

Appendix B:

Transportation Study Report

Report

Airport Road EA King Street to Huntsmill Drive Transportation Study



Prepared for Region of Peel
by IBI Group
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1 Introduction

The Region of Peel has undertaken an Environmental Assessment (EA) for Airport Road from north of King Street to Huntsmill Drive, which is located north of Caledon East. In the study area there are two communities, Caledon East and Mono Road, where increasing traffic volume, heavy trucks, and speeding have been identified as concerns. Prior studies have also identified a need for improved walking and cycling infrastructure along the corridor. The EA will develop a plan for the corridor supporting Town of Caledon and regional requirements and objectives.

1.1 Study Scope

This report is the transportation planning component of the EA to provide recommendations on corridor improvements or changes to accommodate future traffic, active transportation users, and goods movement. The scope of the study includes the following:

- Traffic operations analysis including existing and future travel demand along the corridor and development of measures to accommodate travel growth;
- Safety assessment to review the locations identified as a concern, and the remainder of the corridor, and provide input to the plan to mitigate concerns or maximize safety; and,
- An active transportation study to build on prior studies in the Region and develop recommendations for pedestrian and cycling infrastructure in the corridor that are integrated with safety and traffic requirements, and contribute to accommodating future travel demand growth.

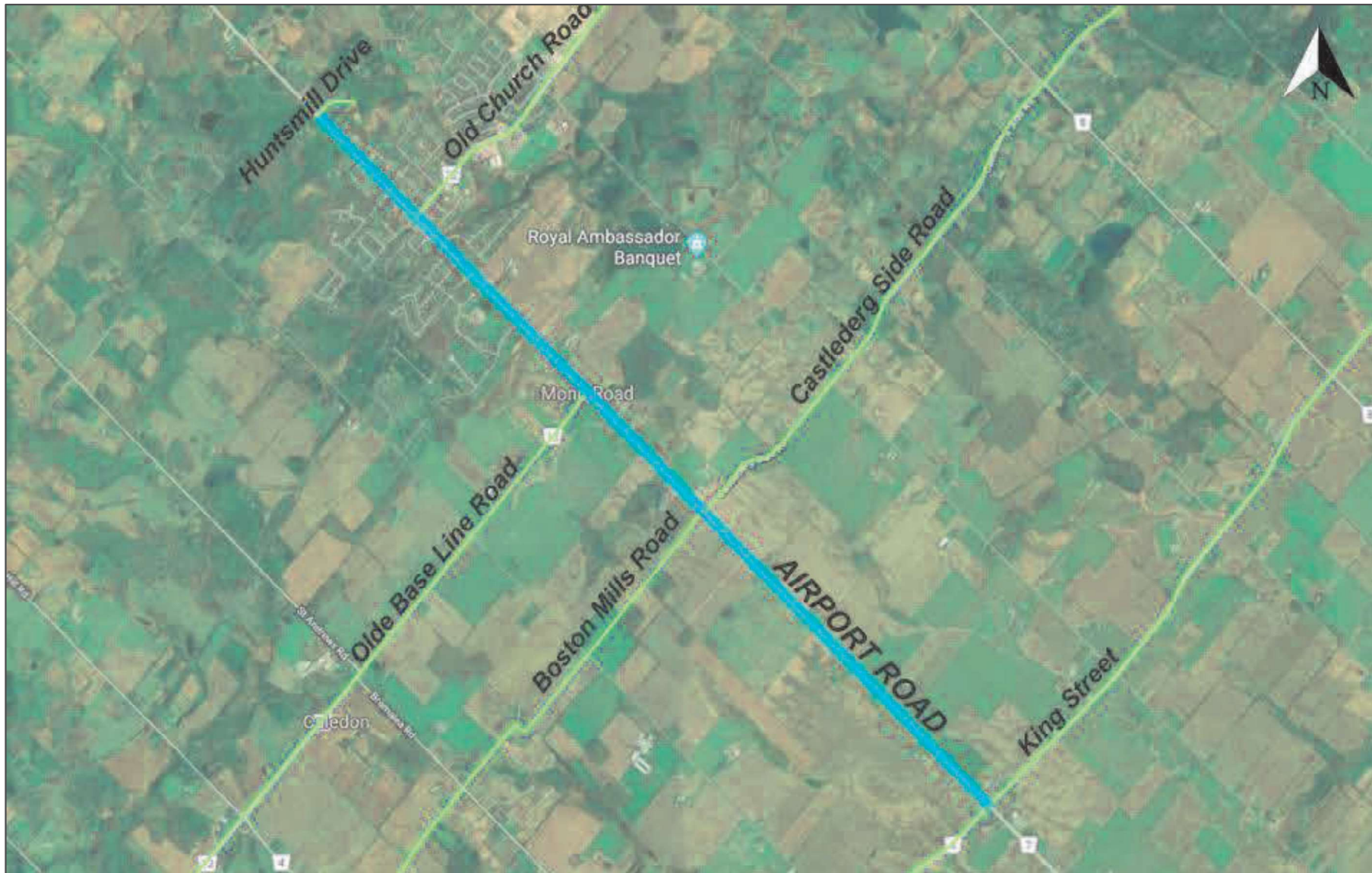
It should be noted that many of the preliminary recommendations and findings in this report require further assessment in the Environmental Assessment, considering environmental, cultural, and social criteria, before the improvements are adopted in the plan.

1.2 Study Area

The study area, as determined by the Region of Peel, is approximately 7.5 kilometers long stretching from 100 meters north of King Street to 300 meters north of Huntsmill Drive as illustrated in Exhibit 1-1. The corridor is a regional major road serving through traffic, goods movement, and local traffic. The corridor includes Caledon East, where Airport Road is urbanized with direct frontage residential, commercial, and retail land use. The corridor also travels through the small community of Mono Road. Outside of the communities, Airport Road has a mix of land-uses such as residential, small businesses, and agriculture, most of which have direct access to the roadway. For the purposes of this report, Airport Road will be described as running in a north-south direction.

Airport Road (Regional Road 7) is classified as a high capacity arterial road and has a two-lane cross-section within the study area limits. To the north, Airport Road connects to Highway 9 – which marks the boundary between the Town of Caledon and Town of Mono – and continues further north as Simcoe Country Road 18. To the south, Airport Road connects to Pearson International Airport and Highway 427, where it then diverts easterly and continues as Dixon Road.

Exhibit 1-1: Study Area



Source: Google Earth (2018)

2 Policy and Planning Framework

The Region of Peel's Long Range Transportation Plan, the Town of Caledon's Official Plan, and a number of other prior studies and plans provide the planning framework for the study.

2.1 Background Studies and Plans

Region of Peel's Long Range Transportation Plan (2012)

The Region of Peel's Long Range Transportation Plan, 2012 (LRTP) identified the potential widening of Airport Road from two lanes to four/five lanes from north of King Street to Olde Base Line Road by 2021. North of Olde Base Line Road the LRTP indicates that Airport Road would remain two lanes. Following the plan, the Region has been protecting the corridor for a future widening.

Region of Peel Road Characterization Study (2013)

The Road Characterization Study (RCS) was developed by the Region of Peel as a measure of the LRTP to aid engineers and planners in evaluating arterial roads to effectively serve multiple transportation modes. The study considers health impacts, local contexts, transportation options, different types of users, and considers growth and intensification. As a result, a set of designs were developed to sustain future land use, provide priorities for the right-of-way, and to accommodate multi-modal demands.

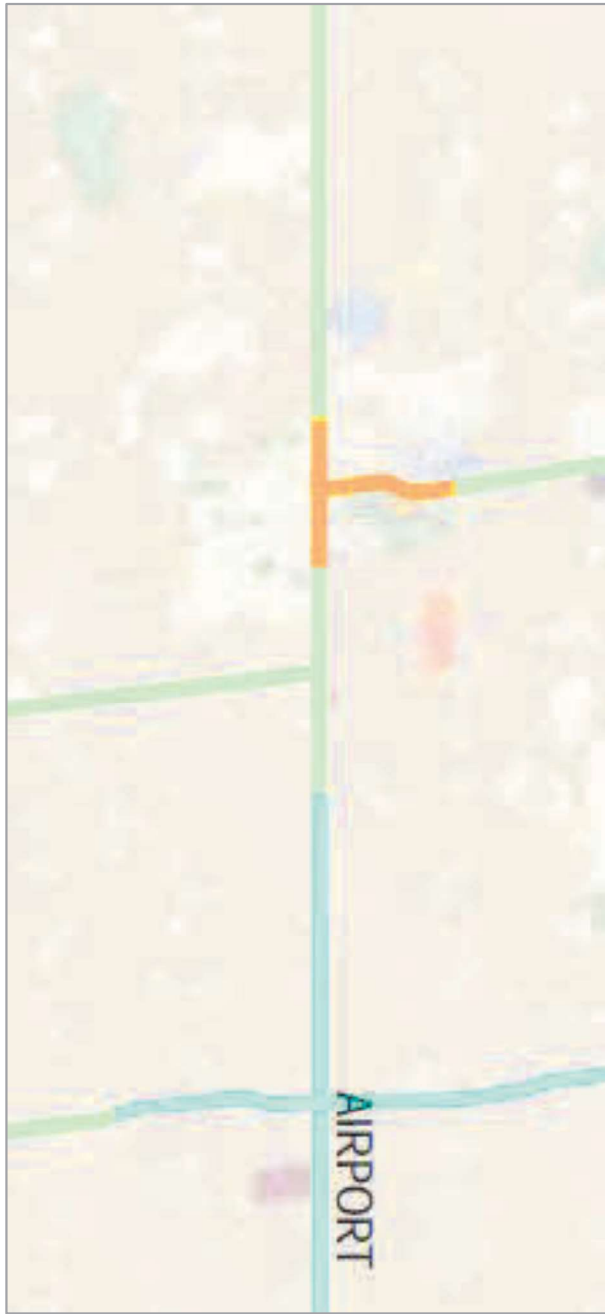
The outcomes of the RCS are as follows:

- A road character map which shows Regional Roads and their characterization;
- A road character matrix which lists the standard attributes associated with each road character and also provides a comprehensive description;
- Access control measures and by-law which integrates the surrounding land use with the quality of traffic service for each road character; and
- Illustrative cross sections to identify zones for multiple transportation modes and the right-of-way.

It should be noted that cross sections taken from the RCS serves as a starting point for engineers and planners during the design. These cross sections are conceptual in nature and will need to be adjusted to respond to site specific conditions.

Through the project study area, Airport Road transitions through several road characterizations (refer to Exhibit 2-1).

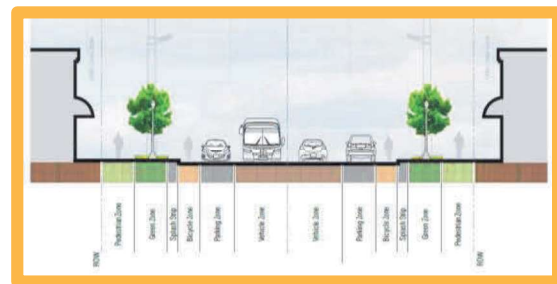
Exhibit 2-1: Road Characterization of Airport Road from the Region of Peel's Road Characterization Study



North of Leamster Trail: Rural Road



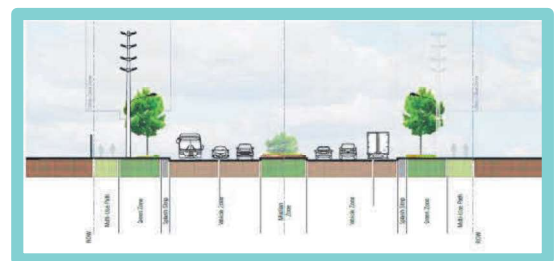
Leamster Trail to Cranston Drive: Rural Main Street



Cranston Drive to Castlederg Side Road: Rural Road



Castlederg Side Road to King: Suburban Connector



Source: Region of Peel's Road Characterization Study

Town of Caledon Official Plan (2018)

The Town of Caledon Official Plan identifies Airport Road as both a high capacity arterial road and the commercial focus for the community, noting that it must accommodate regional and inter-regional traffic, and also play a prominent role in defining Caledon East’s small town character and community. The plan also identifies some transportation opportunities and needs, such as implementing traffic calming measures along Old Church Road and Walker Road West to enhance pedestrian and vehicular safety, and establishing community “gateway” features at the north, south, and east ends of Caledon East.

Caledon East Community Improvement Plan (2014)

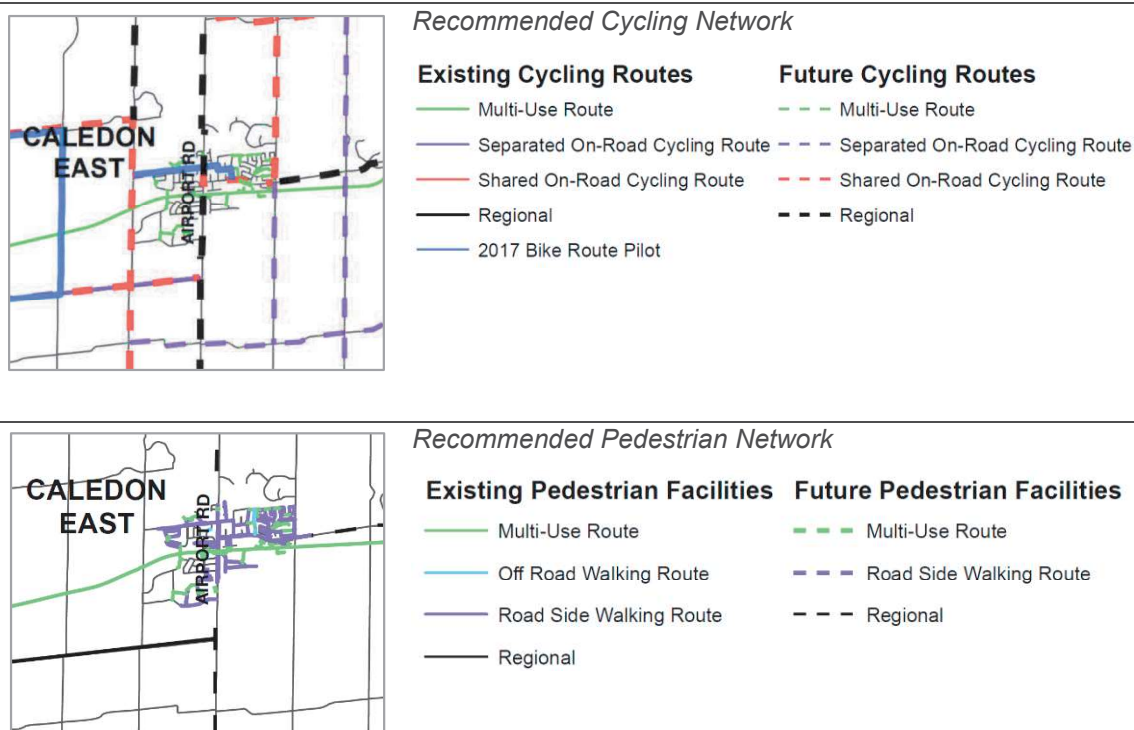
The Caledon East Community Improvement Plan (2014) identifies a long-term strategy to revitalize the community, promote private investment, and improve the quality of life of the community’s residents. The document identifies a number of goals and objectives of relevance to this EA, including:

- Supporting the design and implementation of a new generation of streetscape improvements and public realm improvements;
- Encouraging improvements to accessibility for all persons;
- Improving trailways and expanding or completing the trail network;
- Designing streetscape improvements to be accessible and to be pedestrian-oriented;
- Pursuing opportunities to expand the local cycling network and connections to a regional cycling network; and
- Encouraging other modes of transportation and transportation demand management, such as carpooling.

Town of Caledon Transportation Master Plan (2017)

The Town’s Transportation Master Plan (TMP) is a strategic planning document designed to identify and address the transportation needs of the Town to the year 2031. The plan identifies improvements to the existing road, cycling and pedestrian networks in Caledon. Proposed facilities within close proximity to the study are summarized in Exhibit 2-2.

Exhibit 2-2: Existing and planned transportation infrastructure identified through the Caledon TMP



Source: Caledon Transportation Master Plan

Airport Road Environmental Assessment, Mayfield Road to King Street (2015)

The Region undertook the Airport Road Environmental Assessment, from 1 kilometers north of Mayfield Road to 0.6 kilometers north of King Street. This adjacent EA recommends widening Airport Road from two to four lanes south of King Street and installing a two-lane roundabout at the King Street intersection. Growth rates and analysis methodologies in this report have been kept consistent, where appropriate, with the prior EA.

Traffic Studies

Four traffic studies were incorporated into this traffic engineering analysis including 15717 Airport Road Traffic Impact Study, 16114 Airport Road Traffic Impact Study, 5992 King Street Traffic Impact Study and 89 Walker Road West Traffic Impact Study. These studies reflect developments that are at various stages of approval along the corridor. The studies are summarized in Section 4.1.1 of this report.

Greater Toronto Area West

Greater Toronto Area (GTA) West if pursued may require updates to Town and Region Official Plans, transportation master plans, and revised development levels and horizons will require re-visiting the forecasts / recommendations of the EA.

2.2 Active Transportation

2.2.1 Region of Peel Sustainable Transportation Strategy (STS)

The Region of Peel's Sustainable Transportation Strategy (2018) defines the Region's roles and responsibilities relating to sustainable transportation modes, including walking, cycling, carpooling, transit, and teleworking. Of particular relevance to this study, the Sustainable Transportation Strategy (STS) identifies the Region's existing and proposed walking and cycling networks, as well as mode share targets for sustainable modes across the Region in support of the goal of encouraging residents to choose walking, cycling, public transit, carpooling or teleworking for 50% of peak period trips by the year 2041.

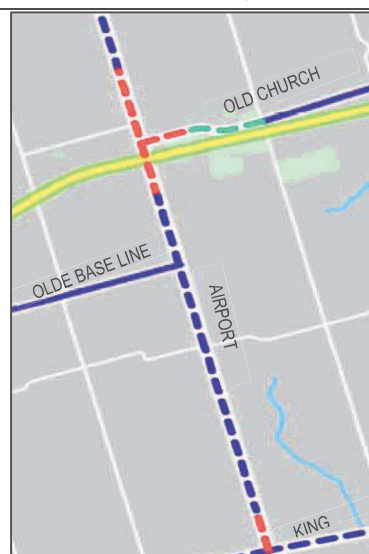
The Strategy identifies a number of key policy directions to inform this study including:

- Adopting a complete streets policy and pursuing Multi-Modal Level of Service (MMLOS) to evaluate road designs;
- Pursuing a Vision Zero target for vulnerable road users;
- Encouraging and supporting walking and cycling to and from schools;
- Providing comfortable, continuous walking routes (urban and rural settlement areas);
- Implementing measures to improve walkability along designated Pedestrian Improvement Areas and promoting walking for short trips; and
- Providing comfortable, continuous cycling facilities.

The STS is accompanied by two supporting plans, an Active Transportation Implementation Plan (ATIP) and a Transportation Demand Management Implementation Plan (TDMIP), both covering 2018-2022 (5 years). The ATIP provides a roadmap for Active Transportation programming and details how near-term programs recommended by the STS may be operationalized, including budgeting and staffing requirements.

Specific infrastructure improvements identified along the study area are summarized in Exhibit 2-3.

Exhibit 2-3: Summary of Proposed Walking and Cycling Infrastructure identified through Peel STS



Proposed Cycling Facilities

Proposed paved shoulders along rural portions of the study area and proposed bike lanes along the urban portions of the study area (continuous). Connections to cross-rides will be further discussed in the preliminary design phase.

Existing Facilities	
	Bike Lane
	Paved Shoulder
	Multi-use Trail
	Off-Road Trail of Regional Significance
	Greenbelt Route

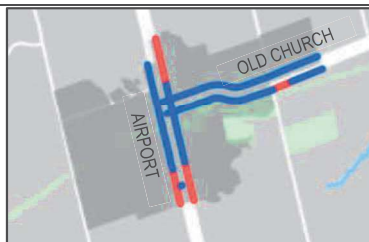
Proposed Facilities	
	Shared Route
	Paved Shoulder
	Bike Lane or Buffered Bike Lane
	Cycle Track
	Multi-Use Trail
	Off-Road Trail of Regional Significance



Pedestrian Improvement Corridor

A pedestrian improvement corridor is identified along Airport Road through Caledon East (north of Cranston Drive and south of Leamster Trail).

	Pedestrian Improvement Corridors
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Sidewalk Gaps

Sidewalk gaps to be addressed are noted on Airport Road north of Walker Road (east side) and south of the Foodland / Caledon East Public School driveway to Cranston Drive.

	Sidewalk Gap
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Source: Peel Sustainable Transportation Strategy

2.3 Goods Movement

The Region of Peel is situated in Southern Ontario and contains several multimodal goods movement hubs. The Region acts as a junction to several major freight routes as it is served by the 400-series highway network, two intermodal rail facilities, and Canada’s largest airport. To continue to effectively move goods throughout the Region, the Region of Peel developed the Strategic Goods Movement Network Study (SGMNS), published in April 2012. This provides for a hierarchical truck route network in the Region of Peel.

The SGMN identifies Airport Road as a primary truck route which would allow for all trucks to pass through Caledon East. Several roads currently having heavy truck or load restrictions have also been identified as potential primary truck routes, including Horseshoe Hill Road and Olde Base Line Road. These segments were reviewed in detail as part of a study being undertaken by IBI Group. It is possible that adopting these other segments as designated truck routes can provide an alternative to Airport Road and assist in directing heavy trucks away from Caledon East.

Two studies were developed in the Region under the SGMN that are relevant to the Airport Road corridor.

Caledon East Study (2015)

The Caledon East Study included assessment of traffic operations through Caledon East, and evaluated alternatives for a Caledon East bypass. The study determined that trucks were using Airport Road due to frequent signals and traffic delays associated with travel to and along Highway 10. The study considered a number of alternative corridors for a bypass around Caledon East. The study determined that bypass alternatives would entail major environmental, social, and community impacts. The study recommended that other strategic

alternatives such as encouraging more traffic to use Highway 10 would be preferable to a bypass.

Infrastructure Feasibility Analysis (2015)

The Infrastructure Feasibility Analysis was an evaluation of various corridors in Caledon that the SMGN identified as potential truck routes. The study determined that Olde Base Line Road could provide a network function in bringing trucks towards Highway 10 from Airport Road thus potentially reducing the volume of through trucks in Caledon East.

2.4 Transit

Currently, there are no municipal public transit services in the Town of Caledon, nor are there any along Airport Road between King Street and Huntsmill Drive. GO Transit provides inter-regional service in Caledon East with three bus routes: Route 37 Orangeville/Brampton, Route 38 Bolton/Malton/North York, and Route 38A Bolton/Malton/North York, none of which operate in the study area. The Town of Caledon is presently working on a Feasibility Study which will investigate the benefits and costs of providing public transit services within the township. However, due to the early stage of this study, implications associated with future transit, micro-transit, and ride-pooling services are not included in this report.

3 Existing Conditions

3.1 Road Network

The following provides a description of the corridor road network. The study area for this report is shown in Exhibit 3-1.

Huntsmill Drive is a two-lane east-west local road serving four residences under the jurisdiction of the Town of Caledon. Airport Road at 300 m north of Huntsmill Drive is set as the north limit of the study area. With no signage present, a speed limit of 50 km/h is assumed.

Leamster Trail is a two-lane east-west local road that serves a local residential area.

Walker Road is a two-lane east-west local road under the jurisdiction of the Town of Caledon. The road is surrounded by agricultural land on the west end but primarily serves residential homes nearing Airport Road. It has a posted speed of 40 km/h and is currently truck prohibited.

Old Church Road – Regional Road 22 is a two-lane east-west arterial road under the jurisdiction of the Region of Peel with a posted speed limit of 50 km/h. The road is currently truck permitted. At the intersection with Airport Road, the west side has a private driveway to an LCBO property. The driveway currently operates as stop control though the other three legs of the intersection are signalized. The intersection has poor geometries and unclear priority rules for traffic to and from the LCBO.

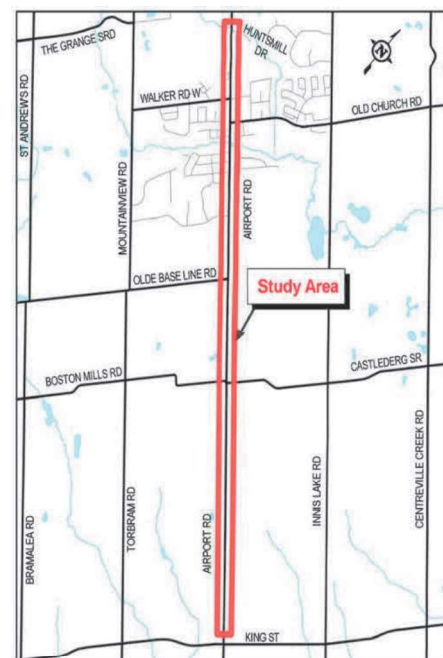


Exhibit 3-1: Study Area

Parsons Avenue, Emma Street, Mountcrest Road, Larry Street, Marion Street, and Hilltop Drive are two-lane east-west local roads with a posted speed limit of 40 km/h. They serve local residential areas.

Caledon Trailway Path is a signalized 'crossride' at Airport Road. The Caledon Trail runs 35 kilometers and connects through Caledon East. The trailway is not maintained in winter season and has a variety of uses such as: walking/jogging, cycling, horseback riding and cross-country skiing. A 'Crossride' is a type of crosswalk that does not require cyclists to dismount before crossing the intersection.

The Foodland Plaza access is a two-lane east-west access to Foodland Plaza.

Caledon Public School Access to Airport Road – The school access currently serves as an egress only with traffic able to turn left and right. The driveway has no designated sidewalk or pedestrian markings.

Cranston Drive is a two-lane east-west road serving a residential community west of Airport Road and connecting with Airport Road at a T intersection.

Olde Base Line Road – Regional Road 12 is a two-lane east-west 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 350 m from Olde Base Line Road and Airport Road intersection. The Olde Base Line Road west leg terminates at Airport Road. No parking is allowed in the vicinity of the subject site. The road is currently truck prohibited.

Boston Mills Road and Castleberg Side Road are two-lane east-west rural roads under the jurisdiction of the Town of Caledon. Airport Road at Castleberg Side Road / Boston Mills Road is an offset intersection configuration and is surrounded by agricultural land with scattered residential buildings. The posted speed limit is 60 km/h and is truck prohibited.

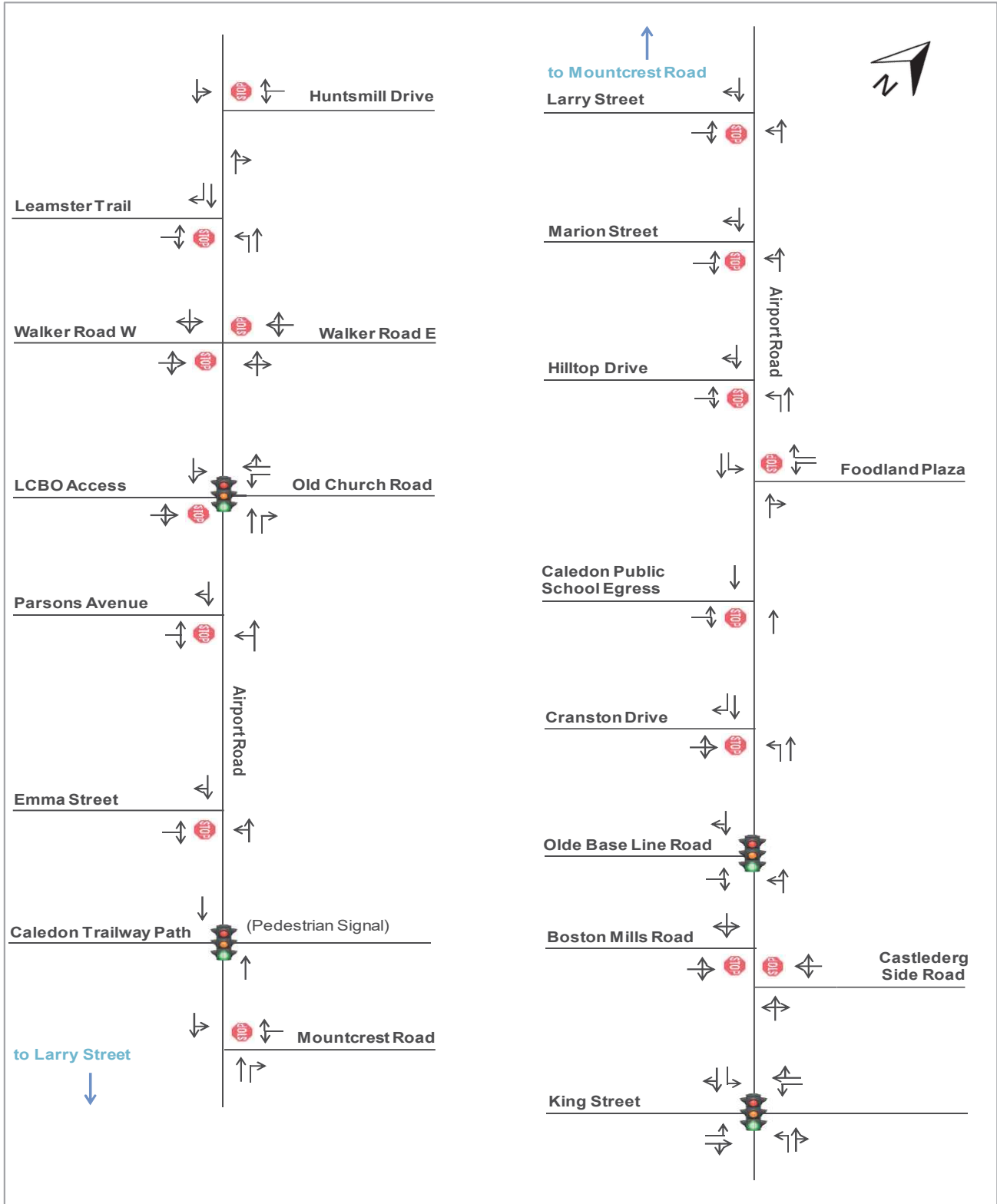
King Street – Regional Road 9 is a two-lane east-west major arterial road under the jurisdiction of the Region of Peel. King Street is mainly surrounded by agricultural land with scattered residential and commercial buildings, some commercial concentration is noted within the intersection of King Street and Airport Road. The posted speed limit on King Street at Airport Road is 70 km/h. Airport Road at 100 m north of King Street is set as the south limit of the study area. As recommended in a previous EA study, Airport Road and King Street intersection will be converted into a two-lane roundabout.

Exhibit 3-2 provides a list of intersecting streets within the study area, along with their road classification and posted speed limit. Exhibit 3-3 provides the existing intersection control type and lane configuration at each of these intersections. The majority of the study area intersections are located within the community of Caledon East, while intersection spacing is far greater along the remainder of the corridor.

Exhibit 3-2: Intersecting Streets within Study Area

Airport Road Intersection	Road Class	Cross-Section	Speed Limit	Additional Notes
Huntsmill Drive	Local	2-lane	50 km/h	Residential
Leamster Trail	Local	2-lane	40 km/h	Residential
Walker Road	Collector	2-lane	40 km/h	Truck traffic prohibited
Old Church Road	Medium Capacity Arterial	2-lane	50 km/h	Truck traffic permitted; unconventional intersection alignment
Parsons Avenue	Local	2-lane	40 km/h	Residential
Emma Street	Local	2-lane	40 km/h	Residential
Mountcrest Road	Local	2-lane	40 km/h	Residential
Larry Street	Local	2-lane	40 km/h	Residential
Marion Street	Local	2-lane	40 km/h	Residential
Hilltop Drive	Local	2-lane	40 km/h	Residential
Foodland plaza access	Retail Access	N/A	40 km/h	Serves retail parking area
Cranston Drive	Local	2-lane	40 km/h	Residential
Olde Base Line Road	Medium Capacity Arterial	2-lane	50 km/h	Truck traffic prohibited
Boston Mills Road	Collector	2-lane	60 km/h	Truck traffic prohibited
Castledeerg Side Road	Collector	2-lane	60 km/h	Truck traffic prohibited
King Street	Medium Capacity Arterial	2-lane	70 km/h	Intersection to be converted to a two-lane roundabout based on previous adjacent EA study

Exhibit 3-3: Existing Lane Configurations



3.2 Adjacent Land Use

The adjacent land use varies widely within the study area. Road characteristics and conditions differ greatly between the urban communities of Caledon East and Mono Road as compared to the rest of the corridor, which is largely rural.

