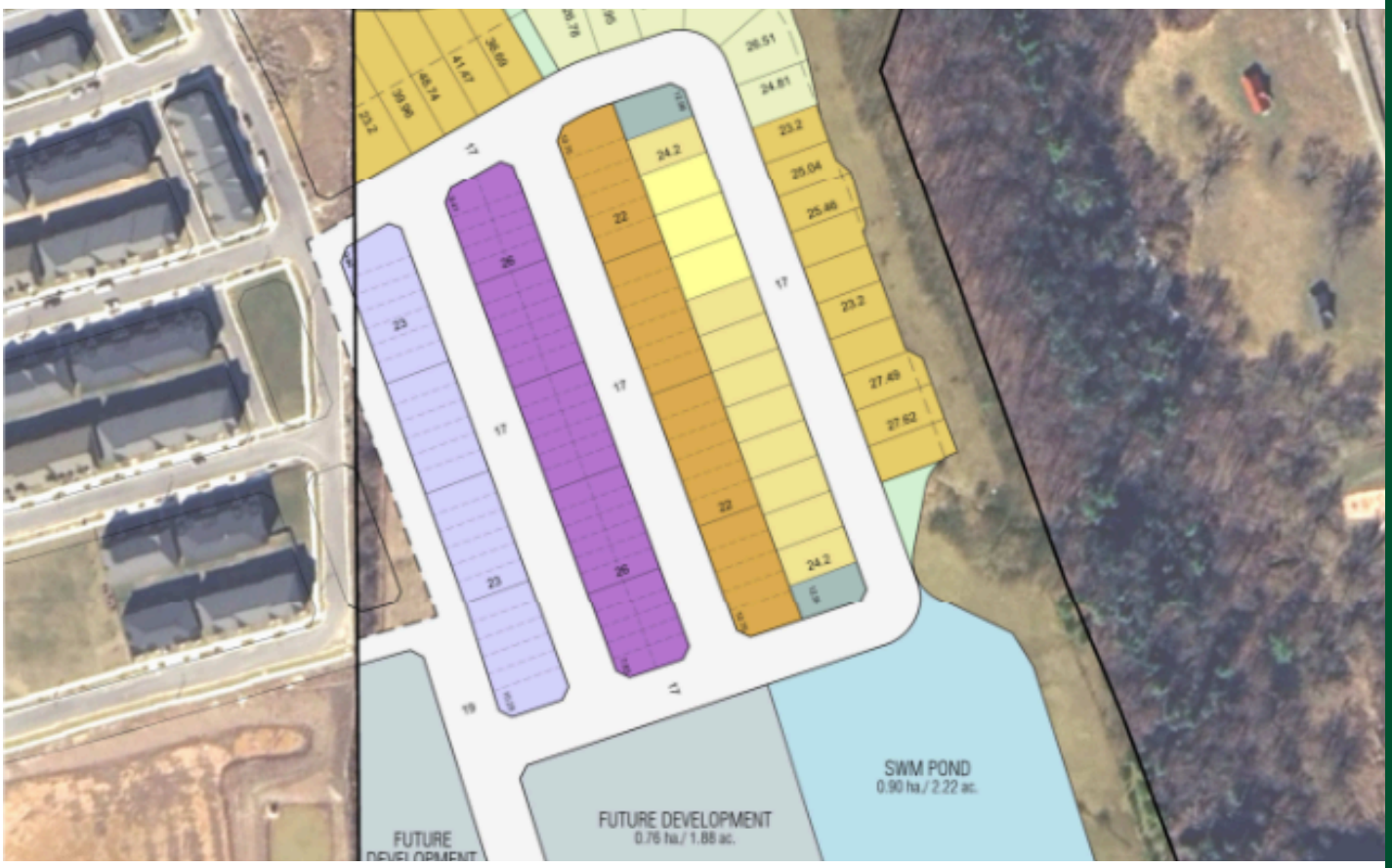
NOVEMBER 11, 2025

ARGO Lions Valley
Transportation Impact Study



ARGO Lions Valley
Transportation Impact Study

Prepared for:

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PN: 2024-110

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Executive Summary

CGH Transportation has been retained by ARGO Lions Valley Limited to prepare a Transportation Impact Study to support the proposed residential development at the ARGO Lions Valley Lands. This Transportation Impact Study has been prepared to support a Draft Plan of Subdivision and Zoning By-law Amendment application and will provide a high-level review on the impact of the proposed development on the transportation network within the Study Area. The study will include a review of existing and planned conditions, a travel demand forecast, a development design review, an operational analysis, and a transportation demand management plan. The focus will be on the major roads and intersections within the Study Area. Through the Terms of Reference and the comments received on the first submission of the TIS, the scope of this report has been confirmed with the Region and Town.

Proposed Development:
The ARGO Lions Valley Lands are located at 1303 Dundas Street West in North Oakville, consisting of the land northwest of the intersection of Dundas Street West and Neyagawa Boulevard.

It should be noted that unit counts are preliminary for the purposes of the study. Further refinement of the unit counts will be conducted at future submission stages.

The proposed development will include approximately 104 townhouse units, 35 single-detached units, and 1.24 hectares of Future Development area which is assumed to contain a mix of approximately 150 stacked townhouse and apartment units. Local roads will be provided for internal circulation. The proposed development is anticipated to be fully built out by 2029.

Analysis Process & Key Findings:
The study includes traffic operational analysis at the Study Area intersections for the baseline horizon of 2024, the buildout horizon of 2029, and the buildout plus 5 years horizon of 2034.

The existing conditions indicate that the Study Area is currently operating under acceptable conditions overall, with the exception of the southbound left-turn at the intersection of Dundas Street West at Sweetwater Gate / Proudfoot Trail. A site visit indicated that the southbound left-turn movement operates efficiently with minimal queuing and delays, and therefore a sensitivity analysis was conducted to address the discrepancy between the Synchro results and field observations at this intersection during the AM peak period. Synchro adjustments were made to align the operational results with observed conditions. All other individual movements are shown to operate without constraints which is consistent with known conditions in the area.

The proposed development is anticipated to generate 112 AM and 138 PM peak hour external two-way vehicle trips. The site generated traffic is much lower than the background traffic, and its impact on the operations of Study Area intersections is anticipated to be relatively low when compared to the impact of the background traffic.

The planned network improvements have been incorporated into the traffic analysis for the 2029 and 2034 horizons. Reviewing the future scenarios, mitigation measures have been considered as a result of the auto mode operational analysis results.

Operational constraints are projected at Dundas Street West and Sweetwater Gate / Proudfoot Gate. In the 2034 future background analysis a protected and permitted left-turn phase has been added to the southbound left-turn in both the AM and PM peak periods with signal timing optimization, and the westbound left-turn lane storage has been extended to 130 metres. In the 2034 future total analysis, a protected and permitted left-turn

phase has been added to the southbound left-turn in both the PM peak period with signal timing optimization, and the westbound left-turn lane storage has been extended to 140 metres. While these measures are shown to slightly improve the southbound left-turn operations, they are anticipated to worsen conditions for the eastbound and westbound movements along Dundas Street West in both horizons. It is therefore recommended that the Region continue to monitor the performance and signal timings of this intersection as required, based on the need to prioritize regional versus individual movements.

All other Study Area intersections are expected to operate without constraints in the future horizons.

A preliminary transportation demand management plan including transit, active modes, and land use measures have been recommended in order to reduce reliance on single occupant vehicle trips.

Within the public road portion of the subject development, a minimum of 174 residential parking spaces are required and 269 spaces are proposed, which is in accordance with the Town of North Oakville Zoning By-law requirements. Within the Future Development Block, it is anticipated that these units will adhere to the parking requirements identified in the Town of North Oakville Zoning By-law. 48 on-street parking spaces are proposed along the local and connector roadways throughout the subject development as shown in the Preliminary Parking Plan prepared by planner Glen Schnarr & Associates Inc. (GSAI).

A Preliminary Traffic Calming Plan has been prepared for Harasym Trail within the subject development. Two curb extensions are recommended on Harasym Trail along the frontage of the subject development at intersections with local roads. The specific design details and exact locations of the curb extensions will be at the detailed design stage and will be constructed as per Town of Oakville Standards.

A draft preliminary construction traffic control plan has been prepared for the subject development. It is assumed that a temporary right-in / right-out access will be provided on Dundas Street West with appropriate signage to support the access. It is noted that this plan is preliminary and will be further refined once a servicing contractor completes this as part of their pre-mobilization work prior to construction.

Given that the impact of the proposed development on the surrounding Study Area road network is relatively minor compared to the other developments in the area and the subject development will be well supported by transit, pedestrian, and cycling facilities within the Study Area, the proposed development application is recommended to proceed from a transportation perspective.

1 Introduction

This Transportation Impact Study (TIS) has been prepared in support of a Draft Plan of Subdivision and Zoning By-law Amendment application for the ARGO Lions Valley development located at 1303 Dundas Street West in the Town of North Oakville. The site is currently zoned as Future Development (FD), with various adjacent zoning classifications including Future Development (FD) north and east, Natural Area (N) south, Private Open Space (O2) south, High Density Residential (HDR) west, Dundas Urban Core (DUC) west, and Neighbourhood Centre (NC) west. The site is bounded by Dundas Street to the south, an existing subdivision to the west, and Sixteen Mile Creek to the east and the north.

A Preliminary Concept Plan has been prepared to inform this analysis and identifies a number of residential blocks, with an internal road network of collectors, local streets, and laneways. The current conceptual design proposes 104 townhouse units, 35 single-detached units, and 1.24 hectares of Future Development land use. For the purposes of the study, a unit count of 150 stacked townhouses and/or apartment units has been approximated for the Future Development block. Future Development areas will be subject to future Zoning By-law Amendment and Site Plan Applications, and as such unit counts for the purpose of this study are conceptual.

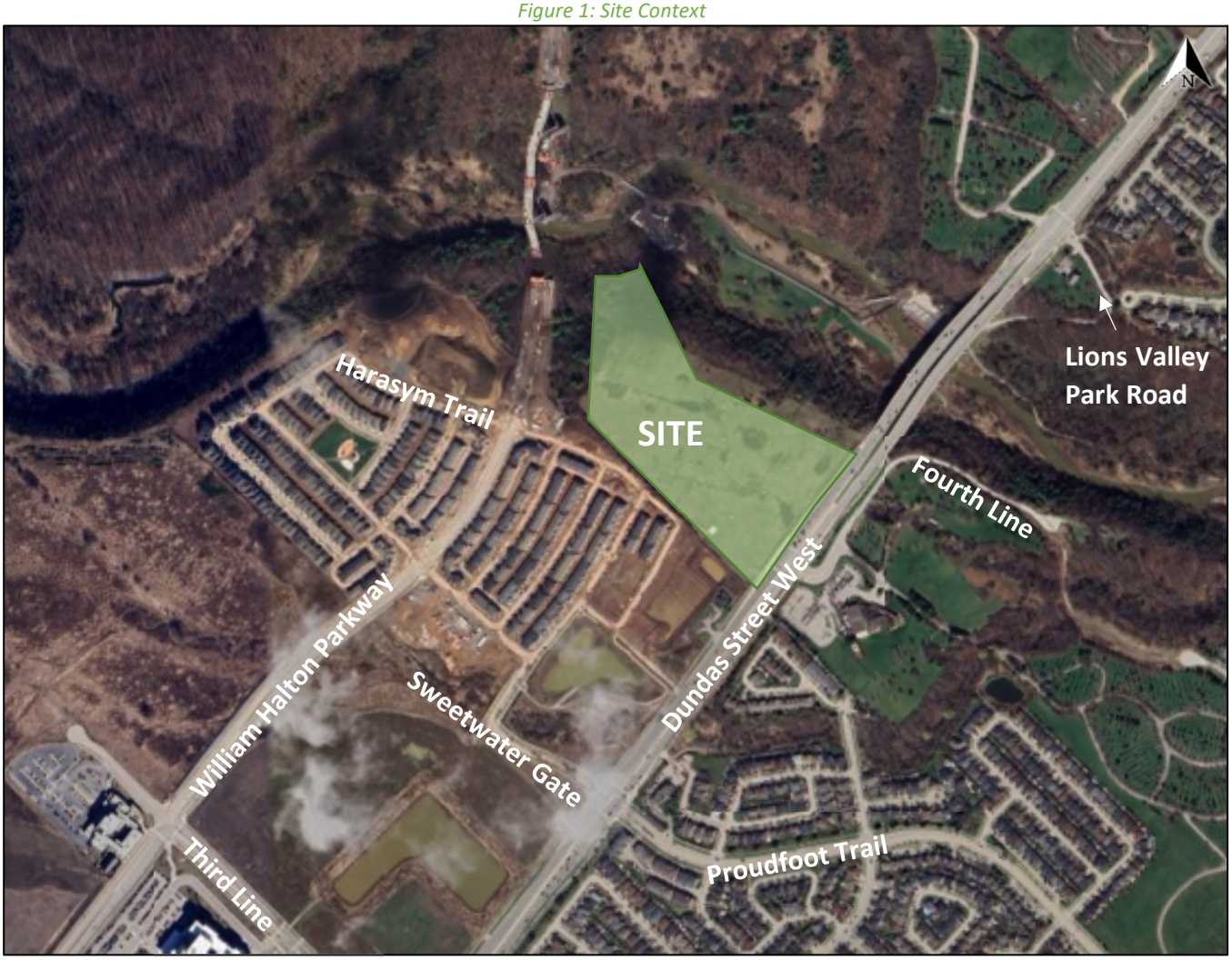
The main site access will be a full-movement access forming the north leg of the existing three-legged intersection of Dundas Street West and Fourth Line and will serve as an extension of Harasym Trail. Access to the future William Halton Parkway will be feasible through connections to the adjacent residential development road network. Access to the development will be guided by the Halton Region Access Management Guidelines where applicable.

Figure 1 illustrates the site context and Appendix A contains the proposed preliminary concept plan.

For the purposes of this report, it has been assumed that the proposed development will be built and operational by 2029. Therefore, the analysis horizons will include 2024 existing conditions, a full build-out horizon of 2029, and a full build-out plus five years horizon of 2034.

The scope of the initial submission of this TIS was sent to both Town of Oakville and Halton Region transportation staff. The pre-consultation comment report dated October 2, 2024, was also considered in the scope of work. Following the first TIS submission, comments from the Town and Region dated April 10, 2025, were received and implemented in the second TIS submission in July 2025. Following the second submission, additional comments were received from the Town and Region dated August 29, 2025. As such, the following report has been developed based on the previously submitted Terms of Reference, the pre-consultation comments, and comments received on the first and second study submissions. The Terms of Reference as well as resulting email correspondence approving and discussing the scope of work, the received comments, and corresponding comment responses have been included in Appendix B.

Figure 1: Site Context



2 Study Area

The Study Area consists of the following intersections:

- Dundas Street West at Fourth Line (Existing/Future)
- William Halton Parkway at Harasym Trail (Existing/Future)
- Dundas Street West at Sweetwater Gate / Proudfoot Trail (Existing/Future)
- Dundas Street West at Lions Valley Park Road (Existing/Future)

3 Existing Conditions

3.1 Area Road Network

Dundas Street West

Dundas Street West is a Halton Region arterial road with a six-lane urban cross-section and a raised concrete median. The Halton Region Transportation Master Plan classifies Dundas Street as an N2 urban road and protects for a 50-metre right-of-way. Boulevard-separated multi-use paths are provided on both sides of the road within the Study Area west of Lions Valley Park Road. East of Lions Valley Park Road, sidewalks are provided on both sides of the road and no bike lanes are provided. A 70 km/h posted speed limit applies.

William Halton Parkway

William Halton Parkway is a regional arterial road with a four-lane urban cross-section and a raised concrete median. The Halton Region Transportation Master Plan identifies William Halton Parkway as a class C2 urban road and protects for a 35-metre right-of-way. West of Harasym Trail, sidewalks are provided on the south side of the roadway, and a multi-use pathway is provided on the north side. Bike lanes are provided on both sides of William Halton Parkway. William Halton Parkway is not currently constructed east of Harasym Trail however, this portion of the William Halton Parkway extension project is anticipated to be completed at the end of 2024 as indicated on the William Halton Parkway Extension Project information page on the Halton Region website. William Halton Parkway is designated as a regional cycling route. A 60 km/h posted speed limit applies.

Harasym Trail

Harasym Trail is a Town of Oakville local road north of William Halton Parkway and has been constructed as a connector/transit corridor road south of William Halton Parkway with a two-lane urban cross-section. The North Oakville Urban Design and Open Space Guidelines reserves a 17-metre right-of-way for local roads and a 19-metre right-of-way for connector/transit corridors. Sidewalks are provided on both sides of the road north of William Halton Parkway. No cycling facilities are provided. A 50 km/h unposted speed limit has been assumed.

Proudfoot Trail

Proudfoot Trail is a Town of Oakville minor arterial road with a two-lane urban cross-section with a raised planted median. The Town of Oakville Official Plan reserves a 26-metre right-of-way for minor arterial roads. Sidewalks and bike lanes are provided on both sides of the road. A 50 km/h posted speed limit applies.

Sweetwater Gate

Sweetwater Gate is a Town of Oakville avenue/transit corridor with a two-lane urban cross-section. The North Oakville Urban Design and Open Space Guidelines reserves a 22-metre right-of-way for avenue / transit corridors.

Boulevard-separated sidewalks are provided on both sides of the roadway. No cycling facilities are provided. A 50 km/h unposted speed limit has been assumed.

Fourth Line

Fourth Line is a Town of Oakville local road with a two-lane rural cross section. The Town of Oakville Official Plan reserves an 18-metre right-of-way for local roads and designates Fourth Line as a proposed signed bike route. No pedestrian and cycling facilities are provided. A 50 km/h posted speed limit applies.

Lions Valley Park Road

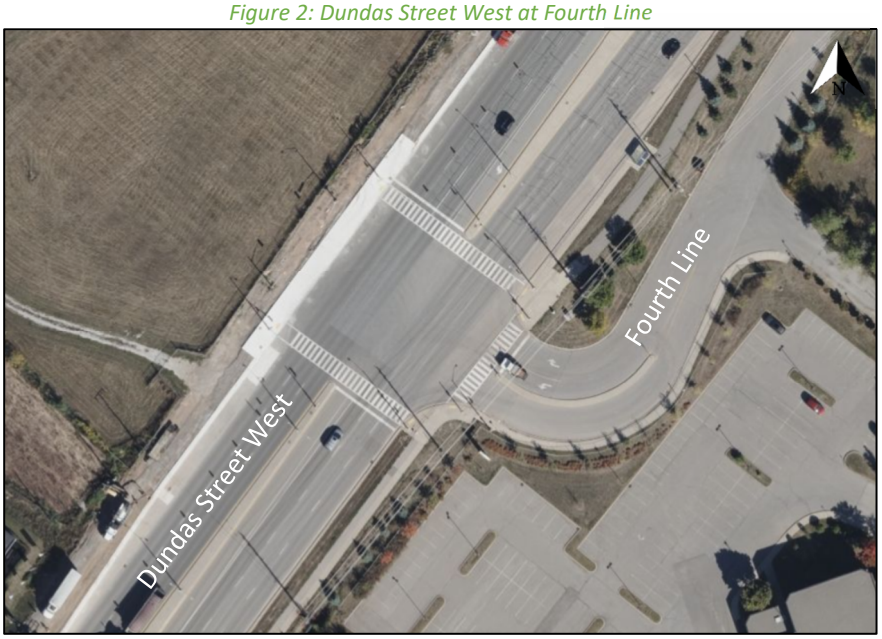
Lions Valley Park Road is a Town of Oakville local road with a two-lane rural cross section. The Town of Oakville Official Plan reserves an 18-metre right-of-way for local roads. No pedestrian or cycling facilities are provided. A 50 km/h unposted speed limit applies.

3.2 Existing Intersections

Dundas Street West at Fourth Line

The intersection of Dundas Street West at Fourth line is a three-legged signalized intersection. The eastbound approach consists of two through lanes and a shared through / right-turn lane. The westbound approach consists of an auxiliary left-turn lane and three through lanes. It is noted that an auxiliary left-turn lane has been reserved for the eastbound approach and an auxiliary right-turn lane has been reserved for the westbound approach, however, they are not in use as the north leg of the intersection has not yet been built. The northbound approach consists of an auxiliary left-turn lane and a right-turn lane. Crosswalks, signal heads, and call buttons are provided on each leg of the intersection. Boulevard-separated multi-use paths are noted on both sides of Dundas Street West. No turn restrictions are noted at this intersection. Figure 2 illustrates the intersection of Dundas Street West at Fourth Line.

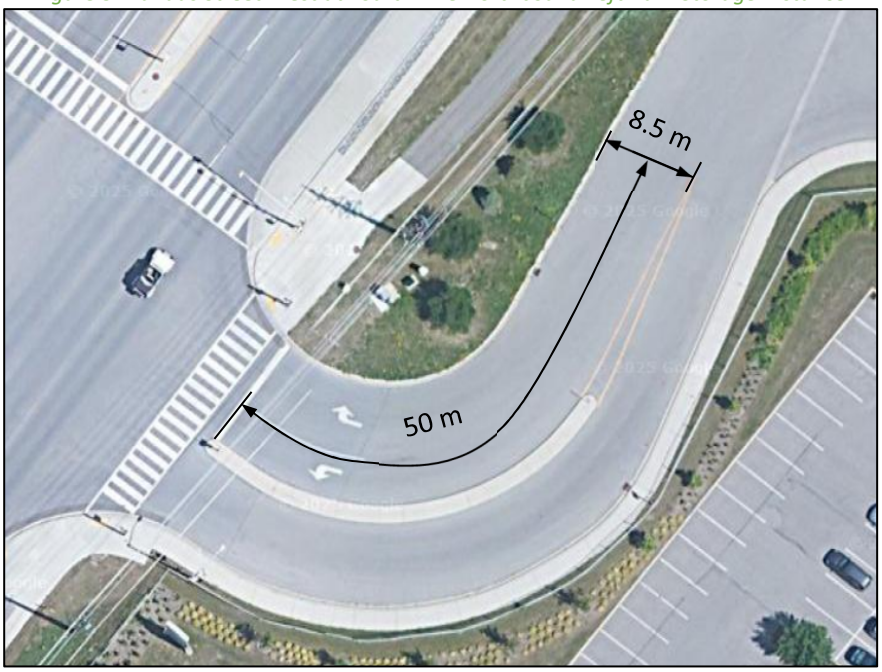
Figure 2: Dundas Street West at Fourth Line



As shown above, the aerial imagery identifies pavement markings which delineate a left-turn lane with a storage length of approximately 15 meters. However, as illustrated in Figure 3 below, the width of the approach lanes on

the south leg of the intersection is a minimum of approximately 8.5 metres up to 50 metres south of the intersection. As this will allow for both northbound left-turn and northbound right-turning vehicles to queue side by side, an actual storage length of 50 metres is provided for the northbound left-turn lane. An assumed taper length of 15 meters has been used for operational analysis purposes. This indicates that the existing geometry is able to accommodate a longer northbound left-turn queue length than what is currently shown in the existing pavement markings. The extended storage distance can be formalized by the Town by completing the northbound left-turn pavement markings to reflect the full available storage length.

Figure 3: Dundas Street West at Fourth Line Northbound Left-Turn Storage Distance



William Halton Parkway at Harasym Trail

The intersection of William Halton Parkway at Harasym Trail is a four-legged unsignalized intersection. The extension of William Halton Parkway from Neyagawa Boulevard to Third Line is under construction and is expected to be completed by December of 2024 as indicated on the William Halton Parkway Extension Project information page on the Halton Region website. As such, the east leg of the intersection is currently closed for public access and used by construction vehicles only. Signals have been installed at the intersection but are not yet operational. The intersection is expected to operate as a four-legged signalized intersection upon completion of the William Halton Parkway extension. The eastbound approach consists of an auxiliary left-turn lane, a through lane, and an auxiliary right-turn lane. The northbound, southbound, and westbound approaches each consist of a shared left-turn / through / right-turn lane. Crosswalks are provided on each leg of the intersection. Sidewalks are provided on both sides of Harasym Trail and on the south side of William Halton Parkway. A multi-use pathway is present on the north side of William Halton parkway. Bike lanes are provided on both sides of William Halton Parkway. No turn restrictions are noted at this intersection. Figure 4 illustrates the intersection of William Halton Parkway at Harasym Trail. Due to the ongoing construction at this intersection, aerial imagery for this intersection is not up to date, however, Figure 4 below has been included to show the most recent imagery available.

Figure 4: William Halton Parkway at Harasym Trail

Dundas Street West at Sweetwater Gate / Proudfoot Trail

The intersection of Dundas Street West at Sweetwater Gate / Proudfoot Trail is a four-legged signalized intersection. The eastbound and westbound approaches each consists of an auxiliary left-turn lane, three through lanes, and an auxiliary right-turn lane. The northbound and southbound approaches each consists of an auxiliary left-turn lane and a shared through / right-turn lane. It is noted that the pavement markings on the southbound approach have not yet been completed, however roadway geometry indicates that sufficient space has been provided for this configuration. Crosswalks, signal heads, and call buttons are provided on each leg of the intersection. Sidewalks and bike lanes are provided on both sides of the road on the northbound and southbound approaches and multi-use pathways are provided on both sides of the eastbound and westbound approaches. No turn restrictions are noted at this intersection. Figure 5 illustrates the intersection of Dundas Street West at Sweetwater Gate / Proudfoot Trail.

Figure 5: Dundas Street West at Sweetwater Gate / Proudfoot Trail

Dundas Street West at Lions Valley Park Road / Private Access

The intersection of Dundas Street West at Lions Valley Park Road is a four-legged signalized intersection. The eastbound approach consists of an auxiliary left-turn lane, three through lanes, and an auxiliary right-turn lane. The westbound approach consists of an auxiliary left-turn lane, two through lanes, and a shared through / right-turn lane. The northbound and southbound approaches each consists of a shared left-turn / through / right-turn lane. The north leg of the intersection serves as an access to Trafalgar Lawn cemetery. Crosswalks, signal heads, and call buttons are provided on the north, south, and west legs of the intersection. Right-turns on red signals are prohibited for the northbound approach. Figure 6 illustrates the intersection of Dundas Street West at Lions Valley Park Road / Private Access.

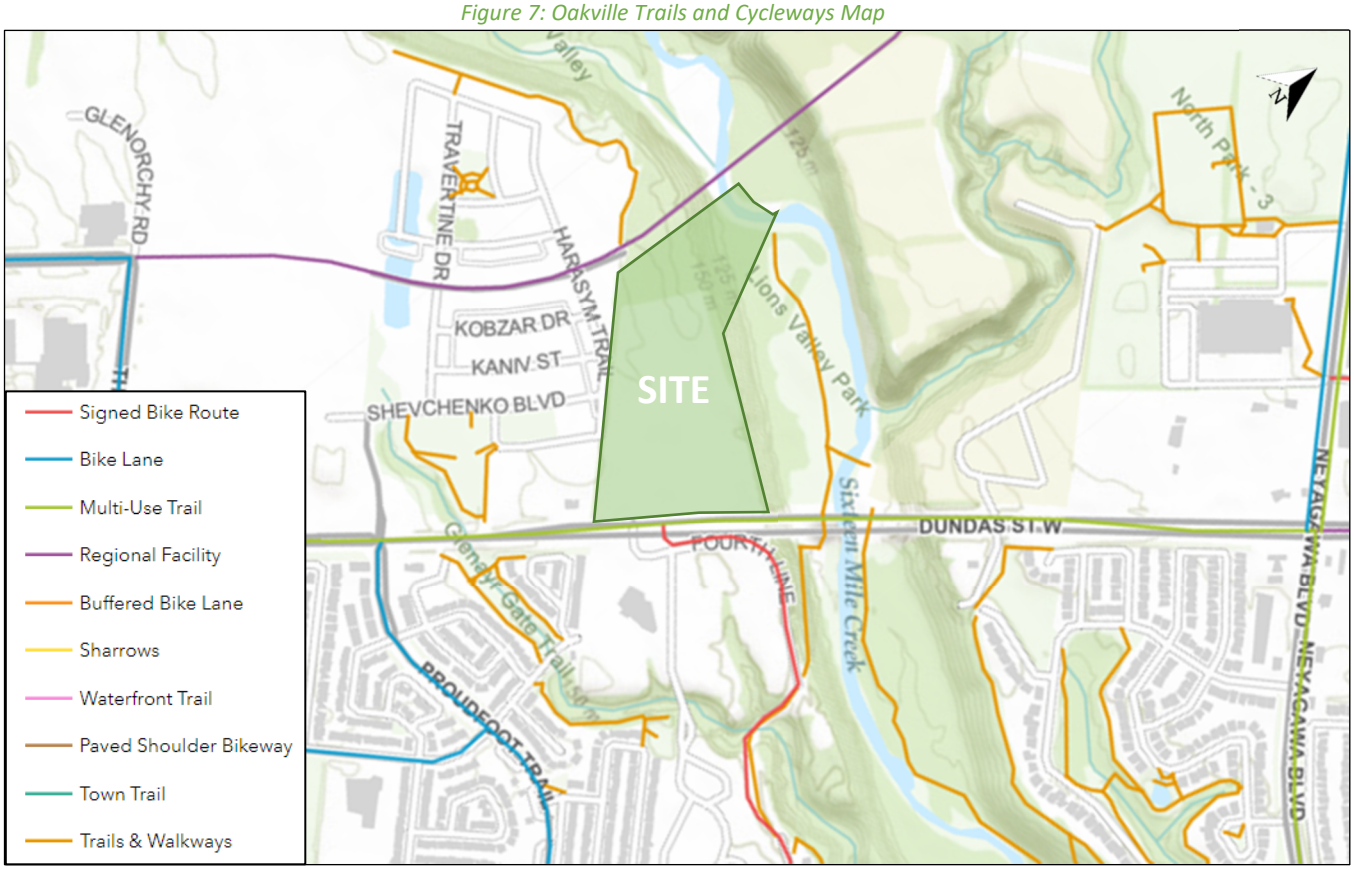
Figure 6: Dundas Street West at Lions Valley Park Road / Private Access

3.3 Cycling and Pedestrian Facilities

Within the Study Area, painted bike lanes are present on both sides of William Halton Parkway and Proudfoot Trail. There is also signage present on Proudfoot Trail indicating the bike route. Multi-use pathways are provided on both sides of Dundas Street West and along the north side of William Halton Parkway. Figure 7 illustrates the cycling road network and conditions of the Study Area.

Sidewalks are provided on the south side of William Halton Parkway, and along both sides of Harasym Trail, Sweetwater Gate, and Proudfoot Trail. A sidewalk is also provided on the west side of the access road to Trafalgar Lawn Cemetery. Pedestrian crosswalks, call buttons, and signal heads are present at all intersections in the Study Area, except for the west leg of the intersection of Dundas Street West at Lions Valley Park Road.

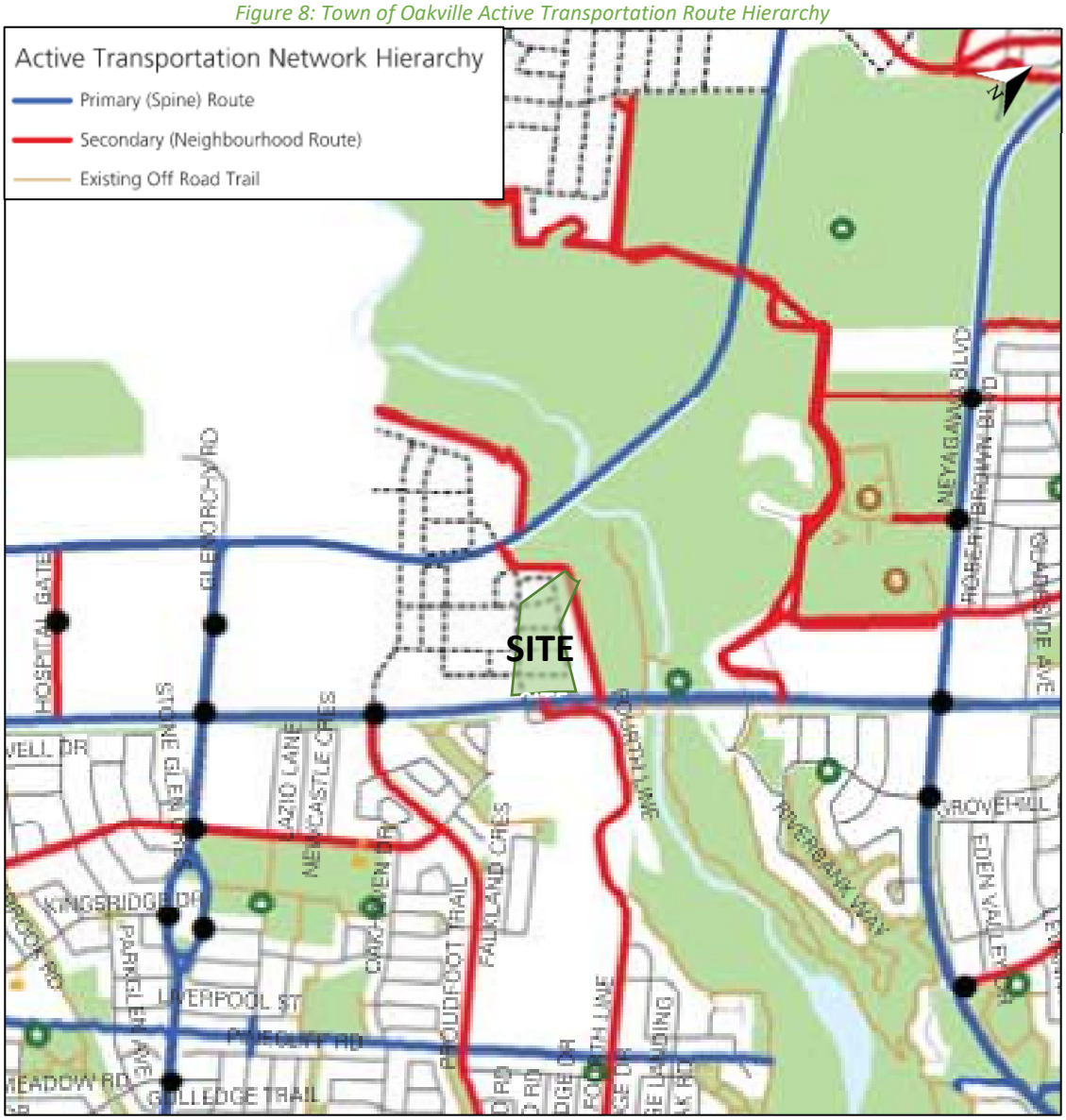
Figure 7: Oakville Trails and Cycleways Map



Source: https://exploreoakville.maps.arcgis.com/apps/webappviewer/index.html?id=1a70aa3d375d4630901d72b10a26444f
Accessed: September 4, 2024

The Town of Oakville Active Transportation Master Plan (2017) designates Dundas Street West and William Halton Parkway as primary (spine) routes. Proudfoot Trail and Fourth Line are designated as secondary (neighbourhood) routes. The William Halton Parkway Extension Project, which is expected to be completed in 2024, is planned to include both bicycle lanes and multi-use pathways. The ATMP also proposes off-road trails north of Dundas Street West within the Study Area. The Town of Oakville ATMP is shown in Figure 8 below.

Figure 8: Town of Oakville Active Transportation Route Hierarchy

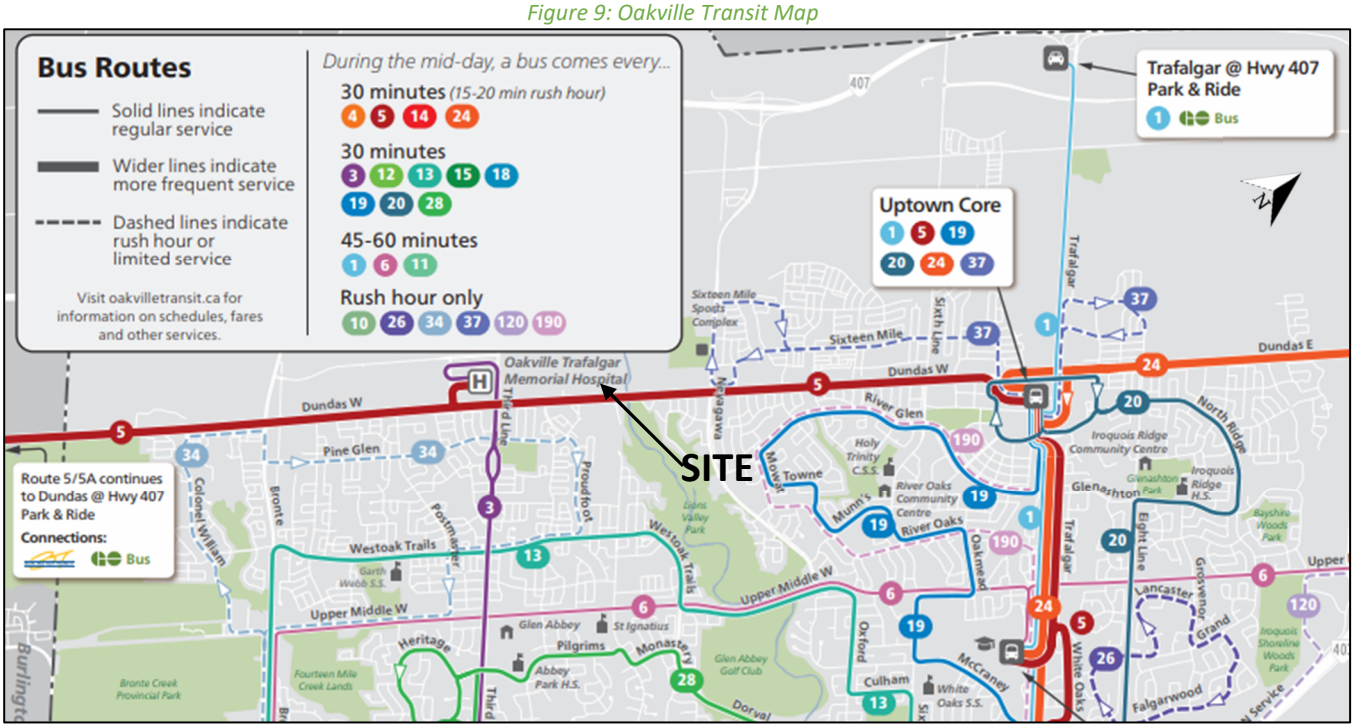


Source: Town of Oakville Active Transportation Master Plan (2017)

3.4 Existing Transit

One transit route operated by Oakville Transit is noted within the vicinity of the proposed development. Route 5/5A Dundas operates along Dundas Street West in the Study Area and provides connection between the Highway 407 Park & Ride and Oakville GO Station. Bus stops are located on the north and south side of Dundas Street West at Fourth Line. Service begins at 6:00 AM and terminates at 12:00 AM. The route operates at 30-minute intervals in off-peak periods and 15-minute intervals during peak periods. The Oakville Transit map is shown in Figure 9 below.

Figure 9: Oakville Transit Map



Source: https://www.oakvilletransit.ca/getmedia/84a8e5ee-7891-446e-8f7f-6037fbdfe081/transit-system-map.pdf

3.5 Existing Peak Hour Travel Demand

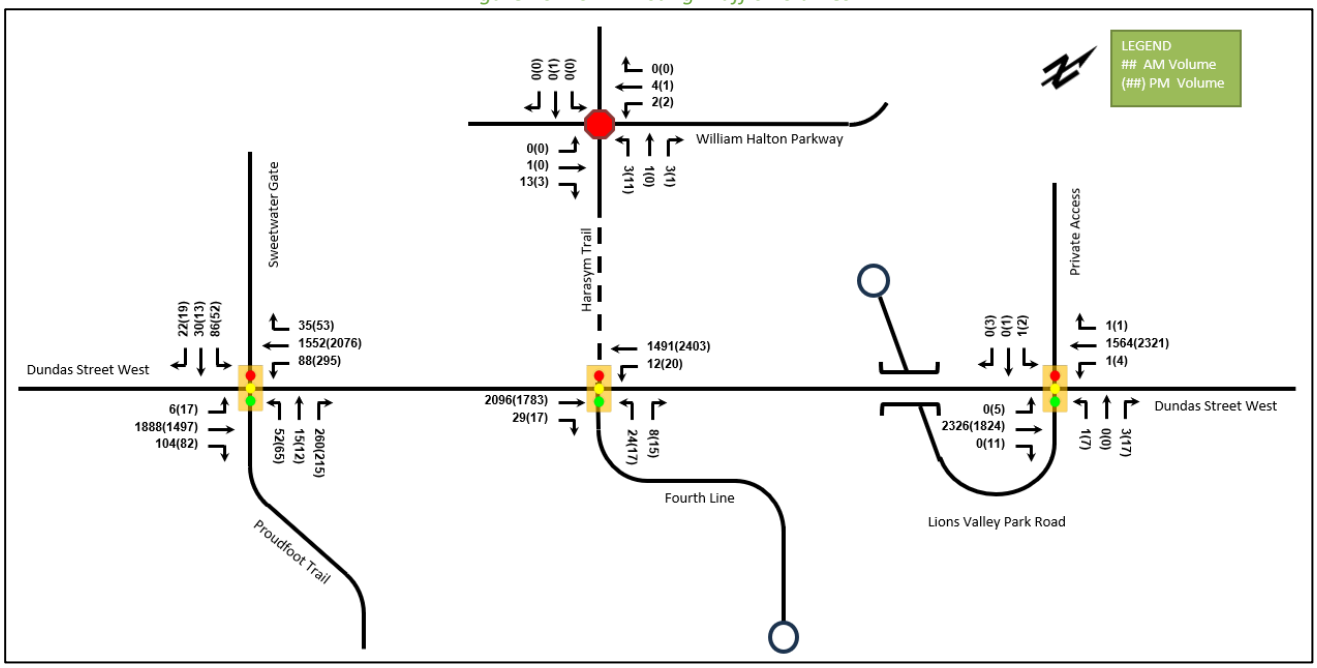
Given the residential land use of the proposed development, the AM and PM peak periods have been selected as the analysis time periods. To understand the existing AM and PM peak hour traffic volumes, turning movement counts for the Study Area intersections have been acquired from the Town of Oakville and Ontario Traffic Inc. Table 1 summarizes the date of the most recent turning movement counts at each existing Study Area intersection.

Table 1: TMC Data Dates

Data Type	Location	Source	Count Date
Turning Movement Counts (TMC)	William Halton Parkway at Harasym Trail	Ontario Traffic Inc.	September 11, 2024
	Dundas Street at Sweetwater Gate / Proudfoot Trail	Ontario Traffic Inc.	November 12, 2024
	Dundas Street at Fourth Line	Town of Oakville	November 21, 2022
	Dundas Street at Lions Valley Park Road	Town of Oakville	October 18, 2023

As shown above, turning movement counts at the intersections of William Halton Parkway at Harasym Trail and Dundas Street West at Sweetwater Gate / Proudfoot Trail have been collected in 2024 and therefore no growth rate has been applied to the counts. At the intersections of Dundas Street West at Fourth Line and Dundas Street West at Lions Valley Park Road, a 2% compound annual growth rate (CAGR) has been applied to Dundas Street West and a 1% CAGR has been applied to Fourth Line and Lions Valley Park Road. Volume balancing to within a 10% difference has also been applied along Dundas Street West as applicable. TMC data is included in Appendix C. Signal timing plans for the intersections along Dundas Street West are included in Appendix D. Figure 10 illustrates the resulting 2024 existing vehicle traffic volumes.

Figure 10: 2024 Existing Traffic Volumes



3.5.1 Collision Analysis

Collision data has been provided by Halton Region for the intersection of Dundas Street West at Fourth Line as this will serve as the primary access to the site. Data for five years (2019-2023) prior to the commencement of this study has been analyzed. Table 2 summarizes the collision types and conditions at the intersection of Dundas Street and Fourth Line. Collision data is included in Appendix E.

Table 2: Dundas Street and Fourth Line Collision Analysis

		Number	%
Total Collisions		**8**	**100 %**
Initial Impact Type	Sideswipe	3	37.5 %
	Rear end	3	37.5 %
	Other	2	25.0%
Classification	P.D. Only	7	87.5 %
	Non-fatal Injury	1	12.5 %
Environment	Clear	7	87.5 %
	Snow	1	12.5 %

The intersection of Dundas Street West and Fourth Line experienced eight collisions between 2019 and 2023. Most collisions occurred in clear conditions with more than half of the collisions categorized as either sideswipe or rear end collisions. No fatal collisions were noted. Sideswipe and rear end collisions are often attributed to driver inattention and high traffic volumes at intersections. Given the number of collisions, type, and severity, no mitigation measures are recommended as a result of this analysis.

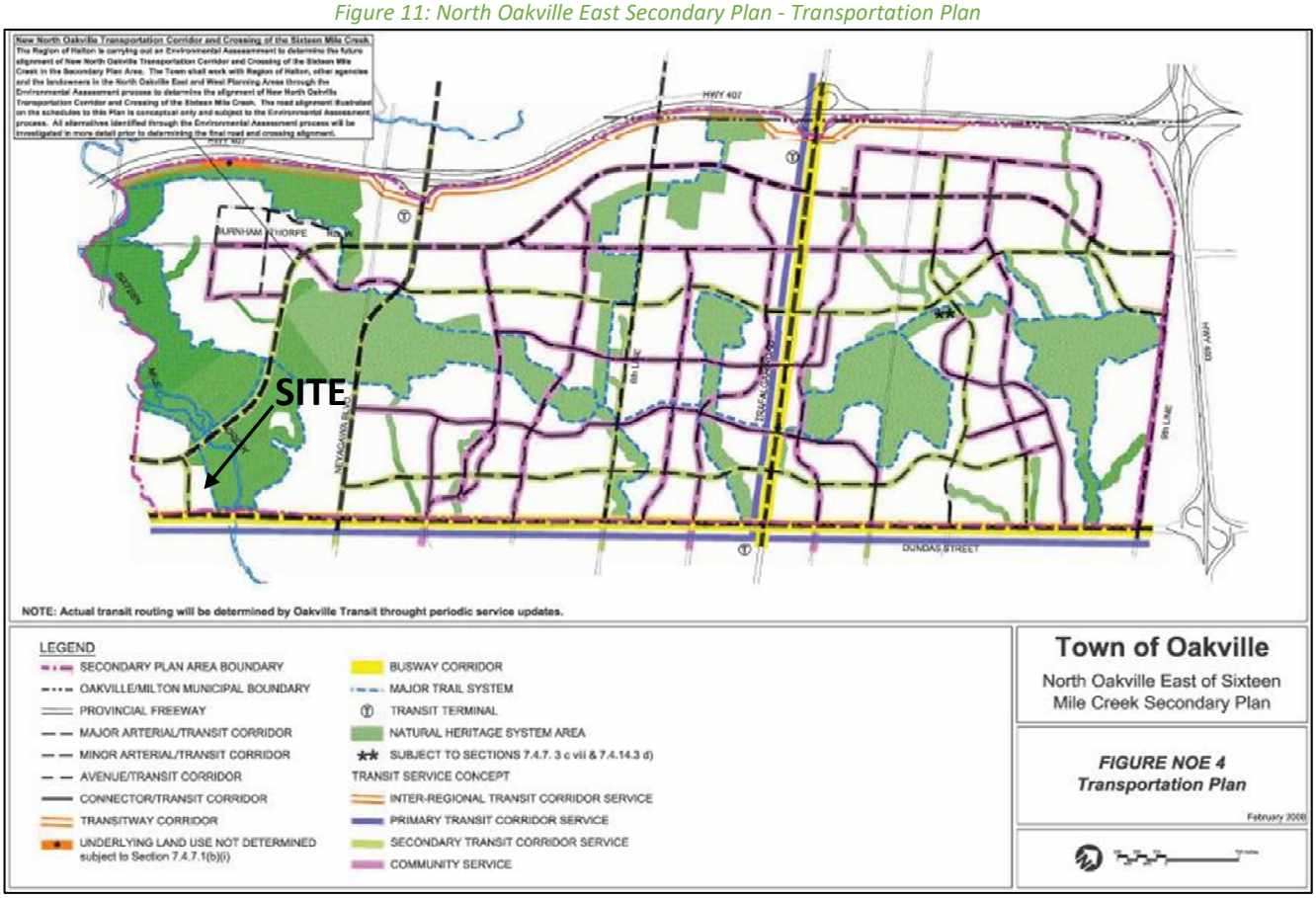
4 Future Background Conditions

4.1 Planned Conditions

4.1.1 North Oakville Secondary Plans – Transportation Plan

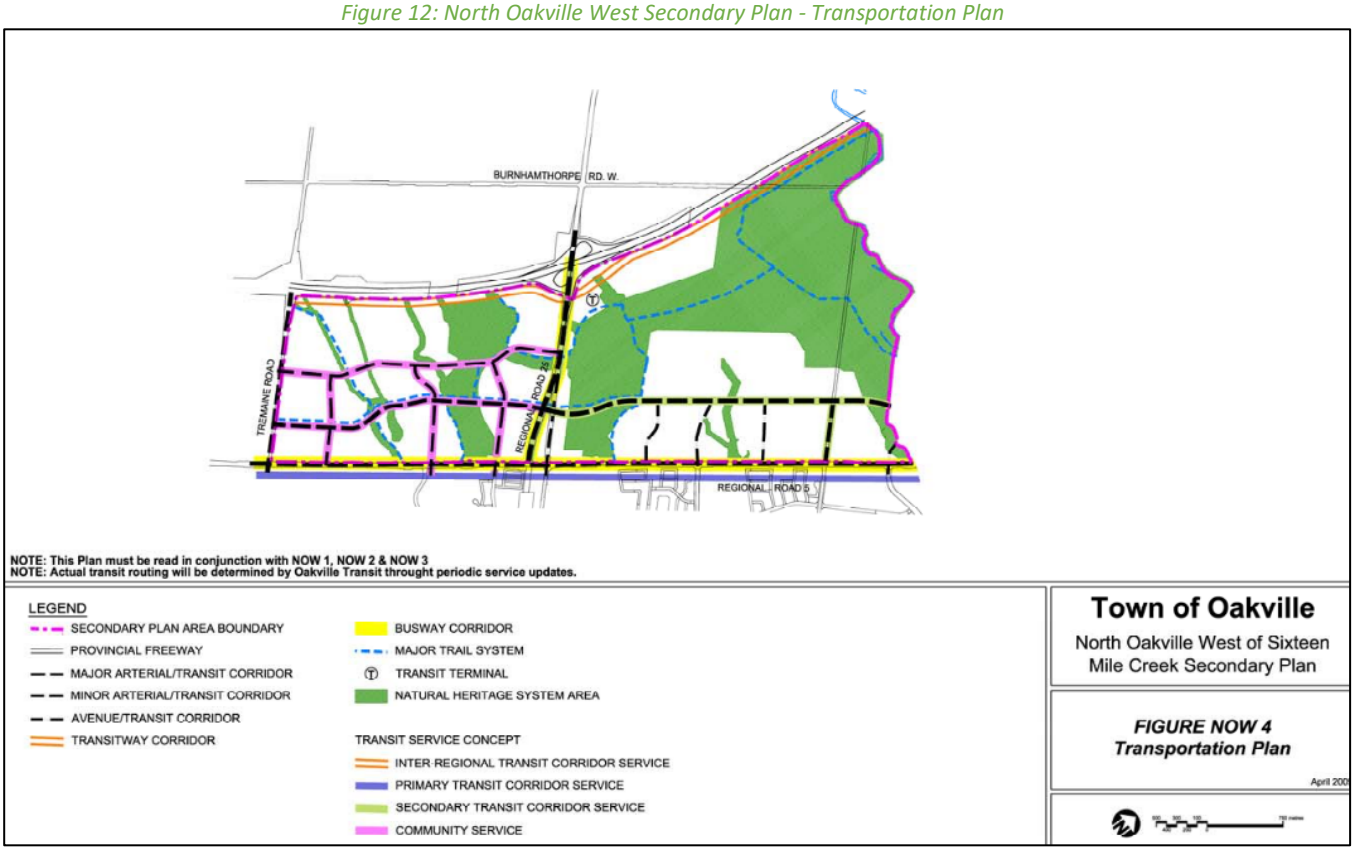
The North Oakville Secondary Plan (East and West) includes transit routes along key corridors within the Study Area. Figure 11 and Figure 12 illustrate the North Oakville East and West Secondary Plan Transportation Plan, respectively. Within the Study Area, Dundas Street is planned as a primary transit corridor and busway corridor, and William Halton Parkway and Harasym Trail are planned as secondary transit corridors. No future transitway information is currently available for the roadways within the Study Area south of Dundas Street West and as such, existing transit routes are assumed to be present in the future.

Figure 11: North Oakville East Secondary Plan - Transportation Plan



Source: North Oakville East Secondary Plan (2008)

Figure 12: North Oakville West Secondary Plan - Transportation Plan

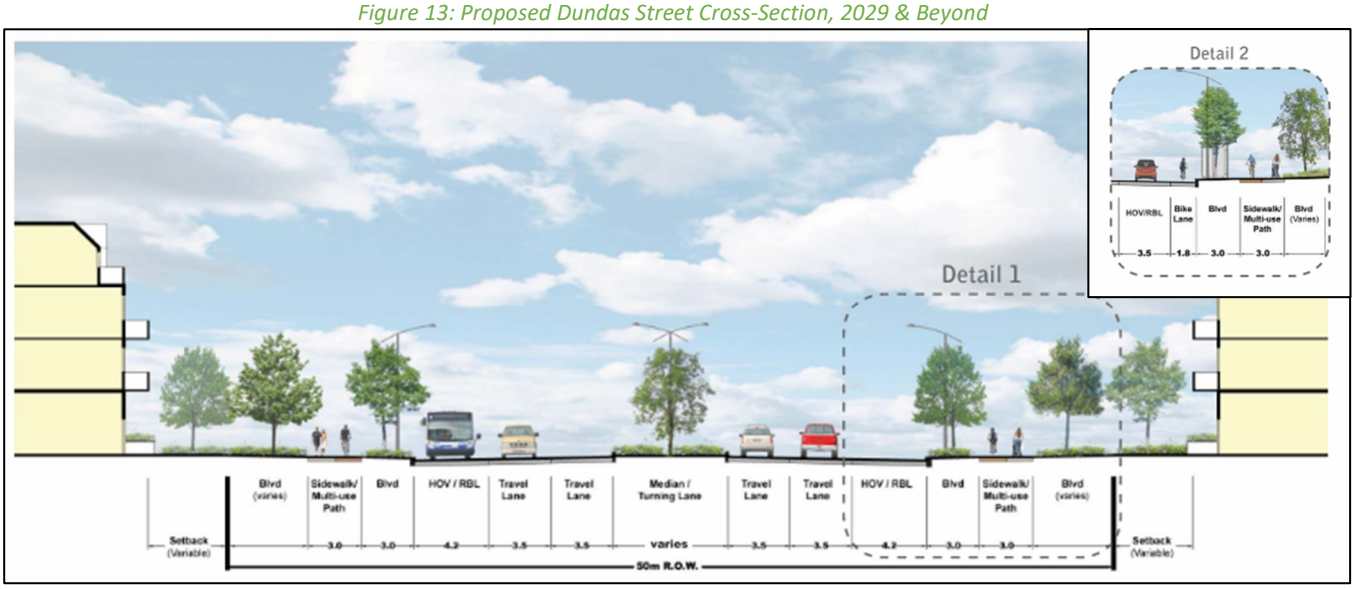


Source: North Oakville West Secondary Plan (2009)

4.1.2 Dundas Street West Priority Bus Corridor

As discussed in Section 3.1, Dundas Street West is a Region of Halton arterial road with a six-lane cross-section. The Halton Region Defining Major Transit Requirements (DMTR) Study (2019) defines Dundas Street as a Priority Bus Corridor within the Study Area. The DMTR Study indicates that HOV lanes are recommended to be implemented along the outer lanes of Dundas Street between Bronte Road and the Halton/Peel Boundary by 2031. Region staff have indicated that the implementation of HOV lanes along Dundas Street West within the Study Area should begin in the 2029 future analysis horizon. As such, a lane utilization factor of 0.80 will be applied to Dundas Street in both the 2029 and 2034 analysis horizons to reflect the capacity reduction on Dundas Street as a result of the HOV lanes. The proposed cross-section of Dundas Street is illustrated in Figure 13.

Figure 13: Proposed Dundas Street Cross-Section, 2029 & Beyond

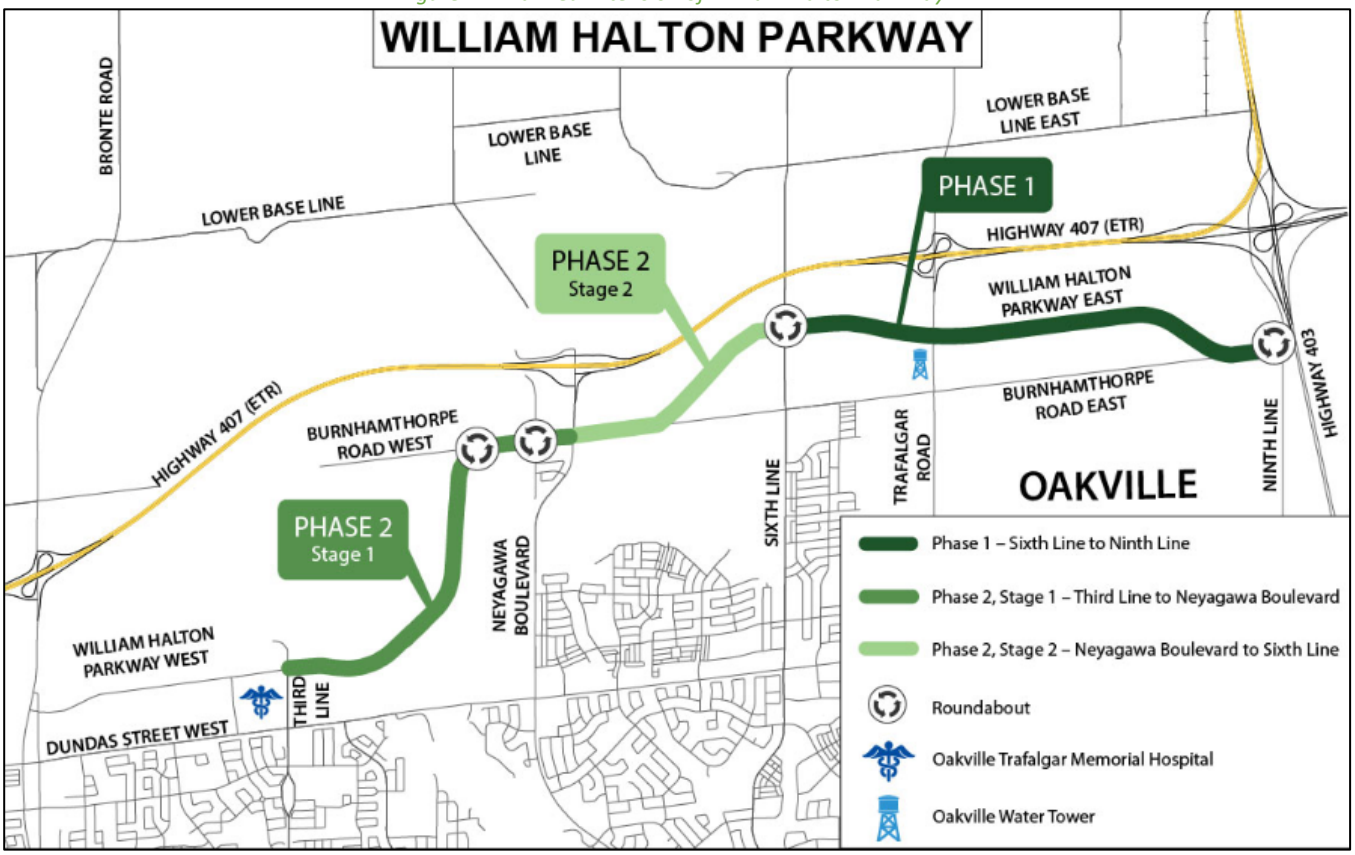


Source: Halton Region Transportation Master Plan Regional Right-of-Way Guidelines (2011)

4.1.3 William Halton Parkway Extension

As discussed in Section 3.1, William Halton Parkway is a Region of Halton arterial road with a four-lane cross-section. The William Halton Parkway Extension Project will create a new east-west corridor from Bronte Road (Regional Road 25) to Ninth Line (Regional Road 13) and has been split into three phases of design and construction as shown in Figure 14 below. Phase 1 and Phase 2 – Stage 2 of the William Halton Parkway Extension Project between Neyagawa Boulevard and Ninth Line has been completed. Phase 2 – Stage 1 of the project, between Third Line and Neyagawa Boulevard, is anticipated to be completed by the end of 2024, and will therefore be considered in both the 2029 and 2034 future analysis horizons. As a result, the intersection of William Halton Parkway at Harasym Trail has been assumed to operate as a four-legged signalized intersection in the 2029 and 2034 future analysis horizons. With the completion of this project, the travel patterns of the east-west traffic within the Study Area along William Halton Parkway are anticipated to change.

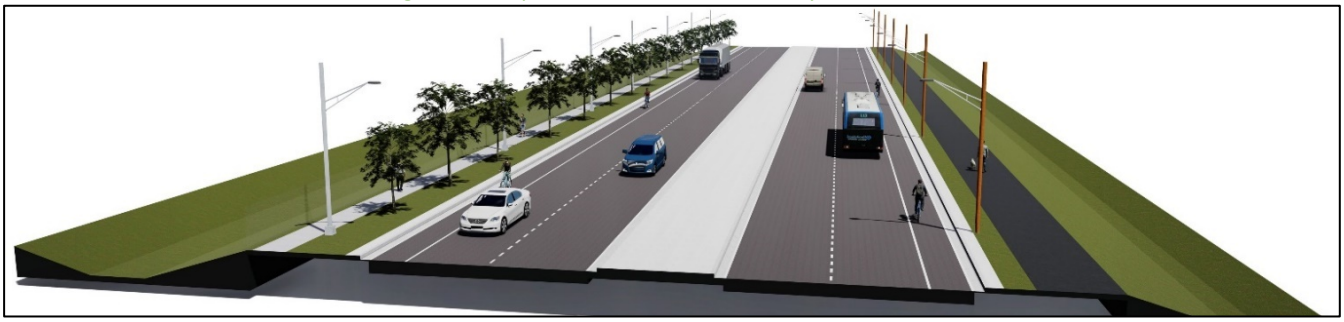
Figure 14: Planned Extension of William Halton Parkway



Source: https://www.halton.ca/For-Residents/Roads-Construction/Construction-Projects/William-Halton-Parkway-Extension-Project
Accessed: September 13, 2024

The proposed cross-section of the William Halton Parkway extension is shown in Figure 15 and includes two proposed vehicle travel lanes in each direction, bikes lanes, a sidewalk, and a multi-use pathway.

Figure 15: Proposed William Halton Parkway Cross Section



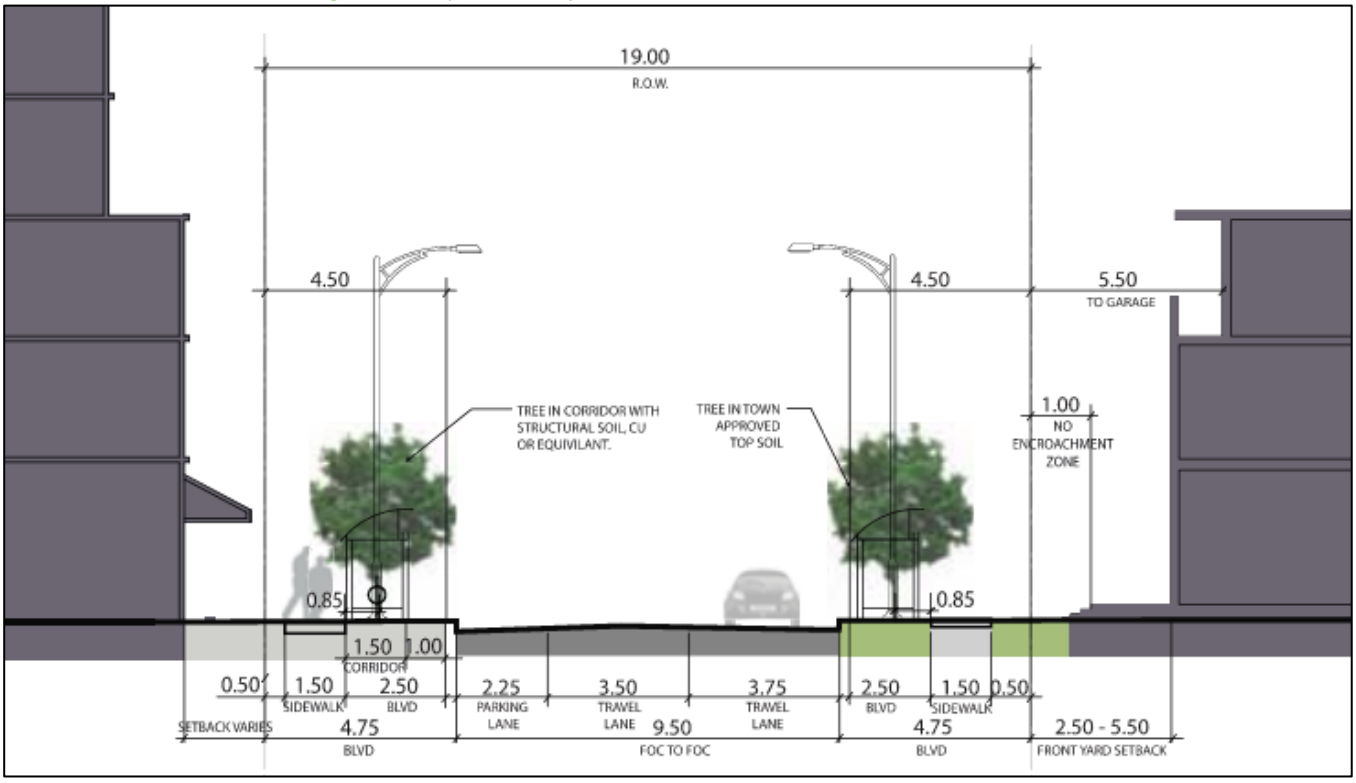
Source: https://www.halton.ca/For-Residents/Roads-Construction/Construction-Projects/William-Halton-Parkway-Extension-Project
Accessed: September 13, 2024

4.1.4 Harasym Trail Extension

The planned extension of Harasym Trail into the subject development lands will provide a north-south connection between William Halton Parkway and Dundas Street West and will form the northern leg of the existing three-legged intersection of Dundas Street West and Fourth Line. The extension of Harasym Trail is identified in the NOESP as an avenue road with a 22-metre right-of-way. However, as discussed in Section 3.1, Harasym Trail has been constructed as a connector/transit corridor with a two-lane cross-section south of William Halton Parkway,

which is consistent with the cross-section identified in the *Graydon Banning/Martillac Estates Transportation Impact Study Update (2019)* considered within the background developments in Section 4.1.5.2. As such, a 19-metre right-of-way will be considered for the extension of Harasym Trail within this study. It is noted that while a 22-metre right-of-way permits on-street parking on both sides of the road, the 19-metre right-of-way has on-street parking on only one side. As discussed in the Graydon Banning and Martillac Estates TIS, no other significant differences or notable concerns are identified with the use of the 19-metre right-of-way. Figure 16 illustrates the cross-section for the Harasym Trail extension as identified in the *North Oakville Urban Design and Open Space Guidelines (2009).* The planned implementation of the extension is assumed to occur alongside the subject development and will therefore be considered in all future total analysis horizons.

Figure 16: Proposed Harasym Trail Extension 19-metre ROW Cross-Section



Source: North Oakville Urban Design and Open Space Guidelines (2009)

4.1.5 Other Study Area Developments

Proposed developments within proximity of the subject site expected to impact the Study Area intersections and road network have been identified. The following nearby developments are major trip generators and will be considered as part of the background traffic growth:

- Schlegel Villages – 2165 Dundas Street West
- Graydon Banning and Martillac Estates – 1357 and 1359 Dundas Street West
- 1280 Dundas Street West

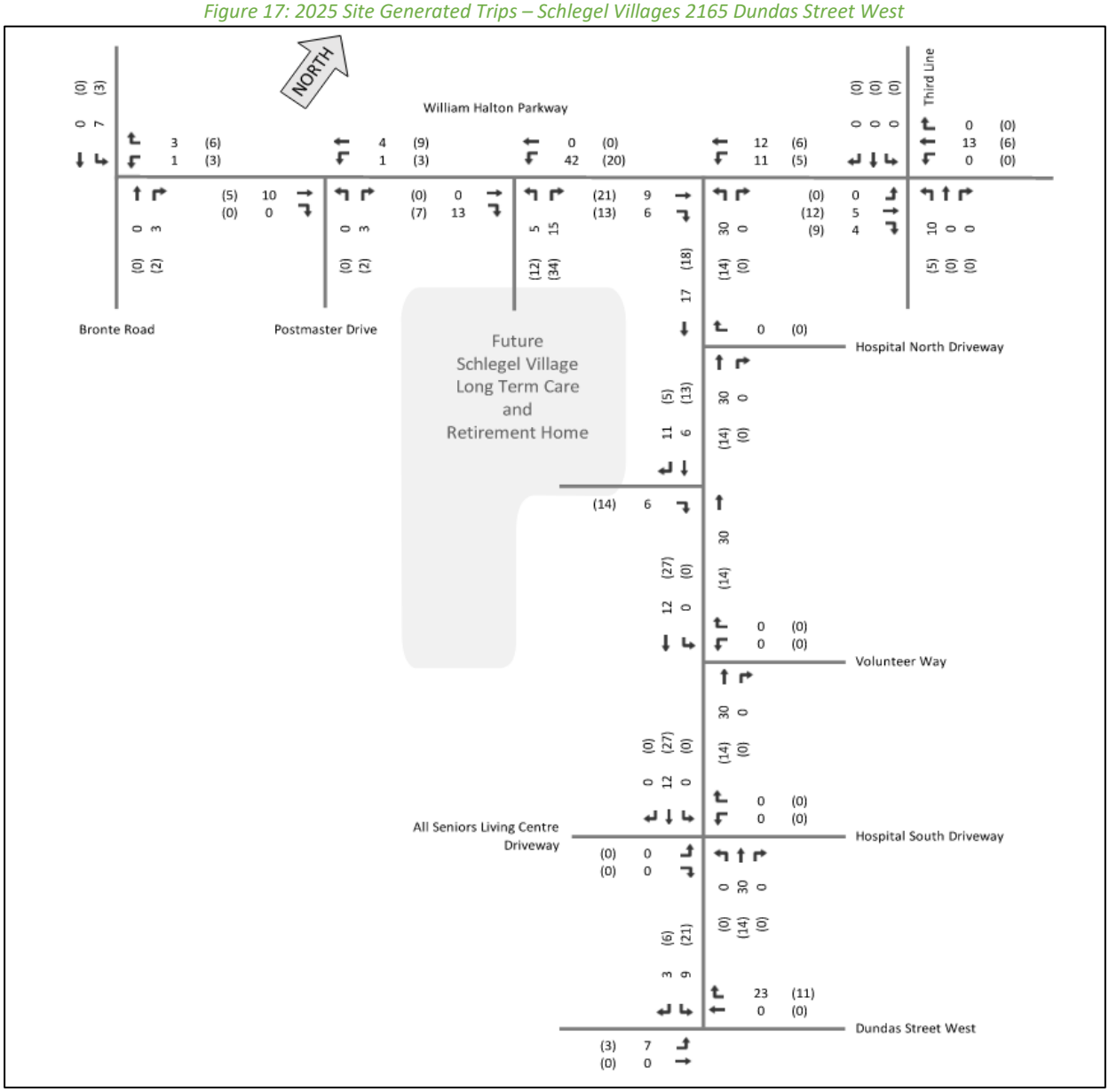
Each background development and the traffic associated with it has been summarized in the subsections below.

4.1.5.1 Schlegel Villages – 2165 Dundas Street West

The future Schlegel Villages development is located to the west of the subject site. The following information has been taken from the *Schlegel Villages Oakville Transportation Impact Study (2024)*, prepared by WSP. The

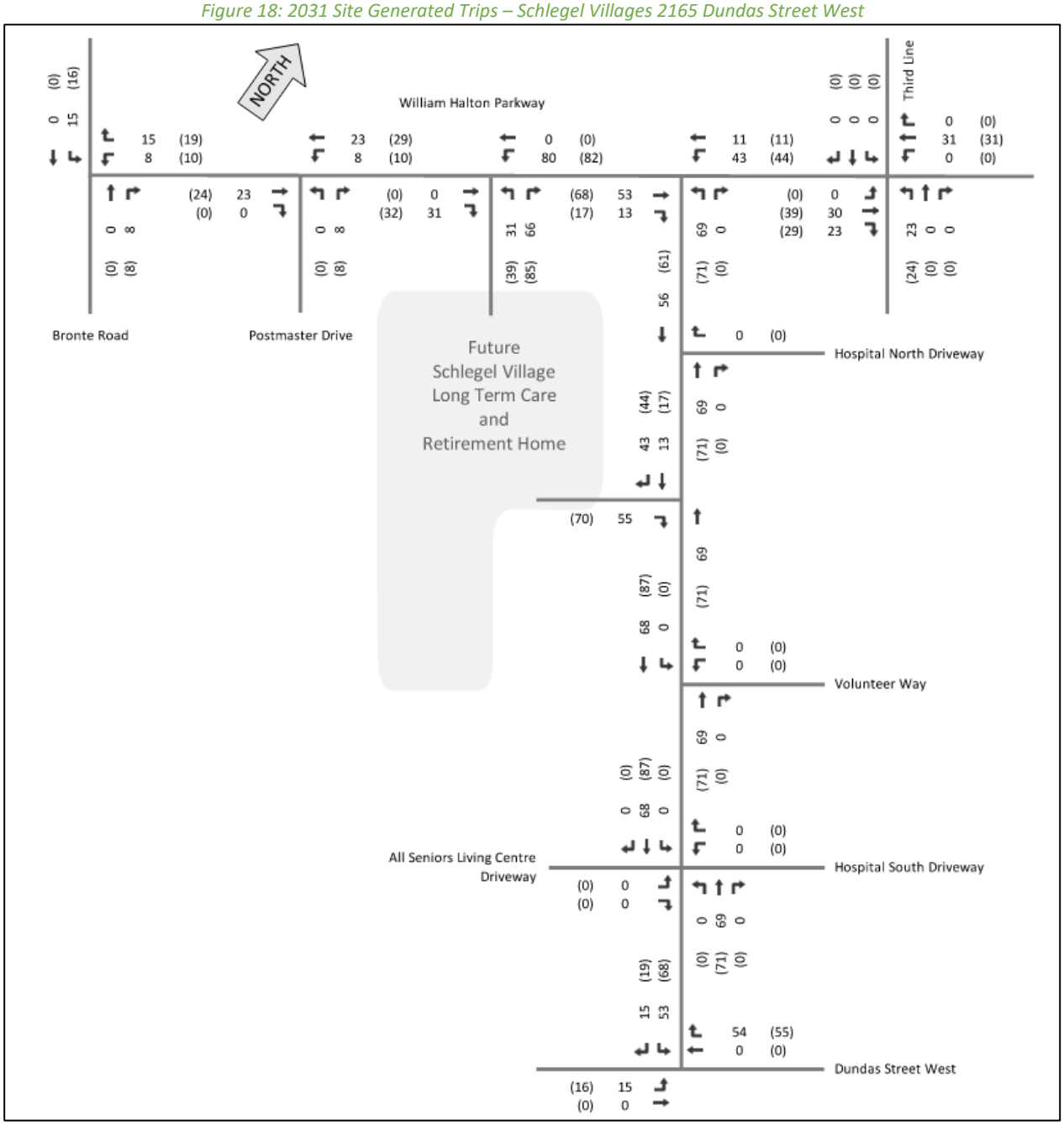
development is phase one of an integrated seniors' campus of care consisting of two ten-storey long-term care homes with a total of 640 beds with an anticipated build-out year of 2025. The proposed development will ultimately accommodate the retirement home uses as well as affordable team member housing, including 560 retirement home beds, 116 retirement apartment units, and 244 apartment units in two affordable team housing buildings in 2031. Access to the development will be provided via one access onto William Halton Parkway and one access onto Hospital Gate. The development is anticipated to generate 90 AM and 90 PM peak hour two-way vehicle trips in 2025, and 305 AM and 350 PM peak hour two-way vehicle trips in 2031. The 2025 site generated traffic will be considered in the 2029 analysis horizon and the 2031 site generated traffic will be considered in the 2034 analysis horizon. The 2025 and 2031 site generated trips for the Schlegel Villages development are illustrated in Figure 17 and Figure 18, respectively. As a conservative approach, Scenario 2 from the TIS has been considered within this study as it assumes higher traffic volumes approaching to and from the east of the site.

Figure 17: 2025 Site Generated Trips – Schlegel Villages 2165 Dundas Street West



Source: Schlegel Villages Oakville Transportation Impact Study; WSP; June 2024

Figure 18: 2031 Site Generated Trips – Schlegel Villages 2165 Dundas Street West



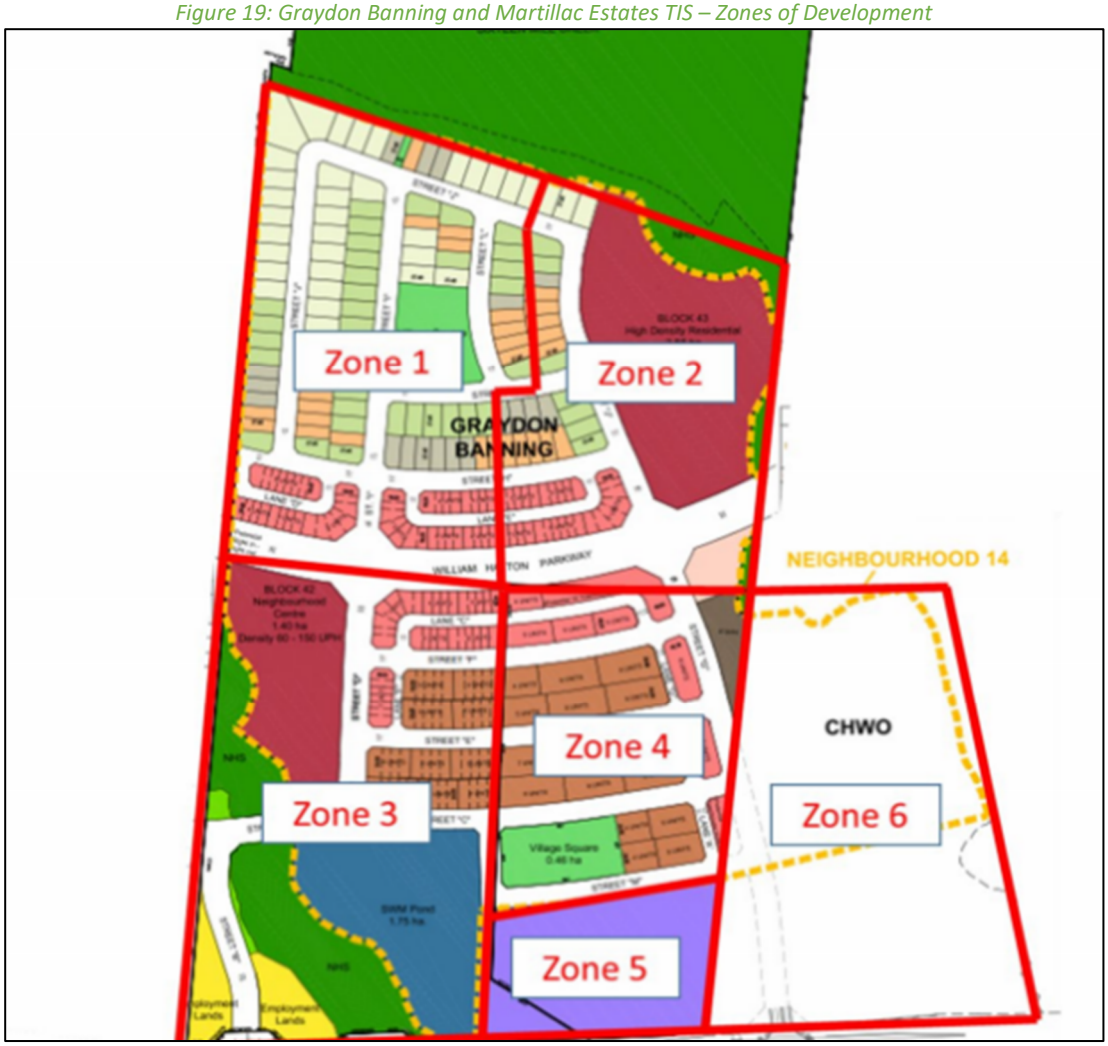
Source: Schlegel Villages Oakville Transportation Impact Study; WSP; June 2024

4.1.5.2 Graydon Banning and Martillac Estates – 1357 and 1359 Dundas Street West

The future Graydon Banning and Martillac Estates development is located to the north and west of the subject site. The following information has been taken from the *Graydon Banning/Martillac Estates Transportation Impact Study Update (2019),* prepared by GHD Limited. The development is proposed to include low, medium, and high-density residential land uses. Access to the development will be provided by full movement intersections at Dundas Street West and Proudfoot Trail, William Halton Parkway and Street D / Street I, William Halton Parkway and Harasym Trail (Street G / Street J), and Dundas Street West at Fourth Line. While the development was anticipated to be built out in 2020, a site visit conducted in November 2024 indicated that portions of the subject

development are still under construction. The Graydon Banning and Martillac Estates TIS identifies six zones of development for consideration as shown in Figure 19 below.

Figure 19: Graydon Banning and Martillac Estates TIS – Zones of Development

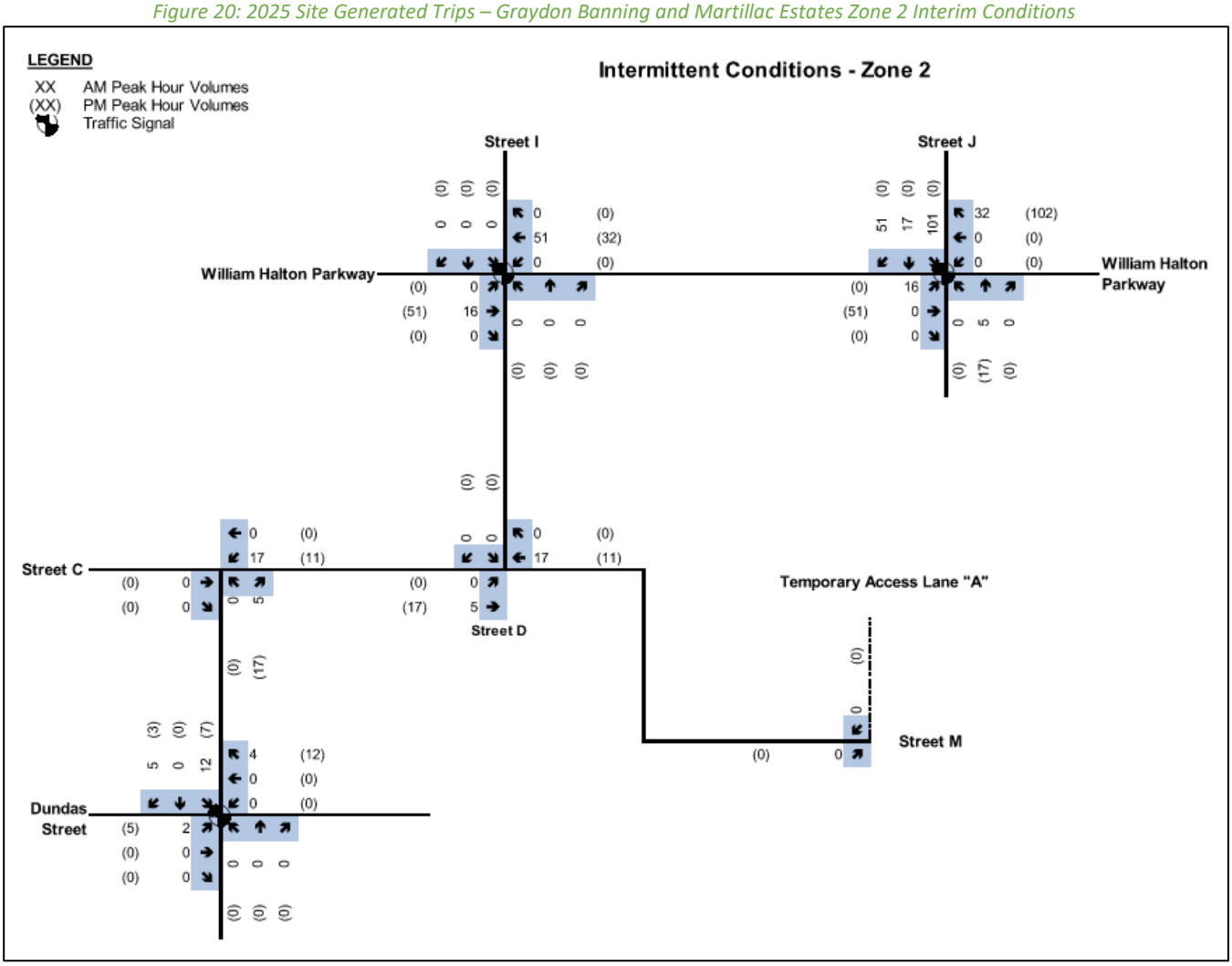


Source: Graydon Banning/Martillac Estates Transportation Impact Study; GHD; August 2019

The Graydon Banning and Martillac Estates TIS identifies a different site trip assignment to the surrounding road network for all six zones. It is also noted that Zone 6 is not part of the development considered in the Graydon Banning and Martillac Estates TIS and is treated as a background development. Zone 6 contains the 1303 Dundas Street lands considered in this TIS. As identified in the site visit, Zone 1 and Zone 4 have been built in their entirety and are occupied, and therefore will not be considered as part of the background development traffic added to existing volumes as this volume is already captured in the existing counts. Zones 2, 3, and 5 are still under construction and are partially occupied and as such will be considered as part of the background development traffic added to existing volumes. The Graydon Banning and Martillac Estates TIS considers an interim scenario where Harasym Trail does not connect to Dundas Street (build-out of Zones 1-5) and an ultimate scenario where Harasym Trail does connect to Dundas Street (build-out of Zones 1-6). The resulting site generated trips for each of Zones 2, 3 and 5 in the interim condition is illustrated in Figure 20, Figure 21, and Figure 22, respectively. These volumes will be considered in the future background analysis within this TIS. The resulting site generated trips

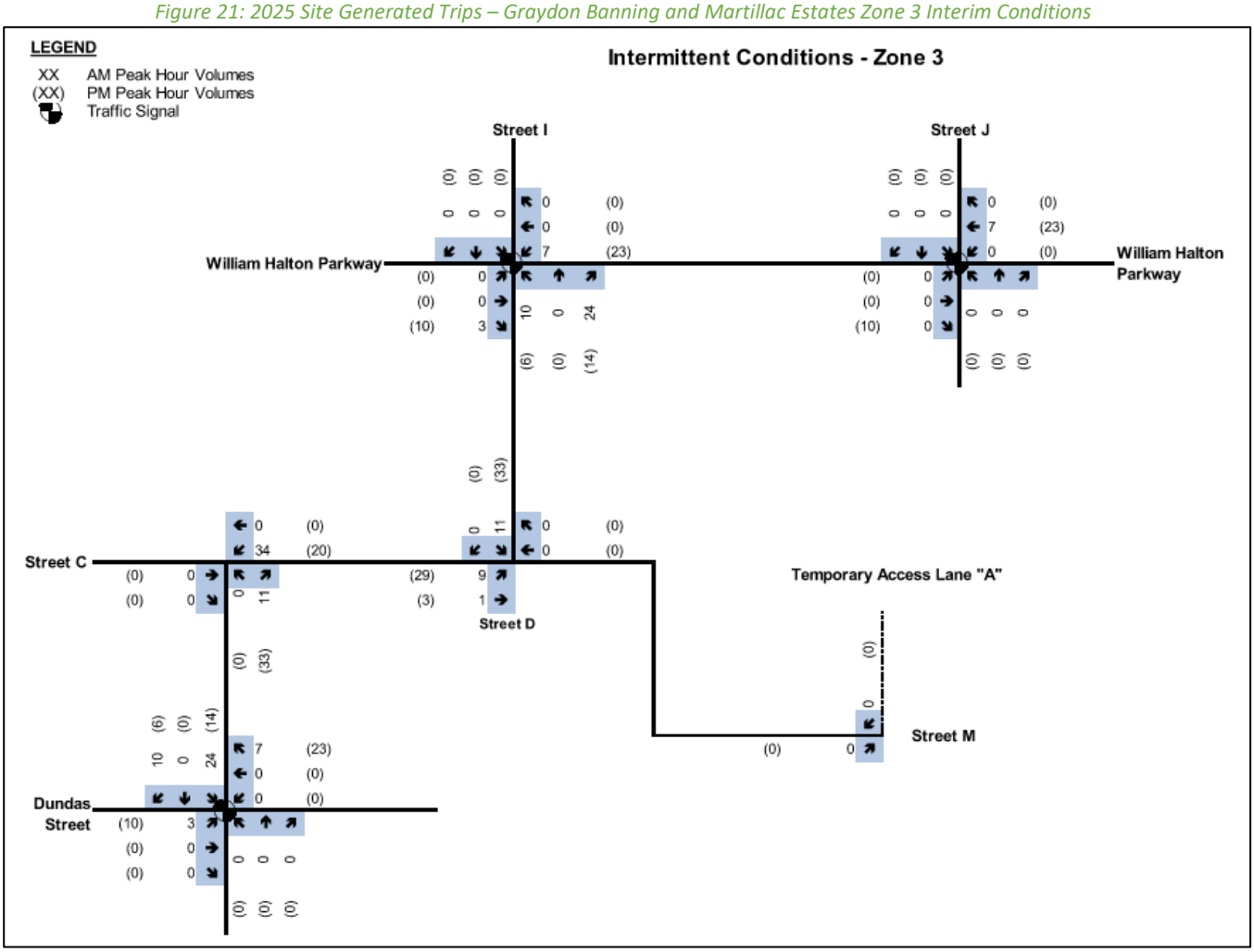
each of Zones 2, 3 and 5 in the ultimate condition is illustrated in Figure 23, Figure 24, and Figure 25, respectively. These volumes will be considered in the future total analysis within this TIS.

Figure 20: 2025 Site Generated Trips – Graydon Banning and Martillac Estates Zone 2 Interim Conditions



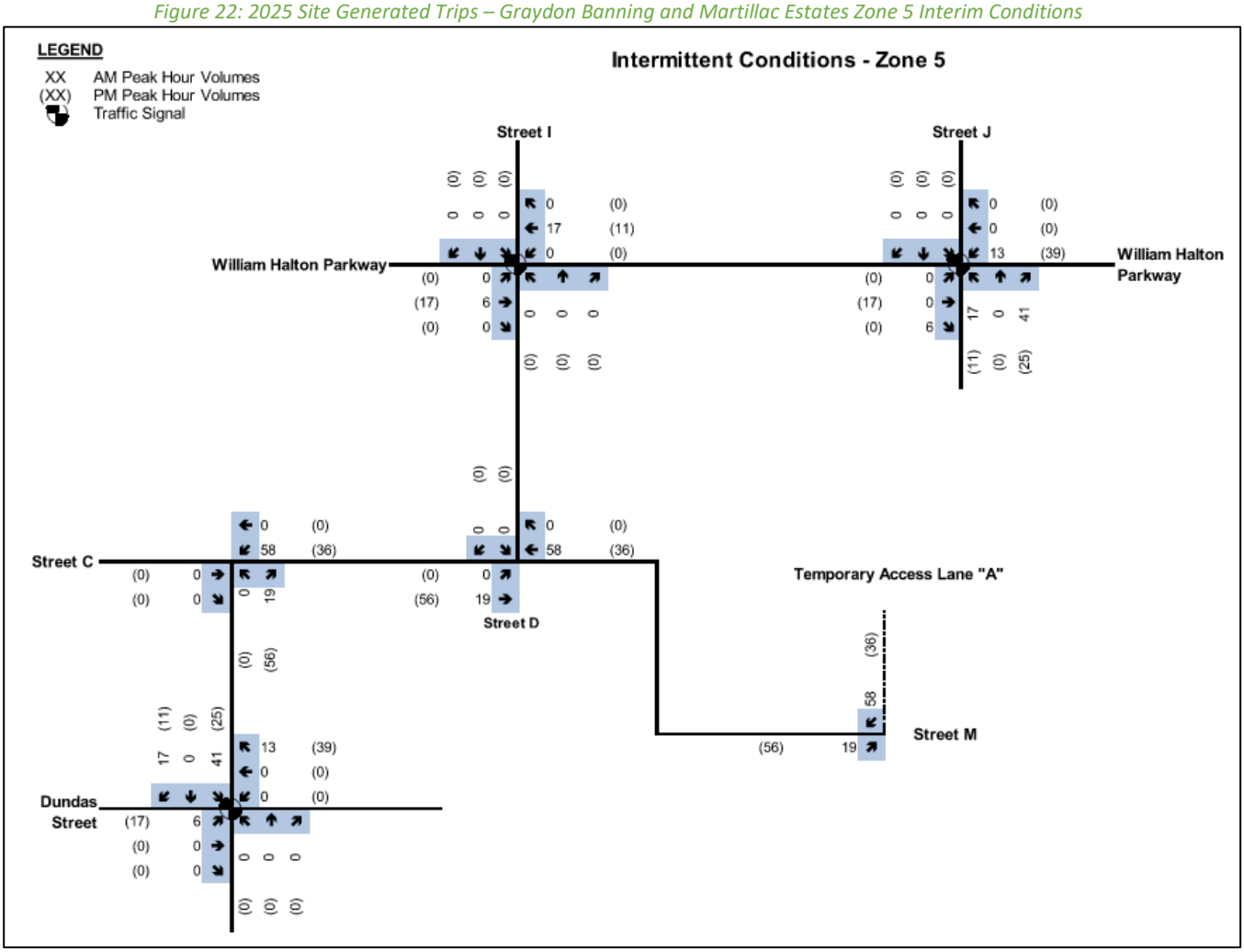
Source: Graydon Banning/Martillac Estates Transportation Impact Study; GHD; August 2019

Figure 21: 2025 Site Generated Trips – Graydon Banning and Martillac Estates Zone 3 Interim Conditions



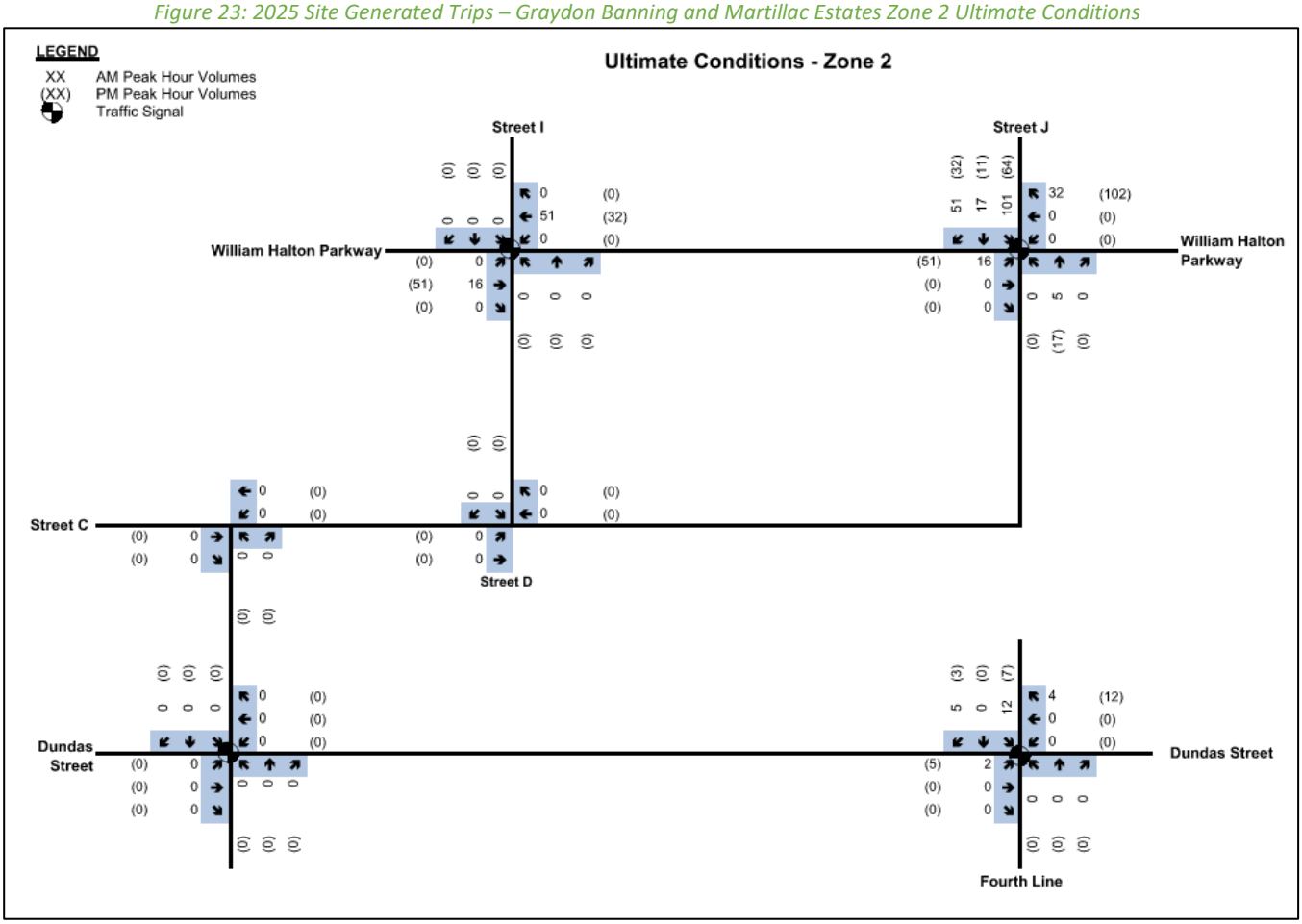
Source: Graydon Banning/Martillac Estates Transportation Impact Study; GHD; August 2019

Figure 22: 2025 Site Generated Trips – Graydon Banning and Martillac Estates Zone 5 Interim Conditions



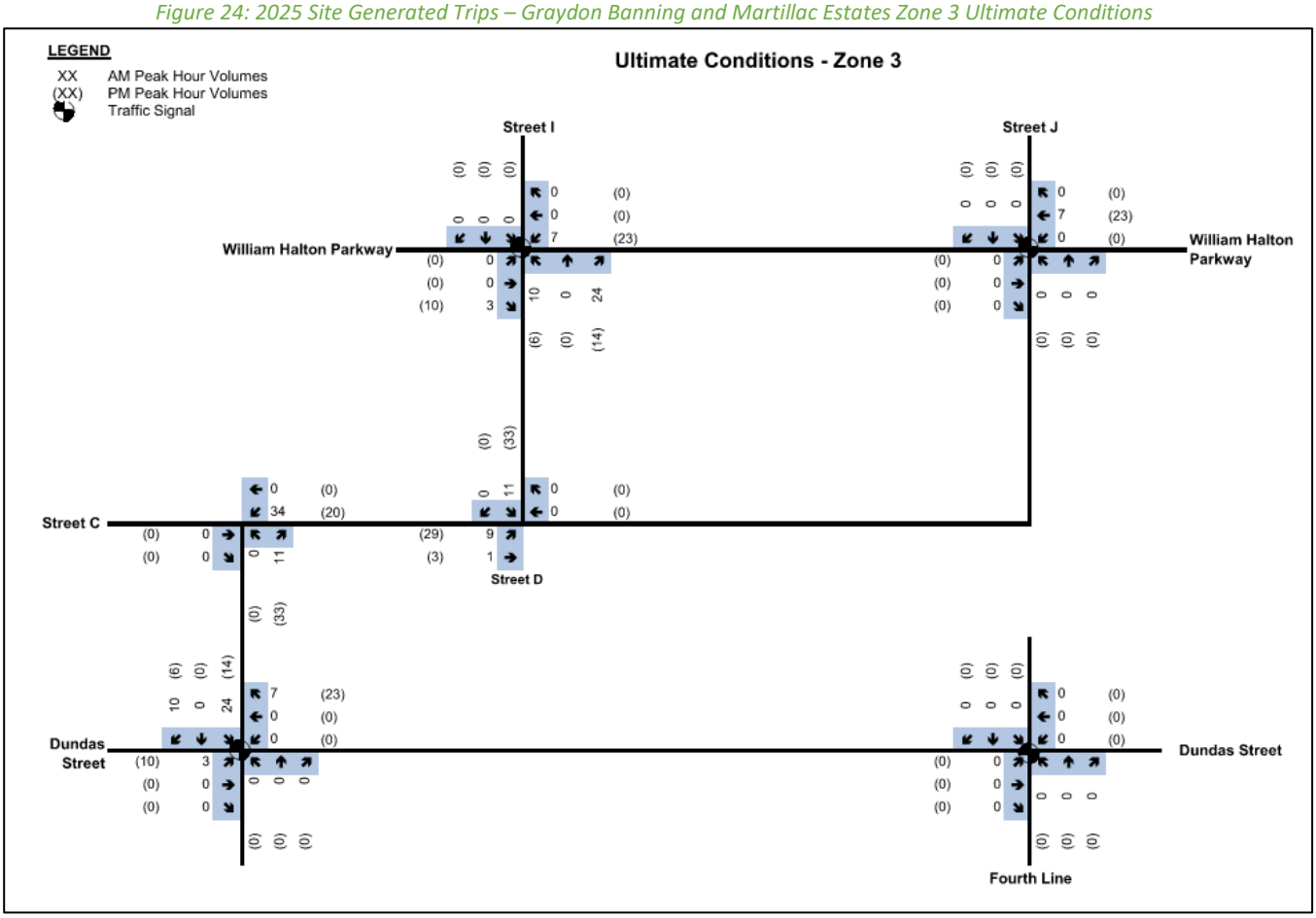
Source: Graydon Banning/Martillac Estates Transportation Impact Study; GHD; August 2019

Figure 23: 2025 Site Generated Trips – Graydon Banning and Martillac Estates Zone 2 Ultimate Conditions



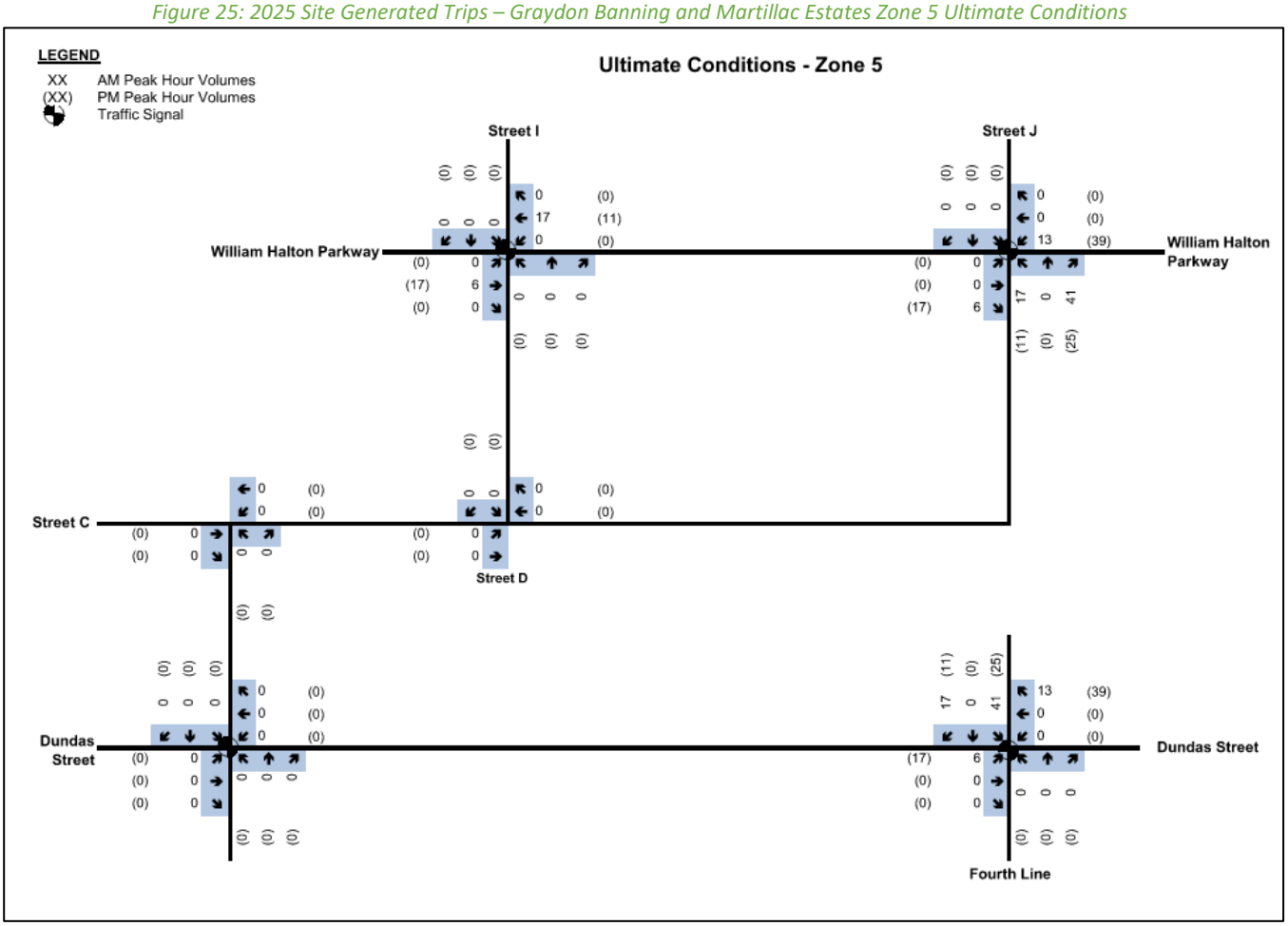
Source: Graydon Banning/Martillac Estates Transportation Impact Study; GHD; August 2019

Figure 24: 2025 Site Generated Trips – Graydon Banning and Martillac Estates Zone 3 Ultimate Conditions



Source: Graydon Banning/Martillac Estates Transportation Impact Study; GHD; August 2019

Figure 25: 2025 Site Generated Trips – Graydon Banning and Martillac Estates Zone 5 Ultimate Conditions



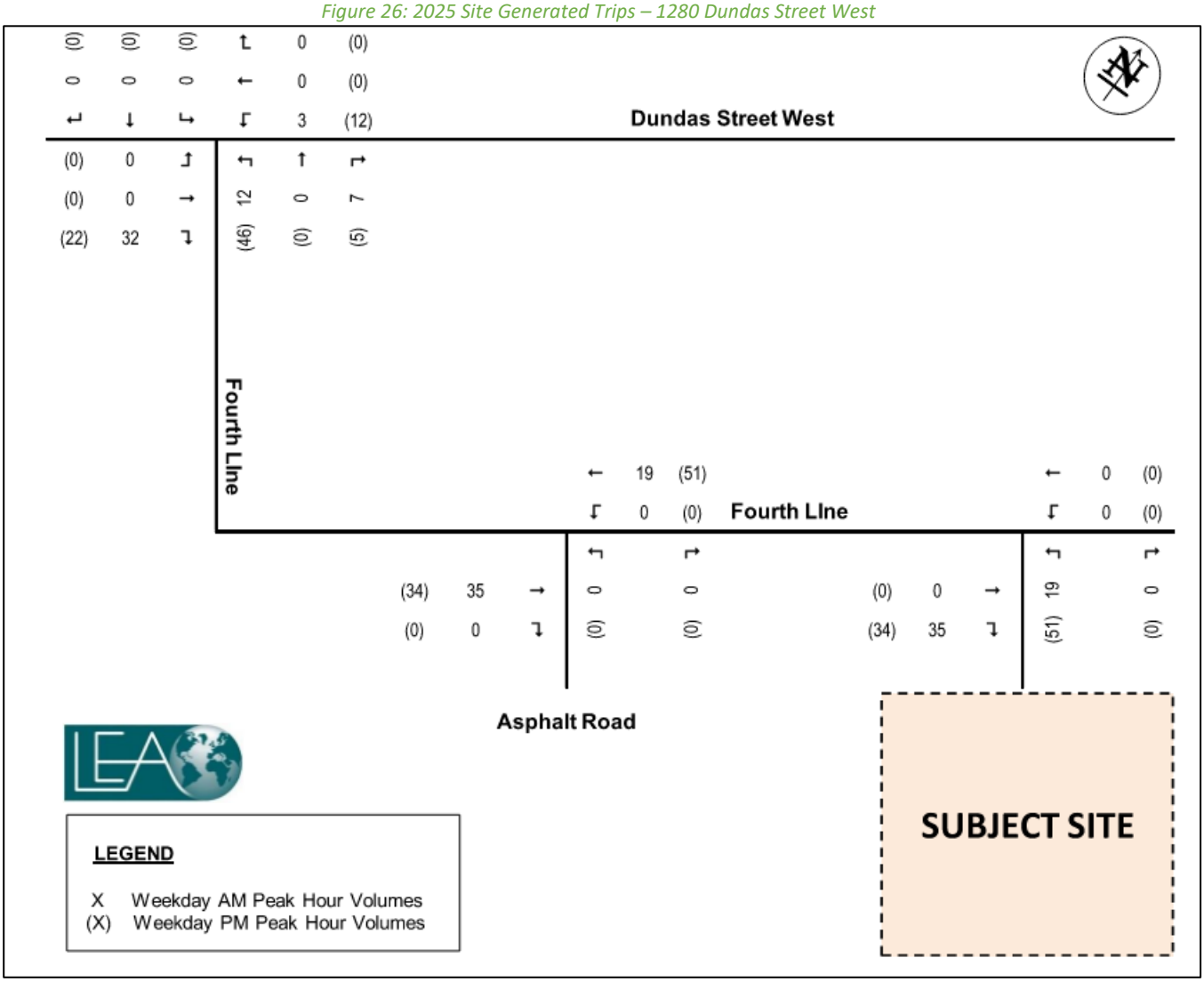
Source: Graydon Banning/Martillac Estates Transportation Impact Study; GHD; August 2019

It is noted that the site generated traffic from these three zones in both the interim and ultimate volume conditions have been proportionally reduced to reflect the portion of development traffic that is assumed to be considered in existing traffic counts. Under these assumptions, Zone 2 is anticipated to generate 38 AM and 49 PM peak hour two-way vehicle trips, Zone 3 is anticipated to generate 30 AM and 36 PM peak hour two-way vehicle trips, and Zone 5 is anticipated to generate 148 AM and 202 PM peak hour two-way vehicle trips.

