

9451 Dickenson Road Transportation Impact Assessment



9451 Dickenson Road Transportation Impact Study

Prepared for:

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November 2025

PN: 2020-80

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1 Introduction

CGH has been retained by Dickenson Limited Partnership to undertake the Transportation Assessment (TIS) to support the Draft Plan of Subdivision for the industrial property located at 9451, 9517, 9569, 9579, 9593 and 9867 Dickenson Road West and at 1199, 1205, and 1209 Glancaster Road. The subject lands are currently rural residential and agricultural lands situated directly north of the John C. Munro Hamilton International Airport and are within the City of Hamilton's Airport Employment Growth District (AEGD). The AEGD Transportation Master Plan (TMP) examines the transportation capacity and links needed to support the AEGD lands, including the subject industrial property. This TIS examines the impact and needs of the subject site during a build-out horizon of 2030 and a plus five-year horizon of 2035 to ensure an acceptable level of service before the full build-out of the AEGD road network.

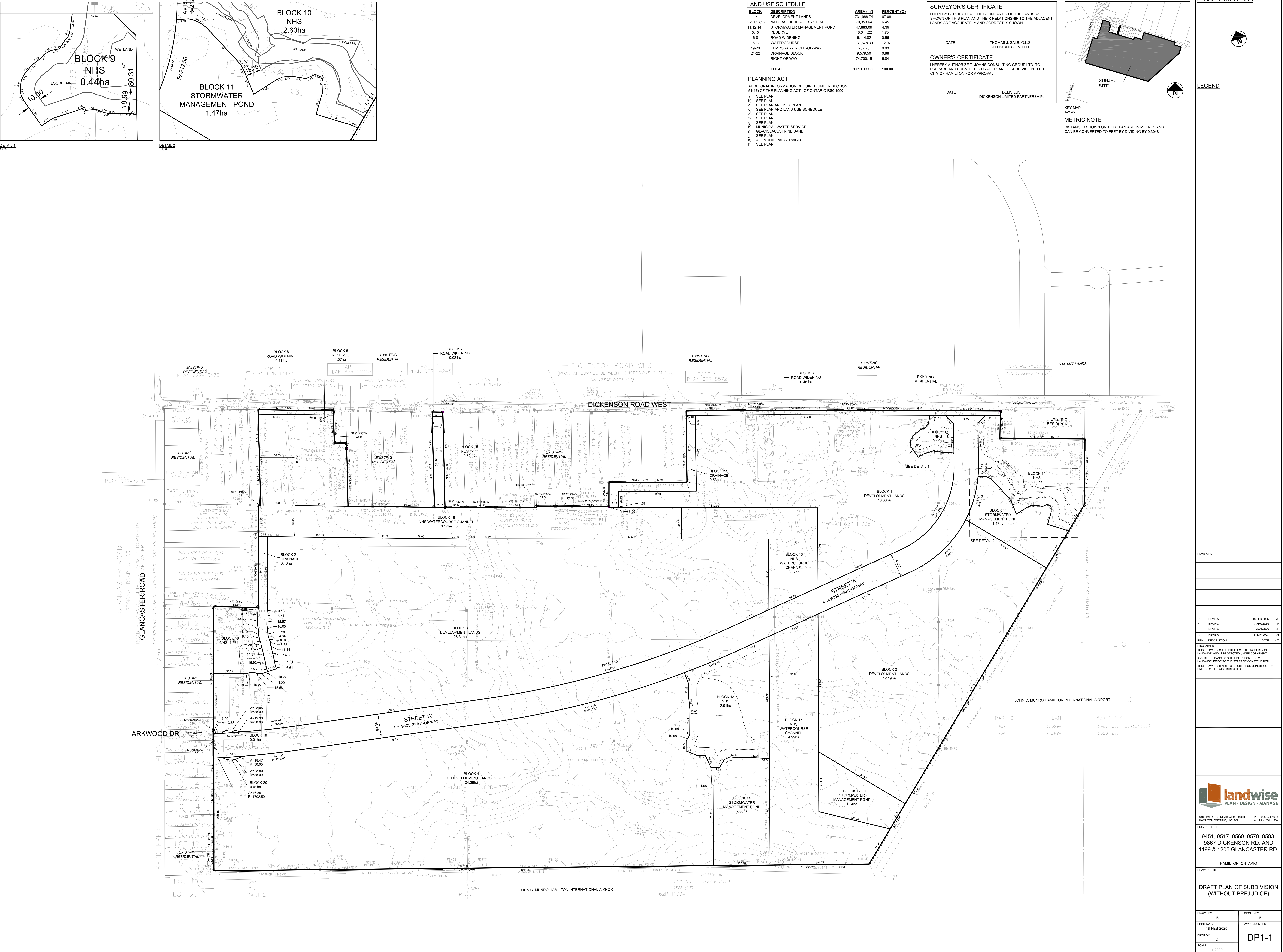
The subject lands are designated as Airside Industrial and Airport Prestige Business zones within the AEGD. Dickenson Limited Partnership is proposing to develop industrial warehousing, which is a permitted use within the prescribed zoning. The total gross floor area (GFA) of the subject development will be approximately 4,281,060 square feet.

For the purposes of this study, it has been assumed that the development blocks will only access Arterial 1N – an arterial road passing through the subject lands as identified within the AEGD TMP. An EA process for Arterial Road 1N to service the development blocks is running concurrently to the draft plan of subdivision process. Figure 1 illustrates the Study Area Context. Figure 2 illustrates the proposed block plan.

Figure 1: Area Context Plan



Figure 2: Block Plan



DETAIL 1
1:750

DETAIL 2
1:1000

LAND USE SCHEDULE

BLOCK	DESCRIPTION	AREA (m²)	PERCENT (%)
1-4	DEVELOPMENT LANDS	731,988.74	67.08
9-10,13,18	NATURAL HERITAGE SYSTEM	70,353.04	6.45
11,12,14	STORMWATER MANAGEMENT POND	47,883.09	4.39
5,15	RESERVE	18,611.22	1.70
6-8	ROAD WIDENING	6,114.82	0.56
16-17	WATERCOURSE	131,678.39	12.07
19-20	TEMPORARY RIGHT-OF-WAY	267.78	0.03
21-22	DRAINAGE BLOCK	9,579.50	0.88
	RIGHT-OF-WAY	74,700.15	6.84
TOTAL		1,091,177.38	100.00

PLANNING ACT

ADDITIONAL INFORMATION REQUIRED UNDER SECTION 51(17) OF THE PLANNING ACT, OF ONTARIO R50 1990

- a) SEE PLAN
- b) SEE PLAN
- c) SEE PLAN AND KEY PLAN
- d) SEE PLAN AND LAND USE SCHEDULE
- e) SEE PLAN
- f) SEE PLAN
- g) SEE PLAN
- h) MUNICIPAL WATER SERVICE
- i) GLACIOLACUSTRINE SAND
- j) SEE PLAN
- k) ALL MUNICIPAL SERVICES
- l) SEE PLAN

SURVEYOR'S CERTIFICATE

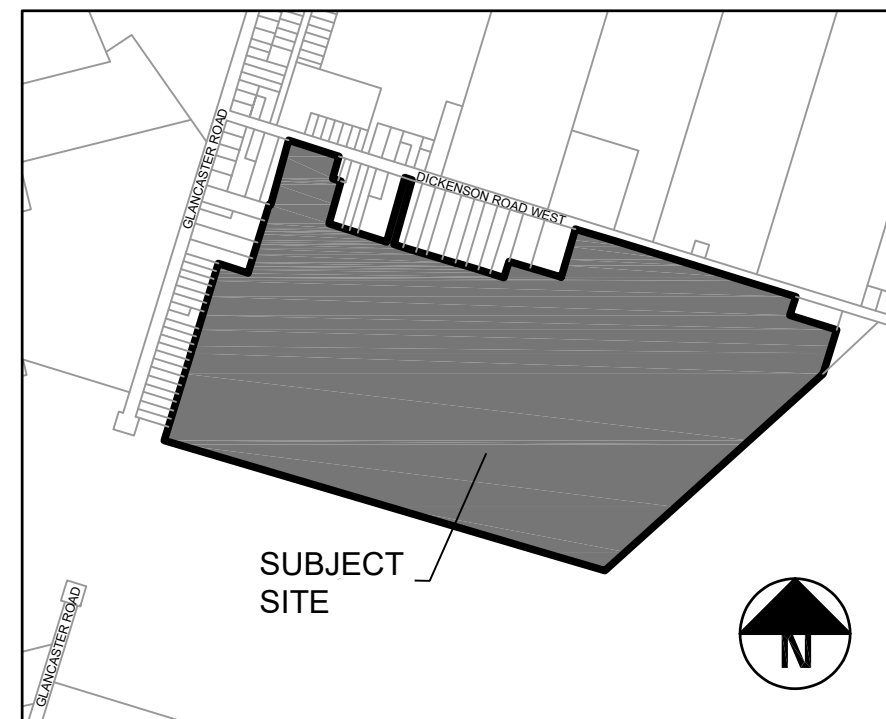
I HEREBY CERTIFY THAT THE BOUNDARIES OF THE LANDS AS SHOWN ON THIS PLAN AND THEIR RELATIONSHIP TO THE ADJACENT LANDS ARE ACCURATELY AND CORRECTLY SHOWN.

DATE _____ THOMAS J. SALB, O.L.S.
J.D. BARNES LIMITED

OWNER'S CERTIFICATE

I HEREBY AUTHORIZE T. JOHNS CONSULTING GROUP LTD. TO PREPARE AND SUBMIT THIS DRAFT PLAN OF SUBDIVISION TO THE CITY OF HAMILTON FOR APPROVAL.

DATE _____ DELIS LUS
DICKENSON LIMITED PARTNERSHIP.



KEY MAP
1:50,000

METRIC NOTE

DISTANCES SHOWN ON THIS PLAN ARE IN METRES AND CAN BE CONVERTED TO FEET BY DIVIDING BY 0.3048

LEGAL DESCRIPTION

LEGEND

REVISIONS

REV.	DESCRIPTION	DATE	INT.
D	REVIEW	18-FEB-2025	JR
C	REVIEW	4-FEB-2025	JR
B	REVIEW	31-JAN-2025	JR
A	REVIEW	8-NOV-2023	JR

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PROJECT TITLE
9451, 9517, 9569, 9579, 9593,
9867 DICKENSON RD. AND
1199 & 1205 LANCASTER RD.
HAMILTON, ONTARIO

DRAFT PLAN OF SUBDIVISION
(WITHOUT PREJUDICE)

DRAWN BY JS	DESIGNED BY JS
PRINT DATE 18-FEB-2025	DRAWING NUMBER DP1-1
REVISION D	SCALE 1:2000

2 Study Area

The Study Area will consist of the following intersections:

- Dickenson Road West at Glancaster Road (Existing)
- Dickenson Road West at Arterial 1N (Future)
- Dickenson Road West at Upper James Street (Existing)

3 Existing Conditions

3.1 Existing Study Area Road Network

Glancaster Road

Glancaster Road is a north-south City of Hamilton minor arterial road with a two-lane rural cross-section. No pedestrian or cycling facilities are present within the Study Area. Glancaster Road has a posted speed limit of 50 km/h north. The City of Hamilton Official Plan maintains a 26.213-metre right-of-way along Glancaster Road within the Study Area.

Dickenson Road West

Dickenson Road West is an east-west City of Hamilton minor arterial road with a two-lane rural cross-section. No pedestrian or cycling facilities are present within the Study Area. Dickenson Road West has a posted speed limit of 60 km/h. The City of Hamilton Official Plan maintains a 37-metre right-of-way along Dickenson Road West within the Study Area.

Upper James Street

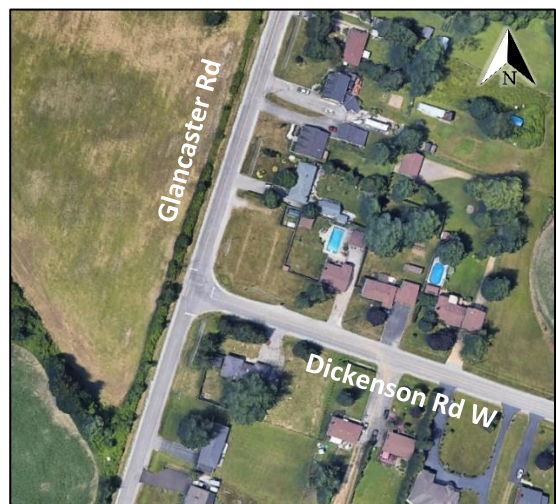
Upper James Street is a north-south City of Hamilton major arterial road with a four-lane rural cross-section. No pedestrian or cycling facilities are present within the Study Area, and only gravel shoulders are provided. Upper James Street has a posted speed limit of 70 km/h north of Dickenson Road West and a posted speed limit of 80 km/h south of Dickenson Road West. Upper James Street is a designated truck route. The City of Hamilton Official Plan maintains a 45-metre right-of-way along Upper James Street within the Study Area.

3.2 Existing Study Area Intersections

The existing Study Area intersections have been summarized below:

Glancaster Road at Dickenson Road West

The intersection of Dickenson Road West and Glancaster Road is an unsignalized, three-legged intersection with all-way stop-control. The northbound approach consists of a shared through / right-turn lane, the southbound approach consists of a shared through / left-turn lane, and the westbound approach consists of a shared left-turn / right-turn lane. No turn restrictions are noted at the intersection.



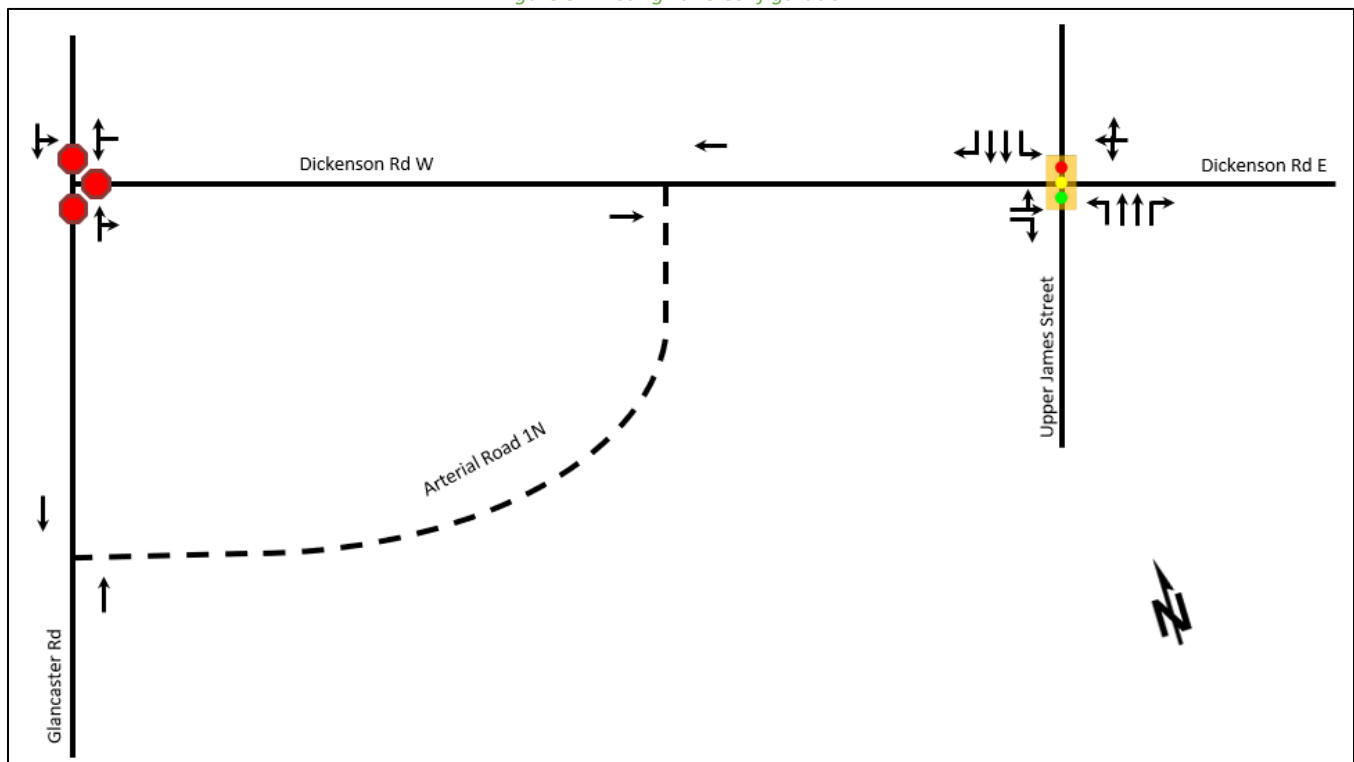
Upper James Street at Dickenson Road West / Dickenson Road East

The intersection of Upper James Street at Dickenson Road West is a signalized intersection. Both the southbound and northbound approaches consist of an auxiliary left-turn lane, two through lanes, and an auxiliary right-turn lane. The eastbound approach consists of a shared through / left-turn lane, and an auxiliary right-turn lane, which is not shown in the figure to the right as it was constructed later than the most recent aerial image. The westbound approach consists of a full-movement lane. Pedestrian signal heads are noted, however, no pedestrian crossing facilities are present. No turn restrictions are noted at the intersection.



The existing lane configuration of the study area road network is illustrated in Figure 3 below.

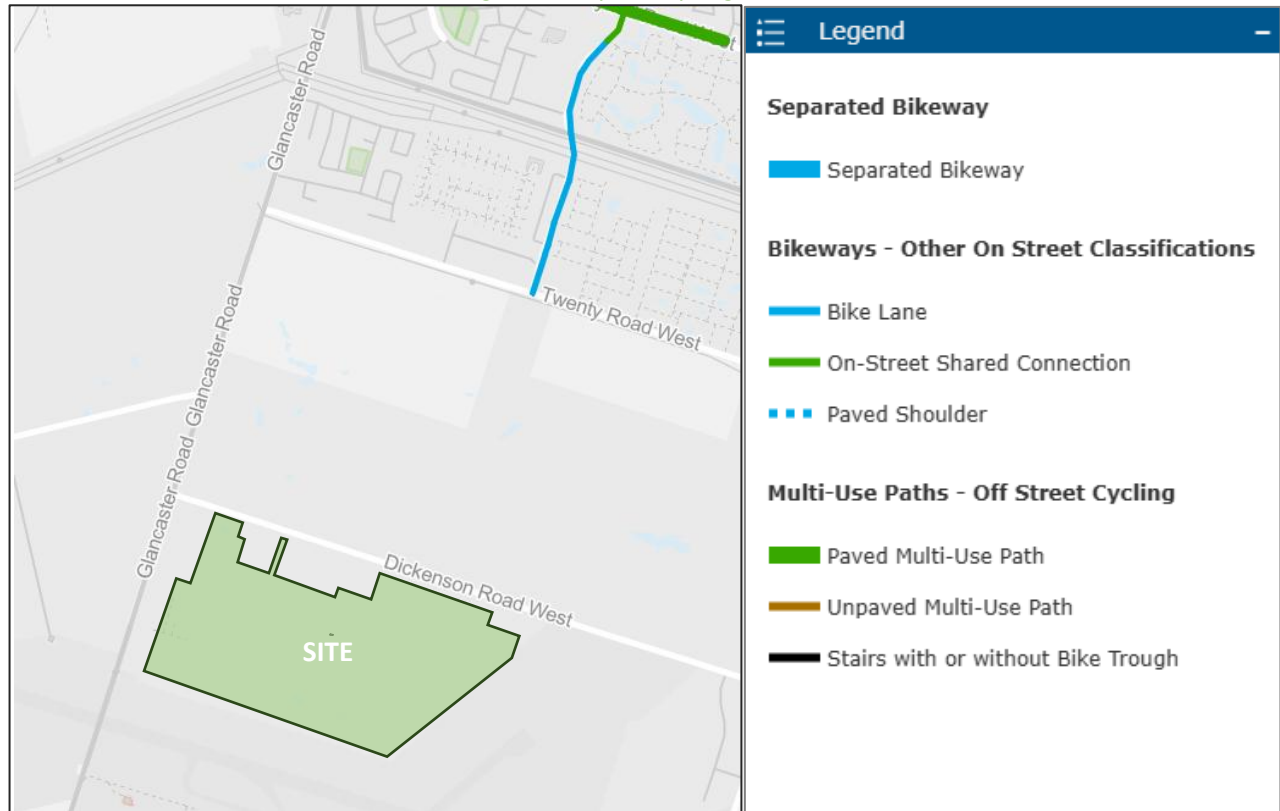
Figure 3: Existing Lane Configuration



3.3 Existing Cycling and Pedestrian Facilities

There are no existing pedestrian or cycling facilities present within the Study Area. Figure 4 illustrates an excerpt of the City of Hamilton Rural Bike Routes, Trails, and Parks Map, highlighting the Study Area cycling facilities.

Figure 4: Study Area Cycling Facilities



Source: City of Hamilton Bike Parking and Infrastructure Map – accessed at:

<https://spatialsolutions.maps.arcgis.com/apps/webappviewer/index.html?id=d193513e973f4d44a2647f874967c57e>

Accessed: October 22nd, 2025

3.4 Existing Transit

There are two transit routes that service the immediate Study Area - the 27 Upper James and the 20 A-Line Express. Within the Study Area, Route 20 operates along Upper James Street, Dickenson Road West, Aeropark Drive, Glanair Drive and Airport Road providing services between downtown Hamilton and the John C. Munro Hamilton International Airport every 10 to 30 minutes on weekdays. Table 1 summarizes the hours of operation for each direction of the service. Route 20 transit stops are located at the intersections of Upper James Street and Glanair Drive, Aeropark Boulevard at Dickenson Road West, Aeropark Boulevard at Glanair Drive, Airport Road at Homestead Road, The Canadian Warplane Heritage Museum, and the John C. Munro Hamilton International Airport.

Table 1: Route 20 Weekday Operating Schedule

Route	Days of Operation	Frequency	Direction	Hours of Operation
20	Weekdays	10 to 30 minutes	Northbound	5:25 AM – 12:53 AM (next day)
			Southbound	5:22 AM – 1:45 AM (next day)

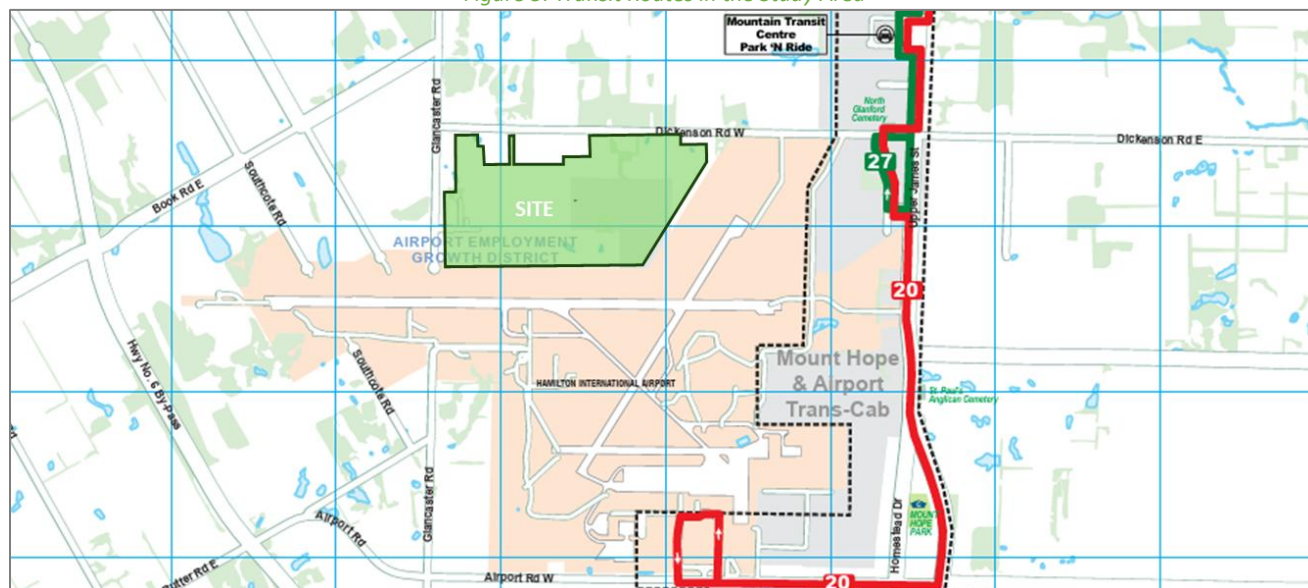
Route 27 operates along Upper James Street, Dickenson Road West, Aeropark Boulevard, and Glanair Drive, providing service between downtown Hamilton and the Amazon Fulfillment Centre every 6 to 35 minutes on weekdays. Table 2 summarizes the hours of operation for each direction of the service. Route 27 transit stops are located at the intersections of Aeropark Boulevard at Dickenson Road West, Aeropark Boulevard at Glanair Drive, and at Upper James Street and Glanair Drive.

Table 2: Route 27 Weekday Operating Schedule

Route	Days of Operation	Frequency	Direction	Hours of Operation
27	Weekdays	6 to 35 minutes	Northbound	4:25 AM – 1:18 AM (next day)
			Southbound	4:38 AM – 1:52 AM (next day)

Figure 5 illustrates the transit system map.

Figure 5: Transit Routes in the Study Area



Source: Excerpt from HSR System Map & Route Directory – accessed at:
<https://www.hamilton.ca/sites/default/files/2024-12/hsr-system-map-2025.pdf>
 Accessed: October 22nd, 2025

3.5 Existing Peak Hour Travel Demand

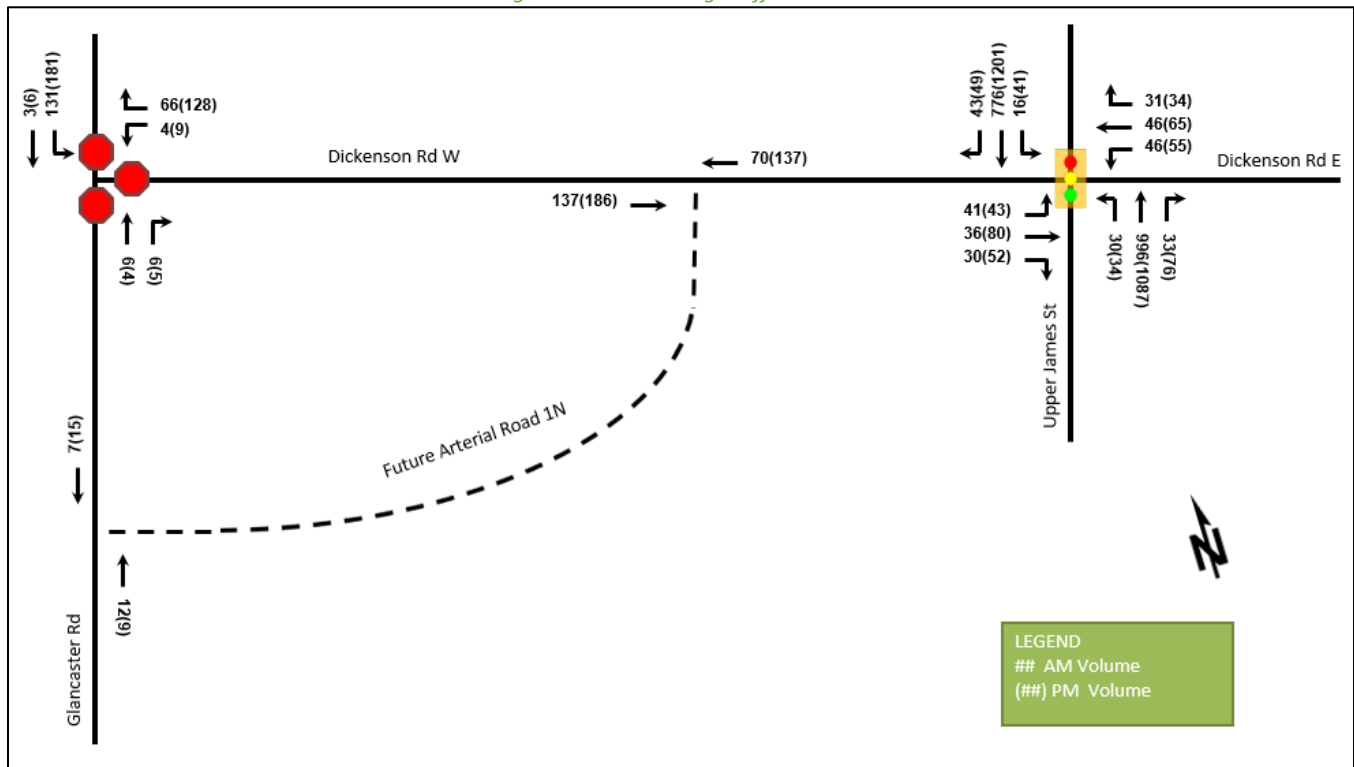
To understand the existing traffic volumes, turning movement counts (TMCs) have been collected for the Study Area intersections during the AM and PM peak hours. These TMCs included the counts for vehicles, heavy vehicles, pedestrians, and cyclists. Table 3 summarizes the intersection count dates and data source. Appendix A includes the turning movement count sheets.

Table 3: Traffic Count Date

Intersection	Count Date	Data Source
Dickenson Rd W/ E at Upper James St	Tuesday, May 9, 2023	Ontario Traffic Inc.
Glancaster Rd at Dickenson Rd W	Tuesday, May 9, 2023	Ontario Traffic Inc.

Figure 6 illustrates the 2025 Existing horizon traffic volumes at the Study Area intersections. The traffic movement counts from 2023 have been grown using a 2% compound annual growth rate (CAGR) to estimate the 2025 volumes. Additionally, the collected intersection counts also provided existing pedestrian and cyclist demands at the Study Area intersections for both AM and PM peak periods. Minimal pedestrian and cyclist volumes were noted at the Study Area intersections, which is expected and reflects the lack of active transportation infrastructure in the Study Area. To minimize coding null input parameters in Synchro, a value of 5 has been assumed for pedestrians and cyclists at all Study Area approaches.

Figure 6: 2025 Existing Traffic Counts



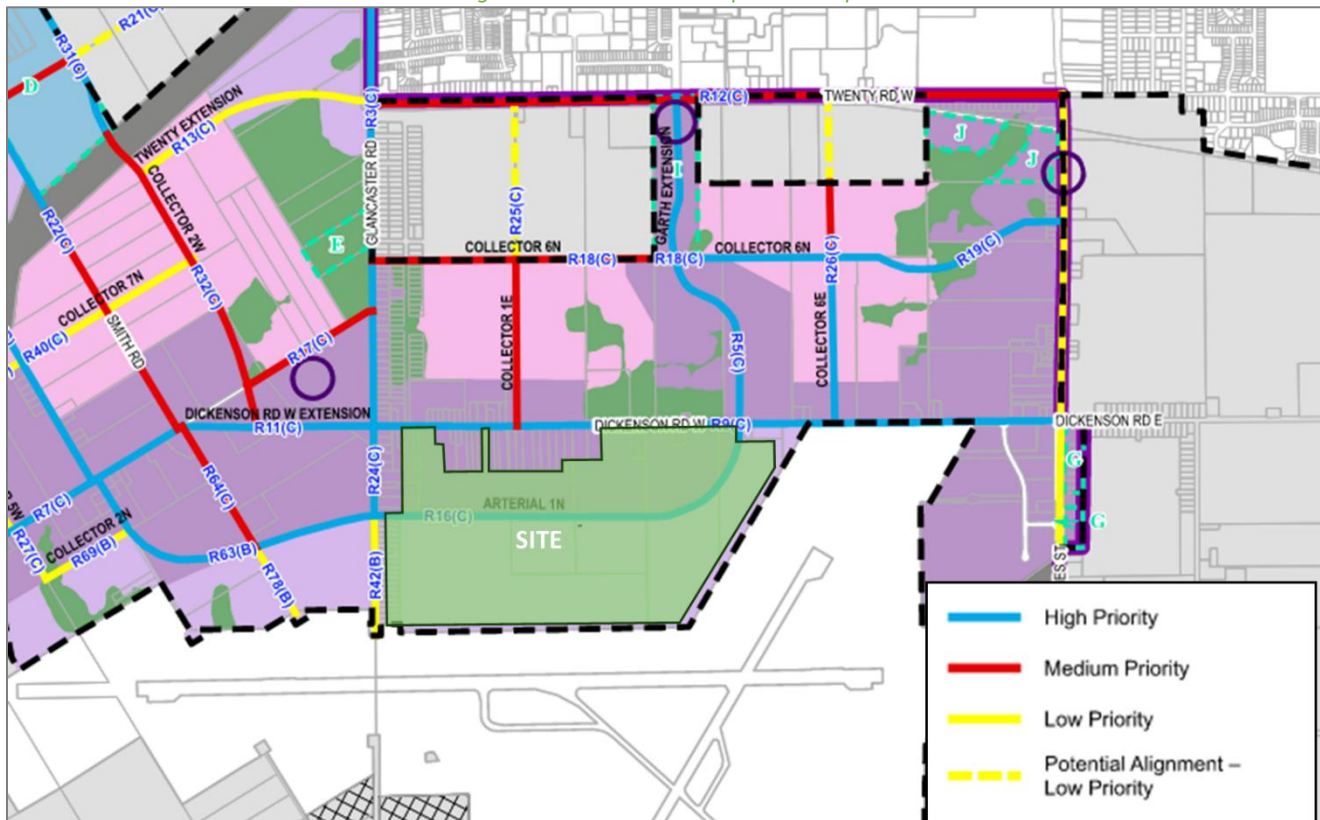
4 Future Background Conditions

4.1 Planning Context

The subject site is located within the Airport Employment Growth District (AEGD) Secondary Plan in the City of Hamilton. The secondary plan establishes a unique land use and planning approach for the employment area adjacent to John C. Munro Hamilton International Airport bound by Garner Road / Twenty Road West to the north, Upper James Street to the east, Fiddler's Green Road to the west, and White Church Road West to the south.

In accordance with this Secondary Plan, a Transportation Master Plan for the Airport Employment Growth District was published in 2024. An excerpt from the 2024 AEGD TMP Update is shown in Figure 7 below.

Figure 7: 2024 AEGD TMP Update Excerpt



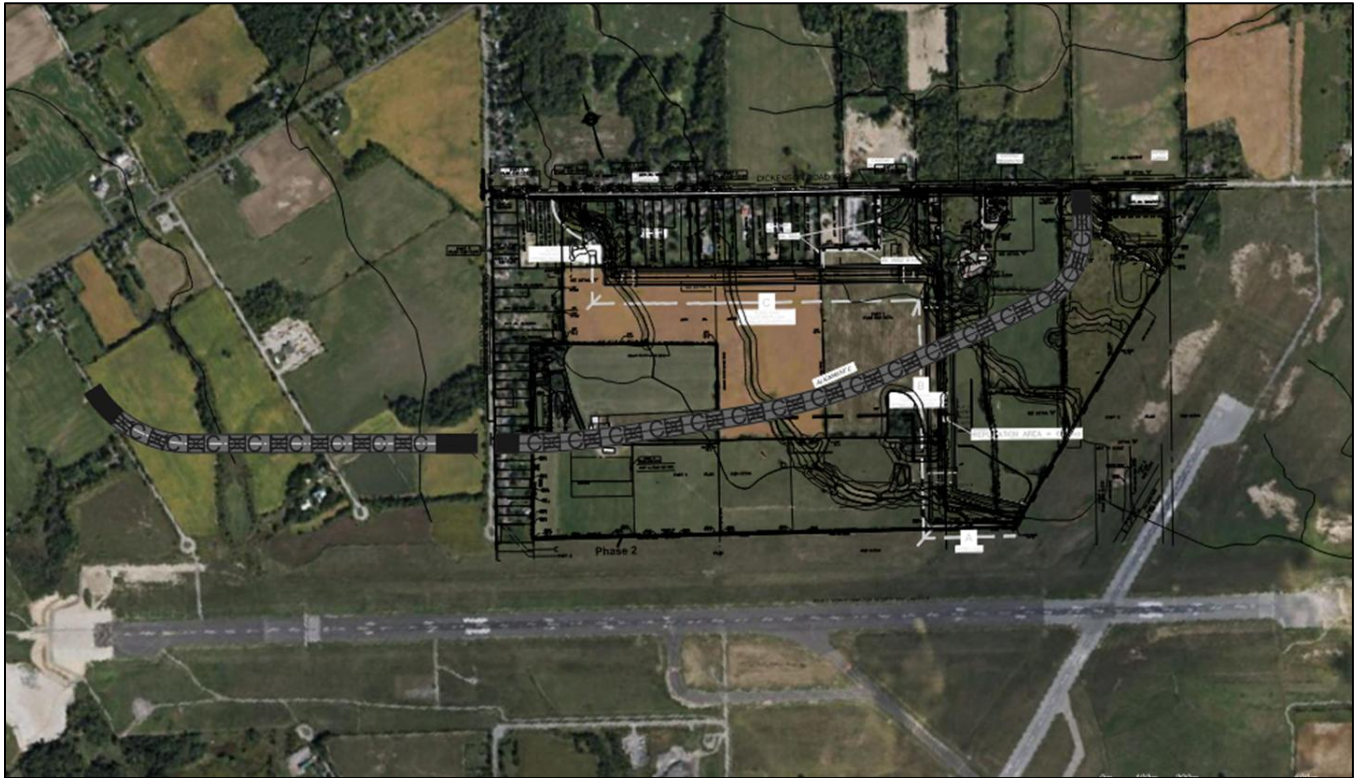
Source: AEGD TMP June 2024 Update – accessed at:

<https://www.hamilton.ca/sites/default/files/2024-06/aegd-tmp-update-project-report-final-revised-jun2024.pdf>

Accessed: October 22nd, 2025

Within the Study Area, the 2024 update proposes a new arterial road (Arterial 1N) within the subject development lands that connects to Dickenson Road West at the potential location of the Garth Street extension, and at Glancaster Road, south of Dickenson Road. Arterial 1N is also indicated to extend west of Glancaster Road and ultimately connect to Book Road at Southcote Road. The Arterial Road 1N Class EA process was initiated as part of the Draft Plan of Subdivision for the subject site and is running in tandem with the Draft Plan of Subdivision process. Through Phase 2 of the EA process, three alignment alternatives of Arterial Road 1N segment between Dickenson Road and Glancaster Road were examined and presented for public feedback during Arterial Road 1N Open House #1. The preferred alignment carried forward in the EA process is shown in Figure 8 below.

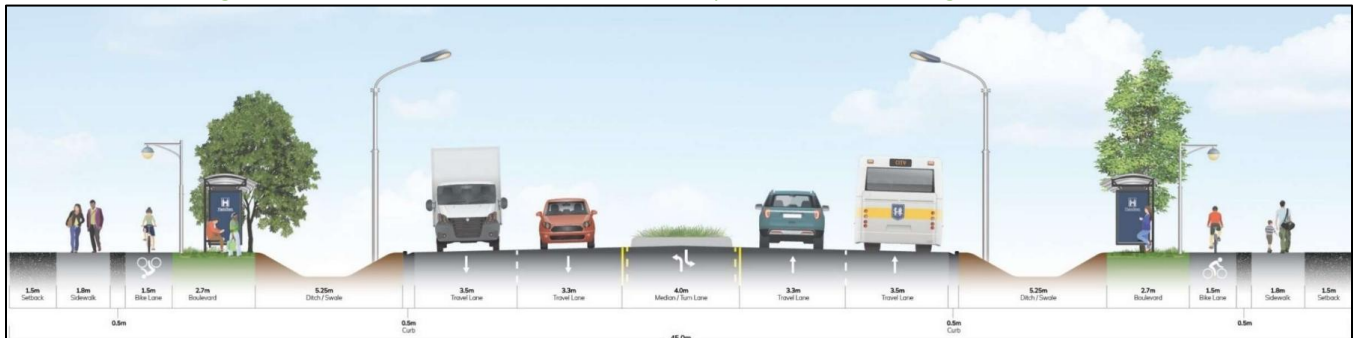
Figure 8: Preferred Alignment of Arterial Road 1N



Source: Arterial Roadway 1N (Dickenson Road West to Glancaster Road) Municipal Class Environmental Assessment – accessed at: <https://www.cghtransportation.com/planning/Arterial1NEA>
Accessed: October 22nd, 2025

The 2024 AEGD TMP update recommends a 45-metre ROW arterial roadway, with two vehicular lanes in each direction, pedestrian, transit, goods movement, cycling and drainage facilities as shown in Figure 9 below.

Figure 9: 45.0 Metre Four Lane Arterial Road - Conceptual Cross-section Design -Arterial Road 1N



Source: Excerpt from AEGD TMP June 2024 Update – accessed at: <https://www.hamilton.ca/sites/default/files/2024-06/aegd-tmp-update-project-report-final-revised-jun2024.pdf>
Accessed: October 22nd, 2025

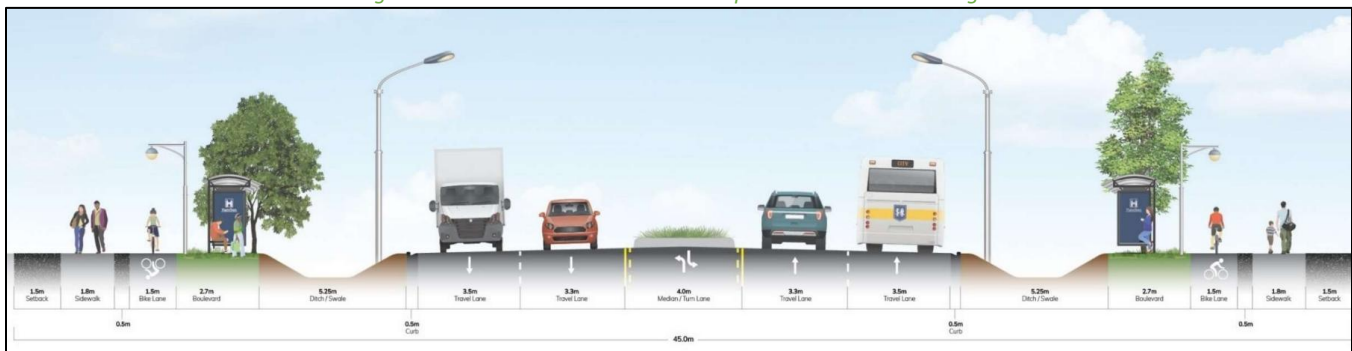
This study examines an interim two-lane configuration of the Arterial Road 1N that connects to Dickenson Road and Glancaster Road in the case where the development of subject lands proceeds prior to construction of the ultimate four-lane right of way identified within the AEGD. The comparison of the trip generation assumptions for the subject lands between the AEGD TMP and the study herein is provided in Section 5.1.2. The Future Total traffic operations with the interim configuration of Arterial Road 1N is examined in Sections 6.4.3 - 6.4.4.

The AEGD Transportation Master Plan also outlines several roadway improvements within the Study Area. These improvements are currently in their respective preliminary planning phases as they required individual environmental assessments and further study. As a result, the exact timings, final configurations, and precise alignments of these improvement projects are unknown at this time. The following sections discuss the proposed Study Area road improvements outlined in the AEGD Transportation Master Plan.

4.1.1 Dickenson Road West

Dickenson Road West is an east-west City of Hamilton minor arterial road within the Study Area. Dickenson Road West is anticipated to be widened between Upper James Street and Glancaster Road and extended from Glancaster Road to Smith Road. The AEGD TMP 2024 recommends a 45-metre ROW along Dickenson Road West be protected to allow for four travel lanes along the roadway as well as active transportation facilities. The updated AEGD TMP four-lane arterial road cross-section can be seen in Figure 10.

Figure 10: Dickenson Road West Conceptual Cross-Section Design



Source: Excerpt from AEGD TMP June 2024 Update – accessed at:

<https://www.hamilton.ca/sites/default/files/2024-06/aegd-tmp-update-project-report-final-revised-jun2024.pdf>

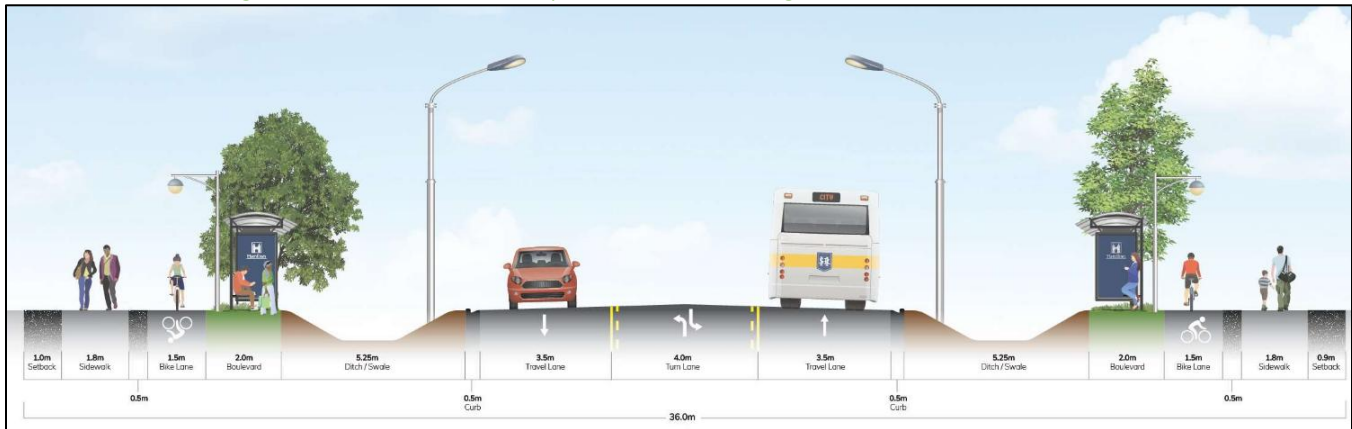
Accessed: October 22nd, 2025

It is noted that the City of Hamilton has initiated the Municipal Class EA process for Dickenson Road West between Upper James Street and Glancaster Road. The existing schedule for the EA does not provide a date for the completion of the Environmental Study Report (ESR) or anticipated construction date of the widening. Thus, Dickenson Road was conservatively assumed to be a two-lane road in the 2030 and 2035 future background horizons for the purposes of this TIS.

4.1.2 Glancaster Road

Glancaster Road is a north-south City of Hamilton future minor arterial road north of Arterial Road 1N and south of Dickenson Road West, and a minor collector road south of Arterial Road 1N within the Study Area. From Garner Road to Dickenson Road West, Glancaster Road is anticipated to have capacity reduced from a four-lane to a two-lane cross-section, and be upgraded from a two-lane to a four-lane cross-section south of Dickenson Road West and Arterial Road 1N. Glancaster Road will also be reconstructed south of Arterial Road 1N. The AEGD TMP 2024 recommends a 36-metre ROW along Glancaster Road be protected for north of Arterial Road 1N in order to allow for four travel lanes along the roadway as well as active transportation facilities. A 30-metre ROW for Glancaster Road south of Arterial Road 1N is recommended. As part of the ongoing update to the AEGD TMP, conceptual right-of-way cross-sections have been provided by City staff for use. The conceptual cross-sections of Glancaster Road between Dickenson Road and Arterial 1N as well as south of Arterial 1N are shown in Figure 11 and Figure 12, respectively.

Figure 11: Glancaster Road Conceptual Cross-Section Design – Dickenson Road to Arterial 1N

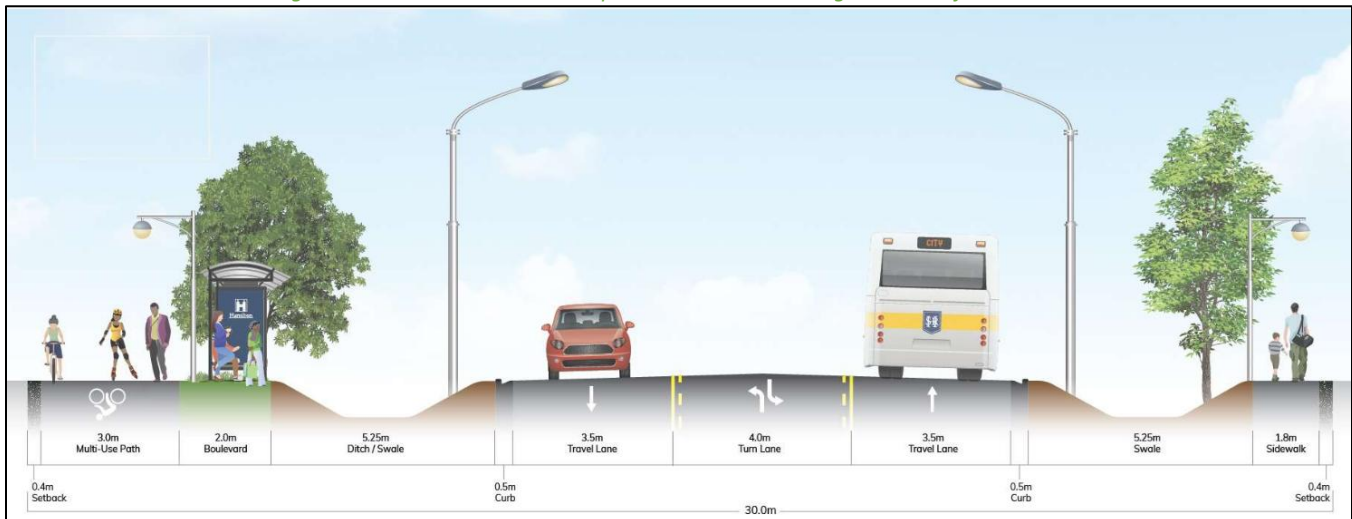


Source: AEGD TMP June 2024 Update – accessed at:

<https://www.hamilton.ca/sites/default/files/2024-06/aegd-tmp-update-project-report-final-revised-jun2024.pdf>

Accessed: October 22nd, 2025

Figure 12: Glancaster Road Conceptual Cross-Section Design – South of Arterial 1N



Source: AEGD TMP June 2024 Update – accessed at:

<https://www.hamilton.ca/sites/default/files/2024-06/aegd-tmp-update-project-report-final-revised-jun2024.pdf>

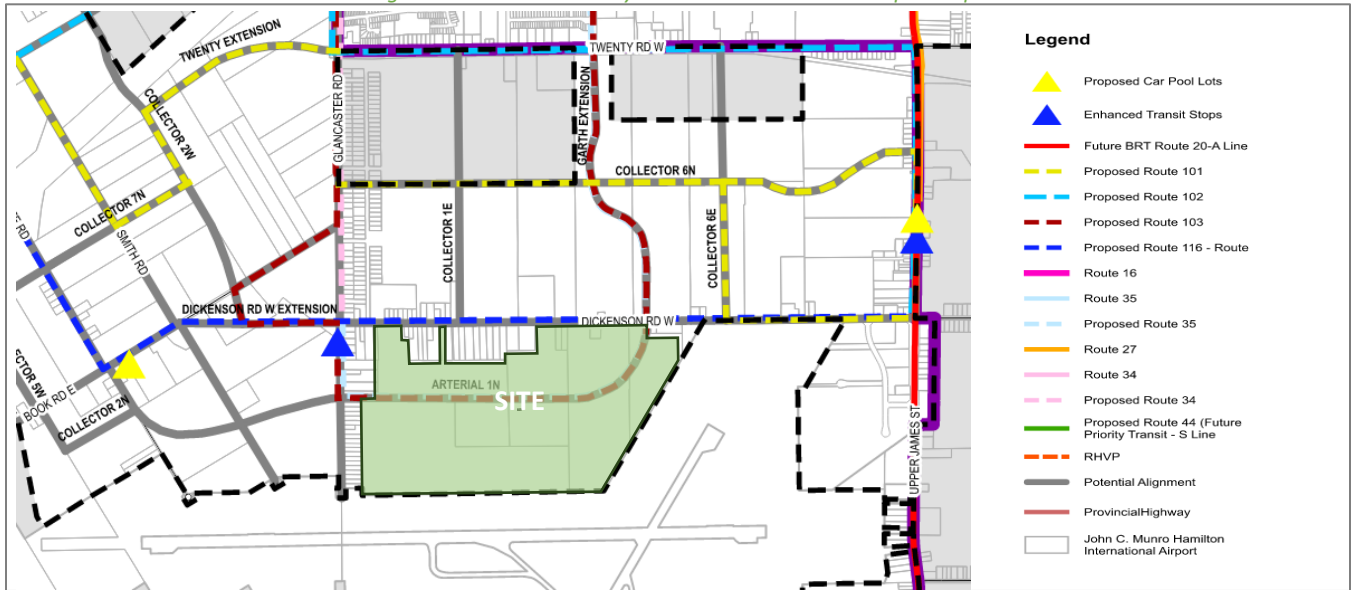
Accessed: October 22nd, 2025

Since the timing of Glancaster Road widening is unknown, it was not included in the analysis herein to develop a more conservative scenario. As Glancaster Road is widened in the future, the traffic conditions are expected to improve as a result of increased capacity.

4.1.3 Planned Transit and Active Transportation Improvements

Currently, information regarding future transit and active transportation improvements within the Study Area is limited. The Conceptual Transit Network Map in the AEGD Secondary Plan shows potential future transit routes along Dickenson Road West, Glancaster Road, and Arterial Road 1N. The map is shown in Figure 13. No trails have been detailed to date. The draft cross-sections developed and presented to the public for the AEGD TMP update include pedestrian and cycling facilities for the 30-metre collector roadway, the 36-metre arterial roadway, and the 45-metre arterial roadway. As such, pedestrian and cycling facilities will be present within the Study Area road network.

Figure 13: AEGD Secondary Plan Transit and Trails Map Excerpt

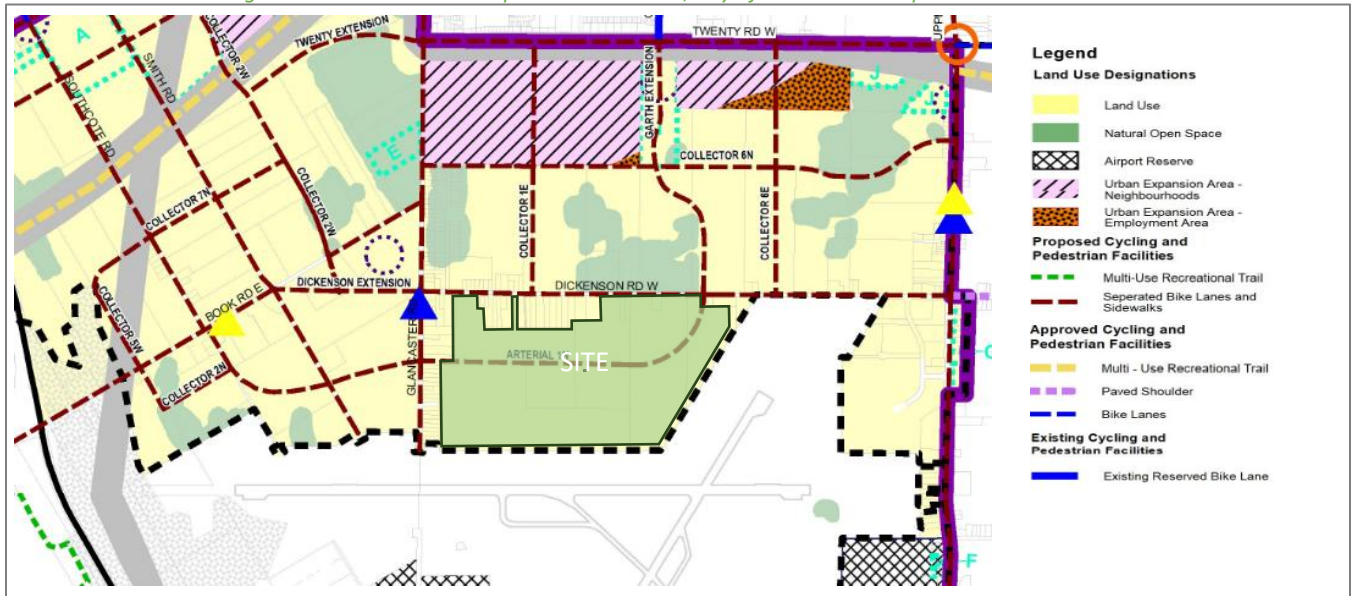


Source: Urban Hamilton Official Plan: Airport Employment Growth District Secondary Plan, Conceptual Transit Network Map, June 2024 – accessed at: <https://www.hamilton.ca/sites/default/files/2023-11/aegd-tmp-update-mapping-conceptual-transit-network.pdf>

Accessed on: October 22nd, 2025

Information regarding future cycling facilities can be found in the City of Hamilton Transportation Master Plan, specifically, the Active Transportation Network from the 2024 updated TMP. The planned cycling facilities for Dickenson Road West, Glancaster Road, and Arterial Road 1N are consistent with information found in the AEGD for road-way classification as illustrated in Figure 19 below. Additionally, a planned future multi-use trail along Upper James Street is noted.

Figure 19: 2024 Active Transportation Network, City of Hamilton Transportation Master Plan



Source: City of Hamilton Transportation Master Plan: Active Transportation Network, June 2024 – accessed at <https://www.hamilton.ca/sites/default/files/2023-11/aegd-tmp-update-mapping-active-transportation-network.pdf>

Accessed on: October 22nd, 2025

4.2 Background Growth

A compound annual growth rate (CAGR) of 2% has been applied to the base 2025 horizon volumes for all movements to estimate the growth in background traffic traveling through the Study Area.

4.3 Future Background Traffic Volumes

Combining the background traffic growth and the existing 2025 traffic volumes, the 2030 Future Background traffic volumes and the 2035 Future Background traffic volumes were projected. Figure 14 and Figure 15 illustrate the Future Background traffic volumes.

Figure 14: 2030 Future Background Traffic Volumes

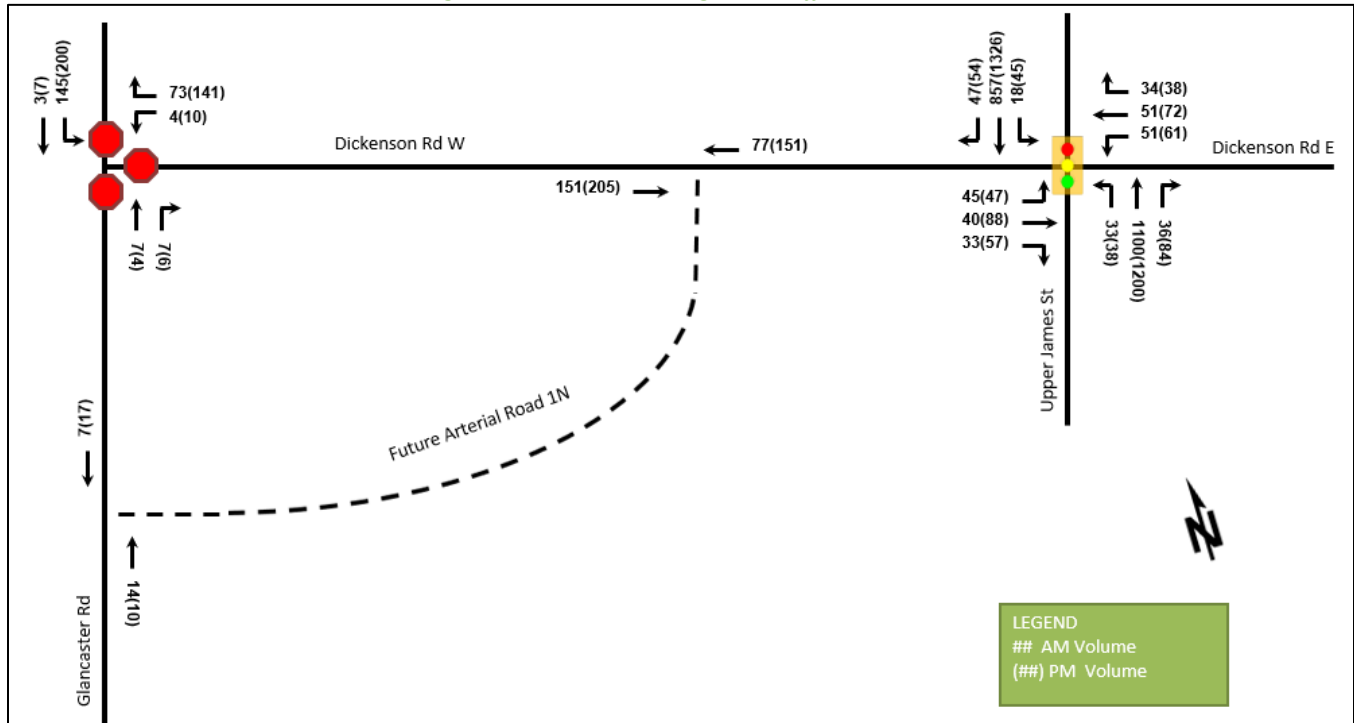
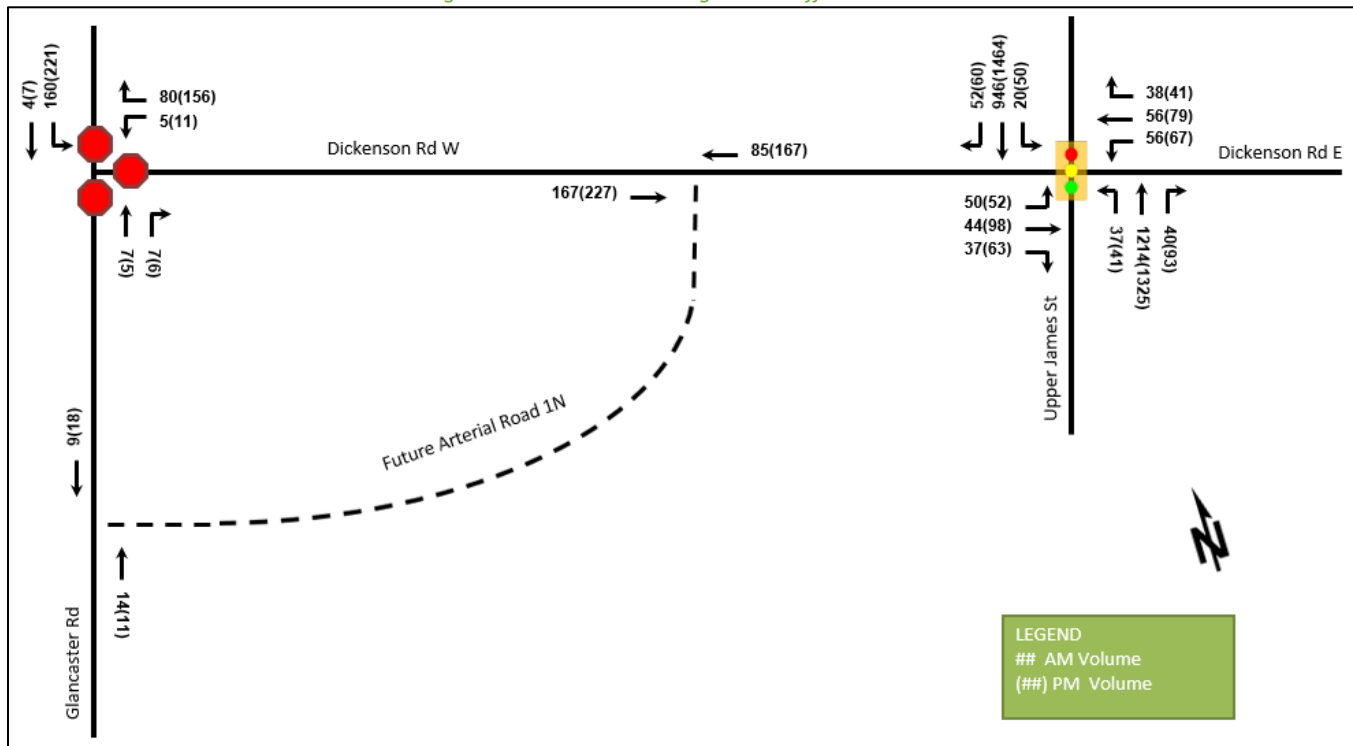


Figure 15: 2035 Future Background Traffic Volumes



5 Future Total Conditions

5.1 Trip Generation

5.1.1 Proposed Development

In the previous submission, the ITE Trip Generation Manual 11th Edition was reviewed to determine the appropriate trip generation rate equations for the proposed land uses. As the latest ITE Trip Generation Manual 12th Edition has become available, the trip generation will be updated accordingly using the most recent data.

The Industrial (Warehousing) land use (ITE LUC 150) was used to estimate trips for the facility based on the gross floor area of the facility. Based on the average gross floor area to lot area ratio of five similar industrial sites in Hamilton, the gross floor area of the subject site is estimated to be 4,281 thousand square feet for the full built-out scenario.

Table 4 summarizes the ITE Trip Generation Equations and directional splits for each land use, and Table 5 summarizes the average trip generation rates and directional splits. The associated land use information pages from the ITE Trip Generation Manual are included in Appendix B. Fitted curve equations have been used where available with more than 20 data points, according to the selection process provided in the ITE Trip Generation Manual. Where a fitted curve equation was not available, the average rate was used instead to determine the trip generation.

Table 4: ITE Fitted Curve Equations and Directional Splits

Land Use (LUC)	Trip Type	AM Peak hour			PM Peak Hour		
		Equation	In %	Out %	Equation	In %	Out %
Industrial (Warehousing) (150)	All Vehicles	$T = 0.10(X) + 13.43$	77%	23%	$T = 0.11(X) + 19.62$	28%	72%

Table 5: ITE Average Trip Generation Rates and Directional Splits

Land Use (LUC)	Trip Type	AM Peak hour			PM Peak Hour		
		Vehicle Trip Rate / 1000 SF	In %	Out %	Vehicle Trip Rate / 1000 SF	In %	Out %
Industrial (Warehousing) (150)	All Vehicles	0.12	77%	23%	0.15	28%	72%
	Trucks	0.02	52%	48%	0.02	53%	47%

LUC – Land Use Code

Based on the average trip rates above, the total site trip generation during the weekday AM peak hour and the weekday PM peak hour are summarized in Table 6.

Table 6: Total Trip Generation

Built-Out Scenario	Trip Type	AM Peak Hour			PM Peak Hour		
		In	Out	Total	In	Out	Total
Full Build-Out 4,281 thousand SF	All Vehicles	340	102	442	137	353	491
	Trucks	45	41	86	45	41	86
	Autos	295	61	356	92	312	405

As shown in Table 6, the resulting number of projected new two-way vehicle trips is approximately 442 vehicles per hour during weekday AM peak hour and 491 vehicles per hour during weekday PM peak hour.

To develop a more conservative analysis, no modal split trip reductions for non-passenger vehicle trips were applied in the analysis. However, given that Arterial Road 1N is proposed as a multi-modal corridor, some vehicle trips are likely to shift to alternative modes in the future, resulting in a reduction of the projected auto demand.

The distribution of the projected truck and passenger vehicle trips entering and exiting the subject site was determined based on the knowledge of the Study Area and the surrounding region. The resulting distribution for passenger vehicles and trucks is summarized in Table 7 and Table 8 below.

Table 7: Passenger Vehicle Trip Distribution

To/From	% of Auto Trips
North via Dickenson-Upper James	45%
North via Glanaster	25%
North via Dickenson-Glanaster	20%
South via Dickenson-Upper James	10%

Table 8: Truck Trip Distribution

To/From	% of Truck Trips
Niagara Falls via Upper James (North of Dickenson)	10%
Greater Toronto Area via Upper James (North of Dickenson)	40%
Greater Toronto Area via Upper James (South of Dickenson)	30%
Windsor via Upper James (South of Dickenson)	20%

The passenger vehicle trips to the site are expected to be made by employees working at the proposed development. As a result, the majority of the passenger vehicle trips are expected to come from and go to the north of the proposed site, due to the location of existing residential developments within the City of Hamilton and its vicinities. To the north of the proposed site, downtown Hamilton and the GTA are expected to generate the majority of the trips from and to the site; to the south of the proposed site, a few small townships are expected to have a minor contribution to the total trips. As a result, approximately 90% of the trips are expected to come from or go to the north, while 10% are going to or from the south. For the northbound trips, Glanaster Road and Upper James Streets are the two routes available to drivers. Glanaster Road is expected to reduce the capacity issues of Upper James Street, given the proposed road widening project that is expected to be completed by the time when the subject site becomes operational. As a result, the northbound trips are expected to distribute more evenly between Glanaster Road and Upper James Street.

The proposed development is a warehouse facility potentially supplied through the Hamilton Airport, which is expected to serve the Golden Horseshoe region upon completion. As a result, trucks are expected to serve three major directions, including to and from the Greater Toronto Area (GTA) to the north, the Brantford-London-Windsor corridor to the southwest, and the St. Catharines-Niagara Falls region to the east. Among these major destinations, the bulk of deliveries are expected to serve locations in the GTA, given it is the population center of the region.

As a result, it is expected that approximately 70% of the total truck trips will be bound to or originate from the GTA. Within this portion of truck trips, 30% are expected to access highways via Upper James Street south of the Dickenson Road, while the remaining 40% are expected to do so via Upper James Street north of the Dickenson Road. The slightly higher allocation for the northern leg of Upper James Street is to account for the trips that serve downtown Hamilton. Brantford, London, and Windsor are estimated to contribute 20% of the total truck trips, and another 10% is expected to serve the St. Catharines and Niagara Falls region, based on the population of the respective municipalities. Since within the most recent AEGD update, the Glanaster Road was not a designated truck route, all truck trips are assigned to Upper James Street en route to their destinations. The final trip assignment and volumes for the Study Area are shown in Figure 16 through Figure 20 below.

