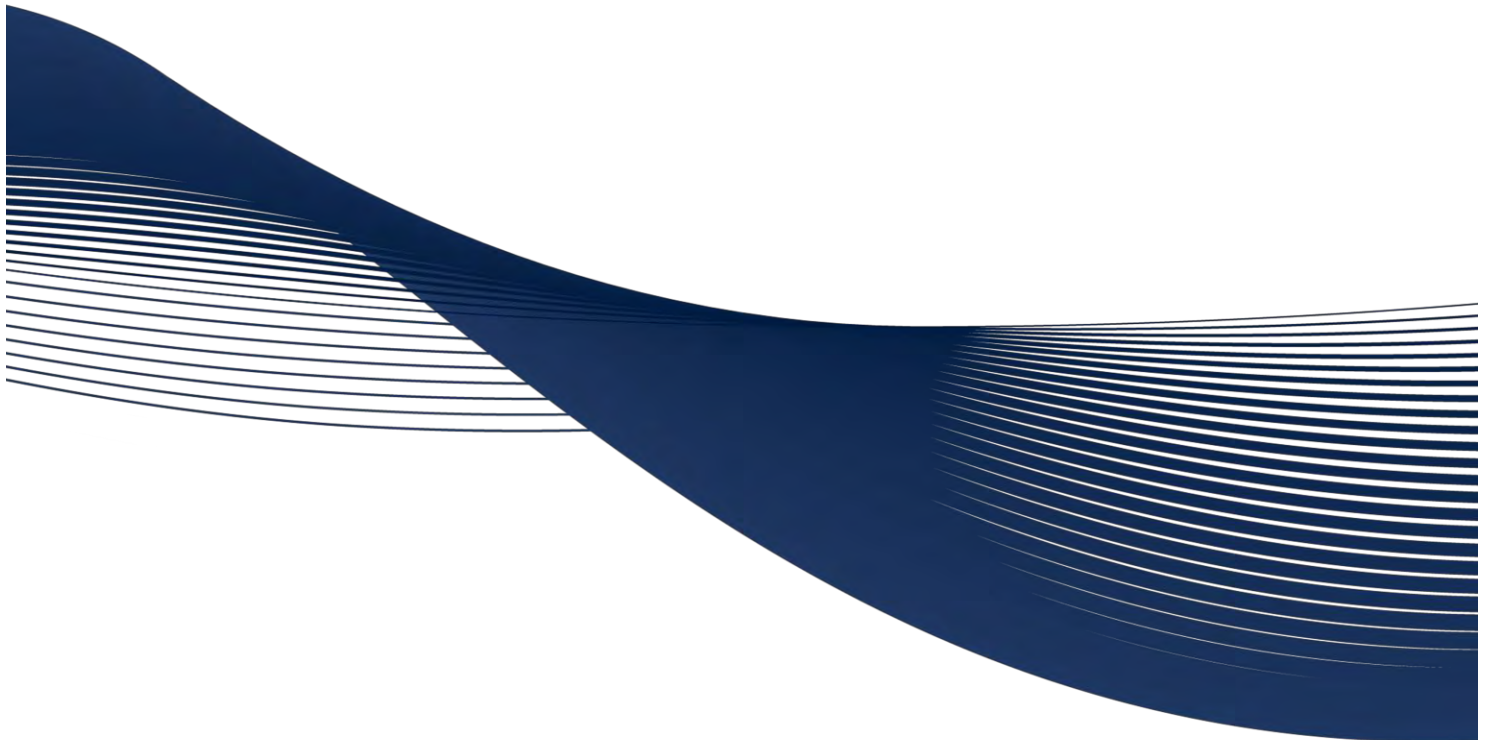


# TRIPLE CROWN LINE DEVELOPMENT INC.

## TRAFFIC IMPACT STUDY

15717 Airport Road, Town of Caledon

Project No.: TR16-0619



**COLE**  
ENGINEERING

JUNE 2017

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June 5, 2017  
Reference No. TR16-0619

Triple Crown Line Development Inc.  
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Dear Mr. Hall:

**Re: Traffic Impact Study  
15717 Airport Road  
Town of Caledon**

Cole Engineering Group Ltd. (Cole Engineering) is pleased to submit this Traffic Impact Study (TIS) for the above noted site in support of a Plan of Subdivision, Official Plan Amendment, and Zoning By-law Amendment. The subject site located at southeast quadrant of Airport Road and Old Church Road in the Town of Caledon (the "Town"), in the Region of Peel (the "Region").

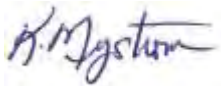
The proposed development is to have two primary accesses via Airport Road and third access from Montcrest Road. Based on the information provided, the intention is to provide a primarily residential development with some commercial uses on the adjacent parcel.

The report documents our findings and conclusions regarding the traffic impact of the proposed development in support of a draft plan of subdivision.

Based on our analysis, the proposed residential development is expected to have minimal impact on the surrounding study intersections in the future conditions. Should you have any questions, please do not hesitate to contact the undersigned.

Yours truly,

**COLE ENGINEERING GROUP LTD.**



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**Issues and Revisions Registry**

Identification	Date	Description of issued and/or revision
Draft Report	April 2017	For Client review
Final Report	June 2017	For Submission

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# 1 Introduction

Cole Engineering Group Ltd. (Cole Engineering) was retained by DG Group (the “Client”) to undertake a Traffic Impact Study in support of a Plan of Subdivision, Official Plan Amendment, and Zoning By-law Amendment. The property municipally known as 15717 Airport Road (herein “the subject site”). The subject site located at approximately 500 m north of the Airport Road and Olde Base Line Road intersection and southeast quadrant of Airport Road and Old Church Road in the Town of Caledon (the “Town”), in the Region of Peel (the “Region”).

The subject site is bounded by undeveloped lands (agricultural land) to the south, Airport Road (Regional Road 7) to the west, residential townhouses to the north, and Valley Lands to the east. Caledon East Public School is located immediate west of Airport Road. **Figure 1-1** illustrates the site location.

The overall development of the site area is approximately 43.64 hectares. Currently, the property lands are mostly vacant consisting of two (2) dwellings, and the associated buildings related to existing agricultural uses. The development consists of 28.65 ha of residential land, as well as a series of smaller parks consisting of 0.61 ha, a neighborhood park consisting of 1.94 ha, 11.72 ha of roads and laneways, and 0.69 ha of future development lands.

Vehicle access to the development is provided via three (3) full movement access driveways. Two (2) site accesses are provided off Airport Road. The one (1) site access will align with the existing Cranston Drive intersection to create a four (4)-way intersection under ‘Stop’ control at the minor street approaches, approximately 730 metres north of Olde Base Line Road. The second access will align with the existing Caledon East Public School Only Exit access and Airport Road intersection to create a four (4)-way intersection with under ‘Controlled-Access’, located 200 m south of Hiltop Drive. The third access will be on the north side of the development connecting Street ‘B’ to existing Mountcrest Road. **Figure 1-2** illustrates the draft plan for subdivision.

The purpose of this study is to:

- Identify any traffic operational concerns in the existing and future traffic conditions;
- Document the total traffic impacts associated with the subject site;
- Identify any required mitigative measures; and,
- Review the on-site circulation and geometric design as it relates to the turning movements of delivery / service vehicles.

## 2 Study Approach

Existing traffic counts were undertaken by Accu-Traffic on behalf of Cole Engineering. A five (5) year (Year 2022) and 10 year (Year 2032) horizon periods were selected to represent future traffic conditions and full-build out of the proposed development.

To forecast the future (2022 and 2032) background traffic condition in the vicinity of the subject site, an annual growth rate will be applied to the study intersections to reflect and capture general traffic growth. Detailed calculation methodologies and assumptions will be presented in the later chapters.

Based on the site related information received, the study area for this analysis includes the following intersections:

- Airport Road and Olde Base Line Road (Signalized);
- Airport Road and Cranston Drive (Unsignalized);
- Airport Road and Mountcrest Road (Unsignalized);
- Airport Road and Hiltop Drive (Unsignalized);
- Airport Road and School Driveway (Unsignalized); and,
- Airport Road and Old Church Road (Signalized).

The TIS preparation will be based on the Peel Region Traffic Impact Study Guidelines and Regional Guidelines for Using Synchro Version 7.73 Rev 8, as well as followings:

- Town of Caledon Transportation Impact Studies Terms of Reference and Guidelines, March 2017
- Town of Caledon Development Standards, Policies, and Guidelines;
- Town of Caledon Official Plan;
- Geometric Design Standards for Canadian Roads (TAC) Manual;
- Ontario Provincial Standard Drawings (OPSD);
- Peel Region Controlled Access By-law; and,
- Ontario Traffic Manual (OTM) Book 12.

Proposed site traffic was derived using information contained in the *Trip Generation Manual*, 9th Edition, published by the ITE and distributed based on the existing traffic pattern and information extracted from the 2011 Transportation Tomorrow Survey (TTS).



## 2.1 Input Parameters and Assumptions

Analysis of the intersection operations will be conducted using *Synchro 9*. The signalized intersection analysis is representative of the following assumptions:

- Peak hour factors (PHFs) based on the Peel Region suggested value of 1.0;
- Heavy Vehicle percentage based on the existing traffic volumes;
- Saturation flow ratio will be based on Synchro default value of 1,900 vphpl; and,
- Synchro results for the signalized intersections will be provided in Highway Capacity Manual (HCM) format.

The unsignalized intersections operational analysis in this report will be completed using the *Synchro 9* software, which employs the 2000 Highway Capacity Methodology for the intersection analysis. All parameters for the unsignalized intersection analysis are based on *Synchro* default values. *Synchro* results for the unsignalized intersections will be provided in Highway Capacity Manual (HCM) format.

Based on our review of the Environmental Study Report conducted for Airport Road (1.0 km of Mayfield Road to 0.6 km north of King Street), the report identified a 3% growth rate per annum along Airport Road from 2011-2021 and a 2% growth rate per annum from 2021-2031. Therefore, a 3% and 2% per annum (compounded) growth rate will be applied to the through movements along Airport Road, respectively.

Trip generation for the proposed development will be based on *Trip Generation Manual, 9<sup>th</sup> Edition* prepared by the Institute of Transportation Engineers (ITE) for Residential Condominium / Townhouse (land use code 230) and Senior Adult Housing-Attached (land use code 252). To be more conservative, the average rate will be used.

The subject zone and adjacent TTS Zones have an existing non-auto modal split of approximately 8%. Currently the Town does not operate a transit service. To be more conservative we will not be applying a non-auto split reduction.

Trip distribution and assignments will be based on the latest 2011 Transportation Tomorrow Survey (TTS) and existing traffic patterns.

The internal site circulation and the functionality of the fire route / emergency services access, waste and recycling collection activities will be analyzed using *AutoTurn 10.0*, to confirm the turning radius requirements and site circulation for both passenger and heavy vehicles related to the proposed development. The detailed functionality of fire route / emergency services access, waste and recycling collection activities will be analyzed as the plan of subdivision drawings are developed.

## 3 Existing Traffic Operation

### 3.1 Existing Road Network

The existing road network, lane configuration and existing traffic control for the study intersections are shown in **Figure 3-1**. The details are described as follows:

- **Airport Road (Regional Road 7)** is a north-south major arterial road consisting of a two (2) lane cross section under the jurisdictional control of the Region of Peel. Within the study area, on-street parking is only available on the south leg the Airport Road / Walker Road intersection on either side of the roadway. It has a posted speed limit of 60 km/h except 980 m north of the Olde Base Line Road and Airport intersection 50 km/h speed limit starts to the north to Airport Road and Huntsmill Drive intersection, is posted 80 km/h beyond the intersection;
- **Olde Base Line Road (Regional Road 12)** is an east-west two (2) lane major arterial road under the jurisdiction of the Region of Peel. The posted speed limit on Olde Base Line Road at Airport Road is 50 km/h, and is posted at 80 km/h beyond 500 m from Olde Base Line Road and Airport Road intersection. The Olde Base Line Road east leg terminates at Airport Road. No Parking allowed in the vicinity of the subject site. The road is currently truck prohibited;
- **Old Church Road (Regional Road 22)** is an east-west two (2) lane arterial road under the jurisdiction of the Region of Peel and it has a posted speed limit of 50 km/h. No Parking allowed in the vicinity of the subject site except one (1) disabled parking spot by permit on south of the roadway. The road is currently truck prohibited;
- **Mountcrest Road** is north-south local road consisting of a two (2) lane cross section under the jurisdictional control of Town of Caledon. The roadway maintains an unposted speed limit of 40 km/h in the vicinity of the proposed development. It is a 'T' intersection 'Stop' control at the minor street approach;
- **Cranston Drive** is a two (2) lane east-west local road under the jurisdiction of The Town of Caledon and has a posted speed limit of 40 km/h. It terminates at Mountainview Road. It is a "T" intersection "Stop" control at the minor street approach; and,
- **Hiltop Drive** is a two (2) lane east-west local road under the jurisdiction of The Town of Caledon and has a posted speed limit of 40 km/h. It is a 'T' intersection 'Stop' control at the minor street approach.

### 3.2 Planned Transportation Improvements

It is noted that the Ministry of Transportation, Ontario (MTO) is currently examining the feasibility of a GTA West Corridor, which will provide east-west connection between the City of Vaughan and City of Guelph area. This new corridor has the potential to affect the timeline of improvements on Airport Road. However, given that plans are still in-progress, the study has not assumed the GTA West Corridor.

It is understood that consideration of a potential Municipal Class Environmental Assessment (EA) for Peel Regional Road 7 (Airport Road) from 0.6 kilometre north of King Street to Huntsmill Drive, as suggested by Region, has been considered. Based on the discussion with Regional staff, the study will examine the need for improvements to Airport Road to address short term and long term issues related to capacity, operational, geometric and storm drainage deficiencies. However, given that potential EA is still in-progress, the study has not assumed geometric improvements.

### 3.3 Existing Data

Existing traffic counts were undertaken by Accu-Traffic on behalf of Cole Engineering. The traffic data is provided in **Appendix A**.

**Table 3.1 Summary of Traffic Data**

Intersection	Data	Date	Source
Airport Road / Old Church Road – LCBO Driveway	TMC Signal Timing	Jan 17, 2017 September 22, 2014	TMCs Accu-Traffic Inc.
Airport Road / Mountcrest Road	TMC	Jan 17, 2017	
Airport Road / Hiltop Drive	TMC	Jan 17, 2017	
Airport Road / Public School Driveway	TMC	March 2, 2017	Signal Timing Cards Region of Peel
Airport Road / Cranston Drive	TMC	Jan 17, 2017	
Airport Road / Olde Base Line Road	TMC Signal Timing	Jan 17, 2017 December 18, 2000	
Airport Road / Caledon Trail Crossing	Signal Timing	September 22, 2014	

The existing traffic volumes are illustrated in **Figure 3-2**.

### 3.4 Existing Analysis

Capacity analysis for all intersections under balanced existing traffic conditions was analyzed using *Synchro 9* software following the *Region of Peel Transportation Impact Study (TIS) Terms of Reference<sup>1</sup> and Regional Guidelines for Using Synchro Version 7.73 Rev.* It should be noted that the sum of the traffic volumes entering/exiting the link at Airport Road / School Driveway L/R out do not equal the sum of traffic volumes at the downstream end of link. This could be because the volume data as collected at different peak hour times. Therefore, traffic volumes balanced between those intersections.

The network intersection's capacity analysis is summarized in **Table 3.1**, while detailed calculations are provided in **Appendix B**. It should be noted that Airport Road and Old Church Road – LCBO Driveway is a three leg intersection however, analysis purpose the intersection was analyzed as a 4-leg intersection to create the westbound left movement. The critical movements (i.e. above volume to capacity (v/c) ratio of 0.90 for shared through/turning movements and 1.0 for exclusive movements) are bolded.

<sup>1</sup> *Transportation Impact Study (TIS) Terms of Reference*, The Regional Municipality of Peel, 2011.

**Table 3.2 Existing Traffic Analysis – Level of Service**

Intersections	Control Type	Key Movements	AM Peak Hour LOS (v/c Ratio)[Delay(s)]	AM Peak Hour LOS (v/c Ratio)[Delay(s)]
Airport Road / Old Church Road – LCBO Driveway	Signalized	Overall EBLTR WBL WBTR NBLT NBR SBLTR	B (0.47) [15.5] B (0.00) [16.9] C (0.46) [23.2] B (0.02) [17.0] A (0.07) [9.3] A (0.03) [9.0] B (0.47) [13.2]	B (0.36) [13.2] B (0.05) [17.4] C (0.29) [20.3] B (0.09) [17.8] B (0.40) [12.3] A (0.15) [9.9] B (0.20) [10.3]
Airport Road / Mountcrest Road	Stop	WBLR NBT NBR SBLT	B (0.02) [11.5] A (0.06) [0.0] A (0.00) [0.0] A (0.00) [0.0]	B (0.01) [12.6] A (0.38) [0.0] A (0.01) [0.0] A (0.01) [0.3]
Airport Road / Hiltop Drive	Stop	EBLR NBL NBT SBTR	B (0.02) [12.2] A (0.01) [8.7] A (0.06) [0.0] A (0.35) [0.0]	B (0.02) [10.6] A (0.02) [7.7] A (0.38) [0.0] A (0.14) [0.0]
Airport Road / Public School Driveway	Stop (Left/Right Out)	EBLR NBT SBT	B (0.17) [13.5] A (0.06) [0.0] A (0.36) [0.0]	B (0.08) [11.8] A (0.38) [0.0] A (0.14) [0.0]
Airport Road / Cranston Drive	Stop	EBLR NBL NBT SBT SBR	B (0.05) [12.6] A (0.00) [9.2] A (0.05) [0.0] A (0.36) [0.0] A (0.00) [0.0]	B (0.02) [11.3] A (0.02) [7.7] A (0.38) [0.0] A (0.13) [0.0] A (0.00) [0.0]
Airport Road / Olde Base Line Road	Signalized	Overall EBLR NBLT SBTR	A (0.44) [8.3] D (0.28) [37.6] A (0.07) [2.5] A (0.45) [4.6]	B (0.51) [14.5] D (0.68) [39.0] A (0.47) [8.0] A (0.17) [5.4]

Under existing traffic conditions, all unsignalized and signalized intersections are currently operating at good level of service (LOS) during the weekday a.m. and p.m. peak hours. All movements are operating with residual capacity and minimum delay time.

## 4 Future Background Traffic Operation

Future background traffic volumes for the 2022 and 2032 horizon periods, excluding the additional traffic generated by the proposed development, consists of the following components: background traffic growth from outside the study area and traffic generated within the study area from other proposed developments.

## 4.1 Growth Rate

As mentioned in **Section 2**, five (5)-year and 10-year horizon periods have been identified for our analysis. This is in line with the Region's Traffic Impact Study requirements where year 2022 and 2032 represents the proposed development full build-out period.

Based on our review of the Environmental Study Report conducted for Airport Road (1.0 km of Mayfield Road to 0.6 km north of King Street), the report identified a 3% growth rate per annum along Airport Road from 2011-2021 and a 2% growth rate per annum from 2021-2031. Therefore, a 3% and 2% per annum (compounded) growth rate will be applied to the through movements along Airport Road, respectively 2022 and 2032 horizons.

## 4.2 Future Background Developments

The subject site is located proximate to where other developments have been proposed in the vicinity of the site.

Potential future background developments:

- **Caledon Villas**, the subject lands are located on the east side of Innis Lake Road, north of Old Church in Caledon East. The subject lands, known municipally as 6600 Old Church Road, comprise an area of approximately 29.1 hectares. The residential subdivision proposed 321 lot residential dwelling. The Traffic Impact Study prepared by Cole Engineering Group Ltd., dated July 2013. The construction anticipated start in 2017. The generated site traffic taken from this study, the associated site traffic figures are provided in **Appendix C**;
- **Castle of Caledon Corp.**, the subject lands are located at the north-east corner of Walker Road West and Mountainview Road in Caledon East. The subject lands, known municipally as 89 Walker Road West, comprise an area of approximately 24.91 hectares. The residential subdivision proposed 203 lot residential dwelling. The Traffic Impact Study prepared by Cole Engineering Group Ltd., dated October 2013. The construction anticipated start in 2017. The generated site traffic taken from this study, the associated site traffic figures are provided in **Appendix C**;
- **2031818 Ontario Ltd.** (Weston Consulting), (0 Airport Road), the subject lands are located on the east of Airport Road, north of McKee Drive in Caledon East. The subject lands are comprised of approximately 18.8 hectares. The residential subdivision proposed 21 condominium dwelling. However, there was no traffic impact study submitted for this specific lands. The trip generation for this land summarized in **Table 4.1**;
- **16008, 16012, 16018 and 16024 Airport Road**, potential future development. The subject lands are comprised 20,000 ft<sup>2</sup> commercial development. The trip generation for this land summarized in **Table 4.1**; and,
- **16114 Airport Road** for potential future development. However in this stage there was not enough information to calculate the trip generation for this particular land.

**Table 4.1 Trip Generation Summary for the Future Background Developments**

Use	Parameter	AM Peak Hour			PM Peak Hour		
		In	Out	Total	In	Out	Total
2031818 Ontario Inc. (Weston Consulting) Residential Condominium / Townhouse 21 Units (LUC 230)	Gross Trip	3	12	15	11	6	17
	Rate (trips / unit)	0.14	0.57	0.71	0.52	0.29	0.81
	<b>Net Trip</b>	<b>3</b>	<b>12</b>	<b>15</b>	<b>11</b>	<b>6</b>	<b>17</b>
16008/16012/16018/16024 Airport Road 20,000 ft <sup>2</sup> Commercial Development (LUC 820)	Gross Trip	36	22	58	46	28	74
	Rate (trips / unit)	1.80	1.10	2.90	2.30	1.40	3.70
	<b>Net Trip</b>	<b>36</b>	<b>22</b>	<b>58</b>	<b>46</b>	<b>28</b>	<b>74</b>
<b>Gross Total</b>		<b>39</b>	<b>34</b>	<b>73</b>	<b>57</b>	<b>34</b>	<b>91</b>

The future background developments traffic volumes are illustrated in **Figure 4-1**.

### 4.3 2022 Future Background Traffic Analysis

Future (2022) background traffic volumes are illustrated in **Figure 4-2**. The proposed future background traffic volumes were analyzed using *Synchro 9.0* software with detailed information provided in **Appendix D**. The Synchro output is summarized in **Table 4.2**. The critical movements (i.e. above volume to capacity (v/c) ratio of 0.90 for shared through/turning movements and 1.0 for exclusive movements) are bolded.

**Table 4.2 Future 2022 Background Traffic Analysis – Level of Service**

Intersections	Control Type	Key Movements	AM Peak Hour LOS (v/c Ratio)[Delay(s)]	AM Peak Hour LOS (v/c Ratio)[Delay(s)]
Airport Road / Old Church Road – LCBO Driveway	Signalized	Overall	B (0.56) [16.5]	B (0.49) [14.3]
		EBLTR	B (0.00) [16.9]	B (0.05) [17.4]
		WBL	C (0.55) [25.1]	C (0.35) [21.2]
		WBTR	B (0.02) [17.0]	B (0.10) [17.8]
		NBLT	A (0.11) [9.6]	B (0.58) [15.1]
		NBR	A (0.05) [9.1]	B (0.21) [10.4]
		SBLTR	B (0.56) [14.8]	B (0.32) [11.5]
Airport Road / Mountcrest Road	Stop	WBLR	B (0.03) [12.6]	C (0.02) [16.2]
		NBT	A (0.10) [0.0]	A (0.55) [0.0]
		NBR	A (0.00) [0.0]	A (0.01) [0.0]
		SBLT	A (0.00) [0.0]	A (0.01) [0.3]
Airport Road / Hiltop Drive	Stop	EBLR	B (0.02) [13.9]	B (0.02) [12.1]
		NBL	A (0.01) [9.2]	A (0.02) [8.1]
		NBT	A (0.09) [0.0]	A (0.56) [0.0]
		SBTR	A (0.44) [0.0]	A (0.22) [0.0]
Airport Road / Public School Driveway	Stop (Left/Right Out)	EBLR	C (0.21) [15.7]	B (0.11) [14.3]
		NBT	A (0.09) [0.0]	A (0.55) [0.0]
		SBT	A (0.45) [0.0]	A (0.22) [0.0]

Intersections	Control Type	Key Movements	AM Peak Hour LOS (v/c Ratio)[Delay(s)]	AM Peak Hour LOS (v/c Ratio)[Delay(s)]
Airport Road / Cranston Drive	Stop	EBLR NBL NBT SBT SBR	C (0.07) [15.0] B (0.01) [10.0] A (0.09) [0.0] A (0.48) [0.0] A (0.00) [0.0]	B (0.02) [13.6] A (0.02) [8.1] A (0.55) [0.0] A (0.23) [0.0] A (0.00) [0.0]
Airport Road / Olde Base Line Road	Signalized	Overall EBLR NBLT SBTR	A (0.55) [8.6] D (0.30) [37.5] A (0.13) [2.8] A (0.58) [1.8]	B (0.70) [0.15] D (0.69) [39.3] B (0.71) [12.3] B (0.32) [6.5]

Under 2022 future background traffic conditions, all unsignalized and signalized intersections are currently operating at good level of service (LOS) during the weekday a.m. and p.m. peak hours. All movements are operating with residual capacity and minimum delay time.

#### 4.4 2032 Future Background Traffic Analysis

Future (2032) background traffic volumes are illustrated in **Figure 4-2**. The proposed future background traffic volumes were analyzed using *Synchro 9.0* software with detailed information provided in **Appendix E**. The Synchro output is summarized in **Table 4.3**. The critical movements (i.e. above volume to capacity (v/c) ratio of 0.90 for shared through/turning movements and 1.0 for exclusive movements).

**Table 4.3 Future 2032 Background Traffic Analysis – Level of Service**

Intersections	Control Type	Key Movements	AM Peak Hour LOS (v/c Ratio)[Delay(s)]	AM Peak Hour LOS (v/c Ratio)[Delay(s)]
Airport Road / Old Church Road – LCBO Driveway	Signalized	Overall EBLTR WBL WBTR NBLT NBR SBLTR	B (0.62) [17.6] B (0.00) [16.9] C (0.55) [25.1] B (0.02) [17.0] A (0.13) [9.7] A (0.05) [9.1] A (0.67) [17.1]	B (0.55) [15.4] B (0.05) [17.4] C (0.35) [21.2] B (0.10) [17.8] B (0.68) [17.4] B (0.21) [10.4] B (0.37) [12.3]
Airport Road / Mountcrest Road	Stop	WBLR NBT NBR SBLT	B (0.03) [13.9] A (0.11) [0.0] A (0.00) [0.0] A (0.00) [0.0]	C (0.02) [18.9] A (0.65) [0.0] A (0.01) [0.0] A (0.01) [0.3]
Airport Road / Hiltop Drive	Stop	EBLR NBL NBT SBTR	C (0.03) [15.9] A (0.01) [9.8] A (0.11) [0.0] A (0.53) [0.0]	B (0.02) [13.1] A (0.03) [8.2] A (0.65) [0.0] A (0.25) [0.0]
Airport Road / Public School Driveway	Stop (Left/Right Out)	EBLR NBT SBT	C (0.25) [18.7] A (0.11) [0.0] A (0.54) [0.0]	C (0.13) [16.0] A (0.65) [0.0] A (0.26) [0.0]

Intersections	Control Type	Key Movements	AM Peak Hour LOS (v/c Ratio)[Delay(s)]	AM Peak Hour LOS (v/c Ratio)[Delay(s)]
Airport Road / Cranston Drive	Stop	EBLR	C (0.08) [17.7]	C (0.02) [15.0]
		NBL	B (0.01) [10.9]	A (0.02) [8.3]
		NBT	A (0.11) [0.0]	A (0.64) [0.0]
		SBT	A (0.58) [0.0]	A (0.27) [0.0]
		SBR	A (0.00) [0.0]	A (0.00) [0.0]
Airport Road / Olde Base Line Road	Signalized	Overall	A (0.64) [9.3]	B (0.78) [16.8]
		EBLR	D (0.30) [37.5]	D (0.69) [39.3]
		NBLT	A (0.14) [2.9]	B (0.81) [16.0]
		SBTR	A (0.67) [7.3]	A (0.36) [6.8]

Under 2032 future background traffic conditions, all unsignalized and signalized intersections are currently operating at good level of service (LOS) during the weekday a.m. and p.m. peak hours. All movements are operating with residual capacity and minimum delay time.

## 5 Site Traffic Operations

Trip generation forecasts were undertaken using information contained in the *Trip Generation, 9<sup>th</sup> Edition* published by ITE. For the assessment of traffic generation, the ITE land use code (LUC) 230 was used to estimate residential land use trips for the weekday AM and PM peak hour. The current application is for 606 units with a Senior Adult Housing comprise 42 units. The trips generated by the proposed residential development are outlined in. To be more conservative the fitted curve equation used. The future lane configuration is illustrated in **Figure 5-1**. The trip generation calculation is summarized in **Table 5.2**.

Information contained in the 2011 Transportation Tomorrow Survey (TTS) for zone 3197 (the Subject Zone) has been reviewed but, since there are no residential zones near the subject site, zones 3442, 3386, and 3447 located in the City of Brampton have also been included in the calculations. The subject zone and adjacent TTS Zones have an existing non-auto modal split of approximately 8%. The non-auto modal split calculation is summarized in **Table 5.1**.

**Table 5.1 Non-Auto Modal Split Calculation Summary**

Zones	Transit excluding GO rail	Auto driver	GO rail only	Joint GO rail and local transit	Auto passenger	School bus	Walk	Total
3197	117	5317	35	0	987	0	134	6590
3386	1352	15018	206	62	1938	0	31	18607
3442	263	5697	118	242	949	57	0	7326
3447	295	6122	47	47	806	57	57	7431
Total	2032	32154	406	351	4680	114	222	39954
Percent	5%	80%	1%	1%	12%	0%	1%	100%
<b>Non-Auto Reduction</b>								<b>8%</b>

Currently the Town does not operate a transit service. To be more conservative we will not be applying a non-auto split reduction.



**Table 5.2 Site Trip Generation Summary**

Use	Parameter	AM Peak Hour			PM Peak Hour		
		In	Out	Total	In	Out	Total
Residential Townhouse – 606 Units (LUC 230)	Gross Trip	45	222	267	211	104	315
	Rate (trips / unit)	0.07	0.37	0.44	0.35	0.17	0.52
	<b>Net Trip</b>	<b>45</b>	<b>222</b>	<b>267</b>	<b>211</b>	<b>104</b>	<b>315</b>
Senior Adult Housing – Attached - 42 Units (LUC 252)	Gross Trip	3	5	8	6	5	11
	Rate (trips / unit)	0.08	0.12	0.2	0.14	0.12	0.26
	<b>Net Trip</b>	<b>3</b>	<b>5</b>	<b>8</b>	<b>6</b>	<b>5</b>	<b>11</b>
<b>Gross Total</b>		<b>48</b>	<b>227</b>	<b>275</b>	<b>217</b>	<b>109</b>	<b>326</b>

Based on the foregoing, the proposed development is expected to generate 274 two (2)-way (48 inbound and 227 outbound) trips during the roadway a.m. peak hour and 326 two (2)-way (217 inbound and 109 outbound) trips during the roadway p.m. peak hour.

## 5.1 Trip Distribution

Trip distribution and assignments will be based on the latest 2011 Transportation Tomorrow Survey (TTS) and existing traffic patterns. The applied trip distribution is summarized in **Table 5.3** with detailed information provided in **Appendix F**.

**Table 5.3 Site Trip Distribution**

Direction	Via	Proportions (AM/PM)
North	Airport Road	24%
South	Airport Road	54%
East	Old Church Road via Airport Road	10%
West	Olde Base Line Road via Airport Road	12%
<b>Total</b>		<b>100%</b>

The site development traffic is assigned to the study area intersections based on the trip distribution presented and the projected site traffic volumes are illustrated in **Figure 5-2**.

## 5.2 Trip Assignment

The proposed site development traffic volumes noted in **Section 5.0** were assigned to the study area intersections based on the trip distribution presented in **Table 5.3** and are provided in **Figure 5-2**.

## 6 Future Total Traffic Operations

### 6.1 2022 Future Total Traffic Analysis – 5-Year Post Build-Out

Future (2022) total traffic volumes are illustrated in **Figure 6-1**. The proposed future total traffic volumes were analyzed using *Synchro 9.0* software with detailed information provided in **Appendix G**. The Synchro output is summarized in **Table 6.1**. The critical movements (i.e. above volume to capacity (v/c) ratio of 0.90 for shared through/turning movements and 1.0 for exclusive movements).

**Table 6.1 2022 Future Total Traffic Analysis – Level of Service**

Intersections	Control Type	Key Movements	AM Peak Hour LOS (v/c Ratio)[Delays]	AM Peak Hour LOS (v/c Ratio)[Delays]
Airport Road / Old Church Road – LCBO Driveway	Signalized	Overall	B (0.57) [16.3]	B (0.53) [14.8]
		EBLTR	B (0.00) [16.9]	B (0.05) [17.1]
		WBL	C (0.56) [25.4]	C (0.40) [22.1]
		WBTR	B (0.02) [17.0]	B (0.10) [17.8]
		NBLT	B (0.18) [10.1]	B (0.61) [15.7]
		NBR	A (0.06) [9.2]	B (0.21) [10.5]
		SBLTR	B (0.58) [15.1]	B (0.38) [12.2]
Airport Road / Mountcrest Road	Stop	WBLR	B (0.04) [12.5]	C (0.03) [16.9]
		NBT	A (0.14) [0.0]	A (0.57) [0.0]
		NBR	A (0.00) [0.0]	A (0.01) [0.0]
		SBLT	A (0.00) [0.0]	A (0.02) [0.6]
Airport Road / Hiltop Drive	Stop	EBLR	B (0.02) [14.1]	B (0.6) [13.4]
		NBL	A (0.01) [9.3]	A (0.03) [8.3]
		NBT	A (0.14) [0.0]	A (0.58) [0.0]
		SBTR	A (0.45) [0.0]	A (0.26) [0.0]
Airport Road / Public School Driveway – Street 'A' North Access	Signalized (New)	Overall	B (0.59) [10.8]	A (0.67) [8.7]
		EBLTR	C (0.21) [25.0]	C (0.03) [27.5]
		WBL	C (0.52) [28.1]	C (0.44) [31.0]
		WBR	C (0.03) [24.0]	C (0.00) [32.5]
		NBT	A (0.17) [4.0]	A (0.70) [7.8]
		NBR	C (0.00) [31.6]	A (0.00) [32.5]
		SBL	A (0.01) [3.3]	A (0.19) [4.0]
SBT	A (0.60) [7.6]	A (0.28) [3.4]		
Airport Road / Cranston Drive – Street 'A' South Access	Stop	EBLTR	C (0.08) [17.0]	C (0.03) [15.7]
		WBLTR	C (0.24) [19.9]	C (0.09) [19.3]
		NBL	B (0.01) [11.2]	A (0.02) [8.3]
		NBT	A (0.10) [0.0]	A (0.56) [0.0]
		NBR	A (0.02) [0.0]	A (0.07) [0.0]
		SBL	A (0.00) [7.6]	B (0.01) [10.5]
		SBT	A (0.54) [0.0]	A (0.26) [0.0]
SBR	A (0.00) [0.0]	A (0.00) [0.0]		

Intersections	Control Type	Key Movements	AM Peak Hour LOS (v/c Ratio)[Delays]	AM Peak Hour LOS (v/c Ratio)[Delays]
Airport Road / Olde Base Line Road	Signalized	Overall	A (0.65) [9.7]	B (0.80) [18.2]
		EBLR	D (0.33) [37.6]	D (0.73) [40.5]
		NBLT	A (0.15) [2.9]	B (0.82) [17.4]
		SBTR	A (0.69) [7.7]	A (0.39) [7.5]

Under 2022 future total traffic conditions, all unsignalized and signalized intersections are currently operating at good level of service (LOS) during the weekday a.m. and p.m. peak hours. All movements are operating with residual capacity and minimum delay time.

## 6.2 2032 Future Total Traffic Analysis – 10-Year Post Build-Out

Future (2032) total traffic volumes are illustrated in **Figure 6-2**. The proposed future total traffic volumes were analyzed using *Synchro 9.0* software with detailed information provided in **Appendix H**. The Synchro output is summarized in **Table 6.2**. The critical movements (i.e. above volume to capacity (v/c) ratio of 0.90 for shared through / turning movements and 1.0 for exclusive movements).

**Table 6.2 2032 Future Total Traffic Analysis – Level of Service**

Intersections	Control Type	Key Movements	AM Peak Hour LOS (v/c Ratio)[Delays]	AM Peak Hour LOS (v/c Ratio)[Delays]
Airport Road / Old Church Road – LCBO Driveway	Signalized	Overall	B (0.63) [17.5]	B (0.59) [16.0]
		EBLTR	B (0.00) [16.9]	B (0.05) [17.1]
		WBL	C (0.56) [25.4]	C (0.40) [22.1]
		WBTR	B (0.02) [17.0]	B (0.10) [17.8]
		NBLT	B (0.20) [10.3]	B (0.71) [18.2]
		NBR	A (0.06) [9.2]	B (0.21) [10.5]
		SBLTR	B (0.68) [17.5]	B (0.45) [13.4]
Airport Road / Mountcrest Road	Stop	WBLR	B (0.04) [13.6]	C (0.04) [16.7]
		NBT	A (0.15) [0.0]	A (0.67) [0.0]
		NBR	A (0.00) [0.0]	A (0.01) [0.0]
		SBLT	A (0.00) [0.0]	A (0.02) [0.6]
Airport Road / Hiltop Drive	Stop	EBLR	B (0.03) [16.1]	B (0.03) [16.2]
		NBL	A (0.01) [9.9]	A (0.03) [8.4]
		NBT	A (0.15) [0.0]	A (0.67) [0.0]
		SBTR	A (0.54) [0.0]	A (0.29) [0.0]
Airport Road / Public School Driveway – Street 'A' North Access	Signalized (New)	Overall	B (0.69) [11.8]	A (0.79) [10.9]
		EBLTR	C (0.21) [25.0]	C (0.03) [26.7]
		WBL	C (0.52) [28.1]	C (0.43) [30.0]
		WBR	C (0.03) [24.0]	C (0.02) [26.6]
		NBT	A (0.19) [4.1]	A (0.83) [12.1]
		NBR	C (0.00) [3.3]	A (0.01) [2.4]
		SBL	A (0.01) [3.3]	A (0.31) [7.1]
SBT	A (0.72) [10.0]	A (0.33) [3.8]		

Intersections	Control Type	Key Movements	AM Peak Hour LOS (v/c Ratio)[Delays]	AM Peak Hour LOS (v/c Ratio)[Delays]
Airport Road / Cranston Drive – Street 'A' South Access	Stop	EBLTR	C (0.11) [22.4]	C (0.03) [17.9]
		WBLTR	C (0.34) [29.6]	C (0.12) [23.0]
		NBL	B (0.01) [13.7]	A (0.02) [8.5]
		NBT	A (0.11) [0.0]	A (0.66) [0.0]
		NBR	A (0.02) [0.0]	A (0.07) [0.0]
		SBL	A (0.00) [7.6]	B (0.01) [11.4]
		SBT	A (0.63) [0.0]	A (0.30) [0.0]
Airport Road / Olde Base Line Road	Signalized	Overall	A (0.74) [11.4]	B (0.88) [23.1]
		EBLR	D (0.33) [37.6]	D (0.73) [40.5]
		NBLT	A (0.17) [3.0]	<b>B (0.92) [26.3]</b>
		SBTR	A (0.78) [10.2]	A (0.43) [7.9]
Airport Road / Olde Base Line Road	Signalized <b>(Optimized)</b>	Overall	-	B (0.87) [21.6]
		EBLR	-	E (0.87) [60.1]
		NBLT	-	B (0.88) [19.5]
		SBTR	-	A (0.40) [6.6]

Under 2032 future total traffic conditions, all unsignalized and signalized intersections are currently operating at good level of service (LOS) during the weekday a.m. and p.m. peak hours except northbound left true movement in the intersection of Airport Road / Olde Base Line Road will experience LOS 0.92 and delay 26.3 seconds. To improve the intersection operation the cycle length has been optimized, LOS 0.88 and delay 19.5 seconds. All other movements are operating with residual capacity and minimum delay time.

### 6.3 Queuing Analysis – Future (2022 and 2032) Total Traffic Conditions

A queuing analyses were completed using the *Synchro 9.0* software. The Airport Road / Street 'A' North Access and Airport Road / Street 'A' South Access intersections were analyzed.

The detailed queuing report outputs under the future 2022 and 2032 total traffic conditions are presented in **Appendix I**. The 95<sup>th</sup> percentile queues of the critical movement are summarized in **Table 6.3**.

**Table 6.3 95<sup>th</sup> Percentile Queue Lengths**

Intersection	Key Movements	95 <sup>th</sup> Percentile Queue (m)		Recommended Storage Lengths (m)
		FT2022 AM (PM)	FT 2032 AM (PM)	
Airport Road / Cranston Drive – Street 'A' South Access	Westbound Left-thru-right	7.2 (2.5)	11.5 (3.1)	--
	Northbound Left	0.2 (0.5)	0.2 (0.5)	30.0 m
	Northbound Right	0.0 (0.0)	0.0 (0.0)	30.0 m
	Southbound Left	0.1 (0.2)	0.1 (0.3)	30.0 m
Airport Road / School Driveway L/R Out – Street 'A' North Access	Westbound Left	21.7 (14.2)	21.7 (14.2)	22.0 m
	Northbound Right	0.0 (0.0)	0.0 (0.6)	30.0 m
	Southbound Left	2.3 (7.7)	2.3 (11.0)	30.0 m

The results of the queueing analysis indicate that the westbound left-thru-right lane 95<sup>th</sup> percentile queue in the Airport Road / Cranston Drive – Street ‘A’ South Access intersection, in the future (2022 and 2032) total horizon years will be less than 11.5 m (or less than two (2) car) length. It is determined that westbound left-thru-right lane is not expected to block the laneways inbound or outbound traffic. The laneways are located approximately 35 m to Airport Road / Cranston Drive – Street ‘A’ South Access, under “Stop” control at the minor street.

Based on the queueing analysis under the future 2022 and 2032 total traffic conditions, estimated 95th percentile queue lengths will not exceed their available / proposed storage length for all intersections.

#### **6.4 Traffic Signal Warrant Analysis – Justification 7**

Traffic signal warrant analysis was conducted for the future (2022 and 2032) total horizon years, during the weekday AM and PM peak hours for following intersections;

- Airport Road / Street ‘A’ North Access; and,
- Airport Road / Street ‘A’ South Access.

The results of the analysis indicate that the traditional warrants for signalization are not satisfied for the Airport Road / Street ‘A’ North Access intersection. The results indicate that the traditional warrants for signalization are not satisfied as the governing warrant fulfillment percentages are 72% and 72% for the 2022 and 2032 horizon years, respectively. As indicated in the ‘Overall Warrant’ section of the attached sheets, the 72% fulfillment reported is well below the 120% required for an existing intersection with one road or both roads are future. This is due to the fact that the minor volumes, from School Driveway L/R Out and the proposed Street ‘A’ North access, are considered to be too low. The detailed analysis sheets are provided in **Appendix J**.

However, it should be noted that Caledon East Public School is located in the vicinity of the subject site. Pedestrians, especially children can be particularly vulnerable to serious injuries at intersections at which vehicles on one or more approaches are not required to stop. The poor operations and high delay associated with these pedestrians, in combination with various safety considerations, continue to support signalization of the proposed Street ‘A’ North Access / Airport Road intersection. As such, despite not satisfying the traditional warrant for signalization, the North Access was analyzed as a signalized intersection in order to assess the degree of operational improvement that could be achieved. Pedestrian Volume and Delay warrants are completed and presented in the following **Section 6.5**.

Also, a signal warrant analysis was conducted for the intersection of Cranston Road and the proposed Street ‘A’ South Access with Airport Road , for the future (2022 and 2032) total horizon year. The results of the analysis indicate that the traditional warrants for signalization are not satisfied for this intersection. The results indicate that the traditional warrants for signalization are not satisfied as the governing warrant fulfillment percentages are 29% and 29% for the 2022 and 2032 horizon years, respectively. As indicated in the ‘Overall Warrant’ section of the attached sheets, the 29% fulfillment reported is well below the 120% required for an existing intersection with one road or both roads are future. This is due to the fact that the minor volumes, from Cranston Drive and the proposed Street ‘A’ South Access, are considered to be too low. The detailed analysis sheets are provided in **Appendix J**.

#### **6.5 Pedestrian Volume and Delay Warrants – Justification 6**

The minimum pedestrian volume conditions are intended for applications where the traffic volume on a main road is so heavy that pedestrians experience excessive delay or hazard in crossing the main road and where high pedestrian crossing volumes produce the likelihood of such delays. To determine the need for

a traffic signal at the intersection the following minimum pedestrian volume and delay criteria are must met:

- Pedestrian Volume warrant; and,
- Pedestrian Delay warrant.

### 6.5.1 Pedestrian Volume Warrant

It should be noted that Caledon East Public School is located in the vicinity of the subject site therefore a pedestrian signal warrant analysis was carried out for the total eight (8) hour pedestrian volume crossing the main road (Airport Road) at the unsignalized intersection of Airport Road / School Driveway L/R out – Street 'A' North Access.

#### 6.5.1.1 Net 8-Hour Pedestrian Volume (Vp)

Based on the Peel District School Board response the City planner, the subject site's the anticipated yield is 161 students between kindergarten to grade 8. The Peel District School Board response letter and the Peel District School Board Transportation Policy are illustrated in **Appendix K**. Since the Peel District School Board Transportation Policy (Policy 39) states that eligibility distances for transportation are:

- |                                   |        |
|-----------------------------------|--------|
| • Kindergarten – Grade 1 Students | 1.0 km |
| • Grade 2 – four (4) Students     | 1.6 km |
| • Grade 5 – eight (8) Students    | 2.0 km |

Given close proximity of the subject site to the school the most of the students assumed to be walking to the school with a guardian. Therefore:

The anticipated student from the subject site: 161 student

Eight (8) Hour Pedestrian Volume:  $161 \text{ student} \times 2 \text{ (am/pm)} \times 50\% = 161 \text{ students}$  (to be conservative it is assumed that 50% will be walking to school).

8 Hour Pedestrian Volume:  $161 \text{ students} \times 50\% = 81 \text{ guardians}$  (based on the Ontario Traffic Manual Book 12, Justification 6 notes – children under 12 assisted in crossing road, to be conservative it is assumed that 50% will be assisted with a guardian).

Eight (8) Hour Pedestrian Volume:  $81 \text{ guardians} \times 4 = 324 \text{ guardians}$  (guardians will be crossing the roadway four (4) times).

Eight (8) Hour Pedestrian Volume:  $161 \text{ students} + 324 \text{ guardians} = 485 \text{ pedestrians}$  (Adjusted).

**6.5.1.2 8-Hour Vehicular Volume (V8)**

Total Count at intersection of Airport Road / School Driveway L/R out- Street 'A' North Access includes: For the subject site future 8 hour vehicular volumes are not available therefore Peak Hour Volumes (PHV) estimated. The Average Hourly Volume (AHV) estimated by:

Future Total 2022 Traffic Volume:

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

Future Total 2022 AM AHV:  $(1173 + 1456) / 4 = 657$  vph (rounded to whole number)

Eight (8) Hour Vehicular Volume:  $657 \text{ vph} \times 8 \text{ h} = 5256 \text{ v}$  (NB and SB).

Future Total 2032 Traffic Volume:

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

Future Total 2032 AM AHV:  $(1362 + 1653) / 4 = 754$  vph (rounded to whole number)

Eight (8) Hour Vehicular Volume:  $754 \text{ vph} \times 8 \text{ h} = 6032 \text{ v}$  (NB and SB).

8 HOUR VEHICULAR VOLUME (V8)	NET 8 HOUR PEDESTRIAN VOLUME				
	<200	200 - 275	276 - 475	476 - 1000	>1000
<1440	NOT JUSTIFIED	NOT JUSTIFIED	NOT JUSTIFIED	NOT JUSTIFIED	NOT JUSTIFIED
1440 - 2600	NOT JUSTIFIED	NOT JUSTIFIED	NOT JUSTIFIED	SEE EQUATION 1	JUSTIFIED
2601 - 7000	NOT JUSTIFIED	NOT JUSTIFIED	SEE EQUATION 2	JUSTIFIED	JUSTIFIED
>7000	NOT JUSTIFIED	SEE EQUATION 3	JUSTIFIED	JUSTIFIED	JUSTIFIED

EQUATION 1: Justified if net 8-hour ped vol.  $> (1650 - (0.45V_g))$   
 EQUATION 2: Justified if net 8-hour ped vol.  $> (0.00001 V_g^2 - 0.146V_g + 800)$   
 EQUATION 3: Justified if net 8 hour ped vol.  $> (340 - (0.0094V_g))$   
 % Justification = ((net 8 hour pedestrian volume)/(Equation 1, 2 or 3 as appropriate)) x 100%

As indicate in the (Table 18) Pedestrian Volume Justification 6A and Figure 22, illustrated in **Appendix L**, from OTM Book 12, the pedestrian signal warrant is justified, as the projected pedestrian volume falls within the '476-1000' category and the projected future 8 Hour Vehicular Volume is 5256 and 6032 for future 2022 and 2032 horizons years, respectively.

### 6.5.2 Pedestrian Delay Warrant

To determine probability of delayed crossing over 10 seconds, HCM2010 methodology for two-way stop controlled intersections used. As per the HCM2010 methodology, Poisson distribution was used to calculate the probability of delayed crossing events longer than 10 seconds.

#### 6.5.2.1 Poisson Distribution

Probability of delayed crossing over 10 seconds:

Poisson Formula is:

$$P(x; \mu) = \frac{(e^{-\mu})(\mu^x)}{x!}$$

Where:

$$x = \text{time to cross the intersection (seconds)}$$

$$\mu = \text{average delay experienced (seconds)}$$

Based on HCM2010 analysis using *Synchro 9.0*, average pedestrian delays were obtained and are detailed and summarized in **Appendix M** and **Table 6.4** respectively for the Future (2022) Total Traffic Scenario. Poisson distribution was used to determine the probability of delayed crossing over 10 seconds, the calculations for Poisson Distribution are shown in **Appendix N**.

**Table 6.4 Net Pedestrian Delays >10 Seconds (Future 2022 Total Traffic Conditions)**

Peak Hour	AM Peak Hour		PM Peak Hour	
Approach Direction	Northbound Leg	Southbound Leg	Northbound Leg	Southbound Leg
Average Pedestrian Delay (seconds)	>10	>10	>10	>10
Probability of Delayed Crossing over 10 seconds	100%	100%	100%	100%

Based on the analysis of the total 8-hour volume of pedestrians experiencing delays of 10 seconds or more in crossing the road during the highest eight hours of pedestrian traffic fulfills the justification requirement identified in Figure 23 and Ministry of Transportation (MTO) Results Sheet , illustrated in **Appendix O**, the pedestrian signal warrant is justified. A tabular form of the justification values is provided in Table 19 below.

NET TOTAL 8 HOUR VOL. OF TOTAL PEDESTRIANS	NET TOTAL 8 HOUR VOLUME OF DELAYED PEDESTRIANS		
	<75	75 - 130	>130
<200	NOT JUSTIFIED	NOT JUSTIFIED	NOT JUSTIFIED
200 - 300	NOT JUSTIFIED	JUSTIFIED IF VOL. OF DELAYED PEDS. > (240 - (0.55 x VOL. OF TOTAL PEDS))	JUSTIFIED
>300	NOT JUSTIFIED	JUSTIFIED	JUSTIFIED

% Justification = ((net 8 hour delayed pedestrian volume) / (threshold volume for justification)) x 100%



The poor operations and high pedestrian volume and delay associated with these northbound and southbound movements, in combination with various safety considerations, continue to support signalization of the proposed Street 'A' North Access intersection.

## 6.6 Left Turn Warrant Analysis

The left-turn warrant analysis was done for the following movements using monographs in the MTO Geometric Design Standards:

- Southbound left-turn at Airport Road / Cranston Drive – Street 'A' South Access; and,
- Westbound left-turn at Airport Road / Cranston Drive – Street 'A' South Access.

**Appendix P** shows the detailed calculation of the left turn warrant analysis of the southbound and westbound movements at the intersection of Airport Road and Street 'A' South Access intersection. The analysis concludes that an exclusive left-turn lane is warranted for southbound movement under the future (2022 and 2032) total traffic conditions.

However, the left turn on the Street 'A' South access is not warranted. Traffic operational analysis done without exclusive left-turn lane at this intersection shows that this movement will operate at good level of capacity. Therefore, exclusive left-turn lane is not considered under the future (2022 and 2032) total traffic conditions for the westbound approach. The detailed calculation and monographs are illustrated in **Appendix P**.

In addition, left turn lane warrants for an exclusive westbound left turn lane were conducted and are assumed in the analysis. The details are included in **Appendix P**. The proposed future lane configuration is illustrated in **Figure 5-1**.

## 7 Recommendations

### 7.1 Community Safety Zones

Community Safety Zones (CSZ) are incorporated in the Ontario government's road safety strategy, which includes initiatives intended to discourage unsafe driving. Airport Road is one of the major north / south truck routes in the Town and has high traffic volumes. Caledon East Public School, proposed senior citizen residence and parkette, valleyland are in the vicinity of the subject site in Caledon East Community. Based on this as well as traffic volumes and speeds, the existing CSZ is recommended to be extended onto Airport Road 450 m south of Cranston Drive. The proposed CSZ signage plan as shown in **Appendix Q**.

In addition, the existing Caledon East Gate feature is located at front of the existing commercial plaza on Airport Road, just north of the proposed subject site. The gateway feature is proposed to be relocated to the southernmost portion of the subject site, defining the point of arrival to Caledon East. The relocation of the gateway feature will support a visual and physical transition into the community, helping to establish a 'Community Safety Zone.'

It is suggested that Council enact a By-law to designate the portion of Airport Road as CSZ which contribute to a safer traffic environment in the vicinity of the subject site (Caledon East Public School and Caledon East Community).

## 7.2 Access Geometrics

The access points evaluated regarding safety point of view. The intersection of Airport Road and School Driveway L/R out – Proposed Street ‘A’ North Access will have a near right offset intersection with a horizontal offset of approximately 5 m. An offset intersection is defined as a location where two (2) minor streets intersect a major street at nearly the same location.

Due to geometrical constraints it is not possible to align the minor street approaches which will be offset by approximately 5 m. Therefore it is recommended that ‘NO STARIGHT THROUGH’ sign (Rb-10) prohibits straight-through movements, and requires that vehicle from the eastbound approach (School Driveway) turn to either the left or right, similar to the existing operation.

## 7.3 Intersection Spacing and Internal Traffic Control Plan

Based on the Regional Municipality of Peel By-law number 75-2012, Appendix A, the minimum spacing for a full moves access along regional roads required to be 300 to 400 m. Along Airport Road, the Regional minimum spacing between intersections is met.

Guidelines for internal intersection spacing are provided in the Geometric Design Guide for Canadian Roads, prepared by the Transportation Association of Canada (TAC) in 1999. These guidelines state that “the minimum spacing between four-legged intersections is normally 60 m. Where the adjacent intersections are three (3) legged a minimum spacing of 40 m is acceptable”. In the subdivision, the TAC normal minimum spacing between intersecting local roads is met.

In addition, the following internal road network intersections are proposed to be stop control at the minor road:

- Airport Road / Street ‘A’ South Access;
- Street ‘A’ / Street N;
- Street ‘A’ / Street ‘C’ – Street ‘G’;
- Street ‘A’ / Street ‘D’;
- Street ‘A’ / Street ‘E’;
- Street ‘A’ / Street ‘J’;
- Street ‘A’ / Street ‘P’;
- Street ‘A’ / Street ‘S’;
- Street ‘A’ / Street ‘T’ – Street ‘L’;
- Street ‘A’ / Street ‘U’ – Street ‘N’;
- Street ‘B’ / Street ‘C’;
- Street ‘B’ / Street ‘H’;
- Street ‘B’ / Street ‘K’;
- Street ‘N’ / Street ‘K’;
- Street ‘K’ / Street ‘L’;
- Street ‘K’ / Street ‘H’;
- Street ‘H’ / Street ‘H’;
- Street ‘H’ / Street ‘S’;
- Street ‘H’ / Street ‘J’;
- Street ‘H’ / Street ‘G’;
- Street ‘U’ / Street ‘V’;
- Street ‘R’ / Street ‘S’;
- Street ‘R’ / Street ‘G’;
- Street ‘E’ / Street ‘F’;
- Street ‘A’ South Leg / Laneways ‘A’ and ‘B’;
- Street ‘V’ / Laneway ‘B’;
- Street ‘N’ / Laneways ‘C’; and,
- Street ‘N’ / Laneway ‘A’.

The following internal road network intersections are proposed to be all-way stop control:

- Street 'A' / Street 'B'; and,
- Street 'A' / Street 'V' – Street 'M'.

The necessary traffic controls plan is depicted in **Appendix R**.

## **8 Transportation Demand Management**

Transportation Demand Management (TDM) refers to a variety of strategies to reduce congestion, minimize the number of single-occupant vehicles, encourage non-auto modes of travel, and reduce vehicle dependency to create a sustainable transportation system.

- Can lower the amount of vehicles on our roads and help improve air quality;
- Promotes more choice and accessibility for users, saving time and money; and,
- Supports better health and fitness.

The Town is developing a Transportation Master Plan to study the existing transportation network and identify strategic actions to meet the Town's future transportation needs.

### **8.1 TDM Opportunities**

#### **8.1.1 Area Marketing Campaigns**

Area marketing campaigns are premised on the objective of behavioural change. The methods of persuasion include conveying messages of:

1. Personal benefit;
2. Social benefit, and,
3. Adhering to the “social norm”.

It is recognized that individuals are more likely to change their current behavior or continue that behavior if it is the social norm amongst their peers.

One of the first area marketing TDM campaigns within the GTA was established by Metropolitan Toronto in 1994. The Diamond Lane Campaign was implemented in coordination with the expansion of the High Occupancy Lane network. The campaign included billboard, transit vehicle, radio, and newspaper ads. Transportation Management Association (TMA)'s can help facilitate TDM directives by developing promotional materials, advocate for funding, conduct transportation fairs, and many other things.

### 8.1.2 Public Transit

Currently the Town does not operate a transit service.

### 8.1.3 Walking / Cycling

The Town has over 260 km of publicly accessible trails, over 65 parks and many playgrounds, picnic areas, splash pads, tennis courts, sports fields, a leash free park, a skateboard park and many other amenities. There are many options for people of all ages to enjoy outdoor recreation. In addition, cycling safety programs were offered such as CAN-BIKE courses and community safety workshops. The Road Safety Handbook was published and includes a chapter on cycling safety. Cycling Canada's CAN-BIKE program is a series of progression courses taught on all aspects of cycling, to ride safely, effectively, and enjoyably on the road. Program development is coordinated through Cycling Canada, with help from National Examiners/Instructors. Course delivery and administration takes place through CAN-BIKE Delivery Agents, such as community associations, municipal departments, service groups and the efforts of independent instructors. The link can be found here: <http://canbikecanada.ca/>.

Based on the Caledon East Conceptual Pedestrian Network provided in **Appendix S**, a conceptual pedestrian linkage is provided within the boundaries of the subject site connecting to Valley Land to the west of Airport Road and residential area to the north Caledon Trail path. Sidewalks, walkways and trails provided within the site to ensure there are opportunities for pedestrian to safely and easily move around the site and connect adjacent neighborhood and Valley Lands. Sidewalks are provided on all streets (on both sides of Street 'A' and on one (1) side of other streets). **Figure 8-1** illustrates the proposed locations of trails, walkways and sidewalks plan prepared by MBTW.

In addition, a separated bicycle lane has been proposed exclusively for cyclists by a marked roadway. 1.5 m bike lane provided on the each side of Street 'A' and Airport Road. The bike lanes support active transportation, provide continuity along Airport Road and connect and create transition into Caledon East's 'Village-like' character in the vicinity of the subject site. Therefore, appropriate signage, pavement marking and way finding signage should be provided at key pedestrian areas.

### 8.1.4 Carpooling

The Smart Commute program has been established in the form of 10 TMAs across the GTHA. The Smart Commute TMAs are supported by Metrolinx to coordinate and implement TDM initiatives.

Smart Commute – The Town of Caledon has displayed leadership in reducing the environmental impact of its workforce by joining the Smart Commute Program. To date, their program includes bicycle and carpool parking, electric vehicle charging stations, and access to a fleet of vehicles. In addition, they offer an employee bike share program, which encourages employees to try cycling for exercise and as a form of active transportation.

Since inception in 2001, Smart Commute has collectively reduced approximately 1.2 million single-occupant vehicle (SOV) trips, which avoided more than 61 million vehicle kilometers traveled (VKT) and prevented the emission of over 14,000 tonnes of greenhouse gases (GHG) and 88 tonnes of smog-causing air pollutants. Smart Commute works to:

- Implement employee trip reduction programs at local workplaces;
- Decrease traffic congestion, and improve air quality and health by reducing vehicle emissions;
- Improve employee productivity and morale, and reduce employee turnover;
- Advocate for improved transit service, and increased local transportation infrastructure;
- Bus-only and cycling lanes, and a wider network of subway and light rapid transit;
- Promote the benefits of transit-supportive development and smart-growth strategies;
- Encourage legislative flexibility in support of high-value, cost effective transportation strategies such as vanpools, telework, transit subsidies and shuttle services; and,
- Increase opportunities for TMA collaboration with business and government.

Smart Commute offers one-on-one support for staff to use sustainable modes of transportation and provides promotions and incentives on an on-going basis. A web based car matching tool is provided to allow carpoolers to easily identify ride matching options among a large membership base and form carpooling arrangements. More information about Smart Commute and Tools can be found here: <http://smartcommute.ca/brampton-caledon/smart-partners/town-of-caledon/>

TDM strategies do not work in isolation, but instead they work together synergistically as one (1) integrated plan specifically focused to the identified study area. In short, TDM plan works best when complementary strategies are packaged together. Similarly, the objectives of the TDM plan cannot be achieved alone, but instead it requires the cooperation between different stakeholders including the developers, City / Region authorities, transit providers, and other involved / impacted partners.

## 8.2 TDM Strategies

### 8.2.1 Marketing

Success of a TDM program heavily depends on the marketing strategies. As such, it is recommended to provide residents with a welcome package to inform residents with alternative traveling options using active transportation network including information on cycling, walking and Smart Commute Program.

### 8.2.2 Education and Promotion

As the new subdivision will be close proximity of the public school, it is anticipated that a considerable portion of the students will be local residents within the community. Therefore, this provides a great opportunity to encourage alternative modes of transportation specifically active transportation (cycling and walking) through partnerships with school boards.

Metrolinx started a pilot project, "*Stepping It Up*", in fall 2009. The project used the Canadian School Travel Planning (STP) Model to encourage active transportation modes of school travel for students, families, and staff. A total of 30 elementary schools in the Cities of Hamilton, Brampton, and Mississauga participated in the project. According to the final report "*Stepping It Up*" completed in June 2012, the survey results from five (5) Peel Region schools indicated a 10% increase in pedestrian travel based on family surveys, and a 3% increase based on student surveys. In contrast, the results showed a 9% decrease in car travel based on family surveys and a 7% decrease based on student surveys. This project is now over. However following the success of this pilot project, it has since been incorporated into the Peel School Travel Planning Program which provides programs and resources such as the School Bicycle Parking Program, Bike to School Week, Peel Children's Safety Village, and the 10 Step Handbook for High School Bike Projects and the Bike Rodeo Community Kit.

Community-based initiatives, such as Active and Safe Routes to School (ASRTS) could encourage the use of active transportation for the daily trips to school. The Active and Safe Routes to School provides resources, tools, information and links for school and communities to create their own unique Active and Safe Routes to School program. The Active and Safe Routes to School program may include walking to school activities such as Walking School Bus, Walking Wednesdays, Walk-a-Block, Walking Buddies, etc.

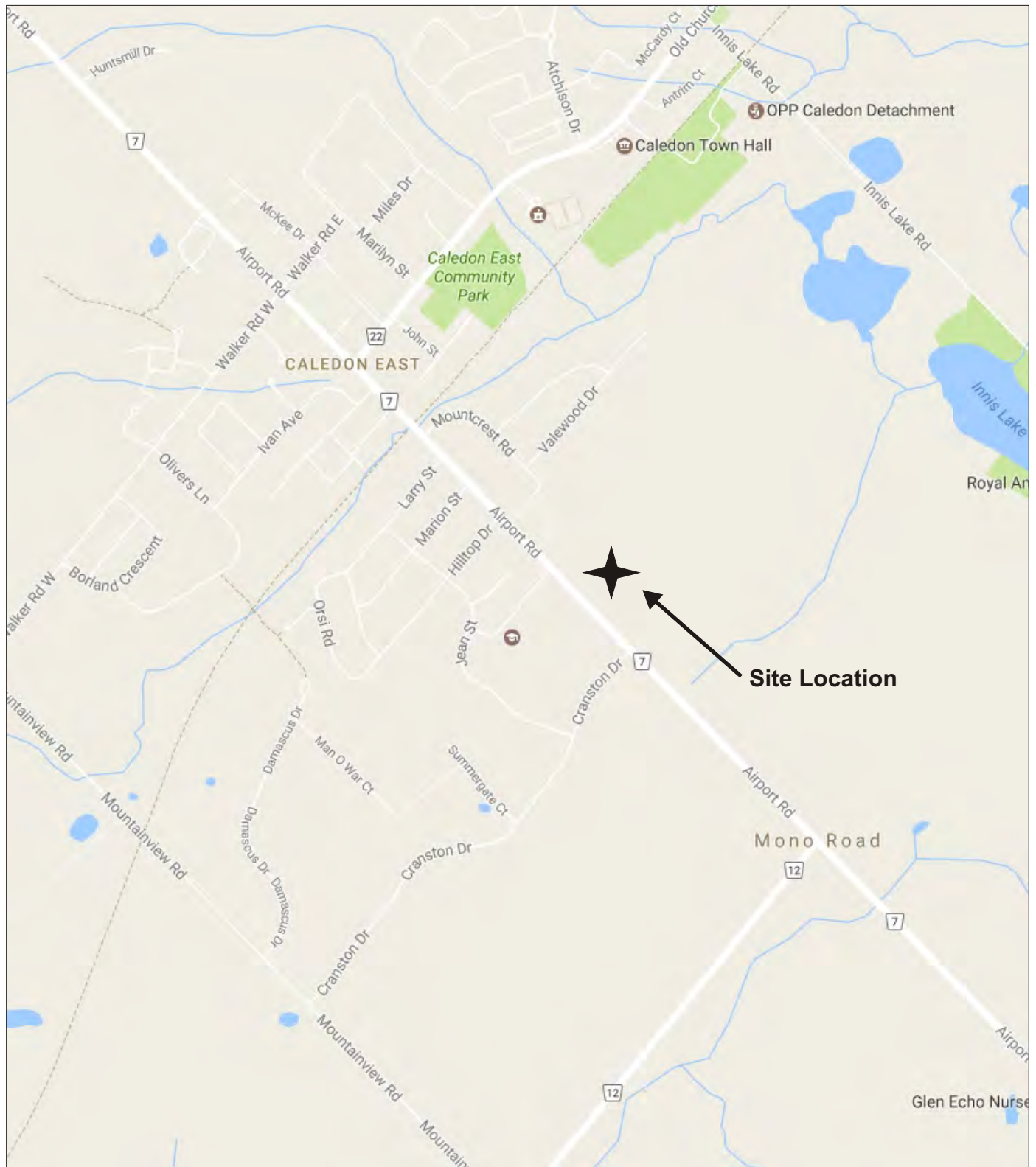
## 9 Conclusions

Based on the analysis, our findings and conclusions are as follows:

- Vehicle access to the development is provided via three (3) full movement access driveways. Two (2) site accesses are provided off Airport Road approximately 730 m north of Olde Base Line Road 200 m south of Hiltop Drive. The third access will be on the north side of the development connecting Street 'B' to existing Mountcrest Road;
- Under existing conditions, the unsignalized intersections within the site network are currently operating at good level of service during the weekday a.m. and p.m. peak hour with residual capacity and minimum delay time;
- Background development corridor growth of 3% and 2% were applied to the traffic volume along the major corridors of Airport Road over a five and ten-year horizon coinciding with full build-out of the development, respectively;
- Under future (2022 and 2032) background conditions, all unsignalized and signalized intersections will continue to operate at good levels of service during both the weekday a.m. and weekday p.m. peak hour with residual capacity and minimum delay time.
- The proposed development is expected to generate 274 two (2)-way (48 inbound and 227 outbound) trips during the roadway a.m. peak hour and 326 two (2)-way (217 inbound and 109 outbound) trips during the roadway p.m. peak hour;
- With the addition of the site-generated traffic, the unsignalized and signalized intersections will continue to operate at good level of service at similar conditions to that occurring under future (2022 and 2032) total conditions except northbound left true movement in the intersection of Airport Road / Olde Base Line Road will experience LOS 0.92 and delay 26.3 seconds. To improve the intersection operation the cycle length has been optimized, LOS 0.88 and delay 19.5 seconds. All other movements are operating with residual capacity and minimum delay time;
- The traditional warrants for traffic signals are not satisfied at the intersection of Airport Road / Cranston Drive – Street 'A' South Access, and Airport Road / School Driveway L/R out – Street 'A' North Access based on future (2022) and (2032) total traffic volumes. However, traffic signals are recommended at Airport Road / School Driveway L/R out – Street 'A' North Access as they dramatically mitigate the excessive pedestrian delays of the northbound and southbound approaches associated with the School Driveway L/R Out and the proposed Street A North access;
- The poor operations and high pedestrian volume and delay associated with these northbound and southbound movements, in combination with various safety considerations, continue to support signalization of the proposed Street 'A' North Access intersection. Based on the analysis of the total eight (8) hour volume of pedestrians experiencing delays of ten seconds or more in crossing the road during the highest eight hours of pedestrian traffic warrant fulfills the justification requirement identified the pedestrian signal warrant is justified. The signalized configuration will contribute significantly to the reduction of potential unsafe driving maneuvers by eliminating excessive delays and provide a safe, direct and protected pedestrian crossing facility;

- The proposed access driveways off Airport Road is forecasted to operate well during both the weekday a.m. and p.m. peak hours;
- The proposed internal sidewalk along within the subject site will provide linkage to the north parcel of the site and aligns with the Town's conceptual pedestrian network;
- The proposed internal streets are designated as local roadways and a 20 and 18 m right-of-way is sufficient;
- The Regional minimum spacing and the TAC normal minimum spacing between intersections and intersecting local roads are met;
- It is suggested that the existing Community Safety Zones is to be extended on Airport Road 450 m south of Cranston Drive;
- It is suggested that the gateway feature is proposed to be relocated to the southernmost portion of the subject site, defining the point of arrival to Caledon East;
- Due to geometrical constraints it is recommended that 'NO STARIGHT THROUGH' sign (Rb-10) prohibits straight-through movements from School Driveway to the Airport Road / School Driveway – Proposed Street 'A' North Access intersection; and,
- It is recommended to provide residents with a welcome package to inform residents with alternative traveling options using active transportation network including information on cycling, walking and Smart Commute Program.





