**AUGUST 19, 2025**

**PROJECT NO: 2378-6557**

**SENT VIA: EMAIL**

City of Mississauga
300 City Centre Drive
Mississauga, ON L5B 3C1

**Attn: Yousef Hereich, C.E.T.**
**Traffic Planning Technologist, City of Mississauga**

**RE: TRANSPORTATION UPDATE LETTER**
**69 & 117 JOHN STREET, CITY OF MISSISSAUGA, REGION OF PEEL**

Dear Yousef,

Centracondos de la Montagne retained C.F. Crozier & Associates Inc. (Crozier) to complete a Transportation Study to support the proposed mixed-use residential commercial development located at 69 & 117 John Street in the City of Mississauga.

The following reports were previously prepared in support of the Subject Development:

- Transportation Impact, and Parking and Loading Justification Study (Crozier, April 2024)
- Transportation Impact, and Parking and Loading Justification Study Update (Crozier, October 2024)

The Transportation Update Letter accompanies the previous submissions. The letter herein addresses the City of Mississauga's comments as well as summarizes the most recent Site Plan changes, and reviews the following:

- Development Proposal
- Study Purpose and Scope
- Site Circulation Review
- Site Access Review
- Parking Review
- Loading Review
- Community Impacts
- Functional Design

## 1.0 Development Proposal

The Site Plan, prepared by Tregebov Cogan Architecture, proposes a mixed-use residential commercial development. The Subject Development is comprised of a total of 1,335 residential units and 300 $m^2$ of commercial space, with 825 vehicle parking spaces and 875 bicycle parking spaces.

**Table 1** outlines the proposed site statistics.

**Table 1: Development Proposal (Comparison)**

| Site Plan | October 2024 | July 2025 |
|---|---|---|
| Residential | 1,342 units<br>(+41 units) | 1,335 units<br>(-7 units) |
| Commercial | 600 $m^2$<br>(-100 $m^2$) | 300 $m^2$<br>(-300 $m^2$) |
| **Parking Supply** | | |
| Vehicle Parking | 822 spaces<br>(-66 spaces) | 825 spaces<br>(+3 spaces) |
| Bicycle Parking | 860 spaces | 875 spaces<br>(+15 spaces) |

In comparison to the previous submission (Crozier, October 2024), the updated Development Proposal includes a decrease of 7 residential units and 300 $m^2$ commercial space. As a reduced development yield is proposed, the transportation operations analysis and findings outlined in the previously submitted Transportation Impact, and Parking and Loading Justification Study Update (Crozier, October 2024) remain valid and are not updated herein.

The most recent Site Plan outlines an updated access configuration, in comparison to the previous submission, to address City comments. **Table 2** outlines the updated access configuration.

**Table 2: Access Configuration (Comparison)**

| Access | Direction | Spacing from John Street & Little John Lane[1] | |
|---|---|---|---|
| | | October 2024 | July 2025 |
| East Site Access | One-Way Inbound | 23 m (west) | 24 m (west) |
| West Site Access | Two-Way[2] | 85 m (west) | 85 m (west) |

*Note 1: Distance from centreline to centerline.*
*Note 2: One-way outbound for passenger vehicles and two-way for trucks, such as waste collection vehicles.*

**Attachment 1** outlines the most recent Site Plan, dated August 15, 2025.

## 2.0 Study Purpose and Scope

The Transportation Update Letter as well as the previously submitted studies have been prepared in accordance with the City of Mississauga's Transportation Impact Study Guidelines (December 2022) as well as the agreed upon Terms of Reference with the City of Mississauga staff.

In addition, the Transportation Update Letter herein addresses the City's comments, dated February 24, 2025, and May 7, 2025.

**Attachment 2** includes the approved Terms of Reference with City staff as well as the comment response matrix outlining the City's comments and the associated responses.

## 3.0 Site Circulation Review

The proposed Site Plan was reviewed from a circulation perspective. The section herein reviews both the vehicle maneuverability and pedestrian circulation.

### 3.1.1 Vehicle Maneuverability

The Vehicle Turning Diagrams illustrate that the typical Region of Peel waste collection vehicle, typical Region of Peel/City of Mississauga fire truck, delivery vehicles and passenger vehicles can safety enter and exit as well as circulate through the Proposed Development. Therefore, the Site Plan is supportable from a vehicle circulation perspective.

**Attachment 3** includes the Vehicle Turning Diagrams.

### 3.1.2 Pedestrian Circulation

The Site Plan proposes pedestrian facilities to support safe pedestrian circulation throughout the Subject Site. Pedestrian facilities are provided along all the buildings' frontages. These pedestrian facilities provide safe and convenient access to all the proposed building entrances. The internal pedestrian facilities are proposed to connect to the existing sidewalks fronting the Subject Site along John Street. Furthermore, north-south, and east-west crosswalks are proposed throughout the Subject Development, where applicable, to facilitate safe pedestrian crossings.

**Attachment 4** includes the Pedestrian Circulation Plan.

## 4.0 Site Access Review

The development proposal includes two site accesses off John Street that will provide transportation servicing to and from the site. This section evaluates the suitability of the site accesses from a transportation safety perspective and recommends mitigation measures, if warranted.

### 4.1 Intersection Sight Distance

The available sightlines at the proposed site accesses were measured and compared to the standards set out in the Transportation Association of Canada (TAC) Geometric Design Guide for Canadian Roads (GDGCR) (June 2017). Sight distance was measured from the proposed site access using the following assumptions:

- A standard drive eye height of 1.08 m for a passenger car.

- An object height of 0.6 m.
- A 4.4 m setback from the approximate extension of the outer curb (or edge of pavement) to represent a vehicle waiting to exit the site.

Intersection sight distance is calculated using Equation 9.9.1 from the TAC GDGCR as outlined below:

$$ISD = 0.278 * V_{major} * t_g$$

Where:

ISD = Intersection Sight Distance
$V_{major}$ = design speed of roadway (km/h)
$t_g$ = assumed time gap for vehicles to turn from stop onto roadway (s)

The design speed of a roadway is typically 10 km/h greater than the posted speed for posted speeds of 50 km/h or less. As the posted speed limit on John Street is 40 km/h, a design speed of 50 km/h was assumed for sight distance analysis.

It is noted that the East Site Access is a one-way inbound access and thus vehicles will not exit using this access. As such, the sight distance requirements were not reviewed for the East Site Access herein.

**Table 3** outlines the sight distance requirements for the proposed site accesses and compares them to the available sight distance.

**Table 3: Intersection Sight Distance Assessment**

| Access | West Site Access | |
|---|---|---|
| **Maneuver** | **Left-Turn** | **Right-Turn** |
| Access Type | Full Moves | |
| Intersection Control | Case B: Stop Control on Minor Road | |
| Posted Speed Limit of Roadway | 40 km/h (Posted) | |
| Assumed Design Speed | 50 km/h | |
| Grade of Roadway | Assumed less than 3% | |
| Horizontal Alignment of Roadway | Straight | |
| Base Time Gap | 7.5 s | 6.5 s |
| Additional Time Gap | None | None |
| Sight Distance Required | 105 m | 91 m |
| Measured Sight Distance[1] | 110+ m | 95+ m |

*Note 1: Measured using aerial imagery.*

John Street is straight, with minimal grade changes, and no visual obstructions are noted. Based on the most recent Site Plan, adequate sight distance is expected to be achieved at the West Site Access.

Given the cul-de-sac located at the eastern terminus of John Street, approximately 160 metres east of the Western Site Access, oncoming cars from the east are expected to be traversing the roadway either from a stopped position or at a significantly lower speed than the posted speed limit. Therefore, the sight distance required can be considered conservative as it assumes oncoming vehicles are travelling at faster speeds than are expected to occur due to the physical constraints.

Overall, there are no sight distance concerns at the proposed West Site Access; thus, the West Site Access is supportable from an intersection sight distance perspective.

**Attachment 5** contains relevant TAC GDGCR excerpts.

### 4.2 Access Spacing and Corner Clearance

Access spacing was reviewed against the Transportation Association of Canada (TAC) Geometric Design Guide for Canadian Roads (GDGCR) (June 2017) requirements for local roadways and commercial accesses. Additionally, TAC GDGCR was used to review corner

clearance spacing for the proposed site accesses. The assessment was based upon the TAC GDGCR Figure 8.9.2 and Figure 8.8.2 for access spacing and corner clearance, respectively.

**Table 4** summarizes the required and proposed access spacing and corner clearance.

**Table 4: Access Spacing and Corner Clearance Review**

| Site Access | Direction | Access Spacing | | Corner Clearance | | Satisfied? |
|---|---|---|---|---|---|---|
| | | Required | Provided | Required | Provided | |
| West | West | 3 m | 43 m | 15 m | 57 m | Yes |
| | East | | 35 m | | 54 m | Yes |
| East | West | | | | | Yes |
| | East | | 80 m[1] | | 15 m[2] | Yes |

*Note 1: Access spacing provided with east terminus of John Street, east of Little John Lane.*
*Note 2: Corner clearance provided with Little John Lane, located on the opposite side of John Street.*

As outlined in **Section 1.0**, the most recent Site Plan proposes the East Site Access be shifted west, further offset from the John Street & Little John Lane intersection. This shift was implemented to address City comments, meeting the corner clearance requirements per TAC GDGCR, as requested by City Transportation staff.

Overall, there access spacing and corner clearance requirements per TAC GDGCR are no access spacing or corner clearance concerns associated with the proposed site accesses. Thus, the proposed site accesses are supportable.

**Attachment 6** includes the Access Spacing and Corner Clearance Diagrams, which outline the proposed access spacing and corner clearance. **Attachment 2** include the correspondence with City staff. **Attachment 5** contains relevant TAC GDGCR excerpts.

### 4.3 East Site Access Justification

City staff indicated that the East Site Access is supportable, given that the corner clearance meets the applicable requirements, as outlined in **Section 4.2**. Nevertheless, for the purpose of a complete assessment, additional justifications in support of the East Site Access are outlined herein.

#### 4.3.1 Proposed One-Way Operations

The East Site Access is proposed to be one-way inbound, with all outbound traffic as well as inbound waste collection traffic to be via the West Site Access. Thus, improved safety is expected at the East Site Access due to the removal of additional conflicts associated with outbound traffic. Furthermore, westbound traffic from the intersection of John Street & Little John Lane are expected to traverse the roadway from a stopped position, at reduced operating speeds, due to the all-way stop control proposed at John Street & Little John Lane. These reduced operating speeds will improve roadway safety as well as result in reduced stopping distances.

To support the proposed one-way operation, relevant one-way signage and pavement markings will be provided at the East Site Access. Further details will be included in a subsequent submission.

### 4.3.2 Fire Considerations

In comparison to the initial submission, where the East Site Access was aligned with the John Street & Little John Lane intersection, the updated Development Proposal features the East Site Access offset to the west. This shift was implemented to address comments received from City Fire staff, which required the fire trucks to avoid travelling under any portion of the proposed buildings. Nevertheless, as outlined in **Section 4.2**, the East Site Access meets the applicable access spacing and corner clearance requirements.

## 5.0 Parking Review

The following section reviews the adequacy of the parking supply of the Proposed Development, located in Precinct 1. The Subject Development proposes a total of 825 vehicle parking spaces and 875 bicycle parking spaces.

### 5.1 Planning Policy Context

The Province of Ontario's Bill 185 received Royal Assent on June 6, 2024, with the bill removing the minimum vehicle parking requirements for all new developments, except for Universities, located within a protected major transit station area (PMTSA). While the City's Zoning By-Law 0225-2007 does not reflect the parking requirements outlined in Bill 185, we understand these requirements are in effect, though the Zoning By-Law has not yet been amended to reflect this change.

However, City of Mississauga staff has recognized the impact of the change in parking requirements per the City's Planning and Development Committee's Recommendation Report, dated September 18, 2024. Through this recommendation report, staff have proposed amendments to the Zoning By-Law for properties located within PMTSAs to promote consistency between the Zoning By-Law and Bill 185. Accordingly, it is proposed that sites within Precinct 1 reflect a minimum requirement of 0 parking spaces.

As the Subject Development is located 550 m from the Cooksville GO station, within the Cooksville GO PMTSA and Precinct 1, the vehicle parking requirements outlined in Bill 185 and the recent recommendations report are applicable to the Proposed Development. Accordingly, the minimum vehicle parking requirement is 0 spaces.

It is noted that the bicycle parking requirements outlined in Zoning By-Law 0225-2007 are still in force and applicable to the Subject Site.

**Attachment 7** contains the relevant parking requirement excerpts and Planning and Development Committee's Recommendation Report (September 18, 2024).

### 5.2 Vehicle Parking

The Province's Bill 185 has been reviewed to determine the minimum vehicle parking requirements. **Table 5** outlines the parking requirements per Bill 185 and the City's Planning and Development Committee's Recommendation Report (September 18, 2024).

**Table 5: City of Mississauga Recommendation Report Vehicle Parking Requirements**

| Land Use | Statistic | Parking Rate | Required Parking | Proposed Parking |
|---|---|---|---|---|
| Condominium Apartment | 1,335 units | 0 space/unit | 0 spaces | 825 spaces (+825 spaces) |
| Retail[1] | 300 m² | 0 space/100 m² | 0 spaces | |
| **Total** | | | **0 spaces** | **825 spaces (+825 spaces)** |

As outlined in **Table 5**, the Subject Development exceeds the parking requirements per the Province's Bill 185 and the City's Planning and Development Committee's Recommendation Report (September 18, 2024). Thus, the proposed parking supply is supportable.

**Attachment 7** contains the relevant parking requirement excerpts.

### 5.3 Barrier-Free Parking

As Bill 185 removes the minimum parking requirements within protected major transit station areas, there are no accessible parking spaces technically required for the Subject Development. However, 18 accessible parking spaces are proposed, which exceeds the applicable requirements.

**Attachment 7** contains the relevant parking requirements excerpts.

### 5.4 Bicycle Parking

The City of Mississauga Zoning By-Law 0225-2007 has been reviewed to determine the minimum bicycle parking requirements. **Table 6** outlines the minimum bicycle parking requirements.

**Table 6: City of Mississauga Zoning By-Law 0225-2007 Bicycle Parking Requirements**

| Land Use | Type | Statistic | Parking Rate | Required Parking | Proposed Parking |
|---|---|---|---|---|---|
| Condominium Apartment | Class A | 1,335 units | 0.60 space/unit | 801 spaces | 804 spaces (+3 spaces) |
| | Class B | | 0.05 space/unit[1] | 67 spaces | 69 spaces (+2 spaces) |
| Retail | Class A | 300 m² | 0.15 space/100 m² | 1 space | 1 space (+0 spaces) |
| | Class B | | 0.2 space/100 m² | 1 space | 1 space (+0 spaces) |
| **Total Bicycle** | | | | **870 spaces** | **875 spaces (+5 spaces)** |

*Note 1: The required bicycle parking rate is the greater of 0.05 spaces/unit or 6 spaces.*

As outlined in **Table 6**, to support the Proposed Development, a total of 802 Class A and 68 Class B bicycle parking spaces are required. The Site Plan proposes 875 bicycle parking spaces,

comprised of 805 Class A and 70 Class B spaces, thus, the Zoning By-Law requirements are exceeded.

**Attachment 7** contains the relevant parking requirement excerpts.

## 6.0 Loading Review

### 6.1 Loading Requirements

The City of Mississauga Zoning By-Law 0225-2007 was reviewed to determine the loading requirements of the Proposed Development.

**Table 7: City of Mississauga Zoning By-Law Loading Requirements**

| Land Use | Statistic | Minimum Loading Requirement | Minimum Loading Required |
|---|---|---|---|
| Apartment | 3 buildings | 1 loading space/apartment building (minimum of 30 dwelling units) | 3 spaces |
| Retail | 300 m² | 1 loading space (between 250 m² and 2,350 m²) | 1 space |
| **Total Required Loading Spaces** | | | 4 spaces |
| **Total Proposed Loading Spaces** | | | **1 space (-3 spaces)** |

Per the City of Mississauga Zoning By-Law 0225-2007, one loading space must be provided for an apartment building containing a minimum of 30 units. Further, one loading space must be provided for retail with a gross floor area greater than 250 m² but less than or equal to 2,350 m². As 1 loading space is provided per the Site Plan, the proposed loading supply is deficient by 3 loading spaces.

**Attachment 7** contains the relevant loading requirement excerpts.

### 6.2 Loading Operations

1 loading space is provided while the Zoning By-law requires 4 loading spaces; thus, the Subject Development is technically deficient to the loading requirements by 3 loading spaces. However, the proposed loading operations are such that additional areas within the Subject Site are proposed to support loading, delivery and move-in/move-out operations in a safe manner.

In addition to the loading space, a pick-up/drop-off (PUDO)/loading zone is also proposed on the north end of the drive aisle, immediately south of Building B. This PUDO/loading zone is centrally located, near the holding rooms in each of the residential buildings and can be utilized for move-ins or deliveries, if needed. Under typical operation, this zone would facilitate pick-ups and drop-offs, and short term deliveries (e.g., UberEats, etc.). When booked, this area can facilitate loading for up to 2 delivery trucks. While this occurs, PUDO can still continue to operate within the remaining lay-by parking spaces south and west of the drive aisle.

Similar to moving or cargo elevators, a booking system will be utilized to manage the loading space and PUDO/loading zone utility. Residential and commercial tenants will be able to book timeslots for the loading space and PUDO/loading zone to ensure that space is available when

required for move-ins and/or deliveries on a first-come, first-serve basis. Thus, waste collection vehicles can utilize the loading space, as typical, on waste collection days. This strategy will ensure that conflicts between waste collection, move-ins and deliveries will not occur.
While the PUDO/loading zone does not meet the City's loading space dimension requirements , it can sufficiently accommodate 2 medium single unit trucks or 4 passenger cars. Furthermore, despite the PUDO/loading zone's dimensions technically being deficient compared to the Zoning By-Law loading space requirements, functionally the PUDO/loading zone is sufficient to address the Subject Development's needs. **Attachment 3** includes the Vehicle Turning Diagrams of medium single unit trucks for the PUDO/loading zone.

Lastly, smaller delivery vehicles, such as package, food, or grocery delivery, typically do not use a loading space and are expected to utilize the 7 lay-by parking spaces provided on-site.

Overall, given that the loading space demand will be managed via a booking system and a PUDO/loading zone is provided in addition to lay-parking parking spaces, the proposed loading supply and operations is sufficient and supportable.

# 7.0 Community Impacts

The Transportation Update Letter herein as well as the previous submissions have evaluated and addressed the traffic related community impacts as a result of the Subject Development. The operational impact of the Proposed Development is outlined in the previously submitted Transportation Impact, and Parking and Loading Justification Study Update (Crozier, October 2024).

A public consultation was held on May 26, 2025, and the transportation related comments can be summarized as follows:

- Reduced Parking Supply Concerns and Impacts to On-Street Parking
- Impact to Traffic Operations

Crozier's responses to these public comments are outlined in the sections below.

## 7.1 Reduced Parking Supply Concerns and Impacts to On-Street Parking

It is noted that a parking rate of 0.61 space/unit is proposed. However, as outlined in **Section 5.2**, the parking supply is supportable based on the applicable requirements per Bill 185 and the City's Planning and Development Committee's Recommendation Report (September 2024). Nevertheless, further review of the proposed parking supply and expected impact to on-street parking is reviewed herein.

Parking Proposal Trends

A review of proposed development applications within the surrounding area as well as those with similar transportation contexts to the Subject Site was conducted to evaluate the adequacy of the proposed parking supply. This review contains developments within Mississauga's Ward 1, Ward 4 and Ward 7 that provide similar access to local surface transit and regional transit services.

**Table 8** summarizes the proposed parking rates for residential developments in these areas, respectively, as well as a comparison to the proposed parking supply.

**Table 8: Parking Proposal Trends in the City of Mississauga**

| Site Location | Parking Rate | Status |
|---|---|---|
| 88 Park Street E | 0.44 space/unit | Appealed |
| 49 South Service Road | 0.39 space/unit | Under Review |
| 42-46 Park Street E & 23 Elizabeth Street N | 0.33 space/unit | Under Review |
| 3085 Hurontario Street | 0.47 space/unit | Under Review |
| 3115 Hurontario Street | 0.38 space/unit | Under Review |
| **Summary** | | |
| Average | 0.40 space/unit | n/a |
| 69 & 117 John Street | 0.62 space/unit | Subject Development |

The proposed developments within similar transportation contexts in the City propose an average parking supply rate of 0.40 space/unit. Thus, the proposed parking rate of 0.62 space/unit is supportable when considering the parking rates proposed at similar sites, especially given the investment in higher order transit within the study area as well as the proposed Transportation Demand Management strategies, as further outlined below.

**Attachment 8** includes the parking proposal trends excerpts.

Reduced Automobile Use

The planned Hazel McCallion Light Rail Transit (LRT) will improve transit connectivity within the Subject Lands and is expected to result in a 25% reduction in automobile mode share. **Table 9** summarizes the existing and expected future mode split, as outlined in the previous submission.

**Table 9: Existing and Expected Future Mode Split**

| Travel Mode | Existing Mode Split[1] | Expected Future Mode Split[2] |
|---|---|---|
| Auto | 78% | 53% |
| Transit | 17% | 42% |
| Walking | 4% | 4% |
| Cycling | 1% | 1% |
| **Total** | **100%** | **100%** |

*Note 1: Based on 2016 Transportation Tomorrow Survey data for inbound and outbound trips during the weekday a.m. and p.m. peak hour.*
*Note 2: Based on existing mode split and the increase in transit mode share due to the Hazel McCallion LRT as outlined in the Hurontario LRT Benefits Case Analysis.*

It is noted that the above mode split does not include expected automobile mode share reductions associated with other transit improvements, such as the Dundas Bus Rapid Transit or GO Transit Expansion, as well as improvements to the active transportation network like the planned cycle tracks along Hurontario Street and Dundas Street. As such, the actual mode split expected will likely represent a greater reduction in automobile mode share than outlined in the previous submissions.

Furthermore, to support the external sustainable transportation network and the future mode split trends, site-specific Transportation Demand Management (TDM) measures are recommended for the Proposed Development. These TDM measures will contribute to reduced automobile use on-site. The following TDM measures are recommended:

- TDM Information Package for New Tenants
- Wayfinding Signage
- Flex Workspace Amenity Spaces
- Pick-Up/Drop-Off Areas
- Subsidized Transit Pass
- Real-Time Information Screens
- Secure & Excess Bicycle Parking Spaces
- Bicycle Repair Station
- Reduced Parking Supply
- Unbundled Parking
- Carshare Spaces

Given the Subject Site's proximity to transit, the planned improvements for the sustainable transportation network, and the recommended TDM measures, there are attractive alternative transportation modes, reducing the Subject Development's reliance on automobiles. Thus, the proposed parking supply is supportable from this perspective.

**Attachment 9** includes the previous submission excerpts.

Impact to On-Street Parking Supply

It is also noted that no pavement or lane widening to support elements such as auxiliary turn-lanes are proposed at either of the proposed Site Accesses, which may typically impact on-street parking supply. As the removal of the on-street parking along John Street would be required to support an auxiliary turn-lane, the Subject Development is not expected to impact the on-street parking supply. Moreover, as the site proposes a parking supply at a rate that exceeds other proposals in a similar transportation context, on-site parking is adequate such that use of existing on-street parking is not required. Accordingly, no notable impacts to on-street parking supply are expected.

Summary

The proposed parking supply is supportable given the parking proposal trends and reduced automobile use expected near the Subject Lands as well as along the Hazel McCallion LRT corridor. Thus, residents and visitors to the Subject Site are not expected to utilize the existing on-street parking and instead will use the provided on-site parking or access the Subject Site via sustainable transportation. Furthermore, the on-street parking supply and conditions for existing residents are expected to remain unchanged following the build out of the Proposed Development.

### 7.2 Impact to Traffic Operations

The intersection operations outlined in the previously submitted Transportation Impact, and Parking and Loading Study Update (October 2024) illustrate that the Subject Development does not materially impact the traffic operations in comparison to future background conditions.

**Table 10** outlines the intersection operation comparison between 2029 future background and future total conditions.

**Table 10: Intersection Operations Comparison**

| Intersection | Peak Hour | LOS | | Delay (s) | | v/c ratio | |
|---|---|---|---|---|---|---|---|
| | | 2029 FB[1] | 2029 FT[2] | 2029 FB[1] | 2029 FT[2] | 2029 FB[1] | 2029 FT[2] |
| Hurontario Street & John Street/Cooksville GO[3] | A.M. | E | E | 57 | 64 | 1.03 | 1.07 |
| | P.M. | D | E | 47 | 61 | 0.93 | 1.01 |
| Hurontario Street & Hillcrest Avenue/Kirwin Avenue | A.M. | F | F | 123 | 142 | 1.12 | 1.17 |
| | P.M. | E | E | 58 | 56 | 0.46 | 0.48 |
| Dundas Street East & Kirwin Avenue/Camilla Road[4] | A.M. | C | C | 29 | 34 | 0.67 | 0.73 |
| | P.M. | C | C | 30 | 33 | 0.68 | 0.72 |
| Hillcrest Avenue & Cooksville GO | A.M. | A | A | 8 | 8 | 0.34 | 0.34 |
| | P.M. | B | B | 12 | 12 | 0.26 | 0.26 |
| John Street & Jaguar Valley Drive | A.M. | B | B | 11 | 14 | 0.09 | 0.14 |
| | P.M. | B | B | 11 | 14 | 0.12 | 0.20 |
| Kirwin Avenue & Jaguar Valley Drive | A.M. | A | A | 9 | 10 | 0.32 | 0.33 |
| | P.M. | B | B | 11 | 11 | 0.48 | 0.48 |
| John Street & Little John Lane[5] | A.M. | A | B | 10 | 11 | 0.16 | 0.22 |
| | P.M. | B | B | 10 | 11 | 0.18 | 0.33 |
| Kirwin Avenue & Little John Lane | A.M. | A | B | 9 | 10 | 0.35 | 0.38 |
| | P.M. | B | B | 10 | 11 | 0.46 | 0.49 |
| John Street & West Site Access | A.M. | - | B | - | 13 | - | 0.46 |
| | P.M. | - | B | - | 12 | - | 0.26 |
| John Street & East Site Access | A.M. | - | A | - | 3 | - | 0.11 |
| | P.M. | - | A | - | 4 | - | 0.17 |

*Note 1: 2029 Future Background.*
*Note 2: 2029 Future Total.*
*Note 3: With an exclusive westbound right-turn lane.*
*Note 4: Signal optimized #1 for 2029 future background as well as the 2029 future total p.m. peak hour. Signal optimized #2 for the 2029 future total a.m. peak hour.*
*Note 5: All-way stop control for 2029 future total conditions.*

Some of the study intersections are expected to operate at or above capacity with volume-to-capacity ratios above 1.0 and/or LOS "F". However, these operations are consistent with future background conditions, with most increases in control delay and v/c ratio being minimal. Furthermore, these conditions are typical in high volume urban areas during the peak periods within the GTHA as well as along transit corridors with protected left-turn phases, such as Hurontario Street.

Overall, the Subject Development does not materially impact the traffic operations at the signalized study intersections. The operational issues observed under future total conditions are

consistent with future background conditions. As such, the Subject Development is supportable from a transportation operations perspective, with the recommended improvements identified below.

**Table 11** outlines the recommendations outlined in the previous submission to support future background and future total conditions.

**Table 11: Recommended Improvements Summary**

| Intersection | Improvement | Responsibility |
|---|---|---|
| **2029 Future Background** | | |
| Hurontario Street & John Street/Cooksville GO | Consider implementing an exclusive westbound right-turn movement, instead of a shared westbound through-right-turn movement.<br><br>Optimize signal timing plan.<br><br>Consider updating the Hazel McCallion LRT design drawings and revise the planned pavement markings to extend the southbound left-turn lane storage length to at least 65 metres. | City |
| Hurontario Street & Hillcrest Avenue/Kirwin Avenue | Optimize signal timing plan.<br><br>Consider updating the Hazel McCallion LRT design drawings and revise the planned pavement markings to maximize the southbound left-turn lane storage length. | City |
| Dundas Street East & Kirwin Avenue/Camilla Road | Optimize signal timing plan.<br><br>Monitor traffic volumes post- Hazel McCallion LRT and post-Dundas BRT to determine if improvements are required, including:<br>• Adjust pavement markings, including the start of on-street parking on the east side, to extend the southbound left-turn lane storage. | City |
| **2029 Future Total** | | |
| Hurontario Street & John Street/Cooksville GO | Consider revising the planned pavement markings to maximize the southbound left-turn lane storage length.<br><br>Consider providing westbound left-turn lane storage length of at least 65 metres. | City/Developer |

| Intersection | Improvement | Responsibility |
|---|---|---|
| Dundas Street East & Kirwin Avenue/Camilla Road | Continue to monitor traffic volumes post-Hazel McCallion LRT and post-Dundas BRT to determine improvements are required, including:<br>• Adjust pavement markings, including the start of on-street parking on the east side, to extend the southbound left-turn lane storage.<br>• Adjust the signal timing plans (Signal Optimized #2) for the weekday a.m. peak period to increase the green time for the southbound left-turn and/or minor approach movements, | City |
| John Street & Little John Lane | Implement AWSC. | Developer |
| Proposed Development | Implement the following site safety measures:<br>• Convex mirrors within parking and loading areas.<br>• Vehicle warning system with lights at the loading entrances and parking exits.<br><br>Implement the following TDM strategies:<br>• TDM Information Package for New Tenants<br>• Wayfinding Storage<br>• Flex Workspace Amenity Spaces<br>• Pick-Up/Drop-Off Areas<br>• Subsidized Transit Pass<br>• Real-Time Information Screens<br>• Secure & Excess Bicycle Parking Spaces<br>• Bicycle Repair Station<br>• Reduced Parking Supply<br>• Unbundled Parking<br>• Carshare Spaces | Developer |

**Attachment 9** includes the previous submission excerpts.

## 8.0 Functional Design

It is noted that City staff requested Functional Designs be provided for the proposed road network improvements. The Functional Designs will be prepared in a subsequent submission as part of the Site Plan Application.

# 9.0 Conclusions

The mixed-use residential commercial development at 69-117 John Street, in the City of Mississauga, proposes 1,335 residential units and 300 $m^2$ of commercial space. The most recent Site Plan proposes a reduction of 7 residential units and 300 $m^2$ of commercial space, in comparison to the previous submission (Crozier, October 2024). Thus, the transportation operations analysis and findings remain valid and are not updated herein.

The Vehicle Turning Diagrams demonstrate that waste collection vehicles, fire trucks, delivery vehicles and passenger vehicles can safety enter and exit the site accesses safely as well as maneuver around the site. The pedestrian facilities proposed also support safe pedestrian circulation throughout the Subject Site. As such, the Subject Development is supportable from a site circulation perspective.

The proposed site accesses meet the sight distance, access spacing and corner clearance requirements per the Transportation Association of Canada Geometric Design Guide for Canadian Roads (June 2017). While the East Site Access is offset from John Street & Little John Lane, the proposed one-way operations, with the access being inbound only, provides improved safety in comparison to a two-way inbound/outbound access.

Per the Province's Bill 185 and the City's Planning and Development Committee's Recommendation Report (September 2024), no vehicle parking for the Subject Development is required, as it is located in the Cooksville protected major transit station area (PMSTA). With 825 parking spaces provided, the proposed parking supply is sufficient and exceeds the minimum requirement.

Furthermore, with the removal of minimum vehicle parking requirements per Bill 185, the accessible parking requirements for the Proposed Development. Nevertheless, 18 accessible parking spaces are provided.

The Proposed Development also exceeds the bicycle parking requirements outlined in the City of Mississauga Zoning By-Law 0225-2007.

The Site Plan provides 1 official loading space, which is deficient the Zoning By-Law requirements. Nevertheless, a pick-up/drop-off (PUDO)/loading zone is proposed which will be used for move-ins and deliveries. This PUDO/loading zone can accommodate 2 medium-single unit trucks or 4 passenger cars at one time. The loading space and PUDO/loading zone demand can be managed via a booking system with concierge on a first-come, first-service basis. Furthermore, smaller delivery vehicles that do not typically use a loading space are expected to use the additional lay-by parking spaces provided on-site.

In conclusion, the Proposed Development can be supported from a site circulation, safety, and parking and loading perspective.

We trust that this review addresses any transportation-related concerns with the project. Should you have any questions or require any further information, please do not hesitate to contact the undersigned.

Respectfully submitted by,

**C.F. CROZIER & ASSOCIATES INC.**

My-Linh Yee, EIT
Engineering Intern, Transportation

**C.F. CROZIER & ASSOCIATES INC.**

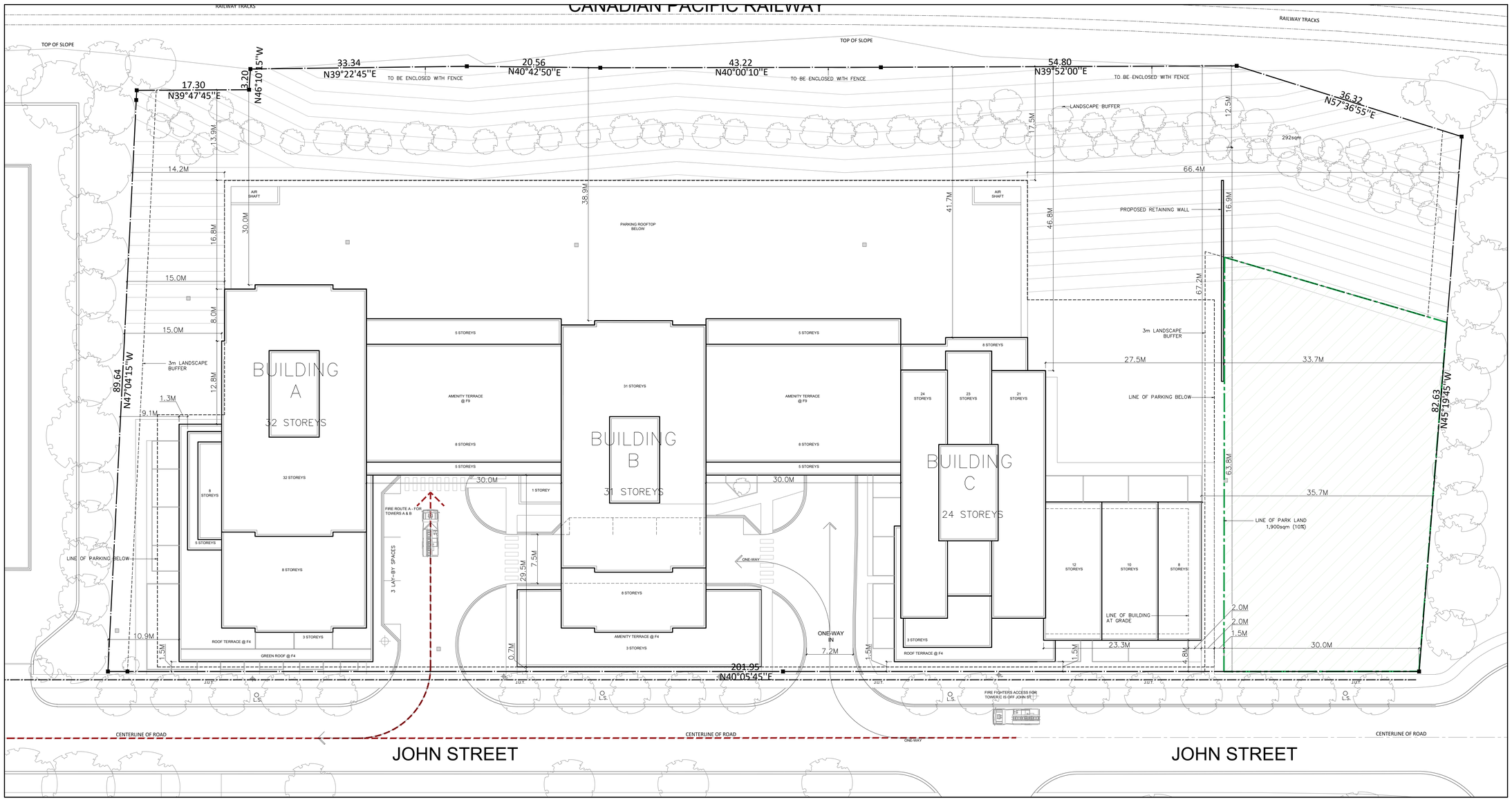
Michael A. Lintón, MASc., P.Eng., Associate
Senior Project Manager, Transportation

Enclosed
Attachment 1: Site Plan
Attachment 2: Correspondence
Attachment 3: Vehicle Turning Diagrams
Attachment 4: Pedestrian Circulation Plan
Attachment 5: Transportation Association of Canada Geometric Design Guide for Canadian Roads Excerpts
Attachment 6: Access Spacing and Corner Clearance Diagrams
Attachment 7: Zoning By-Law Excerpts
Attachment 8: Parking Proposal Trends Excerpts
Attachment 9: Previous Submission Excerpts

/MY

J:\2300\2378 - Centracondos de la Montagne\6557 - 69 & 117 John Street, Mississauga\Reports\Transportation\2025.07.19 Third Submission TUL\2025.08.19_69 & 117 John St Transportation Update Letter.docx

# ATTACHMENT 1:
## Site Plan





## 2 CONTEXT PLAN

Scale: 1:5000

### LEGAL DESCRIPTION

PART OF LOT 15 CONCESSION 1. NORTH OF DUNDAS STREET
(GEOGRAPHIC TOWNSHIP OF TORONTO)

CITY OF MISSISSAUGA
REGIONAL MUNICIPALITY OF PEEL

### SITE DATA

| | |
|---|---|
| **LOT AREA** | **18,685 sq.m (1.87 hectare)** |
| PARKLAND AREA | 1,900 sq.m (0.19 hectare) |
| **NET LOT AREA** | **16,785 sq.m (1.68hectare)** |
| BUILDING AREA (GROUND FLOOR) | 7,241 sq.m (43% of LOT AREA) |
| GROSS FLOOR AREA | 80,495 sq.m |
| FLOOR SPACE INDEX (F.S.I) | 4.8 |

**FLOOR AREAS AND SUITES**

| TYPE | STOREYS | FLOOR PLATE* ($m^2$) | AREA (GFA)($m^2$) | | | | |
|---|---|---|---|---|---|---|---|
| COMMERCIAL | - | | 300 | | | | |
| | | | AREAS ($m^2$) | 1 BEDROOM | 2 BEDROOM | 3 BEDROOM | TOTAL UNITS |
| PODIUM (F1-F8) | - | VARIES | 31,465 | 300 | 20 | 60 | 380 |
| TOWER A (F9+) | 32 | 850 | 18,682 | 230 | 70 | 0 | 300 |
| TOWER B (F9+) | 31 | 850 | 17,967 | 220 | 75 | 0 | 295 |
| TOWER C (F13+) | 24 | 850 | 12,381 | 310 | 50 | 0 | 360 |
| **TOTAL** | | | 80,495 | 1,060 | 215 | 60 | **1,335** |

**NOTES:**
3.5% OF TOTAL UNITS DEDICATED TO RENTAL TENANCY AND 7% OF TOTAL UNITS DEDICATED TO AFFORDABLE HOUSING
*FLOOR PLATE AREAS FOR TOWERS ARE BASED ON FLOORS F9 AND ABOVE. FLOOR PLATE AREAS INDICATE TYPICAL PLAN IN EACH TOWER UPPER FLOORS OF TOWER C HAS DRASTICALLY REDUCED FLOOR PLATE AREAS DUE TO TAPERING MASSING/FORM ON TOP OF TOWER

| | |
|---|---|
| MIN. SUITE AREA | 50 sq.m |
| AVERAGE AREA/SUITE (net) | 62 sq.m |
| UNITS PER HECTARE (U.P.H) | 795 |

**LAND USE AT GRADE**

| | | |
|---|---|---|
| PAVED AREA | 2,150 sq.m | 12% |
| LANDSCAPED AREA | 7,394 sq.m | 40% |
| AREA OF BLDG. AT GRADE | 7,241 sq.m | 38% |
| PARKLAND | 1,900 sq.m | 10% |
| | **18,685 sq.m** | **100%** |

### SETBACKS

**PROVIDED**

| | |
|---|---|
| SOUTH SIDE (JOHN STREET) | VARIES 1.5 m – 31.0 m |
| WEST SIDE | VARIES 9.1 m – 15.0 m |
| NORTH SIDE (C.P.R RAILWAY) | VARIES 30.0 m – 67.2 m |
| EAST SIDE | VARIES 35.0 m – 66.4 m |
| EAST SIDE (TO PARKLAND) | VARIES 3.5 m – 27.5 m |

**BUILDING HEIGHTS**

| | |
|---|---|
| TOWER A HEIGHT TO TOP OF FLAT ROOF (TAKEN FROM ESTABLISHED GRADE LINE) | 99 m |
| TOWER B HEIGHT TO TOP OF FLAT ROOF (TAKEN FROM ESTABLISHED GRADE LINE) | 96 m |
| TOWER C HEIGHT TO TOP OF FLAT ROOF (TAKEN FROM ESTABLISHED GRADE LINE) | 75 m |

### PARKING

**REQUIRED**

| TYPE OF UNIT | NO. OF UNITS | PARKING RATIO | PARKING REQUIRED |
|---|---|---|---|
| 1 BEDROOM | 1,060 | 0.00 | 0 |
| 2 BEDROOM | 215 | 0.00 | 0 |
| 3 BEDROOM | 60 | 0.00 | 0 |
| **TOTAL RESIDENTIAL PARKING** | | | **0** |
| VISITOR PARKING | 1,335 | 0.00 | 0 |
| **TOTAL PARKING REQUIRED** | | | **0** |

**PROVIDED**

| PARKING LEVEL | TOTAL PARKING SPACES *(0.61 PARKING RATIO)* |
|---|---|
| SURFACE | 7 |
| P+1 LEVEL | 116 |
| P+2 LEVEL | 114 |
| P1 LEVEL | 284 |
| P2 LEVEL | 304 |
| **TOTAL** | **825** |

PARKING SPACE TYPICAL DIMENSIONS: 2.6 m X 5.2 m
BARRIER-FREE: 4.5 m X 5.7 m
DRIVEWAY: 7.00 m MIN. WIDTH

**NOTES:**
INCLUDES 18 BARRIER-FREE PARKING SPACES, 807 RESIDENTIAL SPACES
SURFACE LEVEL PARKING SPACES ARE INCLUDED IN TOTAL PARKING PROVIDED
PARKING RATIOS ARE BASED ON NEW REQUIREMENTS SUPPORTED BY MISSISSAUGA CITY COUNCIL
INCLUDES 165 RESIDENTIAL EV SPACES (20% OF TOTAL)

### BICYCLE PARKING PROVIDED

| | |
|---|---|
| SURFACE LEVEL | 70 SPACES |
| BASEMENT LEVELS | 805 SPACES |
| **TOTAL ON SITE** | **875 SPACES** |

**NOTES:**
SURFACE LEVEL SPOTS ARE SHORT-TERM VISITOR SPACES

### AMENITY/OPEN SPACE

| | | |
|---|---|---|
| REAR YARD OPEN SPACE (BERM AREA) | 4,000 sq.m | |
| COMMON OUTDOOR SIDEYARD AMENITY | 1,958 sq.m | |
| OUTDOOR REAR TERRACE AMENITY (AT FLOOR 2) | 2,427 sq.m | |
| PROVIDED SHARED OUTDOOR AMENITY (AT FLOORS 4 AND 9) | 1,340 sq.m | (**F4**- 286 sq.m\| **F9**- 1,054 sq.m) |
| INDOOR AMENITY (TOTAL OF FLOORS 1, 4 AND 9) | 1,320 sq.m | (**F1**- 120 sq.m\| **F4**- 610 sq.m\| **F9**- 590 sq.m) |
| **TOTAL** | **7,045 sq.m*** | |

**NOTES:**
OUTDOOR REAR YARD AMENITY SPACE EXCLUDES PRIVATE PATIOS AND RAILWAY BERM AREAS
* COMBINED PROGRAMMED INDOOR/OUTDOOR AMENITY IS APPROX. **5.3 sq.m/unit**

### LANDSCAPE AREAS

| | | |
|---|---|---|
| REAR YARD (BERM AREA) | 4,000 sq.m | |
| FRONT YARD LANDSCAPING (ISLAND AND MISC. AREAS) | 3,394 sq.m | |
| OUTDOOR AMENITY (TOTAL OF FLOORS 1,2, 4 AND 9) | 5,725 sq.m | |
| **TOTAL** | **9,119 sq.m*** | |

**NOTES:**
OUTDOOR AMENITY SPACE EXCLUDES PRIVATE PATIOS
*DOES NOT INCLUDE ANY PART OF PARKLAND AREA, BERM AREAS OR PAVED AREAS
REAR YARD BERM + FRONT YARD LANDSCAPING EQUALS LANDSCAPE PORTION OF LAND USE ON GRADE (7,394 sq.m)

## 3 SITE PLAN

Scale: 1:300

## 1 STATISTICS

CONSULTANTS:

| DATE | No. | ISSUE |
|---|---|---|
| 2025-08-15 | 01 | FOR REVIEW |


ARCHITECT:
**TREGEBOV COGAN** *ARCHITECT*
40 Saint Clair Avenue East, Suite 303
Toronto, ON M4T 1M9
PHONE: 647.352.3350


OWNER:

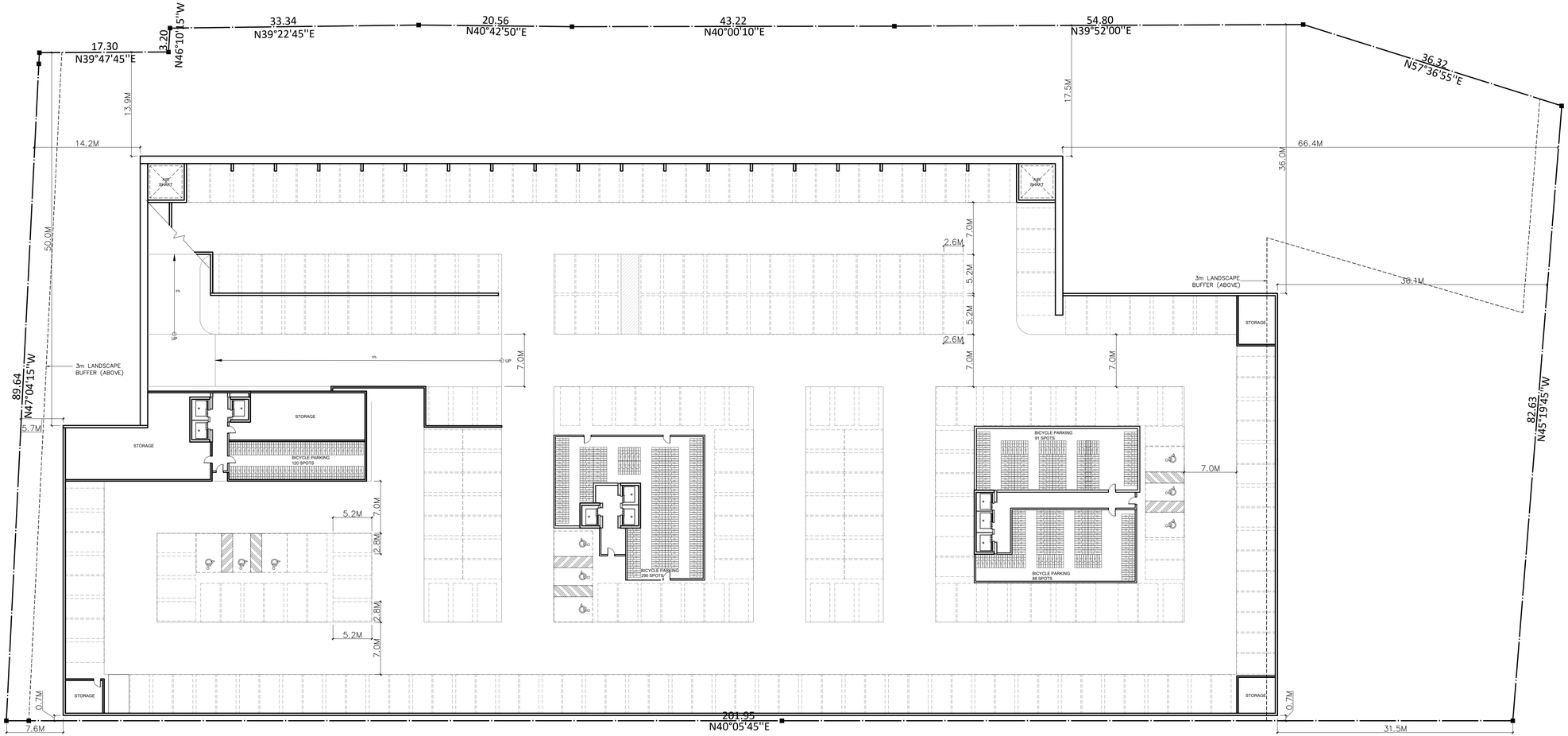
PROJECT NAME:
**69 & 117 JOHN ST. MISSISSAUGA**

DRAWING TITLE:
**SITE STATISTICS, CONTEXT PLAN AND ROOF PLAN**

PRINT DATE: 15-AUGUST 2025

NORTH

PROJ. No.: 1101
DEV APPLICATION NO:
SCALE: AS NOTED
DWG NO. **A1.0**
DRAWN BY: KT,AJ




1 PARKING PLAN - P2

Scale: 1:300

CONSULTANTS:

| DATE | No. | ISSUE |
|---|---|---|
| 2025-08-15 | 01 | FOR REVIEW |


ARCHITECT:

**TREGEBOV COGAN** *ARCHITECT*

40 Saint Clair Avenue East, Suite 303
Toronto, ON M4T 1M9
PHONE: 647.352.3350


OWNER:

PROJECT NAME:

69 & 117 JOHN ST.
MISSISSAUGA

DRAWING TITLE:

**P2 PARKING PLAN**

PRINT DATE: 15-AUGUST 2025

NORTH

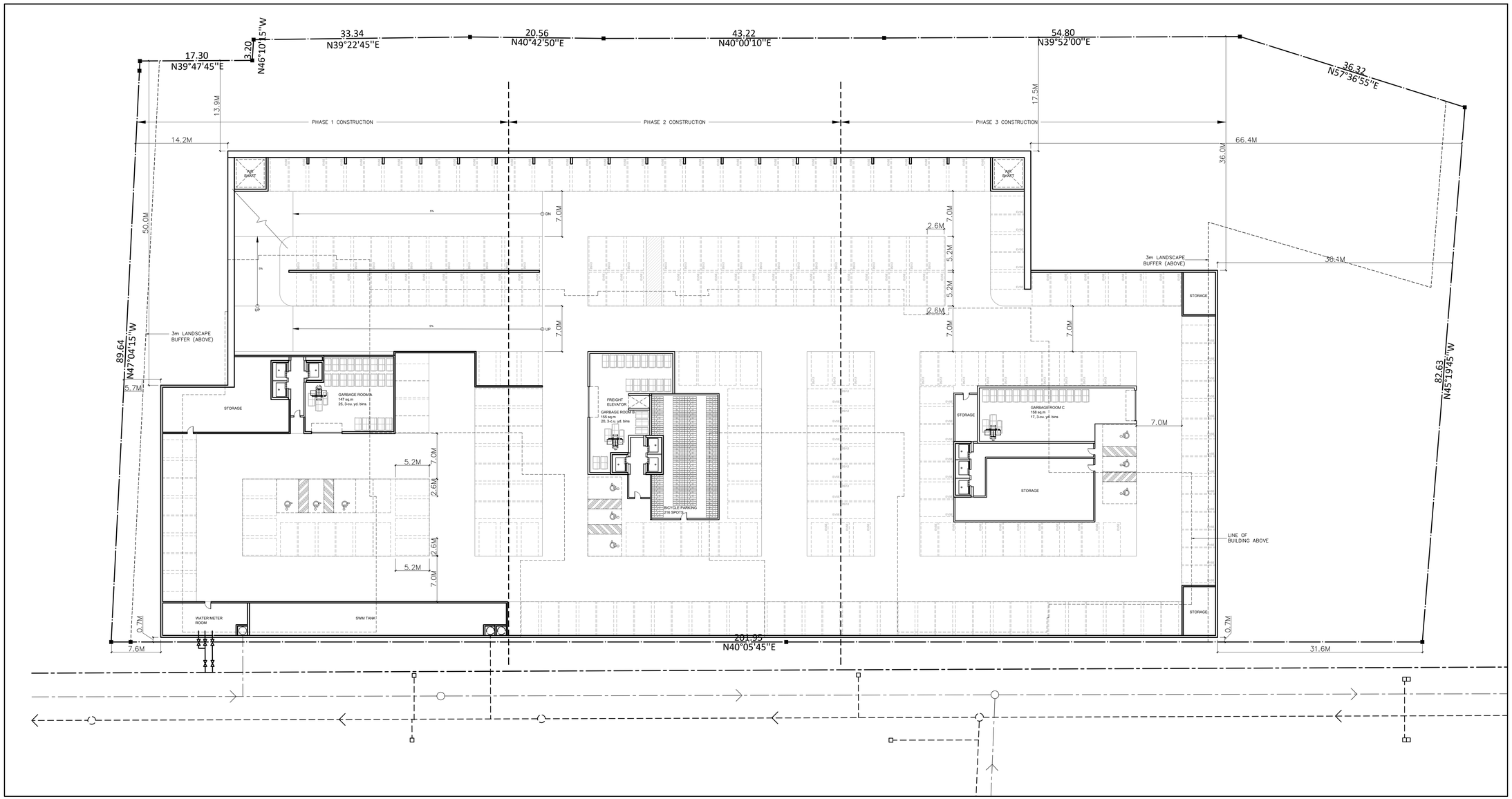
PROJ. No.: 1101

DEV APPLICATION NO:

SCALE: AS NOTED

DWG NO. **A2.1**

DRAWN BY: KT,AJ




1 PARKING PLAN - P1

Scale: 1:300

CONSULTANTS:

| DATE | No. | ISSUE |
|---|---|---|
| 2025-08-15 | 01 | FOR REVIEW |


ARCHITECT:

**TREGEBOV COGAN** *ARCHITECT*

40 Saint Clair Avenue East, Suite 303
Toronto, ON M4T 1M9
PHONE: 647.352.3350


OWNER:

PROJECT NAME:

69 & 117 JOHN ST.
MISSISSAUGA

DRAWING TITLE:

**P1 PARKING PLAN**

PRINT DATE: 15-AUGUST 2025

NORTH

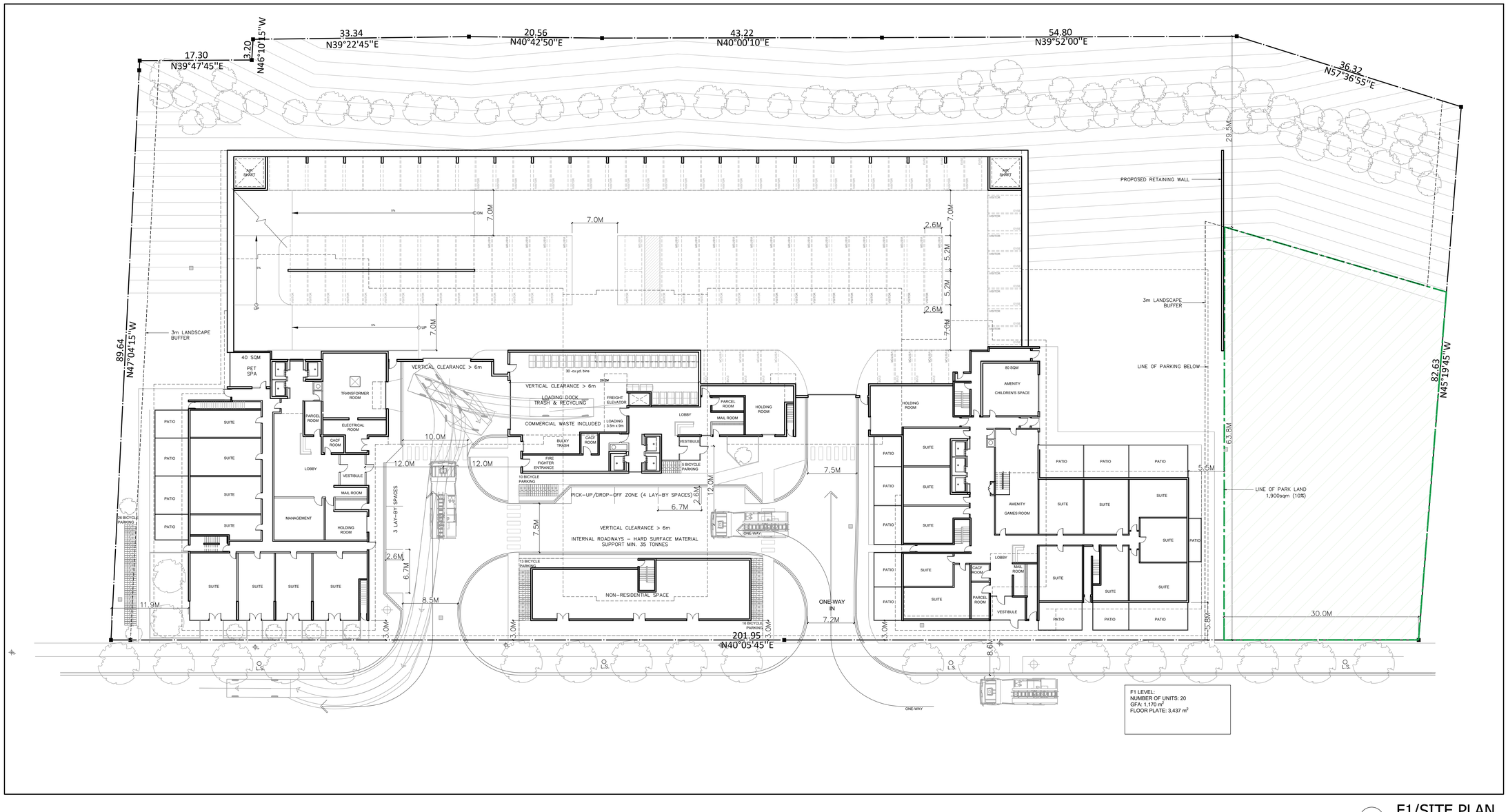
PROJ. No.: 1101

DEV APPLICATION NO:

SCALE: AS NOTED

DWG NO. **A2.2**

DRAWN BY: KT,AJ




1 F1/SITE PLAN
Scale: 1:300

CONSULTANTS:

| DATE | No. | ISSUE |
|---|---|---|
| 2025-08-15 | 01 | FOR REVIEW |

ARCHITECT:

**TREGEBOV COGAN** *ARCHITECT*

40 Saint Clair Avenue East, Suite 303
Toronto, ON M4T 1M9
PHONE: 647.352.3350

OWNER:

PROJECT NAME:

69 & 117 JOHN ST.
MISSISSAUGA

DRAWING TITLE:

**F1/SITE PLAN**

PRINT DATE: 15-AUGUST 2025

NORTH

PROJ. No.: 1101

DEV APPLICATION NO:

SCALE: AS NOTED

DWG NO. **A2.3**

DRAWN BY: KT,AJ

# ATTACHMENT 2:
## Correspondence

## My-Linh Yee

**From:** Michael Turco <Michael.Turco@mississauga.ca>
**Sent:** February 13, 2024 10:19 AM
**To:** My-Linh Yee
**Cc:** Michael Linton; Kierra Harper; Cyrus Hiranandani
**Subject:** RE: 69 & 117 John Street - Terms of Reference

Hi My-Linh,

The proposal at 3065 Jaguar Valley Drive is to convert an existing apartment building site into a standard condominium. Thus, only a change in tenure is proposed and there is no need to consider this site as a background development.

Thank you,

**Michael Turco, C.E.T., CPT, MITE**
Traffic Planning Coordinator
T 905-615-3200 ext. 3597
michael.turco@mississauga.ca

City of Mississauga | Transportation & Works Department
300 City Centre Drive | Mississauga ON | L5B 3C1



---

**From:** My-Linh Yee <myee@cfcrozier.ca>
**Sent:** Tuesday, February 13, 2024 10:15 AM
**To:** Michael Turco <Michael.Turco@mississauga.ca>
**Cc:** Michael Linton <mlinton@cfcrozier.ca>; Kierra Harper <kharper@cfcrozier.ca>; Cyrus Hiranandani <Cyrus.Hiranandani@mississauga.ca>
**Subject:** FW: 69 & 117 John Street - Terms of Reference

Hi Michael,

I tried to reach out to Cyrus but got his out of office email. Are you able to provide us the transportation reports for 3065 Jaguar Valley Drive?

Thanks,
My-Linh

**My-Linh Yee**, EIT
Engineering Intern, Transportation
Office: 905.876.7159
Collingwood | Milton | Toronto | Bradford | Guelph

**From:** My-Linh Yee <myee@cfcrozier.ca>
**Sent:** Tuesday, February 13, 2024 10:10 AM
**To:** Cyrus Hiranandani <Cyrus.Hiranandani@mississauga.ca>
**Cc:** Michael Linton <mlinton@cfcrozier.ca>; Kierra Harper <kharper@cfcrozier.ca>; Trans Projects <Trans.Projects@mississauga.ca>
**Subject:** RE: 69 & 117 John Street - Terms of Reference

Hi Cyrus,

I hope you are doing well. Can you provide the Transportation Impact Study for 3065 Jaguar Valley Drive background development, as we have not been able to find it on the City's website.

Thanks,
My-Linh

**My-Linh Yee**, EIT
Engineering Intern, Transportation
Office: 905.876.7159
Collingwood | Milton | Toronto | Bradford | Guelph

Read about how our story began 20 years ago **here.**

CROZIER

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**From:** Cyrus Hiranandani <Cyrus.Hiranandani@mississauga.ca>
**Sent:** Tuesday, January 23, 2024 11:36 AM
**To:** My-Linh Yee <myee@cfcrozier.ca>
**Cc:** Michael Linton <mlinton@cfcrozier.ca>; Kierra Harper <kharper@cfcrozier.ca>; Trans Projects <Trans.Projects@mississauga.ca>
**Subject:** RE: 69 & 117 John Street - Terms of Reference

Good Morning My-Linh,

Please find attached stamped and approved ToR for the proposed development, which encompasses City comments. Other items to note:

- Certification Form - The Transportation Consultant must complete, sign, and seal (if appropriate) the attached Certification Form from the City's TIS Guidelines (2022) and submit the document with the application/report to ensure compliance with qualification requirements. The TIS Guidelines can be found at https://www.mississauga.ca/wp-content/uploads/2023/03/CMississauga-TIS-Guidelines-Version-5.1-Dec-2022.pdf . It must be ensured that the report conforms to the City's TIS Guidelines.
- Growth Rates/Traffic Data - Please contact Tyler Xuereb from the City's Transportation Planning Section (tyler.xuereb@mississauga.ca, Ext. 4783) to confirm growth rates and/or obtain traffic data for the study area roadways.
- Signal Timing Plans - Signal timing plans for signalized intersections under the City's jurisdiction can be obtained from Jim Kartsomanis (Jim.Kartsomanis@mississauga.ca, Ext. 3964).

Let me know if you have any questions.

Thank you,

**Cyrus Hiranandani, E.I.T.**
Traffic Planning Technologist
T 905-615-3200 ext. 4363
cyrus.hiranandani@mississauga.ca

City of Mississauga | Transportation & Works Department
300 City Centre Drive | Mississauga ON | L5B 3C1



---

**From:** My-Linh Yee <myee@cfcrozier.ca>
**Sent:** Monday, January 8, 2024 5:06 PM
**To:** Kate Vassilyev <Kate.Vassilyev@mississauga.ca>
**Cc:** Michael Linton <mlinton@cfcrozier.ca>; Kierra Harper <kharper@cfcrozier.ca>; Michael Turco <Michael.Turco@mississauga.ca>
**Subject:** RE: 69 & 117 John Street - Terms of Reference

Hi Kate,

I hope you are doing well. Crozier is retained to prepare a Transportation Study in support of the Official Plan Amendment and Zoning By-Law Amendment for the proposed mixed-use residential commercial development at 69 & 117 John Street. The most recent concept plan (see attached) proposes 1,309 residential units and 700 $m^2$ of retail space. It is noted the concept plan is subject to change.

Based on the updated DARC (DARC 23-146 W7) conducted in September 2023 and discussions with the City in December 2023, we are proposing the following updated Terms of Reference for the Transportation Study. Please note, the completed Pre-Study Consultation Checklist is also attached in addition to the below Terms of Reference.

**Study Intersections**

- Hurontario Street & John Street
- Hurontario Street & Kirwin Avenue
- John Street & Little John Lane
- Kirwin Avenue & Little John Lane
- John Street & Jaguar Valley Drive
- Dundas Street & Kirwin Avenue
- Kirwin Avenue & Jaguar Valley Drive
- Hillcrest Avenue & GO Access Road
- Site Access(es)

**Existing Conditions**

- Analyze the existing automobile conditions based on peak hour traffic counts using Synchro Version 11.0, LOS (based on control delays), maximum volume-to-capacity ratios and queue length will be evaluated based on HCM 2000 standards.
- Weekday a.m. and p.m. peak periods; 7:00 a.m. to 10:00 a.m. & 4:00 p.m. to 7:00 p.m.; reflective of the typical commuter peak period.
- We have reached out to tyler.xuereb@mississauga.ca regarding Turning Movement Counts (TMCs) and have been informed the following TMCs are available:
    - Hurontario Street at John Street - 2015
    - Hurontario at Kirwin Avenue – 2016
    - Hillcrest Avenue & GO Access Road – 2015
- In addition, TMCs have been previously conducted in 2023 for the following intersections:
    - Dundas Street & Kirwin Avenue
    - John Street & Jaguar Valley Drive
    - Kirwin Avenue & Jaguar Valley Drive
    - Kirwin Avenue at Little John Lane
    - John Street at Little John Lane
- Many of the above TMCs from the City are quite outdated and we would like to propose conducting new counts at the study intersections where possible. However, we do note that there has been construction activity which may impact travel patterns and as such the study may have to rely on the use of this historical data instead of new counts.
- We have reached out to Steve.Gee@mississauga.ca for signal timing data.

**Study Horizon**

- We propose a 2023 existing base year and a 2028 study horizon, consistent with the City's Traffic Impact Study Guidelines.

**Growth Rates**

- We will reach out to Tyler Xuereb from Transportation Planning (tyler.xuereb@mississauga.ca) to confirm the appropriate growth rates for the study road network.