Figure 16: Site Car Trip Assignment

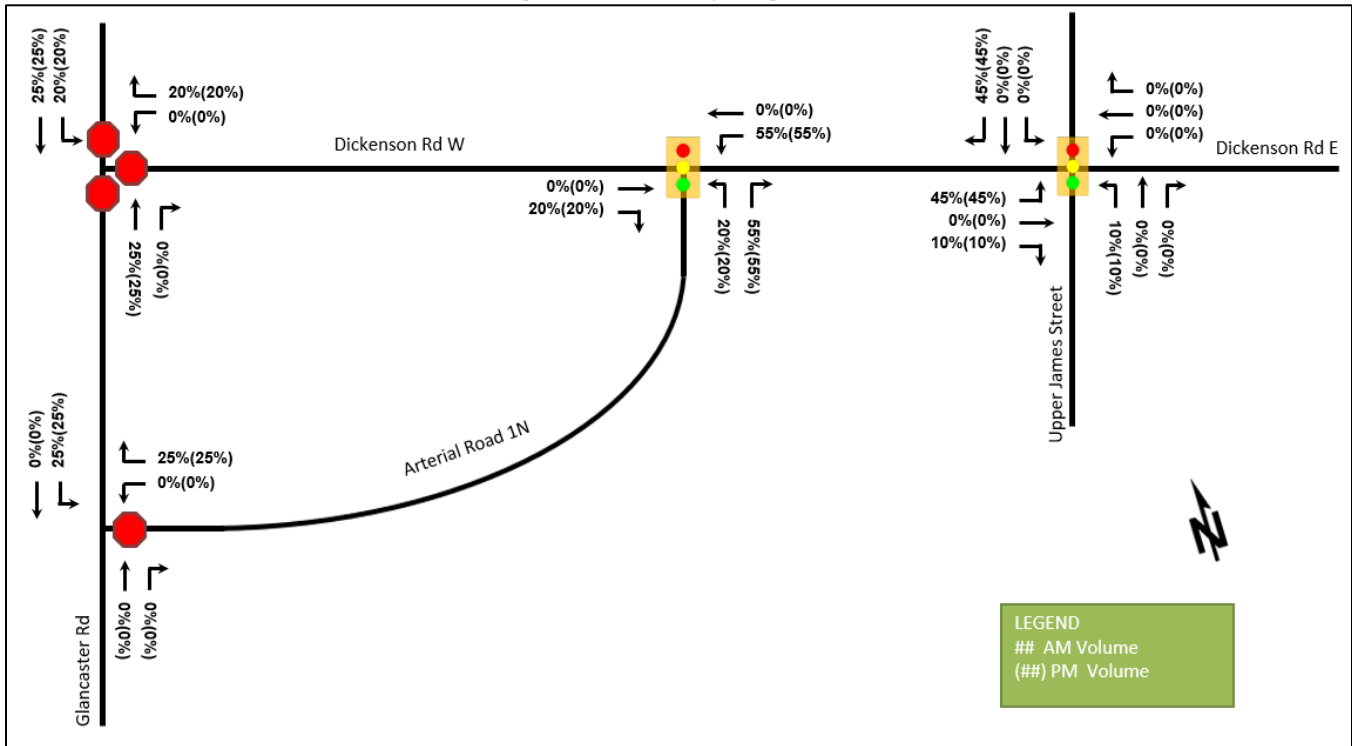


Figure 17: Site Truck Trip Assignment

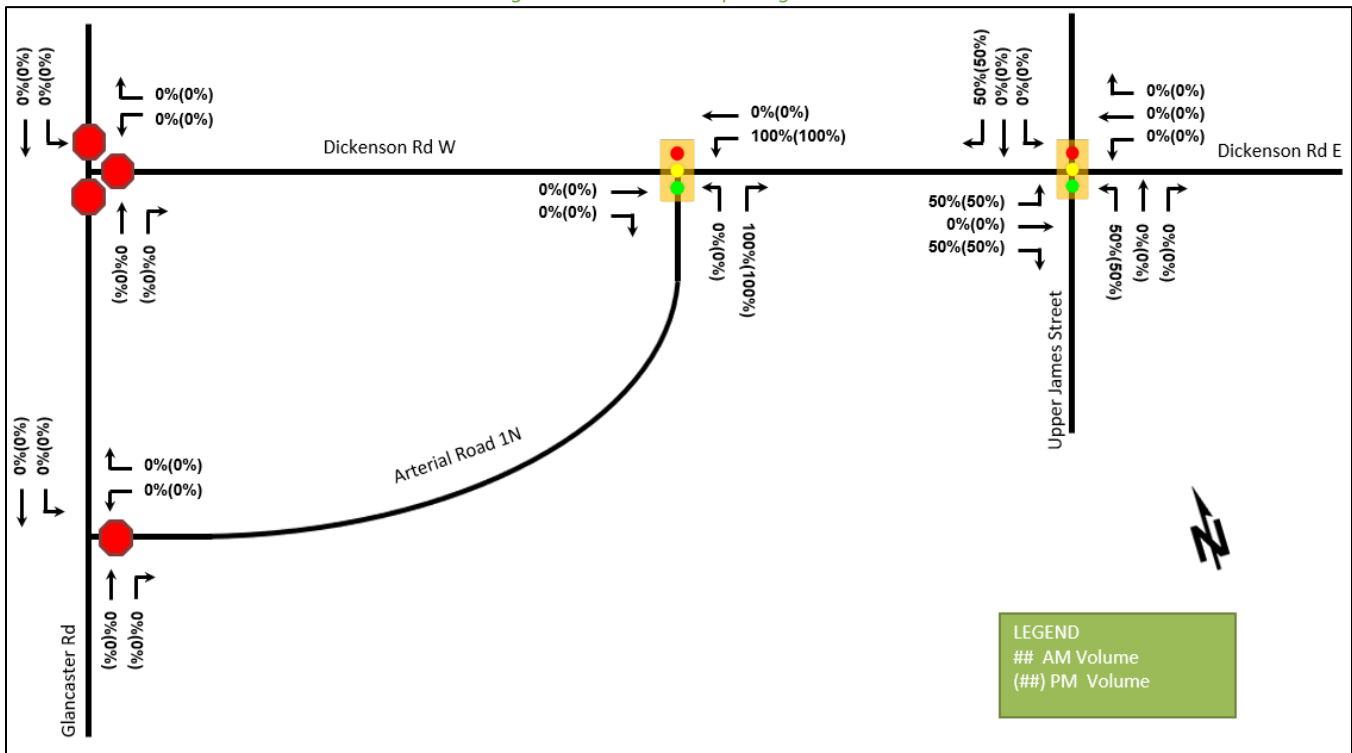


Figure 18: Site Car Trip Volumes

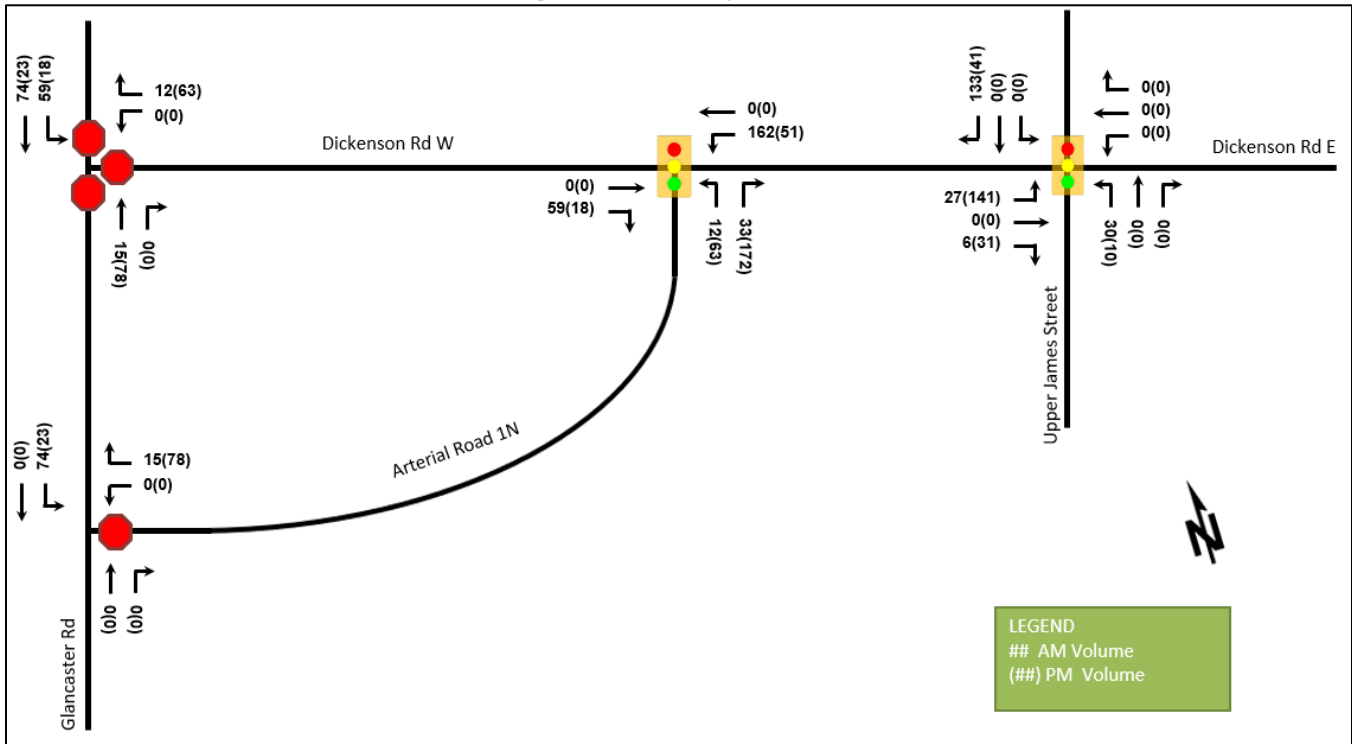


Figure 19: Site Truck Trip Volumes

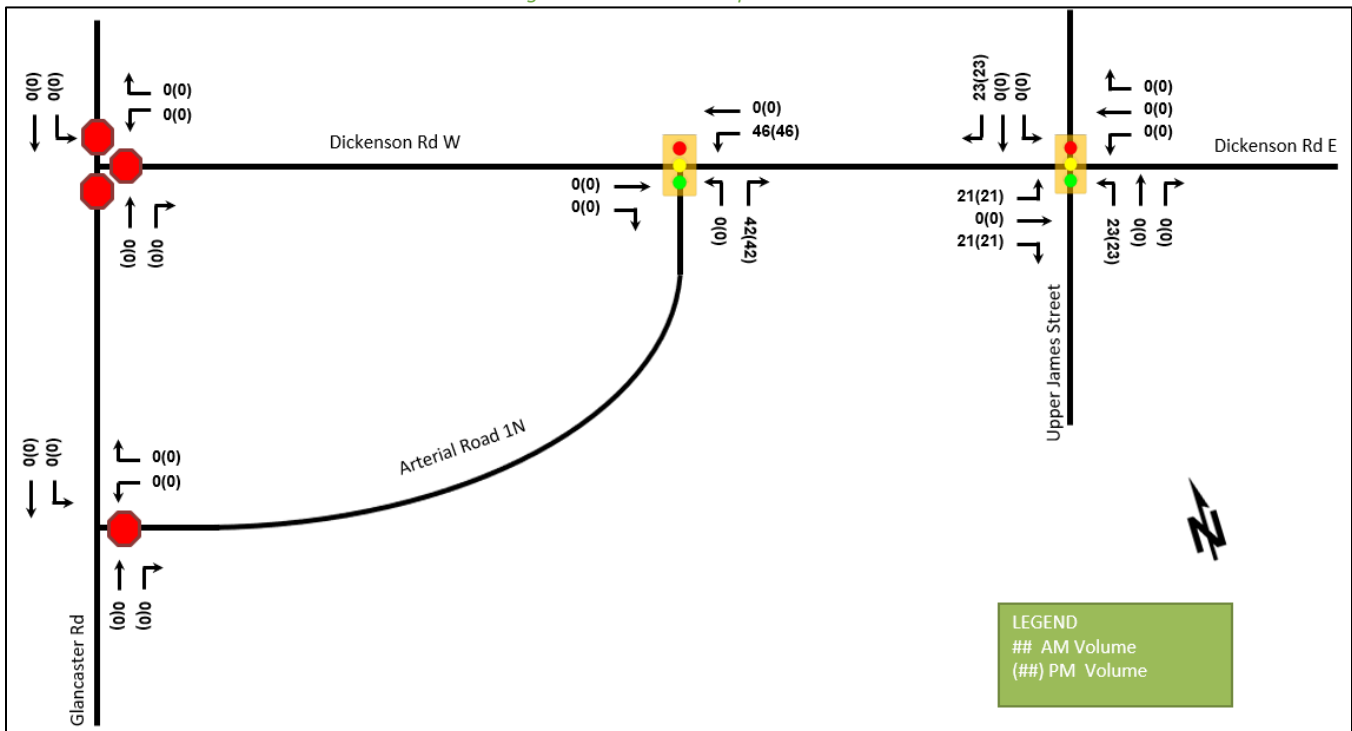
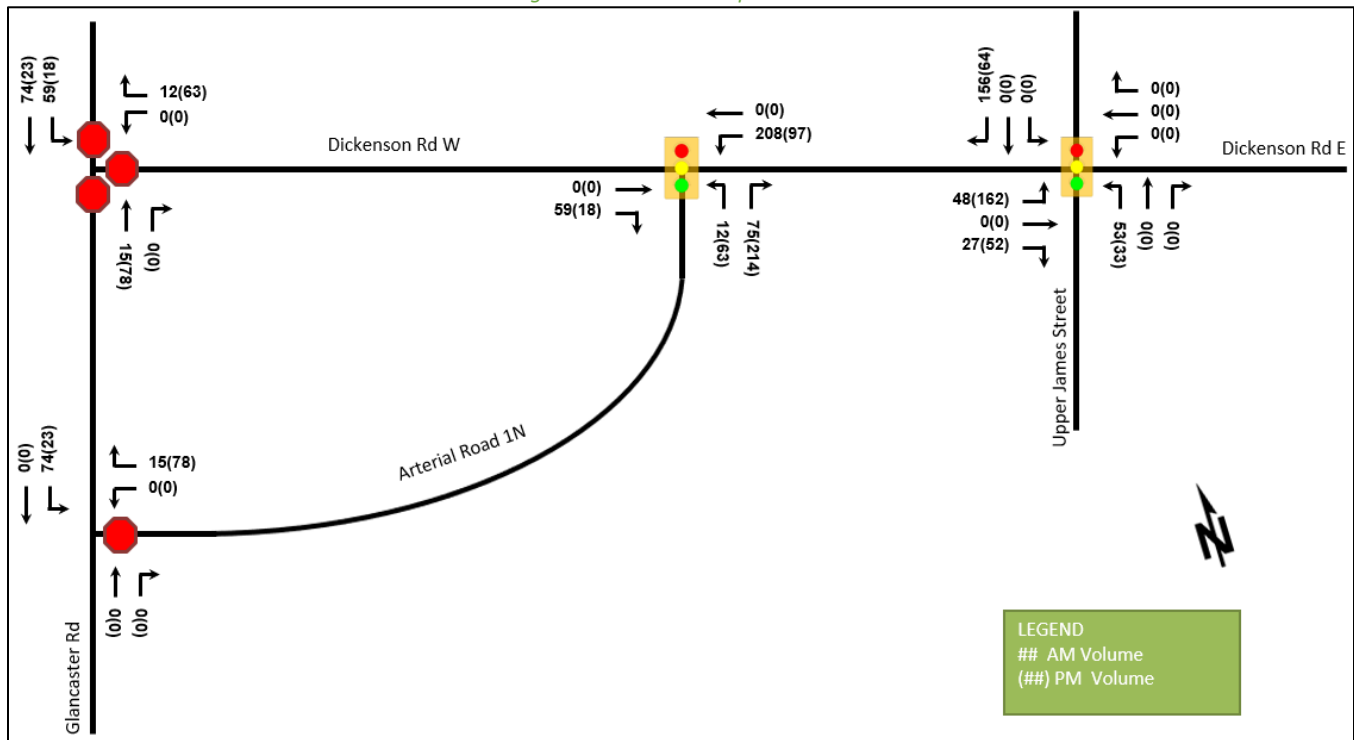


Figure 20: Site Total Trip Volumes



5.1.2 Proposed Development vs AEGD Trip Generation

The trip generation methodology has been updated from the previous EMME-based forecasts to a site-based analysis approach, as more site-specific knowledge has become available. The change in analysis approach affected the trip generation outcome by changing three aspects of the analysis: the land use category, the gross floor area, and the employment forecast for the site. As a result, the updated methodology provides a lower but more accurate representation of the site generated traffic.

The Hamilton Airport Employment Growth District Transportation Master Plan (AEGD TMP) 2024 update considers trip generation based on land use, land size, and established employment densities outlined within the plan. The development land of the proposed project is designated as Airside Industrial Zone and Airport Prestige Business Zone in the AEGD. The permitted uses under these zoning designations include airport storage, maintenance, operation, waste processing and catering facilities, as well as convention centres, transportation terminals, industrial offices, and hospitality industry. Previously, without project-specific information, the highest trip-generating land-use was selected to develop the most conservative analysis and therefore may be higher than in reality. As some design details have become available, it is identified that the desired purpose of the development better aligns with that of a general industrial warehouse facility. As a result, the industrial (warehousing) land use in the ITE Trip Generation Manual was used, resulting in fewer trips generated by the proposed development.

Additionally, it is noted that the EMME volumes assume 98.21 net hectares (10,571.24 thousand SF) of airside industrial and airport prestige land within the subject development. However, as previously mentioned, only 4,281.06 thousand SF of land will actually be developed for the proposed use. The EMME volumes therefore represent a conservative volume scenario at Study Area intersections, and volumes would be significantly lower in reality than what is assumed initially. Furthermore, the original employment forecast was also based on the 98.21-hectare GFA assumption, which resulted in 3,653 employees estimated to be employed on site. Using the updated square footage as mentioned above, it is estimated that only 176 employees will be working on site for

a typical facility of similar size, resulting in further reduction of trip generation estimates. For the reasons stated above, it is concluded that with the changes in methodology and availability of updated site information, the new estimates produce more accurate trip generation results than the EMME model.

5.2 Future Total Traffic Volumes

The projected site trip generation has been combined with the 2030 and 2035 Future Background traffic to estimate the Future Total traffic volumes for the respective time horizons. The 2030 Future Total intersection volumes are shown in Figure 21 and the 2035 Future Total intersection volumes are shown in Figure 22.

Figure 21: 2030 Future Total Trip Volumes

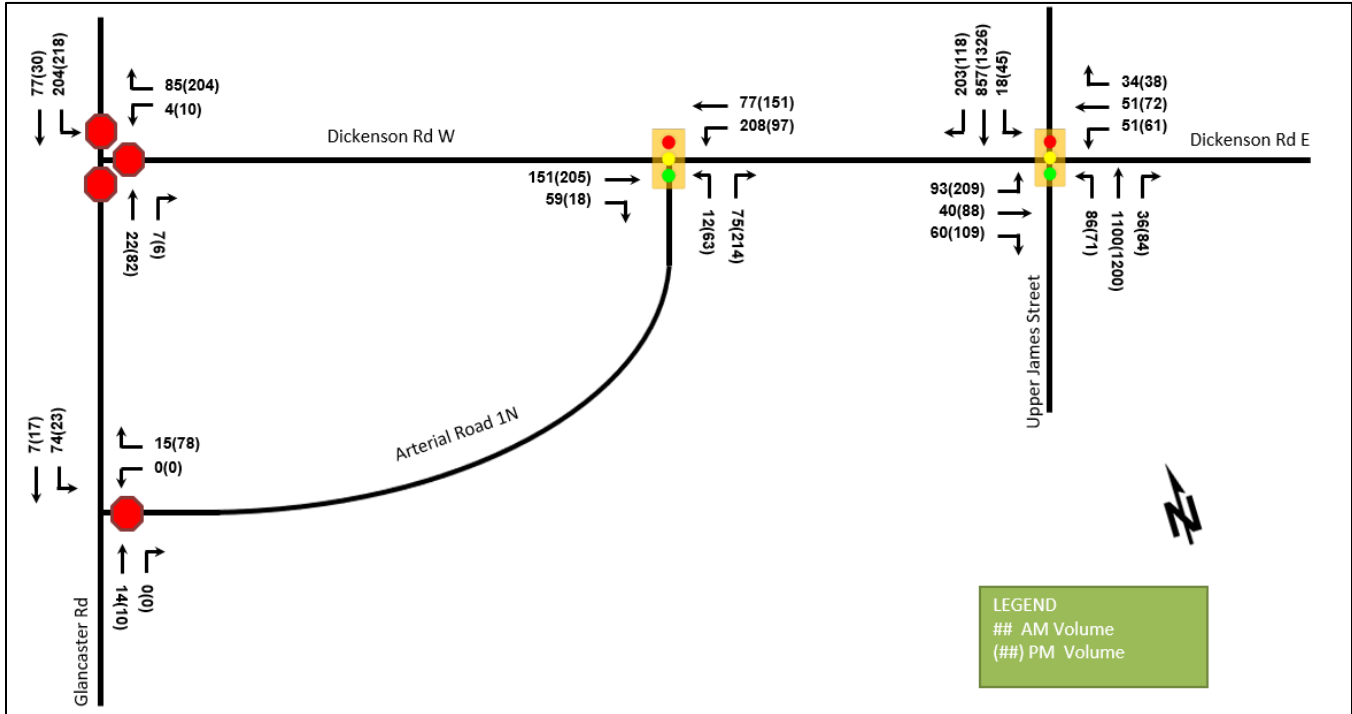
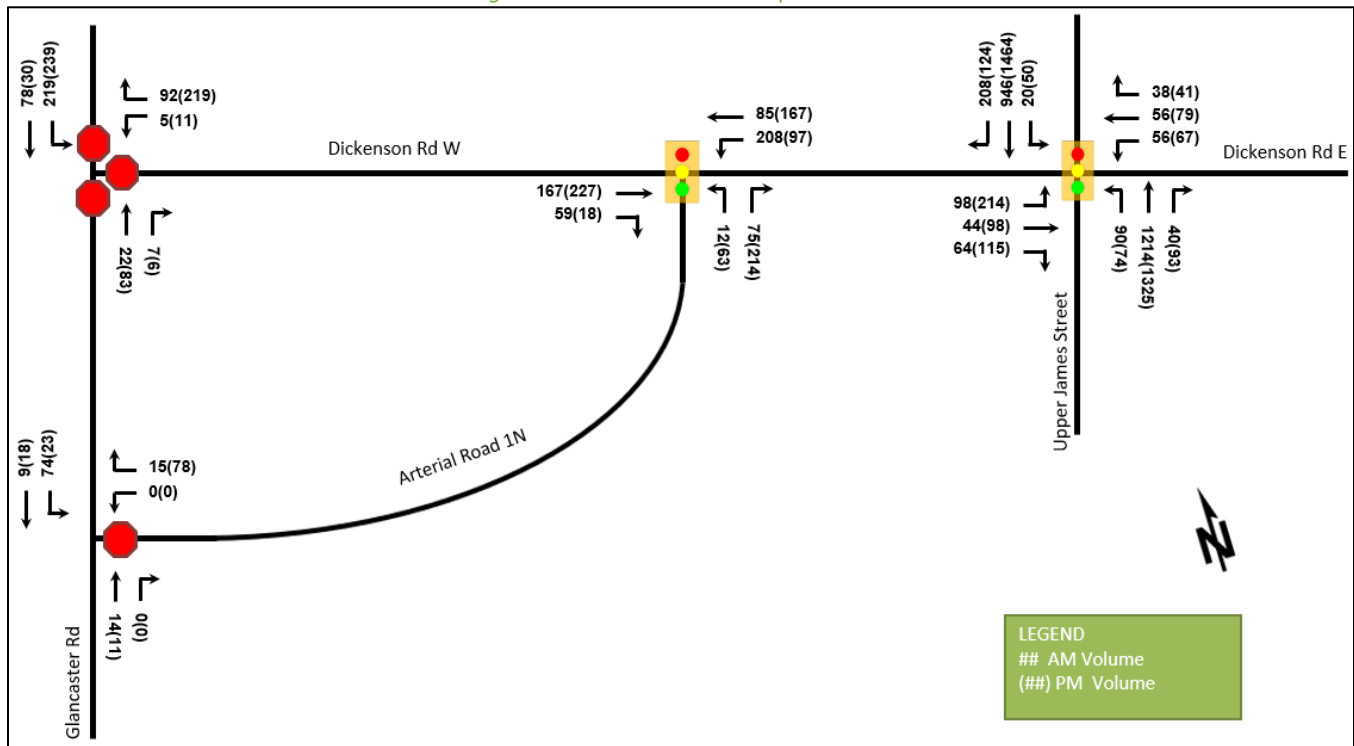


Figure 22: 2035 Future Total Trip Volumes



6 Operational Analysis

6.1 Operational Analysis Parameters

To understand the existing operational characteristics of the Study Area intersections, a Synchro model has been created using Trafficware's Synchro (Version 11) and the City of Hamilton's Traffic Impact Study Guidelines. The Synchro model has been coded using City of Hamilton's *Transportation Assessment Guidelines* (2024) and is based on information gathered from aerial photos, existing signal timing plans, and existing turning movement counts.

The Synchro model has been coded using the existing traffic signal timing data provided by the City of Hamilton which can be found in Appendix C. Heavy Vehicle percentages (HV%) have been calculated for each movement based on the existing heavy vehicle volumes for the Study Area intersections in the existing analysis horizons. Any HV% calculated to be less than 2% was entered as 2% in Synchro to ensure a conservative analysis. Heavy Vehicle percentage calculations can be found in Appendix D.

Pedestrian volumes have been provided for the Study Area intersections with turning movement count information. The provided turning movement counts indicate that the existing intersections within the Study Area have low pedestrian and cyclist volumes. Therefore, conservative volume assumptions of 5 pedestrians/h and 5 cyclists/h have been used for each intersection leg. Turning lane storage lengths have been rounded down to the closest five meters.

HCM 2000 methodology was used to determine signalized intersection LOS, v/c ratios, and delay. Synchro/ICU methodology was used to determine the 95th percentile queues. The unsignalized intersection LOS was determined using HCM 2010 methodology. HCM 2000 LOS criteria for signalized intersections and HCM 2010 criteria for unsignalized intersections are listed in Table 9 and Table 10 respectively.

Table 9: HCM 2000 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 10: HCM 2010 Level of Service Criteria for Unsignalized Intersections

Level of Service	Average Control Delay (Second/Vehicle)
A	0 – 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 considered as outlined by the City of Hamilton's *Transportation Assessment Guidelines* (2024). Critical movements for signalized intersections are defined as through movements or shared through/turning movements with V/C ratios of 0.85 or greater, exclusive turning movements with V/C ratios of 0.90 or greater, and individual movements with 95th percentile queues that exceed available turning lane storage. Critical movements for unsignalized intersections are defined as average delay per vehicle or individual movements presenting at LOS D or greater, and individual movements with 95th percentile queues that exceed available turning lane storage.

6.2 Traffic Warrants

6.2.1 Intersection Control

Using the Ontario Traffic Manual (OTM) Book 12 Justification 7 methodology for examining traffic control signal warrants, applicable Study Area intersections were reviewed. A summary of the traffic control signal warrant analysis for currently unsignalized intersections under future background conditions can be found in Table 11. Traffic control warrant sheets have been included in Appendix E.

Table 11: 2030 Future Total Signalization Warrant Summary

Intersection	Horizon	Warranted?
Glancaster Road & Dickenson Road West	2030 Future Total	No
Arterial Road 1N & Dickenson Road West		No
Arterial Road 1N & Glancaster Road		No
Glancaster Road & Dickenson Road West	2035 Future Total	No
Arterial Road 1N & Dickenson Road West		No
Arterial Road 1N & Glancaster Road		No

As shown above in Table 11, the projected 2030 and 2035 future total horizon traffic volumes for the Study Area intersections do not meet the OTM Book 12 warrants for signalization. However, a traffic signal will be implemented at the Dickenson Road at Arterial Road 1N intersection, designed for the existing lane configuration. This was considered appropriate to ease traffic patterns into the eventual road widening that will constitute a major intersection in the ultimate condition. As such, the intersections of Dickenson Road West at Arterial 1N will have signalization for both future total horizons, the intersection of Glancaster Road at Arterial 1N will have stop

control on the minor approach, and the intersection of Dickenson Road West at Glanaster Road will remain under all way stop control.

Amber Clearance, All Red Clearance, Walk, and Flash Don't Walk times were calculated using the methodology provided in OTM Book 12-Traffic Signals. It was assumed that pedestrian actuation would be implemented at the intersection of Dickenson Road West at Arterial 1N based the future purpose as a major intersection. Additionally, at the intersection of Dickenson Road West at Arterial 1N a protected-permissive phasing for the westbound left movement was assumed to mitigate the impacts of the site on the maintained two-lane road configuration in the interim condition prior to the road widening.

6.2.2 Left Turn Warrant & Design Criteria

Left-turn lane warrants for unsignalized intersections were examined at the intersection of Arterial Road 1N and Dickenson Road West for the 2030 and 2035 total future horizons. To determine if a left-turn lane is warranted, the MTO Geometric Design Standards for Ontario Highways, Section E, left-turn lane warrant nomographs were examined.

A westbound left-turn lane was found to be warranted during the 2030 and 2035 future total horizons with a full build-out. Left-turn lane warrants have been provided in Appendix F.

Using Transportation Association of Canada's Geometric Design Guide for Canadian Roads (TAC) the storage, parallel lane, and taper lengths were determined for a 70 km/h design speed (60 km/h posted speed). For the purposes of determining the taper length it was assumed that this left-turn lane would be constructed as a left-turn on the right side of the centreline with a 3.5 metre turning lane width. The storage length was calculated based on the following formula (TAC Formula 9.14.1):

$$S = \frac{NL}{30}$$

Where:

S = Storage Length (m)

N = Design volume of turning vehicles $\left(\frac{v}{h}\right)$

L = Length (m) occupied by each vehicle = 6 m

To account for the industrial nature of the proposed development, and thus the expected truck traffic which required more space, the above calculation was completed using both passenger car and truck traffic values which were then added to result in a final value.

The braking distance was calculated based on TAC Formula 2.5.1 and reduced by two thirds of the proposed taper length:

$$d_b = 0.039 \frac{V^2}{a} - \frac{2}{3} * d_t$$

Where:

d_b = Braking Distance (m)

V = Design Speed ($\frac{km}{h}$)

a = Deceleration rate ($\frac{m}{s^2}$) = 3.4 $\frac{m}{s^2}$

d_t = Taper Distance (m)

The resulting preliminary storage and taper lengths for the westbound left-turn lane warranted for the 2030 and 2035 future total volumes at Arterial Road 1N and Dickenson Road West are summarized in Table 12.

Table 12: 2030 and 2035 Arterial Road 1N and Dickenson Road West - Preliminary Design Criteria

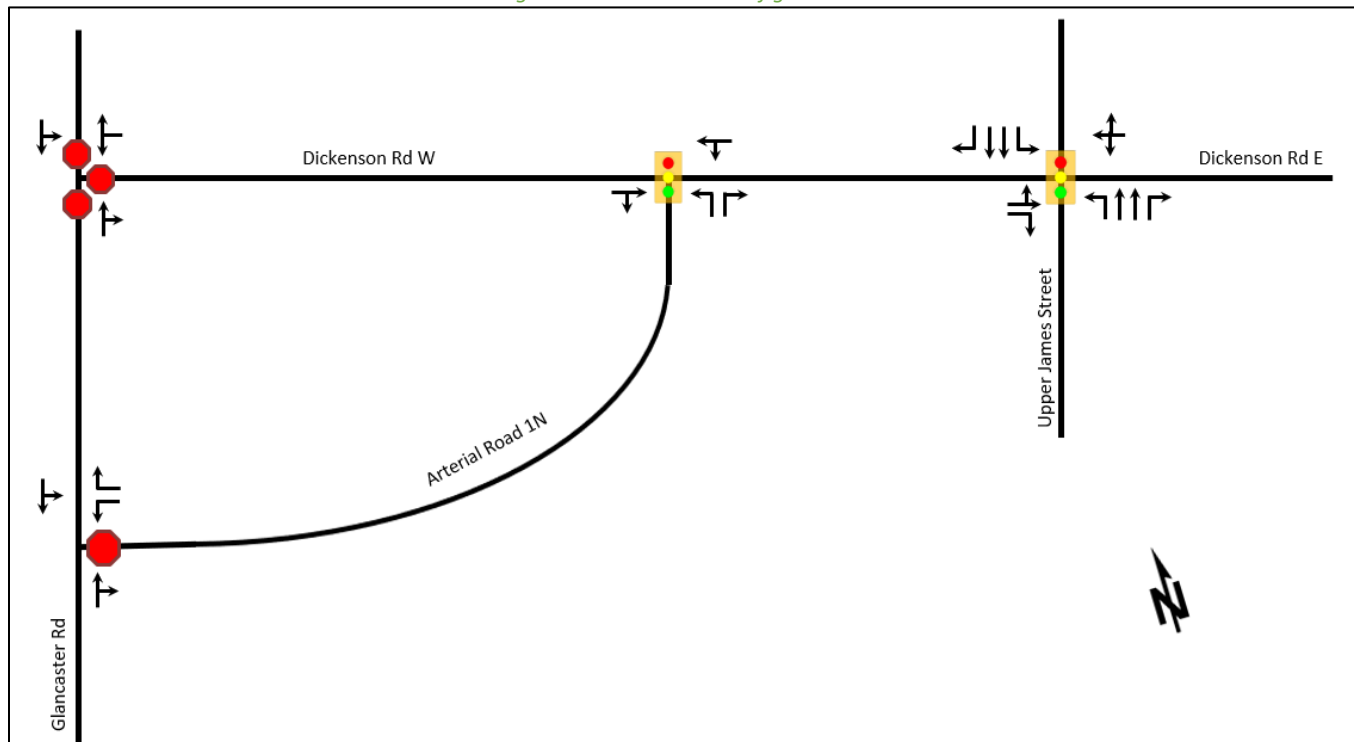
Design Standard	Design Speed	Storage	Parallel Lane	Taper Ratio	Taper	Total Lane Length
TAC	70 km/h	90 m	25 m	15:1	55 m	170 m

While these auxiliary turning lanes are warranted, they will only be implemented at a later stage. Periodic monitoring of the site and operations as the development is built out is recommended.

6.2.3 Intersection Design

Although a left-turn lane was found to be warranted within the timeframe analyzed in this study, it will not be implemented in the analysis and will have to be monitored for its necessity. Dickenson Road currently does not have the right of way available to accommodate the auxiliary lane, however it is forecasted that this roadway will be reconstructed to a four-lane cross section, including the left-turn lane, by the City of Hamilton in the coming years. Therefore in the interim, Dickenson Road at Arterial 1N and Glancaster Road at Arterial 1N will be designed and constructed to operate with a shared through/turn lane to access Arterial Road 1N, which has been the basis for this analysis. Additionally, Arterial Road 1N will be designed to have adequate road width for a four-lane road but will be restricted to two turning lanes at each intersection in the interim. The proposed lane configuration of the Study Area is shown in Figure 23 below.

Figure 23: Future Lane Configuration



6.3 Existing Conditions Operational Analysis

6.3.1 Existing Auto Mode Performance

Table 13 summarizes the operational analysis for the 2025 existing conditions in both the AM and PM peak periods. Table 14 summarizes the 95th percentile queue of each movement for the 2025 existing conditions. Existing Synchro worksheets are included in Appendix G.

Table 13: 2025 Existing Conditions Operational Analysis

Intersection	Mvmnt	AM Peak Hour			PM Peak Hour		
		LOS	V/C	Del (s)	LOS	V/C	Del. (s)
Glancaster Road & Dickenson Road West (Unsignalized)	WBL/R	A	0.08	7	A	0.16	8
	SBL/T	A	0.17	8	A	0.25	9
	NBT/R	A	0.01	7	A	0.01	8
	Overall	A	-	8	A	-	8
Upper James Street & Dickenson Road East/West (Signalized)	EBL/T	C	0.38	34	C	0.52	34
	EBR	C	0.02	31	C	0.10	30
	WBL/T/R	C	0.45	35	C	0.55	35
	NBL	A	0.08	5	A	0.20	8
	NBT	A	0.44	7	A	0.52	8
	NBR	A	0.02	5	A	0.07	5
	SBL	A	0.05	5	A	0.19	8
	SBT	A	0.35	6	A	0.57	9
	SBR	A	0.04	5	A	0.05	5
	Overall	A	0.44	10	B	0.57	12

Table 14: 2025 Existing Conditions Queue Lengths

Intersection	Mvmnt	Storage (m)	AM Q (95 th)	PM Q (95 th)
Glancaster Road & Dickenson Road West (Unsignalized)	NBL/R	N/A	0	0
	WBL/T	N/A	2	5
	SBT/R	N/A	5	8
Upper James Street & Dickenson Road East/West (Signalized)	EBL/T	70	25	38
	EBR	N/A	6	12
	WBL/T/R	N/A	33	44
	NBL	55	9	12
	NBT	N/A	100	121
	NBR	10	6	14
	SBL	100	6	14
	SBT	N/A	73	141
	SBR	20	7	9

As shown above, the intersection of Glancaster Road at Dickenson Road West and Upper James Street at Dickenson Road East/West both function with acceptable V/C ratios and 95th percentile queues that can be accommodated by available storage lanes. No critical movements were noted.

6.4 Future Horizon Operation Analysis

6.4.1 2030 Future Background Operational Analysis

By adding growth impacts to the existing traffic volumes on the Study Area's Road network, the 2030 Future Background analysis horizon was assessed. Signal timing splits were optimized at signalized Dickenson-Upper James intersection. The 2030 Future Background operational analysis is shown in Table 15 and Table 16 summarizes the 95th percentile queue of each movement for the 2030 future conditions during both the AM and PM peak periods. Synchro worksheets for this analysis can be found in Appendix H.

Table 15: 2030 Future Background Conditions Operational Analysis

Intersection	Mvmnt	AM Peak Hour			PM Peak Hour		
		LOS	V/C	Del (s)	LOS	V/C	Del. (s)
Glancaster Road & Dickenson Road West (Unsignalized)	NBT/R	A	0.02	7	A	0.01	8
	WBT/R	A	0.09	7	A	0.18	8
	SBL/T	A	0.19	8	A	0.28	9
	Overall	A	-	8	A	-	9
Upper James Street & Dickenson Road West/ East (Signalized)	EBL/T	C	0.41	34	C	0.55	35
	EBR	C	0.03	30	C	0.12	29
	WBL/T/R	C	0.49	35	D	0.62	37
	NBL	A	0.09	6	B	0.28	11
	NBT	A	0.49	8	A	0.58	10
	NBR	A	0.03	5	A	0.08	6
	SBL	A	0.07	5	A	0.26	9
	SBT	A	0.39	7	B	0.64	10
	SBR	A	0.04	5	A	0.06	6
	Overall	B	0.49	10	B	0.63	13

Table 16: 2030 Future Background Conditions Queue Lengths

Intersection	Mvmnt	Storage (m)	AM Q (95th)	PM Q (95th)
Glancaster Road & Dickenson Road West (Unsignalized)	NBT/R	N/A	0	0
	WBT/R	N/A	2	5
	SBL/T	N/A	5	8
Upper James Street & Dickenson Road East/ West (Signalized)	EBL/T	70	27	42
	EBR	N/A	7	14
	WBL/T/R	N/A	37	49
	NBL	55	10	16
	NBT	N/A	115	141
	NBR	10	6	15
	SBL	100	6	16
	SBT	N/A	83	166
	SBR	20	8	10

As shown above, the Study Area intersections operate with acceptable V/C ratios and storage lanes that accommodate the 95th percentile queue lengths in the 2030 future background analysis horizon. No critical movements are noted, and no over-capacity movements are noted.

6.4.2 2035 Future Background Operational Analysis

By adding growth impacts to the existing traffic volumes on the Study Area's road network, the 2035 Future Background analysis horizon was assessed. Signal timing splits were optimized at signalized Dickenson-Upper James intersection. The 2035 Future Background operational analysis is shown in Table 17 and Table 18 summarizes the 95th percentile queue of each movement for the 2030 future conditions during both the AM and PM peak periods. Synchro worksheets for this analysis can be found in Appendix I.

Table 17: 2035 Future Background Conditions Operational Analysis

Intersection	Mvmnt	AM Peak Hour			PM Peak Hour		
		LOS	V/C	Del (s)	LOS	V/C	Del. (s)
Glancaster Road & Dickenson Road West (Unsignalized)	NBT/R	A	0.02	7	A	0.02	8
	WBT/R	A	0.10	7	A	0.20	8
	SBL/T	A	0.21	9	A	0.31	10
	Overall	A	-	8	A	-	9

Intersection	Mvmnt	AM Peak Hour			PM Peak Hour		
		LOS	V/C	Del (s)	LOS	V/C	Del. (s)
Upper James Street & Dickenson Road West/ East (Signalized)	EBL/T	C	0.46	34	D	0.61	37
	EBR	C	0.03	30	C	0.14	29
	WBL/T/R	C	0.53	35	D	0.69	40
	NBL	A	0.12	6	B	0.41	18
	NBT	A	0.55	9	B	0.64	11
	NBR	A	0.03	5	A	0.09	6
	SBL	A	0.10	6	B	0.37	14
	SBT	A	0.44	8	B	0.71	12
	SBR	A	0.05	5	A	0.06	6
	Overall	B	0.54	11	B	0.71	14

Table 18: 2035 Future Background Conditions Queue Lengths

Intersection	Mvmnt	Storage (m)	AM Q (95th)	PM Q (95th)
Glancaster Road & Dickenson Road West (Unsignalized)	NBT/R	N/A	0	0
	WBT/R	N/A	2	5
	SBL/T	N/A	6	10
Upper James Street & Dickenson Road East/ West (Signalized)	EBL/T	70	30	47
	EBR	N/A	7	15
	WBL/T/R	N/A	40	55
	NBL	55	11	#25
	NBT	N/A	133	166
	NBR	10	7	17
	SBL	100	7	22
	SBT	N/A	94	198
	SBR	20	9	11
Notes:	# - 95% percentile queue exceeds available storage length			

As shown above, the Study Area intersections generally operate with acceptable V/C ratios and storage lanes that accommodate the 95th percentile queue lengths in the 2035 future background analysis horizon. It has been noted that the northbound left movement at the intersection of Upper James Street and Dickenson Road is longer than what is presented. However, as there is residual storage space available the northbound thorough volumes are potentially blocking the northbound left queues from entering the northbound left lane. Despite this, as delays, level of service, and V/C ratios are acceptable, no mitigations have been proposed.

6.4.3 2030 Future Total Operational Analysis

The projected site auto trip generation has been combined with the 2030 Future Background traffic to estimate the 2030 Future Total traffic volumes. Signal timing splits have been optimized at all intersections. The intersections have been analyzed based on the identified signal control and intersection configurations in Section 6.2.1 and Section 6.2.3, respectively. The 2030 Future Total operational analysis can be seen in Table 19 and Table 20 summarizes the 95th percentile queue of each movement for the 2030 future conditions during both the AM and PM peak periods. Synchro worksheets for the 2030 Future Total horizon analysis can be found in Appendix J.

Table 19: 2030 Future Total Conditions Operational Analysis

Intersection	Mvmnt	AM Peak Hour			PM Peak Hour		
		LOS	V/C	Del (s)	LOS	V/C	Del. (s)
Glancaster Road & Dickenson Road West (Unsignalized)	NBT/R	A	0.04	8	A	0.13	8
	WBT/R	A	0.11	8	A	0.27	9
	SBL/T	A	0.36	10	B	0.35	10
	Overall	A	-	9	A	-	9

Intersection	Mvmnt	AM Peak Hour			PM Peak Hour		
		LOS	V/C	Del (s)	LOS	V/C	Del. (s)
Upper James Street & Dickenson Road West/ East (Signalized)	EBL/T	C	0.59	32	D	0.89	51
	EBR	C	0.06	25	C	0.10	22
	WBL/T/R	C	0.41	28	C	0.46	26
	NBL	A	0.32	8	E	0.82	60
	NBT	A	0.54	10	B	0.71	19
	NBR	A	0.03	6	B	0.09	11
	SBL	B	0.08	11	C	0.42	28
	SBT	B	0.52	14	D	0.93	36
	SBR	B	0.23	12	B	0.17	16
	Overall	B	0.58	14	C	0.92	29
Arterial Road 1N & Glancaster Road (Unsignalized)	NBT/R	-	-	-	-	-	-
	SBL/T	A	0.05	7	A	0.02	7
	WBL	A	-	0	A	-	0
	WBR	A	0.02	9	A	0.08	9
	Overall	A	-	6	B	-	7
Arterial Road 1N & Dickenson Road West (Signalized)	NBL	C	0.02	21	B	0.08	15
	NBR	C	0.08	22	B	0.18	16
	EBT/R	B	0.29	19	C	0.42	28
	WBL/T	B	0.59	17	C	0.68	28
	Overall	B	0.40	18	C	0.43	23

Table 20: 2030 Future Total Conditions Queue Lengths

Intersection	Mvmnt	Storage (m)	AM Q (95 th)	PM Q (95 th)
Glancaster Road & Dickenson Road West (Unsignalized)	NBT/R	N/A	1	3
	WBT/R	N/A	3	8
	SBL/T	N/A	12	12
Upper James Street & Dickenson Road East/ West (Signalized)	EBL/T	70	36	#102
	EBR	N/A	6	11
	WBL/T/R	N/A	31	45
	NBL	55	18	#33
	NBT	N/A	117	144
	NBR	10	6	15
	SBL	100	8	#24
	SBT	N/A	102	#219
	SBR	20	35	20
Arterial Road 1N & Glancaster Road (Unsignalized)	WBL	N/A	0	0
	WBR	N/A	0	2
	NBT/R	N/A	-	-
	SBL/T	N/A	2	0
Arterial Road 1N & Dickenson Road West (Signalized)	NBL	N/A	7	21
	NBR	N/A	11	18
	EBT/R	N/A	58	65
	WBT/L	N/A	45	41
Note:	# - 95% percentile queue exceeds available storage length			

The operational analysis at the Study Area intersections in the 2030 future total analysis horizon shows that the intersection of Dickenson Road West and Glancaster Road operates well during the peak hours with no critical capacity movements noted. The access intersections of Arterial Road 1N at Dickenson Road West and Arterial Road 1N at Glancaster Road also operate well during the peak hours with no critical capacity movements noted.

The intersection of Upper James Street and Dickenson Road East/West operates well in the AM peak hour, with a 95th percentile queue only exceeding the available storage length for the southbound right movement. There are critical movements noted in the PM peak hour for Upper James Street and Dickenson Road East/West at the

eastbound through/left and southbound through lanes where the v/c ratio approaches capacity. Additionally, the 95th percentile queues of the eastbound shared through/left, northbound right, southbound through, and southbound right movements exceed the available storage length despite optimized split patterns and increased cycle length. In the PM peak hour, the queues of the northbound left and southbound left movements at the intersection of Upper James Street and Dickenson Road are also noted to be longer than what is presented. However, as there is residual storage space available the northbound and southbound thorough volumes are potentially blocking the northbound left queues from entering the northbound left lane.

However, with the implemented widening of Dickenson Road East/West to a four-lane cross-section, conditions are expected to improve. It is also important to note that such conditions are temporary considering the ongoing development of the AEGD road network. As the network is further built out, additional routes to the highway and nearby communities will be introduced, reducing the pressures of the intersection of Dickenson Road at Upper James Street. Thus, no mitigation measures have been proposed for this scenario aside from the signal split adjustments and increased cycle length.

6.4.4 2035 Future Total Operational Analysis

The projected site auto trip generation has been combined with the 2035 Future Background traffic to estimate the 2035 Future Total traffic volumes. Signal timing splits have been optimized at all intersections. The intersections have been analyzed based on the identified signal control and intersection configurations in Section 6.2.1 and Section 6.2.3, respectively. The 2035 Future Total operational analysis can be seen in Table 21 and Table 22 summarizes the 95th percentile queue of each movement for the 2035 future conditions during both the AM and PM peak periods. Synchro worksheets for the 2035 Future Total horizon analysis can be found in Appendix K.

Table 21: 2035 Future Total Conditions Operational Analysis

Intersection	Mvmnt	AM Peak Hour			PM Peak Hour		
		LOS	V/C	Del (s)	LOS	V/C	Del. (s)
Glancaster Road & Dickenson Road West (Unsignalized)	NBT/R	A	0.04	8	A	0.13	9
	WBT/R	A	0.12	8	A	0.30	9
	SBL/T	A	0.39	10	B	0.39	11
	Overall	A	-	9	A	-	10
Upper James Street & Dickenson Road West/ East (Signalized)	EBL/T	C	0.63	34	E	0.94	67
	EBR	C	0.07	25	C	0.14	25
	WBL/T/R	C	0.45	28	C	0.56	31
	NBL	A	0.38	9	E	0.87	78
	NBT	B	0.60	11	C	0.77	22
	NBR	A	0.03	6	B	0.11	12
	SBL	B	0.11	11	D	0.64	53
	SBT	B	0.57	15	D	1.00	52
	SBR	B	0.24	12	B	0.19	18
	Overall	B	0.64	14	D	0.98	39
Arterial Road 1N & Glancaster Road (Unsignalized)	NBT/R	-	-	-	-	-	-
	SBL/T	A	0.05	7	A	0.02	7
	WBL	A	-	0	A	-	0
	WBR	A	0.02	9	A	0.08	9
	Overall	A	-	6	B	-	7
Arterial Road 1N & Dickenson Road West (Signalized)	NBL	C	0.02	22	B	0.09	16
	NBR	C	0.08	23	B	0.18	17
	EBT/R	B	0.30	18	C	0.43	26
	WBL/T	B	0.59	16	C	0.67	26
	Overall	B	0.42	18	C	0.44	23

Table 22: 2035 Future Total Conditions Queue Lengths

Intersection	Mvmnt	Storage (m)	AM Q (95 th)	PM Q (95 th)
Glancaster Road & Dickenson Road West (Unsignalized)	NBT/R	N/A	1	3
	WBT/R	N/A	3	9
	SBL/T	N/A	14	14
Upper James Street & Dickenson Road East/ West (Signalized)	EBL/T	70	39	#130
	EBR	N/A	7	17
	WBL/T/R	N/A	35	60
	NBL	55	19	#38
	NBT	N/A	136	166
	NBR	10	7	17
	SBL	100	9	#33
	SBT	N/A	117	#252
	SBR	20	38	22
Arterial Road 1N & Glancaster Road (Unsignalized)	WBL	N/A	0	0
	WBR	N/A	0	2
	NBT/R	N/A	-	-
	SBL/T	N/A	2	0
Arterial Road 1N & Dickenson Road West (Signalized)	NBL	N/A	7	21
	NBR	N/A	11	18
	EBT/R	N/A	64	72
	WBT/L	N/A	46	44
Notes:	# - 95% percentile queue exceeds available storage length			

The operational analysis at the Study Area intersections in the 2035 future total analysis horizon shows that the intersection of Dickenson Road West and Glancaster Road operates well during the peak hours with no critical capacity movements noted. The access intersections of Arterial Road 1N at Dickenson Road West and Arterial Road 1N at Glancaster Road also operate well during the peak hours with no critical capacity movements noted.

The intersection of Upper James Street and Dickenson Road East/West operates well in the AM peak hour, with a 95th percentile queue only exceeding the available storage length for the southbound right movement. The intersections operate similarly to the 2030 horizon, except for the southbound through movement where the v/c deteriorates to 1.00. In the PM peak hour, the 95th percentile queues of the eastbound shared through/left, northbound right, southbound through, and southbound right movements exceed the available storage length despite optimized split patterns and increased cycle length. In the PM peak hour, the queues of the northbound left and southbound left movements at the intersection of Upper James Street and Dickenson Road are also noted to be longer than what is presented. However, as there is residual storage space available the northbound and southbound thorough volumes are potentially blocking the northbound left queues from entering the northbound left lane.

However, with the implemented widening of Dickenson Road East/West to a four-lane cross-section, conditions are expected to improve. It is also important to note that such conditions are temporary considering the ongoing development of the AEGD road network. As the network is further built out, additional routes to the highway and nearby communities will be introduced, reducing the pressures of the intersection of Dickenson Road at Upper James Street. Thus, no mitigation measures have been proposed for this scenario.

7 Transportation Demand Management

As part of the pre-consultation comments provided by City of Hamilton staff, it was indicated that a TDM report for an industrial development be submitted as part of a TIS to support the site plan application. As a result, many of the elements of the TDM report are site plan specific and are not applicable at the draft plan application stage, however, the general concepts of the TDM measures are applicable within this report.

With consideration of the Hamilton Transportation Demand Management (TDM) Guide for Development (2015), the proposed development will adhere to the outlined set of multi-modal guidelines where applicable by encouraging and facilitating the use of pedestrian, cycling, and transit facilities within the site. Within the context of the industrial land use, TDM measures may entail providing commuters with information and resources to reduce their automobile trips, lowering building/lease costs by increasing use efficiency of property spaces for property owners, or providing amenities that encourage efficient and sustainable commuting trends by tenants or employees and clients or visitors. The applicable TDM measures to be explored for the subject site include priority considerations outlined by the City of Hamilton TDM guidelines, which are discussed below.

7.1 Wayfinding and Travel Planning

To increase awareness of sustainable transportation opportunities for employees, visitors, and community members, the TDM guide assigns high priority to travel planning resources for employees, including individualized marketing, trip planning tools, active transportation maps, and information resources for industrial developments. In addition, providing wayfinding signage is encouraged. As noted in the pre-consultation comments provided by City staff, a recommended TDM measure is for future tenants to apply for registration of the SmartCommute program within the City of Hamilton in order to promote sustainable modes of transportation within the City.

7.2 Active Transportation Mode Measures

To encourage employees to choose to cycle during their commute, the TDM Guide for Development assigns high-priority to providing end-of-trip amenities for employees. In addition, high priority is also assigned to secure, indoor bicycle parking storage spaces for employees. Another measure to consider is to provide bicycle parking for visitors above minimum provisions or recommendations.

In terms of walking, the TDM guide assigns high priority to providing safe and attractive walking environments. Measures include providing active walkways for pedestrians that link building entrances with public sidewalks as well as providing enhanced pedestrian amenities on site, including benches, landscaping, and lighting.

As mentioned in Section 4.1.3, the draft cross-sections developed and presented to the public for the AEGD TMP update include pedestrian and cycling facilities for the roadways in the Study Area. The pedestrian and cycling facilities planned within the Study Area road network are expected to improve the social, economic, and environmental sustainability of the proposed development. Given these active transportation facilities that will be present, the future site traffic could be reasonably reduced as a result of multi-modal alternatives.

7.3 Transit Measures

The guide prioritizes connections and access to transit to encourage transit as a desirable mode. Within the most recent AEGD Secondary Plan, the Transit Routes and Trails Map indicates that Dickenson Road West north of the proposed development, and Glancaster Road west of the proposed development are proposed transit routes and the arterial road extending through the subject development lands (Arterial Road 1N) is identified as a future transit route extension. These future plans of transit service adjacent to and within the proposed development are encouraged as they will provide economically, socially, and environmentally sustainable travel options for employees arriving and departing the proposed development.

7.4 Parking Measures

As each building within the proposed development is purpose-built and is not a public facility, proposed parking areas are based on the programming and individual needs of each building. This allows for efficient use of land within the proposed development and eliminates unused parking areas. The design of parking areas will be further refined at the site plan stage.

Efficient parking space provision and parking area design is supportive of some of the Industrial TDM initiatives. As part of the site plan submission, further details will be provided regarding the parking areas with consideration given to applicable TDM measures.

To reduce single-occupant vehicle commuting patterns and reduce the oversupply of parking, high priority within the TDM guide has been assigned to providing parking as per minimum requirements for employees and potential reductions in parking requirements based on proximity to transit. Another measure to consider is the implementation of paid parking for employees.

7.5 Carpool Measures

To provide incentives to employees who carpool to work, the guide assigns high priority to providing preferential carpool parking spaces for employees if applicable.

7.6 Education, Promotion, and Incentive Measures

To promote early adoption of sustainable transportation modes by employers, employees, and tenants, the guide assigns high priority to membership in a Transportation Management Association for employees as well as contributing to building a strong TDM brand at the site.

7.7 Staff Evaluation Checklist

Upon final proposal of TDM measures to be included in the proposed development which will be determined at future submission stages, it is understood that City staff will use a checklist to evaluate and track the TDM measures that are being proposed.

8 Conclusions

This Transportation Impact Study has examined the trip generation and Study Area road network impact of the proposed development at 9451, 9517, 9569, 9579, 9593 & 9867 Dickenson Road West and 1199, 1205, and 1209 Glancaster Road., located in the Airport Employment Growth District Secondary Plan.

The proposed development consists of industrial blocks totalling to approximately 4.2 million square feet. Private accesses to the surrounding road network will be proposed along Arterial Roadway 1N between its intersections with Dickenson Road and Glancaster Road, respectively.

The development lands are subject to the policies of the Airport Employment Growth District Secondary Plan, as well as the Transportation Master Plan developed for the AEGD area. The Arterial Road 1N Class EA process was initiated as part of the Draft Plan of Subdivision for the subject site and is running in tandem with the Draft Plan of Subdivision process and will determine the ultimate configuration of the arterial.

This study examines an interim two-lane configuration of the Arterial Road 1N that connects to Dickenson Road and Glancaster Road in the case where the development of subject lands proceeds prior to construction of the ultimate four-lane right of way identified within the AEGD. Although a left-turn lane was found to be warranted within the timeframe analyzed in this study, it will not be implemented in the analysis and will have to be monitored for its necessity. Dickenson Road currently does not have the right of way available to accommodate the auxiliary lane, however it is forecasted that this roadway will be reconstructed to a four-lane cross section, including the left-turn lane, by the City of Hamilton in the coming years. Therefore in the interim, Dickenson Road at Arterial 1N and Glancaster Road at Arterial 1N will be designed and constructed to operate with a shared through/turn lane to access Arterial Road 1N, which has been the basis for this analysis. Additionally, Arterial Road 1N will be designed to have adequate road width for a four-lane road but will be restricted to two turning lanes at each intersection in the interim.

Additionally, a traffic signal will be implemented at the Dickenson Road at Arterial Road 1N intersection, designed for the existing lane configuration. This was considered appropriate to ease traffic patterns into the eventual road widening that will constitute a major intersection in the ultimate condition.

Using the existing collected traffic volumes, an operational analysis of existing conditions was undertaken. In the 2025 existing conditions, no critical movements were noted. A compound annual growth rate (CAGR) of 2% has been applied to the base 2025 horizon volumes for all movements to estimate the growth in background traffic traveling through the Study Area and establish 2030 and 2035 future background traffic volumes. In the future background 2030 and 2035 horizons, no critical movements were noted.

The proposed development is projected to generate 442 bi-directional AM peak hour trips and 491 bi-directional PM peak hour trips at full build-out. Projected site trip generation has been combined with the Future Background traffic to estimate the 2030 and 2035 Future Total traffic volumes. In the Future Total 2030 and 2035 horizons, the AM peak hour operates well with no critical movements and only one movement with a 95th percentile queue exceeding available capacity, the southbound through movement of Upper James Street and Dickenson Road East/West. For the PM peak hour of the Future Total 2030 and 2035 horizons, Upper James Street and Dickenson Road East/West has two critical movements near capacity, the eastbound left/through and the southbound through movement. Additionally, the PM peak hour has 95th percentile queues for the eastbound shared through/left, northbound right, southbound through, and southbound right movements that exceed the available storage length. In the PM peak hour, the queues of the northbound left and southbound left movements at the intersection of Upper James Street and Dickenson Road are also noted to be longer than what is presented.

However, as there is residual storage space available the northbound and southbound thorough volumes are potentially blocking the northbound left queues from entering the northbound left lane. The access intersections of Arterial Road 1N at Dickenson Road and Arterial Road 1N at Glancaster Road operate well in both Future Total 2030 and 2035 horizons.

As the proposed AEGD road network builds out, additional roadway capacity and connectivity will be introduced, as which stage, the traffic analysis should be updated to revisit the operations of the Study Area network at full build-out. A monitoring program will be undertaken for the Study Area, as more information about the site context and surrounding area becomes available, the analysis can be refined. Signalization and turning lane warrants will be revisited as part of the monitoring program. It is expected that there will be multiple buildings on the site, and as buildings are completed TIS updates will be prepared to provide periodic updates to the analysis. At this stage, no mitigation measures have been proposed. While the overall plan of subdivision is sought for approval, in the context analyzed in this TIS the site operates well.

The proposed development does not preclude future shift towards sustainable modes of travel. A TDM report for an industrial development be submitted as part of the TIS during the site plan application stage.

It is recommended that, from a transportation perspective, the proposed draft plan development application proceed.

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Appendix A

Traffic Data

Project #23-124 - CGH Transportation

Intersection Count Report

Intersection: Dickenson Rd W & Glancaster Rd

Municipality: Hamilton

Count Date: Tuesday, May 09, 2023

Site Code: 2312400001

Count Categories: Cars, Trucks, Bicycles, Pedestrians

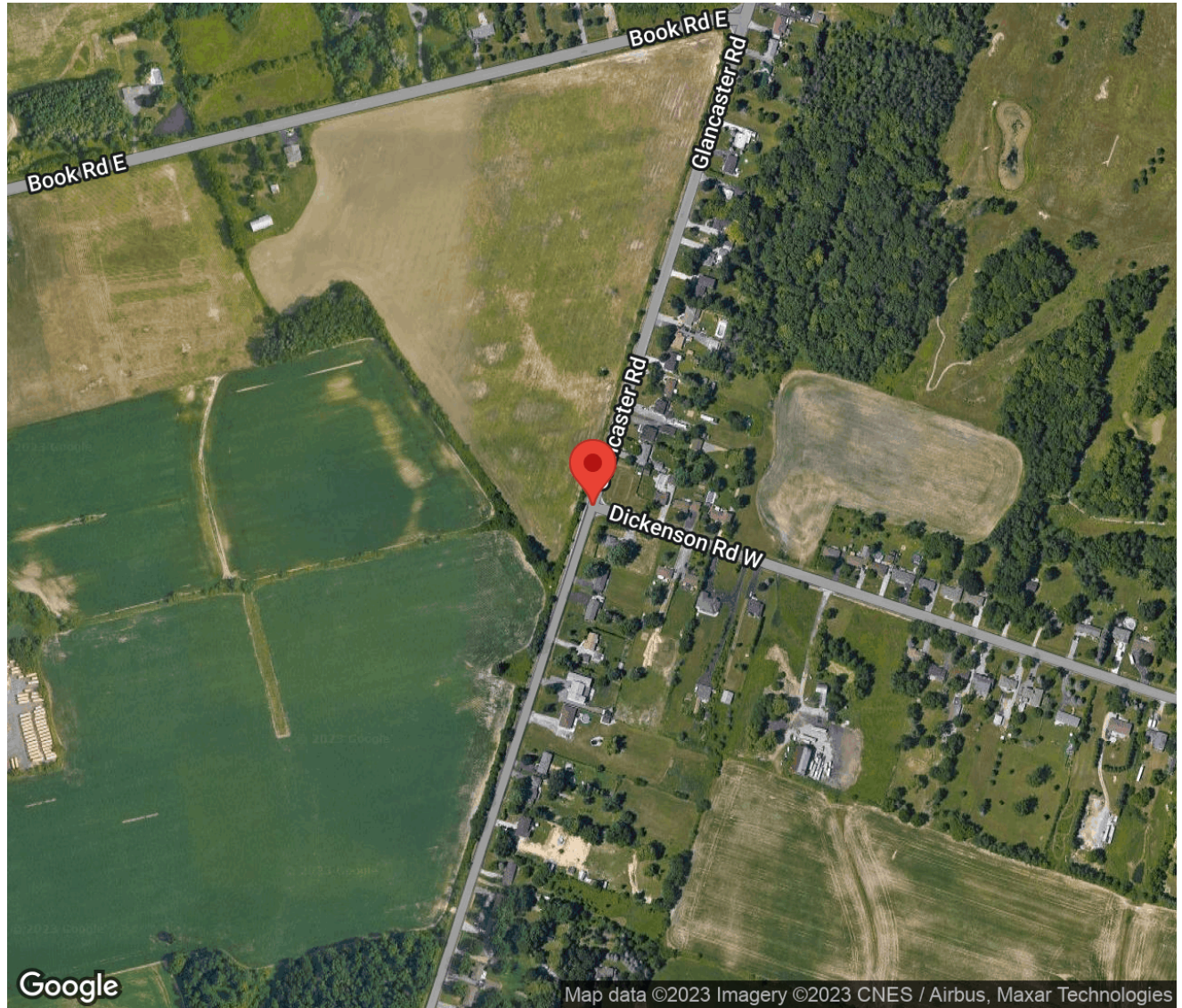
Count Period: 07:00-10:00, 15:00-18:00

Weather: Clear

Comments:

Traffic Count Map

Intersection:	Dickenson Rd W & Glancaster Rd
Site Code:	2312400001
Municipality:	Hamilton
Count Date:	May 09, 2023



Traffic Count Summary

Intersection: Dickenson Rd W & Glancaster Rd
Site Code: 2312400001
Municipality: Hamilton
Count Date: May 09, 2023

Glancaster Rd - Traffic Summary

Hour	North Approach Totals						South Approach Totals						Total
	Includes Cars, Trucks, Bicycles						Includes Cars, Trucks, Bicycles						
	Left	Thru	Right	U-Turn	Total	Peds	Left	Thru	Right	U-Turn	Total	Peds	
07:00 - 08:00	126	3	0	0	129	0	0	6	6	0	12	0	141
08:00 - 09:00	74	3	0	0	77	0	0	6	5	0	11	0	88
09:00 - 10:00	52	4	0	0	56	0	0	5	6	0	11	0	67
BREAK													
15:00 - 16:00	90	7	0	0	97	0	0	2	8	0	10	0	107
16:00 - 17:00	117	9	0	1	127	0	0	17	6	0	23	0	150
17:00 - 18:00	174	6	0	0	180	0	0	4	5	0	9	0	189
GRAND TOTAL	633	32	0	1	666	0	0	40	36	0	76	0	742

Traffic Count Summary

Intersection: Dickenson Rd W & Glancaster Rd
Site Code: 2312400001
Municipality: Hamilton
Count Date: May 09, 2023

Dickenson Rd W - Traffic Summary

Hour	East Approach Totals						West Approach Totals						Total
	Includes Cars, Trucks, Bicycles						Includes Cars, Trucks, Bicycles						
	Left	Thru	Right	U-Turn	Total	Peds	Left	Thru	Right	U-Turn	Total	Peds	
07:00 - 08:00	3	0	63	1	67	4	0	0	0	0	0	0	67
08:00 - 09:00	3	0	87	0	90	3	0	0	0	0	0	0	90
09:00 - 10:00	1	0	49	0	50	0	0	0	0	0	0	0	50
BREAK													
15:00 - 16:00	6	0	98	2	106	0	0	0	0	0	0	0	106
16:00 - 17:00	9	0	131	0	140	1	0	0	0	0	0	0	140
17:00 - 18:00	9	0	123	0	132	0	0	0	0	0	0	0	132
GRAND TOTAL	31	0	551	3	585	8	0	0	0	0	0	0	585



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Traffic Count Data

Intersection: Dickenson Rd W & Glancaster Rd
Site Code: 2312400001
Municipality: Hamilton
Count Date: May 09, 2023

North Approach - Glancaster Rd

Start Time	Cars					Trucks					Bicycles					Total Peds			
																			
07:00	39	0	0	0	39	2	1	0	0	3	0	0	0	0	0	0	0		
07:15	29	0	0	0	29	1	0	0	0	1	0	0	0	0	0	0	0		
07:30	28	1	0	0	29	1	0	0	0	1	0	0	0	0	0	0	0		
07:45	24	1	0	0	25	2	0	0	0	2	0	0	0	0	0	0	0		
08:00	16	0	0	0	16	0	0	0	0	0	0	0	0	0	0	0	0		
08:15	21	0	0	0	21	1	1	0	0	2	0	0	0	0	0	0	0		
08:30	18	0	0	0	18	1	0	0	0	1	0	0	0	0	0	0	0		
08:45	17	1	0	0	18	0	0	0	0	0	0	1	0	0	0	1	0		
09:00	15	0	0	0	15	1	1	0	0	2	0	1	0	0	0	1	0		
09:15	10	0	0	0	10	0	0	0	0	0	0	0	0	0	0	0	0		
09:30	15	1	0	0	16	2	0	0	0	2	1	0	0	0	0	1	0		
09:45	8	0	0	0	8	0	0	0	0	0	0	1	0	0	0	1	0		
SUBTOTAL	240	4	0	0	244	11	3	0	0	14	1	3	0	0	0	4	0		



Traffic Count Data

Dickenson Rd W & Glanaster Rd

2312400001

Hamilton

May 09, 2023

North Approach - Glancaster Rd

	Cars				Trucks				Bicycles				Total Peds			
Start Time														Total		
15:00	21	1	0	0	22	3	0	0	0	1	0	0	0	1	0	
15:15	20	1	0	0	21	1	0	0	0	0	0	0	0	0	0	
15:30	23	4	0	0	27	0	0	0	0	0	0	0	0	0	0	
15:45	20	1	0	0	21	1	0	0	0	0	0	0	0	0	0	
16:00	20	3	0	0	23	4	1	0	0	0	0	0	0	0	0	
16:15	38	3	0	0	41	1	0	0	0	0	0	0	0	0	0	
16:30	25	1	0	1	27	0	0	0	0	0	0	0	0	0	0	
16:45	28	1	0	0	29	1	0	0	0	0	0	0	0	0	0	
17:00	38	1	0	0	39	3	0	0	0	0	0	0	0	0	0	
17:15	41	1	0	0	42	2	0	0	0	0	0	0	0	0	0	
17:30	43	3	0	0	46	0	0	0	0	0	0	0	0	0	0	
17:45	46	1	0	0	47	1	0	0	0	0	0	0	0	0	0	
SUBTOTAL	363	21	0	1	385	17	1	0	0	0	18	1	0	0	1	
GRAND TOTAL	603	25	0	1	629	28	4	0	0	0	32	2	3	0	5	0

Traffic Count Data

Intersection: Dickenson Rd W & Glancaster Rd
 Site Code: 2312400001
 Municipality: Hamilton
 Count Date: May 09, 2023

South Approach - Glancaster Rd

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	
07:15	0	1	0	0	1	0	0	2	0	2	0	0	0	0	0	
07:30	0	3	2	0	5	0	0	0	0	0	0	0	0	0	0	
07:45	0	2	2	0	4	0	0	0	0	0	0	0	0	0	0	
08:00	0	0	1	0	1	0	0	0	0	0	0	0	0	0	0	
08:15	0	1	0	0	1	0	1	0	0	1	0	0	0	0	0	
08:30	0	0	1	0	1	0	1	0	0	1	0	0	0	0	0	
08:45	0	3	2	0	5	0	0	0	0	0	0	1	0	1	0	
09:00	0	2	3	0	5	0	1	0	0	1	0	1	0	1	0	
09:15	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	
09:30	0	1	1	0	2	0	0	0	0	0	0	0	0	0	0	
09:45	0	0	0	0	0	0	0	0	0	0	0	1	0	1	0	
SUBTOTAL	0	14	12	0	26	0	3	2	0	5	0	0	3	0	3	



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Traffic Count Data

Intersection: Dickenson Rd W & Glancaster Rd
Site Code: 2312400001
Municipality: Hamilton
Count Date: May 09, 2023

South Approach - Glancaster Rd

Start Time	Cars				Total	Trucks				Total	Bicycles				Total	Total Peds
																
15:00	0	0	3	0	3	0	0	0	0	0	0	0	0	0	0	
15:15	0	1	1	0	2	0	0	0	0	0	0	0	0	0	0	
15:30	0	1	2	0	3	0	0	0	0	0	0	0	0	0	0	
15:45	0	0	2	0	2	0	0	0	0	0	0	0	0	0	0	
16:00	0	8	2	0	10	0	2	0	0	2	0	0	0	0	0	
16:15	0	2	4	0	6	0	0	0	0	0	1	0	0	1	0	
16:30	0	1	0	0	1	0	1	0	0	1	0	0	0	0	0	
16:45	0	2	0	0	2	0	0	0	0	0	0	0	0	0	0	
17:00	0	1	1	0	2	0	1	0	0	1	0	0	0	0	0	
17:15	0	1	1	0	2	0	0	0	0	0	0	0	0	0	0	
17:30	0	0	1	0	1	0	0	0	0	0	0	0	0	0	0	
17:45	0	1	2	0	3	0	0	0	0	0	0	0	0	0	0	
SUBTOTAL	0	18	19	0	37	0	4	0	0	4	0	1	0	0	1	
GRAND TOTAL	0	32	31	0	63	0	7	2	0	9	0	1	3	0	4	

Traffic Count Data

Intersection: Dickenson Rd W & Glancaster Rd
 Site Code: 2312400001
 Municipality: Hamilton
 Count Date: May 09, 2023

East Approach - Dickenson Rd W

Start Time	Cars					Trucks					Bicycles					Total Peds
					Total					Total					Total	
07:00	0	0	13	0	13	0	0	1	0	1	0	0	0	0	0	
07:15	0	0	15	1	16	0	0	0	0	0	0	0	0	0	3	
07:30	1	0	13	0	14	0	0	2	0	2	0	0	0	0	0	
07:45	2	0	18	0	20	0	0	1	0	1	0	0	0	0	1	
08:00	1	0	25	0	26	0	0	2	0	2	0	0	0	0	2	
08:15	0	0	18	0	18	0	0	0	0	0	0	0	0	0	0	
08:30	1	0	18	0	19	1	0	3	0	4	0	0	0	0	1	
08:45	0	0	21	0	21	0	0	0	0	0	0	0	0	0	0	
09:00	1	0	13	0	14	0	0	0	0	0	0	0	0	0	0	
09:15	0	0	14	0	14	0	0	0	0	0	0	0	0	0	0	
09:30	0	0	13	0	13	0	0	1	0	1	0	1	0	1	0	
09:45	0	0	7	0	7	0	0	0	0	0	0	0	0	0	0	
SUBTOTAL	6	0	188	1	195	1	0	10	0	11	0	0	1	0	7	



Ontario Traffic Inc.
Traffic Monitoring • Services & Products

Traffic Count Data

Intersection: Dickenson Rd W & Glancaster Rd
Site Code: 2312400001
Municipality: Hamilton
Count Date: May 09, 2023

East Approach - Dickenson Rd W

Start Time	Cars			Trucks			Bicycles			Total Peds
	←	↑	→	←	↑	→	←	↑	→	
15:00	1	0	26	0	0	27	0	0	0	0
15:15	2	0	21	0	0	23	0	0	0	0
15:30	2	0	22	1	0	25	0	0	0	0
15:45	1	0	23	1	0	25	0	0	0	0
16:00	2	0	22	0	0	24	0	0	0	0
16:15	2	0	28	0	0	30	0	0	2	1
16:30	2	0	35	0	0	37	0	0	1	0
16:45	1	0	35	0	0	36	1	0	0	0
17:00	2	0	38	0	0	40	0	1	0	0
17:15	0	0	19	0	0	19	0	0	0	0
17:30	3	0	36	0	0	39	0	0	0	0
17:45	4	0	29	0	0	33	0	0	0	0
SUBTOTAL	22	0	334	2	0	358	2	0	3	1
GRAND TOTAL	28	0	522	3	0	553	3	0	4	8

Peak Hour Diagram

Specified Period

From: 07:00:00
To: 10:00:00

One Hour Peak

From: 07:00:00
To: 08:00:00

Intersection: Dickenson Rd W & Glanaster Rd
Site Code: 2312400001
Count Date: May 09, 2023

Weather conditions: Clear

**** Unsignalized Intersection ****

Major Road: Glanaster Rd runs N/S

North Approach

	Out	In	Total
	122	65	187
	7	4	11
	0	0	0
Totals	129	69	198

Glanaster Rd

	0	0	0
	1	6	0
	2	120	0
Totals	3	126	0

East Approach

	Out	In	Total
	63	125	188
	4	8	12
	0	0	0
Totals	67	133	200

Peds: 0



Dickenson Rd W

Totals			
	1	1	0
	63	59	4
	3	3	0

Peds: 0

Totals			
	6	4	0
	0	2	0
	0	0	0

South Approach

	Out	In	Total
	10	5	15
	2	1	3
	0	0	0
Totals	12	6	18

Glanaster Rd

 - Cars

 - Trucks

 - Bicycles

Comments



Ontario Traffic Inc.
Traffic Monitoring • Services & Products

Peak Hour Summary

Intersection: Dickenson Rd W & Glancaster Rd
Site Code: 2312400001
Count Date: May 09, 2023
Period: 07:00 - 10:00

Peak Hour Data (07:00 - 08:00)

Start Time	North Approach Glancaster Rd				South Approach Glancaster Rd				East Approach Dickenson Rd W				West Approach				Total Vehicles
	←	↑	↱	Peds	Total	←	↑	↱	Peds	Total	←	↑	↱	Peds	Total		
07:00	41	1		0	42		0	0	0	0		14	0	0	14	56	
07:15	30	0		0	30	1	2	0	0	3	0	15	1	3	16	49	
07:30	29	1		0	30	3	2	0	0	5	1	15	0	0	16	51	
07:45	26	1		0	27	2	2	0	0	4	2	19	0	1	21	52	
Grand Total	126	3		0	129	6	6	0	0	12	3	63	1	4	67	208	
Approach %	97.7	2.3		0	-	50	50	0	-	-	4.5	94	1.5	-	-	-	
Totals %	60.6	1.4		0	62	2.9	2.9	0	5.8	1.4	30.3	0.5	32.2		0		
PHF	0.77	0.75		0	0.77	0.5	0.75	0	0.6	0.38	0.83	0.25	0.8		0	0.93	
Cars	120	2		0	122	6	4	0	10	3	59	1	63		0	195	
% Cars	95.2	66.7		0	94.6	100	66.7	0	83.3	100	93.7	100	94		0	93.8	
Trucks	6	1		0	7		2	0	2	0	4	0	4		0	13	
% Trucks	4.8	33.3		0	5.4		33.3	0	16.7	0	6.3	0	6		0	6.3	
Bicycles	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	
Peds				0	-				0	-			4		0	-	4
% Peds				0	-				0	-			100		0	-	

Peak Hour Diagram

Specified Period

From: 15:00:00

To: 18:00:00

One Hour Peak

From: 17:00:00

To: 18:00:00

Intersection: Dickenson Rd W & Glanaster Rd

Site Code: 2312400001

Count Date: May 09, 2023

Weather conditions: Clear

**** Unsignalized Intersection ****

Major Road: Glanaster Rd runs N/S

North Approach

	Out	In	Total
	174	125	299
	6	2	8
	0	0	0
Totals	180	127	307

Glanaster Rd

	0	0	0
	0	6	0
	6	168	0
Totals	6	174	0

East Approach

	Out	In	Total
	131	173	304
	1	6	7
	0	0	0
Totals	132	179	311

Peds: 0



Peds: 0

	4	5	0
	3	5	0
	1	0	0
	0	0	0
Totals	4	5	0

Glanaster Rd

Dickenson Rd W

Totals			
0	0	0	0
123	122	1	0
9	9	0	0

South Approach

Out	In	Total
8	15	23
1	0	1
0	0	0
9	15	24

 - Cars

 - Trucks

 - Bicycles

Comments



Ontario Traffic Inc.
Traffic Monitoring • Services & Products

Peak Hour Summary

Intersection: Dickenson Rd W & Glancaster Rd
Site Code: 2312400001
Count Date: May 09, 2023
Period: 15:00 - 18:00

Peak Hour Data (17:00 - 18:00)

Start Time	North Approach Glancaster Rd				South Approach Glancaster Rd				East Approach Dickenson Rd W				West Approach				Total Vehicles
	←	↑	↱	Peds	Total	←	↑	↱	Peds	Total	←	↑	↱	Peds	Total		
17:00	41	1		0	42	2	1	0	0	3	2		39	0	0	41	86
17:15	43	1		0	44	1	1	0	0	2	0		19	0	0	19	65
17:30	43	3		0	46	0	1	0	0	1	3		36	0	0	39	86
17:45	47	1		0	48	1	2	0	0	3	4		29	0	0	33	84
Grand Total	174	6		0	180	4	5	0	0	9	9		123	0	0	132	321
Approach %	96.7	3.3		0	-	44.4	55.6	0	-	-	6.8		93.2	0	-	-	
Totals %	54.2	1.9		0	56.1	1.2	1.6	0	0	2.8	2.8		38.3	0	41.1	0	
PHF	0.93	0.5		0	0.94	0.5	0.63	0	0	0.75	0.56		0.79	0	0.8	0	0.93
Cars	168	6		0	174	3	5	0	0	8	9		122	0	131	0	313
% Cars	96.6	100		0	96.7	75	100	0	0	88.9	100		99.2	0	99.2	0	97.5
Trucks	6	0		0	6	1	0	0	0	1	0		1	0	1	0	8
% Trucks	3.4	0		0	3.3	25	0	0	0	11.1	0		0.8	0	0.8	0	2.5
Bicycles	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
Peds				0	-				0	-				0	-	-	0
% Peds				0	-				0	-				0	-	-	0