Caledon East is a small community of 4,282 residents, according to the 2016 Census. The corridor section between Walker Road and Caledon Trailway represents the main downtown street within the community and includes numerous shops, restaurants, and service establishments. South of Caledon Trailway, the adjacent land use is primarily residential, including numerous houses fronting directly onto Airport Road. A retail / commercial plaza exists on the east side of the corridor near the south end of the community, while Caledon East Public School is located off of Airport Road towards the west. Exhibit 3-4 represents Schedule D of the Town of Caledon Official Plan, and depicts land uses within the Caledon East community.

Mono Road is a very small community centred about the intersection of Airport Road & Boston Mills Road. The community comprises of a mix of residential houses, small shops and restaurants, and several automotive related establishments.

The remaining sections of the study corridor – including north of Caledon East, between Caledon East and Mono Road, and south of Mono Road – is rural, and adjacent land use is predominantly agricultural. Several forested areas also exist within the study area, and are identified as “Environmental Policy Areas” in the Town of Caledon Official Plan.

3.3 Existing Traffic Operations

Section 3.3.1 provides an overview of the approach used for assessing existing and future traffic operations. Existing conditions were analyzed given a base year of 2017, while future conditions were analyzed for multiple horizon years of 2021, 2031, and 2041.

3.3.1 Traffic Analysis Approach

3.3.1.1.1 Signalized and Unsignalized Intersection Analysis

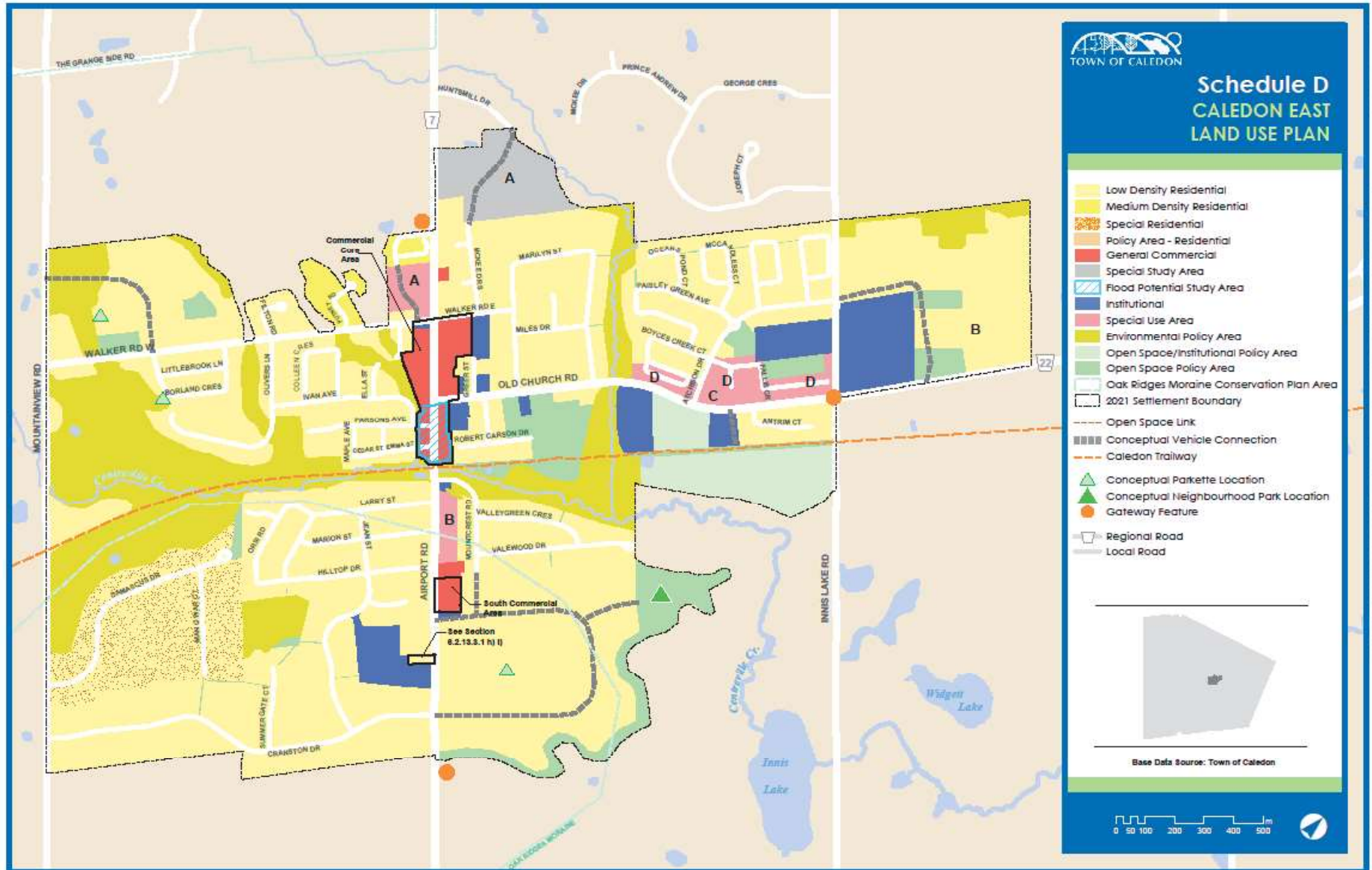
Traffic analysis was conducted using Synchro (version 9) and following Highway Capacity Manual (HCM 2000) methodologies of intersection operations analysis. Analysis periods are limited to the weekday a.m. and p.m. peak hours, when site traffic and background traffic will be highest.

All critical traffic movements identified in the Synchro analysis will be outlined and discussed, as per following conditions based on the Region of Peel’s Traffic Impact Study (TIS) guidelines:

For signalized and unsignalized intersections,

- Volume/capacity (V/C) ratios for overall intersection operations, through movements or shared through/turning movements equal 0.9 or above;
- V/C ratios for exclusive movements exceed 1.00; and
- The estimated 95th percentile queue lengths for an individual movement exceeds the available lane storage.

Exhibit 3-4: Caledon East Land Use Plan



Source: Town of Caledon Official Plan (November, 2016)

Level-of-service (LOS) is a measure of performance based on control delay, as defined in Exhibit 3-5.

Exhibit 3-5: Intersection LOS Reference

HCM	CONTROL DELAY PER VEHICLE (S)	
	Signalized	Unsignalized
A	≤10	≤10
B	>10 and ≤20	>10 and ≤15
C	>20 and ≤35	>15 and ≤25
D	>35 and ≤55	>25 and ≤35
E	>55 and ≤80	>35 and ≤50
F	>80	>50

Default parameter values listed in the Region’s TIS guideline were assumed. This includes an ideal saturation flow rate of 1900 vehicles per hour, peak hour factor of 1.0, lane width for Regional Road of 3.7 m and lane width for intersecting streets/accesses of 3.5 m.

The Institute of Transportation Engineers (ITE) Guidelines was used to determine whether left-turn lanes are warranted. The ITE Guidelines for left-turn lanes provide exhibits summarizing the advancing traffic volume thresholds based on opposing traffic volumes and left turn percentages. If the actual advancing traffic volume (representing the total approach volume of the left turning movement) equals or exceeds the tabulated value, a left-turn lane is justified for the major approach.

Operational concerns or deficiencies noted in the studied horizon years are identified and addressed through recommendations on potential mitigation measures and/or operational improvements.

3.3.1.1.2 Roundabout Analysis

The Region of Peel has a policy which states that roundabouts should be explored at intersections where signals or other improvements are under consideration. Roundabouts provide a number of benefits over signalized intersections including reduced delays during off-peak times, reduction in fatal and serious injury collisions, encouraging lower traffic speeds, and lower maintenance costs.

Roundabouts were analyzed using ARCADY per regional guidelines. The following geometric parameters Exhibit 3-6 were used.

Exhibit 3-6: ARCADY Geometric Parameters

Parameters	Single-Lane Entry	Flared Two-Lane Entry	Two-Lane Approach And Entry*
R (Entry Radius)	25	25	25
Phi (Conflict Angle)	20	20	20
V (Approach Half Width)	4.25	4.25	4
E (Entry Width)	4.25	8	8
L' (Flare Length)	0	20	10
D (Inscribed Circle Diameter)	55	49	49

*Two-lane roundabouts not recommended at current time

In addition, a Network Capacity Scaling factor of 90% (10% reduction in roundabout capacity) was added to the ARCADY analysis to reflect lesser North American experience with roundabouts.

The Region of Peel's Roundabout Feasibility Screening Tool was also used to evaluate the potential roundabout locations. The Roundabout Feasibility Screening Tool is a planning-level tool used to determine if a subject intersection warrants more detailed analysis for the installation of a roundabout. It takes into consideration the existing traffic volumes, operational concerns, existing traffic control proximity to adjacent signals, vertical geometry and property constraints. Each item is identified as roundabout supportive, non-supportive or neutral, and an overall recommendation is provided in terms of proceeding with planning for a roundabout.

3.3.2 Data Collection

Traffic count data and signal timing information was collected from the Region of Peel. All turning movement counts (TMCs) used for this study were conducted within the past two years and so should reflect current traffic patterns within the study area. Exhibit 3-7 provides a summary of dates on which this information was collected/recorded, and all turning movement counts are provided in the Appendix A.

As part of the data collection program, comments from the public and stakeholders related to traffic operations were also reviewed. Due to public concerns, analysis of a private driveway north of Boston Mills Road was included in the analysis and is provided under Section 3.3.3.1.1 .

Exhibit 3-7: Traffic Count and Signal Timing Data Summary

Airport Road Intersection	Control Type	Date Of TMCs	Date Of Signal Timing
Huntsmill Drive	Unsignalized	25-Oct-16	-
Leamster Trail	Unsignalized	25-Oct-16	-
Walker Road East / West	Unsignalized	25-Oct-16	-
Old Church Road	Signalized	25-Oct-16	31-Jan-17
Parsons Avenue	Unsignalized	20-Oct-16	-
Emma Street	Unsignalized	20-Oct-16	-
Caledon Trailway Path	Signalized	20-Oct-16	31-Jan-17
Mountcrest Road	Unsignalized	20-Oct-16	-
Larry Street	Unsignalized	20-Oct-16	-
Marion Street	Unsignalized	20-Oct-16	-
Hilltop Drive	Unsignalized	20-Oct-16	-
Foodland Plaza	Unsignalized	20-Oct-16	-
Cranston Drive	Unsignalized	20-Oct-16	-
Olde Base Line Road	Signalized	20-Oct-16	31-Jan-17
Castleberg Side Road / Boston Mills	Unsignalized	20-Oct-16	-
King Street	Signalized	6-Apr-16	31-Jan-17

3.3.3 2017 Traffic Operations

The existing intersection capacity analysis represents traffic operations during base year 2017. The following annual compounded growth rates were applied to count volumes obtained prior to 2017 in order to bring counts to a consistent base year:

- 1.75% growth rate for southbound volumes in a.m. peak hour and northbound volumes in p.m. peak hour; and,
- 1.5% growth rate for northbound volumes in a.m. peak hour and southbound volumes in p.m. peak hour.

Analysis was conducted for weekday a.m. and p.m. peak hour conditions. Growth rates rationale is discussed further in Section 4.1.2 to 4.1.5 and existing (2017) traffic volumes illustrated in Exhibit 3-8.

A summary of critical movements identified in the existing conditions analysis is provided in Exhibit 3-9, while a detailed Synchro output is provided in Appendix B. Note that individual movement level-of-service for unsignalized intersections minor approaches are reported regardless of whether being critical or not for the purpose of this study.

Exhibit 3-8: Existing (2017) Traffic Volumes

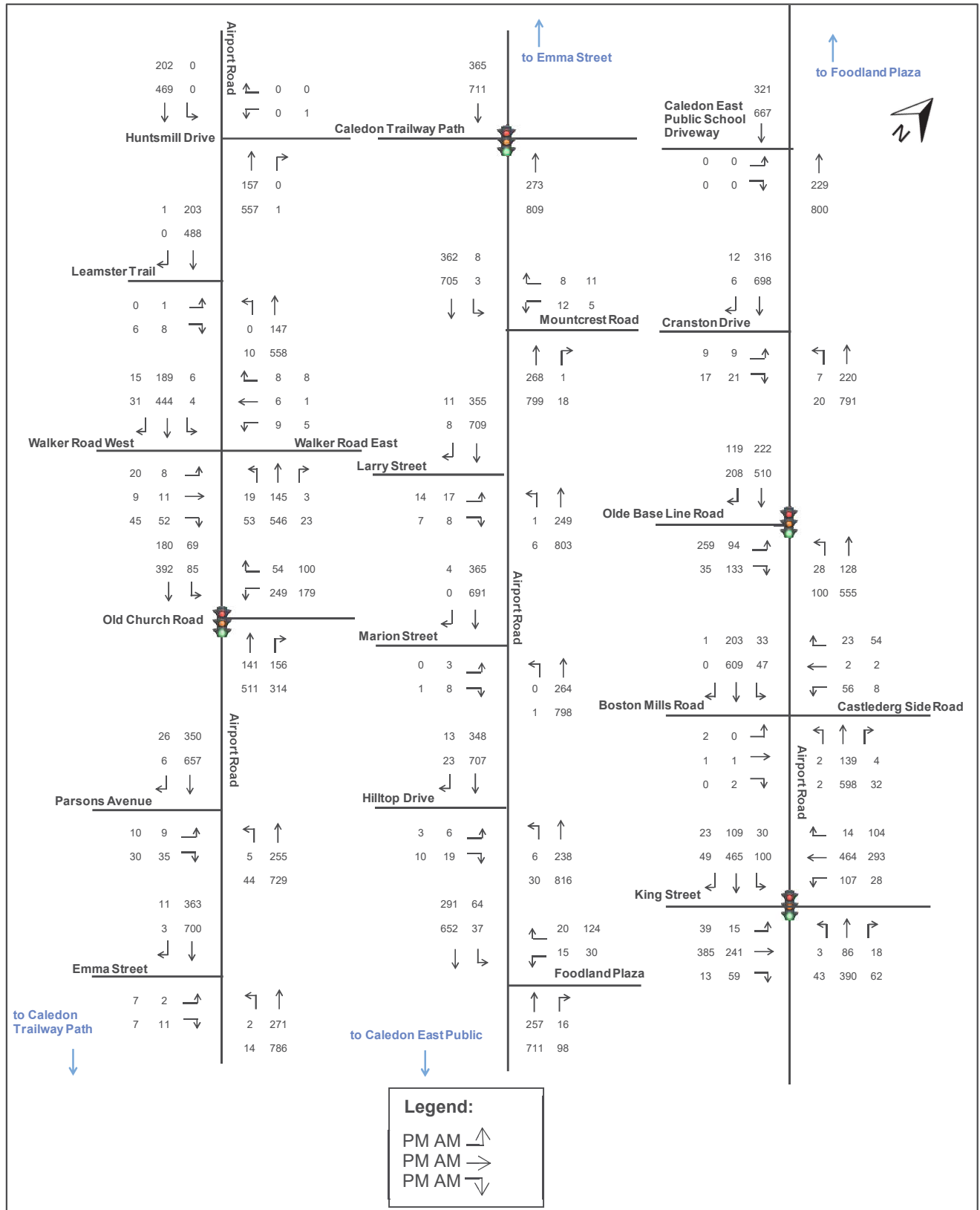


Exhibit 3-9: Existing Critical Movements Summary

Intersecting Road (w/ Airport Road)	Peak Hour	Overall LOS	Critical Movements				
			Mvmt	LOS	Delay (s)	V/C Ratio	95 th %ile Queue (m)
Huntsmill Drive (unsignalized)	AM	-	WB	A	0	0.00	0
	PM	-	WB	B	15	0.00	0
Leamster Trail (unsignalized)	AM	-	EB	B	12	0.02	0
	PM	-	EB	A	9	0.01	0
Walker Road (unsignalized)	AM	-	EB	B	13	0.14	4
			WB	B	14	0.05	1
	PM	-	EB	B	15	0.16	4
			WB	C	17	0.04	1
Old Church Road	AM	B	(no critical movements)				
	PM	A	(no critical movements)				
Parsons Avenue (unsignalized)	AM	-	EB	B	15	0.10	3
	PM	-	EB	B	14	0.09	2
Emma Street (unsignalized)	AM	-	EB	B	14	0.03	1
	PM	-	EB	C	17	0.04	1
Mountcrest Road (unsignalized)	AM	-	WB	C	15	0.05	1
	PM	-	WB	C	18	0.05	1
Larry Street (unsignalized)	AM	-	EB	C	17	0.08	2
	PM	-	EB	C	19	0.08	2
Marion Street (unsignalized)	AM	-	EB	B	15	0.03	1
	PM	-	EB	B	10	0.00	0
Hilltop Drive (unsignalized)	AM	-	EB	C	15	0.07	2
	PM	-	EB	B	14	0.03	1
Foodland Plaza (unsignalized)	AM	-	WBL	C	20	0.06	1
			WBR	A	10	0.03	1
	PM	-	WBL	D	27	0.15	4
			WBR	C	18	0.30	10
Caledon East (P.S.) Driveway (unsignalized)	AM	-	EB	--	--	--	--
	PM	-	EB	--	--	--	--
Cranston Drive (unsignalized)	AM	-	EB	C	15	0.08	2
	PM	-	EB	B	15	0.06	2
Olde Base Line Road (signalized)	AM	B	(no critical movements)				
	PM	B	(no critical movements)				
Boston Mills Road / Castlederg Side Road (unsignalized)	AM	-	EB	B	15	0.01	0
			WB	C	21	0.26	8
	PM	-	EB	C	20	0.01	0
			WB	B	14	0.11	3
King Street (signalized)	AM	C	WBTR	E	54	0.91	142
	PM	C	(no critical movements)				

Overall, the intersections within the study area operate at a satisfactory level of service under existing conditions. All of the intersections operate under capacity with very few critical movements.

3.3.3.1.1 Plant Nursery Business North of Boston Mills Road

There is a local nursery business named Glen Echo Nurseries Inc. located approximately 220 m north of Boston Mills Road. The Region has been receiving complaints about traffic and safety issues at the entrance of this local business, which are compounded by the misaligned intersection of Airport Road & Boston Mills Road / Castlederg Side Road located nearby.

Traffic data was not collected during peak season for the nursery, and therefore site traffic was instead estimated using ITE Trip Generation Manual (9th edition). The area of the site was estimated using Google Map measurements. Exhibit 3-10 summarizes the land use code, trip generation rates and site traffic volumes. The site traffic split in half for inbound and outbound traffic. There is a large community north of the site; therefore, for site traffic distribution, it was assumed that 60% of the traffic is from north of the site, and 40% of the traffic is from south of the site. The estimated turning movements are illustrated in Exhibit 3-11.

The site traffic was modelled in Synchro under existing conditions, and the results are summarized in Exhibit 3-12. A detailed Synchro report is included in Appendix B. Under existing conditions, the entrance operates well at LOS C or better. There is no significant delays observed for the minor approach.

A left-turn lane warrant was run for the northbound approach based on ITE Guidelines for Left-Turn Lanes, and summarized in Exhibit 3-13. As shown in the exhibit, a left-turn lane is not warranted for the northbound in the a.m. peak but is warranted in the p.m. peak. Detailed ITE Guidelines are included in Appendix G and the potential for improvements along this portion of the corridor are re-visited in the future conditions analysis.

Exhibit 3-10: ITE Trip Generation Summary by the Local Nursery Business

Land Use (Code)	Site Statistics	AM		PM	
		Rate	Trips	Rate	Trips
Nursery – Garden Center (817)	21,000 ft ²	2.43	52	6.94	146

Exhibit 3-11: Estimated Traffic Volumes of Plant Nursery Entrance

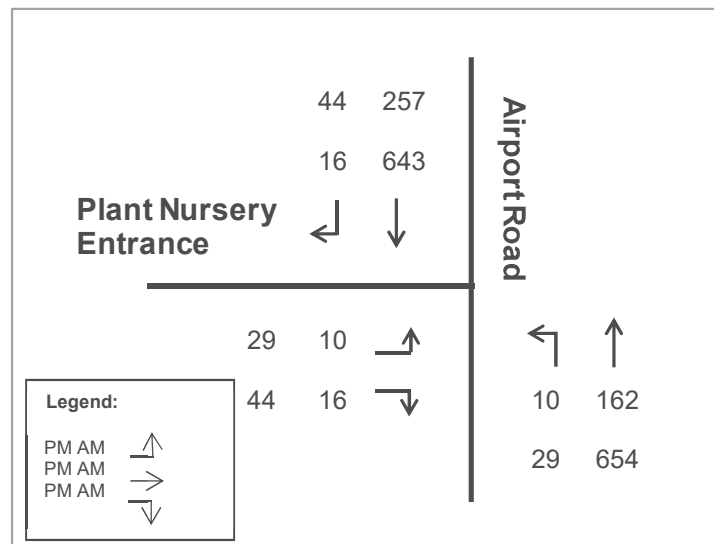


Exhibit 3-12: Existing Condition Summary for the Local Nursery Site Entrance

Location	Peak Hour	Overall LOS	Critical Movements				
			Mvmt	LOS	Delay (s)	V/C	95 th %ile Queue (m)
Local Nursery Site Entrance on Airport Road	AM	-	EB	B	15	0.06	2
	PM	-	EB	B	15	0.17	5

Exhibit 3-13: Left-Turn Lane Warrant for Airport Road Northbound & Local Nursery Site Entrance

Approach	Left Turn %	Opposing Traffic Volume	Advancing Traffic Volume Threshold	Advancing Traffic Volume	Warranted
NBL (AM)	5.8%	659	175 (for 6%, 650vph)	172	NO
NBL (PM)	4.2%	301	371 (for 4%, 300vph)	683	YES

4 Future Traffic Operations and Development of Traffic Mitigation Measures

4.1 Traffic Growth Projections

To determine the future need for improvements and lane requirements, travel demand forecasts were created for the review of 2021, 2031, and 2041 horizon years. Truck percentages and conflicting pedestrians were carried forward from existing conditions.

4.1.1 Future Developments and Traffic Study Review

Several developments are expected within the study area (Town of Caledon and community of Sandhill) in the horizon of this traffic study. They will contribute significant traffic volumes to the Airport Road corridor. Three traffic studies were provided from the Region of Peel to assist with development of future traffic growth. A short description of each is provided below with the full traffic studies available online.

- **16114 Airport Road** (Shacca Caledon Holdings), the subject site is located at the northwest quadrant of Airport Road and Walker Road East/West in the Town of Caledon. The subject property is approximately 4.09 ha in size and is proposed to consist of 38 condominium townhouse units with two commercial buildings which includes a total gross floor area of 1,375 m². The Traffic Impact Study was prepared by C.F. Crozier & Associates Inc. and is dated March 2017. The generated site traffic taken from this study is 40 two-way trips in the a.m. peak hour and 88 two-way trips in the p.m. peak hour. The full build out year for this development is proposed to be 2019 but has been included in the 2021 analysis and subsequently 2031 and 2041 analysis.
- **15717 Airport Road** (Triple Crown Line Development Inc.), the subject site is located approximately 500 m north of Airport Road and Olde Base Line Road intersection and southeast quadrant of Airport Road and Foodland Plaza in the Town of Caledon. The overall development of the site area is approximately 28.65 ha of residential land and includes 606 townhouse units and 42 senior house units. The Traffic Impact Study was prepared by Cole Engineering Group Ltd. and is dated June 2017. The generated site traffic taken from this study is 274 two-way trips in the a.m. peak hour and 326 two-way trips in the p.m. peak hour. The full build out year for this development is proposed to be 2022 but has been included in the 2021, 2031 and 2041 analysis.
- **5992 King Street** (Cantam Group Ltd.), the subject site is located at the northwest quadrant of Airport Road and King Street in the Sandhill Settlement Area. The subject property is planned to include eight fueling stations, a 2150 ft² convenience store, and a 2000 ft² fast food restaurant with a drive through window. The Traffic Impact Study was prepared by Asurza Engineers and is dated October 2016. The generated site traffic taken from this study is 123 two-way trips in the a.m. peak hour and 109 two-way trips in the p.m. peak hour. The build out of this development is anticipated to be by the second quarter of 2018 but has been included in the 2021 analysis and subsequently 2031 and 2041 analyzes.
- **89 Walker Road West** (Castle of Caledon Corp.), the subject site is located at the north-east corner of Walker Road West and Mountainview Road in the Town of Caledon. The subject property is approximately 24.91 ha in size and

is proposed to include 203 residential dwelling units. The Traffic Impact Study was prepared by Cole Engineering Group Ltd., dated October 2013. The construction is anticipated to begin in 2017 with proposed build out year of 2022 and has been included in both 2031 and 2041 analysis.

- **Other developments** – other planned developments that may affect the corridor include a small residential development east of Airport Road connecting to McKee Drive.

Results taken from the three traffic studies are likely conservative as there would be some internal uses (pass-by trips) along the corridor between the developments which would reduce overall trips generated. A summary of the total trips generated are shown in Exhibit 4-1.

Exhibit 4-1: Future Developments Trip Generations Summary

Development	AM Trips			PM Trips		
	In	Out	Total	In	Out	Total
16114 Airport Road	14	26	40	48	40	88
15717 Airport Road	48	227	275	217	109	326
5992 King Street	62	61	123	56	53	109
89 Walker Road West	37	114	151	126	73	199

The future lane configurations for proposed development accesses were adopted from their respective TIS reports. Exhibit 4-2 illustrates the future corridor lane configurations assuming current geometric configurations with proposed accesses to future developments.

The assignments for all future developments generated trips are presented in Exhibit 4-3. The assignments were taken from the three traffic studies, which were based on the percentages of existing TMCs of individual intersections and directions.

4.1.2 Growth Comparison from Relevant Studies

The Town of Caledon and the Region of Peel population and employment growth in addition to environmental reports were first considered in the preparation of the traffic growth forecast. Relevant documents are listed as follows:

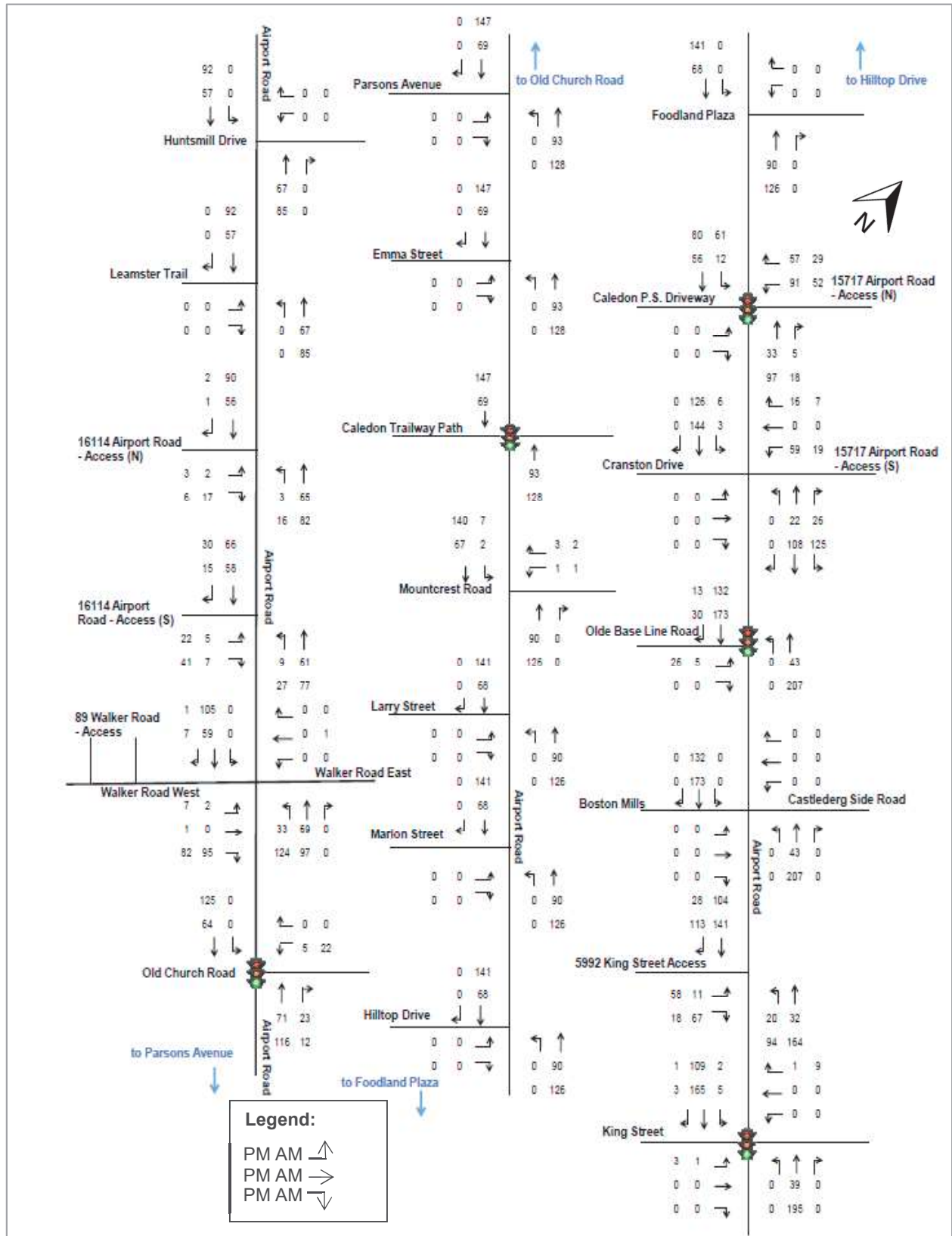
- **Town of Caledon** – “Town of Caledon Transportation Master Plan” (2017); “Town of Caledon Official Plan” (2016)
- **Region of Peel** – “Long Range Transportation Plan” (2012); “Environmental Study Report for Airport Road (1.0 km north of Mayfield to 0.6 km north of King)”

Examination of above documents shows that population and employment between 2011 and 2031 growth rate is estimated to be between 2% and 3%.

Exhibit 4-2: Future Lane Configuration (Base)



Exhibit 4-3: Future Developments Trip Assignments



4.1.3 Region Travel Demand Model Forecasts

The Region of Peel’s EMME model was examined to extract morning peak hour northbound and southbound volumes for years 2011 (base), 2021, 2031 and 2041. The model reflects planned improvements and future modal shares in the Region. These volumes were compared at a number of links along the Airport Road corridor, and corresponding annual compound growth rates were calculated. These growth rates are summarized in Exhibit 4-4.

Exhibit 4-4: Modelled Growth Rates in EMME

CORRIDOR LOCATION	2011-2021		2021-2031		2031-2041		LINK
	SB	NB	SB	NB	SB	NB	
North of Old Church Road	10.2%	1.0%	0.7%	5.4%	1.0%	0.5%	1.7%
Olde Base Line Road – Old Church Road	12.3%	3.5%	1.3%	1.9%	1.9%	0.5%	1.8%
Castledeerg Side Road – Olde Base Line Road	4.7%	2.1%	3.1%	1.0%	-2.6%	-1.1%	1.2%
King Street – Castledeerg Side Road	4.7%	2.1%	3.1%	1.0%	-2.6%	-1.1%	1.3%
Total							1.5%

In the above exhibit, it was observed that there are negative growth rates for Olde Base Line Road to Old Church Road between 2031 and 2041. This is likely due to traffic diverted to other major north-south arterials such as Regional Road 50 and Highway 10 (east and west of Airport Road).

Total link volumes for Airport Road from 2011 to 2041 were examined, and results show that the study corridor is expected to increase at an average annual compound rate of 1.5%. Southbound growth rates between Olde Base Line Road to North of Old Church Road between 2011 and 2021 were excluded in this calculation (10.2% and 12.3%).

It is noted that southbound volumes are significantly higher in the a.m. peak and lower in the p.m. peak. This behaviour is expected and should reflect commuters going to and returning from work.