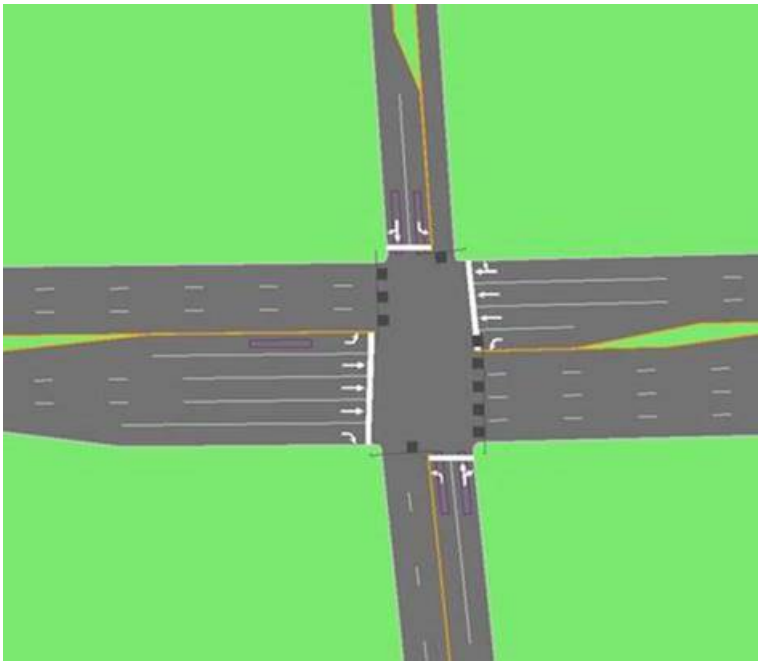
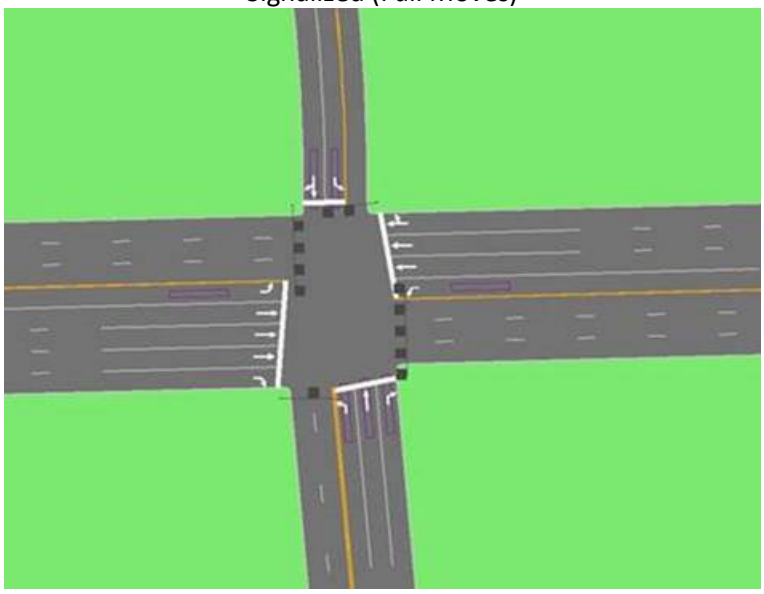
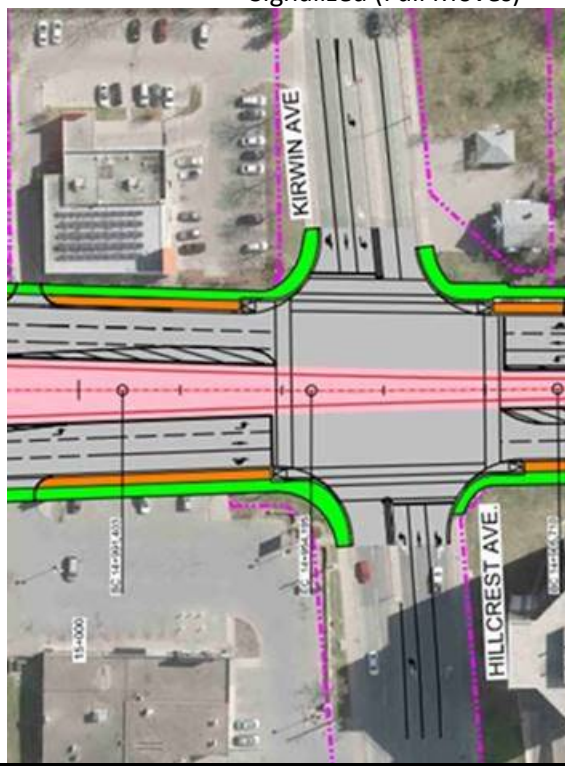
**Background Developments**

- We will include the following background developments in our analysis:
    - 0 Kings Street E, 0 Camilla Road & 2487 Camilla Road
    - 25 & 33 Hillcrest Avenue, 3146 & 3154 & 3168 Hurontario Street
    - 60 Dundas Street East
    - 65-71 Agnes Street
    - 3016 & 3020 & 3026 & 3032 Kirwin Avenue, 3031 Little John Lane
    - 3085 Hurontario Street
    - 3420 & 3442 Hurontario Street

**Hurontario LRT**

- The existing (pre-LRT construction) and future intersection lane configurations that we have currently assumed based on a desktop review and the LRT Rollout Map (June 2017), respectively, are summarized below:

| Intersection | Intersection Configuration | |
|---|---|---|
| | Existing – Pre LRT (Desktop Review) | Future – Post LRT (LRT Rollout Map – Ju |
| Hurontario Street at John Street | Signalized (Full Moves) | Signalized (Full Moves) |

| | | |
|---|---|---|
| |  |  |
| Hurontario Street at Kirwin Avenue | Signalized (Full Moves)<br>  | Signalized (Full Moves)<br>  |

**Background Traffic Volumes**

- We will forecast the 2027 future background volumes based on the above growth rate and background developments.
- Future background volumes will be analyzed based on Synchro Version 11.0, LOS (based on control delays), maximum volume-to-capacity ratios and queue length will be evaluated based on HCM 2000 standards.

**Future Conditions**

- Trip Generation will be based on ITE Trip Generation Manual, 11th edition and First Principles (via existing or forecasted mode split data).
    - We will also review the multi-modal trip generation as well as the anticipated number of GO, LRT, and local bus passengers from the Proposed Development.
- Trip Distribution will be based on Transportation Tomorrow Survey (TTS) data and/or forecasted travel patterns.
- Future background and future total automobile conditions will be compared to identify if capacity and queuing issues are forecasted and if mitigation measures are required.

**Traffic Safety**

- The available site distance at the proposed site access will be compared to standards set out by the Transportation Associates of Canada (TAC) Geometric Design Guide for Canadian Roads (GDGCR).
- The site access will also be reviewed to confirm it conforms to TAC standards.
- The supportability of site access locations and restrictions will be reviewed based on traffic operations and expected queue lengths, as well as applicable access spacing guidelines.
- A Pedestrian Circulation Plan will be prepared per the City of Mississauga's Transportation Impact Study Guidelines.
- Conflicts will be reviewed between vehicles, pedestrians, cyclists, and recommendations made to maintain multimodal safety.

**TDM Review**

- Transportation Demand Management (TDM) opportunities will be assessed, and site-specific measures for the development will be recommended to reduce single-occupancy vehicle (SOV) trips and promote sustainable transportation in line with the City and Region's mode share targets and vision for the Hurontario Street Corridor.

**Parking**

- As part of the TIA submission, a Parking Justification Study will also be included. The Parking Study Terms of Reference will be confirmed with parkingstudy.review@mississauga.ca

**Loading**

- Loading requirements will be reviewed per City of Mississauga Zoning By-Law 0174-2017. Any deviations will be supported with appropriate justification, if required.

**Other**

- Vehicle Turning Diagrams will be provided for the following design vehicles:
    - TAC p-car
    - Medium Single Unit Truck
    - Pumper Fire Truck
    - Region of Peel Typical Waste Collection Vehicle

Thanks,
My-Linh

**My-Linh Yee**, EIT
Engineering Intern, Transportation
Office: 905.876.7159
Collingwood | Milton | Toronto | Bradford | Guelph

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CROZIER CONSULTING ENGINEERS

**From:** Michael Turco <Michael.Turco@mississauga.ca> **On Behalf Of** Trans Projects
**Sent:** Thursday, December 21, 2023 8:46 AM
**To:** Kierra Harper <kharper@cfcrozier.ca>
**Cc:** Michael Linton <mlinton@cfcrozier.ca>; My-Linh Yee <myee@cfcrozier.ca>
**Subject:** RE: 69 & 117 John Street - Terms of Reference

Good morning Kierra,

Thank you for your email. The TIS will be required to conform to the City's new TIS Guidelines, including the new process for Terms of References. Please complete and submit the Pre-Study Consultation Checklist (attached). The City will review and comment on the assumptions once the document is submitted.

Regards,

**Michael Turco, C.E.T., CPT, MITE**
Traffic Planning Coordinator
T 905-615-3200 ext. 3597
michael.turco@mississauga.ca

City of Mississauga | Transportation & Works Department
300 City Centre Drive | Mississauga ON | L5B 3C1



**From:** Kate Vassilyev <Kate.Vassilyev@mississauga.ca>
**Sent:** Wednesday, December 20, 2023 5:45 PM
**To:** Trans Projects <Trans.Projects@mississauga.ca>
**Subject:** FW: 69 & 117 John Street - Terms of Reference

**From:** Kierra Harper <kharper@cfcrozier.ca>
**Sent:** Wednesday, December 20, 2023 10:16 AM
**To:** Kate Vassilyev <Kate.Vassilyev@mississauga.ca>
**Cc:** Michael Linton <mlinton@cfcrozier.ca>; My-Linh Yee <myee@cfcrozier.ca>
**Subject:** 69 & 117 John Street - Terms of Reference

Good morning Kate,

I hope you are doing well. Crozier is retained to prepare a Transportation Impact Study for the proposed development at 69 & 117 John Street. An initial DARC (DARC 22-225 W7) was conducted in 2022, with an updated DARC (DARC 23-146 W7) conducted in September 2023. A Terms of Reference was previously circulated and confirmed with the City in February 2023 (see attached). We wanted to confirm if the City requires us to submit a new Terms of Reference or if the initial Terms of Reference will suffice. Can you also confirm if the study will now be required to conform to the City's updated TIS Guidelines which were released around March 2023? Note that the guidelines were released after the initial TOR coordination and would not have been referenced in the attached correspondence.

Should the initial Terms of Reference suffice, we will also include the following in our report based on the most recent DARC comments:

- Review the anticipated number of GO, LRT, and local bus (using street and/or Cooksville GO) passengers from the Proposed Development

- Include Hillcrest Avenue & GO Access Road as a study intersection.
- Access justification, if the proposed site access is not aligned with Little John Lane.

We will follow up with formal terms pending your response to the above.

Thank you,
Kierra
Reminder: Crozier offices will be closed for the Holidays beginning Friday, December 22*nd* at 5:00pm, and re-opening Tuesday, January 2*nd* at 8:30am. All the best during the Holiday season!

**Kierra Harper**, EIT
Engineering Intern, Transportation
Office: 905.693.4713
Collingwood | Milton | Toronto | Bradford | Guelph

Learn all about our latest awards & recognition **here**.
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# Appendix B

**APPROVED**
*By Cyrus Hiranandani at 11:30 am, Jan 23, 2024*

## Pre-Study Consultation Checklist

| Description | Information | Section Reference |
|---|---|---|
| **Development Information** | | |
| Development Description (land use, size, and number of phases of development) | • High Rise Apartment: 1,309 units (including 4 live/work units)<br>• Retail: 700 $m^2$ | 2.3.6 |
| **Transportation Impact Assessment** | | |
| **Step 1 – Screening** | | |
| Type of Application (attach a drawing) | ☒ Official Plan Amendment<br>☒ Zoning Amendment<br>☐ Site Plan Control Application<br>☐ Plan of Subdivision<br>☐ Other_____ | 2.3.5 |
| Screening Criteria | ☒ Trip Generation Trigger Satisfied<br>☒ Location Trigger Satisfied<br>☐ Operational/Safety Trigger Satisfied | 2.2.1 |
| Type of Study | ☒ Transportation Impact Study<br>☒ Access Review<br>☐ No Additional Study Required | 2.2.1 |
| **Step 2 – Scoping** | | |
| Study Area (intersections to be analyzed)<br><br>Note: The Transportation Consultant is responsible to identify any further intersections impacted as the study progresses. | • Hurontario Street & John Street<br>• Hurontario Street & Kirwin Avenue<br>• John Street & Little John Lane<br>• Kirwin Avenue & Little John Lane<br>• John Street & Jaguar Valley Drive<br>• Dundas Street & Kirwin Avenue<br>• Kirwin Avenue & Jaguar Valley Drive<br>• Hillcrest Avenue & GO Access Road<br>• Site Access(es) | 2.3.8 |
| Horizon Years | ☒ 5 years from date of TIS<br>☐ Interim years_____<br>☐ Other_____ | 2.3.9 |

| Description | Information | Section Reference |
|---|---|---|
| Analysis Periods | ☒ AM weekday peak hour of adjacent roadway<br>☒ PM weekday peak hour of adjacent roadway<br>☐ Saturday peak hour of adjacent roadway<br>☐ AM weekday peak hour of development<br>☐ PM weekday peak hour of development<br>☐ Saturday peak hour of development<br>☐ Other _____ | 2.3.10 |
| Input Parameters and Assumptions (potential deviations) | • Existing Lane Configurations: Pre LRT construction per a desktop review of historical imagery.<br>• Historic Signal Timing Plans: Received from City of Mississauga (Steve.Gee@mississauga.ca)<br>• Future Lane Configurations: Post LRT conditions per the LRT Rollout Map (June 2017) received from the City of Mississauga. | 2.3.13 |
| Existing Transportation Conditions | ☒ City data sources<br>☒ New data collection_____<br>☐ Other _____ | 2.3.14 |
| Planned Network Improvements (with timing) | • Hurontario Light Rail Transit (LRT) and Associated Lane Configurations: 2024 | 2.3.16 |
| Other Planned Developments (per City's Website) | • 0 Kings Street E, 0 Camilla Road & 2487 Camilla Road<br>• 25 & 33 Hillcrest Avenue, 3146 & 3154 & 3168 Hurontario Road<br>• 60 Dundas Street E<br>• 65-71 Agnes Street<br>• 3016 & 3020 & 3026 & 3032 Kirwin Avenue, 3031 Little John Lane<br>• 3085 Hurontario Street<br>• 3420 & 3442 Hurontario Street<br>• 3115 Hurontario Street<br>• 3065 Jaguar Valley Drive<br>• Any other in-stream or recently approved development within approximately 1km from the subject site. Refer to the City's website for further information | 2.3.17 |
| Identification of Mitigation Improvement Measures | ☐ Neighbourhood Traffic Management Plan<br>☐ Other_____ | 2.3.23 |

| Description | Information | Section Reference |
|---|---|---|
| Safety Analysis<br>(any special issues) | • Corner Clearance<br>• Sight Distance<br>• Vehicle-pedestrian/cyclist conflicts<br>• Access conflicts<br>• Pedestrian and cyclist movements | 2.3.25 |
| Site Access and Circulation<br>(design vehicles) | ☒ Passenger Car (P)<br>☐ Light Single Unit Truck (LSU)<br>☒ Medium Single Unit Truck (MSU)<br>☐ Heavy Single Unit Truck (HSU)<br>☒ Pumper Fire Truck<br>☐ WB-20 Tractor Semi-Trailer Truck<br>☒ Other Region of Peel Typical Waste Collection Vehicle | 2.3.26 |
| Impacts During Construction<br>(any special issues) | • N/A | 2.3.27 |
| **Step 3 – Forecasting** | | |
| Growth Rate | ☒ Obtained from City<br>☐ Historical traffic counts<br>☐ Travel demand forecasts<br>☐ Proposed Growth Rate: _____ | 2.3.15 |
| Site Trip Generation | ☒ ITE Trip Generation Manual<br>☒ ~~"First Principles"~~<br>☐ Observed rates for similar developments in area<br>☐ Other _____ | 2.3.19 |
| Trip Reductions | ☒ Internal capture reductions for mixed-use developments<br>☒ Pass-by reductions<br>☐ Other _____ | 2.3.19 |
| Trip Distribution | ☐ Local traffic patterns<br>☒ TTS<br>☐ Travel demand model<br>☐ Population and employment distribution<br>☐ Market analysis of catchment area<br>☐ Other _____ | 2.3.20 |
| Trip Assignment | ☒ Local traffic patterns<br>☐ Shortest distance<br>☒ Site layout, access design and logical routing<br>☐ Existing turning movements<br>☐ Other _____ | 2.3.21 |
| **Transportation Demand Management Plan** | | |

| Description | Information | Section Reference |
|---|---|---|
| Format | ☒ Within a TIA Report<br>☐ Standalone | 3.2.1 |
| Type of Transportation Demand Management Plan | ☐ TDM Statement<br>☒ TDM Scheme | 3.2.2 |
| **Pedestrian Circulation Plan** | | |
| Format | ☒ Within a TIA Report<br>☐ Standalone | 4.2.1 |
| **Additional Comments** | | |

- **Community Impacts**: Any transportation related impacts on the existing community and comments from the public through the planning approvals process shall be addressed in the report.
- **Access Review**: Ensure that the site access(es) conforms to all TAC standards (e.g. corner clearances, clear throat lengths, veh & ped sight line distances for ingress/egress, proximity/alignment to other driveways/roads, etc.); Provide confirmation and technical justification of whether the site access location(s) and design(s) are safe for all roadway users and why.
- **Traffic Control Warrants**: (e.g. all-way stop, traffic control signals) are to be provided, where applicable, for all three scenarios (existing, future background, future total)
- **Detailed Recommendations**: regarding on-site/off-site roadway improvements, site access, site circulation, and TDM measures shall be made.

| Department/Agency | Comment | Crozier Response |
|---|---|---|
| **Second Submission Comments** | | |
| **Traffic Review**<br>City of Mississauga | The proposed easterly access shall be relocated to align centreline to centreline with Little John Lane. | Noted. As discussed with City staff, the East Site Access is located west of John Street & Little John Lane to accommodate previously received Fire comments.<br><br>Nevertheless, the East Site Access provides sufficient corner clearance from the John Street & Little John Lane intersection.<br><br>Further details are outlined in **Section 4.0**. |
| | The Owner shall ensure the proposed access provides sufficient sight lines such that views are not obstructed at the intersection (street trees, retaining walls, noise walls etc.). | Noted. As outlined in **Section 4.1**, no sight distance issues are expected at the proposed site accesses. |
| | The Owner shall provide for a sufficient clear throat length within the driveway access to ensure the roadway and internal driveway can operate efficiently. | Noted. The Vehicle Turning Diagrams demonstrate that the proposed site accesses and internal driveway can operate efficiently.<br><br>The Vehicle Turning Diagrams are included in **Attachment 3**. |
| | The Owner shall provide for a sufficient corner clearance from the roadway to the access point. | Noted. As outlined in **Section 4.2**, the proposed site accesses meet the applicable corner clearance requirements. |
| | Please attach the approved ToR (Appendix B) to the report to confirm alignment with City expectations. | Noted. The approved Terms of Reference is included in **Attachment 2**. |

| Department/Agency | Comment | Crozier Response |
|---|---|---|
| | Based on the data and per table 34, it confirms that projected vehicle and pedestrian volumes meet the criteria for an all-way stop control (AWSC) at the intersection of John St & Little John St. Implementation of AWSC will enhance safety for both vehicles and pedestrians accessing the site. The AWSC aligns with best practices outlined in TAC guidelines for intersection control at urban developments with increased pedestrian activity. We request that you proceed with incorporating an all-way stop control at the intersection of John Street & Little John Lane into the site design. Furthermore, please revise the site plan to reflect the relocation of the proposed easterly driveway to align with Little John Street. Kindly update the relevant drawings and documentation accordingly and ensure to maintain current sight distance provisions. | Noted. As discussed with City staff, the East Site Access is located west of John Street & Little John Lane to accommodate previously received Fire comments.<br><br>Nevertheless, the East Site Access provides sufficient corner clearance from the John Street & Little John Lane intersection.<br><br>Further details are outlined in **Section 4.0**. |

| Department/Agency | Comment | Crozier Response |
|---|---|---|
| | The study forecasts LOS "F" conditions at key intersections (e.g., Hurontario St @ John St). Clearly define the Developer responsibility for any required improvements as existing conditions operated at a LOS "C" condition. | The intersection operations outlined in the previously submitted Transportation Impact, and Parking and Loading Study Update (October 2024) illustrate that the Subject Development does not materially impact the traffic operations in comparison to future background conditions.<br><br>The LOS F observed at key intersections, including Hurontario Street & John Street, is also observed during future background conditions, due to the background traffic expected.<br><br>As identified in the previous submission, the developer driven improvements are the implementation of all-way stop control at John Street & Little John Lane as well as the consideration for an increased westbound and southbound left-turn lane storage at Hurontario Street & John Street/Cooksville GO.<br><br>Further details are included in **Section 7.2** and **Attachment 7**. |
| | The TIS shall include a section in the report to address Community Impacts. This section shall include summary statements outlining the resulting traffic increases to the critical streets, movements and intersections. Comments or concerns from the community through future public meetings and engagements that are related to traffic shall also be addressed in this section. | Noted. **Section 7.0** addresses the Community Impacts based on the comments received during the public consultation on May 26, 2025. |
| | The study is generally compliant with the Mississauga TIS Guidelines; however, the above items must be addressed for final City approval. Please submit a revised report incorporating the requested clarifications and additional justifications. | Noted. |

| Department/Agency | Comment | Crozier Response |
|---|---|---|
| **Public Meeting Recommendation Report Comments** | | |
| **Traffic**<br>City of Mississauga | Provide an updated Traffic Impact Study addressing all staff comments. | Noted. |
| | Provide turning movement diagrams to evaluate the internal site circulation and access points. | Noted. The Vehicle Turning Diagrams evaluate the site circulation, and no conflicts are expected.<br><br>**Attachment 3** includes the Vehicle Turning Diagrams. |
| | Review the easterly driveway access to ensure alignment with Little John Lane and the internal driveway can operate efficiently. | Noted. As confirmed with City staff, the East Site Access is supportable, given that the corner clearance requirements with John Street & Little John Lane are met, and the access can operate efficiently.<br><br>Further details are included in **Section 4.2** and **Section 4.3**. |
| | Address any traffic concerns from the Community related to the proposed development. | Noted. **Section 7.0** addresses the Community Impacts based on the comments received during the public consultation on May 26, 2025. |
| | Provide functional designs showing how the proposed road network improvements can be implemented. | Noted. As discussed in **Section 8.0**, functional designs for the proposed road network improvements will be prepared as part of the Site Plan Application. |

## My-Linh Yee

**From:** My-Linh Yee
**Sent:** July 2, 2025 4:14 PM
**To:** Yousef Hereich
**Cc:** Michael Linton; Sarah Clark; Maurice Luchich; Adam Lucas; Shea Laventure; James Emerson
**Subject:** RE: (OZ/OPA 24-16 W7) 69 & 177 John Street - Access Comments

Hi Yousef,

Thanks for prompt response, I greatly appreciate it! I just wanted to confirm there is nothing further you need from us for an updated recommendation report.

As part of the formal resubmission (following the updated recommendation report) we will provide the access justification, including the requested pavement markings and signage, as well as address any other outstanding traffic comments.

Cheers,
My-Linh *[me/lin]*

**My-Linh Yee**, EIT
Engineering Intern, Transportation
Office: 905.876.7159
Collingwood | Milton | Toronto | Bradford | Guelph



**From:** Yousef Hereich <Yousef.Hereich@mississauga.ca>
**Sent:** July 2, 2025 4:01 PM
**To:** My-Linh Yee <myee@cfcrozier.ca>
**Cc:** Michael Linton <mlinton@cfcrozier.ca>; Sarah Clark <sarahc@gsai.ca>; Maurice Luchich <mauricel@gsai.ca>; Adam Lucas <Adam.Lucas@mississauga.ca>; Shea Laventure <Shea.Laventure@mississauga.ca>; James Emerson <James.Emerson@mississauga.ca>
**Subject:** RE: (OZ/OPA 24-16 W7) 69 & 177 John Street - Access Comments

Hi My-Linh,

Thank you for the follow-up and for providing the updated drawing. Yes, the proposed access location is acceptable as it satisfies the TAC corner clearance requirements. However, please ensure that the internal site design includes pavement markings and signage to reinforce the one-way inbound operation at the easterly driveway. This will help restrict traffic flow appropriately and ensure that delivery trucks utilize this access rather than the secondary driveway, thereby avoiding the need to reverse on-site.

Additionally, please update the written access justification as part of the re-submission to reflect this configuration, including sight distance, corner clearance, and one-way operations. Please also address any other traffic-related comments identified in ePlans.

Let me know if you have any questions.

Kind regards,

**Yousef Hereich, C.E.T.**
Traffic Planning Technologist
T 905-615-3200 ext.8363
yousef.hereich@mississauga.ca

City of Mississauga | Transportation & Works Department,
Infrastructure Planning & Engineering Services Division



---

**From:** My-Linh Yee <myee@cfcrozier.ca>
**Sent:** June 27, 2025 1:56 PM
**To:** Yousef Hereich <Yousef.Hereich@mississauga.ca>; James Emerson <James.Emerson@mississauga.ca>
**Cc:** Michael Linton <mlinton@cfcrozier.ca>; Ryan Au <Ryan.Au@mississauga.ca>; Natalie Fan <Natalie.Fan@mississauga.ca>; Sarah Clark <sarahc@gsai.ca>; Maurice Luchich <mauricel@gsai.ca>
**Subject:** [EXTERNAL] RE: (OZ/OPA 24-16 W7) 69 & 177 John Street - Access Comments

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Hi Yousef and James,

I just wanted to follow up regarding the proposed adjustments to the east site access (see attached). I understand next week is a short week with the Canada Day holiday, but we're hoping to get a response sooner rather than later given our timelines for the updated recommendation report and to get the updated materials to you for review.

Have a great weekend,
My-Linh *[me/lin]*

Please note that our offices will be closed on Monday, June 30 and Tuesday, July 1. We will resume regular office hours on Wedne

**My-Linh Yee**, EIT
Engineering Intern, Transportation
Office: 905.876.7159
Collingwood | Milton | Toronto | Bradford | Guelph

**From:** My-Linh Yee <myee@cfcrozier.ca>
**Sent:** June 25, 2025 3:42 PM
**To:** Yousef Hereich <Yousef.Hereich@mississauga.ca>; james.emerson@mississauga.ca
**Cc:** Michael Linton <mlinton@cfcrozier.ca>; Ryan Au <Ryan.Au@mississauga.ca>; Natalie Fan <Natalie.Fan@mississauga.ca>; Sarah Clark <sarahc@gsai.ca>; Maurice Luchich <mauricel@gsai.ca>
**Subject:** RE: (OZ/OPA 24-16 W7) 69 & 177 John Street - Access Comments

Hi Yousef and James,

Thanks for taking the time to meet with us earlier this month. We have confirmed with the Architect that we can make a minor adjustment to the eastern site access to provide a 15 m corner clearance as requested (per TAC requirements). I have attached a high-level sketch of what this would look like for your review.

We just wanted to confirm that this updated access configuration is acceptable to the City. Furthermore, for the purpose of getting an updated recommendation report, do you require the requisite written access justification (including sight distance, corner clearance, one-way inbound operations, etc.) to be provided now or is it sufficient to provide these details as part of a comprehensive re-submission following the updated recommendation report.

Cheers,
My-Linh *[me/lin]*

**My-Linh Yee**, EIT
Engineering Intern, Transportation
Office: 905.876.7159
Collingwood | Milton | Toronto | Bradford | Guelph



**From:** Yousef Hereich <Yousef.Hereich@mississauga.ca>
**Sent:** June 3, 2025 7:40 PM
**To:** My-Linh Yee <myee@cfcrozier.ca>
**Cc:** Ryan Au <Ryan.Au@mississauga.ca>; Michael Linton <mlinton@cfcrozier.ca>; Natalie Fan <Natalie.Fan@mississauga.ca>
**Subject:** RE: (OZ/OPA 24-16 W7) 69 & 177 John Street - Access Comments

Hi My-Linh,

Can you please schedule a meeting for next Friday June 13th from 10:30am to 11:30am.

Thanks,

MISSISSAUGA

**Yousef Hereich, C.E.T.**
Traffic Planning Technologist
T 905-615-3200 ext.8363
yousef.hereich@mississauga.ca

City of Mississauga | Transportation & Works Department,
Infrastructure Planning & Engineering Services Division



---

**From:** My-Linh Yee <myee@cfcrozier.ca>
**Sent:** June 3, 2025 5:37 PM
**To:** Yousef Hereich <Yousef.Hereich@mississauga.ca>
**Cc:** Ryan Au <Ryan.Au@mississauga.ca>; Michael Linton <mlinton@cfcrozier.ca>
**Subject:** [EXTERNAL] (OZ/OPA 24-16 W7) 69 & 177 John Street - Access Comments

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Good afternoon Yousef,

I hope you are doing well. Crozier is the transportation consultants for the proposed mixed-use residential-commercial development located at 69 & 117 John Street (File Number OZ/OPA 24-16 W7). Are you available to meet to discuss the City's comments regarding the east site access proposed offset with Little John Lane?

Crozier is available at the following times:

- Friday June 6: 3:00 pm to 5:00 pm
- Monday June 9: 2:00 pm to 5:00 pm
- Tuesday June: 11:00 am to 2:00 pm
- Wednesday June 11: 2:30 pm to 5:00 pm
- Thursday June 12: 12:00 pm to 3:00 pm
- Friday June 13: 10:30 am to 12:00 pm; 3:00 pm to 5:00 pm

Cheers,
My-Linh [Me/Lin]

**My-Linh Yee**, EIT
Engineering Intern, Transportation
Office: 905.876.7159
Collingwood | Milton | Toronto | Bradford | Guelph

# ATTACHMENT 3:
## Vehicle Turning Diagrams

CANADIAN PACIFIC RAILWAY

RAILWAY TRACKS

TOP OF SLOPE

17.30
N39°47'45"E

3.20
N46°10'15"W

33.34
N39°22'45"E

20.56
N40°42'50"E

43.22
N40°00'10"E

54.80
N39°52'00"E

89.64
N47°04'15"W

201.95
N40°05'45"E

Fire Truck (Peel)
Custom

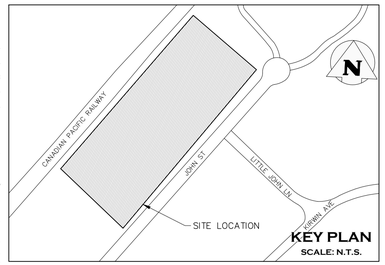
CENTERLINE OF ROAD

JOHN STREET

LITTLE JOHN LANE

3180 LITTLE JOHN ST.

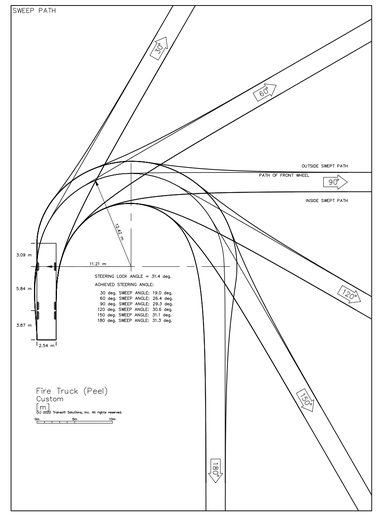
10 0m 10 20
SCALE: 1:300



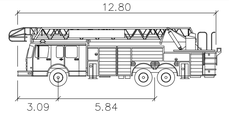

KEY PLAN
SCALE: N.T.S.

FOR REVIEW
NOT TO BE USED FOR CONSTRUCTION

SWEEP PATH




VEHICLE PROFILE




Fire Truck (Peel)

meters

| | |
|---|---|
| Width | : 2.54 |
| Track | : 2.54 |
| Lock to Lock Time | : 6.0 |
| Steering Angle | : 31.4 |

| No. | ISSUE | DATE: MM/DD/YYYY |
|---|---|---|
| 1 | ISSUED FOR 1st SUBMISSION | 04/23/2024 |
| 2 | ISSUED FOR 2nd SUBMISSION | 10/15/2024 |
| 2 | ISSUED FOR 3rd SUBMISSION | 08/05/2025 |

Project

69 & 117 JOHN STREET
CITY OF MISSISSAUGA

Drawing

GROUND FLOOR
FIRE TRUCK
VEHICLE MANEUVERING ANALYSIS

CROZIER CONSULTING ENGINEERS
211 YONGE STREET
SUITE 600
TORONTO, ON, M5B 1M4
416-477.3392 T
WWW.CFCROZIER.CA
INFO@CFCROZIER.CA

| Drawn By | Design By | Project | |
|---|---|---|---|
| R.L./T.D.S./I.A. | | | 2378-6557 |
| Check By | Check By | Scale | Drawing |
| M.Y. | M.L. | 1:300 | T300 |

CANADIAN PACIFIC RAILWAY

RAILWAY TRACKS

TOP OF SLOPE

17.30
N39°47'45"E

3.20
N46°10'15"W

33.34
N39°22'45"E

20.56
N40°42'50"E

43.22
N40°00'10"E

54.80
N39°52'00"E

89.64
N47°04'15"W

201.95
N40°05'45"E

2020 Peel Garbage Truck
Custom

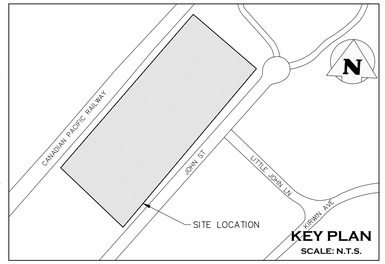
CENTERLINE OF ROAD

JOHN STREET

LITTLE JOHN LANE

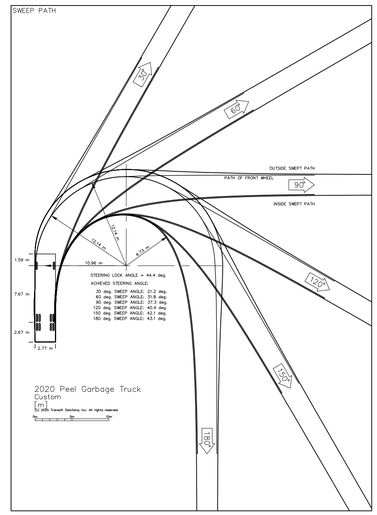
3180 LITTLE JOHN ST.

10 0m 10 20
SCALE: 1:300

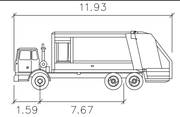



KEY PLAN
SCALE: N.T.S.

FOR REVIEW
NOT TO BE USED FOR CONSTRUCTION




VEHICLE PROFILE




2020 Peel Garbage Truck

meters

| | |
|---|---|
| Width | : 2.77 |
| Track | : 2.60 |
| Lock to Lock Time | : 6.0 |
| Steering Angle | : 44.4 |

| No. | ISSUE | DATE: MM/DD/YYYY |
|---|---|---|
| 1 | ISSUED FOR 1st SUBMISSION | 04/23/2024 |
| 2 | ISSUED FOR 2nd SUBMISSION | 10/15/2024 |
| 2 | ISSUED FOR 3rd SUBMISSION | 08/05/2025 |

Project

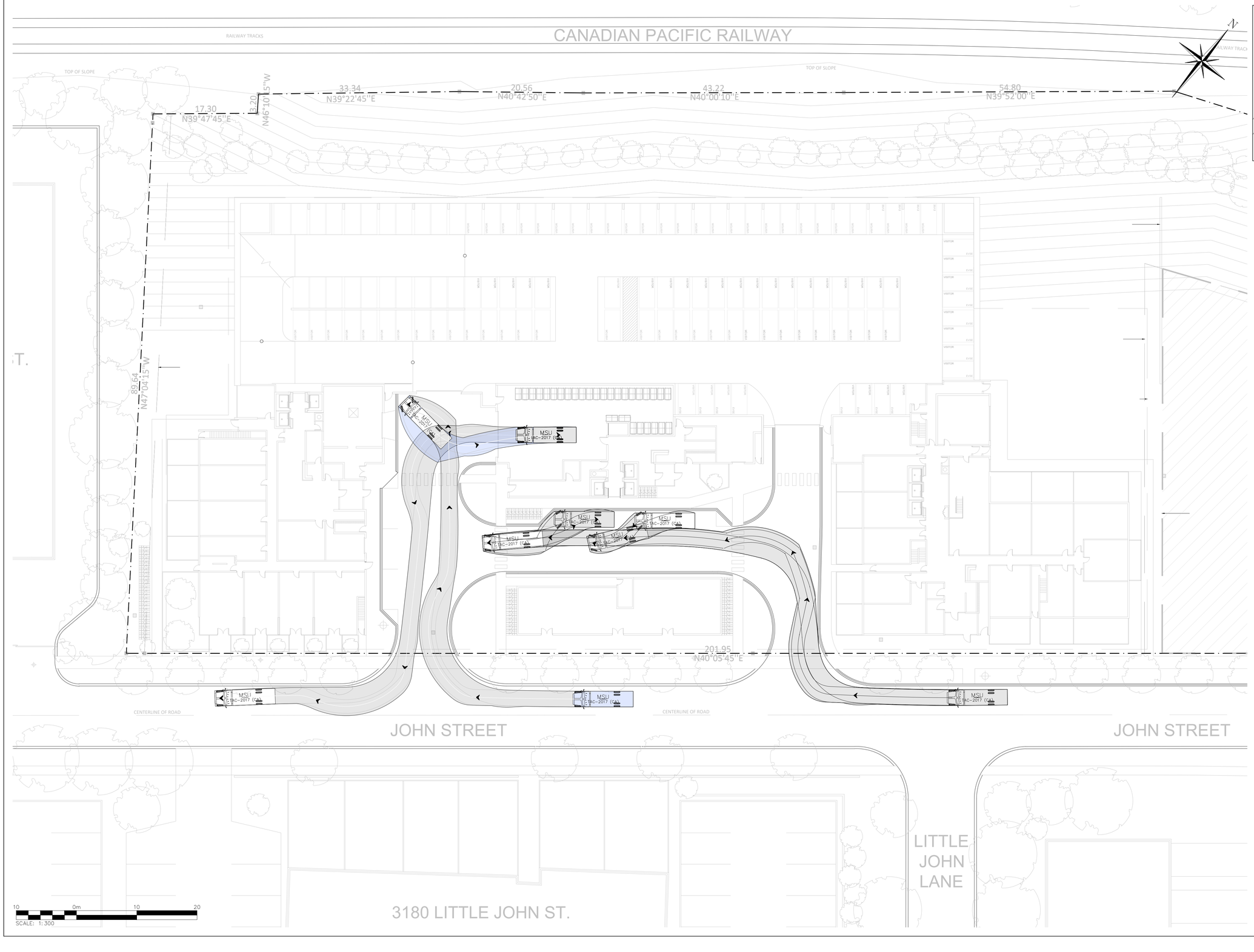
69 & 117 JOHN STREET
CITY OF MISSISSAUGA

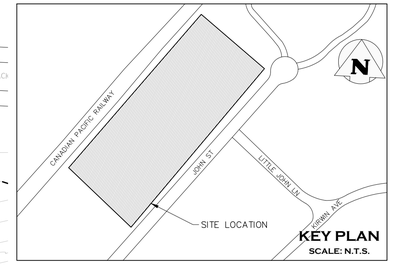
Drawing

GROUND FLOOR
GARBAGE TRUCK
VEHICLE MANEUVERING ANALYSIS

CROZIER CONSULTING ENGINEERS
211 YONGE STREET
SUITE 600
TORONTO, ON, M5B 1M4
416-477-3392 T
WWW.CFCROZIER.CA
INFO@CFCROZIER.CA

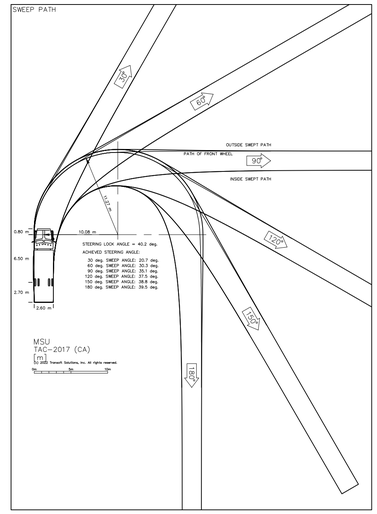
| Drawn By | Design By | Project | |
|---|---|---|---|
| R.L./T.D.S./I.A. | | | 2378-6557 |
| Check By | Check By | Scale | Drawing |
| M.Y. | M.L. | 1:300 | T301 |

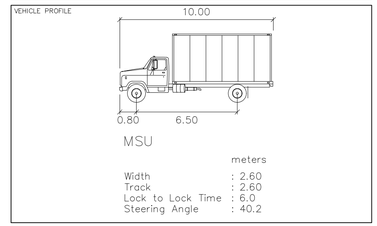



KEY PLAN
SCALE: N.T.S.

FOR REVIEW
NOT TO BE USED FOR CONSTRUCTION

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|---|---|---|
| 1 | ISSUED FOR 1st SUBMISSION | 04/23/2024 |
| 2 | ISSUED FOR 2nd SUBMISSION | 10/15/2024 |
| 2 | ISSUED FOR 3rd SUBMISSION | 08/05/2025 |
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Project
69 & 117 JOHN STREET
CITY OF MISSISSAUGA

Drawing
GROUND FLOOR
MEDIUM SINGLE UNIT (MSU)
VEHICLE MANEUVERING ANALYSIS

CROZIER CONSULTING ENGINEERS
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| Drawn By | Design By | Project |
|---|---|---|
| R.L./T.D.S./I.A. | | 2378-6557 |
| Check By | Check By | Scale / Drawing |
| M.Y. | M.L. | 1:300 / T302 |

CANADIAN PACIFIC RAILWAY

RAILWAY TRACKS

TOP OF SLOPE

17.30
N39°47'45"E

3.20
N46°10'15"W

33.34
N39°22'45"E

20.56
N40°42'50"E

43.22
N40°00'10"E

54.80
N39°52'00"E

89.64
N47°04'15"W

201.95
N40°05'45"E

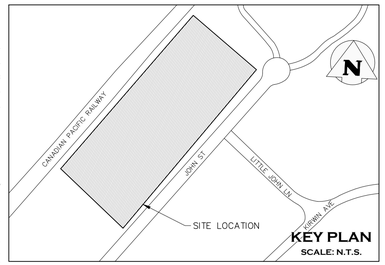
CENTERLINE OF ROAD

JOHN STREET

LITTLE JOHN LANE

3180 LITTLE JOHN ST.

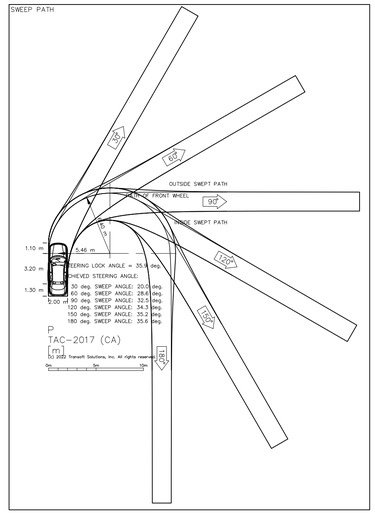
10 0m 10 20
SCALE: 1:300



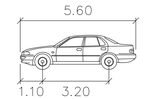

KEY PLAN
SCALE: N.T.S.

FOR REVIEW
NOT TO BE USED FOR CONSTRUCTION

SWEEP PATH




VEHICLE PROFILE

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| 1 | ISSUED FOR 1st SUBMISSION | 04/23/2024 |
| 2 | ISSUED FOR 2nd SUBMISSION | 10/15/2024 |
| 2 | ISSUED FOR 3rd SUBMISSION | 08/05/2025 |

Project
69 & 117 JOHN STREET
CITY OF MISSISSAUGA

Drawing
GROUND FLOOR
PASSENGER VEHICLE
VEHICLE MANEUVERING ANALYSIS


CROZIER CONSULTING ENGINEERS
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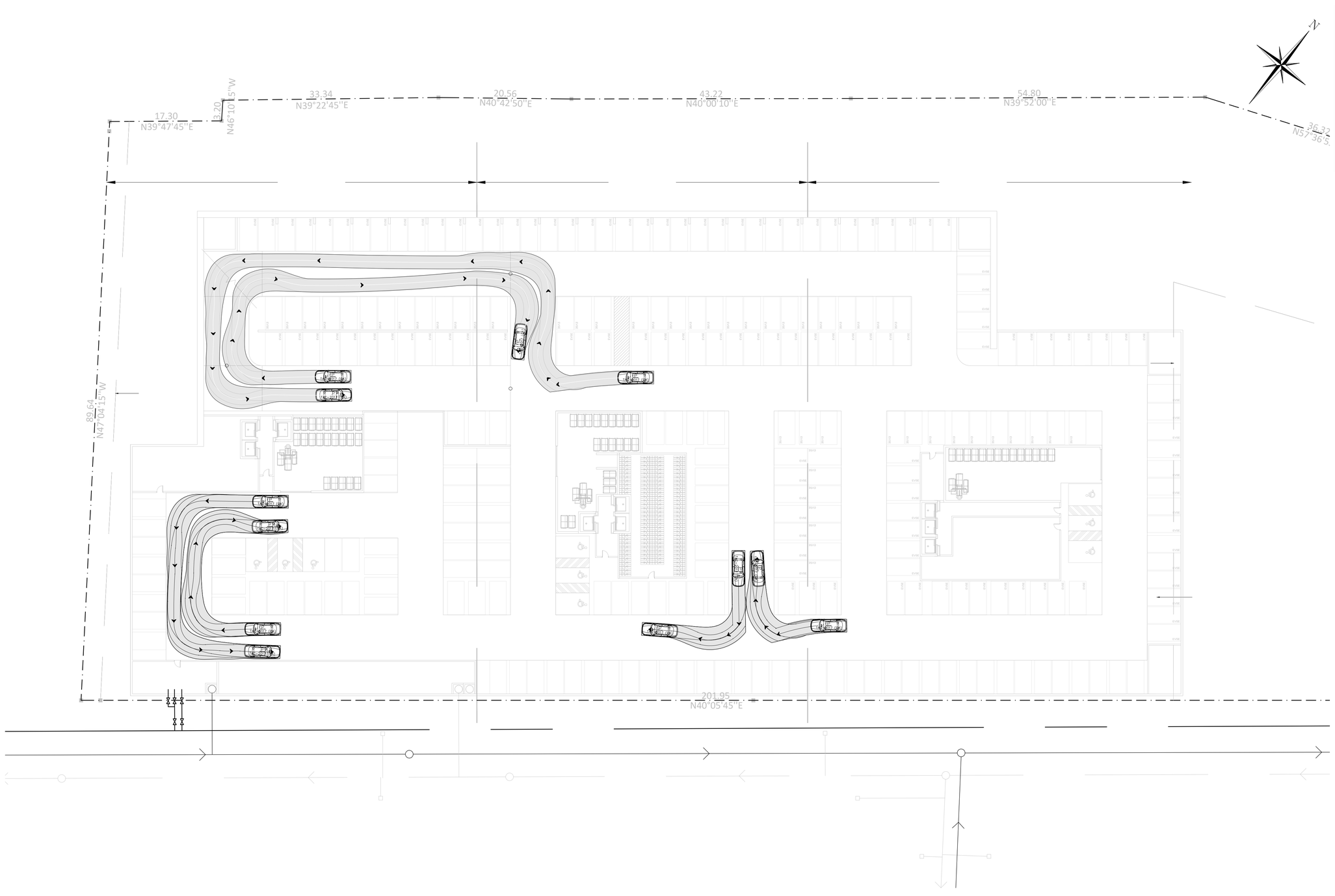
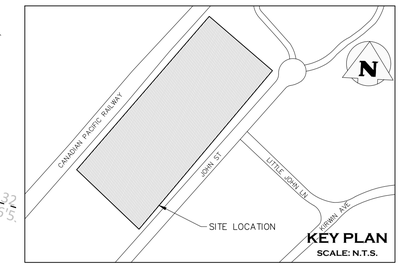
| Check By | Check By | Scale | Drawing |
| M.Y. | M.L. | 1:300 | T303 |

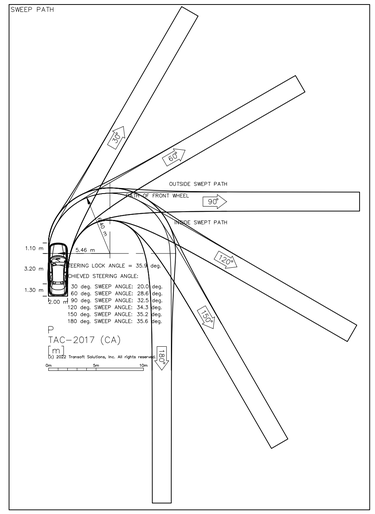



KEY PLAN
SCALE: N.T.S.

FOR REVIEW
NOT TO BE USED FOR CONSTRUCTION

SWEEP PATH

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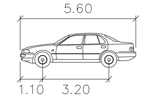


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| 2 | ISSUED FOR 3rd SUBMISSION | 08/05/2025 |
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Project

69 & 117 JOHN STREET
CITY OF MISSISSAUGA

Drawing

PARKING LEVEL P1
PASSENGER VEHICLE
VEHICLE MANEUVERING ANALYSIS

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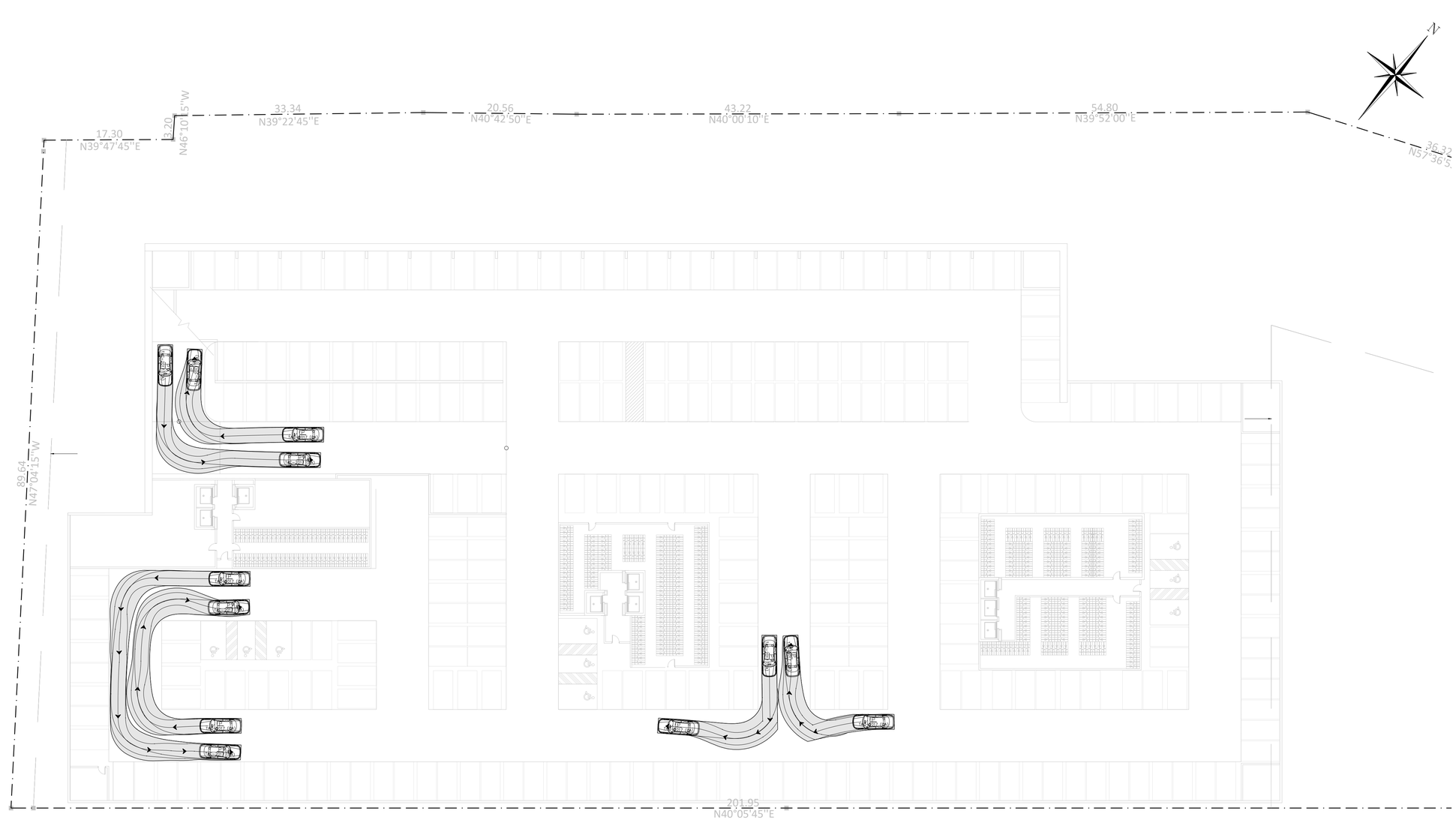
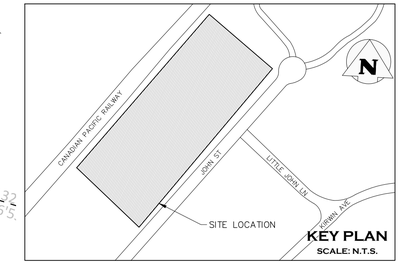
|---|---|---|---|
| Drawn By R.L./T.D.S./I.A. | Design By | Project | 2378-6557 |
| Check By M.Y. | Check By M.L. | Scale 1:300 | Drawing T304 |

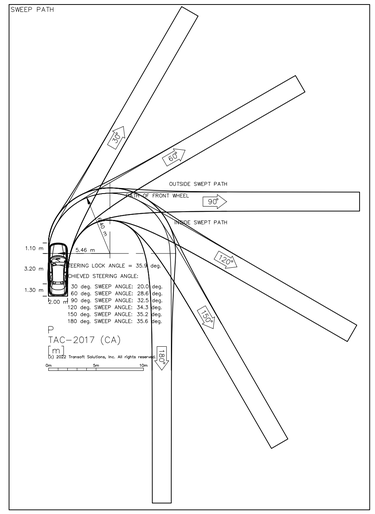



KEY PLAN
SCALE: N.T.S.

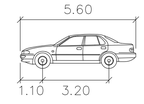
FOR REVIEW
NOT TO BE USED FOR CONSTRUCTION

SWEEP PATH





VEHICLE PROFILE

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| Steering Angle | : 35.9 |

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| 1 | ISSUED FOR 1st SUBMISSION | 04/23/2024 |
| 2 | ISSUED FOR 2nd SUBMISSION | 10/15/2024 |
| 2 | ISSUED FOR 3rd SUBMISSION | 08/05/2025 |
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Project

69 & 117 JOHN STREET
CITY OF MISSISSAUGA

Drawing

PARKING LEVEL P2
PASSENGER VEHICLE
VEHICLE MANEUVERING ANALYSIS

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| | | | |
|---|---|---|---|
| Drawn By: R.L./T.D.S./I.A. | Design By | Project | 2378-6557 |
| Check By: M.Y. | Check By: M.L. | Scale: 1:300 | Drawing: T305 |

10 0m 10 20
SCALE: 1:300

# ATTACHMENT 4:
## Pedestrian Circulation Plan

CANADIAN PACIFIC RAILWAY

RAILWAY TRACKS

TOP OF SLOPE

17.30
N39°47'45"E

3.20
N46°10'15"W

33.34
N39°22'45"E

20.56
N40°42'50"E

43.22
N40°00'10"E

54.80
N39°52'00"E

36.33
N57°36'55"W

89.64
N47°04'15"W

201.95
N40°03'45"E

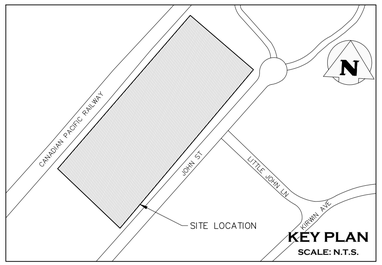
CENTERLINE OF ROAD

JOHN STREET

LITTLE JOHN LANE

3180 LITTLE JOHN ST.

10 0m 10 20
SCALE: 1:300




KEY PLAN
SCALE: N.T.S.

FOR REVIEW
NOT TO BE USED FOR CONSTRUCTION

LEGEND

- VEHICLE PATH
- TRUCK PATH
- SIDEWALK
- CROSSWALK
- PEDESTRIAN–VEHICLE INTERACTION

| No. | ISSUE | DATE: MM/DD/YYYY |
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| 1 | ISSUED FOR 1st SUBMISSION | 04/24/2024 |
| 2 | ISSUED FOR 2nd SUBMISSION | 10/16/2024 |
| 3 | ISSUED FOR 3rd SUBMISSION | 08/05/2025 |

Project
69 & 117 JOHN STREET
CITY OF MISSISSAUGA

Drawing
SITE CIRCULATION PLAN


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TORONTO, ON, M5B 1M4
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| Drawn By | Design By | Project | |
|---|---|---|---|
| I.A./R.L. | | | 2378–6557 |
| Check By | Check By | Scale | Drawing |
| M.Y. | M.L. | 1:300 | T200 |

# ATTACHMENT 5:

## Transportation Association of Canada Geometric Design Guide for Canadian Roads Excerpts

collector roadways, while a 3.0 m minimum is the suggested dimension for both commercial and industrial land uses. If there is a need to provide parallel parking between driveways along the roadway, a spacing of 6.0 to 7.5 m is suitable. If the spacing provided is in the range of 3.0 to 5.0 m, the space may appear inviting to a driver wishing to park, but if used, severely hampers the operation of the driveways by reducing sight lines and interfering with the turning paths of the vehicles.

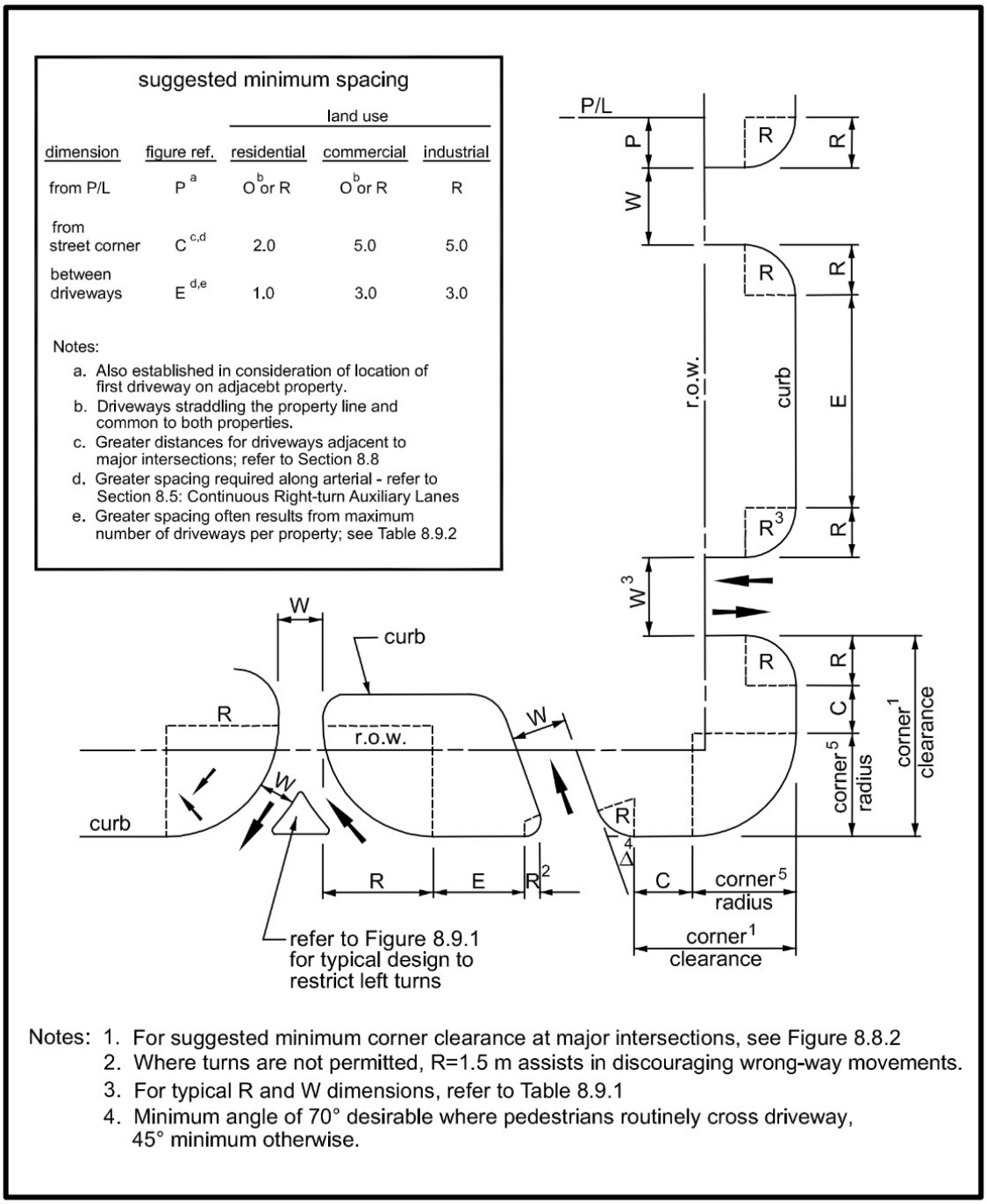
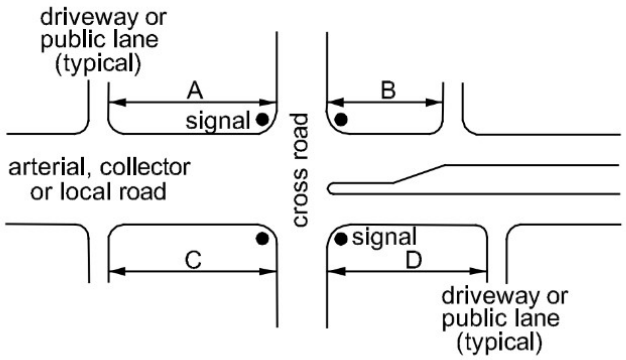


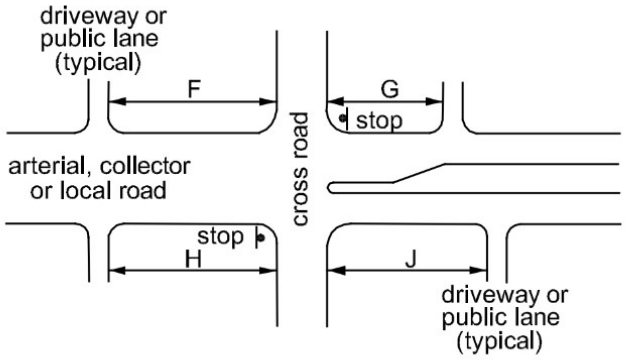

**Figure 8.9.2: Driveway Spacing Guidelines – Locals and Collectors**




| item | min. clearance, m | | |
|---|---|---|---|
| | arterial | collector [b] | local [d] |
| A | 70 [c] | 55 | 15 |
| B | # [a] | 25 | 15 |
| C | 70 | 55 | 15 |
| D | 70 [c] | 55 | 15 |

Notes: a. Distance (#) positions driveway or public lane in advance of the left turn storage length (min.) plus bay taper (des.).
b. Lesser values reflect lower volumes and reduces level of service on collectors and locals.
c. Reduced distances feasible if auxiliary lane implemented, see Section 8.5
d. Values based on operating speed of 50km/h, higher values desirable for higher speeds or may be warranted by traffic conditions.

signals at the cross road




| item | min. clearance, m | | |
|---|---|---|---|
| | arterial | collector [b] | local [b] |
| F | 35 | 20 | 15 |
| G | # [a] | 25 | 15 |
| H | 25 | 25 | 15 |
| J | 35 | 20 | 15 |

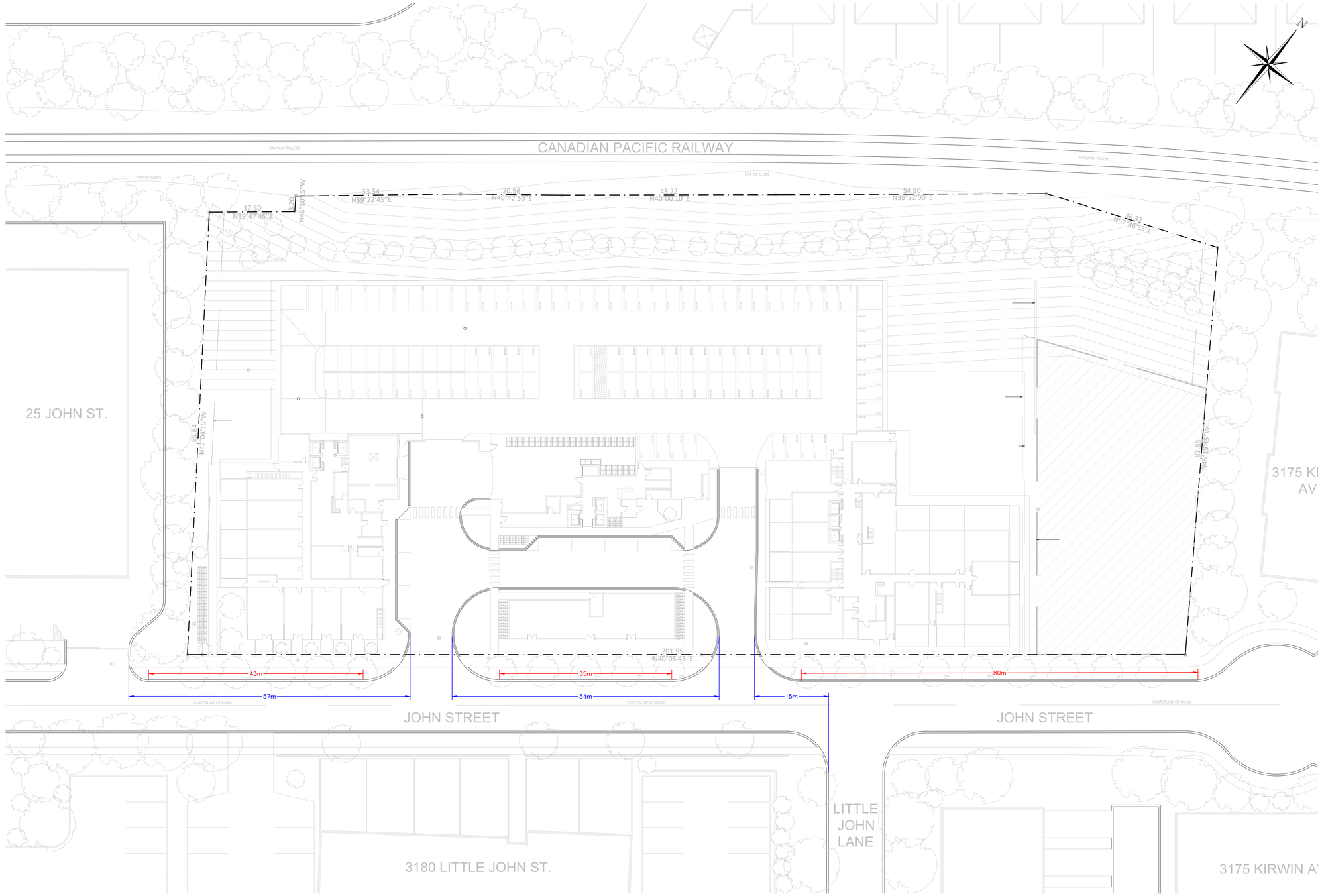
Notes: a. Distance (#) positions driveway or public lane in advance of the left turn storage length (min.) plus bay taper (des.).
b. Lesser values reflect lower volumes and reduces level of service on collectors and locals.

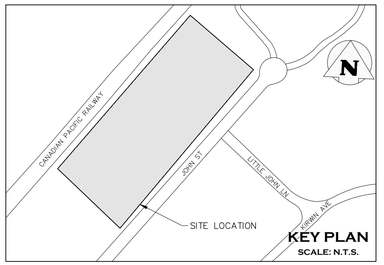
stop control at the cross road

**Figure 8.8.2: Suggested Minimum Corner Clearances to Accesses or Public Lanes at Major Intersections**

Inadequate corner clearance between accesses and signalized intersections along a major road, such as a major arterial, can create serious operational problems including:

# ATTACHMENT 6:
## Access Spacing and Corner Clearance Diagrams




FOR REVIEW
NOT TO BE USED FOR CONSTRUCTION

LEGEND

- ACCESS SPACING
- CORNER CLEARANCE

| No. | ISSUE | DATE: MM/DD/YYYY |
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| 3 | ISSUED FOR 3rd SUBMISSION | 08/05/2025 |
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Project

69 & 117 JOHN STREET
CITY OF MISSISSAUGA

Drawing

INTERSECTION SPACING &
CORNER CLEARANCE

CROZIER
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| Drawn By | Design By | Project | 2378-6557 |
|---|---|---|---|
| R.L. | | | |
| Check By | Check By | Scale | Drawing |
| M.Y. | M.L. | 1:400 | T400 |

# ATTACHMENT 7:
## Zoning By-Law Excerpts

City of Mississauga
# Corporate Report

MISSISSAUGA

Date: September 18, 2024

To: Chair and Members of Planning and Development Committee

From: Andrew Whittemore, M.U.R.P., Commissioner of Planning & Building

Originator's file:
BL.01-PAR

Meeting date:
October 7, 2024

## Subject

**PUBLIC MEETING INFORMATION/RECOMMENDATION REPORT (ALL WARDS)**
**Proposed Amendments to Zoning By-law for Parking in Protected Major Transit Station Areas (PMTSA) and City-wide Accessible Parking Requirements**

## Recommendation

That the proposed amendments to Zoning By-law 0225-2007, as detailed in Appendix 1 of the Report dated September 18, 2024 from the Commissioner of Planning and Building, be approved in accordance with the following:

1. That the implementing zoning by-law amendment be enacted at a future City Council meeting.
2. That notwithstanding planning protocol, that this report regarding the proposed amendments to Zoning Bylaw 0225-2007, be considered both the public meeting and a combined information/recommendation report.
3. That Recommendation PDC-0012-2024 to the report titled "Zoning By-law Amendment to Reduce Residential Parking Requirements along the Hazel McCallion Line (north of the QEW)", which was approved by the Planning and Development Committee on April 8, 2024, be considered null and void.