4.1.5.3 1280 Dundas Street West

The future 1280 Dundas Street West development is located to the south of the subject site. The following information has been taken from the *1280 Dundas Street West Proposed Seniors Residence Development Transportation Impact Analysis*, prepared by LEA Consulting Ltd. The development proposes an eight-storey seniors' building consisting of 339 total units. Access to the development will be provided via one access onto Fourth Line. A 2025 build-out year is anticipated. The development is anticipated to generate 54 AM and 85 PM two-way vehicle trips in the 2025 future analysis horizon. The site generated traffic will be considered in both the 2029 and 2034 future analysis horizons. The 2025 site generated trips for 1280 Dundas Street West are illustrated in Figure 26.

Figure 26: 2025 Site Generated Trips – 1280 Dundas Street West



4.1.5.4 Total Background Development Trips

The total AM and PM peak hour trips generated by the background developments by the 2029 and 2034 horizons are summarized in Table 3 and Table 4, respectively.

Table 3: Background Developments Site Trips By 2029 Summary

Land Use	AM Peak Hour			PM Peak Hour		
	In	Out	Total	In	Out	Total
Schlegel Villages	65	25	90	30	60	90
Graydon Banning	55	165	220	177	110	287
1280 Dundas Street West	35	19	54	34	51	85
Total Trips	**155**	**209**	**364**	**241**	**221**	**462**

A total of 364 AM and 462 PM peak hour two-way vehicle trips will be generated by the three background developments included in this Study by the 2029 future analysis horizon.

Table 4: Background Developments Site Trips By 2034 Summary

Land Use	AM Peak Hour			PM Peak Hour		
	In	Out	Total	In	Out	Total
Schlegel Villages	153	152	305	157	193	350
Graydon Banning	55	165	220	177	110	287
1280 Dundas Street West	35	19	54	34	51	85
Total Trips	**243**	**336**	**579**	**368**	**354**	**722**

A total of 579 AM and 722 PM peak hour two-way vehicle trips will be generated by the three background developments included in this Study by the 2034 future analysis horizon.

4.1.6 Background Growth

A 2% per annum compound annual growth rate (CAGR) has been applied to Dundas Street and a 1% per annum CAGR has been applied to Harasym Trail, Proudfoot Trail, Sweetwater Gate, Fourth Line, and Lions Valley Park Road to reflect the 2029 and 2034 future analysis horizons. These rates have been provided by Region and Town staff and are consistent with the Transportation Impact Studies of nearby sites.

4.1.7 William Halton Parkway Volume Projections

Using the Halton Region EMME Model which includes all 2031 TMP recommendations, the Region's internal study determined the 2031 future year traffic forecast along William Halton Parkway and major intersecting roads based on screen-line growth rate and diversion factors derived from the study. Halton Region has provided the following PM peak hour two-way volume projections along William Halton Parkway:

- Bronte Road to Third Line: 2250 (900 eastbound and 1300 westbound)
- Third Line to Neyagawa Boulevard: 2700 (1200 eastbound and 1500 westbound)

Since only the 2031 PM peak hour volumes have been provided, the following assumptions were made:

- The AM peak hour volumes are the reverse for the eastbound and westbound directions. Additionally, on average the AM peak hour volumes are equal to 8% of daily traffic, where the PM peak hour volumes are equal to 10% of the daily traffic. Therefore, the PM peak hour volumes projected by Halton Region will be multiplied by a factor of 0.8 to determine the AM Peak hour volumes. As such, the 2031 AM peak hour volume from Bronte Road to Third Line will be 1040 eastbound and 720 westbound, and the peak hour volume from Third Line to Neyagawa Boulevard will be 1200 eastbound and 960 westbound.
- AM and PM peak hour forecasts of 2029 volumes corresponding to the 2031 volumes described above were established by 'back-casting' 2031 projections at a compound growth rate of 2% annually.
- The 2034 AM and PM peak hour volumes are projected by applying a compound rate of 2% annually.

To reflect the additional connectivity that this extension will provide to the Study Area, volume adjustments at the intersection of William Halton Parkway and Harasym Trail have been considered. Since the William Halton Parkway extension is not expected to replace the function of Dundas Street West as a primary east-west corridor in the Study Area, volume adjustments do not include a significant redirection of traffic from Dundas Street West onto William Halton Parkway. Volume projections from the Halton Region EMME Model have therefore been assigned exclusively to the eastbound and westbound through movements at the intersection of William Halton Parkway and Harasym Trail.

The projection used the following methodology:

- The 2029 and 2034 future background volumes were initially calculated by summing up the traffic resulting from compound annual growth and traffic from background developments.
- Comparisons were made between this sum and the Regional projected volumes on William Halton Parkway east of Third Line, and the greater was used.
- Resulting volume adjustments were applied along William Halton Parkway to the eastbound and westbound through movements.

The Region's modeler noted that the EMME Model's traffic zone is much larger than the subject site and they do not have information on the population and employment statistics considered in the EMME model. It is therefore not certain how many trips generated from the subject site are included in the model. A conservative approach is taken that zero (0) trips from the proposed development have been included in the EMME Model which provides the volume projections. The possibility of double-counting the site-generated traffic trips from the ARGO lands exists, as a portion of these trips may have been considered in the Region's study. This will result in a volume projection higher than what is likely to be realized along William Halton Parkway.

4.1.8 Future Background Traffic Volumes

Combining the background development traffic, the background growth rate, existing traffic volumes, and the Region's EMME model data, the future background traffic volumes were projected. Figure 27 and Figure 28 illustrate the 2029 and 2034 future background traffic volumes, respectively.

Figure 27: 2029 Future Background Traffic Volumes

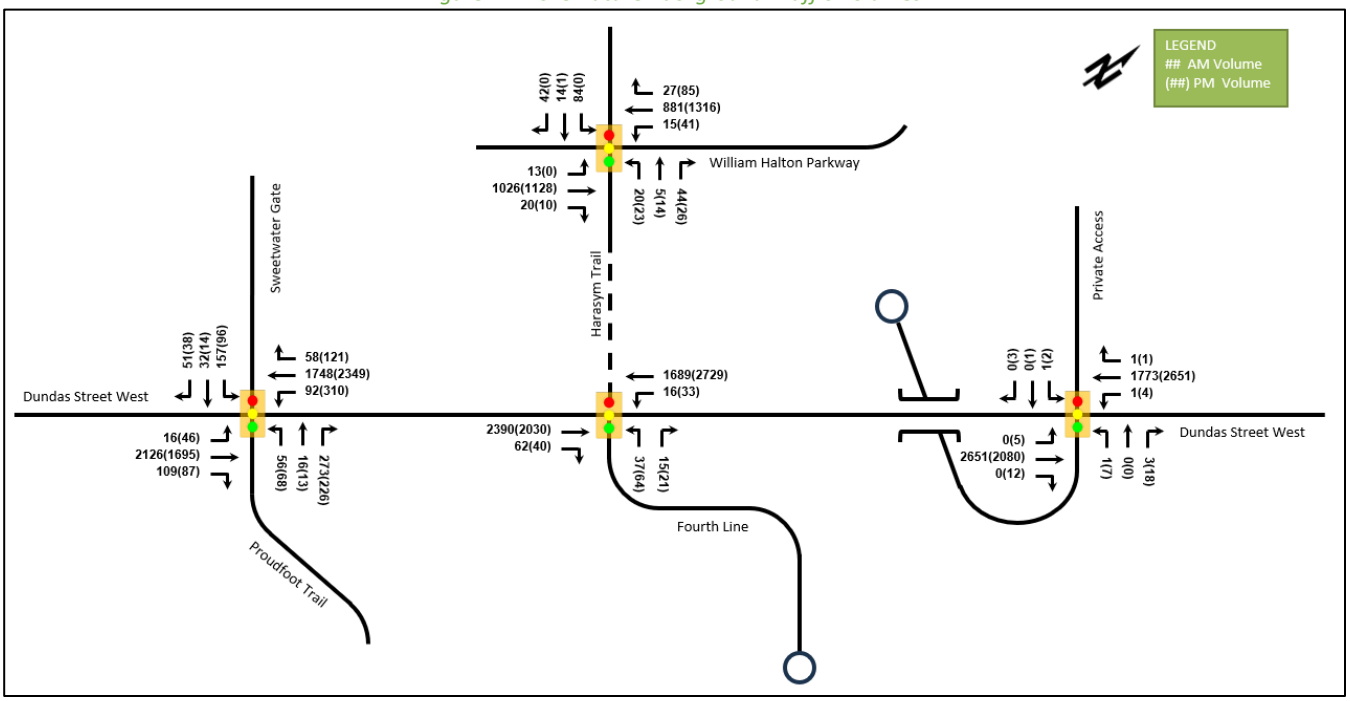
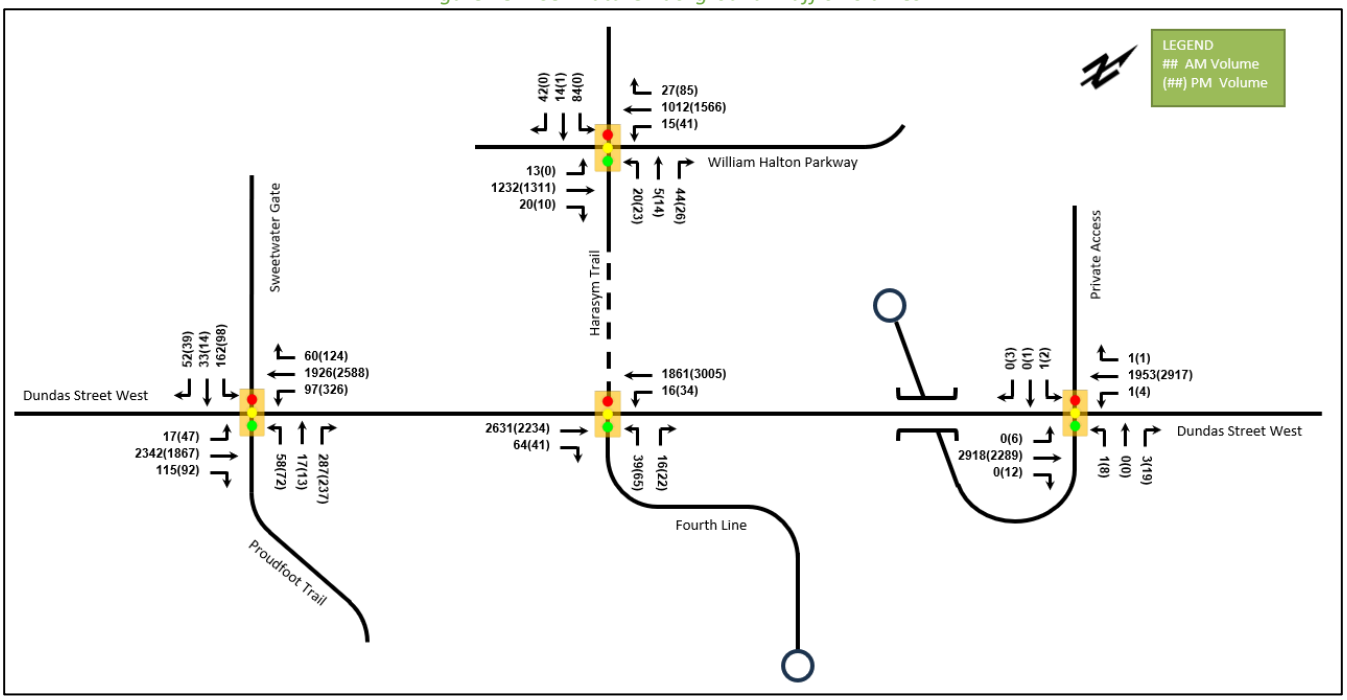


Figure 28: 2034 Future Background Traffic Volumes



5 Forecasting

5.1 Development-Generated Travel Demand

5.1.1 Trip Generation and Mode Shares

The ITE Trip Generation Manual 11th Edition has been reviewed to determine the appropriate trip generation rates and rate equations for each of the proposed land uses. The ITE vehicle trip generation rates and directional splits are summarized in Table 5. As indicated by Town staff, these rates are assumed to represent person trip rates. It is noted that the 150 units proposed within the Future Development block have been assumed to all be stacked townhomes for the purposes of the trip generation below in order to produce a conservative analysis.

Table 5: ITE Trip Generation Person Trip Rates

Land Use	ITE Land Use Code	# of dwelling units / 1000 sq ft GFA	Peak Hour	Vehicle Trip Rate	Directional Split		Method
Single Family Detached	210	35	AM	0.82	In	25%	Fitted Curve
					Out	75%	
			PM	1.06	In	63%	Fitted Curve
					Out	37%	
Single Family Attached	215	104	AM	0.47	In	25%	Fitted Curve
					Out	75%	
			PM	0.56	In	59%	Fitted Curve
					Out	41%	
Multifamily Housing (Low-Rise)	220	150	AM	0.51	In	24%	Fitted Curve
					Out	76%	
			PM	0.61	In	63%	Fitted Curve
					Out	37%	

The Single Family Detached, Single Family Attached, and Multifamily Housing (Low-Rise) land use categories were used to estimate trips for the 35 single-detached units, 104 townhouse units, and 150 stacked townhouse units, respectively. It should be noted that unit counts and block sizes are preliminary for the purposes of the study and will be subject to refinement at future submission stages.

Using the above person trip rates, the total trip generation for the development is summarized in Table 6.

Table 6: Total Person Trip Generation - ITE

Land Use	AM Peak Hour			PM Peak Hour		
	In	Out	Total	In	Out	Total
Single Family Detached	7	22	29	23	14	37
Single Family Attached	12	37	49	34	24	58
Multifamily Housing (Low-Rise)	17	52	69	54	32	86
Total Trips	**36**	**111**	**147**	**111**	**70**	**181**

Town of Oakville Transportation Master Plan Review identifies 2031 mode share targets for various scenarios. Scenario D has been considered for the subject development, as is consistent with other completed TISs in the area, and reflects growth in active transportation, transportation demand management, and local transit, and higher growth in inter-regional transit. The 20% transit mode split target identified under the previous TMP is still the goal, however, it is considered to be beyond 2031, and therefore the 12% transit mode split as shown in Scenario D will be used. It is noted that the Regional 2026 and 2031 mode share targets have also been evaluated. As the Oakville Projection Scenario D is assumed to be more accurate in describing the mode share changes in the Town of Oakville rather than the entire Region, the Scenario D Oakville Projections have been used for both the 2029 and 2034 future horizon analysis. The mode share percentages during peak hours are summarized in Table 7.

Table 7: Mode Share Assumptions

Travel Mode	2026 Regional Projection	2031 Regional Projection	2031 Oakville Projection Scenario D	2029 Applied	2034 Applied
Auto Driver	77%	72%	76%	76%	76%
Transit	15%	20%	12%	12%	12%
Active Transportation	5%	5%	6%	6%	6%
TDM	3%	3%	6%	6%	6%
Total	**100%**	**100%**	**100%**	**100%**	**100%**

Under this assumption, the ARGO property will generate the same two-way vehicle trips during the AM and PM peak hours in 2029 and 2034 future total analysis horizons. Using the above mode shares and person trip rates, the trips by mode have been projected. The trip generation by mode is summarized in Table 8 below.

Table 8: Trip Generation by Mode

Travel Mode	Mode Share	AM Peak Hour			PM Peak Hour		
		In	Out	Total	In	Out	Total
Auto Driver	76%	28	85	112	85	53	138
Transit	12%	4	14	17	14	7	21
Active Transportation	6%	2	6	9	6	5	11
TDM	6%	2	6	9	6	5	11
Total	**100%**	**36**	**111**	**147**	**111**	**70**	**181**

As shown above, 112 AM and 138 PM peak hour two-way vehicle trips are projected as a result of the proposed development.

It is noted that the site traffic generated is much lower than the total site traffic from background developments in the surrounding area considered in the study, as shown in Table 3 and Table 4 above. As such, the site traffic is anticipated to have a relatively minor impact on the transportation network, compared to the background traffic.

5.1.2 Trip Distribution

To understand the travel patterns of the developments, the aggregated Transportation Tomorrow Survey (TTS) data for trips of all purposes in Oakville during AM peak has been used as a reference. The trips to/from the south and east are larger as a large portion of the trips are destined to the southern part of Oakville and Toronto. The percentages of trips to each direction are kept constant between the 2029 and 2034 future analysis horizons. Table 9 summarizes the distribution.

Table 9: 2016 TTS Oakville Trip Distribution

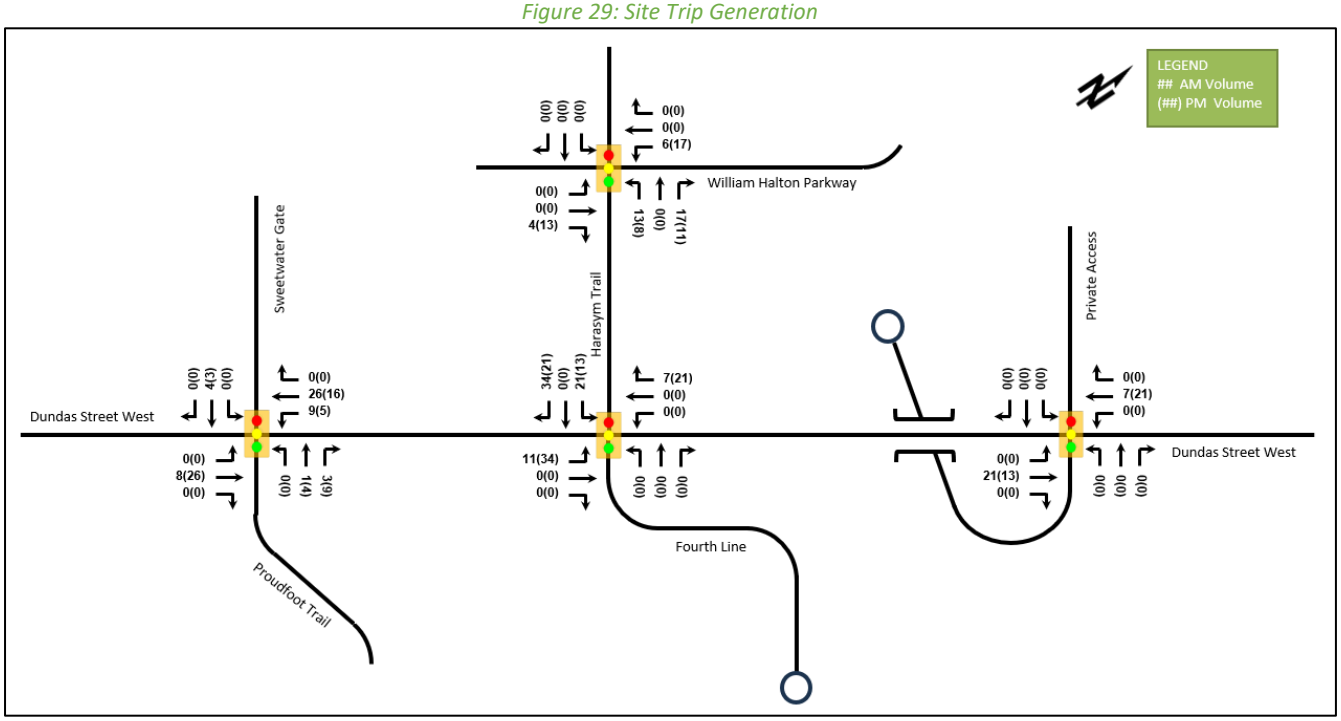
To/From	Percent of Trips
North	15%
South	40%
East	30%
West	15%
Total	100%

It is noted that the distribution presented above is consistent with the nearby *ARGO Neyagawa Transportation Impact Study (2023)* prepared by CGH Transportation.

5.1.3 Trip Assignment

Using the distribution outlined above, turning movement splits, intersection and access turning restrictions, and access to major transportation infrastructure, the trips generated by the site have been assigned to the Study Area road network. The resulting site trip generation for the subject development in both the 2029 and 2034 future analysis horizons is shown in Figure 29.

Figure 29: Site Trip Generation



5.1.4 Future Total Travel Demands

The site generated vehicle traffic has been combined with the 2029 and 2034 future background traffic volumes to estimate the future total traffic volumes. It is noted that the build-out of the subject development will result in the construction of Harasym Trail to Dundas Street. As such, the 2029 and 2034 future background volumes have been adjusted for their inclusion in the 2029 and 2034 future total volumes to consider the impact of this connection, as discussed in Section 4.1.4 above. Figure 30 and Figure 31 show the 2029 and 2034 future background volumes with the Harasym Trail connection to Dundas Street West at Fourth Line, respectively. The 2029 and 2034 future total traffic volumes are shown in Figure 32 and Figure 33, respectively.

Figure 30: 2029 Future Background Volumes with Harasym Trail Extension.

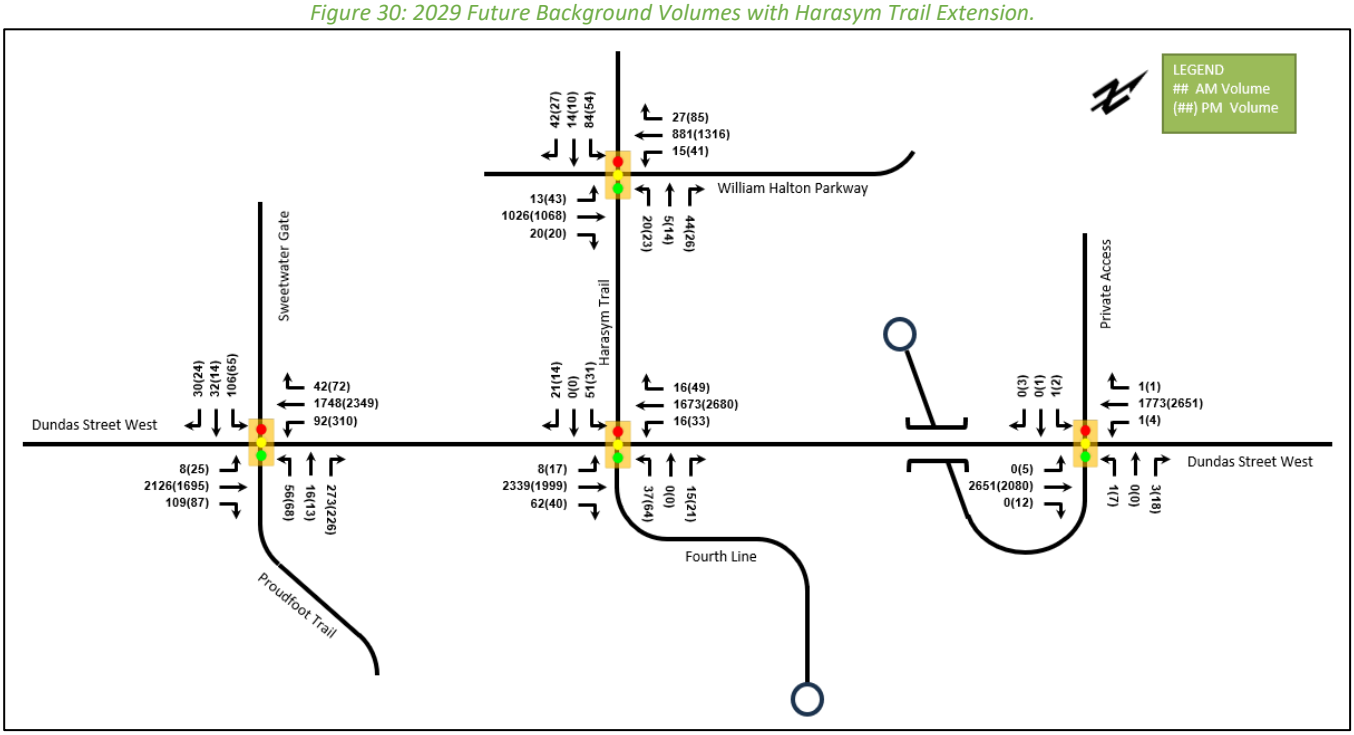


Figure 31: 2034 Future Background Volumes with Harasym Trail Extension

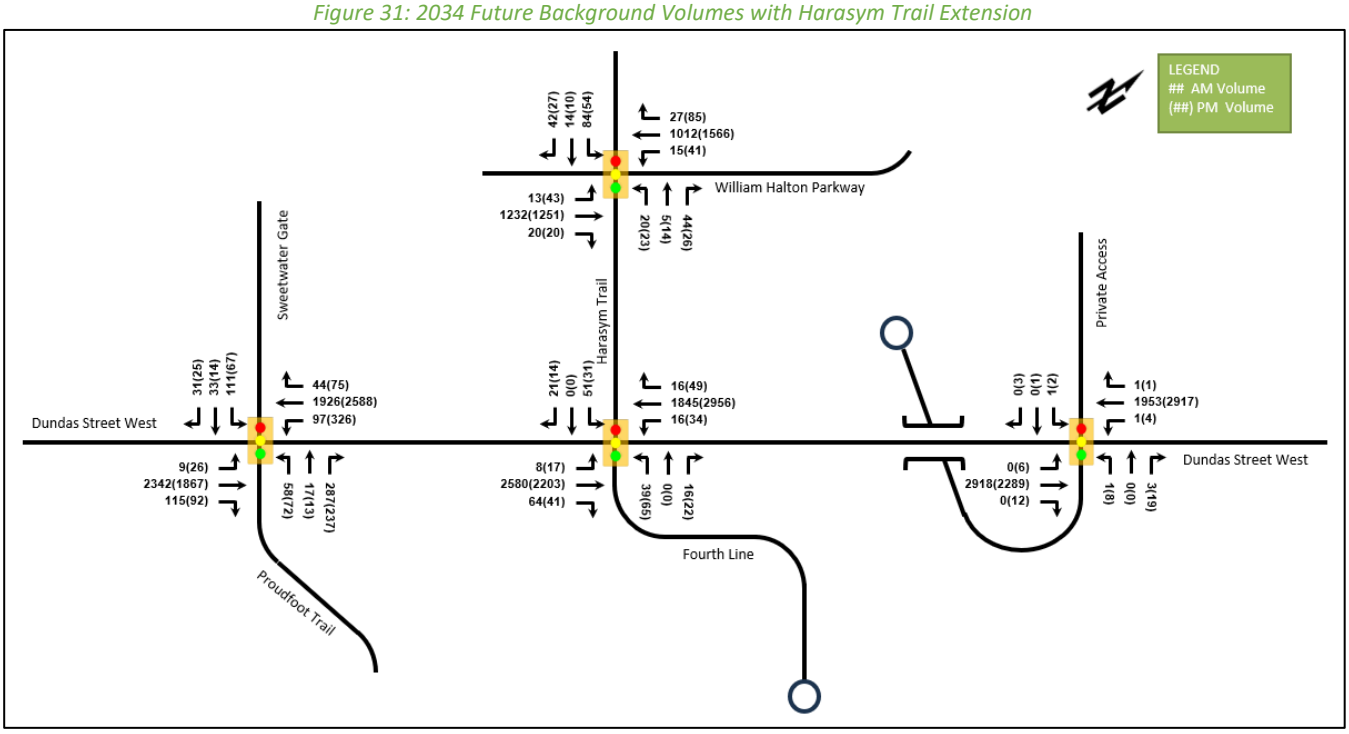


Figure 32: 2029 Future Total Traffic Volumes

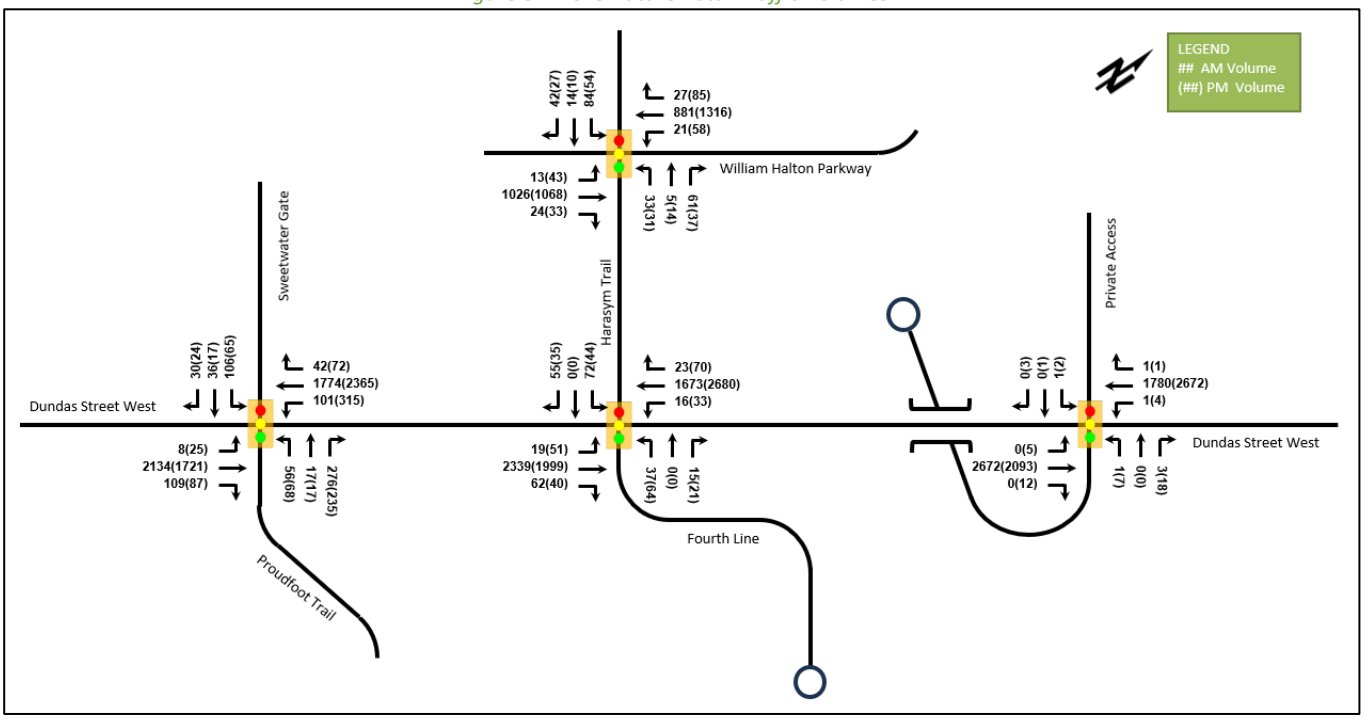
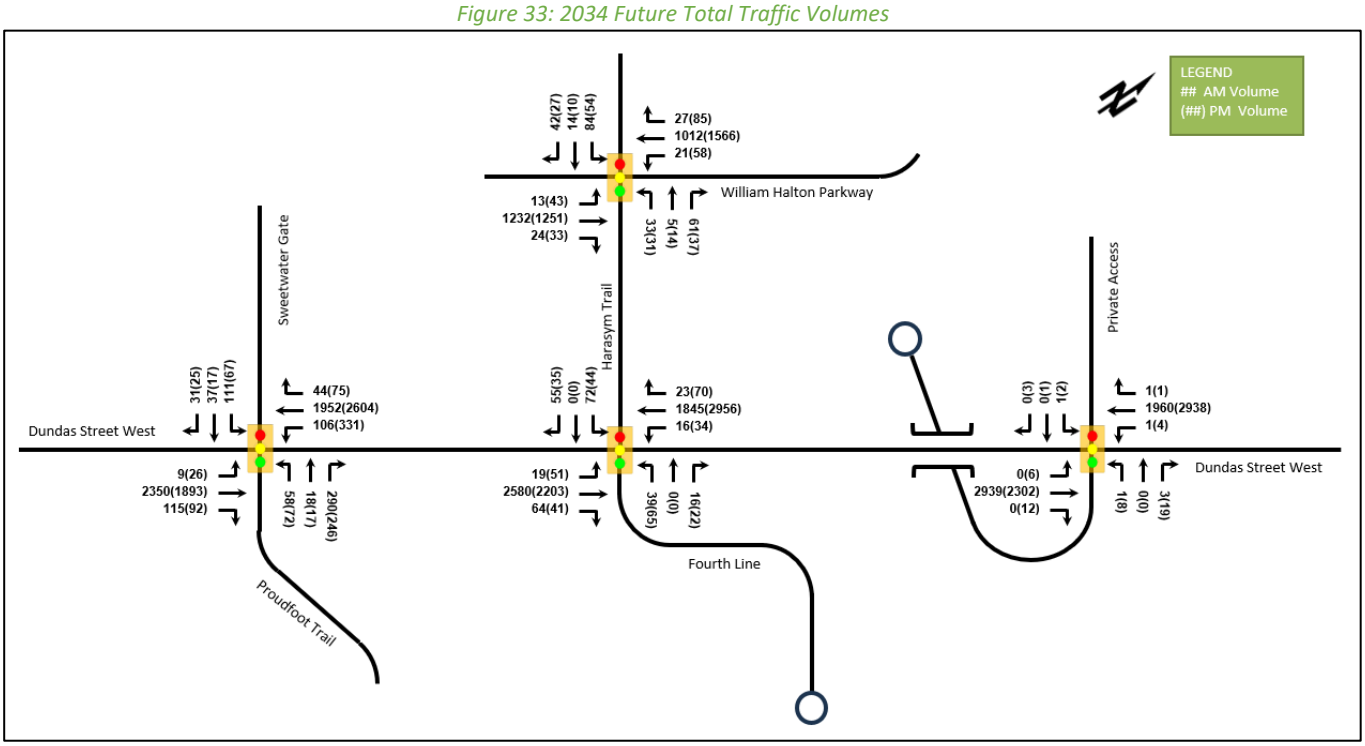


Figure 33: 2034 Future Total Traffic Volumes



6 Development Design

6.1 Development Roadway Cross-sections

Within the proposed development, a 19-metre connector/transit corridor (Harasym Trail) runs in the north-south direction with a connection to Dundas Street West on the south end and a connection to William Halton Parkway on the north end. The surrounding roadway network of 17-metre local roadways are also proposed within the development.

Roadway cross-sections from the *North Oakville Urban Design and Open Space Guidelines (2009)* have been considered for the proposed development's internal road network. The provided cross-sections for the 19-metre connector/transit corridor roadways and 17-metre local roadways have been used and are shown below in in Figure 34 and Figure 35, respectively.

Figure 34: 19-metre Connector/Transit Corridor Roadway Cross-section

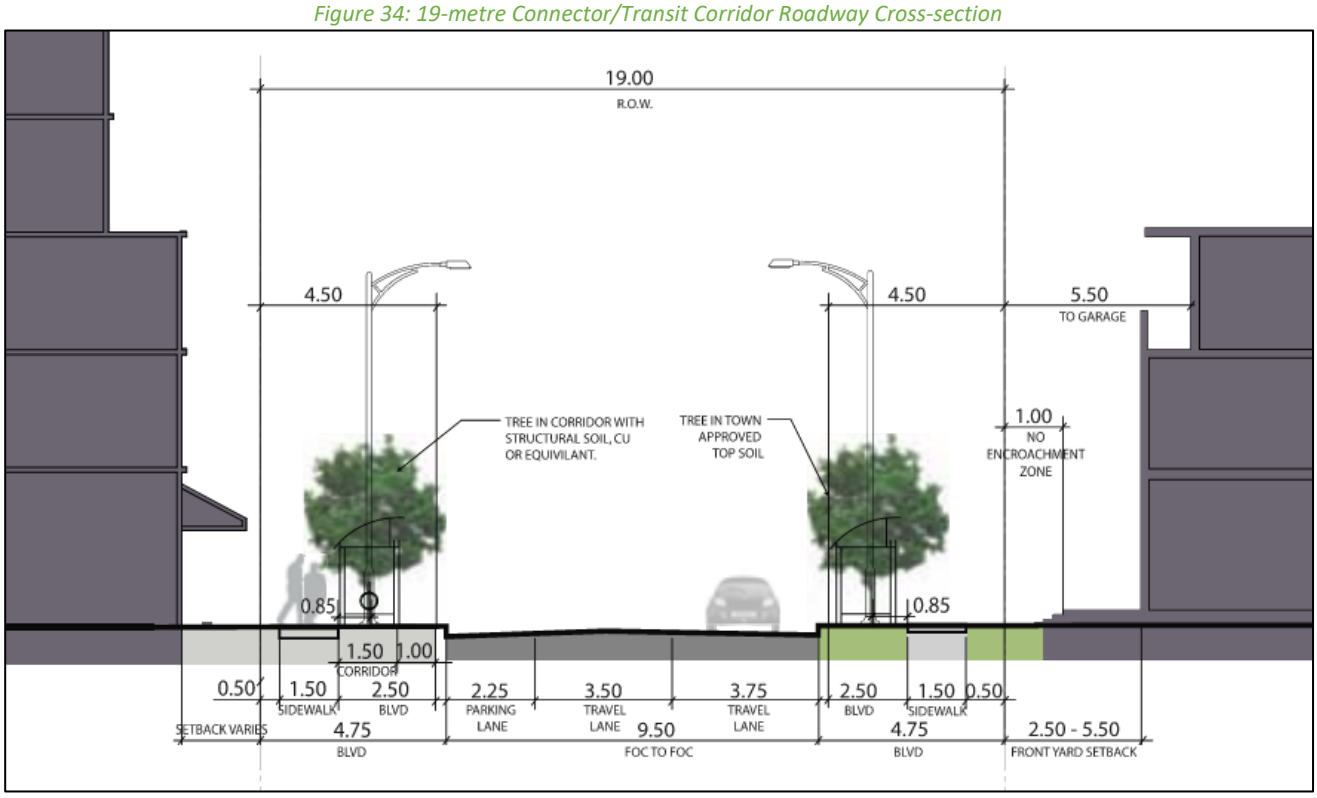
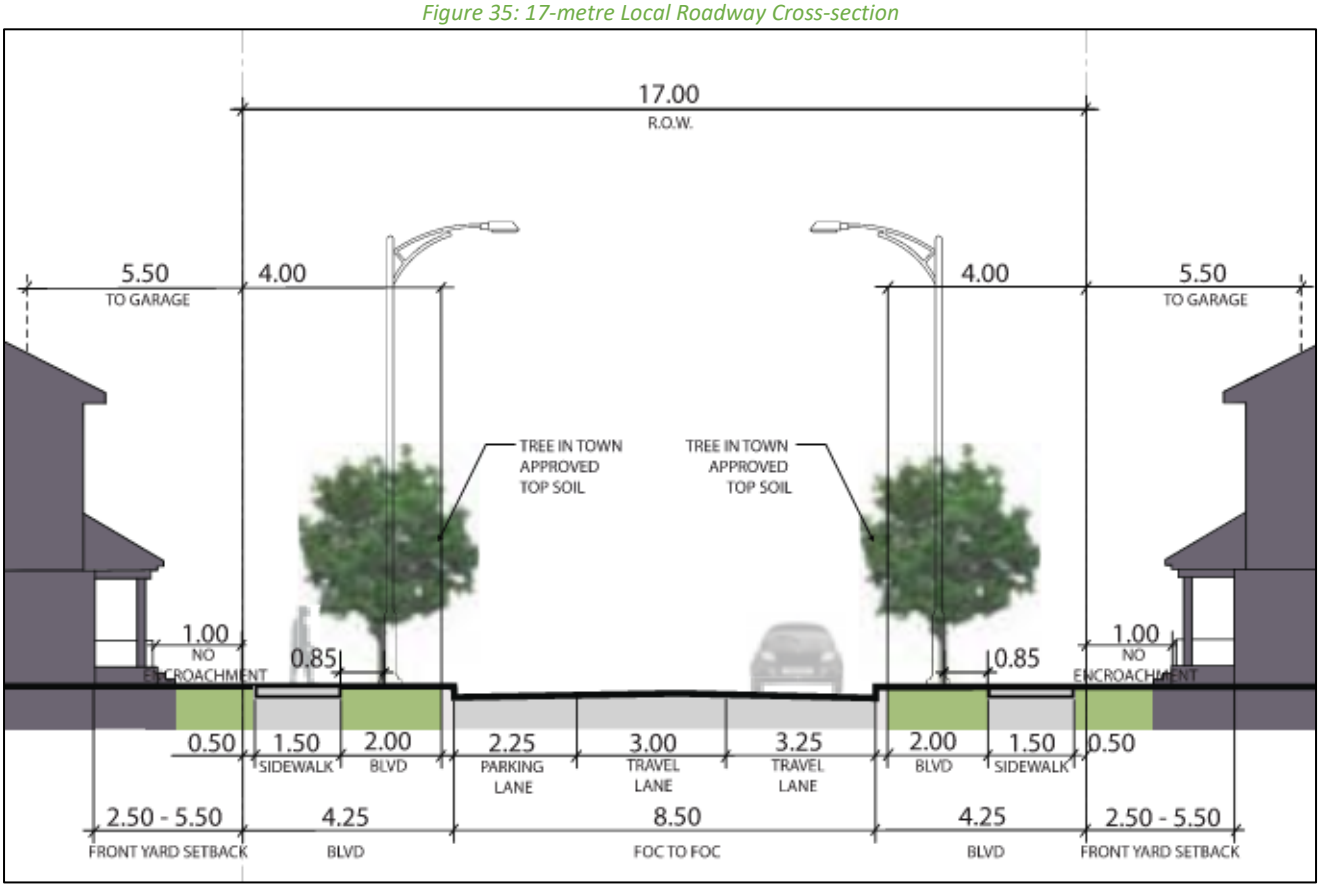


Figure 35: 17-metre Local Roadway Cross-section



As shown, one vehicle travel lane in each direction, sidewalks on both sides, and a parking lane are on one side of the cross-section are proposed for both the 19-metre connector and the 17-metre local roadways. The exact location of the parking lanes will be determined by driveway and fire hydrant locations.

Further details on the various roadway cross-sections can be found in Appendix F.

6.2 Site Circulation

Given the context of the proposed development within the surrounding road network and Study Area, negligible cut-through traffic/infiltration is expected to occur along the 17-metre local roads within the subject development. Some cut-through traffic from the Graydon Banning and Martillac Estates background development is expected along Harasym Trail and has been accounted for the future total volumes. As the subject development is bordered by Dundas Street West to the south and is in close proximity to Wiliam Halton Parkway to the north, drivers are more likely to travel along these roads with higher posted speed limits and fewer intersections than to contribute to cut-through traffic or infiltration within the proposed development. Additionally, it is noted that vehicles looking to travel between William Halton Parkway and Dundas Street are likely to do so along arterial roadways such as Third Line to the west and Neyagawa Boulevard to the east as opposed to along Harasym Trail.

Turning movement plans for all anticipated vehicle types will be provided for internal roads within the Future Development lands at the future site plan application stage. All public roads within the remainder of the site have been designed to Town of Oakville standards. Public road intersections are within the acceptable horizontal skew range of 70° to 110° identified in the Transportation Association of Canada's Geometric Design Guide for Canadian

Roads – Chapter 9, Section 9.7.2. As such, turning templates have not been prepared within the public road portion of the subject development.

6.3 Parking Supply

It is anticipated that the subject development will provide parking in accordance with the Town of North Oakville Zoning By-law requirements. The parking requirements for the single detached and townhouse units proposed through this application are summarized in Table 10 below.

Table 10: North Oakville Zoning By-Law Parking Requirements

Residential Land Use Category	Units/GFA	Parking Rate	Required Parking	Proposed Parking	Difference
Single Dwellings	35	2.00 / unit	70	269	+95
Townhouse Dwellings	104	1.00 / unit	104		
		Total	**174**		

As shown above, a minimum of 174 residential parking spaces are required, and 269 spaces are proposed.

Additionally, approximately 48 on-street parking spaces are proposed along the local and connector roadways throughout the subject development. The locations of these spaces are illustrated in the Parking Plan prepared by planner Glen Schnarr & Associates Inc. (GSAI) shown in Appendix G. It is noted that the Parking Plan and the parking ratios shown in Table 10 above includes the residential units part of a residential reserve block to ensure appropriate residential parking spaces will be proposed to support these units.

Within the Future Development Block, a mix of 150 stacked townhouses or mid-rise apartment units are proposed. As the Future Development area will be subject to a future Zoning By-law Amendment and Site Plan Application, the unit count is conceptual at this time. Parking spaces proposed to support these units will also be identified and refined as part of the future Zoning By-law Amendment and Site Plan Applications. It is however anticipated that these units will adhere to the following parking requirements identified in the Town of North Oakville Zoning By-law, as shown in Table 11 below.

Table 11: North Oakville Zoning By-Law Parking Requirements - Future Development Block

Residential Land Use Category	Parking Rate
Townhouse Dwellings	1.00 / unit minimum, 3.00 / unit maximum
Apartment Dwellings	1.25 / unit maximum
Apartment Dwellings (Visitor)	0.20 / unit visitor parking minimum

6.4 Traffic Calming

A preliminary traffic calming plan has been prepared in accordance with the North Oakville *Terms of Reference for Transportation Impact Studies and Transportation Functional Design Studies* for the portion of Harasym Trail within the subject development. Two traffic calming treatments are recommended along the north-south right-of-way on Harasym Trail at two local road intersections between Dundas Street West and William Halton Parkway. The specific design details and exact locations of the curb extensions will be determined at the detailed design stage and will be constructed as per Town of Oakville Standards. The preliminary Traffic Calming Plan is shown in Appendix H.

6.5 Construction Mitigation Plan / Traffic Control Plan

A draft preliminary construction traffic control plan has been prepared by DSEL included in the Conceptual Siltation Control Plan shown in Appendix I. It is assumed that a temporary right-in / right-out access will be provided on Dundas Street West with appropriate signage to support the access. All signage will be designed and installed in accordance with OTM Book 7 and will be confirmed by the contractor prior to implementation. It is noted that this plan is preliminary and will be further refined once a servicing contractor completes this as part of their pre-mobilization work prior to construction. Additionally, it is noted that on November 6, 2025, the Conceptual Siltation Control Plan was submitted to Town staff. On November 9, 2025, Town staff confirmed that what was submitted is appropriate to address this comment and that this comment is therefore considered cleared. Documentation of this exchange is included in Appendix B.

6.6 Access Analysis and Site Circulation

6.6.1 Access Configuration

The site access of Dundas Street West at Fourth Line / Harasym Trail is proposed to be a full movement signalized access, and the extension of Harasym Trail is proposed to consider the appropriate cross-sections found in Appendix F. Further intersection geometric configuration details are provided within Section 8 below.

6.6.2 Access Spacing

The access spacing for Dundas Street West at Fourth Line / Harasym Trail has been reviewed using Halton Region's *Access Management Guideline (2015).* The access is subject to the full movement access spacing requirement of 300 metres measured stop-bar to stop-bar.

The intersection of Dundas Street West and Fourth Line / Harasym Trail is located approximately 380 metres east of the full movement intersection of Dundas Street West at Sweetwater Gate / Proudfoot Trail, and approximately 610 metres west of the full movement intersection of Dundas Street West at Lions Valley Park Road. These measurements are from stop-bar to stop-bar.

It is noted that a right-in / right-out access is currently being constructed on Dundas Street West between Fourth Line / Harasym Trail and Sweetwater Gate / Proudfoot Trail. The access is approximately 220 metres west of Fourth Line / Harasym Trail and exceeds the right-in / right-out access spacing requirement of 115 metres.

6.6.3 Access Sight Distance

No significant vertical or horizontal curvatures are present on Dundas Street West that are anticipated to impose limitations on the sight lines at the proposed access.

7 Transportation Demand Management Plan

The proposed development includes 104 townhouse units, 35 single-detached units, and 1.24 hectares of Future Development area which is assumed to contain a mix of approximately 150 stacked townhouse and apartment units. To support a development with residential land uses, the most effective Transportation Demand Management (TDM) measures are the access and usability of transit, cycling, and pedestrian facilities.

The placement of sidewalks within the proposed development have been implemented based on the *North Oakville Urban Design and Open Space Guidelines (2009)* and are reflective of the roadway cross-sections discussed in Section 6.1 above. As such, sidewalks will be provided on both sides of the connector and local roads within the development. Further details regarding these planned facilities can be seen in their proposed cross-

section drawings in Appendix F. Additionally, a trail system is proposed to the north and east side of the subject development lands with direct connections to the road network active transportation facilities.

Outside of the subdivision, the pedestrian and cyclist facilities will connect to a broader and improved active transportation network provided by the Town and the Region as part of Dundas Street West, the completed portion of Harasym Trail, and the William Halton Parkway extension project. By the 2029 horizon, the active transportation infrastructure will include:

- Multi-use pathways on both sides of Dundas Street West
- Bike lanes on both sides of William Halton Parkway
- A sidewalk on the south side and a multi-use pathway on the north side of William Halton Parkway
- Sidewalks on both sides of Harasym Trail north of the development lands

Within the Study Area, Dundas Street is planned as a primary transit corridor, and William Halton Parkway and Harasym Trail are planned as secondary transit corridors. It has been assumed that bus stops will be present on the northwest and southeast corners of the intersection of William Halton Parkway and Harasym Trail.

Additionally, existing transit stops located on the northwest and southeast corners of Dundas Street at Fourth Line are assumed to remain unchanged in the future. As a result, the entire development is within a 400-metre walking distance of transit facilities.

The pedestrian circulation / transit facility plan prepared by GSAI is shown in Appendix J and a transit plan illustrating the 400-metre walking distance from transit stops is shown in Appendix K.

As requested by Town staff, a welcome package for new occupants and owners will be provided at the time of home sales that will include information on active transportation facilities. The contents of the welcome package will be approved by the Town of Oakville sustainable transportation program coordinator.

Transportation demand management measures within the Future Development lands will be explored in future Zoning By-law Amendment and Site Plan Application submissions to support a more detailed plan and will be discussed with the Town of Oakville sustainable transportation program coordinator.

8 Operational Analysis

To understand the operational characteristics of the Study Area intersections, Synchro (Version 11) has been used to model the Study Area intersections.

Peak Hour Factors (PHF) have been calculated based on the existing turning movement counts and will be applied to both existing and future analysis horizons. Peak Hour Factors can be seen in the collected traffic data shown in Appendix C.

The Heavy Vehicle percentage (HV %) has been calculated for each turning movement at the Study Area intersections. All Heavy Vehicle percentages calculated to be less than 2% were entered into the Synchro model as 2% in order to produce a conservative analysis. At intersections where no Heavy Vehicle percentage is available, 2% has been used.

Pedestrian volumes were provided for those intersections with turning movement count information in both existing and future analysis. Pedestrian volumes of 5 pedestrians/h and cycling volumes of 5 cyclists/h have been used at all new intersections in the future analysis horizons where applicable.

All other parameters have been coded using accepted best practices and default parameters where applicable.

LOS has been defined using the HCM definition for LOS at signalized intersections in Table 12 and for unsignalized intersections in Table 13.

Table 12: Level of Service Criteria for Signalized Intersections

Level of Service	Average Control Delay (Seconds/Vehicle)
A	≤10
B	>10 – 20
C	>20 – 35
D	>35 – 55
E	>55 – 80
F	>80

Table 13: Level of Service Criteria for Unsignalized Intersections

Level of Service	Average Control Delay (Second/Vehicle)
A	≤10
B	>10 – 15
C	>15 – 25
D	>25 – 35
E	>35 – 50
F	>50

Criteria for critical movements and critical intersections for both signalized and unsignalized intersections will be defined by both Town of Oakville and Halton Region guidelines for all Study Area intersections. The Town of Oakville Terms of Reference (TOR) for Transportation Impact Studies (TIS) and Transportation Functional Design Studies (2009) defines critical movements as v/c ratios of 0.85 for overall intersection operations, v/c ratios of 1.0 for individual through or turning movements, queues for individual movements that exceed available turning lane storage, and queues for through lanes that block vehicles from entering turning lanes. Critical movements at unsignalized intersections are defined as individual movements exceeding level of service (LOS) E based on average delay.

Halton Region Transportation Impact Study Guidelines (2011) define critical movements as v/c ratio of 0.85 or above for overall intersection operations, through movements, or shared through/turning movements, and v/c ratios of 0.95 or above for exclusive movements. Critical movements at unsignalized intersections are defined as individual movements exceeding LOS D based on average delay. Critical movements are also defined as individual movements with 95th percentile queue lengths projected to exceed available turning lane storage for signalized and unsignalized intersections.

Therefore, at signalized intersections, critical movements and intersections are identified using Halton Region's criteria for v/c ratios of 0.85 or above for overall intersection operations, through movements, and shared through/turning movements, and v/c ratios of 0.95 or above for exclusive movements. At unsignalized intersections, critical movements are also identified as individual movements exceeding LOS D based on average delay, as per Halton Region's criteria. Critical movements for both signalized and unsignalized intersections are also identified as individual movements with queues exceeding available turning lane storage and queues for through lanes blocking vehicles from entering turning lanes, as per the Town of Oakville's guidelines. Critical movements have been noted in red in the operational analysis tables below.

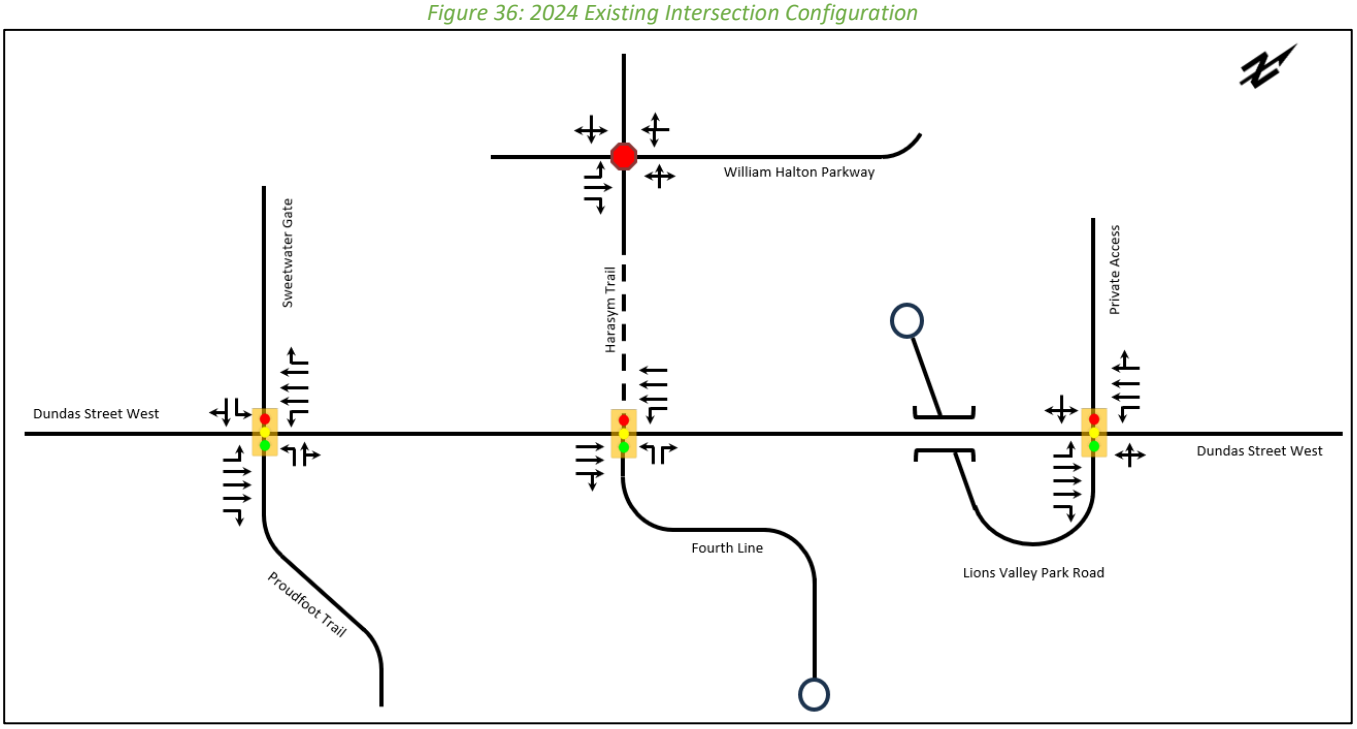
Mitigation measures will be considered at over-capacity movements (v/c ratios equal to or greater than 1.00, 95th percentile queues that exceed provided storage lengths, and LOS F at unsignalized intersections) identified in future horizon analysis.

8.1 2024 Existing Conditions

8.1.1 2024 Existing Intersection Configuration

The existing configurations at the Study Area intersections are illustrated in Figure 36 as described in Section 3.2.

Figure 36: 2024 Existing Intersection Configuration



8.1.2 2024 Existing Conditions Operational Analysis

The existing intersection volumes have been analyzed to establish a baseline condition and determine the impact of the subject development as well as the surrounding background developments on the Study Area road network. The Study Area intersections have been designed based on site visits and aerial photos and turning lane storage lengths have been rounded to the closest five-metre. The analyzed intersection configurations are reflective of those illustrated in Figure 36 above. As discussed in Section 3.2, the northbound left-turn lane at the intersection of Dundas Street West and Fourth Line has been modelled with a storage length of 50 meters with an assumed taper of 15 meters.

Table 14 summarizes the operational analysis of the 2024 existing conditions, and Table 15 summarizes the 95th percentile queue analysis. Appendix L contains the 2024 Existing Conditions Synchro worksheets.

Table 14: 2024 Existing Conditions Operational Analysis

Intersection	Mvmnt	AM Peak Hour			PM Peak Hour		
		LOS	V/C	Del (s)	LOS	V/C	Del. (s)
Dundas Street West at Fourth Line *(Signalized)*	EBT/R	A	0.59	3	B	0.46	11
	WBL	A	0.10	4	A	0.10	2
	WBT	A	0.40	2	A	0.58	3
	NBL	E	0.32	59	E	0.23	58
	NBR	D	0.01	55	E	0.01	55
	Overall	**A**	**0.57**	**3**	**A**	**0.59**	**7**
Dundas Street West at Sweetwater Gate / Proudfoot Trail *(Signalized)*	EBL	A	0.04	9	C	0.23	20
	EBT	B	0.61	14	B	0.56	18
	EBR	A	0.07	9	B	0.06	12
	WBL	C	0.48	22	C	0.77	30
	WBT	A	0.45	7	A	0.57	5
	WBR	A	0.02	5	A	0.04	3
	NBL	D	0.25	44	D	0.36	48
	NBT/R	D	0.69	55	D	0.20	46
	SBL	F	1.19	214	E	0.72	77
	SBT/R	D	0.12	43	D	0.12	45
	Overall	**B**	**0.72**	**19**	**B**	**0.78**	**15**
Dundas Street West at Lions Valley Park Road *(Signalized)*	EBL	A	0.00	0	A	0.06	3
	EBT	A	0.60	4	A	0.46	3
	EBR	A	0.00	0	A	0.01	2
	WBL	A	0.01	2	A	0.03	2
	WBT/R	A	0.41	3	A	0.59	4
	NBL/T/R	E	0.06	63	E	0.38	69
	SBL/T/R	E	0.01	62	E	0.05	65
	Overall	**A**	**0.56**	**4**	**A**	**0.58**	**4**
William Halton Parkway at Harasym Trail *(Unsignalized)*	EBL	A	0.00	7	A	0.00	7
	EBT	A	0.00	7	A	0.00	7
	EBR	A	0.02	7	A	0.00	7
	WBL/T/R	A	0.01	8	A	0.00	8
	NBL/T/R	A	0.01	8	A	0.02	8
	SBL/T/R	A	0.00	7	A	0.00	7
	Overall	**A**	**-**	**7**	**A**	**-**	**8**

Table 15: 2024 Existing Conditions Queue Lengths

Intersection	Mvmnt	Storage Dist (m)	AM Q (95th)	PM Q (95th)
Dundas Street West at Fourth Line *(Signalized)*	EBT/R	-	29	168
	WBL	90	1	2
	WBT	-	38	69
	NBL	50	15	11
	NBR	0	5	7

Intersection	Mvmnt	Storage Dist (m)	AM Q (95th)	PM Q (95th)
Dundas Street West at Sweetwater Gate / Proudfoot Trail *(Signalized)*	EBL	120	3	11
	EBT	-	137	139
	EBR	70	9	12
	WBL	115	24	#92
	WBT	-	65	148
	WBR	60	4	m7
	NBL	90	21	23
	NBT/R	-	60	20
	SBL	30	#49	22
	SBT/R	-	16	12
Dundas Street West at Lions Valley Park Road *(Signalized)*	EBL	50	0	1
	EBT	-	211	52
	EBR	10	0	0
	WBL	75	1	1
	WBT/R	-	111	79
	NBL/T/R	-	4	16
	SBL/T/R	-	2	5
William Halton Parkway at Harasym Trail *(Unsignalized)*	EBL	45	0	0
	EBT	-	0	0
	EBR	-	0	0
	WBL/T/R	-	0	0
	NBL/T/R	-	0	0
	SBL/T/R	-	0	0
Notes:	*#: 95th percentile queue exceeds capacity*			

As shown above, the study intersections generally operate well with acceptable overall intersection v/c ratios in both the AM and PM peaks under existing conditions.

The southbound left-turn movement at the intersection of Dundas Street West and Sweetwater Gate / Proudfoot Trail is shown to operate at an over-capacity v/c ratio in the AM peak period. As the southbound left-turn volume and the northbound through volume in the AM peak period are noted to be low, this Synchro result was noted as unexpected and a site visit on November 27, 2024 was undertaken to observe driver behaviour and operational conditions to understand if the Synchro results are reflective of actual conditions. As a result of the site visit, a sensitivity analysis has been performed in order to calibrate the existing AM Synchro results with the observed intersection operations noted in the field. Additional information regarding the site visit and resulting sensitivity analysis can be found in 8.1.2.1 below. Additionally, the 95th percentile queue for the southbound left-turn movement is also shown to exceed available storage distance in the AM peak period. However, it is noted that pavement markings on the southbound approach of this intersection were incomplete at the time of the study, and an accurate measurement of the storage distance could not be obtained. As such, a 30-metre storage distance was assumed for the purpose of the study. Given this assumption, adjustments to the storage distance will be made in future analysis horizons to reflect 95th percentile queue lengths, and no adjustments will be made for the existing conditions.

The 95th percentile queues of the eastbound and westbound through movements at the intersections of Dundas Street West at Sweetwater Gate / Proudfoot Trail and at Lions Valley Park Road are shown to block vehicles from entering adjacent turning lanes in one or both peak periods. This is expected due to high eastbound and

westbound through traffic along Dundas Street West in both peak periods. However, as no over-capacity movements are noted, no mitigation measures are proposed for the existing horizon.

8.1.2.1 Sensitivity Analysis – Dundas Street West at Sweetwater Gate / Proudfoot Trail

A sensitivity analysis has been conducted to address discrepancies noted between the Synchro analysis results and field observations at the intersection of Dundas Street West at Sweetwater Gate / Proudfoot Trail in the AM peak period.

As discussed in Section 8.1.2, Synchro results indicate a v/c ratio exceeding 1.0 with high delays for the southbound left-turn movement in the AM peak period. Given the relatively low southbound left-turn volumes, and the low conflicting northbound through volumes, a site visit was performed to validate the Synchro results. Field observations showed that the southbound left-turn movement operates well, with all vehicles completing their turns within a single cycle and experiencing minimal queuing and delays. The southbound left-turn and the northbound right-turn movements were observed to function simultaneously without conflicts.

The reported Synchro operational analysis results shown above, is likely the result of Synchro under-allocating green time to the southbound left-turn movement due to its low volumes. In order to better align the operational analysis results with the field observations, the southbound left-turn recall mode in Synchro was adjusted to maximum. This change ensures that the southbound left-turn phase receives sufficient green time and reflects the observed operation of the southbound left-turn movement.

Table 16 summarizes the operational analysis and Table 17 summarizes the 95th percentile queue analysis as a result of the sensitivity analysis. Appendix L contains the 2024 Existing Conditions Sensitivity Analysis Synchro worksheets.

Table 16: 2024 Existing Conditions Operational Analysis – Sensitivity Scenario

Intersection	Mvmnt	AM Peak Hour		
		LOS	V/C	Del (s)
Dundas Street West at Sweetwater Gate / Proudfoot Trail *(Signalized)*	EBL	B	0.05	14
	EBT	C	0.71	22
	EBR	B	0.08	13
	WBL	C	0.55	30
	WBT	B	0.51	11
	WBR	A	0.02	8
	NBL	D	0.16	36
	NBT/R	D	0.48	42
	SBL	D	0.48	40
	SBT/R	C	0.09	34
	Overall	B	**0.63**	**20**

Table 17: 2024 Existing Conditions Queue Lengths – Sensitivity Scenario

Intersection	Mvmnt	Storage Dist (m)	AM Q (95th)
Dundas Street West at Sweetwater Gate / Proudfoot Trail *(Signalized)*	EBL	120	3
	EBT	-	137
	EBR	70	9
	WBL	115	26
	WBT	-	65
	WBR	60	4
	NBL	90	21
	NBT/R	-	60
	SBL	30	35
	SBT/R	-	16

As shown above, with the adjustment of the southbound left-turn recall mode, the intersection of Dundas Street West at Sweetwater Gate / Proudfoot Trail is shown to operate with no over-capacity movements in the AM peak period and is reflective of observed intersection operation. The 95th percentile queue of the eastbound through movement is shown to block vehicles from entering adjacent turning lanes, which is expected due to high eastbound volumes on Dundas Street West in the AM peak period. As no over-capacity movements are noted, no mitigation measures are proposed.

Additionally, as discussed in Section 8.1.2, the storage distance of the southbound left-turn lane was assumed for the purpose of this study as pavement markings are not yet complete on the southbound approach. As such, adjustments to the southbound left-turn storage distance will be made in future analysis horizons to reflect 95th percentile queue lengths, and no adjustments will be made for the existing conditions.

8.2 Future Background Operational Analysis

8.2.1 Future Background Intersection Control

All intersections identified to be signalized in the existing conditions have been assumed to remain signalized in the future background analysis.

At the intersection of William Halton Parkway at Harasym Trail, the existing conditions reflect an unsignalized intersection, signal heads have been noted to be installed but not yet operational. As discussed in Section 4.1.3, the signals are expected to become operational upon the completion of the William Halton Parkway extension project. As such, this intersection is assumed to be signalized and has been analyzed as such in all future background analysis horizons.

8.2.2 Future Background Intersection Design

As discussed in Section 4.1, the Dundas Street West priority bus corridor and the William Halton Parkway extension projects are assumed to be completed before 2029 and therefore have been considered in both the 2029 and 2034 future background analysis horizons. These projects include the implementation of HOV lanes along Dundas Street West, the extension of William Halton Parkway east of Harasym Trail, and the signalization of the intersection of William Halton Parkway at Harasym Trail.

The intersection of William Halton Parkway at Harasym Trail has been modelled as a four-legged signalized intersection. As construction drawings were requested but not available at this intersection at the time of the study, it has been assumed that the eastbound and westbound approaches each consist of an auxiliary left-turn lane, a through lane, and a shared through / right-turn lane. The northbound and southbound approaches are assumed to remain consistent with existing conditions and consist of a shared left-turn / through / right turn lane.

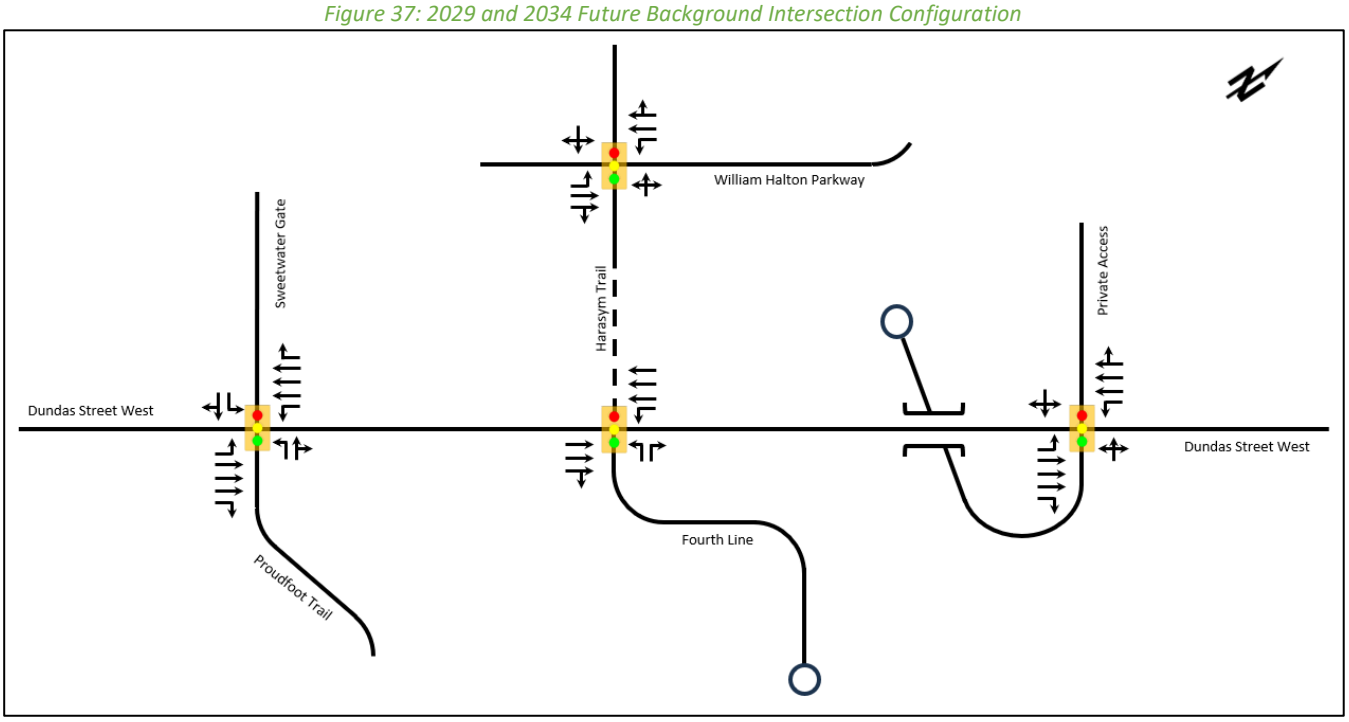
Amber Clearance, All Red Clearance, Walk, and Flash Don't Walk times were calculated using the methodology provided in OTM Book 12-Traffic Signals. A walk time of 7 seconds was assumed, and a pedestrian walking speed of 1.2 m/s was used. The minimum initial values for the Study Area intersections were taken from OTM Book 12.

To reflect the proposed future HOV lanes along Dundas Street West, a lane utilization factor of 0.80 has been applied to eastbound and westbound through movements in accordance with the Halton Region Transportation Impact Study Guidelines to account for the capacity reduction.

All other intersection configurations have been modelled to be consistent with those analyzed in the 2024 existing conditions.

The assumed 2029 and 2034 future background intersection configurations prior to any recommended mitigation measures are illustrated in Figure 37.

Figure 37: 2029 and 2034 Future Background Intersection Configuration



8.2.3 2029 Future Background Conditions Operational Analysis

The 2029 future background conditions have been examined to determine the future traffic conditions without the addition of the proposed development. This will isolate the impact of the subject development on the traffic network.

Table 18 summarizes the operational analysis of 2029 future background conditions and Table 19 summarizes the 95th percentile queue analysis. 2029 future background Synchro worksheets have been included in Appendix M.

Table 18: 2029 Future Background Conditions Operational Analysis

Intersection	Mvmnt	AM Peak Hour			PM Peak Hour		
		LOS	V/C	Del (s)	LOS	V/C	Del. (s)
Dundas Street West at Fourth Line *(Signalized)*	EBT/R	A	0.79	5	C	0.65	20
	WBL	B	0.17	11	A	0.27	8
	WBT	A	0.52	4	A	0.79	8
	NBL	E	0.35	56	E	0.47	56
	NBR	D	0.01	52	D	0.01	51
	Overall	**A**	**0.76**	**5**	**B**	**0.79**	**14**
Dundas Street West at Sweetwater Gate / Proudfoot Trail *(Signalized)*	EBL	C	0.24	22	F	0.81	96
	EBT	C	0.90	30	C	0.78	27
	EBR	B	0.09	13	B	0.07	15
	WBL	D	0.57	39	D	0.87	49
	WBT	B	0.64	12	A	0.77	7
	WBR	A	0.04	7	A	0.09	2
	NBL	D	0.18	36	D	0.31	44
	NBT/R	D	0.54	41	D	0.20	43
	SBL	F	0.99	112	F	0.96	125
	SBT/R	D	0.17	36	D	0.19	43
	Overall	**C**	**0.91**	**26**	**C**	**0.90**	**22**
AM Sensitivity Analysis: SBL max recall							
Dundas Street West at Sweetwater Gate / Proudfoot Trail (Signalized)	*EBL*	*C*	*0.25*	*24*	-	-	-
	EBT	*C*	*0.91*	*31*	-	-	-
	EBR	*B*	*0.09*	*13*	-	-	-
	WBL	*D*	*0.57*	*40*	-	-	-
	WBT	*B*	*0.65*	*13*	-	-	-
	WBR	*A*	*0.04*	*8*	-	-	-
	NBL	*D*	*0.18*	*35*	-	-	-
	NBT/R	*D*	*0.52*	*40*	-	-	-
	SBL	*F*	*0.93*	*96*	-	-	-
	SBT/R	*D*	*0.16*	*36*	-	-	-
	Overall	***C***	***0.91***	***27***	**-**	**-**	**-**
Dundas Street West at Lions Valley Park Road *(Signalized)*	EBL	A	0.00	0	A	0.09	5
	EBT	A	0.77	7	A	0.60	4
	EBR	A	0.00	0	A	0.01	2
	WBL	A	0.02	3	A	0.05	3
	WBT/R	A	0.53	4	A	0.76	6
	NBL/T/R	E	0.06	63	E	0.40	69
	SBL/T/R	E	0.01	62	E	0.08	65
	Overall	**A**	**0.73**	**6**	**A**	**0.74**	**5**
William Halton Parkway at Harasym Trial *(Signalized)*	EBL	A	0.05	6	A	0.00	0
	EBT/R	A	0.55	9	A	0.50	4
	WBL	A	0.08	6	A	0.18	4
	WBT/R	A	0.58	10	A	0.62	6
	NBL/T/R	C	0.20	24	C	0.42	34
	SBL/T/R	C	0.48	27	C	0.01	31
	Overall	**B**	**0.56**	**11**	**A**	**0.60**	**6**

Table 19: 2029 Future Background Conditions Queue Lengths

Intersection	Mvmnt	Storage Dist (m)	AM Q (95th)	PM Q (95th)
Dundas Street West at Fourth Line *(Signalized)*	EBT/R	-	m44	226
	WBL	90	2	3
	WBT	-	62	170
	NBL	50	20	28
	NBR	-	7	8
Dundas Street West at Sweetwater Gate / Proudfoot Trail *(Signalized)*	EBL	120	8	#38
	EBT	-	215	#222
	EBR	70	12	13
	WBL	115	29	m#109
	WBT	-	87	#252
	WBR	60	4	m6
	NBL	90	22	24
	NBT/R	-	66	21
	SBL	30	#80	39
	SBT/R	-	24	19
AM Sensitivity Analysis: SBL max recall				
Dundas Street West at Sweetwater Gate / Proudfoot Trail (Signalized)	*EBL*	*120*	*8*	-
	EBT	-	*215*	-
	EBR	*70*	*12*	-
	WBL	*115*	*28*	-
	WBT	-	*87*	-
	WBR	*60*	*4*	-
	NBL	*90*	*22*	-
	NBT/R	-	*66*	-
	SBL	*30*	*#79*	-
	SBT/R	-	*24*	-
Mitigation: SBL storage extension to 80 m				
Dundas Street West at Sweetwater Gate / Proudfoot Trail (Signalized)	*EBL*	*120*	*8*	*#38*
	EBT	-	*215*	*#222*
	EBR	*70*	*12*	*13*
	WBL	*115*	*28*	*m#109*
	WBT	-	*87*	*#252*
	WBR	*60*	*4*	*m6*
	NBL	*90*	*22*	*24*
	NBT/R	-	*66*	*21*
	SBL	*80*	*#79*	*39*
	SBT/R	-	*24*	*19*
Dundas Street West at Lions Valley Park Road *(Signalized)*	EBL	50	0	1
	EBT	-	#392	84
	EBR	10	0	0
	WBL	75	1	1
	WBT/R	-	170	150
	NBL/T/R	-	4	17
	SBL/T/R	-	2	6

Intersection	Mvmnt	Storage Dist (m)	AM Q (95th)	PM Q (95th)
William Halton Parkway at Harasym Trial *(Signalized)*	EBL	45	5	0
	EBT/R	-	104	51
	WBL	45	6	6
	WBT/R	-	96	72
	NBL/T/R	-	13	15
	SBL/T/R	-	28	1
Notes:	*# 95th percentile queue exceeds capacity*			

As shown above, the addition of background growth, traffic generated from surrounding developments, and the volume adjustments to reflect the extension of William Halton Parkway results in the Study Area intersections operating slightly worse than existing conditions.

At the intersection of Dundas Street West and Sweetwater Gate / Proudfoot Trail, the eastbound through movement is expected to operate with a v/c ratio equal to or greater than 0.85 in the AM peak period, and the southbound left-turn movement is expected to operate with a v/c ratio equal to or greater than 0.95 in both AM and PM peak periods. This is expected due to high volumes anticipated at this intersection. As no over-capacity movements are noted, no mitigation measures are proposed. As discussed in Section 8.1.2.1, a sensitivity analysis was performed on the southbound left-turn movement in the existing conditions AM peak period to better reflect the intersection operations as noted in field observations. This adjustment to the intersection signal timing has also been applied in the 2029 future background analysis horizon. With the adjustment of the recall mode to maximum, the southbound left-turn is expected to operate with a v/c ratio less than 0.95 in the AM peak period. Following the results of the sensitivity analysis, the southbound left-turn storage distance has been extended to 80 metres as a mitigation measure to accommodate the 95th percentile queue length.

Additionally, the 95th percentile queue lengths of the eastbound and westbound through movements at all intersections along Dundas Street West and William Halton Parkway are expected to block vehicles from entering adjacent turning lanes in one or both peak periods. This is expected due to high eastbound and westbound through traffic along Dundas Street West and William Halton Parkway during both peak periods. As no over-capacity movements are noted for these movements, no mitigation measures are proposed.

8.2.4 2034 Future Background Conditions Operational Analysis

The 2034 future background conditions have been examined to determine the future traffic conditions without the addition of the proposed development. This will isolate the impact of the subject development on the traffic network.

Table 20 summarizes the operational analysis of the 2034 future background conditions and Table 21 summarizes the 95th percentile queue analysis. 2034 future background Synchro worksheets have been included in Appendix N.

Additionally, it is noted that the recommended mitigation measures analyzed and identified in the 2029 future background analysis have been applied.

Table 20: 2034 Future Background Conditions Operational Analysis

Intersection	Mvmnt	AM Peak Hour			PM Peak Hour		
		LOS	V/C	Del (s)	LOS	V/C	Del. (s)
Dundas Street West at Fourth Line *(Signalized)*	EBT/R	A	0.87	6	C	0.71	23
	WBL	B	0.17	16	B	0.28	10
	WBT	A	0.58	4	B	0.87	10
	NBL	E	0.36	56	E	0.48	56
	NBR	D	0.01	52	D	0.01	51
	Overall	**A**	**0.83**	**6**	**B**	**0.86**	**16**
Dundas Street West at Sweetwater Gate / Proudfoot Trail *(Signalized)*	EBL	C	0.32	30	F	0.83	102
	EBT	D	1.00	47	C	0.90	34
	EBR	B	0.10	14	B	0.08	17
	WBL	D	0.60	46	D	0.85	47
	WBT	B	0.71	14	A	0.85	8
	WBR	A	0.04	8	A	0.10	1
	NBL	D	0.18	35	D	0.32	44
	NBT/R	D	0.57	41	D	0.21	43
	SBL	F	1.03	125	F	1.03	148
	SBT/R	D	0.18	35	D	0.19	43
	Overall	**C**	**1.00**	**35**	**C**	**0.92**	**25**
AM Sensitivity Analysis: SBL max recall							
Dundas Street West at Sweetwater Gate / Proudfoot Trail (Signalized)	*EBL*	*C*	*0.32*	*30*	-	-	-
	EBT	*D*	*1.00*	*47*	-	-	-
	EBR	*B*	*0.10*	*14*	-	-	-
	WBL	*D*	*0.60*	*46*	-	-	-
	WBT	*B*	*0.71*	*14*	-	-	-
	WBR	*A*	*0.04*	*8*	-	-	-
	NBL	*D*	*0.18*	*35*	-	-	-
	NBT/R	*D*	*0.57*	*41*	-	-	-
	SBL	*F*	*1.03*	*125*	-	-	-
	SBT/R	*D*	*0.18*	*35*	-	-	-
	Overall	***C***	***1.00***	***35***	**-**	**-**	**-**
Mitigation: AM & PM protected + permitted SBL, signal timing optimization, WBL storage of 130 m							
Dundas Street West at Sweetwater Gate / Proudfoot Trail (Signalized)	*EBL*	*C*	*0.32*	*31*	*F*	*0.83*	*109*
	EBT	*E*	*1.03*	*55*	*F*	*1.16*	*117*
	EBR	*B*	*0.09*	*14*	*C*	*0.06*	*24*
	WBL	*D*	*0.59*	*43*	*C*	*0.68*	*34*
	WBT	*B*	*0.73*	*14*	*B*	*0.92*	*15*
	WBR	*A*	*0.04*	*3*	*A*	*0.10*	*2*
	NBL	*D*	*0.28*	*45*	*D*	*0.41*	*49*
	NBT/R	*E*	*0.73*	*58*	*D*	*0.26*	*47*
	SBL	*F*	*0.94*	*89*	*D*	*0.64*	*47*
	SBT/R	*C*	*0.19*	*34*	*D*	*0.15*	*37*
	Overall	***D***	***1.02***	***39***	***D***	***0.99***	***54***

Intersection	Mvmnt	AM Peak Hour			PM Peak Hour		
		LOS	V/C	Del (s)	LOS	V/C	Del. (s)
Dundas Street West at Lions Valley Park Road *(Signalized)*	EBL	A	0.00	0	A	0.11	6
	EBT	A	0.85	9	A	0.66	4
	EBR	A	0.00	0	A	0.01	2
	WBL	A	0.02	3	A	0.08	4
	WBT/R	A	0.59	4	A	0.84	8
	NBL/T/R	E	0.06	63	E	0.44	70
	SBL/T/R	E	0.01	62	E	0.08	65
	Overall	**A**	**0.80**	**7**	**A**	**0.82**	**7**
William Halton Parkway at Harasym Trial *(Signalized)*	EBL	A	0.07	6	A	0.00	0
	EBT/R	B	0.66	11	A	0.58	5
	WBL	A	0.11	7	A	0.23	6
	WBT/R	B	0.67	11	A	0.73	7
	NBL/T/R	C	0.25	25	D	0.50	35
	SBL/T/R	C	0.48	27	C	0.01	31
	Overall	**B**	**0.62**	**12**	**A**	**0.70**	**7**

Table 21: 2034 Future Background Conditions Queue Lengths

Intersection	Mvmnt	Storage Dist (m)	AM Q (95th)	PM Q (95th)
Dundas Street West at Fourth Line *(Signalized)*	EBT/R	-	m44	248
	WBL	90	2	3
	WBT	-	75	232
	NBL	50	20	28
	NBR	-	7	8
Dundas Street West at Sweetwater Gate / Proudfoot Trail *(Signalized)*	EBL	120	10	#38
	EBT	-	#278	#259
	EBR	70	13	15
	WBL	115	30	m#99
	WBT	-	95	#317
	WBR	60	m4	m5
	NBL	90	22	25
	NBT/R	-	71	21
	SBL	80	#85	41
	SBT/R	-	27	19
AM Sensitivity Analysis: SBL max recall				
Dundas Street West at Sweetwater Gate / Proudfoot Trail (Signalized)	*EBL*	*120*	*10*	-
	EBT	-	*#278*	-
	EBR	*70*	*13*	-
	WBL	*115*	*30*	-
	WBT	-	*95*	-
	WBR	*60*	*m4*	-
	NBL	*90*	*22*	-
	NBT/R	-	*71*	-
	SBL	*80*	*#85*	-
	SBT/R	-	*27*	-

Intersection	Mvmnt	Storage Dist (m)	AM Q (95th)	PM Q (95th)
Mitigation: AM & PM protected + permitted SBL, signal timing optimization, WBL storage of 130 m				
Dundas Street West at Sweetwater Gate / Proudfoot Trail (Signalized)	*EBL*	*120*	*#14*	*#35*
	EBT	*-*	*#345*	*#265*
	EBR	*70*	*13*	*9*
	WBL	*130*	*#35*	*m#128*
	WBT	*-*	*#222*	*#359*
	WBR	*60*	*m2*	*m5*
	NBL	*80*	*21*	*25*
	NBT/R	*-*	*59*	*23*
	SBL	*80*	*#46*	*26*
	SBT/R	*-*	*23*	*17*
Dundas Street West at Lions Valley Park Road *(Signalized)*	EBL	50	0	2
	EBT	-	#459	106
	EBR	10	0	0
	WBL	75	1	1
	WBT/R	-	203	210
	NBL/T/R	-	4	18
	SBL/T/R	-	2	6
William Halton Parkway at Harasym Trial *(Signalized)*	EBL	45	5	0
	EBT/R	-	137	67
	WBL	45	6	7
	WBT/R	-	#123	104
	NBL/T/R	-	15	17
	SBL/T/R	-	28	1
Notes:	*# 95th percentile queue exceeds capacity*			

As shown above, the addition of background growth to reflect the 2034 horizon, traffic generated from surrounding developments, and the volume adjustments to reflect the extension of William Halton Parkway results in the Study Area intersections operating slightly worse than the mitigated 2029 future background analysis.

At the intersection of Dundas Street West and Sweetwater Gate / Proudfoot Trail, the eastbound through movement is expected to operate at a v/c ratio greater than or equal to 0.85 in both peak periods and the westbound through movement is expected to operate at a v/c ratio greater than or equal to 0.85 in the PM peak period. Additionally, the southbound left-turn movement is also expected to operate at a v/c ratio greater than or equal to 1.00 in both peak periods. It is noted that the sensitivity analysis shows no improvement of the southbound left-turn movement or overall intersection operations with the adjustment of the recall mode in the AM peak period. This suggests that sufficient volume has been reached for the maximum southbound left-turn green time to be provided, and the adjustment of the recall mode no longer influences the results of the analysis. As such, potential mitigation measures have been explored for this intersection. A protected and permitted left-turn phase has been added to the southbound left-turn in both the AM and PM peak periods with signal timing optimization, and the westbound left-turn lane storage has been extended to 130 metres. While these measures are shown to slightly improve the southbound left-turn operations, they are anticipated to cause or worsen critical and over-capacity v/c ratios for the eastbound and westbound through movements along Dundas Street West. It is therefore recommended that the Region continue to monitor the performance and signal timing of this intersection as required, and implement adjustments based on the need to prioritize regional versus individual movements in order to achieve future operational targets.

At the intersection of Dundas Street West and Fourth Line, the eastbound shared through / right-turn movement is expected to operate at a v/c ratio greater than or equal to 0.85 in the AM peak period, and the westbound through movement is expected to operate at a v/c ratio greater than or equal to 0.85 in the PM peak period. The overall intersection is also expected to operate at a v/c ratio greater than or equal to 0.85 during the PM peak period. The eastbound through movement at the intersection of Dundas Street West at Lions Valley Park Road is also expected to operate at a v/c ratio greater than or equal to 0.85 in the AM peak period. This is expected due to high eastbound and westbound volumes on Dundas Street West in both peak periods. As no over-capacity movements are noted, no mitigation measures are proposed for these movements.

Additionally, the 95th percentile queue lengths of the eastbound and westbound through movements at all intersections along Dundas Street West and William Halton Parkway are expected to block vehicles from entering adjacent turning lanes in one or both peak periods. This is expected due to high eastbound and westbound through traffic along Dundas Street West and William Halton Parkway during both peak periods. As no over-capacity movements are noted for these movements, no mitigation measures are proposed.

It is also noted that this analysis is likely to be conservative at the Study Area intersections along Dundas Street West. As discussed in Section 4.1.2, a lane utilization factor of 0.80 has been applied to Dundas Street West in the eastbound and westbound through movements to account for the reduced capacity anticipated with the implementation of HOV lanes. However, no adjustments have been made to reduce traffic volumes resulting from the HOV usage within the analysis as this reduction is unknown. As a result, the analysis represents a worst-case scenario where some critical movements along Dundas Street West can be expected.

8.3 Future Total Operational Analysis

8.3.1 Future Total Intersection Control

All intersections identified to be signalized in the future background conditions have been assumed to remain signalized in the future total analysis.

8.3.2 Future Total Intersection Configuration

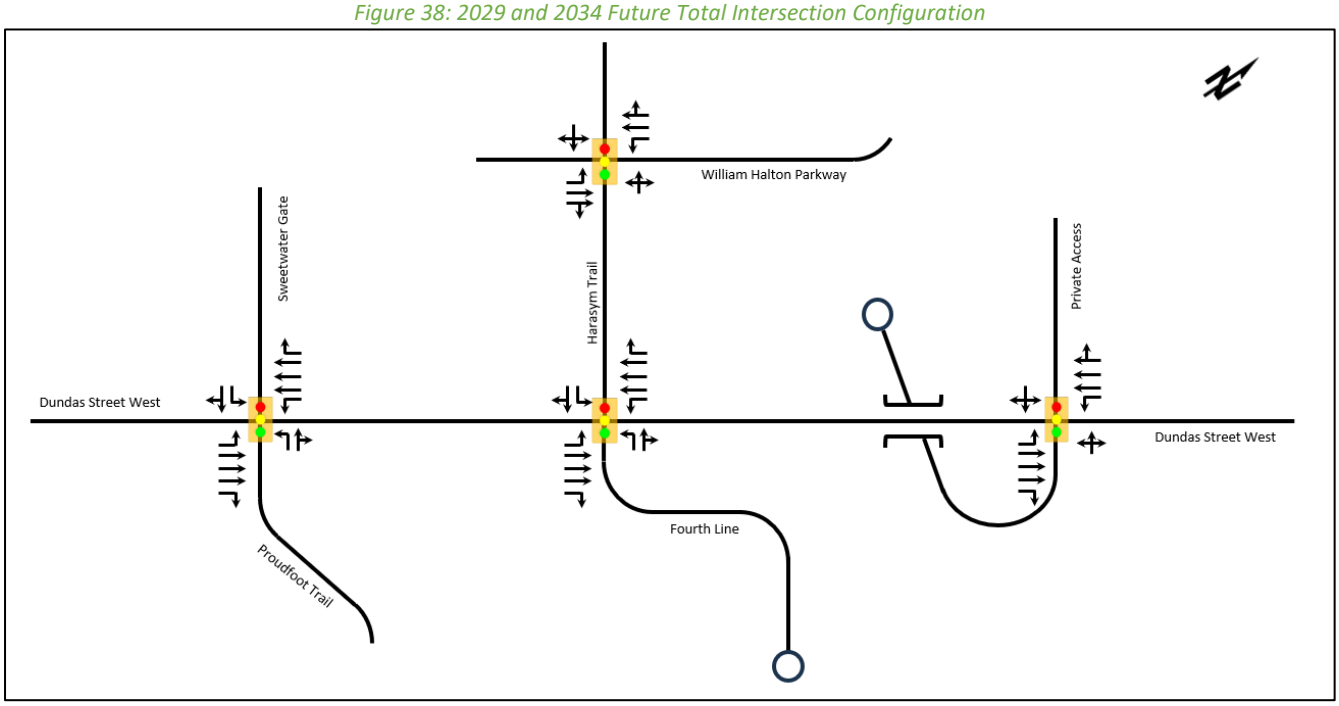
Similar to the intersection configurations considered in the future background analysis horizons, all the improvement projects discussed in Section 4.1 above have been assumed to be completed and therefore have been considered in both the 2029 and 2034 future analysis horizons. In addition to the future background improvements, the future total analysis includes the extension of Harasym Trail to form the north leg at the intersection of Dundas Street West and Fourth Line.

The intersection of Dundas Street West and Fourth Line / Harasym Trail has been modelled as a four-legged signalized intersection. As discussed in Section 3.2, an auxiliary eastbound left-turn lane and an auxiliary westbound right-turn lane has been reserved on Dundas Street West and as such, has been assumed to be operational upon completion of the Harasym Trail connection. The eastbound approach consists of an auxiliary left-turn lane, two through lanes, and a shared through / right-turn lane. The westbound approach consists of an auxiliary left-turn lane, three through lanes, and an auxiliary right-turn lane. The northbound and southbound approaches each consists of an auxiliary left-turn lane and a shared through / right-turn lane. Amber Clearance, All Red Clearance, Walk, and Flash Don’t Walk times for the southbound were assumed to match the timings indicated in the signal timing plan of the northbound approach.

All other intersection configurations have been modelled to be consistent with those analyzed in the future background configurations.

The 2029 and 2034 future total intersection configuration is illustrated in Figure 38.

Figure 38: 2029 and 2034 Future Total Intersection Configuration



8.3.3 2029 Future Total Conditions Operational Analysis

The proposed development's trip generation has been added to the 2029 future background traffic volumes to project the impact of the new traffic on the Study Area road network.

Table 20 summarizes the operational analysis of 2029 future total conditions and Table 21 summarizes the 95th percentile queue analysis. 2029 future total Synchro worksheets have been included in Appendix O.

Additionally, it is noted that the recommended mitigation measures analyzed and identified in the 2029 future background analysis have been applied.

Table 22: 2029 Future Total Conditions Operational Analysis

Intersection	Mvmnt	AM Peak Hour			PM Peak Hour		
		LOS	V/C	Del (s)	LOS	V/C	Del. (s)
Dundas Street West at Fourth Line / Harasym Trail *(Signalized)*	EBL	A	0.17	3	F	0.85	86
	EBT/R	A	0.80	5	B	0.65	19
	WBL	B	0.17	12	A	0.27	8
	WBT	A	0.54	5	A	0.78	8
	WBR	A	0.02	2	A	0.05	2
	NBL	D	0.34	54	E	0.54	58
	NBT/R	D	0.01	50	D	0.01	50
	SBL	E	0.63	62	D	0.37	53
	SBT/R	D	0.04	50	D	0.02	50
	Overall	**A**	**0.78**	**7**	**B**	**0.83**	**14**

Intersection	Mvmnt	AM Peak Hour			PM Peak Hour		
		LOS	V/C	Del (s)	LOS	V/C	Del. (s)
Dundas Street West at Sweetwater Gate / Proudfoot Trail *(Signalized)*	EBL	B	0.11	13	D	0.45	41
	EBT	C	0.83	22	C	0.77	25
	EBR	B	0.09	10	B	0.07	14
	WBL	D	0.62	44	D	0.87	52
	WBT	A	0.60	9	A	0.75	5
	WBR	A	0.03	5	A	0.05	1
	NBL	D	0.23	41	D	0.35	47
	NBT/R	D	0.67	50	D	0.23	45
	SBL	F	1.10	169	F	0.99	153
	SBT/R	D	0.15	40	D	0.16	45
	Overall	**C**	**0.88**	**23**	**C**	**0.91**	**20**
AM Sensitivity Analysis: SBL max recall							
Dundas Street West at Sweetwater Gate / Proudfoot Trail (Signalized)	*EBL*	*B*	*0.13*	*18*	-	-	-
	EBT	*C*	*0.92*	*32*	-	-	-
	EBR	*B*	*0.09*	*13*	-	-	-
	WBL	*D*	*0.62*	*46*	-	-	-
	WBT	*B*	*0.66*	*12*	-	-	-
	WBR	*A*	*0.03*	*7*	-	-	-
	NBL	*D*	*0.18*	*35*	-	-	-
	NBT/R	*D*	*0.54*	*40*	-	-	-
	SBL	*E*	*0.64*	*57*	-	-	-
	SBT/R	*D*	*0.12*	*35*	-	-	-
	Overall	***C***	***0.82***	***25***	**-**	**-**	**-**
Dundas Street West at Lions Valley Park Road *(Signalized)*	EBL	A	0.00	0	A	0.09	5
	EBT	A	0.78	7	A	0.60	4
	EBR	A	0.00	0	A	0.01	2
	WBL	A	0.02	3	A	0.06	3
	WBT/R	A	0.54	4	A	0.77	6
	NBL/T/R	E	0.06	63	E	0.40	69
	SBL/T/R	E	0.01	62	E	0.08	65
	Overall	**A**	**0.73**	**6**	**A**	**0.75**	**5**
William Halton Parkway at Harasym Trial *(Signalized)*	EBL	A	0.06	6	B	0.34	11
	EBT/R	A	0.56	9	A	0.53	6
	WBL	A	0.11	7	A	0.27	7
	WBT/R	A	0.59	10	A	0.67	8
	NBL/T/R	C	0.34	25	C	0.35	28
	SBL/T/R	C	0.46	27	C	0.52	30
	Overall	**B**	**0.55**	**11**	**A**	**0.65**	**9**

Table 23: 2029 Future Total Conditions Queue Lengths

Intersection	Mvmnt	Storage Dist (m)	AM Q (95th)	PM Q (95th)
Dundas Street West at Fourth Line / Harasym Trail *(Signalized)*	EBL	70	m1	m#22
	EBT/R	-	42	215
	WBL	90	2	4
	WBT	-	79	180
	WBR	65	2	5
	NBL	50	19	28
	NBT/R	-	0	0
	SBL	40	32	21
	SBT/R	-	11	4
Dundas Street West at Sweetwater Gate / Proudfoot Trail *(Signalized)*	SBT/R	-	11	4
	EBT	-	217	#228
	EBR	70	12	13
	WBL	115	#34	m#114
	WBT	-	79	#258
	WBR	60	m3	m3
	NBL	90	22	24
	NBT/R	-	67	22
	SBL	80	#58	29
	SBT/R	-	20	15
AM Sensitivity Analysis: SBL max recall				
Dundas Street West at Sweetwater Gate / Proudfoot Trail (Signalized)	*EBL*	*120*	*4*	-
	EBT	-	*217*	-
	EBR	*70*	*12*	-
	WBL	*115*	*#32*	-
	WBT	-	*79*	-
	WBR	*60*	*m3*	-
	NBL	*90*	*22*	-
	NBT/R	-	*67*	-
	SBL	*80*	*#48*	-
	SBT/R	-	*20*	-
Dundas Street West at Lions Valley Park Road *(Signalized)*	EBL	50	0	1
	EBT	-	#397	85
	EBR	10	0	0
	WBL	75	1	1
	WBT/R	-	171	154
	NBL/T/R	-	4	17
	SBL/T/R	-	2	6
William Halton Parkway at Harasym Trial *(Signalized)*	EBL	45	5	11
	EBT/R	-	104	57
	WBL	45	7	10
	WBT/R	-	96	85
	NBL/T/R	-	19	18
	SBL/T/R	-	28	22
Notes:	*# 95th percentile queue exceeds capacity*			

With the addition of the site generated traffic to the 2029 future background traffic, the Study Area intersections operate with some additional critical movements and in a similar manner to the 2029 future background analysis horizon. It is noted that some movements at the intersection of Dundas Street West at Sweetwater Gate /

Proudfoot Trail are shown to improve from the future background analysis, as a portion of site traffic from background developments considered in this study is expected to redirect to use the access at Dundas Street West and Fourth Line / Harasym Trail in the future total analysis.

At the intersection of Dundas Street West and Sweetwater Gate / Proudfoot Trail, the southbound left-turn movement is expected to operate with a v/c ratio equal to or greater than 0.95 in both AM and PM peak periods. As discussed in Section 8.1.2.1, a sensitivity analysis has been performed on the southbound left-turn movement in the AM peak period to better reflect the intersection operations as noted in field observations. With the adjustment of the recall mode to max, the southbound left-turn is expected to operate with a v/c ratio less than 0.95 in the AM peak period. Following the results of the sensitivity analysis, the eastbound through movement is expected to operate at a v/c ratio greater than or equal to 0.85 in the AM peak period. As no over-capacity movements are noted, no mitigation measures are proposed.

Additionally, the 95th percentile queue lengths of the eastbound and westbound through movements at all intersections along Dundas Street West and William Halton Parkway are expected to block vehicles from entering adjacent turning lanes in one or both peak periods. This is expected due to high eastbound and westbound through traffic along Dundas Street West and William Halton Parkway during both peak periods. As no over-capacity movements are noted for these movements, no mitigation measures are proposed.

8.3.4 2034 Future Total Conditions Operational Analysis

The proposed development's trip generation has been added to the 2034 future background traffic volumes to project the impact of the new traffic on the Study Area road network.

Table 24 summarizes the operational analysis of 2034 future total conditions and Table 25 summarizes the 95th percentile queue analysis. 2034 future total Synchro worksheets have been included in Appendix P.

Table 24: 2034 Future Total Conditions Operational Analysis

Intersection	Mvmnt	AM Peak Hour			PM Peak Hour		
		LOS	V/C	Del (s)	LOS	V/C	Del. (s)
Dundas Street West at Fourth Line / Harasym Trail *(Signalized)*	EBL	A	0.22	4	E	0.85	79
	EBT/R	A	0.88	7	C	0.71	21
	WBL	B	0.17	18	B	0.28	11
	WBT	A	0.59	5	B	0.86	11
	WBR	A	0.02	2	A	0.05	3
	NBL	D	0.35	54	E	0.55	58
	NBT/R	D	0.01	50	D	0.01	50
	SBL	E	0.63	62	D	0.37	53
	SBT/R	D	0.04	50	D	0.02	50
	Overall	**A**	**0.85**	**8**	**B**	**0.86**	**17**

Intersection	Mvmnt	AM Peak Hour			PM Peak Hour		
		LOS	V/C	Del (s)	LOS	V/C	Del. (s)
Dundas Street West at Sweetwater Gate / Proudfoot Trail *(Signalized)*	EBL	B	0.17	18	D	0.46	43
	EBT	C	0.93	31	C	0.88	32
	EBR	B	0.10	11	B	0.08	16
	WBL	D	0.65	52	D	0.84	49
	WBT	A	0.68	10	A	0.83	6
	WBR	A	0.03	6	A	0.06	1
	NBL	D	0.22	40	D	0.36	47
	NBT/R	D	0.68	49	D	0.24	45
	SBL	F	1.10	165	F	1.09	191
	SBT/R	D	0.16	39	D	0.16	44
	Overall	**C**	**0.96**	**27**	**C**	**0.92**	**23**
AM Sensitivity Analysis: SBL max recall							
Dundas Street West at Sweetwater Gate / Proudfoot Trail (Signalized)	*EBL*	*C*	*0.17*	*21*	-	-	-
	EBT	*D*	*1.01*	*48*	-	-	-
	EBR	*B*	*0.10*	*14*	-	-	-
	WBL	*D*	*0.65*	*53*	-	-	-
	WBT	*B*	*0.72*	*12*	-	-	-
	WBR	*A*	*0.03*	*7*	-	-	-
	NBL	*D*	*0.18*	*35*	-	-	-
	NBT/R	*D*	*0.58*	*41*	-	-	-
	SBL	*E*	*0.72*	*66*	-	-	-
	SBT/R	*D*	*0.14*	*35*	-	-	-
	Overall	***C***	***0.91***	***33***	**-**	**-**	**-**
Mitigation: PM protected + permitted SBL, signal timing optimization, WBL storage of 140 m							
Dundas Street West at Sweetwater Gate / Proudfoot Trail (Signalized)	*EBL*	-	-	-	*D*	*0.47*	*53*
	EBT	-	-	-	*F*	*1.20*	*135*
	EBR	-	-	-	*C*	*0.06*	*25*
	WBL	-	-	-	*C*	*0.65*	*33*
	WBT	-	-	-	*B*	*0.91*	*13*
	WBR	-	-	-	*A*	*0.05*	*2*
	NBL	-	-	-	*D*	*0.40*	*49*
	NBT/R	-	-	-	*D*	*0.25*	*47*
	SBL	-	-	-	*D*	*0.50*	*42*
	SBT/R	-	-	-	*D*	*0.12*	*38*
	Overall	**-**	**-**	**-**	***E***	***0.98***	***59***
Dundas Street West at Lions Valley Park Road *(Signalized)*	EBL	A	0.00	0	A	0.11	6
	EBT	A	0.86	9	A	0.66	4
	EBR	A	0.00	0	A	0.01	2
	WBL	A	0.02	3	A	0.08	4
	WBT/R	A	0.59	4	A	0.84	8
	NBL/T/R	E	0.06	63	E	0.44	70
	SBL/T/R	E	0.01	62	E	0.08	65
	Overall	**A**	**0.81**	**7**	**A**	**0.82**	**7**

Intersection	Mvmnt	AM Peak Hour			PM Peak Hour		
		LOS	V/C	Del (s)	LOS	V/C	Del. (s)
William Halton Parkway at Harasym Trial *(Signalized)*	EBL	A	0.07	6	B	0.45	18
	EBT/R	B	0.66	11	A	0.62	7
	WBL	A	0.17	9	B	0.37	11
	WBT/R	B	0.67	11	B	0.79	10
	NBL/T/R	C	0.40	26	C	0.42	28
	SBL/T/R	C	0.46	27	C	0.55	31
	Overall	**B**	**0.62**	**12**	**B**	**0.75**	**10**

Table 25: 2034 Future Total Conditions Queue Lengths

Intersection	Mvmnt	Storage Dist (m)	AM Q (95th)	PM Q (95th)
Dundas Street West at Fourth Line / Harasym Trail *(Signalized)*	EBL	70	m1	m#18
	EBT/R	-	#316	237
	WBL	90	2	4
	WBT	-	94	244
	WBR	65	2	5
	NBL	50	20	28
	NBT/R	-	0	0
	SBL	40	32	21
	SBT/R	-	11	4
Dundas Street West at Sweetwater Gate / Proudfoot Trail *(Signalized)*	EBL	120	5	#22
	EBT	-	#280	#264
	EBR	70	13	15
	WBL	115	#34	m#103
	WBT	-	86	#319
	WBR	60	m3	m0
	NBL	90	22	25
	NBT/R	-	73	23
	SBL	80	#62	#32
	SBT/R	-	22	16
AM Sensitivity Analysis: SBL max recall				
Dundas Street West at Sweetwater Gate / Proudfoot Trail (Signalized)	*EBL*	*120*	*5*	-
	EBT	-	*#280*	-
	EBR	*70*	*13*	-
	WBL	*115*	*#36*	-
	WBT	-	*86*	-
	WBR	*60*	*m3*	-
	NBL	*90*	*22*	-
	NBT/R	-	*73*	-
	SBL	*80*	*#54*	-
	SBT/R	-	*22*	-

Intersection	Mvmnt	Storage Dist (m)	AM Q (95th)	PM Q (95th)
Mitigation: PM permitted + permitted SBL, signal timing optimization, WBL storage of 140 m				
Dundas Street West at Sweetwater Gate / Proudfoot Trail (Signalized)	*EBL*	*120*	-	#18
	EBT	-	-	#270
	EBR	*70*	-	9
	WBL	*140*	-	m#131
	WBT	-	-	#361
	WBR	*60*	-	m2
	NBL	*90*	-	25
	NBT/R	-	-	23
	SBL	*80*	-	19
	SBT/R	-	-	14
Dundas Street West at Lions Valley Park Road *(Signalized)*	EBL	50	0	2
	EBT	-	#464	107
	EBR	10	0	0
	WBL	75	1	1
	WBT/R	-	205	216
	NBL/T/R	-	4	18
	SBL/T/R	-	2	6
William Halton Parkway at Harasym Trial *(Signalized)*	EBL	45	5	#19
	EBT/R	-	137	75
	WBL	45	8	14
	WBT/R	-	#123	122
	NBL/T/R	-	22	19
	SBL/T/R	-	28	23
Notes:	*# 95th percentile queue exceeds capacity*			

With the addition of the site generated traffic to the 2034 future background traffic, the Study Area intersections operate with some additional critical and over-capacity movements. It is noted that some movements at the intersection of Dundas Street West at Sweetwater Gate / Proudfoot Trail are shown to improve from the 2034 future background analysis, as a portion of site traffic from background developments considered in this study are expected to redirect to use the access at Dundas Street West and Fourth Line / Harasym Trail in the future total analysis.

At the intersection of Dundas Street West and Sweetwater Gate / Proudfoot Trail, the eastbound through movement is expected to operate at a v/c ratio greater than or equal to 0.85 in both peak periods and the westbound through movement is expected to operate at a v/c ratio greater than or equal to 0.85 in the PM peak period. This is expected due to high eastbound and westbound volumes on Dundas Street West in both peak periods. Additionally, the southbound left-turn movement is expected to operate with a v/c ratio greater than or equal to 0.95 in both AM and PM peak periods. As discussed in Section 8.1.2.1, a sensitivity analysis has been performed on the southbound left-turn movement in the AM peak period to better reflect the intersection operations as noted in field observations. With the adjustment of the recall mode to max, the southbound left-turn is expected to operate with a v/c ratio less than 0.95 in the AM peak period, with the eastbound through movement expected to operate at a v/c ratio greater than or equal to 1.00 in the AM peak period. No reasonable adjustments or signal timing optimization have been identified to mitigate the eastbound through movement in the AM peak period. As a mitigation measure for the PM peak period, a protected and permitted phase has been added to the southbound left-turn with signal timing optimization, and the westbound left-turn lane storage has been extended to 140 metres. While these measures are shown to improve the southbound left-turn operations,

they are anticipated to cause critical and over-capacity v/c ratios for the eastbound and westbound through movements along Dundas Street West. It is therefore recommended that the Region continue to monitor the performance and signal timing of this intersection as required, and implement adjustments based on the need to prioritize regional versus individual movements in order to achieve future operational targets.

Additionally, the 95th percentile queue lengths of the eastbound and westbound through movements at all intersections along Dundas Street West and William Halton Parkway are expected to block vehicles from entering adjacent turning lanes in one or both peak periods. This is expected due to high eastbound and westbound through traffic along Dundas Street West and William Halton Parkway during both peak periods. As no over-capacity movements are noted for these movements, no mitigation measures are proposed.

It is also noted that this analysis is likely to be conservative at the Study Area intersections along Dundas Street West. As discussed in Section 4.1.2, a lane utilization factor of 0.80 has been applied to Dundas Street West in the eastbound and westbound through movements to account for the reduced capacity anticipated with the implementation of HOV lanes. However, no adjustments have been made to reduce traffic volumes resulting from the HOV usage within the analysis as this reduction is unknown. As a result, the analysis represents a worst-case scenario where some critical movements along Dundas Street West can be expected.

9 Recommendations

Some critical and over-capacity movements have been noted within the Study Area as a result of the high volumes expected in the Study Area along Dundas Street West. Some mitigation measures have been proposed for the road network within the Study Area to address the operational issues.