4.1.4 Historical Growth

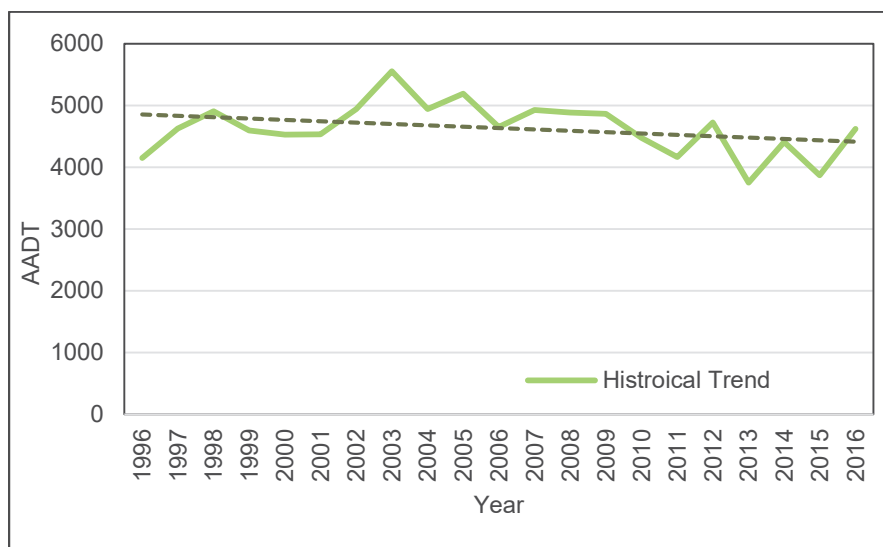
Historical and existing Annual Average Daily Traffic (AADT) volumes from 1996 to 2016 on Airport Road within the study area were analyzed to determine the historical growth rate. Exhibit 4-5 shows the current (2016) AADT volumes on Airport Road within the study area, and the historical growth trends are presented in Exhibit 4-6.

The analysis suggests that volumes within the study area, the traffic volumes fluctuate over the past twenty years, and the average growth rate of 2016 compare to previous years is less than 1 percent.

Exhibit 4-5: Existing AADT on Airport Road

LOCATION	NORTHBOUND AADT	SOUTHBOUND AADT
0.1 km North of Old School Rd	4279	4421
2.8 km North of King St	--	--
0.8 km North of Olde Base Line Rd	5676	5928
1.5 km North of Old Church Rd	3971	4126
1.1 km North of Patterson Sideroad	4238	4343

Exhibit 4-6: Historical AADT Trends



4.1.5 Summary and Future Forecasts

Based on the information presented above, it was concluded that directional growth rates would be used where 1.5% (rounded from 1.39%) represents the growth rate for vehicles going northbound in the a.m. peak hour and southbound in the p.m. peak hour. Meanwhile, 1.75% (rounded from 1.51%) represents growth rate for vehicles going southbound in the a.m. peak hour and northbound in the p.m. peak hour. These directional growth rates were applied to predict traffic volumes in the future horizon years.

Forecasts for 2021, 2031, and 2041 are provided in Exhibit 4-7, Exhibit 4-8, and Exhibit 4-9, respectively.

Exhibit 4-7: Future 2021 Traffic Volumes

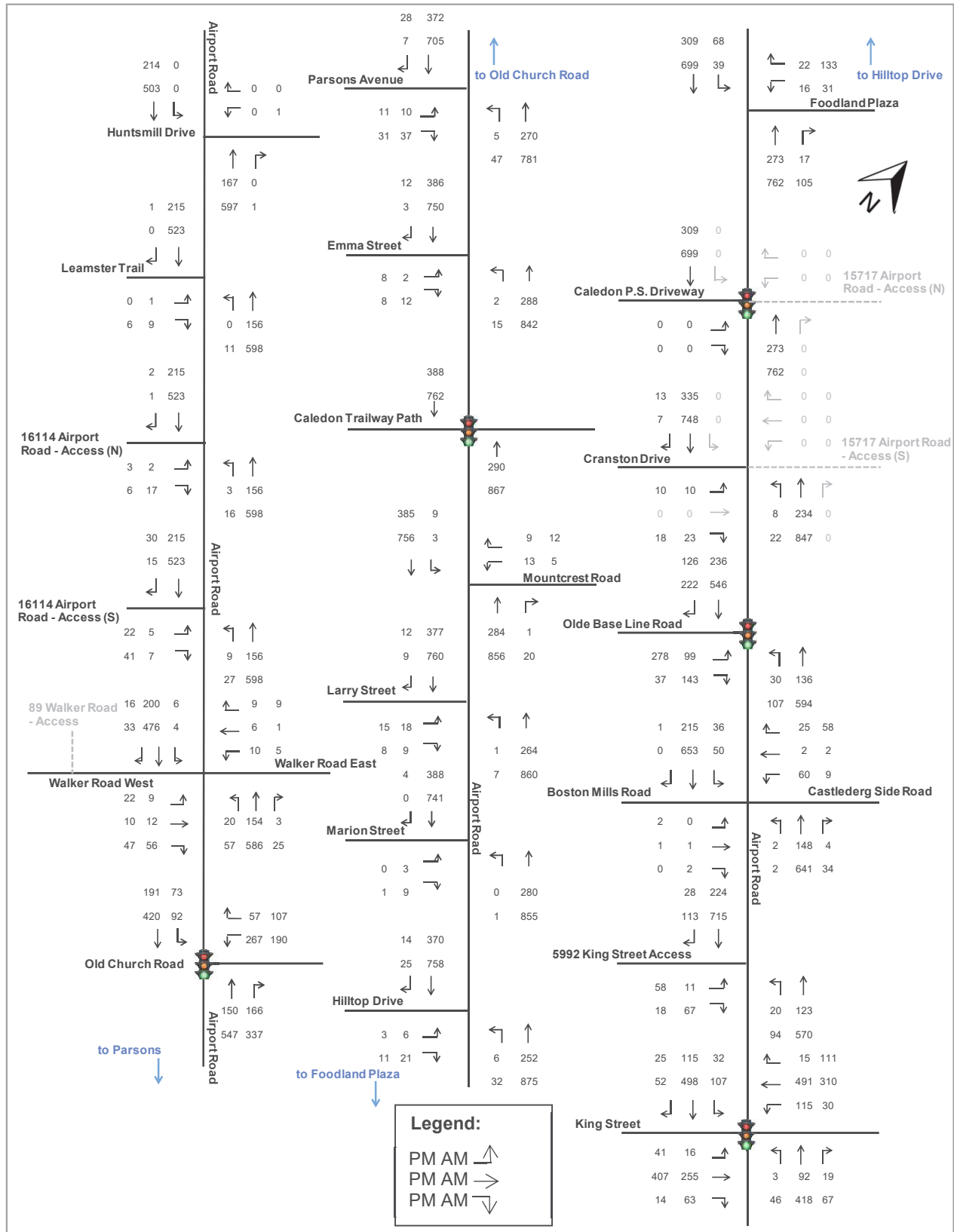


Exhibit 4-8: Future 2031 Traffic Volumes

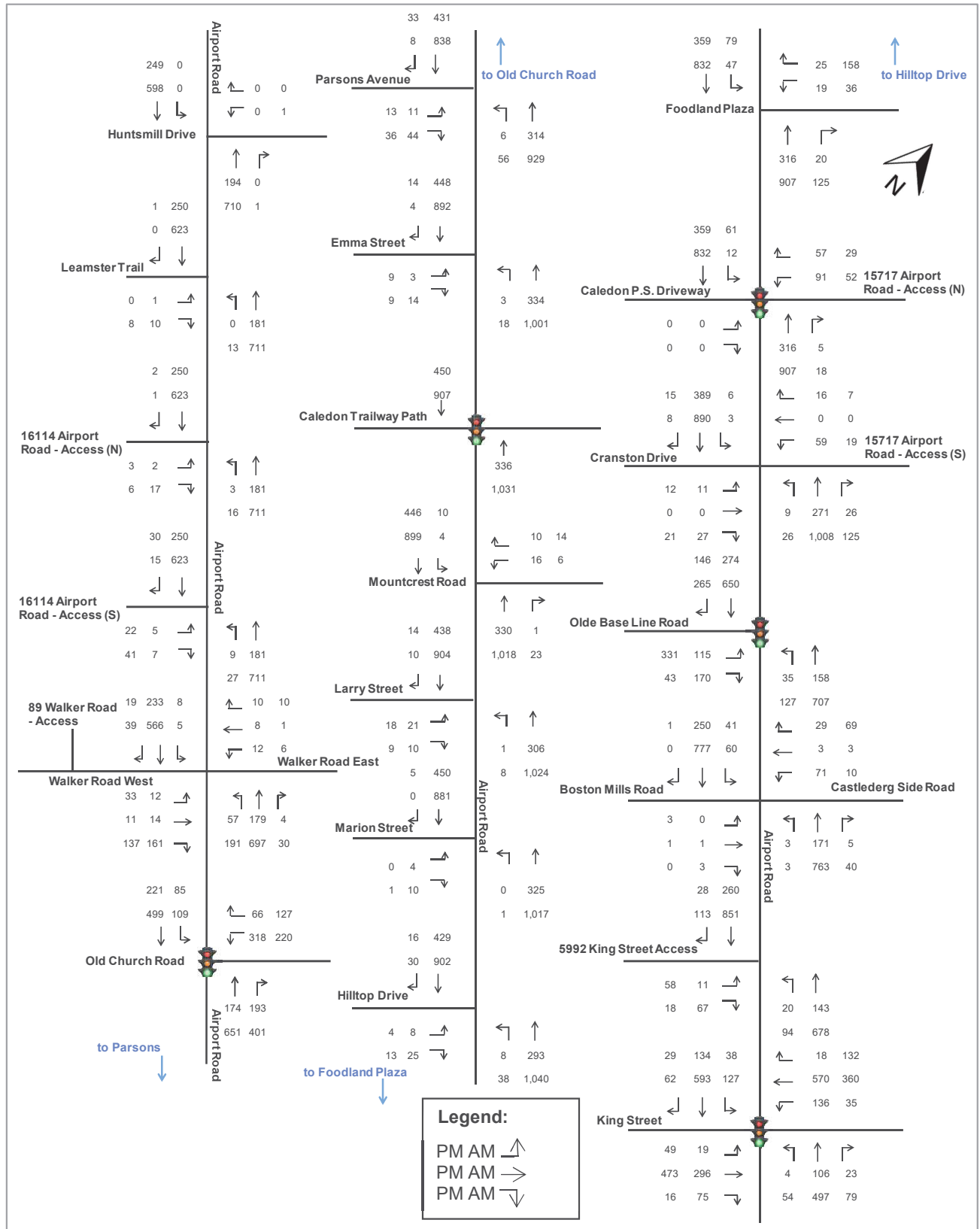
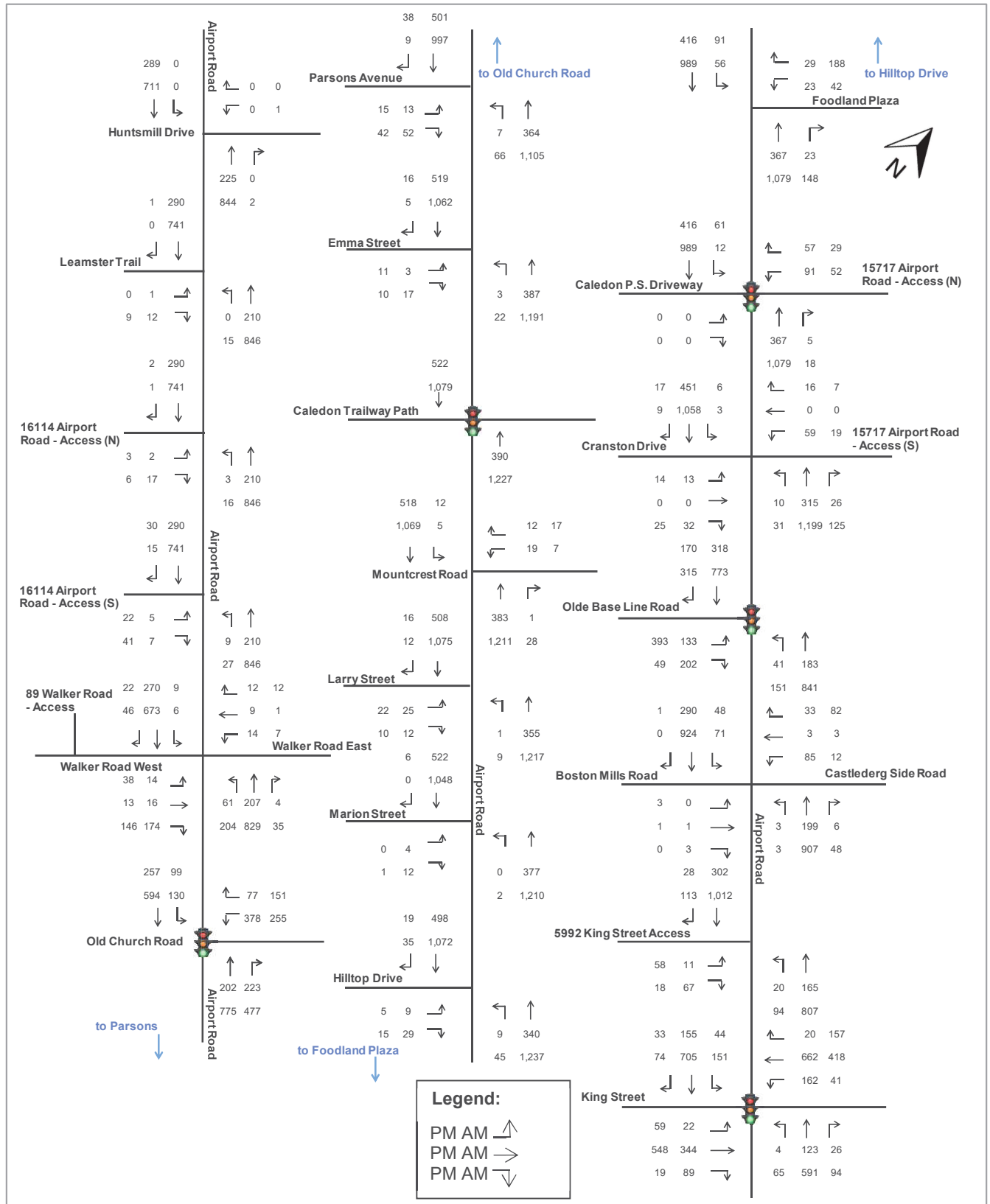


Exhibit 4-9: Future 2041 Traffic Volumes



4.2 2021 Traffic Operations

4.2.1 2021 Intersection Capacity Analysis – Do Nothing

Exhibit 4-11 summarized the 2021 horizon year LOS and critical movements for the study intersections assuming current geometric configurations with proposed accesses to future developments. Intersection optimization features in Synchro were used to optimize signal timing splits for all signalized intersections. Detailed Synchro HCM reports are included in Appendix C. Overall, the intersections within the study area will operate at acceptable level of service under future 2021 conditions. All of the intersections will operate under capacity with very few critical movements.

4.2.2 2021 Roundabout Analysis

There are five intersections analyzed as potential roundabout locations, as listed below:

- Airport Road & Huntsmill Drive,
- Airport Road & Walker Road,
- Airport Road & Cranston Drive,
- Airport Road & Olde Base Line Road,
- Airport Road & Boston Mills Road / Castlederg Side Road.

Roundabout feasibility screenings required by the Region were completed and provided in Appendix I.

The ARCADY analysis based on 2021 traffic volumes for the five potential roundabout locations are presented in Exhibit 4-10. Detailed ARCADY reports are included in Appendix H.

Exhibit 4-10: ARCADY Roundabout Analysis (2021 Volumes)

Approach	Airport Road and Huntsmill Drive		Airport Road and Walker Road		Airport Road at Cranston Drive		Airport Road at Olde Base Line Road		Airport Road and Boston Mills Road	
	AM LOS	PM LOS	AM LOS	PM LOS	AM LOS	PM LOS	AM LOS	PM LOS	AM LOS	PM LOS
EB	--	--	A	A	A	A	A	A	A	A
NB	A	A	A	A	A	B	A	B	A	A
WB	A	A	A	A	--	--	--	--	A	A
SB	A	A	A	A	A	A	B	A	A	A

The results indicate that all five intersections will operate well as single-lane entry roundabouts with residual capacity during both the a.m. and p.m. peak periods. Furthermore, the analysis indicates that all of the approaches will operate at acceptable levels of service (LOS A or B) during both the a.m. and p.m. peak periods.

4.3 2031 Traffic Operations

4.3.1 2031 Intersection Capacity Analysis – Do Nothing

Exhibit 4-12 summarized the 2031 horizon year LOS and critical movements for the study intersections assuming current geometric configurations with proposed accesses to future developments. Intersection optimization features in Synchro were used to optimize signal timing splits for all signalized intersections. Detailed Synchro HCM reports are included in Appendix D.

Exhibit 4-11: 2021 Intersection Operations – Do Nothing

Intersection Road (w/ Airport Road)	Peak Hour	Overall LOS	Critical Movement				
			Mvmt	LOS	Delay (s)	V/C	95 th %tile Queue (m)
Huntsmill Drive (unsignalized)	AM	-	WB	A	0	0.00	0
	PM	-	WB	C	15	0.00	0
Leamster Trail (unsignalized)	AM	-	EB	B	12	0.02	1
	PM	-	EB	A	9	0.01	0
16114 North Access (unsignalized)	AM	-	EB	B	12	0.04	1
	PM	-	EB	B	12	0.02	0
16114 South Access (unsignalized)	AM	-	EB	B	13	0.03	1
	PM	-	EB	B	13	0.12	3
Walker Road (unsignalized)	AM	-	EB	B	14	0.16	4
			WB	B	15	0.06	2
	PM	-	EB	C	16	0.19	5
			WB	C	17	0.05	1
Old Church Road (signalized)	AM	B	(no critical movements)				
	PM	B	(no critical movements)				
Parsons Avenue (unsignalized)	AM	-	EB	C	16	0.12	3
	PM	-	EB	C	16	0.11	3
Emma Street (unsignalized)	AM	-	EB	B	15	0.04	1
	PM	-	EB	C	18	0.06	1
Mountcrest Road (unsignalized)	AM	-	WB	C	16	0.06	2
	PM	-	WB	C	19	0.06	2
Larry Street (unsignalized)	AM	-	EB	C	19	0.09	2
	PM	-	EB	C	21	0.09	2
Marion Street (unsignalized)	AM	-	EB	C	15	0.03	1
	PM	-	EB	B	11	0.00	0
Hilltop Drive (unsignalized)	AM	-	EB	C	16	0.08	2
	PM	-	EB	B	14	0.03	1
Foodland Plaza (unsignalized)	AM	-	WBL	C	22	0.07	2
			WBR	A	10	0.03	1
	PM	-	WBL	D	30	0.18	5
			WBR	C	19	0.35	12
Caledon East P.S. Driveway (unsignalized)	AM	-	EB	--	--	--	--
	PM	-	EB	--	--	--	--
Cranston Drive (unsignalized)	AM	-	EB	C	17	0.10	2
	PM	-	EB	C	16	0.08	2
Olde Base Line Road (signalized)	AM	B	(no critical movements)				
	PM	C	(no critical movements)				
Boston Mills Road / Castlederg Side Road (unsignalized)	AM	-	EB	C	16	0.01	0
			WB	C	20	0.25	7
	PM	-	EB	C	25	0.02	0
			WB	B	15	0.12	3
5992 King Access (unsignalized)	AM	-	EB	C	16	0.19	5
	PM	-	EB	C	21	0.26	8
King Street (signalized)	AM	D	WBTR	E	59	0.94	155
	PM	C	(no critical movements)				

Exhibit 4-12: 2031 Intersection Operations – Do Nothing

Intersection Road (w/ Airport Road)	Peak Hour	Overall LOS	Critical Movement				
			Mvmt	LOS	Delay (s)	V/C	95 th %tile Queue (m)
Huntsmill Drive (unsignalized)	AM	-	WB	A	0	0.00	0
	PM	-	WB	C	18	0.00	0
Learnster Trail (unsignalized)	AM	-	EB	B	13	0.02	1
	PM	-	EB	A	10	0.01	0
16114 North Access (unsignalized)	AM	-	EB	B	13	0.04	1
	PM	-	EB	B	13	0.02	0
16114 South Access (unsignalized)	AM	-	EB	B	14	0.03	1
	PM	-	EB	B	15	0.15	4
Walker Road (unsignalized)	AM	-	EB WB	C C	16 18	0.22 0.09	6 2
	PM	-	EB WB	C C	21 23	0.29 0.08	9 2
Old Church Road (signalized)	AM	B	(no critical movements)				
	PM	B	(no critical movements)				
Parsons Avenue (unsignalized)	AM	-	EB	C	19	0.18	5
	PM	-	EB	C	19	0.16	4
Emma Street (unsignalized)	AM	-	EB	C	19	0.06	2
	PM	-	EB	F	447	0.92	19
Mountcrest Road (unsignalized)	AM	-	WB	C	20	0.10	2
	PM	-	WB	C	24	0.09	2
Larry Street (unsignalized)	AM	-	EB	C	23	0.13	4
	PM	-	EB	D	35	0.18	5
Marion Street (unsignalized)	AM	-	EB	C	18	0.05	1
	PM	-	EB	B	11	0.00	0
Hilltop Drive (unsignalized)	AM	-	EB	C	20	0.12	3
	PM	-	EB	C	20	0.07	2
Foodland Plaza (unsignalized)	AM	-	WBL WBR	D B	29 10	0.11 0.03	3 1
	PM	-	WBL WBR	F D	76 31	0.43 0.54	13 23
Caledon P.S. Driveway / 15717 North Access (signalized)	AM	A	(no critical movements)				
	PM	A	(no critical movements)				
Cranston Drive / 15717 South Access (unsignalized)	AM	-	EB WB	D F	24 51	0.17 0.50	4 18
	PM	-	EB WB	C E	25 45	0.15 0.22	4 6
Olde Base Line Road (signalized)	AM	B	(no critical movements)				
	PM	D	EBLR	E	62	0.92	113
Boston Mills Road / Castledeerg Side Road (unsignalized)	AM	-	EB WB	C D	18 29	0.01 0.41	0 14
	PM	-	EB WB	D C	29 18	0.03 0.17	1 5
5992 King Access (unsignalized)	AM	-	EB	C	19	0.23	7
	PM	-	EB	D	28	0.33	10
King Street (signalized)	AM	D	WBTR	F	92	1.07	192
	PM	C	(no critical movements)				

Most intersections within the study area operate at acceptable level of service under future 2031 conditions. There are a few critical movements identified as follows:

- Airport Road and Emma Street – the eastbound approach operates at level-of-service F with long delays in the p.m. peak hour, and at volume to capacity ratio of 0.92. Constrained operations are reflecting lack of gaps in traffic along Airport Road.

- Airport Road and Foodland Plaza – in the p.m. peak hour the westbound left turn operates at level-of-service F with delay of 76 seconds and v/c ratio of 0.42. While delay is getting long, the acceptable v/c ratio indicates that this intersection still has residual capacity. Improvements may be considered at or around 2031.
- Airport Road and Olde Base Line Road – the eastbound approach, with a single entry lane for both left and right-turning traffic, operates at level-of-service D and volume to capacity ratio of 0.92. Traffic operations could be improved by separating left and right-turning traffic, however there is limited room in the current right-of-way; improvements are discussed in detail in Section 4.4.2 of this report.
- King Street has the westbound approach operating at level-of-service F and v/c ratio greater than 1.0, thus improvements identified in the EA (Mayfield Road to King Street) should be implemented by 2031.

Additional commentary on the potential improvements is provided in the 2041 analysis which incorporates staging considerations and roundabout operations.

4.3.2 2031 Roundabout Analysis

Airport Road at Huntsmill Drive

The ARCADY analysis based on the 2031 traffic volumes indicates that a single-lane entry roundabout at this location is expected to operate well, with significant residual capacity during both the a.m. and p.m. peak periods. Summary results are presented in Exhibit 4-13, with detailed ARCADY reports included in Appendix H.

Exhibit 4-13: ARCADY Roundabout Analysis for Airport Road & Huntsmill Drive (2031 Volumes)

Airport Road and Huntsmill Drive – Single Lane Entry			
Approach	Entry Lanes	AM LOS	PM LOS
Airport Road NB	Single	A	A
Huntsmill Drive WB	Single	A	A
Airport Road SB	Single	A	A

As shown in Exhibit 4-13, the analysis indicates that all of the approaches of a single-lane entry roundabout will operate at acceptable levels of service (LOS A) during both the a.m. and p.m. peak periods.

Airport Road at Walker Road

Similar to the intersection of Airport Road at Huntsmill Drive, the ARCADY analysis based on the 2031 traffic volumes indicates that a single-lane entry roundabout at this location is expected to operate well, with residual capacity during both the a.m. and p.m. peak periods. Summary results are shown in Exhibit 4-14, with detailed ARCADY reports included in Appendix H.

Exhibit 4-14: ARCADY Roundabout Analysis for Airport Road & Walker Road (2031 Volumes)

Airport Road and Walker Road – Single Lane Entry			
Approach	Entry Lanes	AM LOS	PM LOS
Walkers Road EB	Single	A	A
Airport Road NB	Single	A	B
Walkers Road WB	Single	A	A
Airport Road SB	Single	A	A

As shown in Exhibit 4-14, the analysis indicates that all of the approaches of a single-lane entry roundabout will operate at acceptable levels of service (LOS A or B) during both the a.m. and p.m. peak periods.

Airport Road at Cranston Drive

The analysis based on the 2031 traffic volumes indicates that a single-lane entry roundabout at this location is not expected to be sufficient in handling the high volumes during the p.m. peak period. Summary results are shown in Exhibit 4-15, with detailed ARCADY reports included in Appendix H.

Exhibit 4-15: ARCADY Roundabout Analysis for Airport Road & Cranston Drive (2031 Volumes)

Airport Road and Cranston Drive – Single Lane Entry			
Approach	Entry Lanes	AM LOS	PM LOS
Cranston Drive EB	Single	A	A
Airport Road NB	Single	A	F
15717 Airport Road – Access (S) WB	Single	A	A
Airport Road SB	Single	C	A

During the a.m. peak period, a single-lane roundabout is expected to operate with some residual capacity, although the southbound approach is expected to experience moderate queuing and delay. During the p.m. peak period, however, the northbound approach is expected to operate at a LOS F with delays in excess of 133 seconds, and queues around 51 vehicles. Consideration should be given to implementing some of the mitigation measures proposed to accommodate 2041 volumes during initial construction (see 2041 roundabout analysis).

Airport Road at Olde Base Line Road

The ARCADY analysis based on the 2031 traffic volumes indicates that a single-lane entry roundabout at this location is expected to operate with some residual capacity during both the a.m. and p.m. peak periods. Summary results are shown in Exhibit 4-16, with detailed ARCADY reports included in Appendix H.

Exhibit 4-16: ARCADY Roundabout Analysis for Airport Road & Olde Base Line Road (2031 Volumes)

Airport Road and Olde Base Line Road – Single Lane Entry			
Approach	Entry Lanes	AM LOS	PM LOS
Olde Base Line Road EB	Single	A	A
Airport Road NB	Single	A	D
Airport Road SB	Single	C	A

With only a single-lane entry on all approaches, the southbound approach is expected to experience moderate queueing and delay during the a.m. peak period. During the p.m. peak period, the northbound approach is expected to operate at LOS D, where vehicles will be experiencing an average delay of 29 seconds and queues of around 7 vehicles. Consideration could be given to implementing some of the mitigation measures proposed to accommodate 2041 volumes during initial construction; however, a single-lane entry roundabout is expected to be sufficient to accommodate 2031 volumes, with moderate delay during the p.m. peak period only.

Airport Road at Boston Mills Road / Castleberg Side Road

The ARCADY analysis based on the 2031 traffic volumes indicates that a single-lane entry roundabout at this location is expected to operate well during both the a.m. and p.m. peak periods. Summary results are shown in Exhibit 4-17, with detailed ARCADY reports included in Appendix H.

Exhibit 4-17: ARCADY Roundabout Analysis for Airport Road & Boston Mills Road (2031 Volumes)

Airport Road and Boston Mills Road / Castleberg Side Road – Single Lane Entry			
Approach	Entry Lanes	AM LOS	PM LOS
Boston Mills Road EB	Single	A	A
Airport Road NB	Single	A	B
Castleberg Side Road WB	Single	A	A
Airport Road SB	Single	B	A

The analysis indicates that all of the approaches of a single-lane entry roundabout will operate at acceptable levels of service (LOS A or B) during both the a.m. and p.m. peak periods.

4.4 2041 Traffic Operations

4.4.1 2041 Intersection Capacity Analysis – Do Nothing

Exhibit 4-18 summarizes the 2041 horizon year LOS and critical movements for the study intersections assuming current geometric configurations with proposed accesses to future developments. Intersection optimization features in Synchro were used to optimize signal timing splits for all signalized intersections. Detailed Synchro HCM reports are included in Appendix E.

As indicated in Exhibit 4-18, by year 2041, there are a number of intersections or movements with poor traffic operations:

- Unsignalized side-street access to Airport Road becomes difficult with long delays as drivers wait for a gap in traffic to enter. This constraint in traffic operations applies to most local streets accessing Airport Road throughout the corridor, and to business or private driveway access.
- Signalized intersections (Olde Base Line Road, King Street) have movements with long delays and queues under their current geometry, despite optimized signal timings.

Broadly, the findings point to a need for a package of intersection improvements and potentially access consolidation and re-configuration. For unsignalized side-street access to Airport Road, alternative routes for traffic to enter Airport Road via a signalized intersection should be sought. For segments with frequent driveways (e.g. Mono Road, parts of Caledon East, additional turning lanes or two-way left-

turn lane should be considered. Section 4.4.2 provides an analysis of traffic mitigation measures.

Exhibit 4-18: 2041 Intersection Operations – Do Nothing

Intersection Road (w/ Airport Road)	Peak Hour	Overall LOS	Critical Movement				
			Mvmt	LOS	Delay (s)	V/C	95 th %tile Queue (m)
Huntsmill Drive (unsignalized)	AM	-	WB	A	0	0.00	0
	PM	-	WB	C	21	0.00	0
Leamster Trail (unsignalized)	AM	-	EB	B	14	0.03	1
	PM	-	EB	A	10	0.01	0
16114 North Access (unsignalized)	AM	-	EB	B	15	0.05	1
	PM	-	EB	C	15	0.02	1
16114 South Access (unsignalized)	AM	-	EB	B	15	0.05	1
	PM	-	EB	C	18	0.19	5
Walker Road (unsignalized)	AM	-	EB	C	20	0.31	10
			WB	C	22	0.14	4
	PM	-	EB	E	44	0.55	22
Walker Road (unsignalized)	PM	-	WB	E	39	0.16	4
			(no critical movements)				
			(no critical movements)				
Old Church Road (signalized)	AM	C	(no critical movements)				
	PM	B	(no critical movements)				
Parsons Avenue (unsignalized)	AM	-	EB	D	29	0.30	9
	PM	-	EB	F	Err*	8.62	Err*
Emma Street (unsignalized)	AM	-	EB	D	25	0.10	3
	PM	-	EB	F	Err*	Err*	Err*
Mountcrest Road (unsignalized)	AM	-	WB	F	322	0.95	25
	PM	-	WB	D	32	0.15	4
Larry Street (unsignalized)	AM	-	EB	F	304	0.99	28
	PM	-	EB	E	43	0.25	7
Marion Street (unsignalized)	AM	-	EB	E	43	0.14	4
	PM	-	EB	B	12	0.00	0
Hilltop Drive (unsignalized)	AM	-	EB	E	43	0.29	8
	PM	-	EB	C	22	0.09	2
Foodland Plaza (unsignalized)	AM	-	WBL	E	40	0.18	5
			WBR	B	11	0.04	1
	PM	-	WBL	F	91	0.52	17
Foodland Plaza (unsignalized)	PM	-	WBR	F	57	0.77	43
			(no critical movements)				
			(no critical movements)				
Caledon P.S. Driveway / 15717 North Access (signalized)	AM	A	(no critical movements)				
	PM	A	(no critical movements)				
Cranston Drive / 15717 South Access (unsignalized)	AM	-	EB	D	30	0.24	7
			WB	F	76	0.63	24
	PM	-	EB	E	36	0.25	7
Olde Base Line Road (signalized)	AM	C	WB	F	73	0.34	10
			SBTR	C	29	0.94	258
	PM	E	EBLR	F	105	1.09	141
Boston Mills Road / Castleberg Side Road (unsignalized)	AM	-	NBLT	E	76	1.09	263
			EB	C	21	0.02	0
	PM	-	WB	F	62	0.69	31
5992 King Access (unsignalized)	AM	-	EB	E	46	0.04	1
			WB	D	27	0.37	13
	PM	-	EB	C	24	0.29	9
King Street (signalized)	AM	E	EB	C	44	0.46	16
			WBL	F	191	1.24	78
	PM	D	WBTR	F	157	1.24	233
King Street (signalized)	AM	E	EBTR	E	75	1.01	180
			WBTR	F	81	1.03	182
	PM	D	WBTR	F	81	1.03	182

* Err - Indicates severe congestion may occur outside of model parameters.