## Executive Summary

- The City's Planning and Building Department is committed to continuous improvement of our service portfolio so that landowners, businesses, residents, and other parties can help us deliver on our commitment to facilitate housing and the development of land.

- On April 8, 2024, staff presented a corporate report (Appendix 3) to the Planning and Development Committee, including proposed amendments to reduce minimum parking requirements along the Hazel McCallion Line (north of the Queen Elizabeth Way). The recommendation was approved, but shortly thereafter, Bill 185 was released for public consultation. Consequently, staff have not brought forward an implementing by-law.
- On June 6, 2024, *Bill 185, Cutting Red Tape to Build More Homes Act, 2024* received Royal Assent and amended the *Planning Act.* Bill 185 prohibits official plans and zoning by-laws from requiring an owner or occupant of a building or structure to provide and maintain parking facilities within a Protected Major Transit Station Area (PMTSA).
- Bill 185 changed how many accessibility parking spaces (a requirement of the *Accessibility for Ontarians with Disabilities Act* (AODA)) to provide for all new development in the PMTSA. Further consultation with the City's Accessibility Office, Zoning Administration, and the Accessibility Advisory Committee will be required prior to recommending changes to the Accessibility Parking regulations in the Zoning By-law.

# Background

As part of the City's strategy to improve housing affordability and encourage transit usage, on June 28, 2023, Council directed staff to investigate the feasibility of reducing parking standards along the Hazel McCallion Line (north of the Queen Elizabeth Way). On April 8, 2024, staff presented a corporate report to the Planning and Development Committee, which approved recommendations to reduce minimum resident parking requirements and update the Parking Study Terms of Reference to consider further parking rate reduction requests from developers.

Following that approval and prior to bringing an implementing zoning by-law to Council, Bill 185 received Royal Assent on June 6, 2024, and amended the *Planning Act* so that no official plan or zoning by-law may require an "…owner or occupant of a building or structure to provide and maintain parking facilities, other than parking facilities for bicycles…" within a Protected Major Transit Station Area (PMTSA). In other words, parking is no longer required for any land use on lands located in a PMTSA but property owners can choose to provide as many spaces as needed.

The eliminated parking requirements in PMTSAs have been in effect since June 6, 2024, regardless of whether municipalities have updated their zoning by-laws to reflect these changes. Staff are proposing amendments to Mississauga's Zoning By-law to provide consistency and align with the legislation.

In addition, the Zoning By-law also regulates accessible parking requirements in the City. They were originally introduced into the Zoning By-law to align with requirements under the *Accessibility for Ontarians with Disabilities Act* (AODA). However, it has come to the attention of staff that there is a minor inconsistency in how accessible parking requirements are calculated in the Zoning By-law. Therefore, staff are proposing amendments to align with AODA requirements.

# Comments

As noted in the April 8, 2024 Recommendation Report, the reduction in parking requirements along higher order transit lines:

- Enable the City to leverage investments made to the Hazel McCallion Line and accelerate the shift to non-vehicular modes;
- Help lower housing construction costs while reducing construction timelines;
- Advance the goals of the City's Climate Change Action Plan, Downtown Movement Plan, Cycling Master Plan, and the Transportation Master Plan amongst others; and,
- Improve overall site design and opportunities for further intensification.

Although Planning and Development Committee approved a planned gradual reduction in parking rates, Bill 185 effectively eliminates any possible transition to re-evaluate parking demands in PMTSAs. Therefore, staff acknowledge the need to proactively address future concerns such as overflow parking and lack of resident parking in residential buildings by:

- Considering on-street parking permit program as part of Parking Matters 2.0
- Commencing a review of the Cycling Master Plan
- Implementing the micro-mobility pilot project (e-bikes and e-scooters)
- Exploring other approaches such as warning clauses in rental and purchaser agreements to inform future residents of a potential lack of on-site parking

The following comments are specific to the proposed amendments to the Zoning By-law.

### 1. PROPOSED ZONING BY-LAW AMENDMENTS

The following discussion provides an overview of the recommendations and rationale of the proposed amendments. For a detailed explanation of all proposed amendments, see Appendix 1.

### a) Amended Parking Precinct Map

The in-effect Parking Precinct Map includes four parking precincts that are based on Character Areas in Mississauga Official Plan (e.g. Downtown, Major Node, etc.), with Precinct 1 having the lowest parking requirements, and Precinct 4 having the highest.

The proposed amendment to the parking precincts includes the expansion of Parking Precinct 1 to include all lands within a PMTSA, i.e. the entire length of the Hazel McCallion Line, stations along the Dundas bus rapid transit (BRT) and the Lakeshore BRT, Mississauga Transitway, and two GO Stations in Malton and Clarkson which currently receive all day weekday and weekend service. Consequently, the total land area located in Precincts 2 to 4 would be reduced. The majority of the City will not see revisions to the parking precincts. Please see Figure 1 for a map of the proposed Parking Precinct 1.

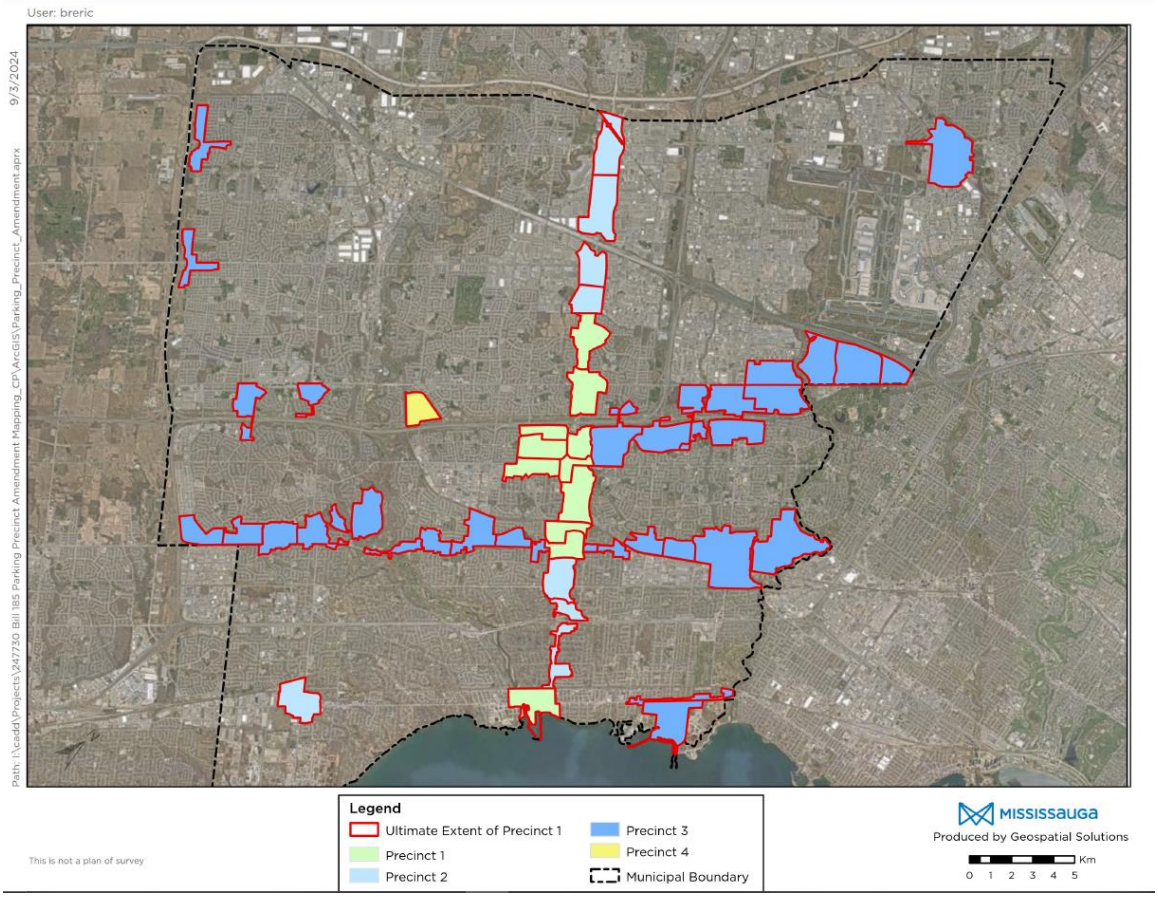



*Figure 1 - Conceptual Map of Parking Precinct 1*

### b) Elimination of Parking Requirements for all Uses in Precinct 1

The amendments to the Zoning By-law include eliminating the minimum number of residential and non-residential parking spaces in Precinct 1, including visitor parking requirements for apartments and townhouses. Existing landowners can continue to retain their parking supply, but now have the option to intensify their property without having to provide additional parking spaces. Vehicular parking requirements for amended Precincts 2-4 remain unaffected, as well as city-wide bicycle parking requirements, including PMTSAs.

To further create consistency and clarity in the Zoning By-law, existing exceptions for properties located in Precinct 1 where parking requirements were previously modified will also be deleted. For development where parking relief was granted through a minor variance application, the Zoning By-law states that off-street parking requirements shall be calculated based on the lesser parking rate of the minor variance or the regulations of the Zoning By-law.

### c) Accessible Parking Requirements for Provided Parking Spaces

Currently, the Zoning By-law calculates a minimum number of accessible parking spaces based on the number of required (residential) visitor or required non-residential parking spaces and are

based on Section 80.36 (1) of the *Ontario Regulation 191/11: Integrated Accessibility Standards* (O. Reg 191/11). O. Reg 191/11 bases minimum accessible parking spaces on "provided" parking spaces on a site, as opposed to "required" parking spaces as the Zoning By-law currently requires.

However, the impact Bill 185 has on accessible parking spaces is that since developers have the flexibility to build as many parking spaces as needed in a PMTSA, and O. Reg 191/11 bases accessible parking space requirements on "provided" parking spaces, there may be an insufficient number of accessible parking spaces to meet the demands of visitors or patrons.

Further research and consultation with internal staff, as well as attending the Accessibility Advisory Committee will be required prior to recommending proposed changes to the Zoning By-law. In addition, informing the province on the consequences that Bill 185 has on providing sufficient of accessible parking spaces will be necessary to avoid an undersupply of such parking spaces in the future.

## 2. FUTURE CONSIDERATIONS FOR PARKING IN BUSINESS IMPROVEMENT AREAS (BIAs)

Mississauga has five BIAs where commercial, residential, or mixed-use buildings are built on small lots with a mainstreet character. These commercial streets are vibrant, walkable, and established prior to the automobile era of the 1950s. However, this context has not been historically factored into parking requirements in BIAs. This has necessitated small businesses to seek variances or payment in lieu of off-street parking (PIL), resulting in reduced viability and attractiveness of setting up businesses in BIAs. In extreme cases, buildings or units can remain vacant for an extended period of time.

Bill 185's elimination of parking requirements somewhat addresses the above issue in BIAs as many of them are located within a PMTSA. However, the boundaries of PMTSAs are generally smaller than those of the BIAs, such that only a portion of the BIA's parking requirements have been eliminated. A future parking study to analyze the matter has commenced and will report back in early 2025.

## PLANNING ANALYSIS SUMMARY

The Provincial Policy Statement (PPS) establishes the overall policy directions on matters of provincial interest related to land use planning and development within Ontario. It sets out province-wide direction on matters related to the efficient use and management of land and infrastructure; the provision of housing; the protection of the environment, resources and water; and economic development. The Growth Plan for the Greater Golden Horseshoe (Growth Plan) builds upon the policy framework established by the PPS and provides more specific land use planning policies, which support the achievement of complete communities, a thriving economy, a clean and healthy environment and social equity. The Growth Plan establishes minimum

intensification targets and requires municipalities to direct growth to existing built-up areas and strategic growth areas to make efficient use of land, infrastructure and transit.

The Province released the Provincial Planning Statement (PPS), 2024, which streamlines their policy framework by replacing both the Provincial Policy Statement, 2020 and the Growth Plan. The new PPS 2024 will be in effect as of October 20, 2024. Until such time, the previous policy instruments remain in effect; however, staff have reviewed the proposed amendments with consideration of the new PPS.

The *Planning Act* requires that municipalities' decisions regarding planning matters be consistent with the Provincial Policy Statement (PPS) and conform with the applicable provincial plans. Mississauga Official Plan is generally consistent with the PPS and conforms with the Growth Plan, the Greenbelt Plan, and the Parkway Belt West Plan.

The proposed amendments are consistent with the Provincial Policy Statement and conforms to the Growth Plan for the Greater Golden Horseshoe, and Mississauga Official Plan. A detailed planning policy analysis can be found in Appendix 2.

## Financial Impact

There are no financial impacts resulting from the recommendations in this report.

## Conclusion

Bill 185 has amended the *Planning Act*, which has eliminated minimum parking requirements for land uses within a PMTSA. The proposed zoning by-law amendments are acceptable from a planning perspective and should be approved as they will promote the development of housing near transit stations, leverage existing and future higher order transit and cycling infrastructure and contribute to overall city building especially in the City's downtown and along key intensification corridors.

## Attachments

Appendix 1: Proposed Zoning By-law Amendments
Appendix 2: Detailed Planning Analysis
Appendix 3: Recommendation Report

A. Whittemore

Andrew Whittemore, M.U.R.P., Commissioner of Planning & Building

Prepared by: Timothy Lee, Planner

**3.1.4.3 Required Number of Loading Spaces**

Where required, **loading spaces** for **uses** other than **office** and/or **medical office** **uses**, shall be provided in accordance with Table 3.1.4.3 - Required Number of Loading Spaces.

**Table 3.1.4.3 - Required Number of Loading Spaces**

(0297-2013)

| ColumnA | | B |
|---|---|---|
| **Line 1.0** | **GROSS FLOOR AREA - NON-RESIDENTIAL OF BUILDING** | **MINIMUM NUMBER OF OFF-STREET LOADING SPACES** |
| **2.0** | Less than or equal to 250 m² | None required |
| **3.0** | Greater than 250 m² but less than or equal to 2 350 m² | 1.0 space |
| **4.0** | Greater than 2 350 m² but less than or equal to 7 500 m² | 2.0 spaces |
| **5.0** | Greater than 7 500 m² but less than or equal to 14 000 m² | 3.0 spaces |
| **6.0** | Greater than 14 000 m² | 3.0 spaces plus 1.0 additional space for each 9 300 m² **GFA - non-residential** or portion thereof |

**3.1.6.5.1 Required Number of Bicycle Parking Spaces for Residential Uses**

Off- **street** **bicycle parking spaces** for residential **uses** shall be provided in accordance with Table 3.1.6.5.1 - Required Number of Bicycle Parking Spaces for Residential Uses

**Table 3.1.6.5.1 - Required Number of Bicycle Parking Spaces for Residential Uses**

| Column | A | B | C |
|---|---|---|---|
| **Line 1.0** | **TYPE OF USE** | **BICYCLE PARKING - CLASS A** | **BICYCLE PARKING - CLASS B** |
| **2.0** | **Apartment** and **stacked townhouse** without exclusive **garages** | 0.6 spaces per unit | The greater of 0.05 spaces per unit or 6.0 spaces |
| **3.0** | **Apartment** and **stacked townhouse** without exclusive **garages** (within CC1 to CC4 and CCO zones) | 0.8 spaces per unit | The greater of 0.1 spaces per unit or 6.0 spaces |
| **4.0** | **Long-Term Care Building** | 0.2 spaces per 100 $m^2$ **GFA - residential** | 0.2 spaces per 100 $m^2$ **GFA - residential** |
| **5.0** | **Long-Term Care Building** (within CC1 to CC4 and CCO zones) | 0.3 spaces per 100 $m^2$ **GFA - residential** | 0.3 spaces per 100 $m^2$ **GFA - residential** |
| **6.0** | **Retirement Building** | 0.3 spaces per unit | The greater of 0.03 spaces per unit or 6.0 spaces |
| **7.0** | **Retirement Building** (within CC1 to CC4 and CCO zones) | 0.4 spaces per unit | The greater of 0.05 spaces per unit or 6.0 spaces |

**3.1.6.6 Required Number of Bicycle Parking Spaces for Non-Residential Uses**

Off-street **bicycle parking spaces** for non-residential **uses** shall be provided in accordance with Table 3.1.6.6 - Required Number of Bicycle Parking Spaces for Non-Residential Uses.

**Table 3.1.6.6 - Required Number of Bicycle Parking Spaces for Non-Residential Uses**

| Column | A | B | C |
|---|---|---|---|
| **Line 1.0** | **TYPE OF USE** | **BICYCLE PARKING - CLASS A** | **BICYCLE PARKING - CLASS B** |
| **2.0** | **Active Recreational Use** , **Community Centre** , **Hospital** , **Library** , **Place of Religious Assembly** , and **Recreational Establishment** | 0.1 spaces per 100 $m^2$ **GFA - non-residential** | 0.1 spaces per 100 $m^2$ **GFA - non-residential** |
| **3.0** | **Active Recreational Use** , **Community Centre** , **Hospital, Library** , **Place of Religious Assembly** , and **Recreational Establishment** (within CC1 to CC4 and CCO zones) | 0.3 spaces per 100 $m^2$ **GFA - non-residential** | 0.3 spaces per 100 $m^2$ **GFA - non-residential** |
| **4.0** | College, University | 1.0 spaces per 100 $m^2$ **GFA - non-residential** | 1.2 spaces per 100 $m^2$ **GFA - non-residential** |
| **5.0** | Contractor's Yard, **Essential Emergency Service** , **Power Generating Facility** , Self Storage Facility, Utilities ( **Electric Transformer and Distribution Facility** , **Sewage Treatment Plant** , **Utility Building** , **Water Treatment Facility** ) and **Waste Transfer Station** | n/a | 2.0 spaces |
| **6.0** | **Education and Training Facility** , **Financial Institution** , **Manufacturing Facility** , **Science and Technology Facility** , **Warehouse/Distribution Facility** , and **Wholesaling Facility** | 0.1 spaces per 100 $m^2$ **GFA - non-residential** | 2.0 spaces |
| **7.0** | **Education and Training Facility** , **Financial Institution** , **Manufacturing Facility** , **Science and Technology Facility** , **Warehouse/Distribution Facility** , and **Wholesaling Facility** (within CC1 to CC4 and CCO zones) | 0.15 spaces per 100 $m^2$ **GFA - non-residential** | 0.15 spaces per 100 $m^2$ **GFA - non-residential** |

| | | | |
|---|---|---|---|
| **8.0** | **Entertainment Establishment** , **Restaurant** , **Convenience Restaurant** , **Take-out Restaurant,** Retail Centre, **Retail Store** , and **Service Establishment** | 0.15 spaces per 100 $m^2$ **GFA - non-residential** | 0.2 spaces per 100 $m^2$ **GFA - non-residential** |
| **9.0** | **Entertainment Establishment** , **Restaurant** , **Convenience Restaurant** , **Take-out Restaurant** , Retail Centre, **Retail Store** , and **Service Establishment** (within CC1 to CC4 and CCO zones) | 0.15 spaces per 100 $m^2$ **GFA - non-residential** | 0.3 spaces per 100 $m^2$ **GFA - non-residential** |
| **10.0** | **Medical Office** and **Medical Office - Restricted** | 0.1 spaces per 100 $m^2$ **GFA - non-residential** | 0.1 spaces per 100 $m^2$ **GFA - non-residential** |
| **11.0** | **Medical Office** and **Medical Office - Restricted** (within CC1 to CC4 and CCO zones) | 0.15 spaces per 100 $m^2$ **GFA - non-residential** | 0.2 spaces per 100 $m^2$ **GFA - non-residential** |
| **12.0** | **Office** | 0.1 spaces per 100 $m^2$ **GFA - non-residential** | 0.1 spaces per 100 $m^2$ **GFA - non-residential** |
| **13.0** | **Office** (within CC1 to CC4 and CCO zones) | 0.2 spaces per 100 $m^2$ **GFA - non-residential** | 0.15 spaces per 100 $m^2$ **GFA - non-residential** |
| **14.0** | **Public/Private School** | 0.1 spaces per 100 $m^2$ **GFA - non-residential** | 0.4 spaces per 100 $m^2$ **GFA - non-residential** |
| **15.0** | All other non-residential **uses** | 0.05 spaces per 100 $m^2$ **GFA - non-residential** | 0.1 spaces per 100 $m^2$ **GFA - non-residential** |

# ATTACHMENT 8:
## Parking Proposal Trends Excerpts

# Updated Traffic Impact Study

## 88 Park Street East

Edenshaw Queen Developments Limited

June 8, 2023

→ The Power of Commitment

**Office**

- Less than or equal to 2 350 $m^2$: None Required
- Greater than 2 350 $m^2$ but less than or equal to 11 600 $m^2$: 1.0 space
- Greater than 11 600 $m^2$: 1.0 space plus 1.0 additional space for each 9 300 $m^2$ gross floor area - non-residential or portion thereof

All loading spaces shall have an unobstructed rectangular area with a minimum width of 3.5 metres and minimum length of 9.0 metres.

Under the City of Mississauga's Zoning By-Law, the subject site is required to provide a minimum of 3 loading spaces.

# 9.2 Proposed Site Parking

The following table summarizes the parking and loading requirement and provision for the subject site.

***Table 13 Parking Requirements and Provisions***

<table>
<tr><th>Type</th><th>Unit Count/GFA</th><th>By-Law Requirement</th><th colspan="2">Required</th><th>Provided</th></tr>
<tr><td>Vehicle Parking – Residential (Residents)</td><td rowspan="6">1,328 dwelling units,<br>1,680 $m^2$ retail GFA,<br>2,017 $m^2$ office GFA, and 907 $m^2$ daycare GFA</td><td>Minimum 0.80 parking space per unit</td><td colspan="2">Minimum of 1,062 spaces</td><td rowspan="5">583 vehicle parking spaces (474 for residents at 0.36 spaces per unit<br>and 109 spaces for visitors/non-residential uses at 0.08 spaces per unit)</td></tr>
<tr><td>Vehicle Parking – Residential (Visitors)</td><td>Minimum 0.20 parking space per unit</td><td>Minimum of 266 spaces</td><td rowspan="4">*Minimum of 266 parking spaces</td></tr>
<tr><td>Vehicle Parking - Retail</td><td>Minimum 3 parking spaces per 100 $m^2$ of non-residential GFA</td><td>Minimum of 50 spaces</td></tr>
<tr><td>Vehicle Parking - Office</td><td>Minimum 2 parking spaces per 100 $m^2$ of non-residential GFA</td><td>Minimum of 40 spaces</td></tr>
<tr><td>Vehicle Parking - Daycare</td><td>Minimum 2.5 parking spaces per 100 $m^2$ of non-residential GFA</td><td>Minimum of 23 spaces</td></tr>
<tr><td>Barrier Free Parking – Non-Residential</td><td>2.0 spaces + 2% of total visit</td><td colspan="2">Minimum of 8 spaces</td><td></td></tr>
</table>

| | | | | |
|---|---|---|---|---|
| **Bicycle Parking (Class A)** | | 0.6 spaces per unit (residential)<br>0.1 space per 100 $m^2$ GFA (office)<br>0.05 spaces per 100 $m^2$ GFA – non-residential (retail + daycare) | Minimum of 797 for residential, 3 spaces for retail, 2 spaces for office, and 1 space for all other uses | 804 spaces |
| **Bicycle Parking (Class B)** | | The greater of 0.05 spaces per unit or 6.0 spaces (residential)<br>0.1 space per 100 $m^2$ GFA – non-residential spaces (retail + office + daycare) | Minimum of 66 spaces for residential, 3 spaces for retail, 2 spaces for office, and 1 space for all other uses | 72 spaces |
| **Loading Space** | | 1 loading space per apartment building with a minimum of 30 dwelling units.<br>1 loading space when the non-residential land use has a GFA greater than 250 $m^2$ but less than or equal to 2 350 $m^2$<br>2 loading spaces when the non-residential land use has a GFA greater than 2 350 $m^2$ but less than or equal to 7 500 $m^2$ | 3 loading spaces (1 for residential and 2 for the retail/daycare component) | 4 loading spaces |

*Shared arrangement for residential visitor and non-residential parking components.

The parking provision of 474 resident parking spaces represents a deficit of 588 spaces from the Zoning By-law requirement of 1,062 resident spaces. The provision of 109 visitor/non-resident visitor parking spaces represents a deficit of 157 parking space from the minimum 266 visitor spaces required for the residential visitor, retail, office and daycare uses. However, the site is well suited to intensification from an urban transportation perspective and current travel characteristics confirm that the surrounding area provides significant opportunity for urban living in a mixed-used environment. The site will promote reduced automobile usage with opportunities to incorporate car share facilities, good pedestrian and cycling infrastructure and connectivity to transit including the existing nearby GO Station and future light rail transit along Hurontario Street.

# 9.3 Parking Assessment

## 9.3.1 Ontario’s Five Year Climate Change Action Plan

The purpose of Ontario's Climate Change Action Plan, announced in 2016, is to address climate change through transportation and land-use measures. The plan aims to reduce emissions, create more livable, mixed-use communities, and prioritize addressing climate change at the municipal level.

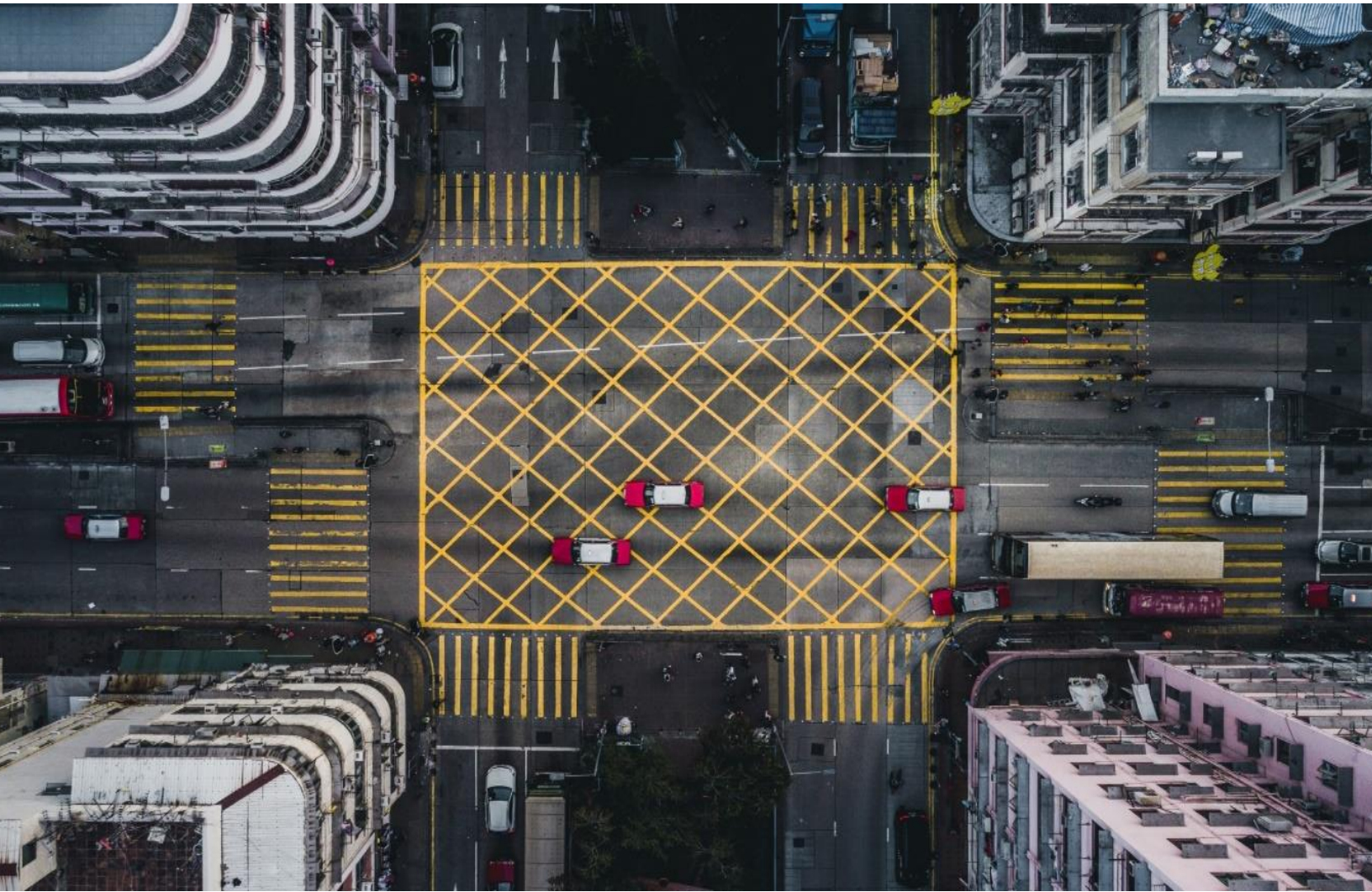
# Traffic Impact Study

## 49 South Service Road

Edenshaw SSR Developments Limited

14 October 2022

→ **The Power of Commitment**



### 8.1.2 Bicycle Parking Requirement

The bicycle parking requirement is also found within the City of Mississauga's Zoning By-law 0225-2007, with the minimum bicycle parking requirement found in Section 3.1.6.5.1 for apartments without exclusive garages. The minimum required bicycle parking By-law rate for the development is as follows:

- Apartment and stacked townhouse without exclusive garages
    - Class A: 0.6 spaces per unit
    - Class B: The greater of 0.05 spaces per unit of 6.0 spaces

Notwithstanding Sections 3.1.6.5 and 3.1.6.6 of the City's By-law, required off-street bicycle parking spaces shall only be required for the construction of new buildings or portions thereof, effective June 8, 2023. Under the City's By-law, the proposed development is required to provide the following bicycle parking supply:

- 353 dwelling units x (0.6 spaces/unit) = 212 Class A spaces
- 353 dwelling units x (0.05 spaces/unit) = 18 Class B spaces

In total, 230 bicycle parking spaces are required, with 212 Class A spaces and 18 Class B spaces.

### 8.1.3 Loading Space Requirement

Under City of Mississauga's Zoning By-law 0225-2007, the loading space requirement for apartment buildings is found in Section 3.1.4.5. and requires 1 loading space per apartment and/or retirement building containing a minimum of 30 dwelling units. The subject site is therefore required to provide one loading space with an unobstructed rectangular area with a minimum width of 3.5 m and a minimum length of 9.0 m.

## 8.2 Proposed Parking and Loading Supply

The following parking and loading supply is proposed for the 353 unit high-rise development:

- Resident parking spaces provided: 102 spaces. (0.29 spaces/unit)
- Visitor parking spaces provided: 35 spaces. (0.10 space/unit).
- 212 long-term bicycle parking spaces
- 17 short-term bicycle parking spaces
- 1 loading space

The Zoning By-law requirement for vehicle and bicycle parking and loading spaces and the subject site's provision are summarized in the table below.

***Table 12 Parking and Loading Requirements and Provision***

| | Requirement | Provision | Surplus/Shortfall |
|---|---|---|---|
| Vehicle Parking | 318 spaces | 102 spaces | **-216 spaces** |
| Visitor Parling | 71 spaces | 35 spaces | **-36 spaces** |
| Long-term Bicycle Parking | 212 spaces | 212 spaces | **Met** |
| Short-term Bicycle Parking | 18 spaces | 18 spaces | **Met** |
| Loading Space | 1 space | 1 space | **Met** |

Edenshaw Elizabeth Developments Limited

# TRANSPORTATION IMPACT STUDY UPDATE

## Proposed Residential Development

**42-46 Park Street East &**
**23 Elizabeth Street North,**
**City of Mississauga**

May 2025

20248

## 1.1 STUDY BACKGROUND

By way of background, LEA previously completed the following submissions in support of prior Official Plan Amendment (OPA), Zoning By-law Amendment (ZBA), and Site Plan Approval (SPA) applications for the proposed development:

- Transportation Impact Study (TIS) dated May 2020;
- Response to City Comments dated December 2021;
- Parking Study Update dated February 2023; and,
- TIS Addendum dated February 2023.

As well, LEA provided evidence and attended a hearing for OLT Case No. OLT-21-002260, which occurred in July 2023. As per the OLT decision for Case No. OLT-21-002260, issued October 5, 2023, appeals for the development proposal for the subject site at the time were dismissed.

## 1.2 STUDY SCOPE

The purpose of this TIS Update is to analyze the transportation conditions based on the latest understanding of the subject site and the surrounding context in support of the present OPA, ZBA, and SPA submissions for the proposed development. This TIS Update will also review the latest development plans and statistics to demonstrate conformity to relevant applicable standards for parking rates, loading requirements, and Transportation Demand Management plan (TDM) measures.

The Terms of Reference provided for the previous TIS dated May 2020 were referenced for this study. The assumption of corridor growth rates, future transit improvements and future road network improvements remain unchanged. The background developments included have been updated accordingly and are detailed in **Section 3.4**. The Terms of Reference correspondence is enclosed in **Appendix A**.

## 1.3 DEVELOPMENT PROPOSAL

The proposed development consists of a single 30-storey residential building with 378 residential units. The site statistics from the most recent submission in February 2023 and the current proposal are presented below in **Table 1-1**.

Table 1-1: Proposed Site Statistics Comparison

| Residential Unit Type | Previous Submission (February 2023) | Current Submission (May 2025) | Change |
|---|---|---|---|
| Studio | 4 Units | 6 Units | +2 Units |
| 1 Bedroom | 157 Units | 253 Units | +96 Units |
| 2 Bedroom | 113 Units | 119 Units | +6 Units |
| **Total** | **274 Units** | **378 Units** | **+104 Units** |

Based on the revised site plan, as illustrated in **Figure 1-2**, one (1) unsignalized site access along Park Street East is proposed for the subject development. The proposed parking supply consists of 101 residential and 22 visitor parking spaces, which will be accommodated within four levels of underground parking. Additionally, the proposed bicycle parking supply shall consist of 250 long-term and 19 short-term residential bicycle parking spaces, which will be accommodated within the underground P1 level.

# 3085 HURONTARIO STREET
# CITY OF MISSISSAUGA

Mixed Use Development
Urban Transportation Considerations

Prepared For: Equity Three Holdings Inc.

September 2024

BA Group

# 3.0 PROPOSED REDEVELOPMENT

## 3.1 Development Uses

The proposed development includes four (4) mixed-use buildings comprising the following uses:

- **Building 1:** 461 residential units and 918 square metres of retail GFA
- **Building 2:** 488 residential units and 304 square metres of retail GFA
- **Building 3:** 417 residential units
- **Building 4**: 325 residential units

Overall, the updated development plan includes 1,691 residential units (all market condominium) and 1,222 square metres of retail GFA. In comparison to the September 2023 submission, the number of residential units has increased slightly with a modest increase in retail GFA. A reduction in vehicle parking spaces is additionally proposed. The updated development proposal is outlined in **Table 1** and illustrated in **Figure 2**. Reduced scale architectural plans are provided in **Appendix B**.

Table 1 Development Proposal

| Use | September 2023[1] | Current[2] | Net Change |
|---|---|---|---|
| Residential units | 1,658 units | 1,691 units | + 33 units |
| Retail | 1,160 square metres GFA | 1,222 square metres GFA | +62 square metres GFA |
| Vehicle parking supply | 1,056 parking spaces | 802 parking spaces (170 non-residential, 589 resident, 43 car share spaces) | - 254 parking spaces |
| Bicycle parking supply | 1,303 (1,217 long-term and 86 short-term) | 1,126 (1,029 long-term and 97 short-term) | - 177 |
| Loading supply | 7 loading spaces | 6 loading spaces | -1 loading space |
| Site access | Via driveways off new east-west municipal road and Kirwin Avenue | Via driveways off a north-south private road between Kirwin Avenue and Street C | All driveways now take access from a private north-south road, none from public roads |

Notes:

1. Based on site statistics provided by Diamond Schmitt Architects on July 17, 2023.
2. Based on site plan prepared by 3XN Architects on September 13, 2024.

nextrans
CONSULTING ENGINEERS

nextrans.ca

# Transportation Impact Study Update

# PROPOSED MIXED-USE DEVELOPMENT

3115 Hurontario Street,
MISSISSAUGA, ONTARIO

July 2024
Project No: NT-21-262

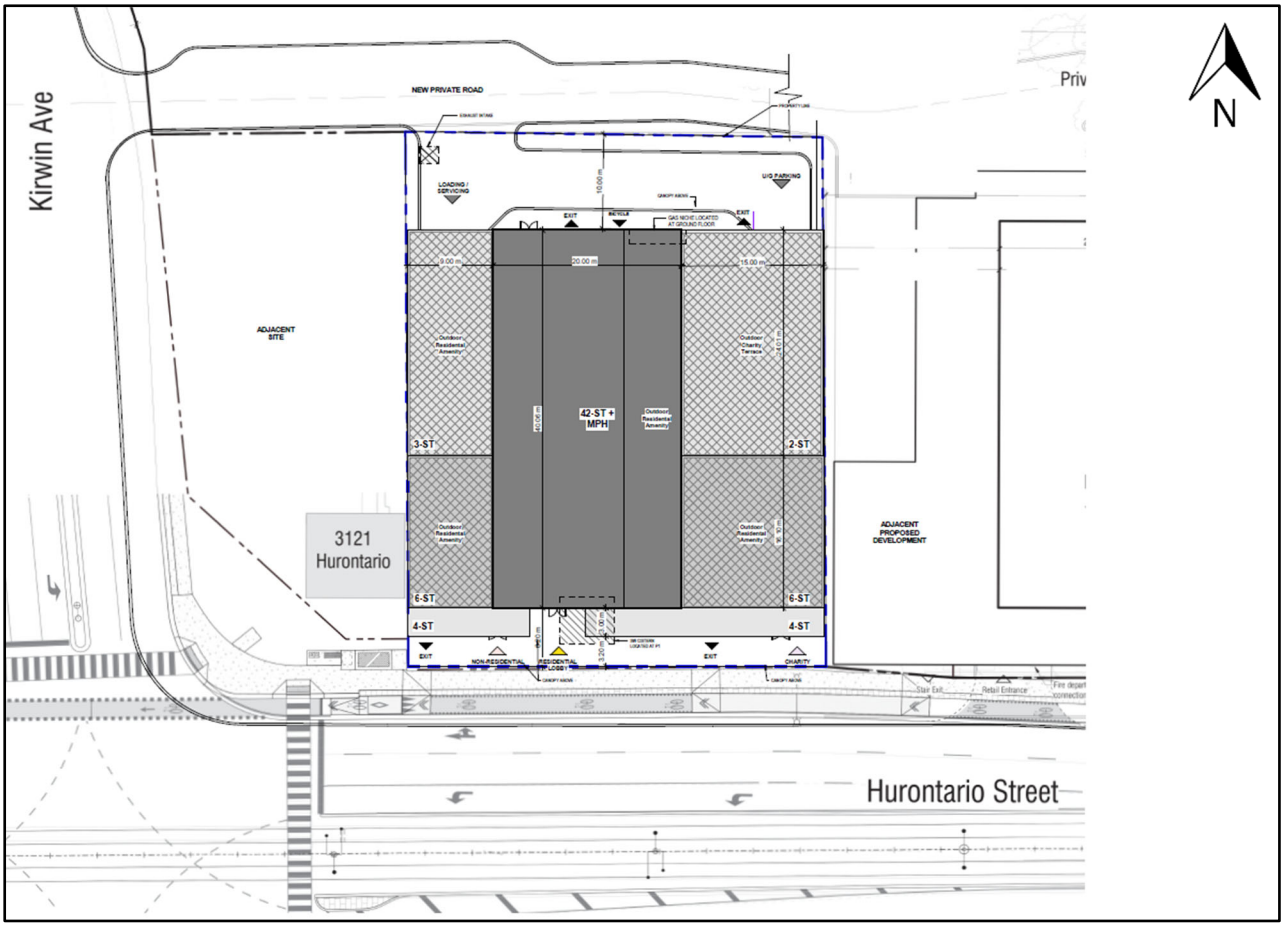
Based on the information outlined in the table above, the existing non-auto modal split in the area is approximately 30% and 29% during the morning and afternoon peak periods, respectively. This assessment suggests that there are viable alternative modes of transportation other than driving private automobiles. It is anticipated that with the future Hurontario LRT, the modal split along this corridor and this area will be much higher (i.e. could be up to 50% for all modal split).

## 3.3. Proposed Development Statistics

The proposed redevelopment of the site consists of a 42-storey mixed-use building with the following breakdown. A full moves access will be provided onto Kirwin Avenue to service the proposed development. It should be noted that this access will be shared with the adjacent development, 3085 Hurontario Street. **Figure 5** illustrates the proposed development site plan.

- Total of 520 residential dwelling units
  - 39 bachelor units
  - 321 one-bedroom units;
  - 122 two-bedroom units; and
  - 38 three-bedroom units
- 218.53 $m^2$ (2,352 $ft^2$) ground related retail gross floor area
- 940.94 $m^2$ (10,128 $ft^2$) of charity centre gross floor area
- Total of 200 parking spaces
- Total of 338 bicycle parking spaces
  - 312 Type B
  - 26 Type A

**Figure 5 – Proposed Site Plan**



# ATTACHMENT 9:
## Previous Submission Excerpts

# TRANSPORTATION IMPACT, AND PARKING AND LOADING JUSTIFICATION STUDY UPDATE

## 69 & 117 JOHN STREET
## RESIDENTIAL DEVELOPMENT

## CITY OF MISSISSAUGA

**PREPARED FOR:**

**CENTRACONDOS DE LA MONTAGNE**

**PREPARED BY:**

**C.F. CROZIER & ASSOCIATES INC.**
**211 YONGE STREET, SUITE 600**
**TORONTO, ON M5B 1M4**

**OCTOBER 2024**

**CFCA FILE NO. 2378-6557**



CROZIER

# TABLE OF CONTENTS

## LIST OF TABLES

## LIST OF FIGURES

## LIST OF APPENDICES

### 3.6 Traffic Modelling and Assumptions

For traffic modelling purposes, signal timing plans by default were kept consistent with existing conditions, unless other considerations necessitated adjustments. Due to the Hazel McCallion LRT, the signal timing plans for study intersections along Hurontario Street were adjusted for future conditions, considering that left-turns along the corridor would occur via protected left-turn phases only. Accordingly, protected northbound and southbound left-turn phases were implemented at Hurontario Street & John Street/Cooksville GO and Hurontario Street & Hillcrest Avenue/Kirwin Avenue. Both intersections were also optimized.

The future lane configurations and auxiliary turn lane storage lengths along the Hurontario Street corridor were reviewed to understand the future design outlined in the Hazel McCallion LRT Rollout Map (June 2017), received from City staff. **Figure 10** illustrates the Hazel McCallion LRT design within the study area.

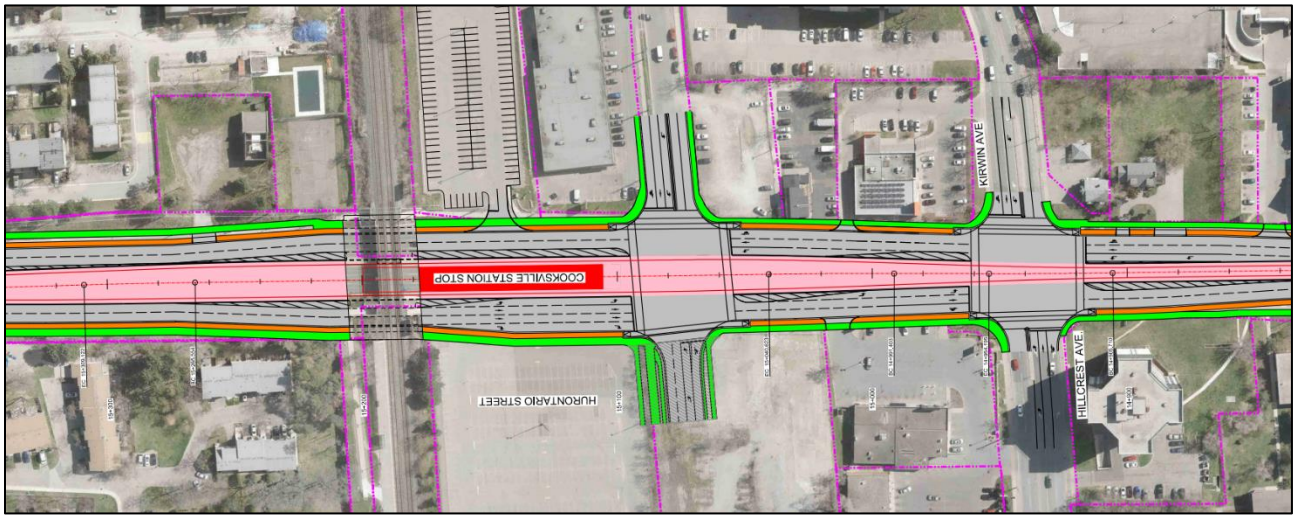


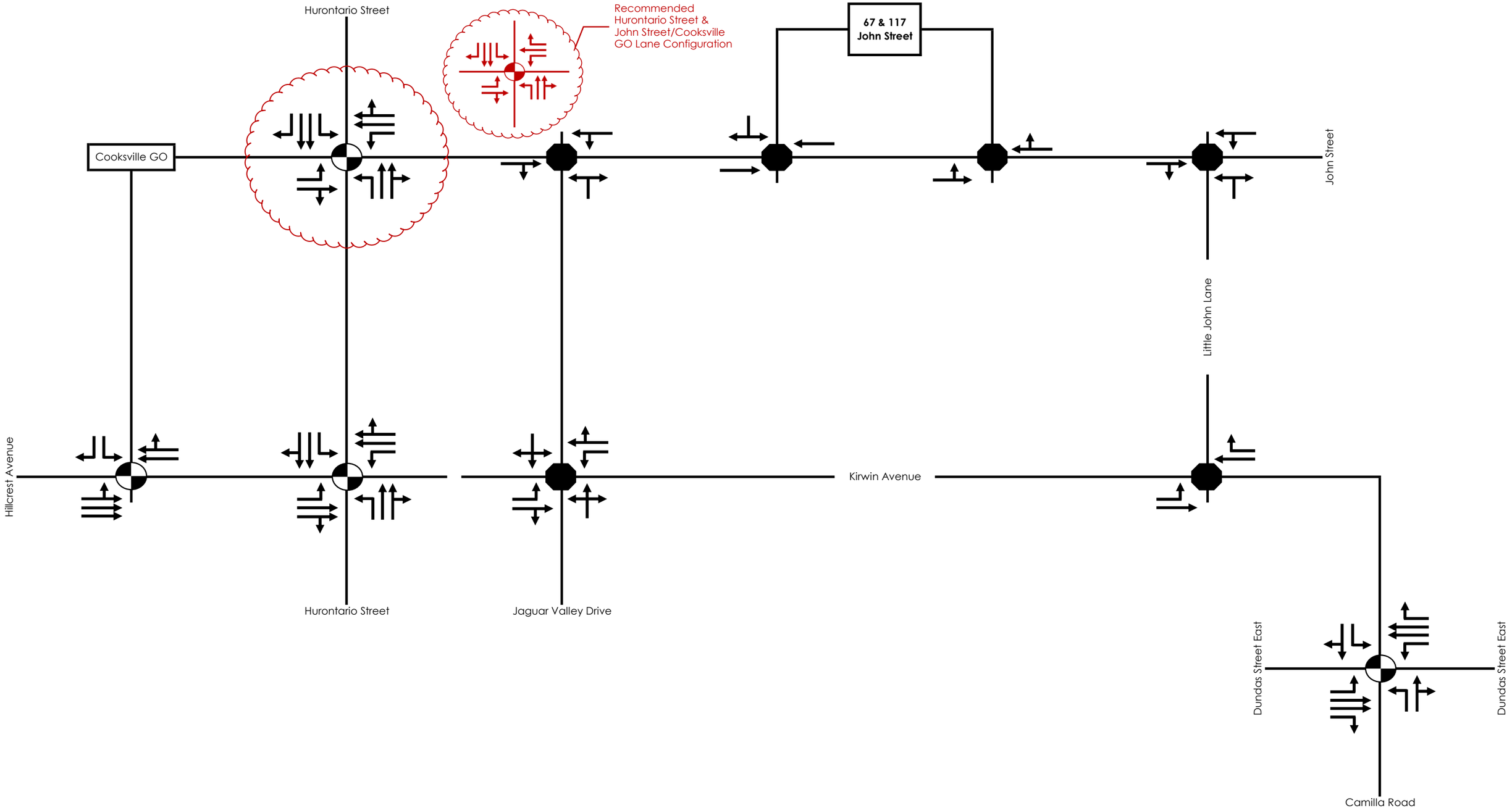

**Figure 10: Hazel McCallion LRT Design (Metrolinx, February 2017)**

The intersection of Hurontario Street & John Street/Cooksville GO was initially modelled per the lane configurations in **Figure 10**. However, initial modelling assuming the westbound lane configuration (exclusive left-turn, exclusive through and shared through-right), per **Figure 10** indicated delay and capacity issues were projected at this intersection. Consequently, an alternative configuration with exclusive left-turn, through, and right-turn lanes for the east approach was also reviewed herein. This configuration results in improved operations due to the high number of westbound right-turn movements compared to relatively low through traffic volumes. However, it is recognized that the Hazel McCallion LRT Design configuration may also function adequately in future conditions, particularly if the projected automobile traffic growth does not materialize as expected given the use of historic data for Hurontario volumes.

Therefore, both the planned shared westbound through-right-turn configuration as well as an exclusive westbound right-turn lane configuration were assessed for future background and future total conditions analysis herein for the purposes of traffic modelling.

PHFs of 0.92 and lost time adjustments of -1.0 were kept consistent with existing operations.

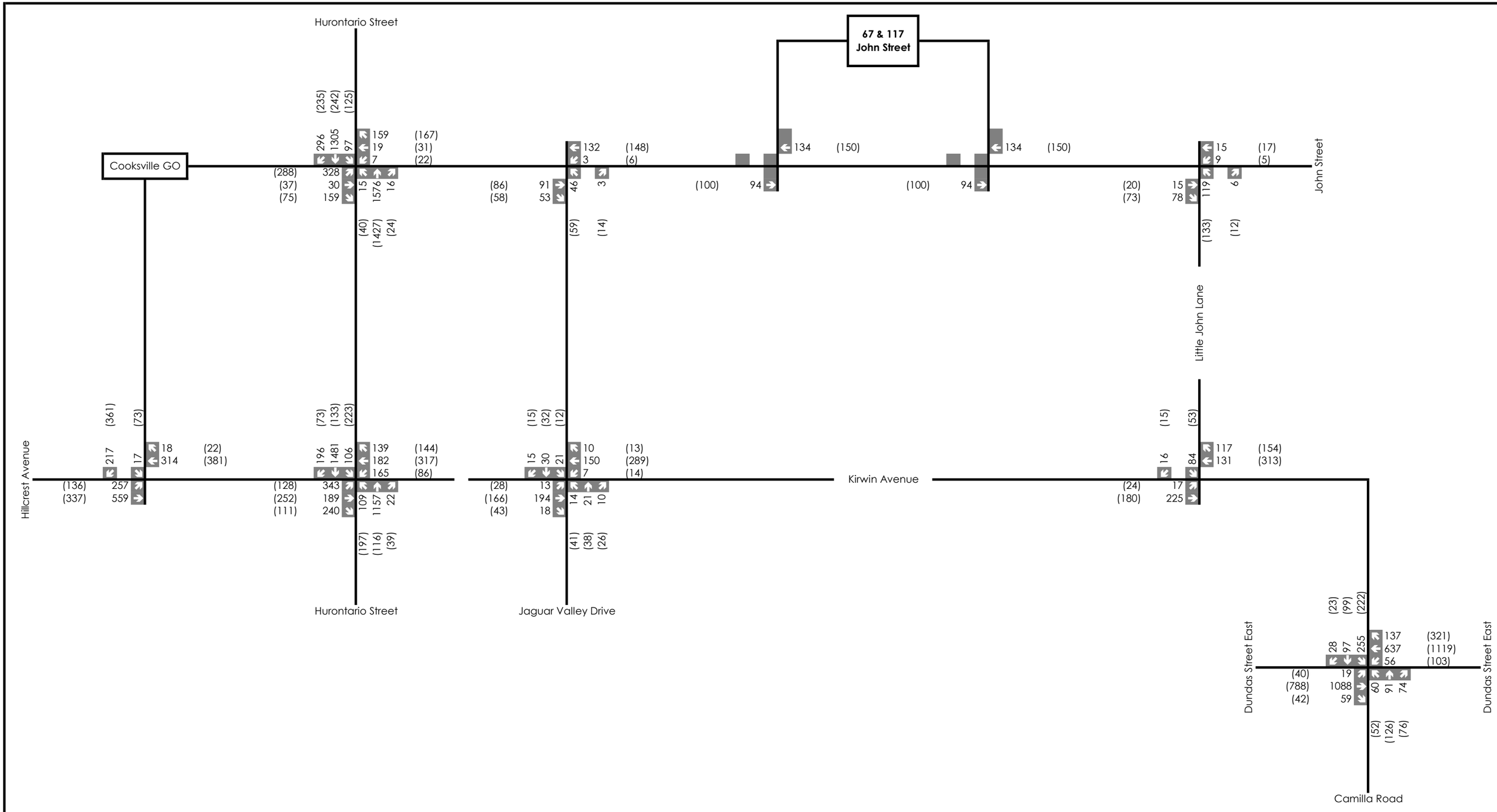
**Appendix G** contains the relevant future improvement excerpts. **Figure 11** outlines the planned future study road network.




| Legend | 69 & 117 John Street | CROZIER CONSULTING ENGINEERS | Figure 11 |
|---|---|---|---|
| xx A.M. Peak Hour Traffic Volumes<br>(xx) P.M. Peak Hour Traffic Volumes<br>{xx} Weekend Peak Hour Traffic Volumes | Planned Future Study Road Network | | Project No. 2378-6557<br>Date. 2024.09.17<br>Analyst. MY |

### 3.7 Intersection Operations

**Figure 12** illustrates the 2029 future background traffic volumes. **Table 16** and **Table 17** outlines the 2029 future background traffic operations for signalized and unsignalized study intersections, respectively. **Appendix F** contains the detailed capacity analysis worksheets.




**Legend**

xx A.M. Peak Hour Traffic Volumes
(xx) P.M. Peak Hour Traffic Volumes
{xx} Weekend Peak Hour Traffic Volumes

**69 & 117 John Street**

**2029 Future Background Traffic Volumes**

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**Figure 12**

Project No. 2378-6557
Date. 2024.09.17
Analyst. MY

**Table 16: 2029 Future Background Traffic Operations – Signalized Intersections**

| Intersection | | Performance Metrics | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | | Movement | LOS[1] | | Delay (s) | | v/c ratio[2] | |
| | | | A.M. | P.M. | A.M. | P.M. | A.M. | P.M. |
| Hurontario Street & John Street/Cooksville GO | Shared WBTR Lane | **Overall** | **F** | **E** | **82** | **61** | **1.08** | **0.98** |
| | | EBL | F | F | 101 | 108 | 1.01 | 1.01 |
| | | EBTR | D | D | 37 | 41 | 0.29 | 0.17 |
| | | WBL | C | D | 34 | 40 | 0.02 | 0.08 |
| | | WBTR | D | D | 35 | 40 | 0.14 | 0.11 |
| | | NBL | F | E | 87 | 78 | 0.57 | 0.49 |
| | | NBTR | F | E | 126 | 68 | 1.17 | 1.02 |
| | | SBL | F | F | 133 | 85 | 0.92 | 0.76 |
| | | SBT | D | B | 46 | 19 | 0.92 | 0.16 |
| | | SBR | C | B | 25 | 20 | 0.41 | 0.21 |
| | Exclusive WBR Lane | **Overall** | **E** | **D** | **57** | **47** | **1.03** | **0.93** |
| | | EBL | F | F | 126 | 111 | 1.07 | 1.00 |
| | | EBTR | D | D | 46 | 47 | 0.35 | 0.20 |
| | | WBL | D | D | 41 | 45 | 0.03 | 0.09 |
| | | WBT | D | D | 41 | 45 | 0.04 | 0.08 |
| | | WBR | D | D | 44 | 46 | 0.23 | 0.13 |
| | | NBL | F | E | 87 | 74 | 0.57 | 0.49 |
| | | NBTR | E | D | 72 | 35 | 1.05 | 0.93 |
| | | SBL | F | F | 98 | 69 | 0.79 | 0.74 |
| | | SBT | C | B | 30 | 15 | 0.82 | 0.15 |
| | | SBR | B | B | 18 | 15 | 0.36 | 0.21 |
| Hurontario Street & Hillcrest Avenue/Kirwin Avenue | | **Overall** | **F** | **E** | **123** | **58** | **1.12** | **0.46** |
| | | EBL | F | E | 201 | 63 | 1.28 | 0.75 |
| | | EBTR | D | D | 41 | 48 | 0.40 | 0.43 |
| | | WBL | F | E | 97 | 64 | 0.91 | 0.61 |
| | | WBTR | D | E | 47 | 68 | 0.34 | 0.78 |
| | | NBL | F | E | 100 | 79 | 0.82 | 0.80 |
| | | NBTR | D | C | 48 | 27 | 0.89 | 0.12 |
| | | SBL | E | F | 78 | 86 | 0.82 | 0.81 |
| | | SBTR | F | C | 203 | 21 | 1.30 | 0.14 |

| Intersection | | Movement | Performance Metrics | | | | | |
|---|---|---|---|---|---|---|---|---|
| | | | LOS[1] | | Delay (s) | | v/c ratio[2] | |
| | | | A.M. | P.M. | A.M. | P.M. | A.M. | P.M. |
| Dundas Street East & Kirwin Avenue/Camilla Road | Existing Signal | **Overall** | **D** | **C** | **36** | **34** | **0.64** | **0.65** |
| | | EBL | A | B | 9 | 17 | 0.06 | 0.21 |
| | | EBT | B | B | 14 | 18 | 0.55 | 0.45 |
| | | EBR | A | B | 9 | 13 | 0.05 | 0.04 |
| | | WBL | B | B | 13 | 11 | 0.28 | 0.29 |
| | | WBT | B | B | 11 | 14 | 0.33 | 0.56 |
| | | WBR | A | B | 9 | 11 | 0.11 | 0.28 |
| | | NBL | E | E | 65 | 60 | 0.43 | 0.31 |
| | | NBTR | E | E | 77 | 76 | 0.72 | 0.77 |
| | | SBL | F | F | 175 | 191 | 1.18 | 1.21 |
| | | SBTR | D | D | 50 | 50 | 0.32 | 0.31 |
| | Signal Optimized #1 | **Overall** | **C** | **C** | **29** | **30** | **0.67** | **0.68** |
| | | EBL | B | C | 14 | 26 | 0.07 | 0.27 |
| | | EBT | C | C | 23 | 26 | 0.63 | 0.52 |
| | | EBR | B | B | 14 | 19 | 0.06 | 0.04 |
| | | WBL | C | B | 23 | 16 | 0.36 | 0.34 |
| | | WBT | B | C | 17 | 22 | 0.38 | 0.63 |
| | | WBR | B | B | 14 | 17 | 0.11 | 0.31 |
| | | NBL | E | E | 65 | 60 | 0.43 | 0.31 |
| | | NBTR | E | E | 77 | 76 | 0.73 | 0.77 |
| | | SBL | D | D | 54 | 52 | 0.77 | 0.74 |
| | | SBTR | D | D | 39 | 39 | 0.24 | 0.23 |
| Hillcrest Avenue & Cooksville GO | | **Overall** | **A** | **B** | **8** | **12** | **0.34** | **0.26** |
| | | EBLT | A | A | 5 | 4 | 0.35 | 0.21 |
| | | WBTR | A | A | 4 | 4 | 0.16 | 0.19 |
| | | SBL | C | C | 25 | 27 | 0.09 | 0.37 |
| | | SBR | C | C | 26 | 26 | 0.16 | 0.26 |

*Note 1: The LOS of a signalized intersection is based on the average control delay per vehicle (HCM 2000).*
*Note 2: All intersection v/c ratios above 0.85 as well as movements above 1.0 are bolded with red text.*

At the study intersections along Hurontario Street significant operational performance loss is projected by the traffic model, with a drop in LOS from "C" to "E" or "F" being projected with at or slightly beyond capacity conditions.

The implementation of the Hazel McCallion LRT will result in higher delays due to the vehicle travel lane reductions along the Hurontario Street corridor as well as the implementation of northbound and southbound protected left-turn movements. These operations are not uncommon for transit corridors with required protected left-turn phases, such as the Highway 7 BRT and St. Clair Avenue. Some congestion is expected along transit corridors such as along the Hazel McCallion LRT, as the priority is to provide higher-order transit service that transport people in a more efficient manner than the traditional automobile. As outlined in MTO's Transit Supportive Guidelines, congestion can motivate commuters to shift from automobile to sustainable modes and the negative impact to vehicle operations due to the implementation of higher-order transit, such as the Hazel McCallion LRT, is an acceptable trade-off.

Furthermore, the volumes used herein can be considered conservative as historic counts were used and may not fully account for the modal split impacts of the Hazel McCallion LRT as well as new routes being available on the boundary road network being available through redevelopment (e.g., Hurontario Street & John Street/Cooksville GO). Due to the Hazel McCallion LRT construction, historic counts at some study intersections (e.g., Hurontario Street & Hillcrest Avenue/Kirwin Avenue) were grown to estimate "existing volumes". While a one-time negative growth factor was applied along Hurontario Street, there may be additional impacts of the Hazel McCallion LRT to the future mode split within the entire study area, especially if there are delays and congestion. As such, the volumes used herein may be considered conservative.

Hurontario Street & John Street/Cooksville GO

Traffic operational issues were projected along Hurontario Street in future background conditions. Several movements are projected to experience operational issues such as LOS "F" with volume-to-capacity ratios above 1.0 at Hurontario Street & John Street/Cooksville GO. However, it is noted that the volume-to-capacity ratios expected are only moderately above 1.0, indicating that vehicles may require more than one cycle length to advance through the intersection during the peak hours.

These conditions are somewhat typical in high volume urban areas during the peak periods within the GTHA, including the Hurontario Street corridors. Given these findings, it is recommended that the City monitor traffic operations along the Hurontario Street corridor within the study area, in the future and revise the associated signal timing plans, as required, to maintain safe and efficient traffic operations. The recommended monitoring will also confirm the rate at which projected traffic growth actually materializes, to assist the City in planning for signal timing optimization along the corridor.

Furthermore, it is recommended that the City consider revising the lane configuration of the east approach at Hurontario Street & John Street/Cooksville GO. Instead of the shared through right-turn movement in the righthand curb lane, as outlined in the most recent design plates, an exclusive right-turn movement should be considered. This change would accommodate the high number of westbound-right traffic projected at the intersection, and result in improved overall conditions during the peak hours. However, it is anticipated that intersection performance of the default lane configuration in practical conditions may be similar to the recommended configuration since with the high westbound left-turn volumes, the westbound through/right curb lane may operate as a defacto westbound right-turn lane.

Hurontario Street & Hillcrest Avenue/Kirwin Avenue

The signalized intersection of Hurontario Street & Hillcrest Avenue/Kirwin Avenue is expected to operate at a LOS "F" and "E" during the weekday a.m. and p.m. peak hours, respectively, with an intersection control delay of 123 seconds or better and an intersection volume-to-capacity ratio of 1.12 or better. During the weekday a.m. peak hour, the eastbound left-turn and southbound through-right lanes are forecasted to operate above capacity with volume-to-capacity ratios above 1.0. However, all other movements during the weekday a.m. and p.m. peak hours are expected to operate below capacity.

As outlined above, vehicles may require more than one cycle length to clear the intersection during the peak hours. However, these conditions are typical in congested areas during the peak periods within the GTHA, including the Hurontario Street corridor. Given these findings, it is recommended that the City monitor traffic operations along the Hurontario Street corridor,

within the study area, in the future and revise the associated signal timing plans, as required, to maintain safe and efficient traffic operations.

Dundas Street East & Kirwin Avenue/Camilla Road

Under the existing signal timing plan, the intersection of Dundas Street East & Kirwin Avenue/Camilla Road continues to operate at a LOS "D" or better during the weekday a.m. and p.m. peak hour. The intersection is expected to operate with a volume-to-capacity ratio of 0.65 or better and a control delay of 36 seconds or better. It is noted that the southbound left-turn movement has a volume-to-capacity ratio above 1.0 during both the weekday a.m. and p.m. peak hours. As such, the signal timing plan was optimized.

Upon optimizing the signal timing plan (Signal Optimized #1), the Dundas Street East & Kirwin Avenue/Camilla Road intersection is expected to operate at a LOS "C" with a control delay of 30 seconds or better and a volume-to-capacity ratio of 0.68 or better during the weekday a.m. and p.m. peak hours. Furthermore, the no movements are expected to have a volume-to-capacity ratio over 1.0.

Hillcrest Avenue & Cooksville GO

Finally, the intersection of Hillcrest Avenue & Cooksville GO is forecasted to operate similarly to existing conditions at a LOS "B" or better and with no notable operational issues during both the a.m. and p.m. weekday peak hour periods.

**Table 17: 2029 Future Background Traffic Operations – Unsignalized Intersections**

| Intersection (Control) | Performance Metrics | | | | | | |
|---|---|---|---|---|---|---|---|
| | Movement | LOS | | Delay (s) | | v/c ratio[2] | |
| | | A.M. | P.M. | A.M. | P.M. | A.M. | P.M. |
| John Street & Jaguar Valley Drive | **Overall[1]** | **B** | **B** | **11** | **11** | **0.09** | **0.12** |
| | EBTR | - | - | 0 | 0 | 0.09 | 0.09 |
| | WBLT | A | A | 0 | 0 | 0.00 | 0.01 |
| | NBLTR | B | B | 11 | 11 | 0.08 | 0.12 |
| Kirwin Avenue & Jaguar Valley Drive | **Overall[1]** | **A** | **B** | **9** | **11** | **0.32** | **0.48** |
| | EBL | A | A | 9 | 10 | 0.02 | 0.05 |
| | EBTR | A | B | 10 | 11 | 0.32 | 0.33 |
| | WBL | A | A | 8 | 9 | 0.01 | 0.02 |
| | WBTR | A | B | 10 | 13 | 0.25 | 0.48 |
| | NBLTR | A | A | 8 | 10 | 0.07 | 0.17 |
| | SBLTR | A | A | 9 | 9 | 0.10 | 0.10 |
| John Street & Little John Lane | **Overall[1]** | **A** | **B** | **10** | **10** | **0.16** | **0.18** |
| | EBTR | - | - | 0 | 0 | 0.06 | 0.06 |
| | WBLT | A | A | 3 | 2 | 0.01 | 0.00 |
| | NBLTR | A | B | 10 | 10 | 0.16 | 0.18 |
| Kirwin Avenue & Little John Lane | **Overall[1]** | **A** | **B** | **9** | **10** | **0.35** | **0.46** |
| | EBL | A | A | 8 | 9 | 0.03 | 0.04 |
| | EBT | B | A | 11 | 10 | 0.35 | 0.28 |
| | WBT | A | B | 9 | 12 | 0.21 | 0.46 |
| | WBR | A | A | 8 | 8 | 0.15 | 0.20 |
| | SBLR | A | A | 9 | 9 | 0.16 | 0.11 |

*Note 1: The overall LOS of a two-way stop-controlled intersection is based on the delay associated with the critical minor road approach (HCM 2000). The overall LOS of an AWSC intersection is based on the overall delay for the intersection (HCM 2010).*

Under 2029 future background conditions, the unsignalized intersections within the study road network are generally operating efficiently with moderate delays and reserve capacity to accommodate future traffic growth. These operations are consistent with the operations under the 2024 existing conditions.

### *3.7.1 Queueing Analysis*

Finally, as outlined in **Section 2.5**, Synchro was used to conduct a queuing assessment and estimate 95$^{th}$ percentile queues within the study road network. The a.m. and p.m. peak hour 95$^{th}$ percentile queues were compared against the auxiliary turn storage lane lengths at the study intersections to understand if there is at least the potential for occasional queuing exceedances.

