4Q Commercial WP Inc.

UPDATED TRANSPORTATION IMPACT STUDY

Proposed Mixed-Use Community

1580-1650 Dundas Street East
City of Mississauga

October 2023
21224

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October 31, 2023 **Reference Number:** 21224

Chloé Valcin-Wright
4Q Commercial WP Inc.
1133 Yonge Street, 4th Floor
Toronto, ON
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Dear Ms. Valcin-Wright,

RE: Transportation Impact Study Update - Response to Comments
Proposed Mixed-Use Community
1580-1650 Dundas Street East, City of Mississauga

LEA Consulting Ltd. (LEA) has been retained by 4Q Commercial WP Inc. to undertake a Transportation Impact Study (TIS) for the proposed mixed-use development located at 1580-1650 Dundas Street East (hereinafter referred to as the "subject site") in the City of Mississauga. The subject site is currently occupied by the Dunwynn Centre, a commercial plaza with a mixture of retail, entertainment, restaurant, services, and self-storage uses, and an adjacent restaurant to the west. The existing plaza includes 2 two-storey buildings and a one-storey restaurant with significant ancillary surface parking plus two large surface parking lots to the south of the buildings. The site is divided into two parcels by Mattawa Avenue, which extends southeast from Dundas Street East.

The first submission for the subject site was filed in July 2022. Subsequently, comments have been received from the City of Mississauga for Parking (Nov 21, 2022) and for Traffic (Jan 19, 2023), Region of Peel (Feb 2, 2023) as well as the City's Peer Reviewer comments by Arcadis (Feb 10, 2023) for the proposed development. As such, the Transportation Impact Study has been updated from the original report submitted to accurately reflect the revised site plan and statistics from July 2023, as well as addressing the comments received.

Comments have been repeated below in blue italic, followed by LEA's responses. Comment numbers are based on the Comment Matrix.

RESPONSE TO COMMENTS

Draft Plan Comments

1. FIRE PREV PLAN EXAMINATION

Comment 4: *See the zoning application for Fire's comments regarding access to various blocks.*

LEA Response: Fire route has been provided in **Drawing 001A of Appendix M**. Blocks A and C principal entrances are within 15m radius of the fire route. Similarly, some of the principal entrances for Blocks E, F, and G are within 15m of the fire route, with internal fire route shown for the townhouse units for Blocks F and G.

2. PARKING

Comment 83: *Municipal Parking Staff advise that the Applicant contact TDM Staff in the Transportation Planning section to review and provide comment on the proposed TDM measures.*

LEA Response: Comments have not been received from TDM Staff. Updated TDM Plan is provided in **Section 11** of the Updated TIS.

Comment 84: *Staff commend the Applicant for considering the provision of TDM measures on-site; however, staff request further details (i.e. car share provided etc.).*

LEA Response: An updated TDM Plan has been provided in **Section 11** of the Updated TIS. However, as the subject site is in the early phases of the development process, TDM details will be finalized and provided in future submissions.

Comment 85: *Staff recommended rates are those within the Citys Zoning By-law 0117-2022; these newly updated rates have been carefully researched, and are tailored to Mississaugas context, reflecting the Citys existing and most recent parking needs. Staff have concerns with the applicants proposed parking rates site-wide.*

LEA Response: Section 9.2 of the Updated TIS reviews the requirements of Zoning By-law 0117-2022.

Comment 86: *The parking reduction that is being requested by the applicant is a 29% parking space deficiency; or in this case scenario equates to a total of 986 parking spaces reduced. With a parking deficiency over the 10% threshold, a satisfactory Parking Utilization Study (PUS) is required to be submitted. The Transportation Impact Study dated July 2022 does not satisfy the requirements from the Citys Parking Terms of Reference. The applicant is required to survey 4-6 days over 2 consecutive weeks and confirm surveying parameters, methodology, and surveying dates with staff prior to conducting the parking surveys.*

LEA Response: Acknowledged. However, the peer review conducted by Arcadis, dated February 10th, 2023, states the following:

> *"Overall, based on Section 4.3 (Precedent Setting Developments) of Appendix M,* ***the proposed development parking rates are within the range of rates of comparable developments*** *and is* ***situated in similar urban contexts****."*

Based on LEA's evaluation of the peer review comments, the Parking Study in **Section 9** of the Updated TIS has been revamped to support this statement.

Comment 87: *Staff are seeking for the parking requirements to be separated per proposed use as staff is unable to validate the parking requirements without having the exact units/GFA for each use, as well as the proposed parking rates for each use:*

- *o Apartment uses and their quantities (i.e. how many units are rental apartment, how many units are condominium).*
- *o Townhome uses and their quantities (i.e. what kind of townhomes are being proposed as well as the quantity for each; back-to-back, through, etc.).*

LEA Response: At the time of this submission, the exact number of condominium units and rental apartment units is unknown, as it is relatively early in the development process. With that, LEA has calculated the required parking spaces based on all of the units being condominium units. However, as the development

continues to proceed and more information is available, an updated parking review will be submitted. **Table 1-1** of the Updated TIS provides a breakdown of the number of units and non-residential GFA.

Comment 88: *Review of applicable planning policy, applicable parking strategies that are in place within comparable municipalities and urban areas, and a review of best practices in parking policy is not satisfactory justification for the requested parking deficiency.*

LEA Response: In addition to the previous justification, **Sections 9.5** to **9.9** of the Updated TIS now also includes a review of future transportation context, contemporary policy direction, recently pursued development applications, and a peer review conducted by Arcadis. As the peer review comments suggest that the rates proposed for the subject site are appropriate, it is our view that the parking rates will be sufficient to pursue a lowered rate.

3. PLANNER – DEV DESIGN

Comment 199: *TRAFFIC PEER REVIEW - Please note that peer review comments have been saved in the external agency folder for your review.*

LEA Response: Noted. Please see **"Peer Review Comments"** below for responses to Peer Review comments.

4. REGION OF PEEL

Comment 154: *WASTE MANAGEMENT COMMENT: For Mixed - Use Buildings with more than 500 Sq meters of commercial/retail space within a development, the Region of Peel will provide Front-End collection of Garbage and Recyclable Materials for the residential component only subject to Section 2.0 and 4.0 of the Waste Collection Design Standards Manual (WCDSM) and the following conditions being met and labelled on a Site Plan drawing. Private Waste Collection is required for Commercial/retail waste. Commercial/retail waste must be stored and set out separate from residential waste and labeled on a on the Site Plan drawings.*

LEA Response: Acknowledged. Regional Front-End collection vehicle has been utilized for the residential loading, with private garbage trucks (Miller truck) being utilized for the non-residential loading, as detailed in **Drawing 002A** to **006B** of **Appendix M**.

Comment 156: *WASTE MANAGEMENT COMMENT - Vehicle Access Route Requirements:*

1. *The Waste Collection Vehicle access route throughout the complex indicating turning radii and turning movements is to be clearly labelled on the drawing.*
6. *The Turning Radius from the cetreline must be a minimum of 13 metres on all turns. This includes the turning radii to the collection point and entrance and exit of the site.*
9. *In a situation where a waste collection vehicle must reverse the maximum straight back-up distance is 15 metres.*

LEA Response:

1. Turning Radii and turning movements of waste collection vehicle is provided in **Drawing 001C – 006A** of **Appendix M.**
6. Turning Radii from the centreline of loading vehicles has been provided at 13m minimum for Peel Region trucks, as shown in **Drawing 001C – 006A** of **Appendix M.**
9. Waste collection vehicles are not required to reverse more than 15 metres.

Comment 157: *WASTE MANAGEMENT COMMENT - Vehicle Access Design Requirements:*

3. Set-out area needs to be larger in order to allow for a clear path of movement during jockeying of bins.

LEA Response:

3. Bin set out areas have been provided in **Drawing 002A – 006B** of **Appendix M.**

4. TRAFFIC REVIEW

Comment 199: *[TRAFFIC IMPACT STUDY] A Traffic Impact Study prepared by LEA Consulting Ltd. dated July 2022 was submitted in support of the proposed development. Based on the information provided to date, staff provide the following comments:*

(A) Section 5.2.2 Vehicle Trip Generation.

(i) Table 5-5: Multi-Modal Site Trip Generation. Please review as numbers for Total New Site Trip Generation doesn't sum up correctly.

(ii) Table 5-6: Residential Trip Distribution; Table 5-7: Retail Trip Distribution; Table 5-8: Community Centre Trip Distribution. Please review again as percentage of trips doesn't sum up to 100%.

LEA Response:

i. **Table 5-4** has been updated in the Updated TIS to reflect the correct Multi-Modal Trip Generation numbers.

ii. **Tables 5-5** to **5-7** have been updated in the Updated TIS to sum up to 100%.

(B) Section 6. Intersection Operations Assessment.

(i) Tables in this section should be revised to include all Movement directions based on Synchro reports.

(ii) The consultant should review the Synchro analysis as v/c ratio are over 1.0 for several approaches.

(iii) 6.1.1 Existing and 5-Year Horizon (2026) Scenarios. Please include rationale for using lane utilization factor of 0.80.

LEA Response:

i. Tables in **Section 6** have been updated to include all movements based on Synchro reports.

ii. The intersections with V/C ratios over 1.0 occur at the Dundas / Dixie intersection during the PM peak hour during all horizon years, and the Jarrow / Dundas and Mattawa / Dundas intersection during the PM peak hour for the 2033 horizon (Scenario 1). It should be noted that the 2033 horizon (Scenario 2) indicates the Jarrow / Dundas and Mattawa / Dundas intersections operate below 1.00 V/C due to traffic diversion.

iii. Based on the Peer Review comments received, the analysis has been updated to assume a lane utilization factor of 1.00; however, a 20% reduction due to HOV lane has been accounted for to the east-west through volumes.

(C) The TIS should include separate section showing turning movement templates. Illustrate truck turning movements with one continuous path with AutoTURN with design vehicles specification. An evaluation of the parking areas and ramps using a PTAC design vehicle should also be included. Trucks must be able to enter the site in a forward motion, turnaround on private property, and exit the site in a forward motion.

LEA Response: Swept paths of passenger vehicle and truck movements have been provided in **Drawing 001C – 006B**, and **007A – 011** of **Appendix M**. Parking area review has also been conducted.

(D) The report should include scenario for proposed road network, consistent with MOPA 141, specifically the bridge connection.

LEA Response: Sections 6.4, 6.5 and **7.3** of the Updated TIS have reviewed a scenario with the Blundell Extension Bridge Connection (i.e. 2033 (Scenario 2)).

(E) Development Phasing should be considered for analyzing a traffic flow.

LEA Response: The proposed development will be phased as follows, and as depicted in **Figure 1-2** of the Updated TIS:

- Phase 1 – Bock E
- Phase 2 – Blocks F and G
- Phase 3 – Blocks A and C
- Phase 4 – Block B

(F) 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.

LEA Response: As indicated in **Comment B (ii)** above, all intersections are anticipated to operate below a 1.00 V/C, with the exception of the Dundas / Dixie intersection during all horizon years / scenarios during the PM peak hour (2033 (Scenario 2)). Upon receipt of comments or concerns from the community, a section shall be added to the Updated TIS to address said concerns / comments.

(G) The TIS should include Sight Line Analysis for proposed access points.

LEA Response: Sightline analysis for stopping sight distance (SSD) and intersection sight distance (ISD) has been provided in **Drawing S01A – S05B** of **Appendix M**.

***Comment 119:** [LAND DEDICATIONS] The Owner will be required to gratuitously dedicate the following to the City of Mississauga:*

(A) MUNICIPAL ROADS:

> *(i) Future Road with a minimum right of way of 22m for the creation of a Minor Collector east-west road from Mattawa Avenue to the westerly property line (Little Etobicoke Creek). The right of way dimension is subject to change through a more detailed engineering review.*
>
> *(ii) Additional municipal roads as per the Dundas MOPA 141 within this plan of subdivision.*

LEA Response: Blundell Road Extension has been included on the site plan with a 22m ROW, with further details to be provided at a later stage.

(B) RIGHT OF WAY WIDENINGS:

(i) A right of way widening towards the ultimate 26 meter right-of-way of Mattawa Avenue as identified in the Official Plan.

(ii) A right of way widening towards the ultimate 42 meter right-of-way of Dundas Street East as identified in the Official Plan.

(iii) Additional right-of-way widening of Loreland Avenue to accommodate required municipal infrastructure.

LEA Response: Mattawa has been designed with a 26m ROW, while Dundas has been designed based on the 30% Dundas BRT design received from Metrolinx.

(C) SIGHT TRIANGLES:

(i) A 7.5 m sight triangle at Loreland Avenue and Mattawa Avenue.

(ii) A 10 m sight triangle at Mattawa Avenue and future road extension identified as Blundell Road Extension.

LEA Response: 7.5m sight triangles have been provided at Mattawa / Loreland, and Blundell Extension / Mattawa. 15m sight triangles have been provided at Dundas / Mattawa, and the bend at Mattawa.

(E) 0.3 METRE RESERVES

(i) A 0.3 m reserve across the East and West frontages on Mattawa Avenue, subject to the approved access location(s).

(ii) 0.3 m reserve along Dundas Street East and along new municipal roads.

***NOTE** This condition will be cleared upon receipt of confirmation from:*

(i) City Surveyor regarding dimensions;

(ii) Environmental Site Management and Compliance regarding environmental conflicts; and

(iii) Legal Services identifying that the transfer has taken place and associated fees have been paid.

LEA Response: 1m buffer has been provided between the property line and start of sidewalks along Mattawa. Dundas Street design has followed the 30% Dundas BRT design received from Metrolinx. Details regarding the Blundell Road Extension will be provided at a later date.

Comment 123: *[INTERNAL SITE CIRCULATION]*

(a) Turning movement diagrams will be required to depict the internal site circulation.

(b) Detailed turning movements are to be provided for ingress and egress through all access point(s) for the site.

(c) Detailed turning movements are to be provided for Mattawa Avenue and Dundas Street East intersection.

(d) Additional provisions to aid in the safety and operation of these features may be required.

(e) Confirmation from Fire and Emergency Services that the internal road is acceptable from an emergency response perspective.

(f) Confirmation from the Region of Peel that the internal road is acceptable from a waste collection perspective.

LEA Response: Please refer to the FDR (including sightline analysis) and Road Design provided in **Appendix M** and **N,** respectively. Swept paths have been provided for the internal roadway, access points, and the intersection of Dundas / Mattawa.

Comment 124: *[RIGHT OF WAY PACKAGE] The developer shall provide a right-of-way package for all proposed roads within the development. The right-of-way package is to include reference to the relevant City of Mississauga standard drawings with detailed cross-sections that are applicable for each road. The developer should be advised that further comments on the development concept may be provided after the ROW package is submitted and therefore, revisions to the overall draft plan may be required.*

(A) The right-of-way package shall include plan views and a description for each of the following considerations:

(i) Pedestrian Facilities;

(ii) Cycling Facilities;

(iii) On-Street Parking and Curbside Management;

(B) The right-of-way package shall also include typical cross-section details of each street that include the following information:

(i) Street Name;

(ii) Road Classification;

(iii) Right-of-way widths;

(iv) Pavement widths and lane widths;

(v) Boulevard widths;

(vi) Sidewalks, curbs, splash pads, grades;

(vii) All above and below ground utilities.

NOTE: Any deviation from a City of Mississauga standard is subject to a comprehensive review and approval process by City staff and all affected external agencies. If non-standard cross sections are proposed, the following information will also be required, but not limited to: An extensive right-of-way package that includes details of all design elements within a proposed right-of-way for each proposed street.

LEA Response: A functional road design has been prepared and can be found in **Appendix N**.

Comment 125: *[SITE ACCESS]*

(i) The proposed access to Dundas Street East (Private Rd A) within Block E is not supported by this section. Proposed accesses for all development blocks shall be provided from roads internal to the overall development site.

(ii) Consolidation of access points along west side of Mattawa Avenue should be completed.

(iii) The access points along west and east side of Mattawa Avenue should be aligned.

(iv) Proposed access west of Loreland Avenue should be aligned with access across the street.

LEA Response:

i. All Blocks within the development will now only be accessible from Mattawa Avenue to ensure site access is supported.

ii. Three (3) accesses are proposed for the west side of Mattawa. Two (2) accesses will be for Block A, while the third is for Block C.

iii. The private laneway between Blocks F and G has been aligned with the Blundell Road Extension on the west side of Mattawa.

iv. The access west of Loreland has been removed, and access is provided via Loreland Extension.

Comment 126: *[PEER REVIEW] In addition to staff comments, the City has retained a Traffic Engineering Consultant to conduct a Peer Review on the Traffic Impact Study prepared by LEA Consulting Ltd. on behalf of the developer. Prior to Registration, the following shall be addressed:*

(i) Address comments as provided by the City's Peer Reviewer. The Summary of Peer Review can be found at External Agency Comments Folder.

(ii) Make satisfactory arrangements with this section to pay for this peer review that will be conducted by an independent consultant chosen by the City, in accordance with the City's Fees and Charges By-law. Please contact Traffic reviewer on the file for the required payment.

LEA Response: Noted. Please see **"Peer Review Comments"** below for responses to Peer Review comments.

Comment 130: *TRAFFIC IMPACT STUDY - SCHEDULE 'C' - REQUIREMENTS FOR SITE PLAN APPROVAL] The following shall be included within Schedule 'C' of the Subdivision Agreement: Prior to Site Plan approval, the owner shall provide an updated Traffic Impact Study to the satisfaction of the City of Mississauga.*

LEA Response: Acknowledged.

Comment 134: *[CYCLING FACILITIES] The Owner will be required to provide accessible and secure short term (outdoor) and long term (indoor) bicycle storage facilities on site. The following rates are to be used:*

(a) Apartment: A minimum of 0.60 long term spaces and 0.05 (6 spaces min.) short term spaces per residential unit.

(b) Retail (Per 100 sq.m. GFA of retail area): A minimum of 0.10 long term spaces and 0.20 short term spaces.

LEA Response: Acknowledged. Please review **Section 9.1** of the Updated TIS. Overall, the subject site will provide a surplus of 172 bicycle parking spaces.

Comment 137: *[RIGH OF WAY] After review of the proposed right-of-ways, the following comments are provided:*

(A) MATTAWA AVE

(i) Lane width for through movements should be increased to 3.5 m.

(ii) Layby parking along Mattawa Avenue should be eliminated.

(iii) Active Transportation: As Mattawa Avenue will be a section of the Etobicoke Creek Trail south extension, on-road bike lanes would not be acceptable. Raised two-way cycle track on the east side of Mattawa Avenue or raised one-way cycle tracks on each side should be implemented.

LEA Response: Please see attached Functional Road Design provided in **Appendix N**. Lane widths are provided at 3.5m, layby parking along Mattawa has been removed, and one-way bike lanes have been provided on each side of the roadway which connects to the future bike lanes along Dundas.

(B) [FUTURE ROAD EXTENSION] Additional information is required for the future road extension currently identified as the Blundell Road Extension from this application. The Owner/Applicant is required to provide the following:

(i) Conceptual Civil Drawings (e.g. Plan and Profile etc.) showing potential bridge connections across the creek should be provided to confirm an appropriate location.

(ii) The right-of-way width for the proposed road may be subject to change from the minimum required 22m as per City of Mississauga standards for Minor Collector Road.

LEA Response: Blundell Road Extension has been shown on the site plan and Functional Road Design; however, details regarding this road extension will be provided at a later date.

***Comment 138:** [TEMPORARY TURNING CIRCLE] The applicant will be required to provide a temporary turning circle as an interim condition for the dead end roads within the proposed development to ensure vehicles, garbage collection, fire & emergency services can be accommodated. The temporary turning circle will be removed once the municipal roads can be extended through the adjacent lands. Some lots/blocks may need to be frozen to provide a turnaround facility. The City will request the required lands to be conveyed through a municipal easement.*

LEA Response: Details regarding the phasing of the site will be prepared at a later date. The current plans have been designed to accommodate all vehicle swept paths in an acceptable manner without the need for a temporary turning circle.

***Comment 139:** [LAND CONVEYANCES - EASEMENTS] The Owner will be required to gratuitously convey the following to the City of Mississauga:*

(i) TEMPORARY TURNING CIRCLE EASEMENT. The Owner might be required to provide a Temporary Turning Circle Easement at the terminus of Street identifies as Blundell Road extension as an interim condition to ensure vehicles can be accommodated.

(ii) PUBLIC VEHICULAR AND PEDESTRIAN ACCESS EASEMENT The Owner will be required to provide a Public Vehicular and Pedestrian Access Easement from public road identified under MOPA 141 to the Dundas Street East (westerly property line of the subject site).

LEA Response: Noted. A potential temporary turning circle easement will be determined at a later date.

***Comment 141:** [SIDEWALK] The applicant is advised that new sidewalk connection along Loreland Avenue to existing sidewalk at Mattawa Avenue should be provided.*

LEA Response: The proposed sidewalks along Mattawa have been extended to the Mattawa / Loreland intersection.

5. TRANSIT INFRASTRUCTURE

Comment 78: *PEDESTRIAN CONNECTIONS: Convenient and accessible pedestrian linkages are to be provided between the existing sidewalk network and MiWay services/stops. Pedestrian walkway connections to the existing municipal sidewalk are necessary to ensure accessibility, reduce walking time and encourage transit use.*

LEA Response: Pedestrian linkages are provided across the frontages of the site along Mattawa. Additionally, walkways are provided along the Private Laneway on the east side of Mattawa, as well as a Multi-Use Path on the west side of Blocks A and C. These will provide pedestrian connections to the municipal sidewalks and transit stops.

OZ / OPA Comments

1. PARKING

As these comments are identical to the Draft Plan Comments, please refer to Draft Plan Comments **Section 2** above for response to parking related comments.

Peer Review Comments

1. EXISTING CONDITIONS

Comment 1: *It is noted that the existing condition Synchro models represents the HOV lane as a general lane (i.e., six lane cross section with dedicated left turn lane), with a lane utilization factor of 0.80 for the eastbound and westbound through lanes. We believe a more conservative approach is to model a four through-lane cross section with a lane utilization factor of 1.0, and a 20% reduction in east-west through volumes (i.e., assuming that the HOV lane is 20% utilized during the AM/PM peak hours).*

LEA Response: As stated in **Sections 3.1** and **6.1.1** of the Updated TIS, a Dundas was modeled with a four (4) lane cross section, 20% reduction in east-west through volumes, lane utilization factor of 1.0 utilized to account for the HOV lane. The existing through-right lane has been modeled as a right-turn lane.

2. FUTURE BACKGORUND TRAFFIC CONDITIONS

Comment 2: *In Section 4.4 of the LEA TIS Report, the background development trip distribution mentions TTS 2016 data, TAZ zones # 3661 and 3670. Please confirm if the TTS directional distribution is identical to Section 5.2.4 (Trip Distribution and Assignment), as the former section lacks a summary table. Furthermore, Section 5.2.4 refers to Appendix D, which actually only contains TTS mode split data.*

LEA Response: The future background TTS directional distribution is identical to the distribution for the proposed development. **Appendix D** has been updated to contain the TTS modal split data.

3.1. MATTAWA AVENUE / DUNDAS STREET INTERSECTION – EXISTING TRIP DEDUCTIONS

Comment 3:

- *The calculated trips (based on ITE Trip Generation Manual 10th generation shopping centre rates) in Figure 5-1 represents all existing traffic volumes in the PM peak hour northbound, westbound left, and eastbound right turn movements. This appears unrealistic, as Mattawa Avenue is a continuous road southeast of the subject site, which serves other existing developments. Please verify the accuracy of the existing Dunwynn plaza retail trip volumes.*

- *The volume diagram in Figure 3-1 of and other similar diagrams appears to imply that Mattawa Avenue terminates at the subject site. Please confirm if this was an intended design of the diagram, or an oversight of the continuous nature of Mattawa Avenue southeast past the subject site.*

- *The PM peak hour eastbound and westbound through volumes show "-42" and "-44" vehicles, respectively. Please confirm if this is either associated with the subject site's adjacent minor site accesses west and east of the primary Mattawa Avenue access (which are not explicitly illustrated in Figure 5-1), or this is pertaining to pass-by traffic deductions, which is not explicitly referenced.*

- *For Table 5-1 (Existing site retail trip generation), please confirm if pass-by traffic reductions were intentionally omitted.*

LEA Response:

- New TMCs were obtained on Thursday, June 22, 2023 at the Dunwynn plaza accesses, to accurately capture the existing trip removals.
- Volume figures have been updated to show the continuation of Mattawa Avenue to the south.
- As mentioned above, new TMCs have been obtained to accurately demonstrate the existing retail trip removals.
- As mentioned above, new TMCs have been obtained at the existing accesses. Therefore pass-by trips are no longer required for the exiting trip removal, as they would be captured in the existing counts.

3.2. MATTAWA AVENUE / DUNDAS STREET INTERSECTION – SUBJECT SITE TRIP GENERATION

Comment 4: *From the LEA TIS report Table 5-4 (Vehicle Site Trip Generation), Table 5-5 (Multi-Modal Site Trip Generation), and Figure 5-2 (New Site Generated Traffic Volumes), the calculated vehicle trips generated by the proposed development is inconsistent.*

For the outbound trips during the weekday AM peak hour, Table 5-4 suggests that the proposed development will generate 386 outbound trips, which is after conversion to person trips, modal split reduction, and site interaction. Although not explicit, the resultant 386 outbound trips logically is presumably the resultant automobile trips, due to the modal split reductions.

Next, in Table 5-5, the final volumes from Table 5-4 are further separated again by travel modes, leading to, for example, 175 auto driver outbound trips in the AM peak hour.

Lastly, in Figure 5-2, the AM peak hour outbound trips show a value of 385 trips, which unexpectedly coincides with Table 5-4 instead of Table 5-5.

LEA Response: Tables 5-3 and **5-4** have been updated to represent the correct number of trip generation and multi-modal trip generation. **Figures 5-2** and **5-3** have been updated accordingly to represent the auto trip generation. It should be noted that pass-by trips have been accounted for during the PM peak hour, for the retail component of the site.

Comment 5: *In addition, there are some calculation discrepancies in the following sections of the LEA TIS Report, with revisions required:*

- *Total New Site Trip Generation. Section 5.2.2 Vehicle Trip Generation (Table 5-4)*
- *Table 5-5: Multi-Modal Site Trip Generation;*
- *Table 5-6: Residential Trip Distribution;*
- *Table 5-7: Retail Trip Distribution; and*
- *Table 5-8: Community Centre Trip Distribution.*

LEA Response: Similar to the response to **Comment 4** above, the tables have been updated to eliminate any discrepancies.

4. FUTURE TOTAL TRAFFIC CONDITIONS AND OVERALL INTERSECTION OPERATION ANALYSIS

Comment 6:

b. The Existing PM peak hour traffic volumes in the EBT and WBT directions at the Wharton Way / Dundas Street East intersection are adjusted in the 2021 existing scenario to be lower than the 2013 TMC data (see Exhibit 4-2 below). Due to the applied traffic growth rates, it is expected that traffic in 2021 should be greater then in 2013.

It appears balancing (i.e., reducing the older higher Wharton Way EB/WB March 2013 volumes in favour of the newer lower Treadswell Drive Feb 2019 EB/WB volumes) was undertaken to harmonize midblock volumes between the datasets, but this is viewed as unnecessary due to the amount of midblock minor street intersections.

LEA Response: As new TMCs were obtained for all intersections (post COVID), balancing between different years was not required; however, some balancing has been provided to account for different peak hours during the AM and PM peak periods.

c. The site traffic addition to the Mattawa Avenue / Dundas Street East intersection in the 2031 Sensitivity Analysis Scenario 2 will impact future 2031 horizon year NBL and WBL turning operations.

Northbound left operations: In the AM and PM peak hours, queues are forecasted to approach 151 metres, which will block the driveways of Block A. It may be ideal to restrict the northernmost Block A driveway to right-in / right-out to facilitate smoother traffic circulation in the area.

Westbound left operations: In the PM peak hour, the V/C ratio is 1.07 (LEA TIS Report Table 6-14), and the 30 m storage length will be exceeded (Exhibit 4-4 , LEA TIS Report Table 6-16). We agree with the recommendation to install a longer WBL storage lane to meet the forecasted queue length.

LEA Response: Based on the updated analysis, the AM and PM peak hour 50th future total queues during the 2028 horizon (pre-BRT) are 122m and 118m, respectively. During the 2033 (Scenario 1) scenario, the AM and PM peak future total 50th queues are 118m and 135m, respectively. Lastly, during the 2033 (Scenario 2) scenario, the AM and PM peak future total 50th queues are 79m and 83m, respectively. As such, since the northerly most site access is approximately 50m south of the Dundas / Mattawa intersection, with the second northerly most access being approximately 100m south of the Dundas / Mattawa intersection, it is our opinion that the 50th queues, upon construction of the Blundell Extension, will not pose significant issues with queue blockages. There may be opportunities for motorists along Mattawa to provide courtesy gaps, to ensure drivers existing the site accesses have the ability to merge into the northbound lanes.

With regards to the WBL turn lane, our recommendation that a longer WBL lane at the Dundas / Mattawa intersection be implemented as part of the future Dundas BRT installation and corridor design at this location.

d. *It is noted that in the AM peak hour, the westbound left queue increases from 78 metres to 122 metres (approximately 5 car lengths), while the southbound left queue increases by approximately one car length. Whereas, in the PM peak hour, both movements show a decrease in queuing, as future site traffic for these movements is lower than existing Dunwynn Mall site traffic.*

   Based on the storage lane capacity, the southbound left turn storage lane capacity may be exceeded by up to two car lengths in the AM peak hour in both 2031 future background and future total scenarios. The TIS does not propose mitigative measures such as increasing the turning lane storage capacity.

   Furthermore, please confirm if these queue spillover issues persist after responding to our question poised in Section 3.1 of this memorandum, regarding the calculation method for existing site traffic, which seemingly results in all Mattawa Avenue south leg traffic being solely considered as site traffic in the LEA TIS report, which may be an overestimate.

LEA Response: Based on the updated analysis, the WBL 95th queues during the AM and PM peak hours during the future total 2033 (Scenario 1) horizon are 124m and 115m, respectively. The 50th queues, which represent the average, are 67m and 82m, respectively. Similarly, the SBL 95th queues during the AM and PM peak hours during the future total 2033 (Scenario 1) horizon are 117m and 167m, respectively. The 50th queues, are 80m and 128m, respectively. The WBL 50th queues don't pose any issues with the available storage; however, the SBL 50th queues are expected to exceed the available storage by approximately 3 vehicles. Lastly, it should be noted that with the implementation of the bridge connection, the 50th queues for the abovementioned movements can be accommodated within the available storages.

4.1. PARKING AND LOADING REGULATIONS REVIEW

Comment 7:

a. The numbers representing the split between proposed residential and other parking spaces in the Introduction section of the Parking Study and TDM Plan (Appendix M) should match the numbers in other sections.

LEA Response: The report has been updated to ensure consistency between the stats.

b. Listing the number of rental apartment units proposed by the development would help in confirming that both condominium and rental By-Law 0117-2022 parking requirements are fulfilled. Rental unit count is not depicted in Table 8-1 of the LEA TIS Report.

LEA Response: As mentioned above, the exact number of condominium units and rental apartment units is unknown, as it is relatively early in the development process. Rental vs. condo unit breakdown will be provided at a later date.

c. Stating development sizes for all developments with reduced residential parking rates listed in Table 4-1 of Appendix M would help in better understanding the relation between scale of the development and applied parking rates.

LEA Response: Site stats for the approved / pursued developments have been provided in **Table 9-8**.

d. Required number of electric vehicle ready parking spaces needs to meet the Mississauga's By-Law 0117-2022 requirements.

LEA Response: Electric vehicle ready parking requirements have been provided in **Table 9-5**.

Overall, based on Section 4.3 (Precedent Setting Developments) of Appendix M the proposed development parking rates are within the range of rates of comparable developments and is situated in similar urban contexts.

LEA Response: Noted.

4.2. GENERAL OBSERVATIONS

Comment 7:

a. According to the Mississauga Traffic Impact Study Guidelines following base saturation flow rates for arterial roadways are assumed:

- *Advanced Left, 1860 veh/hr/lane*
- *Through, 1900 veh/hr/lane*
- *Right, 1640 veh/hr/lane*

These parameters should be implemented in Synchro models.

LEA Response: As per the latest *Mississauga TIS Guidelines*, dated December 2022, a Saturation flow rate of 1,900 vphpl was utilized for all movements.

b. *Site Plan Review has been proposed by the Scope of Work but it is not provided in the TIS. The TIS should include a separate section showing turning movement templates. Illustrate truck turning movements with one continuous AutoTURN swept path with design vehicle specifications. An evaluation of the parking areas and ramps using a PTAC design vehicle should also be included. Trucks must be able to enter the site in a forward motion, turnaround on private property, and exit the site in a forward motion.*

LEA Response: Swept path analysis of loading vehicles utilizing the loading spaces has been provided. Additionally, passenger vehicles utilizing the accesses / parking area / ramps have also been provided. Swept paths can be found in **Appendix M.**

c. *Sight Line Analysis for private road is requested by the City staff but this is missing in the submitted TIS.*

LEA Response: Sightline Analysis for stopping sight distance (SSD) and intersection sight distance (ISD) has been provided in **Drawing S01A – S05B** of **Appendix M**.

d. *City staff requested to include a section for Community Impacts, stating that any traffic related impacts on the existing community and comments from the public througNh the planning approvals process shall be addressed in this section. Section in that regard should be provided in the TIS..*

LEA Response: As indicated in **Comment B (ii)** above, all intersections are anticipated to operate below a 1.00 V/C, with the exception of the Dundas / Dixie intersection during all horizon years / scenarios during the PM peak hour. Upon receipt of comments or concerns from the community, a section shall be added to the Updated TIS to address said concerns / comments.

e. *Based on our internal peer review meeting with City staff (February 1, 2023) the TIS should include scenario for proposed road network under MOPA 141, including the bridge connection.*

LEA Response: Sections 6.4, 6.5 and **7.3** of the Updated TIS include a scenario with the inclusion of the bridge connection (i.e. 2033 (Scenario 2)).

f. *Various typos are noted, for instance, at Sections 6.2 to 6.8, the term "Future Background" is referenced both as "FB" and as "FT" in the 5-Year Horizon (2026) subsections. Presumably, "FT" should stand for Future Total. Report revisions to remedy the typos is recommended.*

LEA Response: Noted. Typos have been corrected.

Should you have any questions regarding the Updated TIS, please contact the undersigned.

Yours truly,

LEA CONSULTING LTD.

Nixon Chan, M.A.Sc., P.Eng., PTOE, PMP
Manager, Transportation Engineering

Andy Bilawejian, B.Eng.
Project Coordinator (EIT)

Attachment 1: 1580-1650 Dundas Street East Updated Transportation Impact Study

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APPENDICES

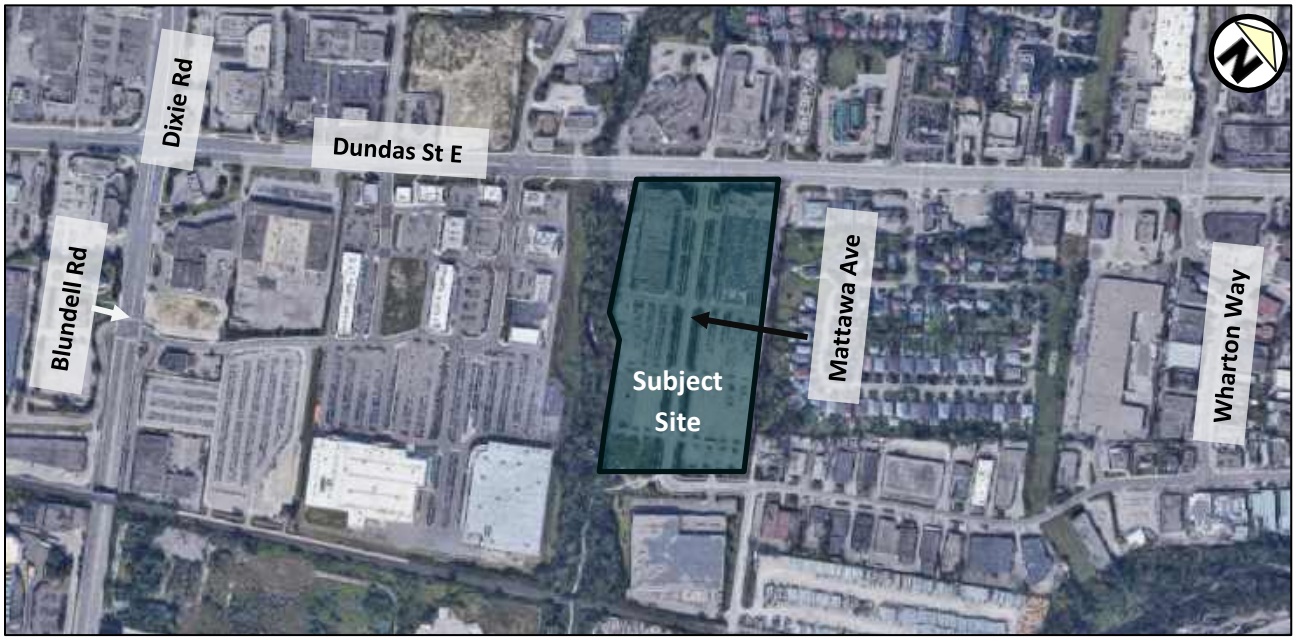
1 INTRODUCTION

LEA Consulting Ltd. (LEA) has been retained by 4Q Commercial WP Inc. to undertake an Updated Transportation Impact Study (TIS) for the proposed mixed-use development located at 1580-1650 Dundas Street East (hereinafter referred to as the "subject site") in the City of Mississauga. The subject site is currently occupied by the Dunwynn Centre, a commercial plaza with a mixture of retail, residential, entertainment, restaurant, services, and self-storage uses, and an adjacent restaurant to the west. The existing plaza includes two two-storey buildings and a one-storey restaurant with significant ancillary surface parking plus two large surface parking lots to the south of the buildings. The site is divided into two parcels by Mattawa Avenue, which extends southeast from Dundas Street East.

The first submission for the subject site was filed in July 2022. Subsequently, comments have been received from the City of Mississauga for Parking (dated November 21, 2022) and for Traffic (dated January 19, 2023), Region of Peel (dated February 2, 2023) as well as the City's Peer Reviewer comments by Arcadis (dated February 10, 2023) for the proposed development. Our responses to these comments are summarized in the cover letter appended with this report.

The development proposal has also been revised, now consisting of 2,877 residential units and 6,094 m^2 of retail GFA. As such, this TIS has been updated from the original report to accurately reflect the revised site plan and statistics for this current updated submission. The site location and existing context is shown in **Figure 1-1**.

Figure 1-1: Site Location



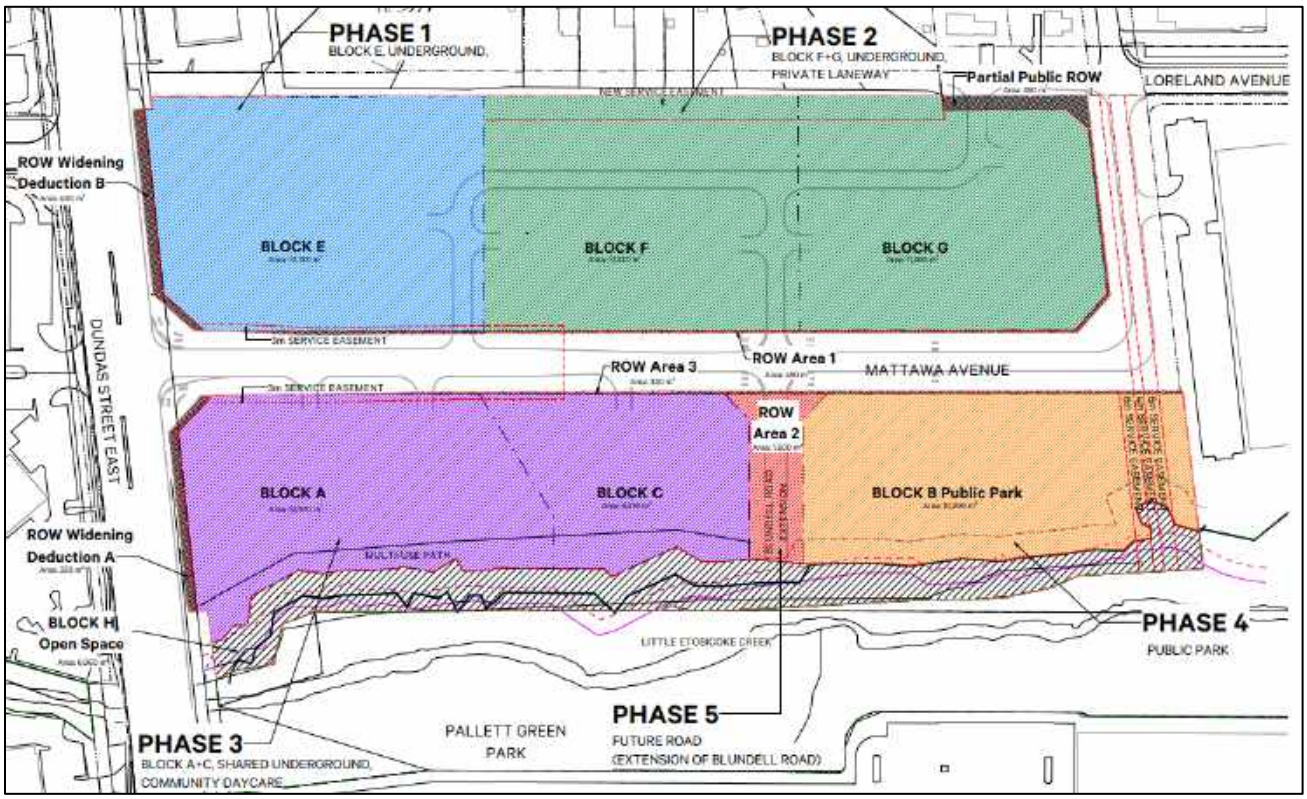
Source: Google Maps, October 2023

1.1 DEVELOPMENT PROPOSAL

1.1.1 Proposed Development Blocks

The proposed development consists of a mixed-use community comprising six (6) development blocks: Blocks A, B, C, E, F, and G. The proposed development will replace the existing Dunwynn Centre and surface parking entirely. The location of each development block and their respective phases is shown in **Figure 1-2**.

Figure 1-2: Proposed Development Block Location and Phasing



Source: SvN, October 2023

Block B will be a new public park while the remaining blocks will be mixed-use residential and retail. Block C will also include community uses. Additional Blocks D and H are included in the overall plan as buffer/natural hazard space.

1.1.2 Proposed Site Statistics

In total, 2,877 residential units, 6,094 m^2 of retail GFA, and 366 m^2 of community GFA are proposed. A total of 2,416 parking spaces, including 1,984 residential and 432 commercial/visitor spaces are also proposed to accommodate the development. The development will include a mixture of mid-rise buildings and high-rise towers ranging from 12 to 41-storeys for Blocks A, C, E, F, and G and 3-storey townhouses, also for Blocks F and G.

The site statistics of the proposed development are presented in **Table 1-1** while **Figure 1-3** illustrates the proposed site plan. The residential units are contemplated to be a mixture of rental and condominium units.

A comparison in total site stats of the current submission to the previous is shown in **Table 1-2**. Overall, a reduction in residential units and community use, and increase in retail GFA, is proposed.

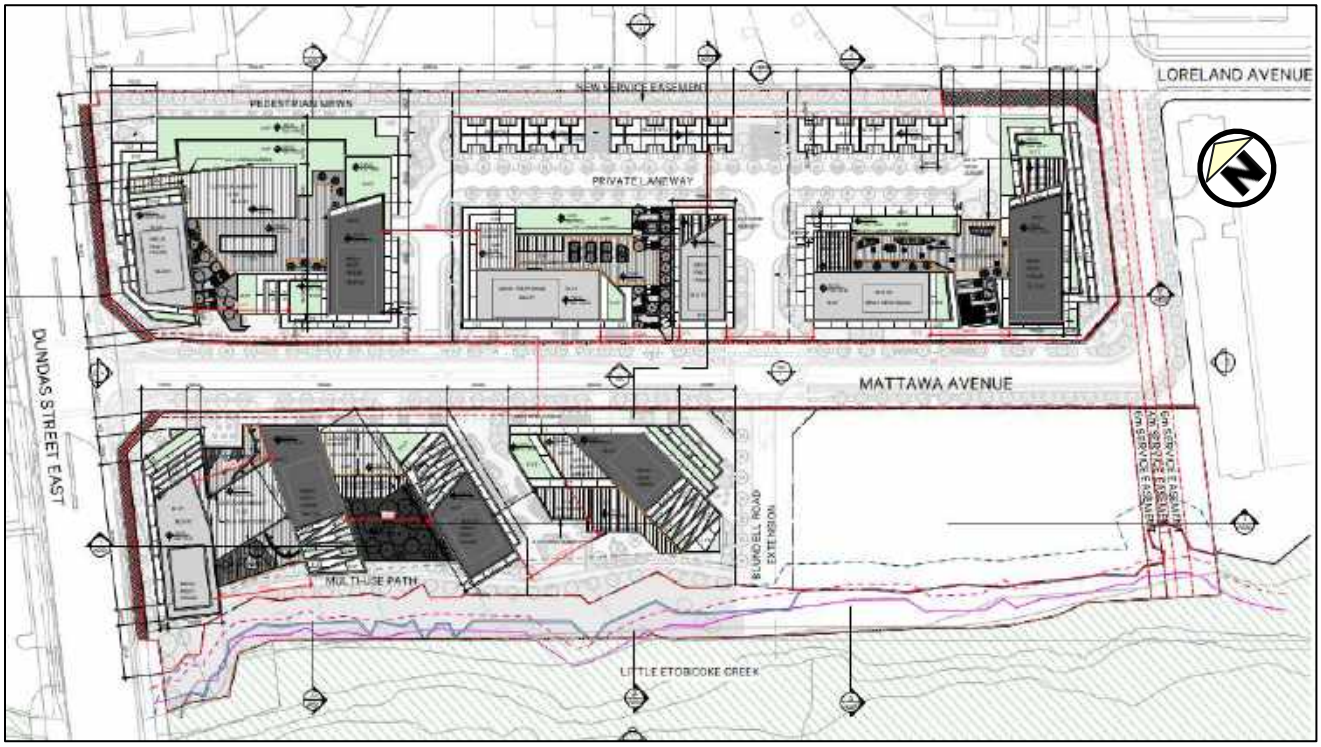
Table 1-1: Proposed Mixed-Use Development Statistics (October 2023 Submission)

Land Use	Units/GFA					Total
	Block A	Block C	Block E	Block F	Block G	
Residential Apartment Units	*1,037*	*425*	*498*	*303*	*454*	*2,717*
Studio	56	45	46	42	31	220
1 Bedroom	625	233	306	178	282	1,624
2 Bedroom	250	103	114	42	102	611
3 Bedroom	106	44	32	41	40	263
Residential Townhouse Units	*4*	*2*	*17*	*76*	*60*	*159*
Studio	-	-	-	-	-	-
1 Bedroom	-	-	4	-	-	4
2 Bedroom	2	2	-	42	47	93
3 Bedroom	2	-	13	34	13	62
Total Units by Block	1,041	427	515	379	514	2,877
Retail GFA	1,271 m^2	955 m^2	2,086 m^2	634 m^2	1,148 m^2	6,094 m^2
Community GFA	-	366 m^2	-	-	-	366 m^2

Table 1-2: Comparison Between Current Proposed Statistics and July 2022 Submission Statistics

Land Use (For each Submission)	Units/GFA					Total
	Block A	Block C	Block E	Block F	Block G	
Current Total Units by Block	1,041	427	515	379	514	2,877
Current Retail GFA	1,271 m^2	955 m^2	2,086 m^2	634 m^2	1,148 m^2	6,094 m^2
Current Community GFA	-	366 m^2	-	-	-	366 m^2
July 2022 Total Units by Block	1,099	448	533	407	540	3,027
July 2022 Retail GFA	759 m^2	841 m^2	906 m^2	-	-	2,506 m^2
July 2022 Community GFA	-	449 m^2	-	-	-	449 m^2
Change in Total Units by Block	-58	-21	-18	-28	-26	-151
Change in Retail GFA	+512 m^2	+114 m^2	+1,180 m^2	+634 m^2	+1,148 m^2	+3,588 m^2
Change in Community GFA	-	-83 m^2	-	-	-	-83 m^2

Figure 1-3: Proposed Site Plan



Source: SvN, October 2023

1.2 STUDY AREA

The study area for this TIS was determined by assessing the size of the proposed development and its anticipated transportation impact, and through consultation with City staff, which is documented in **Appendix A**. The study area includes the following intersections:

- Dundas Street East and Dixie Road (Signalized);
- Dundas Street East and Mattawa Avenue (Signalized);
- Dundas Street East and Neilco Court (Signalized);
- Dundas Street East and Jarrow Avenue (Signalized);
- Dundas Street East and Nawbrook Road (Unsignalized);
- Dundas Street East and Treadwells Drive/Coram Avenue (Signalized);
- Dundas Street East and Wharton Way (Signalized); and
- Dundas Street East and 1590 Dundas Street Access (Unsignalized).

1.3 STUDY DETAILS

The following study will assess the existing transportation network prior to development, followed by a review of the horizon years for this study. Based on consultation with City Staff, both 5-year and 10-year horizon scenarios to the years 2028 (pre-Dundas BRT) and to 2033 (post-Dundas BRT) will be assessed.

Subsequently, the report will assess the existing, future background, and future total traffic conditions for the identified horizon years to assess the impact of the proposed development on the study area transportation network. This will include an assessment of intersection operations as well as queues at critical locations in the road network.

This study will also provide an overview of the proposed parking management strategy for the subject development that aims to reflect the evolving transportation context of the area and support the proposed development in leveraging existing and future transit service, promoting active transportation, and supporting sustainable lifestyles. A review of the proposed site design and loading requirements will also be included.

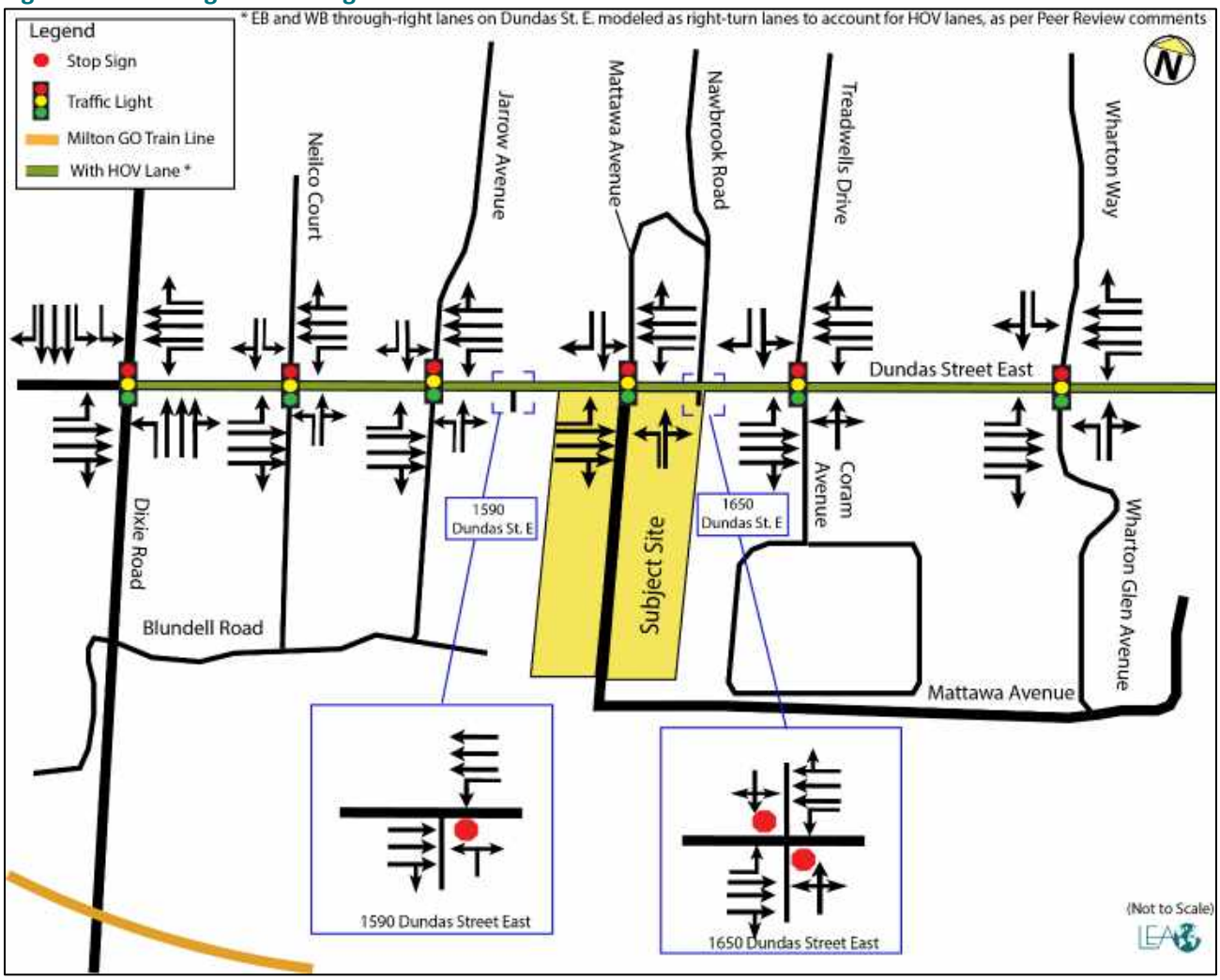
2 EXISTING TRANSPORTATION NETWORK

This section identifies and assesses the existing transportation conditions within the study area, including the road, transit, cycling, and pedestrian networks.

2.1 ROAD NETWORK

The following section provides a description and classification of the roadways within the study area. All roadways within the study area are under the jurisdiction of the City of Mississauga with the exception of Dixie Road, which is under the jurisdiction of the Region of Peel. **Figure 2-1** illustrates the existing lane configuration.

Figure 2-1: Existing Lane Configuration



Dixie Road is a north-south regional road that operates with a six-lane cross-section (three lanes per direction) plus dedicated left-turn lanes at signalized intersections within the study area. Dixie Road operates from Lakeshore Road East in Mississauga to Olde Base Line Road in the Town of Caledon. The roadway operates with a posted speed limit of 60 km/h within the study area.

Dundas Street East is an east-west arterial road that operates with a six-lane cross-section (three lanes per direction) plus dedicated left-turn lanes at intersections within the study area. Dundas Street operates from Highway 6 in Waterdown to Kingston Road in Toronto. The roadway operates with a posted speed limit of 60 km/h within the study area.

Neilco Court is a local road that operates with a two-lane cross-section (one lane per direction) plus a dedicated left-turn lane at Dundas Street East and intersections to the south of Dundas Street East. Neilco Court operates between Blundell Road and dead-ends in the industrial area to the northwest. As no speed limit is posted, the roadway operates with an assumed speed limit of 50 km/h within the study area.

Jarrow Avenue is a local road that operates with a two-lane cross-section (one lane per direction) in the general northwest to southeast direction within the study area. Jarrow Avenue operates from Dundas Street East northwest to Sedlescomb Drive. As no speed limit is posted, the roadway operates with an assumed speed limit of 50 km/h within the study area.

Mattawa Avenue is a minor collector road that operates with an assumed four-lane cross-section (two lanes per direction) between Dundas Street East in the southwest and a dead-end just east of Wharton Glen Avenue in the notheast. As no speed limit is posted, the roadway operates with an assumed speed limit of 50 km/h within the study area.

Nawbrook Road is a local road that operates with a two-lane cross-section (one lane per direction) in the general northwest to southeast direction within the study area. Nawbrook Road operates from Dundas Street East northwest to a dead-end just east of Treadswells Drive. As no speed limit is posted, the roadway operates with an assumed speed limit of 50 km/h within the study area.

Treadwells Drive is a local road that operates with a two-lane cross-section (one lane per direction) in the general northwest to southeast direction within the study area. Treadwells Drive operates from Dundas Street East northwest to Nawbrook Road. As no speed limit is posted, the roadway operates with an assumed speed limit of 50 km/h within the study area.

Wharton Way is a minor collector road that operates with an assumed four-lane cross-section (two lanes per direction) in the general northwest to southeast direction within the study area. Wharton Way connects to Wharton Glen Avenue and southeast of Dundas Street East and to Sharlyn Road northwest of Dundas Street East. As no speed limit is posted, the roadway operates with an assumed speed limit of 50 km/h within the study area.

1590 and 1650 Dundas Street East are the existing site access driveways with a two-lane cross-section (one lane per direction) in the north to south direction. Currently, all movements are permitted for both site driveways.

2.2 TRANSIT NETWORK

The subject site is well-connected to the local and regional transit network, including service operated by MiWay transit, GO Transit, and the Toronto Transit Commission (TTC). The subject site is within walking distance to existing to the nearest local transit stop at Dundas Steet and Mattawa Avenue and within 10-minute walking distance to the nearest express bus transit stop at Dundas Street and Wharton Way.

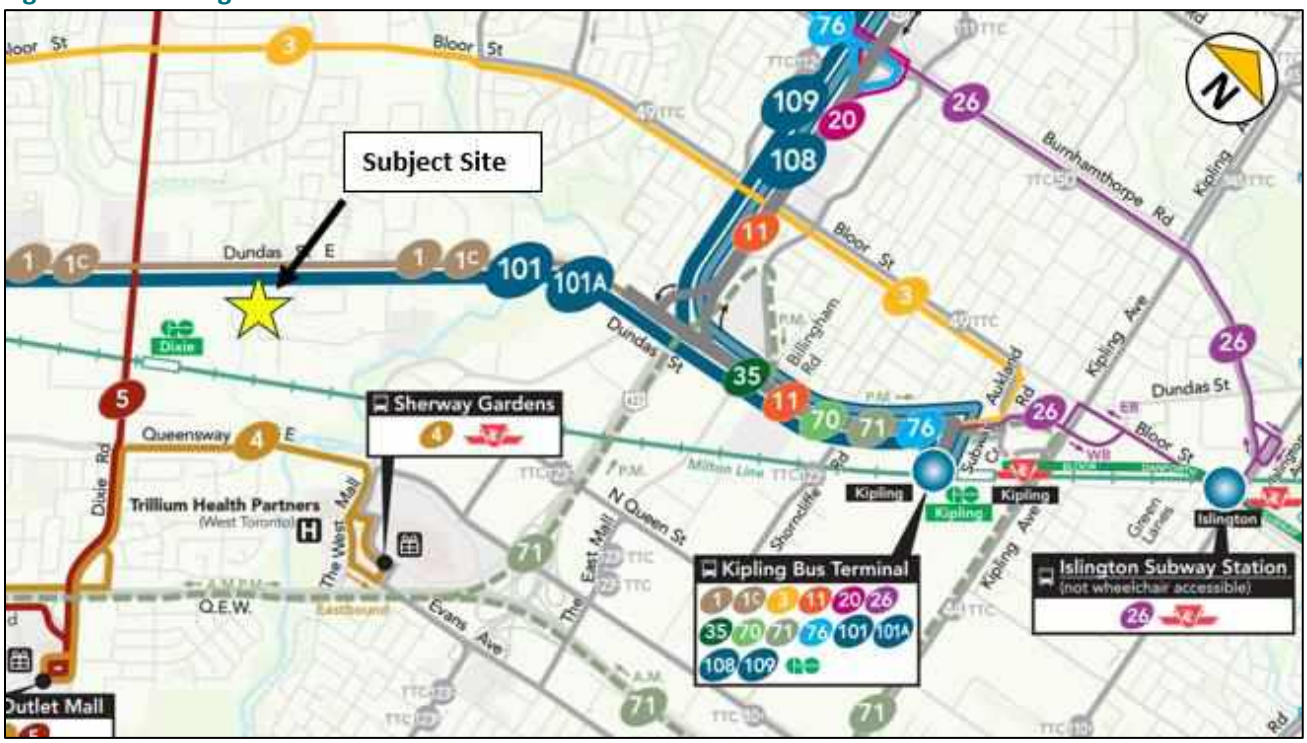
These services operate along Dundas Street within the City of Mississauga and neighbouring City of Toronto to the east and provide connections to the Kipling Transit Hub. The Kipling Transit Hub includes a Bus Terminal, TTC Subway Station, and GO Train Station on the Milton Line. The Kipling Transit Hub is currently within an approximate 15-minute connecting bus ride, bike ride, or 10-15-minute drive of the subject site and offers significant regional transit connections.

Additionally, the subject site is within an approximate 12-minute walking distance or 5-minute bike ride to Dixie GO Station on the Milton GO Train Line using the existing road network. The Milton GO Train Line provides 15-minute rush hour service eastbound to Toronto in the AM and westbound to Milton in the PM and operates a 26-minute ride between Dixie GO Station and Union Station in downtown Toronto.

It is noted that the subject site's transit accessibility is anticipated to improve over the next few years due to major investments in higher order transit and the overall transportation network in close vicinity to the subject site. This includes Bus Rapid Transit (BRT) service along Dundas Street between Hamilton and Toronto, as well as future expansions to the disconnected road network as the area develops.

The surrounding transit network currently servicing the area is illustrated in **Figure 2-2**.

Figure 2-2: Existing Transit Network



Source: MiWay, September 2023

MiWay Route 1/1C – Dundas-Collegeway is a bus route that operates in an east-west direction between Kipling Bus Terminal in the City of Toronto to the area of Laird Road/Ridgeway Drive. The route operates all day, seven days a week. Route 1 operates with headways of 20-minutes.

Access Location: Route 1 is accessible at the intersection of Dundas Street East and Mattawa Avenue in front of the subject site.

MiWay Route 5 – Dixie is a bus route that operates generally in a north-south direction between Lakeshore Road East/Lake Shore Boulevard at the Etobicoke/Mississauga border and Derry Road East. The route operates between 4:30 AM and 10:00 PM, seven days a week. Route 5 operates with headways of 10-15-minutes during peak hours.

Access Location: Route 5 is accessible at the intersection of Dundas Street East and Dixie Road, which is approximately 700 m from the subject site (equivalent to a 10-minute walk).

MiWay Route 101/101A – Dundas Express is an express bus route that operates generally in an east-west direction between Kipling Bus Terminal in the City of Toronto and the South Common Centre. The route operates between 5:00 AM to 11:00 PM, Monday to Friday. Route 101 and 101A operate with headways of 10-minutes during peak hours.

Access Location: Route 101/101A is accessible at the intersection of Dundas Street East and Dixie Road or Wharton Way, which are approximately 700 m from the subject site (equivalent to a 9-minute walk).

GO Train – Milton Line is a rail service operating peak hour, peak direction rail service eastbound to Union Station and westbound to Milton GO Station. The GO Bus Route 21 operates along the route during off-peak hours. The line operates every 15-minutes during peak hours and provides a regional transit connection.

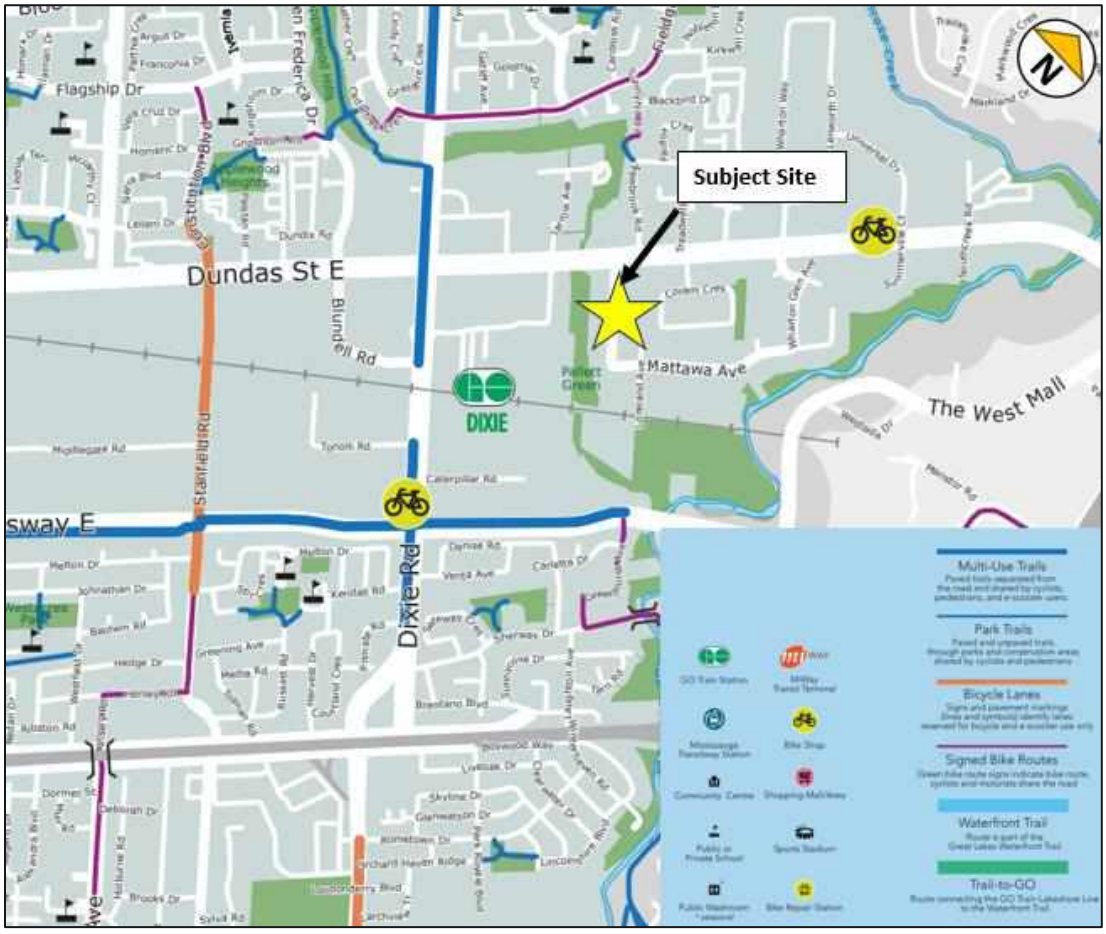
Access Location: the Milton GO Train Line is accessible at Dixie GO Station to the south of the subject site in a commercial plaza, which is approximately 950 m from the subject site (equivalent to a 12-minute walk).

2.3 CYCLING NETWORK

The existing cycling network surrounding the site is illustrated in **Figure 2-3.** The subject site is located in a neighbourhood with some access to nearby cycling infrastructure. A multi-use trail is provided along Dixie Road, which connects with bike lanes further south on Dixie Road as well as signed bike route and park trails offering connections to local destinations, such as the Dixie GO Station and nearby schools.

Additionally, as will be discussed in **Section 4.2.1**, a study titled the Dundas Connects Master Plan was conducted for the Dundas Street corridor across Mississauga. This study was completed in 2018 and included a recommended cross-section for Dundas Street. Within the study area, dedicated bike lanes are recommended to support an urban, pedestrian and cycling-friendly public realm along Dundas Street as well as future Bus Rapid Transit (BRT).

Figure 2-3: Existing Cycling Network



Source: City of Mississauga, October 2023

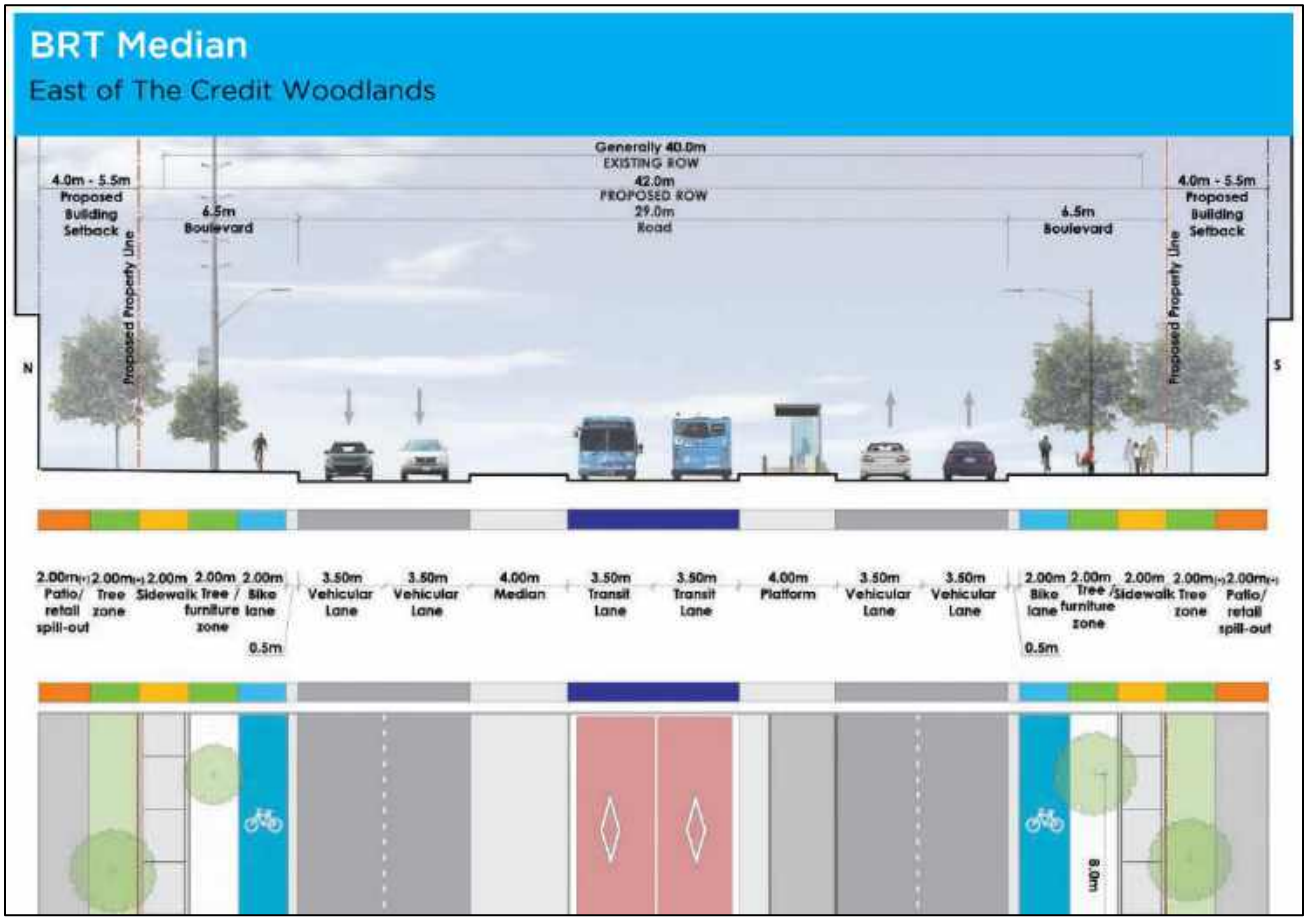
2.4 PEDESTRIAN NETWORK

In the area immediately surrounding the subject site, the existing pedestrian network consists of sidewalks along both sides of Dundas Street East and Mattawa Avenue. Sidewalks are also provided along the main internal roads to the shopping plaza to the southwest. Pedestrian crosswalks are also available on all approaches with protected pedestrian phases at the signalized intersections within the study area. The existing pedestrian network facilitates pedestrian connections to and from the existing commercial uses in the area as well as nearby MiWay transit stops.

It is noted that the existing area surrounding the subject site consists of a mixture of light industrial uses, older residential neighbourhoods, and shopping plazas ranging from small to large-scale. As the area develops, including the subject site specifically, the public realm will be positively transformed with pedestrian-scaled blocks and upgraded facilities, such as along Dundas Street and Mattawa Avenue.

As discussed above, the Dundas Connects Master Plan study was undertaken for the Dundas corridor specifically to guide the development of an urban realm that supports growth and pedestrian, cycling, and public transit improvements along the corridor. The recommended cross section for Dundas Street East within the study area is shown in **Figure 2-4** and includes dedicated cycling facilities and an improved pedestrian environment.

Figure 2-4: Recommended Dundas Street Cross-Section



Source: Dundas Connects Master Plan, 2018

3 EXISTING TRAFFIC CONDITIONS

The following subsections detail the existing traffic conditions for this study, which have been updated from the July 2022 TIS to reflect the latest signal timing plans and current traffic data in the study area.

3.1 TRAFFIC DATA COLLECTION

Turning movement counts (TMCs) were used as the source of traffic data for the intersection capacity analysis. Traffic counts were conducted by LEA on Thursday, June 22, 2023, during the weekday AM and PM peak periods between 7:00 AM to 9:30 AM and 3:30 PM to 6:30 PM, respectively. Signal timing plans at the signalized intersections were obtained from the City of Mississauga.

A summary of the TMC data collected is provided in **Table 3-1**, with detailed traffic counts and signal timing plans available in **Appendix B**.

Table 3-1: Data Collection Summary

No.	Intersection	Date	Source
1	Dundas Street East and Dixie Road	Thursday, June 22nd, 2023	LEA
2	Dundas Street East and Neilco Court		
3	Dundas Street East and Jarrow Avenue		
4	Dundas Street East and Mattawa Avenue		
5	Dundas Street East and Nawbrook Road		
6	Dundas Street East and Treadwells Drive/Coram Avenue		
7	Dundas Street East and Wharton Way		
8	Dundas Street East / 1590 Dundas Street Access		

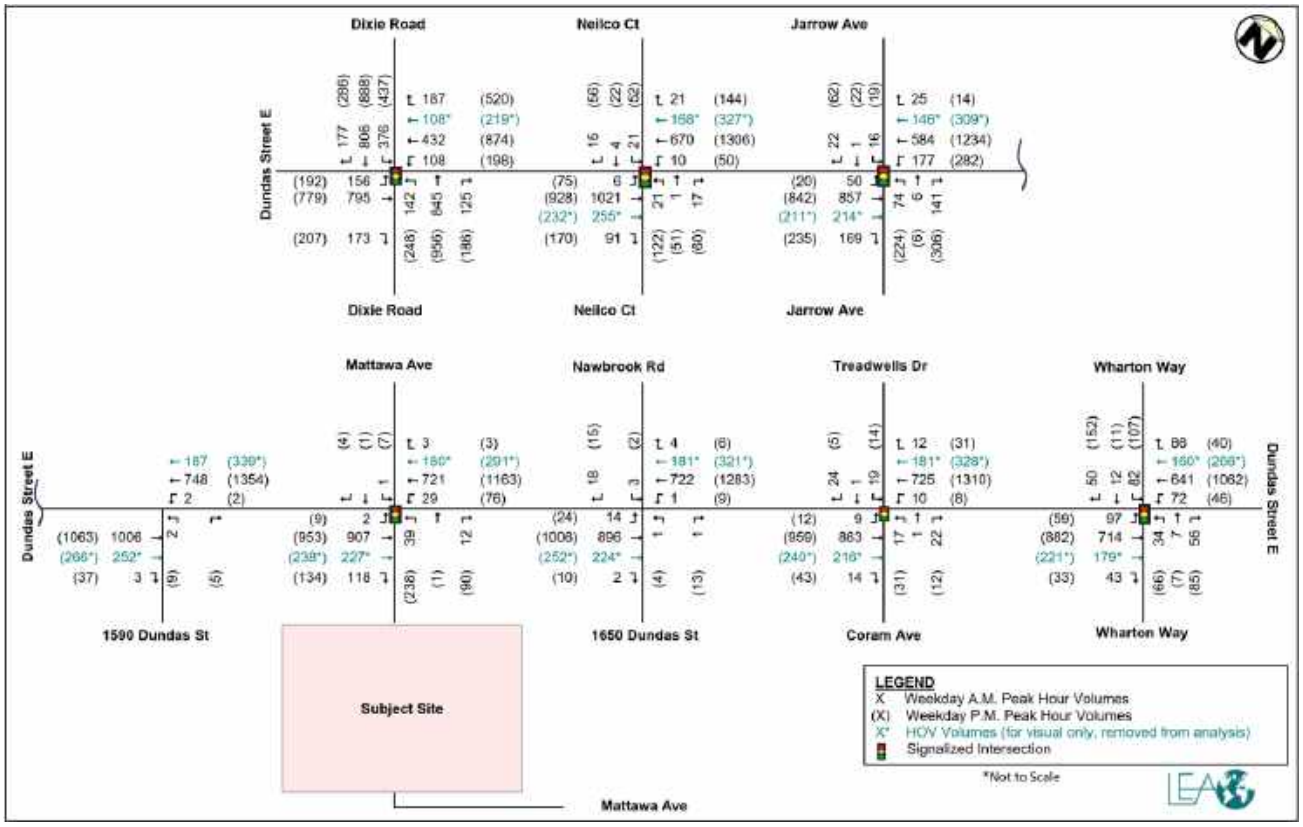
Volumes were balanced along Dundas Street East. The Peak Hour Factor (PHF) values have been calculated based on the surveyed counts.

Based on comments received from the Peer Review conducted of the July 2022 TIS, the suggested approach to account for the HOV lane along Dundas Street East was also adopted. Dundas Street East has been modeled as a four through-lane section with a 20% reduction in east-west through volumes assumed (i.e. assuming that the HOV lane is 20% utilized during the AM/ PM peak hours). The through-right lane has been modelled as a right-turn lane.

3.2 EXISTING TRAFFIC VOLUMES

The existing traffic volumes for the AM and PM peak hours are illustrated in **Figure 3-1**.

Figure 3-1: Existing Traffic Volumes



4 FUTURE BACKGROUND TRAFFIC CONDITIONS

For the analysis of future background traffic conditions, the study considers a five-year horizon to 2028 (pre-BRT), along with a ten-year horizon to the year 2033, from the current year of 2023. For the 2033 horizon year, there are two (2) Scenarios analyzed consisting of Scenario 1 (post-BRT), and Scenario 2 (Post-BRT with Bridge connection). **Table 4-1** summaries the horizon year assumptions applied to each scenario. The future 2028 lane configuration is shown in **Figure 4-1**, while the future 2033 lane configuration for post BRT and Blundell Road Extension are provided in **Figure 4-2**.

It should be noted that the Blundell Road West Bridge Extension was a request made by the City for the proposed development's west parcel to have a future connection to the development to the west. This will help alleviate some of the traffic from the Dundas / Mattawa intersection, by diverting ingress/egress traffic to/from the west.

Table 4-1: Horizon Year and Scenario Summary

Horizon Year	Scenario	Assumptions
2028	-	- Five-year horizon - Pre-BRT improvements
2033	Scenario 1	- Ten-year horizon - Post-BRT improvements
	Scenario 2	- Ten-year horizon - Post-BRT improvements - With Blundell Road West Bridge Extension

This section will discuss the methodology and assumptions adopted for the development of the 2028 and the two (2) 2033 future background scenarios, including the corridor growth rates applied, background developments identified, and improvements to the road and transit networks assumed to be in place. It should be noted that the 2028 horizon year is assumed to have the same lane configuration as existing conditions.

Figure 4-1: 2028 Lane Configuration

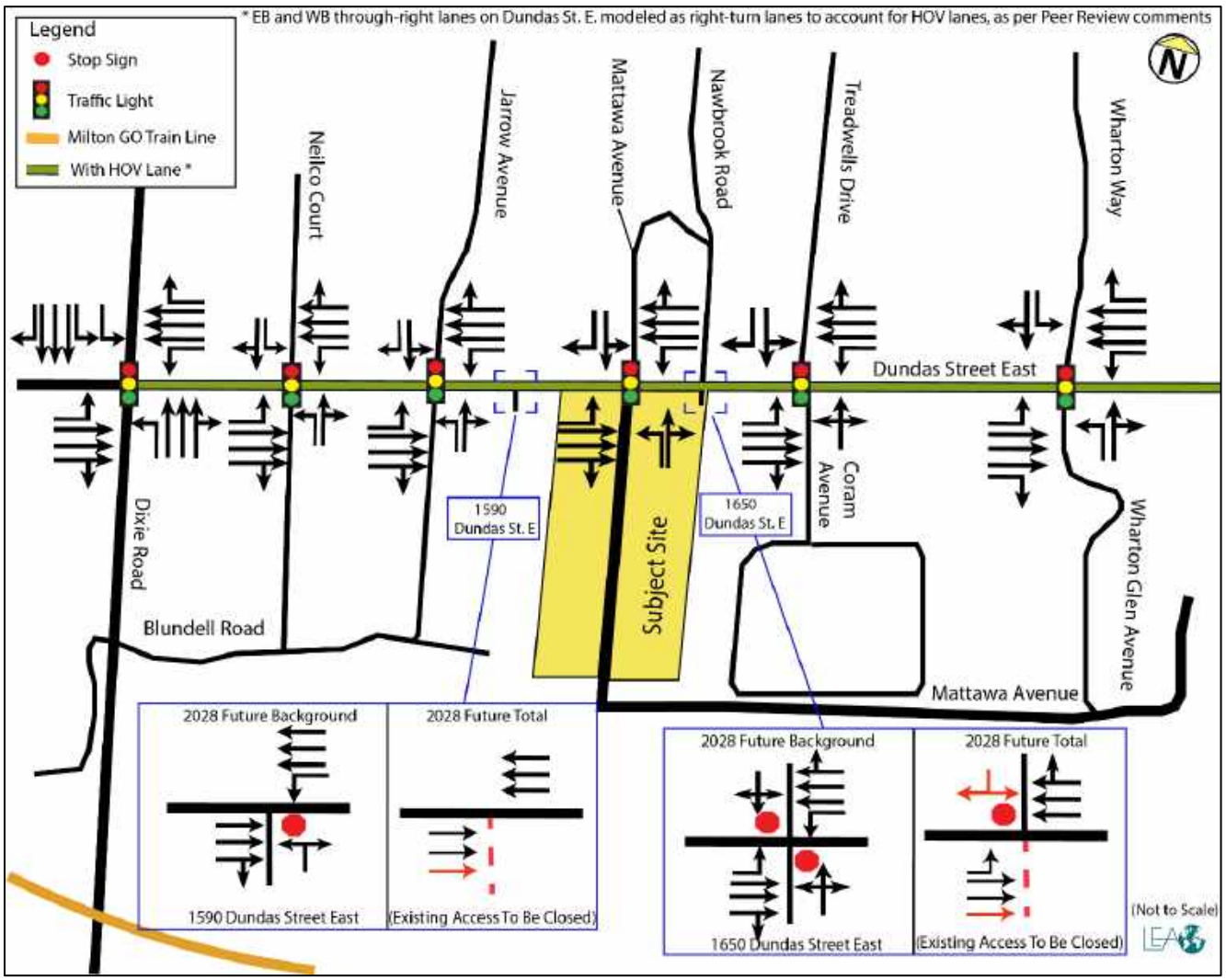
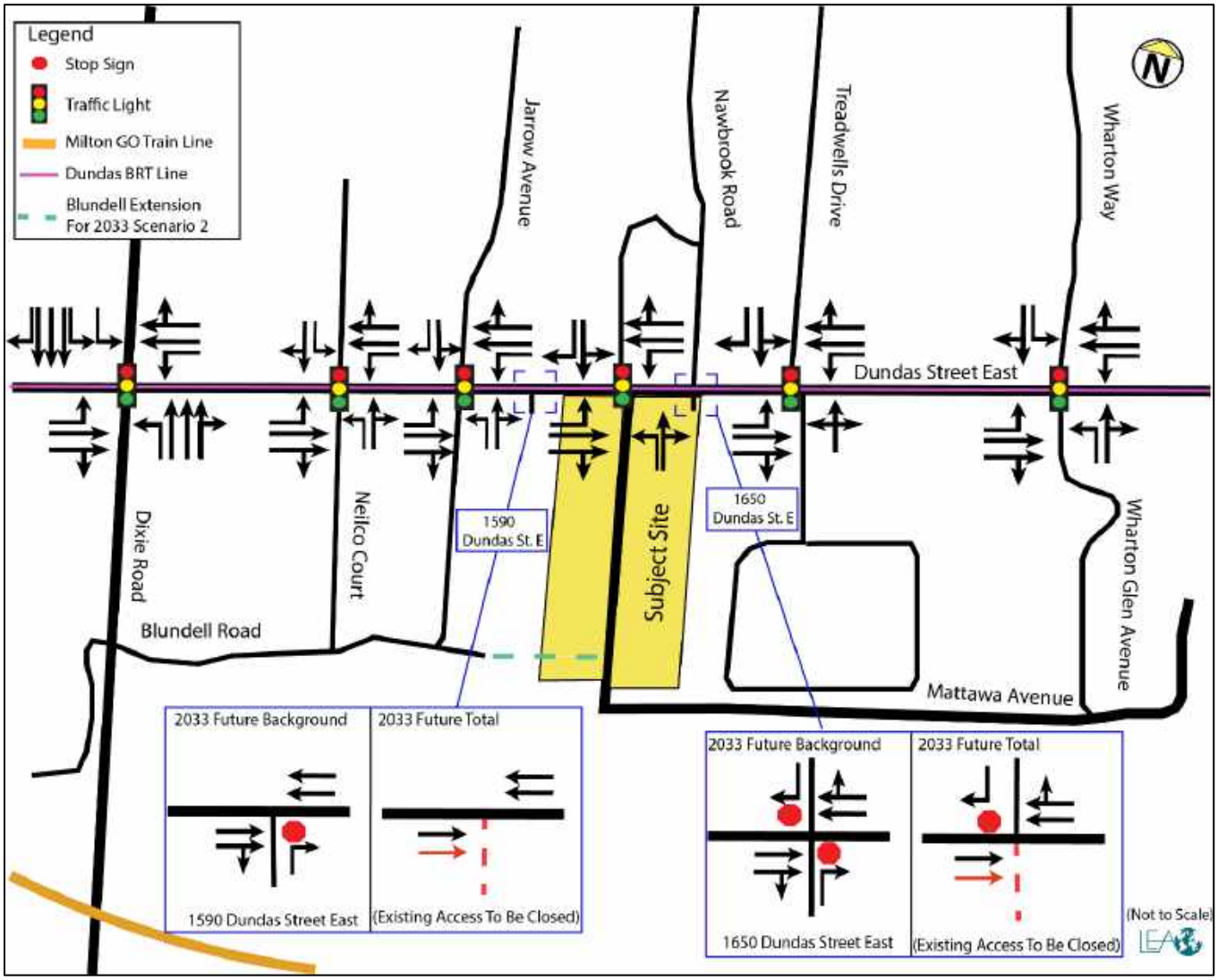


Figure 4-2: 2033 Lane Configuration



*Lane configuration based on *Dundas BRT Mississauga East Corridor Design, Draft Preliminary Plan* (Nov 2, 2021)

4.1 TRAFFIC GROWTH

Growth rates were provided by the City of Mississauga for Dundas Street East and by Peel Region for Dixie Road. The corridor growth rates applied to the calculation of future background traffic are summarized in **Table 4-2**. These were applied to the respective traffic volumes along the Dundas Street East and Dixie Road corridors. It should be noted that the same growth rates are being used as the July 2022 TIS previously submitted. Email correspondence between the Region and City confirming the estimated growth rates is provided in **Appendix C**.

Table 4-2: Corridor Growth Rates

Corridor	Direction	Weekday AM Peak Hour	Weekday PM Peak Hour
Dundas St E	Eastbound	0.5%	1.0%
	Westbound	0.5%	0.5%
Dixie Rd	Northbound	0.5%	0.5%
	Southbound	0.5%	0.5%

4.2 ROAD AND TRANSIT NETWORK IMPROVEMENTS

4.2.1 Dundas BRT

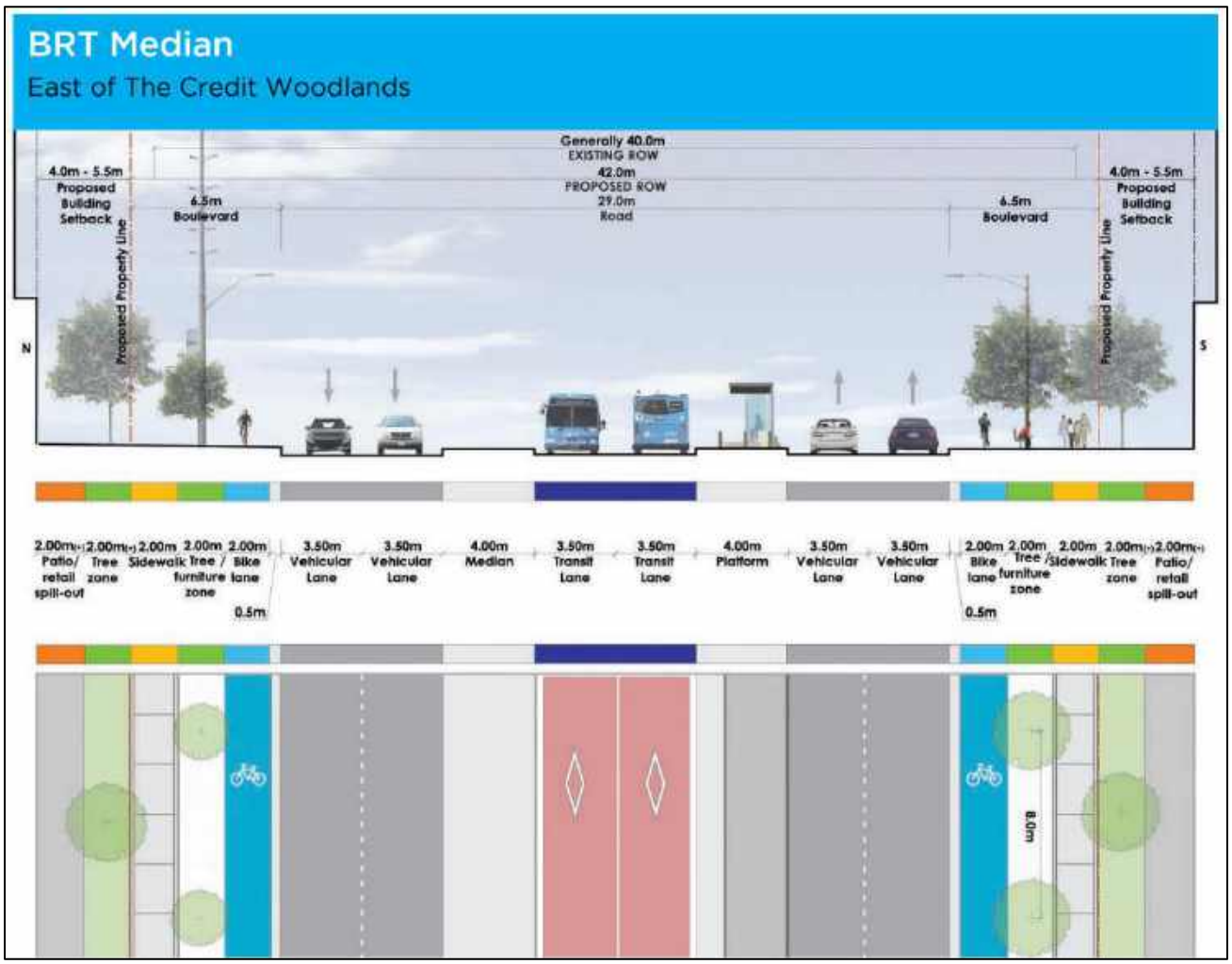
It is noted that along Dundas Street within the study area, the Dundas Bus Rapid Transit (BRT) project is in development. The Dundas BRT project proposes a transit corridor along a 48-km stretch of Dundas Street from Highway 6 in the City of Hamilton to the Kipling Transit Hub in the City of Toronto. The project is currently in the planning process, building upon the Initial Business Case completed and published by Metrolinx in September 2020 and preparing for construction. It is recognized that the project has received funding from each level of government as of March 2022, which will contribute to the design and construction of the project.

A corridor study, the Dundas Connects Master Plan, was also undertaken by the City of Mississauga and completed in 2018 with an endorsement from City Council. This study set out the overall recommendations for the Dundas Street corridor within Mississauga and included recommendations for the overall planning vision along the corridor, including future BRT service. While a preliminary design business case is expected to be completed by Metrolinx, the Dundas Connects Master Plan provided a recommended cross section for a future BRT along Dundas Street within Mississauga. To date, only a 30% design for the Dundas and Mattawa intersection has been received from Metrolinx. The recommended cross section for the segment of Dundas Street adjacent to the subject site is shown in **Figure 4-3**.

The Dundas Street BRT is expected to be completed by 2031 and was therefore adopted for the 2033 traffic analysis scenarios only. Road improvements related to the BRT will include a lane reduction from 6 to 4 lanes along Dundas Street and protected EBL and WBL phases at signalized intersections. The proposed road network shown in the Dundas Connects Study (**Figure 4-3**) was applied.

The Dundas BRT project will also introduce dedicated cycle tracks both east and westbound along Dudas Steet East, beginning from Confederation Parkway and extending to the City of Toronto border. Approximately 7km of cycle tracks will be added once the project is complete. This will increase cycling connectivity to and from the subject site, which will encourage more future residents to utilize alternative modes of transportation, leading to a reduction in single occupancy vehicle (SOV) trips.

Figure 4-3: Recommended Dundas Street Cross-Section



Source: Dundas Connects Master Plan, 2018

4.3 BACKGROUND DEVELOPMENTS

Four (4) background developments were identified within the immediate study area in consultation with the City. Background development traffic volumes were extracted from their respective TIS where available and otherwise derived using the ITE Trip Generation Manual 11th Edition based on the nature of the uses proposed for the development. The site statistics of the background developments are summarized in **Table 4-3**, followed by details regarding the trip generation per development (**Table 4-4, Table 4-5,** and **Table 4-6**).

Table 4-3: Summary of Background Developments

Location	Description	Source of Traffic Volumes
3085 Queen Frederica Drive (Mississauga)	Conversion of apartment units to condominium units; no new trips generated	Terms of Reference (TOR) from City of Mississauga
1565 Dundas Street East (Mississauga)	2-storey mixed-use building: 11,706 ft^2 ground floor retail, convenience store, restaurant and beverage and food preparation establishment with 9,219 ft^2 supporting second floor office	ITE (see **Table 4-4**)
1333 Tonolli Road (Mississauga)	37,803 ft^2 storage building	ITE (see **Table 4-5**)
2360 Dixie Road (Mississauga)	516,360 ft^2 industrial warehousing building	TIS By GHD (Ch. 5, Table 1) (see **Table 4-6**)

Table 4-4: 1565 Dundas Street East Trip Generation

Land Use		Weekday AM Peak			Weekday PM Peak		
		In	Out	Total	In	Out	Total
Retail [LUC 822 – Strip Retail Plaza (<40k GFA)] 11,706 ft^2	Percentage Split	60%	40%	100%	50%	50%	100%
	ITE Vehicle Trip Rate	1.42	0.94	2.36	3.30	3.30	6.59
	ITE Vehicle Trips	17	11	28	39	39	78
	ITE Vehicle Share	100.0%	100.0%		100.0%	99.8%	
	Vehicle Occupancy	1.17	1.16		1.21	1.18	
	Person Trips	20	13	33	47	46	93
	Internal Reduction	1	1		3	1	
	Net Person Trips	19	12	31	44	45	89
	TTS Vehicle Share	66%	66%		66%	66%	
	Vehicle Trips	**13**	**8**	**21**	**29**	**30**	**59**
	Pass-By	0	0	0	0	0	0
	Primary	**13**	**8**	**21**	**29**	**30**	**59**
Office [LUC 712 – Small Office Building] 9,219 ft^2	Percentage Split	82%	18%	100%	34%	66%	100%
	Vehicle Trip Rate	1.37	0.30	1.67	0.73	1.43	2.16
	Vehicle Trips	13	3	16	7	13	20
	ITE Vehicle Share	97%	90%		96%	98%	
	Vehicle Occupancy	1.06	1.06		1.11	1.07	
	Person Trips	14	4	18	8	14	22
	Internal Reduction	1	1		1	3	
	Net Person Trips	13	3	16	7	11	18
	TTS Vehicle Share	76%	76%		76%	76%	
	Vehicle Trips	**10**	**2**	**12**	**5**	**8**	**13**
	Pass-By	0	0	0	0	0	0
	Primary	**10**	**2**	**12**	**5**	**8**	**13**
Total Trips		**23**	**10**	**33**	**34**	**38**	**72**

Table 4-5: 1333 Tonoli Road Trip Generation

Land Use		Weekday AM Peak Hour			Weekday PM Peak Hour		
		In	Out	Total	In	Out	Total
Warehousing * Assumed all trips as vehicle 37,803 ft^2	Percentage Split	77%	23%	100%	28%	72%	100%
	Vehicle Trip Rate	0.13	0.04	0.17	0.05	0.13	0.18
	Vehicle Trips	5	2	7	2	5	7
	ITE Vehicle Share	100%	100%		100%	100%	
	Vehicle Occupancy	1.00	1.00		1.00	1.00	
	Vehicle Trips	5	2	7	2	5	7
	Internal Reduction	0	0		0	0	
	Net Vehicle Trips	5	2	7	2	5	7
	TTS Vehicle Share	100%	100%		100%	100%	
	Vehicle Trips	**5**	**2**	**7**	**2**	**5**	**7**
	Pass-By	0	0	0	0	0	0
	Primary Trips	**5**	**2**	**7**	**2**	**5**	**7**

*Note: * Assume trucks use The Queensway to get onto the highway. Therefore, no truck trips within our study area for this development.*

Table 4-6: 2360 Dixie Road Trip Generation

Land Use		Weekday AM Peak			Weekday PM Peak		
		In	Out	Total	In	Out	Total
Warehousing (LUC 150) 516,360 ft^2	Total Auto Trips Generated (extracted from 2360 Dixie Rd TIS)	68	20	88	26	72	98

4.4 FUTURE BACKGROUND TRAFFIC VOLUMES

Future background traffic conditions were determined by incorporating the future road network configuration, growth rates for the respective horizon years, and background development traffic along with existing traffic volumes. The future background traffic volumes for the 2028 and 2033 horizon years are illustrated in **Figure 4-4** and **Figure 4-5,** respectively. Trips were distributed based on Transportation Tomorrow Survey (TTS) 2016 data for TAZ 3661 and 3670, existing traffic patterns and logical routing.

Figure 4-4: Future Background Traffic Volumes – 2028

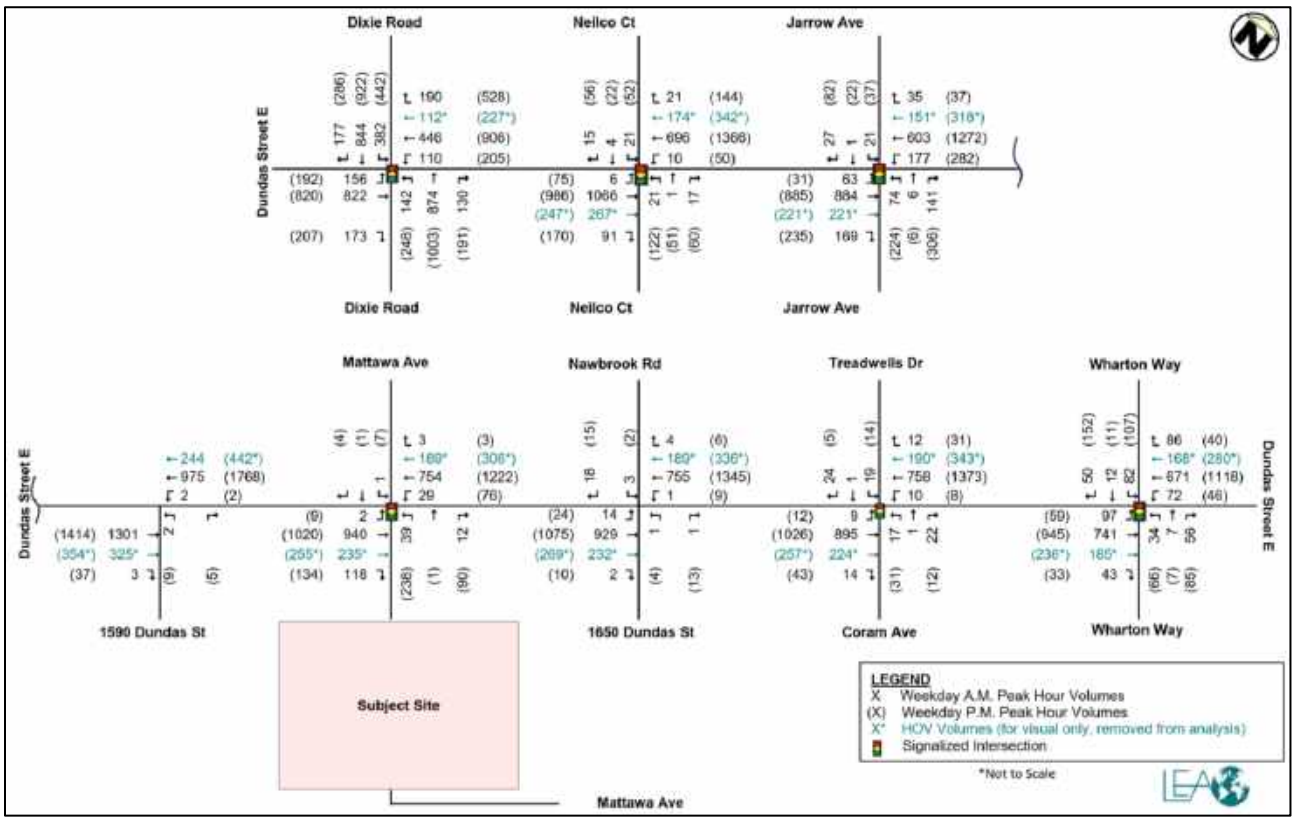
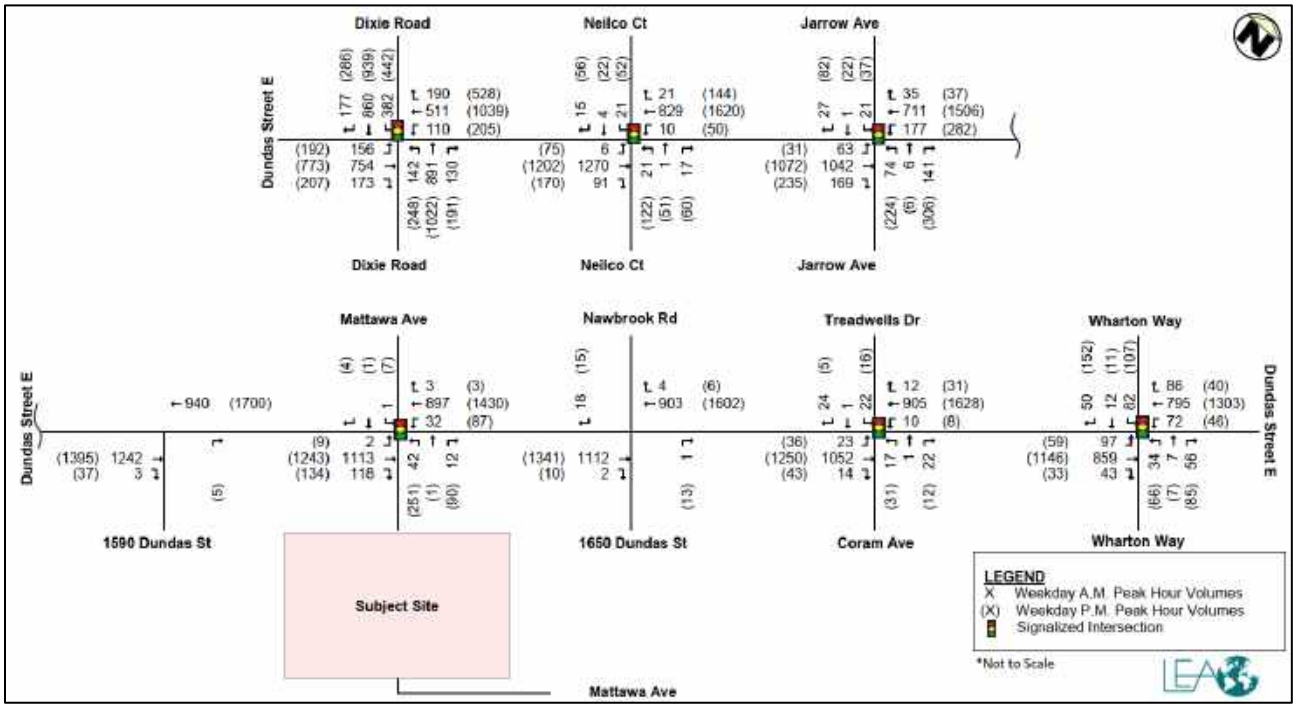


Figure 4-5: Future Background Traffic Volumes – 2033



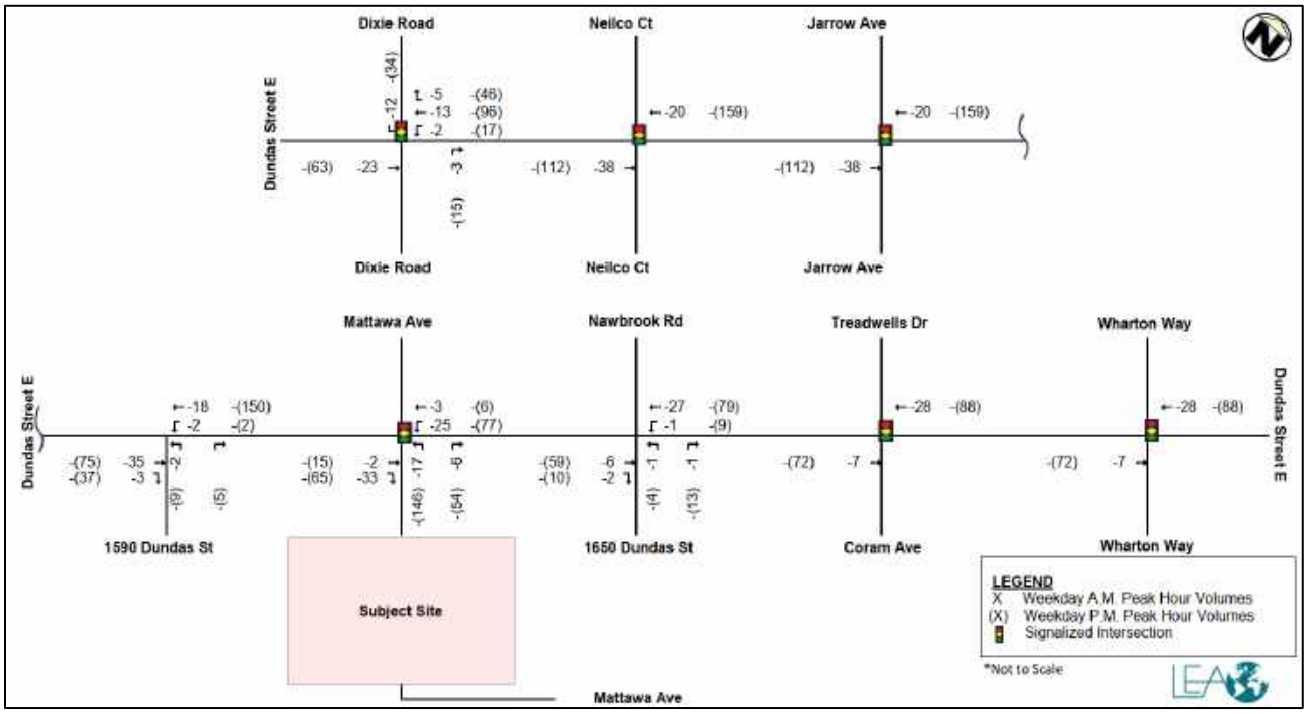
5 FUTURE TOTAL TRAFFIC CONDITIONS

The proposed development consists of a new, mixed-use community to replace the existing retail plaza and surface parking lot located at the subject site. In total, 2,877 residential units, 6,094 m^2 (66,000 ft^2) of retail, 366 m^2 (4,000 ft^2) of community space, and a public park have been assessed. The section below discusses the calculation of existing site traffic to be removed from the road network, as well as the calculation, distribution, and assignment of site-generated vehicle trips to be generated by the proposed development.

5.1 EXISTING SITE TRAFFIC TO BE REMOVED

The total useable existing retail GFA of 15,200 m^2 (163,611 ft^2) for the two existing mixed-use retail buildings was estimated using Google Maps imagery and business information available. To appraise the trips generated at the two existing mixed-use retail buildings, survey counts were conducted at the vehicular accesses. Transportation Tomorrow Survey (TTS) 2016 data and existing traffic volume patterns at the site access were used to determine site trip distribution. The existing site trips to be removed for are shown in **Figure 5-1**.

Figure 5-1: Existing Site Trip Removal



Furthermore, after the Dundas BRT is operational, left-in/left-out movements at the existing vehicular accesses (east and west to Mattawa Ave) would be blocked. To account for the future configuration, these trips are also removed accordingly for the 2033 scenarios.

5.2 NEW SITE-GENERATED TRAFFIC

Based on the latest site statistics, 2,877 residential units, 6,094 m^2 (66,000 ft^2) of retail, 366 m^2 (4,000 ft^2) of community space GFA in the form of a recreational community center are proposed for the subject site. The *ITE Trip Generation Manual 11th* Edition was used to estimate trips generated and Transportation Tomorrow Survey (TTS) 2016 data was used to determine site trip distribution as well as the local modal split. The retail site trips were generated using peak hour of adjacent street average rates from the ITE Trip Generation Manual 11th Edition, while other uses were generated using peak hour rates.

5.2.1 Modal Split

Data from the 2016 TTS was extracted to identify the modal split for trips inbound and outbound from the subject site location (specifically TAZ 3670 and 3661) and surrounding area during the weekday AM and PM peak hours. The existing modal split is summarized in **Table 5-1**. Detailed TTS calculations are provided in **Appendix D**.

Table 5-1: Modal Split Summary

Modes	Modal Split		
	Residential	Retail	Community Centre
Auto Driver	64%	66%	76%
Passenger	11%	15%	8%
Transit	20%	7%	12%
Pedestrian	5%	12%	3%
Cycling	0%	0%	1%
TOTAL	100%	100%	100%

Based on the existing modal split for the study area, a non-auto modal split was identified. This modal split was subsequently applied to the new site trip generation for the subject development, as summarized in **Table 5-2**.

Table 5-2: Modal Split Reduction

Description	Modal Split Reduction
Residential	36%
Retail	34%
Community Centre	24%

5.2.2 Vehicle Trip Generation

The current development proposal includes 2,877 total residential units. Trip generation was estimated using trip rates from the ITE Trip Generation Manual 11th Edition. The average trip rates from ITE Land Use Code (LUC) 222 were used for residential trips, and the average trip rates from ITE LUC 821 were used for retail trips. The trip rate equation for ITE LUC 495 was applied to determine the community centre trips. The calculation of site trip generation and external person trips is detailed in **Table 5-3**.

In total, the subject development is expected to generate 715 two-way vehicle trips in the AM peak hour (214 inbound, 501 outbound) and 947 two-way vehicle trips (603 inbound, 344 outbound) in the PM peak hour.

Table 5-3: Vehicle Site Trip Generation

Land Use	Description	Weekday AM Peak Hour			Weekday PM Peak Hour		
		In	Out	Total	In	Out	Total
Residential							
ITE LUC 222 - Multifamily Housing (High-Rise) **2,883 Units**	ITE Distribution (Person)	25%	75%	100%	66%	34%	100%
	ITE Trip Rates	0.09	0.26	0.34	0.30	0.16	0.46
	ITE Person Trips	245	735	980	875	451	1326
	Auto Split	100%	100%		100%	100%	
	Avg Veh Occupancy	1.00	1.00		1.00	1.00	
	Conversion to Person Trips	245	735	980	875	451	1326
	Interaction Trip Reduction	-5	-7	-12	-60	-22	-82
	Total External Person Trips	240	728	968	815	429	1244
	Non-Auto Mode Split Reduction	-86	-262	-348	-293	-154	-447
	Proposed Residential – External Auto Trips	**154**	**466**	**620**	**522**	**275**	**797**
Retail							
ITE LUC 821 - Shopping Plaza (40-150k) **6,689 m² (72,000 ft²)**	ITE Distribution (Vehicle)	62%	38%	100%	49%	51%	100%
	ITE Trip Rates	1.07	0.66	1.73	2.54	2.65	5.19
	Baseline Auto Trips	78	47	125	183	191	374
	Auto Split	100%	100%		100%	100%	
	Avg Veh Occupancy	1.17	1.16		1.21	1.18	
	Conversion to Person Trips	91	55	146	221	226	447
	Interaction Trip Reduction	-7	-5	-12	-24	-61	-85
	Total External Person Trips	84	50	134	197	165	362
	Non-Auto Mode Split Reduction	-29	-17	-46	-67	-56	-123
	Proposed Retail - External Auto Trips	**55**	**33**	**88**	**130**	**109**	**239**
	Pass-by Percentage	0%	0%		40%	40%	
	Pass-by Trips	0	0	0	52	44	96
	Proposed Retail – Primary External Auto Trips	**55**	**33**	**88**	**78**	**65**	**143**
Community Centre							
ITE LUC 495 - Recreational Community Center **370 m² (4,000 ft²)**	ITE Distribution (Person)	74%	26%	100%	43%	57%	100%
	ITE Trip Rates	1.72	0.60	2.32	1.50	1.99	3.49
	ITE Person Trips	7	2	9	6	8	14
	Auto Split	100%	100%		100%	100%	
	Avg Veh Occupancy	1.00	1.00		1.00	1.00	
	Conversion to Person Trips	7	2	9	6	8	14
	Interaction Trip Reduction	0	0	0	-2	-3	-5
	Total External Person Trips	7	2	9	4	5	9
	Non-Auto Mode Split Reduction	-2	0	-2	-1	-1	-2
	Proposed Community Center – External Auto Trips	**5**	**2**	**7**	**3**	**4**	**7**
	Total New Site Auto Trips	**214**	**501**	**715**	**603**	**344**	**947**

Note: Some site stats are rounded up on, as a conservative approach, for trip generation calculation purposes. Hence, they may not match with the site plan or in Table 1-1.

5.2.3 Multi-Modal Trip Generation

The modal split for the area, based on TTS 2016 data and summarized in **Table 5-1** above, was used to determine the multi-modal trip generation for the subject development. The anticipated trip generation by mode and use is summarized **Table 5-4**.

Table 5-4: Multi-Modal Site Trip Generation

Land Use	Description	Modal Split	Weekday AM Peak Hour			Weekday PM Peak Hour		
			In	Out	Total	In	Out	Total
Residential	**External Person Trips**		**240**	**728**	**968**	**815**	**429**	**1,244**
	Auto Driver Trips	64%	154	466	620	522	275	797
	Passenger Trips	11%	26	80	106	89	47	136
	Transit Trips	20%	48	146	194	163	86	249
	Pedestrian Trips	5%	12	36	48	41	21	62
	Cycling Trips	0%	0	0	0	0	0	0
Retail	**External Person Trips**		**84**	**50**	**134**	**197**	**165**	**362**
	Auto Driver Trips	66%	55	33	88	130	109	239
	Passenger Trips	15%	13	8	21	29	25	54
	Transit Trips	7%	6	3	9	14	11	25
	Pedestrian Trips	12%	10	6	16	24	20	44
	Cycling Trips	0%	0	0	0	0	0	0
Community Centre	**External Person Trips**		**7**	**2**	**9**	**4**	**5**	**9**
	Auto Driver Trips	76%	5	2	7	3	4	7
	Passenger Trips	8%	1	0	1	0	0	0
	Transit Trips	12%	1	0	1	1	1	2
	Pedestrian Trips	3%	0	0	0	0	0	0
	Cycling Trips	1%	0	0	0	0	0	0
All	**External Person Trips**	-	**331**	**780**	**1,111**	**1,016**	**599**	**1,615**
	Auto Driver Trips	-	214	501	715	655	388	1043
	Passenger Trips	-	40	88	128	118	72	190
	Transit Trips	-	55	149	204	178	98	276
	Pedestrian Trips	-	22	42	64	65	41	106
	Cycling Trips	-	0	0	0	0	0	0

5.2.4 Trip Distribution and Assignment

Directional trip distribution of the site traffic was derived using TTS 2016 data for Traffic Analysis Zone (TAZ) 3661 and 3670. The site traffic was assigned to the road network based on trip patterns in the study area, changes in the future road network, and logical routing for each of the proposed uses.

The residential, retail, and community centre trip distribution is summarized in **Table 5-5, Table 5-6,** and **Table 5-7**, respectively. Detailed TTS calculations are provided in **Appendix D**.

Table 5-5: Residential Trip Distribution

Gateway No.	Locations	AM		PM	
		In	Out	In	Out
1	Dixie Rd (S of Dundas St E)	14%	15%	15%	14%
2	Dundas St E (W of Dixie Rd)	27%	24%	17%	27%
3	Dixie Rd (N of Dundas St E)	32%	30%	23%	30%
4	Wharton Way (N of Dundas St E)	0%	0%	0%	0%
5	Dundas St E (E of Wharton Way)	27%	31%	45%	29%
6	Nawbrook Rd (N of Dundas St E)	0%	0%	0%	0%
7	Treadwells Dr (N of Dundas St E)	0%	0%	0%	0%

Table 5-6: Retail Trip Distribution

Gateway No.	Locations	AM		PM	
		In	Out	In	Out
1	Dixie Rd (S of Dundas St E)	16%	11%	11%	13%
2	Dundas St E (W of Dixie Rd)	13%	17%	7%	17%
3	Dixie Rd (N of Dundas St E)	21%	26%	16%	20%
4	Wharton Way (N of Dundas St E)	0%	0%	0%	0%
5	Dundas St E (E of Wharton Way)	50%	46%	66%	50%
6	Nawbrook Rd (N of Dundas St E)	0%	0%	0%	0%
7	Treadwells Dr (N of Dundas St E)	0%	0%	0%	0%

Table 5-7: Community Centre Trip Distribution

Gateway No.	Locations	AM		PM	
		In	Out	In	Out
1	Dixie Rd (S of Dundas St E)	13%	31%	11%	10%
2	Dundas St E (W of Dixie Rd)	21%	8%	15%	18%
3	Dixie Rd (N of Dundas St E)	23%	16%	30%	23%
4	Wharton Way (N of Dundas St E)	0%	0%	0%	0%
5	Dundas St E (E of Wharton Way)	43%	45%	44%	49%
6	Nawbrook Rd (N of Dundas St E)	0%	0%	0%	0%
7	Treadwells Dr (N of Dundas St E)	0%	0%	0%	0%

The new site generated traffic volumes for the 2028 horizon year and 2033 horizon year Scenario 1 during both weekday AM and PM peak hours are shown in **Figure 5-2**. Subsequently, the new site generated traffic volumes for the 2033 horizon year Scenario 2 during both weekday AM and PM peak hours are shown in **Figure 5-3.**

Figure 5-2: Total Site Generated Traffic Volumes – 2028 & 2033 Scenario 1

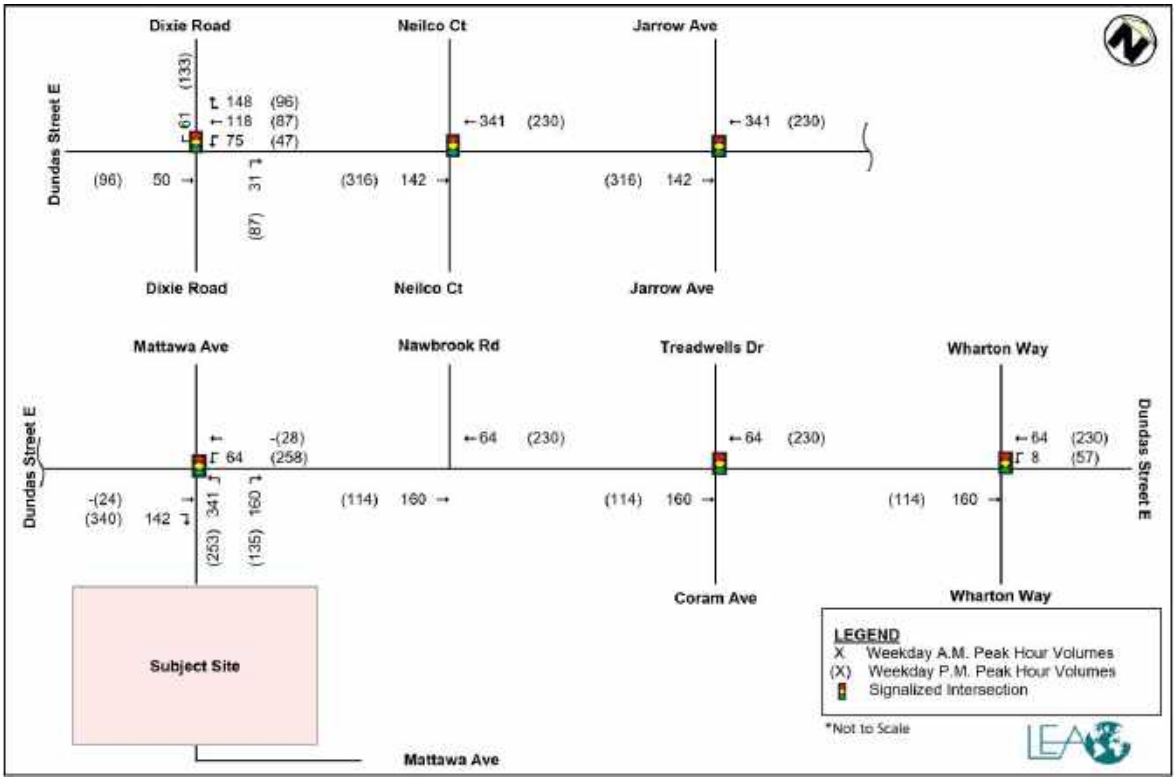
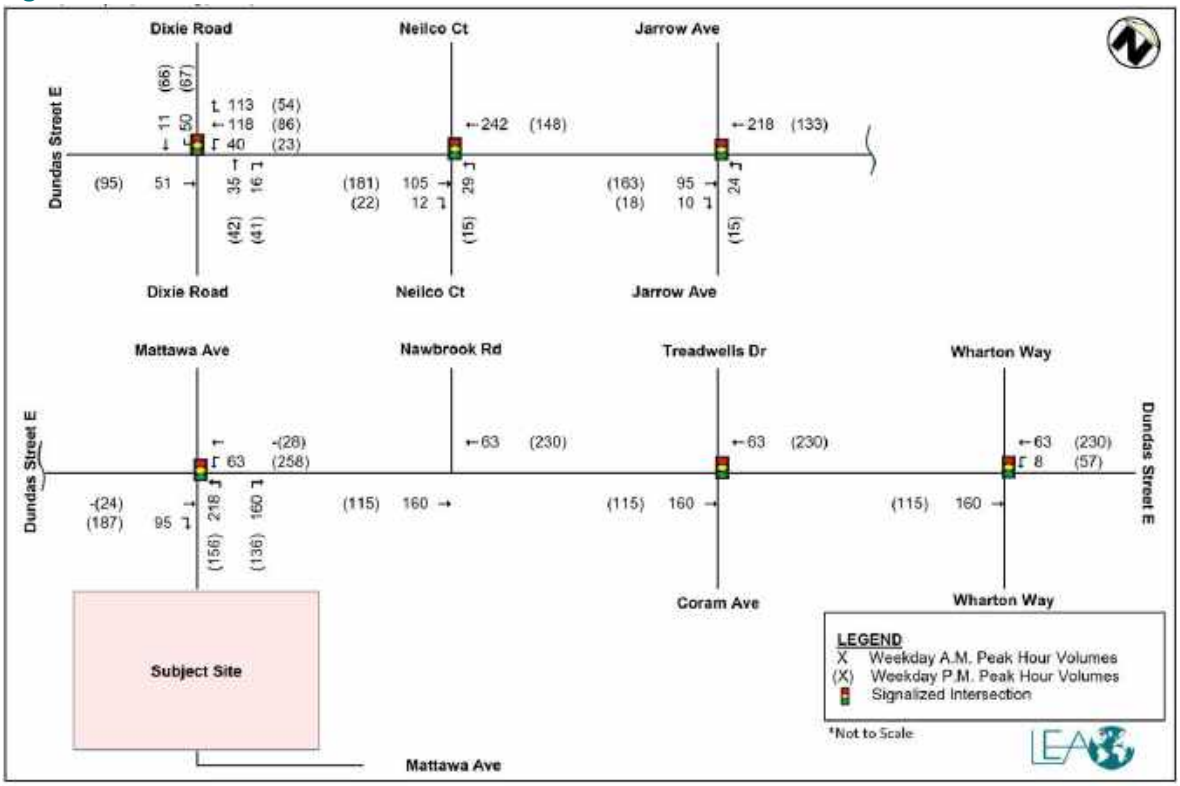


Figure 5-3: Total Site Generated Traffic Volumes – 2033 Scenario 2



5.3 FUTURE TOTAL TRAFFIC VOLUMES

Future total traffic conditions include the addition of the net site trips to the future background traffic volumes. The subject site is located in an area planned for intensification with transit-oriented development. This area provides convenient access to existing and future transit service that will facilitate connections to and from key destinations in both Mississauga and adjacent municipalities, such as Brampton and Toronto, including the existing Dixie GO Station and future Dundas BRT currently in development.

As time progresses, the implementation of planned rapid transit improvements and an enhanced road network and public realm within the study area will increase the attractiveness of transit, walking, and cycling to complete regular trips. As daily travel by transit and active modes increases, vehicular volumes on Dundas Street are expected to decrease, and traffic operations at the study area intersections are expected to improve.

The future total traffic volumes for the weekday AM and PM peak hours in 2028, 2033 Scenario 1, and 2033 Scenario 2, as detailed in **Table 4-1**, are illustrated in **Figure 5-4, Figure 5-5,** and, **Figure 5-6,** respectively.

Figure 5-4: Future Total Traffic Volumes – 2028

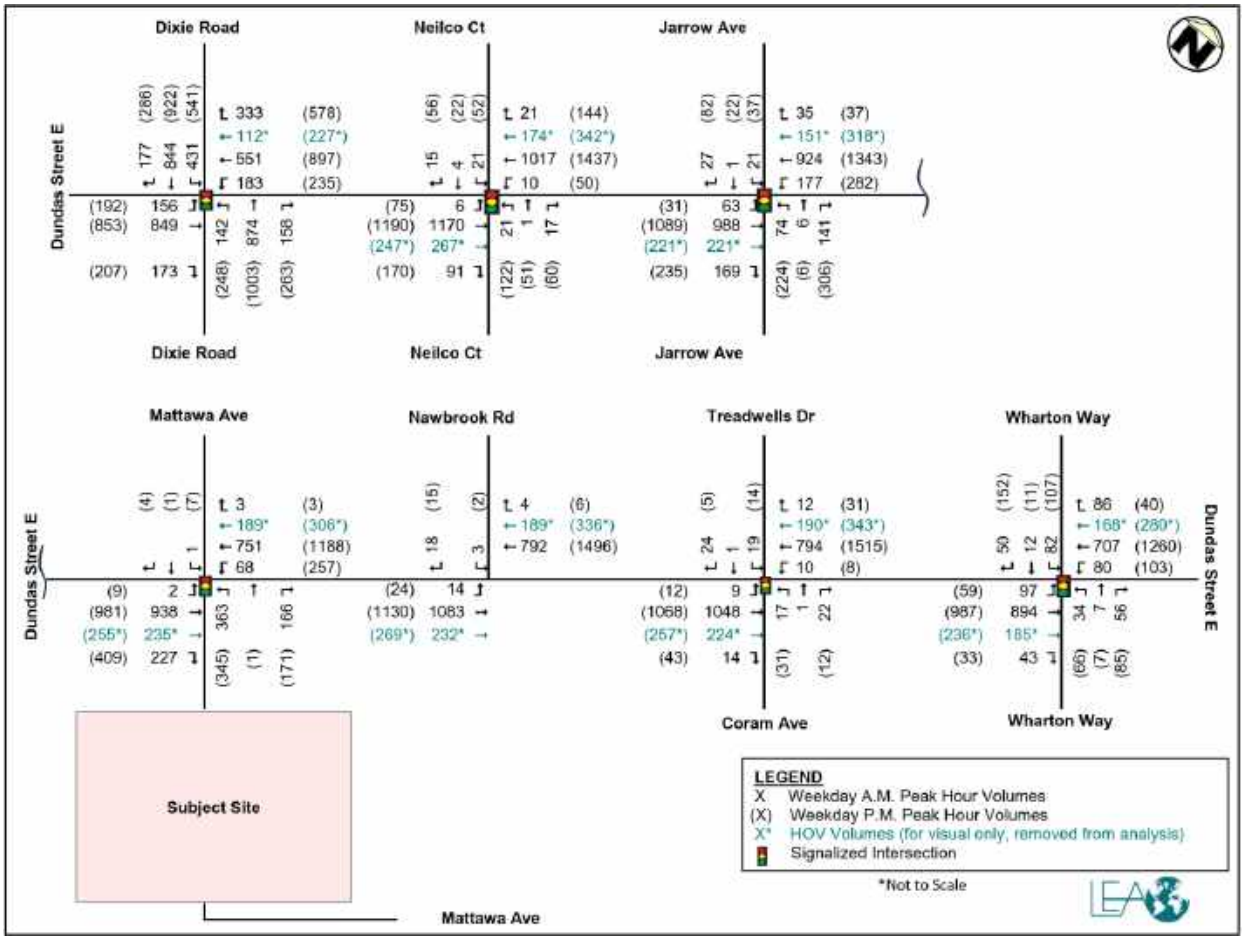


Figure 5-5: Future Total Traffic Volumes – 2033 Scenario 1

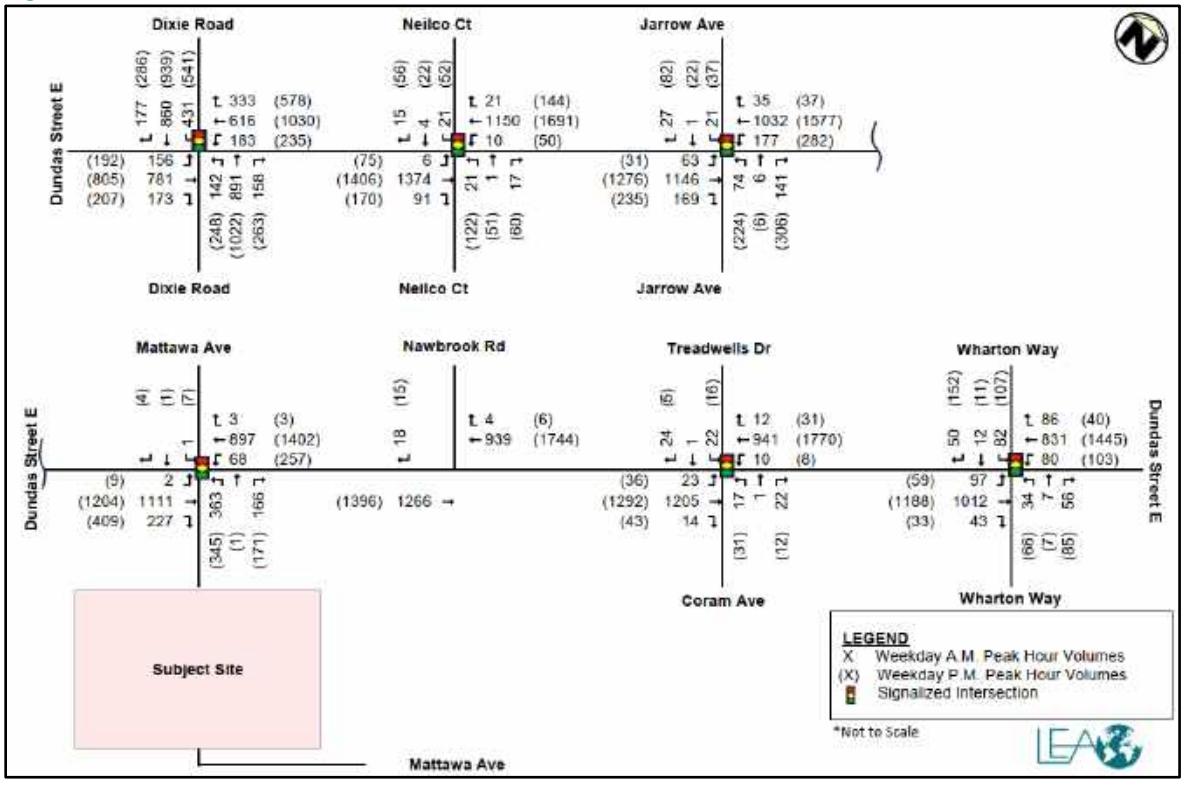
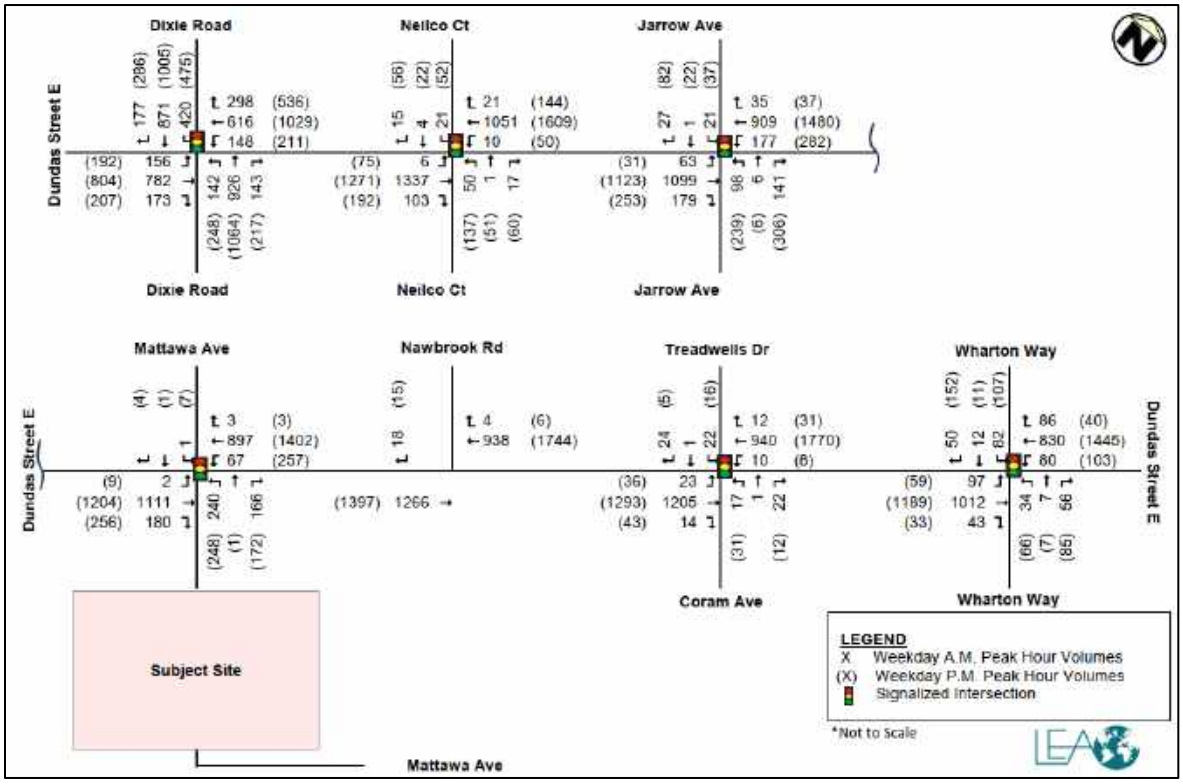


Figure 5-6: Future Total Traffic Volumes – 2033 Scenario 2



6 INTERSECTION CAPACITY ASSESSMENT

Existing traffic operations were assessed to provide a baseline for future traffic operations for the identified scenarios: Future Background 2028, Future Total 2028, Future Background 2033, and Future Total 2033 (Scenarios 1 & 2). The intersection capacity analyses and operations assessments for the study area intersections were undertaken using Synchro version 11.0, based on the Highway Capacity Manual 2000 methodology and adhering to the Region of Peel's *Regional Guidelines for Using Synchro Version 7.73 Rev 8* (December 2010). Peak hour factors (PHF) of 1.00 were used for all study intersections, in line with Peel Region guidelines. A queueing analysis was also conducted for the signalized intersections within the study area.

6.1 SYNCHRO ASSUMPTIONS APPLIED

6.1.1 Existing 2023 and 5-Year Horizon (2028)

While it is noted that the City of Mississauga does not suggest lane utilization factors for HOV lanes, Peer Review comments received from Arcadis regarding the July 2022 TIS suggested a lane utilization factor (LUF) of 1.0 to represent an approximate HOV lane usage of 20 percent. Hence, the HOV lanes along Dundas Street East, east of Dixie Road, were modelled in Synchro using an adjusted LUF of 1.0 for the respective through movements.

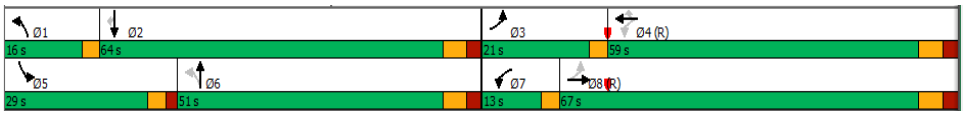
The existing HOV lanes along Dundas Street and lane configuration within the study area were maintained for the future horizon year 2028. Signal timing splits were optimized where applicable and made consistent between future background and future total conditions. Recommended signal timing plans are discussed below**.** The Existing Conditions, Future Background (FB) 2028 and Future Total (FT) 2028 Synchro Summary Reports are provided in in **Appendices E, F** and **G**, respectively.

Recommended Signal Optimization

Under future traffic conditions, the signal timings for the intersections of Dundas Street East & Dixie Road, along with Dundas Street East & Mattawa Avenue, were optimized. Signal optimization was undertaken for both AM and PM peak hours under future background and future total conditions.

The overall cycle lengths were maintained. Details regarding the proposed signal timing changes for each intersection are shown in Table 6-1. A summary of the signal timing plan changes for the Dundas Street East & Dixie Road along with Dundas Street East & Mattawa Avenue intersections are provided in **Table 6-2,** and **Table 6-3,** respectively.

Table 6-1: Detailed Signal Timing Plan Adjustments

Peak Hour	Condition	Signal Timing Plan
Dundas Street E / Dixie Road		
AM Peak	Existing	

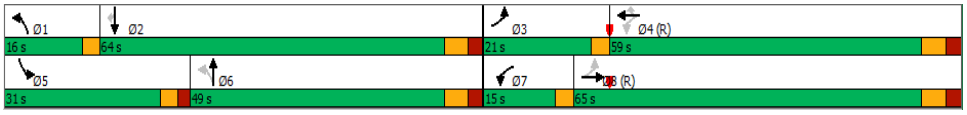
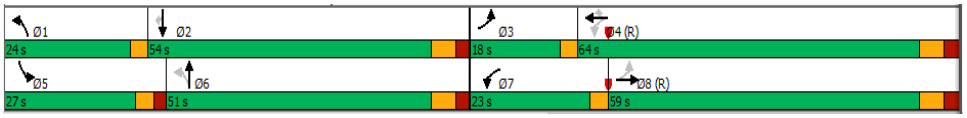
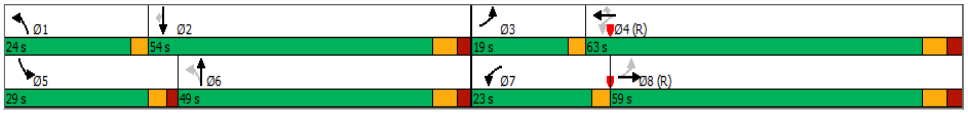
Peak Hour	Condition	Signal Timing Plan
AM Peak	Proposed	
Dundas Street E / Dixie Road		
PM Peak	Existing	
	Proposed	
Dundas Street E / Mattawa Avenue		
AM Peak	Existing	
	Proposed	
PM Peak	Existing	
	Proposed	

Table 6-2: Summary of Timing Plan Changes – Dundas Street East & Dixie Road

Timeframe	AM Peak							
	EBL	EBTR	WBL	WBTR	NBL	NBTR	SBL	SBTR
Existing	21	67	13	59	16	51	29	64
2028 With Optimization	21	65	15	59	16	49	31	64
Net Change	-	-2	+2	-	-	-2	+2	-
Timeframe	PM Peak							
	EBL	EBTR	WBL	WBTR	NBL	NBTR	SBL	SBTR
Existing	18	59	23	64	24	51	27	54
2028 With Optimization	19	59	23	63	24	49	29	54
Net Change	+1	-	-	-1	-	-2	+2	-

Table 6-3: Summary of Signal timing Plan Changes – Dundas Street East & Mattawa Avenue

Timeframe	AM Peak				
	EBLTR	WBL	WBTR	NBLTR	SBLTR
Existing	114	114	114	46	46
2028 With Optimization	105	105	105	55	55
Net Change	-9	-9	-9	+9	+9
Timeframe	PM Peak				
	EBLTR	WBL	WBTR	EBLTR	SBLTR
Existing	114	-	114	46	46
2028 With Optimization	76	31	107	53	53
Net Change	-38	+31	-7	+7	+7

6.1.2 10-Year Horizon (2033) Scenarios 1 and 2

The Dundas Street Bus Rapid Transit (BRT) is expected to be completed by 2033. Therefore, the proposed road network as shown in the Dundas Connects Master Plan study (extracts shown in **Appendix H**) was assumed, including a lane reduction from 6 to 4 lanes and implementing protected EBL and WBL phases for signalized intersections along Dundas Street.

As detailed in **Table 4-1**, two (2) scenarios were considered for 2033:

- **Scenario 1:** A baseline analysis assuming a 10% decrease in traffic volumes following implementation of the Dundas Street BRT; and
- **Scenario 2:** An analysis assuming a 10% decrease in traffic volumes following implementation of the Dundas Street BRT, along with a bridge that extends Blundell Road west of the subject site.

According to background studies including Dundas Connects Master Plan study and the Dundas BRT Initial Business Case study, the Dundas BRT is expected to increase transit ridership and decrease the use of personal vehicles along the Dundas corridor.

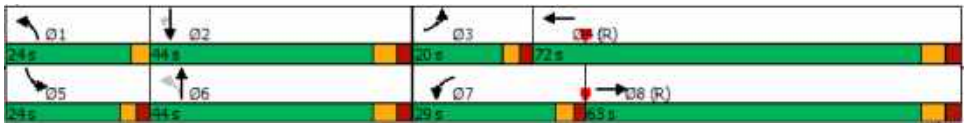
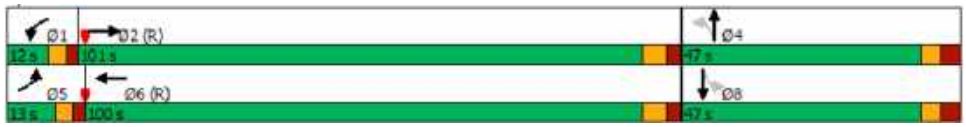
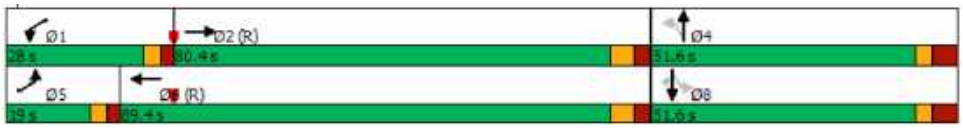
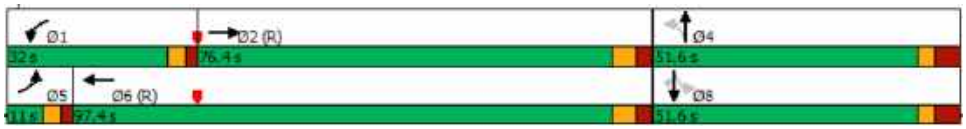
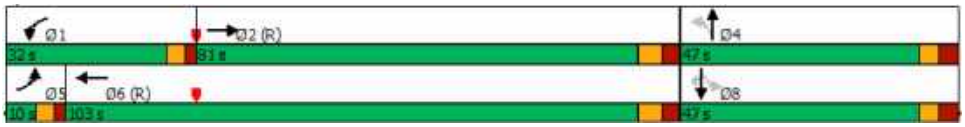
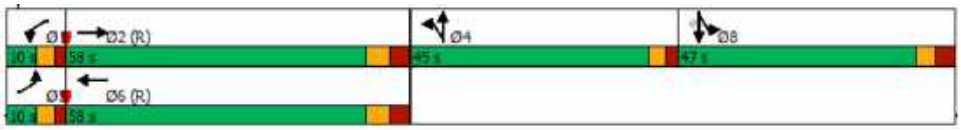
It was estimated that approximately **10%** of through volumes along Dundas Street will switch from driving to taking transit after the Dundas Street BRT is completed. Therefore, an estimated 10% decrease in through volumes along Dundas Street was assumed in the future background 2033 volumes. Future Total 2033 Scenario 1 was carried over to future total volumes for the 2033 Scenario 2 analysis.

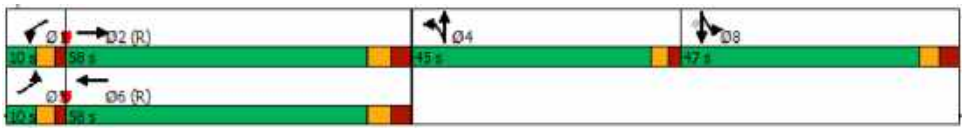
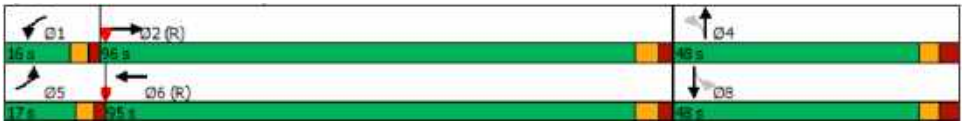
Recommended Signal Optimization

As the permissive EBL and WBL phases will be changed into protected EBL and WBL phases after the implementation of BRT, an updated Signal Timing Plan is adopted in the analysis for horizon year 2033.

The overall cycle lengths were maintained. Details regarding the proposed signal timing time for each intersection are shown in **Table 6-4.**

Table 6-4: Detailed Signal Timing Plan for 2033

Peak Hour	Signal Timing Plan
Dundas Street E / Dixie Road	
AM Peak	
PM Peak	
Dundas Street E / Neilco Court	
AM Peak	
PM Peak	
Dundas Street E / Jarrow Avenue	
AM Peak	
PM Peak	
Dundas Street E / Mattawa Avenue	
AM Peak	
PM Peak	
Dundas Street E / Treadwells Drive / Coram Avenue	
AM Peak	

Peak Hour	Signal Timing Plan
PM Peak	
Dundas Street E / Wharton Way	
AM Peak	
PM Peak	

The 2033 FB Scenario 1 Synchro Summary Report is provided in **Appendix I**, while the 2033 FT Scenario 1 and Scenario 2 Synchro Summary Reports are provided in **Appendices J** and **K**, respectively.

6.1.3 All Scenarios

It is the planning policy of Mississauga to identify movements of interest as those with a volume capacity (V/C) ratio greater than 0.85 for overall intersection operations, and V/C ratios reaching or exceeding 1.00 for through and right movements.

The intersection capacity analysis was conducted during the weekday AM and PM peak hours during each horizon year. The results are summarized by intersection in order to compare the intersection operations between scenarios and to identify critical movements and locations where mitigation measures would be appropriate to address capacity constraints.

The following sections describe the results on the synchro analysis by study area intersection.

6.2 SIGNALIZED INTERSECTIONS – EXISTING & 2028

The following sections will analyse the performance of signalized intersections for the 2028 horizon.

6.2.1 Dixie Road & Dundas Street East

The results of the intersection capacity analysis for Dixie Road and Dundas Street East are summarized in **Table 6-5**.

Table 6-5: Dixie Road & Dundas Street East – Synchro Results – Existing & 2028

AM	Existing 2023				Future Background 2028				Future Total 2028			
Mvmt	Vol	V/C	Delay (s)	LOS	Vol	V/C	Delay (s)	LOS	Vol	V/C	Delay (s)	LOS
overall	-	0.69	55	D	-	0.72	55	D	**-**	**0.91**	**59**	**E**
EBL	156	0.43	28	C	156	0.44	28	C	156	0.50	29	C
EBTR	968	0.56	41	D	995	0.59	42	D	1022	0.62	43	D
WBL	108	0.57	67	E	110	0.57	66	E	**183**	**0.95**	**113**	**F**
WBT	432	0.40	61	E	446	0.41	61	E	551	0.51	58	E
WBR	187	0.19	142	F	190	0.20	134	F	333	0.44	95	F

NBL	142	0.55	39	D	142	0.57	40	D	142	0.57	41	D
NBTR	970	0.77	57	E	1004	0.82	60	E	1032	0.87	64	E
SBL	**376**	**0.90**	**89**	**F**	382	0.87	83	F	**431**	**0.94**	**93**	**F**
SBT	806	0.48	40	D	844	0.50	41	D	844	0.50	41	D
SBR	177	0.19	36	D	177	0.20	36	D	177	0.20	36	D
PM	Existing 2023				Future Background 2028				Future Total 2028			
Mvmt	Vol	V/C	Delay (s)	LOS	Vol	V/C	Delay (s)	LOS	Vol	V/C	Delay (s)	LOS
overall	-	0.87	61	E	-	0.89	63	E	**-**	**0.99**	**73**	**E**
EBL	192	0.84	56	E	192	0.84	56	E	192	0.85	58	E
EBTR	986	0.59	44	D	1027	0.62	45	D	1060	0.67	48	D
WBL	198	0.74	51	D	205	0.78	52	D	235	0.88	62	E
WBT	874	0.71	61	E	906	0.76	63	E	897	0.74	62	E
WBR	520	0.80	94	F	528	0.84	97	F	**578**	**0.91**	**109**	**F**
NBL	248	0.84	54	D	248	0.86	59	E	248	0.86	59	E
NBTR	1142	0.86	62	E	**1194**	**0.94**	**72**	**E**	**1266**	**1.00**	**85**	**F**
SBL	**437**	**0.98**	**105**	**F**	**442**	**0.92**	**89**	**F**	**541**	**1.12**	**144**	**F**
SBT	888	0.60	49	D	922	0.62	50	D	922	0.62	50	D
SBR	286	0.39	47	D	286	0.41	47	D	286	0.41	47	D

AM Peak Hour: Under existing and future traffic conditions, the intersection of Dixie Road & Dundas Street East is forecasted to operate close to capacity with an overall V/C ratio of 0.91, delay time of 59 seconds, and LOS of E. With the optimization, the V/C ratios of all individual movements are within capacity (i.e., V/C ratio less than 1.00). Overall, this intersection is forecasted to operate acceptably in the future horizon year of 2028 (AM Peak) after optimization.

PM Peak Hour: During the PM peak hour, the intersection is forecasted to operate over capacity with an overall V/C ratio of 0.99, delay time of 73 seconds, and LOS of E, for future conditions with optimizations. The WBR, and NBTR movements, are anticipated to operate close to or at capacity, while the SBL movement is anticipated to operate above capacity. Given the intersection is operating at practical capacity under future background conditions for many movements, optimizing the intersection doesn't provide flexibility to resolve the critical movements. As such, it is our opinion that the Region monitor this intersection in the future once the proposed development, other developments, and Dundas BRT are built and fully occupied, and optimize the signal timing accordingly.

6.2.2 Neilco Court & Dundas Street East

The results of the intersection capacity analysis for Neilco Court and Dundas Street East are summarized in **Table 6-6**.

Table 6-6: Neilco Court & Dundas Street East – Synchro Results – Existing & 2028

AM	Existing 2023				Future Background 2028				Future Total 2028			
Mvmt	Vol	V/C	Delay (s)	LOS	Vol	V/C	Delay (s)	LOS	Vol	V/C	Delay (s)	LOS
overall	-	0.37	10	A	-	0.38	9	A	-	0.42	8	A
EBL	6	0.01	4	A	6	0.01	4	A	6	0.02	3	A
EBT	1021	0.40	8	A	1066	0.42	8	A	1170	0.46	8	A
EBR	91	0.07	11	B	91	0.07	10	A	91	0.07	9	A
WBL	10	0.03	3	A	10	0.03	3	A	10	0.04	2	A
WBT	670	0.27	6	A	696	0.28	6	A	1017	0.41	5	A
WBR	21	0.02	2	A	21	0.02	2	A	21	0.02	1	A
NBL	21	0.13	63	E	21	0.13	63	E	21	0.13	63	E
NBTR	18	0.02	62	E	18	0.02	62	E	18	0.02	62	E
SBL	21	0.14	63	E	21	0.14	63	E	21	0.14	63	E
SBTR	19	0.03	62	E	19	0.03	62	E	19	0.03	62	E
PM	Existing 2023				Future Background 2028				Future Total 2028			
Mvmt	Vol	V/C	Delay (s)	LOS	Vol	V/C	Delay (s)	LOS	Vol	V/C	Delay (s)	LOS
overall	-	0.56	25	C	-	0.59	24	C	-	0.61	23	C
EBL	75	0.29	12	B	75	0.31	12	B	75	0.34	12	B
EBT	928	0.37	10	A	986	0.39	10	B	1190	0.47	10	A
EBR	170	0.13	24	C	170	0.13	23	C	170	0.13	17	B
WBL	50	0.15	15	B	50	0.16	15	B	50	0.20	16	B
WBT	1306	0.57	26	C	1366	0.60	26	C	1437	0.63	26	C
WBR	144	0.12	28	C	144	0.12	26	C	144	0.13	22	C
NBL	122	0.57	64	E	122	0.57	64	E	122	0.57	64	E
NBTR	111	0.29	58	E	111	0.29	58	E	111	0.29	58	E
SBL	52	0.28	58	E	52	0.28	58	E	52	0.28	58	E
SBTR	78	0.11	56	E	78	0.11	56	E	78	0.11	56	E

AM and PM Peak Hours: The intersection operates at acceptable levels of service under existing and future conditions, with no critical movements identified.

6.2.3 Jarrow Avenue & Dundas Street East

The results of the intersection capacity analysis for Jarrow Avenue and Dundas Street East are summarized in **Table 6-7**.

Table 6-7: Jarrow Avenue & Dundas Street East – Synchro Results – Existing & 2028

AM	Existing 2023				Future Background 2028				Future Total 2028			
Mvmt	Vol	V/C	Delay (s)	LOS	Vol	V/C	Delay (s)	LOS	Vol	V/C	Delay (s)	LOS
overall	-	0.46	13	B	-	0.47	12	B	-	0.52	11	B
EBL	50	0.10	2	A	63	0.13	2	A	63	0.19	3	A
EBT	857	0.35	2	A	884	0.36	2	A	988	0.40	2	A
EBR	169	0.13	0	A	169	0.13	0	A	169	0.13	0	A
WBL	177	0.47	18	B	177	0.48	18	B	177	0.55	15	B
WBT	584	0.24	10	A	603	0.25	10	A	924	0.39	8	A
WBR	25	0.02	11	B	35	0.03	10	A	35	0.03	6	A
NBL	74	0.40	63	E	74	0.40	63	E	74	0.40	63	E

NBTR	147	0.12	59	E	147	0.12	59	E	147	0.19	60	E
SBLT	17	0.13	59	E	22	0.19	60	E	22	0.19	60	E
SBR	22	0.02	58	E	27	0.02	58	E	27	0.02	58	E
PM	Existing 2023				Future Background 2028				Future Total 2028			
Mvmt	Vol	V/C	Delay (s)	LOS	Vol	V/C	Delay (s)	LOS	Vol	V/C	Delay (s)	LOS
overall	-	0.75	21	C	-	0.78	23	C	-	0.87	25	C
EBL	20	0.12	9	A	31	0.20	11	B	31	0.22	16	B
EBT	842	0.44	9	A	885	0.47	10	A	1089	0.59	15	B
EBR	235	0.18	2	A	235	0.18	2	A	235	0.20	10	B
WBL	282	0.70	17	B	282	0.73	21	C	282	0.85	35	C
WBT	1234	0.55	12	B	1272	0.56	15	B	1343	0.60	15	B
WBR	14	0.01	1	A	37	0.03	10	A	37	0.03	9	A
NBL	224	0.85	82	F	224	0.86	83	F	224	0.86	83	F
NBTR	312	0.33	54	D	312	0.35	54	D	312	0.43	55	D
SBLT	41	0.22	52	D	59	0.48	58	E	59	0.48	58	E
SBR	62	0.04	50	D	82	0.12	51	D	82	0.14	51	D

AM and PM Peak Hours: The intersection operates at acceptable levels of service under existing and future conditions, with no critical movements identified.

6.2.4 Mattawa Avenue & Dundas Street East

The results of the intersection capacity analysis for Mattawa Avenue and Dundas Street East are summarized in **Table 6-8**.

Table 6-8: Mattawa Avenue & Dundas Street East – Synchro Results – Existing & 2028

AM	Existing 2023				Future Background 2028				Future Total 2028			
Mvmt	Vol	V/C	Delay (s)	LOS	Vol	V/C	Delay (s)	LOS	Vol	V/C	Delay (s)	LOS
overall	-	0.34	8	A	-	0.35	7	A	-	0.63	38	D
EBL	2	0.00	4	A	2	0.00	3	A	2	0.01	18	B
EBT	907	0.34	9	A	940	0.35	8	A	938	0.46	30	C
EBR	118	0.09	13	B	118	0.09	8	A	227	0.17	81	F
WBL	29	0.07	2	A	29	0.07	2	A	68	0.25	10	B
WBT	721	0.27	2	A	754	0.28	3	A	751	0.37	9	A
WBR	3	0.00	3	A	3	0.00	3	A	3	0.00	12	B
NBL	39	0.35	71	E	39	0.35	71	E	**363**	**0.97**	**94**	**F**
NBTR	12	0.01	67	E	12	0.01	67	E	166	0.23	43	D
SBLT	1	0.01	67	E	1	0.01	67	E	1	0.00	40	D
SBR	0	0.00	0		0	0.00	0		0	0.00	0	
PM	Existing 2023				Future Background 2028				Future Total 2028			
Mvmt	Vol	V/C	Delay (s)	LOS	Vol	V/C	Delay (s)	LOS	Vol	V/C	Delay (s)	LOS
overall	-	0.59	18	B	-	0.62	24	C	-	0.85	45	D
EBL	9	0.04	14	B	9	0.04	17	B	9	0.05	33	C
EBT	953	0.41	16	B	1020	0.49	25	C	981	0.59	44	D
EBR	134	0.11	39	D	134	0.12	28	C	409	0.40	83	F
WBL	76	0.26	2	A	76	0.25	10	A	257	0.77	62	E

WBT	1163	0.50	2	A	1222	0.53	10	A	1188	0.56	14	B
WBR	3	0.00	7	A	3	0.00	8	A	3	0.00	11	B
NBL	238	0.89	89	F	238	0.86	81	F	**345**	**0.98**	**97**	**F**
NBTR	91	0.07	50	D	91	0.07	49	D	172	0.12	43	D
SBLT	8	0.02	50	D	8	0.02	49	D	8	0.02	41	D
SBR	4	0.00	50	D	4	0.00	48	D	4	0.00	41	D

AM and PM Peak Hours: The intersection operates at acceptable levels of service under existing and future conditions, with the exception of the NBL movement operating close to capacity during both AM and PM peak hours. However, it should be noted that the V/C ratios are below 1.00, indicating the movement is operating within capacity.

6.2.5 Coram Avenue / Treadwells Drive & Dundas Street East

The results of the intersection capacity analysis for Coram Avenue / Treadwells Drive and Dundas Street East are summarized in **Table 6-9**.

Table 6-9: Coram Avenue/Treadwells Drive & Dundas Street East – Synchro Results – Existing & 2028

AM	Existing 2023				Future Background 2028				Future Total 2028			
Mvmt	Vol	V/C	Delay (s)	LOS	Vol	V/C	Delay (s)	LOS	Vol	V/C	Delay (s)	LOS
overall	-	0.34	14	B	-	0.35	14	B	-	0.41	10	A
EBL	9	0.02	5	A	9	0.02	4	A	9	0.02	4	A
EBT	863	0.41	14	B	895	0.42	13	B	1048	0.49	6	A
EBR	14	0.01	9	A	14	0.01	9	A	14	0.01	9	A
WBL	10	0.04	8	A	10	0.04	8	A	10	0.05	8	A
WBT	725	0.34	9	A	758	0.36	9	A	794	0.37	9	A
WBR	12	0.01	9	A	12	0.01	9	A	12	0.01	9	A
NBLTR	40	0.13	65	E	40	0.13	65	E	40	0.13	65	E
SBLT	20	0.11	66	E	20	0.11	66	E	20	0.11	66	E
SBR	24	0.02	65	E	24	0.02	65	E	24	0.02	65	E
PM	Existing 2023				Future Background 2028				Future Total 2028			
Mvmt	Vol	V/C	Delay (s)	LOS	Vol	V/C	Delay (s)	LOS	Vol	V/C	Delay (s)	LOS
overall	-	0.46	12	B	-	0.48	9	A	-	0.53	9	A
EBL	12	0.07	7	A	12	0.08	2	A	12	0.11	4	A
EBT	959	0.43	11	B	1026	0.46	4	A	1068	0.48	3	A
EBR	43	0.03	4	A	43	0.03	0	A	43	0.03	0	A
WBL	8	0.03	7	A	8	0.03	6	A	8	0.03	6	A
WBT	1310	0.59	11	B	1373	0.62	11	B	1515	0.68	12	B
WBR	31	0.02	0	A	31	0.02	0	A	31	0.02	0	A
NBLTR	43	0.03	64	E	43	0.03	64	E	43	0.03	64	E
SBLT	14	0.08	65	E	14	0.08	65	E	14	0.08	65	E
SBR	5	0.00	65	E	5	0.00	65	E	5	0.00	65	E

AM and PM Peak Hours: The intersection operates at acceptable levels of service under existing and future conditions, with no critical movements identified.

6.2.6 Wharton Way & Dundas Street East

The results of the intersection capacity analysis for Wharton Way and Dundas Street East are summarized in **Table 6-10**.

Table 6-10: Wharton Way & Dundas Street East – Synchro Results – Existing & 2028

AM	Existing 2023				Future Background 2028				Future Total 2028			
Mvmt	Vol	V/C	Delay (s)	LOS	Vol	V/C	Delay (s)	LOS	Vol	V/C	Delay (s)	LOS
overall	-	0.36	13	B	-	0.37	13	B	-	0.42	13	B
EBL	97	0.20	1	A	97	0.21	1	A	97	0.21	2	A
EBT	714	0.31	4	A	741	0.32	4	A	894	0.39	4	A
EBR	43	0.03	1	A	43	0.03	1	A	43	0.03	1	A
WBL	72	0.17	4	A	72	0.17	4	A	80	0.22	5	A
WBT	641	0.28	7	A	671	0.29	7	A	707	0.31	8	A
WBR	86	0.09	6	A	86	0.09	6	A	86	0.09	6	A
NBL	34	0.31	67	E	34	0.31	67	E	34	0.31	67	E
NBTR	63	0.09	64	E	63	0.09	64	E	63	0.09	64	E
SBL	82	0.70	85	F	82	0.70	85	F	82	0.70	85	F
SBTR	62	0.12	64	E	62	0.12	64	E	62	0.12	64	E
PM	Existing 2023				Future Background 2028				Future Total 2028			
Mvmt	Vol	V/C	Delay (s)	LOS	Vol	V/C	Delay (s)	LOS	Vol	V/C	Delay (s)	LOS
overall	-	0.47	19	B	-	0.49	18	B	-	0.55	18	B
EBL	59	0.18	7	A	59	0.19	5	A	59	0.23	5	A
EBT	882	0.36	8	A	945	0.38	6	A	987	0.41	6	A
EBR	33	0.03	12	B	33	0.03	2	A	33	0.03	3	A
WBL	46	0.12	5	A	46	0.13	5	A	103	0.29	6	A
WBT	1062	0.43	9	A	1118	0.46	9	A	1260	0.51	10	A
WBR	40	0.04	6	A	40	0.04	6	A	40	0.04	6	A
NBL	66	0.73	92	F	66	0.73	92	F	66	0.73	92	F
NBTR	92	0.09	62	E	92	0.09	62	E	92	0.09	62	E
SBL	107	0.77	89	F	107	0.77	89	F	107	0.77	89	F
SBTR	163	0.16	62	E	163	0.16	62	E	163	0.16	62	E

AM and PM Peak Hours: The intersection operates at acceptable levels of service under existing and future conditions, with no critical movements identified.

6.3 SIGNALIZED INTERSECTIONS – 2033 SCENARIO 1

The following sections will analyse the performance of signalized intersections for 2033 Scenario 1 (ten-year post-BRT).

6.3.1 Dixie Road & Dundas Street East

The results of the intersection capacity analysis for Dixie Road and Dundas Street East are summarized in **Table 6-11**.

Table 6-11: Dixie Road & Dundas Street East – Synchro Results – 2033 Scenario 1

AM	Future Background 2033 Scenario 1				Future Total 2033 Scenario 1			
Mvmt	Vol	V/C	Delay (s)	LOS	Vol	V/C	Delay (s)	LOS
overall	-	0.89	60	E	-	0.96	68	E
EBL	156	0.97	129	F	156	0.97	129	F
EBTR	927	0.84	55	D	954	0.93	67	E
WBL	110	0.73	103	F	183	0.97	143	F
WBTR	701	0.65	35	D	949	0.88	43	D
NBL	142	0.61	44	D	142	0.61	45	D
NBTR	1021	0.93	73	E	1049	0.98	82	F
SBL	382	0.89	86	F	431	0.97	101	F
SBT	860	0.57	46	D	860	0.57	46	D
SBR	177	0.23	41	D	177	0.23	41	D
PM	**Future Background 2033 Scenario 1**				**Future Total 2033 Scenario 1**			
Mvmt	Vol	V/C	Delay (s)	LOS	Vol	V/C	Delay (s)	LOS
overall	-	1.17	106	F	-	1.24	126	F
EBL	192	1.34	263	F	192	1.34	263	F
EBTR	980	0.84	54	D	1012	0.88	58	E
WBL	205	0.89	112	F	235	0.97	123	F
WBTR	1567	1.20	131	F	1608	1.23	145	F
NBL	248	0.97	95	F	248	0.97	95	F
NBTR	1213	1.09	115	F	1285	1.16	142	F
SBL	442	1.14	159	F	541	1.40	262	F
SBT	939	0.83	65	E	939	0.83	65	E
SBR	286	0.54	60	E	286	0.54	60	E

AM Peak Hour: Under future traffic conditions, with the proposed optimization applied, the intersection of Dixie Road & Dundas Street East is forecasted to operate close to capacity with an overall V/C ratio of 0.96, delay time of 68 seconds, and LOS of E during the AM Peak hour.

Several movements, including the EBL, EBTR, WBL, NBTR, and SBL, are forecasted to operate close to capacity. For EBTR, the additional traffic load is majorly contributed by the background growth trips (118 trips), in contrast of the 27 trips added by the subject site. Therefore, the impact of the subject site on this intersection is considered negligible. With the optimization, the V/C ratios of all individual movements are within capacity (i.e., V/C ratio less than 1.00). Overall, this intersection is forecasted to operate acceptably in the future horizon year of 2033 (AM Peak) after optimization.

PM Peak Hour: During the PM peak hour, the intersection is forecasted to operate over capacity with an overall V/C ratio of 1.24, delay time of 126 seconds, and LOS of F, for future conditions. It should be noted

that the EBL, WBTR, NBTR and SBL movements are anticipated to operate above capacity during the future background conditions, with minimal changes to the V/C ratios for most movements due to the addition of the proposed development's site generated traffic (i.e. V/C increase of 0.00 to 0.05), with the exception of the SBL movement. As such, it is our opinion that the Region monitor this intersection in the future once the proposed development, other developments, and Dundas BRT are built and fully occupied, and optimize the signal timing accordingly.

6.3.2 Neilco Court & Dundas Street East

The results of the intersection capacity analysis for Neilco Court and Dundas Street East are summarized in **Table 6-12.**

Table 6-12: Neilco Court & Dundas Street East – Synchro Results – 2033 Scenario 1

AM	Future Background 2033 Scenario 1				Future Total 2033 Scenario 1			
Mvmt	Vol	V/C	Delay (s)	LOS	Vol	V/C	Delay (s)	LOS
overall	-	0.51	8	A	-	0.55	7	A
EBL	6	0.67	155	F	6	0.67	138	F
EBTR	1361	0.58	6	A	1465	0.62	7	A
WBL	10	0.44	112	F	10	0.44	118	F
WBTR	850	0.36	3	A	1171	0.50	3	A
NBL	21	0.13	63	E	21	0.13	63	E
NBTR	18	0.02	62	E	18	0.02	62	E
SBL	21	0.14	63	E	21	0.14	63	E
SBTR	19	0.03	62	E	19	0.03	62	E
PM	Future Background 2033 Scenario 1				Future Total 2033 Scenario 1			
Mvmt	Vol	V/C	Delay (s)	LOS	Vol	V/C	Delay (s)	LOS
overall	-	0.76	22	C	-	0.79	23	C
EBL	75	0.68	68	E	75	0.68	62	E
EBTR	1372	0.62	19	B	1576	0.71	23	C
WBL	50	0.72	111	F	50	0.72	110	F
WBTR	1764	0.83	11	B	1835	0.86	12	B
NBL	122	0.57	64	E	122	0.57	64	E
NBTR	111	0.29	58	E	111	0.29	58	E
SBL	52	0.28	58	E	52	0.28	58	E
SBTR	78	0.11	56	E	78	0.11	56	E

AM and PM Peak Hours: The intersection operates at acceptable levels of service under existing and future conditions, with no critical movements identified.

6.3.3 Jarrow Avenue & Dundas Street East

The results of the intersection capacity analysis for Jarrow Avenue and Dundas Street East are summarized in **Table 6-13**.

Table 6-13: Jarrow Avenue & Dundas Street East – Synchro Results – 2033 Scenario 1

AM	Future Background 2033 Scenario 1				Future Total 2033 Scenario 1			
Mvmt	Vol	V/C	Delay (s)	LOS	Vol	V/C	Delay (s)	LOS
overall	-	0.63	28	C	-	0.67	27	C
EBL	63	0.59	79	E	63	0.59	78	E
EBTR	1211	0.65	18	B	1315	0.71	20	B
WBL	177	0.81	92	F	177	0.81	84	F
WBTR	746	0.37	13	B	1067	0.52	15	B
NBL	74	0.39	62	E	74	0.39	62	E
NBTR	147	0.12	59	E	147	0.12	59	E
SBLT	22	0.18	60	E	22	0.18	60	E
SBR	27	0.02	57	E	27	0.02	57	E
PM	Future Background 2033 Scenario 1				Future Total 2033 Scenario 1			
Mvmt	Vol	V/C	Delay (s)	LOS	Vol	V/C	Delay (s)	LOS
overall	-	0.88	36	D	-	0.95	48	D
EBL	31	0.61	106	F	31	0.61	103	F
EBTR	1307	0.92	35	C	1511	1.06	65	E
WBL	282	0.85	94	F	282	0.85	90	F
WBTR	1543	0.77	15	B	1614	0.80	17	B
NBL	224	0.84	80	E	224	0.84	80	E
NBTR	312	0.31	53	D	312	0.34	53	D
SBLT	59	0.45	56	E	59	0.45	56	E
SBR	82	0.06	49	D	82	0.06	49	D

AM Peak Hour: The intersection operates at acceptable levels of service under existing and future conditions, with no critical movements identified.

PM Peak Hour: During the PM peak hour at this intersection, it is forecasted to operate close to capacity with an overall V/C ratio of 0.95, delay time of 48 seconds, and LOS of D in the Future. The EBTR movement is forecasted to operate over capacity with a V/C ratio of 1.06 and a LOS E under future total conditions. This is contributed by firstly, the reduction of traffic lane for future BRT, secondly, background growth/ development (465 trips), and, lastly, site trips (204 trips). The delay times are less than 1 cycle length, indicating that this movement can acceptably pass through the intersection within 1 cycle. Overall, this intersection is forecasted to operate with minimal changes between future background and future total conditions (i.e. increase of 0.14 V/C), and that any issues caused at this intersection is due to background development's generated traffic.

6.3.4 Mattawa Avenue & Dundas Street East

The results of the intersection capacity analysis for Mattawa Avenue and Dundas Street East are summarized in **Table 6-14**.

Table 6-14: Mattawa Avenue & Dundas Street East – Synchro Results – 2033 Scenario 1

AM	Future Background 2033 Scenario 1				Future Total 2033 Scenario 1			
Mvmt	Vol	V/C	Delay (s)	LOS	Vol	V/C	Delay (s)	LOS
overall	-	0.49	6	A	-	0.84	26	C
EBL	2	0.15	90	F	2	0.20	118	F
EBTR	1231	0.51	4	A	1338	0.82	20	B
WBL	32	0.42	82	F	68	0.66	97	F
WBTR	900	0.35	2	A	900	0.49	6	A
NBL	42	0.37	71	E	**363**	**0.92**	**79**	**E**
NBTR	12	0.01	66	E	166	0.28	42	D
SBLT	1	0.01	66	E	1	0.00	38	D
SBR	0	0.00	0		0	0.00	0	
PM	Future Background 2033 Scenario 1				Future Total 2033 Scenario 1			
Mvmt	Vol	V/C	Delay (s)	LOS	Vol	V/C	Delay (s)	LOS
overall	-	0.77	19	B	**-**	**1.08**	**52**	**D**
EBL	**9**	**0.90**	**254**	**F**	**9**	**0.90**	**218**	**F**
EBTR	1377	0.74	8	A	**1613**	**1.10**	**62**	**E**
WBL	87	0.63	98	F	**257**	**0.97**	**103**	**F**
WBTR	1433	0.65	8	A	1405	0.67	9	A
NBL	**251**	**0.90**	**90**	**F**	**345**	**1.11**	**143**	**F**
NBTR	91	0.07	49	D	172	0.12	47	D
SBLT	8	0.02	49	D	8	0.02	45	D
SBR	4	0.00	48	D	4	0.00	45	D

AM Peak Hour: The intersection operates at acceptable levels of service under existing and future conditions, with no critical movements identified. The NBL movement is anticipated to operate close to capacity, but is within the threshold of 1.00 V/C, indicating acceptable conditions.

PM Peak Hour: The PM Peak hour at this intersection is forecasted to operate over capacity with an overall V/C ratio of 1.08, delay of 52 seconds, and LOS of D. The EBT and NBL movements are forecasted to operate over capacity. This is contributed by firstly, the reduction of traffic lane for future BRT, secondly, background growth/ development (424 trips), and, lastly, site trips (236 trips). To alleviate the constraints at this intersection, an alternative connection is proposed to divert the site trips by providing a connecting bridge to neighbouring development. The scenario is reviewed under the Scenario 2 Analysis in **Section 0**.

6.3.5 Coram Avenue / Treadwells Drive & Dundas Street East

The results of the intersection capacity analysis for Coram Avenue / Treadwells Drive and Dundas Street East are summarized in **Table 6-15**.

Table 6-15: Coram Avenue/Treadwells Drive & Dundas Street East – Synchro Results – 2033 Scenario 1

AM	Future Background 2033 Scenario 1				Future Total 2033 Scenario 1			
Mvmt	Vol	V/C	Delay (s)	LOS	Vol	V/C	Delay (s)	LOS
overall	-	0.45	22	C	-	0.50	23	C
EBL	23	0.53	102	F	23	0.53	93	F
EBTR	1066	0.58	20	C	1219	0.66	23	C
WBL	10	0.48	101	F	10	0.48	100	F
WBTR	917	0.51	17	B	953	0.53	18	B
NBLTR	40	0.11	62	E	40	0.11	62	E
SBLT	23	0.11	62	E	23	0.11	62	E
SBR	24	0.02	61	E	24	0.02	61	E
PM	Future Background 2033 Scenario 1				Future Total 2033 Scenario 1			
Mvmt	Vol	V/C	Delay (s)	LOS	Vol	V/C	Delay (s)	LOS
overall	-	0.64	33	C	-	0.69	41	D
EBL	36	0.54	71	E	36	0.54	63	E
EBTR	1293	0.66	33	C	1335	0.68	39	D
WBL	8	0.80	251	F	8	0.80	247	F
WBTR	**1659**	**0.90**	**30**	**C**	**1801**	**0.98**	**40**	**D**
NBLTR	43	0.03	62	E	43	0.03	62	E
SBLT	16	0.08	62	E	16	0.08	62	E
SBR	5	0.00	61	E	5	0.00	61	E

AM and PM Peak Hours: The intersection operates at acceptable levels of service under existing and future conditions, with the exception of the WBTR movement operating close to capacity during the PM peak hour. However, it should be noted that the V/C ratios are below 1.00, indicating the movement is operating within capacity.

6.3.6 Wharton Way & Dundas Street East

The results of the intersection capacity analysis for Wharton Way and Dundas Street East are summarized in **Table 6-16**.

Table 6-16: Wharton Way & Dundas Street East – Synchro Results – 2033 Scenario 1

AM	Future Background 2033 Scenario 1				Future Total 2033 Scenario 1			
Mvmt	Vol	V/C	Delay (s)	LOS	Vol	V/C	Delay (s)	LOS
overall	-	0.50	21	C	-	0.55	21	C
EBL	97	0.68	97	F	97	0.68	94	F
EBTR	902	0.43	2	A	1055	0.50	4	A
WBL	72	0.61	79	E	80	0.64	80	E
WBTR	881	0.43	13	B	917	0.45	13	B
NBL	34	0.31	67	E	34	0.31	67	E
NBTR	63	0.09	64	E	63	0.09	64	E
SBL	82	0.70	85	F	82	0.70	85	F
SBTR	62	0.12	64	E	62	0.12	64	E
PM	Future Background 2033 Scenario 1				Future Total 2033 Scenario 1			
Mvmt	Vol	V/C	Delay (s)	LOS	Vol	V/C	Delay (s)	LOS
overall	-	0.61	22	C	-	0.67	24	C
EBL	59	0.62	100	F	59	0.62	102	F
EBTR	1179	0.51	6	A	1221	0.58	10	A
WBL	46	0.55	80	F	103	0.57	70	E
WBTR	1343	0.58	14	B	1485	0.65	15	B
NBL	66	0.73	92	F	66	0.73	92	F
NBTR	92	0.09	62	E	92	0.09	62	E
SBL	107	0.77	89	F	107	0.77	89	F
SBTR	163	0.17	62	E	163	0.21	63	E

AM and PM Peak Hours: The intersection operates at acceptable levels of service under existing and future conditions, with no critical movements identified.

6.4 SIGNALIZED INTERSECTIONS – 2033 SCENARIO 2

The following sections will compare the performance of the Future Total 2033 Scenario 1 (without Blundell Bridge Extension) to the Future Total 2033 Scenario 2 (with Blundell Bridge Extension). Please note that the FT 2033 Scenario 1 results are repeated from **Section 6.3** to provide a side-by-side comparison.

6.4.1 Dixie Road & Dundas Street East

The two Future Total 2033 scenarios results of the intersection capacity analysis for Dixie Road and Dundas Street East are summarized in **Table 6-17**.

Table 6-17: Dixie Road & Dundas Street East – Synchro Results – FT 2033 Scenarios 1 & 2

AM	Future Total 2033 Scenario 1				Future Total 2033 Scenario 2			
Mvmt	Vol	V/C	Delay (s)	LOS	Vol	V/C	Delay (s)	LOS
overall	-	0.96	68	E	-	0.93	66	E
EBL	156	0.97	129	F	156	0.97	129	F
EBTR	954	0.93	67	E	955	0.90	62	E
WBL	183	0.97	143	F	148	0.85	115	F
WBTR	949	0.88	43	D	914	0.85	41	D
NBL	142	0.61	45	D	142	0.61	45	D
NBTR	1049	0.98	82	F	1069	1.00	86	F
SBL	431	0.97	101	F	420	0.95	95	F
SBT	860	0.57	46	D	871	0.58	46	D
SBR	177	0.23	41	D	177	0.23	41	D
PM	Future Total 2033 Scenario 1				Future Total 2033 Scenario 2			
Mvmt	Vol	V/C	Delay (s)	LOS	Vol	V/C	Delay (s)	LOS
overall	-	1.24	126	F	-	1.20	115	F
EBL	192	1.34	263	F	192	1.34	263	F
EBTR	1012	0.88	58	E	1011	0.87	57	E
WBL	235	0.97	123	F	211	0.91	114	F
WBTR	1608	1.23	145	F	1565	1.20	132	F
NBL	248	0.97	95	F	248	0.97	95	F
NBTR	1285	1.16	142	F	1281	1.15	140	F
SBL	541	1.40	262	F	475	1.23	192	F
SBT	939	0.83	65	E	1005	0.89	69	E
SBR	286	0.54	60	E	286	0.56	62	E

AM Peak Hour: With the proposed bridge, the performance of the signalized intersection at Dixie Road & Dundas Street E is improved with an overall reduced V/C ratio 0.93, delay time of 66 sec and LOS of E under the Scenario 2 Analysis during AM Peak, under future conditions. Traffic to the southwest is diverted, hence the WBL & WBTR movements were improved in terms of the V/C ratio and the delay times. All movements are operating at or below capacity, with the NBTR movement operating at capacity.