In the 2029 future background horizon, the following network modifications have been considered:

- The extension of the southbound left-turn storage to 80 metres at the intersection of Dundas Street West at Sweetwater Gate / Proudfoot Trail.

In the 2034 future background horizon, the following network modifications have been considered at the intersection of Dundas Street West at Sweetwater Gate / Proudfoot Trail:

- A protected and permitted southbound left-turn phase with signal timing optimization at the intersection in both peak periods.
- The extension of the westbound left-turn storage to 130 metres.

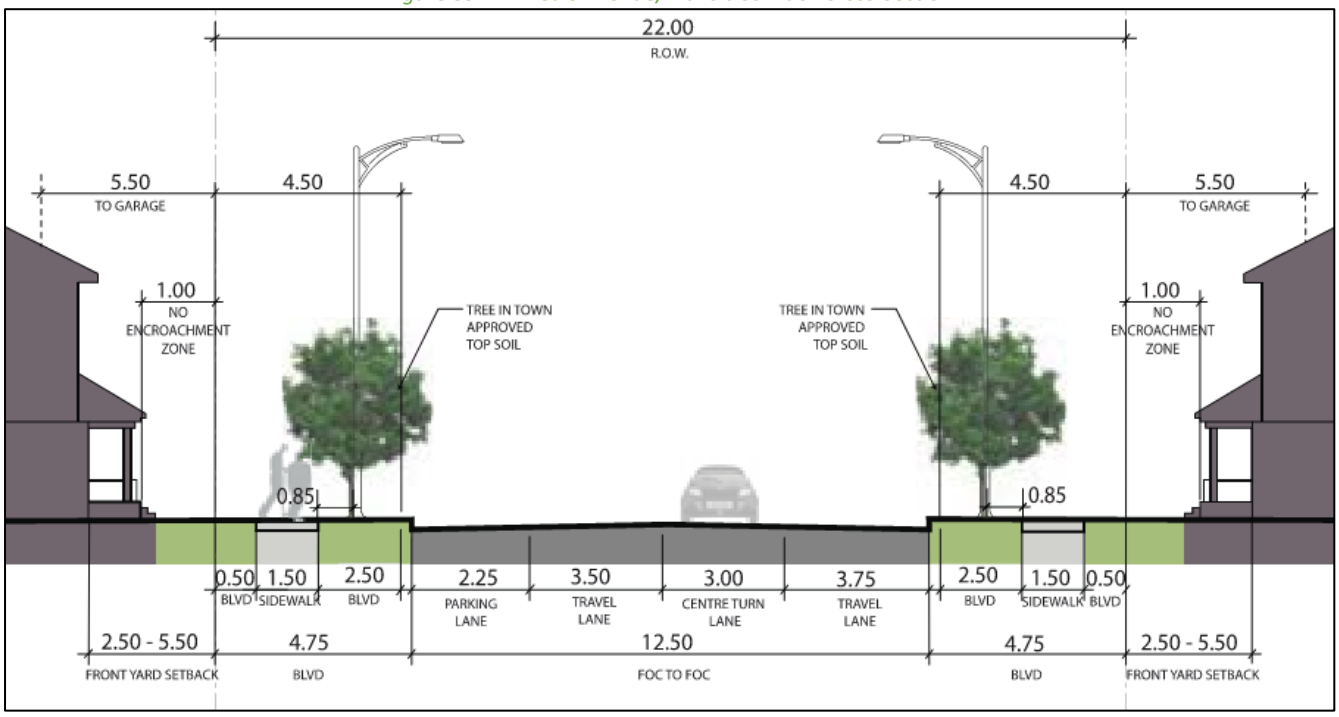
In the 2034 future total horizon, the following network modifications have been considered at the intersection of Dundas Street West at Sweetwater Gate / Proudfoot Trail:

- A protected and permitted southbound left-turn phase with signal timing optimization at the intersection in the PM peak period.
- The extension of the westbound left-turn storage to 140 metres.

It is noted that the extension of the southbound left-turn storage at Dundas Street West and Sweetwater Gate / Proudfoot Trail is primarily due to existing and future background traffic only. As missing pavement markings on the southbound approach do not allow for the existing storage and taper lengths to be determined for this movement, a 30-metre storage length and default 15-metre taper length was assumed in the existing conditions for analysis purposes only. As discussed in Section 3.1, Sweetwater Gate is a 22-metre avenue/transit corridor

with a cross-section from the *North Oakville Urban Design and Open Space Guidelines (2009)* as shown in Figure 39 below.

Figure 39: 22-metre Avenue/Transit Corridor Cross-Section



Given that the transit/avenue corridor allows for a centre turn lane, the extension of the southbound left-turn lane can be accommodated within the existing right-of-way. As shown in Figure 40 below, the storage distance for the southbound left-turn lane can be extended beyond the assumed initial 30-metre storage length and the recommended 80-metre storage in the 2029 future background horizon to a maximum of approximately 170 metres north to where the road bends to meet Shevchenko Boulevard. Therefore, while the initial existing storage length of this movement is unknown, the proposed extension is considered a technically feasible mitigation measure as it can be accommodated within the constraints of the existing road layout and right-of-way.

Figure 40: Dundas Street West and Sweetwater Gate / Proudfoot Trail Southbound Approach Storage and Taper Information

Figure 41 below illustrates the existing and proposed westbound left-turn storage distances at the intersection of Dundas Street West and Sweetwater Gate / Proudfoot Trail. Due to the existing median along the westbound approach, the westbound left-turn storage extension is shown to be able to be accommodated at this intersection.

Figure 41: Dundas Street West and Sweetwater Gate / Proudfoot Trail Westbound Left-Turn Lane Storage Mitigation

The additions of protected and permitted left-turn phases will require updates to signal timing plans and signal heads at the intersection of Dundas Street West and Sweetwater Gate / Proudfoot Trail. As these measures do not require physical changes to the road network, they are considered to be feasible in all future horizons.

It is noted that while the addition of protected and permitted left-turn phases are shown to slightly improve the southbound left-turn operations in both the 2034 future background and future total analysis, they are anticipated to cause critical and over-capacity v/c ratios for the eastbound and westbound through movements along Dundas Street West. As a result, it is recommended that the Region continue to monitor the performance and signal timings of this intersection as required and implement required signal timing adjustments based on the need to prioritize regional versus individual movements.

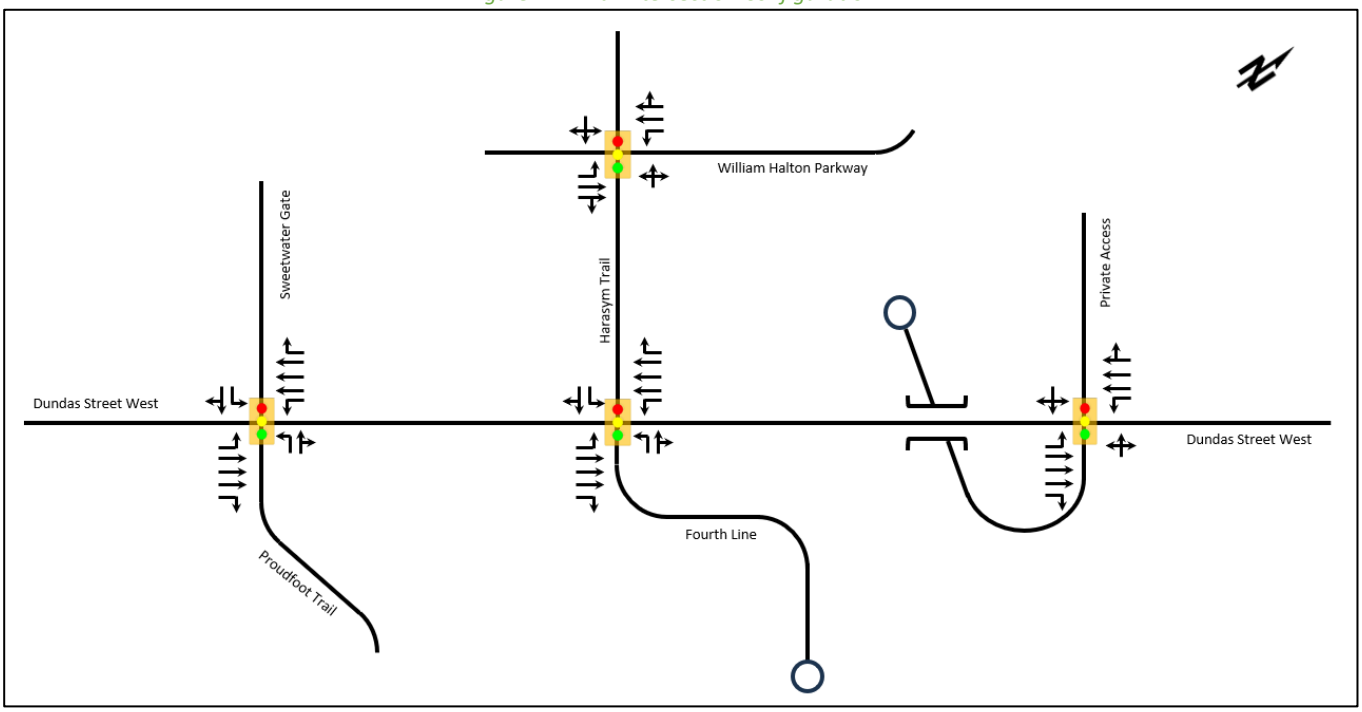
No additional mitigation measures have been proposed for any other Study Area intersections.

Analysis of the future background and future total horizons also show that some movements at the intersection of Dundas Street West at Sweetwater Gate / Proudfoot Trail are expected to improve from the future background

analysis, as a portion of site traffic from background developments considered in this study are anticipated to redirect to use the access at Dundas Street West and Fourth Line / Harasym Trail in the future total horizons.

Figure 42 illustrates the final intersection configuration with all recommended improvements incorporated into the road network.

Figure 42: Final Intersection Configuration



It is noted that the need for the recommended mitigation measures could be reduced should additional future improvements be provided through improved public transit and active transportation infrastructure. This would support the increase in non-auto mode shares and possibly reduce the number of vehicles using the Study Area intersections.

10 Conclusions

This Transportation Impact Study has examined the trip generation, access requirements, and Study Area road network impact of the proposed ARGO Lions Valley development. The TIS has shown the following:

a) The Preliminary Concept Plan identifies a number of residential blocks, with an internal road network of collectors, local streets, and laneways. The current conceptual design proposes 104 townhouse units, 35 single-detached units, and 1.24 hectares of Future Development area which is assumed to contain a mix of approximately 150 stacked townhouse and apartment units. It should be noted that unit counts are preliminary for the purposes of the study and will be subject to refinement at future submission stages.
b) The site is bounded by Dundas Street to the south, an existing subdivision to the west, and Sixteen Mile Creek to the east and the north.
c) The main site access will be a full-movement access forming the north leg of the existing three-legged intersection of Dundas Street West and Fourth Line and will serve as an extension of Harasym Trail. Access to the future William Halton Parkway will be feasible through connections to the adjacent residential development road network.

d) Full build-out has been assumed to occur by 2029.
e) Nearby developments anticipated to be major trip generators have been included in the background traffic projections. These background developments are: Schlegel Villages, Graydon Banning and Martillac Estates, and 1280 Dundas Street West. The background developments are anticipated to generate a total of 364 AM and 462 PM peak hour two-way trips by 2029 and 579 AM and 722 PM peak hour two-way trips by 2034.
f) A 2% per annum compound annual growth rate (CAGR) has been applied to Dundas Street and William Halton Parkway, and a 1% per annum CAGR has been applied to Harasym Trail, Proudfoot Trail, Sweetwater Gate, Fourth Line, and Lions Valley Park Road to grow the existing 2024 horizon to the 2029 and 2034 future analysis horizons.
g) The Region's EMME Model projection of volumes along William Halton Parkway for 2031 PM peak hour have been used to determine the 2029 and 2034 future background traffic volumes.
h) The planned road network improvements up to 2029 include the implementation of HOV lanes on Dundas Street West, the completion of the William Halton Parkway extension east of Third Line, and the signalization of the intersection of William Halton Parkway and Harasym Trail. The Harasym Trail extension will be built out alongside the subject development and form the north leg of the Dundas Street West and Fourth Line intersection.
i) The Harasym Trail extension will be built out alongside the subject development and form the north leg of the Dundas Street West and Fourth Line intersection. This improvement has been considered in the 2029 and 2034 future total analysis only.
j) To estimate the impact of the subject development on the Study Area, a vehicle trip generation exercise has been undertaken for each land use. The trip generation of the residential units used the corresponding ITE rates. Mode shares have been determined using the percentages projected for 2031 under Scenario D, which are considered by the Town for 2031 conditions. The 2034 horizon mode shares are beyond the timeline of this Transportation Master Plan and the same mode share as 2029 has been used in this study to develop a conservative analysis. The subject development is anticipated to generate 112 AM and 138 PM peak hour external two-way auto trips combined during all future horizons.
k) Using the existing 2024 traffic volumes, an operational analysis of the 2024 existing conditions was undertaken. Critical movements were noted however no mitigation measures were recommended. A sensitivity analysis during the AM peak period was conducted at the intersection of Dundas Street West at Sweetwater Gate / Proudfoot Trail to address discrepancies noted between the Synchro analysis results and field observations. In order to better align with field observations, the southbound left-turn recall mode in Synchro was adjusted to maximum to ensure the southbound left-turn phase receives sufficient green time regardless of low volumes and reflects the observed operation of the southbound left-turn movement without significant delays.
l) The 2029 future background traffic volumes were analysed. Critical and over-capacity movements were noted. To address 95th percentile queues extended beyond provided storage lengths, the following mitigation measures have been implemented:
    - The extension of the southbound left-turn storage to 80 metres at the intersection of Dundas Street West and Sweetwater Gate / Proudfoot Trail.
m) The 2029 future total traffic volumes were analysed. Critical movements were noted, however no over-capacity movements were identified. As such, no mitigation measures were recommended.
n) The 2034 future background traffic volumes were analysed. Critical and over-capacity movements were noted. To address over-capacity movements and 95th percentile queues extended beyond provided storage lengths, the following mitigation measures have been considered:

- The addition of a protected and permitted southbound left-turn phase in the AM and PM peak periods at the intersection of Dundas Street West and Sweetwater Gate / Proudfoot Trail.
- The extension of the westbound left-turn storage to 130 metres at the intersection of Dundas Street West and Fourth Line.

o) The 2034 future total traffic volumes were analyzed. Critical and over-capacity movements were noted. To address over-capacity movements and 95th percentile queues extended beyond provided storage lengths, the following mitigation measures have been considered:
   - The addition of a protected and permitted southbound left-turn phase in the PM peak period at the intersection of Dundas Street West and Sweetwater Gate / Proudfoot Trail.
   - The extension of the westbound left-turn storage to 140 metres at the intersection of Dundas Street West and Fourth Line.

p) Within the public road portion of the subject development, a minimum of 174 residential parking spaces are required and 269 spaces are proposed, which is in accordance with the Town of North Oakville Zoning By-law requirements.

q) Within the Future Development Block, it is anticipated that these units will adhere to the parking requirements identified in the Town of North Oakville Zoning By-law.

r) 48 on-street parking spaces are also proposed along the local and connector roadways throughout the subject development as shown in the Preliminary Parking Plan prepared by planner GSAI.

s) A Preliminary Traffic Calming Plan has been prepared for Harasym Trail within the subject development. Two curb extensions are recommended along Harasym Trail at intersections with local roads. The specific design details and exact locations of the curb extensions will be determined at the detailed design stage and will be constructed as per Town of Oakville Standards.

t) A draft preliminary construction traffic control plan has been prepared for the subject development. It is assumed that a temporary right-in / right-out access will be provided on Dundas Street West with appropriate signage to support the access. It is noted that this plan is preliminary and will be further refined once a servicing contractor completes this as part of their pre-mobilization work prior to construction.

u) A Transportation Demand Management Plan has been prepared to support the access and usability of transit, cycling, and pedestrian facilities within the subject development.

The ARGO Lions Valley development will have a minor impact on the Study Area road network. The subject site will provide a range of residential land uses that are transit supportive and accessible to the surrounding pedestrian and cycling network. It is therefore recommended that, from a transportation perspective, the proposed development application proceed.

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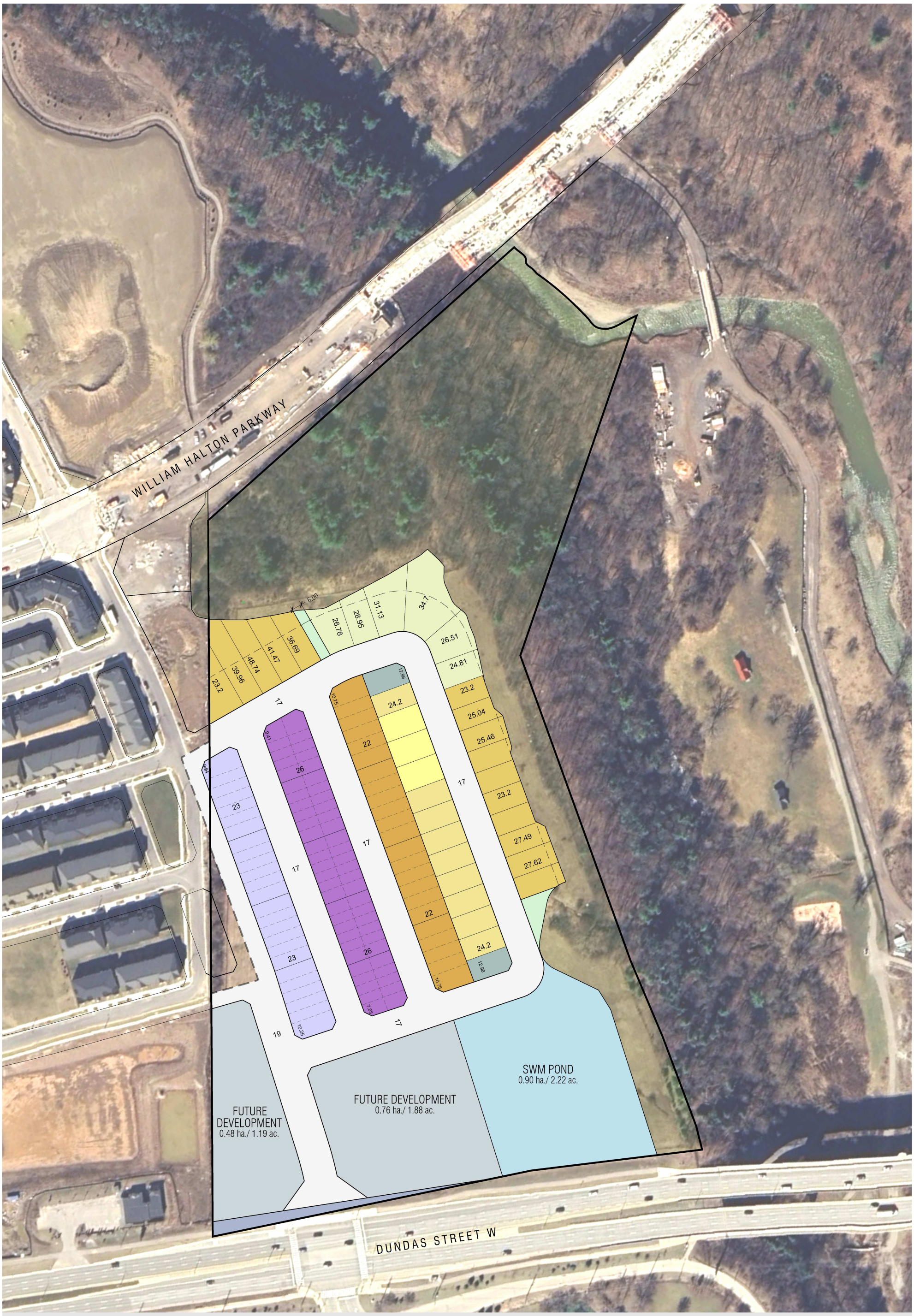
Appendix A

Preliminary Concept Plan



DRAFT

- All Units In Metric Unless Otherwise Noted.
- Base Information Obtained From Various Sources And Is Approximate.
- Schedule / Plan Information Is Conceptual And Requires Verification by Appropriate Agency.
- Aerial Photo: Google Earth, May 2025

GERRARD DESIGN

WHITEOAK COMMUNICATIONS SITE | Oakville, ON

ARGO LIONS VALLEY CONCEPT PLAN

JUNE 06, 2025
PROJECT 2056
SCALE 1:2000

CP-38

LAND USE SUMMARY

Site Area	10.60 ha.	26.19 ac.	
Land Exchange	0.00 ha.	0.00 ac.	
TOTAL SITE AREA	10.60 ha.	26.19 ac.	
NON-DEVELOPABLE			
Road Widening	0.07 ha.	0.17 ac.	
NHS	3.79 ha.	9.37 ac.	
NET SITE AREA	6.74 ha.	16.65 ac.	100%
DEVELOPABLE			
Residential (see 'UNIT SUMMARY' Below)	2.72 ha.	6.72 ac.	40.4%
Future Development	1.24 ha.	3.06 ac.	18.4%
SWM Pond	0.90 ha.	2.22 ac.	13.4%
Right of Way	1.88 ha.	4.65 ac.	27.9%
TOTAL (Developable)	6.74 ha.	16.65 ac.	100%

UNIT SUMMARY

		Width (m)		Dpth. (m)	Unit Count	Lot Mix	Frntg. (lin.m)	Area		% Net Res.
FREEHOLD										
Dual Frontage Townhouses	(20')	**6.00**	x	23.00	**25**	18%	150.0	0.39 ha.	0.96 ac.	14.3%
Back to back Townhouses	(18')	**5.60**	x	13.00	**56**	39%	313.6	0.46 ha.	1.14 ac.	16.9%
Std Townhouses	(24')	**7.30**	x	22.00	**27**	19%	197.1	0.48 ha.	1.19 ac.	17.6%
Single Detached	(42')	**12.80**	x	23.20	**12**	8%	153.6	0.52 ha.	1.28 ac.	19.1%
Single Detached	(50')	**15.24**	x	23.20	**8**	6%	121.9	0.42 ha.	1.04 ac.	15.4%
Single Detached (Corner)	(40')	**12.22**	x	24.20	**2**	1%	24.4	0.06 ha.	0.15 ac.	2.2%
Single Detached	(42')	**12.80**	x	24.20	**9**	6%	115.2	0.28 ha.	0.69 ac.	10.3%
Single Detached	(50')	**15.24**	x	24.20	**3**	2%	45.7	0.11 ha.	0.27 ac.	4.0%
TOTAL RESIDENTIAL					**142**	100%	1121.6	2.72 ha.	6.72 ac.	100.0%

ROW SCHEDULE

	(m) width	(lin.m)	(lin.m) half width
Collector	**19.0**	134.1	165.5
Local Street	**17.0**	833.2	19.3
ROW TOTAL		967.3	184.8

Appendix B

Scope Confirmation

Technical Memorandum

To:	Syed Rizvi – Town of Oakville Ayesha Khan– Halton Region	Date:	2024-08-29
Cc:	ARGO Development Corporation		
From:	Mark Crockford, P. Eng. Robin Marinac, P. Eng.	Project Number:	2024-110

Re: ARGO Lions Valley Oakville Transportation Impact Study – Terms of Reference

CGH has been retained to undertake a Transportation Impact Study (TIS) in support of a Draft Plan of Subdivision application for the ARGO Lions Valley property at 1303 Dundas Street West in North Oakville. The subject property is located at the northeast corner of Dundas Street West and Fourth Line. The site is bounded by Dundas Street to the south, an existing subdivision to the west, and Sixteen Mile Creek to the east and the north. The subject development is proposed to include 57 townhouses and 50 single detached residential units as well as 1.25 hectares of Dundas Urban Core developable area with permissions for built form ranging from 3 to 8 storeys. The current site plan proposal for the Dundas Urban Core areas is unknown at this time however an assumption will be made for trip generation purposes with respect to unit type and unit count within the TIS.

The main site access will form the north leg of the existing three-legged intersection of Dundas Street West and Fourth Line. Access to future William Halton Parkway will be feasible through connections to the adjacent residential development road network. The preliminary concept plan is shown in Attachment 1.

We have prepared the following TIS scope of work for review by Halton Region and Town of Oakville staff. Please let us know if you have any comments or questions. Data and information requests are shown in red.

<u>Transportation Impact Study Requirements (TIS):</u>

The study will be in accordance with the Halton Region's *Guidelines for the Preparation of Traffic Impact Studies* and North Oakville's *Terms of Reference for Transportation Impact Studies and Transportation Functional Design Studies*.

<u>Study Area:</u>

- An overview of the transportation system existing conditions will be documented (including transit, cycling, pedestrian, and automobile modes).
- A summary of existing transportation planning policies within the Study Area will be identified.
- An overview of the Study Area road network will be provided including the road classification and descriptions of:
    - Dundas Street West
    - Fourth Line
    - William Halton Parkway
    - Harasym Trail
    - Sweetwater Gate / Proudfoot Trail
    - Lions Valley Park Road
- The following intersections will be included in the Transportation Impact Study:
    - Dundas Street West at Fourth Line (Existing/Future)

- William Halton Parkway at Harasym Trail (Existing/Future)
- Dundas Street West at Sweetwater Gate / Proudfoot Trail (Existing/Future)
- Dundas Street West at Lions Valley Park Road (Existing/Future)

Analysis Assumptions:

- Horizon years: 2024, 2029 (Buildout), 2034 (+5 years).
- AM and PM peak hours will be analyzed.

Existing Study Area Multimodal Conditions:

- Turning Movement Count data for the intersections of Dundas Street at Lions Valley Park Road (October 2023), Dundas Street at Fourth Line (November 2022), and Dundas Street at Proudfoot Trail (November 2022) have been provided by Region staff and will be used to determine existing 2024 volumes at these three Study Area intersections.
    - Turning Movement Count data for the intersection of William Halton Parkway and Harasym Trail will be collected at this Study Area intersection.
- Signal Timing plans for the three existing Study Area signalized intersections have been requested and received from Region staff.

Planned Transportation Improvements:

- North of the development, the William Halton Parkway extension from Neyagawa Boulevard to Third Line is under construction and will be completed by December of 2024. The following volume projections along William Halton Parkway are requested from Region staff:
    - 2031 PM peak hour volume at Harasym Trail (eastbound and westbound)
    - On average, the AM peak hour volumes are equal to 8% of daily traffic, where the PM peak hour volumes are equal to 10% of the daily traffic. Therefore, the PM peak hour volumes projected by Halton Region will be multiplied by a factor of 0.8 to determine the AM Peak hour volumes. Additionally, the PM peak hour volumes direction will be changed to represent the higher traffic flow towards east in the AM peak hour.
    - This approach to future volume projections along William Halton Parkway has been proposed and approved in both the ARGO Trafalgar TIS prepared by CGH in 2023 as well as the ARGO Neyagawa TIS prepared by CGH in 2023.
- The Halton Region Defining Major Transit Requirements (DMTR) Study (2019) indicates that HOV lanes are recommended to be implemented along the outer lanes of Dundas Street between Bronte Road and the Halton/Peel Boundary by the 2031.
    - As such, a lane utilization factor of 0.80 will be applied in accordance with the Halton Region Transportation Impact Study Guidelines to account for the capacity reduction on Dundas Street as a result of the implementation of the outer HOV lanes in the 2034 future analysis horizon only.
- Harasym Trail will be extended through the development and form the northern leg of the existing three-legged intersection of Dundas Street West at Fourth Line.

Background Growth:

- The following background developments will be considered in the study:
    - 2165 Dundas Street West (TIS requested from staff)
    - Halton Regional Courthouse (TIS requested from staff)
    - Oakville Green (TIS requested from staff)
    - 1357 Dundas Street W Phase 2 (TIS requested from staff)
    - 1388 Dundas Street West (TIS requested from staff)
    - 1280 Dundas Street West (TIS requested from staff)

- A background CAGR of 1.0% will be implemented to determine 2024 existing and 2029 and 2034 future background volumes where applicable.
    - This is based on surrounding TISs that have applied 0%, 1.5%, and 2% growth rates along Dundas Street and at surrounding intersections. Please advise if an alternative growth rate should be applied. (Growth rate request)

Development Site Trip Distribution and Assignment:

- Trip generation: ITE Trip Generation Manual 11th Edition
    - Total person trip generation of the proposed development will be determined using ITE 11th Edition vehicle trip generation. The ITE vehicle trip generation will be treated as the total person trip generation, as majority of ITE studies were collected across United States in 1980s, 1990s, 2000s, the 2010s, and the 2020s. Thus, majority of the ITE data is representative of car-centric environments, where vehicle trips represent total person trips generated by a development. This methodology is consistent with ARGO Trafalgar TIS prepared by CGH in 2023 as well as the ARGO Neyagawa TIS prepared by CGH in 2023.
    - The projected mode shares will be multiplied by total person trip generation to determine projected trips by each mode, including auto mode.
- Mode Share:
    - The Town of Oakville Transportation Master Plan Review identifies 2031 mode share targets for various scenarios. Scenario D will be considered for the subject development, as this is consistent with other completed TISs in the area, and reflects growth in active transportation, transportation demand management, and local transit, and higher growth in inter-regional transit. Additionally, the Oakville Projection Scenario D is assumed to be more accurate in describing the mode share changes in the Town of Oakville rather than the entire Region. The Scenario D Oakville Projections will be used for both the 2029 and 2034 future horizon analysis. It is noted that this approach has been specifically requested by Town staff for similar developments within the Town of Oakville. the Scenario D Oakville Projections have been used for both the 2028 and 2033 future horizon analysis
- Trip distribution and assignment: Transportation Tomorrow Survey (TTS), existing traffic routing patterns and access to major transportation infrastructure.

Analysis:

- Traffic analysis to be performed using Synchro 11 on Study Area network intersections to determine the LOS, delay, V / C ratio and the 95th percentile queues.
    - SimTraffic will not be used to develop 95th percentile queues.
    - Critical movements will be defined using the Town of Oakville's Terms of Reference (TOR) for Transportation Impact Studies (TIS) and Transportation Functional Design Studies (2009) and Halton Region's Transportation Impact Study Guidelines (2011) intersection definitions.
    - Heavy Vehicle % and Peak Hour Factors will be taken from the collected TMC data. Where information is not available, a Heavy Vehicle % of 2%, and the Peak Hour Factor of 0.90 will be applied.
    - Pedestrian and cyclist volumes will be based on existing counts at applicable intersections for both the existing and future pedestrian and cyclist volumes. Pedestrian volumes of 5 pedestrians/h and cycling volumes of 5 cyclists/h have been used at all new intersections in the future analysis horizons where applicable.
    - Other Synchro inputs will be based on site observations, Town and Region Guidelines, as well as Synchro default parameters.

Site Access:

- Required/recommended road improvements either as a result of the development impacts, or general non-development improvements will be identified.

The TIS report will include:

- Site Plan and Map,
- Type and Size of Proposed Land Uses
- Existing Conditions (Study Area Intersections, Road Network, Pedestrian Routes, Cycling Routes, Transit Services),
- Existing Traffic Conditions (Site Operating Characteristics, Data Collection/Traffic Counts, Analysis Periods)
- Future Background Conditions (Horizon Years, Horizon Year Volumes)
- Background Traffic Demand
- Background Traffic Demand Forecast (with acceptable growth rates)
- Site Generated Traffic (Transit Modal Split, Trip Generation/Distribution/Assignment)
- Future Total Traffic Demand
- Capacity Analysis (by Intersection, with LOS, Avg. Delay, V/C ratios)
- Traffic Impacts (Tables – Total Traffic with/without Mitigation)
- Access Considerations – Existing, Proposed, Geometrics (turn lanes etc.)
- Recommendations
- TDM recommendations (Transit, Pedestrian & Cycling Facilities Analysis)
- Conclusions

Technical Memorandum

To:	Syed Rizvi – Town of Oakville Ayesha Khan– Halton Region	Date:	2024-08-29
Cc:	ARGO Development Corporation		
From:	Mark Crockford, P. Eng. Robin Marinac, P. Eng.	Project Number:	2024-110

Re: ARGO Lions Valley Oakville Transportation Impact Study – Terms of Reference

CGH has been retained to undertake a Transportation Impact Study (TIS) in support of a Draft Plan of Subdivision application for the ARGO Lions Valley property at 1303 Dundas Street West in North Oakville. The subject property is located at the northeast corner of Dundas Street West and Fourth Line. The site is bounded by Dundas Street to the south, an existing subdivision to the west, and Sixteen Mile Creek to the east and the north. The subject development is proposed to include 57 townhouses and 50 single detached residential units as well as 1.25 hectares of Dundas Urban Core developable area with permissions for built form ranging from 3 to 8 storeys. The current site plan proposal for the Dundas Urban Core areas is unknown at this time however an assumption will be made for trip generation purposes with respect to unit type and unit count within the TIS.

The main site access will form the north leg of the existing three-legged intersection of Dundas Street West and Fourth Line. Access to future William Halton Parkway will be feasible through connections to the adjacent residential development road network. The preliminary concept plan is shown in Attachment 1.

We have prepared the following TIS scope of work for review by Halton Region and Town of Oakville staff. Please let us know if you have any comments or questions. Data and information requests are shown in red.

<u>Transportation Impact Study Requirements (TIS):</u>

The study will be in accordance with the Halton Region's *Guidelines for the Preparation of Traffic Impact Studies* and North Oakville's *Terms of Reference for Transportation Impact Studies and Transportation Functional Design Studies*.

<u>Study Area:</u>

- An overview of the transportation system existing conditions will be documented (including transit, cycling, pedestrian, and automobile modes).
- A summary of existing transportation planning policies within the Study Area will be identified.
- An overview of the Study Area road network will be provided including the road classification and descriptions of:
    - Dundas Street West
    - Fourth Line
    - William Halton Parkway
    - Harasym Trail
    - Sweetwater Gate / Proudfoot Trail
    - Lions Valley Park Road
- The following intersections will be included in the Transportation Impact Study:
    - Dundas Street West at Fourth Line (Existing/Future)

- William Halton Parkway at Harasym Trail (Existing/Future)
- Dundas Street West at Sweetwater Gate / Proudfoot Trail (Existing/Future)
- Dundas Street West at Lions Valley Park Road (Existing/Future)

Analysis Assumptions:

- Horizon years: 2024, 2029 (Buildout), 2034 (+5 years).
- AM and PM peak hours will be analyzed.

Existing Study Area Multimodal Conditions:

- Turning Movement Count data for the intersections of Dundas Street at Lions Valley Park Road (October 2023), Dundas Street at Fourth Line (November 2022), and Dundas Street at Proudfoot Trail (November 2022) have been provided by Region staff and will be used to determine existing 2024 volumes at these three Study Area intersections.
  - Turning Movement Count data for the intersection of William Halton Parkway at Harasym Trail will be collected at this Study Area intersection.
- Signal Timing plans for the three existing Study Area signalized intersections have been requested and received from Region staff.

Inserted Text SRizvi
As per the Town of Oakville Transportation planning policy, current year TMC's are to be collected for the traffic analysis to be used for the land development TIS studies.

Planned Transportation Improvements:

- North of the development, the William Halton Parkway extension from Neyagawa Boulevard to Third Line is under construction and will be completed by December of 2024. The following volume projections along William Halton Parkway are requested from Region staff:
  - 2031 PM peak hour volume at Harasym Trail (eastbound and westbound)
  - On average, the AM peak hour volumes are equal to 8% of daily traffic, where the PM peak hour volumes are equal to 10% of the daily traffic. Therefore, the PM peak hour volumes projected by Halton Region will be multiplied by a factor of 0.8 to determine the AM Peak hour volumes. Additionally, the PM peak hour volumes direction will be changed to represent the higher traffic flow towards east in the AM peak hour.
  - This approach to future volume projections along William Halton Parkway has been proposed and approved in both the ARGO Trafalgar TIS prepared by CGH in 2023 as well as the ARGO Neyagawa TIS prepared by CGH in 2023.
- The Halton Region Defining Major Transit Requirements (DMTR) Study (2019) indicates that HOV lanes are recommended to be implemented along the outer lanes of Dundas Street between Bronte Road and the Halton/Peel Boundary by the 2031.
  - As such, a lane utilization factor of 0.80 will be applied in accordance with the Halton Region Transportation Impact Study Guidelines to account for the capacity reduction due to the implementation of the outer HOV lanes in the 2034 future analysis horizon only.
- Harasym Trail will be extended through the development and form the northern leg of the existing three-legged intersection of Dundas Street West at Fourth Line.

Inserted Text SRizvi
Regarding timings of the HOV lanes, Halton Region Transportation department should be approached to confirm the timings/year of implementation before using i

Background Growth:

- The following background developments will be considered in the study:
  - 2165 Dundas Street West (TIS requested from staff)
  - Halton Regional Courthouse (TIS requested from staff)
  - Oakville Green (TIS requested from staff)
  - 1357 Dundas Street W Phase 2 (TIS requested from staff)
  - 1388 Dundas Street West (TIS requested from staff)
  - 1280 Dundas Street West (TIS requested from staff)

- A background CAGR of 1.0% will be implemented to determine 2024 existing and 2029 and 2034 future background volumes where applicable.
    - This is based on surrounding TISs that have applied 0%, 1.5%, and 2% growth rates along Dundas Street and at surrounding intersections. Please advise if an alternative growth rate should be applied based on your request)

Inserted Text SRizvi

Growth rate 1% is too low for the North Oakville, minimum 3% GR should be applied for the future horizon years.

Development Site Trip Distribution and Assignment:

- Trip generation: ITE Trip Generation Manual 11th Edition
    - Total person trip generation of the proposed development will be determined using ITE 11th Edition vehicle trip generation. The ITE vehicle trip generation will be treated as the total person trip generation, as majority of ITE studies were collected across United States in 1980s, 1990s, 2000s, the 2010s, and the 2020s. Thus, majority of the ITE data is representative of car-centric environments, where vehicle trips represent total person trips generated by a development. This methodology is consistent with ARGO Trafalgar TIS prepared by CGH in 2023 as well as the ARGO Neyagawa TIS prepared by CGH in 2023.
    - The projected mode shares will be multiplied by total person trip generation to determine projected trips by each mode, including auto mode.
- Mode Share:
    - The Town of Oakville Transportation Master Plan Review identifies 2031 mode share targets for various scenarios. Scenario D will be considered for the subject development, as this is consistent with other completed TISs in the area, and reflects growth in active transportation, transportation demand management, and local transit, and higher growth in inter-regional transit. Additionally, the Oakville Projection Scenario D is assumed to be more accurate in describing the mode share changes in the Town of Oakville rather than the entire Region. The Scenario D Oakville Projections will be used for both the 2029 and 2034 future horizon analysis. It is noted that this approach has been specifically requested by Town staff for similar developments within the Town of Oakville. the Scenario D Oakville Projections have been used for both the 2028 and 2033 future horizon analysis.
- Trip distribution and assignment: Transportation Tomorrow Survey (TTS), existing traffic routing patterns and access to major transportation infrastructure.

Inserted Text SRizvi

Agreed

Analysis:

- Traffic analysis to be performed using Synchro 11 on Study Area network intersections to determine the LOS, delay, V / C ratio and the 95th percentile queues.
    - SimTraffic will not be used to develop 95th percentile queues.
    - Critical movements will be defined using the Town of Oakville's Terms of Reference (TOR) for Transportation Impact Studies (TIS) and Transportation Functional Design Studies (2009) and Halton Region's Transportation Impact Study Guidelines (2011) intersection definitions.
    - Heavy Vehicle % and Peak Hour Factors will be taken from the collected TMC data. Where information is not available, a Heavy Vehicle % of 2%, and the Peak Hour Factor of 0.90 will be applied.
    - Pedestrian and cyclist volumes will be based on existing counts at applicable intersections for both the existing and future pedestrian and cyclist volumes. Pedestrian volumes of 5 pedestrians/h and cycling volumes of 5 cyclists/h have been used at all new intersections in the future analysis horizons where applicable.
    - Other Synchro inputs will be based on site observations, Town and Region Guidelines, as well as Synchro default parameters.

Site Access:

- Required/recommended road improvements either as a result of the development impacts, or general non-development improvements will be identified.

The TIS report will include:

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- Traffic Impacts (Tables – Total Traffic with/without Mitigation)
- Access Considerations – Existing, Proposed, Geometrics (turn lanes etc.)
- Recommendations
- TDM recommendations (Transit, Pedestrian & Cycling Facilities Analysis)
- Conclusions

Outlook

[Draft] Re: FW: [EXTERNAL] ARGO Lions Valley TOR - For Review

From
Draft saved Thu 2024-12-12 14:20

From: Khan, Ayesha <Ayesha.Khan@halton.ca>
Sent: September 16, 2024 2:50 PM
To: Robin Marinac <robin.marinac@cghtransportation.com>
Cc: Mark Crockford <mark.crockford@cghtransportation.com>
Subject: RE: [EXTERNAL] ARGO Lions Valley TOR - For Review

Hello Robin,
I have now had a chance to review the Terms of Reference as well as Syed's comments. Please see my notes below for your consideration:

Traffic Counts
The Region was not accepting the use of traffic data collected from March 2020 to May 2022 due to impacts to typical travel patterns from the COVID-19 pandemic. We are currently accepting the use of traffic data collected since June 2022 given the lift in COVID-19 restrictions and overall "normalization" of peak hour traffic patterns. Therefore, we are satisfied with the usage of your TMCs dated November 2022 and October 2023.

Growth Rates – Dundas Street
Please use a 2% growth rate

Growth Rates - William Halton Parkway

The volume projections were obtained from our Modelling team here at the Region who advised the following.
PM Peak hour volumes (two directions) for the future forecast in the area, noted as below:

- Bronte to Third Line – 2250 (directional volume : westbound - 1300, eastbound – 900)
- Third Line to Neyagawa – 2700 (directional volume : westbound – 1500, eastbound - 1200)

We would like you to please use similar methodology for the expected growth along William Halton as the study prepared for 2165 Dundas Street (Schlegel Villages – Long Term Care Facility).

The consultants for the 2165 Dundas Street Traffic Impact Study allocated 30% of the growth on William Halton Parkway (the growth being the difference between the 2031 forecasts provided by the Region, and the existing demand based on their recent turning movement surveys) to the westbound right-turn and southbound left-turn manoeuvres.

HOV Lanes
Dundas Street can be analyzed as six general purpose lanes for year 2024 (based on existing conditions), and four lanes plus HOV lane (with assumption that 20% of the lane capacity is assigned to HOV usage by using a 0.8 lane utilization factor) for year 2029 (build-out).

Please let me know if you require any further clarification on the above.

Thank you for circulating to us,

Ayesha

Ayesha Khan

Project Manager I – Transportation Development Review
Development Services
Public Works
Halton Region
905-825-6000, ext. | 1-866-442-5866

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Image removed by sender.

From: Robin Marinac <robin.marinac@cghtransportation.com>
Sent: Wednesday, September 11, 2024 2:40 PM
To: Khan, Ayesha <Ayesha.Khan@halton.ca>
Cc: Mark Crockford <mark.crockford@cghtransportation.com>
Subject: FW: [EXTERNAL] ARGO Lions Valley TOR - For Review

Hi Ayesha,

As I'm sure you saw, Syed provided his review and comments on our submitted ARGO Lions Valley Terms of Reference (TOR) document yesterday.

We'd like to discuss two of the comments he provided with you.

The first comment is in response to the TMC dates (October 2023 and November 2022) that we've indicated will be used to develop our existing traffic volumes at our Study Area intersections. The comment is as follows:

As per the Town of Oakville Transportation planning policy, current year TMC's are to be collected for the traffic analysis to be used for the land development TIS studies.

As these counts are not older than 2 years (which means they comply with the Halton Region TIS Guidelines) we do not agree that current year TMCs need to be collected at these intersections. As the three intersections in question are Regional intersections, can you please provide your feedback on if these counts are appropriate?

The second comment is regarding the proposed compound annual growth rates within the Study Area. Syed's comment is as follows:

Growth rate 1% is too low for the North Oakville, minimum 3% GR should be applied for the future horizon years.

We would request your feedback on approriate growth rates to be used on Regional Roads within the Study Area (Dundas Street West and William Halton Parkway). As our intention is to consider the traffic impact of all surrounding developments within the area based on any of the requested TISs you provide, and surrounding TISs have applied 0%, 1.5% and 2% background growth rates, we do not feel that a 3% growth rate is

appropriate. Additionally Dundas Street is anticipated to have HOV lanes implemented along the outer lanes by 2031. With the implementation of these HOV lanes, the roadway capacity of Dundas Street will be decreased and a compound annual growth rate of 3% is unlikely to be accomodated or realistic. With this in mind, can you please provide some guidance on the compound annual growth rates to be used?

Additionally, could you please confirm the estimated timing for the implementation of HOV lanes on Dundas Street within the Study Area?

Kind reagrds,
Robin Marinac

Robin Marinac, P.Eng.
CGH Transportation Inc.
P: 437-242-5183
E: robin.marinac@cghtransportation.com

From: Syed Rizvi <syed.rizvi@oakville.ca>
Sent: September 10, 2024 10:37 AM
To: Robin Marinac <robin.marinac@cghtransportation.com>; Khan, Ayesha <Ayesha.Khan@halton.ca>
Cc: Mark Crockford <mark.crockford@cghtransportation.com>; Bart Lopat <bart@argoland.com>; Jessica Byers <jessica@argoland.com>; Robert Thun <robert.thun@oakville.ca>
Subject: RE: [EXTERNAL] ARGO Lions Valley TOR - For Review

Hi Robin,

Comments on the draft TOR for the proposed site development by Transportation staff are attached herewith.

Feel free to contact if you have any questions.

Thanks,
Syed

Syed Rizvi, **M.Sc., P. Eng**
Transportation Engineer
Transportation and Engineering
Town of Oakville | 905-845-6601, ext. 3981 | www.oakville.ca

From: Robin Marinac <robin.marinac@cghtransportation.com>
Sent: Thursday, August 29, 2024 5:10 PM
To: Khan, Ayesha <Ayesha.Khan@halton.ca>; Syed Rizvi <syed.rizvi@oakville.ca>
Cc: Mark Crockford <mark.crockford@cghtransportation.com>; Bart Lopat <bart@argoland.com>; Jessica Byers <jessica@argoland.com>
Subject: [EXTERNAL] ARGO Lions Valley TOR - For Review

Hi Syed and Ayesha,

Please see the attached Terms of Reference (TOR) Scoping document for the ARGO Lions Valley development lands in North Oakville. The TOR includes a preliminary concept plan which may be subject to minor changes.

Please provide any questions or comments on our proposed scope of work.

Kind regards,
Robin Marinac

Robin Marinac, P.Eng.
CGH Transportation Inc.
P: 437-242-5183
E: robin.marinac@cghtransportation.com

Outlook

[Draft] Re: FW: [EXTERNAL] ARGO Lions Valley TOR - For Review

From
Draft saved Thu 2024-12-12 14:23

From: Syed Rizvi <syed.rizvi@oakville.ca>
Sent: October 28, 2024 1:45 PM
To: Mark Crockford <mark.crockford@cghtransportation.com>
Subject: RE: [EXTERNAL] ARGO Lions Valley TOR - For Review

Hi Mark,

Reference your email, town response on each TOR listed are provided in red. Please let me know if you have any questions.

Thanks,
Syed

Syed Rizvi, M.Sc., P. Eng
Transportation Engineer
Transportation and Engineering
Town of Oakville | 905-845-6601, ext. 3981 | www.oakville.ca

From: Mark Crockford <mark.crockford@cghtransportation.com>
Sent: Monday, October 28, 2024 1:16 PM
To: Syed Rizvi <syed.rizvi@oakville.ca>
Subject: RE: [EXTERNAL] ARGO Lions Valley TOR - For Review

Hi Syed,

I know you are busy still with your OLT hearing, but I was wondering if this one could be passed to someone else to get us a few answers. Let me know and I can pass this to Aquisha or Eric if needed. I've summarized our questions, but you can also look to the email chain below for context.

We've received feedback from Region staff on our TOR and based on that we'd like to highlight some differences:

With respect to the TMC dates of October 2023 and November 2022, Region staff have indicated that they do not object to the usage of the proposed TMCs in our TOR. As these are Regional intersections, we are inclined to follow their guidance on the usage of these traffic counts. Please advise if you still feel that these intersections need to be recounted. – Agreed

A compound annual growth rate of 2% along Dundas Street, and future volume projections and calculation methodology for William Halton Parkway has been supplied by Halton Region staff. As such, we propose to follow their requested growth rate and future growth methodology on Regional roadways (Dundas Street and William Halton Parkway) in the Study Area. One thing I would like to note is that all Town roads within the Study Area (Harasym Trail. Fourth Line,

Sweetwater Gate/ Proudfoot Trail, and Lions Valley Road) serve areas that are currently built out or will have future growth captured through the consideration of background development site traffic. As such, a growth rate of 3% on Town roads in the proposed Study Area is considered overly conservative and instead we would recommend the use of a 1% compound annual growth rate on Town roads within the Study Area. - Agreed

The Region has also indicated that HOV lanes along Dundas Street should be considered in our 2029 future analysis horizon as well as all other future analysis horizons beyond 2029. - Agreed

Additionally, can you please provide us with the TISs for the following background developments: - Please check the planning website for application material and TIS for background developments other than indicated in red.

- 2165 Dundas Street West
- Halton Regional Courthouse – Not planned in near future
- Oakville Green – Previous TIS is no longer valid, the updated version has not started yet
- 1357 Dundas Street W Phase 1
- 1357 Dundas Street W Phase 2
- 1388 Dundas Street West
- 1280 Dundas Street West

We'd also like to discuss the following pre-consultation comment:

Unfortunately, locating the driveways for the corner lots on the longer side of the townhouse complex is not possible based on the unit type proposed by our client. – It was a suggestion therefore no further comments on this one.

Thanks, and any help you can give us expediting these would be greatly appreciated.
Mark

Mark Crockford, P.Eng.
CGH Transportation Inc.
P:905-251-4070
E:Mark.Crockford@CGHTransportation.com

From: Robin Marinac <robin.marinac@cghtransportation.com>
Sent: October 9, 2024 9:16 AM
To: Syed Rizvi <syed.rizvi@oakville.ca>
Cc: Mark Crockford <mark.crockford@cghtransportation.com>; Jade Huangfu <jade.huangfu@cghtransportation.com>
Subject: RE: [EXTERNAL] ARGO Lions Valley TOR - For Review

Hi Syed,

When you have a chance, can you please provide your responses to the questions below? Can you also provide the requested TISs?

Kind regards,
Robin Marinac

Robin Marinac, P.Eng.
CGH Transportation Inc.
P: 437-242-5183
E: robin.marinac@cghtransportation.com

From: Robin Marinac
Sent: September 30, 2024 11:54 AM
To: Syed Rizvi <syed.rizvi@oakville.ca>
Cc: Mark Crockford <mark.crockford@cghtransportation.com>; Jade Huangfu <jade.huangfu@cghtransportation.com>
Subject: RE: [EXTERNAL] ARGO Lions Valley TOR - For Review

Hi Syed,

I hope you had a nice weekend. I just wanted to reach out and see if you've been able to review the email below and locate the requested background TISs.

Kind regards,
Robin Marinac

Robin Marinac, P.Eng.
CGH Transportation Inc.
P: 437-242-5183
E: robin.marinac@cghtransportation.com

From: Robin Marinac
Sent: September 18, 2024 11:43 AM
To: Syed Rizvi <syed.rizvi@oakville.ca>
Cc: Mark Crockford <mark.crockford@cghtransportation.com>; Jade Huangfu <jade.huangfu@cghtransportation.com>
Subject: RE: [EXTERNAL] ARGO Lions Valley TOR - For Review

Hi Syed,

Thank you for the quick response on our TOR. We've also received feedback from Region staff on our TOR and based on that I'd like to highlight some differences:

With respect to the TMC dates of October 2023 and November 2022, Region staff have indicated that they do not object to the usage of the proposed TMCs in our TOR. As these are Regional intersections, we are inclined to follow their guidance on the usage of these traffic counts. Please advise if you still feel that these intersections need to be recounted.

A compound annual growth rate of 2% along Dundas Street, and future volume projections and calculation methodology for William Halton Parkway has been supplied by Halton Region staff. As such, we propose to follow their requested growth rate and future growth methodology on Regional roadways (Dundas Street and William Halton Parkway) in the Study Area. One thing I would like to note is that all Town roads within the Study Area (Harasym Trail. Fourth Line, Sweetwater Gate/ Proudfoot Trail, and Lions Valley Road) serve areas that are currently built out or will have future growth captured through the consideration of background development site traffic. As such, a growth rate of 3% on Town roads in the proposed Study Area is considered overly conservative and instead we would recommend the use of a 1% compound annual growth rate on Town roads within the Study Area.

The Region has also indicated that HOV lanes along Dundas Street should be considered in our 2029 future analysis horizon as well as all other future analysis horizons beyond 2029.

Additionally, can you please provide us with the TISs for the following background developments:

- 2165 Dundas Street West
- Halton Regional Courthouse
- Oakville Green
- 1357 Dundas Street W Phase 1
- 1357 Dundas Street W Phase 2
- 1388 Dundas Street West
- 1280 Dundas Street West

Kind regards,
Robin Marinac

Robin Marinac, P.Eng.
CGH Transportation Inc.
P: 437-242-5183
E: robin.marinac@cghtransportation.com

From: Syed Rizvi <syed.rizvi@oakville.ca>
Sent: September 10, 2024 10:37 AM
To: Robin Marinac <robin.marinac@cghtransportation.com>; Khan, Ayesha <Ayesha.Khan@halton.ca>
Cc: Mark Crockford <mark.crockford@cghtransportation.com>; Bart Lopat <bart@argoland.com>; Jessica Byers <jessica@argoland.com>; Robert Thun <robert.thun@oakville.ca>
Subject: RE: [EXTERNAL] ARGO Lions Valley TOR - For Review

Hi Robin,

Comments on the draft TOR for the proposed site development by Transportation staff are attached herewith.

Feel free to contact if you have any questions.

Thanks,
Syed

Syed Rizvi, **M.Sc., P. Eng**
Transportation Engineer
Transportation and Engineering
Town of Oakville | 905-845-6601, ext. 3981 | www.oakville.ca

From: Robin Marinac <robin.marinac@cghtransportation.com>
Sent: Thursday, August 29, 2024 5:10 PM
To: Khan, Ayesha <Ayesha.Khan@halton.ca>; Syed Rizvi <syed.rizvi@oakville.ca>
Cc: Mark Crockford <mark.crockford@cghtransportation.com>; Bart Lopat <bart@argoland.com>; Jessica Byers <jessica@argoland.com>
Subject: [EXTERNAL] ARGO Lions Valley TOR - For Review

Hi Syed and Ayesha,

Please see the attached Terms of Reference (TOR) Scoping document for the ARGO Lions Valley development lands in North Oakville. The TOR includes a preliminary concept plan which may be subject to minor changes.

Please provide any questions or comments on our proposed scope of work.

Kind regards,
Robin Marinac

Robin Marinac, P.Eng.
CGH Transportation Inc.
P: 437-242-5183
E: robin.marinac@cghtransportation.com

- Reliance Letter as per town's template for the reports and information submitted regarding the environmental site conditions (for the RSC supporting documents). This may be required based on the findings of the ESAs.

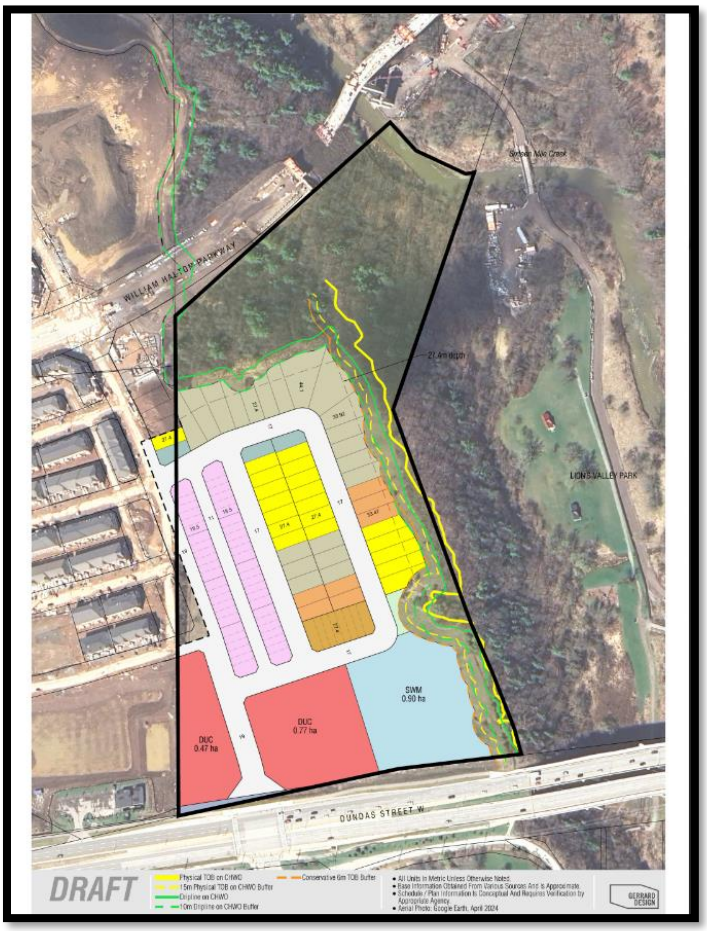
Process:
1. FSS review cycles (to determine constraints and any issues). EIR to be generally developed and approved.
2. ZBA submission
3. Draft Plan submission once FSS is approved or in final stages of approval.

4 Transportation Services, Transportation Engineer

Aquisha Khan, aquisha.khan@oakville.ca

Pre-Consultation

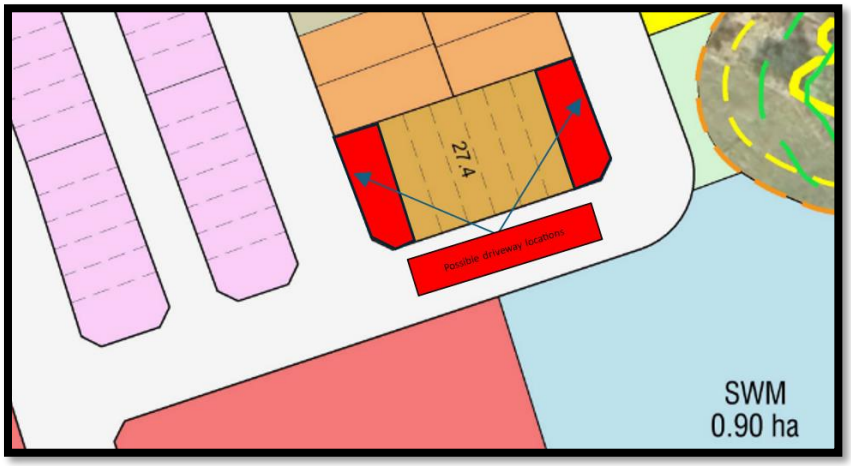
Transportation Planning Preliminary Comments



Preliminary Comments:

- Applicant to please provide details on the width of the lot sizes.
- Applicant to provide/illustrate anticipated connectivity to future trails, where applicable, as per the parks north Oakville trail plan.

- Applicant to ensure that the proposed driveways for the corner lots are outside the daylight triangles. Suggestion to entertain placing the driveways on the longer side of the townhouse complex.



Submission Requirements:

The following would be required:

- Transportation Impact Study to be undertaken by a qualified Transportation engineer with an agreed approved scope of work from Town staff.
  The memo should include details on the existing site infrastructure and proposed infrastructure as well as shall include but is not limited to:
  - Bicycle/Pedestrian Connectivity Plan (provide/illustrate the impacts to existing trails and sidewalk)
  - Turning Movement Plans for all anticipated vehicle types.
  - Parking Justification Demand Section,
  - Transportation Demand Management Plan. For implementation of the program please discussed with town sustainable transportation program coordinator.
- Preliminary Traffic Calming Measure Plan, where applicable.
- Preliminary On-Street Parking Plan.
- Preliminary Construction Mitigation Plan/Traffic Control Plan as outlined in OTM Book 7, this should include a memo detailing the mitigative measures for the pre-construction, the construction and the post construction phases.

5 Building Services, Zoning Examiner
Matt Rubic, matt.rubic@oakville.ca

Pre-Consultation

The following preliminary comments are based on the material provided for discussion purposes only and should not be construed as formal zoning comments on the proposal.

Draft Plan of Subdivision

1. A surveyor's certificate providing lot areas, lot frontages and lot depths is required prior to draft approval.
2. For blocks which will be combined with adjacent lands to create future lots: Lot areas, frontages and lot depths will be confirmed for the combined blocks qualifying as lots prior to draft approval of

3. Please note that an retaining adjacent to the NHS trail will not be accepted by the Town. Additionally, the maximum slope allowable is 3:1. Please revise the grading plan as needed to ensure that the lots on Sreet A do not require the above.

4. How will the Harasym Trail roadway spill drainage between the east and west sides to ensure that the proposed drainage conditions are consistent with the drainage catchment plans.

5. Back slope of grading limit on the east side of the pond does not meet the max 3:1 standards. Please revise as this will cause potential for erosion and long term maintenance issues. Is some cases the slope exceeds 2:1. Based on this, the pond may need to be shifted west to accommodate.

Water Resource Engineer Comments:

1. The EIR/FSS does not reference the Town of Oakville's CLI-ECA. This should be included, and alternatives should be explored to ensure compliance.

2. While the ponds provide overcontrol for the Dundas Street frontage area, it appears that the flow from uncontrolled drainage along Dundas Street properties has not been incorporated into the peak flow calculations relative to targets. Please revise accordingly.

3. Please note that the minimum length to width ratio of the Pond must be 3:1, 5:1 preferred. How does the flow path work for this pond? It's difficult to know as the path from the forebay from the main cell is not shown.

4. The original EIR/FSS Graydon Banning/Martillac EIR/FSS accounted for more portions of the development to be sent to the pond. This includes the rears of the majority of the lots backing on to the NHS/trail area. Town staff requires that rear yards be assumed to drain to Pond 5A until the clean water swale outlet has been further assessed and the LID strategy is confirmed.

5. Provide discussion regarding the emergency spill out of the pond, into the Dundas ROW. Does The sewer system on Dundas have capacity to accommodate this flow? Please provide additional inputs.

6. Add major system flows to the catchment plans and provide an analysis demonstrating that major flows are contained within the ROW.

7. Since underground parking is proposed, include a discussion on whether permanent dewatering will be required and how it will be managed. Have the storm sewers and pond been designed to accommodate the additional groundwater anticipated from sump pumps? Please advise

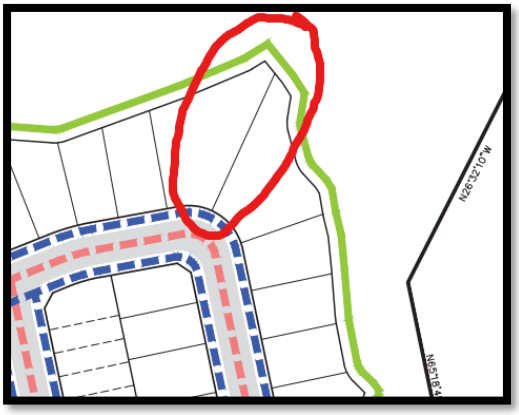
7 Transportation Services, Transportation Engineer

Syed Rizvi, syed.rizvi@oakville.ca

Circulation 1

Sustainable Transportation (M. Dimas)

1. Site Plan
   a. [Circ. 1] – Please consider a connection to the trail in this location.



b. [Circ1] Please show, on the pedestrian circulation plan, the proposed locations of the pedestrian crossings, any mid block crossings, and including on Harasym Trail.
c. [Circ1] NB. As mentioned in the TIS, any future development of stacked townhouse will require bike parking zoning requirements.

2. Transportation Demand Management Measures
   a. [Circ. 1] – A welcome package for new occupants/owners should be including under TDM measures in the TIS, and the content will be approved by the Sustainable Transportation Program Coordinator.

Oakville Transit (J. Phoenix)

1. [Circ. 1] – At this time, fixed route transit service is available on Dundas, via Route 5. As noted in the TIS, there are future plans for higher order (BRT) service on Dundas, in addition to William Halton Parkway and Harasym being identified as future transit routes. Therefore, pedestrian connections, in particular to Dundas and William Halton, and as shown on the transit facility plan, are very important to support access to public transit.

Transportation Services (S. Rizvi)

Based on Site plan and TIS prepared by CGH dated December 2024, Transportation Planning provides following comments:

1. Site Plan
   a. [Circ. 1] – Reference appendix H, the site plan showing the location of the traffic calming curb extension should be verified by submitting the area drawing to the town's development engineering staff for review and approval.

2. Traffic Impact Assessment/Study
   a. Circ. 1 Sensitivity Analysis – Confirmation is required to verify that the proposed mitigation measures such as extending southbound left-turn lane storage lengths at the Dundas Street West and Fourth Line intersection for future horizon years of analysis can be physically implemented within the constraints the current road layouts.

3. Preliminary Construction / Temporary Traffic Control Management Plan
   a. [Circ. 1] – Please submit a Preliminary Construction Traffic Control Management Plan Memo detailing mitigative measures before construction, during construction and post construction phases as per Ontario Traffic Manual (OTM) Book 7.

Syed Rizvi, P. Eng.
Transportation Engineer, West Oakville
Transportation Planning
Syed.rizvi@oakville.ca
(905) 845-6601, Ext: 3981

INTERNAL DEPARTMENTS

8 Fire Department, Fire Prevention Officer

Davin Lindsay, davin.lindsay@oakville.ca

Circulation 1

Rev'd zoning By law amendment/ Plan of Subdivision application. Detail design review to be completed at Site Plan and Building Permit phases of development review.

9 Building Services, Zoning Examiner

Matt Rubic, matt.rubic@oakville.ca

Circulation 1

We have reviewed the above noted development application circulation and have the following comments:

Zoning By-law Amendment

Based on the draft by-law and parking justification study provided by the applicant, zoning recommends the following:

1. A reduced rear yard of 6.0m is proposed for lots 14,15 and 16 should be regulated by block regulations requiring a site figure to delineate the location of these lots.
2. The draft proposes encroachment for non-structural elements where the current permission is for 0.6m. Please provide clarification for which items require a 1.0m encroachment permission.
3. Regulations for rear lane townhouses are proposed but the plan does not indicate rear lanes.
4. Regulations are proposed for a minimum landscape strip where landscape strip is not a requirement for Detached Dwellings or Street Townhouses. Was the intent to reduce minimum landscape 2.4m x 2.4m landscape area dimensions?

5. Please provide clarification on why the amenity area regulation under section 4.17.2 i) shall not apply for Street Towns.
6. When the applicant's draft by-law has been vetted by you (the planner), please prepare your draft by-law and circulate the draft for review. Further comments will be provided when the draft by-law is circulated.

Plan of Subdivision

7. For blocks which will be combined with adjacent lands to create future lots: Lot areas, frontages and lot depths will be confirmed for the combined blocks qualifying as lots prior to draft approval of adjacent lands. Please note that under section 4.11.4 of zoning by-law 2009-189, as amended, blocks not qualifying as lots until they are combined with additional land so as to qualify as lots, shall be used for the purpose of horticulture only and no building or structure may be erected thereon.
8. A surveyor's certificate providing lot areas, lot frontages and lot depths is required prior to draft approval.

10 Transportation and Engineering, Widenings & Addressing

Vince Blosser, vince.blosser@oakville.ca

Circulation 1

Addressing:
Rebecca Medaric, rebecca.medaric@oakville.ca

Street naming and addressing would be assigned after the third submission of engineering drawings to Development Engineering.

At that time, I work with the developer to assign the street names, either from the pre-approved list, or from their suggestions (pending EMS approvals).

11 Legal, Realty Services

Jim Knighton, jim.knighton@oakville.ca

Circulation 1

Planner confirmed NOEMP Agreement in place. No CILP implications

12 Parks and Open Space, Urban Forester

Tony Molnar, tony.molnar@oakville.ca

Circulation 1

Project: Argo Lions Valley

Interim Street and Future Harasym Trail:

Martillac Estates Subdivision west of the subject site constructed an interim street at the eastern limits of the subdivision which included Regional water and wastewater. The extension of Regional water and wastewater to service the CWHO lands from Martillac Estates Subdivision should be included in the FSS. The FSS should be revised to include which development is responsible for the costs related to the removal of the interim street and the cost related to the inspection and testing of Regional infrastructure that may be impacted by the removal of the interim street and construction of Harasym Trail.

Emergency Spill (EIR/FSS):

As denoted through the EIR/FSS, specifically on *the Conceptual Grading, Storm and Sanitary Services Plan, a*n emergency spill condition is denoted by a "E" on the conceptual material provided.

At this time, the provided material does not provide sufficient justification or clarification for supporting an emergency spill condition. The Region requires additional information on the potential frequency of an emergency spill onto Dundas Street, the flow rate and drainage of the emergency spill and any controls that can be put in place to mitigate impacts to Dundas Street. Provided so, the Region would not be in a position to support the emergency spill. Furthermore, encumbrances onto Dundas Street are not permitted. It is recommended that the applicants consulting team conduct a technical meeting with the Region's Development Engineering to discuss next steps.

Waste Management:

To ensure that Regional waste collection services can be provided in a safe and cost-effective manner, this proposal has been reviewed against the Region's *Development Design Guidelines for Source Separation of Solid Waste.*

The Region has considered the subject application from a Regional waste collection perspective and notes the following:

- Region waste will service all residential dwellings for full residential curb side waste collection once construction is completed and units are 90% occupied.
- Regarding the proposed two future development blocks, Regional waste will require more information at time of the future Site Plan application, including a Waste Management Plan, according to Halton Region's guidelines, before confirming waste collection services.
- Please note that Regional waste will not service any commercial units for waste collection development. Any units would need private collection of waste.

Transportation:

In accordance with the MOU and to support an effective Regional transportation network, Halton Region provides the following comments.

Land Dedication:

The existing right-of-way is sufficient to meet the ultimate Dundas Street right-of-way requirements.

A daylight triangle measuring 15m x 15m at Dundas Street (Regional Road 5) and Future Harasym Trail shall be dedicated to the Regional Municipality of Halton for the purpose of road right-of-way widening and future road improvements.

All lands to be dedicated to Halton Region shall be dedicated with clear title (free and clear of encumbrances) and a Certificate of title shall be provided, in a form satisfactory to the Director of Legal Services or his designate.

Any proposed signage, plantings etc., for the site must be placed outside of the new Regional right-of-way (on private property).

Multi-Use Trail:

The developer is responsible for the design and construction of a 3.0m multi-use trail along the north side of Dundas Street. Detail design drawings will be required for this facility (location, design specs, etc.,) for review and approval by Halton Region and the Town of Oakville.

Access:

Access to the subdivision is proposed via the fourth (north) leg of the existing signalized intersection of Dundas Street at Fourth Line/Harasym Trail.

Studies: Traffic Impact:

A Transportation Impact Study has been prepared by CGH Transportation dated December 2024.

The proposed development is anticipated to generate 112 AM and 138 PM peak hour two-way trips. This includes an approximation of a 150 townhouse/apartment units for the Future Development block as well.

Operational constraints are projected at the intersection of Dundas Street at Fourth Line, specifically for the northbound left-turn storage lane to 30 metres which will be required to be extended to accommodate expected queues. In addition, the southbound left turn storage at the intersection of Dundas Street at Sweetwater Gate/Proudfoot Trail is recommended to be extended to 80 metres to accommodate expected queues.

The subject development is expected to have a minor impact on the overall road network. The study is found to be satisfactory; no further revisions required.

Studies: Noise Feasibility:

An Environmental Noise Feasibility Study has been prepared by Valcoustics Canada Ltd., dated December 2024.

The road traffic data used for Dundas Street and William Halton Parkway are acceptable. A 1.8 metre high sound barrier is required along the south property of the detached dwelling and standard townhouse block closest to the SWM pond. This is not adjacent to the Regional property line.

Project Number	2024-110
Project	ARGO Lions Valley
Document	Consolidated Comments Report
Date	11-Jun-25

Comment #	Comment	Response
Town of Oakville		
Sustainable Transportation		
1	2. Transportation Demand Management Measures a. [Circ. 1] – A welcome package for new occupants/owners should be including under TDM measures in the TIS, and the content will be approved by the Sustainable Transportation Program Coordinator.	Noted. This has been added as a TDM measure within the TIS. A welcome package for new occupants and owners will be provided at the time of home sales that will include information on active transportation facilities. The contents of the welcome package will be approved by the Town of Oakville sustainable transportation program coordinator.
Transportation Services		
2	1. Site Plan a. [Circ. 1] – Reference appendix H, the site plan showing the location of the traffic calming curb extension should be verified by submitting the area drawing to the town's development engineering staff for review and approval.	Noted. Appendix H has been sent to the Town's development engineering staff on May 20, 2025, for comment and review in response to this comment. A response was not received prior to this submission. It is however noted that the specific design details and exact locations of the curb extensions will be determined at the detailed design stage and will be constructed as per Town of Oakville Standards.
3	2. Traffic Impact Assessment/Study a. Circ. 1 Sensitivity Analysis – Confirmation is required to verify that the proposed mitigation measures such as extending southbound left-turn lane storage lengths at the Dundas Street West and Fourth Line intersection for future horizon years of analysis can be physically implemented within the constraints the current road layouts.	Mitigation measures recommending the extension of turning lanes, including the westbound left-turn and southbound left-turn lanes at the intersection of Dundas Street West and Sweetwater Gate / Proudfoot Trail, have been reviewed in Section 9 of the report. Given that as-built drawings and aerial imagery of the southbound approach of the intersection of Dundas Street West and Sweetwater Gate / Proudfoot Trail is not updated, the feasibility of the southbound left-turn lane cannot be determined at this time. It is recommended that the Town or Region monitor this intersection to ensure the appropriate storage length is provided to accomodate the traffic volumes generated by the adjacent lands. Due to the existing median along the westbound approach, the westbound left-turn storage extension is shown to be able to be accommodated at the intersection of Dundas Street West and Sweetwater Gate / Proudfoot Trail. The additions of protected and permitted left-turn phases will require updates to signal timing plans and signal heads at this intersection. As these measures do not require physical changes to the road network, they are considered to be feasible in all future horizons. Additionally, the existing northbound left-turn lane storage distance at Dundas Street West and Fourth Line has been re-evaluated with an extended storage distance and updated in the Synchro model to more accurately reflect the existing configuration.
4	3. Preliminary Construction / Temporary Traffic Control Management Plan a. [Circ. 1] – Please submit a Preliminary Construction Traffic Control Management Plan Memo detailing mitigative measures before construction, during construction and post construction phases as per Ontario Traffic Manual (OTM) Book 7.	Through consultation with Town staff following the receipt of the pre-consultation comments, staff acknowledged that the provision of a construction mitigation plan / traffic control plan is premature and is not required at this time. As such, a construction mitigation plan / traffic control plan will be provided when details regarding construction requirements and staging are available. This work will include pre-construction, construction, and post-construction phases and will be in accordance with OTM Book 7.
Halton Region Transportation		
5	<u>Studies: Traffic Impact:</u> A Transportation Impact Study has been prepared by CGH Transportation dated December 2024. The proposed development is anticipated to generate 112 AM and 138 PM peak hour two-way trips. This includes an approximation of a 150 townhouse/apartment units for the Future Development block as well.	Noted.
6	Operational constraints are projected at the intersection of Dundas Street at Fourth Line, specifically for the northbound left-turn storage lane to 30 metres which will be required to be extended to accommodate expected queues. In addition, the southbound left turn storage at the intersection of Dundas Street at Sweetwater Gate/Proudfoot Trail is recommended to be extended to 80 metres to accommodate expected queues.	Noted.
7	The subject development is expected to have a minor impact on the overall road network. The study is found to be satisfactory; no further revisions required.	Noted.

2. While the ponds provide overcontrol for the Dundas Street frontage area, it appears that the flow from uncontrolled drainage along Dundas Street properties has not been incorporated into the peak flow calculations relative to targets. Please revise accordingly. ***Response noted, cleared.***

3. Please note that the minimum length to width ratio of the Pond must be 3:1, 5:1 preferred. How does the flow path work for this pond? It's difficult to know as the path from the forebay from the main cell is not shown. ***Response noted, cleared.***

4. The original EIR/FSS Graydon Banning/Martillac EIR/FSS accounted for more portions of the development to be sent to the pond. This includes the rears of the majority of the lots backing on to the NHS/trail area. Town staff requires that rear yards be assumed to drain to Pond 5A until the clean water swale outlet has been further assessed and the LID strategy is confirmed. ***The confirmation that the block is adequately sized if rear yards are directed to Pond 5A is noted. More of the rear yards are to be directed to Pond 5A, and the servicing path to the pond must be shown and assessed for feasibility to avoid potential erosion impacts to the Valley.***

5. Provide discussion regarding the emergency spill out of the pond, into the Dundas ROW. Does The sewer system on Dundas have capacity to accommodate this flow? Please provide additional inputs. ***Response noted, Refer to Brian5's comment***

6. Add major system flows to the catchment plans and provide an analysis demonstrating that major flows are contained within the ROW. ***Response noted, cleared.***

7. Since underground parking is proposed, include a discussion on whether permanent dewatering will be required and how it will be managed. Have the storm sewers and pond been designed to accommodate the additional groundwater anticipated from sump pumps? Please advise. ***Response noted, cleared.***

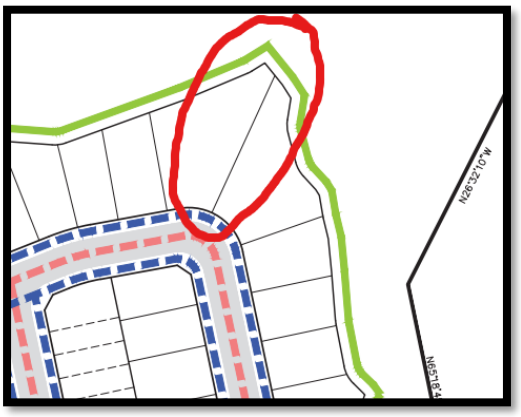
7 Transportation Services, Transportation Engineer

Syed Rizvi, syed.rizvi@oakville.ca

Circulation 2

Sustainable Transportation (M. Dimas)

1. Site Plan
   a. [Circ. 2] – Staff have no further comments at this time.
   b. [Circ. 1] –addressed Please consider a connection to the trail in this location.



c. [Circ1addressed] Please show, on the pedestrian circulation plan, the proposed locations of the pedestrian crossings, any mid block crossings, and including on Harasym Trail.
d. [Circ1]addressed NB. As mentioned in the TIS, any future development of stacked townhouse will require bike parking zoning requirements.

2. Transportation Demand Management Measures
   a. [Circ. 2] – A welcome package should incorporate a neighbourhood map. Examples can be seen here Neighbourhood Information Map .
   b. [Circ. 1] – addressed A welcome package for new occupants/owners should be including under TDM measures in the TIS, and the content will be approved by the Sustainable Transportation Program Coordinator.

Oakville Transit (J. Phoenix)

1. [Circ. 2] – Staff have no further comments at this time.
2. [Circ. 1] – At this time, fixed route transit service is available on Dundas, via Route 5. As noted in the TIS, there are future plans for higher order (BRT) service on Dundas, in addition to William Halton Parkway and Harasym being identified as future transit routes. Therefore, pedestrian connections, in particular to Dundas and William Halton, and as shown on the transit facility plan, are very important to support access to public transit.

Transportation Services (S. Rizvi)

Based on Site plan and TIS prepared by CGH, Transportation Planning provides following comments:

1. Site Plan
   a. [Circ. 2] – It is noted that the location and design of the traffic calming curb extension should be coordinated with the Town's Development Engineering staff during detailed design to ensure consistency with the approved plans and standards.
   b. [Circ. 1] Addressed – Reference appendix H, the site plan showing the location of the traffic calming curb extension should be verified by submitting the area drawing to the town's development engineering staff for review and approval.

2. Traffic Impact Assessment/Study
   a. [Circ. 2] – If the feasibility of implementing the proposed mitigation measures in TIS (e.g., extending southbound left-turn lane storage lengths at the Dundas Street West and Fourth Line intersection) cannot be confirmed at this stage, an alternative, technically feasible mitigation measure should be identified and assessed to ensure that future horizon year capacity and operational requirements can be met within the constraints of the existing road layout.
   b. [Circ. 1] Not Addressed Sensitivity Analysis – Confirmation is required to verify that the proposed mitigation measures such as extending southbound left-turn lane storage lengths at the Dundas Street West and Fourth Line intersection for future horizon years of analysis can be physically implemented within the constraints the current road layouts.

3. Preliminary Construction / Temporary Traffic Control Management Plan
   a. [Circ. 2] – A Preliminary Construction Traffic Control Management Plan is required in accordance with the Town of Oakville's policy. Detailed requirements for the plan will be confirmed and refined at the construction stage.
   b. [Circ. 1] Not Addressed – Please submit a Preliminary Construction Traffic Control Management Plan Memo detailing mitigative measures before construction, during construction and post construction phases as per Ontario Traffic Manual (OTM) Book 7.

Syed Rizvi, P. Eng.
Transportation Engineer, West Oakville
Transportation Planning
Syed.rizvi@oakville.ca
(905) 845-6601, Ext: 3981

INTERNAL DEPARTMENTS

8 Fire Department, Fire Prevention Officer

Davin Lindsay, davin.lindsay@oakville.ca

Circulation 2

Rev'd zoning By law amendment/ Plan of Subdivision application. Detail design review to be completed at Site Plan and Building Permit phases of development review.

9 Building Services, Zoning Examiner

Matt Rubic, matt.rubic@oakville.ca

Circulation 2

We have reviewed the above noted development application circulation and have the following comments:

Zoning By-law Amendment

Based on the draft by-law and parking justification study provided by the applicant, zoning recommends the following:

1. Regulations for rear lane townhouses are proposed under section 8.XXX.5. It appears the intent is to match abutting zone regulation for the abutting block 28 plan 20M-1258. In which case the property should be re-zoned the same zone NC sp 83 rather than cross reference the regulations for rear lane townhouses to avoid split zoning the property.
2. When the applicant's draft by-law has been vetted by you (the planner), please prepare your draft by-law and circulate the draft for review. Further comments will be provided when the draft by-law is circulated.

Plan of Subdivision

3. For blocks which will be combined with adjacent lands to create future lots: Lot areas, frontages and lot depths will be confirmed for the combined blocks qualifying as lots prior to draft approval of adjacent lands. Please note that under section 4.11.4 of zoning by-law 2009-189, as amended, blocks not qualifying as lots until they are combined with additional land so as to qualify as lots, shall be used for the purpose of horticulture only and no building or structure may be erected thereon.
4. A surveyor's certificate providing lot areas, lot frontages and lot depths is required prior to draft approval.

10 Transportation and Engineering, Widenings & Addressing

Vince Blosser, vince.blosser@oakville.ca

Circulation 1

Addressing:
Rebecca Medaric, rebecca.medaric@oakville.ca

Street naming and addressing would be assigned after the third submission of engineering drawings to Development Engineering.

At that time, I work with the developer to assign the street names, either from the pre-approved list, or from their suggestions (pending EMS approvals).

11 Legal, Realty Services

Jim Knighton, jim.knighton@oakville.ca

Circulation 2

Planner confirmed NOEMP Agreement in place. No CILP implications

Matt Day, Finance:
Development Charges, net of any demolition credits would be applicable to this development.

12 Parks and Open Space, Urban Forester

Tony Molnar, tony.molnar@oakville.ca

Circulation 2

Project: Argo Lions Valley

Materials reviewed:

1) Tree Inventory and Preservation Plan Report by Kuntz Forestry Consulting revised June 10, 20205.
2) Existing Conditions, Proposed Site Plan Tree Inventory and Preservation Plan Figures 1

If you have any further questions or inquiries, please contact Customer Service at 1-888-664-9376 or e-mail CustomerCommunications@HydroOne.com to be connected to your Local Operations Centre

If you have any questions please feel free to contact myself.

Thank you,

Land Use Planning Department
Hydro One Networks Inc.
Email: LandUsePlanning@HydroOne.com

22 Ontario Ministry of Transportation

Nunes, Paul (MTO), Paul.Nunes@ontario.ca

Circulation 1

Re: Zoning By-law Amendment & Draft Plan of Subdivision – Request for Comments
Proposed residential development
Argo Lions Valley Ltd.
1303 Dundas Street West, Oakville, ON.
Town Files: **Z.1323.01** and **24T-25002/1323**

After review, the above-described property does not appear to be located within the MTO Permit Control Area, therefore, a Building & Land Use Permit(s) will not be required from this office. We have no further comments.

23 Metrolinx

Jenna Auger, Jenna.Auger@metrolinx.com

Circulation 2

Metrolinx is in receipt of the following comprehensive applications affiliated with the subject lands 1303 Dundas Street West to facilitate a compact residential development. The subject lands are located immediately adjacent to the proposed Dundas Bus Rapid Transit (BRT) route.

Upon review, Metrolinx is able to provide the following comments:

- The Region's road widening program from 4 to 6 lanes already anticipates a future conversion to curbside BRT in the future, and at most, curbside transit-only lanes would be painted in a fashion similar to RapidTO in Toronto.

Should you have any questions, please feel free to reach out.

To ensure that Regional waste collection services can be provided in a safe and cost-effective manner, this proposal has been reviewed against the Region's *Development Design Guidelines for Source Separation of Solid Waste.*

The Region has considered the subject application from a Regional waste collection perspective and notes the following:

- Region waste will service all residential dwellings for full residential curb side waste collection once construction is completed and units are 90% occupied.
- Regarding the proposed two future development blocks, Regional waste will require more information at time of the future Site Plan application, including a Waste Management Plan, according to Halton Region's guidelines, before confirming waste collection services.
- Please note that Regional waste will not service any commercial units for waste collection development. Any units would need private collection of waste.

Transportation Development Review:

In accordance with the MOU and to support an effective Regional transportation network, the Region provides the following comments.

Land Dedication:

The existing right-of-way is sufficient to meet the ultimate Dundas Street right-of-way requirements.

A daylight triangle measuring 15m x 15m at Dundas Street West (Regional Road 5) and future Harasym Trail shall be dedicated to the Regional Municipality of Halton for the purpose of road right-of-way widening and future road improvements.

All lands to be dedicated to Halton Region shall be dedicated with clear title (free and clear of encumbrances) and a Certificate of title shall be provided, in a form satisfactory to the Director of Legal Services or his designate.

Any proposed signage, plantings etc., for the site must be placed outside of the new Regional right-of-way (on private property).

Multi-Use Trail:

The developer is responsible for the design and construction of a 3.0m multi-use trail along the north side of Dundas Street West. Detail design drawings will be required for this facility (location, design specs, etc.) for review and approval by Halton Region and the Town of Oakville.

Access:

Access to the subdivision is proposed via the fourth (north) leg of the existing signalized intersection of Dundas Street West at Fourth Line/Harasym Trail. The required road improvements will be required to be included as part of the detailed designs at the Engineering Submission stage.

Technical Study – Transportation Impact Study:

A Transportation Impact Study has been prepared by CGH Transportation, dated December 2024. A revised study has been included as part of the 2nd submission, dated July 2025.

The proposed development is anticipated to generate 112 AM and 138 PM peak hour two-way trips. This includes an approximation of 150 townhouse/apartment units for the Future Development block as well.

Operational constraints are projected at the intersection of Dundas Street West at Fourth Line, specifically for the northbound left-turn storage lane to 30 metres which will be required to be extended to accommodate expected queues.

In addition, the southbound left turn storage at the intersection of Dundas Street West at Sweetwater Gate/Proudfoot Trail is recommended to be extended to 80 metres to accommodate expected queues. It is noted that the extension of the southbound left-turn storage at Dundas Street West and Sweetwater Gate/Proudfoot Trail is due to existing and future background traffic only. The subject application does not directly contribute to the capacity constraints.
The subject development is expected to have a minor impact on the overall road network. The revised study is found to be satisfactory; no further revisions are required.

Technical Study – Noise Feasibility:

An Environmental Noise Feasibility Study has been prepared by Valcoustics Canada Ltd., dated December 2024.

The road traffic data used for Dundas Street West and William Halton Parkway are acceptable. A 1.8 metre high sound barrier is required along the south property of the detached dwelling and standard townhouse block closest to the SWM pond. This is not adjacent to the Regional property line.

The proposed Warning Clauses in Table 3 are deemed acceptable.

Agreement:

The owner must enter into a Servicing Agreement (through the Development Project Manager) for the completion of required Works for all development associated road improvements (north leg intersection works, multi-use trail, illumination, signage & pavement markings, etc.). The owner is responsible for all costs associated with the improvements detailed as part of the works and must submit for approval detail design drawings and cost estimates.

Set-Backs & Zero Lot Lines:

With respect to the development frontages, the Region requests that set-backs be implemented/maintained from roadway right-of-way limits (i.e.: ultimate ROW for Dundas Street), as per the Town of Oakville's Zoning By-law.

Additionally, the applicant will be required to demonstrate that construction of any underground/above ground development infrastructure (underground parking, SWM tanks, buildings, utility, etc.) will not

Project Number	2024-110
Project	ARGO Lions Valley
Document	2nd Submission Comments
Date	10-Nov-25

Comment #	Comment	Response
	Town of Oakville -Transportation Services	
1	1.Site Plan a.[Circ. 2] – It is noted that the location and design of the traffic calming curb extension should be coordinated with the Town's Development Engineering staff during detailed design to ensure consistency with the approved plans and standards. b.[Circ. 1] Addressed – Reference appendix H, the site plan showing the location of the traffic calming curb extension should be verified by submitting the area drawing to the town's development engineering staff for review and approval.	Noted.
2	2.Traffic Impact Assessment/Study a.[Circ. 2] – If the feasibility of implementing the proposed mitigation measures in TIS (e.g., extending southbound left-turn lane storage lengths at the Dundas Street West and Fourth Line intersection) cannot be confirmed at this stage, an alternative, technically feasible mitigation measure should be identified and assessed to ensure that future horizon year capacity and operational requirements can be met within the constraints of the existing road layout. b.[Circ. 1] Not Addressed Sensitivity Analysis – Confirmation is required to verify that the proposed mitigation measures such as extending southbound left-turn lane storage lengths at the Dundas Street West and Fourth Line intersection for future horizon years of analysis can be physically implemented within the constraints the current road layouts.	The following proposed mitigation measures are discussed in the both the second and third submission of the TIS: Extension of the westbound left-turn lane at the intersection of Dundas St W and Sweetwater Gate / Proudfoot Trail. -Figure 41 in the TIS demonstrates that the proposed storage length extension can be accommodated within the constraints of the existing road layout. Extension of the southbound left-turn lane at the intersection of Dundas St W and Sweetwater Gate / Proudfoot Trail -As missing pavement markings on the southbound approach, shown in Figure 40, do not allow for the existing storage and taper lengths to be determined for this movement, a 30-metre storage length and default 15 metre taper length was used in the existing conditions analysis for analysis purposes only. Sweetwater Gate is a 22-metre Avenue / Transit Corridor, which allows for a centre turn-lane to be provided for. As such, the extension of the southbound left-turn lane at this intersection can be accommodated beyond the assumed initial 30 metre storage length to a maximum of approximately 170 metres north where it bends to meet Shevchenko Boulevard. Therefore, while the initial storage length of this movement is unknown, the proposed extension is considered a technically feasible mitigation measure as it can accommodated within the constraints of the existing road layout and ROW. Text and figures demonstrating this have been added to the third submission of the TIS. Therefore, all physical mitigation measures proposed within the updated TIS can be accommodated within the constraints of the current road layouts.
3	3.Preliminary Construction / Temporary Traffic Control Management Plan a.[Circ. 2] – A Preliminary Construction Traffic Control Management Plan is required in accordance with the Town of Oakville's policy. Detailed requirements for the plan will be confirmed and refined at the construction stage. b.[Circ. 1] Not Addressed – Please submit a Preliminary Construction Traffic Control Management Plan Memo detailing mitigative measures before construction, during construction and post construction phases as per Ontario Traffic Manual (OTM) Book 7.	A draft preliminary construction traffic control plan has been prepared by DSEL and is included in the Conceptual Siltation Control Plan which is included in an Appendix in the updated TIS. It is assumed that a temporary right-in / right-out access will be provided on Dundas Street West with appropriate signage to support the access. All signage will be designed and installed in accordance with OTM Book 7 and will be confirmed by the contractor prior to implementation. It is noted that this plan is preliminary and will be further refined once a servicing contractor completes this as part of their pre-mobilization work prior to construction. On November 6, 2025, the Conceptual Siltation Control Plan was submitted to Town staff. On November 9, 2025, Town staff confirmed that what was submitted is appropriate to address this comment and that this comment is considered cleared.
	Region of Halton Transportation	

4	Access: Access to the subdivision is proposed via the fourth (north) leg of the existing signalized intersection of Dundas Street West at Fourth Line/Harasym Trail. The required road improvements will be required to be included as part of the detailed designs at the Engineering Submission stage.	Noted.
5	Set-Backs & Zero Lot Lines: With respect to the development frontages, the Region requests that set-backs be implemented/maintained from roadway right-of-way limits (i.e.: ultimate ROW for Dundas Street), as per the Town of Oakville's Zoning By-law. Additionally, the applicant will be required to demonstrate that construction of any underground/above ground development infrastructure (underground parking, SWM tanks, buildings, utility, etc.) will not impact or encroach upon the Regional right-of-way (i.e.: temporary or permanent infrastructure including structural tiebacks will not be permitted within the Regional right-of-way). The location of development infrastructure (including but not limited to: underground / above ground parking structure, building, SWM storage tank, utility, etc.) 0m from the property line would limit or potentially preclude the Region's ability to locate infrastructure, such as utilities, and will limit any future Regional Capital Project's grading flexibility, within the Regional right-of-way in close proximity to the right-of-way limit, i.e. within the zone of influence. Transportation Development Review does not support any set-backs of 0m from property line.	Noted.
6	Construction Activities: The following information is provided concerning construction and impacts on the Region's right-of-way. Construction Methods – Shoring/Tiebacks, Open Excavation, etc.: A detailed submission of construction methods is required for internal review by various Regional groups prior to proceeding with plans for construction through the Servicing Agreement/detailed design drawings. This review will be through the Planner to groups such as System Improvements, Water/Wastewater Operations, Road Operations, Transportation Planning, Development Project Manager and Engineering & Construction. Construction – Crane Swing: If it is determined that the construction crane swing will impact the Region's right-of-way, the applicant must submit a Municipal Consent application, with Engineering Drawings, for review and approval, which would go through Halton's internal review process to various staff & departments. There will be specific requirements for the Agreement/Municipal Consent, including fees, security deposit, etc., and a due date for final completion. Construction – Access: Construction access, traffic management plan and any proposed use of the Regional right-of-way, is subject to review and approval from Halton Region.	Noted.

Robin Marinac, P.Eng.
CGH Transportation Inc.
P: 437-242-5183
E: robin.marinac@cghtransportation.com

From: Bart Lopat <bart@argoland.com>
Sent: November 10, 2025 8:37 AM
To: Syed Rizvi <syed.rizvi@oakville.ca>
Cc: Robin Marinac <robin.marinac@cghtransportation.com>; Catherine Buckerfield <catherine.buckerfield@oakville.ca>
Subject: RE: [EXTERNAL] Argo Lions Valley - Preliminary Construction Traffic Control Management Plan

Excellent, thanks Syed! Have a good Monday.

ARGO DEVELOPMENT CORP
Bartosz Lopat
M 905-462-4970
E bart@argoland.com
argoland.com

From: Syed Rizvi <syed.rizvi@oakville.ca>
Sent: November 9, 2025 10:21 PM
To: Bart Lopat <bart@argoland.com>
Cc: Robin Marinac <robin.marinac@cghtransportation.com>; Catherine Buckerfield <catherine.buckerfield@oakville.ca>
Subject: RE: [EXTERNAL] Argo Lions Valley - Preliminary Construction Traffic Control Management Plan

Hi Bart,

Thank you for submitting the preliminary conceptual Traffic Control Plan and confirming that the detailed plan will be provided during the pre-mobilization phase prior to construction.

Please note that the comment attached below is now considered cleared.

Thanks,
Syed

Syed Rizvi, **M.Sc., P. Eng**
Transportation Engineer
Transportation and Engineering
Town of Oakville | 905-845-6601, ext. 3981 | www.oakville.ca

From: Bart Lopat <bart@argoland.com>
Sent: Thursday, November 6, 2025 3:16 PM
To: Syed Rizvi <syed.rizvi@oakville.ca>
Cc: Robin Marinac <robin.marinac@cghtransportation.com>; Catherine Buckerfield <catherine.buckerfield@oakville.ca>
Subject: [EXTERNAL] Argo Lions Valley - Preliminary Construction Traffic Control Management Plan

Good afternoon Syed,

Hope you've been keeping well. I'm reaching out with regards to the Argo Lions Valley site and our last round of transportation comments, that included a reissue of a previous comment relating to a preliminary construction traffic control plan. It is my understanding that you and Robin from CGH had previously discussed this after our first submission and confirmed that this was not required due to such details not being available until detailed design.

Understanding that you now still would like this, I've attached a ESC plan with very preliminary traffic control details for your reference which will be submitted as part of the EIR/FSS in an effort to clear this comment. Please note that this is conceptual and will be further refined once a servicing contractor completes this as part of their pre-mobilization work prior to construction. As such, I would like to kindly confirm this comment be cleared.

3. Preliminary Construction / Temporary Traffic Control Management Plan
   a. [Circ. 2] – A Preliminary Construction Traffic Control Management Plan is required in accordance with the Town of Oakville's policy. Detailed requirements for the plan will be confirmed and refined at the construction stage.