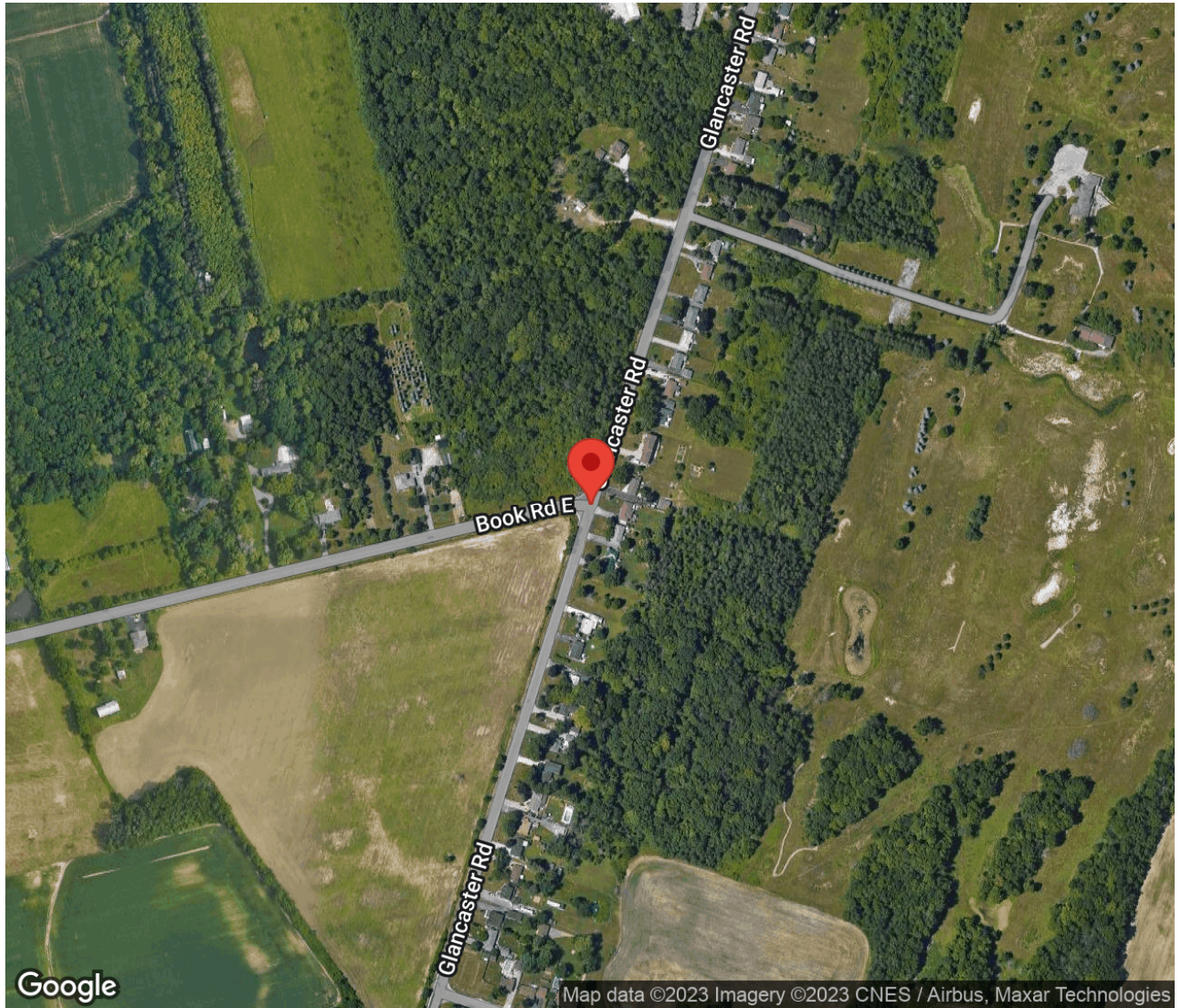
Project #23-124 - CGH Transportation

Intersection Count Report

Intersection:	Book Rd E & Glanaster Rd
Municipality:	Hamilton
Count Date:	Tuesday, May 09, 2023
Site Code:	2312400002
Count Categories:	Cars, Trucks, Bicycles, Pedestrians
Count Period:	07:00-10:00, 15:00-18:00
Weather:	Clear
Comments:	

Traffic Count Map

Intersection:	Book Rd E & Glancaster Rd
Site Code:	2312400002
Municipality:	Hamilton
Count Date:	May 09, 2023



Traffic Count Summary

Intersection: Book Rd E & Glanaster Rd
 Site Code: 2312400002
 Municipality: Hamilton
 Count Date: May 09, 2023

Glanaster Rd - Traffic Summary

Hour	North Approach Totals						South Approach Totals						Total
	Includes Cars, Trucks, Bicycles						Includes Cars, Trucks, Bicycles						
	Left	Thru	Right	U-Turn	Total	Peds	Left	Thru	Right	U-Turn	Total	Peds	
07:00 - 08:00	0	29	162	0	191	0	44	28	0	0	72	0	263
08:00 - 09:00	0	23	141	1	165	0	50	43	0	0	93	0	258
09:00 - 10:00	0	26	94	0	120	0	20	32	0	0	52	0	172
BREAK													
15:00 - 16:00	0	48	125	0	173	0	69	31	0	0	100	0	273
16:00 - 17:00	0	43	171	0	214	0	92	60	0	0	152	0	366
17:00 - 18:00	0	59	145	0	204	0	79	50	0	0	129	0	333
GRAND TOTAL	0	228	838	1	1067	0	354	244	0	0	598	0	1665

Traffic Count Summary

Intersection: Book Rd E & Glanaster Rd
Site Code: 2312400002
Municipality: Hamilton
Count Date: May 09, 2023

Book Rd E - Traffic Summary

Hour	East Approach Totals						West Approach Totals						Total
	Includes Cars, Trucks, Bicycles						Includes Cars, Trucks, Bicycles						
	Left	Thru	Right	U-Turn	Total	Peds	Left	Thru	Right	U-Turn	Total	Peds	
07:00 - 08:00	0	0	0	0	0	2	145	0	99	0	244	0	244
08:00 - 09:00	0	0	0	0	0	0	125	0	53	0	178	0	178
09:00 - 10:00	0	0	0	0	0	0	70	0	30	0	100	0	100
BREAK													
15:00 - 16:00	0	0	0	0	0	0	127	0	49	0	176	0	176
16:00 - 17:00	0	0	0	0	0	0	251	0	82	0	333	0	333
17:00 - 18:00	0	0	0	0	0	0	226	0	127	0	353	0	353
GRAND TOTAL	0	0	0	0	0	2	944	0	440	0	1384	0	1384



Ontario Traffic Inc.
Traffic Monitoring • Services & Products

Traffic Count Data

Intersection: Book Rd E & Glanaster Rd
Site Code: 2312400002
Municipality: Hamilton
Count Date: May 09, 2023

North Approach - Glanaster Rd

Start Time	Cars					Trucks					Bicycles					Total Peds
					Total					Total					Total	
07:00	0	10	26	0	36	0	0	0	0	0	0	0	0	0	0	
07:15	0	5	28	0	33	0	0	0	0	0	0	0	0	0	0	
07:30	0	4	41	0	45	0	0	2	0	2	0	0	0	0	0	
07:45	0	10	65	0	75	0	0	0	0	0	0	0	0	0	0	
08:00	0	5	42	0	47	0	0	1	0	1	0	0	0	0	0	
08:15	0	7	40	0	47	0	0	0	0	0	0	0	0	0	0	
08:30	0	4	32	1	37	0	0	1	0	1	0	1	0	1	0	
08:45	0	6	19	0	25	0	0	6	0	6	0	0	0	0	0	
09:00	0	10	14	0	24	0	0	7	0	7	0	0	0	0	0	
09:15	0	2	16	0	18	0	0	17	0	17	0	0	0	0	0	
09:30	0	5	24	0	29	0	0	0	0	0	0	1	0	0	1	
09:45	0	7	16	0	23	0	0	0	0	0	0	1	0	0	1	
SUBTOTAL	0	75	363	1	439	0	0	34	0	34	0	3	0	0	3	



Ontario Traffic Inc.
Traffic Monitoring • Services & Products

Traffic Count Data

Intersection: Book Rd E & Glanaster Rd
Site Code: 2312400002
Municipality: Hamilton
Count Date: May 09, 2023

North Approach - Glanaster Rd

Start Time	Cars				Total	Trucks				Total	Bicycles				Total	Total Peds
	←	↑	→	↻		←	↑	→	↻		←	↑	→	↻		
15:00	0	12	40	0	52	0	2	1	0	3	0	0	0	0	0	0
15:15	0	11	32	0	43	0	0	0	0	0	0	0	0	0	0	0
15:30	0	14	24	0	38	0	0	2	0	2	0	0	0	0	0	0
15:45	0	9	22	0	31	0	0	4	0	4	0	0	0	0	0	0
16:00	0	9	29	0	38	0	2	6	0	8	0	0	0	0	0	0
16:15	0	14	38	0	52	0	0	5	0	5	0	0	0	0	0	0
16:30	0	10	41	0	51	0	0	3	0	3	0	0	0	0	0	0
16:45	0	8	48	0	56	0	0	1	0	1	0	0	0	0	0	0
17:00	0	14	44	0	58	0	2	1	0	3	0	0	0	0	0	0
17:15	0	15	39	0	54	0	0	0	0	0	0	0	0	0	0	0
17:30	0	11	38	0	49	0	0	0	0	0	0	0	3	0	3	0
17:45	0	17	20	0	37	0	0	0	0	0	0	0	0	0	0	0
SUBTOTAL	0	144	415	0	559	0	6	23	0	29	0	0	3	0	3	0
GRAND TOTAL	0	219	778	1	998	0	6	57	0	63	0	3	3	0	6	0



Ontario Traffic Inc.
Traffic Monitoring • Services & Products

Traffic Count Data

Intersection: Book Rd E & Glanaster Rd
Site Code: 2312400002
Municipality: Hamilton
Count Date: May 09, 2023

South Approach - Glanaster Rd

Start Time	Cars					Trucks					Bicycles					Total Peds
					Total					Total					Total	
07:00	5	6	0	0	11	1	0	0	0	1	0	0	0	0	0	
07:15	10	7	0	0	17	0	0	0	0	0	0	0	0	0	0	
07:30	14	3	0	0	17	2	0	0	0	2	0	0	0	0	0	
07:45	10	12	0	0	22	2	0	0	0	2	0	0	0	0	0	
08:00	17	9	0	0	26	0	0	0	0	0	0	0	0	0	0	
08:15	11	10	0	0	21	1	0	0	0	1	0	0	0	0	0	
08:30	10	7	0	0	17	2	2	0	0	4	0	0	0	0	0	
08:45	9	15	0	0	24	0	0	0	0	0	0	0	0	0	0	
09:00	5	8	0	0	13	0	1	0	0	1	0	0	0	0	0	
09:15	5	10	0	0	15	0	0	0	0	0	0	0	0	0	0	
09:30	5	9	0	0	14	0	1	0	0	1	0	0	0	0	0	
09:45	5	2	0	0	7	0	0	0	0	0	0	1	0	0	0	
SUBTOTAL	106	98	0	0	204	8	4	0	0	12	0	1	0	0	0	



Ontario Traffic Inc.
Traffic Monitoring • Services & Products

Traffic Count Data

Intersection: Book Rd E & Glanaster Rd
Site Code: 2312400002
Municipality: Hamilton
Count Date: May 09, 2023

South Approach - Glanaster Rd

Start Time	Cars					Trucks					Bicycles					Total Peds
	←	↑	→	↺	Total	←	↑	→	↺	Total	←	↑	→	↺	Total	
15:00	17	11	0	0	28	0	0	0	0	0	0	0	0	0	0	0
15:15	15	6	0	0	21	2	1	0	0	3	0	0	0	0	0	0
15:30	14	9	0	0	23	0	0	0	0	0	0	0	0	0	0	0
15:45	19	4	0	0	23	2	0	0	0	2	0	0	0	0	0	0
16:00	18	12	0	0	30	2	1	0	0	3	0	0	0	0	0	0
16:15	19	12	0	0	31	3	1	0	0	4	2	1	0	0	3	0
16:30	26	12	0	0	38	2	1	0	0	3	0	1	0	0	1	0
16:45	20	17	0	0	37	0	2	0	0	2	0	0	0	0	0	0
17:00	27	12	0	0	39	1	1	0	0	2	0	0	0	0	0	0
17:15	12	8	0	0	20	0	0	0	0	0	0	0	0	0	0	0
17:30	25	12	0	0	37	0	0	0	0	0	0	0	0	0	0	0
17:45	14	17	0	0	31	0	0	0	0	0	0	0	0	0	0	0
SUBTOTAL	226	132	0	0	358	12	7	0	0	19	2	2	0	0	4	0
GRAND TOTAL	332	230	0	0	562	20	11	0	0	31	2	3	0	0	5	0



Ontario Traffic Inc.
Traffic Monitoring • Services & Products

Traffic Count Data

Intersection: Book Rd E & Glanaster Rd
Site Code: 2312400002
Municipality: Hamilton
Count Date: May 09, 2023

West Approach - Book Rd E

Start Time	Cars					Trucks					Bicycles					Total Peds
					Total					Total					Total	
07:00	21	0	28	0	49	5	0	3	0	8	0	0	0	0	0	
07:15	35	0	24	0	59	12	0	1	0	13	0	0	0	0	0	
07:30	37	0	24	0	61	5	0	1	0	6	0	0	0	0	0	
07:45	29	0	17	0	46	1	0	1	0	2	0	0	0	0	0	
08:00	29	0	11	0	40	3	0	0	0	3	0	0	0	0	0	
08:15	32	0	14	0	46	4	0	2	0	6	0	0	0	0	0	
08:30	33	0	13	0	46	2	0	1	0	3	0	0	0	0	0	
08:45	22	0	12	0	34	0	0	0	0	0	0	0	0	0	0	
09:00	14	0	6	0	20	0	0	2	0	2	0	0	0	0	0	
09:15	25	0	8	0	33	1	0	0	0	1	0	0	0	0	0	
09:30	16	0	9	0	25	0	0	2	0	2	0	0	0	0	0	
09:45	13	0	3	0	16	1	0	0	0	1	0	0	0	0	0	
SUBTOTAL	306	0	169	0	475	34	0	13	0	47	0	0	0	0	0	



Ontario Traffic Inc.
Traffic Monitoring • Services & Products

Traffic Count Data

Intersection: Book Rd E & Glanaster Rd
Site Code: 2312400002
Municipality: Hamilton
Count Date: May 09, 2023

West Approach - Book Rd E

Start Time	Cars				Total	Trucks				Total	Bicycles				Total	Total Peds
																
15:00	22	0	12	0	34	2	0	1	0	3	0	0	0	0	0	
15:15	35	0	10	0	45	0	0	0	0	0	0	0	0	0	0	
15:30	33	0	13	0	46	0	0	0	0	0	0	0	0	0	0	
15:45	33	0	12	0	45	2	0	1	0	3	0	0	0	0	0	
16:00	68	0	14	0	82	0	0	3	0	3	0	0	0	0	0	
16:15	50	0	26	0	76	1	0	1	0	2	0	0	0	0	0	
16:30	77	0	17	0	94	1	0	0	0	1	0	0	0	0	0	
16:45	51	0	21	0	72	3	0	0	0	3	0	0	0	0	0	
17:00	69	0	27	0	96	1	0	2	0	3	0	0	0	0	0	
17:15	62	0	26	0	88	0	0	2	0	2	0	0	0	0	0	
17:30	52	0	37	0	89	1	0	0	0	1	0	0	0	0	0	
17:45	41	0	33	0	74	0	0	0	0	0	0	0	0	0	0	
SUBTOTAL	593	0	248	0	841	11	0	10	0	21	0	0	0	0	0	
GRAND TOTAL	899	0	417	0	1316	45	0	23	0	68	0	0	0	0	0	

Peak Hour Diagram

Specified Period

From: 07:00:00

To: 10:00:00

One Hour Peak

From: 07:15:00

To: 08:15:00

Intersection: Book Rd E & Glancaster Rd

Site Code: 2312400002

Count Date: May 09, 2023

Weather conditions: Clear

**** Unsignalized Intersection ****

Major Road: Glancaster Rd runs N/S

North Approach

	Out	In	Total
	200	161	361
	3	21	24
	0	0	0
Totals	203	182	385

Glancaster Rd

	0	0	0
	3	0	0
	176	24	0
Totals	179	24	0

Peds: 0

Book Rd E

				Totals
	0	0	0	0
	0	21	130	151
	0	3	76	79

Peds: 0



Peds: 2

Peds: 0

West Approach

	Out	In	Total
	206	227	433
	24	7	31
	0	0	0
Totals	230	234	464

Totals	55	31	0
	51	31	0
	4	0	0
	0	0	0

Glancaster Rd

South Approach

	Out	In	Total
	82	100	182
	4	3	7
	0	0	0
Totals	86	103	189

 - Cars

 - Trucks

 - Bicycles

Comments



Ontario Traffic Inc.
Traffic Monitoring • Services & Products

Peak Hour Summary

Intersection: Book Rd E & Glancaster Rd
Site Code: 2312400002
Count Date: May 09, 2023
Period: 07:00 - 10:00

Peak Hour Data (07:15 - 08:15)

	North Approach Glancaster Rd						South Approach Glancaster Rd						East Approach				West Approach Book Rd E				Total Vehicles
Start Time																					
	Peds						Peds						Peds				Peds				

Peak Hour Diagram

Specified Period

From: 15:00:00

To: 18:00:00

One Hour Peak

From: 16:15:00

To: 17:15:00

Intersection: Book Rd E & Glancaster Rd

Site Code: 2312400002

Count Date: May 09, 2023

Weather conditions: Clear

**** Unsignalized Intersection ****

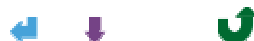
Major Road: Glancaster Rd runs N/S

North Approach

	Out	In	Total
	217	300	517
	12	11	23
	0	2	2
Totals	229	313	542

Glancaster Rd

	0	0	0
	10	2	0
	171	46	0
Totals	181	48	0



Peds: 0

Book Rd E

				Totals
	0	0	0	0
	0	6	247	253
	0	3	91	94

Peds: 0



Peds: 0

Peds: 0

West Approach

	Out	In	Total
	338	263	601
	9	16	25
	0	2	2
Totals	347	281	628

Totals	100	60	0
	92	53	0
	6	5	0
	2	2	0

Glancaster Rd

South Approach

	Out	In	Total
	145	137	282
	11	5	16
	4	0	4
Totals	160	142	302

 - Cars

 - Trucks

 - Bicycles

Comments



Ontario Traffic Inc.
Traffic Monitoring • Services & Products

Peak Hour Summary

Intersection: Book Rd E & Glancaster Rd
Site Code: 2312400002
Count Date: May 09, 2023
Period: 15:00 - 18:00

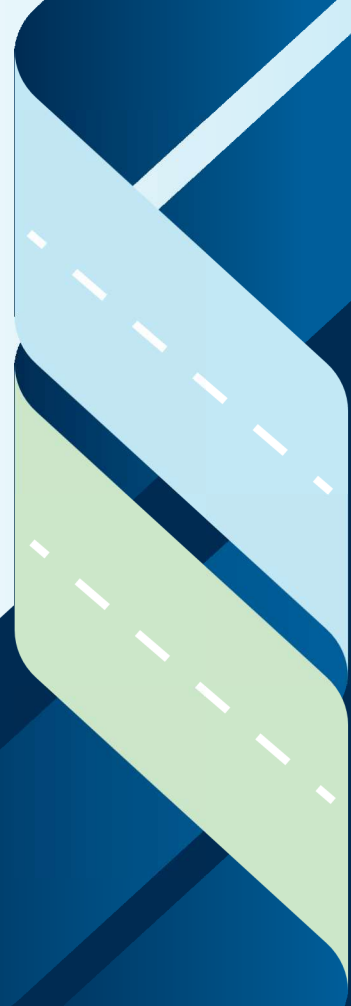
Peak Hour Data (16:15 - 17:15)

	North Approach Glancaster Rd						South Approach Glancaster Rd						East Approach				West Approach Book Rd E				Total Vehicles						
Start Time						Peds	Total						Peds	Total						Peds	Total						
16:15		14	43	0	0	57	24	14					0	0	38						51	27	0	0	78	173	
16:30		10	44	0	0	54	28	14					0	0	42		78	17	0	0	95	21	0	0	95	191	
16:45		8	49	0	0	57	20	19					0	0	39		54	21	0	0	75	21	0	0	75	171	
17:00		16	45	0	0	61	28	13					0	0	41		70	29	0	0	99	29	0	0	99	201	
Grand Total		48	181	0	0	229	100	60					0	0	160		253	94	0	0	347	94	0	0	347	736	
Approach %		21	79	0	-	-	62.5	37.5					0	-	-		72.9	27.1	0	-	-	72.9	27.1	0	-	-	
Totals %		6.5	24.6	0	31.1	13.6	8.2		0	21.7			0	34.4	12.8	0	47.1				47.1						
PHF		0.75	0.92	0	0.94	0.89	0.79		0	0.95			0	0	0.81	0.81	0	0.88		0.92	0.81	0.81	0	0.88	0.92		
Cars		46	171	0	217	92	53		0	145			0	247	91	0	338		700		700						
% Cars		95.8	94.5	0	94.8	92	88.3		0	90.6			0	97.6	96.8	0	97.4		95.1		95.1						
Trucks		2	10	0	12	6	5		0	11			0	6	3	0	9		32		32						
% Trucks		4.2	5.5	0	5.2	6	8.3		0	6.9			0	2.4	3.2	0	2.6		4.3		4.3						
Bicycles		0	0	0	0	2	2		0	4			0	0	0	0	0		4		4						
% Bicycles		0	0	0	0	2	3.3		0	2.5			0	0	0	0	0		0.5		0.5						
Peds					0	-			0	-			0	-	-				0	-	0					0	
% Peds					0	-			0	-			0	-	-				0	-	0						

Project #23-124 - CGH Transportation

Intersection Count Report

Intersection: Dickenson Rd W & Aeropark Blvd
Municipality: Hamilton
Count Date: Tuesday, May 09, 2023
Site Code: 2312400003
Count Categories: Cars, Trucks, Bicycles, Pedestrians
Count Period: 07:00-10:00, 15:00-18:00
Weather: Clear
Comments:



Traffic Count Map

Intersection:	Dickenson Rd W & Aeropark Blvd
Site Code:	2312400003
Municipality:	Hamilton
Count Date:	May 09, 2023



Traffic Count Summary

Intersection: Dickenson Rd W & Aeropark Blvd
 Site Code: 2312400003
 Municipality: Hamilton
 Count Date: May 09, 2023

Aeropark Blvd - Traffic Summary

Hour	North Approach Totals						South Approach Totals						Total
	Includes Cars, Trucks, Bicycles						Includes Cars, Trucks, Bicycles						
	Left	Thru	Right	U-Turn	Total	Peds	Left	Thru	Right	U-Turn	Total	Peds	
07:00 - 08:00	0	0	0	0	0	0	8	0	18	0	26	0	26
08:00 - 09:00	0	0	0	0	0	0	5	0	19	0	24	0	24
09:00 - 10:00	0	0	0	0	0	0	7	0	20	0	27	0	27
BREAK													
15:00 - 16:00	0	0	0	0	0	0	18	0	12	0	30	0	30
16:00 - 17:00	0	0	0	0	0	0	19	0	28	0	47	0	47
17:00 - 18:00	0	0	0	0	0	0	41	0	35	0	76	0	76
GRAND TOTAL	0	0	0	0	0	0	98	0	132	0	230	0	230

Traffic Count Summary

Intersection: Dickenson Rd W & Aeropark Blvd
 Site Code: 2312400003
 Municipality: Hamilton
 Count Date: May 09, 2023

Dickenson Rd W - Traffic Summary

Hour	East Approach Totals						West Approach Totals						Total
	Includes Cars, Trucks, Bicycles						Includes Cars, Trucks, Bicycles						
	Left	Thru	Right	U-Turn	Total	Peds	Left	Thru	Right	U-Turn	Total	Peds	
07:00 - 08:00	41	73	0	0	114	0	0	85	65	0	150	0	264
08:00 - 09:00	14	64	0	1	79	0	0	70	12	0	82	0	161
09:00 - 10:00	14	44	0	1	59	0	0	57	5	0	62	0	121
BREAK													
15:00 - 16:00	12	93	0	0	105	0	0	84	8	0	92	0	197
16:00 - 17:00	16	128	0	0	144	0	0	132	4	0	136	0	280
17:00 - 18:00	47	94	0	1	142	0	0	132	60	0	192	0	334
GRAND TOTAL	144	496	0	3	643	0	0	560	154	0	714	0	1357

Traffic Count Data

Intersection: Dickenson Rd W & Aeropark Blvd
 Site Code: 2312400003
 Municipality: Hamilton
 Count Date: May 09, 2023

South Approach - Aeropark Blvd

Start Time	Cars					Trucks					Bicycles					Total Peds
					Total					Total					Total	
07:00	1	0	2	0	3	0	0	1	0	1	0	0	0	0	0	
07:15	3	0	2	0	5	0	0	3	0	3	0	0	0	0	0	
07:30	3	0	3	0	6	1	0	4	0	5	0	0	0	0	0	
07:45	0	0	0	0	0	0	0	3	0	3	0	0	0	0	0	
08:00	1	0	2	0	3	0	0	3	0	3	0	0	0	0	0	
08:15	2	0	1	0	3	0	0	3	0	3	0	0	0	0	0	
08:30	1	0	0	0	1	1	0	7	0	8	0	0	0	0	0	
08:45	0	0	0	0	0	0	0	3	0	3	0	0	0	0	0	
09:00	2	0	1	0	3	0	0	2	0	2	0	0	0	0	0	
09:15	2	0	2	0	4	0	0	3	0	3	1	0	0	1	0	
09:30	0	0	2	0	2	0	0	6	0	6	0	0	0	0	0	
09:45	1	0	1	0	2	1	0	3	0	4	0	0	0	0	0	
SUBTOTAL	16	0	16	0	32	3	0	41	0	44	1	0	0	0	1	



Ontario Traffic Inc.
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Traffic Count Data

Intersection: Dickenson Rd W & Aeropark Blvd
Site Code: 2312400003
Municipality: Hamilton
Count Date: May 09, 2023

South Approach - Aeropark Blvd

Start Time	Cars			Total	Trucks			Total	Bicycles			Total	Total Peds
	←	↑	→		←	↑	→		←	↑	→		
15:00	5	0	1	6	0	0	1	1	0	0	0	0	0
15:15	3	0	2	5	0	0	1	1	0	0	0	0	0
15:30	4	0	2	6	0	0	4	4	0	0	0	0	0
15:45	5	0	0	5	1	0	2	2	0	0	0	0	0
16:00	7	0	5	12	0	0	4	4	0	0	0	0	0
16:15	2	0	3	5	0	0	3	3	0	0	0	0	0
16:30	6	0	5	11	0	0	4	4	0	0	0	0	0
16:45	4	0	1	5	0	0	3	3	0	0	0	0	0
17:00	6	0	11	17	0	0	4	4	0	0	0	0	0
17:15	5	0	1	6	0	0	3	3	0	0	0	0	0
17:30	20	0	8	28	0	0	3	3	0	0	0	0	0
17:45	10	0	2	12	0	0	3	3	0	0	0	0	0
SUBTOTAL	77	0	41	118	1	0	34	35	0	0	0	0	0
GRAND TOTAL	93	0	57	150	4	0	75	79	1	0	0	1	0



Ontario Traffic Inc.
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Traffic Count Data

Intersection: Dickenson Rd W & Aeropark Blvd
Site Code: 2312400003
Municipality: Hamilton
Count Date: May 09, 2023

East Approach - Dickenson Rd W

Start Time	Cars					Trucks					Bicycles					Total Peds
					Total					Total					Total	
07:00	11	12	0	0	23	1	1	0	0	2	0	0	0	0	0	
07:15	20	12	0	0	32	0	1	0	0	1	0	0	0	0	0	
07:30	3	12	0	0	15	1	3	0	0	4	0	0	0	0	0	
07:45	4	30	0	0	34	1	2	0	0	3	0	0	0	0	0	
08:00	1	14	0	0	15	2	0	0	0	2	0	0	0	0	0	
08:15	3	16	0	0	19	3	2	0	0	5	0	0	0	0	0	
08:30	1	12	0	0	13	2	1	0	0	3	0	0	0	0	0	
08:45	2	18	0	1	21	0	1	0	0	1	0	0	0	0	0	
09:00	1	12	0	0	13	4	0	0	0	4	0	0	0	0	0	
09:15	0	16	0	0	16	3	1	0	0	4	0	0	0	0	0	
09:30	0	9	0	0	9	4	0	0	0	4	0	0	0	0	0	
09:45	1	5	0	1	7	1	0	0	0	1	0	1	0	0	1	
SUBTOTAL	47	168	0	2	217	22	12	0	0	34	0	1	0	0	1	



Ontario Traffic Inc.
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Traffic Count Data

Intersection: Dickenson Rd W & Aeropark Blvd
Site Code: 2312400003
Municipality: Hamilton
Count Date: May 09, 2023

East Approach - Dickenson Rd W

Start Time	Cars					Trucks					Bicycles					Total Peds
					Total					Total					Total	
15:00	2	24	0	0	26	0	1	0	0	1	0	0	0	0	0	
15:15	1	20	0	0	21	2	1	0	0	3	0	0	0	0	0	
15:30	1	25	0	0	26	1	1	0	0	2	0	0	0	0	0	
15:45	2	18	0	0	20	3	3	0	0	6	0	0	0	0	0	
16:00	0	18	0	0	18	2	1	0	0	3	0	0	0	0	0	
16:15	0	30	0	0	30	2	3	0	0	5	0	3	0	3	0	
16:30	2	33	0	0	35	1	1	0	0	2	0	0	0	0	0	
16:45	6	35	0	0	41	3	4	0	0	7	0	0	0	0	0	
17:00	6	31	0	0	37	2	0	0	0	2	0	0	0	0	0	
17:15	6	22	0	1	29	2	1	0	0	3	0	0	0	0	0	
17:30	12	19	0	0	31	2	0	0	0	2	0	0	0	0	0	
17:45	15	21	0	0	36	2	0	0	0	2	0	0	0	0	0	
SUBTOTAL	53	296	0	1	350	22	16	0	0	38	0	3	0	0	3	
GRAND TOTAL	100	464	0	3	567	44	28	0	0	72	0	4	0	0	4	



Ontario Traffic Inc.
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Traffic Count Data

Intersection: Dickenson Rd W & Aeropark Blvd
Site Code: 2312400003
Municipality: Hamilton
Count Date: May 09, 2023

West Approach - Dickenson Rd W

Start Time	Cars					Trucks					Bicycles					Total Peds
					Total					Total					Total	
07:00	0	20	21	0	41	0	4	0	0	4	0	0	0	0	0	
07:15	0	17	22	0	39	0	3	0	0	3	0	0	0	0	0	
07:30	0	21	16	0	37	0	2	0	0	2	0	0	0	0	0	
07:45	0	16	5	0	21	0	2	1	0	3	0	0	0	0	0	
08:00	0	17	3	0	20	0	0	0	0	0	0	0	0	0	0	
08:15	0	12	5	0	17	0	1	0	0	1	0	0	0	0	0	
08:30	0	17	1	0	18	0	1	0	0	1	0	0	0	0	0	
08:45	0	21	3	0	24	0	0	0	0	0	0	1	0	0	1	
09:00	0	17	1	0	18	0	2	0	0	2	0	0	0	0	0	
09:15	0	7	2	0	9	0	0	0	0	0	0	0	1	0	1	
09:30	0	13	1	0	14	0	4	0	0	4	0	0	0	0	0	
09:45	0	14	0	0	14	0	0	0	0	0	0	0	0	0	0	
SUBTOTAL	0	192	80	0	272	0	19	1	0	20	0	1	1	0	2	



Ontario Traffic Inc.
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Traffic Count Data

Intersection: Dickenson Rd W & Aeropark Blvd
Site Code: 2312400003
Municipality: Hamilton
Count Date: May 09, 2023

West Approach - Dickenson Rd W

Start Time	Cars				Total	Trucks				Total	Bicycles				Total	Total Peds
	←	↑	→	↻		←	↑	→	↻		←	↑	→	↻		
15:00	0	18	3	0	21	0	1	1	0	2	0	0	0	0	0	0
15:15	0	17	0	0	17	0	2	0	0	2	0	0	0	0	0	0
15:30	0	24	3	0	27	0	1	0	0	1	0	0	0	0	0	0
15:45	0	21	1	0	22	0	0	0	0	0	0	0	0	0	0	0
16:00	0	23	0	0	23	0	3	0	0	3	0	0	0	0	0	0
16:15	0	38	0	0	38	0	2	0	0	2	0	0	0	0	0	0
16:30	0	30	1	0	31	0	0	1	0	1	0	0	0	0	0	0
16:45	0	35	2	0	37	0	1	0	0	1	0	0	0	0	0	0
17:00	0	35	3	0	38	0	2	0	0	2	0	0	0	0	0	0
17:15	0	31	16	0	47	0	2	1	0	3	0	0	0	0	0	0
17:30	0	32	17	0	49	0	0	0	0	0	0	0	0	0	0	0
17:45	0	29	23	0	52	0	1	0	0	1	0	0	0	0	0	0
SUBTOTAL	0	333	69	0	402	0	15	3	0	18	0	0	0	0	0	0
GRAND TOTAL	0	525	149	0	674	0	34	4	0	38	0	1	1	0	2	0

Peak Hour Diagram

Specified Period

From: 07:00:00
To: 10:00:00

One Hour Peak

From: 07:00:00
To: 08:00:00

Intersection: Dickenson Rd W & Aeropark Blvd
Site Code: 2312400003
Count Date: May 09, 2023

Weather conditions: Clear

**** Unsignalized Intersection ****

Major Road: Dickenson Rd W runs E/W

East Approach

	Out	In	Total
	104	81	185
	10	22	32
	0	0	0
	114	103	217

Dickenson Rd W

			Totals
0	0	0	0
0	11	74	85
0	1	64	65

Peds: 0

Peds: 0



Peds: 0

Dickenson Rd W

Totals			
0	0	0	0
73	66	7	0
41	38	3	0

West Approach

	Out	In	Total
	138	73	211
	12	8	20
	0	0	0
	150	81	231

Totals			
	7	7	0
	1	11	0
	0	0	0

Aeropark Blvd

South Approach

	Out	In	Total
	14	102	116
	12	4	16
	0	0	0
	26	106	132

 - Cars

 - Trucks

 - Bicycles

Comments



Ontario Traffic Inc.
Traffic Monitoring • Services & Products

Peak Hour Summary

Intersection: Dickenson Rd W & Aeropark Blvd
Site Code: 2312400003
Count Date: May 09, 2023
Period: 07:00 - 10:00

Peak Hour Data (07:00 - 08:00)

	North Approach			South Approach Aeropark Blvd			East Approach Dickenson Rd W			West Approach Dickenson Rd W			Total Vehicl es									
Start Time	   	Peds	Total	   	Peds	Total	   	Peds	Total	   	Peds	Total										
07:00		0		1		3	0	0	4	12	13		24	21	0	0	45	74				
07:15		0		3		5	0	0	8	20	13		0	0	33	20	22	0	0	42	83	
07:30		0		4		7	0	0	0	11	4		15	0	0	19	23	16	0	0	39	69
07:45		0		0		3	0	0	0	3	5		32	0	0	37	18	6	0	0	24	64
Grand Total	0	0	8	18	0	0	26	41	73	0	0	114	85	65	0	0	150	290				
Approach %	-	-	30.8	69.2	0	-	36	64	0	-	56.7	43.3	0	-								
Totals %	0	0	2.8	6.2	0	9	14.1	25.2	0	39.3	29.3	22.4	0	51.7								
PHF	0	0	0.5	0.64	0	0.59	0.51	0.57	0	0.77	0.89	0.74	0	0.83	0.87							
Cars	0	0	7	7	0	14	38	66	0	104	74	64	0	138	256							
% Cars	0	0	87.5	38.9	0	53.8	92.7	90.4	0	91.2	87.1	98.5	0	92	88.3							
Trucks	0	0	1	11	0	12	3	7	0	10	11	1	0	12	34							
% Trucks	0	0	12.5	61.1	0	46.2	7.3	9.6	0	8.8	12.9	1.5	0	8	11.7							
Bicycles	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							
Peds	0	-	0	-	0	-	0	0	0	-	0	0	0	-	0							
% Peds	0	-	0	-	0	-	0	0	0	-	0	0	0	-	0							

Peak Hour Diagram

Specified Period

From: 15:00:00
To: 18:00:00

One Hour Peak

From: 17:00:00
To: 18:00:00

Intersection: Dickenson Rd W & Aeropark Blvd
Site Code: 2312400003
Count Date: May 09, 2023

Weather conditions: Clear

**** Unsignalized Intersection ****

Major Road: Dickenson Rd W runs E/W

East Approach

	Out	In	Total
	133	150	283
	9	18	27
	0	0	0
	142	168	310

Dickenson Rd W

			Totals
0	0	0	0
0	5	127	132
0	1	59	60

Peds: 0

Peds: 0



Peds: 0

Dickenson Rd W

Totals			
1	1	0	0
94	93	1	0
47	39	8	0

West Approach

	Out	In	Total
	186	134	320
	6	1	7
	0	0	0
	192	135	327

Totals	41	35	0
	41	22	0
	0	13	0
	0	0	0

Aeropark Blvd

South Approach

	Out	In	Total
	63	98	161
	13	9	22
	0	0	0
	76	107	183

 - Cars

 - Trucks

 - Bicycles

Comments



Ontario Traffic Inc.
Traffic Monitoring • Services & Products

Peak Hour Summary

Intersection: Dickenson Rd W & Aeropark Blvd
Site Code: 2312400003
Count Date: May 09, 2023
Period: 15:00 - 18:00

Peak Hour Data (17:00 - 18:00)

	North Approach				South Approach Aeropark Blvd				East Approach Dickenson Rd W				West Approach Dickenson Rd W				Total Vehicles
Start Time																	
	Peds			Total	Peds			Total	Peds			Total	Peds			Total	
17:00	0				6			21	8	31		39	37	3	0	40	100
17:15	0				5			9	8	23	1	32	33	17	0	50	91
17:30	0				20			31	14	19	0	33	32	17	0	49	113
17:45	0				10			15	17	21	0	38	30	23	0	53	106
Grand Total	0	0	0	41	35	0	0	76	47	94	1	142	132	60	0	192	410
Approach %	-				53.9	46.1	0	-	33.1	66.2	0.7	-	68.8	31.3	0	-	
Totals %	0				10	8.5	0	18.5	11.5	22.9	0.2	34.6	32.2	14.6	0	46.8	
PHF	0	0.51	0.58	0	0.61	0.69	0.76	0.25	0.91	0.89	0.65	0	0.91	0.91	0.91	0.91	
Cars	0	41	22	0	63	39	93	1	133	127	59	0	186			382	
% Cars	0	100	62.9	0	82.9	83	98.9	100	93.7	96.2	98.3	0	96.9			93.2	
Trucks	0	0	13	0	13	8	1	0	9	5	1	0	6			28	
% Trucks	0	0	37.1	0	17.1	17	1.1	0	6.3	3.8	1.7	0	3.1			6.8	
Bicycles	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	
Peds	0	-			0	-			0	-			0	-		0	
% Peds	0	-			0	-			0	-			0	-		-	

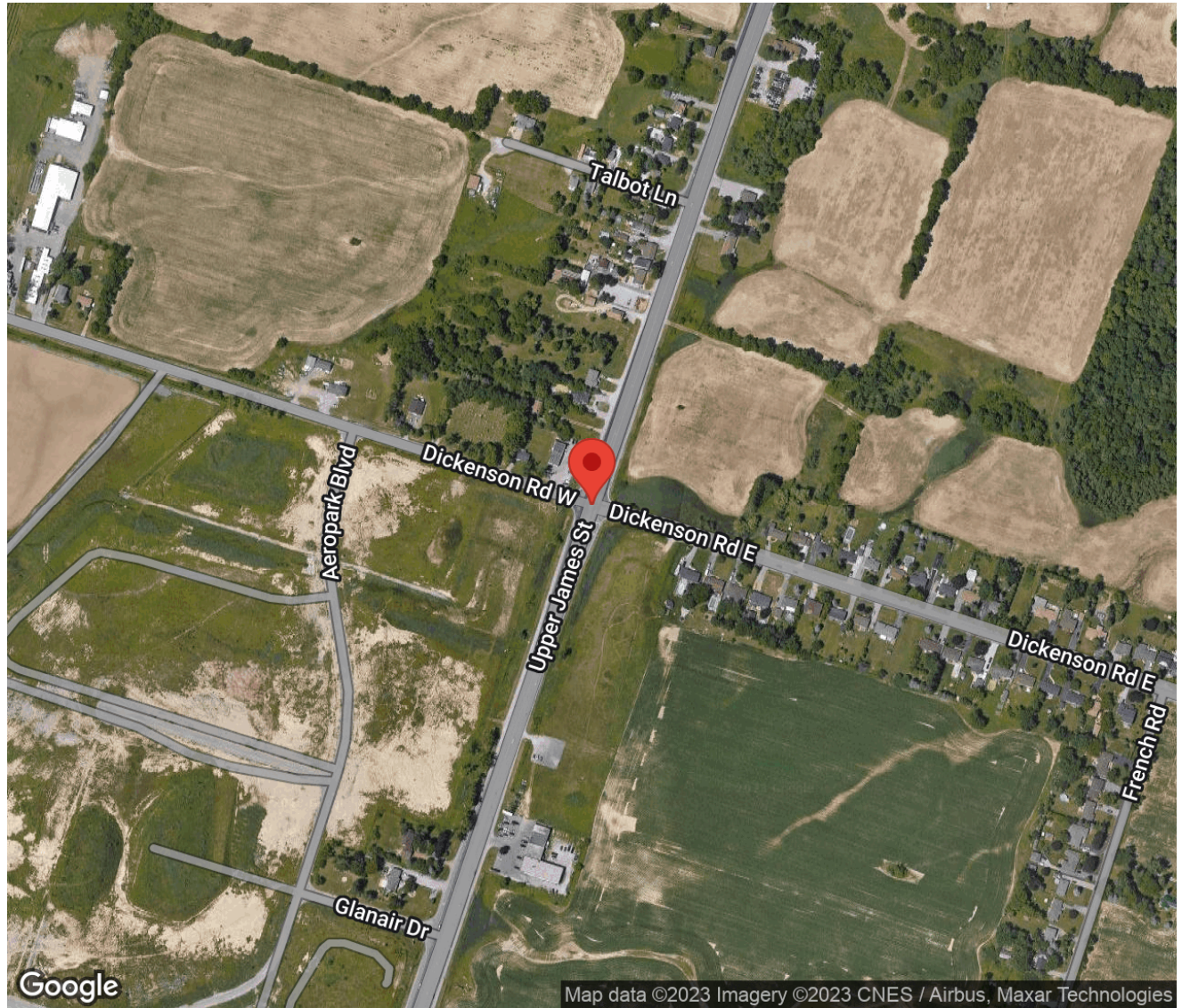
Project #23-124 - CGH Transportation

Intersection Count Report

Intersection: Upper James St & Dickenson Rd
Municipality: Hamilton
Count Date: Tuesday, May 09, 2023
Site Code: 2312400004
Count Categories: Cars, Trucks, Bicycles, Pedestrians
Count Period: 07:00-10:00, 15:00-18:00
Weather: Clear
Comments:

Traffic Count Map

Intersection:	Upper James St & Dickenson Rd
Site Code:	2312400004
Municipality:	Hamilton
Count Date:	May 09, 2023



Traffic Count Summary

Intersection: Upper James St & Dickenson Rd
 Site Code: 2312400004
 Municipality: Hamilton
 Count Date: May 09, 2023

Upper James St - Traffic Summary

Hour	North Approach Totals						South Approach Totals						Total
	Includes Cars, Trucks, Bicycles						Includes Cars, Trucks, Bicycles						
	Left	Thru	Right	U-Turn	Total	Peds	Left	Thru	Right	U-Turn	Total	Peds	
07:00 - 08:00	15	746	41	0	802	0	29	957	32	0	1018	0	1820
08:00 - 09:00	11	550	18	0	579	0	28	957	24	0	1009	0	1588
09:00 - 10:00	15	537	22	1	575	0	18	653	20	0	691	0	1266
BREAK													
15:00 - 16:00	31	968	25	0	1024	0	29	748	34	0	811	0	1835
16:00 - 17:00	56	1090	33	0	1179	0	42	851	40	0	933	1	2112
17:00 - 18:00	39	1154	47	0	1240	0	33	1045	73	0	1151	0	2391
GRAND TOTAL	167	5045	186	1	5399	0	179	5211	223	0	5613	1	11012

Traffic Count Summary

Intersection: Upper James St & Dickenson Rd
 Site Code: 2312400004
 Municipality: Hamilton
 Count Date: May 09, 2023

Dickenson Rd - Traffic Summary

Hour	East Approach Totals						West Approach Totals						Total
	Includes Cars, Trucks, Bicycles						Includes Cars, Trucks, Bicycles						
	Left	Thru	Right	U-Turn	Total	Peds	Left	Thru	Right	U-Turn	Total	Peds	
07:00 - 08:00	44	44	30	0	118	0	39	35	29	0	103	0	221
08:00 - 09:00	26	33	55	0	114	0	29	29	31	0	89	0	203
09:00 - 10:00	22	20	34	0	76	0	31	18	30	0	79	0	155
BREAK													
15:00 - 16:00	40	51	22	0	113	0	21	34	39	0	94	0	207
16:00 - 17:00	23	69	34	0	126	0	40	71	51	0	162	0	288
17:00 - 18:00	53	62	33	0	148	0	41	77	50	0	168	0	316
GRAND TOTAL	208	279	208	0	695	0	201	264	230	0	695	0	1390



Ontario Traffic Inc.
Traffic Monitoring • Services & Products

Traffic Count Data

Intersection: Upper James St & Dickenson Rd
Site Code: 2312400004
Municipality: Hamilton
Count Date: May 09, 2023

North Approach - Upper James St

Start Time	Cars				Total	Trucks				Total	Bicycles				Total	Total Peds
	←	↑	→	↻		←	↑	→	↻		←	↑	→	↻		
07:00	4	190	10	0	204	0	12	2	0	14	0	0	0	0	0	0
07:15	2	212	17	0	231	0	13	0	0	13	0	0	0	0	0	0
07:30	7	156	4	0	167	0	9	1	0	10	0	0	0	0	0	0
07:45	2	139	5	0	146	0	15	2	0	17	0	0	0	0	0	0
08:00	4	117	3	0	124	0	11	1	0	12	0	0	0	0	0	0
08:15	5	128	2	0	135	1	17	3	0	21	0	0	0	0	0	0
08:30	0	122	3	0	125	0	15	2	0	17	0	0	0	0	0	0
08:45	1	123	3	0	127	0	17	1	0	18	0	0	0	0	0	0
09:00	6	131	3	0	140	0	9	4	0	13	0	0	0	0	0	0
09:15	3	126	3	0	132	0	14	3	1	18	1	0	0	0	1	0
09:30	4	122	2	0	128	0	10	4	0	14	0	0	0	0	0	0
09:45	1	118	2	0	121	0	7	1	0	8	0	0	0	0	0	0
SUBTOTAL	39	1684	57	0	1780	1	149	24	1	175	1	0	0	0	1	0



Ontario Traffic Inc.
Traffic Monitoring • Services & Products

Traffic Count Data

Intersection: Upper James St & Dickenson Rd
Site Code: 2312400004
Municipality: Hamilton
Count Date: May 09, 2023

North Approach - Upper James St

Start Time	Cars				Total	Trucks				Total	Bicycles				Total	Total Peds
	←	↑	→	↻		←	↑	→	↻		←	↑	→	↻		
15:00	4	187	6	0	197	0	14	1	0	15	0	0	0	0	0	0
15:15	12	247	3	0	262	0	7	3	0	10	0	0	0	0	0	0
15:30	7	249	7	0	263	0	20	1	0	21	0	0	0	0	0	0
15:45	8	231	2	0	241	0	12	2	0	14	0	1	0	0	1	0
16:00	15	250	4	0	269	0	17	3	0	20	0	0	0	0	0	0
16:15	10	253	1	0	264	0	17	2	0	19	0	0	0	0	0	0
16:30	13	298	7	0	318	0	7	1	0	8	0	0	0	0	0	0
16:45	18	244	12	0	274	0	4	3	0	7	0	0	0	0	0	0
17:00	6	284	9	0	299	0	6	1	0	7	0	0	0	0	0	0
17:15	14	311	8	0	333	0	10	3	0	13	0	0	0	0	0	0
17:30	8	286	12	0	306	0	7	1	0	8	0	0	0	0	0	0
17:45	10	242	11	0	263	1	8	2	0	11	0	0	0	0	0	0
SUBTOTAL	125	3082	82	0	3289	1	129	23	0	153	0	1	0	0	1	0
GRAND TOTAL	164	4766	139	0	5069	2	278	47	1	328	1	1	0	0	2	0



Ontario Traffic Inc.
Traffic Monitoring • Services & Products

Traffic Count Data

Intersection: Upper James St & Dickenson Rd
Site Code: 2312400004
Municipality: Hamilton
Count Date: May 09, 2023

South Approach - Upper James St

Start Time	Cars				Total	Trucks				Total	Bicycles				Total	Total Peds
	←	↑	→	↻		←	↑	→	↻		←	↑	→	↻		
07:00	6	173	3	0	182	0	14	1	0	15	0	0	0	0	0	0
07:15	3	215	9	0	227	0	6	0	0	6	0	0	0	0	0	0
07:30	3	249	6	0	258	1	9	0	0	10	0	0	0	0	0	0
07:45	16	280	13	0	309	0	11	0	0	11	0	0	0	0	0	0
08:00	4	208	6	0	218	0	14	1	0	15	0	0	0	0	0	0
08:15	7	227	5	0	239	0	22	0	0	22	0	0	0	0	0	0
08:30	5	221	4	0	230	0	11	2	0	13	0	0	0	0	0	0
08:45	11	222	4	0	237	1	32	2	0	35	0	0	0	0	0	0
09:00	5	180	5	0	190	0	8	0	0	8	0	0	0	0	0	0
09:15	6	152	7	0	165	1	7	1	0	9	0	0	0	0	0	0
09:30	3	135	4	0	142	0	15	0	0	15	0	0	0	0	0	0
09:45	3	141	2	0	146	0	15	0	0	15	0	0	1	0	1	0
SUBTOTAL	72	2403	68	0	2543	3	164	7	0	174	0	0	1	0	1	0



Ontario Traffic Inc.
Traffic Monitoring • Services & Products

Traffic Count Data

Intersection: Upper James St & Dickenson Rd
Site Code: 2312400004
Municipality: Hamilton
Count Date: May 09, 2023

South Approach - Upper James St

Start Time	Cars				Total	Trucks				Total	Bicycles				Total	Total Peds
	↵	↑	↗	↻		↵	↑	↗	↻		↵	↑	↗	↻		
15:00	7	155	6	0	168	0	12	0	0	12	0	0	0	0	0	0
15:15	3	185	9	0	197	0	12	1	0	13	0	0	0	0	0	0
15:30	13	177	13	0	203	0	11	0	0	11	0	0	0	0	0	0
15:45	3	187	5	0	195	3	9	0	0	12	0	0	0	0	0	0
16:00	4	205	12	0	221	0	13	1	0	14	0	0	0	0	0	0
16:15	9	183	7	0	199	2	5	1	0	8	0	0	0	0	0	1
16:30	12	216	12	0	240	1	9	0	0	10	0	0	0	0	0	0
16:45	10	208	7	0	225	4	12	0	0	16	0	0	0	0	0	0
17:00	7	221	8	0	236	1	12	0	0	13	0	0	0	0	0	0
17:15	8	218	10	0	236	0	7	0	0	7	0	0	0	0	0	0
17:30	6	314	39	0	359	1	8	0	0	9	0	0	0	0	0	0
17:45	10	263	16	0	289	0	2	0	0	2	0	0	0	0	0	0
SUBTOTAL	92	2532	144	0	2768	12	112	3	0	127	0	0	0	0	0	1
GRAND TOTAL	164	4935	212	0	5311	15	276	10	0	301	0	0	1	0	1	1

Traffic Count Data

Intersection: Upper James St & Dickenson Rd
 Site Code: 2312400004
 Municipality: Hamilton
 Count Date: May 09, 2023

East Approach - Dickenson Rd

Start Time	Cars					Trucks					Bicycles					Total Peds
	←	↑	→	↻	Total	←	↑	→	↻	Total	←	↑	→	↻	Total	
07:00	15	8	1	0	24	1	1	0	0	2	0	0	0	0	0	0
07:15	14	11	8	0	33	0	0	0	0	0	0	0	0	0	0	0
07:30	7	8	7	0	22	0	2	0	0	2	0	0	0	0	0	0
07:45	6	13	13	0	32	1	1	1	0	3	0	0	0	0	0	0
08:00	6	8	22	0	36	1	1	0	0	2	0	0	0	0	0	0
08:15	6	10	12	0	28	1	2	0	0	3	0	0	0	0	0	0
08:30	4	5	14	0	23	1	0	0	0	1	0	0	0	0	0	0
08:45	6	7	7	0	20	1	0	0	0	1	0	0	0	0	0	0
09:00	6	5	6	0	17	1	0	0	0	1	0	0	0	0	0	0
09:15	5	6	9	0	20	0	0	0	0	0	0	0	0	0	0	0
09:30	7	5	7	0	19	1	0	1	0	2	0	0	0	0	0	0
09:45	2	3	11	0	16	0	0	0	0	0	0	1	0	0	1	0
SUBTOTAL	84	89	117	0	290	8	7	2	0	17	0	1	0	0	1	0

Traffic Count Data

Intersection: Upper James St & Dickenson Rd
 Site Code: 2312400004
 Municipality: Hamilton
 Count Date: May 09, 2023

East Approach - Dickenson Rd

Start Time	Cars				Total	Trucks				Total	Bicycles				Total	Total Peds
	←	↑	→	↻		←	↑	→	↻		←	↑	→	↻		
15:00	7	13	2	0	22	1	0	0	0	1	0	0	0	0	0	0
15:15	14	15	10	0	39	1	0	1	0	2	0	0	0	0	0	0
15:30	6	6	6	0	18	2	1	0	0	3	0	0	0	0	0	0
15:45	7	15	3	0	25	2	1	0	0	3	0	0	0	0	0	0
16:00	3	10	9	0	22	0	0	0	0	0	0	0	0	0	0	0
16:15	6	19	9	0	34	1	1	0	0	2	0	3	0	0	3	0
16:30	6	17	8	0	31	0	0	0	0	0	0	0	0	0	0	0
16:45	7	19	8	0	34	0	0	0	0	0	0	0	0	0	0	0
17:00	10	21	4	0	35	0	0	0	0	0	0	0	0	0	0	0
17:15	13	13	14	0	40	0	0	0	0	0	0	0	0	0	0	0
17:30	9	13	8	0	30	1	0	0	0	1	0	0	0	0	0	0
17:45	20	15	7	0	42	0	0	0	0	0	0	0	0	0	0	0
SUBTOTAL	108	176	88	0	372	8	3	1	0	12	0	3	0	0	3	0
GRAND TOTAL	192	265	205	0	662	16	10	3	0	29	0	4	0	0	4	0



Ontario Traffic Inc.
Traffic Monitoring • Services & Products

Traffic Count Data

Intersection: Upper James St & Dickenson Rd
Site Code: 2312400004
Municipality: Hamilton
Count Date: May 09, 2023

West Approach - Dickenson Rd

Start Time	Cars				Total	Trucks				Total	Bicycles				Total	Total Peds
	←	↑	→	↻		←	↑	→	↻		←	↑	→	↻		
07:00	7	10	5	0	22	1	0	4	0	5	0	0	0	0	0	0
07:15	6	9	4	0	19	5	1	0	0	6	0	0	0	0	0	0
07:30	8	9	7	0	24	4	0	2	0	6	0	0	0	0	0	0
07:45	5	4	7	0	16	3	2	0	0	5	0	0	0	0	0	0
08:00	4	8	7	0	19	2	1	0	0	3	0	0	0	0	0	0
08:15	4	5	4	0	13	4	0	1	0	5	0	0	0	0	0	0
08:30	3	10	5	0	18	3	0	4	0	7	0	0	0	0	0	0
08:45	6	5	10	0	21	3	0	0	0	3	0	0	0	0	0	0
09:00	5	2	11	0	18	3	1	0	0	4	0	1	0	0	1	0
09:15	2	2	5	0	9	3	0	0	0	3	0	0	0	0	0	0
09:30	2	8	6	0	16	5	1	2	0	8	0	0	0	0	0	0
09:45	6	3	6	0	15	5	0	0	0	5	0	0	0	0	0	0
SUBTOTAL	58	75	77	0	210	41	6	13	0	60	0	1	0	0	1	0



Ontario Traffic Inc.
Traffic Monitoring • Services & Products

Traffic Count Data

Intersection: Upper James St & Dickenson Rd
Site Code: 2312400004
Municipality: Hamilton
Count Date: May 09, 2023

West Approach - Dickenson Rd

Start Time	Cars				Total	Trucks				Total	Bicycles				Total	Total Peds
	←	↑	→	↺		←	↑	→	↺		←	↑	→	↺		
15:00	3	6	10	0	19	1	0	1	0	2	0	0	0	0	0	0
15:15	2	9	8	0	19	2	0	1	0	3	0	0	0	0	0	0
15:30	4	11	11	0	26	3	1	0	0	4	0	0	0	0	0	0
15:45	4	7	8	0	19	2	0	0	0	2	0	0	0	0	0	0
16:00	6	16	8	0	30	4	1	2	0	7	0	0	0	0	0	0
16:15	7	17	17	0	41	3	2	0	0	5	0	0	0	0	0	0
16:30	8	16	11	0	35	4	0	0	0	4	0	0	0	0	0	0
16:45	4	19	13	0	36	4	0	0	0	4	0	0	0	0	0	0
17:00	13	16	17	0	46	4	1	1	0	6	0	0	0	0	0	0
17:15	4	17	12	0	33	3	0	2	0	5	0	0	0	0	0	0
17:30	6	21	13	0	40	3	0	0	0	3	0	0	0	0	0	0
17:45	5	21	5	0	31	3	1	0	0	4	0	0	0	0	0	0
SUBTOTAL	66	176	133	0	375	36	6	7	0	49	0	0	0	0	0	0
GRAND TOTAL	124	251	210	0	585	77	12	20	0	109	0	1	0	0	1	0

Peak Hour Diagram

Specified Period

From: 07:00:00

To: 10:00:00

One Hour Peak

From: 07:00:00

To: 08:00:00

Intersection: Upper James St & Dickenson Rd

Site Code: 2312400004

Count Date: May 09, 2023

Weather conditions: Clear

**** Unsignalized Intersection ****

Major Road: Upper James St runs N/S

North Approach

	Out	In	Total
	748	972	1720
	54	54	108
	0	0	0
Totals	802	1026	1828

Upper James St

	0	0	0	0
	5	49	0	0
	36	697	15	0
Totals	41	746	15	0

East Approach

	Out	In	Total
	111	78	189
	7	4	11
	0	0	0
Totals	118	82	200

Dickenson Rd

				Totals
	0	0	0	0
	0	13	26	39
	0	3	32	35
	0	6	23	29

Peds: 0

Peds: 0



Peds: 0

Dickenson Rd

Totals			
	0	0	0
	30	29	1
	44	40	4
	44	42	2

West Approach

	Out	In	Total
	81	104	185
	22	10	32
	0	0	0
Totals	103	114	217

				
Totals	29	957	32	0
	28	917	31	0
	1	40	1	0
	0	0	0	0

Upper James St

South Approach

	Out	In	Total
	976	762	1738
	42	57	99
	0	0	0
Totals	1018	819	1837

 - Cars

 - Trucks

 - Bicycles

Comments



Ontario Traffic Inc.
Traffic Monitoring • Services & Products

Peak Hour Summary

Intersection: Upper James St & Dickenson Rd
Site Code: 2312400004
Count Date: May 09, 2023
Period: 07:00 - 10:00

Peak Hour Data (07:00 - 08:00)

	North Approach Upper James St						South Approach Upper James St						East Approach Dickenson Rd						West Approach Dickenson Rd						Total Vehicles
Start Time																									
					Peds	Total					Peds	Total					Peds	Total			Peds	Total			
07:00	4	202	12	0	0	218	6	187	4	0	0	197	16	9	1	0	0	26	8	10	9	0	27	468	
07:15	2	225	17	0	0	244	3	221	9	0	0	233	14	11	8	0	0	33	11	10	4	0	25	535	
07:30	7	165	5	0	0	177	4	258	6	0	0	268	7	10	7	0	0	24	12	9	9	0	30	499	
07:45	2	154	7	0	0	163	16	291	13	0	0	320	7	14	14	0	0	35	8	6	7	0	21	539	
Grand Total	15	746	41	0	0	802	29	957	32	0	0	1018	44	44	30	0	0	118	39	35	29	0	103	2041	
Approach %	1.9	93	5.1	0	-	-	2.8	94	3.1	0	-	-	37.3	37.3	25.4	0	-	-	37.9	34	28.2	0	-		
Totals %	0.7	36.6	2	0		39.3	1.4	46.9	1.6	0		49.9	2.2	2.2	1.5	0		5.8	1.9	1.7	1.4	0	5		
PHF	0.54	0.83	0.6	0		0.82	0.45	0.82	0.62	0		0.8	0.69	0.79	0.54	0		0.84	0.81	0.88	0.81	0	0.86	0.95	
Cars	15	697	36	0		748	28	917	31	0		976	42	40	29	0		111	26	32	23	0	81	1916	
% Cars	100	93.4	87.8	0		93.3	96.6	95.8	96.9	0		95.9	95.5	90.9	96.7	0		94.1	66.7	91.4	79.3	0	78.6	93.9	
Trucks	0	49	5	0		54	1	40	1	0		42	2	4	1	0		7	13	3	6	0	22	125	
% Trucks	0	6.6	12.2	0		6.7	3.4	4.2	3.1	0		4.1	4.5	9.1	3.3	0		5.9	33.3	8.6	20.7	0	21.4	6.1	
Bicycles	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		
Peds				0	-	-				0	-	-				0	-	-				0	-	0	
% Peds				0	-	-				0	-	-				0	-	-				0	-	0	

Peak Hour Diagram

Specified Period

From: 15:00:00
To: 18:00:00

One Hour Peak

From: 17:00:00
To: 18:00:00

Intersection: Upper James St & Dickenson Rd
Site Code: 2312400004
Count Date: May 09, 2023

Weather conditions: Clear

**** Unsignalized Intersection ****

Major Road: Upper James St runs N/S

North Approach

	Out	In	Total
	1201	1077	2278
	39	42	81
	0	0	0
Totals	1240	1119	2359

Upper James St

	0	0	0	0
	7	31	1	0
	40	1123	38	0
Totals	47	1154	39	0

East Approach

	Out	In	Total
	147	186	333
	1	3	4
	0	0	0
Totals	148	189	337

Dickenson Rd

				Totals
	0	0	0	0
	0	13	28	41
	0	2	75	77
	0	3	47	50

Peds: 0

Peds: 0



Peds: 0

Peds: 0

Dickenson Rd

Totals			
	0	0	0
	33	33	0
	62	62	0
	53	52	1

West Approach

	Out	In	Total
	150	133	283
	18	9	27
	0	0	0
Totals	168	142	310

				
Totals	33	1045	73	0
	31	1016	73	0
	2	29	0	0
	0	0	0	0

Upper James St

South Approach

	Out	In	Total
	1120	1222	2342
	31	35	66
	0	0	0
Totals	1151	1257	2408

 - Cars

 - Trucks

 - Bicycles

Comments



Peak Hour Summary

Intersection: Upper James St & Dickenson Rd

Site Code: 2312400004

Count Date: May 09, 2023

Period: 15:00 - 18:00

Peak Hour Data (17:00 - 18:00)

[illegible]



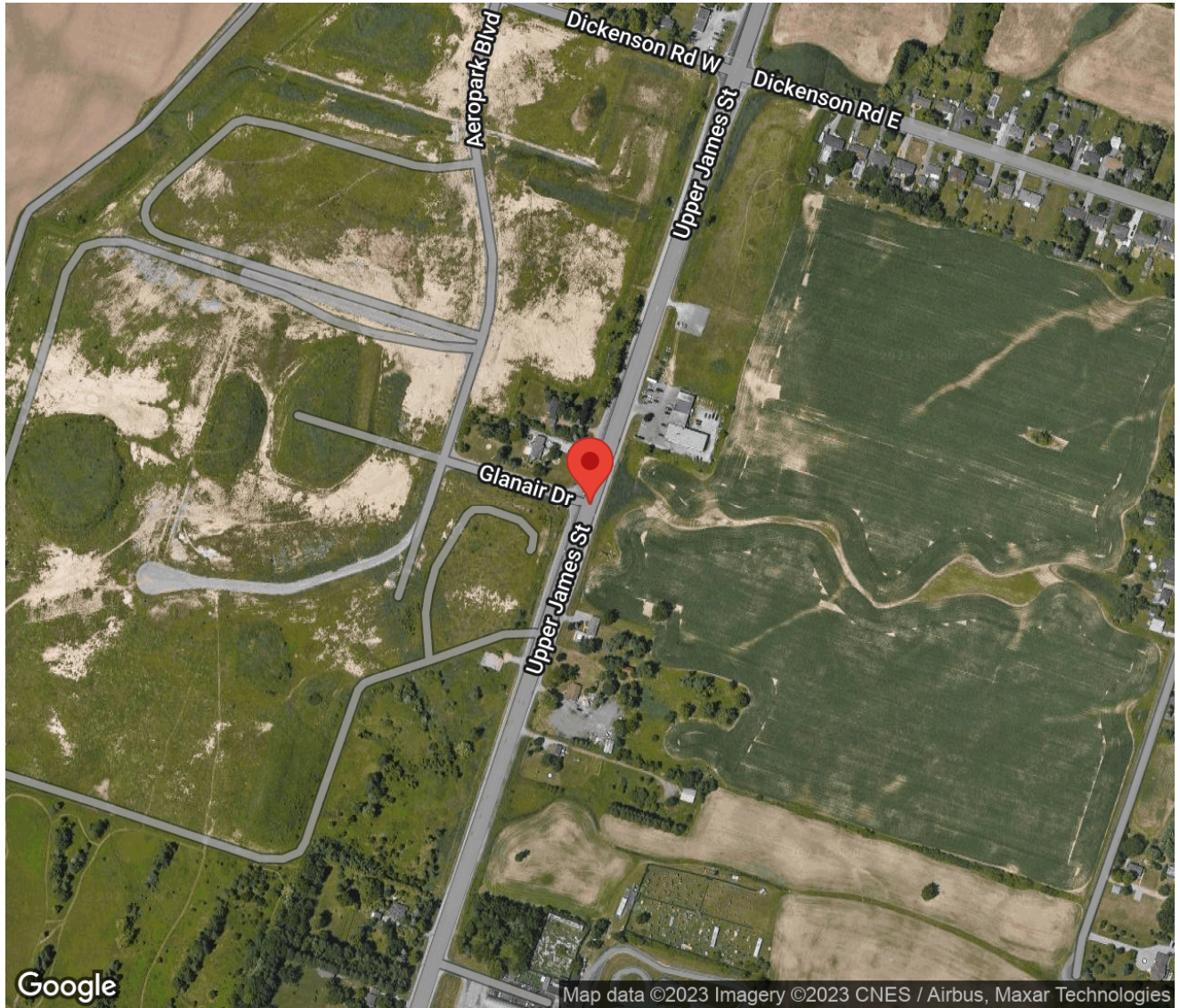
Project #23-124 - CGH Transportation

Intersection Count Report

Intersection:	Glanair Dr & Upper James St
Municipality:	Hamilton
Count Date:	Tuesday, May 09, 2023
Site Code:	2312400005
Count Categories:	Cars, Trucks, Bicycles, Pedestrians
Count Period:	07:00-10:00, 15:00-18:00
Weather:	Clear
Comments:	

Traffic Count Map

Intersection:	Glanair Dr & Upper James St
Site Code:	2312400005
Municipality:	Hamilton
Count Date:	May 09, 2023



Traffic Count Summary

Intersection: Glanair Dr & Upper James St
 Site Code: 2312400005
 Municipality: Hamilton
 Count Date: May 09, 2023

Upper James St - Traffic Summary

Hour	North Approach Totals						South Approach Totals						Total
	Includes Cars, Trucks, Bicycles						Includes Cars, Trucks, Bicycles						
	Left	Thru	Right	U-Turn	Total	Peds	Left	Thru	Right	U-Turn	Total	Peds	
07:00 - 08:00	9	660	151	0	820	0	26	965	3	0	994	1	1814
08:00 - 09:00	9	571	31	0	611	0	15	993	2	0	1010	0	1621
09:00 - 10:00	9	556	23	1	589	0	14	674	5	0	693	0	1282
BREAK													
15:00 - 16:00	4	1031	14	0	1049	0	14	776	2	0	792	0	1841
16:00 - 17:00	8	1137	19	0	1164	0	13	887	4	0	904	0	2068
17:00 - 18:00	4	1084	171	0	1259	0	35	940	0	0	975	1	2234
GRAND TOTAL	43	5039	409	1	5492	0	117	5235	16	0	5368	2	10860

Traffic Count Summary

Intersection: Glanair Dr & Upper James St
 Site Code: 2312400005
 Municipality: Hamilton
 Count Date: May 09, 2023

Commerical Entrance - Traffic Summary

Hour	East Approach Totals						West Approach Totals						Total
	Includes Cars, Trucks, Bicycles						Includes Cars, Trucks, Bicycles						
	Left	Thru	Right	U-Turn	Total	Peds	Left	Thru	Right	U-Turn	Total	Peds	
07:00 - 08:00	0	0	2	0	2	0	49	0	6	0	55	0	57
08:00 - 09:00	2	0	4	0	6	0	14	0	6	0	20	0	26
09:00 - 10:00	0	1	7	0	8	0	13	0	9	0	22	0	30
BREAK													
15:00 - 16:00	1	0	3	0	4	0	34	0	15	0	49	0	53
16:00 - 17:00	1	0	12	0	13	0	31	1	12	0	44	0	57
17:00 - 18:00	4	0	16	0	20	0	195	0	12	0	207	0	227
GRAND TOTAL	8	1	44	0	53	0	336	1	60	0	397	0	450

Traffic Count Data

Intersection: Glanair Dr & Upper James St
 Site Code: 2312400005
 Municipality: Hamilton
 Count Date: May 09, 2023

North Approach - Upper James St

Start Time	Cars				Total	Trucks				Total	Bicycles				Total	Total Peds
	←	↑	→	↻		←	↑	→	↻		←	↑	→	↻		
07:00	0	150	60	0	210	0	16	2	0	18	0	0	0	0	0	0
07:15	0	166	63	0	229	0	10	2	0	12	0	0	0	0	0	0
07:30	4	155	13	0	172	0	6	5	0	11	0	0	0	0	0	0
07:45	5	144	3	0	152	0	13	3	0	16	0	0	0	0	0	0
08:00	1	120	10	0	131	0	9	4	0	13	0	0	0	0	0	0
08:15	2	128	8	0	138	0	17	1	0	18	0	0	0	0	0	0
08:30	2	130	2	0	134	0	19	1	0	20	0	0	0	0	0	0
08:45	4	134	1	0	139	0	14	4	0	18	0	0	0	0	0	0
09:00	0	144	4	0	148	0	8	2	0	10	0	0	0	0	0	0
09:15	0	134	3	0	137	0	12	3	0	15	0	0	0	0	0	0
09:30	4	129	2	0	135	0	9	3	0	12	0	0	0	0	0	0
09:45	5	113	6	1	125	0	7	0	0	7	0	0	0	0	0	0
SUBTOTAL	27	1647	175	1	1850	0	140	30	0	170	0	0	0	0	0	0



Ontario Traffic Inc.
Traffic Monitoring • Services & Products

Traffic Count Data

Intersection: Glanair Dr & Upper James St
Site Code: 2312400005
Municipality: Hamilton
Count Date: May 09, 2023

North Approach - Upper James St

Start Time	Cars				Total	Trucks				Total	Bicycles				Total	Total Peds
	↶	↑	↷	↶		↶	↑	↷	↶		↶	↑	↷	↶		
15:00	1	205	1	0	207	0	14	2	0	16	0	0	0	0	0	0
15:15	1	264	6	0	271	0	9	1	0	10	0	0	0	0	0	0
15:30	1	264	1	0	266	0	21	1	0	22	0	0	0	0	0	0
15:45	1	241	2	0	244	0	13	0	0	13	0	0	0	0	0	0
16:00	3	257	1	0	261	0	16	3	0	19	0	0	0	0	0	0
16:15	1	273	3	0	277	0	16	2	0	18	0	0	0	0	0	0
16:30	2	307	5	0	314	0	7	1	0	8	0	0	0	0	0	0
16:45	2	258	4	0	264	0	3	0	0	3	0	0	0	0	0	0
17:00	0	306	9	0	315	0	6	1	0	7	0	0	0	0	0	0
17:15	2	300	30	0	332	0	10	1	0	11	0	0	0	0	0	0
17:30	1	255	52	0	308	0	8	1	0	9	0	0	0	0	0	0
17:45	1	194	74	0	269	0	5	3	0	8	0	0	0	0	0	0
SUBTOTAL	16	3124	188	0	3328	0	128	16	0	144	0	0	0	0	0	0
GRAND TOTAL	43	4771	363	1	5178	0	268	46	0	314	0	0	0	0	0	0

Traffic Count Data

Intersection: Glanair Dr & Upper James St
 Site Code: 2312400005
 Municipality: Hamilton
 Count Date: May 09, 2023

South Approach - Upper James St

Start Time	Cars					Trucks					Bicycles					Total Peds
	←	↑	→	↻	Total	←	↑	→	↻	Total	←	↑	→	↻	Total	
07:00	7	161	0	0	168	1	16	0	0	17	0	0	0	0	0	0
07:15	9	210	1	0	220	1	6	0	0	7	0	0	0	0	0	0
07:30	4	246	0	0	250	2	8	0	0	10	0	0	0	0	0	1
07:45	1	307	2	0	310	1	11	0	0	12	0	0	0	0	0	0
08:00	1	215	0	0	216	2	13	0	0	15	0	0	0	0	0	0
08:15	2	236	0	0	238	2	19	0	0	21	0	0	0	0	0	0
08:30	2	226	0	0	228	3	14	0	0	17	0	0	0	0	0	0
08:45	2	236	2	0	240	1	34	0	0	35	0	0	0	0	0	0
09:00	1	187	2	0	190	4	9	0	0	13	0	0	0	0	0	0
09:15	0	163	0	0	163	2	10	1	0	13	0	0	0	0	0	0
09:30	0	143	0	0	143	4	11	2	0	17	0	0	0	0	0	0
09:45	0	137	0	0	137	3	14	0	0	17	0	0	0	0	0	0
SUBTOTAL	29	2467	7	0	2503	26	165	3	0	194	0	0	0	0	0	1



Ontario Traffic Inc.
Traffic Monitoring • Services & Products

Traffic Count Data

Intersection: Glanair Dr & Upper James St
Site Code: 2312400005
Municipality: Hamilton
Count Date: May 09, 2023