PM Peak Hour: During the PM peak hour, the performance of the intersection is improved with an overall reduced v/c ratio of 1.20, delay time of 115 sec and LOS of F under the scenario 2 analysis. With the proposed bridge, all critical movements are anticipated to improve. Additionally, part of the traffic at SBL is diverted to SBT to access to the bridge. As such, the SBL movement is greatly improved from V/C ratio of 1.40 to 1.23 and the delay time is reduced from 262 seconds to 192 seconds. The proposed bridge diverts part of the traffic and helps alleviate the constraints at the intersection.

6.4.2 Neilco Court & Dundas Street East

The results of the intersection capacity analysis for Neilco Court and Dundas Street East are summarized in **Table 6-18**.

Table 6-18: Neilco Court & Dundas Street East – Synchro Results – FT 2033 Scenarios 1 & 2

AM	Future Total 2033 Scenario 1				Future Total 2033 Scenario 2			
Mvmt	Vol	V/C	Delay (s)	LOS	Vol	V/C	Delay (s)	LOS
overall	-	0.55	7	A	-	0.57	8	A
EBL	6	0.67	138	F	6	0.67	143	F
EBTR	1465	0.62	7	A	1440	0.61	7	A
WBL	10	0.44	118	F	10	0.44	116	F
WBTR	1171	0.50	3	A	1072	0.45	3	A
NBL	21	0.13	63	E	50	0.33	65	E
NBTR	18	0.02	62	E	18	0.02	62	E
SBL	21	0.14	63	E	21	0.14	63	E
SBTR	19	0.03	62	E	19	0.03	62	E
PM	Future Total 2033 Scenario 1				Future Total 2033 Scenario 2			
Mvmt	Vol	V/C	Delay (s)	LOS	Vol	V/C	Delay (s)	LOS
overall	-	0.79	23	C	-	0.78	22	C
EBL	75	0.68	62	E	75	0.68	64	E
EBTR	1576	0.71	23	C	1463	0.67	20	C
WBL	50	0.72	110	F	50	0.72	111	F
WBTR	1835	0.86	12	B	1753	0.83	12	B
NBL	122	0.57	64	E	137	0.64	67	E
NBTR	111	0.29	58	E	111	0.28	57	E
SBL	52	0.28	58	E	52	0.28	58	E
SBTR	78	0.11	56	E	78	0.11	55	E

AM and PM Peak Hours: The intersection operates at acceptable levels of service with or without the bridge connection, with no critical movements identified.

6.4.3 Jarrow Avenue & Dundas Street East

The results of the intersection capacity analysis for Jarrow Avenue and Dundas Street East are summarized in **Table 6-19**.

Table 6-19: Jarrow Avenue & Dundas Street East – Synchro Results – FT 2033 Scenarios 1 & 2

AM	Future Total 2033 Scenario 1				Future Total 2033 Scenario 2			
Mvmt	Vol	V/C	Delay (s)	LOS	Vol	V/C	Delay (s)	LOS
overall	-	0.67	27	C	-	0.68	28	C
EBL	63	0.59	78	E	63	0.59	78	E
EBTR	1315	0.71	20	B	1278	0.69	19	B
WBL	177	0.81	84	F	177	0.81	83	F
WBTR	1067	0.52	15	B	944	0.46	15	B
NBL	74	0.39	62	E	98	0.52	64	E
NBTR	147	0.12	59	E	147	0.12	58	E
SBLT	22	0.18	60	E	22	0.18	59	E
SBR	27	0.02	57	E	27	0.02	57	E
PM	**Future Total 2033 Scenario 1**				**Future Total 2033 Scenario 2**			
Mvmt	Vol	V/C	Delay (s)	LOS	Vol	V/C	Delay (s)	LOS
overall	-	0.95	48	D	-	0.92	40	D
EBL	31	0.61	103	F	31	0.61	105	F
EBTR	1511	1.06	65	E	1376	0.98	44	D
WBL	282	0.85	90	F	282	0.86	94	F
WBTR	1614	0.80	17	B	1517	0.76	16	B
NBL	224	0.84	80	E	239	0.88	84	F
NBTR	312	0.34	53	D	312	0.32	52	D
SBLT	59	0.45	56	E	59	0.42	55	D
SBR	82	0.06	49	D	82	0.06	48	D

AM and PM Peak Hours: The intersection operates at acceptable levels of service with the implementation of the bridge connection, with an improved EBTR V/C ratio of 1.06 to 0.98 during the PM peak hour.

6.4.4 Mattawa Avenue & Dundas Street East

The results of the intersection capacity analysis for Mattawa Avenue and Dundas Street East are summarized in **Table 6-20**.

Table 6-20: Mattawa Avenue & Dundas Street East – Synchro Results – FT 2033 Scenarios 1 & 2

AM	Future Total 2033 Scenario 1				Future Total 2033 Scenario 2			
Mvmt	Vol	V/C	Delay (s)	LOS	Vol	V/C	Delay (s)	LOS
overall	-	0.84	26	C	-	0.71	20	B
EBL	2	0.20	118	F	2	0.15	103	F
EBTR	1338	0.82	20	B	1291	0.69	11	B
WBL	68	0.66	97	F	67	0.54	101	F
WBTR	900	0.49	6	A	900	0.42	4	A
NBL	**363**	**0.92**	**79**	**E**	240	0.84	78	E
NBTR	166	0.28	42	D	166	0.35	53	D
SBLT	1	0.00	38	D	1	0.00	48	D
SBR	0	0.00	0		0	0.00	0	
PM	**Future Total 2033 Scenario 1**				**Future Total 2033 Scenario 2**			
Mvmt	Vol	V/C	Delay (s)	LOS	Vol	V/C	Delay (s)	LOS
overall	**-**	**1.08**	**52**	**D**	**-**	**0.92**	**26**	**C**
EBL	9	0.90	218	F	9	0.90	239	F
EBTR	**1613**	**1.10**	**62**	**E**	**1460**	**0.94**	**19**	**B**
WBL	**257**	**0.97**	**103**	**F**	**257**	**0.91**	**92**	**F**
WBTR	1405	0.67	9	A	1405	0.64	6	A
NBL	**345**	**1.11**	**143**	**F**	**248**	**0.90**	**90**	**F**
NBTR	172	0.12	47	D	173	0.12	50	D
SBLT	8	0.02	45	D	8	0.02	49	D
SBR	4	0.00	45	D	4	0.00	49	D

AM and PM Peak Hours: As this intersection is the vehicular access of the project development, the proposed bridge diverts the traffic from EBTR and NBL of this intersection. The overall performance of the intersection is significantly improved in both AM and PM peak. All movements are expected to operate acceptably and within capacity with the implementation of the bridge connection.

6.4.5 Coram Avenue / Treadwells Drive & Dundas Street East

The results of the intersection capacity analysis for Coram Avenue / Treadwells Drive and Dundas Street East are summarized in **Table 6-21**.

Table 6-21: Coram Avenue/Treadwells Drive & Dundas Street East – Synchro Results – FT 2033 Scenarios 1 & 2

AM	Future Total 2033 Scenario 1				Future Total 2033 Scenario 2			
Mvmt	Vol	V/C	Delay (s)	LOS	Vol	V/C	Delay (s)	LOS
overall	-	0.50	23	C	-	0.50	23	C
EBL	23	0.53	93	F	23	0.53	100	F
EBTR	1219	0.66	23	C	1219	0.66	22	C
WBL	10	0.48	100	F	10	0.48	101	F
WBTR	953	0.53	18	B	952	0.53	18	B
NBLTR	40	0.11	62	E	40	0.11	62	E
SBLT	23	0.11	62	E	23	0.11	62	E
SBR	24	0.02	61	E	24	0.02	61	E

PM	Future Total 2033 Scenario 1				Future Total 2033 Scenario 2			
Mvmt	Vol	V/C	Delay (s)	LOS	Vol	V/C	Delay (s)	LOS
overall	-	0.69	41	D	-	0.69	40	D
EBL	36	0.54	63	E	36	0.54	65	E
EBTR	1335	0.68	39	D	1336	0.68	38	D
WBL	8	0.80	247	F	8	0.80	247	F
WBTR	1801	0.98	40	D	1801	0.98	40	D
NBLTR	43	0.03	62	E	43	0.03	62	E
SBLT	16	0.08	62	E	16	0.08	62	E
SBR	5	0.00	61	E	5	0.00	61	E

AM and PM Peak Hours: As the proposed bridge diverts the traffic to/from the west, no traffic is diverted at this intersection at Coram Avenue/ Treadwells Drive/ Dundas Street E. Therefore, the conclusions remain the same between the 2033 Future Total scenarios.

6.4.6 Wharton Way & Dundas Street East

The results of the intersection capacity analysis for Wharton Way and Dundas Street East are summarized in **Table 6-22**.

Table 6-22: Wharton Way & Dundas Street E – Synchro Results – FT 2033 Scenarios 1 & 2

AM	Future Total 2033 Scenario 1				Future Total 2033 Scenario 2			
Mvmt	Vol	V/C	Delay (s)	LOS	Vol	V/C	Delay (s)	LOS
overall	-	0.55	21	C	-	0.55	21	C
EBL	97	0.68	94	F	97	0.68	96	F
EBTR	1055	0.50	4	A	1055	0.50	4	A
WBL	80	0.64	80	E	80	0.64	80	E
WBTR	917	0.45	13	B	916	0.45	13	B
NBL	34	0.31	67	E	34	0.31	67	E
NBTR	63	0.09	64	E	63	0.09	64	E
SBL	82	0.70	85	F	82	0.70	85	F
SBTR	62	0.12	64	E	62	0.12	64	E
PM	Future Total 2033 Scenario 1				Future Total 2033 Scenario 2			
Mvmt	Vol	V/C	Delay (s)	LOS	Vol	V/C	Delay (s)	LOS
overall	-	0.67	24	C	-	0.67	24	C
EBL	59	0.62	102	F	59	0.62	101	F
EBTR	1221	0.58	10	A	1222	0.58	10	A
WBL	103	0.57	70	E	103	0.57	70	E
WBTR	1485	0.65	15	B	1485	0.65	15	B
NBL	66	0.73	92	F	66	0.73	92	F
NBTR	92	0.09	62	E	92	0.09	62	E
SBL	107	0.77	89	F	107	0.77	89	F
SBTR	163	0.21	63	E	163	0.21	63	E

AM and PM Peak Hours: As the proposed bridge diverts the traffic to/from the west, no traffic is diverted at this intersection at Wharton Way / Dundas Street East. Therefore, the conclusions remain the same between 2033 Future Total scenarios.

6.5 UNSIGNALIZED INTERSECTION

Existing & 2028:

Table 6-23 will analyse the performance of the unsignalized intersection for the 2028 scenario.

Table 6-23: 1650 Dundas Street/Nawbrook Road & Dundas Street East - Synchro Results – Existing & 2028

AM	Existing 2023					Future Background 2028					Future Total 2028				
Mvmt	Vol	V/C	Delay (s)	LOS	95th Queue	Vol	V/C	Delay (s)	LOS	95th Queue	Vol	V/C	Delay (s)	LOS	95th Queue
EBL	15	0.02	9	A	0	15	0.02	9	A	0	15	0.02	9	A	0
WBL	1	0.00	10	A	0	1	0.00	10	A	0	0	0.00	0		0
NBLTR	2	0.00	13	B	0	2	0.00	13	B	0	0	0.00	0	A	0
SBLTR	22	0.03	10	A	1	22	0.03	10	A	1	22	0.03	10	A	1
PM	Existing 2023					Future Background 2028					Future Total 2028				
Mvmt	Vol	V/C	Delay (s)	LOS	95th Queue	Vol	V/C	Delay (s)	LOS	95th Queue	Vol	V/C	Delay (s)	LOS	95th Queue
EBL	25	0.03	10	B	1	25	0.03	10	B	1	25	0.04	10	B	1
WBL	9	0.01	10	A	0	9	0.01	9	A	0	0	0.00	0		0
NBLTR	18	0.03	11	B	1	18	0.02	10	A	1	0	0.00	0	A	0
SBLTR	18	0.02	10	B	1	18	0.02	10	B	1	18	0.02	10	A	1

AM and PM Peak Hours: The intersection operates at acceptable levels of service under existing and future conditions, with no critical movements identified.

2033 Scenario 1:

Table 6-24 will analyse the performance of the unsignalized intersection for the 2033 Scenario 1.

Table 6-24: 1650 Dundas Street/Nawbrook Road & Dundas Street East - Synchro Results – 2033 Scenario 1

AM	Future Background 2033 Scenario 1					Future Total 2033 Scenario 1				
Mvmt	Vol	V/C	Delay (s)	LOS	95th Queue	Vol	V/C	Delay (s)	LOS	95th Queue
EBT	772	0.45	0		0	879	0.52	0		0
NBR	1	0.00	10	A	0	0	0.00	0	A	0
SBR	19	0.02	9	A	1	19	0.02	9	A	1
PM	Future Background 2033 Scenario 1					Future Total 2033 Scenario 1				
Mvmt	Vol	V/C	Delay (s)	LOS	95th Queue	Vol	V/C	Delay (s)	LOS	95th Queue
EBT	941	0.55	0		0	979	0.58	0		0
NBR	14	0.02	10	A	1	0	0.00	0	A	0
SBR	16	0.03	11	B	1	16	0.03	13	B	1

AM and PM Peak Hours: The intersection operates at acceptable levels of service under existing and future conditions, with no critical movements identified.

2033 Scenario 2:

Table 6-25 will analyse the performance of the unsignalized intersection for the 2033 Scenario 2. Please note that the FT 2033 Scenario 1 results are repeated from **Section 6.3** to provide a side-by-side comparison.

Table 6-25: 1650 Dundas Street/Nawbrook Road & Dundas Street East - Synchro Results – 2033 Scenario 2

AM	Future Total 2033 Scenario 1					Future Total 2033 Scenario 2				
Mvmt	Vol	V/C	Delay (s)	LOS	95th Queue	Vol	V/C	Delay (s)	LOS	95th Queue
EBT	879	0.52	0		0	879	0.52	0		0
NBR	0	0.00	0	A	0	0	0.00	0	A	0
SBR	19	0.02	9	A	1	19	0.02	9	A	1
PM	Future Total 2033 Scenario 1					Future Total 2033 Scenario 2				
Mvmt	Vol	V/C	Delay (s)	LOS	95th Queue	Vol	V/C	Delay (s)	LOS	95th Queue
EBT	979	0.58	0		0	981	0.58	0		0
NBR	0	0.00	0	A	0	0	0.00	0	A	0
SBR	16	0.03	13	B	1	16	0.03	13	B	1

AM and PM Peak Hours: The intersection operates at acceptable levels of service under existing and future conditions, with no critical movements identified.

7 QUEUE ANALYSIS

The following sections will analyse the available and Synchro queues of signalized intersections for all horizon years.

7.1 QUEUE ANALYSIS – EXISTING & 2028

In order to determine whether sufficient storage lengths are available at the signalized intersection to accommodate existing, future background, and future total (2028, and 2033) queues, a queue analysis was conducted using Synchro 11.0, which is based on the Highway Capacity Manual (2000) methodology.

7.1.1 Dixie Road & Dundas Street East

The results of the queue analysis for Dixie Road and Dundas Street East are summarized in **Table 7-1**.

Table 7-1: Dixie Road & Dundas Street East – Queue Analysis – Existing & 2028

AM	Storage	Existing 2023		Future Background 2028		Future Total 2028	
Mvmt		50th Queue	95th Queue	50th Queue	95th Queue	50th Queue	95th Queue
EBL	90	32	48	32	48	32	48
EBTR	-	97	112	103	119	107	123
WBL	170	30	53	31	53	53	87
WBT	-	66	103	69	106	92	130
WBR	98	21	64	22	63	42	**113**
NBL	100	28	44	28	44	28	44
NBTR	-	116	134	123	143	128	147
SBL	135	69	98	69	93	79	113
SBT	-	82	96	86	101	86	101
SBR	125	8	28	9	30	9	30
PM	Storage	Existing 2023		Future Background 2028		Future Total 2028	
Mvmt		50th Queue	95th Queue	50th Queue	95th Queue	50th Queue	95th Queue
EBL	90	38	77	38	83	38	78
EBTR	-	99	119	105	125	113	130
WBL	170	55	81	58	84	68	96
WBT	-	156	181	165	190	164	188
WBR	98	**125**	**191**	**130**	**190**	**147**	**217**
NBL	100	53	86	53	93	53	93
NBTR	-	136	155	147	177	158	194
SBL	135	79	116	79	111	110	**149**
SBT	-	97	113	102	119	102	119
SBR	125	25	58	27	60	27	60

AM Peak Hour: During the AM Peak hour, no queueing issues are expected at the intersection of Dixie Road & Dundas Street East, except for the WBR movement under the future total scenario, where the 95th percentile queue is expected to exceed the storage capacity by 15m (approximately 3 vehicles). However, it should be noted that the 50th queue, which better represents the average queue, presents no queueing issues.

PM Peak Hour: During the PM Peak hour, no queueing issue is expected at this intersection, except for the WBR and SBL movements. For SBL, the 95th percentiles are exceeding its storage capacity by about 14m (approximately 3 vehicles), which is minimal. However, the 50th queue presents no queueing issues. Lastly, for the WBR movement, the 50th and 95th traffic queues exceed the available storage in all scenarios analyzed,

including the existing scenario. The impact of the subject site on the 95th queue is about 26m (approximately 5 vehicles) in the worst-case scenario.

7.1.2 Neilco Court & Dundas Street East

The results of the queue analysis for Neilco Court and Dundas Street East are summarized in **Table 7-2**.

Table 7-2: Neilco Court & Dundas Street East – Queue Analysis – Existing & 2028

AM	Storage	Existing 2023		Future Background 2028		Future Total 2028	
Mvmt		50th Queue	95th Queue	50th Queue	95th Queue	50th Queue	95th Queue
EBL	40	0	2	0	1	0	1
EBT	-	104	136	110	142	118	161
EBR	270	5	18	4	18	3	15
WBL	30	0	2	0	2	0	0
WBT	-	77	101	77	113	89	126
WBR	140	0	1	0	1	0	0
NBL	35	7	14	7	14	7	14
NBTR	-	0	8	0	8	0	8
SBL	30	7	14	7	14	7	14
SBTR		1	9	1	9	1	9
PM		Existing 2023		Future Background 2028		Future Total 2028	
Mvmt	Storage	50th Queue	95th Queue	50th Queue	95th Queue	50th Queue	95th Queue
EBL	40	7	17	6	16	4	12
EBT	-	82	106	90	116	102	118
EBR	270	10	25	9	26	6	16
WBL	30	10	23	9	23	10	22
WBT	-	176	231	185	242	189	254
WBR	140	16	35	15	38	15	34
NBL	35	**41**	**57**	**41**	**57**	**41**	**57**
NBTR	-	24	39	24	39	24	39
SBL	30	16	28	16	28	16	28
SBTR		7	20	7	20	7	20

AM and PM Peak Hour: During the AM and PM peak hours, the intersection at Neilco Court and Dundas Street East is expected to have no queueing issues for any movements, with the exception of the NBL movement during the PM peak hour. The 50th queue is anticipated to exceed the available storage by 6m (approximately 1 vehicle), with no change between exiting and future total conditions. All in all, the subject site will have a minimal impact to queue for this intersection.

7.1.3 Jarrow Avenue & Dundas Street East

The results of the queue analysis for Jarrow Avenue and Dundas Street East are summarized in **Table 7-3**.

Table 7-3: Jarrow Avenue & Dundas Street East – Queue Analysis – Existing & 2028

AM	Storage	Existing 2023		Future Background 2028		Future Total 2028	
Mvmt		50th Queue	95th Queue	50th Queue	95th Queue	50th Queue	95th Queue
EBL	50	1	3	1	3	1	4
EBT	-	8	15	9	16	11	19
EBR	140	0	0	0	0	0	0
WBL	50	34	**81**	32	**75**	27	**55**
WBT	-	56	91	55	90	65	100
WBR	210	1	8	1	10	0	5
NBL	100	24	36	24	36	24	36
NBTR	-	2	20	2	20	7	26
SBLT	-	6	12	7	14	7	14
SBR	10	0	7	0	9	0	9
PM	Storage	Existing 2023		Future Background 2028		Future Total 2028	
Mvmt		50th Queue	95th Queue	50th Queue	95th Queue	50th Queue	95th Queue
EBL	50	1	5	2	7	3	10
EBT	-	35	52	41	57	66	92
EBR	140	0	1	0	1	0	9
WBL	50	28	27	34	43	31	**57**
WBT	-	153	105	168	174	173	186
WBR	210	0	0	1	3	1	3
NBL	100	77	106	77	106	77	106
NBTR	-	13	44	16	47	27	59
SBLT	-	12	23	18	34	18	34
SBR	10	0	13	7	21	9	24

AM Peak Hour: During AM Peak hour, no queueing issues are expected at this intersection, except for the WBL movement during the worst-case scenario. The 95th percentile queue exceeds the storage capacity by 38m (approximately 8 vehicles); however, it should be noted that the 50th queues do not exceed the available storage.

PM Peak Hour: During PM Peak hour, no queue issues are expected, except for WBL, and NBL movements. The 95th percentile queue exceeds the storage capacity; however, it should be noted that the 50th queues do not exceed the available storage. For WBL and NBL, no additional site generated traffic is added to these movements between Future Background and Total conditions. Therefore, the impact induced by the subject site is considered negligible. The WBL traffic queue could also utilize the existing Two-way Left-Turn Lane (TWLTL) to extend the storage.

7.1.4 Mattawa Avenue & Dundas Street East

The results of the queue analysis for Mattawa Avenue and Dundas Street East are summarized in **Table 7-4**.

Table 7-4: Mattawa Avenue & Dundas Street East – Queue Analysis – Existing & 2028

AM	Storage	Existing 2023		Future Background 2028		Future Total 2028	
Mvmt		50th Queue	95th Queue	50th Queue	95th Queue	50th Queue	95th Queue
overall		-	-	-	-	-	-
EBL	40	0	1	0	1	0	1
EBT	-	67	158	85	156	142	165
EBR	210	7	29	7	17	19	43
WBL	50	1	3	1	4	5	8
WBT	-	15	21	20	30	26	30
WBR	70	0	0	0	0	0	0
NBL	135	13	22	13	22	122	**189**
NBTR	-	0	0	0	0	8	30
SBLT	-	0	2	0	2	0	2
SBR	15	0	0	0	0	0	0
PM	**Storage**	**Existing 2023**		**Future Background 2028**		**Future Total 2028**	
Mvmt		50th Queue	95th Queue	50th Queue	95th Queue	50th Queue	95th Queue
overall		-	-	-	-	-	-
EBL	40	1	4	1	5	2	5
EBT	-	62	128	123	189	154	193
EBR	210	3	24	9	34	52	102
WBL	50	1	1	6	12	43	**86**
WBT	-	5	6	57	80	56	92
WBR	70	0	0	0	0	0	0
NBL	135	79	120	79	107	118	**186**
NBTR	-	0	16	0	15	0	20
SBLT	-	2	7	2	7	2	7
SBR	15	0	0	0	0	0	0

AM Peak Hour: During AM Peak hour, no queueing issues are expected at this intersection, except for the NBL movement during the worst-case scenario. The 95th percentile queue exceeds the storage capacity by 54m (approximately 8 vehicles); however, it should be noted that the 50th queues do not exceed the available storage.

PM Peak Hour: During PM Peak hour, no queue issues are expected, except for WBL, and NBL movements. The NBL and WBL movements provides sufficient storage to accommodate the 50th queues. The WBL traffic queue could utilize the existing Two-way Left-Turn Lane (TWLTL) to extend the storage, given the 50th queue storage is exceeded by 20m (approximately 3 vehicles).

7.1.5 Coram Avenue/ Treadwells Drive & Dundas Street East

The results of the queue analysis for Coram Avenue/ Treadwells Drive and Dundas Street East are summarized in **Table 7-5**.

Table 7-5: Coram Avenue/Treadwells Drive & Dundas Street East – Queue Analysis – Existing & 2028

AM	Storage	Existing 2023		Future Background 2028		Future Total 2028	
Mvmt		50th Queue	95th Queue	50th Queue	95th Queue	50th Queue	95th Queue
overall		-	-	-	-	-	-
EBL	25	1	1	1	1	0	1
EBT	-	132	19	129	169	15	194
EBR	150	0	0	0	1	0	0
WBL	30	1	3	1	3	1	3
WBT	-	35	43	36	45	37	46
WBR	340	0	0	0	0	0	0
NBLTR	-	6	18	6	18	6	18
SBLT	-	7	15	7	15	7	15
SBR	20	0	0	0	0	0	0
PM	Storage	Existing 2023		Future Background 2028		Future Total 2028	
Mvmt		50th Queue	95th Queue	50th Queue	95th Queue	50th Queue	95th Queue
overall		-	-	-	-	-	-
EBL	25	2	2	0	1	0	1
EBT	-	65	35	6	12	10	20
EBR	150	1	0	0	0	0	0
WBL	30	1	2	1	2	1	1
WBT	-	48	199	50	213	53	248
WBR	340	0	0	0	0	0	0
NBLTR	-	0	3	0	3	0	3
SBLT	-	5	12	5	12	5	12
SBR	20	0	0	0	0	0	0

AM and PM Peak Hour: During the AM and PM peak hours, the intersection at Coram Avenue and Dundas Street East is expected to have no queueing issues for turning movements.

7.1.6 Wharton Way & Dundas Street East

The results of the queue analysis for Wharton Way and Dundas Street East are summarized in **Table 7-6**.

Table 7-6: Wharton Way & Dundas Street East – Queue Analysis – Existing & 2028

AM		Existing 2023		Future Background 2028		Future Total 2028	
Mvmt	Storage	50th Queue	95th Queue	50th Queue	95th Queue	50th Queue	95th Queue
overall		-	-	-	-	-	-
EBL	50	1	2	2	2	2	2
EBT	-	14	6	15	9	19	10
EBR	80	0	0	0	0	0	0
WBL	110	4	10	4	10	5	11
WBT	-	37	58	39	61	41	65
WBR	50	1	8	1	8	2	9
NBL	40	12	23	12	23	12	23
NBTR	-	2	18	2	18	2	18
SBL	45	29	47	29	47	29	47
SBTR	-	4	19	4	19	4	19
PM	Storage	Existing 2023		Future Background 2028		Future Total 2028	
Mvmt		50th Queue	95th Queue	50th Queue	95th Queue	50th Queue	95th Queue
overall		-	-	-	-	-	-
EBL	50	7	8	5	4	3	4
EBT	-	58	43	44	23	29	35
EBR	80	1	2	1	0	0	0
WBL	110	3	7	3	7	6	14
WBT	-	71	107	77	115	92	137
WBR	50	0	4	0	4	0	4
NBL	40	22	39	22	39	22	39
NBTR	-	2	19	2	19	2	19
SBL	45	36	**57**	36	**57**	36	**57**
SBTR	-	3	25	3	25	3	25

AM and PM Peak Hour: During the AM and PM peak hours, the intersection at Wharton Way and Dundas Street East is expected to have no queueing issues for any movements, with the exception of the SBL movement during both peak hours. However, it should be noted that the 50th queues can be accommodated within the available storage.

7.2 QUEUE ANALYSIS – 2033 SCENARIO 1

7.2.1 Dixie Road & Dundas Street East

The results of the queue analysis for Dixie Road and Dundas Street East are summarized in **Table 7-7**.

Table 7-7: Dixie Road & Dundas Street East – Queue Analysis – 2033 Scenario 1

AM		Future Background 2033 Scenario 1		Future Total 2033 Scenario 1	
Mvmt	Storage	50th Queue	95th Queue	50th Queue	95th Queue
EBL	90	56	**107**	56	**107**
EBTR	-	158	203	171	214
WBL	170	38	64	67	124
WBTR	-	81	67	120	92
NBL	100	30	47	30	47
NBTR	-	131	161	135	168
SBL	135	69	97	80	117
SBT	-	94	111	94	111
SBR	125	13	36	13	36
PM		Future Background 2033 Scenario 1		Future Total 2033 Scenario 1	
Mvmt	Storage	50th Queue	95th Queue	50th Queue	95th Queue
EBL	90	86	**141**	86	**141**
EBTR	-	162	192	170	201
WBL	170	71	95	82	115
WBTR	-	333	222	349	233
NBL	100	69	**128**	69	**128**
NBTR	-	170	201	187	219
SBL	135	91	129	128	**167**
SBT	-	114	132	114	132
SBR	125	37	74	37	74

AM and PM Peak Hour: During the AM and PM peak hours, the intersection at Dixie Road and Dundas Street East is expected to have no queueing issues for any movements, except for the EBL movement during the AM peak hour, and the EBL, NBL and SBL movements during the PM peak hour. The 50th queues for all movements are anticipated to be within the available storage, indicating the average queues can be accommodated.

7.2.2 Neilco Court & Dundas Street East

The results of the queue analysis for Neilco Court and Dundas Street East are summarized in **Table 7-8**.

Table 7-8: Neilco Court & Dundas Street East – Queue Analysis – 2033 Scenario 1

AM	Storage	Future Background 2033 Scenario 1		Future Total 2033 Scenario 1	
Mvmt		50th Queue	95th Queue	50th Queue	95th Queue
EBL	40	2	3	2	2
EBTR	-	47	72	63	81
WBL	30	4	11	4	8
WBTR	-	15	22	15	22
NBL	35	7	14	7	14
NBTR	-	0	8	0	8
SBL	30	7	14	7	14
SBTR	-	1	9	1	9
PM	Storage	Future Background 2033 Scenario 1		Future Total 2033 Scenario 1	
Mvmt		50th Queue	95th Queue	50th Queue	95th Queue
EBL	40	26	29	26	26
EBTR	-	118	119	151	139
WBL	30	18	25	18	24
WBTR	-	48	177	48	192
NBL	35	**41**	**57**	**41**	**57**
NBTR	-	24	39	24	39
SBL	30	16	28	16	28
SBTR	-	7	20	7	20

AM and PM Peak Hour: During the AM and PM peak hours, the intersection at Neilco Court and Dundas Street East is expected to have no queueing issues for any movements, with the exception of the NBL movement during the PM peak hour. The 50th queue is anticipated to exceed the available storage by 6m (approximately 1 vehicle), with no change between exiting and future total conditions. All in all, the subject site will have a minimal impact to queues for this intersection.

7.2.3 Jarrow Avenue & Dundas Street East

The results of the queue analysis for Jarrow Avenue and Dundas Street East are summarized in **Table 7-9**.

Table 7-9: Jarrow Avenue & Dundas Street East – Queue Analysis – 2033 Scenario 1

AM	Storage	Future Background 2033 Scenario 1		Future Total 2033 Scenario 1	
Mvmt		50th Queue	95th Queue	50th Queue	95th Queue
EBL	50	23	42	23	39
EBTR	-	107	72	128	195
WBL	50	**62**	**101**	**60**	**92**
WBTR	-	30	90	64	152
NBL	100	24	36	24	36
NBTR	-	2	20	2	20
SBLT	-	7	14	7	14
SBR	10	0	0	0	0
PM	Storage	Future Background 2033 Scenario 1		Future Total 2033 Scenario 1	
Mvmt		50th Queue	95th Queue	50th Queue	95th Queue
EBL	50	12	20	12	17
EBTR	-	177	276	310	352
WBL	50	**103**	**174**	**101**	**161**
WBTR	-	75	200	92	208
NBL	100	77	**105**	77	**105**
NBTR	-	12	41	15	45
SBLT	-	18	33	18	33
SBR	10	0	12	0	12

AM Peak Hour: During AM Peak hour, no queueing issues are expected at this intersection, except for the WBL movement during the worst-case scenario. The 95th percentile queue exceeds the storage capacity by 42m (approximately 8 vehicles); however, it should be noted that the 50th queues exceed the available storage by 10m (approximately 2 vehicles). Therefore, the impact induced by the subject site is considered negligible. Additionally, the traffic queue could also utilize the existing Two-way Left-Turn Lane (TWLTL) to extend the storage.

PM Peak Hour: During PM Peak hour, no queue issues are expected, except for WBL, and NBL movements. For WBL and NBL, no additional site generated traffic is added to these movements between Future Background and Total conditions. Therefore, the impact induced by the subject site is considered negligible. The WBL traffic queue could also utilize the existing Two-way Left-Turn Lane (TWLTL) to extend the storage, while the NBL movement's 50th queue can be accommodated in the existing storage lane.

7.2.4 Mattawa Avenue & Dundas Street East

The results of the queue analysis for Mattawa Avenue and Dundas Street East are summarized in **Table 7-10**.

Table 7-10: Mattawa Avenue & Dundas Street East – Queue Analysis – 2033 Scenario 1

AM	Storage	Future Background 2033 Scenario 1		Future Total 2033 Scenario 1	
Mvmt		50th Queue	95th Queue	50th Queue	95th Queue
EBL	40	1	1	1	1
EBTR	-	29	49	162	58
WBL	50	12	23	19	49
WBTR	-	7	24	10	25
NBL	135	14	24	118	**167**
NBTR	-	0	0	15	36
SBLT	-	0	2	0	2
SBR	15	0	0	0	0
PM	**Storage**	**Future Background 2033 Scenario 1**		**Future Total 2033 Scenario 1**	
Mvmt		50th Queue	95th Queue	50th Queue	95th Queue
EBL	40	3	4	3	4
EBTR	-	39	53	326	309
WBL	50	27	37	**85**	**99**
WBTR	-	23	90	35	71
NBL	135	83	129	135	**203**
NBTR	-	0	16	0	21
SBLT	-	2	7	2	7
SBR	15	0	0	0	0

AM Peak Hour: During AM Peak hour, no queueing issues are expected at this intersection, except for the NBL movement during the worst-case scenario. The 95th percentile queue exceeds the storage capacity by 32m (approximately 5 vehicles); however, it should be noted that the 50th queues do not exceed the available storage.

PM Peak Hour: During PM Peak hour, no queue issues are expected, except for WBL, and NBL movements. The NBL movement provides sufficient storage to accommodate the 50th queues. The WBL traffic queue could utilize the existing Two-way Left-Turn Lane (TWLTL) to extend the storage, given the 50th queue storage is exceeded by 35m (approximately 5 vehicles).

7.2.5 Coram Avenue/Treadwells Drive & Dundas Street East

The results of the queue analysis for Coram Avenue/Treadwells Drive and Dundas Street East are summarized in **Table 7-11**.

Table 7-11: Coram Avenue/Treadwells Drive & Dundas Street East – Queue Analysis – 2033 Scenario 1

AM	Storage	Future Background 2033 Scenario 1		Future Total 2033 Scenario 1	
Mvmt		50th Queue	95th Queue	50th Queue	95th Queue
EBL	25	8	16	8	12
EBTR	-	60	258	74	318
WBL	30	4	9	4	9
WBTR	-	71	199	73	212
NBLTR	-	6	16	6	16
SBLT	-	8	15	8	15
SBR	20	0	0	0	0
PM	Storage	Future Background 2033 Scenario 1		Future Total 2033 Scenario 1	
Mvmt		50th Queue	95th Queue	50th Queue	95th Queue
EBL	25	13	19	13	14
EBTR	-	138	334	166	273
WBL	30	3	6	3	5
WBTR	-	121	472	131	527
NBLTR	-	0	0	0	0
SBLT	-	5	11	5	11
SBR	20	0	0	0	0

AM and PM Peak Hour: During the AM and PM peak hours, the intersection at Coram Avenue and Dundas Street East is expected to have no queueing issues for turning movements.

7.2.6 Wharton Way & Dundas Street East

The results of the queue analysis for Wharton Way and Dundas Street East are summarized in **Table 7-12**.

Table 7-12: Wharton Way & Dundas Street East – Queue Analysis – 2033 Scenario 1

AM	Storage	Future Background 2033 Scenario 1		Future Total 2033 Scenario 1	
Mvmt		50th Queue	95th Queue	50th Queue	95th Queue
EBL	50	32	**59**	32	**58**
EBTR	-	32	6	63	32
WBL	110	25	43	28	47
WBTR	-	72	113	76	119
NBL	40	12	23	12	23
NBTR	-	2	18	2	18
SBL	45	29	**47**	29	**47**
SBTR	-	4	19	4	19
PM	Storage	Future Background 2033 Scenario 1		Future Total 2033 Scenario 1	
Mvmt		50th Queue	95th Queue	50th Queue	95th Queue
EBL	50	22	34	22	33
EBTR	-	4	43	153	51
WBL	110	16	30	34	55
WBTR	-	121	183	145	218
NBL	40	22	39	22	39
NBTR	-	2	19	2	19
SBL	45	36	**57**	36	**57**
SBTR	-	4	26	7	30

AM and PM Peak Hour: During the AM and PM peak hours, the intersection at Wharton Way and Dundas Street East is expected to have no queueing issues for any movements, with the exception of the SBL movement during both peak hours and the EBL movement during the AM peak hour. However, it should be noted that the 50th queues for all these movements can be accommodated within the available storage.

7.3 QUEUE ANALYSIS – 2033 SCENARIO 2

7.3.1 Dixie Road & Dundas Street East

The results of the queue analysis for Dixie Road and Dundas Street East are summarized in **Table 7-13**.

Table 7-13: Dixie Road & Dundas Street East – Queue Analysis – 2033 Scenario 2

AM	Storage	Future Total 2033 Scenario 1		Future Total 2033 Scenario 2	
Mvmt		50th Queue	95th Queue	50th Queue	95th Queue
EBL	90	56	**107**	56	**107**
EBTR	-	171	214	171	214
WBL	170	67	124	48	91
WBTR	-	120	92	67	82
NBL	100	30	47	30	47
NBTR	-	135	168	139	174
SBL	135	80	117	78	112
SBT	-	94	111	96	113
SBR	125	13	36	13	37
PM	Storage	Future Total 2033 Scenario 1		Future Total 2033 Scenario 2	
Mvmt		50th Queue	95th Queue	50th Queue	95th Queue
EBL	90	86	**141**	86	**141**
EBTR	-	170	201	170	201
WBL	170	82	115	76	102
WBTR	-	349	233	154	223
NBL	100	69	**128**	69	**128**
NBTR	-	187	219	187	219
SBL	135	128	**167**	104	**142**
SBT	-	114	132	124	143
SBR	125	37	74	41	79

AM and PM Peak Hours: The results reveal that the proposed bridge is beneficial to alleviate the queueing issues during the PM peak hour, with significantly improved queues for the at WBTR and SBL movements. 50th queues can be accommodated in the available storage lane.

7.3.2 Neilco Court & Dundas Street East

The results of the queue analysis for Neilco Court and Dundas Street East are summarized in **Table 7-14**.

Table 7-14: Neilco Court & Dundas Street East – Queue Analysis – 2033 Scenario 2

AM	Storage	Future Total 2033 Scenario 1		Future Total 2033 Scenario 2	
Mvmt		50th Queue	95th Queue	50th Queue	95th Queue
EBL	40	2	2	2	3
EBTR	-	63	81	57	77
WBL	30	4	8	4	9
WBTR	-	15	22	20	27
NBL	35	7	14	16	27
NBTR	-	0	8	0	8
SBL	30	7	14	7	14
SBTR	-	1	9	1	9
PM	Storage	Future Total 2033 Scenario 1		Future Total 2033 Scenario 2	
Mvmt		50th Queue	95th Queue	50th Queue	95th Queue
EBL	40	26	26	26	27
EBTR	-	151	139	130	126
WBL	30	18	24	18	24
WBTR	-	48	192	51	200
NBL	35	**41**	**57**	**46**	**64**
NBTR	-	24	39	24	39
SBL	30	16	28	16	28
SBTR	-	7	20	7	20

AM Peak Hour: The intersection of Neilco Court and Dundas Street East is expected to have no queueing issues for all movements, with minimal changes between the with and without bridge connection scenarios. All movements are within their storage capacity for both the 50th and 95th percentile.

PM Peak Hour: Similar to the AM conditions, the bridge connection has minimal changes to the queues between the with and without bridge connection scenarios, with the exception of the NBL movement's 50th queue being extended by one (1) additional vehicle.

7.3.3 Jarrow Avenue & Dundas Street East

The results of the queue analysis for Jarrow Avenue and Dundas Street East are summarized in **Table 7-15**.

Table 7-15: Jarrow Avenue & Dundas Street East – Queue Analysis – 2033 Scenario 2

AM	Storage	Future Total 2033 Scenario 1		Future Total 2033 Scenario 2	
Mvmt		50th Queue	95th Queue	50th Queue	95th Queue
EBL	50	23	39	23	40
EBTR	-	128	195	122	76
WBL	50	**60**	**92**	**60**	**101**
WBTR	-	64	152	56	129
NBL	100	24	36	33	46
NBTR	-	2	20	2	20
SBLT	-	7	14	7	14
SBR	10	0	0	0	0
PM	**Storage**	**Future Total 2033 Scenario 1**		**Future Total 2033 Scenario 2**	
Mvmt		**50th Queue**	**95th Queue**	**50th Queue**	**95th Queue**
EBL	50	12	17	12	19
EBTR	-	310	352	218	303
WBL	50	**101**	**161**	**102**	**175**
WBTR	-	92	208	75	194
NBL	100	77	**105**	82	**113**
NBTR	-	15	45	13	43
SBLT	-	18	33	18	33
SBR	10	0	**12**	0	**12**

AM and PM Peak Hours: By comparing the queues, the proposed bridge is effective in reducing the traffic queue for EBTR 95th queues by 119m (AM Peak) and 49m (PM Peak) respectively, while the traffic queue at WBL movement is slightly increased by about 10m in both AM and PM peak (50th queue changes by 1m). Overall, the proposed bridge is considered a beneficial improvement to this intersection, as Dundas will have significantly improved queues.

7.3.4 Mattawa Avenue & Dundas Street East

The results of the queue analysis for Mattawa Avenue and Dundas Street East are summarized in **Table 7-16**.

Table 7-16: Mattawa Avenue & Dundas Street East – Queue Analysis – 2033 Scenario 2

AM	Storage	Future Total 2033 Scenario 1		Future Total 2033 Scenario 2	
Mvmt		50th Queue	95th Queue	50th Queue	95th Queue
EBL	40	1	1	1	1
EBTR	-	162	58	41	57
WBL	50	19	49	24	42
WBTR	-	10	25	9	24
NBL	135 (Future)	118	**167**	79	105
NBTR	-	15	36	18	40
SBLT	-	0	2	0	2
SBR	15	0	0	0	0
PM	Storage	Future Total 2033 Scenario 1		Future Total Scenario 2	
Mvmt		50th Queue	95th Queue	50th Queue	95th Queue
EBL	40	3	4	3	4
EBTR	-	326	309	105	286
WBL	50	**85**	**99**	**82**	**99**
WBTR	-	35	71	9	71
NBL	135 (Future)	**135**	**203**	83	126
NBTR	-	0	21	0	21
SBLT	-	2	7	2	7
SBR	15	0	0	0	0

AM and PM Peak Hours: The bridge connection is anticipated to greatly benefit the NBL queues during both AM and PM peak hours, with a reduction of 62m and 77m of queue during the AM and PM peak hours, respectively.

7.3.5 Coram Avenue/Treadwells Drive & Dundas Street East

The results of the queue analysis for Coram Avenue/Treadwells Drive and Dundas Street East are summarized in **Table 7-17**.

Table 7-17: Coram Avenue/Treadwells Drive & Dundas Street East – Queue Analysis – 2033 Scenario 2

AM	Storage	Future Total 2033 Scenario 1		Future Total Scenario 2	
Mvmt		50th Queue	95th Queue	50th Queue	95th Queue
EBL	25	8	12	8	13
EBTR	-	74	318	76	318
WBL	30	4	9	4	9
WBTR	-	73	212	73	211
NBLTR	-	6	16	6	16
SBLT	-	8	15	8	15
SBR	20	0	0	0	0
PM	Storage	Future Total 2033 Scenario 1		Future Total Scenario 2	
Mvmt		50th Queue	95th Queue	50th Queue	95th Queue
EBL	25	13	14	13	17
EBTR	-	166	273	164	338
WBL	30	3	5	3	5
WBTR	-	131	527	131	527
NBLTR	-	0	0	0	0
SBLT	-	5	11	5	11
SBR	20	0	0	0	0

AM and PM Peak Hours: As the intersection of Coram Avenue/Treadwells Drive & Dundas Street East is located to the east to the subject site, the proposed bridge will not have impacts to the traffic flow at this intersection. However, despite the traffic flow remaining the same, the 95th queue for EBTR is increased during PM peak when the proposed bridge will be in place. The difference was caused by the traffic volumes being metered by upstream signals under the Future Total 2033 Scenario 1, under the worst-case scenario. This also explains the little difference for the average case (50th queue). In all, the proposed bridge would have no impact to the queueing issue of this intersection.

7.3.6 Wharton Way & Dundas Street East

The results of the queue analysis for Wharton Way and Dundas Street East are summarized in **Table 7-18**.

Table 7-18: Wharton Way & Dundas Street East – Queue Analysis – 2033 Scenario 2

AM	Storage	Future Total 2033 Scenario 1		Future Total Scenario 2	
Mvmt		50th Queue	95th Queue	50th Queue	95th Queue
EBL	50	32	58	32	58
EBTR	-	63	32	50	32
WBL	110	28	47	28	47
WBTR	-	76	119	76	119
NBL	40	12	23	12	23
NBTR	-	2	18	2	18
SBL	45	29	47	29	47
SBTR	-	4	19	4	19
PM	Storage	Future Total 2033 Scenario 1		Future Total Scenario 2	
Mvmt		50th Queue	95th Queue	50th Queue	95th Queue
EBL	50	22	33	22	33
EBTR	-	153	51	152	52
WBL	110	34	55	34	55
WBTR	-	145	218	145	218
NBL	40	22	39	22	39
NBTR	-	2	19	2	19
SBL	45	36	**57**	36	**57**
SBTR	-	7	30	7	30

AM and PM Peak Hours: As the intersection of Wharton Way & Dundas Street East is located to the east of the subject site, the proposed bridge will not have any impact on the traffic flow at this intersection. Thus, the queue analysis is unaffected when the proposed bridge is in place.

8 COLLISION ANALYSIS

Based on consultation with the City of Mississauga, a collision analysis was conducted for the proposed development and subject site. Collision data from 2015 to 2020, summarized by intersection and by segment for all collision types, was provided by the City of Mississauga and Region of Peel for the study area.

A review of the collision data showed that the study area had a total of 386 collisions over this 5-year period, 35 (9%) of which resulted in a non-fatal injury. This averages 77 collisions per year within the study area. Out of the 35 non-fatal injuries recorded, 9 (or 26%) involved a pedestrian or cyclist. There were no fatalities recorded within the 5-year period.

Out of the 386 total collisions recorded within the study area, 187 (48%) occurred at the Dundas Street East and Dixie Road intersection, 120 (31%) occurred at other intersections and 79 (20%) occurred at midblock segments.

Table 8-1 below summarizes the 5-year total, 5-year non-fatal injuries, and 5-year pedestrian or cyclist injuries at each location within the study area.

Table 8-1: Collision Data Within the Study Area – 2015-2020

Type	Location	5-Year Total	KSI (non-fatal)	Pedestrian/ Cyclist Injuries
Collision at Intersection	Dundas St E @ Dixie Rd	187	13	0
	Dundas St E @ Coram Ave	4	2	1
	Dundas St E / Unnamed Ucom @ Jarrow Ave	27	6	3
	Dundas St E @ Mattawa Ave	24	1	1
	Dundas St E @ Nawbrook Rd	4	0	0
	Dundas St E @ Neilco Crt	28	3	1
	Dundas St E @ Treadwells Dr	5	0	0
	Dundas St E @ Wharton Way	28	3	3
	Subtotal	*307*	*28*	*9*
Collision at Midblock Segment	Dundas St E between Coram Ave & Wharton Way	18	0	0
	Dundas St E between Dixie Rd & Neilco Crt	22	4	0
	Dundas St E between Jarrow & Mattawa Ave	17	0	0
	Dundas St E between Mattawa Ave & Nawbrook Rd	2	0	0
	Dundas St E between Nawbrook Rd & Treadwells Dr	4	1	0
	Dundas St E between Neilco Crt & Jarrow Ave	14	2	0
	Dundas St E between Treadwells Dr & Coram Ave	2	0	0
	Subtotal	*79*	*7*	*0*
GRAND TOTAL		386	35	9

Due to large traffic volumes in general at Dundas Street East and Dixie Road, a major intersection, it is expected that more collisions would occur at that location.

All collisions resulting in injury to a pedestrian or cyclist occurred at an intersection, while none occurred at a midblock segment. It is noted that, while collisions occurring at the Dundas Street East and Dixie Road intersection accounted for as much as 48% of total collisions within the study area, no pedestrian or cyclist injuries occurred at that location. **Table 8-2** below summarizes the locations and descriptions of pedestrian or cyclist injuries within the study area.

Table 8-2: Collisions Resulting in Injury to Pedestrians or Cyclists – 2015-2020

Location	No. of Pedestrian / Cyclist Collisions	Description
Coram Ave @ Dundas St E	1	WBT driver hit NB ped, ped at fault for crossing without right-of-way
Dundas St E / Unnamed Ucom @ Jarrow Ave	3	NBL driver hit cyclist on sidewalk
		NBR driver hit pedestrian
		WBT driver hit ped, ped at fault for crossing without right-of-way
Dundas St E @ Mattawa Ave	1	NBL driver hit pedestrian, driver vision was impaired by the sun
Dundas St E @ Neilco Crt	1	WBT driver hit cyclist, cyclist at fault for crossing without right-of-way
Dundas St E @ Wharton Way	3	SBR driver hit EB scooter when making an improper turn
		Turning driver hits pedestrian
		SBR driver hits pedestrian

The majority of pedestrian or cyclist injuries were caused by drivers making turns from minor NB or SB approaches onto Dundas Street East, especially NB from Jarrow Avenue and SB from Wharton Way. The proposed development is not anticipated to add vehicular traffic to these specific minor approaches.

The Dundas Street East and Mattawa Avenue intersection serves as an access for the subject site. In the AM peak hour, the proposed development is anticipated to add 227 and 97 net site trips to the NBL and NBR movements, respectively. In the PM peak hour, the proposed development is anticipated to add 20 and 82 net site trips to the NBL and NBR movements, respectively. However, it is noted that only 1 collision involving injury to a pedestrian was recorded at Dundas Street East and Mattawa Avenue within the 5-year period, indicating that this intersection is not a "hotspot" location. Therefore, the proposed development is not anticipated to significantly affect road safety within the study area.

9 PARKING REVIEW

The following sections will provide a review of the vehicle and bicycle zoning by-law parking requirements applicable to the subject site. A review will also be undertaken of the proposed parking strategy for the subject site to provide a comparison against the applicable requirements and assess whether the proposed strategy is appropriate for the site.

Given the subject site's location, planning context, and future transportation context, it is recommended that a reduced parking supply from what would be required under the by-law be considered for this development. A reduced parking strategy, alongside a comprehensive TDM Plan and thoughtful site design, will enable the subject site to contribute to the evolution of the Dundas Street Corridor in a manner that reduces automobile dependency, supports daily travel by transit and active transportation modes, and encourages a dynamic, mixed-use community for the subject site.

9.1 BICYCLE PARKING REVIEW

The City of Mississauga Zoning By-law 0225-2007 as amended by By-law-118-022 now requires bicycle parking for apartment and retail uses. The required rates are shown in **Table 9-1.** It is noted that bicycle parking is not required for non-residential uses with less than 1,000 m^2 GFA.

Table 9-1: Zoning By-law 0225-2007 Bicycle Parking Requirements

Use	Bicycle Parking Space Requirements	
	Short Term Rate (sp/unit or 100 m^2)	Long Term Rate (sp/unit or 100 m^2)
Residential	0.05	0.60
Retail	0.20	0.10

These rates were applied to determine an appropriate bicycle parking requirement for the proposed development. The required number of bicycle parking spaces applying these rates and the proposed bicycle parking supply is summarized in **Table 9-2**.

Table 9-2: Required and Proposed Bicycle Parking Supply

Block	Use	Scale	Bicycle Parking Spaces Required		Proposed Bicycle Parking Spaces	
			Short-Term	Long-Term	Short-Term	Long-Term
A	Residential	1,041 units	52	625	52	644
	Retail	1,271 m^2 GFA	3	1		
C	Residential	427 units	21	256	21	270
	Retail	955 m^2 GFA	n/a	n/a		
	Community	366 m^2 GFA	n/a	n/a		
E	Residential	515 units	26	309	26	352
	Retail	2,086 m^2 GFA	4	2		
F	Residential	379 units	19	227	19	280
	Retail	634 m^2 GFA	n/a	n/a		
G	Residential	514 units	26	310	26	366
	Retail	1,148 m^2 GFA	2	1		
Total		**2,877 units 6,094 m^2**	**153**	**1,731**	**144**	**1,912**

In total, 144 short-term and 1,912 long-term bicycle parking spaces are proposed for the subject development, whereas 153 short-term and 1,731 long-term bicycle parking spaces are required.

The proposed supply exceeds the total number of bicycle spaces that would otherwise be required for the site, by 172 spaces, and will support the proposed parking supply and TDM Plan.

9.2 VEHICLE PARKING REVIEW

9.2.1 Existing By-law Requirements and Sharing Provisions

The subject site is governed by the City of Mississauga Zoning By-law 0225-2007, which sets out the minimum vehicular parking rates required for the subject site. It is noted that Zoning By-law 0225-2007 has been amended by By-law 0117-2022 as of June 8, 2022, following the City's completion of a citywide Parking Regulations Study. A key change of this By-law is the removal of unit-type rates for residential dwellings, and instead defines rates based on the site's location in the City and whether the tenure will be condominium or rental . This results in a general reduction in parking requirements for most residential uses.

In addition to parking rate reductions and the consolidation of rates by precinct, By-law 0117-2022 includes an expansion of the shared parking provisions previously applicable to the City Centre only. For the majority of non-residential uses, parking can be provided at either the applicable visitor rate or the sum of the non-residential parking rates, whichever is greater, for mixed-use developments.

The subject development is proposing a mixture of rental and condominium units, in which the recommended rate for rental units would apply. Additionally, all blocks include retail and residential uses, thus the permitted shared parking arrangement would also apply.

It should be noted that, based on the phasing plan received for the subject site, the west-end of the subject site will share parking between Blocks A and C, which will be constructed in Phase 3. Similarity, the east-end of the subject site, consisting of Blocks E, F, and G, will share parking, with Block E planned to be constructed in Phase 1, followed by F and G constructed simultaneously during Phase 2.

The latest rates compared to the proposed supply are summarized in **Table 9-3** for Phase 1 and 2/Blocks E, F, and G, and **Table 9-4** for Phase 3 /Blocks A and C. The subject site is located in Precinct 3.

Table 9-3: Required Parking and Proposed Supply – Phases 1&2 / Blocks E, F, & G (East-end)

Block	Land Use	Unit/GFA	Required Rate	Required Spaces	Recommended Minimum Rate	Recommended Minimum Supply	Proposed Spaces
E	Apartment	498	1.0 sp/unit	498	0.65 sp/unit	323	384
	Townhouse	17	1.3 sp/unit	22		11	
	Apartment Visitor	498	0.20 sp/unit	103*	0.15 sp/unit	77*	77*
	Townhouse Visitor	17	0.25 sp/unit				
	Retail	2,086 m^2	4.0 sp/100m^2				
			Block E Total	**622**	**-**	**411**	**461**
F	Apartment	303	1.0 sp/unit	303	0.65 sp/unit	197	346
	Townhouse	76	1.3 sp/unit	99		49	
	Apartment Visitor	303	0.20 sp/unit	80*	0.15 sp/unit	57*	57*
	Townhouse Visitor	76	0.25 sp/unit				
	Retail	634 m^2	4.0 sp/100m^2				
			Block F Total	**482**	**-**	**303**	**403**

Block	Land Use	Unit/GFA	Required Rate	Required Spaces	Recommended Minimum Rate	Recommended Minimum Supply	Proposed Spaces
G	Apartment	454	1.0 sp/unit	454	0.65 sp/unit	295	296
	Townhouse	60	1.3 sp/unit	78		39	
	Apartment Visitor	454	0.20 sp/unit	106*	0.15 sp/unit	77*	77*
	Townhouse Visitor	60	0.25 sp/unit				
	Retail	1,148 m^2	4.0 sp/100m^2				
Block G Total				**639**	**-**	**412**	**373**
Phase 1 & 2 Total Residential (1,408 units)				**1,454**	**0.65 sp/unit**	**914**	**1,026**
Phase 1 & 2 Total Non-Residential (1,408 units & 3,868 m^2)				**289**	**0.15 sp/unit**	**211**	**211**

**Note: parking supply required by zoning by-law 0225-2007 has been calculated in accordance with article 3.1.2.1.3 which allows for shared parking between retail and residential visitor uses, with either the greater of visitor sp/unit or the required number of spaces for all non-residential uses including retail.*

Table 9-4: Required Parking and Proposed Supply – Phases 3&5 / Blocks A&B (West-End)

Block	Land Use	Unit/GFA	Required Rate	Required Spaces	Recommended Minimum Rate	Recommended Minimum Supply	Proposed Spaces
A	Apartment	1,037	1.0 sp/unit	1,037	0.65 sp/unit	674	677
	Townhouse	4	1.3 sp/unit	5		3	
	Apartment Visitor	1,037	0.20 sp/unit	208*	0.15 sp/unit	156*	156*
	Townhouse Visitor	4	0.25 sp/unit				
	Retail	1,271 m^2	4.0 sp/100m^2				
Block A Total				**1,250**	**-**	**833**	**833**
C	Apartment	425	1.0 sp/unit	425	0.65 sp/unit	276	281
	Townhouse	2	1.3 sp/unit	3		1	
	Apartment Visitor	425	0.20 sp/unit	85*	0.15 sp/unit	64*	65*
	Townhouse Visitor	2	0.25 sp/unit				
	Retail	955 m^2 GFA	4.0 sp/100m^2				
	Community	366 m^2	4.5 sp/100m^2				
Block C Total				**513**	**-**	**341**	**346**
Phase 3 & 5 Total Residential (1,468 units)				**1,470**	0.65 sp/unit	**954**	**958**
Phase 3 & 5 Total Non-Residential (1,468 units & 2,592 m^2)				**293**	0.15 sp/unit	**220**	**221**
Phase 1 & 2 Total (1,408 units & 3,868 m^2)				**1,743**	**0.80 sp/unit**	**1,125**	**1,237**
Phase 3 & 5 Total (1,468 units & 2,592 m^2)				**1,763**	**0.80 sp/unit**	**1,174**	**1,179**
OVERALL TOTAL (2,877 units & 6,094 m^2)				**3,506**	**0.80 sp/unit**	**2,299**	**2,416**

**Note: parking supply required by zoning by-law 0225-2007 has been calculated in accordance with article 3.1.2.1.3 which allows for shared parking between retail and residential visitor uses, with either the greater of visitor sp/unit or the required number of spaces for all non-residential uses including retail.*

Based on By-law 0225-2007 rates, the subject site would be required to provide a total of 3,506 spaces, including 1,763 spaces for Phases 3 and 5 (Blocks A and C) and 1,743 spaces for Phase 1 and 2 (Blocks E, F, and G). The proposed development proposes to provide a total of 2,416 spaces, including 1,179 spaces for Phases 3 and 5 (Blocks A and C) and 1,237 spaces for Phase 1 and 2 (Blocks E, F, and G), resulting in an overall shortfall of 1,090 spaces when compared to the by-law requirements.

9.2.2 Proposed Parking Strategy

The proposed parking supply has been developed on a block-by-block basis, recognizing existing site constraints and expanding on the opportunity to support a shared parking arrangement between the proposed retail and residential visitor uses.

As noted above, the proposed development intends to share parking between Phases 1 and 2 (comprising of Blocks E, F, and G), and between Phases 3 and 5 (comprising of Blocks A and C). As these blocks are adjacent and will have knock-out panels that will be removed once each phase is finished, it will allow for full vehicle access throughout the shared underground parking levels. Thus, parking is proposed with the intent of sharing between adjacent phases.

A parking reduction from the latest requirements is being recommended for the subject site. Specifically, a minimum residential rate of 0.65 sp/unit is recommended. By-law requirements for non-residential parking will also be reduced and shared, in accordance with article 3.1.2.1.3 which allows for shared parking between visitor and retail uses as long as the shared supply satisfies the greater of either the minimum required visitor parking supply or the minimum required retail parking supply.

In this case, the residential visitor parking requirement will be provided, as the retail requirement is lower. It should be noted that the proposed townhomes require a visitor parking rate of 0.25 sp/unit, while the apartment units require a rate of 0.20 sp/unit. As the development proposes to share apartment and townhouse parking and leverage the site's location, it is recommended that the same visitor rate of 0.15 sp/unit be applied for non-residential parking spaces. The total proposed parking supply is 2,416 spaces, including 1,179 spaces in Phase 3 and 5, and 1,237 spaces in Phase 1 and 2.

While the proposed residential rate represents a shortfall of about 30% compared to the latest parking requirements identified in the City's by-law, this rate will encourage and support residents to travel by alternative modes rather than single-occupant vehicles, and will support a shift away from vehicle ownership.

Detailed justification for the proposed residential parking rate is provided in the following **Sections 9.5** to **9.9**. Based on major investments in transit infrastructure within the study area, the expected modal shift towards transit and active transportation, proxy site surveys, observed precedents, and the Transportation Demand Management (TDM) measures proposed for the subject site, the proposed supply is expected to be appropriate for the development.

9.3 ELECTRIC VEHICLE READY PARKING

The City of Mississauga requires 20% of residential parking and 10% of visitor parking to be Electric Vehicle Ready as per Zoning By-law 0225-2007. The amount of required EV-Ready parking is calculated based on the recommended minimum required parking supply, which is proposed to be 0.65 sp/unit for residential and 0.15 sp/unit for non-residential parking.

Table 9-5 summarizes the required EV-ready parking supply that must be provided on-site based on the total proposed parking supply.

Table 9-5: Zoning By-law 0225-2007, Electric Vehicle Ready Parking Requirements

Block	Use	Total Proposed Parking Supply	EV-Ready Spaces Required
A	Residential	Proposed 0.65 sp/unit: 677	135
	Visitor/Retail	Proposed 0.15 sp/unit: 156	16
C	Residential	Proposed 0.65 sp/unit: 281	56
	Visitor/Non-Residential	Proposed 0.15 sp/unit: 65	7
E	Residential	Proposed 0.65 sp/unit: 384	77
	Visitor/Retail	Proposed 0.15 sp/unit: 77	8
F	Residential	Proposed 0.65 sp/unit: 346	69
	Visitor/Retail	Proposed 0.15 sp/unit: 57	6
G	Residential	Proposed 0.65 sp/unit: 296	59
	Visitor/Retail	Proposed 0.15 sp/unit: 77	8
		Total	441

The proposed development is required to provide 441 EV-ready parking spaces to satisfy the requirements.

9.4 ACCESSIBLE PARKING

The subject development is required to satisfy the minimum requirements for accessible parking as set out in Zoning By-law 0225-2007. Accessible parking requirements are calculated based on the total number of non-residential parking spaces required on-site.

Table 9-6 highlights the required accessible parking supply on-site and the proposed supply.

Table 9-6: Zoning By-law 0225-2007, Accessible Parking Requirements

Block	Total Proposed Parking Spaces (Non-Residential)	Required Accessible Parking Spaces	Type A Required	Type B Required
A	156	2 plus 2% of total required parking spaces	2	3
C	65	2 plus 2% of total required parking spaces	1	2
E	77	2 plus 2% of total required parking spaces	2	2
F	57	1.0 space plus 3% of total required parking spaces	1	2
G	77	2 plus 2% of total required parking spaces	2	2
		Total	8	11

The proposed development must provide a total of 19 accessible parking spaces, consisting of 8 Type A and 11 Type B spaces, to satisfy the requirements.

9.5 VEHICULAR PARKING REDUCTION JUSTIFICATION

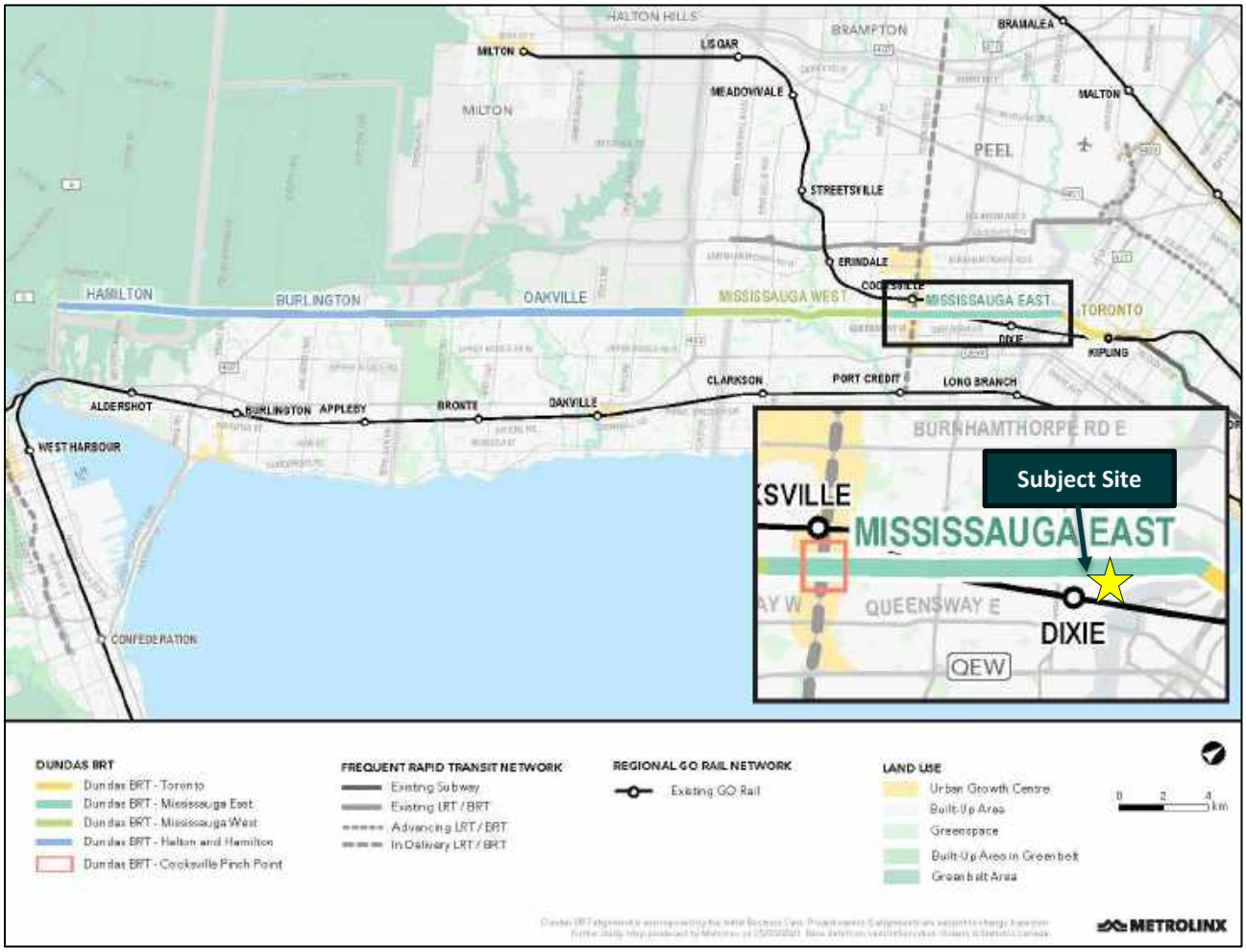
It is recognized that the subject development is seeking to provide a parking supply that represents a shortfall from the applicable Zoning By-law requirements for the subject site. To assess the appropriateness of the proposed parking rates and supply, a review of the existing transit service and provincial and municipal planning context was undertaken, as well as a review of parking supply proposed for comparable residential developments within comparable locations in Mississauga and the GTA.

9.5.1 Future Transit Context

The subject site's transit accessibility is anticipated to improve over the next few years due to major investments in higher order transit and the overall transportation network in close vicinity to the subject site. This includes Bus Rapid Transit (BRT) service along Dundas Street between Hamilton and Toronto, as well as future expansions to the disconnected road network as the area develops.

The Dundas BRT project proposes a transit corridor along a 48-km stretch of Dundas Street from Highway 6 in the City of Hamilton to the Kipling Transit Hub in the City of Toronto. The project is currently in Phase 5 of the planning process, with an Initial Business Case completed and published by Metrolinx in September 2020. **Figure 9-1** illustrates the proposed BRT route.

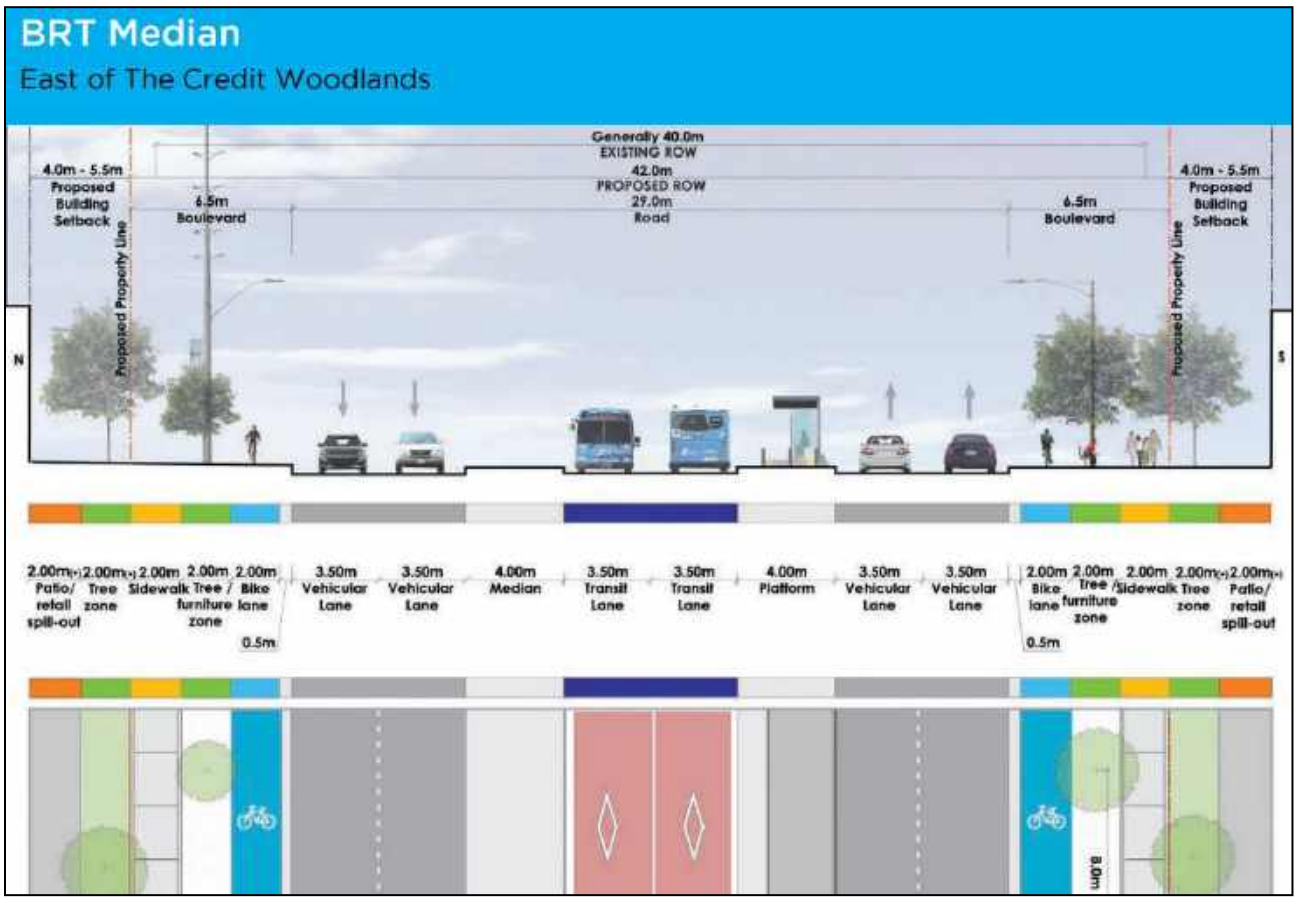
Figure 9-1: Proposed Dundas BRT Alignment



Source: City of Mississauga, 2023

A corridor study, the Dundas Connects Master Plan, was also undertaken by the City of Mississauga and completed in 2018 with an endorsement from City Council. This study set out the overall recommendations for the Dundas Street corridor within Mississauga and included recommendations for the overall planning vision along the corridor, including future BRT service. While a preliminary design business case is still expected to be completed by Metrolinx, the Dundas Connects Master Plan provided a recommended cross section for a future BRT along Dundas Street within Mississauga. The recommended cross section for the segment of Dundas Street adjacent to the subject site is shown in **Figure 9-2**.

Figure 9-2: Recommended Dundas Street Cross-Section



Source: Dundas Connects Master Plan, 2018

9.5.2 Planning Policy Justification

The following planning policies and documents were reviewed to establish an understanding of the current planning and transportation context and objectives applicable to the subject site:

- Provincial Policy Statement, 2020
- A Place to Grow: Growth Plan for the Greater Golden Horseshoe, 2020
    - Section 2: Where and How to Grow
    - Section 3: Infrastructure to Support Growth
- Peel Region Official Plan and MTSA Study
- City of Mississauga Official Plan
- City of Mississauga Transportation Master Plan

Based on a review of the above-noted planning policies, it is noted that the proposed development is subject to several planning goals that seek to support intensification along major corridors and within the GTA, and support transit infrastructure investment and ridership while avoiding an oversupply of parking. Key planning policies and goals applicable to the subject site are summarized below.

9.5.3 The Provincial Policy Statement (2020)

The Provincial Policy Statement (PPS) outlines the Ontario government's policies on land use planning and provides direction in ensuring the development of healthy and resilient communities within a thriving economy. A key focus of the statement is to manage development to support population growth while minimizing impacts to the natural environment. For transportation systems, which are defined to include parking, key directives include providing efficient systems to address project needs, efficiently using existing and planned infrastructure through TDM strategies, minimizing the length and number of vehicle trips, and supporting use of transit and active transportation modes.

Under Section 3 of the Planning Act, all decisions affecting land use planning matters "shall be consistent with" the PPS. One of the key matters pertaining to PPS policies includes the promotion of transportation decisions that increase active transportation and transit usage. As stated under Section 1.8.1 b. of the PPS, **planning authorities shall support land use and development patterns which: "promote the use of active transportation and transit in and between residential, employment (including commercial and industrial) and institutional uses and other areas;"**

Through proposing a reduced parking supply, the proposed redevelopment is in support of the changing paradigm, which shifts away from the provision of excess parking. The subject site is located in close proximity to existing transit serving the City of Mississauga and providing connections to adjacent municipalities, including the City of Toronto, as well as planned high-order transit investments. Therefore, the decision to provide less parking aids in promoting mobility options that are not automobile-dependent, such as active transportation and transit.

It should be noted that the Ontario government is in the process of publishing the updated *Provincial Planning Statement*, which takes policies from *A Place to Grow* and the *Provincial Policy Statement* to support the achievement of housing objectives. Although the plan has not yet been published, it is understood that the statement will focus on the generation of an appropriate housing supply, making land available for development, providing infrastructure to support development, and balancing housing with resources. The subject site will support these goals within the development proposal.

9.5.4 Growth Plan for the Greater Golden Horseshoe (2020)

The Growth Plan for the Greater Golden Horseshoe provides a framework for municipalities to better manage growth in the region to support a high quality of life, environmental protection, as well as economic prosperity. The support of municipalities in land use choices is vital to achieving the long-term framework outlined by the Growth Plan. Some of the key objectives outlined in the Growth Plan include:

- Reduce sprawl;
- Build complete communities to better connect transit with where residents live, work, and play;
- Minimize the negative impacts of climate change.

By supplying a reduced number of parking spaces available for future residents of the subject site, the proposed redevelopment supports an increasing trend towards a reduction in car ownership. **By planning for development that leverages the surrounding transit network and active transportation options, the proposed development discourages sprawl and limits the need for travelling long distances for daily needs. This change would also lower the negative environmental impact caused by car usage.** The proposed parking for this development aligns with the transportation-related issues and goals outlined in the Growth Plan.

9.5.5 Peel Region MTSA Study and Official Plan (2022)

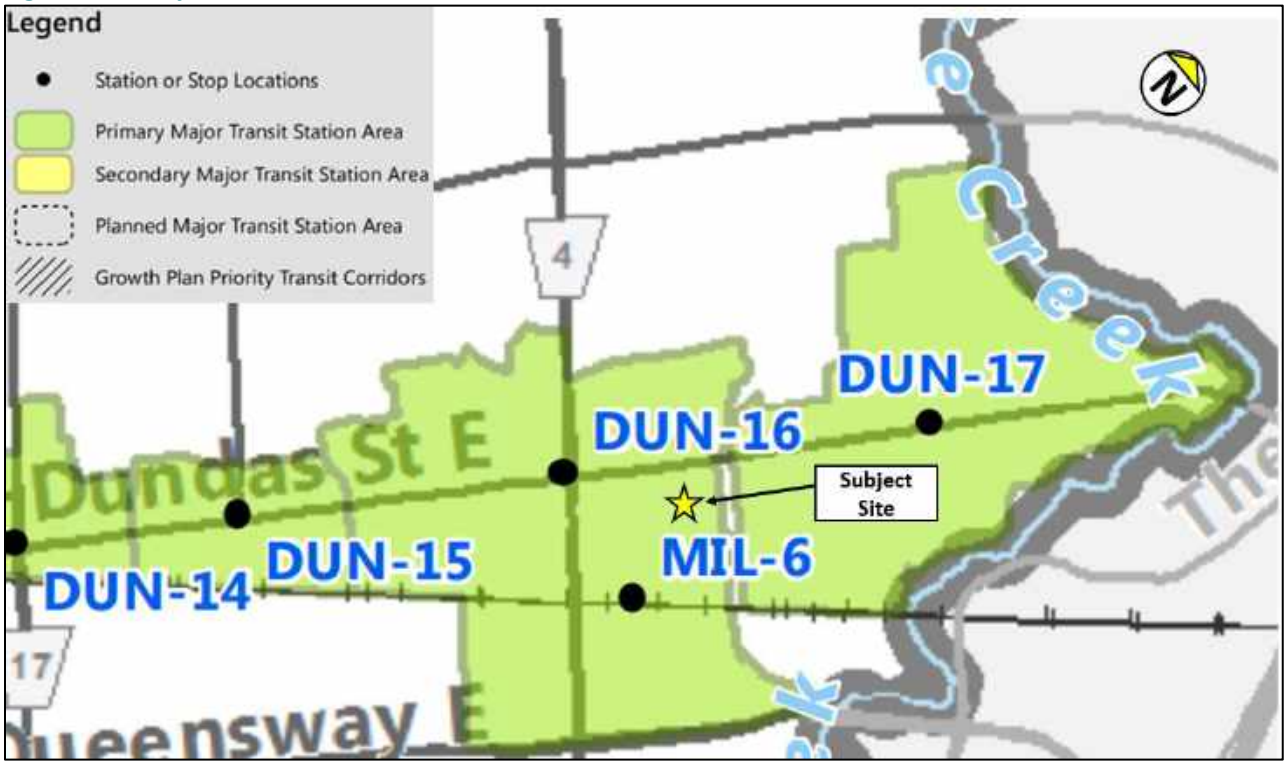
In response to the Provincial Growth Plan, the Region of Peel has developed a strategic plan and policy framework to guide growth within Major Transit Station Areas (MTSAs) as part of the *Peel 2051 Official Plan and Municipal Comprehensive Review* and resulting Region of Peel Official Plan (2022).

The Region's MTSA Study acknowledges that MTSAs are intended to develop in a manner that **supports higher densities and mixed-use growth within proximity to existing or planned higher-order transit**, such as LRT and BRT stations. MTSAs are specifically intended to be **developed as high-density, mixed-use, transit-supportive neighbourhoods** that provide **access to local amenities, jobs, housing, and recreation** opportunities. They are generally defined as the area within an approximate 500-800 m radius of a transit station or stop, representing about a 10-minute walk.

As part of the Region's MTSA Study, several priority MTSAs were identified. MTSAs along the Hazel McCallion LRT corridor have been identified as primary MTSAs under the Region of Peel Official Plan (April 2022). As shown in **Figure 9-3**, the subject site is located within the **primary MTSA along the Dundas BRT** route. MTSA policies are important as they promote transit-supportive neighbourhoods that achieve community benefits such as shortened commutes, reduced congestion and pollution, and increased opportunity to walk and cycle as part of a healthy community.

The subject site's location within a primary MTSA will support the site as a multi-use development comprising part of a larger, transit-supportive neighbourhood that facilitates access to key destinations and amenities by modes other than the single-occupant vehicle, thus supporting further parking reductions for the non-residential uses proposed on-site.

Figure 9-3: Major Transit Station Areas



Source: Peel Region Official Plan Schedule E-5: Major Transit Station Areas (updated November 2022)

9.5.6 City of Mississauga Official Plan (2023 Office Consolidation)

The City's Official Plan sets out a framework for how the municipality will grow to the year 2031. *The City of Mississauga Official Plan* aims to direct growth in a sustainable manner that protects and enhances its natural and cultural heritage resources, as well as the urban form. The Official Plan's approach to land use planning focuses on strategic management of growth and integration of land use, transportation, and design.

The City plans to direct growth within locations supported by existing and planned higher order transit through high density and pedestrian-oriented development. In particular, one of the Plan's seven (7) guiding principles includes "Create a Multi-Modal City", which speaks to prioritizing transit and implementing an efficient active transportation network for cyclists and pedestrians. Section 8.4 addresses parking specifically and recognizes it as a tool to help influence travel behaviour and choice of transportation modes.

Specifically, Policy 8.4.3 states that **"Consideration will be given to reducing off-street parking requirements for developments to reflect levels of vehicle ownership and usage, and as a means of encouraging the greater use of transit, cycling and walking…"**

The reduced parking supply sought for the subject development is supportive of the City's Official Plan as it leverages its proximity to the existing Dixie GO Train Station and planned higher order transit service along Dundas Street West. The proposed development will encourage future residents to utilize alternative transportation modes as opposed to vehicular travel.

9.5.7 City of Mississauga Transportation Master Plan

The City of Mississauga Transportation Master Plan (TMP) was approved by City Council in May 2019 and sets the foundation for transportation policies, plans, and initiatives to guide the City's transportation system through to 2041. The TMP aims to provide a transportation network that is safe and accessible and provides options for travel within, to, and from the City.

Within the Vision of the TMP, it is recognized that a transportation system that is heavily reliant on the single-occupant vehicle is subject to significant challenges and risks ranging from congestion, economic burden, declining air quality, accelerating climate change, negative physical and mental health impacts, and the risk of isolation for those who cannot drive or access a vehicle.

A reduced parking supply that supports and encourages the use of alternative transportation modes where available, such as the Dundas Street corridor and Dixie GO Station, and a proposed development that supports a mixture of uses and compact, walkable urban form, will help to reduce these risks and challenges for future residents and visitors of the subject site.

9.5.8 Planning Policy Justification Summary

The proposed development is subject to several planning objectives that seek to support intensification along major corridors and within the GTA, and support transit infrastructure investment and ridership while avoiding an oversupply of parking.

Based on the review of policy and planning goals towards supporting non-single occupant vehicle travel, it is evident that the City generally supports a reduction in parking supply. Further, based on the Mississauga Official Plan, the City has enacted many policies that strive towards reducing auto travel and encouraging transit and active transportation modes.

As such, the development's decision to provide reduced parking on-site will support a mix of land uses, encourage complete communities, and provide future residents and visitors with opportunities to utilize the

existing and planned transportation options surrounding the site. This will further support broader planning and city-buildings goals at the municipal, regional, and provincial levels towards creating healthier, complete communities in areas that can accommodate intensification by leveraging existing and planned infrastructure and reducing impacts to the natural environment.

9.6 BEST PRACTICES REVIEW OF COMPARABLE MUNICIPALITIES

Trends in peoples' travel behaviour and the relationship between this behaviour and the built form are becoming increasingly recognized, both within the GTA and across the continent. Cities across North America have either adopted or are in the process of adopting significant parking reforms that challenge the status quo of requiring minimum parking for all uses, regardless of transportation context. More than 20 cities within the U.S. alone have either reduced or eliminated minimum parking requirements, including major cities such as San Francisco, Atlanta, and Houston[1]. Within Canada, a number of cities have implemented or are considering implementing measures to reduce or eliminate minimum parking requirements where warranted, as described below.

9.6.1 City of Edmonton

The City of Edmonton voted to remove minimum on-site parking requirements from the City's Zoning By-law citywide, with measures becoming effective as of July 2, 2020. Maximum parking requirements were maintained in downtown areas and expanded in transit-accessible areas to ensure that parking could continue to be controlled where most appropriate. The onus is now on landowners to provide an appropriate supply for their site.

These updates were considered to be a progressive measure to better reflect the planning and transportation context and goals for the City. To arrive at the decision to eliminate parking minimums, two background studies were conducted: a survey study regarding peoples' attitudes and perspectives towards parking and a technical study of how parking had been supplied and utilized across various factors. It was found that parking had been historically oversupplied, and that supply and utilization rates did not correlate to land use nor neighbourhood contexts.

9.6.2 City of Toronto

The City of Toronto recently completed a review of vehicle and bicycle parking requirements for new development, as directed by the Report for Action dated January 5, 2021, and adopted in the January 19, 2021, Planning and Housing Committee Meeting.

The emerging recommendations of the review were presented in a series of public meetings at the end of September 2021. The recommendations included a removal of most minimum parking requirements citywide while maintaining a requirement for a minimum level of service or maintenance vehicle parking and accessible parking. The current minimum parking requirements in place would become the new maximum parking requirements for most uses. This direction recognizes a shift in parking demand due to societal and other external changes, as trends indicating a decrease in vehicle ownership and increase in alternative travel modes and transit infrastructure development are being observed.

[1] https://knowledge.uli.org/en/reports/research-reports/innovations-in-parking-policy?policyType=Reduction/Elimination+of+Parking+Minimums&q&sortBy=relevance&sortOrder=asc&page=2

Further, the study recognizes that minimum parking requirements can limit the ability to create different housing types and reduce or avoid entirely the cost of having to provide parking on-site. By removing most minimum requirements, the process for development approvals can become more simplified and an oversupply of parking can be avoided, while still maintaining minimum requirements where appropriate to ensure maintenance and accessibility.

The study was finalized in November 2021, and the resulting By-law 89-2022 to amend the Citywide by-law with respect to parking requirements was enacted by City Council in February 2022. Consistent with the emerging recommendations described above, the by-law amendment removes minimum parking requirements for most uses, including residential and non-residential uses such as retail, and maintains reduced residential visitor parking requirements.

9.6.3 City of Brampton

The City of Brampton passed an update to their Zoning By-law, titled By-law 45-2021, in March 2021 to eliminate minimum parking requirements for specific uses in the Downtown, Central Area, and Hurontario-Main Corridor while maintaining visitor parking requirements for multi-unit dwellings.

The motion to do so followed a previous Zoning By-law update to significantly reduce residential requirements in those areas to 0.50 sp/unit in December 2020. At the passing of this zoning by-law update in December 2020, a Supplementary Report recommending City Staff to review elimination of minimum parking requirements for specific uses in the Downtown, Central Area, and Hurontario-Main Corridor was also adopted, recognizing that elimination of parking requirements is occurring more frequently in North America and can support transit-oriented development while addressing broader planning objectives towards housing affordability and sustainability.

Similar to the City of Edmonton, the City of Brampton provides a progressive example of eliminating parking requirements for multi-unit dwellings in core areas supported by an intensifying urban form and existing and future transit improvements.

9.6.4 Best Practices Summary

Based on a review of parking requirements currently in place for transit-accessible areas in Canadian municipalities comparable to the subject site, a reduced supply is appropriate. Several municipalities, including Toronto and Brampton within the GTA, have taken or are in the process of undertaking significant measures to reduce minimum parking requirements in order to combat and oversupply of parking and address issues such as air quality and climate change, public health and accessibility, and affordability of housing and transportation.

The subject site is seeking to provide an appropriate parking supply given its location in a prominent development area and with high existing and future transit accessibility. The following sections review comparable developments that have already proposed parking reductions in comparable locations to the subject site.

Table 9-7: Minimum Parking Requirements in Comparable Jurisdictions to the Subject Site

Land Use	City of Edmonton (ZBL 28-97)	City of Toronto (ZBL 89-2022)	City of Brampton (ZBL 45-2021)	Subject Site (City of Mississauga ZBL 0225-2207)
Studio	0 sp/unit	0 sp/unit	0 sp/unit	1.0 sp/unit
1-bed				
2-bed				

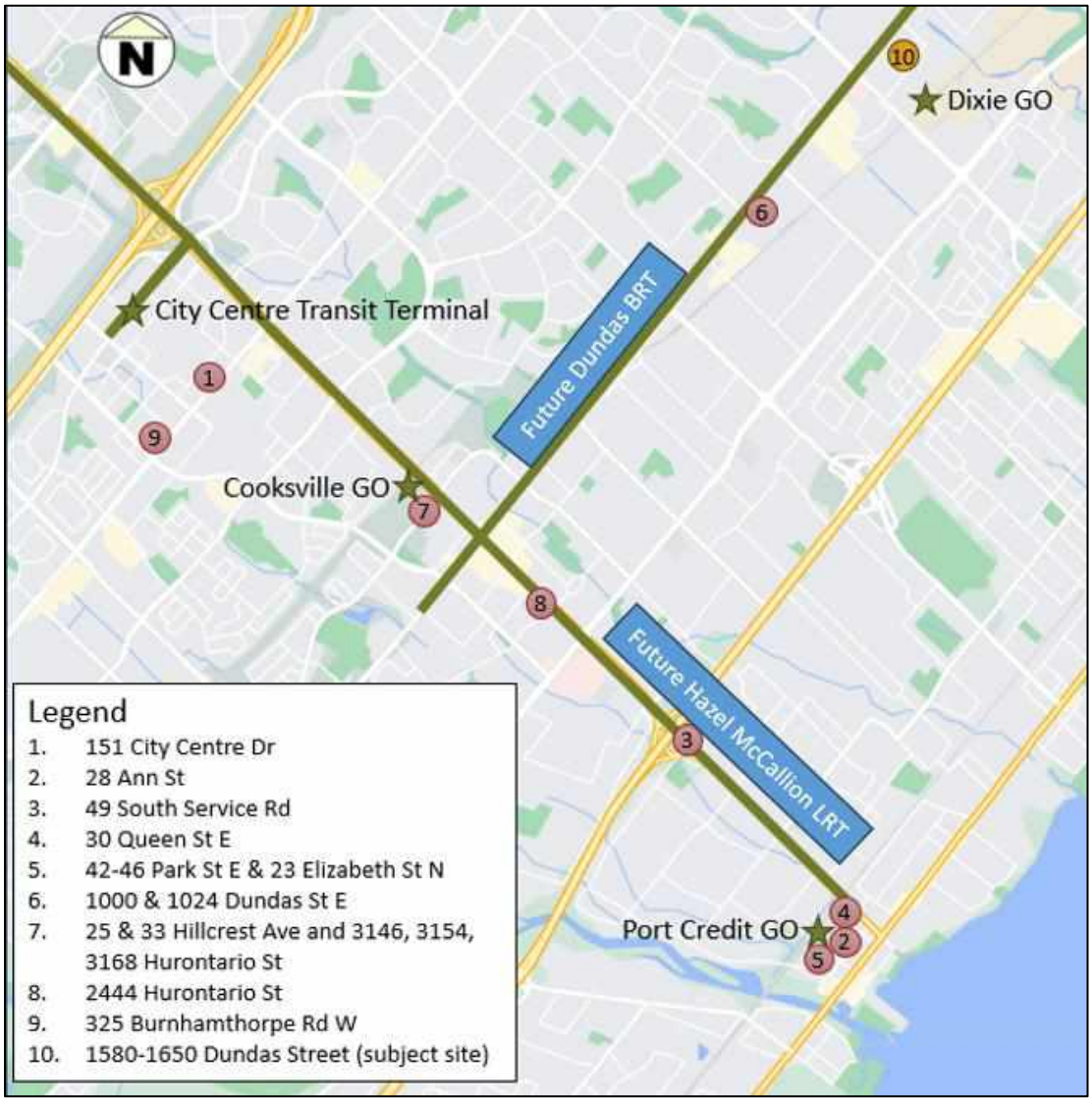
Land Use	City of Edmonton (ZBL 28-97)	City of Toronto (ZBL 89-2022)	City of Brampton (ZBL 45-2021)	Subject Site (City of Mississauga ZBL 0225-2207)
3-bed				
Visitors	0 sp/unit	2 + 0.05 sp/unit [(1)]	0.20 sp/unit	0.20 sp/unit

Note: (1) – Based on City of Toronto Parking Zone B and in all other areas

9.7 RECENTLY APPROVED OR PURSUED PARKING RATES

To further support a reduced resident parking supply and determine an appropriate supply that responds to the current transportation context in the area, a review was conducted of comparable developments pursuing reduced parking rates from the Zoning By-law requirements. Although the City has recently updated its parking policy, developers are still seeking reduced parking rates in transit-oriented communities. These developments are shown in **Figure 9-4**.

Figure 9-4: Mississauga Development Applications with Parking Reductions



Information regarding the development applications was obtained from the City of Mississauga's Development Application database. **Table 9-8** summarizes the reduced parking rates for developments that are under review. Council decisions for 151 City Centre Drive and 28 Ann Street are provided in **Appendix L**.

Table 9-8: Pursued or Approved Residential Parking Rates

#	Site Location	Site Stats	Walk Score/Distance to Transit	Proposed Parking Rate (sp/unit)	Unix Mix	Application Status
1	151 City Centre Drive	Two 60-storey 5 mixed-use; 1,962 units; 26 hotel rooms, 4,816 m^2 office GFA, 4,956 m^2 retail GFA	**Walk Score:** 91 **Transit Score:** 81 **Distance to Transit:** 600m from City Centre Transit Terminal; adjacent to future Hazel McCallion LRT stop	1-Bed: 0.62 2-Bed: 0.72 Vis: 0.15 Overall: 0.77-0.87	1BD: 34% 2BD: 66%	Approved CoA Decision 'A' 355/21
2	28 Ann Street	22-storey mixed-use; 316 units	**Walk Score:** 27 **Transit Score:** 55 **Distance to Transit:** Adjacent to Port Credit GO, future terminus of Hazel McCallion LRT	1-Bed: 0.50 2-Bed: 0.80 Vis: 0.15 Overall: 0.65-0.95	1BD: 29% 2BD: 64% 3BD: 6%	Approved CoA Decision 'A" 413/20
3	49 South Service Road	26-storey residential; 353 units	**Walk Score:** 14 **Transit Score:** 48 **Distance to Transit:** 2.6km to Cooksville GO; 350m to future Hazel McCallion LRT stop	Res: 0.29 Vis: 0.10 Overall: 0.39	1BD: 67% 2BD: 33%	Application in Progress (OPA/OZ 22-23 W1)
4	30 Queen Street E	Two towers, 40-42 storeys; 1,129 units and 1,765 m^2 commercial GFA	**Walk Score:** 33 **Transit Score:** 55 **Distance to Transit:** Adjacent to Port Credit GO, future terminus of Hazel McCallion LRT	Res: 0.32 Vis: 0.10 Overall: 0.42	1BD: 71% 2BD: 29%	Application in Progress (OZ/OPA 22/10 W1)
5	42-46 Park Street E & 23 Elizabeth Street N	22-storey mixed-use; 258 units	**Walk Score:** 31 **Transit Score:** 55 **Distance to Transit:** Adjacent to Port Credit GO, future terminus of Hazel McCallion LRT	Res: 0.67 Vis: 0.10 Overall: 0.42	1BD: 63% 2BD: 35% 3BD: 2%	Application in Progress (OZ 20/006 W1)
6	1000 & 1024 Dundas Street E	4-storey, 16-storey and 20-storey residential; 462 units	**Walk Score:** 34 **Transit Score:** 53 **Distance to Transit:** 1.7km to Dixie GO, adjacent to future Dundas St BRT station	Res: 0.70 Vis: 0.10 Overall: 0.80	Unknown	Application in Progress (OZ/OPA 22-18 W1)
7	25 & 33 Hillcrest Avenue and 3146, 3154, 3168 Hurontario Street	5 buildings: 2,224 units, 6,270 m^2 retail GFA, 8,692 m^2 commercial GFA and 6,216 m^2 community GFA	**Walk Score:** 80 **Transit Score:** 66 **Distance to Transit:** Adjacent to Cooksville GO, future Hazel McCallion LRT station	1-Bed: 0.62 2-Bed: 0.72 3-Bed: 0.80 Vis: 0.20 Overall: 0.82-1.00	1BD: 72% 2BD: 24% 3BD: 5%	Application in Progress (OZ/OPA 22-19 W7)

#	Site Location	Site Stats	Walk Score/Distance to Transit	Proposed Parking Rate (sp/unit)	Unix Mix	Application Status
8	2444 Hurontario Street	26-storey residential; 172 units	**Walk Score:** 33 **Transit Score:** 60 **Distance to Transit:** 1.3km from Cooksville GO, future Hazel McCallion LRT station	Res: 0.69 Vis: 0.15 Overall: 0.84	1BD: 58% 2BD: 42%	Application in Process (OZ 20/010 W7)
9	325 Burnhamthorpe Road West	5 Blocks: 2,722 units, 6,667 m^2 retail GFA, 351 m^2 community GFA	**Walk Score:** 81 **Transit Score:** 67 **Transit Access:** 900m from City Centre Transit Terminal and future Hazel McCallion LRT stop	Res: 0.65 Vis: 0.15[1] Overall: 0.80	1BD: 56% 2BD: 44%	Application in Progress (OPA 21-21 W4)
10	**Subject Site**	**5 Blocks: 2,877 units, 6,094 m^2 retail GFA, 366 m^2 community GFA**	**Walk Score: 32 Transit Score: 49 Transit Access: 900m from-Dixie GO and future Dundas BRT stop**	**Recommended Rates: Res: 0.65 Vis: 0.15[1] Overall: 0.80 Proposed Overall: 0.84/unit**	Std: 8% 1BD: 57% 2BD: 24% 3BD: 11%	**Proposed**

[1] shared visitor and retail spaces

The subject site shares similarities with the other precedent developments listed as each seek to add significant residential density to the surrounding community, while capitalizing on proposed or planned transit improvements underway. In the case of the subject site, the site will benefit from improved access to Dixie GO Station and the planned Dundas Street BRT.

Further, each provide design elements that will enhance connections to the existing external pedestrian, cycling, and transit networks. Specifically, active transportation improvements adjacent to the site will be provided via implementation of future cycling facilities along Dundas Street. It is therefore anticipated that the area will become much less reliant on vehicles in the future, similar to the areas of the other developments listed in the table.

The proposed development at 1000 & 1024 Dundas Street East (#6) also provides an accurate comparison to the subject site. Both developments propose an overall parking rate of 0.80 sp/unit and both have very similar walk score in the low 30s and transit score around 50. Both developments also have direct access to the future Dundas BRT, and a similar distance to the future Hazel McCallion LRT.

Several developments that have been approved or proposed with residential parking rates below 0.65 sp/unit including 28 Ann Street (#2), 49 South Service Road (#3), 30 Queen Street East (#4), and 325 Burnhamthorpe Road West (#9), have lower walk scores (14 to 27) and similar transit scores (48 to 55) compared to the subject site (32 walk & 49 transit). As the subject site has better access to transit and amenities within walking distance, a low parking supply is justifiable.

A review of recently proposed/approved reduced residential parking ratios of nearby comparable developments in the area reveal a range of residential parking rates below the by-law requirements. The studied sites display a similar trend of proposing significantly reduced parking supplies from the Zoning By-law requirements. As such, the reduced parking supply is reasonable for the subject development. While the

subject site has a Walk and Transit Score that indicates a slightly below average degree of walkability and transit accessibility under existing conditions, this is prior to the realization of additional higher-order transit service planning for the area. Once the Dundas BRT is constructed and operational within the study area, the Walk Score and Transit Score is expected to increase significantly. Given the comparability in the transportation context between these sites and the subject site, it is expected that a similar demand for parking would exist at the proposed development. The proposed residential supply rate of 0.65 sp/unit and visitor supply rate of 0.15 sp/unit (combined at 0.80 sp/unit) are greater than the observed average demand at the proxy sites. As such, the proposed parking supply of 0.84 sp/unit will be sufficient to meet the anticipated residential parking demand.

9.8 PEER REVIEW COMMENTS

The previously submitted TIS (dated July 2022) for the subject site received a Peer Review Study by Arcadis, dated February 10, 2023. Section 4.1 of the peer review study evaluated the parking study submitted during the first submission, the consensus of the evaluation stated, "*Overall, based on Section 4.3 (Precedent Setting Developments) of Appendix L, the proposed development parking rates are within the range of rates of comparable developments and is situated in similar urban contexts*." However, comments received by the City are contradicting to the findings of the peer review study, as comments 85 to 88 from the Parking Department at the City state that there are overarching concerns with proposed parking rates.

As demonstrated in the sections above, the proposed parking rate for the subject site is comparable to other developments that have previously been approved within the city. Along with that, a Best Practice review in **Section 9.6** demonstrates that the industry is transitioning towards reduced parking supplies, which aligns with the findings of the Arcadis peer review study. Altogether, the proposed rates are deemed appropriate for the subject site.

9.9 VEHICULAR PARKING CONCLUSIONS

The subject site requires a total parking supply of 3,506 spaces, consisting of 2,924 residential spaces and 582 visitor/retail spaces, as per City of Mississauga Zoning By-law requirements. The non-residential requirements are proposed to be slightly lower as it is proposed that the site provide non-residential parking at a rate of 0.15 sp/unit, resulting in a marginal deficit compared to the required amount. Likewise, a reduced residential parking supply of 0.65 sp/unit is proposed, which presents a deficiency from zoning by-law requirements.

Based on the review of future transportation context, contemporary policy direction, review of comparable municipalities, proxy demand survey results, recently pursued development applications, and a peer review conducted by Arcadis, it is our opinion that the proposed parking supply is sufficient to meet the needs of the proposed development. To support the proposed parking supply, a Transportation Demand Management (TDM) Plan is provided in **Section 11**. TDM measures will be essential to support multi-modal travel options to and from the subject site.

10 LOADING REVIEW

The loading space requirements of the subject site are governed by the City's Zoning By-law 0225-2007. **Table 10-1** summarizes the loading requirements for the proposed uses on-site.

Table 10-1: Zoning By-Law Loading Requirements

Block	Proposed Use	Description and Size	Zoning By-Law 0225-2007		Proposed Spaces
			Loading Rate	Required Spaces	
A	Residential	- 1,037 total apartment units	> 30 units	1	1
		- 4 total townhouse units	n/a	0	
	Retail	- 1,271 m^2 GFA	250 to 2,350 m^2	1	
C	Residential	- 425 total apartment units	> 30 units	1	1
		- 2 total townhouse units	n/a	0	
	Retail	- 955 m^2 GFA	250 to 2,350 m^2	1	
	Community	- 366 m^2 GFA	n/a	0	
E	Residential	- 498 total apartment units	> 30 units	1	1
		- 17 total townhouse units	n/a	0	
	Retail	- 2,086 m^2 GFA	250 to 2,350 m^2	1	
F	Residential	- 303 total apartment units	> 30 units	1	1
		- 76 total townhouse units	n/a	0	
	Retail	- 634 m^2 GFA	250 to 2,350 m^2	1	
G	Residential	- 454 apartment units	> 30 units	1	1
		- 60 total townhouse units	n/a	0	
	Retail	- 1,148 m^2 GFA	250 to 2,350 m^2	1	
			Total	10	5

A total of 5 loading spaces are proposed for the subject site, while By-law 0225-2007 requires a total of 10 loading spaces, indicating that the subject site has a proposed shortfall of 5 loading spaces. The reason for the shortfall of loading spaces on site is caused by functionality constraints caused by the layout of the ground floor. However, it should be noted that the property management will ensure that the loading space is operated in an efficient manner, where the loading spaces will be reserved for waste collection vehicles during dedicated times.

To sum, as each Block will have its own loading space, it is LEA's opinion that the proposed loading spaces will be sufficient to service this site. The swept path drawings and sightline analysis are available in **Appendix M**, with the functional road design provided in **Appendix N**.

11 TRANSPORTATION DEMAND MANAGEMENT

Transportation Demand Management (TDM) is a set of strategies which strive towards a more efficient transportation network by influencing travel behaviour. Effective TDM measures can reduce vehicle usage and encourage people to engage in more sustainable modes of transportation. There are several opportunities to incorporate TDM measures to promote alternate modes of transportation and support existing and future planned transit infrastructure. The following subsections discuss the TDM initiatives with focus on reducing SOV trips to and from the subject site. These include a number of multi-modal travel and parking-based strategies, which collectively will support the reduction in vehicle parking proposed and ultimately support fewer vehicle trips to and from the subject site on a regular basis.

The main objectives of this TDM plan include:

- Reduce vehicle dependence and the attractiveness of SOV trips;
- Increase the feasibility and attractiveness of walking, cycling, and transit modes of travel;
- Promote transit and carpooling programs that reduce SOV travel; and
- Ensure that all measures can be reasonably implemented and support the proposed development.

11.1 EXISTING TRAVEL BEHAVIOUR

Transportation Tomorrow Survey (TTS) 2016 data was reviewed to determine the existing travel behaviour of the subject site and surrounding area. A breakdown of the travel mode split is provided in **Table 11-1**.

Table 11-1: Modal Split Reductions

Modes	Modal Split	
	Residential	Retail
Auto Driver	64%	66%
Passenger	11%	15%
Transit	20%	7%
Pedestrian	5%	12%
Cycling	0%	0%

Currently, 64% of residential trips and 66% of retail trips are made by single-occupant vehicles. The following sections discuss TDM measures that will encourage an increase in more sustainable travel modes to further increase the non-auto driver mode split for trips generated by the subject development.

11.2 TDM-SUPPORTIVE LAND USE STRATEGY

The proposed development will replace a traditional auto-dependent commercial plaza with significant surface parking provided with a new, mixed-use community that will support the development and intensification of the Dundas Street corridor, as identified under the Dundas Connects Planning Study.

Variety of Land Uses and Residential Tenure On-site: The proposed development will provide retail and community destinations that will be walkable or bikeable for the surrounding community as well as future residents of the subject site. This will help to reduce the need for a personal vehicle to accomplish regular trips.

Additionally, rental housing is being considered for portions of the proposed residential units on-site. This will help to expand the rental housing supply in Mississauga within a development that supports the use of transit and active transportation as opposed to supporting auto-dependency as a primary travel mode.

11.3 SITE DESIGN STRATEGIES

Characteristics of the Site Design: The proposed site plan includes a new internal road network to service the site. The road network will be pedestrian friendly and include landscaping, sidewalk, and cycling facilities, and will facilitate connections to future road network improvements such as the Blundell Road extension.

Retail services and building entrances will be oriented to the street to provide continuous street frontages along Dundas Street East and Mattawa Avenue. Additional strategies that are recommended as part of the site design to compliment the proposed land use strategy include:

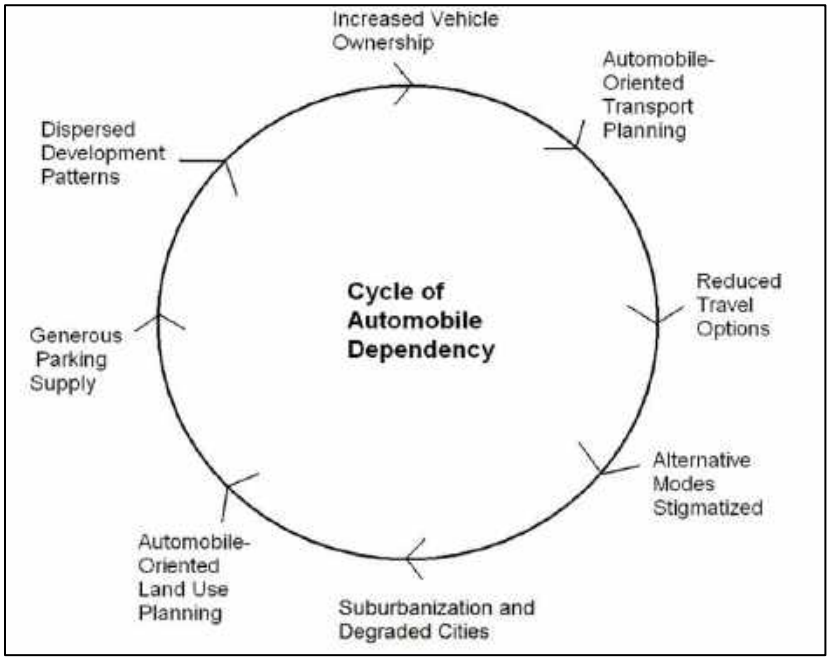
- Orientation of residential and mixed-use buildings towards the street;
- Incorporate frequent entrances to buildings with active road level uses to increase permeability;
- Avoid long stretches of blank walls adjacent to the street; and,
- Support areas with high levels of pedestrian activity through building setbacks and pedestrian amenities.

11.4 PARKING DEMAND MANAGEMENT STRATEGIES

A parking strategy is proposed for the subject site that includes a reduction in the baseline parking requirements and proposed supply on a block-by-block basis to maximize the amount of parking that can be provided while avoiding an oversupply where it is not needed. The following strategies with respect to managing parking demand on-site are recommended for consideration as the development concept continues to develop through the application process:

Parking reduction from Zoning By-law requirements: Parking policies can either encourage households to choose transit, or to purchase a vehicle. **Figure 11-1** illustrates the self-reinforcing cycle of increased automobile dependency and urban sprawl, with has been reinforced by many transportation and land use planning practices observed during the last century. This was generally unintended, reflecting a lack of consideration of the consequences behind these decisions. For example, when deciding the amount of parking required for a particular type of land use, traffic engineers generally determine minimum parking rates disregarding the additional sprawl that may result from these supply rates.

Figure 11-1: Cycle of Automobile Dependency and Related Affects



Source: Evaluating Transportation Land Use Impacts Considering the Impacts, Benefits and Costs of Different Land Use Development Patterns 27 (February 2017).

As displayed by the figure, it has been recognized that an oversupply of parking is becoming problematic in areas with strong transit access and active transportation networks, wherein the availability of parking greatly reduces transit ridership, along with walking and cycling trips. Parking policies should be based on location, transit availability, context of the development, and strategic plans for the area outlined by the City. Given the availability of transit services and improvements planned for the area, there is substantial potential for a parking reduction strategy to reduce vehicle ownership and increase usage of the transit active transportation investments. A reduced parking supply will be a key measure in supporting existing transit services, avoiding oversupply of parking, discouraging automobile use, and supporting the City's long-term transportation goals.

On-Site Car Share Spaces: Car share programs are recommended for consideration to encourage car sharing activities and to reduce the need for automobile ownership. Car share can be provided through an external partner that manages and maintains the logistics of the car share space. Car share spaces are expected to reduce vehicle ownership of residential developments and the overall parking demand that is generated. Additionally, the effectiveness of car share spaces is anticipated to increase as the density of the proposed development increases. As the proposed development is anticipated to be built out as a compact, walkable community, car share will be a viable strategy for future residents of the subject site.

Unbundled Parking: It is recommended that parking be provided unbundled from the lease of rental units and/or sale of apartment units to support zero-car households and tie the cost of vehicle ownership to units requiring parking only.

Shared Parking Strategy: It is recommended that a shared parking strategy be adopted for the non-residential uses on-site, namely the retail and residential visitor components. This will ensure that parking is being provided appropriately to accommodate demand without oversupplying parking to accommodate a 'worst-case scenario'. A review of shared parking was conducted to confirm the appropriateness of adopting this strategy for the subject site.

11.5 PEDESTRIAN-BASED STRATEGIES

Safe and Convenient Internal and External Pedestrian Connections: The proposed site plan ensures safe, comfortable and convenient pedestrian connections to key internal destinations such as the proposed park and street level retail, amenity, and community centre uses. Pedestrians will also be able to access existing bus stops at Dundas Street East and Mattawa Avenue, as well as Dixie GO Train Station via a future extension of Blundell Road that is being considered in the site plan design.

The proposed pedestrian facilities as part of the development plans will further improve connections for residents and visitors to nearby commercial uses and transit stops. To further enhance the pedestrian realm and consider persons with mobility difficulties, the passageways should be well lit with enhanced landscaping and minimal barriers to provide a permeable pedestrian corridor. This will create a pleasant and safe pedestrian experience.

Orient building entrances with direct access to pedestrian networks and streets: The proposed site plan ensures safe, comfortable and convenient pedestrian connections to key internal destinations including the amenity space and the proposed pedestrian mid-block connection. The proposed pedestrian entrances to the buildings are oriented facing all major roadways, providing convenient access for pedestrians, cyclists, and transit users. Connections are also provided to the external pedestrian network with sidewalks along all proposed and existing roadways.

Mixed uses and walking distance to nearby amenities: The subject site is situated within an area that offers various employment, retail, and institutional uses. The subject development is within convenient walking distance from Dixie GO, amongst numerous other institutional, recreational, and retail uses.

Enhanced Landscaping: Enhanced Landscaping will be provided to improve the public realm and 'eyes of the street', which will support a safe and attractive pedestrian environment at all times of day.

11.6 CYCLING-BASED STRATEGIES

Provide connections to cycling infrastructure and facilities: The subject site will be located within an area with great access to the cycling network with various cycling facilities, including proposed cycle tracks on Dundas Street East, providing east-west connections, along with cycle tracks on Dixie Road, providing north-south connections. In addition, the proposed bike lane along Mattawa Avenue will provide north-south connections to and from the subject site. The planned improvements to the cycling network will increase connectivity throughout the city and encourage cycling as a viable option.

Provide Significant Supply of Short-Term and Long-Term Bicycle Parking: Provision of bicycle parking facilities will support and encourage active transportation, while taking advantage of the planned cycling network improvements along Dundas Street. Short-term bicycle parking facilities should be located at-grade in a highly visible and convenient area close to building entrances and parks/gardens for residents and visitors. Long-term bicycle parking should be provided in secured and weather-protected locations, such as storage rooms and bicycle locker rooms.

Bicycle parking is currently proposed at a higher rate than the current required bicycle parking rates. This will encourage bicycle ownership as an alternative to vehicle ownership and will support cycling as a viable travel mode for regular trips, as well as to facilitate first and last-mile trips such as to the Dixie GO Train Station.

Provide sources that offer bicycle skills training: Given the availability of cycling facilities in the immediate area, bicycle training sources can be provided to increase safety and enhance cycling behaviour on the road (ex. CAN-BIKE certification courses).

Promote and increase cycling awareness & multi-modal transportation: It is recommended that information packages be provided to residents to help encourage active transportation and increase awareness of different travel alternatives. The package should include information regarding the environmental and health benefits of cycling, rules of the road, and maps of active transportation infrastructure available in the surrounding area.

11.7 TRANSIT BASED STRATEGIES

Support Existing and Future Transit Connections: The subject site is located in an area with accessibility to surface transit provided by MiWay bus routes that connect to local destinations, other MiWay routes, and to TTC and GO Transit services in the City of Toronto. The fine-grid street design of the site plan will ensure that the existing stops and future service along Dundas Street can be easily accessed.

Provide public transit information to residents: Public transit information should be made available to residents and employees, such as MiWay route maps and seven-day schedule timetables for nearby stops. Route and scheduling information could be provided as displays in lobbies, or through real-time updated digital displays in a central location in the building. This will increase the likelihood of new residents incorporating alternatives in their travel patterns when residing at the development. Transit screens will also allow individuals to wait inside or make alternate arrangements if there is a significant delay. It is recommended that the owner coordinate an information session with the City of Mississauga to deliver and promote transit incentives to residents that work in the City.

Seek opportunities for Bike Share Programs: The applicant is encouraged to seek opportunities to partner with Mississauga and TTC Public Transit authorities, local universities and colleges, and Metrolinx to provide secure shared bike stations at the subject site. This will improve and promote cycling between the site and the nearby Dixie GO Station.

11.8 ADDITIONAL STRATEGIES

Provide pre-loaded PRESTO cards to residents: To incentivize residents to make more transit-based trips, pre-loaded PRESTO cards can be supplied to each unit upon occupation. Supplying residents with a pre-loaded PRESTO card will promote the use of nearby transit services. By adopting transit ridership behaviour early on, residents will rely less on personal automobiles.

Provide car share spaces on-site: Car share programs are recommended to be considered to encourage car sharing activities and to reduce the need for automobile ownership. Car share can be provided through an external partner that manages and maintains the logistics of the car share space. Car share spaces are expected to reduce vehicle ownership of residential developments and the overall parking demand that is generated. Additionally, the effectiveness of car share spaces is anticipated to increase as the density of the proposed development increases, and since the proposed development is anticipated to be built out as a compact dense community, car share provisions would be ideal.

11.9 SUMMARY OF TDM RECOMMENDATIONS

Table 11-2 summarizes the recommended TDM measures and benefits for the subject site.

Table 11-2: Summary of TDM measures

TDM Measure	Benefits
Land-Use and Site Design Strategies	
Variety of Land Uses and Residential Tenure On-site	+ Subject site will provide retail and community destinations that will be walkable and bikeable for all residents + New internal road network will be sustainable-mobility friendly and include landscaping, sidewalk facilities, and cycling facilities + Retail services and building entrances will be oriented to the street to provide continuous street frontages
Site Design optimized to ensure TDM supportive	
Parking Demand Management Strategies	
Parking reduction from Zoning By-law requirements	+ Reduced parking supply will support existing and proposed transit services, avoiding oversupply of parking, discouraging automobile use, and supporting the City's long-term transportation goals + Car share is recommended to encourage car sharing activities and to reduce the need for automobile ownership + Recommended that parking be provided unbundled from the lease of rental units and/or sale of apartment units to support zero-car households + Proposed shared visitor and retail parking to ensure there is no oversupply
On-Site Car Share Spaces	
Unbundled Parking	
Shared Parking Strategy	
Pedestrian-Based Strategies	
Safe and Convenient Internal and External Pedestrian Connections	+ Safe, comfortable and convenient pedestrian connections to key internal destinations such as the proposed park and street level retail, amenity, and community centre uses + Connections are provided to the external pedestrian network with sidewalks along all proposed and existing roadways + Subject site is situated within an area that offers various employment, retail, and institutional uses. + Enhanced Landscaping will be provided to improve the public realm and 'eyes of the street'
Orient building entrances with direct access to pedestrian networks and streets	
Mixed uses and walking distance to nearby amenities	
Walking distance to nearby amenities	
Cycling-Based Strategies	
Provide connections to cycling infrastructure and facilities	+ Create secure and convenient bike parking and amenities on site to encourage cycling + Significant bike parking is proposed to encourage bicycle ownership as an alternative to vehicle ownership and will support cycling as a viable travel mode for regular trips, as well as to facilitate first and last-mile trips such as to the Dixie GO Train Station + bicycle training sources can be provided to increase safety and enhance cycling behaviour on the road + Encourage cycling as a mode for commuting
Provide significant supply of short-term and long-term bicycle parking	
Provide sources of bicycle skills training	
Promote and increase cycling awareness and multi-modal transportation	
Transit-Based Strategies	
Support existing and future transit connections to and from the subject site	+ Encourage travel by existing surface transit providing direct connections to MiWay transit services and GO transit services + Improve knowledge to available transit options

TDM Measure	Benefits
Provide public transit information to residents	+ Opportunity to capitalize on planned transit improvements (e.g. Hazel McCallion LRT) + Subject site is encouraged to seek opportunities to partner with Mississauga and MiWay Public Transit authorities, local universities and colleges, and Metrolinx to provide secure shared bike stations at the subject site
Seek opportunities for Bike Share Programs	
Additional Strategies to be Considered	
Provision of public transit info and/or PRESTO cards to residents	+ Improve knowledge and financial access to available transit options
Consider provision of carshare spaces on-site	+ Provide flexibility for occasional vehicle use without need to own

12 CONCLUSIONS & RECOMMENDATIONS

- The proposed development consists of 2,877 residential units, 6,094 m^2 of retail, and 366 m^2 of community GFA to be provided across several development blocks titled Block A, C, E, F, and G. The development will include a mixture of towers ranging from 12 to 41-storeys for the five blocks.
- The subject site is located in an area well-serviced by the MiWay Transit network. The subject site is within walkable distance of bus stops along Dundas Street East as well as Dixie GO Station.
- A total of seven (7) traffic scenarios were assessed: Existing Conditions 2023, Future Background Conditions 2028, Future Total Conditions 2028, Future Background Conditions 2033 Scenario 1, Future Total Conditions 2033 Scenario 1, Future Background Conditions 2033 Scenario 2, and Future Total Conditions 2033 Scenario 2. For the 2033 scenarios, a baseline assumption of a 10% reduction in traffic volumes following implementation of the Dundas BRT were assessed.
- The site is expected to generate 715 total vehicle trips during the weekday AM peak hour and 947 total vehicle trips during the weekday PM peak hour.
- The majority of the intersections within the study area are expected to operate comparably under future background conditions following development of the subject site with the exception of the Dundas Street East and Mattawa Avenue intersection, which has been assessed as the primary site access. To mitigate constraint issues under future total conditions at this intersection, it is proposed that the signal timing plans be optimized.
- A queueing analysis was also conducted for each study area intersection. All queues are anticipated to be acceptable, with the exception of a few movements that are expected to be overcapacity. However, it should be noted that many of the queue constraints analyzed were caused by background growth within the area, indicating that the subject site will have minimal impact to intersection queues within the area.
- The development proposal includes a reduction in parking requirements and the proposed supply from existing by-law requirements as part of an overall parking and Transportation Demand Management (TDM) strategy to reduce reliance on the personal automobile and support a transit-oriented development (TOD) for the subject site. This includes a recommended baseline requirement of 0.65 residential sp/unit and a 0.15 sp/unit visitor parking requirement (overall 0.80 sp/unit), to be shared between visitor and retail uses. In total, the proposed development will provide 2,416 parking spaces, which equates to 0.84 sp/unit overall.
- Based on a review of the site's transit and provincial and municipal planning context, a parking reduction is an appropriate strategy for the subject site. Additionally, a review of best practices from other municipalities, including Edmonton, Brampton, and Toronto indicate a trend towards significant reducing or removing minimum parking requirements altogether to provide the groundwork for ensuring parking for new developments is appropriate to the context and demand.
- The peer review conduced by Arcadis has indicated that the proposed parking supply for both residential and non-residential uses is appropriate, as the rate are within the range of rates of comparable developments, is situated in similar urban contexts, and can accommodate typical parking demand on-site.

- A comprehensive TDM Strategy that can adapt and evolve as the site plan concept and design evolves is also proposed to support the parking reduction. As a result, the proposed parking strategy is considered to be appropriate and supportable for the subject site.
- The subject site requires ten (10) loading spaces as per the City of Mississauga Zoning By-Law. A total of five (5) loading spaces are proposed, which are intended to be coordinated by the property manager to ensure no overlap of loading activities. As such, it is our opinion the loading supply is appropriate for the subject site.

APPENDIX A

Terms of Reference

Jennica Chiu

From: Kate Vassilyev <Kate.Vassilyev@mississauga.ca>
Sent: March 25, 2021 8:00 AM
To: Jennica Chiu
Cc: Ryan Au; Lin Rogers
Subject: RE: Terms of Reference for Proposed Mixed-Use Community at 1530-1650 Dundas Street East, City of Mississauga

Good morning Jennica,

Thank you for providing the Terms of Reference for 1530-1650 Dundas St East. Staff have reviewed it and provided the following comments in green. Please feel free to contact me if you have questions.

Regards,

Kate (Jekaterina) Vassilyev
Traffic Planning Technologist
T 905-615-3200 ext.8171
kate.vassilyev@mississauga.ca

City of Mississauga | Transportation and Works Department,
Infrustructure Planning Division

From: Jennica Chiu [mailto:JChiu@lea.ca]
Sent: Tuesday, March 9, 2021 2:48 PM
To: Ryan Au <Ryan.Au@mississauga.ca>
Cc: Mackenzie Riggin <mriggin@lea.ca>; Nixon Chan <NChan@lea.ca>
Subject: Terms of Reference for Proposed Mixed-Use Community at 1530-1650 Dundas Street East, City of Mississauga

Dear Mr. Au,

We wish to confirm the following work plan for a Transportation Impact Study (TIS) for the proposed mixed-use community development located at 1530-1650 Dundas Street East (herein referred to as the "subject site") in the City of Mississauga. The report will be in support of the Official Plan Amendment (OPA), Zoning By-Law Amendment (ZBA), and Draft Plan of Subdivision applications for the proposed development. The subject site is located east of the Dundas Street East and Dixie Road intersection, on the south side of Dundas Street East. **Figure 1** illustrates the location of the subject site. Proposed development address is 1580-1650 Dundas St E not 1530.

Figure 1: Site Location

The following outlines the proposed Terms of Reference for the study.

PROPOSED DEVELOPMENT

Based on the latest site plan received, the application involves a high density, mixed-used community inclusive of proposed towers ranging from 25-40 storeys and a 4.3 hectares parkland dedication. The proposed development will include 2,652 residential units, 6795 m^2 of commercial area, a 4340 m^2 community centre, a Privately-Owned Publicly Accessible Space, and three new public roads. The subject site is currently occupied by two existing 2-storey commercial buildings with accompanying surface parking lots. The City of Mississauga has completed a master plan study of Dundas Street through the Dundas Connects project. This study explores ways to incorporate higher order transit on Dundas Street and investigate opportunities for associated transit-orientated development. Please refer to Dundas Connects Master Plan for the surrounding context and road network. https://mississauga.ca/projects-and-strategies/city-projects/dundas-connects/

STUDY AREA AND TRAFFIC DATA COLLECTION

The TIS will assess the weekday AM (7:00 to 9:00 a.m.) and weekday PM (4:00 to 6:00 p.m.) peak hours. The proposed study area will include the analysis of the following intersections:

- Dundas Street East and Dixie Road (Signalized);
- Dundas Street East and Mattawa Avenue (Signalized);
- Dundas Street East / Neilco Court (Signalized)
- Dundas Street East / Jarrow Avenue (Signalized)
- Dundas Street East / Nawbrook Road (Unsignalized)
- Dundas Street East / Treadwells Drive / Coram Avenue (Signalized)
- Dundas Street East / Wharton Way (Signalized)

Turning movement counts at all intersections will be within the last 2 years. It is noted that, due to the ongoing Covid-19 pandemic during the 2020 and 2021 horizon years, traffic operations during this period have been disrupted. LEA proposes to either purchase traffic counts from either the City of Mississauga, Peel Region, or a third party (if available). If recent traffic data cannot be readily purchased or obtained, LEA will utilize available traffic data balanced to reflect

2021 traffic conditions. Please confirm TMC's with staff prior to commencing study. Please obtain signal timing plans from Traffic Signals section. Include 5 –year collision analysis along Dundas Street East.

TRAFFIC ASSESSMENT AND STUDY HORIZON YEAR

The study will focus on weekday AM and PM peak hour traffic operations. Synchro version 11 will be used to assess intersection operations during the peak hours. A five-year horizon will be assessed in this study for the year 2026. Include 5 year horizon (no BRT), 10 year horizon (with BRT).

BACKGROUND TRAFFIC

Background growth rates will be established in consultation with City and Region staff.

General Corridor Growth – LEA will review historical traffic count data along the Dundas Street East and Dixie Road corridors to determine appropriate corridor growth rates. Please obtain growth rates from City's staff (Tyler Xuereb, Transportation Planning Section; tyler.xuereb@mississauga.ca, Ext. 4783).

Road Network Improvements – LEA will note any road network improvements (e.g. road widening) identified within the study area and account for any traffic diversions associated with these improvements within our analysis. Refer to Dundas Connects Master Plan: https://mississauga.ca/projects-and-strategies/city-projects/dundas-connects/

Background Development Traffic – Upon initial review of the City of Mississauga Development Applications online database, the background developments in the study area were identified as summarized in **Table 1**.

Table 1: Identified Background Developments in the Study Area

#	Address of Development	Description
1	3085 Queen Frederica Drive	73 Residential Apartment Units
2	1565 Dundas St. E	Mixed Use Retail and Offices

Please include: 1333 Tonolli Road, storage building and 2360 Dixie Road, industrial building. We understand that the City will confirm if the same and/or additional background developments shall be considered. Upon confirmation, LEA will need to meet with City Staff to review the relevant background documents.

TRIP GENERATION, DISTRIBUTION, AND ASSIGNMENT

The trip generation of the proposed development will be based on site trips calculated from the 10th Edition of the Institute of Transportation Engineers (ITE) Trip Generation Manual and/or from proxy site data for a similar development.

The general trip distribution utilized will be based on a review of the latest Transportation Tomorrow Survey (TTS) data, existing traffic flows, and census tract population densities in the vicinity of the subject site. Trip assignment will be revised accordingly to reflect the configuration of site access, turning restrictions and logical routings.

PARKING AND LOADING

The site is currently under the jurisdiction of the City of Mississauga Zoning By-Law 0225-2007, which will be reviewed for parking and loading requirements. If a parking reduction is proposed, appropriate analyses and justification will be provided to illustrate that the proposed parking supply will meet the projected parking demand. For parking justification please confirm TOR with City Planning staff.

SITE PLAN REVIEW

Site plan review will also be undertaken to ensure vehicular movements can be accommodated at the proposed loading bays, parking lots, drive aisles, garage ramps, etc. and loading and servicing vehicles can effectively access, circulate, and/or perform loading activities on-site. Please include the sight line analysis for the proposed private roads.

ADDITIONAL SECTIONS

- Please include TDM;
- Include a section for Community Impacts. Any traffic related impacts on the existing community and comments from the public through the planning approvals process shall be addressed in this section.

Should you have any comments with our assumptions or have any concerns, please do not hesitate to contact us.

Yours truly,

Jennica Chiu, EIT
Transportation Analyst
LEA Consulting Ltd.
625 Cochrane Drive, 9th Floor | Markham, ON | L3R 9R9
T: 905-470-0015 ext. 383 **E:** JChiu@lea.ca
www.LEA.ca

APPENDIX B

Traffic Data and Signal Timing Plan

Turning Movement Counts

LEA Consulting Ltd.
625 Cochrane Drive

Markam, Ontario, Canada L3R 9R9
905-470-0015 x240 idinsmore@lea.ca

Count Name: 21224_Dixie Rd & Dundas St E-AM
Site Code: 21224
Start Date: 06/22/2023

Turning Movement Data

Start Time	Dixie Road Southbound						Dundas Street East Westbound						Dixie Road Northbound						Dundas Street East Eastbound						Int. Total
	Right	Thru	Left	U-Turn	Peds	App. Total	Right	Thru	Left	U-Turn	Peds	App. Total	Right	Thru	Left	U-Turn	Peds	App. Total	Right	Thru	Left	U-Turn	Peds	App. Total	
7:00 AM	27	110	54	0	3	191	25	63	17	0	3	105	18	65	16	0	10	99	24	191	31	0	3	246	641
7:15 AM	43	207	74	0	4	324	50	95	14	0	8	159	20	106	27	0	5	153	42	184	30	0	5	256	892
7:30 AM	55	239	86	0	3	380	51	85	21	0	7	157	16	160	26	0	6	202	32	211	24	0	6	267	1006
7:45 AM	47	228	93	0	9	368	39	105	27	0	7	171	39	139	25	0	11	203	32	258	44	0	7	334	1076
Hourly Total	172	784	307	0	19	1263	165	348	79	0	25	592	93	470	94	0	32	657	130	844	129	0	21	1103	3615
8:00 AM	38	245	81	0	4	364	40	120	31	0	1	191	30	208	37	0	8	275	58	221	44	0	10	323	1153
8:15 AM	45	230	98	0	3	373	40	134	24	0	4	198	16	236	32	0	9	284	49	175	38	0	13	262	1117
8:30 AM	30	201	69	0	0	300	46	125	25	0	7	196	40	221	35	0	7	296	38	219	47	0	7	304	1096
8:45 AM	51	215	87	0	1	353	49	133	28	0	0	210	35	252	35	0	6	322	48	208	34	0	9	290	1175
Hourly Total	164	891	335	0	8	1390	175	512	108	0	12	795	121	917	139	0	30	1177	193	823	163	0	39	1179	4541
9:00 AM	51	160	122	0	2	333	52	148	31	0	1	231	34	136	40	0	8	210	38	193	37	1	9	269	1043
9:15 AM	50	165	81	0	8	296	53	132	21	0	2	206	38	121	47	0	13	206	49	197	22	0	14	268	976
9:30 AM	59	151	85	1	4	296	63	132	24	0	4	219	22	101	50	0	10	173	34	165	27	0	12	226	914
9:45 AM	60	152	100	0	7	312	60	138	31	1	2	230	28	109	40	0	9	177	46	201	36	0	8	283	1002
Hourly Total	220	628	388	1	21	1237	228	550	107	1	9	886	122	467	177	0	40	766	167	756	122	1	43	1046	3935
10:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Grand Total	556	2303	1030	1	48	3890	568	1410	294	1	46	2273	336	1854	410	0	102	2600	490	2423	414	1	103	3328	12091
Approach %	14.3	59.2	26.5	0.0	-	-	25.0	62.0	12.9	0.0	-	-	12.9	71.3	15.8	0.0	-	-	14.7	72.8	12.4	0.0	-	-	-
Total %	4.6	19.0	8.5	0.0	-	32.2	4.7	11.7	2.4	0.0	-	18.8	2.8	15.3	3.4	0.0	-	21.5	4.1	20.0	3.4	0.0	-	27.5	-
Lights	519	2183	951	1	-	3654	510	1290	263	1	-	2064	309	1762	400	0	-	2471	469	2300	390	1	-	3160	11349
% Lights	93.3	94.8	92.3	100.0	-	93.9	89.8	91.5	89.5	100.0	-	90.8	92.0	95.0	97.6	-	-	95.0	95.7	94.9	94.2	100.0	-	95.0	93.9
Buses	12	28	5	0	-	45	12	31	8	0	-	51	5	16	3	0	-	24	5	41	1	0	-	47	167
% Buses	2.2	1.2	0.5	0.0	-	1.2	2.1	2.2	2.7	0.0	-	2.2	1.5	0.9	0.7	-	-	0.9	1.0	1.7	0.2	0.0	-	1.4	1.4
Trucks	25	90	74	0	-	189	46	86	23	0	-	155	22	76	7	0	-	105	16	82	23	0	-	121	570
% Trucks	4.5	3.9	7.2	0.0	-	4.9	8.1	6.1	7.8	0.0	-	6.8	6.5	4.1	1.7	-	-	4.0	3.3	3.4	5.6	0.0	-	3.6	4.7
Bicycles on Road	0	2	0	0	-	2	0	3	0	0	-	3	0	0	0	0	-	0	0	0	0	0	-	0	5
% Bicycles on Road	0.0	0.1	0.0	0.0	-	0.1	0.0	0.2	0.0	0.0	-	0.1	0.0	0.0	0.0	-	-	0.0	0.0	0.0	0.0	0.0	-	0.0	0.0
Bicycles on Crosswalk	-	-	-	-	3	-	-	-	-	-	2	-	-	-	-	-	3	-	-	-	-	-	10	-	-
% Bicycles on Crosswalk	-	-	-	-	6.3	-	-	-	-	-	4.3	-	-	-	-	-	2.9	-	-	-	-	-	9.7	-	-
Pedestrians	-	-	-	-	45	-	-	-	-	-	44	-	-	-	-	-	99	-	-	-	-	-	93	-	-
% Pedestrians	-	-	-	-	93.8	-	-	-	-	-	95.7	-	-	-	-	-	97.1	-	-	-	-	-	90.3	-	-

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625 Cochrane Drive

Markam, Ontario, Canada L3R 9R9
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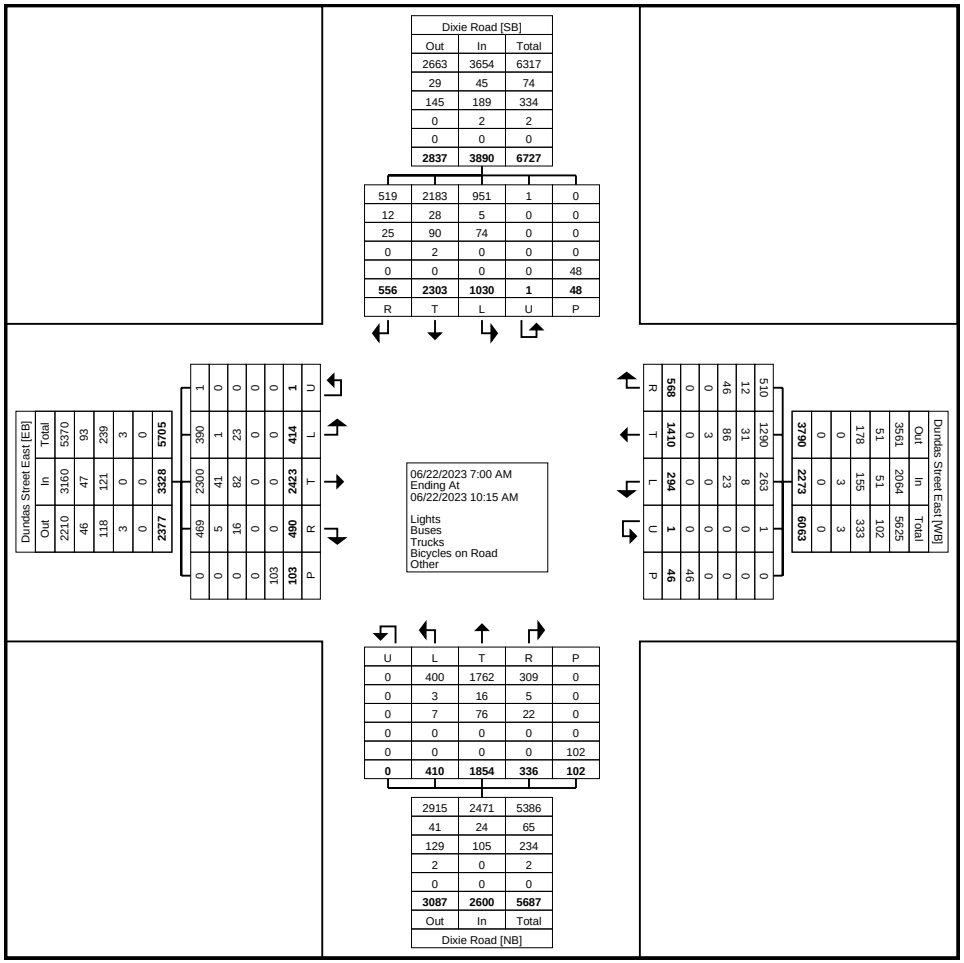
Count Name: 21224_Dixie Rd & Dundas St E-AM
Site Code: 21224
Start Date: 06/22/2023



Turning Movement Data Plot

LEA Consulting Ltd.
625 Cochrane Drive

Markam, Ontario, Canada L3R 9R9
905-470-0015 x240 idinsmore@lea.ca

Count Name: 21224_Dixie Rd & Dundas St E-AM
Site Code: 21224
Start Date: 06/22/2023

Turning Movement Peak Hour Data (8:00 AM)

Start Time	Dixie Road Southbound						Dundas Street East Westbound						Dixie Road Northbound						Dundas Street East Eastbound						Int. Total
	Right	Thru	Left	U-Turn	Peds	App. Total	Right	Thru	Left	U-Turn	Peds	App. Total	Right	Thru	Left	U-Turn	Peds	App. Total	Right	Thru	Left	U-Turn	Peds	App. Total	
8:00 AM	38	245	81	0	4	364	40	120	31	0	1	191	30	208	37	0	8	275	58	221	44	0	10	323	1153
8:15 AM	45	230	98	0	3	373	40	134	24	0	4	198	16	236	32	0	9	284	49	175	38	0	13	262	1117
8:30 AM	30	201	69	0	0	300	46	125	25	0	7	196	40	221	35	0	7	296	38	219	47	0	7	304	1096
8:45 AM	51	215	87	0	1	353	49	133	28	0	0	210	35	252	35	0	6	322	48	208	34	0	9	290	1175
Total	164	891	335	0	8	1390	175	512	108	0	12	795	121	917	139	0	30	1177	193	823	163	0	39	1179	4541
Approach %	11.8	64.1	24.1	0.0	-	-	22.0	64.4	13.6	0.0	-	-	10.3	77.9	11.8	0.0	-	-	16.4	69.8	13.8	0.0	-	-	-
Total %	3.6	19.6	7.4	0.0	-	30.6	3.9	11.3	2.4	0.0	-	17.5	2.7	20.2	3.1	0.0	-	25.9	4.3	18.1	3.6	0.0	-	26.0	-
PHF	0.804	0.909	0.855	0.000	-	0.932	0.893	0.955	0.871	0.000	-	0.946	0.756	0.910	0.939	0.000	-	0.914	0.832	0.931	0.867	0.000	-	0.913	0.966
Lights	152	847	305	0	-	1304	160	468	97	0	-	725	107	866	137	0	-	1110	186	789	157	0	-	1132	4271
% Lights	92.7	95.1	91.0	-	-	93.8	91.4	91.4	89.8	-	-	91.2	88.4	94.4	98.6	-	-	94.3	96.4	95.9	96.3	-	-	96.0	94.1
Buses	3	9	3	0	-	15	6	9	4	0	-	19	4	8	1	0	-	13	1	11	0	0	-	12	59
% Buses	1.8	1.0	0.9	-	-	1.1	3.4	1.8	3.7	-	-	2.4	3.3	0.9	0.7	-	-	1.1	0.5	1.3	0.0	-	-	1.0	1.3
Trucks	9	35	27	0	-	71	9	34	7	0	-	50	10	43	1	0	-	54	6	23	6	0	-	35	210
% Trucks	5.5	3.9	8.1	-	-	5.1	5.1	6.6	6.5	-	-	6.3	8.3	4.7	0.7	-	-	4.6	3.1	2.8	3.7	-	-	3.0	4.6
Bicycles on Road	0	0	0	0	-	0	0	1	0	0	-	1	0	0	0	0	-	0	0	0	0	0	-	0	1
% Bicycles on Road	0.0	0.0	0.0	-	-	0.0	0.0	0.2	0.0	-	-	0.1	0.0	0.0	0.0	-	-	0.0	0.0	0.0	0.0	-	-	0.0	0.0
Bicycles on Crosswalk	-	-	-	-	2	-	-	-	-	-	1	-	-	-	-	-	0	-	-	-	-	-	2	-	-
% Bicycles on Crosswalk	-	-	-	-	25.0	-	-	-	-	-	8.3	-	-	-	-	-	0.0	-	-	-	-	-	5.1	-	-
Pedestrians	-	-	-	-	6	-	-	-	-	-	11	-	-	-	-	-	30	-	-	-	-	-	37	-	-
% Pedestrians	-	-	-	-	75.0	-	-	-	-	-	91.7	-	-	-	-	-	100.0	-	-	-	-	-	94.9	-	-

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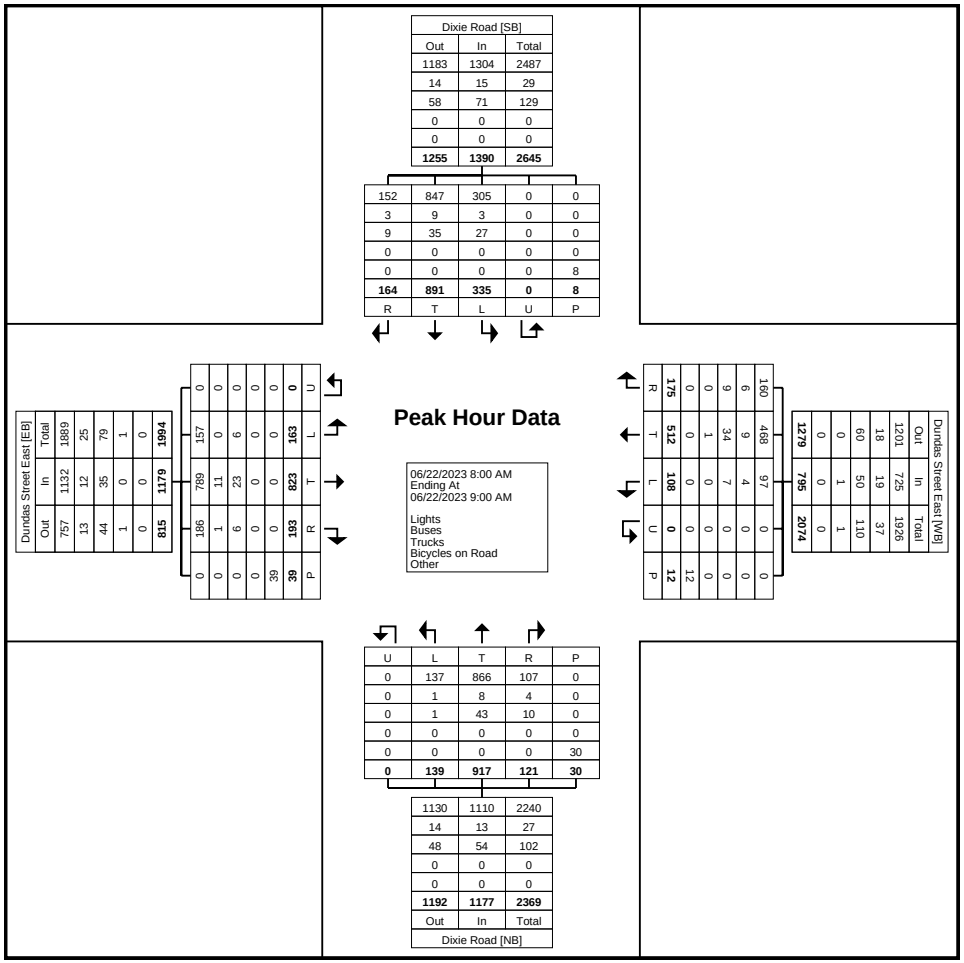
Count Name: 21224_Dixie Rd & Dundas St E-AM
Site Code: 21224
Start Date: 06/22/2023



Turning Movement Peak Hour Data Plot (8:00 AM)

LEA Consulting Ltd.
625 Cochrane Drive

Markam, Ontario, Canada L3R 9R9
905-470-0015 x240 idinsmore@lea.ca

Count Name: 21224_Dixie Rd & Dundas St E-PM
Site Code: 21224
Start Date: 06/22/2023

Turning Movement Data

Start Time	Dixie Road Southbound						Dundas Street East Westbound						Dixie Road Northbound						Dundas Street East Eastbound						Int. Total
	Right	Thru	Left	U-Turn	Peds	App. Total	Right	Thru	Left	U-Turn	Peds	App. Total	Right	Thru	Left	U-Turn	Peds	App. Total	Right	Thru	Left	U-Turn	Peds	App. Total	
3:00 PM	61	166	74	0	13	301	98	256	52	1	6	407	41	216	61	1	14	319	34	186	53	0	17	273	1300
3:15 PM	63	186	92	0	13	341	117	227	56	0	7	400	40	250	51	0	16	341	58	176	55	0	18	289	1371
3:30 PM	85	233	111	0	16	429	105	241	55	0	10	401	26	273	61	0	19	360	43	177	44	0	26	264	1454
3:45 PM	90	164	109	0	16	363	96	255	56	0	10	407	26	247	58	0	13	331	43	224	53	0	12	320	1421
Hourly Total	299	749	386	0	58	1434	416	979	219	1	33	1615	133	986	231	1	62	1351	178	763	205	0	73	1146	5546
4:00 PM	64	231	93	0	7	388	113	268	39	0	17	420	58	273	66	0	14	397	51	175	50	0	17	276	1481
4:15 PM	81	223	94	0	13	398	116	263	46	0	5	425	18	233	70	0	8	321	49	181	47	0	20	277	1421
4:30 PM	74	193	90	0	21	357	106	282	58	0	8	446	40	208	55	0	12	303	49	215	53	0	10	317	1423
4:45 PM	87	231	100	0	10	418	129	213	40	1	8	383	23	279	64	0	17	366	41	176	57	0	11	274	1441
Hourly Total	306	878	377	0	51	1561	464	1026	183	1	38	1674	139	993	255	0	51	1387	190	747	207	0	58	1144	5766
5:00 PM	66	218	102	0	8	386	136	271	46	0	6	453	43	248	63	0	11	354	51	197	41	0	12	289	1482
5:15 PM	70	229	106	2	17	407	136	268	45	2	7	451	55	233	60	0	17	348	34	209	54	0	24	297	1503
5:30 PM	70	265	116	1	9	452	143	266	46	1	7	456	41	268	60	1	7	370	58	162	42	0	22	262	1540
5:45 PM	80	176	113	0	13	369	105	288	61	1	7	455	47	207	65	0	12	319	64	211	55	0	19	330	1473
Hourly Total	286	888	437	3	47	1614	520	1093	198	4	27	1815	186	956	248	1	47	1391	207	779	192	0	77	1178	5998
6:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Grand Total	891	2515	1200	3	156	4609	1400	3098	600	6	98	5104	458	2935	734	2	160	4129	575	2289	604	0	208	3468	17310
Approach %	19.3	54.6	26.0	0.1	-	-	27.4	60.7	11.8	0.1	-	-	11.1	71.1	17.8	0.0	-	-	16.6	66.0	17.4	0.0	-	-	-
Total %	5.1	14.5	6.9	0.0	-	26.6	8.1	17.9	3.5	0.0	-	29.5	2.6	17.0	4.2	0.0	-	23.9	3.3	13.2	3.5	0.0	-	20.0	-
Lights	848	2429	1161	3	-	4441	1331	3021	586	6	-	4944	425	2836	729	2	-	3992	561	2196	567	0	-	3324	16701
% Lights	95.2	96.6	96.8	100.0	-	96.4	95.1	97.5	97.7	100.0	-	96.9	92.8	96.6	99.3	100.0	-	96.7	97.6	95.9	93.9	-	-	95.8	96.5
Buses	5	21	5	0	-	31	24	32	2	0	-	58	4	21	0	0	-	25	3	25	3	0	-	31	145
% Buses	0.6	0.8	0.4	0.0	-	0.7	1.7	1.0	0.3	0.0	-	1.1	0.9	0.7	0.0	0.0	-	0.6	0.5	1.1	0.5	-	-	0.9	0.8
Trucks	36	65	34	0	-	135	45	45	12	0	-	102	29	77	5	0	-	111	8	66	33	0	-	107	455
% Trucks	4.0	2.6	2.8	0.0	-	2.9	3.2	1.5	2.0	0.0	-	2.0	6.3	2.6	0.7	0.0	-	2.7	1.4	2.9	5.5	-	-	3.1	2.6
Bicycles on Road	2	0	0	0	-	2	0	0	0	0	-	0	0	1	0	0	-	1	3	2	1	0	-	6	9
% Bicycles on Road	0.2	0.0	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0	-	0.0	0.5	0.1	0.2	-	-	0.2	0.1
Bicycles on Crosswalk	-	-	-	-	30	-	-	-	-	-	8	-	-	-	-	-	11	-	-	-	-	-	24	-	-
% Bicycles on Crosswalk	-	-	-	-	19.2	-	-	-	-	-	8.2	-	-	-	-	-	6.9	-	-	-	-	-	11.5	-	-
Pedestrians	-	-	-	-	126	-	-	-	-	-	90	-	-	-	-	-	149	-	-	-	-	-	184	-	-
% Pedestrians	-	-	-	-	80.8	-	-	-	-	-	91.8	-	-	-	-	-	93.1	-	-	-	-	-	88.5	-	-

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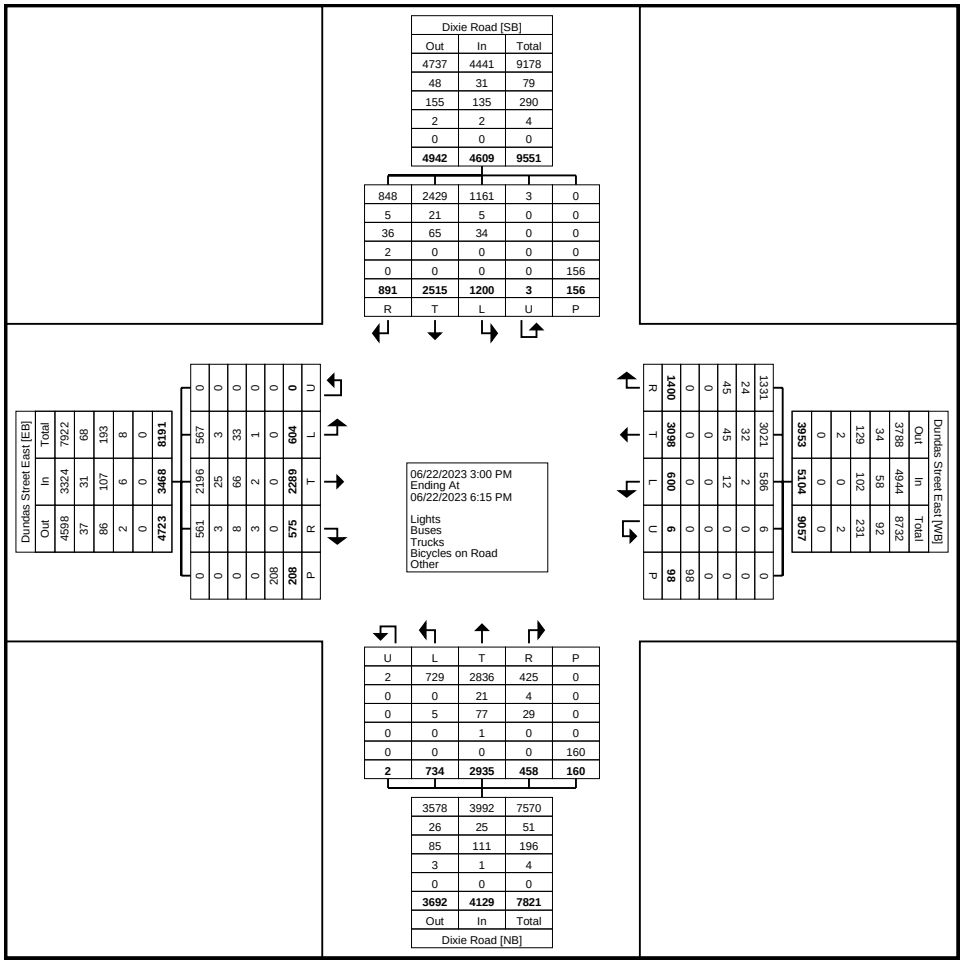
Site Code: 21224
Start Date: 06/22/2023



Turning Movement Data Plot

LEA Consulting Ltd.
625 Cochrane Drive

Markam, Ontario, Canada L3R 9R9
905-470-0015 x240 idinsmore@lea.ca

Count Name: 21224_Dixie Rd & Dundas St E-PM
Site Code: 21224
Start Date: 06/22/2023

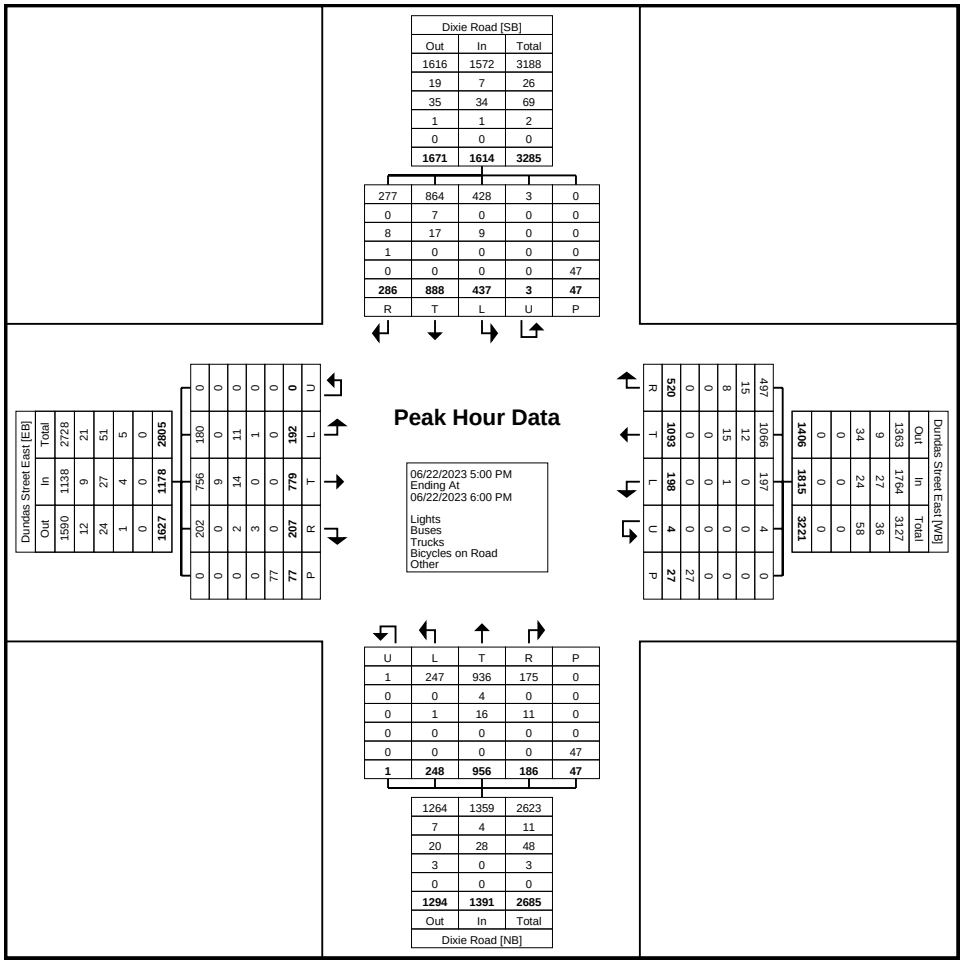
Turning Movement Peak Hour Data (5:00 PM)

Start Time	Dixie Road Southbound						Dundas Street East Westbound						Dixie Road Northbound						Dundas Street East Eastbound						Int. Total
	Right	Thru	Left	U-Turn	Peds	App. Total	Right	Thru	Left	U-Turn	Peds	App. Total	Right	Thru	Left	U-Turn	Peds	App. Total	Right	Thru	Left	U-Turn	Peds	App. Total	
5:00 PM	66	218	102	0	8	386	136	271	46	0	6	453	43	248	63	0	11	354	51	197	41	0	12	289	1482
5:15 PM	70	229	106	2	17	407	136	268	45	2	7	451	55	233	60	0	17	348	34	209	54	0	24	297	1503
5:30 PM	70	265	116	1	9	452	143	266	46	1	7	456	41	268	60	1	7	370	58	162	42	0	22	262	1540
5:45 PM	80	176	113	0	13	369	105	288	61	1	7	455	47	207	65	0	12	319	64	211	55	0	19	330	1473
Total	286	888	437	3	47	1614	520	1093	198	4	27	1815	186	956	248	1	47	1391	207	779	192	0	77	1178	5998
Approach %	17.7	55.0	27.1	0.2	-	-	28.7	60.2	10.9	0.2	-	-	13.4	68.7	17.8	0.1	-	-	17.6	66.1	16.3	0.0	-	-	-
Total %	4.8	14.8	7.3	0.1	-	26.9	8.7	18.2	3.3	0.1	-	30.3	3.1	15.9	4.1	0.0	-	23.2	3.5	13.0	3.2	0.0	-	19.6	-
PHF	0.894	0.838	0.942	0.375	-	0.893	0.909	0.949	0.811	0.500	-	0.995	0.845	0.892	0.954	0.250	-	0.940	0.809	0.923	0.873	0.000	-	0.892	0.974
Lights	277	864	428	3	-	1572	497	1066	197	4	-	1764	175	936	247	1	-	1359	202	756	180	0	-	1138	5833
% Lights	96.9	97.3	97.9	100.0	-	97.4	95.6	97.5	99.5	100.0	-	97.2	94.1	97.9	99.6	100.0	-	97.7	97.6	97.0	93.8	-	-	96.6	97.2
Buses	0	7	0	0	-	7	15	12	0	0	-	27	0	4	0	0	-	4	0	9	0	0	-	9	47
% Buses	0.0	0.8	0.0	0.0	-	0.4	2.9	1.1	0.0	0.0	-	1.5	0.0	0.4	0.0	0.0	-	0.3	0.0	1.2	0.0	-	-	0.8	0.8
Trucks	8	17	9	0	-	34	8	15	1	0	-	24	11	16	1	0	-	28	2	14	11	0	-	27	113
% Trucks	2.8	1.9	2.1	0.0	-	2.1	1.5	1.4	0.5	0.0	-	1.3	5.9	1.7	0.4	0.0	-	2.0	1.0	1.8	5.7	-	-	2.3	1.9
Bicycles on Road	1	0	0	0	-	1	0	0	0	0	-	0	0	0	0	0	-	0	3	0	1	0	-	4	5
% Bicycles on Road	0.3	0.0	0.0	0.0	-	0.1	0.0	0.0	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0	-	0.0	1.4	0.0	0.5	-	-	0.3	0.1
Bicycles on Crosswalk	-	-	-	-	6	-	-	-	-	-	0	-	-	-	-	-	1	-	-	-	-	-	6	-	-
% Bicycles on Crosswalk	-	-	-	-	12.8	-	-	-	-	-	0.0	-	-	-	-	-	2.1	-	-	-	-	-	7.8	-	-
Pedestrians	-	-	-	-	41	-	-	-	-	-	27	-	-	-	-	-	46	-	-	-	-	-	71	-	-
% Pedestrians	-	-	-	-	87.2	-	-	-	-	-	100.0	-	-	-	-	-	97.9	-	-	-	-	-	92.2	-	-

LEA Consulting Ltd.
625 Cochrane Drive

Markam, Ontario, Canada L3R 9R9
905-470-0015 x240 idinsmore@lea.ca

Count Name: 21224_Dixie Rd & Dundas St E-PM
Site Code: 21224
Start Date: 06/22/2023



Turning Movement Peak Hour Data Plot (5:00 PM)

LEA Consulting Ltd.
625 Cochrane Drive

Markam, Ontario, Canada L3R 9R9
905-470-0015 x240 idinsmore@lea.ca

Count Name: 21224_Neilco Ct & Dundas St E-AM
Site Code: 21224
Start Date: 06/22/2023

Turning Movement Data

Start Time	Neilco Court Southbound						Dundas Street East Westbound						Neilco Court Northbound						Dundas Street East Eastbound						Int. Total
	Right	Thru	Left	U-Turn	Peds	App. Total	Right	Thru	Left	U-Turn	Peds	App. Total	Right	Thru	Left	U-Turn	Peds	App. Total	Right	Thru	Left	U-Turn	Peds	App. Total	
7:00 AM	1	0	2	0	2	3	5	94	3	0	2	102	2	0	1	0	0	3	9	242	0	0	3	251	359
7:15 AM	1	0	0	0	3	1	7	159	0	0	5	166	5	0	2	0	2	7	12	284	0	0	0	296	470
7:30 AM	1	1	5	0	2	7	1	146	3	0	2	150	1	1	5	0	3	7	8	294	0	1	0	303	467
7:45 AM	0	1	3	0	3	4	5	163	5	0	0	173	8	0	5	0	0	13	10	388	5	0	1	403	593
Hourly Total	3	2	10	0	10	15	18	562	11	0	9	591	16	1	13	0	5	30	39	1208	5	1	4	1253	1889
8:00 AM	2	2	7	0	4	11	11	187	4	0	2	202	1	2	4	0	1	7	16	297	2	1	1	316	536
8:15 AM	4	1	6	0	1	11	4	207	1	0	1	212	3	0	4	0	2	7	15	306	1	0	0	322	552
8:30 AM	3	0	5	0	2	8	3	195	2	0	1	200	2	0	6	0	1	8	25	328	1	1	0	355	571
8:45 AM	2	0	7	0	2	9	10	239	4	0	2	253	5	1	8	0	4	14	25	313	0	2	1	340	616
Hourly Total	11	3	25	0	9	39	28	828	11	0	6	867	11	3	22	0	8	36	81	1244	4	4	2	1333	2275
9:00 AM	6	3	3	0	3	12	4	197	3	0	1	204	7	0	3	0	2	10	26	329	4	0	1	359	585
9:15 AM	6	4	4	0	4	14	11	187	4	0	0	202	2	1	12	0	0	15	26	305	8	2	1	341	572
9:30 AM	3	2	5	0	2	10	7	219	3	0	1	229	8	5	16	0	7	29	27	290	2	1	6	320	588
9:45 AM	3	5	6	0	6	14	17	207	4	0	1	228	7	4	21	0	2	32	28	303	5	0	3	336	610
Hourly Total	18	14	18	0	15	50	39	810	14	0	3	863	24	10	52	0	11	86	107	1227	19	3	11	1356	2355
10:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1	1
Grand Total	32	19	53	0	34	104	85	2200	36	0	18	2321	51	14	87	0	24	152	227	3680	28	8	17	3943	6520
Approach %	30.8	18.3	51.0	0.0	-	-	3.7	94.8	1.6	0.0	-	-	33.6	9.2	57.2	0.0	-	-	5.8	93.3	0.7	0.2	-	-	-
Total %	0.5	0.3	0.8	0.0	-	1.6	1.3	33.7	0.6	0.0	-	35.6	0.8	0.2	1.3	0.0	-	2.3	3.5	56.4	0.4	0.1	-	60.5	-
Lights	25	19	48	0	-	92	81	1992	35	0	-	2108	45	14	87	0	-	146	224	3441	27	7	-	3699	6045
% Lights	78.1	100.0	90.6	-	-	88.5	95.3	90.5	97.2	-	-	90.8	88.2	100.0	100.0	-	-	96.1	98.7	93.5	96.4	87.5	-	93.8	92.7
Buses	0	0	1	0	-	1	1	53	0	0	-	54	0	0	0	0	-	0	0	52	0	0	-	52	107
% Buses	0.0	0.0	1.9	-	-	1.0	1.2	2.4	0.0	-	-	2.3	0.0	0.0	0.0	-	-	0.0	0.0	1.4	0.0	0.0	-	1.3	1.6
Trucks	7	0	4	0	-	11	3	151	1	0	-	155	6	0	0	0	-	6	2	186	1	1	-	190	362
% Trucks	21.9	0.0	7.5	-	-	10.6	3.5	6.9	2.8	-	-	6.7	11.8	0.0	0.0	-	-	3.9	0.9	5.1	3.6	12.5	-	4.8	5.6
Bicycles on Road	0	0	0	0	-	0	0	4	0	0	-	4	0	0	0	0	-	0	1	1	0	0	-	2	6
% Bicycles on Road	0.0	0.0	0.0	-	-	0.0	0.0	0.2	0.0	-	-	0.2	0.0	0.0	0.0	-	-	0.0	0.4	0.0	0.0	0.0	-	0.1	0.1
Bicycles on Crosswalk	-	-	-	-	9	-	-	-	-	-	1	-	-	-	-	-	1	-	-	-	-	-	3	-	-
% Bicycles on Crosswalk	-	-	-	-	26.5	-	-	-	-	-	5.6	-	-	-	-	-	4.2	-	-	-	-	-	17.6	-	-
Pedestrians	-	-	-	-	25	-	-	-	-	-	17	-	-	-	-	-	23	-	-	-	-	-	14	-	-
% Pedestrians	-	-	-	-	73.5	-	-	-	-	-	94.4	-	-	-	-	-	95.8	-	-	-	-	-	82.4	-	-

LEA Consulting Ltd.
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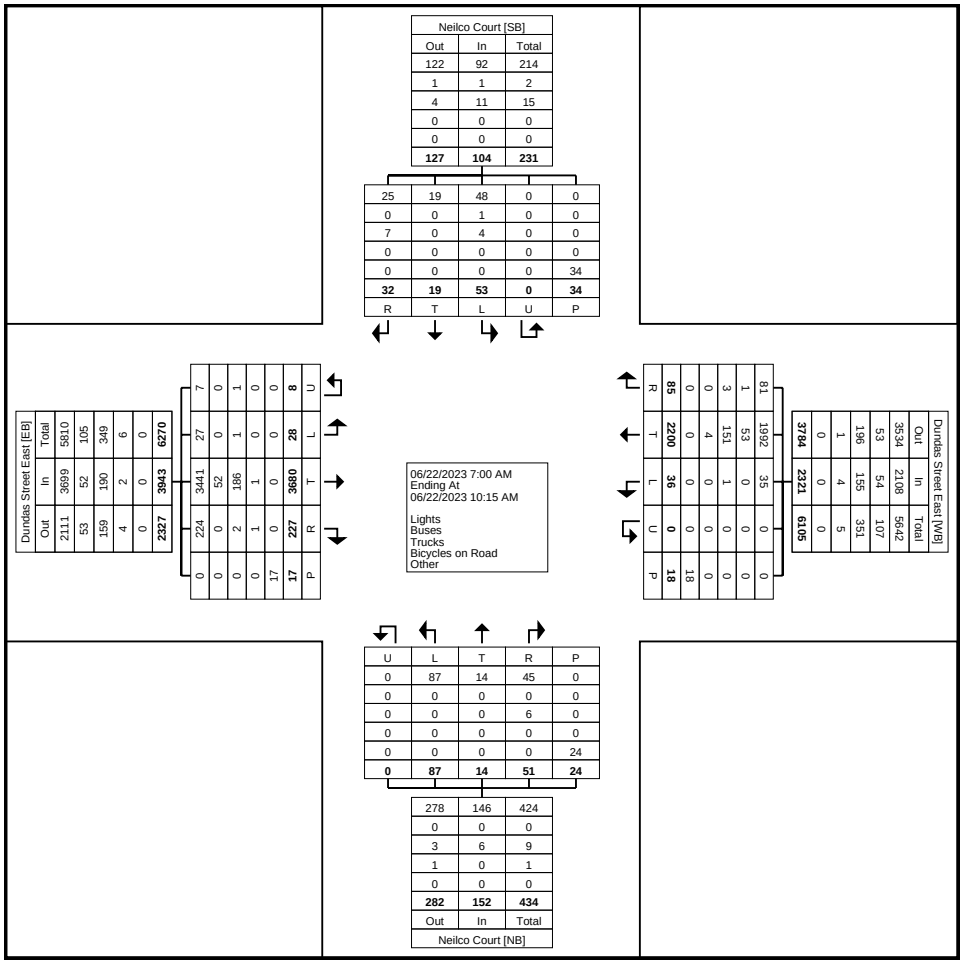
Count Name: 21224_Neilco Ct & Dundas St E-AM
Site Code: 21224
Start Date: 06/22/2023



Turning Movement Data Plot

LEA Consulting Ltd.
625 Cochrane Drive

Markam, Ontario, Canada L3R 9R9
905-470-0015 x240 idinsmore@lea.ca

Count Name: 21224_Neilco Ct & Dundas St E-AM
Site Code: 21224
Start Date: 06/22/2023

Turning Movement Peak Hour Data (8:45 AM)

Start Time	Neilco Court Southbound						Dundas Street East Westbound						Neilco Court Northbound						Dundas Street East Eastbound						Int. Total
	Right	Thru	Left	U-Turn	Peds	App. Total	Right	Thru	Left	U-Turn	Peds	App. Total	Right	Thru	Left	U-Turn	Peds	App. Total	Right	Thru	Left	U-Turn	Peds	App. Total	
8:45 AM	2	0	7	0	2	9	10	239	4	0	2	253	5	1	8	0	4	14	25	313	0	2	1	340	616
9:00 AM	6	3	3	0	3	12	4	197	3	0	1	204	7	0	3	0	2	10	26	329	4	0	1	359	585
9:15 AM	6	4	4	0	4	14	11	187	4	0	0	202	2	1	12	0	0	15	26	305	8	2	1	341	572
9:30 AM	3	2	5	0	2	10	7	219	3	0	1	229	8	5	16	0	7	29	27	290	2	1	6	320	588
Total	17	9	19	0	11	45	32	842	14	0	4	888	22	7	39	0	13	68	104	1237	14	5	9	1360	2361
Approach %	37.8	20.0	42.2	0.0	-	-	3.6	94.8	1.6	0.0	-	-	32.4	10.3	57.4	0.0	-	-	7.6	91.0	1.0	0.4	-	-	-
Total %	0.7	0.4	0.8	0.0	-	1.9	1.4	35.7	0.6	0.0	-	37.6	0.9	0.3	1.7	0.0	-	2.9	4.4	52.4	0.6	0.2	-	57.6	-
PHF	0.708	0.563	0.679	0.000	-	0.804	0.727	0.881	0.875	0.000	-	0.877	0.688	0.350	0.609	0.000	-	0.586	0.963	0.940	0.438	0.625	-	0.947	0.958
Lights	14	9	18	0	-	41	31	775	14	0	-	820	18	7	39	0	-	64	102	1160	13	5	-	1280	2205
% Lights	82.4	100.0	94.7	-	-	91.1	96.9	92.0	100.0	-	-	92.3	81.8	100.0	100.0	-	-	94.1	98.1	93.8	92.9	100.0	-	94.1	93.4
Buses	0	0	0	0	-	0	0	11	0	0	-	11	0	0	0	0	-	0	0	13	0	0	-	13	24
% Buses	0.0	0.0	0.0	-	-	0.0	0.0	1.3	0.0	-	-	1.2	0.0	0.0	0.0	-	-	0.0	0.0	1.1	0.0	0.0	-	1.0	1.0
Trucks	3	0	1	0	-	4	1	54	0	0	-	55	4	0	0	0	-	4	2	63	1	0	-	66	129
% Trucks	17.6	0.0	5.3	-	-	8.9	3.1	6.4	0.0	-	-	6.2	18.2	0.0	0.0	-	-	5.9	1.9	5.1	7.1	0.0	-	4.9	5.5
Bicycles on Road	0	0	0	0	-	0	0	2	0	0	-	2	0	0	0	0	-	0	0	1	0	0	-	1	3
% Bicycles on Road	0.0	0.0	0.0	-	-	0.0	0.0	0.2	0.0	-	-	0.2	0.0	0.0	0.0	-	-	0.0	0.0	0.1	0.0	0.0	-	0.1	0.1
Bicycles on Crosswalk	-	-	-	-	1	-	-	-	-	-	1	-	-	-	-	-	0	-	-	-	-	-	2	-	-
% Bicycles on Crosswalk	-	-	-	-	9.1	-	-	-	-	-	25.0	-	-	-	-	-	0.0	-	-	-	-	-	22.2	-	-
Pedestrians	-	-	-	-	10	-	-	-	-	-	3	-	-	-	-	-	13	-	-	-	-	-	7	-	-
% Pedestrians	-	-	-	-	90.9	-	-	-	-	-	75.0	-	-	-	-	-	100.0	-	-	-	-	-	77.8	-	-

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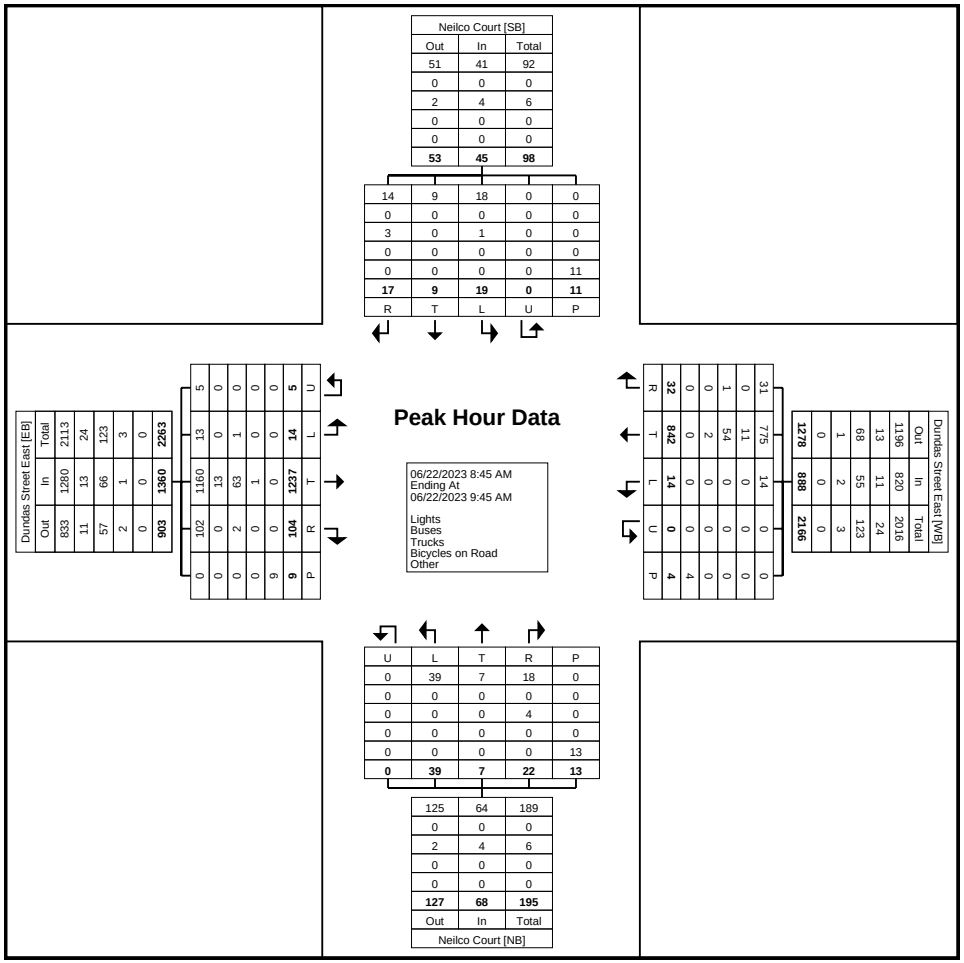
Site Code: 21224
Start Date: 06/22/2023



Turning Movement Peak Hour Data Plot (8:45 AM)

LEA Consulting Ltd.
625 Cochrane Drive

Markam, Ontario, Canada L3R 9R9
905-470-0015 x240 idinsmore@lea.ca

Count Name: 21224_Neilco Ct & Dundas St E-PM
Site Code: 21224
Start Date: 06/22/2023