**Table 18** outlines the 2029 future background queuing assessment.

**Table 18: 2029 Future Background Queuing Assessment**

| Intersection | | Movement | Performance Metrics | | |
|---|---|---|---|---|---|
| | | | 95th Percentile Queue Length (m) | | Auxiliary Lane Storage Length (m) |
| | | | A.M. | P.M. | |
| Hurontario Street & John Street/ Cooksville GO | Shared WBTR Lane | EBL | 182 | 165 | 200[1] |
| | | WBL | 6 | 13 | 25 |
| | | NBL | 6 | 27 | 37.5 |
| | | SBL | 72 | 66 | 48.5 |
| | | SBR | 62 | 14 | 48.5 |
| | Exclusive WBR Lane | EBL | 189 | 165 | 200 |
| | | WBL | 6 | 14 | 25[2] |
| | | NBL | 6 | 27 | 37.5 |
| | | SBL | 52 | 65 | 48.5 |
| | | SBR | 47 | 12 | 48.5 |
| Hurontario Street & Hillcrest Avenue/Kirwin Avenue | | EBL | 187 | 49 | 185[3] |
| | | WBL | 95 | 45 | 50 |
| | | NBL | 91 | 90 | 53 |
| | | SBL | 50 | 107 | 36 |
| Dundas Street East & Kirwin Avenue/ Camilla Road | Existing Signal | EBL | 6 | 17 | 15 |
| | | EBR | 8 | 3 | 30 |
| | | WBL | 19 | 21 | 30 |
| | | WBR | 9 | 21 | 65 |
| | | NBL | 33 | 29 | 36 |
| | | SBL | 139 | 123 | 40 |
| | Signal Optimized #1 | EBL | 8 | 20 | 15 |
| | | EBR | 10 | 4 | 30 |
| | | WBL | 27 | 27 | 30 |
| | | WBR | 11 | 39 | 65 |
| | | NBL | 34 | 29 | 36 |
| | | SBL | 87 | 75 | 40 |
| Hillcrest Avenue & Cooksville GO | | No Auxiliary Turn Lanes | - | - | - |
| John Street & Jaguar Valley Drive | | No Auxiliary Turn Lanes | - | - | - |
| Kirwin Avenue & Jaguar Valley Drive[4] | | EBL | 0 | 0 | 20 |
| | | WBL | 0 | 0 | 15 |
| John Street & Little John Lane | | No Auxiliary Turn Lanes | - | - | - |
| Kirwin Avenue & Little John Lane[4] | | EBL | 0 | 0 | 10 |
| | | WBR | 1 | 1 | 50 |

*Note 1: Based on distance to upstream intersection.*
*Note 2: Based on existing storage length as future storage length is not provided in the most recent design drawings.*
*Note 3: Two-way left-turn lane storage.*
*Note 4: Queuing results for the AWSC intersections based on HCM 2010 methodology.*

Hurontario Street & John Street/Cooksville GO

Similar to existing conditions, the minor queuing exceedances at the Hurontario Street & John Street/Cooksville GO intersection is forecasted. However, these queue exceedances can be accommodated within the provided taper and are not expected to appreciably impact traffic operations.

For the southbound left-turn movement, the most recent Hazel McCallion LRT design drawings appear to include a painted median via pavement markings, at the north end of the delineated southbound left-turn lane, such that the total available storage is approximately 120 metres. Should sufficient space exist, it is recommended that the pavement markings be revised to extend the provided storage to 65 metres for the southbound left-turn movement and mitigate potential queuing impacts.

Hurontario Street & Hillcrest Avenue/Kirwin Avenue

Under 2029 future background conditions, queuing constraints are most notable at the intersection of Hurontario Street & Hillcrest Avenue/Kirwin Avenue. In the most critical cases, each of the four left-turn movement 95$^{th}$ percentile queues are projected to extend beyond their respective turn-lane storage. For the eastbound and northbound left-turn movements, the associated advanced and protected left-turn phases are expected to clear queues to avoid spillback and/or starvation impacts on the adjacent vehicle travel lanes.

Similarly to the Hurontario Steet & John Street/Cooksville GO intersection, for the southbound left-turn movement at Hurontario Street & Hillcrest Avenue/Kirwin Avenue, the most recent Hazel McCallion LRT design drawings appear to include a painted median via pavement markings, at the north end of the delineated southbound left-turn lane, such that the total available storage is approximately 90 metres. Should sufficient space exist, it is recommended that the pavement markings be revised to maximize the provided storage for the southbound left-turn movement and mitigate potential queuing impacts.

For the westbound left-turn movement, while there is no protected left-turn phase, the wide median is expected allow vehicles to queue beyond the storage bay without impacting vehicle movements in either of the bi-directional travel lanes. Furthermore, most of the expected queues can be accommodated within the provided storage and taper. Therefore, the noted queueing issues at this study intersection are expected to be mitigated.

Dundas Street East & Kirwin Avenue/Camilla Road

Consistent with existing conditions, queuing concerns are expected for the southbound left-turn movement at Dundas Street East & Kirwin Avenue/Camilla Avenue for the optimized signal timing plan (Signal Optimized #1). It is noted that the expected queue of 87 metres, during the weekday a.m. peak hour, cannot be accommodated within the provided storage and taper. However, similar to existing conditions, impacts to the adjacent vehicle travel lane are expected to be mitigated due to the protected left-turn phase.

The City should monitor the traffic volumes and queues post- Hazel McCallion LRT to determine if improvements for the southbound left-turn movement is required. Should improvements be required, the City can consider adjusting the pavement markings, including on-street parking on the east, to extend the southbound left-turn lane storage. It is noted that the adjustments to on-street parking is only expected to affect a few driveways, thus not significantly impacting residents in the area.

It is also noted that the eastbound left-turn queue is expected to extend beyond the provided storage. However, the queue can be accommodated within the storage and taper length.

### 3.8 Future Background Recommendations Summary

**Table 19** summarizes the future background recommended improvements.

**Table 19: Recommended Future Background Improvements**

| Intersection | Improvement | Responsibility |
|---|---|---|
| Hurontario Street & John Street/Cooksville GO | Consider implementing an exclusive westbound right-turn movement, instead of a shared westbound through-right-turn movement.<br><br>Optimize the signal timing plan, providing the following green time (Exclusive WBR Movement):<br>• EBT: 53.0 s (a.m.), 48.0 s (p.m.)<br>• WBT: 53.0 s (a.m.), 48.0 s (p.m.)<br>• NBL: 9.5 s (a.m.), 14.8 s (p.m.)<br>• NBT: 89.2 s (a.m.), 86.6 s (p.m.)<br>• SBL: 17.8 s (a.m.), 25.4 s (p.m.)<br>• SBT: 97.5 s (a.m.), 97.6 s (p.m.)<br><br>Consider updating the Hazel McCallion LRT design drawings and revise the planned pavement markings to extend the southbound left-turn lane storage length to at least 65 metres. | City |
| Hurontario Street & Hillcrest Avenue/Kirwin Avenue | Consider optimizing the signal timing plan, providing the following green time:<br>• EBL: 11.0 s (a.m.), 13.0 s (p.m.)<br>• EBT: 67.0 s (a.m.), 69.0 s (p.m.)<br>• WBT: 56.0 s (a.m.), 56.0 s (p.m.)<br>• NBL: 13.0 s (a.m.), 37.0 s (p.m.)<br>• NBT: 76.4 s (a.m.), 53.0 s (p.m.)<br>• SBL: 16.6 s (a.m.), 38.0 s (p.m.)<br>• SBT: 80.0 s (a.m.), 54.0 s (p.m.)<br><br>Consider updating the Hazel McCallion LRT design drawings and revise the planned pavement markings to maximize the southbound left-turn lane storage length. | City |

| Intersection | Improvement | Responsibility |
|---|---|---|
| Dundas Street East & Kirwin Avenue/Camilla Road | Consider optimizing the signal timing plan, providing the following green time (Signal Optimized #1):<br>• EBT: 84.0 s (a.m.), 78.0 s (p.m.)<br>• WBL: 0.0 s (a.m.), 11.0 s (p.m.)<br>• WBT: 84.0 s (a.m.), 89.0 s (p.m.)<br>• NBT: 43.0 s (a.m.), 43.0 s (p.m.)<br>• SBL: 33.0 s (a.m.), 28.0 s (p.m.)<br>• SBT: 76.0 s (a.m.), 71.0 s (p.m.)<br><br>Monitor traffic volumes post- Hazel McCallion LRT and post-Dundas BRT to determine if improvements are required, including:<br>• Adjust pavement markings, including the start of on-street parking on the east side, to extend the southbound left-turn lane storage. | City |

# 4.0 Site Generated Traffic

The Proposed Development will result in additional turning movements at the study intersections. Therefore, this section describes the trip forecasting methodology and results of this forecast for the development proposal.

The site generated traffic forecasting methodology for this study consists of two steps. The first step, Trip Generation, projects the number of trips that originate or are destined for the Proposed Development, while the second step, Trip Distribution and Assignment, assigns trips to the study road network based on the expected distribution of trips to catchment areas and expected shortest paths for trips destined for particular locations.

## 4.1 Trip Generation (UPDATED)

As noted, the development is proposed to consist of 1,342 residential units and 600 $m^2$ of commercial space.

Trip generation for the proposed mixed-use development was determined using the methodology outlined below:

- Residential person trips were generated based on Institute of Transportation Engineers (ITE) Trip Generation Manual 11th Edition for Land Use Categories (LUC) 222 "Multifamily (High-Rise)". The Dense Multi-use Urban category was also selected to represent the future development and transportation context of the surrounding area. In addition, the Close to Rail Transit setting was used for the residential trip generation due to the development's proximity to the Cooksvillle GO Station (approximately 650 metres).

- As commercial person trips are not available in the ITE Trip Generation Manual, 11th Edition for LUC 822 "Strip Retail Plaza (<40k)", the commercial person trips were based on the vehicle trip generation outlined in ITE Trip Generation Manual, 11th Edition and converted to person trips using the factors outlined in ITE Trip Generation Manual, 10th

**Table 26: Forecasted Transit Trip Assignment**

| Transit Service | % of Trips | A.M. Trips[1] | | P.M. Trips[1] | |
|---|---|---|---|---|---|
| | | In | Out | In | Out |
| Milton GO Train | 26% | 24 | 74 | 52 | 37 |
| Lakeshore West GO Train | - | - | - | - | - |
| Hazel McCallion LRT | 17% | 15 | 47 | 33 | 24 |
| MiWay Bus | 34% | 32 | 97 | 68 | 48 |
| Milton GO & TTC Subway | 5% | 5 | 14 | 10 | 7 |
| Hazel McCallion LRT & Lakeshore West GO Train | 6% | 5 | 16 | 11 | 8 |
| MiWay Bus & GO Bus | 3% | 3 | 9 | 6 | 4 |
| Hazel McCallion LRT & MiWay Bus | 9% | 8 | 25 | 18 | 13 |
| MiWay Bus & TTC Subway | - | - | - | - | - |
| **Total** | **100%** | **92** | **281** | **198** | **141** |

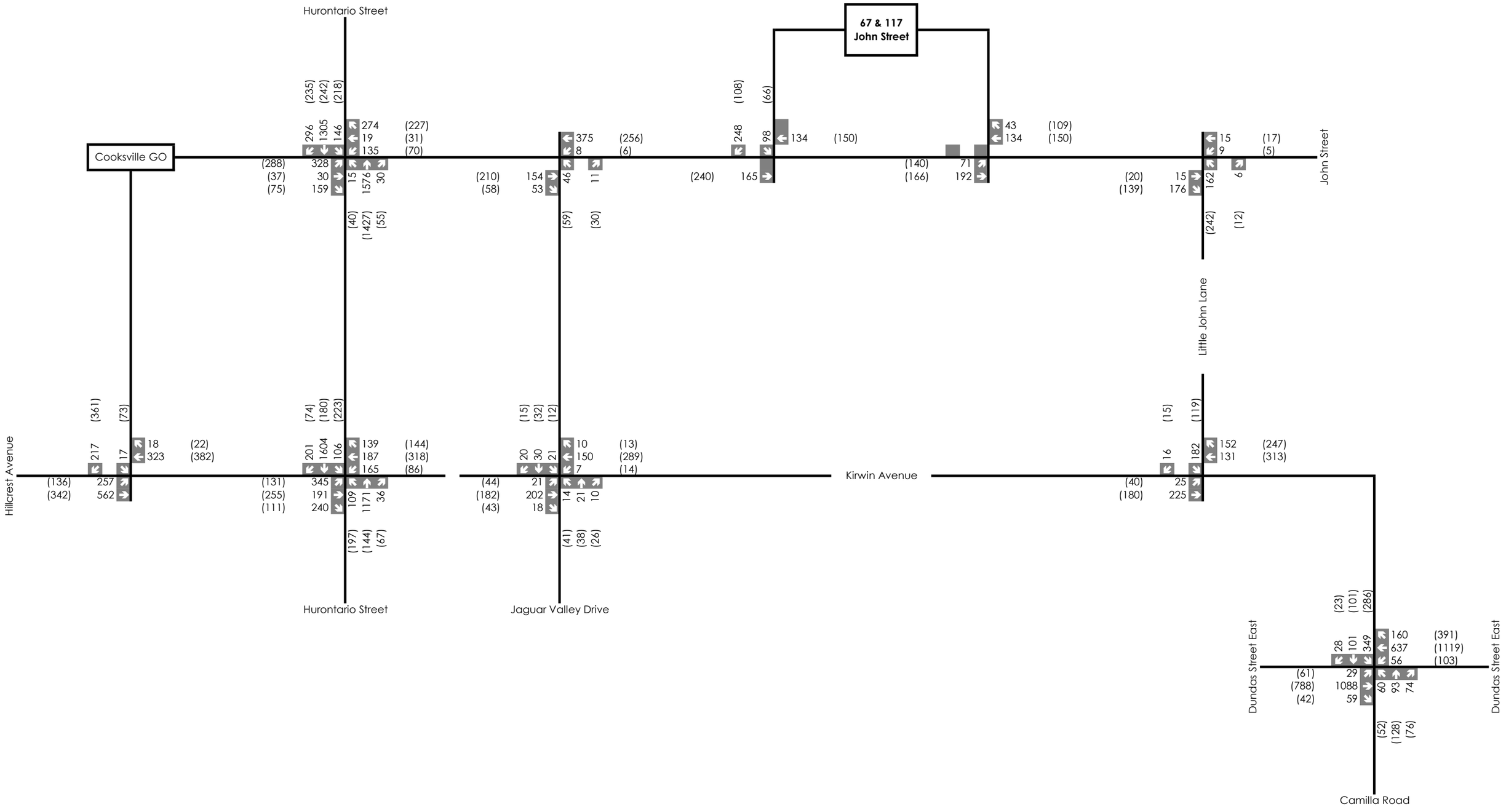
*Note 1: Rounding may cause appearance of minor discrepancies.*

## 5.0 Future Total Conditions

This section will summarize the future total conditions of the study road network. The future total traffic volumes for the horizon years consist of the following components:

- Future Background Traffic Volumes
- Proposed Development's Site Generated Traffic Volumes

**Figure 16** outlines the resulting total volumes for the 2029 horizon year.




**Legend**

xx A.M. Peak Hour Traffic Volumes
(xx) P.M. Peak Hour Traffic Volumes
{xx} Weekend Peak Hour Traffic Volumes

**69 & 117 John Street**

**2029 Future Total Traffic Volumes**

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**Figure 16**

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Date. 2024.09.17
Analyst. MY

### 5.1 Traffic Modelling and Assumptions (UPDATED)

The intersection of John Street & Little John Lane was modelled as AWSC. As outlined in **Section 5.4** and **Section 8.0**, AWSC is recommended as it is warranted and will facilitate safe north-south pedestrian crossings.

Signal timing plans are kept consistent with future background conditions, for comparative purposes. Once again, for future total conditions, PHFs of 0.92 and lost time adjustments of -1.0 were kept unchanged from existing and future background operations.

As outlined in **Section 4.1**, a fulsome update of future total operational analysis was not prepared. However, with the updated East Site Access configuration the updated operations for John Street & Little John Lane and John Street & East Site Access were updated and included herein.

### 5.2 Intersection Operations (UPDATED)

**Table 27** and **Table 28** outlines the 2029 future total traffic operations for signalized and unsignalized study intersections, respectively. **Appendix F** contains the detailed capacity analysis worksheets.

**Table 27: 2029 Future Total Traffic Operations – Signalized Intersections**

| Intersection | | Performance Metrics | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | | Movement | LOS[1] | | Delay (s) | | v/c ratio[2] | |
| | | | A.M. | P.M. | A.M. | P.M. | A.M. | P.M. |
| Hurontario Street & John Street/Cooksville GO | Shared WBTR Lane | **Overall** | **F** | **F** | **93** | **85** | **1.21** | **1.11** |
| | | EBL | F | F | 170 | 149 | 1.20 | 1.13 |
| | | EBTR | D | D | 37 | 41 | 0.29 | 0.17 |
| | | WBL | D | D | 40 | 42 | 0.45 | 0.24 |
| | | WBTR | D | D | 37 | 41 | 0.28 | 0.16 |
| | | NBL | F | E | 86 | 79 | 0.57 | 0.49 |
| | | NBTR | F | F | 131 | 94 | 1.18 | 1.09 |
| | | SBL | F | F | 300 | 137 | 1.40 | 1.12 |
| | | SBT | D | B | 46 | 19 | 0.92 | 0.16 |
| | | SBR | C | B | 25 | 20 | 0.41 | 0.21 |
| | Exclusive WBR Lane | **Overall** | **E** | **E** | **64** | **61** | **1.07** | **1.01** |
| | | EBL | F | F | 126 | 111 | 1.07 | 1.00 |
| | | EBTR | D | D | 46 | 47 | 0.35 | 0.20 |
| | | WBL | D | D | 53 | 48 | 0.59 | 0.29 |
| | | WBT | D | D | 41 | 45 | 0.04 | 0.08 |
| | | WBR | D | D | 50 | 48 | 0.56 | 0.26 |
| | | NBL | F | E | 86 | 79 | 0.57 | 0.49 |
| | | NBTR | F | E | 81 | 58 | 1.07 | 1.00 |
| | | SBL | F | F | 189 | 145 | 1.13 | 1.06 |
| | | SBT | C | B | 30 | 15 | 0.82 | 0.15 |
| | | SBR | B | B | 18 | 16 | 0.36 | 0.21 |

| Intersection | | Movement | Performance Metrics | | | | | |
|---|---|---|---|---|---|---|---|---|
| | | | LOS[1] | | Delay (s) | | v/c ratio[2] | |
| | | | A.M. | P.M. | A.M. | P.M. | A.M. | P.M. |
| Hurontario Street & Hillcrest Avenue/Kirwin Avenue | | **Overall** | **F** | **E** | **142** | **56** | **1.17** | **0.48** |
| | | EBL | F | E | 207 | 65 | 1.29 | 0.77 |
| | | EBTR | D | D | 41 | 48 | 0.41 | 0.44 |
| | | WBL | F | E | 97 | 64 | 0.91 | 0.59 |
| | | WBTR | D | E | 47 | 68 | 0.35 | 0.78 |
| | | NBL | F | E | 101 | 79 | 0.83 | 0.80 |
| | | NBTR | D | C | 50 | 28 | 0.92 | 0.16 |
| | | SBL | F | F | 83 | 81 | 0.82 | 0.81 |
| | | SBTR | F | C | 243 | 23 | 1.40 | 0.19 |
| Dundas Street East & Kirwin Avenue/Camilla Road | Signal Optimized #1 | **Overall** | **D** | **C** | **35** | **33** | **0.73** | **0.72** |
| | | EBL | B | C | 16 | 33 | 0.11 | 0.43 |
| | | EBT | C | C | 25 | 28 | 0.65 | 0.53 |
| | | EBR | B | B | 15 | 20 | 0.06 | 0.04 |
| | | WBL | C | B | 26 | 17 | 0.39 | 0.35 |
| | | WBT | B | C | 19 | 24 | 0.39 | 0.64 |
| | | WBR | B | B | 16 | 19 | 0.13 | 0.38 |
| | | NBL | E | E | 65 | 60 | 0.42 | 0.31 |
| | | NBTR | E | E | 77 | 77 | 0.73 | 0.77 |
| | | SBL | F | E | 86 | 70 | 0.98 | 0.90 |
| | | SBTR | D | D | 37 | 38 | 0.24 | 0.23 |
| | Signal Optimized #2 | **Overall** | **C** | n/a | **34** | n/a | **0.73** | n/a |
| | | EBL | B | | 17 | | 0.11 | |
| | | EBT | C | | 26 | | 0.66 | |
| | | EBR | B | | 16 | | 0.06 | |
| | | WBL | C | | 27 | | 0.40 | |
| | | WBT | B | | 20 | | 0.39 | |
| | | WBR | B | | 17 | | 0.13 | |
| | | NBL | E | | 65 | | 0.42 | |
| | | NBTR | E | | 77 | | 0.73 | |
| | | SBL | E | | 75 | | 0.94 | |
| | | SBTR | D | | 36 | | 0.23 | |
| Hillcrest Avenue & Cooksville GO | | **Overall** | **A** | **B** | **8** | **12** | **0.34** | **0.26** |
| | | EBLT | A | A | 4 | 4 | 0.35 | 0.21 |
| | | WBTR | A | A | 4 | 4 | 0.16 | 0.19 |
| | | SBL | C | C | 25 | 27 | 0.09 | 0.37 |
| | | SBR | C | C | 25 | 26 | 0.16 | 0.26 |

*Note 1: The LOS of a signalized intersection is based on the average control delay per vehicle (HCM 2000).*
*Note 2: All intersection v/c ratios above 0.85 as well as movements above 1.0 are bolded with red text.*

Overall, traffic operations at the signalized study intersections are similar under 2029 future total conditions when compared to 2029 future background conditions. The LOS are expected to remain unchanged at the signalized study intersections between future background and future total conditions.

Hurontario Street & John Street/Cooksville GO

Consistent with future background conditions, an exclusive westbound right-turn lane at Hurontario Street & John Street/Cooksville GO is expected to result in better traffic operations than a shared westbound through right-turn lane. As outlined in **Section 3.7**, the City should consider updating the planned east approach lane configuration to include an exclusive right-turn lane at Hurontario Street & John Street/Cooksville GO.

With an exclusive westbound right-turn lane under 2029 future total conditions, Hurontario Street & John Street/Cooksville GO is expected to operate at an unchanged LOS "E" or better during the weekday a.m. and p.m. peak hours compared to 2029 future background conditions. The intersection is expected to operate with a maximum increase of 14 seconds in intersection control delay and 0.08 in intersection volume-to-capacity ratio.

Consistent with future background conditions, some movements are expected to have operational concerns with LOS "F" and/or volume-to capacity ratios of 1.0. As discussed in future background conditions, these operations are typical within congested areas during peak periods within the GTHA as well as along transit corridors, such as Hurontario Street.

Hurontario Street & Hillcrest Avenue/Kirwin Avenue

Under 2029 future total conditions, the Hurontario Street & Hillcrest Avenue/Kirwin Avenue intersection is expected to operate at an unchanged LOS "F" and "E" during the weekday a.m. and p.m. peak hours, respectively, when compared to future background conditions. Furthermore, the intersection control delay and intersection volume-to-capacity ratio is expected to increase by a maximum of 19 seconds and 0.05, respectively.

It is noted that operational concerns are expected at some movements, including LOS "F" and/or volume-to-capacity ratios above 1.0. However, these conditions are consistent with future background conditions.

Dundas Street East & Kirwin Avenue/Camilla Road

The optimized signalized intersection of Dundas Street East & Kirwin Avenue/Camilla Road (Signal Optimized #1) is expected to operate at an unchanged LOS "C" during the weekday a.m. and p.m. peak hours under 2029 future total conditions compared to future background conditions. The intersection is also expected to operate with an increase of 6 seconds and 0.06 in intersection control delay and intersection volume-to-capacity ratio, respectively.

It is noted that the southbound left-turn movement is expected to operate with a LOS "F" during the weekday a.m. peak hour. As such, the City should monitor traffic volumes and queues post-Hazel McCallion LRT and post-Dundas BRT to determine if improvements for the southbound left-turn movement are required. Should improvements be required, the City can consider implementing an alternate optimized timing plan (Signal Optimized #2) for the weekday a.m. peak hour as well as the previously recommended storage length increase. While slight increases in delay may result due to the new timing plan, the most operationally constrained movements on the minor street approaches will see delay reduction, with no material impact to operations along the Dundas Street corridor.

Hillcrest Avenue & Cooksville GO

Consistent with future background conditions, Hillcrest Avenue & Cooksville GO is expected to operate at a LOS "B" with low control delays and volume-to-capacity ratios during the weekday a.m. and p.m. peak hours.

Summary

The Subject Development does not materially impact the traffic operations at the signalized study intersections. Moreover, the operational issues observed under future total conditions is consistent with future background conditions. As such, the Subject Development is supportable from a transportation operations perspective and not further improvements are required.

**Table 28: 2029 Future Total Traffic Operations – Unsignalized Intersections**

| Intersection (Control) | Performance Metrics | | | | | | |
|---|---|---|---|---|---|---|---|
| | Movement | LOS | | Delay (s) | | Maximum v/c ratio[2] | |
| | | A.M. | P.M. | A.M. | P.M. | A.M. | P.M. |
| **John Street & Jaguar Valley Drive** | **Overall[1]** | **B** | **B** | **14** | **14** | **0.14** | **0.20** |
| | EBTR | - | - | 0 | 0 | 0.13 | 0.17 |
| | WBLT | A | A | 0 | 0 | 0.01 | 0.01 |
| | NBLTR | B | B | 14 | 14 | 0.14 | 0.20 |
| **Kirwin Avenue & Jaguar Valley Drive** | **Overall[1]** | **A** | **B** | **10** | **11** | **0.33** | **0.48** |
| | EBL | A | A | 9 | 10 | 0.04 | 0.09 |
| | EBTR | B | B | 10 | 11 | 0.33 | 0.36 |
| | WBL | A | A | 8 | 9 | 0.01 | 0.02 |
| | WBTR | A | B | 10 | 13 | 0.25 | 0.48 |
| | NBLTR | A | A | 8 | 10 | 0.07 | 0.18 |
| | SBLTR | A | A | 9 | 9 | 0.11 | 0.10 |
| **John Street & Little John Lane** | **Overall[1]** | **B** | **B** | **11** | **11** | **0.22** | **0.33** |
| | EBTR | - | - | 0 | 0 | 0.12 | 0.10 |
| | WBLT | A | A | 3 | 2 | 0.01 | 0.00 |
| | NBLR | B | B | 11 | 11 | 0.22 | 0.33 |
| **Kirwin Avenue & Little John Lane** | **Overall[1]** | **B** | **B** | **10** | **11** | **0.38** | **0.49** |
| | EBL | A | A | 9 | 9 | 0.05 | 0.07 |
| | EBT | B | B | 11 | 11 | 0.38 | 0.30 |
| | WBT | A | B | 10 | 13 | 0.22 | 0.49 |
| | WBR | A | A | 9 | 10 | 0.22 | 0.34 |
| | SBLR | B | B | 11 | 11 | 0.33 | 0.24 |
| **John Street & West Site Access** | **Overall[1]** | **B** | **B** | **13** | **12** | **0.46** | **0.26** |
| | EBLT | - | - | 0 | 0 | 0.00 | 0.00 |
| | WBTR | - | - | 0 | 0 | 0.09 | 0.10 |
| | SBLR | B | B | 13 | 12 | 0.46 | 0.26 |
| **John Street & East Site Access** | **Overall[1]** | **A** | **A** | **3** | **4** | **0.11** | **0.17** |
| | EBLT | A | A | 3 | 4 | 0.06 | 0.12 |
| | WBTR | - | - | 0 | 0 | 0.11 | 0.17 |

*Note 1: The overall LOS of a two-way stop-controlled intersection is based on the delay associated with the critical minor road approach (HCM 2000). The overall LOS of an AWSC intersection is based on the overall delay for the intersection (HCM 2010).*

All of the unsignalized study intersections, including John Street & West Site Access and John Street & East Site Access, are expected to continue operating efficiently with an acceptable LOS under 2029 future total traffic conditions. This is consistent with the operations observed under future background conditions. As such, the Proposed Development is expected to have a minimal impact on the unsignalized study intersections and is supportable from a transportation operations perspective.

### *5.2.1 Queuing Analysis (UPDATED)*

As outlined in **Section 2.5**, Synchro was used to conduct a queuing assessment and estimate 95th percentile queues within the study road network. The a.m. and p.m. peak hour 95th percentile queues were compared against the auxiliary turn storage lane lengths at the study intersections to understand if there is at least the potential for occasional queuing exceedances.

**Table 29** outlines the results of the 2029 future total queuing assessments.

**Table 29: 2029 Future Total Queuing Assessment**

| Intersection | | Performance Metrics | | | |
|---|---|---|---|---|---|
| | | Movement | 95th Percentile Queue Length (m) | | Auxiliary Lane Storage Length (m) |
| | | | A.M. | P.M. | |
| Hurontario Street & John Street/ Cooksville GO | Shared WBTR Lane | EBL | 200 | 176 | 200[1] |
| | | WBL | 58 | 33 | 25 |
| | | NBL | 6 | 27 | 37.5 |
| | | SBL | 116 | 141 | 48.5 |
| | | SBR | 62 | 14 | 48.5 |
| | Exclusive WBR Lane | EBL | 189 | 165 | 200[1] |
| | | WBL | 66 | 36 | 25[2] |
| | | NBL | 6 | 27 | 37.5 |
| | | SBL | 105 | 137 | 48.5 |
| | | SBR | 47 | 12 | 48.5 |
| Hurontario Street & Hillcrest Avenue/Kirwin Avenue | | EBL | 189 | 50 | 185[3] |
| | | WBL | 95 | 45 | 50 |
| | | NBL | 91 | 90 | 53 |
| | | SBL | 52 | 106 | 36 |
| Dundas Street East & Kirwin Avenue/ Camilla Road | Signal Optimized #1 | EBL | 12 | 33 | 15 |
| | | EBR | 10 | 4 | 30 |
| | | WBL | 27 | 27 | 30 |
| | | WBR | 12 | 49 | 65 |
| | | NBL | 33 | 29 | 36 |
| | | SBL | 127 | 105 | 40 |
| | Signal Optimized #2 | EBL | 12 | n/a | 15 |
| | | EBR | 10 | | 30 |
| | | WBL | 29 | | 30 |
| | | WBR | 12 | | 65 |
| | | NBL | 33 | | 36 |
| | | SBL | 121 | | 40 |
| Hillcrest Avenue & Cooksville GO | | No Auxiliary Turn Lanes | - | - | - |
| John Street & Jaguar Valley Drive | | No Auxiliary Turn Lanes | - | - | - |
| Kirwin Avenue & Jaguar Valley Drive[4] | | EBL | 0 | 0 | 20 |
| | | WBL | 0 | 0 | 15 |

| Intersection | Performance Metrics | | | |
|---|---|---|---|---|
| | Movement | 95th Percentile Queue Length (m) | | Auxiliary Lane Storage Length (m) |
| | | A.M. | P.M. | |
| **John Street & Little John Lane** | No Auxiliary Turn Lanes | - | - | - |
| **Kirwin Avenue & Little John Lane[4]** | EBL | 0 | 0 | 10 |
| | WBR | 1 | 2 | 50 |
| **John Street & West Site Access** | No Auxiliary Turn Lanes | - | - | - |
| **John Street & East Site Access** | No Auxiliary Turn Lanes | - | - | - |

*Note 1: Based on distance to upstream intersection.*
*Note 2: Based on existing storage length as future storage length is not provided in the most recent design drawings.*
*Note 3: Two-way left-turn lane storage.*
*Note 4: Queuing results for the AWSC intersections based on HCM 2010 methodology.*

Similar to future background conditions, the future total conditions queuing assessment results in several of instances where 95th percentile queues exceed the auxiliary turn lane storage length.

Hurontario Street & John Street/Cooksville GO

At the intersection of Hurontario Street & John Street/Cooksville GO, the westbound left-turn and southbound left-turn queues have materially worsened as a result of development traffic when compared to future background conditions, while the remaining 95th percentile queuing projections are effectively the same as future background conditions.

As outlined for future background conditions in **Section 3.7.1**, for the southbound left-turn movement, the most recent Hazel McCallion LRT design drawings appear to show a paved median behind the southbound left-turn lane. Should sufficient space exist, it is recommended that pavement marking revisions be pursued to maximize the provided storage to mitigate potential queuing impacts. Given the southbound left-turn movement is planned to have an advanced protected left-turn phase, queuing issues are also expected to be minimized.

The planned westbound left-turn lane storage length at Hurontario Street & John Street/Cooksville GO is not provided in the most recent design drawings. As such, the City should consider providing minimum of 70 metre storage length is provided for the westbound auxiliary left-turn lane to accommodate the projected 95th percentile queues under 2029 future total conditions.

Hurontario Street & Hillcrest Avenue/Kirwin Avenue

At the intersection of Hurontario Street & Hillcrest Avenue/Kirwin Avenue, queuing issues are consistent with future background conditions. The eastbound and northbound left-turn movements are continued to be expected to be mitigated by the advanced and protected left-turn phases.

As outlined in **Section 3.7.1**, it is recommended that pavement marking revisions be implemented to maximize the provided storage for the southbound left-turn movement and mitigate potential queueing impacts. Regardless, the queueing concerns are expected to be mitigated by the protected left-turn phase.

Consistent with future background conditions, the westbound left-turn queues are expected to be mitigated by the wide median and provided taper which will also for additional vehicles to queue beyond the storage length.

Dundas Street East & Kirwin Avenue/Camilla Road

The queueing concerns for the southbound left-turn movement at Dundas Street East & Kirwin Avenue/Camilla Road (Signal Optimized #1) are similar to future background conditions. The available storage length of 40 metres, in comparison to the maximum 95th percentile queue of up to 130 metres, is expected to be operationally adequate due to the following rationales:

- Similar to future background conditions, the advanced protected left-turn phase allows the queues to clear and avoid impacting adjacent through traffic upon commencement of the circular green phase.

- Significant distance (approximately 270 metres) to the nearest intersection along Kirwin Avenue before intersecting with Dundas Street East provides more than adequate capacity for queuing after the storage lanes splits.

- Given that Kirwin Avenue and Camilla Road are collector roads, traffic flow is not as critical when compared to arterials. Occasional queuing blockages during the peak hours would not compromise the purpose of the roadway.

The City should continue to monitor traffic volumes and queues post- Hazel McCallion LRT and post-Dundas BRT to determine if improvements for the southbound left-turn movement are required. Should improvements be required, the City can consider the following:

- Adjust the pavement markings, including on-street parking on the east, to extend the southbound left-turn lane storage. It is noted that the adjustments to on-street parking are only expected to affect a few driveways, thus not significantly impacting residents in the area.

- Adjust the signal timing plan (Signal Optimized #2) for the weekday a.m. peak period to increase the allotted green time for the protected southbound left-turn and/or minor approach movements.

### 5.3 Signal Warrant Assessment (UPDATED)

The signal warrant assessment was conducted at each of the unsignalized study intersections, including at the proposed site accesses off John Street.

The analysis was conducted based on Chapter 4 of the Ontario Traffic Manual (OTM) Book 12: Traffic Signals (Ontario Ministry of Transportation, March 2012). As only peak hour volumes were available, Justification 7: Projected Volumes was selected as the most appropriate warrants to assess the unsignalized study intersections.

The average hour volume was determined using the following formula from OTM Book 12:

$$AHV = (amPHV + pmPHV) / 4$$

Where:

AHV = average hour volume
amPHV = a.m. peak hour volume

### 5.5 Future Total Recommendations Summary

**Table 31** outlines the recommended future total improvements. These improvements should be implemented in addition to the future background warranted improvements outlined in **Table 19**.

**Table 31: Recommended Future Total Improvements**

| Intersection | Improvement | Responsibility |
|---|---|---|
| Hurontario Street & John Street/Cooksville GO | Consider updating the Hazel McCallion LRT design drawings and revise the planned pavement markings to maximize the southbound left-turn lane storage length.<br><br>Consider providing westbound left-turn lane storage length of at least 70 metres. | City/Developer |
| Dundas Street East & Kirwin Avenue/Camilla Road | Continue to monitor traffic volumes post-Hazel McCallion LRT and post-Dundas BRT to determine improvements are required, including:<br>• Adjust pavement markings, including the start of on-street parking on the east side, to extend the southbound left-turn lane storage.<br>• Adjust the signal timing plans (Signal Optimized #2) for the weekday a.m. peak period to increase the green time for the southbound left-turn and/or minor approach movements, | City |
| John Street & Little John Lane | Implement AWSC. | Developer |

## 6.0 Site Circulation Review

The proposed Site Plan was reviewed from a circulation perspective. The section herein reviews both the vehicle maneuverability and pedestrian circulation.

### 6.1 Vehicle Maneuverability

This section considers the internal vehicle maneuverability of the Subject Site to confirm vehicles can safely operate without conflicts or constraints. Vehicle Turning Diagrams were prepared using AutoTURN software.

The following design vehicles are expected to operate on site and are reviewed herein:

- Region of Peel Typical Waste Collection Vehicle
- Region of Peel Typical Fire Truck
- Medium Single Unit (MSU) Truck (Delivery Trucks)
- TAC p-car

**Appendix M** includes the Vehicle Turning Diagrams.

- TDM Information Package for New Tenants
- Wayfinding Signage
- Flex Workspace Amenity Spaces
- Pick-up/Drop-off Area(s)
- Subsidized Transit Passes
- Real-Time Transit Information Screens
- Secure & Excess Bicycle Parking Spaces
- Bicycle Repair Station
- Reduced Parking Supply
- Unbundled Parking
- Carshare Spaces

### 11.1 Existing Transit and Active Transportation Opportunities

There are existing TDM opportunities in the study area to encourage the use of non-auto modes of transportation and reduce SOV trips.
As the surrounding area consists of urban commercial land uses, there are many walkable destinations from the subject property such as parks, commercial and retail businesses, fast-food and sit-down restaurants, many of which are located along Hurontario Street and Dundas Street.

As outlined in **Section 2.2**, there are existing transit services in the study area to provide connectivity to the wider GTHA. Several transit routes are available along Hurontario Street and Dundas Street. Specifically, for the Subject Property, a bus stop is located at Hurontario Street and John Street and/or at Dundas Street and Hurontario Street.
Furthermore, Cooksville GO is a short walk away from the Subject Property (approximately 8 minutes). Thus, daily work commute and weekend trips within and outside of the City can be easily conducted by high capacity, frequent rail services.

The transit availability and options within a short distance from the Subject Property will encourage transit use, and potentially lead to a reduction in SOV trips and parking demands.

### 11.2 Future Transit and Active Transportation Opportunities

As outlined above, there are significant improvements to the transportation network planned within the study road network. Specifically, the following improvements have been proposed within the study area which are geared towards reducing automobile dependency and maximizing sustainable mode share:

- Hazel McCallion LRT
- Dundas BRT
- Hurontario Street and Dundas Street Cycle Tracks

It is noted that the Dundas BRT and Dundas Street Cycle Tracks is assumed to be built out beyond the 2029 horizon year. Regardless, these improvements are expected to further improve the sustainable mode share in the long term.

### 11.3 Site Specific TDM Recommendations

There are several opportunities for the development to promote TDM measures at the Site Plan level in support of reduced automobile use. **Table 38** outlines the recommendations which are expected to contribute to reduced automobile use and increased sustainable mode share.

**Table 38: Site Specific TDM Recommendations**

| Recommended/Provided TDM Measure | Implementation Summary |
|---|---|
| TDM Information Package for New Tenants | Upon and prior to occupancy, a TDM information package should be provided to new and prospective residents and owners. Promotional material should also be readily available (and continuously updated) in the building's lobby to increase awareness of available alternate travel modes and reduce the barriers to adopting more sustainable travel behaviour. Such marketing allows prospective tenants to be aware of sustainable travel options, as well as updates in the transit and cycling infrastructures improvements of the area.<br><br>TDM Information Package can comprise of:<br>• Active Transportation Network Maps<br>• Transit Maps and Schedules<br>• SmartTripsON<br>• Car Rental and Carshare Locations<br><br>Neighbourhood commercial, retail, and institutional facilities should also be included in the marketing package to promote local businesses and to promote a walkable mixed-use community.<br><br>Information on the future transit projects could be provided to prospective buyers to make them aware of pending mass transit opportunities (such as the Hazel McCallion LRT, which can encourage measures such as reduced vehicle ownership and SOV use. |
| Wayfinding Signage | Multi-modal wayfinding signage is recommended throughout the Subject Site. Individuals on-site will be provided directions to transportation services, infrastructure, and key destinations, such as transit stops, bicycle parking and pick-up/drop-off areas, and adjacent commercial facilities. |
| Flex Workspace Amenity Spaces | A flex workspace (coworking space) is recommended as part of the proposed amenities to encourage remote work. In providing a flex workspace, tenants have access to additional workspace and office-related amenities provided, encouraging residents to work remotely, and eliminating the need to commute during peak hours. |

| Recommended/Provided TDM Measure | Implementation Summary |
|---|---|
| Pick-up/Drop-off (PUDO) Areas | A PUDO/loading zone as well as two lay-by parking areas are proposed within the Subject Development.<br><br>It is recommended that these lay-by parking areas be designated as short-term parking or a pick-up/drop-off area to support deliveries, and ride share and taxi services that typically would only require stopping or parking for a short time.<br><br>The PUDO/loading zone can be booked by residential and retail tenants, when needed for loading, and will operate similarly to the lay-by parking areas at all other times. |
| Subsidized Transit Pass | Subsidized transit passes should be provided to new tenants at occupancy to encourage transit use as resident's primary mode of transportation. The subsidized transit passes will be provided for two (2) years and the details will be determined at a later date through subsequent discussions. |
| Real-Time Transit Information Screens | Real-time transit information screens are recommended in the lobby or via wall mounted screens. This provides residents information about transit schedules and real time service delays, increasing reliability for residents to use transit as their primary mode of travel.<br><br>Residents will also be encouraged to download the Transit app. The Transit app provides users with trip planning and real-time transit information including real time passenger volume counts on buses. The app also allows buses to be tracked along its route and allows for live arrival countdowns that help minimize wait times and notify users if an approaching bus is delayed, and if it is not busy to very busy.<br><br>Overall, this measure is expected to decrease vehicle dependency and increase transit reliability and perception for tenants to use transit as a primary mode of travel. |

| Recommended/Provided TDM Measure | Implementation Summary |
|---|---|
| Secure & Excess Bicycle Parking Spaces | Safe and secure bicycle parking is proposed for the development. Access to safe and secure bicycle parking will increase confidence and reliability for prospective cyclists to cycle as their primary mode of transportation. In addition, nine (9) excess bicycle parking spaces are provided for residents, further encouraging residents to cycle.<br><br>The provision of cycling maps, short term bicycle parking spaces, and secure long-term spaces encourages bicycle use and provides residents and visitors convenient and safe storage for frequent bicycle use. |
| Bicycle Repair Station | A small, compact bicycle repair station with a toolkit and pump are also recommended. These stations can be provided near the resident or visitor bicycle parking spaces in order to promote cycling use. These stations also increase confidence and reliability for prospective cyclists to cycle as their primary mode of transportation as cyclists will be able to perform preventative and emergency maintenance on their bike |
| Reduced Parking Supply | As the proposed resident parking rate is 0.61 space per unit, inherently a parking space is not available for every unit. The proposal therefore allows for a maximum vehicle ownership rate of 0.61 vehicles per unit associated with the residential use.<br><br>This measure reduces the number of residents with parking spaces on-site and consequently is expected to reduce the number of automobile trips to/from the Subject Development. |

| Recommended/Provided TDM Measure | Implementation Summary |
|---|---|
| Unbundled Parking | Parking will be purchased by residents on a first-come first-serve basis in addition to unit costs, as opposed to automatically including a parking space with the unit costs.<br><br>Prospective tenants should be advised in advance of the parking availability and cost of leasing a parking space, if available. Potential tenants will also be warned of the limited on-street parking in the area. As such, the residential parking demand can be controlled. By advising the parking availability to potential tenants prior to the rental/purchase agreements, the ambiguity of the parking demand and parking availability can be managed.<br><br>This strategy allows for prospective tenants to choose whether they wish to incur the added cost of purchasing a parking space, particularly if parking is not desired due to vehicle ownership choices and access to sustainable modes such as the nearby Cooksville GO station and future Hazel McCallion LRT stop. |
| Carshare Spaces | The development is recommended to propose a carshare priority parking zone. The developer should explore the opportunity of providing two (2) carshare spaces with a provider. As the area develops and additional residential demand occurs, carshare spaces should be protected to incentivize use and reduced SOV trips.<br><br>The ultimate location of the carshare spaces will be confirmed as applications advance. |

The Subject Development has a 5 Star rating, the highest rating, per the City's Transportation Demand Management and Pedestrian Circulation Checklist. As such, the recommended TDM measures support the Proposed Development's transit oriented context. **Appendix Q** includes the Transportation Demand Management and Pedestrian Circulation Checklist.

## 12.0 Community Impacts

The report herein has evaluated and addressed the traffic related community impacts as a result of the Subject Development. **Section 5.1** summarizes the transportation operational impact of the Proposed Development as well as recommended improvements.

As no formal public consultation session has been held regarding the Proposed Development, community concerns have not been provided at this time. Should a public consultation session be conducted in the future, the specific community concerns can be addressed in a subsequent submission.

# APPENDIX E:

## Level of Service Definitions

Level of Service Definitions

Two-Way Stop Controlled Intersections

| Level of Service | Control Delay per Vehicle (seconds) | Interpretation |
|---|---|---|
| A | ≤ 10 | EXCELLENT. Large and frequent gaps in traffic on the main roadway. Queuing on the minor street is rare. |
| B | > 10 and ≤ 15 | VERY GOOD. Many gaps exist in traffic on the main roadway. Queuing on the minor street is minimal. |
| C | > 15 and ≤ 25 | GOOD. Fewer gaps exist in traffic on the main roadway. Delay on minor approach becomes more noticeable. |
| D | > 25 and ≤ 35 | FAIR. Infrequent and shorter gaps in traffic on the main roadway. Queue lengths develop on the minor street. |
| E | > 35 and ≤ 50 | POOR. Very infrequent gaps in traffic on the main roadway. Queue lengths become noticeable. |
| F | > 50 | UNSATISFACTORY. Very few gaps in traffic on the main roadway. Excessive delay with significant queue lengths on the minor street. |

Adapted from Highway Capacity Manual 2000, Transportation Research Board

Signalized Intersections

| Level of Service | Control Delay per Vehicle (seconds) | Interpretation |
|---|---|---|
| A | ≤ 10 | EXCELLENT. Extremely favourable progression with most vehicles arriving during the green phase. Most vehicles do not stop and short cycle lengths may contribute to low delay. |
| B | > 10 and ≤ 20 | VERY GOOD. Very good progression and/or short cycle lengths with slightly more vehicles stopping than LOS "A" causing slightly higher levels of average delay. |
| C | > 20 and ≤ 35 | GOOD. Fair progression and longer cycle lengths lead to a greater number of vehicles stopping than LOS "B". |
| D | > 35 and ≤ 55 | FAIR. Congestion becomes noticeable with higher average delays resulting from a combination of long cycle lengths, high volume-to-capacity ratios and unfavourable progression. |
| E | > 55 and ≤ 80 | POOR. Lengthy delays values are indicative of poor progression, long cycle lengths and high volume-to-capacity ratios. Individual cycle failures are common with individual movement failures also common. |
| F | > 80 | UNSATISFACTORY. Indicative of oversaturated conditions with vehicular demand greater than the capacity of the intersection. |

Adapted from Highway Capacity Manual 2000, Transportation Research Board

# APPENDIX F:

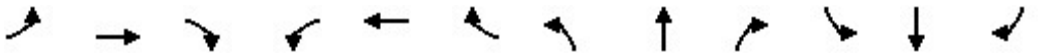
## Detailed Capacity Analysis

| Lane Group | EBL | EBT | WBL | WBT | NBL | NBT | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | | | | |
| Traffic Volume (vph) | 328 | 30 | 7 | 19 | 15 | 1576 | 97 | 1305 | 296 |
| Future Volume (vph) | 328 | 30 | 7 | 19 | 15 | 1576 | 97 | 1305 | 296 |
| Lane Group Flow (vph) | 357 | 206 | 8 | 194 | 16 | 1730 | 105 | 1418 | 322 |
| Turn Type | Perm | NA | Perm | NA | Prot | NA | Prot | NA | Perm |
| Protected Phases | | 8 | | 4 | 1 | 6 | 5 | 2 | |
| Permitted Phases | 8 | | 4 | | | 6 | | 2 | 2 |
| Detector Phase | 8 | 8 | 4 | 4 | 1 | 6 | 5 | 2 | 2 |
| Switch Phase | | | | | | | | | |
| Minimum Initial (s) | 8.0 | 8.0 | 8.0 | 8.0 | 5.0 | 8.0 | 5.0 | 8.0 | 8.0 |
| Minimum Split (s) | 46.0 | 46.0 | 46.0 | 46.0 | 9.5 | 38.0 | 9.5 | 38.0 | 38.0 |
| Total Split (s) | 64.0 | 64.0 | 64.0 | 64.0 | 9.5 | 81.0 | 15.0 | 86.5 | 86.5 |
| Total Split (%) | 40.0% | 40.0% | 40.0% | 40.0% | 5.9% | 50.6% | 9.4% | 54.1% | 54.1% |
| Yellow Time (s) | 4.0 | 4.0 | 4.0 | 4.0 | 3.0 | 4.0 | 3.0 | 4.0 | 4.0 |
| All-Red Time (s) | 4.0 | 4.0 | 4.0 | 4.0 | 1.0 | 3.0 | 1.0 | 3.0 | 3.0 |
| Lost Time Adjust (s) | -1.0 | -1.0 | -1.0 | -1.0 | -1.0 | -1.0 | -1.0 | -1.0 | -1.0 |
| Total Lost Time (s) | 7.0 | 7.0 | 7.0 | 7.0 | 3.0 | 6.0 | 3.0 | 6.0 | 6.0 |
| Lead/Lag | | | | | Lead | Lag | Lead | Lag | Lag |
| Lead-Lag Optimize? | | | | | Yes | Yes | Yes | Yes | Yes |
| Recall Mode | None | None | None | None | None | C-Max | None | C-Max | C-Max |
| v/c Ratio | 1.01 | 0.36 | 0.02 | 0.20 | 0.28 | 1.17 | 0.92 | 0.90 | 0.46 |
| Control Delay | 99.5 | 23.4 | 34.0 | 17.6 | 78.5 | 120.5 | 136.5 | 42.2 | 14.7 |
| Queue Delay | 0.0 | 40.7 | 0.0 | 0.0 | 0.0 | 1.5 | 0.0 | 48.9 | 0.0 |
| Total Delay | 99.5 | 64.1 | 34.0 | 17.6 | 78.5 | 122.0 | 136.5 | 91.1 | 14.7 |
| Queue Length 50th (m) | ~114.9 | 27.2 | 1.7 | 10.6 | 4.6 | ~348.7 | 33.8 | 195.4 | 30.6 |
| Queue Length 95th (m) | #182.1 | 49.6 | 5.7 | 20.2 | m5.9 | m#362.1 | #72.2 | #278.5 | 62.2 |
| Internal Link Dist (m) | | 191.8 | | 112.9 | | 109.3 | | 252.0 | |
| Turn Bay Length (m) | | | 25.0 | | 37.5 | | 48.5 | | 48.5 |
| Base Capacity (vph) | 355 | 565 | 330 | 972 | 57 | 1478 | 114 | 1579 | 705 |
| Starvation Cap Reductn | 0 | 0 | 0 | 0 | 0 | 449 | 0 | 0 | 0 |
| Spillback Cap Reductn | 0 | 364 | 0 | 0 | 0 | 0 | 0 | 812 | 0 |
| Storage Cap Reductn | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Reduced v/c Ratio | 1.01 | 1.02 | 0.02 | 0.20 | 0.28 | 1.68 | 0.92 | 1.85 | 0.46 |

## Intersection Summary

Cycle Length: 160
Actuated Cycle Length: 160
Offset: 0 (0%), Referenced to phase 2:SBT and 6:NBT, Start of Green
Natural Cycle: 135
Control Type: Actuated-Coordinated
~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
# 95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 1: Hurontario Street & Cooksville GO/John Street



| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | | | | | | | |
| Traffic Volume (vph) | 328 | 30 | 159 | 7 | 19 | 159 | 15 | 1576 | 16 | 97 | 1305 | 296 |
| Future Volume (vph) | 328 | 30 | 159 | 7 | 19 | 159 | 15 | 1576 | 16 | 97 | 1305 | 296 |
| Ideal Flow (vphpl) | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 |
| Lane Width | 3.5 | 3.7 | 3.7 | 3.5 | 3.7 | 3.7 | 3.5 | 3.7 | 3.7 | 3.5 | 3.7 | 3.5 |
| Total Lost time (s) | 7.0 | 7.0 | | 7.0 | 7.0 | | 3.0 | 6.0 | | 3.0 | 6.0 | 6.0 |
| Lane Util. Factor | 1.00 | 1.00 | | 1.00 | 0.95 | | 1.00 | 0.95 | | 1.00 | 0.95 | 1.00 |
| Frpb, ped/bikes | 1.00 | 0.97 | | 1.00 | 0.94 | | 1.00 | 1.00 | | 1.00 | 1.00 | 0.85 |
| Flpb, ped/bikes | 0.95 | 1.00 | | 0.98 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | 1.00 |
| Frt | 1.00 | 0.87 | | 1.00 | 0.87 | | 1.00 | 1.00 | | 1.00 | 1.00 | 0.85 |
| Flt Protected | 0.95 | 1.00 | | 0.95 | 1.00 | | 0.95 | 1.00 | | 0.95 | 1.00 | 1.00 |
| Satd. Flow (prot) | 1504 | 1429 | | 1578 | 2552 | | 1409 | 3151 | | 1530 | 2933 | 1187 |
| Flt Permitted | 0.63 | 1.00 | | 0.56 | 1.00 | | 0.95 | 1.00 | | 0.95 | 1.00 | 1.00 |
| Satd. Flow (perm) | 997 | 1429 | | 929 | 2552 | | 1409 | 3151 | | 1530 | 2933 | 1187 |
| Peak-hour factor, PHF | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 |
| Adj. Flow (vph) | 357 | 33 | 173 | 8 | 21 | 173 | 16 | 1713 | 17 | 105 | 1418 | 322 |
| RTOR Reduction (vph) | 0 | 56 | 0 | 0 | 64 | 0 | 0 | 1 | 0 | 0 | 0 | 69 |
| Lane Group Flow (vph) | 357 | 150 | 0 | 8 | 130 | 0 | 16 | 1729 | 0 | 105 | 1418 | 253 |
| Confl. Peds. (#/hr) | 47 | | 20 | 20 | | 47 | 90 | | 46 | 46 | | 90 |
| Confl. Bikes (#/hr) | | | | | | 1 | | | 1 | | | 2 |
| Heavy Vehicles (%) | 2% | 0% | 3% | 0% | 0% | 5% | 14% | 4% | 0% | 5% | 12% | 3% |
| Turn Type | Perm | NA | | Perm | NA | | Prot | NA | | Prot | NA | Perm |
| Protected Phases | | 8 | | | 4 | | 1 | 6 | | 5 | 2 | |
| Permitted Phases | 8 | | | 4 | | | | 6 | | | 2 | 2 |
| Actuated Green, G (s) | 56.0 | 56.0 | | 56.0 | 56.0 | | 2.2 | 74.0 | | 11.0 | 82.8 | 82.8 |
| Effective Green, g (s) | 57.0 | 57.0 | | 57.0 | 57.0 | | 3.2 | 75.0 | | 12.0 | 83.8 | 83.8 |
| Actuated g/C Ratio | 0.36 | 0.36 | | 0.36 | 0.36 | | 0.02 | 0.47 | | 0.08 | 0.52 | 0.52 |
| Clearance Time (s) | 8.0 | 8.0 | | 8.0 | 8.0 | | 4.0 | 7.0 | | 4.0 | 7.0 | 7.0 |
| Vehicle Extension (s) | 3.0 | 3.0 | | 3.0 | 3.0 | | 3.0 | 3.0 | | 3.0 | 3.0 | 3.0 |
| Lane Grp Cap (vph) | 355 | 509 | | 330 | 909 | | 28 | 1477 | | 114 | 1536 | 621 |
| v/s Ratio Prot | | 0.10 | | | 0.05 | | 0.01 | c0.55 | | c0.07 | 0.48 | |
| v/s Ratio Perm | c0.36 | | | 0.01 | | | | | | | | 0.21 |
| v/c Ratio | 1.01 | 0.29 | | 0.02 | 0.14 | | 0.57 | 1.17 | | 0.92 | 0.92 | 0.41 |
| Uniform Delay, d1 | 51.5 | 37.0 | | 33.4 | 34.9 | | 77.7 | 42.5 | | 73.5 | 35.1 | 23.1 |
| Progression Factor | 1.00 | 1.00 | | 1.00 | 1.00 | | 0.98 | 1.07 | | 1.00 | 1.00 | 1.00 |
| Incremental Delay, d2 | 49.2 | 0.3 | | 0.0 | 0.1 | | 10.7 | 80.1 | | 59.8 | 10.7 | 2.0 |
| Delay (s) | 100.7 | 37.4 | | 33.5 | 35.0 | | 86.9 | 125.6 | | 133.4 | 45.9 | 25.1 |
| Level of Service | F | D | | C | D | | F | F | | F | D | C |
| Approach Delay (s) | | 77.5 | | | 34.9 | | | 125.2 | | | 47.2 | |
| Approach LOS | | E | | | C | | | F | | | D | |

| Intersection Summary | | | |
|---|---|---|---|
| HCM 2000 Control Delay | 81.8 | HCM 2000 Level of Service | F |
| HCM 2000 Volume to Capacity ratio | 1.08 | | |
| Actuated Cycle Length (s) | 160.0 | Sum of lost time (s) | 16.0 |
| Intersection Capacity Utilization | 122.3% | ICU Level of Service | H |
| Analysis Period (min) | 15 | | |

c Critical Lane Group

| Lane Group | EBL | EBT | WBL | WBT | NBL | NBT | SBL | SBT |
|---|---|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | | | |
| Traffic Volume (vph) | 343 | 189 | 165 | 182 | 109 | 1157 | 106 | 1481 |
| Future Volume (vph) | 343 | 189 | 165 | 182 | 109 | 1157 | 106 | 1481 |
| Lane Group Flow (vph) | 373 | 466 | 179 | 349 | 118 | 1282 | 115 | 1823 |
| Turn Type | pm+pt | NA | Perm | NA | Prot | NA | Prot | NA |
| Protected Phases | 3 | 8 | | 4 | 1 | 6 | 5 | 2 |
| Permitted Phases | 8 | | 4 | | | 6 | | 2 |
| Detector Phase | 3 | 8 | 4 | 4 | 1 | 6 | 5 | 2 |
| Switch Phase | | | | | | | | |
| Minimum Initial (s) | 5.0 | 8.0 | 8.0 | 8.0 | 7.0 | 8.0 | 5.0 | 8.0 |
| Minimum Split (s) | 9.5 | 56.0 | 56.0 | 56.0 | 11.0 | 51.5 | 9.5 | 51.5 |
| Total Split (s) | 11.0 | 67.0 | 56.0 | 56.0 | 13.0 | 76.4 | 16.6 | 80.0 |
| Total Split (%) | 6.9% | 41.9% | 35.0% | 35.0% | 8.1% | 47.8% | 10.4% | 50.0% |
| Yellow Time (s) | 3.0 | 4.0 | 4.0 | 4.0 | 3.0 | 4.0 | 3.0 | 4.0 |
| All-Red Time (s) | 0.0 | 4.0 | 4.0 | 4.0 | 1.0 | 3.5 | 1.0 | 3.5 |
| Lost Time Adjust (s) | -1.0 | -1.0 | -1.0 | -1.0 | -1.0 | -1.0 | -1.0 | -1.0 |
| Total Lost Time (s) | 2.0 | 7.0 | 7.0 | 7.0 | 3.0 | 6.5 | 3.0 | 6.5 |
| Lead/Lag | Lead | | Lag | Lag | Lead | Lag | Lead | Lag |
| Lead-Lag Optimize? | Yes | | Yes | Yes | Yes | Yes | Yes | Yes |
| Recall Mode | None | None | None | None | None | C-Max | None | C-Max |
| v/c Ratio | 1.19 | 0.45 | 0.91 | 0.41 | 0.82 | 0.89 | 0.82 | 1.30 |
| Control Delay | 154.0 | 29.7 | 100.6 | 30.3 | 106.7 | 49.0 | 85.5 | 186.6 |
| Queue Delay | 3.1 | 0.0 | 0.0 | 0.0 | 0.0 | 49.9 | 0.0 | 1.4 |
| Total Delay | 157.1 | 29.7 | 100.6 | 30.3 | 106.7 | 98.9 | 85.5 | 188.0 |
| Queue Length 50th (m) | ~110.9 | 41.8 | 53.5 | 29.2 | ~42.6 | 206.1 | 37.6 | ~384.1 |
| Queue Length 95th (m) | #187.2 | 56.8 | #94.6 | 43.3 | #90.5 | #255.5 | m#50.0 | #425.0 |
| Internal Link Dist (m) | | 206.4 | | 133.2 | | 400.9 | | 109.3 |
| Turn Bay Length (m) | | | 50.0 | | 53.0 | | 36.0 | |
| Base Capacity (vph) | 313 | 1122 | 222 | 955 | 144 | 1434 | 142 | 1403 |
| Starvation Cap Reductn | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 399 |
| Spillback Cap Reductn | 68 | 0 | 0 | 21 | 0 | 792 | 0 | 0 |
| Storage Cap Reductn | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Reduced v/c Ratio | 1.52 | 0.42 | 0.81 | 0.37 | 0.82 | 2.00 | 0.81 | 1.82 |

**Intersection Summary**

Cycle Length: 160
Actuated Cycle Length: 160
Offset: 99 (62%), Referenced to phase 2:SBT and 6:NBT, Start of Green
Natural Cycle: 150
Control Type: Actuated-Coordinated
~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
# 95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 2: Hurontario Street & Hillcrest Avenue/Kirwin Avenue

| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | | | | | | | |
| Traffic Volume (vph) | 343 | 189 | 240 | 165 | 182 | 139 | 109 | 1157 | 22 | 106 | 1481 | 196 |
| Future Volume (vph) | 343 | 189 | 240 | 165 | 182 | 139 | 109 | 1157 | 22 | 106 | 1481 | 196 |
| Ideal Flow (vphpl) | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 |
| Lane Width | 3.5 | 3.7 | 3.5 | 3.5 | 3.7 | 3.7 | 3.5 | 3.7 | 3.7 | 3.5 | 3.7 | 3.5 |
| Total Lost time (s) | 2.0 | 7.0 | | 7.0 | 7.0 | | 3.0 | 6.5 | | 3.0 | 6.5 | |
| Lane Util. Factor | 1.00 | 0.95 | | 1.00 | 0.95 | | 1.00 | 0.95 | | 1.00 | 0.95 | |
| Frpb, ped/bikes | 1.00 | 0.97 | | 1.00 | 0.99 | | 1.00 | 1.00 | | 1.00 | 0.99 | |
| Flpb, ped/bikes | 1.00 | 1.00 | | 0.98 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | |
| Frt | 1.00 | 0.92 | | 1.00 | 0.94 | | 1.00 | 1.00 | | 1.00 | 0.98 | |
| Flt Protected | 0.95 | 1.00 | | 0.95 | 1.00 | | 0.95 | 1.00 | | 0.95 | 1.00 | |
| Satd. Flow (prot) | 1553 | 2777 | | 1428 | 2834 | | 1460 | 3061 | | 1575 | 3043 | |
| Flt Permitted | 0.44 | 1.00 | | 0.48 | 1.00 | | 0.95 | 1.00 | | 0.95 | 1.00 | |
| Satd. Flow (perm) | 725 | 2777 | | 728 | 2834 | | 1460 | 3061 | | 1575 | 3043 | |
| Peak-hour factor, PHF | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 |
| Adj. Flow (vph) | 373 | 205 | 261 | 179 | 198 | 151 | 118 | 1258 | 24 | 115 | 1610 | 213 |
| RTOR Reduction (vph) | 0 | 86 | 0 | 0 | 92 | 0 | 0 | 1 | 0 | 0 | 6 | 0 |
| Lane Group Flow (vph) | 373 | 380 | 0 | 179 | 257 | 0 | 118 | 1281 | 0 | 115 | 1817 | 0 |
| Confl. Peds. (#/hr) | 18 | | 42 | 42 | | 18 | 96 | | 4 | 4 | | 96 |
| Heavy Vehicles (%) | 3% | 4% | 6% | 10% | 7% | 7% | 10% | 7% | 5% | 2% | 5% | 2% |
| Turn Type | pm+pt | NA | | Perm | NA | | Prot | NA | | Prot | NA | |
| Protected Phases | 3 | 8 | | | 4 | | 1 | 6 | | 5 | 2 | |
| Permitted Phases | 8 | | | 4 | | | | 6 | | | 2 | |
| Actuated Green, G (s) | 53.2 | 53.2 | | 42.2 | 42.2 | | 14.8 | 74.0 | | 13.3 | 72.5 | |
| Effective Green, g (s) | 54.2 | 54.2 | | 43.2 | 43.2 | | 15.8 | 75.0 | | 14.3 | 73.5 | |
| Actuated g/C Ratio | 0.34 | 0.34 | | 0.27 | 0.27 | | 0.10 | 0.47 | | 0.09 | 0.46 | |
| Clearance Time (s) | 3.0 | 8.0 | | 8.0 | 8.0 | | 4.0 | 7.5 | | 4.0 | 7.5 | |
| Vehicle Extension (s) | 3.0 | 3.0 | | 3.0 | 3.0 | | 3.0 | 3.0 | | 3.0 | 3.0 | |
| Lane Grp Cap (vph) | 292 | 940 | | 196 | 765 | | 144 | 1434 | | 140 | 1397 | |
| v/s Ratio Prot | c0.07 | 0.14 | | | 0.09 | | c0.08 | 0.42 | | 0.07 | c0.60 | |
| v/s Ratio Perm | 0.36 | | | c0.25 | | | | | | | | |
| v/c Ratio | 1.28 | 0.40 | | 0.91 | 0.34 | | 0.82 | 0.89 | | 0.82 | 1.30 | |
| Uniform Delay, d1 | 52.2 | 40.5 | | 56.6 | 46.9 | | 70.7 | 38.9 | | 71.6 | 43.2 | |
| Progression Factor | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | | 0.77 | 1.47 | |
| Incremental Delay, d2 | 148.7 | 0.3 | | 40.6 | 0.3 | | 29.1 | 8.9 | | 23.3 | 139.0 | |
| Delay (s) | 200.9 | 40.8 | | 97.2 | 47.1 | | 99.8 | 47.7 | | 78.4 | 202.7 | |
| Level of Service | F | D | | F | D | | F | D | | E | F | |
| Approach Delay (s) | | 112.0 | | | 64.1 | | | 52.1 | | | 195.3 | |
| Approach LOS | | F | | | E | | | D | | | F | |

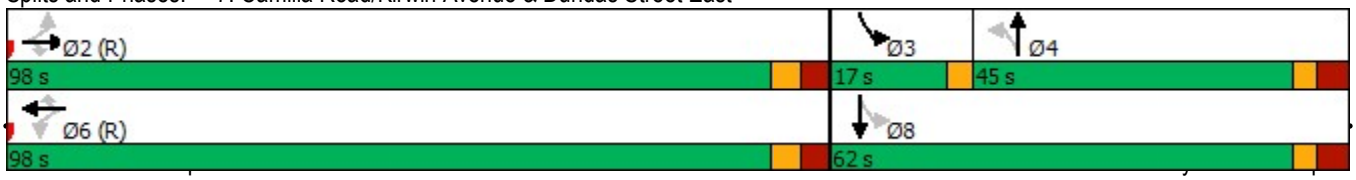
| Intersection Summary | | | |
|---|---|---|---|
| HCM 2000 Control Delay | 123.1 | HCM 2000 Level of Service | F |
| HCM 2000 Volume to Capacity ratio | 1.12 | | |
| Actuated Cycle Length (s) | 160.0 | Sum of lost time (s) | 18.5 |
| Intersection Capacity Utilization | 124.6% | ICU Level of Service | H |
| Analysis Period (min) | 15 | | |
| c Critical Lane Group | | | |