South Approach - Upper James St

Start Time	Cars				Total	Trucks				Total	Bicycles				Total	Total Peds
	←	↑	→	↻		←	↑	→	↻		←	↑	→	↻		
15:00	1	151	1	0	153	3	12	0	0	15	0	0	0	0	0	0
15:15	0	193	1	0	194	2	13	0	0	15	0	0	0	0	0	0
15:30	0	197	0	0	197	2	11	0	0	13	0	0	0	0	0	0
15:45	2	189	0	0	191	4	10	0	0	14	0	0	0	0	0	0
16:00	0	207	1	0	208	2	13	0	0	15	0	0	0	0	0	0
16:15	2	195	0	0	197	3	8	0	0	11	0	0	0	0	0	0
16:30	0	227	3	0	230	3	9	0	0	12	0	0	0	0	0	0
16:45	1	214	0	0	215	2	14	0	0	16	0	0	0	0	0	0
17:00	2	222	0	0	224	1	13	0	0	14	0	0	0	0	0	1
17:15	1	208	0	0	209	3	7	0	0	10	0	0	0	0	0	0
17:30	10	237	0	0	247	6	8	0	0	14	0	0	0	0	0	0
17:45	7	242	0	0	249	5	3	0	0	8	0	0	0	0	0	0
SUBTOTAL	26	2482	6	0	2514	36	121	0	0	157	0	0	0	0	0	1
GRAND TOTAL	55	4949	13	0	5017	62	286	3	0	351	0	0	0	0	0	2



Ontario Traffic Inc.
Traffic Monitoring • Services & Products

Traffic Count Data

Intersection: Glanair Dr & Upper James St
Site Code: 2312400005
Municipality: Hamilton
Count Date: May 09, 2023

East Approach - Commerical Entrance

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	
07:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
07:30	0	0	1	0	1	0	0	0	0	0	0	0	0	0	0	
07:45	0	0	1	0	1	0	0	0	0	0	0	0	0	0	0	
08:00	0	0	1	0	1	0	0	0	0	0	0	0	0	0	0	
08:15	0	0	1	0	1	0	0	0	0	0	0	0	0	0	0	
08:30	1	0	1	0	2	0	0	0	0	0	0	0	0	0	0	
08:45	1	0	1	0	2	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	
09:15	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	
09:30	0	0	0	0	0	0	0	1	0	1	0	0	0	0	0	
09:45	0	0	5	0	5	0	0	0	0	0	0	0	0	0	0	
SUBTOTAL	2	0	12	0	14	0	1	1	0	2	0	0	0	0	0	



Ontario Traffic Inc.
Traffic Monitoring • Services & Products

Traffic Count Data

Intersection: Glanair Dr & Upper James St
Site Code: 2312400005
Municipality: Hamilton
Count Date: May 09, 2023

East Approach - Commerical Entrance

Start Time	Cars			Total	Trucks			Total	Bicycles			Total	Total Peds
	←	↑	→		←	↑	→		←	↑	→		
15:00	0	0	1	0	1	0	0	0	0	0	0	0	0
15:15	1	0	1	0	2	0	0	0	0	0	0	0	0
15:30	0	0	1	0	1	0	0	0	0	0	0	0	0
15:45	0	0	0	0	0	0	0	0	0	0	0	0	0
16:00	1	0	3	0	4	0	0	0	0	0	0	0	0
16:15	0	0	1	0	1	0	0	0	0	0	0	0	0
16:30	0	0	6	0	6	0	0	0	0	0	0	0	0
16:45	0	0	2	0	2	0	0	0	0	0	0	0	0
17:00	1	0	2	0	3	0	0	0	0	0	0	0	0
17:15	1	0	6	0	7	0	0	0	0	0	0	0	0
17:30	1	0	6	0	7	0	0	0	0	0	0	0	0
17:45	1	0	2	0	3	0	0	0	0	0	0	0	0
SUBTOTAL	6	0	31	0	37	0	0	0	0	0	0	0	0
GRAND TOTAL	8	0	43	0	51	0	1	1	0	2	0	0	0



Ontario Traffic Inc.
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Traffic Count Data

Intersection: Glanair Dr & Upper James St
Site Code: 2312400005
Municipality: Hamilton
Count Date: May 09, 2023

West Approach - Glanair Dr

Start Time	Cars				Total	Trucks				Total	Bicycles				Total	Total Peds
	←	↑	→	↺		←	↑	→	↺		←	↑	→	↺		
07:00	21	0	0	0	21	0	0	2	0	2	0	0	0	0	0	0
07:15	16	0	0	0	16	0	0	0	0	0	0	0	0	0	0	0
07:30	10	0	1	0	11	1	0	2	0	3	0	0	0	0	0	0
07:45	1	0	0	0	1	0	0	1	0	1	0	0	0	0	0	0
08:00	5	0	0	0	5	1	0	0	0	1	0	0	0	0	0	0
08:15	3	0	0	0	3	2	0	2	0	4	0	0	0	0	0	0
08:30	2	0	0	0	2	0	0	2	0	2	0	0	0	0	0	0
08:45	0	0	1	0	1	1	0	1	0	2	0	0	0	0	0	0
09:00	3	0	0	0	3	0	0	3	0	3	0	0	0	0	0	0
09:15	2	0	0	0	2	0	0	2	0	2	0	0	0	0	0	0
09:30	1	0	0	0	1	3	0	2	0	5	0	0	0	0	0	0
09:45	3	0	0	0	3	1	0	2	0	3	0	0	0	0	0	0
SUBTOTAL	67	0	2	0	69	9	0	19	0	28	0	0	0	0	0	0



Ontario Traffic Inc.
Traffic Monitoring • Services & Products

Traffic Count Data

Intersection: Glanair Dr & Upper James St
Site Code: 2312400005
Municipality: Hamilton
Count Date: May 09, 2023

West Approach - Glanair Dr

Start Time	Cars				Total	Trucks				Total	Bicycles				Total	Total Peds
																
15:00	15	0	1	0	16	1	0	2	0	3	0	0	0	0	0	
15:15	3	0	1	0	4	0	0	3	0	3	0	0	0	0	0	
15:30	5	0	2	0	7	0	0	2	0	2	0	0	0	0	0	
15:45	8	0	1	0	9	2	0	3	0	5	0	0	0	0	0	
16:00	9	0	0	0	9	0	0	2	0	2	0	0	0	0	0	
16:15	3	0	1	0	4	0	0	4	0	4	0	0	0	0	0	
16:30	10	1	0	0	11	1	0	1	0	2	0	0	0	0	0	
16:45	6	0	0	0	6	2	0	4	0	6	0	0	0	0	0	
17:00	11	0	1	0	12	0	0	1	0	1	0	0	0	0	0	
17:15	19	0	1	0	20	0	0	3	0	3	0	0	0	0	0	
17:30	116	0	1	0	117	2	0	1	0	3	0	0	0	0	0	
17:45	47	0	0	0	47	0	0	4	0	4	0	0	0	0	0	
SUBTOTAL	252	1	9	0	262	8	0	30	0	38	0	0	0	0	0	
GRAND TOTAL	319	1	11	0	331	17	0	49	0	66	0	0	0	0	0	

Peak Hour Diagram

Specified Period

From: 07:00:00
To: 10:00:00

One Hour Peak

From: 07:00:00
To: 08:00:00

Intersection: Glanair Dr & Upper James St
Site Code: 2312400005
Count Date: May 09, 2023

Weather conditions: Clear

**** Signalized Intersection ****

Major Road: Upper James St runs N/S

North Approach

	Out	In	Total
	763	974	1737
	57	42	99
	0	0	0
Totals	820	1016	1836

Upper James St

	0	0	0	0
	12	45	0	0
	139	615	9	0
Totals	151	660	9	0

East Approach

	Out	In	Total
	2	12	14
	0	0	0
	0	0	0
Totals	2	12	14

Glanair Dr

				Totals
	0	0	0	0
	0	1	48	49
	0	0	0	0
	0	5	1	6

Peds: 0



Peds: 1

Commercial Entrance

Totals			
	0	0	0
	2	2	0
	0	0	0
	0	0	0

West Approach

	Out	In	Total
	49	160	209
	6	17	23
	0	0	0
Totals	55	177	232

				
Totals	26	965	3	0
	21	924	3	0
	5	41	0	0
	0	0	0	0

Upper James St

South Approach

	Out	In	Total
	948	616	1564
	46	50	96
	0	0	0
Totals	994	666	1660

 - Cars

 - Trucks

 - Bicycles

Comments



Ontario Traffic Inc.
Traffic Monitoring • Services & Products

Peak Hour Summary

Intersection: Glanair Dr & Upper James St
Site Code: 2312400005
Count Date: May 09, 2023
Period: 07:00 - 10:00

Peak Hour Data (07:00 - 08:00)

Start Time	North Approach Upper James St						South Approach Upper James St						East Approach Commercial Entrance						West Approach Glanair Dr						Total Vehi es
					Peds	Total					Peds	Total					Peds	Total					Peds	Total	
07:00	0	166	62	0	0	228	8	177	0	0	0	185	0	0	0	0	0	0	21	0	2	0	0	23	436
07:15	0	176	65	0	0	241	10	216	1	0	0	227	0	0	0	0	0	0	16	0	0	0	0	16	484
07:30	4	161	18	0	0	183	6	254	0	0	1	260	0	0	1	0	0	1	11	0	3	0	0	14	458
07:45	5	157	6	0	0	168	2	318	2	0	0	322	0	0	1	0	0	1	1	0	1	0	0	2	493
Grand Total	9	660	151	0	0	820	26	965	3	0	1	994	0	0	2	0	0	2	49	0	6	0	0	55	1871
Approach %	1.1	80.5	18.4	0		-	2.6	97.1	0.3	0		-	0	0	100	0	-	89.1	0	10.9	0		-		
Totals %	0.5	35.3	8.1	0		43.8	1.4	51.6	0.2	0		53.1	0	0	0.1	0	0.1	2.6	0	0.3	0		2.9		
PHF	0.45	0.94	0.58	0		0.85	0.65	0.76	0.38	0		0.77	0	0	0.5	0	0.5	0.58	0	0.5	0		0.6	0.95	
Cars	9	615	139	0		763	21	924	3	0		948	0	0	2	0	2	48	0	1	0		49	1762	
% Cars	100	93.2	92.1	0		93	80.8	95.8	100	0		95.4	0	0	100	0	100	98	0	16.7	0		89.1	94.2	
Trucks	0	45	12	0		57	5	41	0	0		46	0	0	0	0	0	1	0	5	0		6	109	
% Trucks	0	6.8	7.9	0		7	19.2	4.2	0	0		4.6	0	0	0	0	0	2	0	83.3	0		10.9	5.8	
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						1					0	-					0	-	1
% Peds						0						100					0	-					0	-	

Peak Hour Diagram

Specified Period

From: 15:00:00

To: 18:00:00

One Hour Peak

From: 17:00:00

To: 18:00:00

Intersection: Glanair Dr & Upper James St

Site Code: 2312400005

Count Date: May 09, 2023

Weather conditions: Clear

**** Signalized Intersection ****

Major Road: Upper James St runs N/S

North Approach

	Out	In	Total
	1224	1118	2342
	35	33	68
	0	0	0
Totals	1259	1151	2410

Upper James St

	0	0	0	0
	6	29	0	0
	165	1055	4	0
Totals	171	1084	4	0

East Approach

	Out	In	Total
	20	4	24
	0	0	0
	0	0	0
Totals	20	4	24

Glanair Dr

				Totals
	0	0	0	0
	0	2	193	195
	0	0	0	0
	0	9	3	12

Peds: 0



Peds: 1

Commercial Entrance

Totals			
0	0	0	0
16	16	0	0
0	0	0	0
4	4	0	0

West Approach

	Out	In	Total
	196	185	381
	11	21	32
	0	0	0
Totals	207	206	413

				
Totals	35	940	0	0
	20	909	0	0
	15	31	0	0
	0	0	0	0

Upper James St

South Approach

	Out	In	Total
	929	1062	1991
	46	38	84
	0	0	0
Totals	975	1100	2075

 - Cars

 - Trucks

 - Bicycles

Comments



Ontario Traffic Inc.
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Peak Hour Summary

Intersection: Glanair Dr & Upper James St
Site Code: 2312400005
Count Date: May 09, 2023
Period: 15:00 - 18:00

Peak Hour Data (17:00 - 18:00)

Start Time	North Approach Upper James St				Peds	Total	South Approach Upper James St				Peds	Total	East Approach Commercial Entrance				Peds	Total	West Approach Glanair Dr				Peds	Total	Total Vehicles
17:00	0	312	10	0	0	322	3	235	0	0	1	238	1	0	2	0	0	3	11	0	2	0	0	13	576
17:15	2	310	31	0	0	343	4	215	0	0	0	219	1	0	6	0	0	7	19	0	4	0	0	23	592
17:30	1	263	53	0	0	317	16	245	0	0	0	261	1	0	6	0	0	7	118	0	2	0	0	120	705
17:45	1	199	77	0	0	277	12	245	0	0	0	257	1	0	2	0	0	3	47	0	4	0	0	51	588
Grand Total	4	1084	171	0	0	1259	35	940	0	0	1	975	4	0	16	0	0	20	195	0	12	0	0	207	2461
Approach %	0.3	86.1	13.6	0		-	3.6	96.4	0	0		-	20	0	80	0		-	94.2	0	5.8	0		-	
Totals %	0.2	44	6.9	0		51.2	1.4	38.2	0	0		39.6	0.2	0	0.7	0		0.8	7.9	0	0.5	0		8.4	
PHF	0.5	0.87	0.56	0		0.92	0.55	0.96	0	0		0.93	1	0	0.67	0		0.71	0.41	0	0.75	0		0.43	0.87
Cars	4	1055	165	0		1224	20	909	0	0		929	4	0	16	0		20	193	0	3	0		196	2369
% Cars	100	97.3	96.5	0		97.2	57.1	96.7	0	0		95.3	100	0	100	0		100	99	0	25	0		94.7	96.3
Trucks	0	29	6	0		35	15	31	0	0		46	0	0	0	0		0	2	0	9	0		11	92
% Trucks	0	2.7	3.5	0		2.8	42.9	3.3	0	0		4.7	0	0	0	0		0	1	0	75	0		5.3	3.7
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					1	-						0					0	-	1
% Peds						0					100	-						0					0	-	

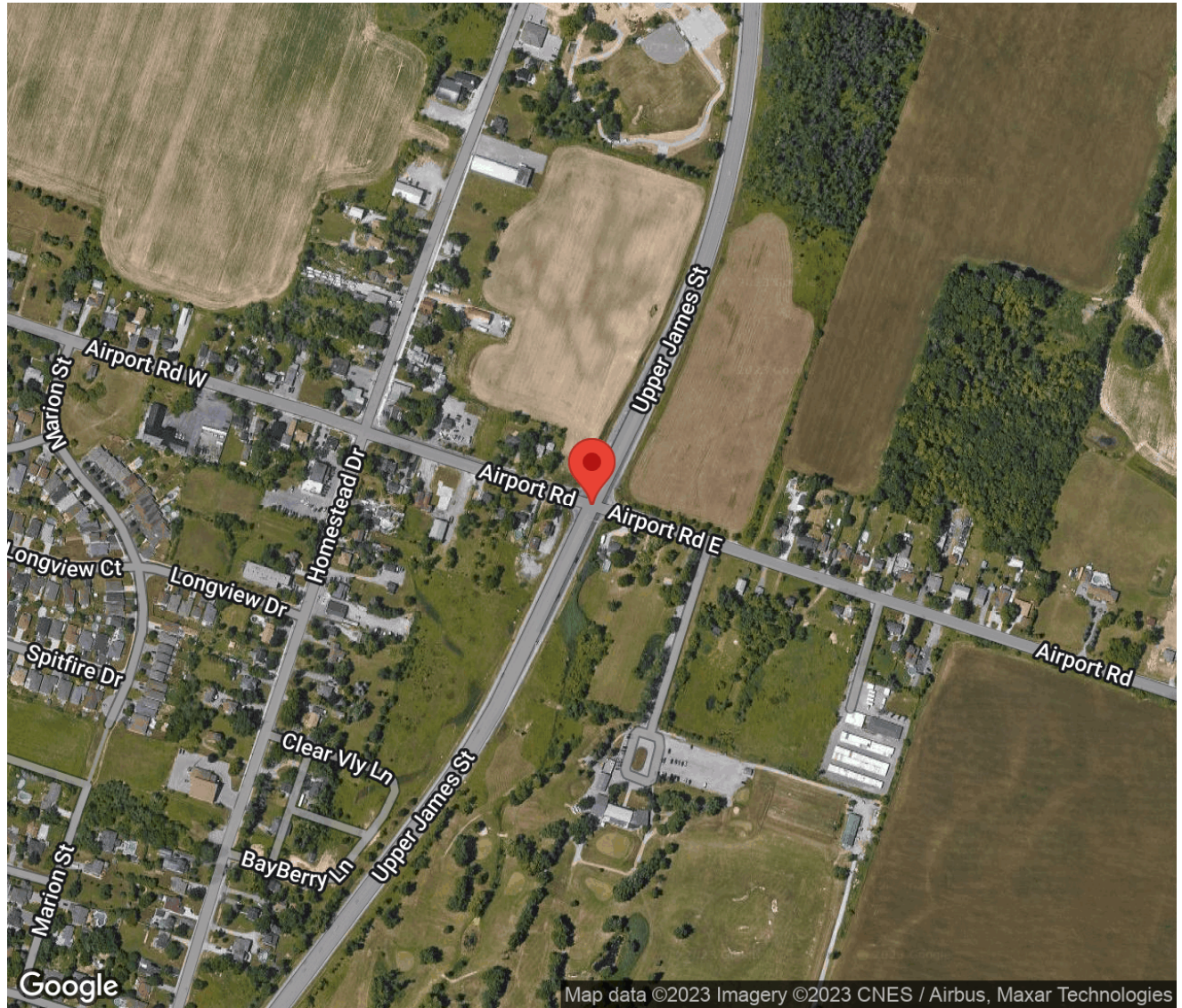
Project #23-124 - CGH Transportation

Intersection Count Report

Intersection: Upper James St & Airport Rd
Municipality: Hamilton
Count Date: Tuesday, May 09, 2023
Site Code: 2312400006
Count Categories: Cars, Trucks, Bicycles, Pedestrians
Count Period: 07:00-10:00, 15:00-18:00
Weather: Clear
Comments:

Traffic Count Map

Intersection:	Upper James St & Airport Rd
Site Code:	2312400006
Municipality:	Hamilton
Count Date:	May 09, 2023



Traffic Count Summary

Intersection: Upper James St & Airport Rd
Site Code: 2312400006
Municipality: Hamilton
Count Date: May 09, 2023

Upper James St - Traffic Summary

Hour	North Approach Totals						South Approach Totals						Total
	Includes Cars, Trucks, Bicycles						Includes Cars, Trucks, Bicycles						
	Left	Thru	Right	U-Turn	Total	Peds	Left	Thru	Right	U-Turn	Total	Peds	
07:00 - 08:00	29	386	36	0	451	0	39	729	67	0	835	0	1286
08:00 - 09:00	24	343	50	0	417	0	37	701	63	0	801	0	1218
09:00 - 10:00	43	327	47	0	417	0	33	489	47	0	569	0	986
BREAK													
15:00 - 16:00	62	678	53	0	793	0	36	514	59	0	609	3	1402
16:00 - 17:00	54	801	44	0	899	0	47	607	88	0	742	0	1641
17:00 - 18:00	77	743	56	0	876	0	52	647	66	0	765	5	1641
GRAND TOTAL	289	3278	286	0	3853	0	244	3687	390	0	4321	8	8174

Traffic Count Summary

Intersection: Upper James St & Airport Rd
 Site Code: 2312400006
 Municipality: Hamilton
 Count Date: May 09, 2023

Airport Rd - Traffic Summary

Hour	East Approach Totals						West Approach Totals						Total
	Includes Cars, Trucks, Bicycles						Includes Cars, Trucks, Bicycles						
	Left	Thru	Right	U-Turn	Total	Peds	Left	Thru	Right	U-Turn	Total	Peds	
07:00 - 08:00	35	106	71	0	212	0	189	96	8	0	293	0	505
08:00 - 09:00	51	89	59	0	199	0	226	79	7	0	312	0	511
09:00 - 10:00	36	88	39	0	163	0	171	69	9	0	249	0	412
BREAK													
15:00 - 16:00	66	114	40	0	220	0	216	119	31	0	366	0	586
16:00 - 17:00	83	131	46	0	260	0	235	183	34	0	452	0	712
17:00 - 18:00	82	153	61	0	296	0	232	176	16	0	424	0	720
GRAND TOTAL	353	681	316	0	1350	0	1269	722	105	0	2096	0	3446



Ontario Traffic Inc.
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Traffic Count Data

Intersection: Upper James St & Airport Rd
Site Code: 2312400006
Municipality: Hamilton
Count Date: May 09, 2023

North Approach - Upper James St

Start Time	Cars				Total	Trucks				Total	Bicycles				Total	Total Peds
	←	↑	→	↻		←	↑	→	↻		←	↑	→	↻		
07:00	4	83	9	0	96	1	10	2	0	13	0	0	0	0	0	0
07:15	6	85	12	0	103	0	8	1	0	9	0	0	0	0	0	0
07:30	10	117	2	0	129	0	4	2	0	6	0	0	0	0	0	0
07:45	7	73	6	0	86	1	6	2	0	9	0	0	0	0	0	0
08:00	9	79	9	0	97	0	7	2	0	9	0	0	0	0	0	0
08:15	4	82	6	0	92	0	10	2	0	12	0	0	0	0	0	0
08:30	5	67	14	0	86	0	14	4	0	18	0	0	0	0	0	0
08:45	6	70	9	0	85	0	14	4	0	18	0	0	0	0	0	0
09:00	4	68	15	0	87	0	10	2	0	12	0	0	0	0	0	0
09:15	9	86	12	0	107	0	8	1	0	9	0	0	0	0	0	0
09:30	15	75	8	0	98	0	6	3	0	9	0	0	0	0	0	0
09:45	15	62	4	0	81	0	12	2	0	14	0	0	0	0	0	0
SUBTOTAL	94	947	106	0	1147	2	109	27	0	138	0	0	0	0	0	0



Ontario Traffic Inc.
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Traffic Count Data

Intersection: Upper James St & Airport Rd
Site Code: 2312400006
Municipality: Hamilton
Count Date: May 09, 2023

North Approach - Upper James St

Start Time	Cars				Trucks				Bicycles				Total Peds
	↵	↑	↶	Total	↵	↑	↶	Total	↵	↑	↶	Total	
15:00	13	130	14	0 157	0	11	3	0 14	0	0	0	0 0	0
15:15	14	173	9	0 196	0	8	1	0 9	0	0	0	0 0	0
15:30	18	165	10	0 193	0	21	1	0 22	0	0	0	0 0	0
15:45	17	160	13	0 190	0	10	2	0 12	0	0	0	0 0	0
16:00	16	178	9	0 203	1	8	2	0 11	0	0	0	0 0	0
16:15	12	198	9	0 219	0	15	2	0 17	0	0	0	0 0	0
16:30	17	197	7	0 221	0	7	2	0 9	0	0	0	0 0	0
16:45	8	192	11	0 211	0	6	2	0 8	0	0	0	0 0	0
17:00	19	197	7	0 223	2	1	2	0 5	0	0	0	0 0	0
17:15	29	203	19	0 251	0	11	2	0 13	0	0	0	0 0	0
17:30	12	191	8	0 211	2	6	1	0 9	0	0	0	0 0	0
17:45	13	128	13	0 154	0	6	4	0 10	0	0	0	0 0	0
SUBTOTAL	188	2112	129	0 2429	5	110	24	0 139	0	0	0	0 0	0
GRAND TOTAL	282	3059	235	0 3576	7	219	51	0 277	0	0	0	0 0	0



Ontario Traffic Inc.
Traffic Monitoring • Services & Products

Traffic Count Data

Intersection: Upper James St & Airport Rd
Site Code: 2312400006
Municipality: Hamilton
Count Date: May 09, 2023

South Approach - Upper James St

Start Time	Cars				Total	Trucks				Total	Bicycles				Total	Total Peds
	←	↑	→	↻		←	↑	→	↻		←	↑	→	↻		
07:00	6	135	9	0	150	0	12	0	0	12	0	0	0	0	0	0
07:15	14	177	14	0	205	0	5	0	0	5	0	0	0	0	0	0
07:30	8	191	22	0	221	1	5	0	0	6	0	0	0	0	0	0
07:45	10	199	22	0	231	0	5	0	0	5	0	0	0	0	0	0
08:00	9	150	13	0	172	0	9	1	0	10	0	0	0	0	0	0
08:15	9	175	14	0	198	1	19	0	0	20	0	0	0	0	0	0
08:30	8	157	20	0	185	0	12	0	0	12	0	0	0	0	0	0
08:45	9	152	13	0	174	1	27	2	0	30	0	0	0	0	0	0
09:00	10	126	7	0	143	0	7	1	0	8	0	0	0	0	0	0
09:15	9	113	17	0	139	0	8	0	0	8	0	0	0	0	0	0
09:30	4	105	10	0	119	1	9	1	0	11	0	0	0	0	0	0
09:45	9	109	10	0	128	0	12	1	0	13	0	0	0	0	0	0
SUBTOTAL	105	1789	171	0	2065	4	130	6	0	140	0	0	0	0	0	0



Ontario Traffic Inc.
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Traffic Count Data

Intersection: Upper James St & Airport Rd
Site Code: 2312400006
Municipality: Hamilton
Count Date: May 09, 2023

South Approach - Upper James St

Start Time	Cars				Total	Trucks				Total	Bicycles				Total	Total Peds
	←	↑	→	↻		←	↑	→	↻		←	↑	→	↻		
15:00	10	89	11	0	110	2	9	1	0	12	0	0	0	0	0	1
15:15	9	138	11	0	158	0	9	0	0	9	0	0	0	0	0	2
15:30	8	111	16	0	135	1	7	0	0	8	0	0	0	0	0	0
15:45	6	139	20	0	165	0	12	0	0	12	0	0	0	0	0	0
16:00	14	133	23	0	170	0	12	2	0	14	0	0	0	0	0	0
16:15	17	124	22	0	163	1	7	1	0	9	0	0	0	0	0	0
16:30	8	152	28	0	188	0	7	1	0	8	0	0	0	0	0	0
16:45	7	159	9	0	175	0	13	2	0	15	0	0	0	0	0	0
17:00	15	149	16	0	180	0	14	0	0	14	0	0	0	0	0	0
17:15	11	147	15	0	173	1	8	0	0	9	0	1	0	0	1	5
17:30	11	171	20	0	202	0	12	1	0	13	0	0	0	0	0	0
17:45	14	141	13	0	168	0	4	1	0	5	0	0	0	0	0	0
SUBTOTAL	130	1653	204	0	1987	5	114	9	0	128	0	1	0	0	1	8
GRAND TOTAL	235	3442	375	0	4052	9	244	15	0	268	0	1	0	0	1	8



Ontario Traffic Inc.
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Traffic Count Data

Intersection: Upper James St & Airport Rd
Site Code: 2312400006
Municipality: Hamilton
Count Date: May 09, 2023

East Approach - Airport Rd

Start Time	Cars					Trucks					Bicycles					Total Peds
	←	↑	→	↻	Total	←	↑	→	↻	Total	←	↑	→	↻	Total	
07:00	8	11	10	0	29	0	1	2	0	3	0	0	0	0	0	0
07:15	8	26	9	0	43	1	1	0	0	2	0	0	0	0	0	0
07:30	8	24	17	0	49	1	3	3	0	7	0	0	0	0	0	0
07:45	8	38	29	0	75	1	2	1	0	4	0	0	0	0	0	0
08:00	11	19	15	0	45	2	0	0	0	2	0	0	0	0	0	0
08:15	11	23	15	0	49	1	0	0	0	1	0	0	0	0	0	0
08:30	11	17	17	0	45	3	0	0	0	3	0	0	0	0	0	0
08:45	12	28	12	0	52	0	2	0	0	2	0	0	0	0	0	0
09:00	12	25	12	0	49	0	1	1	0	2	0	0	0	0	0	0
09:15	9	26	12	0	47	0	0	0	0	0	0	0	0	0	0	0
09:30	6	18	10	0	34	0	2	1	0	3	0	0	0	0	0	0
09:45	8	16	3	0	27	1	0	0	0	1	0	0	0	0	0	0
SUBTOTAL	112	271	161	0	544	10	12	8	0	30	0	0	0	0	0	0



Ontario Traffic Inc.
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Traffic Count Data

Intersection: Upper James St & Airport Rd

Site Code: 2312400006

Municipality: Hamilton

Count Date: May 09, 2023

East Approach - Airport Rd

Start Time	Cars				Total	Trucks				Total	Bicycles				Total	Total Peds
	←	↑	→	↻		←	↑	→	↻		←	↑	→	↻		
15:00	11	22	11	0	44	1	1	0	0	2	0	0	0	0	0	0
15:15	23	30	9	0	62	1	1	0	0	2	0	0	0	0	0	0
15:30	21	32	11	0	64	0	2	0	0	2	0	0	0	0	0	0
15:45	9	26	9	0	44	0	0	0	0	0	0	0	0	0	0	0
16:00	19	29	11	0	59	0	1	0	0	1	0	0	0	0	0	0
16:15	24	30	9	0	63	2	0	0	0	2	0	0	0	0	0	0
16:30	20	28	16	0	64	1	0	1	0	2	0	0	0	0	0	0
16:45	17	41	9	0	67	0	2	0	0	2	0	0	0	0	0	0
17:00	22	41	16	0	79	0	0	0	0	0	0	0	0	0	0	0
17:15	27	38	14	0	79	0	0	0	0	0	0	0	0	0	0	0
17:30	19	38	14	0	71	0	0	0	0	0	0	0	0	0	0	0
17:45	14	36	16	0	66	0	0	1	0	1	0	0	0	0	0	0
SUBTOTAL	226	391	145	0	762	5	7	2	0	14	0	0	0	0	0	0
GRAND TOTAL	338	662	306	0	1306	15	19	10	0	44	0	0	0	0	0	0



Ontario Traffic Inc.
Traffic Monitoring • Services & Products

Traffic Count Data

Intersection: Upper James St & Airport Rd
Site Code: 2312400006
Municipality: Hamilton
Count Date: May 09, 2023

West Approach - Airport Rd

Start Time	Cars				Total	Trucks				Total	Bicycles				Total	Total Peds
	←	↑	→	↻		←	↑	→	↻		←	↑	→	↻		
07:00	32	12	1	0	45	4	1	0	0	5	0	0	0	0	0	0
07:15	40	21	3	0	64	5	0	0	0	5	0	0	0	0	0	0
07:30	48	33	1	0	82	3	0	0	0	3	0	0	0	0	0	0
07:45	54	28	3	0	85	3	1	0	0	4	0	0	0	0	0	0
08:00	46	15	3	0	64	3	2	0	0	5	0	0	0	0	0	0
08:15	51	16	1	0	68	3	3	0	0	6	0	0	0	0	0	0
08:30	50	20	2	0	72	5	0	0	0	5	0	0	0	0	0	0
08:45	62	23	1	0	86	6	0	0	0	6	0	0	0	0	0	0
09:00	51	20	2	0	73	3	4	0	0	7	0	0	0	0	0	0
09:15	33	12	0	0	45	6	0	0	0	6	0	0	0	0	0	0
09:30	29	18	1	0	48	5	0	0	0	5	0	0	0	0	0	0
09:45	38	15	6	0	59	6	0	0	0	6	0	0	0	0	0	0
SUBTOTAL	534	233	24	0	791	52	11	0	0	63	0	0	0	0	0	0



Ontario Traffic Inc.
Traffic Monitoring • Services & Products

Traffic Count Data

Intersection: Upper James St & Airport Rd
Site Code: 2312400006
Municipality: Hamilton
Count Date: May 09, 2023

West Approach - Airport Rd

Start Time	Cars				Total	Trucks				Total	Bicycles				Total	Total Peds
	←	↑	→	↻		←	↑	→	↻		←	↑	→	↻		
15:00	50	22	8	0	80	4	1	0	0	5	0	0	0	0	0	0
15:15	44	25	9	0	78	4	0	0	0	4	0	0	0	0	0	0
15:30	53	32	9	0	94	3	1	0	0	4	0	0	0	0	0	0
15:45	55	37	5	0	97	3	1	0	0	4	0	0	0	0	0	0
16:00	57	45	10	0	112	4	0	0	0	4	0	1	0	0	1	0
16:15	53	35	10	0	98	3	1	0	0	4	0	0	0	0	0	0
16:30	57	48	8	0	113	5	0	0	0	5	0	0	0	0	0	0
16:45	55	53	6	0	114	1	0	0	0	1	0	0	0	0	0	0
17:00	51	40	3	0	94	2	0	0	0	2	0	0	0	0	0	0
17:15	49	48	5	0	102	3	0	0	0	3	0	0	0	0	0	0
17:30	66	53	4	0	123	1	1	0	0	2	0	0	0	0	0	0
17:45	57	33	4	0	94	3	1	0	0	4	0	0	0	0	0	0
SUBTOTAL	647	471	81	0	1199	36	6	0	0	42	0	1	0	0	1	0
GRAND TOTAL	1181	704	105	0	1990	88	17	0	0	105	0	1	0	0	1	0

Peak Hour Diagram

Specified Period

From: 07:00:00
To: 10:00:00

One Hour Peak

From: 07:30:00
To: 08:30:00

Intersection: Upper James St & Airport Rd
Site Code: 2312400006
Count Date: May 09, 2023

Weather conditions: Clear

**** Signalized Intersection ****

Major Road: Upper James St runs N/S

North Approach

	Out	In	Total
	404	990	1394
	36	54	90
	0	0	0
Totals	440	1044	1484

Upper James St

	0	0	0	0
	8	27	1	0
	23	351	30	0
Totals	31	378	31	0

East Approach

	Out	In	Total
	218	193	411
	14	8	22
	0	0	0
Totals	232	201	433

Airport Rd

				Totals
	0	0	0	0
	0	12	199	211
	0	6	92	98
	0	0	8	8

Peds: 0

Peds: 0



Peds: 0

Peds: 0

Airport Rd

Totals			
	0	0	0
	80	76	4
	109	104	5
	43	38	5

West Approach

	Out	In	Total
	299	163	462
	18	15	33
	0	0	0
Totals	317	178	495

				
Totals	38	753	72	0
	36	715	71	0
	2	38	1	0
	0	0	0	0

Upper James St

South Approach

	Out	In	Total
	822	397	1219
	41	32	73
	0	0	0
Totals	863	429	1292

 - Cars

 - Trucks

 - Bicycles

Comments



Ontario Traffic Inc.
Traffic Monitoring • Services & Products

Peak Hour Summary

Intersection: Upper James St & Airport Rd
Site Code: 2312400006
Count Date: May 09, 2023
Period: 07:00 - 10:00

Peak Hour Data (07:30 - 08:30)

	North Approach Upper James St						South Approach Upper James St						East Approach Airport Rd						West Approach Airport Rd						Total Vehicles	
Start Time					Peds	Total					Peds	Total					Peds	Total					Peds	Total		
07:30	10	121	4	0	0	135	9	196	22	0	0	227	9	27	20	0	0	56	51	33	1	0	0	85	503	
07:45	8	79	8	0	0	95	10	204	22	0	0	236	9	40	30	0	0	79	57	29	3	0	0	89	499	
08:00	9	86	11	0	0	106	9	159	14	0	0	182	13	19	15	0	0	47	49	17	3	0	0	69	404	
08:15	4	92	8	0	0	104	10	194	14	0	0	218	12	23	15	0	0	50	54	19	1	0	0	74	446	
Grand Total	31	378	31	0	0	440	38	753	72	0	0	863	43	109	80	0	0	232	211	98	8	0	0	317	1852	
Approach %	7	85.9	7	0	-	-	4.4	87.3	8.3	0	-	-	18.5	47	34.5	0	-	-	66.6	30.9	2.5	0	-	-	-	
Totals %	1.7	20.4	1.7	0	23.8	2.1	40.7	3.9	0	46.6	2.3	5.9	4.3	0	12.5	11.4	5.3	0.4	0	17.1	0	0	0	17.1	-	
PHF	0.78	0.78	0.7	0	0.81	0.95	0.92	0.82	0	0.91	0.83	0.68	0.67	0	0.73	0.93	0.74	0.67	0	0.89	0.92	0	0.89	0.92	-	
Cars	30	351	23	0	404	36	715	71	0	822	38	104	76	0	218	199	92	8	0	299	1743	0	0	0	1743	
% Cars	96.8	92.9	74.2	0	91.8	94.7	95	98.6	0	95.2	88.4	95.4	95	0	94	94.3	93.9	100	0	94.3	94.1	0	0	0	94.1	
Trucks	1	27	8	0	36	2	38	1	0	41	5	5	4	0	14	12	6	0	0	18	109	0	0	0	109	
% Trucks	3.2	7.1	25.8	0	8.2	5.3	5	1.4	0	4.8	11.6	4.6	5	0	6	5.7	6.1	0	0	5.7	5.9	0	0	0	5.9	
Bicycles	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
% Bicycles	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Peds					0	-				0	-	-				0	-	-			0	-	0	-	0	0
% Peds					0	-				0	-	-				0	-	-			0	-	0	-	0	0

Peak Hour Diagram

Specified Period

From: 15:00:00
To: 18:00:00

One Hour Peak

From: 16:45:00
To: 17:45:00

Intersection: Upper James St & Airport Rd
Site Code: 2312400006
Count Date: May 09, 2023

Weather conditions: Clear

**** Signalized Intersection ****

Major Road: Upper James St runs N/S

North Approach

	Out	In	Total
	896	900	1796
	35	54	89
	0	1	1
Totals	931	955	1886

Upper James St

	0	0	0	0
	7	24	4	0
	45	783	68	0
Totals	52	807	72	0

East Approach

	Out	In	Total
	296	322	618
	2	8	10
	0	0	0
Totals	298	330	628

Airport Rd

				Totals
	0	0	0	0
	0	7	221	228
	0	1	194	195
	0	0	18	18

Peds: 0

Peds: 0



Peds: 0

Peds: 5

Airport Rd

Totals			
0	0	0	0
53	53	0	0
160	158	2	0
85	85	0	0

West Approach

	Out	In	Total
	433	247	680
	8	10	18
	0	0	0
Totals	441	257	698

Totals				
	44	626	60	0
	1	47	3	0
	0	1	0	0

Upper James St

South Approach

	Out	In	Total
	730	886	1616
	51	24	75
	1	0	1
Totals	782	910	1692

 - Cars

 - Trucks

 - Bicycles

Comments



Peak Hour Summary

Upper James St & Airport Rd

2312400006

May 09, 2023

15:00 - 18:00

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

	North Approach Upper James St						South Approach Upper James St						East Approach Airport Rd						West Approach Airport Rd						Total Vehicles																																																																																																																																																																																																																																																																																																																																																										
Start Time																																																																																																																																																																																																																																																																																																																																																																																			

Appendix B

ITE Trip Generation Manual

Land Use: 150

Warehouse

Description

A warehouse is a large building primarily devoted to the storage of goods and materials but may also include office and maintenance areas. Stored goods can include raw materials, packing materials, parts, or other finished goods. A warehouse may provide long-term storage or serve as a distribution center for transferring goods between carriers (e.g., from long-haul carrier to a local delivery vehicle). A warehouse typically has loading docks to load and unload goods from trucks.

Additional Data

An additional resource which provides more information about warehouse types and definitions is available from NAIOP Research Foundation: Commercial Real Estate Terms and Definitions report from April 2024. <https://www.naiop.org/globalassets/research-and-publications/report/terms-and-definitions-/naiop-2024-terms-and-definitions.pdf>

The sites were surveyed in the 1990s, the 2000s, the 2010s, and the 2020s in California, Connecticut, Florida, Minnesota, New Jersey, Ohio, Oregon, Pennsylvania, and Texas.

Source Numbers

406, 411, 443, 579, 583, 596, 598, 611, 619, 642, 752, 869, 875, 876, 914, 940, 1050, 1214, 1221, 1257, 1286

Warehouse (150)

Vehicle Trip Ends vs: 1000 Sq. Ft. GFA

On a: Weekday

Setting/Location: General Urban/Suburban

Number of Studies: 81

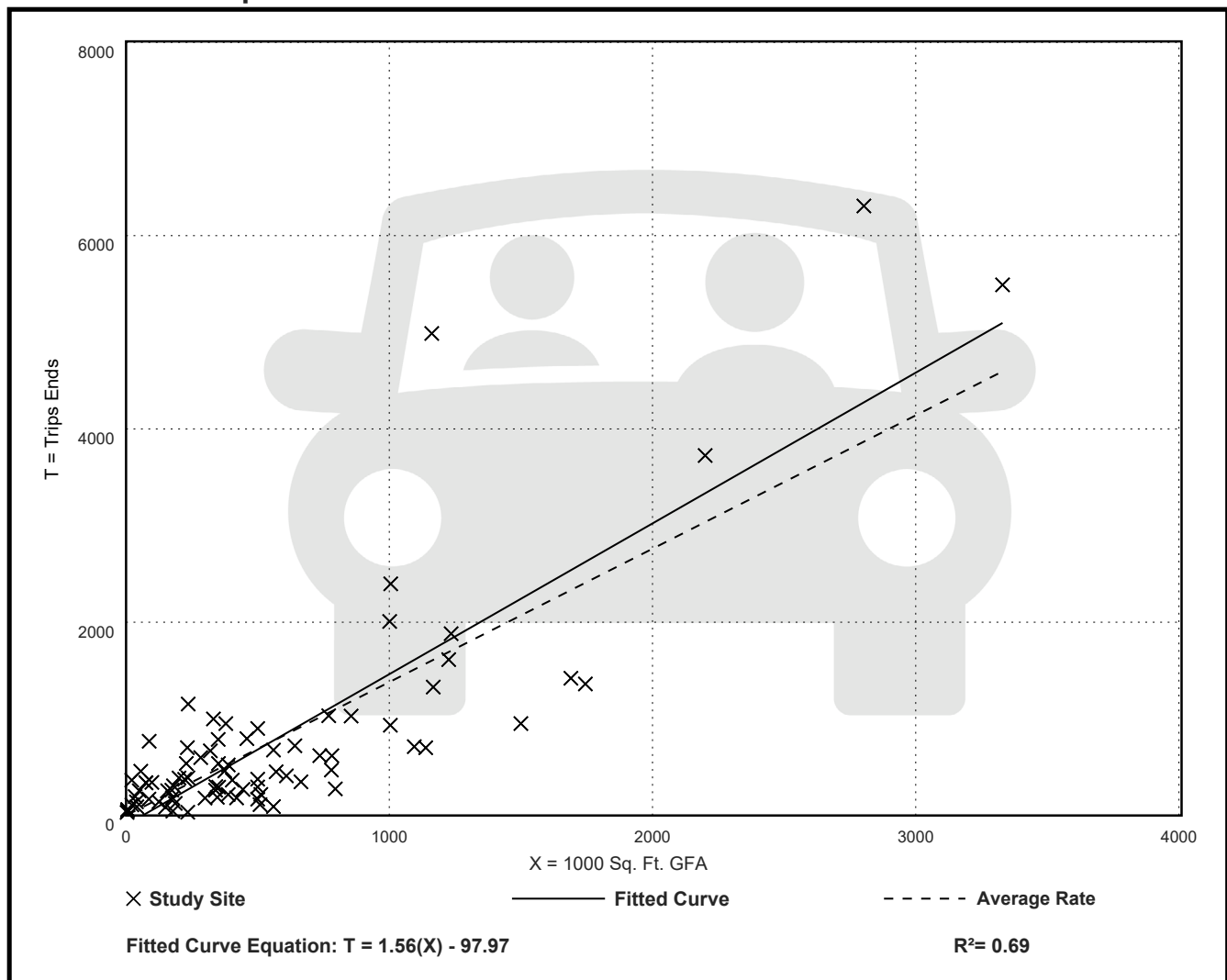
Avg. 1000 Sq. Ft. GFA: 554

Directional Distribution: 50% entering, 50% exiting

Vehicle Trip Generation per 1000 Sq. Ft. GFA

Average Rate	Range of Rates	Standard Deviation
1.38	0.15 - 16.93	1.05

Data Plot and Equation



Warehouse (150)

Vehicle Trip Ends vs: 1000 Sq. Ft. GFA

On a: Weekday,

Peak Hour of Adjacent Street Traffic,

One Hour Between 7 and 9 a.m.

Setting/Location: General Urban/Suburban

Number of Studies: 47

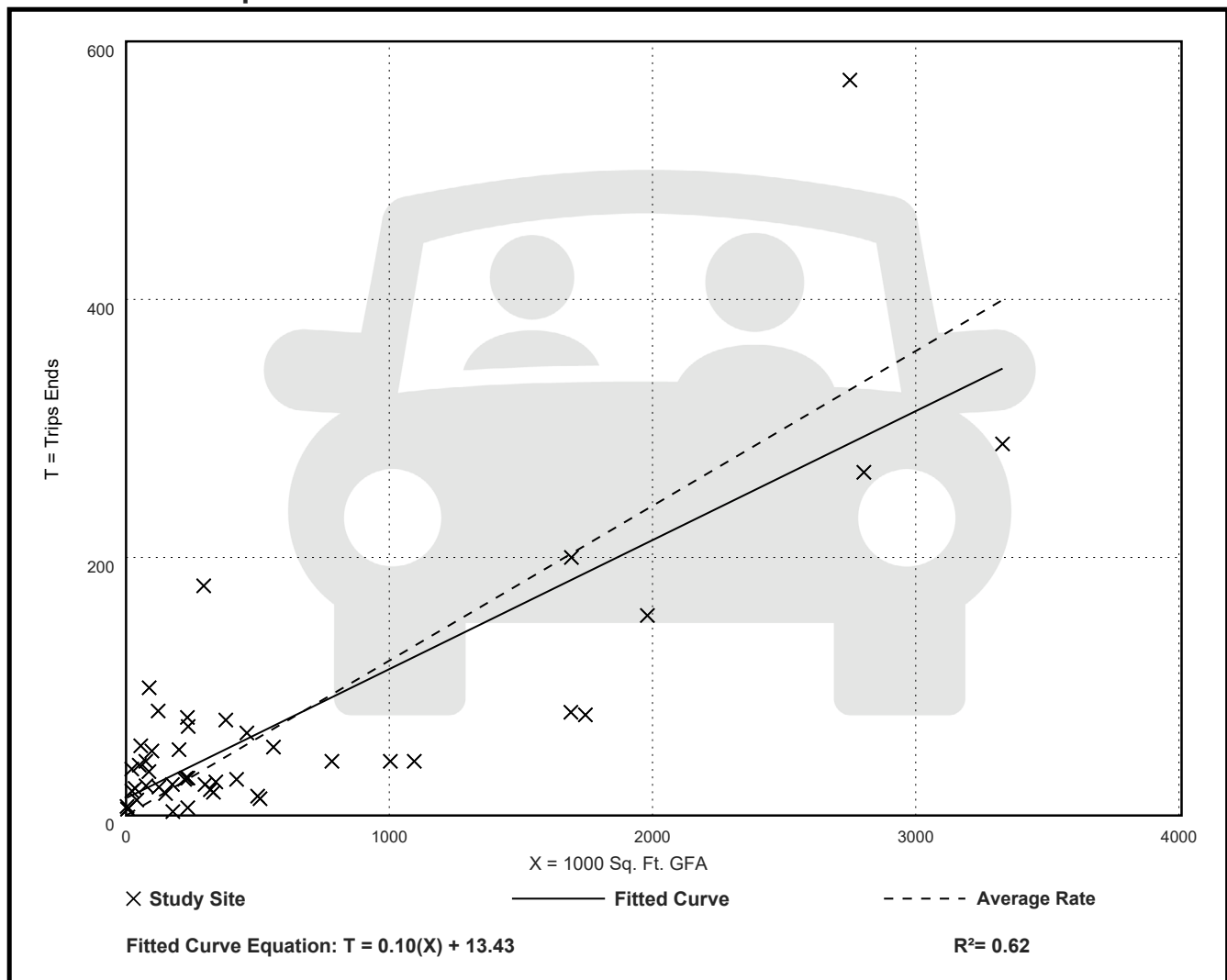
Avg. 1000 Sq. Ft. GFA: 559

Directional Distribution: 77% entering, 23% exiting

Vehicle Trip Generation per 1000 Sq. Ft. GFA

Average Rate	Range of Rates	Standard Deviation
0.12	0.02 - 1.80	0.14

Data Plot and Equation



Warehouse (150)

Vehicle Trip Ends vs: 1000 Sq. Ft. GFA

On a: Weekday,

Peak Hour of Adjacent Street Traffic,

One Hour Between 4 and 6 p.m.

Setting/Location: General Urban/Suburban

Number of Studies: 58

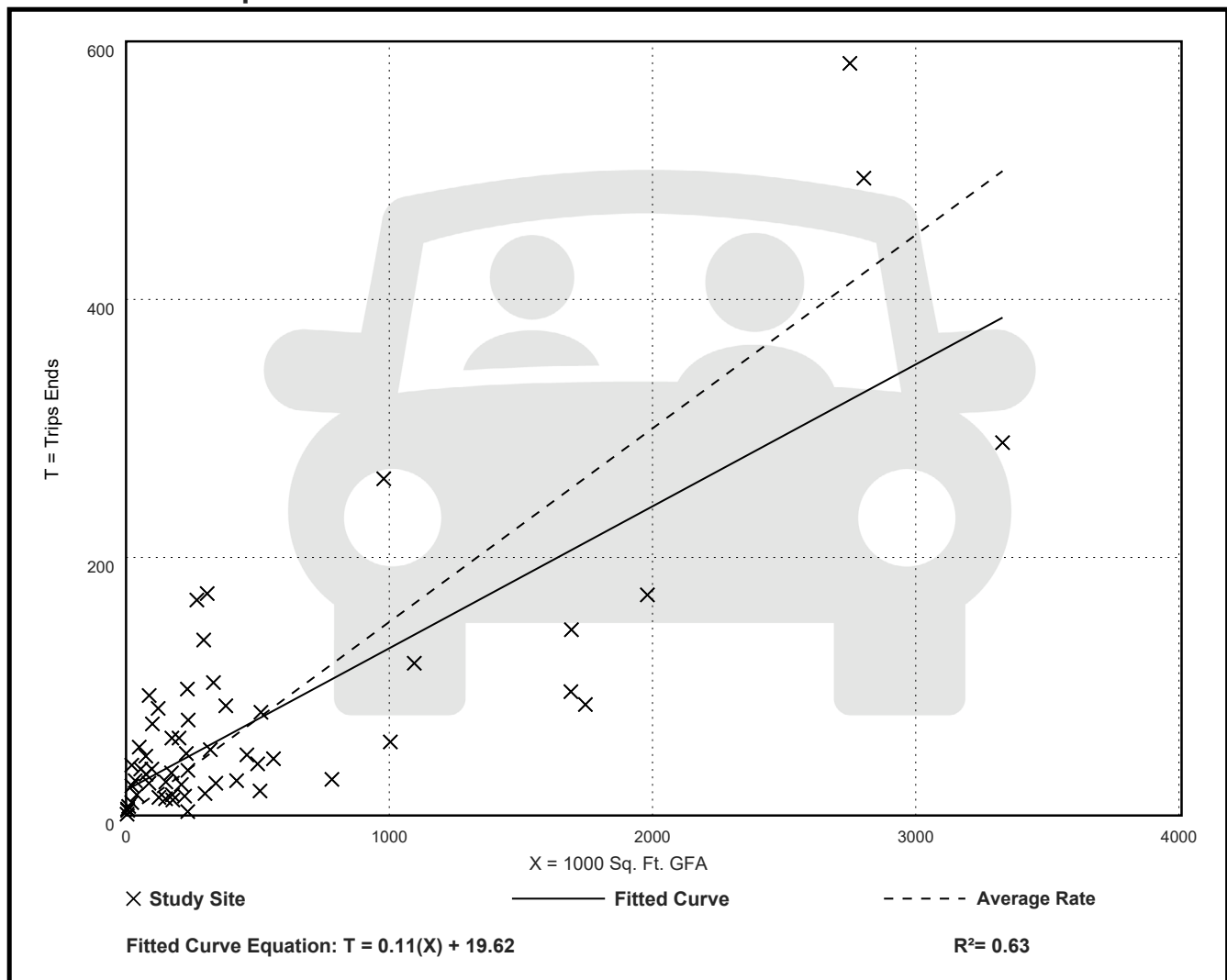
Avg. 1000 Sq. Ft. GFA: 503

Directional Distribution: 28% entering, 72% exiting

Vehicle Trip Generation per 1000 Sq. Ft. GFA

Average Rate	Range of Rates	Standard Deviation
0.15	0.01 - 1.80	0.15

Data Plot and Equation



Warehouse (150)

Vehicle Trip Ends vs: 1000 Sq. Ft. GFA

On a: Weekday,
AM Peak Hour of Generator

Setting/Location: General Urban/Suburban

Number of Studies: 62

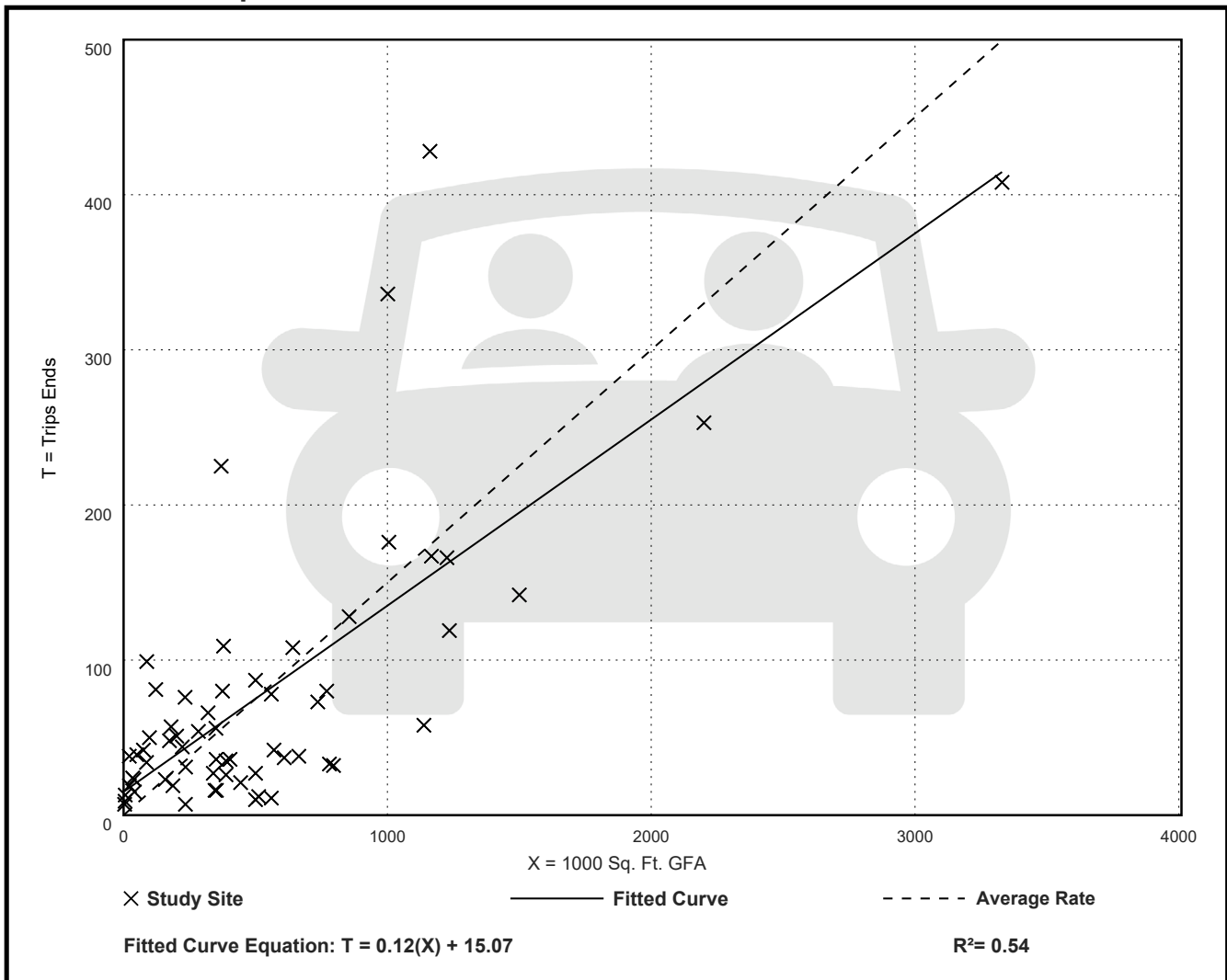
Avg. 1000 Sq. Ft. GFA: 518

Directional Distribution: 70% entering, 30% exiting

Vehicle Trip Generation per 1000 Sq. Ft. GFA

Average Rate	Range of Rates	Standard Deviation
0.15	0.02 - 2.08	0.14

Data Plot and Equation



Warehouse (150)

Vehicle Trip Ends vs: 1000 Sq. Ft. GFA

On a: Weekday,
PM Peak Hour of Generator

Setting/Location: General Urban/Suburban

Number of Studies: 62

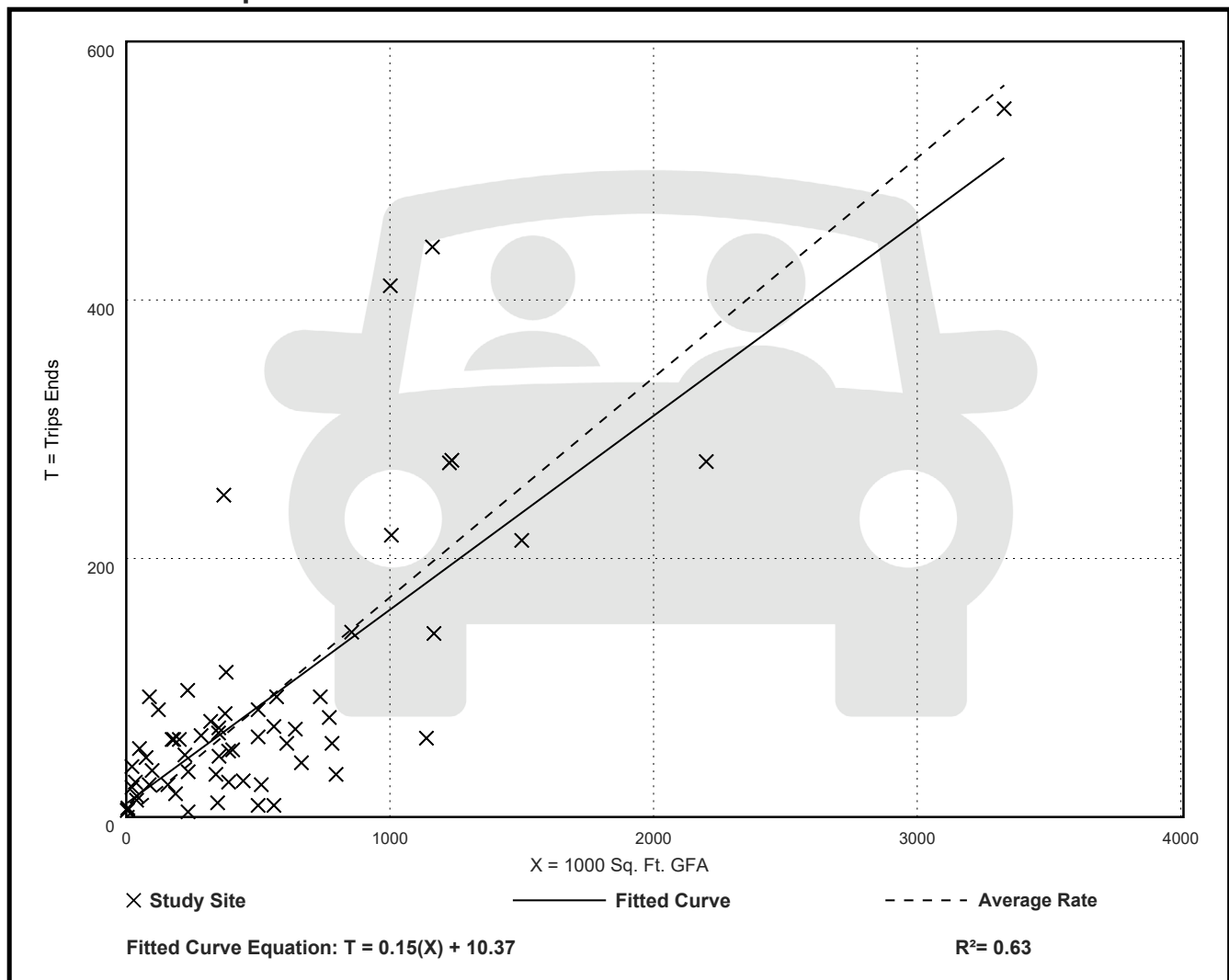
Avg. 1000 Sq. Ft. GFA: 518

Directional Distribution: 34% entering, 66% exiting

Vehicle Trip Generation per 1000 Sq. Ft. GFA

Average Rate	Range of Rates	Standard Deviation
0.17	0.02 - 1.80	0.14

Data Plot and Equation



Warehouse (150)

Vehicle Trip Ends vs: 1000 Sq. Ft. GFA

On a: Saturday

Setting/Location: General Urban/Suburban

Number of Studies: 3

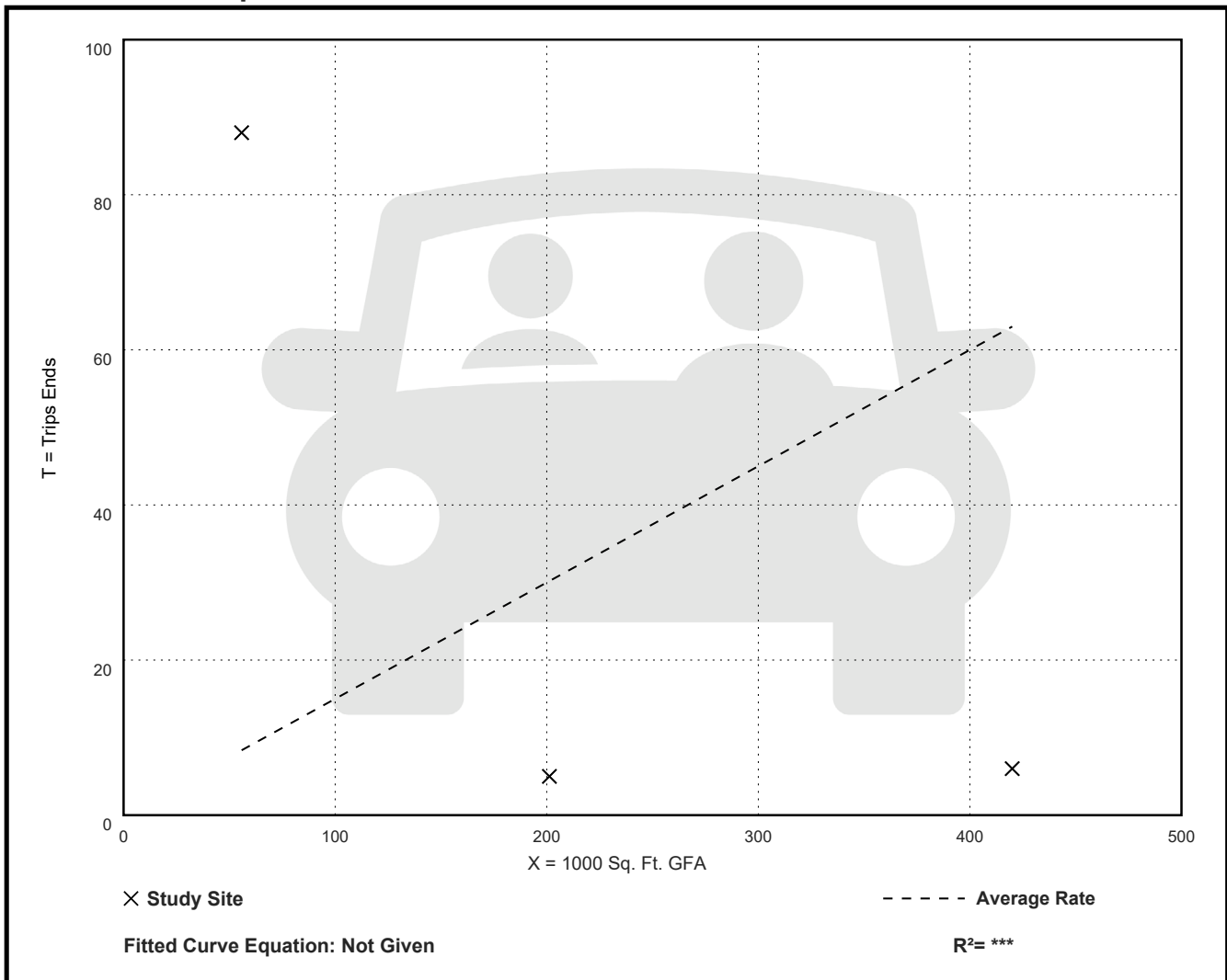
Avg. 1000 Sq. Ft. GFA: 226

Directional Distribution: 50% entering, 50% exiting

Vehicle Trip Generation per 1000 Sq. Ft. GFA

Average Rate	Range of Rates	Standard Deviation
0.15	0.01 - 1.58	0.53

Data Plot and Equation



Warehouse (150)

Vehicle Trip Ends vs: 1000 Sq. Ft. GFA

On a: Saturday, Peak Hour of Generator

Setting/Location: General Urban/Suburban

Number of Studies: 2

Avg. 1000 Sq. Ft. GFA: 129

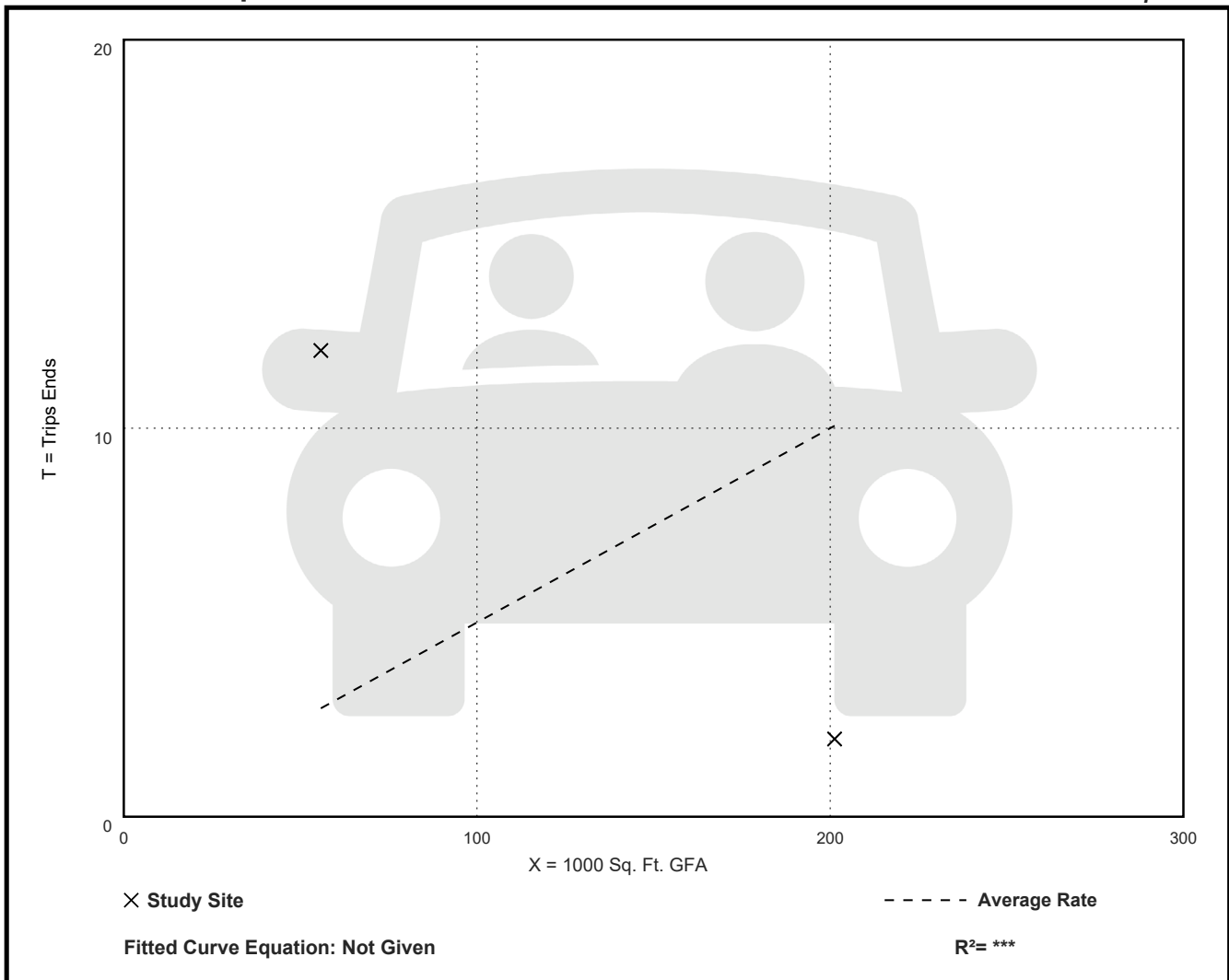
Directional Distribution: 64% entering, 36% exiting

Vehicle Trip Generation per 1000 Sq. Ft. GFA

Average Rate	Range of Rates	Standard Deviation
0.05	0.01 - 0.22	***

Data Plot and Equation

Caution – Small Sample Size



Warehouse (150)

Vehicle Trip Ends vs: 1000 Sq. Ft. GFA

On a: Sunday

Setting/Location: General Urban/Suburban

Number of Studies: 3

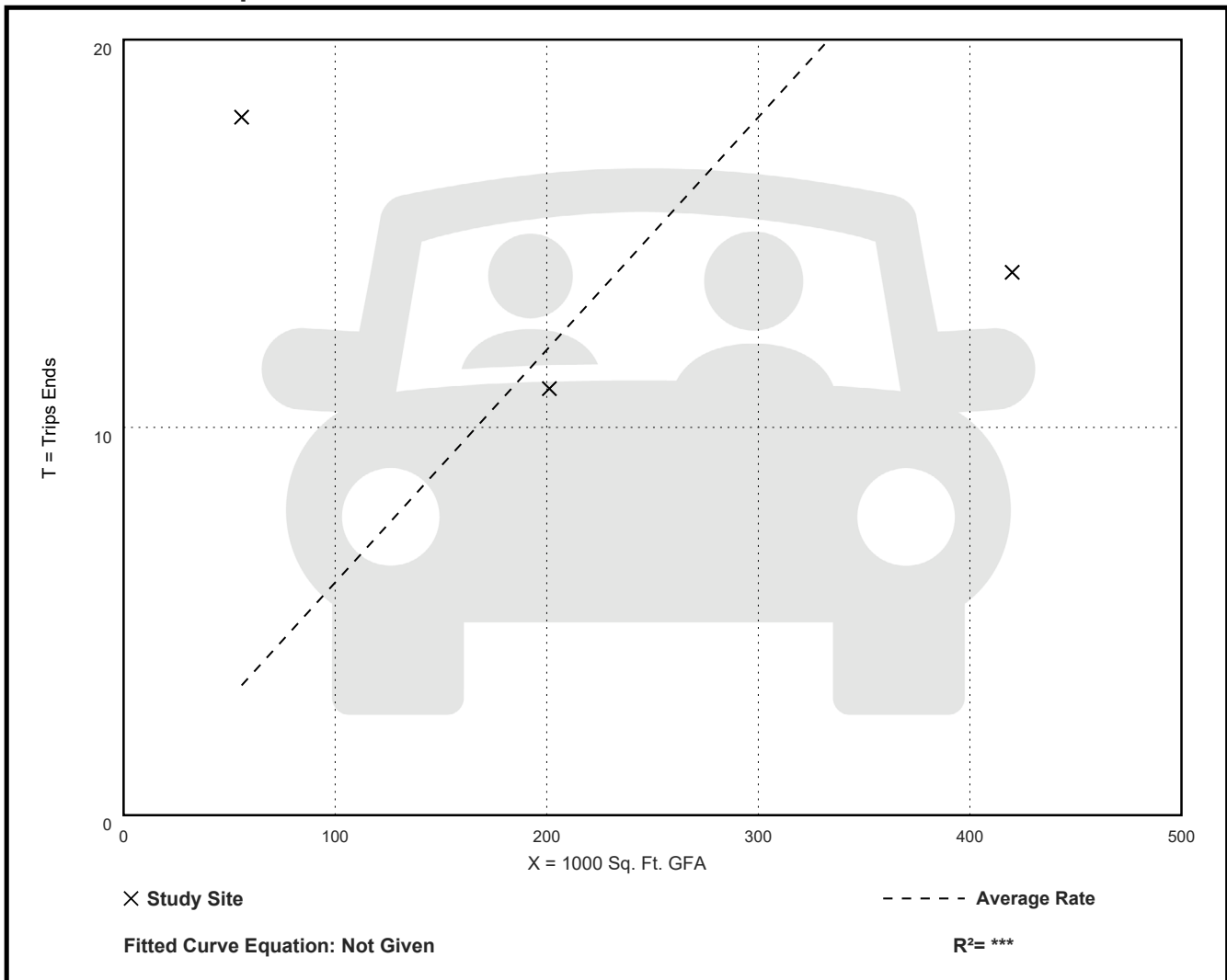
Avg. 1000 Sq. Ft. GFA: 226

Directional Distribution: 50% entering, 50% exiting

Vehicle Trip Generation per 1000 Sq. Ft. GFA

Average Rate	Range of Rates	Standard Deviation
0.06	0.03 - 0.32	0.10

Data Plot and Equation



Warehouse (150)

Vehicle Trip Ends vs: 1000 Sq. Ft. GFA

On a: Sunday, Peak Hour of Generator

Setting/Location: General Urban/Suburban

Number of Studies: 2

Avg. 1000 Sq. Ft. GFA: 129

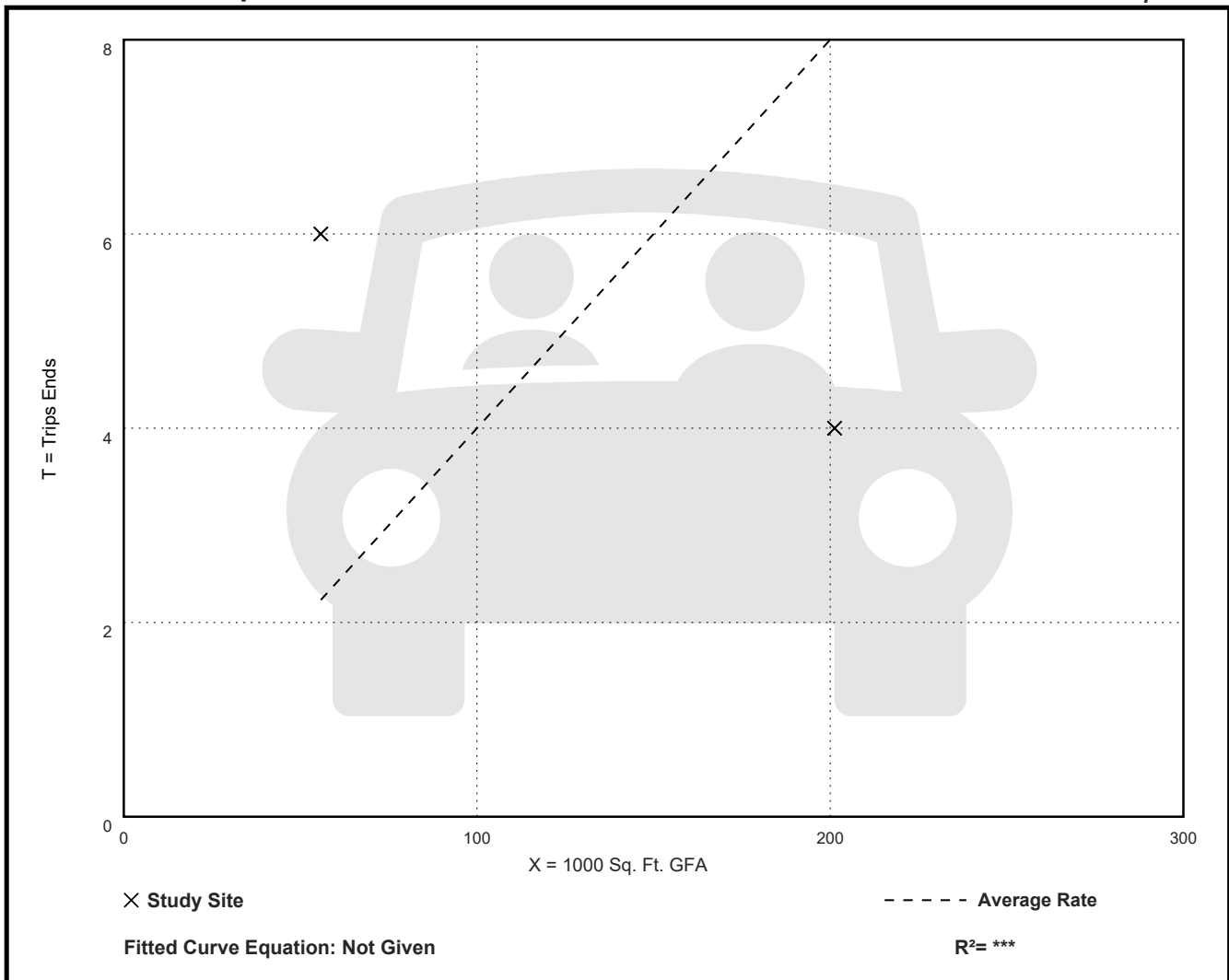
Directional Distribution: 52% entering, 48% exiting

Vehicle Trip Generation per 1000 Sq. Ft. GFA

Average Rate	Range of Rates	Standard Deviation
0.04	0.02 - 0.11	***

Data Plot and Equation

Caution – Small Sample Size



Warehouse (150)

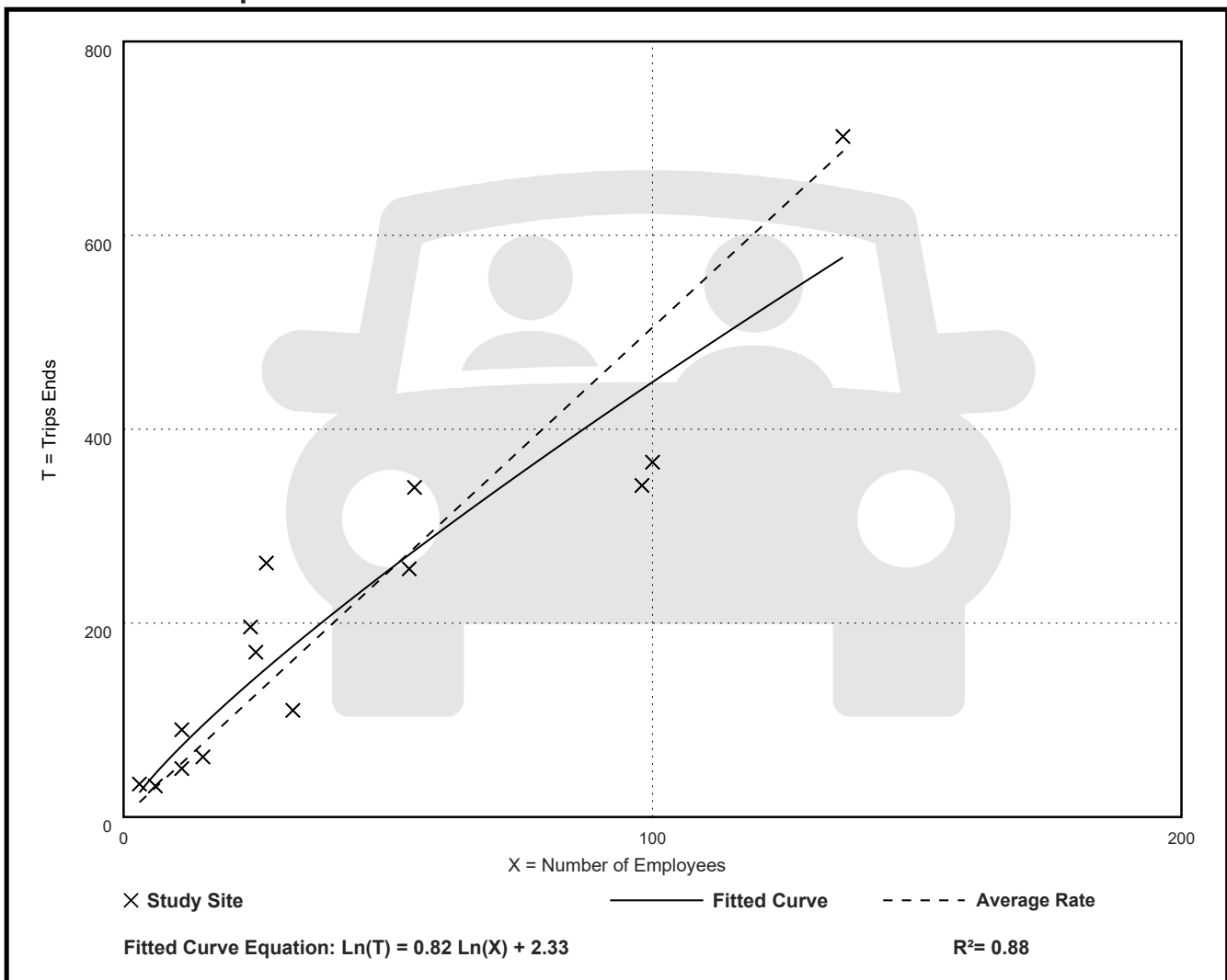
Vehicle Trip Ends vs: Employees
On a: Weekday

Setting/Location: General Urban/Suburban
Number of Studies: 14
Avg. Num. of Employees: 43
Directional Distribution: 50% entering, 50% exiting

Vehicle Trip Generation per Employee

Average Rate	Range of Rates	Standard Deviation
5.05	3.44 - 11.33	1.77

Data Plot and Equation



Warehouse (150)

Vehicle Trip Ends vs: Employees

On a: Weekday,

Peak Hour of Adjacent Street Traffic,

One Hour Between 7 and 9 a.m.