4.4.2 2041 Intersection Capacity Analysis – With Improvements

For discussion of traffic mitigation, the corridor has been split into planning segments based on adjacent land use and natural or urban boundaries. The following segments were defined with Synchro outputs provided in Appendix F:

- Huntsmill Drive to Walker Road (0.8 km);
- Walker Road to Caledon Trailway (0.5 km);
- Caledon Trailway to Cranston Drive (0.9 km); and
- Cranston Drive to King Street (5.0 km).

Huntsmill Drive to Walker Road

At Huntsmill Drive, the northbound approach provides a short slip off right-turn lane for access to the side street. In the southbound direction, traffic counts indicated zero demand for left turns, therefore no left turn lane warrant was run. The intersection continues to operate well and no changes are recommended for traffic operations purposes in 2041.

At Leamster Trail a northbound left turn lane and a southbound right turn lane are currently provided. The intersection continues to operate well in 2041 and no changes are recommended.

At Airport Road & Walker Road, the intersection operates within capacity; however, longer delays are appearing for the eastbound and westbound approaches. There are notable eastbound right turn volumes ~150 vph during both peaks and southbound right turn volumes ~50 vph in the a.m. peak hour. This southbound right-turn volume is slightly below a threshold of 60 vph normally considered for a dedicated right turn lane or taper, but given the down gradient southbound and higher speed of through traffic, a taper or short turning lane should be considered. As a result, a dedicated eastbound left-turn lane, eastbound right-turn lane, and southbound right-turn lane were modelled in Synchro. The mitigation was tested, and results are summarized in Exhibit 4-19.

Exhibit 4-19: Evaluation of Mitigation at Walker Road

Mitigation Option	Peak Hour	Overall LOS	Critical Movements				
			Mvmt	LOS	Delay (s)	V/C	95 th %ile Queue (m)
Add EBL / EBR / SBR turning lanes	AM	-	EBL	C	23	0.06	1
			EBT	C	16	0.18	5
			EBR	C	16	0.18	5
			WBLTR	C	21	0.13	4
	PM	-	EBL	F	62	0.33	10
			EBT	C	16	0.12	3
			EBR	C	16	0.12	3
			WBLTR	E	36	0.15	4

As shown above, adding dedicated turning lanes can reduce the delays on eastbound through and right turning movement. During the p.m. peak period, eastbound left-turn movements and westbound approach will remain operating at LOS E or worse. With the added lanes, the intersection will continue to operate acceptably. Providing either southbound or eastbound right-turn lanes should be further investigated as part of the EA to consider available right-of-way and impacts to adjacent property, lighting, hydro poles and sidewalks.

A left-turn lane warrant was run for all approaches for Airport Road at Walker Road using ITE Guidelines for Left-Turn Lanes, and the results are shown in Exhibit 4-20.

Exhibit 4-20: Left-Turn Lane Warrant for Airport Road & Walker Road

Approach	Left Turn %	Opposing Traffic Volume	Advancing Traffic Volume Threshold	Actual Advancing Traffic Volume	Warranted
NBL (AM)	11.7%	725	117 (taken between 20% and 25%, taken halfway between 700 and 750)	272	YES
NBL (PM)	8.5%	301	235 (20%, 300 vph)	1,068	YES
SBL (AM)	0.8%	239	1018 (for 1%, 250vph)	725	NO
SBL (PM)	3.0%	944	202 (for 3%, 950vph)	301	YES
EBL (AM)	6.9%	35	615 (for 7%, 50 vph)	204	NO
EBL (PM)	19.3%	20	392 (for 20%, 50 vph)	197	NO
WBL (AM)	40.0%	204	230 (for 40%, 200 vph)	35	NO
WBL (PM)	35.0%	197	236 (for 35%, 200 vph)	20	NO

The results indicate that northbound will be warranted for a left turning lane based on both a.m. and p.m. peak hour volumes, however a southbound left turn lane will be warranted based on p.m. peak hour volumes only. For both minor approaches (eastbound and westbound), left turning lanes are not warranted in the a.m. or p.m. peak periods.

A signal warrant analysis was conducted for this intersection, and the results are presented in Exhibit 4-21. As shown, Walker Road & Airport Road intersection will not be warranted for a traffic signal in year 2041.

Exhibit 4-21: Signal Warrant for Walker Road & Airport Road Intersection (2041)

Justification		Compliance	Signal Justified
1). Minimum Vehicular Volume	A). Total Volume	93%	NO
	B). Crossing Volume	81%	
2). Delay to Cross Traffic	A). Total Volume	89%	NO
	B). Crossing Volume	64%	
3). Combination	A). Justification 1	81%	NO
	B). Justification 2	64%	
4). Four-Hour Volume		97%	NO

While traffic operations are acceptable under two-way stop control configuration, traffic speeds have been identified as a concern. Traffic calming via urbanization and a gateway feature will be explored further in development of the concept plan.

South of Walker Road to Caledon Trailway

On the west leg of the intersection of Old Church Road and Airport Road, the unsignalized driveway to the LCBO is a concern due to poor traffic operations, lack of sightlines, collision risk, unclear priority rules, and undesirable configuration of a driveway within a major intersection.

While the intersection was set up in the past by the Region in an effort to improve traffic operations and reduce collision potential, it is currently confusing for drivers and pedestrians. It likely operates well due to long gaps available in traffic at most times of day, which will not be as likely in coming years. It was noted that Synchro does not model the unsignalized driveway, and more complex modelling such as VISSIM would be required to accurately simulate existing operations. However, further analysis is not needed considering that signaling the driveway is recommended from a safety and operations perspective. Furthermore, prior studies have identified a potential benefit of a dedicated SBL lane on Airport Road, with a shadow lane on the south leg (i.e. potential for NBL turning lane).

Because of the skewed alignment of the LCBO access (not directly opposite Old Church Road), it is likely that signaling the access will require a split phase operation under the current geometry. It is noted that traffic counts for the access were not provided and were estimated using ITE for a convenience store and 110 square meters of space, corresponding to the retail component of the building only. A split phase operation would cause a minor increase in delays. Traffic operations with split phase and the proposed SBL mitigation were evaluated and the results are summarized in Exhibit 4-22. A left-turn lane warrant was run for the southbound approach using ITE Guidelines for Left-Turn Lanes, and the results are shown in Exhibit 4-23. The split phase option was tested using a cycle length of 100 seconds, an increase from the 70 seconds today, which reduces the impact of the split phase on traffic but increases traffic and pedestrian waiting times. The normal phase option was tested using a cycle length of 80 seconds.

Exhibit 4-22: Evaluation of Intersection Operations at Old Church Road (2041)

Mitigation Option	Peak Hour	Overall LOS	Critical Movements				
			Mvmt	LOS	Delay (s)	V/C	95 th %ile Queue (m)
Split Phase, Dedicated SBL	AM	C	(no critical movements)				
	PM	C	(no critical movements)				
Normal Phasing, Dedicated SBL	AM	C	(no critical movements)				
	PM	B	(no critical movements)				

Exhibit 4-23: Left-Turn Lane Warrant for Airport Road & Old Church Road

Approach	Left Turn %	Opposing Traffic Volume	Advancing Traffic Volume Threshold	Actual Advancing Traffic Volume	Warranted
SBL (AM)	18.0	426	200 (taken between 15% and 20%, taken between 400 and 450 vph)	724	YES
SBL (PM)	27.8	1252	37 (taken between 25% and 30%, 1250 vph)	272	YES

Alternative solutions to the issues described for the intersection were developed as follows:

- Convert west driveway to right-in, right-out – this is not likely to be feasible or successful as the driveway is located within the intersection and would be subject to violators and further safety deterioration.
- Implement split phasing (as described above) – not preferable from a traffic operations perspective.
- Close the access requiring property access from the rear via Ivan Avenue – this alternative is not likely acceptable to current property owners and tenants and may require acquisition of the property.
- Removal of LCBO building and extension of Ivan Avenue to Airport Road.

These alternatives required consultation with the Town and property owners and further information is provided in the Environmental Planning Report prepared following this transportation study. The following provides a discussion of the traffic and safety-related effects of the extension of Ivan Avenue.

The conceptual alignment for Old Church Road extension is illustrated in Exhibit 4-24. While a seemingly large-scale change, the following are noted:

- It is unlikely that the extension would result in shortcutting traffic or traffic growth on Ivan Avenue or the residential streets connecting to it as there are no through routing or major destinations. A discussion of shortcutting potential is provided below on page 43.
- The extension would provide a better access configuration for the development site on the northwest corner (north of LCBO) – should it become a potential development site in the future. Without the extension, potential future development at the site may require or receive an undesirable full movement access to Airport Road.
- Full signalization would eliminate the split phases, resolve sightline issues, and provide sufficient space for AODA intersection improvements, thus enabling a proper, likely safer, intersection.
- It is noted that this option would improve traffic exiting to Airport Road via Parsons Avenue and Emma Street, both of which experience critical delays and lack of sufficient capacity in 2041 (see below).
- Aside from removal of the LCBO building, the environmental and social impacts of this option appear quite limited though require further investigation.

Also in this analysis segment, both Parsons Avenue and Emma Street intersect Airport Road at a T-intersection, with stop-control on the minor approach. Northbound left turn lanes along Airport Road would be desirable to improve safety and reduce delay to through traffic caused by stopped left turning vehicles and are warranted per the analysis below. However left turn lanes are unlikely to be supported by the business community as they would require elimination of parking along the east side of Airport Road.

At Parsons Avenue and Emma Street the minor approaches (eastbound) experience critical delays in the p.m. peak hours. Both roads are currently too narrow to paint separate lanes for right-turning and left-turning. Due to the close proximity of the signalized Old Church Road to the north, and low traffic volumes, signalizing Parsons Avenue would not be recommended. A warrant was run for Emma Street and signals are not warranted; the results are shown in Exhibit 4-27.

Again, referencing the above, the option of extending Ivan Avenue to connect to Airport Road would alleviate left-turn volumes at both Parsons Avenue and Emma Street. During the development of this report, mitigation options for this area are still being considered and are subject to further consultation with the Town.

Exhibit 4-24: Conceptual Alignment Old Church Road Extension

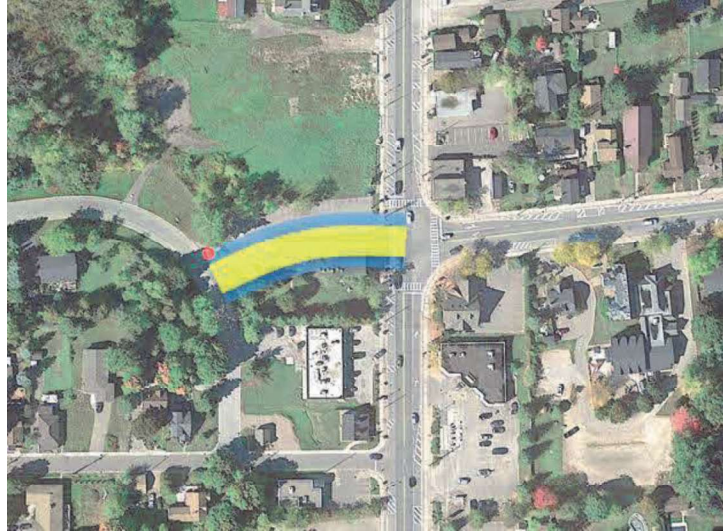


Exhibit 4-25: Left-Turn Lane Warrant for Airport Road & Parsons Avenue

Approach	Left Turn %	Opposing Traffic Volume	Advancing Traffic Volume Threshold	Actual Advancing Traffic Volume	Warranted
NBL (AM)	1.9%	1,006	229 (for 2%, 1000vph)	371	YES
NBL (PM)	5.6%	539	269 (for 5.5%, 550vph)	1,171	YES

Exhibit 4-26: Left-Turn Lane Warrant for Airport Road & Emma Street

Approach	Left Turn %	Opposing Traffic Volume	Advancing Traffic Volume Threshold	Actual Advancing Traffic Volume	Warranted
NBL (AM)	0.8%	1067	298 (for 1%, 1050vph)	390	YES
NBL (PM)	1.8%	535	455 (for 2%, taken halfway between 500 and 550vph)	1213	YES

Exhibit 4-27: Signal Warrant for Emma Street & Airport Road Intersection (2041)

Justification		Compliance	Signal Justified
1). Minimum Vehicular Volume	A). Total Volume	100%	NO
	B). Crossing Volume	6%	
2). Delay to Cross Traffic	A). Total Volume	99%	NO
	B). Crossing Volume	9%	
3). Combination	A). Justification 1	6%	NO
	B). Justification 2	9%	
4). Four-Hour Volume		12%	NO

Travel Time Analysis – Old Church Road Extension

The potential for additional shortcutting traffic was assessed via a desktop travel time analysis. Shortcutting in this context would refer to background traffic (e.g. traffic along Mountainview Road and Walker Road west of Olivers Lane) using Ivan Avenue and the Old Church extension. Traffic currently using Ivan Avenue, Parsons Avenue, and improperly using the LCBO parking lot as a shortcut to Airport Road would not be considered shortcutting traffic.

The approach involved looking at travel times with and without the new link to determine if the extension provides a faster route, which would encourage shortcutting. A series of planning origins and destinations were developed and travel times were estimated using Google Maps and examination of the routes.

Travel times along Airport Road and Walker Road are generally impeded only by traffic delays (e.g. left turn from Airport Road to Walker Road). Alternatively, travel along routes with the extension (e.g. Old Church extension, Ivan Avenue) is impeded by stop signs that are located at Old Church Road and Ivan Avenue, Ivan Avenue and Colleen Crescent, Ivan Avenue and Olivers Lane, and Olivers Lane at Walker Road. Therefore it is likely that travel times with the extension will remain longer than the primary route.

The following table provides the assumed origin and destination, route, and estimated travel time.

Exhibit 4-28: Old Church Road Extension Origin-Destination Travel Time Analysis

From (Origin)	To (Destination)	Travel Time (by car route)	Potential for Shortcutting via Old Church Extension
Airport Road (near Foodland)	Walker Road west of Olivers Lane	2 min (via Airport Road and Walker Road)	Low
		3 min (via Airport Road, Parsons Ave, and Ivan Avenue)	
		3 min (via Airport Road, Old Church Extension, Ivan Avenue, Olivers Lane) – with extension	
Old Church Road (near Community Complex)	Walker Road west of Olivers Lane	2 min (via Old Church Road, Airport Road and Walker Road)	Low
		3 min (via Old Church Road, Marilyn Street, and Walker Road)	
		3 min (via Old Church Road, Old Church extension, Ivan Avenue, Olivers Lane) – with extension	
30 Olivers Lane	Airport Road (near Foodland)	3 min (via Ivan Avenue, Parsons Avenue, Airport Road)	Low
		4 min (via Olivers Lane, Walker Road, Airport Road)	
		3 min (via Ivan Avenue, Old Church extension, Airport Road)	

Based on the above analysis, the Old Church Road extension does not provide a significant travel time savings for traffic between Airport Road and Walker Road west of Olivers Lane. Therefore the potential for significant shortcutting traffic is low. Most traffic is expected to continue to use Airport Road and Walker Road, and the signal and road extension primarily serves to provide an access to the immediate neighbourhood that is currently using Parsons Avenue to access Airport Road, or using the private driveway at the LCBO.

Caledon Trailway Path to South of Cranston Drive

This analysis segment is split into individual intersections as follows.

Mountcrest Road & Airport Road (North Intersection): Mountcrest Road intersects Airport Road at a T-intersection with stop control. This approach will encounter significant delays and operate near capacity during a.m. peak hour. Mountcrest Road is currently slightly too narrow to paint separate WBL and WBR lanes, and so these movements queue within a single lane. Additionally, volumes at this intersection are too low to warrant signalization.

A development plan for 15717 Airport Road proposes a new residential subdivision to the east of Airport Road, south of the existing neighbourhood accessed via Mountcrest Road. The development plan recommends signalization of one of the two proposed accesses to this new subdivision, and the internal roads will connect to the existing south limit of Mountcrest Road. This will provide an alternate egress for the existing subdivision, and it is expected that the majority of left-turning traffic (both to and from Mountcrest Road) would shift to this new signalized access in order to avoid delays. This should mitigate the delays otherwise anticipated at Mountcrest Road & Airport Road.

A left turn lane warrant for the southbound approach was run for Mountcrest Road and it was determined that the lane is warranted for the p.m. peak hour only. From the concept development plans, it will likely not be recommended due to lack of right-of-way.

Exhibit 4-29: Left-Turn Lane Warrant for Airport Road & Mountcrest Road

Approach	Left Turn %	Opposing Traffic Volume	Advancing Traffic Volume Threshold	Actual Advancing Traffic Volume	Warranted
SBL (AM)	0.5%	384	1166 (for 0.5%, taken halfway between 350 and 400vph)	1074	NO
SBL (PM)	2.3%	1239	113 (taken halfway between 2% and 2.5%, 1250vph)	530	YES

Larry Street: Larry Street intersects Airport Road at a T-intersection, with stop-control provided on the minor approach. During pm peak hours, significant delays are anticipated on the minor approach (eastbound) and it will operate near capacity. Larry Street is currently too narrow to paint separate EBL and EBR lanes, and the traffic volumes are too low to warrant signalization.

Shifting left-turn traffic to a signalized intersection or roundabout would provide an egress path for traffic to avoid the congested access route. Cranston Drive and Airport Road intersection is expected to be signalized or converted to a roundabout in the future, which could provide an alternative egress path to traffic on Larry Street.

Marion Street and Hilltop Drive: Both Marion Street and Hilltop Drive intersect Airport Road at a T-intersection, with stop-control provided on the minor approach. The 2041 future do-nothing traffic analysis indicates that both intersections will operate within capacity, while eastbound approaches are expected to operate at LOS E. Due to lack of space, there were no mitigation measurements tested for the two intersections. However, similar to Larry Street, shifting left-turn traffic to a signalized intersection or roundabout would provide an egress path for traffic to reduce side street delays.

Airport Road & Grocery Store Plaza: The WB movements are expected to experience long delays during p.m. peak hours. However, operations may improve with implementation of a new signalized intersection south of this plaza access (as part of the development plan for 15717 Airport Road) which could provide additional gaps in traffic. It is noted that an intersection is proposed just to the south (see below) and the proximity of the new road and the grocery store access is undesirable in terms of managing queues and safety. The northbound right turn volume is 98 vph in the p.m. peak hour suggesting a need for a turning lane.

A signal warrant was run for this intersection, and the results are summarized in Exhibit 4-30 indicating that a signal is not warranted.

Exhibit 4-30: Signal Warrant for Grocery Store Plaza & Airport Road Intersection (2041)

Justification		Compliance	Signal Justified
1). Minimum Vehicular Volume	A). Total Volume	100%	NO
	B). Crossing Volume	52%	
2). Delay to Cross Traffic	A). Total Volume	98%	NO
	B). Crossing Volume	43%	
3). Combination	A). Justification 1	52%	NO
	B). Justification 2	43%	
4). Four-Hour Volume		82%	NO

Public School Access / 15717 Airport Road Residential Development North Access

(Street A): The Traffic Impact Study for the development at 15717 Airport Road, completed by Cole Engineering recommends signalizing the north access opposite the public school, since it scored higher on the signal warrant evaluation and would also serve as a crossing opportunity for public school students. The TIS provided an estimate of pedestrian crossings based on the development size, and rates provided by the Peel District School Board. Under the estimated pedestrian volumes the pedestrian crossing warrant (Ontario Traffic Manual (OTM) Book 12) would be met (see Appendix L of this planning report). It is noted that a sidewalk or pedestrian protection would need to be implemented along the school driveway if it is to become an access for pedestrians to the school.

An alternative to signalizing the north access would be to signalize the south access (opposite Cranston Drive), which would serve a somewhat better network function by offering a signal to the west side of Airport Road in addition to the east side. Under this configuration it might still be possible to provide a pedestrian crosswalk at the north access location provided, that a sidewalk or pedestrian protection would need to be implemented along the school driveway.

The main issue with signalizing the south access / Cranston Drive is that it is out of the way for pedestrians to and from the school. It is likely much more desirable in terms of walking distance for a crossing at the north intersection location, provided that a sidewalk is added as described. Under a configuration with a signal at Cranston Drive, a second

signal at the school would likely still be warranted based on pedestrian volumes. Also, per the information below on Cranston Drive, a signal is not justified per OTM Book 12.

A roundabout could be considered instead of a signal at the school access / 15717 Airport Road north access. A roundabout would likely operate acceptably provided with flared two-lane entries (see operations for Cranston Drive roundabout); however, the pedestrian volume would remain a concern. While measures to improve pedestrian crossing at roundabouts have been developed, such as the use of median islands to provide refuge, roundabouts remain more challenging for pedestrians. Given the high volume of pedestrians, truck traffic, and concerns about speeds, it is very likely that a signal would be preferred to assist crossing. Even with a signal, a crossing guard would likely be warranted during peak times.

Given the above, the preferred course of action at the school access / north development access is to provide a traffic signal. The lane configuration should protect for separate WBL and WBR turning lanes, and the school access should be re-constructed to provide a sidewalk.

Mitigation options were tested at this intersection including unsignalized, pedestrian signal, and signalized intersections with separate WBL and WBR turning lanes, and dedicated NBR and SBL turning lanes to the proposed development. Evaluation results are summarized in Exhibit 4-31.

Exhibit 4-31: Evaluation of Mitigation Options at 15717 Airport Road North Access

Mitigation Option	Peak Hour	Overall LOS	Critical Movements				
			Mvmt	LOS	Delay (s)	V/C	95 th %ile Queue (m)
Unsignalized intersection with dedicated WBL, WBR, NBR, SBL	AM	-	WBL	F	377	1.44	60
			WBR	B	11	0.08	2
			NBR	A	0	0.00	0
			SBL	A	8	0.01	0
	PM	-	WBL	F	Err	>>1	Err
			WBR	C	21	0.11	3
			NBR	A	0	0.01	0
			SBL	C	16	0.16	4
Signalized intersection	AM	A	(no critical movements)				
	PM	A	(no critical movements)				
Pedestrian Signal (IPS)	AM	C	SBT	C	25	0.91	180
	PM	C	NBT	C	34	0.95	207

For the unsignalized mitigation option, WBL approach is expected to operate at LOS F with v/c ratio greater than 1 during p.m. peak hour. Whereas signalizing the intersection can achieve an excellent LOS with no critical movements. If only a pedestrian signal is provided, the intersection is expected to operate at overall LOS C with two critical movements observed.

Cranston Drive / 15717 South Access & Airport Road: Cranston Drive currently intersects Airport Road at a T-intersection, with a stop-control provided on the minor approach. The future 15717 Airport Road residential development proposed a two-way stop controlled access on Airport road connecting Cranston Drive. In 2041 this intersection operates with side street approaches expiring level-of-service F, though acceptable volume to capacity ratio.

Improvements were tested at this intersection including flaring side-street approaches to provide separate left and right turning lanes, and signalization. A roundabout is discussed further in Section 4.4.3 of this report. Evaluation of the above mitigation options are summarized in Exhibit 4-32.

Exhibit 4-32: Evaluation of Mitigation Options at Cranston Drive

Mitigation Option	Peak Hour	Overall LOS	Critical Movements				
			Mvmt	LOS	Delay (s)	V/C	95 th %ile Queue (m)
Unsignalized intersection with dedicated EBL and WBL	AM	-	EBL	F	77	0.21	5
			EBTR	C	22	0.13	3
			WBL	F	265	1.07	38
			WBTR	B	10	0.02	1
	PM	-	EBL	F	81	0.23	6
			EBTR	B	11	0.04	1
			WBL	F	95	0.33	9
			WBTR	C	21	0.03	1
Signalized intersection	AM	A	(no critical movements)				
Pedestrian Signal (IPS)	AM	C	SBT	D	33	0.96	205
	PM	D	NBT	E	57	1.05	244

As indicated in Exhibit 4-32, adding dedicated left-turn lanes to eastbound and westbound approaches can reduce the delays for their shared through-right movements; however, the left-turn movements will still operate at LOS F and experience significant delays. Whereas signalizing the intersection can achieve an excellent LOS with no critical movements. If only a pedestrian signal is implemented, the overall LOS of the intersection is acceptable; however, critical movements are observed for both a.m. and p.m. peak hour. A signal warrant analysis was tested for this intersection, and the results are summarized in Exhibit 4-33 indicating that a signal is not warranted.

Exhibit 4-33: Signal Warrant for Cranston Drive & Airport Road Intersection (2041)

Justification		Compliance	Signal Justified
1). Minimum Vehicular Volume	A). Total Volume	100%	NO
	B). Crossing Volume	45%	
2). Delay to Cross Traffic	A). Total Volume	99%	NO
	B). Crossing Volume	52%	
3). Combination	A). Justification 1	45%	NO
	B). Justification 2	52%	
4). Four-Hour Volume		58%	NO

It was noted previously that traffic entering Airport Road at Mountcrest Road, Larry Street, Marion Street, and Hilltop Drive will experience long delays and driver frustration. Therefore, a signal at Cranston Drive could provide a safe entry point to Airport Road for neighbourhoods on both sides of the corridor. Exhibit 4-34 provides a signal warrant for Cranston Drive at Airport Road, assuming 50% left turn diversion from 15717 North Access Road (WBL), Mountcrest Road (WBL), Larry Street (EBL), Marion Street (EBL), and Hilltop Drive (EBL).

Exhibit 4-34: Signal Warrant for Cranston Drive & Airport Road Intersection with Traffic Diversion (2041)

Justification		Compliance	Signal Justified
1). Minimum Vehicular Volume	A). Total Volume	100%	NO
	B). Crossing Volume	65%	
2). Delay to Cross Traffic	A). Total Volume	99%	NO
	B). Crossing Volume	83%	
3). Combination	A). Justification 1	65%	NO
	B). Justification 2	83%	
4). Four-Hour Volume		78%	NO

With left turn movements diverted to the Cranston Drive at Airport Road intersection, the intersection is still not warranted for a traffic signal with 2041 traffic volumes. However, it is noted that the justification on delay to cross traffic (Justification 2 as shown in above exhibit) is very close to meeting the 100% compliance. This suggests that implementing either a traffic signal or roundabout at this location is likely required in the long term.

South of Cranston Drive to Boston Mills Road / Castlederg Side Road

Olde Base Line Road & Airport Road: Under the current geometry this intersection is expected to operate at LOS C in a.m. peak hour, and LOS E in p.m. peak hour, with significant delays observed on all three approaches. Eastbound and northbound approaches will operate above capacity in the p.m. peak hour. The Caledon East Study completed in 2015 recommended that dedicated NBL, SBR, and EBR lanes be provided, and this configuration was tested for anticipated 2041 traffic volumes. The evaluation results are presented in Exhibit 4-35.

Exhibit 4-35: Evaluation of Mitigation at Olde Base Line Road

Mitigation Option	Peak Hour	Overall LOS	Critical Movements				
			Mvmt	LOS	Delay (s)	V/C	95 th %ile Queue (m)
Add NBL, SBR, EBR turning lanes	AM	B	(no critical movements)				
	PM	C	EBL	E	60	0.93	118

As indicated in Exhibit 4-35, the mitigation option works well for a.m. peak hour. In the p.m. peak hour the eastbound left-turn movement is expected to operate at LOS E, but still under capacity, which is considered acceptable traffic operations.

A signal warrant analysis was run for this intersection using future 2041 traffic volumes. The results are summarized in Exhibit 4-36.

Exhibit 4-36: Signal Warrant for Olde Base Line Road & Airport Road Intersection (2041)

Justification		Compliance	Signal Justified
1). Minimum Vehicular Volume	A). Total Volume	99%	NO
	B). Crossing Volume	85%	
2). Delay to Cross Traffic	A). Total Volume	94%	NO
	B). Crossing Volume	100%	
3). Combination	A). Justification 1	85%	YES
	B). Justification 2	94%	
4). Four-Hour Volume		100%	YES

As indicated in Exhibit 4-36, a traffic signal will remain warranted for year 2041.

The Caledon East Study recommended consideration for a bypass of the community of Mono Road, potentially consisting of realignment of Olde Base Line Road to connect to Airport Road. If Olde Base Line Road is added to the Region’s Goods Movement Network, then a bypass of Mono Road could encourage trucks to turn onto Olde Base Line Road towards Highway 10 rather than continue north through Mono Road and Caledon East. Since the traffic operations analysis indicates that sufficient capacity can be provided at the intersection through local improvements, the bypass is not ‘triggered’ by traffic operations along. Further consideration of the benefits of the bypass are provided in the safety assessment in Section 5 of this report.

Boston Mills Road / Castleberg Side Road & Airport Road: If future volumes are applied to the existing lane configuration, this intersection is expected to operate within capacity in both a.m. and p.m. peak hours. However, long delays are observed for the westbound approach during a.m. peak hours, and eastbound approach during p.m. peak hour. There are also safety concerns with the offset eastbound and westbound approach at this intersection and the proximity of the commercial access to the north. The initial option for improvement is to align the east and west intersection leg, and implement dedicated left-turn and right-turn lanes for eastbound and westbound approaches. Results are summarized in Exhibit 4-37.

Exhibit 4-37: Evaluation of Mitigation Option 1 at Boston Mills Road / Castleberg Road

Mitigation Option	Peak Hour	Overall LOS	Critical Movements				
			Mvmt	LOS	Delay (s)	V/C	95 th %ile Queue (m)
Realign east and west leg, and add EBL, EBR, WBL, WBR turning lanes	AM	-	EBL	A	0	0.00	0
			EBT	C	21	0.01	0
			EBR	C	21	0.01	0
			WBL	F	69	0.63	25
			WBT	B	11	0.04	1
			WBR	B	11	0.04	1
	PM	-	EBL	E	48	0.03	1
			EBT	F	Err	Err	Err
			EBR	F	Err	Err	Err
			WBL	E	36	0.09	2
			WBT	C	21	0.25	8
			WBR	C	21	0.25	8

* Err - Indicates severe congestion may occur outside of model parameters.

A left-turn lane warrant was run for northbound and southbound directions on Airport Road using TAC methodology. Guidelines for Left-Turn Lanes, and the results are shown in Exhibit 4-38. The results indicate that both northbound and southbound will be warranted during both peak periods for year 2041. Revised Synchro output with the dedicated turning lanes is provided in Exhibit 4-37. Guidelines are included in Appendix G.

Exhibit 4-38: Left-Turn Lane Warrant for Airport Road & Boston Mills Road / Castleberg Road

Approach	Left Turn %	Opposing Traffic Volume	Advancing Traffic Volume Threshold	Actual Advancing Traffic Volume	Warranted
NBL (AM)	1.4%	995	204 (for 1.5%, 1000vph)	208	YES
NBL (PM)	0.3%	339	940 (for 0.5%, 350vph)	958	YES
SBL (AM)	7.1%	208	342 (for 7%, 200vph)	995	YES
SBL (PM)	14.2%	958	75 (for 15%, 950vph)	339	YES

Exhibit 4-39: Evaluation of Mitigation Option 2 at Boston Mills Road / Castleberg Road

Mitigation Option	Peak Hour	Overall LOS	Critical Movements				
			Mvmt	LOS	Delay (s)	V/C	95 th %ile Queue (m)
Realign east and west leg, and add EBL, EBR, WBL, WBR, NBL, SBL turning lanes	AM	-	EBL	A	0	0.00	0
			EBT	C	21	0.01	0
			EBR	C	21	0.01	0
			WBL	F	69	0.63	25
			WBT	B	11	0.04	1
			WBR	B	11	0.04	1
			NBL	A	10	0.00	0
			SBL	A	8	0.05	1
	PM	-	EBL	E	46	0.03	1
			EBT	F	Err	Err	Err
			EBR	F	Err	Err	Err
			WBL	E	36	0.09	2
			WBT	C	21	0.25	8
			WBR	C	21	0.25	8
NBL	A	8	0.00	0			
SBL	B	11	0.07	2			

* Err - Indicates severe congestion may occur outside of model parameters.