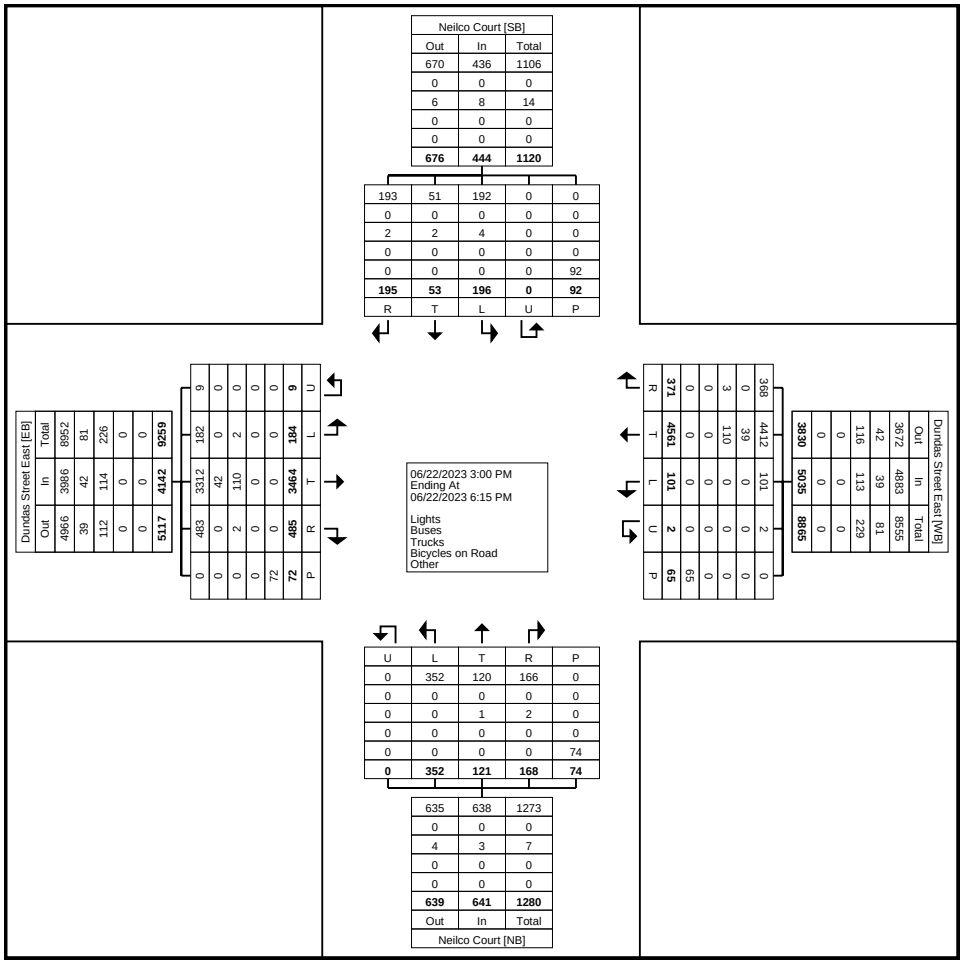
Turning Movement Data

Start Time	Neilco Court Southbound						Dundas Street East Westbound						Neilco Court Northbound						Dundas Street East Eastbound						Int. Total
	Right	Thru	Left	U-Turn	Peds	App. Total	Right	Thru	Left	U-Turn	Peds	App. Total	Right	Thru	Left	U-Turn	Peds	App. Total	Right	Thru	Left	U-Turn	Peds	App. Total	
3:00 PM	18	3	19	0	3	40	36	353	10	1	7	400	18	10	23	0	7	51	36	264	13	0	4	313	804
3:15 PM	15	5	12	0	6	32	24	349	5	0	2	378	17	9	27	0	4	53	42	300	11	0	8	353	816
3:30 PM	17	4	14	0	9	35	23	348	5	0	2	376	11	9	28	0	6	48	54	291	12	3	6	360	819
3:45 PM	17	4	13	0	7	34	26	362	6	0	2	394	11	8	24	0	9	43	31	303	15	1	4	350	821
Hourly Total	67	16	58	0	25	141	109	1412	26	1	13	1548	57	36	102	0	26	195	163	1158	51	4	22	1376	3260
4:00 PM	19	3	23	0	8	45	31	405	7	0	11	443	19	14	37	0	9	70	34	279	11	0	7	324	882
4:15 PM	18	5	24	0	9	47	24	368	6	0	9	398	5	7	20	0	3	32	41	274	11	0	6	326	803
4:30 PM	21	3	15	0	13	39	32	385	8	0	4	425	11	5	34	0	4	50	32	325	24	1	4	382	896
4:45 PM	14	4	24	0	2	42	31	359	4	0	2	394	16	8	37	0	4	61	45	268	12	0	12	325	822
Hourly Total	72	15	86	0	32	173	118	1517	25	0	26	1660	51	34	128	0	20	213	152	1146	58	1	29	1357	3403
5:00 PM	6	2	12	0	9	20	34	420	7	1	9	462	9	13	26	0	7	48	44	281	14	2	5	341	871
5:15 PM	12	4	16	0	7	32	34	415	13	0	7	462	14	11	28	0	9	53	35	309	16	0	4	360	907
5:30 PM	21	7	13	0	8	41	43	412	13	0	3	468	19	15	38	0	7	72	36	277	19	1	2	333	914
5:45 PM	17	9	11	0	11	37	33	385	17	0	7	435	18	12	30	0	5	60	55	293	26	1	10	375	907
Hourly Total	56	22	52	0	35	130	144	1632	50	1	26	1827	60	51	122	0	28	233	170	1160	75	4	21	1409	3599
6:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Grand Total	195	53	196	0	92	444	371	4561	101	2	65	5035	168	121	352	0	74	641	485	3464	184	9	72	4142	10262
Approach %	43.9	11.9	44.1	0.0	-	-	7.4	90.6	2.0	0.0	-	-	26.2	18.9	54.9	0.0	-	-	11.7	83.6	4.4	0.2	-	-	-
Total %	1.9	0.5	1.9	0.0	-	4.3	3.6	44.4	1.0	0.0	-	49.1	1.6	1.2	3.4	0.0	-	6.2	4.7	33.8	1.8	0.1	-	40.4	-
Lights	193	51	192	0	-	436	368	4412	101	2	-	4883	166	120	352	0	-	638	483	3312	182	9	-	3986	9943
% Lights	99.0	96.2	98.0	-	-	98.2	99.2	96.7	100.0	100.0	-	97.0	98.8	99.2	100.0	-	-	99.5	99.6	95.6	98.9	100.0	-	96.2	96.9
Buses	0	0	0	0	-	0	0	39	0	0	-	39	0	0	0	0	-	0	0	42	0	0	-	42	81
% Buses	0.0	0.0	0.0	-	-	0.0	0.0	0.9	0.0	0.0	-	0.8	0.0	0.0	0.0	-	-	0.0	0.0	1.2	0.0	0.0	-	1.0	0.8
Trucks	2	2	4	0	-	8	3	110	0	0	-	113	2	1	0	0	-	3	2	110	2	0	-	114	238
% Trucks	1.0	3.8	2.0	-	-	1.8	0.8	2.4	0.0	0.0	-	2.2	1.2	0.8	0.0	-	-	0.5	0.4	3.2	1.1	0.0	-	2.8	2.3
Bicycles on Road	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0
% Bicycles on Road	0.0	0.0	0.0	-	-	0.0	0.0	0.0	0.0	0.0	-	0.0	0.0	0.0	0.0	-	-	0.0	0.0	0.0	0.0	0.0	-	0.0	0.0
Bicycles on Crosswalk	-	-	-	-	16	-	-	-	-	-	8	-	-	-	-	-	3	-	-	-	-	-	3	-	-
% Bicycles on Crosswalk	-	-	-	-	17.4	-	-	-	-	-	12.3	-	-	-	-	-	4.1	-	-	-	-	-	4.2	-	-
Pedestrians	-	-	-	-	76	-	-	-	-	-	57	-	-	-	-	-	71	-	-	-	-	-	69	-	-
% Pedestrians	-	-	-	-	82.6	-	-	-	-	-	87.7	-	-	-	-	-	95.9	-	-	-	-	-	95.8	-	-

LEA Consulting Ltd.
625 Cochrane Drive

Markam, Ontario, Canada L3R 9R9
905-470-0015 x240 idinsmore@lea.ca

Count Name: 21224_Neilco Ct & Dundas St E-PM
Site Code: 21224
Start Date: 06/22/2023



Turning Movement Data Plot

LEA Consulting Ltd.
625 Cochrane Drive

Markam, Ontario, Canada L3R 9R9
905-470-0015 x240 idinsmore@lea.ca

Count Name: 21224_Neilco Ct & Dundas St E-PM
Site Code: 21224
Start Date: 06/22/2023

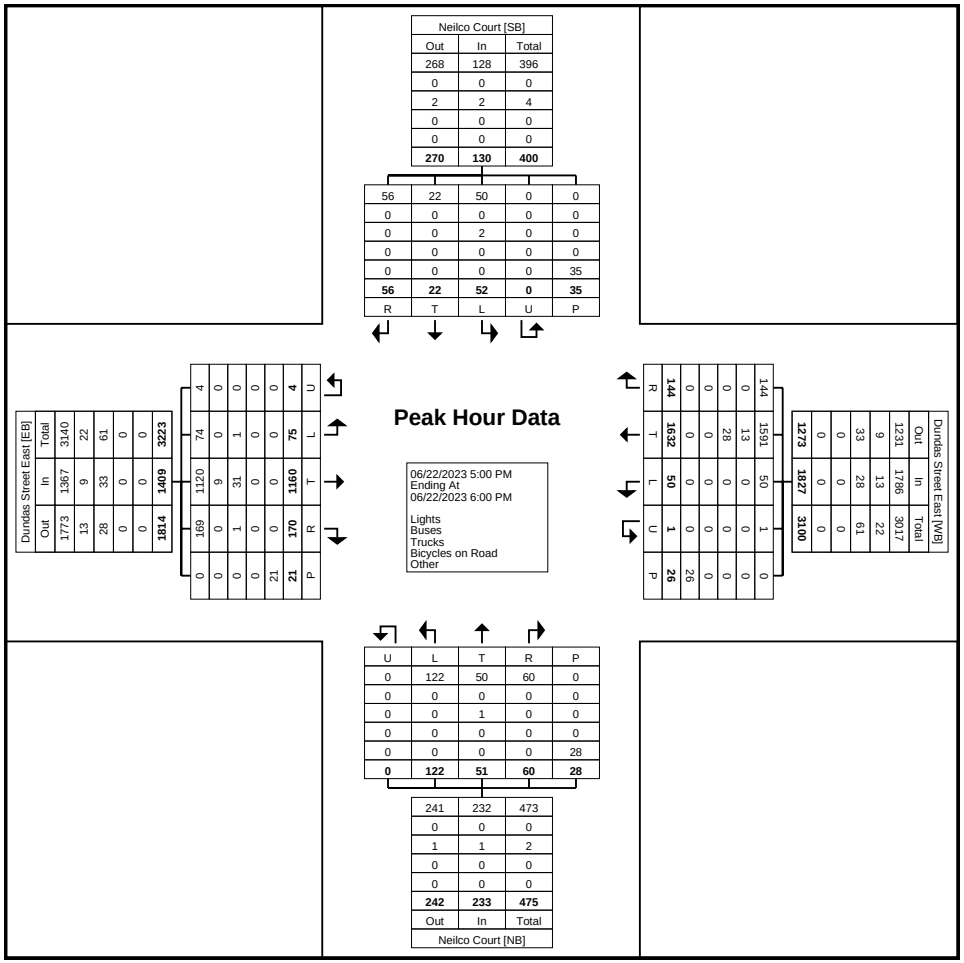
Turning Movement Peak Hour Data (5:00 PM)

Start Time	Neilco Court Southbound						Dundas Street East Westbound						Neilco Court Northbound						Dundas Street East Eastbound						Int. Total
	Right	Thru	Left	U-Turn	Peds	App. Total	Right	Thru	Left	U-Turn	Peds	App. Total	Right	Thru	Left	U-Turn	Peds	App. Total	Right	Thru	Left	U-Turn	Peds	App. Total	
5:00 PM	6	2	12	0	9	20	34	420	7	1	9	462	9	13	26	0	7	48	44	281	14	2	5	341	871
5:15 PM	12	4	16	0	7	32	34	415	13	0	7	462	14	11	28	0	9	53	35	309	16	0	4	360	907
5:30 PM	21	7	13	0	8	41	43	412	13	0	3	468	19	15	38	0	7	72	36	277	19	1	2	333	914
5:45 PM	17	9	11	0	11	37	33	385	17	0	7	435	18	12	30	0	5	60	55	293	26	1	10	375	907
Total	56	22	52	0	35	130	144	1632	50	1	26	1827	60	51	122	0	28	233	170	1160	75	4	21	1409	3599
Approach %	43.1	16.9	40.0	0.0	-	-	7.9	89.3	2.7	0.1	-	-	25.8	21.9	52.4	0.0	-	-	12.1	82.3	5.3	0.3	-	-	-
Total %	1.6	0.6	1.4	0.0	-	3.6	4.0	45.3	1.4	0.0	-	50.8	1.7	1.4	3.4	0.0	-	6.5	4.7	32.2	2.1	0.1	-	39.1	-
PHF	0.667	0.611	0.813	0.000	-	0.793	0.837	0.971	0.735	0.250	-	0.976	0.789	0.850	0.803	0.000	-	0.809	0.773	0.939	0.721	0.500	-	0.939	0.984
Lights	56	22	50	0	-	128	144	1591	50	1	-	1786	60	50	122	0	-	232	169	1120	74	4	-	1367	3513
% Lights	100.0	100.0	96.2	-	-	98.5	100.0	97.5	100.0	100.0	-	97.8	100.0	98.0	100.0	-	-	99.6	99.4	96.6	98.7	100.0	-	97.0	97.6
Buses	0	0	0	0	-	0	0	13	0	0	-	13	0	0	0	0	-	0	0	9	0	0	-	9	22
% Buses	0.0	0.0	0.0	-	-	0.0	0.0	0.8	0.0	0.0	-	0.7	0.0	0.0	0.0	-	-	0.0	0.0	0.8	0.0	0.0	-	0.6	0.6
Trucks	0	0	2	0	-	2	0	28	0	0	-	28	0	1	0	0	-	1	1	31	1	0	-	33	64
% Trucks	0.0	0.0	3.8	-	-	1.5	0.0	1.7	0.0	0.0	-	1.5	0.0	2.0	0.0	-	-	0.4	0.6	2.7	1.3	0.0	-	2.3	1.8
Bicycles on Road	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0
% Bicycles on Road	0.0	0.0	0.0	-	-	0.0	0.0	0.0	0.0	0.0	-	0.0	0.0	0.0	0.0	-	-	0.0	0.0	0.0	0.0	0.0	-	0.0	0.0
Bicycles on Crosswalk	-	-	-	-	5	-	-	-	-	-	1	-	-	-	-	-	2	-	-	-	-	-	1	-	-
% Bicycles on Crosswalk	-	-	-	-	14.3	-	-	-	-	-	3.8	-	-	-	-	-	7.1	-	-	-	-	-	4.8	-	-
Pedestrians	-	-	-	-	30	-	-	-	-	-	25	-	-	-	-	-	26	-	-	-	-	-	20	-	-
% Pedestrians	-	-	-	-	85.7	-	-	-	-	-	96.2	-	-	-	-	-	92.9	-	-	-	-	-	95.2	-	-

LEA Consulting Ltd.
625 Cochrane Drive

Markam, Ontario, Canada L3R 9R9
905-470-0015 x240 idinsmore@lea.ca

Count Name: 21224_Neilco Ct & Dundas St E-PM
Site Code: 21224
Start Date: 06/22/2023



Turning Movement Peak Hour Data Plot (5:00 PM)

LEA Consulting Ltd.
625 Cochrane Drive

Markam, Ontario, Canada L3R 9R9
905-470-0015 x240 idinsmore@lea.ca

Count Name: 21224_Jarrow Ave & Dundas St E-AM
Site Code: 21224
Start Date: 06/22/2023

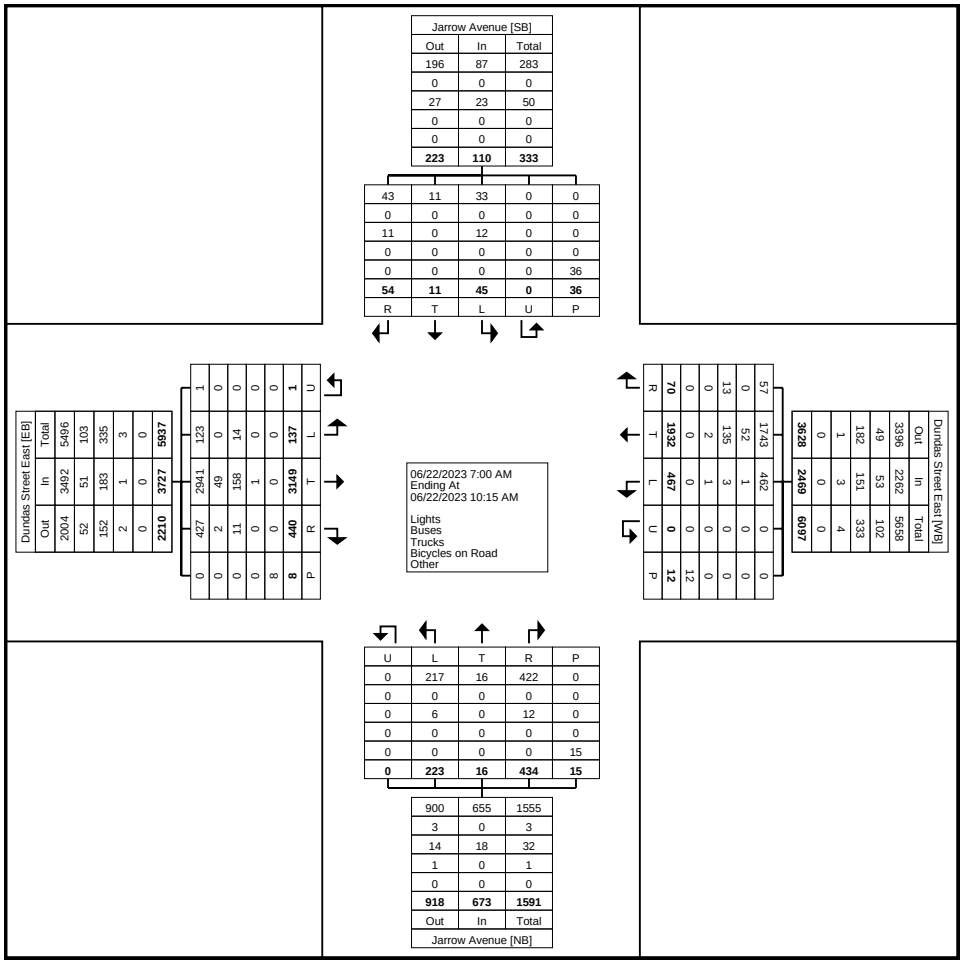
Turning Movement Data

Start Time	Jarrow Avenue Southbound						Dundas Street East Westbound						Jarrow Avenue Northbound						Dundas Street East Eastbound						Int. Total
	Right	Thru	Left	U-Turn	Peds	App. Total	Right	Thru	Left	U-Turn	Peds	App. Total	Right	Thru	Left	U-Turn	Peds	App. Total	Right	Thru	Left	U-Turn	Peds	App. Total	
7:00 AM	1	0	1	0	1	2	3	87	25	0	0	115	21	0	7	0	0	28	14	228	8	0	0	250	395
7:15 AM	2	1	1	0	4	4	5	138	24	0	0	167	25	0	9	0	0	34	22	248	7	0	0	277	482
7:30 AM	4	1	1	0	5	6	3	142	21	0	0	166	18	1	10	0	3	29	17	292	6	0	1	315	516
7:45 AM	0	0	1	0	5	1	3	143	25	0	0	171	25	0	10	0	1	35	28	357	14	0	0	399	606
Hourly Total	7	2	4	0	15	13	14	510	95	0	0	619	89	1	36	0	4	126	81	1125	35	0	1	1241	1999
8:00 AM	4	2	5	0	3	11	4	178	30	0	0	212	22	2	13	0	0	37	20	267	12	0	1	299	559
8:15 AM	2	0	3	0	1	5	8	179	28	0	0	215	29	3	19	0	1	51	33	272	8	0	0	313	584
8:30 AM	6	0	2	0	3	8	11	173	42	0	2	226	36	1	10	0	0	47	36	277	7	0	1	320	601
8:45 AM	8	1	3	0	2	12	2	207	51	0	2	260	35	1	22	0	1	58	48	253	19	0	0	320	650
Hourly Total	20	3	13	0	9	36	25	737	151	0	4	913	122	7	64	0	2	193	137	1069	46	0	2	1252	2394
9:00 AM	6	0	8	0	4	14	4	171	56	0	1	231	41	1	23	0	0	65	52	269	16	1	3	338	648
9:15 AM	3	1	5	0	2	9	13	163	50	0	3	226	52	2	29	0	4	83	55	219	15	0	0	289	607
9:30 AM	8	4	11	0	3	23	9	177	62	0	1	248	74	3	37	0	1	114	51	234	12	0	1	297	682
9:45 AM	10	1	4	0	3	15	5	174	52	0	3	231	55	2	34	0	4	91	64	233	13	0	1	310	647
Hourly Total	27	6	28	0	12	61	31	685	220	0	8	936	222	8	123	0	9	353	222	955	56	1	5	1234	2584
10:00 AM	0	0	0	0	0	0	0	0	1	0	0	1	1	0	0	0	0	1	0	0	0	0	0	0	2
Grand Total	54	11	45	0	36	110	70	1932	467	0	12	2469	434	16	223	0	15	673	440	3149	137	1	8	3727	6979
Approach %	49.1	10.0	40.9	0.0	-	-	2.8	78.3	18.9	0.0	-	-	64.5	2.4	33.1	0.0	-	-	11.8	84.5	3.7	0.0	-	-	-
Total %	0.8	0.2	0.6	0.0	-	1.6	1.0	27.7	6.7	0.0	-	35.4	6.2	0.2	3.2	0.0	-	9.6	6.3	45.1	2.0	0.0	-	53.4	-
Lights	43	11	33	0	-	87	57	1743	462	0	-	2262	422	16	217	0	-	655	427	2941	123	1	-	3492	6496
% Lights	79.6	100.0	73.3	-	-	79.1	81.4	90.2	98.9	-	-	91.6	97.2	100.0	97.3	-	-	97.3	97.0	93.4	89.8	100.0	-	93.7	93.1
Buses	0	0	0	0	-	0	0	52	1	0	-	53	0	0	0	0	-	0	2	49	0	0	-	51	104
% Buses	0.0	0.0	0.0	-	-	0.0	0.0	2.7	0.2	-	-	2.1	0.0	0.0	0.0	-	-	0.0	0.5	1.6	0.0	0.0	-	1.4	1.5
Trucks	11	0	12	0	-	23	13	135	3	0	-	151	12	0	6	0	-	18	11	158	14	0	-	183	375
% Trucks	20.4	0.0	26.7	-	-	20.9	18.6	7.0	0.6	-	-	6.1	2.8	0.0	2.7	-	-	2.7	2.5	5.0	10.2	0.0	-	4.9	5.4
Bicycles on Road	0	0	0	0	-	0	0	2	1	0	-	3	0	0	0	0	-	0	0	1	0	0	-	1	4
% Bicycles on Road	0.0	0.0	0.0	-	-	0.0	0.0	0.1	0.2	-	-	0.1	0.0	0.0	0.0	-	-	0.0	0.0	0.0	0.0	0.0	-	0.0	0.1
Bicycles on Crosswalk	-	-	-	-	11	-	-	-	-	-	0	-	-	-	-	-	4	-	-	-	-	-	1	-	-
% Bicycles on Crosswalk	-	-	-	-	30.6	-	-	-	-	-	0.0	-	-	-	-	-	26.7	-	-	-	-	-	12.5	-	-
Pedestrians	-	-	-	-	25	-	-	-	-	-	12	-	-	-	-	-	11	-	-	-	-	-	7	-	-
% Pedestrians	-	-	-	-	69.4	-	-	-	-	-	100.0	-	-	-	-	-	73.3	-	-	-	-	-	87.5	-	-

LEA Consulting Ltd.
625 Cochrane Drive

Markam, Ontario, Canada L3R 9R9
905-470-0015 x240 idinsmore@lea.ca

Count Name: 21224_Jarrow Ave & Dundas St E-AM
Site Code: 21224
Start Date: 06/22/2023



Turning Movement Data Plot

LEA Consulting Ltd.
625 Cochrane Drive

Markam, Ontario, Canada L3R 9R9
905-470-0015 x240 idinsmore@lea.ca

Count Name: 21224_Jarrow Ave & Dundas St E-AM
Site Code: 21224
Start Date: 06/22/2023

Turning Movement Peak Hour Data (8:45 AM)

Start Time	Jarrow Avenue Southbound						Dundas Street East Westbound						Jarrow Avenue Northbound						Dundas Street East Eastbound						Int. Total
	Right	Thru	Left	U-Turn	Peds	App. Total	Right	Thru	Left	U-Turn	Peds	App. Total	Right	Thru	Left	U-Turn	Peds	App. Total	Right	Thru	Left	U-Turn	Peds	App. Total	
8:45 AM	8	1	3	0	2	12	2	207	51	0	2	260	35	1	22	0	1	58	48	253	19	0	0	320	650
9:00 AM	6	0	8	0	4	14	4	171	56	0	1	231	41	1	23	0	0	65	52	269	16	1	3	338	648
9:15 AM	3	1	5	0	2	9	13	163	50	0	3	226	52	2	29	0	4	83	55	219	15	0	0	289	607
9:30 AM	8	4	11	0	3	23	9	177	62	0	1	248	74	3	37	0	1	114	51	234	12	0	1	297	682
Total	25	6	27	0	11	58	28	718	219	0	7	965	202	7	111	0	6	320	206	975	62	1	4	1244	2587
Approach %	43.1	10.3	46.6	0.0	-	-	2.9	74.4	22.7	0.0	-	-	63.1	2.2	34.7	0.0	-	-	16.6	78.4	5.0	0.1	-	-	-
Total %	1.0	0.2	1.0	0.0	-	2.2	1.1	27.8	8.5	0.0	-	37.3	7.8	0.3	4.3	0.0	-	12.4	8.0	37.7	2.4	0.0	-	48.1	-
PHF	0.781	0.375	0.614	0.000	-	0.630	0.538	0.867	0.883	0.000	-	0.928	0.682	0.583	0.750	0.000	-	0.702	0.936	0.906	0.816	0.250	-	0.920	0.948
Lights	20	6	20	0	-	46	22	657	216	0	-	895	197	7	108	0	-	312	202	911	58	1	-	1172	2425
% Lights	80.0	100.0	74.1	-	-	79.3	78.6	91.5	98.6	-	-	92.7	97.5	100.0	97.3	-	-	97.5	98.1	93.4	93.5	100.0	-	94.2	93.7
Buses	0	0	0	0	-	0	0	11	1	0	-	12	0	0	0	0	-	0	1	11	0	0	-	12	24
% Buses	0.0	0.0	0.0	-	-	0.0	0.0	1.5	0.5	-	-	1.2	0.0	0.0	0.0	-	-	0.0	0.5	1.1	0.0	0.0	-	1.0	0.9
Trucks	5	0	7	0	-	12	6	49	2	0	-	57	5	0	3	0	-	8	3	52	4	0	-	59	136
% Trucks	20.0	0.0	25.9	-	-	20.7	21.4	6.8	0.9	-	-	5.9	2.5	0.0	2.7	-	-	2.5	1.5	5.3	6.5	0.0	-	4.7	5.3
Bicycles on Road	0	0	0	0	-	0	0	1	0	0	-	1	0	0	0	0	-	0	0	1	0	0	-	1	2
% Bicycles on Road	0.0	0.0	0.0	-	-	0.0	0.0	0.1	0.0	-	-	0.1	0.0	0.0	0.0	-	-	0.0	0.0	0.1	0.0	0.0	-	0.1	0.1
Bicycles on Crosswalk	-	-	-	-	2	-	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-
% Bicycles on Crosswalk	-	-	-	-	18.2	-	-	-	-	-	0.0	-	-	-	-	-	0.0	-	-	-	-	-	0.0	-	-
Pedestrians	-	-	-	-	9	-	-	-	-	-	7	-	-	-	-	-	6	-	-	-	-	-	4	-	-
% Pedestrians	-	-	-	-	81.8	-	-	-	-	-	100.0	-	-	-	-	-	100.0	-	-	-	-	-	100.0	-	-

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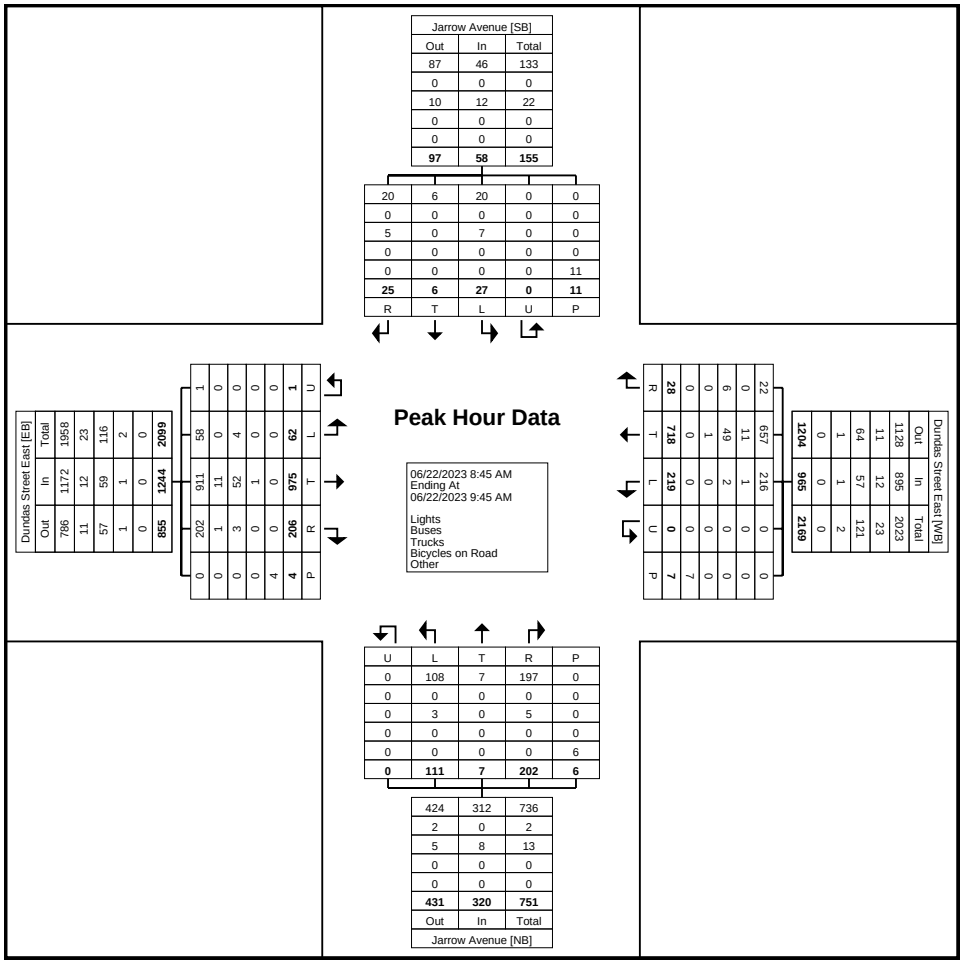
Count Name: 21224_Jarrow Ave & Dundas St E-AM
Site Code: 21224
Start Date: 06/22/2023



Turning Movement Peak Hour Data Plot (8:45 AM)

LEA Consulting Ltd.
625 Cochrane Drive

Markam, Ontario, Canada L3R 9R9
905-470-0015 x240 idinsmore@lea.ca

Count Name: 21224_Jarrow Ave & Dundas St E-PM
Site Code: 21224
Start Date: 06/22/2023

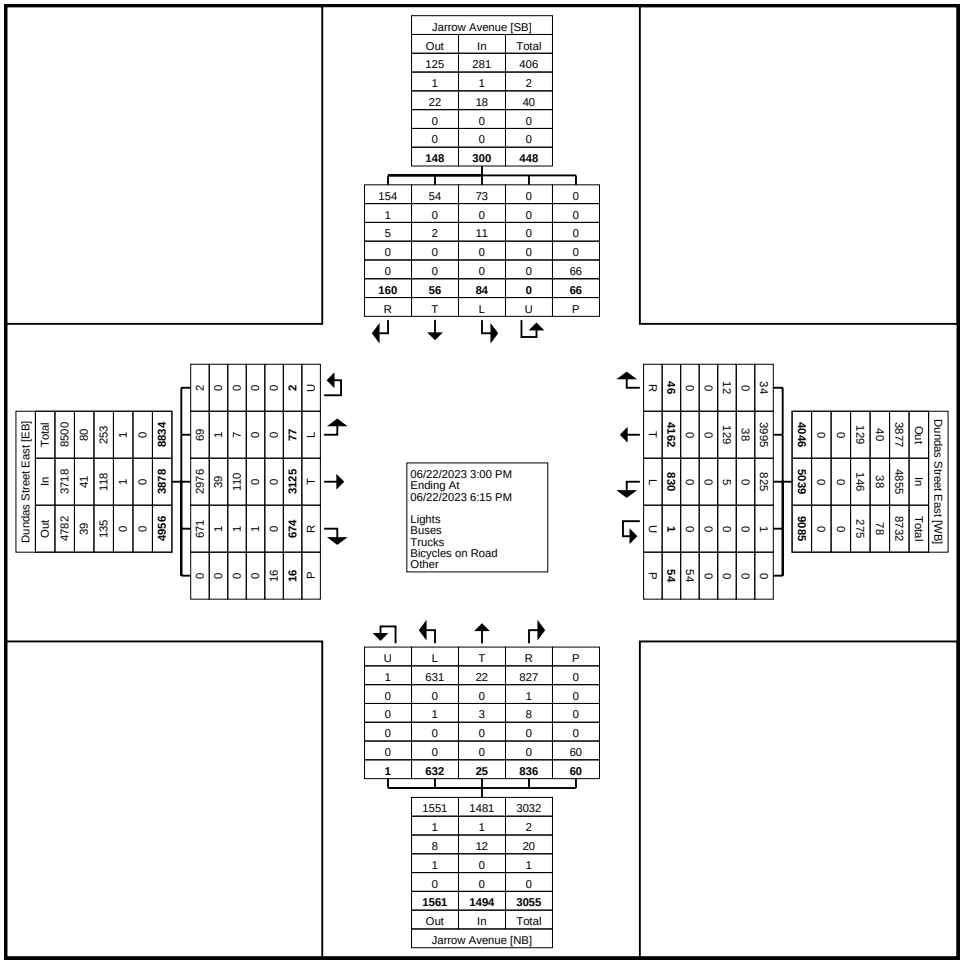
Turning Movement Data

Start Time	Jarrow Avenue Southbound						Dundas Street East Westbound						Jarrow Avenue Northbound						Dundas Street East Eastbound						Int. Total
	Right	Thru	Left	U-Turn	Peds	App. Total	Right	Thru	Left	U-Turn	Peds	App. Total	Right	Thru	Left	U-Turn	Peds	App. Total	Right	Thru	Left	U-Turn	Peds	App. Total	
3:00 PM	13	2	10	0	4	25	6	334	62	0	3	402	71	2	44	0	8	117	49	253	11	1	1	314	858
3:15 PM	18	4	7	0	5	29	4	295	52	0	2	351	64	2	48	0	5	114	45	261	8	0	2	314	808
3:30 PM	17	4	16	0	3	37	3	291	56	0	8	350	57	2	48	0	7	107	55	238	10	0	2	303	797
3:45 PM	7	4	9	0	5	20	4	322	69	0	2	395	47	2	39	0	11	88	52	295	5	1	1	353	856
Hourly Total	55	14	42	0	17	111	17	1242	239	0	15	1498	239	8	179	0	31	426	201	1047	34	2	6	1284	3319
4:00 PM	12	8	8	0	6	28	4	365	77	0	5	446	75	2	62	0	4	139	61	260	11	0	0	332	945
4:15 PM	16	1	2	0	7	19	5	326	77	0	6	408	75	4	50	0	2	129	58	238	6	0	3	302	858
4:30 PM	11	4	6	0	8	21	2	348	79	0	2	429	69	3	53	0	4	125	61	292	3	0	1	356	931
4:45 PM	4	7	7	0	3	18	4	338	77	0	2	419	72	2	64	1	3	139	58	236	3	0	0	297	873
Hourly Total	43	20	23	0	24	86	15	1377	310	0	15	1702	291	11	229	1	13	532	238	1026	23	0	4	1287	3607
5:00 PM	15	9	7	0	4	31	5	403	47	0	6	455	68	2	40	0	4	110	52	266	5	0	4	323	919
5:15 PM	11	6	2	0	9	19	4	387	89	1	5	481	88	0	66	0	3	154	67	271	3	0	1	341	995
5:30 PM	25	5	4	0	4	34	3	384	63	0	9	450	69	4	71	0	3	144	55	243	8	0	1	306	934
5:45 PM	11	2	6	0	8	19	2	369	82	0	4	453	81	0	47	0	6	128	61	272	4	0	0	337	937
Hourly Total	62	22	19	0	25	103	14	1543	281	1	24	1839	306	6	224	0	16	536	235	1052	20	0	6	1307	3785
6:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Grand Total	160	56	84	0	66	300	46	4162	830	1	54	5039	836	25	632	1	60	1494	674	3125	77	2	16	3878	10711
Approach %	53.3	18.7	28.0	0.0	-	-	0.9	82.6	16.5	0.0	-	-	56.0	1.7	42.3	0.1	-	-	17.4	80.6	2.0	0.1	-	-	-
Total %	1.5	0.5	0.8	0.0	-	2.8	0.4	38.9	7.7	0.0	-	47.0	7.8	0.2	5.9	0.0	-	13.9	6.3	29.2	0.7	0.0	-	36.2	-
Lights	154	54	73	0	-	281	34	3995	825	1	-	4855	827	22	631	1	-	1481	671	2976	69	2	-	3718	10335
% Lights	96.3	96.4	86.9	-	-	93.7	73.9	96.0	99.4	100.0	-	96.3	98.9	88.0	99.8	100.0	-	99.1	99.6	95.2	89.6	100.0	-	95.9	96.5
Buses	1	0	0	0	-	1	0	38	0	0	-	38	1	0	0	0	-	1	1	39	1	0	-	41	81
% Buses	0.6	0.0	0.0	-	-	0.3	0.0	0.9	0.0	0.0	-	0.8	0.1	0.0	0.0	0.0	-	0.1	0.1	1.2	1.3	0.0	-	1.1	0.8
Trucks	5	2	11	0	-	18	12	129	5	0	-	146	8	3	1	0	-	12	1	110	7	0	-	118	294
% Trucks	3.1	3.6	13.1	-	-	6.0	26.1	3.1	0.6	0.0	-	2.9	1.0	12.0	0.2	0.0	-	0.8	0.1	3.5	9.1	0.0	-	3.0	2.7
Bicycles on Road	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	1	0	0	0	-	1	1
% Bicycles on Road	0.0	0.0	0.0	-	-	0.0	0.0	0.0	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0	-	0.0	0.1	0.0	0.0	0.0	-	0.0	0.0
Bicycles on Crosswalk	-	-	-	-	15	-	-	-	-	-	6	-	-	-	-	-	14	-	-	-	-	-	1	-	-
% Bicycles on Crosswalk	-	-	-	-	22.7	-	-	-	-	-	11.1	-	-	-	-	-	23.3	-	-	-	-	-	6.3	-	-
Pedestrians	-	-	-	-	51	-	-	-	-	-	48	-	-	-	-	-	46	-	-	-	-	-	15	-	-
% Pedestrians	-	-	-	-	77.3	-	-	-	-	-	88.9	-	-	-	-	-	76.7	-	-	-	-	-	93.8	-	-

LEA Consulting Ltd.
625 Cochrane Drive

Markam, Ontario, Canada L3R 9R9
905-470-0015 x240 idinsmore@lea.ca

Count Name: 21224_Jarrow Ave & Dundas St E-PM
Site Code: 21224
Start Date: 06/22/2023



Turning Movement Data Plot

LEA Consulting Ltd.
625 Cochrane Drive

Markam, Ontario, Canada L3R 9R9
905-470-0015 x240 idinsmore@lea.ca

Count Name: 21224_Jarrow Ave & Dundas St E-PM
Site Code: 21224
Start Date: 06/22/2023

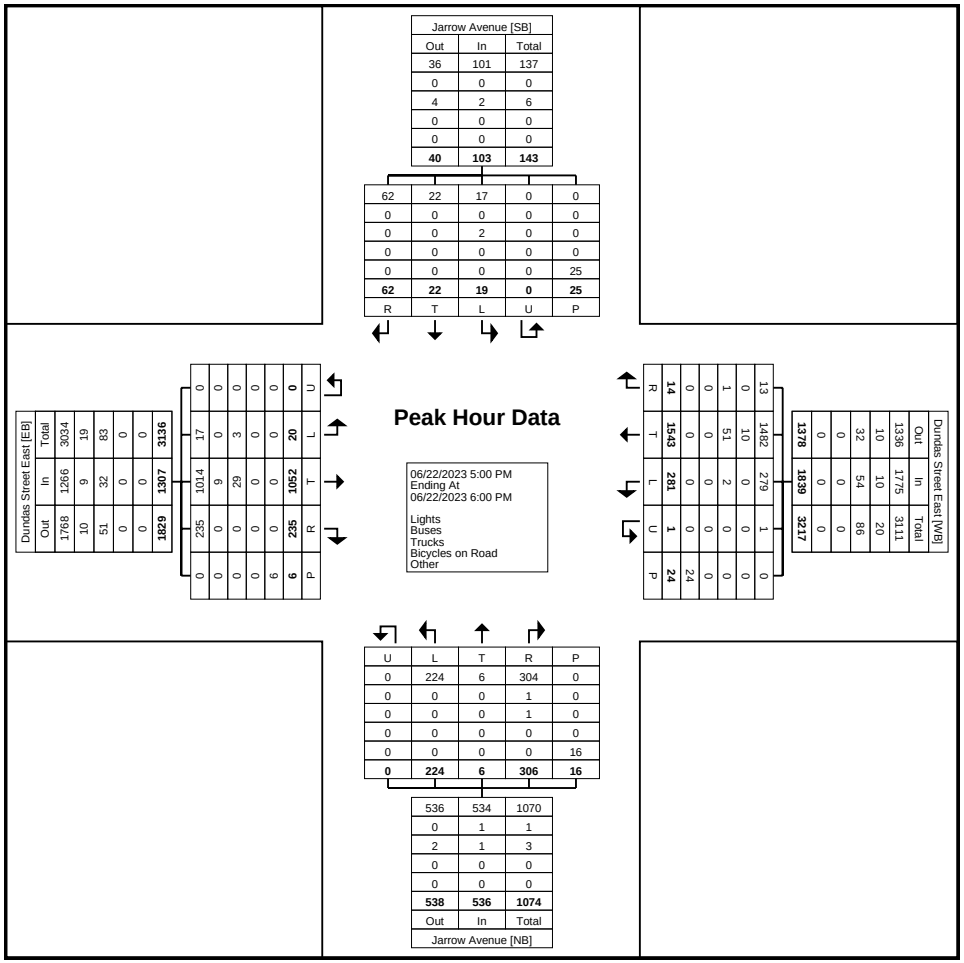
Turning Movement Peak Hour Data (5:00 PM)

Start Time	Jarrow Avenue Southbound						Dundas Street East Westbound						Jarrow Avenue Northbound						Dundas Street East Eastbound						Int. Total
	Right	Thru	Left	U-Turn	Peds	App. Total	Right	Thru	Left	U-Turn	Peds	App. Total	Right	Thru	Left	U-Turn	Peds	App. Total	Right	Thru	Left	U-Turn	Peds	App. Total	
5:00 PM	15	9	7	0	4	31	5	403	47	0	6	455	68	2	40	0	4	110	52	266	5	0	4	323	919
5:15 PM	11	6	2	0	9	19	4	387	89	1	5	481	88	0	66	0	3	154	67	271	3	0	1	341	995
5:30 PM	25	5	4	0	4	34	3	384	63	0	9	450	69	4	71	0	3	144	55	243	8	0	1	306	934
5:45 PM	11	2	6	0	8	19	2	369	82	0	4	453	81	0	47	0	6	128	61	272	4	0	0	337	937
Total	62	22	19	0	25	103	14	1543	281	1	24	1839	306	6	224	0	16	536	235	1052	20	0	6	1307	3785
Approach %	60.2	21.4	18.4	0.0	-	-	0.8	83.9	15.3	0.1	-	-	57.1	1.1	41.8	0.0	-	-	18.0	80.5	1.5	0.0	-	-	-
Total %	1.6	0.6	0.5	0.0	-	2.7	0.4	40.8	7.4	0.0	-	48.6	8.1	0.2	5.9	0.0	-	14.2	6.2	27.8	0.5	0.0	-	34.5	-
PHF	0.620	0.611	0.679	0.000	-	0.757	0.700	0.957	0.789	0.250	-	0.956	0.869	0.375	0.789	0.000	-	0.870	0.877	0.967	0.625	0.000	-	0.958	0.951
Lights	62	22	17	0	-	101	13	1482	279	1	-	1775	304	6	224	0	-	534	235	1014	17	0	-	1266	3676
% Lights	100.0	100.0	89.5	-	-	98.1	92.9	96.0	99.3	100.0	-	96.5	99.3	100.0	100.0	-	-	99.6	100.0	96.4	85.0	-	-	96.9	97.1
Buses	0	0	0	0	-	0	0	10	0	0	-	10	1	0	0	0	-	1	0	9	0	0	-	9	20
% Buses	0.0	0.0	0.0	-	-	0.0	0.0	0.6	0.0	0.0	-	0.5	0.3	0.0	0.0	-	-	0.2	0.0	0.9	0.0	-	-	0.7	0.5
Trucks	0	0	2	0	-	2	1	51	2	0	-	54	1	0	0	0	-	1	0	29	3	0	-	32	89
% Trucks	0.0	0.0	10.5	-	-	1.9	7.1	3.3	0.7	0.0	-	2.9	0.3	0.0	0.0	-	-	0.2	0.0	2.8	15.0	-	-	2.4	2.4
Bicycles on Road	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0
% Bicycles on Road	0.0	0.0	0.0	-	-	0.0	0.0	0.0	0.0	0.0	-	0.0	0.0	0.0	0.0	-	-	0.0	0.0	0.0	0.0	-	-	0.0	0.0
Bicycles on Crosswalk	-	-	-	-	4	-	-	-	-	-	2	-	-	-	-	-	7	-	-	-	-	-	0	-	-
% Bicycles on Crosswalk	-	-	-	-	16.0	-	-	-	-	-	8.3	-	-	-	-	-	43.8	-	-	-	-	-	0.0	-	-
Pedestrians	-	-	-	-	21	-	-	-	-	-	22	-	-	-	-	-	9	-	-	-	-	-	6	-	-
% Pedestrians	-	-	-	-	84.0	-	-	-	-	-	91.7	-	-	-	-	-	56.3	-	-	-	-	-	100.0	-	-

LEA Consulting Ltd.
625 Cochrane Drive

Markam, Ontario, Canada L3R 9R9
905-470-0015 x240 idinsmore@lea.ca

Count Name: 21224_Jarrow Ave & Dundas St E-PM
Site Code: 21224
Start Date: 06/22/2023



Turning Movement Peak Hour Data Plot (5:00 PM)

LEA Consulting Ltd.
625 Cochrane Drive

Markam, Ontario, Canada L3R 9R9
905-470-0015 x240 idinsmore@lea.ca

Count Name: 21224_Mattawa Ave & Dundas St E-AM
Site Code: 21224
Start Date: 06/22/2023

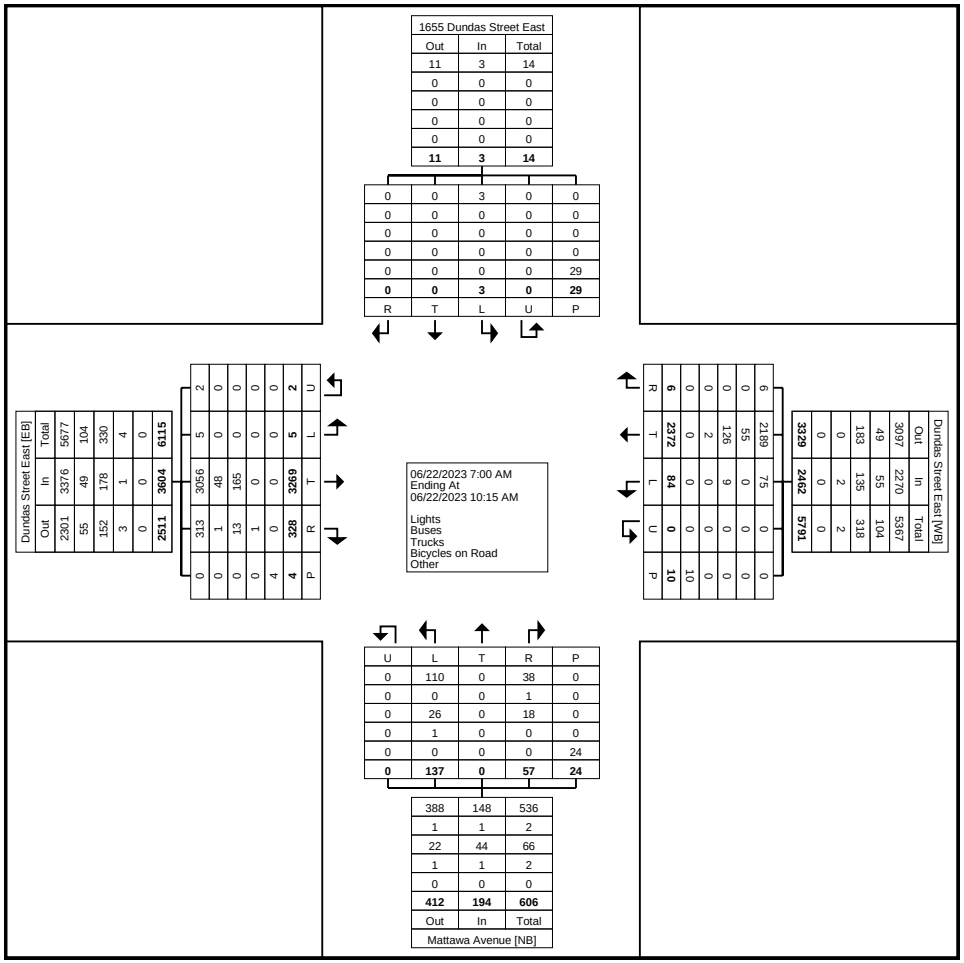
Turning Movement Data

Start Time	1655 Dundas Street East Southbound						Dundas Street East Westbound						Mattawa Avenue Northbound						Dundas Street East Eastbound						Int. Total
	Right	Thru	Left	U-Turn	Peds	App. Total	Right	Thru	Left	U-Turn	Peds	App. Total	Right	Thru	Left	U-Turn	Peds	App. Total	Right	Thru	Left	U-Turn	Peds	App. Total	
7:00 AM	0	0	0	0	1	0	0	109	2	0	1	111	9	0	15	0	2	24	20	229	1	0	0	250	385
7:15 AM	0	0	1	0	5	1	2	159	3	0	0	164	1	0	7	0	1	8	20	254	1	0	0	275	448
7:30 AM	0	0	0	0	1	0	0	170	8	0	2	178	3	0	12	0	3	15	29	269	0	0	0	298	491
7:45 AM	0	0	0	0	4	0	0	179	4	0	0	183	2	0	2	0	1	4	30	354	0	0	0	384	571
Hourly Total	0	0	1	0	11	1	2	617	17	0	3	636	15	0	36	0	7	51	99	1106	2	0	0	1207	1895
8:00 AM	0	0	0	0	2	0	0	194	5	0	0	199	9	0	15	0	0	24	27	264	0	0	0	291	514
8:15 AM	0	0	0	0	1	0	0	212	9	0	0	221	5	0	6	0	3	11	18	299	0	0	0	317	549
8:30 AM	0	0	0	0	2	0	1	202	10	0	0	213	2	0	13	0	0	15	41	301	0	0	0	342	570
8:45 AM	0	0	1	0	2	1	2	250	3	0	1	255	3	0	15	0	3	18	26	257	1	0	1	284	558
Hourly Total	0	0	1	0	7	1	3	858	27	0	1	888	19	0	49	0	6	68	112	1121	1	0	1	1234	2191
9:00 AM	0	0	0	0	1	0	0	237	7	0	0	244	2	0	5	0	0	7	33	280	1	0	0	314	565
9:15 AM	0	0	1	0	1	1	0	207	14	0	0	221	8	0	15	0	2	23	34	229	1	1	1	265	510
9:30 AM	0	0	0	0	2	0	0	230	7	0	0	237	12	0	15	0	1	27	21	281	0	0	0	302	566
9:45 AM	0	0	0	0	7	0	1	223	12	0	6	236	1	0	17	0	8	18	28	252	0	1	2	281	535
Hourly Total	0	0	1	0	11	1	1	897	40	0	6	938	23	0	52	0	11	75	116	1042	2	2	3	1162	2176
10:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	1	1
Grand Total	0	0	3	0	29	3	6	2372	84	0	10	2462	57	0	137	0	24	194	328	3269	5	2	4	3604	6263
Approach %	0.0	0.0	100.0	0.0	-	-	0.2	96.3	3.4	0.0	-	-	29.4	0.0	70.6	0.0	-	-	9.1	90.7	0.1	0.1	-	-	-
Total %	0.0	0.0	0.0	0.0	-	0.0	0.1	37.9	1.3	0.0	-	39.3	0.9	0.0	2.2	0.0	-	3.1	5.2	52.2	0.1	0.0	-	57.5	-
Lights	0	0	3	0	-	3	6	2189	75	0	-	2270	38	0	110	0	-	148	313	3056	5	2	-	3376	5797
% Lights	-	-	100.0	-	-	100.0	100.0	92.3	89.3	-	-	92.2	66.7	-	80.3	-	-	76.3	95.4	93.5	100.0	100.0	-	93.7	92.6
Buses	0	0	0	0	-	0	0	55	0	0	-	55	1	0	0	0	-	1	1	48	0	0	-	49	105
% Buses	-	-	0.0	-	-	0.0	0.0	2.3	0.0	-	-	2.2	1.8	-	0.0	-	-	0.5	0.3	1.5	0.0	0.0	-	1.4	1.7
Trucks	0	0	0	0	-	0	0	126	9	0	-	135	18	0	26	0	-	44	13	165	0	0	-	178	357
% Trucks	-	-	0.0	-	-	0.0	0.0	5.3	10.7	-	-	5.5	31.6	-	19.0	-	-	22.7	4.0	5.0	0.0	0.0	-	4.9	5.7
Bicycles on Road	0	0	0	0	-	0	0	2	0	0	-	2	0	0	1	0	-	1	1	0	0	0	-	1	4
% Bicycles on Road	-	-	0.0	-	-	0.0	0.0	0.1	0.0	-	-	0.1	0.0	-	0.7	-	-	0.5	0.3	0.0	0.0	0.0	-	0.0	0.1
Bicycles on Crosswalk	-	-	-	-	15	-	-	-	-	-	0	-	-	-	-	-	3	-	-	-	-	-	0	-	-
% Bicycles on Crosswalk	-	-	-	-	51.7	-	-	-	-	-	0.0	-	-	-	-	-	12.5	-	-	-	-	-	0.0	-	-
Pedestrians	-	-	-	-	14	-	-	-	-	-	10	-	-	-	-	-	21	-	-	-	-	-	4	-	-
% Pedestrians	-	-	-	-	48.3	-	-	-	-	-	100.0	-	-	-	-	-	87.5	-	-	-	-	-	100.0	-	-

LEA Consulting Ltd.
625 Cochrane Drive

Markam, Ontario, Canada L3R 9R9
905-470-0015 x240 idinsmore@lea.ca

Count Name: 21224_Mattawa Ave & Dundas St
E-AM
Site Code: 21224
Start Date: 06/22/2023



Turning Movement Data Plot

LEA Consulting Ltd.
625 Cochrane Drive

Markam, Ontario, Canada L3R 9R9
905-470-0015 x240 idinsmore@lea.ca

Count Name: 21224_Mattawa Ave & Dundas St E-AM
Site Code: 21224
Start Date: 06/22/2023

Turning Movement Peak Hour Data (8:15 AM)

Start Time	1655 Dundas Street East Southbound						Dundas Street East Westbound						Mattawa Avenue Northbound						Dundas Street East Eastbound						Int. Total
	Right	Thru	Left	U-Turn	Peds	App. Total	Right	Thru	Left	U-Turn	Peds	App. Total	Right	Thru	Left	U-Turn	Peds	App. Total	Right	Thru	Left	U-Turn	Peds	App. Total	
8:15 AM	0	0	0	0	1	0	0	212	9	0	0	221	5	0	6	0	3	11	18	299	0	0	0	317	549
8:30 AM	0	0	0	0	2	0	1	202	10	0	0	213	2	0	13	0	0	15	41	301	0	0	0	342	570
8:45 AM	0	0	1	0	2	1	2	250	3	0	1	255	3	0	15	0	3	18	26	257	1	0	1	284	558
9:00 AM	0	0	0	0	1	0	0	237	7	0	0	244	2	0	5	0	0	7	33	280	1	0	0	314	565
Total	0	0	1	0	6	1	3	901	29	0	1	933	12	0	39	0	6	51	118	1137	2	0	1	1257	2242
Approach %	0.0	0.0	100.0	0.0	-	-	0.3	96.6	3.1	0.0	-	-	23.5	0.0	76.5	0.0	-	-	9.4	90.5	0.2	0.0	-	-	-
Total %	0.0	0.0	0.0	0.0	-	0.0	0.1	40.2	1.3	0.0	-	41.6	0.5	0.0	1.7	0.0	-	2.3	5.3	50.7	0.1	0.0	-	56.1	-
PHF	0.000	0.000	0.250	0.000	-	0.250	0.375	0.901	0.725	0.000	-	0.915	0.600	0.000	0.650	0.000	-	0.708	0.720	0.944	0.500	0.000	-	0.919	0.983
Lights	0	0	1	0	-	1	3	835	26	0	-	864	7	0	37	0	-	44	114	1063	2	0	-	1179	2088
% Lights	-	-	100.0	-	-	100.0	100.0	92.7	89.7	-	-	92.6	58.3	-	94.9	-	-	86.3	96.6	93.5	100.0	-	-	93.8	93.1
Buses	0	0	0	0	-	0	0	16	0	0	-	16	0	0	0	0	-	0	0	11	0	0	-	11	27
% Buses	-	-	0.0	-	-	0.0	0.0	1.8	0.0	-	-	1.7	0.0	-	0.0	-	-	0.0	0.0	1.0	0.0	-	-	0.9	1.2
Trucks	0	0	0	0	-	0	0	48	3	0	-	51	5	0	1	0	-	6	4	63	0	0	-	67	124
% Trucks	-	-	0.0	-	-	0.0	0.0	5.3	10.3	-	-	5.5	41.7	-	2.6	-	-	11.8	3.4	5.5	0.0	-	-	5.3	5.5
Bicycles on Road	0	0	0	0	-	0	0	2	0	0	-	2	0	0	1	0	-	1	0	0	0	0	-	0	3
% Bicycles on Road	-	-	0.0	-	-	0.0	0.0	0.2	0.0	-	-	0.2	0.0	-	2.6	-	-	2.0	0.0	0.0	0.0	-	-	0.0	0.1
Bicycles on Crosswalk	-	-	-	-	2	-	-	-	-	-	0	-	-	-	-	-	1	-	-	-	-	-	0	-	-
% Bicycles on Crosswalk	-	-	-	-	33.3	-	-	-	-	-	0.0	-	-	-	-	-	16.7	-	-	-	-	-	0.0	-	-
Pedestrians	-	-	-	-	4	-	-	-	-	-	1	-	-	-	-	-	5	-	-	-	-	-	1	-	-
% Pedestrians	-	-	-	-	66.7	-	-	-	-	-	100.0	-	-	-	-	-	83.3	-	-	-	-	-	100.0	-	-

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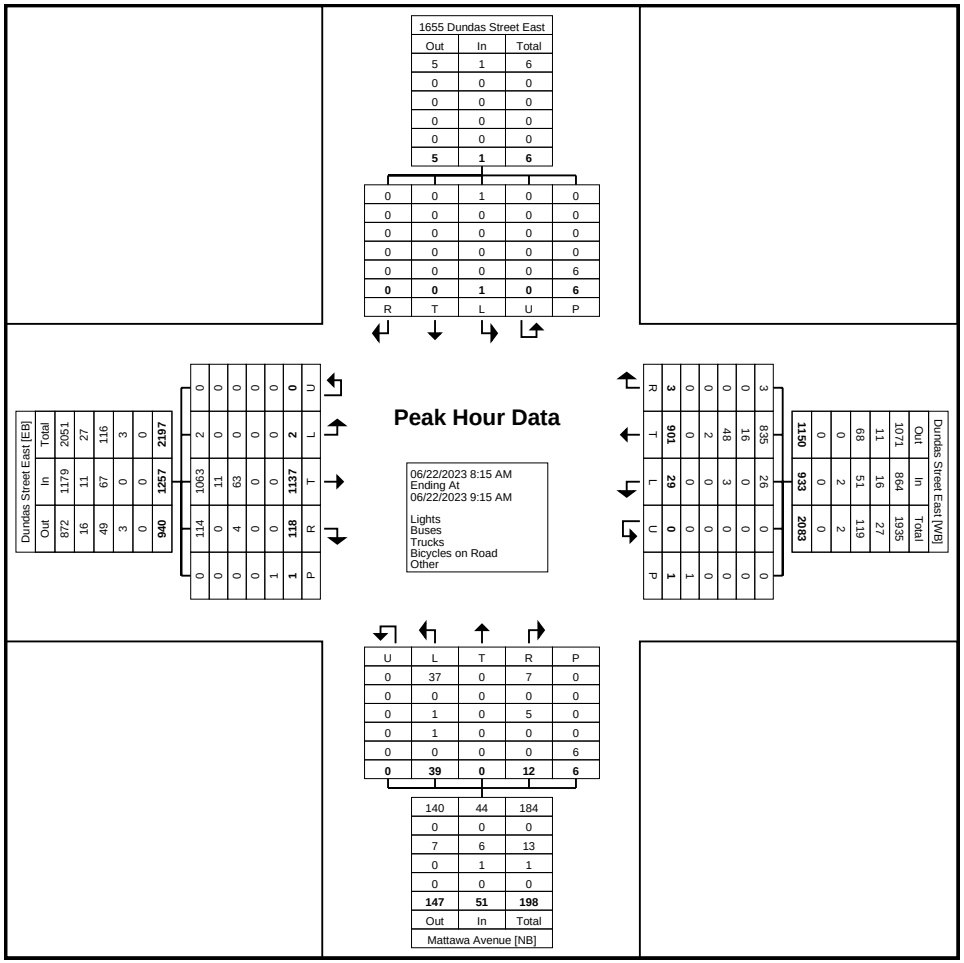
Site Code: 21224
Start Date: 06/22/2023



Turning Movement Peak Hour Data Plot (8:15 AM)

LEA Consulting Ltd.
625 Cochrane Drive

Markam, Ontario, Canada L3R 9R9
905-470-0015 x240 idinsmore@lea.ca

Count Name: 21224_Mattawa Ave & Dundas St E-PM
Site Code: 21224
Start Date: 06/22/2023

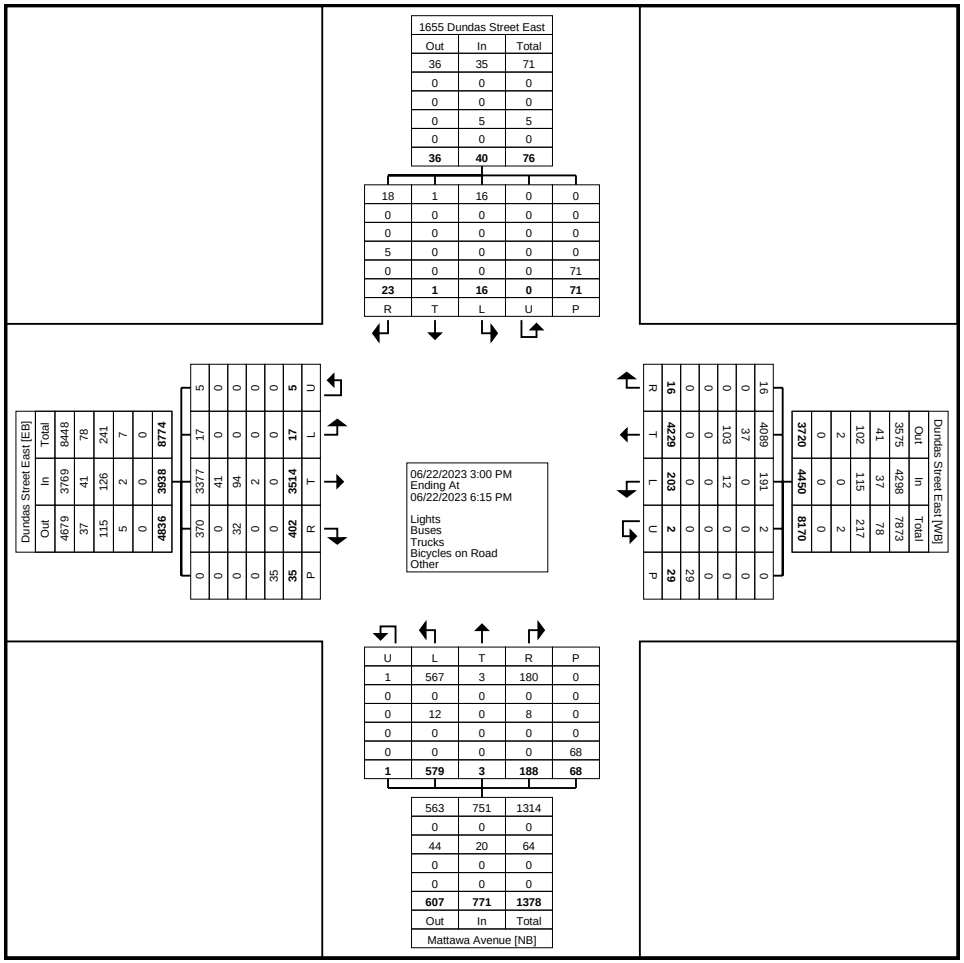
Turning Movement Data

Start Time	1655 Dundas Street East Southbound						Dundas Street East Westbound						Mattawa Avenue Northbound						Dundas Street East Eastbound						Int. Total
	Right	Thru	Left	U-Turn	Peds	App. Total	Right	Thru	Left	U-Turn	Peds	App. Total	Right	Thru	Left	U-Turn	Peds	App. Total	Right	Thru	Left	U-Turn	Peds	App. Total	
3:00 PM	2	0	0	0	2	2	1	313	11	0	2	325	12	0	43	0	9	55	39	284	0	0	1	323	705
3:15 PM	2	0	0	0	5	2	1	279	13	0	1	293	5	0	30	0	3	35	36	276	1	1	1	314	644
3:30 PM	4	0	2	0	5	6	2	339	9	0	1	350	13	1	43	0	5	57	40	261	0	0	1	301	714
3:45 PM	1	0	2	0	6	3	1	303	12	0	2	316	11	0	45	0	1	56	35	302	2	2	2	341	716
Hourly Total	9	0	4	0	18	13	5	1234	45	0	6	1284	41	1	161	0	18	203	150	1123	3	3	5	1279	2779
4:00 PM	1	0	1	0	9	2	0	403	13	0	4	416	15	0	51	1	5	67	34	298	2	0	3	334	819
4:15 PM	2	0	1	0	4	3	4	402	18	0	1	424	14	0	42	0	4	56	31	282	2	0	6	315	798
4:30 PM	6	0	2	0	9	8	1	350	21	0	1	372	19	0	51	0	8	70	25	300	1	0	3	326	776
4:45 PM	1	0	1	0	5	2	3	386	30	0	3	419	9	1	36	0	5	46	28	320	0	0	1	348	815
Hourly Total	10	0	5	0	27	15	8	1541	82	0	9	1631	57	1	180	1	22	239	118	1200	5	0	13	1323	3208
5:00 PM	3	0	1	0	5	4	0	378	16	0	6	394	14	1	57	0	12	72	32	296	2	0	2	330	800
5:15 PM	0	1	3	0	9	4	1	373	26	0	2	400	15	0	62	0	6	77	35	300	5	0	6	340	821
5:30 PM	1	0	0	0	9	1	2	381	18	0	1	401	43	0	59	0	5	102	35	287	0	1	4	323	827
5:45 PM	0	0	3	0	3	3	0	322	16	2	5	340	18	0	60	0	5	78	32	308	2	1	5	343	764
Hourly Total	4	1	7	0	26	12	3	1454	76	2	14	1535	90	1	238	0	28	329	134	1191	9	2	17	1336	3212
6:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Grand Total	23	1	16	0	71	40	16	4229	203	2	29	4450	188	3	579	1	68	771	402	3514	17	5	35	3938	9199
Approach %	57.5	2.5	40.0	0.0	-	-	0.4	95.0	4.6	0.0	-	-	24.4	0.4	75.1	0.1	-	-	10.2	89.2	0.4	0.1	-	-	-
Total %	0.3	0.0	0.2	0.0	-	0.4	0.2	46.0	2.2	0.0	-	48.4	2.0	0.0	6.3	0.0	-	8.4	4.4	38.2	0.2	0.1	-	42.8	-
Lights	18	1	16	0	-	35	16	4089	191	2	-	4298	180	3	567	1	-	751	370	3377	17	5	-	3769	8853
% Lights	78.3	100.0	100.0	-	-	87.5	100.0	96.7	94.1	100.0	-	96.6	95.7	100.0	97.9	100.0	-	97.4	92.0	96.1	100.0	100.0	-	95.7	96.2
Buses	0	0	0	0	-	0	0	37	0	0	-	37	0	0	0	0	-	0	0	41	0	0	-	41	78
% Buses	0.0	0.0	0.0	-	-	0.0	0.0	0.9	0.0	0.0	-	0.8	0.0	0.0	0.0	0.0	-	0.0	0.0	1.2	0.0	0.0	-	1.0	0.8
Trucks	0	0	0	0	-	0	0	103	12	0	-	115	8	0	12	0	-	20	32	94	0	0	-	126	261
% Trucks	0.0	0.0	0.0	-	-	0.0	0.0	2.4	5.9	0.0	-	2.6	4.3	0.0	2.1	0.0	-	2.6	8.0	2.7	0.0	0.0	-	3.2	2.8
Bicycles on Road	5	0	0	0	-	5	0	0	0	0	-	0	0	0	0	0	-	0	0	2	0	0	-	2	7
% Bicycles on Road	21.7	0.0	0.0	-	-	12.5	0.0	0.0	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0	-	0.0	0.0	0.1	0.0	0.0	-	0.1	0.1
Bicycles on Crosswalk	-	-	-	-	9	-	-	-	-	-	2	-	-	-	-	-	13	-	-	-	-	-	1	-	-
% Bicycles on Crosswalk	-	-	-	-	12.7	-	-	-	-	-	6.9	-	-	-	-	-	19.1	-	-	-	-	-	2.9	-	-
Pedestrians	-	-	-	-	62	-	-	-	-	-	27	-	-	-	-	-	55	-	-	-	-	-	34	-	-
% Pedestrians	-	-	-	-	87.3	-	-	-	-	-	93.1	-	-	-	-	-	80.9	-	-	-	-	-	97.1	-	-

LEA Consulting Ltd.
625 Cochrane Drive

Markam, Ontario, Canada L3R 9R9
905-470-0015 x240 idinsmore@lea.ca

Count Name: 21224_Mattawa Ave & Dundas St
E-PM
Site Code: 21224
Start Date: 06/22/2023



Turning Movement Data Plot

LEA Consulting Ltd.
625 Cochrane Drive

Markam, Ontario, Canada L3R 9R9
905-470-0015 x240 idinsmore@lea.ca

Count Name: 21224_Mattawa Ave & Dundas St E-PM
Site Code: 21224
Start Date: 06/22/2023

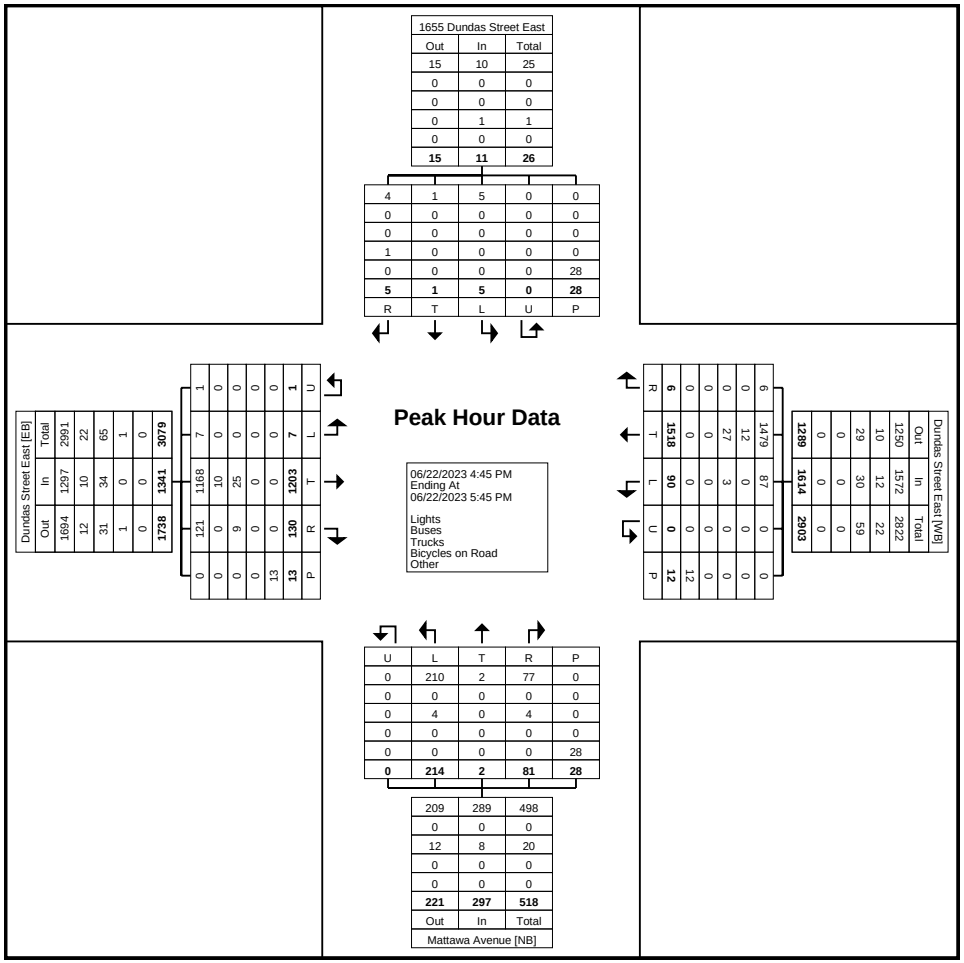
Turning Movement Peak Hour Data (4:45 PM)

Start Time	1655 Dundas Street East Southbound						Dundas Street East Westbound						Mattawa Avenue Northbound						Dundas Street East Eastbound						Int. Total
	Right	Thru	Left	U-Turn	Peds	App. Total	Right	Thru	Left	U-Turn	Peds	App. Total	Right	Thru	Left	U-Turn	Peds	App. Total	Right	Thru	Left	U-Turn	Peds	App. Total	
4:45 PM	1	0	1	0	5	2	3	386	30	0	3	419	9	1	36	0	5	46	28	320	0	0	1	348	815
5:00 PM	3	0	1	0	5	4	0	378	16	0	6	394	14	1	57	0	12	72	32	296	2	0	2	330	800
5:15 PM	0	1	3	0	9	4	1	373	26	0	2	400	15	0	62	0	6	77	35	300	5	0	6	340	821
5:30 PM	1	0	0	0	9	1	2	381	18	0	1	401	43	0	59	0	5	102	35	287	0	1	4	323	827
Total	5	1	5	0	28	11	6	1518	90	0	12	1614	81	2	214	0	28	297	130	1203	7	1	13	1341	3263
Approach %	45.5	9.1	45.5	0.0	-	-	0.4	94.1	5.6	0.0	-	-	27.3	0.7	72.1	0.0	-	-	9.7	89.7	0.5	0.1	-	-	-
Total %	0.2	0.0	0.2	0.0	-	0.3	0.2	46.5	2.8	0.0	-	49.5	2.5	0.1	6.6	0.0	-	9.1	4.0	36.9	0.2	0.0	-	41.1	-
PHF	0.417	0.250	0.417	0.000	-	0.688	0.500	0.983	0.750	0.000	-	0.963	0.471	0.500	0.863	0.000	-	0.728	0.929	0.940	0.350	0.250	-	0.963	0.986
Lights	4	1	5	0	-	10	6	1479	87	0	-	1572	77	2	210	0	-	289	121	1168	7	1	-	1297	3168
% Lights	80.0	100.0	100.0	-	-	90.9	100.0	97.4	96.7	-	-	97.4	95.1	100.0	98.1	-	-	97.3	93.1	97.1	100.0	100.0	-	96.7	97.1
Buses	0	0	0	0	-	0	0	12	0	0	-	12	0	0	0	0	-	0	0	10	0	0	-	10	22
% Buses	0.0	0.0	0.0	-	-	0.0	0.0	0.8	0.0	-	-	0.7	0.0	0.0	0.0	-	-	0.0	0.0	0.8	0.0	0.0	-	0.7	0.7
Trucks	0	0	0	0	-	0	0	27	3	0	-	30	4	0	4	0	-	8	9	25	0	0	-	34	72
% Trucks	0.0	0.0	0.0	-	-	0.0	0.0	1.8	3.3	-	-	1.9	4.9	0.0	1.9	-	-	2.7	6.9	2.1	0.0	0.0	-	2.5	2.2
Bicycles on Road	1	0	0	0	-	1	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	1
% Bicycles on Road	20.0	0.0	0.0	-	-	9.1	0.0	0.0	0.0	-	-	0.0	0.0	0.0	0.0	-	-	0.0	0.0	0.0	0.0	0.0	-	0.0	0.0
Bicycles on Crosswalk	-	-	-	-	5	-	-	-	-	-	0	-	-	-	-	-	3	-	-	-	-	-	0	-	-
% Bicycles on Crosswalk	-	-	-	-	17.9	-	-	-	-	-	0.0	-	-	-	-	-	10.7	-	-	-	-	-	0.0	-	-
Pedestrians	-	-	-	-	23	-	-	-	-	-	12	-	-	-	-	-	25	-	-	-	-	-	13	-	-
% Pedestrians	-	-	-	-	82.1	-	-	-	-	-	100.0	-	-	-	-	-	89.3	-	-	-	-	-	100.0	-	-

LEA Consulting Ltd.
625 Cochrane Drive

Markam, Ontario, Canada L3R 9R9
905-470-0015 x240 idinsmore@lea.ca

Count Name: 21224_Mattawa Ave & Dundas St
E-PM
Site Code: 21224
Start Date: 06/22/2023



Turning Movement Peak Hour Data Plot (4:45 PM)

LEA Consulting Ltd.
625 Cochrane Drive

Markam, Ontario, Canada L3R 9R9
905-470-0015 x240 idinsmore@lea.ca

Count Name: 21224_Nawbrook Rd & Dundas St E-AM
Site Code: 21224
Start Date: 06/22/2023

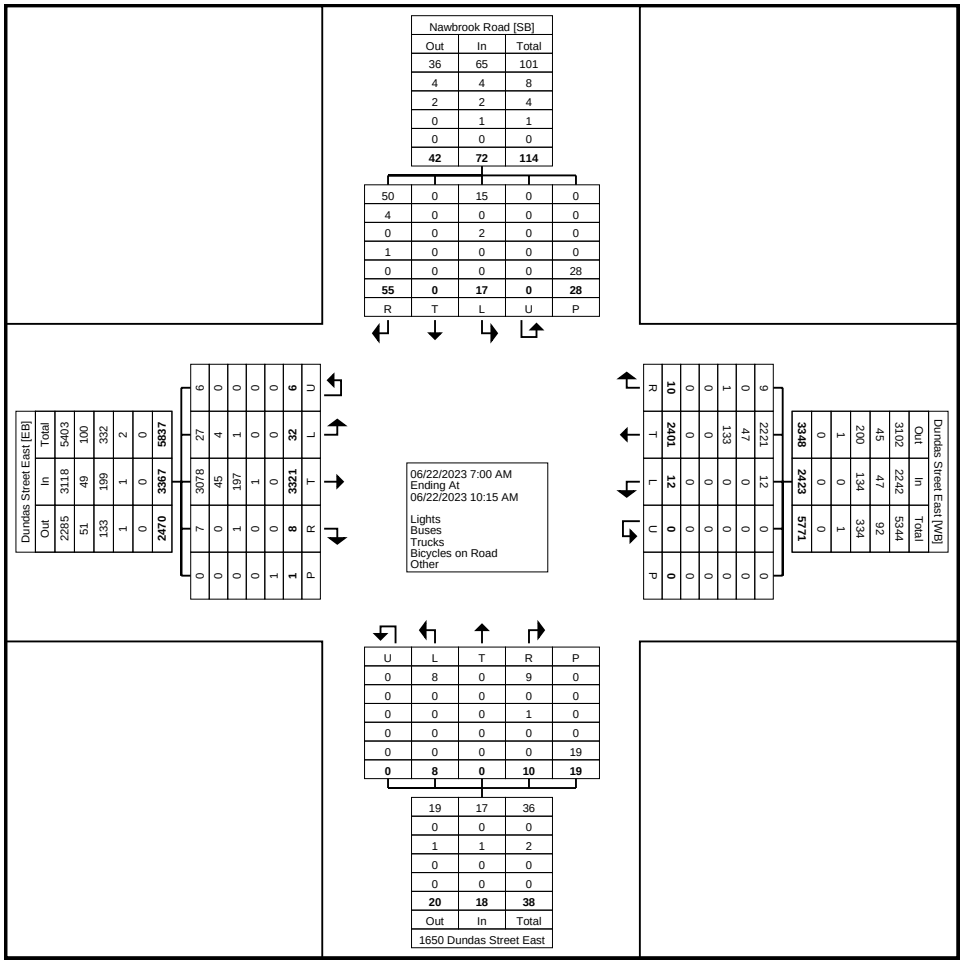
Turning Movement Data

Start Time	Nawbrook Road Southbound						Dundas Street East Westbound						1650 Dundas Street East Northbound						Dundas Street East Eastbound						Int. Total
	Right	Thru	Left	U-Turn	Peds	App. Total	Right	Thru	Left	U-Turn	Peds	App. Total	Right	Thru	Left	U-Turn	Peds	App. Total	Right	Thru	Left	U-Turn	Peds	App. Total	
7:00 AM	4	0	1	0	1	5	0	104	0	0	0	104	1	0	0	0	1	1	0	237	2	1	0	240	350
7:15 AM	4	0	2	0	3	6	1	162	0	0	0	163	0	0	2	0	0	2	0	255	0	0	0	255	426
7:30 AM	6	0	3	0	2	9	0	168	3	0	0	171	2	0	2	0	2	4	1	281	2	0	0	284	468
7:45 AM	3	0	1	0	1	4	1	180	0	0	0	181	2	0	0	0	2	2	0	356	2	1	1	359	546
Hourly Total	17	0	7	0	7	24	2	614	3	0	0	619	5	0	4	0	5	9	1	1129	6	2	1	1138	1790
8:00 AM	6	0	3	0	1	9	1	186	3	0	0	190	3	0	2	0	1	5	0	275	2	0	0	277	481
8:15 AM	4	0	0	0	1	4	0	216	0	0	0	216	0	0	0	0	2	0	0	294	5	0	0	299	519
8:30 AM	3	0	0	0	3	3	0	208	0	0	0	208	0	0	0	0	0	0	0	283	2	0	0	285	496
8:45 AM	5	0	1	0	1	6	2	242	1	0	0	245	1	0	0	0	3	1	1	256	5	0	0	262	514
Hourly Total	18	0	4	0	6	22	3	852	4	0	0	859	4	0	2	0	6	6	1	1108	14	0	0	1123	2010
9:00 AM	6	0	2	0	3	8	2	237	0	0	0	239	0	0	1	0	0	1	1	287	2	1	0	291	539
9:15 AM	5	0	1	0	2	6	2	218	2	0	0	222	0	0	0	0	2	0	1	242	3	1	0	247	475
9:30 AM	6	0	2	0	2	8	1	234	2	0	0	237	1	0	0	0	1	1	3	295	2	2	0	302	548
9:45 AM	3	0	1	0	8	4	0	243	1	0	0	244	0	0	1	0	5	1	1	260	5	0	0	266	515
Hourly Total	20	0	6	0	15	26	5	932	5	0	0	942	1	0	2	0	8	3	6	1084	12	4	0	1106	2077
10:00 AM	0	0	0	0	0	0	0	3	0	0	0	3	0	0	0	0	0	0	0	0	0	0	0	0	3
Grand Total	55	0	17	0	28	72	10	2401	12	0	0	2423	10	0	8	0	19	18	8	3321	32	6	1	3367	5880
Approach %	76.4	0.0	23.6	0.0	-	-	0.4	99.1	0.5	0.0	-	-	55.6	0.0	44.4	0.0	-	-	0.2	98.6	1.0	0.2	-	-	-
Total %	0.9	0.0	0.3	0.0	-	1.2	0.2	40.8	0.2	0.0	-	41.2	0.2	0.0	0.1	0.0	-	0.3	0.1	56.5	0.5	0.1	-	57.3	-
Lights	50	0	15	0	-	65	9	2221	12	0	-	2242	9	0	8	0	-	17	7	3078	27	6	-	3118	5442
% Lights	90.9	-	88.2	-	-	90.3	90.0	92.5	100.0	-	-	92.5	90.0	-	100.0	-	-	94.4	87.5	92.7	84.4	100.0	-	92.6	92.6
Buses	4	0	0	0	-	4	0	47	0	0	-	47	0	0	0	0	-	0	0	45	4	0	-	49	100
% Buses	7.3	-	0.0	-	-	5.6	0.0	2.0	0.0	-	-	1.9	0.0	-	0.0	-	-	0.0	0.0	1.4	12.5	0.0	-	1.5	1.7
Trucks	0	0	2	0	-	2	1	133	0	0	-	134	1	0	0	0	-	1	1	197	1	0	-	199	336
% Trucks	0.0	-	11.8	-	-	2.8	10.0	5.5	0.0	-	-	5.5	10.0	-	0.0	-	-	5.6	12.5	5.9	3.1	0.0	-	5.9	5.7
Bicycles on Road	1	0	0	0	-	1	0	0	0	0	-	0	0	0	0	0	-	0	0	1	0	0	-	1	2
% Bicycles on Road	1.8	-	0.0	-	-	1.4	0.0	0.0	0.0	-	-	0.0	0.0	-	0.0	-	-	0.0	0.0	0.0	0.0	0.0	-	0.0	0.0
Bicycles on Crosswalk	-	-	-	-	9	-	-	-	-	-	0	-	-	-	-	-	4	-	-	-	-	-	1	-	-
% Bicycles on Crosswalk	-	-	-	-	32.1	-	-	-	-	-	-	-	-	-	-	-	21.1	-	-	-	-	-	100.0	-	-
Pedestrians	-	-	-	-	19	-	-	-	-	-	0	-	-	-	-	-	15	-	-	-	-	-	0	-	-
% Pedestrians	-	-	-	-	67.9	-	-	-	-	-	-	-	-	-	-	-	78.9	-	-	-	-	-	0.0	-	-

LEA Consulting Ltd.
625 Cochrane Drive

Markam, Ontario, Canada L3R 9R9
905-470-0015 x240 idinsmore@lea.ca

Count Name: 21224_Nawbrook Rd & Dundas St E-AM
Site Code: 21224
Start Date: 06/22/2023



Turning Movement Data Plot

LEA Consulting Ltd.
625 Cochrane Drive

Markam, Ontario, Canada L3R 9R9
905-470-0015 x240 idinsmore@lea.ca

Count Name: 21224_Nawbrook Rd & Dundas St E-AM
Site Code: 21224
Start Date: 06/22/2023

Turning Movement Peak Hour Data (9:00 AM)

Start Time	Nawbrook Road Southbound						Dundas Street East Westbound						1650 Dundas Street East Northbound						Dundas Street East Eastbound						Int. Total
	Right	Thru	Left	U-Turn	Peds	App. Total	Right	Thru	Left	U-Turn	Peds	App. Total	Right	Thru	Left	U-Turn	Peds	App. Total	Right	Thru	Left	U-Turn	Peds	App. Total	
9:00 AM	6	0	2	0	3	8	2	237	0	0	0	239	0	0	1	0	0	1	1	287	2	1	0	291	539
9:15 AM	5	0	1	0	2	6	2	218	2	0	0	222	0	0	0	0	2	0	1	242	3	1	0	247	475
9:30 AM	6	0	2	0	2	8	1	234	2	0	0	237	1	0	0	0	1	1	3	295	2	2	0	302	548
9:45 AM	3	0	1	0	8	4	0	243	1	0	0	244	0	0	1	0	5	1	1	260	5	0	0	266	515
Total	20	0	6	0	15	26	5	932	5	0	0	942	1	0	2	0	8	3	6	1084	12	4	0	1106	2077
Approach %	76.9	0.0	23.1	0.0	-	-	0.5	98.9	0.5	0.0	-	-	33.3	0.0	66.7	0.0	-	-	0.5	98.0	1.1	0.4	-	-	-
Total %	1.0	0.0	0.3	0.0	-	1.3	0.2	44.9	0.2	0.0	-	45.4	0.0	0.0	0.1	0.0	-	0.1	0.3	52.2	0.6	0.2	-	53.2	-
PHF	0.833	0.000	0.750	0.000	-	0.813	0.625	0.959	0.625	0.000	-	0.965	0.250	0.000	0.500	0.000	-	0.750	0.500	0.919	0.600	0.500	-	0.916	0.948
Lights	19	0	6	0	-	25	5	863	5	0	-	873	1	0	2	0	-	3	6	1005	11	4	-	1026	1927
% Lights	95.0	-	100.0	-	-	96.2	100.0	92.6	100.0	-	-	92.7	100.0	-	100.0	-	-	100.0	100.0	92.7	91.7	100.0	-	92.8	92.8
Buses	0	0	0	0	-	0	0	14	0	0	-	14	0	0	0	0	-	0	0	12	0	0	-	12	26
% Buses	0.0	-	0.0	-	-	0.0	0.0	1.5	0.0	-	-	1.5	0.0	-	0.0	-	-	0.0	0.0	1.1	0.0	0.0	-	1.1	1.3
Trucks	0	0	0	0	-	0	0	55	0	0	-	55	0	0	0	0	-	0	0	67	1	0	-	68	123
% Trucks	0.0	-	0.0	-	-	0.0	0.0	5.9	0.0	-	-	5.8	0.0	-	0.0	-	-	0.0	0.0	6.2	8.3	0.0	-	6.1	5.9
Bicycles on Road	1	0	0	0	-	1	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	1
% Bicycles on Road	5.0	-	0.0	-	-	3.8	0.0	0.0	0.0	-	-	0.0	0.0	-	0.0	-	-	0.0	0.0	0.0	0.0	0.0	-	0.0	0.0
Bicycles on Crosswalk	-	-	-	-	1	-	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-
% Bicycles on Crosswalk	-	-	-	-	6.7	-	-	-	-	-	-	-	-	-	-	-	0.0	-	-	-	-	-	-	-	-
Pedestrians	-	-	-	-	14	-	-	-	-	-	0	-	-	-	-	-	8	-	-	-	-	-	0	-	-
% Pedestrians	-	-	-	-	93.3	-	-	-	-	-	-	-	-	-	-	-	100.0	-	-	-	-	-	-	-	-

LEA Consulting Ltd.
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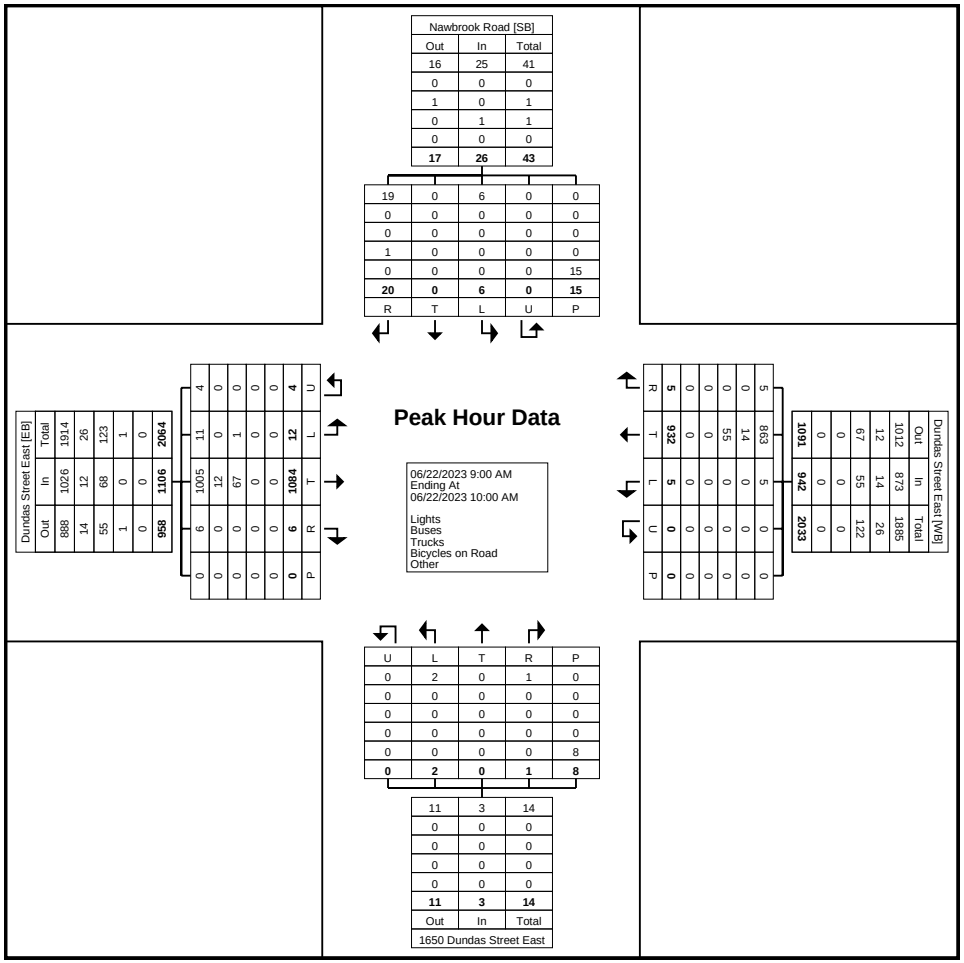
Count Name: 21224_Nawbrook Rd & Dundas St E-AM
Site Code: 21224
Start Date: 06/22/2023



Turning Movement Peak Hour Data Plot (9:00 AM)

LEA Consulting Ltd.
625 Cochrane Drive

Markam, Ontario, Canada L3R 9R9
905-470-0015 x240 idinsmore@lea.ca

Count Name: 21224_Nawbrook Rd & Dundas St E-PM
Site Code: 21224
Start Date: 06/22/2023

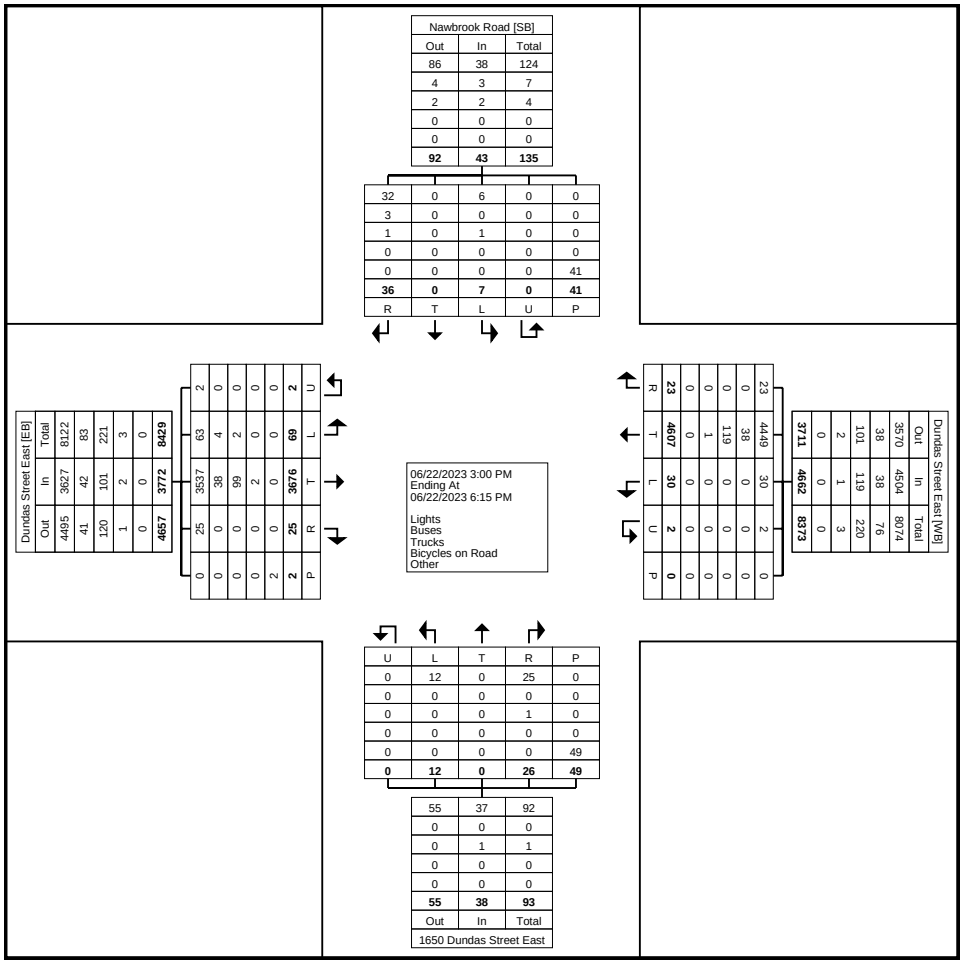
Turning Movement Data

Start Time	Nawbrook Road Southbound						Dundas Street East Westbound						1650 Dundas Street East Northbound						Dundas Street East Eastbound						Int. Total
	Right	Thru	Left	U-Turn	Peds	App. Total	Right	Thru	Left	U-Turn	Peds	App. Total	Right	Thru	Left	U-Turn	Peds	App. Total	Right	Thru	Left	U-Turn	Peds	App. Total	
3:00 PM	2	0	0	0	1	2	3	348	2	0	0	353	3	0	2	0	4	5	1	293	4	0	0	298	658
3:15 PM	0	0	0	0	4	0	2	328	3	1	0	334	1	0	1	0	4	2	2	293	6	0	1	301	637
3:30 PM	4	0	1	0	2	5	3	363	2	0	0	368	1	0	0	0	3	1	2	281	8	0	0	291	665
3:45 PM	3	0	1	0	2	4	1	328	3	0	0	332	1	0	2	0	3	3	4	311	7	1	0	323	662
Hourly Total	9	0	2	0	9	11	9	1367	10	1	0	1387	6	0	5	0	14	11	9	1178	25	1	1	1213	2622
4:00 PM	2	0	2	0	5	4	3	421	2	0	0	426	2	0	1	0	4	3	0	315	4	0	0	319	752
4:15 PM	6	0	0	0	5	6	0	422	4	0	0	426	3	0	0	0	4	3	2	287	5	1	0	295	730
4:30 PM	1	0	1	0	5	2	3	374	0	0	0	377	1	0	0	0	5	1	0	316	7	0	1	323	703
4:45 PM	3	0	0	0	4	3	2	415	5	0	0	422	1	0	2	0	2	3	4	320	4	0	0	328	756
Hourly Total	12	0	3	0	19	15	8	1632	11	0	0	1651	7	0	3	0	15	10	6	1238	20	1	1	1265	2941
5:00 PM	2	0	0	0	1	2	0	396	3	0	0	399	2	0	0	0	8	2	0	310	7	0	0	317	720
5:15 PM	4	0	1	0	3	5	3	415	2	0	0	420	0	0	1	0	5	1	3	311	6	0	0	320	746
5:30 PM	3	0	0	0	7	3	3	432	1	0	0	436	1	0	2	0	4	3	4	325	4	0	0	333	775
5:45 PM	6	0	1	0	2	7	0	361	3	1	0	365	10	0	1	0	3	11	3	312	7	0	0	322	705
Hourly Total	15	0	2	0	13	17	6	1604	9	1	0	1620	13	0	4	0	20	17	10	1258	24	0	0	1292	2946
6:00 PM	0	0	0	0	0	0	0	4	0	0	0	4	0	0	0	0	0	0	0	2	0	0	0	2	6
Grand Total	36	0	7	0	41	43	23	4607	30	2	0	4662	26	0	12	0	49	38	25	3676	69	2	2	3772	8515
Approach %	83.7	0.0	16.3	0.0	-	-	0.5	98.8	0.6	0.0	-	-	68.4	0.0	31.6	0.0	-	-	0.7	97.5	1.8	0.1	-	-	-
Total %	0.4	0.0	0.1	0.0	-	0.5	0.3	54.1	0.4	0.0	-	54.8	0.3	0.0	0.1	0.0	-	0.4	0.3	43.2	0.8	0.0	-	44.3	-
Lights	32	0	6	0	-	38	23	4449	30	2	-	4504	25	0	12	0	-	37	25	3537	63	2	-	3627	8206
% Lights	88.9	-	85.7	-	-	88.4	100.0	96.6	100.0	100.0	-	96.6	96.2	-	100.0	-	-	97.4	100.0	96.2	91.3	100.0	-	96.2	96.4
Buses	3	0	0	0	-	3	0	38	0	0	-	38	0	0	0	0	-	0	0	38	4	0	-	42	83
% Buses	8.3	-	0.0	-	-	7.0	0.0	0.8	0.0	0.0	-	0.8	0.0	-	0.0	-	-	0.0	0.0	1.0	5.8	0.0	-	1.1	1.0
Trucks	1	0	1	0	-	2	0	119	0	0	-	119	1	0	0	0	-	1	0	99	2	0	-	101	223
% Trucks	2.8	-	14.3	-	-	4.7	0.0	2.6	0.0	0.0	-	2.6	3.8	-	0.0	-	-	2.6	0.0	2.7	2.9	0.0	-	2.7	2.6
Bicycles on Road	0	0	0	0	-	0	0	1	0	0	-	1	0	0	0	0	-	0	0	2	0	0	-	2	3
% Bicycles on Road	0.0	-	0.0	-	-	0.0	0.0	0.0	0.0	0.0	-	0.0	0.0	-	0.0	-	-	0.0	0.0	0.1	0.0	0.0	-	0.1	0.0
Bicycles on Crosswalk	-	-	-	-	13	-	-	-	-	-	0	-	-	-	-	-	14	-	-	-	-	-	0	-	-
% Bicycles on Crosswalk	-	-	-	-	31.7	-	-	-	-	-	-	-	-	-	-	-	28.6	-	-	-	-	-	0.0	-	-
Pedestrians	-	-	-	-	28	-	-	-	-	-	0	-	-	-	-	-	35	-	-	-	-	-	2	-	-
% Pedestrians	-	-	-	-	68.3	-	-	-	-	-	-	-	-	-	-	-	71.4	-	-	-	-	-	100.0	-	-

LEA Consulting Ltd.
625 Cochrane Drive

Markam, Ontario, Canada L3R 9R9
905-470-0015 x240 idinsmore@lea.ca

Count Name: 21224_Nawbrook Rd & Dundas St E-PM
Site Code: 21224
Start Date: 06/22/2023



Turning Movement Data Plot

LEA Consulting Ltd.
625 Cochrane Drive

Markam, Ontario, Canada L3R 9R9
905-470-0015 x240 idinsmore@lea.ca

Count Name: 21224_Nawbrook Rd & Dundas St E-PM
Site Code: 21224
Start Date: 06/22/2023

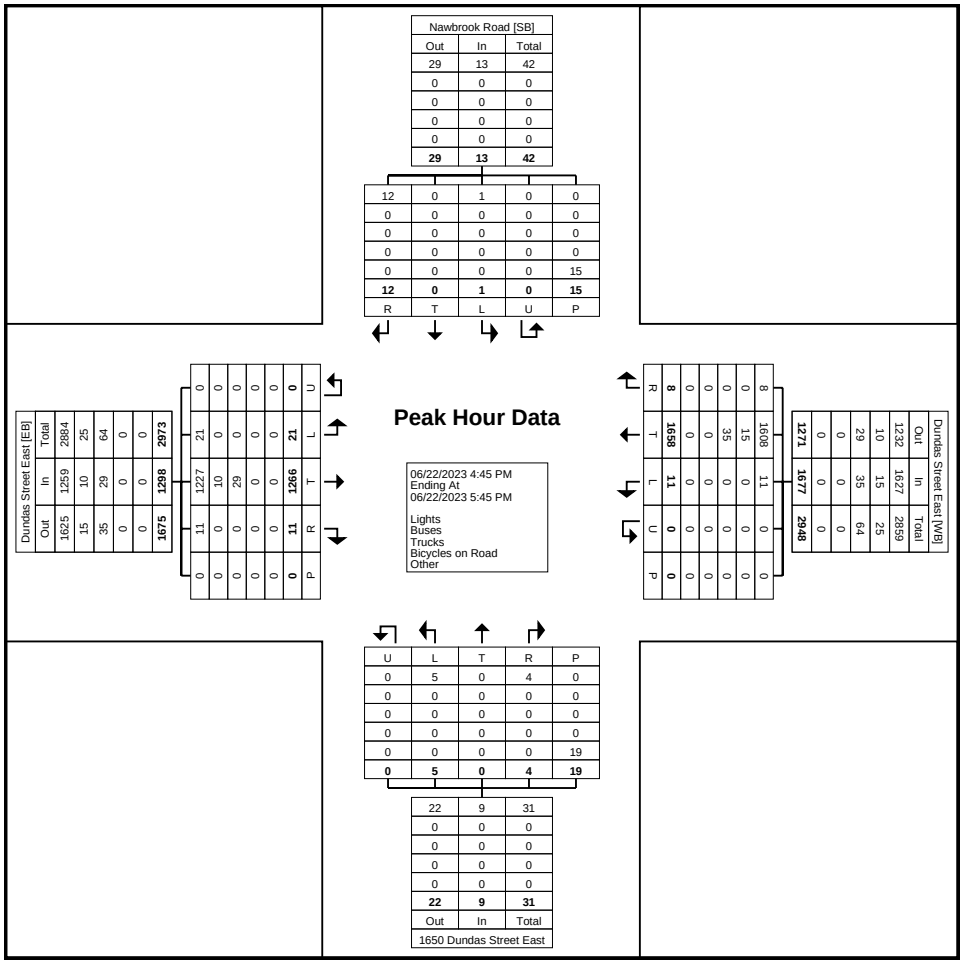
Turning Movement Peak Hour Data (4:45 PM)

Start Time	Nawbrook Road Southbound						Dundas Street East Westbound						1650 Dundas Street East Northbound						Dundas Street East Eastbound						Int. Total
	Right	Thru	Left	U-Turn	Peds	App. Total	Right	Thru	Left	U-Turn	Peds	App. Total	Right	Thru	Left	U-Turn	Peds	App. Total	Right	Thru	Left	U-Turn	Peds	App. Total	
4:45 PM	3	0	0	0	4	3	2	415	5	0	0	422	1	0	2	0	2	3	4	320	4	0	0	328	756
5:00 PM	2	0	0	0	1	2	0	396	3	0	0	399	2	0	0	0	8	2	0	310	7	0	0	317	720
5:15 PM	4	0	1	0	3	5	3	415	2	0	0	420	0	0	1	0	5	1	3	311	6	0	0	320	746
5:30 PM	3	0	0	0	7	3	3	432	1	0	0	436	1	0	2	0	4	3	4	325	4	0	0	333	775
Total	12	0	1	0	15	13	8	1658	11	0	0	1677	4	0	5	0	19	9	11	1266	21	0	0	1298	2997
Approach %	92.3	0.0	7.7	0.0	-	-	0.5	98.9	0.7	0.0	-	-	44.4	0.0	55.6	0.0	-	-	0.8	97.5	1.6	0.0	-	-	-
Total %	0.4	0.0	0.0	0.0	-	0.4	0.3	55.3	0.4	0.0	-	56.0	0.1	0.0	0.2	0.0	-	0.3	0.4	42.2	0.7	0.0	-	43.3	-
PHF	0.750	0.000	0.250	0.000	-	0.650	0.667	0.959	0.550	0.000	-	0.962	0.500	0.000	0.625	0.000	-	0.750	0.688	0.974	0.750	0.000	-	0.974	0.967
Lights	12	0	1	0	-	13	8	1608	11	0	-	1627	4	0	5	0	-	9	11	1227	21	0	-	1259	2908
% Lights	100.0	-	100.0	-	-	100.0	100.0	97.0	100.0	-	-	97.0	100.0	-	100.0	-	-	100.0	100.0	96.9	100.0	-	-	97.0	97.0
Buses	0	0	0	0	-	0	0	15	0	0	-	15	0	0	0	0	-	0	0	10	0	0	-	10	25
% Buses	0.0	-	0.0	-	-	0.0	0.0	0.9	0.0	-	-	0.9	0.0	-	0.0	-	-	0.0	0.0	0.8	0.0	-	-	0.8	0.8
Trucks	0	0	0	0	-	0	0	35	0	0	-	35	0	0	0	0	-	0	0	29	0	0	-	29	64
% Trucks	0.0	-	0.0	-	-	0.0	0.0	2.1	0.0	-	-	2.1	0.0	-	0.0	-	-	0.0	0.0	2.3	0.0	-	-	2.2	2.1
Bicycles on Road	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0
% Bicycles on Road	0.0	-	0.0	-	-	0.0	0.0	0.0	0.0	-	-	0.0	0.0	-	0.0	-	-	0.0	0.0	0.0	0.0	-	-	0.0	0.0
Bicycles on Crosswalk	-	-	-	-	4	-	-	-	-	-	0	-	-	-	-	-	3	-	-	-	-	-	0	-	-
% Bicycles on Crosswalk	-	-	-	-	26.7	-	-	-	-	-	-	-	-	-	-	-	15.8	-	-	-	-	-	-	-	-
Pedestrians	-	-	-	-	11	-	-	-	-	-	0	-	-	-	-	-	16	-	-	-	-	-	0	-	-
% Pedestrians	-	-	-	-	73.3	-	-	-	-	-	-	-	-	-	-	-	84.2	-	-	-	-	-	-	-	-

LEA Consulting Ltd.
625 Cochrane Drive

Markam, Ontario, Canada L3R 9R9
905-470-0015 x240 idinsmore@lea.ca

Count Name: 21224_Nawbrook Rd & Dundas St E-PM
Site Code: 21224
Start Date: 06/22/2023



Turning Movement Peak Hour Data Plot (4:45 PM)

LEA Consulting Ltd.
625 Cochrane Drive

Markam, Ontario, Canada L3R 9R9
905-470-0015 x240 idinsmore@lea.ca

Count Name: 21224_Treadwells Rd & Dundas St E-AM
Site Code: 21224
Start Date: 06/22/2023

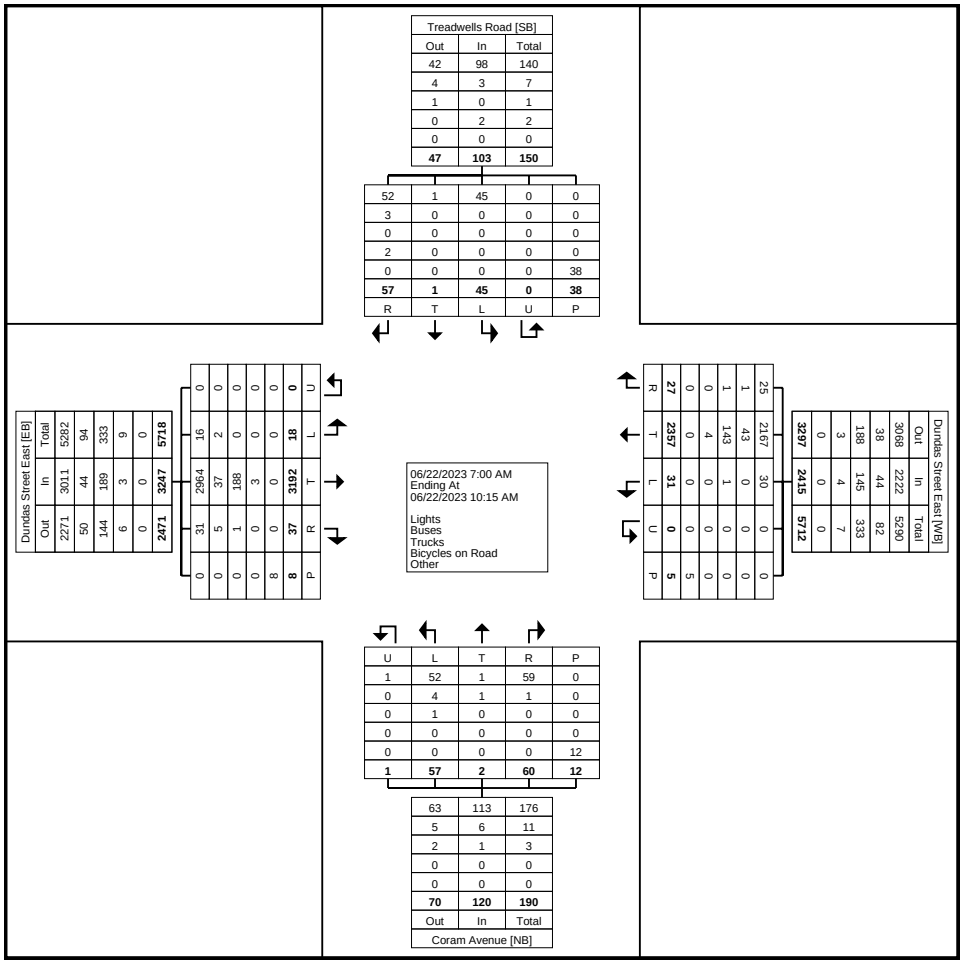
Turning Movement Data

Start Time	Treadwells Road Southbound						Dundas Street East Westbound						Coram Avenue Northbound						Dundas Street East Eastbound						Int. Total
	Right	Thru	Left	U-Turn	Peds	App. Total	Right	Thru	Left	U-Turn	Peds	App. Total	Right	Thru	Left	U-Turn	Peds	App. Total	Right	Thru	Left	U-Turn	Peds	App. Total	
7:00 AM	5	0	2	0	0	7	0	105	2	0	2	107	2	0	4	0	1	6	1	237	0	0	1	238	358
7:15 AM	6	0	1	0	3	7	2	151	0	0	1	153	9	0	6	0	2	15	3	261	2	0	0	266	441
7:30 AM	4	0	5	0	5	9	2	169	5	0	2	176	5	0	6	0	2	11	1	258	1	0	2	260	456
7:45 AM	6	0	2	0	4	8	1	180	2	0	0	183	6	0	3	0	1	9	3	351	1	0	0	355	555
Hourly Total	21	0	10	0	12	31	5	605	9	0	5	619	22	0	19	0	6	41	8	1107	4	0	3	1119	1810
8:00 AM	5	0	6	0	3	11	4	161	4	0	0	169	5	1	10	1	1	17	2	247	1	0	1	250	447
8:15 AM	5	0	6	0	0	11	2	234	2	0	0	238	9	0	3	0	0	12	5	289	1	0	1	295	556
8:30 AM	6	0	4	0	4	10	5	202	3	0	0	210	6	1	4	0	1	11	3	275	0	0	0	278	509
8:45 AM	7	0	6	0	1	13	2	233	3	0	0	238	3	0	6	0	2	9	3	248	2	0	1	253	513
Hourly Total	23	0	22	0	8	45	13	830	12	0	0	855	23	2	23	1	4	49	13	1059	4	0	3	1076	2025
9:00 AM	6	1	3	0	1	10	3	237	2	0	0	242	4	0	4	0	0	8	3	267	6	0	0	276	536
9:15 AM	2	0	4	0	6	6	2	216	3	0	0	221	7	0	2	0	0	9	3	237	4	0	1	244	480
9:30 AM	2	0	1	0	2	3	1	240	2	0	0	243	3	0	4	0	0	7	5	273	0	0	0	278	531
9:45 AM	3	0	5	0	9	8	3	229	3	0	0	235	1	0	5	0	2	6	5	249	0	0	1	254	503
Hourly Total	13	1	13	0	18	27	9	922	10	0	0	941	15	0	15	0	2	30	16	1026	10	0	2	1052	2050
10:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Grand Total	57	1	45	0	38	103	27	2357	31	0	5	2415	60	2	57	1	12	120	37	3192	18	0	8	3247	5885
Approach %	55.3	1.0	43.7	0.0	-	-	1.1	97.6	1.3	0.0	-	-	50.0	1.7	47.5	0.8	-	-	1.1	98.3	0.6	0.0	-	-	-
Total %	1.0	0.0	0.8	0.0	-	1.8	0.5	40.1	0.5	0.0	-	41.0	1.0	0.0	1.0	0.0	-	2.0	0.6	54.2	0.3	0.0	-	55.2	-
Lights	52	1	45	0	-	98	25	2167	30	0	-	2222	59	1	52	1	-	113	31	2964	16	0	-	3011	5444
% Lights	91.2	100.0	100.0	-	-	95.1	92.6	91.9	96.8	-	-	92.0	98.3	50.0	91.2	100.0	-	94.2	83.8	92.9	88.9	-	-	92.7	92.5
Buses	3	0	0	0	-	3	1	43	0	0	-	44	1	1	4	0	-	6	5	37	2	0	-	44	97
% Buses	5.3	0.0	0.0	-	-	2.9	3.7	1.8	0.0	-	-	1.8	1.7	50.0	7.0	0.0	-	5.0	13.5	1.2	11.1	-	-	1.4	1.6
Trucks	0	0	0	0	-	0	1	143	1	0	-	145	0	0	1	0	-	1	1	188	0	0	-	189	335
% Trucks	0.0	0.0	0.0	-	-	0.0	3.7	6.1	3.2	-	-	6.0	0.0	0.0	1.8	0.0	-	0.8	2.7	5.9	0.0	-	-	5.8	5.7
Bicycles on Road	2	0	0	0	-	2	0	4	0	0	-	4	0	0	0	0	-	0	0	3	0	0	-	3	9
% Bicycles on Road	3.5	0.0	0.0	-	-	1.9	0.0	0.2	0.0	-	-	0.2	0.0	0.0	0.0	0.0	-	0.0	0.0	0.1	0.0	-	-	0.1	0.2
Bicycles on Crosswalk	-	-	-	-	8	-	-	-	-	-	0	-	-	-	-	-	2	-	-	-	-	-	0	-	-
% Bicycles on Crosswalk	-	-	-	-	21.1	-	-	-	-	-	0.0	-	-	-	-	-	16.7	-	-	-	-	-	0.0	-	-
Pedestrians	-	-	-	-	30	-	-	-	-	-	5	-	-	-	-	-	10	-	-	-	-	-	8	-	-
% Pedestrians	-	-	-	-	78.9	-	-	-	-	-	100.0	-	-	-	-	-	83.3	-	-	-	-	-	100.0	-	-

LEA Consulting Ltd.
625 Cochrane Drive

Markam, Ontario, Canada L3R 9R9
905-470-0015 x240 idinsmore@lea.ca

Count Name: 21224_Treadwells Rd & Dundas St E-AM
Site Code: 21224
Start Date: 06/22/2023
Page No: 2



Turning Movement Data Plot

LEA Consulting Ltd.
625 Cochrane Drive

Markam, Ontario, Canada L3R 9R9
905-470-0015 x240 idinsmore@lea.ca

Count Name: 21224_Treadwells Rd & Dundas St E-AM
Site Code: 21224
Start Date: 06/22/2023

Turning Movement Peak Hour Data (8:15 AM)

Start Time	Treadwells Road Southbound						Dundas Street East Westbound						Coram Avenue Northbound						Dundas Street East Eastbound						Int. Total
	Right	Thru	Left	U-Turn	Peds	App. Total	Right	Thru	Left	U-Turn	Peds	App. Total	Right	Thru	Left	U-Turn	Peds	App. Total	Right	Thru	Left	U-Turn	Peds	App. Total	
8:15 AM	5	0	6	0	0	11	2	234	2	0	0	238	9	0	3	0	0	12	5	289	1	0	1	295	556
8:30 AM	6	0	4	0	4	10	5	202	3	0	0	210	6	1	4	0	1	11	3	275	0	0	0	278	509
8:45 AM	7	0	6	0	1	13	2	233	3	0	0	238	3	0	6	0	2	9	3	248	2	0	1	253	513
9:00 AM	6	1	3	0	1	10	3	237	2	0	0	242	4	0	4	0	0	8	3	267	6	0	0	276	536
Total	24	1	19	0	6	44	12	906	10	0	0	928	22	1	17	0	3	40	14	1079	9	0	2	1102	2114
Approach %	54.5	2.3	43.2	0.0	-	-	1.3	97.6	1.1	0.0	-	-	55.0	2.5	42.5	0.0	-	-	1.3	97.9	0.8	0.0	-	-	-
Total %	1.1	0.0	0.9	0.0	-	2.1	0.6	42.9	0.5	0.0	-	43.9	1.0	0.0	0.8	0.0	-	1.9	0.7	51.0	0.4	0.0	-	52.1	-
PHF	0.857	0.250	0.792	0.000	-	0.846	0.600	0.956	0.833	0.000	-	0.959	0.611	0.250	0.708	0.000	-	0.833	0.700	0.933	0.375	0.000	-	0.934	0.951
Lights	21	1	19	0	-	41	12	838	9	0	-	859	22	0	15	0	-	37	11	1004	9	0	-	1024	1961
% Lights	87.5	100.0	100.0	-	-	93.2	100.0	92.5	90.0	-	-	92.6	100.0	0.0	88.2	-	-	92.5	78.6	93.0	100.0	-	-	92.9	92.8
Buses	2	0	0	0	-	2	0	12	0	0	-	12	0	1	1	0	-	2	2	8	0	0	-	10	26
% Buses	8.3	0.0	0.0	-	-	4.5	0.0	1.3	0.0	-	-	1.3	0.0	100.0	5.9	-	-	5.0	14.3	0.7	0.0	-	-	0.9	1.2
Trucks	0	0	0	0	-	0	0	55	1	0	-	56	0	0	1	0	-	1	1	66	0	0	-	67	124
% Trucks	0.0	0.0	0.0	-	-	0.0	0.0	6.1	10.0	-	-	6.0	0.0	0.0	5.9	-	-	2.5	7.1	6.1	0.0	-	-	6.1	5.9
Bicycles on Road	1	0	0	0	-	1	0	1	0	0	-	1	0	0	0	0	-	0	0	1	0	0	-	1	3
% Bicycles on Road	4.2	0.0	0.0	-	-	2.3	0.0	0.1	0.0	-	-	0.1	0.0	0.0	0.0	-	-	0.0	0.0	0.1	0.0	-	-	0.1	0.1
Bicycles on Crosswalk	-	-	-	-	1	-	-	-	-	-	0	-	-	-	-	-	1	-	-	-	-	-	0	-	-
% Bicycles on Crosswalk	-	-	-	-	16.7	-	-	-	-	-	-	-	-	-	-	-	33.3	-	-	-	-	-	0.0	-	-
Pedestrians	-	-	-	-	5	-	-	-	-	-	0	-	-	-	-	-	2	-	-	-	-	-	2	-	-
% Pedestrians	-	-	-	-	83.3	-	-	-	-	-	-	-	-	-	-	-	66.7	-	-	-	-	-	100.0	-	-

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Site Code: 21224
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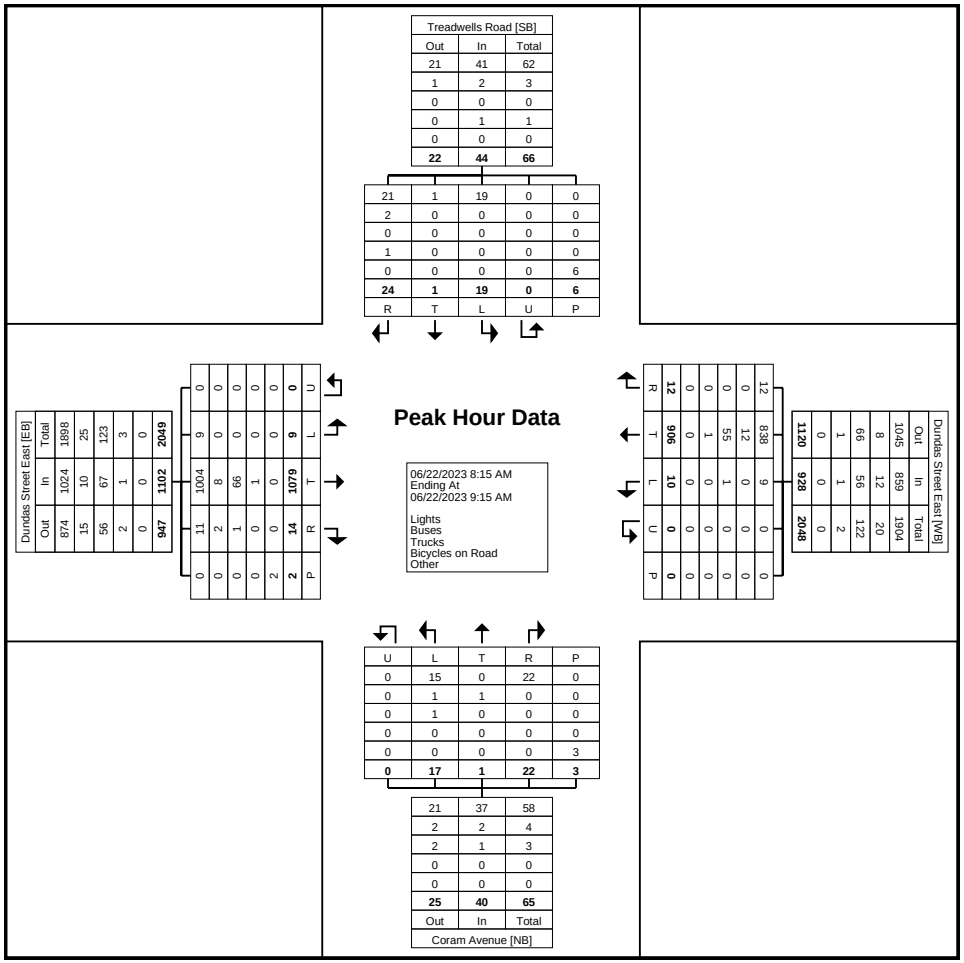

Turning Movement Peak Hour Data Plot (8:15 AM)

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Markam, Ontario, Canada L3R 9R9
905-470-0015 x240 idinsmore@lea.ca

Count Name: 21224_Treadwells Rd & Dundas St E-PM
Site Code: 21224
Start Date: 06/22/2023

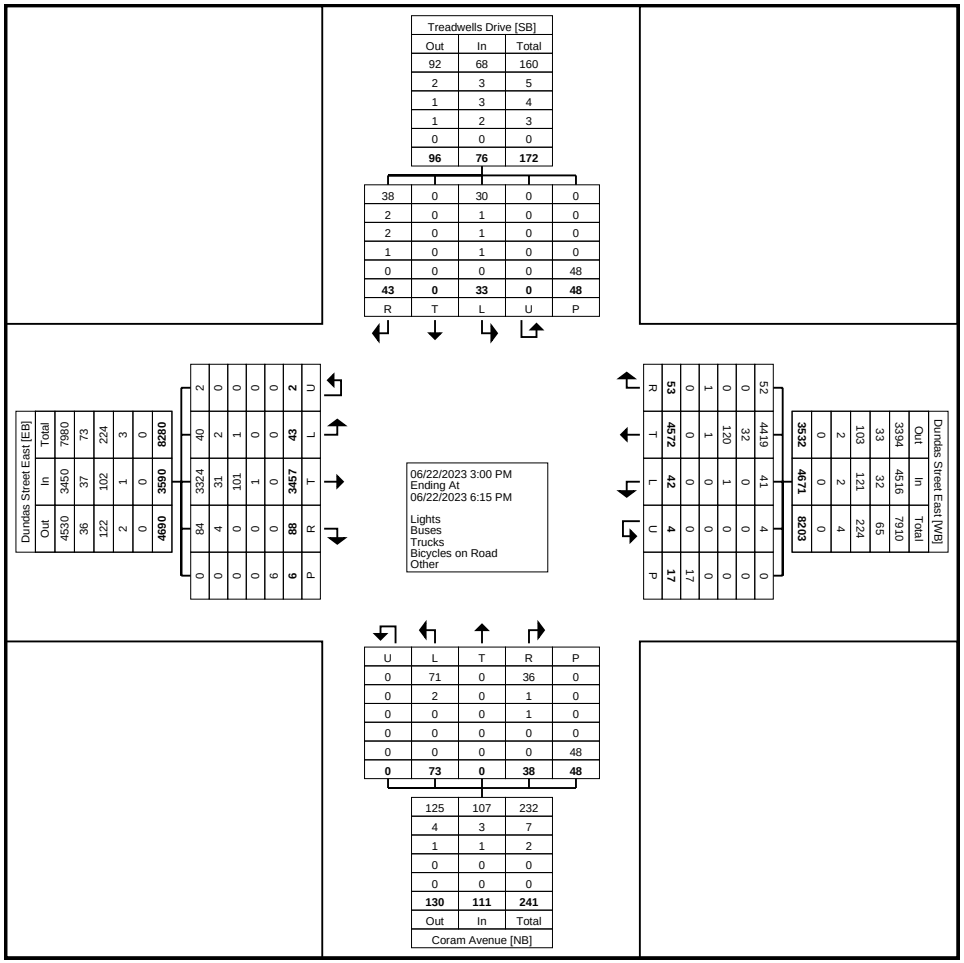
Turning Movement Data

Start Time	Treadwells Drive Southbound						Dundas Street East Westbound						Coram Avenue Northbound						Dundas Street East Eastbound						Int. Total
	Right	Thru	Left	U-Turn	Peds	App. Total	Right	Thru	Left	U-Turn	Peds	App. Total	Right	Thru	Left	U-Turn	Peds	App. Total	Right	Thru	Left	U-Turn	Peds	App. Total	
3:00 PM	7	0	1	0	4	8	1	320	2	0	0	323	2	0	10	0	5	12	3	264	1	0	2	268	611
3:15 PM	5	0	2	0	5	7	4	330	6	0	2	340	3	0	5	0	5	8	7	310	6	0	0	323	678
3:30 PM	6	0	3	0	4	9	4	361	7	1	2	373	7	0	4	0	2	11	7	251	4	0	0	262	655
3:45 PM	4	0	3	0	1	7	5	370	4	1	3	380	1	0	6	0	5	7	3	308	6	0	0	317	711
Hourly Total	22	0	9	0	14	31	14	1381	19	2	7	1416	13	0	25	0	17	38	20	1133	17	0	2	1170	2655
4:00 PM	5	0	2	0	10	7	0	382	3	0	1	385	5	0	1	0	2	6	6	283	4	0	0	293	691
4:15 PM	3	0	5	0	4	8	2	408	6	0	0	416	2	0	7	0	3	9	5	266	6	0	0	277	710
4:30 PM	5	0	1	0	3	6	1	391	5	0	1	397	3	0	5	0	6	8	5	311	4	0	1	320	731
4:45 PM	3	0	2	0	6	5	5	373	3	0	2	381	3	0	4	0	1	7	9	265	2	0	0	276	669
Hourly Total	16	0	10	0	23	26	8	1554	17	0	4	1579	13	0	17	0	12	30	25	1125	16	0	1	1166	2801
5:00 PM	0	0	3	0	4	3	10	446	6	0	2	462	1	0	6	0	4	7	11	294	2	0	0	307	779
5:15 PM	0	0	3	0	1	3	8	402	0	1	3	411	4	0	8	0	10	12	12	288	2	0	0	302	728
5:30 PM	2	0	4	0	5	6	8	408	0	1	0	417	5	0	10	0	1	15	6	304	2	1	3	313	751
5:45 PM	3	0	4	0	1	7	5	381	0	0	1	386	2	0	7	0	4	9	14	313	4	1	0	332	734
Hourly Total	5	0	14	0	11	19	31	1637	6	2	6	1676	12	0	31	0	19	43	43	1199	10	2	3	1254	2992
6:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Grand Total	43	0	33	0	48	76	53	4572	42	4	17	4671	38	0	73	0	48	111	88	3457	43	2	6	3590	8448
Approach %	56.6	0.0	43.4	0.0	-	-	1.1	97.9	0.9	0.1	-	-	34.2	0.0	65.8	0.0	-	-	2.5	96.3	1.2	0.1	-	-	-
Total %	0.5	0.0	0.4	0.0	-	0.9	0.6	54.1	0.5	0.0	-	55.3	0.4	0.0	0.9	0.0	-	1.3	1.0	40.9	0.5	0.0	-	42.5	-
Lights	38	0	30	0	-	68	52	4419	41	4	-	4516	36	0	71	0	-	107	84	3324	40	2	-	3450	8141
% Lights	88.4	-	90.9	-	-	89.5	98.1	96.7	97.6	100.0	-	96.7	94.7	-	97.3	-	-	96.4	95.5	96.2	93.0	100.0	-	96.1	96.4
Buses	2	0	1	0	-	3	0	32	0	0	-	32	1	0	2	0	-	3	4	31	2	0	-	37	75
% Buses	4.7	-	3.0	-	-	3.9	0.0	0.7	0.0	0.0	-	0.7	2.6	-	2.7	-	-	2.7	4.5	0.9	4.7	0.0	-	1.0	0.9
Trucks	2	0	1	0	-	3	0	120	1	0	-	121	1	0	0	0	-	1	0	101	1	0	-	102	227
% Trucks	4.7	-	3.0	-	-	3.9	0.0	2.6	2.4	0.0	-	2.6	2.6	-	0.0	-	-	0.9	0.0	2.9	2.3	0.0	-	2.8	2.7
Bicycles on Road	1	0	1	0	-	2	1	1	0	0	-	2	0	0	0	0	-	0	0	1	0	0	-	1	5
% Bicycles on Road	2.3	-	3.0	-	-	2.6	1.9	0.0	0.0	0.0	-	0.0	0.0	-	0.0	-	-	0.0	0.0	0.0	0.0	0.0	-	0.0	0.1
Bicycles on Crosswalk	-	-	-	-	15	-	-	-	-	-	2	-	-	-	-	-	17	-	-	-	-	-	0	-	-
% Bicycles on Crosswalk	-	-	-	-	31.3	-	-	-	-	-	11.8	-	-	-	-	-	35.4	-	-	-	-	-	0.0	-	-
Pedestrians	-	-	-	-	33	-	-	-	-	-	15	-	-	-	-	-	31	-	-	-	-	-	6	-	-
% Pedestrians	-	-	-	-	68.8	-	-	-	-	-	88.2	-	-	-	-	-	64.6	-	-	-	-	-	100.0	-	-

LEA Consulting Ltd.
625 Cochrane Drive

Markam, Ontario, Canada L3R 9R9
905-470-0015 x240 idinsmore@lea.ca

Count Name: 21224_Treadwells Rd & Dundas St E-PM
Site Code: 21224
Start Date: 06/22/2023
Page No: 2



Turning Movement Data Plot

LEA Consulting Ltd.
625 Cochrane Drive

Markam, Ontario, Canada L3R 9R9
905-470-0015 x240 idinsmore@lea.ca

Count Name: 21224_Treadwells Rd & Dundas St E-PM
Site Code: 21224
Start Date: 06/22/2023

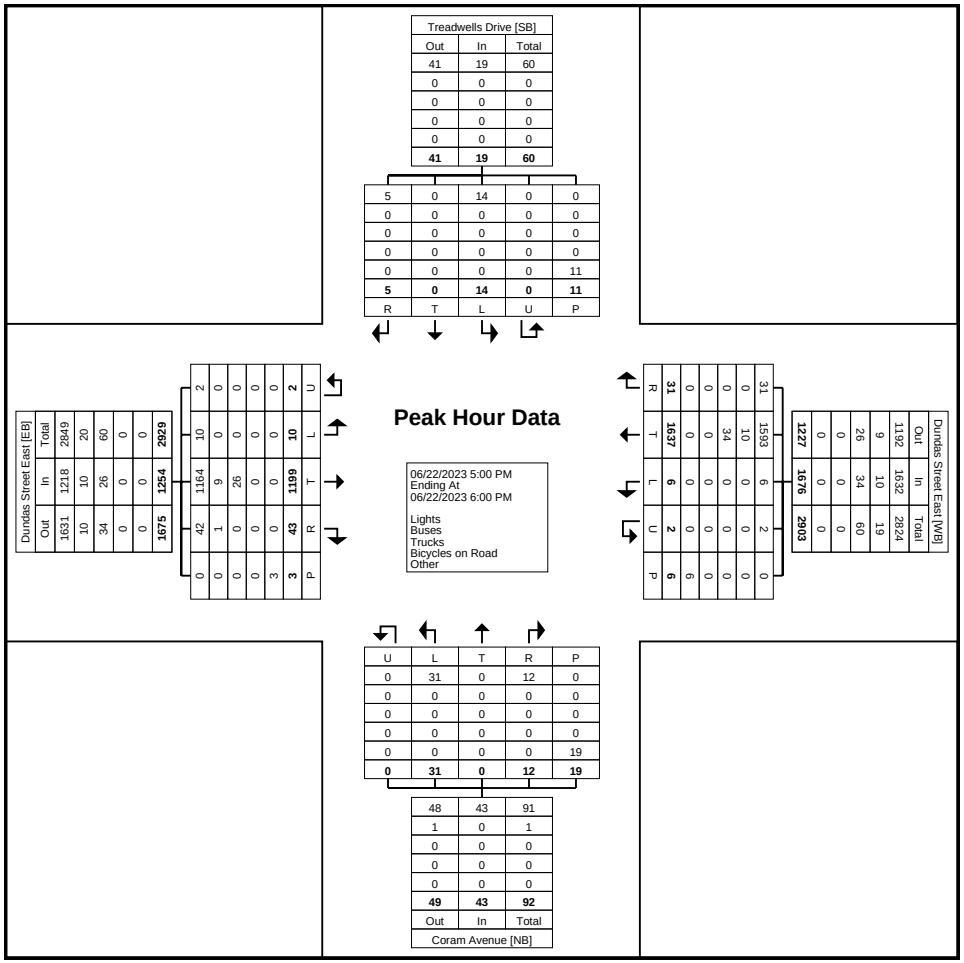
Turning Movement Peak Hour Data (5:00 PM)

Start Time	Treadwells Drive Southbound						Dundas Street East Westbound						Coram Avenue Northbound						Dundas Street East Eastbound						Int. Total
	Right	Thru	Left	U-Turn	Peds	App. Total	Right	Thru	Left	U-Turn	Peds	App. Total	Right	Thru	Left	U-Turn	Peds	App. Total	Right	Thru	Left	U-Turn	Peds	App. Total	
5:00 PM	0	0	3	0	4	3	10	446	6	0	2	462	1	0	6	0	4	7	11	294	2	0	0	307	779
5:15 PM	0	0	3	0	1	3	8	402	0	1	3	411	4	0	8	0	10	12	12	288	2	0	0	302	728
5:30 PM	2	0	4	0	5	6	8	408	0	1	0	417	5	0	10	0	1	15	6	304	2	1	3	313	751
5:45 PM	3	0	4	0	1	7	5	381	0	0	1	386	2	0	7	0	4	9	14	313	4	1	0	332	734
Total	5	0	14	0	11	19	31	1637	6	2	6	1676	12	0	31	0	19	43	43	1199	10	2	3	1254	2992
Approach %	26.3	0.0	73.7	0.0	-	-	1.8	97.7	0.4	0.1	-	-	27.9	0.0	72.1	0.0	-	-	3.4	95.6	0.8	0.2	-	-	-
Total %	0.2	0.0	0.5	0.0	-	0.6	1.0	54.7	0.2	0.1	-	56.0	0.4	0.0	1.0	0.0	-	1.4	1.4	40.1	0.3	0.1	-	41.9	-
PHF	0.417	0.000	0.875	0.000	-	0.679	0.775	0.918	0.250	0.500	-	0.907	0.600	0.000	0.775	0.000	-	0.717	0.768	0.958	0.625	0.500	-	0.944	0.960
Lights	5	0	14	0	-	19	31	1593	6	2	-	1632	12	0	31	0	-	43	42	1164	10	2	-	1218	2912
% Lights	100.0	-	100.0	-	-	100.0	100.0	97.3	100.0	100.0	-	97.4	100.0	-	100.0	-	-	100.0	97.7	97.1	100.0	100.0	-	97.1	97.3
Buses	0	0	0	0	-	0	0	10	0	0	-	10	0	0	0	0	-	0	1	9	0	0	-	10	20
% Buses	0.0	-	0.0	-	-	0.0	0.0	0.6	0.0	0.0	-	0.6	0.0	-	0.0	-	-	0.0	2.3	0.8	0.0	0.0	-	0.8	0.7
Trucks	0	0	0	0	-	0	0	34	0	0	-	34	0	0	0	0	-	0	0	26	0	0	-	26	60
% Trucks	0.0	-	0.0	-	-	0.0	0.0	2.1	0.0	0.0	-	2.0	0.0	-	0.0	-	-	0.0	0.0	2.2	0.0	0.0	-	2.1	2.0
Bicycles on Road	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0
% Bicycles on Road	0.0	-	0.0	-	-	0.0	0.0	0.0	0.0	0.0	-	0.0	0.0	-	0.0	-	-	0.0	0.0	0.0	0.0	0.0	-	0.0	0.0
Bicycles on Crosswalk	-	-	-	-	5	-	-	-	-	-	0	-	-	-	-	-	9	-	-	-	-	-	0	-	-
% Bicycles on Crosswalk	-	-	-	-	45.5	-	-	-	-	-	0.0	-	-	-	-	-	47.4	-	-	-	-	-	0.0	-	-
Pedestrians	-	-	-	-	6	-	-	-	-	-	6	-	-	-	-	-	10	-	-	-	-	-	3	-	-
% Pedestrians	-	-	-	-	54.5	-	-	-	-	-	100.0	-	-	-	-	-	52.6	-	-	-	-	-	100.0	-	-

LEA Consulting Ltd.
625 Cochrane Drive

Markam, Ontario, Canada L3R 9R9
905-470-0015 x240 idinsmore@lea.ca

Count Name: 21224_Treadwells Rd & Dundas St E-PM
Site Code: 21224
Start Date: 06/22/2023



Turning Movement Peak Hour Data Plot (5:00 PM)

LEA Consulting Ltd.
625 Cochrane Drive

Markam, Ontario, Canada L3R 9R9
905-470-0015 x240 idinsmore@lea.ca

Count Name: 21224_Wharton Way & Dundas St E-AM
Site Code: 21224
Start Date: 06/22/2023

Turning Movement Data

Start Time	Wharton Way Southbound						Dundas Street East Westbound						Wharton Way Northbound						Dundas Street East Eastbound						Int. Total
	Right	Thru	Left	U-Turn	Peds	App. Total	Right	Thru	Left	U-Turn	Peds	App. Total	Right	Thru	Left	U-Turn	Peds	App. Total	Right	Thru	Left	U-Turn	Peds	App. Total	
7:00 AM	9	0	17	0	4	26	25	95	20	0	7	140	14	1	5	0	6	20	7	196	24	0	5	227	413
7:15 AM	8	0	21	0	9	29	18	120	12	1	4	151	12	1	7	0	9	20	11	201	31	0	8	243	443
7:30 AM	10	0	18	0	3	28	13	153	15	0	5	181	8	4	8	0	6	20	11	237	31	0	8	279	508
7:45 AM	9	1	25	0	11	35	27	157	24	0	8	208	10	0	4	0	9	14	10	269	50	0	7	329	586
Hourly Total	36	1	81	0	27	118	83	525	71	1	24	680	44	6	24	0	30	74	39	903	136	0	28	1078	1950
8:00 AM	17	0	18	0	6	35	31	176	24	0	0	231	12	3	3	0	2	18	15	255	28	0	2	298	582
8:15 AM	11	5	27	0	9	43	19	188	16	0	2	223	13	2	7	0	3	22	12	242	30	0	2	284	572
8:30 AM	12	3	24	0	6	39	17	173	18	0	4	208	10	1	6	0	4	17	9	205	18	0	2	232	496
8:45 AM	9	1	12	0	9	22	23	237	23	0	0	283	15	2	8	0	1	25	9	233	26	1	10	269	599
Hourly Total	49	9	81	0	30	139	90	774	81	0	6	945	50	8	24	0	10	82	45	935	102	1	16	1083	2249
9:00 AM	18	3	19	0	6	40	27	203	15	0	6	245	18	2	13	0	4	33	13	212	23	1	2	249	567
9:15 AM	15	6	19	0	5	40	21	181	21	0	0	223	14	2	6	0	3	22	10	214	32	0	6	256	541
9:30 AM	11	5	23	0	7	39	25	218	22	0	1	265	25	1	5	0	0	31	14	250	17	0	4	281	616
9:45 AM	21	2	27	0	7	50	20	203	29	0	2	252	17	3	10	0	3	30	14	192	25	0	5	231	563
Hourly Total	65	16	88	0	25	169	93	805	87	0	9	985	74	8	34	0	10	116	51	868	97	1	17	1017	2287
10:00 AM	0	0	0	0	0	0	0	1	0	0	0	1	0	0	0	0	0	0	0	1	0	0	0	1	2
Grand Total	150	26	250	0	82	426	266	2105	239	1	39	2611	168	22	82	0	50	272	135	2707	335	2	61	3179	6488
Approach %	35.2	6.1	58.7	0.0	-	-	10.2	80.6	9.2	0.0	-	-	61.8	8.1	30.1	0.0	-	-	4.2	85.2	10.5	0.1	-	-	-
Total %	2.3	0.4	3.9	0.0	-	6.6	4.1	32.4	3.7	0.0	-	40.2	2.6	0.3	1.3	0.0	-	4.2	2.1	41.7	5.2	0.0	-	49.0	-
Lights	125	26	201	0	-	352	234	1954	221	1	-	2410	143	18	72	0	-	233	125	2511	309	2	-	2947	5942
% Lights	83.3	100.0	80.4	-	-	82.6	88.0	92.8	92.5	100.0	-	92.3	85.1	81.8	87.8	-	-	85.7	92.6	92.8	92.2	100.0	-	92.7	91.6
Buses	6	0	18	0	-	24	10	35	0	0	-	45	0	0	1	0	-	1	0	33	3	0	-	36	106
% Buses	4.0	0.0	7.2	-	-	5.6	3.8	1.7	0.0	0.0	-	1.7	0.0	0.0	1.2	-	-	0.4	0.0	1.2	0.9	0.0	-	1.1	1.6
Trucks	19	0	31	0	-	50	22	114	18	0	-	154	25	4	9	0	-	38	9	163	23	0	-	195	437
% Trucks	12.7	0.0	12.4	-	-	11.7	8.3	5.4	7.5	0.0	-	5.9	14.9	18.2	11.0	-	-	14.0	6.7	6.0	6.9	0.0	-	6.1	6.7
Bicycles on Road	0	0	0	0	-	0	0	2	0	0	-	2	0	0	0	0	-	0	1	0	0	0	-	1	3
% Bicycles on Road	0.0	0.0	0.0	-	-	0.0	0.0	0.1	0.0	0.0	-	0.1	0.0	0.0	0.0	-	-	0.0	0.7	0.0	0.0	0.0	-	0.0	0.0
Bicycles on Crosswalk	-	-	-	-	4	-	-	-	-	-	0	-	-	-	-	-	2	-	-	-	-	-	1	-	-
% Bicycles on Crosswalk	-	-	-	-	4.9	-	-	-	-	-	0.0	-	-	-	-	-	4.0	-	-	-	-	-	1.6	-	-
Pedestrians	-	-	-	-	78	-	-	-	-	-	39	-	-	-	-	-	48	-	-	-	-	-	60	-	-
% Pedestrians	-	-	-	-	95.1	-	-	-	-	-	100.0	-	-	-	-	-	96.0	-	-	-	-	-	98.4	-	-

LEA Consulting Ltd.
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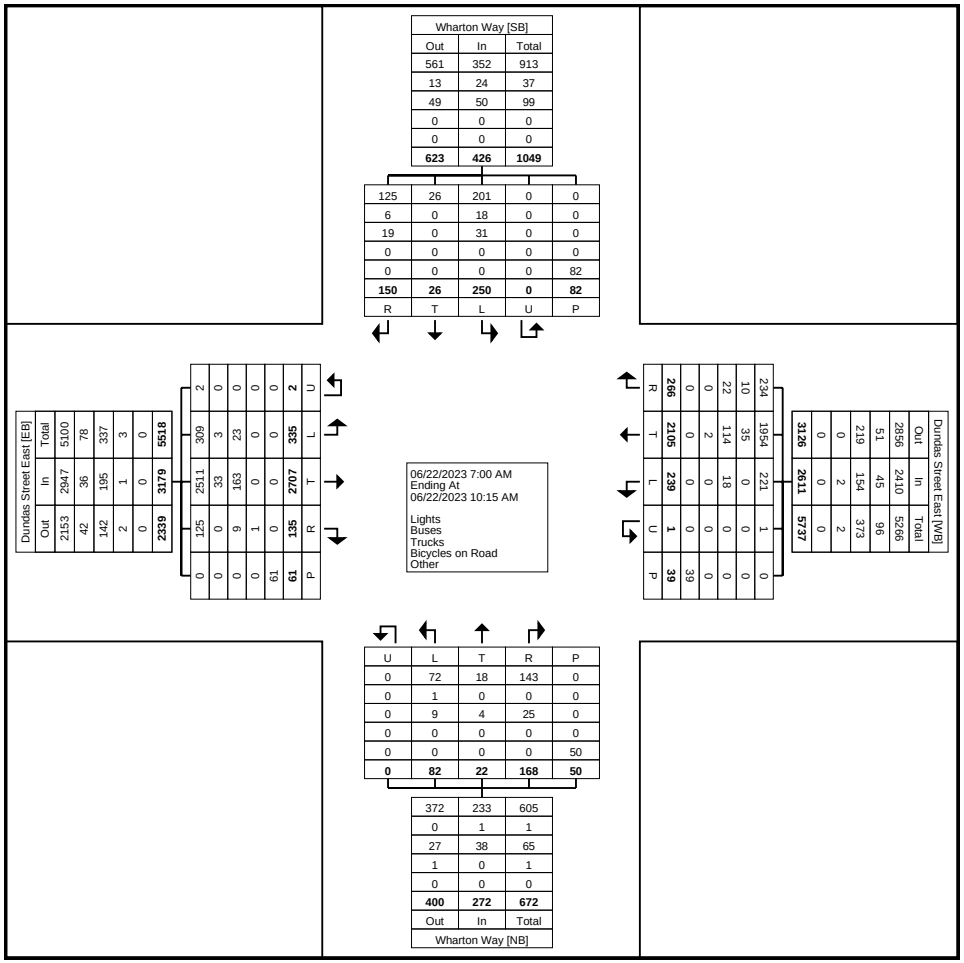
Count Name: 21224_Wharton Way & Dundas St E-AM
Site Code: 21224
Start Date: 06/22/2023



Turning Movement Data Plot

LEA Consulting Ltd.
625 Cochrane Drive

Markam, Ontario, Canada L3R 9R9
905-470-0015 x240 idinsmore@lea.ca

Count Name: 21224_Wharton Way & Dundas St E-AM
Site Code: 21224
Start Date: 06/22/2023

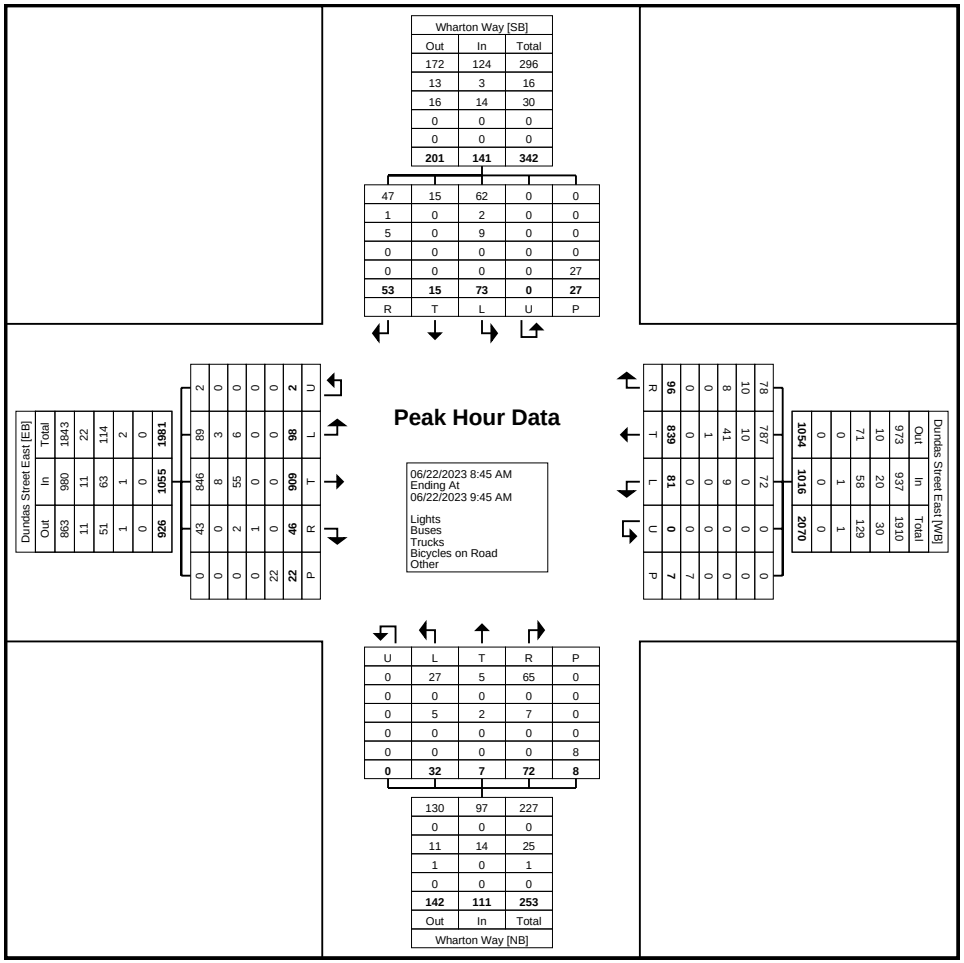
Turning Movement Peak Hour Data (8:45 AM)

Start Time	Wharton Way Southbound						Dundas Street East Westbound						Wharton Way Northbound						Dundas Street East Eastbound						Int. Total
	Right	Thru	Left	U-Turn	Peds	App. Total	Right	Thru	Left	U-Turn	Peds	App. Total	Right	Thru	Left	U-Turn	Peds	App. Total	Right	Thru	Left	U-Turn	Peds	App. Total	
8:45 AM	9	1	12	0	9	22	23	237	23	0	0	283	15	2	8	0	1	25	9	233	26	1	10	269	599
9:00 AM	18	3	19	0	6	40	27	203	15	0	6	245	18	2	13	0	4	33	13	212	23	1	2	249	567
9:15 AM	15	6	19	0	5	40	21	181	21	0	0	223	14	2	6	0	3	22	10	214	32	0	6	256	541
9:30 AM	11	5	23	0	7	39	25	218	22	0	1	265	25	1	5	0	0	31	14	250	17	0	4	281	616
Total	53	15	73	0	27	141	96	839	81	0	7	1016	72	7	32	0	8	111	46	909	98	2	22	1055	2323
Approach %	37.6	10.6	51.8	0.0	-	-	9.4	82.6	8.0	0.0	-	-	64.9	6.3	28.8	0.0	-	-	4.4	86.2	9.3	0.2	-	-	-
Total %	2.3	0.6	3.1	0.0	-	6.1	4.1	36.1	3.5	0.0	-	43.7	3.1	0.3	1.4	0.0	-	4.8	2.0	39.1	4.2	0.1	-	45.4	-
PHF	0.736	0.625	0.793	0.000	-	0.881	0.889	0.885	0.880	0.000	-	0.898	0.720	0.875	0.615	0.000	-	0.841	0.821	0.909	0.766	0.500	-	0.939	0.943
Lights	47	15	62	0	-	124	78	787	72	0	-	937	65	5	27	0	-	97	43	846	89	2	-	980	2138
% Lights	88.7	100.0	84.9	-	-	87.9	81.3	93.8	88.9	-	-	92.2	90.3	71.4	84.4	-	-	87.4	93.5	93.1	90.8	100.0	-	92.9	92.0
Buses	1	0	2	0	-	3	10	10	0	0	-	20	0	0	0	0	-	0	0	8	3	0	-	11	34
% Buses	1.9	0.0	2.7	-	-	2.1	10.4	1.2	0.0	-	-	2.0	0.0	0.0	0.0	-	-	0.0	0.0	0.9	3.1	0.0	-	1.0	1.5
Trucks	5	0	9	0	-	14	8	41	9	0	-	58	7	2	5	0	-	14	2	55	6	0	-	63	149
% Trucks	9.4	0.0	12.3	-	-	9.9	8.3	4.9	11.1	-	-	5.7	9.7	28.6	15.6	-	-	12.6	4.3	6.1	6.1	0.0	-	6.0	6.4
Bicycles on Road	0	0	0	0	-	0	0	1	0	0	-	1	0	0	0	0	-	0	1	0	0	0	-	1	2
% Bicycles on Road	0.0	0.0	0.0	-	-	0.0	0.0	0.1	0.0	-	-	0.1	0.0	0.0	0.0	-	-	0.0	2.2	0.0	0.0	0.0	-	0.1	0.1
Bicycles on Crosswalk	-	-	-	-	1	-	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-
% Bicycles on Crosswalk	-	-	-	-	3.7	-	-	-	-	-	0.0	-	-	-	-	-	0.0	-	-	-	-	-	0.0	-	-
Pedestrians	-	-	-	-	26	-	-	-	-	-	7	-	-	-	-	-	8	-	-	-	-	-	22	-	-
% Pedestrians	-	-	-	-	96.3	-	-	-	-	-	100.0	-	-	-	-	-	100.0	-	-	-	-	-	100.0	-	-

LEA Consulting Ltd.
625 Cochrane Drive

Markam, Ontario, Canada L3R 9R9
905-470-0015 x240 idinsmore@lea.ca

Count Name: 21224_Wharton Way & Dundas St E-AM
Site Code: 21224
Start Date: 06/22/2023



Turning Movement Peak Hour Data Plot (8:45 AM)

LEA Consulting Ltd.
625 Cochrane Drive

Markam, Ontario, Canada L3R 9R9
905-470-0015 x240 idinsmore@lea.ca

Count Name: 21224_Wharton Way & Dundas St E-PM
Site Code: 21224
Start Date: 06/22/2023

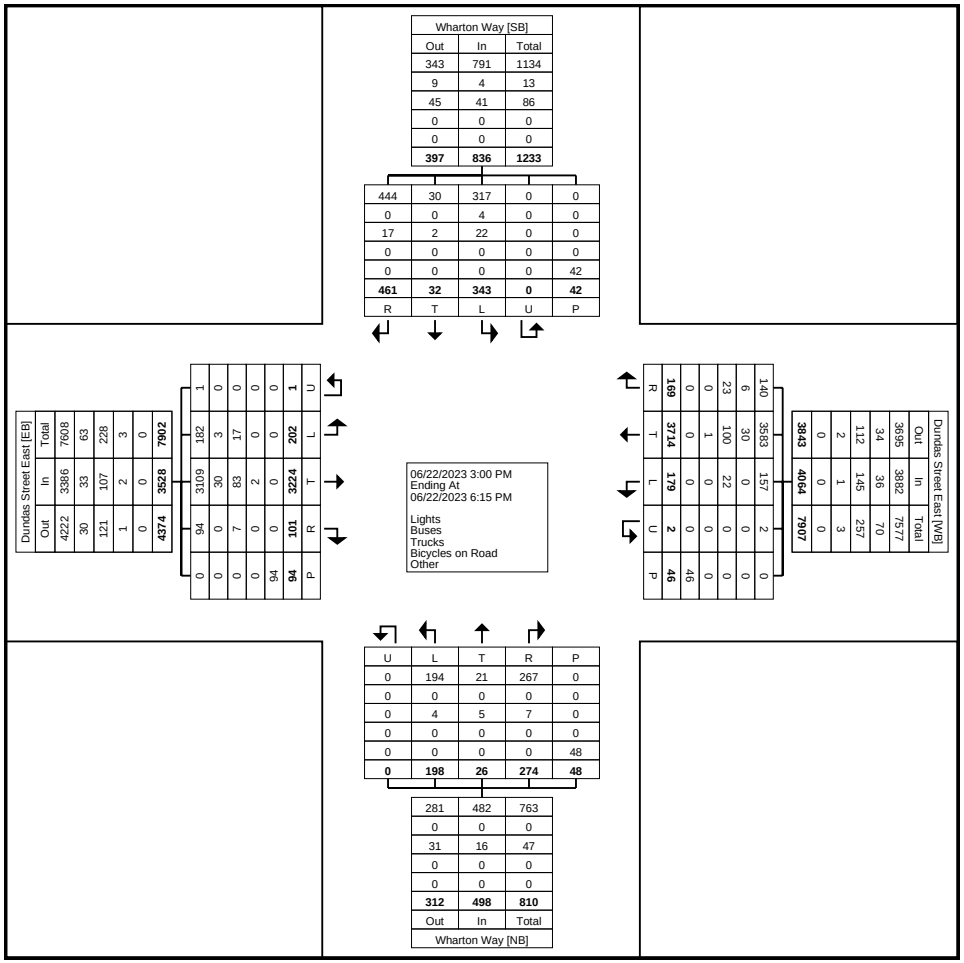
Turning Movement Data

Start Time	Wharton Way Southbound						Dundas Street East Westbound						Wharton Way Northbound						Dundas Street East Eastbound						Int. Total
	Right	Thru	Left	U-Turn	Peds	App. Total	Right	Thru	Left	U-Turn	Peds	App. Total	Right	Thru	Left	U-Turn	Peds	App. Total	Right	Thru	Left	U-Turn	Peds	App. Total	
3:00 PM	30	2	33	0	2	65	22	266	17	1	5	306	30	2	15	0	7	47	10	256	16	0	3	282	700
3:15 PM	20	2	32	0	3	54	16	270	19	0	7	305	27	5	20	0	2	52	10	248	19	0	10	277	688
3:30 PM	35	3	27	0	4	65	17	303	11	0	13	331	25	2	10	0	1	37	6	267	14	0	5	287	720
3:45 PM	28	2	20	0	2	50	22	289	15	0	6	326	20	3	15	0	5	38	11	233	25	0	10	269	683
Hourly Total	113	9	112	0	11	234	77	1128	62	1	31	1268	102	12	60	0	15	174	37	1004	74	0	28	1115	2791
4:00 PM	55	1	29	0	1	85	14	304	18	0	3	336	21	2	27	0	2	50	9	290	26	0	1	325	796
4:15 PM	48	3	40	0	6	91	12	318	18	0	2	348	19	1	19	0	3	39	5	269	11	0	23	285	763
4:30 PM	52	4	27	0	3	83	12	289	19	1	3	321	29	1	17	0	6	47	9	272	15	0	9	296	747
4:45 PM	41	4	28	0	4	73	14	345	16	0	1	375	18	3	9	0	4	30	8	286	17	0	7	311	789
Hourly Total	196	12	124	0	14	332	52	1256	71	1	9	1380	87	7	72	0	15	166	31	1117	69	0	40	1217	3095
5:00 PM	64	3	31	0	3	98	8	328	14	0	4	350	25	0	26	0	3	51	9	254	25	0	5	288	787
5:15 PM	38	1	34	0	3	73	17	331	14	0	1	362	20	3	17	0	6	40	11	268	14	1	6	294	769
5:30 PM	30	2	24	0	5	56	9	370	10	0	0	389	18	2	10	0	5	30	8	291	7	0	2	306	781
5:45 PM	20	5	18	0	6	43	6	299	8	0	1	313	22	2	13	0	4	37	5	290	13	0	13	308	701
Hourly Total	152	11	107	0	17	270	40	1328	46	0	6	1414	85	7	66	0	18	158	33	1103	59	1	26	1196	3038
6:00 PM	0	0	0	0	0	0	0	2	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	2
Grand Total	461	32	343	0	42	836	169	3714	179	2	46	4064	274	26	198	0	48	498	101	3224	202	1	94	3528	8926
Approach %	55.1	3.8	41.0	0.0	-	-	4.2	91.4	4.4	0.0	-	-	55.0	5.2	39.8	0.0	-	-	2.9	91.4	5.7	0.0	-	-	-
Total %	5.2	0.4	3.8	0.0	-	9.4	1.9	41.6	2.0	0.0	-	45.5	3.1	0.3	2.2	0.0	-	5.6	1.1	36.1	2.3	0.0	-	39.5	-
Lights	444	30	317	0	-	791	140	3583	157	2	-	3882	267	21	194	0	-	482	94	3109	182	1	-	3386	8541
% Lights	96.3	93.8	92.4	-	-	94.6	82.8	96.5	87.7	100.0	-	95.5	97.4	80.8	98.0	-	-	96.8	93.1	96.4	90.1	100.0	-	96.0	95.7
Buses	0	0	4	0	-	4	6	30	0	0	-	36	0	0	0	0	-	0	0	30	3	0	-	33	73
% Buses	0.0	0.0	1.2	-	-	0.5	3.6	0.8	0.0	0.0	-	0.9	0.0	0.0	0.0	-	-	0.0	0.0	0.9	1.5	0.0	-	0.9	0.8
Trucks	17	2	22	0	-	41	23	100	22	0	-	145	7	5	4	0	-	16	7	83	17	0	-	107	309
% Trucks	3.7	6.3	6.4	-	-	4.9	13.6	2.7	12.3	0.0	-	3.6	2.6	19.2	2.0	-	-	3.2	6.9	2.6	8.4	0.0	-	3.0	3.5
Bicycles on Road	0	0	0	0	-	0	0	1	0	0	-	1	0	0	0	0	-	0	0	2	0	0	-	2	3
% Bicycles on Road	0.0	0.0	0.0	-	-	0.0	0.0	0.0	0.0	0.0	-	0.0	0.0	0.0	0.0	-	-	0.0	0.0	0.1	0.0	0.0	-	0.1	0.0
Bicycles on Crosswalk	-	-	-	-	1	-	-	-	-	-	2	-	-	-	-	-	10	-	-	-	-	-	5	-	-
% Bicycles on Crosswalk	-	-	-	-	2.4	-	-	-	-	-	4.3	-	-	-	-	-	20.8	-	-	-	-	-	5.3	-	-
Pedestrians	-	-	-	-	41	-	-	-	-	-	44	-	-	-	-	-	38	-	-	-	-	-	89	-	-
% Pedestrians	-	-	-	-	97.6	-	-	-	-	-	95.7	-	-	-	-	-	79.2	-	-	-	-	-	94.7	-	-

LEA Consulting Ltd.
625 Cochrane Drive

Markam, Ontario, Canada L3R 9R9
905-470-0015 x240 idinsmore@lea.ca

Count Name: 21224_Wharton Way & Dundas St
E-PM
Site Code: 21224
Start Date: 06/22/2023



Turning Movement Data Plot

LEA Consulting Ltd.
625 Cochrane Drive

Markam, Ontario, Canada L3R 9R9
905-470-0015 x240 idinsmore@lea.ca

Count Name: 21224_Wharton Way & Dundas St E-PM
Site Code: 21224
Start Date: 06/22/2023

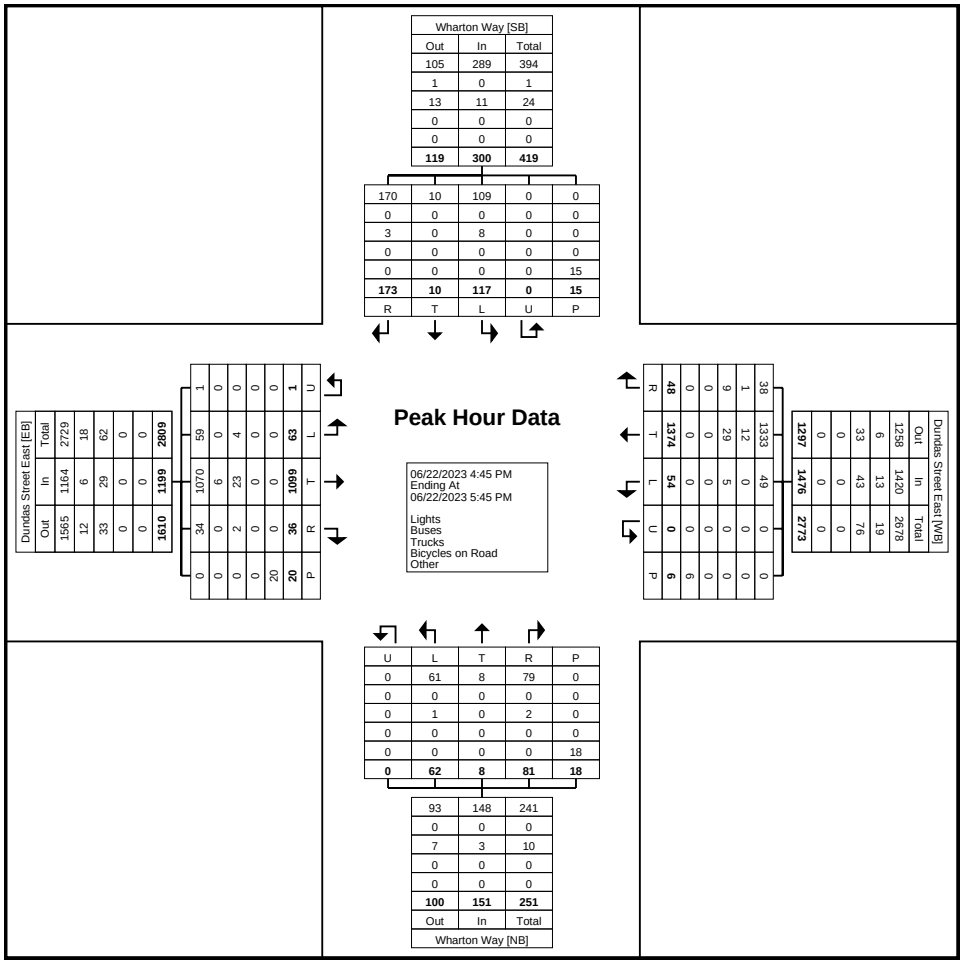
Turning Movement Peak Hour Data (4:45 PM)

Start Time	Wharton Way Southbound						Dundas Street East Westbound						Wharton Way Northbound						Dundas Street East Eastbound						Int. Total
	Right	Thru	Left	U-Turn	Peds	App. Total	Right	Thru	Left	U-Turn	Peds	App. Total	Right	Thru	Left	U-Turn	Peds	App. Total	Right	Thru	Left	U-Turn	Peds	App. Total	
4:45 PM	41	4	28	0	4	73	14	345	16	0	1	375	18	3	9	0	4	30	8	286	17	0	7	311	789
5:00 PM	64	3	31	0	3	98	8	328	14	0	4	350	25	0	26	0	3	51	9	254	25	0	5	288	787
5:15 PM	38	1	34	0	3	73	17	331	14	0	1	362	20	3	17	0	6	40	11	268	14	1	6	294	769
5:30 PM	30	2	24	0	5	56	9	370	10	0	0	389	18	2	10	0	5	30	8	291	7	0	2	306	781
Total	173	10	117	0	15	300	48	1374	54	0	6	1476	81	8	62	0	18	151	36	1099	63	1	20	1199	3126
Approach %	57.7	3.3	39.0	0.0	-	-	3.3	93.1	3.7	0.0	-	-	53.6	5.3	41.1	0.0	-	-	3.0	91.7	5.3	0.1	-	-	-
Total %	5.5	0.3	3.7	0.0	-	9.6	1.5	44.0	1.7	0.0	-	47.2	2.6	0.3	2.0	0.0	-	4.8	1.2	35.2	2.0	0.0	-	38.4	-
PHF	0.676	0.625	0.860	0.000	-	0.765	0.706	0.928	0.844	0.000	-	0.949	0.810	0.667	0.596	0.000	-	0.740	0.818	0.944	0.630	0.250	-	0.964	0.990
Lights	170	10	109	0	-	289	38	1333	49	0	-	1420	79	8	61	0	-	148	34	1070	59	1	-	1164	3021
% Lights	98.3	100.0	93.2	-	-	96.3	79.2	97.0	90.7	-	-	96.2	97.5	100.0	98.4	-	-	98.0	94.4	97.4	93.7	100.0	-	97.1	96.6
Buses	0	0	0	0	-	0	1	12	0	0	-	13	0	0	0	0	-	0	0	6	0	0	-	6	19
% Buses	0.0	0.0	0.0	-	-	0.0	2.1	0.9	0.0	-	-	0.9	0.0	0.0	0.0	-	-	0.0	0.0	0.5	0.0	0.0	-	0.5	0.6
Trucks	3	0	8	0	-	11	9	29	5	0	-	43	2	0	1	0	-	3	2	23	4	0	-	29	86
% Trucks	1.7	0.0	6.8	-	-	3.7	18.8	2.1	9.3	-	-	2.9	2.5	0.0	1.6	-	-	2.0	5.6	2.1	6.3	0.0	-	2.4	2.8
Bicycles on Road	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0
% Bicycles on Road	0.0	0.0	0.0	-	-	0.0	0.0	0.0	0.0	-	-	0.0	0.0	0.0	0.0	-	-	0.0	0.0	0.0	0.0	0.0	-	0.0	0.0
Bicycles on Crosswalk	-	-	-	-	1	-	-	-	-	-	0	-	-	-	-	-	2	-	-	-	-	-	0	-	-
% Bicycles on Crosswalk	-	-	-	-	6.7	-	-	-	-	-	0.0	-	-	-	-	-	11.1	-	-	-	-	-	0.0	-	-
Pedestrians	-	-	-	-	14	-	-	-	-	-	6	-	-	-	-	-	16	-	-	-	-	-	20	-	-
% Pedestrians	-	-	-	-	93.3	-	-	-	-	-	100.0	-	-	-	-	-	88.9	-	-	-	-	-	100.0	-	-

LEA Consulting Ltd.
625 Cochrane Drive

Markam, Ontario, Canada L3R 9R9
905-470-0015 x240 idinsmore@lea.ca

Count Name: 21224_Wharton Way & Dundas St E-PM
Site Code: 21224
Start Date: 06/22/2023



Turning Movement Peak Hour Data Plot (4:45 PM)

LEA Consulting Ltd.

625 Cochrane Drive, 5th Floor
Markham, ON L3R 9R9

Project No.: 21224
Intersection: Site Access & Dundas St E
Weather: Clear
Surveyor(s): KL

File Name : Site Access & Dundas St E-AM
Site Code : 21224003
Start Date : 2023-06-22
Page No : 1

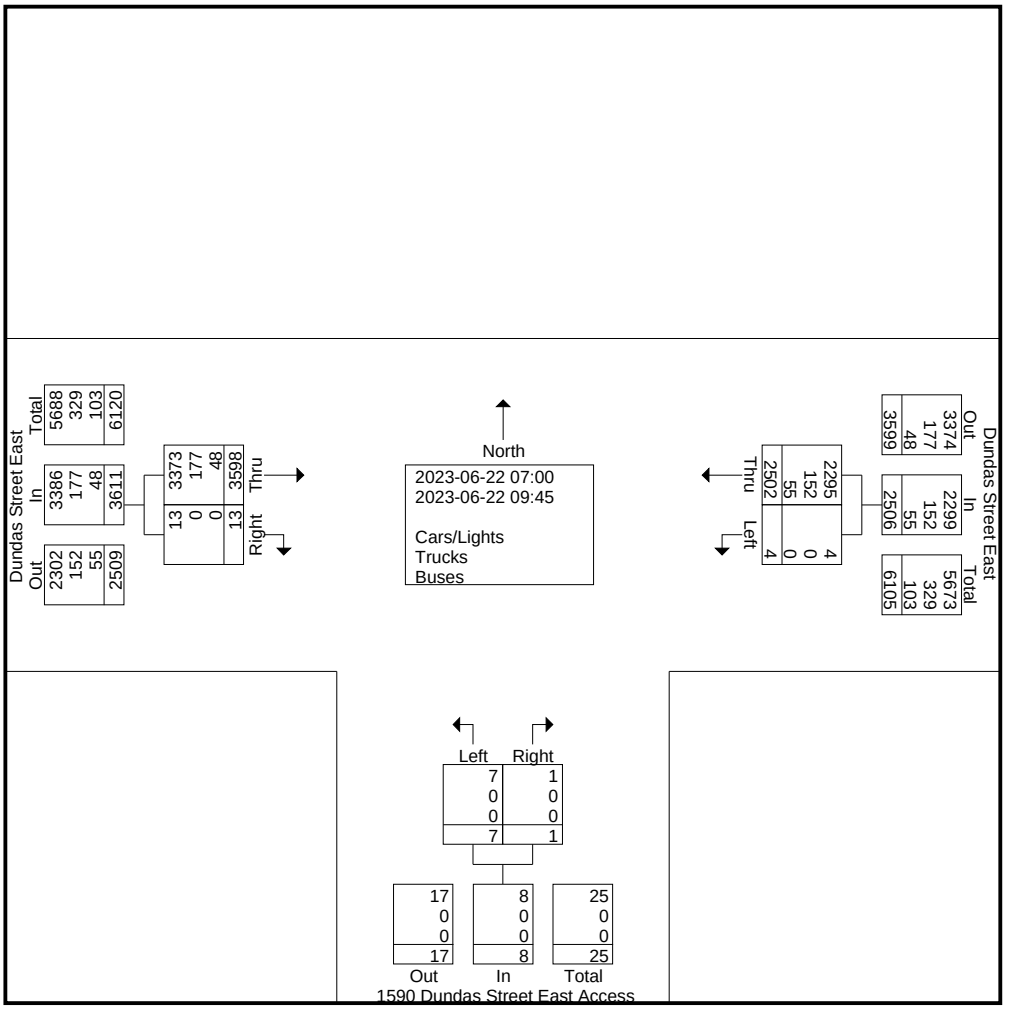
Groups Printed- Cars/Lights - Trucks - Buses

	Dundas Street East Westbound				1590 Dundas Street East Access Northbound				Dundas Street East Eastbound						
Start Time	Left	Thru	Peds	App. Total	Left	Right	Peds	App. Total	Thru	Right	Peds	App. Total	Exclu. Total	Inclu. Total	Int. Total
07:00	0	124	[0]	124	1	0	[0]	1	250	1	[0]	251	0	376	376
07:15	1	165	[0]	166	0	0	[1]	0	274	3	[0]	277	1	443	444
07:30	0	182	[0]	182	1	0	[0]	1	298	2	[0]	300	0	483	483
07:45	1	180	[0]	181	0	0	[0]	0	383	1	[0]	384	0	565	565
Total	2	651	[0]	653	2	0	[1]	2	1205	7	[0]	1212	1	1867	1868
08:00	0	209	[0]	209	0	0	[1]	0	291	0	[0]	291	1	500	501
08:15	0	218	[0]	218	0	0	[0]	0	317	0	[0]	317	0	535	535
08:30	1	213	[0]	214	0	0	[1]	0	342	0	[0]	342	1	556	557
08:45	0	263	[0]	263	2	0	[2]	2	284	2	[0]	286	2	551	553
Total	1	903	[0]	904	2	0	[4]	2	1234	2	[0]	1236	4	2142	2146
09:00	1	241	[0]	242	0	0	[0]	0	314	1	[0]	315	0	557	557
09:15	0	222	[0]	222	0	0	[0]	0	264	0	[0]	264	0	486	486
09:30	0	245	[0]	245	0	0	[2]	0	302	1	[0]	303	2	548	550
09:45	0	240	[0]	240	3	1	[0]	4	279	2	[0]	281	0	525	525
Total	1	948	[0]	949	3	1	[2]	4	1159	4	[0]	1163	2	2116	2118
Grand Total	4	2502	[0]	2506	7	1	[7]	8	3598	13	[0]	3611	7	6125	6132
Apprch %	0.2	99.8			87.5	12.5			99.6	0.4					
Total %	0.1	40.8		40.9	0.1	0		0.1	58.7	0.2		59	0.1	99.9	
Cars/Lights	4	2295		2299	7	1		15	3373	13		3386	0	0	5700
% Cars/Lights	100	91.7	0	91.7	100	100	100	100	93.7	100	0	93.8	0	0	93
Trucks	0	152		152	0	0		0	177	0		177	0	0	329
% Trucks	0	6.1	0	6.1	0	0	0	0	4.9	0	0	4.9	0	0	5.4
Buses	0	55		55	0	0		0	48	0		48	0	0	103
% Buses	0	2.2	0	2.2	0	0	0	0	1.3	0	0	1.3	0	0	1.7

LEA Consulting Ltd.

625 Cochrane Drive, 5th Floor
Markham, ON L3R 9R9

File Name : Site Access & Dundas St E-AM
Site Code : 21224003
Start Date : 2023-06-22
Page No : 2



LEA Consulting Ltd.

625 Cochrane Drive, 5th Floor
Markham, ON L3R 9R9

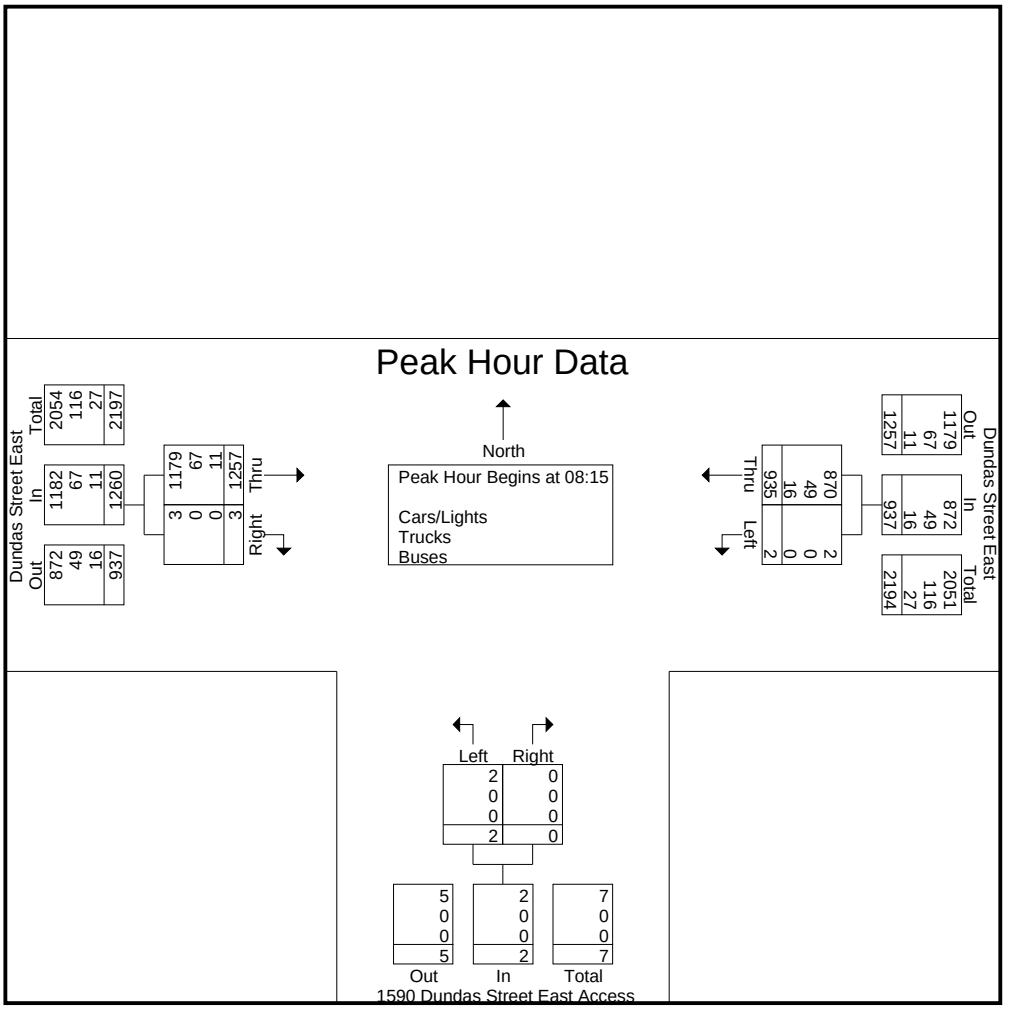
File Name : Site Access & Dundas St E-AM
Site Code : 21224003
Start Date : 2023-06-22
Page No : 3

	Dundas Street East Westbound			1590 Dundas Street East Access Northbound			Dundas Street East Eastbound			
Start Time	Left	Thru	App. Total	Left	Right	App. Total	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 07:00 to 09:45 - Peak 1 of 1										
Peak Hour for Entire Intersection Begins at 08:15										
08:15	0	218	218	0	0	0	317	0	317	535
08:30	**1**	213	214	0	0	0	**342**	0	**342**	556
08:45	0	**263**	**263**	**2**	0	**2**	284	**2**	286	551
09:00	1	241	242	0	0	0	314	1	315	**557**
Total Volume	2	935	937	2	0	2	1257	3	1260	2199
% App. Total	0.2	99.8		100	0		99.8	0.2		
PHF	.500	.889	.891	.250	.000	.250	.919	.375	.921	.987
Cars/Lights	2	870	872	2	0	2	1179	3	1182	2056
% Cars/Lights	100	93.0	93.1	100	0	100	93.8	100	93.8	93.5
Trucks	0	49	49	0	0	0	67	0	67	116
% Trucks	0	5.2	5.2	0	0	0	5.3	0	5.3	5.3
Buses	0	16	16	0	0	0	11	0	11	27
% Buses	0	1.7	1.7	0	0	0	0.9	0	0.9	1.2

LEA Consulting Ltd.