**Figure 1-1  
Site Location**

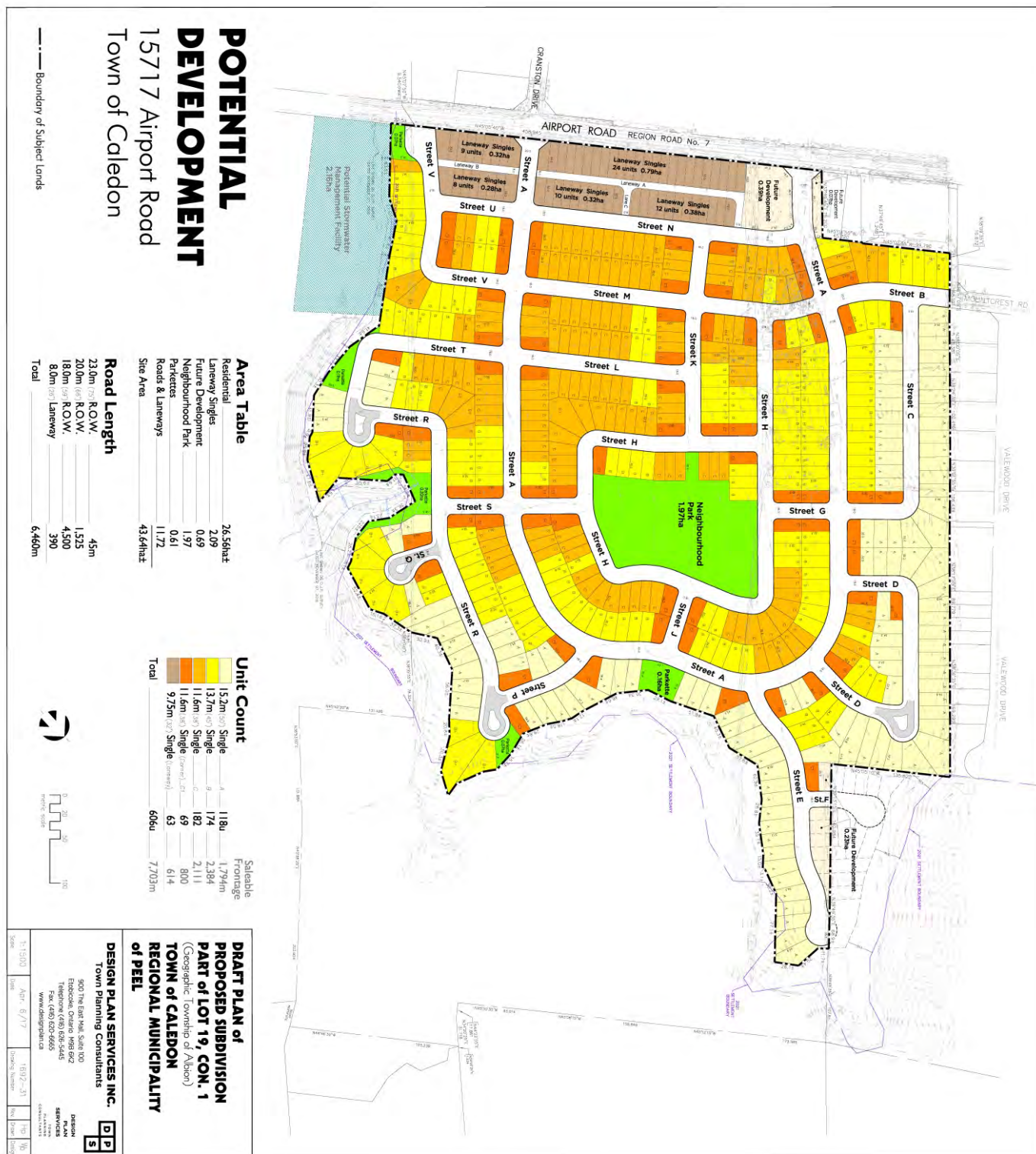
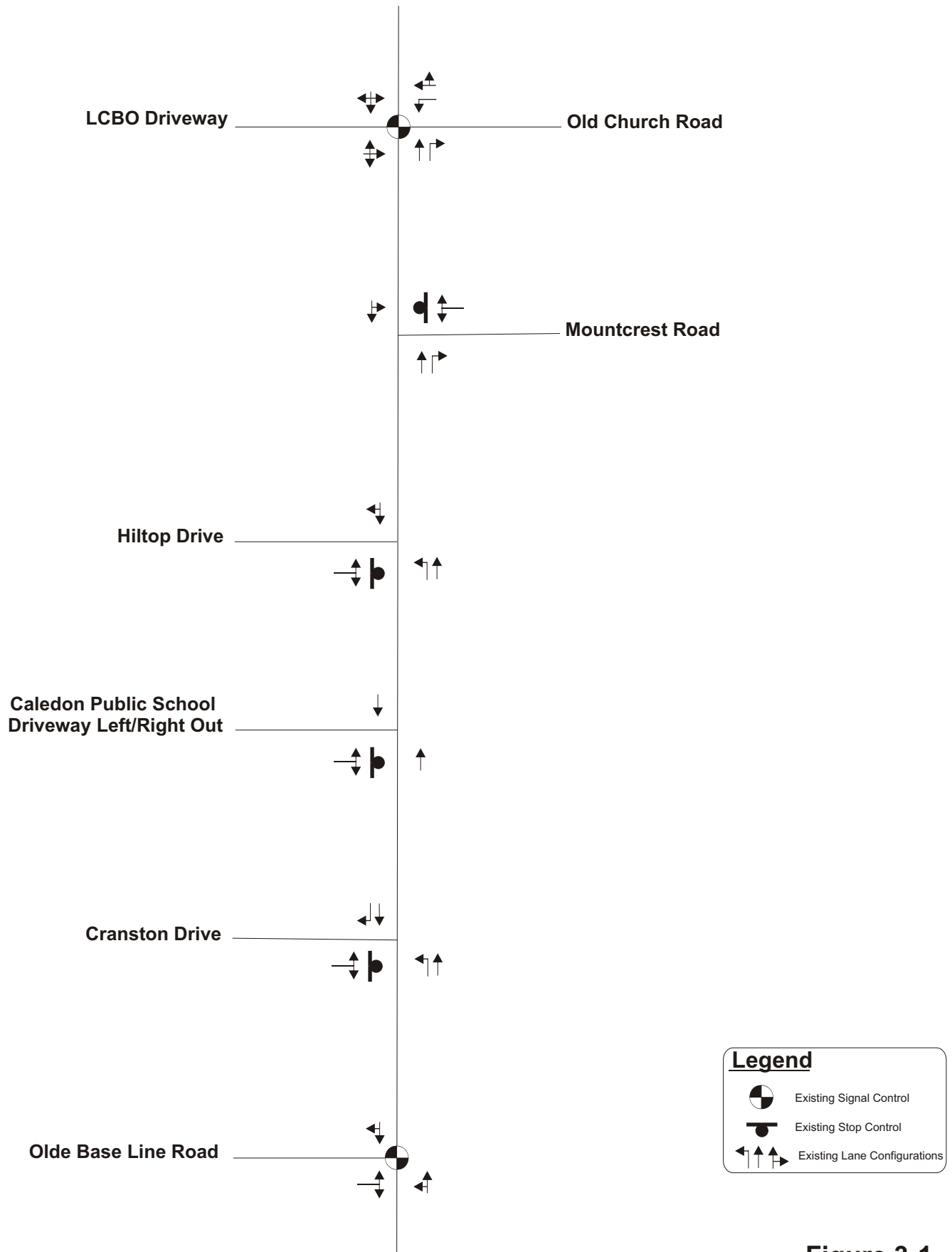
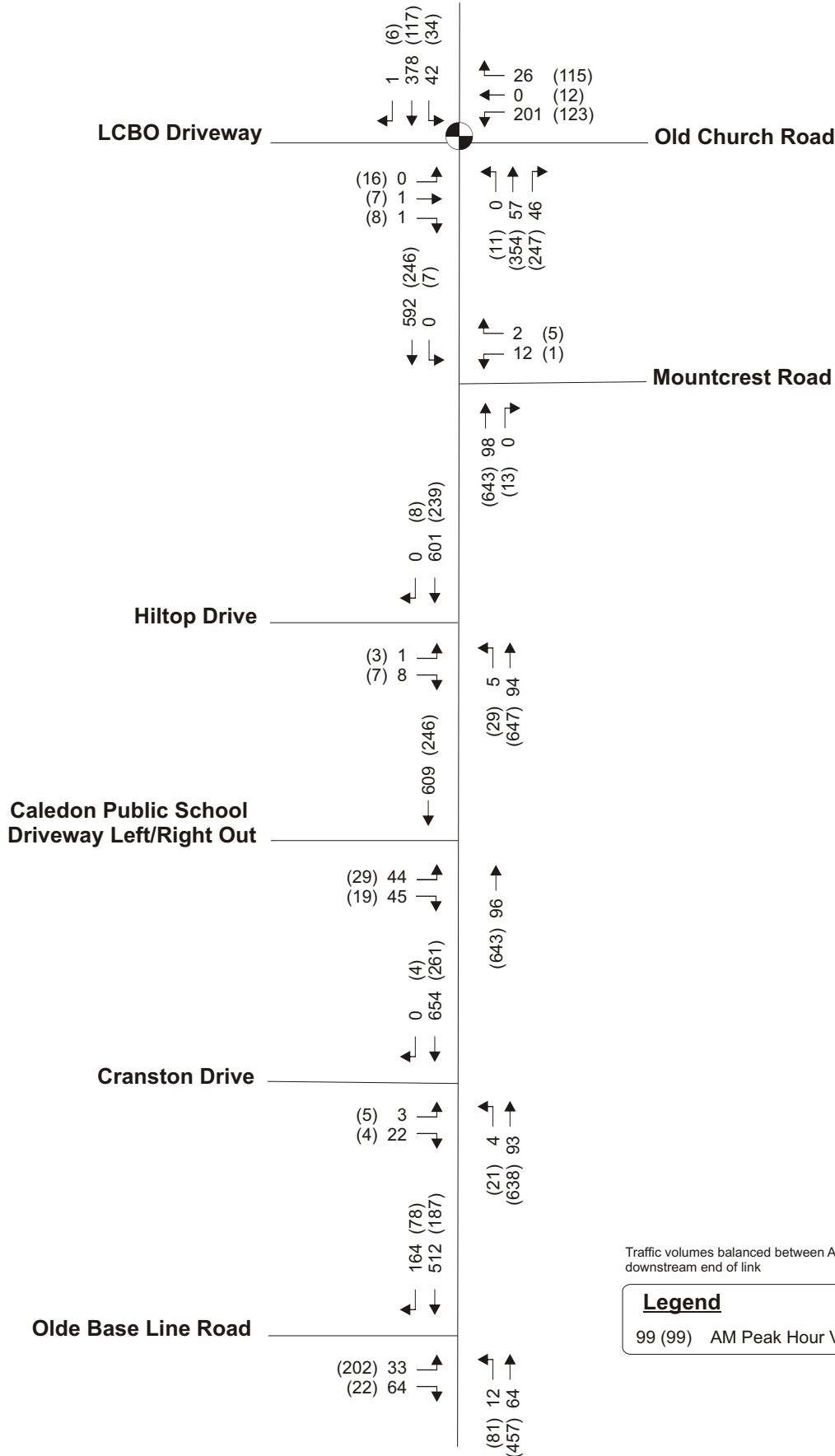


Figure 1-2  
Proposed Conceptual Draft Subdivision Plan



N.T.S.

**Figure 3-1**  
**Existing Lane Configuration**



Traffic volumes balanced between Airport Road/School Driveway L/R Out to downstream end of link

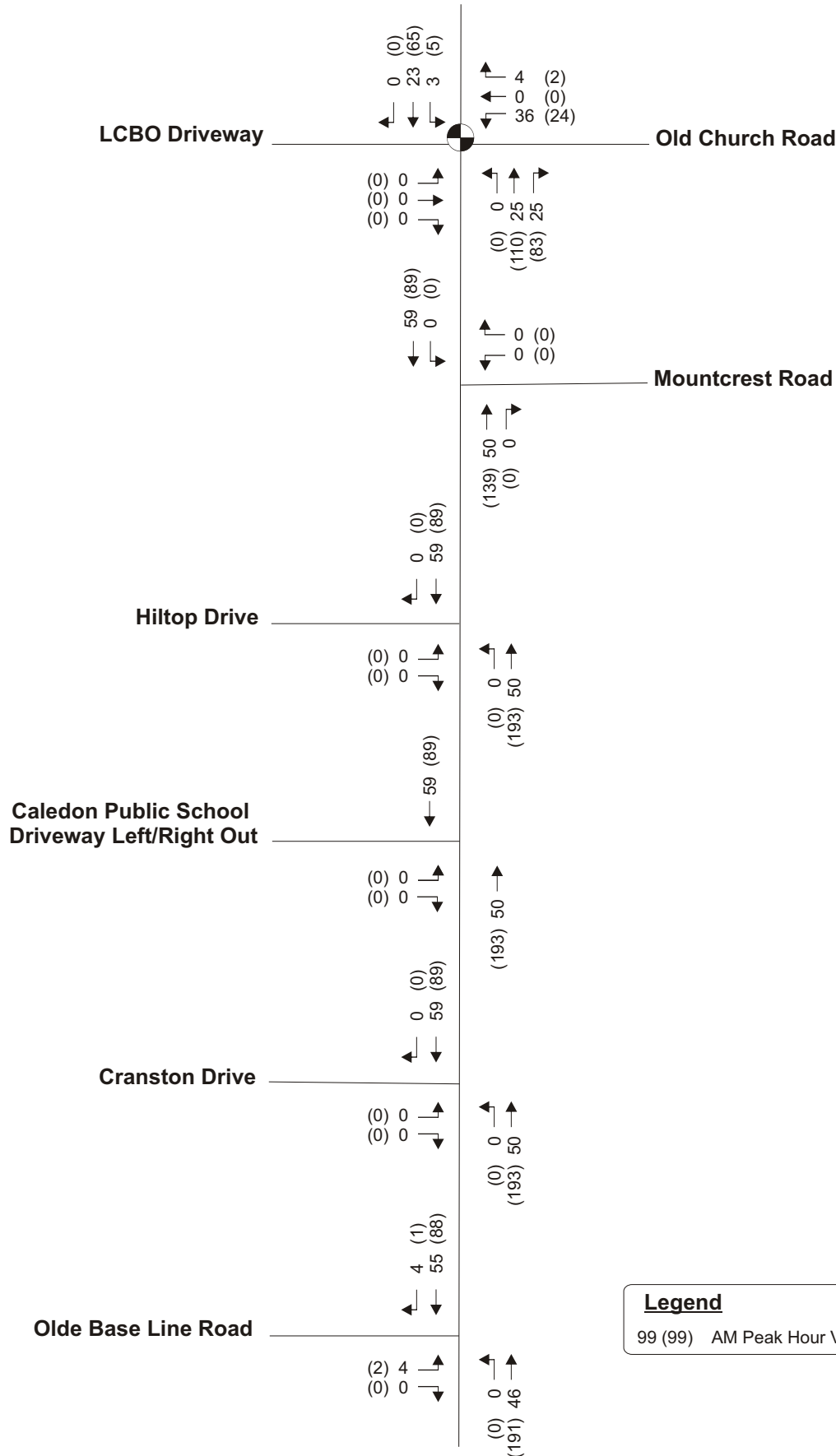
**Legend**

99 (99) AM Peak Hour Volume (PM Peak Hour Volume)



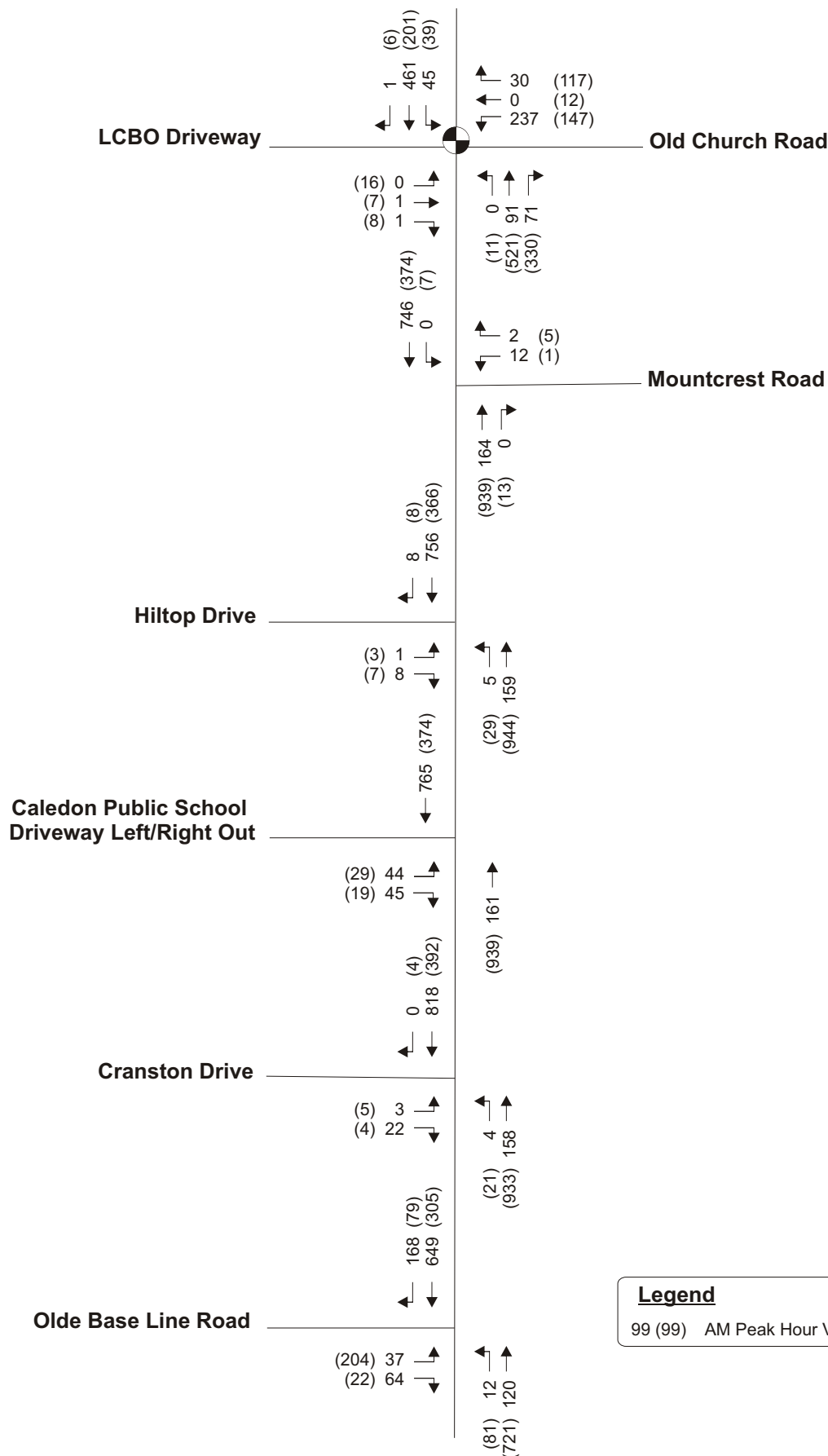
N.T.S.

**Figure 3-2**  
**Balanced Existing Traffic Volumes**



N.T.S.

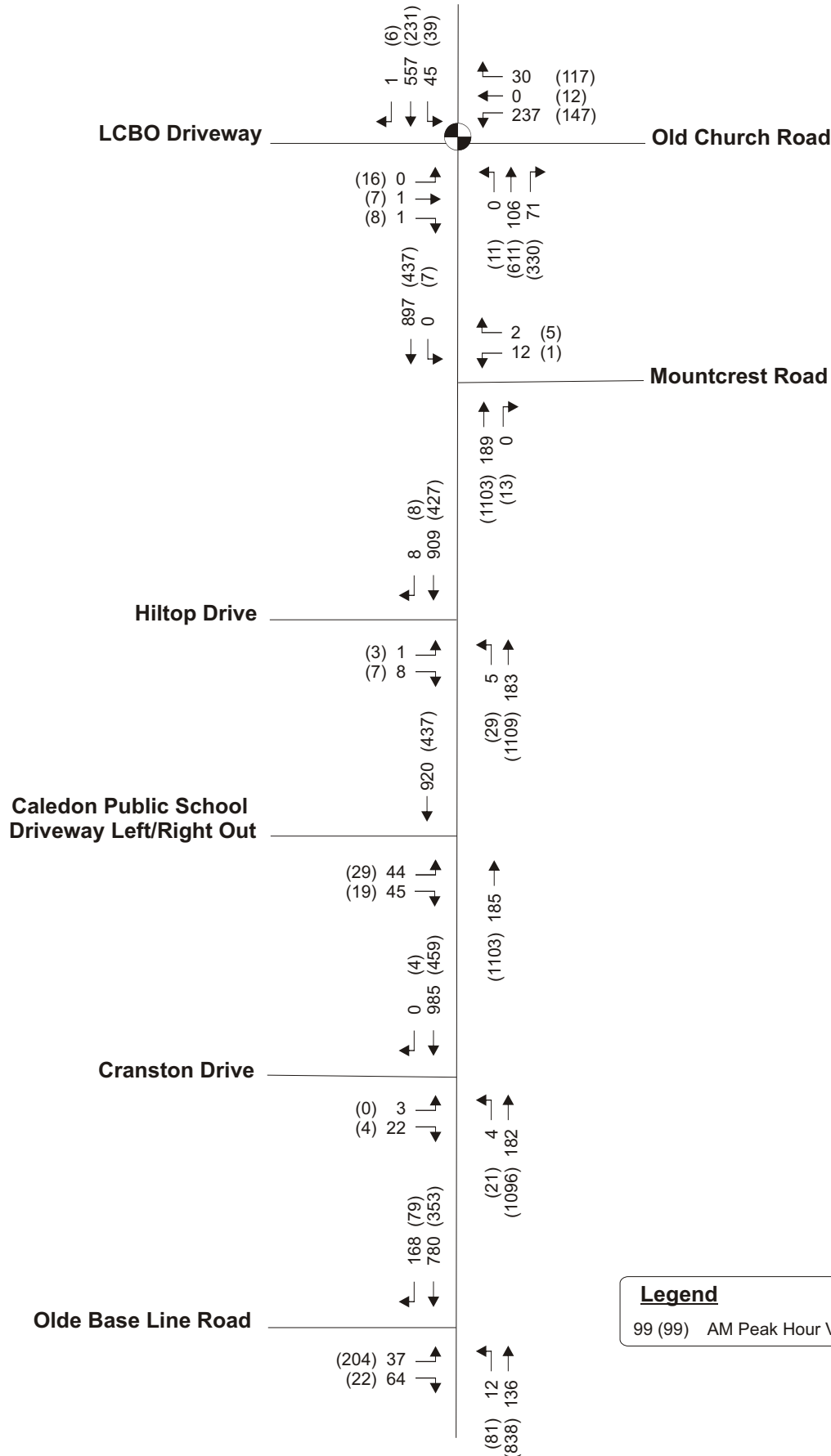
**Figure 4-1**  
**Future Background Developments Traffic Volumes**



N.T.S.

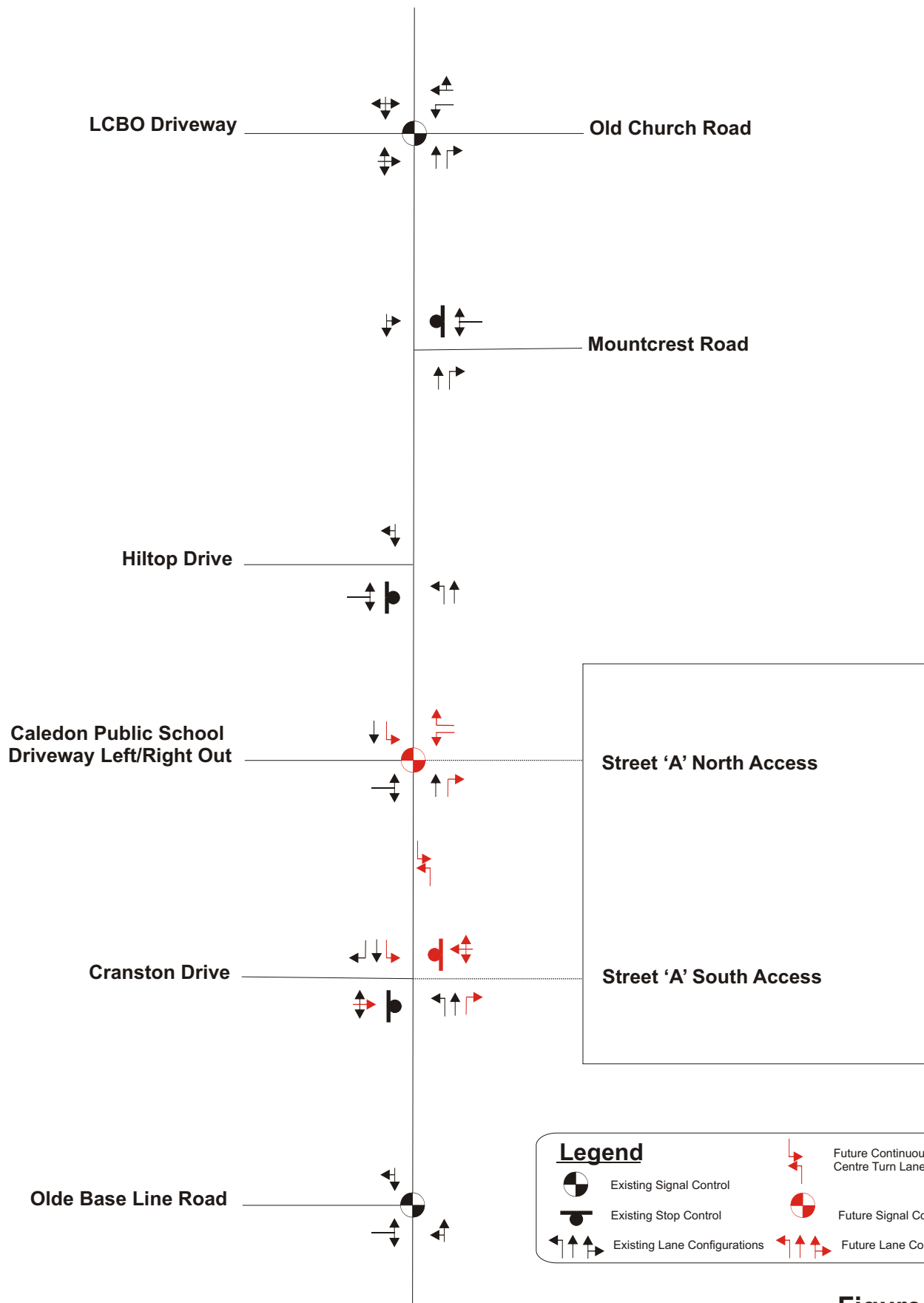
**Legend**  
 99 (99) AM Peak Hour Volume (PM Peak Hour Volume)

**Figure 4-2**  
**Future (2022) Background Traffic Volumes**



**Legend**  
 99 (99) AM Peak Hour Volume (PM Peak Hour Volume)

**Figure 4-3**  
**Future (2032) Background Traffic Volumes**



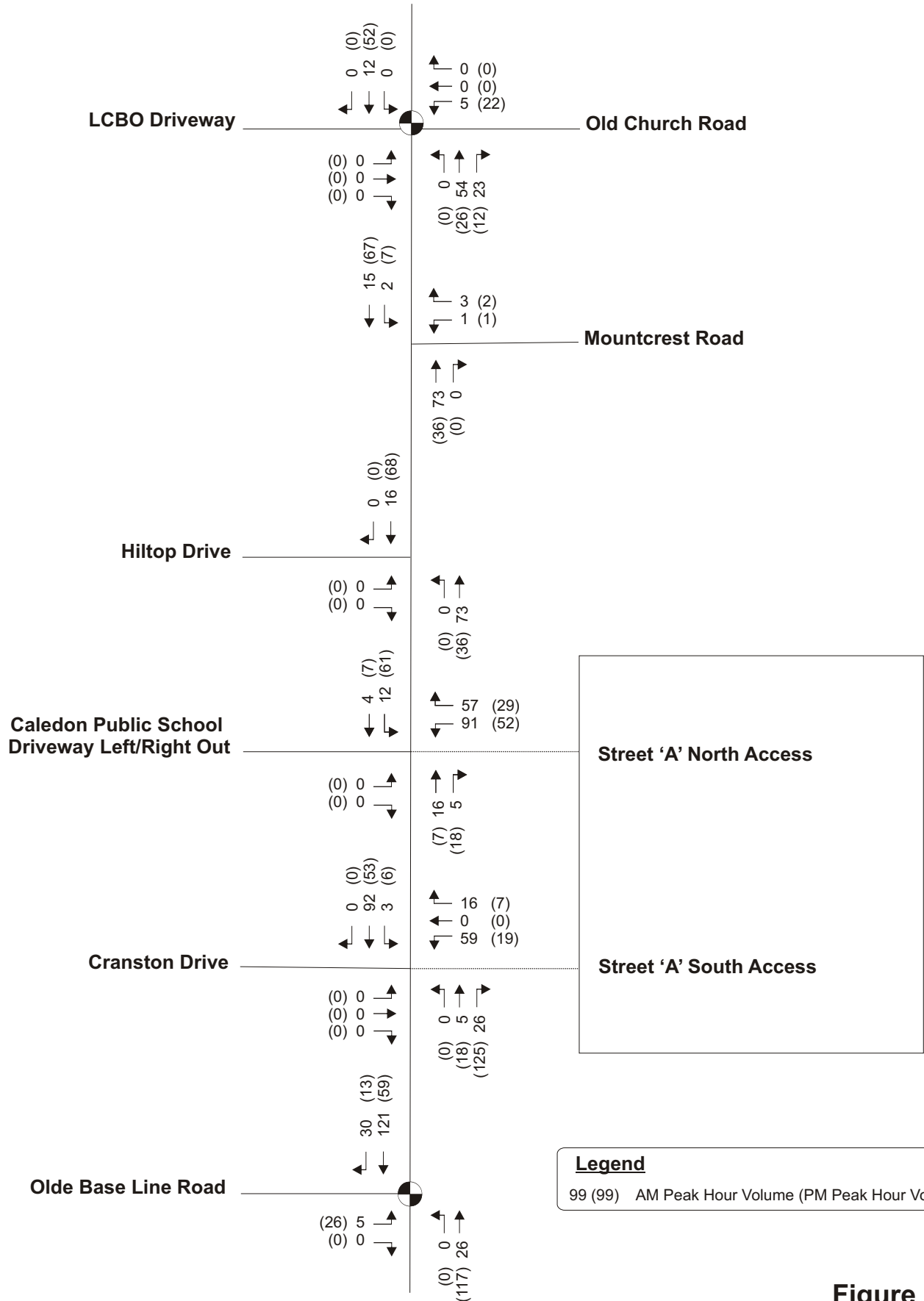
**Legend**

	Existing Signal Control		Future Signal Control
	Existing Stop Control		Future Continuous Centre Turn Lane
	Existing Lane Configurations		Future Lane Configurations

N.T.S.

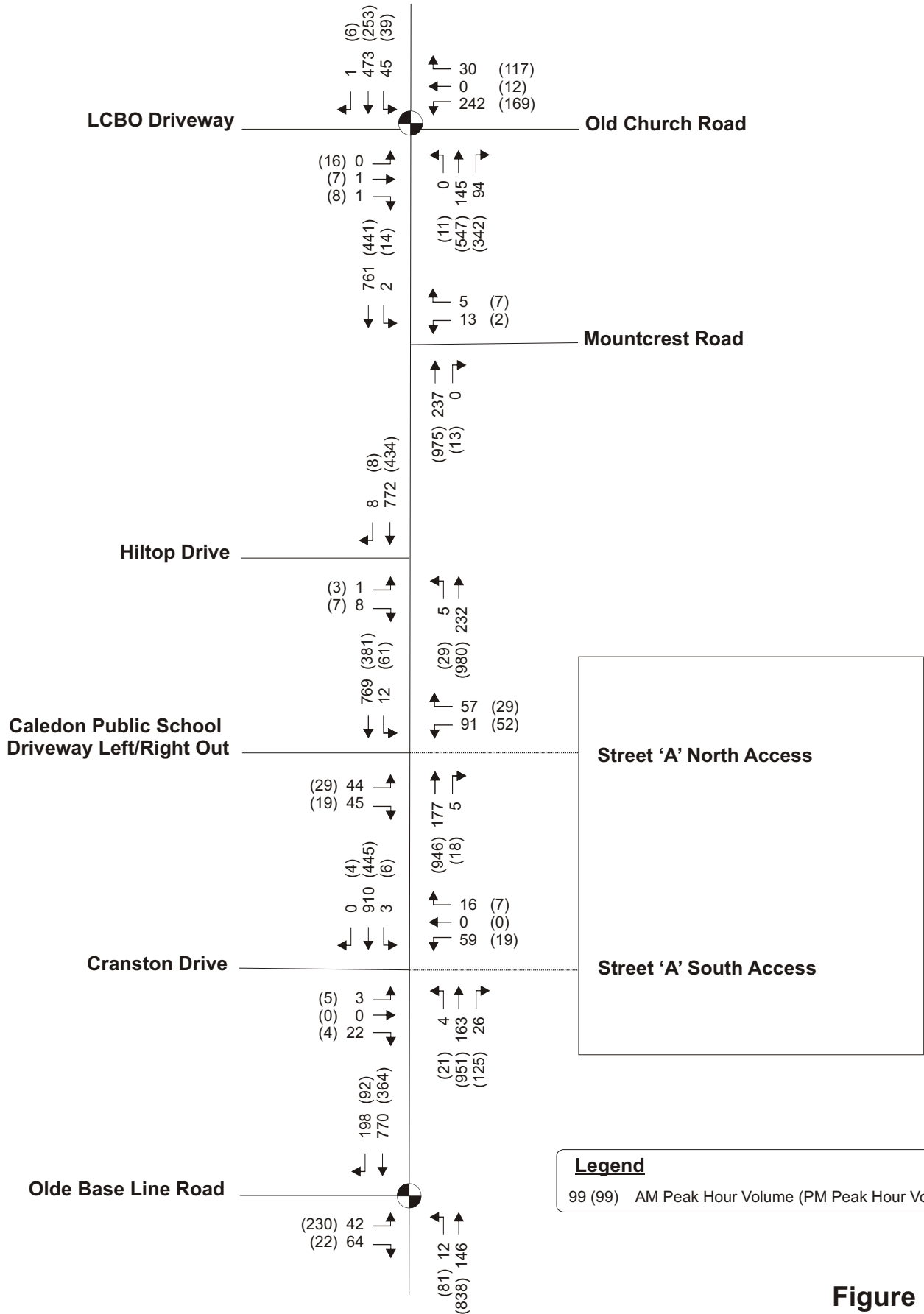
**Figure 5-1  
Future Lane Configuration**





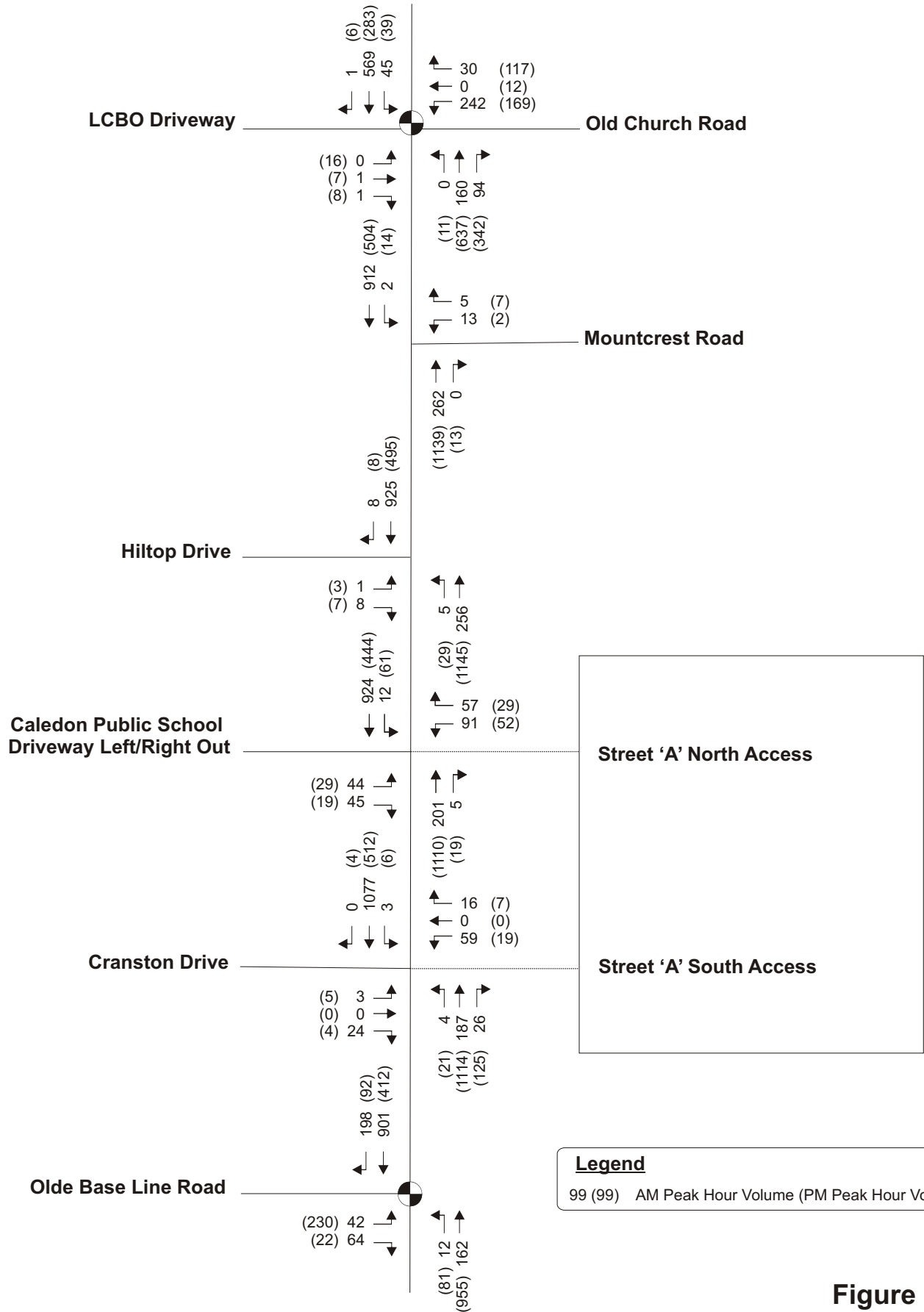
N.T.S.

**Figure 5-2**  
**Site Total Traffic Volumes**



N.T.S.

**Figure 6-1**  
**Future (2022) Total Traffic Volumes**



N.T.S.

**Figure 6-2**  
**Future (2032) Total Traffic Volumes**



N.T.S.

Figure 8-1  
Proposed Trail, Walkway and Pedestrian Plan by MBTW

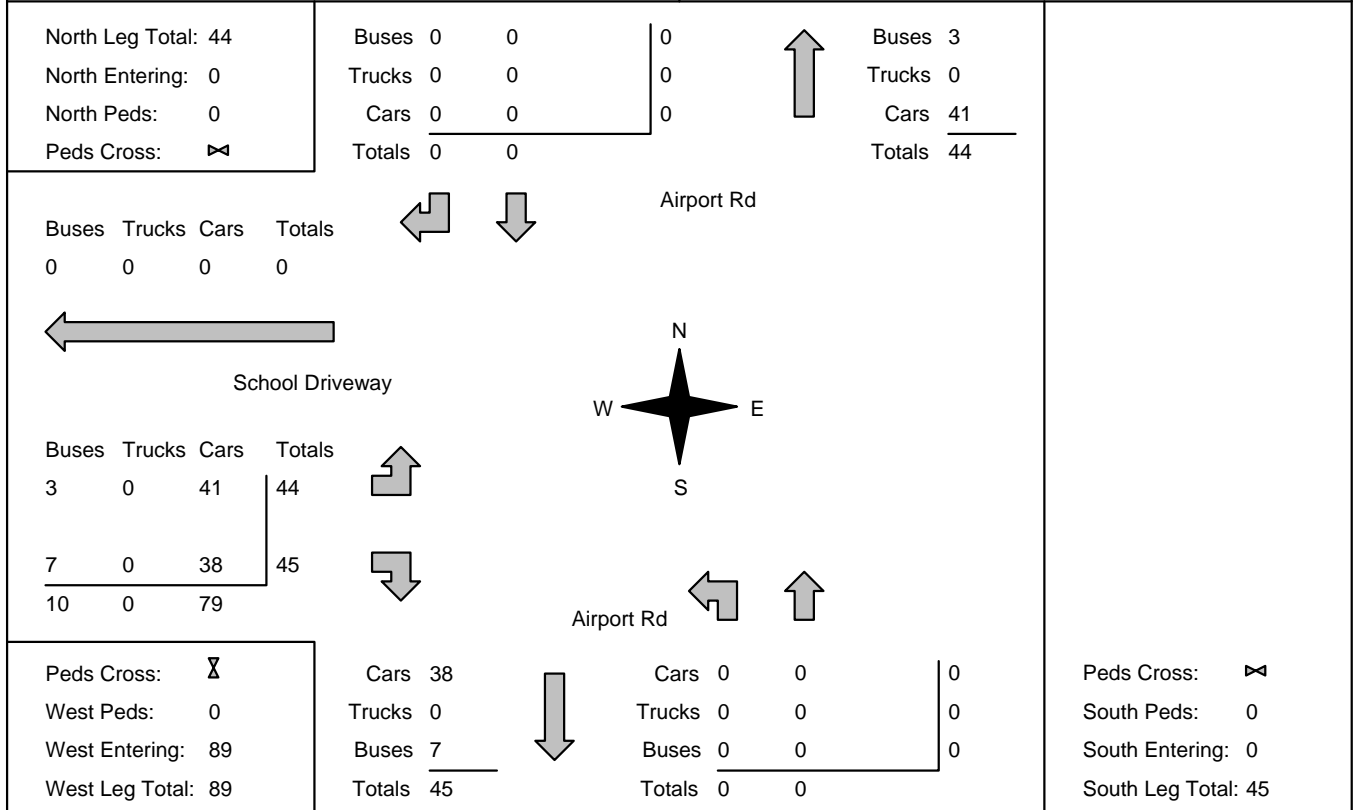
**APPENDIX A**  
**Existing Traffic Data**

# Accu-Traffic Inc.

<b>Morning Peak Diagram</b>	<b>Specified Period</b> <b>From:</b> 8:00:00 <b>To:</b> 10:00:00	<b>One Hour Peak</b> <b>From:</b> 8:45:00 <b>To:</b> 9:45:00
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<b>Municipality:</b> Caledon <b>Site #:</b> 1704300001 <b>Intersection:</b> Airport Rd & School Driveway <b>TFR File #:</b> 1 <b>Count date:</b> 2-Mar-17	<b>Weather conditions:</b>  <b>Person counted:</b> <b>Person prepared:</b> <b>Person checked:</b>
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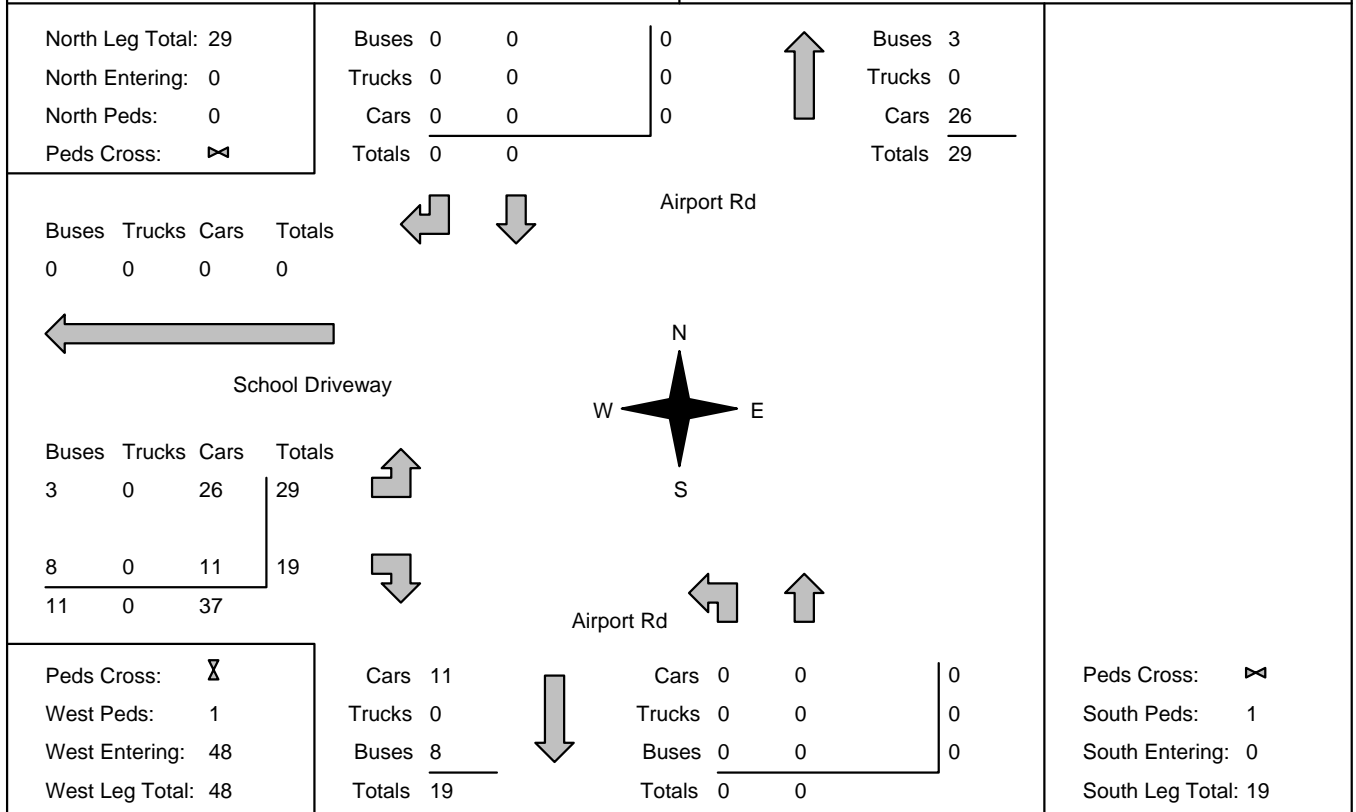
<b>** Non-Signalized Intersection **</b>	<b>Major Road:</b> Airport Rd runs N/S
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## Comments

# Accu-Traffic Inc.

<b>Afternoon Peak Diagram</b>	<b>Specified Period</b> <b>From:</b> 15:00:00 <b>To:</b> 17:00:00	<b>One Hour Peak</b> <b>From:</b> 15:15:00 <b>To:</b> 16:15:00
<b>Municipality:</b> Caledon <b>Site #:</b> 1704300001 <b>Intersection:</b> Airport Rd & School Driveway <b>TFR File #:</b> 1 <b>Count date:</b> 2-Mar-17	<b>Weather conditions:</b>  <b>Person counted:</b> <b>Person prepared:</b> <b>Person checked:</b>	
<b>** Non-Signalized Intersection **</b>	<b>Major Road:</b> Airport Rd runs N/S	



## Comments

# Accu-Traffic Inc.

## Total Count Diagram

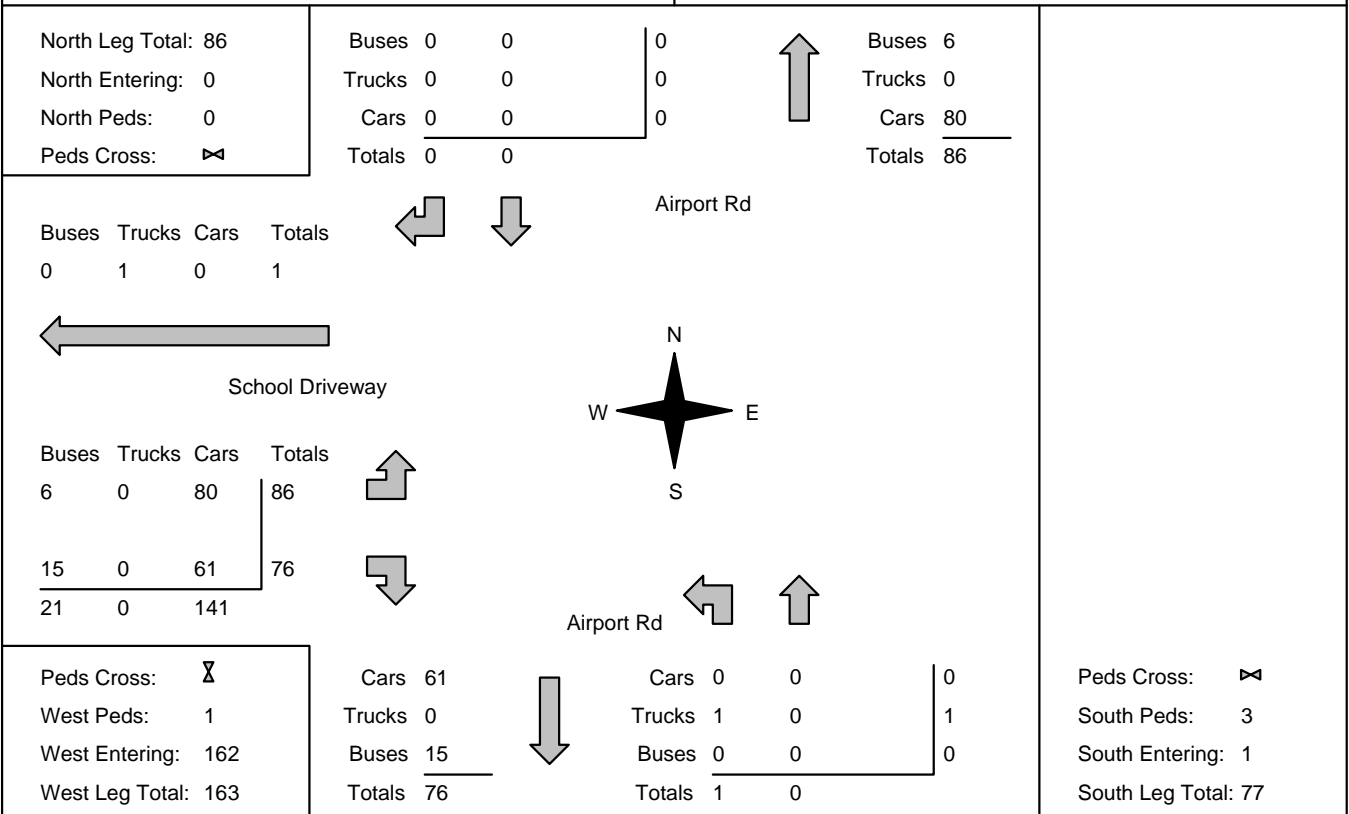
**Municipality:** Caledon  
**Site #:** 1704300001  
**Intersection:** Airport Rd & School Driveway  
**TFR File #:** 1  
**Count date:** 2-Mar-17

**Weather conditions:**

**Person counted:**  
**Person prepared:**  
**Person checked:**

**\*\* Non-Signalized Intersection \*\***

**Major Road:** Airport Rd runs N/S



### Comments





**Accu-Traffic Inc.**  
Traffic Monitoring & Data Analysis

# Accu-Traffic Inc.

## Traffic Count Summary

Intersection: Airport Rd & School Driveway      Count Date: 2-Mar-17      Municipality: Caledon

<b>North Approach Totals</b>						North/South Total Approaches	<b>South Approach Totals</b>					
Hour Ending	Includes Cars, Trucks, & Buses				Total Peds		Hour Ending	Includes Cars, Trucks, & Buses				Total Peds
	Left	Thru	Right	Grand Total				Left	Thru	Right	Grand Total	
8:00:00	0	0	0	0	0	0	8:00:00	0	0	0	0	0
9:00:00	0	0	0	0	0	1	9:00:00	1	0	0	1	2
10:00:00	0	0	0	0	0	0	10:00:00	0	0	0	0	0
15:00:00	0	0	0	0	0	0	15:00:00	0	0	0	0	0
16:00:00	0	0	0	0	0	0	16:00:00	0	0	0	0	0
17:00:00	0	0	0	0	0	0	17:00:00	0	0	0	0	1
<b>Totals:</b>	0	0	0	0	0	1	<b>S Totals:</b>	1	0	0	1	3
<b>East Approach Totals</b>						East/West Total Approaches	<b>West Approach Totals</b>					
Hour Ending	Includes Cars, Trucks, & Buses				Total Peds		Hour Ending	Includes Cars, Trucks, & Buses				Total Peds
	Left	Thru	Right	Grand Total				Left	Thru	Right	Grand Total	
8:00:00	0	0	0	0	0	0	8:00:00	0	0	0	0	0
9:00:00	0	0	0	0	0	19	9:00:00	9	0	10	19	0
10:00:00	0	0	0	0	0	87	10:00:00	43	0	44	87	0
15:00:00	0	0	0	0	0	0	15:00:00	0	0	0	0	0
16:00:00	0	0	0	0	0	45	16:00:00	26	0	19	45	0
17:00:00	0	0	0	0	1	11	17:00:00	8	0	3	11	1
<b>Totals:</b>	0	0	0	0	1	162	<b>W Totals:</b>	86	0	76	162	1
<b>Calculated Values for Traffic Crossing Major Street</b>												
Hours Ending:	8:00	9:00	10:00	15:00			16:00	17:00	0:00	0:00		
Crossing Values:	0	11	43	0			26	9	0	0		



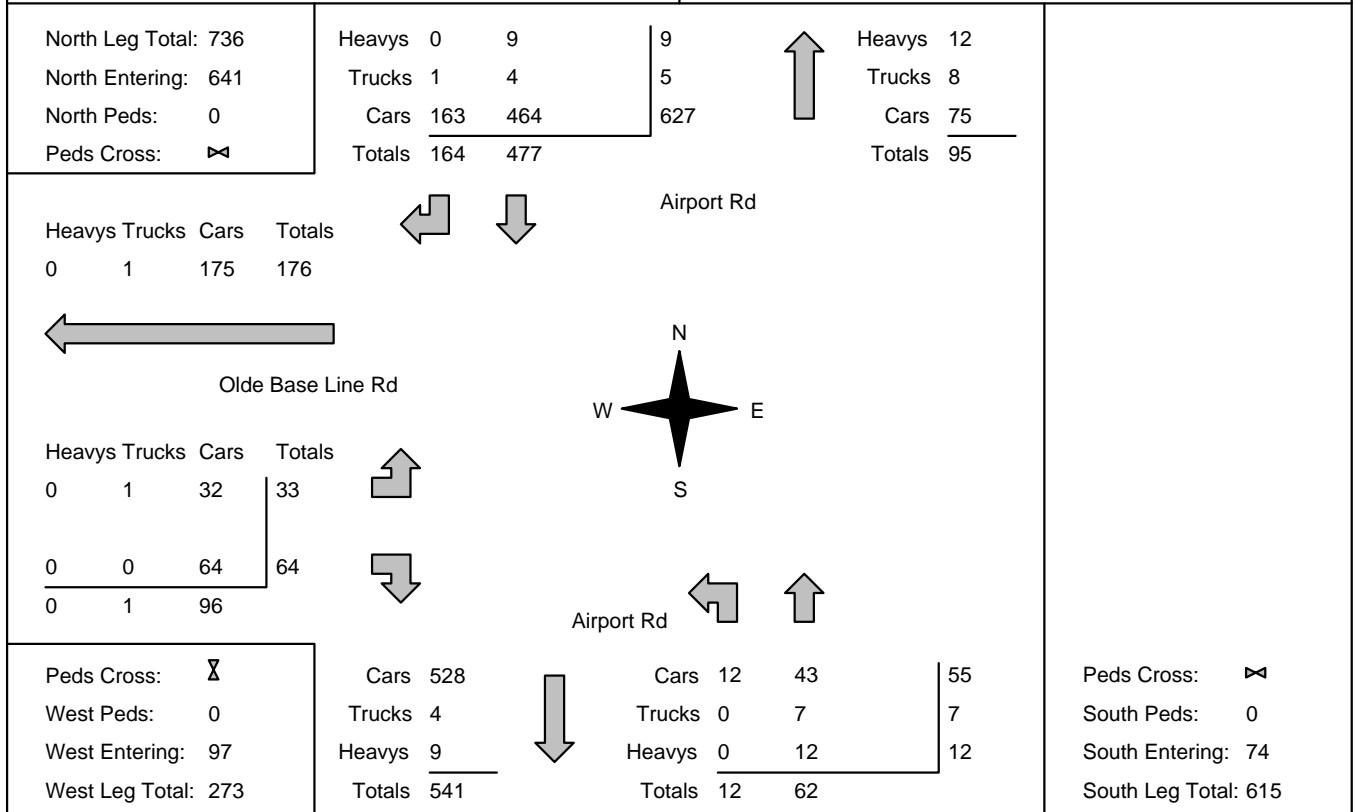






# Accu-Traffic Inc.

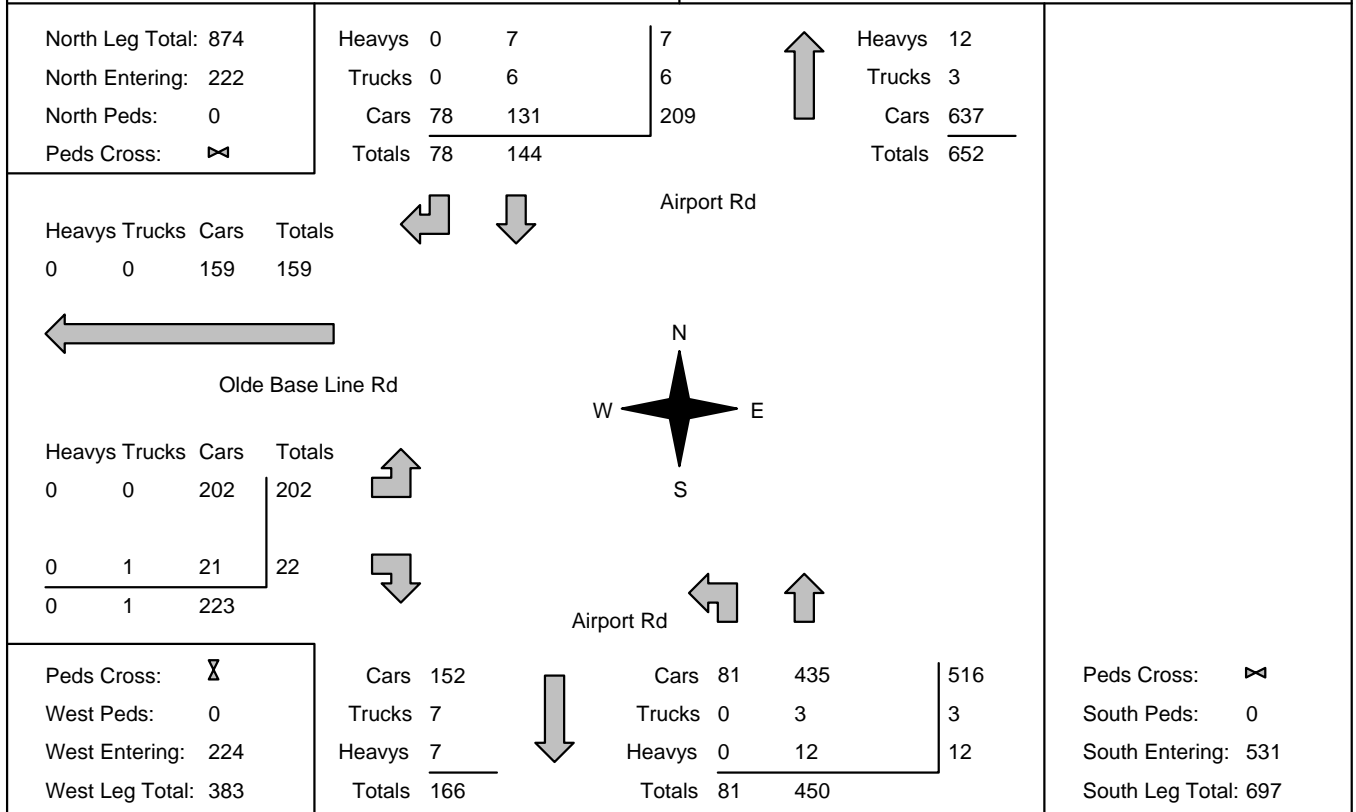
<b>Morning Peak Diagram</b>	<b>Specified Period</b> <b>From:</b> 6:00:00 <b>To:</b> 10:00:00	<b>One Hour Peak</b> <b>From:</b> 7:00:00 <b>To:</b> 8:00:00
<b>Municipality:</b> Caledon <b>Site #:</b> 1701000001 <b>Intersection:</b> Airport Rd & Olde Base Line Rd <b>TFR File #:</b> 1 <b>Count date:</b> 17-Jan-17	<b>Weather conditions:</b>  <b>Person counted:</b> <b>Person prepared:</b> <b>Person checked:</b>	
<b>** Signalized Intersection **</b>		<b>Major Road:</b> Airport Rd runs N/S



## Comments

# Accu-Traffic Inc.

<b>Afternoon Peak Diagram</b>	<b>Specified Period</b> <b>From:</b> 15:00:00 <b>To:</b> 19:00:00	<b>One Hour Peak</b> <b>From:</b> 16:30:00 <b>To:</b> 17:30:00
<b>Municipality:</b> Caledon <b>Site #:</b> 1701000001 <b>Intersection:</b> Airport Rd & Olde Base Line Rd <b>TFR File #:</b> 1 <b>Count date:</b> 17-Jan-17	<b>Weather conditions:</b>  <b>Person counted:</b> <b>Person prepared:</b> <b>Person checked:</b>	
<b>** Signalized Intersection **</b>		<b>Major Road:</b> Airport Rd runs N/S



## Comments

# Accu-Traffic Inc.

## Total Count Diagram

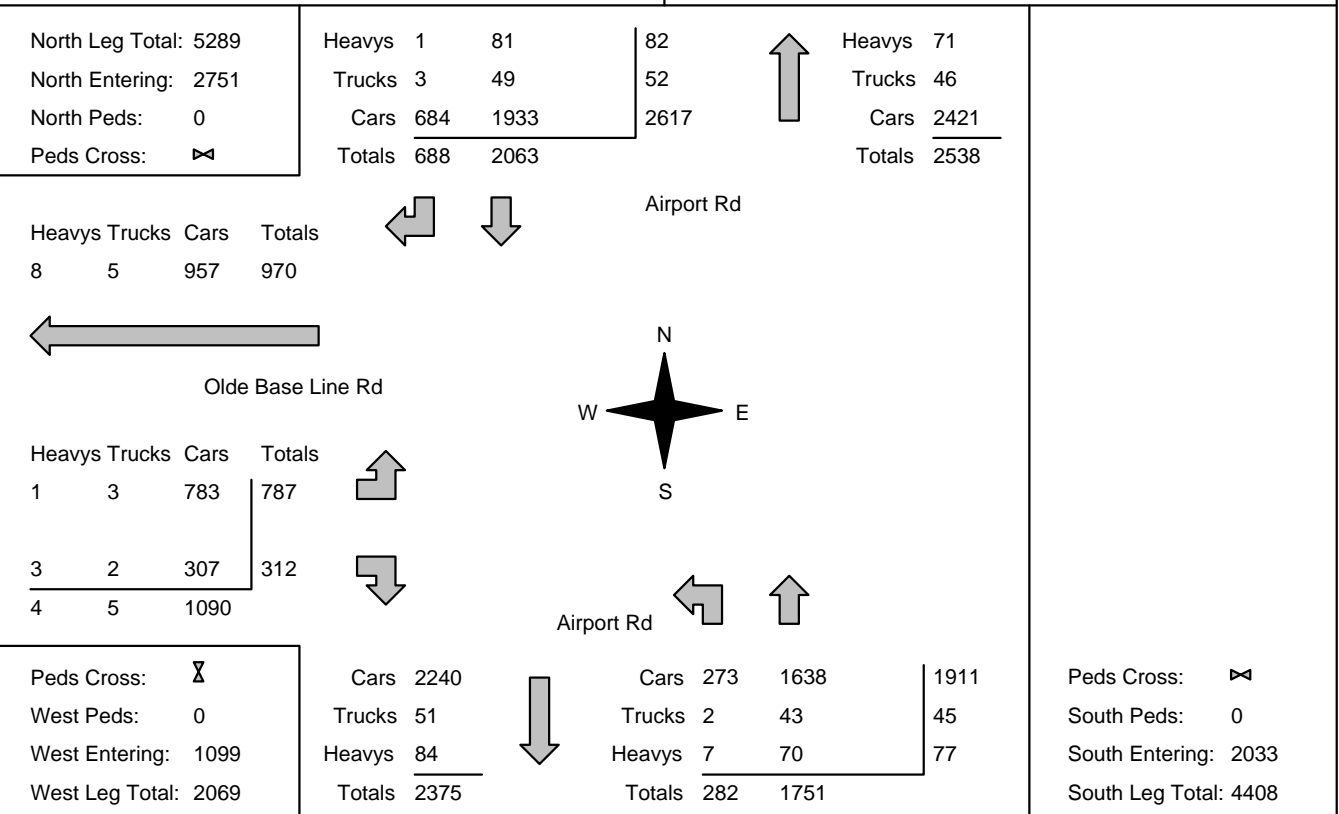
**Municipality:** Caledon  
**Site #:** 1701000001  
**Intersection:** Airport Rd & Olde Base Line Rd  
**TFR File #:** 1  
**Count date:** 17-Jan-17

**Weather conditions:**

**Person counted:**  
**Person prepared:**  
**Person checked:**

**\*\* Signalized Intersection \*\***

**Major Road:** Airport Rd runs N/S



### Comments





**Accu-Traffic Inc.**  
Traffic Monitoring & Data Analysis

# Accu-Traffic Inc.

## Traffic Count Summary

Intersection: Airport Rd & Olde Base Line Rd      Count Date: 17-Jan-17      Municipality: Caledon

North Approach Totals						North/South Total Approaches	South Approach Totals					
Hour Ending	Includes Cars, Trucks, & Heavys				Total Peds		Hour Ending	Includes Cars, Trucks, & Heavys				Total Peds
	Left	Thru	Right	Grand Total				Left	Thru	Right	Grand Total	
6:00:00	0	0	0	0	0	0	6:00:00	0	0	0	0	0
7:00:00	0	409	109	518	0	566	7:00:00	2	46	0	48	0
8:00:00	0	477	164	641	0	715	8:00:00	12	62	0	74	0
9:00:00	0	352	82	434	0	565	9:00:00	9	122	0	131	0
10:00:00	0	265	65	330	0	452	10:00:00	19	103	0	122	0
15:00:00	0	0	0	0	0	0	15:00:00	0	0	0	0	0
16:00:00	0	132	61	193	0	537	16:00:00	41	303	0	344	0
17:00:00	0	170	86	256	0	739	17:00:00	85	398	0	483	0
18:00:00	0	141	67	208	0	683	18:00:00	66	409	0	475	0
19:00:00	0	117	54	171	0	526	19:00:00	48	307	0	355	0
<b>Totals:</b>	0	2063	688	2751	0	4783	<b>S Totals:</b>	282	1750	0	2032	0
East Approach Totals						East/West Total Approaches	West Approach Totals					
Hour Ending	Includes Cars, Trucks, & Heavys				Total Peds		Hour Ending	Includes Cars, Trucks, & Heavys				Total Peds
	Left	Thru	Right	Grand Total				Left	Thru	Right	Grand Total	
6:00:00	0	0	0	0	0	0	6:00:00	0	0	0	0	0
7:00:00	0	0	0	0	0	88	7:00:00	20	0	68	88	0
8:00:00	0	0	0	0	0	97	8:00:00	33	0	64	97	0
9:00:00	0	0	0	0	0	144	9:00:00	80	0	64	144	0
10:00:00	0	0	0	0	0	78	10:00:00	46	0	32	78	0
15:00:00	0	0	0	0	0	0	15:00:00	0	0	0	0	0
16:00:00	0	0	0	0	0	139	16:00:00	116	0	23	139	0
17:00:00	0	0	0	0	0	198	17:00:00	180	0	18	198	0
18:00:00	0	0	0	0	0	208	18:00:00	186	0	22	208	0
19:00:00	0	0	0	0	0	147	19:00:00	126	0	21	147	0
<b>Totals:</b>	0	0	0	0	0	1099	<b>W Totals:</b>	787	0	312	1099	0
<b>Calculated Values for Traffic Crossing Major Street</b>												
Hours Ending:	7:00	8:00	9:00	10:00			16:00	17:00	18:00	19:00		
Crossing Values:	20	33	80	46			116	180	186	126		










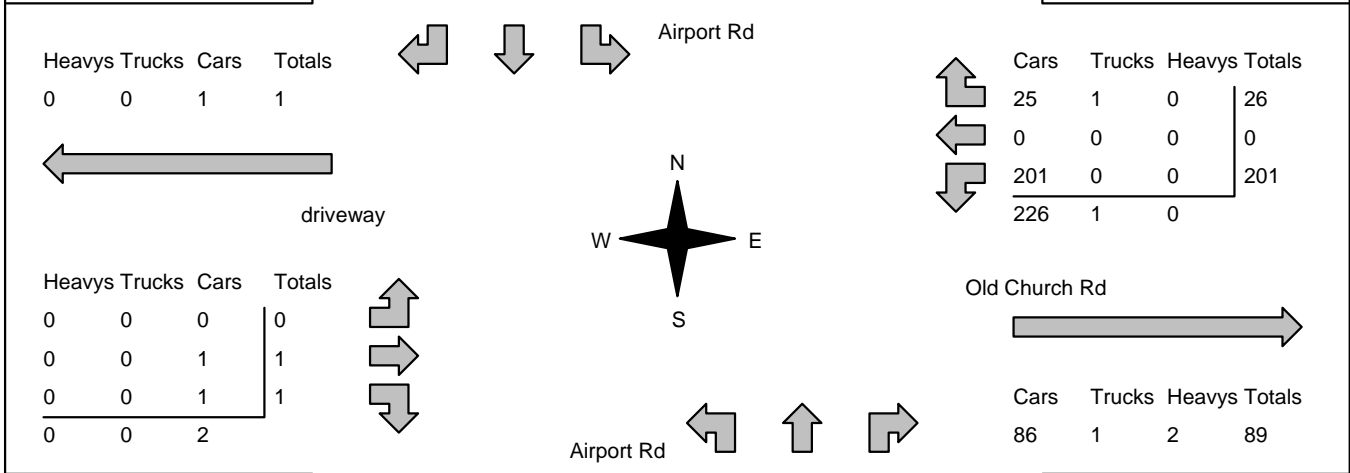
# Accu-Traffic Inc.