Thank you,

ARGO DEVELOPMENT CORP

Bartosz Lopat
M 905-462-4970
E bart@argoland.com
argoland.com

Appendix C

Turning Movement Count Data

Ontario Traffic Inc.
Traffic Monitoring • Services & Products

Project #24-375 - CGH Transportation

Intersection Count Report

Intersection:	William Halton Pkwy & Harasym Trail
Municipality:	Oakville
Count Date:	Wednesday, Sep 11, 2024
Site Code:	2437500001
Count Categories:	Cars, Trucks, Bicycles, Pedestrians
Count Period:	07:00-10:00, 16:00-19:00
Weather:	Clear
Comments:	

Traffic Count Map

Intersection:	William Halton Pkwy & Harasym Trail
Site Code:	2437500001
Municipality:	Oakville
Count Date:	Sep 11, 2024

Ontario Traffic Inc.
Traffic Monitoring • Services & Products

Traffic Count Summary

Intersection:	William Halton Pkwy & Harasym Trail
Site Code:	2437500001
Municipality:	Oakville
Count Date:	Sep 11, 2024

Harasym Trail - Traffic Summary

	North Approach Totals						South Approach Totals						
	Includes Cars, Trucks, Bicycles						Includes Cars, Trucks, Bicycles						
Hour	**Left**	**Thru**	**Right**	**U-Turn**	**Total**	**Peds**	**Left**	**Thru**	**Right**	**U-Turn**	**Total**	**Peds**	**Total**
07:00 - 08:00	1	0	0	0	1	1	1	1	2	0	4	1	5
08:00 - 09:00	0	0	0	0	0	4	6	1	4	0	11	8	11
09:00 - 10:00	0	0	0	0	0	0	2	0	2	0	4	6	4
BREAK													
16:00 - 17:00	0	0	0	0	0	0	10	0	1	0	11	4	11
17:00 - 18:00	0	2	0	0	2	0	9	0	0	0	9	4	11
18:00 - 19:00	0	0	0	0	0	2	8	0	1	0	9	2	9
GRAND TOTAL	**1**	**2**	**0**	**0**	**3**	**7**	**36**	**2**	**10**	**0**	**48**	**25**	**51**

Ontario Traffic Inc.
Traffic Monitoring • Services & Products

Traffic Count Summary

Intersection: William Halton Pkwy & Harasym Trail
Site Code: 2437500001
Municipality: Oakville
Count Date: Sep 11, 2024

William Halton Pkwy - Traffic Summary

	East Approach Totals						West Approach Totals						
	Includes Cars, Trucks, Bicycles						Includes Cars, Trucks, Bicycles						
Hour	**Left**	**Thru**	**Right**	**U-Turn**	**Total**	**Peds**	**Left**	**Thru**	**Right**	**U-Turn**	**Total**	**Peds**	**Total**
07:00 - 08:00	1	0	1	0	2	0	0	0	4	0	4	0	6
08:00 - 09:00	2	4	0	0	6	2	0	1	9	0	10	0	16
09:00 - 10:00	2	0	0	0	2	0	0	0	7	0	7	1	9
BREAK													
16:00 - 17:00	3	1	0	0	4	0	0	0	5	0	5	0	9
17:00 - 18:00	2	2	0	0	4	0	0	0	2	0	2	0	6
18:00 - 19:00	0	0	0	0	0	0	0	0	5	0	5	0	5
GRAND TOTAL	**10**	**7**	**1**	**0**	**18**	**2**	**0**	**1**	**32**	**0**	**33**	**1**	**51**

Ontario Traffic Inc.
Traffic Monitoring • Services & Products

Traffic Count Data

Intersection: William Halton Pkwy & Harasym Trail
Site Code: 2437500001
Municipality: Oakville
Count Date: Sep 11, 2024

North Approach - Harasym Trail

Start Time	Cars					Trucks					Bicycles					Total Peds
					Total					Total					Total	
07:00	0	0	0	0	0	1	0	0	0	1	0	0	0	0	0	0
07:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
07:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
07:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
08:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	4
08:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
08:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
08:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
09:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
09:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
09:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
09:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
SUBTOTAL	0	0	0	0	0	1	0	0	0	1	0	0	0	0	0	5

Ontario Traffic Inc.
Traffic Monitoring • Services & Products

Traffic Count Data

Intersection: William Halton Pkwy & Harasym Trail
Site Code: 2437500001
Municipality: Oakville
Count Date: Sep 11, 2024

North Approach - Harasym Trail

Start Time	Cars					Trucks					Bicycles					Total Peds
					Total					Total					Total	
16:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
16:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
16:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
16:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
17:00	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0
17:15	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0
17:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
17:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
18:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
18:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
18:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2
18:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
SUBTOTAL	0	2	0	0	2	0	0	0	0	0	0	0	0	0	0	2
GRAND TOTAL	0	2	0	0	2	1	0	0	0	1	0	0	0	0	0	7

Ontario Traffic Inc.
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Traffic Count Data

Intersection: William Halton Pkwy & Harasym Trail
Site Code: 2437500001
Municipality: Oakville
Count Date: Sep 11, 2024

South Approach - Harasym Trail

Start Time	Cars					Trucks					Bicycles					Total Peds
					Total					Total					Total	
07:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
07:15	0	1	2	0	3	0	0	0	0	0	0	0	0	0	0	0
07:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
07:45	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1	0
08:00	1	0	2	0	3	0	0	0	0	0	0	0	0	0	0	0
08:15	0	0	0	0	0	1	0	0	0	1	0	0	0	0	0	5
08:30	0	1	1	0	2	1	0	0	0	1	0	0	0	0	0	2
08:45	3	0	1	0	4	0	0	0	0	0	0	0	0	0	0	1
09:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
09:15	1	0	1	0	2	0	0	0	0	0	0	0	0	0	0	2
09:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
09:45	0	0	1	0	1	1	0	0	0	1	0	0	0	0	0	3
SUBTOTAL	5	2	8	0	15	3	0	0	0	3	1	0	0	0	1	15

Ontario Traffic Inc.
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Traffic Count Data

Intersection: William Halton Pkwy & Harasym Trail
Site Code: 2437500001
Municipality: Oakville
Count Date: Sep 11, 2024

South Approach - Harasym Trail

Start Time	Cars					Trucks					Bicycles					Total Peds
					Total					Total					Total	
16:00	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0
16:15	3	0	0	0	3	0	0	0	0	0	0	0	0	0	0	2
16:30	2	0	1	0	3	0	0	0	0	0	0	0	0	0	0	0
16:45	3	0	0	0	3	1	0	0	0	1	0	0	0	0	0	2
17:00	2	0	0	0	2	0	0	0	0	0	1	0	0	0	1	0
17:15	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0
17:30	3	0	0	0	3	0	0	0	0	0	0	0	0	0	0	3
17:45	2	0	0	0	2	0	0	0	0	0	0	0	0	0	0	1
18:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
18:15	4	0	1	0	5	0	0	0	0	0	0	0	0	0	0	0
18:30	2	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0
18:45	2	0	0	0	2	0	0	0	0	0	0	0	0	0	0	2
SUBTOTAL	25	0	2	0	27	1	0	0	0	1	1	0	0	0	1	10
GRAND TOTAL	30	2	10	0	42	4	0	0	0	4	2	0	0	0	2	25

Ontario Traffic Inc.
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Traffic Count Data

Intersection: William Halton Pkwy & Harasym Trail
Site Code: 2437500001
Municipality: Oakville
Count Date: Sep 11, 2024

East Approach - William Halton Pkwy

Start Time	Cars					Trucks					Bicycles					Total Peds
	↰	↑	↱	↶	Total	↰	↑	↱	↶	Total	↰	↑	↱	↶	Total	
07:00	0	0	0	0	0	0	0	1	0	1	0	0	0	0	0	0
07:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
07:30	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0
07:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
08:00	2	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0
08:15	0	3	0	0	3	0	1	0	0	1	0	0	0	0	0	0
08:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2
08:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
09:00	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0
09:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
09:30	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0
09:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
SUBTOTAL	5	3	0	0	8	0	1	1	0	2	0	0	0	0	0	2

Ontario Traffic Inc.
Traffic Monitoring • Services & Products

Traffic Count Data

Intersection: William Halton Pkwy & Harasym Trail
Site Code: 2437500001
Municipality: Oakville
Count Date: Sep 11, 2024

East Approach - William Halton Pkwy

Start Time	Cars					Trucks					Bicycles					Total Peds
	↰	↑	↱	↶	Total	↰	↑	↱	↶	Total	↰	↑	↱	↶	Total	
16:00	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0
16:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
16:30	2	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0
16:45	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0
17:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
17:15	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0
17:30	1	0	0	0	1	0	0	0	0	0	0	1	0	0	1	0
17:45	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	0
18:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
18:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
18:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
18:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
SUBTOTAL	5	1	0	0	6	0	0	0	0	0	0	2	0	0	2	0
GRAND TOTAL	10	4	0	0	14	0	1	1	0	2	0	2	0	0	2	2

Ontario Traffic Inc.
Traffic Monitoring • Services & Products

Traffic Count Data

Intersection: William Halton Pkwy & Harasym Trail
Site Code: 2437500001
Municipality: Oakville
Count Date: Sep 11, 2024

West Approach - William Halton Pkwy

Start Time	Cars					Trucks					Bicycles					Total Peds
	↰	↑	↱	↶	Total	↰	↑	↱	↶	Total	↰	↑	↱	↶	Total	
07:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
07:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
07:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
07:45	0	0	3	0	3	0	0	1	0	1	0	0	0	0	0	0
08:00	0	0	3	0	3	0	0	0	0	0	0	0	0	0	0	0
08:15	0	0	3	0	3	0	0	0	0	0	0	0	0	0	0	0
08:30	0	1	3	0	4	0	0	0	0	0	0	0	0	0	0	0
08:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
09:00	0	0	1	0	1	0	0	0	0	0	0	0	0	0	0	1
09:15	0	0	2	0	2	0	0	0	0	0	0	0	0	0	0	0
09:30	0	0	2	0	2	0	0	0	0	0	0	0	0	0	0	0
09:45	0	0	1	0	1	0	0	1	0	1	0	0	0	0	0	0
SUBTOTAL	0	1	18	0	19	0	0	2	0	2	0	0	0	0	0	1

Ontario Traffic Inc.
Traffic Monitoring • Services & Products

Traffic Count Data

Intersection: William Halton Pkwy & Harasym Trail
Site Code: 2437500001
Municipality: Oakville
Count Date: Sep 11, 2024

West Approach - William Halton Pkwy

Start Time	Cars					Trucks					Bicycles					Total Peds
					Total					Total					Total	
16:00	0	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0
16:15	0	0	1	0	1	0	0	1	0	1	0	0	0	0	0	0
16:30	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	0
16:45	0	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0
17:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
17:15	0	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0
17:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
17:45	0	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0
18:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
18:15	0	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0
18:30	0	0	1	0	1	0	0	1	0	1	0	0	1	0	1	0
18:45	0	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0
SUBTOTAL	0	0	8	0	8	0	0	2	0	2	0	0	2	0	2	0
GRAND TOTAL	0	1	26	0	27	0	0	4	0	4	0	0	2	0	2	1

Ontario Traffic Inc.
Traffic Monitoring • Services & Products

Peak Hour Diagram

Specified Period		One Hour Peak	
From:	07:00:00	From:	07:45:00
To:	10:00:00	To:	08:45:00

Intersection: William Halton Pkwy & Harasym Trail
Site Code: 2437500001
Count Date: Sep 11, 2024

Weather conditions: Clear

**** Unsignalized Intersection **** **Major Road:** Harasym Trail runs N/S

North Approach

	Out	In	Total
Cars	0	1	1
Trucks	0	0	0
Bicycles	0	0	0
	0	**1**	**1**

Harasym Trail

Bicycles	0	0	0	0
Trucks	0	0	0	0
Cars	0	0	0	0
Totals	**0**	**0**	**0**	**0**

East Approach

	Out	In	Total
Cars	5	4	9
Trucks	1	0	1
Bicycles	0	0	0
	6	**4**	**10**

William Halton Pkwy

Bicycles	Trucks	Cars	Totals
0	0	0	**0**
0	0	0	**0**
0	0	1	**1**
0	1	12	**13**

Peds: 0

Peds: 4

Peds: 2

Peds: 7

William Halton Pkwy

Totals	Cars	Trucks	Bicycles
0	0	0	0
0	0	0	0
4	3	1	0
2	2	0	0

West Approach

	Out	In	Total
Cars	13	4	17
Trucks	1	3	4
Bicycles	0	1	1
	14	**8**	**22**

Totals	**4**	**1**	**3**	**0**
Cars	1	1	3	0
Trucks	2	0	0	0
Bicycles	1	0	0	0

Harasym Trail

South Approach

	Out	In	Total
Cars	5	14	19
Trucks	2	1	3
Bicycles	1	0	1
	8	**15**	**23**

Cars - Trucks - Bicycles

Comments

Ontario Traffic Inc.
Traffic Monitoring • Services & Products

Peak Hour Summary

Intersection: William Halton Pkwy & Harasym Trail
Site Code: 2437500001
Count Date: Sep 11, 2024
Period: 07:00 - 10:00

Peak Hour Data (07:45 - 08:45)

Start Time	North Approach Harasym Trail						South Approach Harasym Trail						East Approach William Halton Pkwy						West Approach William Halton Pkwy						Total Vehicles
					Peds	Total					Peds	Total					Peds	Total					Peds	Total	
07:45	0	0	0	0	0	0	1	0	0	0	0	1	0	0	0	0	0	0	0	0	4	0	0	4	5
08:00	0	0	0	0	4	0	1	0	2	0	0	3	2	0	0	0	0	2	0	0	3	0	0	3	8
08:15	0	0	0	0	0	0	1	0	0	0	5	1	0	4	0	0	0	4	0	0	3	0	0	3	8
08:30	0	0	0	0	0	0	1	1	1	0	2	3	0	0	0	0	2	0	0	1	3	0	0	4	7
Grand Total	**0**	**0**	**0**	**0**	**4**	**0**	**4**	**1**	**3**	**0**	**7**	**8**	**2**	**4**	**0**	**0**	**2**	**6**	**0**	**1**	**13**	**0**	**0**	**14**	**28**
Approach %	0	0	0	0		-	50	12.5	37.5	0		-	33.3	66.7	0	0		-	0	7.1	92.9	0		-	
Totals %	0	0	0	0		0	14.3	3.6	10.7	0		28.6	7.1	14.3	0	0		21.4	0	3.6	46.4	0		50	
PHF	**0**	**0**	**0**	**0**		**0**	**1**	**0.25**	**0.38**	**0**		**0.67**	**0.25**	**0.25**	**0**	**0**		**0.38**	**0**	**0.25**	**0.81**	**0**		**0.88**	**0.88**
Cars	0	0	0	0		0	1	1	3	0		5	2	3	0	0		5	0	1	12	0		13	23
% Cars	0	0	0	0		0	25	100	100	0		62.5	100	75	0	0		83.3	0	100	92.3	0		92.9	82.1
Trucks	0	0	0	0		0	2	0	0	0		2	0	1	0	0		1	0	0	1	0		1	4
% Trucks	0	0	0	0		0	50	0	0	0		25	0	25	0	0		16.7	0	0	7.7	0		7.1	14.3
Bicycles	0	0	0	0		0	1	0	0	0		1	0	0	0	0		0	0	0	0	0		0	1
% Bicycles	0	0	0	0		0	25	0	0	0		12.5	0	0	0	0		0	0	0	0	0		0	3.6
Peds					4	-					7	-					2	-					0	-	13
% Peds					30.8	-					53.8	-					15.4	-					0	-	

Peak Hour Diagram

Specified Period		One Hour Peak	
From:	16:00:00	From:	16:15:00
To:	19:00:00	To:	17:15:00

Intersection: William Halton Pkwy & Harasym Trail
Site Code: 2437500001
Count Date: Sep 11, 2024

Weather conditions: Clear

**** Unsignalized Intersection **** **Major Road:** Harasym Trail runs N/S

North Approach

	Out	In	Total
Cars	1	0	1
Trucks	0	0	0
Bicycles	0	0	0
	1	**0**	**1**

Harasym Trail

Bicycles	0	0	0	0
Trucks	0	0	0	0
Cars	0	1	0	0
Totals	**0**	**1**	**0**	**0**

Peds: 0

East Approach

	Out	In	Total
Cars	3	1	4
Trucks	0	0	0
Bicycles	0	0	0
	3	**1**	**4**

William Halton Pkwy

Bicycles	Trucks	Cars	Totals
0	0	0	**0**
0	0	0	**0**
0	0	0	**0**
1	1	2	**4**

Peds: 0

Peds: 0

William Halton Pkwy

Totals	Cars	Trucks	Bicycles
0	0	0	0
0	0	0	0
1	1	0	0
2	2	0	0

Peds: 4

West Approach

	Out	In	Total
Cars	2	11	13
Trucks	1	1	2
Bicycles	1	1	2
	4	**13**	**17**

Totals	**12**	**0**	**1**	**0**
Cars	10	0	1	0
Trucks	1	0	0	0
Bicycles	1	0	0	0

Harasym Trail

South Approach

	Out	In	Total
Cars	11	5	16
Trucks	1	1	2
Bicycles	1	1	2
	13	**7**	**20**

Cars - Trucks - Bicycles

Comments

Ontario Traffic Inc.
Traffic Monitoring • Services & Products

Peak Hour Summary

Intersection: William Halton Pkwy & Harasym Trail
Site Code: 2437500001
Count Date: Sep 11, 2024
Period: 16:00 - 19:00

Peak Hour Data (16:15 - 17:15)

Start Time	North Approach Harasym Trail						South Approach Harasym Trail						East Approach William Halton Pkwy						West Approach William Halton Pkwy						Total Vehicles
					Peds	Total					Peds	Total					Peds	Total					Peds	Total	
16:15	0	0	0	0	0	0	3	0	0	0	2	3	0	0	0	0	0	0	0	0	2	0	0	2	5
16:30	0	0	0	0	0	0	2	0	1	0	0	3	2	0	0	0	0	2	0	0	1	0	0	1	6
16:45	0	0	0	0	0	0	4	0	0	0	2	4	0	1	0	0	0	1	0	0	1	0	0	1	6
17:00	0	1	0	0	0	1	3	0	0	0	0	3	0	0	0	0	0	0	0	0	0	0	0	0	4
Grand Total	**0**	**1**	**0**	**0**	**0**	**1**	**12**	**0**	**1**	**0**	**4**	**13**	**2**	**1**	**0**	**0**	**0**	**3**	**0**	**0**	**4**	**0**	**0**	**4**	**21**
Approach %	0	100	0	0		-	92.3	0	7.7	0		-	66.7	33.3	0	0		-	0	0	100	0		-	
Totals %	0	4.8	0	0		4.8	57.1	0	4.8	0		61.9	9.5	4.8	0	0		14.3	0	0	19	0		19	
PHF	**0**	**0.25**	**0**	**0**		**0.25**	**0.75**	**0**	**0.25**	**0**		**0.81**	**0.25**	**0.25**	**0**	**0**		**0.38**	**0**	**0**	**0.5**	**0**		**0.5**	**0.88**
Cars	0	1	0	0		1	10	0	1	0		11	2	1	0	0		3	0	0	2	0		2	17
% Cars	0	100	0	0		100	83.3	0	100	0		84.6	100	100	0	0		100	0	0	50	0		50	81
Trucks	0	0	0	0		0	1	0	0	0		1	0	0	0	0		0	0	0	1	0		1	2
% Trucks	0	0	0	0		0	8.3	0	0	0		7.7	0	0	0	0		0	0	0	25	0		25	9.5
Bicycles	0	0	0	0		0	1	0	0	0		1	0	0	0	0		0	0	0	1	0		1	2
% Bicycles	0	0	0	0		0	8.3	0	0	0		7.7	0	0	0	0		0	0	0	25	0		25	9.5
Peds					0	-					4	-					0	-					0	-	4
% Peds					0	-					100	-					0	-					0	-	

Ontario Traffic Inc.
Traffic Monitoring • Services & Products

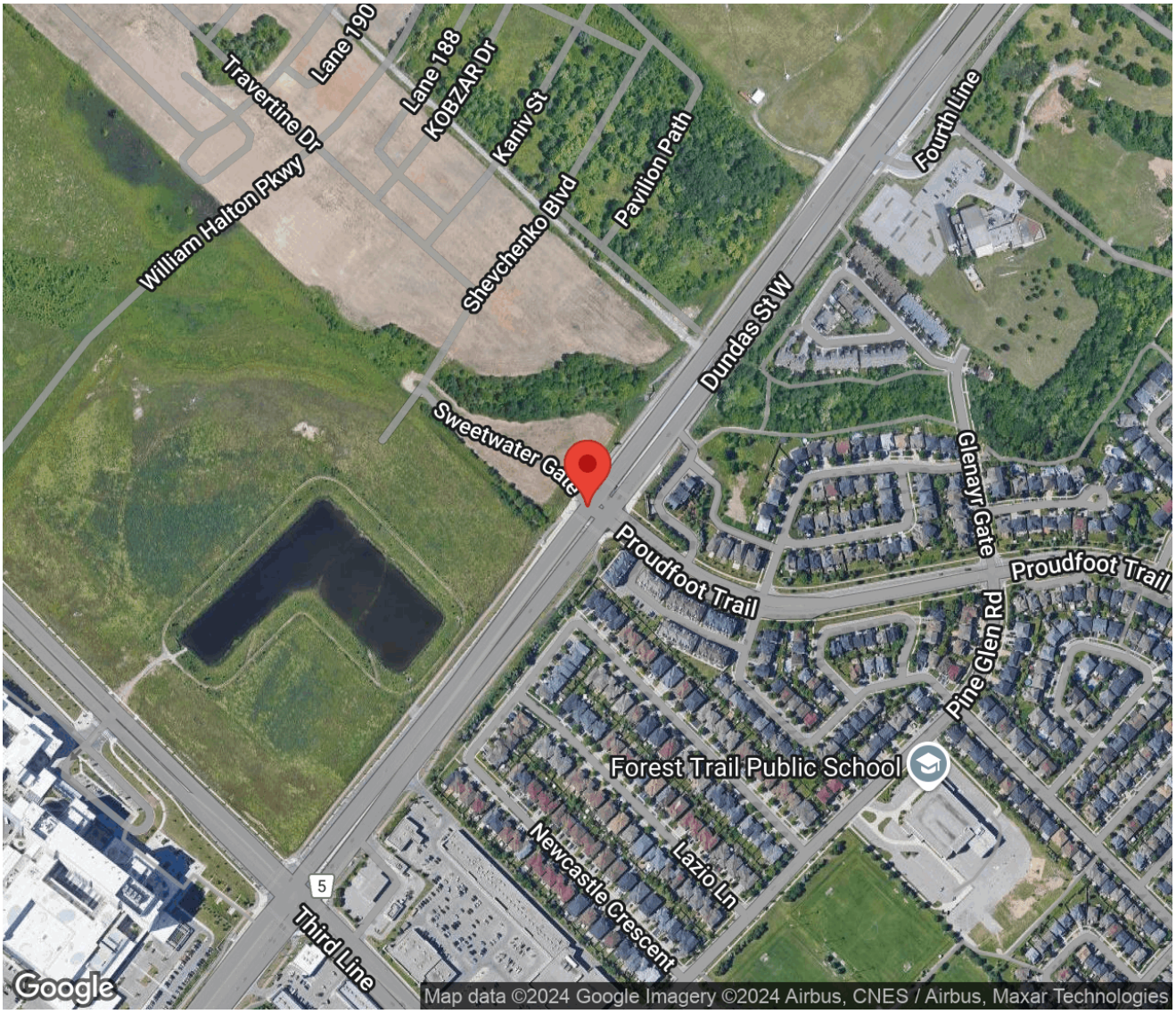
Project #24-478 - CGH Transportation

Intersection Count Report

Intersection:	Dundas St W & Sweetwater Gate - Proudfoot Trail
Municipality:	Oakville
Count Date:	Tuesday, Nov 12, 2024
Site Code:	2447800001
Count Categories:	Cars, Trucks, Bicycles, Pedestrians
Count Period:	07:00-10:00, 16:00-19:00
Weather:	Clear
Comments:	

Traffic Count Map

Intersection:	Dundas St W & Sweetwater Gate - Proudfoot Trail
Site Code:	2447800001
Municipality:	Oakville
Count Date:	Nov 12, 2024



Ontario Traffic Inc.
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Traffic Count Summary

Intersection:	Dundas St W & Sweetwater Gate - Proudfoot Trail
Site Code:	2447800001
Municipality:	Oakville
Count Date:	Nov 12, 2024

Sweetwater Gate - Traffic Summary

	North Approach Totals						South Approach Totals						
	Includes Cars, Trucks, Bicycles						Includes Cars, Trucks, Bicycles						
Hour	**Left**	**Thru**	**Right**	**U-Turn**	**Total**	**Peds**	**Left**	**Thru**	**Right**	**U-Turn**	**Total**	**Peds**	**Total**
07:00 - 08:00	74	17	17	0	108	0	41	4	232	0	277	0	385
08:00 - 09:00	90	23	19	0	132	2	49	16	227	0	292	0	424
09:00 - 10:00	43	11	11	0	65	1	37	4	167	0	208	0	273
BREAK													
16:00 - 17:00	51	7	18	0	76	0	57	11	165	0	233	8	309
17:00 - 18:00	50	14	17	0	81	0	67	15	227	0	309	6	390
18:00 - 19:00	32	4	8	0	44	0	54	15	174	1	244	3	288
GRAND TOTAL	**340**	**76**	**90**	**0**	**506**	**3**	**305**	**65**	**1192**	**1**	**1563**	**17**	**2069**

Traffic Count Summary

Ontario Traffic Inc.
Traffic Monitoring • Services & Products

Intersection:	Dundas St W & Sweetwater Gate - Proudfoot Trail
Site Code:	2447800001
Municipality:	Oakville
Count Date:	Nov 12, 2024

Dundas St W - Traffic Summary

	East Approach Totals						West Approach Totals						
	Includes Cars, Trucks, Bicycles						Includes Cars, Trucks, Bicycles						
Hour	**Left**	**Thru**	**Right**	**U-Turn**	**Total**	**Peds**	**Left**	**Thru**	**Right**	**U-Turn**	**Total**	**Peds**	**Total**
07:00 - 08:00	43	1059	27	0	1129	2	4	1631	57	0	1692	2	2821
08:00 - 09:00	97	1519	35	0	1651	2	4	1858	99	0	1961	0	3612
09:00 - 10:00	103	1101	35	0	1239	2	9	1292	42	0	1343	3	2582
BREAK													
16:00 - 17:00	285	1982	55	0	2322	2	7	1615	68	0	1690	3	4012
17:00 - 18:00	293	2094	59	0	2446	2	13	1456	84	0	1553	3	3999
18:00 - 19:00	260	1471	40	0	1771	2	9	1128	50	0	1187	0	2958
GRAND TOTAL	**1081**	**9226**	**251**	**0**	**10558**	**12**	**46**	**8980**	**400**	**0**	**9426**	**11**	**19984**

Ontario Traffic Inc.
Traffic Monitoring • Services & Products

Traffic Count Data

Intersection: Dundas St W & Sweetwater Gate - Proudfoot Trail
Site Code: 2447800001
Municipality: Oakville
Count Date: Nov 12, 2024

North Approach - Sweetwater Gate

Start Time	Cars					Trucks					Bicycles					Total Peds
	↰	↑	↱	↶	Total	↰	↑	↱	↶	Total	↰	↑	↱	↶	Total	
07:00	5	1	2	0	8	0	0	0	0	0	0	0	0	0	0	0
07:15	22	1	8	0	31	0	0	0	0	0	0	0	0	0	0	0
07:30	21	5	2	0	28	2	0	0	0	2	0	0	0	0	0	0
07:45	22	10	5	0	37	2	0	0	0	2	0	0	0	0	0	0
08:00	15	10	5	0	30	0	0	0	0	0	0	0	0	0	0	0
08:15	25	7	10	0	42	0	0	0	0	0	0	0	0	0	0	0
08:30	21	2	1	0	24	1	1	1	0	3	0	0	0	0	0	0
08:45	28	2	2	0	32	0	1	0	0	1	0	0	0	0	0	2
09:00	15	5	3	0	23	0	0	0	0	0	0	0	0	0	0	0
09:15	10	4	3	0	17	0	0	0	0	0	0	0	0	0	0	0
09:30	10	0	2	0	12	1	0	0	0	1	0	0	0	0	0	1
09:45	7	2	3	0	12	0	0	0	0	0	0	0	0	0	0	0
SUBTOTAL	201	49	46	0	296	6	2	1	0	9	0	0	0	0	0	3

Ontario Traffic Inc.
Traffic Monitoring • Services & Products

Traffic Count Data

Intersection: Dundas St W & Sweetwater Gate - Proudfoot Trail
Site Code: 2447800001
Municipality: Oakville
Count Date: Nov 12, 2024

North Approach - Sweetwater Gate

Start Time	Cars					Trucks					Bicycles					Total Peds
					Total					Total					Total	
16:00	14	1	4	0	19	0	0	0	0	0	0	0	0	0	0	0
16:15	11	0	4	0	15	0	1	0	0	1	0	0	0	0	0	0
16:30	12	4	4	0	20	0	1	1	0	2	0	0	0	0	0	0
16:45	14	0	5	0	19	0	0	0	0	0	0	0	0	0	0	0
17:00	9	5	2	0	16	1	0	0	0	1	0	0	0	0	0	0
17:15	17	7	7	0	31	1	0	0	0	1	0	0	0	0	0	0
17:30	10	1	5	0	16	0	0	0	0	0	0	0	0	0	0	0
17:45	12	1	3	0	16	0	0	0	0	0	0	0	0	0	0	0
18:00	10	0	4	0	14	0	0	0	0	0	0	0	0	0	0	0
18:15	3	0	0	0	3	1	0	0	0	1	0	0	0	0	0	0
18:30	9	2	2	0	13	0	0	1	0	1	0	0	0	0	0	0
18:45	9	2	1	0	12	0	0	0	0	0	0	0	0	0	0	0
SUBTOTAL	130	23	41	0	194	3	2	2	0	7	0	0	0	0	0	0
GRAND TOTAL	331	72	87	0	490	9	4	3	0	16	0	0	0	0	0	3

Ontario Traffic Inc.
Traffic Monitoring • Services & Products

Traffic Count Data

Intersection: Dundas St W & Sweetwater Gate - Proudfoot Trail
Site Code: 2447800001
Municipality: Oakville
Count Date: Nov 12, 2024

South Approach - Proudfoot Trail

Start Time	Cars					Trucks					Bicycles					Total Peds
					Total					Total					Total	
07:00	9	0	41	0	50	0	1	0	0	1	0	0	0	0	0	0
07:15	10	2	40	0	52	1	0	1	0	2	0	0	0	0	0	0
07:30	7	1	73	0	81	0	0	1	0	1	0	0	0	0	0	0
07:45	13	0	76	0	89	1	0	0	0	1	0	0	0	0	0	0
08:00	14	3	61	0	78	1	0	1	0	2	0	0	0	0	0	0
08:15	16	6	66	0	88	0	1	0	0	1	0	0	0	0	0	0
08:30	7	1	53	0	61	0	4	3	0	7	0	0	0	0	0	0
08:45	9	1	41	0	51	2	0	2	0	4	0	0	0	0	0	0
09:00	6	1	37	0	44	0	0	0	0	0	0	0	0	0	0	0
09:15	12	2	62	0	76	0	0	3	0	3	0	0	0	0	0	0
09:30	11	1	34	0	46	0	0	0	0	0	0	0	0	0	0	0
09:45	8	0	31	0	39	0	0	0	0	0	0	0	0	0	0	0
SUBTOTAL	122	18	615	0	755	5	6	11	0	22	0	0	0	0	0	0

Ontario Traffic Inc.
Traffic Monitoring • Services & Products

Traffic Count Data

Intersection: Dundas St W & Sweetwater Gate - Proudfoot Trail
Site Code: 2447800001
Municipality: Oakville
Count Date: Nov 12, 2024

South Approach - Proudfoot Trail

Start Time	Cars					Trucks					Bicycles					Total Peds
					Total					Total					Total	
16:00	18	2	33	0	53	0	0	3	0	3	0	0	0	0	0	1
16:15	14	3	41	0	58	2	1	0	0	3	0	0	0	0	0	6
16:30	9	3	41	0	53	0	0	0	0	0	0	0	0	0	0	0
16:45	14	2	47	0	63	0	0	0	0	0	0	0	0	0	0	1
17:00	22	2	49	0	73	0	1	0	0	1	0	0	0	0	0	2
17:15	14	3	72	0	89	1	0	0	0	1	0	0	0	0	0	1
17:30	14	4	46	0	64	0	0	1	0	1	0	0	0	0	0	1
17:45	16	5	59	0	80	0	0	0	0	0	0	0	0	0	0	2
18:00	21	3	66	0	90	1	0	1	0	2	0	0	0	0	0	0
18:15	13	5	39	0	57	0	0	0	0	0	0	0	0	0	0	2
18:30	13	1	35	0	49	0	1	0	0	1	0	0	0	0	0	0
18:45	6	5	33	1	45	0	0	0	0	0	0	0	0	0	0	1
SUBTOTAL	174	38	561	1	774	4	3	5	0	12	0	0	0	0	0	17
GRAND TOTAL	296	56	1176	1	1529	9	9	16	0	34	0	0	0	0	0	17

Ontario Traffic Inc.
Traffic Monitoring • Services & Products

Traffic Count Data

Intersection: Dundas St W & Sweetwater Gate - Proudfoot Trail
Site Code: 2447800001
Municipality: Oakville
Count Date: Nov 12, 2024

East Approach - Dundas St W

Start Time	Cars					Trucks					Bicycles					Total Peds
	↰	↑	↱	↶	Total	↰	↑	↱	↶	Total	↰	↑	↱	↶	Total	
07:00	3	192	4	0	199	1	15	0	0	16	0	0	0	0	0	1
07:15	5	192	4	0	201	0	13	1	0	14	0	0	0	0	0	1
07:30	17	237	9	0	263	0	13	0	0	13	0	0	0	0	0	0
07:45	17	376	7	0	400	0	21	2	0	23	0	0	0	0	0	0
08:00	16	389	12	0	417	2	18	0	0	20	0	0	0	0	0	0
08:15	22	333	6	0	361	1	25	1	0	27	0	0	0	0	0	0
08:30	28	374	7	0	409	2	16	0	0	18	0	0	0	0	0	2
08:45	26	338	9	0	373	0	26	0	0	26	0	0	0	0	0	0
09:00	27	258	14	0	299	3	17	0	0	20	0	0	0	0	0	1
09:15	30	249	8	0	287	2	33	0	0	35	0	0	0	0	0	1
09:30	22	247	7	0	276	0	18	0	0	18	0	0	0	0	0	0
09:45	19	261	6	0	286	0	18	0	0	18	0	0	0	0	0	0
SUBTOTAL	232	3446	93	0	3771	11	233	4	0	248	0	0	0	0	0	6

Ontario Traffic Inc.
Traffic Monitoring • Services & Products

Traffic Count Data

Intersection: Dundas St W & Sweetwater Gate - Proudfoot Trail
Site Code: 2447800001
Municipality: Oakville
Count Date: Nov 12, 2024

East Approach - Dundas St W

Start Time	Cars					Trucks					Bicycles					Total Peds
					Total					Total					Total	
16:00	62	502	14	0	578	1	15	0	0	16	0	0	0	0	0	1
16:15	78	447	16	0	541	2	22	0	0	24	0	0	0	0	0	0
16:30	69	517	11	0	597	0	12	2	0	14	0	0	0	0	0	0
16:45	73	457	12	0	542	0	10	0	0	10	0	0	0	0	0	1
17:00	68	550	9	0	627	0	9	0	0	9	0	0	0	0	0	0
17:15	64	508	10	0	582	0	5	0	0	5	0	0	0	0	0	2
17:30	90	529	22	0	641	0	8	0	0	8	0	0	0	0	0	0
17:45	71	480	18	0	569	0	5	0	0	5	0	0	0	0	0	0
18:00	78	389	15	0	482	0	4	0	0	4	0	0	0	0	0	0
18:15	56	372	10	0	438	0	3	1	0	4	0	0	0	0	0	0
18:30	58	328	6	0	392	0	6	0	0	6	0	0	0	0	0	1
18:45	68	367	8	0	443	0	2	0	0	2	0	0	0	0	0	1
SUBTOTAL	835	5446	151	0	6432	3	101	3	0	107	0	0	0	0	0	6
GRAND TOTAL	1067	8892	244	0	10203	14	334	7	0	355	0	0	0	0	0	12

Ontario Traffic Inc.
Traffic Monitoring • Services & Products

Traffic Count Data

Intersection: Dundas St W & Sweetwater Gate - Proudfoot Trail
Site Code: 2447800001
Municipality: Oakville
Count Date: Nov 12, 2024

West Approach - Dundas St W

	Cars					Trucks					Bicycles					
Start Time					Total					Total					Total	Total Peds
07:00	1	333	5	0	339	0	14	1	0	15	0	0	0	0	0	1
07:15	0	351	7	0	358	0	23	3	0	26	0	0	0	0	0	1
07:30	1	447	20	0	468	0	13	2	0	15	0	0	0	0	0	0
07:45	1	432	16	0	449	1	18	3	0	22	0	0	0	0	0	0
08:00	0	461	32	0	493	0	12	3	0	15	0	0	0	0	0	0
08:15	0	461	15	0	476	0	14	2	0	16	0	0	0	0	0	0
08:30	4	481	32	0	517	0	9	1	0	10	0	0	0	0	0	0
08:45	0	402	13	0	415	0	18	1	0	19	0	0	0	0	0	0
09:00	3	349	14	0	366	0	16	0	0	16	0	0	0	0	0	0
09:15	3	323	7	0	333	0	8	0	0	8	0	0	0	0	0	2
09:30	0	284	8	0	292	0	13	0	0	13	0	0	0	0	0	1
09:45	3	285	12	0	300	0	14	1	0	15	0	0	0	0	0	0
SUBTOTAL	16	4609	181	0	4806	1	172	17	0	190	0	0	0	0	0	5

Ontario Traffic Inc.
Traffic Monitoring • Services & Products

Traffic Count Data

Intersection: Dundas St W & Sweetwater Gate - Proudfoot Trail
Site Code: 2447800001
Municipality: Oakville
Count Date: Nov 12, 2024

West Approach - Dundas St W

Start Time	Cars					Trucks					Bicycles					Total Peds
					Total					Total					Total	
16:00	1	405	18	0	424	0	8	0	0	8	0	0	0	0	0	1
16:15	0	415	11	0	426	0	3	0	0	3	0	0	0	0	0	1
16:30	1	393	23	0	417	0	9	0	0	9	0	0	0	0	0	0
16:45	5	374	16	0	395	0	8	0	0	8	0	0	0	0	0	1
17:00	3	359	19	0	381	0	8	1	0	9	0	0	0	0	0	2
17:15	3	359	27	0	389	0	5	0	0	5	0	0	0	0	0	0
17:30	5	375	19	0	399	1	9	0	0	10	0	0	0	0	0	1
17:45	1	338	18	0	357	0	3	0	0	3	0	0	0	0	0	0
18:00	3	271	16	0	290	0	4	0	0	4	0	0	0	0	0	0
18:15	1	309	7	0	317	0	4	0	0	4	0	0	0	0	0	0
18:30	3	280	14	0	297	0	5	0	0	5	0	0	0	0	0	0
18:45	2	250	13	0	265	0	5	0	0	5	0	0	0	0	0	0
SUBTOTAL	28	4128	201	0	4357	1	71	1	0	73	0	0	0	0	0	6
GRAND TOTAL	44	8737	382	0	9163	2	243	18	0	263	0	0	0	0	0	11

Peak Hour Diagram

Ontario Traffic Inc.
Traffic Monitoring • Services & Products

Specified Period		One Hour Peak	
From:	07:00:00	From:	07:45:00
To:	10:00:00	To:	08:45:00

Intersection: Dundas St W & Sweetwater Gate - Proudfoot Trail
Site Code: 2447800001
Count Date: Nov 12, 2024

Weather conditions: Clear

**** Signalized Intersection **** **Major Road:** Dundas St W runs E/W

North Approach

	Out	In	Total
Cars	133	47	180
Trucks	5	9	14
Bicycles	0	0	0
	138	**56**	**194**

Sweetwater Gate

Bicycles	0	0	0	0
Trucks	1	1	3	0
Cars	21	29	83	0
Totals	**22**	**30**	**86**	**0**

Peds: 0

East Approach

	Out	In	Total
Cars	1587	2174	3761
Trucks	88	60	148
Bicycles	0	0	0
	1675	**2234**	**3909**

Dundas St W

Bicycles	Trucks	Cars	Totals
0	0	0	**0**
0	1	5	**6**
0	53	1835	**1888**
0	9	95	**104**

Peds: 0

Peds: 2

Dundas St W

Totals	Cars	Trucks	Bicycles
0	0	0	0
35	32	3	0
1552	1472	80	0
88	83	5	0

Peds: 0

West Approach

	Out	In	Total
Cars	1935	1543	3478
Trucks	63	83	146
Bicycles	0	0	0
	1998	**1626**	**3624**

Totals	**52**	**15**	**260**	**0**
Cars	50	10	256	0
Trucks	2	5	4	0
Bicycles	0	0	0	0

Proudfoot Trail

South Approach

	Out	In	Total
Cars	316	207	523
Trucks	11	15	26
Bicycles	0	0	0
	327	**222**	**549**

Cars - Trucks - Bicycles

Comments

Ontario Traffic Inc.
Traffic Monitoring • Services & Products

Peak Hour Summary

Intersection: Dundas St W & Sweetwater Gate - Proudfoot Trail
Site Code: 2447800001
Count Date: Nov 12, 2024
Period: 07:00 - 10:00

Peak Hour Data (07:45 - 08:45)

Start Time	North Approach Sweetwater Gate						South Approach Proudfoot Trail						East Approach Dundas St W						West Approach Dundas St W						Total Vehicles
					Peds	Total					Peds	Total					Peds	Total					Peds	Total	
07:45	24	10	5	0	0	39	14	0	76	0	0	90	17	397	9	0	0	423	2	450	19	0	0	471	1023
08:00	15	10	5	0	0	30	15	3	62	0	0	80	18	407	12	0	0	437	0	473	35	0	0	508	1055
08:15	25	7	10	0	0	42	16	7	66	0	0	89	23	358	7	0	0	388	0	475	17	0	0	492	1011
08:30	22	3	2	0	0	27	7	5	56	0	0	68	30	390	7	0	2	427	4	490	33	0	0	527	1049
Grand Total	**86**	**30**	**22**	**0**	**0**	**138**	**52**	**15**	**260**	**0**	**0**	**327**	**88**	**1552**	**35**	**0**	**2**	**1675**	**6**	**1888**	**104**	**0**	**0**	**1998**	**4138**
Approach %	62.3	21.7	15.9	0		-	15.9	4.6	79.5	0		-	5.3	92.7	2.1	0		-	0.3	94.5	5.2	0		-	
Totals %	2.1	0.7	0.5	0		3.3	1.3	0.4	6.3	0		7.9	2.1	37.5	0.8	0		40.5	0.1	45.6	2.5	0		48.3	
PHF	**0.86**	**0.75**	**0.55**	**0**		**0.82**	**0.81**	**0.54**	**0.86**	**0**		**0.91**	**0.73**	**0.95**	**0.73**	**0**		**0.96**	**0.38**	**0.96**	**0.74**	**0**		**0.95**	**0.98**
Cars	83	29	21	0		133	50	10	256	0		316	83	1472	32	0		1587	5	1835	95	0		1935	3971
% Cars	96.5	96.7	95.5	0		96.4	96.2	66.7	98.5	0		96.6	94.3	94.8	91.4	0		94.7	83.3	97.2	91.3	0		96.8	96
Trucks	3	1	1	0		5	2	5	4	0		11	5	80	3	0		88	1	53	9	0		63	167
% Trucks	3.5	3.3	4.5	0		3.6	3.8	33.3	1.5	0		3.4	5.7	5.2	8.6	0		5.3	16.7	2.8	8.7	0		3.2	4
Bicycles	0	0	0	0		0	0	0	0	0		0	0	0	0	0		0	0	0	0	0		0	0
% Bicycles	0	0	0	0		0	0	0	0	0		0	0	0	0	0		0	0	0	0	0		0	0
Peds					0	-					0	-					2	-					0	-	2
% Peds					0	-					0	-					100	-					0	-	

Ontario Traffic Inc.
Traffic Monitoring • Services & Products

Peak Hour Diagram

Specified Period		One Hour Peak	
From:	16:00:00	From:	16:45:00
To:	19:00:00	To:	17:45:00

Intersection: Dundas St W & Sweetwater Gate - Proudfoot Trail
Site Code: 2447800001
Count Date: Nov 12, 2024

Weather conditions: Clear

**** Signalized Intersection **** **Major Road:** Dundas St W runs E/W

North Approach

	Out	In	Total
Cars	82	80	162
Trucks	2	2	4
Bicycles	0	0	0
	84	**82**	**166**

Sweetwater Gate

Bicycles	0	0	0	0
Trucks	0	0	2	0
Cars	19	13	50	0
Totals	**19**	**13**	**52**	**0**

Peds: 0

East Approach

	Out	In	Total
Cars	2392	1731	4123
Trucks	32	33	65
Bicycles	0	0	0
	2424	**1764**	**4188**

Dundas St W

Bicycles	Trucks	Cars	Totals
0	0	0	**0**
0	1	16	**17**
0	30	1467	**1497**
0	1	81	**82**

Peds: 4

Peds: 3

Dundas St W

Totals	Cars	Trucks	Bicycles
0	0	0	0
53	53	0	0
2076	2044	32	0
295	295	0	0

Peds: 5

West Approach

	Out	In	Total
Cars	1564	2127	3691
Trucks	32	33	65
Bicycles	0	0	0
	1596	**2160**	**3756**

Totals	**65**	**12**	**215**	**0**
Cars	64	11	214	0
Trucks	1	1	1	0
Bicycles	0	0	0	0

Proudfoot Trail

South Approach

	Out	In	Total
Cars	289	389	678
Trucks	3	1	4
Bicycles	0	0	0
	292	**390**	**682**

Cars - Trucks - Bicycles

Comments

Ontario Traffic Inc.
Traffic Monitoring • Services & Products

Peak Hour Summary

Intersection: Dundas St W & Sweetwater Gate - Proudfoot Trail
Site Code: 2447800001
Count Date: Nov 12, 2024
Period: 16:00 - 19:00

Peak Hour Data (16:45 - 17:45)

Start Time	North Approach Sweetwater Gate						South Approach Proudfoot Trail						East Approach Dundas St W						West Approach Dundas St W						Total Vehicles
					Peds	Total					Peds	Total					Peds	Total					Peds	Total	
16:45	14	0	5	0	0	19	14	2	47	0	1	63	73	467	12	0	1	552	5	382	16	0	1	403	1037
17:00	10	5	2	0	0	17	22	3	49	0	2	74	68	559	9	0	0	636	3	367	20	0	2	390	1117
17:15	18	7	7	0	0	32	15	3	72	0	1	90	64	513	10	0	2	587	3	364	27	0	0	394	1103
17:30	10	1	5	0	0	16	14	4	47	0	1	65	90	537	22	0	0	649	6	384	19	0	1	409	1139
Grand Total	**52**	**13**	**19**	**0**	**0**	**84**	**65**	**12**	**215**	**0**	**5**	**292**	**295**	**2076**	**53**	**0**	**3**	**2424**	**17**	**1497**	**82**	**0**	**4**	**1596**	**4396**
Approach %	61.9	15.5	22.6	0		-	22.3	4.1	73.6	0		-	12.2	85.6	2.2	0		-	1.1	93.8	5.1	0		-	
Totals %	1.2	0.3	0.4	0		1.9	1.5	0.3	4.9	0		6.6	6.7	47.2	1.2	0		55.1	0.4	34.1	1.9	0		36.3	
PHF	**0.72**	**0.46**	**0.68**	**0**		**0.66**	**0.74**	**0.75**	**0.75**	**0**		**0.81**	**0.82**	**0.93**	**0.6**	**0**		**0.93**	**0.71**	**0.97**	**0.76**	**0**		**0.98**	**0.96**
Cars	50	13	19	0		82	64	11	214	0		289	295	2044	53	0		2392	16	1467	81	0		1564	4327
% Cars	96.2	100	100	0		97.6	98.5	91.7	99.5	0		99	100	98.5	100	0		98.7	94.1	98	98.8	0		98	98.4
Trucks	2	0	0	0		2	1	1	1	0		3	0	32	0	0		32	1	30	1	0		32	69
% Trucks	3.8	0	0	0		2.4	1.5	8.3	0.5	0		1	0	1.5	0	0		1.3	5.9	2	1.2	0		2	1.6
Bicycles	0	0	0	0		0	0	0	0	0		0	0	0	0	0		0	0	0	0	0		0	0
% Bicycles	0	0	0	0		0	0	0	0	0		0	0	0	0	0		0	0	0	0	0		0	0
Peds					0	-					5	-					3	-					4	-	12
% Peds					0	-					41.7	-					25	-					33.3	-	

Dundas St W @ Lions Valley Park Rd

Municipality: Halton Region
Major Road: Dundas St W
Minor Road: Lions Valley Park Rd

Date: Oct 18, 2023

Major Road Runs: East/West
Weather Conditions: Cloudy/Dry
Person No. 1 Cam
Person No. 2

Period	North Approach							East Approach							South Approach							West Approach							Veh. Summary	
	Cars			Trucks			Ped.	Cars			Trucks			Ped.	Cars			Trucks			Ped.	Cars			Trucks			Ped.		
Ending	Left	Thru	Right	Left	Thru	Right	Cross.	Left	Thru	Right	Left	Thru	Right	Cross.	Left	Thru	Right	Left	Thru	Right	Cross.	Left	Thru	Right	Left	Thru	Right	Cross.	15	60
7:15	0	0	0	0	0	0	0	1	190	0	0	15	0	0	0	0	1	0	0	0	1	0	290	1	0	16	0	0	514	
7:30	0	0	0	0	0	0	0	0	205	0	0	26	0	0	0	0	0	0	0	0	3	0	397	0	0	17	0	0	645	
7:45	0	0	0	0	0	0	0	0	241	1	0	8	0	0	0	0	3	0	0	0	0	0	455	1	0	13	0	0	722	
8:00	0	0	0	0	0	0	0	0	345	0	0	20	0	0	0	0	0	0	0	0	1	0	581	0	0	20	0	0	966	2847
8:15	1	0	0	0	0	0	1	0	338	1	0	14	0	1	1	0	1	0	0	0	2	0	487	0	0	15	0	0	858	3191
8:30	0	0	0	0	0	0	0	0	363	0	0	35	0	1	0	0	1	0	0	0	2	0	616	0	0	17	0	0	1032	3578
8:45	0	0	0	0	0	0	0	1	388	0	0	30	0	0	0	0	0	0	0	1	2	0	523	0	0	21	1	0	965	3821
9:00	1	0	0	0	0	0	0	0	391	1	0	29	0	0	1	0	1	0	0	0	0	0	444	2	0	22	0	0	892	3747
11:15	0	0	1	0	0	0	0	2	256	3	0	29	0	0	1	0	3	0	0	0	0	1	246	1	0	16	0	0	559	
11:30	0	0	2	0	0	0	0	2	258	3	0	19	0	1	3	0	3	0	0	0	2	0	303	1	0	19	0	0	613	
11:45	1	0	2	0	0	0	0	1	250	1	0	23	0	0	3	0	14	0	0	0	1	2	246	2	0	15	0	0	560	
12:00	1	0	1	0	0	0	0	2	274	2	0	20	0	0	1	0	3	0	0	0	1	0	306	2	0	19	0	0	631	2363
12:15	7	0	2	0	0	0	3	1	243	2	0	19	0	2	0	0	5	0	0	0	3	2	347	3	0	17	0	0	648	2452
12:30	1	0	1	0	0	0	4	0	286	0	0	14	0	2	3	0	6	0	0	0	4	1	349	2	0	11	0	0	674	2513
12:45	0	0	1	0	0	0	0	0	295	0	0	21	0	0	0	0	7	0	0	0	0	1	288	6	0	18	0	0	637	2590
13:00	1	0	2	0	0	0	0	0	279	1	0	10	0	0	0	0	5	0	0	0	0	1	288	3	0	22	0	0	612	2571
13:15	0	0	1	0	0	0	0	0	303	5	0	23	0	1	1	0	7	0	0	0	4	0	273	4	0	15	0	0	632	2555
13:30	2	0	2	1	0	0	0	0	252	1	0	15	1	1	3	0	5	0	0	0	0	0	261	3	0	15	0	0	561	2442
13:45	1	0	1	0	0	0	1	1	259	2	0	20	0	1	4	0	5	0	0	0	2	1	279	0	0	12	0	0	585	2390
14:00	0	0	3	0	0	0	0	1	295	4	0	13	0	1	1	0	2	0	0	0	7	1	314	3	0	13	0	0	650	2428
15:15	1	0	2	0	0	0	0	2	270	1	0	17	0	0	3	0	2	0	0	0	1	0	390	4	0	15	0	0	707	
15:30	1	0	1	0	0	0	0	1	532	4	0	23	0	1	1	0	7	0	0	0	0	0	387	3	0	14	0	0	974	
15:45	1	0	0	0	0	0	0	1	516	2	0	20	0	0	1	0	9	0	0	0	2	0	388	1	0	12	0	0	951	
16:00	0	0	0	0	0	0	0	1	580	1	0	21	0	0	4	0	4	0	0	0	1	1	389	6	0	20	0	0	1027	3659
16:15	2	0	0	0	0	0	0	1	584	0	0	27	0	0	1	0	5	0	0	0	1	2	460	2	0	14	0	0	1098	4050
16:30	0	0	2	0	0	0	0	2	518	0	0	26	0	0	1	0	5	0	0	0	4	0	466	1	0	13	0	0	1034	4110
16:45	0	1	1	0	0	0	0	0	510	0	0	9	0	0	1	0	3	0	0	0	1	2	405	2	0	21	0	0	955	4114
17:00	1	0	2	0	0	0	0	2	578	0	0	13	0	1	2	0	1	0	0	0	2	1	416	4	0	6	0	0	1026	4113
17:15	0	0	0	0	0	0	0	0	561	1	0	11	0	3	1	0	5	0	0	0	7	0	448	0	0	9	0	0	1036	4051
17:30	0	0	1	0	0	0	1	0	529	0	0	9	0	1	1	0	7	0	0	0	4	1	424	2	0	6	0	0	980	3997
17:45	2	0	1	0	0	0	0	1	557	1	0	11	0	0	2	0	3	0	0	0	6	0	449	2	0	7	0	0	1036	4078
18:00	0	0	0	0	0	0	0	1	492	0	0	8	0	0	1	1	6	0	0	0	1	0	411	1	0	2	0	0	923	3975

Dundas St W @ Fourth Line

Municipality: Halton Region
Major Road: Dundas St W
Minor Road: Fourth Line

Date: Nov 21, 2022

Major Road Runs: East/West
Weather Conditions: Clear/Dry
Person No. 1 Cam
Person No. 2

Period	North Approach							East Approach							South Approach							West Approach							Veh. Summary	
	Cars			Trucks			Ped.	Cars			Trucks			Ped.	Cars			Trucks			Ped.	Cars			Trucks			Ped.		
Ending	Left	Thru	Right	Left	Thru	Right	Cross.	Left	Thru	Right	Left	Thru	Right	Cross.	Left	Thru	Right	Left	Thru	Right	Cross.	Left	Thru	Right	Left	Thru	Right	Cross.	15	60
7:15	0	0	0	0	0	0	0	0	195	0	0	15	0	0	0	0	0	0	0	0	0	0	316	0	0	16	0	0	542	
7:30	0	0	0	0	0	0	0	2	207	0	0	18	0	0	0	0	1	0	0	0	1	0	314	2	0	26	0	1	570	
7:45	0	0	0	0	0	0	0	1	226	0	0	17	0	0	0	0	2	0	0	0	0	0	435	4	0	13	0	0	698	
8:00	0	0	0	0	0	0	0	4	313	0	0	23	0	0	2	0	2	0	0	0	2	0	459	3	0	20	0	0	826	2636
8:15	0	0	0	0	0	0	0	3	279	0	0	24	0	0	5	0	1	0	0	0	1	0	465	8	0	18	0	0	803	2897
8:30	0	0	0	0	0	0	0	3	359	0	0	26	0	0	8	0	3	0	0	0	0	0	495	9	0	19	0	0	922	3249
8:45	0	0	0	0	0	0	0	2	319	0	0	32	0	0	9	0	2	0	0	0	0	0	492	8	0	18	0	0	882	3433
9:00	0	0	0	0	0	0	0	1	340	0	0	38	0	0	5	0	2	0	0	0	0	0	410	3	0	11	0	0	810	3417
11:15	0	0	0	0	0	0	0	5	206	0	0	25	0	0	0	0	3	0	0	0	0	0	243	0	0	15	0	0	497	
11:30	0	0	0	0	0	0	0	2	221	0	0	22	0	0	1	0	2	0	0	0	1	0	247	1	0	11	0	0	507	
11:45	0	0	0	0	0	0	0	1	230	0	0	17	0	0	1	0	2	0	0	0	1	0	244	0	0	13	0	0	508	
12:00	0	0	0	0	0	0	0	0	239	0	0	23	0	0	3	0	1	0	0	0	0	0	245	1	0	18	0	0	530	2042
12:15	0	0	0	0	0	0	0	4	267	0	0	24	0	0	2	0	2	0	0	0	1	0	285	2	0	12	0	0	598	2143
12:30	0	0	0	0	0	0	0	3	224	0	0	18	0	0	1	0	1	0	0	0	0	0	265	2	0	17	0	0	531	2167
12:45	0	0	0	0	0	0	0	1	255	0	0	19	0	0	2	0	1	0	0	0	1	0	261	3	0	11	1	0	554	2213
13:00	0	0	0	0	0	0	0	3	271	0	0	21	0	0	1	0	2	0	0	0	0	0	273	3	0	17	0	0	591	2274
13:15	0	0	0	0	0	0	0	1	240	0	0	22	0	0	1	0	3	1	0	0	1	0	283	0	0	13	1	0	565	2241
13:30	0	0	0	0	0	0	0	0	279	0	0	15	0	0	1	0	1	0	0	0	3	0	274	0	0	20	0	0	590	2300
13:45	0	0	0	0	0	0	0	1	236	0	0	17	0	0	0	0	2	0	0	0	0	0	258	1	0	16	0	0	531	2277
14:00	0	0	0	0	0	0	0	3	274	0	1	19	0	0	1	0	1	0	0	0	0	0	249	0	0	18	1	0	567	2253
15:15	0	0	0	0	0	0	0	4	338	0	0	22	0	0	3	0	4	0	0	1	1	0	343	0	0	21	0	0	736	
15:30	0	0	0	0	0	0	0	4	412	0	0	18	0	0	1	0	4	0	0	1	0	0	302	2	0	13	0	1	757	
15:45	0	0	0	0	0	0	0	6	520	0	0	23	0	0	4	0	3	0	0	0	1	0	414	1	0	27	0	1	998	
16:00	0	0	0	0	0	0	0	1	502	0	0	11	0	0	3	0	5	0	0	0	2	0	359	2	0	19	0	0	902	3393
16:15	0	0	0	0	0	0	0	5	565	0	0	23	0	0	1	0	3	0	0	0	0	0	395	0	0	9	0	0	1001	3658
16:30	0	0	0	0	0	0	0	6	514	0	0	33	0	0	4	0	5	0	0	0	0	0	465	5	0	11	0	0	1043	3944
16:45	0	0	0	0	0	0	0	5	572	0	0	21	0	0	6	0	3	0	0	0	0	0	386	5	0	13	0	0	1011	3957
17:00	0	0	0	0	0	0	0	4	562	0	0	20	0	0	6	0	4	0	0	0	1	0	422	7	0	13	0	0	1038	4093
17:15	0	0	0	0	0	0	0	1	510	0	0	12	0	0	9	0	4	0	0	0	1	0	402	8	0	4	0	0	950	4042
17:30	0	0	0	0	0	0	0	2	548	0	0	9	0	0	9	0	4	0	0	0	1	0	450	3	0	6	0	0	1031	4030
17:45	0	0	0	0	0	0	0	2	453	0	0	8	0	0	3	0	6	0	0	0	0	0	381	2	0	7	0	0	862	3881
18:00	0	0	0	0	0	0	0	1	425	0	0	7	0	0	1	0	2	0	0	0	0	0	356	3	0	1	0	2	796	3639

Appendix D

Signal Timing Plans

Date: 03-Dec-24
Intersection: Dundas & Lions Valley Park

8 Phase Basic Timing Sheet

	1	2	3	4	5	6	7	8	2 Ped	4 Ped	6 Ped	8 Ped
Phases in use		X		X		X		X	X	X	X	X
Direction		EB		SB		WB		NB				
Min Green		20		10		20		10				
Veh Ext.				3.0				3.0				
Yellow		4.2		3.3		4.2		3.3				
Red		2.5		4.1		2.5		4.1				
Walk		7		7		7		7				
Don't Walk		20		34		20		34				
Max 1												
Max 2												
Max 3												
Veh Recall												
Ped Recall												

Notes:

Check Sync Reference Point

Pattern 1 SSMTWTF
Time: 6:00-15:00
Cycle Length: 140
Offset (%): 41%

Direction		**EB**		**SB**
Phase	***1***	***2***	***3***	***4***
%	0	65	0	35
Direction		**WB**		**NB**
Phase	***5***	***6***	***7***	***8***
%	0	65	0	35

Pattern 2 N/A
Time:
Cycle Length:
Offset (%):

Direction				
Phase	***1***	***2***	***3***	***4***
%				
Direction				
Phase	***5***	***6***	***7***	***8***
%				

Pattern 3 SSMTWTF
Time: 15:00-21:00
Cycle Length: 140
Offset (%): 35%

Direction		**EB**		**SB**
Phase	***1***	***2***	***3***	***4***
%	0	65	0	35
Direction		**WB**		**NB**
Phase	***5***	***6***	***7***	***8***
%	0	65	0	35

Pattern 4 N/A
Time:
Cycle Length:
Offset (%):

Direction				
Phase	***1***	***2***	***3***	***4***
%				
Direction				
Phase	***5***	***6***	***7***	***8***
%				

Pattern 5 SSMTWTF
Time: 21:00-06:00
Cycle Length: Local
Offset (%):

Direction				
Phase	***1***	***2***	***3***	***4***
%				
Direction				
Phase	**5**	**6**	**7**	**8**
%				

Pattern 6
Time:
Cycle Length:
Offset (%):

Direction				
Phase	***1***	***2***	***3***	***4***
%				
Direction				
Phase	**5**	**6**	**7**	**8**
%				

Date: 03-Dec-24
Intersection: Dundas & Proudfoot Trail

8 Phase Basic Timing Sheet

	1	2	3	4	5	6	7	8	2 Ped	4 Ped	6 Ped	8 Ped
Phases in use	X	X				X		X	X	X	X	X
Direction	WBL	EB				WB		NB				
Min Green	7	20				20		10				
Veh Ext.	3.0	5.5				5.5		3.0				
Yellow	3	3.7				3.7		3.3				
Red	1	2.2				2.2		3.6				
Walk		7				7		7				
Don't Walk		19				19		30				
Max 1	15	65				65		25				
Max 2	35	65				65		45				
Max 3												
Veh Recall		X				X						
Ped Recall												

Notes:

'Local Zero Override' in use
Pedestrain Reservice Active
Sync Reference 3:15

Pattern 1
Time: 6:00
Cycle Length: 120
Offset (%): 67%

Direction	**WBL**	**EB**		
Phase	***1***	***2***	***3***	***4***
%	10	59	0	0
Direction		**WB**		**NB**
Phase	***5***	***6***	***7***	***8***
%	0	69	0	31

Pattern 2
Time: 10:00
Cycle Length: 120
Offset (%): 52%

Direction	**WBL**	**EB**		
Phase	***1***	***2***	***3***	***4***
%	10	53	0	0
Direction		**WB**		**NB**
Phase	***5***	***6***	***7***	***8***
%	0	63	0	37

Pattern 3
Time: 15:15
Cycle Length: 120
Offset (%): 6%

Direction	**WBL**	**EB**		
Phase	***1***	***2***	***3***	***4***
%	20	43	0	0
Direction		**WB**		**NB**
Phase	***5***	***6***	***7***	***8***
%	0	63	0	37

Pattern 4
Time: 19:00
Cycle Length: 120
Offset (%): 52%

Direction	**WBL**	**EB**		
Phase	***1***	***2***	***3***	***4***
%	10	53	0	0
Direction		**WB**		**NB**
Phase	***5***	***6***	***7***	***8***
%	0	63	0	37

Pattern 5
Time: 22:00
Cycle Length: Local
Offset (%):

Direction	**WBL**	**EB**		
Phase	***1***	***2***	***3***	***4***
%				
Direction		**WB**		**NB**
Phase	**5**	**6**	**7**	**8**
%				

Pattern 6
Time:
Cycle Length:
Offset (%):

Direction				
Phase	***1***	***2***	***3***	***4***
%				
Direction				
Phase	**5**	**6**	**7**	**8**
%				

Date: 29-May-2020
Intersection: Dundas St @ Fourth Line

8 Phase Basic Timing Sheet

	1	2	3	4	5	6	7	8	2 Ped	4 Ped	6 Ped	8 Ped
Phases in use	x	x				x		x	x	x	x	x
Direction	WBLT	EB				WB		NB				
Min Green	7	20				20		7				
Veh Ext.	4.0	5.0				5.0		4.0				
Yellow	3.0	3.7				3.7		3.7				
Red	1	2.3				2.3		2.9				
Walk		7						7				
Don't Walk		20						27				
Max 1	17	60				60		10				
Max 2		40				40		7				
Max 3												
Veh Recall		x				x						
Ped Recall												

Notes: Pedestrian Reservice Active
Local Zero Override Active
Sync Reference 3:15

Pattern 1
Time: 6:00
Cycle Length: 120
Offset (%): 87%

Direction	**WBLT**	**EB**		
Phase	***1***	***2***	***3***	***4***
%	10%	62%		
Direction	**WB**		**NB**	
Phase	***5***	***6***	***7***	***8***
%	72%		28%	

Pattern 2
Time: 10:00
Cycle Length: 120
Offset (%): 86%

Direction	**WBLT**	**EB**		
Phase	***1***	***2***	***3***	***4***
%	10%	55%		
Direction	**WB**		**NB**	
Phase	***5***	***6***	***7***	***8***
%	65%		35%	

Pattern 3
Time: 15:15
Cycle Length: 120
Offset (%): 76%

Direction	**WBLT**	**EB**		
Phase	***1***	***2***	***3***	***4***
%	10%	55%		
Direction	**WB**		**NB**	
Phase	***5***	***6***	***7***	***8***
%	65%	35%		

Pattern 4
Time: 19:00
Cycle Length: 120
Offset (%): 86%

Direction	**WBLT**	**EB**		
Phase	***1***	***2***	***3***	***4***
%	10%	55%		
Direction	**WB**		**NB**	
Phase	***5***	***6***	***7***	***8***
%	65%	35%		

Pattern 5
Time: 22:00
Cycle Length: Local
Offset (%):

Direction	**WBLT**	**EB**		
Phase	***1***	***2***	***3***	***4***
%				
Direction	**WB**		**NB**	
Phase	**5**	**6**	**7**	**8**
%				

Pattern 6
Time:
Cycle Length:
Offset (%):

Direction				
Phase	***1***	***2***	***3***	***4***
%				
Direction				
Phase	**5**	**6**	**7**	**8**
%				

Appendix E

Collision Data

Geo ID	Accident No.	Accident Date	Municipality
10008501	19293902	2019-08-28	OAKVILLE
10008501	21140267	2021-05-07	OAKVILLE
10008501	21146246	2021-05-13	OAKVILLE
10008501	21217158	2021-07-17	OAKVILLE
10008501	21347547	2021-11-18	OAKVILLE
10008501	23129159	2023-04-27	OAKVILLE
10008501	2300358331	2023-11-15	OAKVILLE
10008501	2300402252A	2023-12-31	OAKVILLE

Location	Vehicle 1 Type
DUNDAS STREET WEST @ FOURTH LINE (10008501)	01 - Automobile, station wagon
DUNDAS STREET WEST @ FOURTH LINE (10008501)	01 - Automobile, station wagon
DUNDAS STREET WEST @ FOURTH LINE (10008501)	05 - Pick-up truck
DUNDAS STREET WEST @ FOURTH LINE (10008501)	05 - Pick-up truck
DUNDAS STREET WEST @ FOURTH LINE (10008501)	01 - Automobile, station wagon
DUNDAS STREET WEST @ FOURTH LINE (10008501)	01 - Automobile, station wagon
DUNDAS STREET WEST @ FOURTH LINE (10008501)	01 - Automobile, station wagon
DUNDAS STREET WEST @ FOURTH LINE (10008501)	01 - Automobile, station wagon

Vehicle 2 Type	Intersection Type	Accident Year	Accident Time
01 - Automobile, station wagon		2019	08:20
05 - Pick-up truck		2021	13:00
01 - Automobile, station wagon		2021	15:10
01 - Automobile, station wagon		2021	16:00
		2021	16:45
34 - Police vehicle		2023	05:00
01 - Automobile, station wagon		2023	14:02
		2023	20:07

Classification Of Accident	Same Type No. of Lanes	Initial Impact Type	Environment Cond. 1
03 - P.D. only	0	04 - Sideswipe	01 - Clear
02 - Non-fatal injury	0	04 - Sideswipe	01 - Clear
03 - P.D. only	0	99 - Other	01 - Clear
03 - P.D. only	0	03 - Rear end	01 - Clear
03 - P.D. only	0	03 - Rear end	01 - Clear
03 - P.D. only	0	04 - Sideswipe	01 - Clear
03 - P.D. only	0	03 - Rear end	01 - Clear
03 - P.D. only	0	07 - SMV other	03 - Snow

Environment Cond. 2	Light	Apparent Driver 1 Action (A)	Traffic Control (B)
	01 - Daylight		
	01 - Daylight	99 - Other	
	01 - Daylight	01 - Driving properly	
	01 - Daylight	01 - Driving properly	
	05 - Dusk	01 - Driving properly	
	07 - Dark	01 - Driving properly	
	01 - Daylight	02 - Following too close	01 - Traffic signal
	08 - Dark, artificial	10 - Lost control	01 - Traffic signal

Apparent Driver 2 Action (A)	Traffic Control (C)	Impact Location
01 - Driving properly		02 - Thru lane
01 - Driving properly		02 - Thru lane
01 - Driving properly		02 - Thru lane
01 - Driving properly		02 - Thru lane
		04 - Right turn lane
12 - Improper lane change		01 - Within intersection
01 - Driving properly	01 - Traffic signal	01 - Within intersection
	01 - Traffic signal	10 - Not on roadway - left side

Driver 1 Condition (A)	Traffic Ctrl Condition (B)	Driver 2 Condition (A)	Traffic Ctrl Condition (C)
		01 - Normal	
		01 - Normal	
01 - Normal		01 - Normal	
01 - Normal		01 - Normal	
01 - Normal			
01 - Normal		01 - Normal	
01 - Normal		01 - Normal	
99 - Other			

Pedestrian 1 Action	Pedestrian 1 Condition (A)	Date Processed	Pedestrian 2 Action
		2023-06-05	
		2024-02-15	
		2024-05-13	

Pedestrian 2 Condition (A)	Road 1 Surface Condition	Road 1 Condition	Road 2 Surface Condition
	01 - Dry	01 - Good	
	01 - Dry	01 - Good	01 - Dry
	01 - Dry	01 - Good	01 - Dry
	01 - Dry	01 - Good	01 - Dry
	01 - Dry	01 - Good	01 - Dry
	01 - Dry	01 - Good	01 - Dry
	01 - Asphalt	01 - Good	01 - Asphalt
	02 - Wet	01 - Good	

Road 2 Condition	Vehicle 1 Manoeuver	Vehicle 1 Initial Direction	Vehicle 1 First Event
	07 - Changing lanes	03 - East	01 - Other motor vehicle
01 - Good	01 - Going ahead	03 - East	01 - Other motor vehicle
01 - Good	09 - Reversing	01 - North	01 - Other motor vehicle
01 - Good	01 - Going ahead	03 - East	01 - Other motor vehicle
01 - Good	01 - Going ahead	04 - West	01 - Other motor vehicle
01 - Good	01 - Going ahead	04 - West	01 - Other motor vehicle
01 - Good	01 - Going ahead	03 - East	01 - Other motor vehicle
	01 - Going ahead	04 - West	21 - Skidding/sliding

Vehicle 1 Second Event	Vehicle 1 Third Event	Vehicle 1 Condition	Vehicle 2 Manoeuver
			01 - Going ahead
01 - Other motor vehicle		01 - No apparent defect	01 - Going ahead
		01 - No apparent defect	10 - Stopped
		01 - No apparent defect	10 - Stopped
		01 - No apparent defect	10 - Stopped
01 - Other motor vehicle	01 - Other motor vehicle	01 - No apparent defect	07 - Changing lanes
		01 - No apparent defect	10 - Stopped
20 - Ran off road	52 - Steel guide rail	01 - No apparent defect	

Vehicle 2 Initial Direction	Vehicle 2 First Event	Vehicle 2 Second Event	Vehicle 2 Third Event
03 - East	01 - Other motor vehicle		
03 - East	01 - Other motor vehicle	01 - Other motor vehicle	
01 - North	01 - Other motor vehicle		
03 - East	01 - Other motor vehicle		
04 - West	01 - Other motor vehicle		
04 - West	01 - Other motor vehicle		
03 - East	01 - Other motor vehicle		

Vehicle 2 Condition	Notes	Latitude	Longitude
01 - No apparent defect		43.456741	-79.754107
01 - No apparent defect		43.456717	-79.754097
01 - No apparent defect		43.456710	-79.754102
01 - No apparent defect		43.456732	-79.754097
		43.456720	-79.754107
01 - No apparent defect	Charged Driver #2 on page 1: HTA 154 (1) (A)	43.456717	-79.754110
01 - No apparent defect		43.456734	-79.754108
		43.456717	-79.754249

X-Coordinate	Y-Coordinate	Traffic Control (A)
600796.01985	4812289.98472	01 - Traffic signal
600796.82842	4812287.36161	01 - Traffic signal
600796.45531	4812286.58941	01 - Traffic signal
600796.80263	4812289.08609	01 - Traffic signal
600796.05353	4812287.73332	01 - Traffic signal
600795.81894	4812287.31799	01 - Traffic signal
600795.94729	4812289.24592	01 - Traffic signal
0.00000	0.00000	10 - No control

Appendix F

Roadway Cross-Sections

6.2.3. Connector/Transit Corridor

Connector/Transit Corridors should be designed to serve relatively low volumes of intra-neighbourhood travel, accommodate local transit service and distribute traffic to and from Major and Minor Arterial/Transit Corridors and Avenue/Transit Corridors.

The treatment of the boulevard will reflect adjacent land use and whether on-street parking is provided.

Specific technical details of the cross-section (i.e. plant material, soil type, engineering standards) will be determined through the appropriate design review process.

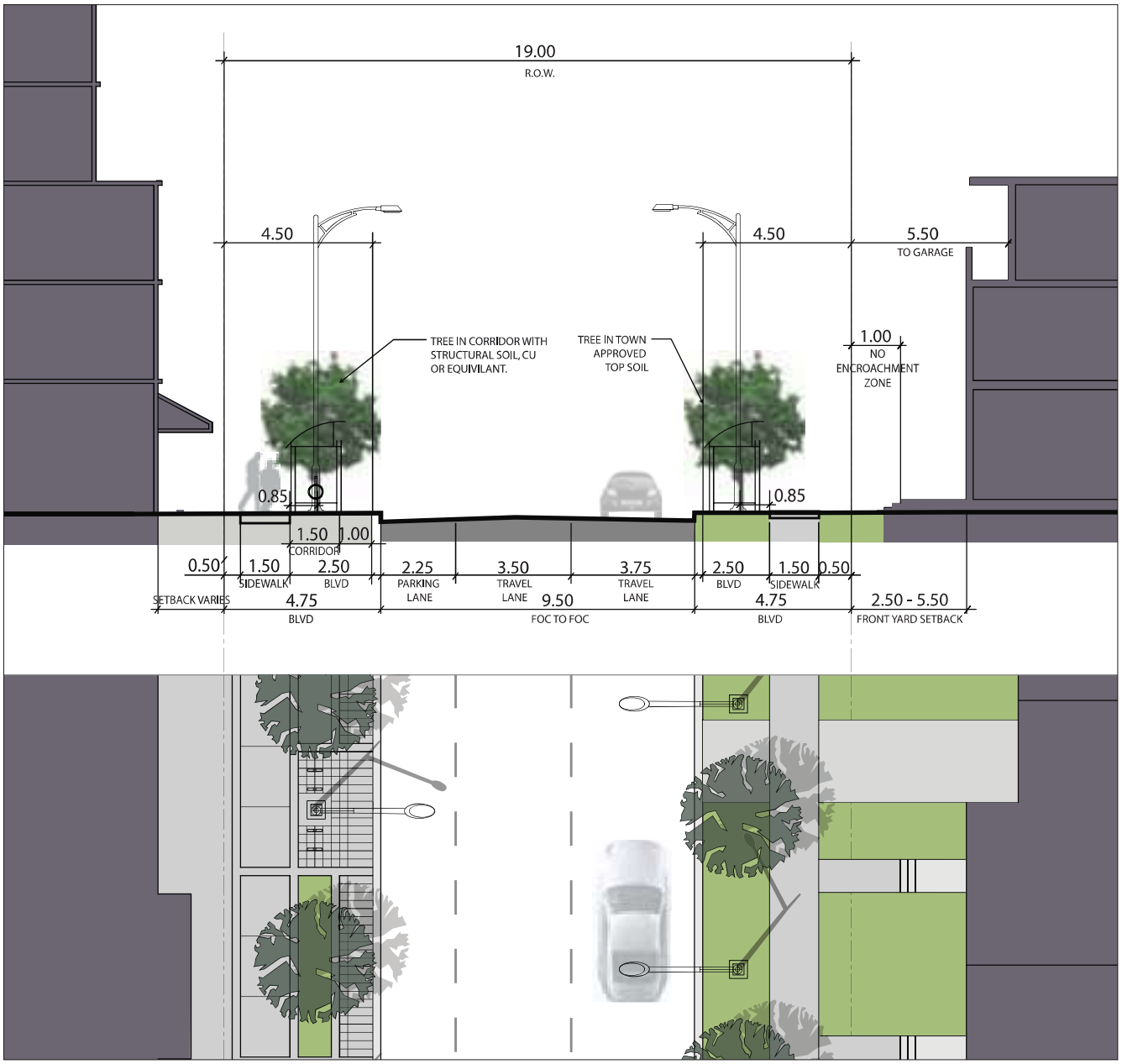


Figure 6.4: Typical Connector/Transit Corridor section through the Neighbourhood Centre. Street tree height at maturity will vary according to species and the availability of optimum growing conditions (i.e. adequate water, sunlight, soil volume), the protection from compacted soils, salt spray, mechanical damage, pests, and maintenance programs. Please refer to tree habitat design guidelines found in Table 9 of Oakville's Urban Forest: Our Solution to Our Pollution (2006).

6.2.4. Local Road

Local Roads will be designed to provide access to individual properties and serve internal residential neighbourhood, Core Area or Employment District travel demands. Local Roads will also connect individual properties to other Local Roads, Avenue/Transit Corridors or Connector/Transit Corridors.

The treatment of the boulevard will reflect adjacent land use and whether on-street parking is provided.

Specific technical details of the cross-section (i.e. plant material, soil type, engineering standards) will be determined through the appropriate design review process.

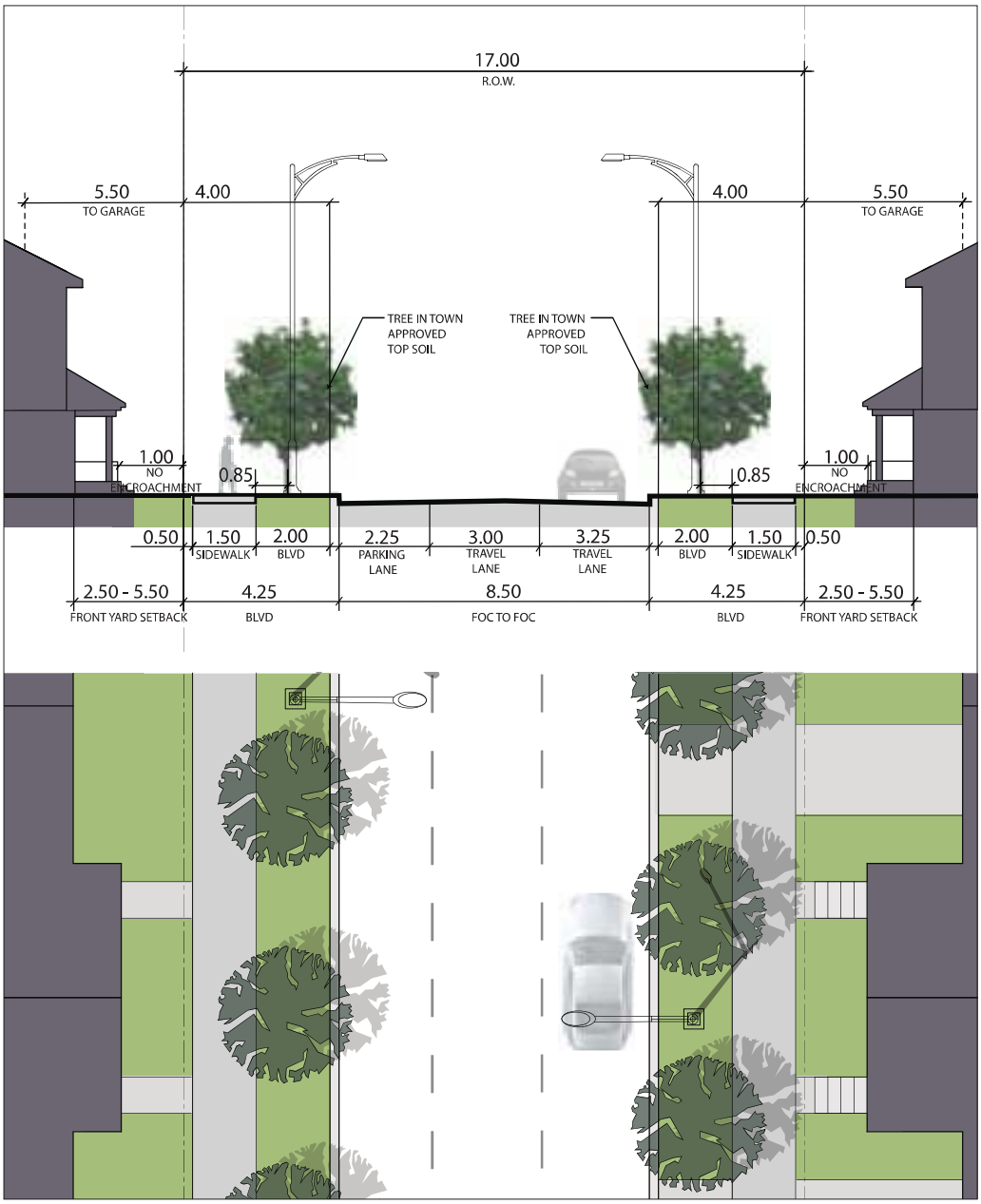
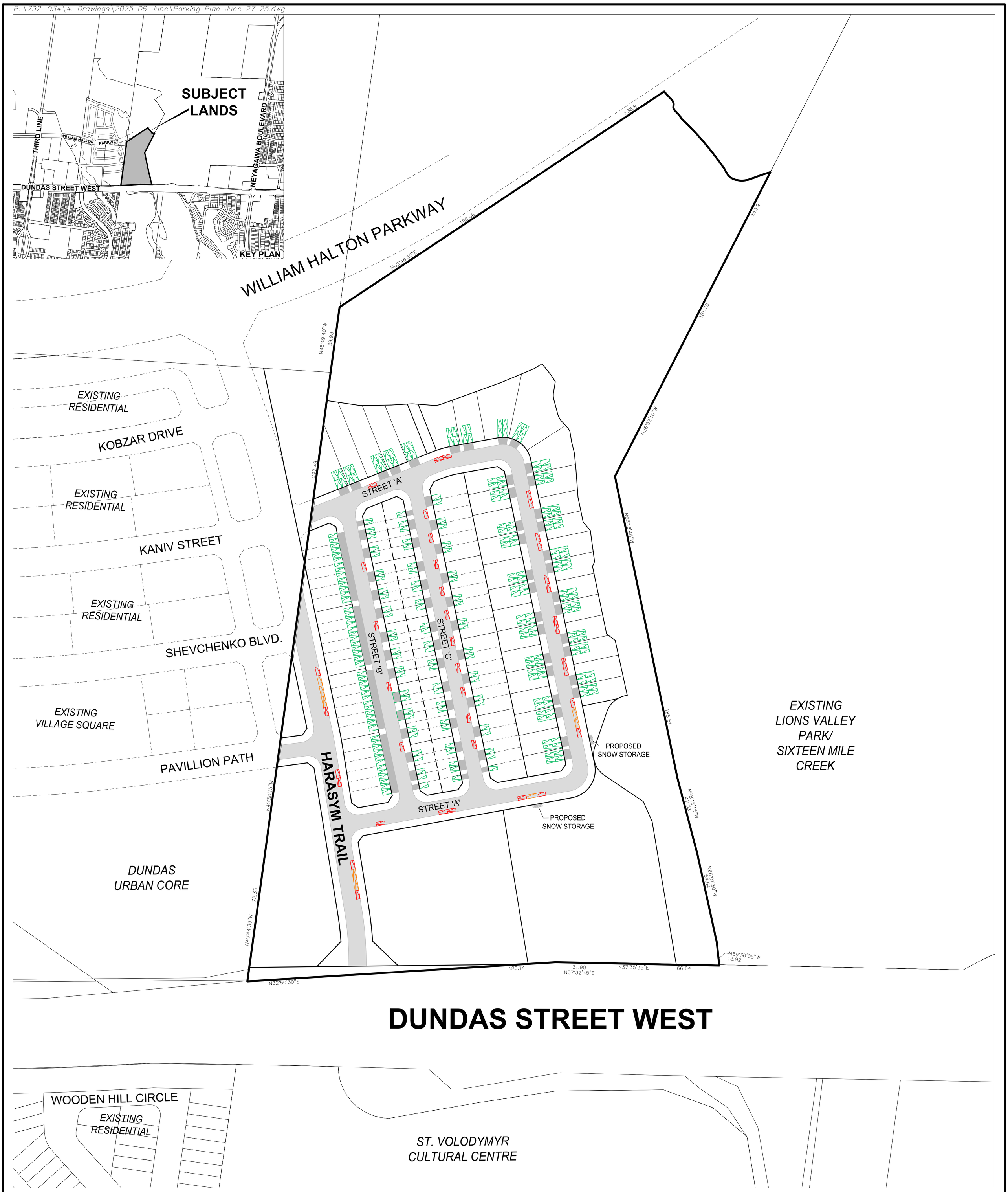


Figure 6.5: Typical Local Road section through the Neighbourhood Centre. Street tree height at maturity will vary according to species and the availability of optimum growing conditions (i.e. adequate water, sunlight, soil volume), the protection from compacted soils, salt spray, mechanical damage, pests, and maintenance programs. Please refer to tree habitat design guidelines found in Table 9 of Oakville's Urban Forest: Our Solution to Our Pollution (2006).

Appendix G

Parking Plan

P:\792-034\4. Drawings\2025 06 June\Parking Plan June 27 25.dwg



PARKING PLAN

ARGO LIONS VALLEY LIMITED

FILE # 24T-

PART OF LOT 23, CONCESSION 1,
NORTH OF DUNDAS STREET
(GEOGRAPHIC TOWNSHIP OF TRAFALGAR)
TOWN OF OAKVILLE
REGIONAL MUNICIPALITY OF HALTON

Parking Count

48 - ON-STREET PARKING SPACES

139 - RESIDENTIAL UNITS

0.34 - VISITOR SPACE/UNIT*

269 - RESIDENTIAL PARKING SPACES

Legend* *ON-STREET / RESIDENTIAL UNITS (48 / 139)*

- INTERIOR ON-STREET PARKING SPACE (6.5m x 2.25m)
- SINGLE AND/OR END ON-STREET PARKING SPACE (5.2m x 2.25m)
- RESIDENTIAL PARKING SPACE (5.5m x 3.0m)
- PROPOSED DRIVEWAY (FINAL LOCATION TO BE DETERMINED)
- PROPOSED SNOW STORAGE

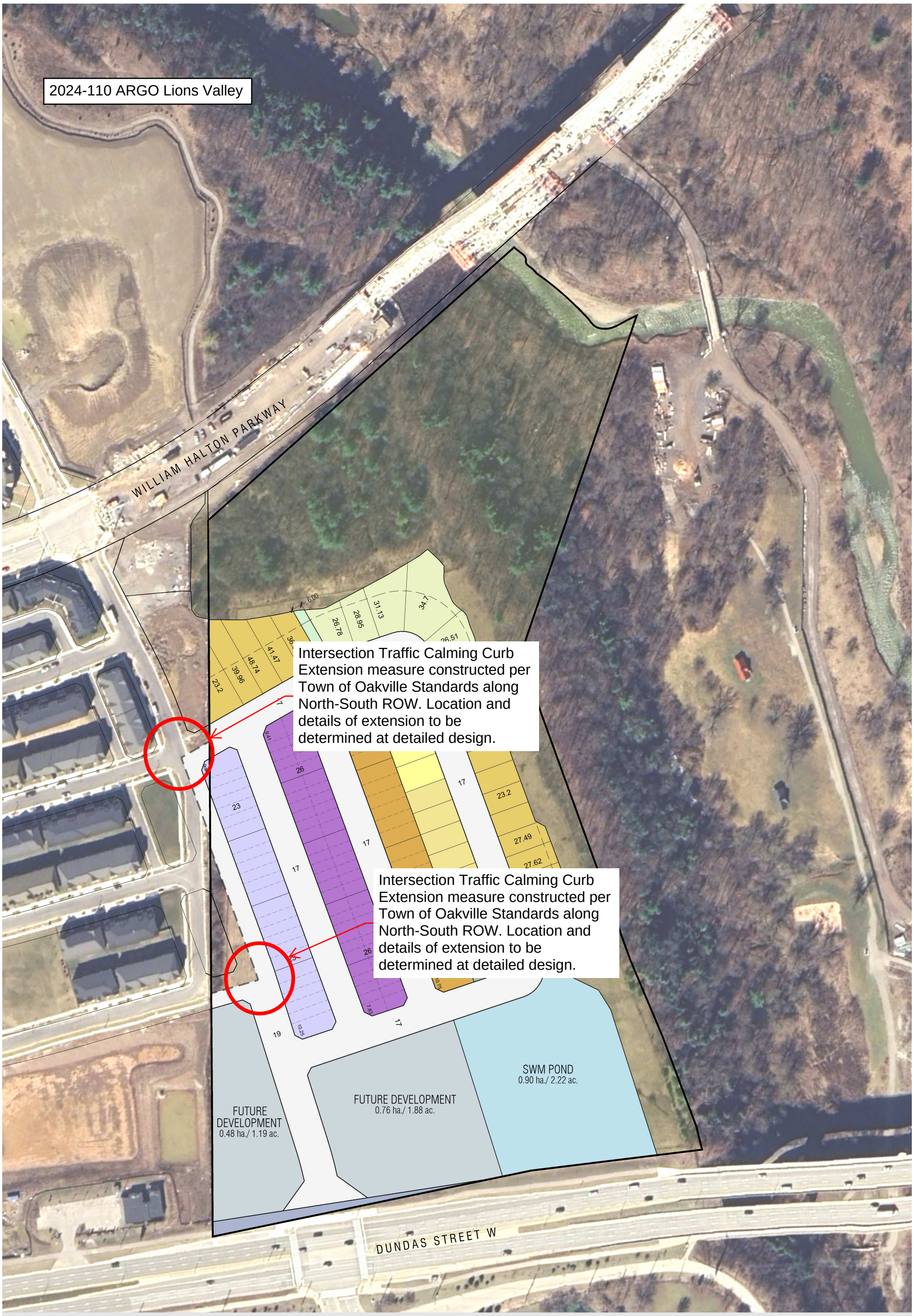
SCALE: 1:1000
(24 x 36)
JUNE 25, 2025

ARGO DEVELOPMENT CORP

GSAI
Glen Schnarr & Associates Inc.

Appendix H

Preliminary Traffic Calming Plan



DRAFT

- All Units In Metric Unless Otherwise Noted.
- Base Information Obtained From Various Sources And Is Approximate.
- Schedule / Plan Information Is Conceptual And Requires Verification by Appropriate Agency.
- Aerial Photo: Google Earth, May 2025

GERRARD DESIGN

WHITEOAK COMMUNICATIONS SITE | Oakville, ON

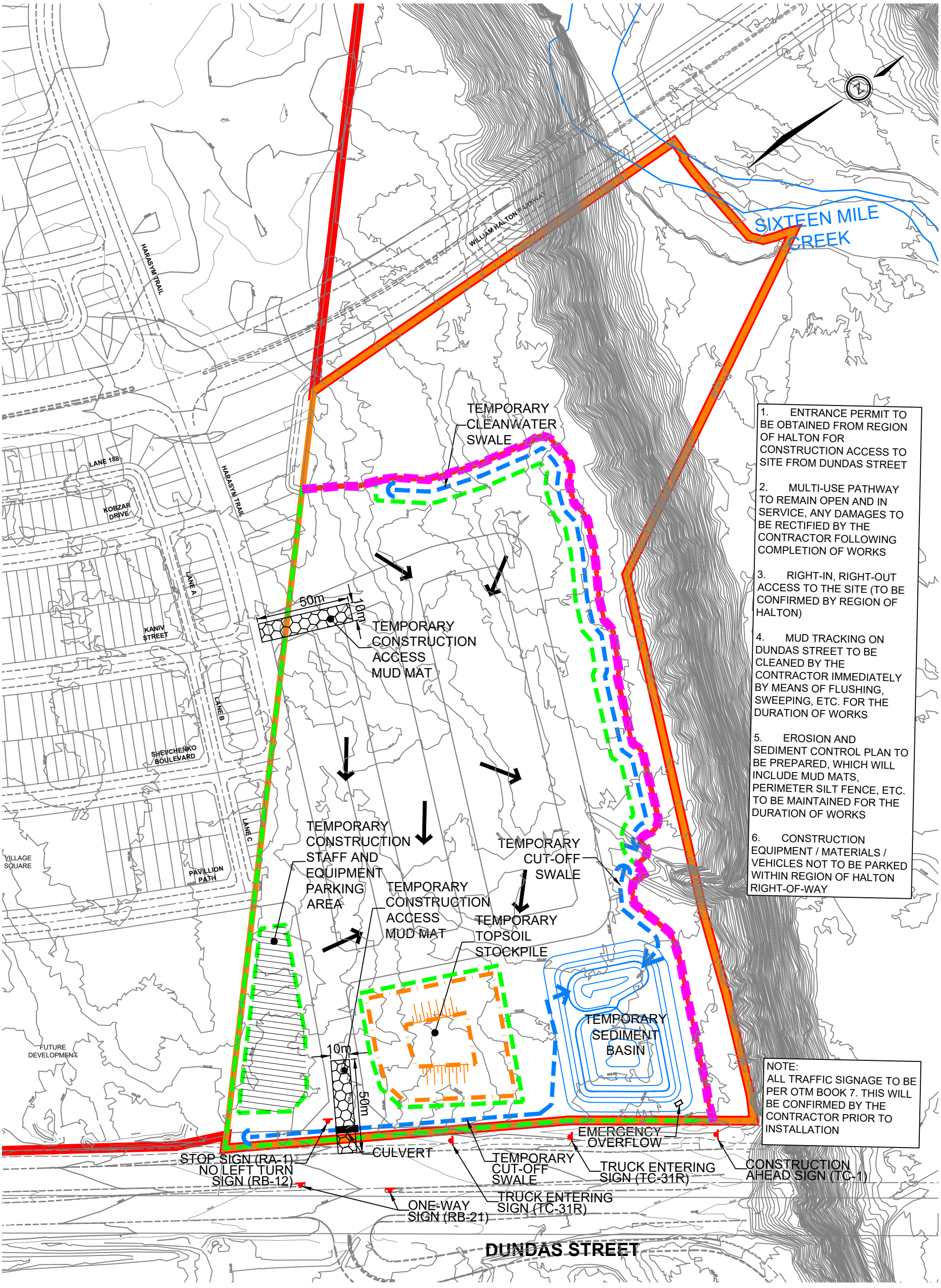
ARGO LIONS VALLEY CONCEPT PLAN

JUNE 06, 2025
PROJECT 2056
SCALE 1:2000

CP-38

Appendix I

Preliminary Construction Traffic Control Management Plan



1. ENTRANCE PERMIT TO BE OBTAINED FROM REGION OF HALTON FOR CONSTRUCTION ACCESS TO SITE FROM DUNDAS STREET

2. MULTI-USE PATHWAY TO REMAIN OPEN AND IN SERVICE, ANY DAMAGES TO BE RECTIFIED BY THE CONTRACTOR FOLLOWING COMPLETION OF WORKS

3. RIGHT-IN, RIGHT-OUT ACCESS TO THE SITE (TO BE CONFIRMED BY REGION OF HALTON)

4. MUD TRACKING ON DUNDAS STREET TO BE CLEANED BY THE CONTRACTOR IMMEDIATELY BY MEANS OF FLUSHING, SWEEPING, ETC. FOR THE DURATION OF WORKS

5. EROSION AND SEDIMENT CONTROL PLAN TO BE PREPARED, WHICH WILL INCLUDE MUD MATS, PERIMETER SILT FENCE, ETC. TO BE MAINTAINED FOR THE DURATION OF WORKS

6. CONSTRUCTION EQUIPMENT / MATERIALS / VEHICLES NOT TO BE PARKED WITHIN REGION OF HALTON RIGHT-OF-WAY

NOTE:
ALL TRAFFIC SIGNAGE TO BE PER OTM BOOK 7. THIS WILL BE CONFIRMED BY THE CONTRACTOR PRIOR TO INSTALLATION

LEGEND

- SUBJECT LANDS
- DOUBLE ROW SILT CONTROL FENCE
- SILT CONTROL FENCE

DAVID SCHAEFFER ENGINEERING LTD.
JENNIFER LAWRENCE & ASSOCIATES INC.
R.J. BURNSIDE & ASSOCIATES LTD.
DS CONSULTANTS LTD.
SCS CONULTING GROUP
GEO MORPHIX LTD.

ARGO LIONS VALLEY

TOWN OF OAKVILLE

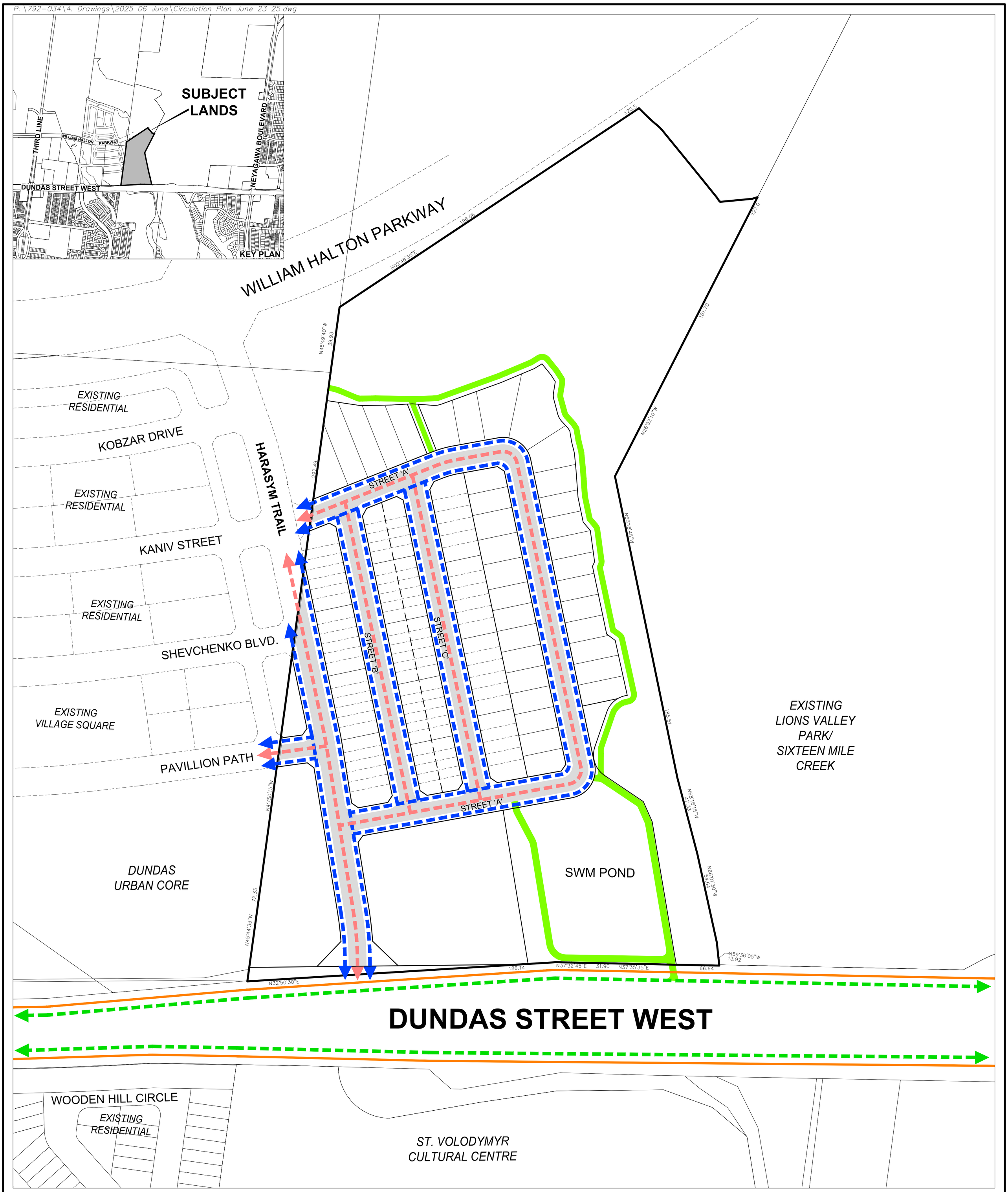
CONCEPTUAL SILTATION CONTROL PLAN

SCALE:	1:2000	PROJECT No.:	24-1380
DATE:	OCTOBER 2025	FIGURE:	11.1

Appendix J

Pedestrian Circulation / Transit Facility Plan

P:\792-034\4. Drawings\2025 06 June\Circulation Plan June 23 25.dwg



PEDESTRIAN CIRCULATION / TRANSIT FACILITY PLAN

ARGO LIONS VALLEY LIMITED

FILE # 24T-

PART OF LOT 23, CONCESSION 1,
NORTH OF DUNDAS STREET
(GEOGRAPHIC TOWNSHIP OF TRAFALGAR)
TOWN OF OAKVILLE
REGIONAL MUNICIPALITY OF HALTON

Legend

- VEHICLE CIRCULATION
- PEDESTRIAN CIRCULATION
- EXISTING TRANSIT ROUTE
- EXISTING MULTI-USE TRAIL
- CONCEPTUAL TRAIL LOCATION

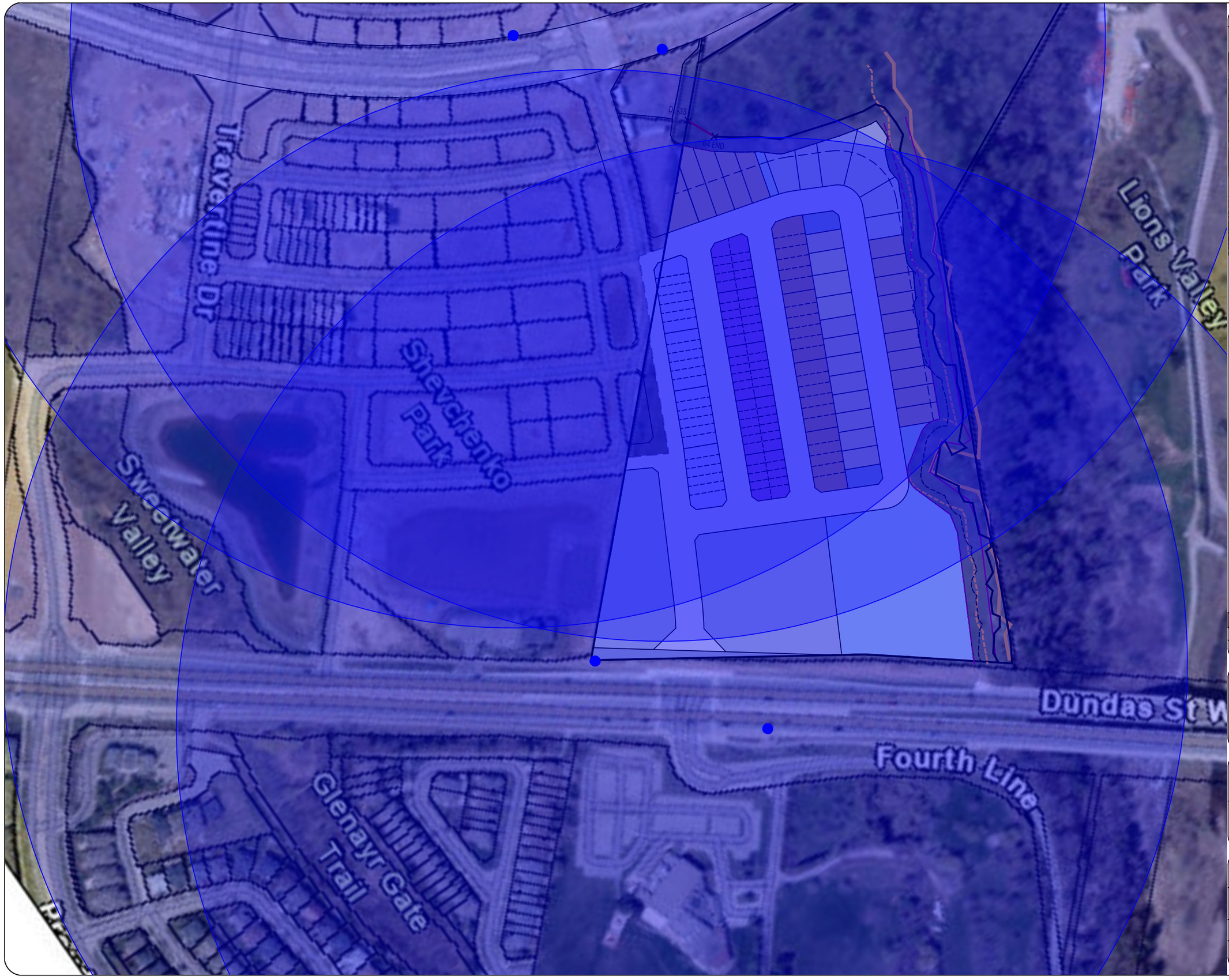
SCALE: 1:1000
(24 x 36)
JUNE 23, 2025

ARGO DEVELOPMENT CORP

GSAI
Glen Schnarr & Associates Inc.

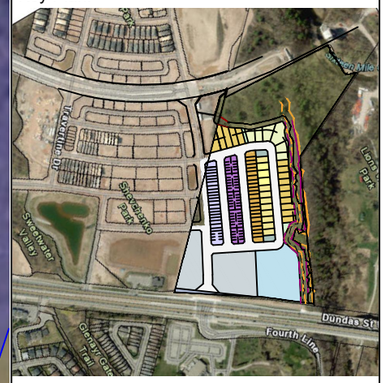
Appendix K

Transit Plan



Notes:

Key Plan:



Legend:

Transit Stop

400m Transit Walking Distance

REV:	DESCRIPTION:	BY:	DATE:
03	ISSUED FOR REVIEW	EW	2025-06-09

STATUS:

CGH Transportation
628 Haines Road
Newmarket, ON
L3Y 6V5
(905) 251-4070

CLIENT: ARGO Lions Valley Limited

ARCHITECT: Gerrard Design

SITE: ARGO Lions Valley

TITLE: Transit Plan

SCALE AT A3:	DATE:	DRAWN:	CHECKED:
NTS	2025-06-09	EW	RM

PROJECT NO:	DRAWING NO:	REVISION:
2024-110	001	03

Appendix L

2024 Existing Conditions Synchro Worksheets

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	2096	29	12	1491	24	8
Future Volume (vph)	2096	29	12	1491	24	8
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (m)		0.0	90.0		15.0	0.0
Storage Lanes		0	1		1	1
Taper Length (m)			100.0		35.0	
Lane Util. Factor	0.91	0.91	1.00	0.91	1.00	1.00
Ped Bike Factor	1.00					
Frt	0.998					0.850
Flt Protected			0.950		0.950	
Satd. Flow (prot)	4922	0	1750	4749	1750	1566
Flt Permitted			0.056		0.950	
Satd. Flow (perm)	4922	0	103	4749	1750	1566
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)	3					9
Link Speed (k/h)	70			70	50	
Link Distance (m)	413.9			633.4	126.1	
Travel Time (s)	21.3			32.6	9.1	
Confl. Peds. (#/hr)		3	3			
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93
Heavy Vehicles (%)	4%	2%	2%	8%	2%	2%
Adj. Flow (vph)	2254	31	13	1603	26	9
Shared Lane Traffic (%)						
Lane Group Flow (vph)	2285	0	13	1603	26	9
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	3.5			3.5	3.5	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	3.0			3.0	3.0	
Two way Left Turn Lane						
Headway Factor	1.01	1.01	1.01	1.01	1.01	1.01
Turning Speed (k/h)		15	25		25	15
Number of Detectors	2		1	2	1	1
Detector Template	Thru		Left	Thru	Left	Right
Leading Detector (m)	10.0		2.0	10.0	2.0	2.0
Trailing Detector (m)	0.0		0.0	0.0	0.0	0.0
Detector 1 Position(m)	0.0		0.0	0.0	0.0	0.0
Detector 1 Size(m)	0.6		2.0	0.6	2.0	2.0
Detector 1 Type	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel						
Detector 1 Extend (s)	0.0		0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0		0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0		0.0	0.0	0.0	0.0
Detector 2 Position(m)	9.4			9.4		
Detector 2 Size(m)	0.6			0.6		
Detector 2 Type	Cl+Ex			Cl+Ex		
Detector 2 Channel						
Detector 2 Extend (s)	0.0			0.0		

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Turn Type	NA		pm+pt	NA	Prot	Perm
Protected Phases	2		1	6	8	
Permitted Phases			6			8
Detector Phase	2		1	6	8	8
Switch Phase						
Minimum Initial (s)	20.0		7.0	20.0	7.0	7.0
Minimum Split (s)	33.0		11.0	26.0	40.6	40.6
Total Split (s)	74.4		12.0	86.4	33.6	33.6
Total Split (%)	62.0%		10.0%	72.0%	28.0%	28.0%
Maximum Green (s)	68.4		8.0	80.4	27.0	27.0
Yellow Time (s)	3.7		3.0	3.7	3.7	3.7
All-Red Time (s)	2.3		1.0	2.3	2.9	2.9
Lost Time Adjust (s)	0.0		0.0	0.0	0.0	0.0
Total Lost Time (s)	6.0		4.0	6.0	6.6	6.6
Lead/Lag	Lag		Lead			
Lead-Lag Optimize?	Yes		Yes			
Vehicle Extension (s)	5.0		4.0	5.0	4.0	4.0
Recall Mode	C-Max		None	C-Max	None	None
Walk Time (s)	7.0				7.0	7.0
Flash Dont Walk (s)	20.0				27.0	27.0
Pedestrian Calls (#/hr)	3				0	0
Act Effct Green (s)	102.4		106.4	106.8	8.4	8.4
Actuated g/C Ratio	0.85		0.89	0.89	0.07	0.07
v/c Ratio	0.54		0.07	0.38	0.21	0.08
Control Delay	2.4		2.4	2.3	56.1	28.0
Queue Delay	0.0		0.0	0.0	0.0	0.0
Total Delay	2.4		2.4	2.3	56.1	28.0
LOS	A		A	A	E	C
Approach Delay	2.4			2.3	48.9	
Approach LOS	A			A	D	
Queue Length 50th (m)	23.2		0.4	27.6	5.9	0.0
Queue Length 95th (m)	28.9		1.4	37.5	14.8	5.1
Internal Link Dist (m)	389.9			609.4	102.1	
Turn Bay Length (m)			90.0		15.0	
Base Capacity (vph)	4202		201	4228	393	359
Starvation Cap Reductn	0		0	0	0	0
Spillback Cap Reductn	0		0	0	0	0
Storage Cap Reductn	0		0	0	0	0
Reduced v/c Ratio	0.54		0.06	0.38	0.07	0.03

Intersection Summary	
Area Type:	Other
Cycle Length: 120	
Actuated Cycle Length: 120	
Offset: 104.4 (87%), Referenced to phase 2:EBT and 6:WBTL, Start of Green	
Natural Cycle: 105	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.54	
Intersection Signal Delay: 2.8	Intersection LOS: A

Intersection Capacity Utilization 57.5% ICU Level of Service B

Analysis Period (min) 15

Splits and Phases: 1: Fourth Line & Dundas Street

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	2096	29	12	1491	24	8
Future Volume (vph)	2096	29	12	1491	24	8
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0		4.0	6.0	6.6	6.6
Lane Util. Factor	0.91		1.00	0.91	1.00	1.00
Frpb, ped/bikes	1.00		1.00	1.00	1.00	1.00
Flpb, ped/bikes	1.00		1.00	1.00	1.00	1.00
Frt	1.00		1.00	1.00	1.00	0.85
Flt Protected	1.00		0.95	1.00	0.95	1.00
Satd. Flow (prot)	4922		1750	4749	1750	1566
Flt Permitted	1.00		0.06	1.00	0.95	1.00
Satd. Flow (perm)	4922		102	4749	1750	1566
Peak-hour factor, PHF	0.93	0.93	0.93	0.93	0.93	0.93
Adj. Flow (vph)	2254	31	13	1603	26	9
RTOR Reduction (vph)	1	0	0	0	0	9
Lane Group Flow (vph)	2284	0	13	1603	26	0
Confl. Peds. (#/hr)		3	3			
Heavy Vehicles (%)	4%	2%	2%	8%	2%	2%
Turn Type	NA		pm+pt	NA	Prot	Perm
Protected Phases	2		1	6	8	
Permitted Phases			6			8
Actuated Green, G (s)	95.0		101.8	101.8	5.6	5.6
Effective Green, g (s)	95.0		101.8	101.8	5.6	5.6
Actuated g/C Ratio	0.79		0.85	0.85	0.05	0.05
Clearance Time (s)	6.0		4.0	6.0	6.6	6.6
Vehicle Extension (s)	5.0		4.0	5.0	4.0	4.0
Lane Grp Cap (vph)	3896		124	4028	81	73
v/s Ratio Prot	c0.46		0.00	c0.34	c0.01	
v/s Ratio Perm			0.09			0.00
v/c Ratio	0.59		0.10	0.40	0.32	0.01
Uniform Delay, d1	4.9		3.2	2.1	55.4	54.5
Progression Factor	0.41		1.00	1.00	1.00	1.00
Incremental Delay, d2	0.5		0.5	0.3	3.1	0.0
Delay (s)	2.5		3.7	2.4	58.5	54.6
Level of Service	A		A	A	E	D
Approach Delay (s)	2.5			2.4	57.5	
Approach LOS	A			A	E	

Intersection Summary			
HCM 2000 Control Delay	3.0	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.57		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	16.6
Intersection Capacity Utilization	57.5%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	6	1888	104	88	1552	35	52	15	260	86	30	22
Future Volume (vph)	6	1888	104	88	1552	35	52	15	260	86	30	22
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	120.0		70.0	115.0		60.0	90.0		0.0	30.0		0.0
Storage Lanes	1		1	1		1	1		0	1		0
Taper Length (m)	65.0			65.0			30.0			15.0		
Lane Util. Factor	1.00	0.91	1.00	1.00	0.91	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor								0.99		1.00		
Frt			0.850			0.850		0.858			0.938	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1526	4980	1465	1684	4885	1465	1716	1535	0	1733	1697	0
Flt Permitted	0.148			0.068			0.722			0.247		
Satd. Flow (perm)	238	4980	1465	121	4885	1465	1304	1535	0	450	1697	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			100			36		127			22	
Link Speed (k/h)		70			70			50			50	
Link Distance (m)		331.1			413.9			220.1			189.0	
Travel Time (s)		17.0			21.3			15.8			13.6	
Confl. Peds. (#/hr)									2	2		
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Heavy Vehicles (%)	17%	3%	9%	6%	5%	9%	4%	33%	2%	3%	3%	5%
Adj. Flow (vph)	6	1927	106	90	1584	36	53	15	265	88	31	22
Shared Lane Traffic (%)												
Lane Group Flow (vph)	6	1927	106	90	1584	36	53	280	0	88	53	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.5			3.5			3.5			3.5	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		3.0			3.0			3.0			3.0	
Two way Left Turn Lane												
Headway Factor	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2	1	1	2	1	1	2		1	2	
Detector Template	Left	Thru	Right	Left	Thru	Right	Left	Thru		Left	Thru	
Leading Detector (m)	2.0	10.0	2.0	2.0	10.0	2.0	2.0	10.0		2.0	10.0	
Trailing Detector (m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Detector 1 Position(m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Detector 1 Size(m)	2.0	0.6	2.0	2.0	0.6	2.0	2.0	0.6		2.0	0.6	
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Type	Perm	NA	Perm	pm+pt	NA	Perm	Perm	NA		Perm	NA	
Protected Phases		2		1	6			8			4	
Permitted Phases	2		2	6		6	8			4		
Detector Phase	2	2	2	1	6	6	8	8		4	4	
Switch Phase												
Minimum Initial (s)	20.0	20.0	20.0	7.0	20.0	20.0	10.0	10.0		10.0	10.0	
Minimum Split (s)	31.9	31.9	31.9	11.0	31.9	31.9	43.9	43.9		43.9	43.9	
Total Split (s)	70.8	70.8	70.8	12.0	82.8	82.8	37.2	37.2		37.2	37.2	
Total Split (%)	59.0%	59.0%	59.0%	10.0%	69.0%	69.0%	31.0%	31.0%		31.0%	31.0%	
Maximum Green (s)	64.9	64.9	64.9	8.0	76.9	76.9	30.3	30.3		30.3	30.3	
Yellow Time (s)	3.7	3.7	3.7	3.0	3.7	3.7	3.3	3.3		3.3	3.3	
All-Red Time (s)	2.2	2.2	2.2	1.0	2.2	2.2	3.6	3.6		3.6	3.6	
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)	5.9	5.9	5.9	4.0	5.9	5.9	6.9	6.9		6.9	6.9	
Lead/Lag	Lag	Lag	Lag	Lead								
Lead-Lag Optimize?	Yes	Yes	Yes	Yes								
Vehicle Extension (s)	5.5	5.5	5.5	3.0	5.5	5.5	3.0	3.0		3.0	3.0	
Recall Mode	C-Max	C-Max	C-Max	None	C-Max	C-Max	None	None		None	None	
Walk Time (s)	7.0	7.0	7.0		7.0	7.0	7.0	7.0		7.0	7.0	
Flash Dont Walk (s)	19.0	19.0	19.0		19.0	19.0	30.0	30.0		30.0	30.0	
Pedestrian Calls (#/hr)	0	0	0		0	0	2	2		0	0	
Act Effct Green (s)	75.7	75.7	75.7	89.2	87.3	87.3	19.9	19.9		19.9	19.9	
Actuated g/C Ratio	0.63	0.63	0.63	0.74	0.73	0.73	0.17	0.17		0.17	0.17	
v/c Ratio	0.04	0.61	0.11	0.48	0.45	0.03	0.25	0.78		1.19	0.18	
Control Delay	12.7	15.6	3.0	25.4	7.4	2.3	43.1	39.8		206.9	26.7	
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Total Delay	12.7	15.6	3.0	25.4	7.4	2.3	43.1	39.8		206.9	26.7	
LOS	B	B	A	C	A	A	D	D		F	C	
Approach Delay		14.9			8.3			40.3			139.1	
Approach LOS		B			A			D			F	
Queue Length 50th (m)	0.5	91.7	0.5	5.0	47.0	0.0	11.0	35.3		~25.0	6.3	
Queue Length 95th (m)	2.9	136.8	8.7	24.3	65.4	3.6	20.6	59.6		#48.6	15.8	
Internal Link Dist (m)		307.1			389.9			196.1			165.0	
Turn Bay Length (m)	120.0		70.0	115.0		60.0	90.0			30.0		
Base Capacity (vph)	150	3142	961	196	3554	1075	329	482		113	444	
Starvation Cap Reductn	0	0	0	0	0	0	0	0		0	0	
Spillback Cap Reductn	0	0	0	0	0	0	0	0		0	0	
Storage Cap Reductn	0	0	0	0	0	0	0	0		0	0	
Reduced v/c Ratio	0.04	0.61	0.11	0.46	0.45	0.03	0.16	0.58		0.78	0.12	

Intersection Summary

Area Type: Other
Cycle Length: 120
Actuated Cycle Length: 120
Offset: 80.4 (67%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green
Natural Cycle: 100
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 1.19
Intersection Signal Delay: 18.4 Intersection LOS: B

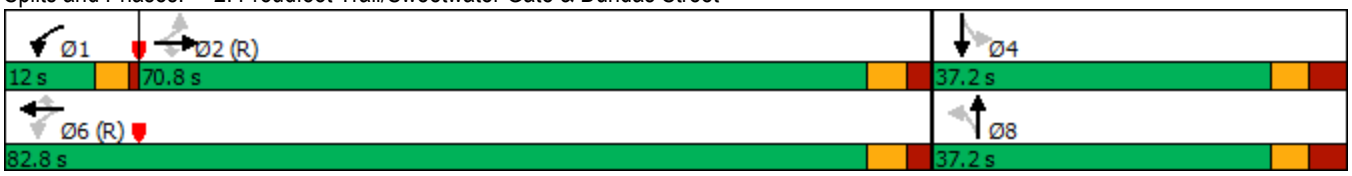
Intersection Capacity Utilization 94.3% ICU Level of Service F

Analysis Period (min) 15

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 2: Proudfoot Trail/Sweetwater Gate & Dundas Street



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	6	1888	104	88	1552	35	52	15	260	86	30	22
Future Volume (vph)	6	1888	104	88	1552	35	52	15	260	86	30	22
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.9	5.9	5.9	4.0	5.9	5.9	6.9	6.9		6.9	6.9	
Lane Util. Factor	1.00	0.91	1.00	1.00	0.91	1.00	1.00	1.00		1.00	1.00	
Frpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.99		1.00	1.00	
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	1.00	0.85	1.00	1.00	0.85	1.00	0.86		1.00	0.94	
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)	1526	4980	1465	1684	4885	1465	1716	1535		1731	1697	
Flt Permitted	0.15	1.00	1.00	0.07	1.00	1.00	0.72	1.00		0.25	1.00	
Satd. Flow (perm)	238	4980	1465	121	4885	1465	1305	1535		450	1697	
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)	6	1927	106	90	1584	36	53	15	265	88	31	22
RTOR Reduction (vph)	0	0	37	0	0	10	0	106	0	0	18	0
Lane Group Flow (vph)	6	1927	69	90	1584	26	53	174	0	88	35	0
Confl. Peds. (#/hr)									2	2		
Heavy Vehicles (%)	17%	3%	9%	6%	5%	9%	4%	33%	2%	3%	3%	5%
Turn Type	Perm	NA	Perm	pm+pt	NA	Perm	Perm	NA		Perm	NA	
Protected Phases		2		1	6			8			4	
Permitted Phases	2		2	6		6	8			4		
Actuated Green, G (s)	75.7	75.7	75.7	87.3	87.3	87.3	19.9	19.9		19.9	19.9	
Effective Green, g (s)	75.7	75.7	75.7	87.3	87.3	87.3	19.9	19.9		19.9	19.9	
Actuated g/C Ratio	0.63	0.63	0.63	0.73	0.73	0.73	0.17	0.17		0.17	0.17	
Clearance Time (s)	5.9	5.9	5.9	4.0	5.9	5.9	6.9	6.9		6.9	6.9	
Vehicle Extension (s)	5.5	5.5	5.5	3.0	5.5	5.5	3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	150	3141	924	187	3553	1065	216	254		74	281	
v/s Ratio Prot		c0.39		0.03	c0.32			0.11			0.02	
v/s Ratio Perm	0.03		0.05	0.32		0.02	0.04			c0.20		
v/c Ratio	0.04	0.61	0.07	0.48	0.45	0.02	0.25	0.69		1.19	0.12	
Uniform Delay, d1	8.4	13.3	8.6	10.6	6.6	4.5	43.5	47.1		50.0	42.6	
Progression Factor	1.00	1.00	1.00	1.86	0.95	0.98	1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.5	0.9	0.2	1.9	0.4	0.0	0.6	7.4		164.3	0.2	
Delay (s)	8.9	14.2	8.7	21.5	6.6	4.5	44.1	54.6		214.4	42.8	
Level of Service	A	B	A	C	A	A	D	D		F	D	
Approach Delay (s)		13.9			7.4			52.9			149.9	
Approach LOS		B			A			D			F	

Intersection Summary			
HCM 2000 Control Delay	18.9	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.72		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	16.8
Intersection Capacity Utilization	94.3%	ICU Level of Service	F
Analysis Period (min)	15		

c Critical Lane Group

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	2326	0	1	1564	1	1	0	3	1	0	0
Future Volume (vph)	0	2326	0	1	1564	1	1	0	3	1	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	50.0		10.0	75.0		0.0	0.0		0.0	0.0		0.0
Storage Lanes	1		1	1		0	0		0	0		0
Taper Length (m)	50.0			100.0			15.0			15.0		
Lane Util. Factor	1.00	0.91	1.00	1.00	0.91	0.91	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor					1.00			0.99			1.00	
Frt								0.899				
Flt Protected				0.950				0.988			0.950	
Satd. Flow (prot)	1842	4980	1842	1750	4839	0	0	1318	0	0	1750	0
Flt Permitted				0.047				0.914			0.755	
Satd. Flow (perm)	1842	4980	1842	87	4839	0	0	1219	0	0	1388	0
Right Turn on Red			Yes			Yes			No			Yes
Satd. Flow (RTOR)												
Link Speed (k/h)		70			70			50			50	
Link Distance (m)		633.4			305.5			139.7			95.5	
Travel Time (s)		32.6			15.7			10.1			6.9	
Confl. Peds. (#/hr)	1		7	7		1	1		2	2		1
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Heavy Vehicles (%)	2%	3%	2%	2%	6%	2%	2%	2%	33%	2%	2%	2%
Adj. Flow (vph)	0	2501	0	1	1682	1	1	0	3	1	0	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	2501	0	1	1683	0	0	4	0	0	1	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.5			3.5			0.0			0.0	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		3.0			3.0			3.0			3.0	
Two way Left Turn Lane												
Headway Factor	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2	1	1	2		1	2		1	2	
Detector Template	Left	Thru	Right	Left	Thru		Left	Thru		Left	Thru	
Leading Detector (m)	2.0	10.0	2.0	2.0	10.0		2.0	10.0		2.0	10.0	
Trailing Detector (m)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Position(m)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Size(m)	2.0	0.6	2.0	2.0	0.6		2.0	0.6		2.0	0.6	
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Type	Perm	NA	Perm	Perm	NA		Perm	NA		Perm	NA	
Protected Phases		2			6			8			4	
Permitted Phases	2		2	6			8			4		
Detector Phase	2	2	2	6	6		8	8		4	4	
Switch Phase												
Minimum Initial (s)	20.0	20.0	20.0	20.0	20.0		10.0	10.0		10.0	10.0	
Minimum Split (s)	33.7	33.7	33.7	33.7	33.7		48.4	48.4		48.4	48.4	
Total Split (s)	91.0	91.0	91.0	91.0	91.0		49.0	49.0		49.0	49.0	
Total Split (%)	65.0%	65.0%	65.0%	65.0%	65.0%		35.0%	35.0%		35.0%	35.0%	
Maximum Green (s)	84.3	84.3	84.3	84.3	84.3		41.6	41.6		41.6	41.6	
Yellow Time (s)	4.2	4.2	4.2	4.2	4.2		3.3	3.3		3.3	3.3	
All-Red Time (s)	2.5	2.5	2.5	2.5	2.5		4.1	4.1		4.1	4.1	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0			0.0			0.0	
Total Lost Time (s)	6.7	6.7	6.7	6.7	6.7			7.4			7.4	
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	C-Max	C-Max	C-Max	C-Max	C-Max		None	None		None	None	
Walk Time (s)	7.0	7.0	7.0	7.0	7.0		7.0	7.0		7.0	7.0	
Flash Dont Walk (s)	20.0	20.0	20.0	20.0	20.0		34.0	34.0		34.0	34.0	
Pedestrian Calls (#/hr)	7	7	7	1	1		2	2		1	1	
Act Effct Green (s)		129.0		129.0	129.0			16.2			16.2	
Actuated g/C Ratio		0.92		0.92	0.92			0.12			0.12	
v/c Ratio		0.55		0.01	0.38			0.03			0.01	
Control Delay		6.1		8.0	4.4			46.8			45.0	
Queue Delay		0.0		0.0	0.0			0.0			0.0	
Total Delay		6.1		8.0	4.4			46.8			45.0	
LOS		A		A	A			D			D	
Approach Delay		6.1			4.5			46.8			45.0	
Approach LOS		A			A			D			D	
Queue Length 50th (m)		0.0		0.0	0.0			1.1			0.3	
Queue Length 95th (m)		211.0		0.9	111.1			3.8			1.6	
Internal Link Dist (m)		609.4			281.5			115.7			71.5	
Turn Bay Length (m)				75.0								
Base Capacity (vph)		4588		80	4458			362			412	
Starvation Cap Reductn		0		0	0			0			0	
Spillback Cap Reductn		0		0	0			0			0	
Storage Cap Reductn		0		0	0			0			0	
Reduced v/c Ratio		0.55		0.01	0.38			0.01			0.00	

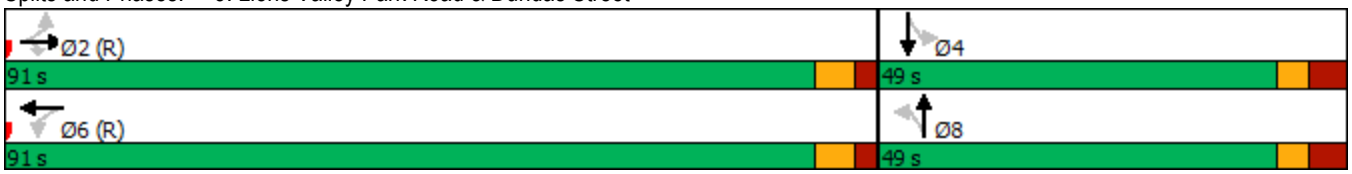
Intersection Summary

Area Type: Other
Cycle Length: 140
Actuated Cycle Length: 140
Offset: 57.4 (41%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green
Natural Cycle: 105
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.55
Intersection Signal Delay: 5.5 Intersection LOS: A

Intersection Capacity Utilization 66.7% ICU Level of Service C

Analysis Period (min) 15

Splits and Phases: 3: Lions Valley Park Road & Dundas Street



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	2326	0	1	1564	1	1	0	3	1	0	0
Future Volume (vph)	0	2326	0	1	1564	1	1	0	3	1	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		6.7		6.7	6.7			7.4			7.4	
Lane Util. Factor		0.91		1.00	0.91			1.00			1.00	
Frpb, ped/bikes		1.00		1.00	1.00			0.99			1.00	
Flpb, ped/bikes		1.00		1.00	1.00			1.00			1.00	
Frt		1.00		1.00	1.00			0.90			1.00	
Flt Protected		1.00		0.95	1.00			0.99			0.95	
Satd. Flow (prot)		4980		1749	4839			1317			1746	
Flt Permitted		1.00		0.05	1.00			0.91			0.76	
Satd. Flow (perm)		4980		87	4839			1219			1388	
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)	0	2501	0	1	1682	1	1	0	3	1	0	0
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	2501	0	1	1683	0	0	4	0	0	1	0
Confl. Peds. (#/hr)	1		7	7		1	1		2	2		1
Heavy Vehicles (%)	2%	3%	2%	2%	6%	2%	2%	2%	33%	2%	2%	2%
Turn Type	Perm	NA	Perm	Perm	NA		Perm	NA		Perm	NA	
Protected Phases		2			6			8			4	
Permitted Phases	2		2	6			8			4		
Actuated Green, G (s)		117.7		117.7	117.7			8.2			8.2	
Effective Green, g (s)		117.7		117.7	117.7			8.2			8.2	
Actuated g/C Ratio		0.84		0.84	0.84			0.06			0.06	
Clearance Time (s)		6.7		6.7	6.7			7.4			7.4	
Vehicle Extension (s)		3.0		3.0	3.0			3.0			3.0	
Lane Grp Cap (vph)		4186		73	4068			71			81	
v/s Ratio Prot		c0.50			0.35							
v/s Ratio Perm				0.01				c0.00			0.00	
v/c Ratio		0.60		0.01	0.41			0.06			0.01	
Uniform Delay, d1		3.6		1.8	2.7			62.2			62.1	
Progression Factor		1.00		1.00	1.00			1.00			1.00	
Incremental Delay, d2		0.6		0.3	0.3			0.3			0.1	
Delay (s)		4.2		2.1	3.0			62.6			62.1	
Level of Service		A		A	A			E			E	
Approach Delay (s)		4.2			3.0			62.6			62.1	
Approach LOS		A			A			E			E	

Intersection Summary			
HCM 2000 Control Delay	3.8	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.56		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	14.1
Intersection Capacity Utilization	66.7%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	1	13	2	4	0	3	1	3	0	0	0
Future Volume (vph)	0	1	13	2	4	0	3	1	3	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	45.0		0.0	0.0		0.0	0.0		0.0	0.0		0.0
Storage Lanes	1		1	0		0	0		0	0		0
Taper Length (m)	50.0			50.0			15.0			15.0		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor												
Frt			0.850					0.942				
Flt Protected					0.986			0.979				
Satd. Flow (prot)	1842	1842	1479	0	1564	0	0	1334	0	0	1842	0
Flt Permitted					0.986			0.979				
Satd. Flow (perm)	1842	1842	1479	0	1564	0	0	1334	0	0	1842	0
Link Speed (k/h)		60			60			50			50	
Link Distance (m)		203.6			105.5			200.3			179.6	
Travel Time (s)		12.2			6.3			14.4			12.9	
Confl. Peds. (#/hr)	4		7	7		4			2	2		
Confl. Bikes (#/hr)									1			
Peak Hour Factor	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88
Heavy Vehicles (%)	2%	2%	8%	2%	25%	2%	67%	2%	2%	2%	2%	2%
Adj. Flow (vph)	0	1	15	2	5	0	3	1	3	0	0	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	1	15	0	7	0	0	7	0	0	0	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.5			3.5			0.0			0.0	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		3.0			3.0			3.0			3.0	
Two way Left Turn Lane												
Headway Factor	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Sign Control		Stop			Stop			Stop			Stop	

Intersection Summary	
Area Type:	Other
Control Type: Unsignalized	
Intersection Capacity Utilization 16.7%	ICU Level of Service A
Analysis Period (min) 15	

Intersection has too many lanes per leg.