A signal warrant test was conducted for this intersection using predicted 2041 traffic volumes, and the results are summarized in Exhibit 4-40 and indicates that a signal is not warranted.

Exhibit 4-40: Signal Warrant for Boston Mills Road & Airport Road Intersection (2041)

Justification		Compliance	Signal Justified
1). Minimum Vehicular Volume	A). Total Volume	91%	NO
	B). Crossing Volume	50%	
2). Delay to Cross Traffic	A). Total Volume	89%	NO
	B). Crossing Volume	40%	
3). Combination	A). Justification 1	50%	NO
	B). Justification 2	40%	
4). Four-Hour Volume		66%	NO

4.4.3 2041 Roundabout Analysis

Building on the prior analysis, the five potential roundabout locations were analyzed using forecasted 2041 traffic volumes. The purpose of this exercise is to verify traffic operations and not to indicate that roundabouts are desirable at these locations, which is assessed in Section 4.5 of this report.

Airport Road at Huntsmill Drive

The ARCADY analysis based on the 2041 traffic volumes indicates that a single-lane entry roundabout at this location is expected to operate well, with significant residual capacity during both the a.m. and p.m. peak periods. The ARCADY analysis results are presented in Exhibit 4-41. Detailed ARCADY reports are included in Appendix H.

Exhibit 4-41: ARCADY Roundabout Analysis for Airport Road & Huntsmill Drive

Airport Road and Huntsmill Drive – Single Lane Entry			
Approach	Entry Lanes	AM LOS	PM LOS
Airport Road NB	Single	A	B
Huntsmill Drive WB	Single	A	A
Airport Road SB	Single	A	A

As shown in Exhibit 4-41, the analysis indicates that all of the approaches will operate at acceptable levels of service (LOS A or B) during both the AM and PM peak periods.

Airport Road at Walker Road

Similar to the intersection of Airport Road at Huntsmill Drive, the ARCADY analysis based on the 2041 traffic volumes indicates that a single-lane entry roundabout at this location is expected to operate well, with residual capacity during both the a.m. and p.m. peak periods. Summary results are shown in Exhibit 4-42, with detailed ARCADY reports included in Appendix H.

Exhibit 4-42: ARCADY Roundabout Analysis for Airport Road & Walker Road

Airport Road and Walker Road – Single Lane Entry			
Approach	Entry Lanes	AM LOS	PM LOS
Walkers Road EB	Single	A	A
Airport Road NB	Single	A	C
Walkers Road WB	Single	A	A
Airport Road SB	Single	A	A

As indicated in Exhibit 4-42, the majority of the approaches are expected to operate at a LOS A, although the northbound approach is expected to experience moderate queuing and delay during the p.m. peak period as a result of the relatively high through volumes.

Airport Road at Cranston Drive

The ARCADY analysis based on the 2041 traffic volumes indicates that a single-lane entry roundabout at this location is not expected to operate well, with both the southbound and northbound approaches experiencing significant capacity constraints during the a.m. and p.m. peak periods, respectively. Summary results are shown in Exhibit 4-43.

Exhibit 4-43: ARCADY Roundabout Analysis for Airport Road & Cranston Drive

Airport Road and Cranston Drive – Single Lane Entry			
Approach	Entry Lanes	AM LOS	PM LOS
Cranston Drive EB	Single	A	A
Airport Road NB	Single	A	F
15717 Airport Road – Access (S) WB	Single	A	A
Airport Road SB	Single	F	A

During the a.m. peak period, the southbound approach is expected to operate at a LOS F with delays in excess of 77 seconds and queues around 25 vehicles. During the p.m. peak period, the northbound approach is expected to operate at a LOS F with delays in excess of 511 seconds, and queues around 170 vehicles.

The capacity constraints are predominantly a result of the high through volumes. There are relatively few turning vehicles on either the northbound or southbound approach, therefore by-pass lanes are not expected to provide much additional capacity.

A flared two-lane entry configuration was then assessed for Airport Road. The ARCADY analysis results are summarized in Exhibit 4-44. Detailed ARCADY reports for all configurations analyzed are included in Appendix H.

Exhibit 4-44: Flared Two-Lane Entry Roundabout Analysis for Airport Road & Cranston Drive

Airport Road and Cranston Drive – NB/SB Flared Two-Lane Entry			
Approach	Entry Lanes	AM LOS	PM LOS
Cranston Drive EB	Single	A	A
Airport Road NB	Dual	A	A
15717 Airport Road – Access (S) WB	Single	A	A
Airport Road SB	Dual	A	A

Under this configuration, the roundabout is expected to operate well with all approaches operating at LOS A, and some residual network capacity during both the a.m. and p.m. peak periods.

Airport Road at Olde Base Line Road

The ARCADY analysis based on the 2041 traffic volumes indicates that a single-lane entry roundabout at this location is not expected to operate well, with the northbound approach experiencing significant capacity constraints at LOS F during the p.m. peak period. Summary results are shown in Exhibit 4-45.

Exhibit 4-45: ARCADY Roundabout Analysis for Airport Road & Olde Base Line Road

Airport Road and Olde Base Line Road – Single Lane Entry			
Approach	Entry Lanes	AM LOS	PM LOS
Olde Base Line Road EB	Single	A	A
Airport Road NB	Single	A	F
Airport Road SB	Single with By-Pass	B	A

To increase the capacity of the northbound approach, a flared two-lane entry configuration was assessed, which includes a northbound flared two-lane entry and a southbound by-pass lane. The ARCADY analysis results are summarized in Exhibit 4-46. Detailed ARCADY reports for all configurations analyzed are included in Appendix H.

Exhibit 4-46: Flared Two-Lane Entry Roundabout Analysis for Airport Road & Olde Base Line Road

Airport Road and Olde Base Line Road – NB Flared Two-Lane Entry with SB By-Pass Lane			
Approach	Entry Lanes	AM LOS	PM LOS
Olde Base Line Road EB	Single	A	A
Airport Road NB	Dual	A	A
Airport Road SB	Single with By-Pass Right Turn	B	A

As shown in Exhibit 4-46, this configuration is expected to be effective with the ARCADY analysis now showing the northbound approach as operating with an LOS A during both the a.m. and p.m. peak periods.

It is noted that a roundabout appears to be an effective treatment for the intersection, however there are adjacent properties and a wetland that will be impacted. Therefore further development and costing of the roundabout option is required.

Airport Road at Boston Mills Road / Castleberg Side Road

The ARCADY analysis based on the 2041 traffic volumes indicates that a single-lane entry roundabout at this location is not expected to operate well during either the a.m. or p.m. peak period. During the a.m. peak period, the southbound approach is experiencing significant capacity constraints with LOS E, delays in excess of 40 seconds, and queues around 12 vehicles. During the p.m. peak period, the northbound approach is experiencing some capacity constraints and moderate queuing, with an expected LOS of D, delay around 26 seconds, and queues around 7 vehicles. Summary results are shown in Exhibit 4-47.

Exhibit 4-47: ARCADY Roundabout Analysis for Airport Road & Boston Mills Road

Airport Road and Boston Mills Road / Castleberg Side Road – Single Lane Entry			
Approach	Entry Lanes	AM LOS	PM LOS
Boston Mills Road EB	Single	A	A
Airport Road NB	Single	A	D
Castleberg Side Road WB	Single	A	A
Airport Road SB	Single	E	A

Based on the operations under the single-lane entry configuration and the proportion of through to turning volumes, the addition of a NB right-turn by-pass lane and converting the SB approach to a flared two-lane entry were considered. The summary results are presented in Exhibit 4-48. Detailed ARCADY reports for all roundabout configurations analyzed are included in Appendix H.

Exhibit 4-48: Roundabout Analysis with NB By-Pass Lane for Airport Road & Boston Mills Road

Airport Road and Boston Mills Road – SB Flared Two-Lane Entry with NB By-Pass Lane			
Approach	Entry Lanes	AM LOS	PM LOS
Boston Mills Road EB	Single	A	A
Airport Road NB	Single with By-Pass Right Turn	A	C
Castleberg Side Road WB	Single	A	A
Airport Road SB	Dual	A	A

This configuration is expected to be effective at relieving congestion on the SB approach during the a.m. peak period, and operations during the p.m. peak period on the NB approach are improved. However, the NB approach is still expected to experience moderate queuing and delay during the p.m. peak period, with LOS C, delay of around 19 seconds, and queues of approximately 5 vehicles. To improve northbound operations even further, the approach geometry could be converted to a flared two-lane entry (same as the proposed SB approach), which would result in the NB approach operated at LOS A.

4.5 Roundabout Screening

The Region of Peel’s Roundabout Feasibility Screening Tool was used to evaluate the potential for roundabouts at four locations. The screening tool is a planning-level tool used to determine if a subject intersection warrants more detailed analysis for the installation of a roundabout. It takes into consideration the existing traffic volumes, operational concerns, existing traffic control proximity to adjacent signals, vertical geometry and property constraints. Each item is identified as roundabout supportive, non-supportive or neutral, and an overall recommendation is provided in terms of proceeding with planning for a roundabout.

To provide input into roundabout screening, preliminary concept plans were developed for roundabouts and alternative intersection configurations for comparison purposes at Walker Road, Cranston Drive, Olde Base Line Road, and Boston Mills Road / Castleberg Side Road as illustrated in Exhibit 4-49 to Exhibit 4-52. The following provides commentary on the preliminary concepts:

- Airport Road and Walker Road – a signal is not warranted through 2041 per Section 4.4.2 analysis, therefore a roundabout is considered on the basis of other goals including reduction of traffic speeds. The roundabout concept plan indicates impact to the heritage property on the southwest corner. Additional property impacts or acquisition are likely on the northeast corner. There is an approved development application for the northwest corner of the intersection. Overall, while a roundabout may be desirable at this location as a gateway feature into central Caledon East, it would entail significant impacts and costs, and is not likely feasible due to property and heritage impacts.
- Airport Road and Cranston Drive – a signal is not warranted through 2041 per Section 4.4.2 analysis, therefore a roundabout is considered on the basis of other goals including reduction of traffic speeds. The roundabout concept plan indicates minor to no impacts to the existing residences on the west side of Airport Road. On the east side the roundabout will require development plans be adjusted to provide space for the roundabout. It should be noted that the concept plan does not account for the flared

northbound approach which will require an additional travel lane – therefore impacts or property protection are higher than indicated.

- Airport Road and Olde Base Line Road – given the existing signal and the analysis provided in Section 4.4.1 either a roundabout or intersection widening is required to accommodate future traffic flows. A roundabout at this location is large entailing property impacts and access impacts to nearby businesses and residences. The alternative intersection treatment has reduced property impacts.
- Airport Road and Boston Mills Road / Castlederg Side Road - a signal is not warranted through 2041 per Section 4.4.2 analysis, therefore a roundabout is considered only on the basis of other goals including reduction of traffic speeds. In the local context the roundabout would have limited impacts, requiring mostly acquisition of farmland, however there are also few residences nearby. A roundabout may help to address the offset at the intersection.

Preliminary roundabout screening worksheets are included in Appendix I. Exhibit 4-53 provides a preliminary summary of the findings. Based on the findings and decisions from the Region, roundabouts were carried forward for detailed study at Cranston Drive, Olde Base Line Road and Boston Mills Road / Castlederg Side Road.

Exhibit 4-49: Roundabout Concept Plan for Airport Road & Walker Road (Not Carried Forward)

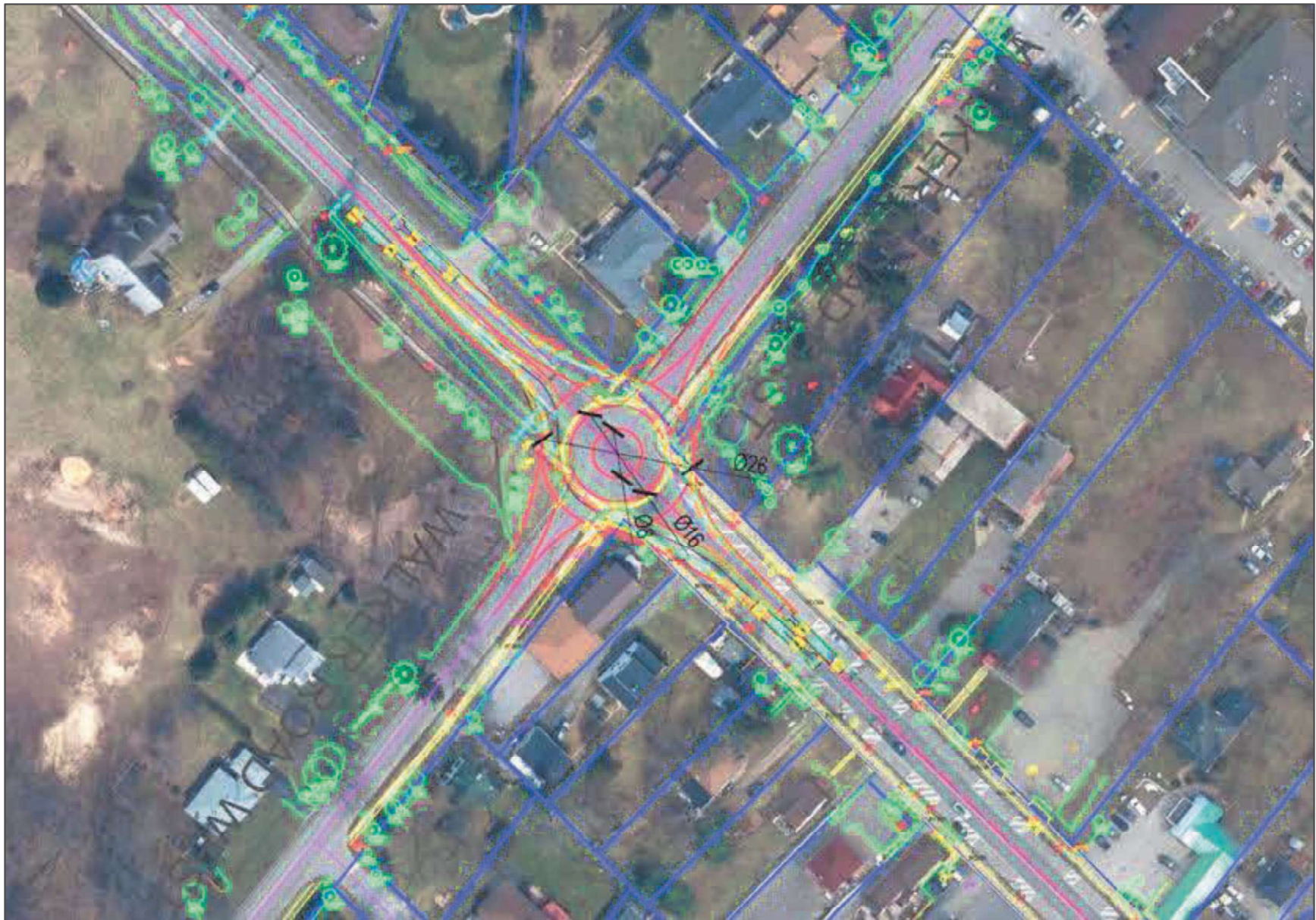


Exhibit 4-50: Roundabout Concept Plan for Airport Road & Cranston Drive

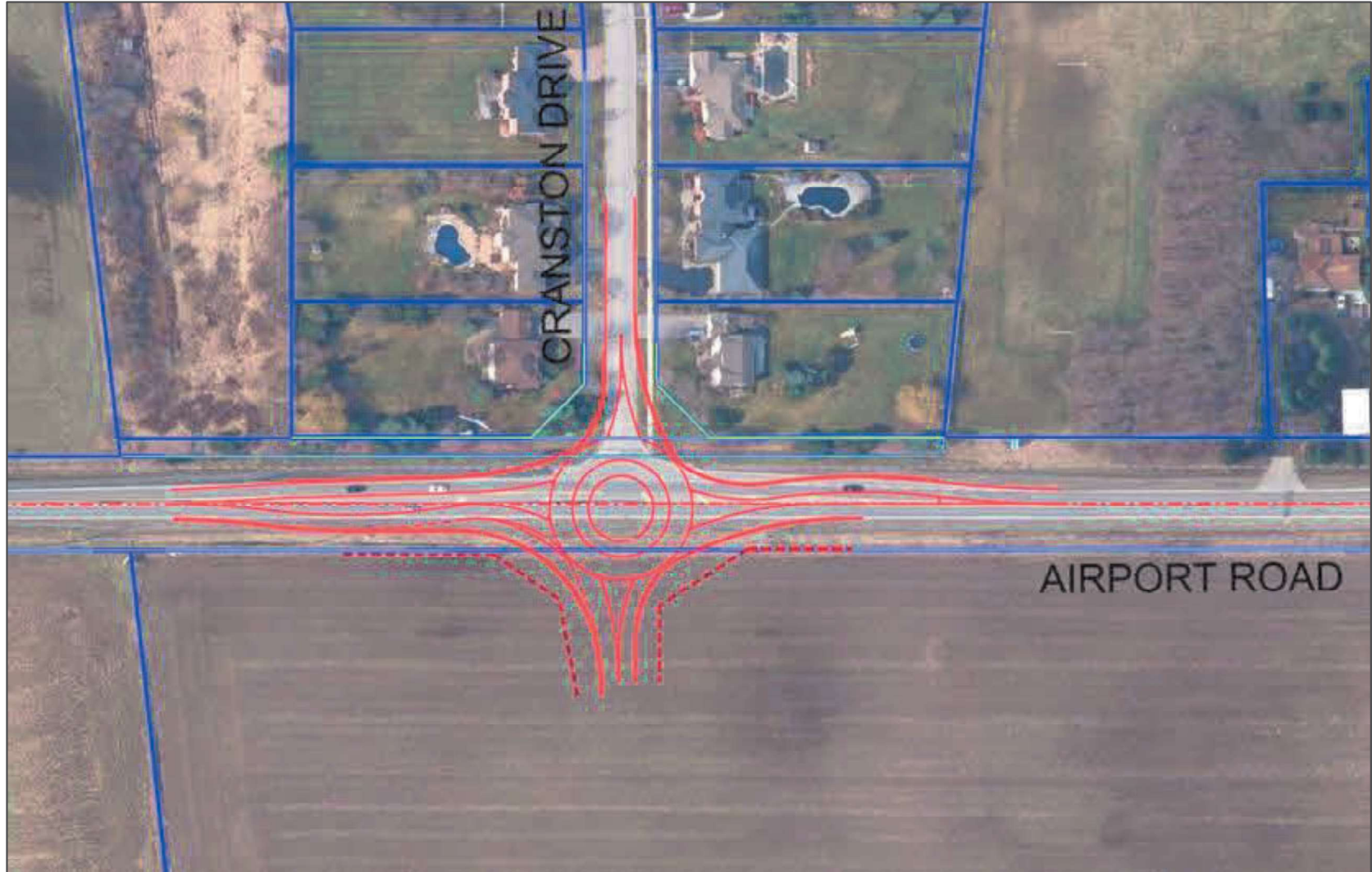


Exhibit 4-51: Roundabout Concept Plan for Airport Road & Olde Base Line Road (Not Carried Forward)



Exhibit 4-52: Roundabout Concept Plan for Airport Road & Boston Mills Road / Castleberg Side Road

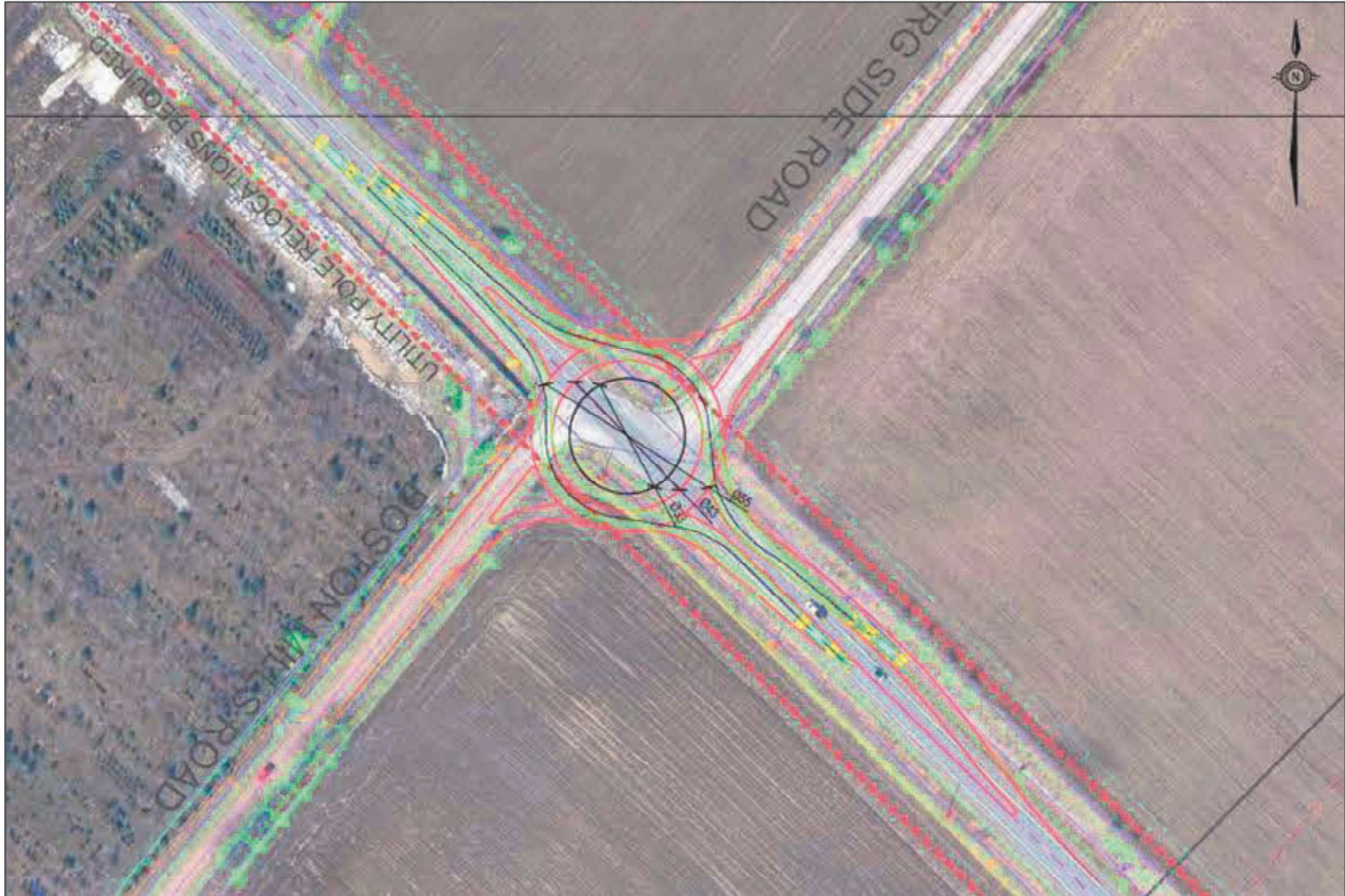


Exhibit 4-53: Roundabout Screening Summary Table

Intersection Road (w/ Airport Road)	Roundabout Supportive (Score / 14)			Recommendation
	Yes	No	Neutral	
Huntsmill Drive	1	6	7	TBD*
Walker Road	2	6	6	
Olde Base Line Road	5	3	6	
Cranston Drive	1	7	6	
Boston Mills Road / Castleberg Side Road	3	5	6	

*To be determined (TBD) following consultation with Town and stakeholders, and determined through environmental study

5 Road Safety Assessment

This section provides a collision analysis, speed limit analysis, and traffic development including sight line analysis. A detailed corridor review and field investigation was undertaken as described in Section 5.1.

5.1 Corridor Review and Field Investigations

Field investigations were undertaken to review the corridor traffic, geometry, and operating environment. Human factors conditions, such as driver positive guidance, speed limits, and interactions between the corridor and adjacent land-use, were considered as part of the review. The investigations were also undertaken to observe and comment on the issues and concerns identified through the request for proposal (RFP) and the public comments on the corridor. The following provides a synopsis of observations and findings.

5.1.1 Huntsmill Drive to Walker Road

A summary of findings and input into the plan development are provided by the following:

- Traffic appears to exceed the posted speed limit of 80 km/h north of Huntsmill Drive and 50 km/h south of Huntsmill Drive.
- Signage in this segment suggests that the Region has attempted to encourage slower speeds and that speeding has been a long term concern. The Region has enacted a 'Community Safety Zone' ending at Huntsmill Drive, plus there is an advisory speed sign (a dynamic speed display sign) to warn drivers that they are speeding.
- Despite the signage, the upstream and immediate operating environment is more representative of rural higher-speed traffic operations. The area is mostly undeveloped except for a few driveways, and a more urbanized cross-section does not present until around Leamster Trail.
- It is likely that compliance with the 50 km/h posted speed limit is low through this transition area because the corridor feels like a rural highway; efforts to force traffic to slow down at Huntsmill Drive or further north could meet with driver frustration, or traffic could resume speeding in the area between Huntsmill Drive and Caledon East.

- No SBL turning lane at Huntsmill; however, there is a paved NBR shoulder. It is noted that currently a southbound left turning lane is not warranted due to low turning volumes.
- Sightlines - some roadside vegetation to be maintained / cut back at Huntsmill (looking south).
- No pedestrians were observed and it is likely that pedestrian volumes are very low due to lack of destinations along this portion of Airport Road, few residences, and lack of pedestrian infrastructure.
- Urbanizing from Walker Road to Leamster Trail and a Gateway feature near Leamster Trail would likely reduce speeds in the southern part of the segment.
- There are a few accesses to properties mostly on east side of Airport Road, clustered near Leamster Trail where a 'gateway feature' would be appropriate.
- Leamster Trail – SBR and NBL turning lanes seem adequate.
- Leamster Trail to Walker Road – the road has a rural cross section – traffic seems to be moving at higher speed than posted 50 km/h limit.
- Leamster Trail – vegetation blocking sightlines to be cut back (looking north).
- Walker Road – no turning lanes

Overall the review found that this segment operates well; however, traffic speeds are a concern. Urbanizing Airport Road from Walker Road to Leamster Trail may encourage slower speeds through the south portion of the corridor.

5.1.2 South of Walker Road to Caledon Trailway

In this segment a summary of findings and input into the plan development are provided by the following:

- Good amount of on-street parking demand during mid-day shows demand for spaces.
- Appears to be under-utilized off-street parking during observed mid-day weekday.
- Frequent driveways including both residential and commercial; however, most do not require backing onto Airport Road. For those that do not have turnaround space, residents seem to back into driveway.
- Non-standard pavement markings delineating parking spaces. Pavement markings were designed to inform drivers where parking is permitted (without parallel strip) and prohibited (with strip). Overall the plan appears to offer some functionality and compliance was observed. The markings likely offer limited traffic calming functionality and curb bulb-outs with landscaping could be considered and would be more effective.
- Consider a two-way left turn lane, however it is unlikely to fit within right-of-way without impacting parking or plan for bike lanes.
- Traffic speed data was not collected, but the corridor was driven with traffic at a speed of approximately 55 km/h indicating that compliance with speed limits



Exhibit 5-1 – Pavement Markings on Airport Road in Caledon East

is higher, though some occurrence of traffic at 60 km/h or higher is likely.

- Active transportation proposes removing parking on one side to enable bike lanes – this seems supportable in terms of road function within the community; however, it could increase the volume of midblock pedestrian crossings to/from parking.
- Old Church Road intersection:
 - Significant sightline concern with exit from LCBO – limited visibility to the south.
 - There is a stop sign facing the driveway; however, right-of-way is to through traffic on a green light; this configuration can be confusing to drivers.
 - Awkward traffic operations – drivers exiting LCBO not sure where to look or how to egress LCBO safely. Fortunately driver confusion leads to tentative movements for the most part.
 - Overlapping left turns northbound and southbound – may need to model as split phasing, one phase for each approach.
 - Busy intersection, westbound left and northbound right turns
 - Large radius curvature for southeast corner – likely works for traffic, but increases traffic turning speed and increases pedestrian exposure.
 - Overall this intersection is awkward and potentially higher-risk due to LCBO driveway. With good local familiarity it is understood that the intersection was previously designed as a compromise between controlling traffic operations and maintaining access to the LCBO. However, improvements should be implemented. Install signal head facing driveway and convert to split phase, and/or search for other opportunities including the concept plan to extend Old Church Road to Ivan Avenue.
- South of Old Church Road – there still appears to be off-street parking available and some underutilized during site visit.
- Aggregate trucks moving through town – noise, vibration – public concerns are valid.
- Some cracks in pavement, but generally good condition, likely not a need for full depth reconstruction.
- Unusual non-standard pavement markings for parking, described above, continue to Caledon Trailway.
- Caledon Trailway crossing with pedestrian signal appears well designed. No compliance observations to report.

5.1.3 Caledon Trailway to South of Cranston Drive

For this segment a summary of findings and input into the plan development are provided by the following:

- This section of Airport Road has a narrow right-of-way. There is no space for widening or improvements without impacts to retaining walls and adjacent property.
- Gradient is likely near or over 5%, which would be the preferable design maximum.
- No turning lanes are present at Larry Street or Marion Street. This is a concern for northbound left turns as it is a potential rear-end hazard.

- Driveways on gradient are a safety concern, with poor sightlines. Some driveways have a turnaround space, at locations without residents seem to back in for safer egress.
- Overall, the gradient portion is a concern due to narrow right-of-way, lack of turning lanes, narrow sidewalks, and no space for active transportation. However, it is likely not possible to widen the road as it would entail many property impacts.
- Foodland entrance – southbound left turn lane is provided but no northbound right (NBR) or paved shoulder. It is noted that NBR turning volumes are 98vph in the p.m. peak hour which exceed the warrant for a northbound right turning lane.
- Sightline to north should be checked during design, likely near minimums due to grades.
- Foodland provides left and right exit lanes to manage queues. Driveway opening is very wide, which could result in higher speed movements.
- Road switches from urban to rural at school access on west side. On the east side rural continues to south edge of Foodland property.
- School access road has no sidewalk, and appears to be used as a bus egress only.
- Sightlines may be poor for the bus egress onto Airport Road from the stop line position due to vegetation to the south and grade to the north.
- Speed limit changes to 60 km/h north of Cranston Drive – this limit seems appropriate considering rural cross section; however, with development plans on east side a lower 50 km/h limit and urbanization may be appropriate in the future (see Section 5.3).
- Traffic observations tended to follow the observed speed data in this location (see Section 5.3) where compliance with the 50 km/h limit is good along the gradient portion, but there is likely some speeding further south near Cranston Drive and potential significant occurrence of speeding south of Cranston Drive.
- Cranston Drive intersection seems to operate well given NBL and SBR turning lanes.

5.1.4 South of Cranston Drive to Boston Mills Road / Castlederg Side Road

For this segment a summary of findings and input into the plan development are provided by the following:

- South of Caledon East the corridor has adjacent farmland. The corridor has the look and feel of a rural highway; therefore, there is likely some occurrence of traffic exceeding the posted 60 km/h limit.
- The corridor has rural cross section throughout including within the community at Mono Road.
- Through Mono Road, there are frequent driveways (approximately 36 in total) serving a mix of residential and commercial properties. Most driveways provide turnaround facilities, which would enable a safer access to Airport Road. A few driveways do not provide turnaround space. Future re-development applications should attempt to consolidate driveways and require turnaround space.
- The 60 km/h speed limit seems appropriate through Mono Road under the current configuration, though the roughly 1-km segment between Mono Road and Caledon East is rural undeveloped / farmland pointing to higher speeds.

- If Airport Road were to be urbanized it would likely encourage slower traffic speeds and a 50 km/h speed limit could be appropriate.
- The intersection of Airport Road and Olde Base Line Road currently provides no turning lanes. Turning lanes are likely warranted by traffic volumes including northbound left, southbound right, and eastbound left. Alternatively, a roundabout could be considered (see Section 4.5).
- There are driveways or properties in the vicinity of Airport Road and Olde Base Line Road that would likely be impacted by improvements including a roundabout or turning lanes.
- South of Mono Road to Castleberg Side Road the corridor reverts to a rural highway cross-section with few driveways and an 80 km/h posted speed limit, which generally aligns with traffic speeds. It was noted in the speed analysis (Section 5.3) that speeding is a significant concern in this area.
- There is a commercial greenhouse / plant nursery north of Boston Mills Road on the west side of Airport Road. The business has no turning lanes but may attract significant volumes of traffic, in particular during peak season in the spring. This location was flagged as a safety concern for the study, and turn lane warrants were investigated (see Section 3.3.3.1.1).
- There are two intersections along Airport Road at Castleberg Side Road and Boston Mills Road that are offset by approximately 30 m centreline to centreline. This offset is undesirable as it creates conflicts between northbound and southbound left turns. There are also no turning lanes on Airport Road. With increasing traffic volumes, the offset is a safety hazard and should be resolved through the EA; either realignment of one road or the other to create a standard four-legged intersection or through installation of a roundabout.