<b>Morning Peak Diagram</b>	<b>Specified Period</b> <b>From:</b> 6:00:00 <b>To:</b> 10:00:00	<b>One Hour Peak</b> <b>From:</b> 7:00:00 <b>To:</b> 8:00:00
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<b>Municipality:</b> Caledon <b>Site #:</b> 1701000002 <b>Intersection:</b> Airport Rd & Old Church Rd <b>TFR File #:</b> 1 <b>Count date:</b> 17-Jan-17	<b>Weather conditions:</b>  <b>Person counted:</b> <b>Person prepared:</b> <b>Person checked:</b>
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<b>** Signalized Intersection **</b>	<b>Major Road:</b> Airport Rd runs N/S
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North Leg Total: 504 North Entering: 421 North Peds: 0 Peds Cross: ☒	<table style="border-collapse: collapse;"> <tr><td>Heavys</td><td>0</td><td>8</td><td>0</td><td style="border-left: 1px solid black;">8</td></tr> <tr><td>Trucks</td><td>0</td><td>3</td><td>0</td><td style="border-left: 1px solid black;">3</td></tr> <tr><td>Cars</td><td>1</td><td>367</td><td>42</td><td style="border-left: 1px solid black;">410</td></tr> <tr><td>Totals</td><td>1</td><td>378</td><td>42</td><td style="border-left: 1px solid black;"></td></tr> </table>	Heavys	0	8	0	8	Trucks	0	3	0	3	Cars	1	367	42	410	Totals	1	378	42			<table style="border-collapse: collapse;"> <tr><td>Heavys</td><td>7</td></tr> <tr><td>Trucks</td><td>4</td></tr> <tr><td>Cars</td><td>72</td></tr> <tr><td>Totals</td><td>83</td></tr> </table>	Heavys	7	Trucks	4	Cars	72	Totals	83	East Leg Total: 316 East Entering: 227 East Peds: 0 Peds Cross: ☒
Heavys	0	8	0	8																												
Trucks	0	3	0	3																												
Cars	1	367	42	410																												
Totals	1	378	42																													
Heavys	7																															
Trucks	4																															
Cars	72																															
Totals	83																															



Peds Cross: ☒ West Peds: 0 West Entering: 2 West Leg Total: 3	<table style="border-collapse: collapse;"> <tr><td>Cars</td><td>569</td></tr> <tr><td>Trucks</td><td>3</td></tr> <tr><td>Heavys</td><td>8</td></tr> <tr><td>Totals</td><td>580</td></tr> </table>	Cars	569	Trucks	3	Heavys	8	Totals	580		<table style="border-collapse: collapse;"> <tr><td>Cars</td><td>0</td><td>47</td><td>43</td><td style="border-left: 1px solid black;">90</td></tr> <tr><td>Trucks</td><td>0</td><td>3</td><td>1</td><td style="border-left: 1px solid black;">4</td></tr> <tr><td>Heavys</td><td>0</td><td>7</td><td>2</td><td style="border-left: 1px solid black;">9</td></tr> <tr><td>Totals</td><td>0</td><td>57</td><td>46</td><td style="border-left: 1px solid black;"></td></tr> </table>	Cars	0	47	43	90	Trucks	0	3	1	4	Heavys	0	7	2	9	Totals	0	57	46		Peds Cross: ☒ South Peds: 0 South Entering: 103 South Leg Total: 683
Cars	569																															
Trucks	3																															
Heavys	8																															
Totals	580																															
Cars	0	47	43	90																												
Trucks	0	3	1	4																												
Heavys	0	7	2	9																												
Totals	0	57	46																													


**Comments**

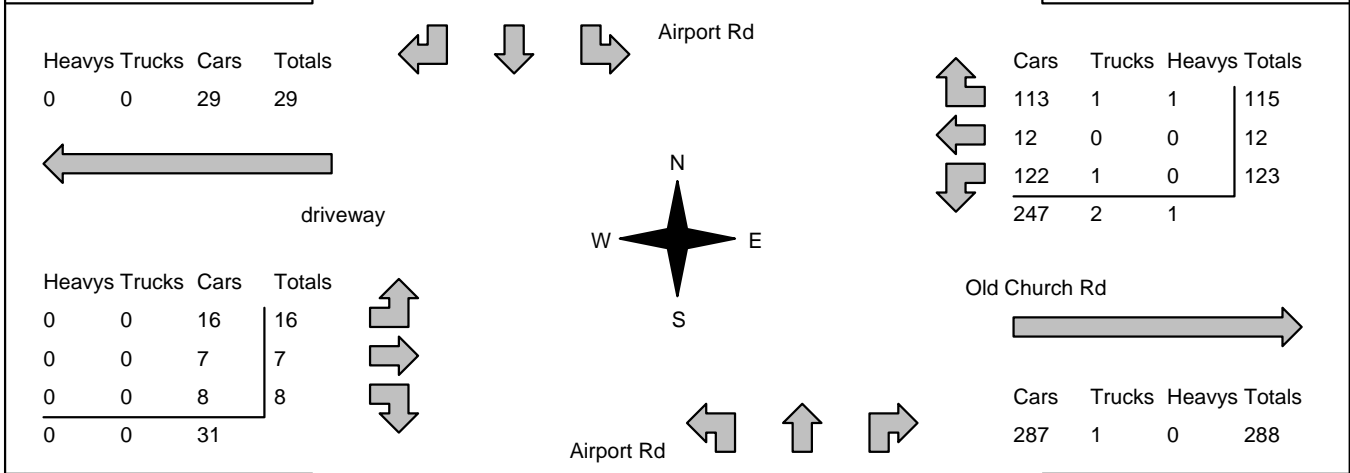
# Accu-Traffic Inc.


<b>Afternoon Peak Diagram</b>	<b>Specified Period</b> <b>From:</b> 15:00:00 <b>To:</b> 19:00:00	<b>One Hour Peak</b> <b>From:</b> 16:30:00 <b>To:</b> 17:30:00
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<b>Municipality:</b> Caledon <b>Site #:</b> 1701000002 <b>Intersection:</b> Airport Rd & Old Church Rd <b>TFR File #:</b> 1 <b>Count date:</b> 17-Jan-17	<b>Weather conditions:</b>  <b>Person counted:</b> <b>Person prepared:</b> <b>Person checked:</b>
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<b>** Signalized Intersection **</b>	<b>Major Road:</b> Airport Rd runs N/S
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North Leg Total: 642 North Entering: 157 North Peds: 1 Peds Cross: ☒	<table style="border-collapse: collapse;"> <tr><td>Heavys</td><td>0</td><td>8</td><td>0</td><td style="border-left: 1px solid black;">8</td></tr> <tr><td>Trucks</td><td>0</td><td>3</td><td>0</td><td style="border-left: 1px solid black;">3</td></tr> <tr><td>Cars</td><td>6</td><td>106</td><td>34</td><td style="border-left: 1px solid black;">146</td></tr> <tr><td><b>Totals</b></td><td><b>6</b></td><td><b>117</b></td><td><b>34</b></td><td style="border-left: 1px solid black;"></td></tr> </table>	Heavys	0	8	0	8	Trucks	0	3	0	3	Cars	6	106	34	146	<b>Totals</b>	<b>6</b>	<b>117</b>	<b>34</b>			<table style="border-collapse: collapse;"> <tr><td>Heavys</td><td>10</td></tr> <tr><td>Trucks</td><td>5</td></tr> <tr><td>Cars</td><td>470</td></tr> <tr><td><b>Totals</b></td><td><b>485</b></td></tr> </table>	Heavys	10	Trucks	5	Cars	470	<b>Totals</b>	<b>485</b>	East Leg Total: 538 East Entering: 250 East Peds: 1 Peds Cross: ☒
Heavys	0	8	0	8																												
Trucks	0	3	0	3																												
Cars	6	106	34	146																												
<b>Totals</b>	<b>6</b>	<b>117</b>	<b>34</b>																													
Heavys	10																															
Trucks	5																															
Cars	470																															
<b>Totals</b>	<b>485</b>																															



Peds Cross: ☒ West Peds: 0 West Entering: 31 West Leg Total: 60	<table style="border-collapse: collapse;"> <tr><td>Cars</td><td>236</td></tr> <tr><td>Trucks</td><td>4</td></tr> <tr><td>Heavys</td><td>8</td></tr> <tr><td><b>Totals</b></td><td><b>248</b></td></tr> </table>	Cars	236	Trucks	4	Heavys	8	<b>Totals</b>	<b>248</b>		<table style="border-collapse: collapse;"> <tr><td>Cars</td><td>11</td><td>341</td><td>246</td><td style="border-left: 1px solid black;">598</td></tr> <tr><td>Trucks</td><td>0</td><td>4</td><td>1</td><td style="border-left: 1px solid black;">5</td></tr> <tr><td>Heavys</td><td>0</td><td>9</td><td>0</td><td style="border-left: 1px solid black;">9</td></tr> <tr><td><b>Totals</b></td><td><b>11</b></td><td><b>354</b></td><td><b>247</b></td><td style="border-left: 1px solid black;"></td></tr> </table>	Cars	11	341	246	598	Trucks	0	4	1	5	Heavys	0	9	0	9	<b>Totals</b>	<b>11</b>	<b>354</b>	<b>247</b>		Peds Cross: ☒ South Peds: 0 South Entering: 612 South Leg Total: 860
Cars	236																															
Trucks	4																															
Heavys	8																															
<b>Totals</b>	<b>248</b>																															
Cars	11	341	246	598																												
Trucks	0	4	1	5																												
Heavys	0	9	0	9																												
<b>Totals</b>	<b>11</b>	<b>354</b>	<b>247</b>																													

## Comments

# Accu-Traffic Inc.

## Total Count Diagram

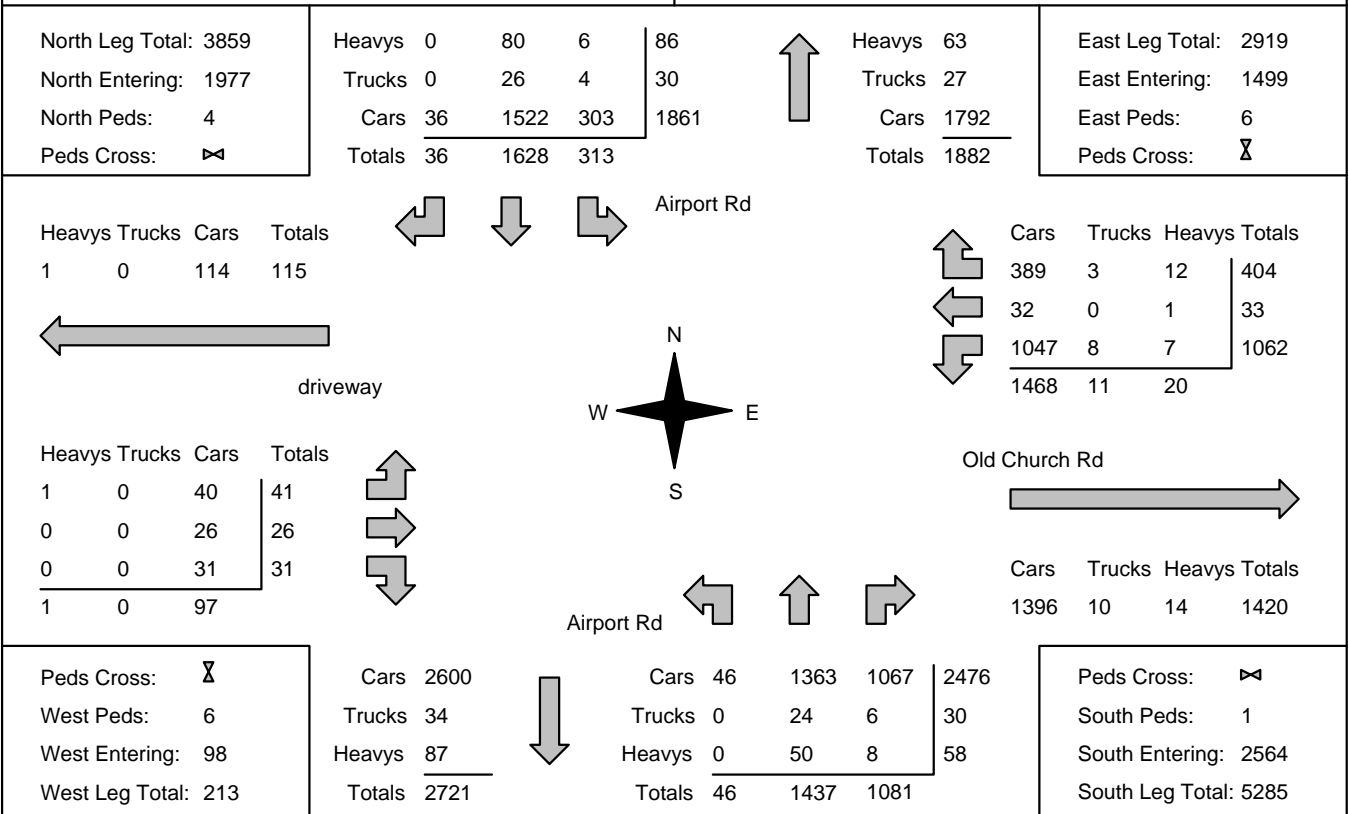
**Municipality:** Caledon  
**Site #:** 1701000002  
**Intersection:** Airport Rd & Old Church Rd  
**TFR File #:** 1  
**Count date:** 17-Jan-17

**Weather conditions:**

**Person counted:**  
**Person prepared:**  
**Person checked:**

**\*\* Signalized Intersection \*\***

**Major Road:** Airport Rd runs N/S



### Comments





**Accu-Traffic Inc.**  
Traffic Monitoring & Data Analysis

# Accu-Traffic Inc.

## Traffic Count Summary

Intersection: Airport Rd & Old Church Rd      Count Date: 17-Jan-17      Municipality: Caledon

North Approach Totals						North/South Total Approaches	South Approach Totals					
Hour Ending	Includes Cars, Trucks, & Heavys				Total Peds		Hour Ending	Includes Cars, Trucks, & Heavys				Total Peds
	Left	Thru	Right	Grand Total				Left	Thru	Right	Grand Total	
6:00:00	0	0	0	0	0	0	6:00:00	0	0	0	0	0
7:00:00	26	334	1	361	0	427	7:00:00	0	34	32	66	0
8:00:00	42	378	1	421	0	524	8:00:00	0	57	46	103	0
9:00:00	71	244	1	316	0	524	9:00:00	0	90	118	208	0
10:00:00	49	211	2	262	0	429	10:00:00	1	83	83	167	0
15:00:00	0	0	0	0	0	0	15:00:00	0	0	0	0	0
16:00:00	34	120	7	161	3	584	16:00:00	7	275	141	423	0
17:00:00	29	126	11	166	1	736	17:00:00	8	347	215	570	0
18:00:00	30	109	6	145	0	737	18:00:00	18	331	243	592	0
19:00:00	32	106	7	145	0	580	19:00:00	12	220	203	435	1
<b>Totals:</b>	313	1628	36	1977	4	4541	<b>S Totals:</b>	46	1437	1081	2564	1
East Approach Totals						East/West Total Approaches	West Approach Totals					
Hour Ending	Includes Cars, Trucks, & Heavys				Total Peds		Hour Ending	Includes Cars, Trucks, & Heavys				Total Peds
	Left	Thru	Right	Grand Total				Left	Thru	Right	Grand Total	
6:00:00	0	0	0	0	0	0	6:00:00	0	0	0	0	0
7:00:00	122	0	21	143	0	144	7:00:00	0	1	0	1	0
8:00:00	201	0	26	227	0	229	8:00:00	0	1	1	2	0
9:00:00	187	0	15	202	0	207	9:00:00	1	3	1	5	0
10:00:00	121	3	39	163	2	166	10:00:00	1	1	1	3	0
15:00:00	0	0	0	0	0	0	15:00:00	0	0	0	0	0
16:00:00	99	4	60	163	0	175	16:00:00	4	1	7	12	0
17:00:00	136	13	102	251	3	274	17:00:00	11	5	7	23	4
18:00:00	113	9	86	208	0	243	18:00:00	18	9	8	35	2
19:00:00	83	4	55	142	1	159	19:00:00	6	5	6	17	0
<b>Totals:</b>	1062	33	404	1499	6	1597	<b>W Totals:</b>	41	26	31	98	6
Calculated Values for Traffic Crossing Major Street												
Hours Ending:	7:00	8:00	9:00	10:00			16:00	17:00	18:00	19:00		
Crossing Values:	123	202	191	125			110	161	140	95		





# Accu-Traffic Inc.

Count Date: 17-Jan-17    Site #: 1701000002

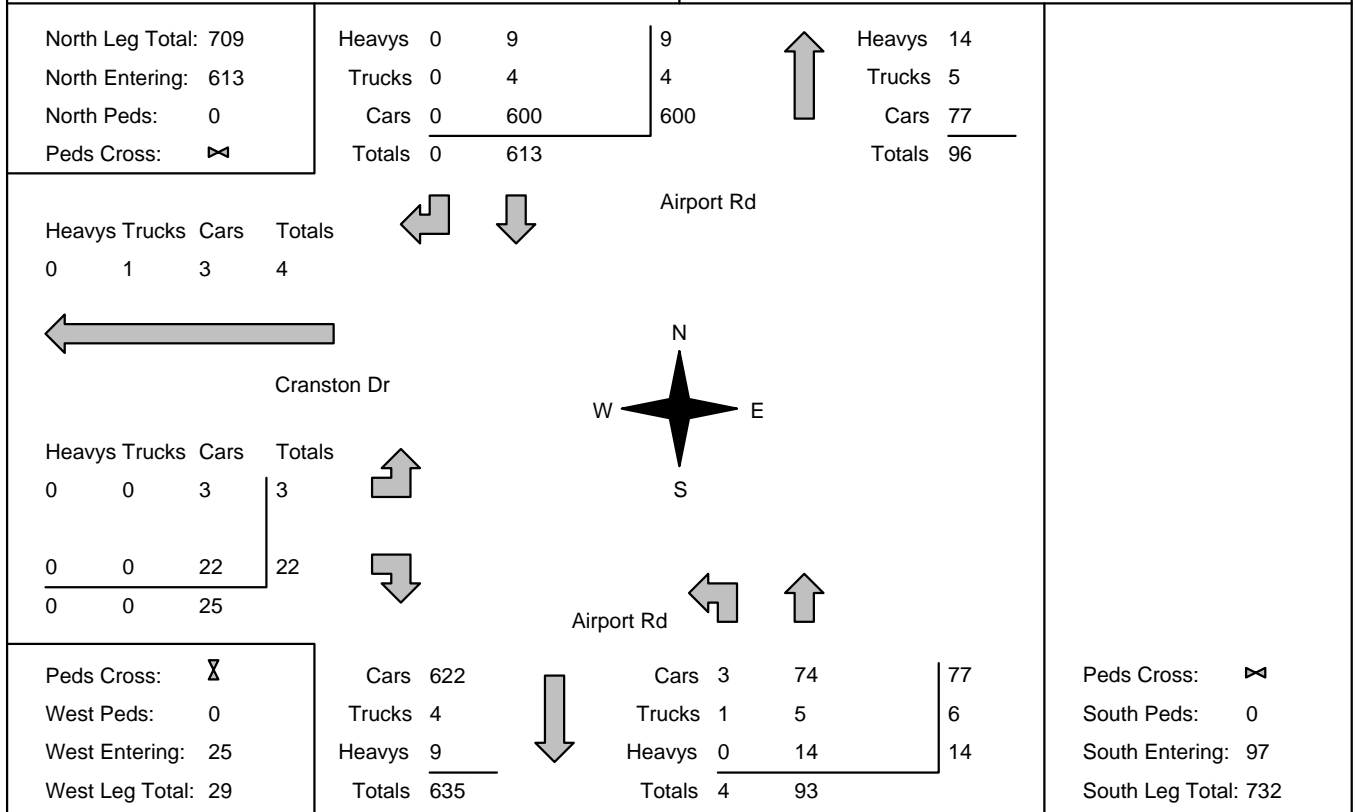
Interval Time	Passenger Cars - East Approach						Trucks - East Approach						Heavys - East Approach						Pedestrians	
	Left		Thru		Right		Left		Thru		Right		Left		Thru		Right		East Cross	
	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr
6:00:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6:15:00	20	20	0	0	3	3	0	0	0	0	0	0	2	2	0	0	3	3	0	0
6:30:00	48	28	0	0	6	3	0	0	0	0	0	0	2	0	0	0	3	0	0	0
6:45:00	84	36	0	0	7	1	0	0	0	0	0	0	2	0	0	0	3	0	0	0
7:00:00	120	36	0	0	16	9	0	0	0	0	0	0	2	0	0	0	5	2	0	0
7:15:00	161	41	0	0	21	5	0	0	0	0	0	0	2	0	0	0	5	0	0	0
7:30:00	216	55	0	0	26	5	0	0	0	0	0	0	2	0	0	0	5	0	0	0
7:45:00	270	54	0	0	33	7	0	0	0	0	0	0	2	0	0	0	5	0	0	0
8:00:00	321	51	0	0	41	8	0	0	0	0	1	1	2	0	0	0	5	0	0	0
8:15:00	362	41	0	0	45	4	1	1	0	0	1	0	4	2	0	0	6	1	0	0
8:30:00	415	53	0	0	46	1	1	0	0	0	1	0	5	1	0	0	6	0	0	0
8:45:00	458	43	0	0	50	4	2	1	0	0	1	0	5	0	0	0	7	1	0	0
9:00:00	502	44	0	0	54	4	3	1	0	0	1	0	5	0	0	0	7	0	0	0
9:15:00	531	29	0	0	59	5	3	0	0	0	1	0	5	0	0	0	7	0	0	0
9:30:00	570	39	0	0	79	20	3	0	0	0	1	0	5	0	0	0	7	0	0	0
9:45:00	600	30	0	0	84	5	3	0	0	0	1	0	6	1	0	0	9	2	1	1
10:00:00	622	22	2	2	91	7	3	0	0	0	1	0	6	0	1	1	9	0	2	1
10:15:00	622	0	2	0	91	0	3	0	0	0	1	0	6	0	1	0	9	0	2	0
15:00:00	622	0	2	0	91	0	3	0	0	0	1	0	6	0	1	0	9	0	2	0
15:15:00	637	15	3	1	100	9	3	0	0	0	1	0	6	0	1	0	9	0	2	0
15:30:00	657	20	4	1	115	15	4	1	0	0	1	0	6	0	1	0	9	0	2	0
15:45:00	682	25	5	1	129	14	6	2	0	0	1	0	7	1	1	0	9	0	2	0
16:00:00	717	35	6	1	150	21	6	0	0	0	2	1	7	0	1	0	9	0	2	0
16:15:00	747	30	7	1	165	15	6	0	0	0	2	0	7	0	1	0	9	0	2	0
16:30:00	781	34	11	4	188	23	7	1	0	0	2	0	7	0	1	0	10	1	4	2
16:45:00	817	36	18	7	222	34	7	0	0	0	2	0	7	0	1	0	10	0	5	1
17:00:00	851	34	19	1	250	28	8	1	0	0	2	0	7	0	1	0	11	1	5	0
17:15:00	877	26	20	1	277	27	8	0	0	0	2	0	7	0	1	0	11	0	5	0
17:30:00	903	26	23	3	301	24	8	0	0	0	3	1	7	0	1	0	11	0	5	0
17:45:00	930	27	26	3	314	13	8	0	0	0	3	0	7	0	1	0	11	0	5	0
18:00:00	964	34	28	2	335	21	8	0	0	0	3	0	7	0	1	0	11	0	5	0
18:15:00	992	28	28	0	352	17	8	0	0	0	3	0	7	0	1	0	12	1	6	1
18:30:00	1012	20	31	3	365	13	8	0	0	0	3	0	7	0	1	0	12	0	6	0
18:45:00	1026	14	31	0	377	12	8	0	0	0	3	0	7	0	1	0	12	0	6	0
19:00:00	1047	21	32	1	389	12	8	0	0	0	3	0	7	0	1	0	12	0	6	0
19:15:00	1047	0	32	0	389	0	8	0	0	0	3	0	7	0	1	0	12	0	6	0
19:15:15	1047	0	32	0	389	0	8	0	0	0	3	0	7	0	1	0	12	0	6	0





# Accu-Traffic Inc.

<b>Morning Peak Diagram</b>	<b>Specified Period</b> <b>From:</b> 6:00:00 <b>To:</b> 10:00:00	<b>One Hour Peak</b> <b>From:</b> 7:00:00 <b>To:</b> 8:00:00
<b>Municipality:</b> Caledon <b>Site #:</b> 1701000003 <b>Intersection:</b> Airport Rd & Cranston Dr <b>TFR File #:</b> 1 <b>Count date:</b> 17-Jan-17	<b>Weather conditions:</b>  <b>Person counted:</b> <b>Person prepared:</b> <b>Person checked:</b>	
<b>** Non-Signalized Intersection **</b>		<b>Major Road:</b> Airport Rd runs N/S



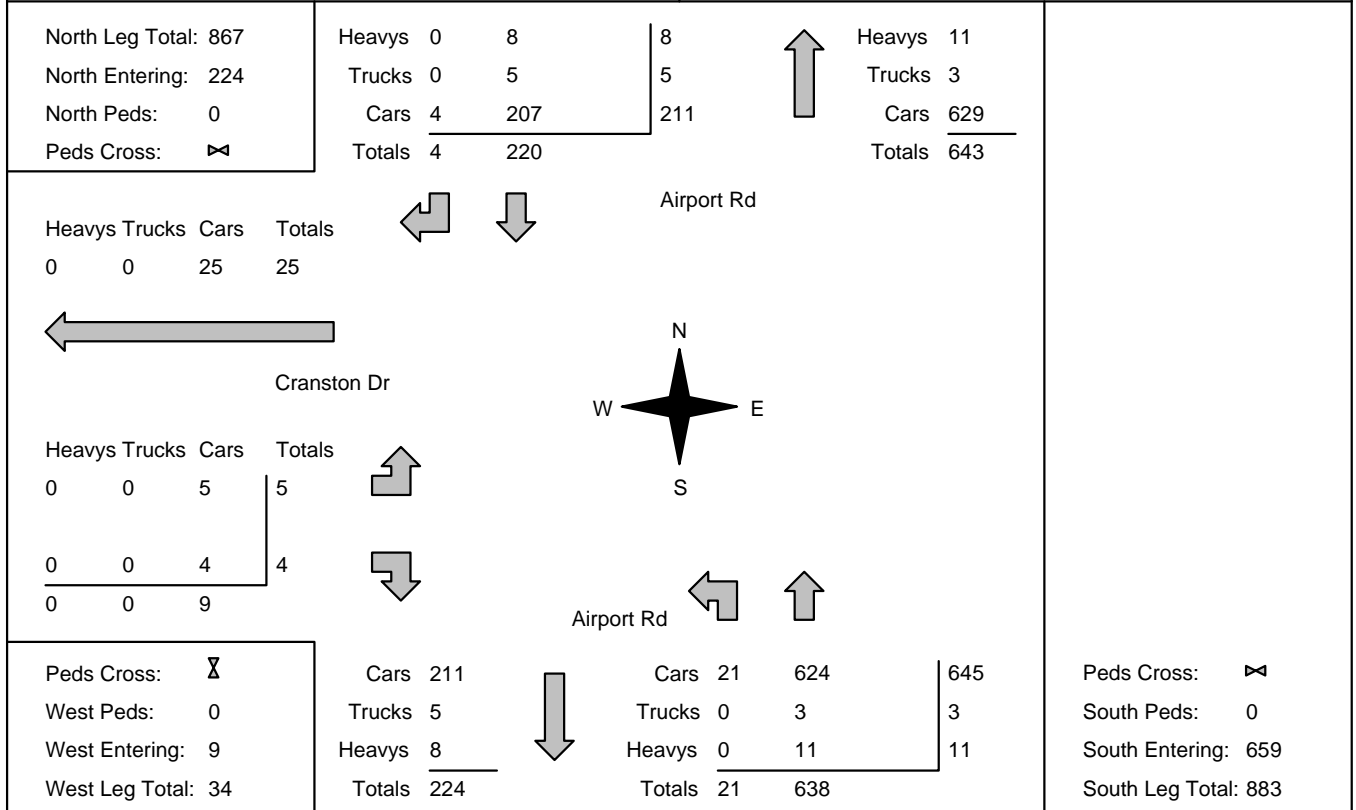
## Comments

# Accu-Traffic Inc.

<b>Afternoon Peak Diagram</b>	<b>Specified Period</b> <b>From:</b> 15:00:00 <b>To:</b> 19:00:00	<b>One Hour Peak</b> <b>From:</b> 16:30:00 <b>To:</b> 17:30:00
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<b>Municipality:</b> Caledon <b>Site #:</b> 1701000003 <b>Intersection:</b> Airport Rd & Cranston Dr <b>TFR File #:</b> 1 <b>Count date:</b> 17-Jan-17	<b>Weather conditions:</b>  <b>Person counted:</b> <b>Person prepared:</b> <b>Person checked:</b>
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<b>** Non-Signalized Intersection **</b>	<b>Major Road:</b> Airport Rd runs N/S
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## Comments

# Accu-Traffic Inc.

## Total Count Diagram

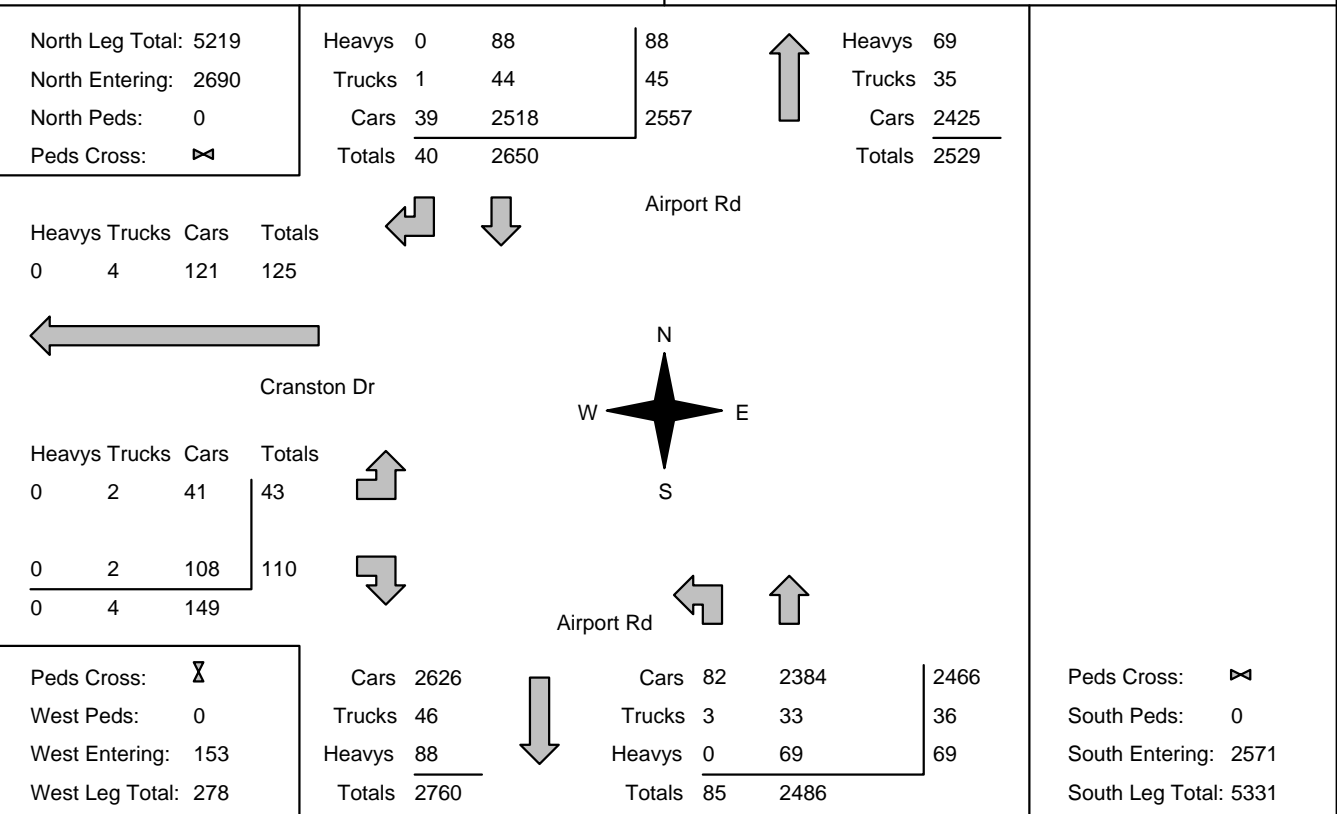
**Municipality:** Caledon  
**Site #:** 1701000003  
**Intersection:** Airport Rd & Cranston Dr  
**TFR File #:** 1  
**Count date:** 17-Jan-17

**Weather conditions:**

**Person counted:**  
**Person prepared:**  
**Person checked:**

**\*\* Non-Signalized Intersection \*\***

**Major Road:** Airport Rd runs N/S



### Comments





**Accu-Traffic Inc.**  
Traffic Monitoring & Data Analysis

# Accu-Traffic Inc.

## Traffic Count Summary

Intersection: Airport Rd & Cranston Dr      Count Date: 17-Jan-17      Municipality: Caledon

North Approach Totals						North/South Total Approaches	South Approach Totals								
Hour Ending	Includes Cars, Trucks, & Heavys				Total Peds		Hour Ending	Includes Cars, Trucks, & Heavys				Total Peds			
	Left	Thru	Right	Grand Total				Left	Thru	Right	Grand Total				
6:00:00	0	0	0	0	0	0	6:00:00	0	0	0	0	0			
7:00:00	0	494	1	495	0	563	7:00:00	3	65	0	68	0			
8:00:00	0	613	0	613	0	710	8:00:00	4	93	0	97	0			
9:00:00	0	431	4	435	0	635	9:00:00	7	193	0	200	0			
10:00:00	0	306	8	314	0	464	10:00:00	5	145	0	150	0			
15:00:00	0	0	0	0	0	0	15:00:00	0	0	0	0	0			
16:00:00	0	193	5	198	0	621	16:00:00	14	409	0	423	0			
17:00:00	0	252	4	256	0	843	17:00:00	11	576	0	587	0			
18:00:00	0	200	8	208	0	812	18:00:00	21	583	0	604	0			
19:00:00	0	161	10	171	0	612	19:00:00	20	421	0	441	0			
Totals:						5260	S Totals:						0		
0						2650	40	2690	0						
East Approach Totals						East/West Total Approaches	West Approach Totals								
Hour Ending	Includes Cars, Trucks, & Heavys				Total Peds		Hour Ending	Includes Cars, Trucks, & Heavys				Total Peds			
	Left	Thru	Right	Grand Total				Left	Thru	Right	Grand Total				
6:00:00	0	0	0	0	0	0	6:00:00	0	0	0	0	0			
7:00:00	0	0	0	0	0	25	7:00:00	1	0	24	25	0			
8:00:00	0	0	0	0	0	25	8:00:00	3	0	22	25	0			
9:00:00	0	0	0	0	0	21	9:00:00	11	0	10	21	0			
10:00:00	0	0	0	0	0	29	10:00:00	5	0	24	29	0			
15:00:00	0	0	0	0	0	0	15:00:00	0	0	0	0	0			
16:00:00	0	0	0	0	0	13	16:00:00	6	0	7	13	0			
17:00:00	0	0	0	0	0	13	17:00:00	5	0	8	13	0			
18:00:00	0	0	0	0	0	16	18:00:00	6	0	10	16	0			
19:00:00	0	0	0	0	0	11	19:00:00	6	0	5	11	0			
Totals:						153	W Totals:						0		
0						0	0	0	0						
<b>Calculated Values for Traffic Crossing Major Street</b>															
Hours Ending:	7:00	8:00	9:00	10:00		16:00	17:00	18:00	19:00						
Crossing Values:	1	3	11	5		6	5	6	6						







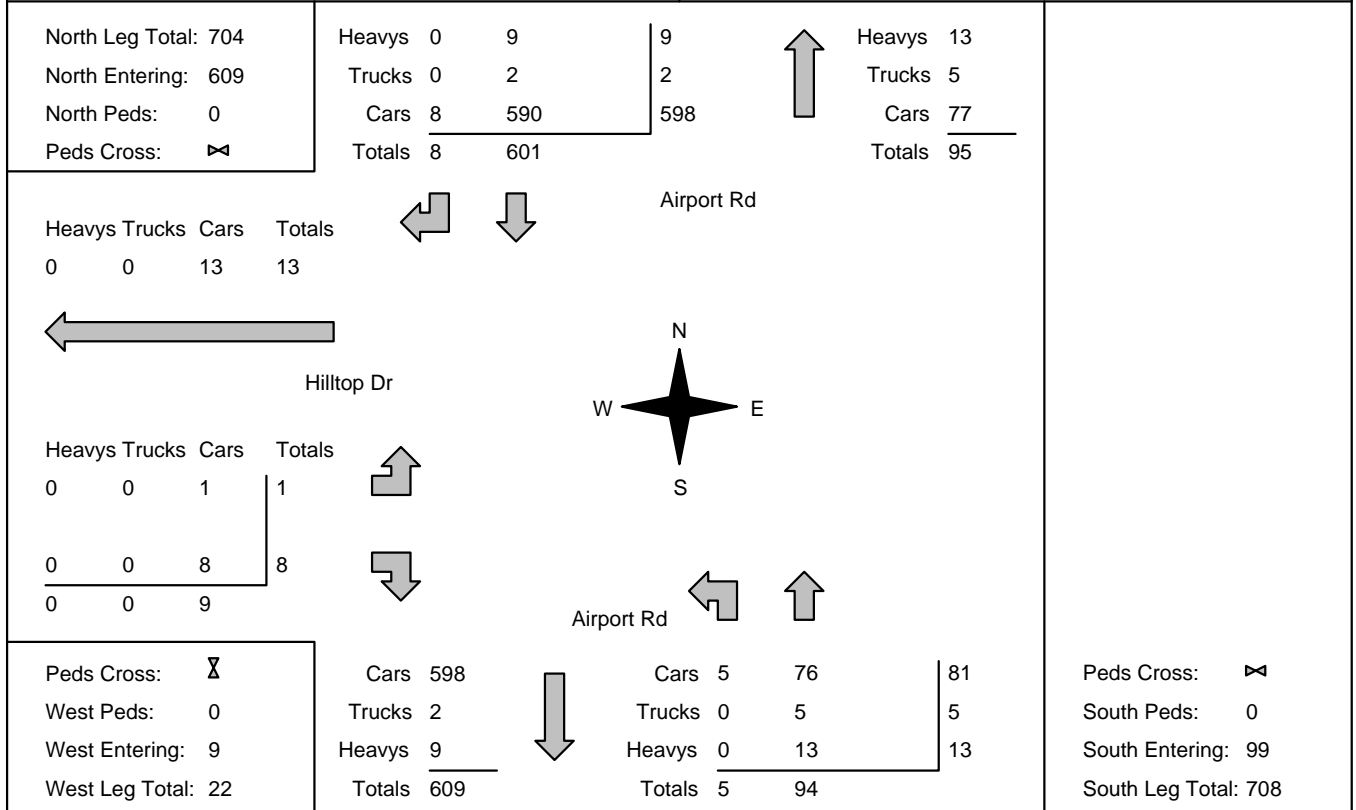


# Accu-Traffic Inc.

<b>Morning Peak Diagram</b>	<b>Specified Period</b> <b>From:</b> 6:00:00 <b>To:</b> 10:00:00	<b>One Hour Peak</b> <b>From:</b> 7:00:00 <b>To:</b> 8:00:00
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<b>Municipality:</b> Caledon <b>Site #:</b> 1701000004 <b>Intersection:</b> Airport Rd & Hilltop Dr <b>TFR File #:</b> 1 <b>Count date:</b> 17-Jan-17	<b>Weather conditions:</b>  <b>Person counted:</b> <b>Person prepared:</b> <b>Person checked:</b>
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<b>** Non-Signalized Intersection **</b>	<b>Major Road:</b> Airport Rd runs N/S
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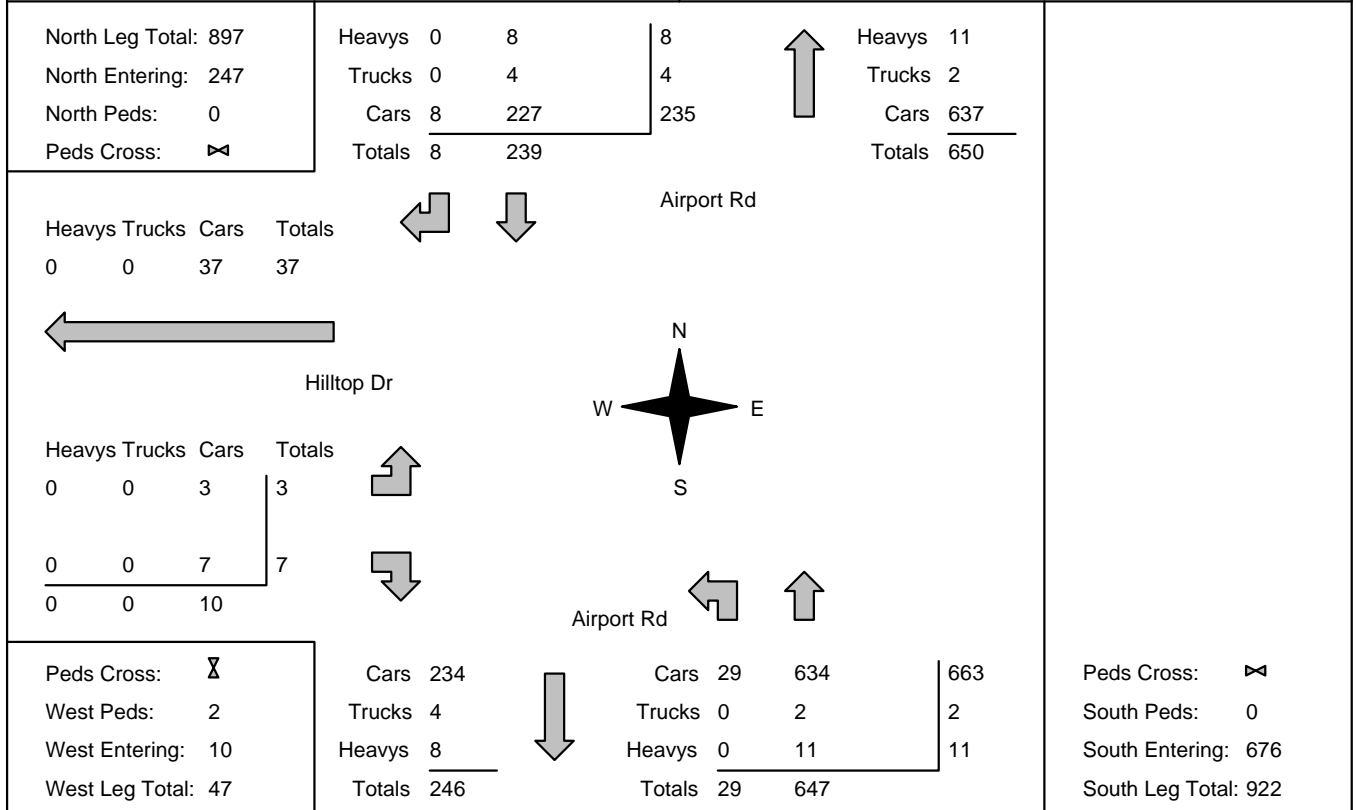
## Comments

# Accu-Traffic Inc.

<b>Afternoon Peak Diagram</b>	<b>Specified Period</b> <b>From:</b> 15:00:00 <b>To:</b> 19:00:00	<b>One Hour Peak</b> <b>From:</b> 16:30:00 <b>To:</b> 17:30:00
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<b>Municipality:</b> Caledon <b>Site #:</b> 1701000004 <b>Intersection:</b> Airport Rd & Hilltop Dr <b>TFR File #:</b> 1 <b>Count date:</b> 17-Jan-17	<b>Weather conditions:</b>  <b>Person counted:</b> <b>Person prepared:</b> <b>Person checked:</b>
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<b>** Non-Signalized Intersection **</b>	<b>Major Road:</b> Airport Rd runs N/S
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## Comments

# Accu-Traffic Inc.

## Total Count Diagram

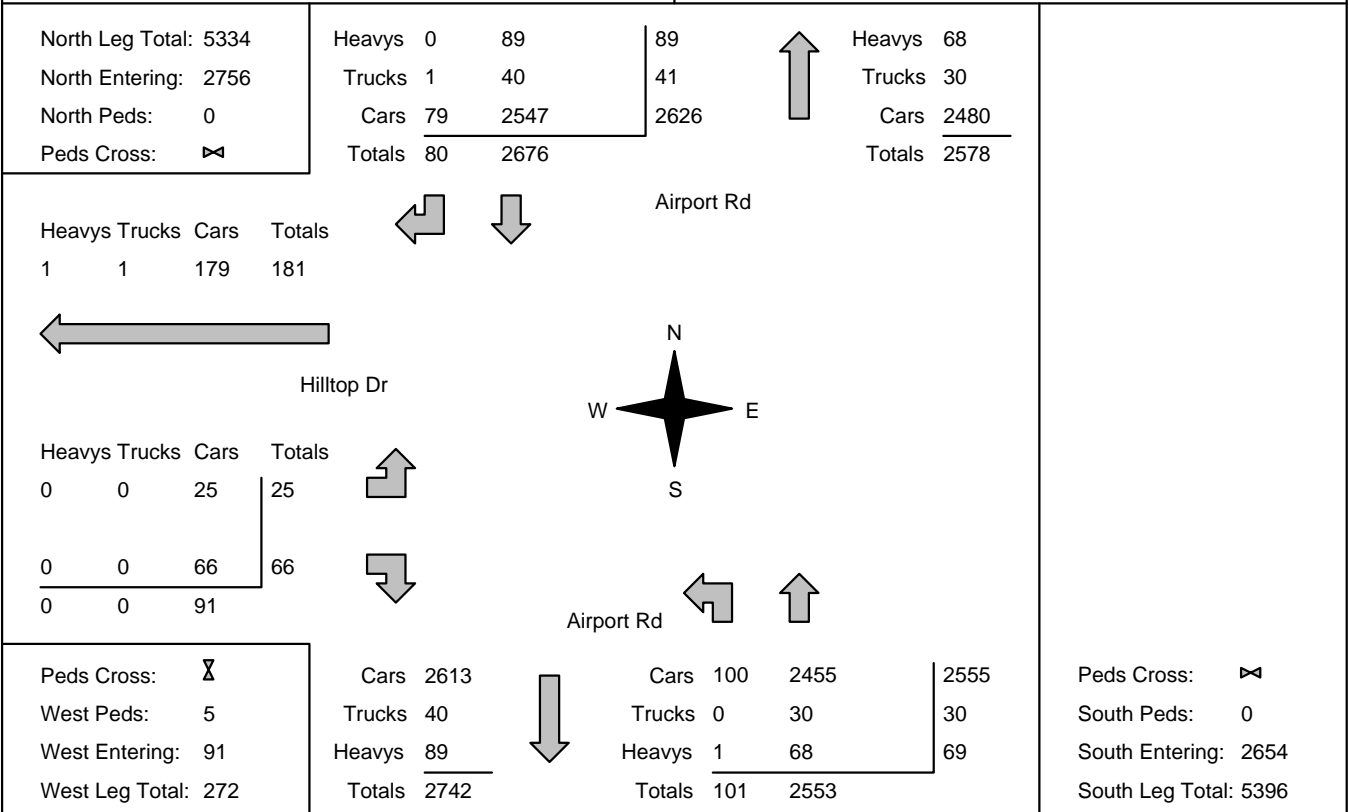
**Municipality:** Caledon  
**Site #:** 1701000004  
**Intersection:** Airport Rd & Hilltop Dr  
**TFR File #:** 1  
**Count date:** 17-Jan-17

**Weather conditions:**

**Person counted:**  
**Person prepared:**  
**Person checked:**

**\*\* Non-Signalized Intersection \*\***

**Major Road:** Airport Rd runs N/S









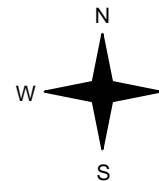






# Accu-Traffic Inc.

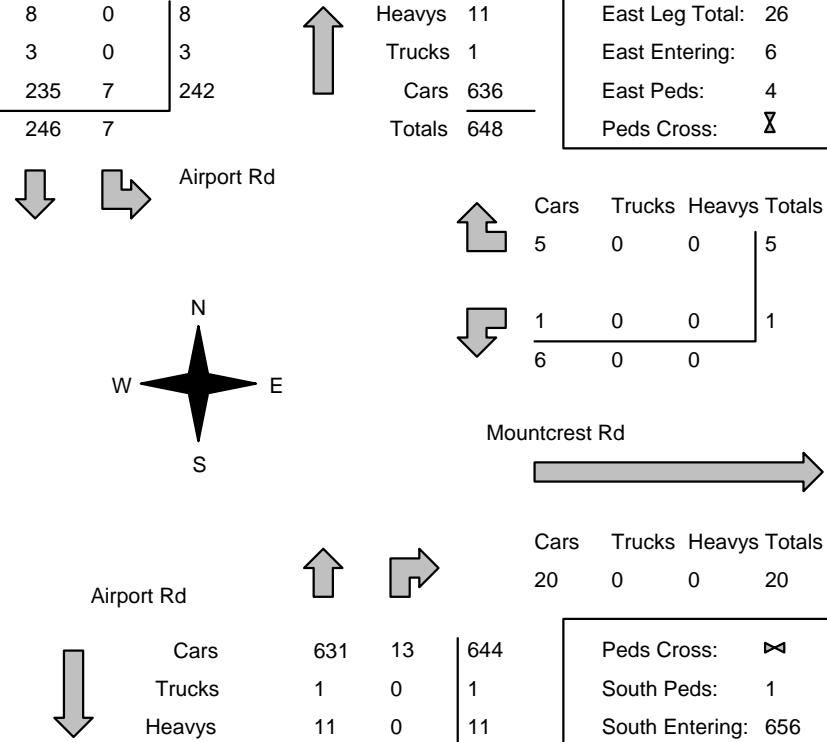
<b>Morning Peak Diagram</b>	<b>Specified Period</b> <b>From:</b> 6:00:00 <b>To:</b> 10:00:00	<b>One Hour Peak</b> <b>From:</b> 7:00:00 <b>To:</b> 8:00:00
<b>Municipality:</b> Caledon <b>Site #:</b> 1701000005 <b>Intersection:</b> Airport Rd & Mountcrest Rd <b>TFR File #:</b> 1 <b>Count date:</b> 17-Jan-17	<b>Weather conditions:</b>  <b>Person counted:</b> <b>Person prepared:</b> <b>Person checked:</b>	
<b>** Non-Signalized Intersection **</b>	<b>Major Road:</b> Airport Rd runs N/S	

North Leg Total: 692 North Entering: 592 North Peds: 0 Peds Cross: ☒	<table style="margin: auto;"> <tr> <td style="padding: 5px;">Heavys</td><td style="padding: 5px;">9</td><td style="padding: 5px;">0</td><td style="padding: 5px;">9</td></tr> <tr> <td style="padding: 5px;">Trucks</td><td style="padding: 5px;">2</td><td style="padding: 5px;">0</td><td style="padding: 5px;">2</td></tr> <tr> <td style="padding: 5px;">Cars</td><td style="padding: 5px;">581</td><td style="padding: 5px;">0</td><td style="padding: 5px;">581</td></tr> <tr> <td style="padding: 5px;">Totals</td><td style="padding: 5px;">592</td><td style="padding: 5px;">0</td><td style="padding: 5px;"></td></tr> </table>  Airport Rd	Heavys	9	0	9	Trucks	2	0	2	Cars	581	0	581	Totals	592	0		<table style="margin: auto;"> <tr> <td style="padding: 5px;">Heavys</td><td style="padding: 5px;">13</td></tr> <tr> <td style="padding: 5px;">Trucks</td><td style="padding: 5px;">3</td></tr> <tr> <td style="padding: 5px;">Cars</td><td style="padding: 5px;">84</td></tr> <tr> <td style="padding: 5px;">Totals</td><td style="padding: 5px;">100</td></tr> </table> East Leg Total: 14 East Entering: 14 East Peds: 0 Peds Cross: ☒	Heavys	13	Trucks	3	Cars	84	Totals	100																																																		
Heavys	9	0	9																																																																									
Trucks	2	0	2																																																																									
Cars	581	0	581																																																																									
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Totals	100																																																																											
																																																																												
<table style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 30%;"></td> <td style="width: 40%; text-align: center;">           Airport Rd             </td> <td style="width: 30%;"></td> </tr> <tr> <td style="padding: 5px;"> <table style="margin: auto;"> <tr> <td style="padding: 5px;">Cars</td><td style="padding: 5px;">2</td><td style="padding: 5px;">0</td><td style="padding: 5px;">0</td><td style="padding: 5px;">2</td></tr> <tr> <td style="padding: 5px;">Trucks</td><td style="padding: 5px;">0</td><td style="padding: 5px;">0</td><td style="padding: 5px;">0</td><td style="padding: 5px;">0</td></tr> <tr> <td style="padding: 5px;">Heavys</td><td style="padding: 5px;">0</td><td style="padding: 5px;">0</td><td style="padding: 5px;">0</td><td style="padding: 5px;">0</td></tr> <tr> <td style="padding: 5px;">Totals</td><td style="padding: 5px;">2</td><td style="padding: 5px;">0</td><td style="padding: 5px;">0</td><td style="padding: 5px;">2</td></tr> </table> </td> <td style="padding: 5px;"> <table style="margin: auto;"> <tr> <td style="padding: 5px;">Cars</td><td style="padding: 5px;">12</td><td style="padding: 5px;">0</td><td style="padding: 5px;">0</td><td style="padding: 5px;">12</td></tr> <tr> <td style="padding: 5px;">Trucks</td><td style="padding: 5px;">0</td><td style="padding: 5px;">0</td><td style="padding: 5px;">0</td><td style="padding: 5px;">0</td></tr> <tr> <td style="padding: 5px;">Heavys</td><td style="padding: 5px;">0</td><td style="padding: 5px;">0</td><td style="padding: 5px;">0</td><td style="padding: 5px;">0</td></tr> <tr> <td style="padding: 5px;">Totals</td><td style="padding: 5px;">12</td><td style="padding: 5px;">0</td><td style="padding: 5px;">0</td><td style="padding: 5px;">12</td></tr> </table> </td> <td style="padding: 5px;">           Mountcrest Rd  </td> </tr> <tr> <td style="padding: 5px;"> <table style="margin: auto;"> <tr> <td style="padding: 5px;">Cars</td><td style="padding: 5px;">593</td></tr> <tr> <td style="padding: 5px;">Trucks</td><td style="padding: 5px;">2</td></tr> <tr> <td style="padding: 5px;">Heavys</td><td style="padding: 5px;">9</td></tr> <tr> <td style="padding: 5px;">Totals</td><td style="padding: 5px;">604</td></tr> </table> </td> <td style="padding: 5px; text-align: center;">           Airport Rd             </td> <td style="padding: 5px;"> <table style="margin: auto;"> <tr> <td style="padding: 5px;">Cars</td><td style="padding: 5px;">82</td><td style="padding: 5px;">0</td><td style="padding: 5px;">82</td></tr> <tr> <td style="padding: 5px;">Trucks</td><td style="padding: 5px;">3</td><td style="padding: 5px;">0</td><td style="padding: 5px;">3</td></tr> <tr> <td style="padding: 5px;">Heavys</td><td style="padding: 5px;">13</td><td style="padding: 5px;">0</td><td style="padding: 5px;">13</td></tr> <tr> <td style="padding: 5px;">Totals</td><td style="padding: 5px;">98</td><td style="padding: 5px;">0</td><td style="padding: 5px;"></td></tr> </table> </td> <td style="padding: 5px; vertical-align: top;">         Peds Cross: ☒          South Peds: 0          South Entering: 98          South Leg Total: 702       </td> </tr> </table>				Airport Rd		<table style="margin: auto;"> <tr> <td style="padding: 5px;">Cars</td><td style="padding: 5px;">2</td><td style="padding: 5px;">0</td><td style="padding: 5px;">0</td><td style="padding: 5px;">2</td></tr> <tr> <td style="padding: 5px;">Trucks</td><td style="padding: 5px;">0</td><td style="padding: 5px;">0</td><td style="padding: 5px;">0</td><td style="padding: 5px;">0</td></tr> <tr> <td style="padding: 5px;">Heavys</td><td style="padding: 5px;">0</td><td style="padding: 5px;">0</td><td style="padding: 5px;">0</td><td style="padding: 5px;">0</td></tr> <tr> <td style="padding: 5px;">Totals</td><td style="padding: 5px;">2</td><td style="padding: 5px;">0</td><td style="padding: 5px;">0</td><td style="padding: 5px;">2</td></tr> </table>	Cars	2	0	0	2	Trucks	0	0	0	0	Heavys	0	0	0	0	Totals	2	0	0	2	<table style="margin: auto;"> <tr> <td style="padding: 5px;">Cars</td><td style="padding: 5px;">12</td><td style="padding: 5px;">0</td><td style="padding: 5px;">0</td><td style="padding: 5px;">12</td></tr> <tr> <td style="padding: 5px;">Trucks</td><td style="padding: 5px;">0</td><td style="padding: 5px;">0</td><td style="padding: 5px;">0</td><td style="padding: 5px;">0</td></tr> <tr> <td style="padding: 5px;">Heavys</td><td style="padding: 5px;">0</td><td style="padding: 5px;">0</td><td style="padding: 5px;">0</td><td style="padding: 5px;">0</td></tr> <tr> <td style="padding: 5px;">Totals</td><td style="padding: 5px;">12</td><td style="padding: 5px;">0</td><td style="padding: 5px;">0</td><td style="padding: 5px;">12</td></tr> </table>	Cars	12	0	0	12	Trucks	0	0	0	0	Heavys	0	0	0	0	Totals	12	0	0	12	Mountcrest Rd 	<table style="margin: auto;"> <tr> <td style="padding: 5px;">Cars</td><td style="padding: 5px;">593</td></tr> <tr> <td style="padding: 5px;">Trucks</td><td style="padding: 5px;">2</td></tr> <tr> <td style="padding: 5px;">Heavys</td><td style="padding: 5px;">9</td></tr> <tr> <td style="padding: 5px;">Totals</td><td style="padding: 5px;">604</td></tr> </table>	Cars	593	Trucks	2	Heavys	9	Totals	604	Airport Rd	<table style="margin: auto;"> <tr> <td style="padding: 5px;">Cars</td><td style="padding: 5px;">82</td><td style="padding: 5px;">0</td><td style="padding: 5px;">82</td></tr> <tr> <td style="padding: 5px;">Trucks</td><td style="padding: 5px;">3</td><td style="padding: 5px;">0</td><td style="padding: 5px;">3</td></tr> <tr> <td style="padding: 5px;">Heavys</td><td style="padding: 5px;">13</td><td style="padding: 5px;">0</td><td style="padding: 5px;">13</td></tr> <tr> <td style="padding: 5px;">Totals</td><td style="padding: 5px;">98</td><td style="padding: 5px;">0</td><td style="padding: 5px;"></td></tr> </table>	Cars	82	0	82	Trucks	3	0	3	Heavys	13	0	13	Totals	98	0		Peds Cross: ☒ South Peds: 0 South Entering: 98 South Leg Total: 702
	Airport Rd																																																																											
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## Comments

# Accu-Traffic Inc.

<b>Afternoon Peak Diagram</b>	<b>Specified Period</b> <b>From:</b> 15:00:00 <b>To:</b> 19:00:00	<b>One Hour Peak</b> <b>From:</b> 16:45:00 <b>To:</b> 17:45:00
<b>Municipality:</b> Caledon <b>Site #:</b> 1701000005 <b>Intersection:</b> Airport Rd & Mountcrest Rd <b>TFR File #:</b> 1 <b>Count date:</b> 17-Jan-17	<b>Weather conditions:</b>  <b>Person counted:</b> <b>Person prepared:</b> <b>Person checked:</b>	
<b>** Non-Signalized Intersection **</b>	<b>Major Road:</b> Airport Rd runs N/S	