HCM All-Way analysis is limited to two lanes per leg.

Channelized right turn lanes are not counted.

Intersection	
Intersection Delay, s/veh	7.3
Intersection LOS	A

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	1	13	2	4	0	3	1	3	0	0	0
Future Vol, veh/h	0	1	13	2	4	0	3	1	3	0	0	0
Peak Hour Factor	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88
Heavy Vehicles, %	2	2	8	2	25	2	67	2	2	2	2	2
Mvmt Flow	0	1	15	2	5	0	3	1	3	0	0	0
Number of Lanes	1	1	1	0	1	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	3	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	3	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	1	3
HCM Control Delay	6.7	7.5	8.4	0
HCM LOS	A	A	A	-

Lane	NBLn1	EBLn1	EBLn2	EBLn3	WBLn1	SBLn1
Vol Left, %	43%	0%	0%	0%	33%	0%
Vol Thru, %	14%	100%	100%	0%	67%	100%
Vol Right, %	43%	0%	0%	100%	0%	0%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	7	0	1	13	6	0
LT Vol	3	0	0	0	2	0
Through Vol	1	0	1	0	4	0
RT Vol	3	0	0	13	0	0
Lane Flow Rate	8	0	1	15	7	0
Geometry Grp	7	7	7	7	7	7
Degree of Util (X)	0.012	0	0.001	0.016	0.009	0
Departure Headway (Hd)	5.592	4.551	4.551	3.953	4.722	4.577
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes
Cap	642	0	789	908	761	0
Service Time	3.304	2.263	2.263	1.665	2.434	2.291
HCM Lane V/C Ratio	0.012	0	0.001	0.017	0.009	0
HCM Control Delay	8.4	7.3	7.3	6.7	7.5	7.3
HCM Lane LOS	A	N	A	A	A	N
HCM 95th-tile Q	0	0	0	0	0	0

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	6	1888	104	88	1552	35	52	15	260	86	30	22
Future Volume (vph)	6	1888	104	88	1552	35	52	15	260	86	30	22
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	120.0		70.0	115.0		60.0	90.0		0.0	30.0		0.0
Storage Lanes	1		1	1		1	1		0	1		0
Taper Length (m)	65.0			65.0			30.0			15.0		
Lane Util. Factor	1.00	0.91	1.00	1.00	0.91	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor								0.99		1.00		
Frt			0.850			0.850		0.858			0.938	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1526	4980	1465	1684	4885	1465	1716	1535	0	1733	1697	0
Flt Permitted	0.141			0.058			0.722			0.401		
Satd. Flow (perm)	226	4980	1465	103	4885	1465	1304	1535	0	731	1697	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			100			36		127			22	
Link Speed (k/h)		70			70			50			50	
Link Distance (m)		331.1			413.9			220.1			189.0	
Travel Time (s)		17.0			21.3			15.8			13.6	
Confl. Peds. (#/hr)									2	2		
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Heavy Vehicles (%)	17%	3%	9%	6%	5%	9%	4%	33%	2%	3%	3%	5%
Adj. Flow (vph)	6	1927	106	90	1584	36	53	15	265	88	31	22
Shared Lane Traffic (%)												
Lane Group Flow (vph)	6	1927	106	90	1584	36	53	280	0	88	53	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.5			3.5			3.5			3.5	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		3.0			3.0			3.0			3.0	
Two way Left Turn Lane												
Headway Factor	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2	1	1	2	1	1	2		1	2	
Detector Template	Left	Thru	Right	Left	Thru	Right	Left	Thru		Left	Thru	
Leading Detector (m)	2.0	10.0	2.0	2.0	10.0	2.0	2.0	10.0		2.0	10.0	
Trailing Detector (m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Detector 1 Position(m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Detector 1 Size(m)	2.0	0.6	2.0	2.0	0.6	2.0	2.0	0.6		2.0	0.6	
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Type	Perm	NA	Perm	pm+pt	NA	Perm	Perm	NA		Perm	NA	
Protected Phases		2		1	6			8			4	
Permitted Phases	2		2	6		6	8			4		
Detector Phase	2	2	2	1	6	6	8	8		4	4	
Switch Phase												
Minimum Initial (s)	20.0	20.0	20.0	7.0	20.0	20.0	10.0	10.0		10.0	10.0	
Minimum Split (s)	31.9	31.9	31.9	11.0	31.9	31.9	43.9	43.9		43.9	43.9	
Total Split (s)	70.8	70.8	70.8	12.0	82.8	82.8	37.2	37.2		37.2	37.2	
Total Split (%)	59.0%	59.0%	59.0%	10.0%	69.0%	69.0%	31.0%	31.0%		31.0%	31.0%	
Maximum Green (s)	64.9	64.9	64.9	8.0	76.9	76.9	30.3	30.3		30.3	30.3	
Yellow Time (s)	3.7	3.7	3.7	3.0	3.7	3.7	3.3	3.3		3.3	3.3	
All-Red Time (s)	2.2	2.2	2.2	1.0	2.2	2.2	3.6	3.6		3.6	3.6	
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)	5.9	5.9	5.9	4.0	5.9	5.9	6.9	6.9		6.9	6.9	
Lead/Lag	Lag	Lag	Lag	Lead								
Lead-Lag Optimize?	Yes	Yes	Yes	Yes								
Vehicle Extension (s)	5.5	5.5	5.5	3.0	5.5	5.5	3.0	3.0		3.0	3.0	
Recall Mode	C-Max	C-Max	C-Max	None	C-Max	C-Max	Max	Max		None	None	
Walk Time (s)	7.0	7.0	7.0		7.0	7.0	7.0	7.0		7.0	7.0	
Flash Dont Walk (s)	19.0	19.0	19.0		19.0	19.0	30.0	30.0		30.0	30.0	
Pedestrian Calls (#/hr)	0	0	0		0	0	2	2		0	0	
Act Effct Green (s)	65.3	65.3	65.3	78.8	76.9	76.9	30.3	30.3		30.3	30.3	
Actuated g/C Ratio	0.54	0.54	0.54	0.66	0.64	0.64	0.25	0.25		0.25	0.25	
v/c Ratio	0.05	0.71	0.13	0.54	0.51	0.04	0.16	0.58		0.48	0.12	
Control Delay	14.5	22.2	3.3	34.7	11.5	2.5	36.6	26.4		48.3	23.5	
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Total Delay	14.5	22.2	3.3	34.7	11.5	2.5	36.6	26.4		48.3	23.5	
LOS	B	C	A	C	B	A	D	C		D	C	
Approach Delay		21.2			12.5			28.0			39.0	
Approach LOS		C			B			C			D	
Queue Length 50th (m)	0.6	118.9	0.6	8.9	59.2	0.0	9.8	31.1		17.7	5.6	
Queue Length 95th (m)	2.9	136.8	8.7	26.4	65.4	3.6	20.6	59.6		35.1	15.8	
Internal Link Dist (m)		307.1			389.9			196.1			165.0	
Turn Bay Length (m)	120.0		70.0	115.0		60.0	90.0			30.0		
Base Capacity (vph)	123	2710	843	173	3130	951	329	482		184	444	
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	0.05	0.71	0.13	0.52	0.51	0.04	0.16	0.58		0.48	0.12	

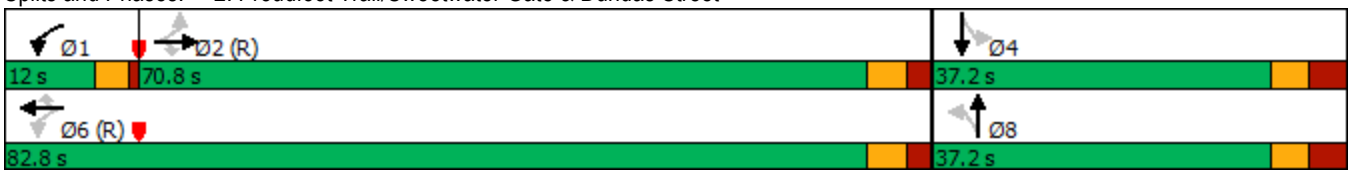
Intersection Summary

Area Type: Other
Cycle Length: 120
Actuated Cycle Length: 120
Offset: 80.4 (67%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green
Natural Cycle: 100
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.71
Intersection Signal Delay: 18.8 Intersection LOS: B

Intersection Capacity Utilization 107.2% ICU Level of Service G

Analysis Period (min) 15

Splits and Phases: 2: Proudfoot Trail/Sweetwater Gate & Dundas Street



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	6	1888	104	88	1552	35	52	15	260	86	30	22
Future Volume (vph)	6	1888	104	88	1552	35	52	15	260	86	30	22
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.9	5.9	5.9	4.0	5.9	5.9	6.9	6.9		6.9	6.9	
Lane Util. Factor	1.00	0.91	1.00	1.00	0.91	1.00	1.00	1.00		1.00	1.00	
Frpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.99		1.00	1.00	
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	1.00	0.85	1.00	1.00	0.85	1.00	0.86		1.00	0.94	
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)	1526	4980	1465	1684	4885	1465	1716	1535		1731	1697	
Flt Permitted	0.14	1.00	1.00	0.06	1.00	1.00	0.72	1.00		0.40	1.00	
Satd. Flow (perm)	227	4980	1465	102	4885	1465	1305	1535		731	1697	
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)	6	1927	106	90	1584	36	53	15	265	88	31	22
RTOR Reduction (vph)	0	0	46	0	0	13	0	95	0	0	16	0
Lane Group Flow (vph)	6	1927	60	90	1584	23	53	185	0	88	37	0
Confl. Peds. (#/hr)									2	2		
Heavy Vehicles (%)	17%	3%	9%	6%	5%	9%	4%	33%	2%	3%	3%	5%
Turn Type	Perm	NA	Perm	pm+pt	NA	Perm	Perm	NA		Perm	NA	
Protected Phases		2		1	6			8			4	
Permitted Phases	2		2	6		6	8			4		
Actuated Green, G (s)	65.3	65.3	65.3	76.9	76.9	76.9	30.3	30.3		30.3	30.3	
Effective Green, g (s)	65.3	65.3	65.3	76.9	76.9	76.9	30.3	30.3		30.3	30.3	
Actuated g/C Ratio	0.54	0.54	0.54	0.64	0.64	0.64	0.25	0.25		0.25	0.25	
Clearance Time (s)	5.9	5.9	5.9	4.0	5.9	5.9	6.9	6.9		6.9	6.9	
Vehicle Extension (s)	5.5	5.5	5.5	3.0	5.5	5.5	3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	123	2709	797	165	3130	938	329	387		184	428	
v/s Ratio Prot		c0.39		0.03	c0.32			c0.12			0.02	
v/s Ratio Perm	0.03		0.04	0.31		0.02	0.04			0.12		
v/c Ratio	0.05	0.71	0.08	0.55	0.51	0.02	0.16	0.48		0.48	0.09	
Uniform Delay, d1	12.8	20.3	13.0	16.7	11.5	7.9	34.9	38.1		38.1	34.3	
Progression Factor	1.00	1.00	1.00	1.57	0.94	0.98	1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.7	1.6	0.2	3.5	0.6	0.0	1.0	4.2		2.0	0.1	
Delay (s)	13.6	22.0	13.2	29.8	11.4	7.8	36.0	42.3		40.1	34.4	
Level of Service	B	C	B	C	B	A	D	D		D	C	
Approach Delay (s)		21.5			12.3			41.3			37.9	
Approach LOS		C			B			D			D	

Intersection Summary			
HCM 2000 Control Delay	19.9	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.63		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	16.8
Intersection Capacity Utilization	107.2%	ICU Level of Service	G
Analysis Period (min)	15		

c Critical Lane Group

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	1783	17	20	2403	17	15
Future Volume (vph)	1783	17	20	2403	17	15
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (m)		0.0	90.0		15.0	0.0
Storage Lanes		0	1		1	1
Taper Length (m)			100.0		35.0	
Lane Util. Factor	0.91	0.91	1.00	0.91	1.00	1.00
Ped Bike Factor	1.00					
Frt	0.999					0.850
Flt Protected			0.950		0.950	
Satd. Flow (prot)	4974	0	1750	4932	1750	1566
Flt Permitted			0.099		0.950	
Satd. Flow (perm)	4974	0	182	4932	1750	1566
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)	2					15
Link Speed (k/h)	70			70	50	
Link Distance (m)	413.9			633.4	126.1	
Travel Time (s)	21.3			32.6	9.1	
Confl. Peds. (#/hr)		1	1			
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98
Heavy Vehicles (%)	3%	2%	2%	4%	2%	2%
Adj. Flow (vph)	1819	17	20	2452	17	15
Shared Lane Traffic (%)						
Lane Group Flow (vph)	1836	0	20	2452	17	15
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	3.5			3.5	3.5	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	3.0			3.0	3.0	
Two way Left Turn Lane						
Headway Factor	1.01	1.01	1.01	1.01	1.01	1.01
Turning Speed (k/h)		15	25		25	15
Number of Detectors	2		1	2	1	1
Detector Template	Thru		Left	Thru	Left	Right
Leading Detector (m)	10.0		2.0	10.0	2.0	2.0
Trailing Detector (m)	0.0		0.0	0.0	0.0	0.0
Detector 1 Position(m)	0.0		0.0	0.0	0.0	0.0
Detector 1 Size(m)	0.6		2.0	0.6	2.0	2.0
Detector 1 Type	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel						
Detector 1 Extend (s)	0.0		0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0		0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0		0.0	0.0	0.0	0.0
Detector 2 Position(m)	9.4			9.4		
Detector 2 Size(m)	0.6			0.6		
Detector 2 Type	Cl+Ex			Cl+Ex		
Detector 2 Channel						
Detector 2 Extend (s)	0.0			0.0		

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Turn Type	NA		pm+pt	NA	Prot	Perm
Protected Phases	2		1	6	8	
Permitted Phases			6			8
Detector Phase	2		1	6	8	8
Switch Phase						
Minimum Initial (s)	20.0		7.0	20.0	7.0	7.0
Minimum Split (s)	33.0		11.0	26.0	40.6	40.6
Total Split (s)	66.0		12.0	78.0	42.0	42.0
Total Split (%)	55.0%		10.0%	65.0%	35.0%	35.0%
Maximum Green (s)	60.0		8.0	72.0	35.4	35.4
Yellow Time (s)	3.7		3.0	3.7	3.7	3.7
All-Red Time (s)	2.3		1.0	2.3	2.9	2.9
Lost Time Adjust (s)	0.0		0.0	0.0	0.0	0.0
Total Lost Time (s)	6.0		4.0	6.0	6.6	6.6
Lead/Lag	Lag		Lead			
Lead-Lag Optimize?	Yes		Yes			
Vehicle Extension (s)	5.0		4.0	5.0	4.0	4.0
Recall Mode	C-Max		None	C-Max	None	None
Walk Time (s)	7.0				7.0	7.0
Flash Dont Walk (s)	20.0				27.0	27.0
Pedestrian Calls (#/hr)	1				0	0
Act Effct Green (s)	102.9		106.9	107.3	7.9	7.9
Actuated g/C Ratio	0.86		0.89	0.89	0.07	0.07
v/c Ratio	0.43		0.08	0.56	0.15	0.13
Control Delay	10.5		2.1	3.1	55.3	24.9
Queue Delay	0.0		0.0	0.0	0.0	0.0
Total Delay	10.5		2.1	3.1	55.3	24.9
LOS	B		A	A	E	C
Approach Delay	10.5			3.1	41.1	
Approach LOS	B			A	D	
Queue Length 50th (m)	30.1		0.5	53.5	3.9	0.0
Queue Length 95th (m)	168.2		1.7	69.0	11.1	6.8
Internal Link Dist (m)	389.9			609.4	102.1	
Turn Bay Length (m)			90.0		15.0	
Base Capacity (vph)	4266		266	4411	516	472
Starvation Cap Reductn	0		0	0	0	0
Spillback Cap Reductn	0		0	0	0	0
Storage Cap Reductn	0		0	0	0	0
Reduced v/c Ratio	0.43		0.08	0.56	0.03	0.03

Intersection Summary	
Area Type:	Other
Cycle Length: 120	
Actuated Cycle Length: 120	
Offset: 91.2 (76%), Referenced to phase 2:EBT and 6:WBTL, Start of Green	
Natural Cycle: 85	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.56	
Intersection Signal Delay: 6.5	Intersection LOS: A

Intersection Capacity Utilization 62.8% ICU Level of Service B

Analysis Period (min) 15

Splits and Phases: 1: Fourth Line & Dundas Street

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	1783	17	20	2403	17	15
Future Volume (vph)	1783	17	20	2403	17	15
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0		4.0	6.0	6.6	6.6
Lane Util. Factor	0.91		1.00	0.91	1.00	1.00
Frpb, ped/bikes	1.00		1.00	1.00	1.00	1.00
Flpb, ped/bikes	1.00		1.00	1.00	1.00	1.00
Frt	1.00		1.00	1.00	1.00	0.85
Flt Protected	1.00		0.95	1.00	0.95	1.00
Satd. Flow (prot)	4972		1750	4932	1750	1566
Flt Permitted	1.00		0.10	1.00	0.95	1.00
Satd. Flow (perm)	4972		182	4932	1750	1566
Peak-hour factor, PHF	0.98	0.98	0.98	0.98	0.98	0.98
Adj. Flow (vph)	1819	17	20	2452	17	15
RTOR Reduction (vph)	0	0	0	0	0	14
Lane Group Flow (vph)	1836	0	20	2452	17	1
Confl. Peds. (#/hr)		1	1			
Heavy Vehicles (%)	3%	2%	2%	4%	2%	2%
Turn Type	NA		pm+pt	NA	Prot	Perm
Protected Phases	2		1	6	8	
Permitted Phases			6			8
Actuated Green, G (s)	95.5		102.3	102.3	5.1	5.1
Effective Green, g (s)	95.5		102.3	102.3	5.1	5.1
Actuated g/C Ratio	0.80		0.85	0.85	0.04	0.04
Clearance Time (s)	6.0		4.0	6.0	6.6	6.6
Vehicle Extension (s)	5.0		4.0	5.0	4.0	4.0
Lane Grp Cap (vph)	3956		191	4204	74	66
v/s Ratio Prot	0.37		0.00	c0.50	c0.01	
v/s Ratio Perm			0.09			0.00
v/c Ratio	0.46		0.10	0.58	0.23	0.01
Uniform Delay, d1	4.0		2.1	2.6	55.6	55.0
Progression Factor	2.62		1.00	1.00	1.00	1.00
Incremental Delay, d2	0.3		0.3	0.6	2.2	0.1
Delay (s)	10.7		2.4	3.2	57.7	55.1
Level of Service	B		A	A	E	E
Approach Delay (s)	10.7			3.2	56.5	
Approach LOS	B			A	E	

Intersection Summary			
HCM 2000 Control Delay	6.8	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.59		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	16.6
Intersection Capacity Utilization	62.8%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	17	1497	82	295	2076	53	65	12	215	52	13	19
Future Volume (vph)	17	1497	82	295	2076	53	65	12	215	52	13	19
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	120.0		70.0	115.0		60.0	90.0		0.0	30.0		0.0
Storage Lanes	1		1	1		1	1		0	1		0
Taper Length (m)	65.0			65.0			30.0			15.0		
Lane Util. Factor	1.00	0.91	1.00	1.00	0.91	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor			0.97				1.00	0.99		1.00	0.99	
Frt			0.850			0.850		0.858			0.912	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1684	5029	1566	1750	5029	1566	1750	1553	0	1716	1664	0
Flt Permitted	0.079			0.103			0.735			0.295		
Satd. Flow (perm)	140	5029	1517	190	5029	1566	1349	1553	0	532	1664	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			74			44		224			6	
Link Speed (k/h)		70			70			50			50	
Link Distance (m)		331.1			413.9			220.1			189.0	
Travel Time (s)		17.0			21.3			15.8			13.6	
Confl. Peds. (#/hr)			5	5			4		3	3		4
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
Heavy Vehicles (%)	6%	2%	2%	2%	2%	2%	2%	8%	2%	4%	2%	2%
Adj. Flow (vph)	18	1559	85	307	2163	55	68	13	224	54	14	20
Shared Lane Traffic (%)												
Lane Group Flow (vph)	18	1559	85	307	2163	55	68	237	0	54	34	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.5			3.5			3.5			3.5	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		3.0			3.0			3.0			3.0	
Two way Left Turn Lane												
Headway Factor	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2	1	1	2	1	1	2		1	2	
Detector Template	Left	Thru	Right	Left	Thru	Right	Left	Thru		Left	Thru	
Leading Detector (m)	2.0	10.0	2.0	2.0	10.0	2.0	2.0	10.0		2.0	10.0	
Trailing Detector (m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Detector 1 Position(m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Detector 1 Size(m)	2.0	0.6	2.0	2.0	0.6	2.0	2.0	0.6		2.0	0.6	
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Type	Perm	NA	Perm	pm+pt	NA	Perm	Perm	NA		Perm	NA	
Protected Phases		2		1	6			8			4	
Permitted Phases	2		2	6		6	8			4		
Detector Phase	2	2	2	1	6	6	8	8		4	4	
Switch Phase												
Minimum Initial (s)	20.0	20.0	20.0	7.0	20.0	20.0	10.0	10.0		10.0	10.0	
Minimum Split (s)	31.9	31.9	31.9	11.0	31.9	31.9	43.9	43.9		43.9	43.9	
Total Split (s)	51.6	51.6	51.6	24.0	75.6	75.6	44.4	44.4		44.4	44.4	
Total Split (%)	43.0%	43.0%	43.0%	20.0%	63.0%	63.0%	37.0%	37.0%		37.0%	37.0%	
Maximum Green (s)	45.7	45.7	45.7	20.0	69.7	69.7	37.5	37.5		37.5	37.5	
Yellow Time (s)	3.7	3.7	3.7	3.0	3.7	3.7	3.3	3.3		3.3	3.3	
All-Red Time (s)	2.2	2.2	2.2	1.0	2.2	2.2	3.6	3.6		3.6	3.6	
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)	5.9	5.9	5.9	4.0	5.9	5.9	6.9	6.9		6.9	6.9	
Lead/Lag	Lag	Lag	Lag	Lead								
Lead-Lag Optimize?	Yes	Yes	Yes	Yes								
Vehicle Extension (s)	5.5	5.5	5.5	3.0	5.5	5.5	3.0	3.0		3.0	3.0	
Recall Mode	C-Max	C-Max	C-Max	None	C-Max	C-Max	None	None		None	None	
Walk Time (s)	7.0	7.0	7.0		7.0	7.0	7.0	7.0		7.0	7.0	
Flash Dont Walk (s)	19.0	19.0	19.0		19.0	19.0	30.0	30.0		30.0	30.0	
Pedestrian Calls (#/hr)	5	5	5		0	0	3	3		4	4	
Act Effct Green (s)	66.6	66.6	66.6	92.2	90.3	90.3	16.9	16.9		16.9	16.9	
Actuated g/C Ratio	0.56	0.56	0.56	0.77	0.75	0.75	0.14	0.14		0.14	0.14	
v/c Ratio	0.23	0.56	0.10	0.76	0.57	0.05	0.36	0.58		0.73	0.14	
Control Delay	31.1	20.4	6.0	30.0	6.3	2.1	48.7	11.9		93.1	35.8	
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Total Delay	31.1	20.4	6.0	30.0	6.3	2.1	48.7	11.9		93.1	35.8	
LOS	C	C	A	C	A	A	D	B		F	D	
Approach Delay		19.8			9.1			20.1			71.0	
Approach LOS		B			A			C			E	
Queue Length 50th (m)	2.0	78.3	1.1	25.4	0.9	0.0	15.4	2.8		12.9	6.1	
Queue Length 95th (m)	11.2	138.5	11.7	#91.7	147.8	m6.5	23.0	20.1		22.0	12.2	
Internal Link Dist (m)		307.1			389.9			196.1			165.0	
Turn Bay Length (m)	120.0		70.0	115.0		60.0	90.0			30.0		
Base Capacity (vph)	77	2791	875	423	3785	1189	421	639		166	524	
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	0.23	0.56	0.10	0.73	0.57	0.05	0.16	0.37		0.33	0.06	

Intersection Summary

Area Type: Other
Cycle Length: 120
Actuated Cycle Length: 120
Offset: 7.2 (6%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green
Natural Cycle: 90
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.76
Intersection Signal Delay: 14.9 Intersection LOS: B

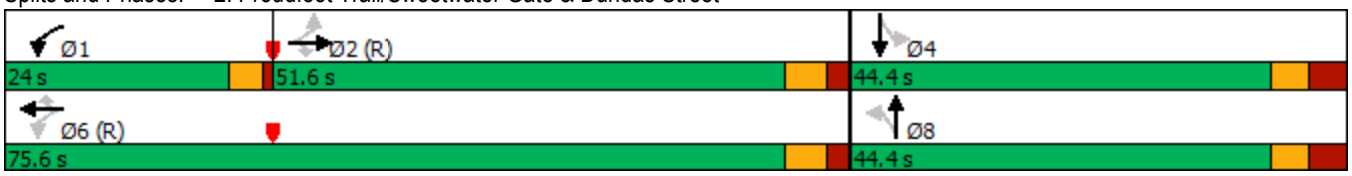
Intersection Capacity Utilization 102.3% ICU Level of Service G

Analysis Period (min) 15

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

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

Splits and Phases: 2: Proudfoot Trail/Sweetwater Gate & Dundas Street



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	17	1497	82	295	2076	53	65	12	215	52	13	19
Future Volume (vph)	17	1497	82	295	2076	53	65	12	215	52	13	19
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.9	5.9	5.9	4.0	5.9	5.9	6.9	6.9		6.9	6.9	
Lane Util. Factor	1.00	0.91	1.00	1.00	0.91	1.00	1.00	1.00		1.00	1.00	
Frpb, ped/bikes	1.00	1.00	0.97	1.00	1.00	1.00	1.00	0.99		1.00	0.99	
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	1.00	0.85	1.00	1.00	0.85	1.00	0.86		1.00	0.91	
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)	1684	5029	1517	1750	5029	1566	1743	1554		1713	1664	
Flt Permitted	0.08	1.00	1.00	0.10	1.00	1.00	0.73	1.00		0.30	1.00	
Satd. Flow (perm)	141	5029	1517	189	5029	1566	1349	1554		533	1664	
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)	18	1559	85	307	2162	55	68	12	224	54	14	20
RTOR Reduction (vph)	0	0	33	0	0	11	0	192	0	0	5	0
Lane Group Flow (vph)	18	1559	52	307	2163	44	68	45	0	54	29	0
Confl. Peds. (#/hr)			5	5			4		3	3		4
Heavy Vehicles (%)	6%	2%	2%	2%	2%	2%	2%	8%	2%	4%	2%	2%
Turn Type	Perm	NA	Perm	pm+pt	NA	Perm	Perm	NA		Perm	NA	
Protected Phases		2		1	6			8			4	
Permitted Phases	2		2	6		6	8			4		
Actuated Green, G (s)	66.6	66.6	66.6	90.3	90.3	90.3	16.9	16.9		16.9	16.9	
Effective Green, g (s)	66.6	66.6	66.6	90.3	90.3	90.3	16.9	16.9		16.9	16.9	
Actuated g/C Ratio	0.55	0.55	0.55	0.75	0.75	0.75	0.14	0.14		0.14	0.14	
Clearance Time (s)	5.9	5.9	5.9	4.0	5.9	5.9	6.9	6.9		6.9	6.9	
Vehicle Extension (s)	5.5	5.5	5.5	3.0	5.5	5.5	3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	78	2791	841	398	3784	1178	189	218		75	234	
v/s Ratio Prot		0.31		c0.13	0.43			0.03			0.02	
v/s Ratio Perm	0.13		0.03	c0.45		0.03	0.05			c0.10		
v/c Ratio	0.23	0.56	0.06	0.77	0.57	0.04	0.36	0.20		0.72	0.12	
Uniform Delay, d1	13.6	17.2	12.3	25.3	6.4	3.8	46.7	45.6		49.3	45.1	
Progression Factor	1.00	1.00	1.00	0.87	0.71	0.67	1.00	1.00		1.00	1.00	
Incremental Delay, d2	6.8	0.8	0.1	7.7	0.5	0.1	1.2	0.5		28.0	0.2	
Delay (s)	20.4	18.0	12.4	29.7	5.1	2.6	47.8	46.1		77.3	45.3	
Level of Service	C	B	B	C	A	A	D	D		E	D	
Approach Delay (s)		17.8			8.0			46.5			64.9	
Approach LOS		B			A			D			E	

Intersection Summary			
HCM 2000 Control Delay	15.2	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.78		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	16.8
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	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	5	1824	11	4	2321	1	7	0	17	2	1	3
Future Volume (vph)	5	1824	11	4	2321	1	7	0	17	2	1	3
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	50.0		10.0	75.0		0.0	0.0		0.0	0.0		0.0
Storage Lanes	1		1	1		0	0		0	0		0
Taper Length (m)	50.0			100.0			15.0			15.0		
Lane Util. Factor	1.00	0.91	1.00	1.00	0.91	0.91	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor			0.96									
Frt			0.850					0.903			0.932	
Flt Protected	0.950			0.950				0.986			0.984	
Satd. Flow (prot)	1750	4932	1566	1750	4932	0	0	1640	0	0	1689	0
Flt Permitted	0.050			0.096				0.903			0.879	
Satd. Flow (perm)	92	4932	1507	177	4932	0	0	1502	0	0	1509	0
Right Turn on Red			Yes			Yes			No			Yes
Satd. Flow (RTOR)			34								3	
Link Speed (k/h)		70			70			50			50	
Link Distance (m)		633.4			305.5			139.7			95.5	
Travel Time (s)		32.6			15.7			10.1			6.9	
Confl. Peds. (#/hr)			7	7								
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Heavy Vehicles (%)	2%	4%	2%	2%	4%	2%	2%	2%	2%	2%	2%	2%
Adj. Flow (vph)	5	1940	12	4	2469	1	7	0	18	2	1	3
Shared Lane Traffic (%)												
Lane Group Flow (vph)	5	1940	12	4	2470	0	0	25	0	0	6	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.5			3.5			0.0			0.0	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		3.0			3.0			3.0			3.0	
Two way Left Turn Lane												
Headway Factor	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2	1	1	2		1	2		1	2	
Detector Template	Left	Thru	Right	Left	Thru		Left	Thru		Left	Thru	
Leading Detector (m)	2.0	10.0	2.0	2.0	10.0		2.0	10.0		2.0	10.0	
Trailing Detector (m)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Position(m)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Size(m)	2.0	0.6	2.0	2.0	0.6		2.0	0.6		2.0	0.6	
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Type	Perm	NA	Perm	Perm	NA		Perm	NA		Perm	NA	
Protected Phases		2			6			8			4	
Permitted Phases	2		2	6			8			4		
Detector Phase	2	2	2	6	6		8	8		4	4	
Switch Phase												
Minimum Initial (s)	20.0	20.0	20.0	20.0	20.0		10.0	10.0		10.0	10.0	
Minimum Split (s)	33.7	33.7	33.7	33.7	33.7		48.4	48.4		48.4	48.4	
Total Split (s)	91.0	91.0	91.0	91.0	91.0		49.0	49.0		49.0	49.0	
Total Split (%)	65.0%	65.0%	65.0%	65.0%	65.0%		35.0%	35.0%		35.0%	35.0%	
Maximum Green (s)	84.3	84.3	84.3	84.3	84.3		41.6	41.6		41.6	41.6	
Yellow Time (s)	4.2	4.2	4.2	4.2	4.2		3.3	3.3		3.3	3.3	
All-Red Time (s)	2.5	2.5	2.5	2.5	2.5		4.1	4.1		4.1	4.1	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0			0.0			0.0	
Total Lost Time (s)	6.7	6.7	6.7	6.7	6.7			7.4			7.4	
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	C-Max	C-Max	C-Max	C-Max	C-Max		None	None		None	None	
Walk Time (s)	7.0	7.0	7.0	7.0	7.0		7.0	7.0		7.0	7.0	
Flash Dont Walk (s)	20.0	20.0	20.0	20.0	20.0		34.0	34.0		34.0	34.0	
Pedestrian Calls (#/hr)	7	7	7	0	0		0	0		0	0	
Act Effct Green (s)	125.4	125.4	125.4	125.4	125.4			10.1			10.1	
Actuated g/C Ratio	0.90	0.90	0.90	0.90	0.90			0.07			0.07	
v/c Ratio	0.06	0.44	0.01	0.03	0.56			0.23			0.05	
Control Delay	4.0	2.7	0.0	2.5	3.4			66.8			48.2	
Queue Delay	0.0	0.0	0.0	0.0	0.0			0.0			0.0	
Total Delay	4.0	2.7	0.0	2.5	3.4			66.8			48.2	
LOS	A	A	A	A	A			E			D	
Approach Delay		2.6			3.4			66.8			48.2	
Approach LOS		A			A			E			D	
Queue Length 50th (m)	0.2	44.9	0.0	0.2	69.2			6.7			0.8	
Queue Length 95th (m)	1.1	51.6	0.2	0.8	79.0			16.3			5.3	
Internal Link Dist (m)		609.4			281.5			115.7			71.5	
Turn Bay Length (m)	50.0		10.0	75.0								
Base Capacity (vph)	82	4419	1354	158	4419			446			450	
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	0.06	0.44	0.01	0.03	0.56			0.06			0.01	

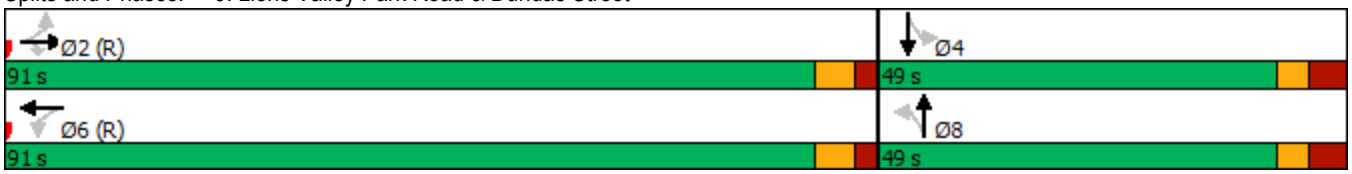
Intersection Summary

Area Type: Other
Cycle Length: 140
Actuated Cycle Length: 140
Offset: 49 (35%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green
Natural Cycle: 105
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.56
Intersection Signal Delay: 3.5 Intersection LOS: A

Intersection Capacity Utilization 65.0% ICU Level of Service C

Analysis Period (min) 15

Splits and Phases: 3: Lions Valley Park Road & Dundas Street



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	5	1824	11	4	2321	1	7	0	17	2	1	3
Future Volume (vph)	5	1824	11	4	2321	1	7	0	17	2	1	3
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.7	6.7	6.7	6.7	6.7			7.4			7.4	
Lane Util. Factor	1.00	0.91	1.00	1.00	0.91			1.00			1.00	
Frpb, ped/bikes	1.00	1.00	0.96	1.00	1.00			1.00			1.00	
Flpb, ped/bikes	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			0.90			0.93	
Flt Protected	0.95	1.00	1.00	0.95	1.00			0.99			0.98	
Satd. Flow (prot)	1750	4932	1507	1748	4932			1640			1690	
Flt Permitted	0.05	1.00	1.00	0.10	1.00			0.90			0.88	
Satd. Flow (perm)	92	4932	1507	176	4932			1502			1510	
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)	5	1940	12	4	2469	1	7	0	18	2	1	3
RTOR Reduction (vph)	0	0	2	0	0	0	0	0	0	0	3	0
Lane Group Flow (vph)	5	1940	10	4	2470	0	0	25	0	0	3	0
Confl. Peds. (#/hr)			7	7								
Heavy Vehicles (%)	2%	4%	2%	2%	4%	2%	2%	2%	2%	2%	2%	2%
Turn Type	Perm	NA	Perm	Perm	NA		Perm	NA		Perm	NA	
Protected Phases		2			6			8			4	
Permitted Phases	2		2	6			8			4		
Actuated Green, G (s)	119.8	119.8	119.8	119.8	119.8			6.1			6.1	
Effective Green, g (s)	119.8	119.8	119.8	119.8	119.8			6.1			6.1	
Actuated g/C Ratio	0.86	0.86	0.86	0.86	0.86			0.04			0.04	
Clearance Time (s)	6.7	6.7	6.7	6.7	6.7			7.4			7.4	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0			3.0			3.0	
Lane Grp Cap (vph)	78	4220	1289	150	4220			65			65	
v/s Ratio Prot		0.39			c0.50							
v/s Ratio Perm	0.05		0.01	0.02				c0.02			0.00	
v/c Ratio	0.06	0.46	0.01	0.03	0.59			0.38			0.05	
Uniform Delay, d1	1.5	2.4	1.5	1.5	2.9			65.1			64.2	
Progression Factor	1.00	1.00	1.00	1.00	1.00			1.00			1.00	
Incremental Delay, d2	1.6	0.4	0.0	0.3	0.6			3.8			0.3	
Delay (s)	3.1	2.8	1.5	1.8	3.5			68.9			64.5	
Level of Service	A	A	A	A	A			E			E	
Approach Delay (s)		2.8			3.5			68.9			64.5	
Approach LOS		A			A			E			E	

Intersection Summary			
HCM 2000 Control Delay	3.6	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.58		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	14.1
Intersection Capacity Utilization	65.0%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	0	3	2	1	0	11	0	1	0	1	0
Future Volume (vph)	0	0	3	2	1	0	11	0	1	0	1	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	45.0		0.0	0.0		0.0	0.0		0.0	0.0		0.0
Storage Lanes	1		1	0		0	0		0	0		0
Taper Length (m)	50.0			15.0			15.0			15.0		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor												
Frt			0.850					0.990				
Flt Protected					0.968			0.956				
Satd. Flow (prot)	1842	1842	1201	0	1783	0	0	1639	0	0	1842	0
Flt Permitted					0.968			0.956				
Satd. Flow (perm)	1842	1842	1201	0	1783	0	0	1639	0	0	1842	0
Link Speed (k/h)		60			60			50			50	
Link Distance (m)		203.6			105.5			200.3			179.6	
Travel Time (s)		12.2			6.3			14.4			12.9	
Confl. Peds. (#/hr)			4	4								
Confl. Bikes (#/hr)			1						1			
Peak Hour Factor	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88
Heavy Vehicles (%)	2%	2%	33%	2%	2%	2%	9%	2%	2%	2%	2%	2%
Adj. Flow (vph)	0	0	3	2	1	0	13	0	1	0	1	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	0	3	0	3	0	0	14	0	0	1	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.5			3.5			0.0			0.0	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		3.0			3.0			3.0			3.0	
Two way Left Turn Lane												
Headway Factor	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Sign Control		Stop			Stop			Stop			Stop	

Intersection Summary	
Area Type:	Other
Control Type: Unsignalized	
Intersection Capacity Utilization 21.2%	ICU Level of Service A
Analysis Period (min) 15	

Intersection has too many lanes per leg.

HCM All-Way analysis is limited to two lanes per leg.

Channelized right turn lanes are not counted.

Intersection	
Intersection Delay, s/veh	7.7
Intersection LOS	A

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	0	3	2	1	0	11	0	1	0	1	0
Future Vol, veh/h	0	0	3	2	1	0	11	0	1	0	1	0
Peak Hour Factor	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88
Heavy Vehicles, %	2	2	33	2	2	2	9	2	2	2	2	2
Mvmt Flow	0	0	3	2	1	0	13	0	1	0	1	0
Number of Lanes	1	1	1	0	1	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	3	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	3	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	1	3
HCM Control Delay	7.1	7.6	7.9	7.3
HCM LOS	A	A	A	A

Lane	NBLn1	EBLn1	EBLn2	EBLn3	WBLn1	SBLn1
Vol Left, %	92%	0%	0%	0%	67%	0%
Vol Thru, %	0%	100%	100%	0%	33%	100%
Vol Right, %	8%	0%	0%	100%	0%	0%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	12	0	0	3	3	1
LT Vol	11	0	0	0	2	0
Through Vol	0	0	0	0	1	1
RT Vol	1	0	0	3	0	0
Lane Flow Rate	14	0	0	3	3	1
Geometry Grp	7	7	7	7	7	7
Degree of Util (X)	0.019	0	0	0.004	0.005	0.001
Departure Headway (Hd)	5.065	4.561	4.561	4.388	4.895	4.552
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes
Cap	710	0	0	818	733	789
Service Time	2.771	2.276	2.276	2.103	2.609	2.262
HCM Lane V/C Ratio	0.02	0	0	0.004	0.004	0.001
HCM Control Delay	7.9	7.3	7.3	7.1	7.6	7.3
HCM Lane LOS	A	N	N	A	A	A
HCM 95th-tile Q	0.1	0	0	0	0	0

Appendix M

2029 Future Background Conditions Synchro Worksheets

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	2390	62	16	1689	37	15
Future Volume (vph)	2390	62	16	1689	37	15
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (m)		0.0	90.0		15.0	0.0
Storage Lanes		0	1		1	1
Taper Length (m)			100.0		35.0	
Lane Util. Factor	*0.80	0.91	1.00	*0.80	1.00	1.00
Ped Bike Factor	1.00					
Frt	0.996					0.850
Flt Protected			0.950		0.950	
Satd. Flow (prot)	4318	0	1750	4175	1750	1566
Flt Permitted			0.041		0.950	
Satd. Flow (perm)	4318	0	76	4175	1750	1566
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)	5					16
Link Speed (k/h)	70			70	50	
Link Distance (m)	413.9			633.4	126.1	
Travel Time (s)	21.3			32.6	9.1	
Confl. Peds. (#/hr)		3	3			
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93
Heavy Vehicles (%)	4%	2%	2%	8%	2%	2%
Adj. Flow (vph)	2570	67	17	1816	40	16
Shared Lane Traffic (%)						
Lane Group Flow (vph)	2637	0	17	1816	40	16
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	3.5			3.5	3.5	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	3.0			3.0	3.0	
Two way Left Turn Lane						
Headway Factor	1.01	1.01	1.01	1.01	1.01	1.01
Turning Speed (k/h)		15	25		25	15
Number of Detectors	2		1	2	1	1
Detector Template	Thru		Left	Thru	Left	Right
Leading Detector (m)	10.0		2.0	10.0	2.0	2.0
Trailing Detector (m)	0.0		0.0	0.0	0.0	0.0
Detector 1 Position(m)	0.0		0.0	0.0	0.0	0.0
Detector 1 Size(m)	0.6		2.0	0.6	2.0	2.0
Detector 1 Type	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel						
Detector 1 Extend (s)	0.0		0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0		0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0		0.0	0.0	0.0	0.0
Detector 2 Position(m)	9.4			9.4		
Detector 2 Size(m)	0.6			0.6		
Detector 2 Type	Cl+Ex			Cl+Ex		
Detector 2 Channel						
Detector 2 Extend (s)	0.0			0.0		

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Turn Type	NA		pm+pt	NA	Prot	Perm
Protected Phases	2		1	6	8	
Permitted Phases			6			8
Detector Phase	2		1	6	8	8
Switch Phase						
Minimum Initial (s)	20.0		7.0	20.0	7.0	7.0
Minimum Split (s)	33.0		11.0	26.0	40.6	40.6
Total Split (s)	74.4		12.0	86.4	33.6	33.6
Total Split (%)	62.0%		10.0%	72.0%	28.0%	28.0%
Maximum Green (s)	68.4		8.0	80.4	27.0	27.0
Yellow Time (s)	3.7		3.0	3.7	3.7	3.7
All-Red Time (s)	2.3		1.0	2.3	2.9	2.9
Lost Time Adjust (s)	0.0		0.0	0.0	0.0	0.0
Total Lost Time (s)	6.0		4.0	6.0	6.6	6.6
Lead/Lag	Lag		Lead			
Lead-Lag Optimize?	Yes		Yes			
Vehicle Extension (s)	5.0		4.0	5.0	4.0	4.0
Recall Mode	C-Max		None	C-Max	None	None
Walk Time (s)	7.0				7.0	7.0
Flash Dont Walk (s)	20.0				27.0	27.0
Pedestrian Calls (#/hr)	3				0	0
Act Effct Green (s)	97.6		102.8	102.0	9.3	9.3
Actuated g/C Ratio	0.81		0.86	0.85	0.08	0.08
v/c Ratio	0.75		0.10	0.51	0.30	0.12
Control Delay	4.5		3.2	3.8	57.2	23.4
Queue Delay	0.0		0.0	0.0	0.0	0.0
Total Delay	4.5		3.2	3.8	57.2	23.4
LOS	A		A	A	E	C
Approach Delay	4.5			3.8	47.6	
Approach LOS	A			A	D	
Queue Length 50th (m)	33.4		0.5	44.5	9.1	0.0
Queue Length 95th (m)	m43.6		1.8	61.9	19.7	6.8
Internal Link Dist (m)	389.9			609.4	102.1	
Turn Bay Length (m)			90.0		15.0	
Base Capacity (vph)	3513		176	3550	393	364
Starvation Cap Reductn	0		0	0	0	0
Spillback Cap Reductn	0		0	0	0	0
Storage Cap Reductn	0		0	0	0	0
Reduced v/c Ratio	0.75		0.10	0.51	0.10	0.04

Intersection Summary	
Area Type:	Other
Cycle Length: 120	
Actuated Cycle Length: 120	
Offset: 104.4 (87%), Referenced to phase 2:EBT and 6:WBTL, Start of Green	
Natural Cycle: 145	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.75	
Intersection Signal Delay: 4.8	Intersection LOS: A

Intersection Capacity Utilization 63.9%	ICU Level of Service B
Analysis Period (min) 15	

* User Entered Value

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

Splits and Phases: 1: Fourth Line & Dundas Street

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	2390	62	16	1689	37	15
Future Volume (vph)	2390	62	16	1689	37	15
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0		4.0	6.0	6.6	6.6
Lane Util. Factor	*0.80		1.00	*0.80	1.00	1.00
Frpb, ped/bikes	1.00		1.00	1.00	1.00	1.00
Flpb, ped/bikes	1.00		1.00	1.00	1.00	1.00
Frt	1.00		1.00	1.00	1.00	0.85
Flt Protected	1.00		0.95	1.00	0.95	1.00
Satd. Flow (prot)	4319		1750	4175	1750	1566
Flt Permitted	1.00		0.04	1.00	0.95	1.00
Satd. Flow (perm)	4319		76	4175	1750	1566
Peak-hour factor, PHF	0.93	0.93	0.93	0.93	0.93	0.93
Adj. Flow (vph)	2570	67	17	1816	40	16
RTOR Reduction (vph)	1	0	0	0	0	15
Lane Group Flow (vph)	2636	0	17	1816	40	1
Confl. Peds. (#/hr)		3	3			
Heavy Vehicles (%)	4%	2%	2%	8%	2%	2%
Turn Type	NA		pm+pt	NA	Prot	Perm
Protected Phases	2		1	6	8	
Permitted Phases			6			8
Actuated Green, G (s)	92.7		99.5	99.5	7.9	7.9
Effective Green, g (s)	92.7		99.5	99.5	7.9	7.9
Actuated g/C Ratio	0.77		0.83	0.83	0.07	0.07
Clearance Time (s)	6.0		4.0	6.0	6.6	6.6
Vehicle Extension (s)	5.0		4.0	5.0	4.0	4.0
Lane Grp Cap (vph)	3336		102	3461	115	103
v/s Ratio Prot	c0.61		0.00	c0.43	c0.02	
v/s Ratio Perm			0.13			0.00
v/c Ratio	0.79		0.17	0.52	0.35	0.01
Uniform Delay, d1	8.0		9.7	3.1	53.6	52.4
Progression Factor	0.44		1.00	1.00	1.00	1.00
Incremental Delay, d2	1.0		1.1	0.6	2.5	0.1
Delay (s)	4.5		10.8	3.7	56.1	52.4
Level of Service	A		B	A	E	D
Approach Delay (s)	4.5			3.7	55.0	
Approach LOS	A			A	E	

Intersection Summary			
HCM 2000 Control Delay	4.8	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.76		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	16.6
Intersection Capacity Utilization	63.9%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

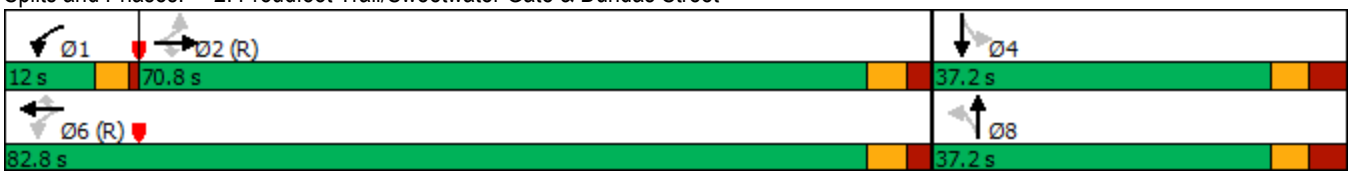
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	16	2126	109	92	1748	58	56	16	273	157	32	51
Future Volume (vph)	16	2126	109	92	1748	58	56	16	273	157	32	51
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	120.0		70.0	115.0		60.0	90.0		0.0	30.0		0.0
Storage Lanes	1		1	1		1	1		0	1		0
Taper Length (m)	65.0			65.0			30.0			15.0		
Lane Util. Factor	1.00	*0.80	1.00	1.00	*0.80	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor								0.99		1.00		
Frt			0.850			0.850		0.858			0.908	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1526	4378	1465	1684	4295	1465	1716	1534	0	1733	1637	0
Flt Permitted	0.075			0.057			0.702			0.364		
Satd. Flow (perm)	120	4378	1465	101	4295	1465	1268	1534	0	663	1637	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			82			59		123			25	
Link Speed (k/h)		70			70			50			50	
Link Distance (m)		331.1			413.9			220.1			189.0	
Travel Time (s)		17.0			21.3			15.8			13.6	
Confl. Peds. (#/hr)									2	2		
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Heavy Vehicles (%)	17%	3%	9%	6%	5%	9%	4%	33%	2%	3%	3%	5%
Adj. Flow (vph)	16	2169	111	94	1784	59	57	16	279	160	33	52
Shared Lane Traffic (%)												
Lane Group Flow (vph)	16	2169	111	94	1784	59	57	295	0	160	85	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.5			3.5			3.5			3.5	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		3.0			3.0			3.0			3.0	
Two way Left Turn Lane												
Headway Factor	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2	1	1	2	1	1	2		1	2	
Detector Template	Left	Thru	Right	Left	Thru	Right	Left	Thru		Left	Thru	
Leading Detector (m)	2.0	10.0	2.0	2.0	10.0	2.0	2.0	10.0		2.0	10.0	
Trailing Detector (m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Detector 1 Position(m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Detector 1 Size(m)	2.0	0.6	2.0	2.0	0.6	2.0	2.0	0.6		2.0	0.6	
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Type	Perm	NA	Perm	pm+pt	NA	Perm	Perm	NA		Perm	NA	
Protected Phases		2		1	6			8			4	
Permitted Phases	2		2	6		6	8			4		
Detector Phase	2	2	2	1	6	6	8	8		4	4	
Switch Phase												
Minimum Initial (s)	20.0	20.0	20.0	7.0	20.0	20.0	10.0	10.0		10.0	10.0	
Minimum Split (s)	31.9	31.9	31.9	11.0	31.9	31.9	43.9	43.9		43.9	43.9	
Total Split (s)	70.8	70.8	70.8	12.0	82.8	82.8	37.2	37.2		37.2	37.2	
Total Split (%)	59.0%	59.0%	59.0%	10.0%	69.0%	69.0%	31.0%	31.0%		31.0%	31.0%	
Maximum Green (s)	64.9	64.9	64.9	8.0	76.9	76.9	30.3	30.3		30.3	30.3	
Yellow Time (s)	3.7	3.7	3.7	3.0	3.7	3.7	3.3	3.3		3.3	3.3	
All-Red Time (s)	2.2	2.2	2.2	1.0	2.2	2.2	3.6	3.6		3.6	3.6	
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)	5.9	5.9	5.9	4.0	5.9	5.9	6.9	6.9		6.9	6.9	
Lead/Lag	Lag	Lag	Lag	Lead								
Lead-Lag Optimize?	Yes	Yes	Yes	Yes								
Vehicle Extension (s)	5.5	5.5	5.5	3.0	5.5	5.5	3.0	3.0		3.0	3.0	
Recall Mode	C-Max	C-Max	C-Max	None	C-Max	C-Max	None	None		None	None	
Walk Time (s)	7.0	7.0	7.0		7.0	7.0	7.0	7.0		7.0	7.0	
Flash Dont Walk (s)	19.0	19.0	19.0		19.0	19.0	30.0	30.0		30.0	30.0	
Pedestrian Calls (#/hr)	0	0	0		0	0	2	2		0	0	
Act Effct Green (s)	66.3	66.3	66.3	79.8	77.9	77.9	29.3	29.3		29.3	29.3	
Actuated g/C Ratio	0.55	0.55	0.55	0.66	0.65	0.65	0.24	0.24		0.24	0.24	
v/c Ratio	0.24	0.90	0.13	0.56	0.64	0.06	0.18	0.63		0.99	0.20	
Control Delay	26.3	30.4	4.9	36.1	12.4	2.1	37.1	29.5		114.2	26.6	
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Total Delay	26.3	30.4	4.9	36.1	12.4	2.1	37.1	29.5		114.2	26.6	
LOS	C	C	A	D	B	A	D	C		F	C	
Approach Delay		29.2			13.2			30.8			83.8	
Approach LOS		C			B			C			F	
Queue Length 50th (m)	1.9	185.5	3.1	10.0	79.4	0.0	10.6	35.7		37.3	11.0	
Queue Length 95th (m)	8.0	215.1	11.5	28.6	86.6	4.4	21.9	65.6		#80.0	24.2	
Internal Link Dist (m)		307.1			389.9			196.1			165.0	
Turn Bay Length (m)	120.0		70.0	115.0		60.0	90.0			30.0		
Base Capacity (vph)	66	2417	845	172	2786	971	320	479		167	432	
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	0.24	0.90	0.13	0.55	0.64	0.06	0.18	0.62		0.96	0.20	

Intersection Summary	
Area Type:	Other
Cycle Length: 120	
Actuated Cycle Length: 120	
Offset: 80.4 (67%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green	
Natural Cycle: 120	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.99	
Intersection Signal Delay: 25.7	Intersection LOS: C

Intersection Capacity Utilization 99.2%	ICU Level of Service F
Analysis Period (min) 15	
* User Entered Value	
# 95th percentile volume exceeds capacity, queue may be longer.	
Queue shown is maximum after two cycles.	

Splits and Phases: 2: Proudfoot Trail/Sweetwater Gate & Dundas Street



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	16	2126	109	92	1748	58	56	16	273	157	32	51
Future Volume (vph)	16	2126	109	92	1748	58	56	16	273	157	32	51
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.9	5.9	5.9	4.0	5.9	5.9	6.9	6.9		6.9	6.9	
Lane Util. Factor	1.00	*0.80	1.00	1.00	*0.80	1.00	1.00	1.00		1.00	1.00	
Frpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.99		1.00	1.00	
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	1.00	0.85	1.00	1.00	0.85	1.00	0.86		1.00	0.91	
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)	1526	4378	1465	1684	4295	1465	1716	1535		1731	1637	
Flt Permitted	0.08	1.00	1.00	0.06	1.00	1.00	0.70	1.00		0.36	1.00	
Satd. Flow (perm)	120	4378	1465	101	4295	1465	1268	1535		664	1637	
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)	16	2169	111	94	1784	59	57	16	279	160	33	52
RTOR Reduction (vph)	0	0	37	0	0	21	0	93	0	0	19	0
Lane Group Flow (vph)	16	2169	74	94	1784	38	57	202	0	160	66	0
Confl. Peds. (#/hr)									2	2		
Heavy Vehicles (%)	17%	3%	9%	6%	5%	9%	4%	33%	2%	3%	3%	5%
Turn Type	Perm	NA	Perm	pm+pt	NA	Perm	Perm	NA		Perm	NA	
Protected Phases		2		1	6			8			4	
Permitted Phases	2		2	6		6	8			4		
Actuated Green, G (s)	66.3	66.3	66.3	77.9	77.9	77.9	29.3	29.3		29.3	29.3	
Effective Green, g (s)	66.3	66.3	66.3	77.9	77.9	77.9	29.3	29.3		29.3	29.3	
Actuated g/C Ratio	0.55	0.55	0.55	0.65	0.65	0.65	0.24	0.24		0.24	0.24	
Clearance Time (s)	5.9	5.9	5.9	4.0	5.9	5.9	6.9	6.9		6.9	6.9	
Vehicle Extension (s)	5.5	5.5	5.5	3.0	5.5	5.5	3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	66	2418	809	165	2788	951	309	374		162	399	
v/s Ratio Prot		c0.50		0.04	c0.42			0.13			0.04	
v/s Ratio Perm	0.13		0.05	0.33		0.03	0.04			c0.24		
v/c Ratio	0.24	0.90	0.09	0.57	0.64	0.04	0.18	0.54		0.99	0.17	
Uniform Delay, d1	13.9	23.8	12.7	22.8	12.6	7.6	35.9	39.5		45.2	35.7	
Progression Factor	1.00	1.00	1.00	1.53	0.88	0.95	1.00	1.00		1.00	1.00	
Incremental Delay, d2	8.5	5.8	0.2	4.0	1.0	0.1	0.3	1.6		66.4	0.2	
Delay (s)	22.4	29.6	12.9	38.7	12.1	7.3	36.2	41.1		111.6	35.9	
Level of Service	C	C	B	D	B	A	D	D		F	D	
Approach Delay (s)		28.7			13.2			40.3			85.3	
Approach LOS		C			B			D			F	

Intersection Summary			
HCM 2000 Control Delay	26.2	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.91		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	16.8
Intersection Capacity Utilization	99.2%	ICU Level of Service	F
Analysis Period (min)	15		

c Critical Lane Group

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	2651	0	1	1773	1	1	0	3	1	0	0
Future Volume (vph)	0	2651	0	1	1773	1	1	0	3	1	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	50.0		10.0	75.0		0.0	0.0		0.0	0.0		0.0
Storage Lanes	1		1	1		0	0		0	0		0
Taper Length (m)	50.0			100.0			15.0			15.0		
Lane Util. Factor	1.00	*0.80	1.00	1.00	*0.80	0.91	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor					1.00			0.99			1.00	
Frt								0.899				
Flt Protected				0.950				0.988			0.950	
Satd. Flow (prot)	1842	4378	1842	1750	4254	0	0	1318	0	0	1750	0
Flt Permitted				0.034				0.914			0.755	
Satd. Flow (perm)	1842	4378	1842	63	4254	0	0	1219	0	0	1388	0
Right Turn on Red			Yes			Yes			No			Yes
Satd. Flow (RTOR)												
Link Speed (k/h)		70			70			50			50	
Link Distance (m)		633.4			305.5			139.7			95.5	
Travel Time (s)		32.6			15.7			10.1			6.9	
Confl. Peds. (#/hr)	1		7	7		1	1		2	2		1
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Heavy Vehicles (%)	2%	3%	2%	2%	6%	2%	2%	2%	33%	2%	2%	2%
Adj. Flow (vph)	0	2851	0	1	1906	1	1	0	3	1	0	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	2851	0	1	1907	0	0	4	0	0	1	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.5			3.5			0.0			0.0	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		3.0			3.0			3.0			3.0	
Two way Left Turn Lane												
Headway Factor	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2	1	1	2		1	2		1	2	
Detector Template	Left	Thru	Right	Left	Thru		Left	Thru		Left	Thru	
Leading Detector (m)	2.0	10.0	2.0	2.0	10.0		2.0	10.0		2.0	10.0	
Trailing Detector (m)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Position(m)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Size(m)	2.0	0.6	2.0	2.0	0.6		2.0	0.6		2.0	0.6	
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	

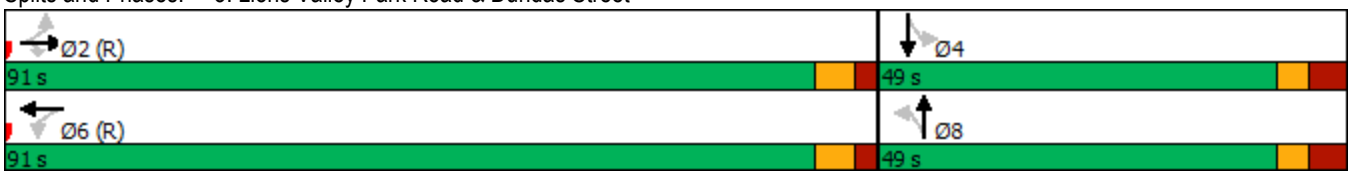
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Type	Perm	NA	Perm	Perm	NA		Perm	NA		Perm	NA	
Protected Phases		2			6			8			4	
Permitted Phases	2		2	6			8			4		
Detector Phase	2	2	2	6	6		8	8		4	4	
Switch Phase												
Minimum Initial (s)	20.0	20.0	20.0	20.0	20.0		10.0	10.0		10.0	10.0	
Minimum Split (s)	33.7	33.7	33.7	33.7	33.7		48.4	48.4		48.4	48.4	
Total Split (s)	91.0	91.0	91.0	91.0	91.0		49.0	49.0		49.0	49.0	
Total Split (%)	65.0%	65.0%	65.0%	65.0%	65.0%		35.0%	35.0%		35.0%	35.0%	
Maximum Green (s)	84.3	84.3	84.3	84.3	84.3		41.6	41.6		41.6	41.6	
Yellow Time (s)	4.2	4.2	4.2	4.2	4.2		3.3	3.3		3.3	3.3	
All-Red Time (s)	2.5	2.5	2.5	2.5	2.5		4.1	4.1		4.1	4.1	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0			0.0			0.0	
Total Lost Time (s)	6.7	6.7	6.7	6.7	6.7			7.4			7.4	
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	C-Max	C-Max	C-Max	C-Max	C-Max		None	None		None	None	
Walk Time (s)	7.0	7.0	7.0	7.0	7.0		7.0	7.0		7.0	7.0	
Flash Dont Walk (s)	20.0	20.0	20.0	20.0	20.0		34.0	34.0		34.0	34.0	
Pedestrian Calls (#/hr)	7	7	7	1	1		2	2		1	1	
Act Effct Green (s)		129.0		129.0	129.0			16.2			16.2	
Actuated g/C Ratio		0.92		0.92	0.92			0.12			0.12	
v/c Ratio		0.71		0.02	0.49			0.03			0.01	
Control Delay		8.5		8.0	5.6			46.8			45.0	
Queue Delay		0.0		0.0	0.0			0.0			0.0	
Total Delay		8.5		8.0	5.6			46.8			45.0	
LOS		A		A	A			D			D	
Approach Delay		8.5			5.6			46.8			45.0	
Approach LOS		A			A			D			D	
Queue Length 50th (m)		0.0		0.0	0.0			1.1			0.3	
Queue Length 95th (m)		#392.1		1.0	170.0			3.8			1.6	
Internal Link Dist (m)		609.4			281.5			115.7			71.5	
Turn Bay Length (m)				75.0								
Base Capacity (vph)		4033		58	3919			362			412	
Starvation Cap Reductn		0		0	0			0			0	
Spillback Cap Reductn		0		0	0			0			0	
Storage Cap Reductn		0		0	0			0			0	
Reduced v/c Ratio		0.71		0.02	0.49			0.01			0.00	

Intersection Summary

Area Type: Other
Cycle Length: 140
Actuated Cycle Length: 140
Offset: 57.4 (41%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green
Natural Cycle: 145
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.71
Intersection Signal Delay: 7.4 Intersection LOS: A

Intersection Capacity Utilization 73.0%	ICU Level of Service C
Analysis Period (min) 15	
* User Entered Value	
# 95th percentile volume exceeds capacity, queue may be longer.	
Queue shown is maximum after two cycles.	

Splits and Phases: 3: Lions Valley Park Road & Dundas Street



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	2651	0	1	1773	1	1	0	3	1	0	0
Future Volume (vph)	0	2651	0	1	1773	1	1	0	3	1	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		6.7		6.7	6.7			7.4			7.4	
Lane Util. Factor		*0.80		1.00	*0.80			1.00			1.00	
Frpb, ped/bikes		1.00		1.00	1.00			0.99			1.00	
Flpb, ped/bikes		1.00		1.00	1.00			1.00			1.00	
Frt		1.00		1.00	1.00			0.90			1.00	
Flt Protected		1.00		0.95	1.00			0.99			0.95	
Satd. Flow (prot)		4378		1750	4254			1317			1746	
Flt Permitted		1.00		0.03	1.00			0.91			0.76	
Satd. Flow (perm)		4378		63	4254			1219			1388	
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)	0	2851	0	1	1906	1	1	0	3	1	0	0
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	2851	0	1	1907	0	0	4	0	0	1	0
Confl. Peds. (#/hr)	1		7	7		1	1		2	2		1
Heavy Vehicles (%)	2%	3%	2%	2%	6%	2%	2%	2%	33%	2%	2%	2%
Turn Type	Perm	NA	Perm	Perm	NA		Perm	NA		Perm	NA	
Protected Phases		2			6			8			4	
Permitted Phases	2		2	6			8			4		
Actuated Green, G (s)		117.7		117.7	117.7			8.2			8.2	
Effective Green, g (s)		117.7		117.7	117.7			8.2			8.2	
Actuated g/C Ratio		0.84		0.84	0.84			0.06			0.06	
Clearance Time (s)		6.7		6.7	6.7			7.4			7.4	
Vehicle Extension (s)		3.0		3.0	3.0			3.0			3.0	
Lane Grp Cap (vph)		3680		52	3576			71			81	
v/s Ratio Prot		c0.65			0.45							
v/s Ratio Perm				0.02				c0.00			0.00	
v/c Ratio		0.77		0.02	0.53			0.06			0.01	
Uniform Delay, d1		5.1		1.8	3.2			62.2			62.1	
Progression Factor		1.00		1.00	1.00			1.00			1.00	
Incremental Delay, d2		1.7		0.7	0.6			0.3			0.1	
Delay (s)		6.7		2.5	3.8			62.6			62.1	
Level of Service		A		A	A			E			E	
Approach Delay (s)		6.7			3.8			62.6			62.1	
Approach LOS		A			A			E			E	

Intersection Summary			
HCM 2000 Control Delay	5.6	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.73		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	14.1
Intersection Capacity Utilization	73.0%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	13	1026	20	15	881	27	20	5	44	84	14	42
Future Volume (vph)	13	1026	20	15	881	27	20	5	44	84	14	42
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	45.0		0.0	45.0		0.0	0.0		0.0	0.0		0.0
Storage Lanes	1		0	1		0	0		0	0		0
Taper Length (m)	50.0			50.0			15.0			15.0		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor	1.00	1.00		1.00	1.00			0.99			1.00	
Frt		0.997			0.995			0.915			0.959	
Flt Protected	0.950			0.950				0.986			0.971	
Satd. Flow (prot)	1750	3483	0	1750	2855	0	0	1389	0	0	1715	0
Flt Permitted	0.241			0.191				0.882			0.771	
Satd. Flow (perm)	443	3483	0	351	2855	0	0	1243	0	0	1361	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		3			5			35			29	
Link Speed (k/h)		60			60			50			50	
Link Distance (m)		203.6			105.5			200.3			179.6	
Travel Time (s)		12.2			6.3			14.4			12.9	
Confl. Peds. (#/hr)	4		7	7		4			2	2		
Confl. Bikes (#/hr)									1			
Peak Hour Factor	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88
Heavy Vehicles (%)	2%	2%	8%	2%	25%	2%	67%	2%	2%	2%	2%	2%
Adj. Flow (vph)	15	1166	23	17	1001	31	23	6	50	95	16	48
Shared Lane Traffic (%)												
Lane Group Flow (vph)	15	1189	0	17	1032	0	0	79	0	0	159	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.5			3.5			0.0			0.0	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		3.0			3.0			3.0			3.0	
Two way Left Turn Lane												
Headway Factor	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2		1	2		1	2		1	2	
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	
Leading Detector (m)	2.0	10.0		2.0	10.0		2.0	10.0		2.0	10.0	
Trailing Detector (m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Position(m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Size(m)	2.0	0.6		2.0	0.6		2.0	0.6		2.0	0.6	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		2			6			8			4	
Permitted Phases	2			6			8			4		
Detector Phase	2	2		6	6		8	8		4	4	
Switch Phase												
Minimum Initial (s)	10.0	10.0		10.0	10.0		10.0	10.0		10.0	10.0	
Minimum Split (s)	31.2	31.2		31.2	31.2		41.5	41.5		41.5	41.5	
Total Split (s)	48.0	48.0		48.0	48.0		42.0	42.0		42.0	42.0	
Total Split (%)	53.3%	53.3%		53.3%	53.3%		46.7%	46.7%		46.7%	46.7%	
Maximum Green (s)	41.8	41.8		41.8	41.8		35.5	35.5		35.5	35.5	
Yellow Time (s)	3.7	3.7		3.7	3.7		3.3	3.3		3.3	3.3	
All-Red Time (s)	2.5	2.5		2.5	2.5		3.2	3.2		3.2	3.2	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0			0.0			0.0	
Total Lost Time (s)	6.2	6.2		6.2	6.2			6.5			6.5	
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	Max	Max		Max	Max		None	None		None	None	
Walk Time (s)	7.0	7.0		7.0	7.0		7.0	7.0		7.0	7.0	
Flash Dont Walk (s)	18.0	18.0		18.0	18.0		28.0	28.0		28.0	28.0	
Pedestrian Calls (#/hr)	7	7		4	4		2	2		0	0	
Act Effct Green (s)	45.4	45.4		45.4	45.4			15.4			15.4	
Actuated g/C Ratio	0.62	0.62		0.62	0.62			0.21			0.21	
v/c Ratio	0.06	0.55		0.08	0.59			0.28			0.52	
Control Delay	10.2	11.3		10.8	12.2			15.7			25.2	
Queue Delay	0.0	0.0		0.0	0.0			0.0			0.0	
Total Delay	10.2	11.3		10.8	12.2			15.7			25.2	
LOS	B	B		B	B			B			C	
Approach Delay		11.3			12.2			15.7			25.2	
Approach LOS		B			B			B			C	
Queue Length 50th (m)	0.6	36.4		0.7	32.4			4.7			14.7	
Queue Length 95th (m)	4.8	103.6		5.5	95.8			13.1			28.1	
Internal Link Dist (m)		179.6			81.5			176.3			155.6	
Turn Bay Length (m)	45.0			45.0								
Base Capacity (vph)	272	2145		215	1760			625			680	
Starvation Cap Reductn	0	0		0	0			0			0	
Spillback Cap Reductn	0	0		0	0			0			0	
Storage Cap Reductn	0	0		0	0			0			0	
Reduced v/c Ratio	0.06	0.55		0.08	0.59			0.13			0.23	

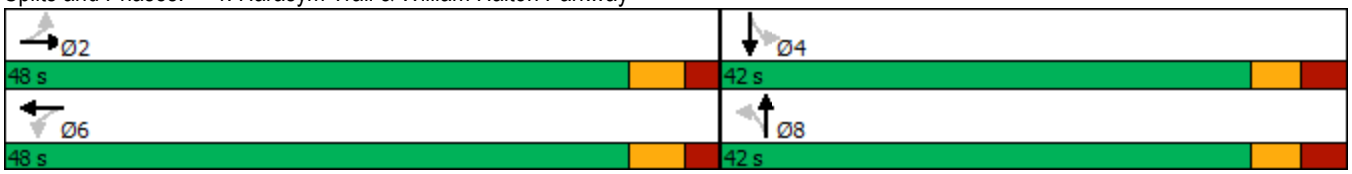
Intersection Summary

Area Type: Other
Cycle Length: 90
Actuated Cycle Length: 73.7
Natural Cycle: 80
Control Type: Semi Act-Uncoord
Maximum v/c Ratio: 0.59
Intersection Signal Delay: 12.7 Intersection LOS: B

Intersection Capacity Utilization 54.2% ICU Level of Service A

Analysis Period (min) 15

Splits and Phases: 4: Harasym Trail & William Halton Parkway



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	13	1026	20	15	881	27	20	5	44	84	14	42
Future Volume (vph)	13	1026	20	15	881	27	20	5	44	84	14	42
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.2	6.2		6.2	6.2			6.5			6.5	
Lane Util. Factor	1.00	0.95		1.00	0.95			1.00			1.00	
Frpb, ped/bikes	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	
Frt	1.00	1.00		1.00	1.00			0.91			0.96	
Flt Protected	0.95	1.00		0.95	1.00			0.99			0.97	
Satd. Flow (prot)	1748	3484		1747	2857			1388			1715	
Flt Permitted	0.24	1.00		0.19	1.00			0.88			0.77	
Satd. Flow (perm)	444	3484		352	2857			1242			1362	
Peak-hour factor, PHF	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88
Adj. Flow (vph)	15	1166	23	17	1001	31	23	6	50	95	16	48
RTOR Reduction (vph)	0	1	0	0	2	0	0	28	0	0	23	0
Lane Group Flow (vph)	15	1188	0	17	1030	0	0	51	0	0	136	0
Confl. Peds. (#/hr)	4		7	7		4			2	2		
Confl. Bikes (#/hr)									1			
Heavy Vehicles (%)	2%	2%	8%	2%	25%	2%	67%	2%	2%	2%	2%	2%
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		2			6			8			4	
Permitted Phases	2			6			8			4		
Actuated Green, G (s)	45.4	45.4		45.4	45.4			15.4			15.4	
Effective Green, g (s)	45.4	45.4		45.4	45.4			15.4			15.4	
Actuated g/C Ratio	0.62	0.62		0.62	0.62			0.21			0.21	
Clearance Time (s)	6.2	6.2		6.2	6.2			6.5			6.5	
Vehicle Extension (s)	3.0	3.0		3.0	3.0			3.0			3.0	
Lane Grp Cap (vph)	274	2152		217	1764			260			285	
v/s Ratio Prot		0.34			c0.36							
v/s Ratio Perm	0.03			0.05				0.04			c0.10	
v/c Ratio	0.05	0.55		0.08	0.58			0.20			0.48	
Uniform Delay, d1	5.6	8.2		5.6	8.4			24.0			25.5	
Progression Factor	1.00	1.00		1.00	1.00			1.00			1.00	
Incremental Delay, d2	0.4	1.0		0.7	1.4			0.4			1.3	
Delay (s)	5.9	9.2		6.3	9.8			24.3			26.8	
Level of Service	A	A		A	A			C			C	
Approach Delay (s)		9.1			9.8			24.3			26.8	
Approach LOS		A			A			C			C	

Intersection Summary			
HCM 2000 Control Delay	11.0	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.56		
Actuated Cycle Length (s)	73.5	Sum of lost time (s)	12.7
Intersection Capacity Utilization	54.2%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	16	2126	109	92	1748	58	56	16	273	157	32	51
Future Volume (vph)	16	2126	109	92	1748	58	56	16	273	157	32	51
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	120.0		70.0	115.0		60.0	90.0		0.0	30.0		0.0
Storage Lanes	1		1	1		1	1		0	1		0
Taper Length (m)	65.0			65.0			30.0			15.0		
Lane Util. Factor	1.00	*0.80	1.00	1.00	*0.80	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor								0.99		1.00		
Frt			0.850			0.850		0.858			0.908	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1526	4378	1465	1684	4295	1465	1716	1534	0	1733	1637	0
Flt Permitted	0.074			0.058			0.702			0.375		
Satd. Flow (perm)	119	4378	1465	103	4295	1465	1268	1534	0	683	1637	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			82			59		123			25	
Link Speed (k/h)		70			70			50			50	
Link Distance (m)		331.1			413.9			220.1			189.0	
Travel Time (s)		17.0			21.3			15.8			13.6	
Confl. Peds. (#/hr)									2	2		
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Heavy Vehicles (%)	17%	3%	9%	6%	5%	9%	4%	33%	2%	3%	3%	5%
Adj. Flow (vph)	16	2169	111	94	1784	59	57	16	279	160	33	52
Shared Lane Traffic (%)												
Lane Group Flow (vph)	16	2169	111	94	1784	59	57	295	0	160	85	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.5			3.5			3.5			3.5	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		3.0			3.0			3.0			3.0	
Two way Left Turn Lane												
Headway Factor	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2	1	1	2	1	1	2		1	2	
Detector Template	Left	Thru	Right	Left	Thru	Right	Left	Thru		Left	Thru	
Leading Detector (m)	2.0	10.0	2.0	2.0	10.0	2.0	2.0	10.0		2.0	10.0	
Trailing Detector (m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Detector 1 Position(m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Detector 1 Size(m)	2.0	0.6	2.0	2.0	0.6	2.0	2.0	0.6		2.0	0.6	
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	

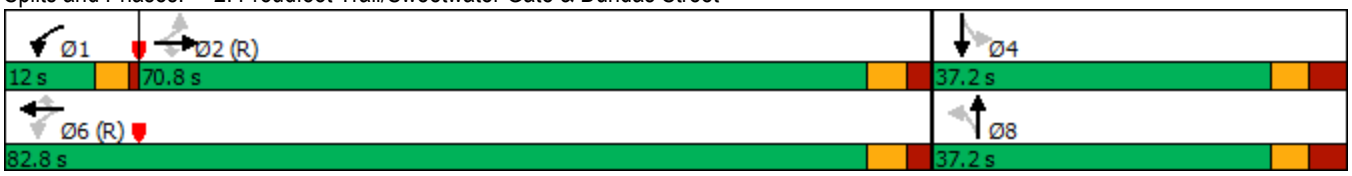
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Type	Perm	NA	Perm	pm+pt	NA	Perm	Perm	NA		Perm	NA	
Protected Phases		2		1	6			8			4	
Permitted Phases	2		2	6		6	8			4		
Detector Phase	2	2	2	1	6	6	8	8		4	4	
Switch Phase												
Minimum Initial (s)	20.0	20.0	20.0	7.0	20.0	20.0	10.0	10.0		10.0	10.0	
Minimum Split (s)	31.9	31.9	31.9	11.0	31.9	31.9	43.9	43.9		43.9	43.9	
Total Split (s)	70.8	70.8	70.8	12.0	82.8	82.8	37.2	37.2		37.2	37.2	
Total Split (%)	59.0%	59.0%	59.0%	10.0%	69.0%	69.0%	31.0%	31.0%		31.0%	31.0%	
Maximum Green (s)	64.9	64.9	64.9	8.0	76.9	76.9	30.3	30.3		30.3	30.3	
Yellow Time (s)	3.7	3.7	3.7	3.0	3.7	3.7	3.3	3.3		3.3	3.3	
All-Red Time (s)	2.2	2.2	2.2	1.0	2.2	2.2	3.6	3.6		3.6	3.6	
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)	5.9	5.9	5.9	4.0	5.9	5.9	6.9	6.9		6.9	6.9	
Lead/Lag	Lag	Lag	Lag	Lead								
Lead-Lag Optimize?	Yes	Yes	Yes	Yes								
Vehicle Extension (s)	5.5	5.5	5.5	3.0	5.5	5.5	3.0	3.0		3.0	3.0	
Recall Mode	C-Max	C-Max	C-Max	None	C-Max	C-Max	None	None		Max	Max	
Walk Time (s)	7.0	7.0	7.0		7.0	7.0	7.0	7.0		7.0	7.0	
Flash Dont Walk (s)	19.0	19.0	19.0		19.0	19.0	30.0	30.0		30.0	30.0	
Pedestrian Calls (#/hr)	0	0	0		0	0	2	2		0	0	
Act Effct Green (s)	65.3	65.3	65.3	78.8	76.9	76.9	30.3	30.3		30.3	30.3	
Actuated g/C Ratio	0.54	0.54	0.54	0.66	0.64	0.64	0.25	0.25		0.25	0.25	
v/c Ratio	0.25	0.91	0.13	0.56	0.65	0.06	0.18	0.62		0.93	0.20	
Control Delay	26.7	31.9	4.9	35.6	12.9	2.1	37.0	28.9		97.6	26.5	
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Total Delay	26.7	31.9	4.9	35.6	12.9	2.1	37.0	28.9		97.6	26.5	
LOS	C	C	A	D	B	A	D	C		F	C	
Approach Delay		30.5			13.7			30.2			72.9	
Approach LOS		C			B			C			E	
Queue Length 50th (m)	1.9	185.5	3.1	9.8	79.4	0.0	10.6	35.7		36.9	11.0	
Queue Length 95th (m)	8.1	215.1	11.5	28.4	86.6	4.4	21.9	65.6		#78.8	24.2	
Internal Link Dist (m)		307.1			389.9			196.1			165.0	
Turn Bay Length (m)	120.0		70.0	115.0		60.0	90.0			30.0		
Base Capacity (vph)	64	2382	834	173	2752	960	320	479		172	432	
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	0.25	0.91	0.13	0.54	0.65	0.06	0.18	0.62		0.93	0.20	

Intersection Summary

Area Type: Other
Cycle Length: 120
Actuated Cycle Length: 120
Offset: 80.4 (67%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green
Natural Cycle: 120
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.93
Intersection Signal Delay: 25.9 Intersection LOS: C

Intersection Capacity Utilization 99.2%	ICU Level of Service F
Analysis Period (min) 15	
* User Entered Value	
# 95th percentile volume exceeds capacity, queue may be longer.	
Queue shown is maximum after two cycles.	

Splits and Phases: 2: Proudfoot Trail/Sweetwater Gate & Dundas Street



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	16	2126	109	92	1748	58	56	16	273	157	32	51
Future Volume (vph)	16	2126	109	92	1748	58	56	16	273	157	32	51
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.9	5.9	5.9	4.0	5.9	5.9	6.9	6.9		6.9	6.9	
Lane Util. Factor	1.00	*0.80	1.00	1.00	*0.80	1.00	1.00	1.00		1.00	1.00	
Frpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.99		1.00	1.00	
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	1.00	0.85	1.00	1.00	0.85	1.00	0.86		1.00	0.91	
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)	1526	4378	1465	1684	4295	1465	1716	1535		1731	1637	
Flt Permitted	0.07	1.00	1.00	0.06	1.00	1.00	0.70	1.00		0.38	1.00	
Satd. Flow (perm)	118	4378	1465	102	4295	1465	1268	1535		684	1637	
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)	16	2169	111	94	1784	59	57	16	279	160	33	52
RTOR Reduction (vph)	0	0	37	0	0	21	0	92	0	0	19	0
Lane Group Flow (vph)	16	2169	74	94	1784	38	57	203	0	160	66	0
Confl. Peds. (#/hr)									2	2		
Heavy Vehicles (%)	17%	3%	9%	6%	5%	9%	4%	33%	2%	3%	3%	5%
Turn Type	Perm	NA	Perm	pm+pt	NA	Perm	Perm	NA		Perm	NA	
Protected Phases		2		1	6			8			4	
Permitted Phases	2		2	6		6	8			4		
Actuated Green, G (s)	65.3	65.3	65.3	76.9	76.9	76.9	30.3	30.3		30.3	30.3	
Effective Green, g (s)	65.3	65.3	65.3	76.9	76.9	76.9	30.3	30.3		30.3	30.3	
Actuated g/C Ratio	0.54	0.54	0.54	0.64	0.64	0.64	0.25	0.25		0.25	0.25	
Clearance Time (s)	5.9	5.9	5.9	4.0	5.9	5.9	6.9	6.9		6.9	6.9	
Vehicle Extension (s)	5.5	5.5	5.5	3.0	5.5	5.5	3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	64	2382	797	165	2752	938	320	387		172	413	
v/s Ratio Prot		c0.50		0.04	c0.42			0.13			0.04	
v/s Ratio Perm	0.14		0.05	0.33		0.03	0.04			c0.23		
v/c Ratio	0.25	0.91	0.09	0.57	0.65	0.04	0.18	0.52		0.93	0.16	
Uniform Delay, d1	14.4	24.7	13.1	23.2	13.2	7.9	35.1	38.6		43.8	34.9	
Progression Factor	1.00	1.00	1.00	1.54	0.88	0.95	1.00	1.00		1.00	1.00	
Incremental Delay, d2	9.1	6.6	0.2	4.0	1.1	0.1	0.3	1.3		52.3	0.8	
Delay (s)	23.6	31.3	13.4	39.6	12.7	7.6	35.4	39.9		96.1	35.8	
Level of Service	C	C	B	D	B	A	D	D		F	D	
Approach Delay (s)		30.4			13.9			39.2			75.2	
Approach LOS		C			B			D			E	

Intersection Summary			
HCM 2000 Control Delay	26.7	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.91		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	16.8
Intersection Capacity Utilization	99.2%	ICU Level of Service	F
Analysis Period (min)	15		

c Critical Lane Group

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	2390	62	16	1689	37	15
Future Volume (vph)	2390	62	16	1689	37	15
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (m)		0.0	90.0		30.0	0.0
Storage Lanes		0	1		1	1
Taper Length (m)			100.0		15.0	
Lane Util. Factor	*0.80	0.91	1.00	*0.80	1.00	1.00
Ped Bike Factor	1.00					
Frt	0.996					0.850
Flt Protected			0.950		0.950	
Satd. Flow (prot)	4318	0	1750	4175	1750	1566
Flt Permitted			0.041		0.950	
Satd. Flow (perm)	4318	0	76	4175	1750	1566
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)	5					16
Link Speed (k/h)	70			70	50	
Link Distance (m)	413.9			633.4	126.1	
Travel Time (s)	21.3			32.6	9.1	
Confl. Peds. (#/hr)		3	3			
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93
Heavy Vehicles (%)	4%	2%	2%	8%	2%	2%
Adj. Flow (vph)	2570	67	17	1816	40	16
Shared Lane Traffic (%)						
Lane Group Flow (vph)	2637	0	17	1816	40	16
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	3.5			3.5	3.5	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	3.0			3.0	3.0	
Two way Left Turn Lane						
Headway Factor	1.01	1.01	1.01	1.01	1.01	1.01
Turning Speed (k/h)		15	25		25	15
Number of Detectors	2		1	2	1	1
Detector Template	Thru		Left	Thru	Left	Right
Leading Detector (m)	10.0		2.0	10.0	2.0	2.0
Trailing Detector (m)	0.0		0.0	0.0	0.0	0.0
Detector 1 Position(m)	0.0		0.0	0.0	0.0	0.0
Detector 1 Size(m)	0.6		2.0	0.6	2.0	2.0
Detector 1 Type	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel						
Detector 1 Extend (s)	0.0		0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0		0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0		0.0	0.0	0.0	0.0
Detector 2 Position(m)	9.4			9.4		
Detector 2 Size(m)	0.6			0.6		
Detector 2 Type	Cl+Ex			Cl+Ex		
Detector 2 Channel						
Detector 2 Extend (s)	0.0			0.0		

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Turn Type	NA		pm+pt	NA	Prot	Perm
Protected Phases	2		1	6	8	
Permitted Phases			6			8
Detector Phase	2		1	6	8	8
Switch Phase						
Minimum Initial (s)	20.0		7.0	20.0	7.0	7.0
Minimum Split (s)	33.0		11.0	26.0	40.6	40.6
Total Split (s)	74.4		12.0	86.4	33.6	33.6
Total Split (%)	62.0%		10.0%	72.0%	28.0%	28.0%
Maximum Green (s)	68.4		8.0	80.4	27.0	27.0
Yellow Time (s)	3.7		3.0	3.7	3.7	3.7
All-Red Time (s)	2.3		1.0	2.3	2.9	2.9
Lost Time Adjust (s)	0.0		0.0	0.0	0.0	0.0
Total Lost Time (s)	6.0		4.0	6.0	6.6	6.6
Lead/Lag	Lag		Lead			
Lead-Lag Optimize?	Yes		Yes			
Vehicle Extension (s)	5.0		4.0	5.0	4.0	4.0
Recall Mode	C-Max		None	C-Max	None	None
Walk Time (s)	7.0				7.0	7.0
Flash Dont Walk (s)	20.0				27.0	27.0
Pedestrian Calls (#/hr)	3				0	0
Act Effct Green (s)	97.6		102.8	102.0	9.3	9.3
Actuated g/C Ratio	0.81		0.86	0.85	0.08	0.08
v/c Ratio	0.75		0.10	0.51	0.30	0.12
Control Delay	4.5		3.2	3.8	57.2	23.4
Queue Delay	0.0		0.0	0.0	0.0	0.0
Total Delay	4.5		3.2	3.8	57.2	23.4
LOS	A		A	A	E	C
Approach Delay	4.5			3.8	47.6	
Approach LOS	A			A	D	
Queue Length 50th (m)	33.4		0.5	44.5	9.1	0.0
Queue Length 95th (m)	m43.6		1.8	61.9	19.7	6.8
Internal Link Dist (m)	389.9			609.4	102.1	
Turn Bay Length (m)			90.0		30.0	
Base Capacity (vph)	3513		176	3550	393	364
Starvation Cap Reductn	0		0	0	0	0
Spillback Cap Reductn	0		0	0	0	0
Storage Cap Reductn	0		0	0	0	0
Reduced v/c Ratio	0.75		0.10	0.51	0.10	0.04

Intersection Summary	
Area Type:	Other
Cycle Length: 120	
Actuated Cycle Length: 120	
Offset: 104.4 (87%), Referenced to phase 2:EBT and 6:WBTL, Start of Green	
Natural Cycle: 145	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.75	
Intersection Signal Delay: 4.8	Intersection LOS: A

Intersection Capacity Utilization 63.9%	ICU Level of Service B
Analysis Period (min) 15	

* User Entered Value

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

Splits and Phases: 1: Fourth Line & Dundas Street

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	2390	62	16	1689	37	15
Future Volume (vph)	2390	62	16	1689	37	15
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0		4.0	6.0	6.6	6.6
Lane Util. Factor	*0.80		1.00	*0.80	1.00	1.00
Frpb, ped/bikes	1.00		1.00	1.00	1.00	1.00
Flpb, ped/bikes	1.00		1.00	1.00	1.00	1.00
Frt	1.00		1.00	1.00	1.00	0.85
Flt Protected	1.00		0.95	1.00	0.95	1.00
Satd. Flow (prot)	4319		1750	4175	1750	1566
Flt Permitted	1.00		0.04	1.00	0.95	1.00
Satd. Flow (perm)	4319		76	4175	1750	1566
Peak-hour factor, PHF	0.93	0.93	0.93	0.93	0.93	0.93
Adj. Flow (vph)	2570	67	17	1816	40	16
RTOR Reduction (vph)	1	0	0	0	0	15
Lane Group Flow (vph)	2636	0	17	1816	40	1
Confl. Peds. (#/hr)		3	3			
Heavy Vehicles (%)	4%	2%	2%	8%	2%	2%
Turn Type	NA		pm+pt	NA	Prot	Perm
Protected Phases	2		1	6	8	
Permitted Phases			6			8
Actuated Green, G (s)	92.7		99.5	99.5	7.9	7.9
Effective Green, g (s)	92.7		99.5	99.5	7.9	7.9
Actuated g/C Ratio	0.77		0.83	0.83	0.07	0.07
Clearance Time (s)	6.0		4.0	6.0	6.6	6.6
Vehicle Extension (s)	5.0		4.0	5.0	4.0	4.0
Lane Grp Cap (vph)	3336		102	3461	115	103
v/s Ratio Prot	c0.61		0.00	c0.43	c0.02	
v/s Ratio Perm			0.13			0.00
v/c Ratio	0.79		0.17	0.52	0.35	0.01
Uniform Delay, d1	8.0		9.7	3.1	53.6	52.4
Progression Factor	0.44		1.00	1.00	1.00	1.00
Incremental Delay, d2	1.0		1.1	0.6	2.5	0.1
Delay (s)	4.5		10.8	3.7	56.1	52.4
Level of Service	A		B	A	E	D
Approach Delay (s)	4.5			3.7	55.0	
Approach LOS	A			A	E	

Intersection Summary			
HCM 2000 Control Delay	4.8	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.76		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	16.6
Intersection Capacity Utilization	63.9%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	16	2126	109	92	1748	58	56	16	273	157	32	51
Future Volume (vph)	16	2126	109	92	1748	58	56	16	273	157	32	51
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	120.0		70.0	115.0		60.0	90.0		0.0	80.0		0.0
Storage Lanes	1		1	1		1	1		0	1		0
Taper Length (m)	65.0			65.0			30.0			15.0		
Lane Util. Factor	1.00	*0.80	1.00	1.00	*0.80	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor								0.99		1.00		
Frt			0.850			0.850		0.858			0.908	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1526	4378	1465	1684	4295	1465	1716	1534	0	1733	1637	0
Flt Permitted	0.075			0.057			0.702			0.364		
Satd. Flow (perm)	120	4378	1465	101	4295	1465	1268	1534	0	663	1637	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			82			59		123			25	
Link Speed (k/h)		70			70			50			50	
Link Distance (m)		331.1			413.9			220.1			189.0	
Travel Time (s)		17.0			21.3			15.8			13.6	
Confl. Peds. (#/hr)									2	2		
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Heavy Vehicles (%)	17%	3%	9%	6%	5%	9%	4%	33%	2%	3%	3%	5%
Adj. Flow (vph)	16	2169	111	94	1784	59	57	16	279	160	33	52
Shared Lane Traffic (%)												
Lane Group Flow (vph)	16	2169	111	94	1784	59	57	295	0	160	85	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.5			3.5			3.5			3.5	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		3.0			3.0			3.0			3.0	
Two way Left Turn Lane												
Headway Factor	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2	1	1	2	1	1	2		1	2	
Detector Template	Left	Thru	Right	Left	Thru	Right	Left	Thru		Left	Thru	
Leading Detector (m)	2.0	10.0	2.0	2.0	10.0	2.0	2.0	10.0		2.0	10.0	
Trailing Detector (m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Detector 1 Position(m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Detector 1 Size(m)	2.0	0.6	2.0	2.0	0.6	2.0	2.0	0.6		2.0	0.6	
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	

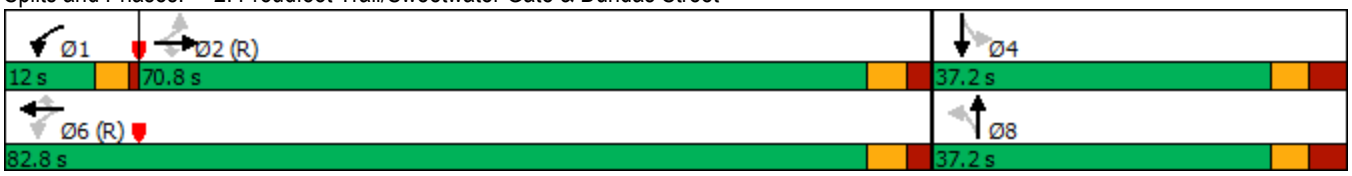
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Type	Perm	NA	Perm	pm+pt	NA	Perm	Perm	NA		Perm	NA	
Protected Phases		2		1	6			8			4	
Permitted Phases	2		2	6		6	8			4		
Detector Phase	2	2	2	1	6	6	8	8		4	4	
Switch Phase												
Minimum Initial (s)	20.0	20.0	20.0	7.0	20.0	20.0	10.0	10.0		10.0	10.0	
Minimum Split (s)	31.9	31.9	31.9	11.0	31.9	31.9	43.9	43.9		43.9	43.9	
Total Split (s)	70.8	70.8	70.8	12.0	82.8	82.8	37.2	37.2		37.2	37.2	
Total Split (%)	59.0%	59.0%	59.0%	10.0%	69.0%	69.0%	31.0%	31.0%		31.0%	31.0%	
Maximum Green (s)	64.9	64.9	64.9	8.0	76.9	76.9	30.3	30.3		30.3	30.3	
Yellow Time (s)	3.7	3.7	3.7	3.0	3.7	3.7	3.3	3.3		3.3	3.3	
All-Red Time (s)	2.2	2.2	2.2	1.0	2.2	2.2	3.6	3.6		3.6	3.6	
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)	5.9	5.9	5.9	4.0	5.9	5.9	6.9	6.9		6.9	6.9	
Lead/Lag	Lag	Lag	Lag	Lead								
Lead-Lag Optimize?	Yes	Yes	Yes	Yes								
Vehicle Extension (s)	5.5	5.5	5.5	3.0	5.5	5.5	3.0	3.0		3.0	3.0	
Recall Mode	C-Max	C-Max	C-Max	None	C-Max	C-Max	None	None		None	None	
Walk Time (s)	7.0	7.0	7.0		7.0	7.0	7.0	7.0		7.0	7.0	
Flash Dont Walk (s)	19.0	19.0	19.0		19.0	19.0	30.0	30.0		30.0	30.0	
Pedestrian Calls (#/hr)	0	0	0		0	0	2	2		0	0	
Act Effct Green (s)	66.3	66.3	66.3	79.8	77.9	77.9	29.3	29.3		29.3	29.3	
Actuated g/C Ratio	0.55	0.55	0.55	0.66	0.65	0.65	0.24	0.24		0.24	0.24	
v/c Ratio	0.24	0.90	0.13	0.56	0.64	0.06	0.18	0.63		0.99	0.20	
Control Delay	26.3	30.4	4.9	36.1	12.4	2.1	37.1	29.5		114.2	26.6	
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Total Delay	26.3	30.4	4.9	36.1	12.4	2.1	37.1	29.5		114.2	26.6	
LOS	C	C	A	D	B	A	D	C		F	C	
Approach Delay		29.2			13.2			30.8			83.8	
Approach LOS		C			B			C			F	
Queue Length 50th (m)	1.9	185.5	3.1	10.0	79.4	0.0	10.6	35.7		37.3	11.0	
Queue Length 95th (m)	8.0	215.1	11.5	28.6	86.6	4.4	21.9	65.6		#80.0	24.2	
Internal Link Dist (m)		307.1			389.9			196.1			165.0	
Turn Bay Length (m)	120.0		70.0	115.0		60.0	90.0			80.0		
Base Capacity (vph)	66	2417	845	172	2786	971	320	479		167	432	
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	0.24	0.90	0.13	0.55	0.64	0.06	0.18	0.62		0.96	0.20	

Intersection Summary

Area Type: Other
Cycle Length: 120
Actuated Cycle Length: 120
Offset: 80.4 (67%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green
Natural Cycle: 120
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.99
Intersection Signal Delay: 25.7 Intersection LOS: C

Intersection Capacity Utilization 99.2%	ICU Level of Service F
Analysis Period (min) 15	
* User Entered Value	
# 95th percentile volume exceeds capacity, queue may be longer.	
Queue shown is maximum after two cycles.	