Setting/Location: General Urban/Suburban

Number of Studies: 13

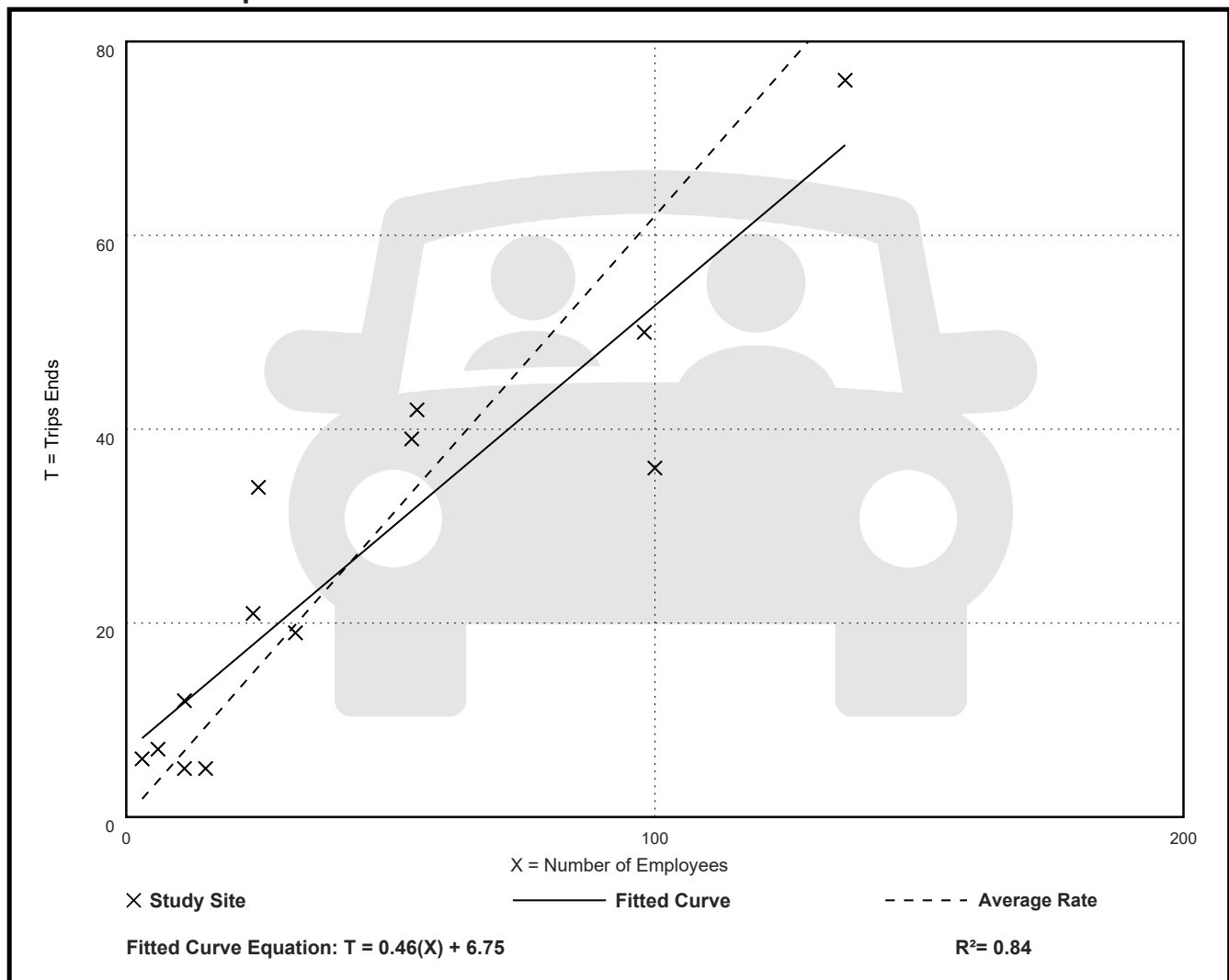
Avg. Num. of Employees: 44

Directional Distribution: 72% entering, 28% exiting

Vehicle Trip Generation per Employee

Average Rate	Range of Rates	Standard Deviation
0.62	0.33 - 2.00	0.26

Data Plot and Equation



Warehouse (150)

Vehicle Trip Ends vs: Employees

On a: Weekday,

Peak Hour of Adjacent Street Traffic,

One Hour Between 4 and 6 p.m.

Setting/Location: General Urban/Suburban

Number of Studies: 14

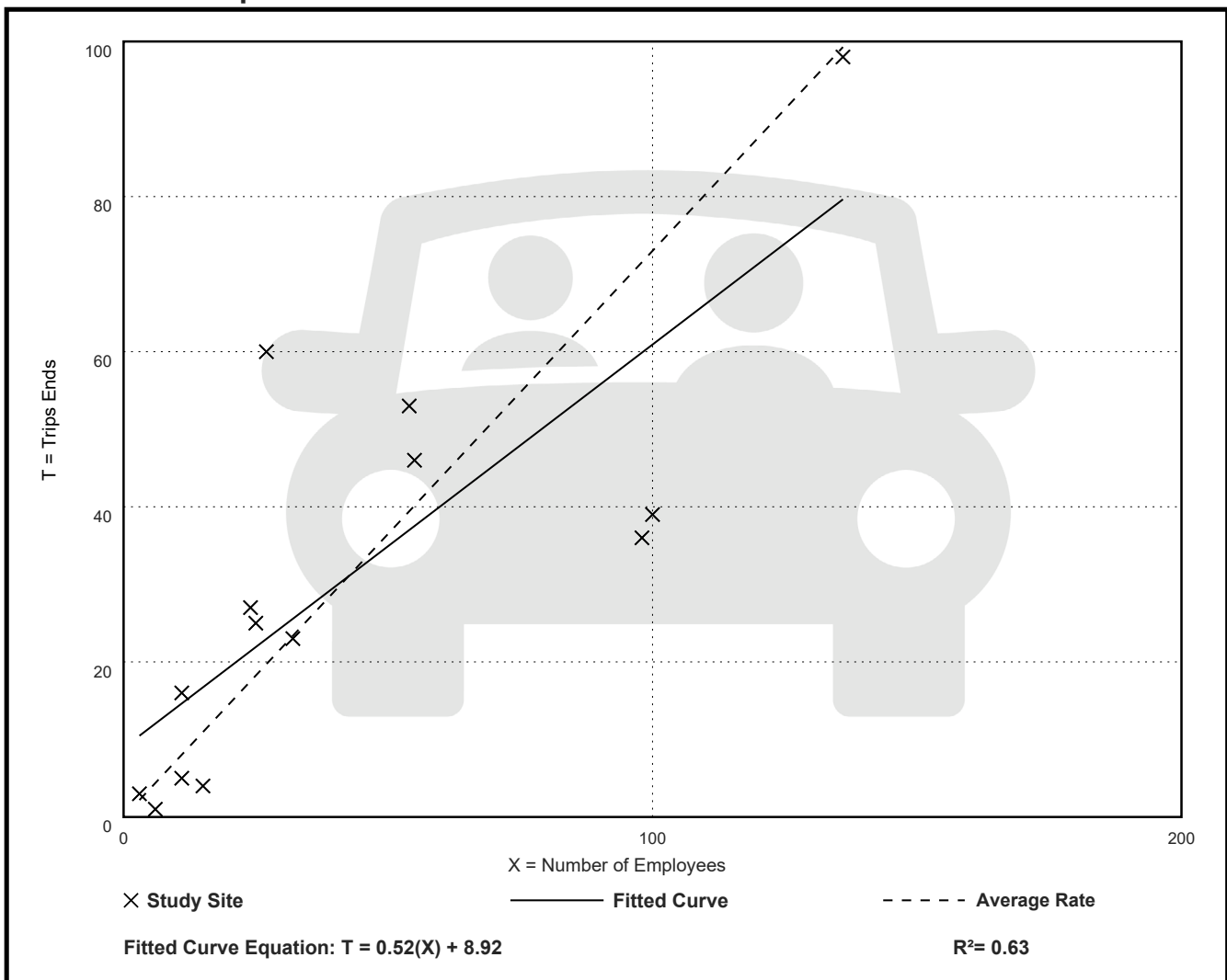
Avg. Num. of Employees: 43

Directional Distribution: 36% entering, 64% exiting

Vehicle Trip Generation per Employee

Average Rate	Range of Rates	Standard Deviation
0.73	0.17 - 2.22	0.44

Data Plot and Equation



Warehouse (150)

Vehicle Trip Ends vs: Employees

On a: Weekday,
AM Peak Hour of Generator

Setting/Location: General Urban/Suburban

Number of Studies: 14

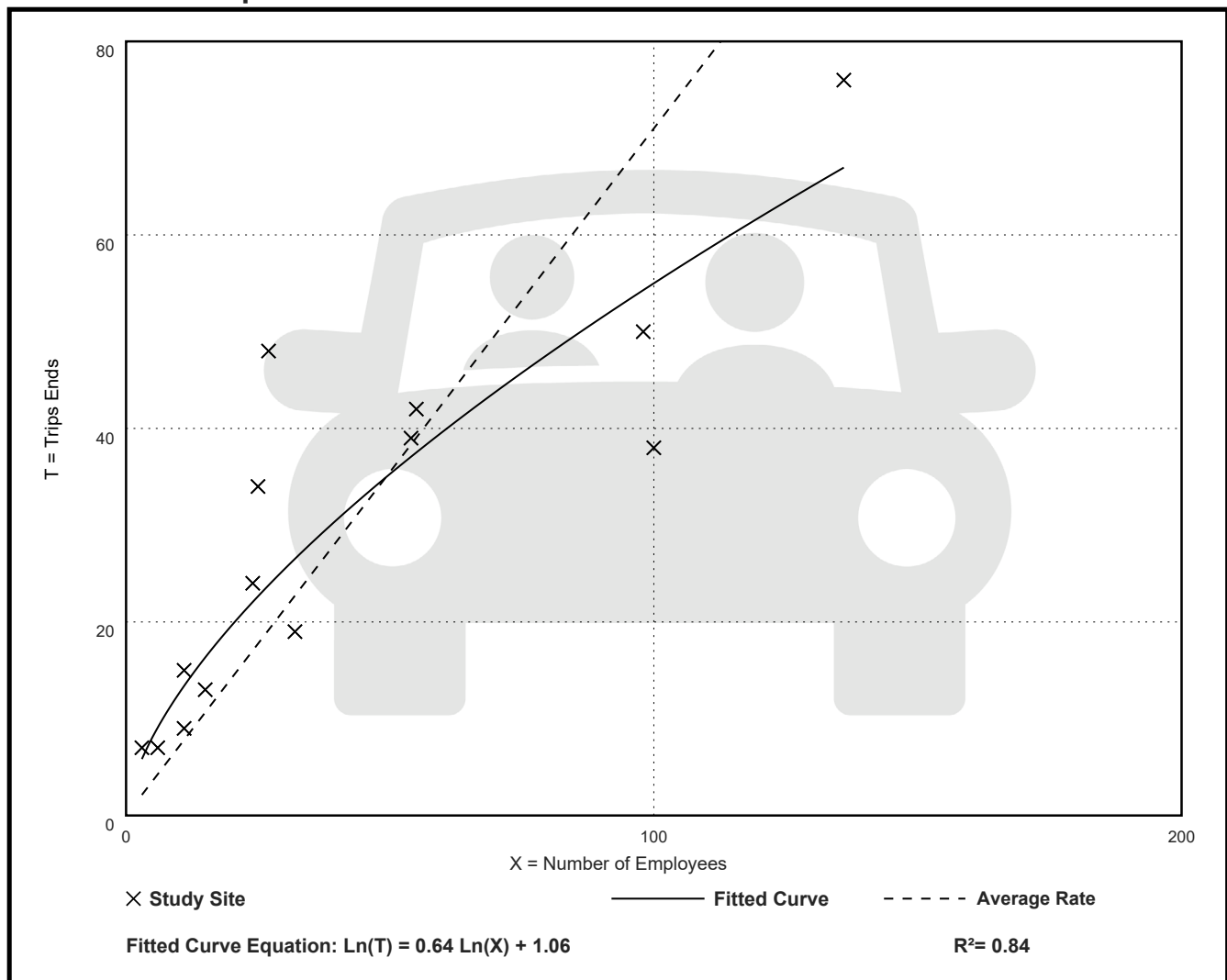
Avg. Num. of Employees: 43

Directional Distribution: 54% entering, 46% exiting

Vehicle Trip Generation per Employee

Average Rate	Range of Rates	Standard Deviation
0.71	0.38 - 2.33	0.37

Data Plot and Equation



Warehouse (150)

Vehicle Trip Ends vs: Employees

On a: Weekday,
PM Peak Hour of Generator

Setting/Location: General Urban/Suburban

Number of Studies: 14

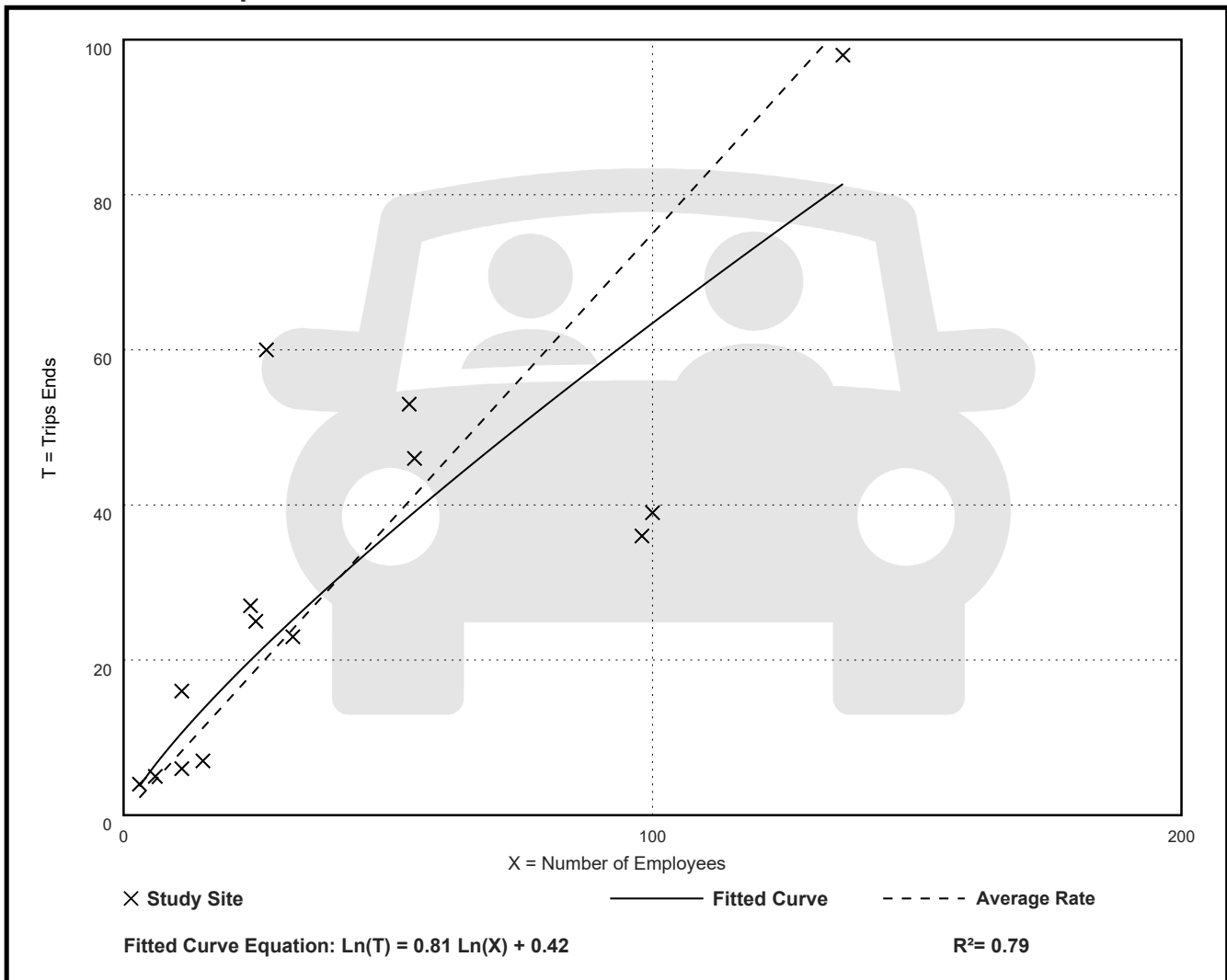
Avg. Num. of Employees: 43

Directional Distribution: 30% entering, 70% exiting

Vehicle Trip Generation per Employee

Average Rate	Range of Rates	Standard Deviation
0.75	0.37 - 2.22	0.43

Data Plot and Equation

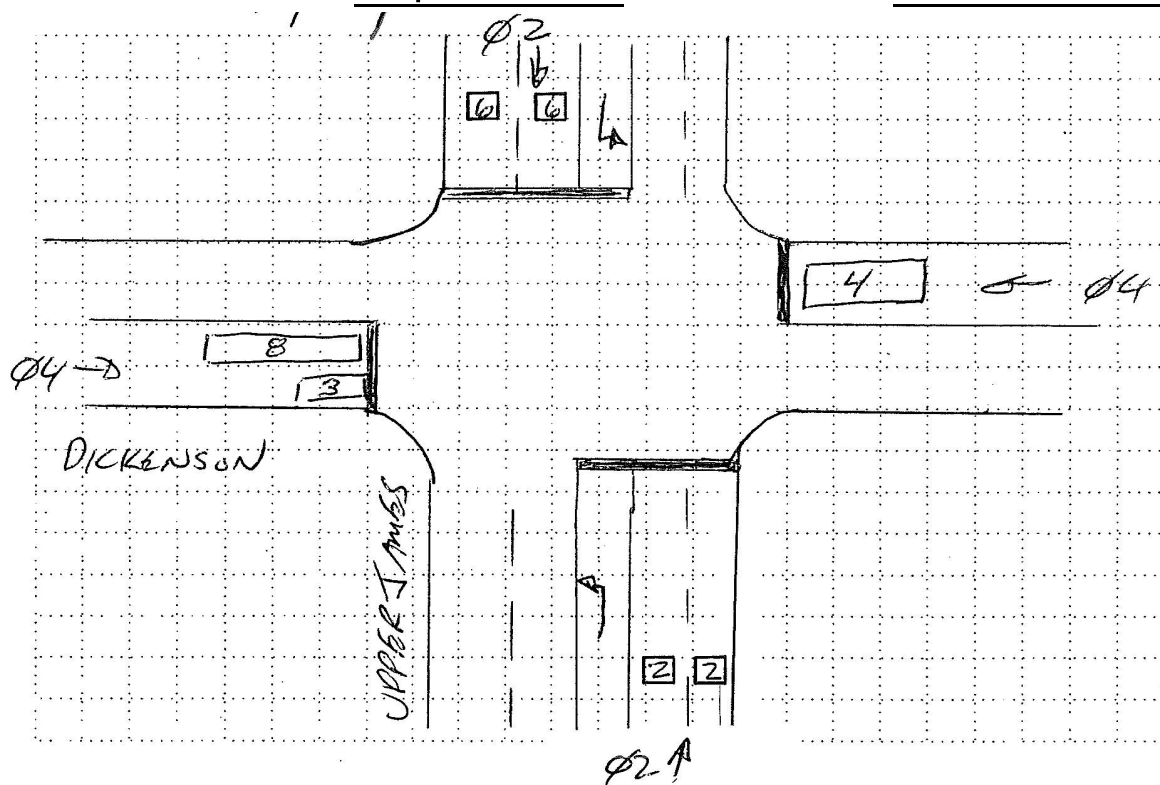


Appendix C

Signal Timing Plan

City of Hamilton - Traffic
Traffic Signal Controller Timing Data

Intersection ID: <u>535</u>	Page <u>1</u> of <u>15</u>
Intersection: <u>Upper James St at Dickenson Rd</u>	
Cabinet Type: <u>TS1</u>	Timing Revision: <u>22-09-S</u>
Controller Type: <u>Intelight TS2-T2</u>	FW Revision: <u>D4-11312</u>
Prepared Checked By: <u>MC</u> <u>BL</u>	Installed By: _____
Prepared Date: <u>27-Sep-22</u>	Install Date: <u>27-Sep-22</u>
Reason for Timing Change: <u>Min Green and Veh Ext time reduction for main st</u>	
Communication: <u>Radio</u>	System: <u>KITS</u>
Operation Type: <u>Semi-Actuated</u>	UPS: <u>None</u>
Pedestrian Detection: <u>Bulldog</u>	RLC: <u>None</u>
Vehicle Detection: <u>Loops</u>	IP Address: <u>10.240.140.23</u>



- φ1:
- φ2: Upper James - NB/SB
- φ3:
- φ4: Dickenson - EB/WB
- φ5:
- φ6:
- φ7:
- φ8:

Flash Operation: Red/Red

Phase Timings (D-1-1)

	Phase	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
	MinGrn		55		10												
	VExt		5.7		3.0												
	Max 1																
	Max 2																
	Max 3																
	MaxExt																
	Yel		4.6		3.7												
	RedClr		1.7		2.5												
	RedHld																
	AdvFls																
	BikeMG																
	Walk		15		7												
	PedClr		12		22												
	Walk2																
	DWHLd																
	EljWlk																
	DlyWlk																
	Added																
	MaxInt																
	MinGap																
	RedAft																
	TTRed																
	CSMin																
	CSMax																
	Red Rvt																
	NegPed																
	APDisc																
	PmtGrn																
	PmtWlk																
	PmtPC																
	RtnGrn																

Phase Options (D-1-2)

Phase	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Min Recall																
Max Recall																
Ped Recall		2														
Soft Recall																
Dual Entry																
Red Rest																
Walk Rest		2														
Walk Expand																
Ped Recycle																
Sim PedTerm																
PC Thru Clr																
Guar Passage																
No Sim Gap																
Yel Lock																
Red Lock																
PhsNxt Lock	1	2	3	4	5	6	7	8								
No Trm Call	1	2	3	4	5	6	7	8								
Cond Srv																
Cond Srv Ena																
Cond Resrv																
Reservice																
Veh Omit																
Ped Omit																
Perm Phase		2		4		6		8								
Prot Call																
Prot Call2																
Flsh Entry																
Flsh Exit																
Flsh Exit Yel																

Dickenson @ Upper James D4- Mar 2023.xlsx

Phase	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Fish Exit Red																
Ped Scrambl																
No Min Yel																
No Min Rev																
Max Scram Wlk																
Flash Yel																
CNA1																
CNA2																
Free WRst Inh																
Flash FYA																
FYA Omit																
FYA Adapt																
FYA Red Rest																

Phase Startup Options (D-1-3 -1)

Stirup Flash	10
Mode	Yel->Red
Stirup Red	5
Yel	0.0
ExtStr Flash	No
CVM Flash	Yes

Phase	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Start Phs				4												
Start Yel																
Start Red				4												
Start NoWlk																
Start Next																
No Veh Call																
No Ped Call																
Start YFls																
Start FYA																

Phase Startup Timings (D-1-3-2)

Phase	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Start Walk																
MinGrn																
MaxGrn																

Conflicting Phases (D-1-4)

Conf Phase	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Phase 1																
Phase 2																
Phase 3																
Phase 4																
Phase 5																
Phase 6																
Phase 7																
Phase 8																

Ring Group Assign (D-1-5-1)

Ring 1	1
Ring 2	1
Ring 3	Off
Ring 4	Off

Ring Group 1 (D-1-5-2)

Barriers	.	X	.	X	.	.	.	.	.	.	.	.	.	.	.	.
Ring 1		2		4												
Ring 2																

Set Ring Config (D-1-5-4)

☐ Yes

Ring configuraion changes must be set to become active

Coordination Options (D-3-1)

[illegible]

I/O Interface (D-6-3)	
Type	TS1-2B
MMU Disable	No
Det BIU 1	Auto
Det BIU 2	Auto
Det BIU 3	Auto
Det BIU 4	Auto

Set New Cabinet (D-6-4)	Yes	Cabinet changes must be set to become active
-------------------------	----------------	--

Vehicle Detectors (D-7-1-1+)

Vehicle Detector 2

Mode	No Disconnect																		
Added	Dis																		
Fail Mode	None																		
System	Ena																		
Phase	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16			
Call Phases		2																	
Yellow Lock Phases																			
Red Lock Phases																			
Extend Phases		2																	
XSwitch Phases																			
Bike Call Phases																			
Call Overlaps																			

Vehicle Detectors (D-7-2-1+)

Vehicle Detector 2

Delay	0.0
Extend	0.0
Delay 2	0.0
Carryover	0
Queue Lmt	0.0
Max Pres	60
No Act	240
Erratic	0
Fail Time	0
Det Link	0

Vehicle Detectors (D-7-1-1+)

Vehicle Detector 3

Mode	No Disconnect																	
Added	Dis																	
Fail Mode	None																	
System	Ena																	
Phase	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16		
Call Phases				4														
Yellow Lock Phases																		
Red Lock Phases																		
Extend Phases				4														
XSwitch Phases																		
Bike Call Phases																		
Call Overlaps																		

Vehicle Detectors (D-7-2-1+)

Vehicle Detector 3

Delay	10.0
Extend	0.0
Delay 2	0.0
Carryover	0
Queue Lmt	0.0
Max Pres	60
No Act	240
Erratic	0
Fail Time	0
Det Link	0

Vehicle Detectors (D-7-1-1+)

Vehicle Detector 4

Mode	No Disconnect																	
Added	Dis																	
Fail Mode	None																	
System	Ena																	
Phase	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16		
Call Phases				4														
Yellow Lock Phases																		
Red Lock Phases																		
Extend Phases				4														
XSwitch Phases																		
Bike Call Phases																		
Call Overlaps																		

Vehicle Detectors (D-7-2-1+)

Vehicle Detector 4

Delay	5.0
Extend	0.0
Delay 2	0.0
Carryover	0
Queue Lmt	0.0
Max Pres	60
No Act	240
Erratic	0
Fail Time	0
Det Link	0

Vehicle Detectors (D-7-1-1+)

Vehicle Detector 5

Mode	No Disconnect															
Added	Dis															
Fail Mode	None															
System	Ena															
Phase	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Call Phases																
Yellow Lock Phases																
Red Lock Phases																
Extend Phases																
XSwitch Phases																
Bike Call Phases																
Call Overlaps																

Vehicle Detectors (D-7-2-1+)

Vehicle Detector 5

Delay	0.0
Extend	0.0
Delay 2	0.0
Carryover	0
Queue Lmt	0.0
Max Pres	60
No Act	240
Erratic	0
Fail Time	0
Det Link	0

Vehicle Detectors (D-7-1-1+)

Vehicle Detector 6

Mode	No Disconnect															
Added	Dis															
Fail Mode	None															
System	Ena															
Phase	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Call Phases		2														
Yellow Lock Phases																
Red Lock Phases																
Extend Phases		2														
XSwitch Phases																
Bike Call Phases																
Call Overlaps																

Vehicle Detectors (D-7-2-1+)

Vehicle Detector 6

Delay	0.0
Extend	0.0
Delay 2	0.0
Carryover	0
Queue Lmt	0.0
Max Pres	60
No Act	240
Erratic	0
Fail Time	0
Det Link	0

Vehicle Detectors (D-7-1-1+)

Vehicle Detector 7

Mode	No Disconnect																		
Added	Dis																		
Fail Mode	None																		
System	Ena																		
Phase	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16			
Call Phases																			
Yellow Lock Phases																			
Red Lock Phases																			
Extend Phases																			
XSwitch Phases																			
Bike Call Phases																			
Call Overlaps																			

Vehicle Detectors (D-7-2-1+)

Vehicle Detector 7

Delay	0.0
Extend	0.0
Delay 2	0.0
Carryover	0
Queue Lmt	0.0
Max Pres	60.0
No Act	240
Erratic	0
Fail Time	0
Det Link	0

Vehicle Detectors (D-7-1-1+)

Vehicle Detector 8

Mode	No Disconnect															
Added	Dis															
Fail Mode	None															
System	Ena															
Phase	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Call Phases				4												
Yellow Lock Phases																
Red Lock Phases																
Extend Phases				4												
XSwitch Phases																
Bike Call Phases																
Call Overlaps																

Vehicle Detectors (D-7-2-1+)

Vehicle Detector 8

Delay	5.0
Extend	0.0
Delay 2	0.0
Carryover	0
Queue Lmt	0
Max Pres	60
No Act	240
Erratic	0
Fail Time	0
Det Link	0

Pedestrian Detectors (D-7-3+)

Pedestrian Detector 4

Phases/Overlaps	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Call Peds				4												
Call Olap Peds																
Call Phases																
Locked Call Phs																
Ped Entry																
Olap Ped Entry																
Ped Cascade																
Call Walk2																
No Act	0															
Max Pres	0															
Erratic	0															
Fail Mode	None															

Serial Port 1 (D-A-1)

Serial Port 1	4			
Baud Rate	38400	8N1	RTS On	0
Broadcast Pln/Syn	Disabled	Time	0:00	
Serial Rebroad	Dis	Response	None	

RTS Off	0
---------	---

Serial Port 2 (D-A-2)

Serial Port 2	0			
Baud Rate	4800	8N1	RTS On	0
Broadcast Pln/Syn	Disabled	Time	0:00	

RTS Off	0
---------	---

Ethernet Config (D-A-3)

IP Address	10	240	140	23
Netmask	255	255	255	0
Gateway	10	240	140	1
Broadcast Address	0	0	0	0
Broadcast Port	0	Time Port	0	
Broadcast Pln/Syn	Disabled	Time	0:00	
Serial Rebroad	Dis	Response	Time/Plan	
Gateway 2	0	0	0	0
Gateway 3	0	0	0	0
Gateway 4	0	0	0	0

Port	161
Mode	Host

General Comm Config (D-A-4)

Database ID#	535
Cont Address	1
Peer Address	0
Remote Calls	Dis
Remote Preempt	Dis
Remote Soft Preempt	Dis
Remote Priority	Dis
Remote MCE	Dis

Timeout	0
Timeout	0

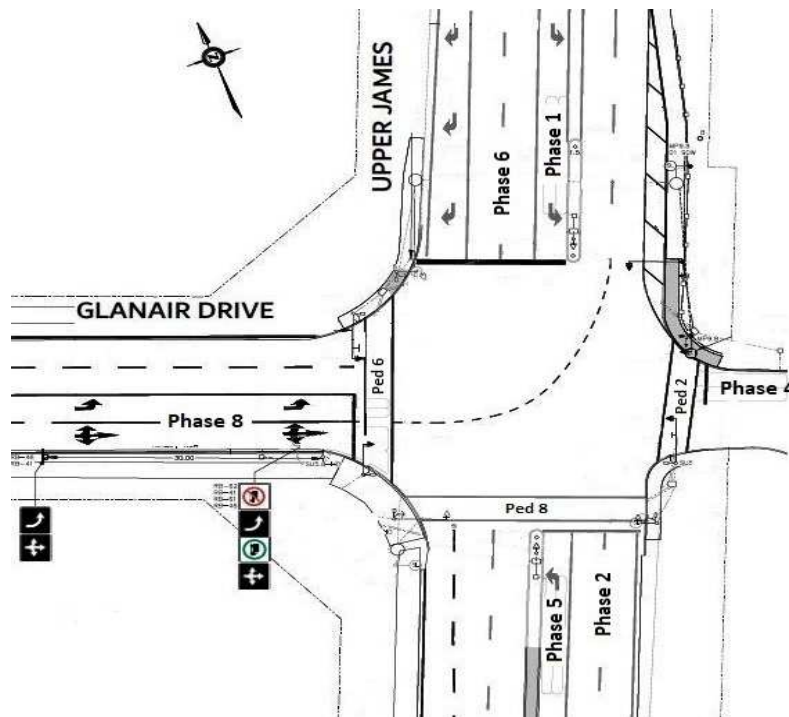
MCE Max	0
---------	---

Logging (D-B)		
VO Period	0	
Power On	Enabled	
Ext Start	Enabled	
Man Control	Enabled	
Cabinet Door	Enabled	
MMU Faults	Enabled	
BIU Faults	Enabled	
Det Faults	Enabled	
Coordination	Enabled	
Preempt	Enabled	
Soft Preempt	Disabled	
Zone	Disabled	
Speed Traps	Disabled	

City of Hamilton - Traffic
Traffic Signal Controller Timing Data

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Intersection ID: 648	Timing Revision: 21-02-D
Intersection: Glanair Dr at Upper James St	
Controller Type: Intelight TS2-T1	FW Revision: D4-10032
Prepared Checked By: MF RDG	Installed By: MF
Prepared Date: 27/Oct/21	Install Date: 16/Dec/21
Reason for Timing Change: Split phasing for dual EBLT	
Communication: _____	System: KITS
Operation Type: Semi-Actuated	UPS: None
Pedestrian Detection: _____	RLC: _____
Vehicle Detection: Loops	IP Address: 10.240.140.43



- φ1: Upper James - SBLT
- φ2: Upper James - NB, East Xwalk (LD)
- φ3:
- φ4: Private Dealership Entr - WB (No Ped Xwalk)
- φ5: Upper James - NBLT
- φ6: Upper James - SB, West Xwalk (LD)
- φ7:
- φ8: Glanair Dr - EB, South Xwalk

*** Split Phasing on Glanair Dr/Private Entr**
Flash Operation: Red/Red

Glanair Dr at Upper James D4 2021 - Done Bench Test

Phase Timings (D-1-1)

Phase	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
MinGrn	5	20		10	5	20		10								
VExt	1.0			2.0	1.0			2.0								
Max 1	10	60		20	10	60		40								
Max 2																
Max 3																
MaxExt																
Yel	3.0	4.6		3.3		4.6		3.3								
RedClr		1.7		2.9		1.7		2.9								
AdvFis																
BikeMG																
Walk		7				7		7								
PedClr		16				16		21								
Walk2																
SolidW																
ElyWlk																
DlyWlk																
Added																
MaxInt																
MinGap																
RedAff																
TTRed																
CSMin																
CSMax																
Red Rvt	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0								
NegPed																
APDisc																
PmtGrn																
PmtWlk																
PmtPC																
RtnGrn																

Phase Options (D-1-2)

Phase	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Min Rec																
Max Rec		2				6										
Ped Rec		2				6										
Soft Rec																
Dual Ent		2				6										
Red Rest																
Walk Rest		2				6										
Walk Expand																
Ped Recycle		2				6										
SimPedTerm		2				6										
PC Thru Clr																
Guar Psg																
No Sim Gap																
Yel Lock																
Red Lock																
PhsNxt Lock	1	2	3	4	5	6	7	8								
No Trm Call	1	2	3	4	5	6	7	8								
Cond Srv																
CS Ena																
Cond Resrv																
Reservice																
SecMinRcl																
SecMaxRcl																
Veh Omit																
Ped Omit																
Perm Phase		2		4		6		8								
Prot Call																
Prot Call2																
FishEntry																
FishExit																
FishExit Yel																

Glanair Dr at Upper James D4 2021 - Done Bench Test

Phase	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
FishExit Red																
PedScrambl																
No Min Yel																
No Min Rev																
MaxScramWlk																
FlashYel																
FlashFYA																
CNA1																
CNA2																

Phase Startup Options (D-1-3 -1)

Stirrup Flash	10
Mode	Yel->Red
Stirrup Red	5
Yel	0.0

Phase	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Start Phs	1				5											
Start Yel																
Start Red																
Start NoWlk																
Start Next																
Start YFIS																
Start FYA																
No Veh Call																
No Ped Call																

Phase Startup Timings (D-1-3-2)

Phase	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Start Walk																
MinGrn																
MaxGrn																

Conflicting Phases (D-1-4)

Conf Phase	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Phase 1																
Phase 2																
Phase 3																
Phase 4								8								
Phase 5																
Phase 6																
Phase 7																
Phase 8																
Phase 9																
Phase 10																
Phase 11																
Phase 12																
Phase 13																
Phase 14																
Phase 15																
Phase 16																

Ring Sequence (D-1-5-1)

Ring 1	1
Ring 2	1
Ring 3	Off
Ring 4	Off

Ringgroup 1 (D-1-5-2)

Barriers	.	X	X	X	X	.	.	.	.	.	.	.	.	.	.	.
Ring 1	1	2	4													
Ring 2	5	6		8												

Set Ring Config (D-1-5-4)

Yes

Ring configuraion changes must be set to become active

MCE Options (D-1-6)

Phase	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
MCE Ped Prot																
MCE Call	1	2		4	5	6		8								
MCE Ped Call		2		4		6		8								
MCE Omit																
MCE Ped Omit																
MCE Veh Sync		2		4		6		8								
MCE Ped Sync		2		4		6		8								
MCE Halt DW																
LRV Phases	1	2	3	4	5	6	7	8								
MCE LRVTrmEly																

Custom Sequences (D-1-7)

Phase	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Seq 1																
Seq 2																
Seq 3																
Seq 4																
Seq 5																
Seq 6																
Seq 7																
Seq 8																

Unit (D-1-8)

Red Revert	4.0
Ped Protect	No
AdvFIs in Flash	No

Coordination Options (D-3-1)

[illegible]

Coordination Pattern 1 (D-3-2)																
Cycle	120															
RGrp 1 - Ofs 1	0															
RGrp 1 - Ofs 2	0															
RGrp 1 - Ofs 3	0															
RGrp 2 - Ofs 1	0															
RGrp 2 - Ofs 2	0															
RGrp 2 - Ofs 3	0															
Phs /Olap	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Split	10	60		15	10	60		35								
Ext																
Float																
PermMin	8	12		12	8	12		12								
MinTrans																
MaxTrans																
Split2																
PA Bef																
PA Aft																
Phases /Overlaps	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Coord		2				6										
No Extend																
FloatEna																
V=P Perm																
Wlk Rst																
PedRcl																
CondPed																
OlPpedRcl																
PedRcy																
MinRcl																
MaxRcl																
CondSrv																
Reserve																
CSReserve																

Glanair Dr at Upper James D4 2021 - Done Bench Test

	Phs /Olap	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
	SecMinRcl																
	SecMaxRcl																
	VehOmt																
	PedOmt																
	Olap Omt																
	Perm Rsv																
	Perm 1																
	Max Inh																
	FYA Omt																
	AdaptPhs																
	AltSeq																
	Perm	SingBnd															
	Ped Permissive	Yield															
	PermLmt	0															
	Prm2Str	0															
	Prm2End	0															
	Max	Max1															
	WlkRest	OppCall															
	TODLnk	0															
	Trans Mode	Default															
	Offset Ref	Default															
	Adapt Mode	Disabled															
	Rng 1 Late																
	Rng 2 Late																
	Rng 3 Late																
	Rng 4 Late																

Coordination Pattern 2 (D-3-2+)																
Cycle			130													
RGrp 1 - Ofs 1			0													
RGrp 1 - Ofs 2			0													
RGrp 1 - Ofs 3			0													
RGrp 2 - Ofs 1			0													
RGrp 2 - Ofs 2			0													
RGrp 2 - Ofs 3			0													
Phs /Olap	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Split	10	70		15	10	70		35								
Ext																
Float																
PermMin	8	12		12	8	12		12								
MinTrans																
MaxTrans																
Split2																
PA Bef																
PA Aft																
Phases /Overlaps	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Coord		2				6										
No Extend																
FloatEna																
V=P Perm																
Wlk Rst																
PedRcl																
CondPed																
OlPpedRcl																
PedRcy																
MinRcl																
MaxRcl																
CondSrv																
Reserve																
CSReserve																

Glanair Dr at Upper James D4 2021 - Done Bench Test

	Phs /Olap	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
	SecMinRcl																
	SecMaxRcl																
	VehOmt																
	PedOmt																
	Olap Omt																
	Perm Rsv																
	Perm 1																
	Max Inh																
	FYA Omt																
	AdaptPhs																
	AltSeq																
	Perm	SingBnd															
	Ped Permissive	Yield															
	PermLmt	1															
	Prm2Str	0															
	Prm2End	0															
	Max	Max1															
	WlkRest	OppCall															
	TODLnk	0															
	Trans Mode	Default															
	Offset Ref	Default															
	Adapt Mode	Disabled															
	Rng 1 Late																
	Rng 2 Late																
	Rng 3 Late																
	Rng 4 Late																

Coordination Pattern 3 (D-3-2+)																
Cycle			130													
RGrp 1 - Ofs 1			0													
RGrp 1 - Ofs 2			0													
RGrp 1 - Ofs 3			0													
RGrp 2 - Ofs 1			0													
RGrp 2 - Ofs 2			0													
RGrp 2 - Ofs 3			0													
Phs /Olap	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Split	10	70		15	10	70		35								
Ext																
Float																
PermMin	8	12		12	8	12		12								
MinTrans																
MaxTrans																
Split2																
PA Bef																
PA Aft																
Phases /Overlaps	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Coord		2				6										
No Extend																
FloatEna																
V=P Perm																
Wlk Rst																
PedRcl																
CondPed																
OlPpedRcl																
PedRcy																
MinRcl																
MaxRcl																
CondSrv																
Reserve																
CSReserve																

Glanair Dr at Upper James D4 2021 - Done Bench Test

	Phs /Olap	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
	SecMinRcl																
	SecMaxRcl																
	VehOmt																
	PedOmt																
	Olap Omt																
	Perm Rsv																
	Perm 1																
	Max Inh																
	FYA Omt																
	AdaptPhs																
	AltSeq																
	Perm	SingBnd															
	Ped Permissive	Yield															
	PermLmt	0															
	Prm2Str	0															
	Prm2End	0															
	Max	Max1															
	WlkRest	OppCall															
	TODLnk	0															
	Trans Mode	Default															
	Offset Ref	Default															
	Adapt Mode	Disabled															
	Rng 1 Late																
	Rng 2 Late																
	Rng 3 Late																
	Rng 4 Late																

Coordination Pattern 4 (D-3-2+)																
Cycle			120													
RGrp 1 - Ofs 1			0													
RGrp 1 - Ofs 2			0													
RGrp 1 - Ofs 3			0													
RGrp 2 - Ofs 1			0													
RGrp 2 - Ofs 2			0													
RGrp 2 - Ofs 3			0													
Phs /Olap	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Split	10	60		15	10	60		35								
Ext																
Float																
PermMin	8	12		12	8	12		12								
MinTrans																
MaxTrans																
Split2																
PA Bef																
PA Aft																
Phases /Overlaps	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Coord		2				6										
No Extend																
FloatEna																
V=P Perm								8								
Wlk Rst																
PedRcl																
CondPed																
OlPpedRcl																
PedRcy																
MinRcl																
MaxRcl																
CondSrv																
Reserve																
CSReserve																

Glanair Dr at Upper James D4 2021 - Done Bench Test

	Phs /Olap	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
	SecMinRcl																
	SecMaxRcl																
	VehOmt																
	PedOmt																
	Olap Omt																
	Perm Rsv																
	Perm 1																
	Max Inh																
	FYA Omt																
	AdaptPhs																
	AltSeq																
	Perm	SingBnd															
	Ped Permissive	Yield															
	PermLmt	0															
	Prm2Str	0															
	Prm2End	0															
	Max	Max1															
	WlkRest	OppCall															
	TODLnk	0															
	Trans Mode	Default															
	Offset Ref	Default															
	Adapt Mode	Disabled															
	Rng 1 Late																
	Rng 2 Late																
	Rng 3 Late																
	Rng 4 Late																

TOD Patterns (D-5-1)

	Time	DOW							Holidays							Mode	Pattern	Offset
Event 1	00:00	S						S								Free		
Event 2	09:00	S						S								Sched	4	1
Event 3	18:30	S						S								Free		
Event 4	00:00		M	T	W	T	F									Free		
Event 5	06:00		M	T	W	T	F									Sched	2	1
Event 6	10:00		M	T	W	T	F									Free		
Event 7	14:30		M	T	W	T	F									Sched	3	1
Event 8	18:30		M	T	W	T	F									Free		
Event 9	22:00		M	T	W	T	F									Free		
Event 10	00:00															Sched		
Event 11	00:00															Sched		
Event 12	00:00															Sched		
Event 13	00:00															Sched		
Event 14	00:00															Sched		
Event 15	00:00															Sched		
Event 16	00:00															Sched		
Event 17	00:00															Sched		
Event 18	00:00															Sched		
Event 19	00:00															Sched		
Event 20	00:00															Sched		
Event 21	00:00															Sched		
Event 22	00:00															Sched		
Event 23	00:00															Sched		
Event 24	00:00															Sched		
Event 25	00:00															Sched		
Event 26	00:00															Sched		
Event 27	00:00															Sched		
Event 28	00:00															Sched		
Event 29	00:00															Sched		
Event 30	00:00															Sched		
Event 31	00:00															Sched		
Event 32	00:00															Sched		

Glanair Dr at Upper James D4 2021 - Done Bench Test

TOD Functions (D-5-2)		Event 1										
Time		00:00										
DOW		S	M	T	W	T	F	S				
Hol												

Phase	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
MinRec																
MaxRec																
SoftRec																
PedRec																
OlPedRec																
MinRec																
MaxRec																
SoftRec																
PedRec																
OlPedRec																
PedRcy																
Max 2																
Max 3																
CondSrv																
PhsOmt	1				5											
PedOmt																
OlapOmt																
RedRst																
WalkRst																
AudPdDis																
SpFunc																
FYA Omit																
Pri Plan	0															
Rem PE Time	0															
Alt Det Sel	0															
Dis Det Diag	No															

Glanair Dr at Upper James D4 2021 - Done Bench Test

TOD Functions (D-5-2+)		Event 2															
Time		06:00															
DOW																	
Hol																	

	Phase	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
	MinRec																
	MaxRec																
	SoftRec																
	PedRec																
	OlPedRec																
	MinRec																
	MaxRec																
	SoftRec																
	PedRec																
	OlPedRec																
	PedRcy																
	Max 2																
	Max 3																
	CondSrv																
	PhsOmt																
	PedOmt																
	OlapOmt																
	RedRst																
	WalkRst																
	AudPddis																
	SpFunc																
	FYA Omit																
	Pri Plan	0															
	Rem PE Time	0															
	Alt Det Sel	0															
	Dis Det Diag	No															

Glanair Dr at Upper James D4 2021 - Done Bench Test

TOD Functions (D-5-2+)		Event 3															
Time		22:00															
DOW																	
Hol																	

	Phase	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
	MinRec																
	MaxRec																
	SoftRec																
	PedRec																
	OlPedRec																
	MinRec																
	MaxRec																
	SoftRec																
	PedRec																
	OlPedRec																
	PedRcy																
	Max 2																
	Max 3																
	CondSrv																
	PhsOmt	1				5											
	PedOmt																
	OlapOmt																
	RedRst																
	WalkRst																
	AudPdDis																
	SpFunc																
	FYA Omit																
	Pri Plan	0															
	Rem PE Time	0															
	Alt Det Sel	0															
	Dis Det Diag	No															

I/O Interface (D-6-3)

Type	TS2-2N
MMU Disable	No

Set New Cabinet (D-6-4)

Yes

Cabinet changes must be set to become active

MMU Compatibility (D-6-9)

Channels	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
MMUIgnore			X				X									

TS2 Detector Fail (D-6-A)

Channels	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
BIU 1-No Fail Call																
BIU 2-No Fail Call																

I/O Logic (D-6-7)

Phase	Func1	Idx	Oper	Func2	Idx	Out1	Inx1	Out2	Inx2	Dly	Ext	Trig	Fis
Chan 1	None	0	Or	None	0	None	0	None	0	0	0	No	No
Chan 2	None	0	Or	None	0	None	0	None	0	0	0	No	No
Chan 3	None	0	Or	None	0	None	0	None	0	0	0	No	No
Chan 4	None	0	Or	None	0	None	0	None	0	0	0	No	No
Chan 5	None	0	Or	None	0	None	0	None	0	0	0	No	No
Chan 6	None	0	Or	None	0	None	0	None	0	0	0	No	No
Chan 7	None	0	Or	None	0	None	0	None	0	0	0	No	No
Chan 8	None	0	Or	None	0	None	0	None	0	0	0	No	No
Chan 9	None	0	Or	None	0	None	0	None	0	0	0	No	No
Chan 10	None	0	Or	None	0	None	0	None	0	0	0	No	No
Chan 11	None	0	Or	None	0	None	0	None	0	0	0	No	No
Chan 12	None	0	Or	None	0	None	0	None	0	0	0	No	No

Glanair Dr at Upper James D4 2021 - Done Bench Test

Load Switch Outputs (D-6-1)

Phase	LS 1	LS 2	LS 3	LS 4	LS 5	LS 6	LS 7	LS 8
Red Function	VehRed	VehRed	VehRed	VehRed	VehRed	VehRed	VehRed	VehRed
Red Index	1	2	3	4	5	6	7	8
Yel Function	VehYel	VehYel	VehYel	VehYel	VehYel	VehYel	VehYel	VehYel
Yel Index	1	2	3	4	5	6	7	8
Gm Function	VehGm	VehGm	VehGm	VehGm	VehGm	VehGm	VehGm	VehGm
Gm Index	1	2	3	4	5	6	7	8

Phase	LS 9	LS 10	LS 11	LS 12	LS 13	LS 14	LS 15	LS 16
Red Function	DntWlk	DntWlk	DntWlk	DntWlk	OlprRed	OlprRed	OlprRed	OlprRed
Red Index	2	4	6	8	13	14	15	16
Yel Function	PedClr	PedClr	PedClr	PedClr	OlprYel	OlprYel	OlprYel	OlprYel
Yel Index	2	4	6	8	13	14	15	16
Gm Function	Walk	Walk	Walk	Walk	OlprGm	OlprGm	OlprGm	OlprGm
Gm Index	2	4	6	8	13	14	15	16

Terminal/Facility Outputs (D-6-2/3/4/5)

Phase	OUT 1	OUT 2	OUT 3	OUT 4	OUT 5	OUT 6	OUT 7	OUT 8
T/F 1 Output								
Index								
T/F 2 Output								
Index								
T/F 3 Output	VehRed	VehRed	VehRed	VehRed	VehRed	VehRed	VehRed	VehRed
Index	0	0	0	0	0	0	0	0
T/F 4 Output	VehRed	VehRed	VehRed	VehRed	VehRed	VehRed	VehRed	VehRed
Index	0	0	0	0	0	0	0	0

Glanair Dr at Upper James D4 2021 - Done Bench Test

Phase	OUT 9	OUT 10	OUT 11	OUT 12	OUT 13	OUT 14	OUT 15	
T/F 1 Output								
Index								
T/F 2 Output								
Index								
T/F 3 Output	VehRed	VehRed	VehRed	VehRed	VehRed	VehRed	VehRed	
Index	0	0	0	0	0	0	0	
T/F 4 Output	VehRed	VehRed	VehRed	VehRed	VehRed	VehRed	VehRed	
Index	0	0	0	0	0	0	0	

Phase	I/O 1	I/O 2	I/O 3	I/O 4	I/O 5	I/O 6	I/O 7	I/O 8
T/F 1 Output								
Index								
T/F 2 Output								
Index								
T/F 3 Output	VehRed	VehRed	VehRed	VehRed	VehRed	VehRed	VehRed	
Index	0	0	0	0	0	0		
T/F 4 Output	VehRed	VehRed	VehRed	VehRed	VehRed	VehRed	VehRed	VehRed
Index	0	0	0	0	0	0	0	0

Phase	I/O 9	I/O 10	I/O 11	I/O 12	I/O 13	I/O 14	I/O 15	
T/F 1 Output		VehRed	VehRed	VehRed	VehRed			
Index		0	0	0	0			
T/F 2 Output		VehRed	VehRed	VehRed	VehRed	VehRed	VehRed	
Index		0	0	0	0	0	0	
T/F 3 Output								
Index								
T/F 4 Output	VehRed							
Index	0							

Glanair Dr at Upper James D4 2021 - Done Bench Test

Detector Inputs (D-6-1/2/3/4)

Phase	DET 1	DET 2	DET 3	DET 4	DET 5	DET 6	DET 7	DET 8
Det Biu 1	VehDet	VehDet	VehDet	VehDet	VehDet	VehDet	None	VehDet
Index	1	2	3	4	5	6	0	8
Det Biu 2	VehDet	VehDet	VehDet	VehDet	VehDet	VehDet	VehDet	VehDet
Index	0	0	0	0	0	0	0	0
Det Biu 3	None	None	None	None	None	None	None	None
Index	0	0	0	0	0	0	0	0
Det Biu 4	None	None	None	None	None	None	None	None
Index	0	0	0	0	0	0	0	0

Phase	DET 9	DET 10	DET 11	DET 12	DET 13	DET 14	DET 15	DET 16
Det Biu 1	VehDet	VehDet	VehDet	VehDet	VehDet	VehDet	VehDet	VehDet
Index	9	10	11	12	13	14	15	16
Det Biu 2	VehDet	VehDet	VehDet	VehDet	VehDet	VehDet	VehDet	VehDet
Index	0	0	0	0	0	0	0	0
Det Biu 3	None	None	None	None	None	None	None	None
Index	0	0	0	0	0	0	0	0
Det Biu 4	None	None	None	None	None	None	None	None
Index	0	0	0	0	0	0	0	0

Terminal/Facility Inputs (D-6-5/6/7/8)

Phase	I/O 7	I/O 8	I/O 9	I/O 10	I/O 11	I/O 12	I/O 13	I/O 14
T/F 1 Input								Preempt
Index								1
T/F 2 Input								
Index								
T/F 3 Input	None	None	None	None	None	None	None	None
Index	0	0	0	0	0	0	0	0
T/F 4 Input				None	None	None	None	None
Index				0	0	0	0	0

Glanair Dr at Upper James D4 2021 - Done Bench Test

Phase	I/O 15	I/O 16	I/O 17	I/O 18	I/O 19	I/O 20	I/O 21	I/O 22
T/F 1 Input	Preempt	None	None	AutFis	None	MCE	IntAdv	MinRec
Index	2	0	0	5	0	5	5	5
T/F 2 Input	Preempt	Preempt	Preempt	Preempt	Preempt	None	None	None
Index		3	4	5	6	0	0	0
T/F 3 Input	None	None	None	None	None	None	None	None
Index	0	0	0	0	0	0	0	0
T/F 4 Input	None	None	None	None	None	None	None	None
Index	0	0	0	0	0	0	0	0

Phase	I/O 23	I/O 24	IN 1	IN 2	IN 3	IN 4	IN 5	IN 6
T/F 1 Input	ExtStr	None	StopTm	StopTm	MaxII	MaxII	Force	Force
Index	5	0	5	5	1	2	1	2
T/F 2 Input	None	None	MaxInh	MaxInh	LocFis	MMUFis	Alarm	Alarm
Index	0	0	1	2	5	5	1	2
T/F 3 Input	None	None	None	None	None	None	None	None
Index	0	0	0	0	0	0	0	0
T/F 4 Input	None	None	None	None	None	None	None	None
Index	0	0	0	0	0	0	0	0

Phase	IN 7	IN 8	OPTO 1	OPTO 2	OPTO 3	OPTO 4
T/F 1 Input	None	None	PedDet	PedDet	PedDet	None
Index	0	0	1	2	3	0
T/F 2 Input	None	None	PedDet	PedDet	PedDet	PedDet
Index	0	0	5	6	7	8
T/F 3 Input	None	None	None	None	None	None
Index	0	0	0	0	0	0
T/F 4 Input	None	None	None	None	None	None
Index	0	0	0	0	0	0

Vehicle Detectors (D-7-1-1)

Vehicle Detector 1

Mode	No Disconnect															
Added	Dis															
Fail Mode	None															
System	Ena															
Phase	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Call Phases	1															
Yellow Lock Phases																
Red Lock Phases																
Extend Phases	1															
XSwitch Phases						6										
Bike Call Phases																

Vehicle Detectors (D-7-2-1)

Vehicle Detector 1

Delay	0.0
Extend	0.0
Carryover	0.0
Queue Lmt	0
Delay 2	0.0
Max Pres	60
No Act	240
Erratic	0
Fail Time	0

Vehicle Detectors (D-7-1-1+)

Vehicle Detector 2

Mode	No Disconnect															
Added	Dis															
Fail Mode	None															
System	Ena															
Phase	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Call Phases		2														
Yellow Lock Phases																
Red Lock Phases																
Extend Phases		2														
XSwitch Phases																
Bike Call Phases																

Vehicle Detectors (D-7-2-1+)

Vehicle Detector 2

Delay	0.0
Extend	5.0
Carryover	0.0
Queue Lmt	0
Delay 2	0.0
Max Pres	60
No Act	240
Erratic	0
Fail Time	0

Vehicle Detectors (D-7-1-1+)

Vehicle Detector 3

Mode	No Disconnect															
Added	Dis															
Fail Mode	None															
System	Ena															
Phase	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Call Phases								8								
Yellow Lock Phases																
Red Lock Phases																
Extend Phases								8								
XSwitch Phases																
Bike Call Phases																

Vehicle Detectors (D-7-2-1+)

Vehicle Detector 3

Delay	0.0
Extend	0.0
Carryover	0.0
Queue Lmt	0
Delay 2	0.0
Max Pres	60
No Act	240
Erratic	0
Fail Time	0

Vehicle Detectors (D-7-1-1+)

Vehicle Detector 4

Mode	No Disconnect															
Added	Dis															
Fail Mode	None															
System	Ena															
Phase	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Call Phases				4												
Yellow Lock Phases																
Red Lock Phases																
Extend Phases				4												
XSwitch Phases																
Bike Call Phases																

Vehicle Detectors (D-7-2-1+)

Vehicle Detector 4

Delay	0.0
Extend	0.0
Carryover	0.0
Queue Lmt	0
Delay 2	0.0
Max Pres	60
No Act	240
Erratic	0
Fail Time	0

Vehicle Detectors (D-7-1-1+)

Vehicle Detector 5

Mode	No Disconnect															
Added	Dis															
Fail Mode	None															
System	Ena															
Phase	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Call Phases					5											
Yellow Lock Phases																
Red Lock Phases																
Extend Phases					5											
XSwitch Phases		2														
Bike Call Phases																

Vehicle Detectors (D-7-2-1+)

Vehicle Detector 5

Delay	0.0
Extend	0.0
Carryover	0.0
Queue Lmt	0
Delay 2	0.0
Max Pres	60
No Act	240
Erratic	0
Fail Time	0

Vehicle Detectors (D-7-1-1+)

Vehicle Detector 6

Mode	No Disconnect															
Added	Dis															
Fail Mode	None															
System	Ena															
Phase	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Call Phases						6										
Yellow Lock Phases																
Red Lock Phases																
Extend Phases						6										
XSwitch Phases																
Bike Call Phases																

Vehicle Detectors (D-7-2-1+)

Vehicle Detector 6

Delay	0.0
Extend	5.0
Carryover	0.0
Queue Lmt	0
Delay 2	0.0
Max Pres	60
No Act	240
Erratic	0
Fail Time	0

Vehicle Detectors (D-7-1-1+)

Vehicle Detector 8

Mode	No Disconnect															
Added	Dis															
Fail Mode	None															
System	Ena															
Phase	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Call Phases								8								
Yellow Lock Phases																
Red Lock Phases																
Extend Phases								8								
XSwitch Phases																
Bike Call Phases																

Vehicle Detectors (D-7-2-1+)

Vehicle Detector 8

Delay	0.0
Extend	0.0
Carryover	0.0
Queue Lmt	0
Delay 2	0.0
Max Pres	60
No Act	240
Erratic	0
Fail Time	0

Pedestrian Detectors (D-7-3+)

Pedestrian Detector 4

Phases/Overlaps	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Call Peds																
Call Olap Peds																
Call Phases																
Locked Call Phs																
Ped Entry																
Olap Ped Entry																
Ped Cascade																
Call Walk2																
No Act	0															
Max Pres	0															
Erratic	0															
Fail Mode	None															

Pedestrian Detectors (D-7-3+)

Pedestrian Detector 8

Phases/Overlaps	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Call Peds								8								
Call Olap Peds																
Call Phases																
Locked Call Phs																
Ped Entry																
Olap Ped Entry																
Ped Cascade																
Call Walk2																
No Act	0															
Max Pres	0															
Erratic	0															
Fail Mode	None															

Logging (D-B)	
VO Period	0
Power On	Enabled
Ext Start	Enabled
Man Control	Enabled
Cabinet Door	Enabled
MMU Faults	Enabled
BIU Faults	Enabled
Det Faults	Enabled
Coordination	Enabled
Preempt	Enabled
Soft Preempt	Disabled
Zone	Disabled
Speed Traps	Disabled

Serial Port 1 (D-A-1)			
Serial Port 1		4	
Baud Rate	38400	8N1	RTS On 0
Broadcast Pln/Syn	Disabled	Time	0:00
Serial Rebroadcast	Dis	Response	None
		RTS Off	0

Serial Port 2 (D-A-2)					
Serial Port 2		0			
Baud Rate		4800			
Broadcast Pln/Syn		Disabled			
		8N1			
		Time			
		RTS On		0	
		0:00			
		RTS Off		0	

Ethernet Config (D-A-3)									
IP Address		10	240		140		43		
Netmask		255	255		255		0		
Gateway		10	240		140		1		
Broadcast Address		0	0		0		0		
Broadcast Port		0	Time Port		0				
Broadcast Pln/Syn		Disabled	Time		0:00				
Serial Rebroad		Dis	Response		Time/Plan				
Gateway 2		0	0		0		0		
Gateway 3		0	0		0		0		
Gateway 4		0	0		0		0		

Port	161
Mode	Host

General Comm Config (D-A-4)	
Database ID#	648
Cont Address	1
Peer Address	0
Remote Calls	Dis
Remote Preempt	Dis
Remote Soft Preempt	Dis
Remote Priority	Dis
Remote MCE	Dis

Timeout	0
Timeout	0

MCE Max	0
---------	---

Control/Config (D-9)

Pattern Mode	Central															
Man Pattern	0															
Man Offset	0															
Stop Time	Ena															
Aux Switch	StopTm	5														
PWD Timeout	5															
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Maint Phs Recall																
Maint Ped Recall																
Used to place calls																

Data Key Transfer (D-9-NEXT)

4 read USB
5 write to USB

Autp Backup (D-9-NEXT-NEXT)

Auto Backup:	USB
Write Delay:	20

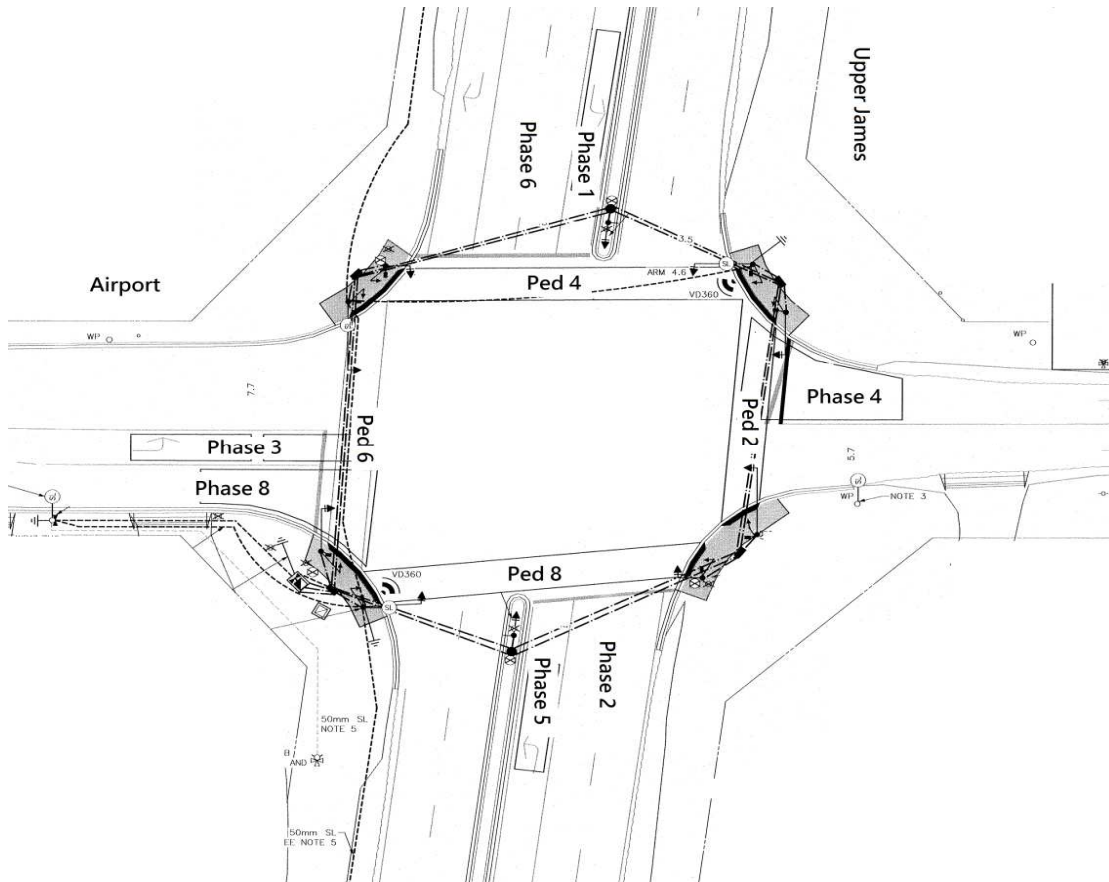
Set Time (D-5-4)

Time	00:00:00
Date	12/31/20
DLS	D4
Zone	Est
GPS Thresh	0

Press Enter after setting Time/Date - ESC sets time

City of Hamilton - Traffic Traffic Signal Controller Timing Data

Intersection: **Upper James St @ Airport Rd**
Controller Type: **3000E** Page **1** of **1**
Programmed By: **MF** Installed By: **MF**
Date: **11/11/11** Date: **11/11/11**



- φ1: Upper Jame - SBLT
- φ2: Upper James - NB, East Xwalk
- φ3: Airport - EBLT
- φ4: Airport - WB, North Xwalk
- φ5: Upper James - NBLT
- φ6: Upper James - SB, West Xwalk
- φ7:
- φ8: Airport - EB, South Xwalk

Flash Operation: Red: Upper James
Red: Airport

SEQUENCE/START-UP (MM-3-1-1)

START-UP PHASES/INTERVAL/SEQUENCE

(X = Enable for start-up phases. Must be compatible if more than one)

START-UP	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
	Phases			X				X								
	Interval	0	(0=Red, 1=Yel, 2= Grn, determines color of selected phases above on start-up)													
	Flash	10	(0-255 seconds start-up flash time)													
	Red	5.0	(0-25.5 secs = length of first red after start-up if start-up in yellow or red)													
Sequence		3	(2=single ring, 3=dual ring, 4=123/567+48, 5=12/56+3478, 6=1234/56+78, 7=1234/56/8, 8=dual quad, 9=12ph													

PHASE RING ASSIGNMENTS

X = Phase assigned to ring (if used). Phases in different rings but same co-phase group can time together.

RING	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
	Ring 1	X	X	X												
	Ring 2				X											
	Ring 3					X		X								
	Ring 4															

CO-PHASE GRP 1-4 ASSIGNMENTS

X = phase assigned to co-phase group. All ph's assigned to rings must be assigned to co-phase group.

CO-PHASE	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
	CO PH 1	X	X		X	X										
	CO PH 2			X				X								
	CO PH 3															
	CO PH 4															

(X = ENABLE)																
TP1 PHASE RECALLS																
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
PHASE RECALLS	MIN RCL		X													
	MAX RCL						X									
	PED RCL															
	SOFT REC															
	NON-LOCK	X		X	X	X					X					
	VEH OMIT															
	PED OMIT															
	WLK REST															
	MAX II															
	RED REST															
	NO SKIP															

(X = ENABLE)																
TP2 PHASE RECALLS																
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
PHASE RECALLS	MIN RCL		X													
	MAX RCL						X									
	PED RCL															
	SOFT REC															
	NON-LOCK	X		X	X	X				X						
	VEH OMIT															
	PED OMIT															
	WLK REST															
MAX II																
RED REST																
NO SKIP																

(X = ENABLE) TP3 PHASE RECALLS																	
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	
PHASE RECALLS	MIN RCL		X			X											
	MAX RCL																
	PED RCL																
	SOFT REC																
	NON-LOCK	X		X	X			X									
	VEH OMIT																
	PED OMIT																
	WLK REST																
	MAX II																
	RED REST																
NO SKIP																	

PHASE RECALLS/MODES; CNA, INH MAX, PED OPTIONS, etc. (MM-3-1-2-2) ONLY 1 PLAN PER UNIT

(X = ENABLE)																	
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
PHASE RECALLS	CNA 1																
	CNA 2																
	CNA 3																
	CNA 4																
	WRM																
	INH MAX																
	PED RECY																
	FL WALK																
	FDW->YEL																
	FDW->RED																
COND PED																	

PHASE TIMES	TP1															
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
	Initial	5	30	5	10	5	30	10								
	Passage	1.0	5.9	1.0	3.0	1.0	5.9	3.0								
	Yellow	3.0	4.6	3.0	3.7	3.0	4.6	3.7								
	Red		1.7		2.6		1.7	2.6								
	Walk		10		7		10	7								
	Ped Clr		17		24		17	24								
	Max 1	10	35	10	20	10	35	20								
	Max 2															
	Mx 3 Lim															
	Mx 3 Adh															
	TBR															
	TTR															
	Min Gap															
	Al/Act															
	Max In															

PHASE TIMES	TP2															
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
	Initial	5	35	5	10	5	35	10								
	Passage	1.0	5.9	1.0	3.0	1.0	5.9	3.0								
	Yellow	3.0	4.6	3.0	3.7	3.0	4.6	3.7								
	Red		1.7		2.6		1.7	2.6								
	Walk		12		12		12	12								
	Ped Clr		17		24		17	24								
	Max 1	10	50	10	20	10	50	20								
	Max 2															
	Mx 3 Lim															
	Mx 3 Adh															
	TBR															
	TTR															
	Min Gap															
	Al/Act															
	Max In															

TP3																
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
PHASE TIMES	Initial	5	35	5	10	5		10								
	Passage	1.0	5.9	1.0	3.0	1.0		3.0								
	Yellow	3.0	4.6	3.0	3.7	3.0		3.7								
	Red		1.7		2.6			2.6								
	Walk		12		12			12								
	Ped Cir		17		24			24								
	Max 1	10	50	10	10	50		20								
	Max 2															
	Mx 3 Lim															
	Mx 3 Adh															
	TBR															
	TTR															
	Min Gap															
	Al/Act															
	Max In															

VEHICLE DETECTOR ASSIGNMENTS (MM-3-1-4-1, PGDN etc.)