North Leg Total: 901 North Entering: 253 North Peds: 0 Peds Cross: ☒	<table style="margin: auto;"> <tr> <td style="text-align: right;">Heavys</td><td style="text-align: center;">8</td><td style="text-align: center;">0</td><td style="border-left: 1px solid black; text-align: center;">8</td></tr> <tr> <td style="text-align: right;">Trucks</td><td style="text-align: center;">3</td><td style="text-align: center;">0</td><td style="border-left: 1px solid black; text-align: center;">3</td></tr> <tr> <td style="text-align: right;">Cars</td><td style="text-align: center;">235</td><td style="text-align: center;">7</td><td style="border-left: 1px solid black; text-align: center;">242</td></tr> <tr> <td style="text-align: right;">Totals</td><td style="text-align: center;">246</td><td style="text-align: center;">7</td><td style="border-left: 1px solid black;"></td></tr> </table>  <table style="margin: auto;"> <tr> <td style="text-align: right;">Heavys</td><td style="text-align: center;">11</td><td></td><td></td></tr> <tr> <td style="text-align: right;">Trucks</td><td style="text-align: center;">1</td><td></td><td></td></tr> <tr> <td style="text-align: right;">Cars</td><td style="text-align: center;">636</td><td></td><td></td></tr> <tr> <td style="text-align: right;">Totals</td><td style="text-align: center;">648</td><td></td><td></td></tr> </table> <table style="margin: auto;"> <tr> <td style="text-align: right;">Cars</td><td style="text-align: center;">5</td><td style="text-align: center;">0</td><td style="text-align: center;">0</td><td style="border-left: 1px solid black; text-align: center;">5</td></tr> <tr> <td style="text-align: right;">Trucks</td><td style="text-align: center;">1</td><td style="text-align: center;">0</td><td style="text-align: center;">0</td><td style="border-left: 1px solid black; text-align: center;">1</td></tr> <tr> <td style="text-align: right;">Heavys</td><td style="text-align: center;">6</td><td style="text-align: center;">0</td><td style="text-align: center;">0</td><td style="border-left: 1px solid black;"></td></tr> <tr> <td style="text-align: right;">Totals</td><td style="text-align: center;">12</td><td style="text-align: center;">0</td><td style="text-align: center;">0</td><td style="border-left: 1px solid black;"></td></tr> </table> <table style="margin: auto;"> <tr> <td style="text-align: right;">Cars</td><td style="text-align: center;">20</td><td style="text-align: center;">0</td><td style="text-align: center;">0</td><td style="border-left: 1px solid black; text-align: center;">20</td></tr> <tr> <td style="text-align: right;">Trucks</td><td style="text-align: center;">0</td><td style="text-align: center;">0</td><td style="text-align: center;">0</td><td style="border-left: 1px solid black;"></td></tr> <tr> <td style="text-align: right;">Heavys</td><td style="text-align: center;">0</td><td style="text-align: center;">0</td><td style="text-align: center;">0</td><td style="border-left: 1px solid black;"></td></tr> <tr> <td style="text-align: right;">Totals</td><td style="text-align: center;">20</td><td style="text-align: center;">0</td><td style="text-align: center;">0</td><td style="border-left: 1px solid black;"></td></tr> </table>	Heavys	8	0	8	Trucks	3	0	3	Cars	235	7	242	Totals	246	7		Heavys	11			Trucks	1			Cars	636			Totals	648			Cars	5	0	0	5	Trucks	1	0	0	1	Heavys	6	0	0		Totals	12	0	0		Cars	20	0	0	20	Trucks	0	0	0		Heavys	0	0	0		Totals	20	0	0		<table style="margin: auto;"> <tr> <td style="text-align: right;">East Leg Total:</td><td style="text-align: center;">26</td></tr> <tr> <td style="text-align: right;">East Entering:</td><td style="text-align: center;">6</td></tr> <tr> <td style="text-align: right;">East Peds:</td><td style="text-align: center;">4</td></tr> <tr> <td style="text-align: right;">Peds Cross:</td><td style="text-align: center;">☒</td></tr> </table> <table style="margin: auto;"> <tr> <td style="text-align: right;">Peds Cross:</td><td style="text-align: center;">☒</td></tr> <tr> <td style="text-align: right;">South Peds:</td><td style="text-align: center;">1</td></tr> <tr> <td style="text-align: right;">South Entering:</td><td style="text-align: center;">656</td></tr> <tr> <td style="text-align: right;">South Leg Total:</td><td style="text-align: center;">903</td></tr> </table>	East Leg Total:	26	East Entering:	6	East Peds:	4	Peds Cross:	☒	Peds Cross:	☒	South Peds:	1	South Entering:	656	South Leg Total:	903
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## Comments

# Accu-Traffic Inc.

## Total Count Diagram

**Municipality:** Caledon  
**Site #:** 1701000005  
**Intersection:** Airport Rd & Mountcrest Rd  
**TFR File #:** 1  
**Count date:** 17-Jan-17

**Weather conditions:**

**Person counted:**  
**Person prepared:**  
**Person checked:**

**\*\* Non-Signalized Intersection \*\***

**Major Road:** Airport Rd runs N/S

North Leg Total: 5317  
 North Entering: 2730  
 North Peds: 0  
 Peds Cross:

Heavys	87	0	87
Trucks	39	1	40
Cars	2582	21	2603
Totals	2708	22	

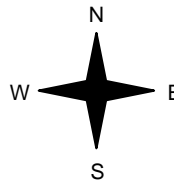


Heavys	65
Trucks	29
Cars	2493
Totals	2587

East Leg Total: 146  
 East Entering: 80  
 East Peds: 7  
 Peds Cross:



Airport Rd



	Cars	Trucks	Heavys	Totals
Upward arrow	25	1	0	26
Downward arrow	53	1	0	54
	78	2	0	

Mountcrest Rd



	Cars	Trucks	Heavys	Totals
Rightward arrow	64	2	0	66

Cars	2635
Trucks	40
Heavys	87
Totals	2762



Airport Rd

Cars	2468	43	2511
Trucks	28	1	29
Heavys	65	0	65
Totals	2561	44	

Peds Cross:   
 South Peds: 1  
 South Entering: 2605  
 South Leg Total: 5367

### Comments





**Accu-Traffic Inc.**  
Traffic Monitoring & Data Analysis

# Accu-Traffic Inc.

## Traffic Count Summary

Intersection: Airport Rd & Mountcrest Rd      Count Date: 17-Jan-17      Municipality: Caledon

North Approach Totals						North/South Total Approaches	South Approach Totals					
Hour Ending	Includes Cars, Trucks, & Heavys				Total Peds		Hour Ending	Includes Cars, Trucks, & Heavys				Total Peds
	Left	Thru	Right	Grand Total				Left	Thru	Right	Grand Total	
6:00:00	0	0	0	0	0	0	6:00:00	0	0	0	0	0
7:00:00	0	466	0	466	0	536	7:00:00	0	69	1	70	0
8:00:00	0	592	0	592	0	690	8:00:00	0	98	0	98	0
9:00:00	3	432	0	435	0	637	9:00:00	0	200	2	202	0
10:00:00	2	318	0	320	0	472	10:00:00	0	152	0	152	0
15:00:00	0	0	0	0	0	0	15:00:00	0	0	0	0	0
16:00:00	3	212	0	215	0	653	16:00:00	0	428	10	438	0
17:00:00	6	267	0	273	0	870	17:00:00	0	587	10	597	1
18:00:00	3	234	0	237	0	837	18:00:00	0	589	11	600	0
19:00:00	5	187	0	192	0	640	19:00:00	0	438	10	448	0
<b>Totals:</b>	22	2708	0	2730	0	5335	<b>S Totals:</b>	0	2561	44	2605	1
East Approach Totals						East/West Total Approaches	West Approach Totals					
Hour Ending	Includes Cars, Trucks, & Heavys				Total Peds		Hour Ending	Includes Cars, Trucks, & Heavys				Total Peds
	Left	Thru	Right	Grand Total				Left	Thru	Right	Grand Total	
6:00:00	0	0	0	0	0	0	6:00:00	0	0	0	0	0
7:00:00	10	0	0	10	0	10	7:00:00	0	0	0	0	0
8:00:00	12	0	2	14	0	14	8:00:00	0	0	0	0	0
9:00:00	10	0	4	14	0	14	9:00:00	0	0	0	0	0
10:00:00	3	0	0	3	2	3	10:00:00	0	0	0	0	0
15:00:00	0	0	0	0	0	0	15:00:00	0	0	0	0	0
16:00:00	8	0	5	13	1	13	16:00:00	0	0	0	0	0
17:00:00	5	0	3	8	1	8	17:00:00	0	0	0	0	0
18:00:00	1	0	5	6	3	6	18:00:00	0	0	0	0	0
19:00:00	5	0	7	12	0	12	19:00:00	0	0	0	0	0
<b>Totals:</b>	54	0	26	80	7	80	<b>W Totals:</b>	0	0	0	0	0
Calculated Values for Traffic Crossing Major Street												
Hours Ending:	7:00	8:00	9:00	10:00			16:00	17:00	18:00	19:00		
Crossing Values:	10	12	10	3			8	6	1	5		









## REGIONAL MUNICIPALITY OF PEEL

### Traffic Signal Timing Parameters

Database Date		September 22, 2014		Prepared Date:		February 2, 2017				
Database Rev		2		Completed By:		RC/ AP				
Timing Card / Field rev		-		Checked By:		RS				
Location							TIME PERIOD			
Airport Road at Caledon Trailway							(sec.)			
Phase #	Direction	Vehicle Minimum (sec.)	Pedestrian Minimum (sec.)		Amber (sec.)	All Red (sec.)	(Green+Amber+All Red)			
			WALK	FDWALK			AM MAX	OFF MAX	PM MAX	
1										
2	Airport Road - Southbound	8.0			4.0	2.0	49.0	31.0	49.0	
3										
4	Caledon Trail Crossing - Westbound	8.0	8.0	10.0	4.0	2.0	21.0	14.0 (min), 24.0 (max)	21.0	
5										
6	Airport Road - Northbound	8.0			4.0	2.0	49.0	31.0	49.0	
7										
8	Caledon Trail Crossing - Eastbound	8.0	8.0	10.0	4.0	2.0	21.0	14.0 (min), 24.0 (max)	21.0	
System Control		Yes								
Local Control		No								
Semi-Actuated Mode		Yes								
				TIME (M-F)		PEAK		CYCLE LENGTH (sec.)		OFFSET (sec.)
				06:30 - 08:00		AM		70		29
				8:00 - 15:00		OFF		Free		0
				15:00 - 18:30		PM		70		29

## REGIONAL MUNICIPALITY OF PEEL

### Traffic Signal Timing Parameters

<b>Database Date</b>		<b>September 22, 2014</b>				<b>Prepared Date:</b>		<b>February 2, 2017</b>	
<b>Database Rev</b>		<b>19</b>				<b>Completed By:</b>		<b>RC/ AP</b>	
<b>Timing Card / Field rev</b>		<b>-</b>				<b>Checked By:</b>		<b>RS</b>	
<b>Location</b>	<b>Airport Road at Old Church Road</b>					<b>TIME PERIOD</b> (sec.) (Green+Amber+All Red)			
<b>Phase #</b>	<b>Direction</b>	<b>Vehicle Minimum (sec.)</b>	<b>Pedestrian Minimum (sec.)</b>		<b>Amber (sec.)</b>	<b>All Red (sec.)</b>			
			<b>WALK</b>	<b>FDWALK</b>			<b>AM MAX</b>	<b>OFF MAX</b>	<b>PM MAX</b>
<b>1</b>	<b>Airport Road - N/S</b>	8.0	8.0	17.0	4.0	3.1	42.0	49.1	42.0
<b>2</b>	<b>Old Church Road - WB</b>	8.0	8.0	10.0	4.0	2.6	28.0	14.6 (min), 26.6 (max)	28.0
<b>System Control</b>		Yes							
<b>Local Control</b>		No							
<b>Semi-Actuated Mode</b>		Yes							
		<b>TIME (M-F)</b>		<b>PEAK</b>		<b>CYCLE LENGTH (sec.)</b>		<b>OFFSET (sec.)</b>	
		<b>06:30-09:00</b>		<b>AM</b>		<b>70</b>		<b>19</b>	
		<b>9:00 - 15:00</b>		<b>OFF</b>		<b>Free</b>		<b>0</b>	
		<b>15:00 - 18:30</b>		<b>PM</b>		<b>70</b>		<b>45</b>	

## REGIONAL MUNICIPALITY OF PEEL

### Traffic Signal Timing Parameters

Database Date		December 18, 2000		Prepared Date:		February 2, 2017	
Database Rev		1		Completed By:		RC/ AP	
Timing Card / Field rev		-		Checked By:		RS	
Location:		Airport Road at Olde Base Line Road				TIME PERIOD (sec.) (Green+Amber+All Red)	
Phase #	Direction	Vehicle Minimum (sec.)	Pedestrian Minimum (sec.)		Amber (sec.)	All Red (sec.)	AM/OFF/PM
			WALK	FDWALK			
1	Not in Use						
2	Airport Road - N/S	12.0	8.0	6.0	4.0	2.0	62.0 (max)
3	Not in Use						
4	Olde Base Line Road - EB	8.0	8.0	5.0	4.0	2.6	14.6 (min), 26.6 (max)
System Control		Yes					
Local Control		No		TIME		CYCLE LENGTH	
Semi-Actuated Mode		Yes		AM/OFF/PM		FREE	



**APPENDIX B**  
**Existing Traffic Level of Service Outputs**

Queues

AM Peak Hour

1: Airport Road & LCBO Driveway/Old Church Road



Lane Group	EBT	WBL	WBT	NBT	NBR	SBL	SBT
Lane Configurations							
Traffic Volume (vph)	1	201	0	57	46	42	378
Future Volume (vph)	1	201	0	57	46	42	378
Lane Group Flow (vph)	2	201	26	57	46	0	421
Turn Type	NA	Perm	NA	NA	Perm	Perm	NA
Protected Phases	2		2	1			1
Permitted Phases		2			1	1	
Detector Phase	2	2	2	1	1	1	1
Switch Phase							
Minimum Initial (s)	8.0	8.0	8.0	8.0	8.0	8.0	8.0
Minimum Split (s)	24.6	24.6	24.6	32.1	32.1	32.1	32.1
Total Split (s)	28.0	28.0	28.0	42.0	42.0	42.0	42.0
Total Split (%)	40.0%	40.0%	40.0%	60.0%	60.0%	60.0%	60.0%
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	2.6	2.6	2.6	3.1	3.1	3.1	3.1
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0		0.0
Total Lost Time (s)	6.6	6.6	6.6	7.1	7.1		7.1
Lead/Lag	Lag	Lag	Lag	Lead	Lead	Lead	Lead
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	Max	Max	Max	Max	Max	Max	Max
v/c Ratio	0.00	0.46	0.02	0.07	0.06		0.47
Control Delay	15.0	23.9	0.0	9.5	2.7		13.6
Queue Delay	0.0	0.0	0.0	0.0	0.0		0.0
Total Delay	15.0	23.9	0.0	9.5	2.7		13.6
Queue Length 50th (m)	0.1	22.2	0.0	3.8	0.0		35.5
Queue Length 95th (m)	1.5	40.9	0.0	9.2	3.8		57.6
Internal Link Dist (m)	54.2		143.8	214.0			592.7
Turn Bay Length (m)					45.0		
Base Capacity (vph)	547	434	1154	811	772		902
Starvation Cap Reductn	0	0	0	0	0		0
Spillback Cap Reductn	0	0	0	0	0		0
Storage Cap Reductn	0	0	0	0	0		0
Reduced v/c Ratio	0.00	0.46	0.02	0.07	0.06		0.47

Intersection Summary

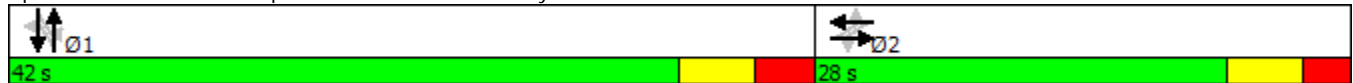
Cycle Length: 70

Actuated Cycle Length: 70

Natural Cycle: 60

Control Type: Semi Act-Uncoord

Splits and Phases: 1: Airport Road & LCBO Driveway/Old Church Road



# HCM Signalized Intersection Capacity Analysis

## 1: Airport Road & LCBO Driveway/Old Church Road

AM Peak Hour



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕		↕	↕			↕	↕		↕	
Traffic Volume (vph)	0	1	1	201	0	26	0	57	46	42	378	1
Future Volume (vph)	0	1	1	201	0	26	0	57	46	42	378	1
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5
Total Lost time (s)		6.6		6.6	6.6			7.1	7.1		7.1	
Lane Util. Factor		1.00		1.00	1.00			1.00	1.00		1.00	
Frt		0.93		1.00	0.85			1.00	0.85		1.00	
Flt Protected		1.00		0.95	1.00			1.00	1.00		1.00	
Satd. Flow (prot)		1791		1785	1633			1628	1493		1861	
Flt Permitted		1.00		0.76	1.00			1.00	1.00		0.97	
Satd. Flow (perm)		1791		1421	1633			1628	1493		1810	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	0	1	1	201	0	26	0	57	46	42	378	1
RTOR Reduction (vph)	0	1	0	0	18	0	0	0	23	0	0	0
Lane Group Flow (vph)	0	1	0	201	8	0	0	57	23	0	421	0
Heavy Vehicles (%)	4%	0%	0%	0%	0%	0%	0%	18%	7%	0%	3%	0%
Turn Type		NA		Perm	NA			NA	Perm	Perm	NA	
Protected Phases		2			2			1		1		1
Permitted Phases	2			2			1		1	1		
Actuated Green, G (s)		21.4		21.4	21.4			34.9	34.9		34.9	
Effective Green, g (s)		21.4		21.4	21.4			34.9	34.9		34.9	
Actuated g/C Ratio		0.31		0.31	0.31			0.50	0.50		0.50	
Clearance Time (s)		6.6		6.6	6.6			7.1	7.1		7.1	
Vehicle Extension (s)		3.0		3.0	3.0			3.0	3.0		3.0	
Lane Grp Cap (vph)		547		434	499			811	744		902	
v/s Ratio Prot		0.00			0.00			0.04				
v/s Ratio Perm				c0.14					0.02		c0.23	
v/c Ratio		0.00		0.46	0.02			0.07	0.03		0.47	
Uniform Delay, d1		16.9		19.7	17.0			9.1	8.9		11.5	
Progression Factor		1.00		1.00	1.00			1.00	1.00		1.00	
Incremental Delay, d2		0.0		3.5	0.1			0.2	0.1		1.7	
Delay (s)		16.9		23.2	17.0			9.3	9.0		13.2	
Level of Service		B		C	B			A	A		B	
Approach Delay (s)		16.9			22.5			9.2			13.2	
Approach LOS		B			C			A			B	

### Intersection Summary











HCM 2000 Control Delay	15.5	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.47		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	13.7
Intersection Capacity Utilization	58.2%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

# HCM Unsignalized Intersection Capacity Analysis

## 2: Airport Road & Mountcrest Rd

AM Peak Hour

						
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	12	2	98	0	0	592
Future Volume (Veh/h)	12	2	98	0	0	592
Sign Control	Stop		Free		Free	
Grade	0%		0%		0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	12	2	98	0	0	592
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	TWLTL			None		
Median storage (veh)	2					
Upstream signal (m)				40		
pX, platoon unblocked						
vC, conflicting volume	690	98			98	
vC1, stage 1 conf vol	98					
vC2, stage 2 conf vol	592					
vCu, unblocked vol	690	98			98	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)	5.4					
tF (s)	3.5	3.3			2.2	
p0 queue free %	98	100			100	
cM capacity (veh/h)	536	963			1508	
Direction, Lane #	WB 1	NB 1	NB 2	SB 1		
Volume Total	14	98	0	592		
Volume Left	12	0	0	0		
Volume Right	2	0	0	0		
cSH	572	1700	1700	1508		
Volume to Capacity	0.02	0.06	0.00	0.00		
Queue Length 95th (m)	0.6	0.0	0.0	0.0		
Control Delay (s)	11.5	0.0	0.0	0.0		
Lane LOS	B					
Approach Delay (s)	11.5	0.0		0.0		
Approach LOS	B					
Intersection Summary						
Average Delay			0.2			
Intersection Capacity Utilization			41.2%	ICU Level of Service	A	
Analysis Period (min)			15			

# HCM Unsignalized Intersection Capacity Analysis

## 3: Airport Road & Hiltop Dr

AM Peak Hour



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	1	8	5	94	601	0
Future Volume (Veh/h)	1	8	5	94	601	0
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	1	8	5	94	601	0
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type						
				TWLTL	TWLTL	
Median storage veh				2	2	
Upstream signal (m)				345		
pX, platoon unblocked						
vC, conflicting volume	705	601	601			
vC1, stage 1 conf vol	601					
vC2, stage 2 conf vol	104					
vCu, unblocked vol	705	601	601			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)	5.4					
tF (s)	3.5	3.3	2.2			
p0 queue free %	100	98	99			
cM capacity (veh/h)	530	504	986			
Direction, Lane #	EB 1	NB 1	NB 2	SB 1		
Volume Total	9	5	94	601		
Volume Left	1	5	0	0		
Volume Right	8	0	0	0		
cSH	507	986	1700	1700		
Volume to Capacity	0.02	0.01	0.06	0.35		
Queue Length 95th (m)	0.4	0.1	0.0	0.0		
Control Delay (s)	12.2	8.7	0.0	0.0		
Lane LOS	B	A				
Approach Delay (s)	12.2	0.4	0.0			
Approach LOS	B					
Intersection Summary						
Average Delay			0.2			
Intersection Capacity Utilization			41.6%	ICU Level of Service	A	
Analysis Period (min)			15			

# HCM Unsignalized Intersection Capacity Analysis

## 4: Airport Road & School Driveway - R/L out

AM Peak Hour



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	44	45	0	96	609	0
Future Volume (Veh/h)	44	45	0	96	609	0
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	44	45	0	96	609	0
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type						
TWLTL TWLTL						
Median storage veh						
2 2						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	705	609	609			
vC1, stage 1 conf vol	609					
vC2, stage 2 conf vol	96					
vCu, unblocked vol	705	609	609			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)	5.4					
tF (s)	3.5	3.3	2.2			
p0 queue free %	92	91	100			
cM capacity (veh/h)	526	499	979			
<b>Direction, Lane #</b>						
	EB 1	NB 1	SB 1			
Volume Total	89	96	609			
Volume Left	44	0	0			
Volume Right	45	0	0			
cSH	512	1700	1700			
Volume to Capacity	0.17	0.06	0.36			
Queue Length 95th (m)	5.0	0.0	0.0			
Control Delay (s)	13.5	0.0	0.0			
Lane LOS	B					
Approach Delay (s)	13.5	0.0	0.0			
Approach LOS	B					
<b>Intersection Summary</b>						
Average Delay			1.5			
Intersection Capacity Utilization		43.9%		ICU Level of Service		A
Analysis Period (min)			15			

# HCM Unsignalized Intersection Capacity Analysis

## 5: Airport Road & Cranston Dr

AM Peak Hour



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	3	22	4	93	613	0
Future Volume (Veh/h)	3	22	4	93	613	0
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	3	22	4	93	613	0
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None TWLTL		
Median storage (veh)				2		
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	714	613	613			
vC1, stage 1 conf vol	613					
vC2, stage 2 conf vol	101					
vCu, unblocked vol	714	613	613			
tC, single (s)	6.4	6.2	4.3			
tC, 2 stage (s)	5.4					
tF (s)	3.5	3.3	2.4			
p0 queue free %	99	96	100			
cM capacity (veh/h)	523	496	864			
Direction, Lane #	EB 1	NB 1	NB 2	SB 1	SB 2	
Volume Total	25	4	93	613	0	
Volume Left	3	4	0	0	0	
Volume Right	22	0	0	0	0	
cSH	499	864	1700	1700	1700	
Volume to Capacity	0.05	0.00	0.05	0.36	0.00	
Queue Length 95th (m)	1.3	0.1	0.0	0.0	0.0	
Control Delay (s)	12.6	9.2	0.0	0.0	0.0	
Lane LOS	B	A				
Approach Delay (s)	12.6	0.4		0.0		
Approach LOS	B					
Intersection Summary						
Average Delay			0.5			
Intersection Capacity Utilization			42.3%	ICU Level of Service	A	
Analysis Period (min)			15			

Queues

AM Peak Hour

6: Airport Road & Olde Base Line Rd



Lane Group	EBL	NBL	NBT	SBT
Lane Configurations				
Traffic Volume (vph)	33	12	62	477
Future Volume (vph)	33	12	62	477
Lane Group Flow (vph)	97	0	74	641
Turn Type	Prot	Perm	NA	NA
Protected Phases	4		2	2
Permitted Phases		2		
Detector Phase	4	2	2	2
Switch Phase				
Minimum Initial (s)	8.0	12.0	12.0	12.0
Minimum Split (s)	19.6	20.0	20.0	20.0
Total Split (s)	26.6	62.0	62.0	62.0
Total Split (%)	30.0%	70.0%	70.0%	70.0%
Yellow Time (s)	4.0	4.0	4.0	4.0
All-Red Time (s)	2.6	2.0	2.0	2.0
Lost Time Adjust (s)	0.0		0.0	0.0
Total Lost Time (s)	6.6		6.0	6.0
Lead/Lag				
Lead-Lag Optimize?				
Recall Mode	None	Max	Max	Max
v/c Ratio	0.41		0.07	0.44
Control Delay	20.4		3.3	4.8
Queue Delay	0.0		0.0	0.0
Total Delay	20.4		3.3	4.8
Queue Length 50th (m)	5.5		2.5	29.5
Queue Length 95th (m)	18.1		6.6	55.6
Internal Link Dist (m)	373.9		480.2	717.9
Turn Bay Length (m)				
Base Capacity (vph)	454		1085	1449
Starvation Cap Reductn	0		0	0
Spillback Cap Reductn	0		0	0
Storage Cap Reductn	0		0	0
Reduced v/c Ratio	0.21		0.07	0.44

Intersection Summary

Cycle Length: 88.6  
 Actuated Cycle Length: 83.4  
 Natural Cycle: 50  
 Control Type: Semi Act-Uncoord

Splits and Phases: 6: Airport Road & Olde Base Line Rd





# HCM Signalized Intersection Capacity Analysis

## 6: Airport Road & Olde Base Line Rd

AM Peak Hour



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	33	64	12	62	477	164
Future Volume (vph)	33	64	12	62	477	164
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width	3.7	3.5	3.7	3.5	3.7	3.5
Total Lost time (s)	6.6			6.0	6.0	
Lane Util. Factor	1.00			1.00	1.00	
Frt	0.91			1.00	0.97	
Flt Protected	0.98			0.99	1.00	
Satd. Flow (prot)	1687			1480	1810	
Flt Permitted	0.98			0.91	1.00	
Satd. Flow (perm)	1687			1362	1810	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	33	64	12	62	477	164
RTOR Reduction (vph)	59	0	0	0	9	0
Lane Group Flow (vph)	38	0	0	74	632	0
Heavy Vehicles (%)	0%	3%	0%	31%	3%	1%
Turn Type	Prot		Perm	NA	NA	
Protected Phases	4			2	2	
Permitted Phases			2			
Actuated Green, G (s)	7.0			65.2	65.2	
Effective Green, g (s)	7.0			65.2	65.2	
Actuated g/C Ratio	0.08			0.77	0.77	
Clearance Time (s)	6.6			6.0	6.0	
Vehicle Extension (s)	3.0			3.0	3.0	
Lane Grp Cap (vph)	139			1047	1391	
v/s Ratio Prot	c0.02				c0.35	
v/s Ratio Perm				0.05		
v/c Ratio	0.28			0.07	0.45	
Uniform Delay, d1	36.5			2.4	3.5	
Progression Factor	1.00			1.00	1.00	
Incremental Delay, d2	1.1			0.1	1.1	
Delay (s)	37.6			2.5	4.6	
Level of Service	D			A	A	
Approach Delay (s)	37.6			2.5	4.6	
Approach LOS	D			A	A	

### Intersection Summary

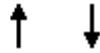
HCM 2000 Control Delay	8.3	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.44		
Actuated Cycle Length (s)	84.8	Sum of lost time (s)	12.6
Intersection Capacity Utilization	52.2%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Queues

AM Peak Hour

7: Airport Road & Caledon Trail Pathway

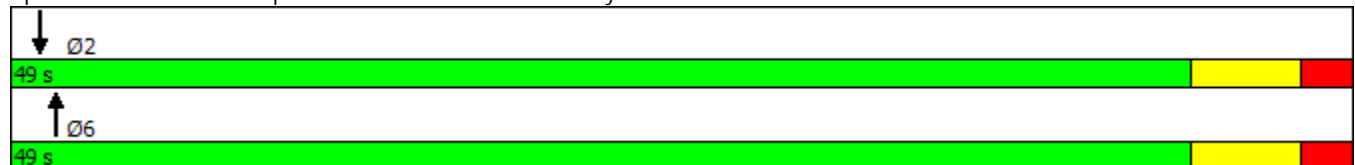


Lane Group	NBT	SBT
Lane Configurations	↑	↑
Traffic Volume (vph)	100	592
Future Volume (vph)	100	592
Lane Group Flow (vph)	100	592
Turn Type	NA	NA
Protected Phases	6	2
Permitted Phases		
Detector Phase	6	2
Switch Phase		
Minimum Initial (s)	8.0	8.0
Minimum Split (s)	24.0	24.0
Total Split (s)	49.0	49.0
Total Split (%)	100.0%	100.0%
Yellow Time (s)	4.0	4.0
All-Red Time (s)	2.0	2.0
Lost Time Adjust (s)	0.0	0.0
Total Lost Time (s)	6.0	6.0
Lead/Lag		
Lead-Lag Optimize?		
Recall Mode	Max	Max
v/c Ratio	0.06	0.31
Control Delay	0.1	0.4
Queue Delay	0.0	0.0
Total Delay	0.1	0.4
Queue Length 50th (m)	0.0	0.0
Queue Length 95th (m)	0.0	0.0
Internal Link Dist (m)	16.1	214.0
Turn Bay Length (m)		
Base Capacity (vph)	1671	1883
Starvation Cap Reductn	0	0
Spillback Cap Reductn	0	0
Storage Cap Reductn	0	0
Reduced v/c Ratio	0.06	0.31

Intersection Summary

Cycle Length: 49  
 Actuated Cycle Length: 64  
 Natural Cycle: 40  
 Control Type: Semi Act-Uncoord















Splits and Phases: 7: Airport Road & Caledon Trail Pathway



# HCM Signalized Intersection Capacity Analysis

## 7: Airport Road & Caledon Trail Pathway

AM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	0	0	0	0	0	0	100	0	0	592	0
Future Volume (vph)	0	0	0	0	0	0	0	100	0	0	592	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)								6.0			6.0	
Lane Util. Factor								1.00			1.00	
Frt								1.00			1.00	
Flt Protected								1.00			1.00	
Satd. Flow (prot)								1671			1883	
Flt Permitted								1.00			1.00	
Satd. Flow (perm)								1671			1883	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	0	0	0	0	0	0	0	100	0	0	592	0
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	0	0	0	0	0	0	100	0	0	592	0
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	0%	15%	0%	0%	2%	0%
Turn Type								NA			NA	
Protected Phases								6			2	
Permitted Phases												
Actuated Green, G (s)								64.0			64.0	
Effective Green, g (s)								64.0			64.0	
Actuated g/C Ratio								1.00			1.00	
Clearance Time (s)								6.0			6.0	
Vehicle Extension (s)								3.0			3.0	
Lane Grp Cap (vph)								1671			1883	
v/s Ratio Prot								0.06			0.31	
v/s Ratio Perm												
v/c Ratio								0.06			0.31	
Uniform Delay, d1								0.0			0.0	
Progression Factor								1.00			1.00	
Incremental Delay, d2								0.1			0.4	
Delay (s)								0.1			0.4	
Level of Service								A			A	
Approach Delay (s)		0.0			0.0			0.1			0.4	
Approach LOS		A			A			A			A	
<b>Intersection Summary</b>												
HCM 2000 Control Delay			0.4					HCM 2000 Level of Service			A	
HCM 2000 Volume to Capacity ratio			0.35									
Actuated Cycle Length (s)			64.0					Sum of lost time (s)			6.0	
Intersection Capacity Utilization			36.2%					ICU Level of Service			A	
Analysis Period (min)			15									
c Critical Lane Group												

Queues  
1: Airport Road & LCBO Driveway/Old Church Road

PM Peak Hour  
Existing Traffic

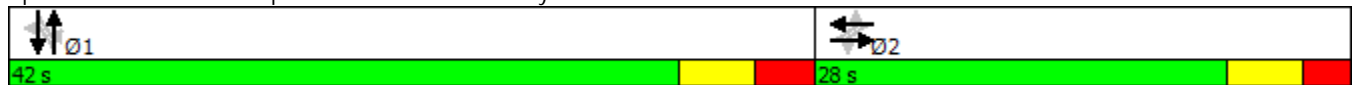


Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT
Lane Configurations		↕	↗	↖		↖	↗		↕
Traffic Volume (vph)	16	7	123	12	11	354	247	34	117
Future Volume (vph)	16	7	123	12	11	354	247	34	117
Lane Group Flow (vph)	0	31	123	127	0	365	247	0	157
Turn Type	Perm	NA	Perm	NA	Perm	NA	Perm	Perm	NA
Protected Phases		2		2		1			1
Permitted Phases	2		2		1		1	1	
Detector Phase	2	2	2	2	1	1	1	1	1
Switch Phase									
Minimum Initial (s)	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0
Minimum Split (s)	24.6	24.6	24.6	24.6	32.1	32.1	32.1	32.1	32.1
Total Split (s)	28.0	28.0	28.0	28.0	42.0	42.0	42.0	42.0	42.0
Total Split (%)	40.0%	40.0%	40.0%	40.0%	60.0%	60.0%	60.0%	60.0%	60.0%
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	2.6	2.6	2.6	2.6	3.1	3.1	3.1	3.1	3.1
Lost Time Adjust (s)		0.0	0.0	0.0		0.0	0.0		0.0
Total Lost Time (s)		6.6	6.6	6.6		7.1	7.1		7.1
Lead/Lag	Lag	Lag	Lag	Lag	Lead	Lead	Lead	Lead	Lead
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	Max	Max	Max	Max	Max	Max	Max	Max	Max
v/c Ratio		0.06	0.29	0.22		0.40	0.27		0.20
Control Delay		14.5	20.9	6.0		12.7	2.3		10.4
Queue Delay		0.0	0.0	0.0		0.0	0.0		0.0
Total Delay		14.5	20.9	6.0		12.7	2.3		10.4
Queue Length 50th (m)		2.2	12.8	1.2		29.5	0.0		11.0
Queue Length 95th (m)		7.9	26.0	12.2		48.4	10.1		21.2
Internal Link Dist (m)		54.2		143.8		214.0			592.7
Turn Bay Length (m)							45.0		
Base Capacity (vph)		488	419	578		913	920		785
Starvation Cap Reductn		0	0	0		0	0		0
Spillback Cap Reductn		0	0	0		0	0		0
Storage Cap Reductn		0	0	0		0	0		0
Reduced v/c Ratio		0.06	0.29	0.22		0.40	0.27		0.20

Intersection Summary

Cycle Length: 70  
 Actuated Cycle Length: 70  
 Natural Cycle: 60  
 Control Type: Semi Act-Uncoord

Splits and Phases: 1: Airport Road & LCBO Driveway/Old Church Road



HCM Signalized Intersection Capacity Analysis  
 1: Airport Road & LCBO Driveway/Old Church Road

PM Peak Hour  
 Existing Traffic



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕		↕	↕			↕	↕		↕	
Traffic Volume (vph)	16	7	8	123	12	115	11	354	247	34	117	6
Future Volume (vph)	16	7	8	123	12	115	11	354	247	34	117	6
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5
Total Lost time (s)		6.6		6.6	6.6			7.1	7.1		7.1	
Lane Util. Factor		1.00		1.00	1.00			1.00	1.00		1.00	
Frt		0.97		1.00	0.86			1.00	0.85		0.99	
Flt Protected		0.97		0.95	1.00			1.00	1.00		0.99	
Satd. Flow (prot)		1808		1767	1631			1847	1597		1772	
Flt Permitted		0.85		0.74	1.00			0.99	1.00		0.88	
Satd. Flow (perm)		1580		1371	1631			1833	1597		1570	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	16	7	8	123	12	115	11	354	247	34	117	6
RTOR Reduction (vph)	0	6	0	0	80	0	0	0	124	0	2	0
Lane Group Flow (vph)	0	25	0	123	47	0	0	365	123	0	155	0
Heavy Vehicles (%)	0%	0%	0%	1%	0%	2%	0%	4%	0%	0%	9%	0%
Turn Type	Perm	NA		Perm	NA		Perm	NA	Perm	Perm	NA	
Protected Phases		2			2			1			1	
Permitted Phases	2			2			1		1	1		
Actuated Green, G (s)		21.4		21.4	21.4			34.9	34.9		34.9	
Effective Green, g (s)		21.4		21.4	21.4			34.9	34.9		34.9	
Actuated g/C Ratio		0.31		0.31	0.31			0.50	0.50		0.50	
Clearance Time (s)		6.6		6.6	6.6			7.1	7.1		7.1	
Vehicle Extension (s)		3.0		3.0	3.0			3.0	3.0		3.0	
Lane Grp Cap (vph)		483		419	498			913	796		782	
v/s Ratio Prot					0.03							
v/s Ratio Perm		0.02		c0.09				c0.20	0.08		0.10	
v/c Ratio		0.05		0.29	0.09			0.40	0.15		0.20	
Uniform Delay, d1		17.1		18.5	17.4			11.0	9.5		9.8	
Progression Factor		1.00		1.00	1.00			1.00	1.00		1.00	
Incremental Delay, d2		0.2		1.8	0.4			1.3	0.4		0.6	
Delay (s)		17.4		20.3	17.8			12.3	9.9		10.3	
Level of Service		B		C	B			B	A		B	
Approach Delay (s)		17.4			19.0			11.3			10.3	
Approach LOS		B			B			B			B	

Intersection Summary

HCM 2000 Control Delay	13.2	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.36		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	13.7
Intersection Capacity Utilization	60.6%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

HCM Unsignalized Intersection Capacity Analysis  
2: Airport Road & Mountcrest Rd

PM Peak Hour  
Existing Traffic



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	↔		↑	↗		↖
Traffic Volume (veh/h)	1	5	643	13	7	246
Future Volume (Veh/h)	1	5	643	13	7	246
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	1	5	643	13	7	246
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			TWLTL			None
Median storage (veh)			2			
Upstream signal (m)						40
pX, platoon unblocked						
vC, conflicting volume	903	643			656	
vC1, stage 1 conf vol	643					
vC2, stage 2 conf vol	260					
vCu, unblocked vol	903	643			656	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)	5.4					
tF (s)	3.5	3.3			2.2	
p0 queue free %	100	99			99	
cM capacity (veh/h)	487	477			941	
Direction, Lane #	WB 1	NB 1	NB 2	SB 1		
Volume Total	6	643	13	253		
Volume Left	1	0	0	7		
Volume Right	5	0	13	0		
cSH	479	1700	1700	941		
Volume to Capacity	0.01	0.38	0.01	0.01		
Queue Length 95th (m)	0.3	0.0	0.0	0.2		
Control Delay (s)	12.6	0.0	0.0	0.3		
Lane LOS	B			A		
Approach Delay (s)	12.6	0.0		0.3		
Approach LOS	B					
Intersection Summary						
Average Delay			0.2			
Intersection Capacity Utilization			43.8%		ICU Level of Service	A
Analysis Period (min)			15			

# HCM Unsignalized Intersection Capacity Analysis

## 3: Airport Road & Hiltop Dr

PM Peak Hour  
Existing Traffic



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	3	7	29	647	239	0
Future Volume (Veh/h)	3	7	29	647	239	0
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	3	7	29	647	239	0
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type						
				TWLTL	TWLTL	
Median storage veh				2	2	
Upstream signal (m)				345		
pX, platoon unblocked						
vC, conflicting volume	944	239	239			
vC1, stage 1 conf vol	239					
vC2, stage 2 conf vol	705					
vCu, unblocked vol	944	239	239			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)	5.4					
tF (s)	3.5	3.3	2.2			
p0 queue free %	99	99	98			
cM capacity (veh/h)	453	805	1340			
Direction, Lane #	EB 1	NB 1	NB 2	SB 1		
Volume Total	10	29	647	239		
Volume Left	3	29	0	0		
Volume Right	7	0	0	0		
cSH	653	1340	1700	1700		
Volume to Capacity	0.02	0.02	0.38	0.14		
Queue Length 95th (m)	0.4	0.5	0.0	0.0		
Control Delay (s)	10.6	7.7	0.0	0.0		
Lane LOS	B	A				
Approach Delay (s)	10.6	0.3				
Approach LOS	B					
Intersection Summary						
Average Delay			0.4			
Intersection Capacity Utilization			44.1%	ICU Level of Service	A	
Analysis Period (min)			15			

# HCM Unsignalized Intersection Capacity Analysis

## 4: Airport Road & School Driveway - R/L out

PM Peak Hour  
Existing Traffic



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	29	19	0	643	246	0
Future Volume (Veh/h)	29	19	0	643	246	0
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	29	19	0	643	246	0
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type						
TWLTL TWLTL						
Median storage veh						
2 2						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	889	246	246			
vC1, stage 1 conf vol	246					
vC2, stage 2 conf vol	643					
vCu, unblocked vol	889	246	246			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)	5.4					
tF (s)	3.5	3.3	2.2			
p0 queue free %	94	98	100			
cM capacity (veh/h)	491	798	1332			
<b>Direction, Lane #</b>						
	EB 1	NB 1	SB 1			
Volume Total	48	643	246			
Volume Left	29	0	0			
Volume Right	19	0	0			
cSH	579	1700	1700			
Volume to Capacity	0.08	0.38	0.14			
Queue Length 95th (m)	2.2	0.0	0.0			
Control Delay (s)	11.8	0.0	0.0			
Lane LOS	B					
Approach Delay (s)	11.8	0.0	0.0			
Approach LOS	B					
<b>Intersection Summary</b>						
Average Delay			0.6			
Intersection Capacity Utilization		43.8%		ICU Level of Service		A
Analysis Period (min)			15			



HCM Unsignalized Intersection Capacity Analysis  
5: Airport Road & Cranston Dr

PM Peak Hour  
Existing Traffic



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	5	4	21	638	220	4
Future Volume (Veh/h)	5	4	21	638	220	4
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	5	4	21	638	220	4
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None TWLTL		
Median storage (veh)				2		
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	900	220	224			
vC1, stage 1 conf vol	220					
vC2, stage 2 conf vol	680					
vCu, unblocked vol	900	220	224			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)	5.4					
tF (s)	3.5	3.3	2.2			
p0 queue free %	99	100	98			
cM capacity (veh/h)	470	825	1357			
Direction, Lane #	EB 1	NB 1	NB 2	SB 1	SB 2	
Volume Total	9	21	638	220	4	
Volume Left	5	21	0	0	0	
Volume Right	4	0	0	0	4	
cSH	581	1357	1700	1700	1700	
Volume to Capacity	0.02	0.02	0.38	0.13	0.00	
Queue Length 95th (m)	0.4	0.4	0.0	0.0	0.0	
Control Delay (s)	11.3	7.7	0.0	0.0	0.0	
Lane LOS	B	A				
Approach Delay (s)	11.3	0.2		0.0		
Approach LOS	B					
Intersection Summary						
Average Delay			0.3			
Intersection Capacity Utilization			43.6%	ICU Level of Service	A	
Analysis Period (min)			15			

Queues  
6: Airport Road & Olde Base Line Rd

PM Peak Hour  
Existing Traffic



Lane Group	EBL	NBL	NBT	SBT
Lane Configurations				
Traffic Volume (vph)	202	81	450	144
Future Volume (vph)	202	81	450	144
Lane Group Flow (vph)	224	0	531	222
Turn Type	Prot	Perm	NA	NA
Protected Phases	4		2	2
Permitted Phases		2		
Detector Phase	4	2	2	2
Switch Phase				
Minimum Initial (s)	8.0	12.0	12.0	12.0
Minimum Split (s)	19.6	20.0	20.0	20.0
Total Split (s)	26.6	62.0	62.0	62.0
Total Split (%)	30.0%	70.0%	70.0%	70.0%
Yellow Time (s)	4.0	4.0	4.0	4.0
All-Red Time (s)	2.6	2.0	2.0	2.0
Lost Time Adjust (s)	0.0		0.0	0.0
Total Lost Time (s)	6.6		6.0	6.0
Lead/Lag				
Lead-Lag Optimize?				
Recall Mode	None	Max	Max	Max
v/c Ratio	0.69		0.47	0.19
Control Delay	43.2		8.9	4.6
Queue Delay	0.0		0.0	0.0
Total Delay	43.2		8.9	4.6
Queue Length 50th (m)	34.6		37.7	8.7
Queue Length 95th (m)	57.8		70.5	19.8
Internal Link Dist (m)	373.9		480.2	717.9
Turn Bay Length (m)				
Base Capacity (vph)	426		1134	1188
Starvation Cap Reductn	0		0	0
Spillback Cap Reductn	0		0	0
Storage Cap Reductn	0		0	0
Reduced v/c Ratio	0.53		0.47	0.19

Intersection Summary

Cycle Length: 88.6  
 Actuated Cycle Length: 85.7  
 Natural Cycle: 50  
 Control Type: Semi Act-Uncoord

Splits and Phases: 6: Airport Road & Olde Base Line Rd



# HCM Signalized Intersection Capacity Analysis

## 6: Airport Road & Olde Base Line Rd

PM Peak Hour  
Existing Traffic



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	202	22	81	450	144	78
Future Volume (vph)	202	22	81	450	144	78
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width	3.7	3.5	3.7	3.5	3.7	3.5
Total Lost time (s)	6.6			6.0	6.0	
Lane Util. Factor	1.00			1.00	1.00	
Frt	0.99			1.00	0.95	
Flt Protected	0.96			0.99	1.00	
Satd. Flow (prot)	1805			1818	1729	
Flt Permitted	0.96			0.92	1.00	
Satd. Flow (perm)	1805			1678	1729	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	202	22	81	450	144	78
RTOR Reduction (vph)	5	0	0	0	19	0
Lane Group Flow (vph)	219	0	0	531	203	0
Heavy Vehicles (%)	0%	5%	0%	3%	9%	0%
Turn Type	Prot		Perm	NA	NA	
Protected Phases	4			2	2	
Permitted Phases			2			
Actuated Green, G (s)	15.2			57.9	57.9	
Effective Green, g (s)	15.2			57.9	57.9	
Actuated g/C Ratio	0.18			0.68	0.68	
Clearance Time (s)	6.6			6.0	6.0	
Vehicle Extension (s)	3.0			3.0	3.0	
Lane Grp Cap (vph)	320			1133	1168	
v/s Ratio Prot	c0.12				0.12	
v/s Ratio Perm				c0.32		
v/c Ratio	0.68			0.47	0.17	
Uniform Delay, d1	33.0			6.6	5.1	
Progression Factor	1.00			1.00	1.00	
Incremental Delay, d2	6.0			1.4	0.3	
Delay (s)	39.0			8.0	5.4	
Level of Service	D			A	A	
Approach Delay (s)	39.0			8.0	5.4	
Approach LOS	D			A	A	

### Intersection Summary

HCM 2000 Control Delay	14.5	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.51		
Actuated Cycle Length (s)	85.7	Sum of lost time (s)	12.6
Intersection Capacity Utilization	68.5%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

Queues  
7: Airport Road & Caledon Trail Pathway

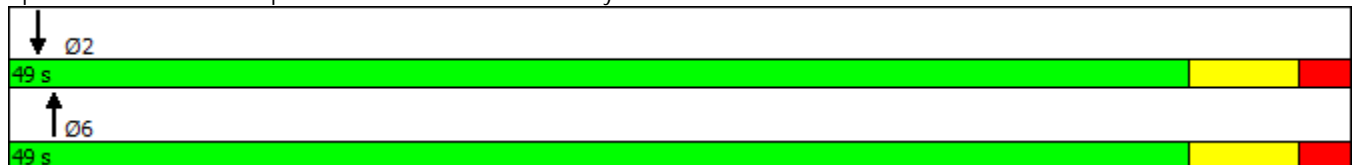
PM Peak Hour  
Existing Traffic

	↑	↓
Lane Group	NBT	SBT
Lane Configurations	↑	↑
Traffic Volume (vph)	648	253
Future Volume (vph)	648	253
Lane Group Flow (vph)	648	253
Turn Type	NA	NA
Protected Phases	6	2
Permitted Phases		
Detector Phase	6	2
Switch Phase		
Minimum Initial (s)	8.0	8.0
Minimum Split (s)	24.0	24.0
Total Split (s)	49.0	49.0
Total Split (%)	100.0%	100.0%
Yellow Time (s)	4.0	4.0
All-Red Time (s)	2.0	2.0
Lost Time Adjust (s)	0.0	0.0
Total Lost Time (s)	6.0	6.0
Lead/Lag		
Lead-Lag Optimize?		
Recall Mode	Max	Max
v/c Ratio	0.34	0.14
Control Delay	0.5	0.2
Queue Delay	0.0	0.0
Total Delay	0.5	0.2
Queue Length 50th (m)	0.0	0.0
Queue Length 95th (m)	0.0	0.0
Internal Link Dist (m)	16.1	214.0
Turn Bay Length (m)		
Base Capacity (vph)	1883	1762
Starvation Cap Reductn	0	0
Spillback Cap Reductn	0	0
Storage Cap Reductn	0	0
Reduced v/c Ratio	0.34	0.14

Intersection Summary

Cycle Length: 49  
 Actuated Cycle Length: 64  
 Natural Cycle: 40  
 Control Type: Semi Act-Uncoord

Splits and Phases: 7: Airport Road & Caledon Trail Pathway



# HCM Signalized Intersection Capacity Analysis

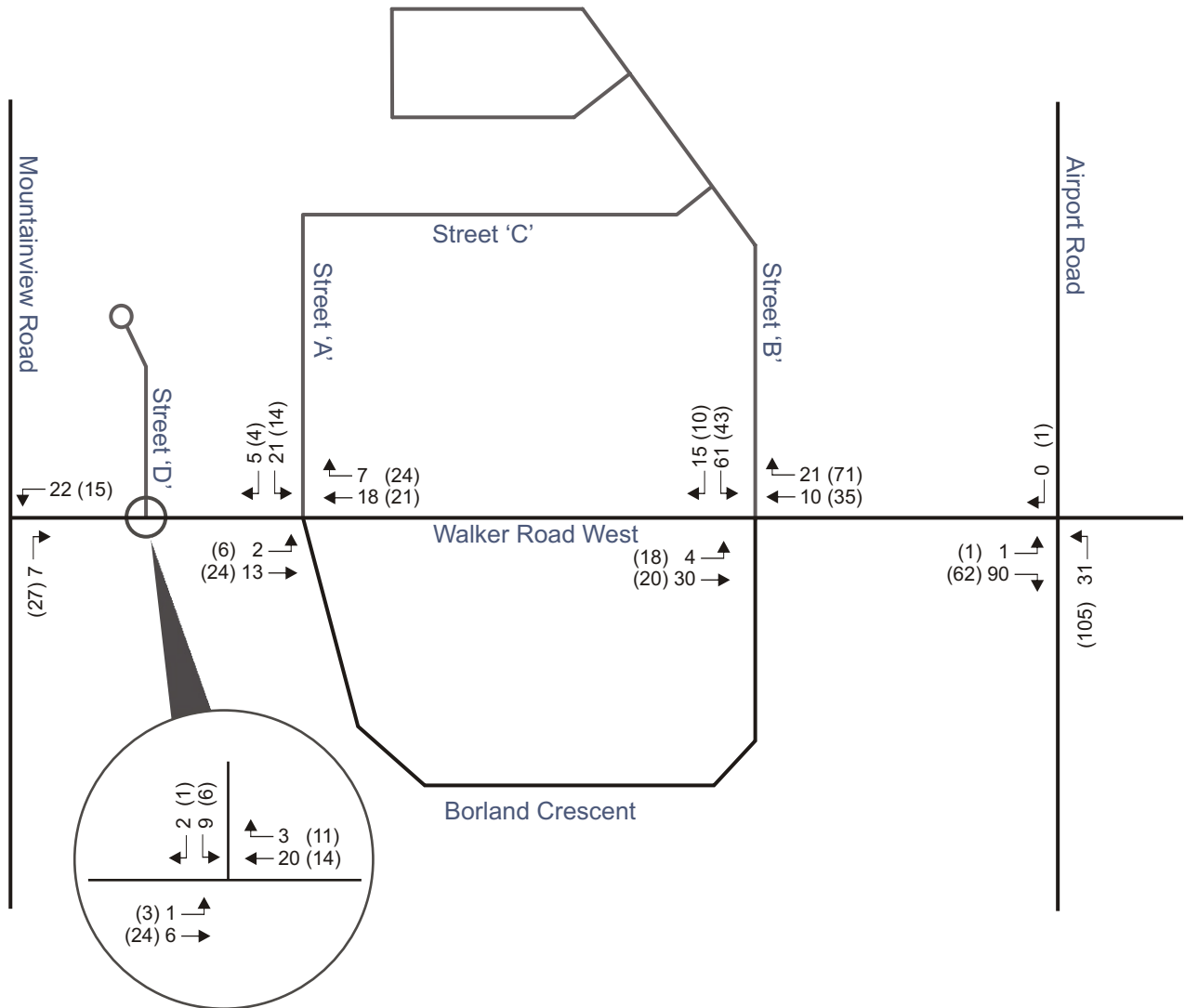
## 7: Airport Road & Caledon Trail Pathway

PM Peak Hour  
Existing Traffic



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations								↑			↑		
Traffic Volume (vph)	0	0	0	0	0	0	0	648	0	0	253	0	
Future Volume (vph)	0	0	0	0	0	0	0	648	0	0	253	0	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	
Total Lost time (s)								6.0			6.0		
Lane Util. Factor								1.00			1.00		
Frt								1.00			1.00		
Flt Protected								1.00			1.00		
Satd. Flow (prot)								1883			1762		
Flt Permitted								1.00			1.00		
Satd. Flow (perm)								1883			1762		
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Adj. Flow (vph)	0	0	0	0	0	0	0	648	0	0	253	0	
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0	
Lane Group Flow (vph)	0	0	0	0	0	0	0	648	0	0	253	0	
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	0%	2%	0%	0%	9%	0%	
Turn Type								NA			NA		
Protected Phases								6			2		
Permitted Phases													
Actuated Green, G (s)								64.0			64.0		
Effective Green, g (s)								64.0			64.0		
Actuated g/C Ratio								1.00			1.00		
Clearance Time (s)								6.0			6.0		
Vehicle Extension (s)								3.0			3.0		
Lane Grp Cap (vph)								1883			1762		
v/s Ratio Prot								0.34			0.14		
v/s Ratio Perm													
v/c Ratio								0.34			0.14		
Uniform Delay, d1								0.0			0.0		
Progression Factor								1.00			1.00		
Incremental Delay, d2								0.5			0.2		
Delay (s)								0.5			0.2		
Level of Service								A			A		
Approach Delay (s)		0.0				0.0		0.5			0.2		
Approach LOS		A				A		A			A		
<b>Intersection Summary</b>													
HCM 2000 Control Delay			0.4					HCM 2000 Level of Service			A		
HCM 2000 Volume to Capacity ratio			0.38										
Actuated Cycle Length (s)			64.0					Sum of lost time (s)			6.0		
Intersection Capacity Utilization			39.1%					ICU Level of Service			A		
Analysis Period (min)			15										
c Critical Lane Group													

**APPENDIX C**  
**Background Development Site Traffic Volumes**

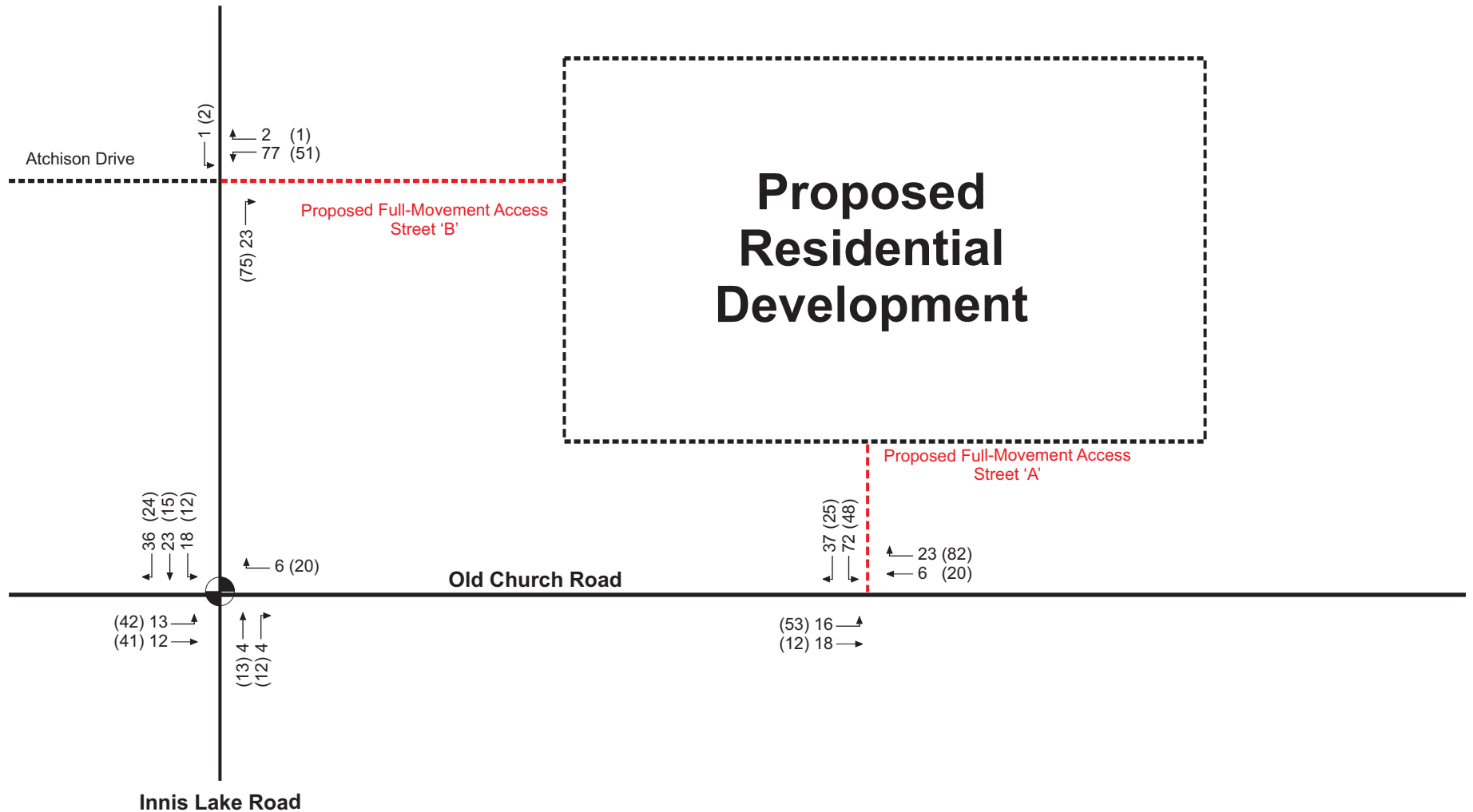


**Legend**  
XX (XX) WEEKDAY AM (WEEKDAY PM) PEAK HOUR



N.T.S.