625 Cochrane Drive, 5th Floor
Markham, ON L3R 9R9

File Name : Site Access & Dundas St E-AM
Site Code : 21224003
Start Date : 2023-06-22
Page No : 4



LEA Consulting Ltd.

625 Cochrane Drive, 5th Floor
Markham, ON L3R 9R9

Project No.: 21224
Intersection: Site Access & Dundas St E
Weather: Clear
Surveyor(s): KL

File Name : Site Access & Dundas St E-PM
Site Code : 21224003
Start Date : 2023-06-22
Page No : 1

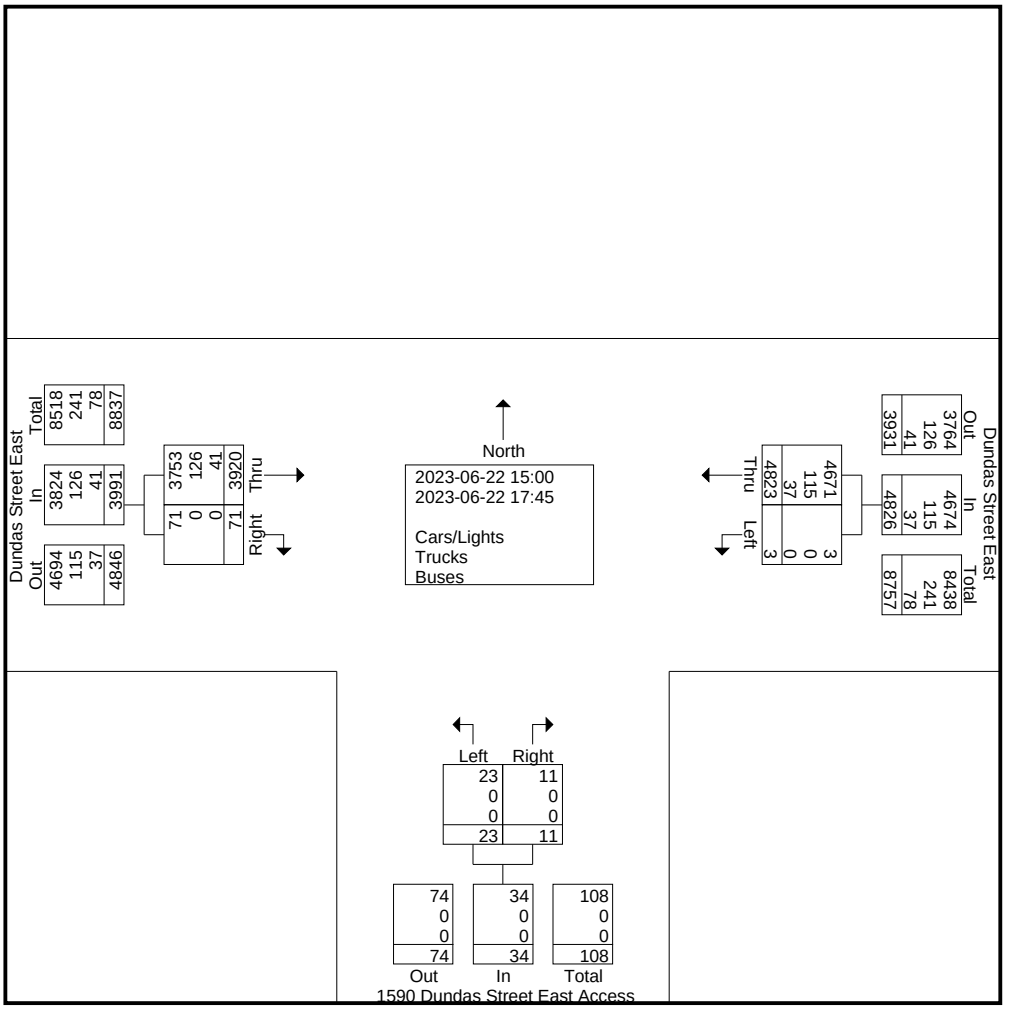
Groups Printed- Cars/Lights - Trucks - Buses

	Dundas Street East Westbound				1590 Dundas Street East Access Northbound				Dundas Street East Eastbound						
Start Time	Left	Thru	Peds	App. Total	Left	Right	Peds	App. Total	Thru	Right	Peds	App. Total	Exclu. Total	Inclu. Total	Int. Total
15:00	1	357	[0]	358	0	0	[4]	0	322	2	[0]	324	4	682	686
15:15	0	311	[0]	311	2	0	[4]	2	313	2	[0]	315	4	628	632
15:30	0	386	[0]	386	1	0	[3]	1	300	1	[0]	301	3	688	691
15:45	0	349	[0]	349	2	1	[1]	3	338	2	[0]	340	1	692	693
Total	1	1403	[0]	1404	5	1	[12]	6	1273	7	[0]	1280	12	2690	2702
16:00	0	454	[0]	454	0	1	[3]	1	333	5	[0]	338	3	793	796
16:15	0	446	[0]	446	1	2	[2]	3	313	4	[0]	317	2	766	768
16:30	0	404	[0]	404	5	0	[6]	5	326	9	[0]	335	6	744	750
16:45	0	423	[0]	423	3	2	[5]	5	346	9	[0]	355	5	783	788
Total	0	1727	[0]	1727	9	5	[16]	14	1318	27	[0]	1345	16	3086	3102
17:00	0	437	[0]	437	1	0	[2]	1	330	6	[0]	336	2	774	776
17:15	1	434	[0]	435	3	0	[4]	3	340	16	[0]	356	4	794	798
17:30	1	440	[0]	441	3	4	[5]	7	318	4	[0]	322	5	770	775
17:45	0	382	[0]	382	2	1	[0]	3	341	11	[0]	352	0	737	737
Total	2	1693	[0]	1695	9	5	[11]	14	1329	37	[0]	1366	11	3075	3086
Grand Total	3	4823	[0]	4826	23	11	[39]	34	3920	71	[0]	3991	39	8851	8890
Apprch %	0.1	99.9			67.6	32.4			98.2	1.8					
Total %	0	54.5		54.5	0.3	0.1		0.4	44.3	0.8		45.1	0.4	99.6	
Cars/Lights	3	4671		4674	23	11		73	3753	71		3824	0	0	8571
% Cars/Lights	100	96.8	0	96.9	100	100	100	100	95.7	100	0	95.8	0	0	96.4
Trucks	0	115		115	0	0		0	126	0		126	0	0	241
% Trucks	0	2.4	0	2.4	0	0	0	0	3.2	0	0	3.2	0	0	2.7
Buses	0	37		37	0	0		0	41	0		41	0	0	78
% Buses	0	0.8	0	0.8	0	0	0	0	1	0	0	1	0	0	0.9

LEA Consulting Ltd.

625 Cochrane Drive, 5th Floor
Markham, ON L3R 9R9

File Name : Site Access & Dundas St E-PM
Site Code : 21224003
Start Date : 2023-06-22
Page No : 2



LEA Consulting Ltd.

625 Cochrane Drive, 5th Floor
Markham, ON L3R 9R9

File Name : Site Access & Dundas St E-PM
Site Code : 21224003
Start Date : 2023-06-22
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	Dundas Street East Westbound			1590 Dundas Street East Access Northbound			Dundas Street East Eastbound			
Start Time	Left	Thru	App. Total	Left	Right	App. Total	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 15:00 to 17:45 - Peak 1 of 1										
Peak Hour for Entire Intersection Begins at 16:45										
16:45	0	423	423	**3**	2	5	**346**	9	355	783
17:00	0	437	437	1	0	1	330	6	336	774
17:15	**1**	434	435	3	0	3	340	**16**	**356**	**794**
17:30	1	**440**	**441**	3	**4**	**7**	318	4	322	770
Total Volume	2	1734	1736	10	6	16	1334	35	1369	3121
% App. Total	0.1	99.9		62.5	37.5		97.4	2.6		
PHF	.500	.985	.984	.833	.375	.571	.964	.547	.961	.983
Cars/Lights	2	1691	1693	10	6	16	1290	35	1325	3034
% Cars/Lights	100	97.5	97.5	100	100	100	96.7	100	96.8	97.2
Trucks	0	31	31	0	0	0	34	0	34	65
% Trucks	0	1.8	1.8	0	0	0	2.5	0	2.5	2.1
Buses	0	12	12	0	0	0	10	0	10	22
% Buses	0	0.7	0.7	0	0	0	0.7	0	0.7	0.7

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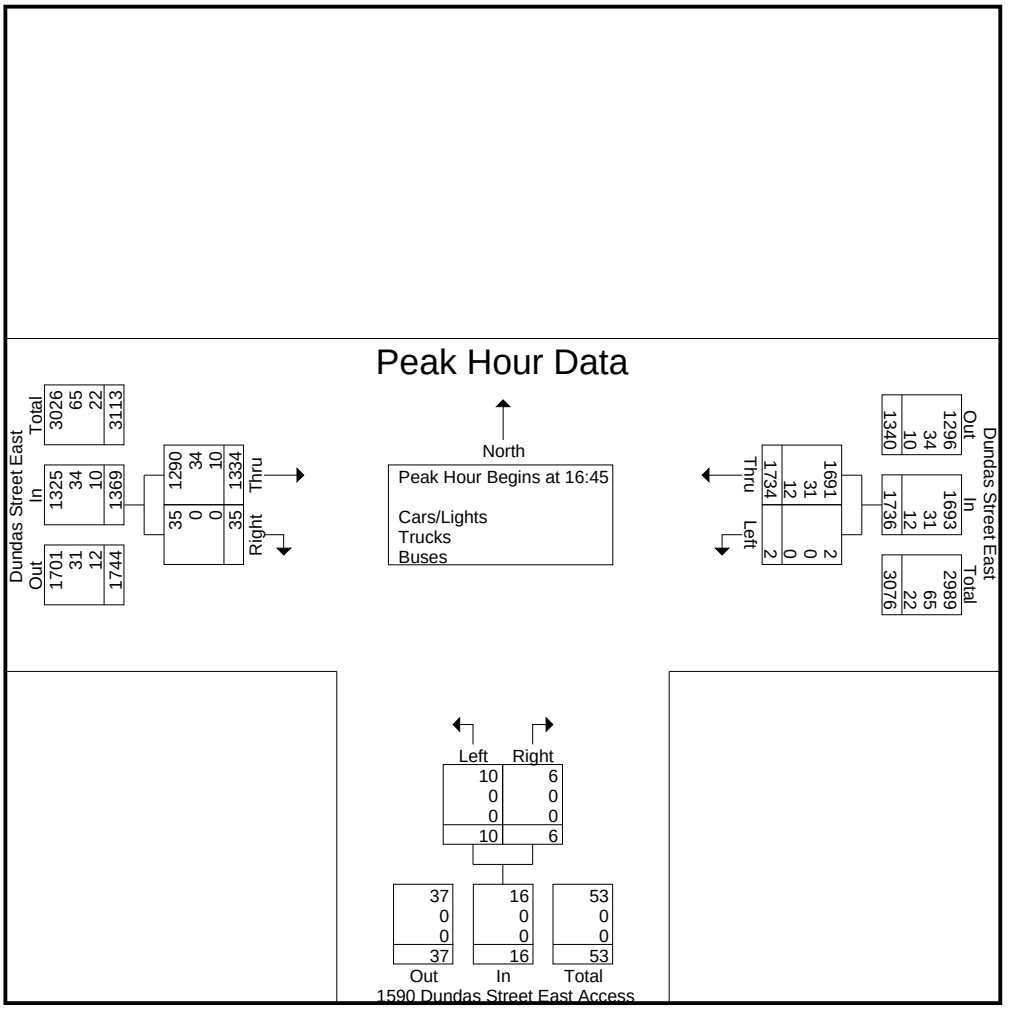


Signal Timing Plan

REGIONAL MUNICIPALITY OF PEEL

Traffic Signal Timing Parameters

Database Date	**July 10, 2023**		**Prepared Date**	**July 10, 2023**
Database Rev	**iNET**		**Completed By**	**TF**
Timing Card / Field rev	**22**		**Checked By**	**AP**

Location **Dixie Road at Dundas Street**

Phase #	Street Name - Direction	Vehicle Minimum (s)	Pedestrian Minimum (s)		Amber (s)	All Red (s)	TIME PERIOD (s)		
			WALK	FDWALK			AM SPLITS	OFF SPLITS	PM SPLITS
1	Dixie Road - NB Prot. Perm. LT	7.0	0.0	0.0	3.0	0.0	16.0	19.0	24.0
2	Dixie Road - SB	10.0	10.0	26.0	4.0	2.5	64.0	54.0	54.0
3	Dundas Street - EB Prot. Perm. LT	7.0	0.0	0.0	3.0	0.0	21.0	24.0	18.0
4	Dundas Street - WB	10.0	10.0	31.0	4.0	2.8	59.0	63.0	64.0
5	Dixie Road - SB Prot. LT	7.0	0.0	0.0	3.0	2.0	29.0	27.0	27.0
6	Dixie Road - NB	10.0	10.0	26.0	4.0	2.5	51.0	46.0	51.0
7	Dundas Street - WB Prot. Perm. LT	7.0	0.0	0.0	3.0	0.0	13.0	18.0	23.0
8	Dundas Street - EB	10.0	10.0	31.0	4.0	2.8	67.0	69.0	59.0

System Control
Yes

Semi-Actuated Mode
Yes

TIME (M-F)	PEAK	CYCLE LENGTH (s)	OFFSET (s)
06:00 - 09:30	AM	160	3
09:30 - 15:00 19:30 - 00:00	OFF	160	0
15:00 - 19:30	PM	160	0

Intelight 1202 DUNDAS STREET E @ Neilco

Phase - Parameter 1-16	Units	Phase 1	Phase 2	Phase 3	Phase 4	Phase 5	Phase 6	Phase 7	Phase 8
Phase Description*	String								
Walk	Sec	0	10	0	10	0	0	0	0
Ped Clear	Sec	0	18	0	30	0	0	0	0
Min Green	Sec	7	10	0	20	0	0	0	0
Passage	Sec	3.0	4.0	0.0	4.0	0.0	0.0	0.0	0.0
Maximum 1	Sec	10	37	0	30	0	0	0	0
Maximum 2	Sec	10	37	0	30	0	0	0	0
Yellow Change	Sec	3.0	4.0	3.0	3.5	3.0	4.0	3.0	4.0
Red Clearance	Sec	0.0	2.5	0.0	3.5	0.0	0.0	0.0	0.0
Red Revert	Sec	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Added Initial	Sec	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Max Initial	Sec	0	0	0	0	0	0	0	0
Time Before Reduction	Sec	0	0	0	0	0	0	0	0
Cars Before Reduction	Veh	0	0	0	0	0	0	0	0
Time To Reduce	Sec	0	0	0	0	0	0	0	0
Reduce By	Sec	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Min Gap	Sec	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Dynamic Max Limit	Sec	0	0	0	0	0	0	0	0
Dynamic Max Step	Sec	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
[P2] Start Up	Enum	phaseNotOn	redClear	other	phaseNotOn	other	other	other	other
[P2] Options	Bit	0:Enabled Phase 5:Non Lock Detector Memory	0:Enabled Phase 3:Non-Actuated 1 7:Max Vehicle Recall 8:Ped. Recall 13:Actuated Rest In Walk		0:Enabled Phase 5:Non Lock Detector Memory				
[P2] Ring	Ring	1	1	0	1	0	0	0	0
[P2] Concurrency	Phase (,)	()	()	()	()	()	()	()	()
Delayed Green*	Sec	0	0	0	0	0	0	0	0
Delayed Ped*	Sec	0	0	0	0	0	0	0	0
Alternate Walk*	Sec	0	0	0	0	0	0	0	0
Alternate Ped Clear*	Sec	0	0	0	0	0	0	0	0
Pre Green*	Sec	0	0	0	0	0	0	0	0
Pre Clearance*	Sec	0	0	0	0	0	0	0	0
Alternate Walk 2*	Sec	0	0	0	0	0	0	0	0
Alt Ped Clear 2*	Sec	0	0	0	0	0	0	0	0
Add Red Clear*	Sec	0	0	0	0	0	0	0	0

Signal Timing Report

Coordination - Pattern 1-32	Units	1	2	3	4	5	6	7	8
Cycle Time	Sec	160	160	160	0	0	0	0	0
Offset	Sec	51	85	53	0	0	0	0	0
Split	Split	1	2	3	4	5	6	7	8
Sequence	Sequence	1	1	1	1	1	1	1	1
Phase Parameter Table*	Number	1	1	1	1	1	1	1	1
Coord Phase Reference Point*	Enum	green	green	green	green	green	green	green	green
Coord Mode*	Enum	singlePermissive	singlePermissive	singlePermissive	singlePermissive	singlePermissive	singlePermissive	singlePermissive	singlePermissive

Coordination - Splits	Units	Phase 1	Phase 2	Phase 3	Phase 4	Phase 5	Phase 6	Phase 7	Phase 8
Split 1 - Mode	Enum	phaseOmitted	none	none	none	none	none	none	none
Split 1 - Time	Sec	0	112	0	48	0	0	0	0
Split 1 - Coord	Enum	False	True	False	False	False	False	False	False
Split 1 - Coord Phase Options*	Bit		0: Reference Point						
Split 2 - Mode	Enum	none	none	none	none	none	none	none	none
Split 2 - Time	Sec	21	86	0	53	0	0	0	0
Split 2 - Coord	Enum	False	True	False	False	False	False	False	False
Split 2 - Coord Phase Options*	Bit		0: Reference Point						
Split 3 - Mode	Enum	none	none	none	none	none	none	none	none
Split 3 - Time	Sec	14	98	0	48	0	0	0	0
Split 3 - Coord	Enum	False	True	False	False	False	False	False	False
Split 3 - Coord Phase Options*	Bit		0: Reference Point						
Split 4 - Mode	Enum	none	none	none	none	none	none	none	none

Intelight			1202			DUNDAS STREET E @ Neilco			

Time Base - Day Plans	Units	Evt 1	Evt 2	Evt 3	Evt 4	Evt 5	Evt 6
Plan 1 Hour	Hour	0	6	9	15	19	3
Plan 1 Minute	Min	0	0	30	0	30	0
Plan 1 Action	Number	8	1	2	3	2	7
Plan 2 Hour	Hour	0	7	3	0	0	0
Plan 2 Minute	Min	0	0	0	0	0	0
Plan 2 Action	Number	8	2	7	0	0	0
Plan 3 Hour	Hour	0	8	23	3	0	0
Plan 3 Minute	Min	0	0	0	0	0	0
Plan 3 Action	Number	8	2	8	7	0	0

Time Base - Action 1-32	Units	1	2	3	4	5	6	7	8
Pattern	Enum	Pattern 1	Pattern 2	Pattern 3	Pattern 4	Pattern 5	Pattern 6	Free	Free
Aux. Functions	Bit								
Spec. Functions	Bit								

Time Base - Action 1-32	Units	9	10
Pattern	Enum	Pattern 9	Pattern 10
Aux. Functions	Bit		
Spec. Functions	Bit		

Location	DUNDAS STREET E @ Neilco
Phase 1	EBLT
Phase 2	E/W
Phase 4	N/S

Intelight			1212			DUNDAS STREET EAST E @ Jarrow Avenue			
Phase - Parameter 1-16	**Units**	**Phase 1**	**Phase 2**	**Phase 3**	**Phase 4**	**Phase 5**	**Phase 6**	**Phase 7**	**Phase 8**
Phase Description*	String								
Walk	Sec	0	10	0	10	0	10	0	10
Ped Clear	Sec	0	31	0	34	0	31	0	34
Min Green	Sec	5	10	0	20	0	10	0	20
Passage	Sec	2.0	3.0	0.0	3.0	0.0	3.0	0.0	3.0
Maximum 1	Sec	10	23	0	25	0	23	0	25
Maximum 2	Sec	10	23	0	25	0	23	0	25
Yellow Change	Sec	3.0	4.0	3.0	3.0	3.0	4.0	3.0	3.0
Red Clearance	Sec	0.0	3.0	0.0	4.5	0.0	3.0	0.0	4.5
Red Revert	Sec	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Added Initial	Sec	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Max Initial	Sec	0	0	0	0	0	0	0	0
Time Before Reduction	Sec	0	0	0	0	0	0	0	0
Cars Before Reduction	Veh	0	0	0	0	0	0	0	0
Time To Reduce	Sec	0	0	0	0	0	0	0	0
Reduce By	Sec	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Min Gap	Sec	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Dynamic Max Limit	Sec	0	0	0	0	0	0	0	0
Dynamic Max Step	Sec	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
[P2] Start Up	Enum	phaseNotOn	redClear	other	phaseNotOn	other	redClear	other	phaseNotOn
[P2] Options	Bit	0:Enabled Phase 5:Non Lock Detector Memory	0:Enabled Phase 3:Non-Actuated 1 7:Max Vehicle Recall 8:Ped. Recall 10:Dual Entry Phase 13:Actuated Rest In Walk		0:Enabled Phase 5:Non Lock Detector Memory 6:Min. Vehicle Recall 10:Dual Entry Phase		0:Enabled Phase 3:Non-Actuated 1 7:Max Vehicle Recall 8:Ped. Recall 10:Dual Entry Phase 13:Actuated Rest In Walk		0:Enabled Phase 5:Non Lock Detector Memory 6:Min. Vehicle Recall 10:Dual Entry Phase
[P2] Ring	Ring	1	1	0	1	0	2	0	2
[P2] Concurrency	Phase (,)	(6)	(6)	()	(8)	()	(1,2)	()	(4)
Delayed Green*	Sec	0	0	0	0	0	0	0	0
Delayed Ped*	Sec	0	0	0	0	0	0	0	0
Alternate Walk*	Sec	0	0	0	0	0	0	0	0
Alternate Ped Clear*	Sec	0	0	0	0	0	0	0	0
Pre Green*	Sec	0	0	0	0	0	0	0	0
Pre Clearance*	Sec	0	0	0	0	0	0	0	0
Alternate Walk 2*	Sec	0	0	0	0	0	0	0	0
Alt Ped Clear 2*	Sec	0	0	0	0	0	0	0	0

Signal Timing Report

Intelight			1212			DUNDAS STREET EAST E @ Jarrow Avenue			
Coordination - Pattern 1-32	**Units**	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**
Cycle Time	Sec	160	160	160	0	0	0	0	0
Offset	Sec	37	90	46	0	0	0	0	0
Split	Split	1	2	3	4	5	6	7	8
Sequence	Sequence	1	1	1	1	1	1	1	1
Phase Parameter Table*	Number	1	1	1	1	1	1	1	1
Coord Phase Reference Point*	Enum	green	green	green	green	green	green	green	green
Coord Mode*	Enum	singlePermissive	singlePermissive	singlePermissive	singlePermissive	singlePermissive	singlePermissive	singlePermissive	singlePermissive
Coordination - Splits	**Units**	**Phase 1**	**Phase 2**	**Phase 3**	**Phase 4**	**Phase 5**	**Phase 6**	**Phase 7**	**Phase 8**
Split 1 - Mode	Enum	phaseOmitted	none	none	none	none	none	none	none
Split 1 - Time	Sec	0	110	0	50	0	110	0	50
Split 1 - Coord	Enum	False	True	False	False	False	True	False	False
Split 1 - Coord Phase Options*	Bit		0: Reference Point				0: Reference Point		
Split 2 - Mode	Enum	none	none	none	maximumVehicleRecall	none	none	none	none
Split 2 - Time	Sec	24	85	0	51	0	109	0	51
Split 2 - Coord	Enum	False	True	False	False	False	True	False	False
Split 2 - Coord Phase Options*	Bit		0: Reference Point						

Split 3 - Mode	Enum	none	none	none	maximumVehicleRecall	none	none	none	none
Split 3 - Time	Sec	21	89	0	50	0	110	0	50
Split 3 - Coord	Enum	False	True	False	False	False	True	False	False
Split 3 - Coord Phase Options*	Bit		0: Reference Point						
Split 4 - Mode	Enum	none	none	none	none	none	none	none	none
Split 4 - Time	Sec	0	0	0	0	0	0	0	0
Split 4 - Coord	Enum	False	False	False	False	False	False	False	False

Intelight			1212			DUNDAS STREET EAST E @ Jarrow Avenue			
Time Base - Day Plans	**Units**	**Evt 1**	**Evt 2**	**Evt 3**	**Evt 4**	**Evt 5**	**Evt 6**		
Plan 1 Hour	Hour	0	6	9	15	19	3		
Plan 1 Minute	Min	0	0	30	0	30	0		
Plan 1 Action	Number	8	1	2	3	2	7		

Intelight			1212			DUNDAS STREET EAST E @ Jarrow Avenue			
Time Base - Day Plans	**Units**	**Evt 1**	**Evt 2**	**Evt 3**	**Evt 4**	**Evt 5**	**Evt 6**		
Plan 2 Hour	Hour	0	7	3	0	0	0		
Plan 2 Minute	Min	0	0	0	0	0	0		
Plan 2 Action	Number	8	2	7	0	0	0		
Plan 3 Hour	Hour	0	8	23	3	0	0		
Plan 3 Minute	Min	0	0	0	0	0	0		
Plan 3 Action	Number	8	2	8	7	0	0		

Time Base - Action 1-32	**Units**	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**
Pattern	Enum	Pattern 1	Pattern 2	Pattern 3	Pattern 4	Pattern 5	Pattern 6	Free	Free
Aux. Functions	Bit								
Spec. Functions	Bit								

Time Base - Action 1-32	**Units**	**9**	**10**
Pattern	Enum	Pattern 9	Pattern 10
Aux. Functions	Bit		
Spec. Functions	Bit		

Location	DUNDAS STREET EAST E @ Jarrow Avenue
Phase 1	WBLT
Phase 2	EB
Phase 4	NB
Phase 6	WB
Phase 8	SB

Generic ASC | 1203 | DUNDAS STREET EAST E @ Mattawa Avenue

Phase - Parameter 1-16	Units	1	2	3	4	5	6	7	8
Walk	Sec	0	10	0	10	0	0	0	0
Ped Clear	Sec	0	23	0	28	0	0	0	0
Min Green	Sec	0	10	0	10	0	0	0	0
Passage	Sec	0.0	4.0	0.0	4.0	0.0	0.0	0.0	0.0
Maximum 1	Sec	0	39	0	25	0	0	0	0
Maximum 2	Sec	0	39	0	25	0	0	0	0
Yellow Change	Sec	3.0	4.0	3.0	3.5	3.0	4.0	3.0	4.0
Red Clearance	Sec	0.0	3.0	0.0	3.5	0.0	0.0	0.0	0.0
Red Revert	Sec	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Added Initial	Sec	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Max Initial	Sec	0	0	0	0	0	0	0	0
Time Before Reduction	Sec	0	0	0	0	0	0	0	0
Cars Before Reduction	Veh	0	0	0	0	0	0	0	0
Time To Reduce	Sec	0	0	0	0	0	0	0	0
Reduce By	Sec	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Min Gap	Sec	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Dynamic Max Limit	Sec	0	0	0	0	0	0	0	0
Dynamic Max Step	Sec	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
[P2] Start Up	Enum	other	redClear	other	phaseNotOn	other	other	other	other
[P2] Options	Bit		0:Enabled Phase 3:Non-Actuated 1 7:Max Vehicle Recall 8:Ped. Recall 13:Actuated Rest In Walk		0:Enabled Phase 5:Non Lock Detector Memory				
[P2] Ring	Ring	0	1	0	1	0	0	0	0
[P2] Concurrency	Phase (,)	()	()	()	()	()	()	()	()

Coordination - Pattern 1-16	Units	1	2	3	4	5	6	7	8
Cycle Time	Sec	160	160	160	0	0	0	0	0
Offset	Sec	117	74	136	0	0	0	0	0
Split	Split	1	2	3	4	5	6	7	8
Sequence	Sequence	1	1	1	1	1	1	1	1

Coordination - Splits	Units	Phase 2	Phase 4
Split 1 - Mode	Enum	none	none
Split 1 - Time	Sec	114	46
Split 1 - Coord	Enum	True	False
Split 2 - Mode	Enum	none	none
Split 2 - Time	Sec	114	46
Split 2 - Coord	Enum	True	False
Split 3 - Mode	Enum	none	none
Split 3 - Time	Sec	114	46
Split 3 - Coord	Enum	True	False

Time Base - Schedule 1-16	Units	1	2	3	4	5	6	7	8
Month	Bit	JFMAMJJASOND	JFMAMJJASOND	JFMAMJJASOND	J----------	-F---------	---A--------	----M-------	------J-----
Day of Week	Bit	-MTWTF-	S------	------S	-M-----	-M-----	-----F-	-M-----	-----F-
Day of Month	Bit	123456789012345678901234567890	123456789012345678901234567890	123456789012345678901234567890	--3----------	----------1---------	----------5----------	----------3-------	1----------
Day Plan	Number	1	3	2	3	3	3	3	3

Generic ASC | 1203 | DUNDAS STREET EAST E @ Mattawa Avenue

Time Base - Schedule 1-16	Units	9	10	11	12	13	14	15	16
Month	Bit	-------A----	--------S---	---------O--	----------D	----------D	----------D	--------S---	----------
Day of Week	Bit	-M-----	-M-----	-M-----	--T----	-M-----	---W---	-----F-	SMTWTFS
Day of Month	Bit	1----------	----5----------	---------0----------	----------7---	----------6-----	----------8---	----------0-	----------
Day Plan	Number	3	3	3	3	3	3	3	0

Time Base - Day Plans	Units	Evt 1	Evt 2	Evt 3	Evt 4	Evt 5	Evt 6
Plan 1 Hour	Hour	0	6	9	15	19	3
Plan 1 Minute	Min	0	0	30	0	30	0
Plan 1 Action	Number	8	1	2	3	2	7
Plan 2 Hour	Hour	0	7	3	0	0	0
Plan 2 Minute	Min	0	0	0	0	0	0

Plan 2 Action	Number	8	2	7	0	0	0		
Plan 3 Hour	Hour	0	8	23	3	0	0		
Plan 3 Minute	Min	0	0	0	0	0	0		
Plan 3 Action	Number	8	2	8	7	0	0		
Time Base - Action 1-16	**Units**	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**
Pattern	Enum	Pattern 1	Pattern 2	Pattern 3	Pattern 4	Pattern 5	Pattern 6	Free	Free
Aux. Functions	Bit								
Spec. Functions	Bit								
Time Base - Action 1-16	**Units**	**9**	**10**						
Pattern	Enum	Pattern 9	Pattern 10						
Aux. Functions	Bit								
Spec. Functions	Bit								

Location	DUNDAS STREET EAST E @ Mattawa Avenue
Phase 2	E/W
Phase 4	N/S

Generic ASC			1204			DUNDAS STREET EAST E @ Coram Avenue			
Phase - Parameter 1-16	**Units**	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**
Walk	Sec	0	10	10	10	0	0	0	0
Ped Clear	Sec	0	19	30	30	0	0	0	0
Min Green	Sec	0	10	15	15	0	0	0	0
Passage	Sec	0.0	4.0	4.0	4.0	0.0	0.0	0.0	0.0
Maximum 1	Sec	0	37	25	20	0	0	0	0
Maximum 2	Sec	0	37	25	20	0	0	0	0
Yellow Change	Sec	3.0	4.0	3.0	3.5	3.0	4.0	3.0	4.0
Red Clearance	Sec	0.0	3.5	2.0	3.5	0.0	0.0	0.0	0.0
Red Revert	Sec	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Added Initial	Sec	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Max Initial	Sec	0	0	0	0	0	0	0	0
Time Before Reduction	Sec	0	0	0	0	0	0	0	0
Cars Before Reduction	Veh	0	0	0	0	0	0	0	0
Time To Reduce	Sec	0	0	0	0	0	0	0	0
Reduce By	Sec	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Min Gap	Sec	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Dynamic Max Limit	Sec	0	0	0	0	0	0	0	0
Dynamic Max Step	Sec	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
[P2] Start Up	Enum	other	redClear	phaseNotOn	phaseNotOn	other	other	other	other
[P2] Options	Bit		0:Enabled Phase 3:Non-Actuated 1 7:Max Vehicle Recall 8:Ped. Recall 13:Actuated Rest In Walk	0:Enabled Phase 5:Non Lock Detector Memory 6:Min. Vehicle Recall	0:Enabled Phase 5:Non Lock Detector Memory 6:Min. Vehicle Recall				
[P2] Ring	Ring	0	1	1	1	0	0	0	0
[P2] Concurrency	Phase (,)	()	()	()	()	()	()	()	()

Coordination - Pattern 1-16	**Units**	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**
Cycle Time	Sec	160	160	160	0	0	0	0	0
Offset	Sec	133	150	136	0	0	0	0	0
Split	Split	1	2	3	4	5	6	7	8
Sequence	Sequence	1	1	1	1	1	1	1	1

Coordination - Splits	**Units**	**Phase 2**	**Phase 3**	**Phase 4**
Split 1 - Mode	Enum	none	none	none
Split 1 - Time	Sec	101	30	29
Split 1 - Coord	Enum	True	False	False
Split 2 - Mode	Enum	none	none	none
Split 2 - Time	Sec	101	30	29
Split 2 - Coord	Enum	True	False	False
Split 3 - Mode	Enum	none	none	none
Split 3 - Time	Sec	101	30	29
Split 3 - Coord	Enum	True	False	False

Time Base - Schedule 1-16	**Units**	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**
Month	Bit	JFMAMJJASOND	JFMAMJJASOND	JFMAMJJASOND	J----------	-F---------	---A--------	----M-------	------J-----
Day of Week	Bit	-MTWTF-	S------	------S	-M-----	-M-----	-----F-	-M-----	-----F-
Day of Month	Bit	123456789012345678901	123456789012345678901	123456789012345678901	--3----------	----------1---------	----------5----------	----------3-------	1----------
Day Plan	Number	1	3	2	3	3	3	3	3

Generic ASC			1204			DUNDAS STREET EAST E @ Coram Avenue			
Time Base - Schedule 1-16	**Units**	**9**	**10**	**11**	**12**	**13**	**14**	**15**	**16**
Month	Bit	-------A----	--------S---	---------O--	----------D	----------D	----------D	--------S---	----------
Day of Week	Bit	-M-----	-M-----	-M-----	--T----	-M-----	---W---	-----F-	SMTWTFS
Day of Month	Bit	1----------	----5----------	---------0----------	----------7---	----------6----	----------8--	----------	----------
Day Plan	Number	3	3	3	3	3	3	3	0

Time Base - Day Plans	**Units**	**Evt 1**	**Evt 2**	**Evt 3**	**Evt 4**	**Evt 5**	**Evt 6**
Plan 1 Hour	Hour	0	6	9	15	19	3
Plan 1 Minute	Min	0	0	30	0	30	0

Plan 1 Action	Number	8	1	2	3	2	7		
Plan 2 Hour	Hour	0	7	3	0	0	0		
Plan 2 Minute	Min	0	0	0	0	0	0		
Plan 2 Action	Number	8	2	7	0	0	0		
Plan 3 Hour	Hour	0	8	23	3	0	0		
Plan 3 Minute	Min	0	0	0	0	0	0		
Plan 3 Action	Number	8	2	8	7	0	0		
Time Base - Action 1-16	**Units**	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**
Pattern	Enum	Pattern 1	Pattern 2	Pattern 3	Pattern 4	Pattern 5	Pattern 6	Free	Free
Aux. Functions	Bit								
Spec. Functions	Bit								
Time Base - Action 1-16	**Units**	**9**	**10**						
Pattern	Enum	Pattern 9	Pattern 10						
Aux. Functions	Bit								
Spec. Functions	Bit								

Location	Dundas Street E @ Coram Avenue / Treadwells Drive
Phase 2	E/W
Phase 3	NB
Phase 4	SB

Intelight 1205 DUNDAS STREET EAST E @ Wharton Way

Phase - Parameter 1-16	Units	Phase 1	Phase 2	Phase 3	Phase 4	Phase 5	Phase 6	Phase 7	Phase 8
Phase Description*	String								
Walk	Sec	0	10	0	10	0	10	0	10
Ped Clear	Sec	0	22	0	31	0	22	0	31
Min Green	Sec	5	8	0	8	5	8	0	8
Passage	Sec	2.0	3.0	0.0	3.0	2.0	3.0	0.0	3.0
Maximum 1	Sec	10	43	0	25	10	43	0	25
Maximum 2	Sec	10	43	0	25	10	43	0	25
Yellow Change	Sec	3.0	4.0	3.0	3.5	3.0	4.0	3.0	3.5
Red Clearance	Sec	0.0	2.5	0.0	3.5	0.0	2.5	0.0	3.5
Red Revert	Sec	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Added Initial	Sec	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Max Initial	Sec	0	0	0	0	0	0	0	0
Time Before Reduction	Sec	0	0	0	0	0	0	0	0
Cars Before Reduction	Veh	0	0	0	0	0	0	0	0
Time To Reduce	Sec	0	0	0	0	0	0	0	0
Reduce By	Sec	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Min Gap	Sec	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Dynamic Max Limit	Sec	0	0	0	0	0	0	0	0
Dynamic Max Step	Sec	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
[P2] Start Up	Enum	phaseNotOn	redClear	other	phaseNotOn	phaseNotOn	redClear	other	phaseNotOn
[P2] Options	Bit	0:Enabled Phase 5:Non Lock Detector Memory	0:Enabled Phase 3:Non-Actuated 1 7:Max Vehicle Recall 8:Ped. Recall 10:Dual Entry Phase 13:Actuated Rest In Walk		0:Enabled Phase 5:Non Lock Detector Memory 10:Dual Entry Phase	0:Enabled Phase 5:Non Lock Detector Memory	0:Enabled Phase 3:Non-Actuated 1 7:Max Vehicle Recall 8:Ped. Recall 10:Dual Entry Phase 13:Actuated Rest In Walk		0:Enabled Phase 5:Non Lock Detector Memory 10:Dual Entry Phase
[P2] Ring	Ring	1	1	0	1	2	2	0	2
[P2] Concurrency	Phase (,)	(5,6)	(5,6)	()	(8)	(1,2)	(1,2)	()	(4)
Delayed Green*	Sec	0	0	0	0	0	0	0	0
Delayed Ped*	Sec	0	0	0	0	0	0	0	0
Alternate Walk*	Sec	0	0	0	0	0	0	0	0
Alternate Ped Clear*	Sec	0	0	0	0	0	0	0	0
Pre Green*	Sec	0	0	0	0	0	0	0	0
Pre Clearance*	Sec	0	0	0	0	0	0	0	0
Alternate Walk 2*	Sec	0	0	0	0	0	0	0	0
Alt Ped Clear 2*	Sec	0	0	0	0	0	0	0	0

Coordination - Pattern 1-32	Units	1	2	3	4	5	6	7	8
Cycle Time	Sec	160	160	160	0	0	0	0	0
Offset	Sec	144	141	133	0	0	0	0	0
Split	Split	1	2	3	4	5	6	7	8
Sequence	Sequence	1	1	1	1	1	1	1	1
Phase Parameter Table*	Number	1	1	1	1	1	1	1	1
Coord Phase Reference Point*	Enum	green	green	green	green	green	green	green	green
Coord Mode*	Enum	singlePermissive	singlePermissive	singlePermissive	singlePermissive	singlePermissive	singlePermissive	singlePermissive	singlePermissive

Coordination - Splits	Units	Phase 1	Phase 2	Phase 3	Phase 4	Phase 5	Phase 6	Phase 7	Phase 8
Split 1 - Mode	Enum	none	none	none	none	none	none	none	none
Split 1 - Time	Sec	14	95	0	51	14	95	0	51
Split 1 - Coord	Enum	False	True	False	False	False	True	False	False
Split 1 - Coord Phase Options*	Bit		0: Reference Point				0: Reference Point		
Split 2 - Mode	Enum	none	none	none	none	none	none	none	none
Split 2 - Time	Sec	14	87	0	59	19	82	0	59
Split 2 - Coord	Enum	False	True	False	False	False	True	False	False
Split 2 - Coord Phase Options*	Bit						0: Reference Point		
Split 3 - Mode	Enum	none	none	none	none	none	none	none	none
Split 3 - Time	Sec	14	95	0	51	14	95	0	51
Split 3 - Coord	Enum	False	True	False	False	False	True	False	False
Split 3 - Coord Phase Options*	Bit		0: Reference Point				0: Reference Point		

Split 4 - Mode	Enum	none	none	none	none	none	none	none	none
Split 4 - Time	Sec	0	0	0	0	0	0	0	0
Split 4 - Coord	Enum	False	False	False	False	False	False	False	False

Intelight			1205			DUNDAS STREET EAST E @ Wharton Way	

Time Base - Day Plans	**Units**	**Evt 1**	**Evt 2**	**Evt 3**	**Evt 4**	**Evt 5**	**Evt 6**
Plan 1 Hour	Hour	0	6	9	15	19	3
Plan 1 Minute	Min	0	0	30	0	30	0
Plan 1 Action	Number	8	1	2	3	2	7

Intelight			1205			DUNDAS STREET EAST E @ Wharton Way	

Time Base - Day Plans	**Units**	**Evt 1**	**Evt 2**	**Evt 3**	**Evt 4**	**Evt 5**	**Evt 6**
Plan 2 Hour	Hour	0	7	3	0	0	0
Plan 2 Minute	Min	0	0	0	0	0	0
Plan 2 Action	Number	8	2	7	0	0	0
Plan 3 Hour	Hour	0	8	23	3	0	0
Plan 3 Minute	Min	0	0	0	0	0	0
Plan 3 Action	Number	8	2	8	7	0	0

Time Base - Action 1-32	**Units**	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**
Pattern	Enum	Pattern 1	Pattern 2	Pattern 3	Pattern 4	Pattern 5	Pattern 6	Free	Free
Aux. Functions	Bit								
Spec. Functions	Bit								

Time Base - Action 1-32	**Units**	**9**	**10**
Pattern	Enum	Pattern 9	Pattern 10
Aux. Functions	Bit		
Spec. Functions	Bit		

Location	DUNDAS STREET EAST E @ Wharton Way
Phase 1	WBLT
Phase 2	EB
Phase 4	NB
Phase 5	EBLT
Phase 6	WB
Phase 8	SB

Existing Trips for Removal

LEA Consulting Ltd.

625 Cochrane Drive, 5th Floor
Markham, ON L3R 9R9

Project No.: 21224
Intersection: Mattawa Ave & Site Access1
Weather: Clear
Surveyor(s): ID

File Name : Mattawa & Site Access-AM
Site Code : 00021224
Start Date : 2023-06-22
Page No : 1

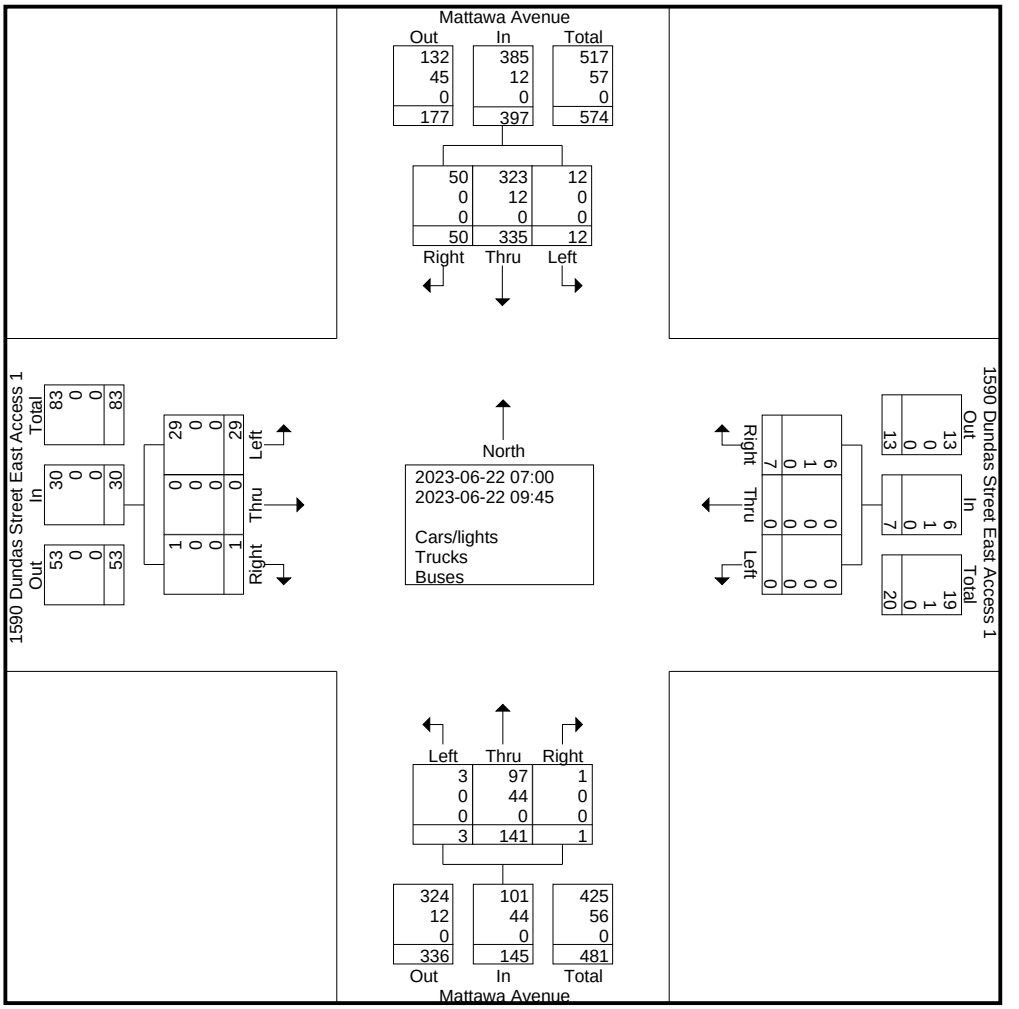
Groups Printed- Cars/lights - Trucks - Buses

	Mattawa Avenue Southbound					1590 Dundas Street East Access 1 Westbound					Mattawa Avenue Northbound					1590 Dundas Street East Access 1 Eastbound							
Start Time	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Exclu. Total	Inclu. Total	Int. Total
07:00	0	22	0	[0]	22	0	0	0	[1]	0	0	11	0	[0]	11	2	0	0	[0]	2	1	35	36
07:15	0	22	0	[0]	22	0	0	0	[0]	0	0	8	0	[0]	8	0	0	0	[0]	0	0	30	30
07:30	1	35	1	[0]	37	0	0	1	[0]	1	0	10	0	[0]	10	1	0	0	[0]	1	0	49	49
07:45	0	29	4	[0]	33	0	0	0	[0]	0	0	5	0	[0]	5	3	0	0	[0]	3	0	41	41
Total	1	108	5	[0]	114	0	0	1	[1]	1	0	34	0	[0]	34	6	0	0	[0]	6	1	155	156
08:00	0	29	0	[0]	29	0	0	0	[0]	0	0	12	0	[0]	12	2	0	0	[0]	2	0	43	43
08:15	0	26	0	[0]	26	0	0	0	[0]	0	0	6	0	[0]	6	0	0	0	[0]	0	0	32	32
08:30	1	39	8	[0]	48	0	0	0	[0]	0	0	13	0	[0]	13	2	0	0	[1]	2	1	63	64
08:45	1	22	5	[0]	28	0	0	2	[0]	2	0	12	0	[0]	12	5	0	0	[1]	5	1	47	48
Total	2	116	13	[0]	131	0	0	2	[0]	2	0	43	0	[0]	43	9	0	0	[2]	9	2	185	187
09:00	1	30	8	[0]	39	0	0	1	[0]	1	1	7	0	[0]	8	2	0	0	[0]	2	0	50	50
09:15	5	32	10	[0]	47	0	0	1	[0]	1	0	23	0	[0]	23	1	0	0	[1]	1	1	72	73
09:30	3	22	3	[0]	28	0	0	2	[0]	2	2	20	1	[0]	23	4	0	1	[0]	5	0	58	58
09:45	0	27	11	[0]	38	0	0	0	[0]	0	0	14	0	[0]	14	7	0	0	[0]	7	0	59	59
Total	9	111	32	[0]	152	0	0	4	[0]	4	3	64	1	[0]	68	14	0	1	[1]	15	1	239	240
Grand Total	12	335	50	[0]	397	0	0	7	[1]	7	3	141	1	[0]	145	29	0	1	[3]	30	4	579	583
Apprch %	3	84.4	12.6			0	0	100			2.1	97.2	0.7			96.7	0	3.3					
Total %	2.1	57.9	8.6		68.6	0	0	1.2		1.2	0.5	24.4	0.2		25	5	0	0.2		5.2	0.7	99.3	
Cars/lights	12	323	50		385	0	0	6		7	3	97	1		101	29	0	1		33	0	0	526
% Cars/lights	100	96.4	100	0	97	0	0	85.7	100	87.5	100	68.8	100	0	69.7	100	0	100	100	100	0	0	90.2
Trucks	0	12	0		12	0	0	1		1	0	44	0		44	0	0	0		0	0	0	57
% Trucks	0	3.6	0	0	3	0	0	14.3	0	12.5	0	31.2	0	0	30.3	0	0	0	0	0	0	0	9.8
Buses	0	0	0		0	0	0	0		0	0	0	0		0	0	0	0		0	0	0	0
% Buses	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

LEA Consulting Ltd.

625 Cochrane Drive, 5th Floor
Markham, ON L3R 9R9

File Name : Mattawa & Site Access-AM
Site Code : 00021224
Start Date : 2023-06-22
Page No : 2



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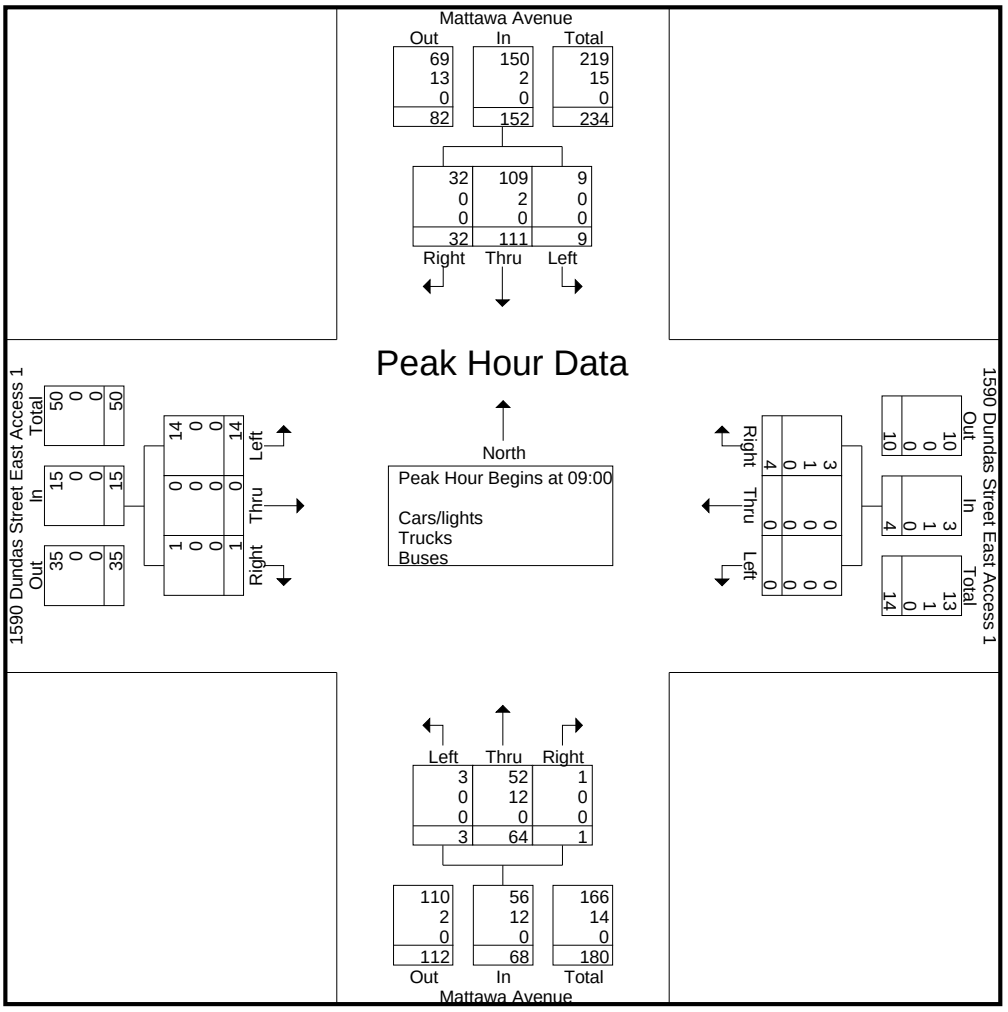
625 Cochrane Drive, 5th Floor
Markham, ON L3R 9R9

File Name : Mattawa & Site Access-AM
Site Code : 00021224
Start Date : 2023-06-22
Page No : 3

	Mattawa Avenue Southbound				1590 Dundas Street East Access 1 Westbound				Mattawa Avenue Northbound				1590 Dundas Street East Access 1 Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 07:00 to 09:45 - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 09:00																	
09:00	1	30	8	39	0	0	1	1	1	7	0	8	2	0	0	2	50
09:15	**5**	**32**	10	**47**	0	0	1	1	0	**23**	0	**23**	1	0	0	1	**72**
09:30	3	22	3	28	0	0	**2**	**2**	**2**	20	**1**	23	4	0	**1**	5	58
09:45	0	27	**11**	38	0	0	0	0	0	14	0	14	**7**	0	0	**7**	59
Total Volume	9	111	32	152	0	0	4	4	3	64	1	68	14	0	1	15	239
% App. Total	5.9	73	21.1		0	0	100		4.4	94.1	1.5		93.3	0	6.7		
PHF	.450	.867	.727	.809	.000	.000	.500	.500	.375	.696	.250	.739	.500	.000	.250	.536	.830
Cars/lights	9	109	32	150	0	0	3	3	3	52	1	56	14	0	1	15	224
% Cars/lights	100	98.2	100	98.7	0	0	75.0	75.0	100	81.3	100	82.4	100	0	100	100	93.7
Trucks	0	2	0	2	0	0	1	1	0	12	0	12	0	0	0	0	15
% Trucks	0	1.8	0	1.3	0	0	25.0	25.0	0	18.8	0	17.6	0	0	0	0	6.3
Buses	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
% Buses	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0



LEA Consulting Ltd.

625 Cochrane Drive, 5th Floor
Markham, ON L3R 9R9

Project No.: 21224
Intersection: Mattawa Ave & Site Access1
Weather: Clear
Surveyor(s): ID

File Name : Mattawa & Site Access 1-PM
Site Code : 00021224
Start Date : 2023-06-22
Page No : 1

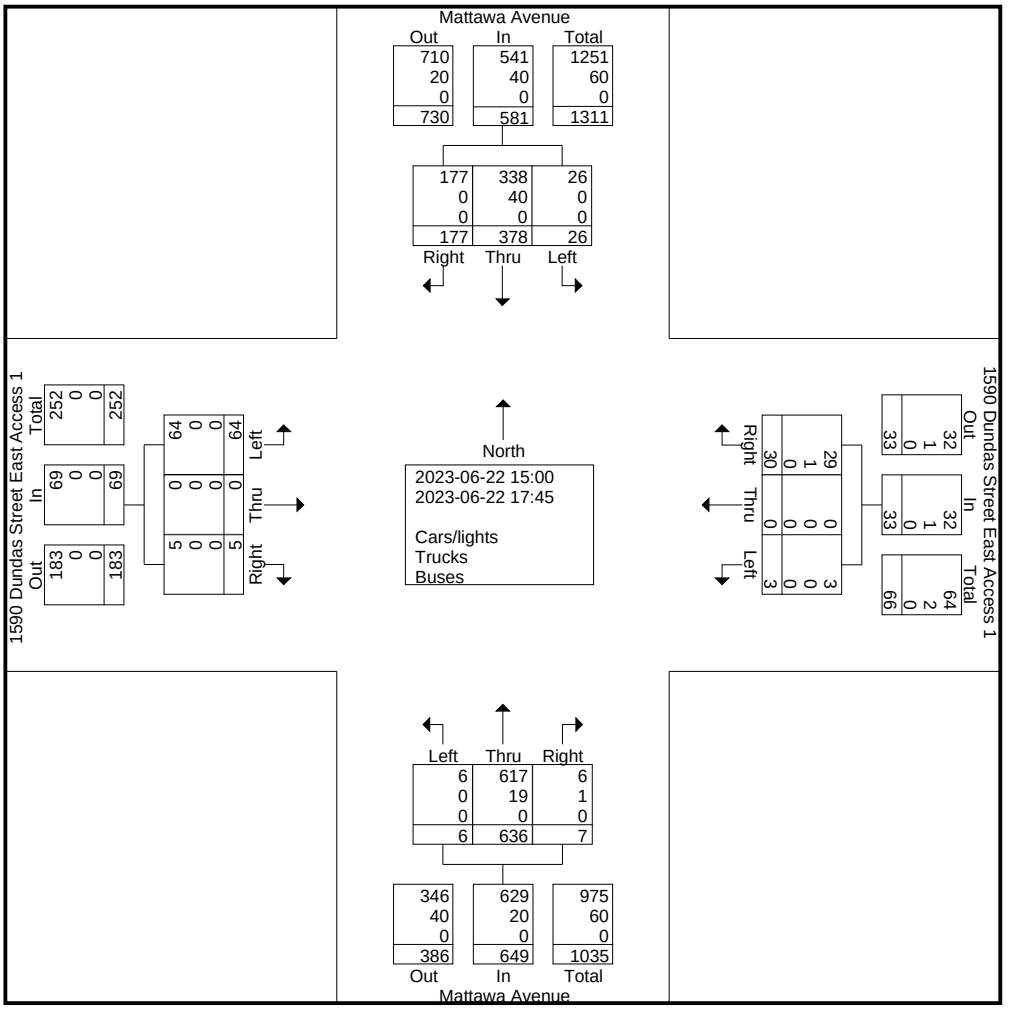
Groups Printed- Cars/lights - Trucks - Buses

	Mattawa Avenue Southbound					1590 Dundas Street East Access 1 Westbound					Mattawa Avenue Northbound					1590 Dundas Street East Access 1 Eastbound							
Start Time	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Exclu. Total	Inclu. Total	Int. Total
15:00	3	29	11	[0]	43	0	0	3	[0]	3	1	40	0	[1]	41	4	0	0	[0]	4	1	91	92
15:15	4	32	12	[0]	48	1	0	2	[0]	3	2	32	0	[2]	34	2	0	0	[4]	2	6	87	93
15:30	1	37	10	[0]	48	0	0	1	[0]	1	0	52	0	[0]	52	8	0	0	[1]	8	1	109	110
15:45	4	31	12	[1]	47	0	0	3	[0]	3	0	49	1	[1]	50	5	0	0	[0]	5	2	105	107
Total	12	129	45	[1]	186	1	0	9	[0]	10	3	173	1	[4]	177	19	0	0	[5]	19	10	392	402
16:00	3	35	10	[0]	48	0	0	4	[2]	4	0	54	0	[0]	54	8	0	0	[1]	8	3	114	117
16:15	5	31	14	[0]	50	1	0	6	[0]	7	1	44	2	[0]	47	4	0	1	[2]	5	2	109	111
16:30	0	37	9	[0]	46	0	0	3	[0]	3	0	54	2	[0]	56	5	0	0	[0]	5	0	110	110
16:45	3	28	26	[2]	57	0	0	2	[2]	2	0	54	1	[2]	55	2	0	1	[2]	3	8	117	125
Total	11	131	59	[2]	201	1	0	15	[4]	16	1	206	5	[2]	212	19	0	2	[5]	21	13	450	463
17:00	2	28	17	[0]	47	0	0	2	[2]	2	1	54	0	[4]	55	5	0	2	[1]	7	7	111	118
17:15	1	36	20	[0]	57	0	0	1	[0]	1	0	56	1	[0]	57	7	0	0	[2]	7	2	122	124
17:30	0	25	21	[0]	46	1	0	1	[0]	2	1	86	0	[2]	87	10	0	1	[2]	11	4	146	150
17:45	0	29	15	[1]	44	0	0	2	[1]	2	0	61	0	[1]	61	4	0	0	[0]	4	3	111	114
Total	3	118	73	[1]	194	1	0	6	[3]	7	2	257	1	[7]	260	26	0	3	[5]	29	16	490	506
Grand Total	26	378	177	[4]	581	3	0	30	[7]	33	6	636	7	[13]	649	64	0	5	[15]	69	39	1332	1371
Apprch %	4.5	65.1	30.5			9.1	0	90.9			0.9	98	1.1			92.8	0	7.2					
Total %	2	28.4	13.3		43.6	0.2	0	2.3		2.5	0.5	47.7	0.5		48.7	4.8	0	0.4		5.2	2.8	97.2	
Cars/lights	26	338	177		545	3	0	29		39	6	617	6		642	64	0	5		84	0	0	1310
% Cars/lights	100	89.4	100	100	93.2	100	0	96.7	100	97.5	100	97	85.7	100	97	100	0	100	100	100	0	0	95.6
Trucks	0	40	0		40	0	0	1		1	0	19	1		20	0	0	0		0	0	0	61
% Trucks	0	10.6	0	0	6.8	0	0	3.3	0	2.5	0	3	14.3	0	3	0	0	0	0	0	0	0	4.4
Buses	0	0	0		0	0	0	0		0	0	0	0		0	0	0	0		0	0	0	0
% Buses	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

LEA Consulting Ltd.

625 Cochrane Drive, 5th Floor
Markham, ON L3R 9R9

File Name : Mattawa & Site Access 1-PM
Site Code : 00021224
Start Date : 2023-06-22
Page No : 2

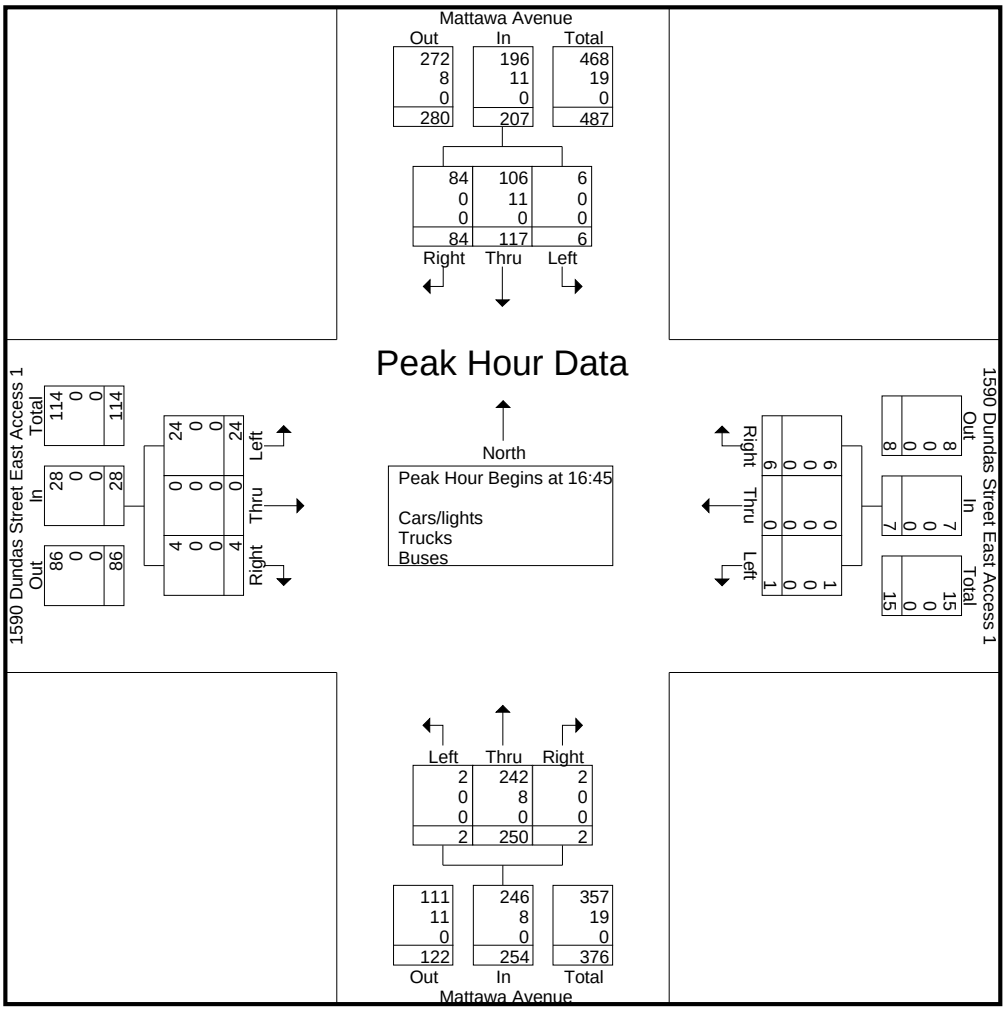


LEA Consulting Ltd.

625 Cochrane Drive, 5th Floor
Markham, ON L3R 9R9

File Name : Mattawa & Site Access 1-PM
Site Code : 00021224
Start Date : 2023-06-22
Page No : 3

	Mattawa Avenue Southbound				1590 Dundas Street East Access 1 Westbound				Mattawa Avenue Northbound				1590 Dundas Street East Access 1 Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 15:00 to 17:45 - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 16:45																	
16:45	**3**	28	**26**	**57**	0	0	**2**	**2**	0	54	**1**	55	2	0	1	3	117
17:00	2	28	17	47	0	0	2	2	**1**	54	0	55	5	0	**2**	7	111
17:15	1	**36**	20	57	0	0	1	1	0	56	1	57	7	0	0	7	122
17:30	0	25	21	46	**1**	0	1	2	1	**86**	0	**87**	**10**	0	1	**11**	**146**
Total Volume	6	117	84	207	1	0	6	7	2	250	2	254	24	0	4	28	496
% App. Total	2.9	56.5	40.6		14.3	0	85.7		0.8	98.4	0.8		85.7	0	14.3		
PHF	.500	.813	.808	.908	.250	.000	.750	.875	.500	.727	.500	.730	.600	.000	.500	.636	.849
Cars/lights	6	106	84	196	1	0	6	7	2	242	2	246	24	0	4	28	477
% Cars/lights	100	90.6	100	94.7	100	0	100	100	100	96.8	100	96.9	100	0	100	100	96.2
Trucks	0	11	0	11	0	0	0	0	0	8	0	8	0	0	0	0	19
% Trucks	0	9.4	0	5.3	0	0	0	0	0	3.2	0	3.1	0	0	0	0	3.8
Buses	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
% Buses	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0



LEA Consulting Ltd.

625 Cochrane Drive, 5th Floor
Markham, ON L3R 9R9

Project No.: 21224
Intersection: Mattawa Ave & Site Access2
Weather: Clear
Surveyor(s): JaC

File Name : Mattawa & Site Access 2-AM
Site Code : 00021224
Start Date : 2023-06-22
Page No : 1

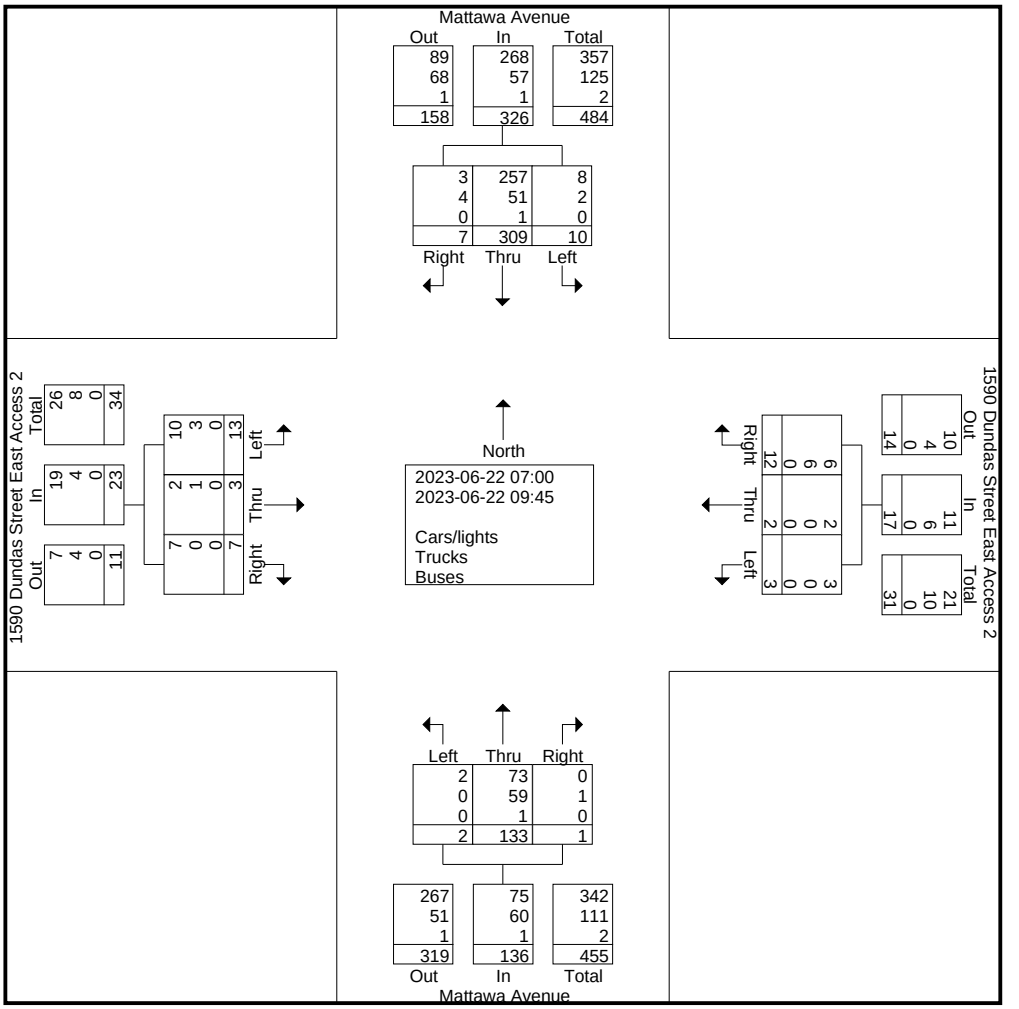
Groups Printed- Cars/lights - Trucks - Buses

	Mattawa Avenue Southbound					1590 Dundas Street East Access 2 Westbound					Mattawa Avenue Northbound					1590 Dundas Street East Access 2 Eastbound							
Start Time	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Exclu. Total	Inclu. Total	Int. Total
07:00	0	21	0	[0]	21	0	0	0	[0]	0	0	12	0	[0]	12	0	0	0	[0]	0	0	33	33
07:15	0	23	1	[0]	24	0	0	0	[0]	0	0	8	0	[0]	8	2	0	2	[0]	4	0	36	36
07:30	0	31	0	[0]	31	0	1	2	[0]	3	0	10	0	[0]	10	0	0	0	[0]	0	0	44	44
07:45	2	28	0	[0]	30	1	0	0	[2]	1	0	4	0	[0]	4	1	1	0	[3]	2	5	37	42
Total	2	103	1	[0]	106	1	1	2	[2]	4	0	34	0	[0]	34	3	1	2	[3]	6	5	150	155
08:00	1	28	1	[1]	30	0	0	2	[1]	2	0	15	1	[0]	16	1	0	0	[1]	1	3	49	52
08:15	0	21	0	[0]	21	0	0	1	[0]	1	0	7	0	[0]	7	0	0	0	[0]	0	0	29	29
08:30	0	41	0	[1]	41	0	0	0	[0]	0	0	16	0	[0]	16	1	0	0	[1]	1	2	58	60
08:45	2	16	1	[1]	19	0	0	0	[0]	0	1	6	0	[0]	7	2	1	1	[1]	4	2	30	32
Total	3	106	2	[3]	111	0	0	3	[1]	3	1	44	1	[0]	46	4	1	1	[3]	6	7	166	173
09:00	2	30	0	[0]	32	0	0	2	[1]	2	0	6	0	[0]	6	2	0	2	[0]	4	1	44	45
09:15	2	26	1	[2]	29	1	0	1	[3]	2	1	18	0	[0]	19	0	1	0	[1]	1	6	51	57
09:30	1	20	2	[0]	23	1	1	3	[1]	5	0	16	0	[0]	16	4	0	2	[1]	6	2	50	52
09:45	0	24	1	[1]	25	0	0	1	[0]	1	0	15	0	[0]	15	0	0	0	[1]	0	2	41	43
Total	5	100	4	[3]	109	2	1	7	[5]	10	1	55	0	[0]	56	6	1	4	[3]	11	11	186	197
Grand Total	10	309	7	[6]	326	3	2	12	[8]	17	2	133	1	[0]	136	13	3	7	[9]	23	23	502	525
Apprch %	3.1	94.8	2.1			17.6	11.8	70.6			1.5	97.8	0.7			56.5	13	30.4					
Total %	2	61.6	1.4		64.9	0.6	0.4	2.4		3.4	0.4	26.5	0.2		27.1	2.6	0.6	1.4		4.6	4.4	95.6	
Cars/lights	8	257	3		273	3	2	6		19	2	73	0		75	10	2	7		27	0	0	394
% Cars/lights	80	83.2	42.9	83.3	82.2	100	100	50	100	76	100	54.9	0	0	55.1	76.9	66.7	100	88.9	84.4	0	0	75
Trucks	2	51	4		58	0	0	6		6	0	59	1		60	3	1	0		5	0	0	129
% Trucks	20	16.5	57.1	16.7	17.5	0	0	50	0	24	0	44.4	100	0	44.1	23.1	33.3	0	11.1	15.6	0	0	24.6
Buses	0	1	0		1	0	0	0		0	0	1	0		1	0	0	0		0	0	0	2
% Buses	0	0.3	0	0	0.3	0	0	0	0	0	0	0.8	0	0	0.7	0	0	0	0	0	0	0	0.4

LEA Consulting Ltd.

625 Cochrane Drive, 5th Floor
Markham, ON L3R 9R9

File Name : Mattawa & Site Access 2-AM
Site Code : 00021224
Start Date : 2023-06-22
Page No : 2

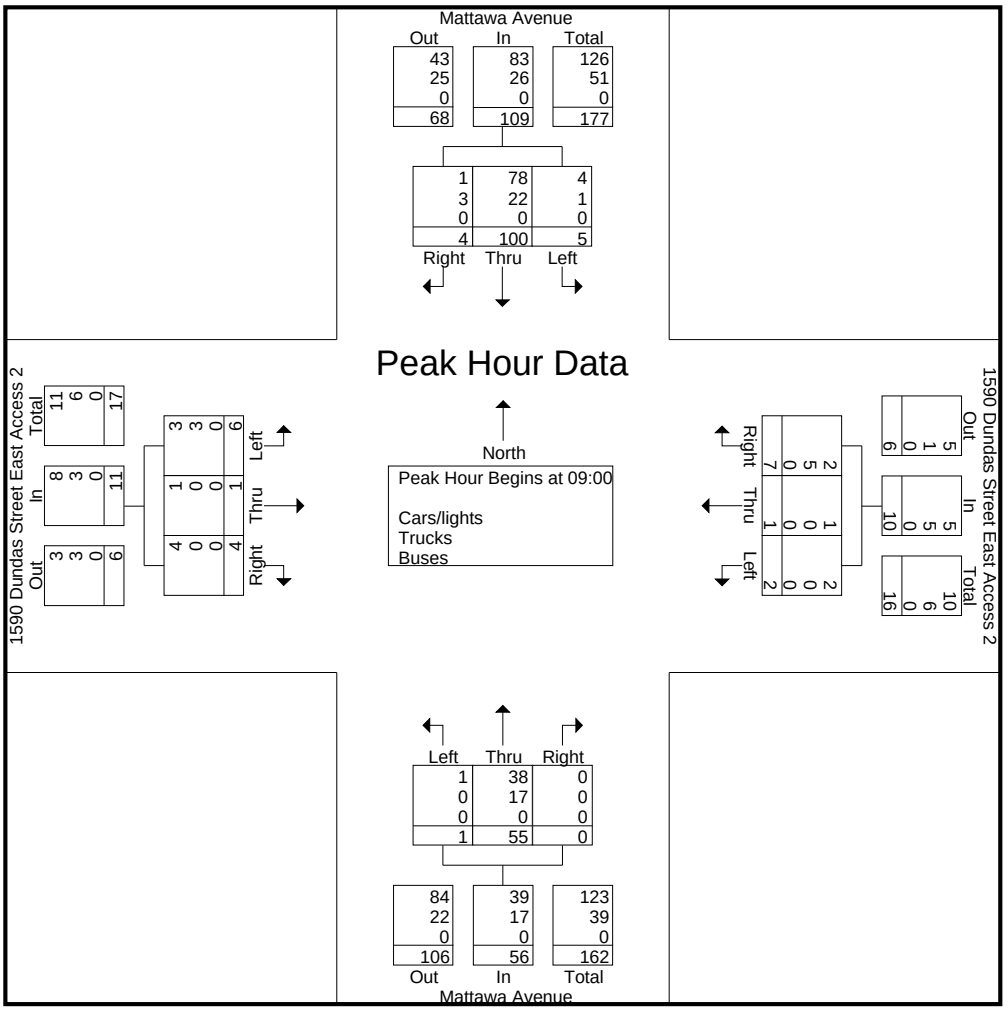


LEA Consulting Ltd.

625 Cochrane Drive, 5th Floor
Markham, ON L3R 9R9

File Name : Mattawa & Site Access 2-AM
Site Code : 00021224
Start Date : 2023-06-22
Page No : 3

	Mattawa Avenue Southbound				1590 Dundas Street East Access 2 Westbound				Mattawa Avenue Northbound				1590 Dundas Street East Access 2 Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 07:00 to 09:45 - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 09:00																	
09:00	**2**	**30**	0	**32**	0	0	2	2	0	6	0	6	2	0	**2**	4	44
09:15	2	26	1	29	**1**	0	1	2	**1**	**18**	0	**19**	0	**1**	0	1	**51**
09:30	1	20	**2**	23	1	**1**	**3**	**5**	0	16	0	16	**4**	0	2	**6**	50
09:45	0	24	1	25	0	0	1	1	0	15	0	15	0	0	0	0	41
Total Volume	5	100	4	109	2	1	7	10	1	55	0	56	6	1	4	11	186
% App. Total	4.6	91.7	3.7		20	10	70		1.8	98.2	0		54.5	9.1	36.4		
PHF	.625	.833	.500	.852	.500	.250	.583	.500	.250	.764	.000	.737	.375	.250	.500	.458	.912
Cars/lights	4	78	1	83	2	1	2	5	1	38	0	39	3	1	4	8	135
% Cars/lights	80.0	78.0	25.0	76.1	100	100	28.6	50.0	100	69.1	0	69.6	50.0	100	100	72.7	72.6
Trucks	1	22	3	26	0	0	5	5	0	17	0	17	3	0	0	3	51
% Trucks	20.0	22.0	75.0	23.9	0	0	71.4	50.0	0	30.9	0	30.4	50.0	0	0	27.3	27.4
Buses	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
% Buses	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0



LEA Consulting Ltd.

625 Cochrane Drive, 5th Floor
Markham, ON L3R 9R9

Project No.: 21224
Intersection: Mattawa Ave & Site Access1
Weather: Clear
Surveyor(s): ID

File Name : Mattawa Ave & Site Access 2-PM
Site Code : 00021224
Start Date : 2023-06-22
Page No : 1

Groups Printed- Cars/lights - Trucks - Buses

	Mattawa Avenue Southbound					1590 Dundas Street East Access 2 Westbound					Mattawa Avenue Northbound					1590 Dundas Street East Access 2 Eastbound							
Start Time	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Exclu. Total	Inclu. Total	Int. Total
15:00	6	25	1	[0]	32	0	0	14	[1]	14	1	27	0	[0]	28	3	0	0	[1]	3	2	77	79
15:15	8	21	5	[1]	34	0	0	5	[1]	5	0	24	0	[0]	24	7	1	1	[2]	9	4	72	76
15:30	12	18	4	[0]	34	0	0	0	[1]	0	1	45	0	[0]	46	4	0	0	[1]	4	2	84	86
15:45	7	19	4	[0]	30	1	0	3	[0]	4	1	24	1	[0]	26	17	2	0	[0]	19	0	79	79
Total	33	83	14	[1]	130	1	0	22	[3]	23	3	120	1	[0]	124	31	3	1	[4]	35	8	312	320
16:00	2	24	9	[1]	35	0	0	3	[2]	3	0	42	0	[5]	42	12	1	0	[1]	13	9	93	102
16:15	0	17	13	[1]	30	0	0	1	[0]	1	0	34	3	[0]	37	9	0	3	[2]	12	3	80	83
16:30	2	18	14	[1]	34	1	0	2	[1]	3	2	41	0	[1]	43	14	2	1	[2]	17	5	97	102
16:45	3	11	13	[1]	27	1	1	1	[1]	3	1	39	0	[3]	40	20	1	1	[2]	22	7	92	99
Total	7	70	49	[4]	126	2	1	7	[4]	10	3	156	3	[9]	162	55	4	5	[7]	64	24	362	386
17:00	1	18	9	[1]	28	0	0	1	[1]	1	2	41	0	[2]	43	14	4	0	[1]	18	5	90	95
17:15	7	12	17	[0]	36	0	0	2	[0]	2	0	34	0	[0]	34	18	2	0	[0]	20	0	92	92
17:30	5	13	8	[0]	26	0	0	2	[1]	2	0	34	1	[1]	35	55	0	1	[1]	56	3	119	122
17:45	3	12	11	[0]	26	0	0	21	[3]	21	0	19	1	[3]	20	23	1	1	[3]	25	9	92	101
Total	16	55	45	[1]	116	0	0	26	[5]	26	2	128	2	[6]	132	110	7	2	[5]	119	17	393	410
Grand Total	56	208	108	[6]	372	3	1	55	[12]	59	8	404	6	[15]	418	196	14	8	[16]	218	49	1067	1116
Apprch %	15.1	55.9	29			5.1	1.7	93.2			1.9	96.7	1.4			89.9	6.4	3.7					
Total %	5.2	19.5	10.1		34.9	0.3	0.1	5.2		5.5	0.7	37.9	0.6		39.2	18.4	1.3	0.7		20.4	4.4	95.6	
Cars/lights	43	156	106		311	1	0	50		63	6	355	6		377	184	12	7		218	0	0	969
% Cars/lights	76.8	75	98.1	100	82.3	33.3	0	90.9	100	88.7	75	87.9	100	66.7	87.1	93.9	85.7	87.5	93.8	93.2	0	0	86.8
Trucks	13	52	2		67	2	1	5		8	2	49	0		56	12	2	1		16	0	0	147
% Trucks	23.2	25	1.9	0	17.7	66.7	100	9.1	0	11.3	25	12.1	0	33.3	12.9	6.1	14.3	12.5	6.2	6.8	0	0	13.2
Buses	0	0	0		0	0	0	0		0	0	0	0		0	0	0	0		0	0	0	0
% Buses	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

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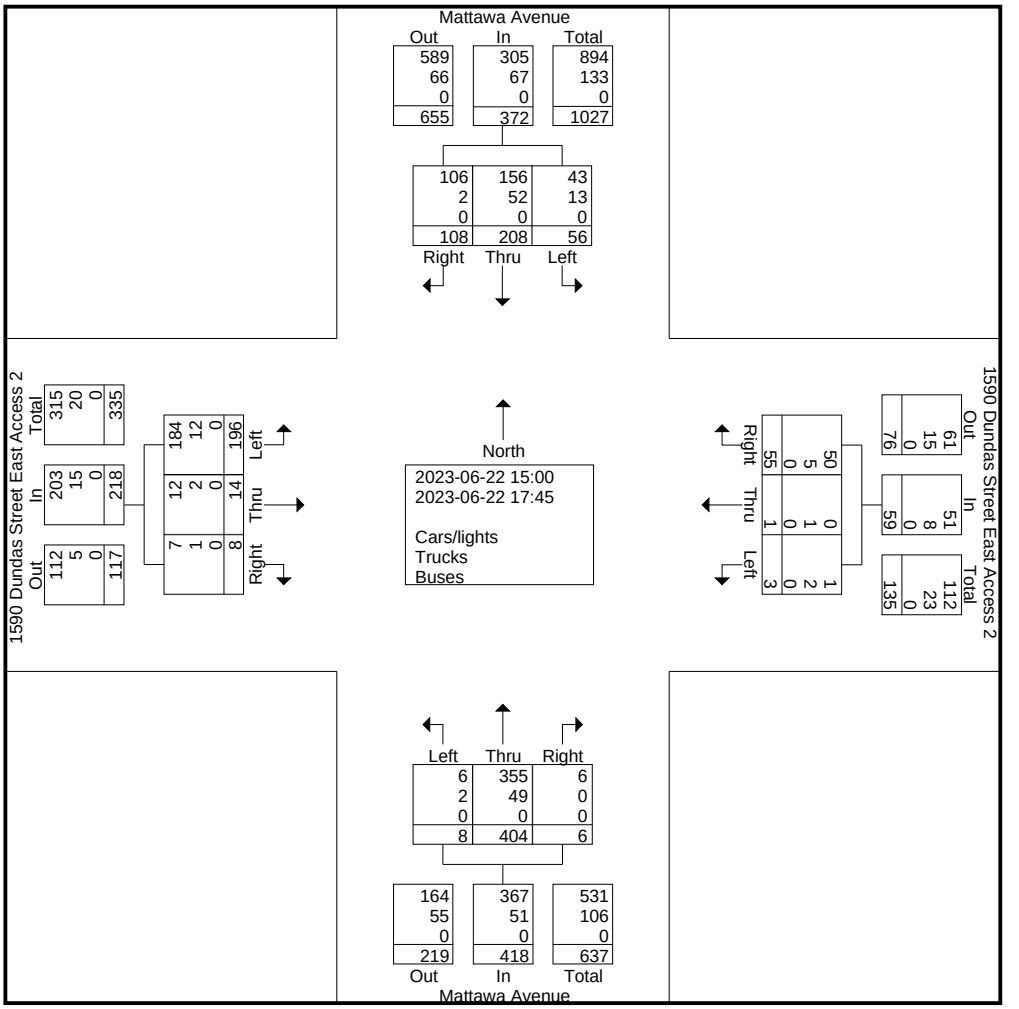
625 Cochrane Drive, 5th Floor
Markham, ON L3R 9R9

File Name : Mattawa Ave & Site Access 2-PM
Site Code : 00021224
Start Date : 2023-06-22
Page No : 2

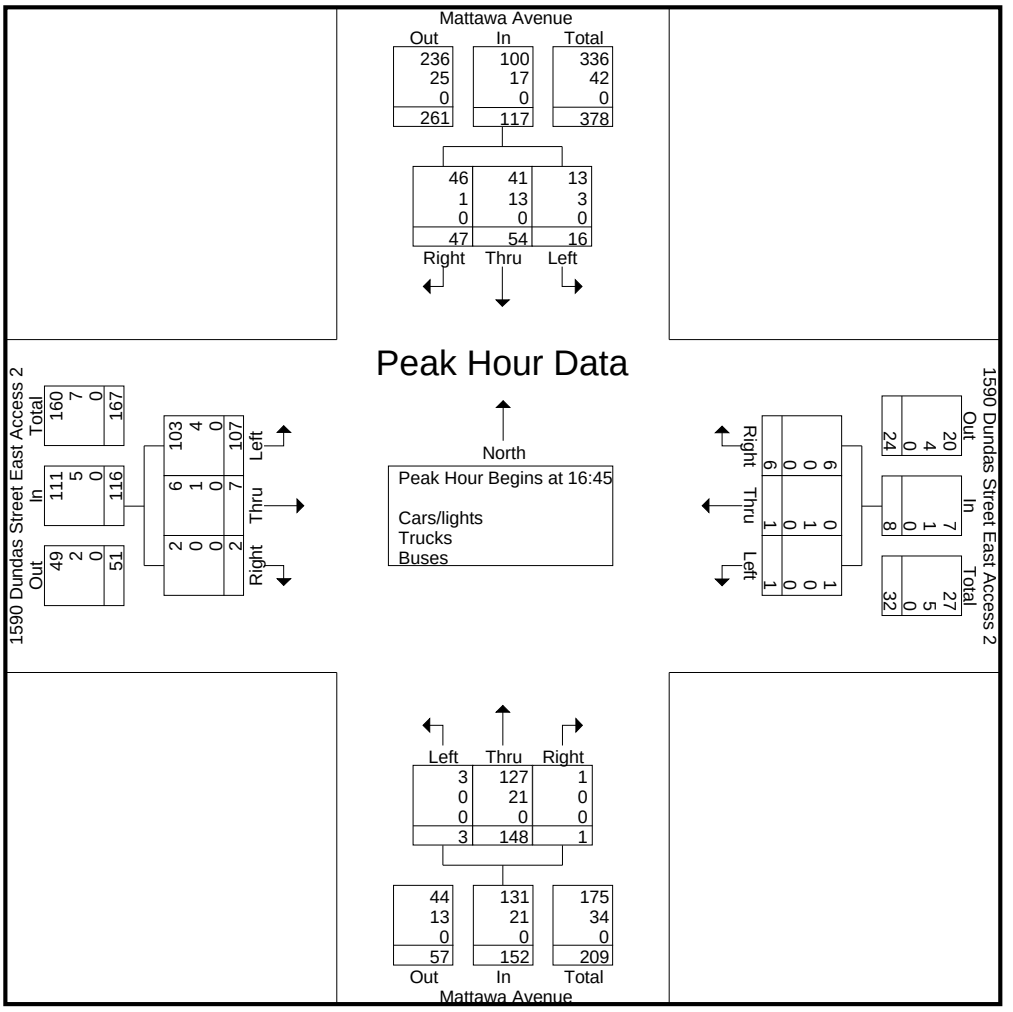


LEA Consulting Ltd.

625 Cochrane Drive, 5th Floor
Markham, ON L3R 9R9

File Name : Mattawa Ave & Site Access 2-PM
Site Code : 00021224
Start Date : 2023-06-22
Page No : 3

	Mattawa Avenue Southbound				1590 Dundas Street East Access 2 Westbound				Mattawa Avenue Northbound				1590 Dundas Street East Access 2 Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 15:00 to 17:45 - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 16:45																	
16:45	3	11	13	27	**1**	**1**	1	**3**	1	39	0	40	20	1	**1**	22	92
17:00	1	**18**	9	28	0	0	1	1	**2**	**41**	0	**43**	14	**4**	0	18	90
17:15	**7**	12	**17**	**36**	0	0	**2**	2	0	34	0	34	18	2	0	20	92
17:30	5	13	8	26	0	0	2	2	0	34	**1**	35	**55**	0	1	**56**	**119**
Total Volume	16	54	47	117	1	1	6	8	3	148	1	152	107	7	2	116	393
% App. Total	13.7	46.2	40.2		12.5	12.5	75		2	97.4	0.7		92.2	6	1.7		
PHF	.571	.750	.691	.813	.250	.250	.750	.667	.375	.902	.250	.884	.486	.438	.500	.518	.826
Cars/lights	13	41	46	100	1	0	6	7	3	127	1	131	103	6	2	111	349
% Cars/lights	81.3	75.9	97.9	85.5	100	0	100	87.5	100	85.8	100	86.2	96.3	85.7	100	95.7	88.8
Trucks	3	13	1	17	0	1	0	1	0	21	0	21	4	1	0	5	44
% Trucks	18.8	24.1	2.1	14.5	0	100	0	12.5	0	14.2	0	13.8	3.7	14.3	0	4.3	11.2
Buses	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
% Buses	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0



LEA Consulting Ltd.

625 Cochrane Drive, 5th Floor
Markham, ON L3R 9R9

Project No.: 21224
Intersection: Mattawa Ave & Site Access3
Weather: Clear
Surveyor(s): ID

File Name : Mattawa Ave & Site Access 3-AM
Site Code : 00021224
Start Date : 2023-06-22
Page No : 1

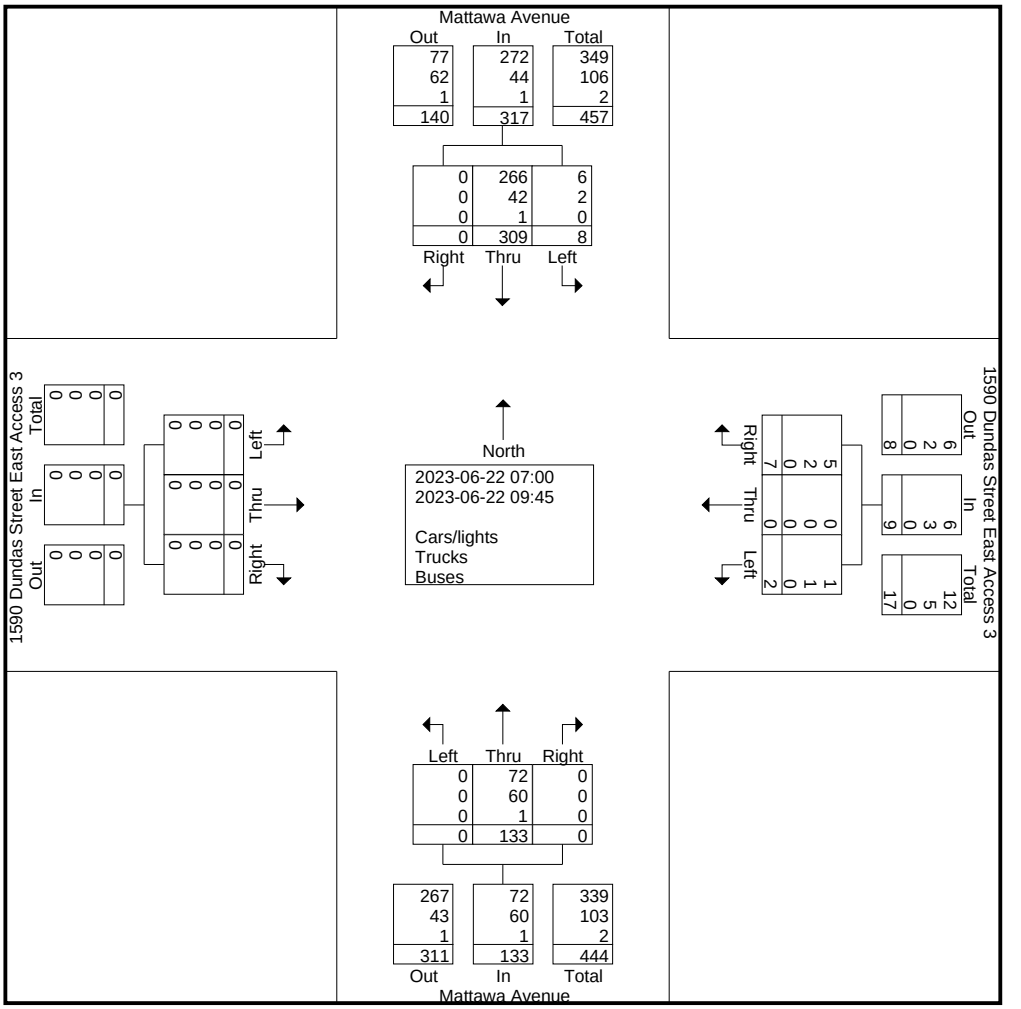
Groups Printed- Cars/lights - Trucks - Buses

	Mattawa Avenue Southbound					1590 Dundas Street East Access 3 Westbound					Mattawa Avenue Northbound					1590 Dundas Street East Access 3 Eastbound							
Start Time	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Exclu. Total	Inclu. Total	Int. Total
07:00	0	21	0	[0]	21	0	0	0	[0]	0	0	12	0	[0]	12	0	0	0	[0]	0	0	33	33
07:15	0	23	0	[0]	23	0	0	1	[0]	1	0	8	0	[0]	8	0	0	0	[0]	0	0	32	32
07:30	0	31	0	[0]	31	0	0	0	[0]	0	0	10	0	[0]	10	0	0	0	[0]	0	0	41	41
07:45	1	27	0	[0]	28	0	0	0	[0]	0	0	4	0	[0]	4	0	0	0	[1]	0	1	32	33
Total	1	102	0	[0]	103	0	0	1	[0]	1	0	34	0	[0]	34	0	0	0	[1]	0	1	138	139
08:00	1	26	0	[1]	27	1	0	2	[0]	3	0	14	0	[0]	14	0	0	0	[1]	0	2	44	46
08:15	0	21	0	[0]	21	0	0	0	[1]	0	0	7	0	[0]	7	0	0	0	[1]	0	2	28	30
08:30	0	41	0	[0]	41	0	0	0	[0]	0	0	16	0	[0]	16	0	0	0	[0]	0	0	57	57
08:45	0	19	0	[1]	19	0	0	0	[0]	0	0	10	0	[0]	10	0	0	0	[1]	0	2	29	31
Total	1	107	0	[2]	108	1	0	2	[1]	3	0	47	0	[0]	47	0	0	0	[3]	0	6	158	164
09:00	1	29	0	[1]	30	0	0	0	[0]	0	0	6	0	[0]	6	0	0	0	[0]	0	1	36	37
09:15	3	26	0	[2]	29	0	0	3	[2]	3	0	17	0	[0]	17	0	0	0	[0]	0	4	49	53
09:30	1	21	0	[0]	22	0	0	1	[1]	1	0	14	0	[0]	14	0	0	0	[0]	0	1	37	38
09:45	1	24	0	[1]	25	1	0	0	[0]	1	0	15	0	[0]	15	0	0	0	[1]	0	2	41	43
Total	6	100	0	[4]	106	1	0	4	[3]	5	0	52	0	[0]	52	0	0	0	[1]	0	8	163	171
Grand Total	8	309	0	[6]	317	2	0	7	[4]	9	0	133	0	[0]	133	0	0	0	[5]	0	15	459	474
Apprch %	2.5	97.5	0			22.2	0	77.8			0	100	0			0	0	0					
Total %	1.7	67.3	0		69.1	0.4	0	1.5		2	0	29	0		29	0	0	0		0	3.2	96.8	
Cars/lights	6	266	0		278	1	0	5		9	0	72	0		72	0	0	0		4	0	0	363
% Cars/lights	75	86.1	0	100	86.1	50	0	71.4	75	69.2	0	54.1	0	0	54.1	0	0	0	80	80	0	0	76.6
Trucks	2	42	0		44	1	0	2		4	0	60	0		60	0	0	0		1	0	0	109
% Trucks	25	13.6	0	0	13.6	50	0	28.6	25	30.8	0	45.1	0	0	45.1	0	0	0	20	20	0	0	23
Buses	0	1	0		1	0	0	0		0	0	1	0		1	0	0	0		0	0	0	2
% Buses	0	0.3	0	0	0.3	0	0	0	0	0	0	0.8	0	0	0.8	0	0	0	0	0	0	0	0.4

LEA Consulting Ltd.

625 Cochrane Drive, 5th Floor
Markham, ON L3R 9R9

File Name : Mattawa Ave & Site Access 3-AM
Site Code : 00021224
Start Date : 2023-06-22
Page No : 2

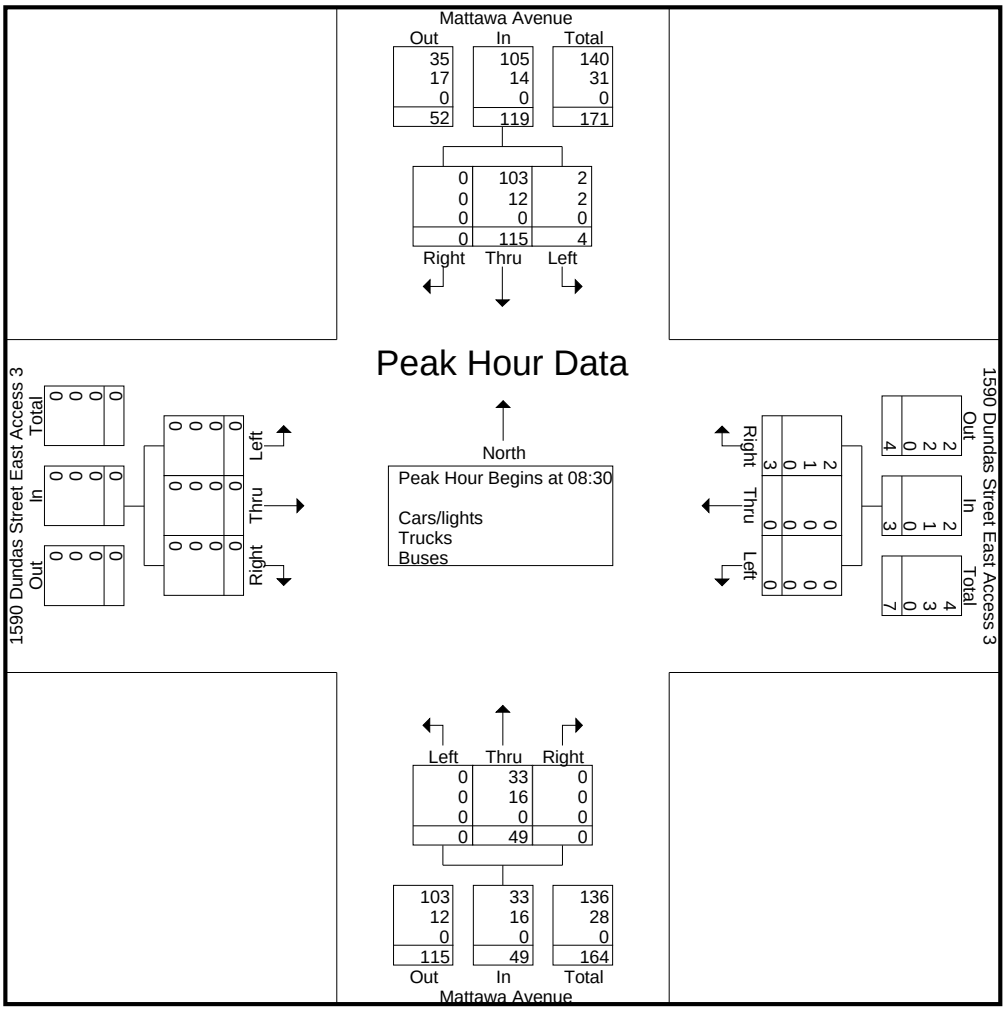


LEA Consulting Ltd.

625 Cochrane Drive, 5th Floor
Markham, ON L3R 9R9

File Name : Mattawa Ave & Site Access 3-AM
Site Code : 00021224
Start Date : 2023-06-22
Page No : 3

	Mattawa Avenue Southbound				1590 Dundas Street East Access 3 Westbound				Mattawa Avenue Northbound				1590 Dundas Street East Access 3 Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 07:00 to 09:45 - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 08:30																	
08:30	0	**41**	0	**41**	0	0	0	0	0	16	0	16	0	0	0	0	**57**
08:45	0	19	0	19	0	0	0	0	0	10	0	10	0	0	0	0	29
09:00	1	29	0	30	0	0	0	0	0	6	0	6	0	0	0	0	36
09:15	**3**	26	0	29	0	0	**3**	**3**	0	**17**	0	**17**	0	0	0	0	49
Total Volume	4	115	0	119	0	0	3	3	0	49	0	49	0	0	0	0	171
% App. Total	3.4	96.6	0		0	0	100		0	100	0		0	0	0		
PHF	.333	.701	.000	.726	.000	.000	.250	.250	.000	.721	.000	.721	.000	.000	.000	.000	.750
Cars/lights	2	103	0	105	0	0	2	2	0	33	0	33	0	0	0	0	140
% Cars/lights	50.0	89.6	0	88.2	0	0	66.7	66.7	0	67.3	0	67.3	0	0	0	0	81.9
Trucks	2	12	0	14	0	0	1	1	0	16	0	16	0	0	0	0	31
% Trucks	50.0	10.4	0	11.8	0	0	33.3	33.3	0	32.7	0	32.7	0	0	0	0	18.1
Buses	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
% Buses	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0



LEA Consulting Ltd.

625 Cochrane Drive, 5th Floor
Markham, ON L3R 9R9

Project No.: 21224
Intersection: Mattawa Ave & Site Access1
Weather: Clear
Surveyor(s): ID

File Name : Mattawa Ave & Site Access 3-PM
Site Code : 00021224
Start Date : 2023-06-22
Page No : 1

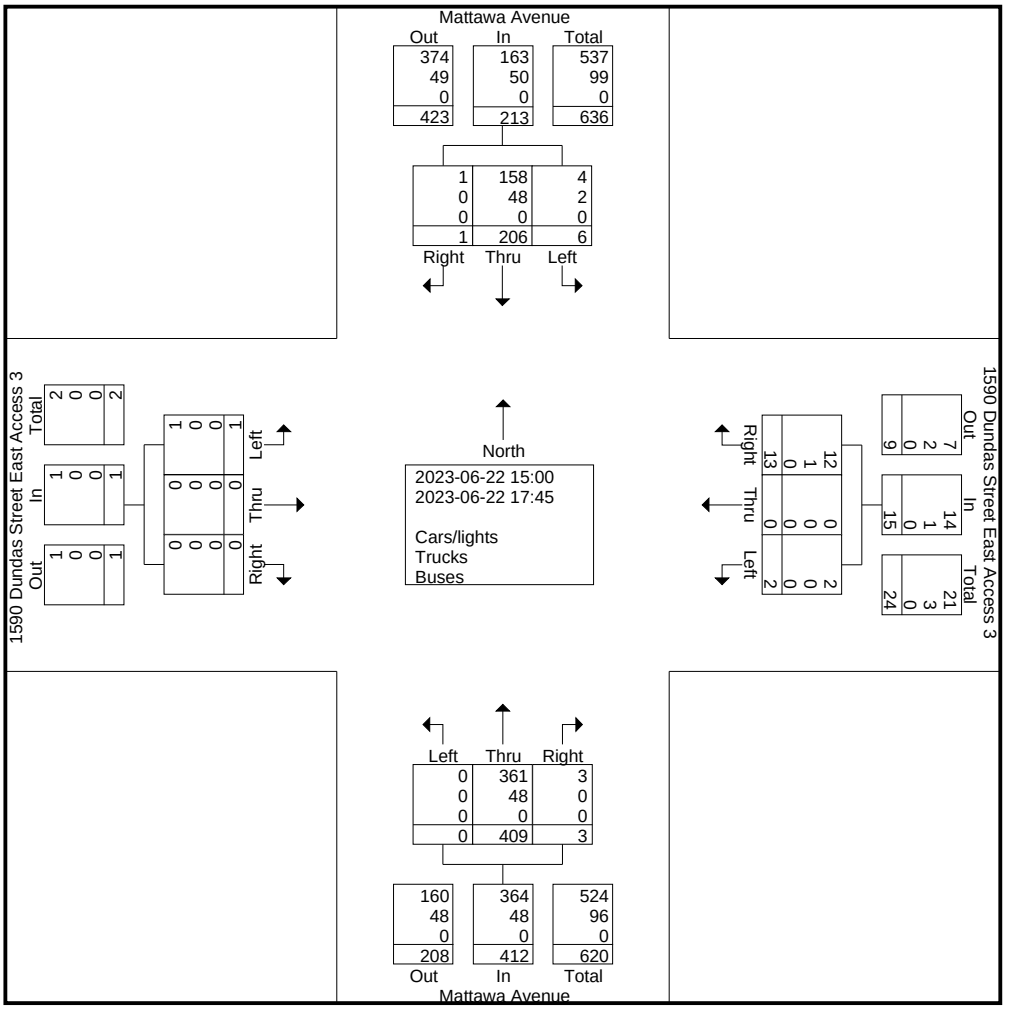
Groups Printed- Cars/lights - Trucks - Buses

	Mattawa Avenue Southbound					1590 Dundas Street East Access 3 Westbound					Mattawa Avenue Northbound					1590 Dundas Street East Access 3 Eastbound							
Start Time	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Exclu. Total	Inclu. Total	Int. Total
15:00	0	25	0	[0]	25	0	0	3	[2]	3	0	25	0	[0]	25	0	0	0	[2]	0	4	53	57
15:15	0	22	0	[2]	22	0	0	0	[1]	0	0	25	0	[0]	25	0	0	0	[1]	0	4	47	51
15:30	0	17	0	[0]	17	0	0	0	[0]	0	0	43	0	[0]	43	0	0	0	[0]	0	0	60	60
15:45	1	18	1	[0]	20	0	0	2	[0]	2	0	24	0	[0]	24	1	0	0	[0]	1	0	47	47
Total	1	82	1	[2]	84	0	0	5	[3]	5	0	117	0	[0]	117	1	0	0	[3]	1	8	207	215
16:00	0	23	0	[2]	23	0	0	1	[1]	1	0	42	0	[2]	42	0	0	0	[1]	0	6	66	72
16:15	0	18	0	[1]	18	0	0	0	[0]	0	0	36	0	[0]	36	0	0	0	[0]	0	1	54	55
16:30	1	19	0	[2]	20	0	0	1	[1]	1	0	40	0	[0]	40	0	0	0	[1]	0	4	61	65
16:45	0	11	0	[5]	11	2	0	0	[2]	2	0	40	1	[0]	41	0	0	0	[3]	0	10	54	64
Total	1	71	0	[10]	72	2	0	2	[4]	4	0	158	1	[2]	159	0	0	0	[5]	0	21	235	256
17:00	1	17	0	[2]	18	0	0	0	[1]	0	0	42	0	[0]	42	0	0	0	[0]	0	3	60	63
17:15	0	12	0	[3]	12	0	0	0	[2]	0	0	36	2	[0]	38	0	0	0	[3]	0	8	50	58
17:30	2	12	0	[2]	14	0	0	2	[1]	2	0	36	0	[1]	36	0	0	0	[2]	0	6	52	58
17:45	1	12	0	[5]	13	0	0	4	[1]	4	0	20	0	[1]	20	0	0	0	[4]	0	11	37	48
Total	4	53	0	[12]	57	0	0	6	[5]	6	0	134	2	[2]	136	0	0	0	[9]	0	28	199	227
Grand Total	6	206	1	[24]	213	2	0	13	[12]	15	0	409	3	[4]	412	1	0	0	[17]	1	57	641	698
Apprch %	2.8	96.7	0.5			13.3	0	86.7			0	99.3	0.7			100	0	0					
Total %	0.9	32.1	0.2		33.2	0.3	0	2		2.3	0	63.8	0.5		64.3	0.2	0	0		0.2	8.2	91.8	
Cars/lights	4	158	1		186	2	0	12		26	0	361	3		364	1	0	0		18	0	0	594
% Cars/lights	66.7	76.7	100	95.8	78.5	100	0	92.3	100	96.3	0	88.3	100	0	87.5	100	0	0	100	100	0	0	85.1
Trucks	2	48	0		51	0	0	1		1	0	48	0		52	0	0	0		0	0	0	104
% Trucks	33.3	23.3	0	4.2	21.5	0	0	7.7	0	3.7	0	11.7	0	100	12.5	0	0	0	0	0	0	0	14.9
Buses	0	0	0		0	0	0	0		0	0	0	0		0	0	0	0		0	0	0	0
% Buses	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

LEA Consulting Ltd.

625 Cochrane Drive, 5th Floor
Markham, ON L3R 9R9

File Name : Mattawa Ave & Site Access 3-PM
Site Code : 00021224
Start Date : 2023-06-22
Page No : 2

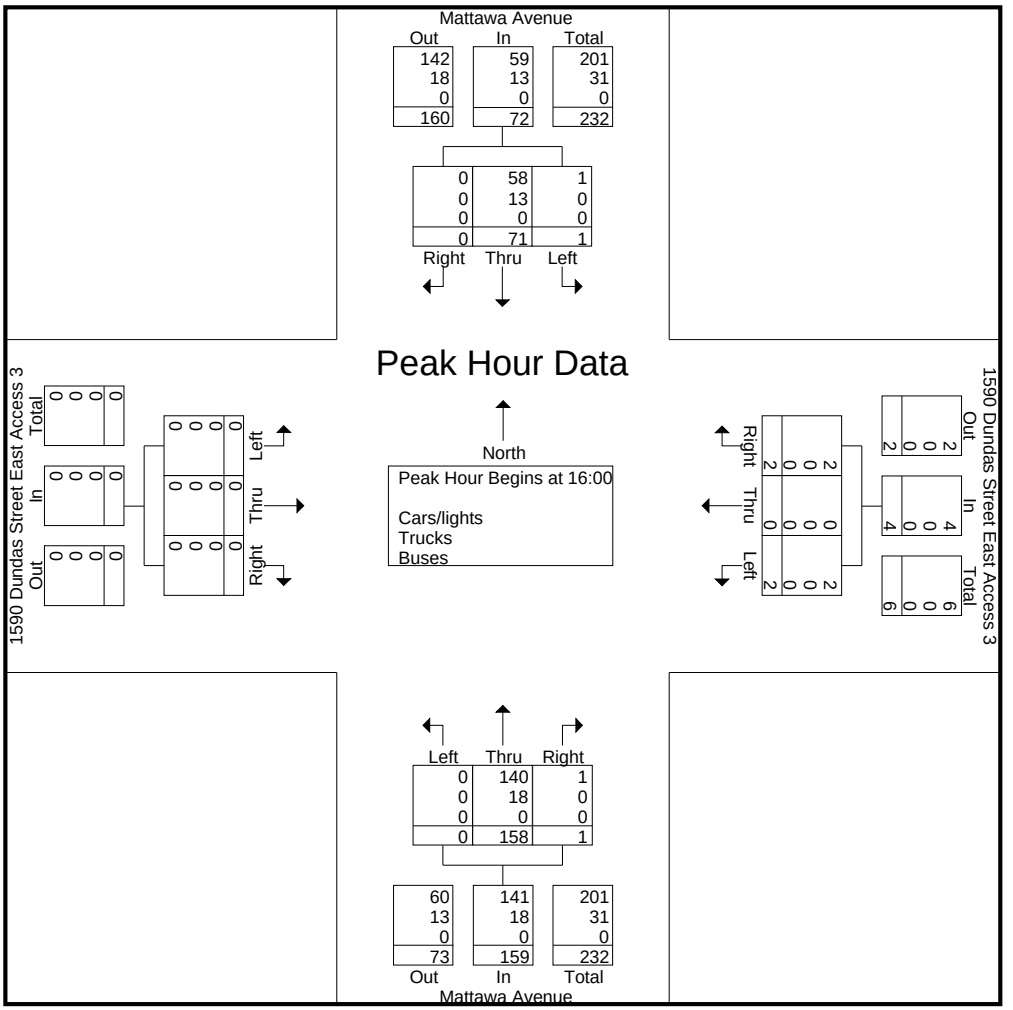


LEA Consulting Ltd.

625 Cochrane Drive, 5th Floor
Markham, ON L3R 9R9

File Name : Mattawa Ave & Site Access 3-PM
Site Code : 00021224
Start Date : 2023-06-22
Page No : 3

	Mattawa Avenue Southbound				1590 Dundas Street East Access 3 Westbound				Mattawa Avenue Northbound				1590 Dundas Street East Access 3 Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 15:00 to 17:45 - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 16:00																	
16:00	0	**23**	0	**23**	0	0	**1**	1	0	**42**	0	**42**	0	0	0	0	**66**
16:15	0	18	0	18	0	0	0	0	0	36	0	36	0	0	0	0	54
16:30	**1**	19	0	20	0	0	1	1	0	40	0	40	0	0	0	0	61
16:45	0	11	0	11	**2**	0	0	**2**	0	40	**1**	41	0	0	0	0	54
Total Volume	1	71	0	72	2	0	2	4	0	158	1	159	0	0	0	0	235
% App. Total	1.4	98.6	0		50	0	50		0	99.4	0.6		0	0	0		
PHF	.250	.772	.000	.783	.250	.000	.500	.500	.000	.940	.250	.946	.000	.000	.000	.000	.890
Cars/lights	1	58	0	59	2	0	2	4	0	140	1	141	0	0	0	0	204
% Cars/lights	100	81.7	0	81.9	100	0	100	100	0	88.6	100	88.7	0	0	0	0	86.8
Trucks	0	13	0	13	0	0	0	0	0	18	0	18	0	0	0	0	31
% Trucks	0	18.3	0	18.1	0	0	0	0	0	11.4	0	11.3	0	0	0	0	13.2
Buses	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
% Buses	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0



LEA Consulting Ltd.

625 Cochrane Drive, 5th Floor
Markham, ON L3R 9R9

Project No.: 21224
Intersection: Mattawa Ave & Site Access
Weather: Clear
Surveyor(s): ML

File Name : Mattawa Ave & Site Access 4-AM
Site Code : 21224022
Start Date : 2023-06-22
Page No : 1

Groups Printed- Cars/Lights - Trucks - Buses

	Mattawa Avenue Southbound					1650 Dundas Street East Access 4 Westbound					Mattawa Avenue Northbound					1590 Dundas Street East Access 4 Eastbound							
Start Time	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Exclu. Total	Inclu. Total	Int. Total
07:00	0	20	0	[0]	20	0	0	0	[0]	0	0	11	0	[0]	11	0	0	0	[0]	0	0	31	31
07:15	0	24	0	[0]	24	0	0	0	[0]	0	0	8	0	[0]	8	0	0	0	[0]	0	0	32	32
07:30	0	34	0	[0]	34	0	0	0	[0]	0	0	10	0	[0]	10	0	0	0	[0]	0	0	44	44
07:45	0	28	0	[0]	28	0	0	0	[0]	0	0	4	0	[0]	4	0	0	0	[0]	0	0	32	32
Total	0	106	0	[0]	106	0	0	0	[0]	0	0	33	0	[0]	33	0	0	0	[0]	0	0	139	139
08:00	0	27	0	[1]	27	0	0	1	[0]	1	0	13	0	[0]	13	0	0	0	[0]	0	1	41	42
08:15	0	21	0	[0]	21	0	0	1	[1]	1	0	6	1	[0]	7	0	0	0	[0]	0	1	29	30
08:30	0	38	0	[0]	38	0	0	1	[0]	1	0	13	0	[0]	13	0	0	0	[0]	0	0	52	52
08:45	0	18	0	[0]	18	0	0	0	[0]	0	0	9	0	[0]	9	0	0	0	[0]	0	0	27	27
Total	0	104	0	[1]	104	0	0	3	[1]	3	0	41	1	[0]	42	0	0	0	[0]	0	2	149	151
09:00	1	28	0	[0]	29	0	0	0	[1]	0	0	5	0	[0]	5	0	0	0	[0]	0	1	34	35
09:15	1	25	0	[0]	26	0	0	0	[2]	0	0	15	1	[0]	16	0	0	0	[0]	0	2	42	44
09:30	0	21	0	[0]	21	0	0	0	[0]	0	0	14	0	[0]	14	0	0	0	[0]	0	0	35	35
09:45	0	25	0	[0]	25	0	0	0	[0]	0	0	17	0	[0]	17	0	0	0	[0]	0	0	42	42
Total	2	99	0	[0]	101	0	0	0	[3]	0	0	51	1	[0]	52	0	0	0	[0]	0	3	153	156
Grand Total	2	309	0	[1]	311	0	0	3	[4]	3	0	125	2	[0]	127	0	0	0	[0]	0	5	441	446
Apprch %	0.6	99.4	0			0	0	100			0	98.4	1.6			0	0	0				
Total %	0.5	70.1	0		70.5	0	0	0.7		0.7	0	28.3	0.5		28.8	0	0	0		0	1.1	98.9	
Cars/Lights	2	286	0		288	0	0	3		7	0	79	2		81	0	0	0		0	0	0	376
% Cars/Lights	100	92.6	0	0	92.3	0	0	100	100	100	0	63.2	100	0	63.8	0	0	0	0	0	0	0	84.3
Trucks	0	23	0		24	0	0	0		0	0	46	0		46	0	0	0		0	0	0	70
% Trucks	0	7.4	0	100	7.7	0	0	0	0	0	0	36.8	0	0	36.2	0	0	0	0	0	0	0	15.7
Buses	0	0	0		0	0	0	0		0	0	0	0		0	0	0	0		0	0	0	0
% Buses	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

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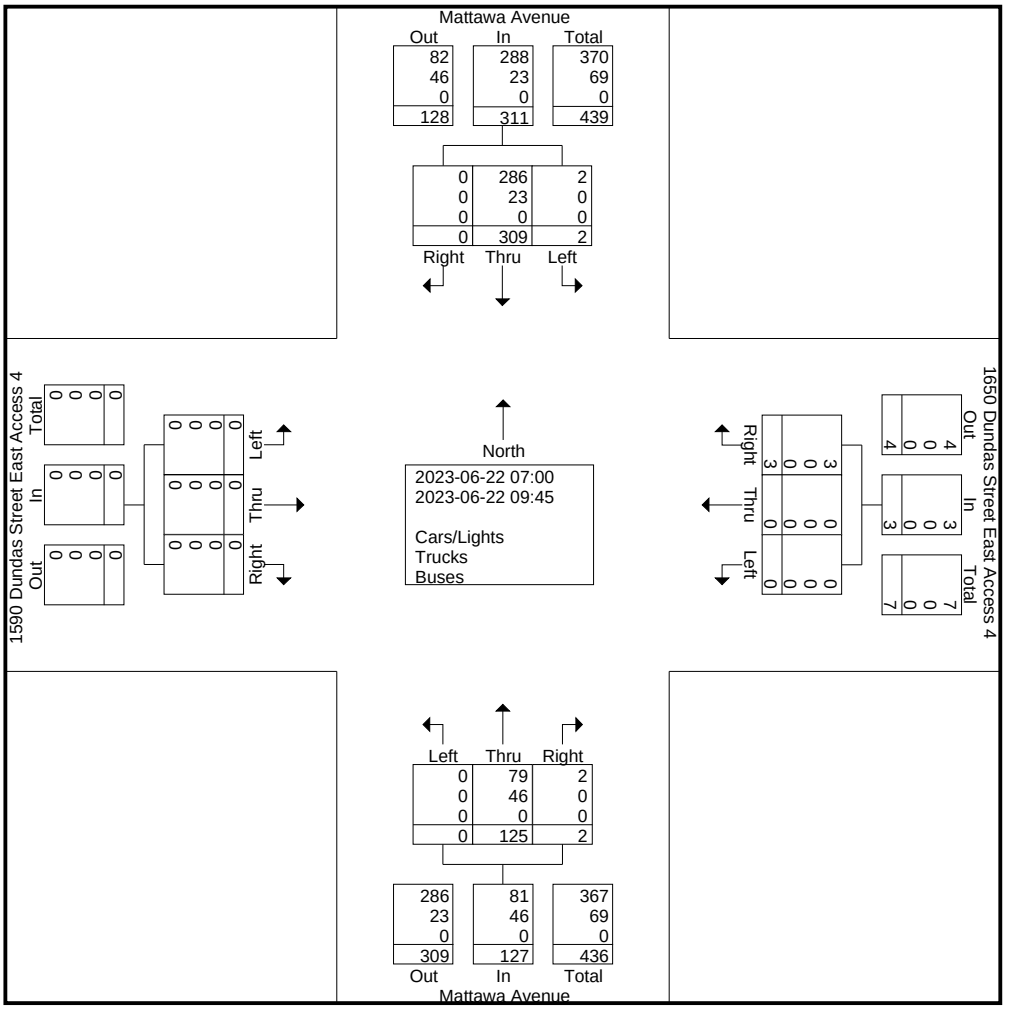
625 Cochrane Drive, 5th Floor
Markham, ON L3R 9R9

File Name : Mattawa Ave & Site Access 4-AM
Site Code : 21224022
Start Date : 2023-06-22
Page No : 2



LEA Consulting Ltd.

625 Cochrane Drive, 5th Floor
Markham, ON L3R 9R9

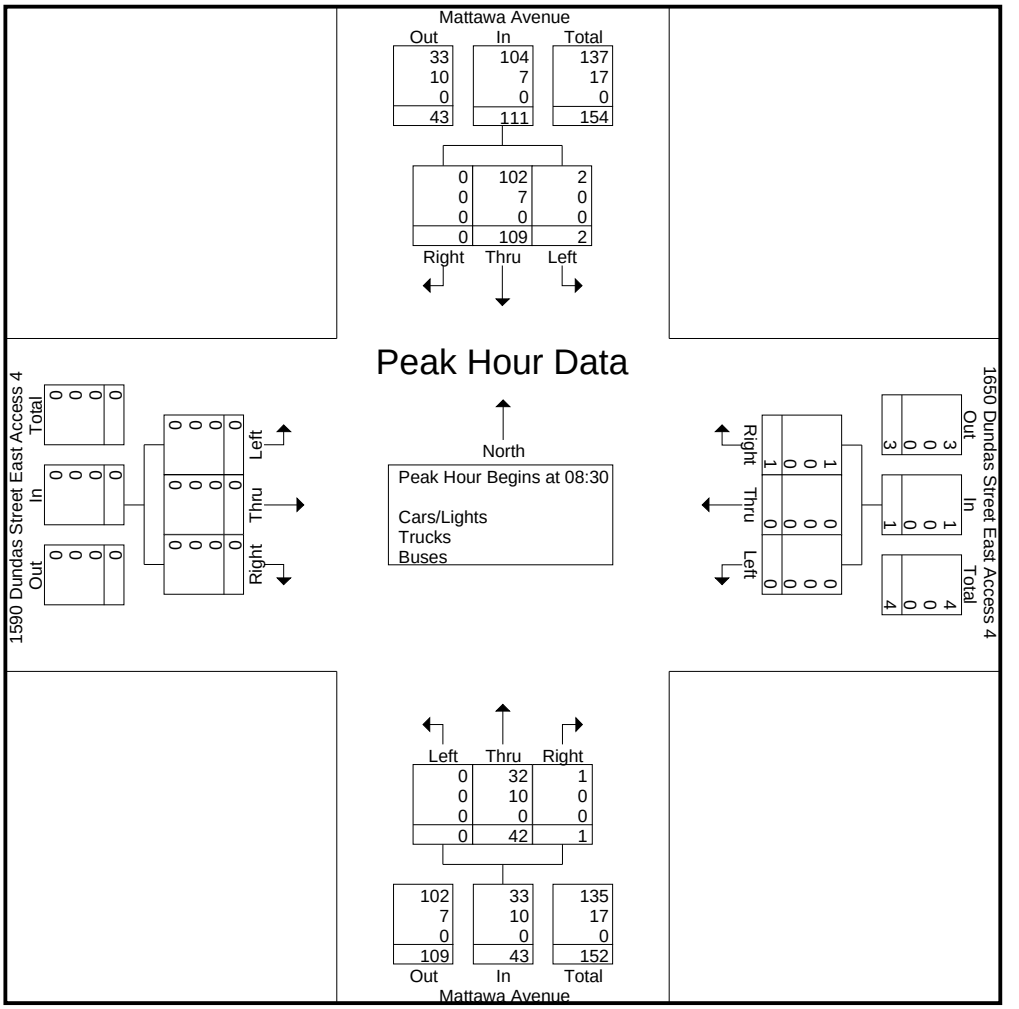
File Name : Mattawa Ave & Site Access 4-AM
Site Code : 21224022
Start Date : 2023-06-22

	Mattawa Avenue Southbound				1650 Dundas Street East Access 4 Westbound				Mattawa Avenue Northbound				1590 Dundas Street East Access 4 Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 07:00 to 09:45 - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 08:30																	
08:30	0	**38**	0	**38**	0	0	**1**	**1**	0	13	0	13	0	0	0	0	**52**
08:45	0	18	0	18	0	0	0	0	0	9	0	9	0	0	0	0	27
09:00	**1**	28	0	29	0	0	0	0	0	5	0	5	0	0	0	0	34
09:15	1	25	0	26	0	0	0	0	0	**15**	**1**	**16**	0	0	0	0	42
Total Volume	2	109	0	111	0	0	1	1	0	42	1	43	0	0	0	0	155
% App. Total	1.8	98.2	0		0	0	100		0	97.7	2.3		0	0	0		
PHF	.500	.717	.000	.730	.000	.000	.250	.250	.000	.700	.250	.672	.000	.000	.000	.000	.745
Cars/Lights	2	102	0	104	0	0	1	1	0	32	1	33	0	0	0	0	138
% Cars/Lights	100	93.6	0	93.7	0	0	100	100	0	76.2	100	76.7	0	0	0	0	89.0
Trucks	0	7	0	7	0	0	0	0	0	10	0	10	0	0	0	0	17
% Trucks	0	6.4	0	6.3	0	0	0	0	0	23.8	0	23.3	0	0	0	0	11.0
Buses	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
% Buses	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

LEA Consulting Ltd.

625 Cochrane Drive, 5th Floor
Markham, ON L3R 9R9

File Name : Mattawa Ave & Site Access 4-AM
Site Code : 21224022
Start Date : 2023-06-22
Page No : 4



LEA Consulting Ltd.

625 Cochrane Drive, 5th Floor
Markham, ON L3R 9R9

Project No.: 21224
Intersection: Mattawa Ave & Site Access
Weather: Clear
Surveyor(s): ML

File Name : Mattawa Ave & Site Access 4-PM
Site Code : 21224022
Start Date : 2023-06-22
Page No : 1

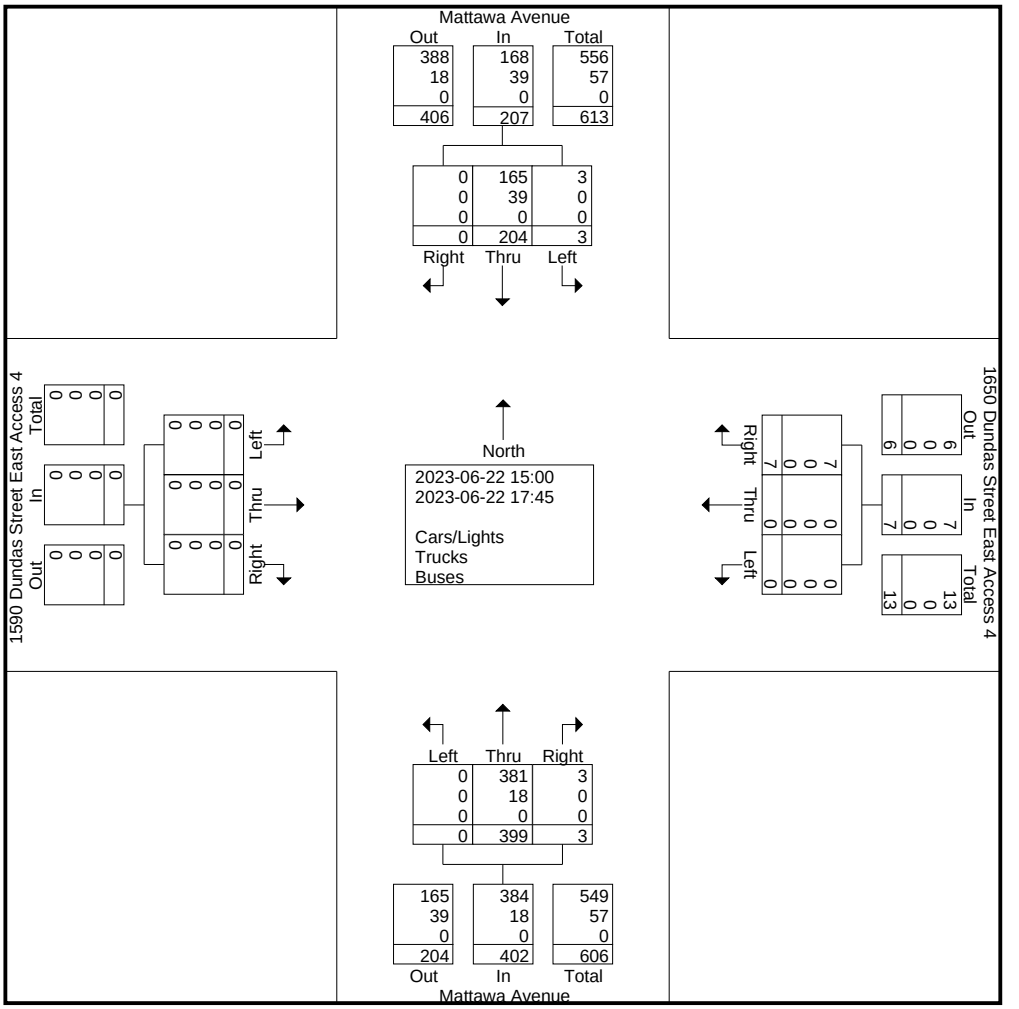
Groups Printed- Cars/Lights - Trucks - Buses

	Mattawa Avenue Southbound					1650 Dundas Street East Access 4 Westbound					Mattawa Avenue Northbound					1590 Dundas Street East Access 4 Eastbound							
Start Time	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Exclu. Total	Inclu. Total	Int. Total
15:00	0	24	0	[0]	24	0	0	0	[0]	0	0	25	0	[0]	25	0	0	0	[0]	0	0	49	49
15:15	0	23	0	[0]	23	0	0	0	[1]	0	0	25	0	[0]	25	0	0	0	[0]	0	1	48	49
15:30	1	17	0	[0]	18	0	0	2	[0]	2	0	42	0	[0]	42	0	0	0	[0]	0	0	62	62
15:45	0	18	0	[0]	18	0	0	0	[0]	0	0	23	1	[1]	24	0	0	0	[0]	0	1	42	43
Total	1	82	0	[0]	83	0	0	2	[1]	2	0	115	1	[1]	116	0	0	0	[0]	0	2	201	203
16:00	1	22	0	[0]	23	0	0	0	[1]	0	0	42	0	[2]	42	0	0	0	[0]	0	3	65	68
16:15	0	18	0	[0]	18	0	0	0	[0]	0	0	36	0	[0]	36	0	0	0	[0]	0	0	54	54
16:30	1	18	0	[0]	19	0	0	1	[0]	1	0	39	0	[0]	39	0	0	0	[0]	0	0	59	59
16:45	0	13	0	[0]	13	0	0	0	[0]	0	0	36	0	[0]	36	0	0	0	[0]	0	0	49	49
Total	2	71	0	[0]	73	0	0	1	[1]	1	0	153	0	[2]	153	0	0	0	[0]	0	3	227	230
17:00	0	17	0	[0]	17	0	0	3	[1]	3	0	38	0	[0]	38	0	0	0	[0]	0	1	58	59
17:15	0	10	0	[0]	10	0	0	1	[2]	1	0	36	2	[0]	38	0	0	0	[0]	0	2	49	51
17:30	0	13	0	[0]	13	0	0	0	[0]	0	0	36	0	[1]	36	0	0	0	[0]	0	1	49	50
17:45	0	11	0	[1]	11	0	0	0	[0]	0	0	21	0	[2]	21	0	0	0	[0]	0	3	32	35
Total	0	51	0	[1]	51	0	0	4	[3]	4	0	131	2	[3]	133	0	0	0	[0]	0	7	188	195
Grand Total	3	204	0	[1]	207	0	0	7	[5]	7	0	399	3	[6]	402	0	0	0	[0]	0	12	616	628
Apprch %	1.4	98.6	0			0	0	100			0	99.3	0.7			0	0	0					
Total %	0.5	33.1	0		33.6	0	0	1.1		1.1	0	64.8	0.5		65.3	0	0	0		0	1.9	98.1	
Cars/Lights	3	165	0		169	0	0	7		12	0	381	3		385	0	0	0		0	0	0	566
% Cars/Lights	100	80.9	0	100	81.2	0	0	100	100	100	0	95.5	100	16.7	94.4	0	0	0	0	0	0	0	90.1
Trucks	0	39	0		39	0	0	0		0	0	18	0		23	0	0	0		0	0	0	62
% Trucks	0	19.1	0	0	18.8	0	0	0	0	0	0	4.5	0	83.3	5.6	0	0	0	0	0	0	0	9.9
Buses	0	0	0		0	0	0	0		0	0	0	0		0	0	0	0		0	0	0	0
% Buses	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

LEA Consulting Ltd.

625 Cochrane Drive, 5th Floor
Markham, ON L3R 9R9

File Name : Mattawa Ave & Site Access 4-PM
Site Code : 21224022
Start Date : 2023-06-22
Page No : 2



LEA Consulting Ltd.

625 Cochrane Drive, 5th Floor
Markham, ON L3R 9R9

File Name : Mattawa Ave & Site Access 4-PM
Site Code : 21224022
Start Date : 2023-06-22

	Mattawa Avenue Southbound				1650 Dundas Street East Access 4 Westbound				Mattawa Avenue Northbound				1590 Dundas Street East Access 4 Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 15:00 to 17:45 - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 16:00																	
16:00	**1**	**22**	0	**23**	0	0	0	0	0	**42**	0	**42**	0	0	0	0	**65**
16:15	0	18	0	18	0	0	0	0	0	36	0	36	0	0	0	0	54
16:30	1	18	0	19	0	0	**1**	**1**	0	39	0	39	0	0	0	0	59
16:45	0	13	0	13	0	0	0	0	0	36	0	36	0	0	0	0	49
Total Volume	2	71	0	73	0	0	1	1	0	153	0	153	0	0	0	0	227
% App. Total	2.7	97.3	0		0	0	100		0	100	0		0	0	0		
PHF	.500	.807	.000	.793	.000	.000	.250	.250	.000	.911	.000	.911	.000	.000	.000	.000	.873
Cars/Lights	2	61	0	63	0	0	1	1	0	143	0	143	0	0	0	0	207
% Cars/Lights	100	85.9	0	86.3	0	0	100	100	0	93.5	0	93.5	0	0	0	0	91.2
Trucks	0	10	0	10	0	0	0	0	0	10	0	10	0	0	0	0	20
% Trucks	0	14.1	0	13.7	0	0	0	0	0	6.5	0	6.5	0	0	0	0	8.8
Buses	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
% Buses	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

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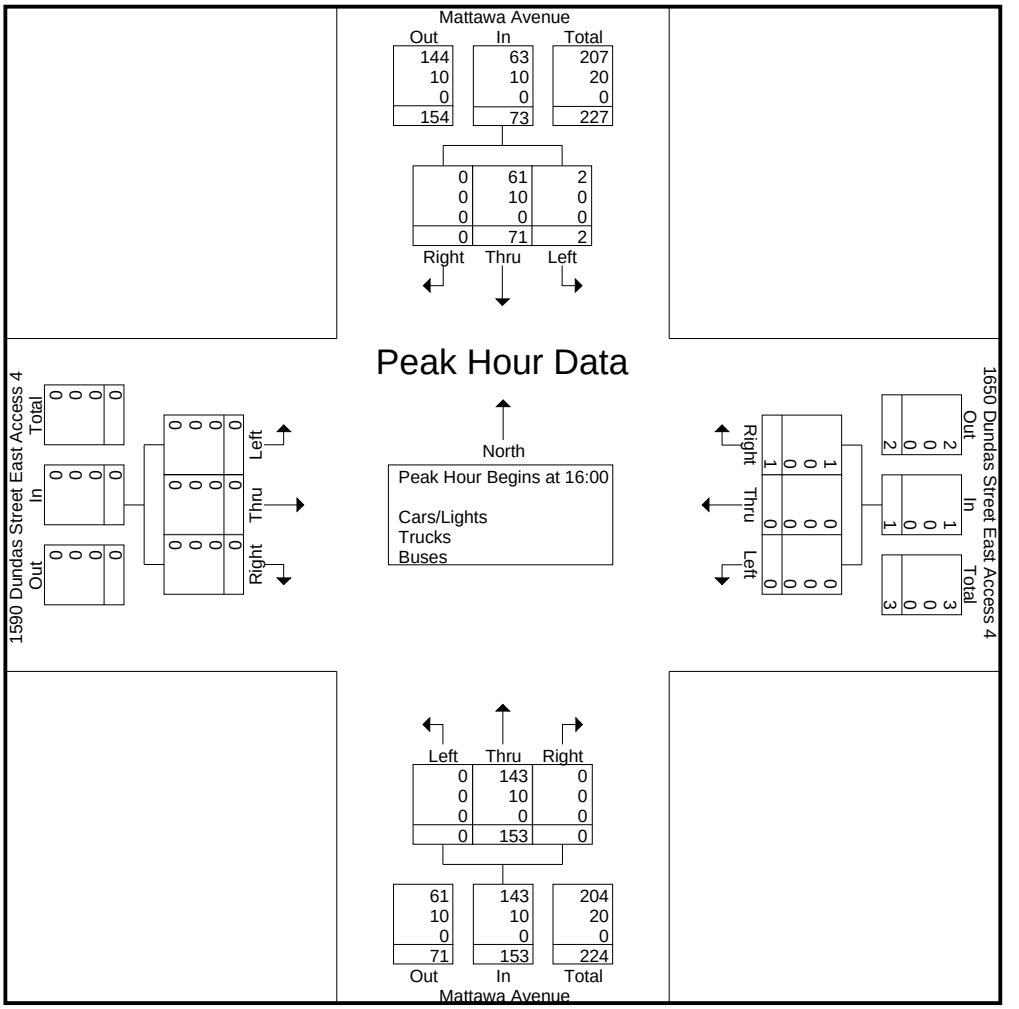
File Name : Mattawa Ave & Site Access 4-PM
Site Code : 21224022
Start Date : 2023-06-22
Page No : 4



LEA Consulting Ltd.

625 Cochrane Drive, 5th Floor
Markham, ON L3R 9R9

Project No.: 21224
Intersection: Mattawa Ave & Site Access5
Weather: Clear
Surveyor(s): MY

File Name : Mattawa Ave & Site Access 5-AM
Site Code : 21224022
Start Date : 2023-06-22
Page No : 1

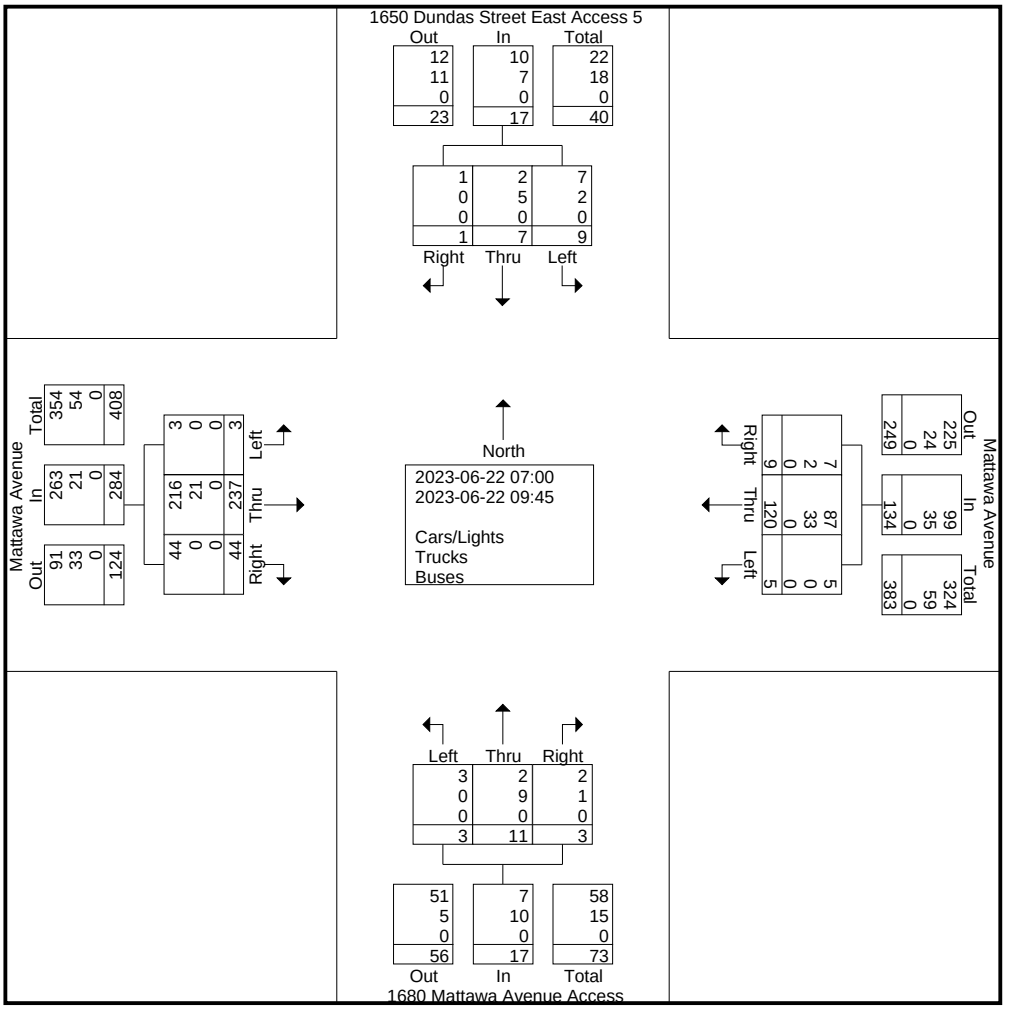
Groups Printed- Cars/Lights - Trucks - Buses

	1650 Dundas Street East Access 5 Southbound					Mattawa Avenue Westbound					1680 Mattawa Avenue Access Northbound					Mattawa Avenue Eastbound							
Start Time	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Exclu. Total	Inclu. Total	Int. Total
07:00	0	0	0	[0]	0	0	11	0	[0]	11	0	0	0	[0]	0	0	18	2	[0]	20	0	31	31
07:15	0	0	0	[0]	0	0	8	1	[0]	9	0	0	0	[0]	0	0	22	1	[0]	23	0	32	32
07:30	0	1	1	[0]	2	1	6	0	[0]	7	0	5	0	[0]	5	0	19	0	[0]	19	0	33	33
07:45	0	0	0	[0]	0	0	5	0	[0]	5	0	3	2	[0]	5	0	20	0	[0]	20	0	30	30
Total	0	1	1	[0]	2	1	30	1	[0]	32	0	8	2	[0]	10	0	79	3	[0]	82	0	126	126
08:00	1	0	0	[0]	1	0	12	0	[0]	12	0	0	0	[0]	0	0	22	4	[0]	26	0	39	39
08:15	0	0	0	[0]	0	0	7	0	[0]	7	0	0	0	[0]	0	0	18	4	[0]	22	0	29	29
08:30	1	0	0	[0]	1	0	13	1	[0]	14	1	1	0	[0]	2	0	32	6	[0]	38	0	55	55
08:45	1	1	0	[1]	2	0	9	1	[0]	10	0	0	0	[0]	0	1	10	7	[1]	18	2	30	32
Total	3	1	0	[1]	4	0	41	2	[0]	43	1	1	0	[0]	2	1	82	21	[1]	104	2	153	155
09:00	1	4	0	[0]	5	0	4	2	[0]	6	0	2	0	[0]	2	0	17	9	[0]	26	0	39	39
09:15	2	1	0	[0]	3	3	15	1	[0]	19	1	0	0	[0]	1	2	21	2	[1]	25	1	48	49
09:30	1	0	0	[0]	1	0	14	1	[0]	15	0	0	0	[0]	0	0	17	5	[0]	22	0	38	38
09:45	2	0	0	[0]	2	1	16	2	[0]	19	1	0	1	[0]	2	0	21	4	[0]	25	0	48	48
Total	6	5	0	[0]	11	4	49	6	[0]	59	2	2	1	[0]	5	2	76	20	[1]	98	1	173	174
Grand Total	9	7	1	[1]	17	5	120	9	[0]	134	3	11	3	[0]	17	3	237	44	[2]	284	3	452	455
Apprch %	52.9	41.2	5.9			3.7	89.6	6.7			17.6	64.7	17.6			1.1	83.5	15.5					
Total %	2	1.5	0.2		3.8	1.1	26.5	2		29.6	0.7	2.4	0.7		3.8	0.7	52.4	9.7		62.8	0.7	99.3	
Cars/Lights	7	2	1		11	5	87	7		99	3	2	2		7	3	216	44		265	0	0	382
% Cars/Lights	77.8	28.6	100	100	61.1	100	72.5	77.8	0	73.9	100	18.2	66.7	0	41.2	100	91.1	100	100	92.7	0	0	84
Trucks	2	5	0		7	0	33	2		35	0	9	1		10	0	21	0		21	0	0	73
% Trucks	22.2	71.4	0	0	38.9	0	27.5	22.2	0	26.1	0	81.8	33.3	0	58.8	0	8.9	0	0	7.3	0	0	16
Buses	0	0	0		0	0	0	0		0	0	0	0		0	0	0	0		0	0	0	0
% Buses	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

LEA Consulting Ltd.

625 Cochrane Drive, 5th Floor
Markham, ON L3R 9R9

File Name : Mattawa Ave & Site Access 5-AM
Site Code : 21224022
Start Date : 2023-06-22
Page No : 2



LEA Consulting Ltd.

625 Cochrane Drive, 5th Floor
Markham, ON L3R 9R9

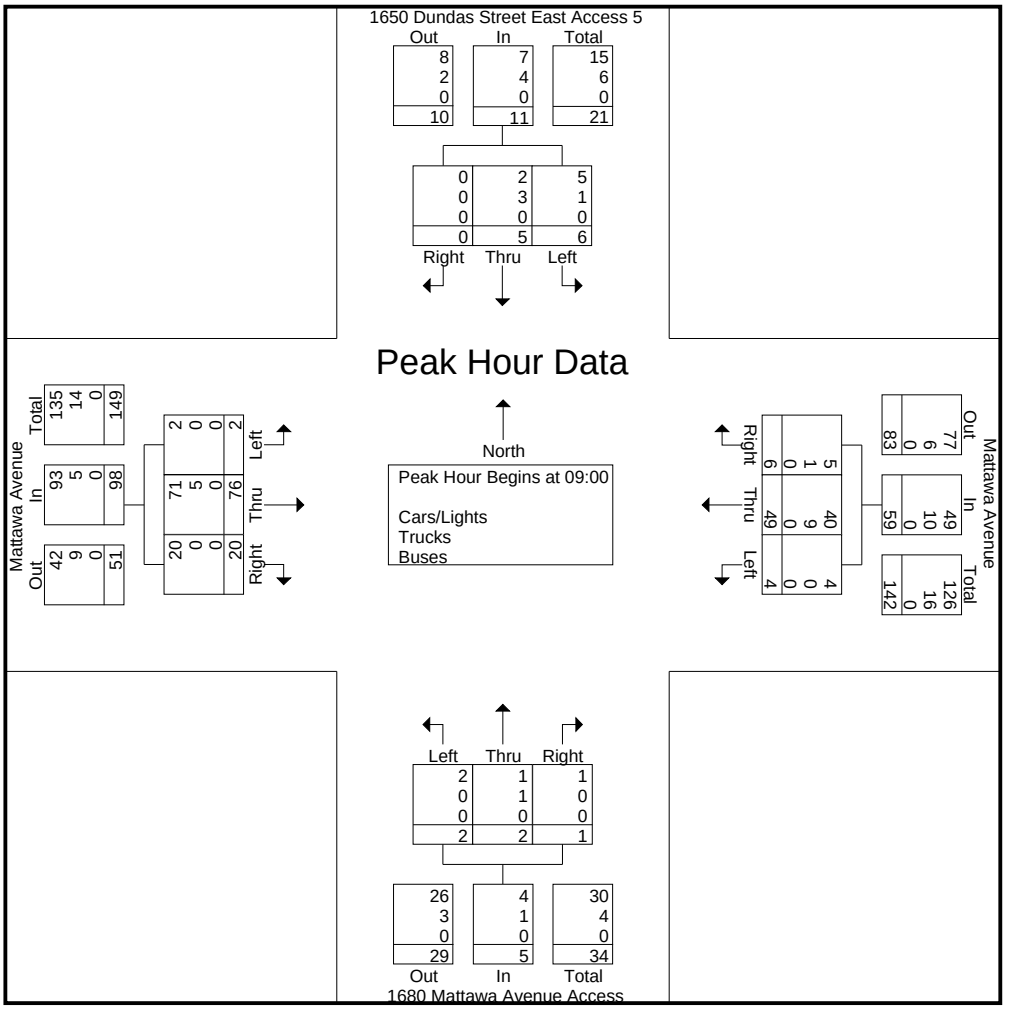
File Name : Mattawa Ave & Site Access 5-AM
Site Code : 21224022
Start Date : 2023-06-22
Page No : 3

	1650 Dundas Street East Access 5 Southbound				Mattawa Avenue Westbound				1680 Mattawa Avenue Access Northbound				Mattawa Avenue Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 07:00 to 09:45 - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 09:00																	
09:00	1	**4**	0	**5**	0	4	**2**	6	0	**2**	0	**2**	0	17	**9**	**26**	39
09:15	**2**	1	0	3	**3**	15	1	**19**	**1**	0	0	1	**2**	**21**	2	25	**48**
09:30	1	0	0	1	0	14	1	15	0	0	0	0	0	17	5	22	38
09:45	2	0	0	2	1	**16**	2	19	1	0	**1**	2	0	21	4	25	48
Total Volume	6	5	0	11	4	49	6	59	2	2	1	5	2	76	20	98	173
% App. Total	54.5	45.5	0		6.8	83.1	10.2		40	40	20		2	77.6	20.4		
PHF	.750	.313	.000	.550	.333	.766	.750	.776	.500	.250	.250	.625	.250	.905	.556	.942	.901
Cars/Lights	5	2	0	7	4	40	5	49	2	1	1	4	2	71	20	93	153
% Cars/Lights	83.3	40.0	0	63.6	100	81.6	83.3	83.1	100	50.0	100	80.0	100	93.4	100	94.9	88.4
Trucks	1	3	0	4	0	9	1	10	0	1	0	1	0	5	0	5	20
% Trucks	16.7	60.0	0	36.4	0	18.4	16.7	16.9	0	50.0	0	20.0	0	6.6	0	5.1	11.6
Buses	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
% Buses	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

LEA Consulting Ltd.

625 Cochrane Drive, 5th Floor
Markham, ON L3R 9R9

File Name : Mattawa Ave & Site Access 5-AM
Site Code : 21224022
Start Date : 2023-06-22
Page No : 4



LEA Consulting Ltd.

625 Cochrane Drive, 5th Floor
Markham, ON L3R 9R9

Project No.: 21224
Intersection: Mattawa Ave & Site Access5
Weather: Clear
Surveyor(s): MY

File Name : Site Access 5 & Mattawa Ave-PM
Site Code : 21224022
Start Date : 2023-06-22
Page No : 1

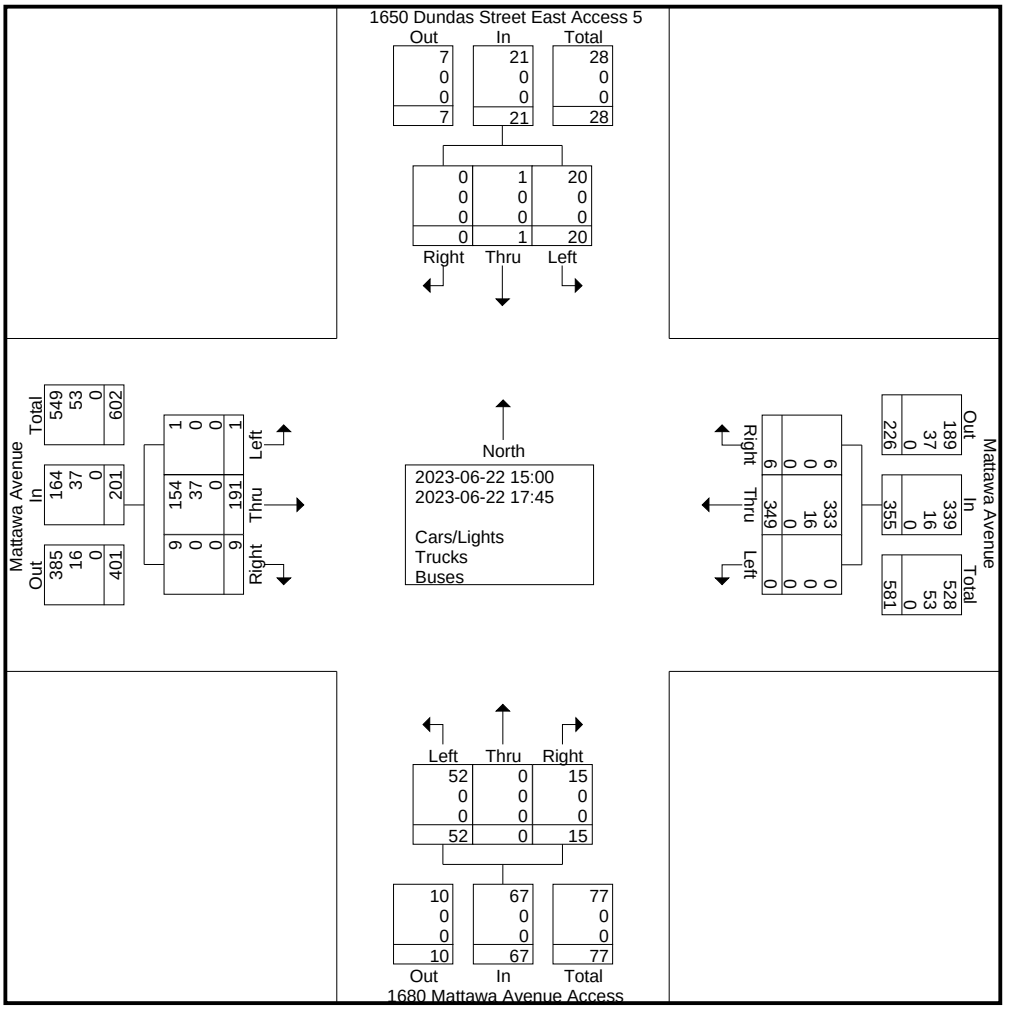
Groups Printed- Cars/Lights - Trucks - Buses

	1650 Dundas Street East Access 5 Southbound					Mattawa Avenue Westbound					1680 Mattawa Avenue Access Northbound					Mattawa Avenue Eastbound							
Start Time	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Exclu. Total	Inclu. Total	Int. Total
15:00	1	0	0	[0]	1	0	23	0	[0]	23	2	0	2	[0]	4	0	23	1	[0]	24	0	52	52
15:15	0	0	0	[0]	0	0	25	1	[0]	26	1	0	1	[0]	2	0	21	2	[0]	23	0	51	51
15:30	1	0	0	[0]	1	0	34	2	[0]	36	3	0	1	[0]	4	0	17	0	[1]	17	1	58	59
15:45	2	1	0	[0]	3	0	24	0	[0]	24	1	0	0	[0]	1	0	15	2	[0]	17	0	45	45
Total	4	1	0	[0]	5	0	106	3	[0]	109	7	0	4	[0]	11	0	76	5	[1]	81	1	206	207
16:00	1	0	0	[0]	1	0	38	0	[1]	38	4	0	2	[3]	6	0	22	1	[0]	23	4	68	72
16:15	4	0	0	[0]	4	0	35	0	[0]	35	2	0	0	[0]	2	0	17	1	[1]	18	1	59	60
16:30	1	0	0	[0]	1	0	28	0	[0]	28	11	0	3	[0]	14	1	16	1	[1]	18	1	61	62
16:45	3	0	0	[0]	3	0	30	1	[1]	31	6	0	1	[3]	7	0	13	0	[1]	13	5	54	59
Total	9	0	0	[0]	9	0	131	1	[2]	132	23	0	6	[6]	29	1	68	3	[3]	72	11	242	253
17:00	1	0	0	[0]	1	0	31	0	[0]	31	7	0	1	[3]	8	0	13	1	[1]	14	4	54	58
17:15	5	0	0	[3]	5	0	35	1	[1]	36	4	0	2	[0]	6	0	11	0	[0]	11	4	58	62
17:30	0	0	0	[2]	0	0	27	0	[1]	27	10	0	2	[0]	12	0	13	0	[0]	13	3	52	55
17:45	1	0	0	[2]	1	0	19	1	[1]	20	1	0	0	[0]	1	0	10	0	[0]	10	3	32	35
Total	7	0	0	[7]	7	0	112	2	[3]	114	22	0	5	[3]	27	0	47	1	[1]	48	14	196	210
Grand Total	20	1	0	[7]	21	0	349	6	[5]	355	52	0	15	[9]	67	1	191	9	[5]	201	26	644	670
Apprch %	95.2	4.8	0			0	98.3	1.7			77.6	0	22.4			0.5	95	4.5					
Total %	3.1	0.2	0		3.3	0	54.2	0.9		55.1	8.1	0	2.3		10.4	0.2	29.7	1.4		31.2	3.9	96.1	
Cars/Lights	20	1	0		28	0	333	6		341	52	0	15		74	1	154	9		168	0	0	611
% Cars/Lights	100	100	0	100	100	0	95.4	100	40	94.7	100	0	100	77.8	97.4	100	80.6	100	80	81.6	0	0	91.2
Trucks	0	0	0		0	0	16	0		19	0	0	0		2	0	37	0		38	0	0	59
% Trucks	0	0	0	0	0	0	4.6	0	60	5.3	0	0	0	22.2	2.6	0	19.4	0	20	18.4	0	0	8.8
Buses	0	0	0		0	0	0	0		0	0	0	0		0	0	0	0		0	0	0	0
% Buses	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

LEA Consulting Ltd.

625 Cochrane Drive, 5th Floor
Markham, ON L3R 9R9

File Name : Site Access 5 & Mattawa Ave-PM
Site Code : 21224022
Start Date : 2023-06-22
Page No : 2



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625 Cochrane Drive, 5th Floor
Markham, ON L3R 9R9

File Name : Site Access 5 & Mattawa Ave-PM
Site Code : 21224022
Start Date : 2023-06-22
Page No : 3

	1650 Dundas Street East Access 5 Southbound				Mattawa Avenue Westbound				1680 Mattawa Avenue Access Northbound				Mattawa Avenue Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 15:00 to 17:45 - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 16:00																	
16:00	1	0	0	1	0	**38**	0	**38**	4	0	2	6	0	**22**	**1**	**23**	**68**
16:15	**4**	0	0	**4**	0	35	0	35	2	0	0	2	0	17	1	18	59
16:30	1	0	0	1	0	28	0	28	**11**	0	**3**	**14**	**1**	16	1	18	61
16:45	3	0	0	3	0	30	**1**	31	6	0	1	7	0	13	0	13	54
Total Volume	9	0	0	9	0	131	1	132	23	0	6	29	1	68	3	72	242
% App. Total	100	0	0		0	99.2	0.8		79.3	0	20.7		1.4	94.4	4.2		
PHF	.563	.000	.000	.563	.000	.862	.250	.868	.523	.000	.500	.518	.250	.773	.750	.783	.890
Cars/Lights	9	0	0	9	0	124	1	125	23	0	6	29	1	58	3	62	225
% Cars/Lights	100	0	0	100	0	94.7	100	94.7	100	0	100	100	100	85.3	100	86.1	93.0
Trucks	0	0	0	0	0	7	0	7	0	0	0	0	0	10	0	10	17
% Trucks	0	0	0	0	0	5.3	0	5.3	0	0	0	0	0	14.7	0	13.9	7.0
Buses	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
% Buses	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

LEA Consulting Ltd.

625 Cochrane Drive, 5th Floor
Markham, ON L3R 9R9

File Name : Site Access 5 & Mattawa Ave-PM
Site Code : 21224022
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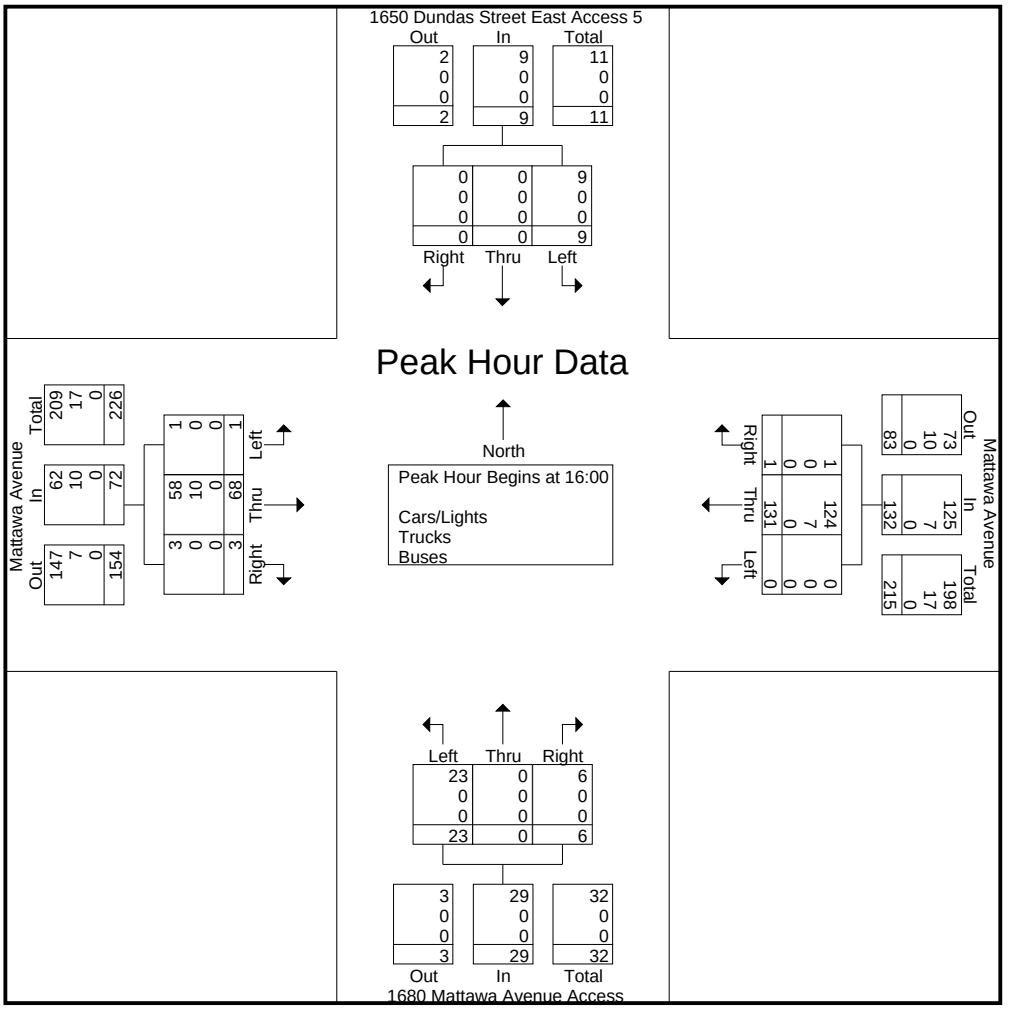
Page No : 4



APPENDIX C

Corridor Growth Rate and Background Development Response

Date: May 10, 2021
From: Jennica Chiu, LEA Consulting Ltd.
Re: Growth Rates Data Request – Dixie Road south of Dundas Street E.

Jennica,
Here are the estimated CAGR values for Dixie Road south of Dundas Street E.:

2016 – 2021	2021 – 2031
0.5%	0.5%

These growth rates are estimated based on multiple sources including Peel Travel Demand forecasting model, ATR and land use/forecasts data. Please note that this area may be further affected by future growth (after 2031 and beyond). Please use your professional judgement when using these values.

If you require further assistance, please contact me at robert.jay@peelregion.ca.

Regards,

Robbie Jay
Transportation Planner, Transportation System Planning
Transportation Division, Public Works Services, Region of Peel
10 Peel Centre Drive, Suite B, 4th Floor
Brampton, ON L6T 4B9
W: (905) 791-7800 x6456
E: robert.jay@peelregion.ca

Jennica Chiu

From: Tyler Xuereb <Tyler.Xuereb@mississauga.ca>
Sent: March 31, 2021 8:41 AM
To: Jennica Chiu
Subject: RE: Terms of Reference for Proposed Mixed-Use Community at 1530-1650 Dundas Street East, City of Mississauga

Follow Up Flag: Follow up
Flag Status: Flagged

Good Morning Jennica,

Using the City's Travel Demand Model and supporting traffic count data, the City's Transportation Planning section has determined the projected growth along Dundas Street to be used as part of your study. The recommended projected growth is shown below:

Dundas Street

	Compounded Annual Growth from Existing to 2031	
	EB	WB
AM Peak Hour	0.5%	0.5%
PM Peak Hour	1.0%	0.5%

Regards,

Tyler Xuereb
Transportation Planning Analyst
T 905-615-3200 ext.4783
Tyler.xuereb@mississauga.ca

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

From: Jennica Chiu <JChiu@lea.ca>
Sent: Friday, March 26, 2021 11:42 AM
To: Tyler Xuereb <Tyler.Xuereb@mississauga.ca>
Subject: RE: Terms of Reference for Proposed Mixed-Use Community at 1530-1650 Dundas Street East, City of Mississauga

Hi Tyler,

Jennica Chiu

From: Kate Vassilyev <Kate.Vassilyev@mississauga.ca>
Sent: July 29, 2021 9:24 AM
To: Jennica Chiu
Cc: Mackenzie Riggin
Subject: RE: Terms of Reference for Proposed Mixed-Use Community at 1580-1650 Dundas Street East, City of Mississauga
Attachments: TIS extract 2360 Dixie Rd.pdf; A101 - Site Plan 1333 Tonolli Road.pdf; A1.1 - Site Plan 1565 Dundas St E.pdf

External Sender

Morning Jennica,

I apologize for the delay, please see my response below in blue. Please feel free to contact me if you have additional questions.

Regards,

Kate (Jekaterina) Vassilyev
Traffic Planning Technologist
T 905-615-3200 ext.8171
kate.vassilyev@mississauga.ca

City of Mississauga | Transportation and Works Department,
Infrastructure Planning Division

From: Jennica Chiu <JChiu@lea.ca>
Sent: Tuesday, July 20, 2021 3:52 PM
To: Kate Vassilyev <Kate.Vassilyev@mississauga.ca>
Cc: Mackenzie Riggin <mriggin@lea.ca>
Subject: RE: Terms of Reference for Proposed Mixed-Use Community at 1580-1650 Dundas Street East, City of Mississauga

Hi Kate,

This is in response to the City's comments on the Terms of Reference for 1580-1650 Dundas St E.

Transportation Impact Studies for the following background developments as requested don't seem to be available on the City's website.

- 3085 Queen Frederica Drive. This application is conversion to Condo, stats and GFA won't change.
- 1565 Dundas St E City file SP 18-24, there is no TIS; proposal is a 2 storey mixed-use, retail, convenience/take-out restaurant, beverage and food preparation establishment with supporting second floor office (GFA: 1943.9 square metres). Please see Site Plan attached.
- 1333 Tonolli Road, storage building (site stats available for this development only). City file SP 20-80, there is no TIS; proposal is a new one storey storage building with a GFA of 3,512 square metres. Proposed use – warehousing. Please see Site Plan attached.

- 2360 Dixie Road, industrial building. Please see extract from TIS attached.

Where can we find the Transportation Impact Studies or the site stats for each site?

Thanks,

Jennica Chiu, EIT
Transportation Analyst
T: 905-470-0015 ext. 383 **E:** JChiu@lea.ca
LEA Consulting Ltd.

From: Kate Vassilyev <Kate.Vassilyev@mississauga.ca>
Sent: April 7, 2021 7:10 AM
To: Jennica Chiu <JChiu@lea.ca>
Subject: RE: Terms of Reference for Proposed Mixed-Use Community at 1530-1650 Dundas Street East, City of Mississauga

Morning Jennica,

For Sightline Analysis please provide comparison between required and proposed sightlines based on TAC for the intersections of Private Roads and Mattawa Avenue.

Regards,

Kate (Jekaterina) Vassilyev
Traffic Planning Technologist
T 905-615-3200 ext.8171
kate.vassilyev@mississauga.ca

City of Mississauga | Transportation and Works Department,
Infrastructure Planning Division

From: Jennica Chiu <JChiu@lea.ca>
Sent: Tuesday, April 6, 2021 2:00 PM
To: Kate Vassilyev <Kate.Vassilyev@mississauga.ca>
Cc: Ryan Au <Ryan.Au@mississauga.ca>; Lin Rogers <Lin.Rogers@mississauga.ca>; Mackenzie Riggin <mriggin@lea.ca>; Nixon Chan <NChan@lea.ca>
Subject: RE: Terms of Reference for Proposed Mixed-Use Community at 1530-1650 Dundas Street East, City of Mississauga

Hi Kate,

This is in response to the City's comments on the Terms of Reference for 1530-1650 Dundas St E.

I'm hoping to get more clarification about the City's requirements for the Sightline Analysis of the proposed private roads.

INFORMATION TAKEN FROM:
SURVEYOR'S REAL PROPERTY REPORT – PART 1
LOT 16 and BLOCK C
REGISTERED PLAN 728
CITY of MISSISSAUGA
Regional Municipality of Peel
BY AVANTI SURVEYING INC.

LEGEND

■	DENOTES	SURVEY MONUMENT FOUND
RP	→ ←	REGISTERED PLAN 728
N,S,E,W	→ ←	NORTH,SOUTH,EAST,WEST
M	→ ←	MEASURED
SIB	→ ←	STANDARD IRON BAR
IB	→ ←	IRON BAR
CP	→ ←	CONCRETE PIN
WIT	→ ←	WITNESS
P.I.N.	→ ←	PROPERTY IDENTIFIER NUMBER
OU	→ ←	ORIGIN UNKNOWN
PL	→ ←	PLAN 43R–11536
PL2	→ ←	PLAN 43R–23973
(1233)	→ ←	G. F. JONES, OLS
T	→ ←	PLAN OF SURVEY BY DUNNING & TAYLOR, OLS DATED OCTOBER 27, 1988
TC	→ ←	TOP OF CURB
BC	→ ←	BOTTOM OF CURB
DT	→ ←	DECIDUOUS TREE
CT	→ ←	CONIFEROUS TREE
Ø	→ ←	DIAMETER
CB	→ ←	CATCH BASIN
MH	→ ←	MANHOLE
FH	→ ←	FIRE HYDRANT
CRW	→ ←	CONCRETE RETAINING WALL
SRW	→ ←	STONE RETAINING WALL
BF	→ ←	BOARD FENCE
CLF	→ ←	CHAIN LINK FENCE
GR	→ ←	GUARD RAIL
LS	→ ←	LIGHT STANDARD
—— ——	→ ←	OVERHEAD WIRES
UP	→ ←	UTILITY POLE

PARKING SPACES RESERVED FOR PEOPLE WITH DISABILITIES MUST BE IDENTIFIED BY A SIGN, INSTALLED AT THE APPLICANT'S EXPENSE, IN ACCORDANCE WITH THE BY–LAW REQUIREMENTS AND BUILDING CODE REQUIREMENTS.

NOTE: IF THE FINAL COURSE OF ASPHALT PAVING IS DELAYED, INSTALL A TEMPORARY LIFT OF ASPHALT AT RAMPS OR CURB CUTS TO PROVIDE BARRIER–FREE ACCESS.

THE APPLICANT WILL BE RESPONSIBLE FOR ENSURING THAT ALL PLANS CONFORM TO TRANSPORT CANADA'S RESTRICTIONS.

THE PORTIONS OF THE DRIVEWAY WITHIN THE MUNICIPAL BOULEVARD WILL BE PAVED BY THE APPLICANT.

AT THE ENTRANCES TO THE SITE, THE MUNICIPAL CURB AND SIDEWALK WILL BE CONTINUOUS THROUGH THE DRIVEWAY AND A CURB DEPRESSION WILL BE PROVIDED FOR EACH ENTRANCE.

ALL ASPHALT AND BASE MATERIALS OF THE EXISTING DRIVEWAY BEING REMOVED ARE TO BE REINSTATED WITH TOP SOIL AND SOD.

ALL DAMAGED AREAS ARE TO BE REINSTATED WITH TOPSOIL AND SOD PRIOR TO THE RELEASE OF SECURITIES.

ALL PROPOSED CURBING WITHIN THE MUNICIPAL BOULEVARD AREA FOR THE SIDE IS TO SUIT AS FOLLOWS:

a) FOR ALL SINGLE FAMILY RESIDENTIAL PROPERTIES INCLUDING ON STREET TOWNHOUSES, ALL CURBING IS TO STOP AT THE PROPERTY LIMIT OR THE BACK OF THE MUNICIPAL SIDEWALK, WHICHEVER IS APPLICABLE, OR
b) FOR ALL OTHER PROPOSALS INCLUDING INDUSTRIAL, COMMERCIAL AND CONDOMINIUM DEVELOPMENTS, ALL ENTRANCES TO THE SITE ARE TO BE IN ACCORDANCE WITH OPSD 350.010.
c) ALL EXCESS EXCAVATED MATERIAL WILL BE REMOVED FROM THE SITE.
d) THE EXISTING DRAINAGE PATTERN WILL BE MAINTAINED EXCEPT WHERE NOTED.
e) THE APPLICANT WILL BE REQUIRED TO CONTACT ALL UTILITY COMPANIES TO OBTAIN ALL REQUIRED LOCATES PRIOR TO THE INSTALLATION OF HOARDING WITH THE MUNICIPAL RIGHT OF WAY.
f) THE APPLICANT WILL BE RESPONSIBLE FOR THE COST OF ANY RELOCATIONS NECESSITATED BY THE SITE PLAN.
g) ALL INTERNAL CURBS ARE TO BE STANDARD 2 STAGE CURB AND GUTTER AS PER O.P.S.D. 600.070.
h) PRIOR TO CONSTRUCTION TAKING PLACE, ALL REQUIRED HOARDING IN ACCORDANCE WITH THE ONTARIO OCCUPATIONAL HEALTH & SAFETY ACT AND REGULATIONS FOR CONSTRUCTION PROJECTS MUST BE ERECTED AND THEN MAINTAINED THROUGHOUT ALL PHASES OF CONSTRUCTION.
i) SHOULD ANY WORKS BE REQUIRED WITHIN THE MUNICIPAL RIGHT OF WAY, A ROAD OCCUPANCY PERMIT WILL BE REQUIRED. FOR FURTHER INFORMATION, PLEASE CONTACT THE PUCC/PERMIT TECHNOLOGIST, LOCATED AT 3185 MAVIS ROAD.

SIGNAGE SHOWN ON THE SITE DEVELOPMENT PLANS IS FOR INFORMATION PURPOSES ONLY. ALL SIGNS WILL BE SUBJECT TO THE PROVISIONS OF SIGN BY–LAW 0054–2002, AS AMENDED, AND A SEPARATE SIGN APPLICATION WILL BE REQUIRED THROUGH THE BUILDING DIVISION.

ANY FENCING ADJACENT TO MUNICIPAL LANDS IS TO BE LOCATED 15cm (6.0 in.) INSIDE THE PROPERTY LINE.

ONLY "SHIELDED" LIGHTING FIXTURES ARE PERMITTED FOR ALL DEVELOPMENT, EXCEPT FOR DETACHED AND SEMI–DETACHED DWELLINGS WITHIN 60m (196.8 ft.) OF A RESIDENTIALLY ZONED PROPERTY AND MUST CONFORM TO THE ENGINEER CERTIFIED LIGHTING PLAN.

THE ENGINEER CERTIFIED LIGHTING PLAN MUST BE SIGNED BY THE CONSULTING ENGINEER.

THE OWNER COVENANTS AND AGREES TO CONSTRUCT AND INSTALL "SHIELDED" LIGHTING FIXTURES ON THE SUBJECT LANDS, IN CONFORMITY WITH THE SITE PLAN AND ENGINEER CERTIFIED LIGHTING PLAN TO THE SATISFACTION OF THE CITY OF MISSISSAUGA.

I HEREBY CERTIFY THAT THIS DRAWING CONFORMS IN ALL RESPECTS TO THE SITE DEVELOPMENT PLANS AS APPROVED BY THE CITY OF MISSISSAUGA UNDER FILE NUMBER SP 18/024 W3.