Splits and Phases: 2: Proudfoot Trail/Sweetwater Gate & Dundas Street



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	16	2126	109	92	1748	58	56	16	273	157	32	51
Future Volume (vph)	16	2126	109	92	1748	58	56	16	273	157	32	51
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.9	5.9	5.9	4.0	5.9	5.9	6.9	6.9		6.9	6.9	
Lane Util. Factor	1.00	*0.80	1.00	1.00	*0.80	1.00	1.00	1.00		1.00	1.00	
Frpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.99		1.00	1.00	
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	1.00	0.85	1.00	1.00	0.85	1.00	0.86		1.00	0.91	
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)	1526	4378	1465	1684	4295	1465	1716	1535		1731	1637	
Flt Permitted	0.08	1.00	1.00	0.06	1.00	1.00	0.70	1.00		0.36	1.00	
Satd. Flow (perm)	120	4378	1465	101	4295	1465	1268	1535		664	1637	
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)	16	2169	111	94	1784	59	57	16	279	160	33	52
RTOR Reduction (vph)	0	0	37	0	0	21	0	93	0	0	19	0
Lane Group Flow (vph)	16	2169	74	94	1784	38	57	202	0	160	66	0
Confl. Peds. (#/hr)									2	2		
Heavy Vehicles (%)	17%	3%	9%	6%	5%	9%	4%	33%	2%	3%	3%	5%
Turn Type	Perm	NA	Perm	pm+pt	NA	Perm	Perm	NA		Perm	NA	
Protected Phases		2		1	6			8			4	
Permitted Phases	2		2	6		6	8			4		
Actuated Green, G (s)	66.3	66.3	66.3	77.9	77.9	77.9	29.3	29.3		29.3	29.3	
Effective Green, g (s)	66.3	66.3	66.3	77.9	77.9	77.9	29.3	29.3		29.3	29.3	
Actuated g/C Ratio	0.55	0.55	0.55	0.65	0.65	0.65	0.24	0.24		0.24	0.24	
Clearance Time (s)	5.9	5.9	5.9	4.0	5.9	5.9	6.9	6.9		6.9	6.9	
Vehicle Extension (s)	5.5	5.5	5.5	3.0	5.5	5.5	3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	66	2418	809	165	2788	951	309	374		162	399	
v/s Ratio Prot		c0.50		0.04	c0.42			0.13			0.04	
v/s Ratio Perm	0.13		0.05	0.33		0.03	0.04			c0.24		
v/c Ratio	0.24	0.90	0.09	0.57	0.64	0.04	0.18	0.54		0.99	0.17	
Uniform Delay, d1	13.9	23.8	12.7	22.8	12.6	7.6	35.9	39.5		45.2	35.7	
Progression Factor	1.00	1.00	1.00	1.53	0.88	0.95	1.00	1.00		1.00	1.00	
Incremental Delay, d2	8.5	5.8	0.2	4.0	1.0	0.1	0.3	1.6		66.4	0.2	
Delay (s)	22.4	29.6	12.9	38.7	12.1	7.3	36.2	41.1		111.6	35.9	
Level of Service	C	C	B	D	B	A	D	D		F	D	
Approach Delay (s)		28.7			13.2			40.3			85.3	
Approach LOS		C			B			D			F	

Intersection Summary			
HCM 2000 Control Delay	26.2	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.91		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	16.8
Intersection Capacity Utilization	99.2%	ICU Level of Service	F
Analysis Period (min)	15		

c Critical Lane Group

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	2651	0	1	1773	1	1	0	3	1	0	0
Future Volume (vph)	0	2651	0	1	1773	1	1	0	3	1	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	50.0		10.0	75.0		0.0	0.0		0.0	0.0		0.0
Storage Lanes	1		1	1		0	0		0	0		0
Taper Length (m)	50.0			100.0			15.0			15.0		
Lane Util. Factor	1.00	*0.80	1.00	1.00	*0.80	0.91	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor					1.00			0.99			1.00	
Frt								0.899				
Flt Protected				0.950				0.988			0.950	
Satd. Flow (prot)	1842	4378	1842	1750	4254	0	0	1318	0	0	1750	0
Flt Permitted				0.034				0.914			0.755	
Satd. Flow (perm)	1842	4378	1842	63	4254	0	0	1219	0	0	1388	0
Right Turn on Red			Yes			Yes			No			Yes
Satd. Flow (RTOR)												
Link Speed (k/h)		70			70			50			50	
Link Distance (m)		633.4			305.5			139.7			95.5	
Travel Time (s)		32.6			15.7			10.1			6.9	
Confl. Peds. (#/hr)	1		7	7		1	1		2	2		1
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Heavy Vehicles (%)	2%	3%	2%	2%	6%	2%	2%	2%	33%	2%	2%	2%
Adj. Flow (vph)	0	2851	0	1	1906	1	1	0	3	1	0	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	2851	0	1	1907	0	0	4	0	0	1	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.5			3.5			0.0			0.0	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		3.0			3.0			3.0			3.0	
Two way Left Turn Lane												
Headway Factor	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2	1	1	2		1	2		1	2	
Detector Template	Left	Thru	Right	Left	Thru		Left	Thru		Left	Thru	
Leading Detector (m)	2.0	10.0	2.0	2.0	10.0		2.0	10.0		2.0	10.0	
Trailing Detector (m)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Position(m)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Size(m)	2.0	0.6	2.0	2.0	0.6		2.0	0.6		2.0	0.6	
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	

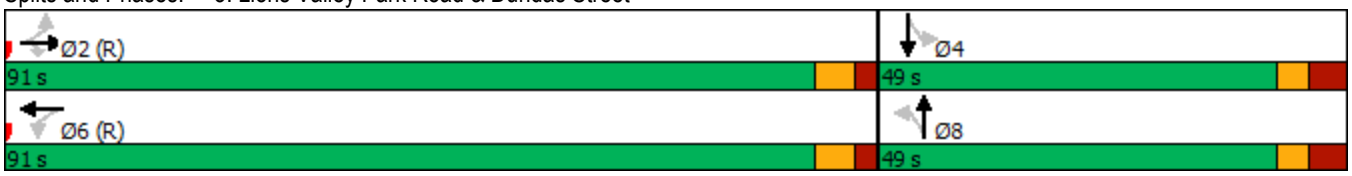
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Type	Perm	NA	Perm	Perm	NA		Perm	NA		Perm	NA	
Protected Phases		2			6			8			4	
Permitted Phases	2		2	6			8			4		
Detector Phase	2	2	2	6	6		8	8		4	4	
Switch Phase												
Minimum Initial (s)	20.0	20.0	20.0	20.0	20.0		10.0	10.0		10.0	10.0	
Minimum Split (s)	33.7	33.7	33.7	33.7	33.7		48.4	48.4		48.4	48.4	
Total Split (s)	91.0	91.0	91.0	91.0	91.0		49.0	49.0		49.0	49.0	
Total Split (%)	65.0%	65.0%	65.0%	65.0%	65.0%		35.0%	35.0%		35.0%	35.0%	
Maximum Green (s)	84.3	84.3	84.3	84.3	84.3		41.6	41.6		41.6	41.6	
Yellow Time (s)	4.2	4.2	4.2	4.2	4.2		3.3	3.3		3.3	3.3	
All-Red Time (s)	2.5	2.5	2.5	2.5	2.5		4.1	4.1		4.1	4.1	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0			0.0			0.0	
Total Lost Time (s)	6.7	6.7	6.7	6.7	6.7			7.4			7.4	
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	C-Max	C-Max	C-Max	C-Max	C-Max		None	None		None	None	
Walk Time (s)	7.0	7.0	7.0	7.0	7.0		7.0	7.0		7.0	7.0	
Flash Dont Walk (s)	20.0	20.0	20.0	20.0	20.0		34.0	34.0		34.0	34.0	
Pedestrian Calls (#/hr)	7	7	7	1	1		2	2		1	1	
Act Effct Green (s)		129.0		129.0	129.0			16.2			16.2	
Actuated g/C Ratio		0.92		0.92	0.92			0.12			0.12	
v/c Ratio		0.71		0.02	0.49			0.03			0.01	
Control Delay		8.5		8.0	5.6			46.8			45.0	
Queue Delay		0.0		0.0	0.0			0.0			0.0	
Total Delay		8.5		8.0	5.6			46.8			45.0	
LOS		A		A	A			D			D	
Approach Delay		8.5			5.6			46.8			45.0	
Approach LOS		A			A			D			D	
Queue Length 50th (m)		0.0		0.0	0.0			1.1			0.3	
Queue Length 95th (m)		#392.1		1.0	170.0			3.8			1.6	
Internal Link Dist (m)		609.4			281.5			115.7			71.5	
Turn Bay Length (m)				75.0								
Base Capacity (vph)		4033		58	3919			362			412	
Starvation Cap Reductn		0		0	0			0			0	
Spillback Cap Reductn		0		0	0			0			0	
Storage Cap Reductn		0		0	0			0			0	
Reduced v/c Ratio		0.71		0.02	0.49			0.01			0.00	

Intersection Summary

Area Type: Other
Cycle Length: 140
Actuated Cycle Length: 140
Offset: 57.4 (41%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green
Natural Cycle: 145
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.71
Intersection Signal Delay: 7.4 Intersection LOS: A

Intersection Capacity Utilization 73.0%	ICU Level of Service C
Analysis Period (min) 15	
* User Entered Value	
# 95th percentile volume exceeds capacity, queue may be longer.	
Queue shown is maximum after two cycles.	

Splits and Phases: 3: Lions Valley Park Road & Dundas Street



Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	2030	40	33	2729	64	21
Future Volume (vph)	2030	40	33	2729	64	21
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (m)		0.0	90.0		15.0	0.0
Storage Lanes		0	1		1	1
Taper Length (m)			100.0		35.0	
Lane Util. Factor	*0.80	0.91	1.00	*0.80	1.00	1.00
Ped Bike Factor	1.00					
Frt	0.997					0.850
Flt Protected			0.950		0.950	
Satd. Flow (prot)	4364	0	1750	4336	1750	1566
Flt Permitted			0.043		0.950	
Satd. Flow (perm)	4364	0	79	4336	1750	1566
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)	3					21
Link Speed (k/h)	70			70	50	
Link Distance (m)	413.9			633.4	126.1	
Travel Time (s)	21.3			32.6	9.1	
Confl. Peds. (#/hr)		1	1			
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98
Heavy Vehicles (%)	3%	2%	2%	4%	2%	2%
Adj. Flow (vph)	2071	41	34	2785	65	21
Shared Lane Traffic (%)						
Lane Group Flow (vph)	2112	0	34	2785	65	21
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	3.5			3.5	3.5	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	3.0			3.0	3.0	
Two way Left Turn Lane						
Headway Factor	1.01	1.01	1.01	1.01	1.01	1.01
Turning Speed (k/h)		15	25		25	15
Number of Detectors	2		1	2	1	1
Detector Template	Thru		Left	Thru	Left	Right
Leading Detector (m)	10.0		2.0	10.0	2.0	2.0
Trailing Detector (m)	0.0		0.0	0.0	0.0	0.0
Detector 1 Position(m)	0.0		0.0	0.0	0.0	0.0
Detector 1 Size(m)	0.6		2.0	0.6	2.0	2.0
Detector 1 Type	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel						
Detector 1 Extend (s)	0.0		0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0		0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0		0.0	0.0	0.0	0.0
Detector 2 Position(m)	9.4			9.4		
Detector 2 Size(m)	0.6			0.6		
Detector 2 Type	Cl+Ex			Cl+Ex		
Detector 2 Channel						
Detector 2 Extend (s)	0.0			0.0		

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Turn Type	NA		pm+pt	NA	Prot	Perm
Protected Phases	2		1	6	8	
Permitted Phases			6			8
Detector Phase	2		1	6	8	8
Switch Phase						
Minimum Initial (s)	20.0		7.0	20.0	7.0	7.0
Minimum Split (s)	33.0		11.0	26.0	40.6	40.6
Total Split (s)	66.0		12.0	78.0	42.0	42.0
Total Split (%)	55.0%		10.0%	65.0%	35.0%	35.0%
Maximum Green (s)	60.0		8.0	72.0	35.4	35.4
Yellow Time (s)	3.7		3.0	3.7	3.7	3.7
All-Red Time (s)	2.3		1.0	2.3	2.9	2.9
Lost Time Adjust (s)	0.0		0.0	0.0	0.0	0.0
Total Lost Time (s)	6.0		4.0	6.0	6.6	6.6
Lead/Lag	Lag		Lead			
Lead-Lag Optimize?	Yes		Yes			
Vehicle Extension (s)	5.0		4.0	5.0	4.0	4.0
Recall Mode	C-Max		None	C-Max	None	None
Walk Time (s)	7.0				7.0	7.0
Flash Dont Walk (s)	20.0				27.0	27.0
Pedestrian Calls (#/hr)	1				0	0
Act Effct Green (s)	93.8		101.3	100.5	10.8	10.8
Actuated g/C Ratio	0.78		0.84	0.84	0.09	0.09
v/c Ratio	0.62		0.20	0.77	0.41	0.13
Control Delay	22.2		5.2	8.1	58.6	20.1
Queue Delay	0.0		0.0	0.0	0.0	0.0
Total Delay	22.2		5.2	8.1	58.6	20.1
LOS	C		A	A	E	C
Approach Delay	22.2			8.1	49.2	
Approach LOS	C			A	D	
Queue Length 50th (m)	147.2		1.1	119.4	14.7	0.0
Queue Length 95th (m)	225.7		3.3	170.2	28.0	7.5
Internal Link Dist (m)	389.9			609.4	102.1	
Turn Bay Length (m)			90.0		15.0	
Base Capacity (vph)	3410		178	3631	516	476
Starvation Cap Reductn	0		0	0	0	0
Spillback Cap Reductn	0		0	0	0	0
Storage Cap Reductn	0		0	0	0	0
Reduced v/c Ratio	0.62		0.19	0.77	0.13	0.04

Intersection Summary	
Area Type:	Other
Cycle Length: 120	
Actuated Cycle Length: 120	
Offset: 91.2 (76%), Referenced to phase 2:EBT and 6:WBTL, Start of Green	
Natural Cycle: 125	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.77	
Intersection Signal Delay: 14.7	Intersection LOS: B

Intersection Capacity Utilization 69.1%	ICU Level of Service C
Analysis Period (min) 15	
* User Entered Value	

Splits and Phases: 1: Fourth Line & Dundas Street

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	2030	40	33	2729	64	21
Future Volume (vph)	2030	40	33	2729	64	21
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0		4.0	6.0	6.6	6.6
Lane Util. Factor	*0.80		1.00	*0.80	1.00	1.00
Frpb, ped/bikes	1.00		1.00	1.00	1.00	1.00
Flpb, ped/bikes	1.00		1.00	1.00	1.00	1.00
Frt	1.00		1.00	1.00	1.00	0.85
Flt Protected	1.00		0.95	1.00	0.95	1.00
Satd. Flow (prot)	4364		1750	4336	1750	1566
Flt Permitted	1.00		0.04	1.00	0.95	1.00
Satd. Flow (perm)	4364		80	4336	1750	1566
Peak-hour factor, PHF	0.98	0.98	0.98	0.98	0.98	0.98
Adj. Flow (vph)	2071	41	34	2785	65	21
RTOR Reduction (vph)	1	0	0	0	0	19
Lane Group Flow (vph)	2111	0	34	2785	65	2
Confl. Peds. (#/hr)		1	1			
Heavy Vehicles (%)	3%	2%	2%	4%	2%	2%
Turn Type	NA		pm+pt	NA	Prot	Perm
Protected Phases	2		1	6	8	
Permitted Phases			6			8
Actuated Green, G (s)	89.7		98.0	98.0	9.4	9.4
Effective Green, g (s)	89.7		98.0	98.0	9.4	9.4
Actuated g/C Ratio	0.75		0.82	0.82	0.08	0.08
Clearance Time (s)	6.0		4.0	6.0	6.6	6.6
Vehicle Extension (s)	5.0		4.0	5.0	4.0	4.0
Lane Grp Cap (vph)	3262		125	3541	137	122
v/s Ratio Prot	0.48		0.01	c0.64	c0.04	
v/s Ratio Perm			0.21			0.00
v/c Ratio	0.65		0.27	0.79	0.47	0.01
Uniform Delay, d1	7.4		6.4	5.6	52.9	51.0
Progression Factor	2.63		1.00	1.00	1.00	1.00
Incremental Delay, d2	0.7		1.6	1.8	3.5	0.1
Delay (s)	20.2		8.0	7.5	56.4	51.1
Level of Service	C		A	A	E	D
Approach Delay (s)	20.2			7.5	55.1	
Approach LOS	C			A	E	

Intersection Summary			
HCM 2000 Control Delay	13.6	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.79		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	16.6
Intersection Capacity Utilization	69.1%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	46	1695	87	310	2349	121	68	13	226	96	14	38
Future Volume (vph)	46	1695	87	310	2349	121	68	13	226	96	14	38
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	120.0		70.0	115.0		60.0	90.0		0.0	30.0		0.0
Storage Lanes	1		1	1		1	1		0	1		0
Taper Length (m)	65.0			65.0			30.0			15.0		
Lane Util. Factor	1.00	*0.80	1.00	1.00	*0.80	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor			0.97				1.00	0.99		1.00	0.99	
Frt			0.850			0.850		0.858			0.891	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1684	4421	1566	1750	4421	1566	1750	1553	0	1716	1622	0
Flt Permitted	0.065			0.061			0.721			0.339		
Satd. Flow (perm)	115	4421	1517	112	4421	1566	1323	1553	0	611	1622	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			72			79		235			3	
Link Speed (k/h)		70			70			50			50	
Link Distance (m)		331.1			413.9			220.1			189.0	
Travel Time (s)		17.0			21.3			15.8			13.6	
Confl. Peds. (#/hr)			5	5			4		3	3		4
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
Heavy Vehicles (%)	6%	2%	2%	2%	2%	2%	2%	8%	2%	4%	2%	2%
Adj. Flow (vph)	48	1766	91	323	2447	126	71	14	235	100	15	40
Shared Lane Traffic (%)												
Lane Group Flow (vph)	48	1766	91	323	2447	126	71	249	0	100	55	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.5			3.5			3.5			3.5	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		3.0			3.0			3.0			3.0	
Two way Left Turn Lane												
Headway Factor	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2	1	1	2	1	1	2		1	2	
Detector Template	Left	Thru	Right	Left	Thru	Right	Left	Thru		Left	Thru	
Leading Detector (m)	2.0	10.0	2.0	2.0	10.0	2.0	2.0	10.0		2.0	10.0	
Trailing Detector (m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Detector 1 Position(m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Detector 1 Size(m)	2.0	0.6	2.0	2.0	0.6	2.0	2.0	0.6		2.0	0.6	
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Type	Perm	NA	Perm	pm+pt	NA	Perm	Perm	NA		Perm	NA	
Protected Phases		2		1	6			8			4	
Permitted Phases	2		2	6		6	8			4		
Detector Phase	2	2	2	1	6	6	8	8		4	4	
Switch Phase												
Minimum Initial (s)	20.0	20.0	20.0	7.0	20.0	20.0	10.0	10.0		10.0	10.0	
Minimum Split (s)	31.9	31.9	31.9	11.0	31.9	31.9	43.9	43.9		43.9	43.9	
Total Split (s)	51.6	51.6	51.6	24.0	75.6	75.6	44.4	44.4		44.4	44.4	
Total Split (%)	43.0%	43.0%	43.0%	20.0%	63.0%	63.0%	37.0%	37.0%		37.0%	37.0%	
Maximum Green (s)	45.7	45.7	45.7	20.0	69.7	69.7	37.5	37.5		37.5	37.5	
Yellow Time (s)	3.7	3.7	3.7	3.0	3.7	3.7	3.3	3.3		3.3	3.3	
All-Red Time (s)	2.2	2.2	2.2	1.0	2.2	2.2	3.6	3.6		3.6	3.6	
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)	5.9	5.9	5.9	4.0	5.9	5.9	6.9	6.9		6.9	6.9	
Lead/Lag	Lag	Lag	Lag	Lead								
Lead-Lag Optimize?	Yes	Yes	Yes	Yes								
Vehicle Extension (s)	5.5	5.5	5.5	3.0	5.5	5.5	3.0	3.0		3.0	3.0	
Recall Mode	C-Max	C-Max	C-Max	None	C-Max	C-Max	None	None		None	None	
Walk Time (s)	7.0	7.0	7.0		7.0	7.0	7.0	7.0		7.0	7.0	
Flash Dont Walk (s)	19.0	19.0	19.0		19.0	19.0	30.0	30.0		30.0	30.0	
Pedestrian Calls (#/hr)	5	5	5		0	0	3	3		4	4	
Act Effct Green (s)	61.1	61.1	61.1	88.5	86.6	86.6	20.6	20.6		20.6	20.6	
Actuated g/C Ratio	0.51	0.51	0.51	0.74	0.72	0.72	0.17	0.17		0.17	0.17	
v/c Ratio	0.83	0.78	0.11	0.86	0.77	0.11	0.31	0.54		0.95	0.20	
Control Delay	112.6	29.4	7.4	48.5	9.0	1.1	43.7	10.1		123.9	37.8	
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Total Delay	112.6	29.4	7.4	48.5	9.0	1.1	43.7	10.1		123.9	37.8	
LOS	F	C	A	D	A	A	D	B		F	D	
Approach Delay		30.4			13.1			17.6			93.3	
Approach LOS		C			B			B			F	
Queue Length 50th (m)	9.3	138.0	2.2	49.2	92.5	0.7	15.1	2.8		~25.7	10.8	
Queue Length 95th (m)	#37.8	#222.3	13.3	m#109.3	#252.0	m5.6	23.8	20.8		38.6	18.6	
Internal Link Dist (m)		307.1			389.9			196.1			165.0	
Turn Bay Length (m)	120.0		70.0	115.0		60.0	90.0			30.0		
Base Capacity (vph)	58	2252	808	387	3189	1151	413	646		190	508	
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	0.83	0.78	0.11	0.83	0.77	0.11	0.17	0.39		0.53	0.11	

Intersection Summary

Area Type: Other
Cycle Length: 120
Actuated Cycle Length: 120
Offset: 7.2 (6%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green
Natural Cycle: 120
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.95
Intersection Signal Delay: 22.0 Intersection LOS: C

Intersection Capacity Utilization 108.2%	ICU Level of Service G
Analysis Period (min) 15	

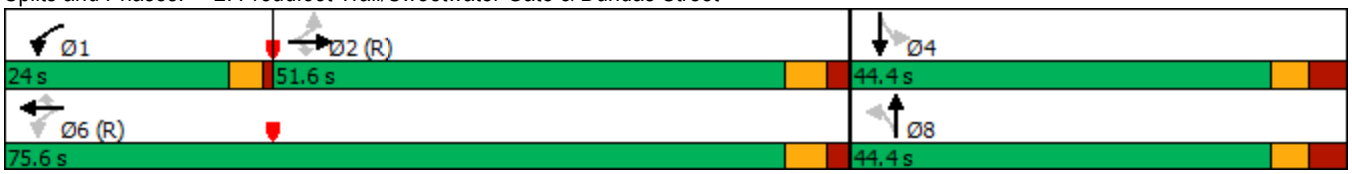
* User Entered Value

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

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

Splits and Phases: 2: Proudfoot Trail/Sweetwater Gate & Dundas Street



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	46	1695	87	310	2349	121	68	13	226	96	14	38
Future Volume (vph)	46	1695	87	310	2349	121	68	13	226	96	14	38
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.9	5.9	5.9	4.0	5.9	5.9	6.9	6.9		6.9	6.9	
Lane Util. Factor	1.00	*0.80	1.00	1.00	*0.80	1.00	1.00	1.00		1.00	1.00	
Frpb, ped/bikes	1.00	1.00	0.97	1.00	1.00	1.00	1.00	0.99		1.00	0.99	
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	1.00	0.85	1.00	1.00	0.85	1.00	0.86		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)	1684	4421	1517	1750	4421	1566	1744	1554		1713	1622	
Flt Permitted	0.07	1.00	1.00	0.06	1.00	1.00	0.72	1.00		0.34	1.00	
Satd. Flow (perm)	116	4421	1517	113	4421	1566	1324	1554		611	1622	
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)	48	1766	91	323	2447	126	71	14	235	100	15	40
RTOR Reduction (vph)	0	0	35	0	0	22	0	195	0	0	2	0
Lane Group Flow (vph)	48	1766	56	323	2447	104	71	54	0	100	53	0
Confl. Peds. (#/hr)			5	5			4		3	3		4
Heavy Vehicles (%)	6%	2%	2%	2%	2%	2%	2%	8%	2%	4%	2%	2%
Turn Type	Perm	NA	Perm	pm+pt	NA	Perm	Perm	NA		Perm	NA	
Protected Phases		2		1	6			8			4	
Permitted Phases	2		2	6		6	8			4		
Actuated Green, G (s)	61.2	61.2	61.2	86.6	86.6	86.6	20.6	20.6		20.6	20.6	
Effective Green, g (s)	61.2	61.2	61.2	86.6	86.6	86.6	20.6	20.6		20.6	20.6	
Actuated g/C Ratio	0.51	0.51	0.51	0.72	0.72	0.72	0.17	0.17		0.17	0.17	
Clearance Time (s)	5.9	5.9	5.9	4.0	5.9	5.9	6.9	6.9		6.9	6.9	
Vehicle Extension (s)	5.5	5.5	5.5	3.0	5.5	5.5	3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	59	2254	773	373	3190	1130	227	266		104	278	
v/s Ratio Prot		0.40		c0.15	0.55			0.03			0.03	
v/s Ratio Perm	0.41		0.04	c0.47		0.07	0.05			c0.16		
v/c Ratio	0.81	0.78	0.07	0.87	0.77	0.09	0.31	0.20		0.96	0.19	
Uniform Delay, d1	24.6	24.0	15.0	37.1	10.4	5.0	43.5	42.7		49.3	42.5	
Progression Factor	1.00	1.00	1.00	0.98	0.58	0.30	1.00	1.00		1.00	1.00	
Incremental Delay, d2	71.8	2.8	0.2	13.0	1.2	0.1	0.8	0.4		75.5	0.3	
Delay (s)	96.4	26.8	15.1	49.2	7.2	1.6	44.3	43.0		124.8	42.9	
Level of Service	F	C	B	D	A	A	D	D		F	D	
Approach Delay (s)		28.0			11.7			43.3			95.7	
Approach LOS		C			B			D			F	

Intersection Summary			
HCM 2000 Control Delay	22.0	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.90		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	16.8
Intersection Capacity Utilization	108.2%	ICU Level of Service	G
Analysis Period (min)	15		

c Critical Lane Group

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	5	2080	12	4	2651	1	7	0	18	2	1	3
Future Volume (vph)	5	2080	12	4	2651	1	7	0	18	2	1	3
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	50.0		10.0	75.0		0.0	0.0		0.0	0.0		0.0
Storage Lanes	1		1	1		0	0		0	0		0
Taper Length (m)	50.0			100.0			15.0			15.0		
Lane Util. Factor	1.00	*0.80	1.00	1.00	*0.80	0.91	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor			0.96									
Frt			0.850					0.901			0.932	
Flt Protected	0.950			0.950				0.987			0.984	
Satd. Flow (prot)	1750	4336	1566	1750	4336	0	0	1638	0	0	1689	0
Flt Permitted	0.033			0.047				0.906			0.879	
Satd. Flow (perm)	61	4336	1507	87	4336	0	0	1504	0	0	1509	0
Right Turn on Red			Yes			Yes			No			Yes
Satd. Flow (RTOR)			34								1	
Link Speed (k/h)		70			70			50			50	
Link Distance (m)		633.4			305.5			139.7			95.5	
Travel Time (s)		32.6			15.7			10.1			6.9	
Confl. Peds. (#/hr)			7	7								
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Heavy Vehicles (%)	2%	4%	2%	2%	4%	2%	2%	2%	2%	2%	2%	2%
Adj. Flow (vph)	5	2213	13	4	2820	1	7	0	19	2	1	3
Shared Lane Traffic (%)												
Lane Group Flow (vph)	5	2213	13	4	2821	0	0	26	0	0	6	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.5			3.5			0.0			0.0	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		3.0			3.0			3.0			3.0	
Two way Left Turn Lane												
Headway Factor	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2	1	1	2		1	2		1	2	
Detector Template	Left	Thru	Right	Left	Thru		Left	Thru		Left	Thru	
Leading Detector (m)	2.0	10.0	2.0	2.0	10.0		2.0	10.0		2.0	10.0	
Trailing Detector (m)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Position(m)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Size(m)	2.0	0.6	2.0	2.0	0.6		2.0	0.6		2.0	0.6	
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	

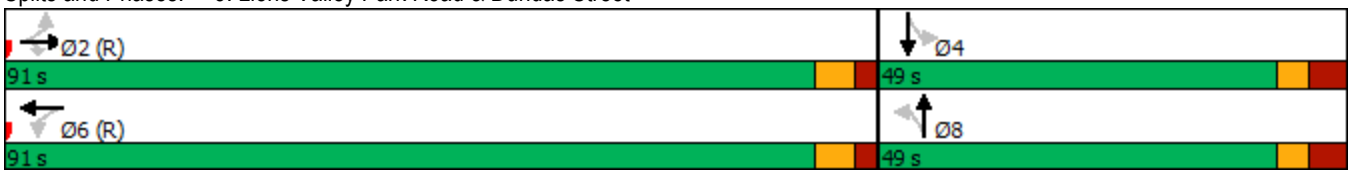
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Type	Perm	NA	Perm	Perm	NA		Perm	NA		Perm	NA	
Protected Phases		2			6			8			4	
Permitted Phases	2		2	6			8			4		
Detector Phase	2	2	2	6	6		8	8		4	4	
Switch Phase												
Minimum Initial (s)	20.0	20.0	20.0	20.0	20.0		10.0	10.0		10.0	10.0	
Minimum Split (s)	33.7	33.7	33.7	33.7	33.7		48.4	48.4		48.4	48.4	
Total Split (s)	91.0	91.0	91.0	91.0	91.0		49.0	49.0		49.0	49.0	
Total Split (%)	65.0%	65.0%	65.0%	65.0%	65.0%		35.0%	35.0%		35.0%	35.0%	
Maximum Green (s)	84.3	84.3	84.3	84.3	84.3		41.6	41.6		41.6	41.6	
Yellow Time (s)	4.2	4.2	4.2	4.2	4.2		3.3	3.3		3.3	3.3	
All-Red Time (s)	2.5	2.5	2.5	2.5	2.5		4.1	4.1		4.1	4.1	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0			0.0			0.0	
Total Lost Time (s)	6.7	6.7	6.7	6.7	6.7			7.4			7.4	
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	C-Max	C-Max	C-Max	C-Max	C-Max		None	None		None	None	
Walk Time (s)	7.0	7.0	7.0	7.0	7.0		7.0	7.0		7.0	7.0	
Flash Dont Walk (s)	20.0	20.0	20.0	20.0	20.0		34.0	34.0		34.0	34.0	
Pedestrian Calls (#/hr)	7	7	7	0	0		0	0		0	0	
Act Effct Green (s)	125.4	125.4	125.4	125.4	125.4			10.1			10.1	
Actuated g/C Ratio	0.90	0.90	0.90	0.90	0.90			0.07			0.07	
v/c Ratio	0.09	0.57	0.01	0.05	0.73			0.24			0.06	
Control Delay	6.2	3.6	0.1	3.8	5.6			67.0			57.2	
Queue Delay	0.0	0.0	0.0	0.0	0.0			0.0			0.0	
Total Delay	6.2	3.6	0.1	3.8	5.6			67.0			57.2	
LOS	A	A	A	A	A			E			E	
Approach Delay		3.6			5.6			67.0			57.2	
Approach LOS		A			A			E			E	
Queue Length 50th (m)	0.2	72.1	0.0	0.2	128.6			6.9			1.3	
Queue Length 95th (m)	1.4	84.0	0.3	1.0	150.2			16.9			5.8	
Internal Link Dist (m)		609.4			281.5			115.7			71.5	
Turn Bay Length (m)	50.0		10.0	75.0								
Base Capacity (vph)	54	3884	1353	78	3884			446			449	
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	0.09	0.57	0.01	0.05	0.73			0.06			0.01	

Intersection Summary

Area Type: Other
Cycle Length: 140
Actuated Cycle Length: 140
Offset: 49 (35%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green
Natural Cycle: 145
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.73
Intersection Signal Delay: 5.1 Intersection LOS: A

Intersection Capacity Utilization 71.3%	ICU Level of Service C
Analysis Period (min) 15	
* User Entered Value	

Splits and Phases: 3: Lions Valley Park Road & Dundas Street



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	5	2080	12	4	2651	1	7	0	18	2	1	3
Future Volume (vph)	5	2080	12	4	2651	1	7	0	18	2	1	3
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.7	6.7	6.7	6.7	6.7			7.4			7.4	
Lane Util. Factor	1.00	*0.80	1.00	1.00	*0.80			1.00			1.00	
Frpb, ped/bikes	1.00	1.00	0.96	1.00	1.00			1.00			1.00	
Flpb, ped/bikes	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			0.90			0.93	
Flt Protected	0.95	1.00	1.00	0.95	1.00			0.99			0.98	
Satd. Flow (prot)	1750	4336	1507	1749	4336			1638			1690	
Flt Permitted	0.03	1.00	1.00	0.05	1.00			0.91			0.88	
Satd. Flow (perm)	62	4336	1507	87	4336			1505			1509	
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)	5	2213	13	4	2820	1	7	0	19	2	1	3
RTOR Reduction (vph)	0	0	2	0	0	0	0	0	0	0	1	0
Lane Group Flow (vph)	5	2213	11	4	2821	0	0	26	0	0	5	0
Confl. Peds. (#/hr)			7	7								
Heavy Vehicles (%)	2%	4%	2%	2%	4%	2%	2%	2%	2%	2%	2%	2%
Turn Type	Perm	NA	Perm	Perm	NA		Perm	NA		Perm	NA	
Protected Phases		2			6			8			4	
Permitted Phases	2		2	6			8			4		
Actuated Green, G (s)	119.8	119.8	119.8	119.8	119.8			6.1			6.1	
Effective Green, g (s)	119.8	119.8	119.8	119.8	119.8			6.1			6.1	
Actuated g/C Ratio	0.86	0.86	0.86	0.86	0.86			0.04			0.04	
Clearance Time (s)	6.7	6.7	6.7	6.7	6.7			7.4			7.4	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0			3.0			3.0	
Lane Grp Cap (vph)	53	3710	1289	74	3710			65			65	
v/s Ratio Prot		0.51			c0.65							
v/s Ratio Perm	0.08		0.01	0.05				c0.02			0.00	
v/c Ratio	0.09	0.60	0.01	0.05	0.76			0.40			0.08	
Uniform Delay, d1	1.6	3.0	1.5	1.5	4.2			65.2			64.3	
Progression Factor	1.00	1.00	1.00	1.00	1.00			1.00			1.00	
Incremental Delay, d2	3.5	0.7	0.0	1.4	1.5			4.0			0.5	
Delay (s)	5.1	3.7	1.5	2.9	5.7			69.2			64.8	
Level of Service	A	A	A	A	A			E			E	
Approach Delay (s)		3.7			5.7			69.2			64.8	
Approach LOS		A			A			E			E	

Intersection Summary			
HCM 2000 Control Delay	5.2	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.74		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	14.1
Intersection Capacity Utilization	71.3%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	1128	10	41	1316	85	23	14	26	0	1	0
Future Volume (vph)	0	1128	10	41	1316	85	23	14	26	0	1	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	45.0		0.0	45.0		0.0	0.0		0.0	0.0		0.0
Storage Lanes	1		0	1		0	0		0	0		0
Taper Length (m)	50.0			50.0			15.0			15.0		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor		1.00		1.00				0.99				
Frt		0.999			0.991			0.944				
Flt Protected				0.950				0.982				
Satd. Flow (prot)	1842	3487	0	1750	3468	0	0	1658	0	0	1842	0
Flt Permitted				0.194				0.880				
Satd. Flow (perm)	1842	3487	0	357	3468	0	0	1485	0	0	1842	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		1			10			25				
Link Speed (k/h)		60			60			50			50	
Link Distance (m)		203.6			105.5			200.3			179.6	
Travel Time (s)		12.2			6.3			14.4			12.9	
Confl. Peds. (#/hr)			4	4								
Confl. Bikes (#/hr)			1						1			
Peak Hour Factor	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88
Heavy Vehicles (%)	2%	2%	33%	2%	2%	2%	9%	2%	2%	2%	2%	2%
Adj. Flow (vph)	0	1282	11	47	1495	97	26	16	30	0	1	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	1293	0	47	1592	0	0	72	0	0	1	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.5			3.5			0.0			0.0	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		3.0			3.0			3.0			3.0	
Two way Left Turn Lane												
Headway Factor	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2		1	2		1	2		1	2	
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	
Leading Detector (m)	2.0	10.0		2.0	10.0		2.0	10.0		2.0	10.0	
Trailing Detector (m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Position(m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Size(m)	2.0	0.6		2.0	0.6		2.0	0.6		2.0	0.6	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Perm	NA		Perm	NA		Perm	NA			NA	
Protected Phases		2			6			8			4	
Permitted Phases	2			6			8			4		
Detector Phase	2	2		6	6		8	8		4	4	
Switch Phase												
Minimum Initial (s)	10.0	10.0		10.0	10.0		10.0	10.0		10.0	10.0	
Minimum Split (s)	31.2	31.2		31.2	31.2		41.5	41.5		41.5	41.5	
Total Split (s)	48.0	48.0		48.0	48.0		42.0	42.0		42.0	42.0	
Total Split (%)	53.3%	53.3%		53.3%	53.3%		46.7%	46.7%		46.7%	46.7%	
Maximum Green (s)	41.8	41.8		41.8	41.8		35.5	35.5		35.5	35.5	
Yellow Time (s)	3.7	3.7		3.7	3.7		3.3	3.3		3.3	3.3	
All-Red Time (s)	2.5	2.5		2.5	2.5		3.2	3.2		3.2	3.2	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0			0.0			0.0	
Total Lost Time (s)	6.2	6.2		6.2	6.2			6.5			6.5	
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	Max	Max		Max	Max		None	None		None	None	
Walk Time (s)	7.0	7.0		7.0	7.0		7.0	7.0		7.0	7.0	
Flash Dont Walk (s)	18.0	18.0		18.0	18.0		28.0	28.0		28.0	28.0	
Pedestrian Calls (#/hr)	4	4		0	0		0	0		0	0	
Act Effct Green (s)		56.3		56.3	56.3			10.1			10.1	
Actuated g/C Ratio		0.81		0.81	0.81			0.15			0.15	
v/c Ratio		0.46		0.16	0.56			0.30			0.00	
Control Delay		4.7		5.7	5.8			23.5			26.0	
Queue Delay		0.0		0.0	0.0			0.0			0.0	
Total Delay		4.7		5.7	5.8			23.5			26.0	
LOS		A		A	A			C			C	
Approach Delay		4.7			5.8			23.5			26.0	
Approach LOS		A			A			C			C	
Queue Length 50th (m)		38.1		1.9	54.3			6.5			0.1	
Queue Length 95th (m)		50.8		6.0	72.2			15.0			1.2	
Internal Link Dist (m)		179.6			81.5			176.3			155.6	
Turn Bay Length (m)				45.0								
Base Capacity (vph)		2835		290	2821			778			950	
Starvation Cap Reductn		0		0	0			0			0	
Spillback Cap Reductn		0		0	0			0			0	
Storage Cap Reductn		0		0	0			0			0	
Reduced v/c Ratio		0.46		0.16	0.56			0.09			0.00	

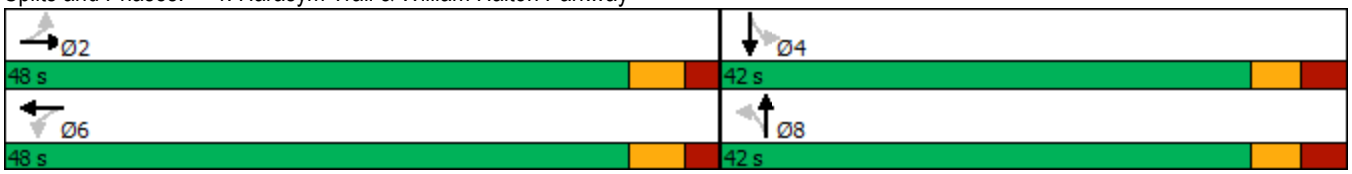
Intersection Summary

Area Type: Other
Cycle Length: 90
Actuated Cycle Length: 69.3
Natural Cycle: 90
Control Type: Semi Act-Uncoord
Maximum v/c Ratio: 0.56
Intersection Signal Delay: 5.7 Intersection LOS: A

Intersection Capacity Utilization 59.9% ICU Level of Service B

Analysis Period (min) 15

Splits and Phases: 4: Harasym Trail & William Halton Parkway



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	1128	10	41	1316	85	23	14	26	0	1	0
Future Volume (vph)	0	1128	10	41	1316	85	23	14	26	0	1	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		6.2		6.2	6.2			6.5			6.5	
Lane Util. Factor		0.95		1.00	0.95			1.00			1.00	
Frpb, ped/bikes		1.00		1.00	1.00			0.99			1.00	
Flpb, ped/bikes		1.00		1.00	1.00			1.00			1.00	
Frt		1.00		1.00	0.99			0.94			1.00	
Flt Protected		1.00		0.95	1.00			0.98			1.00	
Satd. Flow (prot)		3486		1748	3468			1656			1842	
Flt Permitted		1.00		0.19	1.00			0.88			1.00	
Satd. Flow (perm)		3486		357	3468			1484			1842	
Peak-hour factor, PHF	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88
Adj. Flow (vph)	0	1282	11	47	1495	97	26	16	30	0	1	0
RTOR Reduction (vph)	0	0	0	0	3	0	0	23	0	0	0	0
Lane Group Flow (vph)	0	1293	0	47	1589	0	0	49	0	0	1	0
Confl. Peds. (#/hr)			4	4								
Confl. Bikes (#/hr)			1						1			
Heavy Vehicles (%)	2%	2%	33%	2%	2%	2%	9%	2%	2%	2%	2%	2%
Turn Type	Perm	NA		Perm	NA		Perm	NA			NA	
Protected Phases		2			6			8			4	
Permitted Phases	2			6			8			4		
Actuated Green, G (s)		53.6		53.6	53.6			5.7			5.7	
Effective Green, g (s)		53.6		53.6	53.6			5.7			5.7	
Actuated g/C Ratio		0.74		0.74	0.74			0.08			0.08	
Clearance Time (s)		6.2		6.2	6.2			6.5			6.5	
Vehicle Extension (s)		3.0		3.0	3.0			3.0			3.0	
Lane Grp Cap (vph)		2595		265	2581			117			145	
v/s Ratio Prot		0.37			c0.46						0.00	
v/s Ratio Perm				0.13				c0.03				
v/c Ratio		0.50		0.18	0.62			0.42			0.01	
Uniform Delay, d1		3.7		2.7	4.3			31.6			30.5	
Progression Factor		1.00		1.00	1.00			1.00			1.00	
Incremental Delay, d2		0.7		1.5	1.1			2.4			0.0	
Delay (s)		4.4		4.2	5.5			34.0			30.6	
Level of Service		A		A	A			C			C	
Approach Delay (s)		4.4			5.4			34.0			30.6	
Approach LOS		A			A			C			C	

Intersection Summary			
HCM 2000 Control Delay	5.7	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.60		
Actuated Cycle Length (s)	72.0	Sum of lost time (s)	12.7
Intersection Capacity Utilization	59.9%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	2030	40	33	2729	64	21
Future Volume (vph)	2030	40	33	2729	64	21
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (m)		0.0	90.0		30.0	0.0
Storage Lanes		0	1		1	1
Taper Length (m)			100.0		15.0	
Lane Util. Factor	*0.80	0.91	1.00	*0.80	1.00	1.00
Ped Bike Factor	1.00					
Frt	0.997					0.850
Flt Protected			0.950		0.950	
Satd. Flow (prot)	4364	0	1750	4336	1750	1566
Flt Permitted			0.043		0.950	
Satd. Flow (perm)	4364	0	79	4336	1750	1566
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)	3					21
Link Speed (k/h)	70			70	50	
Link Distance (m)	413.9			633.4	126.1	
Travel Time (s)	21.3			32.6	9.1	
Confl. Peds. (#/hr)		1	1			
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98
Heavy Vehicles (%)	3%	2%	2%	4%	2%	2%
Adj. Flow (vph)	2071	41	34	2785	65	21
Shared Lane Traffic (%)						
Lane Group Flow (vph)	2112	0	34	2785	65	21
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	3.5			3.5	3.5	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	3.0			3.0	3.0	
Two way Left Turn Lane						
Headway Factor	1.01	1.01	1.01	1.01	1.01	1.01
Turning Speed (k/h)		15	25		25	15
Number of Detectors	2		1	2	1	1
Detector Template	Thru		Left	Thru	Left	Right
Leading Detector (m)	10.0		2.0	10.0	2.0	2.0
Trailing Detector (m)	0.0		0.0	0.0	0.0	0.0
Detector 1 Position(m)	0.0		0.0	0.0	0.0	0.0
Detector 1 Size(m)	0.6		2.0	0.6	2.0	2.0
Detector 1 Type	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel						
Detector 1 Extend (s)	0.0		0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0		0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0		0.0	0.0	0.0	0.0
Detector 2 Position(m)	9.4			9.4		
Detector 2 Size(m)	0.6			0.6		
Detector 2 Type	Cl+Ex			Cl+Ex		
Detector 2 Channel						
Detector 2 Extend (s)	0.0			0.0		

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Turn Type	NA		pm+pt	NA	Prot	Perm
Protected Phases	2		1	6	8	
Permitted Phases			6			8
Detector Phase	2		1	6	8	8
Switch Phase						
Minimum Initial (s)	20.0		7.0	20.0	7.0	7.0
Minimum Split (s)	33.0		11.0	26.0	40.6	40.6
Total Split (s)	66.0		12.0	78.0	42.0	42.0
Total Split (%)	55.0%		10.0%	65.0%	35.0%	35.0%
Maximum Green (s)	60.0		8.0	72.0	35.4	35.4
Yellow Time (s)	3.7		3.0	3.7	3.7	3.7
All-Red Time (s)	2.3		1.0	2.3	2.9	2.9
Lost Time Adjust (s)	0.0		0.0	0.0	0.0	0.0
Total Lost Time (s)	6.0		4.0	6.0	6.6	6.6
Lead/Lag	Lag		Lead			
Lead-Lag Optimize?	Yes		Yes			
Vehicle Extension (s)	5.0		4.0	5.0	4.0	4.0
Recall Mode	C-Max		None	C-Max	None	None
Walk Time (s)	7.0				7.0	7.0
Flash Dont Walk (s)	20.0				27.0	27.0
Pedestrian Calls (#/hr)	1				0	0
Act Effct Green (s)	93.8		101.3	100.5	10.8	10.8
Actuated g/C Ratio	0.78		0.84	0.84	0.09	0.09
v/c Ratio	0.62		0.20	0.77	0.41	0.13
Control Delay	22.2		5.2	8.1	58.6	20.1
Queue Delay	0.0		0.0	0.0	0.0	0.0
Total Delay	22.2		5.2	8.1	58.6	20.1
LOS	C		A	A	E	C
Approach Delay	22.2			8.1	49.2	
Approach LOS	C			A	D	
Queue Length 50th (m)	147.2		1.1	119.4	14.7	0.0
Queue Length 95th (m)	225.7		3.3	170.2	28.0	7.5
Internal Link Dist (m)	389.9			609.4	102.1	
Turn Bay Length (m)			90.0		30.0	
Base Capacity (vph)	3410		178	3631	516	476
Starvation Cap Reductn	0		0	0	0	0
Spillback Cap Reductn	0		0	0	0	0
Storage Cap Reductn	0		0	0	0	0
Reduced v/c Ratio	0.62		0.19	0.77	0.13	0.04

Intersection Summary	
Area Type:	Other
Cycle Length: 120	
Actuated Cycle Length: 120	
Offset: 91.2 (76%), Referenced to phase 2:EBT and 6:WBTL, Start of Green	
Natural Cycle: 125	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.77	
Intersection Signal Delay: 14.7	Intersection LOS: B

Intersection Capacity Utilization 69.1%	ICU Level of Service C
Analysis Period (min) 15	
* User Entered Value	

Splits and Phases: 1: Fourth Line & Dundas Street

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	2030	40	33	2729	64	21
Future Volume (vph)	2030	40	33	2729	64	21
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0		4.0	6.0	6.6	6.6
Lane Util. Factor	*0.80		1.00	*0.80	1.00	1.00
Frpb, ped/bikes	1.00		1.00	1.00	1.00	1.00
Flpb, ped/bikes	1.00		1.00	1.00	1.00	1.00
Frt	1.00		1.00	1.00	1.00	0.85
Flt Protected	1.00		0.95	1.00	0.95	1.00
Satd. Flow (prot)	4364		1750	4336	1750	1566
Flt Permitted	1.00		0.04	1.00	0.95	1.00
Satd. Flow (perm)	4364		80	4336	1750	1566
Peak-hour factor, PHF	0.98	0.98	0.98	0.98	0.98	0.98
Adj. Flow (vph)	2071	41	34	2785	65	21
RTOR Reduction (vph)	1	0	0	0	0	19
Lane Group Flow (vph)	2111	0	34	2785	65	2
Confl. Peds. (#/hr)		1	1			
Heavy Vehicles (%)	3%	2%	2%	4%	2%	2%
Turn Type	NA		pm+pt	NA	Prot	Perm
Protected Phases	2		1	6	8	
Permitted Phases			6			8
Actuated Green, G (s)	89.7		98.0	98.0	9.4	9.4
Effective Green, g (s)	89.7		98.0	98.0	9.4	9.4
Actuated g/C Ratio	0.75		0.82	0.82	0.08	0.08
Clearance Time (s)	6.0		4.0	6.0	6.6	6.6
Vehicle Extension (s)	5.0		4.0	5.0	4.0	4.0
Lane Grp Cap (vph)	3262		125	3541	137	122
v/s Ratio Prot	0.48		0.01	c0.64	c0.04	
v/s Ratio Perm			0.21			0.00
v/c Ratio	0.65		0.27	0.79	0.47	0.01
Uniform Delay, d1	7.4		6.4	5.6	52.9	51.0
Progression Factor	2.63		1.00	1.00	1.00	1.00
Incremental Delay, d2	0.7		1.6	1.8	3.5	0.1
Delay (s)	20.2		8.0	7.5	56.4	51.1
Level of Service	C		A	A	E	D
Approach Delay (s)	20.2			7.5	55.1	
Approach LOS	C			A	E	

Intersection Summary			
HCM 2000 Control Delay	13.6	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.79		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	16.6
Intersection Capacity Utilization	69.1%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	46	1695	87	310	2349	121	68	13	226	96	14	38
Future Volume (vph)	46	1695	87	310	2349	121	68	13	226	96	14	38
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	120.0		70.0	115.0		60.0	90.0		0.0	80.0		0.0
Storage Lanes	1		1	1		1	1		0	1		0
Taper Length (m)	65.0			65.0			30.0			15.0		
Lane Util. Factor	1.00	*0.80	1.00	1.00	*0.80	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor			0.97				1.00	0.99		1.00	0.99	
Frt			0.850			0.850		0.858			0.891	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1684	4421	1566	1750	4421	1566	1750	1553	0	1716	1622	0
Flt Permitted	0.065			0.061			0.721			0.339		
Satd. Flow (perm)	115	4421	1517	112	4421	1566	1323	1553	0	611	1622	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			72			79		235			3	
Link Speed (k/h)		70			70			50			50	
Link Distance (m)		331.1			413.9			220.1			189.0	
Travel Time (s)		17.0			21.3			15.8			13.6	
Confl. Peds. (#/hr)			5	5			4		3	3		4
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
Heavy Vehicles (%)	6%	2%	2%	2%	2%	2%	2%	8%	2%	4%	2%	2%
Adj. Flow (vph)	48	1766	91	323	2447	126	71	14	235	100	15	40
Shared Lane Traffic (%)												
Lane Group Flow (vph)	48	1766	91	323	2447	126	71	249	0	100	55	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.5			3.5			3.5			3.5	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		3.0			3.0			3.0			3.0	
Two way Left Turn Lane												
Headway Factor	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2	1	1	2	1	1	2		1	2	
Detector Template	Left	Thru	Right	Left	Thru	Right	Left	Thru		Left	Thru	
Leading Detector (m)	2.0	10.0	2.0	2.0	10.0	2.0	2.0	10.0		2.0	10.0	
Trailing Detector (m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Detector 1 Position(m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Detector 1 Size(m)	2.0	0.6	2.0	2.0	0.6	2.0	2.0	0.6		2.0	0.6	
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Type	Perm	NA	Perm	pm+pt	NA	Perm	Perm	NA		Perm	NA	
Protected Phases		2		1	6			8			4	
Permitted Phases	2		2	6		6	8			4		
Detector Phase	2	2	2	1	6	6	8	8		4	4	
Switch Phase												
Minimum Initial (s)	20.0	20.0	20.0	7.0	20.0	20.0	10.0	10.0		10.0	10.0	
Minimum Split (s)	31.9	31.9	31.9	11.0	31.9	31.9	43.9	43.9		43.9	43.9	
Total Split (s)	51.6	51.6	51.6	24.0	75.6	75.6	44.4	44.4		44.4	44.4	
Total Split (%)	43.0%	43.0%	43.0%	20.0%	63.0%	63.0%	37.0%	37.0%		37.0%	37.0%	
Maximum Green (s)	45.7	45.7	45.7	20.0	69.7	69.7	37.5	37.5		37.5	37.5	
Yellow Time (s)	3.7	3.7	3.7	3.0	3.7	3.7	3.3	3.3		3.3	3.3	
All-Red Time (s)	2.2	2.2	2.2	1.0	2.2	2.2	3.6	3.6		3.6	3.6	
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)	5.9	5.9	5.9	4.0	5.9	5.9	6.9	6.9		6.9	6.9	
Lead/Lag	Lag	Lag	Lag	Lead								
Lead-Lag Optimize?	Yes	Yes	Yes	Yes								
Vehicle Extension (s)	5.5	5.5	5.5	3.0	5.5	5.5	3.0	3.0		3.0	3.0	
Recall Mode	C-Max	C-Max	C-Max	None	C-Max	C-Max	None	None		None	None	
Walk Time (s)	7.0	7.0	7.0		7.0	7.0	7.0	7.0		7.0	7.0	
Flash Dont Walk (s)	19.0	19.0	19.0		19.0	19.0	30.0	30.0		30.0	30.0	
Pedestrian Calls (#/hr)	5	5	5		0	0	3	3		4	4	
Act Effct Green (s)	61.1	61.1	61.1	88.5	86.6	86.6	20.6	20.6		20.6	20.6	
Actuated g/C Ratio	0.51	0.51	0.51	0.74	0.72	0.72	0.17	0.17		0.17	0.17	
v/c Ratio	0.83	0.78	0.11	0.86	0.77	0.11	0.31	0.54		0.95	0.20	
Control Delay	112.6	29.4	7.4	48.5	9.0	1.1	43.7	10.1		123.9	37.8	
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Total Delay	112.6	29.4	7.4	48.5	9.0	1.1	43.7	10.1		123.9	37.8	
LOS	F	C	A	D	A	A	D	B		F	D	
Approach Delay		30.4			13.1			17.6			93.3	
Approach LOS		C			B			B			F	
Queue Length 50th (m)	9.3	138.0	2.2	49.2	92.5	0.7	15.1	2.8		~25.7	10.8	
Queue Length 95th (m)	#37.8	#222.3	13.3	m#109.3	#252.0	m5.6	23.8	20.8		38.6	18.6	
Internal Link Dist (m)		307.1			389.9			196.1			165.0	
Turn Bay Length (m)	120.0		70.0	115.0		60.0	90.0			80.0		
Base Capacity (vph)	58	2252	808	387	3189	1151	413	646		190	508	
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	0.83	0.78	0.11	0.83	0.77	0.11	0.17	0.39		0.53	0.11	

Intersection Summary	
Area Type:	Other
Cycle Length: 120	
Actuated Cycle Length: 120	
Offset: 7.2 (6%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green	
Natural Cycle: 120	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.95	
Intersection Signal Delay: 22.0	Intersection LOS: C

Intersection Capacity Utilization 108.2% ICU Level of Service G

Analysis Period (min) 15

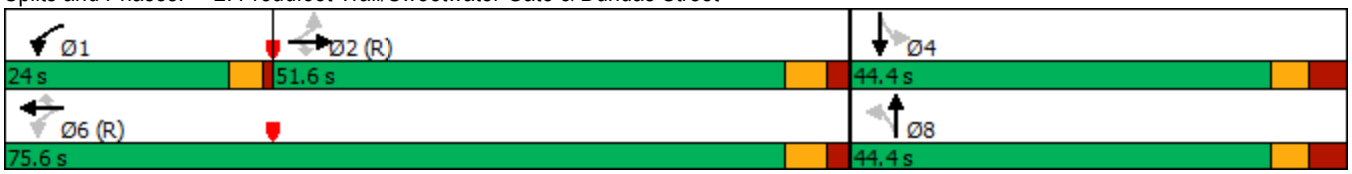
* User Entered Value

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

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

Splits and Phases: 2: Proudfoot Trail/Sweetwater Gate & Dundas Street



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	46	1695	87	310	2349	121	68	13	226	96	14	38
Future Volume (vph)	46	1695	87	310	2349	121	68	13	226	96	14	38
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.9	5.9	5.9	4.0	5.9	5.9	6.9	6.9		6.9	6.9	
Lane Util. Factor	1.00	*0.80	1.00	1.00	*0.80	1.00	1.00	1.00		1.00	1.00	
Frpb, ped/bikes	1.00	1.00	0.97	1.00	1.00	1.00	1.00	0.99		1.00	0.99	
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	1.00	0.85	1.00	1.00	0.85	1.00	0.86		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)	1684	4421	1517	1750	4421	1566	1744	1554		1713	1622	
Flt Permitted	0.07	1.00	1.00	0.06	1.00	1.00	0.72	1.00		0.34	1.00	
Satd. Flow (perm)	116	4421	1517	113	4421	1566	1324	1554		611	1622	
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)	48	1766	91	323	2447	126	71	14	235	100	15	40
RTOR Reduction (vph)	0	0	35	0	0	22	0	195	0	0	2	0
Lane Group Flow (vph)	48	1766	56	323	2447	104	71	54	0	100	53	0
Confl. Peds. (#/hr)			5	5			4		3	3		4
Heavy Vehicles (%)	6%	2%	2%	2%	2%	2%	2%	8%	2%	4%	2%	2%
Turn Type	Perm	NA	Perm	pm+pt	NA	Perm	Perm	NA		Perm	NA	
Protected Phases		2		1	6			8			4	
Permitted Phases	2		2	6		6	8			4		
Actuated Green, G (s)	61.2	61.2	61.2	86.6	86.6	86.6	20.6	20.6		20.6	20.6	
Effective Green, g (s)	61.2	61.2	61.2	86.6	86.6	86.6	20.6	20.6		20.6	20.6	
Actuated g/C Ratio	0.51	0.51	0.51	0.72	0.72	0.72	0.17	0.17		0.17	0.17	
Clearance Time (s)	5.9	5.9	5.9	4.0	5.9	5.9	6.9	6.9		6.9	6.9	
Vehicle Extension (s)	5.5	5.5	5.5	3.0	5.5	5.5	3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	59	2254	773	373	3190	1130	227	266		104	278	
v/s Ratio Prot		0.40		c0.15	0.55			0.03			0.03	
v/s Ratio Perm	0.41		0.04	c0.47		0.07	0.05			c0.16		
v/c Ratio	0.81	0.78	0.07	0.87	0.77	0.09	0.31	0.20		0.96	0.19	
Uniform Delay, d1	24.6	24.0	15.0	37.1	10.4	5.0	43.5	42.7		49.3	42.5	
Progression Factor	1.00	1.00	1.00	0.98	0.58	0.30	1.00	1.00		1.00	1.00	
Incremental Delay, d2	71.8	2.8	0.2	13.0	1.2	0.1	0.8	0.4		75.5	0.3	
Delay (s)	96.4	26.8	15.1	49.2	7.2	1.6	44.3	43.0		124.8	42.9	
Level of Service	F	C	B	D	A	A	D	D		F	D	
Approach Delay (s)		28.0			11.7			43.3			95.7	
Approach LOS		C			B			D			F	

Intersection Summary			
HCM 2000 Control Delay	22.0	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.90		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	16.8
Intersection Capacity Utilization	108.2%	ICU Level of Service	G
Analysis Period (min)	15		

c Critical Lane Group

Appendix N

2034 Future Background Conditions Synchro Worksheets

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	2631	64	16	1861	39	16
Future Volume (vph)	2631	64	16	1861	39	16
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (m)		0.0	90.0		30.0	0.0
Storage Lanes		0	1		1	1
Taper Length (m)			100.0		15.0	
Lane Util. Factor	*0.80	0.91	1.00	*0.80	1.00	1.00
Ped Bike Factor	1.00					
Frt	0.996					0.850
Flt Protected			0.950		0.950	
Satd. Flow (prot)	4318	0	1750	4175	1750	1566
Flt Permitted			0.041		0.950	
Satd. Flow (perm)	4318	0	76	4175	1750	1566
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)	4					17
Link Speed (k/h)	70			70	50	
Link Distance (m)	413.9			633.4	126.1	
Travel Time (s)	21.3			32.6	9.1	
Confl. Peds. (#/hr)		3	3			
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93
Heavy Vehicles (%)	4%	2%	2%	8%	2%	2%
Adj. Flow (vph)	2829	69	17	2001	42	17
Shared Lane Traffic (%)						
Lane Group Flow (vph)	2898	0	17	2001	42	17
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	3.5			3.5	3.5	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	3.0			3.0	3.0	
Two way Left Turn Lane						
Headway Factor	1.01	1.01	1.01	1.01	1.01	1.01
Turning Speed (k/h)		15	25		25	15
Number of Detectors	2		1	2	1	1
Detector Template	Thru		Left	Thru	Left	Right
Leading Detector (m)	10.0		2.0	10.0	2.0	2.0
Trailing Detector (m)	0.0		0.0	0.0	0.0	0.0
Detector 1 Position(m)	0.0		0.0	0.0	0.0	0.0
Detector 1 Size(m)	0.6		2.0	0.6	2.0	2.0
Detector 1 Type	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel						
Detector 1 Extend (s)	0.0		0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0		0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0		0.0	0.0	0.0	0.0
Detector 2 Position(m)	9.4			9.4		
Detector 2 Size(m)	0.6			0.6		
Detector 2 Type	Cl+Ex			Cl+Ex		
Detector 2 Channel						
Detector 2 Extend (s)	0.0			0.0		

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Turn Type	NA		pm+pt	NA	Prot	Perm
Protected Phases	2		1	6	8	
Permitted Phases			6			8
Detector Phase	2		1	6	8	8
Switch Phase						
Minimum Initial (s)	20.0		7.0	20.0	7.0	7.0
Minimum Split (s)	33.0		11.0	26.0	40.6	40.6
Total Split (s)	74.4		12.0	86.4	33.6	33.6
Total Split (%)	62.0%		10.0%	72.0%	28.0%	28.0%
Maximum Green (s)	68.4		8.0	80.4	27.0	27.0
Yellow Time (s)	3.7		3.0	3.7	3.7	3.7
All-Red Time (s)	2.3		1.0	2.3	2.9	2.9
Lost Time Adjust (s)	0.0		0.0	0.0	0.0	0.0
Total Lost Time (s)	6.0		4.0	6.0	6.6	6.6
Lead/Lag	Lag		Lead			
Lead-Lag Optimize?	Yes		Yes			
Vehicle Extension (s)	5.0		4.0	5.0	4.0	4.0
Recall Mode	C-Max		None	C-Max	None	None
Walk Time (s)	7.0				7.0	7.0
Flash Dont Walk (s)	20.0				27.0	27.0
Pedestrian Calls (#/hr)	3				0	0
Act Effct Green (s)	97.5		102.7	101.9	9.4	9.4
Actuated g/C Ratio	0.81		0.86	0.85	0.08	0.08
v/c Ratio	0.83		0.10	0.56	0.31	0.12
Control Delay	6.6		3.2	4.3	57.4	22.8
Queue Delay	0.0		0.0	0.0	0.0	0.0
Total Delay	6.6		3.2	4.3	57.4	22.8
LOS	A		A	A	E	C
Approach Delay	6.6			4.3	47.4	
Approach LOS	A			A	D	
Queue Length 50th (m)	35.8		0.5	53.4	9.5	0.0
Queue Length 95th (m)	m44.1		1.8	74.7	20.4	7.0
Internal Link Dist (m)	389.9			609.4	102.1	
Turn Bay Length (m)			90.0		30.0	
Base Capacity (vph)	3509		176	3546	393	365
Starvation Cap Reductn	0		0	0	0	0
Spillback Cap Reductn	0		0	0	0	0
Storage Cap Reductn	0		0	0	0	0
Reduced v/c Ratio	0.83		0.10	0.56	0.11	0.05

Intersection Summary	
Area Type:	Other
Cycle Length: 120	
Actuated Cycle Length: 120	
Offset: 104.4 (87%), Referenced to phase 2:EBT and 6:WBTL, Start of Green	
Natural Cycle: 145	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.83	
Intersection Signal Delay: 6.1	Intersection LOS: A

Intersection Capacity Utilization 68.6%	ICU Level of Service C
Analysis Period (min) 15	

* User Entered Value

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

Splits and Phases: 1: Fourth Line & Dundas Street

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	2631	64	16	1861	39	16
Future Volume (vph)	2631	64	16	1861	39	16
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0		4.0	6.0	6.6	6.6
Lane Util. Factor	*0.80		1.00	*0.80	1.00	1.00
Frpb, ped/bikes	1.00		1.00	1.00	1.00	1.00
Flpb, ped/bikes	1.00		1.00	1.00	1.00	1.00
Frt	1.00		1.00	1.00	1.00	0.85
Flt Protected	1.00		0.95	1.00	0.95	1.00
Satd. Flow (prot)	4320		1750	4175	1750	1566
Flt Permitted	1.00		0.04	1.00	0.95	1.00
Satd. Flow (perm)	4320		76	4175	1750	1566
Peak-hour factor, PHF	0.93	0.93	0.93	0.93	0.93	0.93
Adj. Flow (vph)	2829	69	17	2001	42	17
RTOR Reduction (vph)	1	0	0	0	0	16
Lane Group Flow (vph)	2897	0	17	2001	42	1
Confl. Peds. (#/hr)		3	3			
Heavy Vehicles (%)	4%	2%	2%	8%	2%	2%
Turn Type	NA		pm+pt	NA	Prot	Perm
Protected Phases	2		1	6	8	
Permitted Phases			6			8
Actuated Green, G (s)	92.6		99.4	99.4	8.0	8.0
Effective Green, g (s)	92.6		99.4	99.4	8.0	8.0
Actuated g/C Ratio	0.77		0.83	0.83	0.07	0.07
Clearance Time (s)	6.0		4.0	6.0	6.6	6.6
Vehicle Extension (s)	5.0		4.0	5.0	4.0	4.0
Lane Grp Cap (vph)	3333		102	3458	116	104
v/s Ratio Prot	c0.67		0.00	c0.48	c0.02	
v/s Ratio Perm			0.13			0.00
v/c Ratio	0.87		0.17	0.58	0.36	0.01
Uniform Delay, d1	9.5		15.2	3.4	53.6	52.3
Progression Factor	0.51		1.00	1.00	1.00	1.00
Incremental Delay, d2	1.1		1.1	0.7	2.6	0.1
Delay (s)	5.9		16.2	4.1	56.2	52.4
Level of Service	A		B	A	E	D
Approach Delay (s)	5.9			4.2	55.1	
Approach LOS	A			A	E	

Intersection Summary			
HCM 2000 Control Delay	5.8	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.83		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	16.6
Intersection Capacity Utilization	68.6%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	17	2342	115	97	1926	60	58	17	287	162	33	52
Future Volume (vph)	17	2342	115	97	1926	60	58	17	287	162	33	52
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	120.0		70.0	115.0		60.0	90.0		0.0	80.0		0.0
Storage Lanes	1		1	1		1	1		0	1		0
Taper Length (m)	65.0			65.0			30.0			15.0		
Lane Util. Factor	1.00	*0.80	1.00	1.00	*0.80	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor								0.99		1.00		
Frt			0.850			0.850		0.858			0.909	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1526	4378	1465	1684	4295	1465	1716	1534	0	1733	1639	0
Flt Permitted	0.061			0.058			0.701			0.350		
Satd. Flow (perm)	98	4378	1465	103	4295	1465	1266	1534	0	638	1639	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			78			55		122			17	
Link Speed (k/h)		70			70			50			50	
Link Distance (m)		331.1			413.9			220.1			189.0	
Travel Time (s)		17.0			21.3			15.8			13.6	
Confl. Peds. (#/hr)									2	2		
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Heavy Vehicles (%)	17%	3%	9%	6%	5%	9%	4%	33%	2%	3%	3%	5%
Adj. Flow (vph)	17	2390	117	99	1965	61	59	17	293	165	34	53
Shared Lane Traffic (%)												
Lane Group Flow (vph)	17	2390	117	99	1965	61	59	310	0	165	87	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.5			3.5			3.5			3.5	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		3.0			3.0			3.0			3.0	
Two way Left Turn Lane												
Headway Factor	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2	1	1	2	1	1	2		1	2	
Detector Template	Left	Thru	Right	Left	Thru	Right	Left	Thru		Left	Thru	
Leading Detector (m)	2.0	10.0	2.0	2.0	10.0	2.0	2.0	10.0		2.0	10.0	
Trailing Detector (m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Detector 1 Position(m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Detector 1 Size(m)	2.0	0.6	2.0	2.0	0.6	2.0	2.0	0.6		2.0	0.6	
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Type	Perm	NA	Perm	pm+pt	NA	Perm	Perm	NA		Perm	NA	
Protected Phases		2		1	6			8			4	
Permitted Phases	2		2	6		6	8			4		
Detector Phase	2	2	2	1	6	6	8	8		4	4	
Switch Phase												
Minimum Initial (s)	20.0	20.0	20.0	7.0	20.0	20.0	10.0	10.0		10.0	10.0	
Minimum Split (s)	31.9	31.9	31.9	11.0	31.9	31.9	43.9	43.9		43.9	43.9	
Total Split (s)	70.8	70.8	70.8	12.0	82.8	82.8	37.2	37.2		37.2	37.2	
Total Split (%)	59.0%	59.0%	59.0%	10.0%	69.0%	69.0%	31.0%	31.0%		31.0%	31.0%	
Maximum Green (s)	64.9	64.9	64.9	8.0	76.9	76.9	30.3	30.3		30.3	30.3	
Yellow Time (s)	3.7	3.7	3.7	3.0	3.7	3.7	3.3	3.3		3.3	3.3	
All-Red Time (s)	2.2	2.2	2.2	1.0	2.2	2.2	3.6	3.6		3.6	3.6	
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)	5.9	5.9	5.9	4.0	5.9	5.9	6.9	6.9		6.9	6.9	
Lead/Lag	Lag	Lag	Lag	Lead								
Lead-Lag Optimize?	Yes	Yes	Yes	Yes								
Vehicle Extension (s)	5.5	5.5	5.5	3.0	5.5	5.5	3.0	3.0		3.0	3.0	
Recall Mode	C-Max	C-Max	C-Max	None	C-Max	C-Max	None	None		None	None	
Walk Time (s)	7.0	7.0	7.0		7.0	7.0	7.0	7.0		7.0	7.0	
Flash Dont Walk (s)	19.0	19.0	19.0		19.0	19.0	30.0	30.0		30.0	30.0	
Pedestrian Calls (#/hr)	0	0	0		0	0	2	2		0	0	
Act Effct Green (s)	65.3	65.3	65.3	78.8	76.9	76.9	30.3	30.3		30.3	30.3	
Actuated g/C Ratio	0.54	0.54	0.54	0.66	0.64	0.64	0.25	0.25		0.25	0.25	
v/c Ratio	0.32	1.00	0.14	0.59	0.71	0.06	0.18	0.65		1.02	0.20	
Control Delay	35.3	47.1	5.7	37.2	13.7	2.4	37.1	31.0		122.8	29.8	
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Total Delay	35.3	47.1	5.7	37.2	13.7	2.4	37.1	31.0		122.8	29.8	
LOS	D	D	A	D	B	A	D	C		F	C	
Approach Delay		45.1			14.5			31.9			90.7	
Approach LOS		D			B			C			F	
Queue Length 50th (m)	2.1	~232.2	4.2	11.0	87.5	0.3	10.9	39.7		~41.4	12.9	
Queue Length 95th (m)	10.2	#278.2	12.9	30.4	94.8	m4.2	22.4	71.0		#84.5	26.5	
Internal Link Dist (m)		307.1			389.9			196.1			165.0	
Turn Bay Length (m)	120.0		70.0	115.0		60.0	90.0			80.0		
Base Capacity (vph)	53	2380	832	173	2752	958	319	478		161	426	
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	0.32	1.00	0.14	0.57	0.71	0.06	0.18	0.65		1.02	0.20	

Intersection Summary

Area Type: Other
Cycle Length: 120
Actuated Cycle Length: 120
Offset: 80.4 (67%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green
Natural Cycle: 130
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 1.02
Intersection Signal Delay: 34.0 Intersection LOS: C

Intersection Capacity Utilization 103.8%	ICU Level of Service G
Analysis Period (min) 15	

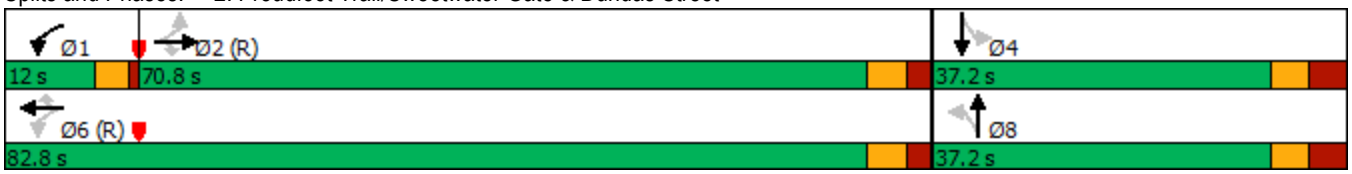
* User Entered Value

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

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

Splits and Phases: 2: Proudfoot Trail/Sweetwater Gate & Dundas Street



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	17	2342	115	97	1926	60	58	17	287	162	33	52
Future Volume (vph)	17	2342	115	97	1926	60	58	17	287	162	33	52
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.9	5.9	5.9	4.0	5.9	5.9	6.9	6.9		6.9	6.9	
Lane Util. Factor	1.00	*0.80	1.00	1.00	*0.80	1.00	1.00	1.00		1.00	1.00	
Frpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.99		1.00	1.00	
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	1.00	0.85	1.00	1.00	0.85	1.00	0.86		1.00	0.91	
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)	1526	4378	1465	1684	4295	1465	1716	1535		1731	1638	
Flt Permitted	0.06	1.00	1.00	0.06	1.00	1.00	0.70	1.00		0.35	1.00	
Satd. Flow (perm)	98	4378	1465	102	4295	1465	1266	1535		637	1638	
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)	17	2390	117	99	1965	61	59	17	293	165	34	53
RTOR Reduction (vph)	0	0	36	0	0	20	0	91	0	0	13	0
Lane Group Flow (vph)	17	2390	81	99	1965	41	59	219	0	165	74	0
Confl. Peds. (#/hr)									2	2		
Heavy Vehicles (%)	17%	3%	9%	6%	5%	9%	4%	33%	2%	3%	3%	5%
Turn Type	Perm	NA	Perm	pm+pt	NA	Perm	Perm	NA		Perm	NA	
Protected Phases		2		1	6			8			4	
Permitted Phases	2		2	6		6	8			4		
Actuated Green, G (s)	65.3	65.3	65.3	76.9	76.9	76.9	30.3	30.3		30.3	30.3	
Effective Green, g (s)	65.3	65.3	65.3	76.9	76.9	76.9	30.3	30.3		30.3	30.3	
Actuated g/C Ratio	0.54	0.54	0.54	0.64	0.64	0.64	0.25	0.25		0.25	0.25	
Clearance Time (s)	5.9	5.9	5.9	4.0	5.9	5.9	6.9	6.9		6.9	6.9	
Vehicle Extension (s)	5.5	5.5	5.5	3.0	5.5	5.5	3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	53	2382	797	165	2752	938	319	387		160	413	
v/s Ratio Prot		c0.55		0.04	c0.46			0.14			0.05	
v/s Ratio Perm	0.17		0.06	0.34		0.03	0.05			c0.26		
v/c Ratio	0.32	1.00	0.10	0.60	0.71	0.04	0.18	0.57		1.03	0.18	
Uniform Delay, d1	15.1	27.4	13.2	27.0	14.3	8.0	35.2	39.1		44.9	35.1	
Progression Factor	1.00	1.00	1.00	1.50	0.85	0.93	1.00	1.00		1.00	1.00	
Incremental Delay, d2	15.3	19.2	0.3	5.0	1.4	0.1	0.3	1.9		79.6	0.2	
Delay (s)	30.4	46.6	13.5	45.6	13.5	7.5	35.4	41.0		124.5	35.3	
Level of Service	C	D	B	D	B	A	D	D		F	D	
Approach Delay (s)		44.9			14.8			40.1			93.7	
Approach LOS		D			B			D			F	

Intersection Summary			
HCM 2000 Control Delay	34.8	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	1.00		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	16.8
Intersection Capacity Utilization	103.8%	ICU Level of Service	G
Analysis Period (min)	15		

c Critical Lane Group

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	2918	0	1	1953	1	1	0	3	1	0	0
Future Volume (vph)	0	2918	0	1	1953	1	1	0	3	1	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	50.0		10.0	75.0		0.0	0.0		0.0	0.0		0.0
Storage Lanes	1		1	1		0	0		0	0		0
Taper Length (m)	50.0			100.0			15.0			15.0		
Lane Util. Factor	1.00	*0.80	1.00	1.00	*0.80	0.91	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor					1.00			0.99			1.00	
Frt								0.899				
Flt Protected				0.950				0.988			0.950	
Satd. Flow (prot)	1842	4378	1842	1750	4254	0	0	1318	0	0	1750	0
Flt Permitted				0.034				0.914			0.755	
Satd. Flow (perm)	1842	4378	1842	63	4254	0	0	1219	0	0	1388	0
Right Turn on Red			Yes			Yes			No			Yes
Satd. Flow (RTOR)												
Link Speed (k/h)		70			70			50			50	
Link Distance (m)		633.4			305.5			139.7			95.5	
Travel Time (s)		32.6			15.7			10.1			6.9	
Confl. Peds. (#/hr)	1		7	7		1	1		2	2		1
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Heavy Vehicles (%)	2%	3%	2%	2%	6%	2%	2%	2%	33%	2%	2%	2%
Adj. Flow (vph)	0	3138	0	1	2100	1	1	0	3	1	0	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	3138	0	1	2101	0	0	4	0	0	1	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.5			3.5			0.0			0.0	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		3.0			3.0			3.0			3.0	
Two way Left Turn Lane												
Headway Factor	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2	1	1	2		1	2		1	2	
Detector Template	Left	Thru	Right	Left	Thru		Left	Thru		Left	Thru	
Leading Detector (m)	2.0	10.0	2.0	2.0	10.0		2.0	10.0		2.0	10.0	
Trailing Detector (m)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Position(m)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Size(m)	2.0	0.6	2.0	2.0	0.6		2.0	0.6		2.0	0.6	
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	

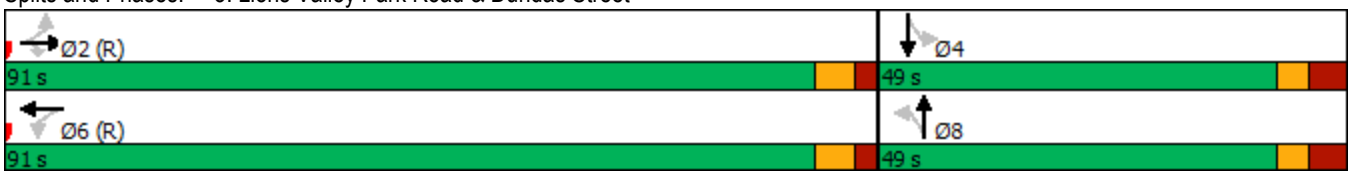
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Type	Perm	NA	Perm	Perm	NA		Perm	NA		Perm	NA	
Protected Phases		2			6			8			4	
Permitted Phases	2		2	6			8			4		
Detector Phase	2	2	2	6	6		8	8		4	4	
Switch Phase												
Minimum Initial (s)	20.0	20.0	20.0	20.0	20.0		10.0	10.0		10.0	10.0	
Minimum Split (s)	33.7	33.7	33.7	33.7	33.7		48.4	48.4		48.4	48.4	
Total Split (s)	91.0	91.0	91.0	91.0	91.0		49.0	49.0		49.0	49.0	
Total Split (%)	65.0%	65.0%	65.0%	65.0%	65.0%		35.0%	35.0%		35.0%	35.0%	
Maximum Green (s)	84.3	84.3	84.3	84.3	84.3		41.6	41.6		41.6	41.6	
Yellow Time (s)	4.2	4.2	4.2	4.2	4.2		3.3	3.3		3.3	3.3	
All-Red Time (s)	2.5	2.5	2.5	2.5	2.5		4.1	4.1		4.1	4.1	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0			0.0			0.0	
Total Lost Time (s)	6.7	6.7	6.7	6.7	6.7			7.4			7.4	
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	C-Max	C-Max	C-Max	C-Max	C-Max		None	None		None	None	
Walk Time (s)	7.0	7.0	7.0	7.0	7.0		7.0	7.0		7.0	7.0	
Flash Dont Walk (s)	20.0	20.0	20.0	20.0	20.0		34.0	34.0		34.0	34.0	
Pedestrian Calls (#/hr)	7	7	7	1	1		2	2		1	1	
Act Effct Green (s)		129.0		129.0	129.0			16.2			16.2	
Actuated g/C Ratio		0.92		0.92	0.92			0.12			0.12	
v/c Ratio		0.78		0.02	0.54			0.03			0.01	
Control Delay		9.4		8.0	6.2			46.8			45.0	
Queue Delay		0.0		0.0	0.0			0.0			0.0	
Total Delay		9.4		8.0	6.2			46.8			45.0	
LOS		A		A	A			D			D	
Approach Delay		9.4			6.2			46.8			45.0	
Approach LOS		A			A			D			D	
Queue Length 50th (m)		0.0		0.0	0.0			1.1			0.3	
Queue Length 95th (m)		#458.9		1.0	203.3			3.8			1.6	
Internal Link Dist (m)		609.4			281.5			115.7			71.5	
Turn Bay Length (m)				75.0								
Base Capacity (vph)		4033		58	3919			362			412	
Starvation Cap Reductn		0		0	0			0			0	
Spillback Cap Reductn		0		0	0			0			0	
Storage Cap Reductn		0		0	0			0			0	
Reduced v/c Ratio		0.78		0.02	0.54			0.01			0.00	

Intersection Summary

Area Type: Other
Cycle Length: 140
Actuated Cycle Length: 140
Offset: 57.4 (41%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green
Natural Cycle: 145
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.78
Intersection Signal Delay: 8.2 Intersection LOS: A

Intersection Capacity Utilization 78.1%	ICU Level of Service D
Analysis Period (min) 15	
* User Entered Value	
# 95th percentile volume exceeds capacity, queue may be longer.	
Queue shown is maximum after two cycles.	

Splits and Phases: 3: Lions Valley Park Road & Dundas Street



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	2918	0	1	1953	1	1	0	3	1	0	0
Future Volume (vph)	0	2918	0	1	1953	1	1	0	3	1	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		6.7		6.7	6.7			7.4			7.4	
Lane Util. Factor		*0.80		1.00	*0.80			1.00			1.00	
Frpb, ped/bikes		1.00		1.00	1.00			0.99			1.00	
Flpb, ped/bikes		1.00		1.00	1.00			1.00			1.00	
Frt		1.00		1.00	1.00			0.90			1.00	
Flt Protected		1.00		0.95	1.00			0.99			0.95	
Satd. Flow (prot)		4378		1750	4254			1317			1746	
Flt Permitted		1.00		0.03	1.00			0.91			0.76	
Satd. Flow (perm)		4378		63	4254			1219			1388	
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)	0	3138	0	1	2100	1	1	0	3	1	0	0
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	3138	0	1	2101	0	0	4	0	0	1	0
Confl. Peds. (#/hr)	1		7	7		1	1		2	2		1
Heavy Vehicles (%)	2%	3%	2%	2%	6%	2%	2%	2%	33%	2%	2%	2%
Turn Type	Perm	NA	Perm	Perm	NA		Perm	NA		Perm	NA	
Protected Phases		2			6			8			4	
Permitted Phases	2		2	6			8			4		
Actuated Green, G (s)		117.7		117.7	117.7			8.2			8.2	
Effective Green, g (s)		117.7		117.7	117.7			8.2			8.2	
Actuated g/C Ratio		0.84		0.84	0.84			0.06			0.06	
Clearance Time (s)		6.7		6.7	6.7			7.4			7.4	
Vehicle Extension (s)		3.0		3.0	3.0			3.0			3.0	
Lane Grp Cap (vph)		3680		52	3576			71			81	
v/s Ratio Prot		c0.72			0.49							
v/s Ratio Perm				0.02				c0.00			0.00	
v/c Ratio		0.85		0.02	0.59			0.06			0.01	
Uniform Delay, d1		6.3		1.8	3.5			62.2			62.1	
Progression Factor		1.00		1.00	1.00			1.00			1.00	
Incremental Delay, d2		2.7		0.7	0.7			0.3			0.1	
Delay (s)		9.0		2.5	4.2			62.6			62.1	
Level of Service		A		A	A			E			E	
Approach Delay (s)		9.0			4.2			62.6			62.1	
Approach LOS		A			A			E			E	

Intersection Summary			
HCM 2000 Control Delay	7.1	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.80		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	14.1
Intersection Capacity Utilization	78.1%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	13	1232	20	15	1012	27	20	5	44	84	14	42
Future Volume (vph)	13	1232	20	15	1012	27	20	5	44	84	14	42
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	45.0		0.0	45.0		0.0	0.0		0.0	0.0		0.0
Storage Lanes	1		0	1		0	0		0	0		0
Taper Length (m)	50.0			50.0			15.0			15.0		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor	1.00	1.00			1.00			0.99			1.00	
Frt		0.998			0.996			0.915			0.959	
Flt Protected	0.950			0.950				0.986			0.971	
Satd. Flow (prot)	1750	3488	0	1750	2856	0	0	1389	0	0	1715	0
Flt Permitted	0.194			0.130				0.882			0.771	
Satd. Flow (perm)	357	3488	0	239	2856	0	0	1243	0	0	1361	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		2			4			17			29	
Link Speed (k/h)		60			60			50			50	
Link Distance (m)		203.6			105.5			200.3			179.6	
Travel Time (s)		12.2			6.3			14.4			12.9	
Confl. Peds. (#/hr)	4		7	7		4			2	2		
Confl. Bikes (#/hr)									1			
Peak Hour Factor	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88
Heavy Vehicles (%)	2%	2%	8%	2%	25%	2%	67%	2%	2%	2%	2%	2%
Adj. Flow (vph)	15	1400	23	17	1150	31	23	6	50	95	16	48
Shared Lane Traffic (%)												
Lane Group Flow (vph)	15	1423	0	17	1181	0	0	79	0	0	159	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.5			3.5			0.0			0.0	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		3.0			3.0			3.0			3.0	
Two way Left Turn Lane												
Headway Factor	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2		1	2		1	2		1	2	
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	
Leading Detector (m)	2.0	10.0		2.0	10.0		2.0	10.0		2.0	10.0	
Trailing Detector (m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Position(m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Size(m)	2.0	0.6		2.0	0.6		2.0	0.6		2.0	0.6	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		2			6			8			4	
Permitted Phases	2			6			8			4		
Detector Phase	2	2		6	6		8	8		4	4	
Switch Phase												
Minimum Initial (s)	10.0	10.0		10.0	10.0		10.0	10.0		10.0	10.0	
Minimum Split (s)	31.2	31.2		31.2	31.2		41.5	41.5		41.5	41.5	
Total Split (s)	48.0	48.0		48.0	48.0		42.0	42.0		42.0	42.0	
Total Split (%)	53.3%	53.3%		53.3%	53.3%		46.7%	46.7%		46.7%	46.7%	
Maximum Green (s)	41.8	41.8		41.8	41.8		35.5	35.5		35.5	35.5	
Yellow Time (s)	3.7	3.7		3.7	3.7		3.3	3.3		3.3	3.3	
All-Red Time (s)	2.5	2.5		2.5	2.5		3.2	3.2		3.2	3.2	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0			0.0			0.0	
Total Lost Time (s)	6.2	6.2		6.2	6.2			6.5			6.5	
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	Max	Max		Max	Max		None	None		None	None	
Walk Time (s)	7.0	7.0		7.0	7.0		7.0	7.0		7.0	7.0	
Flash Dont Walk (s)	18.0	18.0		18.0	18.0		28.0	28.0		28.0	28.0	
Pedestrian Calls (#/hr)	7	7		4	4		2	2		0	0	
Act Effct Green (s)	45.4	45.4		45.4	45.4			15.4			15.4	
Actuated g/C Ratio	0.62	0.62		0.62	0.62			0.21			0.21	
v/c Ratio	0.07	0.66		0.12	0.67			0.29			0.52	
Control Delay	10.6	13.3		12.5	14.1			20.3			25.2	
Queue Delay	0.0	0.0		0.0	0.0			0.0			0.0	
Total Delay	10.6	13.3		12.5	14.1			20.3			25.2	
LOS	B	B		B	B			C			C	
Approach Delay		13.3			14.1			20.3			25.2	
Approach LOS		B			B			C			C	
Queue Length 50th (m)	0.6	48.5		0.7	40.6			6.7			14.7	
Queue Length 95th (m)	4.9	136.7		6.0	#122.7			15.4			28.1	
Internal Link Dist (m)		179.6			81.5			176.3			155.6	
Turn Bay Length (m)	45.0			45.0								
Base Capacity (vph)	219	2148		147	1760			616			680	
Starvation Cap Reductn	0	0		0	0			0			0	
Spillback Cap Reductn	0	0		0	0			0			0	
Storage Cap Reductn	0	0		0	0			0			0	
Reduced v/c Ratio	0.07	0.66		0.12	0.67			0.13			0.23	

Intersection Summary

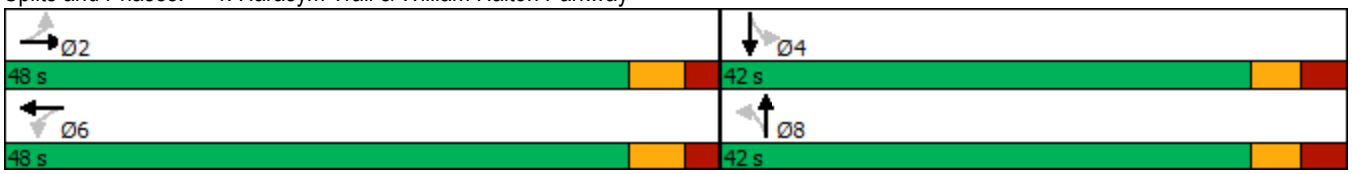
Area Type: Other
Cycle Length: 90
Actuated Cycle Length: 73.7
Natural Cycle: 80
Control Type: Semi Act-Uncoord
Maximum v/c Ratio: 0.67
Intersection Signal Delay: 14.5 Intersection LOS: B

Intersection Capacity Utilization 59.9% ICU Level of Service B

Analysis Period (min) 15

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 4: Harasym Trail & William Halton Parkway



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	13	1232	20	15	1012	27	20	5	44	84	14	42
Future Volume (vph)	13	1232	20	15	1012	27	20	5	44	84	14	42
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.2	6.2		6.2	6.2			6.5			6.5	
Lane Util. Factor	1.00	0.95		1.00	0.95			1.00			1.00	
Frpb, ped/bikes	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	
Frt	1.00	1.00		1.00	1.00			0.91			0.96	
Flt Protected	0.95	1.00		0.95	1.00			0.99			0.97	
Satd. Flow (prot)	1748	3486		1748	2857			1388			1715	
Flt Permitted	0.19	1.00		0.13	1.00			0.88			0.77	
Satd. Flow (perm)	357	3486		240	2857			1242			1362	
Peak-hour factor, PHF	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88
Adj. Flow (vph)	15	1400	23	17	1150	31	23	6	50	95	16	48
RTOR Reduction (vph)	0	1	0	0	2	0	0	13	0	0	23	0
Lane Group Flow (vph)	15	1422	0	17	1179	0	0	66	0	0	136	0
Confl. Peds. (#/hr)	4		7	7		4			2	2		
Confl. Bikes (#/hr)									1			
Heavy Vehicles (%)	2%	2%	8%	2%	25%	2%	67%	2%	2%	2%	2%	2%
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		2			6			8			4	
Permitted Phases	2			6			8			4		
Actuated Green, G (s)	45.4	45.4		45.4	45.4			15.4			15.4	
Effective Green, g (s)	45.4	45.4		45.4	45.4			15.4			15.4	
Actuated g/C Ratio	0.62	0.62		0.62	0.62			0.21			0.21	
Clearance Time (s)	6.2	6.2		6.2	6.2			6.5			6.5	
Vehicle Extension (s)	3.0	3.0		3.0	3.0			3.0			3.0	
Lane Grp Cap (vph)	220	2153		148	1764			260			285	
v/s Ratio Prot		0.41			c0.41							
v/s Ratio Perm	0.04			0.07				0.05			c0.10	
v/c Ratio	0.07	0.66		0.11	0.67			0.25			0.48	
Uniform Delay, d1	5.6	9.1		5.8	9.2			24.2			25.5	
Progression Factor	1.00	1.00		1.00	1.00			1.00			1.00	
Incremental Delay, d2	0.6	1.6		1.6	2.0			0.5			1.3	
Delay (s)	6.2	10.7		7.4	11.2			24.8			26.8	
Level of Service	A	B		A	B			C			C	
Approach Delay (s)		10.6			11.1			24.8			26.8	
Approach LOS		B			B			C			C	

Intersection Summary			
HCM 2000 Control Delay	12.1	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.62		
Actuated Cycle Length (s)	73.5	Sum of lost time (s)	12.7
Intersection Capacity Utilization	59.9%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	17	2342	115	97	1926	60	58	17	287	162	33	52
Future Volume (vph)	17	2342	115	97	1926	60	58	17	287	162	33	52
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	120.0		70.0	115.0		60.0	90.0		0.0	80.0		0.0
Storage Lanes	1		1	1		1	1		0	1		0
Taper Length (m)	65.0			65.0			30.0			15.0		
Lane Util. Factor	1.00	*0.80	1.00	1.00	*0.80	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor								0.99		1.00		
Frt			0.850			0.850		0.858			0.909	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1526	4378	1465	1684	4295	1465	1716	1534	0	1733	1639	0
Flt Permitted	0.061			0.058			0.701			0.350		
Satd. Flow (perm)	98	4378	1465	103	4295	1465	1266	1534	0	638	1639	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			78			55		122			17	
Link Speed (k/h)		70			70			50			50	
Link Distance (m)		331.1			413.9			220.1			189.0	
Travel Time (s)		17.0			21.3			15.8			13.6	
Confl. Peds. (#/hr)									2	2		
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Heavy Vehicles (%)	17%	3%	9%	6%	5%	9%	4%	33%	2%	3%	3%	5%
Adj. Flow (vph)	17	2390	117	99	1965	61	59	17	293	165	34	53
Shared Lane Traffic (%)												
Lane Group Flow (vph)	17	2390	117	99	1965	61	59	310	0	165	87	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.5			3.5			3.5			3.5	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		3.0			3.0			3.0			3.0	
Two way Left Turn Lane												
Headway Factor	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2	1	1	2	1	1	2		1	2	
Detector Template	Left	Thru	Right	Left	Thru	Right	Left	Thru		Left	Thru	
Leading Detector (m)	2.0	10.0	2.0	2.0	10.0	2.0	2.0	10.0		2.0	10.0	
Trailing Detector (m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Detector 1 Position(m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Detector 1 Size(m)	2.0	0.6	2.0	2.0	0.6	2.0	2.0	0.6		2.0	0.6	
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Type	Perm	NA	Perm	pm+pt	NA	Perm	Perm	NA		Perm	NA	
Protected Phases		2		1	6			8			4	
Permitted Phases	2		2	6		6	8			4		
Detector Phase	2	2	2	1	6	6	8	8		4	4	
Switch Phase												
Minimum Initial (s)	20.0	20.0	20.0	7.0	20.0	20.0	10.0	10.0		10.0	10.0	
Minimum Split (s)	31.9	31.9	31.9	11.0	31.9	31.9	43.9	43.9		43.9	43.9	
Total Split (s)	70.8	70.8	70.8	12.0	82.8	82.8	37.2	37.2		37.2	37.2	
Total Split (%)	59.0%	59.0%	59.0%	10.0%	69.0%	69.0%	31.0%	31.0%		31.0%	31.0%	
Maximum Green (s)	64.9	64.9	64.9	8.0	76.9	76.9	30.3	30.3		30.3	30.3	
Yellow Time (s)	3.7	3.7	3.7	3.0	3.7	3.7	3.3	3.3		3.3	3.3	
All-Red Time (s)	2.2	2.2	2.2	1.0	2.2	2.2	3.6	3.6		3.6	3.6	
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)	5.9	5.9	5.9	4.0	5.9	5.9	6.9	6.9		6.9	6.9	
Lead/Lag	Lag	Lag	Lag	Lead								
Lead-Lag Optimize?	Yes	Yes	Yes	Yes								
Vehicle Extension (s)	5.5	5.5	5.5	3.0	5.5	5.5	3.0	3.0		3.0	3.0	
Recall Mode	C-Max	C-Max	C-Max	None	C-Max	C-Max	None	None		Max	Max	
Walk Time (s)	7.0	7.0	7.0		7.0	7.0	7.0	7.0		7.0	7.0	
Flash Dont Walk (s)	19.0	19.0	19.0		19.0	19.0	30.0	30.0		30.0	30.0	
Pedestrian Calls (#/hr)	0	0	0		0	0	2	2		0	0	
Act Effct Green (s)	65.3	65.3	65.3	78.8	76.9	76.9	30.3	30.3		30.3	30.3	
Actuated g/C Ratio	0.54	0.54	0.54	0.66	0.64	0.64	0.25	0.25		0.25	0.25	
v/c Ratio	0.32	1.00	0.14	0.59	0.71	0.06	0.18	0.65		1.02	0.20	
Control Delay	35.3	47.1	5.7	37.2	13.7	2.4	37.1	31.0		122.8	29.8	
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Total Delay	35.3	47.1	5.7	37.2	13.7	2.4	37.1	31.0		122.8	29.8	
LOS	D	D	A	D	B	A	D	C		F	C	
Approach Delay		45.1			14.5			31.9			90.7	
Approach LOS		D			B			C			F	
Queue Length 50th (m)	2.1	~232.2	4.2	11.0	87.5	0.3	10.9	39.7		~41.4	12.9	
Queue Length 95th (m)	10.2	#278.2	12.9	30.4	94.8	m4.2	22.4	71.0		#84.5	26.5	
Internal Link Dist (m)		307.1			389.9			196.1			165.0	
Turn Bay Length (m)	120.0		70.0	115.0		60.0	90.0			80.0		
Base Capacity (vph)	53	2380	832	173	2752	958	319	478		161	426	
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	0.32	1.00	0.14	0.57	0.71	0.06	0.18	0.65		1.02	0.20	

Intersection Summary	
Area Type:	Other
Cycle Length: 120	
Actuated Cycle Length: 120	
Offset: 80.4 (67%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green	
Natural Cycle: 130	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 1.02	
Intersection Signal Delay: 34.0	Intersection LOS: C

Intersection Capacity Utilization 103.8% ICU Level of Service G

Analysis Period (min) 15

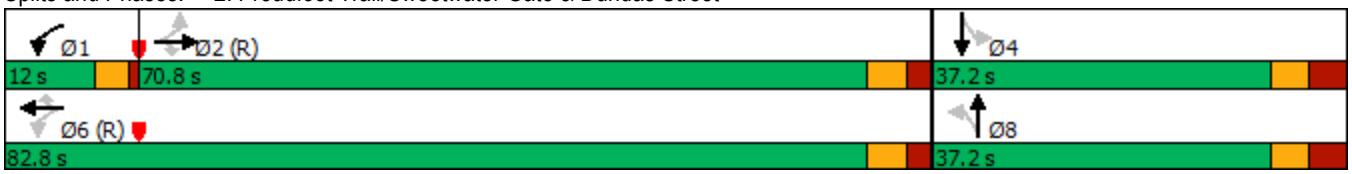
* User Entered Value

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

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

Splits and Phases: 2: Proudfoot Trail/Sweetwater Gate & Dundas Street



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	17	2342	115	97	1926	60	58	17	287	162	33	52
Future Volume (vph)	17	2342	115	97	1926	60	58	17	287	162	33	52
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.9	5.9	5.9	4.0	5.9	5.9	6.9	6.9		6.9	6.9	
Lane Util. Factor	1.00	*0.80	1.00	1.00	*0.80	1.00	1.00	1.00		1.00	1.00	
Frpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.99		1.00	1.00	
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	1.00	0.85	1.00	1.00	0.85	1.00	0.86		1.00	0.91	
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)	1526	4378	1465	1684	4295	1465	1716	1535		1731	1638	
Flt Permitted	0.06	1.00	1.00	0.06	1.00	1.00	0.70	1.00		0.35	1.00	
Satd. Flow (perm)	98	4378	1465	102	4295	1465	1266	1535		637	1638	
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)	17	2390	117	99	1965	61	59	17	293	165	34	53
RTOR Reduction (vph)	0	0	36	0	0	20	0	91	0	0	13	0
Lane Group Flow (vph)	17	2390	81	99	1965	41	59	219	0	165	74	0
Confl. Peds. (#/hr)									2	2		
Heavy Vehicles (%)	17%	3%	9%	6%	5%	9%	4%	33%	2%	3%	3%	5%
Turn Type	Perm	NA	Perm	pm+pt	NA	Perm	Perm	NA		Perm	NA	
Protected Phases		2		1	6			8			4	
Permitted Phases	2		2	6		6	8			4		
Actuated Green, G (s)	65.3	65.3	65.3	76.9	76.9	76.9	30.3	30.3		30.3	30.3	
Effective Green, g (s)	65.3	65.3	65.3	76.9	76.9	76.9	30.3	30.3		30.3	30.3	
Actuated g/C Ratio	0.54	0.54	0.54	0.64	0.64	0.64	0.25	0.25		0.25	0.25	
Clearance Time (s)	5.9	5.9	5.9	4.0	5.9	5.9	6.9	6.9		6.9	6.9	
Vehicle Extension (s)	5.5	5.5	5.5	3.0	5.5	5.5	3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	53	2382	797	165	2752	938	319	387		160	413	
v/s Ratio Prot		c0.55		0.04	c0.46			0.14			0.05	
v/s Ratio Perm	0.17		0.06	0.34		0.03	0.05			c0.26		
v/c Ratio	0.32	1.00	0.10	0.60	0.71	0.04	0.18	0.57		1.03	0.18	
Uniform Delay, d1	15.1	27.4	13.2	27.0	14.3	8.0	35.2	39.1		44.9	35.1	
Progression Factor	1.00	1.00	1.00	1.50	0.85	0.93	1.00	1.00		1.00	1.00	
Incremental Delay, d2	15.3	19.2	0.3	5.0	1.4	0.1	0.3	1.9		79.6	1.0	
Delay (s)	30.4	46.6	13.5	45.6	13.5	7.5	35.4	41.0		124.5	36.1	
Level of Service	C	D	B	D	B	A	D	D		F	D	
Approach Delay (s)		44.9			14.8			40.1			94.0	
Approach LOS		D			B			D			F	

Intersection Summary			
HCM 2000 Control Delay	34.8	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	1.00		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	16.8
Intersection Capacity Utilization	103.8%	ICU Level of Service	G
Analysis Period (min)	15		

c Critical Lane Group

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	17	2342	115	97	1926	60	58	17	287	162	33	52
Future Volume (vph)	17	2342	115	97	1926	60	58	17	287	162	33	52
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	120.0		70.0	130.0		60.0	90.0		0.0	80.0		0.0
Storage Lanes	1		1	1		1	1		0	1		0
Taper Length (m)	65.0			15.0			30.0			15.0		
Lane Util. Factor	1.00	*0.80	1.00	1.00	*0.80	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor								0.99		1.00		
Frt			0.850			0.850		0.858			0.909	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1526	4378	1465	1684	4295	1465	1716	1534	0	1733	1639	0
Flt Permitted	0.063			0.059			0.701			0.168		
Satd. Flow (perm)	101	4378	1465	105	4295	1465	1266	1534	0	306	1639	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			108			72		150			4	
Link Speed (k/h)		70			70			50			50	
Link Distance (m)		331.1			413.9			220.1			189.0	
Travel Time (s)		17.0			21.3			15.8			13.6	
Confl. Peds. (#/hr)									2	2		
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Heavy Vehicles (%)	17%	3%	9%	6%	5%	9%	4%	33%	2%	3%	3%	5%
Adj. Flow (vph)	17	2390	117	99	1965	61	59	17	293	165	34	53
Shared Lane Traffic (%)												
Lane Group Flow (vph)	17	2390	117	99	1965	61	59	310	0	165	87	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.5			3.5			3.5			3.5	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		3.0			3.0			3.0			3.0	
Two way Left Turn Lane												
Headway Factor	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2	1	1	2	1	1	2		1	2	
Detector Template	Left	Thru	Right	Left	Thru	Right	Left	Thru		Left	Thru	
Leading Detector (m)	2.0	10.0	2.0	2.0	10.0	2.0	2.0	10.0		2.0	10.0	
Trailing Detector (m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Detector 1 Position(m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Detector 1 Size(m)	2.0	0.6	2.0	2.0	0.6	2.0	2.0	0.6		2.0	0.6	
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Type	Perm	NA	Perm	pm+pt	NA	Perm	Perm	NA		pm+pt	NA	
Protected Phases		2		1	6			8		7	4	
Permitted Phases	2		2	6		6	8			4		
Detector Phase	2	2	2	1	6	6	8	8		7	4	
Switch Phase												
Minimum Initial (s)	20.0	20.0	20.0	7.0	20.0	20.0	10.0	10.0		7.0	10.0	
Minimum Split (s)	31.9	31.9	31.9	11.0	31.9	31.9	43.9	43.9		11.0	43.9	
Total Split (s)	53.0	53.0	53.0	11.0	64.0	64.0	44.0	44.0		12.0	56.0	
Total Split (%)	44.2%	44.2%	44.2%	9.2%	53.3%	53.3%	36.7%	36.7%		10.0%	46.7%	
Maximum Green (s)	47.1	47.1	47.1	7.0	58.1	58.1	37.1	37.1		8.0	49.1	
Yellow Time (s)	3.7	3.7	3.7	3.0	3.7	3.7	3.3	3.3		3.0	3.3	
All-Red Time (s)	2.2	2.2	2.2	1.0	2.2	2.2	3.6	3.6		1.0	3.6	
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)	5.9	5.9	5.9	4.0	5.9	5.9	6.9	6.9		4.0	6.9	
Lead/Lag	Lag	Lag	Lag	Lead			Lag	Lag		Lead		
Lead-Lag Optimize?	Yes	Yes	Yes	Yes			Yes	Yes		Yes		
Vehicle Extension (s)	5.5	5.5	5.5	3.0	5.5	5.5	3.0	3.0		3.0	3.0	
Recall Mode	C-Max	C-Max	C-Max	None	C-Max	C-Max	None	None		None	None	
Walk Time (s)	7.0	7.0	7.0		7.0	7.0	7.0	7.0			7.0	
Flash Dont Walk (s)	19.0	19.0	19.0		19.0	19.0	30.0	30.0			30.0	
Pedestrian Calls (#/hr)	0	0	0		0	0	2	2			0	
Act Effct Green (s)	63.5	63.5	63.5	77.3	75.4	75.4	19.8	19.8		34.7	31.8	
Actuated g/C Ratio	0.53	0.53	0.53	0.64	0.63	0.63	0.16	0.16		0.29	0.26	
v/c Ratio	0.32	1.03	0.14	0.58	0.73	0.06	0.28	0.82		0.90	0.20	
Control Delay	43.6	56.0	5.0	36.5	16.1	1.1	43.4	40.8		79.0	30.8	
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Total Delay	43.6	56.0	5.0	36.5	16.1	1.1	43.4	40.8		79.0	30.8	
LOS	D	E	A	D	B	A	D	D		E	C	
Approach Delay		53.6			16.6			41.2			62.4	
Approach LOS		D			B			D			E	
Queue Length 50th (m)	2.1	224.4	0.9	8.5	96.2	0.0	12.6	38.6		31.5	15.6	
Queue Length 95th (m)	#14.3	#344.5	12.8	#35.2	#222.2	m1.6	20.6	58.5		#45.8	22.7	
Internal Link Dist (m)		307.1			389.9			196.1			165.0	
Turn Bay Length (m)	120.0		70.0	130.0		60.0	90.0			80.0		
Base Capacity (vph)	53	2318	826	170	2697	946	391	577		183	672	
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	0.32	1.03	0.14	0.58	0.73	0.06	0.15	0.54		0.90	0.13	

Intersection Summary

Area Type: Other
Cycle Length: 120
Actuated Cycle Length: 120
Offset: 0 (0%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green
Natural Cycle: 150
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 1.03
Intersection Signal Delay: 38.2 Intersection LOS: D

Intersection Capacity Utilization 101.4% ICU Level of Service G

Analysis Period (min) 15

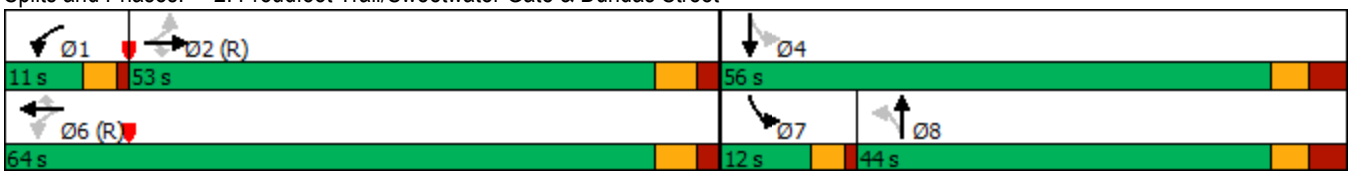
* User Entered Value

\# 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: Proudfoot Trail/Sweetwater Gate & Dundas Street