**Figure 5-1  
Site Traffic Volumes**



# Proposed Residential Development



Legend	
XX	Weekday AM Peak Hour
(XX)	Weekday PM Peak Hour

**Figure 5-1**  
**Site Traffic Volumes**



**APPENDIX D**  
**Future (2022) Background Traffic**  
Level Of Service Outputs

Queues  
1: Airport Road & LCBO Driveway/Old Church Road

AM Peak Hour  
FB 2022

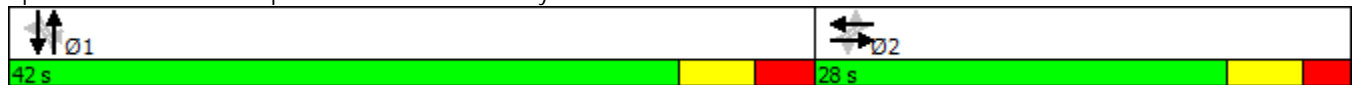


Lane Group	EBT	WBL	WBT	NBT	NBR	SBL	SBT
Lane Configurations							
Traffic Volume (vph)	1	237	0	91	71	45	461
Future Volume (vph)	1	237	0	91	71	45	461
Lane Group Flow (vph)	2	237	30	91	71	0	507
Turn Type	NA	Perm	NA	NA	Perm	Perm	NA
Protected Phases	2		2	1			1
Permitted Phases		2			1	1	
Detector Phase	2	2	2	1	1	1	1
Switch Phase							
Minimum Initial (s)	8.0	8.0	8.0	8.0	8.0	8.0	8.0
Minimum Split (s)	24.6	24.6	24.6	32.1	32.1	32.1	32.1
Total Split (s)	28.0	28.0	28.0	42.0	42.0	42.0	42.0
Total Split (%)	40.0%	40.0%	40.0%	60.0%	60.0%	60.0%	60.0%
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	2.6	2.6	2.6	3.1	3.1	3.1	3.1
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0		0.0
Total Lost Time (s)	6.6	6.6	6.6	7.1	7.1		7.1
Lead/Lag	Lag	Lag	Lag	Lead	Lead	Lead	Lead
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	Max	Max	Max	Max	Max	Max	Max
v/c Ratio	0.00	0.55	0.03	0.11	0.09		0.56
Control Delay	15.0	25.9	0.0	9.8	3.0		15.3
Queue Delay	0.0	0.0	0.0	0.0	0.0		0.0
Total Delay	15.0	25.9	0.0	9.8	3.0		15.3
Queue Length 50th (m)	0.1	26.9	0.0	6.3	0.0		45.6
Queue Length 95th (m)	1.5	48.6	0.0	13.4	5.6		73.2
Internal Link Dist (m)	54.2		143.8	214.0			592.7
Turn Bay Length (m)					45.0		
Base Capacity (vph)	547	434	1099	811	779		901
Starvation Cap Reductn	0	0	0	0	0		0
Spillback Cap Reductn	0	0	0	0	0		0
Storage Cap Reductn	0	0	0	0	0		0
Reduced v/c Ratio	0.00	0.55	0.03	0.11	0.09		0.56

Intersection Summary

Cycle Length: 70  
 Actuated Cycle Length: 70  
 Natural Cycle: 60  
 Control Type: Semi Act-Uncoord

Splits and Phases: 1: Airport Road & LCBO Driveway/Old Church Road



HCM Signalized Intersection Capacity Analysis  
1: Airport Road & LCBO Driveway/Old Church Road

AM Peak Hour  
FB 2022



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕		↕	↕			↕	↕		↕	
Traffic Volume (vph)	0	1	1	237	0	30	0	91	71	45	461	1
Future Volume (vph)	0	1	1	237	0	30	0	91	71	45	461	1
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5
Total Lost time (s)		6.6		6.6	6.6			7.1	7.1		7.1	
Lane Util. Factor		1.00		1.00	1.00			1.00	1.00		1.00	
Frt		0.93		1.00	0.85			1.00	0.85		1.00	
Flt Protected		1.00		0.95	1.00			1.00	1.00		1.00	
Satd. Flow (prot)		1791		1785	1633			1628	1493		1861	
Flt Permitted		1.00		0.76	1.00			1.00	1.00		0.97	
Satd. Flow (perm)		1791		1421	1633			1628	1493		1808	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	0	1	1	237	0	30	0	91	71	45	461	1
RTOR Reduction (vph)	0	1	0	0	21	0	0	0	36	0	0	0
Lane Group Flow (vph)	0	1	0	237	9	0	0	91	35	0	507	0
Heavy Vehicles (%)	4%	0%	0%	0%	0%	0%	0%	18%	7%	0%	3%	0%
Turn Type		NA		Perm	NA			NA	Perm	Perm	NA	
Protected Phases		2			2			1		1		1
Permitted Phases	2			2			1		1	1		
Actuated Green, G (s)		21.4		21.4	21.4			34.9	34.9		34.9	
Effective Green, g (s)		21.4		21.4	21.4			34.9	34.9		34.9	
Actuated g/C Ratio		0.31		0.31	0.31			0.50	0.50		0.50	
Clearance Time (s)		6.6		6.6	6.6			7.1	7.1		7.1	
Vehicle Extension (s)		3.0		3.0	3.0			3.0	3.0		3.0	
Lane Grp Cap (vph)		547		434	499			811	744		901	
v/s Ratio Prot		0.00			0.01			0.06				
v/s Ratio Perm				c0.17					0.02		c0.28	
v/c Ratio		0.00		0.55	0.02			0.11	0.05		0.56	
Uniform Delay, d1		16.9		20.3	17.0			9.3	9.0		12.2	
Progression Factor		1.00		1.00	1.00			1.00	1.00		1.00	
Incremental Delay, d2		0.0		4.9	0.1			0.3	0.1		2.5	
Delay (s)		16.9		25.1	17.0			9.6	9.1		14.8	
Level of Service		B		C	B			A	A		B	
Approach Delay (s)		16.9			24.2			9.4			14.8	
Approach LOS		B			C			A			B	

Intersection Summary

HCM 2000 Control Delay	16.5	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.56		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	13.7
Intersection Capacity Utilization	64.7%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

# HCM Unsignalized Intersection Capacity Analysis

## 2: Airport Road & Mountcrest Rd

AM Peak Hour  
FB 2022



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	12	2	164	0	0	746
Future Volume (Veh/h)	12	2	164	0	0	746
Sign Control	Stop		Free		Free	
Grade	0%		0%		0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	12	2	164	0	0	746
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	TWLTL			None		
Median storage (veh)	2					
Upstream signal (m)				40		
pX, platoon unblocked						
vC, conflicting volume	910	164			164	
vC1, stage 1 conf vol	164					
vC2, stage 2 conf vol	746					
vCu, unblocked vol	910	164			164	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)	5.4					
tF (s)	3.5	3.3			2.2	
p0 queue free %	97	100			100	
cM capacity (veh/h)	451	886			1427	
Direction, Lane #	WB 1	NB 1	NB 2	SB 1		
Volume Total	14	164	0	746		
Volume Left	12	0	0	0		
Volume Right	2	0	0	0		
cSH	485	1700	1700	1427		
Volume to Capacity	0.03	0.10	0.00	0.00		
Queue Length 95th (m)	0.7	0.0	0.0	0.0		
Control Delay (s)	12.6	0.0	0.0	0.0		
Lane LOS	B					
Approach Delay (s)	12.6	0.0		0.0		
Approach LOS	B					
Intersection Summary						
Average Delay			0.2			
Intersection Capacity Utilization			49.3%	ICU Level of Service	A	
Analysis Period (min)			15			

# HCM Unsignalized Intersection Capacity Analysis

## 3: Airport Road & Hiltop Dr

AM Peak Hour  
FB 2022



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	1	8	5	159	756	0
Future Volume (Veh/h)	1	8	5	159	756	0
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	1	8	5	159	756	0
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type						
				TWLTL	TWLTL	
Median storage veh				2	2	
Upstream signal (m)				345		
pX, platoon unblocked						
vC, conflicting volume	925	756	756			
vC1, stage 1 conf vol	756					
vC2, stage 2 conf vol	169					
vCu, unblocked vol	925	756	756			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)	5.4					
tF (s)	3.5	3.3	2.2			
p0 queue free %	100	98	99			
cM capacity (veh/h)	446	411	864			
Direction, Lane #	EB 1	NB 1	NB 2	SB 1		
Volume Total	9	5	159	756		
Volume Left	1	5	0	0		
Volume Right	8	0	0	0		
cSH	415	864	1700	1700		
Volume to Capacity	0.02	0.01	0.09	0.44		
Queue Length 95th (m)	0.5	0.1	0.0	0.0		
Control Delay (s)	13.9	9.2	0.0	0.0		
Lane LOS	B	A				
Approach Delay (s)	13.9	0.3	0.0			
Approach LOS	B					
Intersection Summary						
Average Delay			0.2			
Intersection Capacity Utilization			49.8%	ICU Level of Service	A	
Analysis Period (min)			15			

# HCM Unsignalized Intersection Capacity Analysis

## 4: Airport Road & School Driveway - R/L out

AM Peak Hour  
FB 2022



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	↙			↑	↑	
Traffic Volume (veh/h)	44	45	0	161	765	0
Future Volume (Veh/h)	44	45	0	161	765	0
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	44	45	0	161	765	0
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type						
TWLTL TWLTL						
Median storage veh						
2 2						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	926	765	765			
vC1, stage 1 conf vol	765					
vC2, stage 2 conf vol	161					
vCu, unblocked vol	926	765	765			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)	5.4					
tF (s)	3.5	3.3	2.2			
p0 queue free %	90	89	100			
cM capacity (veh/h)	443	406	857			
<b>Direction, Lane #</b>						
	EB 1	NB 1	SB 1			
Volume Total	89	161	765			
Volume Left	44	0	0			
Volume Right	45	0	0			
cSH	424	1700	1700			
Volume to Capacity	0.21	0.09	0.45			
Queue Length 95th (m)	6.3	0.0	0.0			
Control Delay (s)	15.7	0.0	0.0			
Lane LOS	C					
Approach Delay (s)	15.7	0.0	0.0			
Approach LOS	C					
<b>Intersection Summary</b>						
Average Delay			1.4			
Intersection Capacity Utilization		52.1%		ICU Level of Service		A
Analysis Period (min)			15			

HCM Unsignalized Intersection Capacity Analysis  
5: Airport Road & Cranston Dr

AM Peak Hour  
FB 2022



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	3	22	4	158	818	0
Future Volume (Veh/h)	3	22	4	158	818	0
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	3	22	4	158	818	0
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None TWLTL		
Median storage (veh)				2		
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	984	818	818			
vC1, stage 1 conf vol	818					
vC2, stage 2 conf vol	166					
vCu, unblocked vol	984	818	818			
tC, single (s)	6.4	6.2	4.3			
tC, 2 stage (s)	5.4					
tF (s)	3.5	3.3	2.4			
p0 queue free %	99	94	99			
cM capacity (veh/h)	418	379	719			
Direction, Lane #	EB 1	NB 1	NB 2	SB 1	SB 2	
Volume Total	25	4	158	818	0	
Volume Left	3	4	0	0	0	
Volume Right	22	0	0	0	0	
cSH	383	719	1700	1700	1700	
Volume to Capacity	0.07	0.01	0.09	0.48	0.00	
Queue Length 95th (m)	1.7	0.1	0.0	0.0	0.0	
Control Delay (s)	15.0	10.0	0.0	0.0	0.0	
Lane LOS	C	B				
Approach Delay (s)	15.0	0.2		0.0		
Approach LOS	C					
Intersection Summary						
Average Delay			0.4			
Intersection Capacity Utilization			53.1%	ICU Level of Service	A	
Analysis Period (min)			15			

Queues

AM Peak Hour

6: Airport Road & Olde Base Line Rd

FB 2022



Lane Group	EBL	NBL	NBT	SBT
Lane Configurations				
Traffic Volume (vph)	37	12	120	649
Future Volume (vph)	37	12	120	649
Lane Group Flow (vph)	101	0	132	817
Turn Type	Prot	Perm	NA	NA
Protected Phases	4		2	2
Permitted Phases		2		
Detector Phase	4	2	2	2
Switch Phase				
Minimum Initial (s)	8.0	12.0	12.0	12.0
Minimum Split (s)	19.6	20.0	20.0	20.0
Total Split (s)	26.6	62.0	62.0	62.0
Total Split (%)	30.0%	70.0%	70.0%	70.0%
Yellow Time (s)	4.0	4.0	4.0	4.0
All-Red Time (s)	2.6	2.0	2.0	2.0
Lost Time Adjust (s)	0.0		0.0	0.0
Total Lost Time (s)	6.6		6.0	6.0
Lead/Lag				
Lead-Lag Optimize?				
Recall Mode	None	Max	Max	Max
v/c Ratio	0.43		0.12	0.56
Control Delay	21.1		3.5	6.4
Queue Delay	0.0		0.0	0.0
Total Delay	21.1		3.5	6.4
Queue Length 50th (m)	6.1		4.7	45.8
Queue Length 95th (m)	19.1		11.1	87.9
Internal Link Dist (m)	373.9		480.2	717.9
Turn Bay Length (m)				
Base Capacity (vph)	456		1087	1452
Starvation Cap Reductn	0		0	0
Spillback Cap Reductn	0		0	0
Storage Cap Reductn	0		0	0
Reduced v/c Ratio	0.22		0.12	0.56

Intersection Summary

Cycle Length: 88.6

Actuated Cycle Length: 83.2

Natural Cycle: 60

Control Type: Semi Act-Uncoord

Splits and Phases: 6: Airport Road & Olde Base Line Rd





# HCM Signalized Intersection Capacity Analysis

## 6: Airport Road & Olde Base Line Rd

AM Peak Hour  
FB 2022



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	37	64	12	120	649	168
Future Volume (vph)	37	64	12	120	649	168
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width	3.7	3.5	3.7	3.5	3.7	3.5
Total Lost time (s)	6.6			6.0	6.0	
Lane Util. Factor	1.00			1.00	1.00	
Frt	0.91			1.00	0.97	
Flt Protected	0.98			1.00	1.00	
Satd. Flow (prot)	1693			1459	1821	
Flt Permitted	0.98			0.93	1.00	
Satd. Flow (perm)	1693			1367	1821	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	37	64	12	120	649	168
RTOR Reduction (vph)	59	0	0	0	7	0
Lane Group Flow (vph)	42	0	0	132	810	0
Heavy Vehicles (%)	0%	3%	0%	31%	3%	1%
Turn Type	Prot		Perm	NA	NA	
Protected Phases	4			2	2	
Permitted Phases			2			
Actuated Green, G (s)	7.1			64.8	64.8	
Effective Green, g (s)	7.1			64.8	64.8	
Actuated g/C Ratio	0.08			0.77	0.77	
Clearance Time (s)	6.6			6.0	6.0	
Vehicle Extension (s)	3.0			3.0	3.0	
Lane Grp Cap (vph)	142			1048	1396	
v/s Ratio Prot	c0.03				c0.45	
v/s Ratio Perm				0.10		
v/c Ratio	0.30			0.13	0.58	
Uniform Delay, d1	36.4			2.5	4.1	
Progression Factor	1.00			1.00	1.00	
Incremental Delay, d2	1.2			0.2	1.8	
Delay (s)	37.5			2.8	5.9	
Level of Service	D			A	A	
Approach Delay (s)	37.5			2.8	5.9	
Approach LOS	D			A	A	

### Intersection Summary

HCM 2000 Control Delay	8.6	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.55		
Actuated Cycle Length (s)	84.5	Sum of lost time (s)	12.6
Intersection Capacity Utilization	61.5%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

Queues  
7: Airport Road & Caledon Trail Pathway

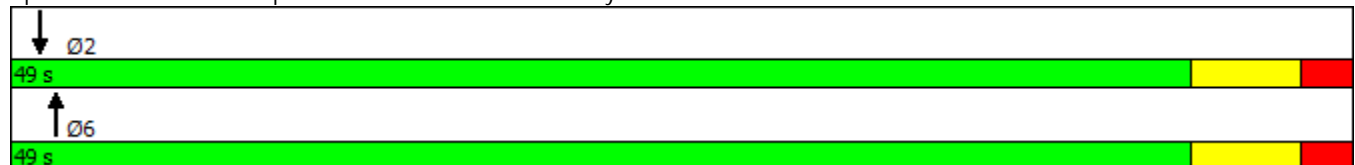
AM Peak Hour  
FB 2022

	↑	↓
Lane Group	NBT	SBT
Lane Configurations	↑	↑
Traffic Volume (vph)	143	731
Future Volume (vph)	143	731
Lane Group Flow (vph)	143	731
Turn Type	NA	NA
Protected Phases	6	2
Permitted Phases		
Detector Phase	6	2
Switch Phase		
Minimum Initial (s)	8.0	8.0
Minimum Split (s)	24.0	24.0
Total Split (s)	49.0	49.0
Total Split (%)	100.0%	100.0%
Yellow Time (s)	4.0	4.0
All-Red Time (s)	2.0	2.0
Lost Time Adjust (s)	0.0	0.0
Total Lost Time (s)	6.0	6.0
Lead/Lag		
Lead-Lag Optimize?		
Recall Mode	Max	Max
v/c Ratio	0.09	0.39
Control Delay	0.1	0.6
Queue Delay	0.0	0.0
Total Delay	0.1	0.6
Queue Length 50th (m)	0.0	0.0
Queue Length 95th (m)	0.0	0.0
Internal Link Dist (m)	16.1	214.0
Turn Bay Length (m)		
Base Capacity (vph)	1671	1883
Starvation Cap Reductn	0	0
Spillback Cap Reductn	0	0
Storage Cap Reductn	0	0
Reduced v/c Ratio	0.09	0.39

Intersection Summary

Cycle Length: 49  
 Actuated Cycle Length: 64  
 Natural Cycle: 40  
 Control Type: Semi Act-Uncoord

Splits and Phases: 7: Airport Road & Caledon Trail Pathway



# HCM Signalized Intersection Capacity Analysis

## 7: Airport Road & Caledon Trail Pathway

AM Peak Hour  
FB 2022



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations								↑			↑		
Traffic Volume (vph)	0	0	0	0	0	0	0	143	0	0	731	0	
Future Volume (vph)	0	0	0	0	0	0	0	143	0	0	731	0	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	
Total Lost time (s)								6.0			6.0		
Lane Util. Factor								1.00			1.00		
Frt								1.00			1.00		
Flt Protected								1.00			1.00		
Satd. Flow (prot)								1671			1883		
Flt Permitted								1.00			1.00		
Satd. Flow (perm)								1671			1883		
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Adj. Flow (vph)	0	0	0	0	0	0	0	143	0	0	731	0	
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0	
Lane Group Flow (vph)	0	0	0	0	0	0	0	143	0	0	731	0	
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	0%	15%	0%	0%	2%	0%	
Turn Type								NA			NA		
Protected Phases								6			2		
Permitted Phases													
Actuated Green, G (s)								64.0			64.0		
Effective Green, g (s)								64.0			64.0		
Actuated g/C Ratio								1.00			1.00		
Clearance Time (s)								6.0			6.0		
Vehicle Extension (s)								3.0			3.0		
Lane Grp Cap (vph)								1671			1883		
v/s Ratio Prot								0.09			0.39		
v/s Ratio Perm													
v/c Ratio								0.09			0.39		
Uniform Delay, d1								0.0			0.0		
Progression Factor								1.00			1.00		
Incremental Delay, d2								0.1			0.6		
Delay (s)								0.1			0.6		
Level of Service								A			A		
Approach Delay (s)		0.0				0.0		0.1			0.6		
Approach LOS		A				A		A			A		
<b>Intersection Summary</b>													
HCM 2000 Control Delay			0.5					HCM 2000 Level of Service			A		
HCM 2000 Volume to Capacity ratio			0.43										
Actuated Cycle Length (s)			64.0					Sum of lost time (s)			6.0		
Intersection Capacity Utilization			43.5%					ICU Level of Service			A		
Analysis Period (min)			15										
c Critical Lane Group													

Queues

PM Peak Hour

1: Airport Road & LCBO Driveway/Old Church Road

FB 2022



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT
Lane Configurations		↕	↗	↖		↖	↗		↕
Traffic Volume (vph)	16	7	147	12	11	521	330	39	201
Future Volume (vph)	16	7	147	12	11	521	330	39	201
Lane Group Flow (vph)	0	31	147	129	0	532	330	0	246
Turn Type	Perm	NA	Perm	NA	Perm	NA	Perm	Perm	NA
Protected Phases		2		2		1			1
Permitted Phases	2		2		1		1	1	
Detector Phase	2	2	2	2	1	1	1	1	1
Switch Phase									
Minimum Initial (s)	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0
Minimum Split (s)	24.6	24.6	24.6	24.6	32.1	32.1	32.1	32.1	32.1
Total Split (s)	28.0	28.0	28.0	28.0	42.0	42.0	42.0	42.0	42.0
Total Split (%)	40.0%	40.0%	40.0%	40.0%	60.0%	60.0%	60.0%	60.0%	60.0%
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	2.6	2.6	2.6	2.6	3.1	3.1	3.1	3.1	3.1
Lost Time Adjust (s)		0.0	0.0	0.0		0.0	0.0		0.0
Total Lost Time (s)		6.6	6.6	6.6		7.1	7.1		7.1
Lead/Lag	Lag	Lag	Lag	Lag	Lead	Lead	Lead	Lead	Lead
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	Max	Max	Max	Max	Max	Max	Max	Max	Max
v/c Ratio		0.06	0.35	0.22		0.58	0.34		0.32
Control Delay		14.5	21.9	6.0		15.6	2.4		11.7
Queue Delay		0.0	0.0	0.0		0.0	0.0		0.0
Total Delay		14.5	21.9	6.0		15.6	2.4		11.7
Queue Length 50th (m)		2.2	15.6	1.2		48.5	0.0		18.7
Queue Length 95th (m)		7.9	30.6	12.3		77.3	11.5		33.1
Internal Link Dist (m)		54.2		143.8		214.0			592.7
Turn Bay Length (m)							45.0		
Base Capacity (vph)		488	419	579		914	961		777
Starvation Cap Reductn		0	0	0		0	0		0
Spillback Cap Reductn		0	0	0		0	0		0
Storage Cap Reductn		0	0	0		0	0		0
Reduced v/c Ratio		0.06	0.35	0.22		0.58	0.34		0.32

Intersection Summary

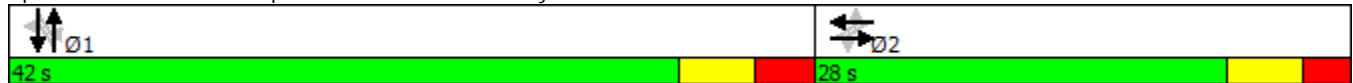
Cycle Length: 70

Actuated Cycle Length: 70

Natural Cycle: 60

Control Type: Semi Act-Uncoord

Splits and Phases: 1: Airport Road & LCBO Driveway/Old Church Road



# HCM Signalized Intersection Capacity Analysis

## 1: Airport Road & LCBO Driveway/Old Church Road

PM Peak Hour  
FB 2022



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕		↕	↕			↕	↕		↕	
Traffic Volume (vph)	16	7	8	147	12	117	11	521	330	39	201	6
Future Volume (vph)	16	7	8	147	12	117	11	521	330	39	201	6
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5
Total Lost time (s)		6.6		6.6	6.6			7.1	7.1		7.1	
Lane Util. Factor		1.00		1.00	1.00			1.00	1.00		1.00	
Frt		0.97		1.00	0.86			1.00	0.85		1.00	
Flt Protected		0.97		0.95	1.00			1.00	1.00		0.99	
Satd. Flow (prot)		1808		1767	1630			1847	1597		1770	
Flt Permitted		0.85		0.74	1.00			0.99	1.00		0.87	
Satd. Flow (perm)		1579		1371	1630			1835	1597		1555	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	16	7	8	147	12	117	11	521	330	39	201	6
RTOR Reduction (vph)	0	6	0	0	81	0	0	0	165	0	2	0
Lane Group Flow (vph)	0	25	0	147	48	0	0	532	165	0	244	0
Heavy Vehicles (%)	0%	0%	0%	1%	0%	2%	0%	4%	0%	0%	9%	0%
Turn Type	Perm	NA		Perm	NA		Perm	NA	Perm	Perm	NA	
Protected Phases		2			2			1			1	
Permitted Phases	2			2			1		1	1		
Actuated Green, G (s)		21.4		21.4	21.4			34.9	34.9		34.9	
Effective Green, g (s)		21.4		21.4	21.4			34.9	34.9		34.9	
Actuated g/C Ratio		0.31		0.31	0.31			0.50	0.50		0.50	
Clearance Time (s)		6.6		6.6	6.6			7.1	7.1		7.1	
Vehicle Extension (s)		3.0		3.0	3.0			3.0	3.0		3.0	
Lane Grp Cap (vph)		482		419	498			914	796		775	
v/s Ratio Prot					0.03							
v/s Ratio Perm		0.02		c0.11				c0.29	0.10		0.16	
v/c Ratio		0.05		0.35	0.10			0.58	0.21		0.32	
Uniform Delay, d1		17.1		18.9	17.4			12.4	9.8		10.4	
Progression Factor		1.00		1.00	1.00			1.00	1.00		1.00	
Incremental Delay, d2		0.2		2.3	0.4			2.7	0.6		1.1	
Delay (s)		17.4		21.2	17.8			15.1	10.4		11.5	
Level of Service		B		C	B			B	B		B	
Approach Delay (s)		17.4			19.6			13.3			11.5	
Approach LOS		B			B			B			B	

### Intersection Summary

HCM 2000 Control Delay	14.3	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.49		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	13.7
Intersection Capacity Utilization	71.4%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

# HCM Unsignalized Intersection Capacity Analysis

## 2: Airport Road & Mountcrest Rd

PM Peak Hour  
FB 2022



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	←	←	↑	↗	←	↘
Traffic Volume (veh/h)	1	5	939	13	7	374
Future Volume (Veh/h)	1	5	939	13	7	374
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	1	5	939	13	7	374
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			TWLTL			None
Median storage veh			2			
Upstream signal (m)						40
pX, platoon unblocked						
vC, conflicting volume	1327	939			952	
vC1, stage 1 conf vol	939					
vC2, stage 2 conf vol	388					
vCu, unblocked vol	1327	939			952	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)	5.4					
tF (s)	3.5	3.3			2.2	
p0 queue free %	100	98			99	
cM capacity (veh/h)	352	323			730	
Direction, Lane #	WB 1	NB 1	NB 2	SB 1		
Volume Total	6	939	13	381		
Volume Left	1	0	0	7		
Volume Right	5	0	13	0		
cSH	327	1700	1700	730		
Volume to Capacity	0.02	0.55	0.01	0.01		
Queue Length 95th (m)	0.4	0.0	0.0	0.2		
Control Delay (s)	16.2	0.0	0.0	0.3		
Lane LOS	C			A		
Approach Delay (s)	16.2	0.0		0.3		
Approach LOS	C					
Intersection Summary						
Average Delay			0.2			
Intersection Capacity Utilization			59.4%		ICU Level of Service	B
Analysis Period (min)			15			

# HCM Unsignalized Intersection Capacity Analysis

## 3: Airport Road & Hiltop Dr

PM Peak Hour  
FB 2022



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	3	7	29	944	366	0
Future Volume (Veh/h)	3	7	29	944	366	0
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	3	7	29	944	366	0
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type						
				TWLTL	TWLTL	
Median storage veh				2	2	
Upstream signal (m)				345		
pX, platoon unblocked						
vC, conflicting volume	1368	366	366			
vC1, stage 1 conf vol	366					
vC2, stage 2 conf vol	1002					
vCu, unblocked vol	1368	366	366			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)	5.4					
tF (s)	3.5	3.3	2.2			
p0 queue free %	99	99	98			
cM capacity (veh/h)	326	684	1204			
Direction, Lane #	EB 1	NB 1	NB 2	SB 1		
Volume Total	10	29	944	366		
Volume Left	3	29	0	0		
Volume Right	7	0	0	0		
cSH	514	1204	1700	1700		
Volume to Capacity	0.02	0.02	0.56	0.22		
Queue Length 95th (m)	0.5	0.6	0.0	0.0		
Control Delay (s)	12.1	8.1	0.0	0.0		
Lane LOS	B	A				
Approach Delay (s)	12.1	0.2	0.0			
Approach LOS	B					
Intersection Summary						
Average Delay			0.3			
Intersection Capacity Utilization			59.7%	ICU Level of Service	B	
Analysis Period (min)			15			

# HCM Unsignalized Intersection Capacity Analysis

## 4: Airport Road & School Driveway - R/L out

PM Peak Hour  
FB 2022



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	29	19	0	939	374	0
Future Volume (Veh/h)	29	19	0	939	374	0
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	29	19	0	939	374	0
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type						
TWLTL TWLTL						
Median storage veh						
2 2						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	1313	374	374			
vC1, stage 1 conf vol	374					
vC2, stage 2 conf vol	939					
vCu, unblocked vol	1313	374	374			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)	5.4					
tF (s)	3.5	3.3	2.2			
p0 queue free %	92	97	100			
cM capacity (veh/h)	354	677	1196			
<b>Direction, Lane #</b>						
	EB 1	NB 1	SB 1			
Volume Total	48	939	374			
Volume Left	29	0	0			
Volume Right	19	0	0			
cSH	436	1700	1700			
Volume to Capacity	0.11	0.55	0.22			
Queue Length 95th (m)	2.9	0.0	0.0			
Control Delay (s)	14.3	0.0	0.0			
Lane LOS	B					
Approach Delay (s)	14.3	0.0	0.0			
Approach LOS	B					
<b>Intersection Summary</b>						
Average Delay			0.5			
Intersection Capacity Utilization		59.4%		ICU Level of Service		B
Analysis Period (min)			15			



# HCM Unsignalized Intersection Capacity Analysis

## 5: Airport Road & Cranston Dr

PM Peak Hour  
FB 2022



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	5	4	21	933	392	4
Future Volume (Veh/h)	5	4	21	933	392	4
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	5	4	21	933	392	4
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None TWLTL		
Median storage (veh)				2		
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	1367	392	396			
vC1, stage 1 conf vol	392					
vC2, stage 2 conf vol	975					
vCu, unblocked vol	1367	392	396			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)	5.4					
tF (s)	3.5	3.3	2.2			
p0 queue free %	99	99	98			
cM capacity (veh/h)	335	661	1174			
Direction, Lane #	EB 1	NB 1	NB 2	SB 1	SB 2	
Volume Total	9	21	933	392	4	
Volume Left	5	21	0	0	0	
Volume Right	4	0	0	0	4	
cSH	429	1174	1700	1700	1700	
Volume to Capacity	0.02	0.02	0.55	0.23	0.00	
Queue Length 95th (m)	0.5	0.4	0.0	0.0	0.0	
Control Delay (s)	13.6	8.1	0.0	0.0	0.0	
Lane LOS	B	A				
Approach Delay (s)	13.6	0.2		0.0		
Approach LOS	B					
Intersection Summary						
Average Delay			0.2			
Intersection Capacity Utilization			59.1%	ICU Level of Service		B
Analysis Period (min)			15			

Queues  
6: Airport Road & Olde Base Line Rd

PM Peak Hour  
FB 2022



Lane Group	EBL	NBL	NBT	SBT
Lane Configurations				
Traffic Volume (vph)	204	81	721	305
Future Volume (vph)	204	81	721	305
Lane Group Flow (vph)	226	0	802	384
Turn Type	Prot	Perm	NA	NA
Protected Phases	4		2	2
Permitted Phases		2		
Detector Phase	4	2	2	2
Switch Phase				
Minimum Initial (s)	8.0	12.0	12.0	12.0
Minimum Split (s)	19.6	20.0	20.0	20.0
Total Split (s)	26.6	62.0	62.0	62.0
Total Split (%)	30.0%	70.0%	70.0%	70.0%
Yellow Time (s)	4.0	4.0	4.0	4.0
All-Red Time (s)	2.6	2.0	2.0	2.0
Lost Time Adjust (s)	0.0		0.0	0.0
Total Lost Time (s)	6.6		6.0	6.0
Lead/Lag				
Lead-Lag Optimize?				
Recall Mode	None	Max	Max	Max
v/c Ratio	0.69		0.71	0.32
Control Delay	43.3		13.9	6.7
Queue Delay	0.0		0.0	0.0
Total Delay	43.3		13.9	6.7
Queue Length 50th (m)	34.9		74.9	21.8
Queue Length 95th (m)	58.4		142.1	42.0
Internal Link Dist (m)	373.9		480.2	717.9
Turn Bay Length (m)				
Base Capacity (vph)	426		1136	1186
Starvation Cap Reductn	0		0	0
Spillback Cap Reductn	0		0	0
Storage Cap Reductn	0		0	0
Reduced v/c Ratio	0.53		0.71	0.32

Intersection Summary

Cycle Length: 88.6  
 Actuated Cycle Length: 85.7  
 Natural Cycle: 60  
 Control Type: Semi Act-Uncoord

Splits and Phases: 6: Airport Road & Olde Base Line Rd



# HCM Signalized Intersection Capacity Analysis

## 6: Airport Road & Olde Base Line Rd

PM Peak Hour  
FB 2022



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	204	22	81	721	305	79
Future Volume (vph)	204	22	81	721	305	79
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width	3.7	3.5	3.7	3.5	3.7	3.5
Total Lost time (s)	6.6			6.0	6.0	
Lane Util. Factor	1.00			1.00	1.00	
Frt	0.99			1.00	0.97	
Flt Protected	0.96			0.99	1.00	
Satd. Flow (prot)	1805			1820	1743	
Flt Permitted	0.96			0.92	1.00	
Satd. Flow (perm)	1805			1684	1743	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	204	22	81	721	305	79
RTOR Reduction (vph)	5	0	0	0	9	0
Lane Group Flow (vph)	221	0	0	802	375	0
Heavy Vehicles (%)	0%	5%	0%	3%	9%	0%
Turn Type	Prot		Perm	NA	NA	
Protected Phases	4			2	2	
Permitted Phases			2			
Actuated Green, G (s)	15.2			57.9	57.9	
Effective Green, g (s)	15.2			57.9	57.9	
Actuated g/C Ratio	0.18			0.68	0.68	
Clearance Time (s)	6.6			6.0	6.0	
Vehicle Extension (s)	3.0			3.0	3.0	
Lane Grp Cap (vph)	320			1137	1177	
v/s Ratio Prot	c0.12				0.21	
v/s Ratio Perm				c0.48		
v/c Ratio	0.69			0.71	0.32	
Uniform Delay, d1	33.0			8.6	5.7	
Progression Factor	1.00			1.00	1.00	
Incremental Delay, d2	6.3			3.7	0.7	
Delay (s)	39.3			12.3	6.5	
Level of Service	D			B	A	
Approach Delay (s)	39.3			12.3	6.5	
Approach LOS	D			B	A	

### Intersection Summary

HCM 2000 Control Delay	15.0	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.70		
Actuated Cycle Length (s)	85.7	Sum of lost time (s)	12.6
Intersection Capacity Utilization	91.4%	ICU Level of Service	F
Analysis Period (min)	15		

c Critical Lane Group

Queues  
7: Airport Road & Caledon Trail Pathway

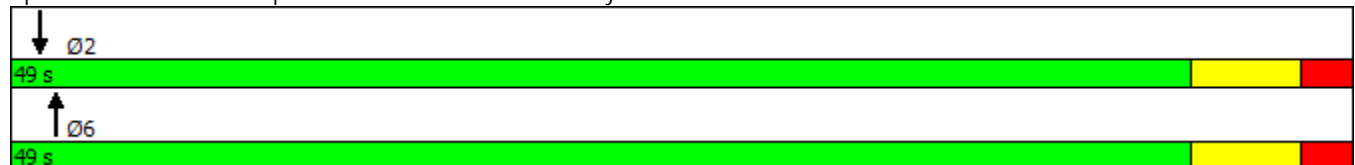
PM Peak Hour  
FB 2022

	↑	↓
Lane Group	NBT	SBT
Lane Configurations	↑	↑
Traffic Volume (vph)	648	253
Future Volume (vph)	648	253
Lane Group Flow (vph)	648	253
Turn Type	NA	NA
Protected Phases	6	2
Permitted Phases		
Detector Phase	6	2
Switch Phase		
Minimum Initial (s)	8.0	8.0
Minimum Split (s)	24.0	24.0
Total Split (s)	49.0	49.0
Total Split (%)	100.0%	100.0%
Yellow Time (s)	4.0	4.0
All-Red Time (s)	2.0	2.0
Lost Time Adjust (s)	0.0	0.0
Total Lost Time (s)	6.0	6.0
Lead/Lag		
Lead-Lag Optimize?		
Recall Mode	Max	Max
v/c Ratio	0.34	0.14
Control Delay	0.5	0.2
Queue Delay	0.0	0.0
Total Delay	0.5	0.2
Queue Length 50th (m)	0.0	0.0
Queue Length 95th (m)	0.0	0.0
Internal Link Dist (m)	16.1	214.0
Turn Bay Length (m)		
Base Capacity (vph)	1883	1762
Starvation Cap Reductn	0	0
Spillback Cap Reductn	0	0
Storage Cap Reductn	0	0
Reduced v/c Ratio	0.34	0.14

Intersection Summary

Cycle Length: 49  
 Actuated Cycle Length: 64  
 Natural Cycle: 40  
 Control Type: Semi Act-Uncoord

Splits and Phases: 7: Airport Road & Caledon Trail Pathway



# HCM Signalized Intersection Capacity Analysis

## 7: Airport Road & Caledon Trail Pathway

PM Peak Hour  
FB 2022



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations								↑			↑	
Traffic Volume (vph)	0	0	0	0	0	0	0	648	0	0	253	0
Future Volume (vph)	0	0	0	0	0	0	0	648	0	0	253	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)								6.0			6.0	
Lane Util. Factor								1.00			1.00	
Frt								1.00			1.00	
Flt Protected								1.00			1.00	
Satd. Flow (prot)								1883			1762	
Flt Permitted								1.00			1.00	
Satd. Flow (perm)								1883			1762	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	0	0	0	0	0	0	0	648	0	0	253	0
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	0	0	0	0	0	0	648	0	0	253	0
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	0%	2%	0%	0%	9%	0%
Turn Type								NA			NA	
Protected Phases								6			2	
Permitted Phases												
Actuated Green, G (s)								64.0			64.0	
Effective Green, g (s)								64.0			64.0	
Actuated g/C Ratio								1.00			1.00	
Clearance Time (s)								6.0			6.0	
Vehicle Extension (s)								3.0			3.0	
Lane Grp Cap (vph)								1883			1762	
v/s Ratio Prot								0.34			0.14	
v/s Ratio Perm												
v/c Ratio								0.34			0.14	
Uniform Delay, d1								0.0			0.0	
Progression Factor								1.00			1.00	
Incremental Delay, d2								0.5			0.2	
Delay (s)								0.5			0.2	
Level of Service								A			A	
Approach Delay (s)		0.0				0.0		0.5			0.2	
Approach LOS		A				A		A			A	
<b>Intersection Summary</b>												
HCM 2000 Control Delay			0.4					HCM 2000 Level of Service			A	
HCM 2000 Volume to Capacity ratio			0.38									
Actuated Cycle Length (s)			64.0					Sum of lost time (s)			6.0	
Intersection Capacity Utilization			39.1%					ICU Level of Service			A	
Analysis Period (min)			15									
c Critical Lane Group												

**APPENDIX E**  
**Future (2032) Background Traffic**  
Level Of Service Outputs

Queues  
1: Airport Road & LCBO Driveway/Old Church Road

AM Peak Hour  
FB 2032

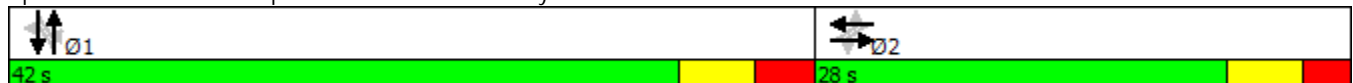


Lane Group	EBT	WBL	WBT	NBT	NBR	SBL	SBT
Lane Configurations							
Traffic Volume (vph)	1	237	0	106	71	45	557
Future Volume (vph)	1	237	0	106	71	45	557
Lane Group Flow (vph)	2	237	30	106	71	0	603
Turn Type	NA	Perm	NA	NA	Perm	Perm	NA
Protected Phases	2		2	1			1
Permitted Phases		2			1	1	
Detector Phase	2	2	2	1	1	1	1
Switch Phase							
Minimum Initial (s)	8.0	8.0	8.0	8.0	8.0	8.0	8.0
Minimum Split (s)	24.6	24.6	24.6	32.1	32.1	32.1	32.1
Total Split (s)	28.0	28.0	28.0	42.0	42.0	42.0	42.0
Total Split (%)	40.0%	40.0%	40.0%	60.0%	60.0%	60.0%	60.0%
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	2.6	2.6	2.6	3.1	3.1	3.1	3.1
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0		0.0
Total Lost Time (s)	6.6	6.6	6.6	7.1	7.1		7.1
Lead/Lag	Lag	Lag	Lag	Lead	Lead	Lead	Lead
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	Max	Max	Max	Max	Max	Max	Max
v/c Ratio	0.00	0.55	0.03	0.13	0.09		0.67
Control Delay	15.0	25.9	0.0	10.0	3.0		17.7
Queue Delay	0.0	0.0	0.0	0.0	0.0		0.0
Total Delay	15.0	25.9	0.0	10.0	3.0		17.7
Queue Length 50th (m)	0.1	26.9	0.0	7.3	0.0		58.5
Queue Length 95th (m)	1.5	48.6	0.0	15.1	5.6		93.5
Internal Link Dist (m)	54.2		143.8	214.0			592.7
Turn Bay Length (m)					45.0		
Base Capacity (vph)	547	434	1076	811	779		904
Starvation Cap Reductn	0	0	0	0	0		0
Spillback Cap Reductn	0	0	0	0	0		0
Storage Cap Reductn	0	0	0	0	0		0
Reduced v/c Ratio	0.00	0.55	0.03	0.13	0.09		0.67

Intersection Summary

Cycle Length: 70  
 Actuated Cycle Length: 70  
 Natural Cycle: 60  
 Control Type: Semi Act-Uncoord

Splits and Phases: 1: Airport Road & LCBO Driveway/Old Church Road



HCM Signalized Intersection Capacity Analysis  
1: Airport Road & LCBO Driveway/Old Church Road

AM Peak Hour  
FB 2032



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕		↕	↕			↕	↕		↕	
Traffic Volume (vph)	0	1	1	237	0	30	0	106	71	45	557	1
Future Volume (vph)	0	1	1	237	0	30	0	106	71	45	557	1
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5
Total Lost time (s)		6.6		6.6	6.6			7.1	7.1		7.1	
Lane Util. Factor		1.00		1.00	1.00			1.00	1.00		1.00	
Frt		0.93		1.00	0.85			1.00	0.85		1.00	
Flt Protected		1.00		0.95	1.00			1.00	1.00		1.00	
Satd. Flow (prot)		1791		1785	1633			1628	1493		1862	
Flt Permitted		1.00		0.76	1.00			1.00	1.00		0.97	
Satd. Flow (perm)		1791		1421	1633			1628	1493		1815	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	0	1	1	237	0	30	0	106	71	45	557	1
RTOR Reduction (vph)	0	1	0	0	21	0	0	0	36	0	0	0
Lane Group Flow (vph)	0	1	0	237	9	0	0	106	35	0	603	0
Heavy Vehicles (%)	4%	0%	0%	0%	0%	0%	0%	18%	7%	0%	3%	0%
Turn Type		NA		Perm	NA			NA	Perm	Perm	NA	
Protected Phases		2			2			1		1		1
Permitted Phases	2			2			1		1	1		
Actuated Green, G (s)		21.4		21.4	21.4			34.9	34.9		34.9	
Effective Green, g (s)		21.4		21.4	21.4			34.9	34.9		34.9	
Actuated g/C Ratio		0.31		0.31	0.31			0.50	0.50		0.50	
Clearance Time (s)		6.6		6.6	6.6			7.1	7.1		7.1	
Vehicle Extension (s)		3.0		3.0	3.0			3.0	3.0		3.0	
Lane Grp Cap (vph)		547		434	499			811	744		904	
v/s Ratio Prot		0.00			0.01			0.07				
v/s Ratio Perm				c0.17					0.02		c0.33	
v/c Ratio		0.00		0.55	0.02			0.13	0.05		0.67	
Uniform Delay, d1		16.9		20.3	17.0			9.4	9.0		13.2	
Progression Factor		1.00		1.00	1.00			1.00	1.00		1.00	
Incremental Delay, d2		0.0		4.9	0.1			0.3	0.1		3.9	
Delay (s)		16.9		25.1	17.0			9.7	9.1		17.1	
Level of Service		B		C	B			A	A		B	
Approach Delay (s)		16.9			24.2			9.5			17.1	
Approach LOS		B			C			A			B	

Intersection Summary

HCM 2000 Control Delay	17.6	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.62		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	13.7
Intersection Capacity Utilization	69.7%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group



# HCM Unsignalized Intersection Capacity Analysis

## 2: Airport Road & Mountcrest Rd

AM Peak Hour  
FB 2032



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	↙		↑	↗		↓
Traffic Volume (veh/h)	12	2	189	0	0	897
Future Volume (Veh/h)	12	2	189	0	0	897
Sign Control	Stop		Free		Free	
Grade	0%		0%		0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	12	2	189	0	0	897
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	TWLTL			None		
Median storage (veh)	2					
Upstream signal (m)				40		
pX, platoon unblocked						
vC, conflicting volume	1086	189			189	
vC1, stage 1 conf vol	189					
vC2, stage 2 conf vol	897					
vCu, unblocked vol	1086	189			189	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)	5.4					
tF (s)	3.5	3.3			2.2	
p0 queue free %	97	100			100	
cM capacity (veh/h)	384	858			1397	
Direction, Lane #	WB 1	NB 1	NB 2	SB 1		
Volume Total	14	189	0	897		
Volume Left	12	0	0	0		
Volume Right	2	0	0	0		
cSH	417	1700	1700	1397		
Volume to Capacity	0.03	0.11	0.00	0.00		
Queue Length 95th (m)	0.8	0.0	0.0	0.0		
Control Delay (s)	13.9	0.0	0.0	0.0		
Lane LOS	B					
Approach Delay (s)	13.9	0.0		0.0		
Approach LOS	B					
Intersection Summary						
Average Delay			0.2			
Intersection Capacity Utilization			57.2%	ICU Level of Service	B	
Analysis Period (min)			15			

# HCM Unsignalized Intersection Capacity Analysis

## 3: Airport Road & Hiltop Dr

AM Peak Hour  
FB 2032



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	1	8	5	183	909	0
Future Volume (Veh/h)	1	8	5	183	909	0
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	1	8	5	183	909	0
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type						
				TWLTL	TWLTL	
Median storage veh				2	2	
Upstream signal (m)				345		
pX, platoon unblocked						
vC, conflicting volume	1102	909	909			
vC1, stage 1 conf vol	909					
vC2, stage 2 conf vol	193					
vCu, unblocked vol	1102	909	909			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)	5.4					
tF (s)	3.5	3.3	2.2			
p0 queue free %	100	98	99			
cM capacity (veh/h)	378	336	757			
Direction, Lane #	EB 1	NB 1	NB 2	SB 1		
Volume Total	9	5	183	909		
Volume Left	1	5	0	0		
Volume Right	8	0	0	0		
cSH	340	757	1700	1700		
Volume to Capacity	0.03	0.01	0.11	0.53		
Queue Length 95th (m)	0.7	0.2	0.0	0.0		
Control Delay (s)	15.9	9.8	0.0	0.0		
Lane LOS	C	A				
Approach Delay (s)	15.9	0.3	0.0			
Approach LOS	C					
Intersection Summary						
Average Delay			0.2			
Intersection Capacity Utilization			57.8%	ICU Level of Service	B	
Analysis Period (min)			15			

# HCM Unsignalized Intersection Capacity Analysis

## 4: Airport Road & School Driveway - R/L out

AM Peak Hour  
FB 2032



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	↔			↑	↑	
Traffic Volume (veh/h)	44	45	0	185	920	0
Future Volume (Veh/h)	44	45	0	185	920	0
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	44	45	0	185	920	0
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type						
TWLTL TWLTL						
Median storage veh						
2 2						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	1105	920	920			
vC1, stage 1 conf vol	920					
vC2, stage 2 conf vol	185					
vCu, unblocked vol	1105	920	920			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)	5.4					
tF (s)	3.5	3.3	2.2			
p0 queue free %	88	86	100			
cM capacity (veh/h)	375	331	750			
<b>Direction, Lane #</b>						
	EB 1	NB 1	SB 1			
Volume Total	89	185	920			
Volume Left	44	0	0			
Volume Right	45	0	0			
cSH	351	1700	1700			
Volume to Capacity	0.25	0.11	0.54			
Queue Length 95th (m)	7.9	0.0	0.0			
Control Delay (s)	18.7	0.0	0.0			
Lane LOS	C					
Approach Delay (s)	18.7	0.0	0.0			
Approach LOS	C					
<b>Intersection Summary</b>						
Average Delay			1.4			
Intersection Capacity Utilization		60.3%		ICU Level of Service		B
Analysis Period (min)			15			

# HCM Unsignalized Intersection Capacity Analysis

## 5: Airport Road & Cranston Dr

AM Peak Hour  
FB 2032



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	3	22	4	182	985	0
Future Volume (Veh/h)	3	22	4	182	985	0
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	3	22	4	182	985	0
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None TWLTL		
Median storage (veh)				2		
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	1175	985	985			
vC1, stage 1 conf vol	985					
vC2, stage 2 conf vol	190					
vCu, unblocked vol	1175	985	985			
tC, single (s)	6.4	6.2	4.3			
tC, 2 stage (s)	5.4					
tF (s)	3.5	3.3	2.4			
p0 queue free %	99	93	99			
cM capacity (veh/h)	349	304	618			
Direction, Lane #	EB 1	NB 1	NB 2	SB 1	SB 2	
Volume Total	25	4	182	985	0	
Volume Left	3	4	0	0	0	
Volume Right	22	0	0	0	0	
cSH	309	618	1700	1700	1700	
Volume to Capacity	0.08	0.01	0.11	0.58	0.00	
Queue Length 95th (m)	2.1	0.2	0.0	0.0	0.0	
Control Delay (s)	17.7	10.9	0.0	0.0	0.0	
Lane LOS	C	B				
Approach Delay (s)	17.7	0.2		0.0		
Approach LOS	C					
Intersection Summary						
Average Delay			0.4			
Intersection Capacity Utilization			61.8%	ICU Level of Service	B	
Analysis Period (min)			15			

Queues  
6: Airport Road & Olde Base Line Rd

AM Peak Hour  
FB 2032



Lane Group	EBL	NBL	NBT	SBT
Lane Configurations				
Traffic Volume (vph)	37	12	136	780
Future Volume (vph)	37	12	136	780
Lane Group Flow (vph)	101	0	148	948
Turn Type	Prot	Perm	NA	NA
Protected Phases	4		2	2
Permitted Phases		2		
Detector Phase	4	2	2	2
Switch Phase				
Minimum Initial (s)	8.0	12.0	12.0	12.0
Minimum Split (s)	19.6	20.0	20.0	20.0
Total Split (s)	26.6	62.0	62.0	62.0
Total Split (%)	30.0%	70.0%	70.0%	70.0%
Yellow Time (s)	4.0	4.0	4.0	4.0
All-Red Time (s)	2.6	2.0	2.0	2.0
Lost Time Adjust (s)	0.0		0.0	0.0
Total Lost Time (s)	6.6		6.0	6.0
Lead/Lag				
Lead-Lag Optimize?				
Recall Mode	None	Max	Max	Max
v/c Ratio	0.43		0.14	0.65
Control Delay	21.1		3.5	8.0
Queue Delay	0.0		0.0	0.0
Total Delay	21.1		3.5	8.0
Queue Length 50th (m)	6.1		5.4	61.6
Queue Length 95th (m)	19.1		12.3	121.5
Internal Link Dist (m)	373.9		480.2	717.9
Turn Bay Length (m)				
Base Capacity (vph)	456		1079	1457
Starvation Cap Reductn	0		0	0
Spillback Cap Reductn	0		0	0
Storage Cap Reductn	0		0	0
Reduced v/c Ratio	0.22		0.14	0.65

Intersection Summary

Cycle Length: 88.6  
 Actuated Cycle Length: 83.2  
 Natural Cycle: 60  
 Control Type: Semi Act-Uncoord

Splits and Phases: 6: Airport Road & Olde Base Line Rd



# HCM Signalized Intersection Capacity Analysis

## 6: Airport Road & Olde Base Line Rd

AM Peak Hour  
FB 2032



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	37	64	12	136	780	168
Future Volume (vph)	37	64	12	136	780	168
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width	3.7	3.5	3.7	3.5	3.7	3.5
Total Lost time (s)	6.6			6.0	6.0	
Lane Util. Factor	1.00			1.00	1.00	
Frt	0.91			1.00	0.98	
Flt Protected	0.98			1.00	1.00	
Satd. Flow (prot)	1693			1456	1827	
Flt Permitted	0.98			0.93	1.00	
Satd. Flow (perm)	1693			1359	1827	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	37	64	12	136	780	168
RTOR Reduction (vph)	59	0	0	0	6	0
Lane Group Flow (vph)	42	0	0	148	942	0
Heavy Vehicles (%)	0%	3%	0%	31%	3%	1%
Turn Type	Prot		Perm	NA	NA	
Protected Phases	4			2	2	
Permitted Phases			2			
Actuated Green, G (s)	7.1			64.8	64.8	
Effective Green, g (s)	7.1			64.8	64.8	
Actuated g/C Ratio	0.08			0.77	0.77	
Clearance Time (s)	6.6			6.0	6.0	
Vehicle Extension (s)	3.0			3.0	3.0	
Lane Grp Cap (vph)	142			1042	1401	
v/s Ratio Prot	c0.03				c0.52	
v/s Ratio Perm				0.11		
v/c Ratio	0.30			0.14	0.67	
Uniform Delay, d1	36.4			2.6	4.7	
Progression Factor	1.00			1.00	1.00	
Incremental Delay, d2	1.2			0.3	2.6	
Delay (s)	37.5			2.9	7.3	
Level of Service	D			A	A	
Approach Delay (s)	37.5			2.9	7.3	
Approach LOS	D			A	A	

### Intersection Summary

HCM 2000 Control Delay	9.3	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.64		
Actuated Cycle Length (s)	84.5	Sum of lost time (s)	12.6
Intersection Capacity Utilization	68.4%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

Queues  
7: Airport Road & Caledon Trail Pathway

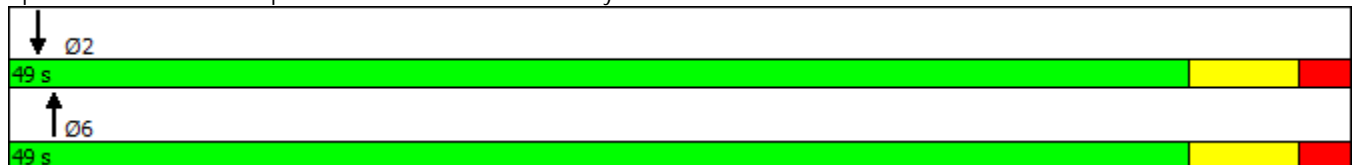
AM Peak Hour  
FB 2032

	↑	↓
Lane Group	NBT	SBT
Lane Configurations	↑	↑
Traffic Volume (vph)	154	800
Future Volume (vph)	154	800
Lane Group Flow (vph)	154	800
Turn Type	NA	NA
Protected Phases	6	2
Permitted Phases		
Detector Phase	6	2
Switch Phase		
Minimum Initial (s)	8.0	8.0
Minimum Split (s)	24.0	24.0
Total Split (s)	49.0	49.0
Total Split (%)	100.0%	100.0%
Yellow Time (s)	4.0	4.0
All-Red Time (s)	2.0	2.0
Lost Time Adjust (s)	0.0	0.0
Total Lost Time (s)	6.0	6.0
Lead/Lag		
Lead-Lag Optimize?		
Recall Mode	Max	Max
v/c Ratio	0.09	0.42
Control Delay	0.1	0.7
Queue Delay	0.0	0.0
Total Delay	0.1	0.7
Queue Length 50th (m)	0.0	0.0
Queue Length 95th (m)	0.0	0.0
Internal Link Dist (m)	16.1	214.0
Turn Bay Length (m)		
Base Capacity (vph)	1671	1883
Starvation Cap Reductn	0	0
Spillback Cap Reductn	0	0
Storage Cap Reductn	0	0
Reduced v/c Ratio	0.09	0.42

Intersection Summary

Cycle Length: 49  
 Actuated Cycle Length: 64  
 Natural Cycle: 40  
 Control Type: Semi Act-Uncoord

Splits and Phases: 7: Airport Road & Caledon Trail Pathway



# HCM Signalized Intersection Capacity Analysis

## 7: Airport Road & Caledon Trail Pathway

AM Peak Hour  
FB 2032



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations								↑			↑		
Traffic Volume (vph)	0	0	0	0	0	0	0	154	0	0	800	0	
Future Volume (vph)	0	0	0	0	0	0	0	154	0	0	800	0	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	
Total Lost time (s)								6.0			6.0		
Lane Util. Factor								1.00			1.00		
Frt								1.00			1.00		
Flt Protected								1.00			1.00		
Satd. Flow (prot)								1671			1883		
Flt Permitted								1.00			1.00		
Satd. Flow (perm)								1671			1883		
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Adj. Flow (vph)	0	0	0	0	0	0	0	154	0	0	800	0	
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0	
Lane Group Flow (vph)	0	0	0	0	0	0	0	154	0	0	800	0	
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	0%	15%	0%	0%	2%	0%	
Turn Type								NA			NA		
Protected Phases								6			2		
Permitted Phases													
Actuated Green, G (s)								64.0			64.0		
Effective Green, g (s)								64.0			64.0		
Actuated g/C Ratio								1.00			1.00		
Clearance Time (s)								6.0			6.0		
Vehicle Extension (s)								3.0			3.0		
Lane Grp Cap (vph)								1671			1883		
v/s Ratio Prot								0.09			0.42		
v/s Ratio Perm													
v/c Ratio								0.09			0.42		
Uniform Delay, d1								0.0			0.0		
Progression Factor								1.00			1.00		
Incremental Delay, d2								0.1			0.7		
Delay (s)								0.1			0.7		
Level of Service								A			A		
Approach Delay (s)		0.0				0.0		0.1			0.7		
Approach LOS		A				A		A			A		
<b>Intersection Summary</b>													
HCM 2000 Control Delay			0.6					HCM 2000 Level of Service			A		
HCM 2000 Volume to Capacity ratio			0.47										
Actuated Cycle Length (s)			64.0					Sum of lost time (s)			6.0		
Intersection Capacity Utilization			47.1%					ICU Level of Service			A		
Analysis Period (min)			15										
c Critical Lane Group													



Queues

PM Peak Hour

1: Airport Road & LCBO Driveway/Old Church Road

FB 2032



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT
Lane Configurations		↕	↗	↖		↖	↗		↕
Traffic Volume (vph)	16	7	147	12	11	611	330	39	231
Future Volume (vph)	16	7	147	12	11	611	330	39	231
Lane Group Flow (vph)	0	31	147	129	0	622	330	0	276
Turn Type	Perm	NA	Perm	NA	Perm	NA	Perm	Perm	NA
Protected Phases		2		2		1			1
Permitted Phases	2		2		1		1	1	
Detector Phase	2	2	2	2	1	1	1	1	1
Switch Phase									
Minimum Initial (s)	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0
Minimum Split (s)	24.6	24.6	24.6	24.6	32.1	32.1	32.1	32.1	32.1
Total Split (s)	28.0	28.0	28.0	28.0	42.0	42.0	42.0	42.0	42.0
Total Split (%)	40.0%	40.0%	40.0%	40.0%	60.0%	60.0%	60.0%	60.0%	60.0%
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	2.6	2.6	2.6	2.6	3.1	3.1	3.1	3.1	3.1
Lost Time Adjust (s)		0.0	0.0	0.0		0.0	0.0		0.0
Total Lost Time (s)		6.6	6.6	6.6		7.1	7.1		7.1
Lead/Lag	Lag	Lag	Lag	Lag	Lead	Lead	Lead	Lead	Lead
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	Max	Max	Max	Max	Max	Max	Max	Max	Max
v/c Ratio		0.06	0.35	0.22		0.68	0.34		0.37
Control Delay		14.5	21.9	6.0		18.0	2.4		12.6
Queue Delay		0.0	0.0	0.0		0.0	0.0		0.0
Total Delay		14.5	21.9	6.0		18.0	2.4		12.6
Queue Length 50th (m)		2.2	15.6	1.2		60.9	0.0		21.8
Queue Length 95th (m)		7.9	30.6	12.3		96.8	11.5		38.3
Internal Link Dist (m)		54.2		143.8		214.0			592.7
Turn Bay Length (m)							45.0		
Base Capacity (vph)		488	419	579		915	961		738
Starvation Cap Reductn		0	0	0		0	0		0
Spillback Cap Reductn		0	0	0		0	0		0
Storage Cap Reductn		0	0	0		0	0		0
Reduced v/c Ratio		0.06	0.35	0.22		0.68	0.34		0.37

Intersection Summary

Cycle Length: 70

Actuated Cycle Length: 70

Natural Cycle: 60

Control Type: Semi Act-Uncoord

Splits and Phases: 1: Airport Road & LCBO Driveway/Old Church Road



HCM Signalized Intersection Capacity Analysis  
 1: Airport Road & LCBO Driveway/Old Church Road

PM Peak Hour  
 FB 2032



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕		↕	↕			↕	↕		↕	
Traffic Volume (vph)	16	7	8	147	12	117	11	611	330	39	231	6
Future Volume (vph)	16	7	8	147	12	117	11	611	330	39	231	6
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5
Total Lost time (s)		6.6		6.6	6.6			7.1	7.1		7.1	
Lane Util. Factor		1.00		1.00	1.00			1.00	1.00		1.00	
Frt		0.97		1.00	0.86			1.00	0.85		1.00	
Flt Protected		0.97		0.95	1.00			1.00	1.00		0.99	
Satd. Flow (prot)		1808		1767	1630			1847	1597		1769	
Flt Permitted		0.85		0.74	1.00			0.99	1.00		0.83	
Satd. Flow (perm)		1579		1371	1630			1836	1597		1480	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	16	7	8	147	12	117	11	611	330	39	231	6
RTOR Reduction (vph)	0	6	0	0	81	0	0	0	165	0	1	0
Lane Group Flow (vph)	0	25	0	147	48	0	0	622	165	0	275	0
Heavy Vehicles (%)	0%	0%	0%	1%	0%	2%	0%	4%	0%	0%	9%	0%
Turn Type	Perm	NA		Perm	NA		Perm	NA	Perm	Perm	NA	
Protected Phases		2			2			1			1	
Permitted Phases	2			2			1		1	1		
Actuated Green, G (s)		21.4		21.4	21.4			34.9	34.9		34.9	
Effective Green, g (s)		21.4		21.4	21.4			34.9	34.9		34.9	
Actuated g/C Ratio		0.31		0.31	0.31			0.50	0.50		0.50	
Clearance Time (s)		6.6		6.6	6.6			7.1	7.1		7.1	
Vehicle Extension (s)		3.0		3.0	3.0			3.0	3.0		3.0	
Lane Grp Cap (vph)		482		419	498			915	796		737	
v/s Ratio Prot					0.03							
v/s Ratio Perm		0.02		c0.11				c0.34	0.10		0.19	
v/c Ratio		0.05		0.35	0.10			0.68	0.21		0.37	
Uniform Delay, d1		17.1		18.9	17.4			13.3	9.8		10.8	
Progression Factor		1.00		1.00	1.00			1.00	1.00		1.00	
Incremental Delay, d2		0.2		2.3	0.4			4.1	0.6		1.4	
Delay (s)		17.4		21.2	17.8			17.4	10.4		12.3	
Level of Service		B		C	B			B	B		B	
Approach Delay (s)		17.4			19.6			15.0			12.3	
Approach LOS		B			B			B			B	

**Intersection Summary**

HCM 2000 Control Delay	15.4	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.55		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	13.7
Intersection Capacity Utilization	72.8%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

# HCM Unsignalized Intersection Capacity Analysis

## 2: Airport Road & Mountcrest Rd

PM Peak Hour  
FB 2032



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	1	5	1103	13	7	437
Future Volume (Veh/h)	1	5	1103	13	7	437
Sign Control	Stop		Free		Free	
Grade	0%		0%		0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	1	5	1103	13	7	437
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	TWLTL			None		
Median storage (veh)	2					
Upstream signal (m)				40		
pX, platoon unblocked						
vC, conflicting volume	1554	1103			1116	
vC1, stage 1 conf vol	1103					
vC2, stage 2 conf vol	451					
vCu, unblocked vol	1554	1103			1116	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)	5.4					
tF (s)	3.5	3.3			2.2	
p0 queue free %	100	98			99	
cM capacity (veh/h)	295	259			633	
Direction, Lane #	WB 1	NB 1	NB 2	SB 1		
Volume Total	6	1103	13	444		
Volume Left	1	0	0	7		
Volume Right	5	0	13	0		
cSH	265	1700	1700	633		
Volume to Capacity	0.02	0.65	0.01	0.01		
Queue Length 95th (m)	0.6	0.0	0.0	0.3		
Control Delay (s)	18.9	0.0	0.0	0.3		
Lane LOS	C			A		
Approach Delay (s)	18.9	0.0		0.3		
Approach LOS	C					
Intersection Summary						
Average Delay			0.2			
Intersection Capacity Utilization			68.1%		ICU Level of Service	C
Analysis Period (min)			15			

# HCM Unsignalized Intersection Capacity Analysis

## 3: Airport Road & Hiltop Dr

PM Peak Hour  
FB 2032



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	3	7	29	1109	427	0
Future Volume (Veh/h)	3	7	29	1109	427	0
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	3	7	29	1109	427	0
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type						
				TWLTL	TWLTL	
Median storage veh				2	2	
Upstream signal (m)				345		
pX, platoon unblocked						
vC, conflicting volume	1594	427	427			
vC1, stage 1 conf vol	427					
vC2, stage 2 conf vol	1167					
vCu, unblocked vol	1594	427	427			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)	5.4					
tF (s)	3.5	3.3	2.2			
p0 queue free %	99	99	97			
cM capacity (veh/h)	272	632	1143			
Direction, Lane #	EB 1	NB 1	NB 2	SB 1		
Volume Total	10	29	1109	427		
Volume Left	3	29	0	0		
Volume Right	7	0	0	0		
cSH	452	1143	1700	1700		
Volume to Capacity	0.02	0.03	0.65	0.25		
Queue Length 95th (m)	0.5	0.6	0.0	0.0		
Control Delay (s)	13.1	8.2	0.0	0.0		
Lane LOS	B	A				
Approach Delay (s)	13.1	0.2	0.0			
Approach LOS	B					
Intersection Summary						
Average Delay	0.2					
Intersection Capacity Utilization	68.4%			ICU Level of Service	C	
Analysis Period (min)	15					

HCM Unsignalized Intersection Capacity Analysis  
 4: Airport Road & School Driveway - R/L out

PM Peak Hour  
 FB 2032



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	29	19	0	1103	437	0
Future Volume (Veh/h)	29	19	0	1103	437	0
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	29	19	0	1103	437	0
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type						
TWLTL TWLTL						
Median storage veh						
2 2						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	1540	437	437			
vC1, stage 1 conf vol	437					
vC2, stage 2 conf vol	1103					
vCu, unblocked vol	1540	437	437			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)	5.4					
tF (s)	3.5	3.3	2.2			
p0 queue free %	90	97	100			
cM capacity (veh/h)	296	624	1134			
<b>Direction, Lane #</b>						
	EB 1	NB 1	SB 1			
Volume Total	48	1103	437			
Volume Left	29	0	0			
Volume Right	19	0	0			
cSH	374	1700	1700			
Volume to Capacity	0.13	0.65	0.26			
Queue Length 95th (m)	3.5	0.0	0.0			
Control Delay (s)	16.0	0.0	0.0			
Lane LOS	C					
Approach Delay (s)	16.0	0.0	0.0			
Approach LOS	C					
<b>Intersection Summary</b>						
Average Delay			0.5			
Intersection Capacity Utilization		68.1%		ICU Level of Service		C
Analysis Period (min)			15			

# HCM Unsignalized Intersection Capacity Analysis

## 5: Airport Road & Cranston Dr

PM Peak Hour  
FB 2032



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	5	4	21	1096	459	4
Future Volume (Veh/h)	5	4	21	1096	459	4
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	5	4	21	1096	459	4
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None TWLTL		
Median storage (veh)				2		
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	1597	459	463			
vC1, stage 1 conf vol	459					
vC2, stage 2 conf vol	1138					
vCu, unblocked vol	1597	459	463			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)	5.4					
tF (s)	3.5	3.3	2.2			
p0 queue free %	98	99	98			
cM capacity (veh/h)	280	606	1109			
Direction, Lane #	EB 1	NB 1	NB 2	SB 1	SB 2	
Volume Total	9	21	1096	459	4	
Volume Left	5	21	0	0	0	
Volume Right	4	0	0	0	4	
cSH	368	1109	1700	1700	1700	
Volume to Capacity	0.02	0.02	0.64	0.27	0.00	
Queue Length 95th (m)	0.6	0.5	0.0	0.0	0.0	
Control Delay (s)	15.0	8.3	0.0	0.0	0.0	
Lane LOS	C	A				
Approach Delay (s)	15.0	0.2		0.0		
Approach LOS	C					
Intersection Summary						
Average Delay			0.2			
Intersection Capacity Utilization			67.7%		ICU Level of Service	C
Analysis Period (min)			15			

Queues  
6: Airport Road & Olde Base Line Rd

PM Peak Hour  
FB 2032



Lane Group	EBL	NBL	NBT	SBT
Lane Configurations				
Traffic Volume (vph)	204	81	838	353
Future Volume (vph)	204	81	838	353
Lane Group Flow (vph)	226	0	919	432
Turn Type	Prot	Perm	NA	NA
Protected Phases	4		2	2
Permitted Phases		2		
Detector Phase	4	2	2	2
Switch Phase				
Minimum Initial (s)	8.0	12.0	12.0	12.0
Minimum Split (s)	19.6	20.0	20.0	20.0
Total Split (s)	26.6	62.0	62.0	62.0
Total Split (%)	30.0%	70.0%	70.0%	70.0%
Yellow Time (s)	4.0	4.0	4.0	4.0
All-Red Time (s)	2.6	2.0	2.0	2.0
Lost Time Adjust (s)	0.0		0.0	0.0
Total Lost Time (s)	6.6		6.0	6.0
Lead/Lag				
Lead-Lag Optimize?				
Recall Mode	None	Max	Max	Max
v/c Ratio	0.69		0.81	0.36
Control Delay	43.3		18.4	7.2
Queue Delay	0.0		0.0	0.0
Total Delay	43.3		18.4	7.2
Queue Length 50th (m)	34.9		98.5	26.0
Queue Length 95th (m)	58.4		#217.8	49.4
Internal Link Dist (m)	373.9		480.2	717.9
Turn Bay Length (m)				
Base Capacity (vph)	426		1140	1186
Starvation Cap Reductn	0		0	0
Spillback Cap Reductn	0		0	0
Storage Cap Reductn	0		0	0
Reduced v/c Ratio	0.53		0.81	0.36

Intersection Summary

Cycle Length: 88.6  
 Actuated Cycle Length: 85.7  
 Natural Cycle: 65  
 Control Type: Semi Act-Uncoord  
 # 95th percentile volume exceeds capacity, queue may be longer.  
 Queue shown is maximum after two cycles.