Nov 01, 2019
SIGNATURE DATE

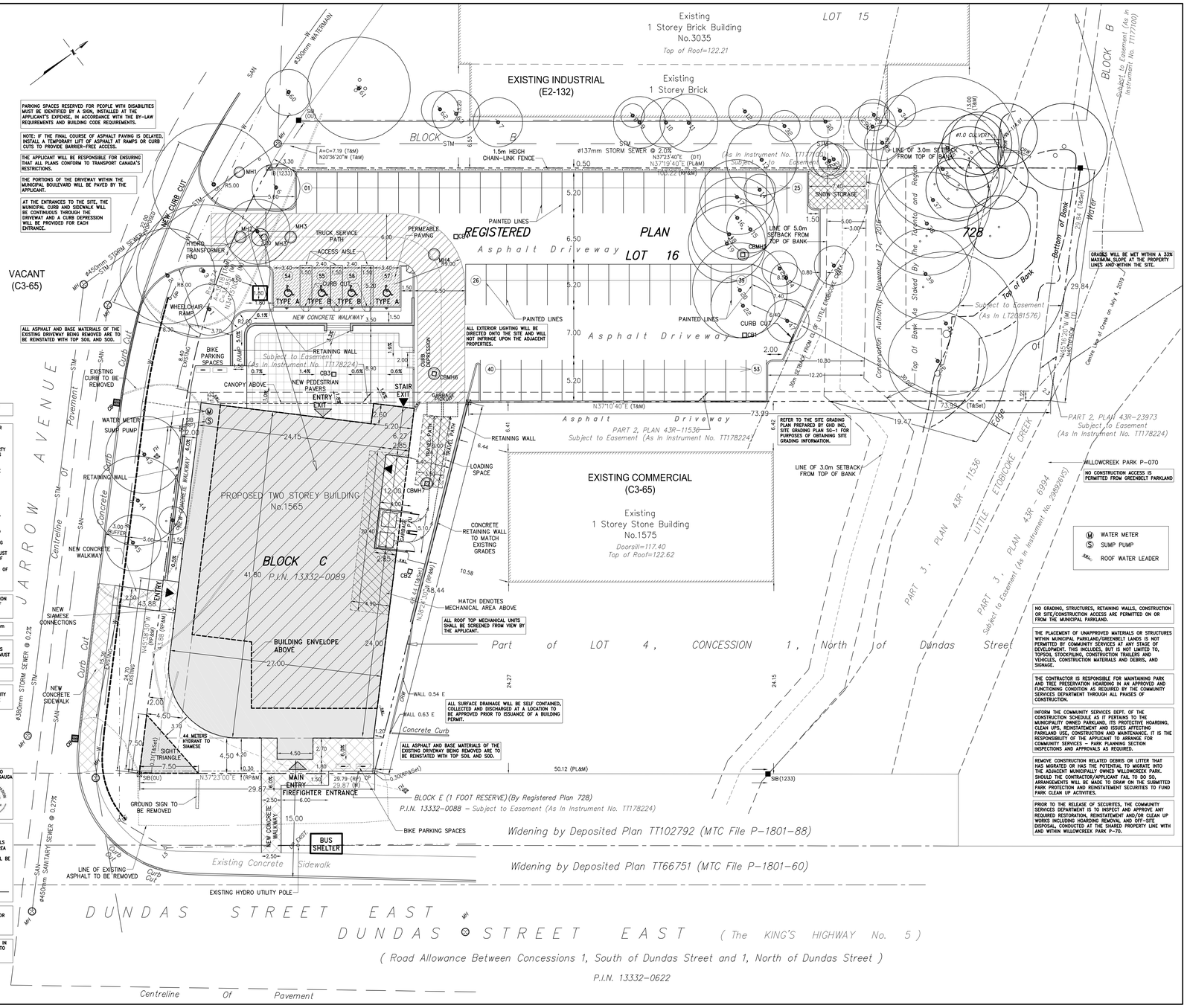
THE APPLICANT IS RESPONSIBLE FOR ENSURING THAT THE TREE PROTECTION HOARDING IS MAINTAINED THROUGHOUT ALL PHASES OF DEMOLITION AND CONSTRUCTION IN THE LOCATION AND CONDITION AS APPROVED BY THE PLANNING AND BUILDING DEPARTMENT. NO MATERIALS (BUILDING MATERIALS, SOIL, ETC.) MAY BE STOCKPILED WITHIN THE AREA OF HOARDING. FAILURE TO MAINTAIN THE HOARDING AS ORIGINALLY APPROVED OR THE STORAGE OF MATERIALS WITHIN THE HOARDING WILL BE CAUSE FOR THE LETTER OF CREDIT TO BE HELD FOR (2) YEARS FOLLOWING COMPLETION OF ALL SITE WORKS.

SIGNATURE (OWNER/APPLICANT) DATE

THE CITY OF MISSISSAUGA REQUIRES THAT ALL WORKING DRAWINGS SUBMITTED TO THE BUILDING DIVISION AS PART OF AN APPLICATION FOR THE ISSUANCE OF A BUILDING PERMIT SHALL BE CERTIFIED BY THE ARCHITECT OR ENGINEER AS BEING IN CONFORMITY WITH THE SITE DEVELOPMENT PLAN AS APPROVED BY THE CITY OF MISSISSAUGA.

THE STRUCTURAL DESIGN OF ANY RETAINING WALL OVER 0.60 METRES IN HEIGHT OR ANY RETAINING WALL LOCATED ON A PROPERTY LINE, IS TO BE SHOWN IN THE GRADING PLAN FOR THIS PROJECT, AND IS TO BE APPROVED BY THE CONSULTING ENGINEER FOR THIS PROJECT.

ALL ASPHALT AND BASE MATERIALS OF THE EXISTING DRIVEWAY BEING REMOVED ARE TO BE REINSTATED WITH TOPSOIL AND SOD



1 A1.1 **SITE PLAN**
SCALE: 1:200

ITEM	ONTARIO BUILDING CODE DATA MATRIX PARTS 3 + 9			OBC REFERENCES		
1	PROJECT DESCRIPTION:	☒ NEW ☐ ADDITION ☐ ALTERATION ☐ CHANGE OF USE	☐ PART 11	☒ PART 3	☐ PART 9	
				1.1.2.[A]	1.1.2.[A] 9.10.1.3	
2	MAJOR OCCUPANCY(S)	COMMERCIAL GROUP E – MERCANTILE		3.1.2.1. (1)	9.10.2	
3	BUILDING AREA (m2)	EXISTING 311.40 sq.m.	NEW 1,079.85 sq.m. TOTAL 2,003.30 sq.m.	1.4.1.2.[A]	1.4.1.2.[A]	
4	GROSS AREA (TENANT)	EXISTING 311.40 sq.m.	NEW 1,837.74 sq.m. TOTAL 232.26 sq.m.	1.4.1.2.[A]	1.4.1.2.[A]	
5	NUMBER OF STOREYS	ABOVE GRADE 2	BELOW GRADE –	1.4.1.2.[A] & 1.1.3.2	1.4.1.2.[A]§9.10.4	
6	HEIGHT OF BUILDING (m)	10.50m				
7	NUMBER OF STREETS / ACCESS ROUTES	2		3.2.2.10 & 3.2.5.	9.10.20.	
8	BUILDING CLASSIFICATION	GROUP E – 3.2.2.60 (up to 3 storey – sprinklered)		3.2.2.20–83	9.10.2	
9	SPRINKLER SYSTEM PROPOSED	☒ ENTIRE BUILDING ☐ SELECTED COMPARTMENTS ☐ SELECTED FLOOR AREA ☐ BASEMENT ☐ IN LIEU OF ROOF RATING ☐ NOT REQUIRED		3.2.2.20–83 3.2.1.5 3.2.2.17 INDEX	9.10.8.2 INDEX	
10	STANDPIPE REQUIRED	☐ YES ☒ NO		3.2.9		
11	FIRE ALARM REQUIRED	☐ YES ☒ NO		3.2.4	9.10.18	
12	WATER SERVICE / SUPPLY IS ADEQUATE	☒ YES ☐ NO		3.2.5.7.		
13	HIGH BUILDING	☐ YES ☒ NO		3.2.6		
14	PERMITTED CONSTRUCTION	☐ COMBUSTIBLE	☒ NON–COMBUSTIBLE OR BOTH	3.2.2.20–83	9.10.6	
	ACTUAL CONSTRUCTION	☐ COMBUSTIBLE	☒ NON–COMBUSTIBLE OR BOTH			
15	MEZZANNE(S) AREA (m2)	N/A		3.2.1.1.(3)–(8)	9.10.4.1	
16	OCCUPANT LOAD BASED ON	☐ m2 / PERSON	☒ DESIGN OF BUILDING	3.1.17	9.9.1.3	
	BASEMENT	OCCUPANCY ___	LOAD ___ PERSONS			
	1ST FLOOR	OCCUPANCY 291	LOAD ___ PERSONS			
	2ND FLOOR	OCCUPANCY 93	LOAD ___ PERSONS			
	3RD FLOOR	OCCUPANCY ___	LOAD ___ PERSONS			
17	BARRIER FREE DESIGN	☒ YES ☐ NO (EXPLAIN)		3.8	9.5.2	
18	HAZARDOUS SUBSTANCES	☐ YES ☒ NO		3.3.1.2.& 3.3.1.19.	9.10.1.3.(4)	
19	REQUIRED FIRE RESISTANCE RATING (FRR)	HORIZONTAL ASSEMBLIES FRR (HOURS)	LISTED DESIGN NO. OR DESCRIPTION (SG–2)	3.2.2.20–83 & 3.2.1.4	9.10.8 9.10.9	
		FLOORS 0.75 HOURS				
		ROOF 0.75 HOURS				
		MEZZANNE 0.75 HOURS				
		FRR OF SUPPORTING MEMBERS	LISTED DESIGN NO. OR DESCRIPTION (SG–2)			
		FLOORS 0.75 HOURS				
		ROOF 0.75 HOURS				
		MEZZANNE 0.75 HOURS				
20	SPATIAL SEPARATION – CONSTRUCTION OF EXTERIOR WALLS			3.2.3	9.10.14	

WALL	AREA OF EBF (m2)	L.D. (m)	L/W OR H/L	PERMITTED MAX. % OF OPENINGS	PROPOSED % OF OPENINGS	FRR (HOURS)	LISTED DESIGN OR DESCRIPTION	COMBUSTIBLE CONSTRUCTION	COMB. CONST. NONC. CLADDING	NON–COMBUSTIBLE CONSTRUCTION
NORTH	NO CHANGE	---	N/A	---	---	---	---	---	---	---
EAST	NO CHANGE	---	N/A	---	---	---	---	---	---	---
SOUTH	NO CHANGE	---	N/A	---	---	---	---	---	---	---
WEST	NO CHANGE	---	N/A	---	---	---	---	---	---	---

CLIENT:
EDDIE'S MEAT AND DELI MARKET INC.
1565 DUNDAS STREET EAST
MISSISSAUGA, ONTARIO

ARCHITECT:
OM ARCHITECTURE INC.
2078 William O'Connell Blvd
BURLINGTON, ON L7M 3T8
ATTENTION: KRZYSZTOF OLAK
PH: 905.271.7148

SITE STATISTICS

ADDRESS:	1565 DUNDAS ST. E. MISSISSAUGA, ONTARIO		
LEGAL DESCRIPTION:	LOT 16 and BLOCK C REGISTERED PLAN 728		
ZONING	C3-65; E2-132; G1		
	%	METRIC	IMPERIAL
LOT AREA: (EXISTING)		4,745.50 M2	51,081.81 SF
LOT FRONTAGE:			
1. AT STREET (EXISTING) -TBC		29.90 M	98.10 FT
ESTABLISHED GRADE		116.71 M	

GROSS FLOOR AREA (NO DEDUCTIONS):

EXISTING - TO BE DEMOLISHED		311.40 M2	
PROPOSED :			
GROUND FLOOR	1,087.48 M2	11,705.54 SF	
SECOND FLOOR	856.47 M2	9,218.96 SF	
TOTAL	1,943.89 M2	20,924.50 SF	
BASEMENT	1,022.60 M2	11,007.17 SF	
GROSS FLOOR AREA - NON RESIDENTIAL (WITH ALLOWABLE DEDUCTIONS)			
GROUND FLOOR	973.54 M2	10,479.44 SF	
SECOND FLOOR	771.50 M2	8,304.63 SF	
TOTAL	1,745.04 M2	18,784.07 SF	
EXISTING BUILING HEIGHT	5.58 M		
PROPOSED BUILDING HEIGHT	10.50 M		

LOT COVERAGE:	%		
EXISTING FOOT PRINT	6.56	311.40 M2	
PROPOSED TOTAL	22.92	1,087.48 M2	
PERMITTED			

PARKING:	RETAIL	RESTAURANT	OFFICE	TOTAL
PARKING RATE /100M2	5.40	16.00	3.20	
AREA	974	92	679	
PARKING SPACES REQUIRED	53	15	22	90
PARKING SPACES PROVIDED				**57**
ACCESSIBLE PARKING SPACES REQUIRED (76-100)				**4**
ACCESSIBLE PARKING SPACES PROVIDED				**4**
LOADING SPACES				**1**

2 A2.1 **SITE STATS**
SCALE: N.T.S.

THE CORPORATION OF THE CITY OF MISSISSAUGA
ACCESSIBLE PARKING SIGN REQUIREMENTS
ACCESSIBLE PARKING BY-LAW # 10-2016

Accessible Parking Signs shall be mounted on a level wall surface or mounted on a permanent post, pillar, or other suitable surface, conforming to the requirements or regulations made under the Highway Traffic Act and the Accessibility for Ontarians with Disabilities Act, and be located:

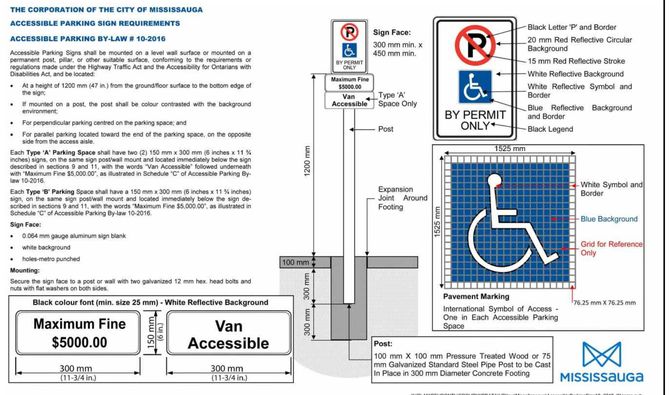
- At a height of 1200 mm (47 in.) from the ground/floor surface to the bottom edge of the sign;
- If mounted on a post, the post shall be colour contrasted with the background environment;
- For perpendicular parking centred on the parking space; and
- For parallel parking located toward the end of the parking space, on the opposite side from the access aisle.

Each **Type 'A' Parking Space** shall have two (2) 150 mm x 300 mm (6 inches x 11 ¾ inches) signs, on the same sign post/wall mount and located immediately below the sign described in sections 9 and 11, with the words "Van Accessible" followed underneath with "Maximum Fine $5,000.00", as illustrated in Schedule "C" of Accessible Parking By-law 10-2016.

Each **Type 'B' Parking** Space shall have a 150 mm x 300 mm (6 inches x 11 ¾ inches) sign, on the same sign post/wall mount and located immediately below the sign described in sections 9 and 11, with the words "Maximum Fine $5,000.00", as illustrated in Schedule "C" of Accessible Parking By-law 10-2016.

Sign Face:
- 0.064 mm gauge aluminum sign blank
- white background
- holes-metro punched

Mounting:
Secure the sign face to a post or wall with two galvanized 12 mm hex. head bolts and nuts with flat washers on both sides.



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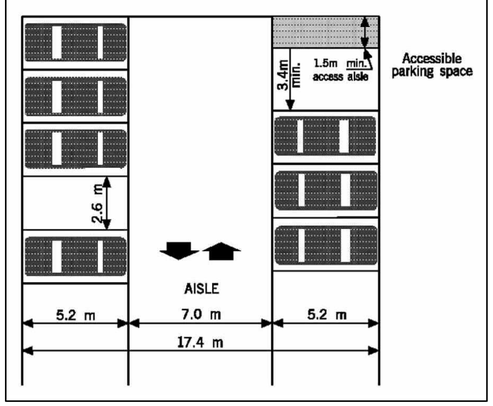
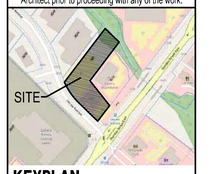
TYPICAL PARKING



ONTARIO ASSOCIATION OF ARCHITECTS
KRZYSZTOF A OLAK
LICENCE
1911

Drawings must NOT be scaled. Contractor must check and verify all dimensions, specifications and drawings on site and report any discrepancies to the Architect prior to proceeding with any of the work.



KEYPLAN

SITE LEGEND:

- PROPERTY LINE
- EXISTING GRADE
- 83.37 FINISHED GRADE
- F.F.E. FINISHED FLOOR ELEVATION
- F.B.E. FINISHED BASEMENT ELEVATION
- F.D.E. FINISHED DECK ELEVATION
- MAIN ENTRANCE
- SECONDARY ENTRANCE
- PROPOSED BUILDING AREA
- TREE HOARDING (SOLID)
- TREE HOARDING (FRAMED)
- EXISTING TREE TO REMAIN
- EXISTING TREE TO BE REMOVED

REF.	DATE:	DESCRIPTION:
2	22.10.18	ISSUED FOR SITE PLAN APPROVAL
1	17.01.18	ISSUED FOR SITE PLAN APPROVAL

REVISIONS / ISSUANCE:

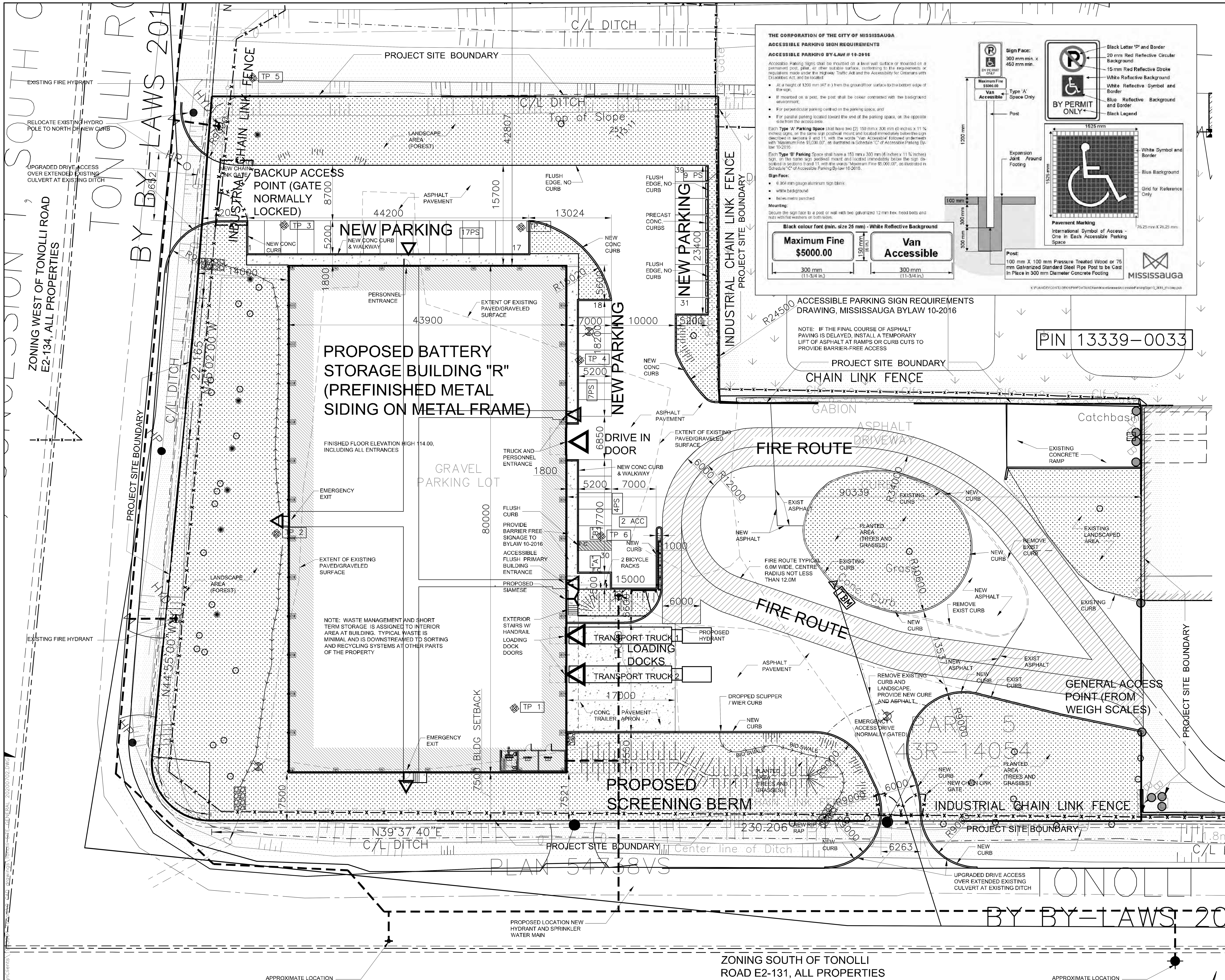
OM ARCHITECTURE INC.
#3-2526 Speers Rd, Oakville On L6L 5M2
T: 905.825.0433 E: info@omarchitecture.ca

CLIENT:
EDDIE'S MEAT & DELI MARKET INC.

ADDRESS: 1565 DUNDAS STREET EAST
CITY: MISSISSAUGA, ONTARIO

DRAWING TITLE:
SITE PLAN & SITE STATS SP 18-24 W3

DRAWN: K.O.
DATE: May 2017 SCALE: 1:200
JOB NUMBER: 270-16 SHEET NUMBER: **A1.1**



PROJECT INFORMATION:

LEGAL DESCRIPTION: PART LOT 6 CONCESSION 1 (SOUTH OF DUNDAS ST), CITY OF MISSISSAUGA, REGIONAL MUNICIPALITY OF PEEL, PART OF MUNICIPAL ADDRESS KNOWN AS 1333 TONOLLI ROAD, MISSISSAUGA, ONTARIO.

ZONING: E2-134

GENERAL USE: - WASTE TRANSFER/PROCESSING STATION: ALLOWED
- SMELTER OR FOUNDRY OPERATION (EXISTING); ALLOWED UNDER E2-134

PROPOSED NEW BUILDING USE: -WAREHOUSING OF UNPROCESSED USED-BATTERY FEED STOCK FOR EXISTING SMELTER OR FOUNDRY: ALLOWED UNDER E2 TABLE 8.2.1, 2.2.6. WAREHOUSE / DISTRIBUTION FACILITY AND NOT DISALLOWED UNDER E2-143 EXCEPTIONS

MINIMUM FRONT YARD SETBACK REQUIRED: 7.5M	PROPOSED: 7.5M
MINIMUM SIDE YARD SETBACK REQUIRED: 7.5M	PROPOSED: 7.5M
MINIMUM REAR YARD SETBACK REQUIRED: 7.5M	PROPOSED: >7.5M

ADJOINING USES: NO RESIDENTIAL USES ADJOIN SITE

MINIMUM LANDSCAPED BUFFER @ STREET: 4.5M	PROPOSED: 7.2M

PROPOSED BUILDING GFA:	3,512 M2
REQUIRED PARKING: 1.1 SP / 100 m2 **GFA =**	**39 SPACES**
PROPOSED PARKING :	42 SPACES
INCLUDED ACCESSIBLE SPACES @ 4%:	1 "A" + 1 "B" SPACE
REQUIRED LOADING SPACES:	2 SPACES
PROPOSED LOADING SPACES:	2 SPACES

PROPOSED PROJECT SITE DEFINITION: SOUTH WEST QUADRANT OF TOTAL SITE HOSTING PROPOSED IMPROVEMENTS, AND AS DELIMITED BY EXISTING UNUSED ACCESS ROAD (FROM WEST), EXISTING LAGOONS, AND EXISTING PROCESSING BUILDINGS.

PROPOSED PROJECT SITE AREA:	14,014.12 M2
EXISTING BUILDING AREA WITHIN PROJECT SITE:	0.00 M2 (NONE)
PROPOSED NEW BUILDING AREA:	3,512.00 M2 (BUILDING "R")
BUILDING COVERAGE OF PROJECT SITE AREA:	25.0 %
PAVEMENT SURFACE PROPOSED AREA WITHIN PROJECT SITE AREA (FROM CAD):	5,182.76 M2 = 36.98%
LANDSCAPE PROPOSED AREA WITHIN PROJECT SITE AREA (FROM CAD):	5,327.77 M2 = 38.02%

PROPOSED USE OF NEW BUILDING "R": COVERED AND PROTECTED INDOOR STORAGE OF FEEDSTOCK MATERIAL IS A REPLACEMENT FOR OUTDOOR STORAGE, STORED MATERIAL IS FOR USE BY AN EXISTING SMELTING OR FOUNDRY OPERATION. NO ADDITIONAL SMELTING OR FOUNDRY OPERATIONS THAT DID NOT EXIST ON THE DATE OF PASSING OF APPLICABLE BYLAW 0229-2018 ARE PROPOSED.

EXCERPTS FROM "Part 8 -Employment Zones Revised: 2018 December 31 " Identifying Permitted Uses and Not Permitted Uses

Page 8.2.3 ~ 848.2.3.134

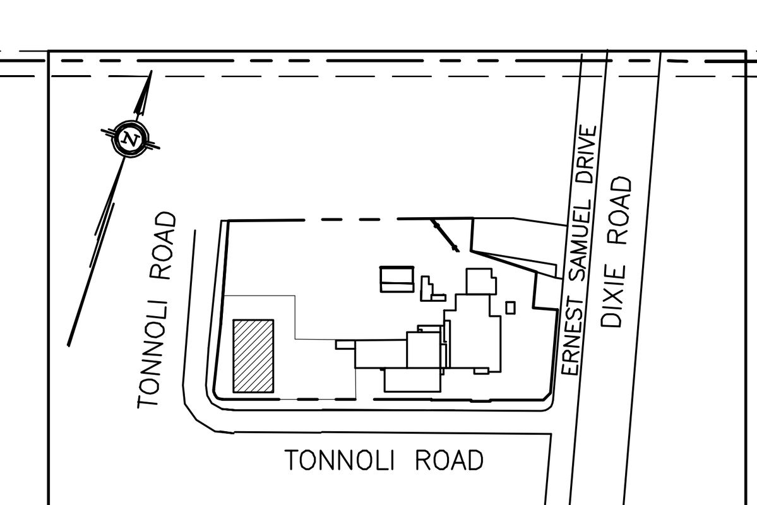
Exception: E2-134 Map # 12, 13, 23
By-law: 0229-2018
In an E2-134 zone the permitted uses and applicable regulations shall be as specified for an E2 zone except that the following uses/regulations shall apply:

Additional Permitted Uses 8.2.3.134.1
(1) E3 uses contained in Subsection 8.2.1 of this By-law, except: (1.1) Power Generating Facility
(2) Asbestos products manufacturing legally existing on the date of passing of this By-law
(3) Cement manufacturing legally existing on the date of passing of this By-law
(4) Gypsum or limestone processing and by-product manufacturing legally existing on the date of passing of this By-law
(5) Oil based paints, oil based coatings, solvent based adhesives and resin, and natural or synthetic rubber manufacturing legally existing on the date of passing of this By-law
(6) Petroleum and coal refining and by-product manufacturing legally existing on the date of passing of this By-law
(7) Phosphate or sulphur products and manufacturing legallyexisting o n the date of passing of this By-law
(8) **Smelting or foundry operations legally existing on the date of passing of this By-law**
(9) Solvent manufacturing legally existing on the date of passing of this By-law
(10) Tannery legally existing on the date of passing of this By-law
(11) Tar and asphalt manufacturing legally existing on the date of passing of this By-law
(12) Composting facility legally existing on the date of passing of this By-law
(13) Motor vehicle wrecking yard legally existing on the date of passing of this By-law

Uses Not Permitted 8.2.3.134.2
(1) Asbestos Products Manufacturing
(2) Cement Manufacturing
(3) Gypsum or limestone processing and by-product manufacturing
(4) Oil based paints, oil based coatings, solvent based adhesives and resin, and natural or synthetic rubber manufacturing
(5) Petroleum and coal refining and by-product manufacturing
(6) Phosphate or sulphur products and manufacturing
(7) Smelting or Foundry Operations
(8) Solvent Manufacturing
(9) Tannery
(10) Tar and Asphalt Manufacturing
(11) Composting Facility
(12) Motor Vehicle Wrecking Yard

GENERAL NOTES:
1) GENERAL SITE INFORMATION TAKEN IN GOOD FAITH FROM DOCUMENT PROVIDED BY OWNER AND FROM SURVEY BY OTHERS. NO EASEMENTS/RESTRICTIONS ON TITLE IN GENERAL AREA OF PROPOSED WORK ARE KNOWN.
2) REFER TO TOPOGRAPHICAL DOCUMENT "TOPOGRAPHICAL PLAN, PART LOT 6 CONCESSION 1 (SOUTH OF DUNDAS ST), CITY OF MISSISSAUGA, REGIONAL MUNICIPALITY OF PEEL, PROJECT NUMBER 19-5483, BY FIDDES CLIPSHAM, FIDDES CLIPSHAM INC, Consulting Engineering - Land Surveying, 16 Mountainview Road South, Suite 101 Halton Hills, Ontario Surveying L7G4K1 905-877-2211 info@fiddesclipsham.com fiddesclipsham.com
3) REFER TO SURVEY DOCUMENTS AND TO SP1.0 FOR PROPERTY BOUNDARY BEARINGS AND DIMENSIONS.
4) REFER TO DOCUMENTS BY INSITE LANDSCAPE ARCHITECTS INC. FOR TREE INVENTORY AND LANDSCAPE PLANS AND DETAILS.
5) REFER TO GRADING PLAN SP1.2 FOR GRADING AND GEODETIC ELEVATIONS.

KEY
- EXISTING GRADE, 2019 TOPOGRAPHIC
- PROPOSED GRADES
- LANDSCAPED AREA
- CONCRETE PAVEMENT OR STRUCTURE
- EMBANKMENT
- STORM WATER DETENTION AREA
- MONITORING WELL LOCATION
- SOIL TEST PIT LOCATION
- FIRE HYDRANT AND BURIED MAIN
- RIP RAP SURFACE TREATMENT



KEY PLAN

DO NOT SCALE

ITEM	QTY	DESCRIPTION	LENGTH	WEIGHT

X	X	X	X
C	2020.06.28	SPA INITIAL SUBMISSION	SRH
B	2019.05.13	CITY INITIAL SUBMISSION	SRH
A	2019.04.24	Client Review / SPA PRECONSULT	JDH

L. H. SCHWINDT & COMPANY INC.
CONSULTING ENGINEERS
HAMILTON LHS ONTARIO

Tonolli Canada

1333 Tonolli Road, Mississauga

PROPOSED BATTERY STORAGE BUILDING
ENLARGED SITE PLAN
PAM 19-134 W1

DATE	2019-04-24	SCALE	1:300	JOB No.	4366
DRAWN	SRH	A101 - SITE PLAN ENLARGED		REV.	C
CHECKED	JDH				

5. Site Generated Traffic

5.1 Site Plan

The proposed site plan prepared by Turner Fleisher Architects Inc., dated March 18, 2020 consists of two warehouse distribution buildings totaling approximately 516,360 sf. The site plan is shown in Figure 5.

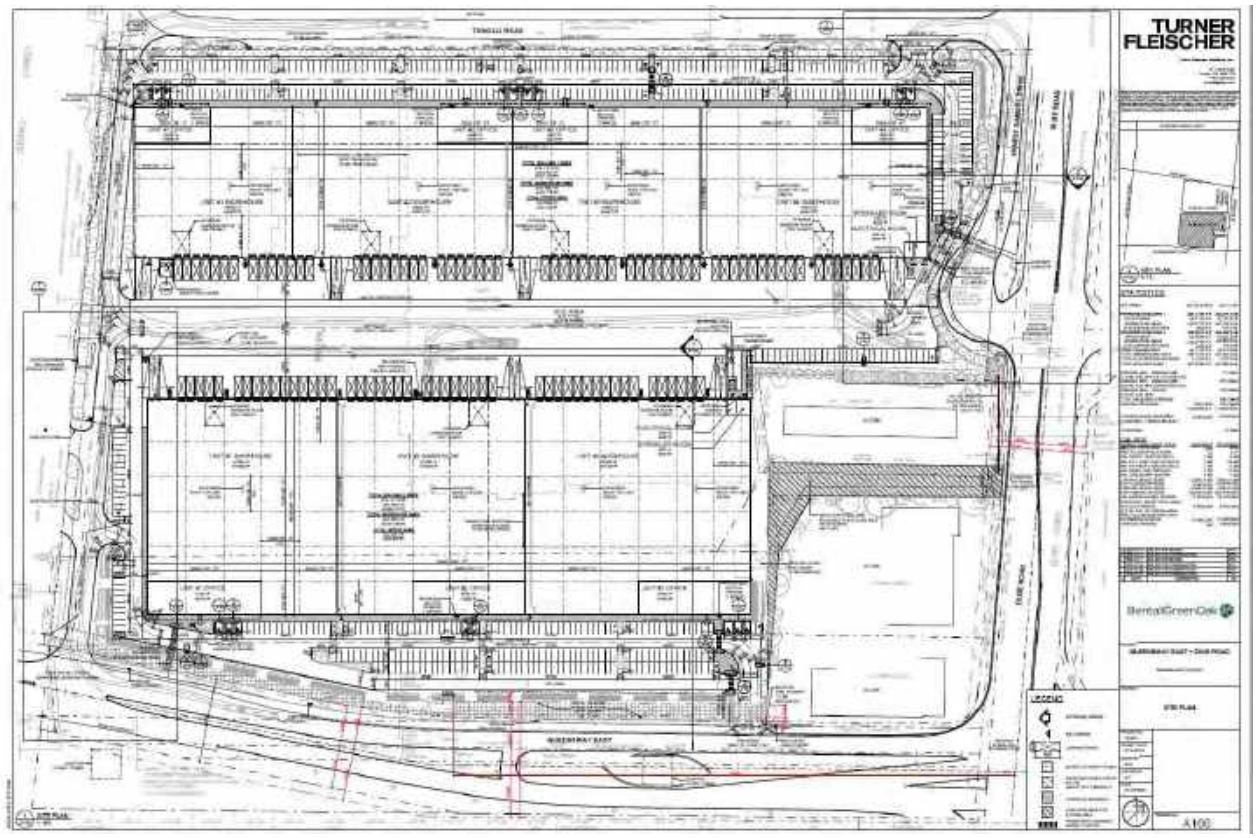


Figure 5 Site Plan

5.2 Transit Modal Split

As a conservative measure, no transit modal split reduction was applied to the trip generation calculations.

5.3 Site Trip Generation

Site traffic generated by the proposed development for the weekday a.m. and p.m. peak hours was estimated by applying the trip rates published by the Institute of Transportation Engineers (ITE) Trip Generation Manual, 10th Edition. Trip generation for the proposed industrial was undertaken using Land Use Code 150 (Warehousing).

The proposed warehouse development is expected to generate a total of 88 two-way vehicle trips during the a.m. peak hour consisting of 68 inbound and 20 outbound trips. During the p.m. peak

hour it is expected to generate 98 new two-way vehicle trips consisting of 26 inbound and 72 outbound trips.

Table 1 summarizes the trip generation calculations. A comparison of the fitted curve equations and average rates for each individual Land Use Code was completed. Whichever calculation resulted in the higher trip generation was used as a conservative measure.

Table 1 Site Trip Generation

Land Use Code	Units/GFA (ft^2)	Parameters	Peak Hour Trip Generation					
			Weekday AM			Weekday PM		
			In	Out	Total	In	Out	Total
Warehousing (LUC 150)	516.4 GFA (ft^2)	Trip Rate	0.132	0.038	0.170	0.050	0.140	0.190
		Trip Ratio	77	23	-	27	73	-
		Total New Trips	68	20	88	26	72	98

In order to calculate the future number of trucks generated by the proposed site, GHD adopted the following truck percentages (Table 2) based on engineering judgment and experience with similar sites.

Table 2 summarizes the estimated truck percentage calculations.

Table 2 Site trips - Breakdown

Parameters	Peak Hour Trip Generation					
	Weekday AM			Weekday PM		
	In	Out	Total	In	Out	Total
% of Trucks	40%	11%		50%	30%	
Total New trips (veh)	41	18	59	13	50	63
Total New trips (trucks)	27	2	29	13	22	35
Total New trips	68	20	88	26	72	98

5.4 Site Trip Distribution and Assignment

Site-generated trips were assigned to the future surrounding road network based existing traffic conditions and engineering judgment.

A breakdown of the site trip distribution for both peak hours can be seen in **Table 2-1.**

Table 2-1 Site Distribution

Direction	Light Vehicles		Heavy Vehicles	
	a.m. peak hour Inbound (Outbound)	p.m. peak hour Inbound (Outbound)	a.m. peak hour Inbound (Outbound)	p.m. peak hour Inbound (Outbound)
East on Queensway	20% (38%)	38% (17%)	33% (57%)	60% (30%)
West on Queensway	36% (21%)	20% (34%)	57% (33%)	30% (60%)
North on Dixie Rd	23% (23%)	27% (24%)	10% (10%)	10% (10%)
South on Dixie Rd	20% (18%)	15% (26%)	0% (0%)	0% (0%)

The assignment of site trips is illustrated in Figures 6a and 6b, with the resulting estimated site trips shown in Figure 7 converted to passenger car equivalents using a conversion factor of 2.0 vehicles representing each truck.

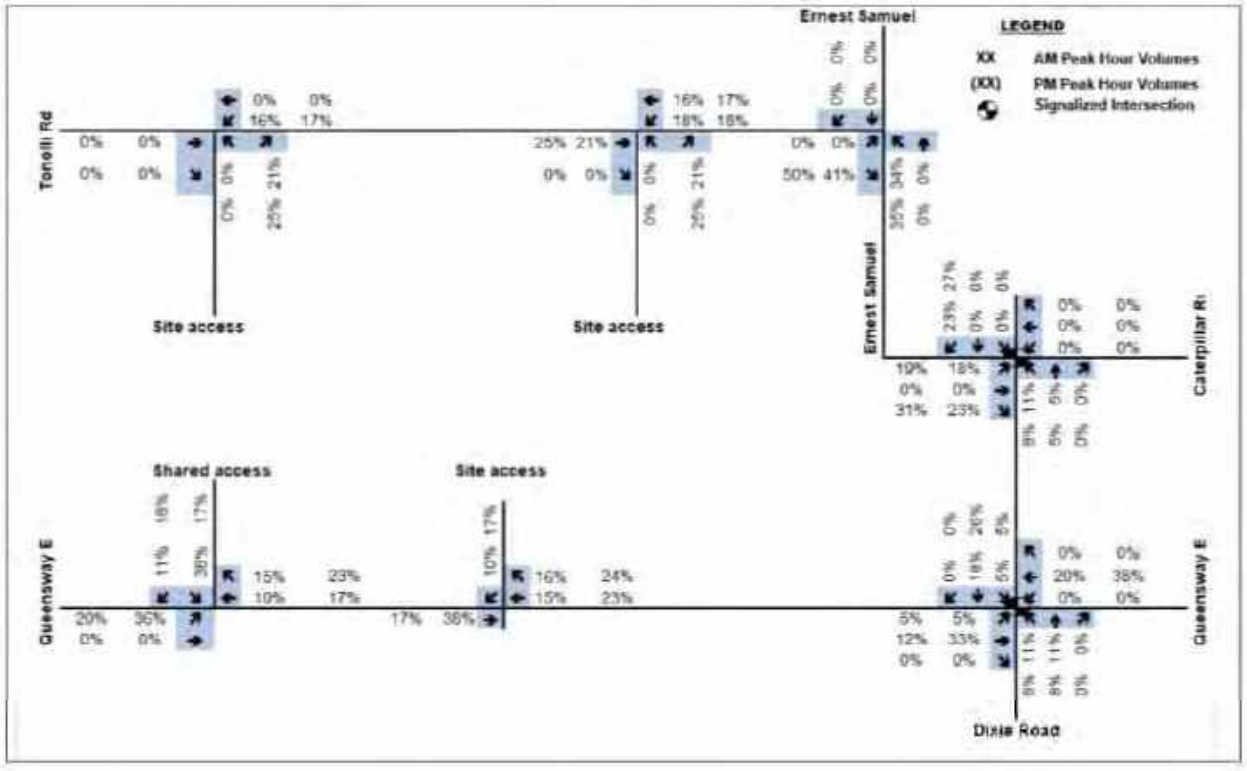


Figure 6a Trip Distribution Percentages (Light Vehicles)

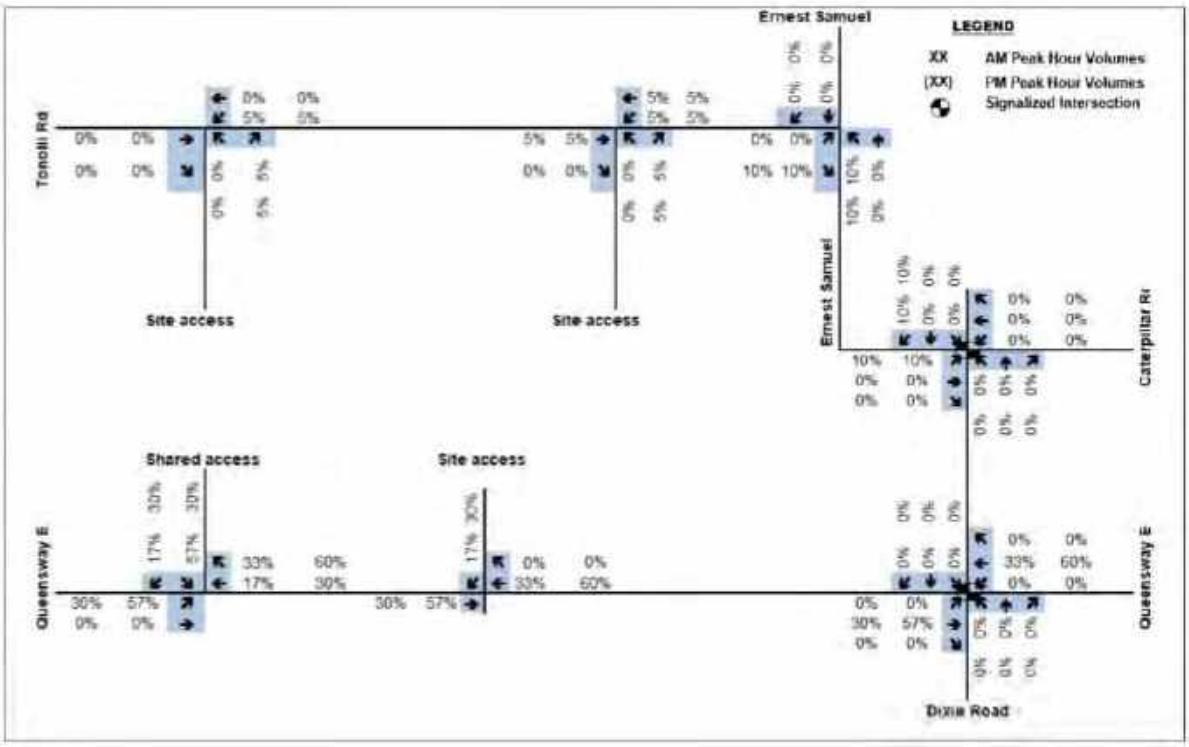


Figure 7b Trip Distribution Percentages (Trucks)

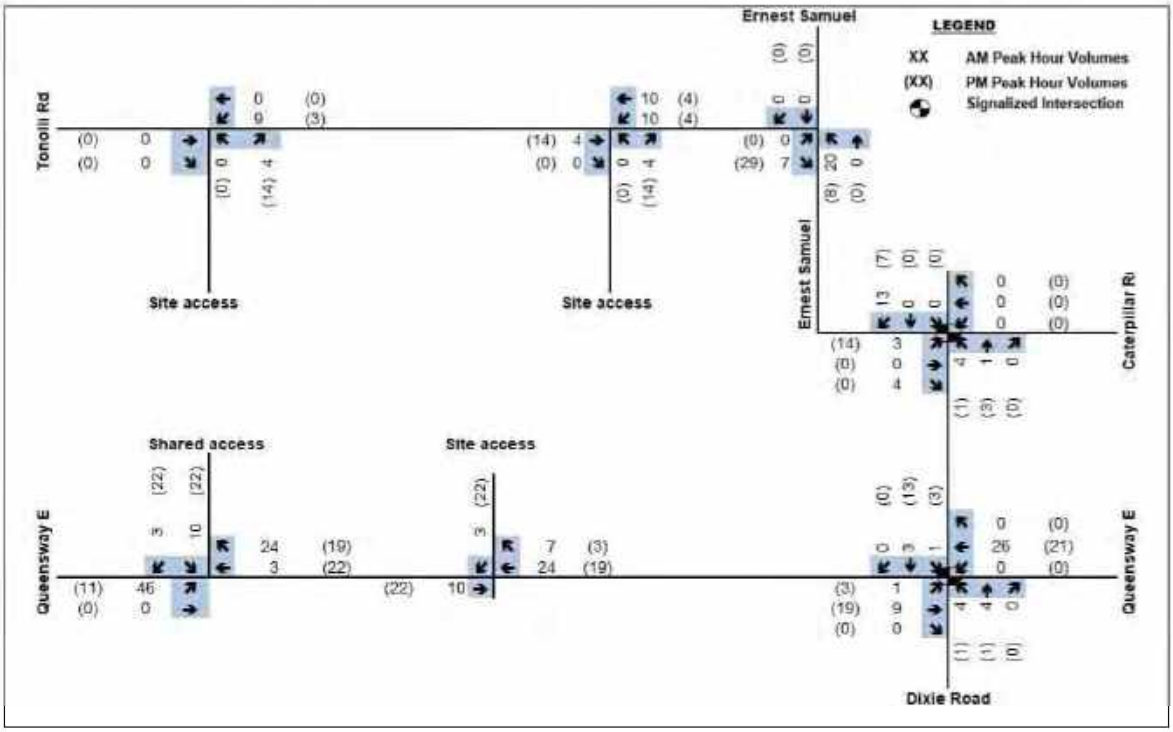


Figure 8 Estimated Site Trips (Passenger Car Equivalents)

APPENDIX D

TTS Modal Split and Distribution Data

From Dundas Connects Master Plan (May 2018) pg. 51

Mode	Split
Auto	84%
Transit	11%
Walk/Cycle	5%
Other	0%
Total	100%

RESIDENTIAL MODAL SPLIT

From TTS: 3670, 3661

Mode	AM		PM	
	IN	OUT	IN	OUT
SOV	54%	44%	52%	66%
Non-SOV	46%	56%	48%	34%

RETAIL MODAL SPLIT

From TTS: 3670, 3661

Mode	AM		PM	
	IN	OUT	IN	OUT
SOV	93%	100%	100%	97%
Non-SOV	7%	0%	0%	3%

COMMUNITY CENTRE MODAL SPLIT

From TTS: 3670, 3661

Mode	AM		PM	
	IN	OUT	IN	OUT
SOV	100%	53%	52%	71%
Non-SOV	0%	47%	48%	29%

AM OUT - RES

Thu Feb 25 2021 15:18:57 GMT 0500 (Eastern Standard Time) Run Time: 2786ms

Cross Tabulation Query Form - Trip - 2016 v1.1

Row: 2006 GTA zone of origin - gta06_orig
Column: Primary travel mode of trip - mode_prime

Filters:
[2006 GTA zone of origin - gta06_orig In 3670,3661
and
Start time of trip - start_time In 0700-0900
and
Trip purpose of origin - purp_orig In H,)

Trip 2016
Table:

	Transit excluding GO rail	Auto driver	GO rail only	Auto passenger	School bus	Taxi passenger	Walk	Total
3661	0	13	0	13	0	0	0	26
3670	300	1118	22	301	235	62	510	2548
Total	300	1131	22	314	235	62	510	2574
%	12%	44%	1%	12%	9%	2%	20%	100%

PM OUT - RES

Thu Feb 25 2021 15:23:24 GMT 0500 (Eastern Standard Time) Run Time: 2412ms

Cross Tabulation Query Form - Trip - 2016 v1.1

Row: 2006 GTA zone of origin - gta06_orig
Column: Primary travel mode of trip - mode_prime

Filters:
[2006 GTA zone of origin - gta06_orig In 3670,3661
and
Start time of trip - start_time In 1600-1800
and
Trip purpose of origin - purp_orig In H,)

Trip 2016
Table:

	Transit excluding GO rail	Auto driver	Auto passenger	Walk	Total
3670	48	370	94	47	559
Total	48	370	94	47	
%	9%	66%	17%	8%	100%

AM IN - Market

Thu Feb 25 2021 23:38:43 GMT-0500 (Eastern Standard Time) - Run Time: 2399ms

Cross Tabulation Query Form - Trip - 2016 v1.1

Row: 2006 GTA zone of destination - gta06_dest
Column: Primary travel mode of trip - mode_prime

Filters:
[2006 GTA zone of destination - gta06_dest In 3670,3661
and
Start time of trip - start_time In 0700-0900
and
Trip purpose of destination - purp_dest In M,)

Trip 2016
Table:

	Auto driver	Auto passenger	
3661	62	7	
3670	27	0	
Total	89	7	96
%	93%	7%	100%

PM IN - Market

Thu Feb 25 2021 23:40:07 GMT-0500 (Eastern Standard Time) - Run Time: 2559ms

Cross Tabulation Query Form - Trip - 2016 v1.1

Row: 2006 GTA zone of destination - gta06_dest
Column: Primary travel mode of trip - mode_prime

Filters:
[2006 GTA zone of destination - gta06_dest In 3670,3661
and
Start time of trip - start_time In 1600-1800
and
Trip purpose of destination - purp_dest In M,)

Trip 2016
Table:

	Auto driver	
3661	76	
3670	148	
Total	224	
%	100%	

AM IN - RES

Thu Feb 25 2021 15:24:58 GMT 0500 (Eastern Standard Time) Run Time: 2636m

Cross Tabulation Query Form - Trip - 2016 v1.1

Row: 2006 GTA zone of destination - gta06_dest
Column: Primary travel mode of trip - mode_prime

Filters:
(2006 GTA zone of destination - gta06_dest In 3670,3661
and
Start time of trip - start_time In 0700-0900
and
Trip purpose of destination - purp_dest In H,)

Trip 2016
Table:

	Transit excluding GO rail	Auto driver	Walk	Total
3661	9	22	0	22
3670	62	259	180	501
Total	62	281	180	523
%	12%	54%	34%	100%

PM IN - RES

Thu Feb 25 2021 15:25:24 GMT 0500 (Eastern Standard Time) Run Time: 3002ms

Cross Tabulation Query Form - Trip - 2016 v1.1

Row: 2006 GTA zone of destination - gta06_dest
Column: Primary travel mode of trip - mode_prime

Filters:
(2006 GTA zone of destination - gta06_dest In 3670,3661
and
Start time of trip - start_time In 1600-1800
and
Trip purpose of destination - purp_dest In H,)

Trip 2016
Table:

	Transit excluding GO rail	Cycle	Auto driver	GO rail only	Auto passenger	Walk	Total
3670	453	26	859	53	196	51	1638
Total	453	26	859	53	196	51	
%	28%	2%	52%	3%	12%	3%	100%

AM-OUT - Market

Thu Mar 04 2021 14:23:44 GMT-0500 (Eastern Standard Time) - Run Time: 2444m

Cross Tabulation Query Form - Trip - 2016 v1.1

Row: 2006 GTA zone of origin - gta06_orig
Column: Primary travel mode of trip - mode_prime

Filters:
Trip purpose of origin - purp_orig In M,
and
Start time of trip - start_time In 700-900
and
2006 GTA zone of origin - gta06_orig In 3661,3670

Trip 2016
Table:

	Auto driver
3661	45
3670	27
%	**100%**

PM OUT- Market

Thu Mar 04 2021 14:24:45 GMT-0500 (Eastern Standard Time) - Run Time: 2213ms

Cross Tabulation Query Form - Trip - 2016 v1.1

Row: 2006 GTA zone of origin - gta06_orig
Column: Primary travel mode of trip - mode_prime

Filters:
Trip purpose of origin - purp_orig In M,
and
Start time of trip - start_time In 1600-1800
and
2006 GTA zone of origin - gta06_orig In 3661,3670

Trip 2016
Table:

	Auto driver	Auto passenger	
3661	**311**	16	
3670	176	0	
Total	**487**	**16**	**503**
%	**97%**	**3%**	

AM IN - Other
Thu Feb 25 2021 23:39:11 GMT-0500 (Eastern Standard Time) - Run Time: 2505ms

Cross Tabulation Query Form - Trip - 2016 v1.1

Row: 2006 GTA zone of destination - gta06_dest
Column: Primary travel mode of trip - mode_prime

Filters:
(2006 GTA zone of destination - gta06_dest In 3670,3661
and
Start time of trip - start_time In 0700-0900
and
Trip purpose of destination - purp_dest In O,)

Trip 2016
Table:

	Auto driver
3661	77
3670	81
Total	158
%	100%

PM IN - Other
Thu Feb 25 2021 23:39:46 GMT-0500 (Eastern Standard Time) - Run Time: 2653ms

Cross Tabulation Query Form - Trip - 2016 v1.1

Row: 2006 GTA zone of destination - gta06_dest
Column: Primary travel mode of trip - mode_prime

Filters:
(2006 GTA zone of destination - gta06_dest In 3670,3661
and
Start time of trip - start_time In 1600-1800
and
Trip purpose of destination - purp_dest In O,)

Trip 2016
Table:

	Transit excluding GO rail	Auto driver	GO rail only	Auto passenger	School bus
3661	0	193	0	55	14
3670	48	153	17	161	0
Total	48	346	17	216	14
%	7%	52%	3%	32%	2%

AM OUT - Other
Thu Mar 04 2021 14:31:59 GMT-0500 (Eastern Standard Time) - Run Time: 2428ms

Cross Tabulation Query Form - Trip - 2016 v1.1

Row: 2006 GTA zone of origin - gta06_orig
Column: Primary travel mode of trip - mode_prime

Filters:
Trip purpose of origin - purp_orig In O,
and
Start time of trip - start_time In 700-900
and
2006 GTA zone of origin - gta06_orig In 3661,3670

Trip 2016
Table:

		Auto driver	GO rail only		Walk		
3661	8	0		0			
3670	11	17		24			
Total	19	17	36	24	665		
%	**53%**	**47%**		4%	100%		

PM OUT - Other
Thu Mar 04 2021 14:33:04 GMT-0500 (Eastern Standard Time) - Run Time: 2508ms

Cross Tabulation Query Form - Trip - 2016 v1.1

Row: 2006 GTA zone of origin - gta06_orig
Column: Primary travel mode of trip - mode_prime

Filters:
Trip purpose of origin - purp_orig In O,
and
Start time of trip - start_time In 1600-1800
and
2006 GTA zone of origin - gta06_orig In 3661,3670

Trip 2016
Table:

	Auto driver	Auto passenger	
3661	47	23	
3670	74	27	
Total	**121**	**50**	**171**
%	**71%**	**29%**	

APPENDIX E

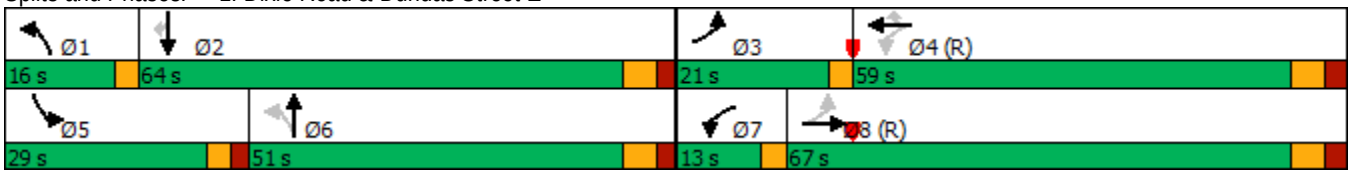
Existing Intersection Capacity Analysis

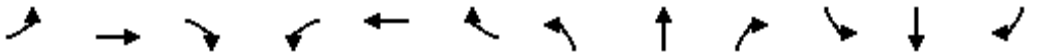
Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT	SBR
Lane Configurations										
Traffic Volume (vph)	156	795	108	432	187	142	845	376	806	177
Future Volume (vph)	156	795	108	432	187	142	845	376	806	177
Lane Group Flow (vph)	166	1030	115	460	199	151	1032	400	857	188
Turn Type	pm+pt	NA	pm+pt	NA	Perm	pm+pt	NA	Prot	NA	Perm
Protected Phases	3	8	7	4		1	6	5	2	
Permitted Phases	8		4		4	6				2
Detector Phase	3	8	7	4	4	1	6	5	2	2
Switch Phase										
Minimum Initial (s)	7.0	10.0	7.0	10.0	10.0	7.0	10.0	7.0	10.0	10.0
Minimum Split (s)	10.0	47.8	11.5	47.8	47.8	10.0	42.5	13.0	42.5	42.5
Total Split (s)	21.0	67.0	13.0	59.0	59.0	16.0	51.0	29.0	64.0	64.0
Total Split (%)	13.1%	41.9%	8.1%	36.9%	36.9%	10.0%	31.9%	18.1%	40.0%	40.0%
Yellow Time (s)	3.0	4.0	3.0	4.0	4.0	3.0	4.0	3.0	4.0	4.0
All-Red Time (s)	0.0	2.8	0.0	2.8	2.8	0.0	2.5	2.0	2.5	2.5
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	3.0	6.8	3.0	6.8	6.8	3.0	6.5	5.0	6.5	6.5
Lead/Lag	Lead	Lag	Lead	Lag	Lag	Lead	Lag	Lead	Lag	Lag
Lead-Lag Optimize?										
Recall Mode	None	C-Max	None	C-Max	C-Max	None	Max	None	Max	Max
v/c Ratio	0.41	0.57	0.55	0.40	0.35	0.53	0.77	0.90	0.48	0.33
Control Delay	27.4	39.4	59.5	61.7	32.2	32.0	56.6	91.3	40.4	10.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	27.4	39.4	59.5	61.7	32.2	32.0	56.6	91.3	40.4	10.1
Queue Length 50th (m)	31.6	96.8	30.1	65.6	21.1	28.4	115.7	68.6	81.6	8.0
Queue Length 95th (m)	48.3	112.4	52.9	102.6	63.5	43.8	134.3	#97.6	95.9	28.2
Internal Link Dist (m)		1362.6		279.9			1407.4		1183.5	
Turn Bay Length (m)	45.0		85.0		42.0	64.0		107.0		50.0
Base Capacity (vph)	422	1821	212	1148	564	296	1337	453	1784	571
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	0.39	0.57	0.54	0.40	0.35	0.51	0.77	0.88	0.48	0.33

Intersection Summary

Cycle Length: 160
Actuated Cycle Length: 160
Offset: 3 (2%), Referenced to phase 4:WBTL and 8:EBTL, Start of Green
Natural Cycle: 115
Control Type: Actuated-Coordinated
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 1: Dixie Road & Dundas Street E





Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	156	795	173	108	432	187	142	845	125	376	806	177
Future Volume (vph)	156	795	173	108	432	187	142	845	125	376	806	177
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.0	3.5	3.0	3.0	3.5	3.0	3.0	3.5	3.0	3.0	3.5	3.0
Total Lost time (s)	3.0	6.8		3.0	6.8	6.8	3.0	6.5		5.0	6.5	6.5
Lane Util. Factor	1.00	0.91		1.00	0.95	1.00	1.00	0.91		0.97	0.91	1.00
Frpb, ped/bikes	1.00	0.99		1.00	1.00	0.98	1.00	1.00		1.00	1.00	0.94
Flpb, ped/bikes	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00
Frt	1.00	0.97		1.00	1.00	0.85	1.00	0.98		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)	1617	4760		1530	3305	1301	1661	4700		3026	4885	1299
Flt Permitted	0.38	1.00		0.20	1.00	1.00	0.31	1.00		0.95	1.00	1.00
Satd. Flow (perm)	654	4760		315	3305	1301	536	4700		3026	4885	1299
Peak-hour factor, PHF	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Adj. Flow (vph)	166	846	184	115	460	199	151	899	133	400	857	188
RTOR Reduction (vph)	0	21	0	0	0	112	0	12	0	0	0	97
Lane Group Flow (vph)	166	1009	0	115	460	87	151	1020	0	400	857	91
Confl. Peds. (#/hr)	8		30	30		8	39		12	12		39
Confl. Bikes (#/hr)							39					
Heavy Vehicles (%)	4%	4%	4%	10%	8%	8%	1%	6%	11%	8%	5%	7%
Bus Blockages (#/hr)	0	0	9	0	0	12	0	0	5	0	0	4
Turn Type	pm+pt	NA		pm+pt	NA	Perm	pm+pt	NA		Prot	NA	Perm
Protected Phases	3	8		7	4		1	6		5	2	
Permitted Phases	8			4		4	6					2
Actuated Green, G (s)	73.2	60.5		65.3	55.6	55.6	57.2	45.1		23.4	58.4	58.4
Effective Green, g (s)	73.2	60.5		65.3	55.6	55.6	57.2	45.1		23.4	58.4	58.4
Actuated g/C Ratio	0.46	0.38		0.41	0.35	0.35	0.36	0.28		0.15	0.36	0.36
Clearance Time (s)	3.0	6.8		3.0	6.8	6.8	3.0	6.5		5.0	6.5	6.5
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)	387	1799		202	1148	452	276	1324		442	1783	474
v/s Ratio Prot	c0.04	c0.21		c0.03	0.14		0.04	c0.22		c0.13	0.18	
v/s Ratio Perm	0.16			0.20		0.07	0.15					0.07
v/c Ratio	0.43	0.56		0.57	0.40	0.19	0.55	0.77		0.90	0.48	0.19
Uniform Delay, d1	26.8	39.3		31.2	39.6	36.5	36.3	52.7		67.2	39.1	34.7
Progression Factor	1.00	1.00		2.02	1.50	3.87	1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	0.8	1.3		3.6	1.0	0.9	2.2	4.4		21.6	0.9	0.9
Delay (s)	27.6	40.5		66.6	60.5	142.3	38.6	57.1		88.8	40.1	35.6
Level of Service	C	D		E	E	F	D	E		F	D	D
Approach Delay (s)		38.7			82.5			54.7			53.0	
Approach LOS		D			F			D			D	

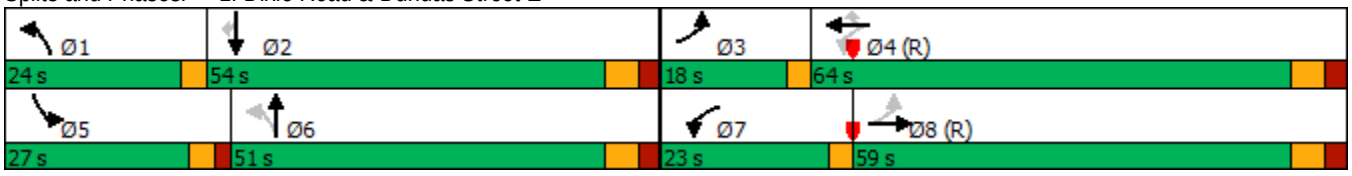
Intersection Summary			
HCM 2000 Control Delay	54.7	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.69		
Actuated Cycle Length (s)	160.0	Sum of lost time (s)	21.3
Intersection Capacity Utilization	102.1%	ICU Level of Service	G
Analysis Period (min)	15		
c Critical Lane Group			

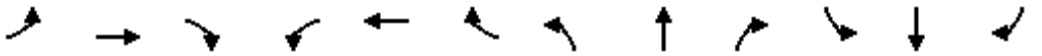
Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT	SBR
Lane Configurations										
Traffic Volume (vph)	192	779	198	874	520	248	956	437	888	286
Future Volume (vph)	192	779	198	874	520	248	956	437	888	286
Lane Group Flow (vph)	198	1016	204	901	536	256	1178	451	915	295
Turn Type	pm+pt	NA	pm+pt	NA	Perm	pm+pt	NA	Prot	NA	Perm
Protected Phases	3	8	7	4		1	6	5	2	
Permitted Phases	8		4		4	6				2
Detector Phase	3	8	7	4	4	1	6	5	2	2
Switch Phase										
Minimum Initial (s)	7.0	10.0	7.0	10.0	10.0	7.0	10.0	7.0	10.0	10.0
Minimum Split (s)	10.0	47.8	11.5	47.8	47.8	10.0	42.5	13.0	42.5	42.5
Total Split (s)	18.0	59.0	23.0	64.0	64.0	24.0	51.0	27.0	54.0	54.0
Total Split (%)	11.3%	36.9%	14.4%	40.0%	40.0%	15.0%	31.9%	16.9%	33.8%	33.8%
Yellow Time (s)	3.0	4.0	3.0	4.0	4.0	3.0	4.0	3.0	4.0	4.0
All-Red Time (s)	0.0	2.8	0.0	2.8	2.8	0.0	2.5	2.0	2.5	2.5
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	-1.0	0.0	0.0
Total Lost Time (s)	3.0	6.8	3.0	6.8	6.8	3.0	6.5	4.0	6.5	6.5
Lead/Lag	Lead	Lag	Lead	Lag	Lag	Lead	Lag	Lead	Lag	Lag
Lead-Lag Optimize?										
Recall Mode	None	C-Max	None	C-Max	C-Max	None	Max	None	Max	Max
v/c Ratio	0.82	0.60	0.73	0.71	0.85	0.83	0.86	0.98	0.60	0.56
Control Delay	52.4	43.1	47.8	61.8	56.4	50.0	61.4	104.5	49.4	18.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	52.4	43.1	47.8	61.8	56.4	50.0	61.4	104.5	49.4	18.6
Queue Length 50th (m)	37.7	98.7	55.0	156.2	124.7	53.0	135.6	78.7	97.2	24.5
Queue Length 95th (m)	#76.6	118.8	80.5	180.8	#191.4	#86.4	155.3	#116.0	113.3	58.0
Internal Link Dist (m)		1362.6		279.9			1407.4		1183.5	
Turn Bay Length (m)	45.0		85.0		42.0	64.0		107.0		50.0
Base Capacity (vph)	246	1694	315	1261	630	327	1363	460	1527	531
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	0.80	0.60	0.65	0.71	0.85	0.78	0.86	0.98	0.60	0.56

Intersection Summary

Cycle Length: 160
Actuated Cycle Length: 160
Offset: 0 (0%), Referenced to phase 4:WBTL and 8:EBTL, Start of Green
Natural Cycle: 115
Control Type: Actuated-Coordinated
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 1: Dixie Road & Dundas Street E





Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	192	779	207	198	874	520	248	956	186	437	888	286
Future Volume (vph)	192	779	207	198	874	520	248	956	186	437	888	286
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.0	3.5	3.0	3.0	3.5	3.0	3.0	3.5	3.0	3.0	3.5	3.0
Total Lost time (s)	3.0	6.8		3.0	6.8	6.8	3.0	6.5		4.0	6.5	6.5
Lane Util. Factor	1.00	0.91		1.00	0.95	1.00	1.00	0.91		0.97	0.91	1.00
Frpb, ped/bikes	1.00	0.99		1.00	1.00	0.93	1.00	0.99		1.00	1.00	0.89
Flpb, ped/bikes	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00
Frt	1.00	0.97		1.00	1.00	0.85	1.00	0.98		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)	1587	4774		1666	3500	1310	1678	4837		3204	4980	1272
Flt Permitted	0.16	1.00		0.17	1.00	1.00	0.20	1.00		0.95	1.00	1.00
Satd. Flow (perm)	264	4774		291	3500	1310	360	4837		3204	4980	1272
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	198	803	213	204	901	536	256	986	192	451	915	295
RTOR Reduction (vph)	0	29	0	0	0	159	0	18	0	0	0	141
Lane Group Flow (vph)	198	987	0	204	901	377	256	1160	0	451	915	154
Confl. Peds. (#/hr)	47		47	47		47	77		27	27		77
Confl. Bikes (#/hr)			3				77					1
Heavy Vehicles (%)	6%	3%	1%	1%	2%	4%	0%	2%	6%	2%	3%	3%
Bus Blockages (#/hr)	0	0	9	0	0	8	0	0	4	0	0	5
Turn Type	pm+pt	NA		pm+pt	NA	Perm	pm+pt	NA		Prot	NA	Perm
Protected Phases	3	8		7	4		1	6		5	2	
Permitted Phases	8			4		4	6					2
Actuated Green, G (s)	70.3	55.8		74.1	57.7	57.7	63.9	44.5		22.0	49.1	49.1
Effective Green, g (s)	70.3	55.8		74.1	57.7	57.7	63.9	44.5		23.0	49.1	49.1
Actuated g/C Ratio	0.44	0.35		0.46	0.36	0.36	0.40	0.28		0.14	0.31	0.31
Clearance Time (s)	3.0	6.8		3.0	6.8	6.8	3.0	6.5		5.0	6.5	6.5
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)	235	1664		275	1262	472	303	1345		460	1528	390
v/s Ratio Prot	c0.08	0.21		c0.08	0.26		0.10	c0.24		c0.14	0.18	
v/s Ratio Perm	c0.29			0.27		0.29	0.23					0.12
v/c Ratio	0.84	0.59		0.74	0.71	0.80	0.84	0.86		0.98	0.60	0.39
Uniform Delay, d1	32.6	42.8		29.0	44.0	46.0	35.3	54.8		68.3	47.1	43.7
Progression Factor	1.00	1.00		1.44	1.32	1.79	1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	23.0	1.6		9.1	3.1	11.8	18.9	7.5		36.7	1.7	3.0
Delay (s)	55.6	44.3		50.8	61.1	94.2	54.2	62.3		105.0	48.8	46.7
Level of Service	E	D		D	E	F	D	E		F	D	D
Approach Delay (s)		46.2			70.6			60.9			63.7	
Approach LOS		D			E			E			E	

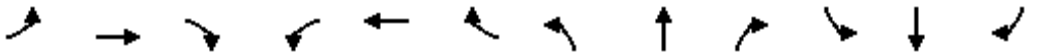
Intersection Summary			
HCM 2000 Control Delay	61.4	HCM 2000 Level of Service	E
HCM 2000 Volume to Capacity ratio	0.87		
Actuated Cycle Length (s)	160.0	Sum of lost time (s)	20.3
Intersection Capacity Utilization	106.6%	ICU Level of Service	G
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Configurations										
Traffic Volume (vph)	75	928	170	50	1306	144	122	51	52	22
Future Volume (vph)	75	928	170	50	1306	144	122	51	52	22
Lane Group Flow (vph)	77	947	173	51	1333	147	124	113	53	79
Turn Type	pm+pt	NA	Perm	Perm	NA	Perm	Perm	NA	Perm	NA
Protected Phases	5	2			6			4		8
Permitted Phases	2		2	6		6	4		8	
Detector Phase	5	2	2	6	6	6	4	4	8	8
Switch Phase										
Minimum Initial (s)	7.0	10.0	10.0	10.0	10.0	10.0	20.0	20.0	20.0	20.0
Minimum Split (s)	11.5	34.5	34.5	34.5	34.5	34.5	47.0	47.0	47.0	47.0
Total Split (s)	14.0	112.0	112.0	98.0	98.0	98.0	48.0	48.0	48.0	48.0
Total Split (%)	8.8%	70.0%	70.0%	61.3%	61.3%	61.3%	30.0%	30.0%	30.0%	30.0%
Yellow Time (s)	3.0	4.0	4.0	4.0	4.0	4.0	3.5	3.5	3.5	3.5
All-Red Time (s)	0.0	2.5	2.5	2.5	2.5	2.5	3.5	3.5	3.5	3.5
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	3.0	6.5	6.5	6.5	6.5	6.5	7.0	7.0	7.0	7.0
Lead/Lag	Lead			Lag	Lag	Lag				
Lead-Lag Optimize?										
Recall Mode	None	C-Max	C-Max	C-Max	C-Max	C-Max	None	None	None	None
v/c Ratio	0.29	0.37	0.17	0.15	0.57	0.16	0.57	0.35	0.28	0.24
Control Delay	9.2	11.3	5.1	19.7	29.0	10.1	69.1	40.2	57.8	19.3
Queue Delay	0.0	0.0	0.0	0.0	1.2	0.0	0.0	0.0	0.0	0.0
Total Delay	9.2	11.3	5.1	19.7	30.2	10.1	69.1	40.2	57.8	19.3
Queue Length 50th (m)	6.5	82.4	9.9	9.9	176.1	16.3	40.6	24.2	16.4	6.6
Queue Length 95th (m)	m17.2	m106.0	m25.2	m23.2	231.0	m35.4	57.0	39.4	27.7	20.2
Internal Link Dist (m)		279.9			149.0			96.0		162.3
Turn Bay Length (m)	30.0			15.0			15.0		25.0	
Base Capacity (vph)	295	2560	1019	351	2325	917	313	454	272	460
Starvation Cap Reductn	0	0	0	0	704	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	0.26	0.37	0.17	0.15	0.82	0.16	0.40	0.25	0.19	0.17

Intersection Summary

Cycle Length: 160
Actuated Cycle Length: 160
Offset: 67 (42%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green
Natural Cycle: 105
Control Type: Actuated-Coordinated
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 2: Nelico Court & Dundas Street E



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	75	928	170	50	1306	144	122	51	60	52	22	56
Future Volume (vph)	75	928	170	50	1306	144	122	51	60	52	22	56
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.0	3.5	3.0	3.0	3.5	3.0	3.0	3.5	3.0	3.0	3.5	3.0
Total Lost time (s)	3.0	6.5	6.5	6.5	6.5	6.5	7.0	7.0		7.0	7.0	
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	0.90	1.00	1.00	0.88	1.00	0.98		1.00	0.97	
Flpb, ped/bikes	1.00	1.00	1.00	0.98	1.00	1.00	0.98	1.00		0.97	1.00	
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.92		1.00	0.89	
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)	1668	3466	1319	1648	3466	1308	1647	1672		1578	1631	
Flt Permitted	0.15	1.00	1.00	0.30	1.00	1.00	0.71	1.00		0.64	1.00	
Satd. Flow (perm)	262	3466	1319	524	3466	1308	1223	1672		1063	1631	
Peak-hour factor, PHF	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Adj. Flow (vph)	77	947	173	51	1333	147	124	52	61	53	22	57
RTOR Reduction (vph)	0	0	45	0	0	40	0	29	0	0	47	0
Lane Group Flow (vph)	77	947	128	51	1333	107	124	84	0	53	32	0
Confl. Peds. (#/hr)	35		28	28		35	21		26	26		21
Confl. Bikes (#/hr)							21					
Heavy Vehicles (%)	1%	3%	1%	0%	3%	0%	0%	2%	0%	4%	0%	0%
Bus Blockages (#/hr)	0	0	5	0	0	4	0	0	0	0	0	0
Turn Type	pm+pt	NA	Perm	Perm	NA	Perm	Perm	NA		Perm	NA	
Protected Phases	5	2			6			4			8	
Permitted Phases	2		2	6		6	4			8		
Actuated Green, G (s)	118.2	118.2	118.2	107.3	107.3	107.3	28.3	28.3		28.3	28.3	
Effective Green, g (s)	118.2	118.2	118.2	107.3	107.3	107.3	28.3	28.3		28.3	28.3	
Actuated g/C Ratio	0.74	0.74	0.74	0.67	0.67	0.67	0.18	0.18		0.18	0.18	
Clearance Time (s)	3.0	6.5	6.5	6.5	6.5	6.5	7.0	7.0		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)	262	2560	974	351	2324	877	216	295		188	288	
v/s Ratio Prot	0.01	c0.27			c0.38			0.05			0.02	
v/s Ratio Perm	0.20		0.10	0.10		0.08	c0.10			0.05		
v/c Ratio	0.29	0.37	0.13	0.15	0.57	0.12	0.57	0.29		0.28	0.11	
Uniform Delay, d1	9.3	7.5	6.0	9.6	14.1	9.5	60.3	57.1		57.0	55.3	
Progression Factor	1.20	1.29	3.95	1.49	1.78	2.95	1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.4	0.3	0.2	0.7	0.9	0.2	3.7	0.5		0.8	0.2	
Delay (s)	11.6	10.0	24.1	15.1	25.9	28.1	64.0	57.6		57.9	55.5	
Level of Service	B	A	C	B	C	C	E	E		E	E	
Approach Delay (s)		12.1			25.8			61.0			56.4	
Approach LOS		B			C			E			E	

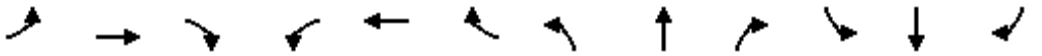
Intersection Summary			
HCM 2000 Control Delay	24.5	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.56		
Actuated Cycle Length (s)	160.0	Sum of lost time (s)	16.5
Intersection Capacity Utilization	82.8%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	SBL	SBT	SBR
Lane Configurations											
Traffic Volume (vph)	20	842	235	282	1234	14	224	6	19	22	62
Future Volume (vph)	20	842	235	282	1234	14	224	6	19	22	62
Lane Group Flow (vph)	21	886	247	297	1299	15	236	328	0	43	65
Turn Type	Perm	NA	Perm	pm+pt	NA	Perm	Perm	NA	Perm	NA	Perm
Protected Phases		2		1	6			4		8	
Permitted Phases	2		2	6		6	4		8		8
Detector Phase	2	2	2	1	6	6	4	4	8	8	8
Switch Phase											
Minimum Initial (s)	10.0	10.0	10.0	5.0	10.0	10.0	20.0	20.0	20.0	20.0	20.0
Minimum Split (s)	48.0	48.0	48.0	9.5	48.0	48.0	51.5	51.5	51.5	51.5	51.5
Total Split (s)	89.0	89.0	89.0	21.0	110.0	110.0	50.0	50.0	50.0	50.0	50.0
Total Split (%)	55.6%	55.6%	55.6%	13.1%	68.8%	68.8%	31.3%	31.3%	31.3%	31.3%	31.3%
Yellow Time (s)	4.0	4.0	4.0	3.0	4.0	4.0	3.0	3.0	3.0	3.0	3.0
All-Red Time (s)	3.0	3.0	3.0	0.0	3.0	3.0	4.5	4.5	4.5	4.5	4.5
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0
Total Lost Time (s)	7.0	7.0	7.0	3.0	7.0	7.0	7.5	7.5		7.5	7.5
Lead/Lag	Lag	Lag	Lag	Lead							
Lead-Lag Optimize?											
Recall Mode	C-Max	C-Max	C-Max	None	C-Max	C-Max	Min	Min	Min	Min	Min
v/c Ratio	0.12	0.44	0.27	0.69	0.55	0.02	0.85	0.60		0.22	0.18
Control Delay	11.8	10.2	0.8	17.2	12.9	0.1	85.9	13.7		51.4	10.5
Queue Delay	0.0	0.2	0.0	0.0	0.3	0.0	0.0	0.0		0.0	0.0
Total Delay	11.8	10.4	0.8	17.2	13.1	0.1	85.9	13.7		51.4	10.5
Queue Length 50th (m)	1.4	35.1	0.0	28.2	152.6	0.0	76.6	13.2		12.0	0.0
Queue Length 95th (m)	4.9	52.4	1.0	m27.2	104.8	m0.1	105.6	43.5		23.2	12.8
Internal Link Dist (m)		149.0			130.6			105.8		70.0	
Turn Bay Length (m)	30.0			30.0							10.0
Base Capacity (vph)	178	1998	919	458	2379	904	341	611		244	440
Starvation Cap Reductn	0	444	0	0	310	0	0	0		0	0
Spillback Cap Reductn	0	0	0	0	408	0	0	0		0	7
Storage Cap Reductn	0	0	0	0	0	0	0	0		0	0
Reduced v/c Ratio	0.12	0.57	0.27	0.65	0.66	0.02	0.69	0.54		0.18	0.15

Intersection Summary

Cycle Length: 160
Actuated Cycle Length: 160
Offset: 25 (16%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green
Natural Cycle: 110
Control Type: Actuated-Coordinated
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 3: Jarrow Avenue & Dundas Street E



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	20	842	235	282	1234	14	224	6	306	19	22	62
Future Volume (vph)	20	842	235	282	1234	14	224	6	306	19	22	62
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.0	3.5	3.0	3.0	3.5	3.0	3.0	3.5	3.0	3.0	3.5	3.0
Total Lost time (s)	7.0	7.0	7.0	3.0	7.0	7.0	7.5	7.5			7.5	7.5
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	0.93	1.00	0.96			1.00	0.98
Flpb, ped/bikes	0.99	1.00	1.00	1.00	1.00	1.00	0.99	1.00			0.99	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.85			1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00			0.98	1.00
Satd. Flow (prot)	1454	3433	1402	1665	3433	1292	1674	1528			1736	1480
Flt Permitted	0.20	1.00	1.00	0.26	1.00	1.00	0.73	1.00			0.52	1.00
Satd. Flow (perm)	306	3433	1402	449	3433	1292	1285	1528			921	1480
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	21	886	247	297	1299	15	236	6	322	20	23	65
RTOR Reduction (vph)	0	0	103	0	0	5	0	219	0	0	0	51
Lane Group Flow (vph)	21	886	144	297	1299	10	236	109	0	0	43	14
Confl. Peds. (#/hr)	25		16	16		25	6		24	24		6
Heavy Vehicles (%)	15%	4%	0%	1%	4%	7%	0%	0%	1%	11%	0%	0%
Bus Blockages (#/hr)	0	0	5	0	0	4	0	0	0	0	0	0
Turn Type	Perm	NA	Perm	pm+pt	NA	Perm	Perm	NA		Perm	NA	Perm
Protected Phases		2		1	6			4			8	
Permitted Phases	2		2	6		6	4			8		8
Actuated Green, G (s)	93.2	93.2	93.2	110.9	110.9	110.9	34.6	34.6			34.6	34.6
Effective Green, g (s)	93.2	93.2	93.2	110.9	110.9	110.9	34.6	34.6			34.6	34.6
Actuated g/C Ratio	0.58	0.58	0.58	0.69	0.69	0.69	0.22	0.22			0.22	0.22
Clearance Time (s)	7.0	7.0	7.0	3.0	7.0	7.0	7.5	7.5			7.5	7.5
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)	178	1999	816	422	2379	895	277	330			199	320
v/s Ratio Prot		0.26		c0.06	0.38			0.07				
v/s Ratio Perm	0.07		0.10	c0.42		0.01	c0.18				0.05	0.01
v/c Ratio	0.12	0.44	0.18	0.70	0.55	0.01	0.85	0.33			0.22	0.04
Uniform Delay, d1	15.0	18.8	15.5	11.6	12.1	7.6	60.2	52.9			51.5	49.6
Progression Factor	0.53	0.46	0.07	1.08	0.91	0.14	1.00	1.00			1.00	1.00
Incremental Delay, d2	1.3	0.7	0.5	4.7	0.8	0.0	21.5	0.6			0.5	0.1
Delay (s)	9.3	9.4	1.5	17.3	11.9	1.1	81.7	53.5			52.1	49.7
Level of Service	A	A	A	B	B	A	F	D			D	D
Approach Delay (s)		7.7			12.8			65.3			50.6	
Approach LOS		A			B			E			D	

Intersection Summary			
HCM 2000 Control Delay	20.9	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.75		
Actuated Cycle Length (s)	160.0	Sum of lost time (s)	17.5
Intersection Capacity Utilization	102.6%	ICU Level of Service	G
Analysis Period (min)	15		

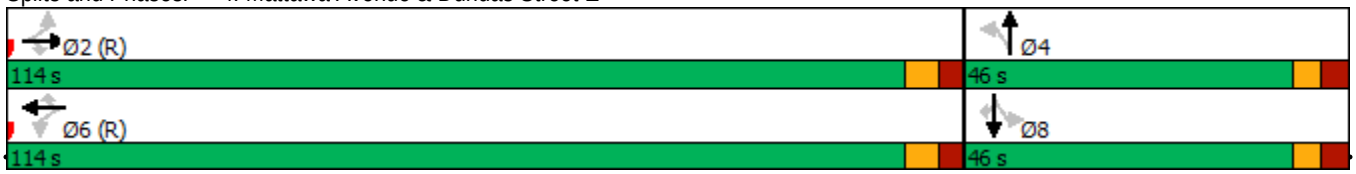
c Critical Lane Group

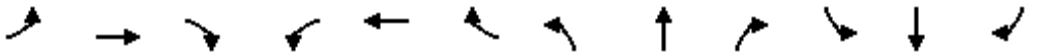
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	SBL	SBT	SBR
Lane Configurations											
Traffic Volume (vph)	9	953	134	76	1163	3	238	1	7	1	4
Future Volume (vph)	9	953	134	76	1163	3	238	1	7	1	4
Lane Group Flow (vph)	9	982	138	78	1199	3	245	94	0	8	4
Turn Type	Perm	NA	Perm	Perm	NA	Perm	Perm	NA	Perm	NA	Perm
Protected Phases		2			6			4		8	
Permitted Phases	2		2	6		6	4		8		8
Detector Phase	2	2	2	6	6	6	4	4	8	8	8
Switch Phase											
Minimum Initial (s)	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0
Minimum Split (s)	40.0	40.0	40.0	40.0	40.0	40.0	45.0	45.0	45.0	45.0	45.0
Total Split (s)	114.0	114.0	114.0	114.0	114.0	114.0	46.0	46.0	46.0	46.0	46.0
Total Split (%)	71.3%	71.3%	71.3%	71.3%	71.3%	71.3%	28.8%	28.8%	28.8%	28.8%	28.8%
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.5	3.5	3.5	3.5	3.5
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0
Total Lost Time (s)	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0		7.0	7.0
Lead/Lag											
Lead-Lag Optimize?											
Recall Mode	C-Max	C-Max	C-Max	C-Max	C-Max	C-Max	None	None	None	None	None
v/c Ratio	0.04	0.41	0.15	0.26	0.50	0.00	0.89	0.24		0.02	0.01
Control Delay	16.9	16.5	6.9	2.6	1.5	0.0	93.0	10.1		46.9	0.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0
Total Delay	16.9	16.5	6.9	2.6	1.6	0.0	93.0	10.1		46.9	0.0
Queue Length 50th (m)	0.9	62.2	2.7	0.6	4.8	0.0	79.1	0.3		2.1	0.0
Queue Length 95th (m)	m3.6	127.7	23.8	1.1	5.8	m0.0	#120.2	16.0		7.0	0.0
Internal Link Dist (m)		73.5			59.8			251.4		120.0	
Turn Bay Length (m)	24.0			28.0							15.0
Base Capacity (vph)	239	2421	922	304	2421	955	313	435		375	377
Starvation Cap Reductn	0	0	0	0	157	0	0	0		0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0		0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0		0	0
Reduced v/c Ratio	0.04	0.41	0.15	0.26	0.53	0.00	0.78	0.22		0.02	0.01

Intersection Summary

Cycle Length: 160
Actuated Cycle Length: 160
Offset: 136 (85%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green
Natural Cycle: 85
Control Type: Actuated-Coordinated
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 4: Mattawa Avenue & Dundas Street E

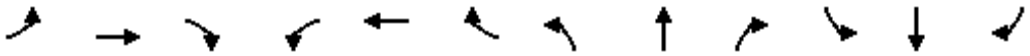




Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	9	953	134	76	1163	3	238	1	90	7	1	4
Future Volume (vph)	9	953	134	76	1163	3	238	1	90	7	1	4
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.0	3.5	3.0	3.0	3.5	3.0	3.0	3.5	3.0	3.0	3.5	3.0
Total Lost time (s)	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0			7.0	7.0
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	0.91	1.00	1.00	0.91	1.00	0.97			1.00	0.97
Flpb, ped/bikes	0.99	1.00	1.00	0.99	1.00	1.00	0.98	1.00			0.99	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.85			1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00			0.96	1.00
Satd. Flow (prot)	1669	3466	1261	1597	3466	1355	1625	1498			1779	1465
Flt Permitted	0.19	1.00	1.00	0.26	1.00	1.00	0.75	1.00			0.83	1.00
Satd. Flow (perm)	343	3466	1261	436	3466	1355	1287	1498			1542	1465
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	9	982	138	78	1199	3	245	1	93	7	1	4
RTOR Reduction (vph)	0	0	42	0	0	1	0	73	0	0	0	3
Lane Group Flow (vph)	9	982	96	78	1199	2	245	21	0	0	8	1
Confl. Peds. (#/hr)	28		28	28		28	13		12	12		13
Heavy Vehicles (%)	0%	3%	7%	4%	3%	0%	2%	0%	4%	0%	0%	0%
Bus Blockages (#/hr)	0	0	5	0	0	4	0	0	0	0	0	0
Turn Type	Perm	NA	Perm	Perm	NA	Perm	Perm	NA		Perm	NA	Perm
Protected Phases		2			6			4			8	
Permitted Phases	2		2	6		6	4			8		8
Actuated Green, G (s)	111.8	111.8	111.8	111.8	111.8	111.8	34.2	34.2			34.2	34.2
Effective Green, g (s)	111.8	111.8	111.8	111.8	111.8	111.8	34.2	34.2			34.2	34.2
Actuated g/C Ratio	0.70	0.70	0.70	0.70	0.70	0.70	0.21	0.21			0.21	0.21
Clearance Time (s)	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0			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)	239	2421	881	304	2421	946	275	320			329	313
v/s Ratio Prot		0.28			c0.35			0.01				
v/s Ratio Perm	0.03		0.08	0.18		0.00	c0.19				0.01	0.00
v/c Ratio	0.04	0.41	0.11	0.26	0.50	0.00	0.89	0.07			0.02	0.00
Uniform Delay, d1	7.5	10.1	7.9	8.8	11.1	7.3	61.1	50.2			49.7	49.5
Progression Factor	1.83	1.50	4.93	0.08	0.08	1.00	1.00	1.00			1.00	1.00
Incremental Delay, d2	0.3	0.5	0.2	1.7	0.6	0.0	28.0	0.1			0.0	0.0
Delay (s)	13.9	15.6	39.0	2.4	1.5	7.3	89.1	50.2			49.7	49.5
Level of Service	B	B	D	A	A	A	F	D			D	D
Approach Delay (s)		18.5			1.5			78.3			49.7	
Approach LOS		B			A			E			D	

Intersection Summary			
HCM 2000 Control Delay	18.1	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.59		
Actuated Cycle Length (s)	160.0	Sum of lost time (s)	14.0
Intersection Capacity Utilization	85.5%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	24	1006	10	9	1283	6	4	0	13	2	0	15
Future Volume (Veh/h)	24	1006	10	9	1283	6	4	0	13	2	0	15
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	25	1059	11	9	1351	6	4	0	14	2	0	16
Pedestrians								19			15	
Lane Width (m)								3.5			3.5	
Walking Speed (m/s)								1.2			1.2	
Percent Blockage								2			1	
Right turn flare (veh)												
Median type		TWLTL			TWLTL							
Median storage veh)		2			2							
Upstream signal (m)		84			172							
pX, platoon unblocked	0.83			0.90			0.87	0.87	0.90	0.87	0.87	0.83
vC, conflicting volume	1372			1089			1618	2524	378	1804	2526	468
vC1, stage 1 conf vol							1134	1134		1387	1387	
vC2, stage 2 conf vol							484	1390		417	1139	
vCu, unblocked vol	711			721			452	1488	0	665	1491	0
tC, single (s)	4.1			4.1			7.5	6.5	6.9	7.5	6.5	6.9
tC, 2 stage (s)							6.5	5.5		6.5	5.5	
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	97			99			99	100	99	99	100	98
cM capacity (veh/h)	732			791			309	252	970	303	258	890

Direction, Lane #	EB 1	EB 2	EB 3	EB 4	WB 1	WB 2	WB 3	WB 4	NB 1	SB 1
Volume Total	25	424	424	223	9	540	540	276	18	18
Volume Left	25	0	0	0	9	0	0	0	4	2
Volume Right	0	0	0	11	0	0	0	6	14	16
cSH	732	1700	1700	1700	791	1700	1700	1700	657	732
Volume to Capacity	0.03	0.25	0.25	0.13	0.01	0.32	0.32	0.16	0.03	0.02
Queue Length 95th (m)	0.8	0.0	0.0	0.0	0.3	0.0	0.0	0.0	0.7	0.6
Control Delay (s)	10.1	0.0	0.0	0.0	9.6	0.0	0.0	0.0	10.6	10.0
Lane LOS	B				A				B	B
Approach Delay (s)	0.2				0.1				10.6	10.0
Approach LOS									B	B

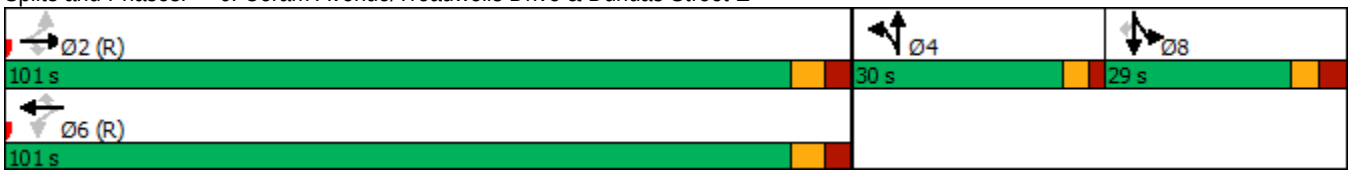
Intersection Summary				
Average Delay	0.3			
Intersection Capacity Utilization	34.9%	ICU Level of Service		A
Analysis Period (min)	15			

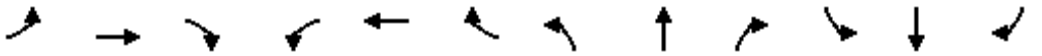
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBT	SBT	SBR
Lane Configurations									
Traffic Volume (vph)	12	959	43	8	1310	31	0	0	5
Future Volume (vph)	12	959	43	8	1310	31	0	0	5
Lane Group Flow (vph)	13	999	45	8	1365	32	45	15	5
Turn Type	Perm	NA	Perm	Perm	NA	Perm	NA	NA	Perm
Protected Phases		2			6		4	8	
Permitted Phases	2		2	6		6			8
Detector Phase	2	2	2	6	6	6	4	8	8
Switch Phase									
Minimum Initial (s)	10.0	10.0	10.0	10.0	10.0	10.0	15.0	15.0	15.0
Minimum Split (s)	36.5	36.5	36.5	36.5	36.5	36.5	45.0	47.0	47.0
Total Split (s)	101.0	101.0	101.0	101.0	101.0	101.0	30.0	29.0	29.0
Total Split (%)	63.1%	63.1%	63.1%	63.1%	63.1%	63.1%	18.8%	18.1%	18.1%
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	3.0	3.5	3.5
All-Red Time (s)	3.5	3.5	3.5	3.5	3.5	3.5	2.0	3.5	3.5
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	7.5	7.5	7.5	7.5	7.5	7.5	5.0	7.0	7.0
Lead/Lag									
Lead-Lag Optimize?									
Recall Mode	C-Max	C-Max	C-Max	C-Max	C-Max	C-Max	Min	Min	Min
v/c Ratio	0.07	0.43	0.05	0.03	0.59	0.03	0.18	0.08	0.02
Control Delay	8.2	11.2	0.8	8.2	11.6	0.1	3.6	64.6	0.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	8.2	11.2	0.8	8.2	11.6	0.1	3.6	64.6	0.2
Queue Length 50th (m)	1.5	65.0	1.4	0.5	47.8	0.0	0.0	4.7	0.0
Queue Length 95th (m)	m1.9	35.4	0.1	m1.5	198.6	0.2	2.6	12.3	0.0
Internal Link Dist (m)		148.0			363.1		118.1	152.8	
Turn Bay Length (m)	15.0			12.0					10.0
Base Capacity (vph)	174	2319	920	293	2319	962	336	245	260
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.07	0.43	0.05	0.03	0.59	0.03	0.13	0.06	0.02

Intersection Summary

Cycle Length: 160
Actuated Cycle Length: 160
Offset: 136 (85%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green
Natural Cycle: 150
Control Type: Actuated-Coordinated
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 6: Coram Avenue/Treadwells Drive & Dundas Street E





Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	12	959	43	8	1310	31	31	0	12	14	0	5
Future Volume (vph)	12	959	43	8	1310	31	31	0	12	14	0	5
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.0	3.5	3.0	3.0	3.5	3.0	3.0	3.5	3.0	3.0	3.5	3.0
Total Lost time (s)	7.5	7.5	7.5	7.5	7.5	7.5		5.0			7.0	7.0
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00		1.00			1.00	1.00
Frpb, ped/bikes	1.00	1.00	0.93	1.00	1.00	0.95		0.99			1.00	0.98
Flpb, ped/bikes	1.00	1.00	1.00	0.99	1.00	1.00		1.00			1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85		0.96			1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00		0.97			0.95	1.00
Satd. Flow (prot)	1681	3466	1345	1668	3466	1409		1734			1785	1484
Flt Permitted	0.15	1.00	1.00	0.25	1.00	1.00		0.97			0.95	1.00
Satd. Flow (perm)	261	3466	1345	436	3466	1409		1734			1785	1484
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	12	999	45	8	1365	32	32	0	12	15	0	5
RTOR Reduction (vph)	0	0	15	0	0	11	0	40	0	0	0	4
Lane Group Flow (vph)	13	999	30	8	1365	21	0	5	0	0	15	1
Confl. Peds. (#/hr)	11		19	19		11	3		6	6		3
Heavy Vehicles (%)	0%	3%	2%	0%	3%	0%	0%	0%	0%	0%	0%	0%
Bus Blockages (#/hr)	0	0	5	0	0	4	0	0	0	0	0	0
Turn Type	Perm	NA	Perm	Perm	NA	Perm	Split	NA		Split	NA	Perm
Protected Phases		2			6		4	4		8	8	
Permitted Phases	2		2	6		6						8
Actuated Green, G (s)	107.1	107.1	107.1	107.1	107.1	107.1		17.0			16.4	16.4
Effective Green, g (s)	107.1	107.1	107.1	107.1	107.1	107.1		17.0			16.4	16.4
Actuated g/C Ratio	0.67	0.67	0.67	0.67	0.67	0.67		0.11			0.10	0.10
Clearance Time (s)	7.5	7.5	7.5	7.5	7.5	7.5		5.0			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)	174	2320	900	291	2320	943		184			182	152
v/s Ratio Prot		0.29			c0.39			c0.00			c0.01	
v/s Ratio Perm	0.05		0.02	0.02		0.02						0.00
v/c Ratio	0.07	0.43	0.03	0.03	0.59	0.02		0.03			0.08	0.00
Uniform Delay, d1	9.2	12.3	8.9	8.9	14.4	8.9		64.1			65.0	64.5
Progression Factor	0.62	0.81	0.46	0.72	0.69	0.04		1.00			1.00	1.00
Incremental Delay, d2	0.8	0.6	0.1	0.2	1.0	0.0		0.1			0.2	0.0
Delay (s)	6.5	10.5	4.2	6.5	10.9	0.4		64.1			65.2	64.5
Level of Service	A	B	A	A	B	A		E			E	E
Approach Delay (s)		10.2			10.7			64.1			65.0	
Approach LOS		B			B			E			E	

Intersection Summary			
HCM 2000 Control Delay	11.9	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.46		
Actuated Cycle Length (s)	160.0	Sum of lost time (s)	19.5
Intersection Capacity Utilization	83.2%	ICU Level of Service	E
Analysis Period (min)	15		

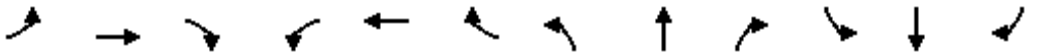
c Critical Lane Group

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Configurations										
Traffic Volume (vph)	59	882	33	46	1062	40	66	7	107	11
Future Volume (vph)	59	882	33	46	1062	40	66	7	107	11
Lane Group Flow (vph)	61	909	34	47	1095	41	68	95	110	168
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	Perm	NA	Perm	NA
Protected Phases	5	2		1	6			4		8
Permitted Phases	2		2	6		6	4		8	
Detector Phase	5	2	2	1	6	6	4	4	8	8
Switch Phase										
Minimum Initial (s)	5.0	8.0	8.0	5.0	8.0	8.0	8.0	8.0	8.0	8.0
Minimum Split (s)	9.5	38.5	38.5	9.5	38.5	38.5	48.0	48.0	48.0	48.0
Total Split (s)	14.0	95.0	95.0	14.0	95.0	95.0	51.0	51.0	51.0	51.0
Total Split (%)	8.8%	59.4%	59.4%	8.8%	59.4%	59.4%	31.9%	31.9%	31.9%	31.9%
Yellow Time (s)	3.0	4.0	4.0	3.0	4.0	4.0	3.5	3.5	3.5	3.5
All-Red Time (s)	0.0	2.5	2.5	0.0	2.5	2.5	3.5	3.5	3.5	3.5
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	3.0	6.5	6.5	3.0	6.5	6.5	7.0	7.0	7.0	7.0
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag				
Lead-Lag Optimize?										
Recall Mode	None	C-Max	C-Max	None	C-Max	C-Max	None	None	None	None
v/c Ratio	0.17	0.36	0.04	0.12	0.43	0.05	0.73	0.34	0.77	0.50
Control Delay	5.8	9.1	2.5	4.6	9.9	1.9	104.7	15.7	98.1	15.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	5.8	9.1	2.5	4.6	9.9	1.9	104.7	15.7	98.1	15.2
Queue Length 50th (m)	7.2	58.2	1.2	2.7	71.2	0.0	22.2	2.1	36.2	3.3
Queue Length 95th (m)	8.4	43.1	2.1	7.2	107.0	3.8	39.3	19.0	56.6	25.4
Internal Link Dist (m)		363.1			862.1			62.3		138.1
Turn Bay Length (m)	30.0		32.0	42.0		42.0	30.0		35.0	
Base Capacity (vph)	388	2552	957	443	2546	822	198	493	303	535
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	0.16	0.36	0.04	0.11	0.43	0.05	0.34	0.19	0.36	0.31

Intersection Summary

Cycle Length: 160
Actuated Cycle Length: 160
Offset: 133 (83%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green
Natural Cycle: 100
Control Type: Actuated-Coordinated

Splits and Phases: 7: Wharton Way & Dundas Street E



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	59	882	33	46	1062	40	66	7	85	107	11	152
Future Volume (vph)	59	882	33	46	1062	40	66	7	85	107	11	152
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.0	3.5	3.0	3.0	3.5	3.0	3.0	3.5	3.0	3.0	3.5	3.0
Total Lost time (s)	3.0	6.5	6.5	3.0	6.5	6.5	7.0	7.0		7.0	7.0	
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	0.94	1.00	1.00	0.94	1.00	0.98		1.00	0.97	
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	0.98	1.00		0.99	1.00	
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.86		1.00	0.86	
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)	1573	3466	1283	1514	3466	1101	1624	1561		1565	1534	
Flt Permitted	0.23	1.00	1.00	0.29	1.00	1.00	0.42	1.00		0.67	1.00	
Satd. Flow (perm)	380	3466	1283	462	3466	1101	720	1561		1104	1534	
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	61	909	34	47	1095	41	68	7	88	110	11	157
RTOR Reduction (vph)	0	0	9	0	0	11	0	77	0	0	137	0
Lane Group Flow (vph)	61	909	25	47	1095	30	68	18	0	110	31	0
Confl. Peds. (#/hr)	15		18	18		15	20		6	6		20
Heavy Vehicles (%)	7%	3%	6%	11%	3%	25%	2%	0%	2%	7%	0%	2%
Bus Blockages (#/hr)	0	0	9	0	0	8	0	0	0	0	0	0
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	Perm	NA		Perm	NA	
Protected Phases	5	2		1	6			4			8	
Permitted Phases	2		2	6		6	4			8		
Actuated Green, G (s)	122.9	117.2	117.2	122.5	117.0	117.0	20.8	20.8		20.8	20.8	
Effective Green, g (s)	122.9	117.2	117.2	122.5	117.0	117.0	20.8	20.8		20.8	20.8	
Actuated g/C Ratio	0.77	0.73	0.73	0.77	0.73	0.73	0.13	0.13		0.13	0.13	
Clearance Time (s)	3.0	6.5	6.5	3.0	6.5	6.5	7.0	7.0		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	2538	939	389	2534	805	93	202		143	199	
v/s Ratio Prot	c0.01	0.26		0.00	c0.32			0.01			0.02	
v/s Ratio Perm	0.13		0.02	0.09		0.03	0.09			c0.10		
v/c Ratio	0.18	0.36	0.03	0.12	0.43	0.04	0.73	0.09		0.77	0.16	
Uniform Delay, d1	5.2	7.8	5.8	4.8	8.4	5.9	66.9	61.3		67.3	61.8	
Progression Factor	1.21	1.01	2.03	1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.2	0.4	0.0	0.1	0.5	0.1	25.3	0.2		21.7	0.4	
Delay (s)	6.5	8.2	11.9	4.9	9.0	6.0	92.2	61.5		88.9	62.2	
Level of Service	A	A	B	A	A	A	F	E		F	E	
Approach Delay (s)		8.2			8.7			74.3			72.8	
Approach LOS		A			A			E			E	

Intersection Summary			
HCM 2000 Control Delay	19.4	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.47		
Actuated Cycle Length (s)	160.0	Sum of lost time (s)	16.5
Intersection Capacity Utilization	83.3%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	1063	37	2	1354	9	5
Future Volume (Veh/h)	1063	37	2	1354	9	5
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97
Hourly flow rate (vph)	1096	38	2	1396	9	5
Pedestrians					11	
Lane Width (m)					3.0	
Walking Speed (m/s)					1.2	
Percent Blockage					1	
Right turn flare (veh)						
Median type	TWLTL			TWLTL		
Median storage veh)	2			2		
Upstream signal (m)	155			98		
pX, platoon unblocked			0.91		0.91	0.91
vC, conflicting volume			1145		1595	395
vC1, stage 1 conf vol					1126	
vC2, stage 2 conf vol					469	
vCu, unblocked vol			797		628	0
tC, single (s)			4.1		6.8	6.9
tC, 2 stage (s)					5.8	
tF (s)			2.2		3.5	3.3
p0 queue free %			100		98	99
cM capacity (veh/h)			750		368	981

Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	WB 3	WB 4	NB 1
Volume Total	438	438	257	2	465	465	465	14
Volume Left	0	0	0	2	0	0	0	9
Volume Right	0	0	38	0	0	0	0	5
cSH	1700	1700	1700	750	1700	1700	1700	474
Volume to Capacity	0.26	0.26	0.15	0.00	0.27	0.27	0.27	0.03
Queue Length 95th (m)	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.7
Control Delay (s)	0.0	0.0	0.0	9.8	0.0	0.0	0.0	12.8
Lane LOS				A				B
Approach Delay (s)	0.0			0.0				12.8
Approach LOS								B

Intersection Summary			
Average Delay	0.1		
Intersection Capacity Utilization	36.2%	ICU Level of Service	A
Analysis Period (min)	15		

APPENDIX F

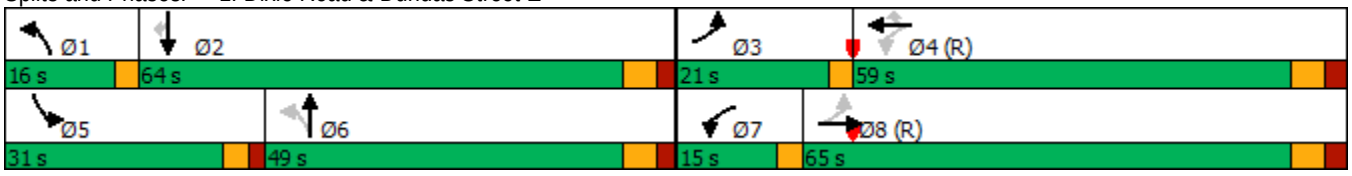
2028 Future Background Intersection Capacity Analysis

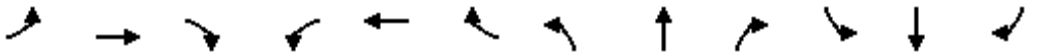
Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT	SBR
Lane Configurations										
Traffic Volume (vph)	156	822	110	446	190	142	874	382	844	177
Future Volume (vph)	156	822	110	446	190	142	874	382	844	177
Lane Group Flow (vph)	166	1058	117	474	202	151	1068	406	898	188
Turn Type	pm+pt	NA	pm+pt	NA	Perm	pm+pt	NA	Prot	NA	Perm
Protected Phases	3	8	7	4		1	6	5	2	
Permitted Phases	8		4		4	6				2
Detector Phase	3	8	7	4	4	1	6	5	2	2
Switch Phase										
Minimum Initial (s)	7.0	10.0	7.0	10.0	10.0	7.0	10.0	7.0	10.0	10.0
Minimum Split (s)	10.0	47.8	11.5	47.8	47.8	10.0	42.5	13.0	42.5	42.5
Total Split (s)	21.0	65.0	15.0	59.0	59.0	16.0	49.0	31.0	64.0	64.0
Total Split (%)	13.1%	40.6%	9.4%	36.9%	36.9%	10.0%	30.6%	19.4%	40.0%	40.0%
Yellow Time (s)	3.0	4.0	3.0	4.0	4.0	3.0	4.0	3.0	4.0	4.0
All-Red Time (s)	0.0	2.8	0.0	2.8	2.8	0.0	2.5	2.0	2.5	2.5
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	3.0	6.8	3.0	6.8	6.8	3.0	6.5	5.0	6.5	6.5
Lead/Lag	Lead	Lag	Lead	Lag	Lag	Lead	Lag	Lead	Lag	Lag
Lead-Lag Optimize?										
Recall Mode	None	C-Max	None	C-Max	C-Max	None	Max	None	Max	Max
v/c Ratio	0.42	0.59	0.55	0.41	0.36	0.55	0.82	0.87	0.50	0.33
Control Delay	27.6	41.2	58.4	61.6	32.6	33.1	60.0	85.5	40.9	11.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	27.6	41.2	58.4	61.6	32.6	33.1	60.0	85.5	40.9	11.1
Queue Length 50th (m)	31.6	102.6	31.0	68.5	22.2	28.4	123.3	68.7	86.4	9.3
Queue Length 95th (m)	48.3	118.9	52.5	106.2	63.2	43.8	142.6	#93.3	101.1	30.0
Internal Link Dist (m)		1362.6		279.9			1407.4		1183.5	
Turn Bay Length (m)	45.0		85.0		42.0	64.0		107.0		50.0
Base Capacity (vph)	416	1783	220	1148	562	285	1301	491	1784	567
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	0.40	0.59	0.53	0.41	0.36	0.53	0.82	0.83	0.50	0.33

Intersection Summary

Cycle Length: 160
Actuated Cycle Length: 160
Offset: 3 (2%), Referenced to phase 4:WBTL and 8:EBTL, Start of Green
Natural Cycle: 115
Control Type: Actuated-Coordinated
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 1: Dixie Road & Dundas Street E





Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	156	822	173	110	446	190	142	874	130	382	844	177
Future Volume (vph)	156	822	173	110	446	190	142	874	130	382	844	177
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.0	3.5	3.0	3.0	3.5	3.0	3.0	3.5	3.0	3.0	3.5	3.0
Total Lost time (s)	3.0	6.8		3.0	6.8	6.8	3.0	6.5		5.0	6.5	6.5
Lane Util. Factor	1.00	0.91		1.00	0.95	1.00	1.00	0.91		0.97	0.91	1.00
Frpb, ped/bikes	1.00	0.99		1.00	1.00	0.98	1.00	1.00		1.00	1.00	0.94
Flpb, ped/bikes	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00
Frt	1.00	0.97		1.00	1.00	0.85	1.00	0.98		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)	1618	4765		1530	3305	1301	1662	4700		3026	4885	1299
Flt Permitted	0.37	1.00		0.18	1.00	1.00	0.29	1.00		0.95	1.00	1.00
Satd. Flow (perm)	637	4765		287	3305	1301	513	4700		3026	4885	1299
Peak-hour factor, PHF	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Adj. Flow (vph)	166	874	184	117	474	202	151	930	138	406	898	188
RTOR Reduction (vph)	0	20	0	0	0	110	0	12	0	0	0	93
Lane Group Flow (vph)	166	1038	0	117	474	92	151	1056	0	406	898	95
Confl. Peds. (#/hr)	8		30	30		8	39		12	12		39
Confl. Bikes (#/hr)							39					
Heavy Vehicles (%)	4%	4%	4%	10%	8%	8%	1%	6%	11%	8%	5%	7%
Bus Blockages (#/hr)	0	0	9	0	0	12	0	0	5	0	0	4
Turn Type	pm+pt	NA		pm+pt	NA	Perm	pm+pt	NA		Prot	NA	Perm
Protected Phases	3	8		7	4		1	6		5	2	
Permitted Phases	8			4		4	6					2
Actuated Green, G (s)	73.2	59.2		66.6	55.6	55.6	56.0	43.9		24.6	58.4	58.4
Effective Green, g (s)	73.2	59.2		66.6	55.6	55.6	56.0	43.9		24.6	58.4	58.4
Actuated g/C Ratio	0.46	0.37		0.42	0.35	0.35	0.35	0.27		0.15	0.36	0.36
Clearance Time (s)	3.0	6.8		3.0	6.8	6.8	3.0	6.5		5.0	6.5	6.5
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)	380	1763		204	1148	452	266	1289		465	1783	474
v/s Ratio Prot	c0.04	c0.22		c0.04	0.14		0.04	c0.22		c0.13	0.18	
v/s Ratio Perm	0.16			0.20		0.07	0.16					0.07
v/c Ratio	0.44	0.59		0.57	0.41	0.20	0.57	0.82		0.87	0.50	0.20
Uniform Delay, d1	26.9	40.6		30.8	39.8	36.6	37.2	54.3		66.2	39.5	34.8
Progression Factor	1.00	1.00		2.02	1.49	3.64	1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	0.8	1.4		3.8	1.1	1.0	2.8	5.9		16.4	1.0	1.0
Delay (s)	27.7	42.0		65.9	60.5	134.2	40.0	60.2		82.6	40.5	35.8
Level of Service	C	D		E	E	F	D	E		F	D	D
Approach Delay (s)		40.1			80.1			57.7			51.4	
Approach LOS		D			F			E			D	

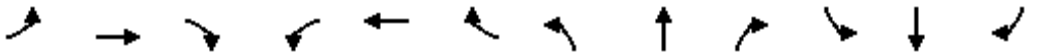
Intersection Summary			
HCM 2000 Control Delay	54.9	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.72		
Actuated Cycle Length (s)	160.0	Sum of lost time (s)	21.3
Intersection Capacity Utilization	102.3%	ICU Level of Service	G
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Configurations										
Traffic Volume (vph)	6	1066	91	10	696	21	21	1	21	4
Future Volume (vph)	6	1066	91	10	696	21	21	1	21	4
Lane Group Flow (vph)	6	1122	96	11	733	22	22	19	22	20
Turn Type	Perm	NA	Perm	Perm	NA	Perm	Perm	NA	Perm	NA
Protected Phases		2			6			4		8
Permitted Phases	2		2	6		6	4		8	
Detector Phase	2	2	2	6	6	6	4	4	8	8
Switch Phase										
Minimum Initial (s)	10.0	10.0	10.0	10.0	10.0	10.0	20.0	20.0	20.0	20.0
Minimum Split (s)	34.5	34.5	34.5	34.5	34.5	34.5	47.0	47.0	47.0	47.0
Total Split (s)	112.0	112.0	112.0	112.0	112.0	112.0	48.0	48.0	48.0	48.0
Total Split (%)	70.0%	70.0%	70.0%	70.0%	70.0%	70.0%	30.0%	30.0%	30.0%	30.0%
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	3.5	3.5	3.5	3.5
All-Red Time (s)	2.5	2.5	2.5	2.5	2.5	2.5	3.5	3.5	3.5	3.5
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.5	6.5	6.5	6.5	6.5	6.5	7.0	7.0	7.0	7.0
Lead/Lag										
Lead-Lag Optimize?										
Recall Mode	C-Max	C-Max	C-Max	C-Max	C-Max	C-Max	None	None	None	None
v/c Ratio	0.01	0.41	0.09	0.03	0.27	0.02	0.11	0.09	0.12	0.09
Control Delay	6.5	9.7	3.6	5.1	7.5	1.0	56.8	21.2	57.0	25.1
Queue Delay	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0
Total Delay	6.5	9.7	3.6	5.1	7.6	1.0	56.8	21.2	57.0	25.1
Queue Length 50th (m)	0.3	110.2	3.9	0.4	76.5	0.2	6.7	0.3	6.7	1.2
Queue Length 95th (m)	m1.4	142.0	m17.9	1.5	113.1	0.8	14.0	7.8	14.0	8.8
Internal Link Dist (m)		279.9			149.0			96.0		162.3
Turn Bay Length (m)	30.0			15.0			15.0		25.0	
Base Capacity (vph)	442	2719	1122	333	2669	1079	334	344	320	370
Starvation Cap Reductn	0	0	0	0	892	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.01	0.41	0.09	0.03	0.41	0.02	0.07	0.06	0.07	0.05

Intersection Summary

Cycle Length: 160
Actuated Cycle Length: 160
Offset: 51 (32%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green
Natural Cycle: 85
Control Type: Actuated-Coordinated
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 2: Nelico Court & Dundas Street E



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	6	1066	91	10	696	21	21	1	17	21	4	15
Future Volume (vph)	6	1066	91	10	696	21	21	1	17	21	4	15
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.0	3.5	3.0	3.0	3.5	3.0	3.0	3.5	3.0	3.0	3.5	3.0
Total Lost time (s)	6.5	6.5	6.5	6.5	6.5	6.5	7.0	7.0		7.0	7.0	
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	0.94	1.00	1.00	0.95	1.00	0.98		1.00	0.98	
Flpb, ped/bikes	0.99	1.00	1.00	0.99	1.00	1.00	0.99	1.00		1.00	1.00	
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.86		1.00	0.88	
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)	1424	3368	1367	1674	3305	1330	1667	1293		1597	1400	
Flt Permitted	0.37	1.00	1.00	0.23	1.00	1.00	0.74	1.00		0.75	1.00	
Satd. Flow (perm)	548	3368	1367	412	3305	1330	1306	1293		1252	1400	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	6	1122	96	11	733	22	22	1	18	22	4	16
RTOR Reduction (vph)	0	0	20	0	0	5	0	16	0	0	14	0
Lane Group Flow (vph)	6	1122	76	11	733	17	22	3	0	22	6	0
Confl. Peds. (#/hr)	11		13	13		11	9		4	4		9
Confl. Bikes (#/hr)							9					
Heavy Vehicles (%)	17%	6%	2%	0%	8%	5%	0%	0%	24%	5%	0%	20%
Bus Blockages (#/hr)	0	0	5	0	0	6	0	0	0	0	0	0
Turn Type	Perm	NA	Perm	Perm	NA	Perm	Perm	NA		Perm	NA	
Protected Phases		2			6			4			8	
Permitted Phases	2		2	6		6	4			8		
Actuated Green, G (s)	126.5	126.5	126.5	126.5	126.5	126.5	20.0	20.0		20.0	20.0	
Effective Green, g (s)	126.5	126.5	126.5	126.5	126.5	126.5	20.0	20.0		20.0	20.0	
Actuated g/C Ratio	0.79	0.79	0.79	0.79	0.79	0.79	0.12	0.12		0.12	0.12	
Clearance Time (s)	6.5	6.5	6.5	6.5	6.5	6.5	7.0	7.0		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)	433	2662	1080	325	2613	1051	163	161		156	175	
v/s Ratio Prot		c0.33			0.22			0.00			0.00	
v/s Ratio Perm	0.01		0.06	0.03		0.01	0.02			c0.02		
v/c Ratio	0.01	0.42	0.07	0.03	0.28	0.02	0.13	0.02		0.14	0.03	
Uniform Delay, d1	3.5	5.3	3.7	3.6	4.5	3.6	62.3	61.4		62.3	61.5	
Progression Factor	0.96	1.41	2.58	0.75	1.26	0.48	1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.0	0.4	0.1	0.2	0.3	0.0	0.4	0.1		0.4	0.1	
Delay (s)	3.5	7.8	9.7	2.9	6.0	1.7	62.7	61.5		62.8	61.6	
Level of Service	A	A	A	A	A	A	E	E		E	E	
Approach Delay (s)		7.9			5.8			62.1			62.2	
Approach LOS		A			A			E			E	

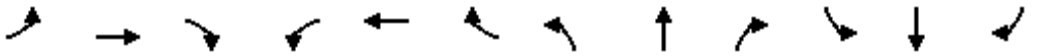
Intersection Summary			
HCM 2000 Control Delay	9.3	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.38		
Actuated Cycle Length (s)	160.0	Sum of lost time (s)	13.5
Intersection Capacity Utilization	69.3%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	SBL	SBT	SBR
Lane Configurations											
Traffic Volume (vph)	63	884	169	177	603	35	74	6	21	1	27
Future Volume (vph)	63	884	169	177	603	35	74	6	21	1	27
Lane Group Flow (vph)	66	921	176	184	628	36	77	153	0	23	28
Turn Type	Perm	NA	Perm	Perm	NA	Perm	Perm	NA	Perm	NA	Perm
Protected Phases		2			6			4		8	
Permitted Phases	2		2	6		6	4		8		8
Detector Phase	2	2	2	6	6	6	4	4	8	8	8
Switch Phase											
Minimum Initial (s)	10.0	10.0	10.0	10.0	10.0	10.0	20.0	20.0	20.0	20.0	20.0
Minimum Split (s)	48.0	48.0	48.0	48.0	48.0	48.0	51.5	51.5	51.5	51.5	51.5
Total Split (s)	110.0	110.0	110.0	110.0	110.0	110.0	50.0	50.0	50.0	50.0	50.0
Total Split (%)	68.8%	68.8%	68.8%	68.8%	68.8%	68.8%	31.3%	31.3%	31.3%	31.3%	31.3%
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	3.0	3.0	3.0	3.0	3.0
All-Red Time (s)	3.0	3.0	3.0	3.0	3.0	3.0	4.5	4.5	4.5	4.5	4.5
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0
Total Lost Time (s)	7.0	7.0	7.0	7.0	7.0	7.0	7.5	7.5		7.5	7.5
Lead/Lag											
Lead-Lag Optimize?											
Recall Mode	C-Max	C-Max	C-Max	C-Max	C-Max	C-Max	Min	Min	Min	Min	Min
v/c Ratio	0.13	0.36	0.16	0.48	0.25	0.04	0.40	0.43		0.19	0.13
Control Delay	2.4	2.1	0.3	22.4	10.8	4.8	65.5	12.1		59.2	16.8
Queue Delay	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0
Total Delay	2.4	2.2	0.3	22.4	10.8	4.8	65.5	12.1		59.2	16.8
Queue Length 50th (m)	1.2	8.8	0.1	32.0	54.8	0.6	24.4	1.8		7.0	0.0
Queue Length 95th (m)	3.4	16.1	0.0	74.5	90.1	9.8	36.2	20.4		14.3	8.7
Internal Link Dist (m)		149.0			130.6			105.8		70.0	
Turn Bay Length (m)	30.0			30.0							10.0
Base Capacity (vph)	501	2546	1103	382	2499	868	334	511		216	340
Starvation Cap Reductn	0	492	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	0.13	0.45	0.16	0.48	0.25	0.04	0.23	0.30		0.11	0.08

Intersection Summary

Cycle Length: 160
Actuated Cycle Length: 160
Offset: 37 (23%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green
Natural Cycle: 110
Control Type: Actuated-Coordinated

Splits and Phases: 3: Jarrow Avenue & Dundas Street E



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	63	884	169	177	603	35	74	6	141	21	1	27
Future Volume (vph)	63	884	169	177	603	35	74	6	141	21	1	27
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.0	3.5	3.0	3.0	3.5	3.0	3.0	3.5	3.0	3.0	3.5	3.0
Total Lost time (s)	7.0	7.0	7.0	7.0	7.0	7.0	7.5	7.5			7.5	7.5
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	0.96	1.00	0.98			1.00	0.98
Flpb, ped/bikes	0.99	1.00	1.00	1.00	1.00	1.00	1.00	1.00			0.99	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.86			1.00	0.85
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)	1546	3368	1402	1647	3305	1137	1613	1520			1255	1206
Flt Permitted	0.41	1.00	1.00	0.29	1.00	1.00	0.74	1.00			0.62	1.00
Satd. Flow (perm)	663	3368	1402	505	3305	1137	1260	1520			816	1206
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	66	921	176	184	628	36	77	6	147	22	1	28
RTOR Reduction (vph)	0	0	43	0	0	9	0	124	0	0	0	24
Lane Group Flow (vph)	66	921	133	184	628	27	77	29	0	0	23	4
Confl. Peds. (#/hr)	11		6	6		11	4		7	7		4
Confl. Bikes (#/hr)			1			1						
Heavy Vehicles (%)	8%	6%	2%	2%	8%	24%	4%	0%	4%	44%	0%	23%
Bus Blockages (#/hr)	0	0	5	0	0	6	0	0	0	0	0	0
Turn Type	Perm	NA	Perm	Perm	NA	Perm	Perm	NA		Perm	NA	Perm
Protected Phases		2			6			4			8	
Permitted Phases	2		2	6		6	4			8		8
Actuated Green, G (s)	121.0	121.0	121.0	121.0	121.0	121.0	24.5	24.5			24.5	24.5
Effective Green, g (s)	121.0	121.0	121.0	121.0	121.0	121.0	24.5	24.5			24.5	24.5
Actuated g/C Ratio	0.76	0.76	0.76	0.76	0.76	0.76	0.15	0.15			0.15	0.15
Clearance Time (s)	7.0	7.0	7.0	7.0	7.0	7.0	7.5	7.5			7.5	7.5
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)	501	2547	1060	381	2499	859	192	232			124	184
v/s Ratio Prot		0.27			0.19			0.02				
v/s Ratio Perm	0.10		0.09	c0.36		0.02	c0.06				0.03	0.00
v/c Ratio	0.13	0.36	0.13	0.48	0.25	0.03	0.40	0.12			0.19	0.02
Uniform Delay, d1	5.3	6.5	5.3	7.5	5.9	4.9	61.1	58.5			59.1	57.6
Progression Factor	0.27	0.23	0.00	1.76	1.57	1.95	1.00	1.00			1.00	1.00
Incremental Delay, d2	0.5	0.4	0.2	4.3	0.2	0.1	1.4	0.2			0.7	0.1
Delay (s)	2.0	1.8	0.2	17.5	9.5	9.5	62.5	58.7			59.8	57.6
Level of Service	A	A	A	B	A	A	E	E			E	E
Approach Delay (s)		1.6			11.2			60.0			58.6	
Approach LOS		A			B			E			E	

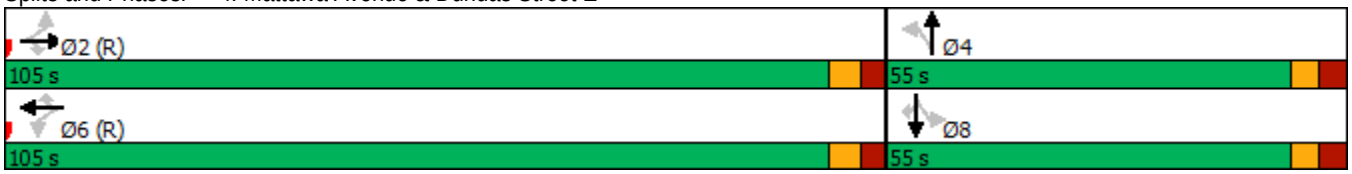
Intersection Summary			
HCM 2000 Control Delay	12.3	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.47		
Actuated Cycle Length (s)	160.0	Sum of lost time (s)	14.5
Intersection Capacity Utilization	92.5%	ICU Level of Service	F
Analysis Period (min)	15		
c Critical Lane Group			

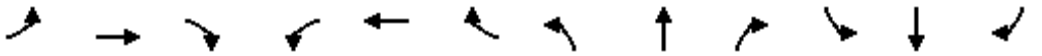
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Configurations										
Traffic Volume (vph)	2	940	118	29	754	3	39	0	1	0
Future Volume (vph)	2	940	118	29	754	3	39	0	1	0
Lane Group Flow (vph)	2	959	120	30	769	3	40	12	0	1
Turn Type	Perm	NA	Perm	Perm	NA	Perm	Perm	NA	Perm	NA
Protected Phases		2			6			4		8
Permitted Phases	2		2	6		6	4		8	
Detector Phase	2	2	2	6	6	6	4	4	8	8
Switch Phase										
Minimum Initial (s)	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0
Minimum Split (s)	40.0	40.0	40.0	40.0	40.0	40.0	45.0	45.0	45.0	45.0
Total Split (s)	105.0	105.0	105.0	105.0	105.0	105.0	55.0	55.0	55.0	55.0
Total Split (%)	65.6%	65.6%	65.6%	65.6%	65.6%	65.6%	34.4%	34.4%	34.4%	34.4%
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	3.5	3.5	3.5	3.5
All-Red Time (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.5	3.5	3.5	3.5
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0
Total Lost Time (s)	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0		7.0
Lead/Lag										
Lead-Lag Optimize?										
Recall Mode	C-Max	C-Max	C-Max	C-Max	C-Max	C-Max	None	None	None	None
v/c Ratio	0.00	0.34	0.10	0.07	0.27	0.00	0.31	0.05		0.01
Control Delay	7.5	10.5	3.5	4.2	3.3	0.0	68.9	0.4		55.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0
Total Delay	7.5	10.5	3.5	4.2	3.3	0.0	68.9	0.4		55.0
Queue Length 50th (m)	0.2	84.7	7.0	1.2	19.7	0.0	13.2	0.0		0.3
Queue Length 95th (m)	m1.0	155.7	16.7	4.1	29.5	m0.0	22.0	0.0		2.1
Internal Link Dist (m)		73.5			59.8			251.4		120.0
Turn Bay Length (m)	24.0			28.0						
Base Capacity (vph)	530	2808	1184	432	2808	1200	390	427		422
Starvation Cap Reductn	0	0	0	0	0	0	0	0		0
Spillback Cap Reductn	0	0	0	0	0	0	0	0		0
Storage Cap Reductn	0	0	0	0	0	0	0	0		0
Reduced v/c Ratio	0.00	0.34	0.10	0.07	0.27	0.00	0.10	0.03		0.00

Intersection Summary

Cycle Length: 160
Actuated Cycle Length: 160
Offset: 117 (73%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green
Natural Cycle: 85
Control Type: Actuated-Coordinated
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 4: Mattawa Avenue & Dundas Street E

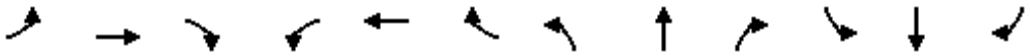




Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	2	940	118	29	754	3	39	0	12	1	0	0
Future Volume (vph)	2	940	118	29	754	3	39	0	12	1	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.0	3.5	3.0	3.0	3.5	3.0	3.0	3.5	3.0	3.0	3.5	3.0
Total Lost time (s)	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0			7.0	
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	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	
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			1.00	
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.85			1.00	
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00			0.95	
Satd. Flow (prot)	1676	3336	1385	1679	3336	1421	1634	1110			1783	
Flt Permitted	0.36	1.00	1.00	0.29	1.00	1.00	0.76	1.00			0.75	
Satd. Flow (perm)	630	3336	1385	512	3336	1421	1302	1110			1407	
Peak-hour factor, PHF	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Adj. Flow (vph)	2	959	120	30	769	3	40	0	12	1	0	0
RTOR Reduction (vph)	0	0	21	0	0	1	0	11	0	0	0	0
Lane Group Flow (vph)	2	959	99	30	769	2	40	1	0	0	1	0
Confl. Peds. (#/hr)	6		6	6		6	1		1	1		1
Heavy Vehicles (%)	0%	7%	3%	0%	7%	0%	3%	0%	42%	0%	0%	0%
Bus Blockages (#/hr)	0	0	5	0	0	6	0	0	0	0	0	0
Turn Type	Perm	NA	Perm	Perm	NA	Perm	Perm	NA		Perm	NA	Perm
Protected Phases		2			6			4			8	
Permitted Phases	2		2	6		6	4			8		8
Actuated Green, G (s)	131.9	131.9	131.9	131.9	131.9	131.9	14.1	14.1			14.1	
Effective Green, g (s)	131.9	131.9	131.9	131.9	131.9	131.9	14.1	14.1			14.1	
Actuated g/C Ratio	0.82	0.82	0.82	0.82	0.82	0.82	0.09	0.09			0.09	
Clearance Time (s)	7.0	7.0	7.0	7.0	7.0	7.0	7.0	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)	519	2750	1141	422	2750	1171	114	97			123	
v/s Ratio Prot		c0.29			0.23			0.00				
v/s Ratio Perm	0.00		0.07	0.06		0.00	c0.03				0.00	
v/c Ratio	0.00	0.35	0.09	0.07	0.28	0.00	0.35	0.01			0.01	
Uniform Delay, d1	2.5	3.5	2.7	2.6	3.2	2.5	68.6	66.6			66.6	
Progression Factor	1.26	2.16	3.01	0.75	0.70	1.00	1.00	1.00			1.00	
Incremental Delay, d2	0.0	0.3	0.1	0.3	0.2	0.0	1.9	0.0			0.0	
Delay (s)	3.1	7.8	8.1	2.3	2.5	2.5	70.5	66.6			66.6	
Level of Service	A	A	A	A	A	A	E	E			E	
Approach Delay (s)		7.8			2.5			69.6			66.6	
Approach LOS		A			A			E			E	

Intersection Summary			
HCM 2000 Control Delay	7.3	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.35		
Actuated Cycle Length (s)	160.0	Sum of lost time (s)	14.0
Intersection Capacity Utilization	63.2%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	14	929	2	1	755	4	1	0	1	3	0	18
Future Volume (Veh/h)	14	929	2	1	755	4	1	0	1	3	0	18
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Hourly flow rate (vph)	15	968	2	1	786	4	1	0	1	3	0	19
Pedestrians								8			15	
Lane Width (m)								3.5			3.5	
Walking Speed (m/s)								1.2			1.2	
Percent Blockage								1			1	
Right turn flare (veh)												
Median type		TWLTL			TWLTL							
Median storage veh)		2			2							
Upstream signal (m)		84			172							
pX, platoon unblocked	0.96			0.95			0.98	0.98	0.95	0.98	0.98	0.96
vC, conflicting volume	805			978			1290	1814	332	1159	1813	279
vC1, stage 1 conf vol							1007	1007		805	805	
vC2, stage 2 conf vol							283	807		354	1008	
vCu, unblocked vol	639			810			914	1450	133	779	1449	89
tC, single (s)	4.2			4.1			7.5	6.5	6.9	7.5	6.5	6.9
tC, 2 stage (s)							6.5	5.5		6.5	5.5	
tF (s)	2.3			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	98			100			100	100	100	99	100	98
cM capacity (veh/h)	858			782			298	293	852	394	295	905

Direction, Lane #	EB 1	EB 2	EB 3	EB 4	WB 1	WB 2	WB 3	WB 4	NB 1	SB 1
Volume Total	15	387	387	196	1	314	314	161	2	22
Volume Left	15	0	0	0	1	0	0	0	1	3
Volume Right	0	0	0	2	0	0	0	4	1	19
cSH	858	1700	1700	1700	782	1700	1700	1700	442	769
Volume to Capacity	0.02	0.23	0.23	0.12	0.00	0.18	0.18	0.09	0.00	0.03
Queue Length 95th (m)	0.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.7
Control Delay (s)	9.3	0.0	0.0	0.0	9.6	0.0	0.0	0.0	13.2	9.8
Lane LOS	A				A				B	A
Approach Delay (s)	0.1				0.0				13.2	9.8
Approach LOS									B	A

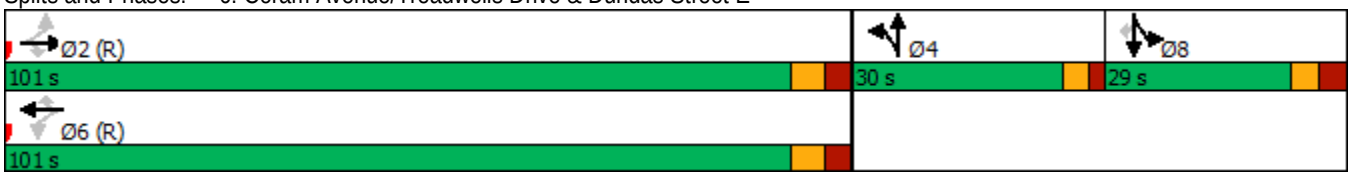
Intersection Summary				
Average Delay	0.2			
Intersection Capacity Utilization	28.0%	ICU Level of Service		A
Analysis Period (min)	15			

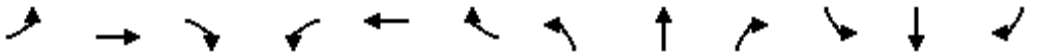
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBT	SBT	SBR
Lane Configurations									
Traffic Volume (vph)	9	895	14	10	758	12	1	1	24
Future Volume (vph)	9	895	14	10	758	12	1	1	24
Lane Group Flow (vph)	9	942	15	11	798	13	42	21	25
Turn Type	Perm	NA	Perm	Perm	NA	Perm	NA	NA	Perm
Protected Phases		2			6		4	8	
Permitted Phases	2		2	6		6			8
Detector Phase	2	2	2	6	6	6	4	8	8
Switch Phase									
Minimum Initial (s)	10.0	10.0	10.0	10.0	10.0	10.0	15.0	15.0	15.0
Minimum Split (s)	36.5	36.5	36.5	36.5	36.5	36.5	45.0	47.0	47.0
Total Split (s)	101.0	101.0	101.0	101.0	101.0	101.0	30.0	29.0	29.0
Total Split (%)	63.1%	63.1%	63.1%	63.1%	63.1%	63.1%	18.8%	18.1%	18.1%
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	3.0	3.5	3.5
All-Red Time (s)	3.5	3.5	3.5	3.5	3.5	3.5	2.0	3.5	3.5
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	7.5	7.5	7.5	7.5	7.5	7.5	5.0	7.0	7.0
Lead/Lag									
Lead-Lag Optimize?									
Recall Mode	C-Max	C-Max	C-Max	C-Max	C-Max	C-Max	Min	Min	Min
v/c Ratio	0.02	0.42	0.02	0.04	0.36	0.01	0.22	0.11	0.12
Control Delay	4.7	13.8	0.6	9.4	9.3	0.0	37.2	65.5	1.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	4.7	13.8	0.6	9.4	9.3	0.0	37.2	65.5	1.2
Queue Length 50th (m)	1.1	128.9	0.0	1.0	35.8	0.0	5.9	6.6	0.0
Queue Length 95th (m)	m1.4	169.2	0.6	2.8	44.5	0.0	18.2	15.4	0.0
Internal Link Dist (m)		148.0			363.1		118.1	152.8	
Turn Bay Length (m)	15.0			12.0					10.0
Base Capacity (vph)	380	2232	813	288	2232	969	266	246	259
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.02	0.42	0.02	0.04	0.36	0.01	0.16	0.09	0.10

Intersection Summary

Cycle Length: 160
Actuated Cycle Length: 160
Offset: 133 (83%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green
Natural Cycle: 130
Control Type: Actuated-Coordinated
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 6: Coram Avenue/Treadwells Drive & Dundas Street E





Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	9	895	14	10	758	12	17	1	22	19	1	24
Future Volume (vph)	9	895	14	10	758	12	17	1	22	19	1	24
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.0	3.5	3.0	3.0	3.5	3.0	3.0	3.5	3.0	3.0	3.5	3.0
Total Lost time (s)	7.5	7.5	7.5	7.5	7.5	7.5		5.0			7.0	7.0
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00		1.00			1.00	1.00
Frpb, ped/bikes	1.00	1.00	0.97	1.00	1.00	0.96		1.00			1.00	0.98
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00		1.00			1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85		0.93			1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00		0.98			0.95	1.00
Satd. Flow (prot)	1677	3336	1186	1529	3336	1418		1584			1793	1482
Flt Permitted	0.32	1.00	1.00	0.27	1.00	1.00		0.98			0.95	1.00
Satd. Flow (perm)	568	3336	1186	431	3336	1418		1584			1793	1482
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	9	942	15	11	798	13	18	1	23	20	1	25
RTOR Reduction (vph)	0	0	5	0	0	4	0	21	0	0	0	22
Lane Group Flow (vph)	9	942	10	11	798	9	0	21	0	0	21	3
Confl. Peds. (#/hr)	6		3	3		6	2					2
Confl. Bikes (#/hr)												1
Heavy Vehicles (%)	0%	7%	21%	10%	7%	0%	12%	100%	0%	0%	0%	0%
Bus Blockages (#/hr)	0	0	5	0	0	6	0	0	0	0	0	0
Turn Type	Perm	NA	Perm	Perm	NA	Perm	Split	NA		Split	NA	Perm
Protected Phases		2			6		4	4		8	8	
Permitted Phases	2		2	6		6						8
Actuated Green, G (s)	107.1	107.1	107.1	107.1	107.1	107.1		17.0			16.4	16.4
Effective Green, g (s)	107.1	107.1	107.1	107.1	107.1	107.1		17.0			16.4	16.4
Actuated g/C Ratio	0.67	0.67	0.67	0.67	0.67	0.67		0.11			0.10	0.10
Clearance Time (s)	7.5	7.5	7.5	7.5	7.5	7.5		5.0			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)	380	2233	793	288	2233	949		168			183	151
v/s Ratio Prot		c0.28			0.24			c0.01			c0.01	
v/s Ratio Perm	0.02		0.01	0.03		0.01						0.00
v/c Ratio	0.02	0.42	0.01	0.04	0.36	0.01		0.13			0.11	0.02
Uniform Delay, d1	8.9	12.2	8.8	9.0	11.5	8.8		64.8			65.2	64.6
Progression Factor	0.41	1.02	1.00	0.81	0.72	1.00		1.00			1.00	1.00
Incremental Delay, d2	0.1	0.6	0.0	0.2	0.4	0.0		0.3			0.3	0.0
Delay (s)	3.8	13.0	8.8	7.5	8.8	8.8		65.1			65.5	64.6
Level of Service	A	B	A	A	A	A		E			E	E
Approach Delay (s)		12.8			8.7			65.1			65.0	
Approach LOS		B			A			E			E	

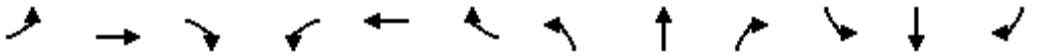
Intersection Summary			
HCM 2000 Control Delay	13.5	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.35		
Actuated Cycle Length (s)	160.0	Sum of lost time (s)	19.5
Intersection Capacity Utilization	66.8%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Configurations										
Traffic Volume (vph)	97	741	43	72	671	86	34	7	82	12
Future Volume (vph)	97	741	43	72	671	86	34	7	82	12
Lane Group Flow (vph)	104	797	46	77	722	92	37	68	88	67
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	Perm	NA	Perm	NA
Protected Phases	5	2		1	6			4		8
Permitted Phases	2		2	6		6	4		8	
Detector Phase	5	2	2	1	6	6	4	4	8	8
Switch Phase										
Minimum Initial (s)	5.0	8.0	8.0	5.0	8.0	8.0	8.0	8.0	8.0	8.0
Minimum Split (s)	9.5	38.5	38.5	9.5	38.5	38.5	48.0	48.0	48.0	48.0
Total Split (s)	14.0	95.0	95.0	14.0	95.0	95.0	51.0	51.0	51.0	51.0
Total Split (%)	8.8%	59.4%	59.4%	8.8%	59.4%	59.4%	31.9%	31.9%	31.9%	31.9%
Yellow Time (s)	3.0	4.0	4.0	3.0	4.0	4.0	3.5	3.5	3.5	3.5
All-Red Time (s)	0.0	2.5	2.5	0.0	2.5	2.5	3.5	3.5	3.5	3.5
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	3.0	6.5	6.5	3.0	6.5	6.5	7.0	7.0	7.0	7.0
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag				
Lead-Lag Optimize?										
Recall Mode	None	C-Max	C-Max	None	C-Max	C-Max	None	None	None	None
v/c Ratio	0.20	0.32	0.05	0.17	0.29	0.11	0.31	0.32	0.70	0.31
Control Delay	1.8	3.9	0.3	4.1	8.1	2.6	69.1	20.7	95.2	23.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	1.8	3.9	0.3	4.1	8.1	2.6	69.1	20.7	95.2	23.3
Queue Length 50th (m)	1.5	15.3	0.0	4.0	38.7	1.3	11.6	2.4	28.9	4.0
Queue Length 95th (m)	2.4	8.5	0.0	9.7	61.0	8.3	23.2	17.5	47.3	19.0
Internal Link Dist (m)		363.1			862.1			62.3		138.1
Turn Bay Length (m)	30.0		32.0	42.0		42.0	30.0		35.0	
Base Capacity (vph)	539	2464	994	494	2477	817	295	427	305	440
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	0.19	0.32	0.05	0.16	0.29	0.11	0.13	0.16	0.29	0.15

Intersection Summary

Cycle Length: 160
Actuated Cycle Length: 160
Offset: 144 (90%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green
Natural Cycle: 100
Control Type: Actuated-Coordinated

Splits and Phases: 7: Wharton Way & Dundas Street E



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	97	741	43	72	671	86	34	7	56	82	12	50
Future Volume (vph)	97	741	43	72	671	86	34	7	56	82	12	50
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.0	3.5	3.0	3.0	3.5	3.0	3.0	3.5	3.0	3.0	3.5	3.0
Total Lost time (s)	3.0	6.5	6.5	3.0	6.5	6.5	7.0	7.0		7.0	7.0	
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	0.96	1.00	1.00	0.91	1.00	0.98		1.00	0.97	
Flpb, ped/bikes	0.99	1.00	1.00	1.00	1.00	1.00	0.98	1.00		0.99	1.00	
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.87		1.00	0.88	
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)	1534	3336	1329	1488	3368	1084	1431	1394		1480	1461	
Flt Permitted	0.36	1.00	1.00	0.33	1.00	1.00	0.71	1.00		0.71	1.00	
Satd. Flow (perm)	582	3336	1329	522	3368	1084	1074	1394		1110	1461	
Peak-hour factor, PHF	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Adj. Flow (vph)	104	797	46	77	722	92	37	8	60	88	13	54
RTOR Reduction (vph)	0	0	12	0	0	20	0	53	0	0	48	0
Lane Group Flow (vph)	104	797	34	77	722	72	37	15	0	88	19	0
Confl. Peds. (#/hr)	27		8	8		27	22		7	7		22
Heavy Vehicles (%)	9%	7%	5%	13%	6%	21%	15%	29%	13%	13%	0%	12%
Bus Blockages (#/hr)	0	0	9	0	0	12	0	0	0	0	0	0
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	Perm	NA		Perm	NA	
Protected Phases	5	2		1	6			4			8	
Permitted Phases	2		2	6		6	4			8		
Actuated Green, G (s)	125.9	118.2	118.2	124.9	117.7	117.7	18.1	18.1		18.1	18.1	
Effective Green, g (s)	125.9	118.2	118.2	124.9	117.7	117.7	18.1	18.1		18.1	18.1	
Actuated g/C Ratio	0.79	0.74	0.74	0.78	0.74	0.74	0.11	0.11		0.11	0.11	
Clearance Time (s)	3.0	6.5	6.5	3.0	6.5	6.5	7.0	7.0		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)	503	2464	981	450	2477	797	121	157		125	165	
v/s Ratio Prot	c0.01	c0.24		0.01	0.21			0.01			0.01	
v/s Ratio Perm	0.15		0.03	0.13		0.07	0.03			c0.08		
v/c Ratio	0.21	0.32	0.03	0.17	0.29	0.09	0.31	0.09		0.70	0.12	
Uniform Delay, d1	4.0	7.2	5.6	4.2	7.1	6.0	65.2	63.6		68.4	63.8	
Progression Factor	0.30	0.46	0.11	1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.2	0.3	0.1	0.2	0.3	0.2	1.4	0.3		16.5	0.3	
Delay (s)	1.4	3.6	0.7	4.4	7.4	6.2	66.6	63.9		84.8	64.1	
Level of Service	A	A	A	A	A	A	E	E		F	E	
Approach Delay (s)		3.2			7.0			64.8			75.9	
Approach LOS		A			A			E			E	

Intersection Summary			
HCM 2000 Control Delay	13.3	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.37		
Actuated Cycle Length (s)	160.0	Sum of lost time (s)	16.5
Intersection Capacity Utilization	69.8%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	1301	3	2	975	2	0
Future Volume (Veh/h)	1301	3	2	975	2	0
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.99	0.99	0.99	0.99	0.99	0.99
Hourly flow rate (vph)	1314	3	2	985	2	0
Pedestrians					3	
Lane Width (m)					3.0	
Walking Speed (m/s)					1.2	
Percent Blockage					0	
Right turn flare (veh)						
Median type	TWLTL			TWLTL		
Median storage veh)	2			2		
Upstream signal (m)	155			98		
pX, platoon unblocked			0.95		0.96	0.95
vC, conflicting volume			1320		1651	442
vC1, stage 1 conf vol					1318	
vC2, stage 2 conf vol					332	
vCu, unblocked vol			1136		1347	208
tC, single (s)			4.1		6.8	6.9
tC, 2 stage (s)					5.8	
tF (s)			2.2		3.5	3.3
p0 queue free %			100		99	100
cM capacity (veh/h)			587		248	759

Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	WB 3	WB 4	NB 1
Volume Total	526	526	266	2	328	328	328	2
Volume Left	0	0	0	2	0	0	0	2
Volume Right	0	0	3	0	0	0	0	0
cSH	1700	1700	1700	587	1700	1700	1700	248
Volume to Capacity	0.31	0.31	0.16	0.00	0.19	0.19	0.19	0.01
Queue Length 95th (m)	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.2
Control Delay (s)	0.0	0.0	0.0	11.2	0.0	0.0	0.0	19.6
Lane LOS				B				C
Approach Delay (s)	0.0			0.0				19.6
Approach LOS								C

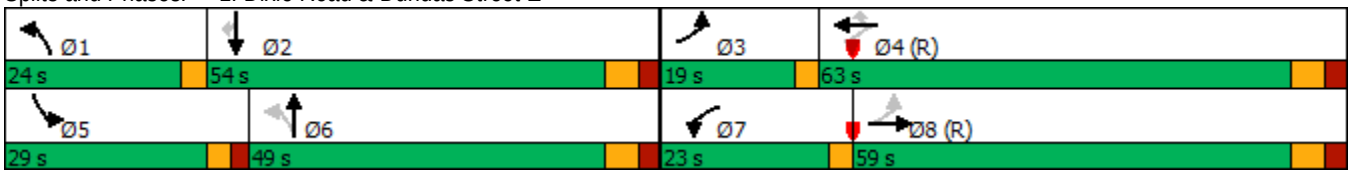
Intersection Summary			
Average Delay	0.0		
Intersection Capacity Utilization	35.2%	ICU Level of Service	A
Analysis Period (min)	15		

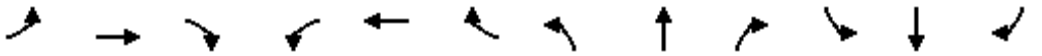
Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT	SBR
Lane Configurations										
Traffic Volume (vph)	192	820	205	906	528	248	1003	442	922	286
Future Volume (vph)	192	820	205	906	528	248	1003	442	922	286
Lane Group Flow (vph)	198	1058	211	934	544	256	1231	456	951	295
Turn Type	pm+pt	NA	pm+pt	NA	Perm	pm+pt	NA	Prot	NA	Perm
Protected Phases	3	8	7	4		1	6	5	2	
Permitted Phases	8		4		4	6				2
Detector Phase	3	8	7	4	4	1	6	5	2	2
Switch Phase										
Minimum Initial (s)	7.0	10.0	7.0	10.0	10.0	7.0	10.0	7.0	10.0	10.0
Minimum Split (s)	10.0	47.8	11.5	47.8	47.8	10.0	42.5	13.0	42.5	42.5
Total Split (s)	19.0	59.0	23.0	63.0	63.0	24.0	49.0	29.0	54.0	54.0
Total Split (%)	11.9%	36.9%	14.4%	39.4%	39.4%	15.0%	30.6%	18.1%	33.8%	33.8%
Yellow Time (s)	3.0	4.0	3.0	4.0	4.0	3.0	4.0	3.0	4.0	4.0
All-Red Time (s)	0.0	2.8	0.0	2.8	2.8	0.0	2.5	2.0	2.5	2.5
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	-1.0	0.0	0.0
Total Lost Time (s)	3.0	6.8	3.0	6.8	6.8	3.0	6.5	4.0	6.5	6.5
Lead/Lag	Lead	Lag	Lead	Lag	Lag	Lead	Lag	Lead	Lag	Lag
Lead-Lag Optimize?										
Recall Mode	None	C-Max	None	C-Max	C-Max	None	Max	None	Max	Max
v/c Ratio	0.82	0.63	0.77	0.76	0.88	0.84	0.94	0.92	0.62	0.56
Control Delay	55.9	44.3	49.5	63.3	60.2	54.2	70.2	90.7	50.0	19.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	55.9	44.3	49.5	63.3	60.2	54.2	70.2	90.7	50.0	19.7
Queue Length 50th (m)	37.7	104.9	57.5	165.4	130.0	53.0	146.7	78.6	101.9	26.8
Queue Length 95th (m)	#82.6	125.2	84.0	189.5	#189.5	#93.2	#176.5	#111.0	118.5	60.4
Internal Link Dist (m)		1362.6		279.9			1407.4		1183.5	
Turn Bay Length (m)	45.0		85.0		42.0	64.0		107.0		50.0
Base Capacity (vph)	240	1682	307	1229	615	318	1309	500	1525	526
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	0.82	0.63	0.69	0.76	0.88	0.81	0.94	0.91	0.62	0.56

Intersection Summary

Cycle Length: 160
Actuated Cycle Length: 160
Offset: 0 (0%), Referenced to phase 4:WBTL and 8:EBTL, Start of Green
Natural Cycle: 125
Control Type: Actuated-Coordinated
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 1: Dixie Road & Dundas Street E





Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	192	820	207	205	906	528	248	1003	191	442	922	286
Future Volume (vph)	192	820	207	205	906	528	248	1003	191	442	922	286
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.0	3.5	3.0	3.0	3.5	3.0	3.0	3.5	3.0	3.0	3.5	3.0
Total Lost time (s)	3.0	6.8		3.0	6.8	6.8	3.0	6.5		4.0	6.5	6.5
Lane Util. Factor	1.00	0.91		1.00	0.95	1.00	1.00	0.91		0.97	0.91	1.00
Frpb, ped/bikes	1.00	0.99		1.00	1.00	0.93	1.00	0.99		1.00	1.00	0.89
Flpb, ped/bikes	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00
Frt	1.00	0.97		1.00	1.00	0.85	1.00	0.98		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)	1588	4782		1666	3500	1310	1679	4841		3204	4980	1272
Flt Permitted	0.13	1.00		0.15	1.00	1.00	0.20	1.00		0.95	1.00	1.00
Satd. Flow (perm)	222	4782		270	3500	1310	345	4841		3204	4980	1272
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	198	845	213	211	934	544	256	1034	197	456	951	295
RTOR Reduction (vph)	0	27	0	0	0	156	0	18	0	0	0	137
Lane Group Flow (vph)	198	1031	0	211	934	388	256	1213	0	456	951	158
Confl. Peds. (#/hr)	47		47	47		47	77		27	27		77
Confl. Bikes (#/hr)			3				77					1
Heavy Vehicles (%)	6%	3%	1%	1%	2%	4%	0%	2%	6%	2%	3%	3%
Bus Blockages (#/hr)	0	0	9	0	0	8	0	0	4	0	0	5
Turn Type	pm+pt	NA		pm+pt	NA	Perm	pm+pt	NA		Prot	NA	Perm
Protected Phases	3	8		7	4		1	6		5	2	
Permitted Phases	8			4		4	6					2
Actuated Green, G (s)	71.4	55.4		73.0	56.2	56.2	62.2	42.7		23.8	49.0	49.0
Effective Green, g (s)	71.4	55.4		73.0	56.2	56.2	62.2	42.7		24.8	49.0	49.0
Actuated g/C Ratio	0.45	0.35		0.46	0.35	0.35	0.39	0.27		0.16	0.31	0.31
Clearance Time (s)	3.0	6.8		3.0	6.8	6.8	3.0	6.5		5.0	6.5	6.5
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)	235	1655		269	1229	460	296	1291		496	1525	389
v/s Ratio Prot	c0.08	0.22		c0.08	0.27		0.11	c0.25		c0.14	0.19	
v/s Ratio Perm	0.29			0.27		c0.30	0.23					0.12
v/c Ratio	0.84	0.62		0.78	0.76	0.84	0.86	0.94		0.92	0.62	0.41
Uniform Delay, d1	33.1	43.6		30.1	45.9	47.9	36.5	57.4		66.6	47.6	44.0
Progression Factor	1.00	1.00		1.33	1.28	1.72	1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	23.0	1.8		12.1	3.8	15.0	22.1	14.3		22.0	1.9	3.1
Delay (s)	56.1	45.4		52.0	62.8	97.1	58.6	71.7		88.6	49.5	47.1
Level of Service	E	D		D	E	F	E	E		F	D	D
Approach Delay (s)		47.1			72.5			69.4			59.6	
Approach LOS		D			E			E			E	

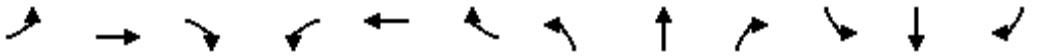
Intersection Summary			
HCM 2000 Control Delay	63.0	HCM 2000 Level of Service	E
HCM 2000 Volume to Capacity ratio	0.89		
Actuated Cycle Length (s)	160.0	Sum of lost time (s)	20.3
Intersection Capacity Utilization	107.0%	ICU Level of Service	G
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Configurations										
Traffic Volume (vph)	75	986	170	50	1366	144	122	51	52	22
Future Volume (vph)	75	986	170	50	1366	144	122	51	52	22
Lane Group Flow (vph)	77	1006	173	51	1394	147	124	113	53	79
Turn Type	pm+pt	NA	Perm	Perm	NA	Perm	Perm	NA	Perm	NA
Protected Phases	5	2			6			4		8
Permitted Phases	2		2	6		6	4		8	
Detector Phase	5	2	2	6	6	6	4	4	8	8
Switch Phase										
Minimum Initial (s)	7.0	10.0	10.0	10.0	10.0	10.0	20.0	20.0	20.0	20.0
Minimum Split (s)	11.5	34.5	34.5	34.5	34.5	34.5	47.0	47.0	47.0	47.0
Total Split (s)	14.0	112.0	112.0	98.0	98.0	98.0	48.0	48.0	48.0	48.0
Total Split (%)	8.8%	70.0%	70.0%	61.3%	61.3%	61.3%	30.0%	30.0%	30.0%	30.0%
Yellow Time (s)	3.0	4.0	4.0	4.0	4.0	4.0	3.5	3.5	3.5	3.5
All-Red Time (s)	0.0	2.5	2.5	2.5	2.5	2.5	3.5	3.5	3.5	3.5
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	3.0	6.5	6.5	6.5	6.5	6.5	7.0	7.0	7.0	7.0
Lead/Lag	Lead			Lag	Lag	Lag				
Lead-Lag Optimize?										
Recall Mode	None	C-Max	C-Max	C-Max	C-Max	C-Max	None	None	None	None
v/c Ratio	0.30	0.39	0.17	0.15	0.60	0.16	0.57	0.35	0.28	0.24
Control Delay	9.1	11.7	4.9	20.3	29.3	10.2	69.1	40.2	57.8	19.3
Queue Delay	0.0	0.0	0.0	0.0	1.5	0.0	0.0	0.0	0.0	0.0
Total Delay	9.1	11.7	4.9	20.3	30.7	10.2	69.1	40.2	57.8	19.3
Queue Length 50th (m)	6.1	90.4	9.1	9.4	184.9	15.4	40.6	24.2	16.4	6.6
Queue Length 95th (m)	m16.4	m115.8	m26.0	m22.6	241.6	m38.2	57.0	39.4	27.7	20.2
Internal Link Dist (m)		279.9			149.0			96.0		162.3
Turn Bay Length (m)	30.0			15.0			15.0		25.0	
Base Capacity (vph)	279	2560	1019	330	2307	909	313	454	272	460
Starvation Cap Reductn	0	0	0	0	670	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	0.28	0.39	0.17	0.15	0.85	0.16	0.40	0.25	0.19	0.17

Intersection Summary

Cycle Length: 160
Actuated Cycle Length: 160
Offset: 67 (42%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green
Natural Cycle: 105
Control Type: Actuated-Coordinated
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 2: Nelico Court & Dundas Street E



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	75	986	170	50	1366	144	122	51	60	52	22	56
Future Volume (vph)	75	986	170	50	1366	144	122	51	60	52	22	56
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.0	3.5	3.0	3.0	3.5	3.0	3.0	3.5	3.0	3.0	3.5	3.0
Total Lost time (s)	3.0	6.5	6.5	6.5	6.5	6.5	7.0	7.0		7.0	7.0	
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	0.90	1.00	1.00	0.88	1.00	0.98		1.00	0.97	
Flpb, ped/bikes	1.00	1.00	1.00	0.98	1.00	1.00	0.98	1.00		0.97	1.00	
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.92		1.00	0.89	
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)	1668	3466	1319	1651	3466	1308	1647	1672		1578	1631	
Flt Permitted	0.13	1.00	1.00	0.28	1.00	1.00	0.71	1.00		0.64	1.00	
Satd. Flow (perm)	236	3466	1319	495	3466	1308	1223	1672		1063	1631	
Peak-hour factor, PHF	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Adj. Flow (vph)	77	1006	173	51	1394	147	124	52	61	53	22	57
RTOR Reduction (vph)	0	0	45	0	0	39	0	29	0	0	47	0
Lane Group Flow (vph)	77	1006	128	51	1394	108	124	84	0	53	32	0
Confl. Peds. (#/hr)	35		28	28		35	21		26	26		21
Confl. Bikes (#/hr)							21					
Heavy Vehicles (%)	1%	3%	1%	0%	3%	0%	0%	2%	0%	4%	0%	0%
Bus Blockages (#/hr)	0	0	5	0	0	4	0	0	0	0	0	0
Turn Type	pm+pt	NA	Perm	Perm	NA	Perm	Perm	NA		Perm	NA	
Protected Phases	5	2			6			4			8	
Permitted Phases	2		2	6		6	4			8		
Actuated Green, G (s)	118.2	118.2	118.2	106.5	106.5	106.5	28.3	28.3		28.3	28.3	
Effective Green, g (s)	118.2	118.2	118.2	106.5	106.5	106.5	28.3	28.3		28.3	28.3	
Actuated g/C Ratio	0.74	0.74	0.74	0.67	0.67	0.67	0.18	0.18		0.18	0.18	
Clearance Time (s)	3.0	6.5	6.5	6.5	6.5	6.5	7.0	7.0		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)	252	2560	974	329	2307	870	216	295		188	288	
v/s Ratio Prot	0.02	c0.29			c0.40			0.05			0.02	
v/s Ratio Perm	0.21		0.10	0.10		0.08	c0.10			0.05		
v/c Ratio	0.31	0.39	0.13	0.16	0.60	0.12	0.57	0.29		0.28	0.11	
Uniform Delay, d1	10.2	7.7	6.0	10.0	15.0	9.8	60.3	57.1		57.0	55.3	
Progression Factor	1.15	1.30	3.79	1.45	1.66	2.59	1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.4	0.3	0.2	0.8	1.0	0.2	3.7	0.5		0.8	0.2	
Delay (s)	12.2	10.3	23.1	15.3	25.9	25.5	64.0	57.6		57.9	55.5	
Level of Service	B	B	C	B	C	C	E	E		E	E	
Approach Delay (s)		12.2			25.5			61.0			56.4	
Approach LOS		B			C			E			E	

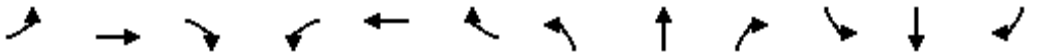
Intersection Summary			
HCM 2000 Control Delay	24.2	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.59		
Actuated Cycle Length (s)	160.0	Sum of lost time (s)	16.5
Intersection Capacity Utilization	84.5%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	SBL	SBT	SBR
Lane Configurations											
Traffic Volume (vph)	31	885	235	282	1272	37	224	6	37	22	82
Future Volume (vph)	31	885	235	282	1272	37	224	6	37	22	82
Lane Group Flow (vph)	33	932	247	297	1339	39	236	328	0	62	86
Turn Type	Perm	NA	Perm	pm+pt	NA	Perm	Perm	NA	Perm	NA	Perm
Protected Phases		2		1	6			4		8	
Permitted Phases	2		2	6		6	4		8		8
Detector Phase	2	2	2	1	6	6	4	4	8	8	8
Switch Phase											
Minimum Initial (s)	10.0	10.0	10.0	5.0	10.0	10.0	20.0	20.0	20.0	20.0	20.0
Minimum Split (s)	48.0	48.0	48.0	9.5	48.0	48.0	51.5	51.5	51.5	51.5	51.5
Total Split (s)	89.0	89.0	89.0	21.0	110.0	110.0	50.0	50.0	50.0	50.0	50.0
Total Split (%)	55.6%	55.6%	55.6%	13.1%	68.8%	68.8%	31.3%	31.3%	31.3%	31.3%	31.3%
Yellow Time (s)	4.0	4.0	4.0	3.0	4.0	4.0	3.0	3.0	3.0	3.0	3.0
All-Red Time (s)	3.0	3.0	3.0	0.0	3.0	3.0	4.5	4.5	4.5	4.5	4.5
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0
Total Lost Time (s)	7.0	7.0	7.0	3.0	7.0	7.0	7.5	7.5		7.5	7.5
Lead/Lag	Lag	Lag	Lag	Lead							
Lead-Lag Optimize?											
Recall Mode	C-Max	C-Max	C-Max	None	C-Max	C-Max	Min	Min	Min	Min	Min
v/c Ratio	0.20	0.47	0.27	0.72	0.56	0.04	0.86	0.60		0.48	0.23
Control Delay	14.0	10.7	0.9	19.9	15.7	3.8	87.2	15.2		65.3	18.2
Queue Delay	0.0	0.2	0.0	0.0	1.1	0.0	0.0	0.0		0.0	0.0
Total Delay	14.0	11.0	0.9	19.9	16.7	3.8	87.2	15.2		65.3	18.2
Queue Length 50th (m)	2.4	41.0	0.0	34.3	168.0	0.8	76.6	15.9		18.3	6.7
Queue Length 95th (m)	7.1	57.0	0.8	43.1	173.5	m3.3	106.2	47.1		33.8	21.3
Internal Link Dist (m)		149.0			130.6			105.8		70.0	
Turn Bay Length (m)	30.0			30.0							10.0
Base Capacity (vph)	168	1990	916	439	2374	905	335	604		158	437
Starvation Cap Reductn	0	400	0	0	721	0	0	0		0	0
Spillback Cap Reductn	0	0	0	0	514	0	0	0		0	8
Storage Cap Reductn	0	0	0	0	0	0	0	0		0	0
Reduced v/c Ratio	0.20	0.59	0.27	0.68	0.81	0.04	0.70	0.54		0.39	0.20

Intersection Summary

Cycle Length: 160
Actuated Cycle Length: 160
Offset: 25 (16%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green
Natural Cycle: 110
Control Type: Actuated-Coordinated
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 3: Jarrow Avenue & Dundas Street E



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	31	885	235	282	1272	37	224	6	306	37	22	82
Future Volume (vph)	31	885	235	282	1272	37	224	6	306	37	22	82
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.0	3.5	3.0	3.0	3.5	3.0	3.0	3.5	3.0	3.0	3.5	3.0
Total Lost time (s)	7.0	7.0	7.0	3.0	7.0	7.0	7.5	7.5			7.5	7.5
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	0.93	1.00	0.96			1.00	0.98
Flpb, ped/bikes	0.99	1.00	1.00	1.00	1.00	1.00	0.99	1.00			0.99	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.85			1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00			0.97	1.00
Satd. Flow (prot)	1455	3433	1402	1666	3433	1292	1675	1528			1690	1480
Flt Permitted	0.19	1.00	1.00	0.24	1.00	1.00	0.72	1.00			0.34	1.00
Satd. Flow (perm)	290	3433	1402	419	3433	1292	1263	1528			595	1480
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	33	932	247	297	1339	39	236	6	322	39	23	86
RTOR Reduction (vph)	0	0	104	0	0	12	0	211	0	0	0	48
Lane Group Flow (vph)	33	932	143	297	1339	27	236	117	0	0	62	38
Confl. Peds. (#/hr)	25		16	16		25	6		24	24		6
Heavy Vehicles (%)	15%	4%	0%	1%	4%	7%	0%	0%	1%	11%	0%	0%
Bus Blockages (#/hr)	0	0	5	0	0	4	0	0	0	0	0	0
Turn Type	Perm	NA	Perm	pm+pt	NA	Perm	Perm	NA		Perm	NA	Perm
Protected Phases		2		1	6			4			8	
Permitted Phases	2		2	6		6	4			8		8
Actuated Green, G (s)	92.8	92.8	92.8	110.7	110.7	110.7	34.8	34.8			34.8	34.8
Effective Green, g (s)	92.8	92.8	92.8	110.7	110.7	110.7	34.8	34.8			34.8	34.8
Actuated g/C Ratio	0.58	0.58	0.58	0.69	0.69	0.69	0.22	0.22			0.22	0.22
Clearance Time (s)	7.0	7.0	7.0	3.0	7.0	7.0	7.5	7.5			7.5	7.5
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)	168	1991	813	406	2375	893	274	332			129	321
v/s Ratio Prot		0.27		c0.07	0.39			0.08				
v/s Ratio Perm	0.11		0.10	c0.44		0.02	c0.19				0.10	0.03
v/c Ratio	0.20	0.47	0.18	0.73	0.56	0.03	0.86	0.35			0.48	0.12
Uniform Delay, d1	15.9	19.4	15.7	12.4	12.5	7.8	60.3	53.0			54.7	50.3
Progression Factor	0.54	0.47	0.10	1.21	1.09	1.23	1.00	1.00			1.00	1.00
Incremental Delay, d2	2.5	0.8	0.5	6.1	0.9	0.1	23.1	0.6			2.8	0.2
Delay (s)	11.2	9.9	2.0	21.0	14.5	9.6	83.4	53.7			57.5	50.5
Level of Service	B	A	A	C	B	A	F	D			E	D
Approach Delay (s)		8.3			15.5			66.1			53.4	
Approach LOS		A			B			E			D	

Intersection Summary			
HCM 2000 Control Delay	22.6	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.78		
Actuated Cycle Length (s)	160.0	Sum of lost time (s)	17.5
Intersection Capacity Utilization	103.6%	ICU Level of Service	G
Analysis Period (min)	15		

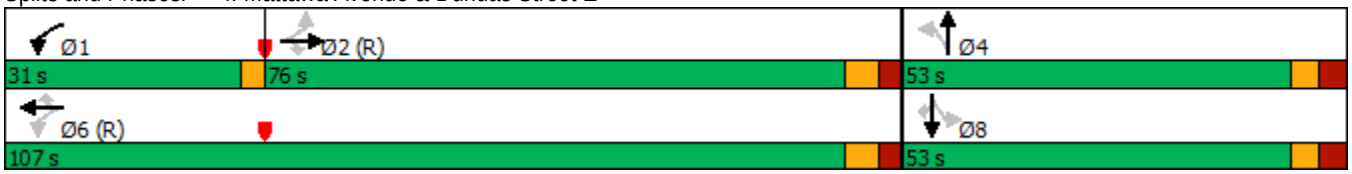
c Critical Lane Group

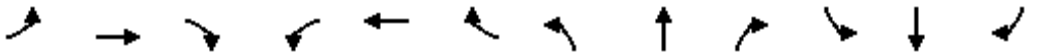
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	SBL	SBT	SBR
Lane Configurations											
Traffic Volume (vph)	9	1020	134	76	1222	3	238	1	7	1	4
Future Volume (vph)	9	1020	134	76	1222	3	238	1	7	1	4
Lane Group Flow (vph)	9	1052	138	78	1260	3	245	94	0	8	4
Turn Type	Perm	NA	Perm	pm+pt	NA	Perm	Perm	NA	Perm	NA	Perm
Protected Phases		2		1	6			4		8	
Permitted Phases	2		2	6		6	4		8		8
Detector Phase	2	2	2	1	6	6	4	4	8	8	8
Switch Phase											
Minimum Initial (s)	10.0	10.0	10.0	5.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0
Minimum Split (s)	40.0	40.0	40.0	8.0	40.0	40.0	45.0	45.0	45.0	45.0	45.0
Total Split (s)	76.0	76.0	76.0	31.0	107.0	107.0	53.0	53.0	53.0	53.0	53.0
Total Split (%)	47.5%	47.5%	47.5%	19.4%	66.9%	66.9%	33.1%	33.1%	33.1%	33.1%	33.1%
Yellow Time (s)	4.0	4.0	4.0	3.0	4.0	4.0	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	3.0	3.0	3.0	0.0	3.0	3.0	3.5	3.5	3.5	3.5	3.5
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0
Total Lost Time (s)	7.0	7.0	7.0	3.0	7.0	7.0	7.0	7.0		7.0	7.0
Lead/Lag	Lag	Lag	Lag	Lead							
Lead-Lag Optimize?											
Recall Mode	C-Max	C-Max	C-Max	None	C-Max	C-Max	None	None	None	None	None
v/c Ratio	0.04	0.49	0.17	0.24	0.53	0.00	0.86	0.23		0.02	0.01
Control Delay	22.2	27.2	10.3	9.1	10.7	0.0	85.6	9.3		43.9	0.0
Queue Delay	0.0	0.4	0.0	0.0	0.1	0.0	0.0	0.0		0.0	0.0
Total Delay	22.2	27.6	10.3	9.1	10.8	0.0	85.6	9.3		43.9	0.0
Queue Length 50th (m)	1.3	123.2	8.5	5.9	56.7	0.0	79.4	0.3		2.1	0.0
Queue Length 95th (m)	m4.9	188.6	33.8	m11.5	79.5	m0.0	106.5	15.0		6.6	0.0
Internal Link Dist (m)		73.5			59.8			251.4		120.0	
Turn Bay Length (m)	24.0			28.0							15.0
Base Capacity (vph)	215	2153	824	477	2391	943	369	497		444	455
Starvation Cap Reductn	0	556	0	0	147	0	0	0		0	0
Spillback Cap Reductn	0	0	0	0	7	0	0	0		0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0		0	0
Reduced v/c Ratio	0.04	0.66	0.17	0.16	0.56	0.00	0.66	0.19		0.02	0.01

Intersection Summary

Cycle Length: 160
Actuated Cycle Length: 160
Offset: 136 (85%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green
Natural Cycle: 95
Control Type: Actuated-Coordinated
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 4: Mattawa Avenue & Dundas Street E

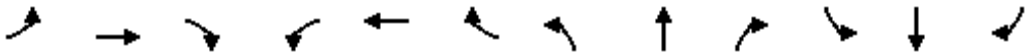




Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	9	1020	134	76	1222	3	238	1	90	7	1	4
Future Volume (vph)	9	1020	134	76	1222	3	238	1	90	7	1	4
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.0	3.5	3.0	3.0	3.5	3.0	3.0	3.5	3.0	3.0	3.5	3.0
Total Lost time (s)	7.0	7.0	7.0	3.0	7.0	7.0	7.0	7.0			7.0	7.0
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	0.91	1.00	1.00	0.91	1.00	0.97			1.00	0.97
Flpb, ped/bikes	0.99	1.00	1.00	1.00	1.00	1.00	0.98	1.00			0.99	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.85			1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00			0.96	1.00
Satd. Flow (prot)	1668	3466	1261	1617	3466	1355	1625	1498			1779	1465
Flt Permitted	0.20	1.00	1.00	0.21	1.00	1.00	0.75	1.00			0.83	1.00
Satd. Flow (perm)	345	3466	1261	360	3466	1355	1287	1498			1546	1465
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	9	1052	138	78	1260	3	245	1	93	7	1	4
RTOR Reduction (vph)	0	0	41	0	0	1	0	72	0	0	0	3
Lane Group Flow (vph)	9	1052	97	78	1260	2	245	22	0	0	8	1
Confl. Peds. (#/hr)	28		28	28		28	13		12	12		13
Heavy Vehicles (%)	0%	3%	7%	4%	3%	0%	2%	0%	4%	0%	0%	0%
Bus Blockages (#/hr)	0	0	5	0	0	4	0	0	0	0	0	0
Turn Type	Perm	NA	Perm	pm+pt	NA	Perm	Perm	NA		Perm	NA	Perm
Protected Phases		2		1	6			4			8	
Permitted Phases	2		2	6		6	4			8		8
Actuated Green, G (s)	99.4	99.4	99.4	110.4	110.4	110.4	35.6	35.6			35.6	35.6
Effective Green, g (s)	99.4	99.4	99.4	110.4	110.4	110.4	35.6	35.6			35.6	35.6
Actuated g/C Ratio	0.62	0.62	0.62	0.69	0.69	0.69	0.22	0.22			0.22	0.22
Clearance Time (s)	7.0	7.0	7.0	3.0	7.0	7.0	7.0	7.0			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)	214	2153	783	311	2391	934	286	333			343	325
v/s Ratio Prot		0.30		0.01	c0.36			0.01				
v/s Ratio Perm	0.03		0.08	0.16		0.00	c0.19				0.01	0.00
v/c Ratio	0.04	0.49	0.12	0.25	0.53	0.00	0.86	0.07			0.02	0.00
Uniform Delay, d1	11.8	16.5	12.4	10.1	12.1	7.7	59.7	49.1			48.6	48.4
Progression Factor	1.39	1.48	2.22	0.93	0.76	1.00	1.00	1.00			1.00	1.00
Incremental Delay, d2	0.3	0.7	0.3	0.3	0.7	0.0	21.5	0.1			0.0	0.0
Delay (s)	16.8	25.1	27.9	9.7	9.9	7.7	81.2	49.2			48.6	48.4
Level of Service	B	C	C	A	A	A	F	D			D	D
Approach Delay (s)		25.4			9.9			72.3			48.6	
Approach LOS		C			A			E			D	

Intersection Summary			
HCM 2000 Control Delay	23.8	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.62		
Actuated Cycle Length (s)	160.0	Sum of lost time (s)	17.0
Intersection Capacity Utilization	87.1%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	24	1075	10	9	1345	6	4	0	13	2	0	15
Future Volume (Veh/h)	24	1075	10	9	1345	6	4	0	13	2	0	15
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	25	1132	11	9	1416	6	4	0	14	2	0	16
Pedestrians								19			15	
Lane Width (m)								3.5			3.5	
Walking Speed (m/s)								1.2			1.2	
Percent Blockage								2			1	
Right turn flare (veh)												
Median type		TWLTL			TWLTL							
Median storage veh)		2			2							
Upstream signal (m)		84			172							
pX, platoon unblocked	0.81			0.86			0.88	0.88	0.86	0.88	0.88	0.81
vC, conflicting volume	1437			1162			1712	2662	402	1893	2664	490
vC1, stage 1 conf vol							1206	1206		1452	1452	
vC2, stage 2 conf vol							506	1455		441	1212	
vCu, unblocked vol	708			603			229	1309	0	435	1311	0
tC, single (s)	4.1			4.1			7.5	6.5	6.9	7.5	6.5	6.9
tC, 2 stage (s)							6.5	5.5		6.5	5.5	
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	97			99			99	100	98	99	100	98
cM capacity (veh/h)	718			830			573	264	920	306	273	870

Direction, Lane #	EB 1	EB 2	EB 3	EB 4	WB 1	WB 2	WB 3	WB 4	NB 1	SB 1
Volume Total	25	453	453	237	9	566	566	289	18	18
Volume Left	25	0	0	0	9	0	0	0	4	2
Volume Right	0	0	0	11	0	0	0	6	14	16
cSH	718	1700	1700	1700	830	1700	1700	1700	811	723
Volume to Capacity	0.03	0.27	0.27	0.14	0.01	0.33	0.33	0.17	0.02	0.02
Queue Length 95th (m)	0.9	0.0	0.0	0.0	0.3	0.0	0.0	0.0	0.5	0.6
Control Delay (s)	10.2	0.0	0.0	0.0	9.4	0.0	0.0	0.0	9.5	10.1
Lane LOS	B				A				A	B
Approach Delay (s)	0.2				0.1				9.5	10.1
Approach LOS									A	B