(X = ASSIGN VEH DETECTOR TO THAT PHASE)

	DET/PH	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
VEH DET ASSIGNMENTS	1	X															
	2		X														
	3			X													
	4				X												
	5					X											
	6						X										
	7																
	8								X								

PED DETECTOR ASSIGNMENTS (MM-3-1-4-2)

(X = ASSIGN PED DETECTOR TO THAT PHASE)

	DET/PH	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
PED DET ASSIGN- MENTS	1																
	2																
	3																
	4				X												
	5																
	6																
	7																
	8								X								

DUAL ENTRY (MM-3-1-6)

DUAL ENTRY ENABLE:	Y	Y/N: Y=Enable Dual Entry. Note this is only one setting even though it appears on each controller screen.															
--------------------	---	---	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--

PG1	PH/CALLS	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
DUAL ENTRY ASSIGN- MENTS	1						X										
	2						X										
	3								X								
	4								X								
	5		X														
	6		X														
	7																
	8				X												

ENHANCED OPTIONS

DYNAMIC OMITTS (MM-3-1-9-1-1)

DYNAM OMITTS GP1 ENABLE:	Y	Y/N: Y=Enable. Note: This is one setting but appears on each screen. No input required for GP1.
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(X = ENABLE)

GRP1-1	FUNC/PH	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
DYNAM.	OMIT PHS	X															
OMITS	IF PH ON		X				X										
ASSIGN-	OR O/L	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P
MENTS	GRN																

Select phases to be dynamically omitted from OMIT PHS row. Select the PH-ONS and/or O/L GRNs that will cause those omits. Phases are omitted when controller state matches IF PH ON row or O/L GRN row.

Note that there are 2 groups of dynamic omits, each with 8 patterns. Group 1 is the default group and group 2 can be selected by input or TOD ckt 96. When a group is active, any one or all of the patterns within that group may be true depending on the controller state.

GRP1-2	FUNC/PH	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
DYNAM.	OMIT PHS					X											
OMITS	IF PH ON		X				X										
ASSIGN-	OR O/L	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P
MENTS	GRN																

GRP1-3	FUNC/PH	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
DYNAM.	OMIT PHS			X													
OMITS	IF PH ON				X				X								
ASSIGN-	OR O/L	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P
MENTS	GRN																

DYNAMIC RECALLS (MM-3-1-9-1-2)

DYN. RECALL GP1 ENABLE:	Y	Y/N: Y=Enable. Note: This is one setting but appears on each screen. No input required for GP1.
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(X = ENABLE)

GRP1-1	FUNC/PH	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
DYNAM.	RCL PHS		X				X										
RECALLS	IF PH ON	X															
ASSIGN-	OR O/L	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P
MENTS	GRN																

Select phases to be dynamically recalled from RCL PHS row. Select the PH-ONs and/or O/L GRNs that will cause those recalls. Phases are recalled when controller state matches PH ON row or O/L GRN row.

Note that there are 2 groups of dynamic recalls, each with 8 patterns. Group 1 is the default group and group 2 can be selected by input or TOD ckt 96. When a group is active, any one or all of the patterns within that group may be true depending on the controller state.

GRP1-2	FUNC/PH	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
DYNAM.	RCL PHS		X				X										
RECALLS	IF PH ON					X											
ASSIGN-	OR O/L	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P
MENTS	GRN																

GRP1-3	FUNC/PH	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
DYNAM.	RCL PHS				X				X								
RECALLS	IF PH ON			X													
ASSIGN-	OR O/L	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P
MENTS	GRN																

DETECTOR SWITCH AND COPY (MM-3-1-4-6-PGDN, etc.)

Detector Switching		Enable	Y	Y/N; Y = Enable, detector switching per plans 1-16 is enabled											
Detector Copy Group 1		Enable	N	Y/N; Y = Enable, detector copy per plans 1-16 is enabled											
Detector Copy Group 2 Input		Enable	N	Y/N; Y = Enable, the group 2 input is enabled. GP2 will then become selected copy group if input is active											

Detector switching disconnects calls from the "From" phase and transfers them to the "To" phase when "To" phase is green.
Detector copy simply copies calls from the "From" phase to the "To" phase, still retaining calls on "From" phase

DET SWITCH & COPY 1 of 16	DET/PH	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
	Ph Grns																
	Switch (TS1)																
	G1 Copy																
	G2 Copy																
	Switch	G1C G2C															

- Notes:
1. Phase greens on "Switch" row apply to TS1 only, do not use for TS2
TS2 Det Switching requires "From" and "To" phases only -->
 2. Det switch and copy operates at phase level and applies all calls from
all detectors assigned to "From" phase
= Specify the phases from which and to which calls get switched or copied for Switch, Group 1, and Group 2 copy.

From Ph:	1		
To Ph:	6		

DET SWITCH & COPY 5 of 16	DET/PH	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
	Ph Grns																
	Switch (TS1)																
	G1 Copy																
	G2 Copy																
	Switch	G1C G2C															

From Ph:	5		
To Ph:	2		

DET SWITCH & COPY 3 of 16	DET/PH	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
	Ph Grns																
	Switch (TS1)																
	G1 Copy																
	G2 Copy																
	Switch	G1C G2C															

From Ph:	3		
To Ph:	8		

DAY PLANS (MM-3-3-1-#)

	HH	MM	CIRCUIT PLAN	C	O	S	CKT	ON/OFF
1	00	00					11(FRE)	ON
2	00	00					11(FRE)	ON
	06	30					14(TP2)	ON
	10	00					14(TP2)	OFF
	14	30					15(TP3)	ON
	18	00					15(TP3)	OFF

WEEK PLANS (MM-3-3-3)

Plan	SUN	MON	TUE	WED	THU	FRI	SAT
1	1	2	2	2	2	2	1
2							
3							
4							
5							

CIRCUIT OVERRIDES (MM-3-3-6)

For each circuit specify TOD (time of day controlled), or manually ON or OFF. Default = TOD

CIRCUIT OVER- RIDES	Circuit	65	66	67	68	69	70	71	72
	Function	LL1	LL2	LL3	LL4	LL5	LL6	LL7	LL8
	State								
	Circuit	73	74	75	76	77	78	79	80
	Function	CN1	CN2	CN3	CN4	WRM	MIN	DIM	CVS
CIRCUIT OVER- RIDES	State								
	Circuit	81	82	83	84	85	86	87	88
	Function							PR1	PR2
	State							ON	ON
	Circuit	121	122	123	124	125	126	127	128
	Function	PH2	DP2	DP3	3CD	EVL	EML	ASC	DCP
	State					ON	ON		

DAYLIGHT SAVINGS (MM-3-3-7)

DAY LIGHT SAVINGS	Spring		Fall	
	(0-12)	(0-5)	(0-12)	(0-5)
	Month	WOM	Month	WOM
	3	2	11	1

Enter Month and Week of Month for Spring Forward and Fall Back days (typical 4 - 1 and 10 - 5). Unit will adjust at 2AM on Sunday of week specified.
Enter zero (or leave blank) if Daylight Savings not used.

SYNC REFERENCE MODE (MM-3-3-8)

Mode:	0	0 = Time dependent, 1 = C/O/S Event
-------	---	-------------------------------------

		HH	MM		
Time Clock Reset:		00	00	TOD clock reset to by TBC input	
Interrupter:		N		Y/N; Y = Interrupter pulses provided	
Pulses:		0		0-6 = Number of interrupter pulses	

TIME DEPENDENT CYCLE REFERENCES

HH	MM
CYC 1:	00
CYC 4:	00

HH	MM
CYC 2:	00
CYC 5:	00

HH	MM	HH	MM
CYC 3:	00	CYC 6:	00

When mode = Time dependent, enter reference times of day for each cycle. Default = 00:00 = midnight = most commonly used reference.
When mode = C/O/S Event, cycle restarts on each COS change. Only use this mode for specific reasons. Time dependent most common used mode.

CONTROLLER DATA

3/23/2020

CLOSED LOOP ID	Master Type:	0 = None, 1 = 3000 Series Master, 2 = 3800 EL master
	Intersection ID	0-255
	Master Identification	0-255
Allow Comm Xfer Between Ports 2 & 3		Y/N: Y = Incoming signal on Master port (2 or 3), gets echo'd on other port

COMM SET-UP (MM-3-5-2)

PG1 PORT ASSIGN	Master (CL) Port:	0 = None, 2 = Port 2, 3 = Port 3 (Port to be used to receive Master Comm)
	Monitor Port	0 = None, 2 = Port 2, 3 = Port 3 (Port to be used for Monitor Data Upload)
	Central Port:	0 = None, 2 = Port 2, 3 = Port 3 (Port to be used for Direct Dial-up Modem)

PG2 PORT 2 SETUP	Data Rate:	1200, 2400, 4800, 9600, 14400, 19200
	Parity	0 = None, 1 = Odd, 2=Even
	Data bits	0 = 7 bits, 1 = 8 bits

PG3 PORT 3 SETUP	Data Rate:	1200, 2400, 4800, 9600, 14400, 19200
	Parity	0 = None, 1 = Odd, 2=Even
	Data bits	0 = 7 bits, 1 = 8 bits

PG4	Modem Set-up String:	Up to 40 characters; A-Z, or # @ = , ! ; % \ &
-----	----------------------	--

PHONE NUMBERS (MM-3-5-3)

PHONE NUM-BERS	Tone:	Y/N
	Phone 1:	Number & control characters (W , ; # ' / T P) if used
	Phone 2:	Number & control characters (W , ; # ' / T P) if used

LOG DATA (MM-3-5-5)

PG1 SAMPLE	Volume Log Sample period:	60	0, 6, 10, 15, 20, 30, 60 minutes, Enabled by TOD Ckt. 125 (EVL)
	MOE Log Sample period:	60	0, 6, 10, 15, 20, 30, 60 minutes, Enabled by TOD Ckt. 126 (EML)

Appendix D

Heavy Vehicle Percentage

Heavy Vehicle Percentage - Full Build-Out													
AM/PM	Intersection												
1 Glancaster Road / Dickenson Road W		NBL	NBT	NBR	WBL	WBT	WBR	SBL	SBT	SBR	EBL	EBT	EBR
	AM	N/A		2%	29%	2%	N/A	5%	3%	2%	N/A	N/A	N/A
	PM	N/A		2%	2%	2%	N/A	2%	3%	2%	N/A	N/A	N/A
2 Dickenson Road / Upper James Street		NBL	NBT	NBR	WBL	WBT	WBR	SBL	SBT	SBR	EBL	EBT	EBR
	AM		27%	4%	3%	4%	9%	3%	2%	6%	10%	35%	9%
	PM		64%	3%	2%	2%	2%	2%	2%	3%	34%	17%	2%
3 Glancaster Road / Arterial Road 1N		NBL	NBT	NBR	WBL	WBT	WBR	SBL	SBT	SBR	EBL	EBT	EBR
	AM	N/A		13%	N/A	N/A		2%	2%	11%	N/A	N/A	N/A
	PM	N/A		9%	N/A	N/A		2%	2%	2%	N/A	N/A	N/A
4 Dickenson Road / Arterial Road 1N		NBL	NBT	NBR	WBL	WBT	WBR	SBL	SBT	SBR	EBL	EBT	EBR
	AM		2%	N/A	59%	16%	6%	N/A	N/A	N/A	N/A		6%
	PM		2%	N/A	22%	82%	2%	N/A	N/A	N/A	N/A		3%

Appendix E

Traffic Control Warrants

Dickenson Rd W @ Arterial 1N
2030 FT Full Built-Out

Justification #7

Justification	Description	Minimum Requirement		Minimum Requirement		Compliance			Signal
		1 Lane Highway		2 or More Lanes		Sectional		Entire %	
		Free Flow	Restr. Flow	Free Flow	Restr. Flow	Numerical	%		
1. Minimum Vehicular Volume	A. Vehicle volume, all approaches (average hour)	480	720	600	900	333	46%	46%	No
	B. Vehicle volume, along minor streets (average hour)	120	170	120	170	137	80%		
2. Delay to Cross Traffic	A. Vehicle volumes, major street (average hour)	480	720	600	900	242	34%	25%	No
	B. Combined vehicle and pedestrian volume crossing artery from minor streets (average hour)	50	75	50	75	19	25%		

Notes

1. Refer to OTM Book 12, pg 92, Mar 2012
2. Lowest section percentage governs justification
3. Average hourly volumes estimated from peak hour volumes, $AHV = PM/2$ or $(AM + PM) / 4$, including amplification factors
4. T-intersection factor corrected, applies only to 1B

Dickenson Rd W @ Glancaster Rd
2030 FT Full Built-Out

Justification #7

Justification	Description	Minimum Requirement		Minimum Requirement		Compliance			Signal
		1 Lane Highway		2 or More Lanes		Sectional		Entire %	
		Free Flow	Restr. Flow	Free Flow	Restr. Flow	Numerical	%		
1. Minimum Vehicular Volume	A. Vehicle volume, all approaches (average hour)	480	720	600	900	237	33%	33%	No
	B. Vehicle volume, along minor streets (average hour)	120	170	120	170	162	95%		
2. Delay to Cross Traffic	A. Vehicle volumes, major street (average hour)	480	720	600	900	76	11%	11%	No
	B. Combined vehicle and pedestrian volume crossing artery from minor streets (average hour)	50	75	50	75	132	176%		

Notes

1. Refer to OTM Book 12, pg 92, Mar 2012
2. Lowest section percentage governs justification
3. Average hourly volumes estimated from peak hour volumes, $AHV = PM/2$ or $(AM + PM) / 4$, including amplification factors
4. T-intersection factor corrected, applies only to 1B

Glanaster Rd @ Arterial 1N
2030 FT Full Built-Out

Justification #7

Justification	Description	Minimum Requirement		Minimum Requirement		Compliance			Signal
		1 Lane Highway		2 or More Lanes		Sectional		Entire %	
		Free Flow	Restr. Flow	Free Flow	Restr. Flow	Numerical	%		
1. Minimum Vehicular Volume	A. Vehicle volume, all approaches (average hour)	480	720	600	900	60	7%	7%	No
	B. Vehicle volume, along minor streets (average hour)	120	170	120	170	54	32%		
2. Delay to Cross Traffic	A. Vehicle volumes, major street (average hour)	480	720	600	900	23	3%	3%	No
	B. Combined vehicle and pedestrian volume crossing artery from minor streets (average hour)	50	75	50	75	30	40%		

Notes

1. Refer to OTM Book 12, pg 92, Mar 2012
2. Lowest section percentage governs justification
3. Average hourly volumes estimated from peak hour volumes, $AHV = PM/2$ or $(AM + PM) / 4$, including amplification factors
4. T-intersection factor corrected, applies only to 1B

Dickenson Rd W @ Arterial 1N
2035 FT Full Built-Out

Justification #7

Justification	Description	Minimum Requirement		Minimum Requirement		Compliance			Signal
		1 Lane Highway		2 or More Lanes		Sectional		Entire %	
		Free Flow	Restr. Flow	Free Flow	Restr. Flow	Numerical	%		
1. Minimum Vehicular Volume	A. Vehicle volume, all approaches (average hour)	480	720	600	900	348	48%	48%	No
	B. Vehicle volume, along minor streets (average hour)	120	170	120	170	137	80%		
2. Delay to Cross Traffic	A. Vehicle volumes, major street (average hour)	480	720	600	900	257	36%	25%	No
	B. Combined vehicle and pedestrian volume crossing artery from minor streets (average hour)	50	75	50	75	19	25%		

Notes

1. Refer to OTM Book 12, pg 92, Mar 2012
2. Lowest section percentage governs justification
3. Average hourly volumes estimated from peak hour volumes, $AHV = PM/2$ or $(AM + PM) / 4$, including amplification factors
4. T-intersection factor corrected, applies only to 1B

Dickenson Rd W @ Glanaster Rd
2035 FT Full Built-Out

Justification #7

Justification	Description	Minimum Requirement		Minimum Requirement		Compliance			Signal
		1 Lane Highway		2 or More Lanes		Sectional		Entire %	
		Free Flow	Restr. Flow	Free Flow	Restr. Flow	Numerical	%		
1. Minimum Vehicular Volume	A. Vehicle volume, all approaches (average hour)	480	720	600	900	253	35%	35%	No
	B. Vehicle volume, along minor streets (average hour)	120	170	120	170	171	101%		
2. Delay to Cross Traffic	A. Vehicle volumes, major street (average hour)	480	720	600	900	82	11%	11%	No
	B. Combined vehicle and pedestrian volume crossing artery from minor streets (average hour)	50	75	50	75	142	189%		

Notes

1. Refer to OTM Book 12, pg 92, Mar 2012
2. Lowest section percentage governs justification
3. Average hourly volumes estimated from peak hour volumes, $AHV = PM/2$ or $(AM + PM) / 4$, including amplification factors
4. T-intersection factor corrected, applies only to 1B

Glanaster Rd @ Arterial 1N
2035 FT Full Built-Out

Justification #7

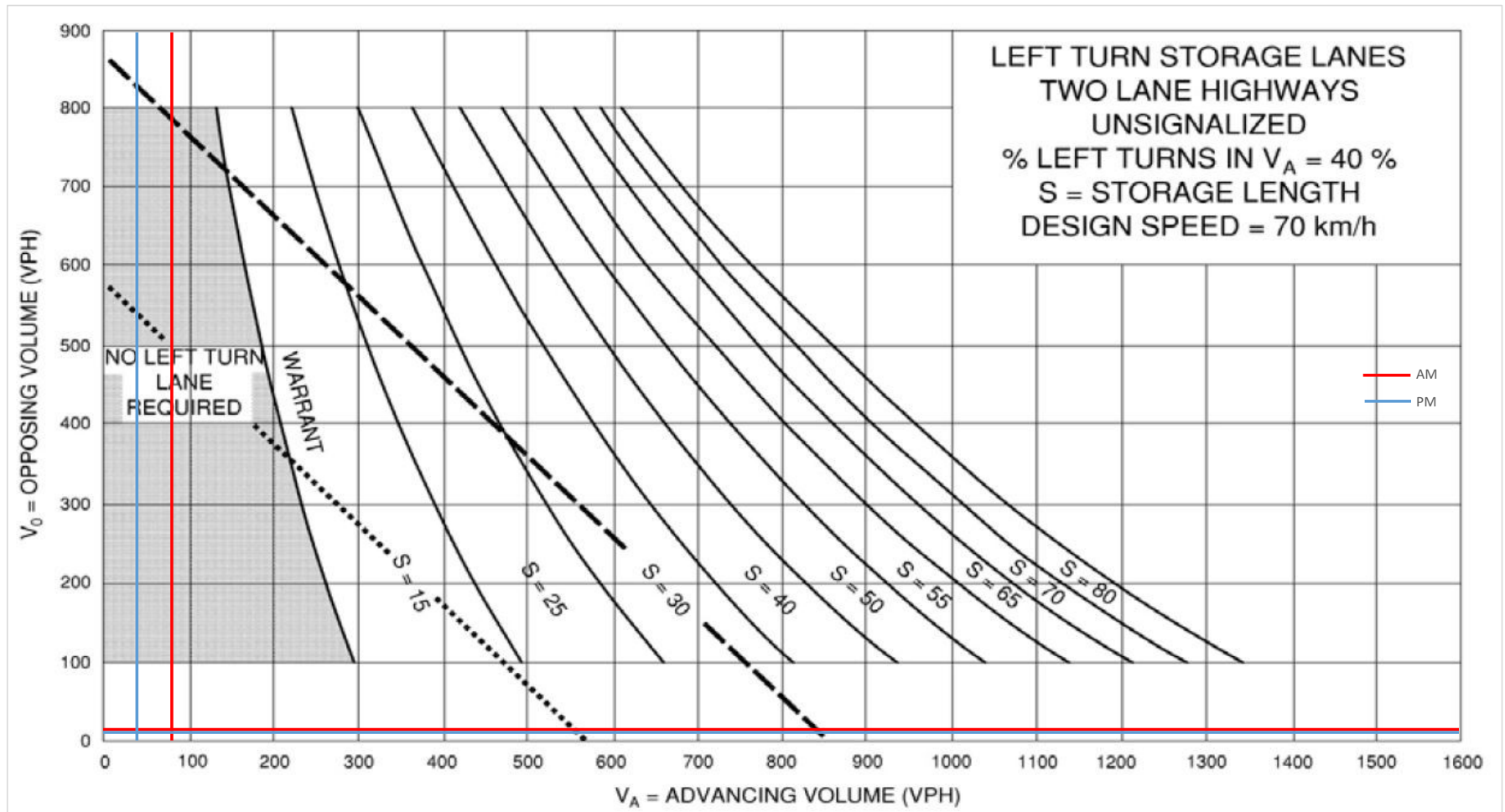
Justification	Description	Minimum Requirement		Minimum Requirement		Compliance			Signal
		1 Lane Highway		2 or More Lanes		Sectional		Entire %	
		Free Flow	Restr. Flow	Free Flow	Restr. Flow	Numerical	%		
1. Minimum Vehicular Volume	A. Vehicle volume, all approaches (average hour)	480	720	600	900	61	7%	7%	No
	B. Vehicle volume, along minor streets (average hour)	120	170	120	170	56	33%		
2. Delay to Cross Traffic	A. Vehicle volumes, major street (average hour)	480	720	600	900	23	3%	3%	No
	B. Combined vehicle and pedestrian volume crossing artery from minor streets (average hour)	50	75	50	75	31	41%		

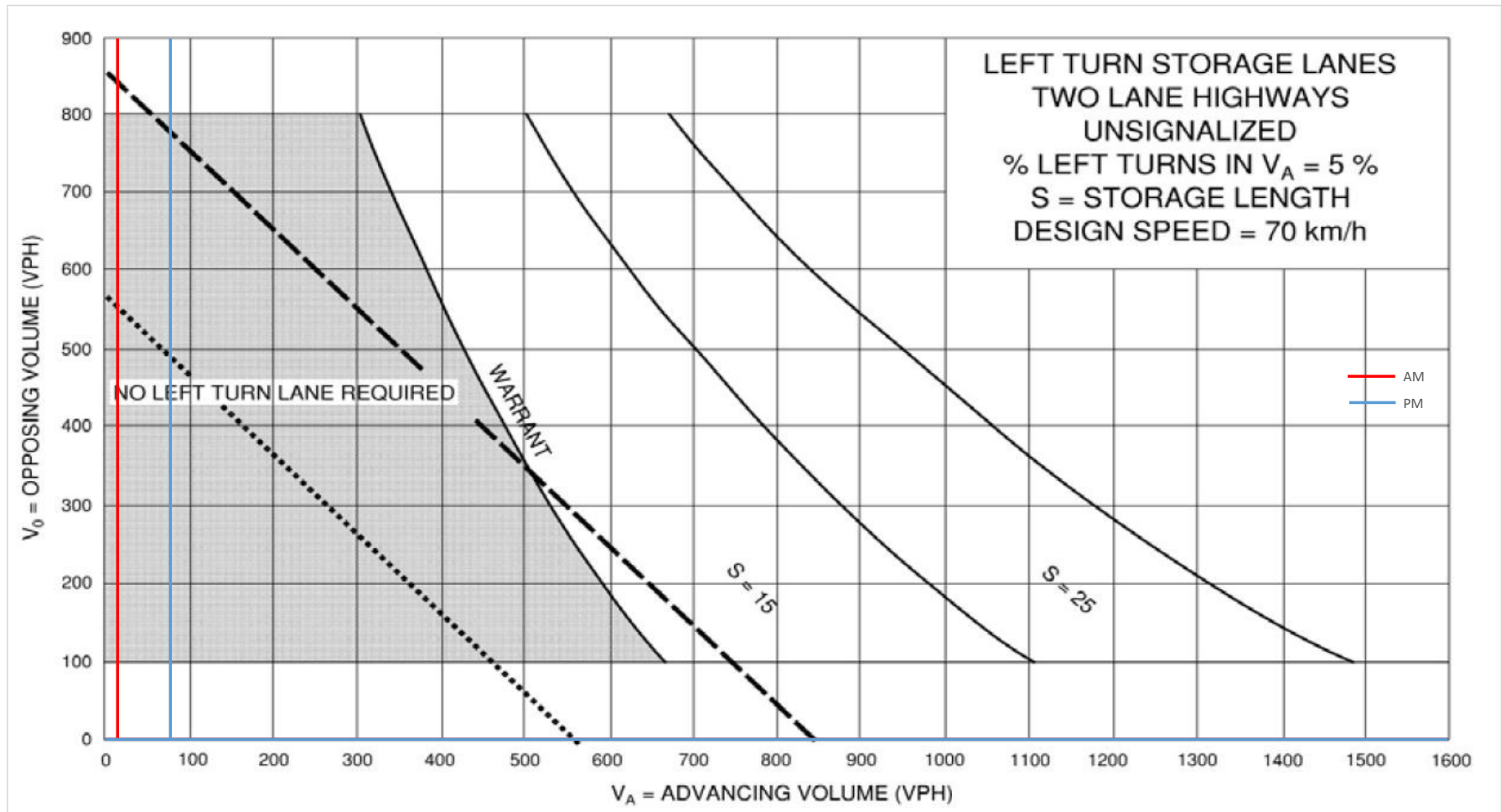
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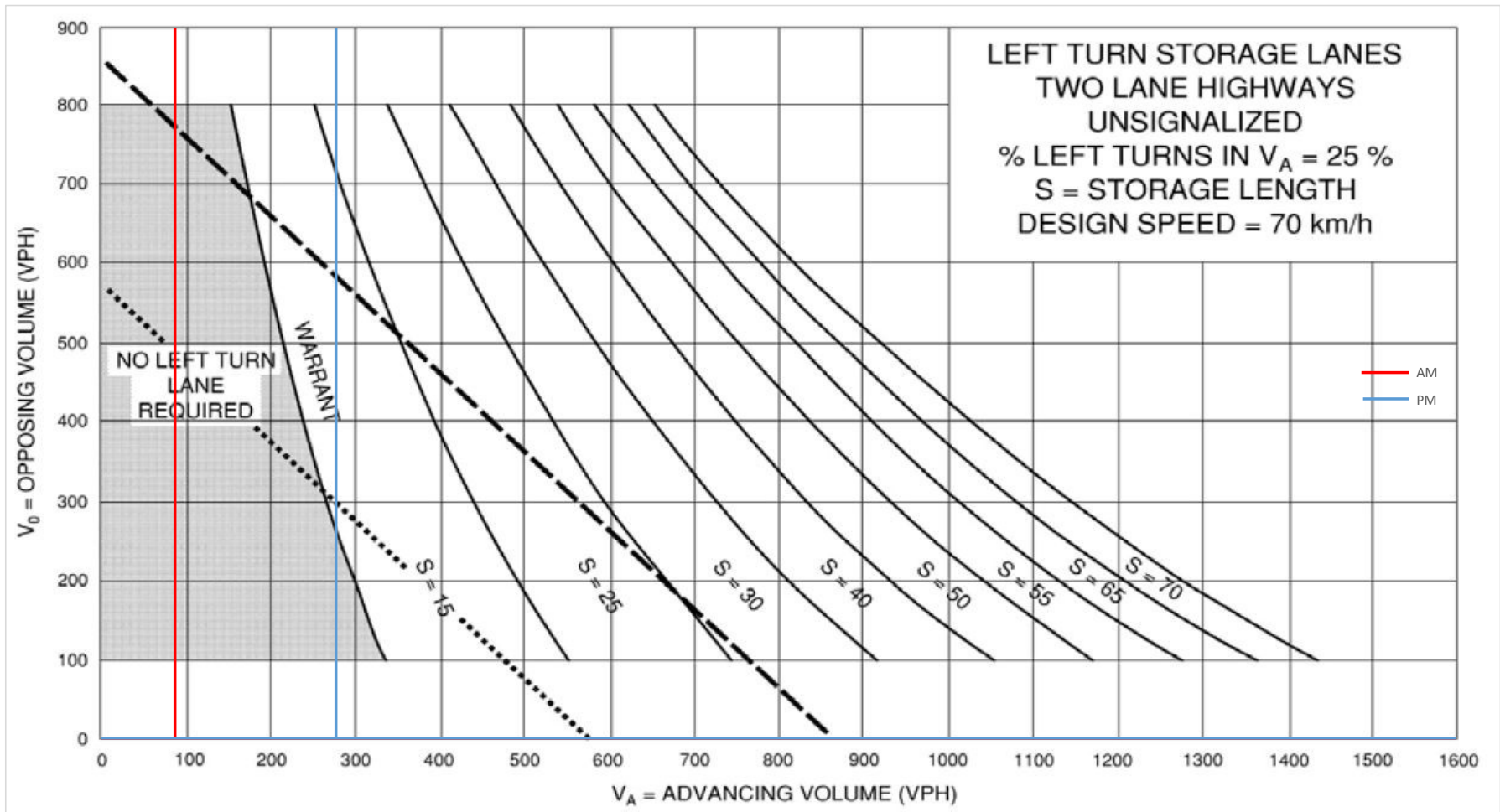
1. Refer to OTM Book 12, pg 92, Mar 2012
2. Lowest section percentage governs justification
3. Average hourly volumes estimated from peak hour volumes, $AHV = PM/2$ or $(AM + PM) / 4$, including amplification factors
4. T-intersection factor corrected, applies only to 1B

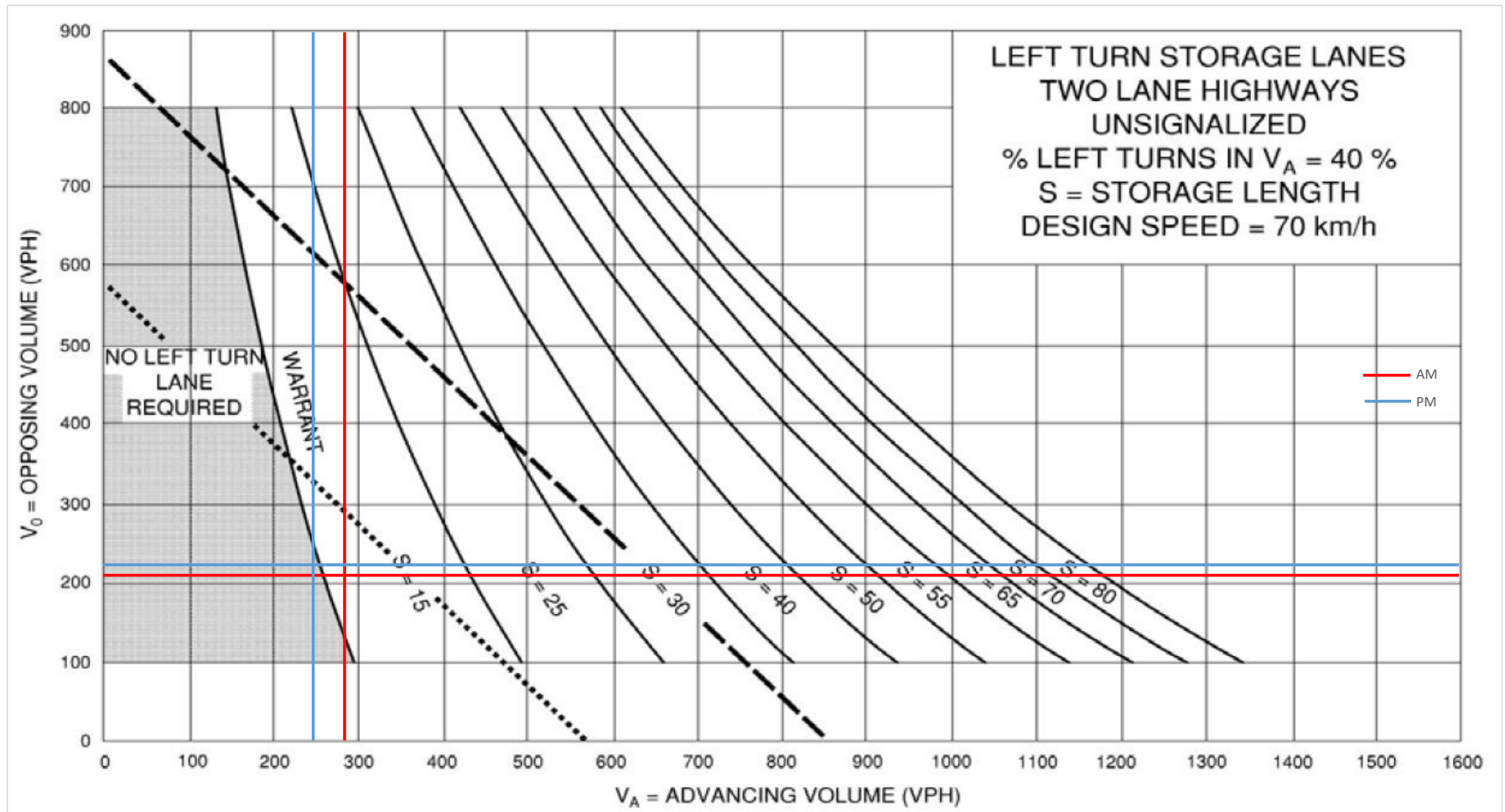
Appendix F

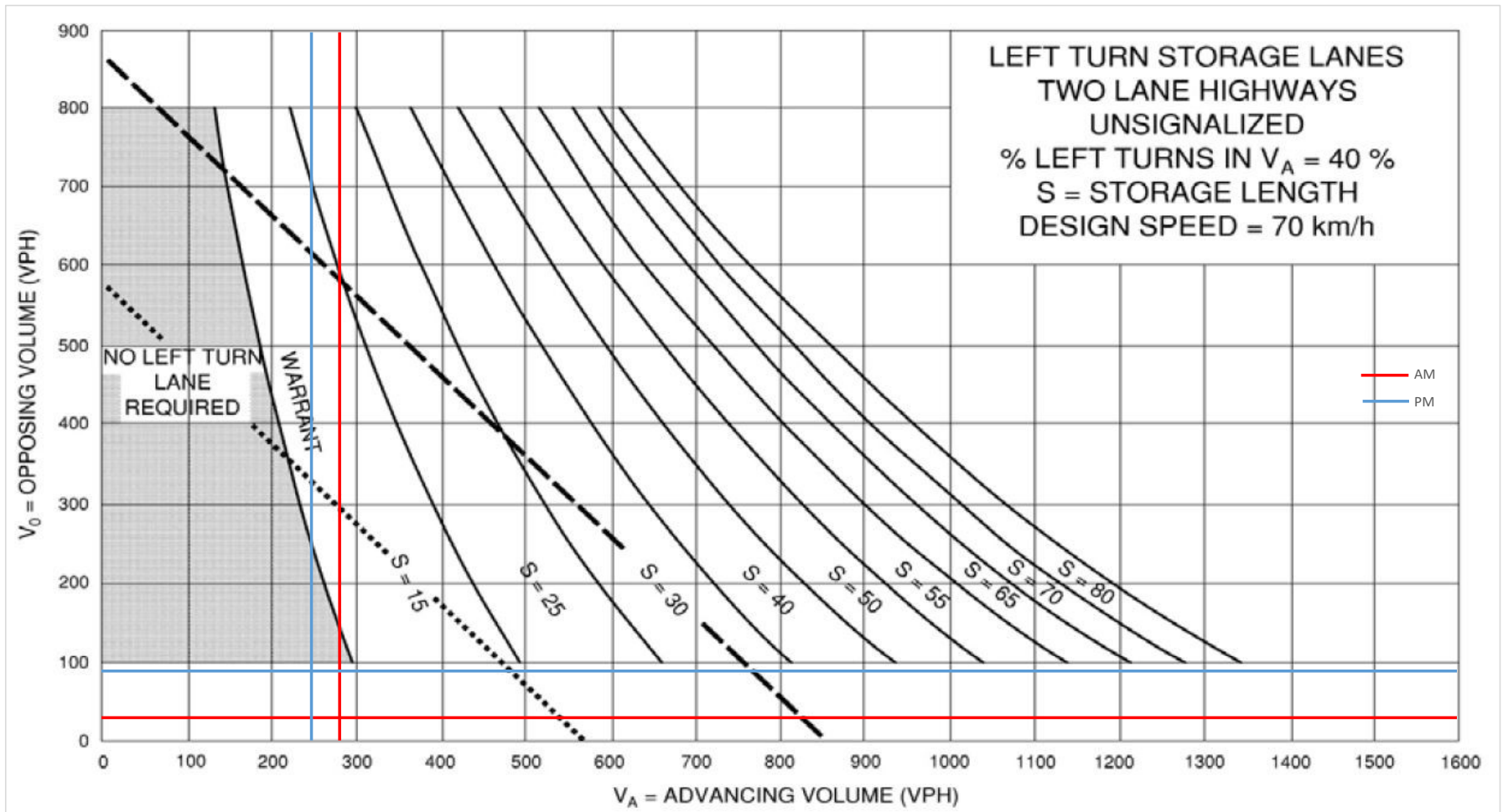
Left Turn Lane Warrants

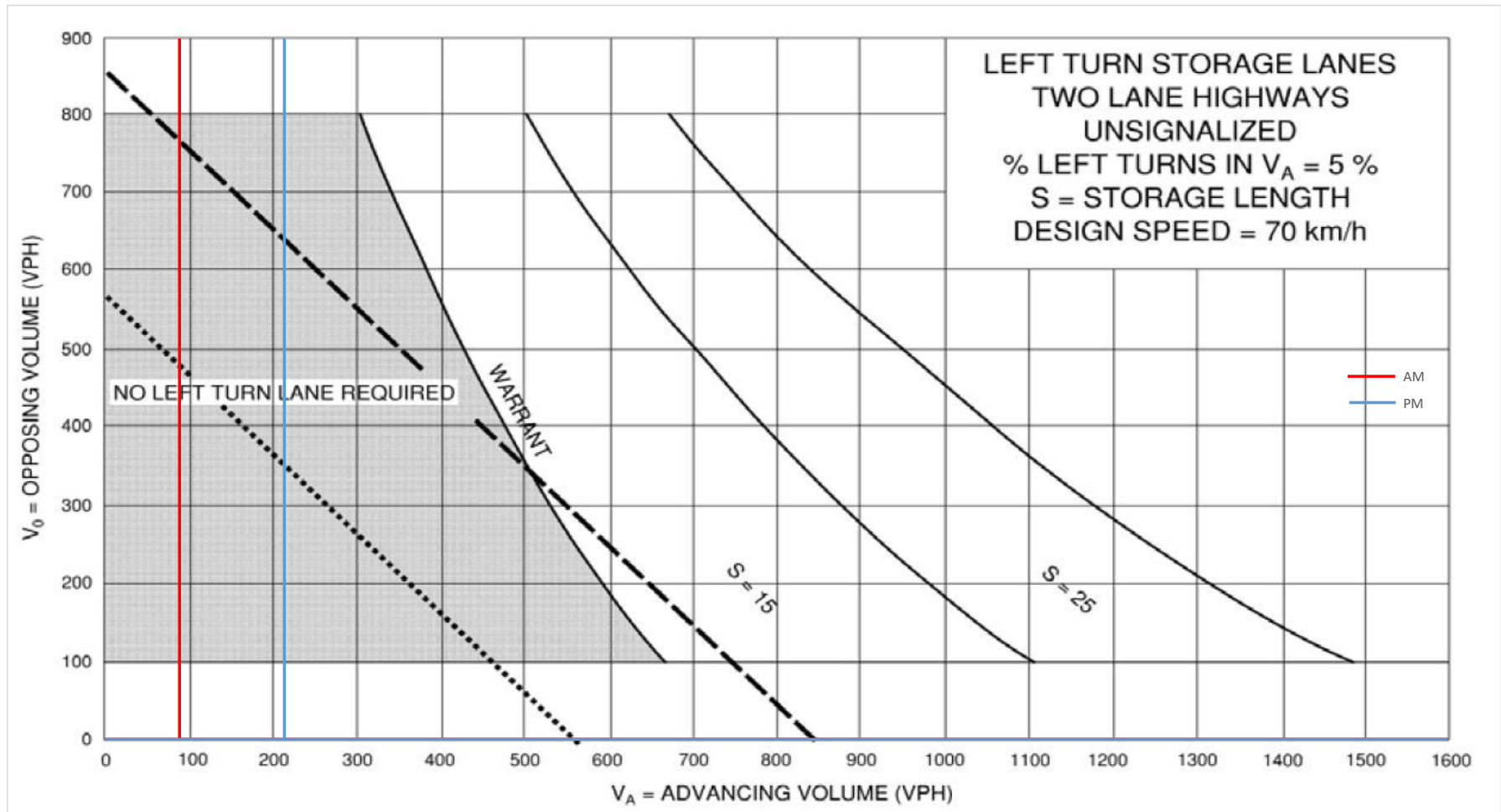


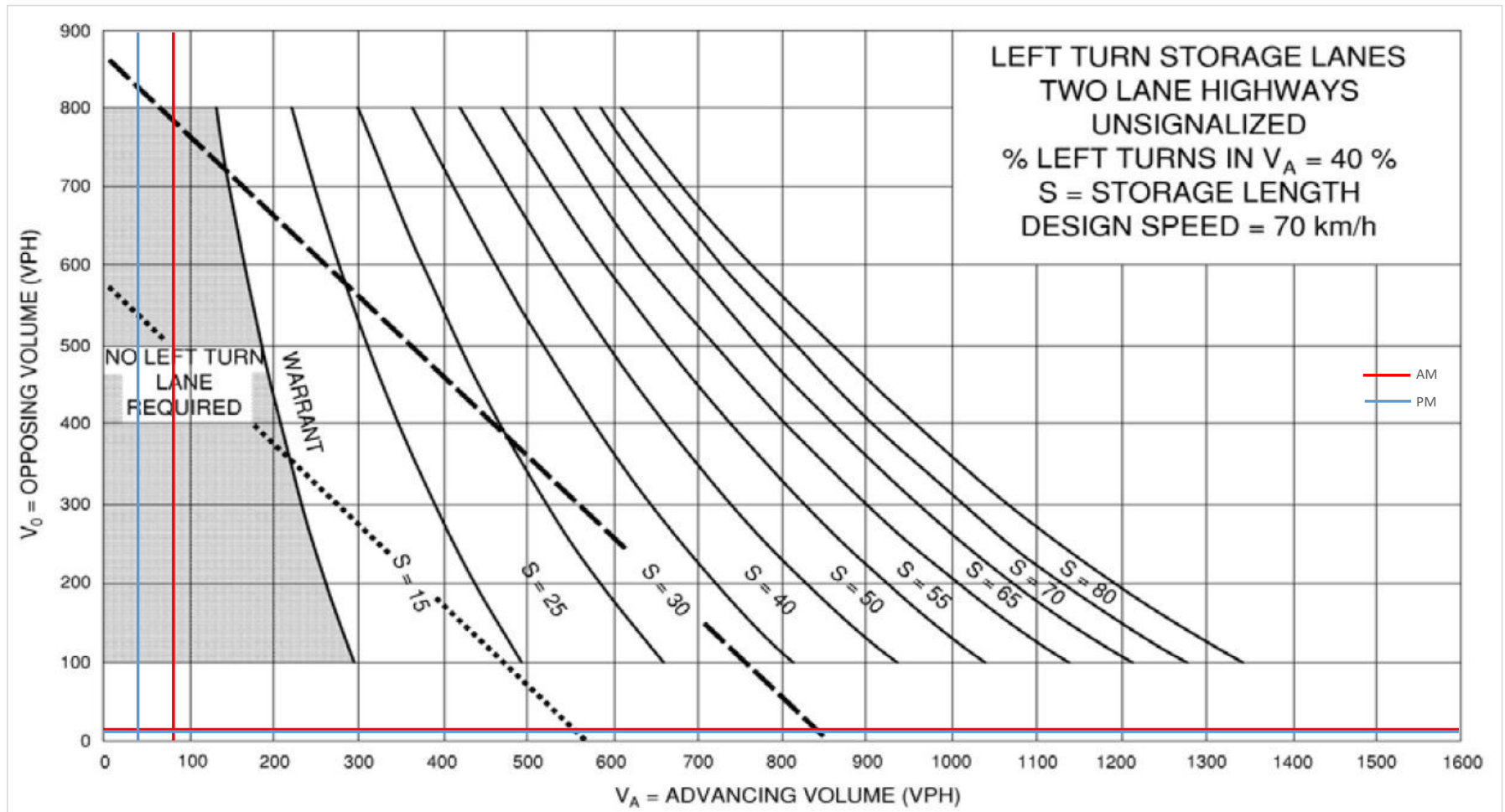


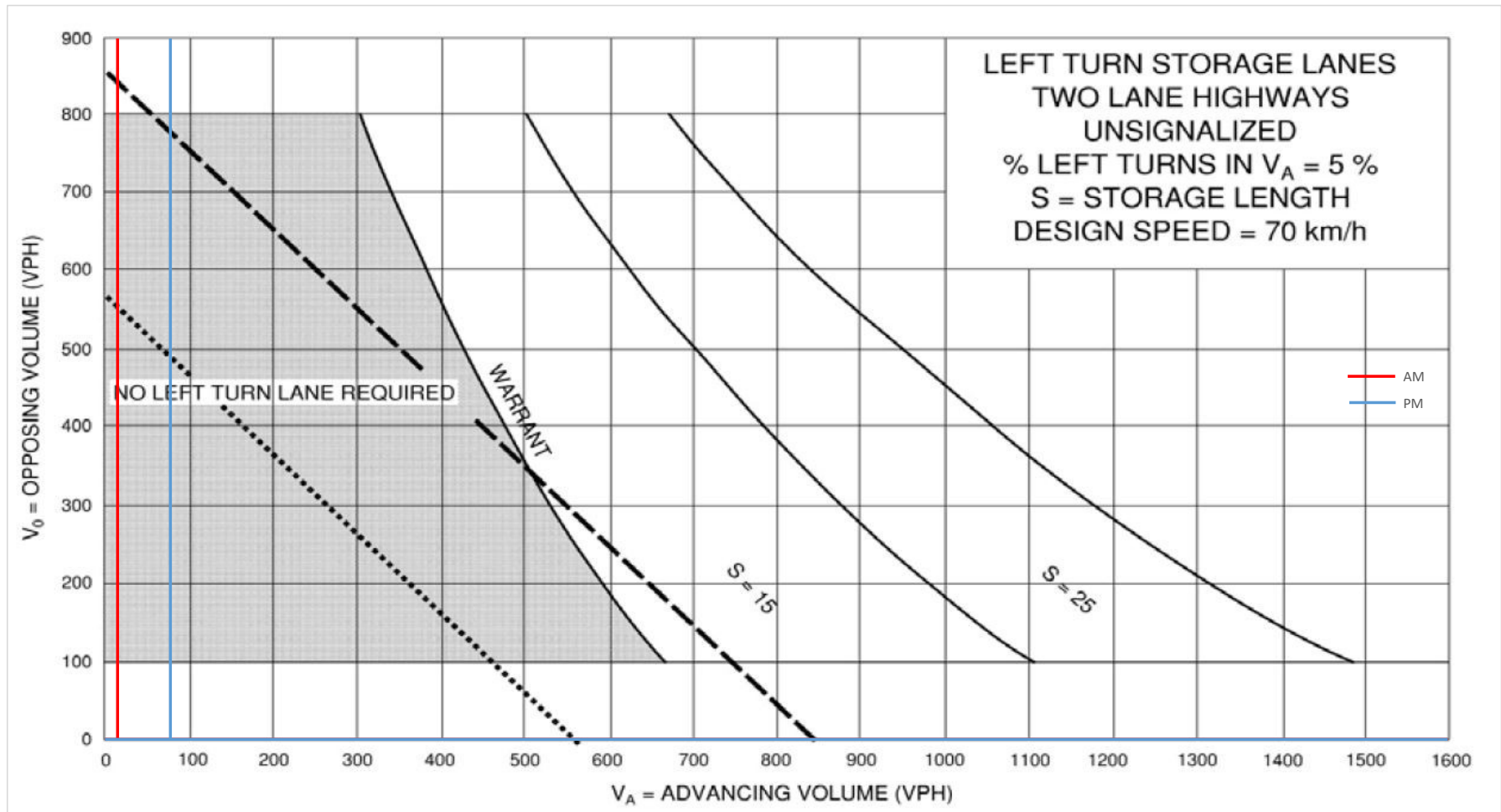


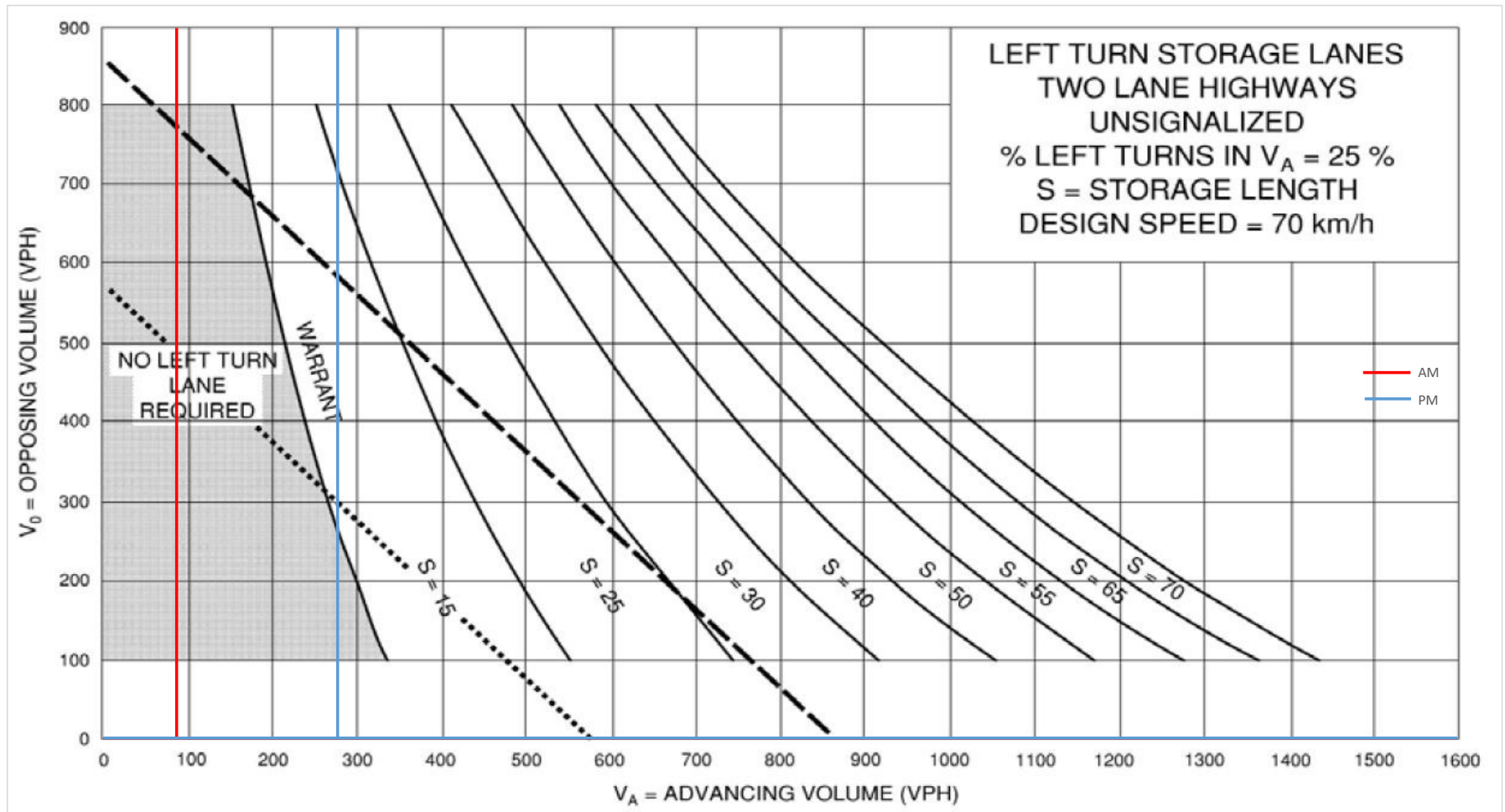


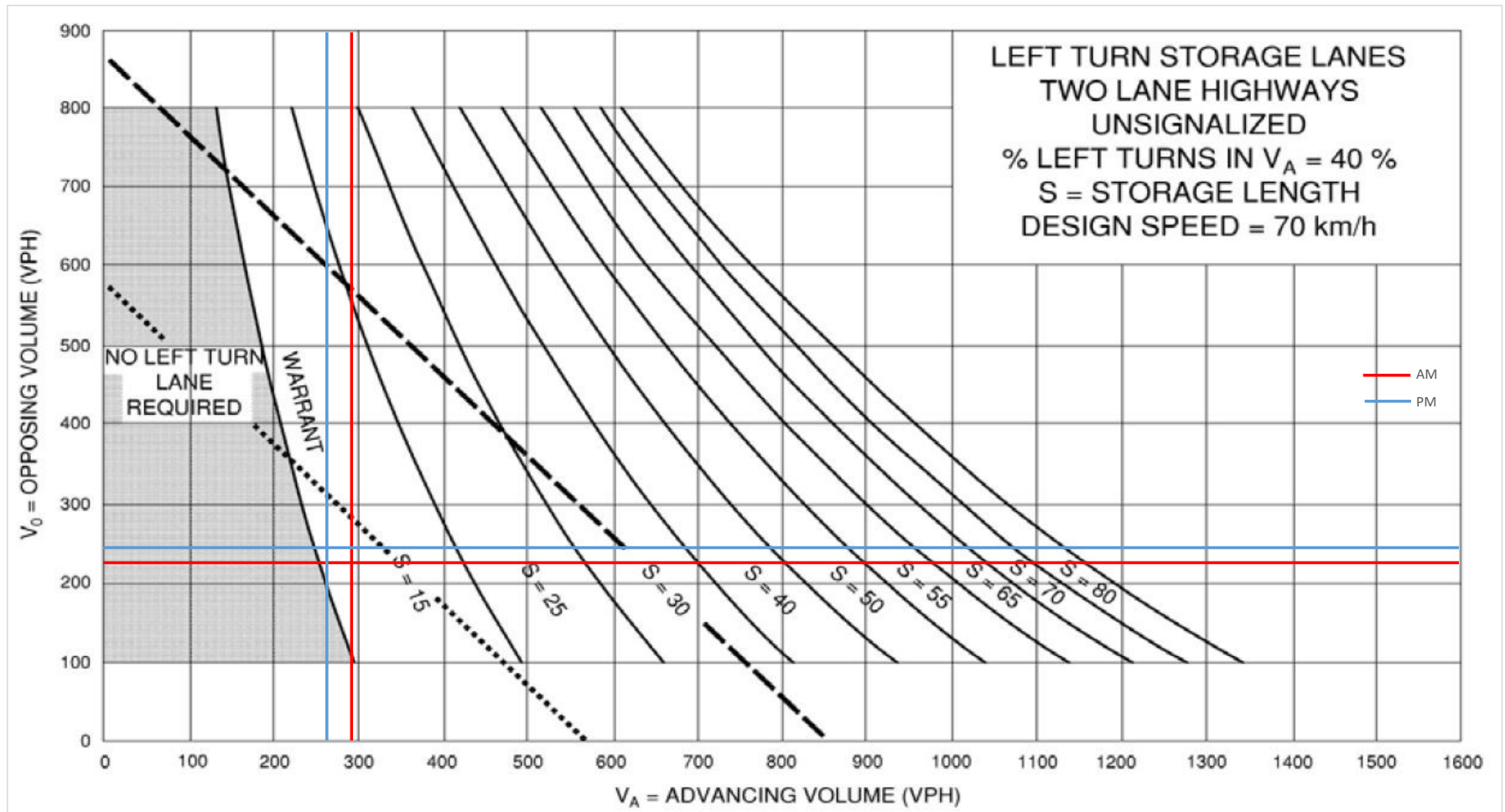


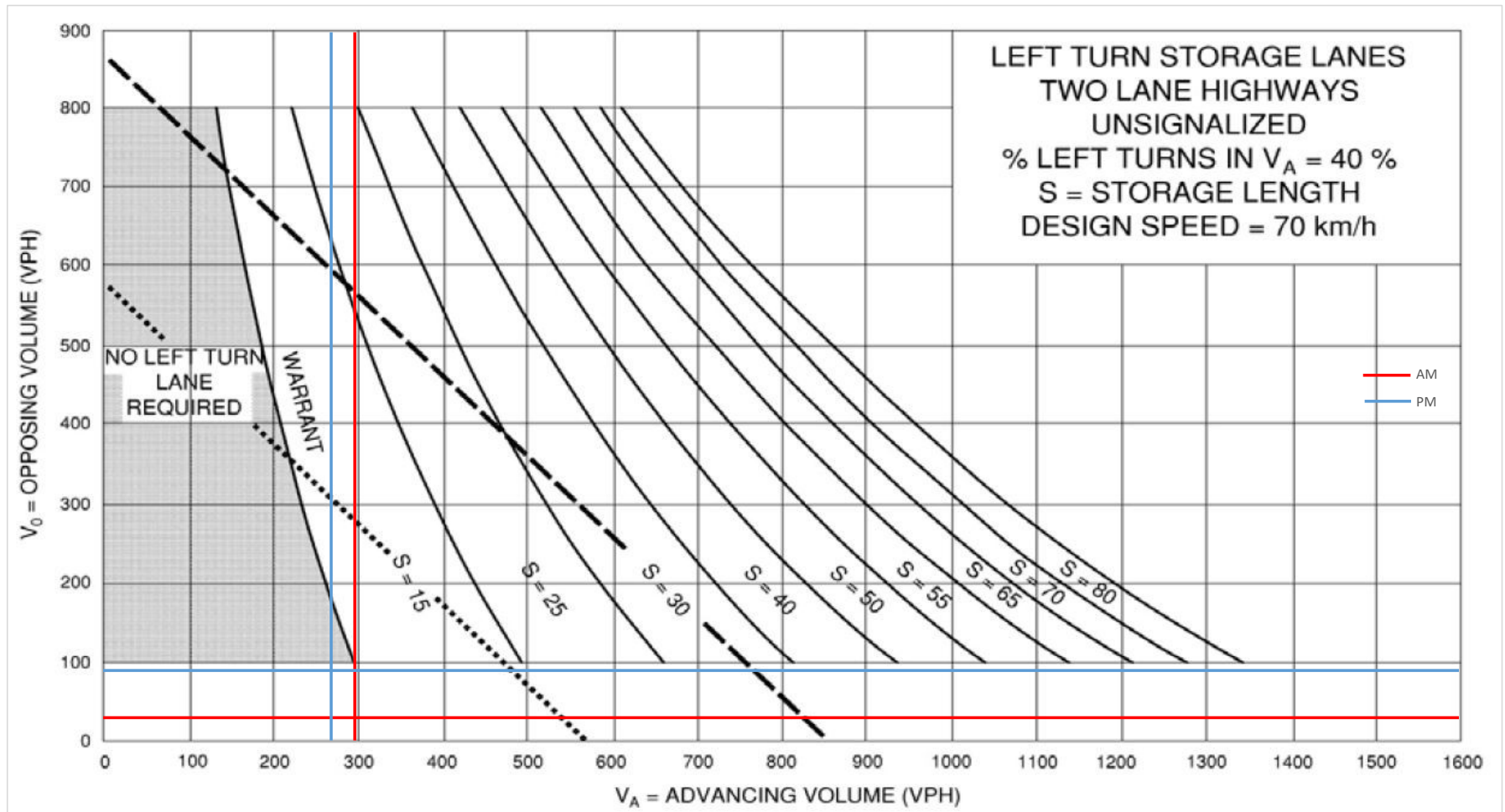


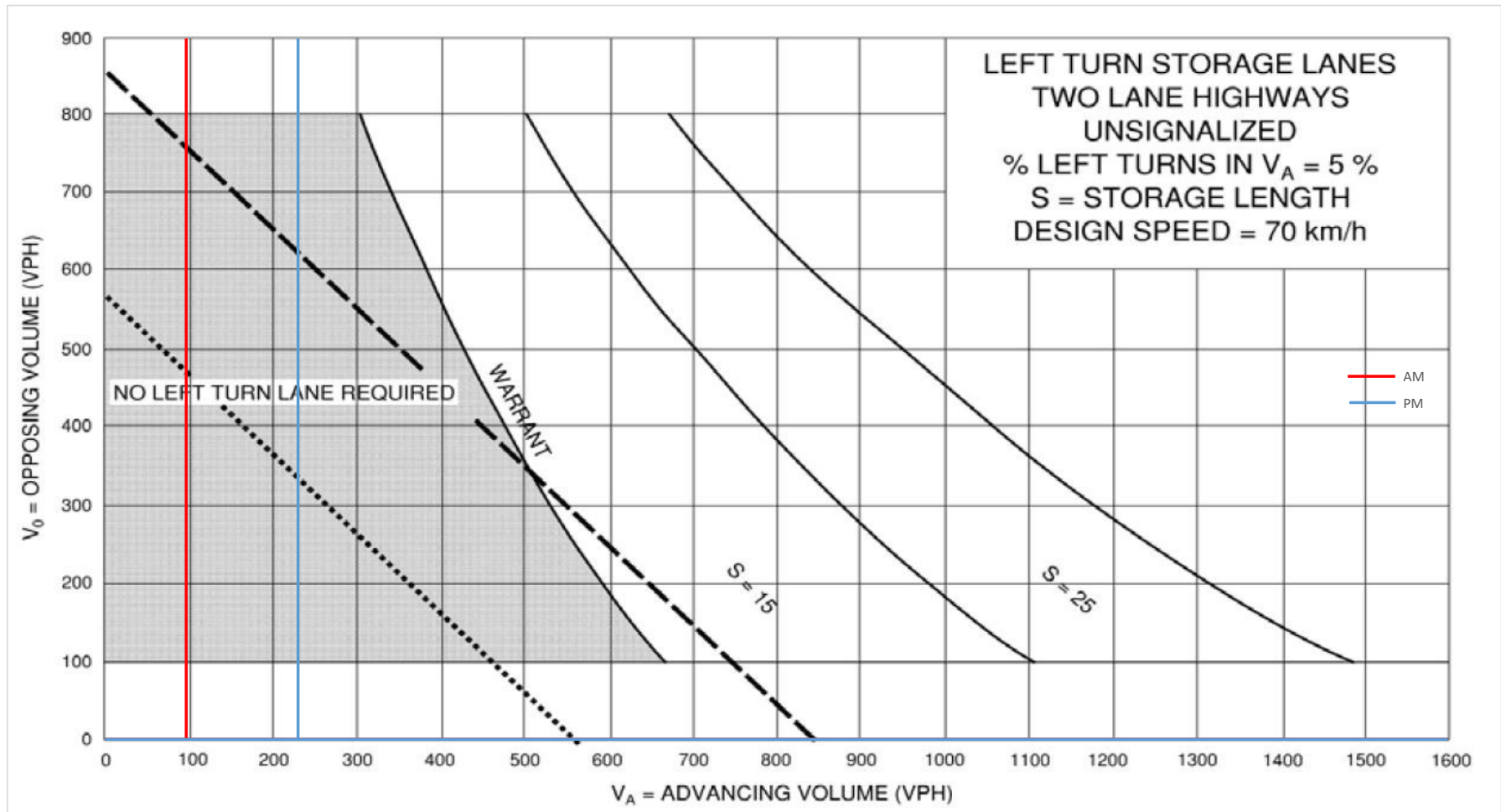












Appendix G

Synchro Analysis Worksheets: 2025 Existing Conditions

Lanes, Volumes, Timings
1: Glancaster Road & Dickenson Road West

Existing 2025 AM
Broccolini Hamilton Airport Site

						
Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	4	66	6	6	131	3
Future Volume (vph)	4	66	6	6	131	3
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor						
Frt	0.872	0.932				
Flt Protected	0.997				0.953	
Satd. Flow (prot)	1561	0	1507	0	0	1715
Flt Permitted	0.997				0.953	
Satd. Flow (perm)	1561	0	1507	0	0	1715
Link Speed (k/h)	60	50		50		
Link Distance (m)	2890.7	836.5		492.7		
Travel Time (s)	173.4	60.2		35.5		
Confl. Peds. (#/hr)	5	5	5		5	
Confl. Bikes (#/hr)	5		5			
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93
Heavy Vehicles (%)	2%	6%	2%	33%	5%	33%
Adj. Flow (vph)	4	71	6	6	141	3
Shared Lane Traffic (%)						
Lane Group Flow (vph)	75	0	12	0	0	144
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(m)	7.2	0.0		0.0		
Link Offset(m)	0.0	0.0		0.0		
Crosswalk Width(m)	4.8	4.8		4.8		
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)	25	15	15		25	
Sign Control	Stop	Stop		Stop		
Intersection Summary						
Area Type:	Other					
Control Type:	Unsignalized					
Intersection Capacity Utilization	26.9%			ICU Level of Service A		
Analysis Period (min)	15					

Intersection

Intersection Delay, s/veh	7.7
Intersection LOS	A

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	4	66	6	6	131	3
Future Vol, veh/h	4	66	6	6	131	3
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93
Heavy Vehicles, %	2	6	2	33	5	33
Mvmt Flow	4	71	6	6	141	3
Number of Lanes	1	0	1	0	0	1

Approach	WB	NB	SB
Opposing Approach		SB	NB
Opposing Lanes	0	1	1
Conflicting Approach Left	NB		WB
Conflicting Lanes Left	1	0	1
Conflicting Approach Right	SB	WB	
Conflicting Lanes Right	1	1	0
HCM Control Delay	7	7	8.2
HCM LOS	A	A	A

Lane	NBLn1	WBLn1	SBLn1
Vol Left, %	0%	6%	98%
Vol Thru, %	50%	0%	2%
Vol Right, %	50%	94%	0%
Sign Control	Stop	Stop	Stop
Traffic Vol by Lane	12	70	134
LT Vol	0	4	131
Through Vol	6	0	3
RT Vol	6	66	0
Lane Flow Rate	13	75	144
Geometry Grp	1	1	1
Degree of Util (X)	0.014	0.076	0.173
Departure Headway (Hd)	3.876	3.649	4.323
Convergence, Y/N	Yes	Yes	Yes
Cap	915	963	831
Service Time	1.933	1.742	2.343
HCM Lane V/C Ratio	0.014	0.078	0.173
HCM Control Delay	7	7	8.2
HCM Lane LOS	A	A	A
HCM 95th-tile Q	0	0.2	0.6

Lanes, Volumes, Timings

2: Upper James Street & Dickenson Road West/Dickenson Road East

Existing 2025 AM

Broccolini Hamilton Airport Site

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	41	36	30	46	46	31	30	996	33	16	776	43
Future Volume (vph)	41	36	30	46	46	31	30	996	33	16	776	43
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	70.0		0.0	0.0		0.0	55.0		10.0	100.0		20.0
Storage Lanes	1		1	0		0	1		1	1		1
Taper Length (m)	20.0			7.5			75.0			90.0		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Ped Bike Factor		1.00	0.98		0.99		1.00		0.97	1.00		0.97
Frt			0.850		0.965				0.850			0.850
Flt Protected		0.974			0.982		0.950			0.950		
Satd. Flow (prot)	0	1519	1346	0	1697	0	1752	3471	1568	1770	3374	1442
Flt Permitted		0.780			0.844		0.330			0.246		
Satd. Flow (perm)	0	1215	1320	0	1456	0	607	3471	1520	458	3374	1398
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			35		17				30			30
Link Speed (k/h)		60			60			80			70	
Link Distance (m)		2890.7			356.7			407.1			458.6	
Travel Time (s)		173.4			21.4			18.3			23.6	
Confl. Peds. (#/hr)	5		5	5		5	5		5	5		5
Confl. Bikes (#/hr)			5			5			5			5
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Heavy Vehicles (%)	34%	8%	20%	4%	9%	3%	3%	4%	3%	2%	7%	12%
Adj. Flow (vph)	43	38	32	48	48	33	32	1048	35	17	817	45
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	81	32	0	129	0	32	1048	35	17	817	45
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)		0.0			0.0			3.6			3.6	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway 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
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2	1	1	2		1	2	1	1	2	1
Detector Template	Left	Thru	Right	Left	Thru		Left	Thru	Right	Left	Thru	Right
Leading Detector (m)	2.0	10.0	2.0	2.0	10.0		2.0	10.0	2.0	2.0	10.0	2.0
Trailing Detector (m)	0.0	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	0.0
Detector 1 Size(m)	2.0	0.6	2.0	2.0	0.6		2.0	0.6	2.0	2.0	0.6	2.0
Detector 1 Type	Cl+Ex	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	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	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	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												

Lanes, Volumes, Timings

2: Upper James Street & Dickenson Road West/Dickenson Road East

Existing 2025 AM

Broccolini Hamilton Airport Site

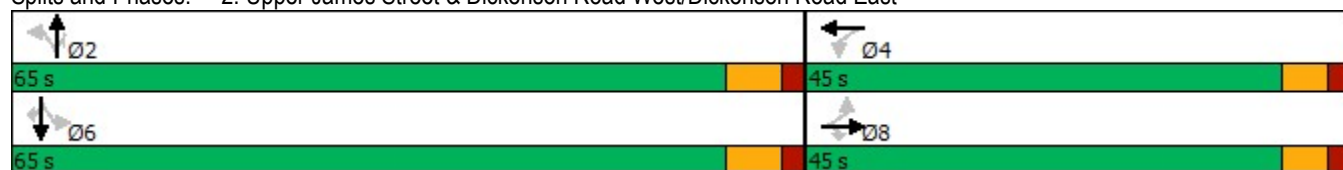
												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Perm	NA	Perm	Perm	NA		Perm	NA	Perm	Perm	NA	Perm
Protected Phases		8			4			2			6	
Permitted Phases	8		8	4			2		2	6		6
Detector Phase	8	8	8	4	4		2	2	2	6	6	6
Switch Phase												
Minimum Initial (s)	10.0	10.0	10.0	10.0	10.0		55.0	55.0	55.0	55.0	55.0	55.0
Minimum Split (s)	45.0	45.0	45.0	45.0	45.0		61.5	61.5	61.5	61.5	61.5	61.5
Total Split (s)	45.0	45.0	45.0	45.0	45.0		65.0	65.0	65.0	65.0	65.0	65.0
Total Split (%)	40.9%	40.9%	40.9%	40.9%	40.9%		59.1%	59.1%	59.1%	59.1%	59.1%	59.1%
Maximum Green (s)	39.0	39.0	39.0	39.0	39.0		58.5	58.5	58.5	58.5	58.5	58.5
Yellow Time (s)	3.7	3.7	3.7	3.7	3.7		4.6	4.6	4.6	4.6	4.6	4.6
All-Red Time (s)	2.3	2.3	2.3	2.3	2.3		1.9	1.9	1.9	1.9	1.9	1.9
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		6.0		6.5	6.5	6.5	6.5	6.5	6.5
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		5.7	5.7	5.7	5.7	5.7	5.7
Recall Mode	None	None	None	None	None		Max	Max	Max	Max	Max	Max
Walk Time (s)	7.0	7.0	7.0	7.0	7.0		15.0	15.0	15.0	15.0	15.0	15.0
Flash Dont Walk (s)	32.0	32.0	32.0	32.0	32.0		22.6	22.6	22.6	22.6	22.6	22.6
Pedestrian Calls (#/hr)	5	5	5	5	5		5	5	5	5	5	5
Act Effect Green (s)		16.0	16.0		16.0		62.1	62.1	62.1	62.1	62.1	62.1
Actuated g/C Ratio		0.18	0.18		0.18		0.68	0.68	0.68	0.68	0.68	0.68
v/c Ratio		0.38	0.12		0.48		0.08	0.44	0.03	0.05	0.35	0.05
Control Delay		35.5	9.2		32.9		8.6	8.9	4.0	8.8	8.1	4.5
Queue Delay		0.0	0.0		0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Delay		35.5	9.2		32.9		8.6	8.9	4.0	8.8	8.1	4.5
LOS		D	A		C		A	A	A	A	A	A
Approach Delay		28.0			32.9			8.7			7.9	
Approach LOS		C			C			A			A	
Queue Length 50th (m)		12.5	0.0		17.5		1.4	31.4	0.3	0.7	22.5	0.6
Queue Length 95th (m)		24.6	6.3		32.7		8.9	99.9	5.5	5.7	73.2	7.1
Internal Link Dist (m)		2866.7			332.7			383.1			434.6	
Turn Bay Length (m)							55.0		10.0	100.0		20.0
Base Capacity (vph)		529	594		643		415	2375	1049	313	2309	966
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		0.15	0.05		0.20		0.08	0.44	0.03	0.05	0.35	0.05
Intersection Summary												
Area Type:	Other											
Cycle Length: 110												
Actuated Cycle Length: 90.8												
Natural Cycle: 110												
Control Type: Semi Act-Uncoord												
Maximum v/c Ratio: 0.48												
Intersection Signal Delay: 10.8	Intersection LOS: B											

Intersection Capacity Utilization 119.5%

ICU Level of Service H

Analysis Period (min) 15

Splits and Phases: 2: Upper James Street & Dickenson Road West/Dickenson Road East



Queues

2: Upper James Street & Dickenson Road West/Dickenson Road East

Existing 2025 AM

Broccolini Hamilton Airport Site



Lane Group	EBT	EBR	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	81	32	129	32	1048	35	17	817	45
v/c Ratio	0.38	0.12	0.48	0.08	0.44	0.03	0.05	0.35	0.05
Control Delay	35.5	9.2	32.9	8.6	8.9	4.0	8.8	8.1	4.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	35.5	9.2	32.9	8.6	8.9	4.0	8.8	8.1	4.5
Queue Length 50th (m)	12.5	0.0	17.5	1.4	31.4	0.3	0.7	22.5	0.6
Queue Length 95th (m)	24.6	6.3	32.7	8.9	99.9	5.5	5.7	73.2	7.1
Internal Link Dist (m)	2866.7		332.7		383.1			434.6	
Turn Bay Length (m)				55.0		10.0	100.0		20.0
Base Capacity (vph)	529	594	643	415	2375	1049	313	2309	966
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	0.15	0.05	0.20	0.08	0.44	0.03	0.05	0.35	0.05
Intersection Summary									