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	17	2342	115	97	1926	60	58	17	287	162	33	52
Future Volume (vph)	17	2342	115	97	1926	60	58	17	287	162	33	52
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.9	5.9	5.9	4.0	5.9	5.9	6.9	6.9		4.0	6.9	
Lane Util. Factor	1.00	*0.80	1.00	1.00	*0.80	1.00	1.00	1.00		1.00	1.00	
Frpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.99		1.00	1.00	
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	1.00	0.85	1.00	1.00	0.85	1.00	0.86		1.00	0.91	
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)	1526	4378	1465	1684	4295	1465	1716	1535		1733	1638	
Flt Permitted	0.06	1.00	1.00	0.06	1.00	1.00	0.70	1.00		0.17	1.00	
Satd. Flow (perm)	101	4378	1465	105	4295	1465	1266	1535		307	1638	
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)	17	2390	117	99	1965	61	59	17	293	165	34	53
RTOR Reduction (vph)	0	0	51	0	0	23	0	125	0	0	3	0
Lane Group Flow (vph)	17	2390	66	99	1965	38	59	185	0	165	84	0
Confl. Peds. (#/hr)									2	2		
Heavy Vehicles (%)	17%	3%	9%	6%	5%	9%	4%	33%	2%	3%	3%	5%
Turn Type	Perm	NA	Perm	pm+pt	NA	Perm	Perm	NA		pm+pt	NA	
Protected Phases		2		1	6			8		7	4	
Permitted Phases	2		2	6		6	8			4		
Actuated Green, G (s)	63.6	63.6	63.6	75.4	75.4	75.4	19.8	19.8		31.8	31.8	
Effective Green, g (s)	63.6	63.6	63.6	75.4	75.4	75.4	19.8	19.8		31.8	31.8	
Actuated g/C Ratio	0.53	0.53	0.53	0.63	0.63	0.63	0.17	0.17		0.27	0.27	
Clearance Time (s)	5.9	5.9	5.9	4.0	5.9	5.9	6.9	6.9		4.0	6.9	
Vehicle Extension (s)	5.5	5.5	5.5	3.0	5.5	5.5	3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	53	2320	776	168	2698	920	208	253		176	434	
v/s Ratio Prot		c0.55		0.04	c0.46			0.12		c0.06	0.05	
v/s Ratio Perm	0.17		0.05	0.33		0.03	0.05			c0.19		
v/c Ratio	0.32	1.03	0.09	0.59	0.73	0.04	0.28	0.73		0.94	0.19	
Uniform Delay, d1	16.0	28.2	13.9	26.7	15.3	8.5	43.9	47.6		39.5	34.2	
Progression Factor	1.00	1.00	1.00	1.45	0.82	0.38	1.00	1.00		1.00	1.00	
Incremental Delay, d2	15.3	26.9	0.2	4.5	1.5	0.1	0.8	10.3		49.4	0.2	
Delay (s)	31.2	55.1	14.1	43.1	14.0	3.3	44.6	57.9		88.9	34.4	
Level of Service	C	E	B	D	B	A	D	E		F	C	
Approach Delay (s)		53.1			15.0			55.8			70.1	
Approach LOS		D			B			E			E	

Intersection Summary			
HCM 2000 Control Delay	38.7	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	1.02		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	20.8
Intersection Capacity Utilization	101.4%	ICU Level of Service	G
Analysis Period (min)	15		

c Critical Lane Group

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	2234	41	34	3005	65	22
Future Volume (vph)	2234	41	34	3005	65	22
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (m)		0.0	90.0		30.0	0.0
Storage Lanes		0	1		1	1
Taper Length (m)			100.0		15.0	
Lane Util. Factor	*0.80	0.91	1.00	*0.80	1.00	1.00
Ped Bike Factor	1.00					
Frt	0.997					0.850
Flt Protected			0.950		0.950	
Satd. Flow (prot)	4364	0	1750	4336	1750	1566
Flt Permitted			0.043		0.950	
Satd. Flow (perm)	4364	0	79	4336	1750	1566
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)	3					22
Link Speed (k/h)	70			70	50	
Link Distance (m)	413.9			633.4	126.1	
Travel Time (s)	21.3			32.6	9.1	
Confl. Peds. (#/hr)		1	1			
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98
Heavy Vehicles (%)	3%	2%	2%	4%	2%	2%
Adj. Flow (vph)	2280	42	35	3066	66	22
Shared Lane Traffic (%)						
Lane Group Flow (vph)	2322	0	35	3066	66	22
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	3.5			3.5	3.5	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	3.0			3.0	3.0	
Two way Left Turn Lane						
Headway Factor	1.01	1.01	1.01	1.01	1.01	1.01
Turning Speed (k/h)		15	25		25	15
Number of Detectors	2		1	2	1	1
Detector Template	Thru		Left	Thru	Left	Right
Leading Detector (m)	10.0		2.0	10.0	2.0	2.0
Trailing Detector (m)	0.0		0.0	0.0	0.0	0.0
Detector 1 Position(m)	0.0		0.0	0.0	0.0	0.0
Detector 1 Size(m)	0.6		2.0	0.6	2.0	2.0
Detector 1 Type	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel						
Detector 1 Extend (s)	0.0		0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0		0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0		0.0	0.0	0.0	0.0
Detector 2 Position(m)	9.4			9.4		
Detector 2 Size(m)	0.6			0.6		
Detector 2 Type	Cl+Ex			Cl+Ex		
Detector 2 Channel						
Detector 2 Extend (s)	0.0			0.0		

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Turn Type	NA		pm+pt	NA	Prot	Perm
Protected Phases	2		1	6	8	
Permitted Phases			6			8
Detector Phase	2		1	6	8	8
Switch Phase						
Minimum Initial (s)	20.0		7.0	20.0	7.0	7.0
Minimum Split (s)	33.0		11.0	26.0	40.6	40.6
Total Split (s)	66.0		12.0	78.0	42.0	42.0
Total Split (%)	55.0%		10.0%	65.0%	35.0%	35.0%
Maximum Green (s)	60.0		8.0	72.0	35.4	35.4
Yellow Time (s)	3.7		3.0	3.7	3.7	3.7
All-Red Time (s)	2.3		1.0	2.3	2.9	2.9
Lost Time Adjust (s)	0.0		0.0	0.0	0.0	0.0
Total Lost Time (s)	6.0		4.0	6.0	6.6	6.6
Lead/Lag	Lag		Lead			
Lead-Lag Optimize?	Yes		Yes			
Vehicle Extension (s)	5.0		4.0	5.0	4.0	4.0
Recall Mode	C-Max		None	C-Max	None	None
Walk Time (s)	7.0				7.0	7.0
Flash Dont Walk (s)	20.0				27.0	27.0
Pedestrian Calls (#/hr)	1				0	0
Act Effct Green (s)	93.7		101.3	100.5	10.9	10.9
Actuated g/C Ratio	0.78		0.84	0.84	0.09	0.09
v/c Ratio	0.68		0.21	0.84	0.42	0.14
Control Delay	25.7		5.2	10.9	58.7	19.8
Queue Delay	0.0		0.0	0.0	0.0	0.0
Total Delay	25.7		5.2	10.9	58.7	19.8
LOS	C		A	B	E	B
Approach Delay	25.7			10.8	49.0	
Approach LOS	C			B	D	
Queue Length 50th (m)	181.5		1.2	161.6	14.9	0.0
Queue Length 95th (m)	247.9		3.4	231.8	28.2	7.7
Internal Link Dist (m)	389.9			609.4	102.1	
Turn Bay Length (m)			90.0		30.0	
Base Capacity (vph)	3408		178	3629	516	477
Starvation Cap Reductn	0		0	0	0	0
Spillback Cap Reductn	0		0	0	0	0
Storage Cap Reductn	0		0	0	0	0
Reduced v/c Ratio	0.68		0.20	0.84	0.13	0.05

Intersection Summary	
Area Type:	Other
Cycle Length: 120	
Actuated Cycle Length: 120	
Offset: 91.2 (76%), Referenced to phase 2:EBT and 6:WBTL, Start of Green	
Natural Cycle: 145	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.84	
Intersection Signal Delay: 17.7	Intersection LOS: B

Intersection Capacity Utilization 74.4%	ICU Level of Service D
Analysis Period (min) 15	
* User Entered Value	

Splits and Phases: 1: Fourth Line & Dundas Street

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	2234	41	34	3005	65	22
Future Volume (vph)	2234	41	34	3005	65	22
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0		4.0	6.0	6.6	6.6
Lane Util. Factor	*0.80		1.00	*0.80	1.00	1.00
Frpb, ped/bikes	1.00		1.00	1.00	1.00	1.00
Flpb, ped/bikes	1.00		1.00	1.00	1.00	1.00
Frt	1.00		1.00	1.00	1.00	0.85
Flt Protected	1.00		0.95	1.00	0.95	1.00
Satd. Flow (prot)	4365		1750	4336	1750	1566
Flt Permitted	1.00		0.04	1.00	0.95	1.00
Satd. Flow (perm)	4365		79	4336	1750	1566
Peak-hour factor, PHF	0.98	0.98	0.98	0.98	0.98	0.98
Adj. Flow (vph)	2280	42	35	3066	66	22
RTOR Reduction (vph)	1	0	0	0	0	20
Lane Group Flow (vph)	2321	0	35	3066	66	2
Confl. Peds. (#/hr)		1	1			
Heavy Vehicles (%)	3%	2%	2%	4%	2%	2%
Turn Type	NA		pm+pt	NA	Prot	Perm
Protected Phases	2		1	6	8	
Permitted Phases			6			8
Actuated Green, G (s)	89.5		97.9	97.9	9.5	9.5
Effective Green, g (s)	89.5		97.9	97.9	9.5	9.5
Actuated g/C Ratio	0.75		0.82	0.82	0.08	0.08
Clearance Time (s)	6.0		4.0	6.0	6.6	6.6
Vehicle Extension (s)	5.0		4.0	5.0	4.0	4.0
Lane Grp Cap (vph)	3255		125	3537	138	123
v/s Ratio Prot	0.53		0.01	c0.71	c0.04	
v/s Ratio Perm			0.22			0.00
v/c Ratio	0.71		0.28	0.87	0.48	0.01
Uniform Delay, d1	8.3		8.6	7.0	52.9	50.9
Progression Factor	2.73		1.00	1.00	1.00	1.00
Incremental Delay, d2	0.7		1.7	3.1	3.5	0.1
Delay (s)	23.3		10.3	10.1	56.4	51.0
Level of Service	C		B	B	E	D
Approach Delay (s)	23.3			10.1	55.1	
Approach LOS	C			B	E	

Intersection Summary			
HCM 2000 Control Delay	16.4	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.86		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	16.6
Intersection Capacity Utilization	74.4%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	47	1867	92	326	2588	124	72	13	237	98	14	39
Future Volume (vph)	47	1867	92	326	2588	124	72	13	237	98	14	39
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	120.0		70.0	115.0		60.0	90.0		0.0	80.0		0.0
Storage Lanes	1		1	1		1	1		0	1		0
Taper Length (m)	65.0			65.0			30.0			15.0		
Lane Util. Factor	1.00	*0.80	1.00	1.00	*0.80	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor			0.97				1.00	0.99		1.00	0.99	
Frt			0.850			0.850		0.858			0.890	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1684	4421	1566	1750	4421	1566	1750	1553	0	1716	1620	0
Flt Permitted	0.068			0.064			0.720			0.316		
Satd. Flow (perm)	121	4421	1517	118	4421	1566	1321	1553	0	570	1620	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			72			73		247			2	
Link Speed (k/h)		70			70			50			50	
Link Distance (m)		331.1			413.9			220.1			189.0	
Travel Time (s)		17.0			21.3			15.8			13.6	
Confl. Peds. (#/hr)			5	5			4		3	3		4
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
Heavy Vehicles (%)	6%	2%	2%	2%	2%	2%	2%	8%	2%	4%	2%	2%
Adj. Flow (vph)	49	1945	96	340	2696	129	75	14	247	102	15	41
Shared Lane Traffic (%)												
Lane Group Flow (vph)	49	1945	96	340	2696	129	75	261	0	102	56	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.5			3.5			3.5			3.5	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		3.0			3.0			3.0			3.0	
Two way Left Turn Lane												
Headway Factor	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2	1	1	2	1	1	2		1	2	
Detector Template	Left	Thru	Right	Left	Thru	Right	Left	Thru		Left	Thru	
Leading Detector (m)	2.0	10.0	2.0	2.0	10.0	2.0	2.0	10.0		2.0	10.0	
Trailing Detector (m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Detector 1 Position(m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Detector 1 Size(m)	2.0	0.6	2.0	2.0	0.6	2.0	2.0	0.6		2.0	0.6	
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Type	Perm	NA	Perm	pm+pt	NA	Perm	Perm	NA		Perm	NA	
Protected Phases		2		1	6			8			4	
Permitted Phases	2		2	6		6	8			4		
Detector Phase	2	2	2	1	6	6	8	8		4	4	
Switch Phase												
Minimum Initial (s)	20.0	20.0	20.0	7.0	20.0	20.0	10.0	10.0		10.0	10.0	
Minimum Split (s)	31.9	31.9	31.9	11.0	31.9	31.9	43.9	43.9		43.9	43.9	
Total Split (s)	51.6	51.6	51.6	24.0	75.6	75.6	44.4	44.4		44.4	44.4	
Total Split (%)	43.0%	43.0%	43.0%	20.0%	63.0%	63.0%	37.0%	37.0%		37.0%	37.0%	
Maximum Green (s)	45.7	45.7	45.7	20.0	69.7	69.7	37.5	37.5		37.5	37.5	
Yellow Time (s)	3.7	3.7	3.7	3.0	3.7	3.7	3.3	3.3		3.3	3.3	
All-Red Time (s)	2.2	2.2	2.2	1.0	2.2	2.2	3.6	3.6		3.6	3.6	
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)	5.9	5.9	5.9	4.0	5.9	5.9	6.9	6.9		6.9	6.9	
Lead/Lag	Lag	Lag	Lag	Lead								
Lead-Lag Optimize?	Yes	Yes	Yes	Yes								
Vehicle Extension (s)	5.5	5.5	5.5	3.0	5.5	5.5	3.0	3.0		3.0	3.0	
Recall Mode	C-Max	C-Max	C-Max	None	C-Max	C-Max	None	None		None	None	
Walk Time (s)	7.0	7.0	7.0		7.0	7.0	7.0	7.0		7.0	7.0	
Flash Dont Walk (s)	19.0	19.0	19.0		19.0	19.0	30.0	30.0		30.0	30.0	
Pedestrian Calls (#/hr)	5	5	5		0	0	3	3		4	4	
Act Effct Green (s)	58.8	58.8	58.8	88.1	86.2	86.2	21.0	21.0		21.0	21.0	
Actuated g/C Ratio	0.49	0.49	0.49	0.73	0.72	0.72	0.18	0.18		0.18	0.18	
v/c Ratio	0.83	0.90	0.12	0.84	0.85	0.11	0.32	0.55		1.02	0.20	
Control Delay	113.9	36.3	8.1	44.8	10.2	1.1	43.7	9.9		143.5	38.2	
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Total Delay	113.9	36.3	8.1	44.8	10.2	1.1	43.7	9.9		143.5	38.2	
LOS	F	D	A	D	B	A	D	A		F	D	
Approach Delay		36.8			13.6			17.5			106.2	
Approach LOS		D			B			B			F	
Queue Length 50th (m)	9.8	171.7	2.9	52.8	107.2	0.8	15.9	2.8		~27.4	11.2	
Queue Length 95th (m)	#38.2	#258.5	14.5	m#99.4	#317.3	m4.7	25.1	21.3		40.7	19.0	
Internal Link Dist (m)		307.1			389.9			196.1			165.0	
Turn Bay Length (m)	120.0		70.0	115.0		60.0	90.0			80.0		
Base Capacity (vph)	59	2165	779	408	3174	1145	412	655		178	507	
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	0.83	0.90	0.12	0.83	0.85	0.11	0.18	0.40		0.57	0.11	

Intersection Summary	
Area Type:	Other
Cycle Length: 120	
Actuated Cycle Length: 120	
Offset: 7.2 (6%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green	
Natural Cycle: 140	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 1.02	
Intersection Signal Delay: 24.8	Intersection LOS: C

Intersection Capacity Utilization 113.4%	ICU Level of Service H
Analysis Period (min) 15	

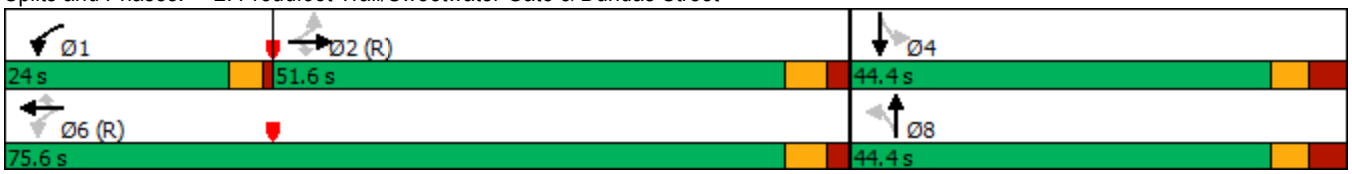
* User Entered Value

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

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

Splits and Phases: 2: Proudfoot Trail/Sweetwater Gate & Dundas Street



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	47	1867	92	326	2588	124	72	13	237	98	14	39
Future Volume (vph)	47	1867	92	326	2588	124	72	13	237	98	14	39
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.9	5.9	5.9	4.0	5.9	5.9	6.9	6.9		6.9	6.9	
Lane Util. Factor	1.00	*0.80	1.00	1.00	*0.80	1.00	1.00	1.00		1.00	1.00	
Frpb, ped/bikes	1.00	1.00	0.97	1.00	1.00	1.00	1.00	0.99		1.00	0.99	
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	1.00	0.85	1.00	1.00	0.85	1.00	0.86		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)	1684	4421	1517	1750	4421	1566	1744	1553		1713	1621	
Flt Permitted	0.07	1.00	1.00	0.06	1.00	1.00	0.72	1.00		0.32	1.00	
Satd. Flow (perm)	121	4421	1517	117	4421	1566	1322	1553		571	1621	
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)	49	1945	96	340	2696	129	75	14	247	102	15	41
RTOR Reduction (vph)	0	0	37	0	0	21	0	204	0	0	2	0
Lane Group Flow (vph)	49	1945	59	340	2696	108	75	57	0	102	54	0
Confl. Peds. (#/hr)			5	5			4		3	3		4
Heavy Vehicles (%)	6%	2%	2%	2%	2%	2%	2%	8%	2%	4%	2%	2%
Turn Type	Perm	NA	Perm	pm+pt	NA	Perm	Perm	NA		Perm	NA	
Protected Phases		2		1	6			8			4	
Permitted Phases	2		2	6		6	8			4		
Actuated Green, G (s)	58.8	58.8	58.8	86.2	86.2	86.2	21.0	21.0		21.0	21.0	
Effective Green, g (s)	58.8	58.8	58.8	86.2	86.2	86.2	21.0	21.0		21.0	21.0	
Actuated g/C Ratio	0.49	0.49	0.49	0.72	0.72	0.72	0.18	0.18		0.18	0.18	
Clearance Time (s)	5.9	5.9	5.9	4.0	5.9	5.9	6.9	6.9		6.9	6.9	
Vehicle Extension (s)	5.5	5.5	5.5	3.0	5.5	5.5	3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	59	2166	743	402	3175	1124	231	271		99	283	
v/s Ratio Prot		c0.44		0.16	c0.61			0.04			0.03	
v/s Ratio Perm	0.41		0.04	0.44		0.07	0.06			c0.18		
v/c Ratio	0.83	0.90	0.08	0.85	0.85	0.10	0.32	0.21		1.03	0.19	
Uniform Delay, d1	26.3	27.9	16.2	37.1	12.2	5.1	43.3	42.4		49.5	42.3	
Progression Factor	1.00	1.00	1.00	1.03	0.51	0.26	1.00	1.00		1.00	1.00	
Incremental Delay, d2	75.2	6.4	0.2	8.8	1.7	0.1	0.8	0.4		98.9	0.3	
Delay (s)	101.6	34.3	16.5	46.8	8.0	1.4	44.1	42.8		148.4	42.6	
Level of Service	F	C	B	D	A	A	D	D		F	D	
Approach Delay (s)		35.0			11.9			43.1			110.9	
Approach LOS		D			B			D			F	

Intersection Summary			
HCM 2000 Control Delay	24.8	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.92		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	16.8
Intersection Capacity Utilization	113.4%	ICU Level of Service	H
Analysis Period (min)	15		

c Critical Lane Group

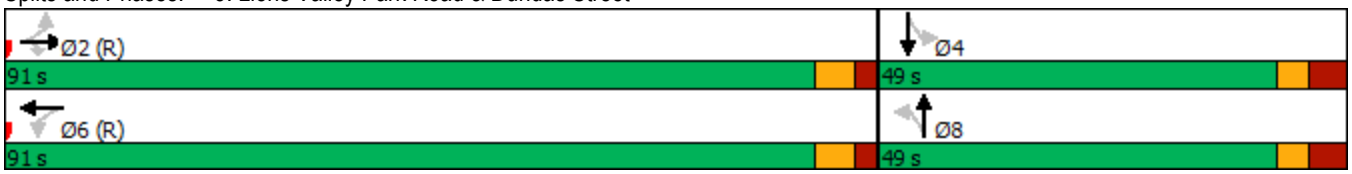
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	6	2289	12	4	2917	1	8	0	19	2	1	3
Future Volume (vph)	6	2289	12	4	2917	1	8	0	19	2	1	3
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	50.0		10.0	75.0		0.0	0.0		0.0	0.0		0.0
Storage Lanes	1		1	1		0	0		0	0		0
Taper Length (m)	50.0			100.0			15.0			15.0		
Lane Util. Factor	1.00	*0.80	1.00	1.00	*0.80	0.91	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor			0.96									
Frt			0.850					0.907			0.932	
Flt Protected	0.950			0.950				0.985			0.984	
Satd. Flow (prot)	1750	4336	1566	1750	4336	0	0	1646	0	0	1689	0
Flt Permitted	0.033			0.034				0.894			0.878	
Satd. Flow (perm)	61	4336	1507	63	4336	0	0	1494	0	0	1507	0
Right Turn on Red			Yes			Yes			No			Yes
Satd. Flow (RTOR)			34								1	
Link Speed (k/h)		70			70			50			50	
Link Distance (m)		633.4			305.5			139.7			95.5	
Travel Time (s)		32.6			15.7			10.1			6.9	
Confl. Peds. (#/hr)			7	7								
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Heavy Vehicles (%)	2%	4%	2%	2%	4%	2%	2%	2%	2%	2%	2%	2%
Adj. Flow (vph)	6	2435	13	4	3103	1	9	0	20	2	1	3
Shared Lane Traffic (%)												
Lane Group Flow (vph)	6	2435	13	4	3104	0	0	29	0	0	6	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.5			3.5			0.0			0.0	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		3.0			3.0			3.0			3.0	
Two way Left Turn Lane												
Headway Factor	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2	1	1	2		1	2		1	2	
Detector Template	Left	Thru	Right	Left	Thru		Left	Thru		Left	Thru	
Leading Detector (m)	2.0	10.0	2.0	2.0	10.0		2.0	10.0		2.0	10.0	
Trailing Detector (m)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Position(m)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Size(m)	2.0	0.6	2.0	2.0	0.6		2.0	0.6		2.0	0.6	
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Type	Perm	NA	Perm	Perm	NA		Perm	NA		Perm	NA	
Protected Phases		2			6			8			4	
Permitted Phases	2		2	6			8			4		
Detector Phase	2	2	2	6	6		8	8		4	4	
Switch Phase												
Minimum Initial (s)	20.0	20.0	20.0	20.0	20.0		10.0	10.0		10.0	10.0	
Minimum Split (s)	33.7	33.7	33.7	33.7	33.7		48.4	48.4		48.4	48.4	
Total Split (s)	91.0	91.0	91.0	91.0	91.0		49.0	49.0		49.0	49.0	
Total Split (%)	65.0%	65.0%	65.0%	65.0%	65.0%		35.0%	35.0%		35.0%	35.0%	
Maximum Green (s)	84.3	84.3	84.3	84.3	84.3		41.6	41.6		41.6	41.6	
Yellow Time (s)	4.2	4.2	4.2	4.2	4.2		3.3	3.3		3.3	3.3	
All-Red Time (s)	2.5	2.5	2.5	2.5	2.5		4.1	4.1		4.1	4.1	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0			0.0			0.0	
Total Lost Time (s)	6.7	6.7	6.7	6.7	6.7			7.4			7.4	
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	C-Max	C-Max	C-Max	C-Max	C-Max		None	None		None	None	
Walk Time (s)	7.0	7.0	7.0	7.0	7.0		7.0	7.0		7.0	7.0	
Flash Dont Walk (s)	20.0	20.0	20.0	20.0	20.0		34.0	34.0		34.0	34.0	
Pedestrian Calls (#/hr)	7	7	7	0	0		0	0		0	0	
Act Effct Green (s)	125.3	125.3	125.3	125.3	125.3			10.2			10.2	
Actuated g/C Ratio	0.90	0.90	0.90	0.90	0.90			0.07			0.07	
v/c Ratio	0.11	0.63	0.01	0.07	0.80			0.27			0.05	
Control Delay	7.2	4.2	0.1	5.2	7.5			67.8			57.0	
Queue Delay	0.0	0.0	0.0	0.0	0.0			0.0			0.0	
Total Delay	7.2	4.2	0.1	5.2	7.5			67.8			57.0	
LOS	A	A	A	A	A			E			E	
Approach Delay		4.2			7.5			67.8			57.0	
Approach LOS		A			A			E			E	
Queue Length 50th (m)	0.3	88.5	0.0	0.2	174.6			7.8			1.3	
Queue Length 95th (m)	1.5	105.7	0.3	1.1	210.0			18.2			5.8	
Internal Link Dist (m)		609.4			281.5			115.7			71.5	
Turn Bay Length (m)	50.0		10.0	75.0								
Base Capacity (vph)	54	3881	1352	56	3881			443			448	
Starvation Cap Reductn	0	0	0	0	0			0			0	
Spillback Cap Reductn	0	0	0	0	0			0			0	
Storage Cap Reductn	0	0	0	0	0			0			0	
Reduced v/c Ratio	0.11	0.63	0.01	0.07	0.80			0.07			0.01	

Intersection Summary	
Area Type:	Other
Cycle Length: 140	
Actuated Cycle Length: 140	
Offset: 49 (35%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green	
Natural Cycle: 145	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.80	
Intersection Signal Delay: 6.4	Intersection LOS: A

Intersection Capacity Utilization 76.5%	ICU Level of Service D
Analysis Period (min) 15	
* User Entered Value	

Splits and Phases: 3: Lions Valley Park Road & Dundas Street



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	6	2289	12	4	2917	1	8	0	19	2	1	3
Future Volume (vph)	6	2289	12	4	2917	1	8	0	19	2	1	3
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.7	6.7	6.7	6.7	6.7			7.4			7.4	
Lane Util. Factor	1.00	*0.80	1.00	1.00	*0.80			1.00			1.00	
Frpb, ped/bikes	1.00	1.00	0.96	1.00	1.00			1.00			1.00	
Flpb, ped/bikes	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			0.91			0.93	
Flt Protected	0.95	1.00	1.00	0.95	1.00			0.98			0.98	
Satd. Flow (prot)	1750	4336	1507	1749	4336			1645			1690	
Flt Permitted	0.03	1.00	1.00	0.03	1.00			0.89			0.88	
Satd. Flow (perm)	62	4336	1507	63	4336			1493			1507	
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)	6	2435	13	4	3103	1	9	0	20	2	1	3
RTOR Reduction (vph)	0	0	2	0	0	0	0	0	0	0	1	0
Lane Group Flow (vph)	6	2435	11	4	3104	0	0	29	0	0	5	0
Confl. Peds. (#/hr)			7	7								
Heavy Vehicles (%)	2%	4%	2%	2%	4%	2%	2%	2%	2%	2%	2%	2%
Turn Type	Perm	NA	Perm	Perm	NA		Perm	NA		Perm	NA	
Protected Phases		2			6			8			4	
Permitted Phases	2		2	6			8			4		
Actuated Green, G (s)	119.7	119.7	119.7	119.7	119.7			6.2			6.2	
Effective Green, g (s)	119.7	119.7	119.7	119.7	119.7			6.2			6.2	
Actuated g/C Ratio	0.86	0.86	0.86	0.86	0.86			0.04			0.04	
Clearance Time (s)	6.7	6.7	6.7	6.7	6.7			7.4			7.4	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0			3.0			3.0	
Lane Grp Cap (vph)	53	3707	1288	53	3707			66			66	
v/s Ratio Prot		0.56			c0.72							
v/s Ratio Perm	0.10		0.01	0.06				c0.02			0.00	
v/c Ratio	0.11	0.66	0.01	0.08	0.84			0.44			0.08	
Uniform Delay, d1	1.6	3.4	1.5	1.6	5.2			65.2			64.2	
Progression Factor	1.00	1.00	1.00	1.00	1.00			1.00			1.00	
Incremental Delay, d2	4.3	0.9	0.0	2.8	2.4			4.6			0.5	
Delay (s)	5.9	4.3	1.5	4.3	7.6			69.8			64.7	
Level of Service	A	A	A	A	A			E			E	
Approach Delay (s)		4.3			7.6			69.8			64.7	
Approach LOS		A			A			E			E	

Intersection Summary			
HCM 2000 Control Delay	6.5	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.82		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	14.1
Intersection Capacity Utilization	76.5%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	1311	10	41	1566	85	23	14	26	0	1	0
Future Volume (vph)	0	1311	10	41	1566	85	23	14	26	0	1	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	45.0		0.0	45.0		0.0	0.0		0.0	0.0		0.0
Storage Lanes	1		0	1		0	0		0	0		0
Taper Length (m)	50.0			50.0			15.0			15.0		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor		1.00						0.99				
Frt		0.999			0.992			0.944				
Flt Protected				0.950				0.982				
Satd. Flow (prot)	1842	3488	0	1750	3472	0	0	1658	0	0	1842	0
Flt Permitted				0.147				0.880				
Satd. Flow (perm)	1842	3488	0	271	3472	0	0	1485	0	0	1842	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		1			8			13				
Link Speed (k/h)		60			60			50			50	
Link Distance (m)		203.6			105.5			200.3			179.6	
Travel Time (s)		12.2			6.3			14.4			12.9	
Confl. Peds. (#/hr)			4	4								
Confl. Bikes (#/hr)			1						1			
Peak Hour Factor	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88
Heavy Vehicles (%)	2%	2%	33%	2%	2%	2%	9%	2%	2%	2%	2%	2%
Adj. Flow (vph)	0	1490	11	47	1780	97	26	16	30	0	1	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	1501	0	47	1877	0	0	72	0	0	1	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.5			3.5			0.0			0.0	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		3.0			3.0			3.0			3.0	
Two way Left Turn Lane												
Headway Factor	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2		1	2		1	2		1	2	
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	
Leading Detector (m)	2.0	10.0		2.0	10.0		2.0	10.0		2.0	10.0	
Trailing Detector (m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Position(m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Size(m)	2.0	0.6		2.0	0.6		2.0	0.6		2.0	0.6	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Perm	NA		Perm	NA		Perm	NA			NA	
Protected Phases		2			6			8			4	
Permitted Phases	2			6			8			4		
Detector Phase	2	2		6	6		8	8		4	4	
Switch Phase												
Minimum Initial (s)	10.0	10.0		10.0	10.0		10.0	10.0		10.0	10.0	
Minimum Split (s)	31.2	31.2		31.2	31.2		41.5	41.5		41.5	41.5	
Total Split (s)	48.0	48.0		48.0	48.0		42.0	42.0		42.0	42.0	
Total Split (%)	53.3%	53.3%		53.3%	53.3%		46.7%	46.7%		46.7%	46.7%	
Maximum Green (s)	41.8	41.8		41.8	41.8		35.5	35.5		35.5	35.5	
Yellow Time (s)	3.7	3.7		3.7	3.7		3.3	3.3		3.3	3.3	
All-Red Time (s)	2.5	2.5		2.5	2.5		3.2	3.2		3.2	3.2	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0			0.0			0.0	
Total Lost Time (s)	6.2	6.2		6.2	6.2			6.5			6.5	
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	Max	Max		Max	Max		None	None		None	None	
Walk Time (s)	7.0	7.0		7.0	7.0		7.0	7.0		7.0	7.0	
Flash Dont Walk (s)	18.0	18.0		18.0	18.0		28.0	28.0		28.0	28.0	
Pedestrian Calls (#/hr)	4	4		0	0		0	0		0	0	
Act Effct Green (s)		56.4		56.4	56.4			10.2			10.2	
Actuated g/C Ratio		0.81		0.81	0.81			0.15			0.15	
v/c Ratio		0.53		0.21	0.67			0.31			0.00	
Control Delay		5.5		7.4	7.4			27.5			26.0	
Queue Delay		0.0		0.0	0.0			0.0			0.0	
Total Delay		5.5		7.4	7.4			27.5			26.0	
LOS		A		A	A			C			C	
Approach Delay		5.5			7.4			27.5			26.0	
Approach LOS		A			A			C			C	
Queue Length 50th (m)		48.9		2.0	75.4			8.3			0.1	
Queue Length 95th (m)		66.9		7.3	104.2			16.6			1.2	
Internal Link Dist (m)		179.6			81.5			176.3			155.6	
Turn Bay Length (m)				45.0								
Base Capacity (vph)		2832		220	2821			772			949	
Starvation Cap Reductn		0		0	0			0			0	
Spillback Cap Reductn		0		0	0			0			0	
Storage Cap Reductn		0		0	0			0			0	
Reduced v/c Ratio		0.53		0.21	0.67			0.09			0.00	

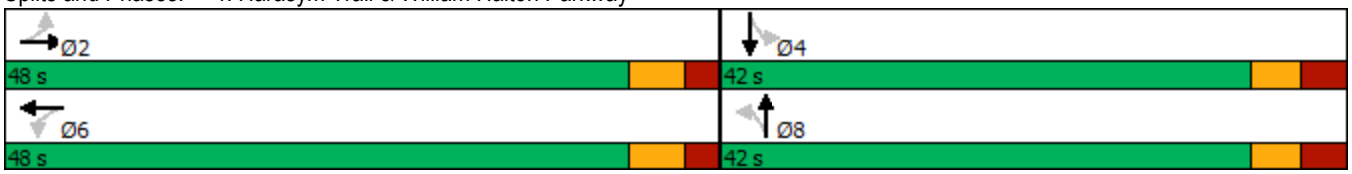
Intersection Summary

Area Type: Other
Cycle Length: 90
Actuated Cycle Length: 69.4
Natural Cycle: 100
Control Type: Semi Act-Uncoord
Maximum v/c Ratio: 0.67
Intersection Signal Delay: 7.0 Intersection LOS: A

Intersection Capacity Utilization 66.8% ICU Level of Service C

Analysis Period (min) 15

Splits and Phases: 4: Harasym Trail & William Halton Parkway



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	1311	10	41	1566	85	23	14	26	0	1	0
Future Volume (vph)	0	1311	10	41	1566	85	23	14	26	0	1	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		6.2		6.2	6.2			6.5			6.5	
Lane Util. Factor		0.95		1.00	0.95			1.00			1.00	
Frpb, ped/bikes		1.00		1.00	1.00			0.99			1.00	
Flpb, ped/bikes		1.00		1.00	1.00			1.00			1.00	
Frt		1.00		1.00	0.99			0.94			1.00	
Flt Protected		1.00		0.95	1.00			0.98			1.00	
Satd. Flow (prot)		3488		1749	3473			1656			1842	
Flt Permitted		1.00		0.15	1.00			0.88			1.00	
Satd. Flow (perm)		3488		270	3473			1484			1842	
Peak-hour factor, PHF	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88
Adj. Flow (vph)	0	1490	11	47	1780	97	26	16	30	0	1	0
RTOR Reduction (vph)	0	0	0	0	2	0	0	12	0	0	0	0
Lane Group Flow (vph)	0	1501	0	47	1875	0	0	60	0	0	1	0
Confl. Peds. (#/hr)			4	4								
Confl. Bikes (#/hr)			1						1			
Heavy Vehicles (%)	2%	2%	33%	2%	2%	2%	9%	2%	2%	2%	2%	2%
Turn Type	Perm	NA		Perm	NA		Perm	NA			NA	
Protected Phases		2			6			8			4	
Permitted Phases	2			6			8			4		
Actuated Green, G (s)		53.7		53.7	53.7			5.8			5.8	
Effective Green, g (s)		53.7		53.7	53.7			5.8			5.8	
Actuated g/C Ratio		0.74		0.74	0.74			0.08			0.08	
Clearance Time (s)		6.2		6.2	6.2			6.5			6.5	
Vehicle Extension (s)		3.0		3.0	3.0			3.0			3.0	
Lane Grp Cap (vph)		2594		200	2583			119			147	
v/s Ratio Prot		0.43			c0.54						0.00	
v/s Ratio Perm				0.17				c0.04				
v/c Ratio		0.58		0.23	0.73			0.50			0.01	
Uniform Delay, d1		4.2		2.9	5.2			31.8			30.5	
Progression Factor		1.00		1.00	1.00			1.00			1.00	
Incremental Delay, d2		0.9		2.7	1.8			3.3			0.0	
Delay (s)		5.1		5.6	7.0			35.2			30.6	
Level of Service		A		A	A			D			C	
Approach Delay (s)		5.1			6.9			35.2			30.6	
Approach LOS		A			A			D			C	

Intersection Summary			
HCM 2000 Control Delay	6.7	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.70		
Actuated Cycle Length (s)	72.2	Sum of lost time (s)	12.7
Intersection Capacity Utilization	66.8%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

Lanes, Volumes, Timings
2: Proudfoot Trail/Sweetwater Gate & Dundas Street

12-01-2024

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	47	1867	92	326	2588	124	72	13	237	98	14	39
Future Volume (vph)	47	1867	92	326	2588	124	72	13	237	98	14	39
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	120.0		70.0	130.0		60.0	90.0		0.0	80.0		0.0
Storage Lanes	1		1	1		1	1		0	1		0
Taper Length (m)	65.0			15.0			30.0			15.0		
Lane Util. Factor	1.00	*0.80	1.00	1.00	*0.80	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor			0.97				1.00	0.99		1.00	0.99	
Frt			0.850			0.850		0.858			0.890	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1684	4421	1566	1750	4421	1566	1750	1553	0	1716	1620	0
Flt Permitted	0.088			0.081			0.720			0.193		
Satd. Flow (perm)	156	4421	1517	149	4421	1566	1321	1553	0	348	1620	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			108			72		239				
Link Speed (k/h)		70			70			50			50	
Link Distance (m)		331.1			413.9			220.1			189.0	
Travel Time (s)		17.0			21.3			15.8			13.6	
Confl. Peds. (#/hr)			5	5			4		3	3		4
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
Heavy Vehicles (%)	6%	2%	2%	2%	2%	2%	2%	8%	2%	4%	2%	2%
Adj. Flow (vph)	49	1945	96	340	2696	129	75	14	247	102	15	41
Shared Lane Traffic (%)												
Lane Group Flow (vph)	49	1945	96	340	2696	129	75	261	0	102	56	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.5			3.5			3.5			3.5	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		3.0			3.0			3.0			3.0	
Two way Left Turn Lane												
Headway Factor	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2	1	1	2	1	1	2		1	2	
Detector Template	Left	Thru	Right	Left	Thru	Right	Left	Thru		Left	Thru	
Leading Detector (m)	2.0	10.0	2.0	2.0	10.0	2.0	2.0	10.0		2.0	10.0	
Trailing Detector (m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Detector 1 Position(m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Detector 1 Size(m)	2.0	0.6	2.0	2.0	0.6	2.0	2.0	0.6		2.0	0.6	
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Type	Perm	NA	Perm	pm+pt	NA	Perm	Perm	NA		pm+pt	NA	
Protected Phases		2		1	6			8		7	4	
Permitted Phases	2		2	6		6	8			4		
Detector Phase	2	2	2	1	6	6	8	8		7	4	
Switch Phase												
Minimum Initial (s)	20.0	20.0	20.0	7.0	20.0	20.0	10.0	10.0		7.0	10.0	
Minimum Split (s)	31.9	31.9	31.9	11.0	31.9	31.9	43.9	43.9		11.0	43.9	
Total Split (s)	50.0	50.0	50.0	15.0	65.0	65.0	44.0	44.0		11.0	55.0	
Total Split (%)	41.7%	41.7%	41.7%	12.5%	54.2%	54.2%	36.7%	36.7%		9.2%	45.8%	
Maximum Green (s)	44.1	44.1	44.1	11.0	59.1	59.1	37.1	37.1		7.0	48.1	
Yellow Time (s)	3.7	3.7	3.7	3.0	3.7	3.7	3.3	3.3		3.0	3.3	
All-Red Time (s)	2.2	2.2	2.2	1.0	2.2	2.2	3.6	3.6		1.0	3.6	
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)	5.9	5.9	5.9	4.0	5.9	5.9	6.9	6.9		4.0	6.9	
Lead/Lag	Lag	Lag	Lag	Lead			Lag	Lag		Lead		
Lead-Lag Optimize?	Yes	Yes	Yes	Yes			Yes	Yes		Yes		
Vehicle Extension (s)	5.5	5.5	5.5	3.0	5.5	5.5	3.0	3.0		3.0	3.0	
Recall Mode	C-Max	C-Max	C-Max	None	C-Max	C-Max	None	None		None	None	
Walk Time (s)	7.0	7.0	7.0		7.0	7.0	7.0	7.0			7.0	
Flash Dont Walk (s)	19.0	19.0	19.0		19.0	19.0	30.0	30.0			30.0	
Pedestrian Calls (#/hr)	5	5	5		0	0	3	3			4	
Act Effct Green (s)	45.5	45.5	45.5	81.4	79.5	79.5	16.7	16.7		30.6	27.7	
Actuated g/C Ratio	0.38	0.38	0.38	0.68	0.66	0.66	0.14	0.14		0.26	0.23	
v/c Ratio	0.83	1.16	0.15	0.68	0.92	0.12	0.41	0.62		0.61	0.15	
Control Delay	115.6	114.1	4.2	33.3	17.0	1.8	50.7	13.4		48.4	34.3	
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Total Delay	115.6	114.1	4.2	33.3	17.0	1.8	50.7	13.4		48.4	34.3	
LOS	F	F	A	C	B	A	D	B		D	C	
Approach Delay		109.1			18.1			21.7			43.4	
Approach LOS		F			B			C			D	
Queue Length 50th (m)	10.0	~217.3	0.0	43.0	127.1	0.3	17.1	4.8		20.1	11.1	
Queue Length 95th (m)	#35.4	#264.5	8.9	m#128.4	#358.8	m5.4	25.1	23.1		25.8	16.6	
Internal Link Dist (m)		307.1			389.9			196.1			165.0	
Turn Bay Length (m)	120.0		70.0	130.0		60.0	90.0			80.0		
Base Capacity (vph)	59	1676	642	500	2927	1061	408	645		168	649	
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	0.83	1.16	0.15	0.68	0.92	0.12	0.18	0.40		0.61	0.09	

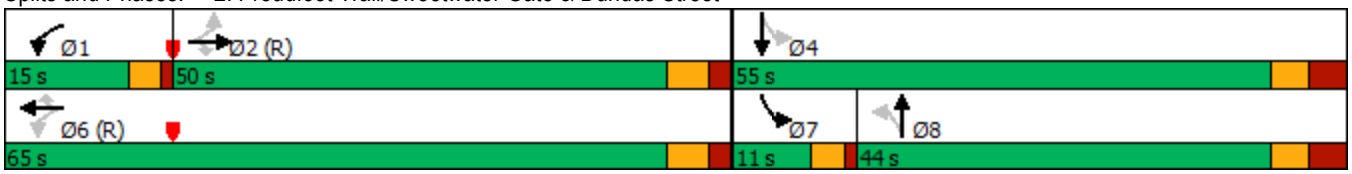
Intersection Summary

Area Type: Other
Cycle Length: 120
Actuated Cycle Length: 120
Offset: 0 (0%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green
Natural Cycle: 150
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 1.16
Intersection Signal Delay: 52.1 Intersection LOS: D

Intersection Capacity Utilization 108.5%	ICU Level of Service G
Analysis Period (min) 15	

* User Entered Value
~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 2: Proudfoot Trail/Sweetwater Gate & Dundas Street



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	47	1867	92	326	2588	124	72	13	237	98	14	39
Future Volume (vph)	47	1867	92	326	2588	124	72	13	237	98	14	39
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.9	5.9	5.9	4.0	5.9	5.9	6.9	6.9		4.0	6.9	
Lane Util. Factor	1.00	*0.80	1.00	1.00	*0.80	1.00	1.00	1.00		1.00	1.00	
Frpb, ped/bikes	1.00	1.00	0.97	1.00	1.00	1.00	1.00	0.99		1.00	0.99	
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	1.00	0.85	1.00	1.00	0.85	1.00	0.86		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)	1684	4421	1517	1750	4421	1566	1744	1553		1716	1621	
Flt Permitted	0.09	1.00	1.00	0.08	1.00	1.00	0.72	1.00		0.19	1.00	
Satd. Flow (perm)	156	4421	1517	149	4421	1566	1322	1553		349	1621	
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)	49	1945	96	340	2696	129	75	14	247	102	15	41
RTOR Reduction (vph)	0	0	60	0	0	24	0	206	0	0	0	0
Lane Group Flow (vph)	49	1945	36	340	2696	105	75	55	0	102	56	0
Confl. Peds. (#/hr)			5	5			4		3	3		4
Heavy Vehicles (%)	6%	2%	2%	2%	2%	2%	2%	8%	2%	4%	2%	2%
Turn Type	Perm	NA	Perm	pm+pt	NA	Perm	Perm	NA		pm+pt	NA	
Protected Phases		2		1	6			8		7	4	
Permitted Phases	2		2	6		6	8			4		
Actuated Green, G (s)	45.5	45.5	45.5	79.5	79.5	79.5	16.7	16.7		27.7	27.7	
Effective Green, g (s)	45.5	45.5	45.5	79.5	79.5	79.5	16.7	16.7		27.7	27.7	
Actuated g/C Ratio	0.38	0.38	0.38	0.66	0.66	0.66	0.14	0.14		0.23	0.23	
Clearance Time (s)	5.9	5.9	5.9	4.0	5.9	5.9	6.9	6.9		4.0	6.9	
Vehicle Extension (s)	5.5	5.5	5.5	3.0	5.5	5.5	3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	59	1676	575	498	2928	1037	183	216		160	374	
v/s Ratio Prot		c0.44		0.17	c0.61			0.04		c0.04	0.03	
v/s Ratio Perm	0.31		0.02	0.28		0.07	0.06			c0.11		
v/c Ratio	0.83	1.16	0.06	0.68	0.92	0.10	0.41	0.26		0.64	0.15	
Uniform Delay, d1	33.8	37.2	23.7	30.8	17.5	7.3	47.2	46.1		38.7	36.8	
Progression Factor	1.00	1.00	1.00	1.03	0.63	0.32	1.00	1.00		1.00	1.00	
Incremental Delay, d2	75.2	79.3	0.2	2.1	3.5	0.1	1.5	0.6		8.1	0.2	
Delay (s)	109.0	116.5	23.9	33.9	14.5	2.4	48.6	46.7		46.8	37.0	
Level of Service	F	F	C	C	B	A	D	D		D	D	
Approach Delay (s)		112.1			16.1			47.2			43.3	
Approach LOS		F			B			D			D	

Intersection Summary			
HCM 2000 Control Delay	53.6	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.99		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	20.8
Intersection Capacity Utilization	108.5%	ICU Level of Service	G
Analysis Period (min)	15		

c Critical Lane Group

Appendix O

2029 Future Total Conditions Synchro Worksheets

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	19	2339	62	16	1673	23	37	0	15	72	0	55
Future Volume (vph)	19	2339	62	16	1673	23	37	0	15	72	0	55
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	70.0		0.0	90.0		65.0	30.0		0.0	40.0		0.0
Storage Lanes	1		0	1		1	1		0	1		0
Taper Length (m)	60.0			100.0			15.0			15.0		
Lane Util. Factor	1.00	*0.80	0.91	1.00	*0.80	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor		1.00										
Frt		0.996				0.850		0.850			0.850	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1750	4318	0	1750	4175	1566	1750	1566	0	1750	1566	0
Flt Permitted	0.086			0.043			0.719			0.747		
Satd. Flow (perm)	158	4318	0	79	4175	1566	1324	1566	0	1376	1566	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		4				33		112			64	
Link Speed (k/h)		70			70			50			50	
Link Distance (m)		413.9			633.4			126.1			441.9	
Travel Time (s)		21.3			32.6			9.1			31.8	
Confl. Peds. (#/hr)			3	3								
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Heavy Vehicles (%)	2%	4%	2%	2%	8%	2%	2%	2%	2%	2%	2%	2%
Adj. Flow (vph)	20	2515	67	17	1799	25	40	0	16	77	0	59
Shared Lane Traffic (%)												
Lane Group Flow (vph)	20	2582	0	17	1799	25	40	16	0	77	59	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.5			3.5			3.5			3.5	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		3.0			3.0			3.0			3.0	
Two way Left Turn Lane												
Headway Factor	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2		1	2	1	1	2		1	2	
Detector Template	Left	Thru		Left	Thru	Right	Left	Thru		Left	Thru	
Leading Detector (m)	2.0	10.0		2.0	10.0	2.0	2.0	10.0		2.0	10.0	
Trailing Detector (m)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Detector 1 Position(m)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Detector 1 Size(m)	2.0	0.6		2.0	0.6	2.0	2.0	0.6		2.0	0.6	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	

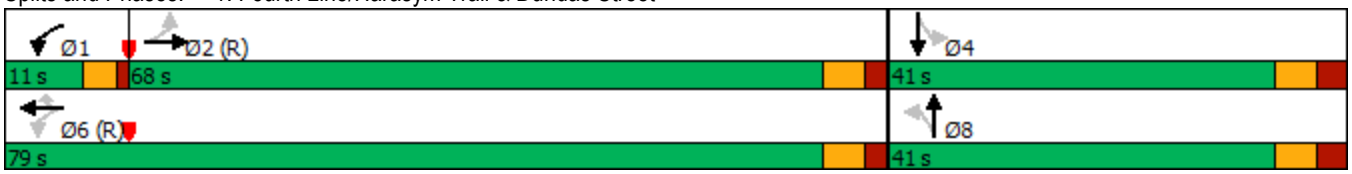
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Type	Perm	NA		pm+pt	NA	Perm	Perm	NA		Perm	NA	
Protected Phases		2		1	6			8			4	
Permitted Phases	2			6		6	8			4		
Detector Phase	2	2		1	6	6	8	8		4	4	
Switch Phase												
Minimum Initial (s)	20.0	20.0		7.0	20.0	20.0	7.0	7.0		7.0	7.0	
Minimum Split (s)	33.0	33.0		11.0	33.0	33.0	40.6	40.6		40.6	40.6	
Total Split (s)	68.0	68.0		11.0	79.0	79.0	41.0	41.0		41.0	41.0	
Total Split (%)	56.7%	56.7%		9.2%	65.8%	65.8%	34.2%	34.2%		34.2%	34.2%	
Maximum Green (s)	62.0	62.0		7.0	73.0	73.0	34.4	34.4		34.4	34.4	
Yellow Time (s)	3.7	3.7		3.0	3.7	3.7	3.7	3.7		3.7	3.7	
All-Red Time (s)	2.3	2.3		1.0	2.3	2.3	2.9	2.9		2.9	2.9	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Total Lost Time (s)	6.0	6.0		4.0	6.0	6.0	6.6	6.6		6.6	6.6	
Lead/Lag	Lag	Lag		Lead								
Lead-Lag Optimize?	Yes	Yes		Yes								
Vehicle Extension (s)	5.0	5.0		4.0	5.0	5.0	4.0	4.0		3.0	3.0	
Recall Mode	C-Max	C-Max		None	C-Max	C-Max	None	None		None	None	
Walk Time (s)	7.0	7.0			7.0	7.0	7.0	7.0		7.0	7.0	
Flash Dont Walk (s)	20.0	20.0			20.0	20.0	27.0	27.0		27.0	27.0	
Pedestrian Calls (#/hr)	3	3			0	0	0	0		0	0	
Act Effct Green (s)	94.7	94.7		100.0	99.2	99.2	12.2	12.2		12.2	12.2	
Actuated g/C Ratio	0.79	0.79		0.83	0.83	0.83	0.10	0.10		0.10	0.10	
v/c Ratio	0.16	0.76		0.10	0.52	0.02	0.30	0.06		0.55	0.27	
Control Delay	4.3	4.9		4.1	5.1	0.9	54.1	0.5		65.4	13.3	
Queue Delay	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Total Delay	4.3	4.9		4.1	5.1	0.9	54.1	0.5		65.4	13.3	
LOS	A	A		A	A	A	D	A		E	B	
Approach Delay		4.9			5.0			38.7			42.8	
Approach LOS		A			A			D			D	
Queue Length 50th (m)	0.5	30.0		0.6	52.1	0.0	8.9	0.0		17.5	0.0	
Queue Length 95th (m)	m0.8	42.2		2.4	78.6	1.6	19.0	0.0		31.8	10.7	
Internal Link Dist (m)		389.9			609.4			102.1			417.9	
Turn Bay Length (m)	70.0			90.0		65.0	30.0			40.0		
Base Capacity (vph)	124	3409		163	3450	1299	379	528		394	494	
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	0.16	0.76		0.10	0.52	0.02	0.11	0.03		0.20	0.12	

Intersection Summary	
Area Type:	Other
Cycle Length: 120	
Actuated Cycle Length: 120	
Offset: 104.4 (87%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green	
Natural Cycle: 135	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.76	
Intersection Signal Delay: 6.5	Intersection LOS: A

Intersection Capacity Utilization 67.7%	ICU Level of Service C
Analysis Period (min) 15	
* User Entered Value	

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

Splits and Phases: 1: Fourth Line/Harasym Trail & Dundas Street



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	19	2339	62	16	1673	23	37	0	15	72	0	55
Future Volume (vph)	19	2339	62	16	1673	23	37	0	15	72	0	55
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0	6.0		4.0	6.0	6.0	6.6	6.6		6.6	6.6	
Lane Util. Factor	1.00	*0.80		1.00	*0.80	1.00	1.00	1.00		1.00	1.00	
Frpb, ped/bikes	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	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		1.00	1.00	0.85	1.00	0.85		1.00	0.85	
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1750	4318		1750	4175	1566	1750	1566		1750	1566	
Flt Permitted	0.09	1.00		0.04	1.00	1.00	0.72	1.00		0.75	1.00	
Satd. Flow (perm)	159	4318		79	4175	1566	1324	1566		1376	1566	
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)	20	2515	67	17	1799	25	40	0	16	77	0	59
RTOR Reduction (vph)	0	1	0	0	0	5	0	15	0	0	54	0
Lane Group Flow (vph)	20	2581	0	17	1799	20	40	1	0	77	5	0
Confl. Peds. (#/hr)			3	3								
Heavy Vehicles (%)	2%	4%	2%	2%	8%	2%	2%	2%	2%	2%	2%	2%
Turn Type	Perm	NA		pm+pt	NA	Perm	Perm	NA		Perm	NA	
Protected Phases		2		1	6			8			4	
Permitted Phases	2			6		6	8			4		
Actuated Green, G (s)	89.8	89.8		96.6	96.6	96.6	10.8	10.8		10.8	10.8	
Effective Green, g (s)	89.8	89.8		96.6	96.6	96.6	10.8	10.8		10.8	10.8	
Actuated g/C Ratio	0.75	0.75		0.80	0.80	0.80	0.09	0.09		0.09	0.09	
Clearance Time (s)	6.0	6.0		4.0	6.0	6.0	6.6	6.6		6.6	6.6	
Vehicle Extension (s)	5.0	5.0		4.0	5.0	5.0	4.0	4.0		3.0	3.0	
Lane Grp Cap (vph)	118	3231		102	3360	1260	119	140		123	140	
v/s Ratio Prot		c0.60		0.00	c0.43			0.00			0.00	
v/s Ratio Perm	0.13			0.13		0.01	0.03			c0.06		
v/c Ratio	0.17	0.80		0.17	0.54	0.02	0.34	0.01		0.63	0.04	
Uniform Delay, d1	4.4	9.4		11.0	4.0	2.3	51.2	49.7		52.7	49.9	
Progression Factor	0.35	0.34		1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Incremental Delay, d2	1.8	1.3		1.1	0.6	0.0	2.3	0.0		9.6	0.1	
Delay (s)	3.3	4.5		12.0	4.6	2.3	53.5	49.8		62.2	50.0	
Level of Service	A	A		B	A	A	D	D		E	D	
Approach Delay (s)		4.5			4.7			52.4			56.9	
Approach LOS		A			A			D			E	

Intersection Summary			
HCM 2000 Control Delay	6.7	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.78		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	16.6
Intersection Capacity Utilization	67.7%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	8	2134	109	101	1774	42	56	17	276	106	36	30
Future Volume (vph)	8	2134	109	101	1774	42	56	17	276	106	36	30
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	120.0		70.0	115.0		60.0	90.0		0.0	80.0		0.0
Storage Lanes	1		1	1		1	1		0	1		0
Taper Length (m)	65.0			65.0			30.0			15.0		
Lane Util. Factor	1.00	*0.80	1.00	1.00	*0.80	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor								0.99		1.00		
Frt			0.850			0.850		0.859			0.932	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1526	4378	1465	1684	4295	1465	1716	1535	0	1733	1685	0
Flt Permitted	0.078			0.053			0.713			0.275		
Satd. Flow (perm)	125	4378	1465	94	4295	1465	1288	1535	0	501	1685	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			82			42		123			24	
Link Speed (k/h)		70			70			50			50	
Link Distance (m)		331.1			413.9			220.1			189.0	
Travel Time (s)		17.0			21.3			15.8			13.6	
Confl. Peds. (#/hr)									2	2		
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Heavy Vehicles (%)	17%	3%	9%	6%	5%	9%	4%	33%	2%	3%	3%	5%
Adj. Flow (vph)	8	2178	111	103	1810	43	57	17	282	108	37	31
Shared Lane Traffic (%)												
Lane Group Flow (vph)	8	2178	111	103	1810	43	57	299	0	108	68	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.5			3.5			3.5			3.5	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		3.0			3.0			3.0			3.0	
Two way Left Turn Lane												
Headway Factor	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2	1	1	2	1	1	2		1	2	
Detector Template	Left	Thru	Right	Left	Thru	Right	Left	Thru		Left	Thru	
Leading Detector (m)	2.0	10.0	2.0	2.0	10.0	2.0	2.0	10.0		2.0	10.0	
Trailing Detector (m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Detector 1 Position(m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Detector 1 Size(m)	2.0	0.6	2.0	2.0	0.6	2.0	2.0	0.6		2.0	0.6	
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Type	Perm	NA	Perm	pm+pt	NA	Perm	Perm	NA		Perm	NA	
Protected Phases		2		1	6			8			4	
Permitted Phases	2		2	6		6	8			4		
Detector Phase	2	2	2	1	6	6	8	8		4	4	
Switch Phase												
Minimum Initial (s)	20.0	20.0	20.0	7.0	20.0	20.0	10.0	10.0		10.0	10.0	
Minimum Split (s)	31.9	31.9	31.9	11.0	31.9	31.9	43.9	43.9		43.9	43.9	
Total Split (s)	70.8	70.8	70.8	12.0	82.8	82.8	37.2	37.2		37.2	37.2	
Total Split (%)	59.0%	59.0%	59.0%	10.0%	69.0%	69.0%	31.0%	31.0%		31.0%	31.0%	
Maximum Green (s)	64.9	64.9	64.9	8.0	76.9	76.9	30.3	30.3		30.3	30.3	
Yellow Time (s)	3.7	3.7	3.7	3.0	3.7	3.7	3.3	3.3		3.3	3.3	
All-Red Time (s)	2.2	2.2	2.2	1.0	2.2	2.2	3.6	3.6		3.6	3.6	
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)	5.9	5.9	5.9	4.0	5.9	5.9	6.9	6.9		6.9	6.9	
Lead/Lag	Lag	Lag	Lag	Lead								
Lead-Lag Optimize?	Yes	Yes	Yes	Yes								
Vehicle Extension (s)	5.5	5.5	5.5	3.0	5.5	5.5	3.0	3.0		3.0	3.0	
Recall Mode	C-Max	C-Max	C-Max	None	C-Max	C-Max	None	None		None	None	
Walk Time (s)	7.0	7.0	7.0		7.0	7.0	7.0	7.0		7.0	7.0	
Flash Dont Walk (s)	19.0	19.0	19.0		19.0	19.0	30.0	30.0		30.0	30.0	
Pedestrian Calls (#/hr)	0	0	0		0	0	2	2		0	0	
Act Effct Green (s)	72.1	72.1	72.1	85.6	83.7	83.7	23.5	23.5		23.5	23.5	
Actuated g/C Ratio	0.60	0.60	0.60	0.71	0.70	0.70	0.20	0.20		0.20	0.20	
v/c Ratio	0.11	0.83	0.12	0.62	0.60	0.04	0.23	0.75		1.11	0.20	
Control Delay	17.8	24.0	4.8	42.7	9.6	2.4	40.0	37.5		167.3	26.5	
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Total Delay	17.8	24.0	4.8	42.7	9.6	2.4	40.0	37.5		167.3	26.5	
LOS	B	C	A	D	A	A	D	D		F	C	
Approach Delay		23.1			11.1			37.9			112.9	
Approach LOS		C			B			D			F	
Queue Length 50th (m)	0.8	166.5	2.7	12.9	68.6	0.0	11.2	39.2		~27.3	8.5	
Queue Length 95th (m)	4.1	216.6	11.5	#34.4	79.0	m3.0	21.9	67.0		#58.2	19.6	
Internal Link Dist (m)		307.1			389.9			196.1			165.0	
Turn Bay Length (m)	120.0		70.0	115.0		60.0	90.0			80.0		
Base Capacity (vph)	75	2631	913	173	2997	1034	325	479		126	443	
Starvation Cap Reductn	0	0	0	0	0	0	0	0		0	0	
Spillback Cap Reductn	0	0	0	0	0	0	0	0		0	0	
Storage Cap Reductn	0	0	0	0	0	0	0	0		0	0	
Reduced v/c Ratio	0.11	0.83	0.12	0.60	0.60	0.04	0.18	0.62		0.86	0.15	

Intersection Summary

Area Type: Other
Cycle Length: 120
Actuated Cycle Length: 120
Offset: 80.4 (67%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green
Natural Cycle: 120
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 1.11
Intersection Signal Delay: 22.6 Intersection LOS: C

Intersection Capacity Utilization 99.6%	ICU Level of Service F
Analysis Period (min) 15	

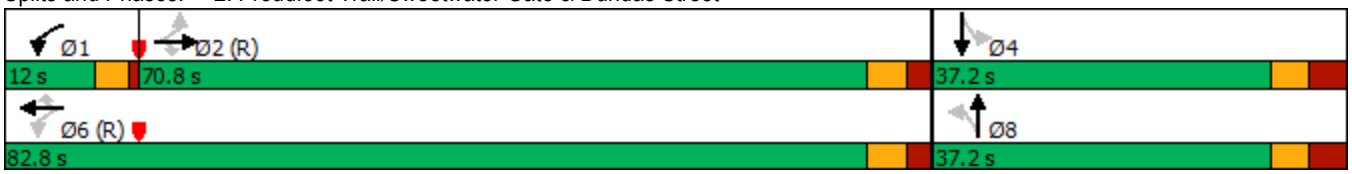
* User Entered Value

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

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

Splits and Phases: 2: Proudfoot Trail/Sweetwater Gate & Dundas Street



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	8	2134	109	101	1774	42	56	17	276	106	36	30
Future Volume (vph)	8	2134	109	101	1774	42	56	17	276	106	36	30
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.9	5.9	5.9	4.0	5.9	5.9	6.9	6.9		6.9	6.9	
Lane Util. Factor	1.00	*0.80	1.00	1.00	*0.80	1.00	1.00	1.00		1.00	1.00	
Frpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.99		1.00	1.00	
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	1.00	0.85	1.00	1.00	0.85	1.00	0.86		1.00	0.93	
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)	1526	4378	1465	1684	4295	1465	1716	1534		1731	1685	
Flt Permitted	0.08	1.00	1.00	0.05	1.00	1.00	0.71	1.00		0.27	1.00	
Satd. Flow (perm)	126	4378	1465	93	4295	1465	1288	1534		501	1685	
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)	8	2178	111	103	1810	43	57	17	282	108	37	31
RTOR Reduction (vph)	0	0	33	0	0	13	0	99	0	0	19	0
Lane Group Flow (vph)	8	2178	78	103	1810	30	57	200	0	108	49	0
Confl. Peds. (#/hr)									2	2		
Heavy Vehicles (%)	17%	3%	9%	6%	5%	9%	4%	33%	2%	3%	3%	5%
Turn Type	Perm	NA	Perm	pm+pt	NA	Perm	Perm	NA		Perm	NA	
Protected Phases		2		1	6			8			4	
Permitted Phases	2		2	6		6	8			4		
Actuated Green, G (s)	72.1	72.1	72.1	83.7	83.7	83.7	23.5	23.5		23.5	23.5	
Effective Green, g (s)	72.1	72.1	72.1	83.7	83.7	83.7	23.5	23.5		23.5	23.5	
Actuated g/C Ratio	0.60	0.60	0.60	0.70	0.70	0.70	0.20	0.20		0.20	0.20	
Clearance Time (s)	5.9	5.9	5.9	4.0	5.9	5.9	6.9	6.9		6.9	6.9	
Vehicle Extension (s)	5.5	5.5	5.5	3.0	5.5	5.5	3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	75	2630	880	165	2995	1021	252	300		98	329	
v/s Ratio Prot		c0.50		0.04	c0.42			0.13			0.03	
v/s Ratio Perm	0.06		0.05	0.39		0.02	0.04			c0.22		
v/c Ratio	0.11	0.83	0.09	0.62	0.60	0.03	0.23	0.67		1.10	0.15	
Uniform Delay, d1	10.2	19.0	10.1	23.9	9.5	5.6	40.6	44.6		48.2	40.0	
Progression Factor	1.00	1.00	1.00	1.57	0.83	0.93	1.00	1.00		1.00	1.00	
Incremental Delay, d2	2.8	3.2	0.2	6.4	0.8	0.0	0.5	5.5		121.1	0.2	
Delay (s)	13.1	22.2	10.3	44.0	8.6	5.3	41.1	50.1		169.4	40.2	
Level of Service	B	C	B	D	A	A	D	D		F	D	
Approach Delay (s)		21.6			10.4			48.7			119.5	
Approach LOS		C			B			D			F	

Intersection Summary			
HCM 2000 Control Delay	22.6	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.88		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	16.8
Intersection Capacity Utilization	99.6%	ICU Level of Service	F
Analysis Period (min)	15		

c Critical Lane Group

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	2672	0	1	1780	1	1	0	3	1	0	0
Future Volume (vph)	0	2672	0	1	1780	1	1	0	3	1	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	50.0		10.0	75.0		0.0	0.0		0.0	0.0		0.0
Storage Lanes	1		1	1		0	0		0	0		0
Taper Length (m)	50.0			100.0			15.0			15.0		
Lane Util. Factor	1.00	*0.80	1.00	1.00	*0.80	0.91	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor					1.00			0.99			1.00	
Frt								0.899				
Flt Protected				0.950				0.988			0.950	
Satd. Flow (prot)	1842	4378	1842	1750	4254	0	0	1318	0	0	1750	0
Flt Permitted				0.034				0.914			0.755	
Satd. Flow (perm)	1842	4378	1842	63	4254	0	0	1219	0	0	1388	0
Right Turn on Red			Yes			Yes			No			Yes
Satd. Flow (RTOR)												
Link Speed (k/h)		70			70			50			50	
Link Distance (m)		633.4			305.5			139.7			95.5	
Travel Time (s)		32.6			15.7			10.1			6.9	
Confl. Peds. (#/hr)	1		7	7		1	1		2	2		1
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Heavy Vehicles (%)	2%	3%	2%	2%	6%	2%	2%	2%	33%	2%	2%	2%
Adj. Flow (vph)	0	2873	0	1	1914	1	1	0	3	1	0	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	2873	0	1	1915	0	0	4	0	0	1	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.5			3.5			0.0			0.0	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		3.0			3.0			3.0			3.0	
Two way Left Turn Lane												
Headway Factor	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2	1	1	2		1	2		1	2	
Detector Template	Left	Thru	Right	Left	Thru		Left	Thru		Left	Thru	
Leading Detector (m)	2.0	10.0	2.0	2.0	10.0		2.0	10.0		2.0	10.0	
Trailing Detector (m)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Position(m)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Size(m)	2.0	0.6	2.0	2.0	0.6		2.0	0.6		2.0	0.6	
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	

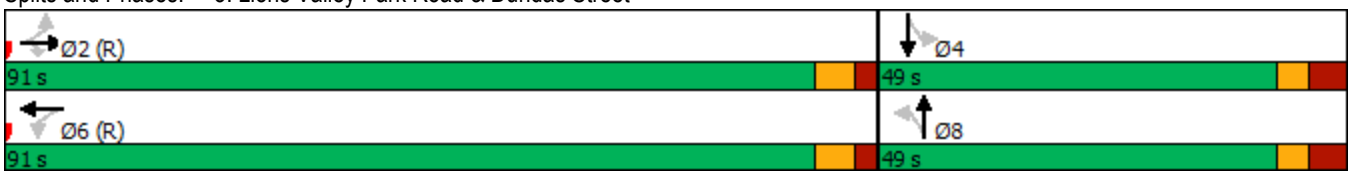
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Type	Perm	NA	Perm	Perm	NA		Perm	NA		Perm	NA	
Protected Phases		2			6			8			4	
Permitted Phases	2		2	6			8			4		
Detector Phase	2	2	2	6	6		8	8		4	4	
Switch Phase												
Minimum Initial (s)	20.0	20.0	20.0	20.0	20.0		10.0	10.0		10.0	10.0	
Minimum Split (s)	33.7	33.7	33.7	33.7	33.7		48.4	48.4		48.4	48.4	
Total Split (s)	91.0	91.0	91.0	91.0	91.0		49.0	49.0		49.0	49.0	
Total Split (%)	65.0%	65.0%	65.0%	65.0%	65.0%		35.0%	35.0%		35.0%	35.0%	
Maximum Green (s)	84.3	84.3	84.3	84.3	84.3		41.6	41.6		41.6	41.6	
Yellow Time (s)	4.2	4.2	4.2	4.2	4.2		3.3	3.3		3.3	3.3	
All-Red Time (s)	2.5	2.5	2.5	2.5	2.5		4.1	4.1		4.1	4.1	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0			0.0			0.0	
Total Lost Time (s)	6.7	6.7	6.7	6.7	6.7			7.4			7.4	
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	C-Max	C-Max	C-Max	C-Max	C-Max		None	None		None	None	
Walk Time (s)	7.0	7.0	7.0	7.0	7.0		7.0	7.0		7.0	7.0	
Flash Dont Walk (s)	20.0	20.0	20.0	20.0	20.0		34.0	34.0		34.0	34.0	
Pedestrian Calls (#/hr)	7	7	7	1	1		2	2		1	1	
Act Effct Green (s)		129.0		129.0	129.0			16.2			16.2	
Actuated g/C Ratio		0.92		0.92	0.92			0.12			0.12	
v/c Ratio		0.71		0.02	0.49			0.03			0.01	
Control Delay		8.6		8.0	5.6			46.8			45.0	
Queue Delay		0.0		0.0	0.0			0.0			0.0	
Total Delay		8.6		8.0	5.6			46.8			45.0	
LOS		A		A	A			D			D	
Approach Delay		8.6			5.6			46.8			45.0	
Approach LOS		A			A			D			D	
Queue Length 50th (m)		0.0		0.0	0.0			1.1			0.3	
Queue Length 95th (m)		#397.4		1.0	171.3			3.8			1.6	
Internal Link Dist (m)		609.4			281.5			115.7			71.5	
Turn Bay Length (m)				75.0								
Base Capacity (vph)		4033		58	3919			362			412	
Starvation Cap Reductn		0		0	0			0			0	
Spillback Cap Reductn		0		0	0			0			0	
Storage Cap Reductn		0		0	0			0			0	
Reduced v/c Ratio		0.71		0.02	0.49			0.01			0.00	

Intersection Summary

Area Type: Other
Cycle Length: 140
Actuated Cycle Length: 140
Offset: 57.4 (41%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green
Natural Cycle: 145
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.71
Intersection Signal Delay: 7.4 Intersection LOS: A

Intersection Capacity Utilization 73.4%	ICU Level of Service D
Analysis Period (min) 15	
* User Entered Value	
# 95th percentile volume exceeds capacity, queue may be longer.	
Queue shown is maximum after two cycles.	

Splits and Phases: 3: Lions Valley Park Road & Dundas Street



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	2672	0	1	1780	1	1	0	3	1	0	0
Future Volume (vph)	0	2672	0	1	1780	1	1	0	3	1	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		6.7		6.7	6.7			7.4			7.4	
Lane Util. Factor		*0.80		1.00	*0.80			1.00			1.00	
Frpb, ped/bikes		1.00		1.00	1.00			0.99			1.00	
Flpb, ped/bikes		1.00		1.00	1.00			1.00			1.00	
Frt		1.00		1.00	1.00			0.90			1.00	
Flt Protected		1.00		0.95	1.00			0.99			0.95	
Satd. Flow (prot)		4378		1750	4254			1317			1746	
Flt Permitted		1.00		0.03	1.00			0.91			0.76	
Satd. Flow (perm)		4378		63	4254			1219			1388	
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)	0	2873	0	1	1914	1	1	0	3	1	0	0
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	2873	0	1	1915	0	0	4	0	0	1	0
Confl. Peds. (#/hr)	1		7	7		1	1		2	2		1
Heavy Vehicles (%)	2%	3%	2%	2%	6%	2%	2%	2%	33%	2%	2%	2%
Turn Type	Perm	NA	Perm	Perm	NA		Perm	NA		Perm	NA	
Protected Phases		2			6			8			4	
Permitted Phases	2		2	6			8			4		
Actuated Green, G (s)		117.7		117.7	117.7			8.2			8.2	
Effective Green, g (s)		117.7		117.7	117.7			8.2			8.2	
Actuated g/C Ratio		0.84		0.84	0.84			0.06			0.06	
Clearance Time (s)		6.7		6.7	6.7			7.4			7.4	
Vehicle Extension (s)		3.0		3.0	3.0			3.0			3.0	
Lane Grp Cap (vph)		3680		52	3576			71			81	
v/s Ratio Prot		c0.66			0.45							
v/s Ratio Perm				0.02				c0.00			0.00	
v/c Ratio		0.78		0.02	0.54			0.06			0.01	
Uniform Delay, d1		5.2		1.8	3.2			62.2			62.1	
Progression Factor		1.00		1.00	1.00			1.00			1.00	
Incremental Delay, d2		1.7		0.7	0.6			0.3			0.1	
Delay (s)		6.9		2.5	3.8			62.6			62.1	
Level of Service		A		A	A			E			E	
Approach Delay (s)		6.9			3.8			62.6			62.1	
Approach LOS		A			A			E			E	

Intersection Summary			
HCM 2000 Control Delay	5.7	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.73		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	14.1
Intersection Capacity Utilization	73.4%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	13	1026	24	21	881	27	33	5	61	84	14	42
Future Volume (vph)	13	1026	24	21	881	27	33	5	61	84	14	42
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	45.0		0.0	45.0		0.0	0.0		0.0	0.0		0.0
Storage Lanes	1		0	1		0	0		0	0		0
Taper Length (m)	50.0			50.0			15.0			15.0		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor	1.00	1.00		1.00	1.00			0.99			1.00	
Frt		0.997			0.995			0.918			0.959	
Flt Protected	0.950			0.950				0.983			0.971	
Satd. Flow (prot)	1750	3482	0	1750	2855	0	0	1357	0	0	1715	0
Flt Permitted	0.241			0.190				0.859			0.790	
Satd. Flow (perm)	443	3482	0	349	2855	0	0	1186	0	0	1394	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		3			5			35			29	
Link Speed (k/h)		60			60			50			50	
Link Distance (m)		203.6			105.5			441.9			179.6	
Travel Time (s)		12.2			6.3			31.8			12.9	
Confl. Peds. (#/hr)	4		7	7		4			2	2		
Confl. Bikes (#/hr)									1			
Peak Hour Factor	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88
Heavy Vehicles (%)	2%	2%	8%	2%	25%	2%	67%	2%	2%	2%	2%	2%
Adj. Flow (vph)	15	1166	27	24	1001	31	38	6	69	95	16	48
Shared Lane Traffic (%)												
Lane Group Flow (vph)	15	1193	0	24	1032	0	0	113	0	0	159	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.5			3.5			3.5			3.5	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		3.0			3.0			3.0			3.0	
Two way Left Turn Lane												
Headway Factor	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2		1	2		1	2		1	2	
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	
Leading Detector (m)	2.0	10.0		2.0	10.0		2.0	10.0		2.0	10.0	
Trailing Detector (m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Position(m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Size(m)	2.0	0.6		2.0	0.6		2.0	0.6		2.0	0.6	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		2			6			8			4	
Permitted Phases	2			6			8			4		
Detector Phase	2	2		6	6		8	8		4	4	
Switch Phase												
Minimum Initial (s)	10.0	10.0		10.0	10.0		10.0	10.0		10.0	10.0	
Minimum Split (s)	31.2	31.2		31.2	31.2		41.5	41.5		41.5	41.5	
Total Split (s)	48.0	48.0		48.0	48.0		42.0	42.0		42.0	42.0	
Total Split (%)	53.3%	53.3%		53.3%	53.3%		46.7%	46.7%		46.7%	46.7%	
Maximum Green (s)	41.8	41.8		41.8	41.8		35.5	35.5		35.5	35.5	
Yellow Time (s)	3.7	3.7		3.7	3.7		3.3	3.3		3.3	3.3	
All-Red Time (s)	2.5	2.5		2.5	2.5		3.2	3.2		3.2	3.2	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0			0.0			0.0	
Total Lost Time (s)	6.2	6.2		6.2	6.2			6.5			6.5	
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	Max	Max		Max	Max		None	None		None	None	
Walk Time (s)	7.0	7.0		7.0	7.0		7.0	7.0		7.0	7.0	
Flash Dont Walk (s)	18.0	18.0		18.0	18.0		28.0	28.0		28.0	28.0	
Pedestrian Calls (#/hr)	7	7		4	4		2	2		0	0	
Act Effct Green (s)	45.2	45.2		45.2	45.2			15.5			15.5	
Actuated g/C Ratio	0.61	0.61		0.61	0.61			0.21			0.21	
v/c Ratio	0.06	0.56		0.11	0.59			0.41			0.50	
Control Delay	10.2	11.4		11.2	12.3			20.1			24.6	
Queue Delay	0.0	0.0		0.0	0.0			0.0			0.0	
Total Delay	10.2	11.4		11.2	12.3			20.1			24.6	
LOS	B	B		B	B			C			C	
Approach Delay		11.4			12.3			20.1			24.6	
Approach LOS		B			B			C			C	
Queue Length 50th (m)	0.6	37.0		1.0	32.8			8.6			14.7	
Queue Length 95th (m)	4.8	104.1		7.2	95.8			19.4			28.0	
Internal Link Dist (m)		179.6			81.5			417.9			155.6	
Turn Bay Length (m)	45.0			45.0								
Base Capacity (vph)	272	2139		214	1755			598			697	
Starvation Cap Reductn	0	0		0	0			0			0	
Spillback Cap Reductn	0	0		0	0			0			0	
Storage Cap Reductn	0	0		0	0			0			0	
Reduced v/c Ratio	0.06	0.56		0.11	0.59			0.19			0.23	

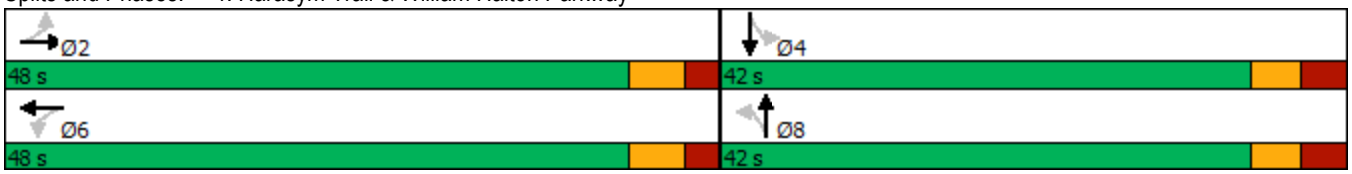
Intersection Summary

Area Type: Other
Cycle Length: 90
Actuated Cycle Length: 73.6
Natural Cycle: 80
Control Type: Semi Act-Uncoord
Maximum v/c Ratio: 0.59
Intersection Signal Delay: 13.0 Intersection LOS: B

Intersection Capacity Utilization 53.7% ICU Level of Service A

Analysis Period (min) 15

Splits and Phases: 4: Harasym Trail & William Halton Parkway



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	13	1026	24	21	881	27	33	5	61	84	14	42
Future Volume (vph)	13	1026	24	21	881	27	33	5	61	84	14	42
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.2	6.2		6.2	6.2			6.5			6.5	
Lane Util. Factor	1.00	0.95		1.00	0.95			1.00			1.00	
Frpb, ped/bikes	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	
Frt	1.00	1.00		1.00	1.00			0.92			0.96	
Flt Protected	0.95	1.00		0.95	1.00			0.98			0.97	
Satd. Flow (prot)	1748	3481		1747	2857			1357			1715	
Flt Permitted	0.24	1.00		0.19	1.00			0.86			0.79	
Satd. Flow (perm)	443	3481		349	2857			1185			1395	
Peak-hour factor, PHF	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88
Adj. Flow (vph)	15	1166	27	24	1001	31	38	6	69	95	16	48
RTOR Reduction (vph)	0	1	0	0	2	0	0	28	0	0	23	0
Lane Group Flow (vph)	15	1192	0	24	1030	0	0	85	0	0	136	0
Confl. Peds. (#/hr)	4		7	7		4			2	2		
Confl. Bikes (#/hr)									1			
Heavy Vehicles (%)	2%	2%	8%	2%	25%	2%	67%	2%	2%	2%	2%	2%
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		2			6			8			4	
Permitted Phases	2			6			8			4		
Actuated Green, G (s)	45.2	45.2		45.2	45.2			15.5			15.5	
Effective Green, g (s)	45.2	45.2		45.2	45.2			15.5			15.5	
Actuated g/C Ratio	0.62	0.62		0.62	0.62			0.21			0.21	
Clearance Time (s)	6.2	6.2		6.2	6.2			6.5			6.5	
Vehicle Extension (s)	3.0	3.0		3.0	3.0			3.0			3.0	
Lane Grp Cap (vph)	272	2143		214	1759			250			294	
v/s Ratio Prot		0.34			c0.36							
v/s Ratio Perm	0.03			0.07				0.07			c0.10	
v/c Ratio	0.06	0.56		0.11	0.59			0.34			0.46	
Uniform Delay, d1	5.6	8.2		5.8	8.5			24.6			25.3	
Progression Factor	1.00	1.00		1.00	1.00			1.00			1.00	
Incremental Delay, d2	0.4	1.0		1.1	1.4			0.8			1.2	
Delay (s)	6.0	9.3		6.9	9.9			25.4			26.5	
Level of Service	A	A		A	A			C			C	
Approach Delay (s)		9.2			9.8			25.4			26.5	
Approach LOS		A			A			C			C	

Intersection Summary			
HCM 2000 Control Delay	11.3	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.55		
Actuated Cycle Length (s)	73.4	Sum of lost time (s)	12.7
Intersection Capacity Utilization	53.7%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	8	2134	109	101	1774	42	56	17	276	106	36	30
Future Volume (vph)	8	2134	109	101	1774	42	56	17	276	106	36	30
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	120.0		70.0	115.0		60.0	90.0		0.0	80.0		0.0
Storage Lanes	1		1	1		1	1		0	1		0
Taper Length (m)	65.0			65.0			30.0			15.0		
Lane Util. Factor	1.00	*0.80	1.00	1.00	*0.80	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor								0.99		1.00		
Frt			0.850			0.850		0.859			0.932	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1526	4378	1465	1684	4295	1465	1716	1535	0	1733	1685	0
Flt Permitted	0.070			0.058			0.713			0.368		
Satd. Flow (perm)	112	4378	1465	103	4295	1465	1288	1535	0	671	1685	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			82			42		123			24	
Link Speed (k/h)		70			70			50			50	
Link Distance (m)		331.1			413.9			220.1			189.0	
Travel Time (s)		17.0			21.3			15.8			13.6	
Confl. Peds. (#/hr)									2	2		
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Heavy Vehicles (%)	17%	3%	9%	6%	5%	9%	4%	33%	2%	3%	3%	5%
Adj. Flow (vph)	8	2178	111	103	1810	43	57	17	282	108	37	31
Shared Lane Traffic (%)												
Lane Group Flow (vph)	8	2178	111	103	1810	43	57	299	0	108	68	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.5			3.5			3.5			3.5	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		3.0			3.0			3.0			3.0	
Two way Left Turn Lane												
Headway Factor	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2	1	1	2	1	1	2		1	2	
Detector Template	Left	Thru	Right	Left	Thru	Right	Left	Thru		Left	Thru	
Leading Detector (m)	2.0	10.0	2.0	2.0	10.0	2.0	2.0	10.0		2.0	10.0	
Trailing Detector (m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Detector 1 Position(m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Detector 1 Size(m)	2.0	0.6	2.0	2.0	0.6	2.0	2.0	0.6		2.0	0.6	
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Type	Perm	NA	Perm	pm+pt	NA	Perm	Perm	NA		Perm	NA	
Protected Phases		2		1	6			8			4	
Permitted Phases	2		2	6		6	8			4		
Detector Phase	2	2	2	1	6	6	8	8		4	4	
Switch Phase												
Minimum Initial (s)	20.0	20.0	20.0	7.0	20.0	20.0	10.0	10.0		10.0	10.0	
Minimum Split (s)	31.9	31.9	31.9	11.0	31.9	31.9	43.9	43.9		43.9	43.9	
Total Split (s)	70.8	70.8	70.8	12.0	82.8	82.8	37.2	37.2		37.2	37.2	
Total Split (%)	59.0%	59.0%	59.0%	10.0%	69.0%	69.0%	31.0%	31.0%		31.0%	31.0%	
Maximum Green (s)	64.9	64.9	64.9	8.0	76.9	76.9	30.3	30.3		30.3	30.3	
Yellow Time (s)	3.7	3.7	3.7	3.0	3.7	3.7	3.3	3.3		3.3	3.3	
All-Red Time (s)	2.2	2.2	2.2	1.0	2.2	2.2	3.6	3.6		3.6	3.6	
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)	5.9	5.9	5.9	4.0	5.9	5.9	6.9	6.9		6.9	6.9	
Lead/Lag	Lag	Lag	Lag	Lead								
Lead-Lag Optimize?	Yes	Yes	Yes	Yes								
Vehicle Extension (s)	5.5	5.5	5.5	3.0	5.5	5.5	3.0	3.0		3.0	3.0	
Recall Mode	C-Max	C-Max	C-Max	None	C-Max	C-Max	None	None		Max	Max	
Walk Time (s)	7.0	7.0	7.0		7.0	7.0	7.0	7.0		7.0	7.0	
Flash Dont Walk (s)	19.0	19.0	19.0		19.0	19.0	30.0	30.0		30.0	30.0	
Pedestrian Calls (#/hr)	0	0	0		0	0	2	2		0	0	
Act Effct Green (s)	65.2	65.2	65.2	78.8	76.9	76.9	30.3	30.3		30.3	30.3	
Actuated g/C Ratio	0.54	0.54	0.54	0.66	0.64	0.64	0.25	0.25		0.25	0.25	
v/c Ratio	0.13	0.92	0.13	0.61	0.66	0.05	0.18	0.62		0.64	0.15	
Control Delay	20.2	32.3	4.9	41.7	12.3	2.4	36.9	29.4		59.0	24.9	
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Total Delay	20.2	32.3	4.9	41.7	12.3	2.4	36.9	29.4		59.0	24.9	
LOS	C	C	A	D	B	A	D	C		E	C	
Approach Delay		31.0			13.7			30.6			45.8	
Approach LOS		C			B			C			D	
Queue Length 50th (m)	0.9	187.4	3.1	12.8	71.2	0.0	10.5	36.7		22.8	8.0	
Queue Length 95th (m)	4.3	216.6	11.5	#32.1	79.0	m3.0	21.9	67.0		#47.7	19.6	
Internal Link Dist (m)		307.1			389.9			196.1			165.0	
Turn Bay Length (m)	120.0		70.0	115.0		60.0	90.0			80.0		
Base Capacity (vph)	60	2379	833	173	2752	953	325	479		169	443	
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	0.13	0.92	0.13	0.60	0.66	0.05	0.18	0.62		0.64	0.15	

Intersection Summary

Area Type: Other
Cycle Length: 120
Actuated Cycle Length: 120
Offset: 80.4 (67%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green
Natural Cycle: 120
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.92
Intersection Signal Delay: 24.4 Intersection LOS: C

Intersection Capacity Utilization 99.6% ICU Level of Service F

Analysis Period (min) 15

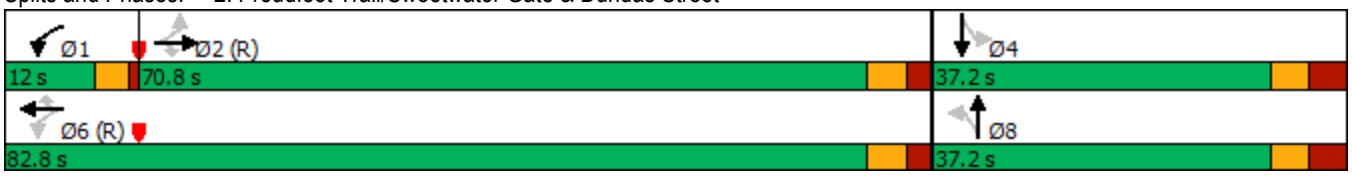
* User Entered Value

\# 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: Proudfoot Trail/Sweetwater Gate & Dundas Street



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	8	2134	109	101	1774	42	56	17	276	106	36	30
Future Volume (vph)	8	2134	109	101	1774	42	56	17	276	106	36	30
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.9	5.9	5.9	4.0	5.9	5.9	6.9	6.9		6.9	6.9	
Lane Util. Factor	1.00	*0.80	1.00	1.00	*0.80	1.00	1.00	1.00		1.00	1.00	
Frpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.99		1.00	1.00	
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	1.00	0.85	1.00	1.00	0.85	1.00	0.86		1.00	0.93	
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)	1526	4378	1465	1684	4295	1465	1716	1534		1731	1685	
Flt Permitted	0.07	1.00	1.00	0.06	1.00	1.00	0.71	1.00		0.37	1.00	
Satd. Flow (perm)	113	4378	1465	102	4295	1465	1288	1534		671	1685	
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)	8	2178	111	103	1810	43	57	17	282	108	37	31
RTOR Reduction (vph)	0	0	37	0	0	15	0	92	0	0	18	0
Lane Group Flow (vph)	8	2178	74	103	1810	28	57	207	0	108	50	0
Confl. Peds. (#/hr)									2	2		
Heavy Vehicles (%)	17%	3%	9%	6%	5%	9%	4%	33%	2%	3%	3%	5%
Turn Type	Perm	NA	Perm	pm+pt	NA	Perm	Perm	NA		Perm	NA	
Protected Phases		2		1	6			8			4	
Permitted Phases	2		2	6		6	8			4		
Actuated Green, G (s)	65.2	65.2	65.2	76.9	76.9	76.9	30.3	30.3		30.3	30.3	
Effective Green, g (s)	65.2	65.2	65.2	76.9	76.9	76.9	30.3	30.3		30.3	30.3	
Actuated g/C Ratio	0.54	0.54	0.54	0.64	0.64	0.64	0.25	0.25		0.25	0.25	
Clearance Time (s)	5.9	5.9	5.9	4.0	5.9	5.9	6.9	6.9		6.9	6.9	
Vehicle Extension (s)	5.5	5.5	5.5	3.0	5.5	5.5	3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	61	2378	795	166	2752	938	325	387		169	425	
v/s Ratio Prot		c0.50		0.04	c0.42			0.13			0.03	
v/s Ratio Perm	0.07		0.05	0.35		0.02	0.04			c0.16		
v/c Ratio	0.13	0.92	0.09	0.62	0.66	0.03	0.18	0.54		0.64	0.12	
Uniform Delay, d1	13.5	24.9	13.2	23.9	13.4	7.9	35.1	38.8		40.0	34.6	
Progression Factor	1.00	1.00	1.00	1.64	0.83	0.93	1.00	1.00		1.00	1.00	
Incremental Delay, d2	4.4	7.0	0.2	6.3	1.1	0.1	0.3	1.4		17.1	0.6	
Delay (s)	17.9	31.9	13.4	45.5	12.2	7.4	35.3	40.2		57.0	35.1	
Level of Service	B	C	B	D	B	A	D	D		E	D	
Approach Delay (s)		30.9			13.8			39.4			48.6	
Approach LOS		C			B			D			D	

Intersection Summary			
HCM 2000 Control Delay	25.2	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.82		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	16.8
Intersection Capacity Utilization	99.6%	ICU Level of Service	F
Analysis Period (min)	15		

c Critical Lane Group

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	51	1999	40	33	2680	70	64	0	21	44	0	35
Future Volume (vph)	51	1999	40	33	2680	70	64	0	21	44	0	35
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	70.0		0.0	90.0		65.0	30.0		0.0	40.0		0.0
Storage Lanes	1		0	1		1	1		0	1		0
Taper Length (m)	60.0			100.0			15.0			15.0		
Lane Util. Factor	1.00	*0.80	0.91	1.00	*0.80	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor		1.00										
Frt		0.997				0.850		0.850			0.850	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1750	4364	0	1750	4336	1566	1750	1566	0	1750	1566	0
Flt Permitted	0.045			0.045			0.734			0.744		
Satd. Flow (perm)	83	4364	0	83	4336	1566	1352	1566	0	1370	1566	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		3				46		115			64	
Link Speed (k/h)		70			70			50			50	
Link Distance (m)		413.9			633.4			126.1			441.0	
Travel Time (s)		21.3			32.6			9.1			31.8	
Confl. Peds. (#/hr)			1	1								
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Heavy Vehicles (%)	2%	3%	2%	2%	4%	2%	2%	2%	2%	2%	2%	2%
Adj. Flow (vph)	52	2040	41	34	2735	71	65	0	21	45	0	36
Shared Lane Traffic (%)												
Lane Group Flow (vph)	52	2081	0	34	2735	71	65	21	0	45	36	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.5			3.5			3.5			3.5	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		3.0			3.0			3.0			3.0	
Two way Left Turn Lane												
Headway Factor	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2		1	2	1	1	2		1	2	
Detector Template	Left	Thru		Left	Thru	Right	Left	Thru		Left	Thru	
Leading Detector (m)	2.0	10.0		2.0	10.0	2.0	2.0	10.0		2.0	10.0	
Trailing Detector (m)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Detector 1 Position(m)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Detector 1 Size(m)	2.0	0.6		2.0	0.6	2.0	2.0	0.6		2.0	0.6	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Type	Perm	NA		pm+pt	NA	Perm	Perm	NA		Perm	NA	
Protected Phases		2		1	6			8			4	
Permitted Phases	2			6		6	8			4		
Detector Phase	2	2		1	6	6	8	8		4	4	
Switch Phase												
Minimum Initial (s)	20.0	20.0		7.0	20.0	20.0	7.0	7.0		7.0	7.0	
Minimum Split (s)	33.0	33.0		11.0	33.0	33.0	40.6	40.6		40.6	40.6	
Total Split (s)	68.0	68.0		11.0	79.0	79.0	41.0	41.0		41.0	41.0	
Total Split (%)	56.7%	56.7%		9.2%	65.8%	65.8%	34.2%	34.2%		34.2%	34.2%	
Maximum Green (s)	62.0	62.0		7.0	73.0	73.0	34.4	34.4		34.4	34.4	
Yellow Time (s)	3.7	3.7		3.0	3.7	3.7	3.7	3.7		3.7	3.7	
All-Red Time (s)	2.3	2.3		1.0	2.3	2.3	2.9	2.9		2.9	2.9	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Total Lost Time (s)	6.0	6.0		4.0	6.0	6.0	6.6	6.6		6.6	6.6	
Lead/Lag	Lag	Lag		Lead								
Lead-Lag Optimize?	Yes	Yes		Yes								
Vehicle Extension (s)	5.0	5.0		4.0	5.0	5.0	4.0	4.0		3.0	3.0	
Recall Mode	C-Max	C-Max		None	C-Max	C-Max	None	None		None	None	
Walk Time (s)	7.0	7.0			7.0	7.0	7.0	7.0		7.0	7.0	
Flash Dont Walk (s)	20.0	20.0			20.0	20.0	27.0	27.0		27.0	27.0	
Pedestrian Calls (#/hr)	1	1			0	0	0	0		0	0	
Act Effct Green (s)	92.5	92.5		100.0	99.2	99.2	12.1	12.1		12.1	12.1	
Actuated g/C Ratio	0.77	0.77		0.83	0.83	0.83	0.10	0.10		0.10	0.10	
v/c Ratio	0.81	0.62		0.20	0.76	0.05	0.48	0.08		0.33	0.17	
Control Delay	93.7	20.5		5.5	8.8	1.6	61.6	0.6		55.0	5.0	
Queue Delay	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Total Delay	93.7	20.5		5.5	8.8	1.6	61.6	0.6		55.0	5.0	
LOS	F	C		A	A	A	E	A		E	A	
Approach Delay		22.3			8.6			46.7			32.8	
Approach LOS		C			A			D			C	
Queue Length 50th (m)	9.1	122.6		1.2	122.0	1.0	14.7	0.0		10.0	0.0	
Queue Length 95th (m)	m#21.6	214.5		3.7	179.7	4.6	27.9	0.0		20.9	3.5	
Internal Link Dist (m)		389.9			609.4			102.1			417.0	
Turn Bay Length (m)	70.0			90.0		65.0	30.0			40.0		
Base Capacity (vph)	64	3363		168	3585	1303	387	530		392	494	
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	0.81	0.62		0.20	0.76	0.05	0.17	0.04		0.11	0.07	

Intersection Summary	
Area Type:	Other
Cycle Length: 120	
Actuated Cycle Length: 120	
Offset: 91.2 (76%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green	
Natural Cycle: 125	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.81	
Intersection Signal Delay: 15.3	Intersection LOS: B

Intersection Capacity Utilization 72.5% ICU Level of Service C

Analysis Period (min) 15

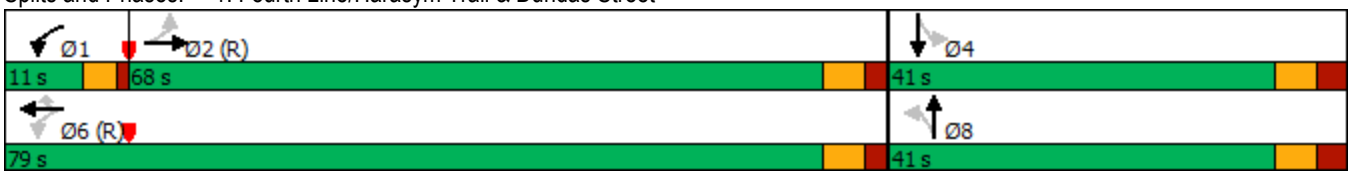
* User Entered Value

\# 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: Fourth Line/Harasym Trail & Dundas Street



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	51	1999	40	33	2680	70	64	0	21	44	0	35
Future Volume (vph)	51	1999	40	33	2680	70	64	0	21	44	0	35
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0	6.0		4.0	6.0	6.0	6.6	6.6		6.6	6.6	
Lane Util. Factor	1.00	*0.80		1.00	*0.80	1.00	1.00	1.00		1.00	1.00	
Frpb, ped/bikes	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	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		1.00	1.00	0.85	1.00	0.85		1.00	0.85	
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1750	4364		1750	4336	1566	1750	1566		1750	1566	
Flt Permitted	0.05	1.00		0.04	1.00	1.00	0.73	1.00		0.74	1.00	
Satd. Flow (perm)	83	4364		82	4336	1566	1351	1566		1370	1566	
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)	52	2040	41	34	2735	71	65	0	21	45	0	36
RTOR Reduction (vph)	0	1	0	0	0	9	0	19	0	0	33	0
Lane Group Flow (vph)	52	2080	0	34	2735	62	65	2	0	45	3	0
Confl. Peds. (#/hr)			1	1								
Heavy Vehicles (%)	2%	3%	2%	2%	4%	2%	2%	2%	2%	2%	2%	2%
Turn Type	Perm	NA		pm+pt	NA	Perm	Perm	NA		Perm	NA	
Protected Phases		2		1	6			8			4	
Permitted Phases	2			6		6	8			4		
Actuated Green, G (s)	88.3	88.3		96.7	96.7	96.7	10.7	10.7		10.7	10.7	
Effective Green, g (s)	88.3	88.3		96.7	96.7	96.7	10.7	10.7		10.7	10.7	
Actuated g/C Ratio	0.74	0.74		0.81	0.81	0.81	0.09	0.09		0.09	0.09	
Clearance Time (s)	6.0	6.0		4.0	6.0	6.0	6.6	6.6		6.6	6.6	
Vehicle Extension (s)	5.0	5.0		4.0	5.0	5.0	4.0	4.0		3.0	3.0	
Lane Grp Cap (vph)	61	3211		127	3494	1261	120	139		122	139	
v/s Ratio Prot		0.48		0.01	c0.63			0.00			0.00	
v/s Ratio Perm	c0.62			0.21		0.04	c0.05			0.03		
v/c Ratio	0.85	0.65		0.27	0.78	0.05	0.54	0.01		0.37	0.02	
Uniform Delay, d1	11.2	8.0		6.7	6.1	2.4	52.3	49.8		51.5	49.9	
Progression Factor	2.21	2.22		1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Incremental Delay, d2	61.2	0.7		1.5	1.8	0.1	6.1	0.1		1.9	0.1	
Delay (s)	86.1	18.5		8.3	7.9	2.4	58.4	49.9		53.4	49.9	
Level of Service	F	B		A	A	A	E	D		D	D	
Approach Delay (s)		20.1			7.8			56.3			51.8	
Approach LOS		C			A			E			D	

Intersection Summary			
HCM 2000 Control Delay	14.4	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.83		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	16.6
Intersection Capacity Utilization	72.5%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	25	1721	87	315	2365	72	68	17	235	65	17	24
Future Volume (vph)	25	1721	87	315	2365	72	68	17	235	65	17	24
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	120.0		70.0	115.0		60.0	90.0		0.0	80.0		0.0
Storage Lanes	1		1	1		1	1		0	1		0
Taper Length (m)	65.0			65.0			30.0			15.0		
Lane Util. Factor	1.00	*0.80	1.00	1.00	*0.80	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor			0.97				1.00	0.99		1.00	0.99	
Frt			0.850			0.850		0.860			0.913	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1684	4421	1566	1750	4421	1566	1750	1556	0	1716	1666	0
Flt Permitted	0.063			0.060			0.729			0.254		
Satd. Flow (perm)	112	4421	1517	111	4421	1566	1338	1556	0	458	1666	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			72			46		245			3	
Link Speed (k/h)		70			70			50			50	
Link Distance (m)		331.1			413.9			220.1			189.0	
Travel Time (s)		17.0			21.3			15.8			13.6	
Confl. Peds. (#/hr)			5	5			4		3	3		4
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
Heavy Vehicles (%)	6%	2%	2%	2%	2%	2%	2%	8%	2%	4%	2%	2%
Adj. Flow (vph)	26	1793	91	328	2464	75	71	18	245	68	18	25
Shared Lane Traffic (%)												
Lane Group Flow (vph)	26	1793	91	328	2464	75	71	263	0	68	43	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.5			3.5			3.5			3.5	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		3.0			3.0			3.0			3.0	
Two way Left Turn Lane												
Headway Factor	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2	1	1	2	1	1	2		1	2	
Detector Template	Left	Thru	Right	Left	Thru	Right	Left	Thru		Left	Thru	
Leading Detector (m)	2.0	10.0	2.0	2.0	10.0	2.0	2.0	10.0		2.0	10.0	
Trailing Detector (m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Detector 1 Position(m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Detector 1 Size(m)	2.0	0.6	2.0	2.0	0.6	2.0	2.0	0.6		2.0	0.6	
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Type	Perm	NA	Perm	pm+pt	NA	Perm	Perm	NA		Perm	NA	
Protected Phases		2		1	6			8			4	
Permitted Phases	2		2	6		6	8			4		
Detector Phase	2	2	2	1	6	6	8	8		4	4	
Switch Phase												
Minimum Initial (s)	20.0	20.0	20.0	7.0	20.0	20.0	10.0	10.0		10.0	10.0	
Minimum Split (s)	31.9	31.9	31.9	11.0	31.9	31.9	43.9	43.9		43.9	43.9	
Total Split (s)	51.6	51.6	51.6	24.0	75.6	75.6	44.4	44.4		44.4	44.4	
Total Split (%)	43.0%	43.0%	43.0%	20.0%	63.0%	63.0%	37.0%	37.0%		37.0%	37.0%	
Maximum Green (s)	45.7	45.7	45.7	20.0	69.7	69.7	37.5	37.5		37.5	37.5	
Yellow Time (s)	3.7	3.7	3.7	3.0	3.7	3.7	3.3	3.3		3.3	3.3	
All-Red Time (s)	2.2	2.2	2.2	1.0	2.2	2.2	3.6	3.6		3.6	3.6	
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)	5.9	5.9	5.9	4.0	5.9	5.9	6.9	6.9		6.9	6.9	
Lead/Lag	Lag	Lag	Lag	Lead								
Lead-Lag Optimize?	Yes	Yes	Yes	Yes								
Vehicle Extension (s)	5.5	5.5	5.5	3.0	5.5	5.5	3.0	3.0		3.0	3.0	
Recall Mode	C-Max	C-Max	C-Max	None	C-Max	C-Max	None	None		None	None	
Walk Time (s)	7.0	7.0	7.0		7.0	7.0	7.0	7.0		7.0	7.0	
Flash Dont Walk (s)	19.0	19.0	19.0		19.0	19.0	30.0	30.0		30.0	30.0	
Pedestrian Calls (#/hr)	5	5	5		0	0	3	3		4	4	
Act Effct Green (s)	63.1	63.1	63.1	90.8	88.9	88.9	18.3	18.3		18.3	18.3	
Actuated g/C Ratio	0.53	0.53	0.53	0.76	0.74	0.74	0.15	0.15		0.15	0.15	
v/c Ratio	0.45	0.77	0.11	0.86	0.75	0.06	0.35	0.59		0.99	0.17	
Control Delay	53.6	27.6	7.1	50.7	6.9	0.7	46.9	11.8		150.9	38.9	
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Total Delay	53.6	27.6	7.1	50.7	6.9	0.7	46.9	11.8		150.9	38.9	
LOS	D	C	A	D	A	A	D	B		F	D	
Approach Delay		27.0			11.8			19.3			107.5	
Approach LOS		C			B			B			F	
Queue Length 50th (m)	3.6	131.9	2.0	48.8	10.5	0.2	15.7	3.8		~19.5	8.6	
Queue Length 95th (m)	#21.4	#227.8	13.3	m#114.1	#258.1	m2.5	23.8	22.1		28.9	15.3	
Internal Link Dist (m)		307.1			389.9			196.1			165.0	
Turn Bay Length (m)	120.0		70.0	115.0		60.0	90.0			80.0		
Base Capacity (vph)	58	2324	831	391	3276	1172	418	654		143	522	
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	0.77	0.11	0.84	0.75	0.06	0.17	0.40		0.48	0.08	

Intersection Summary

Area Type: Other
Cycle Length: 120
Actuated Cycle Length: 120
Offset: 7.2 (6%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green
Natural Cycle: 120
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.99
Intersection Signal Delay: 19.8 Intersection LOS: B

Intersection Capacity Utilization 109.2%	ICU Level of Service H
Analysis Period (min) 15	

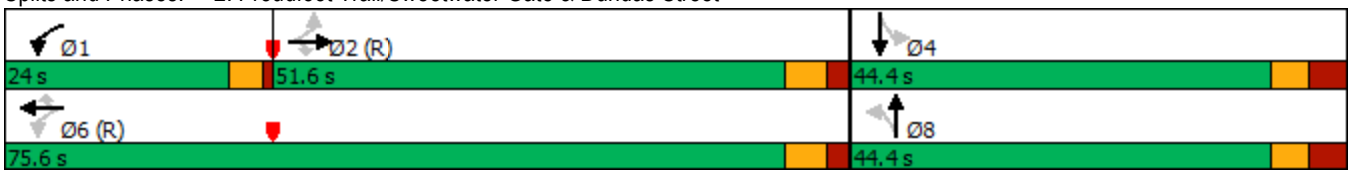
* User Entered Value

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

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

Splits and Phases: 2: Proudfoot Trail/Sweetwater Gate & Dundas Street



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	25	1721	87	315	2365	72	68	17	235	65	17	24
Future Volume (vph)	25	1721	87	315	2365	72	68	17	235	65	17	24
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.9	5.9	5.9	4.0	5.9	5.9	6.9	6.9		6.9	6.9	
Lane Util. Factor	1.00	*0.80	1.00	1.00	*0.80	1.00	1.00	1.00		1.00	1.00	
Frpb, ped/bikes	1.00	1.00	0.97	1.00	1.00	1.00	1.00	0.99		1.00	0.99	
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	1.00	0.85	1.00	1.00	0.85	1.00	0.86		1.00	0.91	
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)	1684	4421	1517	1750	4421	1566	1744	1556		1713	1666	
Flt Permitted	0.06	1.00	1.00	0.06	1.00	1.00	0.73	1.00		0.25	1.00	
Satd. Flow (perm)	112	4421	1517	110	4421	1566	1338	1556		459	1666	
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)	26	1793	91	328	2464	75	71	18	245	68	18	25
RTOR Reduction (vph)	0	0	34	0	0	12	0	208	0	0	3	0
Lane Group Flow (vph)	26	1793	57	328	2464	63	71	55	0	68	40	0
Confl. Peds. (#/hr)			5	5			4		3	3		4
Heavy Vehicles (%)	6%	2%	2%	2%	2%	2%	2%	8%	2%	4%	2%	2%
Turn Type	Perm	NA	Perm	pm+pt	NA	Perm	Perm	NA		Perm	NA	
Protected Phases		2		1	6			8			4	
Permitted Phases	2		2	6		6	8			4		
Actuated Green, G (s)	63.1	63.1	63.1	88.9	88.9	88.9	18.3	18.3		18.3	18.3	
Effective Green, g (s)	63.1	63.1	63.1	88.9	88.9	88.9	18.3	18.3		18.3	18.3	
Actuated g/C Ratio	0.53	0.53	0.53	0.74	0.74	0.74	0.15	0.15		0.15	0.15	
Clearance Time (s)	5.9	5.9	5.9	4.0	5.9	5.9	6.9	6.9		6.9	6.9	
Vehicle Extension (s)	5.5	5.5	5.5	3.0	5.5	5.5	3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	58	2324	797	379	3275	1160	204	237		69	254	
v/s Ratio Prot		0.41		c0.16	0.56			0.04			0.02	
v/s Ratio Perm	0.23		0.04	c0.48		0.04	0.05			c0.15		
v/c Ratio	0.45	0.77	0.07	0.87	0.75	0.05	0.35	0.23		0.99	0.16	
Uniform Delay, d1	17.7	22.7	14.0	37.2	9.1	4.2	45.5	44.7		50.7	44.2	
Progression Factor	1.00	1.00	1.00	1.06	0.45	0.17	1.00	1.00		1.00	1.00	
Incremental Delay, d2	23.1	2.6	0.2	12.9	1.1	0.1	1.0	0.5		102.6	0.3	
Delay (s)	40.7	25.3	14.2	52.3	5.2	0.8	46.5	45.2		153.3	44.5	
Level of Service	D	C	B	D	A	A	D	D		F	D	
Approach Delay (s)		24.9			10.5			45.5			111.2	
Approach LOS		C			B			D			F	