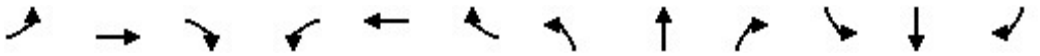
| Lane Group | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | SBL | SBT |
|---|---|---|---|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | | | | | |
| Traffic Volume (vph) | 19 | 1088 | 59 | 56 | 637 | 137 | 60 | 91 | 255 | 97 |
| Future Volume (vph) | 19 | 1088 | 59 | 56 | 637 | 137 | 60 | 91 | 255 | 97 |
| Lane Group Flow (vph) | 21 | 1183 | 64 | 61 | 692 | 149 | 65 | 179 | 277 | 135 |
| Turn Type | Perm | NA | Perm | Perm | NA | Perm | Perm | NA | pm+pt | NA |
| Protected Phases | | 2 | | | 6 | | | 4 | 3 | 8 |
| Permitted Phases | 2 | | 2 | 6 | | 6 | 4 | | 8 | |
| Detector Phase | 2 | 2 | 2 | 6 | 6 | 6 | 4 | 4 | 3 | 8 |
| Switch Phase | | | | | | | | | | |
| Minimum Initial (s) | 8.0 | 8.0 | 8.0 | 8.0 | 8.0 | 8.0 | 8.0 | 8.0 | 5.0 | 8.0 |
| Minimum Split (s) | 44.0 | 44.0 | 44.0 | 44.0 | 44.0 | 44.0 | 43.0 | 43.0 | 9.5 | 43.0 |
| Total Split (s) | 98.0 | 98.0 | 98.0 | 98.0 | 98.0 | 98.0 | 45.0 | 45.0 | 17.0 | 62.0 |
| Total Split (%) | 61.3% | 61.3% | 61.3% | 61.3% | 61.3% | 61.3% | 28.1% | 28.1% | 10.6% | 38.8% |
| Yellow Time (s) | 3.5 | 3.5 | 3.5 | 3.5 | 3.5 | 3.5 | 3.0 | 3.0 | 3.0 | 3.0 |
| All-Red Time (s) | 3.5 | 3.5 | 3.5 | 3.5 | 3.5 | 3.5 | 4.0 | 4.0 | 0.0 | 4.0 |
| Lost Time Adjust (s) | -1.0 | -1.0 | -1.0 | -1.0 | -1.0 | -1.0 | -1.0 | -1.0 | -1.0 | -1.0 |
| Total Lost Time (s) | 6.0 | 6.0 | 6.0 | 6.0 | 6.0 | 6.0 | 6.0 | 6.0 | 2.0 | 6.0 |
| Lead/Lag | | | | | | | Lag | Lag | Lead | |
| Lead-Lag Optimize? | | | | | | | Yes | Yes | Yes | |
| Recall Mode | C-Max | C-Max | C-Max | C-Max | C-Max | C-Max | None | None | None | None |
| v/c Ratio | 0.06 | 0.55 | 0.07 | 0.28 | 0.33 | 0.16 | 0.43 | 0.75 | 1.11 | 0.33 |
| Control Delay | 10.8 | 15.3 | 4.1 | 15.9 | 11.8 | 1.9 | 69.7 | 75.2 | 138.8 | 46.5 |
| Queue Delay | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Total Delay | 10.8 | 15.3 | 4.1 | 15.9 | 11.8 | 1.9 | 69.7 | 75.2 | 138.8 | 46.5 |
| Queue Length 50th (m) | 2.1 | 95.8 | 1.6 | 7.2 | 45.1 | 0.0 | 19.2 | 48.3 | ~89.3 | 32.8 |
| Queue Length 95th (m) | 6.4 | 133.5 | 7.8 | 19.0 | 65.5 | 8.6 | 33.4 | 71.4 | #139.1 | 49.3 |
| Internal Link Dist (m) | | 302.1 | | | 262.5 | | | 162.3 | | 279.0 |
| Turn Bay Length (m) | 15.0 | | 30.0 | 30.0 | | 65.0 | 36.0 | | 40.0 | |
| Base Capacity (vph) | 369 | 2140 | 914 | 219 | 2099 | 936 | 263 | 396 | 249 | 574 |
| Starvation Cap Reductn | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Spillback Cap Reductn | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Storage Cap Reductn | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Reduced v/c Ratio | 0.06 | 0.55 | 0.07 | 0.28 | 0.33 | 0.16 | 0.25 | 0.45 | 1.11 | 0.24 |

Intersection Summary

Cycle Length: 160
Actuated Cycle Length: 160
Offset: 38 (24%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green
Natural Cycle: 100
Control Type: Actuated-Coordinated
~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
# 95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 7: Camilla Road/Kirwin Avenue & Dundas Street East





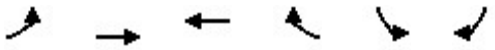
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | | | | | | | |
| Traffic Volume (vph) | 19 | 1088 | 59 | 56 | 637 | 137 | 60 | 91 | 74 | 255 | 97 | 28 |
| Future Volume (vph) | 19 | 1088 | 59 | 56 | 637 | 137 | 60 | 91 | 74 | 255 | 97 | 28 |
| Ideal Flow (vphpl) | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 |
| Lane Width | 3.5 | 3.7 | 3.5 | 3.5 | 3.7 | 3.5 | 3.5 | 3.7 | 3.7 | 3.5 | 3.7 | 3.7 |
| Total Lost time (s) | 6.0 | 6.0 | 6.0 | 6.0 | 6.0 | 6.0 | 6.0 | 6.0 | | 2.0 | 6.0 | |
| Lane Util. Factor | 1.00 | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 | 1.00 | 1.00 | | 1.00 | 1.00 | |
| Frpb, ped/bikes | 1.00 | 1.00 | 0.97 | 1.00 | 1.00 | 0.97 | 1.00 | 0.99 | | 1.00 | 0.99 | |
| Flpb, ped/bikes | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 0.98 | 1.00 | | 1.00 | 1.00 | |
| Frt | 1.00 | 1.00 | 0.85 | 1.00 | 1.00 | 0.85 | 1.00 | 0.93 | | 1.00 | 0.97 | |
| Flt Protected | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 | | 0.95 | 1.00 | |
| Satd. Flow (prot) | 1428 | 3159 | 1327 | 1604 | 3099 | 1312 | 1534 | 1551 | | 1558 | 1622 | |
| Flt Permitted | 0.36 | 1.00 | 1.00 | 0.19 | 1.00 | 1.00 | 0.67 | 1.00 | | 0.35 | 1.00 | |
| Satd. Flow (perm) | 546 | 3159 | 1327 | 324 | 3099 | 1312 | 1083 | 1551 | | 577 | 1622 | |
| Peak-hour factor, PHF | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 |
| Adj. Flow (vph) | 21 | 1183 | 64 | 61 | 692 | 149 | 65 | 99 | 80 | 277 | 105 | 30 |
| RTOR Reduction (vph) | 0 | 0 | 15 | 0 | 0 | 48 | 0 | 21 | 0 | 0 | 8 | 0 |
| Lane Group Flow (vph) | 21 | 1183 | 49 | 61 | 692 | 101 | 65 | 158 | 0 | 277 | 127 | 0 |
| Confl. Peds. (#/hr) | 6 | | 5 | 5 | | 6 | 15 | | 3 | 3 | | 15 |
| Heavy Vehicles (%) | 12% | 4% | 5% | 0% | 6% | 6% | 3% | 1% | 6% | 3% | 3% | 0% |
| Turn Type | Perm | NA | Perm | Perm | NA | Perm | Perm | NA | | pm+pt | NA | |
| Protected Phases | | 2 | | | 6 | | | 4 | | 3 | 8 | |
| Permitted Phases | 2 | | 2 | 6 | | 6 | 4 | | | 8 | | |
| Actuated Green, G (s) | 107.4 | 107.4 | 107.4 | 107.4 | 107.4 | 107.4 | 21.6 | 21.6 | | 38.6 | 38.6 | |
| Effective Green, g (s) | 108.4 | 108.4 | 108.4 | 108.4 | 108.4 | 108.4 | 22.6 | 22.6 | | 39.6 | 39.6 | |
| Actuated g/C Ratio | 0.68 | 0.68 | 0.68 | 0.68 | 0.68 | 0.68 | 0.14 | 0.14 | | 0.25 | 0.25 | |
| Clearance Time (s) | 7.0 | 7.0 | 7.0 | 7.0 | 7.0 | 7.0 | 7.0 | 7.0 | | 3.0 | 7.0 | |
| Vehicle Extension (s) | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | | 3.0 | 3.0 | |
| Lane Grp Cap (vph) | 369 | 2140 | 899 | 219 | 2099 | 888 | 152 | 219 | | 234 | 401 | |
| v/s Ratio Prot | | c0.37 | | | 0.22 | | | c0.10 | | c0.11 | 0.08 | |
| v/s Ratio Perm | 0.04 | | 0.04 | 0.19 | | 0.08 | 0.06 | | | 0.18 | | |
| v/c Ratio | 0.06 | 0.55 | 0.05 | 0.28 | 0.33 | 0.11 | 0.43 | 0.72 | | 1.18 | 0.32 | |
| Uniform Delay, d1 | 8.7 | 13.3 | 8.6 | 10.3 | 10.7 | 9.0 | 62.8 | 65.7 | | 57.4 | 49.2 | |
| Progression Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | | 1.00 | 1.00 | |
| Incremental Delay, d2 | 0.3 | 1.0 | 0.1 | 3.1 | 0.4 | 0.3 | 1.9 | 11.2 | | 117.6 | 0.5 | |
| Delay (s) | 8.9 | 14.3 | 8.8 | 13.4 | 11.1 | 9.3 | 64.7 | 76.9 | | 175.0 | 49.6 | |
| Level of Service | A | B | A | B | B | A | E | E | | F | D | |
| Approach Delay (s) | | 14.0 | | | 11.0 | | | 73.7 | | | 133.9 | |
| Approach LOS | | B | | | B | | | E | | | F | |

| Intersection Summary | | | |
|---|---|---|---|
| HCM 2000 Control Delay | 35.7 | HCM 2000 Level of Service | D |
| HCM 2000 Volume to Capacity ratio | 0.64 | | |
| Actuated Cycle Length (s) | 160.0 | Sum of lost time (s) | 14.0 |
| Intersection Capacity Utilization | 86.5% | ICU Level of Service | E |
| Analysis Period (min) | 15 | | |
| c Critical Lane Group | | | |

| Lane Group | EBL | EBT | WBT | SBL | SBR |
|---|---|---|---|---|---|
| Lane Configurations | | | | | |
| Traffic Volume (vph) | 257 | 559 | 314 | 17 | 217 |
| Future Volume (vph) | 257 | 559 | 314 | 17 | 217 |
| Lane Group Flow (vph) | 0 | 887 | 361 | 18 | 236 |
| Turn Type | pm+pt | NA | NA | Perm | Perm |
| Protected Phases | 1 | 2 | 2 | | |
| Permitted Phases | 2 | | | 4 | 4 |
| Detector Phase | 1 | 2 | 2 | 4 | 4 |
| Switch Phase | | | | | |
| Minimum Initial (s) | 7.0 | 10.0 | 10.0 | 10.0 | 10.0 |
| Minimum Split (s) | 11.5 | 32.0 | 32.0 | 34.5 | 34.5 |
| Total Split (s) | 28.0 | 54.0 | 54.0 | 69.5 | 69.5 |
| Total Split (%) | 18.5% | 35.6% | 35.6% | 45.9% | 45.9% |
| Yellow Time (s) | 3.0 | 3.5 | 3.5 | 3.5 | 3.5 |
| All-Red Time (s) | 0.0 | 3.5 | 3.5 | 2.0 | 2.0 |
| Lost Time Adjust (s) | | -1.0 | -1.0 | -1.0 | -1.0 |
| Total Lost Time (s) | | 6.0 | 6.0 | 4.5 | 4.5 |
| Lead/Lag | Lead | Lag | Lag | | |
| Lead-Lag Optimize? | Yes | Yes | Yes | | |
| Recall Mode | None | Max | Max | None | None |
| v/c Ratio | | 0.35 | 0.16 | 0.09 | 0.54 |
| Control Delay | | 4.9 | 3.9 | 26.3 | 9.3 |
| Queue Delay | | 0.0 | 0.0 | 0.0 | 0.0 |
| Total Delay | | 4.9 | 3.9 | 26.3 | 9.3 |
| Queue Length 50th (m) | | 14.1 | 6.9 | 2.0 | 0.0 |
| Queue Length 95th (m) | | 20.0 | 11.1 | 7.1 | 17.0 |
| Internal Link Dist (m) | | 132.4 | 206.4 | 85.2 | |
| Turn Bay Length (m) | | | | | |
| Base Capacity (vph) | | 2520 | 2278 | 1200 | 1451 |
| Starvation Cap Reductn | | 0 | 0 | 0 | 0 |
| Spillback Cap Reductn | | 0 | 0 | 0 | 0 |
| Storage Cap Reductn | | 0 | 0 | 0 | 0 |
| Reduced v/c Ratio | | 0.35 | 0.16 | 0.01 | 0.16 |

| Intersection Summary |
|---|
| Cycle Length: 151.5 |
| Actuated Cycle Length: 69.9 |
| Natural Cycle: 80 |
| Control Type: Semi Act-Uncoord |

Splits and Phases: 9: Hillcrest Avenue & Cooksville GO



| Movement | EBL | EBT | WBT | WBR | SBL | SBR |
|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | |
| Traffic Volume (vph) | 257 | 559 | 314 | 18 | 17 | 217 |
| Future Volume (vph) | 257 | 559 | 314 | 18 | 17 | 217 |
| Ideal Flow (vphpl) | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 |
| Total Lost time (s) | | 6.0 | 6.0 | | 4.5 | 4.5 |
| Lane Util. Factor | | 0.91 | 0.95 | | 1.00 | 1.00 |
| Frpb, ped/bikes | | 1.00 | 1.00 | | 1.00 | 0.98 |
| Flpb, ped/bikes | | 1.00 | 1.00 | | 0.98 | 1.00 |
| Frt | | 1.00 | 0.99 | | 1.00 | 0.85 |
| Flt Protected | | 0.98 | 1.00 | | 0.95 | 1.00 |
| Satd. Flow (prot) | | 4862 | 3301 | | 1264 | 1500 |
| Flt Permitted | | 0.74 | 1.00 | | 0.95 | 1.00 |
| Satd. Flow (perm) | | 3666 | 3301 | | 1264 | 1500 |
| Peak-hour factor, PHF | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 |
| Adj. Flow (vph) | 279 | 608 | 341 | 20 | 18 | 236 |
| RTOR Reduction (vph) | 0 | 0 | 1 | 0 | 0 | 199 |
| Lane Group Flow (vph) | 0 | 887 | 360 | 0 | 18 | 37 |
| Confl. Peds. (#/hr) | 30 | | | 30 | 23 | 7 |
| Confl. Bikes (#/hr) | | | | 1 | | |
| Heavy Vehicles (%) | 5% | 6% | 10% | 0% | 42% | 7% |
| Turn Type | pm+pt | NA | NA | | Perm | Perm |
| Protected Phases | 1 | 2 | 2 | | | |
| Permitted Phases | 2 | | | | 4 | 4 |
| Actuated Green, G (s) | | 47.3 | 47.3 | | 10.1 | 10.1 |
| Effective Green, g (s) | | 48.3 | 48.3 | | 11.1 | 11.1 |
| Actuated g/C Ratio | | 0.69 | 0.69 | | 0.16 | 0.16 |
| Clearance Time (s) | | 7.0 | 7.0 | | 5.5 | 5.5 |
| Vehicle Extension (s) | | 3.0 | 3.0 | | 3.0 | 3.0 |
| Lane Grp Cap (vph) | | 2533 | 2280 | | 200 | 238 |
| v/s Ratio Prot | | | 0.11 | | | |
| v/s Ratio Perm | | c0.24 | | | 0.01 | c0.02 |
| v/c Ratio | | 0.35 | 0.16 | | 0.09 | 0.16 |
| Uniform Delay, d1 | | 4.4 | 3.7 | | 25.1 | 25.4 |
| Progression Factor | | 1.00 | 1.00 | | 1.00 | 1.00 |
| Incremental Delay, d2 | | 0.1 | 0.1 | | 0.2 | 0.3 |
| Delay (s) | | 4.5 | 3.9 | | 25.3 | 25.7 |
| Level of Service | | A | A | | C | C |
| Approach Delay (s) | | 4.5 | 3.9 | | 25.6 | |
| Approach LOS | | A | A | | C | |

| Intersection Summary | | | |
|---|---|---|---|
| HCM 2000 Control Delay | 7.9 | HCM 2000 Level of Service | A |
| HCM 2000 Volume to Capacity ratio | 0.34 | | |
| Actuated Cycle Length (s) | 69.9 | Sum of lost time (s) | 14.5 |
| Intersection Capacity Utilization | 62.2% | ICU Level of Service | B |
| Analysis Period (min) | 15 | | |
| c Critical Lane Group | | | |

| Movement | EBT | EBR | WBL | WBT | NBL | NBR |
|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | |
| Traffic Volume (veh/h) | 91 | 53 | 3 | 132 | 46 | 3 |
| Future Volume (Veh/h) | 91 | 53 | 3 | 132 | 46 | 3 |
| Sign Control | Free | | | Free | Stop | |
| Grade | 0% | | | 0% | 0% | |
| Peak Hour Factor | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 |
| Hourly flow rate (vph) | 99 | 58 | 3 | 143 | 50 | 3 |
| Pedestrians | 4 | | | 2 | 13 | |
| Lane Width (m) | 3.7 | | | 3.7 | 3.7 | |
| Walking Speed (m/s) | 1.1 | | | 1.1 | 1.1 | |
| Percent Blockage | 0 | | | 0 | 1 | |
| Right turn flare (veh) | | | | | | |
| Median type | None | | | None | | |
| Median storage veh) | | | | | | |
| Upstream signal (m) | 137 | | | | | |
| pX, platoon unblocked | | | | | | |
| vC, conflicting volume | | | 170 | | 294 | 143 |
| vC1, stage 1 conf vol | | | | | | |
| vC2, stage 2 conf vol | | | | | | |
| vCu, unblocked vol | | | 170 | | 294 | 143 |
| tC, single (s) | | | 4.4 | | 6.5 | 6.5 |
| tC, 2 stage (s) | | | | | | |
| tF (s) | | | 2.5 | | 3.6 | 3.6 |
| p0 queue free % | | | 100 | | 92 | 100 |
| cM capacity (veh/h) | | | 1225 | | 662 | 817 |

| Direction, Lane # | EB 1 | WB 1 | NB 1 |
|---|---|---|---|
| Volume Total | 157 | 146 | 53 |
| Volume Left | 0 | 3 | 50 |
| Volume Right | 58 | 0 | 3 |
| cSH | 1700 | 1225 | 669 |
| Volume to Capacity | 0.09 | 0.00 | 0.08 |
| Queue Length 95th (m) | 0.0 | 0.1 | 2.0 |
| Control Delay (s) | 0.0 | 0.2 | 10.8 |
| Lane LOS | | A | B |
| Approach Delay (s) | 0.0 | 0.2 | 10.8 |
| Approach LOS | | | B |

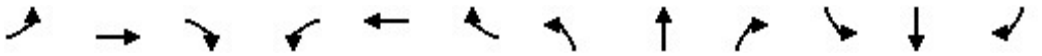
| Intersection Summary | | | |
|---|---|---|---|
| Average Delay | 1.7 | | |
| Intersection Capacity Utilization | 21.4% | ICU Level of Service | A |
| Analysis Period (min) | 15 | | |

| Intersection | |
|---|---|
| Intersection Delay, s/veh | 9.4 |
| Intersection LOS | A |

| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | | | | | | | |
| Traffic Vol, veh/h | 13 | 194 | 18 | 7 | 150 | 10 | 14 | 21 | 10 | 21 | 30 | 15 |
| Future Vol, veh/h | 13 | 194 | 18 | 7 | 150 | 10 | 14 | 21 | 10 | 21 | 30 | 15 |
| Peak Hour Factor | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 |
| Heavy Vehicles, % | 39 | 1 | 6 | 0 | 6 | 10 | 0 | 7 | 10 | 0 | 4 | 20 |
| Mvmt Flow | 14 | 211 | 20 | 8 | 163 | 11 | 15 | 23 | 11 | 23 | 33 | 16 |
| Number of Lanes | 1 | 1 | 0 | 1 | 1 | 0 | 0 | 1 | 0 | 0 | 1 | 0 |

| Approach | EB | WB | NB | SB |
|---|---|---|---|---|
| Opposing Approach | WB | EB | SB | NB |
| Opposing Lanes | 2 | 2 | 1 | 1 |
| Conflicting Approach Left | SB | NB | EB | WB |
| Conflicting Lanes Left | 1 | 1 | 2 | 2 |
| Conflicting Approach Right | NB | SB | WB | EB |
| Conflicting Lanes Right | 1 | 1 | 2 | 2 |
| HCM Control Delay | 9.8 | 9.4 | 8.4 | 8.5 |
| HCM LOS | A | A | A | A |

| Lane | NBLn1 | EBLn1 | EBLn2 | WBLn1 | WBLn2 | SBLn1 |
|---|---|---|---|---|---|---|
| Vol Left, % | 31% | 100% | 0% | 100% | 0% | 32% |
| Vol Thru, % | 47% | 0% | 92% | 0% | 94% | 45% |
| Vol Right, % | 22% | 0% | 8% | 0% | 6% | 23% |
| Sign Control | Stop | Stop | Stop | Stop | Stop | Stop |
| Traffic Vol by Lane | 45 | 13 | 212 | 7 | 160 | 66 |
| LT Vol | 14 | 13 | 0 | 7 | 0 | 21 |
| Through Vol | 21 | 0 | 194 | 0 | 150 | 30 |
| RT Vol | 10 | 0 | 18 | 0 | 10 | 15 |
| Lane Flow Rate | 49 | 14 | 230 | 8 | 174 | 72 |
| Geometry Grp | 2 | 5 | 5 | 5 | 5 | 2 |
| Degree of Util (X) | 0.068 | 0.024 | 0.315 | 0.012 | 0.245 | 0.098 |
| Departure Headway (Hd) | 4.969 | 6.128 | 4.917 | 5.515 | 5.071 | 4.933 |
| Convergence, Y/N | Yes | Yes | Yes | Yes | Yes | Yes |
| Cap | 719 | 584 | 730 | 649 | 708 | 725 |
| Service Time | 3.012 | 3.862 | 2.65 | 3.251 | 2.807 | 2.975 |
| HCM Lane V/C Ratio | 0.068 | 0.024 | 0.315 | 0.012 | 0.246 | 0.099 |
| HCM Control Delay | 8.4 | 9 | 9.9 | 8.3 | 9.5 | 8.5 |
| HCM Lane LOS | A | A | A | A | A | A |
| HCM 95th-tile Q | 0.2 | 0.1 | 1.4 | 0 | 1 | 0.3 |



| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | | | | | | | |
| Traffic Volume (veh/h) | 0 | 15 | 78 | 9 | 15 | 0 | 119 | 0 | 6 | 0 | 0 | 0 |
| Future Volume (Veh/h) | 0 | 15 | 78 | 9 | 15 | 0 | 119 | 0 | 6 | 0 | 0 | 0 |
| Sign Control | | Free | | | Free | | | Stop | | | Stop | |
| Grade | | 0% | | | 0% | | | 0% | | | 0% | |
| Peak Hour Factor | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 |
| Hourly flow rate (vph) | 0 | 16 | 85 | 10 | 16 | 0 | 129 | 0 | 7 | 0 | 0 | 0 |
| Pedestrians | | 2 | | | 1 | | | 11 | | | | |
| Lane Width (m) | | 3.7 | | | 3.7 | | | 3.7 | | | | |
| Walking Speed (m/s) | | 1.1 | | | 1.1 | | | 1.1 | | | | |
| Percent Blockage | | 0 | | | 0 | | | 1 | | | | |
| Right turn flare (veh) | | | | | | | | | | | | |
| Median type | | None | | | None | | | | | | | |
| Median storage veh) | | | | | | | | | | | | |
| Upstream signal (m) | | 354 | | | | | | | | | | |
| pX, platoon unblocked | | | | | | | | | | | | |
| vC, conflicting volume | 16 | | | 112 | | | 108 | 106 | 70 | 102 | 148 | 18 |
| vC1, stage 1 conf vol | | | | | | | | | | | | |
| vC2, stage 2 conf vol | | | | | | | | | | | | |
| vCu, unblocked vol | 16 | | | 112 | | | 108 | 106 | 70 | 102 | 148 | 18 |
| tC, single (s) | 4.1 | | | 4.1 | | | 7.1 | 6.5 | 6.2 | 7.1 | 6.5 | 6.2 |
| tC, 2 stage (s) | | | | | | | | | | | | |
| tF (s) | 2.2 | | | 2.2 | | | 3.5 | 4.0 | 3.3 | 3.5 | 4.0 | 3.3 |
| p0 queue free % | 100 | | | 99 | | | 85 | 100 | 99 | 100 | 100 | 100 |
| cM capacity (veh/h) | 1602 | | | 1475 | | | 852 | 771 | 987 | 860 | 731 | 1059 |

| Direction, Lane # | EB 1 | WB 1 | NB 1 |
|---|---|---|---|
| Volume Total | 101 | 26 | 136 |
| Volume Left | 0 | 10 | 129 |
| Volume Right | 85 | 0 | 7 |
| cSH | 1700 | 1475 | 858 |
| Volume to Capacity | 0.06 | 0.01 | 0.16 |
| Queue Length 95th (m) | 0.0 | 0.2 | 4.3 |
| Control Delay (s) | 0.0 | 2.9 | 10.0 |
| Lane LOS | | A | A |
| Approach Delay (s) | 0.0 | 2.9 | 10.0 |
| Approach LOS | | | A |

| Intersection Summary | | | |
|---|---|---|---|
| Average Delay | 5.4 | | |
| Intersection Capacity Utilization | 23.6% | ICU Level of Service | A |
| Analysis Period (min) | 15 | | |

| Intersection | |
|---|---|
| Intersection Delay, s/veh | 9.4 |
| Intersection LOS | A |

| Movement | EBL | EBT | WBT | WBR | SBL | SBR |
|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | |
| Traffic Vol, veh/h | 17 | 225 | 131 | 117 | 84 | 16 |
| Future Vol, veh/h | 17 | 225 | 131 | 117 | 84 | 16 |
| Peak Hour Factor | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 |
| Heavy Vehicles, % | 0 | 3 | 9 | 2 | 1 | 0 |
| Mvmt Flow | 18 | 245 | 142 | 127 | 91 | 17 |
| Number of Lanes | 1 | 1 | 1 | 1 | 1 | 0 |

| Approach | EB | WB | SB |
|---|---|---|---|
| Opposing Approach | WB | EB | |
| Opposing Lanes | 2 | 2 | 0 |
| Conflicting Approach Left | SB | | WB |
| Conflicting Lanes Left | 1 | 0 | 2 |
| Conflicting Approach Right | | SB | EB |
| Conflicting Lanes Right | 0 | 1 | 2 |
| HCM Control Delay | 10.4 | 8.6 | 9.2 |
| HCM LOS | B | A | A |

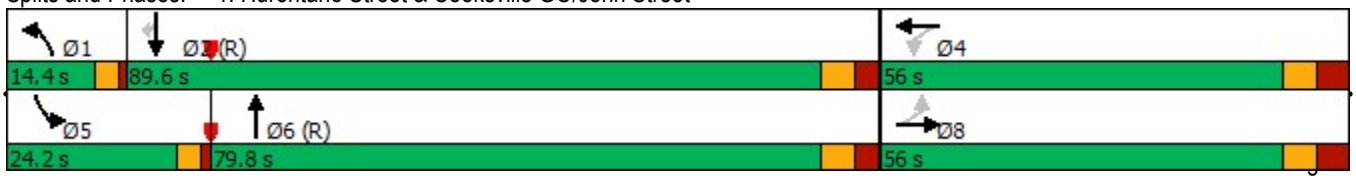
| Lane | EBLn1 | EBLn2 | WBLn1 | WBLn2 | SBLn1 |
|---|---|---|---|---|---|
| Vol Left, % | 100% | 0% | 0% | 0% | 84% |
| Vol Thru, % | 0% | 100% | 100% | 0% | 0% |
| Vol Right, % | 0% | 0% | 0% | 100% | 16% |
| Sign Control | Stop | Stop | Stop | Stop | Stop |
| Traffic Vol by Lane | 17 | 225 | 131 | 117 | 100 |
| LT Vol | 17 | 0 | 0 | 0 | 84 |
| Through Vol | 0 | 225 | 131 | 0 | 0 |
| RT Vol | 0 | 0 | 0 | 117 | 16 |
| Lane Flow Rate | 18 | 245 | 142 | 127 | 109 |
| Geometry Grp | 5 | 5 | 5 | 5 | 2 |
| Degree of Util (X) | 0.028 | 0.345 | 0.205 | 0.154 | 0.157 |
| Departure Headway (Hd) | 5.524 | 5.073 | 5.177 | 4.353 | 5.192 |
| Convergence, Y/N | Yes | Yes | Yes | Yes | Yes |
| Cap | 648 | 709 | 693 | 823 | 689 |
| Service Time | 3.259 | 2.808 | 2.911 | 2.087 | 3.234 |
| HCM Lane V/C Ratio | 0.028 | 0.346 | 0.205 | 0.154 | 0.158 |
| HCM Control Delay | 8.4 | 10.5 | 9.2 | 7.9 | 9.2 |
| HCM Lane LOS | A | B | A | A | A |
| HCM 95th-tile Q | 0.1 | 1.5 | 0.8 | 0.5 | 0.6 |

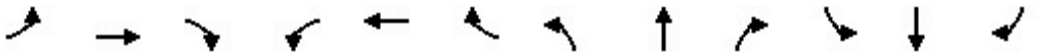
| Lane Group | EBL | EBT | WBL | WBT | NBL | NBT | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | | | | |
| Traffic Volume (vph) | 288 | 37 | 22 | 31 | 40 | 1427 | 125 | 242 | 235 |
| Future Volume (vph) | 288 | 37 | 22 | 31 | 40 | 1427 | 125 | 242 | 235 |
| Lane Group Flow (vph) | 313 | 122 | 24 | 216 | 43 | 1577 | 136 | 263 | 255 |
| Turn Type | Perm | NA | Perm | NA | Prot | NA | Prot | NA | Perm |
| Protected Phases | | 8 | | 4 | 1 | 6 | 5 | 2 | |
| Permitted Phases | 8 | | 4 | | | 6 | | 2 | 2 |
| Detector Phase | 8 | 8 | 4 | 4 | 1 | 6 | 5 | 2 | 2 |
| Switch Phase | | | | | | | | | |
| Minimum Initial (s) | 8.0 | 8.0 | 8.0 | 8.0 | 5.0 | 8.0 | 5.0 | 8.0 | 8.0 |
| Minimum Split (s) | 46.0 | 46.0 | 46.0 | 46.0 | 9.5 | 38.0 | 9.5 | 38.0 | 38.0 |
| Total Split (s) | 56.0 | 56.0 | 56.0 | 56.0 | 14.4 | 79.8 | 24.2 | 89.6 | 89.6 |
| Total Split (%) | 35.0% | 35.0% | 35.0% | 35.0% | 9.0% | 49.9% | 15.1% | 56.0% | 56.0% |
| Yellow Time (s) | 4.0 | 4.0 | 4.0 | 4.0 | 3.0 | 4.0 | 3.0 | 4.0 | 4.0 |
| All-Red Time (s) | 4.0 | 4.0 | 4.0 | 4.0 | 1.0 | 3.0 | 1.0 | 3.0 | 3.0 |
| Lost Time Adjust (s) | -1.0 | -1.0 | -1.0 | -1.0 | -1.0 | -1.0 | -1.0 | -1.0 | -1.0 |
| Total Lost Time (s) | 7.0 | 7.0 | 7.0 | 7.0 | 3.0 | 6.0 | 3.0 | 6.0 | 6.0 |
| Lead/Lag | | | | | Lead | Lag | Lead | Lag | Lag |
| Lead-Lag Optimize? | | | | | Yes | Yes | Yes | Yes | Yes |
| Recall Mode | None | None | None | None | None | C-Max | None | C-Max | C-Max |
| v/c Ratio | 1.01 | 0.25 | 0.08 | 0.22 | 0.43 | 1.02 | 0.76 | 0.16 | 0.33 |
| Control Delay | 106.7 | 20.8 | 40.5 | 8.9 | 86.0 | 67.1 | 93.8 | 19.2 | 3.3 |
| Queue Delay | 0.0 | 0.1 | 0.0 | 0.0 | 0.0 | 31.2 | 0.0 | 0.0 | 0.0 |
| Total Delay | 106.7 | 20.9 | 40.5 | 8.9 | 86.0 | 98.3 | 93.8 | 19.2 | 3.3 |
| Queue Length 50th (m) | ~100.8 | 12.9 | 5.5 | 4.0 | 13.1 | ~280.2 | 42.3 | 22.2 | 0.0 |
| Queue Length 95th (m) | #164.8 | 29.8 | 13.1 | 14.1 | m26.8 | #330.6 | 65.5 | 31.0 | 14.0 |
| Internal Link Dist (m) | | 191.8 | | 112.9 | | 109.3 | | 252.0 | |
| Turn Bay Length (m) | | | 25.0 | | 37.5 | | 48.5 | | 48.5 |
| Base Capacity (vph) | 311 | 493 | 319 | 981 | 114 | 1545 | 212 | 1655 | 766 |
| Starvation Cap Reductn | 0 | 0 | 0 | 0 | 0 | 314 | 0 | 0 | 0 |
| Spillback Cap Reductn | 0 | 27 | 19 | 0 | 0 | 0 | 0 | 0 | 0 |
| Storage Cap Reductn | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Reduced v/c Ratio | 1.01 | 0.26 | 0.08 | 0.22 | 0.38 | 1.28 | 0.64 | 0.16 | 0.33 |

**Intersection Summary**

Cycle Length: 160
Actuated Cycle Length: 160
Offset: 115 (72%), Referenced to phase 2:SBT and 6:NBT, Start of Green
Natural Cycle: 135
Control Type: Actuated-Coordinated
~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
# 95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 1: Hurontario Street & Cooksville GO/John Street





| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | | | | | | | |
| Traffic Volume (vph) | 288 | 37 | 75 | 22 | 31 | 167 | 40 | 1427 | 24 | 125 | 242 | 235 |
| Future Volume (vph) | 288 | 37 | 75 | 22 | 31 | 167 | 40 | 1427 | 24 | 125 | 242 | 235 |
| Ideal Flow (vphpl) | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 |
| Lane Width | 3.5 | 3.7 | 3.7 | 3.5 | 3.7 | 3.7 | 3.5 | 3.7 | 3.7 | 3.5 | 3.7 | 3.5 |
| Total Lost time (s) | 7.0 | 7.0 | | 7.0 | 7.0 | | 3.0 | 6.0 | | 3.0 | 6.0 | 6.0 |
| Lane Util. Factor | 1.00 | 1.00 | | 1.00 | 0.95 | | 1.00 | 0.95 | | 1.00 | 0.95 | 1.00 |
| Frpb, ped/bikes | 1.00 | 0.97 | | 1.00 | 0.97 | | 1.00 | 1.00 | | 1.00 | 1.00 | 0.86 |
| Flpb, ped/bikes | 0.99 | 1.00 | | 0.97 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | 1.00 |
| Frt | 1.00 | 0.90 | | 1.00 | 0.87 | | 1.00 | 1.00 | | 1.00 | 1.00 | 0.85 |
| Flt Protected | 0.95 | 1.00 | | 0.95 | 1.00 | | 0.95 | 1.00 | | 0.95 | 1.00 | 1.00 |
| Satd. Flow (prot) | 1583 | 1462 | | 1491 | 2791 | | 1606 | 3208 | | 1606 | 3042 | 1195 |
| Flt Permitted | 0.61 | 1.00 | | 0.66 | 1.00 | | 0.95 | 1.00 | | 0.95 | 1.00 | 1.00 |
| Satd. Flow (perm) | 1017 | 1462 | | 1042 | 2791 | | 1606 | 3208 | | 1606 | 3042 | 1195 |
| Peak-hour factor, PHF | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 |
| Adj. Flow (vph) | 313 | 40 | 82 | 24 | 34 | 182 | 43 | 1551 | 26 | 136 | 263 | 255 |
| RTOR Reduction (vph) | 0 | 46 | 0 | 0 | 126 | 0 | 0 | 1 | 0 | 0 | 0 | 117 |
| Lane Group Flow (vph) | 313 | 76 | 0 | 24 | 90 | 0 | 43 | 1576 | 0 | 136 | 263 | 138 |
| Confl. Peds. (#/hr) | 16 | | 24 | 24 | | 16 | 81 | | 34 | 34 | | 81 |
| Confl. Bikes (#/hr) | | | | | | 1 | | | | | | 2 |
| Heavy Vehicles (%) | 0% | 0% | 5% | 5% | 0% | 0% | 0% | 2% | 0% | 0% | 8% | 4% |
| Turn Type | Perm | NA | | Perm | NA | | Prot | NA | | Prot | NA | Perm |
| Protected Phases | | 8 | | | 4 | | 1 | 6 | | 5 | 2 | |
| Permitted Phases | 8 | | | 4 | | | | 6 | | | 2 | 2 |
| Actuated Green, G (s) | 48.0 | 48.0 | | 48.0 | 48.0 | | 7.7 | 76.0 | | 17.0 | 85.3 | 85.3 |
| Effective Green, g (s) | 49.0 | 49.0 | | 49.0 | 49.0 | | 8.7 | 77.0 | | 18.0 | 86.3 | 86.3 |
| Actuated g/C Ratio | 0.31 | 0.31 | | 0.31 | 0.31 | | 0.05 | 0.48 | | 0.11 | 0.54 | 0.54 |
| Clearance Time (s) | 8.0 | 8.0 | | 8.0 | 8.0 | | 4.0 | 7.0 | | 4.0 | 7.0 | 7.0 |
| Vehicle Extension (s) | 3.0 | 3.0 | | 3.0 | 3.0 | | 3.0 | 3.0 | | 3.0 | 3.0 | 3.0 |
| Lane Grp Cap (vph) | 311 | 447 | | 319 | 854 | | 87 | 1543 | | 180 | 1640 | 644 |
| v/s Ratio Prot | | 0.05 | | | 0.03 | | 0.03 | c0.49 | | c0.08 | 0.09 | |
| v/s Ratio Perm | c0.31 | | | 0.02 | | | | | | | | 0.12 |
| v/c Ratio | 1.01 | 0.17 | | 0.08 | 0.11 | | 0.49 | 1.02 | | 0.76 | 0.16 | 0.21 |
| Uniform Delay, d1 | 55.5 | 40.6 | | 39.4 | 39.8 | | 73.5 | 41.5 | | 68.9 | 18.6 | 19.2 |
| Progression Factor | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.01 | 0.96 | | 1.00 | 1.00 | 1.00 |
| Incremental Delay, d2 | 52.7 | 0.2 | | 0.1 | 0.1 | | 4.4 | 28.5 | | 16.4 | 0.2 | 0.8 |
| Delay (s) | 108.2 | 40.8 | | 39.5 | 39.8 | | 78.3 | 68.2 | | 85.3 | 18.8 | 19.9 |
| Level of Service | F | D | | D | D | | E | E | | F | B | B |
| Approach Delay (s) | | 89.3 | | | 39.8 | | | 68.5 | | | 33.1 | |
| Approach LOS | | F | | | D | | | E | | | C | |

| Intersection Summary | | | |
|---|---|---|---|
| HCM 2000 Control Delay | 61.4 | HCM 2000 Level of Service | E |
| HCM 2000 Volume to Capacity ratio | 0.98 | | |
| Actuated Cycle Length (s) | 160.0 | Sum of lost time (s) | 16.0 |
| Intersection Capacity Utilization | 108.1% | ICU Level of Service | G |
| Analysis Period (min) | 15 | | |

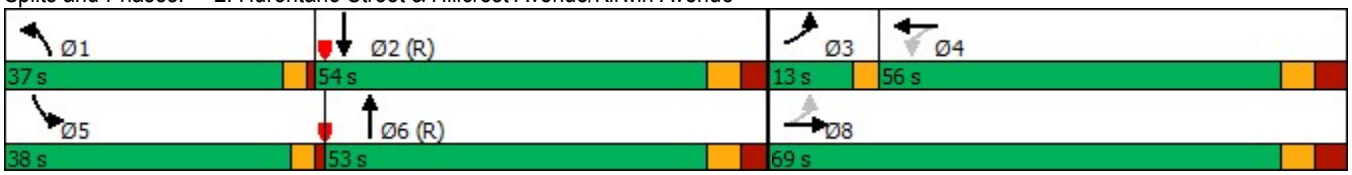
c Critical Lane Group

| Lane Group | EBL | EBT | WBL | WBT | NBL | NBT | SBL | SBT |
|---|---|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | | | |
| Traffic Volume (vph) | 128 | 252 | 86 | 317 | 197 | 116 | 223 | 133 |
| Future Volume (vph) | 128 | 252 | 86 | 317 | 197 | 116 | 223 | 133 |
| Lane Group Flow (vph) | 139 | 395 | 93 | 502 | 214 | 168 | 242 | 224 |
| Turn Type | pm+pt | NA | Perm | NA | Prot | NA | Prot | NA |
| Protected Phases | 3 | 8 | | 4 | 1 | 6 | 5 | 2 |
| Permitted Phases | 8 | | 4 | | | 6 | | 2 |
| Detector Phase | 3 | 8 | 4 | 4 | 1 | 6 | 5 | 2 |
| Switch Phase | | | | | | | | |
| Minimum Initial (s) | 5.0 | 8.0 | 8.0 | 8.0 | 7.0 | 8.0 | 5.0 | 8.0 |
| Minimum Split (s) | 9.5 | 56.0 | 56.0 | 56.0 | 11.0 | 51.5 | 9.5 | 51.5 |
| Total Split (s) | 13.0 | 69.0 | 56.0 | 56.0 | 37.0 | 53.0 | 38.0 | 54.0 |
| Total Split (%) | 8.1% | 43.1% | 35.0% | 35.0% | 23.1% | 33.1% | 23.8% | 33.8% |
| Yellow Time (s) | 3.0 | 4.0 | 4.0 | 4.0 | 3.0 | 4.0 | 3.0 | 4.0 |
| All-Red Time (s) | 0.0 | 4.0 | 4.0 | 4.0 | 1.0 | 3.5 | 1.0 | 3.5 |
| Lost Time Adjust (s) | -1.0 | -1.0 | -1.0 | -1.0 | -1.0 | -1.0 | -1.0 | -1.0 |
| Total Lost Time (s) | 2.0 | 7.0 | 7.0 | 7.0 | 3.0 | 6.5 | 3.0 | 6.5 |
| Lead/Lag | Lead | | Lag | Lag | Lead | Lag | Lead | Lag |
| Lead-Lag Optimize? | Yes | | Yes | Yes | Yes | Yes | Yes | Yes |
| Recall Mode | None | None | None | None | None | C-Max | None | C-Max |
| v/c Ratio | 0.71 | 0.46 | 0.59 | 0.79 | 0.80 | 0.13 | 0.82 | 0.16 |
| Control Delay | 62.1 | 42.7 | 73.3 | 64.9 | 84.3 | 24.9 | 91.1 | 17.0 |
| Queue Delay | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.7 | 0.8 | 0.0 |
| Total Delay | 62.1 | 42.7 | 73.3 | 64.9 | 84.3 | 25.7 | 91.9 | 17.0 |
| Queue Length 50th (m) | 33.9 | 48.2 | 27.4 | 74.0 | 66.2 | 13.5 | 79.3 | 11.8 |
| Queue Length 95th (m) | 49.3 | 60.1 | 45.2 | 89.3 | 90.4 | 25.6 | 107.1 | 20.4 |
| Internal Link Dist (m) | | 206.4 | | 133.2 | | 400.9 | | 109.3 |
| Turn Bay Length (m) | | | 50.0 | | 53.0 | | 36.0 | |
| Base Capacity (vph) | 196 | 1201 | 252 | 977 | 338 | 1314 | 358 | 1392 |
| Starvation Cap Reductn | 0 | 0 | 0 | 0 | 0 | 0 | 19 | 0 |
| Spillback Cap Reductn | 0 | 0 | 0 | 7 | 0 | 881 | 0 | 0 |
| Storage Cap Reductn | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Reduced v/c Ratio | 0.71 | 0.33 | 0.37 | 0.52 | 0.63 | 0.39 | 0.71 | 0.16 |

**Intersection Summary**

Cycle Length: 160
Actuated Cycle Length: 160
Offset: 104 (65%), Referenced to phase 2:SBT and 6:NBT, Start of Green
Natural Cycle: 140
Control Type: Actuated-Coordinated

Splits and Phases: 2: Hurontario Street & Hillcrest Avenue/Kirwin Avenue



| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | | | | | | | |
| Traffic Volume (vph) | 128 | 252 | 111 | 86 | 317 | 144 | 197 | 116 | 39 | 223 | 133 | 73 |
| Future Volume (vph) | 128 | 252 | 111 | 86 | 317 | 144 | 197 | 116 | 39 | 223 | 133 | 73 |
| Ideal Flow (vphpl) | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 |
| Lane Width | 3.5 | 3.7 | 3.5 | 3.5 | 3.7 | 3.7 | 3.5 | 3.7 | 3.7 | 3.5 | 3.7 | 3.5 |
| Total Lost time (s) | 2.0 | 7.0 | | 7.0 | 7.0 | | 3.0 | 6.5 | | 3.0 | 6.5 | |
| Lane Util. Factor | 1.00 | 0.95 | | 1.00 | 0.95 | | 1.00 | 0.95 | | 1.00 | 0.95 | |
| Frpb, ped/bikes | 1.00 | 0.98 | | 1.00 | 0.99 | | 1.00 | 0.97 | | 1.00 | 0.99 | |
| Flpb, ped/bikes | 1.00 | 1.00 | | 0.97 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | |
| Frt | 1.00 | 0.95 | | 1.00 | 0.95 | | 1.00 | 0.96 | | 1.00 | 0.95 | |
| Flt Protected | 0.95 | 1.00 | | 0.95 | 1.00 | | 0.95 | 1.00 | | 0.95 | 1.00 | |
| Satd. Flow (prot) | 1589 | 3020 | | 1506 | 3083 | | 1575 | 2966 | | 1606 | 2999 | |
| Flt Permitted | 0.22 | 1.00 | | 0.52 | 1.00 | | 0.95 | 1.00 | | 0.95 | 1.00 | |
| Satd. Flow (perm) | 371 | 3020 | | 822 | 3083 | | 1575 | 2966 | | 1606 | 2999 | |
| Peak-hour factor, PHF | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 |
| Adj. Flow (vph) | 139 | 274 | 121 | 93 | 345 | 157 | 214 | 126 | 42 | 242 | 145 | 79 |
| RTOR Reduction (vph) | 0 | 37 | 0 | 0 | 39 | 0 | 0 | 16 | 0 | 0 | 36 | 0 |
| Lane Group Flow (vph) | 139 | 358 | 0 | 93 | 463 | 0 | 214 | 152 | 0 | 242 | 188 | 0 |
| Confl. Peds. (#/hr) | 16 | | 60 | 60 | | 16 | 24 | | 49 | 49 | | 24 |
| Heavy Vehicles (%) | 1% | 0% | 5% | 3% | 1% | 0% | 2% | 5% | 0% | 0% | 2% | 3% |
| Turn Type | pm+pt | NA | | Perm | NA | | Prot | NA | | Prot | NA | |
| Protected Phases | 3 | 8 | | | 4 | | 1 | 6 | | 5 | 2 | |
| Permitted Phases | 8 | | | 4 | | | | 6 | | | 2 | |
| Actuated Green, G (s) | 42.8 | 42.8 | | 29.8 | 29.8 | | 26.3 | 69.1 | | 28.6 | 71.4 | |
| Effective Green, g (s) | 43.8 | 43.8 | | 30.8 | 30.8 | | 27.3 | 70.1 | | 29.6 | 72.4 | |
| Actuated g/C Ratio | 0.27 | 0.27 | | 0.19 | 0.19 | | 0.17 | 0.44 | | 0.19 | 0.45 | |
| Clearance Time (s) | 3.0 | 8.0 | | 8.0 | 8.0 | | 4.0 | 7.5 | | 4.0 | 7.5 | |
| Vehicle Extension (s) | 3.0 | 3.0 | | 3.0 | 3.0 | | 3.0 | 3.0 | | 3.0 | 3.0 | |
| Lane Grp Cap (vph) | 185 | 826 | | 158 | 593 | | 268 | 1299 | | 297 | 1357 | |
| v/s Ratio Prot | c0.05 | 0.12 | | | c0.15 | | 0.14 | 0.05 | | c0.15 | c0.06 | |
| v/s Ratio Perm | 0.15 | | | 0.11 | | | | | | | | |
| v/c Ratio | 0.75 | 0.43 | | 0.59 | 0.78 | | 0.80 | 0.12 | | 0.81 | 0.14 | |
| Uniform Delay, d1 | 47.6 | 47.9 | | 58.8 | 61.4 | | 63.7 | 26.6 | | 62.6 | 25.6 | |
| Progression Factor | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.13 | 0.82 | |
| Incremental Delay, d2 | 15.7 | 0.4 | | 5.5 | 6.6 | | 15.2 | 0.2 | | 15.6 | 0.2 | |
| Delay (s) | 63.3 | 48.2 | | 64.3 | 68.0 | | 78.9 | 26.8 | | 86.2 | 21.3 | |
| Level of Service | E | D | | E | E | | E | C | | F | C | |
| Approach Delay (s) | | 52.2 | | | 67.4 | | | 56.0 | | | 55.0 | |
| Approach LOS | | D | | | E | | | E | | | E | |

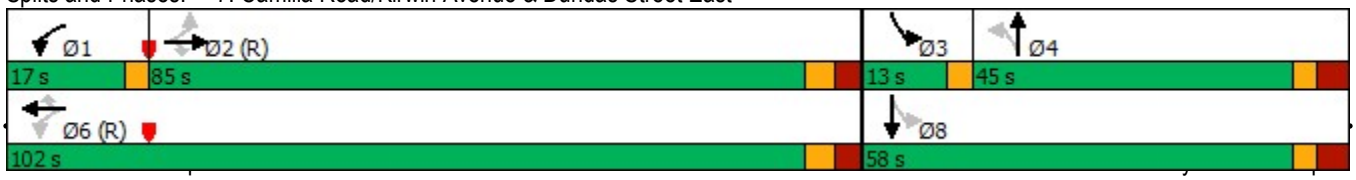
| Intersection Summary | | | |
|---|---|---|---|
| HCM 2000 Control Delay | 58.2 | HCM 2000 Level of Service | E |
| HCM 2000 Volume to Capacity ratio | 0.46 | | |
| Actuated Cycle Length (s) | 160.0 | Sum of lost time (s) | 18.5 |
| Intersection Capacity Utilization | 113.8% | ICU Level of Service | H |
| Analysis Period (min) | 15 | | |
| c Critical Lane Group | | | |

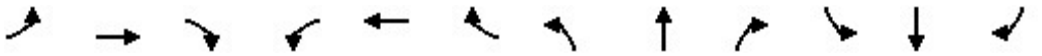
| Lane Group | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | SBL | SBT |
|---|---|---|---|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | | | | | |
| Traffic Volume (vph) | 40 | 788 | 42 | 103 | 1119 | 321 | 52 | 126 | 222 | 99 |
| Future Volume (vph) | 40 | 788 | 42 | 103 | 1119 | 321 | 52 | 126 | 222 | 99 |
| Lane Group Flow (vph) | 43 | 857 | 46 | 112 | 1216 | 349 | 57 | 220 | 241 | 133 |
| Turn Type | Perm | NA | Perm | pm+pt | NA | Perm | Perm | NA | pm+pt | NA |
| Protected Phases | | 2 | | 1 | 6 | | | 4 | 3 | 8 |
| Permitted Phases | 2 | | 2 | 6 | | 6 | 4 | | 8 | |
| Detector Phase | 2 | 2 | 2 | 1 | 6 | 6 | 4 | 4 | 3 | 8 |
| Switch Phase | | | | | | | | | | |
| Minimum Initial (s) | 8.0 | 8.0 | 8.0 | 5.0 | 8.0 | 8.0 | 8.0 | 8.0 | 5.0 | 8.0 |
| Minimum Split (s) | 44.0 | 44.0 | 44.0 | 9.5 | 44.0 | 44.0 | 43.0 | 43.0 | 9.5 | 43.0 |
| Total Split (s) | 85.0 | 85.0 | 85.0 | 17.0 | 102.0 | 102.0 | 45.0 | 45.0 | 13.0 | 58.0 |
| Total Split (%) | 53.1% | 53.1% | 53.1% | 10.6% | 63.8% | 63.8% | 28.1% | 28.1% | 8.1% | 36.3% |
| Yellow Time (s) | 3.5 | 3.5 | 3.5 | 3.0 | 3.5 | 3.5 | 3.0 | 3.0 | 3.0 | 3.0 |
| All-Red Time (s) | 3.5 | 3.5 | 3.5 | 0.0 | 3.5 | 3.5 | 4.0 | 4.0 | 0.0 | 4.0 |
| Lost Time Adjust (s) | -1.0 | -1.0 | -1.0 | -1.0 | -1.0 | -1.0 | -1.0 | -1.0 | -1.0 | -1.0 |
| Total Lost Time (s) | 6.0 | 6.0 | 6.0 | 2.0 | 6.0 | 6.0 | 6.0 | 6.0 | 2.0 | 6.0 |
| Lead/Lag | Lag | Lag | Lag | Lead | | | Lag | Lag | Lead | |
| Lead-Lag Optimize? | Yes | Yes | Yes | Yes | | | Yes | Yes | Yes | |
| Recall Mode | C-Max | C-Max | C-Max | None | C-Max | C-Max | None | None | None | None |
| v/c Ratio | 0.21 | 0.45 | 0.06 | 0.28 | 0.56 | 0.34 | 0.31 | 0.78 | 1.14 | 0.32 |
| Control Delay | 20.7 | 19.5 | 1.6 | 10.4 | 15.3 | 3.2 | 60.9 | 76.5 | 151.4 | 46.9 |
| Queue Delay | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Total Delay | 20.7 | 19.5 | 1.6 | 10.4 | 15.3 | 3.2 | 60.9 | 76.5 | 151.4 | 46.9 |
| Queue Length 50th (m) | 6.0 | 75.0 | 0.0 | 10.6 | 98.9 | 5.6 | 16.2 | 62.7 | ~77.2 | 32.7 |
| Queue Length 95th (m) | 16.6 | 109.2 | 3.2 | 21.0 | 138.5 | 20.7 | 28.7 | 87.2 | #122.7 | 48.9 |
| Internal Link Dist (m) | | 302.1 | | | 262.5 | | | 162.3 | | 279.0 |
| Turn Bay Length (m) | 15.0 | | 30.0 | 30.0 | | 65.0 | 36.0 | | 40.0 | |
| Base Capacity (vph) | 208 | 1917 | 811 | 428 | 2183 | 1016 | 272 | 407 | 211 | 545 |
| Starvation Cap Reductn | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Spillback Cap Reductn | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Storage Cap Reductn | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Reduced v/c Ratio | 0.21 | 0.45 | 0.06 | 0.26 | 0.56 | 0.34 | 0.21 | 0.54 | 1.14 | 0.24 |

Intersection Summary

Cycle Length: 160
Actuated Cycle Length: 160
Offset: 26 (16%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green
Natural Cycle: 110
Control Type: Actuated-Coordinated
~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
# 95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 7: Camilla Road/Kirwin Avenue & Dundas Street East





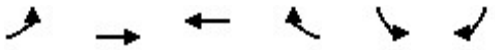
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | | | | | | | |
| Traffic Volume (vph) | 40 | 788 | 42 | 103 | 1119 | 321 | 52 | 126 | 76 | 222 | 99 | 23 |
| Future Volume (vph) | 40 | 788 | 42 | 103 | 1119 | 321 | 52 | 126 | 76 | 222 | 99 | 23 |
| Ideal Flow (vphpl) | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 |
| Lane Width | 3.5 | 3.7 | 3.5 | 3.5 | 3.7 | 3.5 | 3.5 | 3.7 | 3.7 | 3.5 | 3.7 | 3.7 |
| Total Lost time (s) | 6.0 | 6.0 | 6.0 | 2.0 | 6.0 | 6.0 | 6.0 | 6.0 | | 2.0 | 6.0 | |
| Lane Util. Factor | 1.00 | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 | 1.00 | 1.00 | | 1.00 | 1.00 | |
| Frpb, ped/bikes | 1.00 | 1.00 | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 | 0.99 | | 1.00 | 0.99 | |
| Flpb, ped/bikes | 0.99 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 0.98 | 1.00 | | 1.00 | 1.00 | |
| Frt | 1.00 | 1.00 | 0.85 | 1.00 | 1.00 | 0.85 | 1.00 | 0.94 | | 1.00 | 0.97 | |
| Flt Protected | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 | | 0.95 | 1.00 | |
| Satd. Flow (prot) | 1598 | 3189 | 1304 | 1604 | 3221 | 1360 | 1582 | 1616 | | 1587 | 1661 | |
| Flt Permitted | 0.21 | 1.00 | 1.00 | 0.27 | 1.00 | 1.00 | 0.67 | 1.00 | | 0.30 | 1.00 | |
| Satd. Flow (perm) | 347 | 3189 | 1304 | 459 | 3221 | 1360 | 1119 | 1616 | | 506 | 1661 | |
| Peak-hour factor, PHF | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 |
| Adj. Flow (vph) | 43 | 857 | 46 | 112 | 1216 | 349 | 57 | 137 | 83 | 241 | 108 | 25 |
| RTOR Reduction (vph) | 0 | 0 | 18 | 0 | 0 | 94 | 0 | 15 | 0 | 0 | 6 | 0 |
| Lane Group Flow (vph) | 43 | 857 | 28 | 112 | 1216 | 255 | 57 | 205 | 0 | 241 | 127 | 0 |
| Confl. Peds. (#/hr) | 16 | | 13 | 13 | | 16 | 14 | | 10 | 10 | | 14 |
| Heavy Vehicles (%) | 0% | 3% | 5% | 0% | 2% | 0% | 0% | 0% | 0% | 1% | 0% | 3% |
| Turn Type | Perm | NA | Perm | pm+pt | NA | Perm | Perm | NA | | pm+pt | NA | |
| Protected Phases | | 2 | | 1 | 6 | | | 4 | | 3 | 8 | |
| Permitted Phases | 2 | | 2 | 6 | | 6 | 4 | | | 8 | | |
| Actuated Green, G (s) | 95.3 | 95.3 | 95.3 | 107.5 | 107.5 | 107.5 | 25.5 | 25.5 | | 38.5 | 38.5 | |
| Effective Green, g (s) | 96.3 | 96.3 | 96.3 | 108.5 | 108.5 | 108.5 | 26.5 | 26.5 | | 39.5 | 39.5 | |
| Actuated g/C Ratio | 0.60 | 0.60 | 0.60 | 0.68 | 0.68 | 0.68 | 0.17 | 0.17 | | 0.25 | 0.25 | |
| Clearance Time (s) | 7.0 | 7.0 | 7.0 | 3.0 | 7.0 | 7.0 | 7.0 | 7.0 | | 3.0 | 7.0 | |
| Vehicle Extension (s) | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | | 3.0 | 3.0 | |
| Lane Grp Cap (vph) | 208 | 1919 | 784 | 384 | 2184 | 922 | 185 | 267 | | 199 | 410 | |
| v/s Ratio Prot | | 0.27 | | 0.02 | c0.38 | | | c0.13 | | c0.08 | 0.08 | |
| v/s Ratio Perm | 0.12 | | 0.02 | 0.18 | | 0.19 | 0.05 | | | 0.22 | | |
| v/c Ratio | 0.21 | 0.45 | 0.04 | 0.29 | 0.56 | 0.28 | 0.31 | 0.77 | | 1.21 | 0.31 | |
| Uniform Delay, d1 | 14.5 | 17.3 | 13.0 | 10.1 | 13.3 | 10.2 | 58.7 | 63.8 | | 58.2 | 49.1 | |
| Progression Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | | 1.00 | 1.00 | |
| Incremental Delay, d2 | 2.2 | 0.8 | 0.1 | 0.4 | 1.0 | 0.7 | 1.0 | 12.4 | | 132.2 | 0.4 | |
| Delay (s) | 16.7 | 18.1 | 13.0 | 10.5 | 14.3 | 10.9 | 59.6 | 76.2 | | 190.5 | 49.6 | |
| Level of Service | B | B | B | B | B | B | E | E | | F | D | |
| Approach Delay (s) | | 17.8 | | | 13.4 | | | 72.8 | | | 140.4 | |
| Approach LOS | | B | | | B | | | E | | | F | |

| Intersection Summary | | | |
|---|---|---|---|
| HCM 2000 Control Delay | 34.2 | HCM 2000 Level of Service | C |
| HCM 2000 Volume to Capacity ratio | 0.65 | | |
| Actuated Cycle Length (s) | 160.0 | Sum of lost time (s) | 16.0 |
| Intersection Capacity Utilization | 90.8% | ICU Level of Service | E |
| Analysis Period (min) | 15 | | |
| c Critical Lane Group | | | |

| Lane Group | EBL | EBT | WBT | SBL | SBR |
|---|---|---|---|---|---|
| Lane Configurations | | | | | |
| Traffic Volume (vph) | 136 | 337 | 381 | 73 | 361 |
| Future Volume (vph) | 136 | 337 | 381 | 73 | 361 |
| Lane Group Flow (vph) | 0 | 514 | 438 | 79 | 392 |
| Turn Type | pm+pt | NA | NA | Perm | Perm |
| Protected Phases | 1 | 2 | 2 | | |
| Permitted Phases | 2 | | | 4 | 4 |
| Detector Phase | 1 | 2 | 2 | 4 | 4 |
| Switch Phase | | | | | |
| Minimum Initial (s) | 7.0 | 10.0 | 10.0 | 10.0 | 10.0 |
| Minimum Split (s) | 14.5 | 32.0 | 32.0 | 34.5 | 34.5 |
| Total Split (s) | 28.0 | 54.0 | 54.0 | 69.5 | 69.5 |
| Total Split (%) | 18.5% | 35.6% | 35.6% | 45.9% | 45.9% |
| Yellow Time (s) | 3.0 | 3.5 | 3.5 | 3.5 | 3.5 |
| All-Red Time (s) | 0.0 | 3.5 | 3.5 | 2.0 | 2.0 |
| Lost Time Adjust (s) | | -1.0 | -1.0 | -1.0 | -1.0 |
| Total Lost Time (s) | | 6.0 | 6.0 | 4.5 | 4.5 |
| Lead/Lag | Lead | Lag | Lag | | |
| Lead-Lag Optimize? | Yes | Yes | Yes | | |
| Recall Mode | None | Max | Max | None | None |
| v/c Ratio | | 0.21 | 0.19 | 0.38 | 0.68 |
| Control Delay | | 4.5 | 4.4 | 31.8 | 9.9 |
| Queue Delay | | 0.0 | 0.0 | 0.0 | 0.0 |
| Total Delay | | 4.5 | 4.4 | 31.8 | 9.9 |
| Queue Length 50th (m) | | 7.1 | 8.6 | 9.4 | 0.0 |
| Queue Length 95th (m) | | 12.5 | 15.6 | 21.0 | 21.7 |
| Internal Link Dist (m) | | 132.4 | 206.4 | 85.2 | |
| Turn Bay Length (m) | | | | | |
| Base Capacity (vph) | | 2484 | 2250 | 1193 | 1450 |
| Starvation Cap Reductn | | 0 | 0 | 0 | 0 |
| Spillback Cap Reductn | | 0 | 0 | 0 | 0 |
| Storage Cap Reductn | | 0 | 0 | 0 | 0 |
| Reduced v/c Ratio | | 0.21 | 0.19 | 0.07 | 0.27 |

| Intersection Summary |
|---|
| Cycle Length: 151.5 |
| Actuated Cycle Length: 70.4 |
| Natural Cycle: 85 |
| Control Type: Semi Act-Uncoord |

Splits and Phases: 9: Hillcrest Avenue & Cooksville GO



| Movement | EBL | EBT | WBT | WBR | SBL | SBR |
|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | |
| Traffic Volume (vph) | 136 | 337 | 381 | 22 | 73 | 361 |
| Future Volume (vph) | 136 | 337 | 381 | 22 | 73 | 361 |
| Ideal Flow (vphpl) | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 |
| Total Lost time (s) | | 6.0 | 6.0 | | 4.5 | 4.5 |
| Lane Util. Factor | | 0.91 | 0.95 | | 1.00 | 1.00 |
| Frpb, ped/bikes | | 1.00 | 1.00 | | 1.00 | 0.98 |
| Flpb, ped/bikes | | 1.00 | 1.00 | | 0.98 | 1.00 |
| Frt | | 1.00 | 0.99 | | 1.00 | 0.85 |
| Flt Protected | | 0.99 | 1.00 | | 0.95 | 1.00 |
| Satd. Flow (prot) | | 4871 | 3301 | | 1264 | 1500 |
| Flt Permitted | | 0.74 | 1.00 | | 0.95 | 1.00 |
| Satd. Flow (perm) | | 3652 | 3301 | | 1264 | 1500 |
| Peak-hour factor, PHF | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 |
| Adj. Flow (vph) | 148 | 366 | 414 | 24 | 79 | 392 |
| RTOR Reduction (vph) | 0 | 0 | 1 | 0 | 0 | 326 |
| Lane Group Flow (vph) | 0 | 514 | 437 | 0 | 79 | 66 |
| Confl. Peds. (#/hr) | 30 | | | 30 | 23 | 7 |
| Confl. Bikes (#/hr) | | | | 1 | | |
| Heavy Vehicles (%) | 5% | 6% | 10% | 0% | 42% | 7% |
| Turn Type | pm+pt | NA | NA | | Perm | Perm |
| Protected Phases | 1 | 2 | 2 | | | |
| Permitted Phases | 2 | | | | 4 | 4 |
| Actuated Green, G (s) | | 47.0 | 47.0 | | 10.8 | 10.8 |
| Effective Green, g (s) | | 48.0 | 48.0 | | 11.8 | 11.8 |
| Actuated g/C Ratio | | 0.68 | 0.68 | | 0.17 | 0.17 |
| Clearance Time (s) | | 7.0 | 7.0 | | 5.5 | 5.5 |
| Vehicle Extension (s) | | 3.0 | 3.0 | | 3.0 | 3.0 |
| Lane Grp Cap (vph) | | 2493 | 2253 | | 212 | 251 |
| v/s Ratio Prot | | | 0.13 | | | |
| v/s Ratio Perm | | c0.14 | | | c0.06 | 0.04 |
| v/c Ratio | | 0.21 | 0.19 | | 0.37 | 0.26 |
| Uniform Delay, d1 | | 4.1 | 4.1 | | 26.0 | 25.5 |
| Progression Factor | | 1.00 | 1.00 | | 1.00 | 1.00 |
| Incremental Delay, d2 | | 0.0 | 0.2 | | 1.1 | 0.6 |
| Delay (s) | | 4.2 | 4.3 | | 27.1 | 26.0 |
| Level of Service | | A | A | | C | C |
| Approach Delay (s) | | 4.2 | 4.3 | | 26.2 | |
| Approach LOS | | A | A | | C | |

| Intersection Summary | | | |
|---|---|---|---|
| HCM 2000 Control Delay | 11.5 | HCM 2000 Level of Service | B |
| HCM 2000 Volume to Capacity ratio | 0.26 | | |
| Actuated Cycle Length (s) | 70.3 | Sum of lost time (s) | 14.5 |
| Intersection Capacity Utilization | 55.5% | ICU Level of Service | B |
| Analysis Period (min) | 15 | | |
| c Critical Lane Group | | | |

| Movement | EBT | EBR | WBL | WBT | NBL | NBR |
|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | |
| Traffic Volume (veh/h) | 86 | 58 | 6 | 148 | 59 | 14 |
| Future Volume (Veh/h) | 86 | 58 | 6 | 148 | 59 | 14 |
| Sign Control | Free | | | Free | Stop | |
| Grade | 0% | | | 0% | 0% | |
| Peak Hour Factor | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 |
| Hourly flow rate (vph) | 93 | 63 | 7 | 161 | 64 | 15 |
| Pedestrians | 21 | | | 6 | 30 | |
| Lane Width (m) | 3.7 | | | 3.7 | 3.7 | |
| Walking Speed (m/s) | 1.1 | | | 1.1 | 1.1 | |
| Percent Blockage | 2 | | | 1 | 3 | |
| Right turn flare (veh) | | | | | | |
| Median type | None | | | None | | |
| Median storage veh) | | | | | | |
| Upstream signal (m) | 137 | | | | | |
| pX, platoon unblocked | | | | | | |
| vC, conflicting volume | | | 186 | | 350 | 160 |
| vC1, stage 1 conf vol | | | | | | |
| vC2, stage 2 conf vol | | | | | | |
| vCu, unblocked vol | | | 186 | | 350 | 160 |
| tC, single (s) | | | 4.1 | | 6.5 | 6.2 |
| tC, 2 stage (s) | | | | | | |
| tF (s) | | | 2.2 | | 3.6 | 3.3 |
| p0 queue free % | | | 99 | | 89 | 98 |
| cM capacity (veh/h) | | | 1361 | | 602 | 860 |

| Direction, Lane # | EB 1 | WB 1 | NB 1 |
|---|---|---|---|
| Volume Total | 156 | 168 | 79 |
| Volume Left | 0 | 7 | 64 |
| Volume Right | 63 | 0 | 15 |
| cSH | 1700 | 1361 | 638 |
| Volume to Capacity | 0.09 | 0.01 | 0.12 |
| Queue Length 95th (m) | 0.0 | 0.1 | 3.2 |
| Control Delay (s) | 0.0 | 0.4 | 11.4 |
| Lane LOS | | A | B |
| Approach Delay (s) | 0.0 | 0.4 | 11.4 |
| Approach LOS | | | B |