HCM Signalized Intersection Capacity Analysis

2: Upper James Street & Dickenson Road West/Dickenson Road East

Existing 2025 AM

Broccolini Hamilton Airport Site

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↖	↗		↔		↖	↗	↗	↖	↗	↗
Traffic Volume (vph)	41	36	30	46	46	31	30	996	33	16	776	43
Future Volume (vph)	41	36	30	46	46	31	30	996	33	16	776	43
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		6.0	6.0		6.0		6.5	6.5	6.5	6.5	6.5	6.5
Lane Util. Factor		1.00	1.00		1.00		1.00	0.95	1.00	1.00	0.95	1.00
Frpb, ped/bikes		1.00	0.98		0.99		1.00	1.00	0.97	1.00	1.00	0.97
Flpb, ped/bikes		1.00	1.00		1.00		1.00	1.00	1.00	1.00	1.00	1.00
Frt		1.00	0.85		0.97		1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected		0.97	1.00		0.98		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)		1517	1317		1694		1749	3471	1523	1767	3374	1401
Flt Permitted		0.78	1.00		0.84		0.33	1.00	1.00	0.25	1.00	1.00
Satd. Flow (perm)		1215	1317		1456		608	3471	1523	458	3374	1401
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	43	38	32	48	48	33	32	1048	35	17	817	45
RTOR Reduction (vph)	0	0	26	0	14	0	0	0	9	0	0	9
Lane Group Flow (vph)	0	81	6	0	115	0	32	1048	26	17	817	36
Confl. Peds. (#/hr)	5		5	5		5	5		5	5		5
Confl. Bikes (#/hr)			5			5			5			5
Heavy Vehicles (%)	34%	8%	20%	4%	9%	3%	3%	4%	3%	2%	7%	12%
Turn Type	Perm	NA	Perm	Perm	NA		Perm	NA	Perm	Perm	NA	Perm
Protected Phases		8			4			2			6	
Permitted Phases	8		8	4			2		2	6		6
Actuated Green, G (s)		16.0	16.0		16.0		62.1	62.1	62.1	62.1	62.1	62.1
Effective Green, g (s)		16.0	16.0		16.0		62.1	62.1	62.1	62.1	62.1	62.1
Actuated g/C Ratio		0.18	0.18		0.18		0.69	0.69	0.69	0.69	0.69	0.69
Clearance Time (s)		6.0	6.0		6.0		6.5	6.5	6.5	6.5	6.5	6.5
Vehicle Extension (s)		3.0	3.0		3.0		5.7	5.7	5.7	5.7	5.7	5.7
Lane Grp Cap (vph)		214	232		257		416	2379	1043	313	2312	960
v/s Ratio Prot							c0.30				0.24	
v/s Ratio Perm		0.07	0.00		c0.08		0.05		0.02	0.04		0.03
v/c Ratio		0.38	0.02		0.45		0.08	0.44	0.02	0.05	0.35	0.04
Uniform Delay, d1		32.9	30.8		33.3		4.7	6.4	4.6	4.7	5.9	4.6
Progression Factor		1.00	1.00		1.00		1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2		1.1	0.0		1.2		0.4	0.6	0.0	0.3	0.4	0.1
Delay (s)		34.0	30.9		34.6		5.1	7.0	4.6	5.0	6.3	4.7
Level of Service		C	C		C		A	A	A	A	A	A
Approach Delay (s)		33.1			34.6			6.9			6.2	
Approach LOS		C			C			A			A	
Intersection Summary												
HCM 2000 Control Delay			9.6			HCM 2000 Level of Service			A			
HCM 2000 Volume to Capacity ratio			0.44									
Actuated Cycle Length (s)			90.6			Sum of lost time (s)			12.5			
Intersection Capacity Utilization			119.5%			ICU Level of Service			H			
Analysis Period (min)			15									
c Critical Lane Group												

Lanes, Volumes, Timings
1: Glanaster Road & Dickenson Road West

Existing 2025 PM
Broccolini Hamilton Airport Site

						
Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	9	128	4	5	181	6
Future Volume (vph)	9	128	4	5	181	6
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor						
Frt	0.874		0.925			
Flt Protected	0.997					0.954
Satd. Flow (prot)	1623	0	1566	0	0	1760
Flt Permitted	0.997					0.954
Satd. Flow (perm)	1623	0	1566	0	0	1760
Link Speed (k/h)	60		50			50
Link Distance (m)	2890.7		836.5			492.7
Travel Time (s)	173.4		60.2			35.5
Confl. Peds. (#/hr)	5	5		4	5	
Confl. Bikes (#/hr)		5		5		
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93
Heavy Vehicles (%)	2%	2%	25%	2%	3%	2%
Adj. Flow (vph)	10	138	4	5	195	6
Shared Lane Traffic (%)						
Lane Group Flow (vph)	148	0	9	0	0	201
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(m)	7.2		0.0			0.0
Link Offset(m)	0.0		0.0			0.0
Crosswalk Width(m)	4.8		4.8			4.8
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)	25	15		15	25	
Sign Control	Stop		Stop			Stop
Intersection Summary						
Area Type:	Other					
Control Type:	Unsignalized					
Intersection Capacity Utilization	33.3%			ICU Level of Service A		
Analysis Period (min)	15					

Intersection	
Intersection Delay, s/veh	8.3
Intersection LOS	A

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	9	128	4	5	181	6
Future Vol, veh/h	9	128	4	5	181	6
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93
Heavy Vehicles, %	2	2	25	2	3	2
Mvmt Flow	10	138	4	5	195	6
Number of Lanes	1	0	1	0	0	1

Approach	WB	NB	SB
Opposing Approach		SB	NB
Opposing Lanes	0	1	1
Conflicting Approach Left	NB		WB
Conflicting Lanes Left	1	0	1
Conflicting Approach Right	SB	WB	
Conflicting Lanes Right	1	1	0
HCM Control Delay	7.6	7.6	8.9
HCM LOS	A	A	A

Lane	NBLn1	WBLn1	SBLn1
Vol Left, %	0%	7%	97%
Vol Thru, %	44%	0%	3%
Vol Right, %	56%	93%	0%
Sign Control	Stop	Stop	Stop
Traffic Vol by Lane	9	137	187
LT Vol	0	9	181
Through Vol	4	0	6
RT Vol	5	128	0
Lane Flow Rate	10	147	201
Geometry Grp	1	1	1
Degree of Util (X)	0.012	0.159	0.246
Departure Headway (Hd)	4.515	3.886	4.412
Convergence, Y/N	Yes	Yes	Yes
Cap	795	928	808
Service Time	2.527	1.886	2.47
HCM Lane V/C Ratio	0.013	0.158	0.249
HCM Control Delay	7.6	7.6	8.9
HCM Lane LOS	A	A	A
HCM 95th-tile Q	0	0.6	1

Lanes, Volumes, Timings

2: Upper James Street & Dickenson Road West/Dickenson Road East

Existing 2025 PM

Broccolini Hamilton Airport Site

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	43	80	52	55	65	34	34	1087	76	41	1201	49
Future Volume (vph)	43	80	52	55	65	34	34	1087	76	41	1201	49
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	70.0		0.0	0.0		0.0	55.0		13.0	100.0		22.0
Storage Lanes	1		1	0		0	1		1	1		1
Taper Length (m)	20.0			7.5			75.0			90.0		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Ped Bike Factor		1.00	0.98		0.99		1.00		0.97	1.00		0.97
Frt			0.850		0.970				0.850			0.850
Flt Protected		0.983			0.982		0.950			0.950		
Satd. Flow (prot)	0	1645	1524	0	1767	0	1703	3505	1583	1770	3505	1417
Flt Permitted		0.805			0.826		0.162			0.194		
Satd. Flow (perm)	0	1346	1494	0	1484	0	290	3505	1535	361	3505	1373
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			36		14				30			30
Link Speed (k/h)		60			60			80			70	
Link Distance (m)		2890.7			356.7			407.1			458.6	
Travel Time (s)		173.4			21.4			18.3			23.6	
Confl. Peds. (#/hr)	5		5	5		5	5		5	5		5
Confl. Bikes (#/hr)			5			5			5			5
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	33%	3%	6%	2%	2%	2%	6%	3%	2%	2%	3%	14%
Adj. Flow (vph)	48	89	58	61	72	38	38	1208	84	46	1334	54
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	137	58	0	171	0	38	1208	84	46	1334	54
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)		0.0			0.0			3.6			3.6	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway 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
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2	1	1	2		1	2	1	1	2	1
Detector Template	Left	Thru	Right	Left	Thru		Left	Thru	Right	Left	Thru	Right
Leading Detector (m)	2.0	10.0	2.0	2.0	10.0		2.0	10.0	2.0	2.0	10.0	2.0
Trailing Detector (m)	0.0	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	0.0
Detector 1 Size(m)	2.0	0.6	2.0	2.0	0.6		2.0	0.6	2.0	2.0	0.6	2.0
Detector 1 Type	Cl+Ex	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	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	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	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												

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JL

CGH Transportation

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Lanes, Volumes, Timings

2: Upper James Street & Dickenson Road West/Dickenson Road East

Existing 2025 PM

Broccolini Hamilton Airport Site

												
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	Perm	NA		Perm	NA	Perm	Perm	NA	Perm
Protected Phases		8			4			2			6	
Permitted Phases	8		8	4			2		2	6		6
Detector Phase	8	8	8	4	4		2	2	2	6	6	6
Switch Phase												
Minimum Initial (s)	10.0	10.0	10.0	10.0	10.0		55.0	55.0	55.0	55.0	55.0	55.0
Minimum Split (s)	45.0	45.0	45.0	45.0	45.0		61.5	61.5	61.5	61.5	61.5	61.5
Total Split (s)	45.0	45.0	45.0	45.0	45.0		65.0	65.0	65.0	65.0	65.0	65.0
Total Split (%)	40.9%	40.9%	40.9%	40.9%	40.9%		59.1%	59.1%	59.1%	59.1%	59.1%	59.1%
Maximum Green (s)	39.0	39.0	39.0	39.0	39.0		58.5	58.5	58.5	58.5	58.5	58.5
Yellow Time (s)	3.7	3.7	3.7	3.7	3.7		4.6	4.6	4.6	4.6	4.6	4.6
All-Red Time (s)	2.3	2.3	2.3	2.3	2.3		1.9	1.9	1.9	1.9	1.9	1.9
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		6.0		6.5	6.5	6.5	6.5	6.5	6.5
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		5.7	5.7	5.7	5.7	5.7	5.7
Recall Mode	None	None	None	None	None		Max	Max	Max	Max	Max	Max
Walk Time (s)	7.0	7.0	7.0	7.0	7.0		15.0	15.0	15.0	15.0	15.0	15.0
Flash Dont Walk (s)	32.0	32.0	32.0	32.0	32.0		22.6	22.6	22.6	22.6	22.6	22.6
Pedestrian Calls (#/hr)	5	5	5	5	5		5	5	5	5	5	5
Act Effect Green (s)		17.3	17.3		17.3		59.2	59.2	59.2	59.2	59.2	59.2
Actuated g/C Ratio		0.19	0.19		0.19		0.66	0.66	0.66	0.66	0.66	0.66
v/c Ratio		0.52	0.18		0.57		0.20	0.52	0.08	0.19	0.57	0.06
Control Delay		38.4	15.1		36.4		12.4	10.4	5.9	11.6	11.2	5.1
Queue Delay		0.0	0.0		0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Delay		38.4	15.1		36.4		12.4	10.4	5.9	11.6	11.2	5.1
LOS		D	B		D		B	B	A	B	B	A
Approach Delay		31.5			36.4			10.2			11.0	
Approach LOS		C			D			B			B	
Queue Length 50th (m)		22.0	3.2		25.4		2.0	44.3	2.6	2.4	51.7	1.1
Queue Length 95th (m)		38.4	12.4		43.9		12.4	121.4	13.5	13.8	141.2	8.7
Internal Link Dist (m)		2866.7			332.7			383.1			434.6	
Turn Bay Length (m)							55.0		13.0	100.0		22.0
Base Capacity (vph)		595	681		664		192	2326	1028	239	2326	921
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		0.23	0.09		0.26		0.20	0.52	0.08	0.19	0.57	0.06

Intersection Summary

Area Type: Other

Cycle Length: 110

Actuated Cycle Length: 89.2

Natural Cycle: 110

Control Type: Semi Act-Uncoord

Maximum v/c Ratio: 0.57

Intersection Signal Delay: 13.3

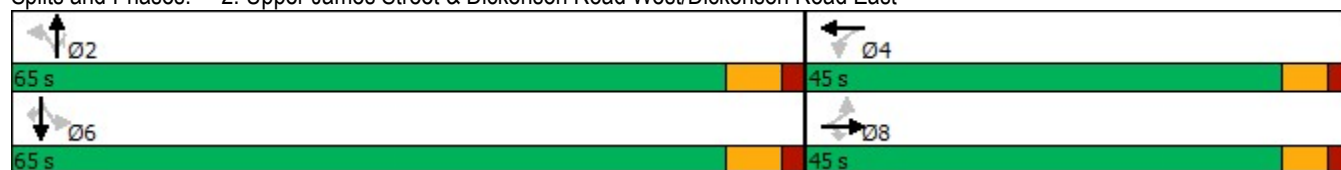
Intersection LOS: B

Intersection Capacity Utilization 119.8%

ICU Level of Service H

Analysis Period (min) 15

Splits and Phases: 2: Upper James Street & Dickenson Road West/Dickenson Road East



Queues

2: Upper James Street & Dickenson Road West/Dickenson Road East

Existing 2025 PM

Broccolini Hamilton Airport Site



Lane Group	EBT	EBR	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	137	58	171	38	1208	84	46	1334	54
v/c Ratio	0.52	0.18	0.57	0.20	0.52	0.08	0.19	0.57	0.06
Control Delay	38.4	15.1	36.4	12.4	10.4	5.9	11.6	11.2	5.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	38.4	15.1	36.4	12.4	10.4	5.9	11.6	11.2	5.1
Queue Length 50th (m)	22.0	3.2	25.4	2.0	44.3	2.6	2.4	51.7	1.1
Queue Length 95th (m)	38.4	12.4	43.9	12.4	121.4	13.5	13.8	141.2	8.7
Internal Link Dist (m)	2866.7		332.7		383.1			434.6	
Turn Bay Length (m)				55.0		13.0	100.0		22.0
Base Capacity (vph)	595	681	664	192	2326	1028	239	2326	921
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	0.23	0.09	0.26	0.20	0.52	0.08	0.19	0.57	0.06
Intersection Summary									

HCM Signalized Intersection Capacity Analysis

2: Upper James Street & Dickenson Road West/Dickenson Road East

Existing 2025 PM

Broccolini Hamilton Airport Site

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	43	80	52	55	65	34	34	1087	76	41	1201	49
Future Volume (vph)	43	80	52	55	65	34	34	1087	76	41	1201	49
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		6.0	6.0		6.0		6.5	6.5	6.5	6.5	6.5	6.5
Lane Util. Factor		1.00	1.00		1.00		1.00	0.95	1.00	1.00	0.95	1.00
Frpb, ped/bikes		1.00	0.98		1.00		1.00	1.00	0.97	1.00	1.00	0.97
Flpb, ped/bikes		1.00	1.00		1.00		1.00	1.00	1.00	1.00	1.00	1.00
Frt		1.00	0.85		0.97		1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected		0.98	1.00		0.98		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)		1644	1492		1765		1702	3505	1538	1768	3505	1376
Flt Permitted		0.81	1.00		0.83		0.16	1.00	1.00	0.19	1.00	1.00
Satd. Flow (perm)		1347	1492		1484		289	3505	1538	362	3505	1376
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	48	89	58	61	72	38	38	1208	84	46	1334	54
RTOR Reduction (vph)	0	0	29	0	11	0	0	0	10	0	0	10
Lane Group Flow (vph)	0	137	29	0	160	0	38	1208	74	46	1334	44
Confl. Peds. (#/hr)	5		5	5		5	5		5	5		5
Confl. Bikes (#/hr)			5			5			5			5
Heavy Vehicles (%)	33%	3%	6%	2%	2%	2%	6%	3%	2%	2%	3%	14%
Turn Type	Perm	NA	Perm	Perm	NA		Perm	NA	Perm	Perm	NA	Perm
Protected Phases		8			4			2			6	
Permitted Phases	8		8	4			2		2	6		6
Actuated Green, G (s)		17.3	17.3		17.3		59.2	59.2	59.2	59.2	59.2	59.2
Effective Green, g (s)		17.3	17.3		17.3		59.2	59.2	59.2	59.2	59.2	59.2
Actuated g/C Ratio		0.19	0.19		0.19		0.67	0.67	0.67	0.67	0.67	0.67
Clearance Time (s)		6.0	6.0		6.0		6.5	6.5	6.5	6.5	6.5	6.5
Vehicle Extension (s)		3.0	3.0		3.0		5.7	5.7	5.7	5.7	5.7	5.7
Lane Grp Cap (vph)		261	290		288		192	2331	1023	240	2331	915
v/s Ratio Prot								0.34			c0.38	
v/s Ratio Perm		0.10	0.02		c0.11		0.13		0.05	0.13		0.03
v/c Ratio		0.52	0.10		0.55		0.20	0.52	0.07	0.19	0.57	0.05
Uniform Delay, d1		32.2	29.5		32.4		5.7	7.6	5.2	5.7	8.1	5.2
Progression Factor		1.00	1.00		1.00		1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2		1.9	0.2		2.3		2.3	0.8	0.1	1.8	1.0	0.1
Delay (s)		34.1	29.6		34.7		8.0	8.4	5.4	7.5	9.1	5.3
Level of Service		C	C		C		A	A	A	A	A	A
Approach Delay (s)		32.7			34.7			8.2			8.9	
Approach LOS		C			C			A			A	
Intersection Summary												
HCM 2000 Control Delay			11.5									
HCM 2000 Volume to Capacity ratio			0.57									
Actuated Cycle Length (s)			89.0									
Intersection Capacity Utilization			119.8%									
Analysis Period (min)			15									
c Critical Lane Group												

Appendix H

Synchro Analysis Worksheets: 2030 Future Background

Lanes, Volumes, Timings
1: Glancaster Road & Dickenson Road West

FB 2030 AM
Broccolini Hamilton Airport Site

						
Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	4	73	7	7	145	3
Future Volume (vph)	4	73	7	7	145	3
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor						
Frt	0.872		0.932			
Flt Protected	0.998					0.953
Satd. Flow (prot)	1577	0	1533	0	0	1716
Flt Permitted	0.998					0.953
Satd. Flow (perm)	1577	0	1533	0	0	1716
Link Speed (k/h)	60		50			50
Link Distance (m)	2890.7		836.5			492.7
Travel Time (s)	173.4		60.2			35.5
Confl. Peds. (#/hr)	5	5		5	5	
Confl. Bikes (#/hr)		5		5		
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93
Heavy Vehicles (%)	2%	5%	2%	29%	5%	33%
Adj. Flow (vph)	4	78	8	8	156	3
Shared Lane Traffic (%)						
Lane Group Flow (vph)	82	0	16	0	0	159
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(m)	7.2		0.0			0.0
Link Offset(m)	0.0		0.0			0.0
Crosswalk Width(m)	4.8		4.8			4.8
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)	25	15		15	25	
Sign Control	Stop		Stop			Stop
Intersection Summary						
Area Type:	Other					
Control Type:	Unsignalized					
Intersection Capacity Utilization	28.0%			ICU Level of Service A		
Analysis Period (min)	15					

Intersection	
Intersection Delay, s/veh	7.9
Intersection LOS	A

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	4	73	7	7	145	3
Future Vol, veh/h	4	73	7	7	145	3
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93
Heavy Vehicles, %	2	5	2	29	5	33
Mvmt Flow	4	78	8	8	156	3
Number of Lanes	1	0	1	0	0	1

Approach	WB	NB	SB
Opposing Approach		SB	NB
Opposing Lanes	0	1	1
Conflicting Approach Left	NB		WB
Conflicting Lanes Left	1	0	1
Conflicting Approach Right	SB	WB	
Conflicting Lanes Right	1	1	0
HCM Control Delay	7.1	7	8.4
HCM LOS	A	A	A

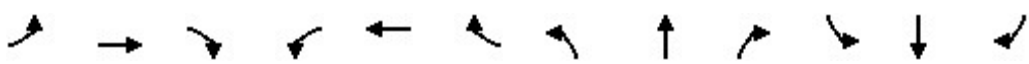
Lane	NBLn1	WBLn1	SBLn1
Vol Left, %	0%	5%	98%
Vol Thru, %	50%	0%	2%
Vol Right, %	50%	95%	0%
Sign Control	Stop	Stop	Stop
Traffic Vol by Lane	14	77	148
LT Vol	0	4	145
Through Vol	7	0	3
RT Vol	7	73	0
Lane Flow Rate	15	83	159
Geometry Grp	1	1	1
Degree of Util (X)	0.016	0.087	0.192
Departure Headway (Hd)	3.901	3.778	4.339
Convergence, Y/N	Yes	Yes	Yes
Cap	907	954	828
Service Time	1.972	1.778	2.367
HCM Lane V/C Ratio	0.017	0.087	0.192
HCM Control Delay	7	7.1	8.4
HCM Lane LOS	A	A	A
HCM 95th-tile Q	0	0.3	0.7

Lanes, Volumes, Timings

FB 2030 AM

2: Upper James Street & Dickenson Road West/Dickenson Road East

Broccolini Hamilton Airport Site

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↖	↗		↔		↖	↗	↗	↖	↗	↗
Traffic Volume (vph)	45	40	33	51	51	34	33	1100	36	18	857	47
Future Volume (vph)	45	40	33	51	51	34	33	1100	36	18	857	47
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	70.0		0.0	0.0		0.0	55.0		10.0	100.0		20.0
Storage Lanes	1		1	0		0	1		1	1		1
Taper Length (m)	20.0			7.5			75.0			90.0		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Ped Bike Factor		1.00	0.98		0.99		1.00		0.97	1.00		0.97
Frt			0.850		0.966				0.850			0.850
Flt Protected		0.974			0.982		0.950			0.950		
Satd. Flow (prot)	0	1540	1335	0	1704	0	1752	3471	1568	1770	3406	1429
Flt Permitted		0.756			0.839		0.296			0.212		
Satd. Flow (perm)	0	1193	1309	0	1454	0	545	3471	1520	394	3406	1385
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			35		17				30			30
Link Speed (k/h)		60			60			80			70	
Link Distance (m)		2890.7			356.7			407.1			458.6	
Travel Time (s)		173.4			21.4			18.3			23.6	
Confl. Peds. (#/hr)	5		5	5		5	5		5	5		5
Confl. Bikes (#/hr)			5			5			5			5
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Heavy Vehicles (%)	31%	8%	21%	4%	8%	3%	3%	4%	3%	2%	6%	13%
Adj. Flow (vph)	47	42	35	54	54	36	35	1158	38	19	902	49
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	89	35	0	144	0	35	1158	38	19	902	49
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)		0.0			0.0			3.6			3.6	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway 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
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2	1	1	2		1	2	1	1	2	1
Detector Template	Left	Thru	Right	Left	Thru		Left	Thru	Right	Left	Thru	Right
Leading Detector (m)	2.0	10.0	2.0	2.0	10.0		2.0	10.0	2.0	2.0	10.0	2.0
Trailing Detector (m)	0.0	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	0.0
Detector 1 Size(m)	2.0	0.6	2.0	2.0	0.6		2.0	0.6	2.0	2.0	0.6	2.0
Detector 1 Type	Cl+Ex	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	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	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	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												

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Page 3

												
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	Perm	NA		Perm	NA	Perm	Perm	NA	Perm
Protected Phases		8			4			2			6	
Permitted Phases	8		8	4			2		2	6		6
Detector Phase	8	8	8	4	4		2	2	2	6	6	6
Switch Phase												
Minimum Initial (s)	10.0	10.0	10.0	10.0	10.0		55.0	55.0	55.0	55.0	55.0	55.0
Minimum Split (s)	45.0	45.0	45.0	45.0	45.0		61.5	61.5	61.5	61.5	61.5	61.5
Total Split (s)	45.0	45.0	45.0	45.0	45.0		65.0	65.0	65.0	65.0	65.0	65.0
Total Split (%)	40.9%	40.9%	40.9%	40.9%	40.9%		59.1%	59.1%	59.1%	59.1%	59.1%	59.1%
Maximum Green (s)	39.0	39.0	39.0	39.0	39.0		58.5	58.5	58.5	58.5	58.5	58.5
Yellow Time (s)	3.7	3.7	3.7	3.7	3.7		4.6	4.6	4.6	4.6	4.6	4.6
All-Red Time (s)	2.3	2.3	2.3	2.3	2.3		1.9	1.9	1.9	1.9	1.9	1.9
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		6.0		6.5	6.5	6.5	6.5	6.5	6.5
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		5.7	5.7	5.7	5.7	5.7	5.7
Recall Mode	None	None	None	None	None		Max	Max	Max	Max	Max	Max
Walk Time (s)	7.0	7.0	7.0	7.0	7.0		15.0	15.0	15.0	15.0	15.0	15.0
Flash Dont Walk (s)	32.0	32.0	32.0	32.0	32.0		22.6	22.6	22.6	22.6	22.6	22.6
Pedestrian Calls (#/hr)	5	5	5	5	5		5	5	5	5	5	5
Act Effect Green (s)		16.4	16.4		16.4		61.4	61.4	61.4	61.4	61.4	61.4
Actuated g/C Ratio		0.18	0.18		0.18		0.68	0.68	0.68	0.68	0.68	0.68
v/c Ratio		0.41	0.13		0.52		0.09	0.49	0.04	0.07	0.39	0.05
Control Delay		36.3	9.9		34.3		9.0	9.7	4.2	9.3	8.6	4.8
Queue Delay		0.0	0.0		0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Delay		36.3	9.9		34.3		9.0	9.7	4.2	9.3	8.6	4.8
LOS		D	A		C		A	A	A	A	A	A
Approach Delay		28.8			34.3			9.5			8.4	
Approach LOS		C			C			A			A	
Queue Length 50th (m)		13.9	0.0		20.1		1.6	38.2	0.4	0.9	27.0	0.8
Queue Length 95th (m)		26.7	7.1		36.5		9.8	114.7	5.9	6.4	82.6	7.9
Internal Link Dist (m)		2866.7			332.7			383.1			434.6	
Turn Bay Length (m)							55.0		10.0	100.0		20.0
Base Capacity (vph)		520	591		644		369	2355	1041	267	2311	949
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		0.17	0.06		0.22		0.09	0.49	0.04	0.07	0.39	0.05

Intersection Summary

Area Type: Other

Cycle Length: 110

Actuated Cycle Length: 90.4

Natural Cycle: 110

Control Type: Semi Act-Uncoord

Maximum v/c Ratio: 0.52

Intersection Signal Delay: 11.5

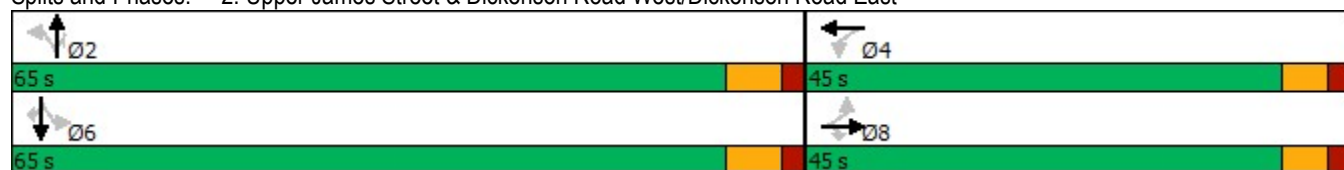
Intersection LOS: B

Intersection Capacity Utilization 119.5%

ICU Level of Service H

Analysis Period (min) 15

Splits and Phases: 2: Upper James Street & Dickenson Road West/Dickenson Road East



Queues

FB 2030 AM

2: Upper James Street & Dickenson Road West/Dickenson Road East

Broccolini Hamilton Airport Site



Lane Group	EBT	EBR	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	89	35	144	35	1158	38	19	902	49
v/c Ratio	0.41	0.13	0.52	0.09	0.49	0.04	0.07	0.39	0.05
Control Delay	36.3	9.9	34.3	9.0	9.7	4.2	9.3	8.6	4.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	36.3	9.9	34.3	9.0	9.7	4.2	9.3	8.6	4.8
Queue Length 50th (m)	13.9	0.0	20.1	1.6	38.2	0.4	0.9	27.0	0.8
Queue Length 95th (m)	26.7	7.1	36.5	9.8	114.7	5.9	6.4	82.6	7.9
Internal Link Dist (m)	2866.7		332.7		383.1			434.6	
Turn Bay Length (m)				55.0		10.0	100.0		20.0
Base Capacity (vph)	520	591	644	369	2355	1041	267	2311	949
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	0.17	0.06	0.22	0.09	0.49	0.04	0.07	0.39	0.05
Intersection Summary									

HCM Signalized Intersection Capacity Analysis

FB 2030 AM

2: Upper James Street & Dickenson Road West/Dickenson Road East

Broccolini Hamilton Airport Site

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	45	40	33	51	51	34	33	1100	36	18	857	47
Future Volume (vph)	45	40	33	51	51	34	33	1100	36	18	857	47
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		6.0	6.0		6.0		6.5	6.5	6.5	6.5	6.5	6.5
Lane Util. Factor		1.00	1.00		1.00		1.00	0.95	1.00	1.00	0.95	1.00
Frpb, ped/bikes		1.00	0.98		0.99		1.00	1.00	0.97	1.00	1.00	0.97
Flpb, ped/bikes		1.00	1.00		1.00		1.00	1.00	1.00	1.00	1.00	1.00
Frt		1.00	0.85		0.97		1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected		0.97	1.00		0.98		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)		1539	1306		1701		1750	3471	1523	1768	3406	1388
Flt Permitted		0.76	1.00		0.84		0.30	1.00	1.00	0.21	1.00	1.00
Satd. Flow (perm)		1194	1306		1454		545	3471	1523	394	3406	1388
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	47	42	35	54	54	36	35	1158	38	19	902	49
RTOR Reduction (vph)	0	0	29	0	14	0	0	0	10	0	0	10
Lane Group Flow (vph)	0	89	6	0	130	0	35	1158	28	19	902	39
Confl. Peds. (#/hr)	5		5	5		5	5		5	5		5
Confl. Bikes (#/hr)			5			5			5			5
Heavy Vehicles (%)	31%	8%	21%	4%	8%	3%	3%	4%	3%	2%	6%	13%
Turn Type	Perm	NA	Perm	Perm	NA		Perm	NA	Perm	Perm	NA	Perm
Protected Phases		8			4			2			6	
Permitted Phases	8		8	4			2		2	6		6
Actuated Green, G (s)		16.4	16.4		16.4		61.4	61.4	61.4	61.4	61.4	61.4
Effective Green, g (s)		16.4	16.4		16.4		61.4	61.4	61.4	61.4	61.4	61.4
Actuated g/C Ratio		0.18	0.18		0.18		0.68	0.68	0.68	0.68	0.68	0.68
Clearance Time (s)		6.0	6.0		6.0		6.5	6.5	6.5	6.5	6.5	6.5
Vehicle Extension (s)		3.0	3.0		3.0		5.7	5.7	5.7	5.7	5.7	5.7
Lane Grp Cap (vph)		216	237		264		370	2360	1035	267	2315	943
v/s Ratio Prot								c0.33			0.26	
v/s Ratio Perm		0.07	0.00		c0.09		0.06		0.02	0.05		0.03
v/c Ratio		0.41	0.03		0.49		0.09	0.49	0.03	0.07	0.39	0.04
Uniform Delay, d1		32.7	30.4		33.2		4.9	6.9	4.7	4.9	6.3	4.8
Progression Factor		1.00	1.00		1.00		1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2		1.3	0.0		1.4		0.5	0.7	0.0	0.5	0.5	0.1
Delay (s)		34.0	30.4		34.7		5.5	7.7	4.8	5.4	6.8	4.8
Level of Service		C	C		C		A	A	A	A	A	A
Approach Delay (s)		33.0			34.7			7.5			6.7	
Approach LOS		C			C			A			A	
Intersection Summary												
HCM 2000 Control Delay			10.0									
HCM 2000 Volume to Capacity ratio			0.49									
Actuated Cycle Length (s)			90.3									
Intersection Capacity Utilization			119.5%									
Analysis Period (min)			15									
c Critical Lane Group												

Lanes, Volumes, Timings
1: Glancaster Road & Dickenson Road West

FB 2030 PM
Broccolini Hamilton Airport Site

						
Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	10	141	4	6	200	7
Future Volume (vph)	10	141	4	6	200	7
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor						
Frt	0.874		0.919			
Flt Protected	0.997					0.954
Satd. Flow (prot)	1623	0	1570	0	0	1744
Flt Permitted	0.997					0.954
Satd. Flow (perm)	1623	0	1570	0	0	1744
Link Speed (k/h)	60		50			50
Link Distance (m)	2890.7		836.5			492.7
Travel Time (s)	173.4		60.2			35.5
Confl. Peds. (#/hr)	5	5		4	5	
Confl. Bikes (#/hr)		5		5		
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93
Heavy Vehicles (%)	2%	2%	25%	2%	4%	2%
Adj. Flow (vph)	11	152	4	6	215	8
Shared Lane Traffic (%)						
Lane Group Flow (vph)	163	0	10	0	0	223
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(m)	7.2		0.0			0.0
Link Offset(m)	0.0		0.0			0.0
Crosswalk Width(m)	4.8		4.8			4.8
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)	25	15		15	25	
Sign Control	Stop		Stop			Stop
Intersection Summary						
Area Type:	Other					
Control Type:	Unsignalized					
Intersection Capacity Utilization	35.1%			ICU Level of Service A		
Analysis Period (min)	15					

Intersection

Intersection Delay, s/veh	8.6
Intersection LOS	A

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	10	141	4	6	200	7
Future Vol, veh/h	10	141	4	6	200	7
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93
Heavy Vehicles, %	2	2	25	2	4	2
Mvmt Flow	11	152	4	6	215	8
Number of Lanes	1	0	1	0	0	1

Approach	WB	NB	SB
Opposing Approach		SB	NB
Opposing Lanes	0	1	1
Conflicting Approach Left	NB		WB
Conflicting Lanes Left	1	0	1
Conflicting Approach Right	SB	WB	
Conflicting Lanes Right	1	1	0
HCM Control Delay	7.8	7.6	9.2
HCM LOS	A	A	A

Lane	NBLn1	WBLn1	SBLn1
Vol Left, %	0%	7%	97%
Vol Thru, %	40%	0%	3%
Vol Right, %	60%	93%	0%
Sign Control	Stop	Stop	Stop
Traffic Vol by Lane	10	151	207
LT Vol	0	10	200
Through Vol	4	0	7
RT Vol	6	141	0
Lane Flow Rate	11	162	223
Geometry Grp	1	1	1
Degree of Util (X)	0.014	0.178	0.275
Departure Headway (Hd)	4.552	3.945	4.455
Convergence, Y/N	Yes	Yes	Yes
Cap	789	914	799
Service Time	2.566	1.946	2.526
HCM Lane V/C Ratio	0.014	0.177	0.279
HCM Control Delay	7.6	7.8	9.2
HCM Lane LOS	A	A	A
HCM 95th-tile Q	0	0.6	1.1

Lanes, Volumes, Timings

FB 2030 PM

2: Upper James Street & Dickenson Road West/Dickenson Road East

Broccolini Hamilton Airport Site

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	47	88	57	61	72	38	38	1200	84	45	1326	54
Future Volume (vph)	47	88	57	61	72	38	38	1200	84	45	1326	54
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	70.0		0.0	0.0		0.0	55.0		13.0	100.0		22.0
Storage Lanes	1		1	0		0	1		1	1		1
Taper Length (m)	20.0			7.5			75.0			90.0		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Ped Bike Factor		1.00	0.98		0.99		1.00		0.97	1.00		0.97
Frt			0.850		0.970				0.850			0.850
Flt Protected		0.983			0.982		0.950			0.950		
Satd. Flow (prot)	0	1672	1538	0	1767	0	1719	3505	1583	1770	3505	1404
Flt Permitted		0.788			0.797		0.128			0.160		
Satd. Flow (perm)	0	1339	1508	0	1432	0	231	3505	1535	298	3505	1361
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			35		14				30			30
Link Speed (k/h)		60			60			80			70	
Link Distance (m)		2890.7			356.7			407.1			458.6	
Travel Time (s)		173.4			21.4			18.3			23.6	
Confl. Peds. (#/hr)	5		5	5		5	5		5	5		5
Confl. Bikes (#/hr)			5			5			5			5
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	30%	2%	5%	2%	2%	2%	5%	3%	2%	2%	3%	15%
Adj. Flow (vph)	52	98	63	68	80	42	42	1333	93	50	1473	60
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	150	63	0	190	0	42	1333	93	50	1473	60
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)		0.0			0.0			3.6			3.6	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway 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
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2	1	1	2		1	2	1	1	2	1
Detector Template	Left	Thru	Right	Left	Thru		Left	Thru	Right	Left	Thru	Right
Leading Detector (m)	2.0	10.0	2.0	2.0	10.0		2.0	10.0	2.0	2.0	10.0	2.0
Trailing Detector (m)	0.0	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	0.0
Detector 1 Size(m)	2.0	0.6	2.0	2.0	0.6		2.0	0.6	2.0	2.0	0.6	2.0
Detector 1 Type	Cl+Ex	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	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	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	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												

10-27-2025

Jl

CGH Transportation

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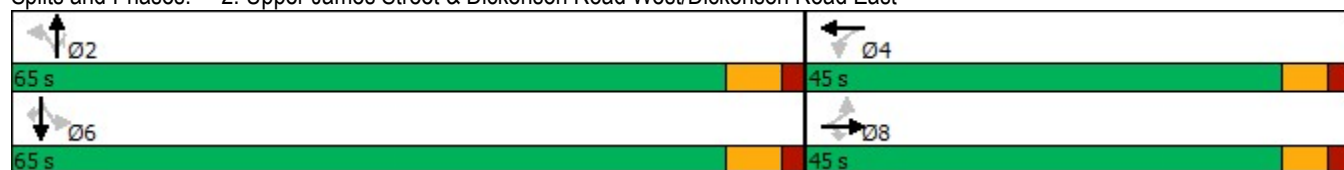
												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Perm	NA	Perm	Perm	NA		Perm	NA	Perm	Perm	NA	Perm
Protected Phases		8			4			2			6	
Permitted Phases	8		8	4			2		2	6		6
Detector Phase	8	8	8	4	4		2	2	2	6	6	6
Switch Phase												
Minimum Initial (s)	10.0	10.0	10.0	10.0	10.0		55.0	55.0	55.0	55.0	55.0	55.0
Minimum Split (s)	45.0	45.0	45.0	45.0	45.0		61.5	61.5	61.5	61.5	61.5	61.5
Total Split (s)	45.0	45.0	45.0	45.0	45.0		65.0	65.0	65.0	65.0	65.0	65.0
Total Split (%)	40.9%	40.9%	40.9%	40.9%	40.9%		59.1%	59.1%	59.1%	59.1%	59.1%	59.1%
Maximum Green (s)	39.0	39.0	39.0	39.0	39.0		58.5	58.5	58.5	58.5	58.5	58.5
Yellow Time (s)	3.7	3.7	3.7	3.7	3.7		4.6	4.6	4.6	4.6	4.6	4.6
All-Red Time (s)	2.3	2.3	2.3	2.3	2.3		1.9	1.9	1.9	1.9	1.9	1.9
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		6.0		6.5	6.5	6.5	6.5	6.5	6.5
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		5.7	5.7	5.7	5.7	5.7	5.7
Recall Mode	None	None	None	None	None		Max	Max	Max	Max	Max	Max
Walk Time (s)	7.0	7.0	7.0	7.0	7.0		15.0	15.0	15.0	15.0	15.0	15.0
Flash Dont Walk (s)	32.0	32.0	32.0	32.0	32.0		22.6	22.6	22.6	22.6	22.6	22.6
Pedestrian Calls (#/hr)	0	0	0	5	5		5	5	5	5	5	5
Act Effct Green (s)		18.2	18.2		18.2		59.2	59.2	59.2	59.2	59.2	59.2
Actuated g/C Ratio		0.20	0.20		0.20		0.66	0.66	0.66	0.66	0.66	0.66
v/c Ratio		0.56	0.19		0.63		0.28	0.58	0.09	0.26	0.64	0.07
Control Delay		39.3	16.0		39.2		16.3	11.6	6.2	14.1	12.7	5.5
Queue Delay		0.0	0.0		0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Delay		39.3	16.0		39.2		16.3	11.6	6.2	14.1	12.7	5.5
LOS		D	B		D		B	B	A	B	B	A
Approach Delay		32.4			39.2			11.4			12.4	
Approach LOS		C			D			B			B	
Queue Length 50th (m)		24.4	4.1		29.1		2.5	54.9	3.2	2.9	64.8	1.5
Queue Length 95th (m)		42.0	13.7		49.4		15.8	141.1	15.1	16.4	166.1	9.8
Internal Link Dist (m)		2866.7			332.7			383.1			434.6	
Turn Bay Length (m)							55.0		13.0	100.0		22.0
Base Capacity (vph)		587	680		635		151	2304	1019	196	2304	905
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		0.26	0.09		0.30		0.28	0.58	0.09	0.26	0.64	0.07
Intersection Summary												
Area Type:	Other											
Cycle Length: 110												
Actuated Cycle Length: 90												
Natural Cycle: 110												
Control Type: Semi Act-Uncoord												
Maximum v/c Ratio: 0.64												
Intersection Signal Delay: 14.7	Intersection LOS: B											

Intersection Capacity Utilization 120.6%

ICU Level of Service H

Analysis Period (min) 15

Splits and Phases: 2: Upper James Street & Dickenson Road West/Dickenson Road East



Queues

FB 2030 PM

2: Upper James Street & Dickenson Road West/Dickenson Road East

Broccolini Hamilton Airport Site



Lane Group	EBT	EBR	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	150	63	190	42	1333	93	50	1473	60
v/c Ratio	0.56	0.19	0.63	0.28	0.58	0.09	0.26	0.64	0.07
Control Delay	39.3	16.0	39.2	16.3	11.6	6.2	14.1	12.7	5.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	39.3	16.0	39.2	16.3	11.6	6.2	14.1	12.7	5.5
Queue Length 50th (m)	24.4	4.1	29.1	2.5	54.9	3.2	2.9	64.8	1.5
Queue Length 95th (m)	42.0	13.7	49.4	15.8	141.1	15.1	16.4	166.1	9.8
Internal Link Dist (m)	2866.7		332.7		383.1			434.6	
Turn Bay Length (m)				55.0		13.0	100.0		22.0
Base Capacity (vph)	587	680	635	151	2304	1019	196	2304	905
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	0.26	0.09	0.30	0.28	0.58	0.09	0.26	0.64	0.07
Intersection Summary									

HCM Signalized Intersection Capacity Analysis

FB 2030 PM

2: Upper James Street & Dickenson Road West/Dickenson Road East

Broccolini Hamilton Airport Site

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	47	88	57	61	72	38	38	1200	84	45	1326	54
Future Volume (vph)	47	88	57	61	72	38	38	1200	84	45	1326	54
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		6.0	6.0		6.0		6.5	6.5	6.5	6.5	6.5	6.5
Lane Util. Factor		1.00	1.00		1.00		1.00	0.95	1.00	1.00	0.95	1.00
Frpb, ped/bikes		1.00	0.98		1.00		1.00	1.00	0.97	1.00	1.00	0.97
Flpb, ped/bikes		1.00	1.00		1.00		1.00	1.00	1.00	1.00	1.00	1.00
Frt		1.00	0.85		0.97		1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected		0.98	1.00		0.98		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)		1670	1506		1765		1718	3505	1538	1768	3505	1364
Flt Permitted		0.79	1.00		0.80		0.13	1.00	1.00	0.16	1.00	1.00
Satd. Flow (perm)		1340	1506		1432		231	3505	1538	298	3505	1364
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	52	98	63	68	80	42	42	1333	93	50	1473	60
RTOR Reduction (vph)	0	0	28	0	11	0	0	0	10	0	0	10
Lane Group Flow (vph)	0	150	35	0	179	0	42	1333	83	50	1473	50
Confl. Peds. (#/hr)	5		5	5		5	5		5	5		5
Confl. Bikes (#/hr)			5			5			5			5
Heavy Vehicles (%)	30%	2%	5%	2%	2%	2%	5%	3%	2%	2%	3%	15%
Turn Type	Perm	NA	Perm	Perm	NA		Perm	NA	Perm	Perm	NA	Perm
Protected Phases		8			4			2			6	
Permitted Phases	8		8	4			2		2	6		6
Actuated Green, G (s)		18.2	18.2		18.2		59.2	59.2	59.2	59.2	59.2	59.2
Effective Green, g (s)		18.2	18.2		18.2		59.2	59.2	59.2	59.2	59.2	59.2
Actuated g/C Ratio		0.20	0.20		0.20		0.66	0.66	0.66	0.66	0.66	0.66
Clearance Time (s)		6.0	6.0		6.0		6.5	6.5	6.5	6.5	6.5	6.5
Vehicle Extension (s)		3.0	3.0		3.0		5.7	5.7	5.7	5.7	5.7	5.7
Lane Grp Cap (vph)		271	304		289		152	2308	1012	196	2308	898
v/s Ratio Prot								0.38			c0.42	
v/s Ratio Perm		0.11	0.02		c0.12		0.18		0.05	0.17		0.04
v/c Ratio		0.55	0.12		0.62		0.28	0.58	0.08	0.26	0.64	0.06
Uniform Delay, d1		32.2	29.3		32.7		6.4	8.5	5.5	6.3	9.0	5.4
Progression Factor		1.00	1.00		1.00		1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2		2.4	0.2		3.9		4.5	1.1	0.2	3.1	1.4	0.1
Delay (s)		34.6	29.4		36.6		10.9	9.5	5.7	9.4	10.4	5.6
Level of Service		C	C		D		B	A	A	A	B	A
Approach Delay (s)		33.1			36.6			9.3			10.2	
Approach LOS		C			D			A			B	
Intersection Summary												
HCM 2000 Control Delay			12.7				HCM 2000 Level of Service			B		
HCM 2000 Volume to Capacity ratio			0.63									
Actuated Cycle Length (s)			89.9				Sum of lost time (s)			12.5		
Intersection Capacity Utilization			120.6%				ICU Level of Service			H		
Analysis Period (min)			15									
c Critical Lane Group												

Appendix I

Synchro Analysis Worksheets: 2035 Future Background

Lanes, Volumes, Timings
1: Glancaster Road & Dickenson Road West

FB 2035 AM
Broccolini Hamilton Airport Site

						
Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	5	80	7	7	160	4
Future Volume (vph)	5	80	7	7	160	4
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor						
Frt	0.872		0.932			
Flt Protected	0.997					0.953
Satd. Flow (prot)	1562	0	1533	0	0	1733
Flt Permitted	0.997					0.953
Satd. Flow (perm)	1562	0	1533	0	0	1733
Link Speed (k/h)	60		50			50
Link Distance (m)	2890.7		836.5			492.7
Travel Time (s)	173.4		60.2			35.5
Confl. Peds. (#/hr)	5	5		5	5	
Confl. Bikes (#/hr)		5		5		
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93
Heavy Vehicles (%)	2%	6%	2%	29%	4%	25%
Adj. Flow (vph)	5	86	8	8	172	4
Shared Lane Traffic (%)						
Lane Group Flow (vph)	91	0	16	0	0	176
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(m)	7.2		0.0			0.0
Link Offset(m)	0.0		0.0			0.0
Crosswalk Width(m)	4.8		4.8			4.8
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)	25	15		15	25	
Sign Control	Stop		Stop			Stop
Intersection Summary						
Area Type:	Other					
Control Type:	Unsignalized					
Intersection Capacity Utilization	29.3%			ICU Level of Service A		
Analysis Period (min)	15					

Intersection	
Intersection Delay, s/veh	8
Intersection LOS	A

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	5	80	7	7	160	4
Future Vol, veh/h	5	80	7	7	160	4
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93
Heavy Vehicles, %	2	6	2	29	4	25
Mvmt Flow	5	86	8	8	172	4
Number of Lanes	1	0	1	0	0	1

Approach	WB	NB	SB
Opposing Approach		SB	NB
Opposing Lanes	0	1	1
Conflicting Approach Left	NB		WB
Conflicting Lanes Left	1	0	1
Conflicting Approach Right	SB	WB	
Conflicting Lanes Right	1	1	0
HCM Control Delay	7.2	7.1	8.5
HCM LOS	A	A	A

Lane	NBLn1	WBLn1	SBLn1
Vol Left, %	0%	6%	98%
Vol Thru, %	50%	0%	2%
Vol Right, %	50%	94%	0%
Sign Control	Stop	Stop	Stop
Traffic Vol by Lane	14	85	164
LT Vol	0	5	160
Through Vol	7	0	4
RT Vol	7	80	0
Lane Flow Rate	15	91	176
Geometry Grp	1	1	1
Degree of Util (X)	0.016	0.097	0.212
Departure Headway (Hd)	3.929	3.822	4.335
Convergence, Y/N	Yes	Yes	Yes
Cap	898	943	827
Service Time	2.01	1.822	2.369
HCM Lane V/C Ratio	0.017	0.097	0.213
HCM Control Delay	7.1	7.2	8.5
HCM Lane LOS	A	A	A
HCM 95th-tile Q	0	0.3	0.8

Lanes, Volumes, Timings

FB 2035 AM

2: Upper James Street & Dickenson Road West/Dickenson Road East

Broccolini Hamilton Airport Site

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↶	↷		↶↷		↶	↶↶	↷	↶	↶↶	↷
Traffic Volume (vph)	50	44	37	56	56	38	37	1214	40	20	946	52
Future Volume (vph)	50	44	37	56	56	38	37	1214	40	20	946	52
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	70.0		0.0	0.0		0.0	55.0		10.0	100.0		20.0
Storage Lanes	1		1	0		0	1		1	1		1
Taper Length (m)	20.0			7.5			75.0			90.0		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Ped Bike Factor		1.00	0.98		0.99		1.00		0.97	1.00		0.97
Frt			0.850		0.966				0.850			0.850
Flt Protected		0.974			0.982		0.950			0.950		
Satd. Flow (prot)	0	1525	1357	0	1698	0	1752	3471	1568	1770	3406	1442
Flt Permitted		0.730			0.835		0.261			0.177		
Satd. Flow (perm)	0	1141	1331	0	1442	0	481	3471	1520	329	3406	1398
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			39		17				30			30
Link Speed (k/h)		60			60			80			70	
Link Distance (m)		2890.7			356.7			407.1			458.6	
Travel Time (s)		173.4			21.4			18.3			23.6	
Confl. Peds. (#/hr)	5		5	5		5	5		5	5		5
Confl. Bikes (#/hr)			5			5			5			5
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Heavy Vehicles (%)	32%	9%	19%	4%	9%	3%	3%	4%	3%	2%	6%	12%
Adj. Flow (vph)	53	46	39	59	59	40	39	1278	42	21	996	55
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	99	39	0	158	0	39	1278	42	21	996	55
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)		0.0			0.0			3.6			3.6	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway 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
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2	1	1	2		1	2	1	1	2	1
Detector Template	Left	Thru	Right	Left	Thru		Left	Thru	Right	Left	Thru	Right
Leading Detector (m)	2.0	10.0	2.0	2.0	10.0		2.0	10.0	2.0	2.0	10.0	2.0
Trailing Detector (m)	0.0	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	0.0
Detector 1 Size(m)	2.0	0.6	2.0	2.0	0.6		2.0	0.6	2.0	2.0	0.6	2.0
Detector 1 Type	Cl+Ex	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	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	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	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												

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JL

CGH Transportation

Page 3

												
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	Perm	NA		Perm	NA	Perm	Perm	NA	Perm
Protected Phases		8			4			2			6	
Permitted Phases	8		8	4			2		2	6		6
Detector Phase	8	8	8	4	4		2	2	2	6	6	6
Switch Phase												
Minimum Initial (s)	10.0	10.0	10.0	10.0	10.0		55.0	55.0	55.0	55.0	55.0	55.0
Minimum Split (s)	45.0	45.0	45.0	45.0	45.0		61.5	61.5	61.5	61.5	61.5	61.5
Total Split (s)	45.0	45.0	45.0	45.0	45.0		65.0	65.0	65.0	65.0	65.0	65.0
Total Split (%)	40.9%	40.9%	40.9%	40.9%	40.9%		59.1%	59.1%	59.1%	59.1%	59.1%	59.1%
Maximum Green (s)	39.0	39.0	39.0	39.0	39.0		58.5	58.5	58.5	58.5	58.5	58.5
Yellow Time (s)	3.7	3.7	3.7	3.7	3.7		4.6	4.6	4.6	4.6	4.6	4.6
All-Red Time (s)	2.3	2.3	2.3	2.3	2.3		1.9	1.9	1.9	1.9	1.9	1.9
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		6.0		6.5	6.5	6.5	6.5	6.5	6.5
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		5.7	5.7	5.7	5.7	5.7	5.7
Recall Mode	None	None	None	None	None		Max	Max	Max	Max	Max	Max
Walk Time (s)	7.0	7.0	7.0	7.0	7.0		15.0	15.0	15.0	15.0	15.0	15.0
Flash Dont Walk (s)	32.0	32.0	32.0	32.0	32.0		22.6	22.6	22.6	22.6	22.6	22.6
Pedestrian Calls (#/hr)	5	5	5	5	5		5	5	5	5	5	5
Act Effect Green (s)		17.0	17.0		17.0		60.3	60.3	60.3	60.3	60.3	60.3
Actuated g/C Ratio		0.19	0.19		0.19		0.67	0.67	0.67	0.67	0.67	0.67
v/c Ratio		0.46	0.14		0.55		0.12	0.55	0.04	0.10	0.44	0.06
Control Delay		37.7	9.5		35.4		9.6	10.7	4.5	10.1	9.3	5.1
Queue Delay		0.0	0.0		0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Delay		37.7	9.5		35.4		9.6	10.7	4.5	10.1	9.3	5.1
LOS		D	A		D		A	B	A	B	A	A
Approach Delay		29.8			35.4			10.5			9.1	
Approach LOS		C			D			B			A	
Queue Length 50th (m)		15.7	0.0		22.6		1.9	46.8	0.5	1.0	32.5	1.1
Queue Length 95th (m)		29.7	7.3		40.1		10.9	133.0	6.7	7.1	94.1	8.9
Internal Link Dist (m)		2866.7			332.7			383.1			434.6	
Turn Bay Length (m)							55.0		10.0	100.0		20.0
Base Capacity (vph)		500	606		642		322	2328	1029	220	2284	947
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		0.20	0.06		0.25		0.12	0.55	0.04	0.10	0.44	0.06

Intersection Summary

Area Type: Other

Cycle Length: 110

Actuated Cycle Length: 89.9

Natural Cycle: 110

Control Type: Semi Act-Uncoord

Maximum v/c Ratio: 0.55

Intersection Signal Delay: 12.3

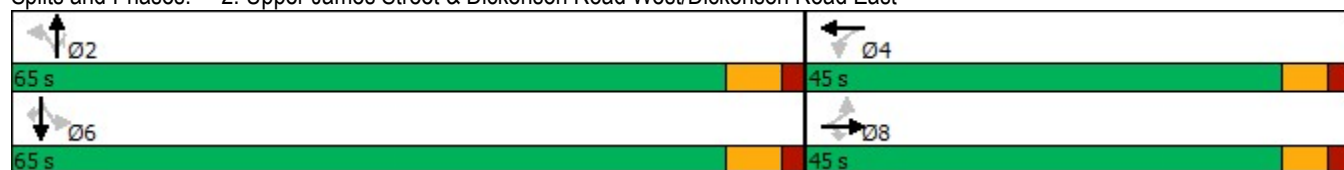
Intersection LOS: B

Intersection Capacity Utilization 119.7%

ICU Level of Service H

Analysis Period (min) 15

Splits and Phases: 2: Upper James Street & Dickenson Road West/Dickenson Road East



Queues

FB 2035 AM

2: Upper James Street & Dickenson Road West/Dickenson Road East

Broccolini Hamilton Airport Site



Lane Group	EBT	EBR	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	99	39	158	39	1278	42	21	996	55
v/c Ratio	0.46	0.14	0.55	0.12	0.55	0.04	0.10	0.44	0.06
Control Delay	37.7	9.5	35.4	9.6	10.7	4.5	10.1	9.3	5.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	37.7	9.5	35.4	9.6	10.7	4.5	10.1	9.3	5.1
Queue Length 50th (m)	15.7	0.0	22.6	1.9	46.8	0.5	1.0	32.5	1.1
Queue Length 95th (m)	29.7	7.3	40.1	10.9	133.0	6.7	7.1	94.1	8.9
Internal Link Dist (m)	2866.7		332.7		383.1			434.6	
Turn Bay Length (m)				55.0		10.0	100.0		20.0
Base Capacity (vph)	500	606	642	322	2328	1029	220	2284	947
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	0.20	0.06	0.25	0.12	0.55	0.04	0.10	0.44	0.06
Intersection Summary									

HCM Signalized Intersection Capacity Analysis

FB 2035 AM

2: Upper James Street & Dickenson Road West/Dickenson Road East

Broccolini Hamilton Airport Site

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↖	↗		↔		↖	↗	↗	↖	↗	↗
Traffic Volume (vph)	50	44	37	56	56	38	37	1214	40	20	946	52
Future Volume (vph)	50	44	37	56	56	38	37	1214	40	20	946	52
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		6.0	6.0		6.0		6.5	6.5	6.5	6.5	6.5	6.5
Lane Util. Factor		1.00	1.00		1.00		1.00	0.95	1.00	1.00	0.95	1.00
Frpb, ped/bikes		1.00	0.98		0.99		1.00	1.00	0.97	1.00	1.00	0.97
Flpb, ped/bikes		1.00	1.00		1.00		1.00	1.00	1.00	1.00	1.00	1.00
Frt		1.00	0.85		0.97		1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected		0.97	1.00		0.98		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)		1523	1328		1695		1750	3471	1523	1768	3406	1401
Flt Permitted		0.73	1.00		0.84		0.26	1.00	1.00	0.18	1.00	1.00
Satd. Flow (perm)		1142	1328		1442		481	3471	1523	330	3406	1401
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	53	46	39	59	59	40	39	1278	42	21	996	55
RTOR Reduction (vph)	0	0	32	0	14	0	0	0	10	0	0	10
Lane Group Flow (vph)	0	99	7	0	144	0	39	1278	32	21	996	45
Confl. Peds. (#/hr)	5		5	5		5	5		5	5		5
Confl. Bikes (#/hr)			5			5			5			5
Heavy Vehicles (%)	32%	9%	19%	4%	9%	3%	3%	4%	3%	2%	6%	12%
Turn Type	Perm	NA	Perm	Perm	NA		Perm	NA	Perm	Perm	NA	Perm
Protected Phases		8			4			2			6	
Permitted Phases	8		8	4			2		2	6		6
Actuated Green, G (s)		17.0	17.0		17.0		60.3	60.3	60.3	60.3	60.3	60.3
Effective Green, g (s)		17.0	17.0		17.0		60.3	60.3	60.3	60.3	60.3	60.3
Actuated g/C Ratio		0.19	0.19		0.19		0.67	0.67	0.67	0.67	0.67	0.67
Clearance Time (s)		6.0	6.0		6.0		6.5	6.5	6.5	6.5	6.5	6.5
Vehicle Extension (s)		3.0	3.0		3.0		5.7	5.7	5.7	5.7	5.7	5.7
Lane Grp Cap (vph)		216	251		272		322	2330	1022	221	2287	940
v/s Ratio Prot								c0.37			0.29	
v/s Ratio Perm		0.09	0.01		c0.10		0.08		0.02	0.06		0.03
v/c Ratio		0.46	0.03		0.53		0.12	0.55	0.03	0.10	0.44	0.05
Uniform Delay, d1		32.3	29.7		32.8		5.3	7.7	5.0	5.2	6.8	5.0
Progression Factor		1.00	1.00		1.00		1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2		1.5	0.0		2.0		0.8	0.9	0.1	0.9	0.6	0.1
Delay (s)		33.9	29.7		34.8		6.0	8.6	5.0	6.0	7.5	5.1
Level of Service		C	C		C		A	A	A	A	A	A
Approach Delay (s)		32.7			34.8			8.4			7.3	
Approach LOS		C			C			A			A	
Intersection Summary												
HCM 2000 Control Delay			10.7			HCM 2000 Level of Service				B		
HCM 2000 Volume to Capacity ratio			0.54									
Actuated Cycle Length (s)			89.8			Sum of lost time (s)			12.5			
Intersection Capacity Utilization			119.7%			ICU Level of Service			H			
Analysis Period (min)			15									
c Critical Lane Group												

Lanes, Volumes, Timings
1: Glancaster Road & Dickenson Road West

FB 2035 PM
Broccolini Hamilton Airport Site

						
Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	11	156	5	6	221	7
Future Volume (vph)	11	156	5	6	221	7
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor						
Frt	0.874		0.926			
Flt Protected	0.997					0.954
Satd. Flow (prot)	1623	0	1597	0	0	1760
Flt Permitted	0.997					0.954
Satd. Flow (perm)	1623	0	1597	0	0	1760
Link Speed (k/h)	60		50			50
Link Distance (m)	2890.7		836.5			492.7
Travel Time (s)	173.4		60.2			35.5
Confl. Peds. (#/hr)	5	5		4	5	
Confl. Bikes (#/hr)		5		5		
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93
Heavy Vehicles (%)	2%	2%	20%	2%	3%	2%
Adj. Flow (vph)	12	168	5	6	238	8
Shared Lane Traffic (%)						
Lane Group Flow (vph)	180	0	11	0	0	246
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(m)	7.2		0.0			0.0
Link Offset(m)	0.0		0.0			0.0
Crosswalk Width(m)	4.8		4.8			4.8
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)	25	15		15	25	
Sign Control	Stop		Stop			Stop
Intersection Summary						
Area Type:	Other					
Control Type:	Unsignalized					
Intersection Capacity Utilization	37.1%			ICU Level of Service A		
Analysis Period (min)	15					

Intersection

Intersection Delay, s/veh	8.8
Intersection LOS	A

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	11	156	5	6	221	7
Future Vol, veh/h	11	156	5	6	221	7
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93
Heavy Vehicles, %	2	2	20	2	3	2
Mvmt Flow	12	168	5	6	238	8
Number of Lanes	1	0	1	0	0	1

Approach	WB	NB	SB
Opposing Approach		SB	NB
Opposing Lanes	0	1	1
Conflicting Approach Left	NB		WB
Conflicting Lanes Left	1	0	1
Conflicting Approach Right	SB	WB	
Conflicting Lanes Right	1	1	0
HCM Control Delay	8	7.7	9.5
HCM LOS	A	A	A

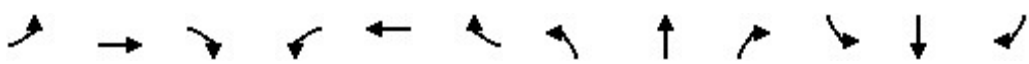
Lane	NBLn1	WBLn1	SBLn1
Vol Left, %	0%	7%	97%
Vol Thru, %	45%	0%	3%
Vol Right, %	55%	93%	0%
Sign Control	Stop	Stop	Stop
Traffic Vol by Lane	11	167	228
LT Vol	0	11	221
Through Vol	5	0	7
RT Vol	6	156	0
Lane Flow Rate	12	180	245
Geometry Grp	1	1	1
Degree of Util (X)	0.015	0.2	0.304
Departure Headway (Hd)	4.567	4.004	4.471
Convergence, Y/N	Yes	Yes	Yes
Cap	785	901	794
Service Time	2.586	2.004	2.554
HCM Lane V/C Ratio	0.015	0.2	0.309
HCM Control Delay	7.7	8	9.5
HCM Lane LOS	A	A	A
HCM 95th-tile Q	0	0.7	1.3

Lanes, Volumes, Timings

FB 2035 PM

2: Upper James Street & Dickenson Road West/Dickenson Road East

Broccolini Hamilton Airport Site

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↶	↷		↶↷		↶	↶↶	↷	↶	↶↶	↷
Traffic Volume (vph)	52	98	63	67	79	41	41	1325	93	50	1464	60
Future Volume (vph)	52	98	63	67	79	41	41	1325	93	50	1464	60
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	70.0		0.0	0.0		0.0	55.0		13.0	100.0		22.0
Storage Lanes	1		1	0		0	1		1	1		1
Taper Length (m)	20.0			7.5			75.0			90.0		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Ped Bike Factor		1.00	0.98		0.99				0.97	1.00		0.97
Frt			0.850		0.970				0.850			0.850
Flt Protected		0.983			0.983		0.950			0.950		
Satd. Flow (prot)	0	1667	1524	0	1769	0	1719	3505	1583	1770	3505	1404
Flt Permitted		0.767			0.757		0.096			0.126		
Satd. Flow (perm)	0	1299	1494	0	1360	0	174	3505	1535	235	3505	1361
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			35		14				30			30
Link Speed (k/h)		60			60			80			70	
Link Distance (m)		2890.7			356.7			407.1			458.6	
Travel Time (s)		173.4			21.4			18.3			23.6	
Confl. Peds. (#/hr)	5		5	5		5	5		5	5		5
Confl. Bikes (#/hr)			5			5			5			5
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	31%	2%	6%	2%	2%	2%	5%	3%	2%	2%	3%	15%
Adj. Flow (vph)	58	109	70	74	88	46	46	1472	103	56	1627	67
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	167	70	0	208	0	46	1472	103	56	1627	67
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)		0.0			0.0			3.6			3.6	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway 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
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2	1	1	2		1	2	1	1	2	1
Detector Template	Left	Thru	Right	Left	Thru		Left	Thru	Right	Left	Thru	Right
Leading Detector (m)	2.0	10.0	2.0	2.0	10.0		2.0	10.0	2.0	2.0	10.0	2.0
Trailing Detector (m)	0.0	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	0.0
Detector 1 Size(m)	2.0	0.6	2.0	2.0	0.6		2.0	0.6	2.0	2.0	0.6	2.0
Detector 1 Type	Cl+Ex	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	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	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	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												

10-27-2025

JL

CGH Transportation

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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	Perm	NA		Perm	NA	Perm	Perm	NA	Perm
Protected Phases		8			4			2			6	
Permitted Phases	8		8	4			2		2	6		6
Detector Phase	8	8	8	4	4		2	2	2	6	6	6
Switch Phase												
Minimum Initial (s)	10.0	10.0	10.0	10.0	10.0		55.0	55.0	55.0	55.0	55.0	55.0
Minimum Split (s)	45.0	45.0	45.0	45.0	45.0		61.5	61.5	61.5	61.5	61.5	61.5
Total Split (s)	45.0	45.0	45.0	45.0	45.0		65.0	65.0	65.0	65.0	65.0	65.0
Total Split (%)	40.9%	40.9%	40.9%	40.9%	40.9%		59.1%	59.1%	59.1%	59.1%	59.1%	59.1%
Maximum Green (s)	39.0	39.0	39.0	39.0	39.0		58.5	58.5	58.5	58.5	58.5	58.5
Yellow Time (s)	3.7	3.7	3.7	3.7	3.7		4.6	4.6	4.6	4.6	4.6	4.6
All-Red Time (s)	2.3	2.3	2.3	2.3	2.3		1.9	1.9	1.9	1.9	1.9	1.9
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		6.0		6.5	6.5	6.5	6.5	6.5	6.5
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		5.7	5.7	5.7	5.7	5.7	5.7
Recall Mode	None	None	None	None	None		Max	Max	Max	Max	Max	Max
Walk Time (s)	7.0	7.0	7.0	7.0	7.0		15.0	15.0	15.0	15.0	15.0	15.0
Flash Dont Walk (s)	32.0	32.0	32.0	32.0	32.0		22.6	22.6	22.6	22.6	22.6	22.6
Pedestrian Calls (#/hr)	5	5	5	5	5		5	5	5	5	5	5
Act Effect Green (s)		19.0	19.0		19.0		59.2	59.2	59.2	59.2	59.2	59.2
Actuated g/C Ratio		0.21	0.21		0.21		0.65	0.65	0.65	0.65	0.65	0.65
v/c Ratio		0.62	0.21		0.70		0.41	0.64	0.10	0.37	0.71	0.07
Control Delay		41.6	17.3		43.2		26.1	13.1	6.5	20.1	14.7	5.8
Queue Delay		0.0	0.0		0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Delay		41.6	17.3		43.2		26.1	13.1	6.5	20.1	14.7	5.8
LOS		D	B		D		C	B	A	C	B	A
Approach Delay		34.4			43.2			13.0			14.5	
Approach LOS		C			D			B			B	
Queue Length 50th (m)		27.7	5.2		32.9		3.2	68.6	4.0	3.8	82.3	2.0
Queue Length 95th (m)		47.0	15.3		55.1		#24.9	166.2	16.7	22.0	198.4	10.9
Internal Link Dist (m)		2866.7			332.7			383.1			434.6	
Turn Bay Length (m)							55.0		13.0	100.0		22.0
Base Capacity (vph)		564	668		598		113	2283	1010	152	2283	897
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		0.30	0.10		0.35		0.41	0.64	0.10	0.37	0.71	0.07
Intersection Summary												
Area Type:	Other											
Cycle Length: 110												
Actuated Cycle Length: 90.8												
Natural Cycle: 110												
Control Type: Semi Act-Uncoord												
Maximum v/c Ratio: 0.71												
Intersection Signal Delay: 16.7	Intersection LOS: B											

Intersection Capacity Utilization 121.4%

ICU Level of Service H

Analysis Period (min) 15

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

Queue shown is maximum after two cycles.

Splits and Phases: 2: Upper James Street & Dickenson Road West/Dickenson Road East



Queues

FB 2035 PM

2: Upper James Street & Dickenson Road West/Dickenson Road East

Broccolini Hamilton Airport Site



Lane Group	EBT	EBR	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	167	70	208	46	1472	103	56	1627	67
v/c Ratio	0.62	0.21	0.70	0.41	0.64	0.10	0.37	0.71	0.07
Control Delay	41.6	17.3	43.2	26.1	13.1	6.5	20.1	14.7	5.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	41.6	17.3	43.2	26.1	13.1	6.5	20.1	14.7	5.8
Queue Length 50th (m)	27.7	5.2	32.9	3.2	68.6	4.0	3.8	82.3	2.0
Queue Length 95th (m)	47.0	15.3	55.1	#24.9	166.2	16.7	22.0	198.4	10.9
Internal Link Dist (m)	2866.7		332.7		383.1			434.6	
Turn Bay Length (m)				55.0		13.0	100.0		22.0
Base Capacity (vph)	564	668	598	113	2283	1010	152	2283	897
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	0.30	0.10	0.35	0.41	0.64	0.10	0.37	0.71	0.07

Intersection Summary

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

Queue shown is maximum after two cycles.