Splits and Phases: 6: Airport Road & Olde Base Line Rd



HCM Signalized Intersection Capacity Analysis  
6: Airport Road & Olde Base Line Rd

PM Peak Hour  
FB 2032



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	204	22	81	838	353	79
Future Volume (vph)	204	22	81	838	353	79
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width	3.7	3.5	3.7	3.5	3.7	3.5
Total Lost time (s)	6.6			6.0	6.0	
Lane Util. Factor	1.00			1.00	1.00	
Frt	0.99			1.00	0.98	
Flt Protected	0.96			1.00	1.00	
Satd. Flow (prot)	1805			1821	1745	
Flt Permitted	0.96			0.92	1.00	
Satd. Flow (perm)	1805			1689	1745	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	204	22	81	838	353	79
RTOR Reduction (vph)	5	0	0	0	8	0
Lane Group Flow (vph)	221	0	0	919	424	0
Heavy Vehicles (%)	0%	5%	0%	3%	9%	0%
Turn Type	Prot		Perm	NA	NA	
Protected Phases	4			2	2	
Permitted Phases			2			
Actuated Green, G (s)	15.2			57.9	57.9	
Effective Green, g (s)	15.2			57.9	57.9	
Actuated g/C Ratio	0.18			0.68	0.68	
Clearance Time (s)	6.6			6.0	6.0	
Vehicle Extension (s)	3.0			3.0	3.0	
Lane Grp Cap (vph)	320			1141	1178	
v/s Ratio Prot	c0.12				0.24	
v/s Ratio Perm				c0.54		
v/c Ratio	0.69			0.81	0.36	
Uniform Delay, d1	33.0			9.9	6.0	
Progression Factor	1.00			1.00	1.00	
Incremental Delay, d2	6.3			6.1	0.9	
Delay (s)	39.3			16.0	6.8	
Level of Service	D			B	A	
Approach Delay (s)	39.3			16.0	6.8	
Approach LOS	D			B	A	

Intersection Summary

HCM 2000 Control Delay	16.8	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.78		
Actuated Cycle Length (s)	85.7	Sum of lost time (s)	12.6
Intersection Capacity Utilization	100.1%	ICU Level of Service	G
Analysis Period (min)	15		

c Critical Lane Group



Queues  
7: Airport Road & Caledon Trail Pathway

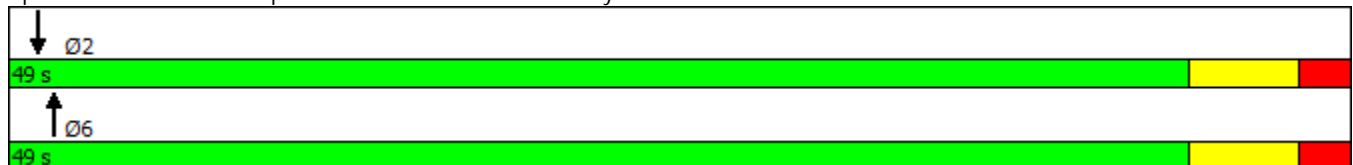
PM Peak Hour  
FB 2032

	↑	↓
Lane Group	NBT	SBT
Lane Configurations	↑	↑
Traffic Volume (vph)	648	253
Future Volume (vph)	648	253
Lane Group Flow (vph)	648	253
Turn Type	NA	NA
Protected Phases	6	2
Permitted Phases		
Detector Phase	6	2
Switch Phase		
Minimum Initial (s)	8.0	8.0
Minimum Split (s)	24.0	24.0
Total Split (s)	49.0	49.0
Total Split (%)	100.0%	100.0%
Yellow Time (s)	4.0	4.0
All-Red Time (s)	2.0	2.0
Lost Time Adjust (s)	0.0	0.0
Total Lost Time (s)	6.0	6.0
Lead/Lag		
Lead-Lag Optimize?		
Recall Mode	Max	Max
v/c Ratio	0.34	0.14
Control Delay	0.5	0.2
Queue Delay	0.0	0.0
Total Delay	0.5	0.2
Queue Length 50th (m)	0.0	0.0
Queue Length 95th (m)	0.0	0.0
Internal Link Dist (m)	16.1	214.0
Turn Bay Length (m)		
Base Capacity (vph)	1883	1762
Starvation Cap Reductn	0	0
Spillback Cap Reductn	0	0
Storage Cap Reductn	0	0
Reduced v/c Ratio	0.34	0.14

**Intersection Summary**

Cycle Length: 49  
 Actuated Cycle Length: 64  
 Natural Cycle: 40  
 Control Type: Semi Act-Uncoord

Splits and Phases: 7: Airport Road & Caledon Trail Pathway



# HCM Signalized Intersection Capacity Analysis

## 7: Airport Road & Caledon Trail Pathway

PM Peak Hour  
FB 2032



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations								↑			↑	
Traffic Volume (vph)	0	0	0	0	0	0	0	648	0	0	253	0
Future Volume (vph)	0	0	0	0	0	0	0	648	0	0	253	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)								6.0			6.0	
Lane Util. Factor								1.00			1.00	
Frt								1.00			1.00	
Flt Protected								1.00			1.00	
Satd. Flow (prot)								1883			1762	
Flt Permitted								1.00			1.00	
Satd. Flow (perm)								1883			1762	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	0	0	0	0	0	0	0	648	0	0	253	0
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	0	0	0	0	0	0	648	0	0	253	0
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	0%	2%	0%	0%	9%	0%
Turn Type								NA			NA	
Protected Phases								6			2	
Permitted Phases												
Actuated Green, G (s)								64.0			64.0	
Effective Green, g (s)								64.0			64.0	
Actuated g/C Ratio								1.00			1.00	
Clearance Time (s)								6.0			6.0	
Vehicle Extension (s)								3.0			3.0	
Lane Grp Cap (vph)								1883			1762	
v/s Ratio Prot								0.34			0.14	
v/s Ratio Perm												
v/c Ratio								0.34			0.14	
Uniform Delay, d1								0.0			0.0	
Progression Factor								1.00			1.00	
Incremental Delay, d2								0.5			0.2	
Delay (s)								0.5			0.2	
Level of Service								A			A	
Approach Delay (s)		0.0			0.0			0.5			0.2	
Approach LOS		A			A			A			A	
<b>Intersection Summary</b>												
HCM 2000 Control Delay			0.4					HCM 2000 Level of Service			A	
HCM 2000 Volume to Capacity ratio			0.38									
Actuated Cycle Length (s)			64.0					Sum of lost time (s)			6.0	
Intersection Capacity Utilization			39.1%					ICU Level of Service			A	
Analysis Period (min)			15									
c Critical Lane Group												

**APPENDIX F**  
**TTS Data**

Filters:  
 (2006 GTA zone of household - gta06\_hhld ln 3197  
 and  
 Age of person - age ln 18-98)

Trip 2011  
 Table:

,3197  
 PD 1 of Toronto,114  
 PD 3 of Toronto,28  
 PD 7 of Toronto,18  
 PD 8 of Toronto,61  
 PD 9 of Toronto,56  
 PD 10 of Toronto,119  
 PD 12 of Toronto,23  
 PD 16 of Toronto,18  
 Newmarket,48  
 Markham,18  
 King,23  
 Vaughan,358  
 Caledon,3738  
 Brampton,998  
 Mississauga,517  
 Oakville,84  
 City of Guelph,18  
 Orangeville,186  
 Barrie,18  
 New Tecumseth,13  
 Muskoka,28  
 Ramara,13  
 Shelburne,26  
 Mono Township,45  
 External,23

Zones	Subject Zone 3197	Percent	North		South		East		West	
			#	%	#	%	#	%	#	%
PD 1 of Toronto	114	2%			114	100%				
PD 3 of Toronto	28	0%			28	100%				
PD 7 of Toronto	18	0%			18	100%				
PD 8 of Toronto	61	1%			61	100%				
PD 9 of Toronto	56	1%			56	100%				
PD 10 of Toronto	119	2%			119	100%				
PD 12 of Toronto	23	0%			23	100%				
PD 16 of Toronto	18	0%			18	100%				
Newmarket	48	1%							48	100%
Markham	18	0%			18	100%				
King	23	0%			23	100%				
Vaughan	358	5%			358	100%				
Caledon	3738	57%	1495	40%	1121	30%	561	15%	561	15%
Brampton	998	15%			998	100%				
Mississauga	517	8%			517	100%				
Oakville	84	1%			84	100%				
City of Guelph	18	0%							18	100%
Orangeville	186	3%							186	100%
Barrie	18	0%					18	100%		
New Tecumseth	13	0%	13	100%						
Muskoka	28	0%					28			
Ramara	13	0%	13	100%						
Shelburne	26	0%	26	100%						
Mono Township	45	1%	45	100%						
Total	6568	100%	1592	24%	3556	54%	607	9%	813	12%

TTS Analysis for 15717 Airport Road

	Transit excluding GO rail	Auto driver	GO rail only	Joint GO rail and local transit	Auto passenger	School bus	Walk
3197	117	5317	35	0	987	0	134
3386	1352	15018	206	62	1938	0	31
3442	263	5697	118	242	949	57	0
3447	295	6122	47	47	806	57	57
<b>TOTAL</b>	<b>2027</b>	<b>32154</b>	<b>406</b>	<b>351</b>	<b>4680</b>	<b>114</b>	<b>222</b>
	<b>5%</b>	<b>80%</b>	<b>1%</b>	<b>1%</b>	<b>12%</b>	<b>0%</b>	<b>1%</b>

8%

Wed Jan 04 2017 13:22:29 GMT-0500 (Eastern Standard Time) - Run Time: 2352ms

Cross Tabulation Query Form - Trip - 2011

Row: 2006 GTA zone of household - gta06\_hhld

Column: Primary travel mode of trip - mode\_prime

Filters:

Age of person - age In 18-99

and

2006 GTA zone of household - gta06\_hhld In 3197,3442,3386,3447

Trip 2011

Table:

,Transit excluding GO rail,Auto driver,GO rail only,Joint GO rail and local transit,Auto passenger,School bus,Walk

3197,117,5317,35,0,987,0,134

3386,1352,15018,206,62,1938,0,31

3442,263,5697,118,242,949,57,0

3447,295,6122,47,47,806,57,57

<b>TOTAL</b>
6590
18607
7326
7431
39954
100%

**APPENDIX G**  
**Future (2022) Total Traffic**  
Level Of Service Outputs

**Approach**

Approach Direction	NB
Median Present?	No
Approach Delay(s)	22169.1
Level of Service	F

**Crosswalk**

Length (ft)	36
Lanes Crossed	2
Veh Vol Crossed	946
Ped Vol Crossed	122
Yield Rate(%)	0
Ped Platooning	No
Critical Headway (s)	33.00
Prob of Delayed X-ing	1.00
Prob of Blocked Lane	0.99
Delay for adq Gap	22172.90
Avg Ped Delay (s)	22169.10

**Approach**

Approach Direction	SB
Median Present?	No
Approach Delay(s)	22169.1
Level of Service	F

**Crosswalk**

Length (ft)	36
Lanes Crossed	2
Veh Vol Crossed	946
Ped Vol Crossed	122
Yield Rate(%)	0
Ped Platooning	No
Critical Headway (s)	33.00
Prob of Delayed X-ing	1.00
Prob of Blocked Lane	0.99
Delay for adq Gap	22172.90
Avg Ped Delay (s)	22169.10



**Approach**

Approach Direction	NB
Median Present?	No
Approach Delay(s)	520274
Level of Service	F

**Crosswalk**

Length (ft)	36
Lanes Crossed	2
Veh Vol Crossed	1327
Ped Vol Crossed	122
Yield Rate(%)	0
Ped Platooning	No
Critical Headway (s)	33.00
Prob of Delayed X-ing	1.00
Prob of Blocked Lane	1.00
Delay for adq Gap	520277.00
Avg Ped Delay (s)	520274.00

**Approach**

Approach Direction	SB
Median Present?	No
Approach Delay(s)	520274
Level of Service	F

**Crosswalk**

Length (ft)	36
Lanes Crossed	2
Veh Vol Crossed	1327
Ped Vol Crossed	122
Yield Rate(%)	0
Ped Platooning	No
Critical Headway (s)	33.00
Prob of Delayed X-ing	1.00
Prob of Blocked Lane	1.00
Delay for adq Gap	520277.00
Avg Ped Delay (s)	520274.00

Queues  
1: Airport Road & LCBO Driveway/Old Church Road

AM Peak Hour  
FT 2022

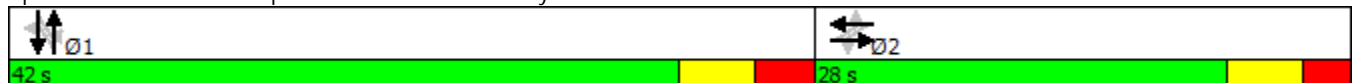


Lane Group	EBT	WBL	WBT	NBT	NBR	SBL	SBT
Lane Configurations							
Traffic Volume (vph)	1	242	0	145	94	45	473
Future Volume (vph)	1	242	0	145	94	45	473
Lane Group Flow (vph)	2	242	30	145	94	0	519
Turn Type	NA	Perm	NA	NA	Perm	Perm	NA
Protected Phases	2		2	1			1
Permitted Phases		2			1	1	
Detector Phase	2	2	2	1	1	1	1
Switch Phase							
Minimum Initial (s)	8.0	8.0	8.0	8.0	8.0	8.0	8.0
Minimum Split (s)	24.6	24.6	24.6	32.1	32.1	32.1	32.1
Total Split (s)	28.0	28.0	28.0	42.0	42.0	42.0	42.0
Total Split (%)	40.0%	40.0%	40.0%	60.0%	60.0%	60.0%	60.0%
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	2.6	2.6	2.6	3.1	3.1	3.1	3.1
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0		0.0
Total Lost Time (s)	6.6	6.6	6.6	7.1	7.1		7.1
Lead/Lag	Lag	Lag	Lag	Lead	Lead	Lead	Lead
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	Max	Max	Max	Max	Max	Max	Max
v/c Ratio	0.00	0.56	0.03	0.18	0.12		0.58
Control Delay	15.0	26.2	0.1	10.4	2.8		15.6
Queue Delay	0.0	0.0	0.0	0.0	0.0		0.0
Total Delay	15.0	26.2	0.1	10.4	2.8		15.6
Queue Length 50th (m)	0.1	27.6	0.0	10.3	0.0		47.2
Queue Length 95th (m)	1.5	49.7	0.0	19.9	6.4		75.7
Internal Link Dist (m)	54.2		143.8	214.0			592.7
Turn Bay Length (m)					45.0		
Base Capacity (vph)	547	434	1022	811	791		897
Starvation Cap Reductn	0	0	0	0	0		0
Spillback Cap Reductn	0	0	0	0	0		0
Storage Cap Reductn	0	0	0	0	0		0
Reduced v/c Ratio	0.00	0.56	0.03	0.18	0.12		0.58

Intersection Summary

Cycle Length: 70  
 Actuated Cycle Length: 70  
 Natural Cycle: 60  
 Control Type: Semi Act-Uncoord

Splits and Phases: 1: Airport Road & LCBO Driveway/Old Church Road



HCM Signalized Intersection Capacity Analysis  
 1: Airport Road & LCBO Driveway/Old Church Road

AM Peak Hour  
 FT 2022



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕		↕	↕			↕	↕		↕	
Traffic Volume (vph)	0	1	1	242	0	30	0	145	94	45	473	1
Future Volume (vph)	0	1	1	242	0	30	0	145	94	45	473	1
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5
Total Lost time (s)		6.6		6.6	6.6			7.1	7.1		7.1	
Lane Util. Factor		1.00		1.00	1.00			1.00	1.00		1.00	
Frt		0.93		1.00	0.85			1.00	0.85		1.00	
Flt Protected		1.00		0.95	1.00			1.00	1.00		1.00	
Satd. Flow (prot)		1791		1785	1633			1628	1493		1861	
Flt Permitted		1.00		0.76	1.00			1.00	1.00		0.96	
Satd. Flow (perm)		1791		1421	1633			1628	1493		1800	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	0	1	1	242	0	30	0	145	94	45	473	1
RTOR Reduction (vph)	0	1	0	0	21	0	0	0	47	0	0	0
Lane Group Flow (vph)	0	1	0	242	9	0	0	145	47	0	519	0
Heavy Vehicles (%)	4%	0%	0%	0%	0%	0%	0%	18%	7%	0%	3%	0%
Turn Type		NA		Perm	NA			NA	Perm	Perm	NA	
Protected Phases		2			2			1			1	
Permitted Phases	2			2			1		1	1		
Actuated Green, G (s)		21.4		21.4	21.4			34.9	34.9		34.9	
Effective Green, g (s)		21.4		21.4	21.4			34.9	34.9		34.9	
Actuated g/C Ratio		0.31		0.31	0.31			0.50	0.50		0.50	
Clearance Time (s)		6.6		6.6	6.6			7.1	7.1		7.1	
Vehicle Extension (s)		3.0		3.0	3.0			3.0	3.0		3.0	
Lane Grp Cap (vph)		547		434	499			811	744		897	
v/s Ratio Prot		0.00			0.01			0.09				
v/s Ratio Perm				c0.17					0.03		c0.29	
v/c Ratio		0.00		0.56	0.02			0.18	0.06		0.58	
Uniform Delay, d1		16.9		20.3	17.0			9.7	9.1		12.4	
Progression Factor		1.00		1.00	1.00			1.00	1.00		1.00	
Incremental Delay, d2		0.0		5.1	0.1			0.5	0.2		2.7	
Delay (s)		16.9		25.4	17.0			10.1	9.2		15.1	
Level of Service		B		C	B			B	A		B	
Approach Delay (s)		16.9			24.5			9.8			15.1	
Approach LOS		B			C			A			B	

Intersection Summary

HCM 2000 Control Delay	16.3	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.57		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	13.7
Intersection Capacity Utilization	72.5%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

# HCM Unsignalized Intersection Capacity Analysis

## 2: Airport Road & Mountcrest Rd

AM Peak Hour  
FT 2022



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	13	5	237	0	2	761
Future Volume (Veh/h)	13	5	237	0	2	761
Sign Control	Stop		Free		Free	
Grade	0%		0%		0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	13	5	237	0	2	761
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	TWLTL			None		
Median storage (veh)	2					
Upstream signal (m)				40		
pX, platoon unblocked						
vC, conflicting volume	1002	237			237	
vC1, stage 1 conf vol	237					
vC2, stage 2 conf vol	765					
vCu, unblocked vol	1002	237			237	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)	5.4					
tF (s)	3.5	3.3			2.2	
p0 queue free %	97	99			100	
cM capacity (veh/h)	435	807			1342	
Direction, Lane #	WB 1	NB 1	NB 2	SB 1		
Volume Total	18	237	0	763		
Volume Left	13	0	0	2		
Volume Right	5	0	0	0		
cSH	499	1700	1700	1342		
Volume to Capacity	0.04	0.14	0.00	0.00		
Queue Length 95th (m)	0.9	0.0	0.0	0.0		
Control Delay (s)	12.5	0.0	0.0	0.0		
Lane LOS	B			A		
Approach Delay (s)	12.5	0.0		0.0		
Approach LOS	B					
Intersection Summary						
Average Delay			0.3			
Intersection Capacity Utilization			51.6%	ICU Level of Service	A	
Analysis Period (min)			15			

# HCM Unsignalized Intersection Capacity Analysis

## 3: Airport Road & Hiltop Dr

AM Peak Hour  
FT 2022



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	1	8	5	232	772	0
Future Volume (Veh/h)	1	8	5	232	772	0
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	1	8	5	232	772	0
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type						
				TWLTL	TWLTL	
Median storage veh				2	2	
Upstream signal (m)				206	345	
pX, platoon unblocked						
vC, conflicting volume	1014	772	772			
vC1, stage 1 conf vol	772					
vC2, stage 2 conf vol	242					
vCu, unblocked vol	1014	772	772			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)	5.4					
tF (s)	3.5	3.3	2.2			
p0 queue free %	100	98	99			
cM capacity (veh/h)	432	403	852			
Direction, Lane #	EB 1	NB 1	NB 2	SB 1		
Volume Total	9	5	232	772		
Volume Left	1	5	0	0		
Volume Right	8	0	0	0		
cSH	406	852	1700	1700		
Volume to Capacity	0.02	0.01	0.14	0.45		
Queue Length 95th (m)	0.5	0.1	0.0	0.0		
Control Delay (s)	14.1	9.3	0.0	0.0		
Lane LOS	B	A				
Approach Delay (s)	14.1	0.2		0.0		
Approach LOS	B					
Intersection Summary						
Average Delay			0.2			
Intersection Capacity Utilization			50.6%	ICU Level of Service	A	
Analysis Period (min)			15			

Queues

AM Peak Hour

4: Airport Road & School Driveway - R/L out/North Site Access - Street A

FT 2022



Lane Group	EBT	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	↕	↙	↘	↑	↗	↖	↑
Traffic Volume (vph)	0	91	57	177	5	12	769
Future Volume (vph)	0	91	57	177	5	12	769
Lane Group Flow (vph)	89	91	57	177	5	12	769
Turn Type	NA	Perm	Perm	NA	NA	Perm	NA
Protected Phases	4			2			6
Permitted Phases		8	8			6	
Detector Phase	4	8	8	2		6	6
Switch Phase							
Minimum Initial (s)	8.0	8.0	8.0	8.0		8.0	8.0
Minimum Split (s)	24.0	24.0	24.0	31.0		31.0	31.0
Total Split (s)	25.0	25.0	25.0	45.0		45.0	45.0
Total Split (%)	35.7%	35.7%	35.7%	64.3%		64.3%	64.3%
Yellow Time (s)	4.0	4.0	4.0	4.0		4.0	4.0
All-Red Time (s)	2.0	2.0	2.0	2.0		2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0		0.0	0.0
Total Lost Time (s)	6.0	6.0	6.0	6.0		6.0	6.0
Lead/Lag							
Lead-Lag Optimize?							
Recall Mode	None	None	None	Max		Max	Max
v/c Ratio	0.28	0.42	0.18	0.16	0.04	0.01	0.57
Control Delay	14.8	29.3	8.5	5.1	0.4	4.8	8.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	14.8	29.3	8.5	5.1	0.4	4.8	8.8
Queue Length 50th (m)	4.3	9.8	0.0	6.8	0.0	0.4	44.4
Queue Length 95th (m)	15.0	21.7	8.2	16.6	0.0	2.3	93.0
Internal Link Dist (m)	191.8			290.2			182.0
Turn Bay Length (m)		22.0			30.0	40.0	
Base Capacity (vph)	569	412	540	1124	140	883	1340
Starvation Cap Reductn	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.16	0.22	0.11	0.16	0.04	0.01	0.57

Intersection Summary

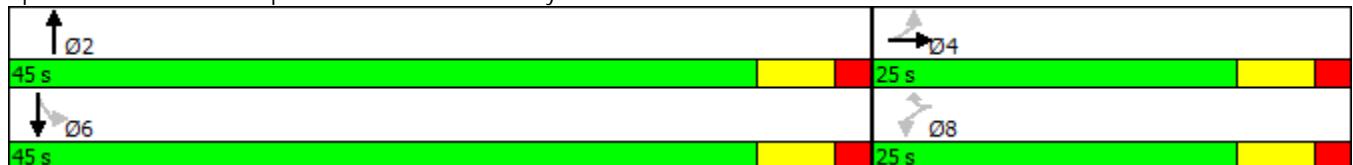
Cycle Length: 70

Actuated Cycle Length: 61.9

Natural Cycle: 60

Control Type: Semi Act-Uncoord

Splits and Phases: 4: Airport Road & School Driveway - R/L out/North Site Access - Street A



# HCM Signalized Intersection Capacity Analysis

## 4: Airport Road & School Driveway - R/L out/North Site Access - Street A

AM Peak Hour  
FT 2022



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔		↔		↔		↑	↔	↔	↑	
Traffic Volume (vph)	44	0	45	91	0	57	0	177	5	12	769	0
Future Volume (vph)	44	0	45	91	0	57	0	177	5	12	769	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.7	3.7	3.5	3.7	3.7	3.7	3.7	3.5	3.7	3.7	3.7	3.5
Total Lost time (s)		6.0		6.0		6.0		6.0	4.0	6.0	6.0	
Lane Util. Factor		1.00		1.00		1.00		1.00	1.00	1.00	1.00	
Frt		0.93		1.00		0.85		1.00	0.85	1.00	1.00	
Flt Protected		0.98		0.95		1.00		1.00	1.00	0.95	1.00	
Satd. Flow (prot)		1747		1825		1633		1579	1633	1825	1883	
Flt Permitted		0.98		0.70		1.00		1.00	1.00	0.65	1.00	
Satd. Flow (perm)		1747		1343		1633		1579	1633	1240	1883	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	44	0	45	91	0	57	0	177	5	12	769	0
RTOR Reduction (vph)	0	41	0	0	0	50	0	0	5	0	0	0
Lane Group Flow (vph)	0	48	0	91	0	7	0	177	0	12	769	0
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	0%	19%	0%	0%	2%	0%
Turn Type	Perm	NA		Perm		Perm		NA	NA	Perm	NA	
Protected Phases		4						2				6
Permitted Phases	4			8		8				6		
Actuated Green, G (s)		8.3		8.3		8.3		42.9	0.0	42.9	42.9	
Effective Green, g (s)		8.3		8.3		8.3		42.9	0.0	42.9	42.9	
Actuated g/C Ratio		0.13		0.13		0.13		0.68	0.00	0.68	0.68	
Clearance Time (s)		6.0		6.0		6.0		6.0		6.0	6.0	
Vehicle Extension (s)		3.0		3.0		3.0		3.0		3.0	3.0	
Lane Grp Cap (vph)		229		176		214		1071	0	841	1278	
v/s Ratio Prot								0.11				c0.41
v/s Ratio Perm		0.03		c0.07		0.00				0.01		
v/c Ratio		0.21		0.52		0.03		0.17	0.00	0.01	0.60	
Uniform Delay, d1		24.5		25.6		24.0		3.7	31.6	3.3	5.5	
Progression Factor		1.00		1.00		1.00		1.00	1.00	1.00	1.00	
Incremental Delay, d2		0.5		2.6		0.1		0.3	0.0	0.0	2.1	
Delay (s)		25.0		28.1		24.0		4.0	31.6	3.3	7.6	
Level of Service		C		C		C		A	C	A	A	
Approach Delay (s)		25.0			26.6			4.8			7.5	
Approach LOS		C			C			A			A	

### Intersection Summary





















HCM 2000 Control Delay	10.8	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.59		
Actuated Cycle Length (s)	63.2	Sum of lost time (s)	12.0
Intersection Capacity Utilization	62.3%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

# HCM Unsignalized Intersection Capacity Analysis

## 5: Airport Road & Cranston Dr/South Site Access -Street A

AM Peak Hour  
FT 2022

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	3	0	22	59	0	16	4	163	26	3	910	0
Future Volume (Veh/h)	3	0	22	59	0	16	4	163	26	3	910	0
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	3	0	22	59	0	16	4	163	26	3	910	0
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			TWLT	
Median storage veh												2
Upstream signal (m)												314
pX, platoon unblocked	0.72	0.72	0.72	0.72	0.72		0.72					
vC, conflicting volume	1103	1113	910	1109	1087	163	910			189		
vC1, stage 1 conf vol	916	916		171	171							
vC2, stage 2 conf vol	187	197		938	916							
vCu, unblocked vol	948	961	679	956	925	163	679			189		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.3			4.1		
tC, 2 stage (s)	6.1	5.5		6.1	5.5							
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.4			2.2		
p0 queue free %	99	100	93	78	100	98	99			100		
cM capacity (veh/h)	302	309	327	269	307	887	585			1397		
Direction, Lane #	EB 1	WB 1	NB 1	NB 2	NB 3	SB 1	SB 2	SB 3				
Volume Total	25	75	4	163	26	3	910	0				
Volume Left	3	59	4	0	0	3	0	0				
Volume Right	22	16	0	0	26	0	0	0				
cSH	324	316	585	1700	1700	1397	1700	1700				
Volume to Capacity	0.08	0.24	0.01	0.10	0.02	0.00	0.54	0.00				
Queue Length 95th (m)	2.0	7.2	0.2	0.0	0.0	0.1	0.0	0.0				
Control Delay (s)	17.0	19.9	11.2	0.0	0.0	7.6	0.0	0.0				
Lane LOS	C	C	B			A						
Approach Delay (s)	17.0	19.9	0.2			0.0						
Approach LOS	C	C										
Intersection Summary												
Average Delay			1.6									
Intersection Capacity Utilization			65.5%	ICU Level of Service	C							
Analysis Period (min)			15									



Queues  
6: Airport Road & Olde Base Line Rd

AM Peak Hour  
FT 2022



Lane Group	EBL	NBL	NBT	SBT
Lane Configurations				
Traffic Volume (vph)	42	12	146	770
Future Volume (vph)	42	12	146	770
Lane Group Flow (vph)	106	0	158	968
Turn Type	Prot	Perm	NA	NA
Protected Phases	4		2	2
Permitted Phases		2		
Detector Phase	4	2	2	2
Switch Phase				
Minimum Initial (s)	8.0	12.0	12.0	12.0
Minimum Split (s)	19.6	20.0	20.0	20.0
Total Split (s)	26.6	62.0	62.0	62.0
Total Split (%)	30.0%	70.0%	70.0%	70.0%
Yellow Time (s)	4.0	4.0	4.0	4.0
All-Red Time (s)	2.6	2.0	2.0	2.0
Lost Time Adjust (s)	0.0		0.0	0.0
Total Lost Time (s)	6.6		6.0	6.0
Lead/Lag				
Lead-Lag Optimize?				
Recall Mode	None	Max	Max	Max
v/c Ratio	0.44		0.15	0.67
Control Delay	22.0		3.6	8.5
Queue Delay	0.0		0.0	0.0
Total Delay	22.0		3.6	8.5
Queue Length 50th (m)	6.8		5.8	64.7
Queue Length 95th (m)	20.2		13.3	130.3
Internal Link Dist (m)	373.9		480.2	717.9
Turn Bay Length (m)				
Base Capacity (vph)	459		1078	1449
Starvation Cap Reductn	0		0	0
Spillback Cap Reductn	0		0	0
Storage Cap Reductn	0		0	0
Reduced v/c Ratio	0.23		0.15	0.67

Intersection Summary

Cycle Length: 88.6  
 Actuated Cycle Length: 82.9  
 Natural Cycle: 60  
 Control Type: Semi Act-Uncoord

Splits and Phases: 6: Airport Road & Olde Base Line Rd



# HCM Signalized Intersection Capacity Analysis

## 6: Airport Road & Olde Base Line Rd

AM Peak Hour  
FT 2022



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	42	64	12	146	770	198
Future Volume (vph)	42	64	12	146	770	198
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width	3.7	3.5	3.7	3.5	3.7	3.5
Total Lost time (s)	6.6			6.0	6.0	
Lane Util. Factor	1.00			1.00	1.00	
Frt	0.92			1.00	0.97	
Flt Protected	0.98			1.00	1.00	
Satd. Flow (prot)	1699			1455	1821	
Flt Permitted	0.98			0.93	1.00	
Satd. Flow (perm)	1699			1360	1821	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	42	64	12	146	770	198
RTOR Reduction (vph)	59	0	0	0	7	0
Lane Group Flow (vph)	47	0	0	158	961	0
Heavy Vehicles (%)	0%	3%	0%	31%	3%	1%
Turn Type	Prot		Perm	NA	NA	
Protected Phases	4			2	2	
Permitted Phases			2			
Actuated Green, G (s)	7.2			64.5	64.5	
Effective Green, g (s)	7.2			64.5	64.5	
Actuated g/C Ratio	0.09			0.77	0.77	
Clearance Time (s)	6.6			6.0	6.0	
Vehicle Extension (s)	3.0			3.0	3.0	
Lane Grp Cap (vph)	145			1040	1393	
v/s Ratio Prot	c0.03				c0.53	
v/s Ratio Perm				0.12		
v/c Ratio	0.33			0.15	0.69	
Uniform Delay, d1	36.3			2.6	4.9	
Progression Factor	1.00			1.00	1.00	
Incremental Delay, d2	1.3			0.3	2.8	
Delay (s)	37.6			2.9	7.7	
Level of Service	D			A	A	
Approach Delay (s)	37.6			2.9	7.7	
Approach LOS	D			A	A	

### Intersection Summary

HCM 2000 Control Delay	9.7	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.65		
Actuated Cycle Length (s)	84.3	Sum of lost time (s)	12.6
Intersection Capacity Utilization	69.7%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

Queues  
7: Airport Road & Caledon Trail Pathway

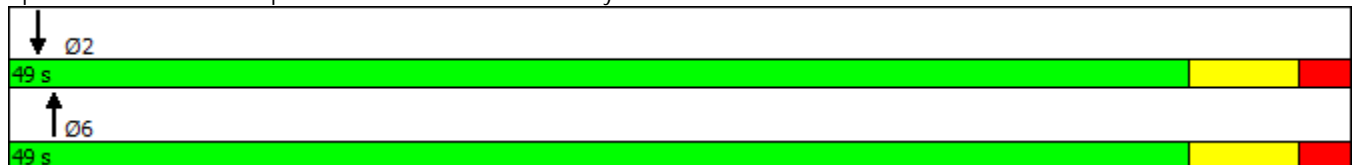
AM Peak Hour  
FT 2022

	↑	↓
Lane Group	NBT	SBT
Lane Configurations	↑	↑
Traffic Volume (vph)	220	748
Future Volume (vph)	220	748
Lane Group Flow (vph)	220	748
Turn Type	NA	NA
Protected Phases	6	2
Permitted Phases		
Detector Phase	6	2
Switch Phase		
Minimum Initial (s)	8.0	8.0
Minimum Split (s)	24.0	24.0
Total Split (s)	49.0	49.0
Total Split (%)	100.0%	100.0%
Yellow Time (s)	4.0	4.0
All-Red Time (s)	2.0	2.0
Lost Time Adjust (s)	0.0	0.0
Total Lost Time (s)	6.0	6.0
Lead/Lag		
Lead-Lag Optimize?		
Recall Mode	Max	Max
v/c Ratio	0.13	0.40
Control Delay	0.2	0.6
Queue Delay	0.0	0.0
Total Delay	0.2	0.6
Queue Length 50th (m)	0.0	0.0
Queue Length 95th (m)	0.0	0.0
Internal Link Dist (m)	16.1	214.0
Turn Bay Length (m)		
Base Capacity (vph)	1671	1883
Starvation Cap Reductn	0	0
Spillback Cap Reductn	0	0
Storage Cap Reductn	0	0
Reduced v/c Ratio	0.13	0.40

**Intersection Summary**

Cycle Length: 49  
 Actuated Cycle Length: 64  
 Natural Cycle: 40  
 Control Type: Semi Act-Uncoord

Splits and Phases: 7: Airport Road & Caledon Trail Pathway



# HCM Signalized Intersection Capacity Analysis

## 7: Airport Road & Caledon Trail Pathway

AM Peak Hour  
FT 2022



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations								↑			↑	
Traffic Volume (vph)	0	0	0	0	0	0	0	220	0	0	748	0
Future Volume (vph)	0	0	0	0	0	0	0	220	0	0	748	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)								6.0			6.0	
Lane Util. Factor								1.00			1.00	
Frt								1.00			1.00	
Flt Protected								1.00			1.00	
Satd. Flow (prot)								1671			1883	
Flt Permitted								1.00			1.00	
Satd. Flow (perm)								1671			1883	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	0	0	0	0	0	0	0	220	0	0	748	0
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	0	0	0	0	0	0	220	0	0	748	0
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	0%	15%	0%	0%	2%	0%
Turn Type								NA			NA	
Protected Phases								6			2	
Permitted Phases												
Actuated Green, G (s)								64.0			64.0	
Effective Green, g (s)								64.0			64.0	
Actuated g/C Ratio								1.00			1.00	
Clearance Time (s)								6.0			6.0	
Vehicle Extension (s)								3.0			3.0	
Lane Grp Cap (vph)								1671			1883	
v/s Ratio Prot								0.13			0.40	
v/s Ratio Perm												
v/c Ratio								0.13			0.40	
Uniform Delay, d1								0.0			0.0	
Progression Factor								1.00			1.00	
Incremental Delay, d2								0.2			0.6	
Delay (s)								0.2			0.6	
Level of Service								A			A	
Approach Delay (s)		0.0			0.0			0.2			0.6	
Approach LOS		A			A			A			A	
<b>Intersection Summary</b>												
HCM 2000 Control Delay			0.5					HCM 2000 Level of Service			A	
HCM 2000 Volume to Capacity ratio			0.44									
Actuated Cycle Length (s)			64.0					Sum of lost time (s)			6.0	
Intersection Capacity Utilization			44.4%					ICU Level of Service			A	
Analysis Period (min)			15									
c Critical Lane Group												

Queues  
1: Airport Road & LCBO Driveway/Old Church Road

PM Peak Hour  
FT 2022

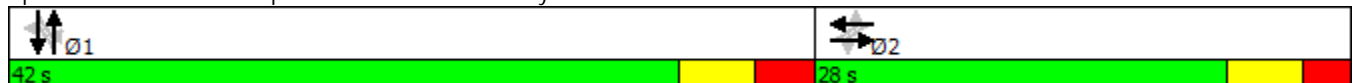


Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT
Lane Configurations		↕	↗	↘		↖	↗		↕
Traffic Volume (vph)	16	7	169	12	11	547	342	39	253
Future Volume (vph)	16	7	169	12	11	547	342	39	253
Lane Group Flow (vph)	0	31	169	129	0	558	342	0	298
Turn Type	Perm	NA	Perm	NA	Perm	NA	Perm	Perm	NA
Protected Phases		2		2		1			1
Permitted Phases	2		2		1		1	1	
Detector Phase	2	2	2	2	1	1	1	1	1
Switch Phase									
Minimum Initial (s)	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0
Minimum Split (s)	24.6	24.6	24.6	24.6	32.1	32.1	32.1	32.1	32.1
Total Split (s)	28.0	28.0	28.0	28.0	42.0	42.0	42.0	42.0	42.0
Total Split (%)	40.0%	40.0%	40.0%	40.0%	60.0%	60.0%	60.0%	60.0%	60.0%
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	2.6	2.6	2.6	2.6	3.1	3.1	3.1	3.1	3.1
Lost Time Adjust (s)		0.0	0.0	0.0		0.0	0.0		0.0
Total Lost Time (s)		6.6	6.6	6.6		7.1	7.1		7.1
Lead/Lag	Lag	Lag	Lag	Lag	Lead	Lead	Lead	Lead	Lead
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	Max	Max	Max	Max	Max	Max	Max	Max	Max
v/c Ratio		0.06	0.40	0.22		0.61	0.35		0.38
Control Delay		14.5	22.8	6.0		16.2	2.4		12.6
Queue Delay		0.0	0.0	0.0		0.0	0.0		0.0
Total Delay		14.5	22.8	6.0		16.2	2.4		12.6
Queue Length 50th (m)		2.2	18.3	1.2		51.9	0.0		23.6
Queue Length 95th (m)		7.9	34.9	12.3		82.8	11.7		40.8
Internal Link Dist (m)		54.2		143.8		214.0			592.7
Turn Bay Length (m)							45.0		
Base Capacity (vph)		488	419	579		914	967		787
Starvation Cap Reductn		0	0	0		0	0		0
Spillback Cap Reductn		0	0	0		0	0		0
Storage Cap Reductn		0	0	0		0	0		0
Reduced v/c Ratio		0.06	0.40	0.22		0.61	0.35		0.38

Intersection Summary

Cycle Length: 70  
 Actuated Cycle Length: 70  
 Natural Cycle: 60  
 Control Type: Semi Act-Uncoord

Splits and Phases: 1: Airport Road & LCBO Driveway/Old Church Road



HCM Signalized Intersection Capacity Analysis  
1: Airport Road & LCBO Driveway/Old Church Road

PM Peak Hour  
FT 2022



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕		↕	↕			↕	↕		↕	
Traffic Volume (vph)	16	7	8	169	12	117	11	547	342	39	253	6
Future Volume (vph)	16	7	8	169	12	117	11	547	342	39	253	6
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5
Total Lost time (s)		6.6		6.6	6.6			7.1	7.1		7.1	
Lane Util. Factor		1.00		1.00	1.00			1.00	1.00		1.00	
Frt		0.97		1.00	0.86			1.00	0.85		1.00	
Flt Protected		0.97		0.95	1.00			1.00	1.00		0.99	
Satd. Flow (prot)		1808		1767	1630			1847	1597		1768	
Flt Permitted		0.85		0.74	1.00			0.99	1.00		0.89	
Satd. Flow (perm)		1579		1371	1630			1833	1597		1578	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	16	7	8	169	12	117	11	547	342	39	253	6
RTOR Reduction (vph)	0	6	0	0	81	0	0	0	171	0	1	0
Lane Group Flow (vph)	0	25	0	169	48	0	0	558	171	0	297	0
Heavy Vehicles (%)	0%	0%	0%	1%	0%	2%	0%	4%	0%	0%	9%	0%
Turn Type	Perm	NA		Perm	NA		Perm	NA	Perm	Perm	NA	
Protected Phases		2			2			1			1	
Permitted Phases	2			2			1		1	1		
Actuated Green, G (s)		21.4		21.4	21.4			34.9	34.9		34.9	
Effective Green, g (s)		21.4		21.4	21.4			34.9	34.9		34.9	
Actuated g/C Ratio		0.31		0.31	0.31			0.50	0.50		0.50	
Clearance Time (s)		6.6		6.6	6.6			7.1	7.1		7.1	
Vehicle Extension (s)		3.0		3.0	3.0			3.0	3.0		3.0	
Lane Grp Cap (vph)		482		419	498			913	796		786	
v/s Ratio Prot					0.03							
v/s Ratio Perm		0.02		c0.12				c0.30	0.11		0.19	
v/c Ratio		0.05		0.40	0.10			0.61	0.21		0.38	
Uniform Delay, d1		17.1		19.2	17.4			12.7	9.9		10.8	
Progression Factor		1.00		1.00	1.00			1.00	1.00		1.00	
Incremental Delay, d2		0.2		2.9	0.4			3.0	0.6		1.4	
Delay (s)		17.4		22.1	17.8			15.7	10.5		12.2	
Level of Service		B		C	B			B	B		B	
Approach Delay (s)		17.4			20.2			13.7			12.2	
Approach LOS		B			C			B			B	

Intersection Summary

HCM 2000 Control Delay	14.8	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.53		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	13.7
Intersection Capacity Utilization	74.2%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

# HCM Unsignalized Intersection Capacity Analysis

## 2: Airport Road & Mountcrest Rd

PM Peak Hour  
FT 2022



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	2	7	975	13	14	441
Future Volume (Veh/h)	2	7	975	13	14	441
Sign Control	Stop		Free		Free	
Grade	0%		0%		0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	2	7	975	13	14	441
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	TWLTL			None		
Median storage veh	2					
Upstream signal (m)				40		
pX, platoon unblocked						
vC, conflicting volume	1444	975			988	
vC1, stage 1 conf vol	975					
vC2, stage 2 conf vol	469					
vCu, unblocked vol	1444	975			988	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)	5.4					
tF (s)	3.5	3.3			2.2	
p0 queue free %	99	98			98	
cM capacity (veh/h)	331	308			708	
Direction, Lane #	WB 1	NB 1	NB 2	SB 1		
Volume Total	9	975	13	455		
Volume Left	2	0	0	14		
Volume Right	7	0	13	0		
cSH	313	1700	1700	708		
Volume to Capacity	0.03	0.57	0.01	0.02		
Queue Length 95th (m)	0.7	0.0	0.0	0.5		
Control Delay (s)	16.9	0.0	0.0	0.6		
Lane LOS	C			A		
Approach Delay (s)	16.9	0.0		0.6		
Approach LOS	C					
Intersection Summary						
Average Delay			0.3			
Intersection Capacity Utilization			61.3%		ICU Level of Service	B
Analysis Period (min)			15			

# HCM Unsignalized Intersection Capacity Analysis

## 3: Airport Road & Hiltop Dr

PM Peak Hour  
FT 2022



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	3	7	29	980	434	0
Future Volume (Veh/h)	3	7	29	980	434	0
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	3	7	29	980	434	0
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type						
				TWLTL	TWLTL	
Median storage veh				2	2	
Upstream signal (m)				206	345	
pX, platoon unblocked	0.61					
vC, conflicting volume	1472	434	434			
vC1, stage 1 conf vol	434					
vC2, stage 2 conf vol	1038					
vCu, unblocked vol	1454	434	434			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)	5.4					
tF (s)	3.5	3.3	2.2			
p0 queue free %	99	99	97			
cM capacity (veh/h)	260	626	1136			
Direction, Lane #	EB 1	NB 1	NB 2	SB 1		
Volume Total	10	29	980	434		
Volume Left	3	29	0	0		
Volume Right	7	0	0	0		
cSH	440	1136	1700	1700		
Volume to Capacity	0.02	0.03	0.58	0.26		
Queue Length 95th (m)	0.6	0.6	0.0	0.0		
Control Delay (s)	13.4	8.3	0.0	0.0		
Lane LOS	B	A				
Approach Delay (s)	13.4	0.2	0.0			
Approach LOS	B					
Intersection Summary						
Average Delay			0.3			
Intersection Capacity Utilization			61.6%	ICU Level of Service	B	
Analysis Period (min)			15			



Queues

PM Peak Hour

4: Airport Road & School Driveway - R/L out/North Site Access - Street A

FT 2022



Lane Group	EBT	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	↕	↙	↘	↑	↘	↙	↑
Traffic Volume (vph)	0	52	29	946	18	61	381
Future Volume (vph)	0	52	29	946	18	61	381
Lane Group Flow (vph)	48	52	29	946	18	61	381
Turn Type	NA	Perm	custom	NA	NA	Perm	NA
Protected Phases	4			2			6
Permitted Phases		8				6	
Detector Phase	4	8		2		6	6
Switch Phase							
Minimum Initial (s)	8.0	8.0		8.0		8.0	8.0
Minimum Split (s)	24.0	24.0		31.0		31.0	31.0
Total Split (s)	25.0	25.0		45.0		45.0	45.0
Total Split (%)	35.7%	35.7%		64.3%		64.3%	64.3%
Yellow Time (s)	4.0	4.0		4.0		4.0	4.0
All-Red Time (s)	2.0	2.0		2.0		2.0	2.0
Lost Time Adjust (s)	0.0	0.0		0.0		0.0	0.0
Total Lost Time (s)	6.0	6.0		6.0		6.0	6.0
Lead/Lag							
Lead-Lag Optimize?							
Recall Mode	None	None		Max		Max	Max
v/c Ratio	0.17	0.26	0.21	0.64	0.13	0.17	0.26
Control Delay	9.8	27.3	3.3	9.0	1.9	5.5	4.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	9.8	27.3	3.3	9.0	1.9	5.5	4.1
Queue Length 50th (m)	0.1	6.6	0.0	60.9	0.0	2.2	15.0
Queue Length 95th (m)	7.9	14.2	0.0	#135.4	0.0	7.7	29.8
Internal Link Dist (m)	191.8			290.2			182.0
Turn Bay Length (m)		22.0			30.0	40.0	
Base Capacity (vph)	571	442	140	1477	140	353	1467
Starvation Cap Reductn	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.08	0.12	0.21	0.64	0.13	0.17	0.26

Intersection Summary

Cycle Length: 70

Actuated Cycle Length: 62.4

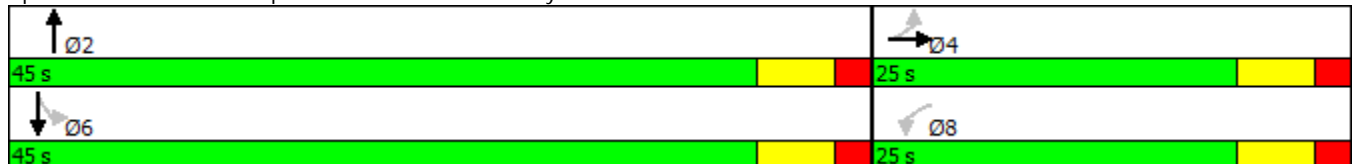
Natural Cycle: 70

Control Type: Semi Act-Uncoord

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

Queue shown is maximum after two cycles.

Splits and Phases: 4: Airport Road & School Driveway - R/L out/North Site Access - Street A



# HCM Signalized Intersection Capacity Analysis

## 4: Airport Road & School Driveway - R/L out/North Site Access - Street A

PM Peak Hour  
FT 2022



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔		↔		↔		↑	↔	↔	↑	
Traffic Volume (vph)	29	0	19	52	0	29	0	946	18	61	381	0
Future Volume (vph)	29	0	19	52	0	29	0	946	18	61	381	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.7	3.7	3.5	3.7	3.7	3.7	3.7	3.5	3.7	3.7	3.7	3.5
Total Lost time (s)		6.0		6.0		4.0		6.0	4.0	6.0	6.0	
Lane Util. Factor		1.00		1.00		1.00		1.00	1.00	1.00	1.00	
Fr <sub>t</sub>		0.95		1.00		0.85		1.00	0.85	1.00	1.00	
Fl <sub>t</sub> Protected		0.97		0.95		1.00		1.00	1.00	0.95	1.00	
Satd. Flow (prot)		1765		1825		1633		1842	1633	1825	1830	
Fl <sub>t</sub> Permitted		0.97		0.75		1.00		1.00	1.00	0.23	1.00	
Satd. Flow (perm)		1765		1450		1633		1842	1633	440	1830	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	29	0	19	52	0	29	0	946	18	61	381	0
RTOR Reduction (vph)	0	43	0	0	0	29	0	0	18	0	0	0
Lane Group Flow (vph)	0	5	0	52	0	0	0	946	0	61	381	0
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	0%	2%	0%	0%	5%	0%
Turn Type	Perm	NA		Perm		custom		NA	NA	Perm	NA	
Protected Phases		4						2				6
Permitted Phases	4			8						6		
Actuated Green, G (s)		5.3		5.3		0.0		47.6	0.0	47.6	47.6	
Effective Green, g (s)		5.3		5.3		0.0		47.6	0.0	47.6	47.6	
Actuated g/C Ratio		0.08		0.08		0.00		0.73	0.00	0.73	0.73	
Clearance Time (s)		6.0		6.0				6.0		6.0	6.0	
Vehicle Extension (s)		3.0		3.0				3.0		3.0	3.0	
Lane Grp Cap (vph)		144		118		0		1350	0	322	1342	
v/s Ratio Prot								c0.51				0.21
v/s Ratio Perm		0.00		c0.04						0.14		
v/c Ratio		0.03		0.44		0.00		0.70	0.00	0.19	0.28	
Uniform Delay, d <sub>1</sub>		27.4		28.4		32.5		4.7	32.5	2.7	2.9	
Progression Factor		1.00		1.00		1.00		1.00	1.00	1.00	1.00	
Incremental Delay, d <sub>2</sub>		0.1		2.6		0.0		3.1	0.0	1.3	0.5	
Delay (s)		27.5		31.0		32.5		7.8	32.5	4.0	3.4	
Level of Service		C		C		C		A	C	A	A	
Approach Delay (s)		27.5			31.5			8.3			3.5	
Approach LOS		C			C			A			A	





















### Intersection Summary

HCM 2000 Control Delay	8.7	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.67		
Actuated Cycle Length (s)	64.9	Sum of lost time (s)	12.0
Intersection Capacity Utilization	73.1%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

HCM Unsignalized Intersection Capacity Analysis  
5: Airport Road & Cranston Dr/South Site Access -Street A

PM Peak Hour  
FT 2022

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	5	0	4	19	0	7	21	951	125	6	445	4
Future Volume (Veh/h)	5	0	4	19	0	7	21	951	125	6	445	4
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	5	0	4	19	0	7	21	951	125	6	445	4
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			TWLTL	
Median storage veh												2
Upstream signal (m)												314
pX, platoon unblocked												
vC, conflicting volume	1457	1575	445	1454	1454	951	449			1076		
vC1, stage 1 conf vol	457	457		993	993							
vC2, stage 2 conf vol	1000	1118		461	461							
vCu, unblocked vol	1457	1575	445	1454	1454	951	449			1076		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)	6.1	5.5		6.1	5.5							
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	98	100	99	93	100	98	98			99		
cM capacity (veh/h)	256	253	617	266	288	318	1122			656		
Direction, Lane #	EB 1	WB 1	NB 1	NB 2	NB 3	SB 1	SB 2	SB 3				
Volume Total	9	26	21	951	125	6	445	4				
Volume Left	5	19	21	0	0	6	0	0				
Volume Right	4	7	0	0	125	0	0	4				
cSH	346	278	1122	1700	1700	656	1700	1700				
Volume to Capacity	0.03	0.09	0.02	0.56	0.07	0.01	0.26	0.00				
Queue Length 95th (m)	0.6	2.5	0.5	0.0	0.0	0.2	0.0	0.0				
Control Delay (s)	15.7	19.3	8.3	0.0	0.0	10.5	0.0	0.0				
Lane LOS	C	C	A			B						
Approach Delay (s)	15.7	19.3	0.2			0.1						
Approach LOS	C	C										
Intersection Summary												
Average Delay			0.6									
Intersection Capacity Utilization			60.1%	ICU Level of Service	B							
Analysis Period (min)			15									

Queues  
6: Airport Road & Olde Base Line Rd

PM Peak Hour  
FT 2022



Lane Group	EBL	NBL	NBT	SBT
Lane Configurations				
Traffic Volume (vph)	230	81	838	364
Future Volume (vph)	230	81	838	364
Lane Group Flow (vph)	252	0	919	456
Turn Type	Prot	Perm	NA	NA
Protected Phases	4		2	2
Permitted Phases		2		
Detector Phase	4	2	2	2
Switch Phase				
Minimum Initial (s)	8.0	12.0	12.0	12.0
Minimum Split (s)	19.6	20.0	20.0	20.0
Total Split (s)	26.6	62.0	62.0	62.0
Total Split (%)	30.0%	70.0%	70.0%	70.0%
Yellow Time (s)	4.0	4.0	4.0	4.0
All-Red Time (s)	2.6	2.0	2.0	2.0
Lost Time Adjust (s)	0.0		0.0	0.0
Total Lost Time (s)	6.6		6.0	6.0
Lead/Lag				
Lead-Lag Optimize?				
Recall Mode	None	Max	Max	Max
v/c Ratio	0.73		0.82	0.39
Control Delay	45.0		19.8	7.8
Queue Delay	0.0		0.0	0.0
Total Delay	45.0		19.8	7.8
Queue Length 50th (m)	39.8		105.1	29.5
Queue Length 95th (m)	65.1		#218.6	52.7
Internal Link Dist (m)	373.9		480.2	717.9
Turn Bay Length (m)				
Base Capacity (vph)	424		1119	1169
Starvation Cap Reductn	0		0	0
Spillback Cap Reductn	0		0	0
Storage Cap Reductn	0		0	0
Reduced v/c Ratio	0.59		0.82	0.39

Intersection Summary

Cycle Length: 88.6  
 Actuated Cycle Length: 86  
 Natural Cycle: 65  
 Control Type: Semi Act-Uncoord  
 # 95th percentile volume exceeds capacity, queue may be longer.  
 Queue shown is maximum after two cycles.

Splits and Phases: 6: Airport Road & Olde Base Line Rd



HCM Signalized Intersection Capacity Analysis  
6: Airport Road & Olde Base Line Rd

PM Peak Hour  
FT 2022



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	230	22	81	838	364	92
Future Volume (vph)	230	22	81	838	364	92
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width	3.7	3.5	3.7	3.5	3.7	3.5
Total Lost time (s)	6.6			6.0	6.0	
Lane Util. Factor	1.00			1.00	1.00	
Frt	0.99			1.00	0.97	
Flt Protected	0.96			1.00	1.00	
Satd. Flow (prot)	1808			1821	1744	
Flt Permitted	0.96			0.92	1.00	
Satd. Flow (perm)	1808			1683	1744	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	230	22	81	838	364	92
RTOR Reduction (vph)	4	0	0	0	9	0
Lane Group Flow (vph)	248	0	0	919	447	0
Heavy Vehicles (%)	0%	5%	0%	3%	9%	0%
Turn Type	Prot		Perm		NA	NA
Protected Phases	4				2	2
Permitted Phases			2			
Actuated Green, G (s)	16.2				57.2	57.2
Effective Green, g (s)	16.2				57.2	57.2
Actuated g/C Ratio	0.19				0.67	0.67
Clearance Time (s)	6.6				6.0	6.0
Vehicle Extension (s)	3.0				3.0	3.0
Lane Grp Cap (vph)	340				1119	1159
v/s Ratio Prot	c0.14					0.26
v/s Ratio Perm					c0.55	
v/c Ratio	0.73				0.82	0.39
Uniform Delay, d1	32.8				10.6	6.5
Progression Factor	1.00				1.00	1.00
Incremental Delay, d2	7.6				6.8	1.0
Delay (s)	40.5				17.4	7.5
Level of Service	D				B	A
Approach Delay (s)	40.5				17.4	7.5
Approach LOS	D				B	A

Intersection Summary

HCM 2000 Control Delay	18.2	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.80		
Actuated Cycle Length (s)	86.0	Sum of lost time (s)	12.6
Intersection Capacity Utilization	102.9%	ICU Level of Service	G
Analysis Period (min)	15		

c Critical Lane Group

Queues  
7: Airport Road & Caledon Trail Pathway

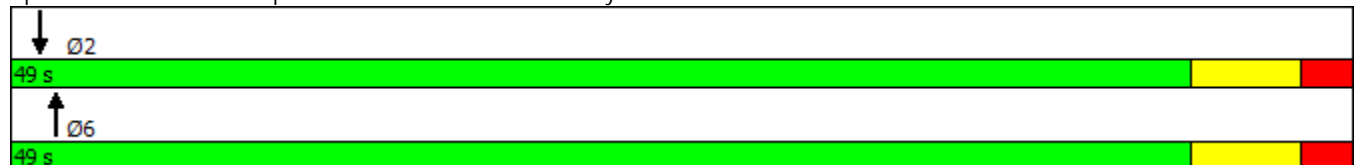
PM Peak Hour  
FT 2022

	↑	↓
Lane Group	NBT	SBT
Lane Configurations	↑	↑
Traffic Volume (vph)	981	454
Future Volume (vph)	981	454
Lane Group Flow (vph)	981	454
Turn Type	NA	NA
Protected Phases	6	2
Permitted Phases		
Detector Phase	6	2
Switch Phase		
Minimum Initial (s)	8.0	8.0
Minimum Split (s)	24.0	24.0
Total Split (s)	49.0	49.0
Total Split (%)	100.0%	100.0%
Yellow Time (s)	4.0	4.0
All-Red Time (s)	2.0	2.0
Lost Time Adjust (s)	0.0	0.0
Total Lost Time (s)	6.0	6.0
Lead/Lag		
Lead-Lag Optimize?		
Recall Mode	Max	Max
v/c Ratio	0.52	0.26
Control Delay	1.0	0.4
Queue Delay	0.0	0.0
Total Delay	1.0	0.4
Queue Length 50th (m)	0.0	0.0
Queue Length 95th (m)	0.0	0.0
Internal Link Dist (m)	16.1	214.0
Turn Bay Length (m)		
Base Capacity (vph)	1883	1762
Starvation Cap Reductn	0	0
Spillback Cap Reductn	0	0
Storage Cap Reductn	0	0
Reduced v/c Ratio	0.52	0.26

**Intersection Summary**

Cycle Length: 49  
 Actuated Cycle Length: 64  
 Natural Cycle: 40  
 Control Type: Semi Act-Uncoord

Splits and Phases: 7: Airport Road & Caledon Trail Pathway



HCM Signalized Intersection Capacity Analysis  
7: Airport Road & Caledon Trail Pathway

PM Peak Hour  
FT 2022



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations								↑			↑		
Traffic Volume (vph)	0	0	0	0	0	0	0	981	0	0	454	0	
Future Volume (vph)	0	0	0	0	0	0	0	981	0	0	454	0	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	
Total Lost time (s)								6.0			6.0		
Lane Util. Factor								1.00			1.00		
Frt								1.00			1.00		
Flt Protected								1.00			1.00		
Satd. Flow (prot)								1883			1762		
Flt Permitted								1.00			1.00		
Satd. Flow (perm)								1883			1762		
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Adj. Flow (vph)	0	0	0	0	0	0	0	981	0	0	454	0	
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0	
Lane Group Flow (vph)	0	0	0	0	0	0	0	981	0	0	454	0	
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	0%	2%	0%	0%	9%	0%	
Turn Type								NA			NA		
Protected Phases								6			2		
Permitted Phases													
Actuated Green, G (s)								64.0			64.0		
Effective Green, g (s)								64.0			64.0		
Actuated g/C Ratio								1.00			1.00		
Clearance Time (s)								6.0			6.0		
Vehicle Extension (s)								3.0			3.0		
Lane Grp Cap (vph)								1883			1762		
v/s Ratio Prot								c0.52			0.26		
v/s Ratio Perm													
v/c Ratio								0.52			0.26		
Uniform Delay, d1								0.0			0.0		
Progression Factor								1.00			1.00		
Incremental Delay, d2								1.0			0.4		
Delay (s)								1.0			0.4		
Level of Service								A			A		
Approach Delay (s)		0.0			0.0			1.0			0.4		
Approach LOS		A			A			A			A		
<b>Intersection Summary</b>													
HCM 2000 Control Delay			0.8					HCM 2000 Level of Service			A		
HCM 2000 Volume to Capacity ratio			0.57										
Actuated Cycle Length (s)			64.0					Sum of lost time (s)			6.0		
Intersection Capacity Utilization			56.6%					ICU Level of Service			B		
Analysis Period (min)			15										
c Critical Lane Group													

**APPENDIX H**  
**Future (2032) Total Traffic**  
Level Of Service Outputs



Queues

AM Peak Hour

1: Airport Road & LCBO Driveway/Old Church Road

FT 2032



Lane Group	EBT	WBL	WBT	NBT	NBR	SBL	SBT
Lane Configurations							
Traffic Volume (vph)	1	242	0	160	94	45	569
Future Volume (vph)	1	242	0	160	94	45	569
Lane Group Flow (vph)	2	242	30	160	94	0	615
Turn Type	NA	Perm	NA	NA	Perm	Perm	NA
Protected Phases	2		2	1			1
Permitted Phases		2			1	1	
Detector Phase	2	2	2	1	1	1	1
Switch Phase							
Minimum Initial (s)	8.0	8.0	8.0	8.0	8.0	8.0	8.0
Minimum Split (s)	24.6	24.6	24.6	32.1	32.1	32.1	32.1
Total Split (s)	28.0	28.0	28.0	42.0	42.0	42.0	42.0
Total Split (%)	40.0%	40.0%	40.0%	60.0%	60.0%	60.0%	60.0%
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	2.6	2.6	2.6	3.1	3.1	3.1	3.1
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0		0.0
Total Lost Time (s)	6.6	6.6	6.6	7.1	7.1		7.1
Lead/Lag	Lag	Lag	Lag	Lead	Lead	Lead	Lead
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	Max	Max	Max	Max	Max	Max	Max
v/c Ratio	0.00	0.56	0.03	0.20	0.12		0.68
Control Delay	15.0	26.2	0.1	10.6	2.8		18.2
Queue Delay	0.0	0.0	0.0	0.0	0.0		0.0
Total Delay	15.0	26.2	0.1	10.6	2.8		18.2
Queue Length 50th (m)	0.1	27.6	0.0	11.5	0.0		60.2
Queue Length 95th (m)	1.5	49.7	0.0	21.7	6.4		96.5
Internal Link Dist (m)	54.2		143.8	214.0			592.7
Turn Bay Length (m)					45.0		
Base Capacity (vph)	547	434	1001	811	791		901
Starvation Cap Reductn	0	0	0	0	0		0
Spillback Cap Reductn	0	0	0	0	0		0
Storage Cap Reductn	0	0	0	0	0		0
Reduced v/c Ratio	0.00	0.56	0.03	0.20	0.12		0.68

Intersection Summary

Cycle Length: 70

Actuated Cycle Length: 70

Natural Cycle: 60

Control Type: Semi Act-Uncoord

Splits and Phases: 1: Airport Road & LCBO Driveway/Old Church Road



# HCM Signalized Intersection Capacity Analysis

## 1: Airport Road & LCBO Driveway/Old Church Road

AM Peak Hour  
FT 2032



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕		↕	↕			↕	↕		↕	
Traffic Volume (vph)	0	1	1	242	0	30	0	160	94	45	569	1
Future Volume (vph)	0	1	1	242	0	30	0	160	94	45	569	1
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5
Total Lost time (s)		6.6		6.6	6.6			7.1	7.1		7.1	
Lane Util. Factor		1.00		1.00	1.00			1.00	1.00		1.00	
Frt		0.93		1.00	0.85			1.00	0.85		1.00	
Flt Protected		1.00		0.95	1.00			1.00	1.00		1.00	
Satd. Flow (prot)		1791		1785	1633			1628	1493		1862	
Flt Permitted		1.00		0.76	1.00			1.00	1.00		0.97	
Satd. Flow (perm)		1791		1421	1633			1628	1493		1807	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	0	1	1	242	0	30	0	160	94	45	569	1
RTOR Reduction (vph)	0	1	0	0	21	0	0	0	47	0	0	0
Lane Group Flow (vph)	0	1	0	242	9	0	0	160	47	0	615	0
Heavy Vehicles (%)	4%	0%	0%	0%	0%	0%	0%	18%	7%	0%	3%	0%
Turn Type		NA		Perm	NA			NA	Perm	Perm	NA	
Protected Phases		2			2			1			1	
Permitted Phases	2			2			1		1	1		
Actuated Green, G (s)		21.4		21.4	21.4			34.9	34.9		34.9	
Effective Green, g (s)		21.4		21.4	21.4			34.9	34.9		34.9	
Actuated g/C Ratio		0.31		0.31	0.31			0.50	0.50		0.50	
Clearance Time (s)		6.6		6.6	6.6			7.1	7.1		7.1	
Vehicle Extension (s)		3.0		3.0	3.0			3.0	3.0		3.0	
Lane Grp Cap (vph)		547		434	499			811	744		900	
v/s Ratio Prot		0.00			0.01			0.10				
v/s Ratio Perm				c0.17					0.03		c0.34	
v/c Ratio		0.00		0.56	0.02			0.20	0.06		0.68	
Uniform Delay, d1		16.9		20.3	17.0			9.8	9.1		13.3	
Progression Factor		1.00		1.00	1.00			1.00	1.00		1.00	
Incremental Delay, d2		0.0		5.1	0.1			0.5	0.2		4.2	
Delay (s)		16.9		25.4	17.0			10.3	9.2		17.5	
Level of Service		B		C	B			B	A		B	
Approach Delay (s)		16.9			24.5			9.9			17.5	
Approach LOS		B			C			A			B	

### Intersection Summary

HCM 2000 Control Delay	17.5	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.63		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	13.7
Intersection Capacity Utilization	78.3%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

# HCM Unsignalized Intersection Capacity Analysis

## 2: Airport Road & Mountcrest Rd

AM Peak Hour  
FT 2032



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	↙		↑	↗		↓
Traffic Volume (veh/h)	13	5	262	0	2	912
Future Volume (Veh/h)	13	5	262	0	2	912
Sign Control	Stop		Free		Free	
Grade	0%		0%		0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	13	5	262	0	2	912
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	TWLTL			None		
Median storage (veh)	2					
Upstream signal (m)				40		
pX, platoon unblocked						
vC, conflicting volume	1178	262			262	
vC1, stage 1 conf vol	262					
vC2, stage 2 conf vol	916					
vCu, unblocked vol	1178	262			262	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)	5.4					
tF (s)	3.5	3.3			2.2	
p0 queue free %	96	99			100	
cM capacity (veh/h)	371	782			1314	
Direction, Lane #	WB 1	NB 1	NB 2	SB 1		
Volume Total	18	262	0	914		
Volume Left	13	0	0	2		
Volume Right	5	0	0	0		
cSH	434	1700	1700	1314		
Volume to Capacity	0.04	0.15	0.00	0.00		
Queue Length 95th (m)	1.0	0.0	0.0	0.0		
Control Delay (s)	13.6	0.0	0.0	0.0		
Lane LOS	B			A		
Approach Delay (s)	13.6	0.0		0.0		
Approach LOS	B					
Intersection Summary						
Average Delay			0.2			
Intersection Capacity Utilization			59.6%	ICU Level of Service	B	
Analysis Period (min)			15			

# HCM Unsignalized Intersection Capacity Analysis

## 3: Airport Road & Hiltop Dr

AM Peak Hour  
FT 2032



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	1	8	5	256	925	0
Future Volume (Veh/h)	1	8	5	256	925	0
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	1	8	5	256	925	0
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type						
				TWLTL	TWLTL	
Median storage veh				2	2	
Upstream signal (m)				206	345	
pX, platoon unblocked						
vC, conflicting volume	1191	925	925			
vC1, stage 1 conf vol	925					
vC2, stage 2 conf vol	266					
vCu, unblocked vol	1191	925	925			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)	5.4					
tF (s)	3.5	3.3	2.2			
p0 queue free %	100	98	99			
cM capacity (veh/h)	367	329	747			
Direction, Lane #	EB 1	NB 1	NB 2	SB 1		
Volume Total	9	5	256	925		
Volume Left	1	5	0	0		
Volume Right	8	0	0	0		
cSH	333	747	1700	1700		
Volume to Capacity	0.03	0.01	0.15	0.54		
Queue Length 95th (m)	0.7	0.2	0.0	0.0		
Control Delay (s)	16.1	9.9	0.0	0.0		
Lane LOS	C	A				
Approach Delay (s)	16.1	0.2		0.0		
Approach LOS	C					
Intersection Summary						
Average Delay			0.2			
Intersection Capacity Utilization			58.7%	ICU Level of Service	B	
Analysis Period (min)			15			

Queues

AM Peak Hour

4: Airport Road & School Driveway - R/L out/North Site Access - Street A

FT 2032



Lane Group	EBT	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	↕	↙	↘	↑	↗	↘	↑
Traffic Volume (vph)	0	91	57	201	5	12	924
Future Volume (vph)	0	91	57	201	5	12	924
Lane Group Flow (vph)	89	91	57	201	5	12	924
Turn Type	NA	Perm	Perm	NA	Perm	Perm	NA
Protected Phases	4			2			6
Permitted Phases		8	8		2	6	
Detector Phase	4	8	8	2	2	6	6
Switch Phase							
Minimum Initial (s)	8.0	8.0	8.0	8.0	8.0	8.0	8.0
Minimum Split (s)	24.0	24.0	24.0	31.0	31.0	31.0	31.0
Total Split (s)	25.0	25.0	25.0	45.0	45.0	45.0	45.0
Total Split (%)	35.7%	35.7%	35.7%	64.3%	64.3%	64.3%	64.3%
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.0	6.0	6.0	6.0	6.0	6.0	6.0
Lead/Lag							
Lead-Lag Optimize?							
Recall Mode	None	None	None	Max	Max	Max	Max
v/c Ratio	0.28	0.42	0.18	0.18	0.00	0.01	0.69
Control Delay	14.8	29.3	8.5	5.2	0.0	4.8	11.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	14.8	29.3	8.5	5.2	0.0	4.8	11.7
Queue Length 50th (m)	4.3	9.8	0.0	7.9	0.0	0.4	61.9
Queue Length 95th (m)	15.0	21.7	8.2	18.8	0.0	2.3	#144.8
Internal Link Dist (m)	191.8			290.2			182.0
Turn Bay Length (m)		22.0			30.0	40.0	
Base Capacity (vph)	569	412	540	1124	1176	864	1340
Starvation Cap Reductn	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.16	0.22	0.11	0.18	0.00	0.01	0.69

Intersection Summary

Cycle Length: 70

Actuated Cycle Length: 61.9

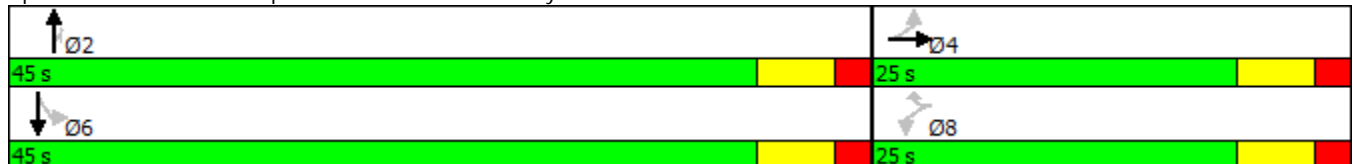
Natural Cycle: 65

Control Type: Semi Act-Uncoord

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

Queue shown is maximum after two cycles.