Intersection Summary			
HCM 2000 Control Delay	20.2	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.91		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	16.8
Intersection Capacity Utilization	109.2%	ICU Level of Service	H
Analysis Period (min)	15		

c Critical Lane Group

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	5	2093	12	4	2672	1	7	0	18	2	1	3
Future Volume (vph)	5	2093	12	4	2672	1	7	0	18	2	1	3
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	50.0		10.0	75.0		0.0	0.0		0.0	0.0		0.0
Storage Lanes	1		1	1		0	0		0	0		0
Taper Length (m)	50.0			100.0			15.0			15.0		
Lane Util. Factor	1.00	*0.80	1.00	1.00	*0.80	0.91	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor			0.96									
Frt			0.850					0.901			0.932	
Flt Protected	0.950			0.950				0.987			0.984	
Satd. Flow (prot)	1750	4336	1566	1750	4336	0	0	1638	0	0	1689	0
Flt Permitted	0.033			0.046				0.906			0.879	
Satd. Flow (perm)	61	4336	1507	85	4336	0	0	1504	0	0	1509	0
Right Turn on Red			Yes			Yes			No			Yes
Satd. Flow (RTOR)			34								1	
Link Speed (k/h)		70			70			50			50	
Link Distance (m)		633.4			305.5			139.7			95.5	
Travel Time (s)		32.6			15.7			10.1			6.9	
Confl. Peds. (#/hr)			7	7								
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Heavy Vehicles (%)	2%	4%	2%	2%	4%	2%	2%	2%	2%	2%	2%	2%
Adj. Flow (vph)	5	2227	13	4	2843	1	7	0	19	2	1	3
Shared Lane Traffic (%)												
Lane Group Flow (vph)	5	2227	13	4	2844	0	0	26	0	0	6	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.5			3.5			0.0			0.0	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		3.0			3.0			3.0			3.0	
Two way Left Turn Lane												
Headway Factor	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2	1	1	2		1	2		1	2	
Detector Template	Left	Thru	Right	Left	Thru		Left	Thru		Left	Thru	
Leading Detector (m)	2.0	10.0	2.0	2.0	10.0		2.0	10.0		2.0	10.0	
Trailing Detector (m)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Position(m)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Size(m)	2.0	0.6	2.0	2.0	0.6		2.0	0.6		2.0	0.6	
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	

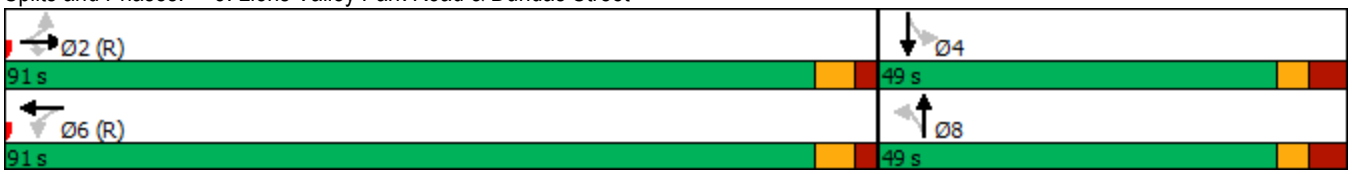
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Type	Perm	NA	Perm	Perm	NA		Perm	NA		Perm	NA	
Protected Phases		2			6			8			4	
Permitted Phases	2		2	6			8			4		
Detector Phase	2	2	2	6	6		8	8		4	4	
Switch Phase												
Minimum Initial (s)	20.0	20.0	20.0	20.0	20.0		10.0	10.0		10.0	10.0	
Minimum Split (s)	33.7	33.7	33.7	33.7	33.7		48.4	48.4		48.4	48.4	
Total Split (s)	91.0	91.0	91.0	91.0	91.0		49.0	49.0		49.0	49.0	
Total Split (%)	65.0%	65.0%	65.0%	65.0%	65.0%		35.0%	35.0%		35.0%	35.0%	
Maximum Green (s)	84.3	84.3	84.3	84.3	84.3		41.6	41.6		41.6	41.6	
Yellow Time (s)	4.2	4.2	4.2	4.2	4.2		3.3	3.3		3.3	3.3	
All-Red Time (s)	2.5	2.5	2.5	2.5	2.5		4.1	4.1		4.1	4.1	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0			0.0			0.0	
Total Lost Time (s)	6.7	6.7	6.7	6.7	6.7			7.4			7.4	
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	C-Max	C-Max	C-Max	C-Max	C-Max		None	None		None	None	
Walk Time (s)	7.0	7.0	7.0	7.0	7.0		7.0	7.0		7.0	7.0	
Flash Dont Walk (s)	20.0	20.0	20.0	20.0	20.0		34.0	34.0		34.0	34.0	
Pedestrian Calls (#/hr)	7	7	7	0	0		0	0		0	0	
Act Effct Green (s)	125.4	125.4	125.4	125.4	125.4			10.1			10.1	
Actuated g/C Ratio	0.90	0.90	0.90	0.90	0.90			0.07			0.07	
v/c Ratio	0.09	0.57	0.01	0.05	0.73			0.24			0.06	
Control Delay	6.2	3.6	0.1	3.8	5.7			67.0			57.2	
Queue Delay	0.0	0.0	0.0	0.0	0.0			0.0			0.0	
Total Delay	6.2	3.6	0.1	3.8	5.7			67.0			57.2	
LOS	A	A	A	A	A			E			E	
Approach Delay		3.6			5.7			67.0			57.2	
Approach LOS		A			A			E			E	
Queue Length 50th (m)	0.2	72.9	0.0	0.2	131.9			6.9			1.3	
Queue Length 95th (m)	1.4	85.3	0.3	1.0	153.7			16.9			5.8	
Internal Link Dist (m)		609.4			281.5			115.7			71.5	
Turn Bay Length (m)	50.0		10.0	75.0								
Base Capacity (vph)	54	3884	1353	76	3884			446			449	
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	0.09	0.57	0.01	0.05	0.73			0.06			0.01	

Intersection Summary

Area Type: Other
Cycle Length: 140
Actuated Cycle Length: 140
Offset: 49 (35%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green
Natural Cycle: 145
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.73
Intersection Signal Delay: 5.2 Intersection LOS: A

Intersection Capacity Utilization 71.7%	ICU Level of Service C
Analysis Period (min) 15	
* User Entered Value	

Splits and Phases: 3: Lions Valley Park Road & Dundas Street



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	5	2093	12	4	2672	1	7	0	18	2	1	3
Future Volume (vph)	5	2093	12	4	2672	1	7	0	18	2	1	3
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.7	6.7	6.7	6.7	6.7			7.4			7.4	
Lane Util. Factor	1.00	*0.80	1.00	1.00	*0.80			1.00			1.00	
Frpb, ped/bikes	1.00	1.00	0.96	1.00	1.00			1.00			1.00	
Flpb, ped/bikes	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			0.90			0.93	
Flt Protected	0.95	1.00	1.00	0.95	1.00			0.99			0.98	
Satd. Flow (prot)	1750	4336	1507	1749	4336			1638			1690	
Flt Permitted	0.03	1.00	1.00	0.05	1.00			0.91			0.88	
Satd. Flow (perm)	62	4336	1507	85	4336			1505			1509	
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)	5	2227	13	4	2843	1	7	0	19	2	1	3
RTOR Reduction (vph)	0	0	2	0	0	0	0	0	0	0	1	0
Lane Group Flow (vph)	5	2227	11	4	2844	0	0	26	0	0	5	0
Confl. Peds. (#/hr)			7	7								
Heavy Vehicles (%)	2%	4%	2%	2%	4%	2%	2%	2%	2%	2%	2%	2%
Turn Type	Perm	NA	Perm	Perm	NA		Perm	NA		Perm	NA	
Protected Phases		2			6			8			4	
Permitted Phases	2		2	6			8			4		
Actuated Green, G (s)	119.8	119.8	119.8	119.8	119.8			6.1			6.1	
Effective Green, g (s)	119.8	119.8	119.8	119.8	119.8			6.1			6.1	
Actuated g/C Ratio	0.86	0.86	0.86	0.86	0.86			0.04			0.04	
Clearance Time (s)	6.7	6.7	6.7	6.7	6.7			7.4			7.4	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0			3.0			3.0	
Lane Grp Cap (vph)	53	3710	1289	72	3710			65			65	
v/s Ratio Prot		0.51			c0.66							
v/s Ratio Perm	0.08		0.01	0.05				c0.02			0.00	
v/c Ratio	0.09	0.60	0.01	0.06	0.77			0.40			0.08	
Uniform Delay, d1	1.6	3.0	1.5	1.5	4.2			65.2			64.3	
Progression Factor	1.00	1.00	1.00	1.00	1.00			1.00			1.00	
Incremental Delay, d2	3.5	0.7	0.0	1.5	1.6			4.0			0.5	
Delay (s)	5.1	3.7	1.5	3.0	5.8			69.2			64.8	
Level of Service	A	A	A	A	A			E			E	
Approach Delay (s)		3.7			5.8			69.2			64.8	
Approach LOS		A			A			E			E	

Intersection Summary			
HCM 2000 Control Delay	5.3	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.75		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	14.1
Intersection Capacity Utilization	71.7%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	43	1068	33	58	1316	85	31	14	37	54	10	27
Future Volume (vph)	43	1068	33	58	1316	85	31	14	37	54	10	27
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	45.0		0.0	45.0		0.0	0.0		0.0	0.0		0.0
Storage Lanes	1		0	1		0	0		0	0		0
Taper Length (m)	50.0			50.0			15.0			15.0		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor		1.00		1.00				0.99				
Frt		0.995			0.991			0.939			0.959	
Flt Protected	0.950			0.950				0.982			0.971	
Satd. Flow (prot)	1750	3448	0	1750	3468	0	0	1646	0	0	1715	0
Flt Permitted	0.115			0.193				0.862			0.765	
Satd. Flow (perm)	212	3448	0	355	3468	0	0	1445	0	0	1351	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		5			10			31			13	
Link Speed (k/h)		60			60			50			50	
Link Distance (m)		203.6			105.5			441.0			179.6	
Travel Time (s)		12.2			6.3			31.8			12.9	
Confl. Peds. (#/hr)			4	4								
Confl. Bikes (#/hr)			1						1			
Peak Hour Factor	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88
Heavy Vehicles (%)	2%	2%	33%	2%	2%	2%	9%	2%	2%	2%	2%	2%
Adj. Flow (vph)	49	1214	38	66	1495	97	35	16	42	61	11	31
Shared Lane Traffic (%)												
Lane Group Flow (vph)	49	1252	0	66	1592	0	0	93	0	0	103	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.5			3.5			3.5			3.5	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		3.0			3.0			3.0			3.0	
Two way Left Turn Lane												
Headway Factor	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2		1	2		1	2		1	2	
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	
Leading Detector (m)	2.0	10.0		2.0	10.0		2.0	10.0		2.0	10.0	
Trailing Detector (m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Position(m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Size(m)	2.0	0.6		2.0	0.6		2.0	0.6		2.0	0.6	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		2			6			8			4	
Permitted Phases	2			6			8			4		
Detector Phase	2	2		6	6		8	8		4	4	
Switch Phase												
Minimum Initial (s)	10.0	10.0		10.0	10.0		10.0	10.0		10.0	10.0	
Minimum Split (s)	31.2	31.2		31.2	31.2		41.5	41.5		41.5	41.5	
Total Split (s)	48.0	48.0		48.0	48.0		42.0	42.0		42.0	42.0	
Total Split (%)	53.3%	53.3%		53.3%	53.3%		46.7%	46.7%		46.7%	46.7%	
Maximum Green (s)	41.8	41.8		41.8	41.8		35.5	35.5		35.5	35.5	
Yellow Time (s)	3.7	3.7		3.7	3.7		3.3	3.3		3.3	3.3	
All-Red Time (s)	2.5	2.5		2.5	2.5		3.2	3.2		3.2	3.2	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0			0.0			0.0	
Total Lost Time (s)	6.2	6.2		6.2	6.2			6.5			6.5	
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	Max	Max		Max	Max		None	None		None	None	
Walk Time (s)	7.0	7.0		7.0	7.0		7.0	7.0		7.0	7.0	
Flash Dont Walk (s)	18.0	18.0		18.0	18.0		28.0	28.0		28.0	28.0	
Pedestrian Calls (#/hr)	4	4		0	0		0	0		0	0	
Act Effct Green (s)	47.3	47.3		47.3	47.3			10.9			10.9	
Actuated g/C Ratio	0.72	0.72		0.72	0.72			0.16			0.16	
v/c Ratio	0.32	0.51		0.26	0.64			0.35			0.44	
Control Delay	13.6	6.9		9.0	8.6			21.6			28.5	
Queue Delay	0.0	0.0		0.0	0.0			0.0			0.0	
Total Delay	13.6	6.9		9.0	8.6			21.6			28.5	
LOS	B	A		A	A			C			C	
Approach Delay		7.1			8.6			21.6			28.5	
Approach LOS		A			A			C			C	
Queue Length 50th (m)	2.3	36.3		2.9	54.3			6.6			9.9	
Queue Length 95th (m)	11.1	57.3		10.2	85.2			17.5			22.0	
Internal Link Dist (m)		179.6			81.5			417.0			155.6	
Turn Bay Length (m)	45.0			45.0								
Base Capacity (vph)	151	2466		253	2482			791			732	
Starvation Cap Reductn	0	0		0	0			0			0	
Spillback Cap Reductn	0	0		0	0			0			0	
Storage Cap Reductn	0	0		0	0			0			0	
Reduced v/c Ratio	0.32	0.51		0.26	0.64			0.12			0.14	

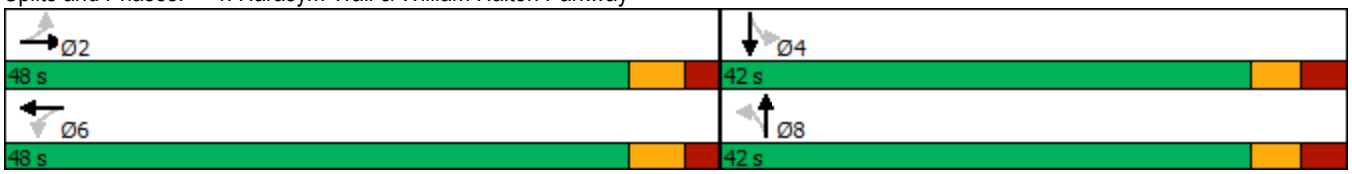
Intersection Summary

Area Type: Other
Cycle Length: 90
Actuated Cycle Length: 66.1
Natural Cycle: 90
Control Type: Semi Act-Uncoord
Maximum v/c Ratio: 0.64
Intersection Signal Delay: 9.0 Intersection LOS: A

Intersection Capacity Utilization 67.1% ICU Level of Service C

Analysis Period (min) 15

Splits and Phases: 4: Harasym Trail & William Halton Parkway



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	43	1068	33	58	1316	85	31	14	37	54	10	27
Future Volume (vph)	43	1068	33	58	1316	85	31	14	37	54	10	27
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.2	6.2		6.2	6.2			6.5			6.5	
Lane Util. Factor	1.00	0.95		1.00	0.95			1.00			1.00	
Frpb, ped/bikes	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	
Frt	1.00	1.00		1.00	0.99			0.94			0.96	
Flt Protected	0.95	1.00		0.95	1.00			0.98			0.97	
Satd. Flow (prot)	1750	3449		1748	3468			1645			1716	
Flt Permitted	0.11	1.00		0.19	1.00			0.86			0.77	
Satd. Flow (perm)	211	3449		354	3468			1444			1353	
Peak-hour factor, PHF	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88
Adj. Flow (vph)	49	1214	38	66	1495	97	35	16	42	61	11	31
RTOR Reduction (vph)	0	2	0	0	3	0	0	27	0	0	11	0
Lane Group Flow (vph)	49	1250	0	66	1589	0	0	66	0	0	92	0
Confl. Peds. (#/hr)			4	4								
Confl. Bikes (#/hr)			1						1			
Heavy Vehicles (%)	2%	2%	33%	2%	2%	2%	9%	2%	2%	2%	2%	2%
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		2			6			8			4	
Permitted Phases	2			6			8			4		
Actuated Green, G (s)	45.9	45.9		45.9	45.9			8.8			8.8	
Effective Green, g (s)	45.9	45.9		45.9	45.9			8.8			8.8	
Actuated g/C Ratio	0.68	0.68		0.68	0.68			0.13			0.13	
Clearance Time (s)	6.2	6.2		6.2	6.2			6.5			6.5	
Vehicle Extension (s)	3.0	3.0		3.0	3.0			3.0			3.0	
Lane Grp Cap (vph)	143	2348		241	2361			188			176	
v/s Ratio Prot		0.36			c0.46							
v/s Ratio Perm	0.23			0.19				0.05			c0.07	
v/c Ratio	0.34	0.53		0.27	0.67			0.35			0.52	
Uniform Delay, d1	4.5	5.4		4.2	6.3			26.7			27.3	
Progression Factor	1.00	1.00		1.00	1.00			1.00			1.00	
Incremental Delay, d2	6.4	0.9		2.8	1.6			1.1			2.8	
Delay (s)	10.9	6.3		7.0	7.9			27.8			30.1	
Level of Service	B	A		A	A			C			C	
Approach Delay (s)		6.4			7.8			27.8			30.1	
Approach LOS		A			A			C			C	

Intersection Summary			
HCM 2000 Control Delay	8.6	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.65		
Actuated Cycle Length (s)	67.4	Sum of lost time (s)	12.7
Intersection Capacity Utilization	67.1%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

Appendix P

2034 Future Total Conditions Synchro Worksheets

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	19	2580	64	16	1845	23	39	0	16	72	0	55
Future Volume (vph)	19	2580	64	16	1845	23	39	0	16	72	0	55
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	70.0		0.0	90.0		65.0	30.0		0.0	40.0		0.0
Storage Lanes	1		0	1		1	1		0	1		0
Taper Length (m)	60.0			100.0			15.0			15.0		
Lane Util. Factor	1.00	*0.80	0.91	1.00	*0.80	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor		1.00										
Frt		0.996				0.850		0.850			0.850	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1750	4318	0	1750	4175	1566	1750	1566	0	1750	1566	0
Flt Permitted	0.066			0.043			0.719			0.746		
Satd. Flow (perm)	122	4318	0	79	4175	1566	1324	1566	0	1374	1566	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		4				33		111			64	
Link Speed (k/h)		70			70			50			50	
Link Distance (m)		413.9			633.4			126.1			441.9	
Travel Time (s)		21.3			32.6			9.1			31.8	
Confl. Peds. (#/hr)			3	3								
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Heavy Vehicles (%)	2%	4%	2%	2%	8%	2%	2%	2%	2%	2%	2%	2%
Adj. Flow (vph)	20	2774	69	17	1984	25	42	0	17	77	0	59
Shared Lane Traffic (%)												
Lane Group Flow (vph)	20	2843	0	17	1984	25	42	17	0	77	59	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.5			3.5			3.5			3.5	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		3.0			3.0			3.0			3.0	
Two way Left Turn Lane												
Headway Factor	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2		1	2	1	1	2		1	2	
Detector Template	Left	Thru		Left	Thru	Right	Left	Thru		Left	Thru	
Leading Detector (m)	2.0	10.0		2.0	10.0	2.0	2.0	10.0		2.0	10.0	
Trailing Detector (m)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Detector 1 Position(m)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Detector 1 Size(m)	2.0	0.6		2.0	0.6	2.0	2.0	0.6		2.0	0.6	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Type	Perm	NA		pm+pt	NA	Perm	Perm	NA		Perm	NA	
Protected Phases		2		1	6			8			4	
Permitted Phases	2			6		6	8			4		
Detector Phase	2	2		1	6	6	8	8		4	4	
Switch Phase												
Minimum Initial (s)	20.0	20.0		7.0	20.0	20.0	7.0	7.0		7.0	7.0	
Minimum Split (s)	33.0	33.0		11.0	33.0	33.0	40.6	40.6		40.6	40.6	
Total Split (s)	68.0	68.0		11.0	79.0	79.0	41.0	41.0		41.0	41.0	
Total Split (%)	56.7%	56.7%		9.2%	65.8%	65.8%	34.2%	34.2%		34.2%	34.2%	
Maximum Green (s)	62.0	62.0		7.0	73.0	73.0	34.4	34.4		34.4	34.4	
Yellow Time (s)	3.7	3.7		3.0	3.7	3.7	3.7	3.7		3.7	3.7	
All-Red Time (s)	2.3	2.3		1.0	2.3	2.3	2.9	2.9		2.9	2.9	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Total Lost Time (s)	6.0	6.0		4.0	6.0	6.0	6.6	6.6		6.6	6.6	
Lead/Lag	Lag	Lag		Lead								
Lead-Lag Optimize?	Yes	Yes		Yes								
Vehicle Extension (s)	5.0	5.0		4.0	5.0	5.0	4.0	4.0		3.0	3.0	
Recall Mode	C-Max	C-Max		None	C-Max	C-Max	None	None		None	None	
Walk Time (s)	7.0	7.0			7.0	7.0	7.0	7.0		7.0	7.0	
Flash Dont Walk (s)	20.0	20.0			20.0	20.0	27.0	27.0		27.0	27.0	
Pedestrian Calls (#/hr)	3	3			0	0	0	0		0	0	
Act Effct Green (s)	94.7	94.7		100.0	99.2	99.2	12.2	12.2		12.2	12.2	
Actuated g/C Ratio	0.79	0.79		0.83	0.83	0.83	0.10	0.10		0.10	0.10	
v/c Ratio	0.21	0.83		0.10	0.58	0.02	0.31	0.07		0.55	0.27	
Control Delay	4.8	7.7		4.1	5.6	0.9	54.6	0.5		65.4	13.3	
Queue Delay	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Total Delay	4.8	7.7		4.1	5.6	0.9	54.6	0.5		65.4	13.3	
LOS	A	A		A	A	A	D	A		E	B	
Approach Delay		7.7			5.6			39.0			42.8	
Approach LOS		A			A			D			D	
Queue Length 50th (m)	0.4	42.5		0.6	62.2	0.0	9.3	0.0		17.6	0.0	
Queue Length 95th (m)	m0.7	#316.0		2.4	93.7	1.6	19.7	0.0		31.8	10.7	
Internal Link Dist (m)		389.9			609.4			102.1			417.9	
Turn Bay Length (m)	70.0			90.0		65.0	30.0			40.0		
Base Capacity (vph)	96	3409		163	3450	1299	379	528		393	494	
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	0.21	0.83		0.10	0.58	0.02	0.11	0.03		0.20	0.12	

Intersection Summary	
Area Type:	Other
Cycle Length: 120	
Actuated Cycle Length: 120	
Offset: 104.4 (87%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green	
Natural Cycle: 145	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.83	
Intersection Signal Delay: 8.1	Intersection LOS: A

Intersection Capacity Utilization 72.4% ICU Level of Service C

Analysis Period (min) 15

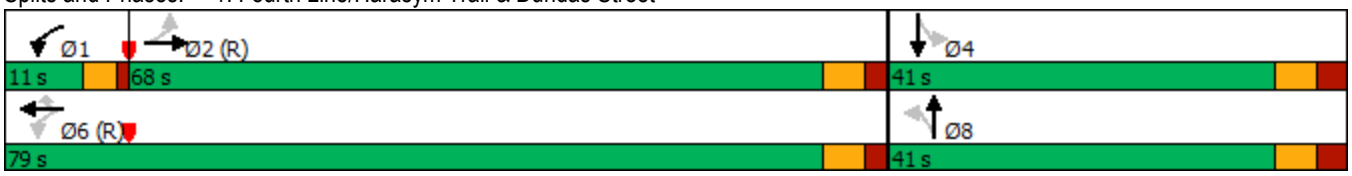
* User Entered Value

\# 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: Fourth Line/Harasym Trail & Dundas Street



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	19	2580	64	16	1845	23	39	0	16	72	0	55
Future Volume (vph)	19	2580	64	16	1845	23	39	0	16	72	0	55
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0	6.0		4.0	6.0	6.0	6.6	6.6		6.6	6.6	
Lane Util. Factor	1.00	*0.80		1.00	*0.80	1.00	1.00	1.00		1.00	1.00	
Frpb, ped/bikes	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	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		1.00	1.00	0.85	1.00	0.85		1.00	0.85	
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1750	4319		1750	4175	1566	1750	1566		1750	1566	
Flt Permitted	0.07	1.00		0.04	1.00	1.00	0.72	1.00		0.75	1.00	
Satd. Flow (perm)	121	4319		79	4175	1566	1324	1566		1375	1566	
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)	20	2774	69	17	1984	25	42	0	17	77	0	59
RTOR Reduction (vph)	0	1	0	0	0	5	0	15	0	0	54	0
Lane Group Flow (vph)	20	2842	0	17	1984	20	42	2	0	77	5	0
Confl. Peds. (#/hr)			3	3								
Heavy Vehicles (%)	2%	4%	2%	2%	8%	2%	2%	2%	2%	2%	2%	2%
Turn Type	Perm	NA		pm+pt	NA	Perm	Perm	NA		Perm	NA	
Protected Phases		2		1	6			8			4	
Permitted Phases	2			6		6	8			4		
Actuated Green, G (s)	89.8	89.8		96.6	96.6	96.6	10.8	10.8		10.8	10.8	
Effective Green, g (s)	89.8	89.8		96.6	96.6	96.6	10.8	10.8		10.8	10.8	
Actuated g/C Ratio	0.75	0.75		0.80	0.80	0.80	0.09	0.09		0.09	0.09	
Clearance Time (s)	6.0	6.0		4.0	6.0	6.0	6.6	6.6		6.6	6.6	
Vehicle Extension (s)	5.0	5.0		4.0	5.0	5.0	4.0	4.0		3.0	3.0	
Lane Grp Cap (vph)	90	3232		102	3360	1260	119	140		123	140	
v/s Ratio Prot		c0.66		0.00	c0.48			0.00			0.00	
v/s Ratio Perm	0.16			0.13		0.01	0.03			c0.06		
v/c Ratio	0.22	0.88		0.17	0.59	0.02	0.35	0.01		0.63	0.04	
Uniform Delay, d1	4.6	11.1		16.7	4.3	2.3	51.3	49.7		52.7	49.9	
Progression Factor	0.31	0.45		1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Incremental Delay, d2	2.5	1.7		1.1	0.8	0.0	2.5	0.0		9.6	0.1	
Delay (s)	3.9	6.7		17.7	5.1	2.3	53.8	49.8		62.2	50.0	
Level of Service	A	A		B	A	A	D	D		E	D	
Approach Delay (s)		6.7			5.2			52.6			56.9	
Approach LOS		A			A			D			E	

Intersection Summary			
HCM 2000 Control Delay	8.0	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.85		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	16.6
Intersection Capacity Utilization	72.4%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	9	2350	115	106	1952	44	58	18	290	111	37	31
Future Volume (vph)	9	2350	115	106	1952	44	58	18	290	111	37	31
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	120.0		70.0	115.0		60.0	90.0		0.0	80.0		0.0
Storage Lanes	1		1	1		1	1		0	1		0
Taper Length (m)	65.0			65.0			30.0			15.0		
Lane Util. Factor	1.00	*0.80	1.00	1.00	*0.80	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor								0.99		1.00		
Frt			0.850			0.850		0.859			0.931	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1526	4378	1465	1684	4295	1465	1716	1535	0	1733	1683	0
Flt Permitted	0.057			0.054			0.711			0.271		
Satd. Flow (perm)	92	4378	1465	96	4295	1465	1285	1535	0	494	1683	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			78			40		122			16	
Link Speed (k/h)		70			70			50			50	
Link Distance (m)		331.1			413.9			220.1			189.0	
Travel Time (s)		17.0			21.3			15.8			13.6	
Confl. Peds. (#/hr)									2	2		
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Heavy Vehicles (%)	17%	3%	9%	6%	5%	9%	4%	33%	2%	3%	3%	5%
Adj. Flow (vph)	9	2398	117	108	1992	45	59	18	296	113	38	32
Shared Lane Traffic (%)												
Lane Group Flow (vph)	9	2398	117	108	1992	45	59	314	0	113	70	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.5			3.5			3.5			3.5	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		3.0			3.0			3.0			3.0	
Two way Left Turn Lane												
Headway Factor	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2	1	1	2	1	1	2		1	2	
Detector Template	Left	Thru	Right	Left	Thru	Right	Left	Thru		Left	Thru	
Leading Detector (m)	2.0	10.0	2.0	2.0	10.0	2.0	2.0	10.0		2.0	10.0	
Trailing Detector (m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Detector 1 Position(m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Detector 1 Size(m)	2.0	0.6	2.0	2.0	0.6	2.0	2.0	0.6		2.0	0.6	
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Type	Perm	NA	Perm	pm+pt	NA	Perm	Perm	NA		Perm	NA	
Protected Phases		2		1	6			8			4	
Permitted Phases	2		2	6		6	8			4		
Detector Phase	2	2	2	1	6	6	8	8		4	4	
Switch Phase												
Minimum Initial (s)	20.0	20.0	20.0	7.0	20.0	20.0	10.0	10.0		10.0	10.0	
Minimum Split (s)	31.9	31.9	31.9	11.0	31.9	31.9	43.9	43.9		43.9	43.9	
Total Split (s)	70.8	70.8	70.8	12.0	82.8	82.8	37.2	37.2		37.2	37.2	
Total Split (%)	59.0%	59.0%	59.0%	10.0%	69.0%	69.0%	31.0%	31.0%		31.0%	31.0%	
Maximum Green (s)	64.9	64.9	64.9	8.0	76.9	76.9	30.3	30.3		30.3	30.3	
Yellow Time (s)	3.7	3.7	3.7	3.0	3.7	3.7	3.3	3.3		3.3	3.3	
All-Red Time (s)	2.2	2.2	2.2	1.0	2.2	2.2	3.6	3.6		3.6	3.6	
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)	5.9	5.9	5.9	4.0	5.9	5.9	6.9	6.9		6.9	6.9	
Lead/Lag	Lag	Lag	Lag	Lead								
Lead-Lag Optimize?	Yes	Yes	Yes	Yes								
Vehicle Extension (s)	5.5	5.5	5.5	3.0	5.5	5.5	3.0	3.0		3.0	3.0	
Recall Mode	C-Max	C-Max	C-Max	None	C-Max	C-Max	None	None		None	None	
Walk Time (s)	7.0	7.0	7.0		7.0	7.0	7.0	7.0		7.0	7.0	
Flash Dont Walk (s)	19.0	19.0	19.0		19.0	19.0	30.0	30.0		30.0	30.0	
Pedestrian Calls (#/hr)	0	0	0		0	0	2	2		0	0	
Act Effct Green (s)	70.4	70.4	70.4	84.0	82.1	82.1	25.1	25.1		25.1	25.1	
Actuated g/C Ratio	0.59	0.59	0.59	0.70	0.68	0.68	0.21	0.21		0.21	0.21	
v/c Ratio	0.17	0.93	0.13	0.64	0.68	0.04	0.22	0.75		1.10	0.19	
Control Delay	23.7	32.2	5.5	43.9	10.7	2.7	39.1	37.9		161.7	29.7	
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Total Delay	23.7	32.2	5.5	43.9	10.7	2.7	39.1	37.9		161.7	29.7	
LOS	C	C	A	D	B	A	D	D		F	C	
Approach Delay		30.9			12.2			38.1			111.2	
Approach LOS		C			B			D			F	
Queue Length 50th (m)	1.0	221.5	4.0	14.7	78.2	0.3	11.2	41.8		26.5	10.1	
Queue Length 95th (m)	5.1	#279.9	12.9	#34.3	86.1	m2.9	22.3	72.5		#61.6	21.8	
Internal Link Dist (m)		307.1			389.9			196.1			165.0	
Turn Bay Length (m)	120.0		70.0	115.0		60.0	90.0			80.0		
Base Capacity (vph)	53	2567	891	174	2939	1015	324	478		124	436	
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	0.93	0.13	0.62	0.68	0.04	0.18	0.66		0.91	0.16	

Intersection Summary

Area Type: Other
Cycle Length: 120
Actuated Cycle Length: 120
Offset: 80.4 (67%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green
Natural Cycle: 130
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 1.10
Intersection Signal Delay: 26.6 Intersection LOS: C

Intersection Capacity Utilization 103.9% ICU Level of Service G

Analysis Period (min) 15

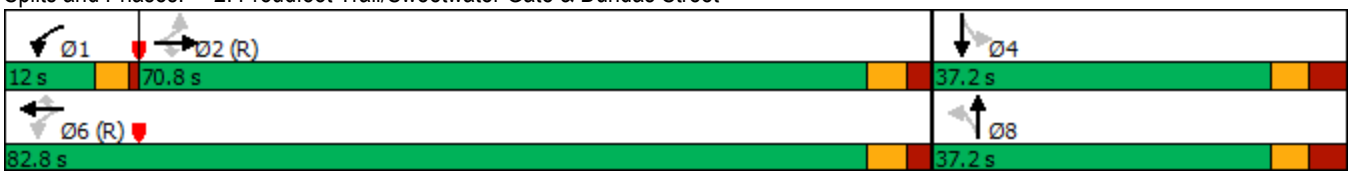
* User Entered Value

\# 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: Proudfoot Trail/Sweetwater Gate & Dundas Street



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	9	2350	115	106	1952	44	58	18	290	111	37	31
Future Volume (vph)	9	2350	115	106	1952	44	58	18	290	111	37	31
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.9	5.9	5.9	4.0	5.9	5.9	6.9	6.9		6.9	6.9	
Lane Util. Factor	1.00	*0.80	1.00	1.00	*0.80	1.00	1.00	1.00		1.00	1.00	
Frpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.99		1.00	1.00	
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	1.00	0.85	1.00	1.00	0.85	1.00	0.86		1.00	0.93	
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)	1526	4378	1465	1684	4295	1465	1716	1534		1731	1684	
Flt Permitted	0.06	1.00	1.00	0.05	1.00	1.00	0.71	1.00		0.27	1.00	
Satd. Flow (perm)	91	4378	1465	95	4295	1465	1285	1534		494	1684	
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)	9	2398	117	108	1992	45	59	18	296	113	38	32
RTOR Reduction (vph)	0	0	32	0	0	13	0	96	0	0	13	0
Lane Group Flow (vph)	9	2398	85	108	1992	32	59	218	0	113	57	0
Confl. Peds. (#/hr)									2	2		
Heavy Vehicles (%)	17%	3%	9%	6%	5%	9%	4%	33%	2%	3%	3%	5%
Turn Type	Perm	NA	Perm	pm+pt	NA	Perm	Perm	NA		Perm	NA	
Protected Phases		2		1	6			8			4	
Permitted Phases	2		2	6		6	8			4		
Actuated Green, G (s)	70.4	70.4	70.4	82.1	82.1	82.1	25.1	25.1		25.1	25.1	
Effective Green, g (s)	70.4	70.4	70.4	82.1	82.1	82.1	25.1	25.1		25.1	25.1	
Actuated g/C Ratio	0.59	0.59	0.59	0.68	0.68	0.68	0.21	0.21		0.21	0.21	
Clearance Time (s)	5.9	5.9	5.9	4.0	5.9	5.9	6.9	6.9		6.9	6.9	
Vehicle Extension (s)	5.5	5.5	5.5	3.0	5.5	5.5	3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	53	2568	859	166	2938	1002	268	320		103	352	
v/s Ratio Prot		c0.55		0.04	c0.46			0.14			0.03	
v/s Ratio Perm	0.10		0.06	0.40		0.02	0.05			c0.23		
v/c Ratio	0.17	0.93	0.10	0.65	0.68	0.03	0.22	0.68		1.10	0.16	
Uniform Delay, d1	11.4	22.7	10.9	28.5	11.2	6.1	39.3	43.7		47.5	38.8	
Progression Factor	1.00	1.00	1.00	1.55	0.79	0.93	1.00	1.00		1.00	1.00	
Incremental Delay, d2	6.8	7.8	0.2	7.6	1.1	0.1	0.4	5.7		117.3	0.2	
Delay (s)	18.2	30.5	11.1	51.7	9.9	5.7	39.8	49.4		164.7	39.1	
Level of Service	B	C	B	D	A	A	D	D		F	D	
Approach Delay (s)		29.6			11.9			47.9			116.7	
Approach LOS		C			B			D			F	

Intersection Summary			
HCM 2000 Control Delay	26.7	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.96		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	16.8
Intersection Capacity Utilization	103.9%	ICU Level of Service	G
Analysis Period (min)	15		

c Critical Lane Group

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	2939	0	1	1960	1	1	0	3	1	0	0
Future Volume (vph)	0	2939	0	1	1960	1	1	0	3	1	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	50.0		10.0	75.0		0.0	0.0		0.0	0.0		0.0
Storage Lanes	1		1	1		0	0		0	0		0
Taper Length (m)	50.0			100.0			15.0			15.0		
Lane Util. Factor	1.00	*0.80	1.00	1.00	*0.80	0.91	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor					1.00			0.99			1.00	
Frt								0.899				
Flt Protected				0.950				0.988			0.950	
Satd. Flow (prot)	1842	4378	1842	1750	4254	0	0	1318	0	0	1750	0
Flt Permitted				0.034				0.914			0.755	
Satd. Flow (perm)	1842	4378	1842	63	4254	0	0	1219	0	0	1388	0
Right Turn on Red			Yes			Yes			No			Yes
Satd. Flow (RTOR)												
Link Speed (k/h)		70			70			50			50	
Link Distance (m)		633.4			305.5			139.7			95.5	
Travel Time (s)		32.6			15.7			10.1			6.9	
Confl. Peds. (#/hr)	1		7	7		1	1		2	2		1
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Heavy Vehicles (%)	2%	3%	2%	2%	6%	2%	2%	2%	33%	2%	2%	2%
Adj. Flow (vph)	0	3160	0	1	2108	1	1	0	3	1	0	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	3160	0	1	2109	0	0	4	0	0	1	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.5			3.5			0.0			0.0	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		3.0			3.0			3.0			3.0	
Two way Left Turn Lane												
Headway Factor	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2	1	1	2		1	2		1	2	
Detector Template	Left	Thru	Right	Left	Thru		Left	Thru		Left	Thru	
Leading Detector (m)	2.0	10.0	2.0	2.0	10.0		2.0	10.0		2.0	10.0	
Trailing Detector (m)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Position(m)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Size(m)	2.0	0.6	2.0	2.0	0.6		2.0	0.6		2.0	0.6	
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	

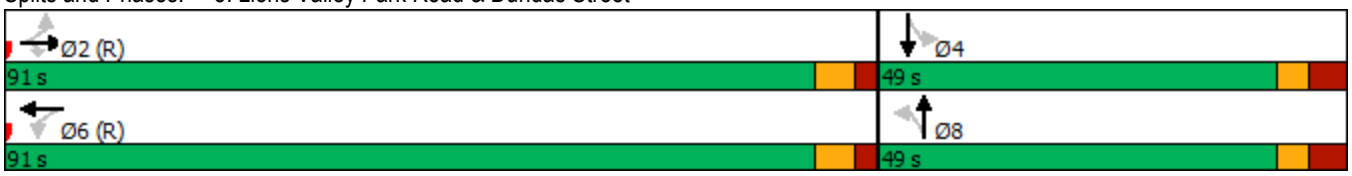
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Type	Perm	NA	Perm	Perm	NA		Perm	NA		Perm	NA	
Protected Phases		2			6			8			4	
Permitted Phases	2		2	6			8			4		
Detector Phase	2	2	2	6	6		8	8		4	4	
Switch Phase												
Minimum Initial (s)	20.0	20.0	20.0	20.0	20.0		10.0	10.0		10.0	10.0	
Minimum Split (s)	33.7	33.7	33.7	33.7	33.7		48.4	48.4		48.4	48.4	
Total Split (s)	91.0	91.0	91.0	91.0	91.0		49.0	49.0		49.0	49.0	
Total Split (%)	65.0%	65.0%	65.0%	65.0%	65.0%		35.0%	35.0%		35.0%	35.0%	
Maximum Green (s)	84.3	84.3	84.3	84.3	84.3		41.6	41.6		41.6	41.6	
Yellow Time (s)	4.2	4.2	4.2	4.2	4.2		3.3	3.3		3.3	3.3	
All-Red Time (s)	2.5	2.5	2.5	2.5	2.5		4.1	4.1		4.1	4.1	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0			0.0			0.0	
Total Lost Time (s)	6.7	6.7	6.7	6.7	6.7			7.4			7.4	
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	C-Max	C-Max	C-Max	C-Max	C-Max		None	None		None	None	
Walk Time (s)	7.0	7.0	7.0	7.0	7.0		7.0	7.0		7.0	7.0	
Flash Dont Walk (s)	20.0	20.0	20.0	20.0	20.0		34.0	34.0		34.0	34.0	
Pedestrian Calls (#/hr)	7	7	7	1	1		2	2		1	1	
Act Effct Green (s)		129.0		129.0	129.0			16.2			16.2	
Actuated g/C Ratio		0.92		0.92	0.92			0.12			0.12	
v/c Ratio		0.78		0.02	0.54			0.03			0.01	
Control Delay		9.5		8.0	6.2			46.8			45.0	
Queue Delay		0.0		0.0	0.0			0.0			0.0	
Total Delay		9.5		8.0	6.2			46.8			45.0	
LOS		A		A	A			D			D	
Approach Delay		9.5			6.2			46.8			45.0	
Approach LOS		A			A			D			D	
Queue Length 50th (m)		0.0		0.0	0.0			1.1			0.3	
Queue Length 95th (m)		#464.0		1.0	205.0			3.8			1.6	
Internal Link Dist (m)		609.4			281.5			115.7			71.5	
Turn Bay Length (m)				75.0								
Base Capacity (vph)		4033		58	3919			362			412	
Starvation Cap Reductn		0		0	0			0			0	
Spillback Cap Reductn		0		0	0			0			0	
Storage Cap Reductn		0		0	0			0			0	
Reduced v/c Ratio		0.78		0.02	0.54			0.01			0.00	

Intersection Summary

Area Type: Other
Cycle Length: 140
Actuated Cycle Length: 140
Offset: 57.4 (41%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green
Natural Cycle: 145
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.78
Intersection Signal Delay: 8.2 Intersection LOS: A

Intersection Capacity Utilization 78.5%	ICU Level of Service D
Analysis Period (min) 15	
* User Entered Value	
# 95th percentile volume exceeds capacity, queue may be longer.	
Queue shown is maximum after two cycles.	

Splits and Phases: 3: Lions Valley Park Road & Dundas Street



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	2939	0	1	1960	1	1	0	3	1	0	0
Future Volume (vph)	0	2939	0	1	1960	1	1	0	3	1	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		6.7		6.7	6.7			7.4			7.4	
Lane Util. Factor		*0.80		1.00	*0.80			1.00			1.00	
Frpb, ped/bikes		1.00		1.00	1.00			0.99			1.00	
Flpb, ped/bikes		1.00		1.00	1.00			1.00			1.00	
Frt		1.00		1.00	1.00			0.90			1.00	
Flt Protected		1.00		0.95	1.00			0.99			0.95	
Satd. Flow (prot)		4378		1750	4254			1317			1746	
Flt Permitted		1.00		0.03	1.00			0.91			0.76	
Satd. Flow (perm)		4378		63	4254			1219			1388	
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)	0	3160	0	1	2108	1	1	0	3	1	0	0
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	3160	0	1	2109	0	0	4	0	0	1	0
Confl. Peds. (#/hr)	1		7	7		1	1		2	2		1
Heavy Vehicles (%)	2%	3%	2%	2%	6%	2%	2%	2%	33%	2%	2%	2%
Turn Type	Perm	NA	Perm	Perm	NA		Perm	NA		Perm	NA	
Protected Phases		2			6			8			4	
Permitted Phases	2		2	6			8			4		
Actuated Green, G (s)		117.7		117.7	117.7			8.2			8.2	
Effective Green, g (s)		117.7		117.7	117.7			8.2			8.2	
Actuated g/C Ratio		0.84		0.84	0.84			0.06			0.06	
Clearance Time (s)		6.7		6.7	6.7			7.4			7.4	
Vehicle Extension (s)		3.0		3.0	3.0			3.0			3.0	
Lane Grp Cap (vph)		3680		52	3576			71			81	
v/s Ratio Prot		c0.72			0.50							
v/s Ratio Perm				0.02				c0.00			0.00	
v/c Ratio		0.86		0.02	0.59			0.06			0.01	
Uniform Delay, d1		6.4		1.8	3.5			62.2			62.1	
Progression Factor		1.00		1.00	1.00			1.00			1.00	
Incremental Delay, d2		2.8		0.7	0.7			0.3			0.1	
Delay (s)		9.2		2.5	4.2			62.6			62.1	
Level of Service		A		A	A			E			E	
Approach Delay (s)		9.2			4.2			62.6			62.1	
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	0.81		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	14.1
Intersection Capacity Utilization	78.5%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	13	1232	24	21	1012	27	33	5	61	84	14	42
Future Volume (vph)	13	1232	24	21	1012	27	33	5	61	84	14	42
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	45.0		0.0	45.0		0.0	0.0		0.0	0.0		0.0
Storage Lanes	1		0	1		0	0		0	0		0
Taper Length (m)	50.0			50.0			15.0			15.0		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor	1.00	1.00			1.00			0.99			1.00	
Frt		0.997			0.996			0.918			0.959	
Flt Protected	0.950			0.950				0.983			0.971	
Satd. Flow (prot)	1750	3483	0	1750	2856	0	0	1357	0	0	1715	0
Flt Permitted	0.193			0.129				0.859			0.790	
Satd. Flow (perm)	355	3483	0	238	2856	0	0	1186	0	0	1394	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		3			4			17			29	
Link Speed (k/h)		60			60			50			50	
Link Distance (m)		203.6			105.5			441.9			179.6	
Travel Time (s)		12.2			6.3			31.8			12.9	
Confl. Peds. (#/hr)	4		7	7		4			2	2		
Confl. Bikes (#/hr)									1			
Peak Hour Factor	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88
Heavy Vehicles (%)	2%	2%	8%	2%	25%	2%	67%	2%	2%	2%	2%	2%
Adj. Flow (vph)	15	1400	27	24	1150	31	38	6	69	95	16	48
Shared Lane Traffic (%)												
Lane Group Flow (vph)	15	1427	0	24	1181	0	0	113	0	0	159	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.5			3.5			3.5			3.5	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		3.0			3.0			3.0			3.0	
Two way Left Turn Lane												
Headway Factor	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2		1	2		1	2		1	2	
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	
Leading Detector (m)	2.0	10.0		2.0	10.0		2.0	10.0		2.0	10.0	
Trailing Detector (m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Position(m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Size(m)	2.0	0.6		2.0	0.6		2.0	0.6		2.0	0.6	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		2			6			8			4	
Permitted Phases	2			6			8			4		
Detector Phase	2	2		6	6		8	8		4	4	
Switch Phase												
Minimum Initial (s)	10.0	10.0		10.0	10.0		10.0	10.0		10.0	10.0	
Minimum Split (s)	31.2	31.2		31.2	31.2		41.5	41.5		41.5	41.5	
Total Split (s)	48.0	48.0		48.0	48.0		42.0	42.0		42.0	42.0	
Total Split (%)	53.3%	53.3%		53.3%	53.3%		46.7%	46.7%		46.7%	46.7%	
Maximum Green (s)	41.8	41.8		41.8	41.8		35.5	35.5		35.5	35.5	
Yellow Time (s)	3.7	3.7		3.7	3.7		3.3	3.3		3.3	3.3	
All-Red Time (s)	2.5	2.5		2.5	2.5		3.2	3.2		3.2	3.2	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0			0.0			0.0	
Total Lost Time (s)	6.2	6.2		6.2	6.2			6.5			6.5	
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	Max	Max		Max	Max		None	None		None	None	
Walk Time (s)	7.0	7.0		7.0	7.0		7.0	7.0		7.0	7.0	
Flash Dont Walk (s)	18.0	18.0		18.0	18.0		28.0	28.0		28.0	28.0	
Pedestrian Calls (#/hr)	7	7		4	4		2	2		0	0	
Act Effct Green (s)	45.2	45.2		45.2	45.2			15.5			15.5	
Actuated g/C Ratio	0.61	0.61		0.61	0.61			0.21			0.21	
v/c Ratio	0.07	0.67		0.16	0.67			0.43			0.50	
Control Delay	10.6	13.5		13.6	14.2			24.2			24.6	
Queue Delay	0.0	0.0		0.0	0.0			0.0			0.0	
Total Delay	10.6	13.5		13.6	14.2			24.2			24.6	
LOS	B	B		B	B			C			C	
Approach Delay		13.4			14.2			24.2			24.6	
Approach LOS		B			B			C			C	
Queue Length 50th (m)	0.6	49.3		1.1	41.0			10.7			14.7	
Queue Length 95th (m)	4.9	137.3		8.1	#122.7			21.9			28.0	
Internal Link Dist (m)		179.6			81.5			417.9			155.6	
Turn Bay Length (m)	45.0			45.0								
Base Capacity (vph)	218	2140		146	1755			589			697	
Starvation Cap Reductn	0	0		0	0			0			0	
Spillback Cap Reductn	0	0		0	0			0			0	
Storage Cap Reductn	0	0		0	0			0			0	
Reduced v/c Ratio	0.07	0.67		0.16	0.67			0.19			0.23	

Intersection Summary

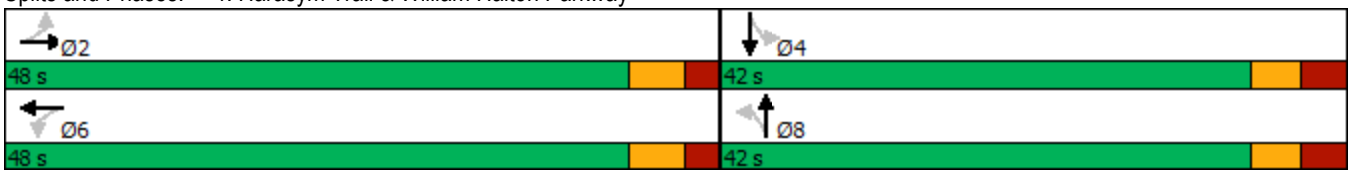
Area Type: Other
Cycle Length: 90
Actuated Cycle Length: 73.6
Natural Cycle: 80
Control Type: Semi Act-Uncoord
Maximum v/c Ratio: 0.67
Intersection Signal Delay: 14.8 Intersection LOS: B

Intersection Capacity Utilization 59.4% ICU Level of Service B

Analysis Period (min) 15

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 4: Harasym Trail & William Halton Parkway



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	13	1232	24	21	1012	27	33	5	61	84	14	42
Future Volume (vph)	13	1232	24	21	1012	27	33	5	61	84	14	42
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.2	6.2		6.2	6.2			6.5			6.5	
Lane Util. Factor	1.00	0.95		1.00	0.95			1.00			1.00	
Frpb, ped/bikes	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	
Frt	1.00	1.00		1.00	1.00			0.92			0.96	
Flt Protected	0.95	1.00		0.95	1.00			0.98			0.97	
Satd. Flow (prot)	1748	3484		1748	2857			1357			1715	
Flt Permitted	0.19	1.00		0.13	1.00			0.86			0.79	
Satd. Flow (perm)	356	3484		237	2857			1185			1395	
Peak-hour factor, PHF	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88
Adj. Flow (vph)	15	1400	27	24	1150	31	38	6	69	95	16	48
RTOR Reduction (vph)	0	1	0	0	2	0	0	13	0	0	23	0
Lane Group Flow (vph)	15	1426	0	24	1179	0	0	100	0	0	136	0
Confl. Peds. (#/hr)	4		7	7		4			2	2		
Confl. Bikes (#/hr)									1			
Heavy Vehicles (%)	2%	2%	8%	2%	25%	2%	67%	2%	2%	2%	2%	2%
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		2			6			8			4	
Permitted Phases	2			6			8			4		
Actuated Green, G (s)	45.2	45.2		45.2	45.2			15.5			15.5	
Effective Green, g (s)	45.2	45.2		45.2	45.2			15.5			15.5	
Actuated g/C Ratio	0.62	0.62		0.62	0.62			0.21			0.21	
Clearance Time (s)	6.2	6.2		6.2	6.2			6.5			6.5	
Vehicle Extension (s)	3.0	3.0		3.0	3.0			3.0			3.0	
Lane Grp Cap (vph)	219	2145		145	1759			250			294	
v/s Ratio Prot		0.41			c0.41							
v/s Ratio Perm	0.04			0.10				0.08			c0.10	
v/c Ratio	0.07	0.66		0.17	0.67			0.40			0.46	
Uniform Delay, d1	5.7	9.2		6.0	9.2			24.9			25.3	
Progression Factor	1.00	1.00		1.00	1.00			1.00			1.00	
Incremental Delay, d2	0.6	1.6		2.4	2.1			1.0			1.2	
Delay (s)	6.3	10.8		8.5	11.3			26.0			26.5	
Level of Service	A	B		A	B			C			C	
Approach Delay (s)		10.8			11.2			26.0			26.5	
Approach LOS		B			B			C			C	

Intersection Summary			
HCM 2000 Control Delay	12.4	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.62		
Actuated Cycle Length (s)	73.4	Sum of lost time (s)	12.7
Intersection Capacity Utilization	59.4%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	9	2350	115	106	1952	44	58	18	290	111	37	31
Future Volume (vph)	9	2350	115	106	1952	44	58	18	290	111	37	31
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	120.0		70.0	115.0		60.0	90.0		0.0	80.0		0.0
Storage Lanes	1		1	1		1	1		0	1		0
Taper Length (m)	65.0			65.0			30.0			15.0		
Lane Util. Factor	1.00	*0.80	1.00	1.00	*0.80	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor								0.99		1.00		
Frt			0.850			0.850		0.859			0.931	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1526	4378	1465	1684	4295	1465	1716	1535	0	1733	1683	0
Flt Permitted	0.061			0.058			0.711			0.343		
Satd. Flow (perm)	98	4378	1465	103	4295	1465	1285	1535	0	625	1683	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			78			40		122			16	
Link Speed (k/h)		70			70			50			50	
Link Distance (m)		331.1			413.9			220.1			189.0	
Travel Time (s)		17.0			21.3			15.8			13.6	
Confl. Peds. (#/hr)									2	2		
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Heavy Vehicles (%)	17%	3%	9%	6%	5%	9%	4%	33%	2%	3%	3%	5%
Adj. Flow (vph)	9	2398	117	108	1992	45	59	18	296	113	38	32
Shared Lane Traffic (%)												
Lane Group Flow (vph)	9	2398	117	108	1992	45	59	314	0	113	70	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.5			3.5			3.5			3.5	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		3.0			3.0			3.0			3.0	
Two way Left Turn Lane												
Headway Factor	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2	1	1	2	1	1	2		1	2	
Detector Template	Left	Thru	Right	Left	Thru	Right	Left	Thru		Left	Thru	
Leading Detector (m)	2.0	10.0	2.0	2.0	10.0	2.0	2.0	10.0		2.0	10.0	
Trailing Detector (m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Detector 1 Position(m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Detector 1 Size(m)	2.0	0.6	2.0	2.0	0.6	2.0	2.0	0.6		2.0	0.6	
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Type	Perm	NA	Perm	pm+pt	NA	Perm	Perm	NA		Perm	NA	
Protected Phases		2		1	6			8			4	
Permitted Phases	2		2	6		6	8			4		
Detector Phase	2	2	2	1	6	6	8	8		4	4	
Switch Phase												
Minimum Initial (s)	20.0	20.0	20.0	7.0	20.0	20.0	10.0	10.0		10.0	10.0	
Minimum Split (s)	31.9	31.9	31.9	11.0	31.9	31.9	43.9	43.9		43.9	43.9	
Total Split (s)	70.8	70.8	70.8	12.0	82.8	82.8	37.2	37.2		37.2	37.2	
Total Split (%)	59.0%	59.0%	59.0%	10.0%	69.0%	69.0%	31.0%	31.0%		31.0%	31.0%	
Maximum Green (s)	64.9	64.9	64.9	8.0	76.9	76.9	30.3	30.3		30.3	30.3	
Yellow Time (s)	3.7	3.7	3.7	3.0	3.7	3.7	3.3	3.3		3.3	3.3	
All-Red Time (s)	2.2	2.2	2.2	1.0	2.2	2.2	3.6	3.6		3.6	3.6	
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)	5.9	5.9	5.9	4.0	5.9	5.9	6.9	6.9		6.9	6.9	
Lead/Lag	Lag	Lag	Lag	Lead								
Lead-Lag Optimize?	Yes	Yes	Yes	Yes								
Vehicle Extension (s)	5.5	5.5	5.5	3.0	5.5	5.5	3.0	3.0		3.0	3.0	
Recall Mode	C-Max	C-Max	C-Max	None	C-Max	C-Max	None	None		Max	Max	
Walk Time (s)	7.0	7.0	7.0		7.0	7.0	7.0	7.0		7.0	7.0	
Flash Dont Walk (s)	19.0	19.0	19.0		19.0	19.0	30.0	30.0		30.0	30.0	
Pedestrian Calls (#/hr)	0	0	0		0	0	2	2		0	0	
Act Effct Green (s)	65.2	65.2	65.2	78.8	76.9	76.9	30.3	30.3		30.3	30.3	
Actuated g/C Ratio	0.54	0.54	0.54	0.66	0.64	0.64	0.25	0.25		0.25	0.25	
v/c Ratio	0.17	1.01	0.14	0.64	0.72	0.05	0.18	0.66		0.72	0.16	
Control Delay	23.6	48.3	5.7	43.2	13.1	2.7	37.1	31.5		67.6	28.5	
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Total Delay	23.6	48.3	5.7	43.2	13.1	2.7	37.1	31.5		67.6	28.5	
LOS	C	D	A	D	B	A	D	C		E	C	
Approach Delay		46.3			14.4			32.4			52.7	
Approach LOS		D			B			C			D	
Queue Length 50th (m)	1.0	~235.9	4.2	14.3	78.5	0.3	10.9	40.8		24.4	9.9	
Queue Length 95th (m)	4.9	#279.9	12.9	#35.7	86.1	m2.9	22.3	72.5		#53.5	21.8	
Internal Link Dist (m)		307.1			389.9			196.1			165.0	
Turn Bay Length (m)	120.0		70.0	115.0		60.0	90.0			80.0		
Base Capacity (vph)	53	2377	831	173	2752	953	324	478		157	436	
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	1.01	0.14	0.62	0.72	0.05	0.18	0.66		0.72	0.16	

Intersection Summary

Area Type: Other
Cycle Length: 120
Actuated Cycle Length: 120
Offset: 80.4 (67%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green
Natural Cycle: 130
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 1.01
Intersection Signal Delay: 32.4 Intersection LOS: C

Intersection Capacity Utilization 103.9%	ICU Level of Service G
Analysis Period (min) 15	

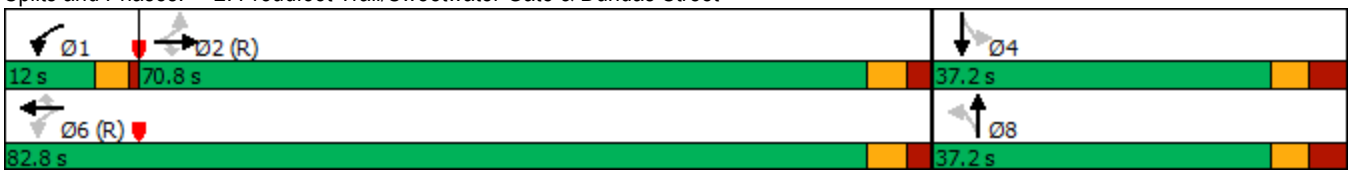
* User Entered Value

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

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

Splits and Phases: 2: Proudfoot Trail/Sweetwater Gate & Dundas Street



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	9	2350	115	106	1952	44	58	18	290	111	37	31
Future Volume (vph)	9	2350	115	106	1952	44	58	18	290	111	37	31
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.9	5.9	5.9	4.0	5.9	5.9	6.9	6.9		6.9	6.9	
Lane Util. Factor	1.00	*0.80	1.00	1.00	*0.80	1.00	1.00	1.00		1.00	1.00	
Frpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.99		1.00	1.00	
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	1.00	0.85	1.00	1.00	0.85	1.00	0.86		1.00	0.93	
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)	1526	4378	1465	1684	4295	1465	1716	1534		1731	1684	
Flt Permitted	0.06	1.00	1.00	0.06	1.00	1.00	0.71	1.00		0.34	1.00	
Satd. Flow (perm)	99	4378	1465	102	4295	1465	1285	1534		625	1684	
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)	9	2398	117	108	1992	45	59	18	296	113	38	32
RTOR Reduction (vph)	0	0	36	0	0	14	0	91	0	0	12	0
Lane Group Flow (vph)	9	2398	81	108	1992	31	59	223	0	113	58	0
Confl. Peds. (#/hr)									2	2		
Heavy Vehicles (%)	17%	3%	9%	6%	5%	9%	4%	33%	2%	3%	3%	5%
Turn Type	Perm	NA	Perm	pm+pt	NA	Perm	Perm	NA		Perm	NA	
Protected Phases		2		1	6			8			4	
Permitted Phases	2		2	6		6	8			4		
Actuated Green, G (s)	65.2	65.2	65.2	76.9	76.9	76.9	30.3	30.3		30.3	30.3	
Effective Green, g (s)	65.2	65.2	65.2	76.9	76.9	76.9	30.3	30.3		30.3	30.3	
Actuated g/C Ratio	0.54	0.54	0.54	0.64	0.64	0.64	0.25	0.25		0.25	0.25	
Clearance Time (s)	5.9	5.9	5.9	4.0	5.9	5.9	6.9	6.9		6.9	6.9	
Vehicle Extension (s)	5.5	5.5	5.5	3.0	5.5	5.5	3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	53	2378	795	166	2752	938	324	387		157	425	
v/s Ratio Prot		c0.55		0.04	c0.46			0.15			0.03	
v/s Ratio Perm	0.09		0.06	0.37		0.02	0.05			c0.18		
v/c Ratio	0.17	1.01	0.10	0.65	0.72	0.03	0.18	0.58		0.72	0.14	
Uniform Delay, d1	13.8	27.4	13.2	28.5	14.4	7.9	35.1	39.2		41.0	34.7	
Progression Factor	1.00	1.00	1.00	1.59	0.79	0.93	1.00	1.00		1.00	1.00	
Incremental Delay, d2	6.8	20.5	0.3	7.6	1.4	0.1	0.3	2.1		24.6	0.7	
Delay (s)	20.6	47.9	13.5	52.8	12.9	7.4	35.4	41.3		65.6	35.4	
Level of Service	C	D	B	D	B	A	D	D		E	D	
Approach Delay (s)		46.2			14.8			40.4			54.0	
Approach LOS		D			B			D			D	

Intersection Summary			
HCM 2000 Control Delay	33.2	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.91		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	16.8
Intersection Capacity Utilization	103.9%	ICU Level of Service	G
Analysis Period (min)	15		

c Critical Lane Group

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	51	2203	41	34	2956	70	65	0	22	44	0	35
Future Volume (vph)	51	2203	41	34	2956	70	65	0	22	44	0	35
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	70.0		0.0	90.0		65.0	30.0		0.0	40.0		0.0
Storage Lanes	1		0	1		1	1		0	1		0
Taper Length (m)	60.0			100.0			15.0			15.0		
Lane Util. Factor	1.00	*0.80	0.91	1.00	*0.80	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor		1.00										
Frt		0.997				0.850		0.850			0.850	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1750	4364	0	1750	4336	1566	1750	1566	0	1750	1566	0
Flt Permitted	0.045			0.043			0.734			0.743		
Satd. Flow (perm)	83	4364	0	79	4336	1566	1352	1566	0	1369	1566	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		3				41		113			64	
Link Speed (k/h)		70			70			50			50	
Link Distance (m)		413.9			633.4			126.1			441.0	
Travel Time (s)		21.3			32.6			9.1			31.8	
Confl. Peds. (#/hr)			1	1								
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Heavy Vehicles (%)	2%	3%	2%	2%	4%	2%	2%	2%	2%	2%	2%	2%
Adj. Flow (vph)	52	2248	42	35	3016	71	66	0	22	45	0	36
Shared Lane Traffic (%)												
Lane Group Flow (vph)	52	2290	0	35	3016	71	66	22	0	45	36	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.5			3.5			3.5			3.5	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		3.0			3.0			3.0			3.0	
Two way Left Turn Lane												
Headway Factor	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2		1	2	1	1	2		1	2	
Detector Template	Left	Thru		Left	Thru	Right	Left	Thru		Left	Thru	
Leading Detector (m)	2.0	10.0		2.0	10.0	2.0	2.0	10.0		2.0	10.0	
Trailing Detector (m)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Detector 1 Position(m)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Detector 1 Size(m)	2.0	0.6		2.0	0.6	2.0	2.0	0.6		2.0	0.6	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Type	Perm	NA		pm+pt	NA	Perm	Perm	NA		Perm	NA	
Protected Phases		2		1	6			8			4	
Permitted Phases	2			6		6	8			4		
Detector Phase	2	2		1	6	6	8	8		4	4	
Switch Phase												
Minimum Initial (s)	20.0	20.0		7.0	20.0	20.0	7.0	7.0		7.0	7.0	
Minimum Split (s)	33.0	33.0		11.0	33.0	33.0	40.6	40.6		40.6	40.6	
Total Split (s)	68.0	68.0		11.0	79.0	79.0	41.0	41.0		41.0	41.0	
Total Split (%)	56.7%	56.7%		9.2%	65.8%	65.8%	34.2%	34.2%		34.2%	34.2%	
Maximum Green (s)	62.0	62.0		7.0	73.0	73.0	34.4	34.4		34.4	34.4	
Yellow Time (s)	3.7	3.7		3.0	3.7	3.7	3.7	3.7		3.7	3.7	
All-Red Time (s)	2.3	2.3		1.0	2.3	2.3	2.9	2.9		2.9	2.9	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Total Lost Time (s)	6.0	6.0		4.0	6.0	6.0	6.6	6.6		6.6	6.6	
Lead/Lag	Lag	Lag		Lead								
Lead-Lag Optimize?	Yes	Yes		Yes								
Vehicle Extension (s)	5.0	5.0		4.0	5.0	5.0	4.0	4.0		3.0	3.0	
Recall Mode	C-Max	C-Max		None	C-Max	C-Max	None	None		None	None	
Walk Time (s)	7.0	7.0			7.0	7.0	7.0	7.0		7.0	7.0	
Flash Dont Walk (s)	20.0	20.0			20.0	20.0	27.0	27.0		27.0	27.0	
Pedestrian Calls (#/hr)	1	1			0	0	0	0		0	0	
Act Effct Green (s)	92.4	92.4		100.0	99.2	99.2	12.2	12.2		12.2	12.2	
Actuated g/C Ratio	0.77	0.77		0.83	0.83	0.83	0.10	0.10		0.10	0.10	
v/c Ratio	0.81	0.68		0.21	0.84	0.05	0.48	0.08		0.33	0.17	
Control Delay	87.0	24.0		5.7	11.6	1.8	61.6	0.6		54.9	5.0	
Queue Delay	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Total Delay	87.0	24.0		5.7	11.6	1.8	61.6	0.6		54.9	5.0	
LOS	F	C		A	B	A	E	A		D	A	
Approach Delay		25.4			11.3			46.3			32.7	
Approach LOS		C			B			D			C	
Queue Length 50th (m)	9.3	155.6		1.3	164.0	1.2	14.9	0.0		10.0	0.0	
Queue Length 95th (m)	m#18.3	237.0		3.8	244.2	4.9	28.2	0.0		20.9	3.5	
Internal Link Dist (m)		389.9			609.4			102.1			417.0	
Turn Bay Length (m)	70.0			90.0		65.0	30.0			40.0		
Base Capacity (vph)	64	3360		165	3583	1301	387	529		392	494	
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	0.81	0.68		0.21	0.84	0.05	0.17	0.04		0.11	0.07	

Intersection Summary	
Area Type:	Other
Cycle Length: 120	
Actuated Cycle Length: 120	
Offset: 91.2 (76%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green	
Natural Cycle: 145	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.84	
Intersection Signal Delay: 18.0	Intersection LOS: B

Intersection Capacity Utilization 77.9% ICU Level of Service D

Analysis Period (min) 15

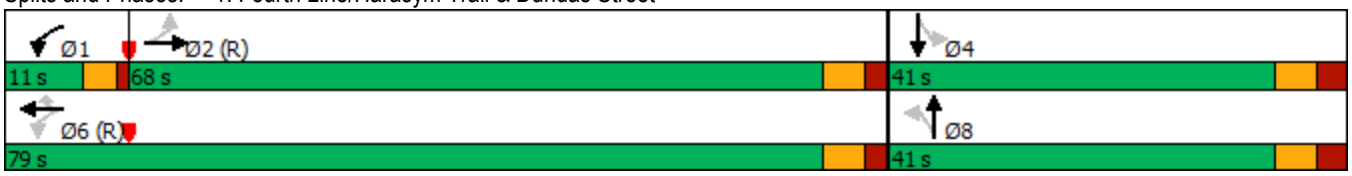
* User Entered Value

\# 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: Fourth Line/Harasym Trail & Dundas Street



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	51	2203	41	34	2956	70	65	0	22	44	0	35
Future Volume (vph)	51	2203	41	34	2956	70	65	0	22	44	0	35
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0	6.0		4.0	6.0	6.0	6.6	6.6		6.6	6.6	
Lane Util. Factor	1.00	*0.80		1.00	*0.80	1.00	1.00	1.00		1.00	1.00	
Frpb, ped/bikes	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	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		1.00	1.00	0.85	1.00	0.85		1.00	0.85	
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1750	4365		1750	4336	1566	1750	1566		1750	1566	
Flt Permitted	0.05	1.00		0.04	1.00	1.00	0.73	1.00		0.74	1.00	
Satd. Flow (perm)	84	4365		80	4336	1566	1351	1566		1369	1566	
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)	52	2248	42	35	3016	71	66	0	22	45	0	36
RTOR Reduction (vph)	0	1	0	0	0	8	0	20	0	0	33	0
Lane Group Flow (vph)	52	2289	0	35	3016	63	66	2	0	45	3	0
Confl. Peds. (#/hr)			1	1								
Heavy Vehicles (%)	2%	3%	2%	2%	4%	2%	2%	2%	2%	2%	2%	2%
Turn Type	Perm	NA		pm+pt	NA	Perm	Perm	NA		Perm	NA	
Protected Phases		2		1	6			8			4	
Permitted Phases	2			6		6	8			4		
Actuated Green, G (s)	88.2	88.2		96.6	96.6	96.6	10.8	10.8		10.8	10.8	
Effective Green, g (s)	88.2	88.2		96.6	96.6	96.6	10.8	10.8		10.8	10.8	
Actuated g/C Ratio	0.74	0.74		0.80	0.80	0.80	0.09	0.09		0.09	0.09	
Clearance Time (s)	6.0	6.0		4.0	6.0	6.0	6.6	6.6		6.6	6.6	
Vehicle Extension (s)	5.0	5.0		4.0	5.0	5.0	4.0	4.0		3.0	3.0	
Lane Grp Cap (vph)	61	3208		125	3490	1260	121	140		123	140	
v/s Ratio Prot		0.52		0.01	c0.70			0.00			0.00	
v/s Ratio Perm	0.62			0.21		0.04	c0.05			0.03		
v/c Ratio	0.85	0.71		0.28	0.86	0.05	0.55	0.01		0.37	0.02	
Uniform Delay, d1	11.3	8.9		8.9	7.5	2.4	52.3	49.7		51.4	49.8	
Progression Factor	2.24	2.33		1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Incremental Delay, d2	53.6	0.8		1.7	3.1	0.1	6.2	0.1		1.8	0.1	
Delay (s)	78.8	21.4		10.6	10.6	2.5	58.4	49.8		53.2	49.9	
Level of Service	E	C		B	B	A	E	D		D	D	
Approach Delay (s)		22.7			10.4			56.3			51.7	
Approach LOS		C			B			E			D	

Intersection Summary			
HCM 2000 Control Delay	16.8	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.86		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	16.6
Intersection Capacity Utilization	77.9%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	26	1893	92	331	2604	75	72	17	246	67	17	25
Future Volume (vph)	26	1893	92	331	2604	75	72	17	246	67	17	25
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	120.0		70.0	115.0		60.0	90.0		0.0	80.0		0.0
Storage Lanes	1		1	1		1	1		0	1		0
Taper Length (m)	65.0			65.0			30.0			15.0		
Lane Util. Factor	1.00	*0.80	1.00	1.00	*0.80	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor			0.97				1.00	0.99		1.00	0.99	
Frt			0.850			0.850		0.860			0.911	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1684	4421	1566	1750	4421	1566	1750	1556	0	1716	1662	0
Flt Permitted	0.066			0.062			0.728			0.232		
Satd. Flow (perm)	117	4421	1517	114	4421	1566	1336	1556	0	418	1662	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			72			44		256			2	
Link Speed (k/h)		70			70			50			50	
Link Distance (m)		331.1			413.9			220.1			189.0	
Travel Time (s)		17.0			21.3			15.8			13.6	
Confl. Peds. (#/hr)			5	5			4		3	3		4
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
Heavy Vehicles (%)	6%	2%	2%	2%	2%	2%	2%	8%	2%	4%	2%	2%
Adj. Flow (vph)	27	1972	96	345	2713	78	75	18	256	70	18	26
Shared Lane Traffic (%)												
Lane Group Flow (vph)	27	1972	96	345	2713	78	75	274	0	70	44	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.5			3.5			3.5			3.5	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		3.0			3.0			3.0			3.0	
Two way Left Turn Lane												
Headway Factor	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2	1	1	2	1	1	2		1	2	
Detector Template	Left	Thru	Right	Left	Thru	Right	Left	Thru		Left	Thru	
Leading Detector (m)	2.0	10.0	2.0	2.0	10.0	2.0	2.0	10.0		2.0	10.0	
Trailing Detector (m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Detector 1 Position(m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Detector 1 Size(m)	2.0	0.6	2.0	2.0	0.6	2.0	2.0	0.6		2.0	0.6	
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Type	Perm	NA	Perm	pm+pt	NA	Perm	Perm	NA		Perm	NA	
Protected Phases		2		1	6			8			4	
Permitted Phases	2		2	6		6	8			4		
Detector Phase	2	2	2	1	6	6	8	8		4	4	
Switch Phase												
Minimum Initial (s)	20.0	20.0	20.0	7.0	20.0	20.0	10.0	10.0		10.0	10.0	
Minimum Split (s)	31.9	31.9	31.9	11.0	31.9	31.9	43.9	43.9		43.9	43.9	
Total Split (s)	51.6	51.6	51.6	24.0	75.6	75.6	44.4	44.4		44.4	44.4	
Total Split (%)	43.0%	43.0%	43.0%	20.0%	63.0%	63.0%	37.0%	37.0%		37.0%	37.0%	
Maximum Green (s)	45.7	45.7	45.7	20.0	69.7	69.7	37.5	37.5		37.5	37.5	
Yellow Time (s)	3.7	3.7	3.7	3.0	3.7	3.7	3.3	3.3		3.3	3.3	
All-Red Time (s)	2.2	2.2	2.2	1.0	2.2	2.2	3.6	3.6		3.6	3.6	
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)	5.9	5.9	5.9	4.0	5.9	5.9	6.9	6.9		6.9	6.9	
Lead/Lag	Lag	Lag	Lag	Lead								
Lead-Lag Optimize?	Yes	Yes	Yes	Yes								
Vehicle Extension (s)	5.5	5.5	5.5	3.0	5.5	5.5	3.0	3.0		3.0	3.0	
Recall Mode	C-Max	C-Max	C-Max	None	C-Max	C-Max	None	None		None	None	
Walk Time (s)	7.0	7.0	7.0		7.0	7.0	7.0	7.0		7.0	7.0	
Flash Dont Walk (s)	19.0	19.0	19.0		19.0	19.0	30.0	30.0		30.0	30.0	
Pedestrian Calls (#/hr)	5	5	5		0	0	3	3		4	4	
Act Effct Green (s)	60.7	60.7	60.7	90.5	88.6	88.6	18.6	18.6		18.6	18.6	
Actuated g/C Ratio	0.51	0.51	0.51	0.75	0.74	0.74	0.16	0.16		0.16	0.16	
v/c Ratio	0.46	0.88	0.12	0.84	0.83	0.07	0.36	0.60		1.09	0.17	
Control Delay	55.2	33.7	7.7	46.8	8.0	0.6	47.1	11.6		184.6	39.5	
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Total Delay	55.2	33.7	7.7	46.8	8.0	0.6	47.1	11.6		184.6	39.5	
LOS	E	C	A	D	A	A	D	B		F	D	
Approach Delay		32.8			12.0			19.2			128.6	
Approach LOS		C			B			B			F	
Queue Length 50th (m)	3.9	164.2	2.7	53.0	10.7	0.2	16.6	3.8		~21.2	9.0	
Queue Length 95th (m)	#21.9	#264.0	14.5	m#103.1	#318.5	m0.3	25.0	22.7		#31.8	15.8	
Internal Link Dist (m)		307.1			389.9			196.1			165.0	
Turn Bay Length (m)	120.0		70.0	115.0		60.0	90.0			80.0		
Base Capacity (vph)	59	2235	802	411	3263	1167	417	662		130	520	
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	0.46	0.88	0.12	0.84	0.83	0.07	0.18	0.41		0.54	0.08	

Intersection Summary

Area Type: Other
Cycle Length: 120
Actuated Cycle Length: 120
Offset: 7.2 (6%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green
Natural Cycle: 140
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 1.09
Intersection Signal Delay: 22.5 Intersection LOS: C

Intersection Capacity Utilization 114.4%	ICU Level of Service H
Analysis Period (min) 15	

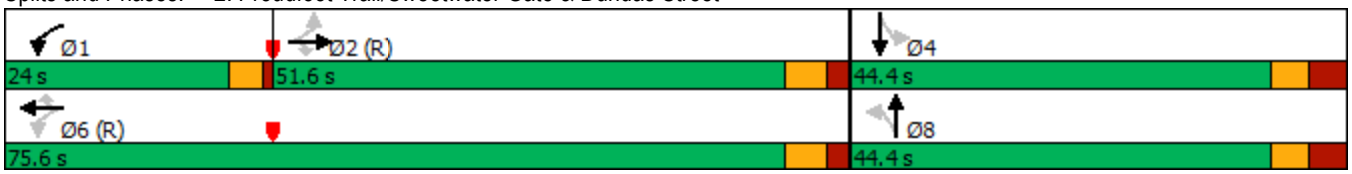
* User Entered Value

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

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

Splits and Phases: 2: Proudfoot Trail/Sweetwater Gate & Dundas Street



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	26	1893	92	331	2604	75	72	17	246	67	17	25
Future Volume (vph)	26	1893	92	331	2604	75	72	17	246	67	17	25
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.9	5.9	5.9	4.0	5.9	5.9	6.9	6.9		6.9	6.9	
Lane Util. Factor	1.00	*0.80	1.00	1.00	*0.80	1.00	1.00	1.00		1.00	1.00	
Frpb, ped/bikes	1.00	1.00	0.97	1.00	1.00	1.00	1.00	0.99		1.00	0.99	
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	1.00	0.85	1.00	1.00	0.85	1.00	0.86		1.00	0.91	
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)	1684	4421	1517	1750	4421	1566	1744	1556		1713	1663	
Flt Permitted	0.07	1.00	1.00	0.06	1.00	1.00	0.73	1.00		0.23	1.00	
Satd. Flow (perm)	117	4421	1517	114	4421	1566	1337	1556		418	1663	
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)	27	1972	96	345	2712	78	75	18	256	70	18	26
RTOR Reduction (vph)	0	0	36	0	0	12	0	216	0	0	2	0
Lane Group Flow (vph)	27	1972	60	345	2713	66	75	58	0	70	42	0
Confl. Peds. (#/hr)			5	5			4		3	3		4
Heavy Vehicles (%)	6%	2%	2%	2%	2%	2%	2%	8%	2%	4%	2%	2%
Turn Type	Perm	NA	Perm	pm+pt	NA	Perm	Perm	NA		Perm	NA	
Protected Phases		2		1	6			8			4	
Permitted Phases	2		2	6		6	8			4		
Actuated Green, G (s)	60.7	60.7	60.7	88.6	88.6	88.6	18.6	18.6		18.6	18.6	
Effective Green, g (s)	60.7	60.7	60.7	88.6	88.6	88.6	18.6	18.6		18.6	18.6	
Actuated g/C Ratio	0.51	0.51	0.51	0.74	0.74	0.74	0.16	0.16		0.16	0.16	
Clearance Time (s)	5.9	5.9	5.9	4.0	5.9	5.9	6.9	6.9		6.9	6.9	
Vehicle Extension (s)	5.5	5.5	5.5	3.0	5.5	5.5	3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	59	2236	767	410	3264	1156	207	241		64	257	
v/s Ratio Prot		c0.45		0.17	c0.61			0.04			0.03	
v/s Ratio Perm	0.23		0.04	0.45		0.04	0.06			c0.17		
v/c Ratio	0.46	0.88	0.08	0.84	0.83	0.06	0.36	0.24		1.09	0.16	
Uniform Delay, d1	19.1	26.5	15.3	37.1	10.6	4.3	45.4	44.5		50.7	44.0	
Progression Factor	1.00	1.00	1.00	1.09	0.39	0.16	1.00	1.00		1.00	1.00	
Incremental Delay, d2	23.5	5.5	0.2	8.5	1.5	0.1	1.1	0.5		140.6	0.3	
Delay (s)	42.5	31.9	15.5	49.0	5.7	0.7	46.5	45.0		191.3	44.3	
Level of Service	D	C	B	D	A	A	D	D		F	D	
Approach Delay (s)		31.3			10.3			45.3			134.6	
Approach LOS		C			B			D			F	

Intersection Summary			
HCM 2000 Control Delay	22.7	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.92		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	16.8
Intersection Capacity Utilization	114.4%	ICU Level of Service	H
Analysis Period (min)	15		

c Critical Lane Group

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	6	2302	12	4	2938	1	8	0	19	2	1	3
Future Volume (vph)	6	2302	12	4	2938	1	8	0	19	2	1	3
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	50.0		10.0	75.0		0.0	0.0		0.0	0.0		0.0
Storage Lanes	1		1	1		0	0		0	0		0
Taper Length (m)	50.0			100.0			15.0			15.0		
Lane Util. Factor	1.00	*0.80	1.00	1.00	*0.80	0.91	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor			0.96									
Frt			0.850					0.907			0.932	
Flt Protected	0.950			0.950				0.985			0.984	
Satd. Flow (prot)	1750	4336	1566	1750	4336	0	0	1646	0	0	1689	0
Flt Permitted	0.033			0.033				0.894			0.878	
Satd. Flow (perm)	61	4336	1507	61	4336	0	0	1494	0	0	1507	0
Right Turn on Red			Yes			Yes			No			Yes
Satd. Flow (RTOR)			34								1	
Link Speed (k/h)		70			70			50			50	
Link Distance (m)		633.4			305.5			139.7			95.5	
Travel Time (s)		32.6			15.7			10.1			6.9	
Confl. Peds. (#/hr)			7	7								
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Heavy Vehicles (%)	2%	4%	2%	2%	4%	2%	2%	2%	2%	2%	2%	2%
Adj. Flow (vph)	6	2449	13	4	3126	1	9	0	20	2	1	3
Shared Lane Traffic (%)												
Lane Group Flow (vph)	6	2449	13	4	3127	0	0	29	0	0	6	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.5			3.5			0.0			0.0	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		3.0			3.0			3.0			3.0	
Two way Left Turn Lane												
Headway Factor	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2	1	1	2		1	2		1	2	
Detector Template	Left	Thru	Right	Left	Thru		Left	Thru		Left	Thru	
Leading Detector (m)	2.0	10.0	2.0	2.0	10.0		2.0	10.0		2.0	10.0	
Trailing Detector (m)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Position(m)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Size(m)	2.0	0.6	2.0	2.0	0.6		2.0	0.6		2.0	0.6	
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	

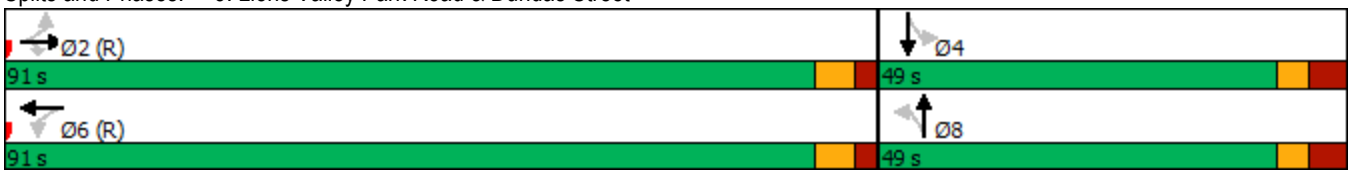
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Type	Perm	NA	Perm	Perm	NA		Perm	NA		Perm	NA	
Protected Phases		2			6			8			4	
Permitted Phases	2		2	6			8			4		
Detector Phase	2	2	2	6	6		8	8		4	4	
Switch Phase												
Minimum Initial (s)	20.0	20.0	20.0	20.0	20.0		10.0	10.0		10.0	10.0	
Minimum Split (s)	33.7	33.7	33.7	33.7	33.7		48.4	48.4		48.4	48.4	
Total Split (s)	91.0	91.0	91.0	91.0	91.0		49.0	49.0		49.0	49.0	
Total Split (%)	65.0%	65.0%	65.0%	65.0%	65.0%		35.0%	35.0%		35.0%	35.0%	
Maximum Green (s)	84.3	84.3	84.3	84.3	84.3		41.6	41.6		41.6	41.6	
Yellow Time (s)	4.2	4.2	4.2	4.2	4.2		3.3	3.3		3.3	3.3	
All-Red Time (s)	2.5	2.5	2.5	2.5	2.5		4.1	4.1		4.1	4.1	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0			0.0			0.0	
Total Lost Time (s)	6.7	6.7	6.7	6.7	6.7			7.4			7.4	
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	C-Max	C-Max	C-Max	C-Max	C-Max		None	None		None	None	
Walk Time (s)	7.0	7.0	7.0	7.0	7.0		7.0	7.0		7.0	7.0	
Flash Dont Walk (s)	20.0	20.0	20.0	20.0	20.0		34.0	34.0		34.0	34.0	
Pedestrian Calls (#/hr)	7	7	7	0	0		0	0		0	0	
Act Effct Green (s)	125.3	125.3	125.3	125.3	125.3			10.2			10.2	
Actuated g/C Ratio	0.90	0.90	0.90	0.90	0.90			0.07			0.07	
v/c Ratio	0.11	0.63	0.01	0.07	0.81			0.27			0.05	
Control Delay	7.2	4.2	0.1	5.5	7.7			67.8			57.0	
Queue Delay	0.0	0.0	0.0	0.0	0.0			0.0			0.0	
Total Delay	7.2	4.2	0.1	5.5	7.7			67.8			57.0	
LOS	A	A	A	A	A			E			E	
Approach Delay		4.2			7.7			67.8			57.0	
Approach LOS		A			A			E			E	
Queue Length 50th (m)	0.3	89.9	0.0	0.2	178.9			7.8			1.3	
Queue Length 95th (m)	1.5	107.2	0.3	1.1	215.7			18.2			5.8	
Internal Link Dist (m)		609.4			281.5			115.7			71.5	
Turn Bay Length (m)	50.0		10.0	75.0								
Base Capacity (vph)	54	3881	1352	54	3881			443			448	
Starvation Cap Reductn	0	0	0	0	0			0			0	
Spillback Cap Reductn	0	0	0	0	0			0			0	
Storage Cap Reductn	0	0	0	0	0			0			0	
Reduced v/c Ratio	0.11	0.63	0.01	0.07	0.81			0.07			0.01	

Intersection Summary

Area Type: Other
Cycle Length: 140
Actuated Cycle Length: 140
Offset: 49 (35%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green
Natural Cycle: 145
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.81
Intersection Signal Delay: 6.6 Intersection LOS: A

Intersection Capacity Utilization 76.9%	ICU Level of Service D
Analysis Period (min) 15	
* User Entered Value	

Splits and Phases: 3: Lions Valley Park Road & Dundas Street



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	6	2302	12	4	2938	1	8	0	19	2	1	3
Future Volume (vph)	6	2302	12	4	2938	1	8	0	19	2	1	3
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.7	6.7	6.7	6.7	6.7			7.4			7.4	
Lane Util. Factor	1.00	*0.80	1.00	1.00	*0.80			1.00			1.00	
Frpb, ped/bikes	1.00	1.00	0.96	1.00	1.00			1.00			1.00	
Flpb, ped/bikes	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			0.91			0.93	
Flt Protected	0.95	1.00	1.00	0.95	1.00			0.98			0.98	
Satd. Flow (prot)	1750	4336	1507	1749	4336			1645			1690	
Flt Permitted	0.03	1.00	1.00	0.03	1.00			0.89			0.88	
Satd. Flow (perm)	62	4336	1507	62	4336			1493			1507	
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)	6	2449	13	4	3126	1	9	0	20	2	1	3
RTOR Reduction (vph)	0	0	2	0	0	0	0	0	0	0	1	0
Lane Group Flow (vph)	6	2449	11	4	3127	0	0	29	0	0	5	0
Confl. Peds. (#/hr)			7	7								
Heavy Vehicles (%)	2%	4%	2%	2%	4%	2%	2%	2%	2%	2%	2%	2%
Turn Type	Perm	NA	Perm	Perm	NA		Perm	NA		Perm	NA	
Protected Phases		2			6			8			4	
Permitted Phases	2		2	6			8			4		
Actuated Green, G (s)	119.7	119.7	119.7	119.7	119.7			6.2			6.2	
Effective Green, g (s)	119.7	119.7	119.7	119.7	119.7			6.2			6.2	
Actuated g/C Ratio	0.86	0.86	0.86	0.86	0.86			0.04			0.04	
Clearance Time (s)	6.7	6.7	6.7	6.7	6.7			7.4			7.4	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0			3.0			3.0	
Lane Grp Cap (vph)	53	3707	1288	53	3707			66			66	
v/s Ratio Prot		0.56			c0.72							
v/s Ratio Perm	0.10		0.01	0.07				c0.02			0.00	
v/c Ratio	0.11	0.66	0.01	0.08	0.84			0.44			0.08	
Uniform Delay, d1	1.6	3.4	1.5	1.6	5.3			65.2			64.2	
Progression Factor	1.00	1.00	1.00	1.00	1.00			1.00			1.00	
Incremental Delay, d2	4.3	0.9	0.0	2.8	2.5			4.6			0.5	
Delay (s)	5.9	4.3	1.5	4.3	7.8			69.8			64.7	
Level of Service	A	A	A	A	A			E			E	
Approach Delay (s)		4.3			7.8			69.8			64.7	
Approach LOS		A			A			E			E	

Intersection Summary			
HCM 2000 Control Delay	6.7	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.82		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	14.1
Intersection Capacity Utilization	76.9%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	43	1251	33	58	1566	85	31	14	37	54	10	27
Future Volume (vph)	43	1251	33	58	1566	85	31	14	37	54	10	27
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	45.0		0.0	45.0		0.0	0.0		0.0	0.0		0.0
Storage Lanes	1		0	1		0	0		0	0		0
Taper Length (m)	50.0			50.0			15.0			15.0		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor		1.00						0.99				
Frt		0.996			0.992			0.939			0.959	
Flt Protected	0.950			0.950				0.982			0.971	
Satd. Flow (prot)	1750	3456	0	1750	3472	0	0	1646	0	0	1715	0
Flt Permitted	0.087			0.142				0.861			0.765	
Satd. Flow (perm)	160	3456	0	262	3472	0	0	1444	0	0	1351	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		4			8			16			5	
Link Speed (k/h)		60			60			50			50	
Link Distance (m)		203.6			105.5			441.0			179.6	
Travel Time (s)		12.2			6.3			31.8			12.9	
Confl. Peds. (#/hr)			4	4								
Confl. Bikes (#/hr)			1						1			
Peak Hour Factor	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88
Heavy Vehicles (%)	2%	2%	33%	2%	2%	2%	9%	2%	2%	2%	2%	2%
Adj. Flow (vph)	49	1422	38	66	1780	97	35	16	42	61	11	31
Shared Lane Traffic (%)												
Lane Group Flow (vph)	49	1460	0	66	1877	0	0	93	0	0	103	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.5			3.5			3.5			3.5	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		3.0			3.0			3.0			3.0	
Two way Left Turn Lane												
Headway Factor	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2		1	2		1	2		1	2	
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	
Leading Detector (m)	2.0	10.0		2.0	10.0		2.0	10.0		2.0	10.0	
Trailing Detector (m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Position(m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Size(m)	2.0	0.6		2.0	0.6		2.0	0.6		2.0	0.6	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		2			6			8			4	
Permitted Phases	2			6			8			4		
Detector Phase	2	2		6	6		8	8		4	4	
Switch Phase												
Minimum Initial (s)	10.0	10.0		10.0	10.0		10.0	10.0		10.0	10.0	
Minimum Split (s)	31.2	31.2		31.2	31.2		41.5	41.5		41.5	41.5	
Total Split (s)	48.0	48.0		48.0	48.0		42.0	42.0		42.0	42.0	
Total Split (%)	53.3%	53.3%		53.3%	53.3%		46.7%	46.7%		46.7%	46.7%	
Maximum Green (s)	41.8	41.8		41.8	41.8		35.5	35.5		35.5	35.5	
Yellow Time (s)	3.7	3.7		3.7	3.7		3.3	3.3		3.3	3.3	
All-Red Time (s)	2.5	2.5		2.5	2.5		3.2	3.2		3.2	3.2	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0			0.0			0.0	
Total Lost Time (s)	6.2	6.2		6.2	6.2			6.5			6.5	
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	Max	Max		Max	Max		None	None		None	None	
Walk Time (s)	7.0	7.0		7.0	7.0		7.0	7.0		7.0	7.0	
Flash Dont Walk (s)	18.0	18.0		18.0	18.0		28.0	28.0		28.0	28.0	
Pedestrian Calls (#/hr)	4	4		0	0		0	0		0	0	
Act Effct Green (s)	47.2	47.2		47.2	47.2			11.0			11.0	
Actuated g/C Ratio	0.71	0.71		0.71	0.71			0.17			0.17	
v/c Ratio	0.43	0.59		0.35	0.76			0.37			0.45	
Control Delay	24.1	8.0		13.3	11.6			25.3			30.4	
Queue Delay	0.0	0.0		0.0	0.0			0.0			0.0	
Total Delay	24.1	8.0		13.3	11.6			25.3			30.4	
LOS	C	A		B	B			C			C	
Approach Delay		8.5			11.6			25.3			30.4	
Approach LOS		A			B			C			C	
Queue Length 50th (m)	2.5	46.8		3.1	75.4			8.3			10.8	
Queue Length 95th (m)	#18.5	74.7		13.7	121.6			19.4			23.0	
Internal Link Dist (m)		179.6			81.5			417.0			155.6	
Turn Bay Length (m)	45.0			45.0								
Base Capacity (vph)	114	2466		187	2479			782			727	
Starvation Cap Reductn	0	0		0	0			0			0	
Spillback Cap Reductn	0	0		0	0			0			0	
Storage Cap Reductn	0	0		0	0			0			0	
Reduced v/c Ratio	0.43	0.59		0.35	0.76			0.12			0.14	

Intersection Summary

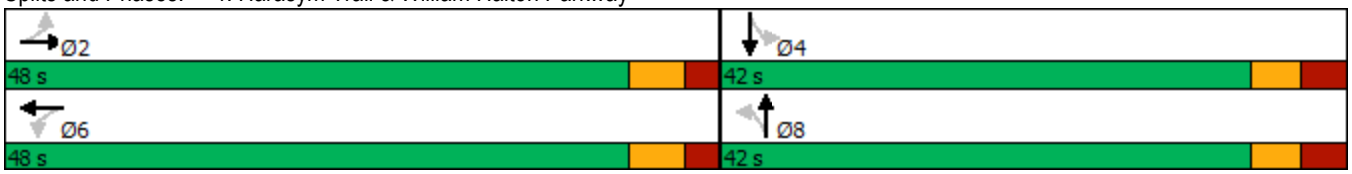
Area Type: Other
Cycle Length: 90
Actuated Cycle Length: 66.2
Natural Cycle: 100
Control Type: Semi Act-Uncoord
Maximum v/c Ratio: 0.76
Intersection Signal Delay: 11.2 Intersection LOS: B

Intersection Capacity Utilization 67.1% ICU Level of Service C

Analysis Period (min) 15

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 4: Harasym Trail & William Halton Parkway



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	43	1251	33	58	1566	85	31	14	37	54	10	27
Future Volume (vph)	43	1251	33	58	1566	85	31	14	37	54	10	27
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.2	6.2		6.2	6.2			6.5			6.5	
Lane Util. Factor	1.00	0.95		1.00	0.95			1.00			1.00	
Frpb, ped/bikes	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	
Frt	1.00	1.00		1.00	0.99			0.94			0.96	
Flt Protected	0.95	1.00		0.95	1.00			0.98			0.97	
Satd. Flow (prot)	1750	3457		1749	3473			1645			1716	
Flt Permitted	0.09	1.00		0.14	1.00			0.86			0.77	
Satd. Flow (perm)	161	3457		261	3473			1443			1352	
Peak-hour factor, PHF	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88
Adj. Flow (vph)	49	1422	38	66	1780	97	35	16	42	61	11	31
RTOR Reduction (vph)	0	1	0	0	3	0	0	14	0	0	4	0
Lane Group Flow (vph)	49	1459	0	66	1874	0	0	79	0	0	99	0
Confl. Peds. (#/hr)			4	4								
Confl. Bikes (#/hr)			1						1			
Heavy Vehicles (%)	2%	2%	33%	2%	2%	2%	9%	2%	2%	2%	2%	2%
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		2			6			8			4	
Permitted Phases	2			6			8			4		
Actuated Green, G (s)	45.9	45.9		45.9	45.9			8.9			8.9	
Effective Green, g (s)	45.9	45.9		45.9	45.9			8.9			8.9	
Actuated g/C Ratio	0.68	0.68		0.68	0.68			0.13			0.13	
Clearance Time (s)	6.2	6.2		6.2	6.2			6.5			6.5	
Vehicle Extension (s)	3.0	3.0		3.0	3.0			3.0			3.0	
Lane Grp Cap (vph)	109	2350		177	2361			190			178	
v/s Ratio Prot		0.42			c0.54							
v/s Ratio Perm	0.31			0.25				0.05			c0.07	
v/c Ratio	0.45	0.62		0.37	0.79			0.42			0.55	
Uniform Delay, d1	5.0	6.0		4.6	7.5			26.9			27.4	
Progression Factor	1.00	1.00		1.00	1.00			1.00			1.00	
Incremental Delay, d2	12.8	1.2		5.9	2.8			1.5			3.7	
Delay (s)	17.8	7.2		10.6	10.4			28.4			31.1	
Level of Service	B	A		B	B			C			C	
Approach Delay (s)		7.6			10.4			28.4			31.1	
Approach LOS		A			B			C			C	

Intersection Summary			
HCM 2000 Control Delay	10.3	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.75		
Actuated Cycle Length (s)	67.5	Sum of lost time (s)	12.7
Intersection Capacity Utilization	67.1%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	26	1893	92	331	2604	75	72	17	246	67	17	25
Future Volume (vph)	26	1893	92	331	2604	75	72	17	246	67	17	25
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	120.0		70.0	115.0		60.0	90.0		0.0	80.0		0.0
Storage Lanes	1		1	1		1	1		0	1		0
Taper Length (m)	65.0			65.0			30.0			15.0		
Lane Util. Factor	1.00	*0.80	1.00	1.00	*0.80	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor			0.97				1.00	0.99		1.00	0.99	
Frt			0.850			0.850		0.860			0.911	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1684	4421	1566	1750	4421	1566	1750	1556	0	1716	1662	0
Flt Permitted	0.090			0.082			0.728			0.193		
Satd. Flow (perm)	160	4421	1517	151	4421	1566	1336	1556	0	348	1662	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			108			72		256				
Link Speed (k/h)		70			70			50			50	
Link Distance (m)		331.1			413.9			220.1			189.0	
Travel Time (s)		17.0			21.3			15.8			13.6	
Confl. Peds. (#/hr)			5	5			4		3	3		4
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
Heavy Vehicles (%)	6%	2%	2%	2%	2%	2%	2%	8%	2%	4%	2%	2%
Adj. Flow (vph)	27	1972	96	345	2713	78	75	18	256	70	18	26
Shared Lane Traffic (%)												
Lane Group Flow (vph)	27	1972	96	345	2713	78	75	274	0	70	44	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.5			3.5			3.5			3.5	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		3.0			3.0			3.0			3.0	
Two way Left Turn Lane												
Headway Factor	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2	1	1	2	1	1	2		1	2	
Detector Template	Left	Thru	Right	Left	Thru	Right	Left	Thru		Left	Thru	
Leading Detector (m)	2.0	10.0	2.0	2.0	10.0	2.0	2.0	10.0		2.0	10.0	
Trailing Detector (m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Detector 1 Position(m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Detector 1 Size(m)	2.0	0.6	2.0	2.0	0.6	2.0	2.0	0.6		2.0	0.6	
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Type	Perm	NA	Perm	pm+pt	NA	Perm	Perm	NA		pm+pt	NA	
Protected Phases		2		1	6			8		7	4	
Permitted Phases	2		2	6		6	8			4		
Detector Phase	2	2	2	1	6	6	8	8		7	4	
Switch Phase												
Minimum Initial (s)	20.0	20.0	20.0	7.0	20.0	20.0	10.0	10.0		7.0	10.0	
Minimum Split (s)	31.9	31.9	31.9	11.0	31.9	31.9	43.9	43.9		11.0	43.9	
Total Split (s)	50.0	50.0	50.0	15.0	65.0	65.0	44.0	44.0		11.0	55.0	
Total Split (%)	41.7%	41.7%	41.7%	12.5%	54.2%	54.2%	36.7%	36.7%		9.2%	45.8%	
Maximum Green (s)	44.1	44.1	44.1	11.0	59.1	59.1	37.1	37.1		7.0	48.1	
Yellow Time (s)	3.7	3.7	3.7	3.0	3.7	3.7	3.3	3.3		3.0	3.3	
All-Red Time (s)	2.2	2.2	2.2	1.0	2.2	2.2	3.6	3.6		1.0	3.6	
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)	5.9	5.9	5.9	4.0	5.9	5.9	6.9	6.9		4.0	6.9	
Lead/Lag	Lag	Lag	Lag	Lead			Lag	Lag		Lead		
Lead-Lag Optimize?	Yes	Yes	Yes	Yes			Yes	Yes		Yes		
Vehicle Extension (s)	5.5	5.5	5.5	3.0	5.5	5.5	3.0	3.0		3.0	3.0	
Recall Mode	C-Max	C-Max	C-Max	None	C-Max	C-Max	None	None		None	None	
Walk Time (s)	7.0	7.0	7.0		7.0	7.0	7.0	7.0			7.0	
Flash Dont Walk (s)	19.0	19.0	19.0		19.0	19.0	30.0	30.0			30.0	
Pedestrian Calls (#/hr)	5	5	5		0	0	3	3			4	
Act Effct Green (s)	45.3	45.3	45.3	83.6	81.7	81.7	16.7	16.7		28.4	25.5	
Actuated g/C Ratio	0.38	0.38	0.38	0.70	0.68	0.68	0.14	0.14		0.24	0.21	
v/c Ratio	0.45	1.18	0.15	0.64	0.90	0.07	0.41	0.63		0.43	0.12	
Control Delay	56.1	123.2	4.2	32.7	15.0	1.1	50.6	12.8		40.5	33.6	
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Total Delay	56.1	123.2	4.2	32.7	15.0	1.1	50.6	12.8		40.5	33.6	
LOS	E	F	A	C	B	A	D	B		D	C	
Approach Delay		116.9			16.6			20.9			37.8	
Approach LOS		F			B			C			D	
Queue Length 50th (m)	4.6	~225.0	0.0	42.6	98.4	0.1	17.1	3.9		13.6	8.7	
Queue Length 95th (m)	#18.4	#270.0	8.9	m#130.8	#361.2	m1.7	25.0	22.7		18.9	13.9	
Internal Link Dist (m)		307.1			389.9			196.1			165.0	
Turn Bay Length (m)	120.0		70.0	115.0		60.0	90.0			80.0		
Base Capacity (vph)	60	1667	639	537	3010	1089	413	657		162	666	
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	1.18	0.15	0.64	0.90	0.07	0.18	0.42		0.43	0.07	

Intersection Summary

Area Type: Other
Cycle Length: 120
Actuated Cycle Length: 120
Offset: 0 (0%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green
Natural Cycle: 150
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 1.18
Intersection Signal Delay: 54.2 Intersection LOS: D

Intersection Capacity Utilization 109.5%	ICU Level of Service H
Analysis Period (min) 15	

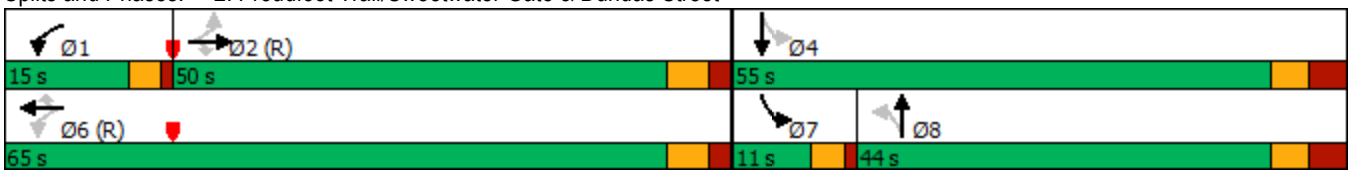
* User Entered Value

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

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

Splits and Phases: 2: Proudfoot Trail/Sweetwater Gate & Dundas Street



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	26	1893	92	331	2604	75	72	17	246	67	17	25
Future Volume (vph)	26	1893	92	331	2604	75	72	17	246	67	17	25
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.9	5.9	5.9	4.0	5.9	5.9	6.9	6.9		4.0	6.9	
Lane Util. Factor	1.00	*0.80	1.00	1.00	*0.80	1.00	1.00	1.00		1.00	1.00	
Frpb, ped/bikes	1.00	1.00	0.97	1.00	1.00	1.00	1.00	0.99		1.00	0.99	
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	1.00	0.85	1.00	1.00	0.85	1.00	0.86		1.00	0.91	
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)	1684	4421	1517	1750	4421	1566	1744	1556		1716	1663	
Flt Permitted	0.09	1.00	1.00	0.08	1.00	1.00	0.73	1.00		0.19	1.00	
Satd. Flow (perm)	159	4421	1517	152	4421	1566	1337	1556		349	1663	
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)	27	1972	96	345	2712	78	75	18	256	70	18	26
RTOR Reduction (vph)	0	0	60	0	0	23	0	220	0	0	0	0
Lane Group Flow (vph)	27	1972	36	345	2713	55	75	54	0	70	44	0
Confl. Peds. (#/hr)			5	5			4		3	3		4
Heavy Vehicles (%)	6%	2%	2%	2%	2%	2%	2%	8%	2%	4%	2%	2%
Turn Type	Perm	NA	Perm	pm+pt	NA	Perm	Perm	NA		pm+pt	NA	
Protected Phases		2		1	6			8		7	4	
Permitted Phases	2		2	6		6	8			4		
Actuated Green, G (s)	44.5	44.5	44.5	80.9	80.9	80.9	16.7	16.7		26.3	26.3	
Effective Green, g (s)	44.5	44.5	44.5	80.9	80.9	80.9	16.7	16.7		26.3	26.3	
Actuated g/C Ratio	0.37	0.37	0.37	0.67	0.67	0.67	0.14	0.14		0.22	0.22	
Clearance Time (s)	5.9	5.9	5.9	4.0	5.9	5.9	6.9	6.9		4.0	6.9	
Vehicle Extension (s)	5.5	5.5	5.5	3.0	5.5	5.5	3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	58	1639	562	533	2980	1055	186	216		140	364	
v/s Ratio Prot		c0.45		0.17	c0.61			0.03		c0.02	0.03	
v/s Ratio Perm	0.17		0.02	0.26		0.03	0.06			c0.09		
v/c Ratio	0.47	1.20	0.06	0.65	0.91	0.05	0.40	0.25		0.50	0.12	
Uniform Delay, d1	28.7	37.8	24.3	29.1	16.5	6.6	47.1	46.1		39.2	37.6	
Progression Factor	1.00	1.00	1.00	1.07	0.57	0.29	1.00	1.00		1.00	1.00	
Incremental Delay, d2	24.5	97.5	0.2	1.5	3.1	0.1	1.4	0.6		2.8	0.1	
Delay (s)	53.2	135.3	24.5	32.8	12.6	2.0	48.5	46.7		42.0	37.7	
Level of Service	D	F	C	C	B	A	D	D		D	D	
Approach Delay (s)		129.1			14.5			47.1			40.4	
Approach LOS		F			B			D			D	

Intersection Summary			
HCM 2000 Control Delay	59.2	HCM 2000 Level of Service	E
HCM 2000 Volume to Capacity ratio	0.98		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	20.8
Intersection Capacity Utilization	109.5%	ICU Level of Service	H
Analysis Period (min)	15		

c Critical Lane Group