5.1.5 Boston Mills Road / Castleberg Side Road to North of King Street

This segment of Airport Road is rural with adjacent farmland and is posted at 80 km/h. There are a number of residential accesses, all of which appear to provide internal turnaround capability. There are also a number of field accesses. Aside from the potential presence of slow-moving farm vehicles, and wild animal crossings, no unusual safety concerns were identified.

5.2 Collision Analysis

5.2.1 Collision Trends

A total of 91 reported collisions occurred in the five year study period (2012-2016); Exhibit 5-2 presents the yearly collision distribution of collisions by severity. A large portion of all collisions were classified as property damage only (PDO), with fewer non-fatal injuries, and even fewer fatal injuries. There were a total of 74 PDO collisions, 16 non-fatal injuries, and 1 fatality. The data shows a significant drop-off in the annual collision frequencies after 2014. It is noted that in 2014, the collision reporting system in Ontario changed from a paper based system to an electronic reporting system also known as e-collisions. It is believed that the 2014 drop in collisions might be the result of migrating to the new e-collision system.

Exhibit 5-2: Collisions by Year

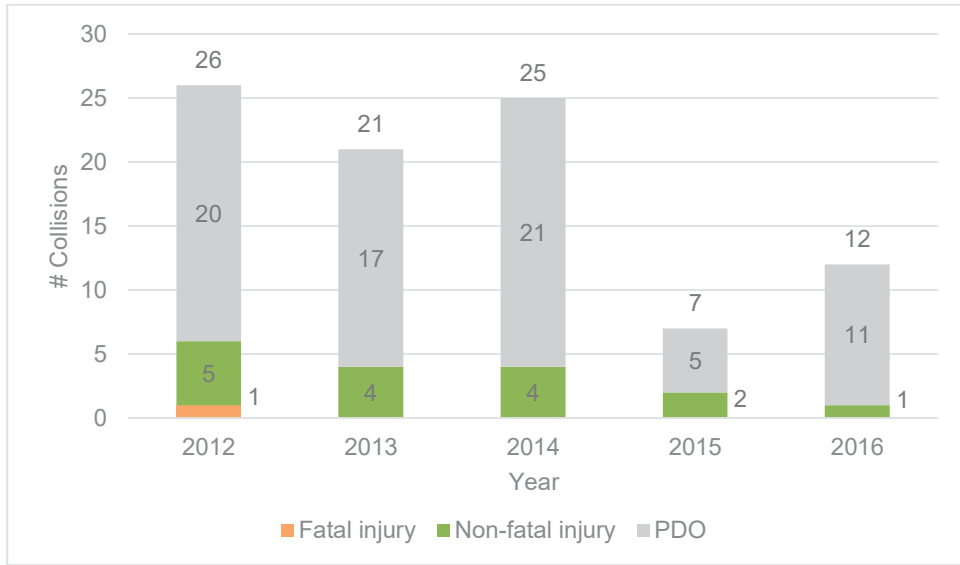


Exhibit 5-3 shows the distribution of collisions that have occurred along Airport Road, aggregated by intersection and midblock locations. A total of 50 collisions occurred at intersections, and 41 collisions occurred at midblock locations. The intersections that had the highest number of collisions were King Street, Olde Base Line Road, and Old Church Road; most likely due to the higher traffic volumes passing through those locations. The midblock locations adjacent to those intersections also experienced a higher number of collisions, presumably for the same reasons. Further analysis of notable intersections and midblock segments is presented in later sections.

Exhibit 5-3: Collisions by Location

Intersection	Collision Frequency	Midblock	Collision Frequency
Huntsmill Drive	2	Huntsmill Drive to Leamster Trail	5
Leamster Trail	N/A	Leamster Trail to Walker Road W	2
Walker Road W	4	Walker Road W to Old Church Road	6
Old Church Road	8	Old Church Road to Parsons Avenue	4
Parsons Avenue	N/A	Parsons Avenue to Emma Street	N/A
Emma Street	N/A	Emma Street to Caledon Trailway	N/A
Caledon Trailway	1	Caledon Trailway to Mountcrest Road	N/A
Mountcrest Road	1	Mountcrest Road to Larry Street	1
Larry Street	N/A	Larry Street to Marion Street	1
Marion Street	N/A	Marion Street to Hilltop Drive	N/A
Hilltop Drive	1	Hilltop Drive to Cranston Drive	4
Cranston Drive	2	Cranston Drive to Olde Base Line Road	4
Olde Base Line Road	12	Olde Base Line Road to Boston Mills Road / Castleberg Side Road	6
Boston Mills Road / Castleberg Side Road	2	Boston Mills Road / Castleberg Side Road to King Street	8
King Street	17		

Exhibit 5-4: Initial Impact Type

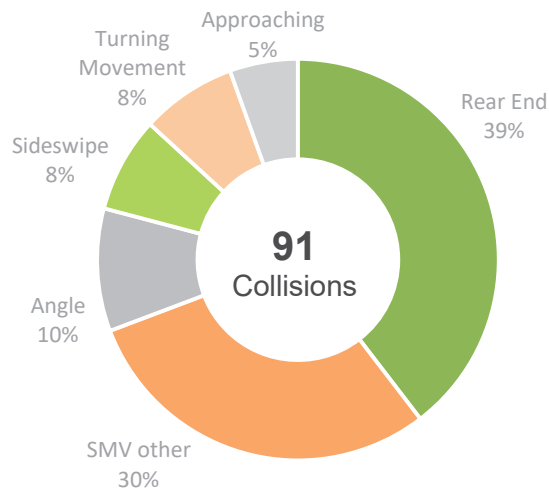


Exhibit 5-4 shows the collision distributions by initial impact type. The most common impact type was rear-end collisions, which is expected for a major arterial road with higher operating speeds and frequent intersections/accesses. Correspondingly, 74% of the rear-end collisions occurred at signalized intersections, typically during periods of higher traffic demand (e.g., the AM and PM commuter peaks).

The second most common impact type was single motor vehicle (SMV) collisions. There was a slight concentration of SMV collisions at the southern end of the study area between

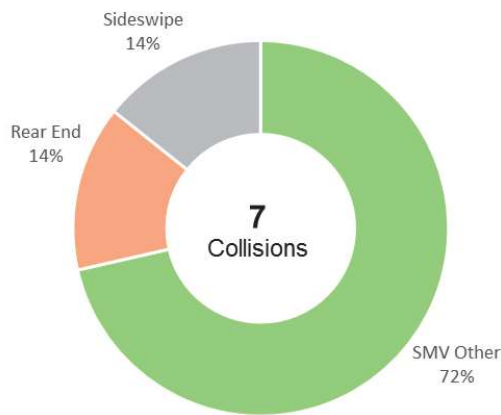
Hilltop Drive and King Street. Almost half of the midblock SMV collisions involved a vehicle striking a wild animal, two collisions involved a pedestrian, and the remainder involved drivers losing control and driving into a ditch or pole.

5.2.2 Huntsmill Drive to Walker Road

There were a total of seven reported midblock collisions that occurred between Huntsmill Drive to Walker Road. This segment of Airport Road is approximately 800 m long and contains three intersections. Exhibit 5-5 shows the collision distributions by initial impact type for the segment.

Exhibit 5-5: Huntsmill Drive to Walker Road Midblock Collisions by Initial Impact Type

COLLISION TYPE	SMV Other	Angle	Rear End
FREQUENCY	5	1	1



The most common impact type was SMV (72%), followed by rear-end (14%), and sideswipe (14%) collisions. One of the SMV collisions involved a pedestrian fatality, when the pedestrian ran onto the roadway in front of a vehicle. The other four SMV collisions occurred when a driver hit a wild animal when there were low lighting conditions. Three of the wild animal collisions occurred north of Leamster Trail, where the adjacent lanes are heavily wooded.

The proposed addition of bike lanes between Walker Road and Leamster Trail is not expected to have a major impact on the safety performance along this segment. There are four private driveways on Airport Road, care should be taken to

reduce the potential for conflicts between cyclists and vehicles accessing driveways (e.g., by ensuring that the lanes are clearly marked and good sightlines provided).

Intersection of Airport Road and Walker Road

Between 2012 and 2016, there were four collisions that occurred at the intersection of Airport Road and Walker Road. A collision distribution by initial impact type is shown in Exhibit 5-6.

Exhibit 5-6: Walker Road Collisions by Initial Impact Type

COLLISION TYPE	Rear End	Sideswipe
FREQUENCY	3	1

There was a total of three rear-end collisions and one sideswipe collision during the five year study period. Two rear-ends were in the northbound direction, and the other was caused by a southbound right-turning vehicle rear-ended by a southbound through vehicle.

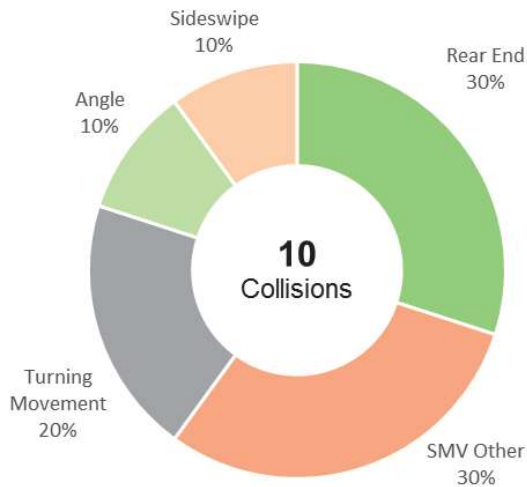
Less than one collision per year occurred at this location, and none resulted in injury or fatality; therefore, signalization is not warranted from a safety standpoint. The proposed road widenings, to add a dedicated eastbound left- and right-turn lanes and southbound right-turn lanes, are expected to reduce the risk of rear-end collisions.

5.2.3 South of Walker Road to Caledon Trailway

There were a total of 10 midblock collisions that occurred between Walker Road and Caledon Trailway. This segment of Airport Road is approximately 520 m long and contains four intersections. Exhibit 5-7 shows the collision distributions by initial impact type for the segment.

Exhibit 5-7: South of Walker Road to Caledon Trailway Midblock Collisions by Initial Impact Type

COLLISION TYPE	Rear End	SMV Other	Turning Movement	Angle	Sideswipe
FREQUENCY	3	3	2	1	1



The most prominent collision types were rear-end (30%) and SMV (30%), followed by turning movement collisions. The three SMV collisions occurred north of Parsons Avenue, and they respectively involved a pedestrian, a parked vehicle, and a utility pole. One rear-end collision occurred when a vehicle reversed into another while parking on-street. Both turning movement collisions occurred when a left-turning vehicle did not yield the right-of-way and was hit by a through vehicle.

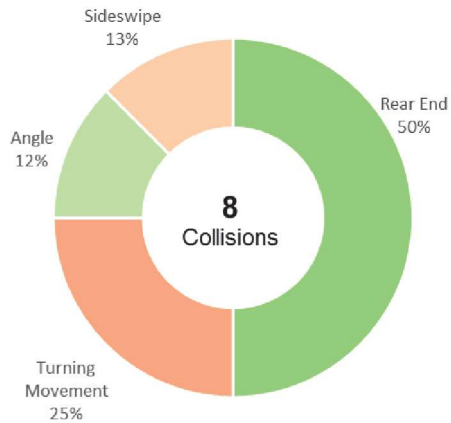
Two out of the six SMV and rear-end collisions were parking related; the removal of parking on one side along this segment would reduce those types of collisions. Additionally, there are several commercial accesses on both sides of the road, which may create conflicts between turning vehicles and cyclists.

Intersection of Airport Road and Old Church Road

The intersection of Airport Road and Old Church Road is a signalized, three-leg intersection located approximately 300 m south of Walker Road. Between 2012 and 2016, there were eight collisions that occurred at this location, the collision distribution by initial impact type is shown in Exhibit 5-8.

Exhibit 5-8: Old Church Road Collisions by Initial Impact Type

COLLISION TYPE	Rear End	Turning Movement	Angle	Sideswipe
FREQUENCY	4	2	1	1



The most frequent collision types were rear-ends (50%), followed by turning movements (25%). In terms of rear-end collisions, two occurred in the northbound direction, and one occurred in each of the southbound and westbound directions. Both turning movement collisions occurred when a northbound left- or U-turning vehicle failed to yield to the right-of-way, and was struck by a southbound through vehicle.

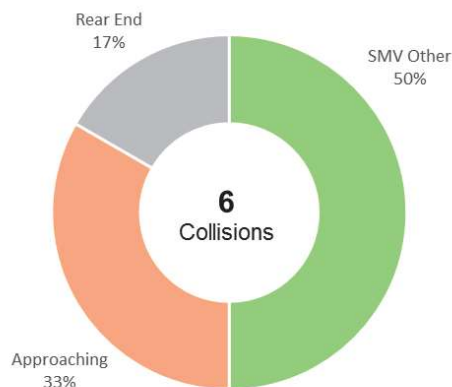
All collisions occurring at Old Church Road were classified as PDO, suggesting that speed was not a major factor, which is perhaps attributable to the tighter intersection spacing around this location. In addition, half of the collisions occurred during the evening rush hour, when higher traffic demand often results in lower operating speeds.

5.2.4 Caledon Trailway to South of Cranston Drive

There were a total of six collisions that occurred between Caledon Trailway and south of Cranston Drive. This segment of Airport Road is approximately 1.1 kilometers and contains of seven intersections. Exhibit 5-9 shows the collision distribution by initial impact type for the segment.

Exhibit 5-9: Caledon Trailway to South of Cranston Drive Midblock Collisions by Initial Impact Type

COLLISION TYPE	SMV Other	Approaching	Rear End
FREQUENCY	3	2	1



The most frequent impact types were SMV (50%), followed by approaching (33%), and rear-end (17%) collisions. All three SMV collisions occurred between Cranston Drive and Hilltop Drive; two were related to driving too fast for conditions, losing control, and crashing into a ditch; the other was a collision with an animal. Both approaching collisions were attributed to drivers being inattentive and driving into the opposing lane, both collisions resulted in non-fatal injuries.

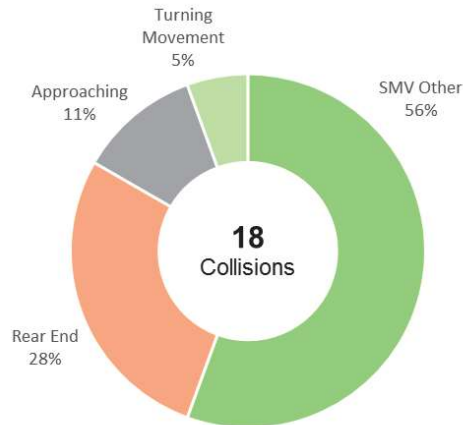
A proposed roundabout at Cranston Drive would serve as a gateway feature, helping to lower operating speeds, which could reduce the risk of speeding related collisions.

5.2.5 South of Cranston Drive to Boston Mills Road / Castleberg Side Road

There were a total of 18 midblock collisions that occurred between Cranston Drive and King Street, the most of any road segment. This segment of Airport Road is approximately 1.65 kilometers long and contains three intersections. Exhibit 5-10 shows the distribution of collisions by initial impact type for the segment.

Exhibit 5-10: Cranston Drive to King Street Midblock Collisions by Initial Impact Type

COLLISION TYPE	SMV Other	Rear End	Approaching	Turning Movement
FREQUENCY	10	5	2	1



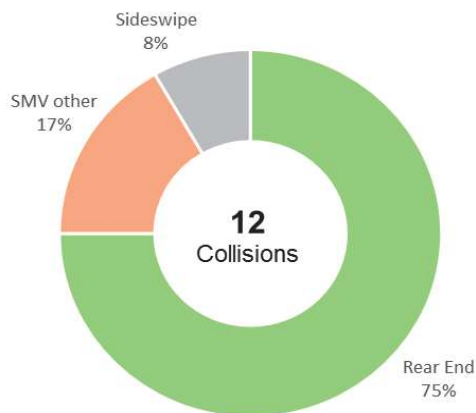
The most common impact types were SMV (56%), followed by rear-end (28%), and approaching (11%) collisions. Half of the SMV collisions involved a wild animal, the other half were the result of the driver losing control and driving off the road. Two of the five rear-end collisions resulted in injury, which suggest that speed may have been a factor. The geometry of Airport Road may encourage high speeds; a straight roadway with limited accesses, makes it easy for traffic to operate with lower perceived risks. It is noted that few collisions appear to be associated with the community of Mono Road – most collisions are SMV and eight other collisions across a 5-year period for the full segment does not appear to be an unusual risk.

Intersection of Airport Road and Olde Base Line Road

The intersection of Airport Road and Olde Base Line Road is a signalized, three-legged intersection. There were a total of 12 reported collisions that occurred at this location over the analysis period. Exhibit 5-11 shows the distribution of collisions by initial impact type.

Exhibit 5-11: Olde Base Line Road Collisions by Initial Impact Type

COLLISION TYPE	Rear End	SMV Other	Sideswipe
FREQUENCY	9	2	1



The most prominent collision types were rear-end (75%), followed by SMV other (17%), and sideswipe (8%) collisions. Six out of nine rear-end collisions involved northbound vehicles, two involved southbound vehicles, and one was in the eastbound direction.

The high number of northbound rear-end collisions may be attributed to the lack of a designated northbound left-turn lane, which could result in left-turning vehicles getting rear-ended by vehicles going through the intersection. The widening of Airport Road at this location to provide a designated northbound left-turn lane or a roundabout would likely help to reduce the frequency of northbound rear-end collisions.

5.2.6 Boston Mills Road / Castleberg Side Road to North of King Street

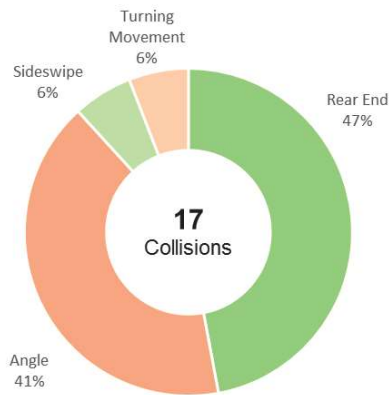
Intersection of Airport Road and King Street

The intersection of Airport Road and King Street is a signalized, four-legged intersection. There were a total of 17 reported collisions that occurred at this location over the study period, the

most at any intersection along the study corridor. Exhibit 5-12 shows the distribution of collisions by initial impact type.

Exhibit 5-12: King Street Collisions by Initial Impact Type

COLLISION TYPE	Rear End	Angle	Turning Movement	Sideswipe
FREQUENCY	8	7	1	1



The most prominent collision types at King Street were rear-ends (47%), followed by angle (41%) collisions. There have been a relatively high number of angle collisions at this location, which suggests that vehicles are not obeying traffic controls. Three angle collisions involved a southbound vehicles, three involved an eastbound vehicle that did not yield the right-of-way, and another involved a westbound vehicle. Based on the collision data, there were not any issues relating to the signal control or road conditions that resulted in the angle collisions, suggesting that drivers are simply disobeying traffic control at this intersection, intentionally or otherwise.

High speeds may also be a contributing factor in the collisions; three out of seven (3/7) angle collisions, and three out of eight (3/8) rear-end collisions, resulted in an injury. The prominence of angle collisions and high injury rates suggests that drivers may be speeding through the intersection to avoid waiting at a red light. A roundabout is planned at this intersection which may alleviate the collision frequency.

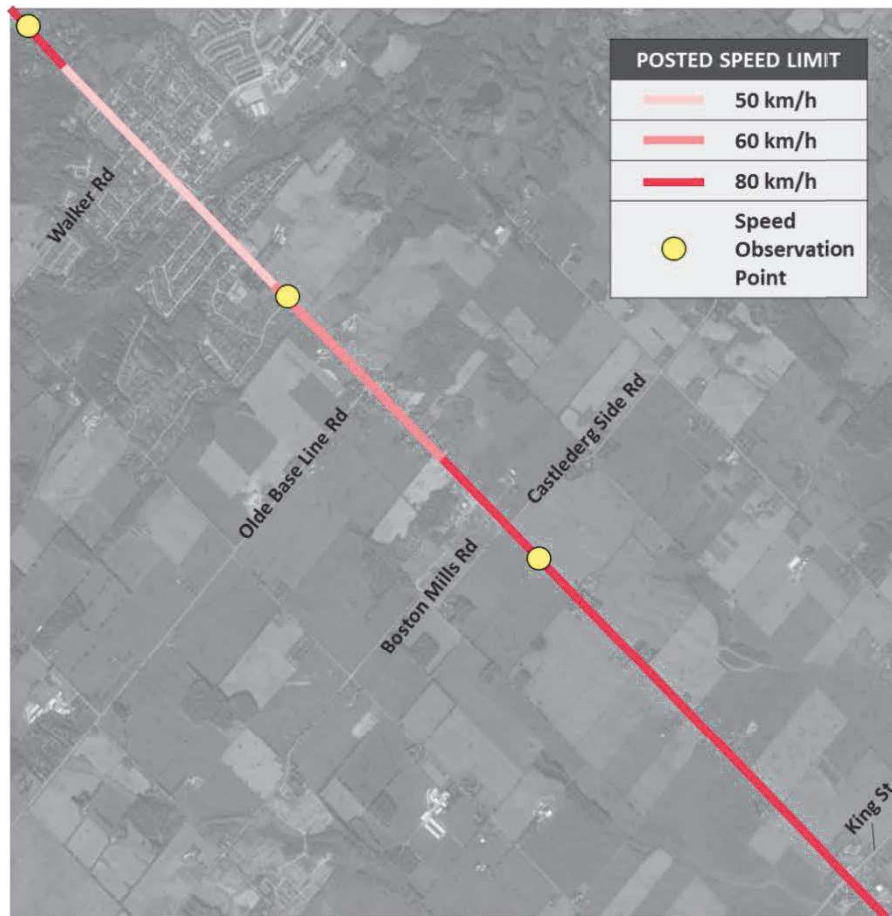
5.3 Traffic Speed Analysis

This section provides an analysis of existing speed limits and current observed speeds to identify locations of concern with respect to speeding. A review of speed limits using TAC methodology is provided to develop recommendations for changes to speed limits (or speed zones). Additional commentary is provided on community objectives and traffic calming needs and opportunities.

5.3.1 Posted Speed Limit

The posted speed limits on Airport Road within the study area are illustrated in Exhibit 5-13.

Exhibit 5-13: Corridor Posted Speed Limits



5.3.2 Observed Traffic Speeds

Field traffic speed counts were collected by the Region in 2015 at three locations as shown in Exhibit 5-13. The observed traffic speed counts were analyzed and summarized in Exhibit 5-14.

Exhibit 5-14: Summary of Observed Traffic Speeds

Location	Posted Speed Limit (km/h)	Northbound		Southbound		Combined	
		50 th %tile (km/h)	85 th %tile (km/h)	50 th %tile (km/h)	85 th %tile (km/h)	50 th %tile (km/h)	85 th %tile (km/h)
1.5 km North of Old Church Road	80	80	89	79	88	80	89
0.8 km North of Olde Base Line Road	60	62	71	66	75	65	74
2.8 km North of King Street	80	87	97	94	103	91	100

From Exhibit 5-14, it is observed that there is speeding at all three observation locations. An 85th percentile speed at 10 km/h over the posted limit, or more, is indicative of a speeding issue. This criteria applies to the two southern locations, but the north location is also a concern (see field investigations above). It is noted that the north location is adjacent to a 50 km/h zone, and the field observations indicated there was little slowing of traffic through the intersection of Huntsmill Drive. Additional commentary on analysis and recommendations is provided in the following section.

5.3.3 TAC Speed Limit Analysis

The speed limit assessment was undertaken using the Transportation Association of Canada (TAC) Guideline for Establishing Posted Speed Limits methodology. Detailed speed limit assessment sheets are included in Appendix K. A summary of recommended posted speed limits for existing and future conditions on Airport Road is provided in Exhibit 5-15. It is noted that the segment definition does not directly follow the operational segments, but was instead chosen to reflect traffic speeds and local conditions.

Exhibit 5-15: Speed Limit Assessment Summary

Airport Road Section	Existing Conditions Assessment	
	Risk Score	Recommended Posted Speed Limit
Huntsmill Drive to Walker Road	47	70 km/h
Walker Road to Caledon Trailway Path	70	50 km/h
Caledon Trailway Path to Caledon East PS Driveway	54	60 km/h
Caledon East PS Driveway to Cranston Drive	31	80 km/h
Cranston Drive to 635 m south of Olde Base Line Road	48	70 km/h
635 m south of Olde Base Line Road to King Street	29	90 km/h

The total risk score given by TAC speed limit methodology is based on the assessment of multiple risk categories, such as road geometries, pavement conditions, driveway density, presence of vulnerable road users, etc. The recommended posted speed limit is then determined considering the road characterization, the assessed risk scored and adjacent land use (urban or rural).

The analysis reflects the changing nature of the corridor from north to south. While the analysis points to changing speed limits, it is likely that six segments are excessive given the 7.5 kilometers length of the study area. The following section provides commentary by location.

5.4 Traffic Development

5.4.1 Sightline Analysis

Sightline analysis was conducted to all minor streets intersecting with Airport Road to determine whether there are sufficient sightline distance for left and right turning vehicles from the stop bar. The criteria used to determine sightline requirements and detailed sightline analysis sheets are provided in Appendix J, which is based on the Geometric Design for Ontario Highways. Locations with sightline deficiencies are summarized in Exhibit 5-16 along with recommendations.

The private driveways along the corridor are also assessed. There are some driveways that are close to the crossing street. On section of Airport Road between Marion Street and Hilltop Road, the slope of properties has necessitated the use of retaining walls on residential driveways, which can limit sightline lines (for example, 15831 Airport Road).

Exhibit 5-16: Locations with Sightline Deficiencies and Recommendations on Airport Road

Airport Road Intersection	Deficiencies	Recommendations
Huntsmill Drive	Vegetation on the south side blocks visibility	Monitor and clear vegetation
Leamster Trail	Vegetation on the north side block sightline	Clear vegetation
LCBO Access	LCBO building blocks view to the south, vehicles might drive out onto the sidewalk for visibility	See Section 4.4.2 – extension of Old Church Road would address sightline concern
Emma Street	Pizza shop to the north blocks sightline	Consider alternatives in design

5.4.2 Access Spacing

Existing accesses and driveways along the corridor are summarized by segment, and presented in Exhibit 5-17. The following are noted:

- From Huntsmill Drive to Walker Road, there are 10 accesses for an average 80 m spacing, however the majority are clustered near the south end of the segment near or south of Leamster Trail.
- From Walker Road to Caledon Trailway, there are 28 accesses for an average 20 m spacing. This access frequency and the commercial nature of many accesses points to a potential two-way-left turn lane. Two-way left turn lanes (TWLTL) can enhance safety by removing left turns from through traffic along Airport Road. In the local context a TWLTL would not fit within the existing pavement width or right-of-way, but would fit if parking were removed on one side of Airport Road. Further discussion of alternatives along this section of Airport Road including consideration for a bike lane is provided in Section 6.2.2.
- From Caledon Trailway to Cranston Drive, there are 24 accesses primarily residential frontage North of Foodland Plaza and the plaza commercial access itself. The densest frontage of accesses between Mountcrest Road and the Foodland Plaza corresponds to the narrowest portion of Airport Road where there is no space to implement left turn lanes or other improvements.
- From Cranston Drive to King Street, there are 70 accesses covering a mix of tightly spaced residential and commercial accesses in Mono Road and widely spaced farm or homestead accesses in the rural parts. Through Mono Road, the dense access spacing is a potential concern, though with primarily residential accesses and very low turning volumes, a two-way left turn lane (TWLTL) is not likely to be warranted.

The Transportation Association of Canada (TAC) provides information on the advantages, disadvantages and application of two-way left turn lanes. Further consultation considering two-way left turn lanes in Caledon East, and the associated impact on parking is required.

Exhibit 5-17: Summary of Existing Accesses

Segments	Number of Driveways			Average Spacing (m)
	Residential	Commercial	Industrial	
Huntsmill Drive to Walker Road	8	2	--	80
Walker Road to Caledon Trailway Path	6	22	--	20
Caledon Trailway Path to Cranston Drive	22	2	--	35
Cranston Drive to North of King Street	61	6	3	70

There is no existing access that impacts auxiliary lane storage on Airport Road under current conditions. A list of accesses with future 2041 traffic volumes approaching 60 vph on Airport Road are summarized in Exhibit 5-18 to be evaluated for potential auxiliary right turn lanes.

Exhibit 5-18: Summary of Potential Auxiliary Right Turn Lanes

Access	Approach	Future Traffic Volume
Walker Road	SB	46 vph (AM)
Proposed 5992 King Street Access	SB	113 vph (AM)

Exhibit 5-19: Advantages and Disadvantage of Two-Way Left Turn Lane (source: TAC)

Advantages	Disadvantages
<ul style="list-style-type: none"> well suited to strip development with frequent low to medium volume driveways remove turning traffic from the through lanes, significantly improving traffic safety and capacity not as restrictive to access as raised median implementation costs and right-of-way requirements are less than that of a raised median 	<ul style="list-style-type: none"> generally not suited for operating speeds >70 km/h not suitable to high volume driveways, exclusive turn lanes preferred left-turn paths not clearly defined and turning conflicts can occur limited to tangent alignments with good sight distance traffic level of service lower as compared to divided roadway opposing traffic flow not physically separated as with a raised median pedestrians required to cross wide roadway without a physical central refuge area operation may not be clearly understood by the unfamiliar driver

5.5 Traffic Signals and Illumination

Traffic signal warrants and left turning lane warrants were run for existing unsignalized intersections and included in Section 4.4.2. Sightline analysis was conducted and presented in Section 5.4.1.

AODA should be implemented according to legislated guidelines, which typically requires implementation at reconstruction or new construction. In this study the following intersections have been identified as undergoing significant change where AODA should be implemented:

- Proposed signalization of the west leg of Old Church Road;
- Proposed signalized intersection at Caledon East PS Driveway and 15717 Airport Road North Access; and
- Roundabout or intersection widening at Airport Road and Olde Base Line Road.

A signal warrant for the proposed intersection at Caledon East PS Driveway and 15717 Airport Road North Access was provided by the development's TIS, which is included in Appendix L of this planning report.

Street lighting levels should be checked against standards during the detailed design phase.

5.6 Summary of Safety Assessment

Huntsmill Drive to Walker Road

In the north portion of this segment, from Huntsmill Drive to Leamster Trail, traffic is exceeding the posted 50 km/h speed limit despite efforts by the Region to encourage slower speeds through signage and bylaws including Community Safety Zone, and an electronic speed advisory sign. The review of corridor conditions through field observations indicate that the corridor is more conducive to higher speed traffic due to its rural cross section, good sightlines, and lack of adjacent development. Little pedestrian activity is expected (none was observed) and the road functions like a rural highway, and drivers are likely speeding as it is perceived to be safe and comfortable.

The study applied the Transport Association of Canada speed analysis tool to develop a recommended speed limit and the resulting recommendation is 70 km/h. Based on the findings of this analysis, it is likely that the current 50 km/h speed limit is set too low in terms of driver expectation for the corridor.

Despite the finding, the Region is not in favour of increasing the speed limit on the basis of perceived safety and efforts to reduce entry speeds into the community of Caledon East. Local traffic calming could be considered such as horizontal or vertical deflection measures, though it would be unusual for a rural Regional arterial. It is also noted that even with a local treatment at Huntsmill Drive, the character of the corridor and the long distance to Leamster Trail (500 m) may encourage speeding that resumes between the two intersections. It should be noted that a roundabout or other traffic calming measures installed at Huntsmill Drive may result in an increase in collisions.