Splits and Phases: 4: Airport Road & School Driveway - R/L out/North Site Access - Street A



# HCM Signalized Intersection Capacity Analysis

## 4: Airport Road & School Driveway - R/L out/North Site Access - Street A

AM Peak Hour  
FT 2032



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔		↔		↔		↑	↔	↔	↑	
Traffic Volume (vph)	44	0	45	91	0	57	0	201	5	12	924	0
Future Volume (vph)	44	0	45	91	0	57	0	201	5	12	924	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.7	3.7	3.5	3.7	3.7	3.7	3.7	3.5	3.7	3.7	3.7	3.5
Total Lost time (s)		6.0		6.0		6.0		6.0	6.0	6.0	6.0	
Lane Util. Factor		1.00		1.00		1.00		1.00	1.00	1.00	1.00	
Frt		0.93		1.00		0.85		1.00	0.85	1.00	1.00	
Flt Protected		0.98		0.95		1.00		1.00	1.00	0.95	1.00	
Satd. Flow (prot)		1747		1825		1633		1579	1633	1825	1883	
Flt Permitted		0.98		0.70		1.00		1.00	1.00	0.63	1.00	
Satd. Flow (perm)		1747		1343		1633		1579	1633	1213	1883	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	44	0	45	91	0	57	0	201	5	12	924	0
RTOR Reduction (vph)	0	41	0	0	0	50	0	0	2	0	0	0
Lane Group Flow (vph)	0	48	0	91	0	7	0	201	3	12	924	0
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	0%	19%	0%	0%	2%	0%
Turn Type	Perm	NA		Perm		Perm		NA	Perm	Perm	NA	
Protected Phases		4						2				6
Permitted Phases	4			8		8			2	6		
Actuated Green, G (s)		8.3		8.3		8.3		42.9	42.9	42.9	42.9	
Effective Green, g (s)		8.3		8.3		8.3		42.9	42.9	42.9	42.9	
Actuated g/C Ratio		0.13		0.13		0.13		0.68	0.68	0.68	0.68	
Clearance Time (s)		6.0		6.0		6.0		6.0	6.0	6.0	6.0	
Vehicle Extension (s)		3.0		3.0		3.0		3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)		229		176		214		1071	1108	823	1278	
v/s Ratio Prot								0.13				c0.49
v/s Ratio Perm		0.03		c0.07		0.00			0.00	0.01		
v/c Ratio		0.21		0.52		0.03		0.19	0.00	0.01	0.72	
Uniform Delay, d1		24.5		25.6		24.0		3.7	3.3	3.3	6.4	
Progression Factor		1.00		1.00		1.00		1.00	1.00	1.00	1.00	
Incremental Delay, d2		0.5		2.6		0.1		0.4	0.0	0.0	3.6	
Delay (s)		25.0		28.1		24.0		4.1	3.3	3.3	10.0	
Level of Service		C		C		C		A	A	A	A	
Approach Delay (s)		25.0			26.6			4.1			9.9	
Approach LOS		C			C			A			A	

### Intersection Summary

HCM 2000 Control Delay	11.8	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.69		
Actuated Cycle Length (s)	63.2	Sum of lost time (s)	12.0
Intersection Capacity Utilization	70.5%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

HCM Unsignalized Intersection Capacity Analysis  
5: Airport Road & Cranston Dr/South Site Access -Street A

AM Peak Hour  
FT 2032



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔			↔		↗	↖	↗	↗	↖	↖
Traffic Volume (veh/h)	3	0	22	59	0	16	4	187	26	3	1077	0
Future Volume (Veh/h)	3	0	22	59	0	16	4	187	26	3	1077	0
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	3	0	22	59	0	16	4	187	26	3	1077	0
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			TWLTL	
Median storage veh												2
Upstream signal (m)												314
pX, platoon unblocked	0.51	0.51	0.51	0.51	0.51		0.51					
vC, conflicting volume	1294	1304	1077	1300	1278	187	1077			213		
vC1, stage 1 conf vol	1083	1083		195	195							
vC2, stage 2 conf vol	211	221		1105	1083							
vCu, unblocked vol	1099	1118	676	1110	1067	187	676			213		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.3			4.1		
tC, 2 stage (s)	6.1	5.5		6.1	5.5							
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.4			2.2		
p0 queue free %	99	100	91	68	100	98	99			100		
cM capacity (veh/h)	216	221	235	183	218	860	419			1369		

Direction, Lane #	EB 1	WB 1	NB 1	NB 2	NB 3	SB 1	SB 2	SB 3
Volume Total	25	75	4	187	26	3	1077	0
Volume Left	3	59	4	0	0	3	0	0
Volume Right	22	16	0	0	26	0	0	0
cSH	232	220	419	1700	1700	1369	1700	1700
Volume to Capacity	0.11	0.34	0.01	0.11	0.02	0.00	0.63	0.00
Queue Length 95th (m)	2.9	11.5	0.2	0.0	0.0	0.1	0.0	0.0
Control Delay (s)	22.4	29.6	13.7	0.0	0.0	7.6	0.0	0.0
Lane LOS	C	D	B			A		
Approach Delay (s)	22.4	29.6	0.3			0.0		
Approach LOS	C	D						

Intersection Summary		
Average Delay		2.0
Intersection Capacity Utilization	74.3%	ICU Level of Service
Analysis Period (min)	15	D

Queues  
6: Airport Road & Olde Base Line Rd

AM Peak Hour  
FT 2032



Lane Group	EBL	NBL	NBT	SBT
Lane Configurations				
Traffic Volume (vph)	42	12	162	901
Future Volume (vph)	42	12	162	901
Lane Group Flow (vph)	106	0	174	1099
Turn Type	Prot	Perm	NA	NA
Protected Phases	4		2	2
Permitted Phases		2		
Detector Phase	4	2	2	2
Switch Phase				
Minimum Initial (s)	8.0	12.0	12.0	12.0
Minimum Split (s)	19.6	20.0	20.0	20.0
Total Split (s)	26.6	62.0	62.0	62.0
Total Split (%)	30.0%	70.0%	70.0%	70.0%
Yellow Time (s)	4.0	4.0	4.0	4.0
All-Red Time (s)	2.6	2.0	2.0	2.0
Lost Time Adjust (s)	0.0		0.0	0.0
Total Lost Time (s)	6.6		6.0	6.0
Lead/Lag				
Lead-Lag Optimize?				
Recall Mode	None	Max	Max	Max
v/c Ratio	0.44		0.16	0.76
Control Delay	22.0		3.7	11.5
Queue Delay	0.0		0.0	0.0
Total Delay	22.0		3.7	11.5
Queue Length 50th (m)	6.8		6.5	87.0
Queue Length 95th (m)	20.2		14.6	#207.0
Internal Link Dist (m)	373.9		480.2	717.9
Turn Bay Length (m)				
Base Capacity (vph)	459		1072	1453
Starvation Cap Reductn	0		0	0
Spillback Cap Reductn	0		0	0
Storage Cap Reductn	0		0	0
Reduced v/c Ratio	0.23		0.16	0.76

Intersection Summary

Cycle Length: 88.6  
 Actuated Cycle Length: 82.9  
 Natural Cycle: 75  
 Control Type: Semi Act-Uncoord  
 # 95th percentile volume exceeds capacity, queue may be longer.  
 Queue shown is maximum after two cycles.

Splits and Phases: 6: Airport Road & Olde Base Line Rd





# HCM Signalized Intersection Capacity Analysis

## 6: Airport Road & Olde Base Line Rd

AM Peak Hour  
FT 2032



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	42	64	12	162	901	198
Future Volume (vph)	42	64	12	162	901	198
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width	3.7	3.5	3.7	3.5	3.7	3.5
Total Lost time (s)	6.6			6.0	6.0	
Lane Util. Factor	1.00			1.00	1.00	
Frt	0.92			1.00	0.98	
Flt Protected	0.98			1.00	1.00	
Satd. Flow (prot)	1699			1453	1826	
Flt Permitted	0.98			0.93	1.00	
Satd. Flow (perm)	1699			1352	1826	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	42	64	12	162	901	198
RTOR Reduction (vph)	59	0	0	0	6	0
Lane Group Flow (vph)	47	0	0	174	1093	0
Heavy Vehicles (%)	0%	3%	0%	31%	3%	1%
Turn Type	Prot		Perm	NA	NA	
Protected Phases	4			2	2	
Permitted Phases			2			
Actuated Green, G (s)	7.2			64.5	64.5	
Effective Green, g (s)	7.2			64.5	64.5	
Actuated g/C Ratio	0.09			0.77	0.77	
Clearance Time (s)	6.6			6.0	6.0	
Vehicle Extension (s)	3.0			3.0	3.0	
Lane Grp Cap (vph)	145			1034	1397	
v/s Ratio Prot	c0.03				c0.60	
v/s Ratio Perm				0.13		
v/c Ratio	0.33			0.17	0.78	
Uniform Delay, d1	36.3			2.7	5.8	
Progression Factor	1.00			1.00	1.00	
Incremental Delay, d2	1.3			0.4	4.4	
Delay (s)	37.6			3.0	10.2	
Level of Service	D			A	B	
Approach Delay (s)	37.6			3.0	10.2	
Approach LOS	D			A	B	

### Intersection Summary

HCM 2000 Control Delay	11.4	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.74		
Actuated Cycle Length (s)	84.3	Sum of lost time (s)	12.6
Intersection Capacity Utilization	76.6%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

Queues  
7: Airport Road & Caledon Trail Pathway

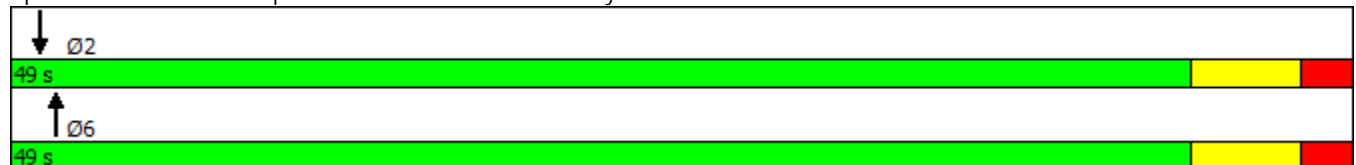
AM Peak Hour  
FT 2032

	↑	↓
Lane Group	NBT	SBT
Lane Configurations	↑	↑
Traffic Volume (vph)	220	748
Future Volume (vph)	220	748
Lane Group Flow (vph)	220	748
Turn Type	NA	NA
Protected Phases	6	2
Permitted Phases		
Detector Phase	6	2
Switch Phase		
Minimum Initial (s)	8.0	8.0
Minimum Split (s)	24.0	24.0
Total Split (s)	49.0	49.0
Total Split (%)	100.0%	100.0%
Yellow Time (s)	4.0	4.0
All-Red Time (s)	2.0	2.0
Lost Time Adjust (s)	0.0	0.0
Total Lost Time (s)	6.0	6.0
Lead/Lag		
Lead-Lag Optimize?		
Recall Mode	Max	Max
v/c Ratio	0.13	0.40
Control Delay	0.2	0.6
Queue Delay	0.0	0.0
Total Delay	0.2	0.6
Queue Length 50th (m)	0.0	0.0
Queue Length 95th (m)	0.0	0.0
Internal Link Dist (m)	16.1	214.0
Turn Bay Length (m)		
Base Capacity (vph)	1671	1883
Starvation Cap Reductn	0	0
Spillback Cap Reductn	0	0
Storage Cap Reductn	0	0
Reduced v/c Ratio	0.13	0.40

**Intersection Summary**

Cycle Length: 49  
 Actuated Cycle Length: 64  
 Natural Cycle: 40  
 Control Type: Semi Act-Uncoord

Splits and Phases: 7: Airport Road & Caledon Trail Pathway



# HCM Signalized Intersection Capacity Analysis

## 7: Airport Road & Caledon Trail Pathway

AM Peak Hour  
FT 2032



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations								↑			↑		
Traffic Volume (vph)	0	0	0	0	0	0	0	220	0	0	748	0	
Future Volume (vph)	0	0	0	0	0	0	0	220	0	0	748	0	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	
Total Lost time (s)								6.0			6.0		
Lane Util. Factor								1.00			1.00		
Frt								1.00			1.00		
Flt Protected								1.00			1.00		
Satd. Flow (prot)								1671			1883		
Flt Permitted								1.00			1.00		
Satd. Flow (perm)								1671			1883		
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Adj. Flow (vph)	0	0	0	0	0	0	0	220	0	0	748	0	
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0	
Lane Group Flow (vph)	0	0	0	0	0	0	0	220	0	0	748	0	
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	0%	15%	0%	0%	2%	0%	
Turn Type								NA			NA		
Protected Phases								6			2		
Permitted Phases													
Actuated Green, G (s)								64.0			64.0		
Effective Green, g (s)								64.0			64.0		
Actuated g/C Ratio								1.00			1.00		
Clearance Time (s)								6.0			6.0		
Vehicle Extension (s)								3.0			3.0		
Lane Grp Cap (vph)								1671			1883		
v/s Ratio Prot								0.13			0.40		
v/s Ratio Perm													
v/c Ratio								0.13			0.40		
Uniform Delay, d1								0.0			0.0		
Progression Factor								1.00			1.00		
Incremental Delay, d2								0.2			0.6		
Delay (s)								0.2			0.6		
Level of Service								A			A		
Approach Delay (s)		0.0				0.0		0.2			0.6		
Approach LOS		A				A		A			A		
<b>Intersection Summary</b>													
HCM 2000 Control Delay			0.5					HCM 2000 Level of Service			A		
HCM 2000 Volume to Capacity ratio			0.44										
Actuated Cycle Length (s)			64.0					Sum of lost time (s)			6.0		
Intersection Capacity Utilization			44.4%					ICU Level of Service			A		
Analysis Period (min)			15										
c Critical Lane Group													

Queues  
1: Airport Road & LCBO Driveway/Old Church Road

PM Peak Hour  
FT 2032

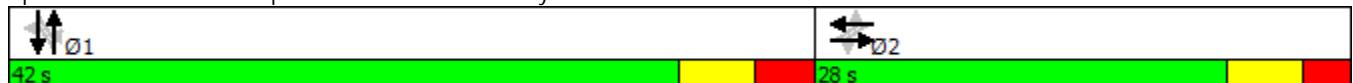


Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT
Lane Configurations		↕	↗	↖		↖	↗		↕
Traffic Volume (vph)	16	7	169	12	11	637	342	39	283
Future Volume (vph)	16	7	169	12	11	637	342	39	283
Lane Group Flow (vph)	0	31	169	129	0	648	342	0	328
Turn Type	Perm	NA	Perm	NA	Perm	NA	Perm	Perm	NA
Protected Phases		2		2		1			1
Permitted Phases	2		2		1		1	1	
Detector Phase	2	2	2	2	1	1	1	1	1
Switch Phase									
Minimum Initial (s)	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0
Minimum Split (s)	24.6	24.6	24.6	24.6	32.1	32.1	32.1	32.1	32.1
Total Split (s)	28.0	28.0	28.0	28.0	42.0	42.0	42.0	42.0	42.0
Total Split (%)	40.0%	40.0%	40.0%	40.0%	60.0%	60.0%	60.0%	60.0%	60.0%
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	2.6	2.6	2.6	2.6	3.1	3.1	3.1	3.1	3.1
Lost Time Adjust (s)		0.0	0.0	0.0		0.0	0.0		0.0
Total Lost Time (s)		6.6	6.6	6.6		7.1	7.1		7.1
Lead/Lag	Lag	Lag	Lag	Lag	Lead	Lead	Lead	Lead	Lead
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	Max	Max	Max	Max	Max	Max	Max	Max	Max
v/c Ratio		0.06	0.40	0.22		0.71	0.35		0.45
Control Delay		14.5	22.8	6.0		19.0	2.4		13.9
Queue Delay		0.0	0.0	0.0		0.0	0.0		0.0
Total Delay		14.5	22.8	6.0		19.0	2.4		13.9
Queue Length 50th (m)		2.2	18.3	1.2		64.9	0.0		27.2
Queue Length 95th (m)		7.9	34.9	12.3		103.2	11.7		47.4
Internal Link Dist (m)		54.2		143.8		214.0			592.7
Turn Bay Length (m)							45.0		
Base Capacity (vph)		488	419	579		914	967		723
Starvation Cap Reductn		0	0	0		0	0		0
Spillback Cap Reductn		0	0	0		0	0		0
Storage Cap Reductn		0	0	0		0	0		0
Reduced v/c Ratio		0.06	0.40	0.22		0.71	0.35		0.45

Intersection Summary

Cycle Length: 70  
 Actuated Cycle Length: 70  
 Natural Cycle: 60  
 Control Type: Semi Act-Uncoord

Splits and Phases: 1: Airport Road & LCBO Driveway/Old Church Road



HCM Signalized Intersection Capacity Analysis  
1: Airport Road & LCBO Driveway/Old Church Road

PM Peak Hour  
FT 2032



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕		↕	↕			↕	↕		↕	
Traffic Volume (vph)	16	7	8	169	12	117	11	637	342	39	283	6
Future Volume (vph)	16	7	8	169	12	117	11	637	342	39	283	6
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5
Total Lost time (s)		6.6		6.6	6.6			7.1	7.1		7.1	
Lane Util. Factor		1.00		1.00	1.00			1.00	1.00		1.00	
Frt		0.97		1.00	0.86			1.00	0.85		1.00	
Flt Protected		0.97		0.95	1.00			1.00	1.00		0.99	
Satd. Flow (prot)		1808		1767	1630			1847	1597		1768	
Flt Permitted		0.85		0.74	1.00			0.99	1.00		0.81	
Satd. Flow (perm)		1579		1371	1630			1835	1597		1449	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	16	7	8	169	12	117	11	637	342	39	283	6
RTOR Reduction (vph)	0	6	0	0	81	0	0	0	171	0	1	0
Lane Group Flow (vph)	0	25	0	169	48	0	0	648	171	0	327	0
Heavy Vehicles (%)	0%	0%	0%	1%	0%	2%	0%	4%	0%	0%	9%	0%
Turn Type	Perm	NA		Perm	NA		Perm	NA	Perm	Perm	NA	
Protected Phases		2			2			1			1	
Permitted Phases	2			2			1		1	1		
Actuated Green, G (s)		21.4		21.4	21.4			34.9	34.9		34.9	
Effective Green, g (s)		21.4		21.4	21.4			34.9	34.9		34.9	
Actuated g/C Ratio		0.31		0.31	0.31			0.50	0.50		0.50	
Clearance Time (s)		6.6		6.6	6.6			7.1	7.1		7.1	
Vehicle Extension (s)		3.0		3.0	3.0			3.0	3.0		3.0	
Lane Grp Cap (vph)		482		419	498			914	796		722	
v/s Ratio Prot					0.03							
v/s Ratio Perm		0.02		c0.12				c0.35	0.11		0.23	
v/c Ratio		0.05		0.40	0.10			0.71	0.21		0.45	
Uniform Delay, d1		17.1		19.2	17.4			13.6	9.9		11.4	
Progression Factor		1.00		1.00	1.00			1.00	1.00		1.00	
Incremental Delay, d2		0.2		2.9	0.4			4.6	0.6		2.0	
Delay (s)		17.4		22.1	17.8			18.2	10.5		13.4	
Level of Service		B		C	B			B	B		B	
Approach Delay (s)		17.4			20.2			15.6			13.4	
Approach LOS		B			C			B			B	











Intersection Summary

HCM 2000 Control Delay	16.0	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.59		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	13.7
Intersection Capacity Utilization	75.6%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

HCM Unsignalized Intersection Capacity Analysis  
2: Airport Road & Mountcrest Rd

PM Peak Hour  
FT 2032

						
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	2	7	1139	13	14	504
Future Volume (Veh/h)	2	7	1139	13	14	504
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	2	7	1139	13	14	504
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	TWLTL			None		
Median storage veh	2					
Upstream signal (m)				40		
pX, platoon unblocked						
vC, conflicting volume	1671	1139			1152	
vC1, stage 1 conf vol	1139					
vC2, stage 2 conf vol	532					
vCu, unblocked vol	1671	1139			1152	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)	5.4					
tF (s)	3.5	3.3			2.2	
p0 queue free %	99	97			98	
cM capacity (veh/h)	278	247			614	
Direction, Lane #	WB 1	NB 1	NB 2	SB 1		
Volume Total	9	1139	13	518		
Volume Left	2	0	0	14		
Volume Right	7	0	13	0		
cSH	253	1700	1700	614		
Volume to Capacity	0.04	0.67	0.01	0.02		
Queue Length 95th (m)	0.9	0.0	0.0	0.6		
Control Delay (s)	19.7	0.0	0.0	0.6		
Lane LOS	C			A		
Approach Delay (s)	19.7	0.0		0.6		
Approach LOS	C					
Intersection Summary						
Average Delay			0.3			
Intersection Capacity Utilization			69.9%	ICU Level of Service	C	
Analysis Period (min)			15			

# HCM Unsignalized Intersection Capacity Analysis

## 3: Airport Road & Hiltop Dr

PM Peak Hour  
FT 2032



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	3	7	29	1145	495	0
Future Volume (Veh/h)	3	7	29	1145	495	0
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	3	7	29	1145	495	0
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type						
				TWLTL	TWLTL	
Median storage veh				2	2	
Upstream signal (m)				206	345	
pX, platoon unblocked	0.33					
vC, conflicting volume	1698	495	495			
vC1, stage 1 conf vol	495					
vC2, stage 2 conf vol	1203					
vCu, unblocked vol	2103	495	495			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)	5.4					
tF (s)	3.5	3.3	2.2			
p0 queue free %	98	99	97			
cM capacity (veh/h)	165	579	1079			
Direction, Lane #	EB 1	NB 1	NB 2	SB 1		
Volume Total	10	29	1145	495		
Volume Left	3	29	0	0		
Volume Right	7	0	0	0		
cSH	330	1079	1700	1700		
Volume to Capacity	0.03	0.03	0.67	0.29		
Queue Length 95th (m)	0.7	0.7	0.0	0.0		
Control Delay (s)	16.2	8.4	0.0	0.0		
Lane LOS	C	A				
Approach Delay (s)	16.2	0.2				
Approach LOS	C					
Intersection Summary						
Average Delay			0.2			
Intersection Capacity Utilization			70.3%	ICU Level of Service	C	
Analysis Period (min)			15			

Queues

PM Peak Hour

4: Airport Road & School Driveway - R/L out/North Site Access - Street A

FT 2032



Lane Group	EBT	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	↕	↙	↘	↑	↘	↙	↑
Traffic Volume (vph)	0	52	29	1110	18	61	444
Future Volume (vph)	0	52	29	1110	18	61	444
Lane Group Flow (vph)	48	52	29	1110	18	61	444
Turn Type	NA	Perm	Perm	NA	Perm	Perm	NA
Protected Phases	4			2			6
Permitted Phases		8	8		2	6	
Detector Phase	4	8	8	2	2	6	6
Switch Phase							
Minimum Initial (s)	8.0	8.0	8.0	8.0	8.0	8.0	8.0
Minimum Split (s)	24.0	24.0	24.0	31.0	31.0	31.0	31.0
Total Split (s)	25.0	25.0	25.0	45.0	45.0	45.0	45.0
Total Split (%)	35.7%	35.7%	35.7%	64.3%	64.3%	64.3%	64.3%
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.0	6.0	6.0	6.0	6.0	6.0	6.0
Lead/Lag							
Lead-Lag Optimize?							
Recall Mode	None	None	None	Max	Max	Max	Max
v/c Ratio	0.17	0.26	0.11	0.76	0.01	0.28	0.31
Control Delay	9.6	26.6	5.8	13.3	0.5	9.1	4.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	9.6	26.6	5.8	13.3	0.5	9.1	4.4
Queue Length 50th (m)	0.1	6.0	0.0	87.2	0.0	2.5	18.3
Queue Length 95th (m)	7.9	14.2	4.1	#202.2	0.6	11.0	35.7
Internal Link Dist (m)	191.8			290.2			182.0
Turn Bay Length (m)		22.0			30.0	40.0	
Base Capacity (vph)	583	443	541	1464	1308	217	1455
Starvation Cap Reductn	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.08	0.12	0.05	0.76	0.01	0.28	0.31

Intersection Summary

Cycle Length: 70

Actuated Cycle Length: 61

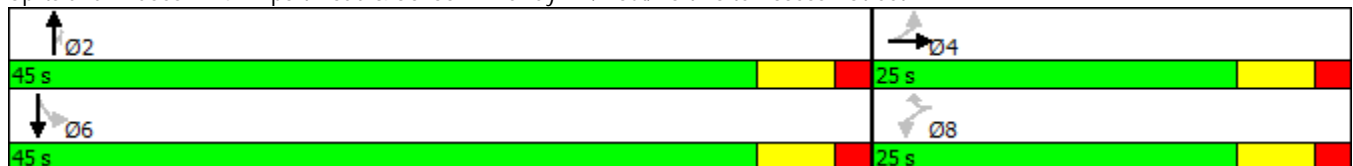
Natural Cycle: 80

Control Type: Semi Act-Uncoord

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

Queue shown is maximum after two cycles.

Splits and Phases: 4: Airport Road & School Driveway - R/L out/North Site Access - Street A





HCM Signalized Intersection Capacity Analysis  
 4: Airport Road & School Driveway - R/L out/North Site Access - Street A

PM Peak Hour  
 FT 2032



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔		↔		↔		↑	↔	↔	↑	
Traffic Volume (vph)	29	0	19	52	0	29	0	1110	18	61	444	0
Future Volume (vph)	29	0	19	52	0	29	0	1110	18	61	444	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.7	3.7	3.5	3.7	3.7	3.7	3.7	3.5	3.7	3.7	3.7	3.5
Total Lost time (s)		6.0		6.0		6.0		6.0	6.0	6.0	6.0	
Lane Util. Factor		1.00		1.00		1.00		1.00	1.00	1.00	1.00	
Frt		0.95		1.00		0.85		1.00	0.85	1.00	1.00	
Flt Protected		0.97		0.95		1.00		1.00	1.00	0.95	1.00	
Satd. Flow (prot)		1765		1825		1633		1842	1633	1825	1830	
Flt Permitted		0.97		0.74		1.00		1.00	1.00	0.14	1.00	
Satd. Flow (perm)		1765		1423		1633		1842	1633	272	1830	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	29	0	19	52	0	29	0	1110	18	61	444	0
RTOR Reduction (vph)	0	43	0	0	0	27	0	0	5	0	0	0
Lane Group Flow (vph)	0	5	0	52	0	2	0	1110	13	61	444	0
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	0%	2%	0%	0%	5%	0%
Turn Type	Perm	NA		Perm		Perm		NA	Perm	Perm	NA	
Protected Phases		4						2				6
Permitted Phases	4			8		8			2	6		
Actuated Green, G (s)		5.4		5.4		5.4		46.0	46.0	46.0	46.0	
Effective Green, g (s)		5.4		5.4		5.4		46.0	46.0	46.0	46.0	
Actuated g/C Ratio		0.09		0.09		0.09		0.73	0.73	0.73	0.73	
Clearance Time (s)		6.0		6.0		6.0		6.0	6.0	6.0	6.0	
Vehicle Extension (s)		3.0		3.0		3.0		3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)		150		121		139		1336	1184	197	1327	
v/s Ratio Prot								c0.60				0.24
v/s Ratio Perm		0.00		c0.04		0.00			0.01	0.22		
v/c Ratio		0.03		0.43		0.02		0.83	0.01	0.31	0.33	
Uniform Delay, d1		26.6		27.5		26.6		6.0	2.4	3.1	3.2	
Progression Factor		1.00		1.00		1.00		1.00	1.00	1.00	1.00	
Incremental Delay, d2		0.1		2.4		0.1		6.1	0.0	4.0	0.7	
Delay (s)		26.7		30.0		26.6		12.1	2.4	7.1	3.8	
Level of Service		C		C		C		B	A	A	A	
Approach Delay (s)		26.7			28.8			12.0				4.2
Approach LOS		C			C			B				A

Intersection Summary

HCM 2000 Control Delay	10.9	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.79		
Actuated Cycle Length (s)	63.4	Sum of lost time (s)	12.0
Intersection Capacity Utilization	86.8%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

HCM Unsignalized Intersection Capacity Analysis  
 5: Airport Road & Cranston Dr/South Site Access -Street A

PM Peak Hour  
 FT 2032



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕		↗	↑	↗	↗	↑	↗
Traffic Volume (veh/h)	5	0	4	19	0	7	21	1114	125	6	512	4
Future Volume (Veh/h)	5	0	4	19	0	7	21	1114	125	6	512	4
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	5	0	4	19	0	7	21	1114	125	6	512	4
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			TWLTL	
Median storage veh												2
Upstream signal (m)												314
pX, platoon unblocked												
vC, conflicting volume	1687	1805	512	1684	1684	1114	516			1239		
vC1, stage 1 conf vol	524	524		1156	1156							
vC2, stage 2 conf vol	1163	1281		528	528							
vCu, unblocked vol	1687	1805	512	1684	1684	1114	516			1239		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)	6.1	5.5		6.1	5.5							
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	98	100	99	91	100	97	98			99		
cM capacity (veh/h)	206	211	566	216	242	256	1060			569		

Direction, Lane #	EB 1	WB 1	NB 1	NB 2	NB 3	SB 1	SB 2	SB 3
Volume Total	9	26	21	1114	125	6	512	4
Volume Left	5	19	21	0	0	6	0	0
Volume Right	4	7	0	0	125	0	0	4
cSH	287	226	1060	1700	1700	569	1700	1700
Volume to Capacity	0.03	0.12	0.02	0.66	0.07	0.01	0.30	0.00
Queue Length 95th (m)	0.8	3.1	0.5	0.0	0.0	0.3	0.0	0.0
Control Delay (s)	17.9	23.0	8.5	0.0	0.0	11.4	0.0	0.0
Lane LOS	C	C	A			B		
Approach Delay (s)	17.9	23.0	0.1			0.1		
Approach LOS	C	C						

Intersection Summary		
Average Delay		0.6
Intersection Capacity Utilization	68.6%	ICU Level of Service C
Analysis Period (min)		15

Queues  
6: Airport Road & Olde Base Line Rd

PM Peak Hour  
FT 2032



Lane Group	EBL	NBL	NBT	SBT
Lane Configurations				
Traffic Volume (vph)	230	81	955	412
Future Volume (vph)	230	81	955	412
Lane Group Flow (vph)	252	0	1036	504
Turn Type	Prot	Perm	NA	NA
Protected Phases	4		2	2
Permitted Phases		2		
Detector Phase	4	2	2	2
Switch Phase				
Minimum Initial (s)	8.0	12.0	12.0	12.0
Minimum Split (s)	19.6	20.0	20.0	20.0
Total Split (s)	26.6	62.0	62.0	62.0
Total Split (%)	30.0%	70.0%	70.0%	70.0%
Yellow Time (s)	4.0	4.0	4.0	4.0
All-Red Time (s)	2.6	2.0	2.0	2.0
Lost Time Adjust (s)	0.0		0.0	0.0
Total Lost Time (s)	6.6		6.0	6.0
Lead/Lag				
Lead-Lag Optimize?				
Recall Mode	None	Max	Max	Max
v/c Ratio	0.73		0.92	0.43
Control Delay	45.0		29.2	8.3
Queue Delay	0.0		0.0	0.0
Total Delay	45.0		29.2	8.3
Queue Length 50th (m)	39.8		139.0	34.5
Queue Length 95th (m)	65.1		#264.7	60.6
Internal Link Dist (m)	373.9		480.2	717.9
Turn Bay Length (m)				
Base Capacity (vph)	424		1122	1169
Starvation Cap Reductn	0		0	0
Spillback Cap Reductn	0		0	0
Storage Cap Reductn	0		0	0
Reduced v/c Ratio	0.59		0.92	0.43

Intersection Summary

Cycle Length: 88.6  
 Actuated Cycle Length: 86  
 Natural Cycle: 90  
 Control Type: Semi Act-Uncoord  
 # 95th percentile volume exceeds capacity, queue may be longer.  
 Queue shown is maximum after two cycles.

Splits and Phases: 6: Airport Road & Olde Base Line Rd



HCM Signalized Intersection Capacity Analysis  
6: Airport Road & Olde Base Line Rd

PM Peak Hour  
FT 2032



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	230	22	81	955	412	92
Future Volume (vph)	230	22	81	955	412	92
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width	3.7	3.5	3.7	3.5	3.7	3.5
Total Lost time (s)	6.6			6.0	6.0	
Lane Util. Factor	1.00			1.00	1.00	
Frt	0.99			1.00	0.98	
Flt Protected	0.96			1.00	1.00	
Satd. Flow (prot)	1808			1821	1745	
Flt Permitted	0.96			0.92	1.00	
Satd. Flow (perm)	1808			1687	1745	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	230	22	81	955	412	92
RTOR Reduction (vph)	4	0	0	0	8	0
Lane Group Flow (vph)	248	0	0	1036	496	0
Heavy Vehicles (%)	0%	5%	0%	3%	9%	0%
Turn Type	Prot		Perm	NA	NA	
Protected Phases	4			2	2	
Permitted Phases			2			
Actuated Green, G (s)	16.2			57.2	57.2	
Effective Green, g (s)	16.2			57.2	57.2	
Actuated g/C Ratio	0.19			0.67	0.67	
Clearance Time (s)	6.6			6.0	6.0	
Vehicle Extension (s)	3.0			3.0	3.0	
Lane Grp Cap (vph)	340			1122	1160	
v/s Ratio Prot	c0.14				0.28	
v/s Ratio Perm				c0.61		
v/c Ratio	0.73			0.92	0.43	
Uniform Delay, d1	32.8			12.5	6.7	
Progression Factor	1.00			1.00	1.00	
Incremental Delay, d2	7.6			13.8	1.2	
Delay (s)	40.5			26.3	7.9	
Level of Service	D			C	A	
Approach Delay (s)	40.5			26.3	7.9	
Approach LOS	D			C	A	

Intersection Summary

HCM 2000 Control Delay	23.1	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.88		
Actuated Cycle Length (s)	86.0	Sum of lost time (s)	12.6
Intersection Capacity Utilization	111.6%	ICU Level of Service	H
Analysis Period (min)	15		

c Critical Lane Group

Queues  
7: Airport Road & Caledon Trail Pathway

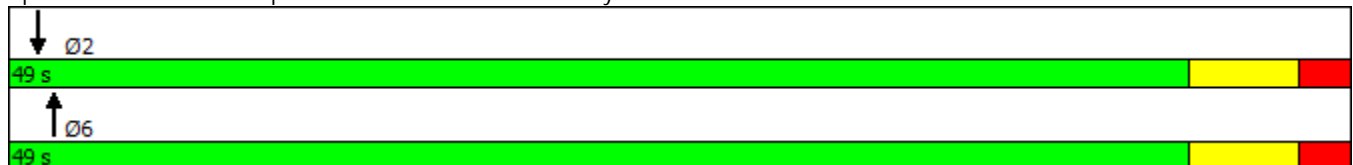
PM Peak Hour  
FT 2032

	↑	↓
Lane Group	NBT	SBT
Lane Configurations	↑	↑
Traffic Volume (vph)	981	454
Future Volume (vph)	981	454
Lane Group Flow (vph)	981	454
Turn Type	NA	NA
Protected Phases	6	2
Permitted Phases		
Detector Phase	6	2
Switch Phase		
Minimum Initial (s)	8.0	8.0
Minimum Split (s)	24.0	24.0
Total Split (s)	49.0	49.0
Total Split (%)	100.0%	100.0%
Yellow Time (s)	4.0	4.0
All-Red Time (s)	2.0	2.0
Lost Time Adjust (s)	0.0	0.0
Total Lost Time (s)	6.0	6.0
Lead/Lag		
Lead-Lag Optimize?		
Recall Mode	Max	Max
v/c Ratio	0.52	0.26
Control Delay	1.0	0.4
Queue Delay	0.0	0.0
Total Delay	1.0	0.4
Queue Length 50th (m)	0.0	0.0
Queue Length 95th (m)	0.0	0.0
Internal Link Dist (m)	16.1	214.0
Turn Bay Length (m)		
Base Capacity (vph)	1883	1762
Starvation Cap Reductn	0	0
Spillback Cap Reductn	0	0
Storage Cap Reductn	0	0
Reduced v/c Ratio	0.52	0.26

**Intersection Summary**

Cycle Length: 49  
 Actuated Cycle Length: 64  
 Natural Cycle: 40  
 Control Type: Semi Act-Uncoord

Splits and Phases: 7: Airport Road & Caledon Trail Pathway



# HCM Signalized Intersection Capacity Analysis

## 7: Airport Road & Caledon Trail Pathway

PM Peak Hour  
FT 2032



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations								↑			↑		
Traffic Volume (vph)	0	0	0	0	0	0	0	981	0	0	454	0	
Future Volume (vph)	0	0	0	0	0	0	0	981	0	0	454	0	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	
Total Lost time (s)								6.0			6.0		
Lane Util. Factor								1.00			1.00		
Frt								1.00			1.00		
Flt Protected								1.00			1.00		
Satd. Flow (prot)								1883			1762		
Flt Permitted								1.00			1.00		
Satd. Flow (perm)								1883			1762		
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Adj. Flow (vph)	0	0	0	0	0	0	0	981	0	0	454	0	
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0	
Lane Group Flow (vph)	0	0	0	0	0	0	0	981	0	0	454	0	
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	0%	2%	0%	0%	9%	0%	
Turn Type								NA			NA		
Protected Phases								6			2		
Permitted Phases													
Actuated Green, G (s)								64.0			64.0		
Effective Green, g (s)								64.0			64.0		
Actuated g/C Ratio								1.00			1.00		
Clearance Time (s)								6.0			6.0		
Vehicle Extension (s)								3.0			3.0		
Lane Grp Cap (vph)								1883			1762		
v/s Ratio Prot								0.52			0.26		
v/s Ratio Perm													
v/c Ratio								0.52			0.26		
Uniform Delay, d1								0.0			0.0		
Progression Factor								1.00			1.00		
Incremental Delay, d2								1.0			0.4		
Delay (s)								1.0			0.4		
Level of Service								A			A		
Approach Delay (s)		0.0				0.0		1.0			0.4		
Approach LOS		A				A		A			A		
<b>Intersection Summary</b>													
HCM 2000 Control Delay			0.8					HCM 2000 Level of Service			A		
HCM 2000 Volume to Capacity ratio			0.57										
Actuated Cycle Length (s)			64.0					Sum of lost time (s)			6.0		
Intersection Capacity Utilization			56.6%					ICU Level of Service			B		
Analysis Period (min)			15										
c Critical Lane Group													

Queues  
6: Airport Road & Olde Base Line Rd

PM Peak Hour  
FT 2032 (Optimized)



Lane Group	EBL	NBL	NBT	SBT
Lane Configurations				
Traffic Volume (vph)	230	81	955	412
Future Volume (vph)	230	81	955	412
Lane Group Flow (vph)	252	0	1036	504
Turn Type	Prot	Perm	NA	NA
Protected Phases	4		2	2
Permitted Phases		2		
Detector Phase	4	2	2	2
Switch Phase				
Minimum Initial (s)	8.0	12.0	12.0	12.0
Minimum Split (s)	19.6	20.0	20.0	20.0
Total Split (s)	21.0	67.6	67.6	67.6
Total Split (%)	23.7%	76.3%	76.3%	76.3%
Yellow Time (s)	4.0	4.0	4.0	4.0
All-Red Time (s)	2.6	2.0	2.0	2.0
Lost Time Adjust (s)	0.0		0.0	0.0
Total Lost Time (s)	6.6		6.0	6.0
Lead/Lag				
Lead-Lag Optimize?				
Recall Mode	None	Max	Max	Max
v/c Ratio	0.88		0.88	0.41
Control Delay	66.1		21.2	6.5
Queue Delay	0.0		0.0	0.0
Total Delay	66.1		21.2	6.5
Queue Length 50th (m)	43.4		125.4	30.6
Queue Length 95th (m)	#85.3		#244.6	47.2
Internal Link Dist (m)	373.9		480.2	717.9
Turn Bay Length (m)				
Base Capacity (vph)	295		1183	1232
Starvation Cap Reductn	0		0	0
Spillback Cap Reductn	0		0	0
Storage Cap Reductn	0		0	0
Reduced v/c Ratio	0.85		0.88	0.41

Intersection Summary

Cycle Length: 88.6  
 Actuated Cycle Length: 89.4  
 Natural Cycle: 90  
 Control Type: Semi Act-Uncoord  
 # 95th percentile volume exceeds capacity, queue may be longer.  
 Queue shown is maximum after two cycles.

Splits and Phases: 6: Airport Road & Olde Base Line Rd



HCM Signalized Intersection Capacity Analysis  
6: Airport Road & Olde Base Line Rd

PM Peak Hour  
FT 2032 (Optimized)



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	230	22	81	955	412	92
Future Volume (vph)	230	22	81	955	412	92
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width	3.7	3.5	3.7	3.5	3.7	3.5
Total Lost time (s)	6.6			6.0	6.0	
Lane Util. Factor	1.00			1.00	1.00	
Frt	0.99			1.00	0.98	
Flt Protected	0.96			1.00	1.00	
Satd. Flow (prot)	1808			1821	1745	
Flt Permitted	0.96			0.92	1.00	
Satd. Flow (perm)	1808			1687	1745	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	230	22	81	955	412	92
RTOR Reduction (vph)	4	0	0	0	9	0
Lane Group Flow (vph)	248	0	0	1036	495	0
Heavy Vehicles (%)	0%	5%	0%	3%	9%	0%
Turn Type	Prot		Perm	NA	NA	
Protected Phases	4			2	2	
Permitted Phases			2			
Actuated Green, G (s)	14.1			62.7	62.7	
Effective Green, g (s)	14.1			62.7	62.7	
Actuated g/C Ratio	0.16			0.70	0.70	
Clearance Time (s)	6.6			6.0	6.0	
Vehicle Extension (s)	3.0			3.0	3.0	
Lane Grp Cap (vph)	285			1183	1223	
v/s Ratio Prot	c0.14				0.28	
v/s Ratio Perm				c0.61		
v/c Ratio	0.87			0.88	0.40	
Uniform Delay, d1	36.8			10.3	5.6	
Progression Factor	1.00			1.00	1.00	
Incremental Delay, d2	23.4			9.2	1.0	
Delay (s)	60.1			19.5	6.6	
Level of Service	E			B	A	
Approach Delay (s)	60.1			19.5	6.6	
Approach LOS	E			B	A	

Intersection Summary

HCM 2000 Control Delay	21.6	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.87		
Actuated Cycle Length (s)	89.4	Sum of lost time (s)	12.6
Intersection Capacity Utilization	111.6%	ICU Level of Service	H
Analysis Period (min)	15		

c Critical Lane Group



**APPENDIX I**  
**Queue Analysis**

Queues

AM Peak Hour

4: Airport Road & School Driveway - R/L out/North Site Access - Street A

FT 2022



Lane Group	EBT	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	↕	↙	↘	↑	↗	↖	↑
Traffic Volume (vph)	0	91	57	177	5	12	769
Future Volume (vph)	0	91	57	177	5	12	769
Lane Group Flow (vph)	89	91	57	177	5	12	769
Turn Type	NA	Perm	Perm	NA	NA	Perm	NA
Protected Phases	4			2			6
Permitted Phases		8	8			6	
Detector Phase	4	8	8	2		6	6
Switch Phase							
Minimum Initial (s)	8.0	8.0	8.0	8.0		8.0	8.0
Minimum Split (s)	24.0	24.0	24.0	31.0		31.0	31.0
Total Split (s)	25.0	25.0	25.0	45.0		45.0	45.0
Total Split (%)	35.7%	35.7%	35.7%	64.3%		64.3%	64.3%
Yellow Time (s)	4.0	4.0	4.0	4.0		4.0	4.0
All-Red Time (s)	2.0	2.0	2.0	2.0		2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0		0.0	0.0
Total Lost Time (s)	6.0	6.0	6.0	6.0		6.0	6.0
Lead/Lag							
Lead-Lag Optimize?							
Recall Mode	None	None	None	Max		Max	Max
v/c Ratio	0.28	0.42	0.18	0.16	0.04	0.01	0.57
Control Delay	14.8	29.3	8.5	5.1	0.4	4.8	8.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	14.8	29.3	8.5	5.1	0.4	4.8	8.8
Queue Length 50th (m)	4.3	9.8	0.0	6.8	0.0	0.4	44.4
Queue Length 95th (m)	15.0	21.7	8.2	16.6	0.0	2.3	93.0
Internal Link Dist (m)	191.8			290.2			182.0
Turn Bay Length (m)		22.0			30.0	40.0	
Base Capacity (vph)	569	412	540	1124	140	883	1340
Starvation Cap Reductn	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.16	0.22	0.11	0.16	0.04	0.01	0.57

Intersection Summary

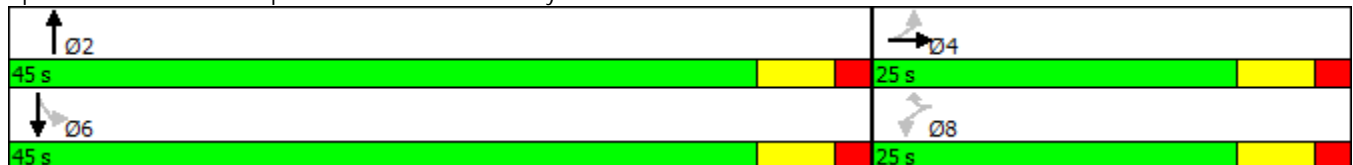
Cycle Length: 70

Actuated Cycle Length: 61.9

Natural Cycle: 60





















Control Type: Semi Act-Uncoord

Splits and Phases: 4: Airport Road & School Driveway - R/L out/North Site Access - Street A



HCM Unsignalized Intersection Capacity Analysis  
 5: Airport Road & Cranston Dr/South Site Access -Street A

AM Peak Hour  
 FT 2022

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	3	0	22	59	0	16	4	163	26	3	910	0
Future Volume (Veh/h)	3	0	22	59	0	16	4	163	26	3	910	0
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	3	0	22	59	0	16	4	163	26	3	910	0
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			TWLTL	
Median storage veh												2
Upstream signal (m)												314
pX, platoon unblocked	0.72	0.72	0.72	0.72	0.72		0.72					
vC, conflicting volume	1103	1113	910	1109	1087	163	910			189		
vC1, stage 1 conf vol	916	916		171	171							
vC2, stage 2 conf vol	187	197		938	916							
vCu, unblocked vol	948	961	679	956	925	163	679			189		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.3			4.1		
tC, 2 stage (s)	6.1	5.5		6.1	5.5							
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.4			2.2		
p0 queue free %	99	100	93	78	100	98	99			100		
cM capacity (veh/h)	302	309	327	269	307	887	585			1397		
Direction, Lane #	EB 1	WB 1	NB 1	NB 2	NB 3	SB 1	SB 2	SB 3				
Volume Total	25	75	4	163	26	3	910	0				
Volume Left	3	59	4	0	0	3	0	0				
Volume Right	22	16	0	0	26	0	0	0				
cSH	324	316	585	1700	1700	1397	1700	1700				
Volume to Capacity	0.08	0.24	0.01	0.10	0.02	0.00	0.54	0.00				
Queue Length 95th (m)	2.0	7.2	0.2	0.0	0.0	0.1	0.0	0.0				
Control Delay (s)	17.0	19.9	11.2	0.0	0.0	7.6	0.0	0.0				
Lane LOS	C	C	B			A						
Approach Delay (s)	17.0	19.9	0.2			0.0						
Approach LOS	C	C										
Intersection Summary												
Average Delay			1.6									
Intersection Capacity Utilization			65.5%	ICU Level of Service	C							
Analysis Period (min)			15									

Queues

PM Peak Hour

4: Airport Road & School Driveway - R/L out/North Site Access - Street A

FT 2022



Lane Group	EBT	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	↕	↙	↘	↑	↗	↘	↑
Traffic Volume (vph)	0	52	29	946	18	61	381
Future Volume (vph)	0	52	29	946	18	61	381
Lane Group Flow (vph)	48	52	29	946	18	61	381
Turn Type	NA	Perm	custom	NA	NA	Perm	NA
Protected Phases	4			2			6
Permitted Phases		8				6	
Detector Phase	4	8		2		6	6
Switch Phase							
Minimum Initial (s)	8.0	8.0		8.0		8.0	8.0
Minimum Split (s)	24.0	24.0		31.0		31.0	31.0
Total Split (s)	25.0	25.0		45.0		45.0	45.0
Total Split (%)	35.7%	35.7%		64.3%		64.3%	64.3%
Yellow Time (s)	4.0	4.0		4.0		4.0	4.0
All-Red Time (s)	2.0	2.0		2.0		2.0	2.0
Lost Time Adjust (s)	0.0	0.0		0.0		0.0	0.0
Total Lost Time (s)	6.0	6.0		6.0		6.0	6.0
Lead/Lag							
Lead-Lag Optimize?							
Recall Mode	None	None		Max		Max	Max
v/c Ratio	0.17	0.26	0.21	0.64	0.13	0.17	0.26
Control Delay	9.8	27.3	3.3	9.0	1.9	5.5	4.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	9.8	27.3	3.3	9.0	1.9	5.5	4.1
Queue Length 50th (m)	0.1	6.6	0.0	60.9	0.0	2.2	15.0
Queue Length 95th (m)	7.9	14.2	0.0	#135.4	0.0	7.7	29.8
Internal Link Dist (m)	191.8			290.2			182.0
Turn Bay Length (m)		22.0			30.0	40.0	
Base Capacity (vph)	571	442	140	1477	140	353	1467
Starvation Cap Reductn	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.08	0.12	0.21	0.64	0.13	0.17	0.26

Intersection Summary

Cycle Length: 70

Actuated Cycle Length: 62.4

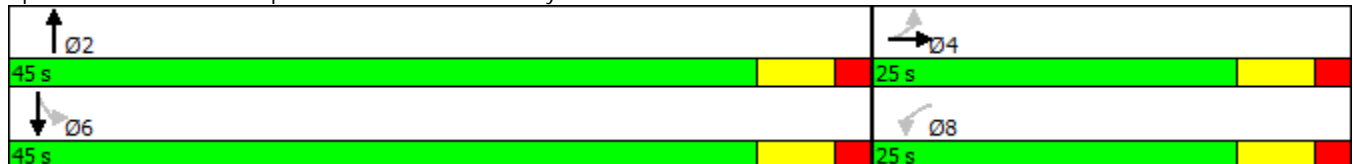
Natural Cycle: 70

Control Type: Semi Act-Uncoord

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

Queue shown is maximum after two cycles.





















Splits and Phases: 4: Airport Road & School Driveway - R/L out/North Site Access - Street A



# HCM Unsignalized Intersection Capacity Analysis

## 5: Airport Road & Cranston Dr/South Site Access -Street A

PM Peak Hour  
FT 2022

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	5	0	4	19	0	7	21	951	125	6	445	4
Future Volume (Veh/h)	5	0	4	19	0	7	21	951	125	6	445	4
Sign Control		Stop			Stop			Free				Free
Grade		0%			0%			0%				0%
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	5	0	4	19	0	7	21	951	125	6	445	4
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type												
								None		TWLTL		
Median storage veh												2
Upstream signal (m)												314
pX, platoon unblocked												
vC, conflicting volume	1457	1575	445	1454	1454	951	449			1076		
vC1, stage 1 conf vol	457	457		993	993							
vC2, stage 2 conf vol	1000	1118		461	461							
vCu, unblocked vol	1457	1575	445	1454	1454	951	449			1076		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)	6.1	5.5		6.1	5.5							
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	98	100	99	93	100	98	98			99		
cM capacity (veh/h)	256	253	617	266	288	318	1122			656		
Direction, Lane #	EB 1	WB 1	NB 1	NB 2	NB 3	SB 1	SB 2	SB 3				
Volume Total	9	26	21	951	125	6	445	4				
Volume Left	5	19	21	0	0	6	0	0				
Volume Right	4	7	0	0	125	0	0	4				
cSH	346	278	1122	1700	1700	656	1700	1700				
Volume to Capacity	0.03	0.09	0.02	0.56	0.07	0.01	0.26	0.00				
Queue Length 95th (m)	0.6	2.5	0.5	0.0	0.0	0.2	0.0	0.0				
Control Delay (s)	15.7	19.3	8.3	0.0	0.0	10.5	0.0	0.0				
Lane LOS	C	C	A			B						
Approach Delay (s)	15.7	19.3	0.2			0.1						
Approach LOS	C	C										
Intersection Summary												
Average Delay			0.6									
Intersection Capacity Utilization			60.1%		ICU Level of Service				B			
Analysis Period (min)			15									

Queues

AM Peak Hour

4: Airport Road & School Driveway - R/L out/North Site Access - Street A

FT 2032



Lane Group	EBT	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	↕	↙	↘	↑	↗	↘	↑
Traffic Volume (vph)	0	91	57	201	5	12	924
Future Volume (vph)	0	91	57	201	5	12	924
Lane Group Flow (vph)	89	91	57	201	5	12	924
Turn Type	NA	Perm	Perm	NA	Perm	Perm	NA
Protected Phases	4			2			6
Permitted Phases		8	8		2	6	
Detector Phase	4	8	8	2	2	6	6
Switch Phase							
Minimum Initial (s)	8.0	8.0	8.0	8.0	8.0	8.0	8.0
Minimum Split (s)	24.0	24.0	24.0	31.0	31.0	31.0	31.0
Total Split (s)	25.0	25.0	25.0	45.0	45.0	45.0	45.0
Total Split (%)	35.7%	35.7%	35.7%	64.3%	64.3%	64.3%	64.3%
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.0	6.0	6.0	6.0	6.0	6.0	6.0
Lead/Lag							
Lead-Lag Optimize?							
Recall Mode	None	None	None	Max	Max	Max	Max
v/c Ratio	0.28	0.42	0.18	0.18	0.00	0.01	0.69
Control Delay	14.8	29.3	8.5	5.2	0.0	4.8	11.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	14.8	29.3	8.5	5.2	0.0	4.8	11.7
Queue Length 50th (m)	4.3	9.8	0.0	7.9	0.0	0.4	61.9
Queue Length 95th (m)	15.0	21.7	8.2	18.8	0.0	2.3	#144.8
Internal Link Dist (m)	191.8			290.2			182.0
Turn Bay Length (m)		22.0			30.0	40.0	
Base Capacity (vph)	569	412	540	1124	1176	864	1340
Starvation Cap Reductn	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.16	0.22	0.11	0.18	0.00	0.01	0.69

Intersection Summary

Cycle Length: 70

Actuated Cycle Length: 61.9

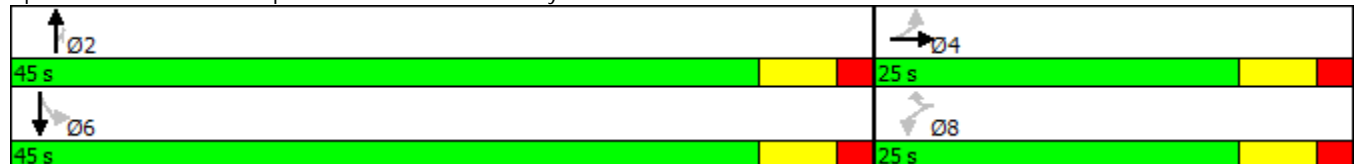
Natural Cycle: 65

Control Type: Semi Act-Uncoord

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

Queue shown is maximum after two cycles.

Splits and Phases: 4: Airport Road & School Driveway - R/L out/North Site Access - Street A



# HCM Unsignalized Intersection Capacity Analysis

## 5: Airport Road & Cranston Dr/South Site Access -Street A

AM Peak Hour  
FT 2032



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔			↔		↗	↖	↗	↖	↖	↗
Traffic Volume (veh/h)	3	0	22	59	0	16	4	187	26	3	1077	0
Future Volume (Veh/h)	3	0	22	59	0	16	4	187	26	3	1077	0
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	3	0	22	59	0	16	4	187	26	3	1077	0
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			TWLTL	
Median storage veh												2
Upstream signal (m)												314
pX, platoon unblocked	0.51	0.51	0.51	0.51	0.51		0.51					
vC, conflicting volume	1294	1304	1077	1300	1278	187	1077			213		
vC1, stage 1 conf vol	1083	1083		195	195							
vC2, stage 2 conf vol	211	221		1105	1083							
vCu, unblocked vol	1099	1118	676	1110	1067	187	676			213		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.3			4.1		
tC, 2 stage (s)	6.1	5.5		6.1	5.5							
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.4			2.2		
p0 queue free %	99	100	91	68	100	98	99			100		
cM capacity (veh/h)	216	221	235	183	218	860	419			1369		

Direction, Lane #	EB 1	WB 1	NB 1	NB 2	NB 3	SB 1	SB 2	SB 3
Volume Total	25	75	4	187	26	3	1077	0
Volume Left	3	59	4	0	0	3	0	0
Volume Right	22	16	0	0	26	0	0	0
cSH	232	220	419	1700	1700	1369	1700	1700
Volume to Capacity	0.11	0.34	0.01	0.11	0.02	0.00	0.63	0.00
Queue Length 95th (m)	2.9	11.5	0.2	0.0	0.0	0.1	0.0	0.0
Control Delay (s)	22.4	29.6	13.7	0.0	0.0	7.6	0.0	0.0
Lane LOS	C	D	B			A		
Approach Delay (s)	22.4	29.6	0.3			0.0		
Approach LOS	C	D						

Intersection Summary		
Average Delay		2.0
Intersection Capacity Utilization	74.3%	ICU Level of Service
Analysis Period (min)	15	D

Queues

PM Peak Hour

4: Airport Road & School Driveway - R/L out/North Site Access - Street A

FT 2032



Lane Group	EBT	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	↕	↙	↘	↑	↗	↖	↓
Traffic Volume (vph)	0	52	29	1110	18	61	444
Future Volume (vph)	0	52	29	1110	18	61	444
Lane Group Flow (vph)	48	52	29	1110	18	61	444
Turn Type	NA	Perm	Perm	NA	Perm	Perm	NA
Protected Phases	4			2			6
Permitted Phases		8	8		2	6	
Detector Phase	4	8	8	2	2	6	6
Switch Phase							
Minimum Initial (s)	8.0	8.0	8.0	8.0	8.0	8.0	8.0
Minimum Split (s)	24.0	24.0	24.0	31.0	31.0	31.0	31.0
Total Split (s)	25.0	25.0	25.0	45.0	45.0	45.0	45.0
Total Split (%)	35.7%	35.7%	35.7%	64.3%	64.3%	64.3%	64.3%
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.0	6.0	6.0	6.0	6.0	6.0	6.0
Lead/Lag							
Lead-Lag Optimize?							
Recall Mode	None	None	None	Max	Max	Max	Max
v/c Ratio	0.17	0.26	0.11	0.76	0.01	0.28	0.31
Control Delay	9.6	26.6	5.8	13.3	0.5	9.1	4.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	9.6	26.6	5.8	13.3	0.5	9.1	4.4
Queue Length 50th (m)	0.1	6.0	0.0	87.2	0.0	2.5	18.3
Queue Length 95th (m)	7.9	14.2	4.1	#202.2	0.6	11.0	35.7
Internal Link Dist (m)	191.8			290.2			182.0
Turn Bay Length (m)		22.0			30.0	40.0	
Base Capacity (vph)	583	443	541	1464	1308	217	1455
Starvation Cap Reductn	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.08	0.12	0.05	0.76	0.01	0.28	0.31

Intersection Summary

Cycle Length: 70

Actuated Cycle Length: 61

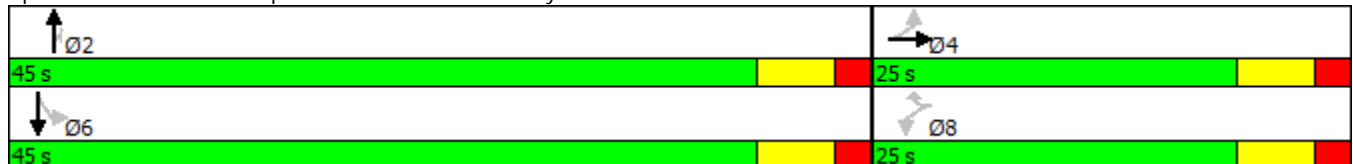
Natural Cycle: 80

Control Type: Semi Act-Uncoord

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

Queue shown is maximum after two cycles.

Splits and Phases: 4: Airport Road & School Driveway - R/L out/North Site Access - Street A





HCM Unsignalized Intersection Capacity Analysis  
5: Airport Road & Cranston Dr/South Site Access -Street A

PM Peak Hour  
FT 2032



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕		↗	↖	↗	↗	↖	↖
Traffic Volume (veh/h)	5	0	4	19	0	7	21	1114	125	6	512	4
Future Volume (Veh/h)	5	0	4	19	0	7	21	1114	125	6	512	4
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	5	0	4	19	0	7	21	1114	125	6	512	4
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			TWLTL	
Median storage veh												2
Upstream signal (m)												314
pX, platoon unblocked												
vC, conflicting volume	1687	1805	512	1684	1684	1114	516			1239		
vC1, stage 1 conf vol	524	524		1156	1156							
vC2, stage 2 conf vol	1163	1281		528	528							
vCu, unblocked vol	1687	1805	512	1684	1684	1114	516			1239		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)	6.1	5.5		6.1	5.5							
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	98	100	99	91	100	97	98			99		
cM capacity (veh/h)	206	211	566	216	242	256	1060			569		

Direction, Lane #	EB 1	WB 1	NB 1	NB 2	NB 3	SB 1	SB 2	SB 3
Volume Total	9	26	21	1114	125	6	512	4
Volume Left	5	19	21	0	0	6	0	0
Volume Right	4	7	0	0	125	0	0	4
cSH	287	226	1060	1700	1700	569	1700	1700
Volume to Capacity	0.03	0.12	0.02	0.66	0.07	0.01	0.30	0.00
Queue Length 95th (m)	0.8	3.1	0.5	0.0	0.0	0.3	0.0	0.0
Control Delay (s)	17.9	23.0	8.5	0.0	0.0	11.4	0.0	0.0
Lane LOS	C	C	A			B		
Approach Delay (s)	17.9	23.0	0.1			0.1		
Approach LOS	C	C						

Intersection Summary		
Average Delay		0.6
Intersection Capacity Utilization	68.6%	ICU Level of Service C
Analysis Period (min)		15

**APPENDIX J**  
**Signal Warrants**

# Signal Warrant Calculation



## Justification 7 - Projected Volumes

Major Street: Airport Road

Minor Street: Street A - North

Traffic Condition: FT 2022

North/South

East/West

Number of Approaches: 1  
 Tee Intersection: No  
 Existing Intersection: Yes

Flow Condition: Restricted Flow (Urban)  
 No. of Peak Hours: 2

Volume	1st Hour	2nd Hour	Factor	Average Hour
1A - All	1200	1535	4	684
1B - Minor	237	129	4	92
2A - Major	963	1406	4	592
2B - Crossing	135	81	4	54

### WARRANT 1 - MINIMUM VEHICULAR VOLUME => 54% Satisfied

A.	Vehicle volume all approaches (average hour)	Restricted Flow	Average Hour	Percent Satisfied
		720	684	95%
B.	Vehicle volume, along minor streets (average hour)	Restricted Flow	Average Hour	Percent Satisfied
		170	92	54%

### WARRANT 2 - DELAY TO CROSS TRAFFIC => 72% Satisfied

A.	Vehicle volume all approaches (average hour)	Restricted Flow	Average Hour	Percent Satisfied
		720	592	82%
B.	Combined vehicle and pedestrian volume crossing artery from minor streets (average hour)	Restricted Flow	Average Hour	Percent Satisfied
		75	54	72%

**Overall Warrant => 72% Satisfied**

**Result => No signals are warranted nor provision for undergrounds needed.**

# Signal Warrant Calculation



## Justification 7 - Projected Volumes

Major Street: Airport Road

Minor Street: Street A - South

Traffic Condition: FT 2022

North/South

East/West

Number of Approaches: 1  
 Tee Intersection: No  
 Existing Intersection: Yes

Flow Condition: Restricted Flow (Urban)  
 No. of Peak Hours: 2

Volume	1st Hour	2nd Hour	Factor	Average Hour
1A - All	1206	1587	4	699
1B - Minor	100	35	4	34
2A - Major	1106	1552	4	665
2B - Crossing	62	24	4	22

### WARRANT 1 - MINIMUM VEHICULAR VOLUME => 20% Satisfied

A.	Vehicle volume all approaches (average hour)	Restricted Flow	Average Hour	Percent Satisfied
		720	699	97%
B.	Vehicle volume, along minor streets (average hour)	Restricted Flow	Average Hour	Percent Satisfied
		170	34	20%

### WARRANT 2 - DELAY TO CROSS TRAFFIC => 29% Satisfied

A.	Vehicle volume all approaches (average hour)	Restricted Flow	Average Hour	Percent Satisfied
		720	665	92%
B.	Combined vehicle and pedestrian volume crossing artery from minor streets (average hour)	Restricted Flow	Average Hour	Percent Satisfied
		75	22	29%

**Overall Warrant => 29% Satisfied**

**Result => No signals are warranted nor provision for undergrounds needed.**

# Signal Warrant Calculation



## Justification 7 - Projected Volumes

Major Street: Airport Road

Minor Street: Street A -North

Traffic Condition: FT 2032

North/South

East/West

Number of Lane: 1  
 Tee Intersection: No  
 Existing Intersection: Yes

Flow Condition: Restricted Flow (Urban)  
 No. of Peak Hours: 2

Volume	1st Hour	2nd Hour	Factor	Average Hour
1A - All	1379	1762	4	786
1B - Minor	237	129	4	92
2A - Major	1142	1633	4	694
2B - Crossing	135	81	4	54

### WARRANT 1 - MINIMUM VEHICULAR VOLUME => 54% Satisfied

A.	Vehicle volume all approaches (average hour)	Restricted Flow	Average Hour	Percent Satisfied
		720	786	109%
B.	Vehicle volume, along minor streets (average hour)	Restricted Flow	Average Hour	Percent Satisfied
		170	92	54%

### WARRANT 2 - DELAY TO CROSS TRAFFIC => 72% Satisfied

A.	Vehicle volume all approaches (average hour)	Restricted Flow	Average Hour	Percent Satisfied
		720	694	96%
B.	Combined vehicle and pedestrian volume crossing artery from minor streets (average hour)	Restricted Flow	Average Hour	Percent Satisfied
		75	54	72%

**Overall Warrant => 72% Satisfied**

**Result => No signals are warranted nor provision for undergrounds needed.**

# Signal Warrant Calculation



## Justification 7 - Projected Volumes

Major Street: Airport Road

Minor Street: Street A - South

Traffic Condition: FT 2032

North/South

East/West

Number of Approaches: 1  
 Tee Intersection: No  
 Existing Intersection: Yes

Flow Condition: Restricted Flow (Urban)  
 No. of Peak Hours: 2

Volume	1st Hour	2nd Hour	Factor	Average Hour
1A - All	1397	1827	4	806
1B - Minor	100	35	4	34
2A - Major	1297	1792	4	772
2B - Crossing	62	24	4	22

### WARRANT 1 - MINIMUM VEHICULAR VOLUME => 20% Satisfied

A.	Vehicle volume all approaches (average hour)	Restricted Flow	Average Hour	Percent Satisfied
		720	806	112%
B.	Vehicle volume, along minor streets (average hour)	Restricted Flow	Average Hour	Percent Satisfied
		170	34	20%

### WARRANT 2 - DELAY TO CROSS TRAFFIC => 29% Satisfied

A.	Vehicle volume all approaches (average hour)	Restricted Flow	Average Hour	Percent Satisfied
		720	772	107%
B.	Combined vehicle and pedestrian volume crossing artery from minor streets (average hour)	Restricted Flow	Average Hour	Percent Satisfied
		75	22	29%

Overall Warrant => 29% Satisfied

Result => No signals are warranted nor provision for undergrounds needed.