HCM Signalized Intersection Capacity Analysis

FB 2035 PM

2: Upper James Street & Dickenson Road West/Dickenson Road East

Broccolini Hamilton Airport Site

													
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations													
Traffic Volume (vph)	52	98	63	67	79	41	41	1325	93	50	1464	60	
Future Volume (vph)	52	98	63	67	79	41	41	1325	93	50	1464	60	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	
Total Lost time (s)		6.0	6.0		6.0		6.5	6.5	6.5	6.5	6.5	6.5	
Lane Util. Factor		1.00	1.00		1.00		1.00	0.95	1.00	1.00	0.95	1.00	
Frpb, ped/bikes		1.00	0.98		1.00		1.00	1.00	0.97	1.00	1.00	0.97	
Flpb, ped/bikes		1.00	1.00		1.00		1.00	1.00	1.00	1.00	1.00	1.00	
Frt		1.00	0.85		0.97		1.00	1.00	0.85	1.00	1.00	0.85	
Flt Protected		0.98	1.00		0.98		0.95	1.00	1.00	0.95	1.00	1.00	
Satd. Flow (prot)		1665	1492		1766		1718	3505	1538	1769	3505	1364	
Flt Permitted		0.77	1.00		0.76		0.10	1.00	1.00	0.13	1.00	1.00	
Satd. Flow (perm)		1299	1492		1361		173	3505	1538	235	3505	1364	
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	
Adj. Flow (vph)	58	109	70	74	88	46	46	1472	103	56	1627	67	
RTOR Reduction (vph)	0	0	28	0	11	0	0	0	10	0	0	10	
Lane Group Flow (vph)	0	167	42	0	197	0	46	1472	93	56	1627	57	
Confl. Peds. (#/hr)	5		5	5		5	5		5	5		5	
Confl. Bikes (#/hr)			5			5			5			5	
Heavy Vehicles (%)	31%	2%	6%	2%	2%	2%	5%	3%	2%	2%	3%	15%	
Turn Type	Perm	NA	Perm	Perm	NA		Perm	NA	Perm	Perm	NA	Perm	
Protected Phases		8			4			2			6		
Permitted Phases	8		8	4			2		2	6		6	
Actuated Green, G (s)		19.0	19.0		19.0		59.2	59.2	59.2	59.2	59.2	59.2	
Effective Green, g (s)		19.0	19.0		19.0		59.2	59.2	59.2	59.2	59.2	59.2	
Actuated g/C Ratio		0.21	0.21		0.21		0.65	0.65	0.65	0.65	0.65	0.65	
Clearance Time (s)		6.0	6.0		6.0		6.5	6.5	6.5	6.5	6.5	6.5	
Vehicle Extension (s)		3.0	3.0		3.0		5.7	5.7	5.7	5.7	5.7	5.7	
Lane Grp Cap (vph)		272	312		285		112	2287	1003	153	2287	890	
v/s Ratio Prot								0.42			c0.46		
v/s Ratio Perm		0.13	0.03		c0.14		0.27		0.06	0.24		0.04	
v/c Ratio		0.61	0.14		0.69		0.41	0.64	0.09	0.37	0.71	0.06	
Uniform Delay, d1		32.5	29.2		33.1		7.5	9.4	5.8	7.2	10.2	5.7	
Progression Factor		1.00	1.00		1.00		1.00	1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2		4.1	0.2		7.0		10.8	1.4	0.2	6.6	1.9	0.1	
Delay (s)		36.6	29.4		40.2		18.2	10.8	6.0	13.8	12.1	5.8	
Level of Service		D	C		D		B	B	A	B	B	A	
Approach Delay (s)		34.5			40.2			10.7			11.9		
Approach LOS		C			D			B			B		
Intersection Summary													
HCM 2000 Control Delay			14.4									HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio			0.71										
Actuated Cycle Length (s)			90.7							12.5		Sum of lost time (s)	
Intersection Capacity Utilization			121.4%							H		ICU Level of Service	
Analysis Period (min)			15										
c Critical Lane Group													

Appendix J

Synchro Analysis Worksheets: 2030 Future Total (Full Build-Out)

Lanes, Volumes, Timings
1: Glancaster Road & Dickenson Road West

FT 2030 AM
Broccolini Hamilton Airport Site

						
Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	4	85	22	7	204	77
Future Volume (vph)	4	85	22	7	204	77
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor						
Frt	0.871		0.966			
Flt Protected	0.998					0.965
Satd. Flow (prot)	1575	0	1688	0	0	1785
Flt Permitted	0.998					0.965
Satd. Flow (perm)	1575	0	1688	0	0	1785
Link Speed (k/h)	60		50			50
Link Distance (m)	1486.2		615.2			492.7
Travel Time (s)	89.2		44.3			35.5
Confl. Peds. (#/hr)	5	5		5	5	
Confl. Bikes (#/hr)		5		5		
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93
Heavy Vehicles (%)	2%	5%	2%	29%	3%	2%
Adj. Flow (vph)	4	91	24	8	219	83
Shared Lane Traffic (%)						
Lane Group Flow (vph)	95	0	32	0	0	302
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(m)	3.6		0.0			0.0
Link Offset(m)	0.0		0.0			0.0
Crosswalk Width(m)	4.8		4.8			4.8
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)	25	15		15	25	
Sign Control	Stop		Stop			Stop
Intersection Summary						
Area Type:	Other					
Control Type:	Unsignalized					
Intersection Capacity Utilization	35.8%			ICU Level of Service A		
Analysis Period (min)	15					

Intersection

Intersection Delay, s/veh	9.1
Intersection LOS	A

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	4	85	22	7	204	77
Future Vol, veh/h	4	85	22	7	204	77
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93
Heavy Vehicles, %	2	5	2	29	3	2
Mvmt Flow	4	91	24	8	219	83
Number of Lanes	1	0	1	0	0	1

Approach	WB	NB	SB
Opposing Approach		SB	NB
Opposing Lanes	0	1	1
Conflicting Approach Left	NB		WB
Conflicting Lanes Left	1	0	1
Conflicting Approach Right	SB	WB	
Conflicting Lanes Right	1	1	0
HCM Control Delay	7.6	7.5	9.8
HCM LOS	A	A	A

Lane	NBLn1	WBLn1	SBLn1
Vol Left, %	0%	4%	73%
Vol Thru, %	76%	0%	27%
Vol Right, %	24%	96%	0%
Sign Control	Stop	Stop	Stop
Traffic Vol by Lane	29	89	281
LT Vol	0	4	204
Through Vol	22	0	77
RT Vol	7	85	0
Lane Flow Rate	31	96	302
Geometry Grp	1	1	1
Degree of Util (X)	0.037	0.11	0.36
Departure Headway (Hd)	4.311	4.131	4.289
Convergence, Y/N	Yes	Yes	Yes
Cap	834	873	834
Service Time	2.322	2.133	2.346
HCM Lane V/C Ratio	0.037	0.11	0.362
HCM Control Delay	7.5	7.6	9.8
HCM Lane LOS	A	A	A
HCM 95th-tile Q	0.1	0.4	1.6

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	93	40	60	51	51	34	86	1100	36	18	857	203
Future Volume (vph)	93	40	60	51	51	34	86	1100	36	18	857	203
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	70.0		0.0	0.0		0.0	55.0		10.0	100.0		20.0
Storage Lanes	1		1	0		0	1		1	1		1
Taper Length (m)	20.0			7.5			75.0			90.0		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Ped Bike Factor		1.00	0.98		0.99		1.00		0.97	1.00		0.97
Frt			0.850		0.966				0.850			0.850
Flt Protected		0.966			0.982		0.950			0.950		
Satd. Flow (prot)	0	1443	1035	0	1698	0	1421	3471	1568	1770	3406	1468
Flt Permitted		0.716			0.825		0.236			0.243		
Satd. Flow (perm)	0	1067	1016	0	1425	0	353	3471	1520	452	3406	1422
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			82		20				33			92
Link Speed (k/h)		60			60			80			70	
Link Distance (m)		1404.5			356.7			407.1			458.6	
Travel Time (s)		84.3			21.4			18.3			23.6	
Confl. Peds. (#/hr)	5		5	5		5	5		5	5		5
Confl. Bikes (#/hr)			5			5			5			5
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Heavy Vehicles (%)	35%	9%	56%	4%	9%	3%	27%	4%	3%	2%	6%	10%
Adj. Flow (vph)	98	42	63	54	54	36	91	1158	38	19	902	214
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	140	63	0	144	0	91	1158	38	19	902	214
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)		0.0			0.0			3.6			3.6	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway 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
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2	1	1	2		1	2	1	1	2	1
Detector Template	Left	Thru	Right	Left	Thru		Left	Thru	Right	Left	Thru	Right
Leading Detector (m)	2.0	10.0	2.0	2.0	10.0		2.0	10.0	2.0	2.0	10.0	2.0
Trailing Detector (m)	0.0	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	0.0
Detector 1 Size(m)	2.0	0.6	2.0	2.0	0.6		2.0	0.6	2.0	2.0	0.6	2.0
Detector 1 Type	Cl+Ex	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	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	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	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	Perm	NA		pm+pt	NA	Perm	Perm	NA	Perm
Protected Phases		8			4		5	2			6	
Permitted Phases	8		8	4			2		2	6		6
Detector Phase	8	8	8	4	4		5	2	2	6	6	6
Switch Phase												
Minimum Initial (s)	10.0	10.0	10.0	10.0	10.0		5.0	10.0	10.0	10.0	10.0	10.0
Minimum Split (s)	45.0	45.0	45.0	45.0	45.0		9.0	44.1	44.1	44.1	44.1	44.1
Total Split (s)	45.0	45.0	45.0	45.0	45.0		10.0	55.0	55.0	45.0	45.0	45.0
Total Split (%)	45.0%	45.0%	45.0%	45.0%	45.0%		10.0%	55.0%	55.0%	45.0%	45.0%	45.0%
Maximum Green (s)	39.0	39.0	39.0	39.0	39.0		6.0	48.5	48.5	38.5	38.5	38.5
Yellow Time (s)	3.7	3.7	3.7	3.7	3.7		4.0	4.6	4.6	4.6	4.6	4.6
All-Red Time (s)	2.3	2.3	2.3	2.3	2.3		0.0	1.9	1.9	1.9	1.9	1.9
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		6.0		4.0	6.5	6.5	6.5	6.5	6.5
Lead/Lag							Lead			Lag	Lag	Lag
Lead-Lag Optimize?							Yes			Yes	Yes	Yes
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	5.7	5.7	5.7	5.7	5.7
Recall Mode	None	None	None	None	None		None	Max	Max	Max	Max	Max
Walk Time (s)	7.0	7.0	7.0	7.0	7.0			15.0	15.0	15.0	15.0	15.0
Flash Dont Walk (s)	32.0	32.0	32.0	32.0	32.0			22.6	22.6	22.6	22.6	22.6
Pedestrian Calls (#/hr)	5	5	5	5	5			5	5	5	5	5
Act Effect Green (s)		17.8	17.8		17.8		51.8	49.2	49.2	41.3	41.3	41.3
Actuated g/C Ratio		0.22	0.22		0.22		0.65	0.62	0.62	0.52	0.52	0.52
v/c Ratio		0.59	0.22		0.43		0.29	0.54	0.04	0.08	0.51	0.27
Control Delay		37.0	5.0		25.6		10.3	11.8	4.6	16.4	16.6	9.7
Queue Delay		0.0	0.0		0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Delay		37.0	5.0		25.6		10.3	11.8	4.6	16.4	16.6	9.7
LOS		D	A		C		B	B	A	B	B	A
Approach Delay		27.1			25.6			11.5			15.3	
Approach LOS		C			C			B			B	

Intersection Summary

Area Type: Other

Cycle Length: 100

Actuated Cycle Length: 79.7

Natural Cycle: 100

Control Type: Semi Act-Uncoord

Maximum v/c Ratio: 0.59

Intersection Signal Delay: 14.9

Intersection LOS: B

Intersection Capacity Utilization 72.7%

ICU Level of Service C

Analysis Period (min) 15

Splits and Phases: 2: Upper James Street & Dickenson Road West/Dickenson Road East





Lane Group	EBT	EBR	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	140	63	144	91	1158	38	19	902	214
v/c Ratio	0.59	0.22	0.43	0.29	0.54	0.04	0.08	0.51	0.27
Control Delay	37.0	5.0	25.6	10.3	11.8	4.6	16.4	16.6	9.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	37.0	5.0	25.6	10.3	11.8	4.6	16.4	16.6	9.7
Queue Length 50th (m)	19.7	0.0	16.6	4.0	43.1	0.3	1.4	44.8	9.3
Queue Length 95th (m)	36.1	5.8	31.3	18.1	116.9	5.9	7.9	102.3	35.1
Internal Link Dist (m)	1380.5		332.7		383.1			434.6	
Turn Bay Length (m)				55.0		10.0	100.0		20.0
Base Capacity (vph)	530	546	717	311	2144	951	234	1766	781
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	0.26	0.12	0.20	0.29	0.54	0.04	0.08	0.51	0.27
Intersection Summary									

Lanes, Volumes, Timings
3: Glancaster Road & Arterial 1N

FT 2030 AM
Broccolini Hamilton Airport Site

						
Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	0	15	14	0	74	7
Future Volume (vph)	0	15	14	0	74	7
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor						
Frt	0.850					
Flt Protected	0.957					
Satd. Flow (prot)	1863	1583	1681	0	0	1768
Flt Permitted	0.957					
Satd. Flow (perm)	1863	1583	1681	0	0	1768
Link Speed (k/h)	60		50			50
Link Distance (m)	1775.0		221.3			615.2
Travel Time (s)	106.5		15.9			44.3
Confl. Peds. (#/hr)	5	5		5	5	
Confl. Bikes (#/hr)		5		5		
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	2%	2%	13%	2%	2%	11%
Adj. Flow (vph)	0	16	15	0	80	8
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	16	15	0	0	88
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(m)	3.6		0.0			0.0
Link Offset(m)	0.0		0.0			0.0
Crosswalk Width(m)	4.8		4.8			4.8
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)	25	15		15	25	
Sign Control	Stop		Free			Free
Intersection Summary						
Area Type:	Other					
Control Type:	Unsignalized					
Intersection Capacity Utilization	22.7%			ICU Level of Service A		
Analysis Period (min)	15					

Intersection						
Int Delay, s/veh	6.1					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	0	15	14	0	74	7
Future Vol, veh/h	0	15	14	0	74	7
Conflicting Peds, #/hr	5	5	0	5	5	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	0	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	13	2	2	11
Mvmt Flow	0	16	15	0	80	8
Major/Minor	Minor1	Major1	Major2			
Conflicting Flow All	193	25	0	0	20	0
Stage 1	20	-	-	-	-	-
Stage 2	173	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218	-
Pot Cap-1 Maneuver	796	1051	-	-	1596	-
Stage 1	1003	-	-	-	-	-
Stage 2	857	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	748	1040	-	-	1588	-
Mov Cap-2 Maneuver	748	-	-	-	-	-
Stage 1	998	-	-	-	-	-
Stage 2	809	-	-	-	-	-
Approach	WB	NB		SB		
HCM Control Delay, s	8.5	0		6.7		
HCM LOS	A					
Minor Lane/Major Mvmt	NBT	NBRWBLn1	WBLn2	SBL	SBT	
Capacity (veh/h)	-	-	-	1040	1588	-
HCM Lane V/C Ratio	-	-	-	0.016	0.051	-
HCM Control Delay (s)	-	-	0	8.5	7.4	0
HCM Lane LOS	-	-	A	A	A	A
HCM 95th %tile Q(veh)	-	-	-	0	0.2	-

Lanes, Volumes, Timings
4: Arterial 1N & Dickenson Road West

FT 2030 AM
Broccolini Hamilton Airport Site

	→	↘	↙	←	↖	↗
Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↰			↱	↱	↱
Traffic Volume (vph)	151	59	208	77	12	75
Future Volume (vph)	151	59	208	77	12	75
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (m)		0.0	115.0		0.0	0.0
Storage Lanes		0	0		1	1
Taper Length (m)			55.0		100.0	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor	0.99			1.00	0.99	0.96
Frt	0.962					0.850
Flt Protected				0.965	0.950	
Satd. Flow (prot)	1732	0	0	1618	1770	1016
Flt Permitted				0.538	0.950	
Satd. Flow (perm)	1732	0	0	900	1753	980
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)	19					82
Link Speed (k/h)	60			60	60	
Link Distance (m)	1486.2			1404.5	1775.0	
Travel Time (s)	89.2			84.3	106.5	
Confl. Peds. (#/hr)		5	5		5	5
Confl. Bikes (#/hr)		5				5
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	6%	2%	16%	6%	2%	59%
Adj. Flow (vph)	164	64	226	84	13	82
Shared Lane Traffic (%)						
Lane Group Flow (vph)	228	0	0	310	13	82
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	3.6			3.6	3.6	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	4.8			4.8	4.8	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
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						

Lanes, Volumes, Timings
4: Arterial 1N & Dickenson Road West

FT 2030 AM
Broccolini Hamilton Airport Site

	→	↘	↙	←	↖	↗
Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Detector 2 Extend (s)	0.0			0.0		
Turn Type	NA		pm+pt	NA	Prot	Perm
Protected Phases	4		3	8	2	
Permitted Phases			8			2
Detector Phase	4		3	8	2	2
Switch Phase						
Minimum Initial (s)	10.0		10.0	10.0	10.0	10.0
Minimum Split (s)	32.3		32.3	32.3	32.2	32.2
Total Split (s)	33.0		32.3	65.3	34.7	34.7
Total Split (%)	33.0%		32.3%	65.3%	34.7%	34.7%
Maximum Green (s)	27.7		27.0	60.0	29.5	29.5
Yellow Time (s)	3.7		3.7	3.7	3.7	3.7
All-Red Time (s)	1.6		1.6	1.6	1.5	1.5
Lost Time Adjust (s)	0.0			0.0	0.0	0.0
Total Lost Time (s)	5.3			5.3	5.2	5.2
Lead/Lag	Lag		Lead			
Lead-Lag Optimize?	Yes		Yes			
Vehicle Extension (s)	3.0		3.0	3.0	3.0	3.0
Recall Mode	None		None	None	C-Max	C-Max
Walk Time (s)	7.0		7.0	7.0	7.0	7.0
Flash Dont Walk (s)	20.0		20.0	20.0	20.0	20.0
Pedestrian Calls (#/hr)	5		5	5	5	5
Act Effect Green (s)	43.5			49.9	39.6	39.6
Actuated g/C Ratio	0.44			0.50	0.40	0.40
v/c Ratio	0.30			0.64	0.02	0.19
Control Delay	19.0			22.7	24.3	7.3
Queue Delay	0.0			0.0	0.0	0.0
Total Delay	19.0			22.7	24.3	7.3
LOS	B			C	C	A
Approach Delay	19.0			22.7	9.7	
Approach LOS	B			C	A	

Intersection Summary

Area Type: Other
 Cycle Length: 100
 Actuated Cycle Length: 100
 Offset: 0 (0%), Referenced to phase 2:NBL and 6:, Start of Green
 Natural Cycle: 100
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 0.64
 Intersection Signal Delay: 19.4
 Intersection Capacity Utilization 64.6%
 Analysis Period (min) 15
 Intersection LOS: B
 ICU Level of Service C

Splits and Phases: 4: Arterial 1N & Dickenson Road West



Queues
4: Arterial 1N & Dickenson Road West

FT 2030 AM
Broccolini Hamilton Airport Site

				
Lane Group	EBT	WBT	NBL	NBR
Lane Group Flow (vph)	228	310	13	82
v/c Ratio	0.30	0.64	0.02	0.19
Control Delay	19.0	22.7	24.3	7.3
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	19.0	22.7	24.3	7.3
Queue Length 50th (m)	21.4	42.6	1.7	0.0
Queue Length 95th (m)	58.4	45.1	6.5	11.1
Internal Link Dist (m)	1462.2	1380.5	1751.0	
Turn Bay Length (m)				
Base Capacity (vph)	763	579	700	437
Starvation Cap Reductn	0	0	0	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.30	0.54	0.02	0.19
Intersection Summary				

Lanes, Volumes, Timings
1: Glancaster Road & Dickenson Road West

FT 2030 PM
Broccolini Hamilton Airport Site

						
Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	10	204	82	6	218	30
Future Volume (vph)	10	204	82	6	218	30
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor						
Frt	0.871		0.991			
Flt Protected	0.998					0.958
Satd. Flow (prot)	1619	0	1846	0	0	1769
Flt Permitted	0.998					0.958
Satd. Flow (perm)	1619	0	1846	0	0	1769
Link Speed (k/h)	60		50			50
Link Distance (m)	1486.2		615.2			492.7
Travel Time (s)	89.2		44.3			35.5
Confl. Peds. (#/hr)	5	5		5	5	
Confl. Bikes (#/hr)		5		5		
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93
Heavy Vehicles (%)	2%	2%	2%	2%	3%	2%
Adj. Flow (vph)	11	219	88	6	234	32
Shared Lane Traffic (%)						
Lane Group Flow (vph)	230	0	94	0	0	266
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(m)	3.6		0.0			0.0
Link Offset(m)	0.0		0.0			0.0
Crosswalk Width(m)	4.8		4.8			4.8
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)	25	15		15	25	
Sign Control	Stop		Stop			Stop
Intersection Summary						
Area Type:	Other					
Control Type:	Unsignalized					
Intersection Capacity Utilization	40.7%			ICU Level of Service A		
Analysis Period (min)	15					

Intersection

Intersection Delay, s/veh	9.4
Intersection LOS	A

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	10	204	82	6	218	30
Future Vol, veh/h	10	204	82	6	218	30
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93
Heavy Vehicles, %	2	2	2	2	3	2
Mvmt Flow	11	219	88	6	234	32
Number of Lanes	1	0	1	0	0	1

Approach	WB	NB	SB
Opposing Approach		SB	NB
Opposing Lanes	0	1	1
Conflicting Approach Left	NB		WB
Conflicting Lanes Left	1	0	1
Conflicting Approach Right	SB	WB	
Conflicting Lanes Right	1	1	0
HCM Control Delay	8.8	8.4	10.3
HCM LOS	A	A	B

Lane	NBLn1	WBLn1	SBLn1
Vol Left, %	0%	5%	88%
Vol Thru, %	93%	0%	12%
Vol Right, %	7%	95%	0%
Sign Control	Stop	Stop	Stop
Traffic Vol by Lane	88	214	248
LT Vol	0	10	218
Through Vol	82	0	30
RT Vol	6	204	0
Lane Flow Rate	95	230	267
Geometry Grp	1	1	1
Degree of Util (X)	0.124	0.271	0.351
Departure Headway (Hd)	4.717	4.238	4.743
Convergence, Y/N	Yes	Yes	Yes
Cap	758	847	757
Service Time	2.76	2.265	2.78
HCM Lane V/C Ratio	0.125	0.272	0.353
HCM Control Delay	8.4	8.8	10.3
HCM Lane LOS	A	A	B
HCM 95th-tile Q	0.4	1.1	1.6

Lanes, Volumes, Timings

FT 2030 PM

2: Upper James Street & Dickenson Road West/Dickenson Road East

Broccolini Hamilton Airport Site

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	209	88	109	61	72	38	71	1200	84	45	1326	118
Future Volume (vph)	209	88	109	61	72	38	71	1200	84	45	1326	118
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	70.0		0.0	0.0		0.0	55.0		10.0	100.0		20.0
Storage Lanes	1		1	0		0	1		1	1		1
Taper Length (m)	20.0			7.5			75.0			90.0		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Ped Bike Factor		1.00	0.98		1.00				0.97	1.00		0.97
Frt			0.850		0.970				0.850			0.850
Flt Protected		0.966			0.982		0.950			0.950		
Satd. Flow (prot)	0	1631	1233	0	1767	0	1101	3505	1583	1770	3505	1205
Flt Permitted		0.669			0.652		0.087			0.141		
Satd. Flow (perm)	0	1127	1210	0	1172	0	101	3505	1535	262	3505	1168
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			121		17				33			76
Link Speed (k/h)		60			60			80			70	
Link Distance (m)		1404.5			356.7			407.1			458.6	
Travel Time (s)		84.3			21.4			18.3			23.6	
Confl. Peds. (#/hr)	5		5	5		5	5		5	5		5
Confl. Bikes (#/hr)			5			5			5			5
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	17%	2%	31%	2%	2%	2%	64%	3%	2%	2%	3%	34%
Adj. Flow (vph)	232	98	121	68	80	42	79	1333	93	50	1473	131
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	330	121	0	190	0	79	1333	93	50	1473	131
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)		0.0			0.0			3.6			3.6	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway 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
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2	1	1	2		1	2	1	1	2	1
Detector Template	Left	Thru	Right	Left	Thru		Left	Thru	Right	Left	Thru	Right
Leading Detector (m)	2.0	10.0	2.0	2.0	10.0		2.0	10.0	2.0	2.0	10.0	2.0
Trailing Detector (m)	0.0	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	0.0
Detector 1 Size(m)	2.0	0.6	2.0	2.0	0.6		2.0	0.6	2.0	2.0	0.6	2.0
Detector 1 Type	Cl+Ex	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	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	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	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	Perm	NA		pm+pt	NA	Perm	Perm	NA	Perm
Protected Phases		8			4		5	2			6	
Permitted Phases	8		8	4			2		2	6		6
Detector Phase	8	8	8	4	4		5	2	2	6	6	6
Switch Phase												
Minimum Initial (s)	10.0	10.0	10.0	10.0	10.0		5.0	10.0	10.0	10.0	10.0	10.0
Minimum Split (s)	45.0	45.0	45.0	45.0	45.0		9.0	44.1	44.1	44.1	44.1	44.1
Total Split (s)	45.0	45.0	45.0	45.0	45.0		9.0	55.0	55.0	46.0	46.0	46.0
Total Split (%)	45.0%	45.0%	45.0%	45.0%	45.0%		9.0%	55.0%	55.0%	46.0%	46.0%	46.0%
Maximum Green (s)	39.0	39.0	39.0	39.0	39.0		5.0	48.5	48.5	39.5	39.5	39.5
Yellow Time (s)	3.7	3.7	3.7	3.7	3.7		4.0	4.6	4.6	4.6	4.6	4.6
All-Red Time (s)	2.3	2.3	2.3	2.3	2.3		0.0	1.9	1.9	1.9	1.9	1.9
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		6.0		4.0	6.5	6.5	6.5	6.5	6.5
Lead/Lag							Lead			Lag	Lag	Lag
Lead-Lag Optimize?							Yes			Yes	Yes	Yes
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	5.7	5.7	5.7	5.7	5.7
Recall Mode	None	None	None	None	None		None	Max	Max	Max	Max	Max
Walk Time (s)	7.0	7.0	7.0	7.0	7.0			15.0	15.0	15.0	15.0	15.0
Flash Dont Walk (s)	32.0	32.0	32.0	32.0	32.0			22.6	22.6	22.6	22.6	22.6
Pedestrian Calls (#/hr)	5	5	5	5	5			5	5	5	5	5
Act Effect Green (s)		30.7	30.7		30.7		51.4	48.9	48.9	41.9	41.9	41.9
Actuated g/C Ratio		0.33	0.33		0.33		0.56	0.53	0.53	0.45	0.45	0.45
v/c Ratio		0.88	0.25		0.47		0.71	0.72	0.11	0.42	0.92	0.23
Control Delay		53.8	5.3		25.6		50.7	20.6	9.4	35.7	37.6	10.2
Queue Delay		0.0	0.0		0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Delay		53.8	5.3		25.6		50.7	20.6	9.4	35.7	37.6	10.2
LOS		D	A		C		D	C	A	D	D	B
Approach Delay		40.7			25.6			21.5			35.4	
Approach LOS		D			C			C			D	

Intersection Summary

Area Type: Other

Cycle Length: 100

Actuated Cycle Length: 92.1

Natural Cycle: 100

Control Type: Semi Act-Uncoord

Maximum v/c Ratio: 0.92

Intersection Signal Delay: 30.0

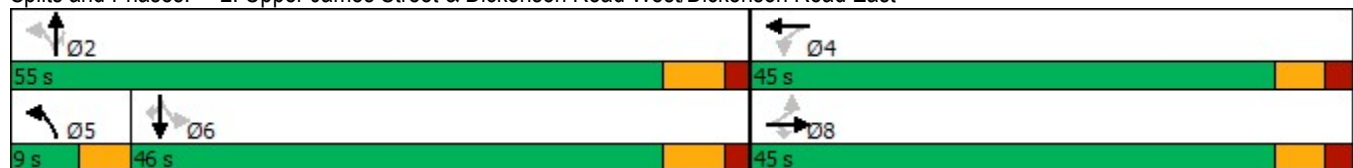
Intersection LOS: C

Intersection Capacity Utilization 81.7%

ICU Level of Service D

Analysis Period (min) 15

Splits and Phases: 2: Upper James Street & Dickenson Road West/Dickenson Road East





Lane Group	EBT	EBR	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	330	121	190	79	1333	93	50	1473	131
v/c Ratio	0.88	0.25	0.47	0.71	0.72	0.11	0.42	0.92	0.23
Control Delay	53.8	5.3	25.6	50.7	20.6	9.4	35.7	37.6	10.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	53.8	5.3	25.6	50.7	20.6	9.4	35.7	37.6	10.2
Queue Length 50th (m)	57.1	0.0	25.0	6.9	97.6	5.4	6.6	142.0	6.1
Queue Length 95th (m)	#101.7	11.3	44.7	#32.5	143.5	15.1	#24.0	#219.0	20.2
Internal Link Dist (m)	1380.5		332.7		383.1			434.6	
Turn Bay Length (m)				55.0		10.0	100.0		20.0
Base Capacity (vph)	480	585	509	111	1859	829	119	1593	572
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	0.69	0.21	0.37	0.71	0.72	0.11	0.42	0.92	0.23

Intersection Summary

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

Queue shown is maximum after two cycles.

Lanes, Volumes, Timings
3: Glancaster Road & Arterial 1N

FT 2030 PM
Broccolini Hamilton Airport Site

						
Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	0	78	10	0	23	17
Future Volume (vph)	0	78	10	0	23	17
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor						
Frt	0.850					
Flt Protected	0.972					
Satd. Flow (prot)	1863	1583	1743	0	0	1811
Flt Permitted	0.972					
Satd. Flow (perm)	1863	1583	1743	0	0	1811
Link Speed (k/h)	60		50			50
Link Distance (m)	1807.0		221.3			615.2
Travel Time (s)	108.4		15.9			44.3
Confl. Peds. (#/hr)	5	5		5	5	
Confl. Bikes (#/hr)		5		5		
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	2%	2%	9%	2%	2%	2%
Adj. Flow (vph)	0	85	11	0	25	18
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	85	11	0	0	43
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(m)	3.6		0.0			0.0
Link Offset(m)	0.0		0.0			0.0
Crosswalk Width(m)	4.8		4.8			4.8
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)	25	15		15	25	
Sign Control	Stop		Free			Free
Intersection Summary						
Area Type:	Other					
Control Type:	Unsignalized					
Intersection Capacity Utilization	20.4%			ICU Level of Service A		
Analysis Period (min)	15					

Intersection						
Int Delay, s/veh	6.6					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	0	78	10	0	23	17
Future Vol, veh/h	0	78	10	0	23	17
Conflicting Peds, #/hr	5	5	0	5	5	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	0	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	9	2	2	2
Mvmt Flow	0	85	11	0	25	18
Major/Minor	Minor1	Major1	Major2			
Conflicting Flow All	89	21	0	0	16	0
Stage 1	16	-	-	-	-	-
Stage 2	73	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218	-
Pot Cap-1 Maneuver	912	1056	-	-	1602	-
Stage 1	1007	-	-	-	-	-
Stage 2	950	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	888	1045	-	-	1594	-
Mov Cap-2 Maneuver	888	-	-	-	-	-
Stage 1	1002	-	-	-	-	-
Stage 2	930	-	-	-	-	-
Approach	WB	NB	SB			
HCM Control Delay, s	8.7	0	4.2			
HCM LOS	A					
Minor Lane/Major Mvmt	NBT	NBRWBLn1WBLn2	SBL	SBT		
Capacity (veh/h)	-	-	1045	1594	-	
HCM Lane V/C Ratio	-	-	0.081	0.016	-	
HCM Control Delay (s)	-	-	0	8.7	7.3	0
HCM Lane LOS	-	-	A	A	A	A
HCM 95th %tile Q(veh)	-	-	0.3	0	-	

Lanes, Volumes, Timings
4: Arterial 1N & Dickenson Road West

FT 2030 PM
Broccolini Hamilton Airport Site

						
Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	205	18	97	151	63	214
Future Volume (vph)	205	18	97	151	63	214
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (m)		0.0	115.0		0.0	0.0
Storage Lanes		0	0		1	1
Taper Length (m)			55.0		100.0	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.989					0.850
Flt Protected				0.981	0.950	
Satd. Flow (prot)	1826	0	0	1399	1770	1324
Flt Permitted				0.612	0.950	
Satd. Flow (perm)	1826	0	0	873	1770	1324
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)	4					233
Link Speed (k/h)	60			60	60	
Link Distance (m)	1486.2			1404.5	1807.0	
Travel Time (s)	89.2			84.3	108.4	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	3%	2%	82%	2%	2%	22%
Adj. Flow (vph)	223	20	105	164	68	233
Shared Lane Traffic (%)						
Lane Group Flow (vph)	243	0	0	269	68	233
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	3.6			3.6	3.6	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	4.8			4.8	4.8	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
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		
Turn Type	NA		pm+pt	NA	Prot	Perm
Protected Phases	4		3	8	2	

Lanes, Volumes, Timings
4: Arterial 1N & Dickenson Road West

FT 2030 PM
Broccolini Hamilton Airport Site

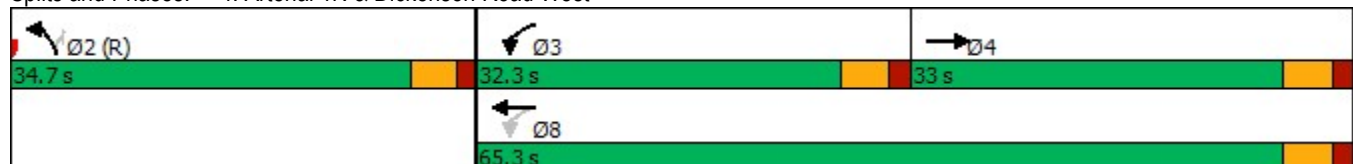
	→	↘	↙	←	↖	↗
Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Permitted Phases			8			2
Detector Phase	4		3	8	2	2
Switch Phase						
Minimum Initial (s)	10.0		10.0	10.0	10.0	10.0
Minimum Split (s)	32.3		32.3	32.3	32.0	32.0
Total Split (s)	33.0		32.3	65.3	34.7	34.7
Total Split (%)	33.0%		32.3%	65.3%	34.7%	34.7%
Maximum Green (s)	27.7		27.0	60.0	29.7	29.7
Yellow Time (s)	3.7		3.7	3.7	3.5	3.5
All-Red Time (s)	1.6		1.6	1.6	1.5	1.5
Lost Time Adjust (s)	0.0			0.0	0.0	0.0
Total Lost Time (s)	5.3			5.3	5.0	5.0
Lead/Lag	Lag		Lead			
Lead-Lag Optimize?	Yes		Yes			
Vehicle Extension (s)	3.0		3.0	3.0	3.0	3.0
Recall Mode	None		None	None	C-Max	C-Max
Walk Time (s)	7.0		7.0	7.0	7.0	7.0
Flash Dont Walk (s)	20.0		20.0	20.0	20.0	20.0
Pedestrian Calls (#/hr)	5		5	5	5	5
Act Effect Green (s)	31.4			37.9	51.8	51.8
Actuated g/C Ratio	0.31			0.38	0.52	0.52
v/c Ratio	0.42			0.75	0.07	0.29
Control Delay	28.8			38.0	17.7	4.3
Queue Delay	0.0			0.0	0.0	0.0
Total Delay	28.8			38.0	17.7	4.3
LOS	C			D	B	A
Approach Delay	28.8			38.0	7.3	
Approach LOS	C			D	A	

Intersection Summary

Area Type: Other
 Cycle Length: 100
 Actuated Cycle Length: 100
 Offset: 0 (0%), Referenced to phase 2:NBL and 6:, Start of Green
 Natural Cycle: 100
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 0.75
 Intersection Signal Delay: 23.9
 Intersection Capacity Utilization 46.5%
 Analysis Period (min) 15

Intersection LOS: C
 ICU Level of Service A

Splits and Phases: 4: Arterial 1N & Dickenson Road West



Queues
4: Arterial 1N & Dickenson Road West

FT 2030 PM
Broccolini Hamilton Airport Site

	→	←	↶	↷
Lane Group	EBT	WBT	NBL	NBR
Lane Group Flow (vph)	243	269	68	233
v/c Ratio	0.42	0.75	0.07	0.29
Control Delay	28.8	38.0	17.7	4.3
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	28.8	38.0	17.7	4.3
Queue Length 50th (m)	35.3	49.8	6.4	0.0
Queue Length 95th (m)	65.3	41.4	20.5	17.5
Internal Link Dist (m)	1462.2	1380.5	1783.0	
Turn Bay Length (m)				
Base Capacity (vph)	604	551	916	798
Starvation Cap Reductn	0	0	0	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.40	0.49	0.07	0.29
Intersection Summary				

Appendix K

Synchro Analysis Worksheets: 2035 Future Total (Full Build-Out)

Lanes, Volumes, Timings
1: Glancaster Road & Dickenson Road West

FT 2035 AM
Broccolini Hamilton Airport Site

						
Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	5	92	22	7	219	78
Future Volume (vph)	5	92	22	7	219	78
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor						
Frt	0.871		0.966			
Flt Protected	0.998					0.964
Satd. Flow (prot)	1575	0	1688	0	0	1783
Flt Permitted	0.998					0.964
Satd. Flow (perm)	1575	0	1688	0	0	1783
Link Speed (k/h)	60		50			50
Link Distance (m)	1486.2		615.2			492.7
Travel Time (s)	89.2		44.3			35.5
Confl. Peds. (#/hr)	5	5		5	5	
Confl. Bikes (#/hr)		5		5		
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93
Heavy Vehicles (%)	2%	5%	2%	29%	3%	2%
Adj. Flow (vph)	5	99	24	8	235	84
Shared Lane Traffic (%)						
Lane Group Flow (vph)	104	0	32	0	0	319
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(m)	3.6		0.0			0.0
Link Offset(m)	0.0		0.0			0.0
Crosswalk Width(m)	4.8		4.8			4.8
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)	25	15		15	25	
Sign Control	Stop		Stop			Stop
Intersection Summary						
Area Type:	Other					
Control Type:	Unsignalized					
Intersection Capacity Utilization	37.1%			ICU Level of Service A		
Analysis Period (min)	15					

HCM Unsignalized Intersection Capacity Analysis

1: Glancaster Road & Dickenson Road West

FT 2035 AM
Broccolini Hamilton Airport Site

						
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Sign Control	Stop		Stop			Stop
Traffic Volume (vph)	5	92	22	7	219	78
Future Volume (vph)	5	92	22	7	219	78
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93
Hourly flow rate (vph)	5	99	24	8	235	84
Direction, Lane #	WB 1	NB 1	SB 1			
Volume Total (vph)	104	32	319			
Volume Left (vph)	5	0	235			
Volume Right (vph)	99	8	0			
Hadj (s)	-0.48	0.00	0.19			
Departure Headway (s)	4.2	4.5	4.4			
Degree Utilization, x	0.12	0.04	0.39			
Capacity (veh/h)	783	765	799			
Control Delay (s)	7.8	7.7	10.1			
Approach Delay (s)	7.8	7.7	10.1			
Approach LOS	A	A	B			
Intersection Summary						
Delay			9.4			
Level of Service			A			
Intersection Capacity Utilization			37.1%	ICU Level of Service	A	
Analysis Period (min)			15			

Intersection

Intersection Delay, s/veh	9.3
Intersection LOS	A

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	5	92	22	7	219	78
Future Vol, veh/h	5	92	22	7	219	78
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93
Heavy Vehicles, %	2	5	2	29	3	2
Mvmt Flow	5	99	24	8	235	84
Number of Lanes	1	0	1	0	0	1

Approach	WB	NB	SB
Opposing Approach		SB	NB
Opposing Lanes	0	1	1
Conflicting Approach Left	NB		WB
Conflicting Lanes Left	1	0	1
Conflicting Approach Right	SB	WB	
Conflicting Lanes Right	1	1	0
HCM Control Delay	7.8	7.5	10
HCM LOS	A	A	A

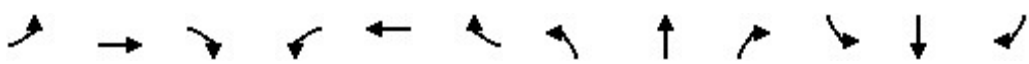
Lane	NBLn1	WBLn1	SBLn1
Vol Left, %	0%	5%	74%
Vol Thru, %	76%	0%	26%
Vol Right, %	24%	95%	0%
Sign Control	Stop	Stop	Stop
Traffic Vol by Lane	29	97	297
LT Vol	0	5	219
Through Vol	22	0	78
RT Vol	7	92	0
Lane Flow Rate	31	104	319
Geometry Grp	1	1	1
Degree of Util (X)	0.038	0.121	0.382
Departure Headway (Hd)	4.352	4.18	4.307
Convergence, Y/N	Yes	Yes	Yes
Cap	825	863	827
Service Time	2.365	2.182	2.371
HCM Lane V/C Ratio	0.038	0.121	0.386
HCM Control Delay	7.5	7.8	10
HCM Lane LOS	A	A	A
HCM 95th-tile Q	0.1	0.4	1.8

Lanes, Volumes, Timings

FT 2035 AM

2: Upper James Street & Dickenson Road West/Dickenson Road East

Broccolini Hamilton Airport Site

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	98	44	64	56	56	38	90	1214	40	20	946	208
Future Volume (vph)	98	44	64	56	56	38	90	1214	40	20	946	208
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	70.0		0.0	0.0		0.0	55.0		10.0	100.0		20.0
Storage Lanes	1		1	0		0	1		1	1		1
Taper Length (m)	20.0			7.5			75.0			90.0		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Ped Bike Factor		1.00	0.98		0.99		1.00		0.97	1.00		0.97
Frt			0.850		0.966				0.850			0.850
Flt Protected		0.967			0.982		0.950			0.950		
Satd. Flow (prot)	0	1447	1035	0	1699	0	1421	3471	1568	1770	3406	1468
Flt Permitted		0.700			0.820		0.201			0.200		
Satd. Flow (perm)	0	1045	1016	0	1417	0	300	3471	1520	372	3406	1422
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			82		20				33			86
Link Speed (k/h)		60			60			80			70	
Link Distance (m)		1404.5			356.7			407.1			458.6	
Travel Time (s)		84.3			21.4			18.3			23.6	
Confl. Peds. (#/hr)	5		5	5		5	5		5	5		5
Confl. Bikes (#/hr)			5			5			5			5
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Heavy Vehicles (%)	35%	9%	56%	4%	9%	3%	27%	4%	3%	2%	6%	10%
Adj. Flow (vph)	103	46	67	59	59	40	95	1278	42	21	996	219
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	149	67	0	158	0	95	1278	42	21	996	219
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)		0.0			0.0			3.6			3.6	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway 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
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2	1	1	2		1	2	1	1	2	1
Detector Template	Left	Thru	Right	Left	Thru		Left	Thru	Right	Left	Thru	Right
Leading Detector (m)	2.0	10.0	2.0	2.0	10.0		2.0	10.0	2.0	2.0	10.0	2.0
Trailing Detector (m)	0.0	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	0.0
Detector 1 Size(m)	2.0	0.6	2.0	2.0	0.6		2.0	0.6	2.0	2.0	0.6	2.0
Detector 1 Type	Cl+Ex	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	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	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	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	Perm	NA		pm+pt	NA	Perm	Perm	NA	Perm
Protected Phases		8			4		5	2			6	
Permitted Phases	8		8	4			2		2	6		6
Detector Phase	8	8	8	4	4		5	2	2	6	6	6
Switch Phase												
Minimum Initial (s)	10.0	10.0	10.0	10.0	10.0		5.0	10.0	10.0	10.0	10.0	10.0
Minimum Split (s)	45.0	45.0	45.0	45.0	45.0		9.0	44.1	44.1	44.1	44.1	44.1
Total Split (s)	45.0	45.0	45.0	45.0	45.0		10.0	55.0	55.0	45.0	45.0	45.0
Total Split (%)	45.0%	45.0%	45.0%	45.0%	45.0%		10.0%	55.0%	55.0%	45.0%	45.0%	45.0%
Maximum Green (s)	39.0	39.0	39.0	39.0	39.0		6.0	48.5	48.5	38.5	38.5	38.5
Yellow Time (s)	3.7	3.7	3.7	3.7	3.7		4.0	4.6	4.6	4.6	4.6	4.6
All-Red Time (s)	2.3	2.3	2.3	2.3	2.3		0.0	1.9	1.9	1.9	1.9	1.9
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		6.0		4.0	6.5	6.5	6.5	6.5	6.5
Lead/Lag							Lead			Lag	Lag	Lag
Lead-Lag Optimize?							Yes			Yes	Yes	Yes
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	5.7	5.7	5.7	5.7	5.7
Recall Mode	None	None	None	None	None		None	Max	Max	Max	Max	Max
Walk Time (s)	7.0	7.0	7.0	7.0	7.0			15.0	15.0	15.0	15.0	15.0
Flash Dont Walk (s)	32.0	32.0	32.0	32.0	32.0			22.6	22.6	22.6	22.6	22.6
Pedestrian Calls (#/hr)	5	5	5	5	5			5	5	5	5	5
Act Effect Green (s)		18.3	18.3		18.3		51.7	49.2	49.2	41.3	41.3	41.3
Actuated g/C Ratio		0.23	0.23		0.23		0.64	0.61	0.61	0.51	0.51	0.51
v/c Ratio		0.63	0.23		0.47		0.34	0.60	0.04	0.11	0.57	0.28
Control Delay		38.7	5.6		26.6		11.5	13.0	5.0	17.5	17.7	10.4
Queue Delay		0.0	0.0		0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Delay		38.7	5.6		26.6		11.5	13.0	5.0	17.5	17.7	10.4
LOS		D	A		C		B	B	A	B	B	B
Approach Delay		28.5			26.6			12.6			16.4	
Approach LOS		C			C			B			B	

Intersection Summary

Area Type: Other

Cycle Length: 100

Actuated Cycle Length: 80.2

Natural Cycle: 100

Control Type: Semi Act-Uncoord

Maximum v/c Ratio: 0.63

Intersection Signal Delay: 16.0

Intersection LOS: B

Intersection Capacity Utilization 75.6%

ICU Level of Service D

Analysis Period (min) 15

Splits and Phases: 2: Upper James Street & Dickenson Road West/Dickenson Road East



Queues

FT 2035 AM

2: Upper James Street & Dickenson Road West/Dickenson Road East

Broccolini Hamilton Airport Site



Lane Group	EBT	EBR	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	149	67	158	95	1278	42	21	996	219
v/c Ratio	0.63	0.23	0.47	0.34	0.60	0.04	0.11	0.57	0.28
Control Delay	38.7	5.6	26.6	11.5	13.0	5.0	17.5	17.7	10.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	38.7	5.6	26.6	11.5	13.0	5.0	17.5	17.7	10.4
Queue Length 50th (m)	21.3	0.0	18.7	4.5	52.4	0.5	1.6	52.8	10.5
Queue Length 95th (m)	38.5	6.6	34.5	18.7	135.5	6.5	8.7	116.6	37.5
Internal Link Dist (m)	1380.5		332.7		383.1			434.6	
Turn Bay Length (m)				55.0		10.0	100.0		20.0
Base Capacity (vph)	515	543	709	278	2129	945	191	1754	774
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	0.29	0.12	0.22	0.34	0.60	0.04	0.11	0.57	0.28
Intersection Summary									

HCM Signalized Intersection Capacity Analysis

FT 2035 AM

2: Upper James Street & Dickenson Road West/Dickenson Road East

Broccolini Hamilton Airport Site

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↖	↗		↔		↖	↗	↗	↖	↗	↗
Traffic Volume (vph)	98	44	64	56	56	38	90	1214	40	20	946	208
Future Volume (vph)	98	44	64	56	56	38	90	1214	40	20	946	208
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		6.0	6.0		6.0		4.0	6.5	6.5	6.5	6.5	6.5
Lane Util. Factor		1.00	1.00		1.00		1.00	0.95	1.00	1.00	0.95	1.00
Frpb, ped/bikes		1.00	0.98		0.99		1.00	1.00	0.97	1.00	1.00	0.97
Flpb, ped/bikes		1.00	1.00		1.00		1.00	1.00	1.00	1.00	1.00	1.00
Frt		1.00	0.85		0.97		1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected		0.97	1.00		0.98		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)		1444	1015		1695		1421	3471	1524	1768	3406	1426
Flt Permitted		0.70	1.00		0.82		0.20	1.00	1.00	0.20	1.00	1.00
Satd. Flow (perm)		1046	1015		1416		300	3471	1524	373	3406	1426
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	103	46	67	59	59	40	95	1278	42	21	996	219
RTOR Reduction (vph)	0	0	52	0	15	0	0	0	13	0	0	42
Lane Group Flow (vph)	0	149	15	0	143	0	95	1278	29	21	996	177
Confl. Peds. (#/hr)	5		5	5		5	5		5	5		5
Confl. Bikes (#/hr)			5			5			5			5
Heavy Vehicles (%)	35%	9%	56%	4%	9%	3%	27%	4%	3%	2%	6%	10%
Turn Type	Perm	NA	Perm	Perm	NA		pm+pt	NA	Perm	Perm	NA	Perm
Protected Phases		8			4		5	2			6	
Permitted Phases	8		8	4			2		2	6		6
Actuated Green, G (s)		18.3	18.3		18.3		50.0	50.0	50.0	41.3	41.3	41.3
Effective Green, g (s)		18.3	18.3		18.3		50.0	50.0	50.0	41.3	41.3	41.3
Actuated g/C Ratio		0.23	0.23		0.23		0.62	0.62	0.62	0.51	0.51	0.51
Clearance Time (s)		6.0	6.0		6.0		4.0	6.5	6.5	6.5	6.5	6.5
Vehicle Extension (s)		3.0	3.0		3.0		3.0	5.7	5.7	5.7	5.7	5.7
Lane Grp Cap (vph)		236	229		320		250	2147	943	190	1740	728
v/s Ratio Prot							0.02	c0.37			0.29	
v/s Ratio Perm		c0.14	0.01		0.10		0.21		0.02	0.06		0.12
v/c Ratio		0.63	0.07		0.45		0.38	0.60	0.03	0.11	0.57	0.24
Uniform Delay, d1		28.2	24.5		26.9		7.8	9.3	6.0	10.2	13.6	11.0
Progression Factor		1.00	1.00		1.00		1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2		5.4	0.1		1.0		1.0	1.2	0.1	1.2	1.4	0.8
Delay (s)		33.6	24.7		27.9		8.8	10.5	6.0	11.4	15.0	11.8
Level of Service		C	C		C		A	B	A	B	B	B
Approach Delay (s)		30.8			27.9			10.3			14.4	
Approach LOS		C			C			B			B	
Intersection Summary												
HCM 2000 Control Delay			14.3				HCM 2000 Level of Service				B	
HCM 2000 Volume to Capacity ratio			0.64									
Actuated Cycle Length (s)			80.8				Sum of lost time (s)			16.5		
Intersection Capacity Utilization			75.6%				ICU Level of Service			D		
Analysis Period (min)			15									
c Critical Lane Group												

Lanes, Volumes, Timings
3: Glancaster Road & Arterial 1N

FT 2035 AM
Broccolini Hamilton Airport Site

						
Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	0	15	14	0	74	9
Future Volume (vph)	0	15	14	0	74	9
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor						
Frt	0.850					
Flt Protected	0.957					
Satd. Flow (prot)	1863	1583	1681	0	0	1765
Flt Permitted	0.957					
Satd. Flow (perm)	1863	1583	1681	0	0	1765
Link Speed (k/h)	60	50		50		
Link Distance (m)	1775.0	221.3		615.2		
Travel Time (s)	106.5	15.9		44.3		
Confl. Peds. (#/hr)	5	5	5		5	
Confl. Bikes (#/hr)	5		5			
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	2%	2%	13%	2%	2%	11%
Adj. Flow (vph)	0	16	15	0	80	10
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	16	15	0	0	90
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(m)	3.6	0.0		0.0		
Link Offset(m)	0.0	0.0		0.0		
Crosswalk Width(m)	4.8	4.8		4.8		
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)	25	15	15		25	
Sign Control	Stop	Free		Free		
Intersection Summary						
Area Type:	Other					
Control Type:	Unsignalized					
Intersection Capacity Utilization	22.8%			ICU Level of Service A		
Analysis Period (min)	15					

HCM Unsignalized Intersection Capacity Analysis

3: Glancaster Road & Arterial 1N

FT 2035 AM
Broccolini Hamilton Airport Site

						
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	0	15	14	0	74	9
Future Volume (Veh/h)	0	15	14	0	74	9
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	16	15	0	80	10
Pedestrians	5		5			5
Lane Width (m)	3.6		3.6			3.6
Walking Speed (m/s)	1.0		1.0			1.0
Percent Blockage	1		1			1
Right turn flare (veh)						
Median type			None			None
Median storage veh						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	195	25			20	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	195	25			20	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	100	98			95	
cM capacity (veh/h)	746	1041			1588	
Direction, Lane #	WB 1	WB 2	NB 1	SB 1		
Volume Total	0	16	15	90		
Volume Left	0	0	0	80		
Volume Right	0	16	0	0		
cSH	1700	1041	1700	1588		
Volume to Capacity	0.00	0.02	0.01	0.05		
Queue Length 95th (m)	0.0	0.4	0.0	1.3		
Control Delay (s)	0.0	8.5	0.0	6.6		
Lane LOS	A	A		A		
Approach Delay (s)	8.5		0.0	6.6		
Approach LOS	A					
Intersection Summary						
Average Delay			6.0			
Intersection Capacity Utilization			22.8%	ICU Level of Service		A
Analysis Period (min)			15			

Intersection						
Int Delay, s/veh	6					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	0	15	14	0	74	9
Future Vol, veh/h	0	15	14	0	74	9
Conflicting Peds, #/hr	5	5	0	5	5	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	0	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	13	2	2	11
Mvmt Flow	0	16	15	0	80	10
Major/Minor	Minor1	Major1	Major2			
Conflicting Flow All	195	25	0	0	20	0
Stage 1	20	-	-	-	-	-
Stage 2	175	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218	-
Pot Cap-1 Maneuver	794	1051	-	-	1596	-
Stage 1	1003	-	-	-	-	-
Stage 2	855	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	746	1040	-	-	1588	-
Mov Cap-2 Maneuver	746	-	-	-	-	-
Stage 1	998	-	-	-	-	-
Stage 2	807	-	-	-	-	-
Approach	WB	NB		SB		
HCM Control Delay, s	8.5	0		6.6		
HCM LOS	A					
Minor Lane/Major Mvmt	NBT	NBRWBLn1	WBLn2	SBL	SBT	
Capacity (veh/h)	-	-	-	1040	1588	-
HCM Lane V/C Ratio	-	-	-	0.016	0.051	-
HCM Control Delay (s)	-	-	0	8.5	7.4	0
HCM Lane LOS	-	-	A	A	A	A
HCM 95th %tile Q(veh)	-	-	-	0	0.2	-

Lanes, Volumes, Timings
4: Arterial 1N & Dickenson Road West

FT 2035 AM
Broccolini Hamilton Airport Site

	→	↘	↙	←	↖	↗
Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↰			↱	↱	↱
Traffic Volume (vph)	167	59	208	85	12	75
Future Volume (vph)	167	59	208	85	12	75
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (m)		0.0	115.0		0.0	0.0
Storage Lanes		0	0		1	1
Taper Length (m)			55.0		100.0	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor	0.99			1.00	0.99	0.96
Frt	0.965					0.850
Flt Protected				0.966	0.950	
Satd. Flow (prot)	1737	0	0	1623	1770	1016
Flt Permitted				0.533	0.950	
Satd. Flow (perm)	1737	0	0	893	1753	980
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)	18					82
Link Speed (k/h)	60			60	60	
Link Distance (m)	1486.2			1404.5	1775.0	
Travel Time (s)	89.2			84.3	106.5	
Confl. Peds. (#/hr)		5	5		5	5
Confl. Bikes (#/hr)		5				5
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	6%	2%	16%	6%	2%	59%
Adj. Flow (vph)	182	64	226	92	13	82
Shared Lane Traffic (%)						
Lane Group Flow (vph)	246	0	0	318	13	82
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	3.6			3.6	3.6	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	4.8			4.8	4.8	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
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						

Lanes, Volumes, Timings
4: Arterial 1N & Dickenson Road West

FT 2035 AM
Broccolini Hamilton Airport Site

	→	↘	↙	←	↖	↗
Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Detector 2 Extend (s)	0.0			0.0		
Turn Type	NA		pm+pt	NA	Prot	Perm
Protected Phases	4		3	8	2	
Permitted Phases			8			2
Detector Phase	4		3	8	2	2
Switch Phase						
Minimum Initial (s)	10.0		10.0	10.0	10.0	10.0
Minimum Split (s)	32.3		32.3	32.3	32.2	32.2
Total Split (s)	33.0		32.3	65.3	34.7	34.7
Total Split (%)	33.0%		32.3%	65.3%	34.7%	34.7%
Maximum Green (s)	27.7		27.0	60.0	29.5	29.5
Yellow Time (s)	3.7		3.7	3.7	3.7	3.7
All-Red Time (s)	1.6		1.6	1.6	1.5	1.5
Lost Time Adjust (s)	0.0			0.0	0.0	0.0
Total Lost Time (s)	5.3			5.3	5.2	5.2
Lead/Lag	Lag		Lead			
Lead-Lag Optimize?	Yes		Yes			
Vehicle Extension (s)	3.0		3.0	3.0	3.0	3.0
Recall Mode	None		None	None	C-Max	C-Max
Walk Time (s)	7.0		7.0	7.0	7.0	7.0
Flash Dont Walk (s)	20.0		20.0	20.0	20.0	20.0
Pedestrian Calls (#/hr)	5		5	5	5	5
Act Effect Green (s)	45.2			51.7	37.8	37.8
Actuated g/C Ratio	0.45			0.52	0.38	0.38
v/c Ratio	0.31			0.64	0.02	0.19
Control Delay	18.7			21.7	24.8	7.4
Queue Delay	0.0			0.0	0.0	0.0
Total Delay	18.7			21.7	24.8	7.4
LOS	B			C	C	A
Approach Delay	18.7			21.7	9.8	
Approach LOS	B			C	A	

Intersection Summary

Area Type: Other
 Cycle Length: 100
 Actuated Cycle Length: 100
 Offset: 0 (0%), Referenced to phase 2:NBL and 6:, Start of Green
 Natural Cycle: 100
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 0.64
 Intersection Signal Delay: 18.8
 Intersection Capacity Utilization 65.7%
 Analysis Period (min) 15
 Intersection LOS: B
 ICU Level of Service C

Splits and Phases: 4: Arterial 1N & Dickenson Road West



Queues
4: Arterial 1N & Dickenson Road West

FT 2035 AM
Broccolini Hamilton Airport Site



Lane Group	EBT	WBT	NBL	NBR
Lane Group Flow (vph)	246	318	13	82
v/c Ratio	0.31	0.64	0.02	0.19
Control Delay	18.7	21.7	24.8	7.4
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	18.7	21.7	24.8	7.4
Queue Length 50th (m)	21.9	41.2	1.8	0.0
Queue Length 95th (m)	63.5	46.4	6.5	11.1
Internal Link Dist (m)	1462.2	1380.5	1751.0	
Turn Bay Length (m)				
Base Capacity (vph)	795	574	669	421
Starvation Cap Reductn	0	0	0	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.31	0.55	0.02	0.19
Intersection Summary				

HCM Signalized Intersection Capacity Analysis

4: Arterial 1N & Dickenson Road West

FT 2035 AM
Broccolini Hamilton Airport Site

	→	↘	↙	←	↖	↗
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↰			↱	↱	↱
Traffic Volume (vph)	167	59	208	85	12	75
Future Volume (vph)	167	59	208	85	12	75
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.3			5.3	5.2	5.2
Lane Util. Factor	1.00			1.00	1.00	1.00
Frpb, ped/bikes	0.99			1.00	1.00	0.97
Flpb, ped/bikes	1.00			1.00	1.00	1.00
Frt	0.96			1.00	1.00	0.85
Flt Protected	1.00			0.97	0.95	1.00
Satd. Flow (prot)	1738			1620	1770	981
Flt Permitted	1.00			0.53	0.95	1.00
Satd. Flow (perm)	1738			894	1770	981
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	182	64	226	92	13	82
RTOR Reduction (vph)	10	0	0	0	0	54
Lane Group Flow (vph)	236	0	0	318	13	28
Confl. Peds. (#/hr)		5	5		5	5
Confl. Bikes (#/hr)		5				5
Heavy Vehicles (%)	6%	2%	16%	6%	2%	59%
Turn Type	NA		pm+pt	NA	Prot	Perm
Protected Phases	4		3	8	2	
Permitted Phases			8			2
Actuated Green, G (s)	45.2			55.9	33.6	33.6
Effective Green, g (s)	45.2			55.9	33.6	33.6
Actuated g/C Ratio	0.45			0.56	0.34	0.34
Clearance Time (s)	5.3			5.3	5.2	5.2
Vehicle Extension (s)	3.0			3.0	3.0	3.0
Lane Grp Cap (vph)	785			538	594	329
v/s Ratio Prot	0.14			c0.03	0.01	
v/s Ratio Perm				c0.30		c0.03
v/c Ratio	0.30			0.59	0.02	0.08
Uniform Delay, d1	17.4			14.5	22.2	22.7
Progression Factor	1.00			1.00	1.00	1.00
Incremental Delay, d2	0.2			1.7	0.1	0.5
Delay (s)	17.6			16.3	22.3	23.2
Level of Service	B			B	C	C
Approach Delay (s)	17.6			16.3	23.1	
Approach LOS	B			B	C	
Intersection Summary						
HCM 2000 Control Delay			17.7		HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio			0.42			
Actuated Cycle Length (s)			100.0		Sum of lost time (s)	15.8
Intersection Capacity Utilization			65.7%		ICU Level of Service	C
Analysis Period (min)			15			
c Critical Lane Group						

Lanes, Volumes, Timings
1: Glancaster Road & Dickenson Road West

FT 2035 PM
Broccolini Hamilton Airport Site

						
Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	11	219	83	6	239	30
Future Volume (vph)	11	219	83	6	239	30
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor						
Frt	0.872		0.991			
Flt Protected	0.998					0.957
Satd. Flow (prot)	1621	0	1846	0	0	1767
Flt Permitted	0.998					0.957
Satd. Flow (perm)	1621	0	1846	0	0	1767
Link Speed (k/h)	60		50			50
Link Distance (m)	1486.2		615.2			492.7
Travel Time (s)	89.2		44.3			35.5
Confl. Peds. (#/hr)	5	5		5	5	
Confl. Bikes (#/hr)		5		5		
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93
Heavy Vehicles (%)	2%	2%	2%	2%	3%	2%
Adj. Flow (vph)	12	235	89	6	257	32
Shared Lane Traffic (%)						
Lane Group Flow (vph)	247	0	95	0	0	289
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(m)	3.6		0.0			0.0
Link Offset(m)	0.0		0.0			0.0
Crosswalk Width(m)	4.8		4.8			4.8
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)	25	15		15	25	
Sign Control	Stop		Stop			Stop
Intersection Summary						
Area Type:	Other					
Control Type:	Unsignalized					
Intersection Capacity Utilization	42.8%			ICU Level of Service A		
Analysis Period (min)	15					

Intersection	
Intersection Delay, s/veh	9.8
Intersection LOS	A

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	11	219	83	6	239	30
Future Vol, veh/h	11	219	83	6	239	30
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93
Heavy Vehicles, %	2	2	2	2	3	2
Mvmt Flow	12	235	89	6	257	32
Number of Lanes	1	0	1	0	0	1

Approach	WB	NB	SB
Opposing Approach		SB	NB
Opposing Lanes	0	1	1
Conflicting Approach Left	NB		WB
Conflicting Lanes Left	1	0	1
Conflicting Approach Right	SB	WB	
Conflicting Lanes Right	1	1	0
HCM Control Delay	9.1	8.5	10.8
HCM LOS	A	A	B

Lane	NBLn1	WBLn1	SBLn1
Vol Left, %	0%	5%	89%
Vol Thru, %	93%	0%	11%
Vol Right, %	7%	95%	0%
Sign Control	Stop	Stop	Stop
Traffic Vol by Lane	89	230	269
LT Vol	0	11	239
Through Vol	83	0	30
RT Vol	6	219	0
Lane Flow Rate	96	247	289
Geometry Grp	1	1	1
Degree of Util (X)	0.127	0.296	0.385
Departure Headway (Hd)	4.792	4.302	4.79
Convergence, Y/N	Yes	Yes	Yes
Cap	745	833	749
Service Time	2.846	2.335	2.836
HCM Lane V/C Ratio	0.129	0.297	0.386
HCM Control Delay	8.5	9.1	10.8
HCM Lane LOS	A	A	B
HCM 95th-tile Q	0.4	1.2	1.8

Lanes, Volumes, Timings

FT 2035 PM

2: Upper James Street & Dickenson Road West/Dickenson Road East

Broccolini Hamilton Airport Site

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↶	↷		↶↷		↶	↶↶	↷	↶	↶↶	↷
Traffic Volume (vph)	214	98	115	67	79	41	74	1325	93	50	1464	124
Future Volume (vph)	214	98	115	67	79	41	74	1325	93	50	1464	124
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	70.0		0.0	0.0		0.0	55.0		10.0	100.0		20.0
Storage Lanes	1		1	0		0	1		1	1		1
Taper Length (m)	20.0			7.5			75.0			90.0		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Ped Bike Factor		1.00	0.98		0.99				0.97	1.00		0.97
Frt			0.850		0.970				0.850			0.850
Flt Protected		0.967			0.983		0.950			0.950		
Satd. Flow (prot)	0	1636	1233	0	1769	0	1101	3505	1583	1770	3505	1205
Flt Permitted		0.649			0.593		0.075			0.102		
Satd. Flow (perm)	0	1096	1209	0	1066	0	87	3505	1535	190	3505	1168
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			107		14				30			69
Link Speed (k/h)		60			60			80			70	
Link Distance (m)		1404.5			356.7			407.1			458.6	
Travel Time (s)		84.3			21.4			18.3			23.6	
Confl. Peds. (#/hr)	5		5	5		5	5		5	5		5
Confl. Bikes (#/hr)			5			5			5			5
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	17%	2%	31%	2%	2%	2%	64%	3%	2%	2%	3%	34%
Adj. Flow (vph)	238	109	128	74	88	46	82	1472	103	56	1627	138
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	347	128	0	208	0	82	1472	103	56	1627	138
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)		0.0			0.0			3.6			3.6	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway 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
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2	1	1	2		1	2	1	1	2	1
Detector Template	Left	Thru	Right	Left	Thru		Left	Thru	Right	Left	Thru	Right
Leading Detector (m)	2.0	10.0	2.0	2.0	10.0		2.0	10.0	2.0	2.0	10.0	2.0
Trailing Detector (m)	0.0	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	0.0
Detector 1 Size(m)	2.0	0.6	2.0	2.0	0.6		2.0	0.6	2.0	2.0	0.6	2.0
Detector 1 Type	Cl+Ex	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	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	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	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												

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JL

CGH Transportation

Page 3

												
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	Perm	NA		pm+pt	NA	Perm	Perm	NA	Perm
Protected Phases		8			4		5	2			6	
Permitted Phases	8		8	4			2		2	6		6
Detector Phase	8	8	8	4	4		5	2	2	6	6	6
Switch Phase												
Minimum Initial (s)	10.0	10.0	10.0	10.0	10.0		5.0	10.0	10.0	10.0	10.0	10.0
Minimum Split (s)	45.0	45.0	45.0	45.0	45.0		9.0	44.1	44.1	44.1	44.1	44.1
Total Split (s)	45.0	45.0	45.0	45.0	45.0		9.0	65.0	65.0	56.0	56.0	56.0
Total Split (%)	40.9%	40.9%	40.9%	40.9%	40.9%		8.2%	59.1%	59.1%	50.9%	50.9%	50.9%
Maximum Green (s)	39.0	39.0	39.0	39.0	39.0		5.0	58.5	58.5	49.5	49.5	49.5
Yellow Time (s)	3.7	3.7	3.7	3.7	3.7		4.0	4.6	4.6	4.6	4.6	4.6
All-Red Time (s)	2.3	2.3	2.3	2.3	2.3		0.0	1.9	1.9	1.9	1.9	1.9
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		6.0		4.0	6.5	6.5	6.5	6.5	6.5
Lead/Lag							Lead			Lag	Lag	Lag
Lead-Lag Optimize?							Yes			Yes	Yes	Yes
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	5.7	5.7	5.7	5.7	5.7
Recall Mode	None	None	None	None	None		None	Max	Max	Max	Max	Max
Walk Time (s)	7.0	7.0	7.0	7.0	7.0			15.0	15.0	15.0	15.0	15.0
Flash Dont Walk (s)	32.0	32.0	32.0	32.0	32.0			22.6	22.6	22.6	22.6	22.6
Pedestrian Calls (#/hr)	5	5	5	5	5			5	5	5	5	5
Act Effect Green (s)		36.0	36.0		36.0		61.1	58.6	58.6	49.6	49.6	49.6
Actuated g/C Ratio		0.34	0.34		0.34		0.57	0.55	0.55	0.46	0.46	0.46
v/c Ratio		0.94	0.27		0.57		0.85	0.77	0.12	0.64	1.00	0.24
Control Delay		70.1	8.4		33.8		78.1	23.0	9.5	60.6	53.1	10.7
Queue Delay		0.0	0.0		0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Delay		70.1	8.4		33.8		78.1	23.0	9.5	60.6	53.1	10.7
LOS		E	A		C		E	C	A	E	D	B
Approach Delay		53.4			33.8			24.9			50.1	
Approach LOS		D			C			C			D	

Intersection Summary

Area Type: Other

Cycle Length: 110

Actuated Cycle Length: 107.2

Natural Cycle: 110

Control Type: Semi Act-Uncoord

Maximum v/c Ratio: 1.00

Intersection Signal Delay: 39.6

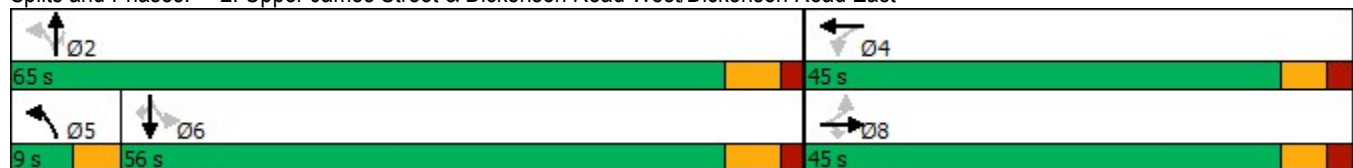
Intersection LOS: D

Intersection Capacity Utilization 85.8%

ICU Level of Service E

Analysis Period (min) 15

Splits and Phases: 2: Upper James Street & Dickenson Road West/Dickenson Road East





Lane Group	EBT	EBR	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	347	128	208	82	1472	103	56	1627	138
v/c Ratio	0.94	0.27	0.57	0.85	0.77	0.12	0.64	1.00	0.24
Control Delay	70.1	8.4	33.8	78.1	23.0	9.5	60.6	53.1	10.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	70.1	8.4	33.8	78.1	23.0	9.5	60.6	53.1	10.7
Queue Length 50th (m)	73.4	3.1	34.6	8.5	135.0	7.8	9.6	~208.0	8.9
Queue Length 95th (m)	#130.0	16.5	60.1	#38.1	166.2	16.7	#33.1	#252.3	22.1
Internal Link Dist (m)	1380.5		332.7		383.1			434.6	
Turn Bay Length (m)				55.0		10.0	100.0		20.0
Base Capacity (vph)	399	508	397	97	1917	853	87	1621	577
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	0.87	0.25	0.52	0.85	0.77	0.12	0.64	1.00	0.24

Intersection Summary

~ 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.

Lanes, Volumes, Timings
3: Glancaster Road & Arterial 1N

FT 2035 PM
Broccolini Hamilton Airport Site

						
Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	0	78	11	0	23	18
Future Volume (vph)	0	78	11	0	23	18
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor						
Frt	0.850					
Flt Protected	0.973					
Satd. Flow (prot)	1863	1583	1743	0	0	1812
Flt Permitted	0.973					
Satd. Flow (perm)	1863	1583	1743	0	0	1812
Link Speed (k/h)	60	50		50		
Link Distance (m)	1807.0	221.3		615.2		
Travel Time (s)	108.4	15.9		44.3		
Confl. Peds. (#/hr)	5	5	5		5	
Confl. Bikes (#/hr)	5		5			
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	2%	2%	9%	2%	2%	2%
Adj. Flow (vph)	0	85	12	0	25	20
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	85	12	0	0	45
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(m)	3.6	0.0		0.0		
Link Offset(m)	0.0	0.0		0.0		
Crosswalk Width(m)	4.8	4.8		4.8		
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)	25	15	15		25	
Sign Control	Stop	Free		Free		
Intersection Summary						
Area Type:	Other					
Control Type:	Unsignalized					
Intersection Capacity Utilization	20.4%			ICU Level of Service A		
Analysis Period (min)	15					

Intersection						
Int Delay, s/veh	6.6					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	0	78	11	0	23	18
Future Vol, veh/h	0	78	11	0	23	18
Conflicting Peds, #/hr	5	5	0	5	5	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	0	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	9	2	2	2
Mvmt Flow	0	85	12	0	25	20
Major/Minor	Minor1	Major1	Major2			
Conflicting Flow All	92	22	0	0	17	0
Stage 1	17	-	-	-	-	-
Stage 2	75	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218	-
Pot Cap-1 Maneuver	908	1055	-	-	1600	-
Stage 1	1006	-	-	-	-	-
Stage 2	948	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	884	1044	-	-	1592	-
Mov Cap-2 Maneuver	884	-	-	-	-	-
Stage 1	1001	-	-	-	-	-
Stage 2	928	-	-	-	-	-
Approach	WB	NB	SB			
HCM Control Delay, s	8.8	0	4.1			
HCM LOS	A					
Minor Lane/Major Mvmt	NBT	NBRWBLn1WBLn2	SBL	SBT		
Capacity (veh/h)	-	-	-	1044	1592	-
HCM Lane V/C Ratio	-	-	-	0.081	0.016	-
HCM Control Delay (s)	-	-	0	8.8	7.3	0
HCM Lane LOS	-	-	A	A	A	A
HCM 95th %tile Q(veh)	-	-	-	0.3	0	-

Lanes, Volumes, Timings
4: Arterial 1N & Dickenson Road West

FT 2035 PM
Broccolini Hamilton Airport Site

	→	↘	↙	←	↖	↗
Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↰			↱	↱	↱
Traffic Volume (vph)	227	18	97	167	63	214
Future Volume (vph)	227	18	97	167	63	214
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (m)		0.0	115.0		0.0	0.0
Storage Lanes		0	0		1	1
Taper Length (m)			55.0		100.0	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.990					0.850
Flt Protected				0.982	0.950	
Satd. Flow (prot)	1828	0	0	1421	1770	1324
Flt Permitted				0.618	0.950	
Satd. Flow (perm)	1828	0	0	895	1770	1324
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)	4					233
Link Speed (k/h)	60			60	60	
Link Distance (m)	1486.2			1404.5	1807.0	
Travel Time (s)	89.2			84.3	108.4	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	3%	2%	82%	2%	2%	22%
Adj. Flow (vph)	247	20	105	182	68	233
Shared Lane Traffic (%)						
Lane Group Flow (vph)	267	0	0	287	68	233
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	3.6			3.6	3.6	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	4.8			4.8	4.8	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
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		
Turn Type	NA		pm+pt	NA	Prot	Perm
Protected Phases	4		3	8	2	

Lanes, Volumes, Timings
4: Arterial 1N & Dickenson Road West

FT 2035 PM
Broccolini Hamilton Airport Site

	→	↘	↙	←	↖	↗
Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Permitted Phases			8			2
Detector Phase	4		3	8	2	2
Switch Phase						
Minimum Initial (s)	10.0		10.0	10.0	10.0	10.0
Minimum Split (s)	32.3		32.3	32.3	32.0	32.0
Total Split (s)	33.0		32.3	65.3	34.7	34.7
Total Split (%)	33.0%		32.3%	65.3%	34.7%	34.7%
Maximum Green (s)	27.7		27.0	60.0	29.7	29.7
Yellow Time (s)	3.7		3.7	3.7	3.5	3.5
All-Red Time (s)	1.6		1.6	1.6	1.5	1.5
Lost Time Adjust (s)	0.0			0.0	0.0	0.0
Total Lost Time (s)	5.3			5.3	5.0	5.0
Lead/Lag	Lag		Lead			
Lead-Lag Optimize?	Yes		Yes			
Vehicle Extension (s)	3.0		3.0	3.0	3.0	3.0
Recall Mode	None		None	None	C-Max	C-Max
Walk Time (s)	7.0		7.0	7.0	7.0	7.0
Flash Dont Walk (s)	20.0		20.0	20.0	20.0	20.0
Pedestrian Calls (#/hr)	5		5	5	5	5
Act Effect Green (s)	33.8			40.3	49.4	49.4
Actuated g/C Ratio	0.34			0.40	0.49	0.49
v/c Ratio	0.43			0.74	0.08	0.30
Control Delay	27.6			35.0	18.8	4.4
Queue Delay	0.0			0.0	0.0	0.0
Total Delay	27.6			35.0	18.8	4.4
LOS	C			C	B	A
Approach Delay	27.6			35.0	7.7	
Approach LOS	C			C	A	

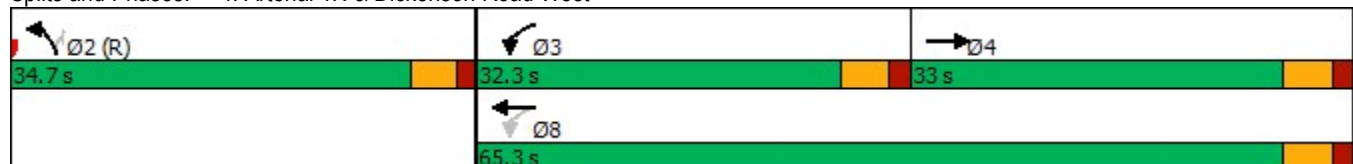
Intersection Summary

Area Type: Other
 Cycle Length: 100
 Actuated Cycle Length: 100
 Offset: 0 (0%), Referenced to phase 2:NBL and 6:, Start of Green
 Natural Cycle: 100
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 0.74
 Intersection Signal Delay: 23.1
 Intersection Capacity Utilization 48.5%
 Analysis Period (min) 15

Intersection LOS: C

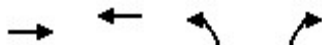
ICU Level of Service A

Splits and Phases: 4: Arterial 1N & Dickenson Road West



Queues
4: Arterial 1N & Dickenson Road West

FT 2035 PM
Broccolini Hamilton Airport Site



Lane Group	EBT	WBT	NBL	NBR
Lane Group Flow (vph)	267	287	68	233
v/c Ratio	0.43	0.74	0.08	0.30
Control Delay	27.6	35.0	18.8	4.4
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	27.6	35.0	18.8	4.4
Queue Length 50th (m)	37.1	51.0	6.9	0.0
Queue Length 95th (m)	71.8	44.3	20.5	17.5
Internal Link Dist (m)	1462.2	1380.5	1783.0	
Turn Bay Length (m)				
Base Capacity (vph)	640	565	874	771
Starvation Cap Reductn	0	0	0	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.42	0.51	0.08	0.30
Intersection Summary				