In the south portion of the segment starting at Leamster Trail, urbanization and a gateway feature would improve compliance with the 50 km/h speed limit, and it would be compatible with the adjacent urban form. At Leamster Trail, the gateway feature should include substantial visual or alignment treatments, more than normal 'welcome to Caledon East' signage or landscape-style signs. An alignment treatment could be a raised median with landscaping, sometimes seen with signage or flagpoles. The through lanes would have a minor deflection around the raised median compatible with a 60 km/h design speed (10 above the limit), and lane narrowing. The following exhibit illustrates potential entry features to encourage slower traffic speeds. Further

review of needs and opportunities along the corridor considering active transportation and the Town of Caledon's Official Plan, which provides input to development plans and the location of the 'gateway feature' near Leamster Trail is provided in Section 6.2.1.

Exhibit 5-20: Raised Median Example (Left), Integrated with Pedestrian Crosswalk (Right)



South of Walker Road to Caledon Trailway

The current 50 km/h posted speed limit is consistent with the TAC recommendation. No speed data were available from within this section; however, observations made during the field investigations suggest a higher degree of compliance compared with further north, with observed traffic speed at 55 km/h, though some occurrence of speeding is still likely. In this section the surrounding operating environment provides a number of cues to drivers that reflect an elevated level of risk and a need to drive more slowly. The non-standard pavement markings described in the field notes likely contribute to a visual narrowing of the roadway, though it is less effective than a physical narrowing. Further compliance and slower speeds should be encouraged through additional visual cues such as curb bulb-outs, planters, street furniture, and increased presence of on-street activity like cycling, pedestrians, and retail frontage.

Caledon Trailway to South of Cranston Drive

The gradient along Airport Road from Caledon Trailway to the Foodland Plaza, and narrow right-of-way, seem to contribute to higher compliance with the posted 50 km/h speed limit, though the down gradient may cause some northbound traffic to naturally increase speed northbound.

South of the Foodland plaza the urban cross section ends, the west side of the road is rear facing lots, and the east side of the road is farmland. These attributes contribute to a rural highway feel supporting higher speeds, and the data collection points indicate that most traffic is speeding. The TAC analysis indicates a recommended speed limit of 60 km/h, higher than the posted limit of 50 km/h. The TAC score of 60 km/h as opposed to 50 km/h is mainly driven by the fact that there are no signals or stop signs for through traffic on Airport Road. An interim 60 km/h speed limit could be considered, but given that development of the east side will occur within a few years and will introduce a signal, it is likely appropriate to maintain the current 50 km/h speed limit.

South of the school access the speed limit reverts to 60 km/h whereas the speed analysis points to 80 km/h. In both directions, the 85th percentile speeds are in excess of 70 km/h. This suggests that both speeding is a concern and that speed limits in the corridor may be too low. It is noted that there are significant development plans on the east side of Airport Road. The Region should consider increasing the speed limit to 70 km/h from the school access to Mono Road; however since this would be an interim change the current 60 km/h could also be considered appropriate. Despite the above, the Region is not in favour of increasing the speed limit.

Urbanizing the corridor through Cranston Drive as recommended through the corridor review, and development on the east side, will naturally reduce traffic speeds through visual and physical cues to drivers, and a 50 km/h limit may be appropriate at that time.

South of Cranston Drive to Boston Mills Road / Castleberg Side Road

This segment is predominantly rural; however, at its centre, through the community of Mono Road, there is a 650 m section with significantly higher access density. As a result, there is little environmental influence to support the 60 km/h posted speed limit at the two ends of the segment.

The TAC analysis points to an alternating 80 km/h and 70 km/h speed limit, higher than the posted 60 km/h limit. Generally within Mono Road the 60 km/h seems appropriate considering the direct frontage driveways, presence of both commercial and residential lots, and the signalized intersection at Olde Base Line Road. Outside of Mono Road, to both the south and for the short rural stretch to Cranston Drive, the rural configuration contributes to higher traffic speeds.

This type of rural community often presents a speed limit compliance challenge, and without a clear transition point or gateway feature there is little that can be done, outside of enforcement, to address the issue. The minimum speed zone length requirements necessitate that the 60 km/h speed limit extends beyond the built-up area. One potential treatment that could help with the transitions would be roundabouts at both ends of the community (e.g., at Olde Base Line Road and Boston Mills Road / Castleberg Side Road). Not only would they serve as speed management, but the roundabouts, if connected by a raised median, could eliminate left turns into the many driveways while still providing access to northbound and southbound Airport Road (via U-turns).

Boston Mills Road / Castleberg Side Road to King Street

Despite the TAC findings pointing to a 90 km/h speed limit, a 90 km/h limit is rare in Ontario especially considering the local context. Therefore the existing 80 km/h speed limit is likely appropriate and should be maintained.

6 Active Transportation

6.1 Existing Conditions

6.1.1 Airport Road

Currently active transportation facilities along Airport Road are limited to the sidewalks provided along urbanized sections, and crossing facilities including the Caledon Trailway.

From Huntsmill Drive to Walker Road, there are no cycling or pedestrian facilities located along the roadway until Leamster Trail, where there is an existing pedestrian facility on the west side of the street connecting to Walker Road.

South of Walker Road, the corridor includes sidewalks on both sides of the road, with streetscaped paved boulevards, pedestrian scale lighting and other amenities including planters. Despite the effort to improve walkability, the sidewalks are narrow, and in some cases the paving stones and concrete have settled, resulting in an uneven walking surface in some locations. No cycling facilities are present on this stretch of Airport Road.

At Old Church Road, ladder crosswalks are painted, however Accessibility for Ontarians with Disability Act (AODA) features are missing from the intersection, including AODA – compliant curb ramps with tactile plates and push buttons.

Exhibit 6-1: Pedestrian facilities along Airport Road between Walker Road & the Caledon Trailway



Photo Sources: IBI Group

An important active transportation facility in this section is the crossing at the Caledon Trailway path, a Regionally-significant trail facility. This crossing was upgraded following the Region's 2011 Active Transportation Plan to include a signalized crossing, including crossrides and bicycle signals. Amenities include a new multi-use bridge crossing a watercourse, cyclist-rest-bar and trailhead with mapping.

Exhibit 6-2: Caledon Trailway at Airport Road



Photo Sources: IBI Group

South of the Caledon Trailway crossing, sidewalks are provided on both sides of the street to the Foodland. South of the grocery store, the east side of the street transitions to a rural cross-section, and no paved shoulders are provided. The sidewalks continue on the west side of the street to the driveway of the Caledon East Public School, and then also transition to a rural cross-section without any pedestrian facilities. There are no cycling facilities along this section of the corridor.

South of Cranston Drive to Boston Mills Road / Castleberg Side Road, there are no existing pedestrian or cycling facilities along the Airport Road corridor. There are intersecting cycling facilities on Olde Base Line Road (existing paved shoulders) and Castleberg Side Road (future paved shoulders).

From Boston Mills Road / Castleberg Side Road to North of King Street, there are no existing pedestrian or cycling facilities along the Airport Road corridor through this section of the study area. South of the study area, the addition of paved shoulders is a planned active transportation improvement identified through the EA completed from 1 kilometre north of Mayfield Road to 0.6 kilometres north of King Street.

6.1.2 Old Church Road

Currently, several active transportation facilities exist along Old Church Road. These include sidewalks, a crossover at Marilyn Street (east), and a multi-use trail (MUT) from Marilyn Street (east) to Innis Lake Road.

From Airport Road to Marilyn Street (east), existing active transportation is consistent with facilities along Airport Road with sidewalks on both sides, streetscaped paved boulevards, pedestrian scaled lighting and planters. However, no dedicated cycling facilities exist along this section of the roadway.

From Marilyn Street (east) to Innis Lake Road, a MUT has been constructed along south side. Sidewalks have been maintained on the north side with paved boulevards on both sides. It is important to note that this MUT connects several important destinations within Caledon East including: the town hall, community complex and arena, soccer field, library, police office and

two schools. It also serves the newly constructed subdivision to the north. The multi-use trail is pictured in Exhibit 6-3.

Exhibit 6-3: Multi-Use Trail along Old Church Road from Marilyn Street (east) to Innis Lake Road



Photo Sources: IBI Group

At Marilyn Street (east), a crossover has also been constructed and provides connection with the signed bike route and the MUT. The crossover facility is also noted as AODA compliant, with curb ramps and tactile plates as illustrated in Exhibit 6-4.

Exhibit 6-4: Marilyn Street (East) Crossover



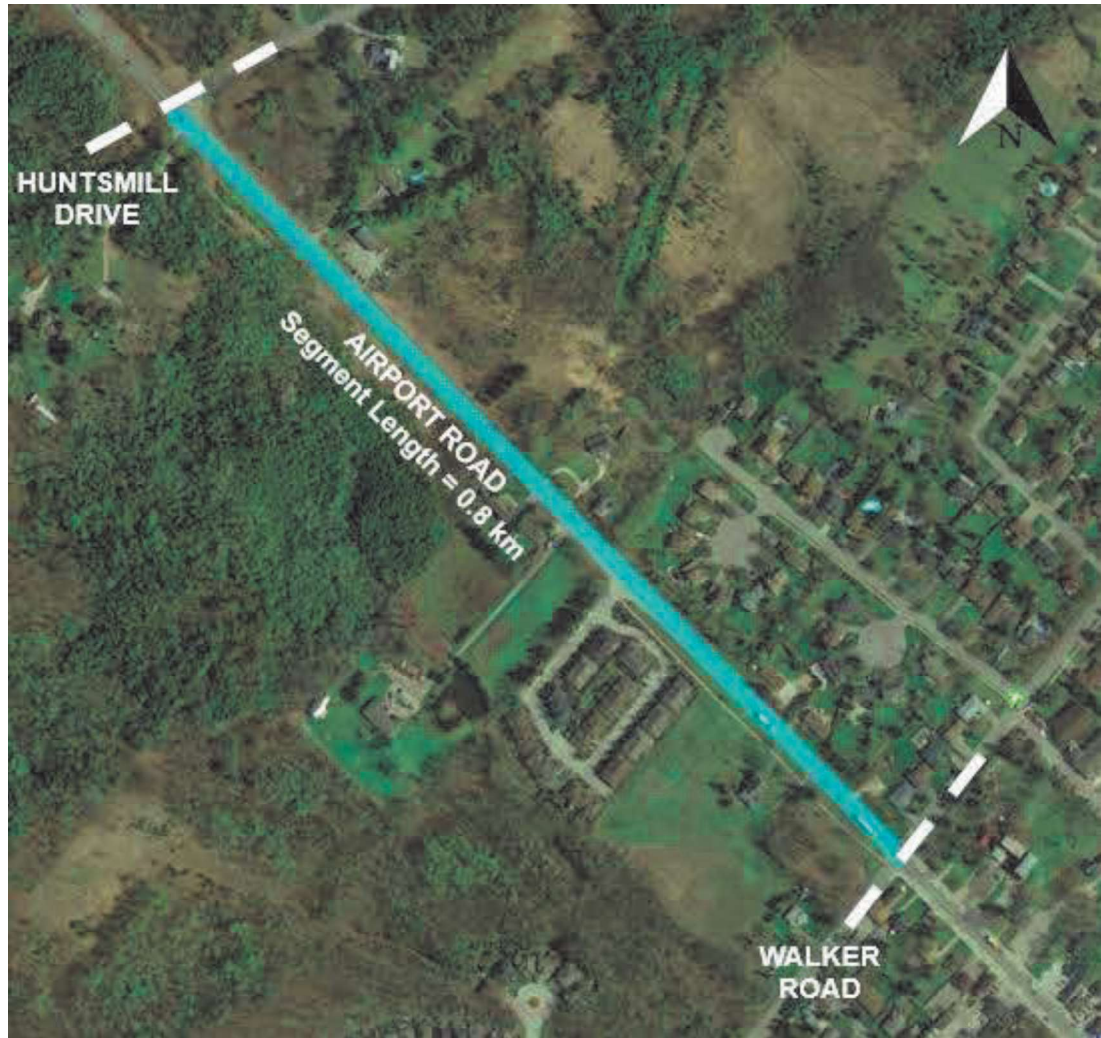
Photo Sources: IBI Group

6.2 Active Transportation Needs Assessment

6.2.1 Airport Road (Huntsmill Drive to Walker Road)

The addition of active transportation facilities along this section of the corridor (approximately 800 m in length), shown in Exhibit 6-5, should be planned to improve safety and encourage walking and cycling. It will also contribute to the development of an 'urban feel' along the corridor to help encourage slower traffic speeds, and to support recommendations of the Region's Road Characterization Study and Sustainable Transportation Strategy.

Exhibit 6-5: Airport Road from Huntsmill Drive to Walker Road



In the rural context between Huntsmill Drive and Leamster Trail, paved shoulders can accommodate pedestrian and cycling activity, which is anticipated to be relatively low. Provision of paved shoulders is consistent with the proposed cycling network in the Region of Peel's Sustainable Transportation Strategy, and are appropriate given the roadway context and operation conditions.

Urbanization of Airport Road between Leamster Trail and Walker Road will allow for the addition of on-road bike lanes and a new sidewalk on the east side. Vehicular lane narrowing and a painted buffer on the bike lanes can be used to slow motor vehicles, which will improve the comfort and safety of both pedestrians and cyclists.

Since the entire stretch of Airport Road south of Leamster Trail to Cranston Drive is designated as a pedestrian improvement corridor, a new sidewalk should be provided on the west boulevard and coupled with streetscaping enhancements which may include: pedestrian scale lighting, stormwater features, planters etc. These features can draw upon the Region's new streetscaping toolbox.

In the longer term, the natural environment area north of Caledon East could become more prominent or be designated as a natural park. There is an unmarked trail into the natural environment area in the vicinity of Huntsmill Drive, though it appears to be low use and

undesigned. If the trail network / park are ever formalized, the trail / entry feature or parking could complement or be integrated with the treatment along this section of the corridor.

Based on the above the following provides a summary of key recommendations:

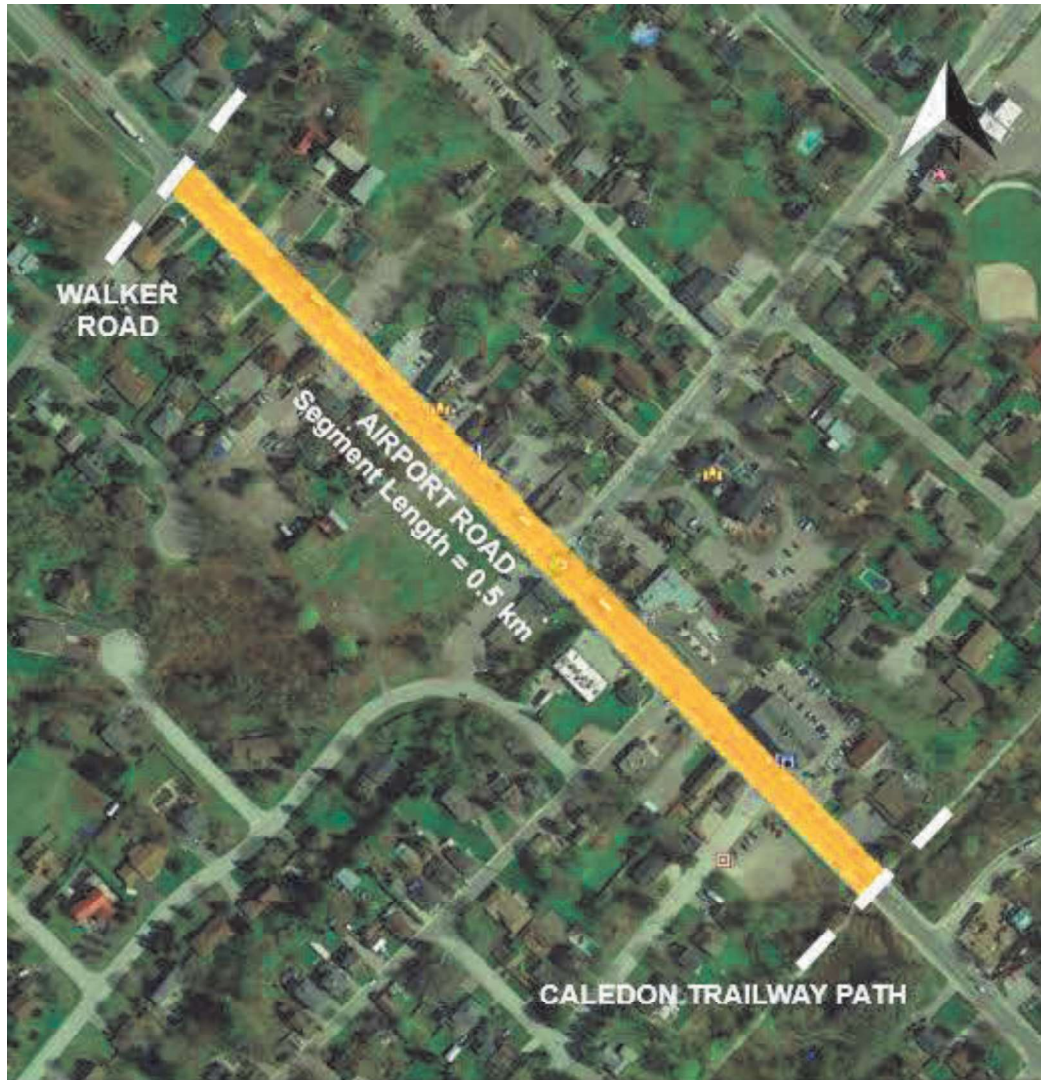
- Huntsmill Drive to Leamster Trail – Provide paved shoulders on both sides to accommodate rural pedestrians and cyclists;
- Leamster Trail to Walker Road – In concert with the road urbanization, provide streetscaped sidewalks and pedestrian amenities as part of the pedestrian improvement corridor upgrades. Provide buffered bike lanes to accommodate cyclists;
- Narrow existing vehicular travel lanes to reduce speeding and improve safety and comfort of vulnerable users; and,
- Provide AODA compliant upgrades at Walker Road, including accommodation at roundabout via Pedestrian Crossovers (PXOs) and multi-use trail in the boulevard should it be pursued.

6.2.2 Airport Road (Walker Road to Caledon Trailway)

Through the rural main street of downtown Caledon East there are many competing demands for space which impact the proposed active transportation facilities. Important elements to be considered in the corridor through this section (approximately 520 m in length), shown in Exhibit 6-6, include:

- High quality pedestrian realm – This corridor is identified as a pedestrian improvement corridor in the Peel STS, and should provide high quality public realm with streetscaping and wider sidewalks whenever possible;
- Cycling facilities – Previous studies from the Region of Peel have identified planned on-road cycling facilities along this corridor, while support for local active transportation improvements was identified in the Caledon East Community Improvement Plan;
- On-street parking – The provision of on-street parking is important along the corridor both as a means of supporting the local business community but also to buffer adjacent pedestrian facilities from truck traffic and noise along Airport Road. The existing on-street parking is defined only by paint markings, however the addition of parking lay-bys will provide better definition of space and provide additional boulevard width for streetscaping elements; and
- Trail connectivity – Providing access to/from the Caledon Trailway into town will help to maximize the tourism potential of the trail, encouraging cyclists and hikers to visit the businesses and other services.

Exhibit 6-6: Airport Road from Walker Road to Caledon Trailway Path



There are several alternatives for improving active transportation conditions along this stretch of Airport Road. These alternatives are summarized below:

- Widen sidewalks and boulevards, incorporate extensive streetscaping and provide lay-by parking on one or both sides;
- Add bike lanes within the existing roadway curbs through the removal of parking on one side; improve sidewalks where needed and add streetscaping between parking lay-bys; and
- Reconstruct the boulevard and roadway to provide cycle tracks and new sidewalks, with streetscaping between parking lay-bys.

Because there are a number of policy and planning documents that emphasize the importance of both pedestrian and cycling improvements along the corridor, it is recommended that dedicated cycling facilities be provided (i.e. option one above is not preferred). The following provides commentary on-road (buffered bike lanes) or off-road cycling facilities (cycle tracks):

- **Alignment with previous plans** – Both the road characterization study and the Peel STS suggest bicycle lanes along Airport Road. The rural main street cross-

section from the road characterization shows on-road facilities, so there is some previous precedent and justification for on-road facilities;

- **Cost / Construction Impacts** – Most of the other EA recommendations have minimal implications for road reconstruction, particularly in the urban area (i.e. there is no widening of the road recommended). The decisions to pursue in-boulevard cycling facilities will be significantly more expensive, unless other roadwork is already anticipated (to address other infrastructure needs);
- **Continuity** – Along the rest of the corridor (rural sections to the north and south) – cyclists will be on-road along paved shoulders, so there is a benefit for both cyclist and driver expectation to provide a continuous on-road facility. On the other hand, there is an argument for separated cycling facilities being able to attract a broader cross-section of cyclists, so separated facilities within the rural town centre may be attractive to the community;
- **Trade-offs in the Boulevard** – Cycle tracks in the boulevard will require more space overall than on-road facilities (need to consider space to provide buffer between sidewalk and cycle track), so this may reduce space for sidewalks / boulevards / streetscaping); and
- **On-going maintenance** – If the facilities are in the boulevard, this would be a fairly short (about 900 m) section of cycle track that would have unique maintenance requirements.

At this time, either option is justifiable from a safety / planning perspective, and further inputs related to public preferences, maintenance and other EA considerations will be used to finalize the facility selection.

Based on the above the following provides a summary of recommendations:

- Walker Road to Caledon Trailway Path - Remove parking on one side to accommodate on-road buffered bike lanes or raised cycle tracks. Incorporate sidewalk enhancements including streetscaping wherever possible;
- Provide parking lay-bys to narrow the pavement width, better define parking locations, and to provide additional boulevard space for streetscaping elements;
- Narrow existing vehicular travel lanes to reduce speeding and improve safety and comfort of vulnerable users; and
- Provide AODA compliant upgrades at Old Church Road and incorporate cyclist and pedestrian friendly intersection enhancements.

If wider sidewalks are provided on either side of Airport Road with the intent of designating the wider sidewalks as a multi-use path, it is anticipated the multi-use path will not be an attractive cycling facility and most cyclists will remain on road in mixed traffic with reduced space compared to existing, due to the anticipated presence of a relatively high volume of pedestrians and frequent driveways. It is anticipated the multi-use path will function primarily as a wider sidewalk and provide a high-quality pedestrian facility.

6.2.3 Airport Road (Caledon Trailway to South of Cranston Drive)

Due to right-of-way (ROW) constraints like narrow sidewalks, direct frontage retaining walls, vegetation, utilities, and driveways, this section of the corridor (approximately 1.1 km in length), shown in Exhibit 6-7, presents challenges to upgrading active transportation facilities, particularly for cyclists.

Exhibit 6-7: Airport Road from Caledon Trailway to South of Cranston Drive



As shown in Exhibit 6-8, there is no space for widening the sidewalk.

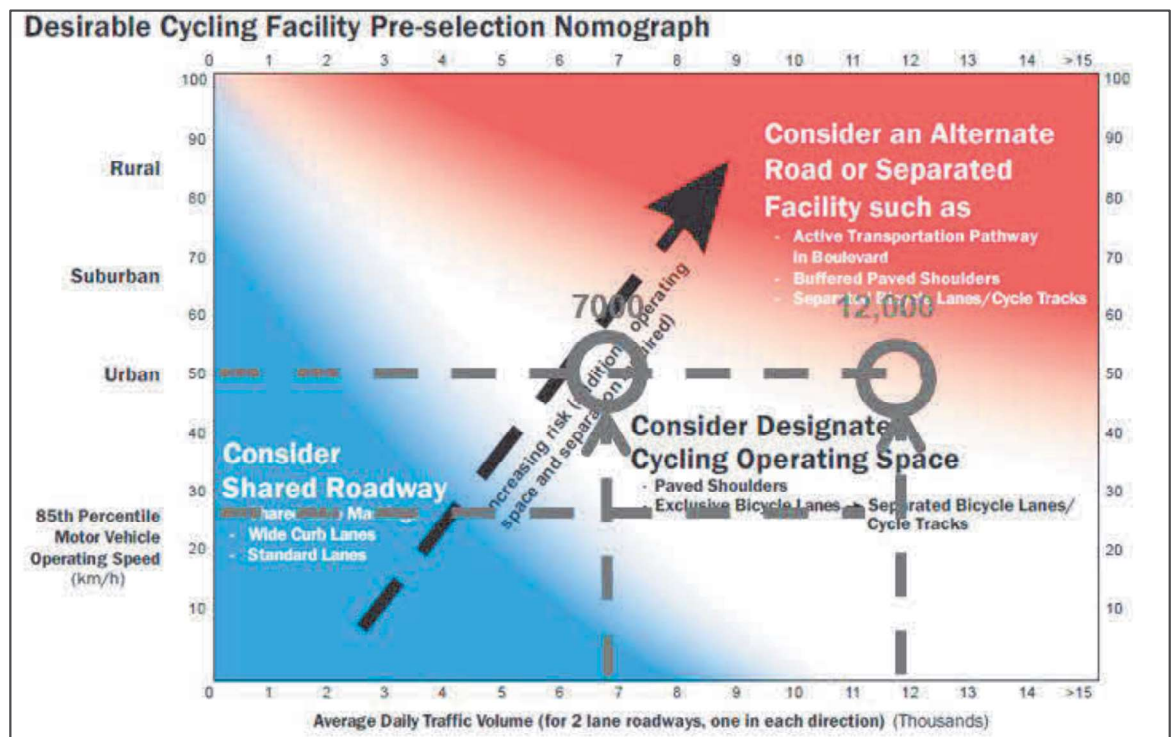
Exhibit 6-8: Streetview of Airport Road from Caledon Trailway to South of Cranston Drive



Several alternatives were considered with respect to cycling facilities through this section:

- **Provide a shared on-road cycling facility** – This strategy would involve cyclists sharing the road with motor vehicles. However, this option can be ruled out as motor vehicle volumes and speeds are too high. Applying the cycling facility pre-selection nomograph indicates that for AADTs between 7,000 and 12,000, a shared facility is inappropriate (refer to Exhibit 6-9);

Exhibit 6-9: OTM Book 18 Pre-Selection Nomograph



Source: OTM Book 18

- **Provide advisory bike lanes** – This would involve dashed paint markings outlining advisory bike lanes and a single lane of vehicular traffic to accommodate both directions of traffic. When opposing drivers meet, they must yield to cyclists and pull into the bike lanes to pass (refer to Exhibit 6-10). However, these facilities are generally incompatible with Regional road characteristics and in this case motor vehicles volumes are too high to consider the use of advisory bike lanes (generally considered only for AADT < 3,000-6,000);

Exhibit 6-10: Illustration of Advisory Bike Lanes

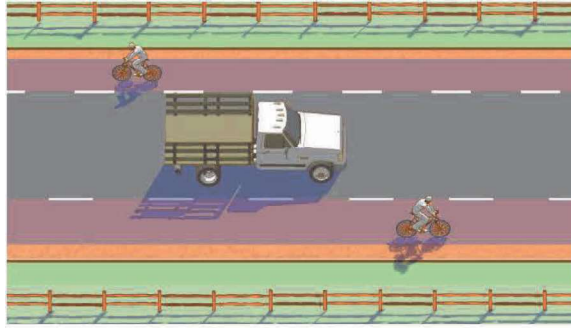


Figure 2-10. Motorists travel in the center two-way travel lane. When passing a bicyclist, no lane change is necessary.

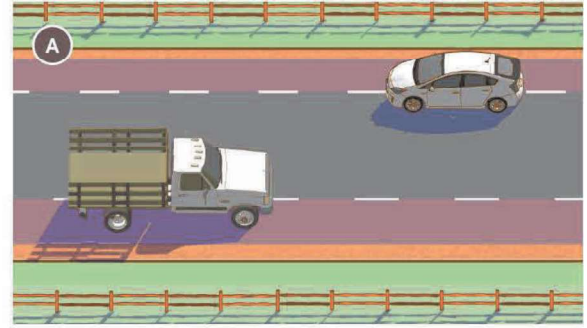


Figure 2-11. When two motor vehicles meet, motorists may need to encroach into the advisory shoulder space.

Source: FHWA's Small Town & Rural Multimodal Networks

- **Provide edgelines** – Edgelines are painted lines inset from the curb that provide some operating space for cyclists. However, because edgelines are typically less than 1.2 m (a constrained minimum width for bike lanes), they are not a designated cycling facility and are uncomfortable and unattractive for most cyclists. They are not specifically marked or signed as cycling routes to avoid the perception that they are intended specifically for cycling use. One benefit of edgelines is their potential traffic calming impacts of helping to slow traffic into the town and to further buffer the sidewalks from vehicular traffic.
- **Provide alternate route** – Various routing alternatives were considered as alternatives to Airport Road through this corridor (refer to Exhibit 6-11).

Of these potential detour routes, the route along Mountcrest Road (orange route in Exhibit 6-11) has the most potential. This route would need to be coupled with a short bi-directional boulevard facility between the Caledon Trailway Path and Mountcrest Road to make the connection to the Trailway itself and the bike lanes to the north of the Trailway. Although an imperfect solution, at least some continuity is afforded to cyclists from the south. The route may make use of either Cranston Drive or the proposed signalized access at 15717 Airport Road.

Exhibit 6-11: Potential Detour Routes along Airport Road from the Caledon Trailway Path to Hilltop Drive



- **Widen the roadway to accommodate cycling facilities such as a multi-use path** – Widening the roadway to provide cycling facilities is challenging through this section of the corridor because of property and ROW restrictions. This should be considered over a longer term horizon, should opportunities arise.

The preferred alternative should consider a phased approach, with a detour route being pursued as an interim strategy, with a long-term goal to provide a continuous cycling facility.

In terms of pedestrian facilities along this section of Airport Road, the pedestrian improvements corridor extends to Cranston Drive, so continuous sidewalks should be provided on both sides of the road to Cranston Drive. Opportunities to incorporate additional amenities should be considered where the ROW widens south of Hilltop Drive. A formalized school crossing (either a signalized crossing or a higher order PXO) should be considered as the potential development opposite the Caledon East Public School occurs to facilitate walking to school. The location of the crossing should provide convenient and direct access to the school site, which may require the addition of a trail or sidewalk connection on the west side to access the school.

Active Transportation Key Recommendations:

- Caledon Trailway Path to Hilltop Drive / Mountcrest Road - Partner with the Town of Caledon to provide an alternative cycling route along Mountcrest Road, including a short boulevard connection at the existing Caledon Trailway Path crossride and implement appropriate wayfinding and signage to inform cyclists of the route. Consider future opportunities to widen through this section to accommodate bike lanes. The alternative route may make use of the proposed signalized access opposite 15717 Airport Road.
- Consider the addition of edgelines along Airport Road.
- Hilltop Drive / Mountcrest Road to Cranston Drive - Extend the existing sidewalk on the west side to Cranston Drive, and provide new sidewalk on the east side. Provide buffered bike lanes on both sides to accommodate cyclists. Accommodate a controlled school crossing to provide access to Caledon East Public School from new development on the east side of Airport Road (location to be confirmed).
- Narrow existing vehicular travel lanes to reduce speeding and improve safety and comfort of vulnerable users.

6.2.4 Airport Road (Cranston Drive to Boston Mills Road / Castleberg Side Road)

In the rural roadway context between Cranston Drive and King Street (approximately 1.65 km in length), shown in Exhibit 6-12, paved shoulders can accommodate pedestrian and cycling activity, which is anticipated to be relatively low. Provision of paved shoulders is consistent with the proposed cycling network in the Peel Sustainable Transportation Strategy.

Exhibit 6-12: Airport Road from Cranston Drive to Boston Mills Road / Castleberg Side Road



Summary of recommendations:

- Provide paved shoulders on both sides to accommodate rural pedestrians and cyclists. Where speeds are anticipated above 60 km/hr, incorporate buffered paved shoulders;
- Narrow existing vehicular travel lanes to reduce speeding and improve safety and comfort of vulnerable users; and
- Where roundabouts are provided, incorporate shared multi-use path by-passes for pedestrians and cyclists.

6.2.5 Airport Road (Boston Mills Road / Castleberg Side Road to King Street)

In the rural roadway context between Boston Mills Road / Castleberg Side Road and King Street (approximately 3.1 km in length), shown in Exhibit 6-13, paved shoulders can accommodate pedestrian and cycling activity, which is anticipated to be relatively low.

Exhibit 6-13: Airport Road from Boston Mills Road / Castledeberg Side Road to King Street



6.2.6 Old Church Road (Airport Road to Marilyn Street (east))

Since the entire stretch of Old Church Road from Airport Road to Marilyn Street (east), shown in Exhibit 6-14, is designated as a pedestrian improvement corridor, streetscaping improvements should be considered.