**APPENDIX K**  
**Peel School Board Response and Policy 39**





1. Prior to final approval, the Town of Caledon shall be advised by the School Board(s) that satisfactory arrangements regarding the provision and distribution of educational facilities have been made between the developer/applicant and the School Board(s) for this plan.
2. The developer shall agree to erect and maintain signs at the entrances to the subdivision which shall advise prospective purchasers that due to present school facilities, some of the children from the subdivision may have to be accommodated in temporary facilities or bused to schools, according to the Board's Transportation Policy.
3. The Board requires that the following clause be placed in any agreement of purchase and sale entered into with respect to any units in this plan, within a period of five years from the date of registration of the development agreement:

“Whereas, despite the efforts of the Peel District School Board, sufficient accommodation may not be available for all anticipated students in the neighbourhood schools, you are hereby notified that some students may be accommodated in temporary facilities or bused to schools outside of the area, according to the Board's Transportation Policy. You are advised to contact the School Accommodation department of the Peel District School Board to determine the exact schools.”

An addition, portables, boundary change and/or school re-organization may be required at the affected school(s) to accommodate the anticipated number of students from this development.

The Board wishes to be notified of the decision of Council with respect to this proposed application.

If you require any further information please contact me at 905-890-1010, ext. 2217.

Yours truly,



Amar Singh, BURPI

Planner

Planning and Accommodation Dept.

- c. B. Bielski, Peel District School Board  
K. Koops, Dufferin-Peel Catholic District School Board (email only)

## **TRANSPORTATION**

This policy is aligned with and supports the principles and expectations of the Board's Human Rights policy (Policy 51) and the Equity and Inclusive Education policy (Policy 54). At all times, this policy should be interpreted to be consistent with the Board's policies and the *Human Rights Code*.

School bus services are managed by Student Transportation of Peel Region (STOPR), a consortium formed by agreement between the Peel District School Board and the Dufferin-Peel Catholic District School Board. STOPR is responsible for implementing the policies of each Board and for overseeing the daily operations and administration of student transportation services within the region. Safe transportation of students, operating procedures and additional information supporting this policy can be found at [www.stopr.ca](http://www.stopr.ca).

### **ADMINISTRATIVE REGULATION**

1. **Eligibility to Regular Day Schools and Elementary Extended and French Immersion Programs**

- (a) The Board's eligibility distances for transportation are:

Kindergarten - Grade 1 students	1.0 km
Grades 2 – 4 students	1.6 km
Grades 5 – 6 students	2.0 km
Grades 7 – 8 students	<del>3.2 km</del> <b><u>2.0 km</u></b>
Secondary students	3.8 km

The eligibility distances measured are the shortest, safe walking route along sidewalks, roadways and paved pedestrian walkways from school property line to home property line. This measurement is made **exclusively** using the geographic information system (GIS) component of the Board's transportation management software. Additional information is outlined in [STOPR002 Transportation Eligibility](#).

- (b) The maximum distance a student may be required to walk to a bus stop is:

Kindergarten students	0.4 km
Grades 1 – 6 students	0.8 km
Grades 7 – 12 students	1.2 km

Additional information is outlined in [STOPR003 Walking Distance to the Bus Stop](#).

- (c) The Board does not provide bussing for ~~Regional Programs or the secondary Extended or French Immersion programs~~ **with the exception of students residing within the approved boundaries and enrolled in either of these programs at Humberview Secondary School.**
- (d) **The Board does not provide bussing for Regional Programs.**
- (e) Special Education students requiring bussing accommodation will be transported in accordance with [STOPR019 Special Education Transportation](#).

- (f) The Board will not accept responsibility for the transportation of students taking advantage of the flexible boundary policy. [Board Policy 19](#) provides additional information.

## 2. Courtesy Transportation

Students may be granted a courtesy seat if space is available on an existing bus route. Applications must be submitted in September, on an annual basis, to the home school principal and are subject to [STOPR013 Courtesy Transportation](#).

## 3. Bus Privilege Cards

The principal may issue bus privilege cards to students. Where bus privilege cards are issued, bus drivers are required to enforce the conditions printed on the back of each card, and may collect the card of any student who does not conform to the regulations. The bus drivers will report to the school principal, as soon as possible, any incident which required them to collect the card, and the principal will determine what action, if any, is to be taken.

## 4. Student Conduct

Students will not be removed from a school bus until they reach the school or their home. If student behaviour is endangering the safety of driver or other passengers, the bus driver will pull over and contact the police. Student(s) will be written up on a misconduct form, which is submitted to the school principal. Further information is outlined in [STOPR020 Student Code of Conduct](#).

## 5. Operational Functions

STOPR is responsible for all operations and service parameters pertaining to home to school student transportation including determination of student eligibility for transportation, route planning, bus stop changes and service complaints. An appeal process for parent(s)/guardian(s) in disagreement with operational issues is detailed in [STOPR028 Transportation Appeal Process](#).

## 6. Inclement Weather

Buses may be cancelled due to inclement weather. For further information, refer to [STOPR029 Service Cancellation Due To Inclement Weather](#).

## 7. Accidents

If the school bus is involved in an accident or incident, the driver will immediately contact dispatch and deploy appropriate procedures to ensure the safety of all passengers. Additional information is outlined in [STOPR025 Accident Procedures](#).

Approved March 11, 1969  
Revised February 22, 1973  
Revised March 12, 1974  
Revised December 1974  
Corrected February 1975  
Revised February 1976  
Revised July 27, 1976  
Revised November 2, 1977  
Revised November 28, 1977  
Revised September 12, 1978

Revised April 8, 1980  
Revised March 16, 1981  
Revised February 26, 1985  
Revised June 24, 1986  
Revised September 8, 1987  
Revised September 22, 1987  
Revised September 7, 1988  
Revised May 9, 1989  
Revised January 23, 1996  
Revised August 26, 1997

Revised January 1, 1998 *(to reflect change in Board name)*  
Reviewed January 2000  
Revised May 26, 2009  
Revised August 24, 2010  
Revised June 14, 2011  
Approved February 25, 2014 *(replaces former Policy 39)*  
Revised June 18, 2014  
**Revised August 31, 2016**

**APPENDIX L**  
**Pedestrian Warrant / Volume Warrant – OTM Book 12,**  
**Figure 22**

# Figure 22 Justification 6 - Pedestrian Volume FT 2022

## 4.9 Justification 6 – Pedestrian Volume and Delay

Once justification has been established, determination of the appropriate crossing protection device should be subject to site-specific engineering judgement (see Guideline 3 for options).

### Purpose

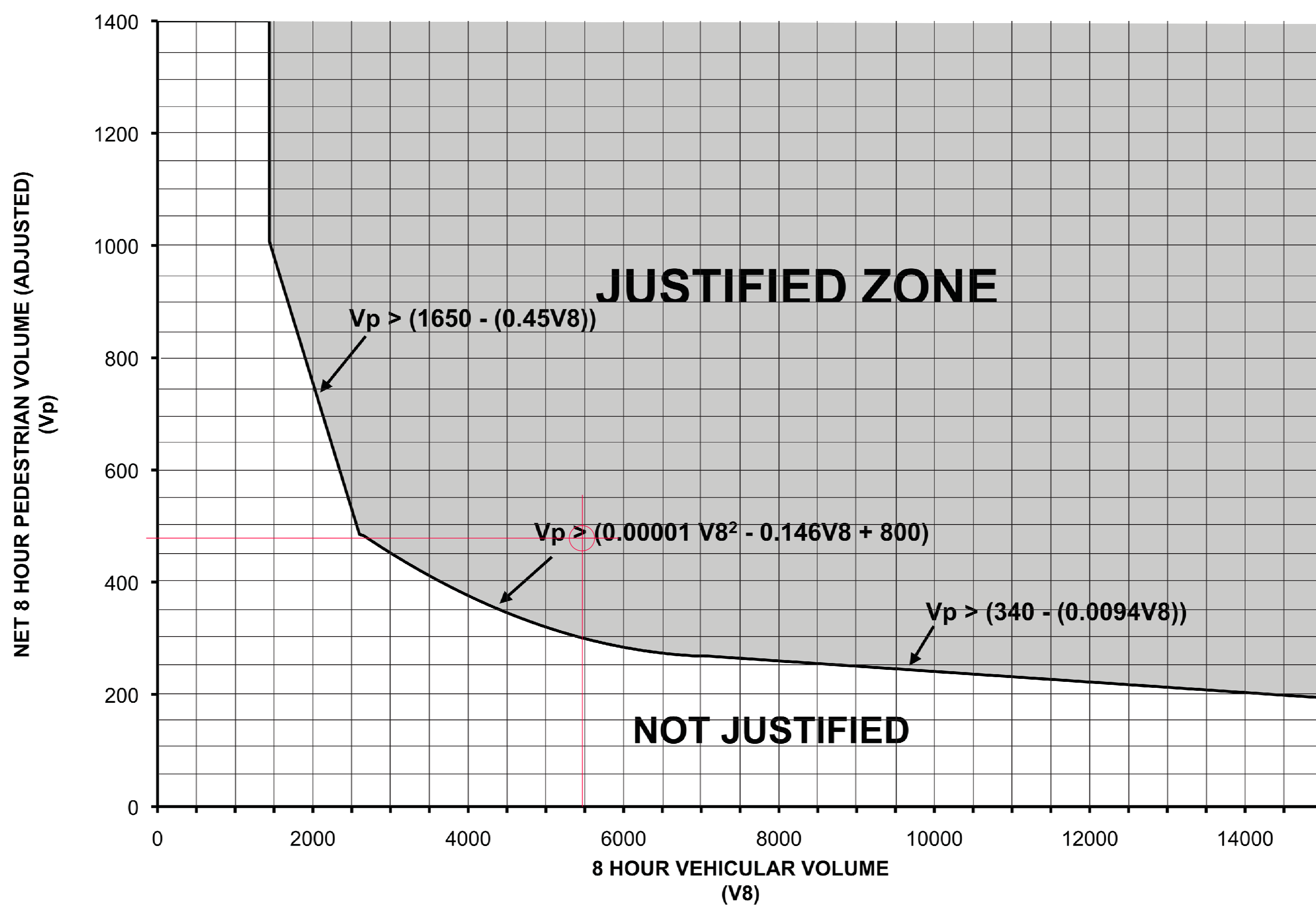
The minimum pedestrian volume conditions are intended for applications where the traffic volume on a main road is so heavy that pedestrians experience excessive delay or hazard in crossing the main road, or where high pedestrian crossing volumes produce the likelihood of such delays.

The justification is applicable to an unsignalized intersection or a mid-block location.

### Standard

The need for a traffic control device at an intersection or mid-block location must be considered if both the following minimum pedestrian volume and delay criteria are met:

1. The total eight-hour pedestrian volume crossing the main road at an intersection or mid-block location during the highest eight hours of pedestrian traffic fulfils the



**Figure 22 – Justification 6 – Pedestrian Volume**

**APPENDIX M**  
**HCM 2010 Pedestrian Analysis Outputs**

**Approach**

Approach Direction	NB	
Median Present?	Yes	
Approach Delay(s)	614698	
Level of Service	F	

**Crosswalk**

Length (ft)	48	48
Lanes Crossed	2	2
Veh Vol Crossed	946	946
Ped Vol Crossed	122	122
Yield Rate(%)	0	0
Ped Platooning	Yes	Yes
Critical Headway (s)	43.00	43.00
Prob of Delayed X-ing	1.00	1.00
Prob of Blocked Lane	1.00	1.00
Delay for adq Gap	307353.00	307353.00
Avg Ped Delay (s)	307349.00	307349.00

**Approach**

Approach Direction	SB	
Median Present?	Yes	
Approach Delay(s)	35606	
Level of Service	F	

**Crosswalk**

Length (ft)	35	35
Lanes Crossed	2	2
Veh Vol Crossed	946	946
Ped Vol Crossed	122	122
Yield Rate(%)	0	0
Ped Platooning	Yes	Yes
Critical Headway (s)	32.17	32.17
Prob of Delayed X-ing	1.00	1.00
Prob of Blocked Lane	0.99	0.99
Delay for adq Gap	17806.80	17806.80
Avg Ped Delay (s)	17803.00	17803.00

**Approach**

Approach Direction	NB
Median Present?	No
Approach Delay(s)	20754800
Level of Service	F

**Crosswalk**

Length (ft)	48
Lanes Crossed	2
Veh Vol Crossed	1327
Ped Vol Crossed	122
Yield Rate(%)	0
Ped Platooning	Yes
Critical Headway (s)	43.00
Prob of Delayed X-ing	1.00
Prob of Blocked Lane	1.00
Delay for adq Gap	20754800.00
Avg Ped Delay (s)	20754800.00

**Approach**

Approach Direction	SB
Median Present?	No
Approach Delay(s)	382668
Level of Service	F

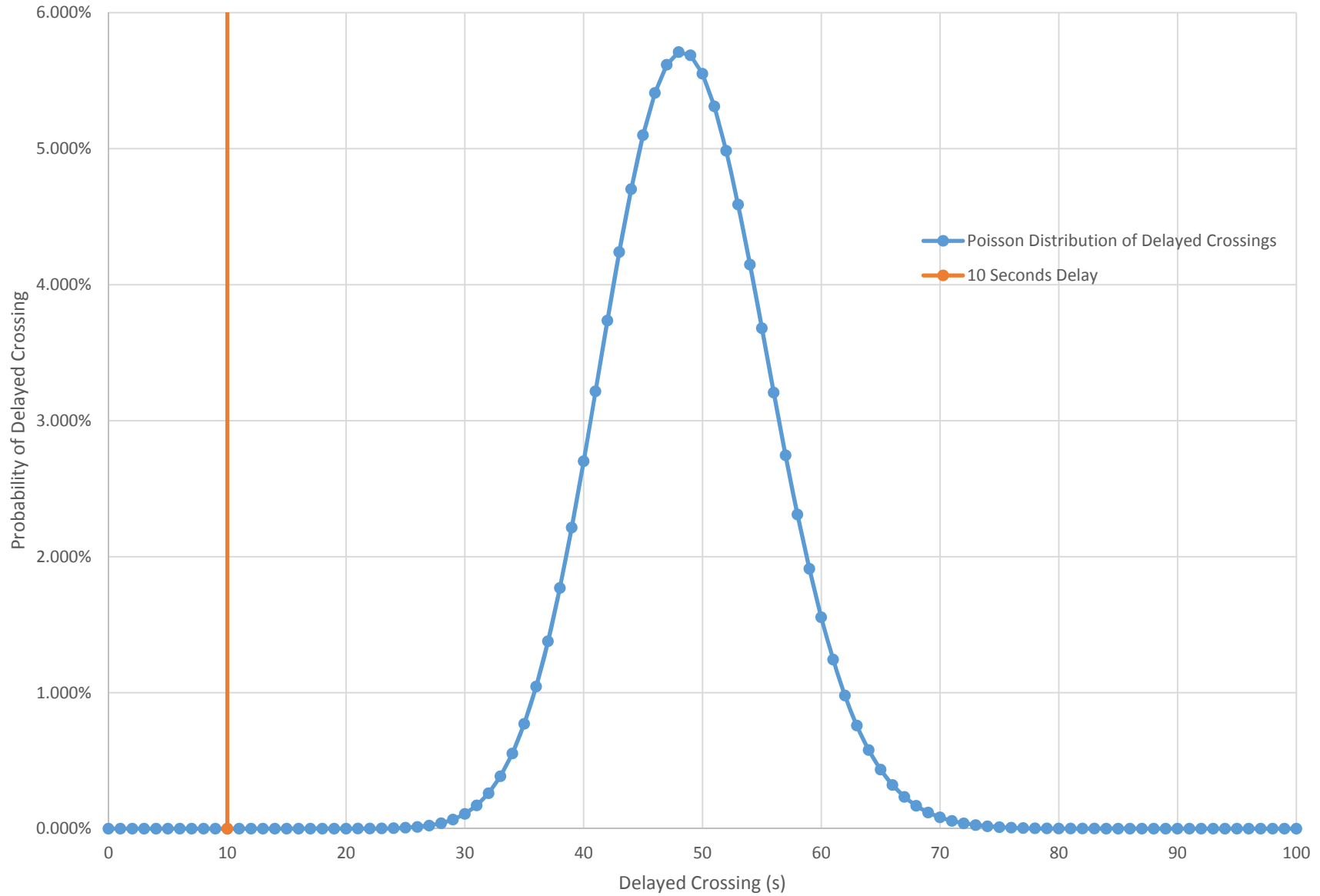
**Crosswalk**

Length (ft)	35
Lanes Crossed	2
Veh Vol Crossed	1327
Ped Vol Crossed	122
Yield Rate(%)	0
Ped Platooning	Yes
Critical Headway (s)	32.17
Prob of Delayed X-ing	1.00
Prob of Blocked Lane	1.00
Delay for adq Gap	382671.00
Avg Ped Delay (s)	382668.00

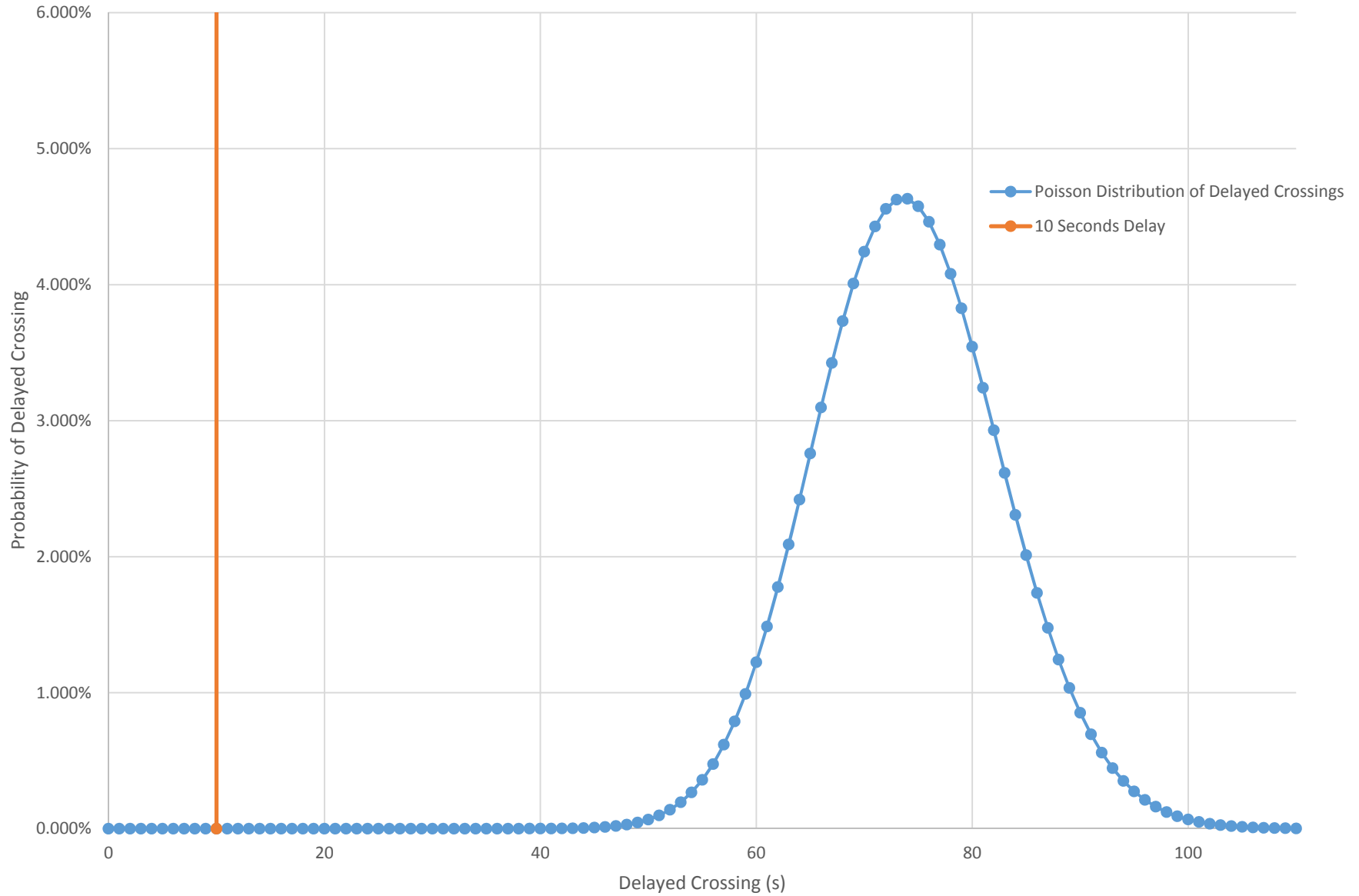


**APPENDIX N**  
**Poisson Distribution**

Probability of Seconds of Delay experienced for Crossing  
Future (2022) Total AM Peak Hour



### Probability of Seconds of Delay experienced for Crossing Future (2022) Total AM Peak Hour



FT2022  
 Approach Leg NB AM peak PM Peak  
 Average Delay SB NB SB 505.44

Seconds of Delay	Prob NB AM	Cumulative Probability	Prob SB AM	Cumulative Probability	Prob NB PM	Cumulative Probability	Prob SB PM	Cumulative Probability	
0	0.000%	0.000%	100.000%	0.000%	0.000%	100.000%	0.000%	0.000%	100.000%
1	0.000%	0.000%	100.000%	0.000%	0.000%	100.000%	0.000%	0.000%	100.000%
2	0.000%	0.000%	100.000%	0.000%	0.000%	100.000%	0.000%	0.000%	100.000%
3	0.000%	0.000%	100.000%	0.000%	0.000%	100.000%	0.000%	0.000%	100.000%
4	0.000%	0.000%	100.000%	0.000%	0.000%	100.000%	0.000%	0.000%	100.000%
5	0.000%	0.000%	100.000%	0.000%	0.000%	100.000%	0.000%	0.000%	100.000%
6	0.000%	0.000%	100.000%	0.000%	0.000%	100.000%	0.000%	0.000%	100.000%
7	0.000%	0.000%	100.000%	0.000%	0.000%	100.000%	0.000%	0.000%	100.000%
8	0.000%	0.000%	100.000%	0.000%	0.000%	100.000%	0.000%	0.000%	100.000%
9	0.000%	0.000%	100.000%	0.000%	0.000%	100.000%	0.000%	0.000%	100.000%
10	0.000%	0.000%	100.000%	0.000%	0.000%	100.000%	0.000%	0.000%	100.000%
11	0.000%	0.000%	100.000%	0.000%	0.000%	100.000%	0.000%	0.000%	100.000%
12	0.000%	0.000%	100.000%	0.000%	0.000%	100.000%	0.000%	0.000%	100.000%
13	0.000%	0.000%	100.000%	0.000%	0.000%	100.000%	0.000%	0.000%	100.000%
14	0.000%	0.000%	100.000%	0.000%	0.000%	100.000%	0.000%	0.000%	100.000%
15	0.000%	0.000%	100.000%	0.000%	0.000%	100.000%	0.000%	0.000%	100.000%
16	0.000%	0.000%	100.000%	0.000%	0.000%	100.000%	0.000%	0.000%	100.000%
17	0.000%	0.000%	100.000%	0.000%	0.000%	100.000%	0.000%	0.000%	100.000%
18	0.000%	0.000%	100.000%	0.000%	0.000%	100.000%	0.000%	0.000%	100.000%
19	0.000%	0.000%	100.000%	0.000%	0.000%	100.000%	0.000%	0.000%	100.000%
20	0.000%	0.000%	100.000%	0.000%	0.000%	100.000%	0.000%	0.000%	100.000%
21	0.000%	0.001%	99.999%	0.000%	0.000%	100.000%	0.000%	0.000%	100.000%
22	0.001%	0.001%	99.999%	0.000%	0.000%	100.000%	0.000%	0.000%	100.000%
23	0.002%	0.003%	99.997%	0.000%	0.000%	100.000%	0.000%	0.000%	100.000%
24	0.003%	0.007%	99.993%	0.000%	0.000%	100.000%	0.000%	0.000%	100.000%
25	0.007%	0.013%	99.987%	0.000%	0.000%	100.000%	0.000%	0.000%	100.000%
26	0.013%	0.026%	99.974%	0.000%	0.000%	100.000%	0.000%	0.000%	100.000%
27	0.023%	0.049%	99.951%	0.000%	0.000%	100.000%	0.000%	0.000%	100.000%
28	0.040%	0.088%	99.912%	0.000%	0.000%	100.000%	0.000%	0.000%	100.000%
29	0.067%	0.155%	99.845%	0.000%	0.000%	100.000%	0.000%	0.000%	100.000%
30	0.108%	0.263%	99.737%	0.000%	0.000%	100.000%	0.000%	0.000%	100.000%
31	0.171%	0.434%	99.566%	0.000%	0.000%	100.000%	0.000%	0.000%	100.000%
32	0.260%	0.695%	99.305%	0.000%	0.000%	100.000%	0.000%	0.000%	100.000%
33	0.385%	1.080%	98.920%	0.000%	0.000%	100.000%	0.000%	0.000%	100.000%
34	0.553%	1.632%	98.368%	0.000%	0.000%	100.000%	0.000%	0.000%	100.000%
35	0.771%	2.403%	97.597%	0.000%	0.000%	100.000%	0.000%	0.000%	100.000%
36	1.045%	3.448%	96.552%	0.000%	0.000%	100.000%	0.000%	0.000%	100.000%
37	1.378%	4.826%	95.174%	0.000%	0.000%	100.000%	0.000%	0.000%	100.000%
38	1.770%	6.595%	93.405%	0.000%	0.000%	100.000%	0.000%	0.000%	100.000%
39	2.214%	8.810%	91.190%	0.000%	0.001%	99.999%	0.000%	0.000%	100.000%
40	2.701%	11.511%	88.489%	0.001%	0.001%	99.999%	0.000%	0.000%	100.000%
41	3.215%	14.726%	85.274%	0.001%	0.002%	99.998%	0.000%	0.000%	100.000%
42	3.736%	18.462%	81.538%	0.002%	0.004%	99.996%	0.000%	0.000%	100.000%
43	4.240%	22.702%	77.298%	0.003%	0.006%	99.994%	0.000%	0.000%	100.000%
44	4.702%	27.404%	72.596%	0.005%	0.011%	99.989%	0.000%	0.000%	100.000%
45	5.099%	32.503%	67.497%	0.008%	0.019%	99.981%	0.000%	0.000%	100.000%
46	5.410%	37.913%	62.087%	0.012%	0.031%	99.969%	0.000%	0.000%	100.000%
47	5.617%	43.530%	56.470%	0.019%	0.050%	99.950%	0.000%	0.000%	100.000%
48	5.710%	49.240%	50.760%	0.030%	0.080%	99.920%	0.000%	0.000%	100.000%
49	5.687%	54.927%	45.073%	0.045%	0.125%	99.875%	0.000%	0.000%	100.000%
50	5.551%	60.478%	39.522%	0.067%	0.193%	99.807%	0.000%	0.000%	100.000%
51	5.311%	65.789%	34.211%	0.097%	0.290%	99.710%	0.000%	0.000%	100.000%
52	4.984%	70.774%	29.226%	0.139%	0.429%	99.571%	0.000%	0.000%	100.000%
53	4.589%	75.363%	24.637%	0.194%	0.623%	99.377%	0.000%	0.001%	99.999%
54	4.147%	79.510%	20.490%	0.266%	0.890%	99.110%	0.000%	0.001%	99.999%
55	3.680%	83.190%	16.810%	0.359%	1.249%	98.751%	0.001%	0.002%	99.998%
56	3.207%	86.397%	13.603%	0.475%	1.724%	98.276%	0.001%	0.003%	99.997%
57	2.745%	89.143%	10.857%	0.618%	2.341%	97.659%	0.002%	0.005%	99.995%
58	2.310%	91.453%	8.547%	0.789%	3.130%	96.870%	0.003%	0.009%	99.991%
59	1.911%	93.363%	6.637%	0.991%	4.121%	95.879%	0.005%	0.014%	99.986%
60	1.554%	94.917%	5.083%	1.224%	5.345%	94.655%	0.008%	0.022%	99.978%
61	1.243%	96.160%	3.840%	1.487%	6.831%	93.169%	0.012%	0.035%	99.965%
62	0.979%	97.139%	2.861%	1.777%	8.608%	91.392%	0.018%	0.053%	99.947%
63	0.758%	97.897%	2.103%	2.090%	10.698%	89.302%	0.027%	0.080%	99.920%
64	0.578%	98.475%	1.525%	2.420%	13.117%	86.883%	0.039%	0.119%	99.881%
65	0.434%	98.909%	1.091%	2.758%	15.876%	84.124%	0.055%	0.174%	99.826%
66	0.321%	99.229%	0.771%	3.097%	18.972%	81.028%	0.077%	0.251%	99.749%
67	0.234%	99.463%	0.537%	3.425%	22.397%	77.603%	0.106%	0.357%	99.643%
68	0.168%	99.631%	0.369%	3.732%	26.129%	73.871%	0.144%	0.501%	99.499%
69	0.119%	99.749%	0.251%	4.008%	30.137%	69.863%	0.193%	0.694%	99.306%
70	0.083%	99.832%	0.168%	4.243%	34.380%	65.620%	0.254%	0.948%	99.052%
71	0.057%	99.889%	0.111%	4.428%	38.808%	61.192%	0.330%	1.278%	98.722%
72	0.039%	99.927%	0.073%	4.557%	43.365%	56.635%	0.423%	1.700%	98.300%
73	0.026%	99.953%	0.047%	4.626%	47.991%	52.009%	0.534%	2.234%	97.766%
74	0.017%	99.970%	0.030%	4.632%	52.623%	47.377%	0.666%	2.900%	97.100%
75	0.011%	99.981%	0.019%	4.576%	57.200%	42.800%	0.819%	3.719%	96.281%
76	0.007%	99.988%	0.012%	4.462%	61.662%	38.338%	0.994%	4.714%	95.286%
77	0.004%	99.993%	0.007%	4.294%	65.956%	34.044%	1.192%	5.905%	94.095%
78	0.003%	99.996%	0.004%	4.079%	70.035%	29.965%	1.409%	7.315%	92.685%
79	0.002%	99.997%	0.003%	3.826%	73.861%	26.139%	1.646%	8.961%	91.039%
80	0.001%	99.998%	0.002%	3.544%	77.406%	22.594%	1.899%	10.859%	89.141%
81	0.001%	99.999%	0.001%	3.242%	80.648%	19.352%	2.162%	13.021%	86.979%
82	0.000%	99.999%	0.001%	2.930%	83.578%	16.422%	2.433%	15.454%	84.546%
83	0.000%	100.000%	0.000%	2.616%	86.193%	13.807%	2.704%	18.158%	81.842%
84	0.000%	100.000%	0.000%	2.307%	88.501%	11.499%	2.970%	21.127%	78.873%
85	0.000%	100.000%	0.000%	2.012%	90.512%	9.488%	3.224%	24.351%	75.649%
86	0.000%	100.000%	0.000%	1.733%	92.245%	7.755%	3.458%	27.809%	72.191%
87	0.000%	100.000%	0.000%	1.476%	93.722%	6.278%	3.667%	31.476%	68.524%
88	0.000%	100.000%	0.000%	1.243%	94.965%	5.035%	3.845%	35.321%	64.679%
89	0.000%	100.000%	0.000%	1.035%	96.000%	4.000%	3.986%	39.307%	60.693%
90	0.000%	100.000%	0.000%	0.852%	96.852%	3.148%	4.086%	43.392%	56.608%
91	0.000%	100.000%	0.000%	0.694%	97.545%	2.455%	4.142%	47.535%	52.465%
92	0.000%	100.000%	0.000%	0.559%	98.104%	1.896%	4.154%	51.689%	48.311%
93	0.000%	100.000%	0.000%	0.445%	98.550%	1.450%	4.121%	55.810%	44.190%
94	0.000%	100.000%	0.000%	0.351%	98.901%	1.099%	4.045%	59.854%	40.146%
95	0.000%	100.000%	0.000%	0.274%	99.174%	0.826%	3.928%	63.782%	36.218%
96	0.000%	100.000%	0.000%	0.211%	99.386%	0.614%	3.775%	67.557%	32.443%
97	0.000%	100.000%	0.000%	0.161%	99.547%	0.453%	3.590%	71.148%	28.852%
98	0.000%	100.000%	0.000%	0.122%	99.669%	0.331%	3.380%	74.528%	25.472%
99	0.000%	100.000%	0.000%	0.091%	99.761%	0.239%	3.150%	77.678%	22.322%
100	0.000%	100.000%	0.000%	0.068%	99.828%	0.172%	2.906%	80.584%	19.416%
101	0.000%	100.000%	0.000%	0.050%	99.878%	0.122%	2.655%	83.239%	16.761%
102	0.000%	100.000%	0.000%	0.036%	99.914%	0.086%	2.401%	85.640%	14.360%
103	0.000%	100.000%	0.000%	0.026%	99.940%	0.060%	2.151%	87.791%	12.209%
104	0.000%	100.000%	0.000%	0.018%	99.958%	0.042%	1.908%	89.699%	10.301%
105	0.000%	100.000%	0.000%	0.013%	99.971%	0.029%	1.677%	91.376%	8.624%
106	0.000%	100.000%	0.000%	0.009%	99.981%	0.019%	1.459%	92.835%	7.165%
107	0.000%	100.000%	0.000%	0.006%	99.987%	0.013%	1.258%	94.093%	5.907%
108	0.000%	100.000%	0.000%	0.004%	99.991%	0.009%	1.075%	95.168%	4.832%
109	0.000%	100.000%	0.000%	0.003%	99.994%	0.006%	0.910%	96.078%	3.922%
110	0.000%	100.000%	0.000%	0.002%	99.996%	0.004%	0.763%	96.841%	3.159%
111	0.000%	100.000%	0.000%	0.001%	99.998%	0.002%	0.634%	97.475%	2.525%
112	0.000%	100.000%	0.000%	0.001%	99.998%	0.002%	0.522%	97.997%	2.003%
113	0.000%	100.000%	0.000%	0.001%	99.999%	0.001%	0.427%	98.424%	1.576%







**APPENDIX O**

**Pedestrian Warrant / Delay Warrant – OTM Book 12,  
Figure 23 and MTO Results Sheet**



# Figure 23 Justification 6 - Pedestrian Delay

Book 12 • Traffic Signals

8 Hour Pedestrian Volume: 485 p

NET Pedestrian Delays > 10 Seconds (8 Hours): 485 p

8 Hour Projected Vehicle Volume: 5480 v

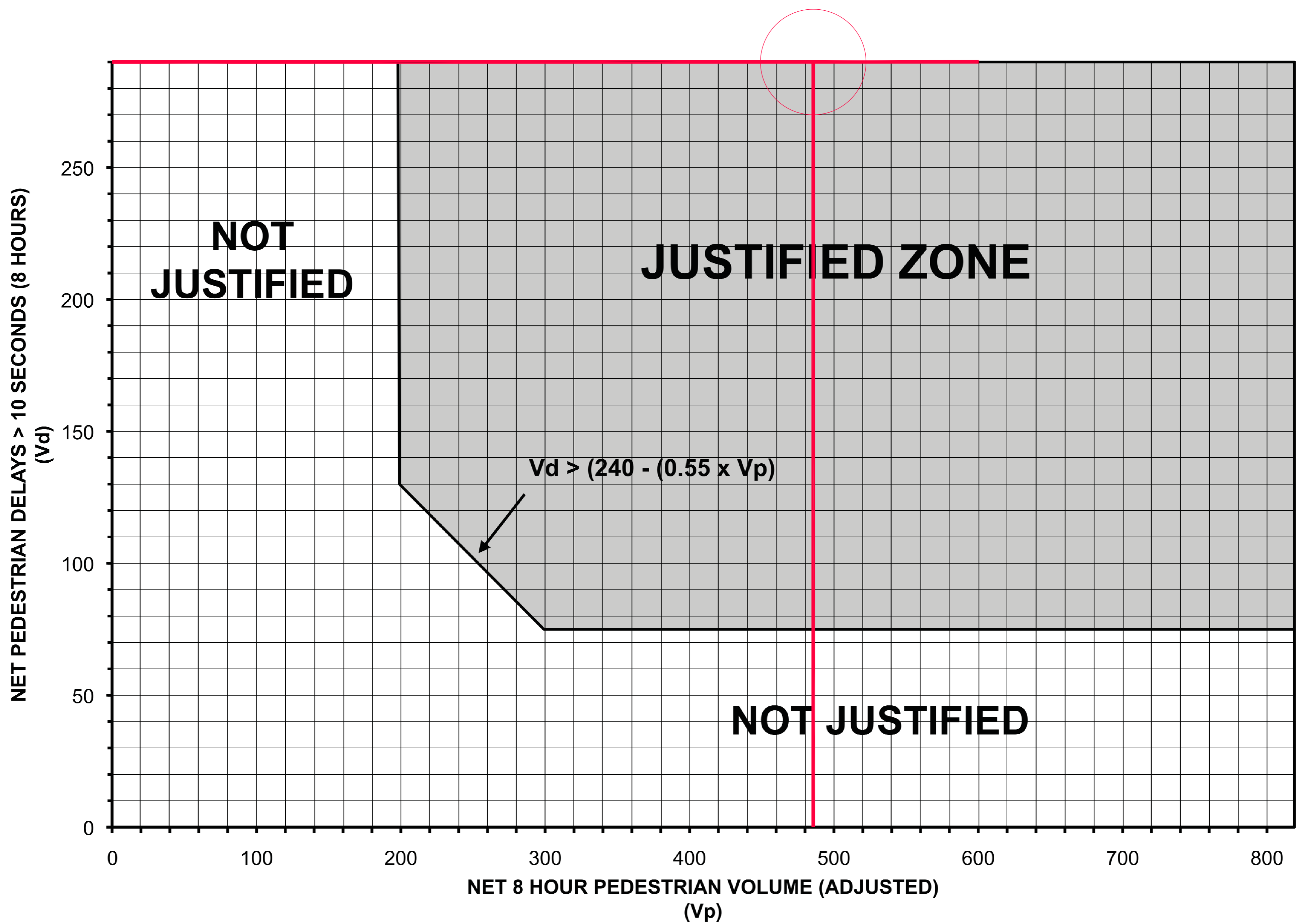


Figure 23 – Justification 6 – Pedestrian Delay

Intersection: Airport Road /Street A North Access

Count Date: Future Projected Volume 2022

Summary Results

	Justification	Compliance	Signal Justified?	
			YES	NO
1. Minimum Vehicular Volume	A Total Volume	0 %	<input type="checkbox"/>	<input checked="" type="checkbox"/>
	B Crossing Volume	0 %	<input type="checkbox"/>	<input checked="" type="checkbox"/>
2. Delay to Cross Traffic	A Main Road	0 %	<input type="checkbox"/>	<input checked="" type="checkbox"/>
	B Crossing Road	0 %	<input type="checkbox"/>	<input checked="" type="checkbox"/>
3. Combination	A Justificaton 1	0 %	<input type="checkbox"/>	<input checked="" type="checkbox"/>
	B Justification 2	0 %	<input type="checkbox"/>	<input checked="" type="checkbox"/>
4. 4-Hr Volume		0 %	<input type="checkbox"/>	<input checked="" type="checkbox"/>

5. Collision Experience		0 %	<input type="checkbox"/>	<input checked="" type="checkbox"/>
-------------------------	--	-----	--------------------------	-------------------------------------

6. Pedestrians	A Volume	Justification met	<input checked="" type="checkbox"/>	<input type="checkbox"/>
	B Delay	Justification met	<input checked="" type="checkbox"/>	<input type="checkbox"/>

## **APPENDIX P**

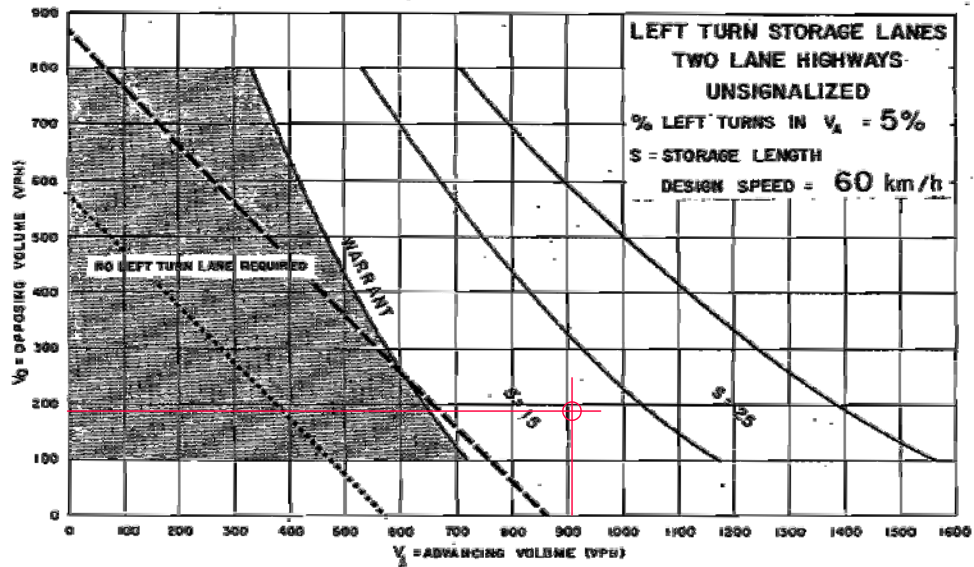
### **Left Turn Warrant Analysis and Left Turn Monographs**

# Airport Road/Street 'A' South Access

AM Peak Hour  
FT 2022 SBL

AT-GRADE INTERSECTIONS

APPENDIX A



$V_A=913$  vph

$V_o=193$  vph

$S=15m$

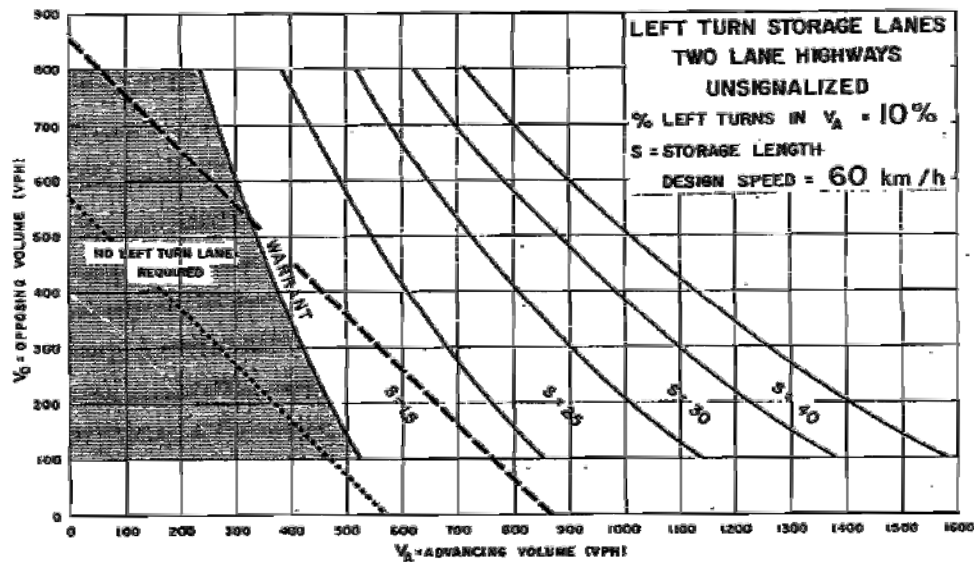
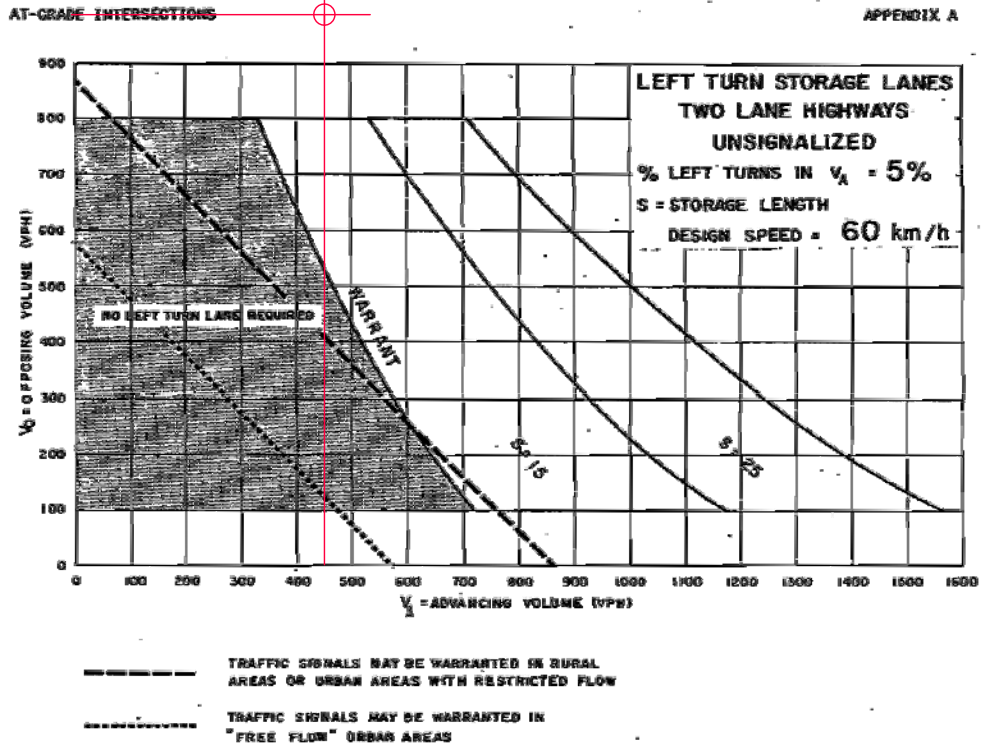


Figure EA-6

# Airport Road/Street 'A' South Access

PM Peak Hour  
FT 2022 SBL



$V_a=455$

$V_o=1097$

$S=25m$

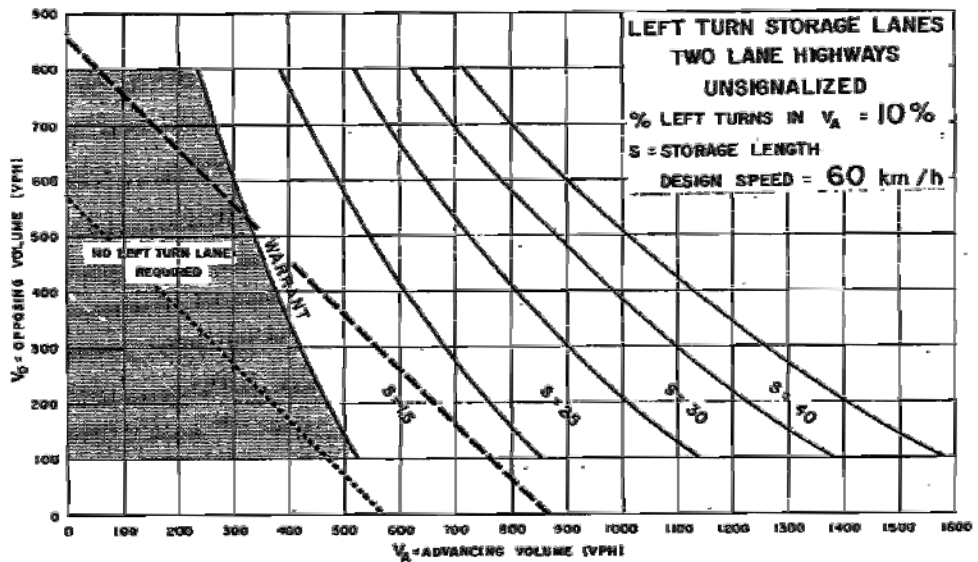


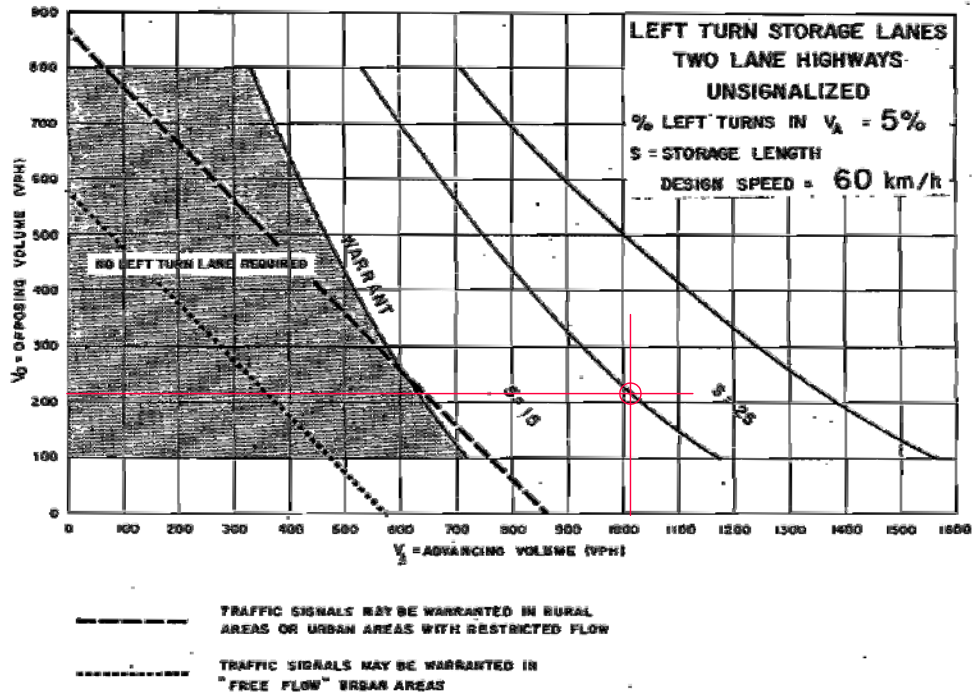
Figure EA-6

# Airport Road/Street 'A' South Access

## AM Peak Hour FT 2032 SBL

AT-GRADE INTERSECTIONS

APPENDIX A



$V_A=1080$

$V_O=217$

$S=25m$

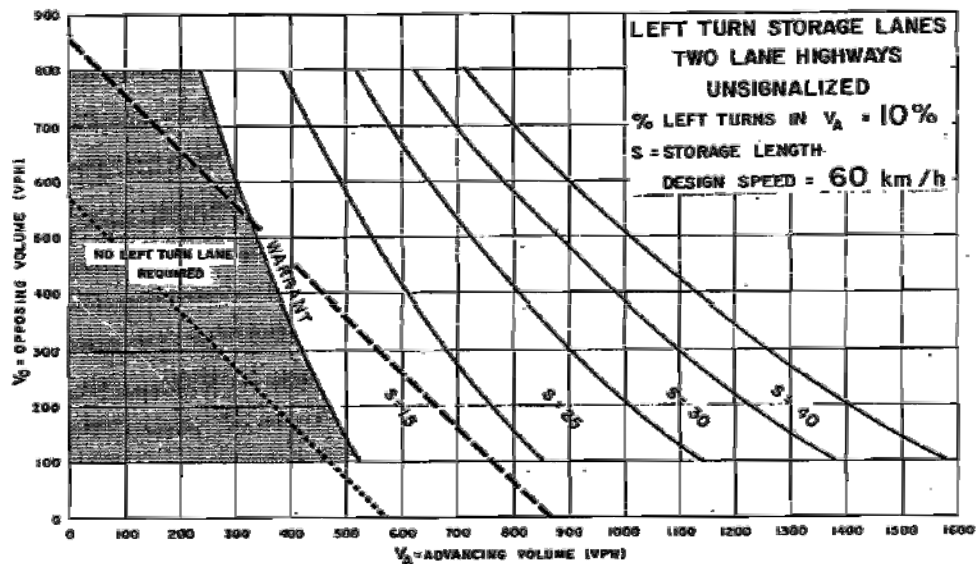


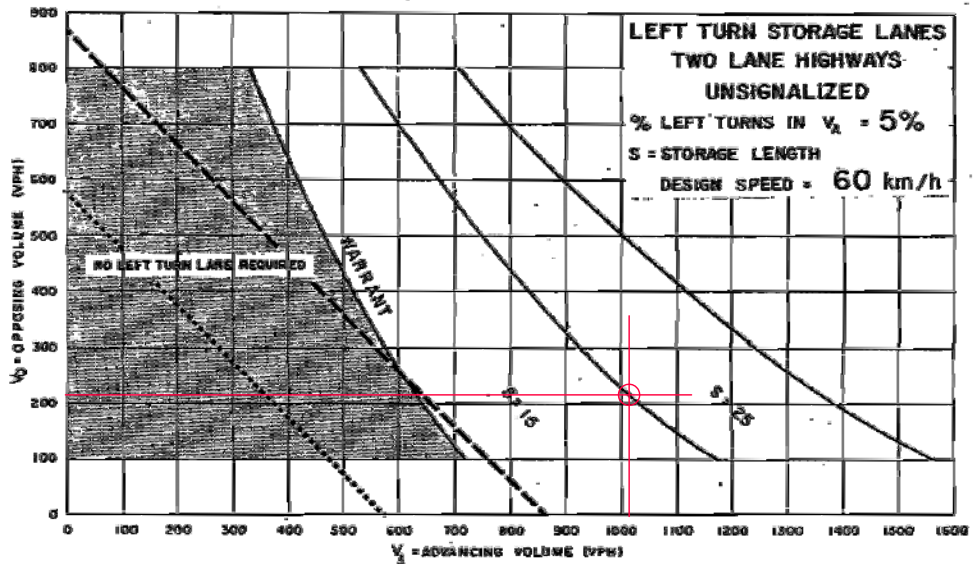
Figure EA-6

# Airport Road/Street 'A' South Access

## AM Peak Hour FT 2032 SBL

AT-GRADE INTERSECTIONS

APPENDIX A



$V_a=1080$

$V_o=217$

$S=25m$

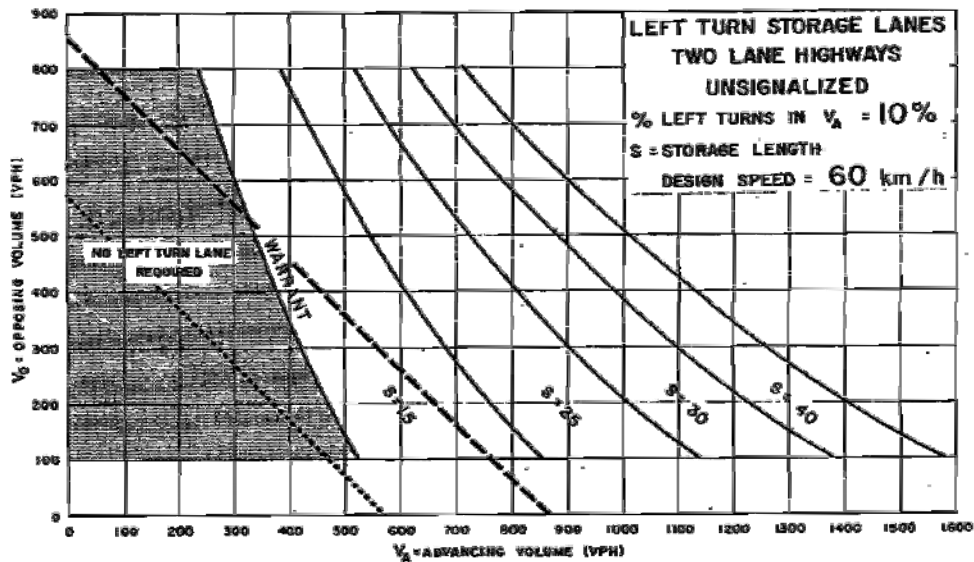


Figure EA-6

94-06

EA-7

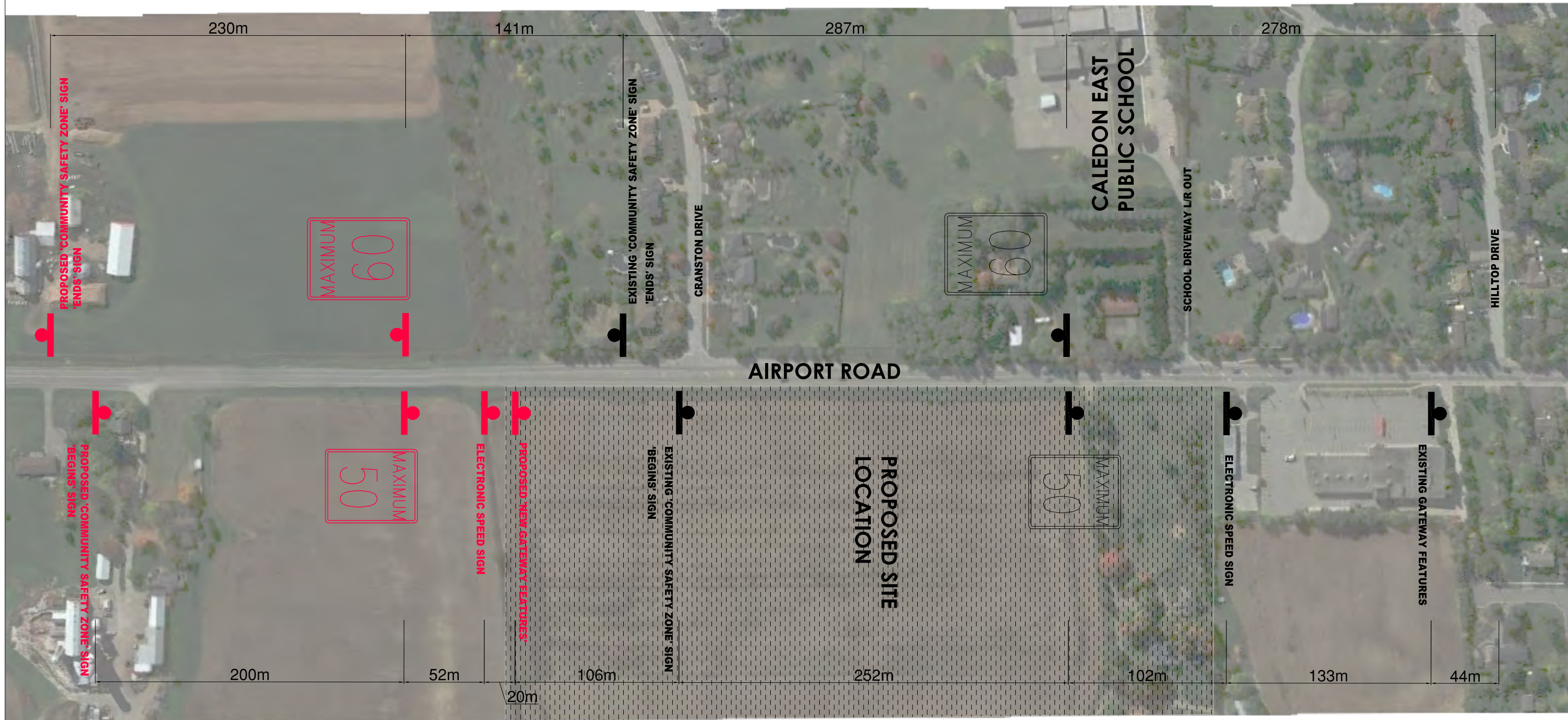
## 15717 Airport Road - SOUTH ACCESS STORAGE LEFT TURN WARRANT CALCULATIONS

AM Peak Hour FT 2022 WBL		PM Peak Hour FT 2022 WBL	
Airport Road at Cranston / Street A South		Airport Road at Cranston / Street A South	
Posted Speed:	60 km/h	Posted Speed:	60 km/h
Design Speed:	80 Km/h	Design Speed:	80 Km/h
Advancing Traffic Volume:	75	Advancing Traffic Volume:	26
Opposing Traffic Volume:	25	Opposing Traffic Volume:	9
Left Turn Volume:	59	Left Turn Volume:	19
Percentage of Left Turn Traffic:	78.66667	Percentage of Left Turn Traffic:	73.07692
	79%		73%
AM Peak Hour FT 2032 WBL		PM Peak Hour FT 2032 WBL	
Airport Road at Cranston / Street A South		Airport Road at Cranston / Street A South	
Posted Speed:	60 km/h	Posted Speed:	60 km/h
Design Speed:	80 Km/h	Design Speed:	80 Km/h
Advancing Traffic Volume:	75	Advancing Traffic Volume:	26
Opposing Traffic Volume:	25	Opposing Traffic Volume:	9
Left Turn Volume:	59	Left Turn Volume:	19
Percentage of Left Turn Traffic:	78.66667	Percentage of Left Turn Traffic:	73.07692
	79%		73%

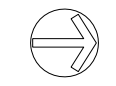
AM Peak Hour FT 2022 SBL		PM Peak Hour FT 2022 SBL	
Airport Road at Cranston / Street A South		Airport Road at Cranston / Street A South	
Posted Speed:	60 km/h	Posted Speed:	60 km/h
Design Speed:	80 Km/h	Design Speed:	80 Km/h
Advancing Traffic Volume:	913	Advancing Traffic Volume:	455
Opposing Traffic Volume:	193	Opposing Traffic Volume:	1097
Left Turn Volume:	3	Left Turn Volume:	6
Percentage of Left Turn Traffic:	0.328587	Percentage of Left Turn Traffic:	1.318681
	1%		2%
AM Peak Hour FT 2032 SBL		PM Peak Hour FT 2032 SBL	
Airport Road at Cranston / Street A South		Airport Road at Cranston / Street A South	
Posted Speed:	60 km/h	Posted Speed:	60 km/h
Design Speed:	80 Km/h	Design Speed:	80 Km/h
Advancing Traffic Volume:	1080	Advancing Traffic Volume:	522
Opposing Traffic Volume:	217	Opposing Traffic Volume:	1260
Left Turn Volume:	3	Left Turn Volume:	6
Percentage of Left Turn Traffic:	0.277778	Percentage of Left Turn Traffic:	1.149425
	1%		2%



**APPENDIX Q**  
**Community Safety Zone Plan**



PROPOSED COMMUNITY SAFETY ZONE ON AIRPORT ROAD ( REGIONAL ROAD 7) IN THE VICINITY OF SUBJECT SITE  
 PROPOSED SIGN LOCATIONS ARE APPROXIMATE.



LEGEND

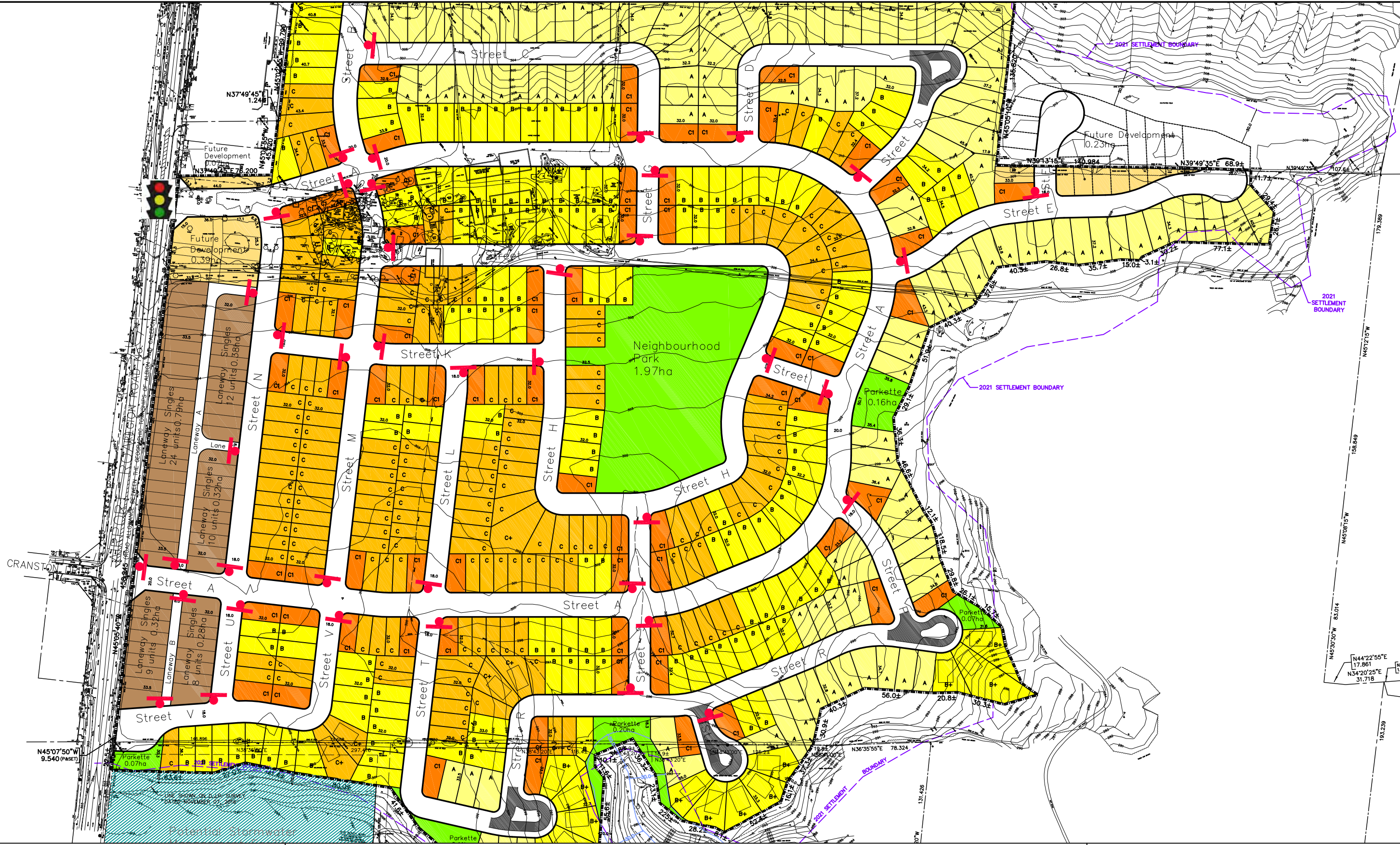


EXISTING SIGN LOCATION



PROPOSED SIGN LOCATION


**APPENDIX R**  
**Internal Traffic Control Plan**





**COLE  
ENGINEERING**

70 VALLEYWOOD DRIVE, MARKHAM, ON L3R 4T5  
T:416.987.6161 / 905.940.6161 F:905.940.2064

**LEGEND**

 STOP SIGN (Ra-1)

 PROPOSED TRAFFIC SIGNAL

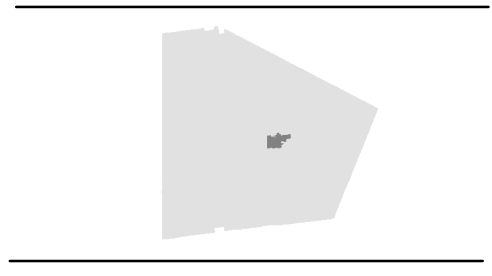
INTERNAL TRAFFIC CONTROL PLAN PROPOSED RESIDENTIAL DEVELOPMENT 15717 AIRPORT ROAD TOWN OF CALEDON REGION OF PEEL		
DATE:	JUNE 2017	PROJECT No.: TR16-0619
SCALE:	1:3000	FIGURE No.:

**APPENDIX S**  
**Caledon Conceptual Pedestrian Network**



# Figure 17 CALEDON EAST CONCEPTUAL PEDESTRIAN NETWORK

- Institutional
- Environmental Policy Area (revised November 1999)
- Open Space Policy Area
- Open Space/Institutional Policy Area
- 2021 Settlement Boundary
- - - Conceptual Pedestrian Linkage
- - - Caledon Trailway
- Regional Road
- Local Road



Base Data Source: Town of Caledon