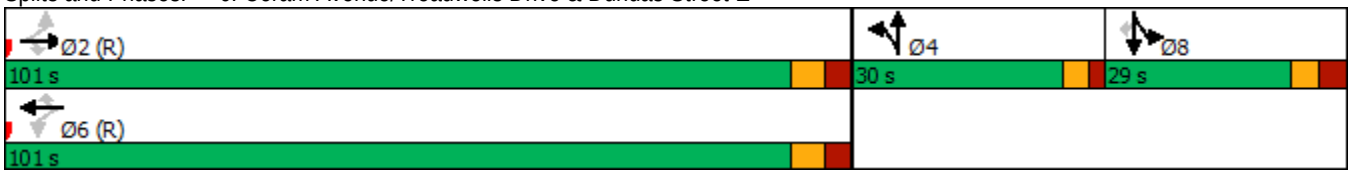
Intersection Summary				
Average Delay	0.3			
Intersection Capacity Utilization	36.1%	ICU Level of Service		A
Analysis Period (min)	15			

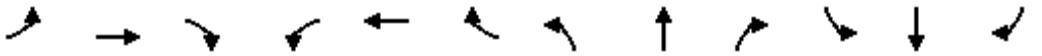
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBT	SBT	SBR
Lane Configurations									
Traffic Volume (vph)	12	1026	43	8	1373	31	0	0	5
Future Volume (vph)	12	1026	43	8	1373	31	0	0	5
Lane Group Flow (vph)	13	1069	45	8	1430	32	45	15	5
Turn Type	Perm	NA	Perm	Perm	NA	Perm	NA	NA	Perm
Protected Phases		2			6		4	8	
Permitted Phases	2		2	6		6			8
Detector Phase	2	2	2	6	6	6	4	8	8
Switch Phase									
Minimum Initial (s)	10.0	10.0	10.0	10.0	10.0	10.0	15.0	15.0	15.0
Minimum Split (s)	36.5	36.5	36.5	36.5	36.5	36.5	45.0	47.0	47.0
Total Split (s)	101.0	101.0	101.0	101.0	101.0	101.0	30.0	29.0	29.0
Total Split (%)	63.1%	63.1%	63.1%	63.1%	63.1%	63.1%	18.8%	18.1%	18.1%
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	3.0	3.5	3.5
All-Red Time (s)	3.5	3.5	3.5	3.5	3.5	3.5	2.0	3.5	3.5
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	7.5	7.5	7.5	7.5	7.5	7.5	5.0	7.0	7.0
Lead/Lag									
Lead-Lag Optimize?									
Recall Mode	C-Max	C-Max	C-Max	C-Max	C-Max	C-Max	Min	Min	Min
v/c Ratio	0.08	0.46	0.05	0.03	0.62	0.03	0.18	0.08	0.02
Control Delay	2.7	4.1	0.1	8.1	12.0	0.1	3.6	64.6	0.2
Queue Delay	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	2.7	4.2	0.1	8.1	12.0	0.1	3.6	64.6	0.2
Queue Length 50th (m)	0.1	6.3	0.0	0.5	49.5	0.0	0.0	4.7	0.0
Queue Length 95th (m)	m0.5	11.7	0.1	m1.5	212.6	0.1	2.6	12.3	0.0
Internal Link Dist (m)		148.0			363.1		118.1	152.8	
Turn Bay Length (m)	15.0			12.0					10.0
Base Capacity (vph)	157	2319	920	266	2319	962	336	245	260
Starvation Cap Reductn	0	262	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.08	0.52	0.05	0.03	0.62	0.03	0.13	0.06	0.02

Intersection Summary

Cycle Length: 160
Actuated Cycle Length: 160
Offset: 136 (85%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green
Natural Cycle: 150
Control Type: Actuated-Coordinated
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 6: Coram Avenue/Treadwells Drive & Dundas Street E





Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	12	1026	43	8	1373	31	31	0	12	14	0	5
Future Volume (vph)	12	1026	43	8	1373	31	31	0	12	14	0	5
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.0	3.5	3.0	3.0	3.5	3.0	3.0	3.5	3.0	3.0	3.5	3.0
Total Lost time (s)	7.5	7.5	7.5	7.5	7.5	7.5		5.0			7.0	7.0
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00		1.00			1.00	1.00
Frpb, ped/bikes	1.00	1.00	0.93	1.00	1.00	0.95		0.99			1.00	0.98
Flpb, ped/bikes	1.00	1.00	1.00	0.99	1.00	1.00		1.00			1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85		0.96			1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00		0.97			0.95	1.00
Satd. Flow (prot)	1685	3466	1345	1670	3466	1409		1734			1785	1484
Flt Permitted	0.13	1.00	1.00	0.23	1.00	1.00		0.97			0.95	1.00
Satd. Flow (perm)	236	3466	1345	398	3466	1409		1734			1785	1484
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	12	1069	45	8	1430	32	32	0	12	15	0	5
RTOR Reduction (vph)	0	0	15	0	0	11	0	40	0	0	0	4
Lane Group Flow (vph)	13	1069	30	8	1430	21	0	5	0	0	15	1
Confl. Peds. (#/hr)	11		19	19		11	3		6	6		3
Heavy Vehicles (%)	0%	3%	2%	0%	3%	0%	0%	0%	0%	0%	0%	0%
Bus Blockages (#/hr)	0	0	5	0	0	4	0	0	0	0	0	0
Turn Type	Perm	NA	Perm	Perm	NA	Perm	Split	NA		Split	NA	Perm
Protected Phases		2			6		4	4		8	8	
Permitted Phases	2		2	6		6						8
Actuated Green, G (s)	107.1	107.1	107.1	107.1	107.1	107.1		17.0			16.4	16.4
Effective Green, g (s)	107.1	107.1	107.1	107.1	107.1	107.1		17.0			16.4	16.4
Actuated g/C Ratio	0.67	0.67	0.67	0.67	0.67	0.67		0.11			0.10	0.10
Clearance Time (s)	7.5	7.5	7.5	7.5	7.5	7.5		5.0			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)	157	2320	900	266	2320	943		184			182	152
v/s Ratio Prot		0.31			c0.41			c0.00			c0.01	
v/s Ratio Perm	0.06		0.02	0.02		0.02						0.00
v/c Ratio	0.08	0.46	0.03	0.03	0.62	0.02		0.03			0.08	0.00
Uniform Delay, d1	9.3	12.6	8.9	8.9	14.9	8.9		64.1			65.0	64.5
Progression Factor	0.14	0.26	0.01	0.69	0.68	0.03		1.00			1.00	1.00
Incremental Delay, d2	0.9	0.6	0.1	0.2	1.2	0.0		0.1			0.2	0.0
Delay (s)	2.2	3.9	0.2	6.4	11.2	0.3		64.1			65.2	64.5
Level of Service	A	A	A	A	B	A		E			E	E
Approach Delay (s)		3.7			11.0			64.1			65.0	
Approach LOS		A			B			E			E	

Intersection Summary			
HCM 2000 Control Delay	9.2	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.48		
Actuated Cycle Length (s)	160.0	Sum of lost time (s)	19.5
Intersection Capacity Utilization	85.0%	ICU Level of Service	E
Analysis Period (min)	15		

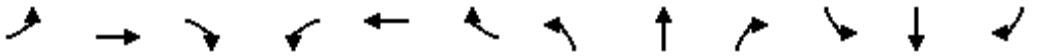
c Critical Lane Group

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Configurations										
Traffic Volume (vph)	59	945	33	46	1118	40	66	7	107	11
Future Volume (vph)	59	945	33	46	1118	40	66	7	107	11
Lane Group Flow (vph)	61	974	34	47	1153	41	68	95	110	168
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	Perm	NA	Perm	NA
Protected Phases	5	2		1	6			4		8
Permitted Phases	2		2	6		6	4		8	
Detector Phase	5	2	2	1	6	6	4	4	8	8
Switch Phase										
Minimum Initial (s)	5.0	8.0	8.0	5.0	8.0	8.0	8.0	8.0	8.0	8.0
Minimum Split (s)	9.5	38.5	38.5	9.5	38.5	38.5	48.0	48.0	48.0	48.0
Total Split (s)	14.0	95.0	95.0	14.0	95.0	95.0	51.0	51.0	51.0	51.0
Total Split (%)	8.8%	59.4%	59.4%	8.8%	59.4%	59.4%	31.9%	31.9%	31.9%	31.9%
Yellow Time (s)	3.0	4.0	4.0	3.0	4.0	4.0	3.5	3.5	3.5	3.5
All-Red Time (s)	0.0	2.5	2.5	0.0	2.5	2.5	3.5	3.5	3.5	3.5
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	3.0	6.5	6.5	3.0	6.5	6.5	7.0	7.0	7.0	7.0
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag				
Lead-Lag Optimize?										
Recall Mode	None	C-Max	C-Max	None	C-Max	C-Max	None	None	None	None
v/c Ratio	0.18	0.38	0.04	0.12	0.45	0.05	0.73	0.34	0.77	0.50
Control Delay	4.3	6.5	0.5	4.7	10.2	1.9	104.7	15.7	98.1	15.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	4.3	6.5	0.5	4.7	10.2	1.9	104.7	15.7	98.1	15.2
Queue Length 50th (m)	5.1	44.3	0.6	2.7	76.7	0.0	22.2	2.1	36.2	3.3
Queue Length 95th (m)	4.0	22.9	0.0	7.2	115.0	3.8	39.3	19.0	56.6	25.4
Internal Link Dist (m)		363.1			862.1			62.3		138.1
Turn Bay Length (m)	30.0		32.0	42.0		42.0	30.0		35.0	
Base Capacity (vph)	368	2552	957	418	2546	822	198	493	303	535
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	0.17	0.38	0.04	0.11	0.45	0.05	0.34	0.19	0.36	0.31

Intersection Summary

Cycle Length: 160
Actuated Cycle Length: 160
Offset: 133 (83%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green
Natural Cycle: 100
Control Type: Actuated-Coordinated

Splits and Phases: 7: Wharton Way & Dundas Street E



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	59	945	33	46	1118	40	66	7	85	107	11	152
Future Volume (vph)	59	945	33	46	1118	40	66	7	85	107	11	152
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.0	3.5	3.0	3.0	3.5	3.0	3.0	3.5	3.0	3.0	3.5	3.0
Total Lost time (s)	3.0	6.5	6.5	3.0	6.5	6.5	7.0	7.0		7.0	7.0	
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	0.94	1.00	1.00	0.94	1.00	0.98		1.00	0.97	
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	0.98	1.00		0.99	1.00	
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.86		1.00	0.86	
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)	1573	3466	1283	1514	3466	1101	1624	1561		1565	1534	
Flt Permitted	0.21	1.00	1.00	0.27	1.00	1.00	0.42	1.00		0.67	1.00	
Satd. Flow (perm)	353	3466	1283	427	3466	1101	720	1561		1104	1534	
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	61	974	34	47	1153	41	68	7	88	110	11	157
RTOR Reduction (vph)	0	0	9	0	0	11	0	77	0	0	137	0
Lane Group Flow (vph)	61	974	25	47	1153	30	68	18	0	110	31	0
Confl. Peds. (#/hr)	15		18	18		15	20		6	6		20
Heavy Vehicles (%)	7%	3%	6%	11%	3%	25%	2%	0%	2%	7%	0%	2%
Bus Blockages (#/hr)	0	0	9	0	0	8	0	0	0	0	0	0
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	Perm	NA		Perm	NA	
Protected Phases	5	2		1	6			4			8	
Permitted Phases	2		2	6		6	4			8		
Actuated Green, G (s)	122.9	117.2	117.2	122.5	117.0	117.0	20.8	20.8		20.8	20.8	
Effective Green, g (s)	122.9	117.2	117.2	122.5	117.0	117.0	20.8	20.8		20.8	20.8	
Actuated g/C Ratio	0.77	0.73	0.73	0.77	0.73	0.73	0.13	0.13		0.13	0.13	
Clearance Time (s)	3.0	6.5	6.5	3.0	6.5	6.5	7.0	7.0		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)	314	2538	939	364	2534	805	93	202		143	199	
v/s Ratio Prot	c0.01	0.28		0.00	c0.33			0.01			0.02	
v/s Ratio Perm	0.14		0.02	0.09		0.03	0.09			c0.10		
v/c Ratio	0.19	0.38	0.03	0.13	0.46	0.04	0.73	0.09		0.77	0.16	
Uniform Delay, d1	5.4	8.0	5.8	4.9	8.7	5.9	66.9	61.3		67.3	61.8	
Progression Factor	0.82	0.69	0.35	1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.3	0.4	0.0	0.2	0.6	0.1	25.3	0.2		21.7	0.4	
Delay (s)	4.7	5.9	2.1	5.1	9.3	6.0	92.2	61.5		88.9	62.2	
Level of Service	A	A	A	A	A	A	F	E		F	E	
Approach Delay (s)		5.7			9.0			74.3			72.8	
Approach LOS		A			A			E			E	

Intersection Summary			
HCM 2000 Control Delay	18.0	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.49		
Actuated Cycle Length (s)	160.0	Sum of lost time (s)	16.5
Intersection Capacity Utilization	84.8%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	1414	37	2	1768	9	5
Future Volume (Veh/h)	1414	37	2	1768	9	5
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97
Hourly flow rate (vph)	1458	38	2	1823	9	5
Pedestrians					11	
Lane Width (m)					3.0	
Walking Speed (m/s)					1.2	
Percent Blockage					1	
Right turn flare (veh)						
Median type	TWLTL			TWLTL		
Median storage veh)	2			2		
Upstream signal (m)	155			98		
pX, platoon unblocked			0.88		0.91	0.88
vC, conflicting volume			1507		2100	516
vC1, stage 1 conf vol					1488	
vC2, stage 2 conf vol					612	
vCu, unblocked vol			1089		938	0
tC, single (s)			4.1		6.8	6.9
tC, 2 stage (s)					5.8	
tF (s)			2.2		3.5	3.3
p0 queue free %			100		96	99
cM capacity (veh/h)			565		252	950

Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	WB 3	WB 4	NB 1
Volume Total	583	583	330	2	608	608	608	14
Volume Left	0	0	0	2	0	0	0	9
Volume Right	0	0	38	0	0	0	0	5
cSH	1700	1700	1700	565	1700	1700	1700	341
Volume to Capacity	0.34	0.34	0.19	0.00	0.36	0.36	0.36	0.04
Queue Length 95th (m)	0.0	0.0	0.0	0.1	0.0	0.0	0.0	1.0
Control Delay (s)	0.0	0.0	0.0	11.4	0.0	0.0	0.0	16.0
Lane LOS				B				C
Approach Delay (s)	0.0			0.0				16.0
Approach LOS								C

Intersection Summary			
Average Delay	0.1		
Intersection Capacity Utilization	44.2%	ICU Level of Service	A
Analysis Period (min)	15		

APPENDIX G

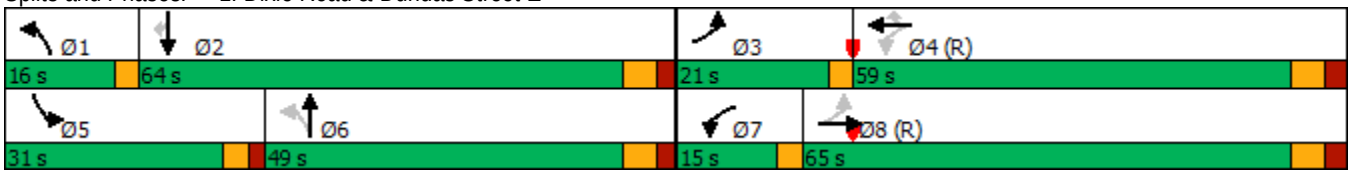
2028 Future Total Intersection Capacity Analysis

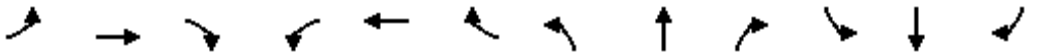
Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT	SBR
Lane Configurations										
Traffic Volume (vph)	156	849	183	551	333	142	874	431	844	177
Future Volume (vph)	156	849	183	551	333	142	874	431	844	177
Lane Group Flow (vph)	166	1087	195	586	354	151	1098	459	898	188
Turn Type	pm+pt	NA	pm+pt	NA	Perm	pm+pt	NA	Prot	NA	Perm
Protected Phases	3	8	7	4		1	6	5	2	
Permitted Phases	8		4		4	6				2
Detector Phase	3	8	7	4	4	1	6	5	2	2
Switch Phase										
Minimum Initial (s)	7.0	10.0	7.0	10.0	10.0	7.0	10.0	7.0	10.0	10.0
Minimum Split (s)	10.0	47.8	11.5	47.8	47.8	10.0	42.5	13.0	42.5	42.5
Total Split (s)	21.0	65.0	15.0	59.0	59.0	16.0	49.0	31.0	64.0	64.0
Total Split (%)	13.1%	40.6%	9.4%	36.9%	36.9%	10.0%	30.6%	19.4%	40.0%	40.0%
Yellow Time (s)	3.0	4.0	3.0	4.0	4.0	3.0	4.0	3.0	4.0	4.0
All-Red Time (s)	0.0	2.8	0.0	2.8	2.8	0.0	2.5	2.0	2.5	2.5
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	3.0	6.8	3.0	6.8	6.8	3.0	6.5	5.0	6.5	6.5
Lead/Lag	Lead	Lag	Lead	Lag	Lag	Lead	Lag	Lead	Lag	Lag
Lead-Lag Optimize?										
Recall Mode	None	C-Max	None	C-Max	C-Max	None	Max	None	Max	Max
v/c Ratio	0.48	0.62	0.92	0.51	0.58	0.55	0.87	0.94	0.50	0.33
Control Delay	29.1	42.4	92.5	58.8	34.9	33.2	63.3	94.5	40.9	11.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	29.1	42.4	92.5	58.8	34.9	33.2	63.3	94.5	40.9	11.1
Queue Length 50th (m)	31.6	106.5	52.5	92.4	41.8	28.4	127.5	79.3	86.4	9.3
Queue Length 95th (m)	48.3	123.1	#86.6	129.7	112.6	43.8	147.1	#113.4	101.1	30.0
Internal Link Dist (m)		1362.6		279.9			1407.4		1183.5	
Turn Bay Length (m)	45.0		85.0		42.0	64.0		107.0		50.0
Base Capacity (vph)	371	1754	211	1148	608	286	1264	491	1784	567
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	0.45	0.62	0.92	0.51	0.58	0.53	0.87	0.93	0.50	0.33

Intersection Summary

Cycle Length: 160
Actuated Cycle Length: 160
Offset: 3 (2%), Referenced to phase 4:WBTL and 8:EBTL, Start of Green
Natural Cycle: 125
Control Type: Actuated-Coordinated
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 1: Dixie Road & Dundas Street E





Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	156	849	173	183	551	333	142	874	158	431	844	177
Future Volume (vph)	156	849	173	183	551	333	142	874	158	431	844	177
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.0	3.5	3.0	3.0	3.5	3.0	3.0	3.5	3.0	3.0	3.5	3.0
Total Lost time (s)	3.0	6.8		3.0	6.8	6.8	3.0	6.5		5.0	6.5	6.5
Lane Util. Factor	1.00	0.91		1.00	0.95	1.00	1.00	0.91		0.97	0.91	1.00
Frpb, ped/bikes	1.00	0.99		1.00	1.00	0.98	1.00	1.00		1.00	1.00	0.94
Flpb, ped/bikes	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00
Frt	1.00	0.97		1.00	1.00	0.85	1.00	0.98		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)	1618	4769		1530	3305	1301	1661	4674		3026	4885	1299
Flt Permitted	0.30	1.00		0.16	1.00	1.00	0.30	1.00		0.95	1.00	1.00
Satd. Flow (perm)	515	4769		262	3305	1301	527	4674		3026	4885	1299
Peak-hour factor, PHF	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Adj. Flow (vph)	166	903	184	195	586	354	151	930	168	459	898	188
RTOR Reduction (vph)	0	19	0	0	0	157	0	16	0	0	0	93
Lane Group Flow (vph)	166	1068	0	195	586	197	151	1082	0	459	898	95
Confl. Peds. (#/hr)	8		30	30		8	39		12	12		39
Confl. Bikes (#/hr)							39					
Heavy Vehicles (%)	4%	4%	4%	10%	8%	8%	1%	6%	11%	8%	5%	7%
Bus Blockages (#/hr)	0	0	9	0	0	12	0	0	5	0	0	4
Turn Type	pm+pt	NA		pm+pt	NA	Perm	pm+pt	NA		Prot	NA	Perm
Protected Phases	3	8		7	4		1	6		5	2	
Permitted Phases	8			4		4	6					2
Actuated Green, G (s)	72.8	58.2		67.6	55.6	55.6	54.8	42.7		25.8	58.4	58.4
Effective Green, g (s)	72.8	58.2		67.6	55.6	55.6	54.8	42.7		25.8	58.4	58.4
Actuated g/C Ratio	0.45	0.36		0.42	0.35	0.35	0.34	0.27		0.16	0.36	0.36
Clearance Time (s)	3.0	6.8		3.0	6.8	6.8	3.0	6.5		5.0	6.5	6.5
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	1734		205	1148	452	266	1247		487	1783	474
v/s Ratio Prot	c0.05	0.22		c0.07	0.18		0.04	c0.23		c0.15	0.18	
v/s Ratio Perm	0.18			c0.33		0.15	0.15					0.07
v/c Ratio	0.50	0.62		0.95	0.51	0.44	0.57	0.87		0.94	0.50	0.20
Uniform Delay, d1	27.7	41.7		35.5	41.4	40.2	38.0	56.0		66.4	39.5	34.8
Progression Factor	1.00	1.00		1.86	1.36	2.29	1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	1.2	1.6		47.1	1.5	2.9	2.8	8.3		26.9	1.0	1.0
Delay (s)	28.9	43.4		113.2	57.7	94.7	40.8	64.3		93.2	40.5	35.8
Level of Service	C	D		F	E	F	D	E		F	D	D
Approach Delay (s)		41.5			78.8			61.4			55.6	
Approach LOS		D			E			E			E	

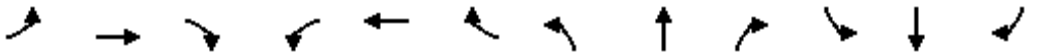
Intersection Summary			
HCM 2000 Control Delay	58.7	HCM 2000 Level of Service	E
HCM 2000 Volume to Capacity ratio	0.91		
Actuated Cycle Length (s)	160.0	Sum of lost time (s)	21.3
Intersection Capacity Utilization	105.2%	ICU Level of Service	G
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Configurations										
Traffic Volume (vph)	6	1170	91	10	1017	21	21	1	21	4
Future Volume (vph)	6	1170	91	10	1017	21	21	1	21	4
Lane Group Flow (vph)	6	1232	96	11	1071	22	22	19	22	20
Turn Type	Perm	NA	Perm	Perm	NA	Perm	Perm	NA	Perm	NA
Protected Phases		2			6			4		8
Permitted Phases	2		2	6		6	4		8	
Detector Phase	2	2	2	6	6	6	4	4	8	8
Switch Phase										
Minimum Initial (s)	10.0	10.0	10.0	10.0	10.0	10.0	20.0	20.0	20.0	20.0
Minimum Split (s)	34.5	34.5	34.5	34.5	34.5	34.5	47.0	47.0	47.0	47.0
Total Split (s)	112.0	112.0	112.0	112.0	112.0	112.0	48.0	48.0	48.0	48.0
Total Split (%)	70.0%	70.0%	70.0%	70.0%	70.0%	70.0%	30.0%	30.0%	30.0%	30.0%
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	3.5	3.5	3.5	3.5
All-Red Time (s)	2.5	2.5	2.5	2.5	2.5	2.5	3.5	3.5	3.5	3.5
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.5	6.5	6.5	6.5	6.5	6.5	7.0	7.0	7.0	7.0
Lead/Lag										
Lead-Lag Optimize?										
Recall Mode	C-Max	C-Max	C-Max	C-Max	C-Max	C-Max	None	None	None	None
v/c Ratio	0.02	0.45	0.09	0.04	0.40	0.02	0.11	0.09	0.12	0.09
Control Delay	6.3	9.7	3.2	3.7	5.9	0.4	56.8	21.2	57.0	25.1
Queue Delay	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0
Total Delay	6.3	9.7	3.2	3.7	6.0	0.4	56.8	21.2	57.0	25.1
Queue Length 50th (m)	0.3	117.8	3.4	0.3	89.4	0.0	6.7	0.3	6.7	1.2
Queue Length 95th (m)	m1.4	m161.1	m14.7	m0.0	126.1	0.4	14.0	7.8	14.0	8.8
Internal Link Dist (m)		279.9			149.0			96.0		162.3
Turn Bay Length (m)	30.0			15.0			15.0		25.0	
Base Capacity (vph)	303	2719	1122	292	2669	1079	334	344	320	370
Starvation Cap Reductn	0	0	0	0	470	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.02	0.45	0.09	0.04	0.49	0.02	0.07	0.06	0.07	0.05

Intersection Summary

Cycle Length: 160
Actuated Cycle Length: 160
Offset: 51 (32%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green
Natural Cycle: 85
Control Type: Actuated-Coordinated
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 2: Nelico Court & Dundas Street E



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	6	1170	91	10	1017	21	21	1	17	21	4	15
Future Volume (vph)	6	1170	91	10	1017	21	21	1	17	21	4	15
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.0	3.5	3.0	3.0	3.5	3.0	3.0	3.5	3.0	3.0	3.5	3.0
Total Lost time (s)	6.5	6.5	6.5	6.5	6.5	6.5	7.0	7.0		7.0	7.0	
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	0.94	1.00	1.00	0.95	1.00	0.98		1.00	0.98	
Flpb, ped/bikes	0.99	1.00	1.00	0.99	1.00	1.00	0.99	1.00		1.00	1.00	
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.86		1.00	0.88	
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)	1431	3368	1367	1676	3305	1330	1667	1293		1597	1400	
Flt Permitted	0.25	1.00	1.00	0.21	1.00	1.00	0.74	1.00		0.75	1.00	
Satd. Flow (perm)	374	3368	1367	362	3305	1330	1306	1293		1252	1400	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	6	1232	96	11	1071	22	22	1	18	22	4	16
RTOR Reduction (vph)	0	0	20	0	0	5	0	16	0	0	14	0
Lane Group Flow (vph)	6	1232	76	11	1071	17	22	3	0	22	6	0
Confl. Peds. (#/hr)	11		13	13		11	9		4	4		9
Confl. Bikes (#/hr)							9					
Heavy Vehicles (%)	17%	6%	2%	0%	8%	5%	0%	0%	24%	5%	0%	20%
Bus Blockages (#/hr)	0	0	5	0	0	6	0	0	0	0	0	0
Turn Type	Perm	NA	Perm	Perm	NA	Perm	Perm	NA		Perm	NA	
Protected Phases		2			6			4			8	
Permitted Phases	2		2	6		6	4			8		
Actuated Green, G (s)	126.5	126.5	126.5	126.5	126.5	126.5	20.0	20.0		20.0	20.0	
Effective Green, g (s)	126.5	126.5	126.5	126.5	126.5	126.5	20.0	20.0		20.0	20.0	
Actuated g/C Ratio	0.79	0.79	0.79	0.79	0.79	0.79	0.12	0.12		0.12	0.12	
Clearance Time (s)	6.5	6.5	6.5	6.5	6.5	6.5	7.0	7.0		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)	295	2662	1080	286	2613	1051	163	161		156	175	
v/s Ratio Prot		c0.37			0.32			0.00			0.00	
v/s Ratio Perm	0.02		0.06	0.03		0.01	0.02			c0.02		
v/c Ratio	0.02	0.46	0.07	0.04	0.41	0.02	0.13	0.02		0.14	0.03	
Uniform Delay, d1	3.6	5.5	3.7	3.6	5.2	3.6	62.3	61.4		62.3	61.5	
Progression Factor	0.92	1.33	2.29	0.52	0.84	0.16	1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.1	0.4	0.1	0.2	0.5	0.0	0.4	0.1		0.4	0.1	
Delay (s)	3.4	7.7	8.6	2.1	4.8	0.6	62.7	61.5		62.8	61.6	
Level of Service	A	A	A	A	A	A	E	E		E	E	
Approach Delay (s)		7.8			4.7			62.1			62.2	
Approach LOS		A			A			E			E	

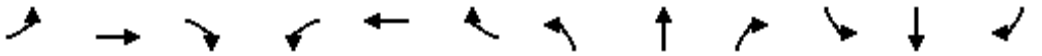
Intersection Summary			
HCM 2000 Control Delay	8.2	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.42		
Actuated Cycle Length (s)	160.0	Sum of lost time (s)	13.5
Intersection Capacity Utilization	69.3%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	SBL	SBT	SBR
Lane Configurations											
Traffic Volume (vph)	63	988	169	177	924	35	74	6	21	1	27
Future Volume (vph)	63	988	169	177	924	35	74	6	21	1	27
Lane Group Flow (vph)	66	1029	176	184	963	36	77	153	0	23	28
Turn Type	Perm	NA	Perm	Perm	NA	Perm	Perm	NA	Perm	NA	Perm
Protected Phases		2			6			4		8	
Permitted Phases	2		2	6		6	4		8		8
Detector Phase	2	2	2	6	6	6	4	4	8	8	8
Switch Phase											
Minimum Initial (s)	10.0	10.0	10.0	10.0	10.0	10.0	20.0	20.0	20.0	20.0	20.0
Minimum Split (s)	48.0	48.0	48.0	48.0	48.0	48.0	51.5	51.5	51.5	51.5	51.5
Total Split (s)	110.0	110.0	110.0	110.0	110.0	110.0	50.0	50.0	50.0	50.0	50.0
Total Split (%)	68.8%	68.8%	68.8%	68.8%	68.8%	68.8%	31.3%	31.3%	31.3%	31.3%	31.3%
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	3.0	3.0	3.0	3.0	3.0
All-Red Time (s)	3.0	3.0	3.0	3.0	3.0	3.0	4.5	4.5	4.5	4.5	4.5
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0
Total Lost Time (s)	7.0	7.0	7.0	7.0	7.0	7.0	7.5	7.5		7.5	7.5
Lead/Lag											
Lead-Lag Optimize?											
Recall Mode	C-Max	C-Max	C-Max	C-Max	C-Max	C-Max	Min	Min	Min	Min	Min
v/c Ratio	0.19	0.40	0.16	0.55	0.39	0.04	0.40	0.45		0.19	0.13
Control Delay	3.3	2.4	0.3	19.3	8.8	2.9	65.5	16.8		59.2	16.8
Queue Delay	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0
Total Delay	3.3	2.5	0.3	19.3	8.8	2.9	65.5	16.8		59.2	16.8
Queue Length 50th (m)	1.4	11.2	0.1	26.5	65.1	0.4	24.4	7.3		7.0	0.0
Queue Length 95th (m)	3.6	18.7	0.2	m55.1	m100.1	m4.6	36.2	25.9		14.3	8.7
Internal Link Dist (m)		149.0			130.6			105.8		70.0	
Turn Bay Length (m)	30.0			30.0							10.0
Base Capacity (vph)	342	2546	1103	335	2499	868	334	498		216	340
Starvation Cap Reductn	0	387	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	0.19	0.48	0.16	0.55	0.39	0.04	0.23	0.31		0.11	0.08

Intersection Summary

Cycle Length: 160
Actuated Cycle Length: 160
Offset: 37 (23%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green
Natural Cycle: 120
Control Type: Actuated-Coordinated
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 3: Jarrow Avenue & Dundas Street E



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	63	988	169	177	924	35	74	6	141	21	1	27
Future Volume (vph)	63	988	169	177	924	35	74	6	141	21	1	27
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.0	3.5	3.0	3.0	3.5	3.0	3.0	3.5	3.0	3.0	3.5	3.0
Total Lost time (s)	7.0	7.0	7.0	7.0	7.0	7.0	7.5	7.5			7.5	7.5
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	0.96	1.00	0.98			1.00	0.98
Flpb, ped/bikes	0.99	1.00	1.00	1.00	1.00	1.00	1.00	1.00			0.99	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.86			1.00	0.85
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)	1552	3368	1402	1648	3305	1137	1613	1520			1255	1206
Flt Permitted	0.28	1.00	1.00	0.26	1.00	1.00	0.74	1.00			0.62	1.00
Satd. Flow (perm)	452	3368	1402	444	3305	1137	1260	1520			816	1206
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	66	1029	176	184	962	36	77	6	147	22	1	28
RTOR Reduction (vph)	0	0	43	0	0	9	0	109	0	0	0	24
Lane Group Flow (vph)	66	1029	133	184	963	27	77	44	0	0	23	4
Confl. Peds. (#/hr)	11		6	6		11	4		7	7		4
Confl. Bikes (#/hr)			1			1						
Heavy Vehicles (%)	8%	6%	2%	2%	8%	24%	4%	0%	4%	44%	0%	23%
Bus Blockages (#/hr)	0	0	5	0	0	6	0	0	0	0	0	0
Turn Type	Perm	NA	Perm	Perm	NA	Perm	Perm	NA		Perm	NA	Perm
Protected Phases		2			6			4			8	
Permitted Phases	2		2	6		6	4			8		8
Actuated Green, G (s)	121.0	121.0	121.0	121.0	121.0	121.0	24.5	24.5			24.5	24.5
Effective Green, g (s)	121.0	121.0	121.0	121.0	121.0	121.0	24.5	24.5			24.5	24.5
Actuated g/C Ratio	0.76	0.76	0.76	0.76	0.76	0.76	0.15	0.15			0.15	0.15
Clearance Time (s)	7.0	7.0	7.0	7.0	7.0	7.0	7.5	7.5			7.5	7.5
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)	341	2547	1060	335	2499	859	192	232			124	184
v/s Ratio Prot		0.31			0.29			0.03				
v/s Ratio Perm	0.15		0.09	c0.41		0.02	c0.06				0.03	0.00
v/c Ratio	0.19	0.40	0.13	0.55	0.39	0.03	0.40	0.19			0.19	0.02
Uniform Delay, d1	5.6	6.8	5.3	8.1	6.7	4.9	61.1	59.1			59.1	57.6
Progression Factor	0.29	0.25	0.00	1.16	1.10	1.16	1.00	1.00			1.00	1.00
Incremental Delay, d2	1.2	0.4	0.2	5.7	0.4	0.1	1.4	0.4			0.7	0.1
Delay (s)	2.7	2.2	0.2	15.1	7.8	5.7	62.5	59.5			59.8	57.6
Level of Service	A	A	A	B	A	A	E	E			E	E
Approach Delay (s)		1.9			8.8			60.5			58.6	
Approach LOS		A			A			E			E	

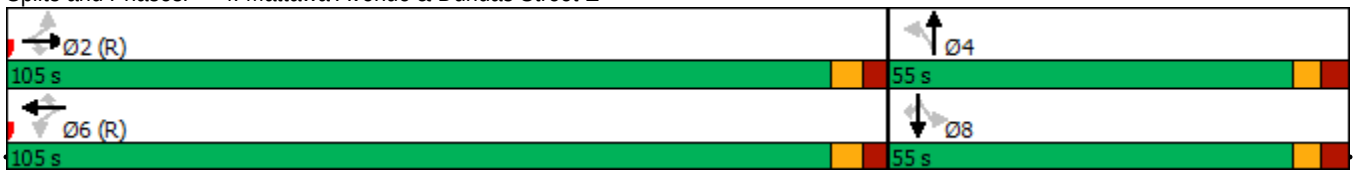
Intersection Summary			
HCM 2000 Control Delay	10.9	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.52		
Actuated Cycle Length (s)	160.0	Sum of lost time (s)	14.5
Intersection Capacity Utilization	92.5%	ICU Level of Service	F
Analysis Period (min)	15		
c Critical Lane Group			

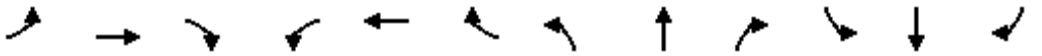
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Configurations										
Traffic Volume (vph)	2	938	227	68	751	3	363	0	1	0
Future Volume (vph)	2	938	227	68	751	3	363	0	1	0
Lane Group Flow (vph)	2	957	232	69	766	3	370	169	0	1
Turn Type	Perm	NA	Perm	Perm	NA	Perm	Perm	NA	Perm	NA
Protected Phases		2			6			4		8
Permitted Phases	2		2	6		6	4		8	
Detector Phase	2	2	2	6	6	6	4	4	8	8
Switch Phase										
Minimum Initial (s)	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0
Minimum Split (s)	40.0	40.0	40.0	40.0	40.0	40.0	45.0	45.0	45.0	45.0
Total Split (s)	105.0	105.0	105.0	105.0	105.0	105.0	55.0	55.0	55.0	55.0
Total Split (%)	65.6%	65.6%	65.6%	65.6%	65.6%	65.6%	34.4%	34.4%	34.4%	34.4%
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	3.5	3.5	3.5	3.5
All-Red Time (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.5	3.5	3.5	3.5
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0
Total Lost Time (s)	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0		7.0
Lead/Lag										
Lead-Lag Optimize?										
Recall Mode	C-Max	C-Max	C-Max	C-Max	C-Max	C-Max	None	None	None	None
v/c Ratio	0.01	0.46	0.25	0.25	0.37	0.00	0.97	0.40		0.00
Control Delay	19.0	30.5	9.6	10.8	9.1	0.0	94.1	13.8		39.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0
Total Delay	19.0	30.5	9.6	10.8	9.1	0.0	94.1	13.8		39.0
Queue Length 50th (m)	0.4	141.6	19.0	4.5	25.8	0.0	121.8	8.3		0.2
Queue Length 95th (m)	m1.1	165.1	43.3	7.7	30.0	m0.0	#189.1	30.3		1.9
Internal Link Dist (m)		73.5			59.8			251.4		120.0
Turn Bay Length (m)	24.0			28.0						
Base Capacity (vph)	353	2065	946	272	2065	889	390	427		329
Starvation Cap Reductn	0	0	0	0	0	0	0	0		0
Spillback Cap Reductn	0	0	0	0	0	0	0	0		0
Storage Cap Reductn	0	0	0	0	0	0	0	0		0
Reduced v/c Ratio	0.01	0.46	0.25	0.25	0.37	0.00	0.95	0.40		0.00

Intersection Summary

Cycle Length: 160
Actuated Cycle Length: 160
Offset: 117 (73%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green
Natural Cycle: 85
Control Type: Actuated-Coordinated
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 4: Mattawa Avenue & Dundas Street E

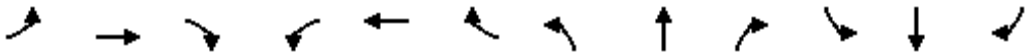




Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	2	938	227	68	751	3	363	0	166	1	0	0
Future Volume (vph)	2	938	227	68	751	3	363	0	166	1	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.0	3.5	3.0	3.0	3.5	3.0	3.0	3.5	3.0	3.0	3.5	3.0
Total Lost time (s)	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0			7.0	
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	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	
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			1.00	
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.85			1.00	
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00			0.95	
Satd. Flow (prot)	1678	3336	1385	1680	3336	1421	1634	1110			1783	
Flt Permitted	0.32	1.00	1.00	0.25	1.00	1.00	0.76	1.00			0.58	
Satd. Flow (perm)	570	3336	1385	440	3336	1421	1302	1110			1098	
Peak-hour factor, PHF	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Adj. Flow (vph)	2	957	232	69	766	3	370	0	169	1	0	0
RTOR Reduction (vph)	0	0	88	0	0	1	0	95	0	0	0	0
Lane Group Flow (vph)	2	957	144	69	766	2	370	74	0	0	1	0
Confl. Peds. (#/hr)	6		6	6		6	1		1	1		1
Heavy Vehicles (%)	0%	7%	3%	0%	7%	0%	3%	0%	42%	0%	0%	0%
Bus Blockages (#/hr)	0	0	5	0	0	6	0	0	0	0	0	0
Turn Type	Perm	NA	Perm	Perm	NA	Perm	Perm	NA		Perm	NA	Perm
Protected Phases		2			6			4			8	
Permitted Phases	2		2	6		6	4			8		8
Actuated Green, G (s)	99.1	99.1	99.1	99.1	99.1	99.1	46.9	46.9			46.9	
Effective Green, g (s)	99.1	99.1	99.1	99.1	99.1	99.1	46.9	46.9			46.9	
Actuated g/C Ratio	0.62	0.62	0.62	0.62	0.62	0.62	0.29	0.29			0.29	
Clearance Time (s)	7.0	7.0	7.0	7.0	7.0	7.0	7.0	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)	353	2066	857	272	2066	880	381	325			321	
v/s Ratio Prot		c0.29			0.23			0.07				
v/s Ratio Perm	0.00		0.10	0.16		0.00	c0.28				0.00	
v/c Ratio	0.01	0.46	0.17	0.25	0.37	0.00	0.97	0.23			0.00	
Uniform Delay, d1	11.6	16.3	12.9	13.8	15.0	11.6	55.9	42.8			40.0	
Progression Factor	1.55	1.79	6.20	0.58	0.56	1.00	1.00	1.00			1.00	
Incremental Delay, d2	0.0	0.7	0.4	2.1	0.5	0.0	38.3	0.4			0.0	
Delay (s)	18.0	29.8	80.6	10.1	8.9	11.6	94.2	43.2			40.0	
Level of Service	B	C	F	B	A	B	F	D			D	
Approach Delay (s)		39.7			9.0			78.2			40.0	
Approach LOS		D			A			E			D	

Intersection Summary			
HCM 2000 Control Delay	37.8	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.63		
Actuated Cycle Length (s)	160.0	Sum of lost time (s)	14.0
Intersection Capacity Utilization	80.3%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	14	1083	0	0	792	4	0	0	0	3	0	18
Future Volume (Veh/h)	14	1083	0	0	792	4	0	0	0	3	0	18
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Hourly flow rate (vph)	15	1128	0	0	825	4	0	0	0	3	0	19
Pedestrians								8			15	
Lane Width (m)								3.5			3.5	
Walking Speed (m/s)								1.2			1.2	
Percent Blockage								1			1	
Right turn flare (veh)												
Median type		TWLTL			TWLTL							
Median storage veh)		2			2							
Upstream signal (m)		84			172							
pX, platoon unblocked	0.95			0.87			0.90	0.90	0.87	0.90	0.90	0.95
vC, conflicting volume	844			1136			1460	2010	384	1248	2008	292
vC1, stage 1 conf vol							1166	1166		842	842	
vC2, stage 2 conf vol							294	844		406	1166	
vCu, unblocked vol	646			642			726	1339	0	490	1337	64
tC, single (s)	4.2			4.1			7.5	6.5	6.9	7.5	6.5	6.9
tC, 2 stage (s)							6.5	5.5		6.5	5.5	
tF (s)	2.3			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	98			100			100	100	100	99	100	98
cM capacity (veh/h)	846			825			342	307	945	396	311	931

Direction, Lane #	EB 1	EB 2	EB 3	EB 4	WB 1	WB 2	WB 3	WB 4	NB 1	SB 1
Volume Total	15	451	451	226	0	330	330	169	0	22
Volume Left	15	0	0	0	0	0	0	0	0	3
Volume Right	0	0	0	0	0	0	0	4	0	19
cSH	846	1700	1700	1700	1700	1700	1700	1700	1700	786
Volume to Capacity	0.02	0.27	0.27	0.13	0.00	0.19	0.19	0.10	0.00	0.03
Queue Length 95th (m)	0.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.7
Control Delay (s)	9.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	9.7
Lane LOS	A								A	A
Approach Delay (s)	0.1				0.0				0.0	9.7
Approach LOS									A	A

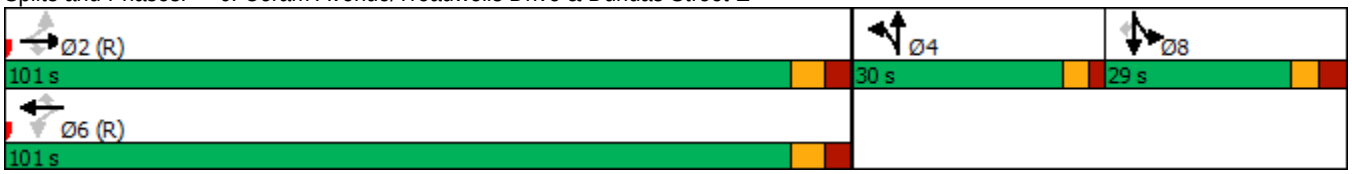
Intersection Summary				
Average Delay	0.2			
Intersection Capacity Utilization	30.9%	ICU Level of Service		A
Analysis Period (min)	15			

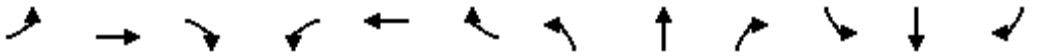
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBT	SBT	SBR
Lane Configurations									
Traffic Volume (vph)	9	1048	14	10	794	12	1	1	24
Future Volume (vph)	9	1048	14	10	794	12	1	1	24
Lane Group Flow (vph)	9	1103	15	11	836	13	42	21	25
Turn Type	Perm	NA	Perm	Perm	NA	Perm	NA	NA	Perm
Protected Phases		2			6		4	8	
Permitted Phases	2		2	6		6			8
Detector Phase	2	2	2	6	6	6	4	8	8
Switch Phase									
Minimum Initial (s)	10.0	10.0	10.0	10.0	10.0	10.0	15.0	15.0	15.0
Minimum Split (s)	36.5	36.5	36.5	36.5	36.5	36.5	45.0	47.0	47.0
Total Split (s)	101.0	101.0	101.0	101.0	101.0	101.0	30.0	29.0	29.0
Total Split (%)	63.1%	63.1%	63.1%	63.1%	63.1%	63.1%	18.8%	18.1%	18.1%
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	3.0	3.5	3.5
All-Red Time (s)	3.5	3.5	3.5	3.5	3.5	3.5	2.0	3.5	3.5
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	7.5	7.5	7.5	7.5	7.5	7.5	5.0	7.0	7.0
Lead/Lag									
Lead-Lag Optimize?									
Recall Mode	C-Max	C-Max	C-Max	C-Max	C-Max	C-Max	Min	Min	Min
v/c Ratio	0.02	0.49	0.02	0.05	0.37	0.01	0.22	0.11	0.12
Control Delay	4.6	6.2	0.1	9.5	9.3	0.0	37.2	65.5	1.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	4.6	6.2	0.1	9.5	9.3	0.0	37.2	65.5	1.2
Queue Length 50th (m)	0.2	15.1	0.0	1.0	37.2	0.0	5.9	6.6	0.0
Queue Length 95th (m)	m1.0	194.4	m0.0	2.8	45.8	0.0	18.2	15.4	0.0
Internal Link Dist (m)		148.0			363.1		118.1	152.8	
Turn Bay Length (m)	15.0			12.0					10.0
Base Capacity (vph)	362	2232	813	233	2232	969	266	246	259
Starvation Cap Reductn	0	61	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.02	0.51	0.02	0.05	0.37	0.01	0.16	0.09	0.10

Intersection Summary

Cycle Length: 160
Actuated Cycle Length: 160
Offset: 133 (83%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green
Natural Cycle: 140
Control Type: Actuated-Coordinated
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 6: Coram Avenue/Treadwells Drive & Dundas Street E





Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	9	1048	14	10	794	12	17	1	22	19	1	24
Future Volume (vph)	9	1048	14	10	794	12	17	1	22	19	1	24
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.0	3.5	3.0	3.0	3.5	3.0	3.0	3.5	3.0	3.0	3.5	3.0
Total Lost time (s)	7.5	7.5	7.5	7.5	7.5	7.5		5.0			7.0	7.0
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00		1.00			1.00	1.00
Frpb, ped/bikes	1.00	1.00	0.97	1.00	1.00	0.96		1.00			1.00	0.98
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00		1.00			1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85		0.93			1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00		0.98			0.95	1.00
Satd. Flow (prot)	1677	3336	1186	1530	3336	1418		1584			1793	1482
Flt Permitted	0.31	1.00	1.00	0.22	1.00	1.00		0.98			0.95	1.00
Satd. Flow (perm)	542	3336	1186	348	3336	1418		1584			1793	1482
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	9	1103	15	11	836	13	18	1	23	20	1	25
RTOR Reduction (vph)	0	0	5	0	0	4	0	21	0	0	0	22
Lane Group Flow (vph)	9	1103	10	11	836	9	0	21	0	0	21	3
Confl. Peds. (#/hr)	6		3	3		6	2					2
Confl. Bikes (#/hr)												1
Heavy Vehicles (%)	0%	7%	21%	10%	7%	0%	12%	100%	0%	0%	0%	0%
Bus Blockages (#/hr)	0	0	5	0	0	6	0	0	0	0	0	0
Turn Type	Perm	NA	Perm	Perm	NA	Perm	Split	NA		Split	NA	Perm
Protected Phases		2			6		4	4		8	8	
Permitted Phases	2		2	6		6						8
Actuated Green, G (s)	107.1	107.1	107.1	107.1	107.1	107.1		17.0			16.4	16.4
Effective Green, g (s)	107.1	107.1	107.1	107.1	107.1	107.1		17.0			16.4	16.4
Actuated g/C Ratio	0.67	0.67	0.67	0.67	0.67	0.67		0.11			0.10	0.10
Clearance Time (s)	7.5	7.5	7.5	7.5	7.5	7.5		5.0			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)	362	2233	793	232	2233	949		168			183	151
v/s Ratio Prot		c0.33			0.25			c0.01			c0.01	
v/s Ratio Perm	0.02		0.01	0.03		0.01						0.00
v/c Ratio	0.02	0.49	0.01	0.05	0.37	0.01		0.13			0.11	0.02
Uniform Delay, d1	8.9	13.1	8.8	9.0	11.7	8.8		64.8			65.2	64.6
Progression Factor	0.40	0.39	1.00	0.80	0.71	1.00		1.00			1.00	1.00
Incremental Delay, d2	0.1	0.7	0.0	0.4	0.5	0.0		0.3			0.3	0.0
Delay (s)	3.7	5.8	8.8	7.6	8.8	8.8		65.1			65.5	64.6
Level of Service	A	A	A	A	A	A		E			E	E
Approach Delay (s)		5.8			8.8			65.1			65.0	
Approach LOS		A			A			E			E	

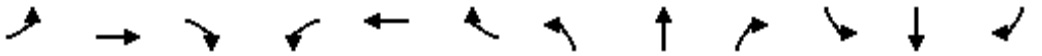
Intersection Summary			
HCM 2000 Control Delay	9.6	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.41		
Actuated Cycle Length (s)	160.0	Sum of lost time (s)	19.5
Intersection Capacity Utilization	66.8%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Configurations										
Traffic Volume (vph)	97	894	43	80	707	86	34	7	82	12
Future Volume (vph)	97	894	43	80	707	86	34	7	82	12
Lane Group Flow (vph)	104	961	46	86	760	92	37	68	88	67
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	Perm	NA	Perm	NA
Protected Phases	5	2		1	6			4		8
Permitted Phases	2		2	6		6	4		8	
Detector Phase	5	2	2	1	6	6	4	4	8	8
Switch Phase										
Minimum Initial (s)	5.0	8.0	8.0	5.0	8.0	8.0	8.0	8.0	8.0	8.0
Minimum Split (s)	9.5	38.5	38.5	9.5	38.5	38.5	48.0	48.0	48.0	48.0
Total Split (s)	14.0	95.0	95.0	14.0	95.0	95.0	51.0	51.0	51.0	51.0
Total Split (%)	8.8%	59.4%	59.4%	8.8%	59.4%	59.4%	31.9%	31.9%	31.9%	31.9%
Yellow Time (s)	3.0	4.0	4.0	3.0	4.0	4.0	3.5	3.5	3.5	3.5
All-Red Time (s)	0.0	2.5	2.5	0.0	2.5	2.5	3.5	3.5	3.5	3.5
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	3.0	6.5	6.5	3.0	6.5	6.5	7.0	7.0	7.0	7.0
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag				
Lead-Lag Optimize?										
Recall Mode	None	C-Max	C-Max	None	C-Max	C-Max	None	None	None	None
v/c Ratio	0.21	0.39	0.05	0.22	0.31	0.11	0.31	0.32	0.70	0.31
Control Delay	2.0	4.1	0.3	4.6	8.3	2.8	69.1	20.7	95.2	23.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	2.0	4.1	0.3	4.6	8.3	2.8	69.1	20.7	95.2	23.3
Queue Length 50th (m)	1.9	18.7	0.0	4.5	41.4	1.6	11.6	2.4	28.9	4.0
Queue Length 95th (m)	2.3	9.7	0.0	10.6	64.8	8.7	23.2	17.5	47.3	19.0
Internal Link Dist (m)		363.1			862.1			62.3		138.1
Turn Bay Length (m)	30.0		32.0	42.0		42.0	30.0		35.0	
Base Capacity (vph)	521	2460	993	424	2477	816	295	427	305	440
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	0.20	0.39	0.05	0.20	0.31	0.11	0.13	0.16	0.29	0.15

Intersection Summary

Cycle Length: 160
Actuated Cycle Length: 160
Offset: 144 (90%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green
Natural Cycle: 100
Control Type: Actuated-Coordinated

Splits and Phases: 7: Wharton Way & Dundas Street E



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	97	894	43	80	707	86	34	7	56	82	12	50
Future Volume (vph)	97	894	43	80	707	86	34	7	56	82	12	50
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.0	3.5	3.0	3.0	3.5	3.0	3.0	3.5	3.0	3.0	3.5	3.0
Total Lost time (s)	3.0	6.5	6.5	3.0	6.5	6.5	7.0	7.0		7.0	7.0	
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	0.96	1.00	1.00	0.91	1.00	0.98		1.00	0.97	
Flpb, ped/bikes	0.99	1.00	1.00	1.00	1.00	1.00	0.98	1.00		0.99	1.00	
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.87		1.00	0.88	
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)	1535	3336	1329	1489	3368	1084	1431	1394		1480	1461	
Flt Permitted	0.35	1.00	1.00	0.27	1.00	1.00	0.71	1.00		0.71	1.00	
Satd. Flow (perm)	558	3336	1329	429	3368	1084	1074	1394		1110	1461	
Peak-hour factor, PHF	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Adj. Flow (vph)	104	961	46	86	760	92	37	8	60	88	13	54
RTOR Reduction (vph)	0	0	12	0	0	19	0	53	0	0	48	0
Lane Group Flow (vph)	104	961	34	86	760	73	37	15	0	88	19	0
Confl. Peds. (#/hr)	27		8	8		27	22		7	7		22
Heavy Vehicles (%)	9%	7%	5%	13%	6%	21%	15%	29%	13%	13%	0%	12%
Bus Blockages (#/hr)	0	0	9	0	0	12	0	0	0	0	0	0
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	Perm	NA		Perm	NA	
Protected Phases	5	2		1	6			4			8	
Permitted Phases	2		2	6		6	4			8		
Actuated Green, G (s)	125.7	118.0	118.0	125.1	117.7	117.7	18.1	18.1		18.1	18.1	
Effective Green, g (s)	125.7	118.0	118.0	125.1	117.7	117.7	18.1	18.1		18.1	18.1	
Actuated g/C Ratio	0.79	0.74	0.74	0.78	0.74	0.74	0.11	0.11		0.11	0.11	
Clearance Time (s)	3.0	6.5	6.5	3.0	6.5	6.5	7.0	7.0		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)	485	2460	980	384	2477	797	121	157		125	165	
v/s Ratio Prot	0.01	c0.29		c0.01	0.23			0.01			0.01	
v/s Ratio Perm	0.16		0.03	0.16		0.07	0.03			c0.08		
v/c Ratio	0.21	0.39	0.03	0.22	0.31	0.09	0.31	0.09		0.70	0.12	
Uniform Delay, d1	4.1	7.7	5.7	4.4	7.2	6.0	65.2	63.6		68.4	63.8	
Progression Factor	0.36	0.43	0.10	1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.2	0.4	0.1	0.3	0.3	0.2	1.4	0.3		16.5	0.3	
Delay (s)	1.6	3.8	0.6	4.7	7.5	6.2	66.6	63.9		84.8	64.1	
Level of Service	A	A	A	A	A	A	E	E		F	E	
Approach Delay (s)		3.5			7.2			64.8			75.9	
Approach LOS		A			A			E			E	

Intersection Summary			
HCM 2000 Control Delay	12.6	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.42		
Actuated Cycle Length (s)	160.0	Sum of lost time (s)	16.5
Intersection Capacity Utilization	69.8%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	1408	0	0	1298	0	0
Future Volume (Veh/h)	1408	0	0	1298	0	0
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.99	0.99	0.99	0.99	0.99	0.99
Hourly flow rate (vph)	1422	0	0	1311	0	0
Pedestrians					3	
Lane Width (m)					3.0	
Walking Speed (m/s)					1.2	
Percent Blockage					0	
Right turn flare (veh)						
Median type	TWLTL			TWLTL		
Median storage veh)	2			2		
Upstream signal (m)	155			98		
pX, platoon unblocked			0.93		0.95	0.93
vC, conflicting volume			1425		1862	477
vC1, stage 1 conf vol					1425	
vC2, stage 2 conf vol					437	
vCu, unblocked vol			1192		1218	173
tC, single (s)			4.1		6.8	6.9
tC, 2 stage (s)					5.8	
tF (s)			2.2		3.5	3.3
p0 queue free %			100		100	100
cM capacity (veh/h)			550		230	786

Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	WB 3	WB 4	NB 1
Volume Total	569	569	284	0	437	437	437	0
Volume Left	0	0	0	0	0	0	0	0
Volume Right	0	0	0	0	0	0	0	0
cSH	1700	1700	1700	1700	1700	1700	1700	1700
Volume to Capacity	0.33	0.33	0.17	0.00	0.26	0.26	0.26	0.00
Queue Length 95th (m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Control Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Lane LOS								A
Approach Delay (s)	0.0			0.0				0.0
Approach LOS								A

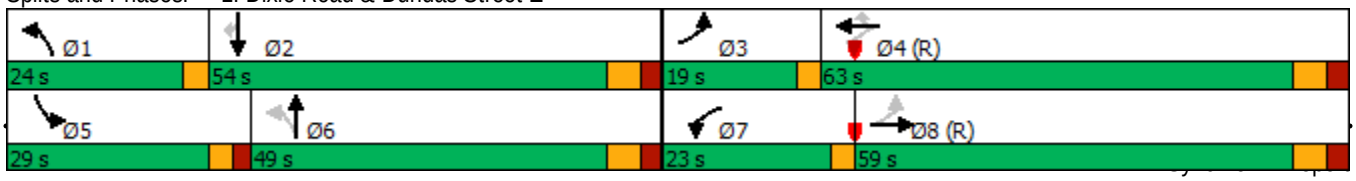
Intersection Summary			
Average Delay	0.0		
Intersection Capacity Utilization	30.5%	ICU Level of Service	A
Analysis Period (min)	15		

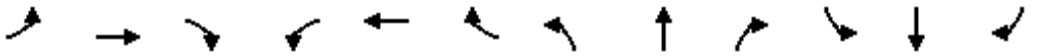
Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT	SBR
Lane Configurations										
Traffic Volume (vph)	192	853	235	897	578	248	1003	541	922	286
Future Volume (vph)	192	853	235	897	578	248	1003	541	922	286
Lane Group Flow (vph)	198	1092	242	925	596	256	1305	558	951	295
Turn Type	pm+pt	NA	pm+pt	NA	Perm	pm+pt	NA	Prot	NA	Perm
Protected Phases	3	8	7	4		1	6	5	2	
Permitted Phases	8		4		4	6				2
Detector Phase	3	8	7	4	4	1	6	5	2	2
Switch Phase										
Minimum Initial (s)	7.0	10.0	7.0	10.0	10.0	7.0	10.0	7.0	10.0	10.0
Minimum Split (s)	10.0	47.8	11.5	47.8	47.8	10.0	42.5	13.0	42.5	42.5
Total Split (s)	19.0	59.0	23.0	63.0	63.0	24.0	49.0	29.0	54.0	54.0
Total Split (%)	11.9%	36.9%	14.4%	39.4%	39.4%	15.0%	30.6%	18.1%	33.8%	33.8%
Yellow Time (s)	3.0	4.0	3.0	4.0	4.0	3.0	4.0	3.0	4.0	4.0
All-Red Time (s)	0.0	2.8	0.0	2.8	2.8	0.0	2.5	2.0	2.5	2.5
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	-1.0	0.0	0.0
Total Lost Time (s)	3.0	6.8	3.0	6.8	6.8	3.0	6.5	4.0	6.5	6.5
Lead/Lag	Lead	Lag	Lead	Lag	Lag	Lead	Lag	Lead	Lag	Lag
Lead-Lag Optimize?										
Recall Mode	None	C-Max	None	C-Max	C-Max	None	Max	None	Max	Max
v/c Ratio	0.83	0.67	0.86	0.74	0.94	0.85	1.00	1.12	0.62	0.56
Control Delay	55.1	46.6	60.8	62.7	66.9	54.3	81.9	135.3	50.0	19.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	55.1	46.6	60.8	62.7	66.9	54.3	81.9	135.3	50.0	19.7
Queue Length 50th (m)	37.7	112.8	68.0	163.9	146.6	53.0	~158.4	~110.0	101.9	26.8
Queue Length 95th (m)	#77.6	130.4	#96.1	188.3	#217.3	#92.8	#194.1	#149.3	118.5	60.4
Internal Link Dist (m)		1362.6		279.9			1407.4		1183.5	
Turn Bay Length (m)	45.0		85.0		42.0	64.0		107.0		50.0
Base Capacity (vph)	245	1631	293	1243	636	318	1300	500	1525	526
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	0.81	0.67	0.83	0.74	0.94	0.81	1.00	1.12	0.62	0.56

Intersection Summary

Cycle Length: 160
Actuated Cycle Length: 160
Offset: 0 (0%), Referenced to phase 4:WBTL and 8:EBTL, 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.

Splits and Phases: 1: Dixie Road & Dundas Street E





Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	192	853	207	235	897	578	248	1003	263	541	922	286
Future Volume (vph)	192	853	207	235	897	578	248	1003	263	541	922	286
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.0	3.5	3.0	3.0	3.5	3.0	3.0	3.5	3.0	3.0	3.5	3.0
Total Lost time (s)	3.0	6.8		3.0	6.8	6.8	3.0	6.5		4.0	6.5	6.5
Lane Util. Factor	1.00	0.91		1.00	0.95	1.00	1.00	0.91		0.97	0.91	1.00
Frpb, ped/bikes	1.00	0.99		1.00	1.00	0.93	1.00	0.99		1.00	1.00	0.89
Flpb, ped/bikes	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00
Frt	1.00	0.97		1.00	1.00	0.85	1.00	0.97		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)	1588	4789		1667	3500	1310	1679	4785		3204	4980	1272
Flt Permitted	0.15	1.00		0.13	1.00	1.00	0.20	1.00		0.95	1.00	1.00
Satd. Flow (perm)	245	4789		232	3500	1310	346	4785		3204	4980	1272
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	198	879	213	242	925	596	256	1034	271	558	951	295
RTOR Reduction (vph)	0	25	0	0	0	171	0	29	0	0	0	137
Lane Group Flow (vph)	198	1067	0	242	925	425	256	1276	0	558	951	158
Confl. Peds. (#/hr)	47		47	47		47	77		27	27		77
Confl. Bikes (#/hr)			3				77					1
Heavy Vehicles (%)	6%	3%	1%	1%	2%	4%	0%	2%	6%	2%	3%	3%
Bus Blockages (#/hr)	0	0	9	0	0	8	0	0	4	0	0	5
Turn Type	pm+pt	NA		pm+pt	NA	Perm	pm+pt	NA		Prot	NA	Perm
Protected Phases	3	8		7	4		1	6		5	2	
Permitted Phases	8			4		4	6					2
Actuated Green, G (s)	68.9	53.6		75.2	56.9	56.9	62.0	42.5		24.0	49.0	49.0
Effective Green, g (s)	68.9	53.6		75.2	56.9	56.9	62.0	42.5		25.0	49.0	49.0
Actuated g/C Ratio	0.43	0.34		0.47	0.36	0.36	0.39	0.27		0.16	0.31	0.31
Clearance Time (s)	3.0	6.8		3.0	6.8	6.8	3.0	6.5		5.0	6.5	6.5
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)	233	1604		275	1244	465	296	1271		500	1525	389
v/s Ratio Prot	0.08	0.22		c0.10	0.26		0.11	c0.27		c0.17	0.19	
v/s Ratio Perm	0.28			0.31		c0.32	0.23					0.12
v/c Ratio	0.85	0.67		0.88	0.74	0.91	0.86	1.00		1.12	0.62	0.41
Uniform Delay, d1	33.6	45.5		32.7	45.2	49.2	36.6	58.8		67.5	47.6	44.0
Progression Factor	1.00	1.00		1.21	1.30	1.77	1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	24.0	2.2		22.8	3.4	22.0	22.1	26.1		76.0	1.9	3.1
Delay (s)	57.6	47.7		62.3	61.9	109.0	58.7	84.9		143.5	49.5	47.1
Level of Service	E	D		E	E	F	E	F		F	D	D
Approach Delay (s)		49.2			77.9			80.6			78.2	
Approach LOS		D			E			F			E	

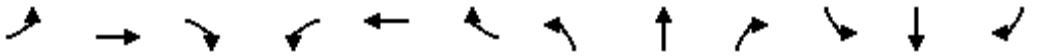
Intersection Summary			
HCM 2000 Control Delay	72.9	HCM 2000 Level of Service	E
HCM 2000 Volume to Capacity ratio	0.99		
Actuated Cycle Length (s)	160.0	Sum of lost time (s)	20.3
Intersection Capacity Utilization	110.4%	ICU Level of Service	H
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Configurations										
Traffic Volume (vph)	75	1190	170	50	1437	144	122	51	52	22
Future Volume (vph)	75	1190	170	50	1437	144	122	51	52	22
Lane Group Flow (vph)	77	1214	173	51	1466	147	124	113	53	79
Turn Type	pm+pt	NA	Perm	Perm	NA	Perm	Perm	NA	Perm	NA
Protected Phases	5	2			6			4		8
Permitted Phases	2		2	6		6	4		8	
Detector Phase	5	2	2	6	6	6	4	4	8	8
Switch Phase										
Minimum Initial (s)	7.0	10.0	10.0	10.0	10.0	10.0	20.0	20.0	20.0	20.0
Minimum Split (s)	11.5	34.5	34.5	34.5	34.5	34.5	47.0	47.0	47.0	47.0
Total Split (s)	14.0	112.0	112.0	98.0	98.0	98.0	48.0	48.0	48.0	48.0
Total Split (%)	8.8%	70.0%	70.0%	61.3%	61.3%	61.3%	30.0%	30.0%	30.0%	30.0%
Yellow Time (s)	3.0	4.0	4.0	4.0	4.0	4.0	3.5	3.5	3.5	3.5
All-Red Time (s)	0.0	2.5	2.5	2.5	2.5	2.5	3.5	3.5	3.5	3.5
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	3.0	6.5	6.5	6.5	6.5	6.5	7.0	7.0	7.0	7.0
Lead/Lag	Lead			Lag	Lag	Lag				
Lead-Lag Optimize?										
Recall Mode	None	C-Max	C-Max	C-Max	C-Max	C-Max	None	None	None	None
v/c Ratio	0.33	0.47	0.17	0.20	0.63	0.16	0.57	0.35	0.28	0.24
Control Delay	8.1	11.0	3.7	20.6	29.1	9.5	69.1	40.2	57.8	19.3
Queue Delay	0.0	0.0	0.0	0.0	2.0	0.0	0.0	0.0	0.0	0.0
Total Delay	8.1	11.0	3.7	20.6	31.1	9.5	69.1	40.2	57.8	19.3
Queue Length 50th (m)	4.1	102.2	5.5	9.6	188.9	14.6	40.6	24.2	16.4	6.6
Queue Length 95th (m)	m12.4	m117.7	m16.4	m21.6	254.2	m34.4	57.0	39.4	27.7	20.2
Internal Link Dist (m)		279.9			149.0			96.0		162.3
Turn Bay Length (m)	30.0			15.0			15.0		25.0	
Base Capacity (vph)	261	2560	1019	257	2325	913	313	454	272	460
Starvation Cap Reductn	0	0	0	0	668	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	0.30	0.47	0.17	0.20	0.88	0.16	0.40	0.25	0.19	0.17

Intersection Summary

Cycle Length: 160
Actuated Cycle Length: 160
Offset: 67 (42%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green
Natural Cycle: 105
Control Type: Actuated-Coordinated
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 2: Nelico Court & Dundas Street E



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	75	1190	170	50	1437	144	122	51	60	52	22	56
Future Volume (vph)	75	1190	170	50	1437	144	122	51	60	52	22	56
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.0	3.5	3.0	3.0	3.5	3.0	3.0	3.5	3.0	3.0	3.5	3.0
Total Lost time (s)	3.0	6.5	6.5	6.5	6.5	6.5	7.0	7.0		7.0	7.0	
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	0.90	1.00	1.00	0.88	1.00	0.98		1.00	0.97	
Flpb, ped/bikes	1.00	1.00	1.00	0.99	1.00	1.00	0.98	1.00		0.97	1.00	
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.92		1.00	0.89	
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)	1668	3466	1319	1662	3466	1308	1647	1672		1578	1631	
Flt Permitted	0.12	1.00	1.00	0.22	1.00	1.00	0.71	1.00		0.64	1.00	
Satd. Flow (perm)	212	3466	1319	384	3466	1308	1223	1672		1063	1631	
Peak-hour factor, PHF	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Adj. Flow (vph)	77	1214	173	51	1466	147	124	52	61	53	22	57
RTOR Reduction (vph)	0	0	45	0	0	36	0	29	0	0	47	0
Lane Group Flow (vph)	77	1214	128	51	1466	111	124	84	0	53	32	0
Confl. Peds. (#/hr)	35		28	28		35	21		26	26		21
Confl. Bikes (#/hr)							21					
Heavy Vehicles (%)	1%	3%	1%	0%	3%	0%	0%	2%	0%	4%	0%	0%
Bus Blockages (#/hr)	0	0	5	0	0	4	0	0	0	0	0	0
Turn Type	pm+pt	NA	Perm	Perm	NA	Perm	Perm	NA		Perm	NA	
Protected Phases	5	2			6			4			8	
Permitted Phases	2		2	6		6	4			8		
Actuated Green, G (s)	118.2	118.2	118.2	107.3	107.3	107.3	28.3	28.3		28.3	28.3	
Effective Green, g (s)	118.2	118.2	118.2	107.3	107.3	107.3	28.3	28.3		28.3	28.3	
Actuated g/C Ratio	0.74	0.74	0.74	0.67	0.67	0.67	0.18	0.18		0.18	0.18	
Clearance Time (s)	3.0	6.5	6.5	6.5	6.5	6.5	7.0	7.0		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)	228	2560	974	257	2324	877	216	295		188	288	
v/s Ratio Prot	0.02	c0.35			c0.42			0.05			0.02	
v/s Ratio Perm	0.23		0.10	0.13		0.08	c0.10			0.05		
v/c Ratio	0.34	0.47	0.13	0.20	0.63	0.13	0.57	0.29		0.28	0.11	
Uniform Delay, d1	11.1	8.4	6.0	10.0	15.0	9.5	60.3	57.1		57.0	55.3	
Progression Factor	1.01	1.12	2.86	1.42	1.66	2.33	1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.4	0.3	0.1	1.4	1.1	0.2	3.7	0.5		0.8	0.2	
Delay (s)	11.6	9.7	17.4	15.6	26.0	22.3	64.0	57.6		57.9	55.5	
Level of Service	B	A	B	B	C	C	E	E		E	E	
Approach Delay (s)		10.7			25.4			61.0			56.4	
Approach LOS		B			C			E			E	

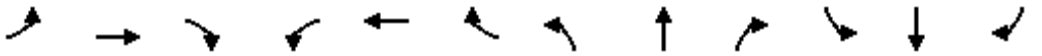
Intersection Summary			
HCM 2000 Control Delay	22.8	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.61		
Actuated Cycle Length (s)	160.0	Sum of lost time (s)	16.5
Intersection Capacity Utilization	86.5%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	SBL	SBT	SBR
Lane Configurations											
Traffic Volume (vph)	31	1089	235	282	1343	37	224	6	37	22	82
Future Volume (vph)	31	1089	235	282	1343	37	224	6	37	22	82
Lane Group Flow (vph)	33	1146	247	297	1414	39	236	328	0	62	86
Turn Type	Perm	NA	Perm	pm+pt	NA	Perm	Perm	NA	Perm	NA	Perm
Protected Phases		2		1	6			4		8	
Permitted Phases	2		2	6		6	4		8		8
Detector Phase	2	2	2	1	6	6	4	4	8	8	8
Switch Phase											
Minimum Initial (s)	10.0	10.0	10.0	5.0	10.0	10.0	20.0	20.0	20.0	20.0	20.0
Minimum Split (s)	48.0	48.0	48.0	9.5	48.0	48.0	51.5	51.5	51.5	51.5	51.5
Total Split (s)	89.0	89.0	89.0	21.0	110.0	110.0	50.0	50.0	50.0	50.0	50.0
Total Split (%)	55.6%	55.6%	55.6%	13.1%	68.8%	68.8%	31.3%	31.3%	31.3%	31.3%	31.3%
Yellow Time (s)	4.0	4.0	4.0	3.0	4.0	4.0	3.0	3.0	3.0	3.0	3.0
All-Red Time (s)	3.0	3.0	3.0	0.0	3.0	3.0	4.5	4.5	4.5	4.5	4.5
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0
Total Lost Time (s)	7.0	7.0	7.0	3.0	7.0	7.0	7.5	7.5		7.5	7.5
Lead/Lag	Lag	Lag	Lag	Lead							
Lead-Lag Optimize?											
Recall Mode	C-Max	C-Max	C-Max	None	C-Max	C-Max	Min	Min	Min	Min	Min
v/c Ratio	0.22	0.59	0.28	0.83	0.60	0.04	0.86	0.63		0.48	0.24
Control Delay	20.0	16.4	3.1	33.2	16.2	3.9	87.2	20.5		65.3	22.4
Queue Delay	0.0	0.2	0.0	0.0	1.4	0.0	0.0	0.0		0.0	0.0
Total Delay	20.0	16.6	3.1	33.2	17.5	3.9	87.2	20.5		65.3	22.4
Queue Length 50th (m)	3.3	66.4	0.0	31.3	172.6	0.8	76.6	26.6		18.3	9.2
Queue Length 95th (m)	m9.6	91.6	8.9	m#57.4	m186.0	m3.4	106.2	59.0		33.8	23.9
Internal Link Dist (m)		149.0			130.6			105.8		70.0	
Turn Bay Length (m)	30.0			30.0							10.0
Base Capacity (vph)	150	1937	881	368	2374	904	335	579		158	431
Starvation Cap Reductn	0	216	0	0	698	0	0	0		0	0
Spillback Cap Reductn	0	0	0	0	504	0	0	0		0	7
Storage Cap Reductn	0	0	0	0	0	0	0	0		0	0
Reduced v/c Ratio	0.22	0.67	0.28	0.81	0.84	0.04	0.70	0.57		0.39	0.20

Intersection Summary

Cycle Length: 160
Actuated Cycle Length: 160
Offset: 25 (16%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green
Natural Cycle: 120
Control Type: Actuated-Coordinated
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 3: Jarrow Avenue & Dundas Street E



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	31	1089	235	282	1343	37	224	6	306	37	22	82
Future Volume (vph)	31	1089	235	282	1343	37	224	6	306	37	22	82
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.0	3.5	3.0	3.0	3.5	3.0	3.0	3.5	3.0	3.0	3.5	3.0
Total Lost time (s)	7.0	7.0	7.0	3.0	7.0	7.0	7.5	7.5			7.5	7.5
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	0.93	1.00	0.96			1.00	0.98
Flpb, ped/bikes	0.99	1.00	1.00	1.00	1.00	1.00	0.99	1.00			0.99	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.85			1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00			0.97	1.00
Satd. Flow (prot)	1456	3433	1402	1667	3433	1292	1675	1528			1690	1480
Flt Permitted	0.17	1.00	1.00	0.17	1.00	1.00	0.72	1.00			0.34	1.00
Satd. Flow (perm)	266	3433	1402	290	3433	1292	1263	1528			595	1480
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	33	1146	247	297	1414	39	236	6	322	39	23	86
RTOR Reduction (vph)	0	0	91	0	0	11	0	185	0	0	0	41
Lane Group Flow (vph)	33	1146	156	297	1414	28	236	143	0	0	62	45
Confl. Peds. (#/hr)	25		16	16		25	6		24	24		6
Heavy Vehicles (%)	15%	4%	0%	1%	4%	7%	0%	0%	1%	11%	0%	0%
Bus Blockages (#/hr)	0	0	5	0	0	4	0	0	0	0	0	0
Turn Type	Perm	NA	Perm	pm+pt	NA	Perm	Perm	NA		Perm	NA	Perm
Protected Phases		2		1	6			4			8	
Permitted Phases	2		2	6		6	4			8		8
Actuated Green, G (s)	90.3	90.3	90.3	110.7	110.7	110.7	34.8	34.8			34.8	34.8
Effective Green, g (s)	90.3	90.3	90.3	110.7	110.7	110.7	34.8	34.8			34.8	34.8
Actuated g/C Ratio	0.56	0.56	0.56	0.69	0.69	0.69	0.22	0.22			0.22	0.22
Clearance Time (s)	7.0	7.0	7.0	3.0	7.0	7.0	7.5	7.5			7.5	7.5
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)	150	1937	791	350	2375	893	274	332			129	321
v/s Ratio Prot		0.33		c0.09	0.41			0.09				
v/s Ratio Perm	0.12		0.11	c0.49		0.02	c0.19				0.10	0.03
v/c Ratio	0.22	0.59	0.20	0.85	0.60	0.03	0.86	0.43			0.48	0.14
Uniform Delay, d1	17.3	22.8	17.1	19.6	12.9	7.8	60.3	54.0			54.7	50.5
Progression Factor	0.76	0.62	0.56	1.02	1.08	1.16	1.00	1.00			1.00	1.00
Incremental Delay, d2	3.1	1.2	0.5	14.9	0.9	0.1	23.1	0.9			2.8	0.2
Delay (s)	16.2	15.4	10.0	35.0	14.9	9.0	83.4	54.9			57.5	50.7
Level of Service	B	B	B	C	B	A	F	D			E	D
Approach Delay (s)		14.5			18.2			66.8			53.6	
Approach LOS		B			B			E			D	

Intersection Summary			
HCM 2000 Control Delay	25.2	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.87		
Actuated Cycle Length (s)	160.0	Sum of lost time (s)	17.5
Intersection Capacity Utilization	105.6%	ICU Level of Service	G
Analysis Period (min)	15		

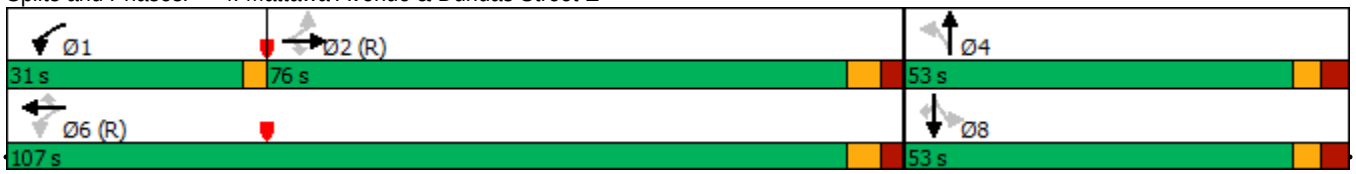
c Critical Lane Group

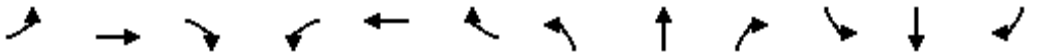
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	SBL	SBT	SBR
Lane Configurations											
Traffic Volume (vph)	9	981	409	257	1188	3	345	1	7	1	4
Future Volume (vph)	9	981	409	257	1188	3	345	1	7	1	4
Lane Group Flow (vph)	9	1011	422	265	1225	3	356	177	0	8	4
Turn Type	Perm	NA	Perm	pm+pt	NA	Perm	Perm	NA	Perm	NA	Perm
Protected Phases		2		1	6			4		8	
Permitted Phases	2		2	6		6	4		8		8
Detector Phase	2	2	2	1	6	6	4	4	8	8	8
Switch Phase											
Minimum Initial (s)	10.0	10.0	10.0	5.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0
Minimum Split (s)	40.0	40.0	40.0	8.0	40.0	40.0	45.0	45.0	45.0	45.0	45.0
Total Split (s)	76.0	76.0	76.0	31.0	107.0	107.0	53.0	53.0	53.0	53.0	53.0
Total Split (%)	47.5%	47.5%	47.5%	19.4%	66.9%	66.9%	33.1%	33.1%	33.1%	33.1%	33.1%
Yellow Time (s)	4.0	4.0	4.0	3.0	4.0	4.0	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	3.0	3.0	3.0	0.0	3.0	3.0	3.5	3.5	3.5	3.5	3.5
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0
Total Lost Time (s)	7.0	7.0	7.0	3.0	7.0	7.0	7.0	7.0		7.0	7.0
Lead/Lag	Lag	Lag	Lag	Lead							
Lead-Lag Optimize?											
Recall Mode	C-Max	C-Max	C-Max	None	C-Max	C-Max	None	None	None	None	None
v/c Ratio	0.05	0.59	0.53	0.75	0.56	0.00	0.98	0.32		0.02	0.01
Control Delay	38.6	45.6	20.8	49.5	13.9	0.0	97.8	7.2		41.1	0.0
Queue Delay	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0		0.0	0.0
Total Delay	38.6	45.6	20.8	49.5	14.0	0.0	97.8	7.2		41.1	0.0
Queue Length 50th (m)	2.1	154.4	52.3	42.7	55.7	0.0	118.2	0.3		1.9	0.0
Queue Length 95th (m)	m4.8	193.3	101.6	85.5	92.4	m0.0	#186.0	19.5		6.6	0.0
Internal Link Dist (m)		73.5			59.8			251.4		120.0	
Turn Bay Length (m)	24.0			28.0							15.0
Base Capacity (vph)	186	1712	797	430	2179	862	369	555		438	455
Starvation Cap Reductn	0	0	0	0	213	0	0	0		0	0
Spillback Cap Reductn	0	0	0	0	12	0	0	0		0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0		0	0
Reduced v/c Ratio	0.05	0.59	0.53	0.62	0.62	0.00	0.96	0.32		0.02	0.01

Intersection Summary

Cycle Length: 160
Actuated Cycle Length: 160
Offset: 136 (85%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green
Natural Cycle: 95
Control Type: Actuated-Coordinated
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 4: Mattawa Avenue & Dundas Street E

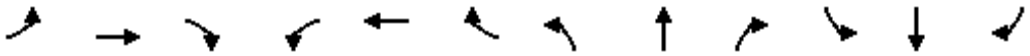




Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	9	981	409	257	1188	3	345	1	171	7	1	4
Future Volume (vph)	9	981	409	257	1188	3	345	1	171	7	1	4
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.0	3.5	3.0	3.0	3.5	3.0	3.0	3.5	3.0	3.0	3.5	3.0
Total Lost time (s)	7.0	7.0	7.0	3.0	7.0	7.0	7.0	7.0			7.0	7.0
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	0.91	1.00	1.00	0.91	1.00	0.97			1.00	0.97
Flpb, ped/bikes	0.99	1.00	1.00	1.00	1.00	1.00	0.98	1.00			0.99	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.85			1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00			0.96	1.00
Satd. Flow (prot)	1665	3466	1261	1618	3466	1355	1625	1496			1783	1465
Flt Permitted	0.22	1.00	1.00	0.18	1.00	1.00	0.75	1.00			0.82	1.00
Satd. Flow (perm)	378	3466	1261	306	3466	1355	1287	1496			1526	1465
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	9	1011	422	265	1225	3	356	1	176	7	1	4
RTOR Reduction (vph)	0	0	175	0	0	1	0	126	0	0	0	3
Lane Group Flow (vph)	9	1011	247	265	1225	2	356	51	0	0	8	1
Confl. Peds. (#/hr)	28		28	28		28	13		12	12		13
Heavy Vehicles (%)	0%	3%	7%	4%	3%	0%	2%	0%	4%	0%	0%	0%
Bus Blockages (#/hr)	0	0	5	0	0	4	0	0	0	0	0	0
Turn Type	Perm	NA	Perm	pm+pt	NA	Perm	Perm	NA		Perm	NA	Perm
Protected Phases		2		1	6			4			8	
Permitted Phases	2		2	6		6	4			8		8
Actuated Green, G (s)	79.0	79.0	79.0	100.6	100.6	100.6	45.4	45.4			45.4	45.4
Effective Green, g (s)	79.0	79.0	79.0	100.6	100.6	100.6	45.4	45.4			45.4	45.4
Actuated g/C Ratio	0.49	0.49	0.49	0.63	0.63	0.63	0.28	0.28			0.28	0.28
Clearance Time (s)	7.0	7.0	7.0	3.0	7.0	7.0	7.0	7.0			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)	186	1711	622	344	2179	851	365	424			433	415
v/s Ratio Prot		0.29		c0.09	0.35			0.03				
v/s Ratio Perm	0.02		0.20	c0.39		0.00	c0.28				0.01	0.00
v/c Ratio	0.05	0.59	0.40	0.77	0.56	0.00	0.98	0.12			0.02	0.00
Uniform Delay, d1	21.0	28.9	25.5	19.4	17.1	11.0	56.7	42.5			41.3	41.1
Progression Factor	1.53	1.46	3.20	2.78	0.76	1.00	1.00	1.00			1.00	1.00
Incremental Delay, d2	0.4	1.3	1.7	7.8	0.8	0.0	40.2	0.1			0.0	0.0
Delay (s)	32.5	43.7	83.4	61.8	13.7	11.0	96.9	42.6			41.3	41.1
Level of Service	C	D	F	E	B	B	F	D			D	D
Approach Delay (s)		55.2			22.2			78.9			41.2	
Approach LOS		E			C			E			D	

Intersection Summary			
HCM 2000 Control Delay	44.6	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.85		
Actuated Cycle Length (s)	160.0	Sum of lost time (s)	17.0
Intersection Capacity Utilization	90.1%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	24	1130	0	0	1496	6	0	0	0	2	0	15
Future Volume (Veh/h)	24	1130	0	0	1496	6	0	0	0	2	0	15
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	25	1189	0	0	1575	6	0	0	0	2	0	16
Pedestrians								19			15	
Lane Width (m)								3.5			3.5	
Walking Speed (m/s)								1.2			1.2	
Percent Blockage								2			1	
Right turn flare (veh)												
Median type		TWLTL			TWLTL							
Median storage veh)		2			2							
Upstream signal (m)		84			172							
pX, platoon unblocked	0.76			0.81			0.85	0.85	0.81	0.85	0.85	0.76
vC, conflicting volume	1596			1208			1799	2854	415	2039	2851	543
vC1, stage 1 conf vol							1258	1258		1593	1593	
vC2, stage 2 conf vol							541	1596		446	1258	
vCu, unblocked vol	686			451			0	1098	0	145	1095	0
tC, single (s)	4.1			4.1			7.5	6.5	6.9	7.5	6.5	6.9
tC, 2 stage (s)							6.5	5.5		6.5	5.5	
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	96			100			100	100	100	100	100	98
cM capacity (veh/h)	690			897			808	282	873	750	297	820

Direction, Lane #	EB 1	EB 2	EB 3	EB 4	WB 1	WB 2	WB 3	WB 4	NB 1	SB 1
Volume Total	25	476	476	238	0	630	630	321	0	18
Volume Left	25	0	0	0	0	0	0	0	0	2
Volume Right	0	0	0	0	0	0	0	6	0	16
cSH	690	1700	1700	1700	1700	1700	1700	1700	1700	812
Volume to Capacity	0.04	0.28	0.28	0.14	0.00	0.37	0.37	0.19	0.00	0.02
Queue Length 95th (m)	0.9	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.5
Control Delay (s)	10.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	9.5
Lane LOS	B								A	A
Approach Delay (s)	0.2				0.0				0.0	9.5
Approach LOS									A	A

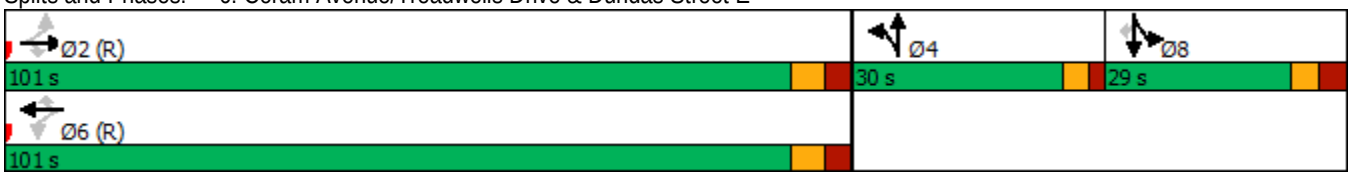
Intersection Summary				
Average Delay	0.2			
Intersection Capacity Utilization	39.0%	ICU Level of Service		A
Analysis Period (min)	15			

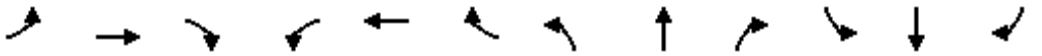
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBT	SBT	SBR
Lane Configurations									
Traffic Volume (vph)	12	1068	43	8	1515	31	0	0	5
Future Volume (vph)	12	1068	43	8	1515	31	0	0	5
Lane Group Flow (vph)	13	1113	45	8	1578	32	45	15	5
Turn Type	Perm	NA	Perm	Perm	NA	Perm	NA	NA	Perm
Protected Phases		2			6		4	8	
Permitted Phases	2		2	6		6			8
Detector Phase	2	2	2	6	6	6	4	8	8
Switch Phase									
Minimum Initial (s)	10.0	10.0	10.0	10.0	10.0	10.0	15.0	15.0	15.0
Minimum Split (s)	36.5	36.5	36.5	36.5	36.5	36.5	45.0	47.0	47.0
Total Split (s)	101.0	101.0	101.0	101.0	101.0	101.0	30.0	29.0	29.0
Total Split (%)	63.1%	63.1%	63.1%	63.1%	63.1%	63.1%	18.8%	18.1%	18.1%
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	3.0	3.5	3.5
All-Red Time (s)	3.5	3.5	3.5	3.5	3.5	3.5	2.0	3.5	3.5
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	7.5	7.5	7.5	7.5	7.5	7.5	5.0	7.0	7.0
Lead/Lag									
Lead-Lag Optimize?									
Recall Mode	C-Max	C-Max	C-Max	C-Max	C-Max	C-Max	Min	Min	Min
v/c Ratio	0.11	0.48	0.05	0.03	0.68	0.03	0.18	0.08	0.02
Control Delay	4.2	2.6	0.1	7.9	12.8	0.1	3.6	64.6	0.2
Queue Delay	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	4.2	2.7	0.1	7.9	12.8	0.1	3.6	64.6	0.2
Queue Length 50th (m)	0.2	10.1	0.0	0.5	52.5	0.0	0.0	4.7	0.0
Queue Length 95th (m)	m0.7	20.0	m0.1	m1.3	248.0	m0.0	2.6	12.3	0.0
Internal Link Dist (m)		148.0			363.1		118.1	152.8	
Turn Bay Length (m)	15.0			12.0					10.0
Base Capacity (vph)	123	2319	920	250	2319	962	336	245	260
Starvation Cap Reductn	0	222	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.11	0.53	0.05	0.03	0.68	0.03	0.13	0.06	0.02

Intersection Summary

Cycle Length: 160
Actuated Cycle Length: 160
Offset: 136 (85%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green
Natural Cycle: 150
Control Type: Actuated-Coordinated
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 6: Coram Avenue/Treadwells Drive & Dundas Street E





Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	12	1068	43	8	1515	31	31	0	12	14	0	5
Future Volume (vph)	12	1068	43	8	1515	31	31	0	12	14	0	5
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.0	3.5	3.0	3.0	3.5	3.0	3.0	3.5	3.0	3.0	3.5	3.0
Total Lost time (s)	7.5	7.5	7.5	7.5	7.5	7.5		5.0			7.0	7.0
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00		1.00			1.00	1.00
Frpb, ped/bikes	1.00	1.00	0.93	1.00	1.00	0.95		0.99			1.00	0.98
Flpb, ped/bikes	1.00	1.00	1.00	0.99	1.00	1.00		1.00			1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85		0.96			1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00		0.97			0.95	1.00
Satd. Flow (prot)	1685	3466	1345	1672	3466	1409		1734			1785	1484
Flt Permitted	0.10	1.00	1.00	0.21	1.00	1.00		0.97			0.95	1.00
Satd. Flow (perm)	184	3466	1345	375	3466	1409		1734			1785	1484
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	12	1112	45	8	1578	32	32	0	12	15	0	5
RTOR Reduction (vph)	0	0	15	0	0	11	0	40	0	0	0	4
Lane Group Flow (vph)	13	1113	30	8	1578	21	0	5	0	0	15	1
Confl. Peds. (#/hr)	11		19	19		11	3		6	6		3
Heavy Vehicles (%)	0%	3%	2%	0%	3%	0%	0%	0%	0%	0%	0%	0%
Bus Blockages (#/hr)	0	0	5	0	0	4	0	0	0	0	0	0
Turn Type	Perm	NA	Perm	Perm	NA	Perm	Split	NA		Split	NA	Perm
Protected Phases		2			6		4	4		8	8	
Permitted Phases	2		2	6		6						8
Actuated Green, G (s)	107.1	107.1	107.1	107.1	107.1	107.1		17.0			16.4	16.4
Effective Green, g (s)	107.1	107.1	107.1	107.1	107.1	107.1		17.0			16.4	16.4
Actuated g/C Ratio	0.67	0.67	0.67	0.67	0.67	0.67		0.11			0.10	0.10
Clearance Time (s)	7.5	7.5	7.5	7.5	7.5	7.5		5.0			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)	123	2320	900	251	2320	943		184			182	152
v/s Ratio Prot		0.32			c0.46			c0.00			c0.01	
v/s Ratio Perm	0.07		0.02	0.02		0.02						0.00
v/c Ratio	0.11	0.48	0.03	0.03	0.68	0.02		0.03			0.08	0.00
Uniform Delay, d1	9.4	12.9	8.9	8.9	16.1	8.9		64.1			65.0	64.5
Progression Factor	0.22	0.15	0.00	0.68	0.66	0.00		1.00			1.00	1.00
Incremental Delay, d2	1.5	0.6	0.1	0.2	1.5	0.0		0.1			0.2	0.0
Delay (s)	3.5	2.5	0.1	6.3	12.0	0.0		64.1			65.2	64.5
Level of Service	A	A	A	A	B	A		E			E	E
Approach Delay (s)		2.4			11.8			64.1			65.0	
Approach LOS		A			B			E			E	

Intersection Summary			
HCM 2000 Control Delay	9.1	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.53		
Actuated Cycle Length (s)	160.0	Sum of lost time (s)	19.5
Intersection Capacity Utilization	88.9%	ICU Level of Service	E
Analysis Period (min)	15		

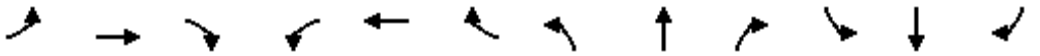
c Critical Lane Group

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Configurations										
Traffic Volume (vph)	59	987	33	103	1260	40	66	7	107	11
Future Volume (vph)	59	987	33	103	1260	40	66	7	107	11
Lane Group Flow (vph)	61	1018	34	106	1299	41	68	95	110	168
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	Perm	NA	Perm	NA
Protected Phases	5	2		1	6			4		8
Permitted Phases	2		2	6		6	4		8	
Detector Phase	5	2	2	1	6	6	4	4	8	8
Switch Phase										
Minimum Initial (s)	5.0	8.0	8.0	5.0	8.0	8.0	8.0	8.0	8.0	8.0
Minimum Split (s)	9.5	38.5	38.5	9.5	38.5	38.5	48.0	48.0	48.0	48.0
Total Split (s)	14.0	95.0	95.0	14.0	95.0	95.0	51.0	51.0	51.0	51.0
Total Split (%)	8.8%	59.4%	59.4%	8.8%	59.4%	59.4%	31.9%	31.9%	31.9%	31.9%
Yellow Time (s)	3.0	4.0	4.0	3.0	4.0	4.0	3.5	3.5	3.5	3.5
All-Red Time (s)	0.0	2.5	2.5	0.0	2.5	2.5	3.5	3.5	3.5	3.5
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	3.0	6.5	6.5	3.0	6.5	6.5	7.0	7.0	7.0	7.0
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag				
Lead-Lag Optimize?										
Recall Mode	None	C-Max	C-Max	None	C-Max	C-Max	None	None	None	None
v/c Ratio	0.21	0.41	0.04	0.29	0.51	0.05	0.73	0.34	0.77	0.50
Control Delay	4.4	6.9	0.6	5.9	11.1	1.9	104.7	15.7	98.1	15.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	4.4	6.9	0.6	5.9	11.1	1.9	104.7	15.7	98.1	15.2
Queue Length 50th (m)	3.0	28.5	0.1	6.3	92.3	0.0	22.2	2.1	36.2	3.3
Queue Length 95th (m)	4.1	35.0	m0.0	14.1	137.3	3.8	39.3	19.0	56.6	25.4
Internal Link Dist (m)		363.1			862.1			62.3		138.1
Turn Bay Length (m)	30.0		32.0	42.0		42.0	30.0		35.0	
Base Capacity (vph)	327	2484	933	391	2546	822	198	493	303	535
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	0.19	0.41	0.04	0.27	0.51	0.05	0.34	0.19	0.36	0.31

Intersection Summary

Cycle Length: 160
Actuated Cycle Length: 160
Offset: 133 (83%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green
Natural Cycle: 100
Control Type: Actuated-Coordinated
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 7: Wharton Way & Dundas Street E



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	59	987	33	103	1260	40	66	7	85	107	11	152
Future Volume (vph)	59	987	33	103	1260	40	66	7	85	107	11	152
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.0	3.5	3.0	3.0	3.5	3.0	3.0	3.5	3.0	3.0	3.5	3.0
Total Lost time (s)	3.0	6.5	6.5	3.0	6.5	6.5	7.0	7.0		7.0	7.0	
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	0.94	1.00	1.00	0.94	1.00	0.98		1.00	0.97	
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	0.98	1.00		0.99	1.00	
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.86		1.00	0.86	
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)	1573	3466	1283	1515	3466	1101	1624	1561		1565	1534	
Flt Permitted	0.18	1.00	1.00	0.25	1.00	1.00	0.42	1.00		0.67	1.00	
Satd. Flow (perm)	298	3466	1283	391	3466	1101	720	1561		1104	1534	
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	61	1018	34	106	1299	41	68	7	88	110	11	157
RTOR Reduction (vph)	0	0	10	0	0	11	0	77	0	0	137	0
Lane Group Flow (vph)	61	1018	24	106	1299	30	68	18	0	110	31	0
Confl. Peds. (#/hr)	15		18	18		15	20		6	6		20
Heavy Vehicles (%)	7%	3%	6%	11%	3%	25%	2%	0%	2%	7%	0%	2%
Bus Blockages (#/hr)	0	0	9	0	0	8	0	0	0	0	0	0
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	Perm	NA		Perm	NA	
Protected Phases	5	2		1	6			4			8	
Permitted Phases	2		2	6		6	4			8		
Actuated Green, G (s)	120.4	114.7	114.7	125.0	117.0	117.0	20.8	20.8		20.8	20.8	
Effective Green, g (s)	120.4	114.7	114.7	125.0	117.0	117.0	20.8	20.8		20.8	20.8	
Actuated g/C Ratio	0.75	0.72	0.72	0.78	0.73	0.73	0.13	0.13		0.13	0.13	
Clearance Time (s)	3.0	6.5	6.5	3.0	6.5	6.5	7.0	7.0		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)	269	2484	919	361	2534	805	93	202		143	199	
v/s Ratio Prot	0.01	0.29		c0.01	c0.37			0.01			0.02	
v/s Ratio Perm	0.16		0.02	0.21		0.03	0.09			c0.10		
v/c Ratio	0.23	0.41	0.03	0.29	0.51	0.04	0.73	0.09		0.77	0.16	
Uniform Delay, d1	6.3	9.1	6.5	5.0	9.2	5.9	66.9	61.3		67.3	61.8	
Progression Factor	0.71	0.65	0.41	1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.4	0.5	0.0	0.5	0.7	0.1	25.3	0.2		21.7	0.4	
Delay (s)	4.8	6.3	2.7	5.5	10.0	6.0	92.2	61.5		88.9	62.2	
Level of Service	A	A	A	A	A	A	F	E		F	E	
Approach Delay (s)		6.2			9.5			74.3			72.8	
Approach LOS		A			A			E			E	

Intersection Summary			
HCM 2000 Control Delay	17.7	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.55		
Actuated Cycle Length (s)	160.0	Sum of lost time (s)	16.5
Intersection Capacity Utilization	88.7%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	1655	0	0	1848	0	0
Future Volume (Veh/h)	1655	0	0	1848	0	0
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97
Hourly flow rate (vph)	1706	0	0	1905	0	0
Pedestrians					11	
Lane Width (m)					3.0	
Walking Speed (m/s)					1.2	
Percent Blockage					1	
Right turn flare (veh)						
Median type	TWLTL			TWLTL		
Median storage veh)	2			2		
Upstream signal (m)	155			98		
pX, platoon unblocked			0.82		0.91	0.82
vC, conflicting volume			1717		2352	580
vC1, stage 1 conf vol					1717	
vC2, stage 2 conf vol					635	
vCu, unblocked vol			1086		780	0
tC, single (s)			4.1		6.8	6.9
tC, 2 stage (s)					5.8	
tF (s)			2.2		3.5	3.3
p0 queue free %			100		100	100
cM capacity (veh/h)			526		230	883

Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	WB 3	WB 4	NB 1
Volume Total	682	682	341	0	635	635	635	0
Volume Left	0	0	0	0	0	0	0	0
Volume Right	0	0	0	0	0	0	0	0
cSH	1700	1700	1700	1700	1700	1700	1700	1700
Volume to Capacity	0.40	0.40	0.20	0.00	0.37	0.37	0.37	0.00
Queue Length 95th (m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Control Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Lane LOS								A
Approach Delay (s)	0.0			0.0				0.0
Approach LOS								A

Intersection Summary			
Average Delay	0.0		
Intersection Capacity Utilization	39.0%	ICU Level of Service	A
Analysis Period (min)	15		

APPENDIX H

Dundas Connects Excerpts

DRAFT PRELIMINARY PLAN

DRAFT PRELIMINARY PLAN

LEGEND

PROPOSED BRT LANE		PROPOSED SIDEWALK	
PROPOSED BRT STATION		PROPOSED CYCLE TRACK	
EXISTING ROW		PROPOSED MUP	
MISSISSAUGA OP 42m ROW		APPROXIMATE GRADING LIMITS	
		PROPOSED RETAINING WALL	

MISSISSAUGA AECOM

DUNDAS BRT
MISSISSAUGA EAST
CORRIDOR DESIGN

KIRWIN AVE. TO ETOBICOKE CREEK
DRAFT 10% ROLL PLAN
SECTION 2 OF 2

20m 0m 20m

DUNDAS BRT
MISSISSAUGA EAST
CORRIDOR DESIGN

KIRWIN AVE. TO ETOBICOKE CREEK
DRAFT 10% ROLL PLAN
SECTION 2 OF 2

20m 0m 20m

MISSISSAUGA AECOM

LEGEND
PROPOSED BRT LANE
PROPOSED BRT STATION
EXISTING ROW
MISSISSAUGA OP 42m ROW
PROPOSED SIDEWALK
PROPOSED CYCLE TRACK
PROPOSED MUP
APPROXIMATE GRADING LIMITS
PROPOSED RETAINING WALL

APPENDIX I

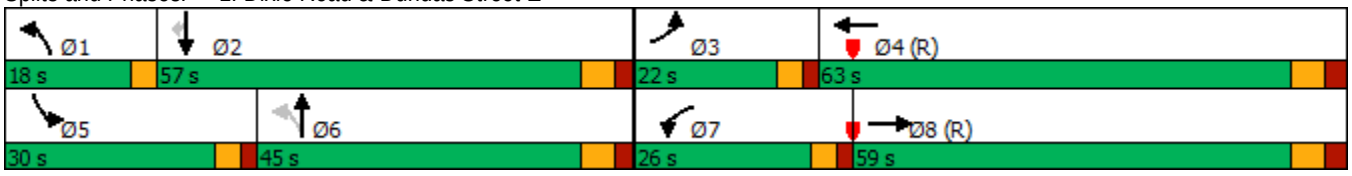
2033 Future Background Scenario 1 Intersection Capacity Analysis

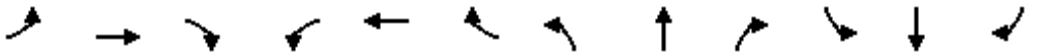
Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT	SBR
Lane Configurations									
Traffic Volume (vph)	156	754	110	511	142	891	382	860	177
Future Volume (vph)	156	754	110	511	142	891	382	860	177
Lane Group Flow (vph)	166	986	117	746	151	1086	406	915	188
Turn Type	Prot	NA	Prot	NA	pm+pt	NA	Prot	NA	Perm
Protected Phases	3	8	7	4	1	6	5	2	
Permitted Phases					6				2
Detector Phase	3	8	7	4	1	6	5	2	2
Switch Phase									
Minimum Initial (s)	7.0	10.0	7.0	10.0	7.0	10.0	7.0	10.0	10.0
Minimum Split (s)	12.0	47.8	12.0	47.8	10.0	42.5	13.0	42.5	42.5
Total Split (s)	22.0	59.0	26.0	63.0	18.0	45.0	30.0	57.0	57.0
Total Split (%)	13.8%	36.9%	16.3%	39.4%	11.3%	28.1%	18.8%	35.6%	35.6%
Yellow Time (s)	3.0	4.0	3.0	4.0	3.0	4.0	3.0	4.0	4.0
All-Red Time (s)	2.0	2.8	2.0	2.8	0.0	2.5	2.0	2.5	2.5
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.0	6.8	5.0	6.8	3.0	6.5	5.0	6.5	6.5
Lead/Lag	Lead	Lag	Lead	Lag	Lead	Lag	Lead	Lag	Lag
Lead-Lag Optimize?									
Recall Mode	None	C-Max	None	C-Max	None	Max	None	Max	Max
v/c Ratio	0.97	0.84	0.73	0.66	0.59	0.93	0.89	0.57	0.37
Control Delay	129.4	54.6	111.6	34.0	37.5	71.9	88.5	46.6	15.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	129.4	54.6	111.6	34.0	37.5	71.9	88.5	46.6	15.0
Queue Length 50th (m)	56.3	158.3	37.8	80.8	30.3	130.6	69.3	94.1	12.9
Queue Length 95th (m)	#106.8	#203.0	63.8	67.0	46.7	#160.5	#96.7	110.7	35.9
Internal Link Dist (m)		1362.6		279.9		1407.4		1183.5	
Turn Bay Length (m)	140.0		160.0		64.0		107.0		50.0
Base Capacity (vph)	172	1177	201	1131	277	1169	472	1595	514
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.97	0.84	0.58	0.66	0.55	0.93	0.86	0.57	0.37

Intersection Summary

Cycle Length: 160
Actuated Cycle Length: 160
Offset: 87 (54%), Referenced to phase 4:WBT and 8:EBT, Start of Green
Natural Cycle: 130
Control Type: Actuated-Coordinated
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 1: Dixie Road & Dundas Street E





Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	156	754	173	110	511	190	142	891	130	382	860	177
Future Volume (vph)	156	754	173	110	511	190	142	891	130	382	860	177
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.0	3.5	3.0	3.0	3.5	3.0	3.0	3.5	3.0	3.0	3.5	3.0
Total Lost time (s)	5.0	6.8		5.0	6.8		3.0	6.5		5.0	6.5	6.5
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	0.91		0.97	0.91	1.00
Frpb, ped/bikes	1.00	0.99		1.00	0.99		1.00	1.00		1.00	1.00	0.94
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	1.00
Frt	1.00	0.97		1.00	0.96		1.00	0.98		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)	1620	3308		1532	3153		1663	4702		3026	4885	1299
Flt Permitted	0.95	1.00		0.95	1.00		0.26	1.00		0.95	1.00	1.00
Satd. Flow (perm)	1620	3308		1532	3153		455	4702		3026	4885	1299
Peak-hour factor, PHF	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Adj. Flow (vph)	166	802	184	117	544	202	151	948	138	406	915	188
RTOR Reduction (vph)	0	12	0	0	24	0	0	12	0	0	0	90
Lane Group Flow (vph)	166	974	0	117	722	0	151	1074	0	406	915	98
Confl. Peds. (#/hr)	8		30	30		8	39		12	12		39
Confl. Bikes (#/hr)							39					
Heavy Vehicles (%)	4%	4%	4%	10%	8%	8%	1%	6%	11%	8%	5%	7%
Bus Blockages (#/hr)	0	0	9	0	0	12	0	0	5	0	0	4
Turn Type	Prot	NA		Prot	NA		pm+pt	NA		Prot	NA	Perm
Protected Phases	3	8		7	4		1	6		5	2	
Permitted Phases							6					2
Actuated Green, G (s)	17.0	56.4		16.8	56.2		52.6	39.4		24.1	52.3	52.3
Effective Green, g (s)	17.0	56.4		16.8	56.2		52.6	39.4		24.1	52.3	52.3
Actuated g/C Ratio	0.11	0.35		0.11	0.35		0.33	0.25		0.15	0.33	0.33
Clearance Time (s)	5.0	6.8		5.0	6.8		3.0	6.5		5.0	6.5	6.5
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)	172	1166		160	1107		249	1157		455	1596	424
v/s Ratio Prot	c0.10	c0.29		0.08	0.23		0.05	c0.23		c0.13	0.19	
v/s Ratio Perm							0.15					0.08
v/c Ratio	0.97	0.84		0.73	0.65		0.61	0.93		0.89	0.57	0.23
Uniform Delay, d1	71.2	47.5		69.4	43.7		39.8	58.9		66.7	44.6	39.2
Progression Factor	1.00	1.00		1.27	0.74		1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	57.8	7.2		15.2	2.9		4.1	14.0		19.3	1.5	1.3
Delay (s)	129.1	54.7		103.4	35.4		43.9	72.9		86.0	46.1	40.5
Level of Service	F	D		F	D		D	E		F	D	D
Approach Delay (s)		65.4			44.6			69.4			56.1	
Approach LOS		E			D			E			E	

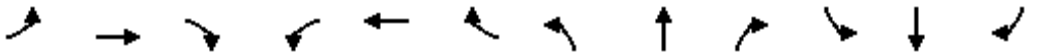
Intersection Summary			
HCM 2000 Control Delay	59.7	HCM 2000 Level of Service	E
HCM 2000 Volume to Capacity ratio	0.89		
Actuated Cycle Length (s)	160.0	Sum of lost time (s)	23.3
Intersection Capacity Utilization	103.1%	ICU Level of Service	G
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations								
Traffic Volume (vph)	6	1270	10	829	21	1	21	4
Future Volume (vph)	6	1270	10	829	21	1	21	4
Lane Group Flow (vph)	6	1433	11	895	22	19	22	20
Turn Type	Prot	NA	Prot	NA	Perm	NA	Perm	NA
Protected Phases	5	2	1	6		4		8
Permitted Phases					4		8	
Detector Phase	5	2	1	6	4	4	8	8
Switch Phase								
Minimum Initial (s)	5.0	10.0	5.0	10.0	20.0	20.0	20.0	20.0
Minimum Split (s)	10.0	34.5	10.0	34.5	47.0	47.0	47.0	47.0
Total Split (s)	10.0	103.0	10.0	103.0	47.0	47.0	47.0	47.0
Total Split (%)	6.3%	64.4%	6.3%	64.4%	29.4%	29.4%	29.4%	29.4%
Yellow Time (s)	3.0	4.0	3.0	4.0	3.5	3.5	3.5	3.5
All-Red Time (s)	2.0	2.5	2.0	2.5	3.5	3.5	3.5	3.5
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.0	6.5	5.0	6.5	7.0	7.0	7.0	7.0
Lead/Lag	Lead	Lag	Lead	Lag				
Lead-Lag Optimize?								
Recall Mode	None	C-Max	None	C-Max	None	None	None	None
v/c Ratio	0.12	0.55	0.18	0.34	0.11	0.09	0.12	0.09
Control Delay	79.3	6.9	102.8	3.3	56.8	21.2	57.0	25.1
Queue Delay	0.0	0.1	0.0	0.1	0.0	0.0	0.0	0.0
Total Delay	79.3	7.0	102.8	3.4	56.8	21.2	57.0	25.1
Queue Length 50th (m)	1.9	46.5	3.9	15.1	6.7	0.3	6.7	1.2
Queue Length 95th (m)	m3.0	m72.4	m11.0	21.8	14.0	7.8	14.0	8.8
Internal Link Dist (m)		279.9		149.0		96.0		162.3
Turn Bay Length (m)	145.0		100.0		15.0		25.0	
Base Capacity (vph)	52	2598	62	2616	326	336	313	362
Starvation Cap Reductn	0	240	0	545	0	0	0	0
Spillback Cap Reductn	0	52	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.12	0.61	0.18	0.43	0.07	0.06	0.07	0.06

Intersection Summary

Cycle Length: 160
Actuated Cycle Length: 160
Offset: 82 (51%), Referenced to phase 2:EBT and 6:WBT, Start of Green
Natural Cycle: 105
Control Type: Actuated-Coordinated
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 2: Nelico Court & Dundas Street E



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	6	1270	91	10	829	21	21	1	17	21	4	15
Future Volume (vph)	6	1270	91	10	829	21	21	1	17	21	4	15
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.0	3.5	3.0	3.0	3.5	3.0	3.0	3.5	3.0	3.0	3.5	3.0
Total Lost time (s)	5.0	6.5		5.0	6.5		7.0	7.0		7.0	7.0	
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	1.00		1.00	1.00	
Frpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	0.98		1.00	0.98	
Flpb, ped/bikes	1.00	1.00		1.00	1.00		0.99	1.00		1.00	1.00	
Frt	1.00	0.99		1.00	1.00		1.00	0.86		1.00	0.88	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1440	3330		1685	3291		1667	1293		1597	1400	
Flt Permitted	0.95	1.00		0.95	1.00		0.74	1.00		0.75	1.00	
Satd. Flow (perm)	1440	3330		1685	3291		1306	1293		1252	1400	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	6	1337	96	11	873	22	22	1	18	22	4	16
RTOR Reduction (vph)	0	2	0	0	1	0	0	16	0	0	14	0
Lane Group Flow (vph)	6	1431	0	11	894	0	22	3	0	22	6	0
Confl. Peds. (#/hr)	11		13	13		11	9		4	4		9
Confl. Bikes (#/hr)							9					
Heavy Vehicles (%)	17%	6%	2%	0%	8%	5%	0%	0%	24%	5%	0%	20%
Bus Blockages (#/hr)	0	0	5	0	0	6	0	0	0	0	0	0
Turn Type	Prot	NA		Prot	NA		Perm	NA		Perm	NA	
Protected Phases	5	2		1	6			4			8	
Permitted Phases							4			8		
Actuated Green, G (s)	1.0	119.1		2.4	120.5		20.0	20.0		20.0	20.0	
Effective Green, g (s)	1.0	119.1		2.4	120.5		20.0	20.0		20.0	20.0	
Actuated g/C Ratio	0.01	0.74		0.01	0.75		0.12	0.12		0.12	0.12	
Clearance Time (s)	5.0	6.5		5.0	6.5		7.0	7.0		7.0	7.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	9	2478		25	2478		163	161		156	175	
v/s Ratio Prot	0.00	c0.43		c0.01	0.27			0.00			0.00	
v/s Ratio Perm							0.02			c0.02		
v/c Ratio	0.67	0.58		0.44	0.36		0.13	0.02		0.14	0.03	
Uniform Delay, d1	79.3	9.2		78.1	6.7		62.3	61.4		62.3	61.5	
Progression Factor	1.02	0.60		1.29	0.40		1.00	1.00		1.00	1.00	
Incremental Delay, d2	73.5	0.6		11.5	0.4		0.4	0.1		0.4	0.1	
Delay (s)	154.5	6.0		112.2	3.0		62.7	61.5		62.8	61.6	
Level of Service	F	A		F	A		E	E		E	E	
Approach Delay (s)		6.7			4.4			62.1			62.2	
Approach LOS		A			A			E			E	

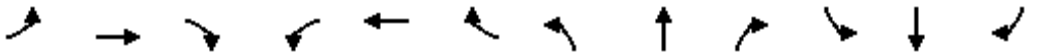
Intersection Summary			
HCM 2000 Control Delay	7.7	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.51		
Actuated Cycle Length (s)	160.0	Sum of lost time (s)	18.5
Intersection Capacity Utilization	70.3%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT	SBR
Lane Configurations									
Traffic Volume (vph)	63	1042	177	711	74	6	21	1	27
Future Volume (vph)	63	1042	177	711	74	6	21	1	27
Lane Group Flow (vph)	66	1261	184	777	77	153	0	23	28
Turn Type	Prot	NA	Prot	NA	Perm	NA	Perm	NA	Perm
Protected Phases	5	2	1	6		4		8	
Permitted Phases					4		8		8
Detector Phase	5	2	1	6	4	4	8	8	8
Switch Phase									
Minimum Initial (s)	5.0	10.0	5.0	10.0	20.0	20.0	20.0	20.0	20.0
Minimum Split (s)	10.0	48.0	10.0	48.0	51.5	51.5	51.5	51.5	51.5
Total Split (s)	19.0	80.4	28.0	89.4	51.6	51.6	51.6	51.6	51.6
Total Split (%)	11.9%	50.3%	17.5%	55.9%	32.3%	32.3%	32.3%	32.3%	32.3%
Yellow Time (s)	3.0	4.0	3.0	4.0	3.0	3.0	3.0	3.0	3.0
All-Red Time (s)	2.0	3.0	2.0	3.0	4.5	4.5	4.5	4.5	4.5
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0
Total Lost Time (s)	5.0	7.0	5.0	7.0	7.5	7.5		7.5	7.5
Lead/Lag	Lead	Lag	Lead	Lag					
Lead-Lag Optimize?									
Recall Mode	None	C-Max	None	C-Max	Min	Min	Min	Min	Min
v/c Ratio	0.59	0.65	0.81	0.37	0.39	0.43		0.18	0.11
Control Delay	89.5	19.4	98.2	14.5	64.9	11.9		58.5	0.8
Queue Delay	0.0	0.2	0.0	0.0	0.0	0.0		0.0	0.0
Total Delay	89.5	19.6	98.2	14.5	64.9	11.9		58.5	0.8
Queue Length 50th (m)	23.1	106.7	62.4	30.0	24.4	1.8		7.0	0.0
Queue Length 95th (m)	41.8	72.3	#100.9	90.2	35.7	20.1		14.1	0.0
Internal Link Dist (m)		149.0		130.6		105.8		70.0	
Turn Bay Length (m)	110.0		140.0						10.0
Base Capacity (vph)	136	1939	246	2120	347	525		226	401
Starvation Cap Reductn	0	139	0	0	0	0		0	0
Spillback Cap Reductn	0	0	0	0	0	0		0	0
Storage Cap Reductn	0	0	0	0	0	0		0	0
Reduced v/c Ratio	0.49	0.70	0.75	0.37	0.22	0.29		0.10	0.07

Intersection Summary

Cycle Length: 160
Actuated Cycle Length: 160
Offset: 86 (54%), Referenced to phase 2:EBT and 6:WBT, Start of Green
Natural Cycle: 120
Control Type: Actuated-Coordinated
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 3: Jarrow Avenue & Dundas Street E



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	63	1042	169	177	711	35	74	6	141	21	1	27
Future Volume (vph)	63	1042	169	177	711	35	74	6	141	21	1	27
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.0	3.5	3.0	3.0	3.5	3.0	3.0	3.5	3.0	3.0	3.5	3.0
Total Lost time (s)	5.0	7.0		5.0	7.0		7.5	7.5			7.5	7.5
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	1.00			1.00	1.00
Frpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	0.98			1.00	0.98
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00			0.99	1.00
Frt	1.00	0.98		1.00	0.99		1.00	0.86			1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00			0.95	1.00
Satd. Flow (prot)	1560	3300		1652	3254		1613	1520			1255	1206
Flt Permitted	0.95	1.00		0.95	1.00		0.74	1.00			0.63	1.00
Satd. Flow (perm)	1560	3300		1652	3254		1260	1520			824	1206
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	66	1085	176	184	741	36	77	6	147	22	1	28
RTOR Reduction (vph)	0	6	0	0	1	0	0	124	0	0	0	24
Lane Group Flow (vph)	66	1255	0	184	776	0	77	29	0	0	23	4
Confl. Peds. (#/hr)	11		6	6		11	4		7	7		4
Confl. Bikes (#/hr)			1			1						
Heavy Vehicles (%)	8%	6%	2%	2%	8%	24%	4%	0%	4%	44%	0%	23%
Bus Blockages (#/hr)	0	0	5	0	0	6	0	0	0	0	0	0
Turn Type	Prot	NA		Prot	NA		Perm	NA		Perm	NA	Perm
Protected Phases	5	2		1	6			4			8	
Permitted Phases							4			8		8
Actuated Green, G (s)	11.5	93.7		22.0	104.2		24.8	24.8			24.8	24.8
Effective Green, g (s)	11.5	93.7		22.0	104.2		24.8	24.8			24.8	24.8
Actuated g/C Ratio	0.07	0.59		0.14	0.65		0.16	0.16			0.16	0.16
Clearance Time (s)	5.0	7.0		5.0	7.0		7.5	7.5			7.5	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)	112	1932		227	2119		195	235			127	186
v/s Ratio Prot	0.04	c0.38		c0.11	0.24			0.02				
v/s Ratio Perm							c0.06				0.03	0.00
v/c Ratio	0.59	0.65		0.81	0.37		0.39	0.12			0.18	0.02
Uniform Delay, d1	72.0	22.2		67.0	12.8		60.8	58.2			58.8	57.3
Progression Factor	1.00	0.75		1.10	0.98		1.00	1.00			1.00	1.00
Incremental Delay, d2	6.6	1.5		18.7	0.5		1.3	0.2			0.7	0.1
Delay (s)	78.5	18.0		92.1	13.0		62.2	58.5			59.5	57.4
Level of Service	E	B		F	B		E	E			E	E
Approach Delay (s)		21.0			28.2			59.7			58.3	
Approach LOS		C			C			E			E	

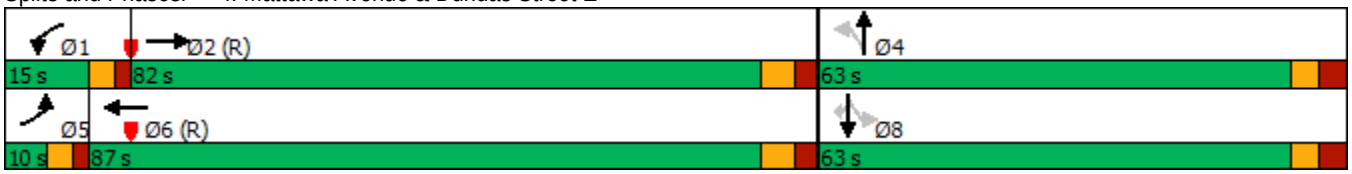
Intersection Summary			
HCM 2000 Control Delay	27.9	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.63		
Actuated Cycle Length (s)	160.0	Sum of lost time (s)	19.5
Intersection Capacity Utilization	92.5%	ICU Level of Service	F
Analysis Period (min)	15		
c Critical Lane Group			

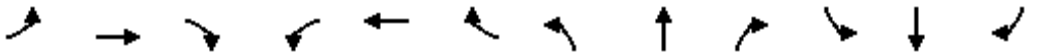
Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations								
Traffic Volume (vph)	2	1113	32	897	42	0	1	0
Future Volume (vph)	2	1113	32	897	42	0	1	0
Lane Group Flow (vph)	2	1256	33	918	43	12	0	1
Turn Type	Prot	NA	Prot	NA	Perm	NA	Perm	NA
Protected Phases	5	2	1	6		4		8
Permitted Phases					4		8	
Detector Phase	5	2	1	6	4	4	8	8
Switch Phase								
Minimum Initial (s)	5.0	10.0	5.0	10.0	10.0	10.0	10.0	10.0
Minimum Split (s)	10.0	40.0	10.0	40.0	45.0	45.0	45.0	45.0
Total Split (s)	10.0	82.0	15.0	87.0	63.0	63.0	63.0	63.0
Total Split (%)	6.3%	51.3%	9.4%	54.4%	39.4%	39.4%	39.4%	39.4%
Yellow Time (s)	3.0	4.0	3.0	4.0	3.5	3.5	3.5	3.5
All-Red Time (s)	2.0	3.0	2.0	3.0	3.5	3.5	3.5	3.5
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0		0.0
Total Lost Time (s)	5.0	7.0	5.0	7.0	7.0	7.0		7.0
Lead/Lag	Lead	Lag	Lead	Lag				
Lead-Lag Optimize?								
Recall Mode	None	C-Max	None	C-Max	None	None	None	None
v/c Ratio	0.03	0.50	0.37	0.33	0.33	0.06		0.01
Control Delay	81.5	5.4	87.3	2.5	69.5	0.5		55.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0		0.0
Total Delay	81.5	5.5	87.3	2.5	69.5	0.5		55.0
Queue Length 50th (m)	0.6	29.0	11.8	7.1	14.2	0.0		0.3
Queue Length 95th (m)	m1.3	48.5	m23.3	23.7	23.5	0.0		2.1
Internal Link Dist (m)		73.5		59.8		251.4		120.0
Turn Bay Length (m)	140.0		145.0					
Base Capacity (vph)	61	2533	109	2757	455	457		492
Starvation Cap Reductn	0	104	0	0	0	0		0
Spillback Cap Reductn	0	0	0	0	0	0		0
Storage Cap Reductn	0	0	0	0	0	0		0
Reduced v/c Ratio	0.03	0.52	0.30	0.33	0.09	0.03		0.00

Intersection Summary

Cycle Length: 160
Actuated Cycle Length: 160
Offset: 90 (56%), Referenced to phase 2:EBT and 6:WBT, Start of Green
Natural Cycle: 95
Control Type: Actuated-Coordinated
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 4: Mattawa Avenue & Dundas Street E

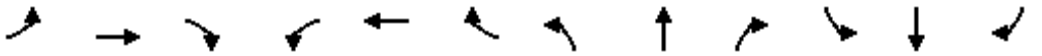




Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	2	1113	118	32	897	3	42	0	12	1	0	0
Future Volume (vph)	2	1113	118	32	897	3	42	0	12	1	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.0	3.5	3.0	3.0	3.5	3.0	3.0	3.5	3.0	3.0	3.5	3.0
Total Lost time (s)	5.0	7.0		5.0	7.0		7.0	7.0			7.0	
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	1.00			1.00	
Frpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	0.99			1.00	
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00			1.00	
Frt	1.00	0.99		1.00	1.00		1.00	0.85			1.00	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00			0.95	
Satd. Flow (prot)	1685	3290		1685	3335		1634	1110			1783	
Flt Permitted	0.95	1.00		0.95	1.00		0.76	1.00			0.75	
Satd. Flow (perm)	1685	3290		1685	3335		1302	1110			1407	
Peak-hour factor, PHF	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Adj. Flow (vph)	2	1136	120	33	915	3	43	0	12	1	0	0
RTOR Reduction (vph)	0	2	0	0	0	0	0	11	0	0	0	0
Lane Group Flow (vph)	2	1254	0	33	918	0	43	1	0	0	1	0
Confl. Peds. (#/hr)	6		6	6		6	1		1	1		1
Heavy Vehicles (%)	0%	7%	3%	0%	7%	0%	3%	0%	42%	0%	0%	0%
Bus Blockages (#/hr)	0	0	5	0	0	6	0	0	0	0	0	0
Turn Type	Prot	NA		Prot	NA		Perm	NA		Perm	NA	Perm
Protected Phases	5	2		1	6			4			8	
Permitted Phases							4			8		8
Actuated Green, G (s)	1.3	119.2		7.5	125.4		14.3	14.3			14.3	
Effective Green, g (s)	1.3	119.2		7.5	125.4		14.3	14.3			14.3	
Actuated g/C Ratio	0.01	0.75		0.05	0.78		0.09	0.09			0.09	
Clearance Time (s)	5.0	7.0		5.0	7.0		7.0	7.0			7.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0			3.0	
Lane Grp Cap (vph)	13	2451		78	2613		116	99			125	
v/s Ratio Prot	0.00	c0.38		c0.02	0.28			0.00				
v/s Ratio Perm							c0.03				0.00	
v/c Ratio	0.15	0.51		0.42	0.35		0.37	0.01			0.01	
Uniform Delay, d1	78.8	8.4		74.1	5.2		68.6	66.4			66.4	
Progression Factor	1.09	0.45		1.07	0.36		1.00	1.00			1.00	
Incremental Delay, d2	4.4	0.6		3.3	0.3		2.0	0.0			0.0	
Delay (s)	90.1	4.4		82.4	2.2		70.6	66.4			66.4	
Level of Service	F	A		F	A		E	E			E	
Approach Delay (s)		4.6			5.0			69.7			66.4	
Approach LOS		A			A			E			E	

Intersection Summary			
HCM 2000 Control Delay	6.3	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.49		
Actuated Cycle Length (s)	160.0	Sum of lost time (s)	19.0
Intersection Capacity Utilization	63.2%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	1112	2	0	903	4	0	0	1	0	0	18
Future Volume (Veh/h)	0	1112	2	0	903	4	0	0	1	0	0	18
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Hourly flow rate (vph)	0	1158	2	0	941	4	0	0	1	0	0	19
Pedestrians								8			15	
Lane Width (m)								3.0			3.0	
Walking Speed (m/s)								1.2			1.2	
Percent Blockage								1			1	
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (m)		84			172							
pX, platoon unblocked	0.83			0.85			0.91	0.91	0.85	0.91	0.91	0.83
vC, conflicting volume	960			1168			1656	2127	588	1538	2126	488
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	544			836			758	1277	151	628	1276	0
tC, single (s)	4.2			4.1			7.5	6.5	6.9	7.5	6.5	6.9
tC, 2 stage (s)												
tF (s)	2.3			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			100			100	100	100	100	100	98
cM capacity (veh/h)	811			679			261	150	737	329	150	897

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	SB 1
Volume Total	772	388	627	318	1	19
Volume Left	0	0	0	0	0	0
Volume Right	0	2	0	4	1	19
cSH	1700	1700	1700	1700	737	897
Volume to Capacity	0.45	0.23	0.37	0.19	0.00	0.02
Queue Length 95th (m)	0.0	0.0	0.0	0.0	0.0	0.5
Control Delay (s)	0.0	0.0	0.0	0.0	9.9	9.1
Lane LOS					A	A
Approach Delay (s)	0.0		0.0		9.9	9.1
Approach LOS					A	A

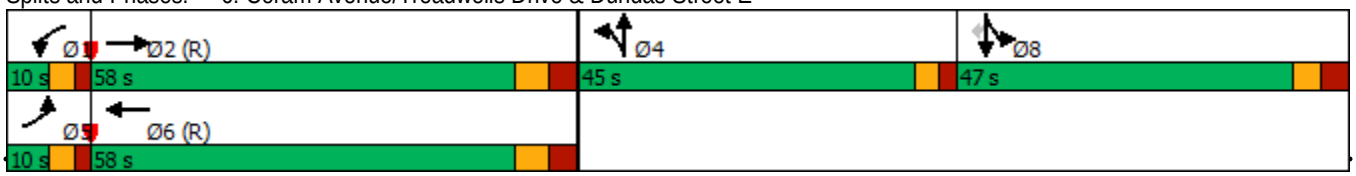
Intersection Summary				
Average Delay	0.1			
Intersection Capacity Utilization	40.8%	ICU Level of Service	A	
Analysis Period (min)	15			

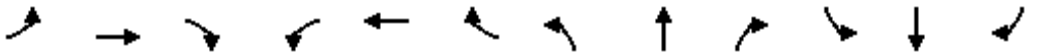
Lane Group	EBL	EBT	WBL	WBT	NBT	SBT	SBR
Lane Configurations							
Traffic Volume (vph)	23	1052	10	905	1	1	24
Future Volume (vph)	23	1052	10	905	1	1	24
Lane Group Flow (vph)	24	1122	11	966	42	24	25
Turn Type	Prot	NA	Prot	NA	NA	NA	Perm
Protected Phases	5	2	1	6	4	8	
Permitted Phases							8
Detector Phase	5	2	1	6	4	8	8
Switch Phase							
Minimum Initial (s)	5.0	10.0	5.0	10.0	15.0	15.0	15.0
Minimum Split (s)	10.0	36.5	10.0	36.5	45.0	47.0	47.0
Total Split (s)	10.0	58.0	10.0	58.0	45.0	47.0	47.0
Total Split (%)	6.3%	36.3%	6.3%	36.3%	28.1%	29.4%	29.4%
Yellow Time (s)	3.0	4.0	3.0	4.0	3.0	3.5	3.5
All-Red Time (s)	2.0	3.5	2.0	3.5	2.0	3.5	3.5
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.0	7.5	5.0	7.5	5.0	7.0	7.0
Lead/Lag	Lead	Lag	Lead	Lag			
Lead-Lag Optimize?	Yes	Yes	Yes	Yes			
Recall Mode	None	C-Max	None	C-Max	Min	Min	Min
v/c Ratio	0.34	0.56	0.19	0.50	0.19	0.11	0.09
Control Delay	100.3	22.3	90.5	19.8	33.0	59.0	0.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	100.3	22.3	90.5	19.8	33.0	59.0	0.7
Queue Length 50th (m)	8.4	59.8	3.5	70.7	5.9	7.5	0.0
Queue Length 95th (m)	m16.1	#258.0	m9.3	#199.1	16.1	14.6	0.0
Internal Link Dist (m)		148.0		363.1	118.1	152.8	
Turn Bay Length (m)	145.0		145.0				10.0
Base Capacity (vph)	70	1994	57	1940	413	448	445
Starvation Cap Reductn	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.34	0.56	0.19	0.50	0.10	0.05	0.06

Intersection Summary

Cycle Length: 160
Actuated Cycle Length: 160
Offset: 104 (65%), Referenced to phase 2:EBT and 6:WBT, Start of Green
Natural Cycle: 150
Control Type: Actuated-Coordinated
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: 6: Coram Avenue/Treadwells Drive & Dundas Street E





Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	23	1052	14	10	905	12	17	1	22	22	1	24
Future Volume (vph)	23	1052	14	10	905	12	17	1	22	22	1	24
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.0	3.5	3.0	3.0	3.5	3.0	3.0	3.5	3.0	3.0	3.5	3.0
Total Lost time (s)	5.0	7.5		5.0	7.5			5.0			7.0	7.0
Lane Util. Factor	1.00	0.95		1.00	0.95			1.00			1.00	1.00
Frpb, ped/bikes	1.00	1.00		1.00	1.00			1.00			1.00	0.98
Flpb, ped/bikes	1.00	1.00		1.00	1.00			1.00			1.00	1.00
Frt	1.00	1.00		1.00	1.00			0.93			1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00			0.98			0.95	1.00
Satd. Flow (prot)	1685	3323		1532	3331			1584			1793	1483
Flt Permitted	0.95	1.00		0.95	1.00			0.98			0.95	1.00
Satd. Flow (perm)	1685	3323		1532	3331			1584			1793	1483
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	24	1107	15	11	953	13	18	1	23	23	1	25
RTOR Reduction (vph)	0	0	0	0	0	0	0	20	0	0	0	22
Lane Group Flow (vph)	24	1122	0	11	966	0	0	22	0	0	24	3
Confl. Peds. (#/hr)	6		3	3		6	2					2
Confl. Bikes (#/hr)												1
Heavy Vehicles (%)	0%	7%	21%	10%	7%	0%	12%	100%	0%	0%	0%	0%
Bus Blockages (#/hr)	0	0	5	0	0	6	0	0	0	0	0	0
Turn Type	Prot	NA		Prot	NA		Split	NA		Split	NA	Perm
Protected Phases	5	2		1	6		4	4		8	8	
Permitted Phases												8
Actuated Green, G (s)	4.3	93.0		2.5	91.2			20.0			20.0	20.0
Effective Green, g (s)	4.3	93.0		2.5	91.2			20.0			20.0	20.0
Actuated g/C Ratio	0.03	0.58		0.02	0.57			0.12			0.12	0.12
Clearance Time (s)	5.0	7.5		5.0	7.5			5.0			7.0	7.0
Vehicle Extension (s)	3.0	3.0		3.0	3.0			3.0			3.0	3.0
Lane Grp Cap (vph)	45	1931		23	1898			198			224	185
v/s Ratio Prot	c0.01	c0.34		0.01	0.29			c0.01			c0.01	
v/s Ratio Perm												0.00
v/c Ratio	0.53	0.58		0.48	0.51			0.11			0.11	0.02
Uniform Delay, d1	76.9	21.2		78.1	20.8			62.1			62.1	61.4
Progression Factor	1.19	0.90		1.11	0.78			1.00			1.00	1.00
Incremental Delay, d2	10.4	1.1		13.9	0.9			0.2			0.2	0.0
Delay (s)	102.1	20.2		100.8	17.1			62.4			62.3	61.4
Level of Service	F	C		F	B			E			E	E
Approach Delay (s)		21.9			18.0			62.4			61.8	
Approach LOS		C			B			E			E	

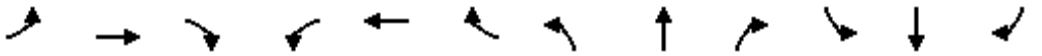
Intersection Summary			
HCM 2000 Control Delay	21.8	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.45		
Actuated Cycle Length (s)	160.0	Sum of lost time (s)	24.5
Intersection Capacity Utilization	68.0%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations								
Traffic Volume (vph)	97	859	72	795	34	7	82	12
Future Volume (vph)	97	859	72	795	34	7	82	12
Lane Group Flow (vph)	104	970	77	947	37	68	88	67
Turn Type	Prot	NA	Prot	NA	Perm	NA	Perm	NA
Protected Phases	5	2	1	6		4		8
Permitted Phases					4		8	
Detector Phase	5	2	1	6	4	4	8	8
Switch Phase								
Minimum Initial (s)	5.0	8.0	5.0	8.0	8.0	8.0	8.0	8.0
Minimum Split (s)	10.0	38.5	10.0	38.5	48.0	48.0	48.0	48.0
Total Split (s)	27.0	87.0	22.0	82.0	51.0	51.0	51.0	51.0
Total Split (%)	16.9%	54.4%	13.8%	51.3%	31.9%	31.9%	31.9%	31.9%
Yellow Time (s)	3.0	4.0	3.0	4.0	3.5	3.5	3.5	3.5
All-Red Time (s)	2.0	2.5	2.0	2.5	3.5	3.5	3.5	3.5
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.0	6.5	5.0	6.5	7.0	7.0	7.0	7.0
Lead/Lag	Lead	Lag	Lead	Lag				
Lead-Lag Optimize?								
Recall Mode	None	C-Max	None	C-Max	None	None	None	None
v/c Ratio	0.68	0.43	0.61	0.43	0.31	0.32	0.70	0.31
Control Delay	104.8	2.4	89.9	14.1	69.1	20.7	95.2	23.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	104.8	2.4	89.9	14.1	69.1	20.7	95.2	23.3
Queue Length 50th (m)	31.7	32.4	25.3	72.0	11.6	2.4	28.9	4.0
Queue Length 95th (m)	58.5	5.5	43.1	112.8	23.2	17.5	47.3	19.0
Internal Link Dist (m)		363.1		862.1		62.3		138.1
Turn Bay Length (m)	30.0		42.0		30.0		35.0	
Base Capacity (vph)	213	2272	162	2180	295	427	305	440
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.49	0.43	0.48	0.43	0.13	0.16	0.29	0.15

Intersection Summary

Cycle Length: 160
Actuated Cycle Length: 160
Offset: 112 (70%), Referenced to phase 2:EBT and 6:WBT, Start of Green
Natural Cycle: 100
Control Type: Actuated-Coordinated

Splits and Phases: 7: Wharton Way & Dundas Street E



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	97	859	43	72	795	86	34	7	56	82	12	50
Future Volume (vph)	97	859	43	72	795	86	34	7	56	82	12	50
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.0	3.5	3.0	3.0	3.5	3.0	3.0	3.5	3.0	3.0	3.5	3.0
Total Lost time (s)	5.0	6.5		5.0	6.5		7.0	7.0		7.0	7.0	
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	1.00		1.00	1.00	
Frpb, ped/bikes	1.00	1.00		1.00	0.99		1.00	0.98		1.00	0.97	
Flpb, ped/bikes	1.00	1.00		1.00	1.00		0.98	1.00		0.99	1.00	
Frt	1.00	0.99		1.00	0.99		1.00	0.87		1.00	0.88	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1546	3309		1491	3246		1431	1394		1480	1461	
Flt Permitted	0.95	1.00		0.95	1.00		0.71	1.00		0.71	1.00	
Satd. Flow (perm)	1546	3309		1491	3246		1074	1394		1110	1461	
Peak-hour factor, PHF	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Adj. Flow (vph)	104	924	46	77	855	92	37	8	60	88	13	54
RTOR Reduction (vph)	0	1	0	0	3	0	0	53	0	0	48	0
Lane Group Flow (vph)	104	969	0	77	944	0	37	15	0	88	19	0
Confl. Peds. (#/hr)	27		8	8		27	22		7	7		22
Heavy Vehicles (%)	9%	7%	5%	13%	6%	21%	15%	29%	13%	13%	0%	12%
Bus Blockages (#/hr)	0	0	9	0	0	12	0	0	0	0	0	0
Turn Type	Prot	NA		Prot	NA		Perm	NA		Perm	NA	
Protected Phases	5	2		1	6			4			8	
Permitted Phases							4			8		
Actuated Green, G (s)	16.0	109.8		13.6	107.4		18.1	18.1		18.1	18.1	
Effective Green, g (s)	16.0	109.8		13.6	107.4		18.1	18.1		18.1	18.1	
Actuated g/C Ratio	0.10	0.69		0.08	0.67		0.11	0.11		0.11	0.11	
Clearance Time (s)	5.0	6.5		5.0	6.5		7.0	7.0		7.0	7.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	154	2270		126	2178		121	157		125	165	
v/s Ratio Prot	c0.07	c0.29		0.05	0.29			0.01			0.01	
v/s Ratio Perm							0.03			c0.08		
v/c Ratio	0.68	0.43		0.61	0.43		0.31	0.09		0.70	0.12	
Uniform Delay, d1	69.5	11.1		70.6	12.2		65.2	63.6		68.4	63.8	
Progression Factor	1.26	0.15		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	9.5	0.5		8.5	0.6		1.4	0.3		16.5	0.3	
Delay (s)	97.3	2.2		79.1	12.8		66.6	63.9		84.8	64.1	
Level of Service	F	A		E	B		E	E		F	E	
Approach Delay (s)		11.4			17.8			64.8			75.9	
Approach LOS		B			B			E			E	

Intersection Summary			
HCM 2000 Control Delay	20.8	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.50		
Actuated Cycle Length (s)	160.0	Sum of lost time (s)	18.5
Intersection Capacity Utilization	70.6%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	1242	3	0	940	0	0
Future Volume (Veh/h)	1242	3	0	940	0	0
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.99	0.99	0.99	0.99	0.99	0.99
Hourly flow rate (vph)	1255	3	0	949	0	0
Pedestrians					3	
Lane Width (m)					3.0	
Walking Speed (m/s)					1.2	
Percent Blockage					0	
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (m)	155			98		
pX, platoon unblocked			0.75		0.79	0.75
vC, conflicting volume			1261		1734	632
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			694		951	0
tC, single (s)			4.1		6.8	6.9
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			100		100	100
cM capacity (veh/h)			686		207	821

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1
Volume Total	837	421	474	474	0
Volume Left	0	0	0	0	0
Volume Right	0	3	0	0	0
cSH	1700	1700	1700	1700	1700
Volume to Capacity	0.49	0.25	0.28	0.28	0.01
Queue Length 95th (m)	0.0	0.0	0.0	0.0	0.0
Control Delay (s)	0.0	0.0	0.0	0.0	0.0
Lane LOS					A
Approach Delay (s)	0.0		0.0		0.0
Approach LOS					A

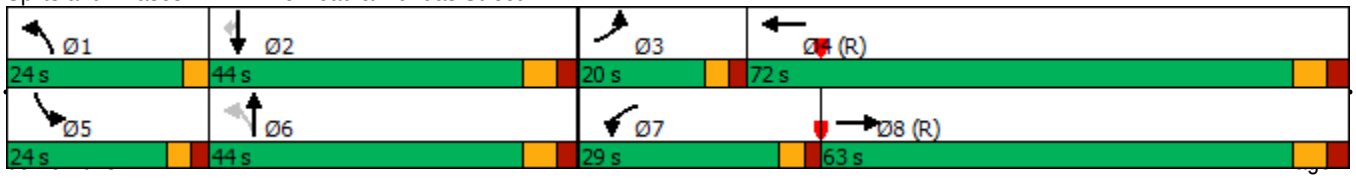
Intersection Summary			
Average Delay	0.0		
Intersection Capacity Utilization	37.8%	ICU Level of Service	A
Analysis Period (min)	15		

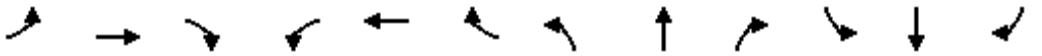
Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT	SBR
Lane Configurations									
Traffic Volume (vph)	192	773	205	1039	248	1022	442	939	286
Future Volume (vph)	192	773	205	1039	248	1022	442	939	286
Lane Group Flow (vph)	198	1010	211	1615	256	1251	456	968	295
Turn Type	Prot	NA	Prot	NA	pm+pt	NA	Prot	NA	Perm
Protected Phases	3	8	7	4	1	6	5	2	
Permitted Phases					6				2
Detector Phase	3	8	7	4	1	6	5	2	2
Switch Phase									
Minimum Initial (s)	7.0	10.0	7.0	10.0	7.0	10.0	7.0	10.0	10.0
Minimum Split (s)	12.0	47.8	12.0	47.8	10.0	42.5	13.0	42.5	42.5
Total Split (s)	20.0	63.0	29.0	72.0	24.0	44.0	24.0	44.0	44.0
Total Split (%)	12.5%	39.4%	18.1%	45.0%	15.0%	27.5%	15.0%	27.5%	27.5%
Yellow Time (s)	3.0	4.0	3.0	4.0	3.0	4.0	3.0	4.0	4.0
All-Red Time (s)	2.0	2.8	2.0	2.8	0.0	2.5	2.0	2.5	2.5
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	-1.0	0.0	0.0
Total Lost Time (s)	5.0	6.8	5.0	6.8	3.0	6.5	4.0	6.5	6.5
Lead/Lag	Lead	Lag	Lead	Lag	Lead	Lag	Lead	Lag	Lag
Lead-Lag Optimize?									
Recall Mode	None	C-Max	None	C-Max	None	Max	None	Max	Max
v/c Ratio	1.34	0.84	0.89	1.19	0.96	1.09	1.14	0.83	0.68
Control Delay	241.8	53.6	113.4	124.3	90.0	108.4	148.7	65.2	30.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	241.8	53.6	113.4	124.3	90.0	108.4	148.7	65.2	30.4
Queue Length 50th (m)	~85.7	162.0	71.4	~333.0	69.2	~169.6	~91.4	113.9	36.7
Queue Length 95th (m)	#140.5	192.1	m#95.1	#222.3	#128.4	#201.2	#128.9	132.3	74.3
Internal Link Dist (m)		1362.6		279.9		1407.4		1183.5	
Turn Bay Length (m)	140.0		160.0		64.0		107.0		50.0
Base Capacity (vph)	148	1206	250	1354	268	1151	400	1169	434
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	1.34	0.84	0.84	1.19	0.96	1.09	1.14	0.83	0.68

Intersection Summary

Cycle Length: 160
Actuated Cycle Length: 160
Offset: 150 (94%), Referenced to phase 4:WBT and 8:EBT, 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: 1: Dixie Road & Dundas Street E





Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	192	773	207	205	1039	528	248	1022	191	442	939	286
Future Volume (vph)	192	773	207	205	1039	528	248	1022	191	442	939	286
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.0	3.5	3.0	3.0	3.5	3.0	3.0	3.5	3.0	3.0	3.5	3.0
Total Lost time (s)	5.0	6.8		5.0	6.8		3.0	6.5		4.0	6.5	6.5
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	0.91		0.97	0.91	1.00
Frpb, ped/bikes	1.00	0.99		1.00	0.98		1.00	0.99		1.00	1.00	0.89
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	1.00
Frt	1.00	0.97		1.00	0.95		1.00	0.98		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)	1589	3322		1668	3228		1683	4844		3204	4980	1272
Flt Permitted	0.95	1.00		0.95	1.00		0.11	1.00		0.95	1.00	1.00
Satd. Flow (perm)	1589	3322		1668	3228		189	4844		3204	4980	1272
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	198	797	213	211	1071	544	256	1054	197	456	968	295
RTOR Reduction (vph)	0	15	0	0	40	0	0	17	0	0	0	135
Lane Group Flow (vph)	198	995	0	211	1575	0	256	1234	0	456	968	160
Confl. Peds. (#/hr)	47		47	47		47	77		27	27		77
Confl. Bikes (#/hr)			3				77					1
Heavy Vehicles (%)	6%	3%	1%	1%	2%	4%	0%	2%	6%	2%	3%	3%
Bus Blockages (#/hr)	0	0	9	0	0	8	0	0	4	0	0	5
Turn Type	Prot	NA		Prot	NA		pm+pt	NA		Prot	NA	Perm
Protected Phases	3	8		7	4		1	6		5	2	
Permitted Phases							6					2
Actuated Green, G (s)	15.0	57.4		22.8	65.2		58.4	37.5		19.0	37.6	37.6
Effective Green, g (s)	15.0	57.4		22.8	65.2		58.4	37.5		20.0	37.6	37.6
Actuated g/C Ratio	0.09	0.36		0.14	0.41		0.36	0.23		0.12	0.24	0.24
Clearance Time (s)	5.0	6.8		5.0	6.8		3.0	6.5		5.0	6.5	6.5
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)	148	1191		237	1315		264	1135		400	1170	298
v/s Ratio Prot	c0.12	0.30		0.13	c0.49		0.13	c0.25		c0.14	0.19	
v/s Ratio Perm							0.23					0.13
v/c Ratio	1.34	0.84		0.89	1.20		0.97	1.09		1.14	0.83	0.54
Uniform Delay, d1	72.5	47.0		67.4	47.4		48.6	61.2		70.0	58.1	53.6
Progression Factor	1.00	1.00		1.34	0.78		1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	190.5	7.0		21.4	93.6		46.4	53.8		89.0	6.8	6.7
Delay (s)	263.0	54.0		111.9	130.6		95.0	115.0		159.0	64.9	60.3
Level of Service	F	D		F	F		F	F		F	E	E
Approach Delay (s)		88.3			128.4			111.6			89.1	
Approach LOS		F			F			F			F	

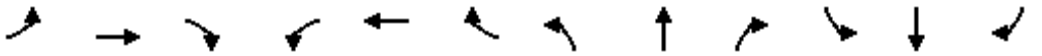
Intersection Summary			
HCM 2000 Control Delay	105.8	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	1.17		
Actuated Cycle Length (s)	160.0	Sum of lost time (s)	22.3
Intersection Capacity Utilization	119.9%	ICU Level of Service	H
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations								
Traffic Volume (vph)	75	1202	50	1620	122	51	52	22
Future Volume (vph)	75	1202	50	1620	122	51	52	22
Lane Group Flow (vph)	77	1400	51	1800	124	113	53	79
Turn Type	Prot	NA	Prot	NA	Perm	NA	Perm	NA
Protected Phases	5	2	1	6		4		8
Permitted Phases					4		8	
Detector Phase	5	2	1	6	4	4	8	8
Switch Phase								
Minimum Initial (s)	7.0	10.0	5.0	10.0	20.0	20.0	20.0	20.0
Minimum Split (s)	12.0	34.5	10.0	34.5	47.0	47.0	47.0	47.0
Total Split (s)	13.0	101.0	12.0	100.0	47.0	47.0	47.0	47.0
Total Split (%)	8.1%	63.1%	7.5%	62.5%	29.4%	29.4%	29.4%	29.4%
Yellow Time (s)	3.0	4.0	3.0	4.0	3.5	3.5	3.5	3.5
All-Red Time (s)	2.0	2.5	2.0	2.5	3.5	3.5	3.5	3.5
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.0	6.5	5.0	6.5	7.0	7.0	7.0	7.0
Lead/Lag	Lead	Lag	Lead	Lag				
Lead-Lag Optimize?								
Recall Mode	None	C-Max	None	C-Max	None	None	None	None
v/c Ratio	0.68	0.62	0.60	0.83	0.57	0.35	0.28	0.24
Control Delay	72.2	21.0	106.4	12.2	69.1	40.2	57.8	19.3
Queue Delay	0.0	0.7	0.0	0.4	0.0	0.0	0.0	0.0
Total Delay	72.2	21.7	106.4	12.7	69.1	40.2	57.8	19.3
Queue Length 50th (m)	25.8	118.3	17.7	47.5	40.6	24.2	16.4	6.6
Queue Length 95th (m)	m28.7	m118.7	m24.5	176.8	57.0	39.4	27.7	20.2
Internal Link Dist (m)		279.9		149.0		96.0		162.3
Turn Bay Length (m)	145.0		100.0		15.0		25.0	
Base Capacity (vph)	113	2266	85	2176	306	444	265	450
Starvation Cap Reductn	0	218	0	90	0	0	0	0
Spillback Cap Reductn	0	480	0	0	0	4	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.68	0.78	0.60	0.86	0.41	0.26	0.20	0.18

Intersection Summary

Cycle Length: 160
Actuated Cycle Length: 160
Offset: 134 (84%), Referenced to phase 2:EBT and 6:WBT, Start of Green
Natural Cycle: 135
Control Type: Actuated-Coordinated
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 2: Nelico Court & Dundas Street E



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	75	1202	170	50	1620	144	122	51	60	52	22	56
Future Volume (vph)	75	1202	170	50	1620	144	122	51	60	52	22	56
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.0	3.5	3.0	3.0	3.5	3.0	3.0	3.5	3.0	3.0	3.5	3.0
Total Lost time (s)	5.0	6.5		5.0	6.5		7.0	7.0		7.0	7.0	
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	1.00		1.00	1.00	
Frpb, ped/bikes	1.00	0.99		1.00	0.99		1.00	0.98		1.00	0.97	
Flpb, ped/bikes	1.00	1.00		1.00	1.00		0.98	1.00		0.97	1.00	
Frt	1.00	0.98		1.00	0.99		1.00	0.92		1.00	0.89	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1668	3368		1685	3399		1647	1672		1578	1631	
Flt Permitted	0.95	1.00		0.95	1.00		0.71	1.00		0.64	1.00	
Satd. Flow (perm)	1668	3368		1685	3399		1223	1672		1063	1631	
Peak-hour factor, PHF	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Adj. Flow (vph)	77	1227	173	51	1653	147	124	52	61	53	22	57
RTOR Reduction (vph)	0	6	0	0	4	0	0	29	0	0	47	0
Lane Group Flow (vph)	77	1394	0	51	1796	0	124	84	0	53	32	0
Confl. Peds. (#/hr)	35		28	28		35	21		26	26		21
Confl. Bikes (#/hr)							21					
Heavy Vehicles (%)	1%	3%	1%	0%	3%	0%	0%	2%	0%	4%	0%	0%
Bus Blockages (#/hr)	0	0	5	0	0	4	0	0	0	0	0	0
Turn Type	Prot	NA		Prot	NA		Perm	NA		Perm	NA	
Protected Phases	5	2		1	6			4			8	
Permitted Phases							4			8		
Actuated Green, G (s)	10.9	106.4		6.8	102.3		28.3	28.3		28.3	28.3	
Effective Green, g (s)	10.9	106.4		6.8	102.3		28.3	28.3		28.3	28.3	
Actuated g/C Ratio	0.07	0.67		0.04	0.64		0.18	0.18		0.18	0.18	
Clearance Time (s)	5.0	6.5		5.0	6.5		7.0	7.0		7.0	7.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	113	2239		71	2173		216	295		188	288	
v/s Ratio Prot	c0.05	c0.41		0.03	c0.53			0.05			0.02	
v/s Ratio Perm							c0.10			0.05		
v/c Ratio	0.68	0.62		0.72	0.83		0.57	0.29		0.28	0.11	
Uniform Delay, d1	72.9	15.3		75.7	22.1		60.3	57.1		57.0	55.3	
Progression Factor	0.86	1.23		1.19	0.39		1.00	1.00		1.00	1.00	
Incremental Delay, d2	5.4	0.4		20.7	2.6		3.7	0.5		0.8	0.2	
Delay (s)	67.8	19.3		111.1	11.3		64.0	57.6		57.9	55.5	
Level of Service	E	B		F	B		E	E		E	E	
Approach Delay (s)		21.8			14.0			61.0			56.4	
Approach LOS		C			B			E			E	

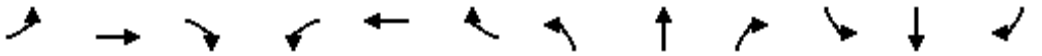
Intersection Summary			
HCM 2000 Control Delay	21.7	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.76		
Actuated Cycle Length (s)	160.0	Sum of lost time (s)	18.5
Intersection Capacity Utilization	97.2%	ICU Level of Service	F
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT	SBR
Lane Configurations									
Traffic Volume (vph)	31	1072	282	1506	224	6	37	22	82
Future Volume (vph)	31	1072	282	1506	224	6	37	22	82
Lane Group Flow (vph)	33	1375	297	1624	236	328	0	62	86
Turn Type	Prot	NA	Prot	NA	Perm	NA	Perm	NA	Perm
Protected Phases	5	2	1	6		4		8	
Permitted Phases					4		8		8
Detector Phase	5	2	1	6	4	4	8	8	8
Switch Phase									
Minimum Initial (s)	5.0	10.0	5.0	10.0	20.0	20.0	20.0	20.0	20.0
Minimum Split (s)	10.0	48.0	10.0	48.0	51.5	51.5	51.5	51.5	51.5
Total Split (s)	11.0	76.4	32.0	97.4	51.6	51.6	51.6	51.6	51.6
Total Split (%)	6.9%	47.8%	20.0%	60.9%	32.3%	32.3%	32.3%	32.3%	32.3%
Yellow Time (s)	3.0	4.0	3.0	4.0	3.0	3.0	3.0	3.0	3.0
All-Red Time (s)	2.0	3.0	2.0	3.0	4.5	4.5	4.5	4.5	4.5
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0
Total Lost Time (s)	5.0	7.0	5.0	7.0	7.5	7.5		7.5	7.5
Lead/Lag	Lead	Lag	Lead	Lag					
Lead-Lag Optimize?									
Recall Mode	None	C-Max	None	C-Max	Min	Min	Min	Min	Min
v/c Ratio	0.52	0.92	0.85	0.76	0.84	0.59		0.45	0.21
Control Delay	109.2	35.3	94.7	15.6	84.0	12.6		62.4	7.3
Queue Delay	0.0	3.2	0.0	0.2	0.0	0.0		0.0	0.0
Total Delay	109.2	38.5	94.7	15.8	84.0	12.6		62.4	7.3
Queue Length 50th (m)	11.7	177.0	102.5	74.9	76.6	11.7		18.2	0.0
Queue Length 95th (m)	m#20.3	#275.8	m#174.2	199.6	104.6	41.0		33.0	11.9
Internal Link Dist (m)		149.0		130.6		105.8		70.0	
Turn Bay Length (m)	110.0		140.0						10.0
Base Capacity (vph)	64	1499	349	2135	348	627		170	476
Starvation Cap Reductn	0	70	0	72	0	0		0	0
Spillback Cap Reductn	0	0	0	69	0	0		0	1
Storage Cap Reductn	0	0	0	0	0	0		0	0
Reduced v/c Ratio	0.52	0.96	0.85	0.79	0.68	0.52		0.36	0.18

Intersection Summary

Cycle Length: 160
Actuated Cycle Length: 160
Offset: 148 (93%), Referenced to phase 2:EBT and 6:WBT, Start of Green
Natural Cycle: 150
Control Type: Actuated-Coordinated
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 3: Jarrow Avenue & Dundas Street E



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	31	1072	235	282	1506	37	224	6	306	37	22	82
Future Volume (vph)	31	1072	235	282	1506	37	224	6	306	37	22	82
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.0	3.5	3.0	3.0	3.5	3.0	3.0	3.5	3.0	3.0	3.5	3.0
Total Lost time (s)	5.0	7.0		5.0	7.0		7.5	7.5			7.5	7.5
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	1.00			1.00	1.00
Frpb, ped/bikes	1.00	0.99		1.00	1.00		1.00	0.96			1.00	0.98
Flpb, ped/bikes	1.00	1.00		1.00	1.00		0.99	1.00			0.99	1.00
Frt	1.00	0.97		1.00	1.00		1.00	0.85			1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00			0.97	1.00
Satd. Flow (prot)	1465	3333		1668	3412		1675	1528			1690	1480
Flt Permitted	0.95	1.00		0.95	1.00		0.72	1.00			0.36	1.00
Satd. Flow (perm)	1465	3333		1668	3412		1263	1528			620	1480
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	33	1128	247	297	1585	39	236	6	322	39	23	86
RTOR Reduction (vph)	0	12	0	0	1	0	0	222	0	0	0	67
Lane Group Flow (vph)	33	1363	0	297	1623	0	236	106	0	0	62	19
Confl. Peds. (#/hr)	25		16	16		25	6		24	24		6
Heavy Vehicles (%)	15%	4%	0%	1%	4%	7%	0%	0%	1%	11%	0%	0%
Bus Blockages (#/hr)	0	0	5	0	0	4	0	0	0	0	0	0
Turn Type	Prot	NA		Prot	NA		Perm	NA		Perm	NA	Perm
Protected Phases	5	2		1	6			4			8	
Permitted Phases							4			8		8
Actuated Green, G (s)	5.9	71.4		33.6	99.1		35.5	35.5			35.5	35.5
Effective Green, g (s)	5.9	71.4		33.6	99.1		35.5	35.5			35.5	35.5
Actuated g/C Ratio	0.04	0.45		0.21	0.62		0.22	0.22			0.22	0.22
Clearance Time (s)	5.0	7.0		5.0	7.0		7.5	7.5			7.5	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)	54	1487		350	2113		280	339			137	328
v/s Ratio Prot	0.02	c0.41		c0.18	0.48			0.07				
v/s Ratio Perm							c0.19				0.10	0.01
v/c Ratio	0.61	0.92		0.85	0.77		0.84	0.31			0.45	0.06
Uniform Delay, d1	75.9	41.5		60.8	22.1		59.6	52.1			53.8	49.1
Progression Factor	1.18	0.62		1.30	0.56		1.00	1.00			1.00	1.00
Incremental Delay, d2	15.9	9.0		14.3	2.2		20.0	0.5			2.4	0.1
Delay (s)	105.5	35.0		93.5	14.7		79.6	52.6			56.2	49.1
Level of Service	F	C		F	B		E	D			E	D
Approach Delay (s)		36.6			26.9			63.9			52.1	
Approach LOS		D			C			E			D	

Intersection Summary			
HCM 2000 Control Delay	36.4	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.88		
Actuated Cycle Length (s)	160.0	Sum of lost time (s)	19.5
Intersection Capacity Utilization	111.3%	ICU Level of Service	H
Analysis Period (min)	15		

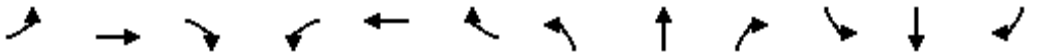
c Critical Lane Group

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT	SBR
Lane Configurations									
Traffic Volume (vph)	9	1243	87	1430	251	1	7	1	4
Future Volume (vph)	9	1243	87	1430	251	1	7	1	4
Lane Group Flow (vph)	9	1419	90	1477	259	94	0	8	4
Turn Type	Prot	NA	Prot	NA	Perm	NA	Perm	NA	Perm
Protected Phases	5	2	1	6		4		8	
Permitted Phases					4		8		8
Detector Phase	5	2	1	6	4	4	8	8	8
Switch Phase									
Minimum Initial (s)	5.0	10.0	5.0	10.0	10.0	10.0	10.0	10.0	10.0
Minimum Split (s)	10.0	40.0	10.0	40.0	45.0	45.0	45.0	45.0	45.0
Total Split (s)	10.0	81.0	32.0	103.0	47.0	47.0	47.0	47.0	47.0
Total Split (%)	6.3%	50.6%	20.0%	64.4%	29.4%	29.4%	29.4%	29.4%	29.4%
Yellow Time (s)	3.0	4.0	3.0	4.0	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	2.0	3.0	2.0	3.0	3.5	3.5	3.5	3.5	3.5
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0
Total Lost Time (s)	5.0	7.0	5.0	7.0	7.0	7.0		7.0	7.0
Lead/Lag	Lead	Lag	Lead	Lag					
Lead-Lag Optimize?									
Recall Mode	None	C-Max	None	C-Max	None	None	None	None	None
v/c Ratio	0.16	0.74	0.62	0.63	0.91	0.23		0.02	0.01
Control Delay	90.4	8.9	101.9	7.1	93.3	9.9		46.0	0.0
Queue Delay	0.0	0.3	0.0	0.7	0.0	0.0		0.0	0.0
Total Delay	90.4	9.2	101.9	7.7	93.3	9.9		46.0	0.0
Queue Length 50th (m)	3.1	39.1	27.1	23.0	83.4	0.3		2.1	0.0
Queue Length 95th (m)	m4.3	52.5	m36.5	89.6	#129.2	15.8		7.0	0.0
Internal Link Dist (m)		73.5		59.8		251.4		120.0	
Turn Bay Length (m)	140.0		145.0						15.0
Base Capacity (vph)	57	1923	273	2346	321	444		386	437
Starvation Cap Reductn	0	107	0	469	0	0		0	0
Spillback Cap Reductn	0	0	0	1	0	0		0	0
Storage Cap Reductn	0	0	0	0	0	0		0	0
Reduced v/c Ratio	0.16	0.78	0.33	0.79	0.81	0.21		0.02	0.01

Intersection Summary

Cycle Length: 160
Actuated Cycle Length: 160
Offset: 0 (0%), Referenced to phase 2:EBT and 6:WBT, Start of Green
Natural Cycle: 105
Control Type: Actuated-Coordinated
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
m Volume for 95th percentile queue is metered by upstream signal.