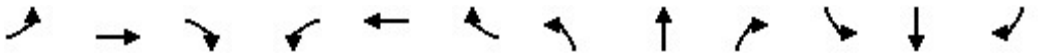
| Intersection Summary | | | |
|---|---|---|---|
| Average Delay | 2.4 | | |
| Intersection Capacity Utilization | 27.0% | ICU Level of Service | A |
| Analysis Period (min) | 15 | | |

| Intersection | |
|---|---|
| Intersection Delay, s/veh | 11.1 |
| Intersection LOS | B |

| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | | | | | | | |
| Traffic Vol, veh/h | 28 | 166 | 43 | 14 | 289 | 13 | 41 | 38 | 26 | 12 | 32 | 15 |
| Future Vol, veh/h | 28 | 166 | 43 | 14 | 289 | 13 | 41 | 38 | 26 | 12 | 32 | 15 |
| Peak Hour Factor | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 |
| Heavy Vehicles, % | 29 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 13 |
| Mvmt Flow | 30 | 180 | 47 | 15 | 314 | 14 | 45 | 41 | 28 | 13 | 35 | 16 |
| Number of Lanes | 1 | 1 | 0 | 1 | 1 | 0 | 0 | 1 | 0 | 0 | 1 | 0 |

| Approach | EB | WB | NB | SB |
|---|---|---|---|---|
| Opposing Approach | WB | EB | SB | NB |
| Opposing Lanes | 2 | 2 | 1 | 1 |
| Conflicting Approach Left | SB | NB | EB | WB |
| Conflicting Lanes Left | 1 | 1 | 2 | 2 |
| Conflicting Approach Right | NB | SB | WB | EB |
| Conflicting Lanes Right | 1 | 1 | 2 | 2 |
| HCM Control Delay | 10.4 | 12.4 | 9.6 | 9.1 |
| HCM LOS | B | B | A | A |

| Lane | NBLn1 | EBLn1 | EBLn2 | WBLn1 | WBLn2 | SBLn1 |
|---|---|---|---|---|---|---|
| Vol Left, % | 39% | 100% | 0% | 100% | 0% | 20% |
| Vol Thru, % | 36% | 0% | 79% | 0% | 96% | 54% |
| Vol Right, % | 25% | 0% | 21% | 0% | 4% | 25% |
| Sign Control | Stop | Stop | Stop | Stop | Stop | Stop |
| Traffic Vol by Lane | 105 | 28 | 209 | 14 | 302 | 59 |
| LT Vol | 41 | 28 | 0 | 14 | 0 | 12 |
| Through Vol | 38 | 0 | 166 | 0 | 289 | 32 |
| RT Vol | 26 | 0 | 43 | 0 | 13 | 15 |
| Lane Flow Rate | 114 | 30 | 227 | 15 | 328 | 64 |
| Geometry Grp | 2 | 5 | 5 | 5 | 5 | 2 |
| Degree of Util (X) | 0.171 | 0.053 | 0.327 | 0.024 | 0.474 | 0.099 |
| Departure Headway (Hd) | 5.388 | 6.307 | 5.178 | 5.731 | 5.197 | 5.54 |
| Convergence, Y/N | Yes | Yes | Yes | Yes | Yes | Yes |
| Cap | 659 | 564 | 688 | 620 | 686 | 651 |
| Service Time | 3.482 | 4.093 | 2.962 | 3.51 | 2.975 | 3.54 |
| HCM Lane V/C Ratio | 0.173 | 0.053 | 0.33 | 0.024 | 0.478 | 0.098 |
| HCM Control Delay | 9.6 | 9.5 | 10.5 | 8.7 | 12.6 | 9.1 |
| HCM Lane LOS | A | A | B | A | B | A |
| HCM 95th-tile Q | 0.6 | 0.2 | 1.4 | 0.1 | 2.6 | 0.3 |



| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | | | | | | | |
| Traffic Volume (veh/h) | 0 | 20 | 73 | 5 | 17 | 0 | 133 | 0 | 12 | 0 | 0 | 0 |
| Future Volume (Veh/h) | 0 | 20 | 73 | 5 | 17 | 0 | 133 | 0 | 12 | 0 | 0 | 0 |
| Sign Control | | Free | | | Free | | | Stop | | | Stop | |
| Grade | | 0% | | | 0% | | | 0% | | | 0% | |
| Peak Hour Factor | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 |
| Hourly flow rate (vph) | 0 | 22 | 79 | 5 | 18 | 0 | 145 | 0 | 13 | 0 | 0 | 0 |
| Pedestrians | | 1 | | | 1 | | | 12 | | | | |
| Lane Width (m) | | 3.7 | | | 3.7 | | | 3.7 | | | | |
| Walking Speed (m/s) | | 1.1 | | | 1.1 | | | 1.1 | | | | |
| Percent Blockage | | 0 | | | 0 | | | 1 | | | | |
| Right turn flare (veh) | | | | | | | | | | | | |
| Median type | | None | | | None | | | | | | | |
| Median storage veh) | | | | | | | | | | | | |
| Upstream signal (m) | | 354 | | | | | | | | | | |
| pX, platoon unblocked | | | | | | | | | | | | |
| vC, conflicting volume | 18 | | | 113 | | | 102 | 102 | 74 | 104 | 141 | 19 |
| vC1, stage 1 conf vol | | | | | | | | | | | | |
| vC2, stage 2 conf vol | | | | | | | | | | | | |
| vCu, unblocked vol | 18 | | | 113 | | | 102 | 102 | 74 | 104 | 141 | 19 |
| tC, single (s) | 4.1 | | | 4.1 | | | 7.1 | 6.5 | 6.2 | 7.1 | 6.5 | 6.2 |
| tC, 2 stage (s) | | | | | | | | | | | | |
| tF (s) | 2.2 | | | 2.2 | | | 3.5 | 4.0 | 3.3 | 3.5 | 4.0 | 3.3 |
| p0 queue free % | 100 | | | 100 | | | 83 | 100 | 99 | 100 | 100 | 100 |
| cM capacity (veh/h) | 1599 | | | 1472 | | | 860 | 777 | 981 | 855 | 739 | 1058 |

| Direction, Lane # | EB 1 | WB 1 | NB 1 |
|---|---|---|---|
| Volume Total | 101 | 23 | 158 |
| Volume Left | 0 | 5 | 145 |
| Volume Right | 79 | 0 | 13 |
| cSH | 1700 | 1472 | 869 |
| Volume to Capacity | 0.06 | 0.00 | 0.18 |
| Queue Length 95th (m) | 0.0 | 0.1 | 5.0 |
| Control Delay (s) | 0.0 | 1.6 | 10.1 |
| Lane LOS | | A | B |
| Approach Delay (s) | 0.0 | 1.6 | 10.1 |
| Approach LOS | | | B |

| Intersection Summary | | | |
|---|---|---|---|
| Average Delay | 5.8 | | |
| Intersection Capacity Utilization | 25.0% | ICU Level of Service | A |
| Analysis Period (min) | 15 | | |

| Intersection | |
|---|---|
| Intersection Delay, s/veh | 10.2 |
| Intersection LOS | B |

| Movement | EBL | EBT | WBT | WBR | SBL | SBR |
|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | |
| Traffic Vol, veh/h | 24 | 180 | 313 | 154 | 53 | 15 |
| Future Vol, veh/h | 24 | 180 | 313 | 154 | 53 | 15 |
| Peak Hour Factor | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 |
| Heavy Vehicles, % | 0 | 1 | 1 | 2 | 2 | 0 |
| Mvmt Flow | 26 | 196 | 340 | 167 | 58 | 16 |
| Number of Lanes | 1 | 1 | 1 | 1 | 1 | 0 |

| Approach | EB | WB | SB |
|---|---|---|---|
| Opposing Approach | WB | EB | |
| Opposing Lanes | 2 | 2 | 0 |
| Conflicting Approach Left | SB | | WB |
| Conflicting Lanes Left | 1 | 0 | 2 |
| Conflicting Approach Right | | SB | EB |
| Conflicting Lanes Right | 0 | 1 | 2 |
| HCM Control Delay | 9.7 | 10.5 | 9.2 |
| HCM LOS | A | B | A |

| Lane | EBLn1 | EBLn2 | WBLn1 | WBLn2 | SBLn1 |
|---|---|---|---|---|---|
| Vol Left, % | 100% | 0% | 0% | 0% | 78% |
| Vol Thru, % | 0% | 100% | 100% | 0% | 0% |
| Vol Right, % | 0% | 0% | 0% | 100% | 22% |
| Sign Control | Stop | Stop | Stop | Stop | Stop |
| Traffic Vol by Lane | 24 | 180 | 313 | 154 | 68 |
| LT Vol | 24 | 0 | 0 | 0 | 53 |
| Through Vol | 0 | 180 | 313 | 0 | 0 |
| RT Vol | 0 | 0 | 0 | 154 | 15 |
| Lane Flow Rate | 26 | 196 | 340 | 167 | 74 |
| Geometry Grp | 5 | 5 | 5 | 5 | 2 |
| Degree of Util (X) | 0.041 | 0.28 | 0.464 | 0.197 | 0.113 |
| Departure Headway (Hd) | 5.638 | 5.152 | 4.915 | 4.229 | 5.481 |
| Convergence, Y/N | Yes | Yes | Yes | Yes | Yes |
| Cap | 635 | 697 | 735 | 849 | 653 |
| Service Time | 3.374 | 2.888 | 2.643 | 1.957 | 3.527 |
| HCM Lane V/C Ratio | 0.041 | 0.281 | 0.463 | 0.197 | 0.113 |
| HCM Control Delay | 8.6 | 9.9 | 11.8 | 8 | 9.2 |
| HCM Lane LOS | A | A | B | A | A |
| HCM 95th-tile Q | 0.1 | 1.1 | 2.5 | 0.7 | 0.4 |

Lanes, Volumes, Timings
1: Hurontario Street & Cooksville GO/John Street

2029 FB AM Adj. Lane Configuration

| Lane Group | EBL | EBT | WBL | WBT | WBR | NBL | NBT | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | | | | | |
| Traffic Volume (vph) | 328 | 30 | 7 | 19 | 159 | 15 | 1576 | 97 | 1305 | 296 |
| Future Volume (vph) | 328 | 30 | 7 | 19 | 159 | 15 | 1576 | 97 | 1305 | 296 |
| Lane Group Flow (vph) | 357 | 206 | 8 | 21 | 173 | 16 | 1730 | 105 | 1418 | 322 |
| Turn Type | Perm | NA | Perm | NA | Perm | Prot | NA | Prot | NA | Perm |
| Protected Phases | | 8 | | 4 | | 1 | 6 | 5 | 2 | |
| Permitted Phases | 8 | | 4 | | 4 | | 6 | | 2 | 2 |
| Detector Phase | 8 | 8 | 4 | 4 | 4 | 1 | 6 | 5 | 2 | 2 |
| Switch Phase | | | | | | | | | | |
| Minimum Initial (s) | 8.0 | 8.0 | 8.0 | 8.0 | 8.0 | 5.0 | 8.0 | 5.0 | 8.0 | 8.0 |
| Minimum Split (s) | 46.0 | 46.0 | 46.0 | 46.0 | 46.0 | 9.5 | 38.0 | 9.5 | 38.0 | 38.0 |
| Total Split (s) | 53.0 | 53.0 | 53.0 | 53.0 | 53.0 | 9.5 | 89.2 | 17.8 | 97.5 | 97.5 |
| Total Split (%) | 33.1% | 33.1% | 33.1% | 33.1% | 33.1% | 5.9% | 55.8% | 11.1% | 60.9% | 60.9% |
| Yellow Time (s) | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 | 3.0 | 4.0 | 3.0 | 4.0 | 4.0 |
| All-Red Time (s) | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 | 1.0 | 3.0 | 1.0 | 3.0 | 3.0 |
| Lost Time Adjust (s) | -1.0 | -1.0 | -1.0 | -1.0 | -1.0 | -1.0 | -1.0 | -1.0 | -1.0 | -1.0 |
| Total Lost Time (s) | 7.0 | 7.0 | 7.0 | 7.0 | 7.0 | 3.0 | 6.0 | 3.0 | 6.0 | 6.0 |
| Lead/Lag | | | | | | Lead | Lag | Lead | Lag | Lag |
| Lead-Lag Optimize? | | | | | | Yes | Yes | Yes | Yes | Yes |
| Recall Mode | None | None | None | None | None | None | C-Max | None | C-Max | C-Max |
| v/c Ratio | 1.07 | 0.44 | 0.03 | 0.04 | 0.37 | 0.28 | 1.04 | 0.79 | 0.80 | 0.41 |
| Control Delay | 121.4 | 29.1 | 41.7 | 41.6 | 16.4 | 79.4 | 70.0 | 107.3 | 29.0 | 9.5 |
| Queue Delay | 0.0 | 66.6 | 0.0 | 0.0 | 0.0 | 0.0 | 23.8 | 0.0 | 50.2 | 0.0 |
| Total Delay | 121.4 | 95.7 | 41.7 | 41.6 | 16.4 | 79.4 | 93.8 | 107.3 | 79.2 | 9.5 |
| Queue Length 50th (m) | ~125.2 | 30.1 | 1.9 | 4.9 | 11.6 | 4.6 | ~319.6 | 33.1 | 161.8 | 20.9 |
| Queue Length 95th (m) | #189.1 | 55.0 | 6.4 | 12.0 | 33.0 | m5.7 | m#329.6 | #63.4 | 225.7 | 47.4 |
| Internal Link Dist (m) | | 191.8 | | 112.9 | | | 109.3 | | 252.0 | |
| Turn Bay Length (m) | | | 25.0 | | | 37.5 | | 48.5 | | 48.5 |
| Base Capacity (vph) | 334 | 473 | 249 | 497 | 462 | 57 | 1656 | 141 | 1781 | 786 |
| Starvation Cap Reductn | 0 | 0 | 0 | 0 | 0 | 0 | 536 | 0 | 0 | 0 |
| Spillback Cap Reductn | 0 | 297 | 0 | 0 | 0 | 0 | 0 | 0 | 961 | 0 |
| Storage Cap Reductn | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Reduced v/c Ratio | 1.07 | 1.17 | 0.03 | 0.04 | 0.37 | 0.28 | 1.54 | 0.74 | 1.73 | 0.41 |

Intersection Summary

Cycle Length: 160
Actuated Cycle Length: 160
Offset: 0 (0%), Referenced to phase 2:SBT and 6:NBT, Start of Green
Natural Cycle: 145
Control Type: Actuated-Coordinated
~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
# 95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 1: Hurontario Street & Cooksville GO/John Street

| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | | | | | | | |
| Traffic Volume (vph) | 328 | 30 | 159 | 7 | 19 | 159 | 15 | 1576 | 16 | 97 | 1305 | 296 |
| Future Volume (vph) | 328 | 30 | 159 | 7 | 19 | 159 | 15 | 1576 | 16 | 97 | 1305 | 296 |
| Ideal Flow (vphpl) | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 |
| Lane Width | 3.5 | 3.7 | 3.7 | 3.5 | 3.7 | 3.7 | 3.5 | 3.7 | 3.7 | 3.5 | 3.7 | 3.5 |
| Total Lost time (s) | 7.0 | 7.0 | | 7.0 | 7.0 | 7.0 | 3.0 | 6.0 | | 3.0 | 6.0 | 6.0 |
| Lane Util. Factor | 1.00 | 1.00 | | 1.00 | 1.00 | 1.00 | 1.00 | 0.95 | | 1.00 | 0.95 | 1.00 |
| Frpb, ped/bikes | 1.00 | 0.97 | | 1.00 | 1.00 | 0.93 | 1.00 | 1.00 | | 1.00 | 1.00 | 0.85 |
| Flpb, ped/bikes | 0.94 | 1.00 | | 0.98 | 1.00 | 1.00 | 1.00 | 1.00 | | 1.00 | 1.00 | 1.00 |
| Frt | 1.00 | 0.87 | | 1.00 | 1.00 | 0.85 | 1.00 | 1.00 | | 1.00 | 1.00 | 0.85 |
| Flt Protected | 0.95 | 1.00 | | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 | | 0.95 | 1.00 | 1.00 |
| Satd. Flow (prot) | 1484 | 1429 | | 1579 | 1729 | 1300 | 1409 | 3151 | | 1530 | 2933 | 1187 |
| Flt Permitted | 0.74 | 1.00 | | 0.52 | 1.00 | 1.00 | 0.95 | 1.00 | | 0.95 | 1.00 | 1.00 |
| Satd. Flow (perm) | 1162 | 1429 | | 869 | 1729 | 1300 | 1409 | 3151 | | 1530 | 2933 | 1187 |
| Peak-hour factor, PHF | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 |
| Adj. Flow (vph) | 357 | 33 | 173 | 8 | 21 | 173 | 16 | 1713 | 17 | 105 | 1418 | 322 |
| RTOR Reduction (vph) | 0 | 63 | 0 | 0 | 0 | 88 | 0 | 0 | 0 | 0 | 0 | 68 |
| Lane Group Flow (vph) | 357 | 143 | 0 | 8 | 21 | 85 | 16 | 1730 | 0 | 105 | 1418 | 254 |
| Confl. Peds. (#/hr) | 47 | | 20 | 20 | | 47 | 90 | | 46 | 46 | | 90 |
| Confl. Bikes (#/hr) | | | | | | 1 | | | 1 | | | 2 |
| Heavy Vehicles (%) | 2% | 0% | 3% | 0% | 0% | 5% | 14% | 4% | 0% | 5% | 12% | 3% |
| Turn Type | Perm | NA | | Perm | NA | Perm | Prot | NA | | Prot | NA | Perm |
| Protected Phases | | 8 | | | 4 | | 1 | 6 | | 5 | 2 | |
| Permitted Phases | 8 | | | 4 | | 4 | | 6 | | | 2 | 2 |
| Actuated Green, G (s) | 45.0 | 45.0 | | 45.0 | 45.0 | 45.0 | 2.2 | 83.0 | | 13.0 | 93.8 | 93.8 |
| Effective Green, g (s) | 46.0 | 46.0 | | 46.0 | 46.0 | 46.0 | 3.2 | 84.0 | | 14.0 | 94.8 | 94.8 |
| Actuated g/C Ratio | 0.29 | 0.29 | | 0.29 | 0.29 | 0.29 | 0.02 | 0.52 | | 0.09 | 0.59 | 0.59 |
| Clearance Time (s) | 8.0 | 8.0 | | 8.0 | 8.0 | 8.0 | 4.0 | 7.0 | | 4.0 | 7.0 | 7.0 |
| Vehicle Extension (s) | 3.0 | 3.0 | | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | | 3.0 | 3.0 | 3.0 |
| Lane Grp Cap (vph) | 334 | 410 | | 249 | 497 | 373 | 28 | 1654 | | 133 | 1737 | 703 |
| v/s Ratio Prot | | 0.10 | | | 0.01 | | 0.01 | c0.55 | | c0.07 | 0.48 | |
| v/s Ratio Perm | c0.31 | | | 0.01 | | 0.07 | | | | | | 0.21 |
| v/c Ratio | 1.07 | 0.35 | | 0.03 | 0.04 | 0.23 | 0.57 | 1.05 | | 0.79 | 0.82 | 0.36 |
| Uniform Delay, d1 | 57.0 | 45.1 | | 41.0 | 41.1 | 43.4 | 77.7 | 38.0 | | 71.6 | 25.7 | 16.9 |
| Progression Factor | 1.00 | 1.00 | | 1.00 | 1.00 | 1.00 | 1.00 | 1.19 | | 1.00 | 1.00 | 1.00 |
| Incremental Delay, d2 | 68.7 | 0.5 | | 0.1 | 0.0 | 0.3 | 9.6 | 27.2 | | 26.0 | 4.4 | 1.4 |
| Delay (s) | 125.7 | 45.7 | | 41.0 | 41.1 | 43.8 | 87.3 | 72.4 | | 97.5 | 30.1 | 18.3 |
| Level of Service | F | D | | D | D | D | F | E | | F | C | B |
| Approach Delay (s) | | 96.4 | | | 43.4 | | | 72.5 | | | 31.9 | |
| Approach LOS | | F | | | D | | | E | | | C | |

| Intersection Summary | | | |
|---|---|---|---|
| HCM 2000 Control Delay | 57.1 | HCM 2000 Level of Service | E |
| HCM 2000 Volume to Capacity ratio | 1.03 | | |
| Actuated Cycle Length (s) | 160.0 | Sum of lost time (s) | 16.0 |
| Intersection Capacity Utilization | 114.0% | ICU Level of Service | H |
| Analysis Period (min) | 15 | | |

c Critical Lane Group

Lanes, Volumes, Timings
1: Hurontario Street & Cooksville GO/John Street

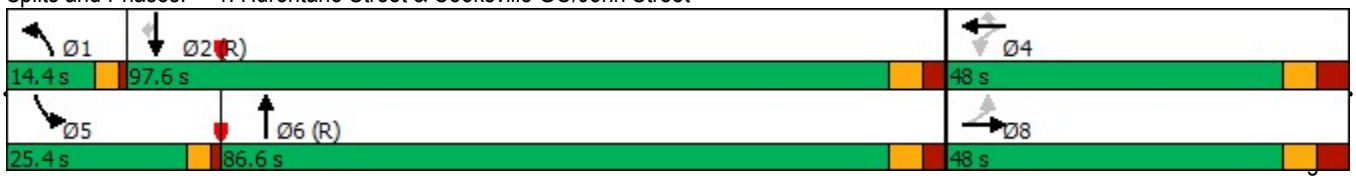
2029 FB PM Adj. Lane Configuration

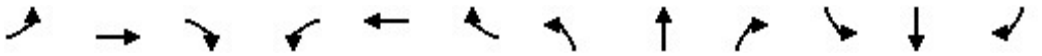
| Lane Group | EBL | EBT | WBL | WBT | WBR | NBL | NBT | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | | | | | |
| Traffic Volume (vph) | 288 | 37 | 22 | 31 | 167 | 40 | 1427 | 125 | 242 | 235 |
| Future Volume (vph) | 288 | 37 | 22 | 31 | 167 | 40 | 1427 | 125 | 242 | 235 |
| Lane Group Flow (vph) | 313 | 122 | 24 | 34 | 182 | 43 | 1577 | 136 | 263 | 255 |
| Turn Type | Perm | NA | Perm | NA | Perm | Prot | NA | Prot | NA | Perm |
| Protected Phases | | 8 | | 4 | | 1 | 6 | 5 | 2 | |
| Permitted Phases | 8 | | 4 | | 4 | | 6 | | 2 | 2 |
| Detector Phase | 8 | 8 | 4 | 4 | 4 | 1 | 6 | 5 | 2 | 2 |
| Switch Phase | | | | | | | | | | |
| Minimum Initial (s) | 8.0 | 8.0 | 8.0 | 8.0 | 8.0 | 5.0 | 8.0 | 5.0 | 8.0 | 8.0 |
| Minimum Split (s) | 46.0 | 46.0 | 46.0 | 46.0 | 46.0 | 9.5 | 38.0 | 9.5 | 38.0 | 38.0 |
| Total Split (s) | 48.0 | 48.0 | 48.0 | 48.0 | 48.0 | 14.4 | 86.6 | 25.4 | 97.6 | 97.6 |
| Total Split (%) | 30.0% | 30.0% | 30.0% | 30.0% | 30.0% | 9.0% | 54.1% | 15.9% | 61.0% | 61.0% |
| Yellow Time (s) | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 | 3.0 | 4.0 | 3.0 | 4.0 | 4.0 |
| All-Red Time (s) | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 | 1.0 | 3.0 | 1.0 | 3.0 | 3.0 |
| Lost Time Adjust (s) | -1.0 | -1.0 | -1.0 | -1.0 | -1.0 | -1.0 | -1.0 | -1.0 | -1.0 | -1.0 |
| Total Lost Time (s) | 7.0 | 7.0 | 7.0 | 7.0 | 7.0 | 3.0 | 6.0 | 3.0 | 6.0 | 6.0 |
| Lead/Lag | | | | | | Lead | Lag | Lead | Lag | Lag |
| Lead-Lag Optimize? | | | | | | Yes | Yes | Yes | Yes | Yes |
| Recall Mode | None | None | None | None | None | None | C-Max | None | C-Max | C-Max |
| v/c Ratio | 1.00 | 0.29 | 0.09 | 0.08 | 0.36 | 0.43 | 0.93 | 0.74 | 0.15 | 0.31 |
| Control Delay | 109.8 | 25.6 | 46.7 | 45.9 | 8.0 | 86.0 | 41.8 | 91.1 | 15.3 | 2.7 |
| Queue Delay | 0.0 | 0.1 | 0.0 | 0.0 | 0.0 | 0.0 | 45.3 | 0.0 | 0.0 | 0.0 |
| Total Delay | 109.8 | 25.7 | 46.8 | 45.9 | 8.0 | 86.0 | 87.2 | 91.1 | 15.3 | 2.7 |
| Queue Length 50th (m) | ~100.8 | 14.9 | 5.9 | 8.3 | 0.0 | 13.1 | 195.8 | 42.3 | 19.7 | 0.0 |
| Queue Length 95th (m) | #164.6 | 33.3 | 14.2 | 17.7 | 19.4 | m26.8 | #306.5 | 64.9 | 27.5 | 12.4 |
| Internal Link Dist (m) | | 191.8 | | 112.9 | | | 109.3 | | 252.0 | |
| Turn Bay Length (m) | | | 25.0 | | | 37.5 | | 48.5 | | 48.5 |
| Base Capacity (vph) | 312 | 420 | 261 | 443 | 499 | 114 | 1697 | 224 | 1807 | 813 |
| Starvation Cap Reductn | 0 | 0 | 0 | 0 | 0 | 0 | 362 | 0 | 0 | 0 |
| Spillback Cap Reductn | 0 | 28 | 20 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Storage Cap Reductn | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Reduced v/c Ratio | 1.00 | 0.31 | 0.10 | 0.08 | 0.36 | 0.38 | 1.18 | 0.61 | 0.15 | 0.31 |

Intersection Summary

Cycle Length: 160
Actuated Cycle Length: 160
Offset: 115 (72%), Referenced to phase 2:SBT and 6:NBT, Start of Green
Natural Cycle: 125
Control Type: Actuated-Coordinated
~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
# 95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 1: Hurontario Street & Cooksville GO/John Street





| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | | | | | | | |
| Traffic Volume (vph) | 288 | 37 | 75 | 22 | 31 | 167 | 40 | 1427 | 24 | 125 | 242 | 235 |
| Future Volume (vph) | 288 | 37 | 75 | 22 | 31 | 167 | 40 | 1427 | 24 | 125 | 242 | 235 |
| Ideal Flow (vphpl) | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 |
| Lane Width | 3.5 | 3.7 | 3.7 | 3.5 | 3.7 | 3.7 | 3.5 | 3.7 | 3.7 | 3.5 | 3.7 | 3.5 |
| Total Lost time (s) | 7.0 | 7.0 | | 7.0 | 7.0 | 7.0 | 3.0 | 6.0 | | 3.0 | 6.0 | 6.0 |
| Lane Util. Factor | 1.00 | 1.00 | | 1.00 | 1.00 | 1.00 | 1.00 | 0.95 | | 1.00 | 0.95 | 1.00 |
| Frpb, ped/bikes | 1.00 | 0.97 | | 1.00 | 1.00 | 0.97 | 1.00 | 1.00 | | 1.00 | 1.00 | 0.86 |
| Flpb, ped/bikes | 0.98 | 1.00 | | 0.97 | 1.00 | 1.00 | 1.00 | 1.00 | | 1.00 | 1.00 | 1.00 |
| Frt | 1.00 | 0.90 | | 1.00 | 1.00 | 0.85 | 1.00 | 1.00 | | 1.00 | 1.00 | 0.85 |
| Flt Protected | 0.95 | 1.00 | | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 | | 0.95 | 1.00 | 1.00 |
| Satd. Flow (prot) | 1575 | 1462 | | 1492 | 1729 | 1422 | 1606 | 3208 | | 1606 | 3042 | 1195 |
| Flt Permitted | 0.73 | 1.00 | | 0.65 | 1.00 | 1.00 | 0.95 | 1.00 | | 0.95 | 1.00 | 1.00 |
| Satd. Flow (perm) | 1219 | 1462 | | 1023 | 1729 | 1422 | 1606 | 3208 | | 1606 | 3042 | 1195 |
| Peak-hour factor, PHF | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 |
| Adj. Flow (vph) | 313 | 40 | 82 | 24 | 34 | 182 | 43 | 1551 | 26 | 136 | 263 | 255 |
| RTOR Reduction (vph) | 0 | 46 | 0 | 0 | 0 | 135 | 0 | 0 | 0 | 0 | 0 | 105 |
| Lane Group Flow (vph) | 313 | 76 | 0 | 24 | 34 | 47 | 43 | 1577 | 0 | 136 | 263 | 150 |
| Confl. Peds. (#/hr) | 16 | | 24 | 24 | | 16 | 81 | | 34 | 34 | | 81 |
| Confl. Bikes (#/hr) | | | | | | 1 | | | | | | 2 |
| Heavy Vehicles (%) | 0% | 0% | 5% | 5% | 0% | 0% | 0% | 2% | 0% | 0% | 8% | 4% |
| Turn Type | Perm | NA | | Perm | NA | Perm | Prot | NA | | Prot | NA | Perm |
| Protected Phases | | 8 | | | 4 | | 1 | 6 | | 5 | 2 | |
| Permitted Phases | 8 | | | 4 | | 4 | | 6 | | | 2 | 2 |
| Actuated Green, G (s) | 40.0 | 40.0 | | 40.0 | 40.0 | 40.0 | 7.7 | 83.6 | | 17.4 | 93.3 | 93.3 |
| Effective Green, g (s) | 41.0 | 41.0 | | 41.0 | 41.0 | 41.0 | 8.7 | 84.6 | | 18.4 | 94.3 | 94.3 |
| Actuated g/C Ratio | 0.26 | 0.26 | | 0.26 | 0.26 | 0.26 | 0.05 | 0.53 | | 0.11 | 0.59 | 0.59 |
| Clearance Time (s) | 8.0 | 8.0 | | 8.0 | 8.0 | 8.0 | 4.0 | 7.0 | | 4.0 | 7.0 | 7.0 |
| Vehicle Extension (s) | 3.0 | 3.0 | | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | | 3.0 | 3.0 | 3.0 |
| Lane Grp Cap (vph) | 312 | 374 | | 262 | 443 | 364 | 87 | 1696 | | 184 | 1792 | 704 |
| v/s Ratio Prot | | 0.05 | | | 0.02 | | 0.03 | c0.49 | | c0.08 | 0.09 | |
| v/s Ratio Perm | c0.26 | | | 0.02 | | 0.03 | | | | | | 0.13 |
| v/c Ratio | 1.00 | 0.20 | | 0.09 | 0.08 | 0.13 | 0.49 | 0.93 | | 0.74 | 0.15 | 0.21 |
| Uniform Delay, d1 | 59.5 | 46.7 | | 45.3 | 45.1 | 45.8 | 73.5 | 34.9 | | 68.5 | 14.8 | 15.4 |
| Progression Factor | 1.00 | 1.00 | | 1.00 | 1.00 | 1.00 | 1.01 | 0.88 | | 1.00 | 1.00 | 1.00 |
| Incremental Delay, d2 | 51.8 | 0.3 | | 0.2 | 0.1 | 0.2 | 4.4 | 10.5 | | 14.4 | 0.2 | 0.7 |
| Delay (s) | 111.3 | 46.9 | | 45.5 | 45.2 | 45.9 | 78.4 | 41.2 | | 82.9 | 14.9 | 16.1 |
| Level of Service | F | D | | D | D | D | E | D | | F | B | B |
| Approach Delay (s) | | 93.2 | | | 45.8 | | | 42.2 | | | 29.5 | |
| Approach LOS | | F | | | D | | | D | | | C | |

| Intersection Summary | | | |
|---|---|---|---|
| HCM 2000 Control Delay | 47.2 | HCM 2000 Level of Service | D |
| HCM 2000 Volume to Capacity ratio | 0.93 | | |
| Actuated Cycle Length (s) | 160.0 | Sum of lost time (s) | 16.0 |
| Intersection Capacity Utilization | 99.9% | ICU Level of Service | F |
| Analysis Period (min) | 15 | | |

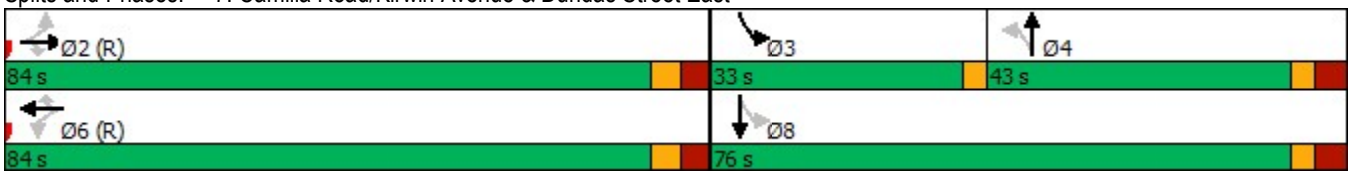
c Critical Lane Group

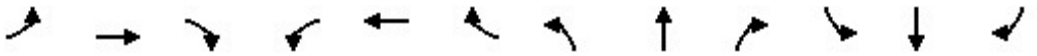
| Lane Group | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | SBL | SBT |
|---|---|---|---|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | | | | | |
| Traffic Volume (vph) | 19 | 1088 | 59 | 56 | 637 | 137 | 60 | 91 | 255 | 97 |
| Future Volume (vph) | 19 | 1088 | 59 | 56 | 637 | 137 | 60 | 91 | 255 | 97 |
| Lane Group Flow (vph) | 21 | 1183 | 64 | 61 | 692 | 149 | 65 | 179 | 277 | 135 |
| Turn Type | Perm | NA | Perm | Perm | NA | Perm | Perm | NA | pm+pt | NA |
| Protected Phases | | 2 | | | 6 | | | 4 | 3 | 8 |
| Permitted Phases | 2 | | 2 | 6 | | 6 | 4 | | 8 | |
| Detector Phase | 2 | 2 | 2 | 6 | 6 | 6 | 4 | 4 | 3 | 8 |
| Switch Phase | | | | | | | | | | |
| Minimum Initial (s) | 8.0 | 8.0 | 8.0 | 8.0 | 8.0 | 8.0 | 8.0 | 8.0 | 5.0 | 8.0 |
| Minimum Split (s) | 44.0 | 44.0 | 44.0 | 44.0 | 44.0 | 44.0 | 43.0 | 43.0 | 9.5 | 43.0 |
| Total Split (s) | 84.0 | 84.0 | 84.0 | 84.0 | 84.0 | 84.0 | 43.0 | 43.0 | 33.0 | 76.0 |
| Total Split (%) | 52.5% | 52.5% | 52.5% | 52.5% | 52.5% | 52.5% | 26.9% | 26.9% | 20.6% | 47.5% |
| Yellow Time (s) | 3.5 | 3.5 | 3.5 | 3.5 | 3.5 | 3.5 | 3.0 | 3.0 | 3.0 | 3.0 |
| All-Red Time (s) | 3.5 | 3.5 | 3.5 | 3.5 | 3.5 | 3.5 | 4.0 | 4.0 | 0.0 | 4.0 |
| Lost Time Adjust (s) | -1.0 | -1.0 | -1.0 | -1.0 | -1.0 | -1.0 | -1.0 | -1.0 | -1.0 | -1.0 |
| Total Lost Time (s) | 6.0 | 6.0 | 6.0 | 6.0 | 6.0 | 6.0 | 6.0 | 6.0 | 2.0 | 6.0 |
| Lead/Lag | | | | | | | Lag | Lag | Lead | |
| Lead-Lag Optimize? | | | | | | | Yes | Yes | Yes | |
| Recall Mode | C-Max | C-Max | C-Max | C-Max | C-Max | C-Max | None | None | None | None |
| v/c Ratio | 0.07 | 0.63 | 0.08 | 0.36 | 0.38 | 0.18 | 0.43 | 0.75 | 0.74 | 0.25 |
| Control Delay | 17.6 | 24.3 | 6.6 | 27.7 | 18.8 | 3.0 | 69.7 | 75.4 | 51.5 | 35.1 |
| Queue Delay | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Total Delay | 17.6 | 24.3 | 6.6 | 27.7 | 18.8 | 3.0 | 69.7 | 75.4 | 51.5 | 35.1 |
| Queue Length 50th (m) | 2.8 | 127.0 | 2.1 | 9.9 | 59.7 | 0.0 | 19.2 | 48.3 | 68.0 | 28.3 |
| Queue Length 95th (m) | 8.4 | 172.8 | 10.1 | 26.5 | 84.7 | 11.1 | 33.5 | 71.5 | 87.0 | 41.6 |
| Internal Link Dist (m) | | 302.1 | | | 262.5 | | | 162.3 | | 279.0 |
| Turn Bay Length (m) | 15.0 | | 30.0 | 30.0 | | 65.0 | 36.0 | | 40.0 | |
| Base Capacity (vph) | 309 | 1881 | 809 | 169 | 1845 | 841 | 250 | 377 | 394 | 715 |
| Starvation Cap Reductn | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Spillback Cap Reductn | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Storage Cap Reductn | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Reduced v/c Ratio | 0.07 | 0.63 | 0.08 | 0.36 | 0.38 | 0.18 | 0.26 | 0.47 | 0.70 | 0.19 |

Intersection Summary

Cycle Length: 160
Actuated Cycle Length: 160
Offset: 38 (24%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green
Natural Cycle: 100
Control Type: Actuated-Coordinated

Splits and Phases: 7: Camilla Road/Kirwin Avenue & Dundas Street East





| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | | | | | | | |
| Traffic Volume (vph) | 19 | 1088 | 59 | 56 | 637 | 137 | 60 | 91 | 74 | 255 | 97 | 28 |
| Future Volume (vph) | 19 | 1088 | 59 | 56 | 637 | 137 | 60 | 91 | 74 | 255 | 97 | 28 |
| Ideal Flow (vphpl) | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 |
| Lane Width | 3.5 | 3.7 | 3.5 | 3.5 | 3.7 | 3.5 | 3.5 | 3.7 | 3.7 | 3.5 | 3.7 | 3.7 |
| Total Lost time (s) | 6.0 | 6.0 | 6.0 | 6.0 | 6.0 | 6.0 | 6.0 | 6.0 | | 2.0 | 6.0 | |
| Lane Util. Factor | 1.00 | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 | 1.00 | 1.00 | | 1.00 | 1.00 | |
| Frpb, ped/bikes | 1.00 | 1.00 | 0.97 | 1.00 | 1.00 | 0.97 | 1.00 | 0.99 | | 1.00 | 0.99 | |
| Flpb, ped/bikes | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 0.98 | 1.00 | | 1.00 | 1.00 | |
| Frt | 1.00 | 1.00 | 0.85 | 1.00 | 1.00 | 0.85 | 1.00 | 0.93 | | 1.00 | 0.97 | |
| Flt Protected | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 | | 0.95 | 1.00 | |
| Satd. Flow (prot) | 1428 | 3159 | 1327 | 1604 | 3099 | 1312 | 1534 | 1551 | | 1558 | 1622 | |
| Flt Permitted | 0.35 | 1.00 | 1.00 | 0.17 | 1.00 | 1.00 | 0.67 | 1.00 | | 0.35 | 1.00 | |
| Satd. Flow (perm) | 520 | 3159 | 1327 | 284 | 3099 | 1312 | 1083 | 1551 | | 575 | 1622 | |
| Peak-hour factor, PHF | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 |
| Adj. Flow (vph) | 21 | 1183 | 64 | 61 | 692 | 149 | 65 | 99 | 80 | 277 | 105 | 30 |
| RTOR Reduction (vph) | 0 | 0 | 19 | 0 | 0 | 60 | 0 | 21 | 0 | 0 | 7 | 0 |
| Lane Group Flow (vph) | 21 | 1183 | 45 | 61 | 692 | 89 | 65 | 158 | 0 | 277 | 128 | 0 |
| Confl. Peds. (#/hr) | 6 | | 5 | 5 | | 6 | 15 | | 3 | 3 | | 15 |
| Heavy Vehicles (%) | 12% | 4% | 5% | 0% | 6% | 6% | 3% | 1% | 6% | 3% | 3% | 0% |
| Turn Type | Perm | NA | Perm | Perm | NA | Perm | Perm | NA | | pm+pt | NA | |
| Protected Phases | | 2 | | | 6 | | | 4 | | 3 | 8 | |
| Permitted Phases | 2 | | 2 | 6 | | 6 | 4 | | | 8 | | |
| Actuated Green, G (s) | 94.3 | 94.3 | 94.3 | 94.3 | 94.3 | 94.3 | 21.5 | 21.5 | | 51.7 | 51.7 | |
| Effective Green, g (s) | 95.3 | 95.3 | 95.3 | 95.3 | 95.3 | 95.3 | 22.5 | 22.5 | | 52.7 | 52.7 | |
| Actuated g/C Ratio | 0.60 | 0.60 | 0.60 | 0.60 | 0.60 | 0.60 | 0.14 | 0.14 | | 0.33 | 0.33 | |
| Clearance Time (s) | 7.0 | 7.0 | 7.0 | 7.0 | 7.0 | 7.0 | 7.0 | 7.0 | | 3.0 | 7.0 | |
| Vehicle Extension (s) | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | | 3.0 | 3.0 | |
| Lane Grp Cap (vph) | 309 | 1881 | 790 | 169 | 1845 | 781 | 152 | 218 | | 362 | 534 | |
| v/s Ratio Prot | | c0.37 | | | 0.22 | | | c0.10 | | c0.13 | 0.08 | |
| v/s Ratio Perm | 0.04 | | 0.03 | 0.21 | | 0.07 | 0.06 | | | 0.12 | | |
| v/c Ratio | 0.07 | 0.63 | 0.06 | 0.36 | 0.38 | 0.11 | 0.43 | 0.73 | | 0.77 | 0.24 | |
| Uniform Delay, d1 | 13.6 | 20.9 | 13.5 | 16.7 | 16.8 | 14.0 | 62.9 | 65.8 | | 44.3 | 39.1 | |
| Progression Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | | 1.00 | 1.00 | |
| Incremental Delay, d2 | 0.4 | 1.6 | 0.1 | 5.9 | 0.6 | 0.3 | 1.9 | 11.4 | | 9.3 | 0.2 | |
| Delay (s) | 14.1 | 22.5 | 13.7 | 22.6 | 17.4 | 14.3 | 64.8 | 77.2 | | 53.6 | 39.3 | |
| Level of Service | B | C | B | C | B | B | E | E | | D | D | |
| Approach Delay (s) | | 21.9 | | | 17.3 | | | 73.9 | | | 48.9 | |
| Approach LOS | | C | | | B | | | E | | | D | |

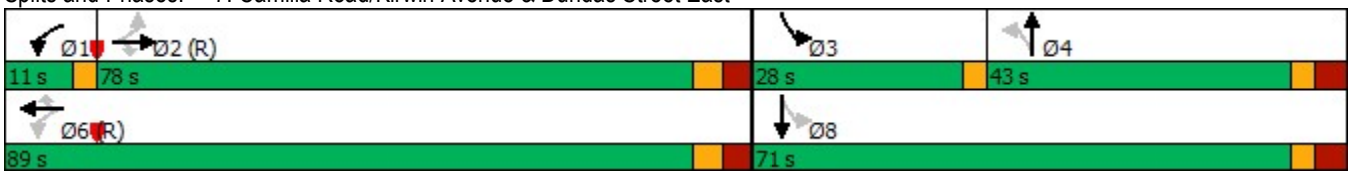
| Intersection Summary | | | |
|---|---|---|---|
| HCM 2000 Control Delay | 28.9 | HCM 2000 Level of Service | C |
| HCM 2000 Volume to Capacity ratio | 0.67 | | |
| Actuated Cycle Length (s) | 160.0 | Sum of lost time (s) | 14.0 |
| Intersection Capacity Utilization | 86.5% | ICU Level of Service | E |
| Analysis Period (min) | 15 | | |
| c Critical Lane Group | | | |

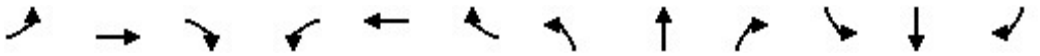
| Lane Group | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | SBL | SBT |
|---|---|---|---|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | | | | | |
| Traffic Volume (vph) | 40 | 788 | 42 | 103 | 1119 | 321 | 52 | 126 | 222 | 99 |
| Future Volume (vph) | 40 | 788 | 42 | 103 | 1119 | 321 | 52 | 126 | 222 | 99 |
| Lane Group Flow (vph) | 43 | 857 | 46 | 112 | 1216 | 349 | 57 | 220 | 241 | 133 |
| Turn Type | Perm | NA | Perm | pm+pt | NA | Perm | Perm | NA | pm+pt | NA |
| Protected Phases | | 2 | | 1 | 6 | | | 4 | 3 | 8 |
| Permitted Phases | 2 | | 2 | 6 | | 6 | 4 | | 8 | |
| Detector Phase | 2 | 2 | 2 | 1 | 6 | 6 | 4 | 4 | 3 | 8 |
| Switch Phase | | | | | | | | | | |
| Minimum Initial (s) | 8.0 | 8.0 | 8.0 | 5.0 | 8.0 | 8.0 | 8.0 | 8.0 | 5.0 | 8.0 |
| Minimum Split (s) | 44.0 | 44.0 | 44.0 | 9.5 | 44.0 | 44.0 | 43.0 | 43.0 | 9.5 | 43.0 |
| Total Split (s) | 78.0 | 78.0 | 78.0 | 11.0 | 89.0 | 89.0 | 43.0 | 43.0 | 28.0 | 71.0 |
| Total Split (%) | 48.8% | 48.8% | 48.8% | 6.9% | 55.6% | 55.6% | 26.9% | 26.9% | 17.5% | 44.4% |
| Yellow Time (s) | 3.5 | 3.5 | 3.5 | 3.0 | 3.5 | 3.5 | 3.0 | 3.0 | 3.0 | 3.0 |
| All-Red Time (s) | 3.5 | 3.5 | 3.5 | 0.0 | 3.5 | 3.5 | 4.0 | 4.0 | 0.0 | 4.0 |
| Lost Time Adjust (s) | -1.0 | -1.0 | -1.0 | -1.0 | -1.0 | -1.0 | -1.0 | -1.0 | -1.0 | -1.0 |
| Total Lost Time (s) | 6.0 | 6.0 | 6.0 | 2.0 | 6.0 | 6.0 | 6.0 | 6.0 | 2.0 | 6.0 |
| Lead/Lag | Lag | Lag | Lag | Lead | | | Lag | Lag | Lead | |
| Lead-Lag Optimize? | Yes | Yes | Yes | Yes | | | Yes | Yes | Yes | |
| Recall Mode | C-Max | C-Max | C-Max | None | C-Max | C-Max | None | None | None | None |
| v/c Ratio | 0.27 | 0.52 | 0.06 | 0.33 | 0.63 | 0.38 | 0.31 | 0.78 | 0.71 | 0.24 |
| Control Delay | 31.4 | 28.2 | 2.2 | 16.7 | 24.1 | 6.8 | 61.0 | 76.8 | 50.3 | 35.8 |
| Queue Delay | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Total Delay | 31.4 | 28.2 | 2.2 | 16.7 | 24.1 | 6.8 | 61.0 | 76.8 | 50.3 | 35.8 |
| Queue Length 50th (m) | 7.7 | 95.1 | 0.0 | 14.2 | 130.3 | 14.4 | 16.2 | 62.7 | 57.6 | 28.3 |
| Queue Length 95th (m) | 20.3 | 128.3 | 3.7 | 27.2 | 176.3 | 39.4 | 28.8 | 87.3 | 75.2 | 41.8 |
| Internal Link Dist (m) | | 302.1 | | | 262.5 | | | 162.3 | | 279.0 |
| Turn Bay Length (m) | 15.0 | | 30.0 | 30.0 | | 65.0 | 36.0 | | 40.0 | |
| Base Capacity (vph) | 160 | 1659 | 711 | 337 | 1925 | 911 | 258 | 387 | 354 | 680 |
| Starvation Cap Reductn | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Spillback Cap Reductn | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Storage Cap Reductn | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Reduced v/c Ratio | 0.27 | 0.52 | 0.06 | 0.33 | 0.63 | 0.38 | 0.22 | 0.57 | 0.68 | 0.20 |

Intersection Summary

Cycle Length: 160
Actuated Cycle Length: 160
Offset: 26 (16%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green
Natural Cycle: 110
Control Type: Actuated-Coordinated

Splits and Phases: 7: Camilla Road/Kirwin Avenue & Dundas Street East





| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | | | | | | | |
| Traffic Volume (vph) | 40 | 788 | 42 | 103 | 1119 | 321 | 52 | 126 | 76 | 222 | 99 | 23 |
| Future Volume (vph) | 40 | 788 | 42 | 103 | 1119 | 321 | 52 | 126 | 76 | 222 | 99 | 23 |
| Ideal Flow (vphpl) | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 |
| Lane Width | 3.5 | 3.7 | 3.5 | 3.5 | 3.7 | 3.5 | 3.5 | 3.7 | 3.7 | 3.5 | 3.7 | 3.7 |
| Total Lost time (s) | 6.0 | 6.0 | 6.0 | 2.0 | 6.0 | 6.0 | 6.0 | 6.0 | | 2.0 | 6.0 | |
| Lane Util. Factor | 1.00 | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 | 1.00 | 1.00 | | 1.00 | 1.00 | |
| Frpb, ped/bikes | 1.00 | 1.00 | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 | 0.99 | | 1.00 | 0.99 | |
| Flpb, ped/bikes | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 0.98 | 1.00 | | 1.00 | 1.00 | |
| Frt | 1.00 | 1.00 | 0.85 | 1.00 | 1.00 | 0.85 | 1.00 | 0.94 | | 1.00 | 0.97 | |
| Flt Protected | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 | | 0.95 | 1.00 | |
| Satd. Flow (prot) | 1599 | 3189 | 1304 | 1604 | 3221 | 1360 | 1582 | 1616 | | 1587 | 1661 | |
| Flt Permitted | 0.18 | 1.00 | 1.00 | 0.25 | 1.00 | 1.00 | 0.67 | 1.00 | | 0.30 | 1.00 | |
| Satd. Flow (perm) | 309 | 3189 | 1304 | 416 | 3221 | 1360 | 1119 | 1616 | | 506 | 1661 | |
| Peak-hour factor, PHF | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 |
| Adj. Flow (vph) | 43 | 857 | 46 | 112 | 1216 | 349 | 57 | 137 | 83 | 241 | 108 | 25 |
| RTOR Reduction (vph) | 0 | 0 | 22 | 0 | 0 | 98 | 0 | 15 | 0 | 0 | 6 | 0 |
| Lane Group Flow (vph) | 43 | 857 | 24 | 112 | 1216 | 251 | 57 | 205 | 0 | 241 | 127 | 0 |
| Confl. Peds. (#/hr) | 16 | | 13 | 13 | | 16 | 14 | | 10 | 10 | | 14 |
| Heavy Vehicles (%) | 0% | 3% | 5% | 0% | 2% | 0% | 0% | 0% | 0% | 1% | 0% | 3% |
| Turn Type | Perm | NA | Perm | pm+pt | NA | Perm | Perm | NA | | pm+pt | NA | |
| Protected Phases | | 2 | | 1 | 6 | | | 4 | | 3 | 8 | |
| Permitted Phases | 2 | | 2 | 6 | | 6 | 4 | | | 8 | | |
| Actuated Green, G (s) | 82.2 | 82.2 | 82.2 | 94.6 | 94.6 | 94.6 | 25.5 | 25.5 | | 51.4 | 51.4 | |
| Effective Green, g (s) | 83.2 | 83.2 | 83.2 | 95.6 | 95.6 | 95.6 | 26.5 | 26.5 | | 52.4 | 52.4 | |
| Actuated g/C Ratio | 0.52 | 0.52 | 0.52 | 0.60 | 0.60 | 0.60 | 0.17 | 0.17 | | 0.33 | 0.33 | |
| Clearance Time (s) | 7.0 | 7.0 | 7.0 | 3.0 | 7.0 | 7.0 | 7.0 | 7.0 | | 3.0 | 7.0 | |
| Vehicle Extension (s) | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | | 3.0 | 3.0 | |
| Lane Grp Cap (vph) | 160 | 1658 | 678 | 325 | 1924 | 812 | 185 | 267 | | 327 | 543 | |
| v/s Ratio Prot | | 0.27 | | 0.02 | c0.38 | | | c0.13 | | c0.11 | 0.08 | |
| v/s Ratio Perm | 0.14 | | 0.02 | 0.18 | | 0.18 | 0.05 | | | 0.13 | | |
| v/c Ratio | 0.27 | 0.52 | 0.04 | 0.34 | 0.63 | 0.31 | 0.31 | 0.77 | | 0.74 | 0.23 | |
| Uniform Delay, d1 | 21.4 | 25.2 | 18.8 | 15.8 | 20.8 | 15.9 | 58.7 | 63.8 | | 43.5 | 39.2 | |
| Progression Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | | 1.00 | 1.00 | |
| Incremental Delay, d2 | 4.1 | 1.2 | 0.1 | 0.6 | 1.6 | 1.0 | 1.0 | 12.4 | | 8.4 | 0.2 | |
| Delay (s) | 25.5 | 26.4 | 18.9 | 16.4 | 22.4 | 16.9 | 59.6 | 76.2 | | 51.9 | 39.4 | |
| Level of Service | C | C | B | B | C | B | E | E | | D | D | |
| Approach Delay (s) | | 26.0 | | | 20.9 | | | 72.8 | | | 47.5 | |
| Approach LOS | | C | | | C | | | E | | | D | |

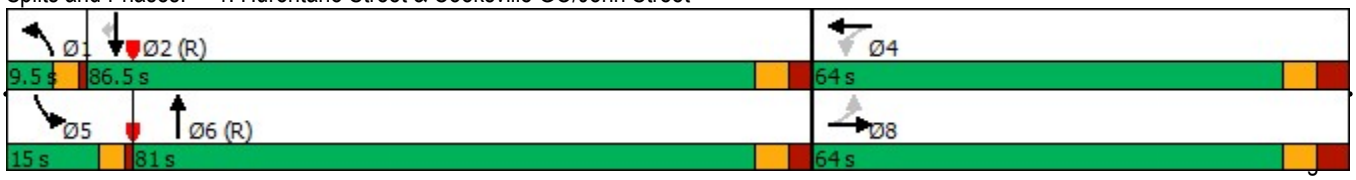
| Intersection Summary | | | |
|---|---|---|---|
| HCM 2000 Control Delay | 29.8 | HCM 2000 Level of Service | C |
| HCM 2000 Volume to Capacity ratio | 0.68 | | |
| Actuated Cycle Length (s) | 160.0 | Sum of lost time (s) | 16.0 |
| Intersection Capacity Utilization | 90.8% | ICU Level of Service | E |
| Analysis Period (min) | 15 | | |
| c Critical Lane Group | | | |

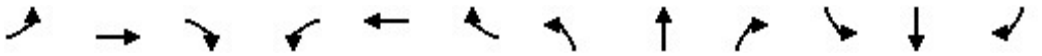
| Lane Group | EBL | EBT | WBL | WBT | NBL | NBT | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | | | | |
| Traffic Volume (vph) | 328 | 30 | 135 | 19 | 15 | 1576 | 147 | 1305 | 296 |
| Future Volume (vph) | 328 | 30 | 135 | 19 | 15 | 1576 | 147 | 1305 | 296 |
| Lane Group Flow (vph) | 357 | 206 | 147 | 319 | 16 | 1746 | 160 | 1418 | 322 |
| Turn Type | Perm | NA | Perm | NA | Prot | NA | Prot | NA | Perm |
| Protected Phases | | 8 | | 4 | 1 | 6 | 5 | 2 | |
| Permitted Phases | 8 | | 4 | | | 6 | | 2 | 2 |
| Detector Phase | 8 | 8 | 4 | 4 | 1 | 6 | 5 | 2 | 2 |
| Switch Phase | | | | | | | | | |
| Minimum Initial (s) | 8.0 | 8.0 | 8.0 | 8.0 | 5.0 | 8.0 | 5.0 | 8.0 | 8.0 |
| Minimum Split (s) | 46.0 | 46.0 | 46.0 | 46.0 | 9.5 | 38.0 | 9.5 | 38.0 | 38.0 |
| Total Split (s) | 64.0 | 64.0 | 64.0 | 64.0 | 9.5 | 81.0 | 15.0 | 86.5 | 86.5 |
| Total Split (%) | 40.0% | 40.0% | 40.0% | 40.0% | 5.9% | 50.6% | 9.4% | 54.1% | 54.1% |
| Yellow Time (s) | 4.0 | 4.0 | 4.0 | 4.0 | 3.0 | 4.0 | 3.0 | 4.0 | 4.0 |
| All-Red Time (s) | 4.0 | 4.0 | 4.0 | 4.0 | 1.0 | 3.0 | 1.0 | 3.0 | 3.0 |
| Lost Time Adjust (s) | -1.0 | -1.0 | -1.0 | -1.0 | -1.0 | -1.0 | -1.0 | -1.0 | -1.0 |
| Total Lost Time (s) | 7.0 | 7.0 | 7.0 | 7.0 | 3.0 | 6.0 | 3.0 | 6.0 | 6.0 |
| Lead/Lag | | | | | Lead | Lag | Lead | Lag | Lag |
| Lead-Lag Optimize? | | | | | Yes | Yes | Yes | Yes | Yes |
| Recall Mode | None | None | None | None | None | C-Max | None | C-Max | C-Max |
| v/c Ratio | 1.20 | 0.36 | 0.45 | 0.33 | 0.28 | 1.18 | 1.40 | 0.90 | 0.46 |
| Control Delay | 162.2 | 23.4 | 44.7 | 26.4 | 78.0 | 125.9 | 275.1 | 42.2 | 14.7 |
| Queue Delay | 0.0 | 42.2 | 75.2 | 0.0 | 0.0 | 1.5 | 0.0 | 48.9 | 0.0 |
| Total Delay | 162.2 | 65.6 | 119.9 | 26.4 | 78.0 | 127.3 | 275.1 | 91.1 | 14.7 |
| Queue Length 50th (m) | ~137.1 | 27.2 | 35.8 | 26.3 | 4.6 | ~355.0 | ~67.6 | 195.4 | 30.6 |
| Queue Length 95th (m) | #201.0 | 49.6 | 58.4 | 39.5 | m5.7 | m#366.3 | #115.7 | #278.5 | 62.2 |
| Internal Link Dist (m) | | 191.8 | | 112.9 | | 109.3 | | 252.0 | |
| Turn Bay Length (m) | | | 25.0 | | 37.5 | | 48.5 | | 48.5 |
| Base Capacity (vph) | 297 | 565 | 330 | 961 | 57 | 1474 | 114 | 1579 | 705 |
| Starvation Cap Reductn | 0 | 0 | 0 | 0 | 0 | 447 | 0 | 0 | 0 |
| Spillback Cap Reductn | 0 | 365 | 219 | 0 | 0 | 0 | 0 | 813 | 0 |
| Storage Cap Reductn | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Reduced v/c Ratio | 1.20 | 1.03 | 1.32 | 0.33 | 0.28 | 1.70 | 1.40 | 1.85 | 0.46 |

## Intersection Summary

Cycle Length: 160
Actuated Cycle Length: 160
Offset: 0 (0%), Referenced to phase 2:SBT and 6:NBT, Start of Green
Natural Cycle: 135
Control Type: Actuated-Coordinated
~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
# 95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 1: Hurontario Street & Cooksville GO/John Street





| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | | | | | | | |
| Traffic Volume (vph) | 328 | 30 | 159 | 135 | 19 | 274 | 15 | 1576 | 30 | 147 | 1305 | 296 |
| Future Volume (vph) | 328 | 30 | 159 | 135 | 19 | 274 | 15 | 1576 | 30 | 147 | 1305 | 296 |
| Ideal Flow (vphpl) | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 |
| Lane Width | 3.5 | 3.7 | 3.7 | 3.5 | 3.7 | 3.7 | 3.5 | 3.7 | 3.7 | 3.5 | 3.7 | 3.5 |
| Total Lost time (s) | 7.0 | 7.0 | | 7.0 | 7.0 | | 3.0 | 6.0 | | 3.0 | 6.0 | 6.0 |
| Lane Util. Factor | 1.00 | 1.00 | | 1.00 | 0.95 | | 1.00 | 0.95 | | 1.00 | 0.95 | 1.00 |
| Frpb, ped/bikes | 1.00 | 0.97 | | 1.00 | 0.93 | | 1.00 | 1.00 | | 1.00 | 1.00 | 0.85 |
| Flpb, ped/bikes | 0.96 | 1.00 | | 0.98 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | 1.00 |
| Frt | 1.00 | 0.87 | | 1.00 | 0.86 | | 1.00 | 1.00 | | 1.00 | 1.00 | 0.85 |
| Flt Protected | 0.95 | 1.00 | | 0.95 | 1.00 | | 0.95 | 1.00 | | 0.95 | 1.00 | 1.00 |
| Satd. Flow (prot) | 1518 | 1429 | | 1578 | 2520 | | 1409 | 3144 | | 1530 | 2933 | 1187 |
| Flt Permitted | 0.52 | 1.00 | | 0.56 | 1.00 | | 0.95 | 1.00 | | 0.95 | 1.00 | 1.00 |
| Satd. Flow (perm) | 836 | 1429 | | 929 | 2520 | | 1409 | 3144 | | 1530 | 2933 | 1187 |
| Peak-hour factor, PHF | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 |
| Adj. Flow (vph) | 357 | 33 | 173 | 147 | 21 | 298 | 16 | 1713 | 33 | 160 | 1418 | 322 |
| RTOR Reduction (vph) | 0 | 56 | 0 | 0 | 64 | 0 | 0 | 1 | 0 | 0 | 0 | 69 |
| Lane Group Flow (vph) | 357 | 150 | 0 | 147 | 255 | 0 | 16 | 1745 | 0 | 160 | 1418 | 253 |
| Confl. Peds. (#/hr) | 47 | | 20 | 20 | | 47 | 90 | | 46 | 46 | | 90 |
| Confl. Bikes (#/hr) | | | | | | 1 | | | 1 | | | 2 |
| Heavy Vehicles (%) | 2% | 0% | 3% | 0% | 0% | 5% | 14% | 4% | 0% | 5% | 12% | 3% |
| Turn Type | Perm | NA | | Perm | NA | | Prot | NA | | Prot | NA | Perm |
| Protected Phases | | 8 | | | 4 | | 1 | 6 | | 5 | 2 | |
| Permitted Phases | 8 | | | 4 | | | | 6 | | | 2 | 2 |
| Actuated Green, G (s) | 56.0 | 56.0 | | 56.0 | 56.0 | | 2.2 | 74.0 | | 11.0 | 82.8 | 82.8 |
| Effective Green, g (s) | 57.0 | 57.0 | | 57.0 | 57.0 | | 3.2 | 75.0 | | 12.0 | 83.8 | 83.8 |
| Actuated g/C Ratio | 0.36 | 0.36 | | 0.36 | 0.36 | | 0.02 | 0.47 | | 0.08 | 0.52 | 0.52 |
| Clearance Time (s) | 8.0 | 8.0 | | 8.0 | 8.0 | | 4.0 | 7.0 | | 4.0 | 7.0 | 7.0 |
| Vehicle Extension (s) | 3.0 | 3.0 | | 3.0 | 3.0 | | 3.0 | 3.0 | | 3.0 | 3.0 | 3.0 |
| Lane Grp Cap (vph) | 297 | 509 | | 330 | 897 | | 28 | 1473 | | 114 | 1536 | 621 |
| v/s Ratio Prot | | 0.10 | | | 0.10 | | 0.01 | c0.56 | | c0.10 | 0.48 | |
| v/s Ratio Perm | c0.43 | | | 0.16 | | | | | | | | 0.21 |
| v/c Ratio | 1.20 | 0.29 | | 0.45 | 0.28 | | 0.57 | 1.18 | | 1.40 | 0.92 | 0.41 |
| Uniform Delay, d1 | 51.5 | 37.0 | | 39.4 | 36.9 | | 77.7 | 42.5 | | 74.0 | 35.1 | 23.1 |
| Progression Factor | 1.00 | 1.00 | | 1.00 | 1.00 | | 0.98 | 1.06 | | 1.00 | 1.00 | 1.00 |
| Incremental Delay, d2 | 118.6 | 0.3 | | 1.0 | 0.2 | | 9.8 | 85.8 | | 225.8 | 10.7 | 2.0 |
| Delay (s) | 170.1 | 37.4 | | 40.4 | 37.1 | | 85.9 | 131.1 | | 299.8 | 45.9 | 25.1 |
| Level of Service | F | D | | D | D | | F | F | | F | D | C |
| Approach Delay (s) | | 121.5 | | | 38.1 | | | 130.7 | | | 63.7 | |
| Approach LOS | | F | | | D | | | F | | | E | |

| Intersection Summary | | | |
|---|---|---|---|
| HCM 2000 Control Delay | 93.3 | HCM 2000 Level of Service | F |
| HCM 2000 Volume to Capacity ratio | 1.21 | | |
| Actuated Cycle Length (s) | 160.0 | Sum of lost time (s) | 16.0 |
| Intersection Capacity Utilization | 126.8% | ICU Level of Service | H |
| Analysis Period (min) | 15 | | |

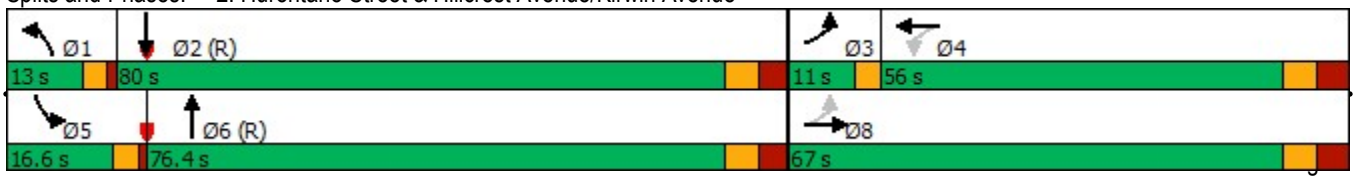
c Critical Lane Group

| Lane Group | EBL | EBT | WBL | WBT | NBL | NBT | SBL | SBT |
|---|---|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | | | |
| Traffic Volume (vph) | 345 | 191 | 165 | 187 | 109 | 1171 | 106 | 1604 |
| Future Volume (vph) | 345 | 191 | 165 | 187 | 109 | 1171 | 106 | 1604 |
| Lane Group Flow (vph) | 375 | 469 | 179 | 354 | 118 | 1312 | 115 | 1961 |
| Turn Type | pm+pt | NA | Perm | NA | Prot | NA | Prot | NA |
| Protected Phases | 3 | 8 | | 4 | 1 | 6 | 5 | 2 |
| Permitted Phases | 8 | | 4 | | | 6 | | 2 |
| Detector Phase | 3 | 8 | 4 | 4 | 1 | 6 | 5 | 2 |
| Switch Phase | | | | | | | | |
| Minimum Initial (s) | 5.0 | 8.0 | 8.0 | 8.0 | 7.0 | 8.0 | 5.0 | 8.0 |
| Minimum Split (s) | 9.5 | 56.0 | 56.0 | 56.0 | 11.0 | 51.5 | 9.5 | 51.5 |
| Total Split (s) | 11.0 | 67.0 | 56.0 | 56.0 | 13.0 | 76.4 | 16.6 | 80.0 |
| Total Split (%) | 6.9% | 41.9% | 35.0% | 35.0% | 8.1% | 47.8% | 10.4% | 50.0% |
| Yellow Time (s) | 3.0 | 4.0 | 4.0 | 4.0 | 3.0 | 4.0 | 3.0 | 4.0 |
| All-Red Time (s) | 0.0 | 4.0 | 4.0 | 4.0 | 1.0 | 3.5 | 1.0 | 3.5 |
| Lost Time Adjust (s) | -1.0 | -1.0 | -1.0 | -1.0 | -1.0 | -1.0 | -1.0 | -1.0 |
| Total Lost Time (s) | 2.0 | 7.0 | 7.0 | 7.0 | 3.0 | 6.5 | 3.0 | 6.5 |
| Lead/Lag | Lead | | Lag | Lag | Lead | Lag | Lead | Lag |
| Lead-Lag Optimize? | Yes | | Yes | Yes | Yes | Yes | Yes | Yes |
| Recall Mode | None | None | None | None | None | C-Max | None | C-Max |
| v/c Ratio | 1.21 | 0.46 | 0.91 | 0.41 | 0.83 | 0.92 | 0.82 | 1.40 |
| Control Delay | 158.6 | 29.9 | 100.4 | 31.2 | 107.6 | 51.2 | 90.6 | 224.5 |
| Queue Delay | 3.2 | 0.0 | 0.0 | 0.0 | 0.0 | 49.1 | 0.0 | 1.0 |
| Total Delay | 161.8 | 29.9 | 100.4 | 31.2 | 107.6 | 100.3 | 90.6 | 225.6 |
| Queue Length 50th (m) | ~112.9 | 42.3 | 53.5 | 30.4 | ~43.2 | 214.6 | 37.3 | ~433.1 |
| Queue Length 95th (m) | #189.3 | 57.5 | #94.8 | 44.7 | #90.5 | #266.4 | m#52.1 | #473.8 |
| Internal Link Dist (m) | | 206.4 | | 133.2 | | 400.9 | | 109.3 |
| Turn Bay Length (m) | | | 50.0 | | 53.0 | | 36.0 | |
| Base Capacity (vph) | 311 | 1123 | 222 | 953 | 143 | 1432 | 142 | 1405 |
| Starvation Cap Reductn | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 315 |
| Spillback Cap Reductn | 69 | 0 | 0 | 20 | 0 | 789 | 0 | 0 |
| Storage Cap Reductn | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Reduced v/c Ratio | 1.55 | 0.42 | 0.81 | 0.38 | 0.83 | 2.04 | 0.81 | 1.80 |

## Intersection Summary

Cycle Length: 160
Actuated Cycle Length: 160
Offset: 99 (62%), Referenced to phase 2:SBT and 6:NBT, Start of Green
Natural Cycle: 150
Control Type: Actuated-Coordinated
~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
# 95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 2: Hurontario Street & Hillcrest Avenue/Kirwin Avenue



| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | | | | | | | |
| Traffic Volume (vph) | 345 | 191 | 240 | 165 | 187 | 139 | 109 | 1171 | 36 | 106 | 1604 | 201 |
| Future Volume (vph) | 345 | 191 | 240 | 165 | 187 | 139 | 109 | 1171 | 36 | 106 | 1604 | 201 |
| Ideal Flow (vphpl) | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 |
| Lane Width | 3.5 | 3.7 | 3.5 | 3.5 | 3.7 | 3.7 | 3.5 | 3.7 | 3.7 | 3.5 | 3.7 | 3.5 |
| Total Lost time (s) | 2.0 | 7.0 | | 7.0 | 7.0 | | 3.0 | 6.5 | | 3.0 | 6.5 | |
| Lane Util. Factor | 1.00 | 0.95 | | 1.00 | 0.95 | | 1.00 | 0.95 | | 1.00 | 0.95 | |
| Frpb, ped/bikes | 1.00 | 0.97 | | 1.00 | 0.99 | | 1.00 | 1.00 | | 1.00 | 0.99 | |
| Flpb, ped/bikes | 1.00 | 1.00 | | 0.98 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | |
| Frt | 1.00 | 0.92 | | 1.00 | 0.94 | | 1.00 | 1.00 | | 1.00 | 0.98 | |
| Flt Protected | 0.95 | 1.00 | | 0.95 | 1.00 | | 0.95 | 1.00 | | 0.95 | 1.00 | |
| Satd. Flow (prot) | 1553 | 2780 | | 1428 | 2837 | | 1460 | 3056 | | 1575 | 3047 | |
| Flt Permitted | 0.44 | 1.00 | | 0.48 | 1.00 | | 0.95 | 1.00 | | 0.95 | 1.00 | |
| Satd. Flow (perm) | 718 | 2780 | | 726 | 2837 | | 1460 | 3056 | | 1575 | 3047 | |
| Peak-hour factor, PHF | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 |
| Adj. Flow (vph) | 375 | 208 | 261 | 179 | 203 | 151 | 118 | 1273 | 39 | 115 | 1743 | 218 |
| RTOR Reduction (vph) | 0 | 85 | 0 | 0 | 89 | 0 | 0 | 1 | 0 | 0 | 6 | 0 |
| Lane Group Flow (vph) | 375 | 384 | 0 | 179 | 265 | 0 | 118 | 1311 | 0 | 115 | 1955 | 0 |
| Confl. Peds. (#/hr) | 18 | | 42 | 42 | | 18 | 96 | | 4 | 4 | | 96 |
| Heavy Vehicles (%) | 3% | 4% | 6% | 10% | 7% | 7% | 10% | 7% | 5% | 2% | 5% | 2% |
| Turn Type | pm+pt | NA | | Perm | NA | | Prot | NA | | Prot | NA | |
| Protected Phases | 3 | 8 | | | 4 | | 1 | 6 | | 5 | 2 | |
| Permitted Phases | 8 | | | 4 | | | | 6 | | | 2 | |
| Actuated Green, G (s) | 53.3 | 53.3 | | 42.3 | 42.3 | | 14.7 | 73.9 | | 13.3 | 72.5 | |
| Effective Green, g (s) | 54.3 | 54.3 | | 43.3 | 43.3 | | 15.7 | 74.9 | | 14.3 | 73.5 | |
| Actuated g/C Ratio | 0.34 | 0.34 | | 0.27 | 0.27 | | 0.10 | 0.47 | | 0.09 | 0.46 | |
| Clearance Time (s) | 3.0 | 8.0 | | 8.0 | 8.0 | | 4.0 | 7.5 | | 4.0 | 7.5 | |
| Vehicle Extension (s) | 3.0 | 3.0 | | 3.0 | 3.0 | | 3.0 | 3.0 | | 3.0 | 3.0 | |
| Lane Grp Cap (vph) | 290 | 943 | | 196 | 767 | | 143 | 1430 | | 140 | 1399 | |
| v/s Ratio Prot | c0.07 | 0.14 | | | 0.09 | | c0.08 | 0.43 | | 0.07 | c0.64 | |
| v/s Ratio Perm | 0.37 | | | c0.25 | | | | | | | | |
| v/c Ratio | 1.29 | 0.41 | | 0.91 | 0.35 | | 0.83 | 0.92 | | 0.82 | 1.40 | |
| Uniform Delay, d1 | 52.1 | 40.5 | | 56.5 | 46.9 | | 70.8 | 39.6 | | 71.6 | 43.2 | |
| Progression Factor | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | | 0.83 | 1.41 | |
| Incremental Delay, d2 | 155.2 | 0.3 | | 40.6 | 0.3 | | 30.5 | 10.8 | | 23.7 | 182.1 | |
| Delay (s) | 207.3 | 40.8 | | 97.1 | 47.2 | | 101.3 | 50.4 | | 83.4 | 243.1 | |
| Level of Service | F | D | | F | D | | F | D | | F | F | |
| Approach Delay (s) | | 114.8 | | | 64.0 | | | 54.6 | | | 234.2 | |
| Approach LOS | | F | | | E | | | D | | | F | |

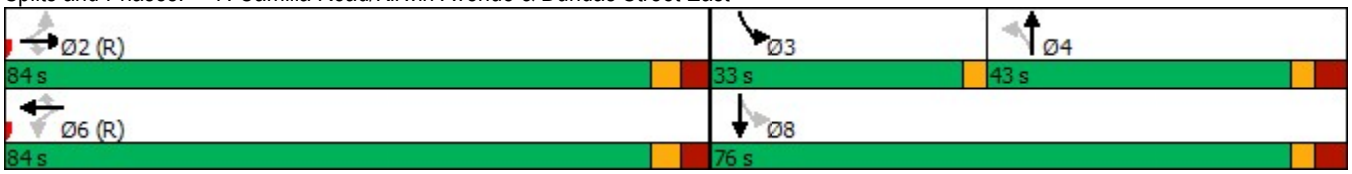
| Intersection Summary | | | |
|---|---|---|---|
| HCM 2000 Control Delay | 142.4 | HCM 2000 Level of Service | F |
| HCM 2000 Volume to Capacity ratio | 1.17 | | |
| Actuated Cycle Length (s) | 160.0 | Sum of lost time (s) | 18.5 |
| Intersection Capacity Utilization | 128.5% | ICU Level of Service | H |
| Analysis Period (min) | 15 | | |
| c Critical Lane Group | | | |

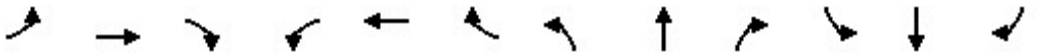
| Lane Group | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | SBL | SBT |
|---|---|---|---|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | | | | | |
| Traffic Volume (vph) | 29 | 1088 | 59 | 56 | 637 | 161 | 60 | 93 | 350 | 101 |
| Future Volume (vph) | 29 | 1088 | 59 | 56 | 637 | 161 | 60 | 93 | 350 | 101 |
| Lane Group Flow (vph) | 32 | 1183 | 64 | 61 | 692 | 175 | 65 | 181 | 380 | 140 |
| Turn Type | Perm | NA | Perm | Perm | NA | Perm | Perm | NA | pm+pt | NA |
| Protected Phases | | 2 | | | 6 | | | 4 | 3 | 8 |
| Permitted Phases | 2 | | 2 | 6 | | 6 | 4 | | 8 | |
| Detector Phase | 2 | 2 | 2 | 6 | 6 | 6 | 4 | 4 | 3 | 8 |
| Switch Phase | | | | | | | | | | |
| Minimum Initial (s) | 8.0 | 8.0 | 8.0 | 8.0 | 8.0 | 8.0 | 8.0 | 8.0 | 5.0 | 8.0 |
| Minimum Split (s) | 44.0 | 44.0 | 44.0 | 44.0 | 44.0 | 44.0 | 43.0 | 43.0 | 9.5 | 43.0 |
| Total Split (s) | 84.0 | 84.0 | 84.0 | 84.0 | 84.0 | 84.0 | 43.0 | 43.0 | 33.0 | 76.0 |
| Total Split (%) | 52.5% | 52.5% | 52.5% | 52.5% | 52.5% | 52.5% | 26.9% | 26.9% | 20.6% | 47.5% |
| Yellow Time (s) | 3.5 | 3.5 | 3.5 | 3.5 | 3.5 | 3.5 | 3.0 | 3.0 | 3.0 | 3.0 |
| All-Red Time (s) | 3.5 | 3.5 | 3.5 | 3.5 | 3.5 | 3.5 | 4.0 | 4.0 | 0.0 | 4.0 |
| Lost Time Adjust (s) | -1.0 | -1.0 | -1.0 | -1.0 | -1.0 | -1.0 | -1.0 | -1.0 | -1.0 | -1.0 |
| Total Lost Time (s) | 6.0 | 6.0 | 6.0 | 6.0 | 6.0 | 6.0 | 6.0 | 6.0 | 2.0 | 6.0 |
| Lead/Lag | | | | | | | Lag | Lag | Lead | |
| Lead-Lag Optimize? | | | | | | | Yes | Yes | Yes | |
| Recall Mode | C-Max | C-Max | C-Max | C-Max | C-Max | C-Max | None | None | None | None |
| v/c Ratio | 0.11 | 0.65 | 0.08 | 0.39 | 0.39 | 0.21 | 0.42 | 0.75 | 0.94 | 0.25 |
| Control Delay | 18.7 | 26.0 | 6.7 | 29.9 | 20.0 | 3.0 | 69.2 | 75.6 | 74.6 | 34.0 |
| Queue Delay | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Total Delay | 18.7 | 26.0 | 6.7 | 29.9 | 20.0 | 3.0 | 69.2 | 75.6 | 74.6 | 34.0 |
| Queue Length 50th (m) | 4.5 | 129.9 | 2.1 | 10.3 | 61.1 | 0.0 | 19.2 | 49.2 | 100.0 | 29.1 |
| Queue Length 95th (m) | 11.6 | 173.9 | 10.1 | 27.3 | 85.2 | 11.8 | 33.4 | 72.3 | #127.3 | 42.8 |
| Internal Link Dist (m) | | 302.1 | | | 262.5 | | | 162.3 | | 279.0 |
| Turn Bay Length (m) | 15.0 | | 30.0 | 30.0 | | 65.0 | 36.0 | | 40.0 | |
| Base Capacity (vph) | 296 | 1823 | 786 | 158 | 1789 | 831 | 249 | 377 | 404 | 716 |
| Starvation Cap Reductn | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Spillback Cap Reductn | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Storage Cap Reductn | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Reduced v/c Ratio | 0.11 | 0.65 | 0.08 | 0.39 | 0.39 | 0.21 | 0.26 | 0.48 | 0.94 | 0.20 |

**Intersection Summary**

Cycle Length: 160
Actuated Cycle Length: 160
Offset: 38 (24%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green
Natural Cycle: 100
Control Type: Actuated-Coordinated
# 95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 7: Camilla Road/Kirwin Avenue & Dundas Street East





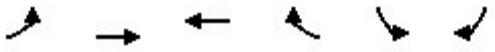
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | | | | | | | |
| Traffic Volume (vph) | 29 | 1088 | 59 | 56 | 637 | 161 | 60 | 93 | 74 | 350 | 101 | 28 |
| Future Volume (vph) | 29 | 1088 | 59 | 56 | 637 | 161 | 60 | 93 | 74 | 350 | 101 | 28 |
| Ideal Flow (vphpl) | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 |
| Lane Width | 3.5 | 3.7 | 3.5 | 3.5 | 3.7 | 3.5 | 3.5 | 3.7 | 3.7 | 3.5 | 3.7 | 3.7 |
| Total Lost time (s) | 6.0 | 6.0 | 6.0 | 6.0 | 6.0 | 6.0 | 6.0 | 6.0 | | 2.0 | 6.0 | |
| Lane Util. Factor | 1.00 | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 | 1.00 | 1.00 | | 1.00 | 1.00 | |
| Frpb, ped/bikes | 1.00 | 1.00 | 0.97 | 1.00 | 1.00 | 0.97 | 1.00 | 0.99 | | 1.00 | 0.99 | |
| Flpb, ped/bikes | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 0.98 | 1.00 | | 1.00 | 1.00 | |
| Frt | 1.00 | 1.00 | 0.85 | 1.00 | 1.00 | 0.85 | 1.00 | 0.93 | | 1.00 | 0.97 | |
| Flt Protected | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 | | 0.95 | 1.00 | |
| Satd. Flow (prot) | 1428 | 3159 | 1327 | 1604 | 3099 | 1312 | 1534 | 1553 | | 1558 | 1624 | |
| Flt Permitted | 0.34 | 1.00 | 1.00 | 0.16 | 1.00 | 1.00 | 0.67 | 1.00 | | 0.35 | 1.00 | |
| Satd. Flow (perm) | 514 | 3159 | 1327 | 273 | 3099 | 1312 | 1078 | 1553 | | 573 | 1624 | |
| Peak-hour factor, PHF | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 |
| Adj. Flow (vph) | 32 | 1183 | 64 | 61 | 692 | 175 | 65 | 101 | 80 | 380 | 110 | 30 |
| RTOR Reduction (vph) | 0 | 0 | 20 | 0 | 0 | 74 | 0 | 20 | 0 | 0 | 7 | 0 |
| Lane Group Flow (vph) | 32 | 1183 | 44 | 61 | 692 | 101 | 65 | 161 | 0 | 380 | 133 | 0 |
| Confl. Peds. (#/hr) | 6 | | 5 | 5 | | 6 | 15 | | 3 | 3 | | 15 |
| Heavy Vehicles (%) | 12% | 4% | 5% | 0% | 6% | 6% | 3% | 1% | 6% | 3% | 3% | 0% |
| Turn Type | Perm | NA | Perm | Perm | NA | Perm | Perm | NA | | pm+pt | NA | |
| Protected Phases | | 2 | | | 6 | | | 4 | | 3 | 8 | |
| Permitted Phases | 2 | | 2 | 6 | | 6 | 4 | | | 8 | | |
| Actuated Green, G (s) | 91.4 | 91.4 | 91.4 | 91.4 | 91.4 | 91.4 | 21.8 | 21.8 | | 54.6 | 54.6 | |
| Effective Green, g (s) | 92.4 | 92.4 | 92.4 | 92.4 | 92.4 | 92.4 | 22.8 | 22.8 | | 55.6 | 55.6 | |
| Actuated g/C Ratio | 0.58 | 0.58 | 0.58 | 0.58 | 0.58 | 0.58 | 0.14 | 0.14 | | 0.35 | 0.35 | |
| Clearance Time (s) | 7.0 | 7.0 | 7.0 | 7.0 | 7.0 | 7.0 | 7.0 | 7.0 | | 3.0 | 7.0 | |
| Vehicle Extension (s) | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | | 3.0 | 3.0 | |
| Lane Grp Cap (vph) | 296 | 1824 | 766 | 157 | 1789 | 757 | 153 | 221 | | 388 | 564 | |
| v/s Ratio Prot | | c0.37 | | | 0.22 | | | c0.10 | | c0.19 | 0.08 | |
| v/s Ratio Perm | 0.06 | | 0.03 | 0.22 | | 0.08 | 0.06 | | | 0.15 | | |
| v/c Ratio | 0.11 | 0.65 | 0.06 | 0.39 | 0.39 | 0.13 | 0.42 | 0.73 | | 0.98 | 0.24 | |
| Uniform Delay, d1 | 15.2 | 22.8 | 14.8 | 18.4 | 18.4 | 15.5 | 62.6 | 65.7 | | 46.7 | 37.1 | |
| Progression Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | | 1.00 | 1.00 | |
| Incremental Delay, d2 | 0.7 | 1.8 | 0.1 | 7.1 | 0.6 | 0.4 | 1.9 | 11.4 | | 39.7 | 0.2 | |
| Delay (s) | 16.0 | 24.6 | 14.9 | 25.5 | 19.0 | 15.8 | 64.5 | 77.1 | | 86.4 | 37.3 | |
| Level of Service | B | C | B | C | B | B | E | E | | F | D | |
| Approach Delay (s) | | 23.9 | | | 18.8 | | | 73.8 | | | 73.2 | |
| Approach LOS | | C | | | B | | | E | | | E | |

| Intersection Summary | | | |
|---|---|---|---|
| HCM 2000 Control Delay | 35.1 | HCM 2000 Level of Service | D |
| HCM 2000 Volume to Capacity ratio | 0.73 | | |
| Actuated Cycle Length (s) | 160.0 | Sum of lost time (s) | 14.0 |
| Intersection Capacity Utilization | 92.4% | ICU Level of Service | F |
| Analysis Period (min) | 15 | | |
| c Critical Lane Group | | | |

| Lane Group | EBL | EBT | WBT | SBL | SBR |
|---|---|---|---|---|---|
| Lane Configurations | | | | | |
| Traffic Volume (vph) | 257 | 562 | 323 | 17 | 217 |
| Future Volume (vph) | 257 | 562 | 323 | 17 | 217 |
| Lane Group Flow (vph) | 0 | 890 | 371 | 18 | 236 |
| Turn Type | pm+pt | NA | NA | Perm | Perm |
| Protected Phases | 1 | 2 | 2 | | |
| Permitted Phases | 2 | | | 4 | 4 |
| Detector Phase | 1 | 2 | 2 | 4 | 4 |
| Switch Phase | | | | | |
| Minimum Initial (s) | 7.0 | 10.0 | 10.0 | 10.0 | 10.0 |
| Minimum Split (s) | 11.5 | 32.0 | 32.0 | 34.5 | 34.5 |
| Total Split (s) | 28.0 | 54.0 | 54.0 | 69.5 | 69.5 |
| Total Split (%) | 18.5% | 35.6% | 35.6% | 45.9% | 45.9% |
| Yellow Time (s) | 3.0 | 3.5 | 3.5 | 3.5 | 3.5 |
| All-Red Time (s) | 0.0 | 3.5 | 3.5 | 2.0 | 2.0 |
| Lost Time Adjust (s) | | -1.0 | -1.0 | -1.0 | -1.0 |
| Total Lost Time (s) | | 6.0 | 6.0 | 4.5 | 4.5 |
| Lead/Lag | Lead | Lag | Lag | | |
| Lead-Lag Optimize? | Yes | Yes | Yes | | |
| Recall Mode | None | Max | Max | None | None |
| v/c Ratio | | 0.35 | 0.16 | 0.09 | 0.54 |
| Control Delay | | 4.9 | 4.0 | 26.3 | 9.3 |
| Queue Delay | | 0.0 | 0.0 | 0.0 | 0.0 |
| Total Delay | | 4.9 | 4.0 | 26.3 | 9.3 |
| Queue Length 50th (m) | | 14.1 | 7.1 | 2.0 | 0.0 |
| Queue Length 95th (m) | | 20.1 | 11.4 | 7.1 | 17.0 |
| Internal Link Dist (m) | | 132.4 | 206.4 | 85.2 | |
| Turn Bay Length (m) | | | | | |
| Base Capacity (vph) | | 2514 | 2278 | 1200 | 1451 |
| Starvation Cap Reductn | | 0 | 0 | 0 | 0 |
| Spillback Cap Reductn | | 0 | 0 | 0 | 0 |
| Storage Cap Reductn | | 0 | 0 | 0 | 0 |
| Reduced v/c Ratio | | 0.35 | 0.16 | 0.01 | 0.16 |

| Intersection Summary |
|---|
| Cycle Length: 151.5 |
| Actuated Cycle Length: 69.9 |
| Natural Cycle: 80 |
| Control Type: Semi Act-Uncoord |

Splits and Phases: 9: Hillcrest Avenue & Cooksville GO



| Movement | EBL | EBT | WBT | WBR | SBL | SBR |
|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | |
| Traffic Volume (vph) | 257 | 562 | 323 | 18 | 17 | 217 |
| Future Volume (vph) | 257 | 562 | 323 | 18 | 17 | 217 |
| Ideal Flow (vphpl) | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 |
| Total Lost time (s) | | 6.0 | 6.0 | | 4.5 | 4.5 |
| Lane Util. Factor | | 0.91 | 0.95 | | 1.00 | 1.00 |
| Frpb, ped/bikes | | 1.00 | 1.00 | | 1.00 | 0.98 |
| Flpb, ped/bikes | | 1.00 | 1.00 | | 0.98 | 1.00 |
| Frt | | 1.00 | 0.99 | | 1.00 | 0.85 |
| Flt Protected | | 0.98 | 1.00 | | 0.95 | 1.00 |
| Satd. Flow (prot) | | 4863 | 3301 | | 1264 | 1500 |
| Flt Permitted | | 0.74 | 1.00 | | 0.95 | 1.00 |
| Satd. Flow (perm) | | 3656 | 3301 | | 1264 | 1500 |
| Peak-hour factor, PHF | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 |
| Adj. Flow (vph) | 279 | 611 | 351 | 20 | 18 | 236 |
| RTOR Reduction (vph) | 0 | 0 | 1 | 0 | 0 | 199 |
| Lane Group Flow (vph) | 0 | 890 | 370 | 0 | 18 | 37 |
| Confl. Peds. (#/hr) | 30 | | | 30 | 23 | 7 |
| Confl. Bikes (#/hr) | | | | 1 | | |
| Heavy Vehicles (%) | 5% | 6% | 10% | 0% | 42% | 7% |
| Turn Type | pm+pt | NA | NA | | Perm | Perm |
| Protected Phases | 1 | 2 | 2 | | | |
| Permitted Phases | 2 | | | | 4 | 4 |
| Actuated Green, G (s) | | 47.3 | 47.3 | | 10.1 | 10.1 |
| Effective Green, g (s) | | 48.3 | 48.3 | | 11.1 | 11.1 |
| Actuated g/C Ratio | | 0.69 | 0.69 | | 0.16 | 0.16 |
| Clearance Time (s) | | 7.0 | 7.0 | | 5.5 | 5.5 |
| Vehicle Extension (s) | | 3.0 | 3.0 | | 3.0 | 3.0 |
| Lane Grp Cap (vph) | | 2526 | 2280 | | 200 | 238 |
| v/s Ratio Prot | | | 0.11 | | | |
| v/s Ratio Perm | | c0.24 | | | 0.01 | c0.02 |
| v/c Ratio | | 0.35 | 0.16 | | 0.09 | 0.16 |
| Uniform Delay, d1 | | 4.4 | 3.8 | | 25.1 | 25.4 |
| Progression Factor | | 1.00 | 1.00 | | 1.00 | 1.00 |
| Incremental Delay, d2 | | 0.1 | 0.2 | | 0.2 | 0.3 |
| Delay (s) | | 4.5 | 3.9 | | 25.3 | 25.7 |
| Level of Service | | A | A | | C | C |
| Approach Delay (s) | | 4.5 | 3.9 | | 25.6 | |
| Approach LOS | | A | A | | C | |

| Intersection Summary | | | |
|---|---|---|---|
| HCM 2000 Control Delay | 7.9 | HCM 2000 Level of Service | A |
| HCM 2000 Volume to Capacity ratio | 0.34 | | |
| Actuated Cycle Length (s) | 69.9 | Sum of lost time (s) | 14.5 |
| Intersection Capacity Utilization | 62.3% | ICU Level of Service | B |
| Analysis Period (min) | 15 | | |
| c Critical Lane Group | | | |

| Movement | EBT | EBR | WBL | WBT | NBL | NBR |
|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | |
| Traffic Volume (veh/h) | 155 | 53 | 8 | 375 | 46 | 11 |
| Future Volume (Veh/h) | 155 | 53 | 8 | 375 | 46 | 11 |
| Sign Control | Free | | | Free | Stop | |
| Grade | 0% | | | 0% | 0% | |
| Peak Hour Factor | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 |
| Hourly flow rate (vph) | 168 | 58 | 9 | 408 | 50 | 12 |
| Pedestrians | 4 | | | 2 | 13 | |
| Lane Width (m) | 3.7 | | | 3.7 | 3.7 | |
| Walking Speed (m/s) | 1.1 | | | 1.1 | 1.1 | |
| Percent Blockage | 0 | | | 0 | 1 | |
| Right turn flare (veh) | | | | | | |
| Median type | None | | | None | | |
| Median storage veh) | | | | | | |
| Upstream signal (m) | 137 | | | | | |
| pX, platoon unblocked | | | | | | |
| vC, conflicting volume | | | 239 | | 640 | 212 |
| vC1, stage 1 conf vol | | | | | | |
| vC2, stage 2 conf vol | | | | | | |
| vCu, unblocked vol | | | 239 | | 640 | 212 |
| tC, single (s) | | | 4.4 | | 6.5 | 6.5 |
| tC, 2 stage (s) | | | | | | |
| tF (s) | | | 2.5 | | 3.6 | 3.6 |
| p0 queue free % | | | 99 | | 88 | 98 |
| cM capacity (veh/h) | | | 1152 | | 413 | 745 |

| Direction, Lane # | EB 1 | WB 1 | NB 1 |
|---|---|---|---|
| Volume Total | 226 | 417 | 62 |
| Volume Left | 0 | 9 | 50 |
| Volume Right | 58 | 0 | 12 |
| cSH | 1700 | 1152 | 452 |
| Volume to Capacity | 0.13 | 0.01 | 0.14 |
| Queue Length 95th (m) | 0.0 | 0.2 | 3.6 |
| Control Delay (s) | 0.0 | 0.3 | 14.2 |
| Lane LOS | | A | B |
| Approach Delay (s) | 0.0 | 0.3 | 14.2 |
| Approach LOS | | | B |

| Intersection Summary | | | |
|---|---|---|---|
| Average Delay | 1.4 | | |
| Intersection Capacity Utilization | 40.0% | ICU Level of Service | A |
| Analysis Period (min) | 15 | | |

| Intersection | |
|---|---|
| Intersection Delay, s/veh | 9.5 |
| Intersection LOS | A |

| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | | | | | | | |
| Traffic Vol, veh/h | 21 | 202 | 18 | 7 | 150 | 10 | 14 | 21 | 10 | 21 | 30 | 20 |
| Future Vol, veh/h | 21 | 202 | 18 | 7 | 150 | 10 | 14 | 21 | 10 | 21 | 30 | 20 |
| Peak Hour Factor | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 |
| Heavy Vehicles, % | 39 | 1 | 6 | 0 | 6 | 10 | 0 | 7 | 10 | 0 | 4 | 20 |
| Mvmt Flow | 23 | 220 | 20 | 8 | 163 | 11 | 15 | 23 | 11 | 23 | 33 | 22 |
| Number of Lanes | 1 | 1 | 0 | 1 | 1 | 0 | 0 | 1 | 0 | 0 | 1 | 0 |

| Approach | EB | WB | NB | SB |
|---|---|---|---|---|
| Opposing Approach | WB | EB | SB | NB |
| Opposing Lanes | 2 | 2 | 1 | 1 |
| Conflicting Approach Left | SB | NB | EB | WB |
| Conflicting Lanes Left | 1 | 1 | 2 | 2 |
| Conflicting Approach Right | NB | SB | WB | EB |
| Conflicting Lanes Right | 1 | 1 | 2 | 2 |
| HCM Control Delay | 10 | 9.5 | 8.4 | 8.6 |
| HCM LOS | A | A | A | A |

| Lane | NBLn1 | EBLn1 | EBLn2 | WBLn1 | WBLn2 | SBLn1 |
|---|---|---|---|---|---|---|
| Vol Left, % | 31% | 100% | 0% | 100% | 0% | 30% |
| Vol Thru, % | 47% | 0% | 92% | 0% | 94% | 42% |
| Vol Right, % | 22% | 0% | 8% | 0% | 6% | 28% |
| Sign Control | Stop | Stop | Stop | Stop | Stop | Stop |
| Traffic Vol by Lane | 45 | 21 | 220 | 7 | 160 | 71 |
| LT Vol | 14 | 21 | 0 | 7 | 0 | 21 |
| Through Vol | 21 | 0 | 202 | 0 | 150 | 30 |
| RT Vol | 10 | 0 | 18 | 0 | 10 | 20 |
| Lane Flow Rate | 49 | 23 | 239 | 8 | 174 | 77 |
| Geometry Grp | 2 | 5 | 5 | 5 | 5 | 2 |
| Degree of Util (X) | 0.068 | 0.039 | 0.328 | 0.012 | 0.247 | 0.106 |
| Departure Headway (Hd) | 5.019 | 6.146 | 4.937 | 5.552 | 5.108 | 4.939 |
| Convergence, Y/N | Yes | Yes | Yes | Yes | Yes | Yes |
| Cap | 711 | 583 | 727 | 644 | 703 | 724 |
| Service Time | 3.066 | 3.881 | 2.671 | 3.289 | 2.844 | 2.982 |
| HCM Lane V/C Ratio | 0.069 | 0.039 | 0.329 | 0.012 | 0.248 | 0.106 |
| HCM Control Delay | 8.4 | 9.1 | 10.1 | 8.4 | 9.5 | 8.6 |
| HCM Lane LOS | A | A | B | A | A | A |
| HCM 95th-tile Q | 0.2 | 0.1 | 1.4 | 0 | 1 | 0.4 |

| Movement | EBT | EBR | WBL | WBT | NBL | NBR |
|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | |
| Traffic Volume (veh/h) | 15 | 176 | 9 | 15 | 162 | 6 |
| Future Volume (Veh/h) | 15 | 176 | 9 | 15 | 162 | 6 |
| Sign Control | Free | | | Free | Stop | |
| Grade | 0% | | | 0% | 0% | |
| Peak Hour Factor | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 |
| Hourly flow rate (vph) | 16 | 191 | 10 | 16 | 176 | 7 |
| Pedestrians | 2 | | | 1 | 11 | |
| Lane Width (m) | 3.7 | | | 3.7 | 3.7 | |
| Walking Speed (m/s) | 1.1 | | | 1.1 | 1.1 | |
| Percent Blockage | 0 | | | 0 | 1 | |
| Right turn flare (veh) | | | | | | |
| Median type | None | | | None | | |
| Median storage veh) | | | | | | |
| Upstream signal (m) | 354 | | | | | |
| pX, platoon unblocked | | | | | | |
| vC, conflicting volume | | | 218 | | 160 | 124 |
| vC1, stage 1 conf vol | | | | | | |
| vC2, stage 2 conf vol | | | | | | |
| vCu, unblocked vol | | | 218 | | 160 | 124 |
| tC, single (s) | | | 4.1 | | 6.4 | 6.2 |
| tC, 2 stage (s) | | | | | | |
| tF (s) | | | 2.2 | | 3.5 | 3.3 |
| p0 queue free % | | | 99 | | 78 | 99 |
| cM capacity (veh/h) | | | 1350 | | 817 | 922 |

| Direction, Lane # | EB 1 | WB 1 | NB 1 |
|---|---|---|---|
| Volume Total | 207 | 26 | 183 |
| Volume Left | 0 | 10 | 176 |
| Volume Right | 191 | 0 | 7 |
| cSH | 1700 | 1350 | 820 |
| Volume to Capacity | 0.12 | 0.01 | 0.22 |
| Queue Length 95th (m) | 0.0 | 0.2 | 6.5 |
| Control Delay (s) | 0.0 | 3.0 | 10.6 |
| Lane LOS | | A | B |
| Approach Delay (s) | 0.0 | 3.0 | 10.6 |
| Approach LOS | | | B |

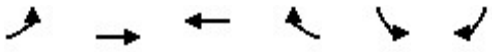
| Intersection Summary | | | |
|---|---|---|---|
| Average Delay | 4.9 | | |
| Intersection Capacity Utilization | 31.1% | ICU Level of Service | A |
| Analysis Period (min) | 15 | | |

| Intersection | |
|---|---|
| Intersection Delay, s/veh | 10.4 |
| Intersection LOS | B |

| Movement | EBL | EBT | WBT | WBR | SBL | SBR |
|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | |
| Traffic Vol, veh/h | 25 | 225 | 131 | 153 | 183 | 16 |
| Future Vol, veh/h | 25 | 225 | 131 | 153 | 183 | 16 |
| Peak Hour Factor | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 |
| Heavy Vehicles, % | 0 | 3 | 9 | 2 | 1 | 0 |
| Mvmt Flow | 27 | 245 | 142 | 166 | 199 | 17 |
| Number of Lanes | 1 | 1 | 1 | 1 | 1 | 0 |

| Approach | EB | WB | SB |
|---|---|---|---|
| Opposing Approach | WB | EB | |
| Opposing Lanes | 2 | 2 | 0 |
| Conflicting Approach Left | SB | | WB |
| Conflicting Lanes Left | 1 | 0 | 2 |
| Conflicting Approach Right | | SB | EB |
| Conflicting Lanes Right | 0 | 1 | 2 |
| HCM Control Delay | 11.3 | 9.3 | 11 |
| HCM LOS | B | A | B |

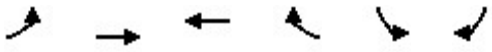
| Lane | EBLn1 | EBLn2 | WBLn1 | WBLn2 | SBLn1 |
|---|---|---|---|---|---|
| Vol Left, % | 100% | 0% | 0% | 0% | 92% |
| Vol Thru, % | 0% | 100% | 100% | 0% | 0% |
| Vol Right, % | 0% | 0% | 0% | 100% | 8% |
| Sign Control | Stop | Stop | Stop | Stop | Stop |
| Traffic Vol by Lane | 25 | 225 | 131 | 153 | 199 |
| LT Vol | 25 | 0 | 0 | 0 | 183 |
| Through Vol | 0 | 225 | 131 | 0 | 0 |
| RT Vol | 0 | 0 | 0 | 153 | 16 |
| Lane Flow Rate | 27 | 245 | 142 | 166 | 216 |
| Geometry Grp | 5 | 5 | 5 | 5 | 2 |
| Degree of Util (X) | 0.045 | 0.371 | 0.219 | 0.218 | 0.323 |
| Departure Headway (Hd) | 5.912 | 5.459 | 5.544 | 4.717 | 5.384 |
| Convergence, Y/N | Yes | Yes | Yes | Yes | Yes |
| Cap | 601 | 653 | 642 | 753 | 662 |
| Service Time | 3.691 | 3.237 | 3.321 | 2.493 | 3.463 |
| HCM Lane V/C Ratio | 0.045 | 0.375 | 0.221 | 0.22 | 0.326 |
| HCM Control Delay | 9 | 11.5 | 9.9 | 8.8 | 11 |
| HCM Lane LOS | A | B | A | A | B |
| HCM 95th-tile Q | 0.1 | 1.7 | 0.8 | 0.8 | 1.4 |



| Movement | EBL | EBT | WBT | WBR | SBL | SBR |
|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | |
| Traffic Volume (veh/h) | 0 | 166 | 134 | 0 | 99 | 248 |
| Future Volume (Veh/h) | 0 | 166 | 134 | 0 | 99 | 248 |
| Sign Control | | Free | Free | | Stop | |
| Grade | | 0% | 0% | | 0% | |
| Peak Hour Factor | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 |
| Hourly flow rate (vph) | 0 | 180 | 146 | 0 | 108 | 270 |
| Pedestrians | | | | | | |
| Lane Width (m) | | | | | | |
| Walking Speed (m/s) | | | | | | |
| Percent Blockage | | | | | | |
| Right turn flare (veh) | | | | | | |
| Median type | | None | None | | | |
| Median storage veh) | | | | | | |
| Upstream signal (m) | | 264 | | | | |
| pX, platoon unblocked | | | | | | |
| vC, conflicting volume | 146 | | | | 326 | 146 |
| vC1, stage 1 conf vol | | | | | | |
| vC2, stage 2 conf vol | | | | | | |
| vCu, unblocked vol | 146 | | | | 326 | 146 |
| tC, single (s) | 4.1 | | | | 6.4 | 6.2 |
| tC, 2 stage (s) | | | | | | |
| tF (s) | 2.2 | | | | 3.5 | 3.3 |
| p0 queue free % | 100 | | | | 84 | 70 |
| cM capacity (veh/h) | 1436 | | | | 668 | 901 |

| Direction, Lane # | EB 1 | WB 1 | SB 1 |
|---|---|---|---|
| Volume Total | 180 | 146 | 378 |
| Volume Left | 0 | 0 | 108 |
| Volume Right | 0 | 0 | 270 |
| cSH | 1436 | 1700 | 819 |
| Volume to Capacity | 0.00 | 0.09 | 0.46 |
| Queue Length 95th (m) | 0.0 | 0.0 | 18.7 |
| Control Delay (s) | 0.0 | 0.0 | 13.1 |
| Lane LOS | | | B |
| Approach Delay (s) | 0.0 | 0.0 | 13.1 |
| Approach LOS | | | B |

| Intersection Summary | | | |
|---|---|---|---|
| Average Delay | 7.0 | | |
| Intersection Capacity Utilization | 36.2% | ICU Level of Service | A |
| Analysis Period (min) | 15 | | |



| Movement | EBL | EBT | WBT | WBR | SBL | SBR |
|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | |
| Traffic Volume (veh/h) | 71 | 192 | 134 | 43 | 0 | 0 |
| Future Volume (Veh/h) | 71 | 192 | 134 | 43 | 0 | 0 |
| Sign Control | | Free | Free | | Stop | |
| Grade | | 0% | 0% | | 0% | |
| Peak Hour Factor | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 |
| Hourly flow rate (vph) | 77 | 209 | 146 | 47 | 0 | 0 |
| Pedestrians | | | | | | |
| Lane Width (m) | | | | | | |
| Walking Speed (m/s) | | | | | | |
| Percent Blockage | | | | | | |
| Right turn flare (veh) | | | | | | |
| Median type | | None | None | | | |
| Median storage veh) | | | | | | |
| Upstream signal (m) | | 330 | | | | |
| pX, platoon unblocked | | | | | | |
| vC, conflicting volume | 193 | | | | 532 | 170 |
| vC1, stage 1 conf vol | | | | | | |
| vC2, stage 2 conf vol | | | | | | |
| vCu, unblocked vol | 193 | | | | 532 | 170 |
| tC, single (s) | 4.1 | | | | 6.4 | 6.2 |
| tC, 2 stage (s) | | | | | | |
| tF (s) | 2.2 | | | | 3.5 | 3.3 |
| p0 queue free % | 94 | | | | 100 | 100 |
| cM capacity (veh/h) | 1380 | | | | 479 | 874 |

| Direction, Lane # | EB 1 | WB 1 |
|---|---|---|
| Volume Total | 286 | 193 |
| Volume Left | 77 | 0 |
| Volume Right | 0 | 47 |
| cSH | 1380 | 1700 |
| Volume to Capacity | 0.06 | 0.11 |
| Queue Length 95th (m) | 1.3 | 0.0 |
| Control Delay (s) | 2.5 | 0.0 |
| Lane LOS | A | |
| Approach Delay (s) | 2.5 | 0.0 |
| Approach LOS | | |

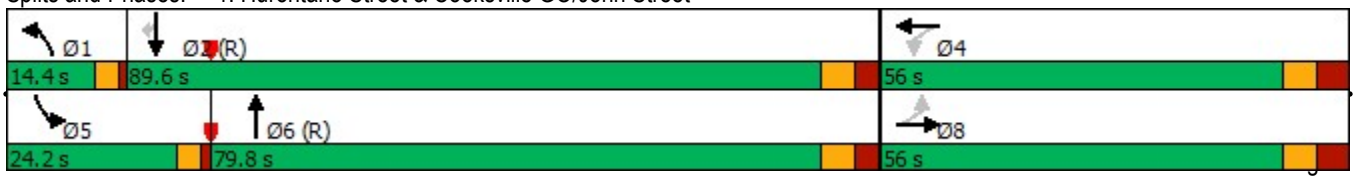
| Intersection Summary | | | |
|---|---|---|---|
| Average Delay | 1.5 | | |
| Intersection Capacity Utilization | 30.4% | ICU Level of Service | A |
| Analysis Period (min) | 15 | | |

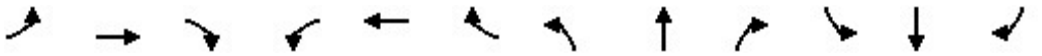
| Lane Group | EBL | EBT | WBL | WBT | NBL | NBT | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | | | | |
| Traffic Volume (vph) | 288 | 37 | 70 | 31 | 40 | 1427 | 218 | 242 | 235 |
| Future Volume (vph) | 288 | 37 | 70 | 31 | 40 | 1427 | 218 | 242 | 235 |
| Lane Group Flow (vph) | 313 | 122 | 76 | 282 | 43 | 1611 | 237 | 263 | 255 |
| Turn Type | Perm | NA | Perm | NA | Prot | NA | Prot | NA | Perm |
| Protected Phases | | 8 | | 4 | 1 | 6 | 5 | 2 | |
| Permitted Phases | 8 | | 4 | | | 6 | | 2 | 2 |
| Detector Phase | 8 | 8 | 4 | 4 | 1 | 6 | 5 | 2 | 2 |
| Switch Phase | | | | | | | | | |
| Minimum Initial (s) | 8.0 | 8.0 | 8.0 | 8.0 | 5.0 | 8.0 | 5.0 | 8.0 | 8.0 |
| Minimum Split (s) | 46.0 | 46.0 | 46.0 | 46.0 | 9.5 | 38.0 | 9.5 | 38.0 | 38.0 |
| Total Split (s) | 56.0 | 56.0 | 56.0 | 56.0 | 14.4 | 79.8 | 24.2 | 89.6 | 89.6 |
| Total Split (%) | 35.0% | 35.0% | 35.0% | 35.0% | 9.0% | 49.9% | 15.1% | 56.0% | 56.0% |
| Yellow Time (s) | 4.0 | 4.0 | 4.0 | 4.0 | 3.0 | 4.0 | 3.0 | 4.0 | 4.0 |
| All-Red Time (s) | 4.0 | 4.0 | 4.0 | 4.0 | 1.0 | 3.0 | 1.0 | 3.0 | 3.0 |
| Lost Time Adjust (s) | -1.0 | -1.0 | -1.0 | -1.0 | -1.0 | -1.0 | -1.0 | -1.0 | -1.0 |
| Total Lost Time (s) | 7.0 | 7.0 | 7.0 | 7.0 | 3.0 | 6.0 | 3.0 | 6.0 | 6.0 |
| Lead/Lag | | | | | Lead | Lag | Lead | Lag | Lag |
| Lead-Lag Optimize? | | | | | Yes | Yes | Yes | Yes | Yes |
| Recall Mode | None | None | None | None | None | C-Max | None | C-Max | C-Max |
| v/c Ratio | 1.13 | 0.25 | 0.24 | 0.28 | 0.43 | 1.09 | 1.12 | 0.16 | 0.33 |
| Control Delay | 141.4 | 20.8 | 44.1 | 12.4 | 86.7 | 92.2 | 157.2 | 19.2 | 3.3 |
| Queue Delay | 0.0 | 0.0 | 0.1 | 0.0 | 0.0 | 3.5 | 0.0 | 0.0 | 0.0 |
| Total Delay | 141.4 | 20.9 | 44.2 | 12.4 | 86.7 | 95.7 | 157.2 | 19.2 | 3.3 |
| Queue Length 50th (m) | ~114.6 | 12.9 | 18.2 | 9.1 | 12.9 | ~300.9 | ~86.1 | 22.2 | 0.0 |
| Queue Length 95th (m) | #175.9 | 29.8 | 33.0 | 20.7 | m26.8 | #343.5 | #141.4 | 31.0 | 14.0 |
| Internal Link Dist (m) | | 191.8 | | 112.9 | | 109.3 | | 252.0 | |
| Turn Bay Length (m) | | | 25.0 | | 37.5 | | 48.5 | | 48.5 |
| Base Capacity (vph) | 278 | 493 | 319 | 991 | 114 | 1473 | 212 | 1655 | 766 |
| Starvation Cap Reductn | 0 | 0 | 0 | 0 | 0 | 281 | 0 | 0 | 0 |
| Spillback Cap Reductn | 0 | 23 | 16 | 0 | 0 | 0 | 0 | 0 | 0 |
| Storage Cap Reductn | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Reduced v/c Ratio | 1.13 | 0.26 | 0.25 | 0.28 | 0.38 | 1.35 | 1.12 | 0.16 | 0.33 |

## Intersection Summary

Cycle Length: 160
Actuated Cycle Length: 160
Offset: 115 (72%), Referenced to phase 2:SBT and 6:NBT, Start of Green
Natural Cycle: 145
Control Type: Actuated-Coordinated
~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
# 95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 1: Hurontario Street & Cooksville GO/John Street





| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | | | | | | | |
| Traffic Volume (vph) | 288 | 37 | 75 | 70 | 31 | 228 | 40 | 1427 | 55 | 218 | 242 | 235 |
| Future Volume (vph) | 288 | 37 | 75 | 70 | 31 | 228 | 40 | 1427 | 55 | 218 | 242 | 235 |
| Ideal Flow (vphpl) | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 |
| Lane Width | 3.5 | 3.7 | 3.7 | 3.5 | 3.7 | 3.7 | 3.5 | 3.7 | 3.7 | 3.5 | 3.7 | 3.5 |
| Total Lost time (s) | 7.0 | 7.0 | | 7.0 | 7.0 | | 3.0 | 6.0 | | 3.0 | 6.0 | 6.0 |
| Lane Util. Factor | 1.00 | 1.00 | | 1.00 | 0.95 | | 1.00 | 0.95 | | 1.00 | 0.95 | 1.00 |
| Frpb, ped/bikes | 1.00 | 0.97 | | 1.00 | 0.97 | | 1.00 | 1.00 | | 1.00 | 1.00 | 0.86 |
| Flpb, ped/bikes | 0.99 | 1.00 | | 0.97 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | 1.00 |
| Frt | 1.00 | 0.90 | | 1.00 | 0.87 | | 1.00 | 0.99 | | 1.00 | 1.00 | 0.85 |
| Flt Protected | 0.95 | 1.00 | | 0.95 | 1.00 | | 0.95 | 1.00 | | 0.95 | 1.00 | 1.00 |
| Satd. Flow (prot) | 1585 | 1462 | | 1491 | 2770 | | 1606 | 3192 | | 1606 | 3042 | 1195 |
| Flt Permitted | 0.54 | 1.00 | | 0.66 | 1.00 | | 0.95 | 1.00 | | 0.95 | 1.00 | 1.00 |
| Satd. Flow (perm) | 907 | 1462 | | 1042 | 2770 | | 1606 | 3192 | | 1606 | 3042 | 1195 |
| Peak-hour factor, PHF | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 |
| Adj. Flow (vph) | 313 | 40 | 82 | 76 | 34 | 248 | 43 | 1551 | 60 | 237 | 263 | 255 |
| RTOR Reduction (vph) | 0 | 46 | 0 | 0 | 143 | 0 | 0 | 2 | 0 | 0 | 0 | 117 |
| Lane Group Flow (vph) | 313 | 76 | 0 | 76 | 139 | 0 | 43 | 1609 | 0 | 237 | 263 | 138 |
| Confl. Peds. (#/hr) | 16 | | 24 | 24 | | 16 | 81 | | 34 | 34 | | 81 |
| Confl. Bikes (#/hr) | | | | | | 1 | | | | | | 2 |
| Heavy Vehicles (%) | 0% | 0% | 5% | 5% | 0% | 0% | 0% | 2% | 0% | 0% | 8% | 4% |
| Turn Type | Perm | NA | | Perm | NA | | Prot | NA | | Prot | NA | Perm |
| Protected Phases | | 8 | | | 4 | | 1 | 6 | | 5 | 2 | |
| Permitted Phases | 8 | | | 4 | | | | 6 | | | 2 | 2 |
| Actuated Green, G (s) | 48.0 | 48.0 | | 48.0 | 48.0 | | 7.7 | 72.8 | | 20.2 | 85.3 | 85.3 |
| Effective Green, g (s) | 49.0 | 49.0 | | 49.0 | 49.0 | | 8.7 | 73.8 | | 21.2 | 86.3 | 86.3 |
| Actuated g/C Ratio | 0.31 | 0.31 | | 0.31 | 0.31 | | 0.05 | 0.46 | | 0.13 | 0.54 | 0.54 |
| Clearance Time (s) | 8.0 | 8.0 | | 8.0 | 8.0 | | 4.0 | 7.0 | | 4.0 | 7.0 | 7.0 |
| Vehicle Extension (s) | 3.0 | 3.0 | | 3.0 | 3.0 | | 3.0 | 3.0 | | 3.0 | 3.0 | 3.0 |
| Lane Grp Cap (vph) | 277 | 447 | | 319 | 848 | | 87 | 1472 | | 212 | 1640 | 644 |
| v/s Ratio Prot | | 0.05 | | | 0.05 | | 0.03 | c0.50 | | c0.15 | 0.09 | |
| v/s Ratio Perm | c0.35 | | | 0.07 | | | | | | | | 0.12 |
| v/c Ratio | 1.13 | 0.17 | | 0.24 | 0.16 | | 0.49 | 1.09 | | 1.12 | 0.16 | 0.21 |
| Uniform Delay, d1 | 55.5 | 40.6 | | 41.5 | 40.5 | | 73.5 | 43.1 | | 69.4 | 18.6 | 19.2 |
| Progression Factor | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.02 | 0.95 | | 1.00 | 1.00 | 1.00 |
| Incremental Delay, d2 | 93.7 | 0.2 | | 0.4 | 0.1 | | 4.4 | 53.3 | | 97.1 | 0.2 | 0.8 |
| Delay (s) | 149.2 | 40.8 | | 41.9 | 40.6 | | 79.1 | 94.3 | | 166.5 | 18.8 | 19.9 |
| Level of Service | F | D | | D | D | | E | F | | F | B | B |
| Approach Delay (s) | | 118.8 | | | 40.9 | | | 93.9 | | | 65.5 | |
| Approach LOS | | F | | | D | | | F | | | E | |

| Intersection Summary | | | |
|---|---|---|---|
| HCM 2000 Control Delay | 84.7 | HCM 2000 Level of Service | F |
| HCM 2000 Volume to Capacity ratio | 1.11 | | |
| Actuated Cycle Length (s) | 160.0 | Sum of lost time (s) | 16.0 |
| Intersection Capacity Utilization | 116.3% | ICU Level of Service | H |
| Analysis Period (min) | 15 | | |

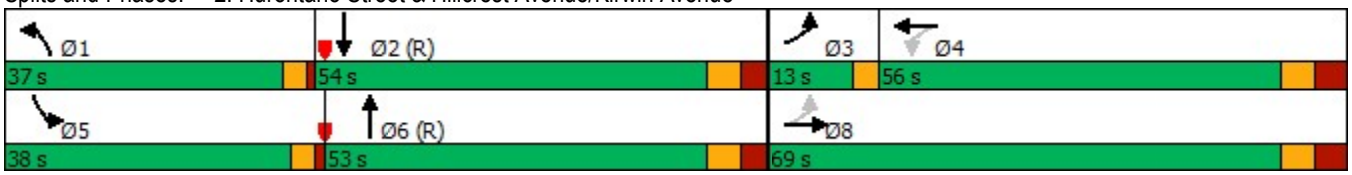
c Critical Lane Group

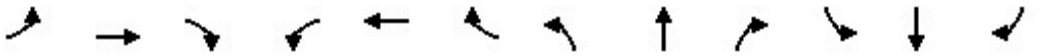
| Lane Group | EBL | EBT | WBL | WBT | NBL | NBT | SBL | SBT |
|---|---|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | | | |
| Traffic Volume (vph) | 131 | 255 | 86 | 318 | 197 | 144 | 223 | 180 |
| Future Volume (vph) | 131 | 255 | 86 | 318 | 197 | 144 | 223 | 180 |
| Lane Group Flow (vph) | 142 | 398 | 93 | 503 | 214 | 230 | 242 | 276 |
| Turn Type | pm+pt | NA | Perm | NA | Prot | NA | Prot | NA |
| Protected Phases | 3 | 8 | | 4 | 1 | 6 | 5 | 2 |
| Permitted Phases | 8 | | 4 | | | 6 | | 2 |
| Detector Phase | 3 | 8 | 4 | 4 | 1 | 6 | 5 | 2 |
| Switch Phase | | | | | | | | |
| Minimum Initial (s) | 5.0 | 8.0 | 8.0 | 8.0 | 7.0 | 8.0 | 5.0 | 8.0 |
| Minimum Split (s) | 9.5 | 56.0 | 56.0 | 56.0 | 11.0 | 51.5 | 9.5 | 51.5 |
| Total Split (s) | 13.0 | 69.0 | 56.0 | 56.0 | 37.0 | 53.0 | 38.0 | 54.0 |
| Total Split (%) | 8.1% | 43.1% | 35.0% | 35.0% | 23.1% | 33.1% | 23.8% | 33.8% |
| Yellow Time (s) | 3.0 | 4.0 | 4.0 | 4.0 | 3.0 | 4.0 | 3.0 | 4.0 |
| All-Red Time (s) | 0.0 | 4.0 | 4.0 | 4.0 | 1.0 | 3.5 | 1.0 | 3.5 |
| Lost Time Adjust (s) | -1.0 | -1.0 | -1.0 | -1.0 | -1.0 | -1.0 | -1.0 | -1.0 |
| Total Lost Time (s) | 2.0 | 7.0 | 7.0 | 7.0 | 3.0 | 6.5 | 3.0 | 6.5 |
| Lead/Lag | Lead | | Lag | Lag | Lead | Lag | Lead | Lag |
| Lead-Lag Optimize? | Yes | | Yes | Yes | Yes | Yes | Yes | Yes |
| Recall Mode | None | None | None | None | None | C-Max | None | C-Max |
| v/c Ratio | 0.72 | 0.46 | 0.59 | 0.79 | 0.80 | 0.18 | 0.82 | 0.20 |
| Control Delay | 63.4 | 42.7 | 73.2 | 65.0 | 84.3 | 24.2 | 85.8 | 21.7 |
| Queue Delay | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 1.6 | 0.7 | 0.0 |
| Total Delay | 63.4 | 42.7 | 73.2 | 65.0 | 84.3 | 25.8 | 86.6 | 21.7 |
| Queue Length 50th (m) | 34.7 | 48.6 | 27.3 | 74.3 | 66.2 | 18.0 | 78.9 | 20.9 |
| Queue Length 95th (m) | 50.4 | 60.6 | 45.2 | 89.6 | 90.4 | 32.8 | 106.1 | 32.2 |
| Internal Link Dist (m) | | 206.4 | | 133.2 | | 400.9 | | 109.3 |
| Turn Bay Length (m) | | | 50.0 | | 53.0 | | 36.0 | |
| Base Capacity (vph) | 196 | 1201 | 250 | 976 | 338 | 1304 | 358 | 1394 |
| Starvation Cap Reductn | 0 | 0 | 0 | 0 | 0 | 0 | 18 | 0 |
| Spillback Cap Reductn | 0 | 0 | 0 | 7 | 0 | 897 | 0 | 0 |
| Storage Cap Reductn | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Reduced v/c Ratio | 0.72 | 0.33 | 0.37 | 0.52 | 0.63 | 0.57 | 0.71 | 0.20 |

## Intersection Summary

Cycle Length: 160
Actuated Cycle Length: 160
Offset: 104 (65%), Referenced to phase 2:SBT and 6:NBT, Start of Green
Natural Cycle: 140
Control Type: Actuated-Coordinated

Splits and Phases: 2: Hurontario Street & Hillcrest Avenue/Kirwin Avenue





| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | | | | | | | |
| Traffic Volume (vph) | 131 | 255 | 111 | 86 | 318 | 144 | 197 | 144 | 67 | 223 | 180 | 74 |
| Future Volume (vph) | 131 | 255 | 111 | 86 | 318 | 144 | 197 | 144 | 67 | 223 | 180 | 74 |
| Ideal Flow (vphpl) | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 |
| Lane Width | 3.5 | 3.7 | 3.5 | 3.5 | 3.7 | 3.7 | 3.5 | 3.7 | 3.7 | 3.5 | 3.7 | 3.5 |
| Total Lost time (s) | 2.0 | 7.0 | | 7.0 | 7.0 | | 3.0 | 6.5 | | 3.0 | 6.5 | |
| Lane Util. Factor | 1.00 | 0.95 | | 1.00 | 0.95 | | 1.00 | 0.95 | | 1.00 | 0.95 | |
| Frpb, ped/bikes | 1.00 | 0.98 | | 1.00 | 0.99 | | 1.00 | 0.97 | | 1.00 | 0.99 | |
| Flpb, ped/bikes | 1.00 | 1.00 | | 0.97 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | |
| Frt | 1.00 | 0.95 | | 1.00 | 0.95 | | 1.00 | 0.95 | | 1.00 | 0.96 | |
| Flt Protected | 0.95 | 1.00 | | 0.95 | 1.00 | | 0.95 | 1.00 | | 0.95 | 1.00 | |
| Satd. Flow (prot) | 1589 | 3022 | | 1506 | 3083 | | 1575 | 2922 | | 1606 | 3038 | |
| Flt Permitted | 0.22 | 1.00 | | 0.52 | 1.00 | | 0.95 | 1.00 | | 0.95 | 1.00 | |
| Satd. Flow (perm) | 371 | 3022 | | 820 | 3083 | | 1575 | 2922 | | 1606 | 3038 | |
| Peak-hour factor, PHF | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 |
| Adj. Flow (vph) | 142 | 277 | 121 | 93 | 346 | 157 | 214 | 157 | 73 | 242 | 196 | 80 |
| RTOR Reduction (vph) | 0 | 37 | 0 | 0 | 38 | 0 | 0 | 27 | 0 | 0 | 21 | 0 |
| Lane Group Flow (vph) | 142 | 361 | 0 | 93 | 465 | 0 | 214 | 203 | 0 | 242 | 255 | 0 |
| Confl. Peds. (#/hr) | 16 | | 60 | 60 | | 16 | 24 | | 49 | 49 | | 24 |
| Heavy Vehicles (%) | 1% | 0% | 5% | 3% | 1% | 0% | 2% | 5% | 0% | 0% | 2% | 3% |
| Turn Type | pm+pt | NA | | Perm | NA | | Prot | NA | | Prot | NA | |
| Protected Phases | 3 | 8 | | | 4 | | 1 | 6 | | 5 | 2 | |
| Permitted Phases | 8 | | | 4 | | | | 6 | | | 2 | |
| Actuated Green, G (s) | 42.9 | 42.9 | | 29.9 | 29.9 | | 26.3 | 69.0 | | 28.6 | 71.3 | |
| Effective Green, g (s) | 43.9 | 43.9 | | 30.9 | 30.9 | | 27.3 | 70.0 | | 29.6 | 72.3 | |
| Actuated g/C Ratio | 0.27 | 0.27 | | 0.19 | 0.19 | | 0.17 | 0.44 | | 0.19 | 0.45 | |
| Clearance Time (s) | 3.0 | 8.0 | | 8.0 | 8.0 | | 4.0 | 7.5 | | 4.0 | 7.5 | |
| Vehicle Extension (s) | 3.0 | 3.0 | | 3.0 | 3.0 | | 3.0 | 3.0 | | 3.0 | 3.0 | |
| Lane Grp Cap (vph) | 185 | 829 | | 158 | 595 | | 268 | 1278 | | 297 | 1372 | |
| v/s Ratio Prot | c0.05 | 0.12 | | | c0.15 | | 0.14 | 0.07 | | c0.15 | c0.08 | |
| v/s Ratio Perm | 0.16 | | | 0.11 | | | | | | | | |
| v/c Ratio | 0.77 | 0.44 | | 0.59 | 0.78 | | 0.80 | 0.16 | | 0.81 | 0.19 | |
| Uniform Delay, d1 | 47.9 | 47.8 | | 58.8 | 61.3 | | 63.7 | 27.2 | | 62.6 | 26.2 | |
| Progression Factor | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.04 | 0.86 | |
| Incremental Delay, d2 | 17.2 | 0.4 | | 5.5 | 6.6 | | 15.2 | 0.3 | | 15.6 | 0.3 | |
| Delay (s) | 65.1 | 48.2 | | 64.3 | 68.0 | | 78.9 | 27.5 | | 80.9 | 23.0 | |
| Level of Service | E | D | | E | E | | E | C | | F | C | |
| Approach Delay (s) | | 52.7 | | | 67.4 | | | 52.3 | | | 50.0 | |
| Approach LOS | | D | | | E | | | D | | | D | |

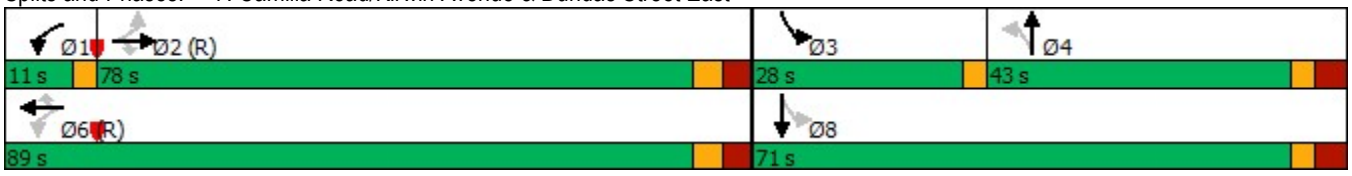
| Intersection Summary | | | |
|---|---|---|---|
| HCM 2000 Control Delay | 56.1 | HCM 2000 Level of Service | E |
| HCM 2000 Volume to Capacity ratio | 0.48 | | |
| Actuated Cycle Length (s) | 160.0 | Sum of lost time (s) | 18.5 |
| Intersection Capacity Utilization | 113.8% | ICU Level of Service | H |
| Analysis Period (min) | 15 | | |
| c Critical Lane Group | | | |

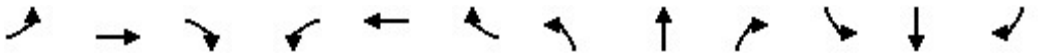
| Lane Group | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | SBL | SBT |
|---|---|---|---|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | | | | | |
| Traffic Volume (vph) | 61 | 788 | 42 | 103 | 1119 | 391 | 52 | 128 | 286 | 101 |
| Future Volume (vph) | 61 | 788 | 42 | 103 | 1119 | 391 | 52 | 128 | 286 | 101 |
| Lane Group Flow (vph) | 66 | 857 | 46 | 112 | 1216 | 425 | 57 | 222 | 311 | 135 |
| Turn Type | Perm | NA | Perm | pm+pt | NA | Perm | Perm | NA | pm+pt | NA |
| Protected Phases | | 2 | | 1 | 6 | | | 4 | 3 | 8 |
| Permitted Phases | 2 | | 2 | 6 | | 6 | 4 | | 8 | |
| Detector Phase | 2 | 2 | 2 | 1 | 6 | 6 | 4 | 4 | 3 | 8 |
| Switch Phase | | | | | | | | | | |
| Minimum Initial (s) | 8.0 | 8.0 | 8.0 | 5.0 | 8.0 | 8.0 | 8.0 | 8.0 | 5.0 | 8.0 |
| Minimum Split (s) | 44.0 | 44.0 | 44.0 | 9.5 | 44.0 | 44.0 | 43.0 | 43.0 | 9.5 | 43.0 |
| Total Split (s) | 78.0 | 78.0 | 78.0 | 11.0 | 89.0 | 89.0 | 43.0 | 43.0 | 28.0 | 71.0 |
| Total Split (%) | 48.8% | 48.8% | 48.8% | 6.9% | 55.6% | 55.6% | 26.9% | 26.9% | 17.5% | 44.4% |
| Yellow Time (s) | 3.5 | 3.5 | 3.5 | 3.0 | 3.5 | 3.5 | 3.0 | 3.0 | 3.0 | 3.0 |
| All-Red Time (s) | 3.5 | 3.5 | 3.5 | 0.0 | 3.5 | 3.5 | 4.0 | 4.0 | 0.0 | 4.0 |
| Lost Time Adjust (s) | -1.0 | -1.0 | -1.0 | -1.0 | -1.0 | -1.0 | -1.0 | -1.0 | -1.0 | -1.0 |
| Total Lost Time (s) | 6.0 | 6.0 | 6.0 | 2.0 | 6.0 | 6.0 | 6.0 | 6.0 | 2.0 | 6.0 |
| Lead/Lag | Lag | Lag | Lag | Lead | | | Lag | Lag | Lead | |
| Lead-Lag Optimize? | Yes | Yes | Yes | Yes | | | Yes | Yes | Yes | |
| Recall Mode | C-Max | C-Max | C-Max | None | C-Max | C-Max | None | None | None | None |
| v/c Ratio | 0.43 | 0.53 | 0.07 | 0.34 | 0.64 | 0.46 | 0.31 | 0.78 | 0.87 | 0.24 |
| Control Delay | 39.4 | 29.2 | 2.2 | 17.4 | 25.2 | 7.5 | 60.7 | 76.8 | 64.5 | 35.0 |
| Queue Delay | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Total Delay | 39.4 | 29.2 | 2.2 | 17.4 | 25.2 | 7.5 | 60.7 | 76.8 | 64.5 | 35.0 |
| Queue Length 50th (m) | 13.2 | 96.3 | 0.0 | 14.5 | 132.0 | 18.5 | 16.1 | 63.6 | 77.7 | 28.6 |
| Queue Length 95th (m) | 32.7 | 128.3 | 3.7 | 27.4 | 177.2 | 49.1 | 28.7 | 88.1 | #105.3 | 42.1 |
| Internal Link Dist (m) | | 302.1 | | | 262.5 | | | 162.3 | | 279.0 |
| Turn Bay Length (m) | 15.0 | | 30.0 | 30.0 | | 65.0 | 36.0 | | 40.0 | |
| Base Capacity (vph) | 152 | 1620 | 696 | 328 | 1886 | 919 | 258 | 387 | 359 | 680 |
| Starvation Cap Reductn | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Spillback Cap Reductn | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Storage Cap Reductn | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Reduced v/c Ratio | 0.43 | 0.53 | 0.07 | 0.34 | 0.64 | 0.46 | 0.22 | 0.57 | 0.87 | 0.20 |

**Intersection Summary**

Cycle Length: 160
Actuated Cycle Length: 160
Offset: 26 (16%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green
Natural Cycle: 110
Control Type: Actuated-Coordinated
# 95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 7: Camilla Road/Kirwin Avenue & Dundas Street East