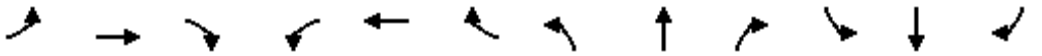
Splits and Phases: 4: Mattawa Avenue & Dundas Street E



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	9	1243	134	87	1430	3	251	1	90	7	1	4
Future Volume (vph)	9	1243	134	87	1430	3	251	1	90	7	1	4
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.0	3.5	3.0	3.0	3.5	3.0	3.0	3.5	3.0	3.0	3.5	3.0
Total Lost time (s)	5.0	7.0		5.0	7.0		7.0	7.0			7.0	7.0
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	1.00			1.00	1.00
Frpb, ped/bikes	1.00	0.99		1.00	1.00		1.00	0.97			1.00	0.97
Flpb, ped/bikes	1.00	1.00		1.00	1.00		0.98	1.00			0.99	1.00
Frt	1.00	0.99		1.00	1.00		1.00	0.85			1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00			0.96	1.00
Satd. Flow (prot)	1685	3374		1620	3464		1625	1498			1779	1465
Flt Permitted	0.95	1.00		0.95	1.00		0.75	1.00			0.83	1.00
Satd. Flow (perm)	1685	3374		1620	3464		1287	1498			1547	1465
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	9	1281	138	90	1474	3	259	1	93	7	1	4
RTOR Reduction (vph)	0	4	0	0	0	0	0	72	0	0	0	3
Lane Group Flow (vph)	9	1415	0	90	1477	0	259	22	0	0	8	1
Confl. Peds. (#/hr)	28		28	28		28	13		12	12		13
Heavy Vehicles (%)	0%	3%	7%	4%	3%	0%	2%	0%	4%	0%	0%	0%
Bus Blockages (#/hr)	0	0	5	0	0	4	0	0	0	0	0	0
Turn Type	Prot	NA		Prot	NA		Perm	NA		Perm	NA	Perm
Protected Phases	5	2		1	6			4			8	
Permitted Phases							4			8		8
Actuated Green, G (s)	1.0	91.1		14.2	104.3		35.7	35.7			35.7	35.7
Effective Green, g (s)	1.0	91.1		14.2	104.3		35.7	35.7			35.7	35.7
Actuated g/C Ratio	0.01	0.57		0.09	0.65		0.22	0.22			0.22	0.22
Clearance Time (s)	5.0	7.0		5.0	7.0		7.0	7.0			7.0	7.0
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0			3.0	3.0
Lane Grp Cap (vph)	10	1921		143	2258		287	334			345	326
v/s Ratio Prot	0.01	c0.42		c0.06	c0.43			0.01				
v/s Ratio Perm							c0.20				0.01	0.00
v/c Ratio	0.90	0.74		0.63	0.65		0.90	0.07			0.02	0.00
Uniform Delay, d1	79.5	25.6		70.4	16.9		60.5	49.0			48.5	48.3
Progression Factor	1.15	0.27		1.33	0.41		1.00	1.00			1.00	1.00
Incremental Delay, d2	162.8	1.4		4.0	0.7		29.2	0.1			0.0	0.0
Delay (s)	254.4	8.4		97.8	7.6		89.7	49.1			48.6	48.3
Level of Service	F	A		F	A		F	D			D	D
Approach Delay (s)		9.9			12.7			78.9			48.5	
Approach LOS		A			B			E			D	

Intersection Summary			
HCM 2000 Control Delay	18.6	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.77		
Actuated Cycle Length (s)	160.0	Sum of lost time (s)	19.0
Intersection Capacity Utilization	93.4%	ICU Level of Service	F
Analysis Period (min)	15		

c Critical Lane Group



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	1341	10	0	1602	6	0	0	13	0	0	15
Future Volume (Veh/h)	0	1341	10	0	1602	6	0	0	13	0	0	15
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	0	1412	11	0	1686	6	0	0	14	0	0	16
Pedestrians								19			15	
Lane Width (m)								3.0			3.0	
Walking Speed (m/s)								1.2			1.2	
Percent Blockage								1			1	
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (m)		84			172							
pX, platoon unblocked	0.54			0.69			0.70	0.70	0.69	0.70	0.70	0.54
vC, conflicting volume	1707			1442			2296	3144	730	2424	3146	861
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	611			739			0	1197	0	165	1201	0
tC, single (s)	4.1			4.1			7.5	6.5	6.9	7.5	6.5	6.9
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			100			100	100	98	100	100	97
cM capacity (veh/h)	524			596			675	127	742	525	127	584

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	SB 1
Volume Total	941	482	1124	568	14	16
Volume Left	0	0	0	0	0	0
Volume Right	0	11	0	6	14	16
cSH	1700	1700	1700	1700	742	584
Volume to Capacity	0.55	0.28	0.66	0.33	0.02	0.03
Queue Length 95th (m)	0.0	0.0	0.0	0.0	0.5	0.7
Control Delay (s)	0.0	0.0	0.0	0.0	9.9	11.3
Lane LOS					A	B
Approach Delay (s)	0.0		0.0		9.9	11.3
Approach LOS					A	B

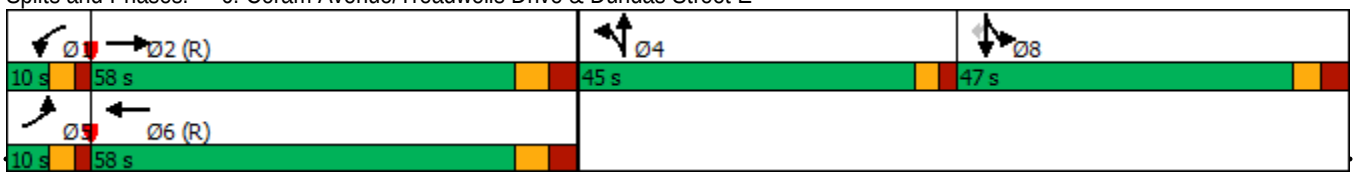
Intersection Summary				
Average Delay	0.1			
Intersection Capacity Utilization	54.5%	ICU Level of Service		A
Analysis Period (min)	15			

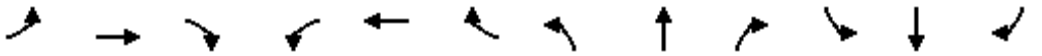
Lane Group	EBL	EBT	WBL	WBT	NBT	SBT	SBR
Lane Configurations							
Traffic Volume (vph)	36	1250	8	1628	0	0	5
Future Volume (vph)	36	1250	8	1628	0	0	5
Lane Group Flow (vph)	38	1347	8	1728	45	17	5
Turn Type	Prot	NA	Prot	NA	NA	NA	Perm
Protected Phases	5	2	1	6	4	8	
Permitted Phases							8
Detector Phase	5	2	1	6	4	8	8
Switch Phase							
Minimum Initial (s)	5.0	10.0	5.0	10.0	15.0	15.0	15.0
Minimum Split (s)	10.0	36.5	10.0	36.5	45.0	47.0	47.0
Total Split (s)	10.0	58.0	10.0	58.0	45.0	47.0	47.0
Total Split (%)	6.3%	36.3%	6.3%	36.3%	28.1%	29.4%	29.4%
Yellow Time (s)	3.0	4.0	3.0	4.0	3.0	3.5	3.5
All-Red Time (s)	2.0	3.5	2.0	3.5	2.0	3.5	3.5
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.0	7.5	5.0	7.5	5.0	7.0	7.0
Lead/Lag	Lead	Lag	Lead	Lag			
Lead-Lag Optimize?							
Recall Mode	None	C-Max	None	C-Max	Min	Min	Min
v/c Ratio	0.45	0.64	0.13	0.89	0.14	0.08	0.02
Control Delay	75.9	31.5	92.5	30.3	1.0	57.9	0.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	75.9	31.5	92.5	30.3	1.0	57.9	0.2
Queue Length 50th (m)	13.2	138.4	2.9	121.1	0.0	5.3	0.0
Queue Length 95th (m)	m#19.2	#334.0	m6.1	#472.4	0.0	11.4	0.0
Internal Link Dist (m)		148.0		363.1	118.1	152.8	
Turn Bay Length (m)	145.0		145.0				10.0
Base Capacity (vph)	84	2119	60	1936	517	446	445
Starvation Cap Reductn	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.45	0.64	0.13	0.89	0.09	0.04	0.01

Intersection Summary

Cycle Length: 160
Actuated Cycle Length: 160
Offset: 150 (94%), Referenced to phase 2:EBT and 6:WBT, Start of Green
Natural Cycle: 150
Control Type: Actuated-Coordinated
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: 6: Coram Avenue/Treadwells Drive & Dundas Street E





Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	36	1250	43	8	1628	31	31	0	12	16	0	5
Future Volume (vph)	36	1250	43	8	1628	31	31	0	12	16	0	5
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.0	3.5	3.0	3.0	3.5	3.0	3.0	3.5	3.0	3.0	3.5	3.0
Total Lost time (s)	5.0	7.5		5.0	7.5			5.0			7.0	7.0
Lane Util. Factor	1.00	0.95		1.00	0.95			1.00			1.00	1.00
Frpb, ped/bikes	1.00	1.00		1.00	1.00			0.99			1.00	0.98
Flpb, ped/bikes	1.00	1.00		1.00	1.00			1.00			1.00	1.00
Frt	1.00	0.99		1.00	1.00			0.96			1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00			0.97			0.95	1.00
Satd. Flow (prot)	1685	3441		1685	3455			1734			1785	1484
Flt Permitted	0.95	1.00		0.95	1.00			0.97			0.95	1.00
Satd. Flow (perm)	1685	3441		1685	3455			1734			1785	1484
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	38	1302	45	8	1696	32	32	0	12	17	0	5
RTOR Reduction (vph)	0	1	0	0	0	0	0	39	0	0	0	4
Lane Group Flow (vph)	38	1346	0	8	1728	0	0	6	0	0	17	1
Confl. Peds. (#/hr)	11		19	19		11	3		6	6		3
Heavy Vehicles (%)	0%	3%	2%	0%	3%	0%	0%	0%	0%	0%	0%	0%
Bus Blockages (#/hr)	0	0	5	0	0	4	0	0	0	0	0	0
Turn Type	Prot	NA		Prot	NA		Split	NA		Split	NA	Perm
Protected Phases	5	2		1	6		4	4		8	8	
Permitted Phases												8
Actuated Green, G (s)	6.8	94.5		1.0	88.7			20.0			20.0	20.0
Effective Green, g (s)	6.8	94.5		1.0	88.7			20.0			20.0	20.0
Actuated g/C Ratio	0.04	0.59		0.01	0.55			0.12			0.12	0.12
Clearance Time (s)	5.0	7.5		5.0	7.5			5.0			7.0	7.0
Vehicle Extension (s)	3.0	3.0		3.0	3.0			3.0			3.0	3.0
Lane Grp Cap (vph)	71	2032		10	1915			216			223	185
v/s Ratio Prot	c0.02	c0.39		0.00	c0.50			c0.00			c0.01	
v/s Ratio Perm												0.00
v/c Ratio	0.54	0.66		0.80	0.90			0.03			0.08	0.00
Uniform Delay, d1	75.1	22.0		79.4	31.8			61.5			61.8	61.3
Progression Factor	0.87	1.43		1.18	0.73			1.00			1.00	1.00
Incremental Delay, d2	5.6	1.3		157.4	6.7			0.0			0.1	0.0
Delay (s)	71.0	32.7		250.8	29.8			61.5			62.0	61.3
Level of Service	E	C		F	C			E			E	E
Approach Delay (s)		33.8			30.9			61.5			61.8	
Approach LOS		C			C			E			E	

Intersection Summary			
HCM 2000 Control Delay	32.8	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.64		
Actuated Cycle Length (s)	160.0	Sum of lost time (s)	24.5
Intersection Capacity Utilization	93.0%	ICU Level of Service	F
Analysis Period (min)	15		

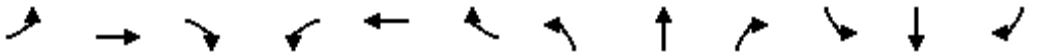
c Critical Lane Group

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations								
Traffic Volume (vph)	59	1146	46	1303	66	7	107	11
Future Volume (vph)	59	1146	46	1303	66	7	107	11
Lane Group Flow (vph)	61	1215	47	1384	68	95	110	168
Turn Type	Prot	NA	Prot	NA	Perm	NA	Perm	NA
Protected Phases	5	2	1	6		4		8
Permitted Phases					4		8	
Detector Phase	5	2	1	6	4	4	8	8
Switch Phase								
Minimum Initial (s)	5.0	8.0	5.0	8.0	8.0	8.0	8.0	8.0
Minimum Split (s)	10.0	38.5	10.0	38.5	48.0	48.0	48.0	48.0
Total Split (s)	17.0	96.0	16.0	95.0	48.0	48.0	48.0	48.0
Total Split (%)	10.6%	60.0%	10.0%	59.4%	30.0%	30.0%	30.0%	30.0%
Yellow Time (s)	3.0	4.0	3.0	4.0	3.5	3.5	3.5	3.5
All-Red Time (s)	2.0	2.5	2.0	2.5	3.5	3.5	3.5	3.5
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.0	6.5	5.0	6.5	7.0	7.0	7.0	7.0
Lead/Lag	Lead	Lag	Lead	Lag				
Lead-Lag Optimize?								
Recall Mode	None	C-Max	None	C-Max	None	None	None	None
v/c Ratio	0.54	0.50	0.48	0.58	0.73	0.34	0.77	0.50
Control Delay	102.4	6.3	87.6	15.5	105.3	15.8	98.5	15.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	102.4	6.3	87.6	15.5	105.3	15.8	98.5	15.7
Queue Length 50th (m)	21.9	3.6	15.5	121.4	22.2	2.1	36.2	3.9
Queue Length 95th (m)	m33.7	42.7	29.6	183.3	39.4	19.1	56.7	26.1
Internal Link Dist (m)		363.1		862.1		62.3		138.1
Turn Bay Length (m)	30.0		42.0		30.0		35.0	
Base Capacity (vph)	129	2424	113	2389	184	465	282	508
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.47	0.50	0.42	0.58	0.37	0.20	0.39	0.33

Intersection Summary

Cycle Length: 160
Actuated Cycle Length: 160
Offset: 136 (85%), Referenced to phase 2:EBT and 6:WBT, Start of Green
Natural Cycle: 100
Control Type: Actuated-Coordinated
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 7: Wharton Way & Dundas Street E



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	59	1146	33	46	1303	40	66	7	85	107	11	152
Future Volume (vph)	59	1146	33	46	1303	40	66	7	85	107	11	152
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.0	3.5	3.0	3.0	3.5	3.0	3.0	3.5	3.0	3.0	3.5	3.0
Total Lost time (s)	5.0	6.5		5.0	6.5		7.0	7.0		7.0	7.0	
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	1.00		1.00	1.00	
Frpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	0.98		1.00	0.97	
Flpb, ped/bikes	1.00	1.00		1.00	1.00		0.98	1.00		0.99	1.00	
Frt	1.00	1.00		1.00	1.00		1.00	0.86		1.00	0.86	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1574	3442		1518	3423		1624	1561		1565	1534	
Flt Permitted	0.95	1.00		0.95	1.00		0.42	1.00		0.67	1.00	
Satd. Flow (perm)	1574	3442		1518	3423		720	1561		1104	1534	
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	61	1181	34	47	1343	41	68	7	88	110	11	157
RTOR Reduction (vph)	0	1	0	0	1	0	0	77	0	0	135	0
Lane Group Flow (vph)	61	1214	0	47	1383	0	68	18	0	110	33	0
Confl. Peds. (#/hr)	15		18	18		15	20		6	6		20
Heavy Vehicles (%)	7%	3%	6%	11%	3%	25%	2%	0%	2%	7%	0%	2%
Bus Blockages (#/hr)	0	0	9	0	0	8	0	0	0	0	0	0
Turn Type	Prot	NA		Prot	NA		Perm	NA		Perm	NA	
Protected Phases	5	2		1	6			4			8	
Permitted Phases							4			8		
Actuated Green, G (s)	10.1	111.6		9.1	110.6		20.8	20.8		20.8	20.8	
Effective Green, g (s)	10.1	111.6		9.1	110.6		20.8	20.8		20.8	20.8	
Actuated g/C Ratio	0.06	0.70		0.06	0.69		0.13	0.13		0.13	0.13	
Clearance Time (s)	5.0	6.5		5.0	6.5		7.0	7.0		7.0	7.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	99	2400		86	2366		93	202		143	199	
v/s Ratio Prot	c0.04	0.35		0.03	c0.40			0.01			0.02	
v/s Ratio Perm							0.09			c0.10		
v/c Ratio	0.62	0.51		0.55	0.58		0.73	0.09		0.77	0.17	
Uniform Delay, d1	73.1	11.3		73.4	12.8		66.9	61.3		67.3	61.9	
Progression Factor	1.25	0.45		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	8.6	0.6		6.9	1.1		25.3	0.2		21.7	0.4	
Delay (s)	99.9	5.7		80.4	13.9		92.2	61.5		88.9	62.3	
Level of Service	F	A		F	B		F	E		F	E	
Approach Delay (s)		10.2			16.0			74.3			72.8	
Approach LOS		B			B			E			E	

Intersection Summary			
HCM 2000 Control Delay	21.7	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.61		
Actuated Cycle Length (s)	160.0	Sum of lost time (s)	18.5
Intersection Capacity Utilization	92.1%	ICU Level of Service	F
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	1395	37	0	1700	0	5
Future Volume (Veh/h)	1395	37	0	1700	0	5
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97
Hourly flow rate (vph)	1438	38	0	1753	0	5
Pedestrians					11	
Lane Width (m)					3.0	
Walking Speed (m/s)					1.2	
Percent Blockage					1	
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (m)	155			98		
pX, platoon unblocked			0.62		0.76	0.62
vC, conflicting volume			1487		2344	749
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			578		562	0
tC, single (s)			4.1		6.8	6.9
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			100		100	99
cM capacity (veh/h)			624		347	676

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1
Volume Total	959	517	876	876	5
Volume Left	0	0	0	0	0
Volume Right	0	38	0	0	5
cSH	1700	1700	1700	1700	676
Volume to Capacity	0.56	0.30	0.52	0.52	0.01
Queue Length 95th (m)	0.0	0.0	0.0	0.0	0.2
Control Delay (s)	0.0	0.0	0.0	0.0	10.4
Lane LOS					B
Approach Delay (s)	0.0		0.0		10.4
Approach LOS					B

Intersection Summary			
Average Delay	0.0		
Intersection Capacity Utilization	50.3%	ICU Level of Service	A
Analysis Period (min)	15		

APPENDIX J

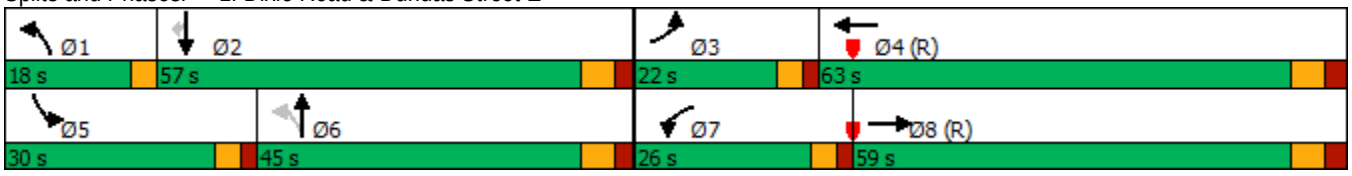
2033 Future Total Scenario 1 Intersection Capacity Analysis

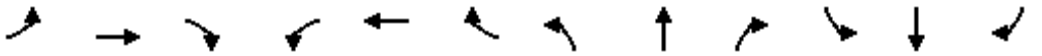
Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT	SBR
Lane Configurations									
Traffic Volume (vph)	156	781	183	616	142	891	431	860	177
Future Volume (vph)	156	781	183	616	142	891	431	860	177
Lane Group Flow (vph)	166	1015	195	1009	151	1116	459	915	188
Turn Type	Prot	NA	Prot	NA	pm+pt	NA	Prot	NA	Perm
Protected Phases	3	8	7	4	1	6	5	2	
Permitted Phases					6				2
Detector Phase	3	8	7	4	1	6	5	2	2
Switch Phase									
Minimum Initial (s)	7.0	10.0	7.0	10.0	7.0	10.0	7.0	10.0	10.0
Minimum Split (s)	12.0	47.8	12.0	47.8	10.0	42.5	13.0	42.5	42.5
Total Split (s)	22.0	59.0	26.0	63.0	18.0	45.0	30.0	57.0	57.0
Total Split (%)	13.8%	36.9%	16.3%	39.4%	11.3%	28.1%	18.8%	35.6%	35.6%
Yellow Time (s)	3.0	4.0	3.0	4.0	3.0	4.0	3.0	4.0	4.0
All-Red Time (s)	2.0	2.8	2.0	2.8	0.0	2.5	2.0	2.5	2.5
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.0	6.8	5.0	6.8	3.0	6.5	5.0	6.5	6.5
Lead/Lag	Lead	Lag	Lead	Lag	Lead	Lag	Lead	Lag	Lag
Lead-Lag Optimize?									
Recall Mode	None	C-Max	None	C-Max	None	Max	None	Max	Max
v/c Ratio	0.97	0.93	0.97	0.89	0.58	0.98	0.97	0.57	0.37
Control Delay	129.4	65.9	140.0	40.8	37.5	80.6	101.2	46.6	15.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	129.4	65.9	140.0	40.8	37.5	80.6	101.2	46.6	15.0
Queue Length 50th (m)	56.3	171.0	66.5	119.5	30.3	135.1	79.9	94.1	12.9
Queue Length 95th (m)	#106.8	#213.8	#123.9	91.8	46.7	#168.0	#116.7	110.7	35.9
Internal Link Dist (m)		1362.6		279.9		1407.4		1183.5	
Turn Bay Length (m)	140.0		160.0		64.0		107.0		50.0
Base Capacity (vph)	172	1092	201	1136	277	1140	472	1595	514
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.97	0.93	0.97	0.89	0.55	0.98	0.97	0.57	0.37

Intersection Summary

Cycle Length: 160
Actuated Cycle Length: 160
Offset: 87 (54%), Referenced to phase 4:WBT and 8:EBT, Start of Green
Natural Cycle: 140
Control Type: Actuated-Coordinated
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 1: Dixie Road & Dundas Street E





Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	156	781	173	183	616	333	142	891	158	431	860	177
Future Volume (vph)	156	781	173	183	616	333	142	891	158	431	860	177
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.0	3.5	3.0	3.0	3.5	3.0	3.0	3.5	3.0	3.0	3.5	3.0
Total Lost time (s)	5.0	6.8		5.0	6.8		3.0	6.5		5.0	6.5	6.5
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	0.91		0.97	0.91	1.00
Frpb, ped/bikes	1.00	0.99		1.00	0.99		1.00	1.00		1.00	1.00	0.94
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	1.00
Frt	1.00	0.97		1.00	0.95		1.00	0.98		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)	1620	3311		1532	3108		1663	4677		3026	4885	1299
Flt Permitted	0.95	1.00		0.95	1.00		0.27	1.00		0.95	1.00	1.00
Satd. Flow (perm)	1620	3311		1532	3108		465	4677		3026	4885	1299
Peak-hour factor, PHF	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Adj. Flow (vph)	166	831	184	195	655	354	151	948	168	459	915	188
RTOR Reduction (vph)	0	12	0	0	45	0	0	16	0	0	0	90
Lane Group Flow (vph)	166	1003	0	195	964	0	151	1100	0	459	915	98
Confl. Peds. (#/hr)	8		30	30		8	39		12	12		39
Confl. Bikes (#/hr)							39					
Heavy Vehicles (%)	4%	4%	4%	10%	8%	8%	1%	6%	11%	8%	5%	7%
Bus Blockages (#/hr)	0	0	9	0	0	12	0	0	5	0	0	4
Turn Type	Prot	NA		Prot	NA		pm+pt	NA		Prot	NA	Perm
Protected Phases	3	8		7	4		1	6		5	2	
Permitted Phases							6					2
Actuated Green, G (s)	17.0	52.2		21.0	56.2		51.7	38.5		25.0	52.3	52.3
Effective Green, g (s)	17.0	52.2		21.0	56.2		51.7	38.5		25.0	52.3	52.3
Actuated g/C Ratio	0.11	0.33		0.13	0.35		0.32	0.24		0.16	0.33	0.33
Clearance Time (s)	5.0	6.8		5.0	6.8		3.0	6.5		5.0	6.5	6.5
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)	172	1080		201	1091		249	1125		472	1596	424
v/s Ratio Prot	0.10	c0.30		c0.13	c0.31		0.05	c0.24		c0.15	0.19	
v/s Ratio Perm							0.15					0.08
v/c Ratio	0.97	0.93		0.97	0.88		0.61	0.98		0.97	0.57	0.23
Uniform Delay, d1	71.2	52.1		69.2	48.8		40.4	60.3		67.2	44.6	39.2
Progression Factor	1.00	1.00		1.32	0.68		1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	57.8	14.8		51.7	9.6		4.1	22.0		34.1	1.5	1.3
Delay (s)	129.1	66.9		142.9	42.7		44.5	82.3		101.3	46.1	40.5
Level of Service	F	E		F	D		D	F		F	D	D
Approach Delay (s)		75.7			58.9			77.8			61.6	
Approach LOS		E			E			E			E	

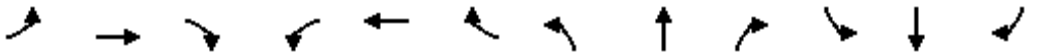
Intersection Summary			
HCM 2000 Control Delay	68.1	HCM 2000 Level of Service	E
HCM 2000 Volume to Capacity ratio	0.96		
Actuated Cycle Length (s)	160.0	Sum of lost time (s)	23.3
Intersection Capacity Utilization	106.0%	ICU Level of Service	G
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations								
Traffic Volume (vph)	6	1374	10	1150	21	1	21	4
Future Volume (vph)	6	1374	10	1150	21	1	21	4
Lane Group Flow (vph)	6	1542	11	1233	22	19	22	20
Turn Type	Prot	NA	Prot	NA	Perm	NA	Perm	NA
Protected Phases	5	2	1	6		4		8
Permitted Phases					4		8	
Detector Phase	5	2	1	6	4	4	8	8
Switch Phase								
Minimum Initial (s)	5.0	10.0	5.0	10.0	20.0	20.0	20.0	20.0
Minimum Split (s)	10.0	34.5	10.0	34.5	47.0	47.0	47.0	47.0
Total Split (s)	10.0	103.0	10.0	103.0	47.0	47.0	47.0	47.0
Total Split (%)	6.3%	64.4%	6.3%	64.4%	29.4%	29.4%	29.4%	29.4%
Yellow Time (s)	3.0	4.0	3.0	4.0	3.5	3.5	3.5	3.5
All-Red Time (s)	2.0	2.5	2.0	2.5	3.5	3.5	3.5	3.5
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.0	6.5	5.0	6.5	7.0	7.0	7.0	7.0
Lead/Lag	Lead	Lag	Lead	Lag				
Lead-Lag Optimize?								
Recall Mode	None	C-Max	None	C-Max	None	None	None	None
v/c Ratio	0.12	0.59	0.18	0.47	0.11	0.09	0.12	0.09
Control Delay	77.2	8.0	109.1	2.7	56.8	21.2	57.0	25.1
Queue Delay	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	77.2	8.1	109.1	2.7	56.8	21.2	57.0	25.1
Queue Length 50th (m)	2.0	63.2	3.9	15.3	6.7	0.3	6.7	1.2
Queue Length 95th (m)	m2.2	m80.9	m8.2	21.7	14.0	7.8	14.0	8.8
Internal Link Dist (m)		279.9		149.0		96.0		162.3
Turn Bay Length (m)	145.0		100.0		15.0		25.0	
Base Capacity (vph)	52	2601	62	2619	326	336	313	362
Starvation Cap Reductn	0	239	0	196	0	0	0	0
Spillback Cap Reductn	0	85	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.12	0.65	0.18	0.51	0.07	0.06	0.07	0.06

Intersection Summary

Cycle Length: 160
Actuated Cycle Length: 160
Offset: 82 (51%), Referenced to phase 2:EBT and 6:WBT, Start of Green
Natural Cycle: 115
Control Type: Actuated-Coordinated
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 2: Nelico Court & Dundas Street E



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	6	1374	91	10	1150	21	21	1	17	21	4	15
Future Volume (vph)	6	1374	91	10	1150	21	21	1	17	21	4	15
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.0	3.5	3.0	3.0	3.5	3.0	3.0	3.5	3.0	3.0	3.5	3.0
Total Lost time (s)	5.0	6.5		5.0	6.5		7.0	7.0		7.0	7.0	
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	1.00		1.00	1.00	
Frpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	0.98		1.00	0.98	
Flpb, ped/bikes	1.00	1.00		1.00	1.00		0.99	1.00		1.00	1.00	
Frt	1.00	0.99		1.00	1.00		1.00	0.86		1.00	0.88	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1440	3332		1685	3295		1667	1293		1597	1400	
Flt Permitted	0.95	1.00		0.95	1.00		0.74	1.00		0.75	1.00	
Satd. Flow (perm)	1440	3332		1685	3295		1306	1293		1252	1400	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	6	1446	96	11	1211	22	22	1	18	22	4	16
RTOR Reduction (vph)	0	2	0	0	0	0	0	16	0	0	14	0
Lane Group Flow (vph)	6	1540	0	11	1233	0	22	3	0	22	6	0
Confl. Peds. (#/hr)	11		13	13		11	9		4	4		9
Confl. Bikes (#/hr)							9					
Heavy Vehicles (%)	17%	6%	2%	0%	8%	5%	0%	0%	24%	5%	0%	20%
Bus Blockages (#/hr)	0	0	5	0	0	6	0	0	0	0	0	0
Turn Type	Prot	NA		Prot	NA		Perm	NA		Perm	NA	
Protected Phases	5	2		1	6			4			8	
Permitted Phases							4			8		
Actuated Green, G (s)	1.0	119.1		2.4	120.5		20.0	20.0		20.0	20.0	
Effective Green, g (s)	1.0	119.1		2.4	120.5		20.0	20.0		20.0	20.0	
Actuated g/C Ratio	0.01	0.74		0.01	0.75		0.12	0.12		0.12	0.12	
Clearance Time (s)	5.0	6.5		5.0	6.5		7.0	7.0		7.0	7.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	9	2480		25	2481		163	161		156	175	
v/s Ratio Prot	0.00	c0.46		c0.01	0.37			0.00			0.00	
v/s Ratio Perm							0.02			c0.02		
v/c Ratio	0.67	0.62		0.44	0.50		0.13	0.02		0.14	0.03	
Uniform Delay, d1	79.3	9.7		78.1	7.8		62.3	61.4		62.3	61.5	
Progression Factor	1.00	0.67		1.38	0.25		1.00	1.00		1.00	1.00	
Incremental Delay, d2	58.6	0.5		10.7	0.6		0.4	0.1		0.4	0.1	
Delay (s)	138.0	7.0		118.4	2.6		62.7	61.5		62.8	61.6	
Level of Service	F	A		F	A		E	E		E	E	
Approach Delay (s)		7.5			3.6			62.1			62.2	
Approach LOS		A			A			E			E	

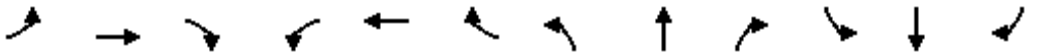
Intersection Summary			
HCM 2000 Control Delay	7.4	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.55		
Actuated Cycle Length (s)	160.0	Sum of lost time (s)	18.5
Intersection Capacity Utilization	73.2%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT	SBR
Lane Configurations									
Traffic Volume (vph)	63	1146	177	1032	74	6	21	1	27
Future Volume (vph)	63	1146	177	1032	74	6	21	1	27
Lane Group Flow (vph)	66	1370	184	1111	77	153	0	23	28
Turn Type	Prot	NA	Prot	NA	Perm	NA	Perm	NA	Perm
Protected Phases	5	2	1	6		4		8	
Permitted Phases					4		8		8
Detector Phase	5	2	1	6	4	4	8	8	8
Switch Phase									
Minimum Initial (s)	5.0	10.0	5.0	10.0	20.0	20.0	20.0	20.0	20.0
Minimum Split (s)	10.0	48.0	10.0	48.0	51.5	51.5	51.5	51.5	51.5
Total Split (s)	19.0	80.4	28.0	89.4	51.6	51.6	51.6	51.6	51.6
Total Split (%)	11.9%	50.3%	17.5%	55.9%	32.3%	32.3%	32.3%	32.3%	32.3%
Yellow Time (s)	3.0	4.0	3.0	4.0	3.0	3.0	3.0	3.0	3.0
All-Red Time (s)	2.0	3.0	2.0	3.0	4.5	4.5	4.5	4.5	4.5
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0
Total Lost Time (s)	5.0	7.0	5.0	7.0	7.5	7.5		7.5	7.5
Lead/Lag	Lead	Lag	Lead	Lag					
Lead-Lag Optimize?									
Recall Mode	None	C-Max	None	C-Max	Min	Min	Min	Min	Min
v/c Ratio	0.59	0.71	0.81	0.52	0.39	0.43		0.18	0.11
Control Delay	88.7	21.2	89.3	16.3	64.9	11.9		58.5	0.8
Queue Delay	0.0	0.3	0.0	0.1	0.0	0.0		0.0	0.0
Total Delay	88.7	21.4	89.3	16.4	64.9	11.9		58.5	0.8
Queue Length 50th (m)	23.2	127.7	60.0	64.0	24.4	1.8		7.0	0.0
Queue Length 95th (m)	m39.4	195.2	m#91.9	152.2	35.7	20.1		14.1	0.0
Internal Link Dist (m)		149.0		130.6		105.8		70.0	
Turn Bay Length (m)	110.0		140.0						10.0
Base Capacity (vph)	136	1942	246	2129	347	525		226	401
Starvation Cap Reductn	0	130	0	138	0	0		0	0
Spillback Cap Reductn	0	22	0	0	0	1		0	0
Storage Cap Reductn	0	0	0	0	0	0		0	0
Reduced v/c Ratio	0.49	0.76	0.75	0.56	0.22	0.29		0.10	0.07

Intersection Summary

Cycle Length: 160
Actuated Cycle Length: 160
Offset: 86 (54%), Referenced to phase 2:EBT and 6:WBT, Start of Green
Natural Cycle: 130
Control Type: Actuated-Coordinated
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 3: Jarrow Avenue & Dundas Street E



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	63	1146	169	177	1032	35	74	6	141	21	1	27
Future Volume (vph)	63	1146	169	177	1032	35	74	6	141	21	1	27
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.0	3.5	3.0	3.0	3.5	3.0	3.0	3.5	3.0	3.0	3.5	3.0
Total Lost time (s)	5.0	7.0		5.0	7.0		7.5	7.5			7.5	7.5
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	1.00			1.00	1.00
Frpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	0.98			1.00	0.98
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00			0.99	1.00
Frt	1.00	0.98		1.00	1.00		1.00	0.86			1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00			0.95	1.00
Satd. Flow (prot)	1560	3305		1652	3269		1613	1520			1255	1206
Flt Permitted	0.95	1.00		0.95	1.00		0.74	1.00			0.63	1.00
Satd. Flow (perm)	1560	3305		1652	3269		1260	1520			824	1206
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	66	1194	176	184	1075	36	77	6	147	22	1	28
RTOR Reduction (vph)	0	5	0	0	1	0	0	124	0	0	0	24
Lane Group Flow (vph)	66	1365	0	184	1110	0	77	29	0	0	23	4
Confl. Peds. (#/hr)	11		6	6		11	4		7	7		4
Confl. Bikes (#/hr)			1			1						
Heavy Vehicles (%)	8%	6%	2%	2%	8%	24%	4%	0%	4%	44%	0%	23%
Bus Blockages (#/hr)	0	0	5	0	0	6	0	0	0	0	0	0
Turn Type	Prot	NA		Prot	NA		Perm	NA		Perm	NA	Perm
Protected Phases	5	2		1	6			4			8	
Permitted Phases							4			8		8
Actuated Green, G (s)	11.5	93.7		22.0	104.2		24.8	24.8			24.8	24.8
Effective Green, g (s)	11.5	93.7		22.0	104.2		24.8	24.8			24.8	24.8
Actuated g/C Ratio	0.07	0.59		0.14	0.65		0.16	0.16			0.16	0.16
Clearance Time (s)	5.0	7.0		5.0	7.0		7.5	7.5			7.5	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)	112	1935		227	2128		195	235			127	186
v/s Ratio Prot	0.04	c0.41		c0.11	0.34			0.02				
v/s Ratio Perm							c0.06				0.03	0.00
v/c Ratio	0.59	0.71		0.81	0.52		0.39	0.12			0.18	0.02
Uniform Delay, d1	72.0	23.4		67.0	14.7		60.8	58.2			58.8	57.3
Progression Factor	1.00	0.76		1.00	0.94		1.00	1.00			1.00	1.00
Incremental Delay, d2	6.4	1.8		16.6	0.8		1.3	0.2			0.7	0.1
Delay (s)	78.1	19.6		83.7	14.6		62.2	58.5			59.5	57.4
Level of Service	E	B		F	B		E	E			E	E
Approach Delay (s)		22.3			24.4			59.7			58.3	
Approach LOS		C			C			E			E	

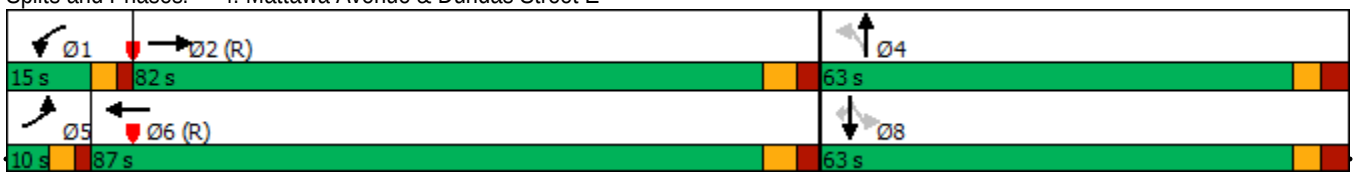
Intersection Summary			
HCM 2000 Control Delay	26.7	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.67		
Actuated Cycle Length (s)	160.0	Sum of lost time (s)	19.5
Intersection Capacity Utilization	92.5%	ICU Level of Service	F
Analysis Period (min)	15		
c Critical Lane Group			

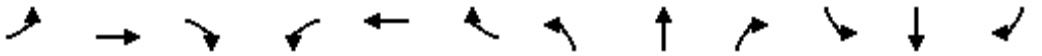
Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations								
Traffic Volume (vph)	2	1111	68	897	363	0	1	0
Future Volume (vph)	2	1111	68	897	363	0	1	0
Lane Group Flow (vph)	2	1366	69	918	370	169	0	1
Turn Type	Prot	NA	Prot	NA	Perm	NA	Perm	NA
Protected Phases	5	2	1	6		4		8
Permitted Phases					4		8	
Detector Phase	5	2	1	6	4	4	8	8
Switch Phase								
Minimum Initial (s)	5.0	10.0	5.0	10.0	10.0	10.0	10.0	10.0
Minimum Split (s)	10.0	40.0	10.0	40.0	45.0	45.0	45.0	45.0
Total Split (s)	10.0	82.0	15.0	87.0	63.0	63.0	63.0	63.0
Total Split (%)	6.3%	51.3%	9.4%	54.4%	39.4%	39.4%	39.4%	39.4%
Yellow Time (s)	3.0	4.0	3.0	4.0	3.5	3.5	3.5	3.5
All-Red Time (s)	2.0	3.0	2.0	3.0	3.5	3.5	3.5	3.5
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0		0.0
Total Lost Time (s)	5.0	7.0	5.0	7.0	7.0	7.0		7.0
Lead/Lag	Lead	Lag	Lead	Lag				
Lead-Lag Optimize?								
Recall Mode	None	C-Max	None	C-Max	None	None	None	None
v/c Ratio	0.04	0.82	0.66	0.47	0.92	0.41		0.00
Control Delay	106.0	20.8	108.6	5.7	80.6	18.2		34.0
Queue Delay	0.0	0.1	0.0	0.0	0.0	0.0		0.0
Total Delay	106.0	20.9	108.6	5.7	80.6	18.2		34.0
Queue Length 50th (m)	0.6	161.7	19.3	9.5	117.5	15.2		0.2
Queue Length 95th (m)	m1.0	58.0	#48.5	24.5	#166.6	36.4		1.8
Internal Link Dist (m)		73.5		59.8		251.4		120.0
Turn Bay Length (m)	140.0		145.0					
Base Capacity (vph)	55	1664	110	1968	455	457		388
Starvation Cap Reductn	0	23	0	0	0	0		0
Spillback Cap Reductn	0	0	0	0	0	0		0
Storage Cap Reductn	0	0	0	0	0	0		0
Reduced v/c Ratio	0.04	0.83	0.63	0.47	0.81	0.37		0.00

Intersection Summary

Cycle Length: 160
Actuated Cycle Length: 160
Offset: 90 (56%), Referenced to phase 2:EBT and 6:WBT, Start of Green
Natural Cycle: 95
Control Type: Actuated-Coordinated
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 4: Mattawa Avenue & Dundas Street E

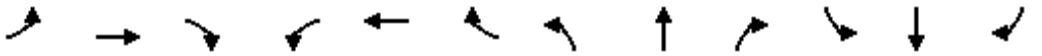




Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	2	1111	227	68	897	3	363	0	166	1	0	0
Future Volume (vph)	2	1111	227	68	897	3	363	0	166	1	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.0	3.5	3.0	3.0	3.5	3.0	3.0	3.5	3.0	3.0	3.5	3.0
Total Lost time (s)	5.0	7.0		5.0	7.0		7.0	7.0			7.0	
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	1.00			1.00	
Frpb, ped/bikes	1.00	0.99		1.00	1.00		1.00	0.99			1.00	
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00			1.00	
Frt	1.00	0.97		1.00	1.00		1.00	0.85			1.00	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00			0.95	
Satd. Flow (prot)	1685	3253		1685	3335		1634	1110			1783	
Flt Permitted	0.95	1.00		0.95	1.00		0.76	1.00			0.59	
Satd. Flow (perm)	1685	3253		1685	3335		1302	1110			1111	
Peak-hour factor, PHF	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Adj. Flow (vph)	2	1134	232	69	915	3	370	0	169	1	0	0
RTOR Reduction (vph)	0	10	0	0	0	0	0	73	0	0	0	0
Lane Group Flow (vph)	2	1356	0	69	918	0	370	96	0	0	1	0
Confl. Peds. (#/hr)	6		6	6		6	1		1	1		1
Heavy Vehicles (%)	0%	7%	3%	0%	7%	0%	3%	0%	42%	0%	0%	0%
Bus Blockages (#/hr)	0	0	5	0	0	6	0	0	0	0	0	0
Turn Type	Prot	NA		Prot	NA		Perm	NA		Perm	NA	Perm
Protected Phases	5	2		1	6			4			8	
Permitted Phases							4			8		8
Actuated Green, G (s)	1.0	81.4		10.0	90.4		49.6	49.6			49.6	
Effective Green, g (s)	1.0	81.4		10.0	90.4		49.6	49.6			49.6	
Actuated g/C Ratio	0.01	0.51		0.06	0.57		0.31	0.31			0.31	
Clearance Time (s)	5.0	7.0		5.0	7.0		7.0	7.0			7.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0			3.0	
Lane Grp Cap (vph)	10	1654		105	1884		403	344			344	
v/s Ratio Prot	0.00	c0.42		c0.04	0.28			0.09				
v/s Ratio Perm							c0.28				0.00	
v/c Ratio	0.20	0.82		0.66	0.49		0.92	0.28			0.00	
Uniform Delay, d1	79.1	33.1		73.3	20.9		53.2	41.7			38.1	
Progression Factor	1.40	0.49		1.15	0.25		1.00	1.00			1.00	
Incremental Delay, d2	7.3	3.6		12.4	0.8		25.4	0.4			0.0	
Delay (s)	117.7	19.9		96.7	6.0		78.6	42.1			38.1	
Level of Service	F	B		F	A		E	D			D	
Approach Delay (s)		20.0			12.3			67.2			38.1	
Approach LOS		C			B			E			D	

Intersection Summary			
HCM 2000 Control Delay	26.2	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.84		
Actuated Cycle Length (s)	160.0	Sum of lost time (s)	19.0
Intersection Capacity Utilization	85.0%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	1266	0	0	939	4	0	0	0	0	0	18
Future Volume (Veh/h)	0	1266	0	0	939	4	0	0	0	0	0	18
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Hourly flow rate (vph)	0	1319	0	0	978	4	0	0	0	0	0	19
Pedestrians								8			15	
Lane Width (m)								3.0			3.0	
Walking Speed (m/s)								1.2			1.2	
Percent Blockage								1			1	
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (m)		84			172							
pX, platoon unblocked	0.82			0.65			0.74	0.74	0.65	0.74	0.74	0.82
vC, conflicting volume	997			1327			1835	2324	668	1654	2322	506
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	558			438			343	1002	0	100	999	0
tC, single (s)	4.2			4.1			7.5	6.5	6.9	7.5	6.5	6.9
tC, 2 stage (s)												
tF (s)	2.3			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			100			100	100	100	100	100	98
cM capacity (veh/h)	791			735			422	179	708	636	179	886

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	SB 1
Volume Total	879	440	652	330	0	19
Volume Left	0	0	0	0	0	0
Volume Right	0	0	0	4	0	19
cSH	1700	1700	1700	1700	1700	886
Volume to Capacity	0.52	0.26	0.38	0.19	0.00	0.02
Queue Length 95th (m)	0.0	0.0	0.0	0.0	0.0	0.5
Control Delay (s)	0.0	0.0	0.0	0.0	0.0	9.2
Lane LOS					A	A
Approach Delay (s)	0.0		0.0		0.0	9.2
Approach LOS					A	A

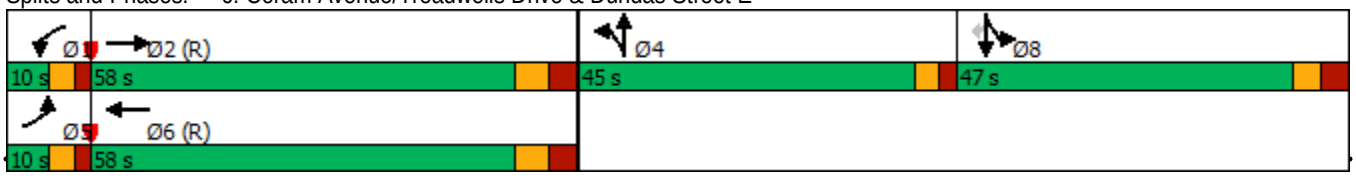
Intersection Summary				
Average Delay	0.1			
Intersection Capacity Utilization	38.3%	ICU Level of Service		A
Analysis Period (min)	15			

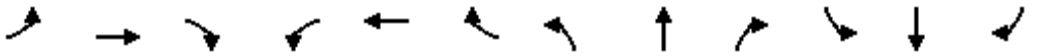
Lane Group	EBL	EBT	WBL	WBT	NBT	SBT	SBR
Lane Configurations							
Traffic Volume (vph)	23	1205	10	941	1	1	24
Future Volume (vph)	23	1205	10	941	1	1	24
Lane Group Flow (vph)	24	1283	11	1004	42	24	25
Turn Type	Prot	NA	Prot	NA	NA	NA	Perm
Protected Phases	5	2	1	6	4	8	
Permitted Phases							8
Detector Phase	5	2	1	6	4	8	8
Switch Phase							
Minimum Initial (s)	5.0	10.0	5.0	10.0	15.0	15.0	15.0
Minimum Split (s)	10.0	36.5	10.0	36.5	45.0	47.0	47.0
Total Split (s)	10.0	58.0	10.0	58.0	45.0	47.0	47.0
Total Split (%)	6.3%	36.3%	6.3%	36.3%	28.1%	29.4%	29.4%
Yellow Time (s)	3.0	4.0	3.0	4.0	3.0	3.5	3.5
All-Red Time (s)	2.0	3.5	2.0	3.5	2.0	3.5	3.5
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.0	7.5	5.0	7.5	5.0	7.0	7.0
Lead/Lag	Lead	Lag	Lead	Lag			
Lead-Lag Optimize?	Yes	Yes	Yes	Yes			
Recall Mode	None	C-Max	None	C-Max	Min	Min	Min
v/c Ratio	0.34	0.64	0.19	0.52	0.19	0.11	0.09
Control Delay	91.5	24.3	89.9	20.4	33.0	59.0	0.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	91.5	24.3	89.9	20.4	33.0	59.0	0.7
Queue Length 50th (m)	8.3	74.4	3.5	73.4	5.9	7.5	0.0
Queue Length 95th (m)	m11.5	#317.5	m9.0	#211.7	16.1	14.6	0.0
Internal Link Dist (m)		148.0		363.1	118.1	152.8	
Turn Bay Length (m)	145.0		145.0				10.0
Base Capacity (vph)	70	1994	57	1940	413	448	445
Starvation Cap Reductn	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.34	0.64	0.19	0.52	0.10	0.05	0.06

Intersection Summary

Cycle Length: 160
Actuated Cycle Length: 160
Offset: 104 (65%), Referenced to phase 2:EBT and 6:WBT, Start of Green
Natural Cycle: 150
Control Type: Actuated-Coordinated
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: 6: Coram Avenue/Treadwells Drive & Dundas Street E





Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	23	1205	14	10	941	12	17	1	22	22	1	24
Future Volume (vph)	23	1205	14	10	941	12	17	1	22	22	1	24
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.0	3.5	3.0	3.0	3.5	3.0	3.0	3.5	3.0	3.0	3.5	3.0
Total Lost time (s)	5.0	7.5		5.0	7.5			5.0			7.0	7.0
Lane Util. Factor	1.00	0.95		1.00	0.95			1.00			1.00	1.00
Frpb, ped/bikes	1.00	1.00		1.00	1.00			1.00			1.00	0.98
Flpb, ped/bikes	1.00	1.00		1.00	1.00			1.00			1.00	1.00
Frt	1.00	1.00		1.00	1.00			0.93			1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00			0.98			0.95	1.00
Satd. Flow (prot)	1685	3324		1532	3331			1584			1793	1483
Flt Permitted	0.95	1.00		0.95	1.00			0.98			0.95	1.00
Satd. Flow (perm)	1685	3324		1532	3331			1584			1793	1483
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	24	1268	15	11	991	13	18	1	23	23	1	25
RTOR Reduction (vph)	0	0	0	0	0	0	0	20	0	0	0	22
Lane Group Flow (vph)	24	1283	0	11	1004	0	0	22	0	0	24	3
Confl. Peds. (#/hr)	6		3	3		6	2					2
Confl. Bikes (#/hr)												1
Heavy Vehicles (%)	0%	7%	21%	10%	7%	0%	12%	100%	0%	0%	0%	0%
Bus Blockages (#/hr)	0	0	5	0	0	6	0	0	0	0	0	0
Turn Type	Prot	NA		Prot	NA		Split	NA		Split	NA	Perm
Protected Phases	5	2		1	6		4	4		8	8	
Permitted Phases												8
Actuated Green, G (s)	4.3	93.0		2.5	91.2			20.0			20.0	20.0
Effective Green, g (s)	4.3	93.0		2.5	91.2			20.0			20.0	20.0
Actuated g/C Ratio	0.03	0.58		0.02	0.57			0.12			0.12	0.12
Clearance Time (s)	5.0	7.5		5.0	7.5			5.0			7.0	7.0
Vehicle Extension (s)	3.0	3.0		3.0	3.0			3.0			3.0	3.0
Lane Grp Cap (vph)	45	1932		23	1898			198			224	185
v/s Ratio Prot	c0.01	c0.39		0.01	0.30			c0.01			c0.01	
v/s Ratio Perm												0.00
v/c Ratio	0.53	0.66		0.48	0.53			0.11			0.11	0.02
Uniform Delay, d1	76.9	22.8		78.1	21.2			62.1			62.1	61.4
Progression Factor	1.12	0.96		1.10	0.79			1.00			1.00	1.00
Incremental Delay, d2	7.5	1.2		13.8	1.0			0.2			0.2	0.0
Delay (s)	93.3	23.0		100.1	17.7			62.4			62.3	61.4
Level of Service	F	C		F	B			E			E	E
Approach Delay (s)		24.3			18.6			62.4			61.8	
Approach LOS		C			B			E			E	

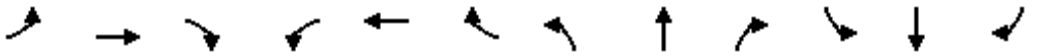
Intersection Summary			
HCM 2000 Control Delay	23.3	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.50		
Actuated Cycle Length (s)	160.0	Sum of lost time (s)	24.5
Intersection Capacity Utilization	69.0%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations								
Traffic Volume (vph)	97	1012	80	831	34	7	82	12
Future Volume (vph)	97	1012	80	831	34	7	82	12
Lane Group Flow (vph)	104	1134	86	986	37	68	88	67
Turn Type	Prot	NA	Prot	NA	Perm	NA	Perm	NA
Protected Phases	5	2	1	6		4		8
Permitted Phases					4		8	
Detector Phase	5	2	1	6	4	4	8	8
Switch Phase								
Minimum Initial (s)	5.0	8.0	5.0	8.0	8.0	8.0	8.0	8.0
Minimum Split (s)	10.0	38.5	10.0	38.5	48.0	48.0	48.0	48.0
Total Split (s)	27.0	87.0	22.0	82.0	51.0	51.0	51.0	51.0
Total Split (%)	16.9%	54.4%	13.8%	51.3%	31.9%	31.9%	31.9%	31.9%
Yellow Time (s)	3.0	4.0	3.0	4.0	3.5	3.5	3.5	3.5
All-Red Time (s)	2.0	2.5	2.0	2.5	3.5	3.5	3.5	3.5
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.0	6.5	5.0	6.5	7.0	7.0	7.0	7.0
Lead/Lag	Lead	Lag	Lead	Lag				
Lead-Lag Optimize?								
Recall Mode	None	C-Max	None	C-Max	None	None	None	None
v/c Ratio	0.68	0.50	0.64	0.45	0.31	0.32	0.70	0.31
Control Delay	101.4	4.5	90.2	14.4	69.1	20.7	95.2	23.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	101.4	4.5	90.2	14.4	69.1	20.7	95.2	23.3
Queue Length 50th (m)	32.4	63.0	28.3	76.3	11.6	2.4	28.9	4.0
Queue Length 95th (m)	m57.6	32.0	46.6	119.2	23.2	17.5	47.3	19.0
Internal Link Dist (m)		363.1		862.1		62.3		138.1
Turn Bay Length (m)	30.0		42.0		30.0		35.0	
Base Capacity (vph)	213	2256	164	2184	295	427	305	440
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.49	0.50	0.52	0.45	0.13	0.16	0.29	0.15

Intersection Summary

Cycle Length: 160
Actuated Cycle Length: 160
Offset: 112 (70%), Referenced to phase 2:EBT and 6:WBT, Start of Green
Natural Cycle: 100
Control Type: Actuated-Coordinated
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 7: Wharton Way & Dundas Street E



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	97	1012	43	80	831	86	34	7	56	82	12	50
Future Volume (vph)	97	1012	43	80	831	86	34	7	56	82	12	50
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.0	3.5	3.0	3.0	3.5	3.0	3.0	3.5	3.0	3.0	3.5	3.0
Total Lost time (s)	5.0	6.5		5.0	6.5		7.0	7.0		7.0	7.0	
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	1.00		1.00	1.00	
Frpb, ped/bikes	1.00	1.00		1.00	0.99		1.00	0.98		1.00	0.97	
Flpb, ped/bikes	1.00	1.00		1.00	1.00		0.98	1.00		0.99	1.00	
Frt	1.00	0.99		1.00	0.99		1.00	0.87		1.00	0.88	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1546	3313		1491	3251		1431	1394		1480	1461	
Flt Permitted	0.95	1.00		0.95	1.00		0.71	1.00		0.71	1.00	
Satd. Flow (perm)	1546	3313		1491	3251		1074	1394		1110	1461	
Peak-hour factor, PHF	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Adj. Flow (vph)	104	1088	46	86	894	92	37	8	60	88	13	54
RTOR Reduction (vph)	0	1	0	0	3	0	0	53	0	0	48	0
Lane Group Flow (vph)	104	1133	0	86	983	0	37	15	0	88	19	0
Confl. Peds. (#/hr)	27		8	8		27	22		7	7		22
Heavy Vehicles (%)	9%	7%	5%	13%	6%	21%	15%	29%	13%	13%	0%	12%
Bus Blockages (#/hr)	0	0	9	0	0	12	0	0	0	0	0	0
Turn Type	Prot	NA		Prot	NA		Perm	NA		Perm	NA	
Protected Phases	5	2		1	6			4			8	
Permitted Phases							4			8		
Actuated Green, G (s)	16.0	108.9		14.5	107.4		18.1	18.1		18.1	18.1	
Effective Green, g (s)	16.0	108.9		14.5	107.4		18.1	18.1		18.1	18.1	
Actuated g/C Ratio	0.10	0.68		0.09	0.67		0.11	0.11		0.11	0.11	
Clearance Time (s)	5.0	6.5		5.0	6.5		7.0	7.0		7.0	7.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	154	2254		135	2182		121	157		125	165	
v/s Ratio Prot	c0.07	c0.34		0.06	0.30			0.01			0.01	
v/s Ratio Perm							0.03			c0.08		
v/c Ratio	0.68	0.50		0.64	0.45		0.31	0.09		0.70	0.12	
Uniform Delay, d1	69.5	12.4		70.2	12.4		65.2	63.6		68.4	63.8	
Progression Factor	1.23	0.28		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	8.8	0.6		9.5	0.7		1.4	0.3		16.5	0.3	
Delay (s)	94.4	4.1		79.7	13.1		66.6	63.9		84.8	64.1	
Level of Service	F	A		E	B		E	E		F	E	
Approach Delay (s)		11.6			18.4			64.8			75.9	
Approach LOS		B			B			E			E	

Intersection Summary			
HCM 2000 Control Delay	20.5	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.55		
Actuated Cycle Length (s)	160.0	Sum of lost time (s)	18.5
Intersection Capacity Utilization	72.4%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	1349	0	0	1261	0	0
Future Volume (Veh/h)	1349	0	0	1261	0	0
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.99	0.99	0.99	0.99	0.99	0.99
Hourly flow rate (vph)	1363	0	0	1274	0	0
Pedestrians					3	
Lane Width (m)					3.0	
Walking Speed (m/s)					1.2	
Percent Blockage					0	
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (m)	155			98		
pX, platoon unblocked			0.71		0.80	0.71
vC, conflicting volume			1366		2003	684
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			714		826	0
tC, single (s)			4.1		6.8	6.9
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			100		100	100
cM capacity (veh/h)			639		250	778

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1
Volume Total	909	454	637	637	0
Volume Left	0	0	0	0	0
Volume Right	0	0	0	0	0
cSH	1700	1700	1700	1700	1700
Volume to Capacity	0.53	0.27	0.37	0.37	0.00
Queue Length 95th (m)	0.0	0.0	0.0	0.0	0.0
Control Delay (s)	0.0	0.0	0.0	0.0	0.0
Lane LOS					A
Approach Delay (s)	0.0		0.0		0.0
Approach LOS					A

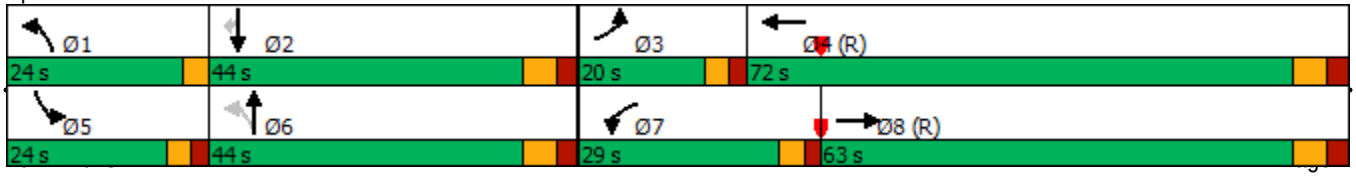
Intersection Summary			
Average Delay	0.0		
Intersection Capacity Utilization	40.6%	ICU Level of Service	A
Analysis Period (min)	15		

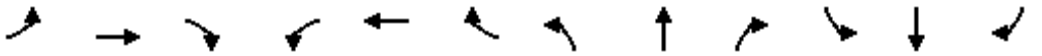
Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT	SBR
Lane Configurations									
Traffic Volume (vph)	192	805	235	1030	248	1022	541	939	286
Future Volume (vph)	192	805	235	1030	248	1022	541	939	286
Lane Group Flow (vph)	198	1043	242	1658	256	1325	558	968	295
Turn Type	Prot	NA	Prot	NA	pm+pt	NA	Prot	NA	Perm
Protected Phases	3	8	7	4	1	6	5	2	
Permitted Phases					6				2
Detector Phase	3	8	7	4	1	6	5	2	2
Switch Phase									
Minimum Initial (s)	7.0	10.0	7.0	10.0	7.0	10.0	7.0	10.0	10.0
Minimum Split (s)	12.0	47.8	12.0	47.8	10.0	42.5	13.0	42.5	42.5
Total Split (s)	20.0	63.0	29.0	72.0	24.0	44.0	24.0	44.0	44.0
Total Split (%)	12.5%	39.4%	18.1%	45.0%	15.0%	27.5%	15.0%	27.5%	27.5%
Yellow Time (s)	3.0	4.0	3.0	4.0	3.0	4.0	3.0	4.0	4.0
All-Red Time (s)	2.0	2.8	2.0	2.8	0.0	2.5	2.0	2.5	2.5
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	-1.0	0.0	0.0
Total Lost Time (s)	5.0	6.8	5.0	6.8	3.0	6.5	4.0	6.5	6.5
Lead/Lag	Lead	Lag	Lead	Lag	Lead	Lag	Lead	Lag	Lag
Lead-Lag Optimize?									
Recall Mode	None	C-Max	None	C-Max	None	Max	None	Max	Max
v/c Ratio	1.34	0.88	0.97	1.22	0.96	1.15	1.40	0.83	0.68
Control Delay	241.8	57.6	120.9	136.5	90.0	130.2	240.6	65.2	30.4
Queue Delay	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	241.8	57.7	120.9	136.5	90.0	130.2	240.6	65.2	30.4
Queue Length 50th (m)	~85.7	170.0	81.9	~349.4	69.2	~187.3	~127.8	113.9	36.7
Queue Length 95th (m)	#140.5	201.4m	#114.6	#232.7	#128.4	#219.0	#167.2	132.3	74.3
Internal Link Dist (m)		1362.6		279.9		1407.4		1183.5	
Turn Bay Length (m)	140.0		160.0		64.0		107.0		50.0
Base Capacity (vph)	148	1182	250	1356	268	1150	400	1169	434
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	3	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	1.34	0.88	0.97	1.22	0.96	1.15	1.40	0.83	0.68

Intersection Summary

Cycle Length: 160
Actuated Cycle Length: 160
Offset: 150 (94%), Referenced to phase 4:WBT and 8:EBT, 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: 1: Dixie Road & Dundas Street E





Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	192	805	207	235	1030	578	248	1022	263	541	939	286
Future Volume (vph)	192	805	207	235	1030	578	248	1022	263	541	939	286
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.0	3.5	3.0	3.0	3.5	3.0	3.0	3.5	3.0	3.0	3.5	3.0
Total Lost time (s)	5.0	6.8		5.0	6.8		3.0	6.5		4.0	6.5	6.5
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	0.91		0.97	0.91	1.00
Frpb, ped/bikes	1.00	0.99		1.00	0.98		1.00	0.99		1.00	1.00	0.89
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	1.00
Frt	1.00	0.97		1.00	0.95		1.00	0.97		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)	1589	3327		1668	3210		1683	4789		3204	4980	1272
Flt Permitted	0.95	1.00		0.95	1.00		0.11	1.00		0.95	1.00	1.00
Satd. Flow (perm)	1589	3327		1668	3210		189	4789		3204	4980	1272
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	198	830	213	242	1062	596	256	1054	271	558	968	295
RTOR Reduction (vph)	0	14	0	0	49	0	0	28	0	0	0	135
Lane Group Flow (vph)	198	1029	0	242	1609	0	256	1297	0	558	968	160
Confl. Peds. (#/hr)	47		47	47		47	77		27	27		77
Confl. Bikes (#/hr)			3				77					1
Heavy Vehicles (%)	6%	3%	1%	1%	2%	4%	0%	2%	6%	2%	3%	3%
Bus Blockages (#/hr)	0	0	9	0	0	8	0	0	4	0	0	5
Turn Type	Prot	NA		Prot	NA		pm+pt	NA		Prot	NA	Perm
Protected Phases	3	8		7	4		1	6		5	2	
Permitted Phases							6					2
Actuated Green, G (s)	15.0	56.2		24.0	65.2		58.4	37.5		19.0	37.6	37.6
Effective Green, g (s)	15.0	56.2		24.0	65.2		58.4	37.5		20.0	37.6	37.6
Actuated g/C Ratio	0.09	0.35		0.15	0.41		0.36	0.23		0.12	0.24	0.24
Clearance Time (s)	5.0	6.8		5.0	6.8		3.0	6.5		5.0	6.5	6.5
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)	148	1168		250	1308		264	1122		400	1170	298
v/s Ratio Prot	c0.12	0.31		0.15	c0.50		0.13	c0.27		c0.17	0.19	
v/s Ratio Perm							0.23					0.13
v/c Ratio	1.34	0.88		0.97	1.23		0.97	1.16		1.40	0.83	0.54
Uniform Delay, d1	72.5	48.8		67.6	47.4		48.6	61.2		70.0	58.1	53.6
Progression Factor	1.00	1.00		1.32	0.79		1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	190.5	9.6		33.9	107.6		46.4	80.4		192.4	6.8	6.7
Delay (s)	263.0	58.4		123.3	145.0		95.0	141.7		262.4	64.9	60.3
Level of Service	F	E		F	F		F	F		F	E	E
Approach Delay (s)		91.0			142.2			134.1			124.7	
Approach LOS		F			F			F			F	

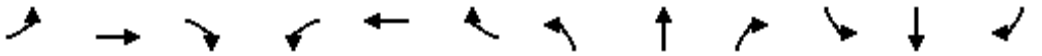
Intersection Summary			
HCM 2000 Control Delay	125.7	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	1.24		
Actuated Cycle Length (s)	160.0	Sum of lost time (s)	22.3
Intersection Capacity Utilization	123.0%	ICU Level of Service	H
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations								
Traffic Volume (vph)	75	1406	50	1691	122	51	52	22
Future Volume (vph)	75	1406	50	1691	122	51	52	22
Lane Group Flow (vph)	77	1608	51	1873	124	113	53	79
Turn Type	Prot	NA	Prot	NA	Perm	NA	Perm	NA
Protected Phases	5	2	1	6		4		8
Permitted Phases					4		8	
Detector Phase	5	2	1	6	4	4	8	8
Switch Phase								
Minimum Initial (s)	7.0	10.0	5.0	10.0	20.0	20.0	20.0	20.0
Minimum Split (s)	12.0	34.5	10.0	34.5	47.0	47.0	47.0	47.0
Total Split (s)	13.0	101.0	12.0	100.0	47.0	47.0	47.0	47.0
Total Split (%)	8.1%	63.1%	7.5%	62.5%	29.4%	29.4%	29.4%	29.4%
Yellow Time (s)	3.0	4.0	3.0	4.0	3.5	3.5	3.5	3.5
All-Red Time (s)	2.0	2.5	2.0	2.5	3.5	3.5	3.5	3.5
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.0	6.5	5.0	6.5	7.0	7.0	7.0	7.0
Lead/Lag	Lead	Lag	Lead	Lag				
Lead-Lag Optimize?								
Recall Mode	None	C-Max	None	C-Max	None	None	None	None
v/c Ratio	0.68	0.71	0.60	0.86	0.57	0.35	0.28	0.24
Control Delay	63.1	24.8	105.5	13.0	69.1	40.2	57.8	19.3
Queue Delay	0.0	4.5	0.0	0.6	0.0	0.0	0.0	0.0
Total Delay	63.1	29.4	105.5	13.6	69.1	40.2	57.8	19.3
Queue Length 50th (m)	25.6	150.6	17.8	47.6	40.6	24.2	16.4	6.6
Queue Length 95th (m)	m25.5	m139.3	m23.8	#191.5	57.0	39.4	27.7	20.2
Internal Link Dist (m)		279.9		149.0		96.0		162.3
Turn Bay Length (m)	145.0		100.0		15.0		25.0	
Base Capacity (vph)	113	2275	85	2176	306	444	265	450
Starvation Cap Reductn	0	216	0	86	0	0	0	0
Spillback Cap Reductn	0	585	0	0	0	5	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.68	0.95	0.60	0.90	0.41	0.26	0.20	0.18

Intersection Summary

Cycle Length: 160
Actuated Cycle Length: 160
Offset: 134 (84%), Referenced to phase 2:EBT and 6:WBT, Start of Green
Natural Cycle: 135
Control Type: Actuated-Coordinated
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: Nelico Court & Dundas Street E



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	75	1406	170	50	1691	144	122	51	60	52	22	56
Future Volume (vph)	75	1406	170	50	1691	144	122	51	60	52	22	56
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.0	3.5	3.0	3.0	3.5	3.0	3.0	3.5	3.0	3.0	3.5	3.0
Total Lost time (s)	5.0	6.5		5.0	6.5		7.0	7.0		7.0	7.0	
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	1.00		1.00	1.00	
Frpb, ped/bikes	1.00	0.99		1.00	0.99		1.00	0.98		1.00	0.97	
Flpb, ped/bikes	1.00	1.00		1.00	1.00		0.98	1.00		0.97	1.00	
Frt	1.00	0.98		1.00	0.99		1.00	0.92		1.00	0.89	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1668	3381		1685	3401		1647	1672		1578	1631	
Flt Permitted	0.95	1.00		0.95	1.00		0.71	1.00		0.64	1.00	
Satd. Flow (perm)	1668	3381		1685	3401		1223	1672		1063	1631	
Peak-hour factor, PHF	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Adj. Flow (vph)	77	1435	173	51	1726	147	124	52	61	53	22	57
RTOR Reduction (vph)	0	5	0	0	3	0	0	29	0	0	47	0
Lane Group Flow (vph)	77	1603	0	51	1870	0	124	84	0	53	32	0
Confl. Peds. (#/hr)	35		28	28		35	21		26	26		21
Confl. Bikes (#/hr)							21					
Heavy Vehicles (%)	1%	3%	1%	0%	3%	0%	0%	2%	0%	4%	0%	0%
Bus Blockages (#/hr)	0	0	5	0	0	4	0	0	0	0	0	0
Turn Type	Prot	NA		Prot	NA		Perm	NA		Perm	NA	
Protected Phases	5	2		1	6			4			8	
Permitted Phases							4			8		
Actuated Green, G (s)	10.9	106.4		6.8	102.3		28.3	28.3		28.3	28.3	
Effective Green, g (s)	10.9	106.4		6.8	102.3		28.3	28.3		28.3	28.3	
Actuated g/C Ratio	0.07	0.67		0.04	0.64		0.18	0.18		0.18	0.18	
Clearance Time (s)	5.0	6.5		5.0	6.5		7.0	7.0		7.0	7.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	113	2248		71	2174		216	295		188	288	
v/s Ratio Prot	c0.05	c0.47		0.03	c0.55			0.05			0.02	
v/s Ratio Perm							c0.10			0.05		
v/c Ratio	0.68	0.71		0.72	0.86		0.57	0.29		0.28	0.11	
Uniform Delay, d1	72.9	17.1		75.7	23.1		60.3	57.1		57.0	55.3	
Progression Factor	0.83	1.31		1.19	0.38		1.00	1.00		1.00	1.00	
Incremental Delay, d2	1.5	0.2		19.7	3.1		3.7	0.5		0.8	0.2	
Delay (s)	61.7	22.6		110.1	11.8		64.0	57.6		57.9	55.5	
Level of Service	E	C		F	B		E	E		E	E	
Approach Delay (s)		24.4			14.4			61.0			56.4	
Approach LOS		C			B			E			E	

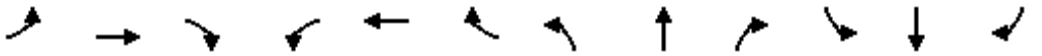
Intersection Summary			
HCM 2000 Control Delay	22.8	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.79		
Actuated Cycle Length (s)	160.0	Sum of lost time (s)	18.5
Intersection Capacity Utilization	99.1%	ICU Level of Service	F
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT	SBR
Lane Configurations									
Traffic Volume (vph)	31	1276	282	1577	224	6	37	22	82
Future Volume (vph)	31	1276	282	1577	224	6	37	22	82
Lane Group Flow (vph)	33	1590	297	1699	236	328	0	62	86
Turn Type	Prot	NA	Prot	NA	Perm	NA	Perm	NA	Perm
Protected Phases	5	2	1	6		4		8	
Permitted Phases					4		8		8
Detector Phase	5	2	1	6	4	4	8	8	8
Switch Phase									
Minimum Initial (s)	5.0	10.0	5.0	10.0	20.0	20.0	20.0	20.0	20.0
Minimum Split (s)	10.0	48.0	10.0	48.0	51.5	51.5	51.5	51.5	51.5
Total Split (s)	11.0	76.4	32.0	97.4	51.6	51.6	51.6	51.6	51.6
Total Split (%)	6.9%	47.8%	20.0%	60.9%	32.3%	32.3%	32.3%	32.3%	32.3%
Yellow Time (s)	3.0	4.0	3.0	4.0	3.0	3.0	3.0	3.0	3.0
All-Red Time (s)	2.0	3.0	2.0	3.0	4.5	4.5	4.5	4.5	4.5
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0
Total Lost Time (s)	5.0	7.0	5.0	7.0	7.5	7.5		7.5	7.5
Lead/Lag	Lead	Lag	Lead	Lag					
Lead-Lag Optimize?									
Recall Mode	None	C-Max	None	C-Max	Min	Min	Min	Min	Min
v/c Ratio	0.52	1.06	0.85	0.80	0.84	0.60		0.45	0.21
Control Delay	106.4	65.0	90.9	17.9	84.0	14.4		62.4	7.3
Queue Delay	0.0	17.8	0.0	0.3	0.0	0.1		0.0	0.0
Total Delay	106.4	82.8	90.9	18.2	84.0	14.5		62.4	7.3
Queue Length 50th (m)	11.7	~309.8	101.0	91.8	76.6	15.1		18.2	0.0
Queue Length 95th (m)	m17.1	#352.3	m#160.7	m207.7	104.6	45.3		33.0	11.9
Internal Link Dist (m)		149.0		130.6		105.8		70.0	
Turn Bay Length (m)	110.0		140.0						10.0
Base Capacity (vph)	64	1503	349	2137	348	618		170	476
Starvation Cap Reductn	0	57	0	67	0	0		0	0
Spillback Cap Reductn	0	237	0	85	0	19		0	2
Storage Cap Reductn	0	0	0	0	0	0		0	0
Reduced v/c Ratio	0.52	1.26	0.85	0.83	0.68	0.55		0.36	0.18

Intersection Summary

Cycle Length: 160
Actuated Cycle Length: 160
Offset: 148 (93%), Referenced to phase 2:EBT and 6:WBT, 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: 3: Jarrow Avenue & Dundas Street E



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	31	1276	235	282	1577	37	224	6	306	37	22	82
Future Volume (vph)	31	1276	235	282	1577	37	224	6	306	37	22	82
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.0	3.5	3.0	3.0	3.5	3.0	3.0	3.5	3.0	3.0	3.5	3.0
Total Lost time (s)	5.0	7.0		5.0	7.0		7.5	7.5			7.5	7.5
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	1.00			1.00	1.00
Frpb, ped/bikes	1.00	0.99		1.00	1.00		1.00	0.96			1.00	0.98
Flpb, ped/bikes	1.00	1.00		1.00	1.00		0.99	1.00			0.99	1.00
Frt	1.00	0.98		1.00	1.00		1.00	0.85			1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00			0.97	1.00
Satd. Flow (prot)	1465	3346		1668	3413		1675	1528			1690	1480
Flt Permitted	0.95	1.00		0.95	1.00		0.72	1.00			0.36	1.00
Satd. Flow (perm)	1465	3346		1668	3413		1263	1528			620	1480
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	33	1343	247	297	1660	39	236	6	322	39	23	86
RTOR Reduction (vph)	0	9	0	0	1	0	0	212	0	0	0	67
Lane Group Flow (vph)	33	1581	0	297	1698	0	236	116	0	0	62	19
Confl. Peds. (#/hr)	25		16	16		25	6		24	24		6
Heavy Vehicles (%)	15%	4%	0%	1%	4%	7%	0%	0%	1%	11%	0%	0%
Bus Blockages (#/hr)	0	0	5	0	0	4	0	0	0	0	0	0
Turn Type	Prot	NA		Prot	NA		Perm	NA		Perm	NA	Perm
Protected Phases	5	2		1	6			4			8	
Permitted Phases							4			8		8
Actuated Green, G (s)	5.9	71.4		33.6	99.1		35.5	35.5			35.5	35.5
Effective Green, g (s)	5.9	71.4		33.6	99.1		35.5	35.5			35.5	35.5
Actuated g/C Ratio	0.04	0.45		0.21	0.62		0.22	0.22			0.22	0.22
Clearance Time (s)	5.0	7.0		5.0	7.0		7.5	7.5			7.5	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)	54	1493		350	2113		280	339			137	328
v/s Ratio Prot	0.02	c0.47		c0.18	0.50			0.08				
v/s Ratio Perm							c0.19				0.10	0.01
v/c Ratio	0.61	1.06		0.85	0.80		0.84	0.34			0.45	0.06
Uniform Delay, d1	75.9	44.3		60.8	23.1		59.6	52.4			53.8	49.1
Progression Factor	1.17	0.61		1.26	0.62		1.00	1.00			1.00	1.00
Incremental Delay, d2	14.6	38.0		13.3	2.5		20.0	0.6			2.4	0.1
Delay (s)	103.2	64.9		89.6	16.9		79.6	53.0			56.2	49.1
Level of Service	F	E		F	B		E	D			E	D
Approach Delay (s)		65.6			27.7			64.1			52.1	
Approach LOS		E			C			E			D	

Intersection Summary			
HCM 2000 Control Delay	47.5	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.95		
Actuated Cycle Length (s)	160.0	Sum of lost time (s)	19.5
Intersection Capacity Utilization	113.3%	ICU Level of Service	H
Analysis Period (min)	15		

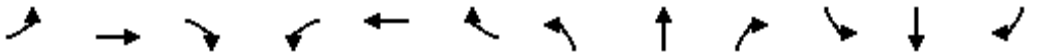
c Critical Lane Group

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT	SBR
Lane Configurations									
Traffic Volume (vph)	9	1204	257	1402	345	1	7	1	4
Future Volume (vph)	9	1204	257	1402	345	1	7	1	4
Lane Group Flow (vph)	9	1663	265	1448	356	177	0	8	4
Turn Type	Prot	NA	Prot	NA	Perm	NA	Perm	NA	Perm
Protected Phases	5	2	1	6		4		8	
Permitted Phases					4		8		8
Detector Phase	5	2	1	6	4	4	8	8	8
Switch Phase									
Minimum Initial (s)	5.0	10.0	5.0	10.0	10.0	10.0	10.0	10.0	10.0
Minimum Split (s)	10.0	40.0	10.0	40.0	45.0	45.0	45.0	45.0	45.0
Total Split (s)	10.0	81.0	32.0	103.0	47.0	47.0	47.0	47.0	47.0
Total Split (%)	6.3%	50.6%	20.0%	64.4%	29.4%	29.4%	29.4%	29.4%	29.4%
Yellow Time (s)	3.0	4.0	3.0	4.0	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	2.0	3.0	2.0	3.0	3.5	3.5	3.5	3.5	3.5
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0
Total Lost Time (s)	5.0	7.0	5.0	7.0	7.0	7.0		7.0	7.0
Lead/Lag	Lead	Lag	Lead	Lag					
Lead-Lag Optimize?									
Recall Mode	None	C-Max	None	C-Max	None	None	None	None	None
v/c Ratio	0.17	1.10	0.97	0.64	1.11	0.35		0.02	0.01
Control Delay	92.4	64.1	100.7	8.0	136.2	8.2		45.6	0.0
Queue Delay	0.0	0.8	0.0	1.1	0.0	0.0		0.0	0.0
Total Delay	92.4	64.9	100.7	9.1	136.2	8.2		45.6	0.0
Queue Length 50th (m)	3.0	~325.6	84.7	35.2	~135.4	0.3		2.1	0.0
Queue Length 95th (m)	m3.8	m#309.2	m#99.2	m71.3	#202.7	20.7		7.0	0.0
Internal Link Dist (m)		73.5		59.8		251.4		120.0	
Turn Bay Length (m)	140.0		145.0						15.0
Base Capacity (vph)	52	1514	273	2252	321	506		377	437
Starvation Cap Reductn	0	41	0	511	0	0		0	0
Spillback Cap Reductn	0	0	0	30	0	0		0	0
Storage Cap Reductn	0	0	0	0	0	0		0	0
Reduced v/c Ratio	0.17	1.13	0.97	0.83	1.11	0.35		0.02	0.01

Intersection Summary

Cycle Length: 160
Actuated Cycle Length: 160
Offset: 0 (0%), Referenced to phase 2:EBT and 6:WBT, 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.

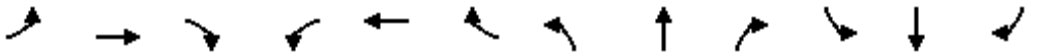
Splits and Phases: 4: Mattawa Avenue & Dundas Street E



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	9	1204	409	257	1402	3	345	1	171	7	1	4
Future Volume (vph)	9	1204	409	257	1402	3	345	1	171	7	1	4
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.0	3.5	3.0	3.0	3.5	3.0	3.0	3.5	3.0	3.0	3.5	3.0
Total Lost time (s)	5.0	7.0		5.0	7.0		7.0	7.0			7.0	7.0
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	1.00			1.00	1.00
Frpb, ped/bikes	1.00	0.98		1.00	1.00		1.00	0.97			1.00	0.97
Flpb, ped/bikes	1.00	1.00		1.00	1.00		0.98	1.00			0.99	1.00
Frt	1.00	0.96		1.00	1.00		1.00	0.85			1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00			0.96	1.00
Satd. Flow (prot)	1685	3229		1620	3464		1625	1496			1783	1465
Flt Permitted	0.95	1.00		0.95	1.00		0.75	1.00			0.81	1.00
Satd. Flow (perm)	1685	3229		1620	3464		1287	1496			1512	1465
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	9	1241	422	265	1445	3	356	1	176	7	1	4
RTOR Reduction (vph)	0	21	0	0	0	0	0	132	0	0	0	3
Lane Group Flow (vph)	9	1642	0	265	1448	0	356	45	0	0	8	1
Confl. Peds. (#/hr)	28		28	28		28	13		12	12		13
Heavy Vehicles (%)	0%	3%	7%	4%	3%	0%	2%	0%	4%	0%	0%	0%
Bus Blockages (#/hr)	0	0	5	0	0	4	0	0	0	0	0	0
Turn Type	Prot	NA		Prot	NA		Perm	NA		Perm	NA	Perm
Protected Phases	5	2		1	6			4			8	
Permitted Phases							4			8		8
Actuated Green, G (s)	1.0	74.0		27.0	100.0		40.0	40.0			40.0	40.0
Effective Green, g (s)	1.0	74.0		27.0	100.0		40.0	40.0			40.0	40.0
Actuated g/C Ratio	0.01	0.46		0.17	0.62		0.25	0.25			0.25	0.25
Clearance Time (s)	5.0	7.0		5.0	7.0		7.0	7.0			7.0	7.0
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0			3.0	3.0
Lane Grp Cap (vph)	10	1493		273	2165		321	374			378	366
v/s Ratio Prot	0.01	c0.51		c0.16	0.42			0.03				
v/s Ratio Perm							c0.28				0.01	0.00
v/c Ratio	0.90	1.10		0.97	0.67		1.11	0.12			0.02	0.00
Uniform Delay, d1	79.5	43.0		66.1	19.3		60.0	46.4			45.2	45.0
Progression Factor	1.18	0.30		1.18	0.43		1.00	1.00			1.00	1.00
Incremental Delay, d2	123.3	49.0		24.5	0.6		82.8	0.1			0.0	0.0
Delay (s)	217.5	61.9		102.6	8.9		142.8	46.5			45.3	45.0
Level of Service	F	E		F	A		F	D			D	D
Approach Delay (s)		62.7			23.4			110.9			45.2	
Approach LOS		E			C			F			D	

Intersection Summary			
HCM 2000 Control Delay	52.0	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	1.08		
Actuated Cycle Length (s)	160.0	Sum of lost time (s)	19.0
Intersection Capacity Utilization	104.8%	ICU Level of Service	G
Analysis Period (min)	15		

c Critical Lane Group



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	1396	0	0	1744	6	0	0	0	0	0	15
Future Volume (Veh/h)	0	1396	0	0	1744	6	0	0	0	0	0	15
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	0	1469	0	0	1836	6	0	0	0	0	0	16
Pedestrians								19			15	
Lane Width (m)								3.0			3.0	
Walking Speed (m/s)								1.2			1.2	
Percent Blockage								1			1	
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (m)		84			172							
pX, platoon unblocked	0.46			0.55			0.69	0.69	0.55	0.69	0.69	0.46
vC, conflicting volume	1857			1488			2422	3345	754	2588	3342	936
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	523			247			0	549	0	0	545	0
tC, single (s)	4.1			4.1			7.5	6.5	6.9	7.5	6.5	6.9
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			100			100	100	100	100	100	97
cM capacity (veh/h)	481			721			663	299	591	687	301	498

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	SB 1
Volume Total	979	490	1224	618	0	16
Volume Left	0	0	0	0	0	0
Volume Right	0	0	0	6	0	16
cSH	1700	1700	1700	1700	1700	498
Volume to Capacity	0.58	0.29	0.72	0.36	0.00	0.03
Queue Length 95th (m)	0.0	0.0	0.0	0.0	0.0	0.8
Control Delay (s)	0.0	0.0	0.0	0.0	0.0	12.5
Lane LOS					A	B
Approach Delay (s)	0.0		0.0		0.0	12.5
Approach LOS					A	B

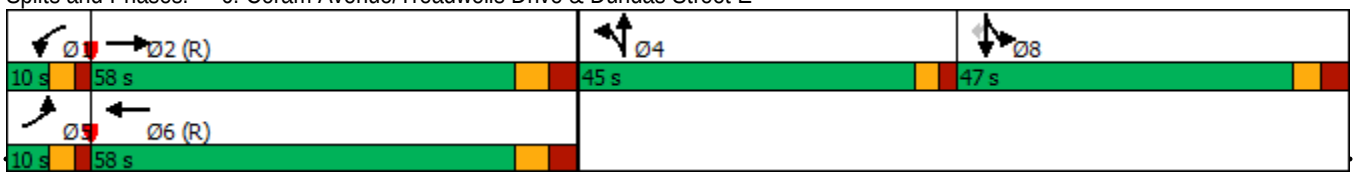
Intersection Summary				
Average Delay	0.1			
Intersection Capacity Utilization	58.4%	ICU Level of Service		B
Analysis Period (min)	15			

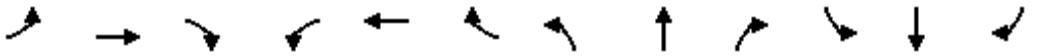
Lane Group	EBL	EBT	WBL	WBT	NBT	SBT	SBR
Lane Configurations							
Traffic Volume (vph)	36	1292	8	1770	0	0	5
Future Volume (vph)	36	1292	8	1770	0	0	5
Lane Group Flow (vph)	38	1391	8	1876	45	17	5
Turn Type	Prot	NA	Prot	NA	NA	NA	Perm
Protected Phases	5	2	1	6	4	8	
Permitted Phases							8
Detector Phase	5	2	1	6	4	8	8
Switch Phase							
Minimum Initial (s)	5.0	10.0	5.0	10.0	15.0	15.0	15.0
Minimum Split (s)	10.0	36.5	10.0	36.5	45.0	47.0	47.0
Total Split (s)	10.0	58.0	10.0	58.0	45.0	47.0	47.0
Total Split (%)	6.3%	36.3%	6.3%	36.3%	28.1%	29.4%	29.4%
Yellow Time (s)	3.0	4.0	3.0	4.0	3.0	3.5	3.5
All-Red Time (s)	2.0	3.5	2.0	3.5	2.0	3.5	3.5
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.0	7.5	5.0	7.5	5.0	7.0	7.0
Lead/Lag	Lead	Lag	Lead	Lag			
Lead-Lag Optimize?							
Recall Mode	None	C-Max	None	C-Max	Min	Min	Min
v/c Ratio	0.45	0.66	0.13	0.97	0.14	0.08	0.02
Control Delay	64.4	36.1	92.2	38.3	1.0	57.9	0.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	64.4	36.1	92.2	38.3	1.0	57.9	0.2
Queue Length 50th (m)	13.1	165.5	2.9	131.1	0.0	5.3	0.0
Queue Length 95th (m)	m14.3	m#273.1	m5.2	#526.6	0.0	11.4	0.0
Internal Link Dist (m)		148.0		363.1	118.1	152.8	
Turn Bay Length (m)	145.0		145.0				10.0
Base Capacity (vph)	84	2119	60	1936	517	446	445
Starvation Cap Reductn	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.45	0.66	0.13	0.97	0.09	0.04	0.01

Intersection Summary

Cycle Length: 160
Actuated Cycle Length: 160
Offset: 150 (94%), Referenced to phase 2:EBT and 6:WBT, Start of Green
Natural Cycle: 150
Control Type: Actuated-Coordinated
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: 6: Coram Avenue/Treadwells Drive & Dundas Street E





Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	36	1292	43	8	1770	31	31	0	12	16	0	5
Future Volume (vph)	36	1292	43	8	1770	31	31	0	12	16	0	5
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.0	3.5	3.0	3.0	3.5	3.0	3.0	3.5	3.0	3.0	3.5	3.0
Total Lost time (s)	5.0	7.5		5.0	7.5			5.0			7.0	7.0
Lane Util. Factor	1.00	0.95		1.00	0.95			1.00			1.00	1.00
Frpb, ped/bikes	1.00	1.00		1.00	1.00			0.99			1.00	0.98
Flpb, ped/bikes	1.00	1.00		1.00	1.00			1.00			1.00	1.00
Frt	1.00	1.00		1.00	1.00			0.96			1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00			0.97			0.95	1.00
Satd. Flow (prot)	1685	3442		1685	3456			1734			1785	1484
Flt Permitted	0.95	1.00		0.95	1.00			0.97			0.95	1.00
Satd. Flow (perm)	1685	3442		1685	3456			1734			1785	1484
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	38	1346	45	8	1844	32	32	0	12	17	0	5
RTOR Reduction (vph)	0	1	0	0	0	0	0	39	0	0	0	4
Lane Group Flow (vph)	38	1390	0	8	1876	0	0	6	0	0	17	1
Confl. Peds. (#/hr)	11		19	19		11	3		6	6		3
Heavy Vehicles (%)	0%	3%	2%	0%	3%	0%	0%	0%	0%	0%	0%	0%
Bus Blockages (#/hr)	0	0	5	0	0	4	0	0	0	0	0	0
Turn Type	Prot	NA		Prot	NA		Split	NA		Split	NA	Perm
Protected Phases	5	2		1	6		4	4		8	8	
Permitted Phases												8
Actuated Green, G (s)	6.8	94.5		1.0	88.7			20.0			20.0	20.0
Effective Green, g (s)	6.8	94.5		1.0	88.7			20.0			20.0	20.0
Actuated g/C Ratio	0.04	0.59		0.01	0.55			0.12			0.12	0.12
Clearance Time (s)	5.0	7.5		5.0	7.5			5.0			7.0	7.0
Vehicle Extension (s)	3.0	3.0		3.0	3.0			3.0			3.0	3.0
Lane Grp Cap (vph)	71	2032		10	1915			216			223	185
v/s Ratio Prot	c0.02	c0.40		0.00	c0.54			c0.00			c0.01	
v/s Ratio Perm												0.00
v/c Ratio	0.54	0.68		0.80	0.98			0.03			0.08	0.00
Uniform Delay, d1	75.1	22.5		79.4	34.8			61.5			61.8	61.3
Progression Factor	0.81	1.71		1.18	0.73			1.00			1.00	1.00
Incremental Delay, d2	2.2	0.5		153.2	14.6			0.0			0.1	0.0
Delay (s)	62.7	39.0		246.6	39.9			61.5			62.0	61.3
Level of Service	E	D		F	D			E			E	E
Approach Delay (s)		39.7			40.7			61.5			61.8	
Approach LOS		D			D			E			E	

Intersection Summary			
HCM 2000 Control Delay	40.7	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.69		
Actuated Cycle Length (s)	160.0	Sum of lost time (s)	24.5
Intersection Capacity Utilization	96.9%	ICU Level of Service	F
Analysis Period (min)	15		

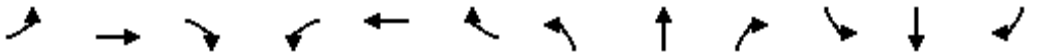
c Critical Lane Group

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations								
Traffic Volume (vph)	59	1188	103	1445	66	7	107	11
Future Volume (vph)	59	1188	103	1445	66	7	107	11
Lane Group Flow (vph)	61	1259	106	1531	68	95	110	168
Turn Type	Prot	NA	Prot	NA	Perm	NA	Perm	NA
Protected Phases	5	2	1	6		4		8
Permitted Phases					4		8	
Detector Phase	5	2	1	6	4	4	8	8
Switch Phase								
Minimum Initial (s)	5.0	8.0	5.0	8.0	8.0	8.0	8.0	8.0
Minimum Split (s)	10.0	38.5	10.0	38.5	48.0	48.0	48.0	48.0
Total Split (s)	17.0	96.0	16.0	95.0	48.0	48.0	48.0	48.0
Total Split (%)	10.6%	60.0%	10.0%	59.4%	30.0%	30.0%	30.0%	30.0%
Yellow Time (s)	3.0	4.0	3.0	4.0	3.5	3.5	3.5	3.5
All-Red Time (s)	2.0	2.5	2.0	2.5	3.5	3.5	3.5	3.5
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.0	6.5	5.0	6.5	7.0	7.0	7.0	7.0
Lead/Lag	Lead	Lag	Lead	Lag				
Lead-Lag Optimize?								
Recall Mode	None	C-Max	None	C-Max	None	None	None	None
v/c Ratio	0.54	0.58	0.57	0.64	0.73	0.34	0.77	0.52
Control Delay	104.2	10.6	78.2	17.0	105.3	15.8	98.5	18.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	104.2	10.6	78.2	17.0	105.3	15.8	98.5	18.6
Queue Length 50th (m)	21.9	152.6	34.1	144.7	22.2	2.1	36.2	7.2
Queue Length 95th (m)	m32.8	51.4	54.9	217.6	39.4	19.1	56.7	29.9
Internal Link Dist (m)		363.1		862.1		62.3		138.1
Turn Bay Length (m)	30.0		42.0		30.0		35.0	
Base Capacity (vph)	129	2174	187	2391	184	465	282	500
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.47	0.58	0.57	0.64	0.37	0.20	0.39	0.34

Intersection Summary

Cycle Length: 160
Actuated Cycle Length: 160
Offset: 136 (85%), Referenced to phase 2:EBT and 6:WBT, Start of Green
Natural Cycle: 110
Control Type: Actuated-Coordinated
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 7: Wharton Way & Dundas Street E



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	59	1188	33	103	1445	40	66	7	85	107	11	152
Future Volume (vph)	59	1188	33	103	1445	40	66	7	85	107	11	152
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.0	3.5	3.0	3.0	3.5	3.0	3.0	3.5	3.0	3.0	3.5	3.0
Total Lost time (s)	5.0	6.5		5.0	6.5		7.0	7.0		7.0	7.0	
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	1.00		1.00	1.00	
Frpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	0.98		1.00	0.97	
Flpb, ped/bikes	1.00	1.00		1.00	1.00		0.98	1.00		0.99	1.00	
Frt	1.00	1.00		1.00	1.00		1.00	0.86		1.00	0.86	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1574	3443		1518	3427		1624	1561		1565	1534	
Flt Permitted	0.95	1.00		0.95	1.00		0.42	1.00		0.67	1.00	
Satd. Flow (perm)	1574	3443		1518	3427		720	1561		1104	1534	
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	61	1225	34	106	1490	41	68	7	88	110	11	157
RTOR Reduction (vph)	0	1	0	0	1	0	0	77	0	0	125	0
Lane Group Flow (vph)	61	1258	0	106	1530	0	68	18	0	110	43	0
Confl. Peds. (#/hr)	15		18	18		15	20		6	6		20
Heavy Vehicles (%)	7%	3%	6%	11%	3%	25%	2%	0%	2%	7%	0%	2%
Bus Blockages (#/hr)	0	0	9	0	0	8	0	0	0	0	0	0
Turn Type	Prot	NA		Prot	NA		Perm	NA		Perm	NA	
Protected Phases	5	2		1	6			4			8	
Permitted Phases							4			8		
Actuated Green, G (s)	10.1	101.0		19.7	110.6		20.8	20.8		20.8	20.8	
Effective Green, g (s)	10.1	101.0		19.7	110.6		20.8	20.8		20.8	20.8	
Actuated g/C Ratio	0.06	0.63		0.12	0.69		0.13	0.13		0.13	0.13	
Clearance Time (s)	5.0	6.5		5.0	6.5		7.0	7.0		7.0	7.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	99	2173		186	2368		93	202		143	199	
v/s Ratio Prot	0.04	0.37		c0.07	c0.45			0.01			0.03	
v/s Ratio Perm							0.09			c0.10		
v/c Ratio	0.62	0.58		0.57	0.65		0.73	0.09		0.77	0.21	
Uniform Delay, d1	73.1	17.1		66.2	13.8		66.9	61.3		67.3	62.3	
Progression Factor	1.28	0.53		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	8.4	0.9		4.0	1.4		25.3	0.2		21.7	0.5	
Delay (s)	101.9	9.9		70.1	15.2		92.2	61.5		88.9	62.8	
Level of Service	F	A		E	B		F	E		F	E	
Approach Delay (s)		14.1			18.7			74.3			73.2	
Approach LOS		B			B			E			E	

Intersection Summary			
HCM 2000 Control Delay	24.1	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)	18.5
Intersection Capacity Utilization	96.0%	ICU Level of Service	F
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	1636	0	0	1771	0	0
Future Volume (Veh/h)	1636	0	0	1771	0	0
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97
Hourly flow rate (vph)	1687	0	0	1826	0	0
Pedestrians					11	
Lane Width (m)					3.0	
Walking Speed (m/s)					1.2	
Percent Blockage					1	
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (m)	155			98		
pX, platoon unblocked			0.57		0.70	0.57
vC, conflicting volume			1698		2611	854
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			702		692	0
tC, single (s)			4.1		6.8	6.9
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			100		100	100
cM capacity (veh/h)			509		267	613

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1
Volume Total	1125	562	913	913	0
Volume Left	0	0	0	0	0
Volume Right	0	0	0	0	0
cSH	1700	1700	1700	1700	1700
Volume to Capacity	0.66	0.33	0.54	0.54	0.00
Queue Length 95th (m)	0.0	0.0	0.0	0.0	0.0
Control Delay (s)	0.0	0.0	0.0	0.0	0.0
Lane LOS					A
Approach Delay (s)	0.0		0.0		0.0
Approach LOS					A

Intersection Summary			
Average Delay	0.0		
Intersection Capacity Utilization	52.3%	ICU Level of Service	A
Analysis Period (min)	15		

APPENDIX K

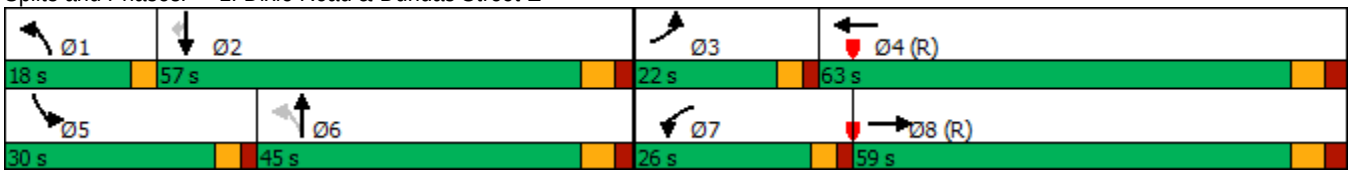
2033 Future Total Scenario 2 Intersection Capacity Analysis

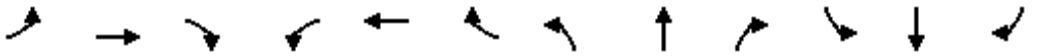
Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT	SBR
Lane Configurations									
Traffic Volume (vph)	156	782	148	616	142	926	420	871	177
Future Volume (vph)	156	782	148	616	142	926	420	871	177
Lane Group Flow (vph)	166	1016	157	972	151	1137	447	927	188
Turn Type	Prot	NA	Prot	NA	pm+pt	NA	Prot	NA	Perm
Protected Phases	3	8	7	4	1	6	5	2	
Permitted Phases					6				2
Detector Phase	3	8	7	4	1	6	5	2	2
Switch Phase									
Minimum Initial (s)	7.0	10.0	7.0	10.0	7.0	10.0	7.0	10.0	10.0
Minimum Split (s)	12.0	47.8	12.0	47.8	10.0	42.5	13.0	42.5	42.5
Total Split (s)	22.0	59.0	26.0	63.0	18.0	45.0	30.0	57.0	57.0
Total Split (%)	13.8%	36.9%	16.3%	39.4%	11.3%	28.1%	18.8%	35.6%	35.6%
Yellow Time (s)	3.0	4.0	3.0	4.0	3.0	4.0	3.0	4.0	4.0
All-Red Time (s)	2.0	2.8	2.0	2.8	0.0	2.5	2.0	2.5	2.5
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.0	6.8	5.0	6.8	3.0	6.5	5.0	6.5	6.5
Lead/Lag	Lead	Lag	Lead	Lag	Lead	Lag	Lead	Lag	Lag
Lead-Lag Optimize?									
Recall Mode	None	C-Max	None	C-Max	None	Max	None	Max	Max
v/c Ratio	0.97	0.90	0.85	0.86	0.59	0.99	0.95	0.58	0.37
Control Delay	129.4	61.7	120.5	39.8	37.9	84.3	96.4	46.8	15.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	129.4	61.7	120.5	39.8	37.9	84.3	96.4	46.8	15.4
Queue Length 50th (m)	56.3	171.2	48.4	67.4	30.3	138.8	77.5	95.6	13.4
Queue Length 95th (m)	#106.8	#214.3	#91.1	82.2	46.7	#173.6	#112.4	112.6	36.6
Internal Link Dist (m)		1362.6		279.9		1407.4		1183.5	
Turn Bay Length (m)	140.0		160.0		64.0		107.0		50.0
Base Capacity (vph)	172	1126	201	1132	274	1143	472	1595	513
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.97	0.90	0.78	0.86	0.55	0.99	0.95	0.58	0.37

Intersection Summary

Cycle Length: 160
Actuated Cycle Length: 160
Offset: 87 (54%), Referenced to phase 4:WBT and 8:EBT, Start of Green
Natural Cycle: 130
Control Type: Actuated-Coordinated
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 1: Dixie Road & Dundas Street E





Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	156	782	173	148	616	298	142	926	143	420	871	177
Future Volume (vph)	156	782	173	148	616	298	142	926	143	420	871	177
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.0	3.5	3.0	3.0	3.5	3.0	3.0	3.5	3.0	3.0	3.5	3.0
Total Lost time (s)	5.0	6.8		5.0	6.8		3.0	6.5		5.0	6.5	6.5
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	0.91		0.97	0.91	1.00
Frpb, ped/bikes	1.00	0.99		1.00	0.99		1.00	1.00		1.00	1.00	0.94
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	1.00
Frt	1.00	0.97		1.00	0.95		1.00	0.98		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)	1620	3311		1532	3122		1663	4695		3026	4885	1299
Flt Permitted	0.95	1.00		0.95	1.00		0.26	1.00		0.95	1.00	1.00
Satd. Flow (perm)	1620	3311		1532	3122		454	4695		3026	4885	1299
Peak-hour factor, PHF	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Adj. Flow (vph)	166	832	184	157	655	317	151	985	152	447	927	188
RTOR Reduction (vph)	0	12	0	0	36	0	0	13	0	0	0	89
Lane Group Flow (vph)	166	1004	0	157	936	0	151	1124	0	447	927	99
Confl. Peds. (#/hr)	8		30	30		8	39		12	12		39
Confl. Bikes (#/hr)							39					
Heavy Vehicles (%)	4%	4%	4%	10%	8%	8%	1%	6%	11%	8%	5%	7%
Bus Blockages (#/hr)	0	0	9	0	0	12	0	0	5	0	0	4
Turn Type	Prot	NA		Prot	NA		pm+pt	NA		Prot	NA	Perm
Protected Phases	3	8		7	4		1	6		5	2	
Permitted Phases							6					2
Actuated Green, G (s)	17.0	53.8		19.4	56.2		51.7	38.5		25.0	52.3	52.3
Effective Green, g (s)	17.0	53.8		19.4	56.2		51.7	38.5		25.0	52.3	52.3
Actuated g/C Ratio	0.11	0.34		0.12	0.35		0.32	0.24		0.16	0.33	0.33
Clearance Time (s)	5.0	6.8		5.0	6.8		3.0	6.5		5.0	6.5	6.5
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)	172	1113		185	1096		246	1129		472	1596	424
v/s Ratio Prot	0.10	c0.30		c0.10	0.30		0.05	c0.24		c0.15	0.19	
v/s Ratio Perm							0.15					0.08
v/c Ratio	0.97	0.90		0.85	0.85		0.61	1.00		0.95	0.58	0.23
Uniform Delay, d1	71.2	50.6		68.9	48.1		40.4	60.7		66.8	44.7	39.2
Progression Factor	1.00	1.00		1.28	0.69		1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	57.8	11.8		27.0	7.9		4.5	25.8		28.2	1.6	1.3
Delay (s)	129.1	62.4		115.2	41.3		44.9	86.4		95.1	46.3	40.5
Level of Service	F	E		F	D		D	F		F	D	D
Approach Delay (s)		71.7			51.6			81.6			59.6	
Approach LOS		E			D			F			E	

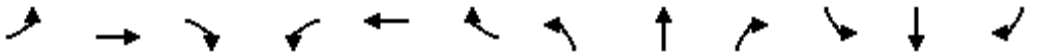
Intersection Summary			
HCM 2000 Control Delay	66.1	HCM 2000 Level of Service	E
HCM 2000 Volume to Capacity ratio	0.93		
Actuated Cycle Length (s)	160.0	Sum of lost time (s)	23.3
Intersection Capacity Utilization	104.2%	ICU Level of Service	G
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations								
Traffic Volume (vph)	6	1337	10	1051	50	1	21	4
Future Volume (vph)	6	1337	10	1051	50	1	21	4
Lane Group Flow (vph)	6	1515	11	1128	53	19	22	20
Turn Type	Prot	NA	Prot	NA	Perm	NA	Perm	NA
Protected Phases	5	2	1	6		4		8
Permitted Phases					4		8	
Detector Phase	5	2	1	6	4	4	8	8
Switch Phase								
Minimum Initial (s)	5.0	10.0	5.0	10.0	20.0	20.0	20.0	20.0
Minimum Split (s)	10.0	34.5	10.0	34.5	47.0	47.0	47.0	47.0
Total Split (s)	10.0	103.0	10.0	103.0	47.0	47.0	47.0	47.0
Total Split (%)	6.3%	64.4%	6.3%	64.4%	29.4%	29.4%	29.4%	29.4%
Yellow Time (s)	3.0	4.0	3.0	4.0	3.5	3.5	3.5	3.5
All-Red Time (s)	2.0	2.5	2.0	2.5	3.5	3.5	3.5	3.5
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.0	6.5	5.0	6.5	7.0	7.0	7.0	7.0
Lead/Lag	Lead	Lag	Lead	Lag				
Lead-Lag Optimize?								
Recall Mode	None	C-Max	None	C-Max	None	None	None	None
v/c Ratio	0.12	0.58	0.18	0.43	0.27	0.09	0.12	0.09
Control Delay	78.0	7.6	106.3	3.6	61.7	21.2	57.0	25.1
Queue Delay	0.0	0.1	0.0	0.1	0.0	0.0	0.0	0.0
Total Delay	78.0	7.7	106.3	3.7	61.7	21.2	57.0	25.1
Queue Length 50th (m)	1.9	57.0	3.9	20.0	16.4	0.3	6.7	1.2
Queue Length 95th (m)	m2.6	m77.4	m9.1	26.8	27.2	7.8	14.0	8.8
Internal Link Dist (m)		279.9		149.0		96.0		162.3
Turn Bay Length (m)	145.0		100.0		15.0		25.0	
Base Capacity (vph)	52	2595	62	2619	326	336	313	362
Starvation Cap Reductn	0	236	0	319	0	0	0	0
Spillback Cap Reductn	0	81	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.12	0.64	0.18	0.49	0.16	0.06	0.07	0.06

Intersection Summary

Cycle Length: 160
Actuated Cycle Length: 160
Offset: 82 (51%), Referenced to phase 2:EBT and 6:WBT, Start of Green
Natural Cycle: 115
Control Type: Actuated-Coordinated
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 2: Nelico Court & Dundas Street E



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	6	1337	103	10	1051	21	50	1	17	21	4	15
Future Volume (vph)	6	1337	103	10	1051	21	50	1	17	21	4	15
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.0	3.5	3.0	3.0	3.5	3.0	3.0	3.5	3.0	3.0	3.5	3.0
Total Lost time (s)	5.0	6.5		5.0	6.5		7.0	7.0		7.0	7.0	
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	1.00		1.00	1.00	
Frpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	0.98		1.00	0.98	
Flpb, ped/bikes	1.00	1.00		1.00	1.00		0.99	1.00		1.00	1.00	
Frt	1.00	0.99		1.00	1.00		1.00	0.86		1.00	0.88	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1440	3327		1685	3294		1667	1293		1597	1400	
Flt Permitted	0.95	1.00		0.95	1.00		0.74	1.00		0.75	1.00	
Satd. Flow (perm)	1440	3327		1685	3294		1306	1293		1252	1400	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	6	1407	108	11	1106	22	53	1	18	22	4	16
RTOR Reduction (vph)	0	2	0	0	0	0	0	16	0	0	14	0
Lane Group Flow (vph)	6	1513	0	11	1128	0	53	3	0	22	6	0
Confl. Peds. (#/hr)	11		13	13		11	9		4	4		9
Confl. Bikes (#/hr)							9					
Heavy Vehicles (%)	17%	6%	2%	0%	8%	5%	0%	0%	24%	5%	0%	20%
Bus Blockages (#/hr)	0	0	5	0	0	6	0	0	0	0	0	0
Turn Type	Prot	NA		Prot	NA		Perm	NA		Perm	NA	
Protected Phases	5	2		1	6			4			8	
Permitted Phases							4			8		
Actuated Green, G (s)	1.0	119.1		2.4	120.5		20.0	20.0		20.0	20.0	
Effective Green, g (s)	1.0	119.1		2.4	120.5		20.0	20.0		20.0	20.0	
Actuated g/C Ratio	0.01	0.74		0.01	0.75		0.12	0.12		0.12	0.12	
Clearance Time (s)	5.0	6.5		5.0	6.5		7.0	7.0		7.0	7.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	9	2476		25	2480		163	161		156	175	
v/s Ratio Prot	0.00	c0.45		c0.01	0.34			0.00			0.00	
v/s Ratio Perm							c0.04			0.02		
v/c Ratio	0.67	0.61		0.44	0.45		0.33	0.02		0.14	0.03	
Uniform Delay, d1	79.3	9.6		78.1	7.4		63.8	61.4		62.3	61.5	
Progression Factor	1.01	0.64		1.34	0.39		1.00	1.00		1.00	1.00	
Incremental Delay, d2	62.4	0.5		11.1	0.6		1.2	0.1		0.4	0.1	
Delay (s)	142.5	6.6		115.6	3.4		65.0	61.5		62.8	61.6	
Level of Service	F	A		F	A		E	E		E	E	
Approach Delay (s)		7.2			4.5			64.1			62.2	
Approach LOS		A			A			E			E	

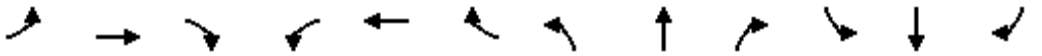
Intersection Summary			
HCM 2000 Control Delay	8.4	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.57		
Actuated Cycle Length (s)	160.0	Sum of lost time (s)	18.5
Intersection Capacity Utilization	72.6%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT	SBR
Lane Configurations									
Traffic Volume (vph)	63	1099	177	909	98	6	21	1	27
Future Volume (vph)	63	1099	177	909	98	6	21	1	27
Lane Group Flow (vph)	66	1331	184	983	102	153	0	23	28
Turn Type	Prot	NA	Prot	NA	Perm	NA	Perm	NA	Perm
Protected Phases	5	2	1	6		4		8	
Permitted Phases					4		8		8
Detector Phase	5	2	1	6	4	4	8	8	8
Switch Phase									
Minimum Initial (s)	5.0	10.0	5.0	10.0	20.0	20.0	20.0	20.0	20.0
Minimum Split (s)	10.0	48.0	10.0	48.0	51.5	51.5	51.5	51.5	51.5
Total Split (s)	19.0	80.4	28.0	89.4	51.6	51.6	51.6	51.6	51.6
Total Split (%)	11.9%	50.3%	17.5%	55.9%	32.3%	32.3%	32.3%	32.3%	32.3%
Yellow Time (s)	3.0	4.0	3.0	4.0	3.0	3.0	3.0	3.0	3.0
All-Red Time (s)	2.0	3.0	2.0	3.0	4.5	4.5	4.5	4.5	4.5
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0
Total Lost Time (s)	5.0	7.0	5.0	7.0	7.5	7.5		7.5	7.5
Lead/Lag	Lead	Lag	Lead	Lag					
Lead-Lag Optimize?									
Recall Mode	None	C-Max	None	C-Max	Min	Min	Min	Min	Min
v/c Ratio	0.59	0.69	0.81	0.46	0.52	0.42		0.18	0.10
Control Delay	88.9	21.0	89.6	16.5	69.7	11.8		58.0	0.8
Queue Delay	0.0	0.2	0.0	0.0	0.0	0.0		0.0	0.0
Total Delay	88.9	21.2	89.6	16.5	69.7	11.8		58.0	0.8
Queue Length 50th (m)	23.1	121.6	60.1	56.0	33.1	1.8		7.0	0.0
Queue Length 95th (m)	m40.3	75.6	#101.1	128.5	45.8	20.1		14.1	0.0
Internal Link Dist (m)		149.0		130.6		105.8		70.0	
Turn Bay Length (m)	110.0		140.0						10.0
Base Capacity (vph)	136	1933	246	2121	347	525		229	401
Starvation Cap Reductn	0	140	0	0	0	0		0	0
Spillback Cap Reductn	0	0	0	7	0	0		0	0
Storage Cap Reductn	0	0	0	0	0	0		0	0
Reduced v/c Ratio	0.49	0.74	0.75	0.46	0.29	0.29		0.10	0.07

Intersection Summary

Cycle Length: 160
Actuated Cycle Length: 160
Offset: 86 (54%), Referenced to phase 2:EBT and 6:WBT, Start of Green
Natural Cycle: 130
Control Type: Actuated-Coordinated
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 3: Jarrow Avenue & Dundas Street E



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	63	1099	179	177	909	35	98	6	141	21	1	27
Future Volume (vph)	63	1099	179	177	909	35	98	6	141	21	1	27
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.0	3.5	3.0	3.0	3.5	3.0	3.0	3.5	3.0	3.0	3.5	3.0
Total Lost time (s)	5.0	7.0		5.0	7.0		7.5	7.5			7.5	7.5
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	1.00			1.00	1.00
Frpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	0.98			1.00	0.98
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00			0.99	1.00
Frt	1.00	0.98		1.00	0.99		1.00	0.86			1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00			0.95	1.00
Satd. Flow (prot)	1560	3300		1652	3265		1613	1520			1255	1206
Flt Permitted	0.95	1.00		0.95	1.00		0.74	1.00			0.63	1.00
Satd. Flow (perm)	1560	3300		1652	3265		1260	1520			831	1206
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	66	1145	186	184	947	36	102	6	147	22	1	28
RTOR Reduction (vph)	0	6	0	0	1	0	0	124	0	0	0	24
Lane Group Flow (vph)	66	1325	0	184	982	0	102	29	0	0	23	4
Confl. Peds. (#/hr)	11		6	6		11	4		7	7		4
Confl. Bikes (#/hr)			1			1						
Heavy Vehicles (%)	8%	6%	2%	2%	8%	24%	4%	0%	4%	44%	0%	23%
Bus Blockages (#/hr)	0	0	5	0	0	6	0	0	0	0	0	0
Turn Type	Prot	NA		Prot	NA		Perm	NA		Perm	NA	Perm
Protected Phases	5	2		1	6			4			8	
Permitted Phases							4			8		8
Actuated Green, G (s)	11.5	93.4		22.0	103.9		25.1	25.1			25.1	25.1
Effective Green, g (s)	11.5	93.4		22.0	103.9		25.1	25.1			25.1	25.1
Actuated g/C Ratio	0.07	0.58		0.14	0.65		0.16	0.16			0.16	0.16
Clearance Time (s)	5.0	7.0		5.0	7.0		7.5	7.5			7.5	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)	112	1926		227	2120		197	238			130	189
v/s Ratio Prot	0.04	c0.40		c0.11	0.30			0.02				
v/s Ratio Perm							c0.08				0.03	0.00
v/c Ratio	0.59	0.69		0.81	0.46		0.52	0.12			0.18	0.02
Uniform Delay, d1	72.0	23.2		67.0	14.1		61.9	58.0			58.5	57.1
Progression Factor	1.00	0.77		0.98	1.01		1.00	1.00			1.00	1.00
Incremental Delay, d2	6.4	1.7		17.9	0.7		2.3	0.2			0.7	0.0
Delay (s)	78.2	19.4		83.4	14.8		64.2	58.2			59.1	57.1
Level of Service	E	B		F	B		E	E			E	E
Approach Delay (s)		22.2			25.6			60.6			58.0	
Approach LOS		C			C			E			E	

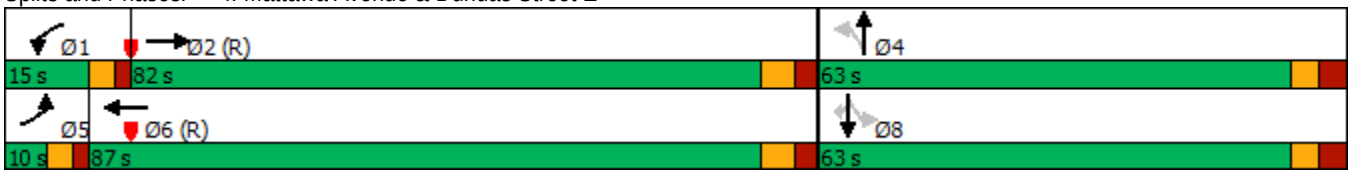
Intersection Summary			
HCM 2000 Control Delay	27.6	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.68		
Actuated Cycle Length (s)	160.0	Sum of lost time (s)	19.5
Intersection Capacity Utilization	92.5%	ICU Level of Service	F
Analysis Period (min)	15		
c Critical Lane Group			

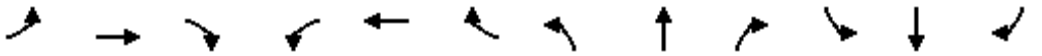
Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations								
Traffic Volume (vph)	2	1111	67	897	240	0	1	0
Future Volume (vph)	2	1111	67	897	240	0	1	0
Lane Group Flow (vph)	2	1318	68	918	245	169	0	1
Turn Type	Prot	NA	Prot	NA	Perm	NA	Perm	NA
Protected Phases	5	2	1	6		4		8
Permitted Phases					4		8	
Detector Phase	5	2	1	6	4	4	8	8
Switch Phase								
Minimum Initial (s)	5.0	10.0	5.0	10.0	10.0	10.0	10.0	10.0
Minimum Split (s)	10.0	40.0	10.0	40.0	45.0	45.0	45.0	45.0
Total Split (s)	10.0	82.0	15.0	87.0	63.0	63.0	63.0	63.0
Total Split (%)	6.3%	51.3%	9.4%	54.4%	39.4%	39.4%	39.4%	39.4%
Yellow Time (s)	3.0	4.0	3.0	4.0	3.5	3.5	3.5	3.5
All-Red Time (s)	2.0	3.0	2.0	3.0	3.5	3.5	3.5	3.5
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0		0.0
Total Lost Time (s)	5.0	7.0	5.0	7.0	7.0	7.0		7.0
Lead/Lag	Lead	Lag	Lead	Lag				
Lead-Lag Optimize?								
Recall Mode	None	C-Max	None	C-Max	None	None	None	None
v/c Ratio	0.03	0.69	0.54	0.41	0.84	0.51		0.00
Control Delay	94.0	12.2	110.2	3.9	82.0	24.5		42.0
Queue Delay	0.0	0.1	0.0	0.0	0.0	0.0		0.0
Total Delay	94.0	12.2	110.2	3.9	82.0	24.5		42.0
Queue Length 50th (m)	0.6	40.6	24.2	8.6	79.1	17.8		0.3
Queue Length 95th (m)	m1.4	57.2	42.2	24.1	104.5	39.7		1.9
Internal Link Dist (m)		73.5		59.8		251.4		120.0
Turn Bay Length (m)	140.0		145.0					
Base Capacity (vph)	61	1905	131	2246	455	457		358
Starvation Cap Reductn	0	49	0	0	0	0		0
Spillback Cap Reductn	0	0	0	0	0	0		0
Storage Cap Reductn	0	0	0	0	0	0		0
Reduced v/c Ratio	0.03	0.71	0.52	0.41	0.54	0.37		0.00

Intersection Summary

Cycle Length: 160
Actuated Cycle Length: 160
Offset: 90 (56%), Referenced to phase 2:EBT and 6:WBT, Start of Green
Natural Cycle: 95
Control Type: Actuated-Coordinated
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 4: Mattawa Avenue & Dundas Street E

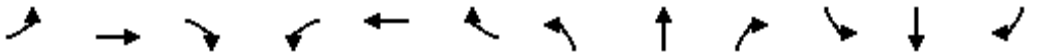




Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	2	1111	180	67	897	3	240	0	166	1	0	0
Future Volume (vph)	2	1111	180	67	897	3	240	0	166	1	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.0	3.5	3.0	3.0	3.5	3.0	3.0	3.5	3.0	3.0	3.5	3.0
Total Lost time (s)	5.0	7.0		5.0	7.0		7.0	7.0			7.0	
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	1.00			1.00	
Frpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	0.99			1.00	
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00			1.00	
Frt	1.00	0.98		1.00	1.00		1.00	0.85			1.00	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00			0.95	
Satd. Flow (prot)	1685	3268		1685	3335		1634	1110			1783	
Flt Permitted	0.95	1.00		0.95	1.00		0.76	1.00			0.54	
Satd. Flow (perm)	1685	3268		1685	3335		1302	1110			1022	
Peak-hour factor, PHF	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Adj. Flow (vph)	2	1134	184	68	915	3	245	0	169	1	0	0
RTOR Reduction (vph)	0	6	0	0	0	0	0	82	0	0	0	0
Lane Group Flow (vph)	2	1312	0	68	918	0	245	87	0	0	1	0
Confl. Peds. (#/hr)	6		6	6		6	1		1	1		1
Heavy Vehicles (%)	0%	7%	3%	0%	7%	0%	3%	0%	42%	0%	0%	0%
Bus Blockages (#/hr)	0	0	5	0	0	6	0	0	0	0	0	0
Turn Type	Prot	NA		Prot	NA		Perm	NA		Perm	NA	Perm
Protected Phases	5	2		1	6			4			8	
Permitted Phases							4			8		8
Actuated Green, G (s)	1.3	93.0		12.0	103.7		36.0	36.0			36.0	
Effective Green, g (s)	1.3	93.0		12.0	103.7		36.0	36.0			36.0	
Actuated g/C Ratio	0.01	0.58		0.08	0.65		0.22	0.22			0.22	
Clearance Time (s)	5.0	7.0		5.0	7.0		7.0	7.0			7.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0			3.0	
Lane Grp Cap (vph)	13	1899		126	2161		292	249			229	
v/s Ratio Prot	0.00	c0.40		c0.04	0.28			0.08				
v/s Ratio Perm							c0.19				0.00	
v/c Ratio	0.15	0.69		0.54	0.42		0.84	0.35			0.00	
Uniform Delay, d1	78.8	23.4		71.3	13.7		59.2	52.1			48.1	
Progression Factor	1.26	0.41		1.36	0.25		1.00	1.00			1.00	
Incremental Delay, d2	4.2	1.6		3.9	0.5		18.6	0.8			0.0	
Delay (s)	103.2	11.3		101.2	4.0		77.8	53.0			48.1	
Level of Service	F	B		F	A		E	D			D	
Approach Delay (s)		11.4			10.7			67.7			48.1	
Approach LOS		B			B			E			D	

Intersection Summary			
HCM 2000 Control Delay	19.7	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.71		
Actuated Cycle Length (s)	160.0	Sum of lost time (s)	19.0
Intersection Capacity Utilization	76.9%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	1266	0	0	938	4	0	0	0	0	0	18
Future Volume (Veh/h)	0	1266	0	0	938	4	0	0	0	0	0	18
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Hourly flow rate (vph)	0	1319	0	0	977	4	0	0	0	0	0	19
Pedestrians								8			15	
Lane Width (m)								3.0			3.0	
Walking Speed (m/s)								1.2			1.2	
Percent Blockage								1			1	
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (m)		84			172							
pX, platoon unblocked	0.82			0.72			0.81	0.81	0.72	0.81	0.81	0.82
vC, conflicting volume	996			1327			1834	2323	668	1654	2321	506
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	559			687			575	1175	0	352	1173	0
tC, single (s)	4.2			4.1			7.5	6.5	6.9	7.5	6.5	6.9
tC, 2 stage (s)												
tF (s)	2.3			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			100			100	100	100	100	100	98
cM capacity (veh/h)	792			659			317	154	785	464	155	886

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	SB 1
Volume Total	879	440	651	330	0	19
Volume Left	0	0	0	0	0	0
Volume Right	0	0	0	4	0	19
cSH	1700	1700	1700	1700	1700	886
Volume to Capacity	0.52	0.26	0.38	0.19	0.00	0.02
Queue Length 95th (m)	0.0	0.0	0.0	0.0	0.0	0.5
Control Delay (s)	0.0	0.0	0.0	0.0	0.0	9.2
Lane LOS					A	A
Approach Delay (s)	0.0		0.0		0.0	9.2
Approach LOS					A	A

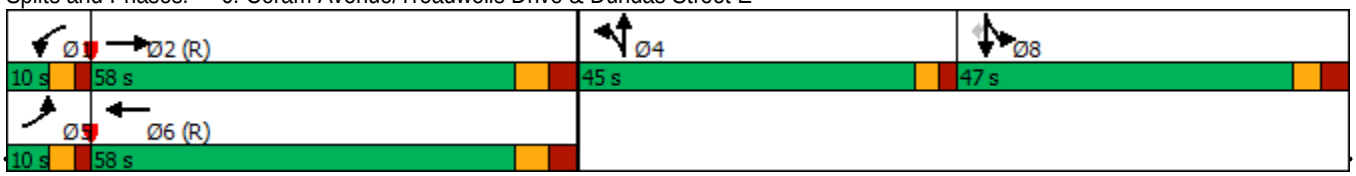
Intersection Summary				
Average Delay	0.1			
Intersection Capacity Utilization	38.3%	ICU Level of Service		A
Analysis Period (min)	15			

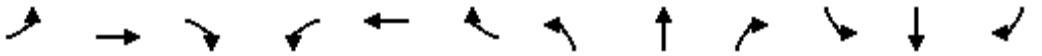
Lane Group	EBL	EBT	WBL	WBT	NBT	SBT	SBR
Lane Configurations							
Traffic Volume (vph)	23	1205	10	940	1	1	24
Future Volume (vph)	23	1205	10	940	1	1	24
Lane Group Flow (vph)	24	1283	11	1002	42	24	25
Turn Type	Prot	NA	Prot	NA	NA	NA	Perm
Protected Phases	5	2	1	6	4	8	
Permitted Phases							8
Detector Phase	5	2	1	6	4	8	8
Switch Phase							
Minimum Initial (s)	5.0	10.0	5.0	10.0	15.0	15.0	15.0
Minimum Split (s)	10.0	36.5	10.0	36.5	45.0	47.0	47.0
Total Split (s)	10.0	58.0	10.0	58.0	45.0	47.0	47.0
Total Split (%)	6.3%	36.3%	6.3%	36.3%	28.1%	29.4%	29.4%
Yellow Time (s)	3.0	4.0	3.0	4.0	3.0	3.5	3.5
All-Red Time (s)	2.0	3.5	2.0	3.5	2.0	3.5	3.5
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.0	7.5	5.0	7.5	5.0	7.0	7.0
Lead/Lag	Lead	Lag	Lead	Lag			
Lead-Lag Optimize?	Yes	Yes	Yes	Yes			
Recall Mode	None	C-Max	None	C-Max	Min	Min	Min
v/c Ratio	0.34	0.64	0.19	0.52	0.19	0.11	0.09
Control Delay	98.3	23.0	90.3	20.3	33.0	59.0	0.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	98.3	23.0	90.3	20.3	33.0	59.0	0.7
Queue Length 50th (m)	8.4	76.2	3.5	73.2	5.9	7.5	0.0
Queue Length 95th (m)	m13.2	#317.8	m9.0	#211.1	16.1	14.6	0.0
Internal Link Dist (m)		148.0		363.1	118.1	152.8	
Turn Bay Length (m)	145.0		145.0				10.0
Base Capacity (vph)	70	1994	57	1940	413	448	445
Starvation Cap Reductn	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.34	0.64	0.19	0.52	0.10	0.05	0.06

Intersection Summary

Cycle Length: 160
Actuated Cycle Length: 160
Offset: 104 (65%), Referenced to phase 2:EBT and 6:WBT, Start of Green
Natural Cycle: 150
Control Type: Actuated-Coordinated
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: 6: Coram Avenue/Treadwells Drive & Dundas Street E





Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	23	1205	14	10	940	12	17	1	22	22	1	24
Future Volume (vph)	23	1205	14	10	940	12	17	1	22	22	1	24
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.0	3.5	3.0	3.0	3.5	3.0	3.0	3.5	3.0	3.0	3.5	3.0
Total Lost time (s)	5.0	7.5		5.0	7.5			5.0			7.0	7.0
Lane Util. Factor	1.00	0.95		1.00	0.95			1.00			1.00	1.00
Frpb, ped/bikes	1.00	1.00		1.00	1.00			1.00			1.00	0.98
Flpb, ped/bikes	1.00	1.00		1.00	1.00			1.00			1.00	1.00
Frt	1.00	1.00		1.00	1.00			0.93			1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00			0.98			0.95	1.00
Satd. Flow (prot)	1685	3324		1532	3331			1584			1793	1483
Flt Permitted	0.95	1.00		0.95	1.00			0.98			0.95	1.00
Satd. Flow (perm)	1685	3324		1532	3331			1584			1793	1483
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	24	1268	15	11	989	13	18	1	23	23	1	25
RTOR Reduction (vph)	0	0	0	0	0	0	0	20	0	0	0	22
Lane Group Flow (vph)	24	1283	0	11	1002	0	0	22	0	0	24	3
Confl. Peds. (#/hr)	6		3	3		6	2					2
Confl. Bikes (#/hr)												1
Heavy Vehicles (%)	0%	7%	21%	10%	7%	0%	12%	100%	0%	0%	0%	0%
Bus Blockages (#/hr)	0	0	5	0	0	6	0	0	0	0	0	0
Turn Type	Prot	NA		Prot	NA		Split	NA		Split	NA	Perm
Protected Phases	5	2		1	6		4	4		8	8	
Permitted Phases												8
Actuated Green, G (s)	4.3	93.0		2.5	91.2			20.0			20.0	20.0
Effective Green, g (s)	4.3	93.0		2.5	91.2			20.0			20.0	20.0
Actuated g/C Ratio	0.03	0.58		0.02	0.57			0.12			0.12	0.12
Clearance Time (s)	5.0	7.5		5.0	7.5			5.0			7.0	7.0
Vehicle Extension (s)	3.0	3.0		3.0	3.0			3.0			3.0	3.0
Lane Grp Cap (vph)	45	1932		23	1898			198			224	185
v/s Ratio Prot	c0.01	c0.39		0.01	0.30			c0.01			c0.01	
v/s Ratio Perm												0.00
v/c Ratio	0.53	0.66		0.48	0.53			0.11			0.11	0.02
Uniform Delay, d1	76.9	22.8		78.1	21.2			62.1			62.1	61.4
Progression Factor	1.19	0.88		1.11	0.79			1.00			1.00	1.00
Incremental Delay, d2	9.0	1.4		13.8	1.0			0.2			0.2	0.0
Delay (s)	100.1	21.6		100.5	17.6			62.4			62.3	61.4
Level of Service	F	C		F	B			E			E	E
Approach Delay (s)		23.0			18.5			62.4			61.8	
Approach LOS		C			B			E			E	

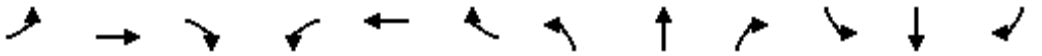
Intersection Summary			
HCM 2000 Control Delay	22.6	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.50		
Actuated Cycle Length (s)	160.0	Sum of lost time (s)	24.5
Intersection Capacity Utilization	69.0%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations								
Traffic Volume (vph)	97	1012	80	830	34	7	82	12
Future Volume (vph)	97	1012	80	830	34	7	82	12
Lane Group Flow (vph)	104	1134	86	984	37	68	88	67
Turn Type	Prot	NA	Prot	NA	Perm	NA	Perm	NA
Protected Phases	5	2	1	6		4		8
Permitted Phases					4		8	
Detector Phase	5	2	1	6	4	4	8	8
Switch Phase								
Minimum Initial (s)	5.0	8.0	5.0	8.0	8.0	8.0	8.0	8.0
Minimum Split (s)	10.0	38.5	10.0	38.5	48.0	48.0	48.0	48.0
Total Split (s)	27.0	87.0	22.0	82.0	51.0	51.0	51.0	51.0
Total Split (%)	16.9%	54.4%	13.8%	51.3%	31.9%	31.9%	31.9%	31.9%
Yellow Time (s)	3.0	4.0	3.0	4.0	3.5	3.5	3.5	3.5
All-Red Time (s)	2.0	2.5	2.0	2.5	3.5	3.5	3.5	3.5
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.0	6.5	5.0	6.5	7.0	7.0	7.0	7.0
Lead/Lag	Lead	Lag	Lead	Lag				
Lead-Lag Optimize?								
Recall Mode	None	C-Max	None	C-Max	None	None	None	None
v/c Ratio	0.68	0.50	0.64	0.45	0.31	0.32	0.70	0.31
Control Delay	103.1	4.2	90.2	14.4	69.1	20.7	95.2	23.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	103.1	4.2	90.2	14.4	69.1	20.7	95.2	23.3
Queue Length 50th (m)	32.4	50.1	28.3	76.1	11.6	2.4	28.9	4.0
Queue Length 95th (m)	m57.6	31.6	46.6	118.8	23.2	17.5	47.3	19.0
Internal Link Dist (m)		363.1		862.1		62.3		138.1
Turn Bay Length (m)	30.0		42.0		30.0		35.0	
Base Capacity (vph)	213	2256	164	2184	295	427	305	440
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.49	0.50	0.52	0.45	0.13	0.16	0.29	0.15

Intersection Summary

Cycle Length: 160
Actuated Cycle Length: 160
Offset: 112 (70%), Referenced to phase 2:EBT and 6:WBT, Start of Green
Natural Cycle: 100
Control Type: Actuated-Coordinated
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 7: Wharton Way & Dundas Street E



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	97	1012	43	80	830	86	34	7	56	82	12	50
Future Volume (vph)	97	1012	43	80	830	86	34	7	56	82	12	50
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.0	3.5	3.0	3.0	3.5	3.0	3.0	3.5	3.0	3.0	3.5	3.0
Total Lost time (s)	5.0	6.5		5.0	6.5		7.0	7.0		7.0	7.0	
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	1.00		1.00	1.00	
Frpb, ped/bikes	1.00	1.00		1.00	0.99		1.00	0.98		1.00	0.97	
Flpb, ped/bikes	1.00	1.00		1.00	1.00		0.98	1.00		0.99	1.00	
Frt	1.00	0.99		1.00	0.99		1.00	0.87		1.00	0.88	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1546	3313		1491	3251		1431	1394		1480	1461	
Flt Permitted	0.95	1.00		0.95	1.00		0.71	1.00		0.71	1.00	
Satd. Flow (perm)	1546	3313		1491	3251		1074	1394		1110	1461	
Peak-hour factor, PHF	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Adj. Flow (vph)	104	1088	46	86	892	92	37	8	60	88	13	54
RTOR Reduction (vph)	0	1	0	0	3	0	0	53	0	0	48	0
Lane Group Flow (vph)	104	1133	0	86	981	0	37	15	0	88	19	0
Confl. Peds. (#/hr)	27		8	8		27	22		7	7		22
Heavy Vehicles (%)	9%	7%	5%	13%	6%	21%	15%	29%	13%	13%	0%	12%
Bus Blockages (#/hr)	0	0	9	0	0	12	0	0	0	0	0	0
Turn Type	Prot	NA		Prot	NA		Perm	NA		Perm	NA	
Protected Phases	5	2		1	6			4			8	
Permitted Phases							4			8		
Actuated Green, G (s)	16.0	108.9		14.5	107.4		18.1	18.1		18.1	18.1	
Effective Green, g (s)	16.0	108.9		14.5	107.4		18.1	18.1		18.1	18.1	
Actuated g/C Ratio	0.10	0.68		0.09	0.67		0.11	0.11		0.11	0.11	
Clearance Time (s)	5.0	6.5		5.0	6.5		7.0	7.0		7.0	7.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	154	2254		135	2182		121	157		125	165	
v/s Ratio Prot	c0.07	c0.34		0.06	0.30			0.01			0.01	
v/s Ratio Perm							0.03			c0.08		
v/c Ratio	0.68	0.50		0.64	0.45		0.31	0.09		0.70	0.12	
Uniform Delay, d1	69.5	12.4		70.2	12.4		65.2	63.6		68.4	63.8	
Progression Factor	1.26	0.26		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	8.8	0.6		9.5	0.7		1.4	0.3		16.5	0.3	
Delay (s)	96.2	3.9		79.7	13.1		66.6	63.9		84.8	64.1	
Level of Service	F	A		E	B		E	E		F	E	
Approach Delay (s)		11.6			18.4			64.8			75.9	
Approach LOS		B			B			E			E	

Intersection Summary			
HCM 2000 Control Delay	20.5	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.55		
Actuated Cycle Length (s)	160.0	Sum of lost time (s)	18.5
Intersection Capacity Utilization	72.4%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	1302	0	0	1138	0	0
Future Volume (Veh/h)	1302	0	0	1138	0	0
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.99	0.99	0.99	0.99	0.99	0.99
Hourly flow rate (vph)	1315	0	0	1149	0	0
Pedestrians					3	
Lane Width (m)					3.0	
Walking Speed (m/s)					1.2	
Percent Blockage					0	
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (m)	155			98		
pX, platoon unblocked			0.73		0.79	0.73
vC, conflicting volume			1318		1892	660
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			690		859	0
tC, single (s)			4.1		6.8	6.9
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			100		100	100
cM capacity (veh/h)			664		237	793

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1
Volume Total	877	438	574	574	0
Volume Left	0	0	0	0	0
Volume Right	0	0	0	0	0
cSH	1700	1700	1700	1700	1700
Volume to Capacity	0.52	0.26	0.34	0.34	0.00
Queue Length 95th (m)	0.0	0.0	0.0	0.0	0.0
Control Delay (s)	0.0	0.0	0.0	0.0	0.0
Lane LOS					A
Approach Delay (s)	0.0		0.0		0.0
Approach LOS					A

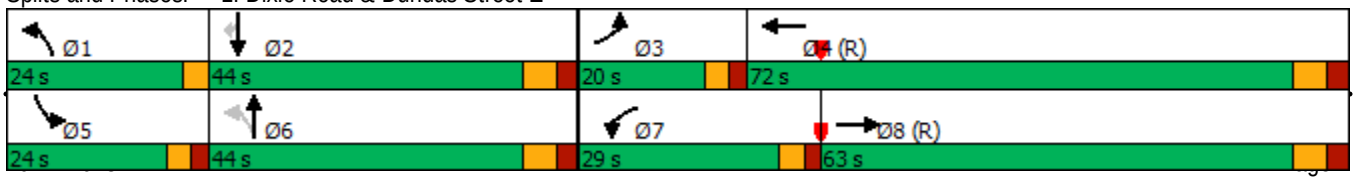
Intersection Summary			
Average Delay	0.0		
Intersection Capacity Utilization	39.3%	ICU Level of Service	A
Analysis Period (min)	15		

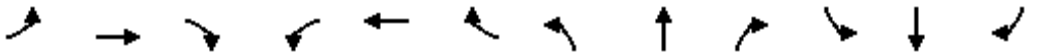
Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT	SBR
Lane Configurations									
Traffic Volume (vph)	192	804	211	1029	248	1064	475	1005	286
Future Volume (vph)	192	804	211	1029	248	1064	475	1005	286
Lane Group Flow (vph)	198	1042	218	1614	256	1321	490	1036	295
Turn Type	Prot	NA	Prot	NA	pm+pt	NA	Prot	NA	Perm
Protected Phases	3	8	7	4	1	6	5	2	
Permitted Phases					6				2
Detector Phase	3	8	7	4	1	6	5	2	2
Switch Phase									
Minimum Initial (s)	7.0	10.0	7.0	10.0	7.0	10.0	7.0	10.0	10.0
Minimum Split (s)	12.0	47.8	12.0	47.8	10.0	42.5	13.0	42.5	42.5
Total Split (s)	20.0	63.0	29.0	72.0	24.0	44.0	24.0	44.0	44.0
Total Split (%)	12.5%	39.4%	18.1%	45.0%	15.0%	27.5%	15.0%	27.5%	27.5%
Yellow Time (s)	3.0	4.0	3.0	4.0	3.0	4.0	3.0	4.0	4.0
All-Red Time (s)	2.0	2.8	2.0	2.8	0.0	2.5	2.0	2.5	2.5
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	-1.0	0.0	0.0
Total Lost Time (s)	5.0	6.8	5.0	6.8	3.0	6.5	4.0	6.5	6.5
Lead/Lag	Lead	Lag	Lead	Lag	Lead	Lag	Lead	Lag	Lag
Lead-Lag Optimize?									
Recall Mode	None	C-Max	None	C-Max	None	Max	None	Max	Max
v/c Ratio	1.34	0.87	0.90	1.19	0.96	1.15	1.23	0.89	0.69
Control Delay	241.8	56.0	114.3	123.9	89.4	129.0	177.0	69.1	33.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	241.8	56.0	114.3	123.9	89.4	129.0	177.0	69.1	33.2
Queue Length 50th (m)	~85.7	169.7	75.5	~154.3	69.1	~187.3	~103.6	123.9	40.6
Queue Length 95th (m)	#140.5	201.1m	#101.8	#223.3	#128.2	#219.2	#141.8	143.1	78.6
Internal Link Dist (m)		1362.6		279.9		1407.4		1183.5	
Turn Bay Length (m)	140.0		160.0		64.0		107.0		50.0
Base Capacity (vph)	148	1200	250	1356	269	1151	400	1170	426
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	1.34	0.87	0.87	1.19	0.95	1.15	1.23	0.89	0.69

Intersection Summary

Cycle Length: 160
Actuated Cycle Length: 160
Offset: 150 (94%), Referenced to phase 4:WBT and 8:EBT, 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: 1: Dixie Road & Dundas Street E





Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	192	804	207	211	1029	536	248	1064	217	475	1005	286
Future Volume (vph)	192	804	207	211	1029	536	248	1064	217	475	1005	286
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.0	3.5	3.0	3.0	3.5	3.0	3.0	3.5	3.0	3.0	3.5	3.0
Total Lost time (s)	5.0	6.8		5.0	6.8		3.0	6.5		4.0	6.5	6.5
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	0.91		0.97	0.91	1.00
Frpb, ped/bikes	1.00	0.99		1.00	0.98		1.00	0.99		1.00	1.00	0.89
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	1.00
Frt	1.00	0.97		1.00	0.95		1.00	0.97		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)	1589	3326		1668	3223		1683	4829		3204	4980	1272
Flt Permitted	0.95	1.00		0.95	1.00		0.11	1.00		0.95	1.00	1.00
Satd. Flow (perm)	1589	3326		1668	3223		189	4829		3204	4980	1272
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	198	829	213	218	1061	553	256	1097	224	490	1036	295
RTOR Reduction (vph)	0	14	0	0	42	0	0	19	0	0	0	127
Lane Group Flow (vph)	198	1028	0	218	1572	0	256	1302	0	490	1036	168
Confl. Peds. (#/hr)	47		47	47		47	77		27	27		77
Confl. Bikes (#/hr)			3				77					1
Heavy Vehicles (%)	6%	3%	1%	1%	2%	4%	0%	2%	6%	2%	3%	3%
Bus Blockages (#/hr)	0	0	9	0	0	8	0	0	4	0	0	5
Turn Type	Prot	NA		Prot	NA		pm+pt	NA		Prot	NA	Perm
Protected Phases	3	8		7	4		1	6		5	2	
Permitted Phases							6					2
Actuated Green, G (s)	15.0	57.1		23.1	65.2		58.4	37.5		19.0	37.6	37.6
Effective Green, g (s)	15.0	57.1		23.1	65.2		58.4	37.5		20.0	37.6	37.6
Actuated g/C Ratio	0.09	0.36		0.14	0.41		0.36	0.23		0.12	0.24	0.24
Clearance Time (s)	5.0	6.8		5.0	6.8		3.0	6.5		5.0	6.5	6.5
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)	148	1186		240	1313		264	1131		400	1170	298
v/s Ratio Prot	c0.12	0.31		0.13	c0.49		0.13	c0.27		c0.15	0.21	
v/s Ratio Perm							0.23					0.13
v/c Ratio	1.34	0.87		0.91	1.20		0.97	1.15		1.23	0.89	0.56
Uniform Delay, d1	72.5	47.9		67.4	47.4		48.9	61.2		70.0	59.1	54.0
Progression Factor	1.00	1.00		1.34	0.80		1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	190.5	8.6		23.9	93.5		46.4	78.5		121.6	10.0	7.5
Delay (s)	263.0	56.5		113.9	131.6		95.3	139.7		191.6	69.1	61.5
Level of Service	F	E		F	F		F	F		F	E	E
Approach Delay (s)		89.5			129.5			132.5			100.8	
Approach LOS		F			F			F			F	

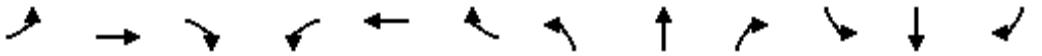
Intersection Summary			
HCM 2000 Control Delay	114.5	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	1.20		
Actuated Cycle Length (s)	160.0	Sum of lost time (s)	22.3
Intersection Capacity Utilization	119.9%	ICU Level of Service	H
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations								
Traffic Volume (vph)	75	1271	50	1609	137	51	52	22
Future Volume (vph)	75	1271	50	1609	137	51	52	22
Lane Group Flow (vph)	77	1493	51	1789	140	113	53	79
Turn Type	Prot	NA	Prot	NA	Perm	NA	Perm	NA
Protected Phases	5	2	1	6		4		8
Permitted Phases					4		8	
Detector Phase	5	2	1	6	4	4	8	8
Switch Phase								
Minimum Initial (s)	7.0	10.0	5.0	10.0	20.0	20.0	20.0	20.0
Minimum Split (s)	12.0	34.5	10.0	34.5	47.0	47.0	47.0	47.0
Total Split (s)	13.0	101.0	12.0	100.0	47.0	47.0	47.0	47.0
Total Split (%)	8.1%	63.1%	7.5%	62.5%	29.4%	29.4%	29.4%	29.4%
Yellow Time (s)	3.0	4.0	3.0	4.0	3.5	3.5	3.5	3.5
All-Red Time (s)	2.0	2.5	2.0	2.5	3.5	3.5	3.5	3.5
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.0	6.5	5.0	6.5	7.0	7.0	7.0	7.0
Lead/Lag	Lead	Lag	Lead	Lag				
Lead-Lag Optimize?								
Recall Mode	None	C-Max	None	C-Max	None	None	None	None
v/c Ratio	0.68	0.66	0.60	0.83	0.64	0.34	0.28	0.23
Control Delay	64.7	21.9	106.0	12.9	72.5	39.8	57.3	19.1
Queue Delay	0.0	1.5	0.0	0.4	0.0	0.0	0.0	0.0
Total Delay	64.7	23.3	106.0	13.3	72.5	39.8	57.3	19.1
Queue Length 50th (m)	25.8	129.6	17.6	50.5	45.8	23.8	16.2	6.5
Queue Length 95th (m)	m27.3	m125.6	m24.2	200.3	63.9	39.4	27.7	20.2
Internal Link Dist (m)		279.9		149.0		96.0		162.3
Turn Bay Length (m)	145.0		100.0		15.0		25.0	
Base Capacity (vph)	113	2253	85	2167	306	444	266	450
Starvation Cap Reductn	0	204	0	90	0	0	0	0
Spillback Cap Reductn	0	525	0	0	0	4	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.68	0.86	0.60	0.86	0.46	0.26	0.20	0.18

Intersection Summary

Cycle Length: 160
Actuated Cycle Length: 160
Offset: 134 (84%), Referenced to phase 2:EBT and 6:WBT, Start of Green
Natural Cycle: 135
Control Type: Actuated-Coordinated
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 2: Nelico Court & Dundas Street E



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	75	1271	192	50	1609	144	137	51	60	52	22	56
Future Volume (vph)	75	1271	192	50	1609	144	137	51	60	52	22	56
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.0	3.5	3.0	3.0	3.5	3.0	3.0	3.5	3.0	3.0	3.5	3.0
Total Lost time (s)	5.0	6.5		5.0	6.5		7.0	7.0		7.0	7.0	
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	1.00		1.00	1.00	
Frpb, ped/bikes	1.00	0.99		1.00	0.99		1.00	0.98		1.00	0.97	
Flpb, ped/bikes	1.00	1.00		1.00	1.00		0.98	1.00		0.97	1.00	
Frt	1.00	0.98		1.00	0.99		1.00	0.92		1.00	0.89	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1668	3362		1685	3398		1647	1672		1578	1631	
Flt Permitted	0.95	1.00		0.95	1.00		0.71	1.00		0.64	1.00	
Satd. Flow (perm)	1668	3362		1685	3398		1223	1672		1065	1631	
Peak-hour factor, PHF	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Adj. Flow (vph)	77	1297	196	51	1642	147	140	52	61	53	22	57
RTOR Reduction (vph)	0	6	0	0	4	0	0	29	0	0	47	0
Lane Group Flow (vph)	77	1487	0	51	1785	0	140	84	0	53	32	0
Confl. Peds. (#/hr)	35		28	28		35	21		26	26		21
Confl. Bikes (#/hr)							21					
Heavy Vehicles (%)	1%	3%	1%	0%	3%	0%	0%	2%	0%	4%	0%	0%
Bus Blockages (#/hr)	0	0	5	0	0	4	0	0	0	0	0	0
Turn Type	Prot	NA		Prot	NA		Perm	NA		Perm	NA	
Protected Phases	5	2		1	6			4			8	
Permitted Phases							4			8		
Actuated Green, G (s)	10.9	106.0		6.8	101.9		28.7	28.7		28.7	28.7	
Effective Green, g (s)	10.9	106.0		6.8	101.9		28.7	28.7		28.7	28.7	
Actuated g/C Ratio	0.07	0.66		0.04	0.64		0.18	0.18		0.18	0.18	
Clearance Time (s)	5.0	6.5		5.0	6.5		7.0	7.0		7.0	7.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	113	2227		71	2164		219	299		191	292	
v/s Ratio Prot	c0.05	c0.44		0.03	c0.53			0.05			0.02	
v/s Ratio Perm							c0.11			0.05		
v/c Ratio	0.68	0.67		0.72	0.83		0.64	0.28		0.28	0.11	
Uniform Delay, d1	72.9	16.3		75.7	22.2		60.9	56.7		56.7	55.0	
Progression Factor	0.85	1.22		1.19	0.42		1.00	1.00		1.00	1.00	
Incremental Delay, d2	1.5	0.1		20.7	2.6		6.0	0.5		0.8	0.2	
Delay (s)	63.6	20.1		110.6	11.9		66.9	57.3		57.5	55.1	
Level of Service	E	C		F	B		E	E		E	E	
Approach Delay (s)		22.2			14.7			62.6			56.1	
Approach LOS		C			B			E			E	

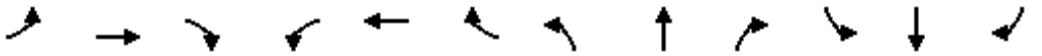
Intersection Summary			
HCM 2000 Control Delay	22.4	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.78		
Actuated Cycle Length (s)	160.0	Sum of lost time (s)	18.5
Intersection Capacity Utilization	96.9%	ICU Level of Service	F
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT	SBR
Lane Configurations									
Traffic Volume (vph)	31	1123	282	1480	239	6	37	22	82
Future Volume (vph)	31	1123	282	1480	239	6	37	22	82
Lane Group Flow (vph)	33	1448	297	1597	252	328	0	62	86
Turn Type	Prot	NA	Prot	NA	Perm	NA	Perm	NA	Perm
Protected Phases	5	2	1	6		4		8	
Permitted Phases					4		8		8
Detector Phase	5	2	1	6	4	4	8	8	8
Switch Phase									
Minimum Initial (s)	5.0	10.0	5.0	10.0	20.0	20.0	20.0	20.0	20.0
Minimum Split (s)	10.0	48.0	10.0	48.0	51.5	51.5	51.5	51.5	51.5
Total Split (s)	11.0	76.4	32.0	97.4	51.6	51.6	51.6	51.6	51.6
Total Split (%)	6.9%	47.8%	20.0%	60.9%	32.3%	32.3%	32.3%	32.3%	32.3%
Yellow Time (s)	3.0	4.0	3.0	4.0	3.0	3.0	3.0	3.0	3.0
All-Red Time (s)	2.0	3.0	2.0	3.0	4.5	4.5	4.5	4.5	4.5
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0
Total Lost Time (s)	5.0	7.0	5.0	7.0	7.5	7.5		7.5	7.5
Lead/Lag	Lead	Lag	Lead	Lag					
Lead-Lag Optimize?									
Recall Mode	None	C-Max	None	C-Max	Min	Min	Min	Min	Min
v/c Ratio	0.52	0.98	0.86	0.76	0.88	0.58		0.42	0.21
Control Delay	108.2	44.1	94.9	16.7	87.5	12.9		59.4	7.3
Queue Delay	0.0	18.9	0.0	0.2	0.0	0.0		0.0	0.0
Total Delay	108.2	63.0	94.9	16.9	87.5	13.0		59.4	7.3
Queue Length 50th (m)	11.6	218.0	102.2	74.5	81.7	12.6		17.8	0.0
Queue Length 95th (m)	m18.7	#303.4	m#174.5	194.4	112.7	42.5		32.7	11.9
Internal Link Dist (m)		149.0		130.6		105.8		70.0	
Turn Bay Length (m)	110.0		140.0						10.0
Base Capacity (vph)	64	1484	345	2113	348	624		180	476
Starvation Cap Reductn	0	74	0	70	0	0		0	0
Spillback Cap Reductn	0	99	0	102	0	7		0	2
Storage Cap Reductn	0	0	0	0	0	0		0	0
Reduced v/c Ratio	0.52	1.05	0.86	0.79	0.72	0.53		0.34	0.18

Intersection Summary

Cycle Length: 160
Actuated Cycle Length: 160
Offset: 148 (93%), Referenced to phase 2:EBT and 6:WBT, Start of Green
Natural Cycle: 150
Control Type: Actuated-Coordinated
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 3: Jarrow Avenue & Dundas Street E



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	31	1123	253	282	1480	37	239	6	306	37	22	82
Future Volume (vph)	31	1123	253	282	1480	37	239	6	306	37	22	82
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.0	3.5	3.0	3.0	3.5	3.0	3.0	3.5	3.0	3.0	3.5	3.0
Total Lost time (s)	5.0	7.0		5.0	7.0		7.5	7.5			7.5	7.5
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	1.00			1.00	1.00
Frpb, ped/bikes	1.00	0.99		1.00	1.00		1.00	0.96			1.00	0.98
Flpb, ped/bikes	1.00	1.00		1.00	1.00		0.99	1.00			0.99	1.00
Frt	1.00	0.97		1.00	1.00		1.00	0.85			1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00			0.97	1.00
Satd. Flow (prot)	1465	3331		1668	3412		1675	1528			1690	1480
Flt Permitted	0.95	1.00		0.95	1.00		0.72	1.00			0.38	1.00
Satd. Flow (perm)	1465	3331		1668	3412		1263	1528			654	1480
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	33	1182	266	297	1558	39	252	6	322	39	23	86
RTOR Reduction (vph)	0	12	0	0	1	0	0	217	0	0	0	66
Lane Group Flow (vph)	33	1436	0	297	1596	0	252	111	0	0	62	20
Confl. Peds. (#/hr)	25		16	16		25	6		24	24		6
Heavy Vehicles (%)	15%	4%	0%	1%	4%	7%	0%	0%	1%	11%	0%	0%
Bus Blockages (#/hr)	0	0	5	0	0	4	0	0	0	0	0	0
Turn Type	Prot	NA		Prot	NA		Perm	NA		Perm	NA	Perm
Protected Phases	5	2		1	6			4			8	
Permitted Phases							4			8		8
Actuated Green, G (s)	5.9	70.8		33.2	98.1		36.5	36.5			36.5	36.5
Effective Green, g (s)	5.9	70.8		33.2	98.1		36.5	36.5			36.5	36.5
Actuated g/C Ratio	0.04	0.44		0.21	0.61		0.23	0.23			0.23	0.23
Clearance Time (s)	5.0	7.0		5.0	7.0		7.5	7.5			7.5	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)	54	1473		346	2091		288	348			149	337
v/s Ratio Prot	0.02	c0.43		c0.18	0.47			0.07				
v/s Ratio Perm							c0.20				0.09	0.01
v/c Ratio	0.61	0.98		0.86	0.76		0.88	0.32			0.42	0.06
Uniform Delay, d1	75.9	43.7		61.1	22.5		59.6	51.4			52.7	48.3
Progression Factor	1.18	0.63		1.27	0.60		1.00	1.00			1.00	1.00
Incremental Delay, d2	15.3	15.9		15.8	2.2		24.2	0.5			1.9	0.1
Delay (s)	104.8	43.6		93.5	15.8		83.8	51.9			54.5	48.4
Level of Service	F	D		F	B		F	D			D	D
Approach Delay (s)		44.9			28.0			65.8			51.0	
Approach LOS		D			C			E			D	

Intersection Summary			
HCM 2000 Control Delay	40.3	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.92		
Actuated Cycle Length (s)	160.0	Sum of lost time (s)	19.5
Intersection Capacity Utilization	110.6%	ICU Level of Service	H
Analysis Period (min)	15		

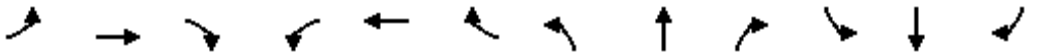
c Critical Lane Group

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT	SBR
Lane Configurations									
Traffic Volume (vph)	9	1204	257	1402	248	1	7	1	4
Future Volume (vph)	9	1204	257	1402	248	1	7	1	4
Lane Group Flow (vph)	9	1505	265	1448	256	178	0	8	4
Turn Type	Prot	NA	Prot	NA	Perm	NA	Perm	NA	Perm
Protected Phases	5	2	1	6		4		8	
Permitted Phases					4		8		8
Detector Phase	5	2	1	6	4	4	8	8	8
Switch Phase									
Minimum Initial (s)	5.0	10.0	5.0	10.0	10.0	10.0	10.0	10.0	10.0
Minimum Split (s)	10.0	40.0	10.0	40.0	45.0	45.0	45.0	45.0	45.0
Total Split (s)	10.0	81.0	32.0	103.0	47.0	47.0	47.0	47.0	47.0
Total Split (%)	6.3%	50.6%	20.0%	64.4%	29.4%	29.4%	29.4%	29.4%	29.4%
Yellow Time (s)	3.0	4.0	3.0	4.0	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	2.0	3.0	2.0	3.0	3.5	3.5	3.5	3.5	3.5
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0
Total Lost Time (s)	5.0	7.0	5.0	7.0	7.0	7.0		7.0	7.0
Lead/Lag	Lead	Lag	Lead	Lag					
Lead-Lag Optimize?									
Recall Mode	None	C-Max	None	C-Max	None	None	None	None	None
v/c Ratio	0.16	0.94	0.91	0.62	0.90	0.38		0.02	0.01
Control Delay	88.8	20.3	90.9	5.9	92.9	8.6		46.1	0.0
Queue Delay	0.0	3.5	0.0	0.7	0.0	0.0		0.0	0.0
Total Delay	88.8	23.9	90.9	6.6	92.9	8.6		46.1	0.0
Queue Length 50th (m)	3.2	105.4	81.5	8.8	82.5	0.3		2.1	0.0
Queue Length 95th (m)	m4.3	m#286.2	m#99.2	m71.3	#126.4	20.7		7.0	0.0
Internal Link Dist (m)		73.5		59.8		251.4		120.0	
Turn Bay Length (m)	140.0		145.0						15.0
Base Capacity (vph)	57	1595	291	2351	321	507		374	437
Starvation Cap Reductn	0	55	0	517	0	0		0	0
Spillback Cap Reductn	0	0	0	0	0	0		0	0
Storage Cap Reductn	0	0	0	0	0	0		0	0
Reduced v/c Ratio	0.16	0.98	0.91	0.79	0.80	0.35		0.02	0.01

Intersection Summary

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

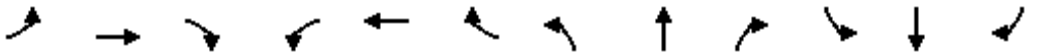
Splits and Phases: 4: Mattawa Avenue & Dundas Street E



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	9	1204	256	257	1402	3	248	1	172	7	1	4
Future Volume (vph)	9	1204	256	257	1402	3	248	1	172	7	1	4
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.0	3.5	3.0	3.0	3.5	3.0	3.0	3.5	3.0	3.0	3.5	3.0
Total Lost time (s)	5.0	7.0		5.0	7.0		7.0	7.0			7.0	7.0
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	1.00			1.00	1.00
Frpb, ped/bikes	1.00	0.98		1.00	1.00		1.00	0.97			1.00	0.97
Flpb, ped/bikes	1.00	1.00		1.00	1.00		0.98	1.00			0.99	1.00
Frt	1.00	0.97		1.00	1.00		1.00	0.85			1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00			0.96	1.00
Satd. Flow (prot)	1685	3301		1620	3464		1625	1496			1783	1465
Flt Permitted	0.95	1.00		0.95	1.00		0.75	1.00			0.80	1.00
Satd. Flow (perm)	1685	3301		1620	3464		1287	1496			1496	1465
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	9	1241	264	265	1445	3	256	1	177	7	1	4
RTOR Reduction (vph)	0	11	0	0	0	0	0	138	0	0	0	3
Lane Group Flow (vph)	9	1494	0	265	1448	0	256	40	0	0	8	1
Confl. Peds. (#/hr)	28		28	28		28	13		12	12		13
Heavy Vehicles (%)	0%	3%	7%	4%	3%	0%	2%	0%	4%	0%	0%	0%
Bus Blockages (#/hr)	0	0	5	0	0	4	0	0	0	0	0	0
Turn Type	Prot	NA		Prot	NA		Perm	NA		Perm	NA	Perm
Protected Phases	5	2		1	6			4			8	
Permitted Phases							4			8		8
Actuated Green, G (s)	1.0	76.8		28.8	104.6		35.4	35.4			35.4	35.4
Effective Green, g (s)	1.0	76.8		28.8	104.6		35.4	35.4			35.4	35.4
Actuated g/C Ratio	0.01	0.48		0.18	0.65		0.22	0.22			0.22	0.22
Clearance Time (s)	5.0	7.0		5.0	7.0		7.0	7.0			7.0	7.0
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0			3.0	3.0
Lane Grp Cap (vph)	10	1584		291	2264		284	330			330	324
v/s Ratio Prot	0.01	c0.45		c0.16	0.42			0.03				
v/s Ratio Perm							c0.20				0.01	0.00
v/c Ratio	0.90	0.94		0.91	0.64		0.90	0.12			0.02	0.00
Uniform Delay, d1	79.5	39.5		64.3	16.5		60.6	49.9			48.8	48.5
Progression Factor	1.14	0.30		1.21	0.35		1.00	1.00			1.00	1.00
Incremental Delay, d2	149.1	7.0		13.6	0.5		29.3	0.2			0.0	0.0
Delay (s)	239.3	18.9		91.5	6.3		89.9	50.0			48.8	48.5
Level of Service	F	B		F	A		F	D			D	D
Approach Delay (s)		20.2			19.5			73.6			48.7	
Approach LOS		C			B			E			D	

Intersection Summary			
HCM 2000 Control Delay	26.3	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.92		
Actuated Cycle Length (s)	160.0	Sum of lost time (s)	19.0
Intersection Capacity Utilization	96.1%	ICU Level of Service	F
Analysis Period (min)	15		

c Critical Lane Group



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	1397	0	0	1744	6	0	0	0	0	0	15
Future Volume (Veh/h)	0	1397	0	0	1744	6	0	0	0	0	0	15
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	0	1471	0	0	1836	6	0	0	0	0	0	16
Pedestrians								19			15	
Lane Width (m)								3.0			3.0	
Walking Speed (m/s)								1.2			1.2	
Percent Blockage								1			1	
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (m)		84			172							
pX, platoon unblocked	0.46			0.57			0.68	0.68	0.57	0.68	0.68	0.46
vC, conflicting volume	1857			1490			2424	3347	754	2590	3344	936
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	523			359			0	661	0	0	656	0
tC, single (s)	4.1			4.1			7.5	6.5	6.9	7.5	6.5	6.9
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			100			100	100	100	100	100	97
cM capacity (veh/h)	481			683			652	254	615	675	256	498

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	SB 1
Volume Total	981	490	1224	618	0	16
Volume Left	0	0	0	0	0	0
Volume Right	0	0	0	6	0	16
cSH	1700	1700	1700	1700	1700	498
Volume to Capacity	0.58	0.29	0.72	0.36	0.00	0.03
Queue Length 95th (m)	0.0	0.0	0.0	0.0	0.0	0.8
Control Delay (s)	0.0	0.0	0.0	0.0	0.0	12.5
Lane LOS					A	B
Approach Delay (s)	0.0		0.0		0.0	12.5
Approach LOS					A	B

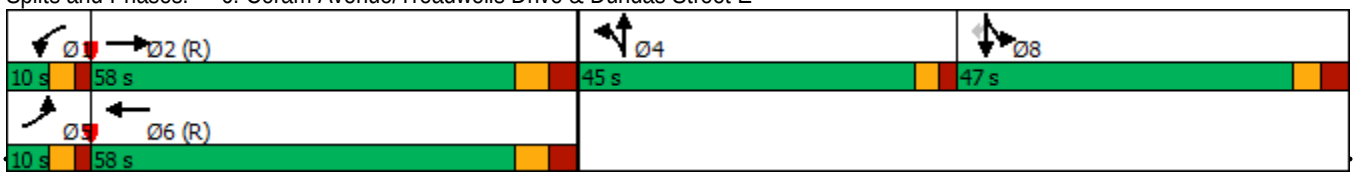
Intersection Summary				
Average Delay	0.1			
Intersection Capacity Utilization	58.4%	ICU Level of Service		B
Analysis Period (min)	15			

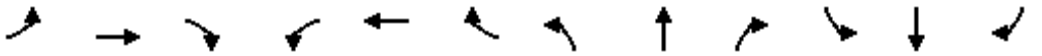
Lane Group	EBL	EBT	WBL	WBT	NBT	SBT	SBR
Lane Configurations							
Traffic Volume (vph)	36	1293	8	1770	0	0	5
Future Volume (vph)	36	1293	8	1770	0	0	5
Lane Group Flow (vph)	38	1392	8	1876	45	17	5
Turn Type	Prot	NA	Prot	NA	NA	NA	Perm
Protected Phases	5	2	1	6	4	8	
Permitted Phases							8
Detector Phase	5	2	1	6	4	8	8
Switch Phase							
Minimum Initial (s)	5.0	10.0	5.0	10.0	15.0	15.0	15.0
Minimum Split (s)	10.0	36.5	10.0	36.5	45.0	47.0	47.0
Total Split (s)	10.0	58.0	10.0	58.0	45.0	47.0	47.0
Total Split (%)	6.3%	36.3%	6.3%	36.3%	28.1%	29.4%	29.4%
Yellow Time (s)	3.0	4.0	3.0	4.0	3.0	3.5	3.5
All-Red Time (s)	2.0	3.5	2.0	3.5	2.0	3.5	3.5
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.0	7.5	5.0	7.5	5.0	7.0	7.0
Lead/Lag	Lead	Lag	Lead	Lag			
Lead-Lag Optimize?							
Recall Mode	None	C-Max	None	C-Max	Min	Min	Min
v/c Ratio	0.45	0.66	0.13	0.97	0.14	0.08	0.02
Control Delay	68.2	35.1	92.2	38.3	1.0	57.9	0.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	68.2	35.1	92.2	38.3	1.0	57.9	0.2
Queue Length 50th (m)	13.2	164.3	2.9	131.1	0.0	5.3	0.0
Queue Length 95th (m)	m16.5	m#338.1	m5.2	#526.6	0.0	11.4	0.0
Internal Link Dist (m)		148.0		363.1	118.1	152.8	
Turn Bay Length (m)	145.0		145.0				10.0
Base Capacity (vph)	84	2119	60	1936	517	446	445
Starvation Cap Reductn	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.45	0.66	0.13	0.97	0.09	0.04	0.01

Intersection Summary

Cycle Length: 160
Actuated Cycle Length: 160
Offset: 150 (94%), Referenced to phase 2:EBT and 6:WBT, Start of Green
Natural Cycle: 150
Control Type: Actuated-Coordinated
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: 6: Coram Avenue/Treadwells Drive & Dundas Street E





Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	36	1293	43	8	1770	31	31	0	12	16	0	5
Future Volume (vph)	36	1293	43	8	1770	31	31	0	12	16	0	5
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.0	3.5	3.0	3.0	3.5	3.0	3.0	3.5	3.0	3.0	3.5	3.0
Total Lost time (s)	5.0	7.5		5.0	7.5			5.0			7.0	7.0
Lane Util. Factor	1.00	0.95		1.00	0.95			1.00			1.00	1.00
Frpb, ped/bikes	1.00	1.00		1.00	1.00			0.99			1.00	0.98
Flpb, ped/bikes	1.00	1.00		1.00	1.00			1.00			1.00	1.00
Frt	1.00	1.00		1.00	1.00			0.96			1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00			0.97			0.95	1.00
Satd. Flow (prot)	1685	3442		1685	3456			1734			1785	1484
Flt Permitted	0.95	1.00		0.95	1.00			0.97			0.95	1.00
Satd. Flow (perm)	1685	3442		1685	3456			1734			1785	1484
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	38	1347	45	8	1844	32	32	0	12	17	0	5
RTOR Reduction (vph)	0	1	0	0	0	0	0	39	0	0	0	4
Lane Group Flow (vph)	38	1391	0	8	1876	0	0	6	0	0	17	1
Confl. Peds. (#/hr)	11		19	19		11	3		6	6		3
Heavy Vehicles (%)	0%	3%	2%	0%	3%	0%	0%	0%	0%	0%	0%	0%
Bus Blockages (#/hr)	0	0	5	0	0	4	0	0	0	0	0	0
Turn Type	Prot	NA		Prot	NA		Split	NA		Split	NA	Perm
Protected Phases	5	2		1	6		4	4		8	8	
Permitted Phases												8
Actuated Green, G (s)	6.8	94.5		1.0	88.7			20.0			20.0	20.0
Effective Green, g (s)	6.8	94.5		1.0	88.7			20.0			20.0	20.0
Actuated g/C Ratio	0.04	0.59		0.01	0.55			0.12			0.12	0.12
Clearance Time (s)	5.0	7.5		5.0	7.5			5.0			7.0	7.0
Vehicle Extension (s)	3.0	3.0		3.0	3.0			3.0			3.0	3.0
Lane Grp Cap (vph)	71	2032		10	1915			216			223	185
v/s Ratio Prot	c0.02	c0.40		0.00	c0.54			c0.00			c0.01	
v/s Ratio Perm												0.00
v/c Ratio	0.54	0.68		0.80	0.98			0.03			0.08	0.00
Uniform Delay, d1	75.1	22.5		79.4	34.8			61.5			61.8	61.3
Progression Factor	0.81	1.63		1.18	0.73			1.00			1.00	1.00
Incremental Delay, d2	4.0	1.0		153.2	14.6			0.0			0.1	0.0
Delay (s)	64.5	37.8		246.6	39.9			61.5			62.0	61.3
Level of Service	E	D		F	D			E			E	E
Approach Delay (s)		38.5			40.7			61.5			61.8	
Approach LOS		D			D			E			E	

Intersection Summary			
HCM 2000 Control Delay	40.2	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.69		
Actuated Cycle Length (s)	160.0	Sum of lost time (s)	24.5
Intersection Capacity Utilization	96.9%	ICU Level of Service	F
Analysis Period (min)	15		

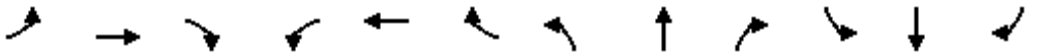
c Critical Lane Group

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations								
Traffic Volume (vph)	59	1189	103	1445	66	7	107	11
Future Volume (vph)	59	1189	103	1445	66	7	107	11
Lane Group Flow (vph)	61	1260	106	1531	68	95	110	168
Turn Type	Prot	NA	Prot	NA	Perm	NA	Perm	NA
Protected Phases	5	2	1	6		4		8
Permitted Phases					4		8	
Detector Phase	5	2	1	6	4	4	8	8
Switch Phase								
Minimum Initial (s)	5.0	8.0	5.0	8.0	8.0	8.0	8.0	8.0
Minimum Split (s)	10.0	38.5	10.0	38.5	48.0	48.0	48.0	48.0
Total Split (s)	17.0	96.0	16.0	95.0	48.0	48.0	48.0	48.0
Total Split (%)	10.6%	60.0%	10.0%	59.4%	30.0%	30.0%	30.0%	30.0%
Yellow Time (s)	3.0	4.0	3.0	4.0	3.5	3.5	3.5	3.5
All-Red Time (s)	2.0	2.5	2.0	2.5	3.5	3.5	3.5	3.5
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.0	6.5	5.0	6.5	7.0	7.0	7.0	7.0
Lead/Lag	Lead	Lag	Lead	Lag				
Lead-Lag Optimize?								
Recall Mode	None	C-Max	None	C-Max	None	None	None	None
v/c Ratio	0.54	0.58	0.57	0.64	0.73	0.34	0.77	0.52
Control Delay	103.5	10.6	78.2	17.0	105.3	15.8	98.5	18.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	103.5	10.6	78.2	17.0	105.3	15.8	98.5	18.6
Queue Length 50th (m)	21.9	151.5	34.1	144.7	22.2	2.1	36.2	7.2
Queue Length 95th (m)	m32.8	51.6	54.9	217.6	39.4	19.1	56.7	29.9
Internal Link Dist (m)		363.1		862.1		62.3		138.1
Turn Bay Length (m)	30.0		42.0		30.0		35.0	
Base Capacity (vph)	129	2174	187	2391	184	465	282	500
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.47	0.58	0.57	0.64	0.37	0.20	0.39	0.34

Intersection Summary

Cycle Length: 160
Actuated Cycle Length: 160
Offset: 136 (85%), Referenced to phase 2:EBT and 6:WBT, Start of Green
Natural Cycle: 110
Control Type: Actuated-Coordinated
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 7: Wharton Way & Dundas Street E



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	59	1189	33	103	1445	40	66	7	85	107	11	152
Future Volume (vph)	59	1189	33	103	1445	40	66	7	85	107	11	152
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.0	3.5	3.0	3.0	3.5	3.0	3.0	3.5	3.0	3.0	3.5	3.0
Total Lost time (s)	5.0	6.5		5.0	6.5		7.0	7.0		7.0	7.0	
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	1.00		1.00	1.00	
Frpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	0.98		1.00	0.97	
Flpb, ped/bikes	1.00	1.00		1.00	1.00		0.98	1.00		0.99	1.00	
Frt	1.00	1.00		1.00	1.00		1.00	0.86		1.00	0.86	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1574	3443		1518	3427		1624	1561		1565	1534	
Flt Permitted	0.95	1.00		0.95	1.00		0.42	1.00		0.67	1.00	
Satd. Flow (perm)	1574	3443		1518	3427		720	1561		1104	1534	
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	61	1226	34	106	1490	41	68	7	88	110	11	157
RTOR Reduction (vph)	0	1	0	0	1	0	0	77	0	0	125	0
Lane Group Flow (vph)	61	1259	0	106	1530	0	68	18	0	110	43	0
Confl. Peds. (#/hr)	15		18	18		15	20		6	6		20
Heavy Vehicles (%)	7%	3%	6%	11%	3%	25%	2%	0%	2%	7%	0%	2%
Bus Blockages (#/hr)	0	0	9	0	0	8	0	0	0	0	0	0
Turn Type	Prot	NA		Prot	NA		Perm	NA		Perm	NA	
Protected Phases	5	2		1	6			4			8	
Permitted Phases							4			8		
Actuated Green, G (s)	10.1	101.0		19.7	110.6		20.8	20.8		20.8	20.8	
Effective Green, g (s)	10.1	101.0		19.7	110.6		20.8	20.8		20.8	20.8	
Actuated g/C Ratio	0.06	0.63		0.12	0.69		0.13	0.13		0.13	0.13	
Clearance Time (s)	5.0	6.5		5.0	6.5		7.0	7.0		7.0	7.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	99	2173		186	2368		93	202		143	199	
v/s Ratio Prot	0.04	0.37		c0.07	c0.45			0.01			0.03	
v/s Ratio Perm							0.09			c0.10		
v/c Ratio	0.62	0.58		0.57	0.65		0.73	0.09		0.77	0.21	
Uniform Delay, d1	73.1	17.1		66.2	13.8		66.9	61.3		67.3	62.3	
Progression Factor	1.27	0.53		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	8.4	0.9		4.0	1.4		25.3	0.2		21.7	0.5	
Delay (s)	101.3	9.9		70.1	15.2		92.2	61.5		88.9	62.8	
Level of Service	F	A		E	B		F	E		F	E	
Approach Delay (s)		14.1			18.7			74.3			73.2	
Approach LOS		B			B			E			E	

Intersection Summary			
HCM 2000 Control Delay	24.0	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)	18.5
Intersection Capacity Utilization	96.0%	ICU Level of Service	F
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	1483	0	0	1674	0	0
Future Volume (Veh/h)	1483	0	0	1674	0	0
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97
Hourly flow rate (vph)	1529	0	0	1726	0	0
Pedestrians					11	
Lane Width (m)					3.0	
Walking Speed (m/s)					1.2	
Percent Blockage					1	
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (m)	155			98		
pX, platoon unblocked			0.58		0.71	0.58
vC, conflicting volume			1540		2403	776
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			501		555	0
tC, single (s)			4.1		6.8	6.9
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			100		100	100
cM capacity (veh/h)			622		329	633

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1
Volume Total	1019	510	863	863	0
Volume Left	0	0	0	0	0
Volume Right	0	0	0	0	0
cSH	1700	1700	1700	1700	1700
Volume to Capacity	0.60	0.30	0.51	0.51	0.00
Queue Length 95th (m)	0.0	0.0	0.0	0.0	0.0
Control Delay (s)	0.0	0.0	0.0	0.0	0.0
Lane LOS					A
Approach Delay (s)	0.0		0.0		0.0
Approach LOS					A

Intersection Summary			
Average Delay	0.0		
Intersection Capacity Utilization	49.6%	ICU Level of Service	A
Analysis Period (min)	15		

APPENDIX L

City Council Decision – 151 City Centre Drive and 28 Ann Street

COMMITTEE OF ADJUSTMENT DECISION

City of Mississauga

'A' - 355 / 21

"A" 355/21
WARD 4

Decision of the Mississauga Committee of Adjustment under
Section 45(1) OR (2) of The Planning Act R.S.O. 1990, c.P.13, as amended.
Application for the property located at 151 City Centre Drive.
Date of Hearing on Thursday September 23, 2021
Date Decision Signed by the Committee September 30, 2021

The hearing commenced at approximately 1:01p.m.

No Member declared a pecuniary interest for this application.

The subject application was heard at approximately 1:07p.m.

APPLICATION DETAILS

The applicant requests the Committee to approve a minor variance to allow a reduction in required parking proposing:
1. A parking rate of 0.62 spaces per 1 bedroom unit (condo) whereas By-law 0225-2007, as amended, requires a minimum parking rate of 1 space per 1 bedroom unit (condo) in this instance;
2. A parking rate of 0.62 spaces per 1 bedroom unit (rental) whereas By-law 0225-2007, as amended, requires a minimum parking rate of 1 space per 1 bedroom unit (rental) in this instance; and
3. A parking rate of 0.72 spaces per 2 bedroom unit whereas By-law 0225-2007, as amended, requires a minimum parking rate of 1 space per 2 bedroom unit in this instance.

G. Broll, agent, attended and presented evidence and comment in support of the application.

COMMENTS
The Secretary – Treasurer noted the comments received from:

• City of Mississauga, Planning and Building Department (dated September 15, 2021)
• City of Mississauga, Transportation and Works Department (dated September 15, 2021)

CORRESPONDENCE & DISCUSSION
No public comments were received as a result of the public circulation of this application.

B. Williams, City Planning Strategies, spoke before the Committee to amend City Planning Strategies comments and conditions.

Committee asked questions of the agent who appeared before the Committee.

DECISION
The applicant requested that the application be amended and Committee agreed to the request.

Committee has taken into consideration, on balance, any and all submissions made before its decision. They have also considered all relevant materials including: information provided by the applicant, plans submitted, and staff and agency comments, and the majority of the members have determined that the application is minor in nature, desirable for the appropriate development on the subject property, and that the general intent and purpose of the Zoning By-law and the Official Plan are maintained.

Accordingly, the Committee resolves to authorize and grant the request.

MOVED BY:
J. Page CARRIED

The Decision of the Committee is:

APPLICATION APPROVED AS AMENDED SUBJECT TO CONDITIONS:

To allow a reduction in required parking proposing:
1. A parking rate of 0.62 spaces per 1 bedroom unit (condo) whereas By-law 0225-2007, as amended, requires a minimum parking rate of 1 space per 1 bedroom unit (condo) in this instance;
2. A parking rate of 0.72 spaces per 2 bedroom unit whereas By-law 0225-2007, as amended, requires a minimum parking rate of 1 space per 2 bedroom unit in this instance.

CONDITIONS:

1. That the applicant enter into an agreement pursuant to s.45 (9.1) of the Planning Act, with content satisfactory to City staff as indicated below, and in a form satisfactory to the City Solicitor, to secure performance of the following conditions, including any associated securities/letters of credit:
a) To provide four (4) car-share spaces at an accessible and visible location, demonstrated by inclusion on the approved site plan through the Site Plan Application for the Third (3rd) and Final Phase of this development to the satisfaction of the Director of Development and Design, Planning & Building department.
b) Prior to the approval of the Site Plan Application for the Third (3rd) and Final Phase of this development, a copy of an executed agreement with a car-share company to secure and provide for four (4) car-share vehicles for a minimum period of two (2) years should be submitted to the satisfaction of the Director of Infrastructure Planning & Engineering Services, Transportation & Works department.
c) To confirm that a bicycle voucher with a minimum amount of $200 per condominium unit was provided to each unit owner that did not purchase a parking space at the time of closing, including supporting documentation, satisfactory to the Director of Infrastructure Planning & Engineering Services, Transportation & Works department.
d) To confirm that a pre-loaded Presto Card with a minimum amount of $1620 per condominium unit

was provided to each unit owner that did not purchase a parking space at the time of closing, including supporting documentation, satisfactory to the Director of Infrastructure Planning & Engineering Services, Transportation & Works department.
2. Provide resident bicycle parking spaces at a rate of 0.80 spaces per unit.

Committee Decision dated at the City of Mississauga on September 30, 2021.

"S. PATRIZIO"
S. PATRIZIO (Chair) DISSENTED
D. GEORGE
"W. SHAHRUKH"
W. SHAHRUKH DISSENTED
D. KENNEDY
"J. PAGE"
J. PAGE "J. KWAST"
J. KWAST
"D. COOK"
D. COOK

I certify this is copy of the decision of the Committee's decision given on September 30, 2021

"L. CHRISTIE" For a signed copy of this document

LISA CHRISTIE – SECRETARY TREASURER please call 905-615-3200 ext. 2408
or email Committee.Adjustment@mississauga.ca

A copy of Section 45 of the Planning Act, as amended, is attached.

This decision is subject to appeal to the Local Planning Appeal Tribunal by filing with the Secretary-Treasurer of the Committee of Adjustment a written notification, giving reasons for the appeal, accompanied with the prescribed fee on or before October 20, 2021

NOTES:
1. A Development Charge may be payable prior to the issuance of a Building Permit.
2. Further approvals from the City of Mississauga may be required i.e. a Building Permit, a Zoning Certificate, a License, etc.

Committee Decision dated at the City of Mississauga on September 30, 2021.

DISSENTED

S. PATRIZIO – (CHAIR)
D. GEORGE
DISSENTED

W. SHAHRUKH
D. KENNEDY

J. PAGE
J. KWAST

D. COOK

I certify the Committee Members who concurred with the decision signed this on September 30, 2021.

LISA CHRISTIE – SECRETARY TREASURER

Decision of the Mississauga Committee of Adjustment under
Section 45(1) OR (2) of The Planning Act R.S.O. 1990, c.P.13, as amended.
Application for the property located at **28 Ann Street**.
Date of Hearing on Thursday March 25, 2021
Date Decision Signed by the Committee April 1, 2021

The hearing commenced at approximately 1:03p.m.

No Member declared a pecuniary interest for this application.

The subject application was heard at approximately 2:54p.m.

APPLICATION DETAILS

The applicant requests the Committee to approve a minor variance to allow reduced parking requirements on the subject property proposing:

1. 0.5 parking spaces per one bedroom unit whereas By-law 0225-2007, as amended, requires a minimum of 0.75 parking spaces per one bedroom unit in this instance; and
2. 0.8 parking spaces per two bedroom unit whereas By-law 0225-2007, as amended, requires a minimum of 0.90 parking spaces per two bedroom unit in this instance.

D. Sajecki, agent, attended and presented evidence and comment in support of the application.

BACKGROUND

On December 17, 2020, D. Sajecki, agent, requested to defer the application to meet with staff.

The Committee consented to the request and deferred the application until further notice.

The Secretary – Treasurer noted the comments received from:

- City of Mississauga, Planning and Building Department (dated December 9, 2020)
- City of Mississauga, Transportation and Works Department (dated December 9, 2020)
- Region of Peel (dated December 9, 2020)

COMMENTS

The Secretary – Treasurer noted the comments received from:

- City of Mississauga, Planning and Building Department (dated March 17, 2021)
- City of Mississauga, Transportation and Works Department (dated March 17, 2021)
- Region of Peel (dated March 17, 2021)

CORRESPONDENCE & DISCUSSION

The Secretary – Treasurer noted the comments received from:

- Correspondence was received from two area community associations expressing support for the subject application

Two area residents appeared before the Committee and expressed support for the application.

T. Shukla, Planning and Building, spoke regarding the selected proxy site for the Parking Study.

Committee asked questions of the agent who appeared before the Committee.

DECISION

The applicant requested that the application be amended and Committee agreed to the request.

Committee has taken into consideration, on balance, any and all submissions made before its decision including two written submissions and two oral submissions. They have also considered all relevant materials including: information provided by the applicant, plans submitted, and staff and agency comments, and the majority of the members have determined that the application is minor in nature, desirable for the appropriate development on the subject property, and that the general intent and purpose of the Zoning By-law and the Official Plan are maintained.

Accordingly, the Committee resolves to authorize and grant the request.

MOVED BY: D. George CARRIED

The Decision of the Committee is:

APPLICATION APPROVED AS AMENDED SUBJECT TO CONDITIONS:

To allow reduced parking requirements on the subject property proposing:
1. 0.57 parking spaces per one bedroom unit whereas By-law 0225-2007, as amended, requires a minimum of 0.75 parking spaces per one bedroom unit in this instance;
2. 0.73 parking spaces per two bedroom unit whereas By-law 0225-2007, as amended, requires a minimum of 0.90 parking spaces per two bedroom unit in this instance.

CONDITION(S):
1. The applicant shall enter into an agreement pursuant to s.45 (9.1) of the Planning Act, with content satisfactory to City staff as indicated below, and in a form satisfactory to the City Solicitor, to secure performance of the following conditions, including any associated securities/letters of credit:
   a) To provide two car-share spaces at an accessible and visible location, demonstrated by inclusion on the approved site plan through the Site Plan Application No. SP-20-51 to the satisfaction of the Director of Development and Design, Planning & Building department.
   b) Prior to the approval of the Site Plan processed through SP-20-51, a copy of an executed agreement with a car-share company to secure and provide for two car-share vehicles for a minimum period of two years should be submitted to the satisfaction of the Director of Infrastructure Planning & Engineering Services, Transportation & Works department.
   c) To confirm that a pre-loaded Presto Card with a minimum amount of $ 250 per condominium unit was provided to each unit owner at the time of closing, including supporting documentation, satisfactory to the Director of Infrastructure Planning & Engineering Services, Transportation & Works department.

Committee Decision dated at the City of Mississauga on April 1, 2021.

"S. PATRIZIO" S. PATRIZIO (Chair)	"D. GEORGE" D. GEORGE
"W. SHAHRUKH" W. SHAHRUKH	"D. KENNEDY" D. KENNEDY
"J. PAGE" J. PAGE	**ABSENT** J. KWAST
"D. COOK" D. COOK	

I certify this is copy of the decision of the Committee’s decision given on April 1, 2021

“D. RUSNOV”	For a signed copy of this document
DIANA RUSNOV – CITY – CLERK	please call 905-615-3200 ext. 2408 or email Committee.Adjustment@mississauga.ca

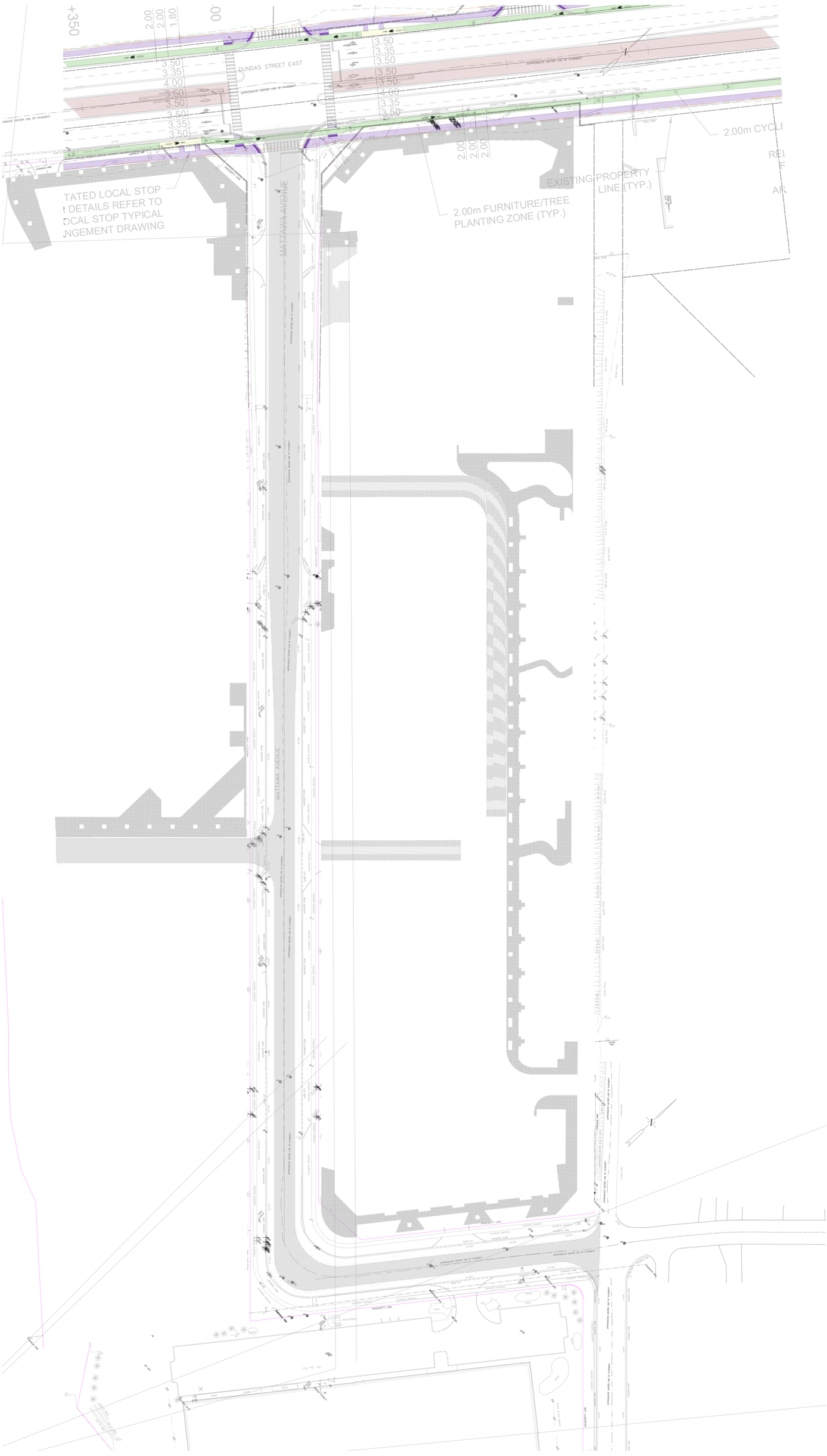
A copy of Section 45 of the Planning Act, as amended, is attached.