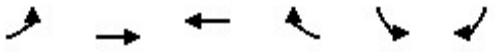
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | | | | | | | |
| Traffic Volume (vph) | 61 | 788 | 42 | 103 | 1119 | 391 | 52 | 128 | 76 | 286 | 101 | 23 |
| Future Volume (vph) | 61 | 788 | 42 | 103 | 1119 | 391 | 52 | 128 | 76 | 286 | 101 | 23 |
| Ideal Flow (vphpl) | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 |
| Lane Width | 3.5 | 3.7 | 3.5 | 3.5 | 3.7 | 3.5 | 3.5 | 3.7 | 3.7 | 3.5 | 3.7 | 3.7 |
| Total Lost time (s) | 6.0 | 6.0 | 6.0 | 2.0 | 6.0 | 6.0 | 6.0 | 6.0 | | 2.0 | 6.0 | |
| Lane Util. Factor | 1.00 | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 | 1.00 | 1.00 | | 1.00 | 1.00 | |
| Frpb, ped/bikes | 1.00 | 1.00 | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 | 0.99 | | 1.00 | 0.99 | |
| Flpb, ped/bikes | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 0.98 | 1.00 | | 1.00 | 1.00 | |
| Frt | 1.00 | 1.00 | 0.85 | 1.00 | 1.00 | 0.85 | 1.00 | 0.94 | | 1.00 | 0.97 | |
| Flt Protected | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 | | 0.95 | 1.00 | |
| Satd. Flow (prot) | 1599 | 3189 | 1304 | 1605 | 3221 | 1360 | 1582 | 1617 | | 1587 | 1662 | |
| Flt Permitted | 0.18 | 1.00 | 1.00 | 0.24 | 1.00 | 1.00 | 0.67 | 1.00 | | 0.30 | 1.00 | |
| Satd. Flow (perm) | 302 | 3189 | 1304 | 408 | 3221 | 1360 | 1117 | 1617 | | 503 | 1662 | |
| Peak-hour factor, PHF | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 |
| Adj. Flow (vph) | 66 | 857 | 46 | 112 | 1216 | 425 | 57 | 139 | 83 | 311 | 110 | 25 |
| RTOR Reduction (vph) | 0 | 0 | 23 | 0 | 0 | 123 | 0 | 14 | 0 | 0 | 6 | 0 |
| Lane Group Flow (vph) | 66 | 857 | 23 | 112 | 1216 | 302 | 57 | 208 | 0 | 311 | 129 | 0 |
| Confl. Peds. (#/hr) | 16 | | 13 | 13 | | 16 | 14 | | 10 | 10 | | 14 |
| Heavy Vehicles (%) | 0% | 3% | 5% | 0% | 2% | 0% | 0% | 0% | 0% | 1% | 0% | 3% |
| Turn Type | Perm | NA | Perm | pm+pt | NA | Perm | Perm | NA | | pm+pt | NA | |
| Protected Phases | | 2 | | 1 | 6 | | | 4 | | 3 | 8 | |
| Permitted Phases | 2 | | 2 | 6 | | 6 | 4 | | | 8 | | |
| Actuated Green, G (s) | 80.3 | 80.3 | 80.3 | 92.7 | 92.7 | 92.7 | 25.7 | 25.7 | | 53.3 | 53.3 | |
| Effective Green, g (s) | 81.3 | 81.3 | 81.3 | 93.7 | 93.7 | 93.7 | 26.7 | 26.7 | | 54.3 | 54.3 | |
| Actuated g/C Ratio | 0.51 | 0.51 | 0.51 | 0.59 | 0.59 | 0.59 | 0.17 | 0.17 | | 0.34 | 0.34 | |
| Clearance Time (s) | 7.0 | 7.0 | 7.0 | 3.0 | 7.0 | 7.0 | 7.0 | 7.0 | | 3.0 | 7.0 | |
| Vehicle Extension (s) | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | | 3.0 | 3.0 | |
| Lane Grp Cap (vph) | 153 | 1620 | 662 | 316 | 1886 | 796 | 186 | 269 | | 344 | 564 | |
| v/s Ratio Prot | | 0.27 | | 0.02 | c0.38 | | | c0.13 | | c0.14 | 0.08 | |
| v/s Ratio Perm | 0.22 | | 0.02 | 0.18 | | 0.22 | 0.05 | | | 0.16 | | |
| v/c Ratio | 0.43 | 0.53 | 0.04 | 0.35 | 0.64 | 0.38 | 0.31 | 0.77 | | 0.90 | 0.23 | |
| Uniform Delay, d1 | 24.8 | 26.5 | 19.7 | 16.7 | 22.1 | 17.7 | 58.5 | 63.7 | | 44.5 | 37.9 | |
| Progression Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | | 1.00 | 1.00 | |
| Incremental Delay, d2 | 8.6 | 1.2 | 0.1 | 0.7 | 1.7 | 1.4 | 0.9 | 12.9 | | 25.9 | 0.2 | |
| Delay (s) | 33.4 | 27.7 | 19.8 | 17.4 | 23.8 | 19.0 | 59.5 | 76.6 | | 70.4 | 38.1 | |
| Level of Service | C | C | B | B | C | B | E | E | | E | D | |
| Approach Delay (s) | | 27.7 | | | 22.2 | | | 73.1 | | | 60.6 | |
| Approach LOS | | C | | | C | | | E | | | E | |

| Intersection Summary | | | |
|---|---|---|---|
| HCM 2000 Control Delay | 32.9 | HCM 2000 Level of Service | C |
| HCM 2000 Volume to Capacity ratio | 0.72 | | |
| Actuated Cycle Length (s) | 160.0 | Sum of lost time (s) | 16.0 |
| Intersection Capacity Utilization | 94.8% | ICU Level of Service | F |
| Analysis Period (min) | 15 | | |
| c Critical Lane Group | | | |

| Lane Group | EBL | EBT | WBT | SBL | SBR |
|---|---|---|---|---|---|
| Lane Configurations | | | | | |
| Traffic Volume (vph) | 136 | 342 | 382 | 73 | 361 |
| Future Volume (vph) | 136 | 342 | 382 | 73 | 361 |
| Lane Group Flow (vph) | 0 | 520 | 439 | 79 | 392 |
| Turn Type | pm+pt | NA | NA | Perm | Perm |
| Protected Phases | 1 | 2 | 2 | | |
| Permitted Phases | 2 | | | 4 | 4 |
| Detector Phase | 1 | 2 | 2 | 4 | 4 |
| Switch Phase | | | | | |
| Minimum Initial (s) | 7.0 | 10.0 | 10.0 | 10.0 | 10.0 |
| Minimum Split (s) | 14.5 | 32.0 | 32.0 | 34.5 | 34.5 |
| Total Split (s) | 28.0 | 54.0 | 54.0 | 69.5 | 69.5 |
| Total Split (%) | 18.5% | 35.6% | 35.6% | 45.9% | 45.9% |
| Yellow Time (s) | 3.0 | 3.5 | 3.5 | 3.5 | 3.5 |
| All-Red Time (s) | 0.0 | 3.5 | 3.5 | 2.0 | 2.0 |
| Lost Time Adjust (s) | | -1.0 | -1.0 | -1.0 | -1.0 |
| Total Lost Time (s) | | 6.0 | 6.0 | 4.5 | 4.5 |
| Lead/Lag | Lead | Lag | Lag | | |
| Lead-Lag Optimize? | Yes | Yes | Yes | | |
| Recall Mode | None | Max | Max | None | None |
| v/c Ratio | | 0.21 | 0.20 | 0.38 | 0.68 |
| Control Delay | | 4.5 | 4.4 | 31.8 | 9.9 |
| Queue Delay | | 0.0 | 0.0 | 0.0 | 0.0 |
| Total Delay | | 4.5 | 4.4 | 31.8 | 9.9 |
| Queue Length 50th (m) | | 7.2 | 8.6 | 9.4 | 0.0 |
| Queue Length 95th (m) | | 12.7 | 15.6 | 21.0 | 21.7 |
| Internal Link Dist (m) | | 132.4 | 206.4 | 85.2 | |
| Turn Bay Length (m) | | | | | |
| Base Capacity (vph) | | 2488 | 2250 | 1193 | 1450 |
| Starvation Cap Reductn | | 0 | 0 | 0 | 0 |
| Spillback Cap Reductn | | 0 | 0 | 0 | 0 |
| Storage Cap Reductn | | 0 | 0 | 0 | 0 |
| Reduced v/c Ratio | | 0.21 | 0.20 | 0.07 | 0.27 |

| Intersection Summary |
|---|
| Cycle Length: 151.5 |
| Actuated Cycle Length: 70.4 |
| Natural Cycle: 85 |
| Control Type: Semi Act-Uncoord |

Splits and Phases: 9: Hillcrest Avenue & Cooksville GO



| Movement | EBL | EBT | WBT | WBR | SBL | SBR |
|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | |
| Traffic Volume (vph) | 136 | 342 | 382 | 22 | 73 | 361 |
| Future Volume (vph) | 136 | 342 | 382 | 22 | 73 | 361 |
| Ideal Flow (vphpl) | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 |
| Total Lost time (s) | | 6.0 | 6.0 | | 4.5 | 4.5 |
| Lane Util. Factor | | 0.91 | 0.95 | | 1.00 | 1.00 |
| Frpb, ped/bikes | | 1.00 | 1.00 | | 1.00 | 0.98 |
| Flpb, ped/bikes | | 1.00 | 1.00 | | 0.98 | 1.00 |
| Frt | | 1.00 | 0.99 | | 1.00 | 0.85 |
| Flt Protected | | 0.99 | 1.00 | | 0.95 | 1.00 |
| Satd. Flow (prot) | | 4872 | 3301 | | 1264 | 1500 |
| Flt Permitted | | 0.74 | 1.00 | | 0.95 | 1.00 |
| Satd. Flow (perm) | | 3656 | 3301 | | 1264 | 1500 |
| Peak-hour factor, PHF | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 |
| Adj. Flow (vph) | 148 | 372 | 415 | 24 | 79 | 392 |
| RTOR Reduction (vph) | 0 | 0 | 1 | 0 | 0 | 326 |
| Lane Group Flow (vph) | 0 | 520 | 438 | 0 | 79 | 66 |
| Confl. Peds. (#/hr) | 30 | | | 30 | 23 | 7 |
| Confl. Bikes (#/hr) | | | | 1 | | |
| Heavy Vehicles (%) | 5% | 6% | 10% | 0% | 42% | 7% |
| Turn Type | pm+pt | NA | NA | | Perm | Perm |
| Protected Phases | 1 | 2 | 2 | | | |
| Permitted Phases | 2 | | | | 4 | 4 |
| Actuated Green, G (s) | | 47.0 | 47.0 | | 10.8 | 10.8 |
| Effective Green, g (s) | | 48.0 | 48.0 | | 11.8 | 11.8 |
| Actuated g/C Ratio | | 0.68 | 0.68 | | 0.17 | 0.17 |
| Clearance Time (s) | | 7.0 | 7.0 | | 5.5 | 5.5 |
| Vehicle Extension (s) | | 3.0 | 3.0 | | 3.0 | 3.0 |
| Lane Grp Cap (vph) | | 2496 | 2253 | | 212 | 251 |
| v/s Ratio Prot | | | 0.13 | | | |
| v/s Ratio Perm | | c0.14 | | | c0.06 | 0.04 |
| v/c Ratio | | 0.21 | 0.19 | | 0.37 | 0.26 |
| Uniform Delay, d1 | | 4.1 | 4.1 | | 26.0 | 25.5 |
| Progression Factor | | 1.00 | 1.00 | | 1.00 | 1.00 |
| Incremental Delay, d2 | | 0.0 | 0.2 | | 1.1 | 0.6 |
| Delay (s) | | 4.2 | 4.3 | | 27.1 | 26.0 |
| Level of Service | | A | A | | C | C |
| Approach Delay (s) | | 4.2 | 4.3 | | 26.2 | |
| Approach LOS | | A | A | | C | |

| Intersection Summary | | | |
|---|---|---|---|
| HCM 2000 Control Delay | 11.5 | HCM 2000 Level of Service | B |
| HCM 2000 Volume to Capacity ratio | 0.26 | | |
| Actuated Cycle Length (s) | 70.3 | Sum of lost time (s) | 14.5 |
| Intersection Capacity Utilization | 55.6% | ICU Level of Service | B |
| Analysis Period (min) | 15 | | |
| c Critical Lane Group | | | |

| Movement | EBT | EBR | WBL | WBT | NBL | NBR |
|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | |
| Traffic Volume (veh/h) | 210 | 58 | 6 | 257 | 59 | 30 |
| Future Volume (Veh/h) | 210 | 58 | 6 | 257 | 59 | 30 |
| Sign Control | Free | | | Free | Stop | |
| Grade | 0% | | | 0% | 0% | |
| Peak Hour Factor | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 |
| Hourly flow rate (vph) | 228 | 63 | 7 | 279 | 64 | 33 |
| Pedestrians | 21 | | | 6 | 30 | |
| Lane Width (m) | 3.7 | | | 3.7 | 3.7 | |
| Walking Speed (m/s) | 1.1 | | | 1.1 | 1.1 | |
| Percent Blockage | 2 | | | 1 | 3 | |
| Right turn flare (veh) | | | | | | |
| Median type | None | | | None | | |
| Median storage veh) | | | | | | |
| Upstream signal (m) | 137 | | | | | |
| pX, platoon unblocked | | | | | | |
| vC, conflicting volume | | | 321 | | 604 | 296 |
| vC1, stage 1 conf vol | | | | | | |
| vC2, stage 2 conf vol | | | | | | |
| vCu, unblocked vol | | | 321 | | 604 | 296 |
| tC, single (s) | | | 4.1 | | 6.5 | 6.2 |
| tC, 2 stage (s) | | | | | | |
| tF (s) | | | 2.2 | | 3.6 | 3.3 |
| p0 queue free % | | | 99 | | 85 | 95 |
| cM capacity (veh/h) | | | 1215 | | 428 | 724 |

| Direction, Lane # | EB 1 | WB 1 | NB 1 |
|---|---|---|---|
| Volume Total | 291 | 286 | 97 |
| Volume Left | 0 | 7 | 64 |
| Volume Right | 63 | 0 | 33 |
| cSH | 1700 | 1215 | 497 |
| Volume to Capacity | 0.17 | 0.01 | 0.20 |
| Queue Length 95th (m) | 0.0 | 0.1 | 5.4 |
| Control Delay (s) | 0.0 | 0.2 | 14.0 |
| Lane LOS | | A | B |
| Approach Delay (s) | 0.0 | 0.2 | 14.0 |
| Approach LOS | | | B |

| Intersection Summary | | | |
|---|---|---|---|
| Average Delay | 2.1 | | |
| Intersection Capacity Utilization | 34.3% | ICU Level of Service | A |
| Analysis Period (min) | 15 | | |

| Intersection | |
|---|---|
| Intersection Delay, s/veh | 11.2 |
| Intersection LOS | B |

| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | | | | | | | |
| Traffic Vol, veh/h | 44 | 182 | 43 | 14 | 289 | 13 | 41 | 38 | 26 | 12 | 32 | 15 |
| Future Vol, veh/h | 44 | 182 | 43 | 14 | 289 | 13 | 41 | 38 | 26 | 12 | 32 | 15 |
| Peak Hour Factor | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 |
| Heavy Vehicles, % | 29 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 13 |
| Mvmt Flow | 48 | 198 | 47 | 15 | 314 | 14 | 45 | 41 | 28 | 13 | 35 | 16 |
| Number of Lanes | 1 | 1 | 0 | 1 | 1 | 0 | 0 | 1 | 0 | 0 | 1 | 0 |

| Approach | EB | WB | NB | SB |
|---|---|---|---|---|
| Opposing Approach | WB | EB | SB | NB |
| Opposing Lanes | 2 | 2 | 1 | 1 |
| Conflicting Approach Left | SB | NB | EB | WB |
| Conflicting Lanes Left | 1 | 1 | 2 | 2 |
| Conflicting Approach Right | NB | SB | WB | EB |
| Conflicting Lanes Right | 1 | 1 | 2 | 2 |
| HCM Control Delay | 10.6 | 12.6 | 9.8 | 9.3 |
| HCM LOS | B | B | A | A |

| Lane | NBLn1 | EBLn1 | EBLn2 | WBLn1 | WBLn2 | SBLn1 |
|---|---|---|---|---|---|---|
| Vol Left, % | 39% | 100% | 0% | 100% | 0% | 20% |
| Vol Thru, % | 36% | 0% | 81% | 0% | 96% | 54% |
| Vol Right, % | 25% | 0% | 19% | 0% | 4% | 25% |
| Sign Control | Stop | Stop | Stop | Stop | Stop | Stop |
| Traffic Vol by Lane | 105 | 44 | 225 | 14 | 302 | 59 |
| LT Vol | 41 | 44 | 0 | 14 | 0 | 12 |
| Through Vol | 38 | 0 | 182 | 0 | 289 | 32 |
| RT Vol | 26 | 0 | 43 | 0 | 13 | 15 |
| Lane Flow Rate | 114 | 48 | 245 | 15 | 328 | 64 |
| Geometry Grp | 2 | 5 | 5 | 5 | 5 | 2 |
| Degree of Util (X) | 0.176 | 0.084 | 0.353 | 0.024 | 0.478 | 0.1 |
| Departure Headway (Hd) | 5.566 | 6.316 | 5.196 | 5.778 | 5.244 | 5.629 |
| Convergence, Y/N | Yes | Yes | Yes | Yes | Yes | Yes |
| Cap | 648 | 562 | 685 | 614 | 679 | 640 |
| Service Time | 3.566 | 4.109 | 2.989 | 3.567 | 3.032 | 3.633 |
| HCM Lane V/C Ratio | 0.176 | 0.085 | 0.358 | 0.024 | 0.483 | 0.1 |
| HCM Control Delay | 9.8 | 9.7 | 10.8 | 8.7 | 12.8 | 9.3 |
| HCM Lane LOS | A | A | B | A | B | A |
| HCM 95th-tile Q | 0.6 | 0.3 | 1.6 | 0.1 | 2.6 | 0.3 |

| Movement | EBT | EBR | WBL | WBT | NBL | NBR |
|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | |
| Traffic Volume (veh/h) | 20 | 139 | 5 | 17 | 242 | 12 |
| Future Volume (Veh/h) | 20 | 139 | 5 | 17 | 242 | 12 |
| Sign Control | Free | | | Free | Stop | |
| Grade | 0% | | | 0% | 0% | |
| Peak Hour Factor | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 |
| Hourly flow rate (vph) | 22 | 151 | 5 | 18 | 263 | 13 |
| Pedestrians | 1 | | | 1 | 12 | |
| Lane Width (m) | 3.7 | | | 3.7 | 3.7 | |
| Walking Speed (m/s) | 1.1 | | | 1.1 | 1.1 | |
| Percent Blockage | 0 | | | 0 | 1 | |
| Right turn flare (veh) | | | | | | |
| Median type | None | | | None | | |
| Median storage veh) | | | | | | |
| Upstream signal (m) | 354 | | | | | |
| pX, platoon unblocked | | | | | | |
| vC, conflicting volume | | | 185 | | 138 | 110 |
| vC1, stage 1 conf vol | | | | | | |
| vC2, stage 2 conf vol | | | | | | |
| vCu, unblocked vol | | | 185 | | 138 | 110 |
| tC, single (s) | | | 4.1 | | 6.4 | 6.2 |
| tC, 2 stage (s) | | | | | | |
| tF (s) | | | 2.2 | | 3.5 | 3.3 |
| p0 queue free % | | | 100 | | 69 | 99 |
| cM capacity (veh/h) | | | 1386 | | 844 | 937 |

| Direction, Lane # | EB 1 | WB 1 | NB 1 |
|---|---|---|---|
| Volume Total | 173 | 23 | 276 |
| Volume Left | 0 | 5 | 263 |
| Volume Right | 151 | 0 | 13 |
| cSH | 1700 | 1386 | 848 |
| Volume to Capacity | 0.10 | 0.00 | 0.33 |
| Queue Length 95th (m) | 0.0 | 0.1 | 10.8 |
| Control Delay (s) | 0.0 | 1.7 | 11.3 |
| Lane LOS | | A | B |
| Approach Delay (s) | 0.0 | 1.7 | 11.3 |
| Approach LOS | | | B |

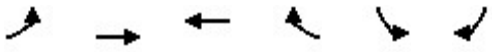
| Intersection Summary | | | |
|---|---|---|---|
| Average Delay | 6.7 | | |
| Intersection Capacity Utilization | 34.7% | ICU Level of Service | A |
| Analysis Period (min) | 15 | | |

| Intersection | |
|---|---|
| Intersection Delay, s/veh | 11 |
| Intersection LOS | B |

| Movement | EBL | EBT | WBT | WBR | SBL | SBR |
|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | |
| Traffic Vol, veh/h | 40 | 180 | 313 | 247 | 119 | 15 |
| Future Vol, veh/h | 40 | 180 | 313 | 247 | 119 | 15 |
| Peak Hour Factor | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 |
| Heavy Vehicles, % | 0 | 1 | 1 | 2 | 2 | 0 |
| Mvmt Flow | 43 | 196 | 340 | 268 | 129 | 16 |
| Number of Lanes | 1 | 1 | 1 | 1 | 1 | 0 |

| Approach | EB | WB | SB |
|---|---|---|---|
| Opposing Approach | WB | EB | |
| Opposing Lanes | 2 | 2 | 0 |
| Conflicting Approach Left | SB | | WB |
| Conflicting Lanes Left | 1 | 0 | 2 |
| Conflicting Approach Right | | SB | EB |
| Conflicting Lanes Right | 0 | 1 | 2 |
| HCM Control Delay | 10.4 | 11.4 | 10.6 |
| HCM LOS | B | B | B |

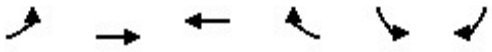
| Lane | EBLn1 | EBLn2 | WBLn1 | WBLn2 | SBLn1 |
|---|---|---|---|---|---|
| Vol Left, % | 100% | 0% | 0% | 0% | 89% |
| Vol Thru, % | 0% | 100% | 100% | 0% | 0% |
| Vol Right, % | 0% | 0% | 0% | 100% | 11% |
| Sign Control | Stop | Stop | Stop | Stop | Stop |
| Traffic Vol by Lane | 40 | 180 | 313 | 247 | 134 |
| LT Vol | 40 | 0 | 0 | 0 | 119 |
| Through Vol | 0 | 180 | 313 | 0 | 0 |
| RT Vol | 0 | 0 | 0 | 247 | 15 |
| Lane Flow Rate | 43 | 196 | 340 | 268 | 146 |
| Geometry Grp | 5 | 5 | 5 | 5 | 2 |
| Degree of Util (X) | 0.073 | 0.3 | 0.49 | 0.335 | 0.233 |
| Departure Headway (Hd) | 6.007 | 5.519 | 5.186 | 4.498 | 5.754 |
| Convergence, Y/N | Yes | Yes | Yes | Yes | Yes |
| Cap | 592 | 646 | 691 | 792 | 619 |
| Service Time | 3.791 | 3.303 | 2.949 | 2.261 | 3.835 |
| HCM Lane V/C Ratio | 0.073 | 0.303 | 0.492 | 0.338 | 0.236 |
| HCM Control Delay | 9.3 | 10.7 | 12.9 | 9.5 | 10.6 |
| HCM Lane LOS | A | B | B | A | B |
| HCM 95th-tile Q | 0.2 | 1.3 | 2.7 | 1.5 | 0.9 |



| Movement | EBL | EBT | WBT | WBR | SBL | SBR |
|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | |
| Traffic Volume (veh/h) | 0 | 240 | 150 | 0 | 66 | 109 |
| Future Volume (Veh/h) | 0 | 240 | 150 | 0 | 66 | 109 |
| Sign Control | | Free | Free | | Stop | |
| Grade | | 0% | 0% | | 0% | |
| Peak Hour Factor | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 |
| Hourly flow rate (vph) | 0 | 261 | 163 | 0 | 72 | 118 |
| Pedestrians | | | | | | |
| Lane Width (m) | | | | | | |
| Walking Speed (m/s) | | | | | | |
| Percent Blockage | | | | | | |
| Right turn flare (veh) | | | | | | |
| Median type | | None | None | | | |
| Median storage veh) | | | | | | |
| Upstream signal (m) | | 264 | | | | |
| pX, platoon unblocked | | | | | | |
| vC, conflicting volume | 163 | | | | 424 | 163 |
| vC1, stage 1 conf vol | | | | | | |
| vC2, stage 2 conf vol | | | | | | |
| vCu, unblocked vol | 163 | | | | 424 | 163 |
| tC, single (s) | 4.1 | | | | 6.4 | 6.2 |
| tC, 2 stage (s) | | | | | | |
| tF (s) | 2.2 | | | | 3.5 | 3.3 |
| p0 queue free % | 100 | | | | 88 | 87 |
| cM capacity (veh/h) | 1416 | | | | 587 | 882 |

| Direction, Lane # | EB 1 | WB 1 | SB 1 |
|---|---|---|---|
| Volume Total | 261 | 163 | 190 |
| Volume Left | 0 | 0 | 72 |
| Volume Right | 0 | 0 | 118 |
| cSH | 1416 | 1700 | 741 |
| Volume to Capacity | 0.00 | 0.10 | 0.26 |
| Queue Length 95th (m) | 0.0 | 0.0 | 7.8 |
| Control Delay (s) | 0.0 | 0.0 | 11.5 |
| Lane LOS | | | B |
| Approach Delay (s) | 0.0 | 0.0 | 11.5 |
| Approach LOS | | | B |

| Intersection Summary | | | |
|---|---|---|---|
| Average Delay | | 3.6 | |
| Intersection Capacity Utilization | | 29.7% | ICU Level of Service A |
| Analysis Period (min) | | 15 | |



| Movement | EBL | EBT | WBT | WBR | SBL | SBR |
|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | |
| Traffic Volume (veh/h) | 140 | 166 | 150 | 109 | 0 | 0 |
| Future Volume (Veh/h) | 140 | 166 | 150 | 109 | 0 | 0 |
| Sign Control | | Free | Free | | Stop | |
| Grade | | 0% | 0% | | 0% | |
| Peak Hour Factor | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 |
| Hourly flow rate (vph) | 152 | 180 | 163 | 118 | 0 | 0 |
| Pedestrians | | | | | | |
| Lane Width (m) | | | | | | |
| Walking Speed (m/s) | | | | | | |
| Percent Blockage | | | | | | |
| Right turn flare (veh) | | | | | | |
| Median type | | None | None | | | |
| Median storage veh) | | | | | | |
| Upstream signal (m) | | 330 | | | | |
| pX, platoon unblocked | | | | | | |
| vC, conflicting volume | 281 | | | | 706 | 222 |
| vC1, stage 1 conf vol | | | | | | |
| vC2, stage 2 conf vol | | | | | | |
| vCu, unblocked vol | 281 | | | | 706 | 222 |
| tC, single (s) | 4.1 | | | | 6.4 | 6.2 |
| tC, 2 stage (s) | | | | | | |
| tF (s) | 2.2 | | | | 3.5 | 3.3 |
| p0 queue free % | 88 | | | | 100 | 100 |
| cM capacity (veh/h) | 1282 | | | | 355 | 818 |

| Direction, Lane # | EB 1 | WB 1 |
|---|---|---|
| Volume Total | 332 | 281 |
| Volume Left | 152 | 0 |
| Volume Right | 0 | 118 |
| cSH | 1282 | 1700 |
| Volume to Capacity | 0.12 | 0.17 |
| Queue Length 95th (m) | 3.1 | 0.0 |
| Control Delay (s) | 4.3 | 0.0 |
| Lane LOS | A | |
| Approach Delay (s) | 4.3 | 0.0 |
| Approach LOS | | |

| Intersection Summary | | | |
|---|---|---|---|
| Average Delay | 2.3 | | |
| Intersection Capacity Utilization | 37.7% | ICU Level of Service | A |
| Analysis Period (min) | 15 | | |

Lanes, Volumes, Timings
1: Hurontario Street & Cooksville GO/John Street

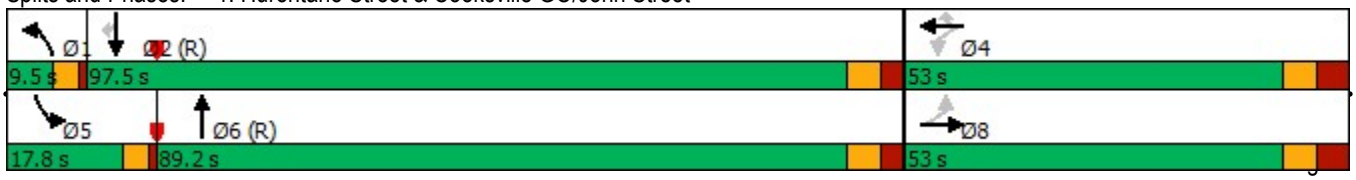
2029 FT AM Adj. Lane Configuration

| Lane Group | EBL | EBT | WBL | WBT | WBR | NBL | NBT | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | | | | | |
| Traffic Volume (vph) | 328 | 30 | 135 | 19 | 274 | 15 | 1576 | 147 | 1305 | 296 |
| Future Volume (vph) | 328 | 30 | 135 | 19 | 274 | 15 | 1576 | 147 | 1305 | 296 |
| Lane Group Flow (vph) | 357 | 206 | 147 | 21 | 298 | 16 | 1746 | 160 | 1418 | 322 |
| Turn Type | Perm | NA | Perm | NA | Perm | Prot | NA | Prot | NA | Perm |
| Protected Phases | | 8 | | 4 | | 1 | 6 | 5 | 2 | |
| Permitted Phases | 8 | | 4 | | 4 | | 6 | | 2 | 2 |
| Detector Phase | 8 | 8 | 4 | 4 | 4 | 1 | 6 | 5 | 2 | 2 |
| Switch Phase | | | | | | | | | | |
| Minimum Initial (s) | 8.0 | 8.0 | 8.0 | 8.0 | 8.0 | 5.0 | 8.0 | 5.0 | 8.0 | 8.0 |
| Minimum Split (s) | 46.0 | 46.0 | 46.0 | 46.0 | 46.0 | 9.5 | 38.0 | 9.5 | 38.0 | 38.0 |
| Total Split (s) | 53.0 | 53.0 | 53.0 | 53.0 | 53.0 | 9.5 | 89.2 | 17.8 | 97.5 | 97.5 |
| Total Split (%) | 33.1% | 33.1% | 33.1% | 33.1% | 33.1% | 5.9% | 55.8% | 11.1% | 60.9% | 60.9% |
| Yellow Time (s) | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 | 3.0 | 4.0 | 3.0 | 4.0 | 4.0 |
| All-Red Time (s) | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 | 1.0 | 3.0 | 1.0 | 3.0 | 3.0 |
| Lost Time Adjust (s) | -1.0 | -1.0 | -1.0 | -1.0 | -1.0 | -1.0 | -1.0 | -1.0 | -1.0 | -1.0 |
| Total Lost Time (s) | 7.0 | 7.0 | 7.0 | 7.0 | 7.0 | 3.0 | 6.0 | 3.0 | 6.0 | 6.0 |
| Lead/Lag | | | | | | Lead | Lag | Lead | Lag | Lag |
| Lead-Lag Optimize? | | | | | | Yes | Yes | Yes | Yes | Yes |
| Recall Mode | None | None | None | None | None | None | C-Max | None | C-Max | C-Max |
| v/c Ratio | 1.07 | 0.44 | 0.59 | 0.04 | 0.65 | 0.28 | 1.07 | 1.13 | 0.80 | 0.41 |
| Control Delay | 121.4 | 29.1 | 60.2 | 41.6 | 35.6 | 78.5 | 78.2 | 177.9 | 29.0 | 9.5 |
| Queue Delay | 0.0 | 66.6 | 79.0 | 0.0 | 0.0 | 0.0 | 14.8 | 0.0 | 50.2 | 0.0 |
| Total Delay | 121.4 | 95.7 | 139.1 | 41.6 | 35.6 | 78.5 | 93.0 | 177.9 | 79.2 | 9.5 |
| Queue Length 50th (m) | ~125.2 | 30.1 | 40.4 | 4.9 | 49.4 | 4.6 | ~325.8 | ~58.8 | 161.8 | 20.9 |
| Queue Length 95th (m) | #189.1 | 55.0 | 66.3 | 12.0 | 84.5 | m5.7 | m#333.8 | #106.9 | 225.7 | 47.4 |
| Internal Link Dist (m) | | 191.8 | | 112.9 | | | 109.3 | | 252.0 | |
| Turn Bay Length (m) | | | 25.0 | | | 37.5 | | 48.5 | | 48.5 |
| Base Capacity (vph) | 334 | 473 | 249 | 497 | 462 | 57 | 1635 | 141 | 1781 | 786 |
| Starvation Cap Reductn | 0 | 0 | 0 | 0 | 0 | 0 | 532 | 0 | 0 | 0 |
| Spillback Cap Reductn | 0 | 297 | 161 | 0 | 0 | 0 | 0 | 0 | 962 | 0 |
| Storage Cap Reductn | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Reduced v/c Ratio | 1.07 | 1.17 | 1.67 | 0.04 | 0.65 | 0.28 | 1.58 | 1.13 | 1.73 | 0.41 |

Intersection Summary

Cycle Length: 160
Actuated Cycle Length: 160
Offset: 0 (0%), Referenced to phase 2:SBT and 6:NBT, Start of Green
Natural Cycle: 145
Control Type: Actuated-Coordinated
~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
# 95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 1: Hurontario Street & Cooksville GO/John Street



| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | | | | | | | |
| Traffic Volume (vph) | 328 | 30 | 159 | 135 | 19 | 274 | 15 | 1576 | 30 | 147 | 1305 | 296 |
| Future Volume (vph) | 328 | 30 | 159 | 135 | 19 | 274 | 15 | 1576 | 30 | 147 | 1305 | 296 |
| Ideal Flow (vphpl) | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 |
| Lane Width | 3.5 | 3.7 | 3.7 | 3.5 | 3.7 | 3.7 | 3.5 | 3.7 | 3.7 | 3.5 | 3.7 | 3.5 |
| Total Lost time (s) | 7.0 | 7.0 | | 7.0 | 7.0 | 7.0 | 3.0 | 6.0 | | 3.0 | 6.0 | 6.0 |
| Lane Util. Factor | 1.00 | 1.00 | | 1.00 | 1.00 | 1.00 | 1.00 | 0.95 | | 1.00 | 0.95 | 1.00 |
| Frpb, ped/bikes | 1.00 | 0.97 | | 1.00 | 1.00 | 0.93 | 1.00 | 1.00 | | 1.00 | 1.00 | 0.85 |
| Flpb, ped/bikes | 0.94 | 1.00 | | 0.98 | 1.00 | 1.00 | 1.00 | 1.00 | | 1.00 | 1.00 | 1.00 |
| Frt | 1.00 | 0.87 | | 1.00 | 1.00 | 0.85 | 1.00 | 1.00 | | 1.00 | 1.00 | 0.85 |
| Flt Protected | 0.95 | 1.00 | | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 | | 0.95 | 1.00 | 1.00 |
| Satd. Flow (prot) | 1484 | 1429 | | 1579 | 1729 | 1300 | 1409 | 3144 | | 1530 | 2933 | 1187 |
| Flt Permitted | 0.74 | 1.00 | | 0.52 | 1.00 | 1.00 | 0.95 | 1.00 | | 0.95 | 1.00 | 1.00 |
| Satd. Flow (perm) | 1162 | 1429 | | 869 | 1729 | 1300 | 1409 | 3144 | | 1530 | 2933 | 1187 |
| Peak-hour factor, PHF | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 |
| Adj. Flow (vph) | 357 | 33 | 173 | 147 | 21 | 298 | 16 | 1713 | 33 | 160 | 1418 | 322 |
| RTOR Reduction (vph) | 0 | 63 | 0 | 0 | 0 | 88 | 0 | 1 | 0 | 0 | 0 | 68 |
| Lane Group Flow (vph) | 357 | 143 | 0 | 147 | 21 | 210 | 16 | 1745 | 0 | 160 | 1418 | 254 |
| Confl. Peds. (#/hr) | 47 | | 20 | 20 | | 47 | 90 | | 46 | 46 | | 90 |
| Confl. Bikes (#/hr) | | | | | | 1 | | | 1 | | | 2 |
| Heavy Vehicles (%) | 2% | 0% | 3% | 0% | 0% | 5% | 14% | 4% | 0% | 5% | 12% | 3% |
| Turn Type | Perm | NA | | Perm | NA | Perm | Prot | NA | | Prot | NA | Perm |
| Protected Phases | | 8 | | | 4 | | 1 | 6 | | 5 | 2 | |
| Permitted Phases | 8 | | | 4 | | 4 | | 6 | | | 2 | 2 |
| Actuated Green, G (s) | 45.0 | 45.0 | | 45.0 | 45.0 | 45.0 | 2.2 | 82.2 | | 13.8 | 93.8 | 93.8 |
| Effective Green, g (s) | 46.0 | 46.0 | | 46.0 | 46.0 | 46.0 | 3.2 | 83.2 | | 14.8 | 94.8 | 94.8 |
| Actuated g/C Ratio | 0.29 | 0.29 | | 0.29 | 0.29 | 0.29 | 0.02 | 0.52 | | 0.09 | 0.59 | 0.59 |
| Clearance Time (s) | 8.0 | 8.0 | | 8.0 | 8.0 | 8.0 | 4.0 | 7.0 | | 4.0 | 7.0 | 7.0 |
| Vehicle Extension (s) | 3.0 | 3.0 | | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | | 3.0 | 3.0 | 3.0 |
| Lane Grp Cap (vph) | 334 | 410 | | 249 | 497 | 373 | 28 | 1634 | | 141 | 1737 | 703 |
| v/s Ratio Prot | | 0.10 | | | 0.01 | | 0.01 | c0.56 | | c0.10 | 0.48 | |
| v/s Ratio Perm | c0.31 | | | 0.17 | | 0.16 | | | | | | 0.21 |
| v/c Ratio | 1.07 | 0.35 | | 0.59 | 0.04 | 0.56 | 0.57 | 1.07 | | 1.13 | 0.82 | 0.36 |
| Uniform Delay, d1 | 57.0 | 45.1 | | 48.9 | 41.1 | 48.4 | 77.7 | 38.4 | | 72.6 | 25.7 | 16.9 |
| Progression Factor | 1.00 | 1.00 | | 1.00 | 1.00 | 1.00 | 0.99 | 1.18 | | 1.00 | 1.00 | 1.00 |
| Incremental Delay, d2 | 68.7 | 0.5 | | 3.7 | 0.0 | 1.9 | 8.6 | 35.3 | | 116.6 | 4.4 | 1.4 |
| Delay (s) | 125.7 | 45.7 | | 52.6 | 41.1 | 50.4 | 85.8 | 80.7 | | 189.2 | 30.1 | 18.3 |
| Level of Service | F | D | | D | D | D | F | F | | F | C | B |
| Approach Delay (s) | | 96.4 | | | 50.7 | | | 80.7 | | | 41.5 | |
| Approach LOS | | F | | | D | | | F | | | D | |

| Intersection Summary | | | |
|---|---|---|---|
| HCM 2000 Control Delay | 63.7 | HCM 2000 Level of Service | E |
| HCM 2000 Volume to Capacity ratio | 1.07 | | |
| Actuated Cycle Length (s) | 160.0 | Sum of lost time (s) | 16.0 |
| Intersection Capacity Utilization | 125.2% | ICU Level of Service | H |
| Analysis Period (min) | 15 | | |

c Critical Lane Group

Lanes, Volumes, Timings
1: Hurontario Street & Cooksville GO/John Street

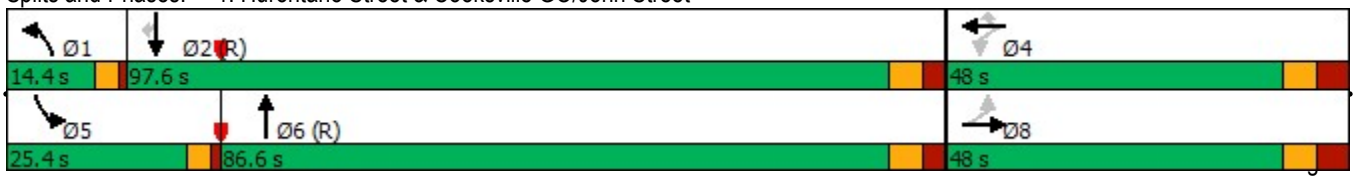
2029 FT PM Adj. Lane Configuration

| Lane Group | EBL | EBT | WBL | WBT | WBR | NBL | NBT | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | | | | | |
| Traffic Volume (vph) | 288 | 37 | 70 | 31 | 228 | 40 | 1427 | 218 | 242 | 235 |
| Future Volume (vph) | 288 | 37 | 70 | 31 | 228 | 40 | 1427 | 218 | 242 | 235 |
| Lane Group Flow (vph) | 313 | 122 | 76 | 34 | 248 | 43 | 1611 | 237 | 263 | 255 |
| Turn Type | Perm | NA | Perm | NA | Perm | Prot | NA | Prot | NA | Perm |
| Protected Phases | | 8 | | 4 | | 1 | 6 | 5 | 2 | |
| Permitted Phases | 8 | | 4 | | 4 | | 6 | | 2 | 2 |
| Detector Phase | 8 | 8 | 4 | 4 | 4 | 1 | 6 | 5 | 2 | 2 |
| Switch Phase | | | | | | | | | | |
| Minimum Initial (s) | 8.0 | 8.0 | 8.0 | 8.0 | 8.0 | 5.0 | 8.0 | 5.0 | 8.0 | 8.0 |
| Minimum Split (s) | 46.0 | 46.0 | 46.0 | 46.0 | 46.0 | 9.5 | 38.0 | 9.5 | 38.0 | 38.0 |
| Total Split (s) | 48.0 | 48.0 | 48.0 | 48.0 | 48.0 | 14.4 | 86.6 | 25.4 | 97.6 | 97.6 |
| Total Split (%) | 30.0% | 30.0% | 30.0% | 30.0% | 30.0% | 9.0% | 54.1% | 15.9% | 61.0% | 61.0% |
| Yellow Time (s) | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 | 3.0 | 4.0 | 3.0 | 4.0 | 4.0 |
| All-Red Time (s) | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 | 1.0 | 3.0 | 1.0 | 3.0 | 3.0 |
| Lost Time Adjust (s) | -1.0 | -1.0 | -1.0 | -1.0 | -1.0 | -1.0 | -1.0 | -1.0 | -1.0 | -1.0 |
| Total Lost Time (s) | 7.0 | 7.0 | 7.0 | 7.0 | 7.0 | 3.0 | 6.0 | 3.0 | 6.0 | 6.0 |
| Lead/Lag | | | | | | Lead | Lag | Lead | Lag | Lag |
| Lead-Lag Optimize? | | | | | | Yes | Yes | Yes | Yes | Yes |
| Recall Mode | None | None | None | None | None | None | C-Max | None | C-Max | C-Max |
| v/c Ratio | 1.00 | 0.29 | 0.29 | 0.08 | 0.48 | 0.43 | 1.00 | 1.06 | 0.15 | 0.31 |
| Control Delay | 109.8 | 25.6 | 51.5 | 45.9 | 13.3 | 86.8 | 57.4 | 139.4 | 15.3 | 2.7 |
| Queue Delay | 0.0 | 0.1 | 0.2 | 0.0 | 0.0 | 0.0 | 36.5 | 0.0 | 0.0 | 0.0 |
| Total Delay | 109.8 | 25.7 | 51.7 | 45.9 | 13.3 | 86.8 | 93.9 | 139.4 | 15.3 | 2.7 |
| Queue Length 50th (m) | ~100.8 | 14.9 | 19.6 | 8.3 | 10.1 | 12.9 | ~241.1 | ~82.1 | 19.7 | 0.0 |
| Queue Length 95th (m) | #164.6 | 33.3 | 35.5 | 17.7 | 36.2 | m26.9 | #319.3 | #137.4 | 27.5 | 12.4 |
| Internal Link Dist (m) | | 191.8 | | 112.9 | | | 109.3 | | 252.0 | |
| Turn Bay Length (m) | | | 25.0 | | | 37.5 | | 48.5 | | 48.5 |
| Base Capacity (vph) | 312 | 420 | 261 | 443 | 518 | 114 | 1608 | 224 | 1807 | 813 |
| Starvation Cap Reductn | 0 | 0 | 0 | 0 | 0 | 0 | 321 | 0 | 0 | 0 |
| Spillback Cap Reductn | 0 | 24 | 17 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Storage Cap Reductn | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Reduced v/c Ratio | 1.00 | 0.31 | 0.31 | 0.08 | 0.48 | 0.38 | 1.25 | 1.06 | 0.15 | 0.31 |

Intersection Summary

Cycle Length: 160
Actuated Cycle Length: 160
Offset: 115 (72%), Referenced to phase 2:SBT and 6:NBT, Start of Green
Natural Cycle: 145
Control Type: Actuated-Coordinated
~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
# 95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 1: Hurontario Street & Cooksville GO/John Street



| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | | | | | | | |
| Traffic Volume (vph) | 288 | 37 | 75 | 70 | 31 | 228 | 40 | 1427 | 55 | 218 | 242 | 235 |
| Future Volume (vph) | 288 | 37 | 75 | 70 | 31 | 228 | 40 | 1427 | 55 | 218 | 242 | 235 |
| Ideal Flow (vphpl) | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 |
| Lane Width | 3.5 | 3.7 | 3.7 | 3.5 | 3.7 | 3.7 | 3.5 | 3.7 | 3.7 | 3.5 | 3.7 | 3.5 |
| Total Lost time (s) | 7.0 | 7.0 | | 7.0 | 7.0 | 7.0 | 3.0 | 6.0 | | 3.0 | 6.0 | 6.0 |
| Lane Util. Factor | 1.00 | 1.00 | | 1.00 | 1.00 | 1.00 | 1.00 | 0.95 | | 1.00 | 0.95 | 1.00 |
| Frpb, ped/bikes | 1.00 | 0.97 | | 1.00 | 1.00 | 0.97 | 1.00 | 1.00 | | 1.00 | 1.00 | 0.86 |
| Flpb, ped/bikes | 0.98 | 1.00 | | 0.97 | 1.00 | 1.00 | 1.00 | 1.00 | | 1.00 | 1.00 | 1.00 |
| Frt | 1.00 | 0.90 | | 1.00 | 1.00 | 0.85 | 1.00 | 0.99 | | 1.00 | 1.00 | 0.85 |
| Flt Protected | 0.95 | 1.00 | | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 | | 0.95 | 1.00 | 1.00 |
| Satd. Flow (prot) | 1575 | 1462 | | 1492 | 1729 | 1422 | 1606 | 3192 | | 1606 | 3042 | 1195 |
| Flt Permitted | 0.73 | 1.00 | | 0.65 | 1.00 | 1.00 | 0.95 | 1.00 | | 0.95 | 1.00 | 1.00 |
| Satd. Flow (perm) | 1219 | 1462 | | 1023 | 1729 | 1422 | 1606 | 3192 | | 1606 | 3042 | 1195 |
| Peak-hour factor, PHF | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 |
| Adj. Flow (vph) | 313 | 40 | 82 | 76 | 34 | 248 | 43 | 1551 | 60 | 237 | 263 | 255 |
| RTOR Reduction (vph) | 0 | 46 | 0 | 0 | 0 | 154 | 0 | 1 | 0 | 0 | 0 | 105 |
| Lane Group Flow (vph) | 313 | 76 | 0 | 76 | 34 | 94 | 43 | 1610 | 0 | 237 | 263 | 150 |
| Confl. Peds. (#/hr) | 16 | | 24 | 24 | | 16 | 81 | | 34 | 34 | | 81 |
| Confl. Bikes (#/hr) | | | | | | 1 | | | | | | 2 |
| Heavy Vehicles (%) | 0% | 0% | 5% | 5% | 0% | 0% | 0% | 2% | 0% | 0% | 8% | 4% |
| Turn Type | Perm | NA | | Perm | NA | Perm | Prot | NA | | Prot | NA | Perm |
| Protected Phases | | 8 | | | 4 | | 1 | 6 | | 5 | 2 | |
| Permitted Phases | 8 | | | 4 | | 4 | | 6 | | | 2 | 2 |
| Actuated Green, G (s) | 40.0 | 40.0 | | 40.0 | 40.0 | 40.0 | 7.7 | 79.6 | | 21.4 | 93.3 | 93.3 |
| Effective Green, g (s) | 41.0 | 41.0 | | 41.0 | 41.0 | 41.0 | 8.7 | 80.6 | | 22.4 | 94.3 | 94.3 |
| Actuated g/C Ratio | 0.26 | 0.26 | | 0.26 | 0.26 | 0.26 | 0.05 | 0.50 | | 0.14 | 0.59 | 0.59 |
| Clearance Time (s) | 8.0 | 8.0 | | 8.0 | 8.0 | 8.0 | 4.0 | 7.0 | | 4.0 | 7.0 | 7.0 |
| Vehicle Extension (s) | 3.0 | 3.0 | | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | | 3.0 | 3.0 | 3.0 |
| Lane Grp Cap (vph) | 312 | 374 | | 262 | 443 | 364 | 87 | 1607 | | 224 | 1792 | 704 |
| v/s Ratio Prot | | 0.05 | | | 0.02 | | 0.03 | c0.50 | | c0.15 | 0.09 | |
| v/s Ratio Perm | c0.26 | | | 0.07 | | 0.07 | | | | | | 0.13 |
| v/c Ratio | 1.00 | 0.20 | | 0.29 | 0.08 | 0.26 | 0.49 | 1.00 | | 1.06 | 0.15 | 0.21 |
| Uniform Delay, d1 | 59.5 | 46.7 | | 47.8 | 45.1 | 47.4 | 73.5 | 39.7 | | 68.8 | 14.8 | 15.4 |
| Progression Factor | 1.00 | 1.00 | | 1.00 | 1.00 | 1.00 | 1.02 | 0.88 | | 1.00 | 1.00 | 1.00 |
| Incremental Delay, d2 | 51.8 | 0.3 | | 0.6 | 0.1 | 0.4 | 4.3 | 22.8 | | 76.3 | 0.2 | 0.7 |
| Delay (s) | 111.3 | 46.9 | | 48.4 | 45.2 | 47.8 | 79.2 | 57.6 | | 145.1 | 14.9 | 16.1 |
| Level of Service | F | D | | D | D | D | E | E | | F | B | B |
| Approach Delay (s) | | 93.2 | | | 47.7 | | | 58.1 | | | 56.2 | |
| Approach LOS | | F | | | D | | | E | | | E | |

| Intersection Summary | | | |
|---|---|---|---|
| HCM 2000 Control Delay | 61.3 | HCM 2000 Level of Service | E |
| HCM 2000 Volume to Capacity ratio | 1.01 | | |
| Actuated Cycle Length (s) | 160.0 | Sum of lost time (s) | 16.0 |
| Intersection Capacity Utilization | 103.5% | ICU Level of Service | G |
| Analysis Period (min) | 15 | | |

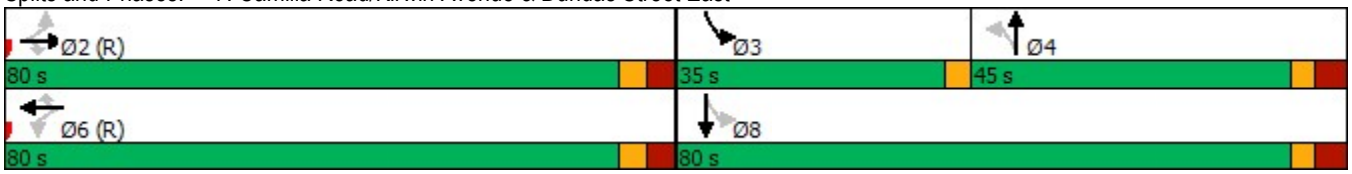
c Critical Lane Group

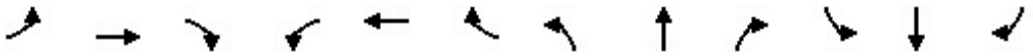
| Lane Group | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | SBL | SBT |
|---|---|---|---|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | | | | | |
| Traffic Volume (vph) | 29 | 1088 | 59 | 56 | 637 | 161 | 60 | 93 | 350 | 101 |
| Future Volume (vph) | 29 | 1088 | 59 | 56 | 637 | 161 | 60 | 93 | 350 | 101 |
| Lane Group Flow (vph) | 32 | 1183 | 64 | 61 | 692 | 175 | 65 | 181 | 380 | 140 |
| Turn Type | Perm | NA | Perm | Perm | NA | Perm | Perm | NA | pm+pt | NA |
| Protected Phases | | 2 | | | 6 | | | 4 | 3 | 8 |
| Permitted Phases | 2 | | 2 | 6 | | 6 | 4 | | 8 | |
| Detector Phase | 2 | 2 | 2 | 6 | 6 | 6 | 4 | 4 | 3 | 8 |
| Switch Phase | | | | | | | | | | |
| Minimum Initial (s) | 8.0 | 8.0 | 8.0 | 8.0 | 8.0 | 8.0 | 8.0 | 8.0 | 5.0 | 8.0 |
| Minimum Split (s) | 44.0 | 44.0 | 44.0 | 44.0 | 44.0 | 44.0 | 43.0 | 43.0 | 9.5 | 43.0 |
| Total Split (s) | 80.0 | 80.0 | 80.0 | 80.0 | 80.0 | 80.0 | 45.0 | 45.0 | 35.0 | 80.0 |
| Total Split (%) | 50.0% | 50.0% | 50.0% | 50.0% | 50.0% | 50.0% | 28.1% | 28.1% | 21.9% | 50.0% |
| Yellow Time (s) | 3.5 | 3.5 | 3.5 | 3.5 | 3.5 | 3.5 | 3.0 | 3.0 | 3.0 | 3.0 |
| All-Red Time (s) | 3.5 | 3.5 | 3.5 | 3.5 | 3.5 | 3.5 | 4.0 | 4.0 | 0.0 | 4.0 |
| Lost Time Adjust (s) | -1.0 | -1.0 | -1.0 | -1.0 | -1.0 | -1.0 | -1.0 | -1.0 | -1.0 | -1.0 |
| Total Lost Time (s) | 6.0 | 6.0 | 6.0 | 6.0 | 6.0 | 6.0 | 6.0 | 6.0 | 2.0 | 6.0 |
| Lead/Lag | | | | | | | Lag | Lag | Lead | |
| Lead-Lag Optimize? | | | | | | | Yes | Yes | Yes | |
| Recall Mode | C-Max | C-Max | C-Max | C-Max | C-Max | C-Max | None | None | None | None |
| v/c Ratio | 0.11 | 0.66 | 0.08 | 0.40 | 0.39 | 0.21 | 0.42 | 0.75 | 0.91 | 0.24 |
| Control Delay | 19.8 | 27.3 | 7.0 | 32.2 | 21.0 | 3.1 | 69.3 | 75.1 | 66.4 | 32.8 |
| Queue Delay | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Total Delay | 19.8 | 27.3 | 7.0 | 32.2 | 21.0 | 3.1 | 69.3 | 75.1 | 66.4 | 32.8 |
| Queue Length 50th (m) | 4.6 | 134.1 | 2.2 | 10.6 | 63.1 | 0.0 | 19.2 | 48.9 | 97.8 | 28.5 |
| Queue Length 95th (m) | 12.0 | 178.8 | 10.4 | 28.6 | 87.6 | 12.2 | 33.4 | 72.0 | #121.0 | 41.9 |
| Internal Link Dist (m) | | 302.1 | | | 262.5 | | | 162.3 | | 279.0 |
| Turn Bay Length (m) | 15.0 | | 30.0 | 30.0 | | 65.0 | 36.0 | | 40.0 | |
| Base Capacity (vph) | 289 | 1792 | 774 | 151 | 1758 | 820 | 263 | 396 | 422 | 757 |
| Starvation Cap Reductn | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Spillback Cap Reductn | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Storage Cap Reductn | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Reduced v/c Ratio | 0.11 | 0.66 | 0.08 | 0.40 | 0.39 | 0.21 | 0.25 | 0.46 | 0.90 | 0.18 |

Intersection Summary

Cycle Length: 160
Actuated Cycle Length: 160
Offset: 38 (24%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green
Natural Cycle: 100
Control Type: Actuated-Coordinated
# 95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 7: Camilla Road/Kirwin Avenue & Dundas Street East





| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | | | | | | | |
| Traffic Volume (vph) | 29 | 1088 | 59 | 56 | 637 | 161 | 60 | 93 | 74 | 350 | 101 | 28 |
| Future Volume (vph) | 29 | 1088 | 59 | 56 | 637 | 161 | 60 | 93 | 74 | 350 | 101 | 28 |
| Ideal Flow (vphpl) | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 |
| Lane Width | 3.5 | 3.7 | 3.5 | 3.5 | 3.7 | 3.5 | 3.5 | 3.7 | 3.7 | 3.5 | 3.7 | 3.7 |
| Total Lost time (s) | 6.0 | 6.0 | 6.0 | 6.0 | 6.0 | 6.0 | 6.0 | 6.0 | | 2.0 | 6.0 | |
| Lane Util. Factor | 1.00 | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 | 1.00 | 1.00 | | 1.00 | 1.00 | |
| Frpb, ped/bikes | 1.00 | 1.00 | 0.97 | 1.00 | 1.00 | 0.97 | 1.00 | 0.99 | | 1.00 | 0.99 | |
| Flpb, ped/bikes | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 0.98 | 1.00 | | 1.00 | 1.00 | |
| Frt | 1.00 | 1.00 | 0.85 | 1.00 | 1.00 | 0.85 | 1.00 | 0.93 | | 1.00 | 0.97 | |
| Flt Protected | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 | | 0.95 | 1.00 | |
| Satd. Flow (prot) | 1428 | 3159 | 1327 | 1604 | 3099 | 1312 | 1534 | 1553 | | 1558 | 1624 | |
| Flt Permitted | 0.34 | 1.00 | 1.00 | 0.16 | 1.00 | 1.00 | 0.67 | 1.00 | | 0.35 | 1.00 | |
| Satd. Flow (perm) | 510 | 3159 | 1327 | 267 | 3099 | 1312 | 1078 | 1553 | | 573 | 1624 | |
| Peak-hour factor, PHF | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 |
| Adj. Flow (vph) | 32 | 1183 | 64 | 61 | 692 | 175 | 65 | 101 | 80 | 380 | 110 | 30 |
| RTOR Reduction (vph) | 0 | 0 | 21 | 0 | 0 | 76 | 0 | 21 | 0 | 0 | 7 | 0 |
| Lane Group Flow (vph) | 32 | 1183 | 43 | 61 | 692 | 99 | 65 | 160 | 0 | 380 | 133 | 0 |
| Confl. Peds. (#/hr) | 6 | | 5 | 5 | | 6 | 15 | | 3 | 3 | | 15 |
| Heavy Vehicles (%) | 12% | 4% | 5% | 0% | 6% | 6% | 3% | 1% | 6% | 3% | 3% | 0% |
| Turn Type | Perm | NA | Perm | Perm | NA | Perm | Perm | NA | | pm+pt | NA | |
| Protected Phases | | 2 | | | 6 | | | 4 | | 3 | 8 | |
| Permitted Phases | 2 | | 2 | 6 | | 6 | 4 | | | 8 | | |
| Actuated Green, G (s) | 89.8 | 89.8 | 89.8 | 89.8 | 89.8 | 89.8 | 21.8 | 21.8 | | 56.2 | 56.2 | |
| Effective Green, g (s) | 90.8 | 90.8 | 90.8 | 90.8 | 90.8 | 90.8 | 22.8 | 22.8 | | 57.2 | 57.2 | |
| Actuated g/C Ratio | 0.57 | 0.57 | 0.57 | 0.57 | 0.57 | 0.57 | 0.14 | 0.14 | | 0.36 | 0.36 | |
| Clearance Time (s) | 7.0 | 7.0 | 7.0 | 7.0 | 7.0 | 7.0 | 7.0 | 7.0 | | 3.0 | 7.0 | |
| Vehicle Extension (s) | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | | 3.0 | 3.0 | |
| Lane Grp Cap (vph) | 289 | 1792 | 753 | 151 | 1758 | 744 | 153 | 221 | | 404 | 580 | |
| v/s Ratio Prot | | c0.37 | | | 0.22 | | | c0.10 | | c0.19 | 0.08 | |
| v/s Ratio Perm | 0.06 | | 0.03 | 0.23 | | 0.08 | 0.06 | | | 0.15 | | |
| v/c Ratio | 0.11 | 0.66 | 0.06 | 0.40 | 0.39 | 0.13 | 0.42 | 0.73 | | 0.94 | 0.23 | |
| Uniform Delay, d1 | 16.0 | 23.9 | 15.5 | 19.4 | 19.3 | 16.2 | 62.6 | 65.6 | | 44.6 | 36.0 | |
| Progression Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | | 1.00 | 1.00 | |
| Incremental Delay, d2 | 0.8 | 1.9 | 0.1 | 7.8 | 0.7 | 0.4 | 1.9 | 11.2 | | 30.0 | 0.2 | |
| Delay (s) | 16.7 | 25.9 | 15.6 | 27.3 | 19.9 | 16.6 | 64.5 | 76.8 | | 74.6 | 36.2 | |
| Level of Service | B | C | B | C | B | B | E | E | | E | D | |
| Approach Delay (s) | | 25.1 | | | 19.8 | | | 73.6 | | | 64.3 | |
| Approach LOS | | C | | | B | | | E | | | E | |

| Intersection Summary | | | |
|---|---|---|---|
| HCM 2000 Control Delay | 34.3 | HCM 2000 Level of Service | C |
| HCM 2000 Volume to Capacity ratio | 0.73 | | |
| Actuated Cycle Length (s) | 160.0 | Sum of lost time (s) | 14.0 |
| Intersection Capacity Utilization | 92.4% | ICU Level of Service | F |
| Analysis Period (min) | 15 | | |
| c Critical Lane Group | | | |

# APPENDIX Q:

## Transportation Demand Management and Pedestrian Circulation Checklist

# Appendix E

## Transportation Demand Management and Pedestrian Circulation Checklist

This checklist is designed to evaluate the incorporation of Transportation Demand Management (TDM) measures, including pedestrian circulation techniques, into development proposals. The template is modelled on the prototype Class 2: Medium Density/Moderate Congestion (TDM Moderate) checklist contained in *TDM Supportive Guidelines for Development Approvals* (ACT Canada, 2008).

The applicant must complete and return this checklist with their **Transportation Demand Management Plan** (TDMP) and/or **Pedestrian Circulation Plan** (PCP).

### Application Summary

| | |
|---|---|
| Development Application No: | Date: |
| DARC 23-146 W7 | October 16, 2024 |
| Applicant: | Staff: |
| GSAI | Cyrus Hiranandani |
| **SCORE AND RATING:** | **TDM SUPPORTIVE?** |
| 92% (5 Star) | Yes X No |

### Scorecard

Use the scorecard below to determine the TDM rating and supportiveness of the development proposal based on the final score calculated on page E-5. If the proposal does not satisfy the minimum threshold, review and enhance the TDM measures.

| Final Score | Rating | TDM Supportive? |
|---|---|---|
| 91% - 100% | ***** (5 Star) | YES |
| 81% - 90% | **** (4 Star) | |
| 71% - 80% | *** (3 Star) | |
| 61% - 70% | ** (2 Star) | NO (Review and Enhance TDM Measures) |
| 50% - 60% | * (1 Star) | |
| Less than 50% | (None) | |

| CATEGORY A – Pedestrian Circulation | | | | | |
|---|---|---|---|---|---|
| In creating an environment that facilitates and supports pedestrian activity, the public realm needs to be accessible, safe, and comfortable to encourage movement on the street and in the surrounding area(s). | | | | | |
| | **Features** | **Yes** | **No** | **N/A** | **Comments** |
| A1 | Development located within 800 m walking distance of residential (if employment) or employment (if residential) uses | X | | | |
| A2 | Development located within 400 m walking distance of retail, restaurant, or other pedestrian-oriented uses or similar services provided on-site | X | | | |
| A3 | At least one functional building entrance oriented towards public space (i.e., street, park, square) | X | | | |
| A4 | At least one functional building entrance located close to on-site or adjacent street transit stop | X | | | |
| A5 | Nearest functional building entrance located within 50 m of (and connected to) public street with sidewalk | X | | | |
| A6 | Accessible on-site pedestrian routes provided and connected to surrounding network and transit | X | | | |
| A7 | Continuous sidewalks (1.5 m min. width) provided along all on-site roads and both sides of adjacent public streets | X | | | |
| A8 | No conflict points between pedestrians and other users (i.e., vehicles, cyclists) | X | | | |
| A9 | Adequate and properly designed pedestrian crossings provided on-site | X | | | |
| A10 | Off-site road works designed to maximize pedestrian safety and minimize pedestrian crossing distances (e.g., no right turn channelization) | X | | | |
| A11 | Amenities provided along pedestrian routes (i.e., benches, street furniture) | | X | | |
| A11 | Shelters and benches provided at transit stops | X | | | |
| A12 | Wayfinding provided to guide pedestrians | X | | | |
| A13 | Lighting provided along pedestrian routes | X | | | |
| A14 | Weather protection provided along pedestrian routes | | X | | |
| A15 | Vehicle parking areas located away from street and pedestrian routes | X | | | |
| A16 | Protected pedestrian routes provided through vehicle parking lots and linked to building(s) | X | | | |

| CATEGORY A – Pedestrian Circulation | | | | | |
|---|---|---|---|---|---|
| In creating an environment that facilitates and supports pedestrian activity, the public realm needs to be accessible, safe, and comfortable to encourage movement on the street and in the surrounding area(s). | | | | | |
| | **Features** | **Yes** | **No** | **N/A** | **Comments** |
| A17 | Passenger pick-up and drop-off areas located to side or rear of buildings, downstream from major building entrance points, but no more than 30 m away | x | | | |
| A18 | Loading areas located away from street and pedestrian routes | x | | | |
| | **Sub-Total** | 16 | 2 | 0 | |

| CATEGORY B – Cycling Orientation | | | | | |
|---|---|---|---|---|---|
| In creating an environment that facilitates and supports cycling activity, the public realm needs to be accessible, safe, and comfortable to encourage movement on the street and in the surrounding area(s). | | | | | |
| | **Features** | **Yes** | **No** | **N/A** | **Comments** |
| B1 | On-site cycling routes provided and connected to surrounding network | | | x | |
| B2 | Class A (long-term) and Class B (short-term) bicycle parking spaces provided per City of Mississauga Zoning By-law (reproduced at end of this checklist for reference) | x | | | |
| B3 | Bicycle repair station provided at-grade or within underground structure close to long-term bicycle parking | x | | | |
| B4 | Wayfinding provided to guide cyclists | x | | | |
| B5 | Other amenities provided for cyclists (e.g., showers, change rooms) | x | | | |
| | **Sub-Total** | 4 | 0 | 1 | |

| CATEGORY C – Transit Service | | | | | |
|---|---|---|---|---|---|
| The availability and proximity of convenient public transit service with direct pedestrian linkages to the building expands the range of viable travel options for employees, visitors, and residents. | | | | | |
| | **Features** | **Yes** | **No** | **N/A** | **Comments** |
| C1 | Development located within 800 m walking distance of a rapid transit station (existing or planned) or within 400 m of two or more public bus routes with minimum 15-minute headway service during peak commuter periods and every 30 minutes throughout the remainder of the day | x | | | |
| C2 | Information about public transit routes, schedules, and fares provided in accessible and visible location on-site and in adjacent bus stops | x | | | |
| C3 | Sufficient capacity available to accommodate transit riders generated by development | x | | | |
| | **Sub-Total** | 6 | | | |

| CATEGORY D – Motor Vehicle Parking | | | | | |
|---|---|---|---|---|---|
| The location and design of motor vehicle parking facilities can affect the character and cost of a development. Avoiding the oversupply of parking can also help reduce single occupant vehicle travel. | | | | | |
| | **Features** | **Yes** | **No** | **N/A** | **Comments** |
| D1 | No more than the minimum number of parking spaces required by the Zoning By-law provided | | | x | |
| D2 | Priority parking equivalent to 10% of employee spaces provided for carpooling/vanpooling | | | x | |
| D3 | Priority parking equivalent to 3% of full-time building occupants provided for auto share and hybrid/alternative fuel vehicles | x | | | |
| D4 | Priority parking equivalent to 1% of the parking stalls provided for mopeds, motorcycles, and minicars | | x | | |
| D5 | Parking shared for different uses on-site and/or adjoining properties | x | | | |
| D6 | 50% of parking located underground or in structured parking | x | | | |
| | **Sub-Total** | 3 | 1 | 2 | |