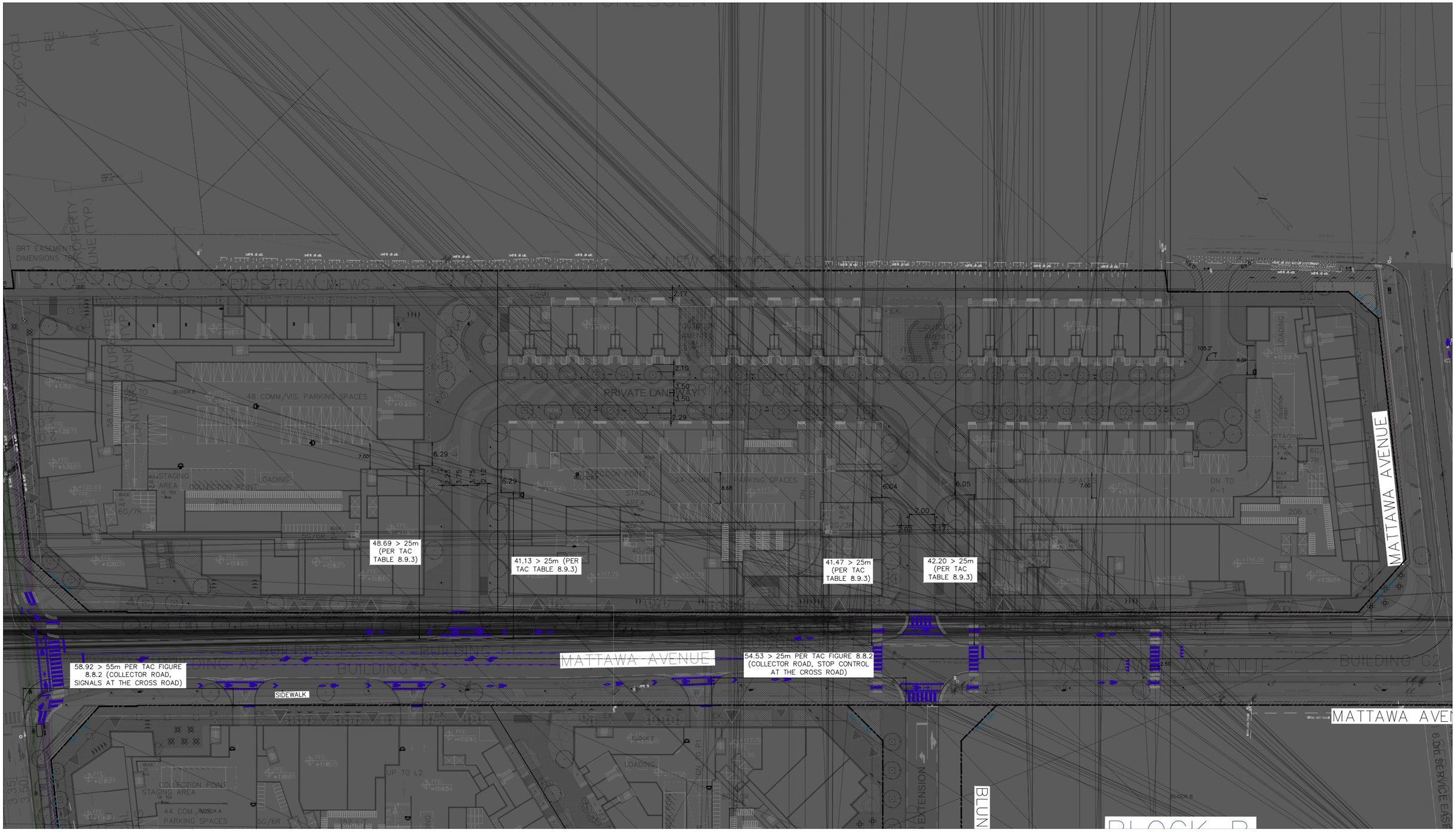
This decision is subject to appeal to the Local Planning Appeal Tribunal by filing with the Secretary-Treasurer of the Committee of Adjustment a written notification, giving reasons for the appeal, accompanied with the prescribed fee on or before **April 21, 2021**

NOTES:
1. A Development Charge may be payable prior to the issuance of a Building Permit.
2. Further approvals from the City of Mississauga may be required i.e. a Building Permit, a Zoning Certificate, a License, etc.

APPENDIX M

Swept Path Drawings and Sightline Analysis


DUNDAS STREET EAST
MATTAWA AVENUE
MATTAWA AVENUE
EXISTING PROPERTY LINE (TYP.)
2.00m FURNITURE/TREE PLANTING ZONE (TYP.)
2.00m CYCL
TATED LOCAL STOP
DETAILS REFER TO
CAL STOP TYPICAL
NGEMENT DRAWING
PROPERTY LINE
PROPERTY LINE


BRT EASEMENTS DIMENSIONS TBC
PROPERTY LINE (TYP.)
2.00m CYCLE
PEDESTRIAN MEWS
NATURAL FREE ZONE
48 COMM/VIS. PARKING SPACES
PRIVATE LANEWAY
PRIVATE LANEWAY
LOADING
STAGING AREA
COLLECTION POINT
OUTDOOR AMENITY
MATTAWA AVENUE
MATTAWA AVENUE
MATTAWA AVENUE
BUILDING A2
BUILDING A3
BUILDING G2
BUILDING F2
SIDEWALK
44 COM./VIS. PARKING SPACES
UP TO L2
DN TO P1
DN TO P-1
206 L.T.
BLUNDELL EXTENSION
6.0m SERVICE EASE
48.69 > 25m (PER TAC TABLE 8.9.3)
41.13 > 25m (PER TAC TABLE 8.9.3)
41.47 > 25m (PER TAC TABLE 8.9.3)
42.20 > 25m (PER TAC TABLE 8.9.3)
58.92 > 55m PER TAC FIGURE 8.8.2 (COLLECTOR ROAD, SIGNALS AT THE CROSS ROAD)
54.53 > 25m PER TAC FIGURE 8.8.2 (COLLECTOR ROAD, STOP CONTROL AT THE CROSS ROAD)

NEW SERVICE EASEMENT

PRIVATE LANEWAY

PEDESTRIAN MEWS

BRT EASEMENTS
DIMENSIONS TBC

BUILDING A1

BUILDING A2

BUILDING A3

BUILDING F1

BUILDING F2

BUILDING G1

BUILDING G2

MATTAWA AVENUE

LORELAND AVENUE

DUNDAS STREET

BLOCK E

BLOCK F

BLOCK G

BLOCK C

COLLECTION POINT

STAGING AREA

LOADING

OUTDOOR AMENITY

PET AMENITY AREA

24 COMM. VIS. PARKING SPACES

37 COMM. VIS. PARKING SPACES

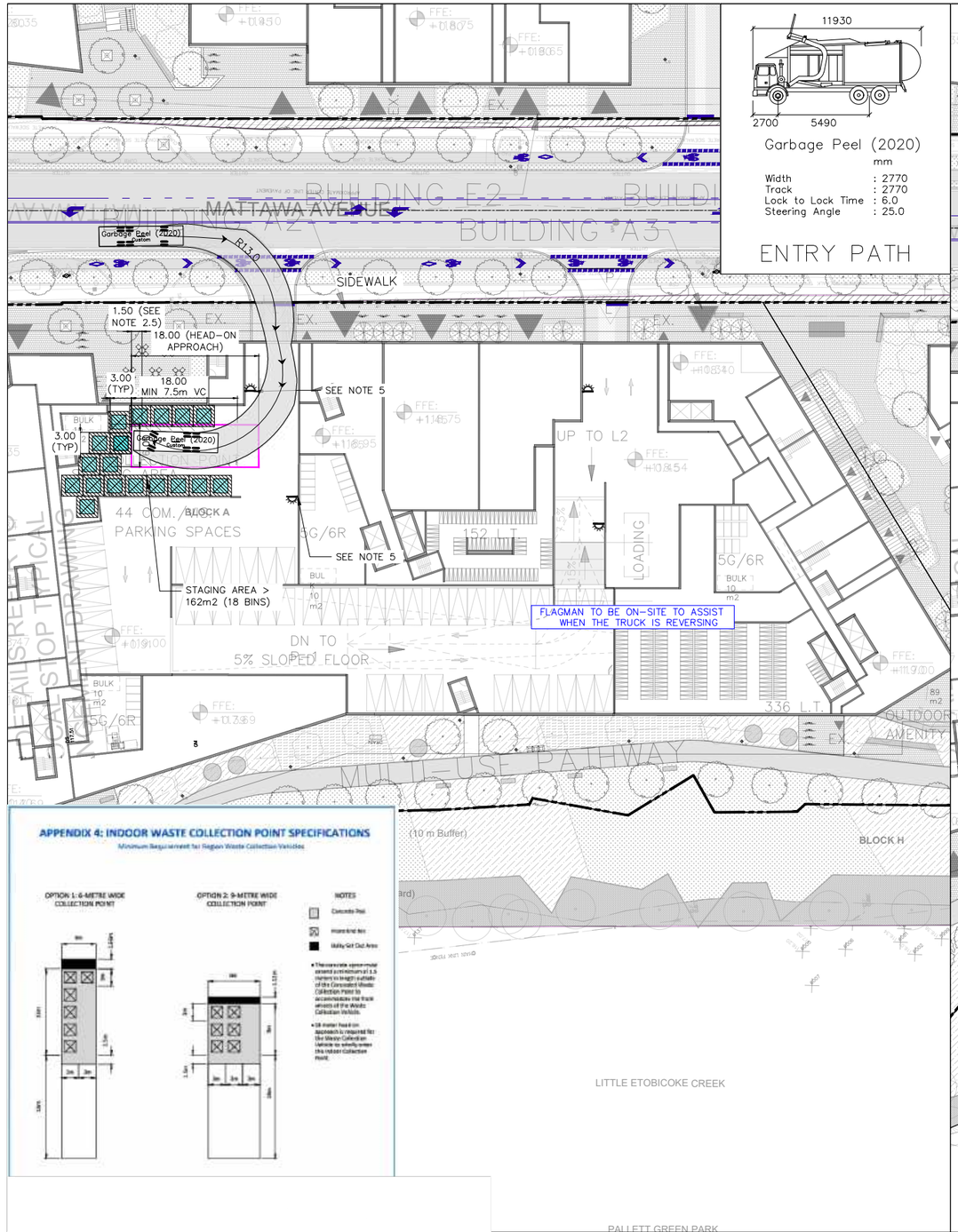
48 COMM/VIS. PARKING SPACES

DN TO P-1

294 L.T.

206 L.T.

134 L.T.

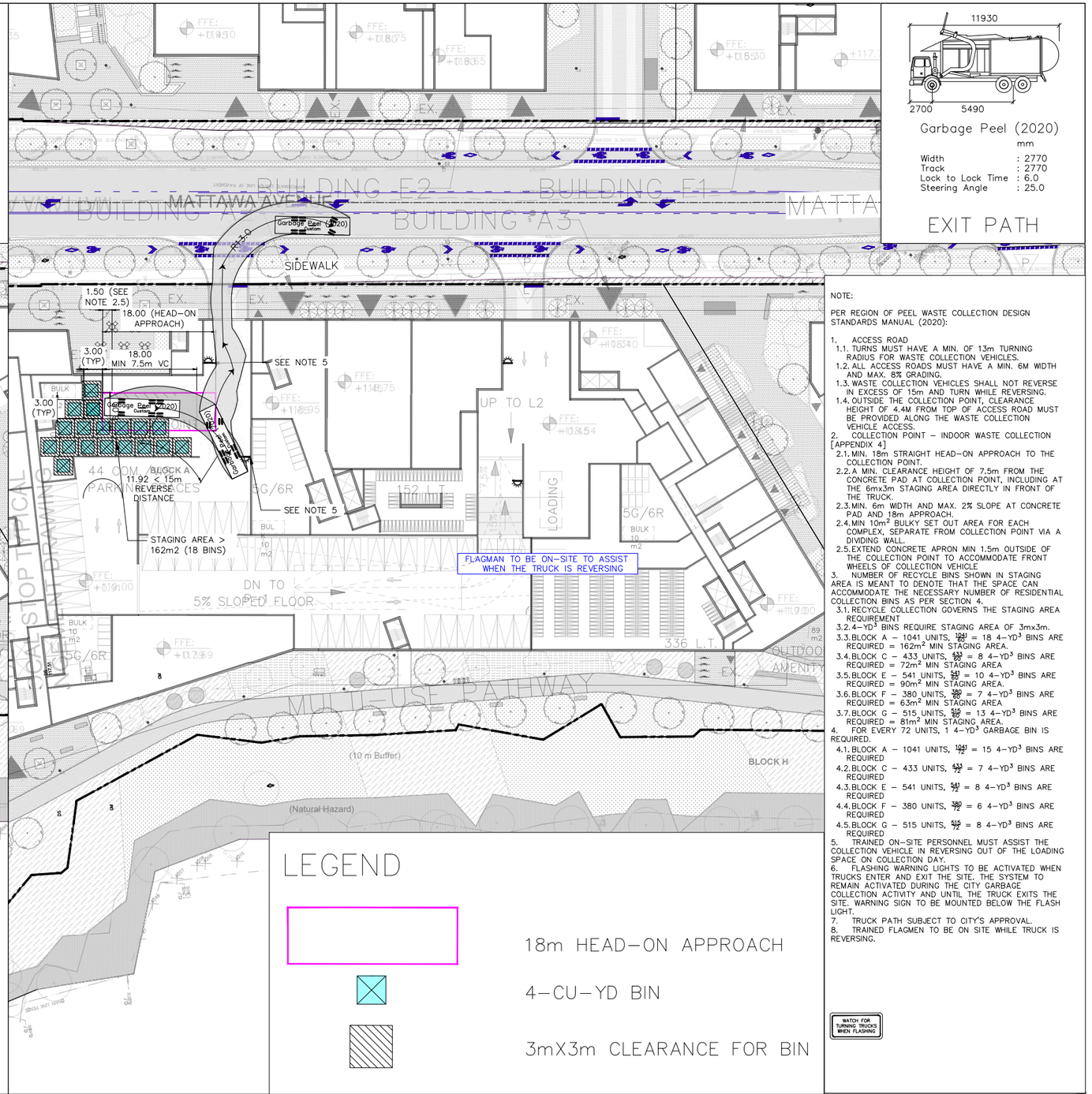


Garbage Peel (2020)

mm

Width	: 2770
Track	: 2770
Lock to Lock Time	: 6.0
Steering Angle	: 25.0

ENTRY PATH



Garbage Peel (2020)

mm

Width	: 2770
Track	: 2770
Lock to Lock Time	: 6.0
Steering Angle	: 25.0

EXIT PATH

NOTE:

PER REGION OF PEEL WASTE COLLECTION DESIGN STANDARDS MANUAL (2020):

1. ACCESS ROAD
 1.1. TURNS MUST HAVE A MIN. OF 13m TURNING RADIUS FOR WASTE COLLECTION VEHICLES.
 1.2. ALL ACCESS ROADS MUST HAVE A MIN. 6M WIDTH AND MAX. 8% GRADING.
 1.3. WASTE COLLECTION VEHICLES SHALL NOT REVERSE IN EXCESS OF 15m AND TURN WHILE REVERSING.
 1.4. OUTSIDE THE COLLECTION POINT, CLEARANCE HEIGHT OF 4.4M FROM TOP OF ACCESS ROAD MUST BE PROVIDED ALONG THE WASTE COLLECTION VEHICLE ACCESS.
2. COLLECTION POINT – INDOOR WASTE COLLECTION [APPENDIX 4]
 2.1. MIN. 18m STRAIGHT HEAD-ON APPROACH TO THE COLLECTION POINT.
 2.2. A MIN. CLEARANCE HEIGHT OF 7.5m FROM THE CONCRETE PAD AT COLLECTION POINT, INCLUDING AT THE 6mx3m STAGING AREA DIRECTLY IN FRONT OF THE TRUCK.
 2.3. MIN. 6m WIDTH AND MAX. 2% SLOPE AT CONCRETE PAD AND 18m APPROACH.
 2.4. MIN $10m^2$ BULKY SET OUT AREA FOR EACH COMPLEX, SEPARATE FROM COLLECTION POINT VIA A DIVIDING WALL.
 2.5. EXTEND CONCRETE APRON MIN 1.5m OUTSIDE OF THE COLLECTION POINT TO ACCOMMODATE FRONT WHEELS OF COLLECTION VEHICLE
3. NUMBER OF RECYCLE BINS SHOWN IN STAGING AREA IS MEANT TO DENOTE THAT THE SPACE CAN ACCOMMODATE THE NECESSARY NUMBER OF RESIDENTIAL COLLECTION BINS AS PER SECTION 4.
 3.1. RECYCLE COLLECTION GOVERNS THE STAGING AREA REQUIREMENT
 3.2. $4-YD^3$ BINS REQUIRE STAGING AREA OF 3mx3m.
 3.3. BLOCK A – 1041 UNITS, $\frac{1041}{60}$ = 18 $4-YD^3$ BINS ARE REQUIRED = $162m^2$ MIN STAGING AREA.
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 3.5. BLOCK E – 541 UNITS, $\frac{541}{72}$ = 10 $4-YD^3$ BINS ARE REQUIRED = $90m^2$ MIN STAGING AREA.
 3.6. BLOCK F – 380 UNITS, $\frac{380}{72}$ = 7 $4-YD^3$ BINS ARE REQUIRED = $63m^2$ MIN STAGING AREA.
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4. FOR EVERY 72 UNITS, 1 $4-YD^3$ GARBAGE BIN IS REQUIRED.
 4.1. BLOCK A – 1041 UNITS, $\frac{1041}{72}$ = 15 $4-YD^3$ BINS ARE REQUIRED
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5. TRAINED ON-SITE PERSONNEL MUST ASSIST THE COLLECTION VEHICLE IN REVERSING OUT OF THE LOADING SPACE ON COLLECTION DAY.
6. FLASHING WARNING LIGHTS TO BE ACTIVATED WHEN TRUCKS ENTER AND EXIT THE SITE. THE SYSTEM TO REMAIN ACTIVATED DURING THE CITY GARBAGE COLLECTION ACTIVITY AND UNTIL THE TRUCK EXITS THE SITE. WARNING SIGN TO BE MOUNTED BELOW THE FLASH LIGHT.
7. TRUCK PATH SUBJECT TO CITY'S APPROVAL.
8. TRAINED FLAGMEN TO BE ON SITE WHILE TRUCK IS REVERSING.

WATCH FOR TURNING TRUCKS WHEN FLASHING

LEGEND

18m HEAD-ON APPROACH

4-CU-YD BIN

3mX3m CLEARANCE FOR BIN

PLOT DATE: November 02, 2023

DRAWN BY: R.R.

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Consulting Engineers and Planners
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N

Project No.	21224
Date	NOV. 01, 2023

1530-1650 DUNDAS STREET EAST
MISSISSAUGA ONTARIO

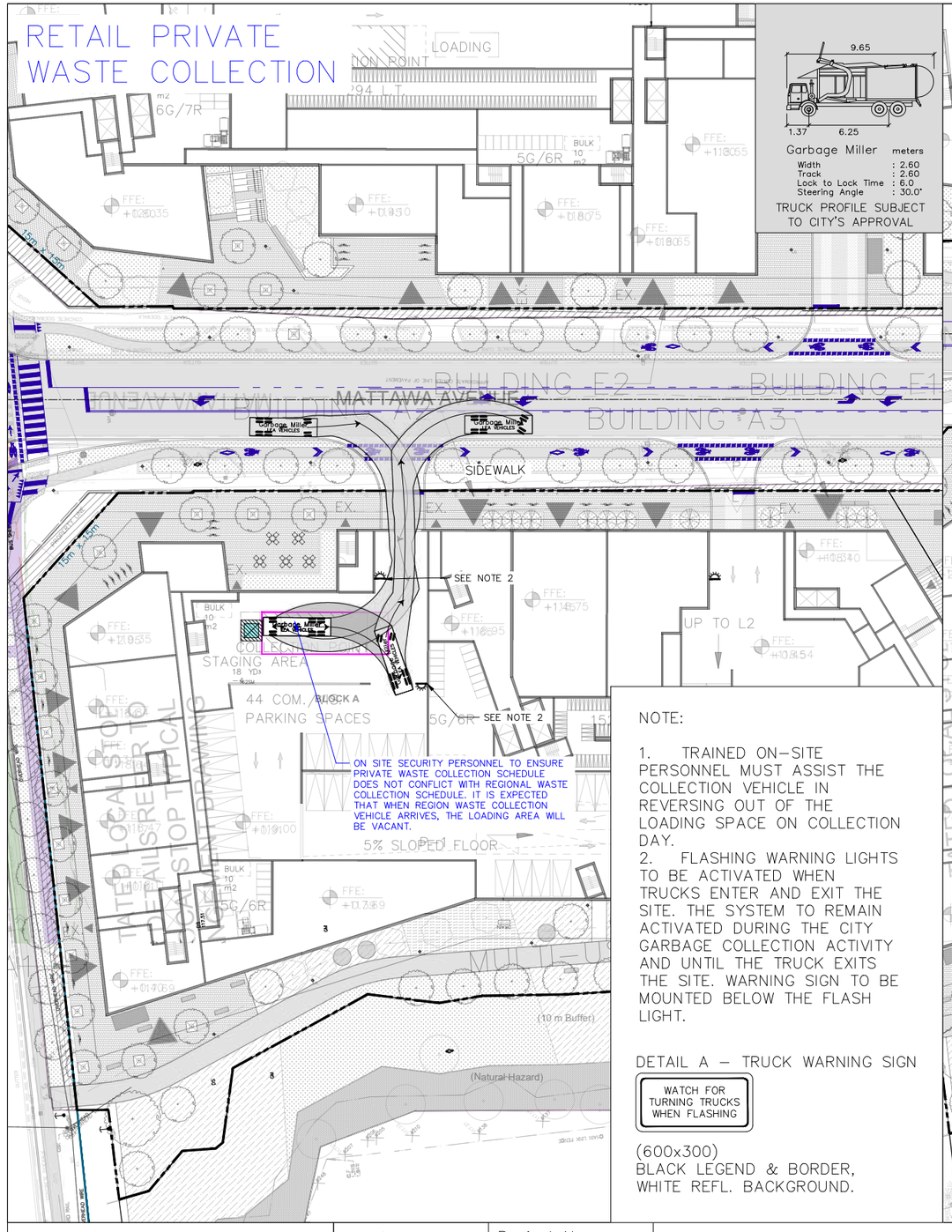
7.5 0 7.5 15 22.5m
1:750

BLOCK A
LOADING REVIEW
REGION GARBAGE COLLECTION VEHICLE

Drawing No.
002A

DRAWING NAME: F:\21224\Drafting\21224WF025 – FDR – 2.dwg

RETAIL PRIVATE WASTE COLLECTION



Garbage Miller meters

Width	: 2.60
Track	: 2.60
Lock to Lock Time	: 6.0
Steering Angle	: 30.0°

TRUCK PROFILE SUBJECT TO CITY'S APPROVAL

NOTE:

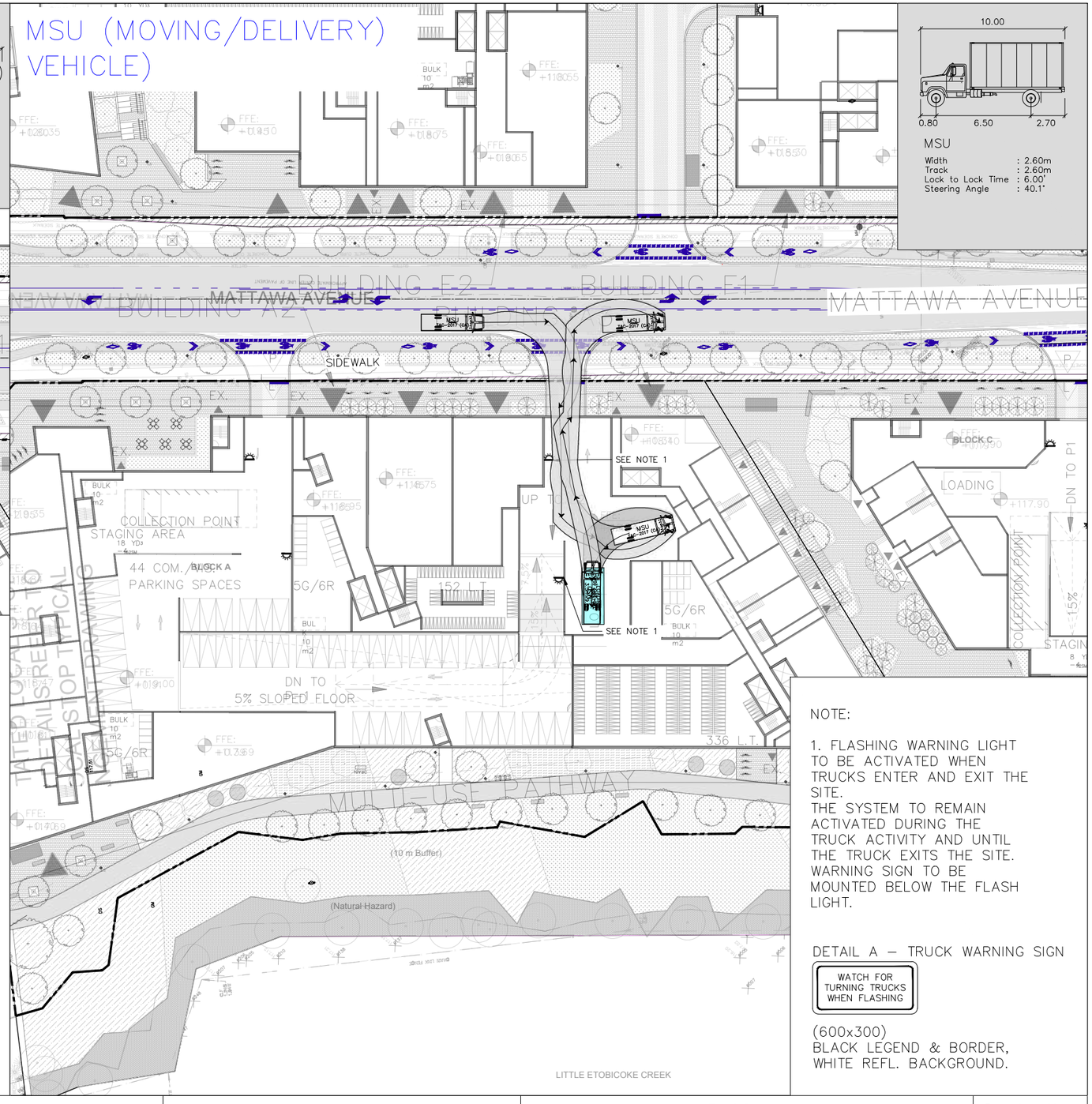
1. TRAINED ON-SITE PERSONNEL MUST ASSIST THE COLLECTION VEHICLE IN REVERSING OUT OF THE LOADING SPACE ON COLLECTION DAY.
2. FLASHING WARNING LIGHTS TO BE ACTIVATED WHEN TRUCKS ENTER AND EXIT THE SITE. THE SYSTEM TO REMAIN ACTIVATED DURING THE CITY GARBAGE COLLECTION ACTIVITY AND UNTIL THE TRUCK EXITS THE SITE. WARNING SIGN TO BE MOUNTED BELOW THE FLASH LIGHT.

DETAIL A – TRUCK WARNING SIGN

WATCH FOR TURNING TRUCKS WHEN FLASHING

(600x300)
BLACK LEGEND & BORDER,
WHITE REFL. BACKGROUND.

MSU (MOVING/DELIVERY) VEHICLE)



MSU

Width	: 2.60m
Track	: 2.60m
Lock to Lock Time	: 6.00'
Steering Angle	: 40.1°

NOTE:

1. FLASHING WARNING LIGHT TO BE ACTIVATED WHEN TRUCKS ENTER AND EXIT THE SITE.
THE SYSTEM TO REMAIN ACTIVATED DURING THE TRUCK ACTIVITY AND UNTIL THE TRUCK EXITS THE SITE.
WARNING SIGN TO BE MOUNTED BELOW THE FLASH LIGHT.

DETAIL A – TRUCK WARNING SIGN

WATCH FOR TURNING TRUCKS WHEN FLASHING

(600x300)
BLACK LEGEND & BORDER,
WHITE REFL. BACKGROUND.

PLOT DATE: November 02, 2023
DRAWN BY: R.R.

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Project No. 21224

Date NOV. 01, 2023

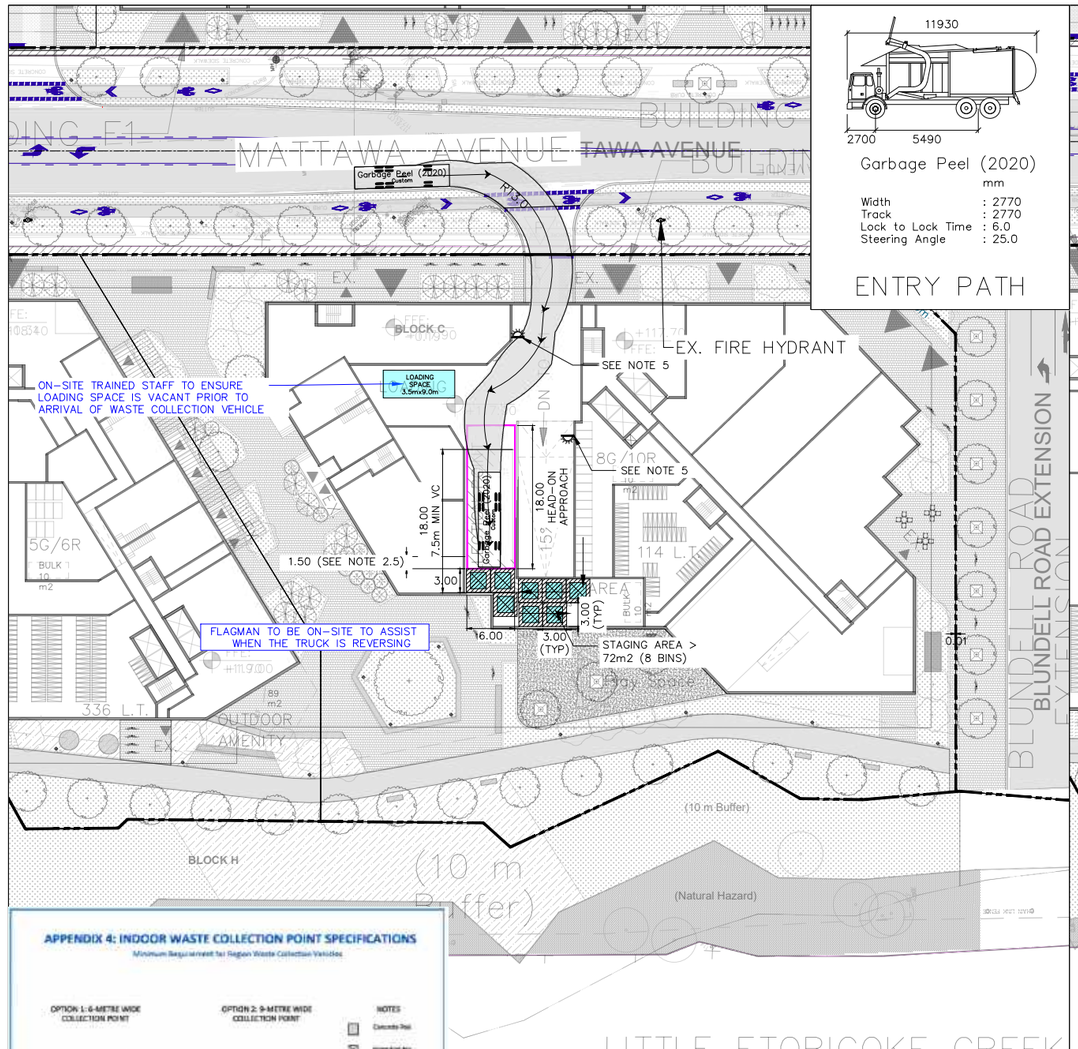
1530-1650 DUNDAS STREET EAST
MISSISSAUGA ONTARIO

7.5 0 7.5 15 22.5m
1: 750

BLOCK A
LOADING REVIEW
RETAIL PRIVATE WASTE COLLECTION VEHICLE &
MSU – MOVING/DELIVERY VEHICLE

Drawing No. 002B

DRAWING NAME: F:\21224\Drafting\21224WF025 – FDR – 2.dwg

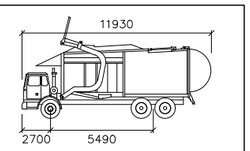


Garbage Peel (2020)

mm

Width	: 2770
Track	: 2770
Lock to Lock Time	: 6.0
Steering Angle	: 25.0

ENTRY PATH



Garbage Peel (2020)

mm

Width	: 2770
Track	: 2770
Lock to Lock Time	: 6.0
Steering Angle	: 25.0

EXIT PATH

RAISED INTERSECTION

NOTE:

PER REGION OF PEEL WASTE COLLECTION DESIGN STANDARDS MANUAL (2020):

1. ACCESS ROAD
   - 1.1. TURNS MUST HAVE A MIN. OF 13m TURNING RADIUS FOR WASTE COLLECTION VEHICLES.
   - 1.2. ALL ACCESS ROADS MUST HAVE A MIN. 6M WIDTH AND MAX. 8% GRADING.
   - 1.3. WASTE COLLECTION VEHICLES SHALL NOT REVERSE IN EXCESS OF 15m AND TURN WHILE REVERSING.
   - 1.4. OUTSIDE THE COLLECTION POINT, CLEARANCE HEIGHT OF 4.4M FROM TOP OF ACCESS ROAD MUST BE PROVIDED ALONG THE WASTE COLLECTION VEHICLE ACCESS.
2. COLLECTION POINT – INDOOR WASTE COLLECTION [APPENDIX 4]
   - 2.1. MIN. 18m STRAIGHT HEAD-ON APPROACH TO THE COLLECTION POINT.
   - 2.2. A MIN. CLEARANCE HEIGHT OF 7.5m FROM THE CONCRETE PAD AT COLLECTION POINT, INCLUDING AT THE 6mx3m STAGING AREA DIRECTLY IN FRONT OF THE TRUCK.
   - 2.3. MIN. 6m WIDTH AND MAX. 2% SLOPE AT CONCRETE PAD AND 18m APPROACH.
   - 2.4. MIN 10m^2 BULKY SET OUT AREA FOR EACH COMPLEX, SEPARATE FROM COLLECTION POINT VIA A DIVIDING WALL.
   - 2.5. EXTEND CONCRETE APRON MIN 1.5m OUTSIDE OF THE COLLECTION POINT TO ACCOMMODATE FRONT WHEELS OF COLLECTION VEHICLE
3. NUMBER OF RECYCLE BINS SHOWN IN STAGING AREA IS MEANT TO DENOTE THAT THE SPACE CAN ACCOMMODATE THE NECESSARY NUMBER OF RESIDENTIAL COLLECTION BINS AS PER SECTION 4.
   - 3.1. RECYCLE COLLECTION GOVERNS THE STAGING AREA REQUIREMENT
   - 3.2. 4-YD^3 BINS REQUIRE STAGING AREA OF 3mx3m.
   - 3.3. BLOCK A – 1041 UNITS, $\frac{1041}{80}$ = 18 4-YD^3 BINS ARE REQUIRED = 162m^2 MIN STAGING AREA.
   - 3.4. BLOCK C – 433 UNITS, $\frac{433}{80}$ = 8 4-YD^3 BINS ARE REQUIRED = 72m^2 MIN STAGING AREA
   - 3.5. BLOCK E – 541 UNITS, $\frac{541}{80}$ = 10 4-YD^3 BINS ARE REQUIRED = 90m^2 MIN STAGING AREA.
   - 3.6. BLOCK F – 380 UNITS, $\frac{380}{80}$ = 7 4-YD^3 BINS ARE REQUIRED = 63m^2 MIN STAGING AREA
   - 3.7. BLOCK G – 515 UNITS, $\frac{515}{80}$ = 13 4-YD^3 BINS ARE REQUIRED = 81m^2 MIN STAGING AREA.
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6. FLASHING WARNING LIGHTS TO BE ACTIVATED WHEN TRUCKS ENTER AND EXIT THE SITE. THE SYSTEM TO REMAIN ACTIVATED DURING THE CITY GARBAGE COLLECTION ACTIVITY AND UNTIL THE TRUCK EXITS THE SITE. WARNING SIGN TO BE MOUNTED BELOW THE FLASH LIGHT.
7. TRUCK PATH SUBJECT TO CITY'S APPROVAL.
8. TRAINED FLAGMEN TO BE ON SITE WHILE TRUCK IS REVERSING.

WATCH FOR TURNING TRUCKS WHEN FLASHING

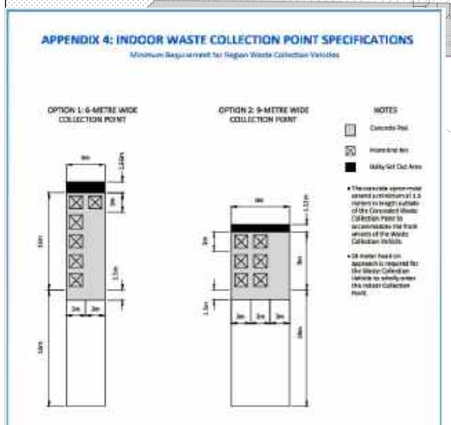

FIGURE 01 – REGION INDOOR WASTE COLLECTION POINT SPECIFICATIONS

LEGEND

18m HEAD-ON APPROACH

4-CU-YD BIN

3mX3m CLEARANCE FOR BIN

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Project No.	21224
Date	NOV. 01, 2023

1530-1650 DUNDAS STREET EAST
MISSISSAUGA ONTARIO

7.5 0 7.5 15 22.5m
1:750

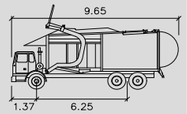
BLOCK C
LOADING REVIEW
REGION GARBAGE COLLECTION VEHICLE

Drawing No. 003A

DRAWN BY: R.R. PLOT DATE: November 02, 2023

DRAWING NAME: F:\21224\Drafting\21224WF025 – FDR – 2.dwg

RETAIL PRIVATE WASTE COLLECTION



Garbage Miller meters

Width	: 2.60
Track	: 2.60
Lock to Lock Time	: 6.0
Steering Angle	: 30.0°

TRUCK PROFILE SUBJECT TO CITY'S APPROVAL

MATTAWA AVENUE

Garbage Miller LEA VEHICLES

Garbage Miller LEA VEHICLES

BLOCK C

EX. FIRE HYDRANT

SEE NOTE 2

LOADING SPACE 3.5m x 9.0m

Garbage Miller LEA VEHICLES

SEE NOTE 2

8G/10R

ON-SITE TRAINED STAFF TO ENSURE LOADING SPACE IS VACANT PRIOR TO ARRIVAL OF LOADING VEHICLE

Garbage Miller LEA VEHICLES

ON SITE SECURITY PERSONNEL TO ENSURE PRIVATE WASTE COLLECTION SCHEDULE DOES NOT CONFLICT WITH REGIONAL WASTE COLLECTION SCHEDULE. IT IS EXPECTED THAT WHEN REGION WASTE COLLECTION VEHICLE ARRIVES, THE LOADING AREA WILL BE VACANT.

15%

STAGING AREA 8 YD³

BULK 10 m2

FFE: +111.90

89 m2

L.T.

OUTDOOR AMENITY

EX

BLOCK H

(10 m Buffer)

NOTE:

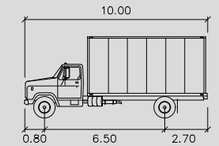
1. TRAINED ON-SITE PERSONNEL MUST ASSIST THE COLLECTION VEHICLE IN REVERSING OUT OF THE LOADING SPACE ON COLLECTION DAY.
2. FLASHING WARNING LIGHTS TO BE ACTIVATED WHEN TRUCKS ENTER AND EXIT THE SITE. THE SYSTEM TO REMAIN ACTIVATED DURING THE CITY GARBAGE COLLECTION ACTIVITY AND UNTIL THE TRUCK EXITS THE SITE. WARNING SIGN TO BE MOUNTED BELOW THE FLASH LIGHT.

DETAIL A – TRUCK WARNING SIGN

WATCH FOR TURNING TRUCKS WHEN FLASHING

(600x300)
BLACK LEGEND & BORDER,
WHITE REFL. BACKGROUND.

MSU (MOVING/DELIVERY) VEHICLE)



MSU

Width	: 2.60m
Track	: 2.60m
Lock to Lock Time	: 6.00°
Steering Angle	: 40.1°

+117.79

MATTAWA AVENUE

MSU TAC-2017 (CA)

MSU TAC-2017 (CA)

BLOCK C

EX. FIRE HYDRANT

SEE NOTE 1

LOADING SPACE 3.5m x 9.0m

MSU TAC-2017 (CA)

SEE NOTE 1

8G/10R

ON-SITE TRAINED STAFF TO ENSURE LOADING SPACE IS VACANT PRIOR TO ARRIVAL OF LOADING VEHICLE

MSU TAC-2017 (CA)

15%

5G/6R

BULK 10 m2

FFE: +111.90

89 m2

336 L.T.

OUTDOOR AMENITY

EX

BLOCK H

NOTE:

1. FLASHING WARNING LIGHT TO BE ACTIVATED WHEN TRUCKS ENTER AND EXIT THE SITE.
THE SYSTEM TO REMAIN ACTIVATED DURING THE TRUCK ACTIVITY AND UNTIL THE TRUCK EXITS THE SITE. WARNING SIGN TO BE MOUNTED BELOW THE FLASH LIGHT.

DETAIL A – TRUCK WARNING SIGN

WATCH FOR TURNING TRUCKS WHEN FLASHING

(600x300)
BLACK LEGEND & BORDER,
WHITE REFL. BACKGROUND.

PLOT DATE: November 02, 2023

DRAWN BY: R.R.

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Project No. 21224

Date NOV. 01, 2023

1530–1650 DUNDAS STREET EAST
MISSISSAUGA ONTARIO

5 0 5 10 15m
1:500

BLOCK C
LOADING REVIEW
RETAIL PRIVATE WASTE COLLECTION VEHICLE &
MSU – MOVING/DELIVERY VEHICLE

Drawing No. 003B

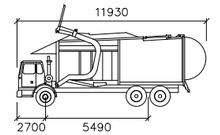
DRAWING NAME: F:\21224\Drafting\21224WF025 – FDR – 2.dwg

Garbage Peel (2020)

mm

Width	: 2770
Track	: 2770
Lock to Lock Time	: 6.0
Steering Angle	: 25.0

ENTRY PATH



Garbage Peel (2020)

mm

Width	: 2770
Track	: 2770
Lock to Lock Time	: 6.0
Steering Angle	: 25.0

EXIT PATH

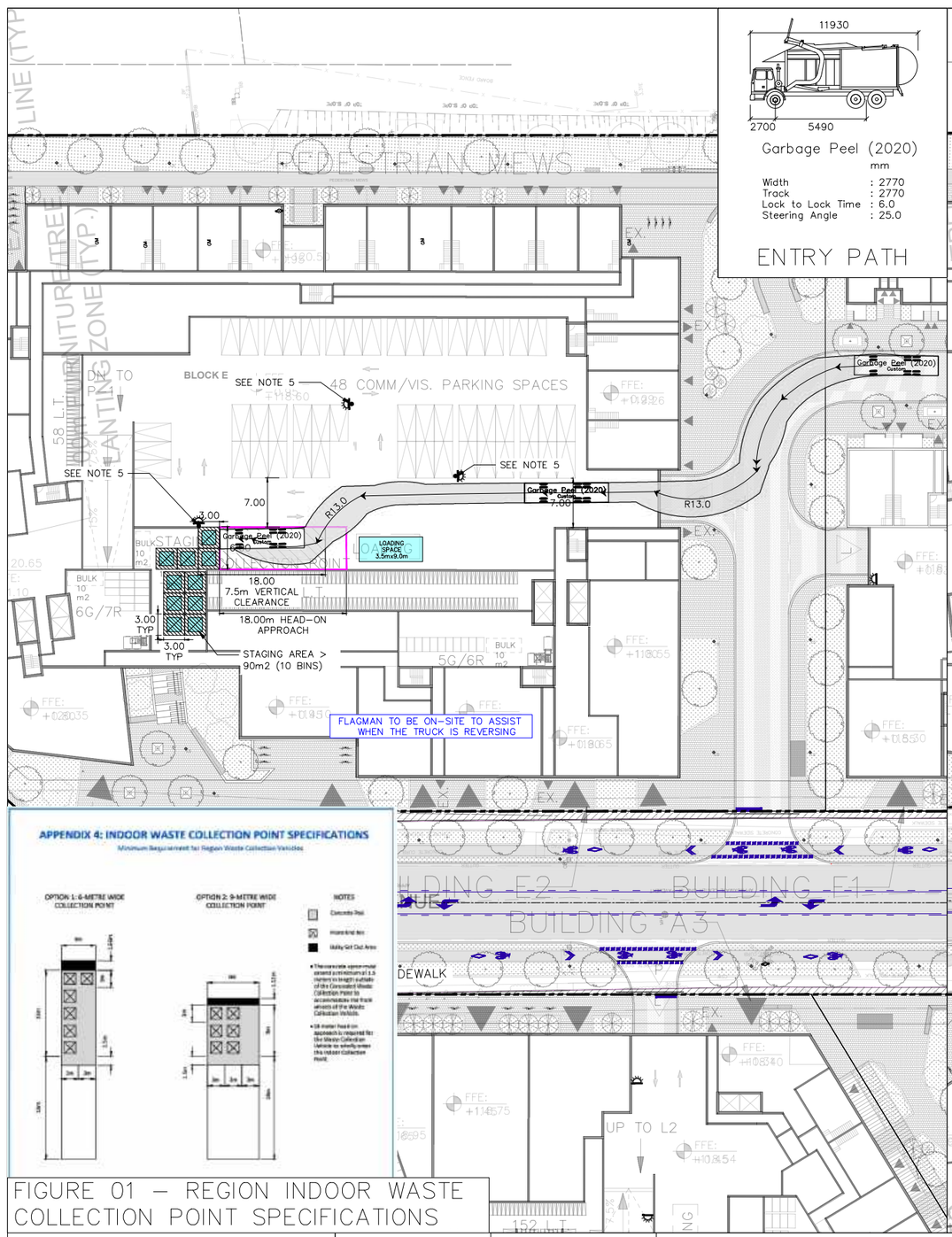


FIGURE 01 – REGION INDOOR WASTE COLLECTION POINT SPECIFICATIONS

NOTE:

PER REGION OF PEEL WASTE COLLECTION DESIGN STANDARDS MANUAL (2020):

1. ACCESS ROAD
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   - 1.3. WASTE COLLECTION VEHICLES SHALL NOT REVERSE IN EXCESS OF 15m AND TURN WHILE REVERSING.
   - 1.4. OUTSIDE THE COLLECTION POINT, CLEARANCE HEIGHT OF 4.4M FROM TOP OF ACCESS ROAD MUST BE PROVIDED ALONG THE WASTE COLLECTION VEHICLE ACCESS.
2. COLLECTION POINT – INDOOR WASTE COLLECTION [APPENDIX 4]
   - 2.1. MIN. 18m STRAIGHT HEAD-ON APPROACH TO THE COLLECTION POINT.
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   - 2.4. MIN $10m^2$ BULKY SET OUT AREA FOR EACH COMPLEX, SEPARATE FROM COLLECTION POINT VIA A DIVIDING WALL.
   - 2.5. EXTEND CONCRETE APRON MIN 1.5m OUTSIDE OF THE COLLECTION POINT TO ACCOMMODATE FRONT WHEELS OF COLLECTION VEHICLE
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   - 3.2. 4–YD^3 BINS REQUIRE STAGING AREA OF 3mx3m.
   - 3.3. BLOCK A – 1041 UNITS, $\frac{1041}{180}$ = 18 4–YD^3 BINS ARE REQUIRED = $162m^2$ MIN STAGING AREA.
   - 3.4. BLOCK C – 433 UNITS, $\frac{433}{72}$ = 8 4–YD^3 BINS ARE REQUIRED = $72m^2$ MIN STAGING AREA
   - 3.5. BLOCK E – 541 UNITS, $\frac{541}{90}$ = 10 4–YD^3 BINS ARE REQUIRED = $90m^2$ MIN STAGING AREA.
   - 3.6. BLOCK F – 380 UNITS, $\frac{380}{90}$ = 7 4–YD^3 BINS ARE REQUIRED = $63m^2$ MIN STAGING AREA.
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7. TRUCK PATH SUBJECT TO CITY'S APPROVAL.
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WATCH FOR TURNING TRUCKS WHEN FLASHING

LEGEND

18m HEAD–ON APPROACH

4–CU–YD BIN

3mX3m CLEARANCE FOR BIN

PLOT DATE: November 02, 2023

DRAWN BY: R.R.

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Consulting Engineers and Planners
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Project No. 21224

Date NOV. 01, 2023

1530–1650 DUNDAS STREET EAST
MISSISSAUGA ONTARIO

7.5 0 7.5 15 22.5m
1:750

BLOCK E
LOADING REVIEW
REGION GARBAGE COLLECTION VEHICLE

Drawing No. 004A

DRAWING NAME: F:\21224\Drafting\21224WF025 – FDR – 2.dwg

PEDESTRIA

BLOCK E

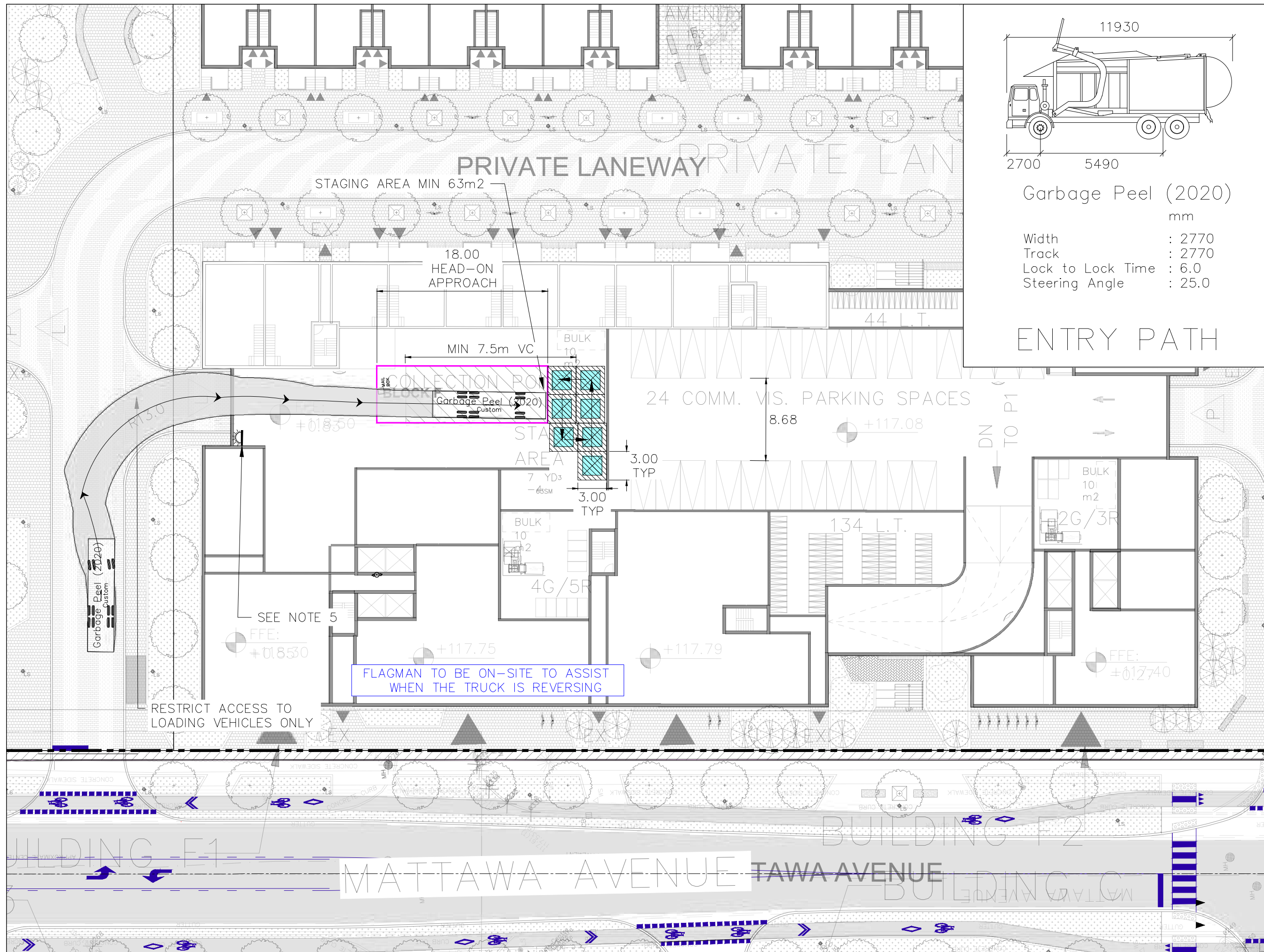
APPROXIMATE CENTER LINE OF PAVEMENT

CONCRETE SIDEWALK

CONCRETE CURB

GUTTER

CSW



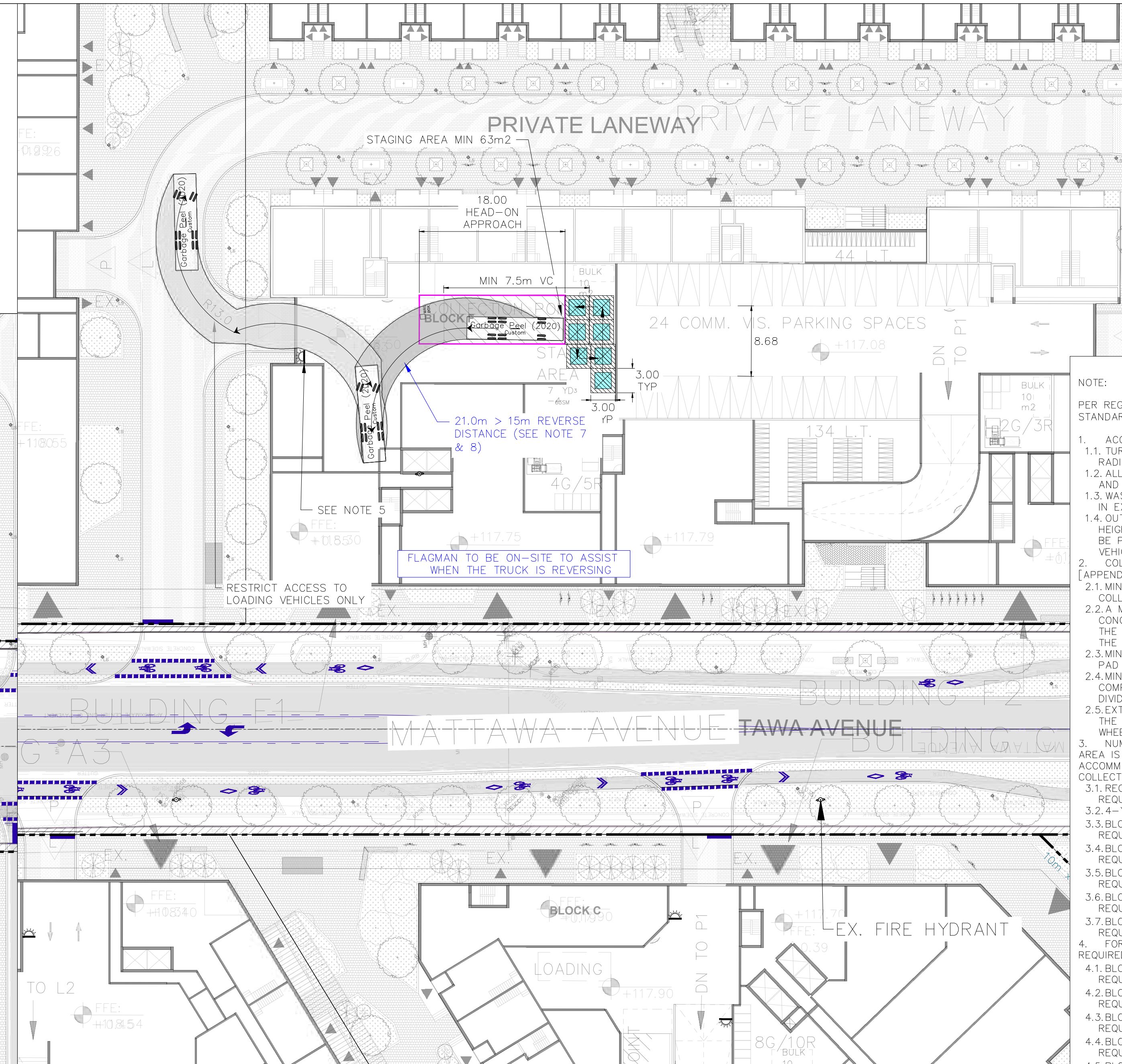
11930
2700 5490

Garbage Peel (2020)

mm

Width	: 2770
Track	: 2770
Lock to Lock Time	: 6.0
Steering Angle	: 25.0

ENTRY PATH



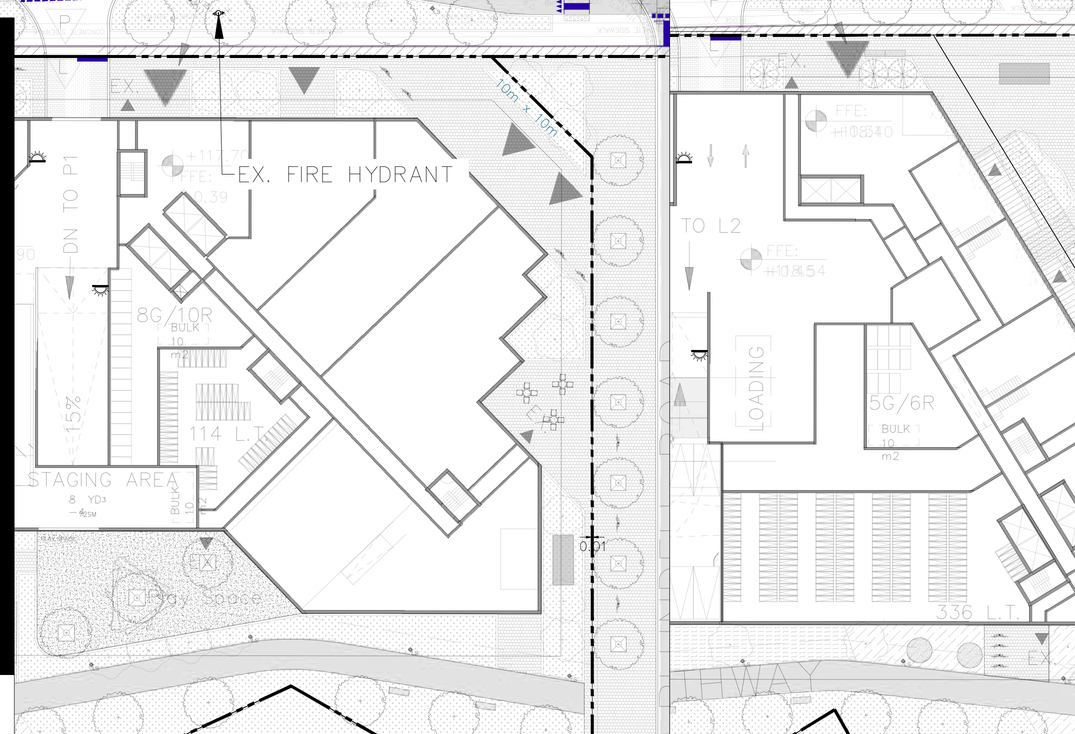
11930
2700 5490

Garbage Peel (2020)

mm

Width	: 2770
Track	: 2770
Lock to Lock Time	: 6.0
Steering Angle	: 25.0

EXIT PATH



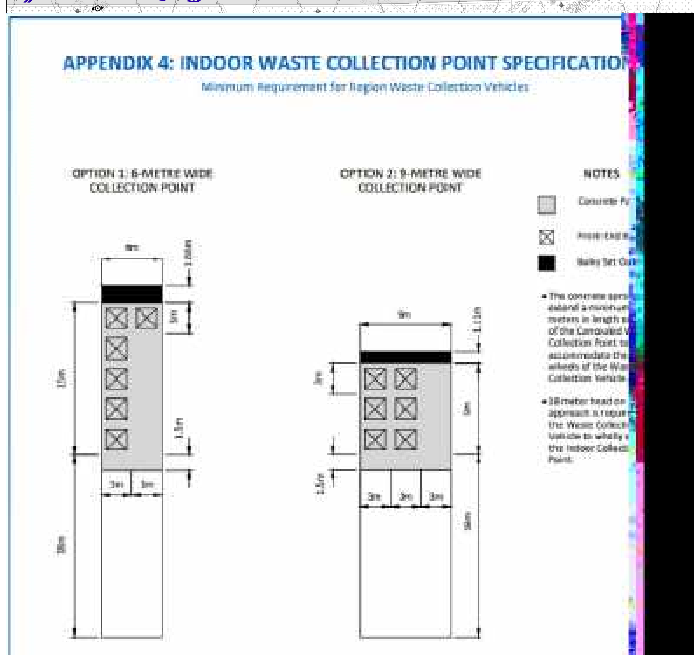


FIGURE 01 – REGION INDOOR WASTE COLLECTION POINT SPECIFICATIONS

NOTE:

PER REGION OF PEEL WASTE COLLECTION DESIGN STANDARDS MANUAL (2020):

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 1.1. TURNS MUST HAVE A MIN. OF 13m TURNING RADIUS FOR WASTE COLLECTION VEHICLES.
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 3.2. 4–YD^3 BINS REQUIRE STAGING AREA OF 3mx3m.
 3.3. BLOCK A – 1041 UNITS, $\frac{1041}{60}$ = 18 4–YD^3 BINS ARE REQUIRED = $162m^2$ MIN STAGING AREA.
 3.4. BLOCK C – 433 UNITS, $\frac{433}{60}$ = 8 4–YD^3 BINS ARE REQUIRED = $72m^2$ MIN STAGING AREA
 3.5. BLOCK E – 541 UNITS, $\frac{541}{60}$ = 10 4–YD^3 BINS ARE REQUIRED = $90m^2$ MIN STAGING AREA.
 3.6. BLOCK F – 380 UNITS, $\frac{380}{60}$ = 7 4–YD^3 BINS ARE REQUIRED = $63m^2$ MIN STAGING AREA
 3.7. BLOCK G – 515 UNITS, $\frac{515}{60}$ = 13 4–YD^3 BINS ARE REQUIRED = $81m^2$ MIN STAGING AREA.
4. FOR EVERY 72 UNITS, 1 4–YD^3 GARBAGE BIN IS REQUIRED.
 4.1. BLOCK A – 1041 UNITS, $\frac{1041}{72}$ = 15 4–YD^3 BINS ARE REQUIRED
 4.2. BLOCK C – 433 UNITS, $\frac{433}{72}$ = 7 4–YD^3 BINS ARE REQUIRED
 4.3. BLOCK E – 541 UNITS, $\frac{541}{72}$ = 8 4–YD^3 BINS ARE REQUIRED
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 4.5. BLOCK G – 515 UNITS, $\frac{515}{72}$ = 8 4–YD^3 BINS ARE REQUIRED
5. TRAINED ON–SITE PERSONNEL MUST ASSIST THE COLLECTION VEHICLE IN REVERSING OUT OF THE LOADING SPACE ON COLLECTION DAY.
6. FLASHING WARNING LIGHTS TO BE ACTIVATED WHEN TRUCKS ENTER AND EXIT THE SITE. THE SYSTEM TO REMAIN ACTIVATED DURING THE CITY GARBAGE COLLECTION ACTIVITY AND UNTIL THE TRUCK EXITS THE SITE. WARNING SIGN TO BE MOUNTED BELOW THE FLASH LIGHT.
7. TRUCK PATH SUBJECT TO CITY'S APPROVAL.
8. TRAINED FLAGMEN TO BE ON SITE WHILE TRUCK IS REVERSING.

WATCH FOR TURNING TRUCKS WHEN FLASHING

LEGEND

- 18m HEAD–ON APPROACH
- 4–CU–YD BIN
- 3mX3m CLEARANCE FOR BIN

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N

Project No. 21224

Date NOV. 01, 2023

1530–1650 DUNDAS STREET EAST
MISSISSAUGA ONTARIO

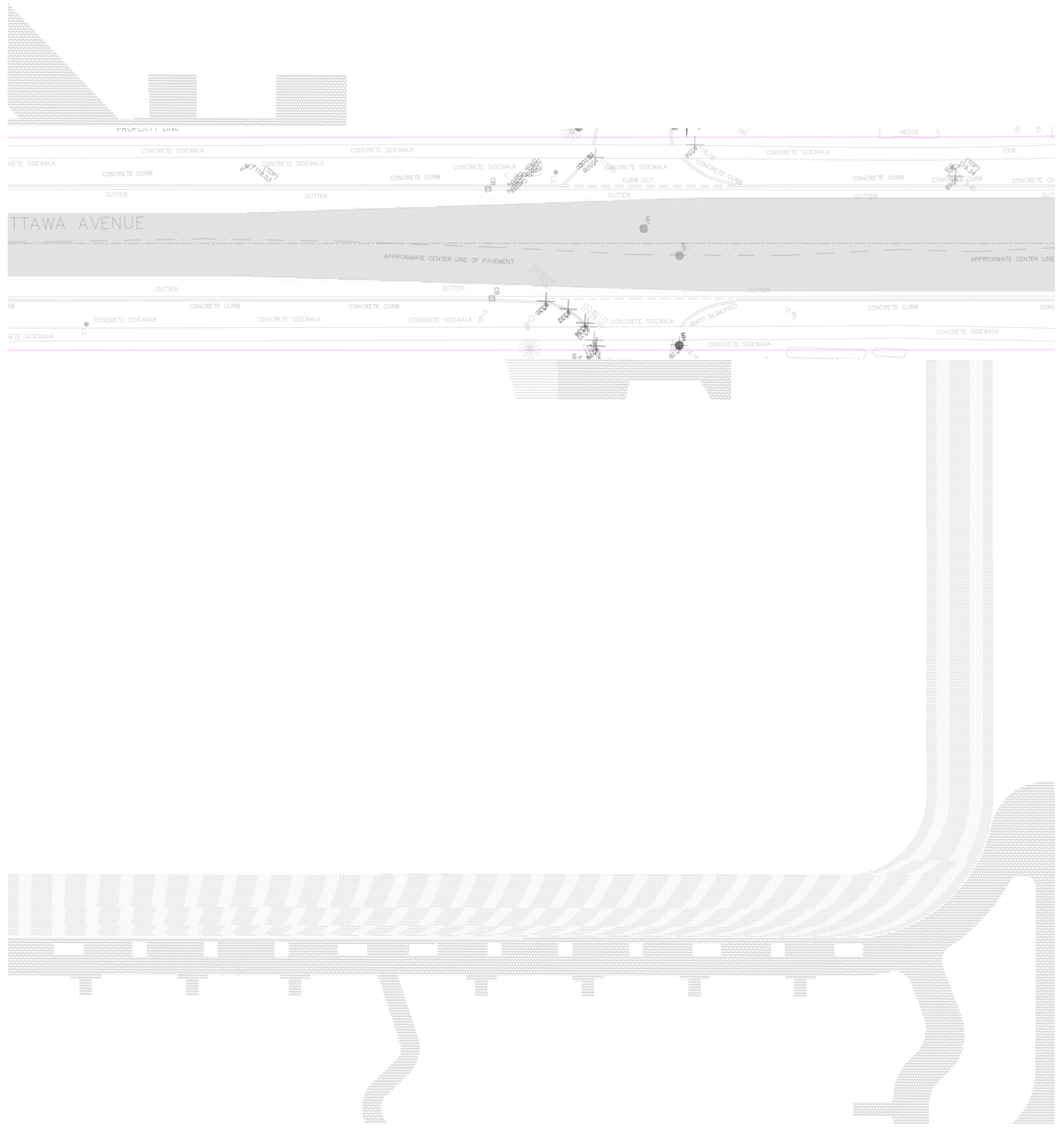
7.5 0 7.5 15 22.5m
1: 750

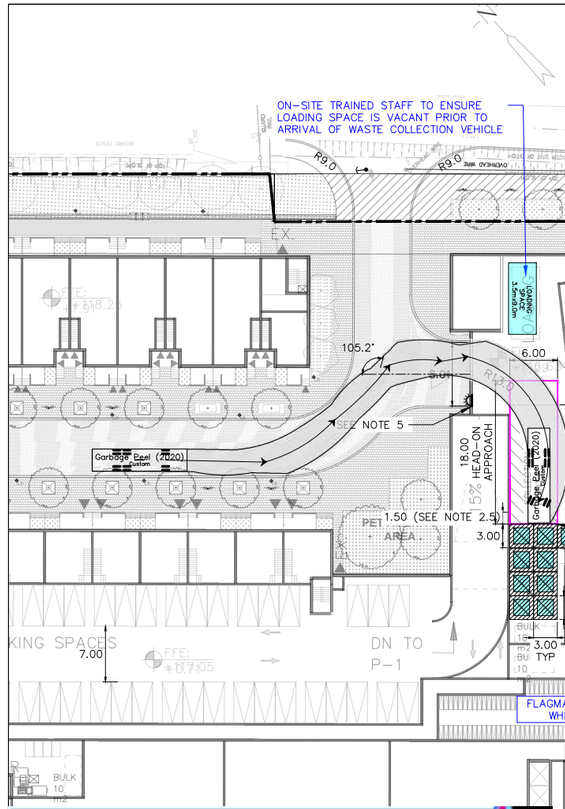
BLOCK F
LOADING REVIEW
REGION WASTE COLLECTION VEHICLE

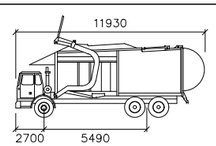
Drawing No. 005A

DRAWN BY: R.R. PLOT DATE: November 02, 2023

DRAWING NAME: F:\21224\Drafting\21224WF025 – FDR – 2.dwg


TTAWA AVENUE
APPROXIMATE CENTER LINE OF PAVEMENT
APPROXIMATE CENTER LINE
CONCRETE SIDEWALK
CONCRETE CURB
GUTTER
CURB CUT
HEDGE



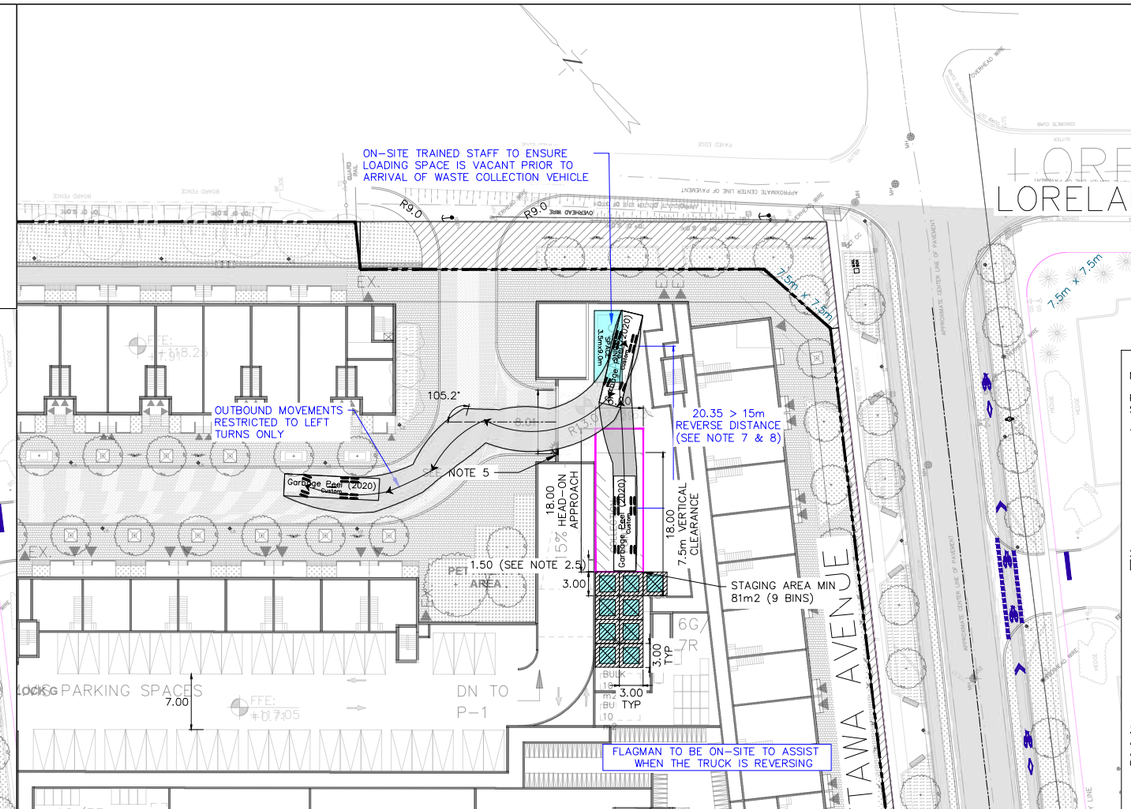


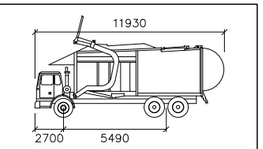
Garbage Peel (2020)

mm

Width	: 2770
Track	: 2770
Lock to Lock Time	: 6.0
Steering Angle	: 25.0

ENTRY PATH





Garbage Peel (2020)

mm

Width	: 2770
Track	: 2770
Lock to Lock Time	: 6.0
Steering Angle	: 25.0

EXIT PATH

NOTE:

PER REGION OF PEEL WASTE COLLECTION DESIGN STANDARDS MANUAL (2020):

1. ACCESS ROAD
   - 1.1. TURNS MUST HAVE A MIN. OF 13m TURNING RADIUS FOR WASTE COLLECTION VEHICLES.
   - 1.2. ALL ACCESS ROADS MUST HAVE A MIN. 6M WIDTH AND MAX. 8% GRADING.
   - 1.3. WASTE COLLECTION VEHICLES SHALL NOT REVERSE IN EXCESS OF 15m AND TURN WHILE REVERSING.
   - 1.4. OUTSIDE THE COLLECTION POINT, CLEARANCE HEIGHT OF 4.4M FROM TOP OF ACCESS ROAD MUST BE PROVIDED ALONG THE WASTE COLLECTION VEHICLE ACCESS.
2. COLLECTION POINT – INDOOR WASTE COLLECTION [APPENDIX 4]
   - 2.1. MIN. 18m STRAIGHT HEAD-ON APPROACH TO THE COLLECTION POINT.
   - 2.2. A MIN. CLEARANCE HEIGHT OF 7.5m FROM THE CONCRETE PAD AT COLLECTION POINT, INCLUDING AT THE 6mx3m STAGING AREA DIRECTLY IN FRONT OF THE TRUCK.
   - 2.3. MIN. 6m WIDTH AND MAX. 2% SLOPE AT CONCRETE PAD AND 18m APPROACH.
   - 2.4. MIN 10m^2 BULKY SET OUT AREA FOR EACH COMPLEX, SEPARATE FROM COLLECTION POINT VIA A DIVIDING WALL.
   - 2.5. EXTEND CONCRETE APRON MIN 1.5m OUTSIDE OF THE COLLECTION POINT TO ACCOMMODATE FRONT WHEELS OF COLLECTION VEHICLE
3. NUMBER OF RECYCLE BINS SHOWN IN STAGING AREA IS MEANT TO DENOTE THAT THE SPACE CAN ACCOMMODATE THE NECESSARY NUMBER OF RESIDENTIAL COLLECTION BINS AS PER SECTION 4.
   - 3.1. RECYCLE COLLECTION GOVERNS THE STAGING AREA REQUIREMENT
   - 3.2. 4-YD^3 BINS REQUIRE STAGING AREA OF 3mx3m.
   - 3.3. BLOCK A – 1041 UNITS, $\frac{1041}{180}$ = 18 4-YD^3 BINS ARE REQUIRED = 162m^2 MIN STAGING AREA.
   - 3.4. BLOCK C – 433 UNITS, $\frac{433}{72}$ = 8 4-YD^3 BINS ARE REQUIRED = 72m^2 MIN STAGING AREA
   - 3.5. BLOCK E – 541 UNITS, $\frac{541}{72}$ = 10 4-YD^3 BINS ARE REQUIRED = 90m^2 MIN STAGING AREA.
   - 3.6. BLOCK F – 380 UNITS, $\frac{380}{72}$ = 7 4-YD^3 BINS ARE REQUIRED = 63m^2 MIN STAGING AREA
   - 3.7. BLOCK G – 515 UNITS, $\frac{515}{72}$ = 13 4-YD^3 BINS ARE REQUIRED = 81m^2 MIN STAGING AREA.
4. FOR EVERY 72 UNITS, 1 4-YD^3 GARBAGE BIN IS REQUIRED.
   - 4.1. BLOCK A – 1041 UNITS, $\frac{1041}{72}$ = 15 4-YD^3 BINS ARE REQUIRED
   - 4.2. BLOCK C – 433 UNITS, $\frac{433}{72}$ = 7 4-YD^3 BINS ARE REQUIRED
   - 4.3. BLOCK E – 541 UNITS, $\frac{541}{72}$ = 8 4-YD^3 BINS ARE REQUIRED
   - 4.4. BLOCK F – 380 UNITS, $\frac{380}{72}$ = 6 4-YD^3 BINS ARE REQUIRED
   - 4.5. BLOCK G – 515 UNITS, $\frac{515}{72}$ = 8 4-YD^3 BINS ARE REQUIRED
5. TRAINED ON-SITE PERSONNEL MUST ASSIST THE COLLECTION VEHICLE IN REVERSING OUT OF THE LOADING SPACE ON COLLECTION DAY.
6. FLASHING WARNING LIGHTS TO BE ACTIVATED WHEN TRUCKS ENTER AND EXIT THE SITE. THE SYSTEM TO REMAIN ACTIVATED DURING THE CITY GARBAGE COLLECTION ACTIVITY AND UNTIL THE TRUCK EXITS THE SITE. WARNING SIGN TO BE MOUNTED BELOW THE FLASH LIGHT.
7. TRUCK PATH SUBJECT TO CITY'S APPROVAL.
8. TRAINED FLAGMEN TO BE ON SITE WHILE TRUCK IS REVERSING.

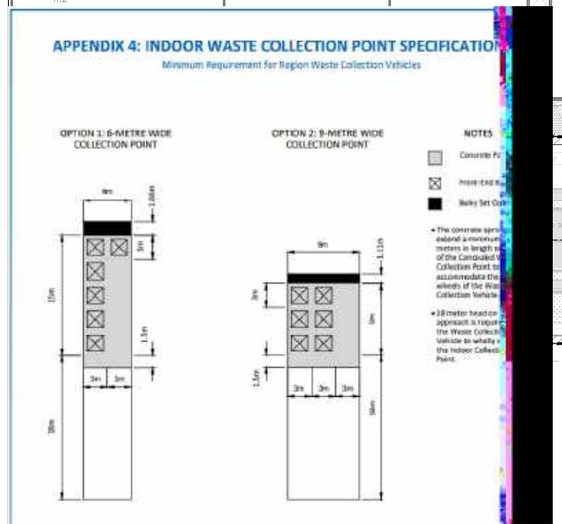


FIGURE 01 – REGION INDOOR WASTE COLLECTION POINT SPECIFICATIONS

LEGEND

18m HEAD-ON APPROACH

4-CU-YD BIN

3mX3m CLEARANCE FOR BIN

WATCH FOR TURNING TRUCKS WHEN FLASHING

DRAWN BY: R.R. PLOT DATE: November 02, 2023

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Project No. 21224

Date NOV. 01, 2023

1530-1650 DUNDAS STREET EAST
MISSISSAUGA ONTARIO

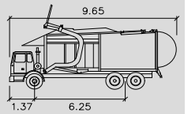
7.5 0 7.5 15 22.5m
1:750

BLOCK G
LOADING REVIEW
REGION WASTE COLLECTION VEHICLE

Drawing No. 006A

DRAWING NAME: F:\21224\Drafting\21224WF025 – FDR – 2.dwg

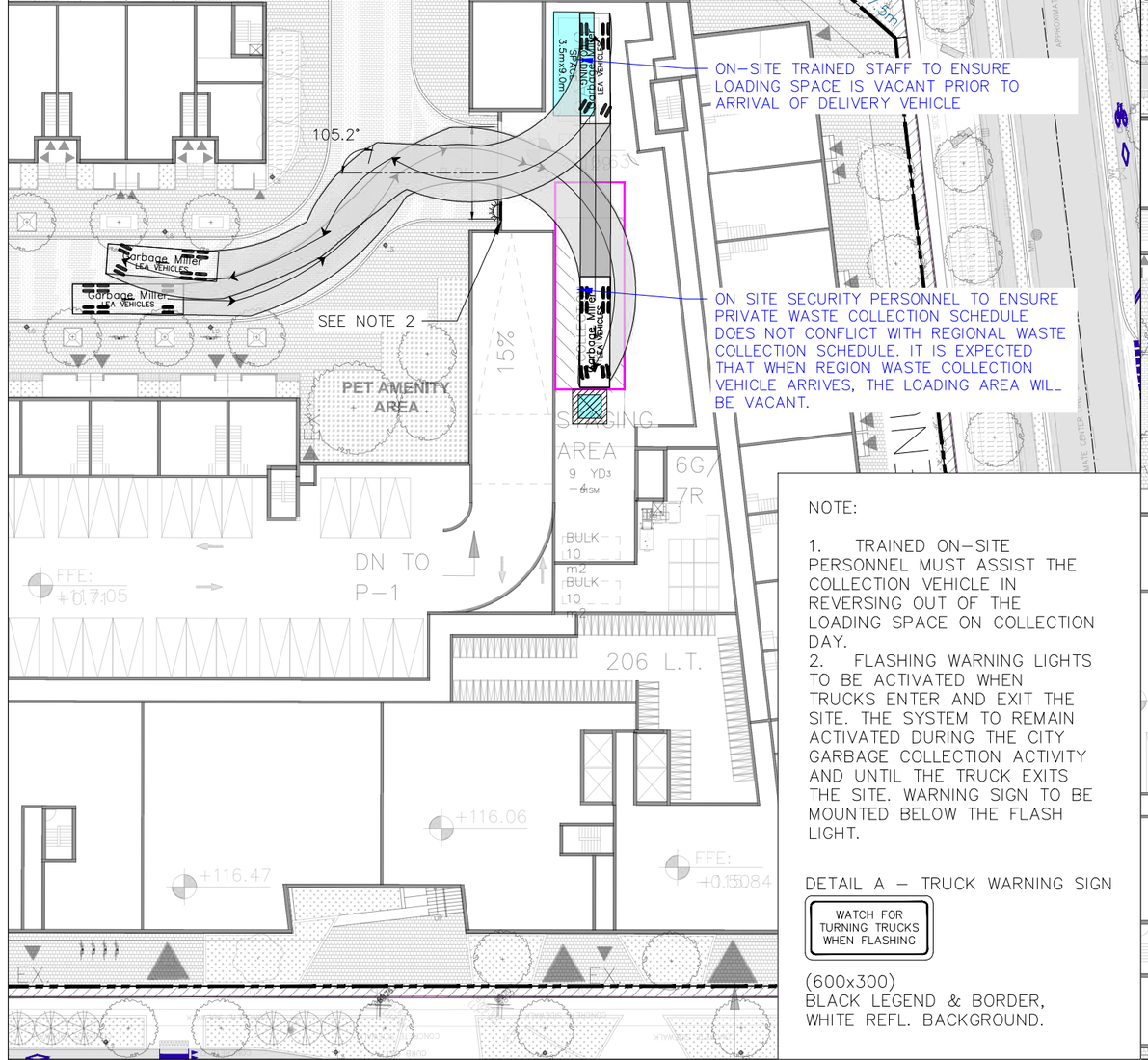
RETAIL PRIVATE WASTE COLLECTION



Garbage Miller meters

Width	: 2.60
Track	: 2.60
Lock to Lock Time	: 6.0
Steering Angle	: 30.0°

TRUCK PROFILE SUBJECT TO CITY'S APPROVAL



NOTE:

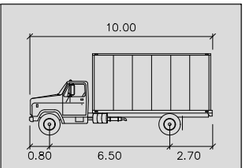
1. TRAINED ON-SITE PERSONNEL MUST ASSIST THE COLLECTION VEHICLE IN REVERSING OUT OF THE LOADING SPACE ON COLLECTION DAY.
2. FLASHING WARNING LIGHTS TO BE ACTIVATED WHEN TRUCKS ENTER AND EXIT THE SITE. THE SYSTEM TO REMAIN ACTIVATED DURING THE CITY GARBAGE COLLECTION ACTIVITY AND UNTIL THE TRUCK EXITS THE SITE. WARNING SIGN TO BE MOUNTED BELOW THE FLASH LIGHT.

DETAIL A – TRUCK WARNING SIGN

WATCH FOR TURNING TRUCKS WHEN FLASHING

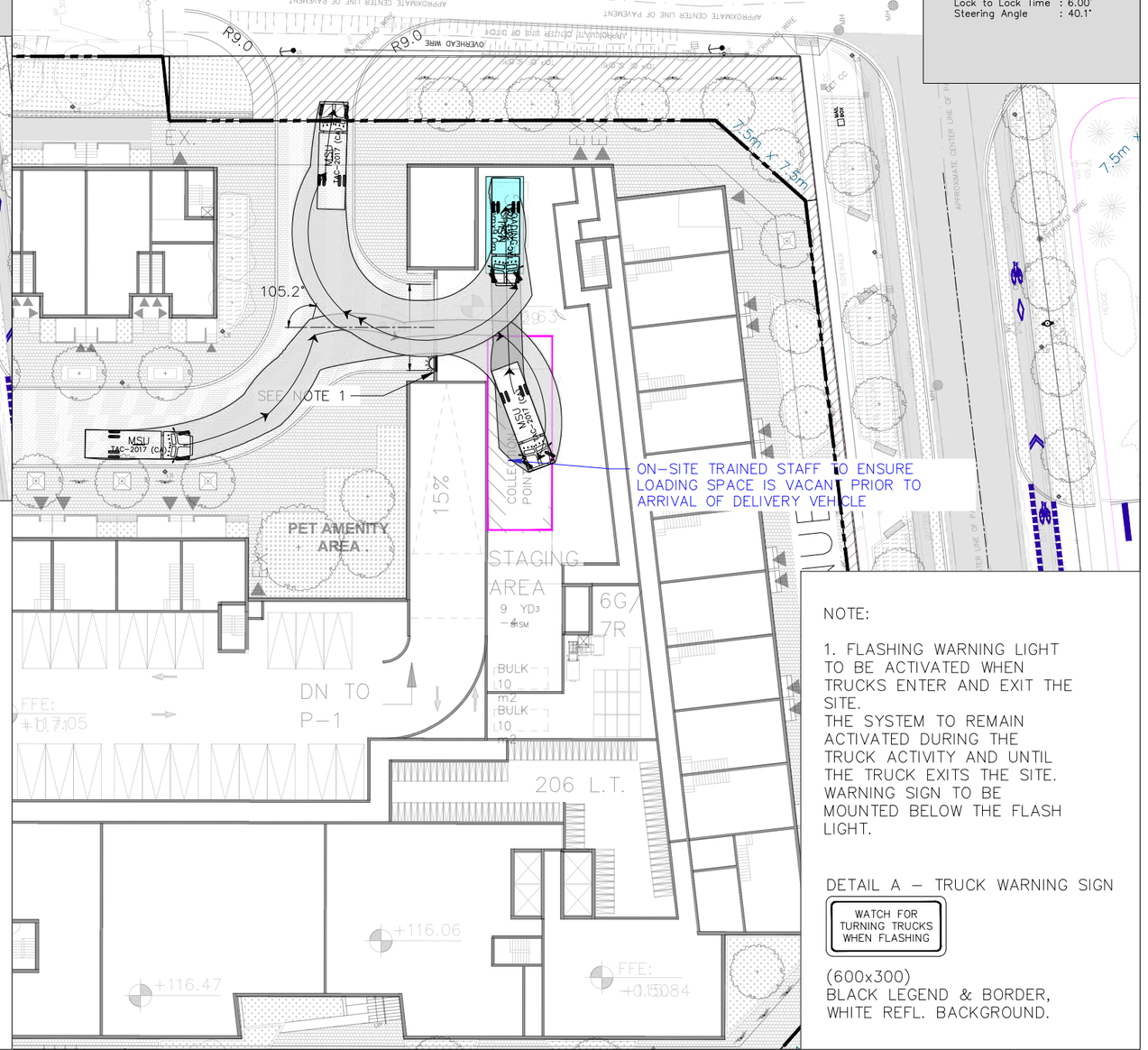
(600x300)
BLACK LEGEND & BORDER,
WHITE REFL. BACKGROUND.

MSU (MOVING/DELIVERY) VEHICLE)



MSU

Width	: 2.60m
Track	: 2.60m
Lock to Lock Time	: 6.00'
Steering Angle	: 40.1°



NOTE:

1. FLASHING WARNING LIGHT TO BE ACTIVATED WHEN TRUCKS ENTER AND EXIT THE SITE.
THE SYSTEM TO REMAIN ACTIVATED DURING THE TRUCK ACTIVITY AND UNTIL THE TRUCK EXITS THE SITE.
WARNING SIGN TO BE MOUNTED BELOW THE FLASH LIGHT.

DETAIL A – TRUCK WARNING SIGN

WATCH FOR TURNING TRUCKS WHEN FLASHING

(600x300)
BLACK LEGEND & BORDER,
WHITE REFL. BACKGROUND.

PLOT DATE: November 02, 2023
DRAWN BY: R.R.

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Project No. 21224

Date NOV. 01, 2023

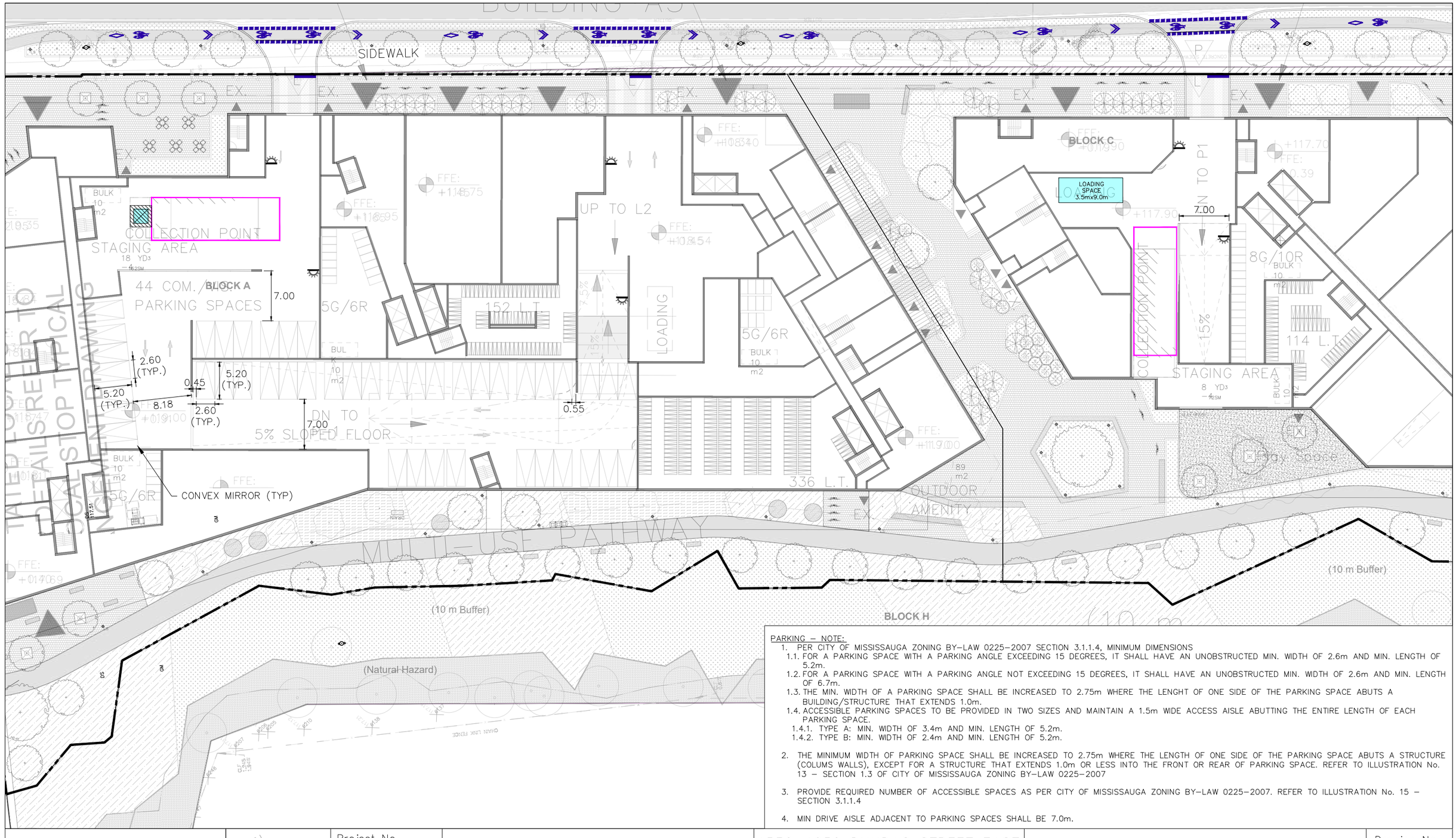
1530–1650 DUNDAS STREET EAST
MISSISSAUGA ONTARIO

5 0 5 10 15m
1:500

BLOCK G
LOADING REVIEW
RETAIL PRIVATE WASTE COLLECTION VEHICLE &
MSU – MOVING/DELIVERY VEHICLE

Drawing No. 006B

DRAWING NAME: F:\21224\Drafting\21224WF025 – FDR – 2.dwg



PARKING – NOTE:

1. PER CITY OF MISSISSAUGA ZONING BY–LAW 0225–2007 SECTION 3.1.1.4, MINIMUM DIMENSIONS
   - 1.1. FOR A PARKING SPACE WITH A PARKING ANGLE EXCEEDING 15 DEGREES, IT SHALL HAVE AN UNOBSTRUCTED MIN. WIDTH OF 2.6m AND MIN. LENGTH OF 5.2m.
   - 1.2. FOR A PARKING SPACE WITH A PARKING ANGLE NOT EXCEEDING 15 DEGREES, IT SHALL HAVE AN UNOBSTRUCTED MIN. WIDTH OF 2.6m AND MIN. LENGTH OF 6.7m.
   - 1.3. THE MIN. WIDTH OF A PARKING SPACE SHALL BE INCREASED TO 2.75m WHERE THE LENGHT OF ONE SIDE OF THE PARKING SPACE ABUTS A BUILDING/STRUCTURE THAT EXTENDS 1.0m.
   - 1.4. ACCESSIBLE PARKING SPACES TO BE PROVIDED IN TWO SIZES AND MAINTAIN A 1.5m WIDE ACCESS AISLE ABUTTING THE ENTIRE LENGTH OF EACH PARKING SPACE.
     - 1.4.1. TYPE A: MIN. WIDTH OF 3.4m AND MIN. LENGTH OF 5.2m.
     - 1.4.2. TYPE B: MIN. WIDTH OF 2.4m AND MIN. LENGTH OF 5.2m.
2. THE MINIMUM WIDTH OF PARKING SPACE SHALL BE INCREASED TO 2.75m WHERE THE LENGTH OF ONE SIDE OF THE PARKING SPACE ABUTS A STRUCTURE (COLUMS WALLS), EXCEPT FOR A STRUCTURE THAT EXTENDS 1.0m OR LESS INTO THE FRONT OR REAR OF PARKING SPACE. REFER TO ILLUSTRATION No. 13 – SECTION 1.3 OF CITY OF MISSISSAUGA ZONING BY–LAW 0225–2007
3. PROVIDE REQUIRED NUMBER OF ACCESSIBLE SPACES AS PER CITY OF MISSISSAUGA ZONING BY–LAW 0225–2007. REFER TO ILLUSTRATION No. 15 – SECTION 3.1.1.4
4. MIN DRIVE AISLE ADJACENT TO PARKING SPACES SHALL BE 7.0m.

PLOT DATE: November 02, 2023

DRAWN BY: R.R.

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Project No. 21224

Date NOV. 01, 2023

1530–1650 DUNDAS STREET EAST
MISSISSAUGA ONTARIO

10 0 10 20 30m
1:1000

PARKING REVIEW
GROUND LEVEL
BLOCK "A" & "C"

Drawing No. 007A

DRAWING NAME: F:\21224\Drafting\21224WF025 – FDR – 2.dwg

EXIS
2.00m FURNITURE/TREE
PLANTING ZONE (TYP.)

PARKING: 294 (265 RES+29 VISE)
BIKE PARKING: 38

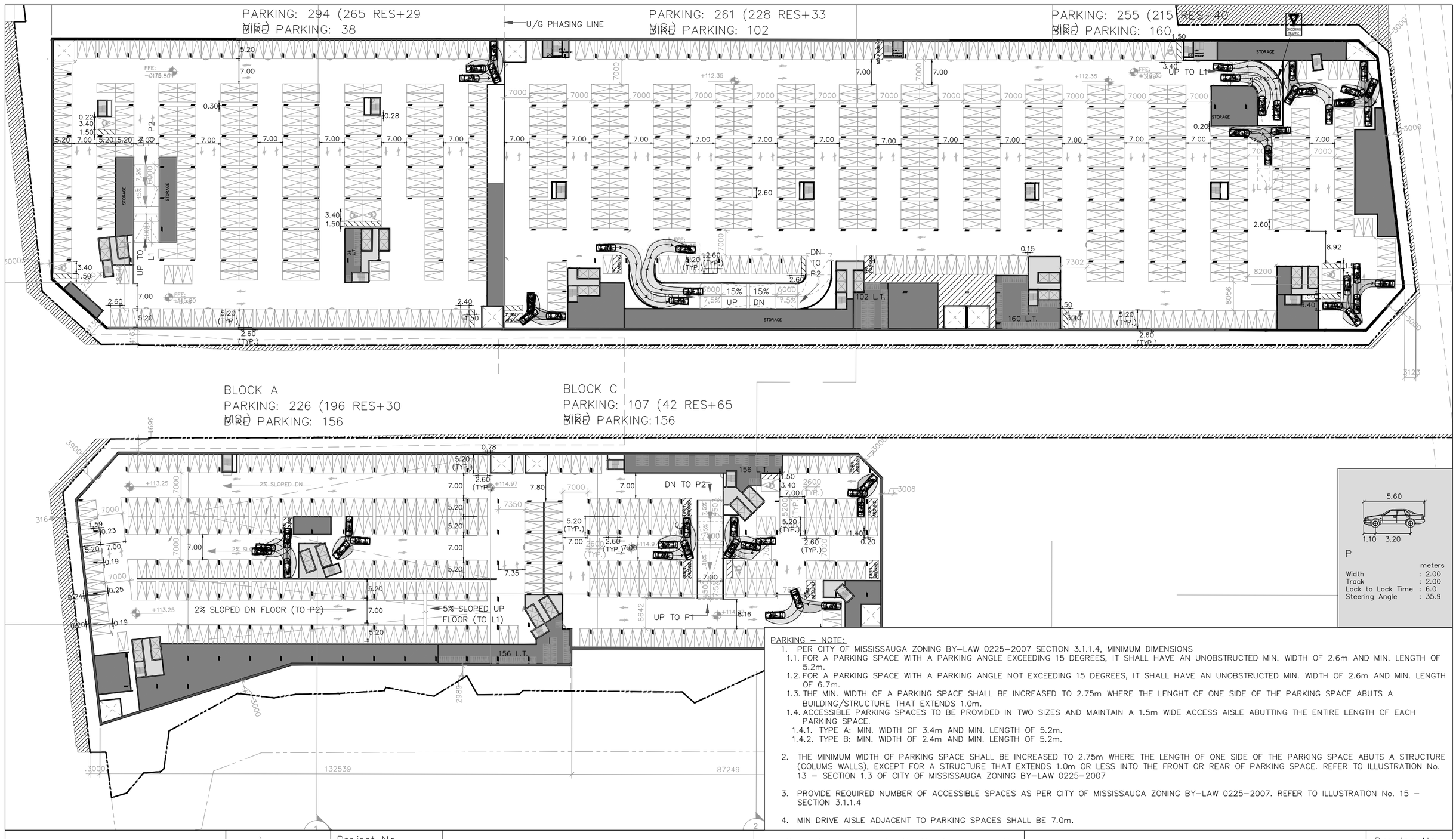
U/G PHASING LINE

PARKING: 261 (228 RES+33 VISE)
BIKE PARKING: 102

PARKING: 255 (215 RES+40 VISE)
BIKE PARKING: 160

BLOCK A
PARKING: 226 (196 RES+30 VISE)
BIKE PARKING: 156

BLOCK C
PARKING: 107 (42 RES+65 VISE)
BIKE PARKING: 156



P	meters
Width	: 2.00
Track	: 2.00
Lock to Lock Time	: 6.0
Steering Angle	: 35.9

PARKING – NOTE:

1. PER CITY OF MISSISSAUGA ZONING BY–LAW 0225–2007 SECTION 3.1.1.4, MINIMUM DIMENSIONS
   - 1.1. FOR A PARKING SPACE WITH A PARKING ANGLE EXCEEDING 15 DEGREES, IT SHALL HAVE AN UNOBSTRUCTED MIN. WIDTH OF 2.6m AND MIN. LENGTH OF 5.2m.
   - 1.2. FOR A PARKING SPACE WITH A PARKING ANGLE NOT EXCEEDING 15 DEGREES, IT SHALL HAVE AN UNOBSTRUCTED MIN. WIDTH OF 2.6m AND MIN. LENGTH OF 6.7m.
   - 1.3. THE MIN. WIDTH OF A PARKING SPACE SHALL BE INCREASED TO 2.75m WHERE THE LENGHT OF ONE SIDE OF THE PARKING SPACE ABUTS A BUILDING/STRUCTURE THAT EXTENDS 1.0m.
   - 1.4. ACCESSIBLE PARKING SPACES TO BE PROVIDED IN TWO SIZES AND MAINTAIN A 1.5m WIDE ACCESS AISLE ABUTTING THE ENTIRE LENGTH OF EACH PARKING SPACE.
     - 1.4.1. TYPE A: MIN. WIDTH OF 3.4m AND MIN. LENGTH OF 5.2m.
     - 1.4.2. TYPE B: MIN. WIDTH OF 2.4m AND MIN. LENGTH OF 5.2m.
2. THE MINIMUM WIDTH OF PARKING SPACE SHALL BE INCREASED TO 2.75m WHERE THE LENGTH OF ONE SIDE OF THE PARKING SPACE ABUTS A STRUCTURE (COLUMS WALLS), EXCEPT FOR A STRUCTURE THAT EXTENDS 1.0m OR LESS INTO THE FRONT OR REAR OF PARKING SPACE. REFER TO ILLUSTRATION No. 13 – SECTION 1.3 OF CITY OF MISSISSAUGA ZONING BY–LAW 0225–2007
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4. MIN DRIVE AISLE ADJACENT TO PARKING SPACES SHALL BE 7.0m.

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Project No. 21224

Date NOV. 01, 2023

1530–1650 DUNDAS STREET EAST
MISSISSAUGA ONTARIO

10 0 10 20 30m
1:1000

PARKING REVIEW UNDERGROUND LEVEL 1

Drawing No. 008A

DRAWN BY: R.R. PLOT DATE: November 02, 2023

DRAWING NAME: F:\21224\Drafting\21224WF025 – FDR – 2.dwg

UNEXCAVATED

UNEXCAVATED

UNEXCAVATED

BLOCK A
PARKING: 22 RES.

BLOCK C
PARKING: 1 RES.

CONVEX MIRROR (TYP)

2% SLOPED DN FLOOR

2% SLOPED UP

UP TO P1

15% SLOPE

STORAGE

PARKING – NOTE:

1. PER CITY OF MISSISSAUGA ZONING BY–LAW 0225–2007 SECTION 3.1.1.4, MINIMUM DIMENSIONS
   - 1.1. FOR A PARKING SPACE WITH A PARKING ANGLE EXCEEDING 15 DEGREES, IT SHALL HAVE AN UNOBSTRUCTED MIN. WIDTH OF 2.6m AND MIN. LENGTH OF 5.2m.
   - 1.2. FOR A PARKING SPACE WITH A PARKING ANGLE NOT EXCEEDING 15 DEGREES, IT SHALL HAVE AN UNOBSTRUCTED MIN. WIDTH OF 2.6m AND MIN. LENGTH OF 6.7m.
   - 1.3. THE MIN. WIDTH OF A PARKING SPACE SHALL BE INCREASED TO 2.75m WHERE THE LENGHT OF ONE SIDE OF THE PARKING SPACE ABUTS A BUILDING/STRUCTURE THAT EXTENDS 1.0m.
   - 1.4. ACCESSIBLE PARKING SPACES TO BE PROVIDED IN TWO SIZES AND MAINTAIN A 1.5m WIDE ACCESS AISLE ABUTTING THE ENTIRE LENGTH OF EACH PARKING SPACE.
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3. PROVIDE REQUIRED NUMBER OF ACCESSIBLE SPACES AS PER CITY OF MISSISSAUGA ZONING BY–LAW 0225–2007. REFER TO ILLUSTRATION No. 15 – SECTION 3.1.1.4
4. MIN DRIVE AISLE ADJACENT TO PARKING SPACES SHALL BE 7.0m.

P

	meters
Width	: 2.00
Track	: 2.00
Lock to Lock Time	: 6.0
Steering Angle	: 35.9

DRAWN BY: R.R. PLOT DATE: November 02, 2023

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Project No. 21224

Date NOV. 01, 2023

1530–1650 DUNDAS STREET EAST
MISSISSAUGA ONTARIO

10 0 10 20 30m
1:1000

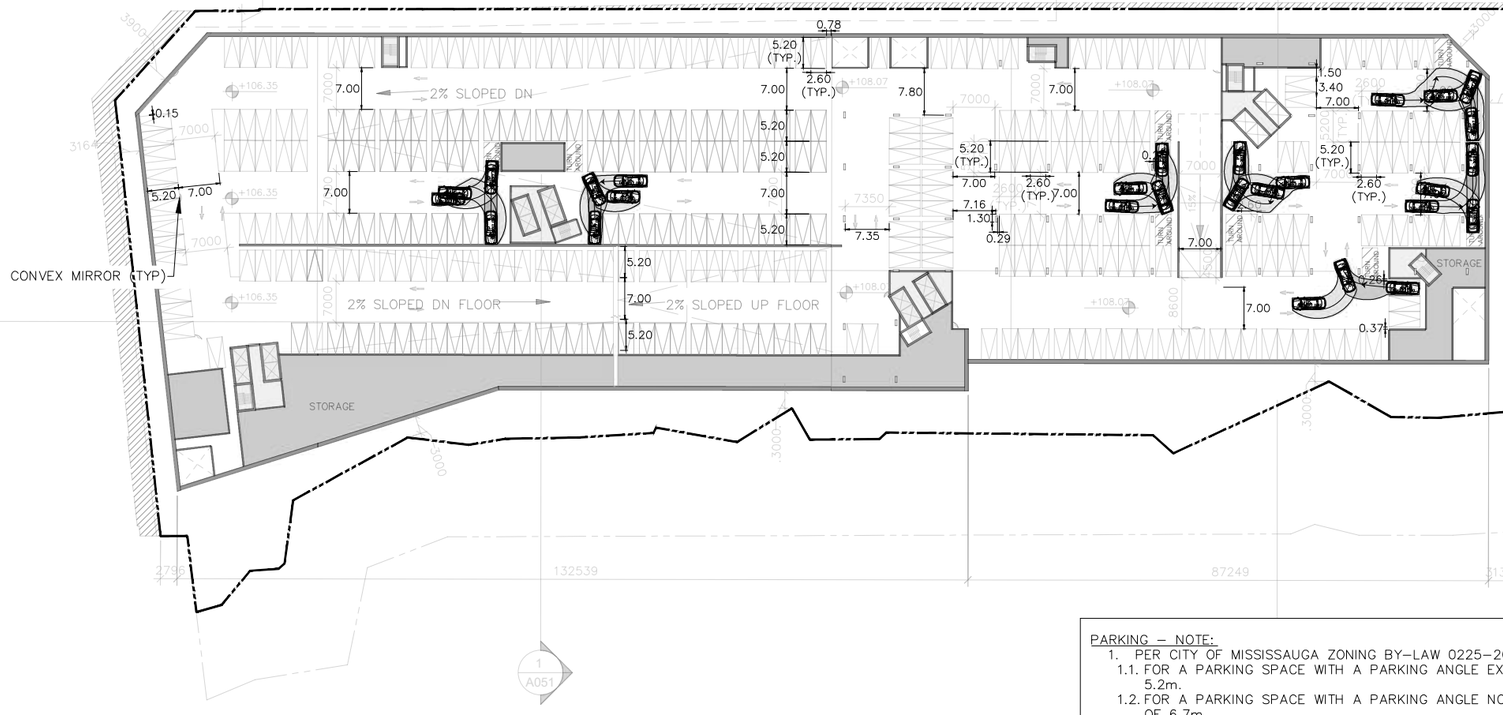
PARKING REVIEW
UNDERGROUND LEVEL 2

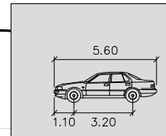
Drawing No. 009

DRAWING NAME: F:\21224\Drafting\21224WF025 – FDR – 2.dwg

BLOCK A
PARKING: 254 RES.

BLOCK C
PARKING: 124 RES.





P

	meters
Width	: 2.00
Track	: 2.00
Lock to Lock Time	: 6.0
Steering Angle	: 35.9

PARKING – NOTE:

1. PER CITY OF MISSISSAUGA ZONING BY–LAW 0225–2007 SECTION 3.1.1.4, MINIMUM DIMENSIONS
   - 1.1. FOR A PARKING SPACE WITH A PARKING ANGLE EXCEEDING 15 DEGREES, IT SHALL HAVE AN UNOBSTRUCTED MIN. WIDTH OF 2.6m AND MIN. LENGTH OF 5.2m.
   - 1.2. FOR A PARKING SPACE WITH A PARKING ANGLE NOT EXCEEDING 15 DEGREES, IT SHALL HAVE AN UNOBSTRUCTED MIN. WIDTH OF 2.6m AND MIN. LENGTH OF 6.7m.
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   - 1.4. ACCESSIBLE PARKING SPACES TO BE PROVIDED IN TWO SIZES AND MAINTAIN A 1.5m WIDE ACCESS AISLE ABUTTING THE ENTIRE LENGTH OF EACH PARKING SPACE.
     - 1.4.1. TYPE A: MIN. WIDTH OF 3.4m AND MIN. LENGTH OF 5.2m.
     - 1.4.2. TYPE B: MIN. WIDTH OF 2.4m AND MIN. LENGTH OF 5.2m.
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3. PROVIDE REQUIRED NUMBER OF ACCESSIBLE SPACES AS PER CITY OF MISSISSAUGA ZONING BY–LAW 0225–2007. REFER TO ILLUSTRATION No. 15 – SECTION 3.1.1.4
4. MIN DRIVE AISLE ADJACENT TO PARKING SPACES SHALL BE 7.0m.

PLOT DATE: November 02, 2023

DRAWN BY: R.R.

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Project No. 21224

Date NOV. 01, 2023

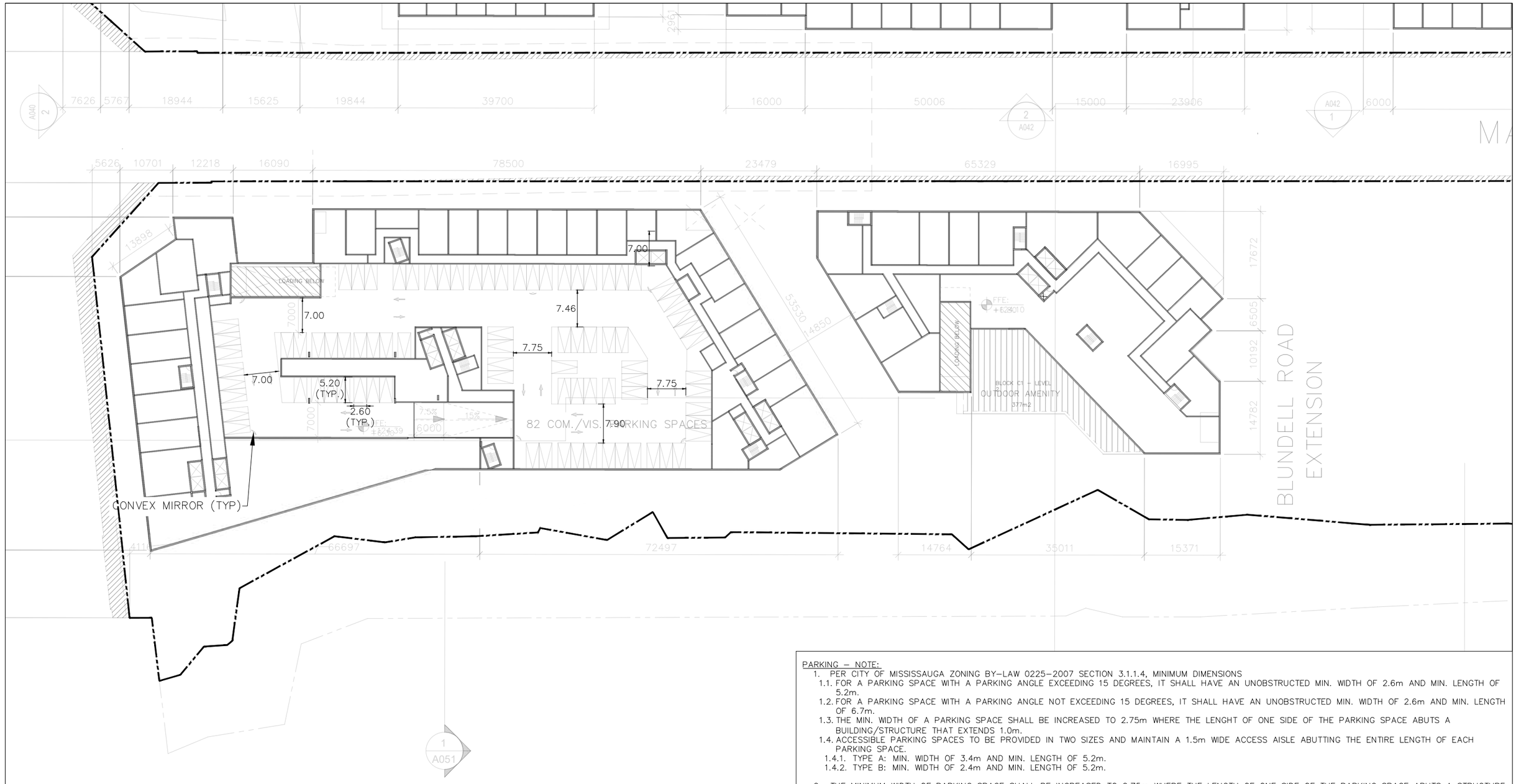
1530–1650 DUNDAS STREET EAST
MISSISSAUGA ONTARIO

10 0 10 20 30m
1:1000

PARKING REVIEW
UNDERGROUND LEVEL 3

Drawing No. 010

DRAWING NAME: F:\21224\Drafting\21224WF025 – FDR – 2.dwg



PARKING – NOTE:

1. PER CITY OF MISSISSAUGA ZONING BY–LAW 0225–2007 SECTION 3.1.1.4, MINIMUM DIMENSIONS
   - 1.1. FOR A PARKING SPACE WITH A PARKING ANGLE EXCEEDING 15 DEGREES, IT SHALL HAVE AN UNOBSTRUCTED MIN. WIDTH OF 2.6m AND MIN. LENGTH OF 5.2m.
   - 1.2. FOR A PARKING SPACE WITH A PARKING ANGLE NOT EXCEEDING 15 DEGREES, IT SHALL HAVE AN UNOBSTRUCTED MIN. WIDTH OF 2.6m AND MIN. LENGTH OF 6.7m.
   - 1.3. THE MIN. WIDTH OF A PARKING SPACE SHALL BE INCREASED TO 2.75m WHERE THE LENGHT OF ONE SIDE OF THE PARKING SPACE ABUTS A BUILDING/STRUCTURE THAT EXTENDS 1.0m.
   - 1.4. ACCESSIBLE PARKING SPACES TO BE PROVIDED IN TWO SIZES AND MAINTAIN A 1.5m WIDE ACCESS AISLE ABUTTING THE ENTIRE LENGTH OF EACH PARKING SPACE.
     - 1.4.1. TYPE A: MIN. WIDTH OF 3.4m AND MIN. LENGTH OF 5.2m.
     - 1.4.2. TYPE B: MIN. WIDTH OF 2.4m AND MIN. LENGTH OF 5.2m.
2. THE MINIMUM WIDTH OF PARKING SPACE SHALL BE INCREASED TO 2.75m WHERE THE LENGTH OF ONE SIDE OF THE PARKING SPACE ABUTS A STRUCTURE (COLUMS WALLS), EXCEPT FOR A STRUCTURE THAT EXTENDS 1.0m OR LESS INTO THE FRONT OR REAR OF PARKING SPACE. REFER TO ILLUSTRATION No. 13 – SECTION 1.3 OF CITY OF MISSISSAUGA ZONING BY–LAW 0225–2007
3. PROVIDE REQUIRED NUMBER OF ACCESSIBLE SPACES AS PER CITY OF MISSISSAUGA ZONING BY–LAW 0225–2007. REFER TO ILLUSTRATION No. 15 – SECTION 3.1.1.4
4. MIN DRIVE AISLE ADJACENT TO PARKING SPACES SHALL BE 7.0m.

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1530–1650 DUNDAS STREET EAST
MISSISSAUGA ONTARIO

7.5 0 7.5 15 22.5m
1: 750

PARKING REVIEW
LEVEL 2 (PODIUM)

Drawing No. 011

DRAWING NAME: F:\21224\Drafting\21224WF025 – FDR – 2.dwg

STOPPING SIGHT DISTANCE (SSD)	
SIGHTLINES PER "TAC" TABLE 2.5.2	
POSTED SPEED	50km/hr (ASSUMED)
DESIGN SPEED	60km/hr
STOPPING SIGHT DISTANCE (m)	
REQUIRED SSD	85
AVAILABLE SSD	>85
REQUIRED SSD SATISFIED	YES

REQUIRED SSD = 85.00
(60KM/H DESIGN SPEED)

CLEAR SIGHT LINE

INCOMING VEHICLE

AVAILABLE SSD = 55.95
(SEE NOTE 1)

INCOMING VEHICLES
SLOWING DOWN TO AN
ASSUMED 15KM/H

AVAILABLE SSD = 85.00
(60KM/H DESIGN SPEED)

DUNDAS STREET EAST

MATTAWA AVENUE

BUILDING A1

BUILDING A2

BUILDING A3

BUILDING F1

BUILDING F2

SIDEWALK

BLOCK C

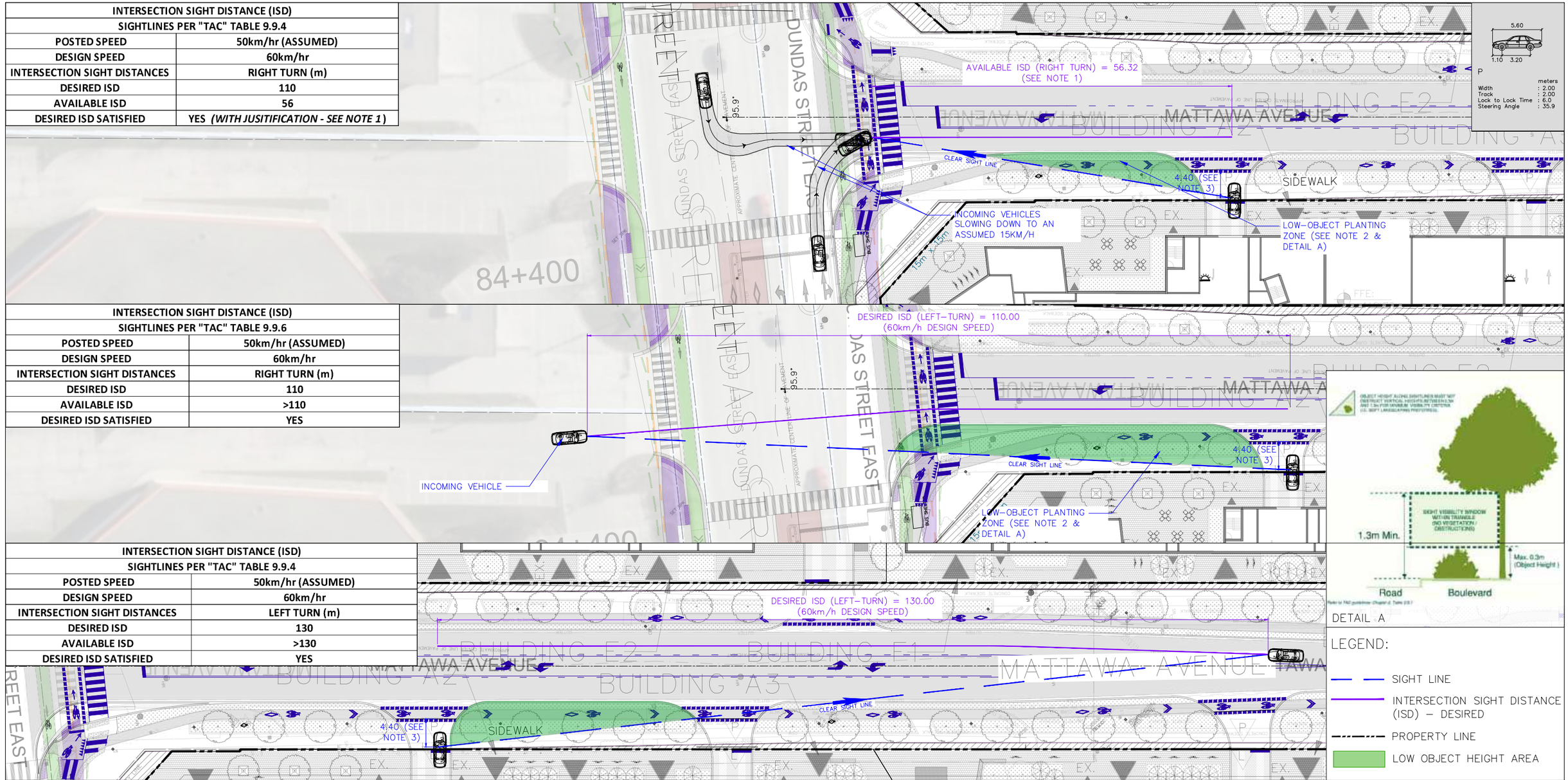
15m X 15m

95.9°

INTERSECTION SIGHT DISTANCE (ISD)	
SIGHTLINES PER "TAC" TABLE 9.9.4	
POSTED SPEED	50km/hr (ASSUMED)
DESIGN SPEED	60km/hr
INTERSECTION SIGHT DISTANCES	RIGHT TURN (m)
DESIRED ISD	110
AVAILABLE ISD	56
DESIRED ISD SATISFIED	YES *(WITH JUSTIFICATION - SEE NOTE 1)*

INTERSECTION SIGHT DISTANCE (ISD)	
SIGHTLINES PER "TAC" TABLE 9.9.6	
POSTED SPEED	50km/hr (ASSUMED)
DESIGN SPEED	60km/hr
INTERSECTION SIGHT DISTANCES	RIGHT TURN (m)
DESIRED ISD	110
AVAILABLE ISD	>110
DESIRED ISD SATISFIED	YES

INTERSECTION SIGHT DISTANCE (ISD)	
SIGHTLINES PER "TAC" TABLE 9.9.4	
POSTED SPEED	50km/hr (ASSUMED)
DESIGN SPEED	60km/hr
INTERSECTION SIGHT DISTANCES	LEFT TURN (m)
DESIRED ISD	130
AVAILABLE ISD	>130
DESIRED ISD SATISFIED	YES



DETAIL A

LEGEND:

- SIGHT LINE
- INTERSECTION SIGHT DISTANCE (ISD) – DESIRED
- PROPERTY LINE
- LOW OBJECT HEIGHT AREA

NOTES:

1. THE AVAILABLE INTERSECTION SIGHT DISTANCE (ISD) OF 56.32m (RIGHT TURN) IS LESS THAN THE DESIRED ISD OF 110m (RIGHT TURN) FOR THE DESIGN SPEED LIMIT OF 60KM/H (PER TABLE 9.9.6 OF TRANSPORTATION ASSOCIATION OF CANADA (TAC) GUIDELINE – CHAPTER 9). HOWEVER, GIVEN THE EXISTING CONDITIONS FOR THE EXISTING INTERSECTION OF DUNDAS STREET AND MATTAWA AVE, THE AVAILABLE ISD IS ACCEPTABLE – JUSTIFICATION IS AS FOLLOWS:
   1.1. GIVEN THAT VEHICLES WILL BE TURNING RIGHT ONTO MATTAWA AVE FROM DUNDAS STREET, IT IS EXPECTED THAT THE VEHICLES WILL DRIVE AT A LOWER SPEED APPROACHING THE PROPOSED ACCESS – I.E. VEHICLES WILL TURN ONTO MATTAWA AT A SPEED LOWER THAN 60KM/H (I.E. 15KM/H – WHILE MAKING RIGHT TURN FROM DUNDAS). PER EQUATION 9.9.1 AND TABLE 9.9.5 OF TRANSPORTATION ASSOCIATION OF CANADA (TAC) GUIDELINE – CHAPTER 9, THE ISD FOR 15KM/H DESIGN SPEED IS CALCULATED AS:
   ISD = 0.278*V*t = 0.278*15*7.5 = 27.1m
   THEREFORE THE AVAILABLE ISD IS MORE THAN THE REQUIRED AT A SPEED OF 15KM/H.
2. OBJECT HEIGHT ALONG SIGHTLINES SHOULD PROVIDE CLEAR SIGHTLINES BETWEEN VERTICAL HEIGHTS OF 0.3m AND 1.3m FOR MIN VISIBILITY CRITERIA
3. SIGHT TRIANGLE VERTEX TAKEN 4.4m FROM THE BACK OF CYCLE TRACK FOR CONSERVATIVE ANALYSIS.

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Project No. 21224

Date NOV. 01, 2023

1530–1650 DUNDAS STREET EAST
MISSISSAUGA ONTARIO

6 0 6 12 18m
1:600

SIGHTLINE ANALYSIS
INTERSECTION SIGHT DISTANCE
BLOCK A
NORTH ACCESS

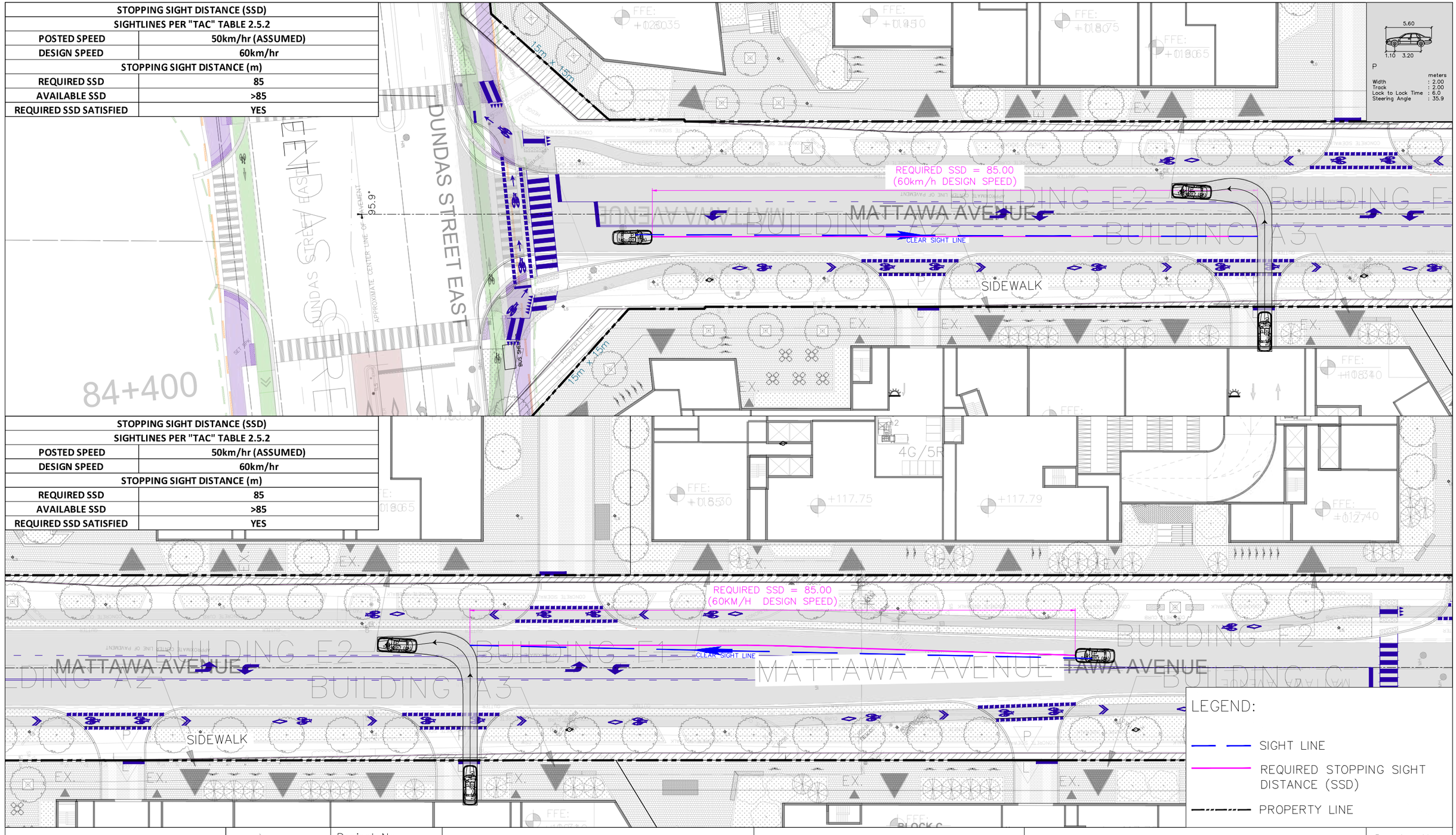
Drawing No. S01B

DRAWN BY: R.R. PLOT DATE: November 02, 2023

DRAWING NAME: F:\21224\Drafting\21224WF025 – FDR – 2.dwg

STOPPING SIGHT DISTANCE (SSD)	
SIGHTLINES PER "TAC" TABLE 2.5.2	
POSTED SPEED	50km/hr (ASSUMED)
DESIGN SPEED	60km/hr
STOPPING SIGHT DISTANCE (m)	
REQUIRED SSD	85
AVAILABLE SSD	>85
REQUIRED SSD SATISFIED	YES

STOPPING SIGHT DISTANCE (SSD)	
SIGHTLINES PER "TAC" TABLE 2.5.2	
POSTED SPEED	50km/hr (ASSUMED)
DESIGN SPEED	60km/hr
STOPPING SIGHT DISTANCE (m)	
REQUIRED SSD	85
AVAILABLE SSD	>85
REQUIRED SSD SATISFIED	YES



PLOT DATE: November 02, 2023

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Date NOV. 01, 2023

1530–1650 DUNDAS STREET EAST
MISSISSAUGA ONTARIO

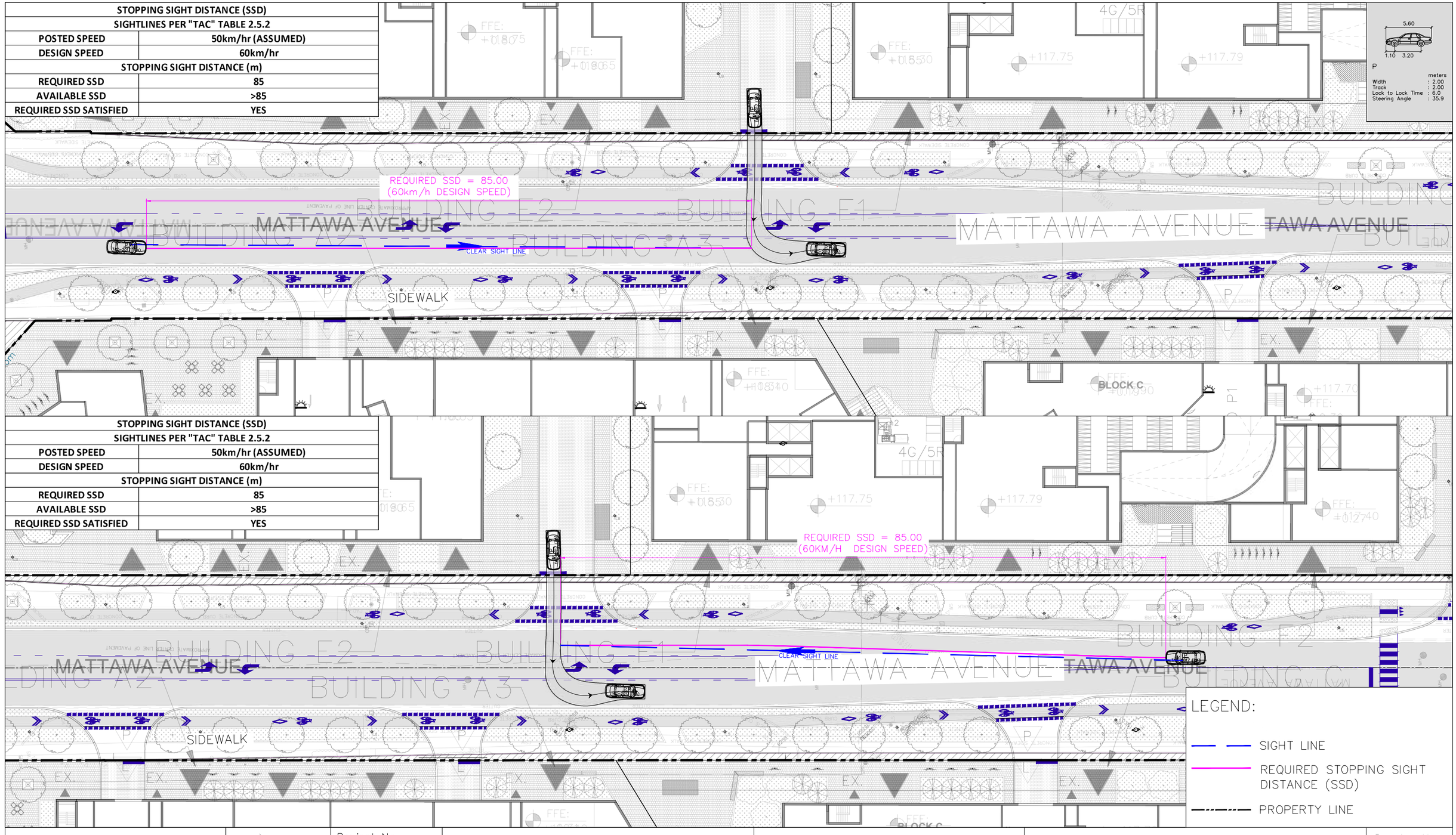
5 0 5 10 15m
1:500

SIGHTLINE ANALYSIS
STOPPING SIGHT DISTANCE
BLOCK A
SOUTH ACCESS

Drawing No. S02A

DRAWING NAME: F:\21224\Drafting\21224WF025 – FDR – 2.dwg

STOPPING SIGHT DISTANCE (SSD)	
SIGHTLINES PER "TAC" TABLE 2.5.2	
POSTED SPEED	50km/hr (ASSUMED)
DESIGN SPEED	60km/hr
STOPPING SIGHT DISTANCE (m)	
REQUIRED SSD	85
AVAILABLE SSD	>85
REQUIRED SSD SATISFIED	YES



STOPPING SIGHT DISTANCE (SSD)	
SIGHTLINES PER "TAC" TABLE 2.5.2	
POSTED SPEED	50km/hr (ASSUMED)
DESIGN SPEED	60km/hr
STOPPING SIGHT DISTANCE (m)	
REQUIRED SSD	85
AVAILABLE SSD	>85
REQUIRED SSD SATISFIED	YES

DRAWN BY: R.R. PLOT DATE: November 02, 2023

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Date NOV. 01, 2023

1530–1650 DUNDAS STREET EAST
MISSISSAUGA ONTARIO

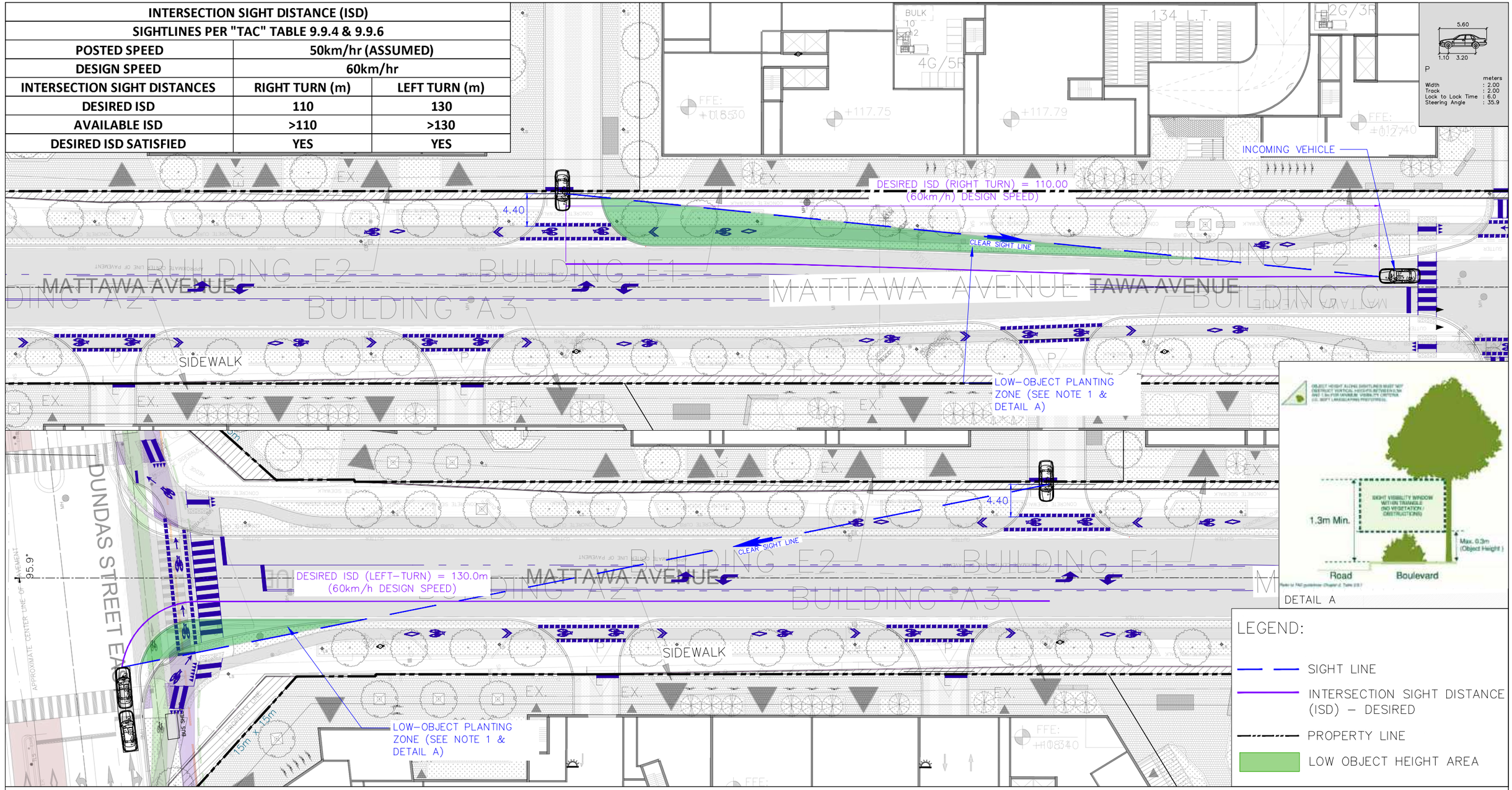
5 0 5 10 15m
1:500

SIGHTLINE ANALYSIS
STOPPING SIGHT DISTANCE
DRIVEWAY BETWEEN BLOCK E & F

Drawing No. S03A

DRAWING NAME: F:\21224\Drafting\21224WF025 – FDR – 2.dwg

INTERSECTION SIGHT DISTANCE (ISD)		
SIGHTLINES PER "TAC" TABLE 9.9.4 & 9.9.6		
POSTED SPEED	50km/hr (ASSUMED)	
DESIGN SPEED	60km/hr	
INTERSECTION SIGHT DISTANCES	RIGHT TURN (m)	LEFT TURN (m)
DESIRED ISD	110	130
AVAILABLE ISD	>110	>130
DESIRED ISD SATISFIED	YES	YES



NOTES:

1. OBJECT HEIGHT ALONG SIGHTLINES SHOULD PROVIDE CLEAR SIGHTLINES BETWEEN VERTICAL HEIGHTS OF 0.3m AND 1.3m FOR MIN VISIBILITY CRITERIA
2. SIGHT TRIANGLE VERTEX TAKEN 4.4m FROM THE BACK OF CYCLE TRACK FOR CONSERVATIVE ANALYSIS.

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Project No. 21224

Date NOV. 01, 2023

1530–1650 DUNDAS STREET EAST
MISSISSAUGA ONTARIO

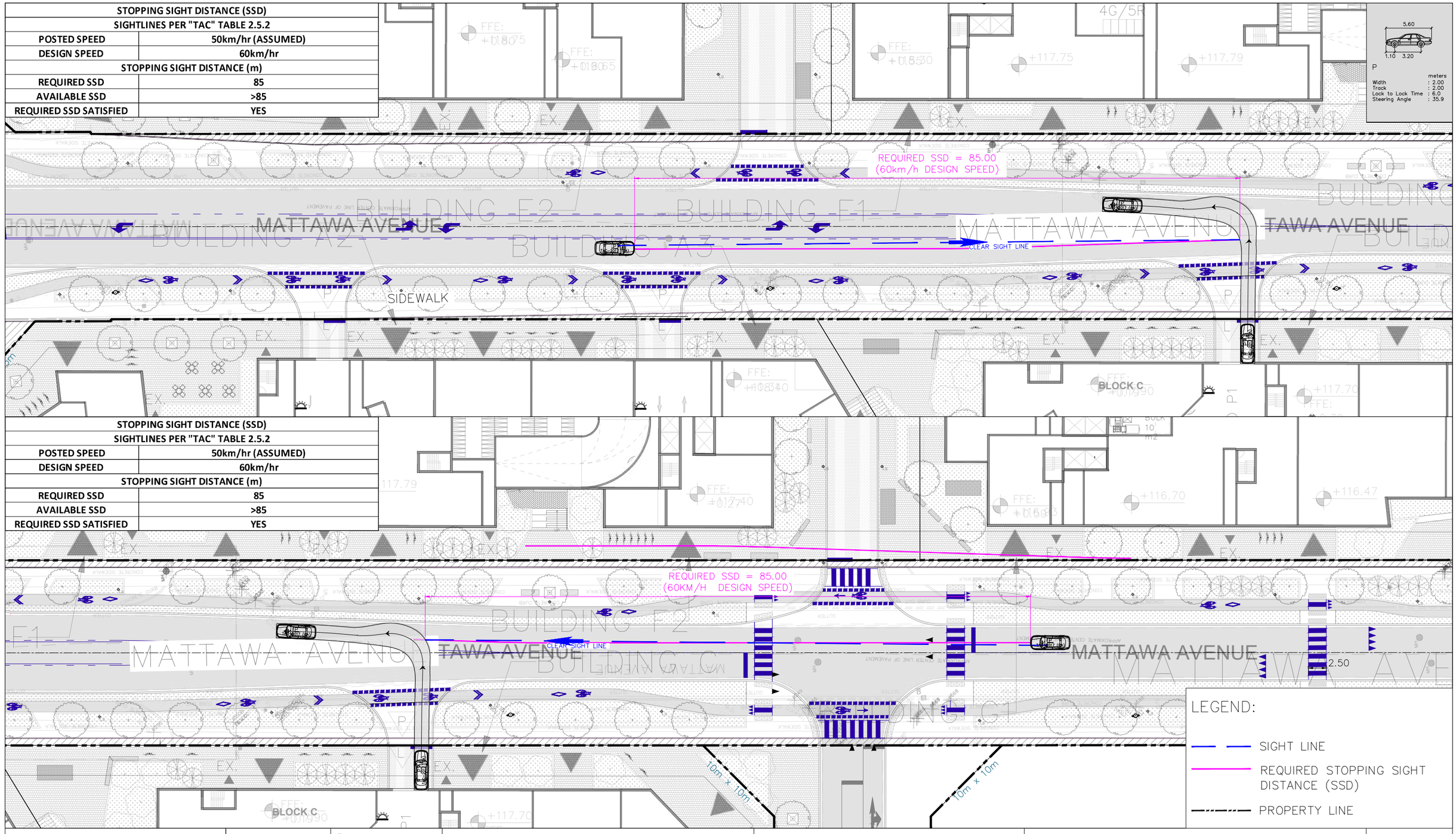
5 0 5 10 15m
1:500

SIGHTLINE ANALYSIS
INTERSECTION SIGHT DISTANCE
DRIVEWAY BETWEEN BLOCK E AND F

Drawing No. S03B

DRAWING NAME: F:\21224\Drafting\21224WF025 – FDR – 2.dwg

STOPPING SIGHT DISTANCE (SSD)	
SIGHTLINES PER "TAC" TABLE 2.5.2	
POSTED SPEED	50km/hr (ASSUMED)
DESIGN SPEED	60km/hr
STOPPING SIGHT DISTANCE (m)	
REQUIRED SSD	85
AVAILABLE SSD	>85
REQUIRED SSD SATISFIED	YES



STOPPING SIGHT DISTANCE (SSD)	
SIGHTLINES PER "TAC" TABLE 2.5.2	
POSTED SPEED	50km/hr (ASSUMED)
DESIGN SPEED	60km/hr
STOPPING SIGHT DISTANCE (m)	
REQUIRED SSD	85
AVAILABLE SSD	>85
REQUIRED SSD SATISFIED	YES

LEGEND:

- SIGHT LINE
- REQUIRED STOPPING SIGHT DISTANCE (SSD)
- PROPERTY LINE

PLOT DATE: November 02, 2023

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Date NOV. 01, 2023

1530–1650 DUNDAS STREET EAST
MISSISSAUGA ONTARIO

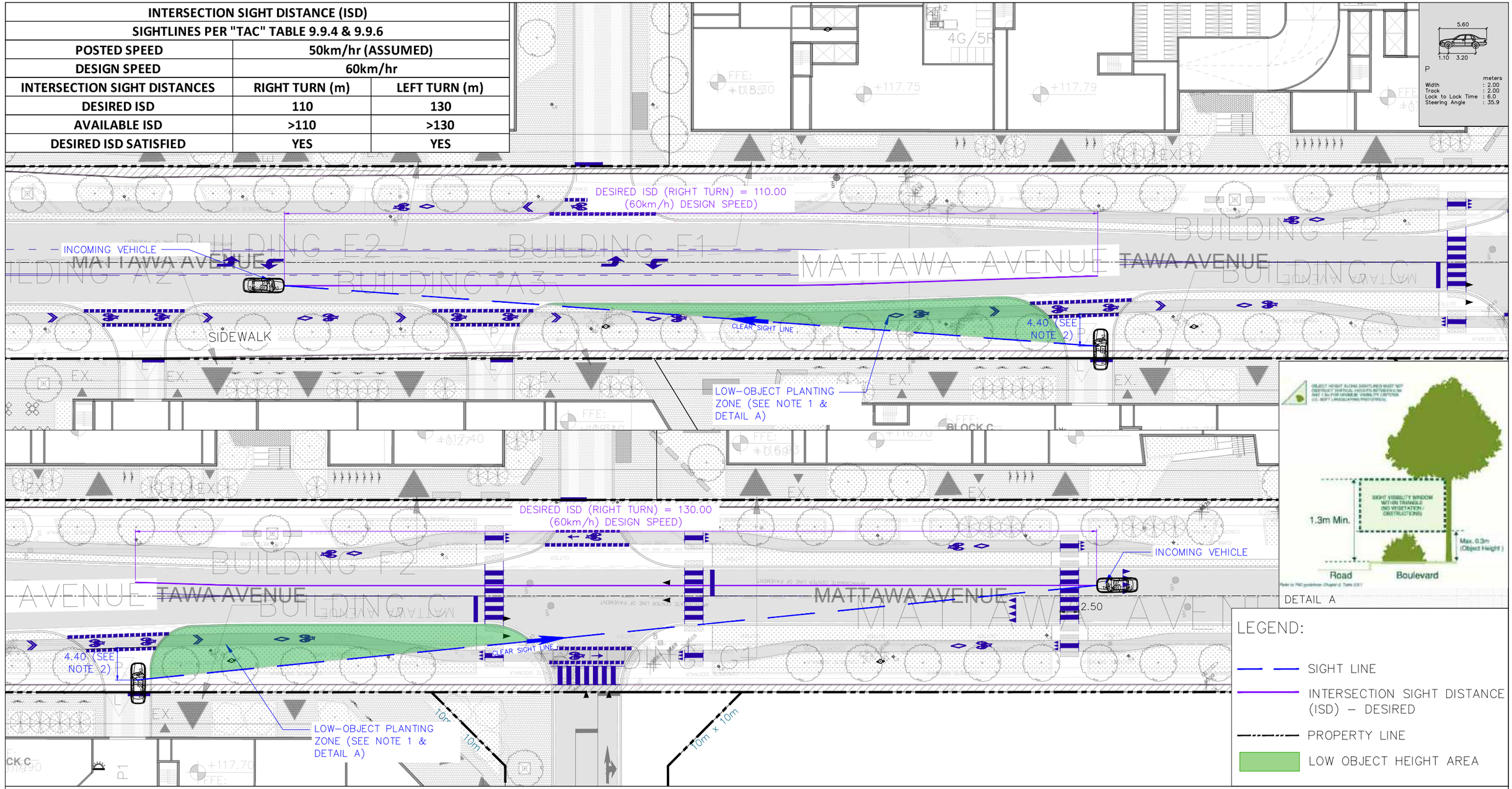
5 0 5 10 15m
1:500

SIGHTLINE ANALYSIS
STOPPING SIGHT DISTANCE
BLOCK C

Drawing No. S04A

DRAWING NAME: F:\21224\Drafting\21224WF025 – FDR – 2.dwg

INTERSECTION SIGHT DISTANCE (ISD)		
SIGHTLINES PER "TAC" TABLE 9.9.4 & 9.9.6		
POSTED SPEED	50km/hr (ASSUMED)	
DESIGN SPEED	60km/hr	
INTERSECTION SIGHT DISTANCES	RIGHT TURN (m)	LEFT TURN (m)
DESIRED ISD	110	130
AVAILABLE ISD	>110	>130
DESIRED ISD SATISFIED	YES	YES



NOTES:

1. OBJECT HEIGHT ALONG SIGHTLINES SHOULD PROVIDE CLEAR SIGHTLINES BETWEEN VERTICAL HEIGHTS OF 0.3m AND 1.3m FOR MIN VISIBILITY CRITERIA
2. SIGHT TRIANGLE VERTEX TAKEN 4.4m FROM THE BACK OF CYCLE TRACK FOR CONSERVATIVE ANALYSIS.

PLOT DATE: November 02, 2023

DRAWN BY: R.R.

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Project No. 21224

Date NOV. 01, 2023

1530–1650 DUNDAS STREET EAST
MISSISSAUGA ONTARIO

5 0 5 10 15m
1:500

SIGHTLINE ANALYSIS
INTERSECTION SIGHT DISTANCE
BLOCK C

Drawing No. S04B

DRAWING NAME: F:\21224\Drafting\21224WF025 – FDR – 2.dwg

STOPPING SIGHT DISTANCE (SSD)	
SIGHTLINES PER "TAC" TABLE 2.5.2	
POSTED SPEED	50km/hr (ASSUMED)
DESIGN SPEED	60km/hr
STOPPING SIGHT DISTANCE (m)	
REQUIRED SSD	85
AVAILABLE SSD	>85
REQUIRED SSD SATISFIED	YES

CLEAR SIGHT TRIANGLE FOR SOUTHBOUND VEHICLE ON MATTAWA AVENUE TO SEE ALL-WAYS STOP-CONTROL INTERSECTION, INCLUDING:
- ADEQUATE STOPPING DISTANCE TO SEE STOP SIGN AND COME TO A FULL STOP
- CLEAR SIGHT LINE TO SEE OUTBOUND VEHICLES FROM BLOCK F DRIVEWAY AVENUE (WESTBOUND RIGHT-TURN AND LEFT-TURN)
- CLEAR SIGHT LINE TO SEE EAST-WEST CROSSING PEDESTRIANS FOR CROSSWALK

LOW-OBJECT PLANTING ZONE (SEE NOTE 1 & DETAIL A)

AWLL-WAY STOP INTERSECTION

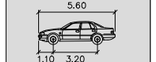
REQUIRED SSD = 85.00 (60km/h DESIGN SPEED)

CLEAR SIGHT LINE

CLEAR SIGHT LINE

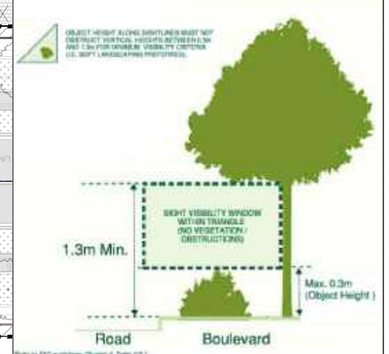
10m x 10m

10m x 10m



P

	meters
Width	: 2.00
Track	: 2.00
Lock to Lock Time	: 6.0
Steering Angle	: 35.9



DETAIL A

STOPPING SIGHT DISTANCE (SSD)	
SIGHTLINES PER "TAC" TABLE 2.5.2	
POSTED SPEED	50km/hr (ASSUMED)
DESIGN SPEED	60km/hr
STOPPING SIGHT DISTANCE (m)	
REQUIRED SSD	85
AVAILABLE SSD	>85
REQUIRED SSD SATISFIED	YES

LOW-OBJECT PLANTING ZONE (SEE NOTE 1 & DETAIL A)

AWLL-WAY STOP INTERSECTION

REQUIRED SSD = 85.00 (60km/h DESIGN SPEED)

CLEAR SIGHT LINE

CLEAR SIGHT LINE

2.50

CLEAR SIGHT TRIANGLE FOR NORTHBOUND VEHICLE ON MATTAWA AVENUE TO SEE ALL-WAYS STOP-CONTROL INTERSECTION, INCLUDING:
- ADEQUATE STOPPING DISTANCE TO SEE STOP SIGN AND COME TO A FULL STOP
- CLEAR SIGHT LINE TO SEE OUTBOUND VEHICLES FROM BLOCK F DRIVEWAY AVENUE (WESTBOUND RIGHT-TURN AND LEFT-TURN)
- CLEAR SIGHT LINE TO SEE EAST-WEST CROSSING PEDESTRIANS FOR CROSSWALK

10m x 10m

10m x 10m

LEGEND:
- SIGHT LINE
- REQUIRED STOPPING SIGHT DISTANCE (SSD)
- PROPERTY LINE
- LOW OBJECT HEIGHT AREA

NOTES:

1. OBJECT HEIGHT ALONG SIGHTLINES SHOULD PROVIDE CLEAR SIGHTLINES BETWEEN VERTICAL HEIGHTS OF 0.3m AND 1.3m FOR MIN VISIBILITY CRITERIA.

PLOT DATE: November 02, 2023

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Project No. 21224

Date NOV. 01, 2023

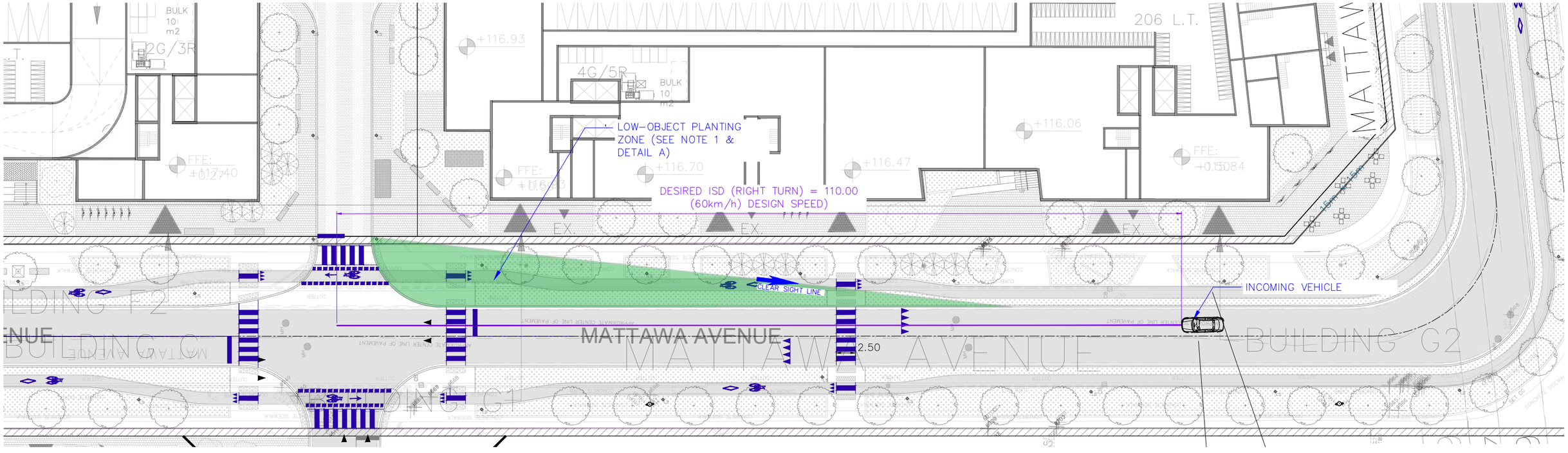
1530-1650 DUNDAS STREET EAST
MISSISSAUGA ONTARIO

5 0 5 10 15m
1:500

SIGHTLINE ANALYSIS
STOPPING SIGHT DISTANCE
DRIVEWAY BETWEEN BLOCK F AND G

Drawing No. S05A

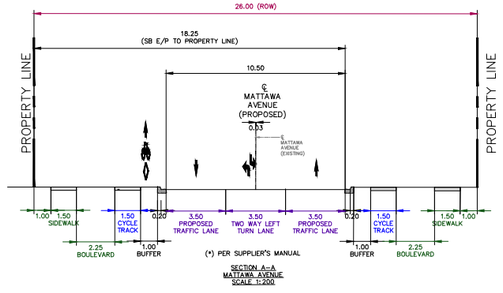
DRAWING NAME: F:\21224\Drafting\21224WF025 - FDR - 2.dwg


LOW-OBJECT PLANTING ZONE (SEE NOTE 1 & DETAIL A)
DESIRED ISD (RIGHT TURN) = 110.00 (60km/h) DESIGN SPEED)
CLEAR SIGHT LINE
INCOMING VEHICLE
MATTAWA AVENUE
2.50
BUILDING G2
206 L.T.
4G/5R
12G/3R
BULK 10 m2
+116.93
+116.70
+116.47
+116.06
FFE: +0.15084
EX

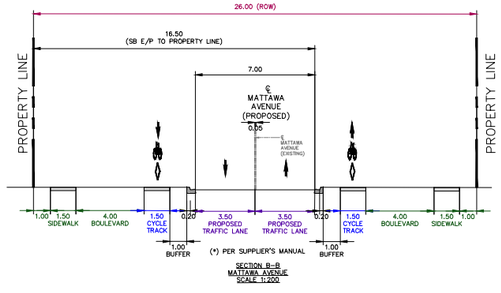
APPENDIX N

Functional Road Design

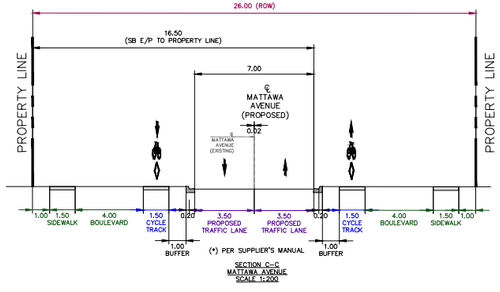
OPTION 2 – ROADWAY CENTERED ALONG R.O.W.



SECTION A–A
MATTAWA AVENUE
SCALE 1:200



SECTION B–B
MATTAWA AVENUE
SCALE 1:200



SECTION C–C
MATTAWA AVENUE
SCALE 1:200

MATCH EXISTING

MATTAWA AVENUE

LORELAND AVENUE

BRT EASEMENT DIMENSIONS TBD

+ NEW SERVICE EASEMENT

PEDESTRIAN MEWS

PRIVATE LANEWAY

ACCESS TO 1680 MATTAWA – MATCH EXISTING

DUNDAS STREET

MATCH DUNDAS BRT DESIGN – BY OTHERS

CONCEPTUAL CROSSRIDE LOCATION TO BE DESIGNED/IMPLEMENTED BY OTHERS

CENTERLINE OF EXISTING DRIVEWAY TO NEIGHBOURING PROPERTY – APPROXIMATED BASED ON AERIAL PHOTOGRAPHS. TO BE CONFIRMED WITH PROVISION OF ADDITIONAL TOPO INFORMATION

INTERSECTION LEG TO BE DESIGNED BY OTHERS

RELOCATE CROSSWALK AND CROSSRIDE TO ACCOMMODATE MATTAWA AVENUE CYCLE TRACKS

CONCEPTUAL CROSSRIDE LOCATION TO BE DESIGNED/IMPLEMENTED BY OTHERS

ALL UTILITIES IMPACTED BY ROAD DESIGN TO BE RELOCATED – BY OTHERS

LEVEL 2 TYPE "C" PXO – SIGNAGE TO BE PROVIDED AT LATER STAGE

EXISTING CENTERLINE (APPROXIMATE)

CONTINUOUS SIDEWALK (SEE DETAIL A) – TYP.

MATCH DUNDAS BRT DESIGN – BY OTHERS

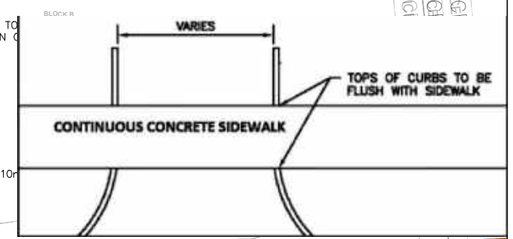
STEPBACK STOP BAR FOR LEFT–TURN IMPLEMENTED TO ACCOMMODATE MSU DESIGN VEHICLE

BLUNDELL ROAD EXTENSION

BLUNDELL ROAD EXTENSION – DESIGN TO BE REVISED AS REQUIRED UPON PROVISION OF FURTHER DETAILS/AT A LATER STAGE

TERMINATE BLUNDELL ROAD EXTENSION 10m NORTH OF DRIP LINE

DRIP LINE



DETAIL A

PLOT DATE: November 01, 2023

DRAWN BY: R.R.

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Project No. 21224

Date NOV. 01, 2023

- PROPOSED PAVEMENT MARKINGS
- MATTAWA ROW
- DUNDAS BRT ROW
- SIDEWALK
- CYCLE TRACK

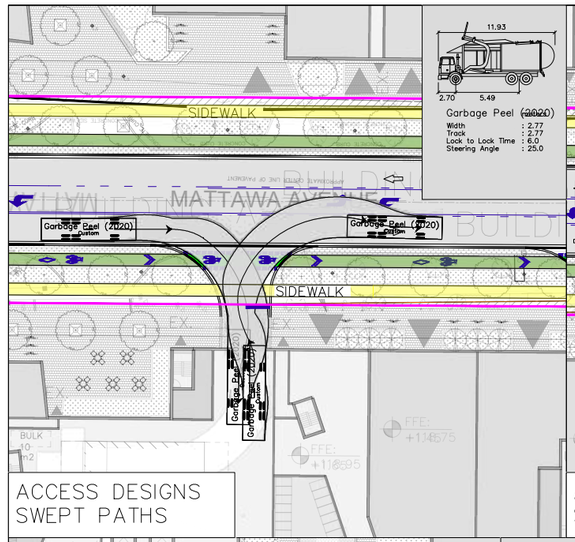
1530–1650 DUNDAS STREET EAST
MISSISSAUGA ONTARIO

12.5 0 12.5 25 37.5m
1:1250

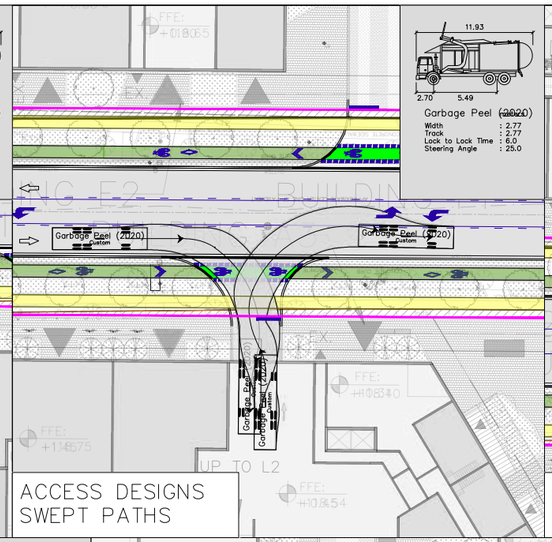
FUNCTIONAL ROAD DESIGN PLAN VIEW & CROSS SECTIONS (SUBJECT TO CITY'S APPROVAL)

Drawing No. 001

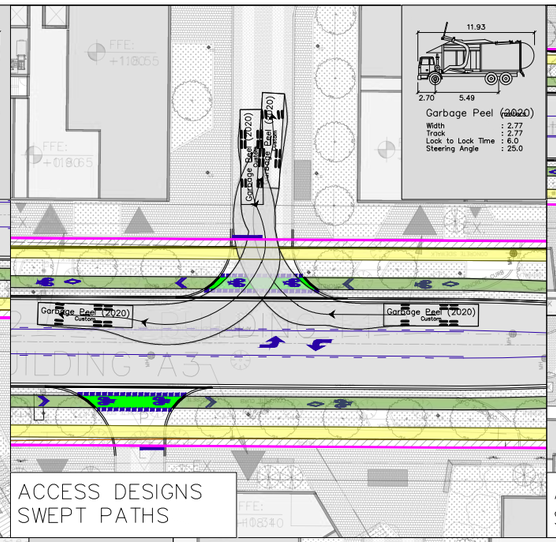
DRAWING NAME: F:\21224\Drafting\21224WF025 – ROAD DESIGN.dwg



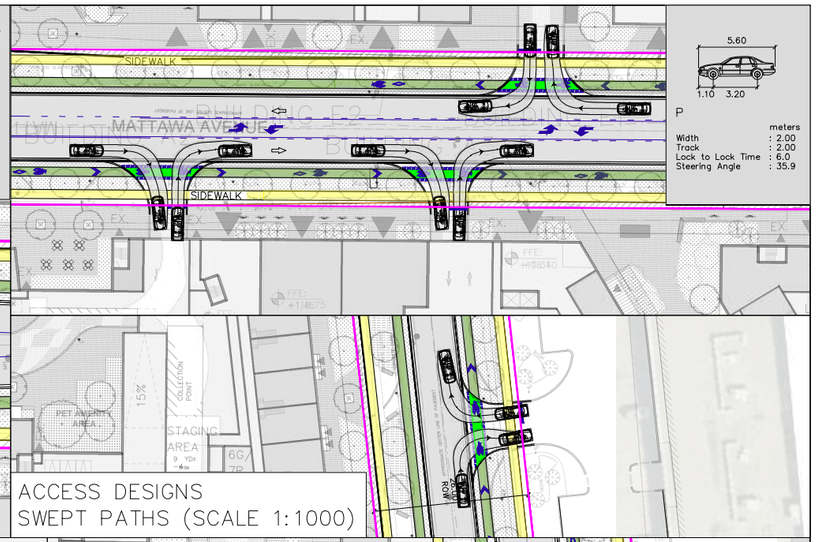
ACCESS DESIGNS
SWEPT PATHS



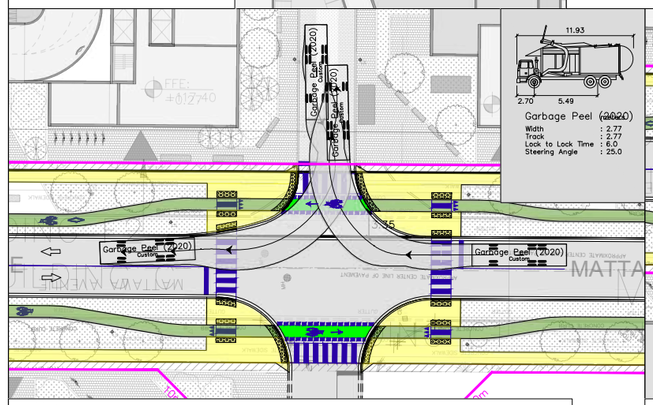
ACCESS DESIGNS
SWEPT PATHS



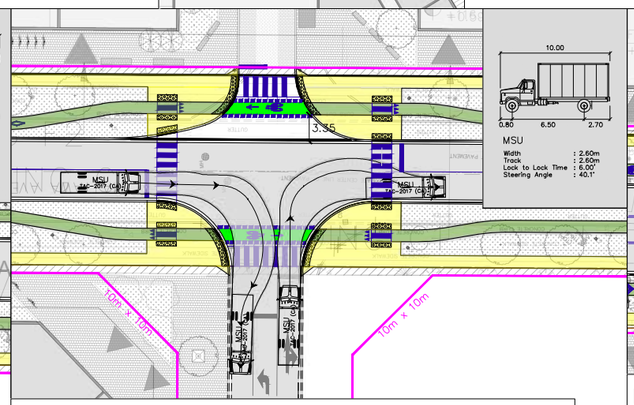
ACCESS DESIGNS
SWEPT PATHS



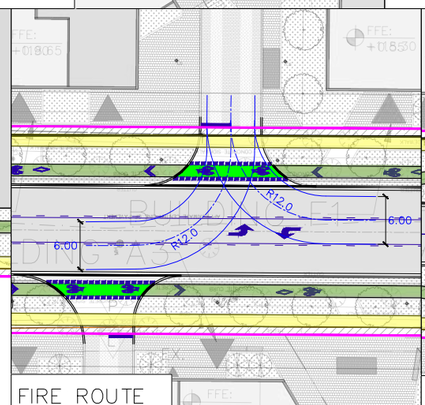
ACCESS DESIGNS
SWEPT PATHS (SCALE 1:1000)



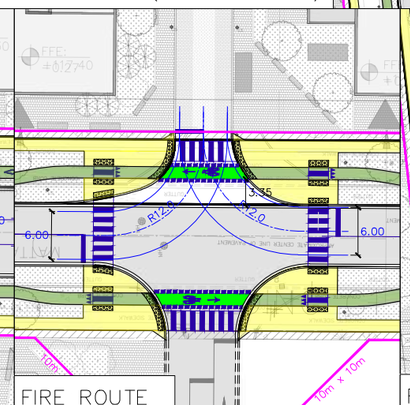
MATTAWA AVE & BLUNDELL ROAD (SEE NOTE 1)
GARBAGE TRUCK SWEPT PATHS



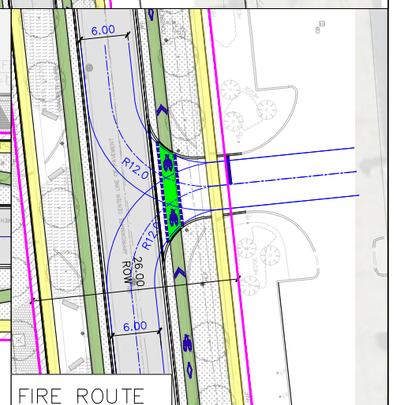
MATTAWA AVE & BLUNDELL ROAD (SEE NOTE 1)
MSU SWEPT PATHS



FIRE ROUTE

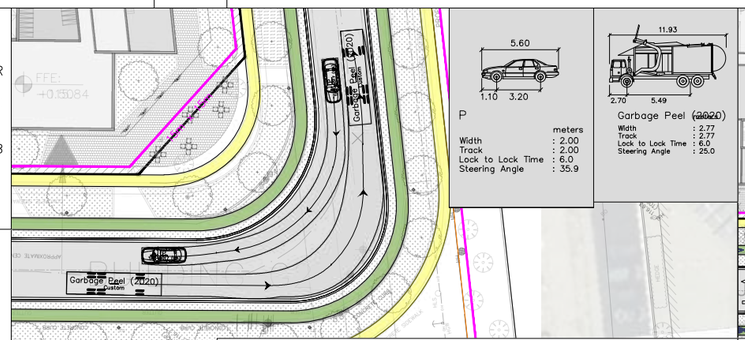


FIRE ROUTE

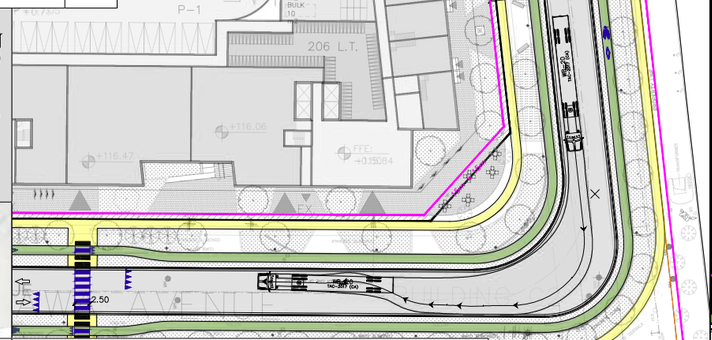


FIRE ROUTE

NOTES:
1. MATTAWA AVENUE & BLUNDELL ROAD INTERSECTION DESIGNED ASSUMING THE FOLLOWING (DESIGN TO BE REVISED AS REQUIRED UPON PROVISION OF FURTHER DETAILS):
   - 1.1. DESIGN VEHICLE: MSU AS THE LARGEST VEHICLE FOR WEST LEG.
   - 1.2. BLUNDELL ROAD TO INCLUDE NB RIGHT TURN/THRU LANE, NB LEFT TURN LANE, AND SB THRU LANE.
   - 1.3. NO ACCESS FOR HEAVY DUTY VEHICLES TO BLUNDELL ROAD FROM MATTAWA AVENUE–I.E. HSU, WB–20 (53–FT TRAILER).



MATTAWA AVE.
GARBAGE TRUCK & P–TAC SWEPT PATHS



MATTAWA AVE.
WB–20 SWEPT PATHS (SCALE 1:1000)

PLOT DATE: November 01, 2023

DRAWN BY: R.R.

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N

Project No. 21224

Date NOV. 01, 2023

PROPOSED TRAFFIC LANES
ROW
SIDEWALK
CYCLE TRACK

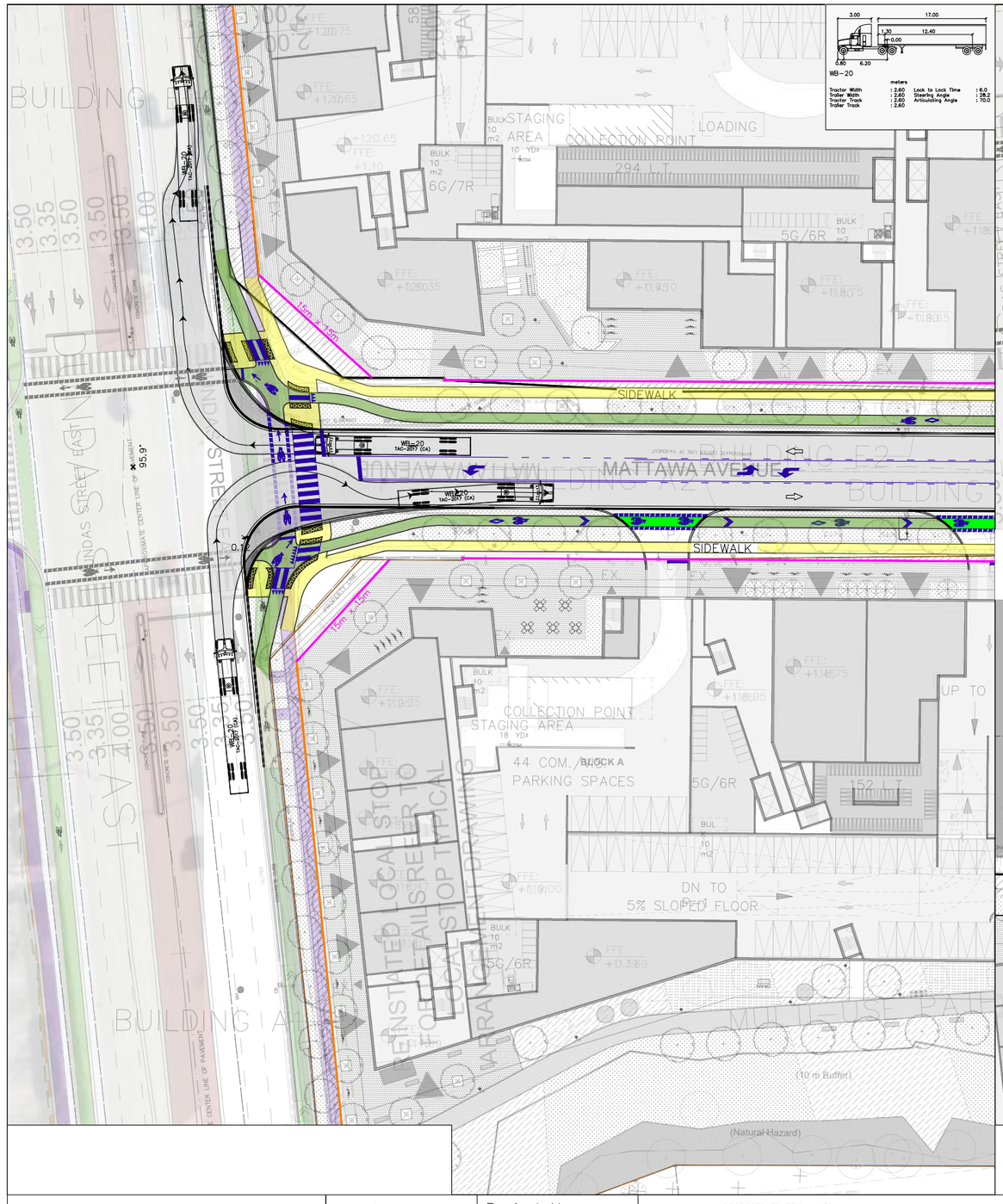
1530–1650 DUNDAS STREET EAST
MISSISSAUGA ONTARIO

7.5 0 7.5 15 22.5m
1:750

FUNCTIONAL ROAD DESIGN
SWEPT PATHS

Drawing No. 002

DRAWING NAME: F:\21224\Drafting\21224WF025 – ROAD DESIGN.dwg



MATTAWA AVE. & LORELAND AVE.
WB-20 SWEPT PATHS

MATTAWA AVE. & LORELAND AVE.
FIRE TRUCK SWEPT PATHS

PLOT DATE: November 01, 2023

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Date NOV. 01, 2023

PROPOSED TRAFFIC LANES
ROW
SIDEWALK
CYCLE TRACK

1530-1650 DUNDAS STREET EAST
MISSISSAUGA ONTARIO

7.5 0 7.5 15 22.5m
1: 750

FUNCTIONAL ROAD DESIGN
SWEPT PATHS

Drawing No. 003

DRAWING NAME: F:\21224\Drafting\21224WF025 - ROAD DESIGN.dwg

STOPPING SIGHT DISTANCES	
SIGHTLINES PER "TAC" TABLE 2.5.2	
POSTED SPEED	50Km/h
DESIGN SPEED	60Km/h
STOPPING SIGHT DISTANCES	DISTANCE (m)
DESIRED SSD	85
AVAILABLE SSD	>85
REQUIRED SSD SATISFIED	YES

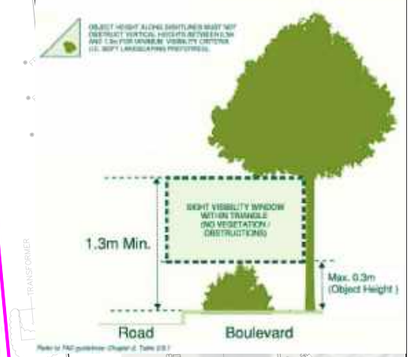
LOW PLANTING AREA. OBJECT HEIGHT IN THIS AREA SHOULD NOT OBSTRUCT VERTICAL HEIGHTS BETWEEN 0.3m AND 1.3m – SEE DETAIL A

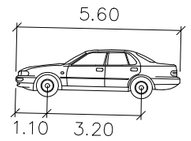
REQUIRED & AVAILABLE SSD = 85m

MATTAWA AVENUE

BLOCK B

DETAIL A





P

	meters
Width	: 2.00
Track	: 2.00
Lock to Lock Time	: 6.0
Steering Angle	: 35.9

PLOT DATE: November 01, 2023

DRAWN BY: R.R.

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Project No. 21224

Date NOV. 01, 2023

1530–1650 DUNDAS STREET EAST
MISSISSAUGA ONTARIO

5 0 5 10 15m
1:500

FUNCTIONAL ROAD DESIGN
STOPPING SIGHT DISTANCE

Drawing No. 004

DRAWING NAME: F:\21224\Drafting\21224WF025 – ROAD DESIGN.dwg

Updated Transportation Impact Study
Proposed Mixed-Use Community
1580-1650 Dundas Street
City of Mississauga