Exhibit 6-14: Old Church Road from Airport Road to Marilyn Street (east)



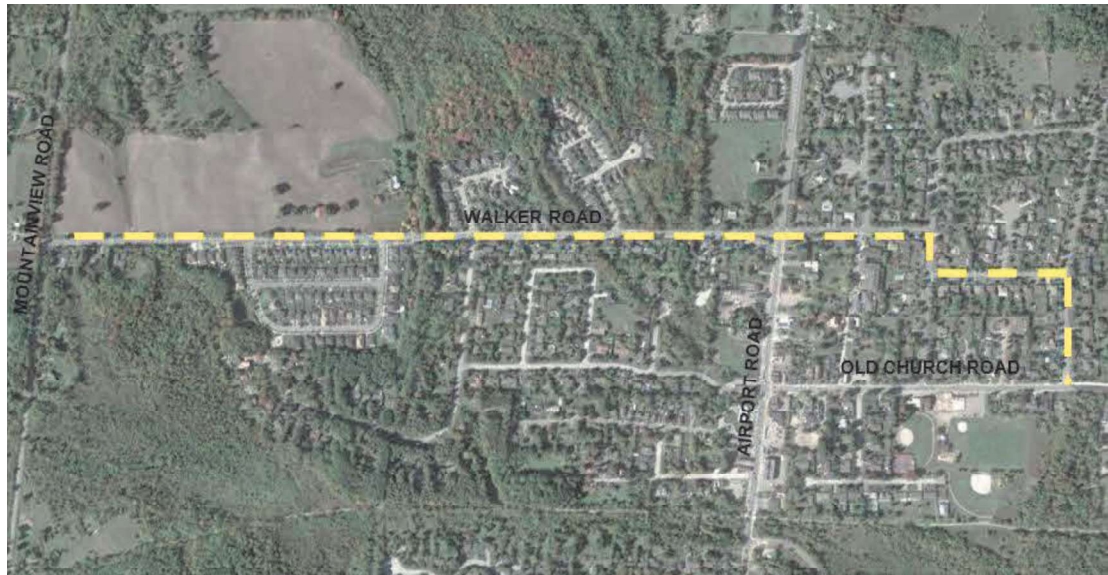
Currently the pedestrian elements along Old Church Road shows similarity to the rural main street conditions of Airport Road. Therefore, for consistency, it is beneficial to provide similar upgrades along this section. If parking will remain for the first couple of blocks of Old Church Road east of Airport Road, a similar parking lay-by concept should be considered to provide opportunities for additional streetscaping.

This section of Old Church Road also experiences significant ROW constraints which presents challenges in upgrading the current cycling facilities. Two alternatives were considered for this section:

- **Maintain MUT** – This strategy would involve connection between uni-directional facilities along Airport Road and the recently constructed MUT beginning at Old Church Road to Innis Lake Road (refer to Section 6.1.2). This option would have implications for the design of Old Church Road / Airport Road intersection (would likely need bike boxes and/or some protected bases for bikes to turn left onto/off the MUT). It is also likely that accommodating the MUT will require minor widening and reconstruction of the south side of the road.
- **Provide alternate route** – This option will require cyclists to use existing signed route along Marilyn/Miles/Walker to connect Airport Road and the MUT along Old

Church Road. Although an imperfect solution, at least some continuity is afforded to cyclists from the south. This route, picture in Exhibit 6-15, was identified in the 2017 Town of Caledon Signed Cycling Route pilot program.

Exhibit 6-15: Potential Detour Route (signed route) – Marilyn Street / Miles Drive / Walker Road



At this time, either option is justifiable from a safety / planning / cost perspective, and further inputs related to public preferences, maintenance, and other EA considerations will be used to finalize the facility selection.

Active Transportation Key Recommendations:

- Widen and reconstruct the south side of Old Church Road to accommodate an MUT;
- Connect the planned MUT on the south side of Old Church Road to Airport Road. This option involves using bike boxes or protected bases for cyclists to make a left turn onto/off the MUT;
- Provide an alternate route, requiring cyclists to use existing signed route found within the Town of Caledon Signed Cycling Route pilot program; and
- Incorporate parking lay-by if the existing on-street parking is to be maintained to provide additional opportunities for streetscaping.

7 Summary and Recommendations

This report provides an assessment of traffic operations, active transportation, and safety along Airport Road, from Huntsmill Drive to King Street. This assessment is the transportation planning and traffic component of the Region of Peel's Environmental Assessment (EA) for the corridor. The findings of this report have been carried forward into the Environmental Planning Report (EPR).

Huntsmill Drive to Walker Road

From Huntsmill Drive to Leamster Trail, traffic is exceeding the posted 50 km/h speed limit despite signage and bylaws. The corridor is more conducive to higher speed traffic due to its rural cross section, good sightlines, and lack of adjacent development, such that the road functions like a rural highway. Analysis of recommended speed using Transport Association of Canada (TAC) methodologies indicated a 70 km/h design speed would be appropriate.

The Region is not in favour of increasing the speed limit on the basis of perceived safety and a desire to encourage slower speed entering Caledon East. Traffic calming measures such as a roundabout or other measures could encourage lower speeds, but would be unusual for the local context (rural arterial) and may result in an increase in collisions. Huntsmill Drive is also approximately 500 m from Leamster Trail, and speeding may resume if local calming were implemented.

From Leamster Trail to Walker Road, urbanizing Airport Road and a gateway feature could improve compliance with speed limits. These treatments would also be compatible with the adjacent urban form. At Leamster Trail, a gateway feature should include visual or alignment treatments, such as a raised median with landscaping.

Traffic analysis at Airport Road and Walker Road show that left turn lanes are warranted on Airport Road, along with a southbound right-turn lane. A signal or roundabout is not warranted in 2041 and stop control continues to operate acceptably. A roundabout was considered as a feature to reduce traffic speeds, though would have significant property impacts. Further review of a roundabout was recommended as part of the environmental planning report.

The Active Transportation study developed the following recommendations:

- Huntsmill Drive to Leamster Trail – Provide paved shoulders on both sides to accommodate rural pedestrians and cyclists;
- Leamster Trail to Walker Road – In concert with the road urbanization, provide streetscaped sidewalks and pedestrian amenities as part of the pedestrian improvement corridor upgrades. Provide buffered bike lanes to accommodate cyclists;
- Narrow existing vehicular travel lanes to reduce speeding and improve safety and comfort of vulnerable users; and,
- Provide AODA compliant upgrades at Walker Road, including accommodation at roundabout via PXOs and multi-use trail in the boulevard.

South of Walker Road to Caledon Trailway

Traffic appears to have higher compliance with speed limits in this segment, however further management of traffic speed and in particular heavy truck speeds is desirable as an urban 'downtown' corridor with direct frontage businesses and residences. This should be attained

through additional visual cues such as curb bulb-outs, landscaping, and integrated active transportation facilities.

Significant safety and operational constraints were identified at the intersection of Airport Road and Old Church Road. The LCBO driveway at the intersection has poor sight lines and a lack of clear priority rules which together represent a safety concern. The configuration operates poorly with drivers unsure as to who has priority and queues within the driveway are possible.

Long term solutions at Old Church Road and Airport Road could include closing the access to the west property (LCBO), or extending Old Church Road to the west to Ivan Avenue. Extending Old Church Avenue would resolve access to nearby properties and provide a safe access to Airport Road for the neighbourhood to the west. Further evaluation of environmental, social, and cultural impacts is required.

At Airport Road and Parsons Avenue, and at Emma Avenue, a northbound left turning lane is warranted, however it would require removal of parking along Airport Road. This should be evaluated in conjunction with the Old Church Road extension described above.

The active transportation assessment developed the following recommendations:

- Walker Road to Caledon Trailway Path – remove parking on one side to accommodate on-road buffered bike lanes or raised cycle tracks. Incorporate sidewalk enhancements including streetscaping wherever possible;
- Provide parking lay-bys to narrow the pavement width, better define parking locations, and to provide additional boulevard space for streetscaping elements;
- Narrow existing vehicular travel lanes to reduce speeding and improve safety and comfort of vulnerable users;
- Provide AODA compliant upgrades at Old Church Road and incorporate cyclist and pedestrian friendly intersection enhancements.

A multi-use path in the form of wider sidewalks was also considered and it was commented that it may provide a higher quality pedestrian facility compared to existing conditions, but would be limited as a cycling facility due to the presence of frequent driveways, entrances, and high pedestrian volumes.

Caledon Trailway to South of Cranston Drive

From the Trailway to the Foodland Plaza Airport Road is tightly constrained with limited right-of-way, hydro, retaining walls, and private residences. Traffic analysis found that access to Airport Road would incur increasing delays over time, and there is a safety concern due to the gradient and lack of turning lanes at Marion Street and Larry Street. However, lack of space restricts opportunities for improvements. It was noted that an alternative access to the community is available at Hilltop Drive and at Cranston Drive. At the Foodland Plaza, a warrant for a northbound right turn lane is met.

South of the Foodland plaza the road has a more rural feel and speeding is more common. A higher 80 km/h speed limit was considered, however with the development plans for the east side, a change in speed limit would likely be temporary. Therefore, no change to the speed limit is recommended.

A residential development is proposed at 15717 Airport Road with 602 homes and 42 senior residence units. The development traffic impact study proposes a signalized intersection opposite the Caledon East Public School access road just south of Foodland Plaza. Because of safety concerns a crossing guard may be needed during school times.

The development at 15717 Airport Road will also have access via Cranston Drive. Analysis of future traffic conditions indicate that a signal or roundabout is not warranted by 2041 traffic volumes, though access to Airport Road may incur long delay at that horizon. A roundabout

could be considered beyond 2041 on the basis of safety and lower traffic and should be reviewed further.

Active transportation directions are:

- Caledon Trailway Path to Hilltop Drive / Mountcrest Road - Partner with the Town of Caledon to provide an alternative cycling route along Mountcrest Road, including a short boulevard connection at the existing Caledon Trailway Path crossride and implement appropriate wayfinding and signage to inform cyclists of the route. Consider future opportunities to widen through this section to accommodate bike lanes. The alternative route may make use of the proposed signalized access opposite 15717 Airport Road;
- Hilltop Drive / Mountcrest Road to Cranston Drive – Extend the existing sidewalk on the west side to Cranston Drive, and provide new sidewalk on the east side. Provide buffered bike lanes on both sides to accommodate cyclists. Accommodate a controlled school crossing to provide access to Caledon East Public School from new development on the east side of Airport Road (location to be confirmed); and
- Narrow existing vehicular travel lanes to reduce speeding and improve safety and comfort of vulnerable users.

South of Cranston Drive to Boston Mills Road / Castleberg Side Road

Analysis of traffic speeds indicates that speeding in this segment is a concern, in particular through the community of Mono Road. This type of rural community often presents a speed limit compliance challenge in the transition areas between rural and semi-urban.

Traffic analysis of Airport Road and Olde Base Line Road indicate that widening to provide left turn lanes is recommended if a signal is to be maintained.

Alternatively, a roundabout was evaluated and determined to be operationally feasible, though it would require flared entry and bypass lanes in the northbound and southbound direction to accommodate future demands. A concept plan for the roundabout indicates potential for significant property impacts. Further consultation regarding a roundabout with stakeholders and the public, and evaluation of environmental, cultural, and social impacts is required.

At Airport Road and Glen Echo Nurseries, a dedicated northbound left turning lane and southbound right taper are warranted and would help to address a safety concern identified by the Region.

At Airport Road and Boston Mills Road / Castleberg Side Road the offset intersections are a safety hazard and should be addressed through realignment or a roundabout. Traffic operations analysis indicates that a signal or roundabout is not warranted and a two-way stop control is sufficient for 2041. Further trade-offs (property, cultural) between an intersection and roundabout are to be evaluated in the Environmental Planning Report (EPR).

Active transportation directions are as follows:

- Provide paved shoulders on both sides to accommodate rural pedestrians and cyclists. Where speeds are anticipated above 60 km/hr, incorporate buffered paved shoulders;
- A sidewalk offset by landscaping / boulevard was identified for Airport Road between Mono Road and Cranston Drive;
- Narrow existing vehicular travel lanes to reduce speeding and improve safety and comfort of vulnerable users; and
- Where roundabouts are provided, incorporate shared multi-use path by-passes for pedestrians and cyclists.

Boston Mills Road / Castleberg Side Road to King Street

This segment is rural with no major changes identified. Speed analysis pointed to a 90 km/h speed limit, however that is unusual in the Region's context. Therefore the existing 80 km/h speed limit is likely appropriate and should be maintained. Current information from the Region is that no development is proposed beyond approximately 200 m north of King Street; therefore the Region should consider re-designating this segment of the corridor a 'rural road' instead of a 'suburban connector' in the Region's road characterization plan. The active transportation assessment recommends the development of paved shoulders to accommodate pedestrian and cycling activity.

Old Church Road (Airport Road to Marilyn Street)

Old Church Road between Airport Road and Marilyn Street was included in the study to identify tie-in opportunities to Airport Road and the segment further east, in particular for active transportation. The study developed the following recommendations:

- Widen and reconstruct the south side of Old Church Road to accommodate a multi-use trail;
- Connect the planned multi-use trail on the south side of Old Church Road to Airport Road. This option involves using bike boxes or protected bases for cyclists to make a left turn onto/off the trail;
- Continue the signed cycling route on Marilyn Street to connect Old Church Road with Airport Road on an optional bypass / alternative route; and
- Incorporate parking lay-by if the existing on-street parking is to be maintained to provide additional opportunities for streetscaping.

7.1.1 Next Steps

This report provides an interim traffic operations and safety analysis and multi-modal assessment of Airport Road from King Street to Huntsmill Drive in support of the Environmental Assessment. The findings of this report will be used to evaluate alternative solutions and designs under the EA, along with other technical, environmental, social, cultural and economic criteria. Following the combined evaluations, a concept plan will be developed, subject to public consultation.

Appendix A – Turning Movement Counts



Turning Movement Count (4 . AIRPORT RD & HUNTSMILL DR) CustID: 00730428 MioID: 357974

Start Time	Southbound AIRPORT RD					Westbound HUNTSMILL DR					Northbound AIRPORT RD					Int. Total (15 min)	Int. Total (1 hr)
	Left	Thru	U-Turn	Peds	Approach Total	Left	Right	U-Turn	Peds	Approach Total	Thru	Right	U-Turn	Peds	Approach Total		
07:00:00	0	102	0	0	102	1	0	0	0	1	28	0	0	0	28	131	
07:15:00	0	149	0	0	149	0	0	0	0	0	33	0	0	0	33	182	
07:30:00	0	97	0	0	97	0	0	0	0	0	38	0	0	0	38	135	
07:45:00	0	124	0	0	124	0	0	0	0	0	41	0	0	0	41	165	613
08:00:00	0	91	0	0	91	0	0	0	0	0	43	0	0	0	43	134	616
08:15:00	1	103	0	0	104	0	0	0	0	0	39	0	0	0	39	143	577
08:30:00	0	85	0	0	85	1	0	0	0	1	46	0	0	0	46	132	574
08:45:00	0	97	0	0	97	0	1	0	0	1	34	1	0	0	35	133	542
BREAK																	
11:00:00	0	59	0	0	59	0	0	0	0	0	49	0	0	0	49	108	
11:15:00	0	74	0	0	74	0	0	0	0	0	37	0	0	0	37	111	
11:30:00	1	50	0	0	51	0	0	0	0	0	41	0	0	0	41	92	
11:45:00	0	56	0	0	56	1	0	0	0	1	50	0	0	0	50	107	418
12:00:00	1	43	0	0	44	1	0	0	0	1	38	0	0	0	38	83	393
12:15:00	0	59	0	0	59	1	0	0	0	1	34	0	0	0	34	94	376
12:30:00	0	42	0	0	42	0	1	0	0	1	49	1	0	0	50	93	377
12:45:00	0	59	0	0	59	0	0	0	0	0	52	1	0	0	53	112	382
13:00:00	0	49	0	0	49	0	1	0	0	1	39	1	0	0	40	90	389
13:15:00	0	50	0	0	50	0	0	0	0	0	60	0	0	0	60	110	405
13:30:00	0	54	0	0	54	0	0	0	0	0	61	0	0	0	61	115	427
13:45:00	0	47	0	0	47	0	0	0	0	0	39	1	0	0	40	87	402
BREAK																	
15:00:00	0	46	0	0	46	0	0	0	0	0	60	0	0	0	60	106	
15:15:00	0	48	0	0	48	0	0	0	0	0	108	0	0	0	108	156	



15:30:00	0	48	0	0	48	0	0	0	0	0	96	0	0	0	96	144	
15:45:00	0	65	0	0	65	0	0	0	0	0	120	0	0	0	120	185	591
16:00:00	0	58	0	0	58	0	0	0	0	0	107	0	0	0	107	165	650
16:15:00	0	49	0	0	49	0	0	0	0	0	120	0	0	0	120	169	663
16:30:00	0	51	0	0	51	0	0	0	0	0	127	1	0	0	128	179	698
16:45:00	0	45	0	0	45	0	0	0	0	0	146	0	0	0	146	191	704
17:00:00	0	45	0	0	45	0	0	0	0	0	142	0	0	0	142	187	726
17:15:00	0	58	0	0	58	1	0	0	0	1	132	0	0	0	132	191	748
17:30:00	0	54	0	0	54	0	0	0	0	0	118	0	0	0	118	172	741
17:45:00	0	50	0	0	50	0	0	0	0	0	145	0	0	0	145	195	745
Grand Total	3	2107	0	0	2110	6	3	0	0	9	2272	6	0	0	2278	4397	-

Approach%	0.1%	99.9%	0%	-	66.7%	33.3%	0%	-	99.7%	0.3%	0%	-	-	-
Totals %	0.1%	47.9%	0%	48%	0.1%	0.1%	0%	0.2%	51.7%	0.1%	0%	51.8%	-	-
Heavy	0	363	0	-	0	0	0	-	263	0	0	-	-	-
Heavy %	0%	17.2%	0%	-	0%	0%	0%	-	11.6%	0%	0%	-	-	-
Bicycles	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Bicycle %	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Peak Hour: 07:15 AM - 08:15 AM Weather: Mostly Cloudy (2.8 °C)

Start Time	Southbound AIRPORT RD					Westbound HUNTSMILL DR					Northbound AIRPORT RD					Int. Total (15 min)
	Left	Thru	U-Turn	Peds	Approach Total	Left	Right	U-Turn	Peds	Approach Total	Thru	Right	U-Turn	Peds	Approach Total	
07:15:00	0	149	0	0	149	0	0	0	0	0	33	0	0	0	33	182
07:30:00	0	97	0	0	97	0	0	0	0	0	38	0	0	0	38	135
07:45:00	0	124	0	0	124	0	0	0	0	0	41	0	0	0	41	165
08:00:00	0	91	0	0	91	0	0	0	0	0	43	0	0	0	43	134
Grand Total	0	461	0	0	461	0	0	0	0	0	155	0	0	0	155	616
Approach%	0%	100%	0%		-	0%	0%	0%		-	100%	0%	0%		-	-
Totals %	0%	74.8%	0%		74.8%	0%	0%	0%		0%	25.2%	0%	0%		25.2%	-
PHF	0	0.77	0		0.77	0	0	0		0	0.9	0	0		0.9	-
Heavy	0	46	0		46	0	0	0		0	50	0	0		50	-
Heavy %	0%	10%	0%		10%	0%	0%	0%		0%	32.3%	0%	0%		32.3%	-
Lights	0	415	0		415	0	0	0		0	105	0	0		105	-
Lights %	0%	90%	0%		90%	0%	0%	0%		0%	67.7%	0%	0%		67.7%	-
Single-Unit Trucks	0	17	0		17	0	0	0		0	15	0	0		15	-
Single-Unit Trucks %	0%	3.7%	0%		3.7%	0%	0%	0%		0%	9.7%	0%	0%		9.7%	-
Buses	0	7	0		7	0	0	0		0	10	0	0		10	-
Buses %	0%	1.5%	0%		1.5%	0%	0%	0%		0%	6.5%	0%	0%		6.5%	-
Articulated Trucks	0	22	0		22	0	0	0		0	25	0	0		25	-
Articulated Trucks %	0%	4.8%	0%		4.8%	0%	0%	0%		0%	16.1%	0%	0%		16.1%	-



Peak Hour: 12:45 PM - 01:45 PM Weather: Mostly Cloudy (4 °C)

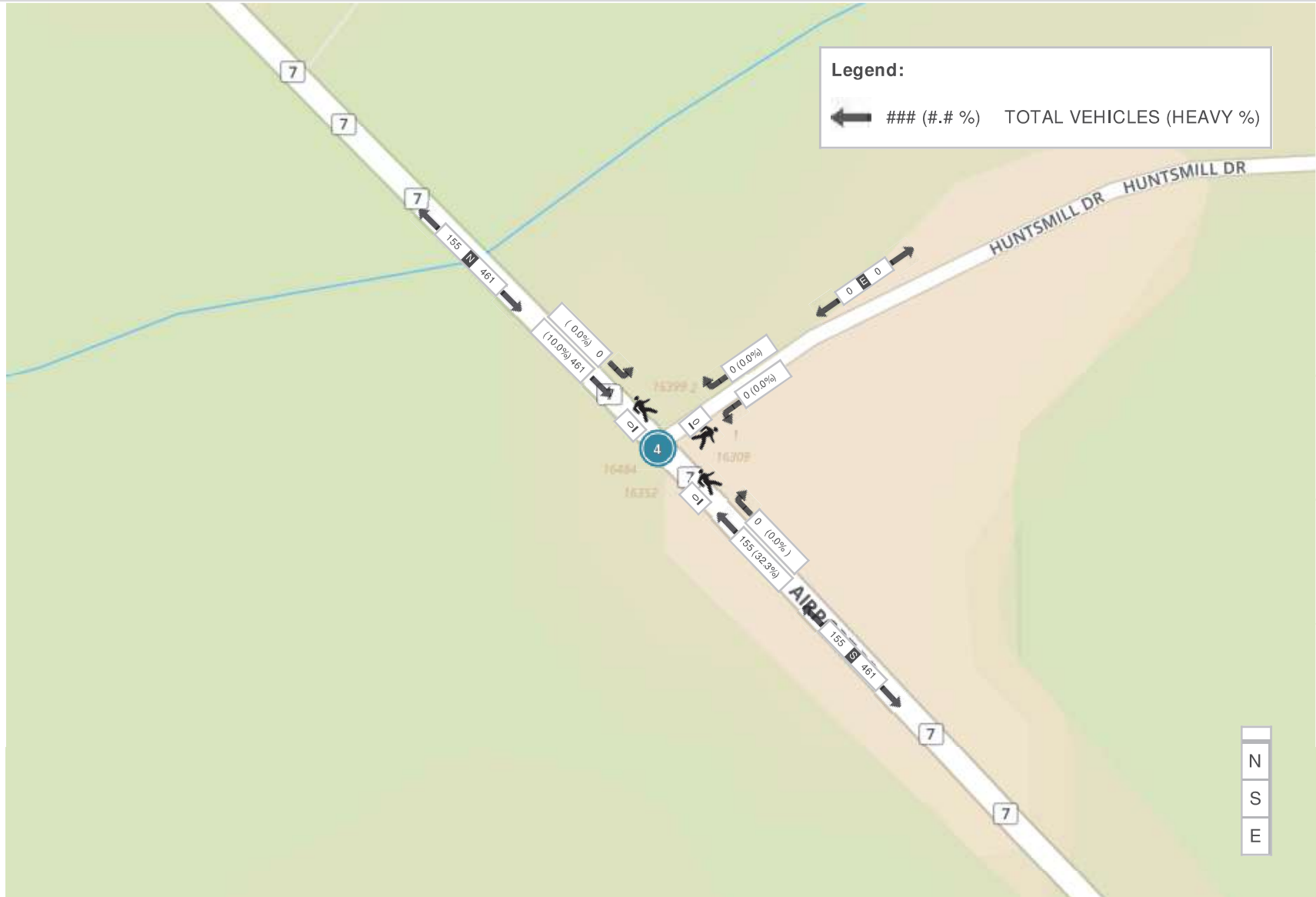
Start Time	Southbound AIRPORT RD					Westbound HUNTSMILL DR					Northbound AIRPORT RD					Int. Total (15 min)
	Left	Thru	U-Turn	Peds	Approach Total	Left	Right	U-Turn	Peds	Approach Total	Thru	Right	U-Turn	Peds	Approach Total	
12:45:00	0	59	0	0	59	0	0	0	0	0	52	1	0	0	53	112
13:00:00	0	49	0	0	49	0	1	0	0	1	39	1	0	0	40	90
13:15:00	0	50	0	0	50	0	0	0	0	0	60	0	0	0	60	110
13:30:00	0	54	0	0	54	0	0	0	0	0	61	0	0	0	61	115
Grand Total	0	212	0	0	212	0	1	0	0	1	212	2	0	0	214	427
Approach%	0%	100%	0%		-	0%	100%	0%		-	99.1%	0.9%	0%		-	-
Totals %	0%	49.6%	0%		49.6%	0%	0.2%	0%		0.2%	49.6%	0.5%	0%		50.1%	-
PHF	0	0.9	0		0.9	0	0.25	0		0.25	0.87	0.5	0		0.88	-
Heavy	0	44	0		44	0	0	0		0	24	0	0		24	-
Heavy %	0%	20.8%	0%		20.8%	0%	0%	0%		0%	11.3%	0%	0%		11.2%	-
Lights	0	168	0		168	0	1	0		1	188	2	0		190	-
Lights %	0%	79.2%	0%		79.2%	0%	100%	0%		100%	88.7%	100%	0%		88.8%	-
Single-Unit Trucks	0	18	0		18	0	0	0		0	12	0	0		12	-
Single-Unit Trucks %	0%	8.5%	0%		8.5%	0%	0%	0%		0%	5.7%	0%	0%		5.6%	-
Buses	0	4	0		4	0	0	0		0	0	0	0		0	-
Buses %	0%	1.9%	0%		1.9%	0%	0%	0%		0%	0%	0%	0%		0%	-
Articulated Trucks	0	22	0		22	0	0	0		0	12	0	0		12	-
Articulated Trucks %	0%	10.4%	0%		10.4%	0%	0%	0%		0%	5.7%	0%	0%		5.6%	-



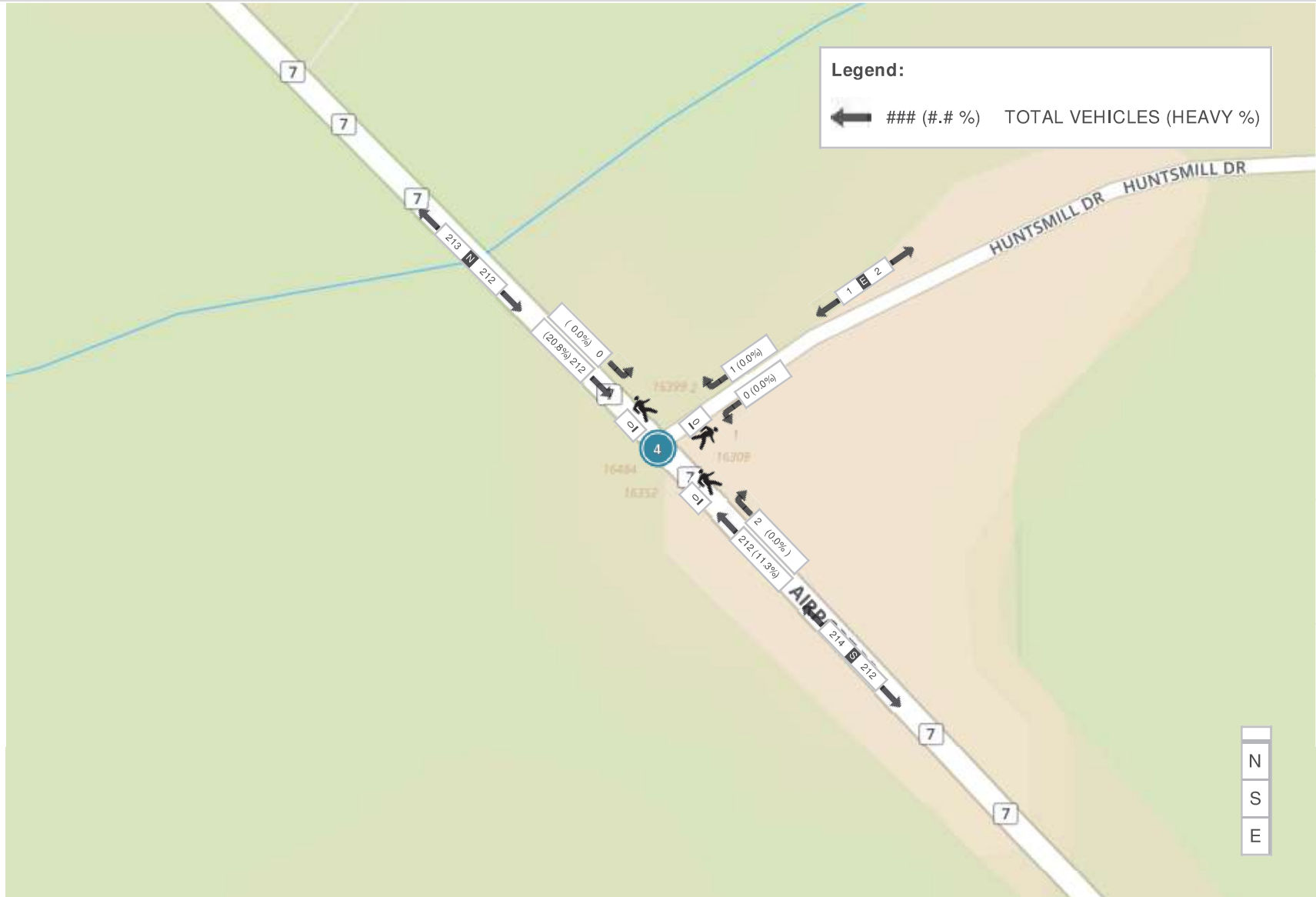
Peak Hour: 04:30 PM - 05:30 PM Weather: Scattered Clouds (5.8 °C)

Start Time	Southbound AIRPORT RD					Westbound HUNTSMILL DR					Northbound AIRPORT RD					Int. Total (15 min)
	Left	Thru	U-Turn	Peds	Approach Total	Left	Right	U-Turn	Peds	Approach Total	Thru	Right	U-Turn	Peds	Approach Total	
16:30:00	0	51	0	0	51	0	0	0	0	0	127	1	0	0	128	179
16:45:00	0	45	0	0	45	0	0	0	0	0	146	0	0	0	146	191
17:00:00	0	45	0	0	45	0	0	0	0	0	142	0	0	0	142	187
17:15:00	0	58	0	0	58	1	0	0	0	1	132	0	0	0	132	191
Grand Total	0	199	0	0	199	1	0	0	0	1	547	1	0	0	548	748
Approach%	0%	100%	0%		-	100%	0%	0%		-	99.8%	0.2%	0%		-	-
Totals %	0%	26.6%	0%		26.6%	0.1%	0%	0%		0.1%	73.1%	0.1%	0%		73.3%	-
PHF	0	0.86	0		0.86	0.25	0	0		0.25	0.94	0.25	0		0.94	-
Heavy	0	38	0		38	0	0	0		0	20	0	0		20	-
Heavy %	0%	19.1%	0%		19.1%	0%	0%	0%		0%	3.7%	0%	0%		3.6%	-
Lights	0	161	0		161	1	0	0		1	527	1	0		528	-
Lights %	0%	80.9%	0%		80.9%	100%	0%	0%		100%	96.3%	100%	0%		96.4%	-
Single-Unit Trucks	0	17	0		17	0	0	0		0	14	0	0		14	-
Single-Unit Trucks %	0%	8.5%	0%		8.5%	0%	0%	0%		0%	2.6%	0%	0%		2.6%	-
Buses	0	3	0		3	0	0	0		0	1	0	0		1	-
Buses %	0%	1.5%	0%		1.5%	0%	0%	0%		0%	0.2%	0%	0%		0.2%	-
Articulated Trucks	0	18	0		18	0	0	0		0	5	0	0		5	-
Articulated Trucks %	0%	9%	0%		9%	0%	0%	0%		0%	0.9%	0%	0%		0.9%	-

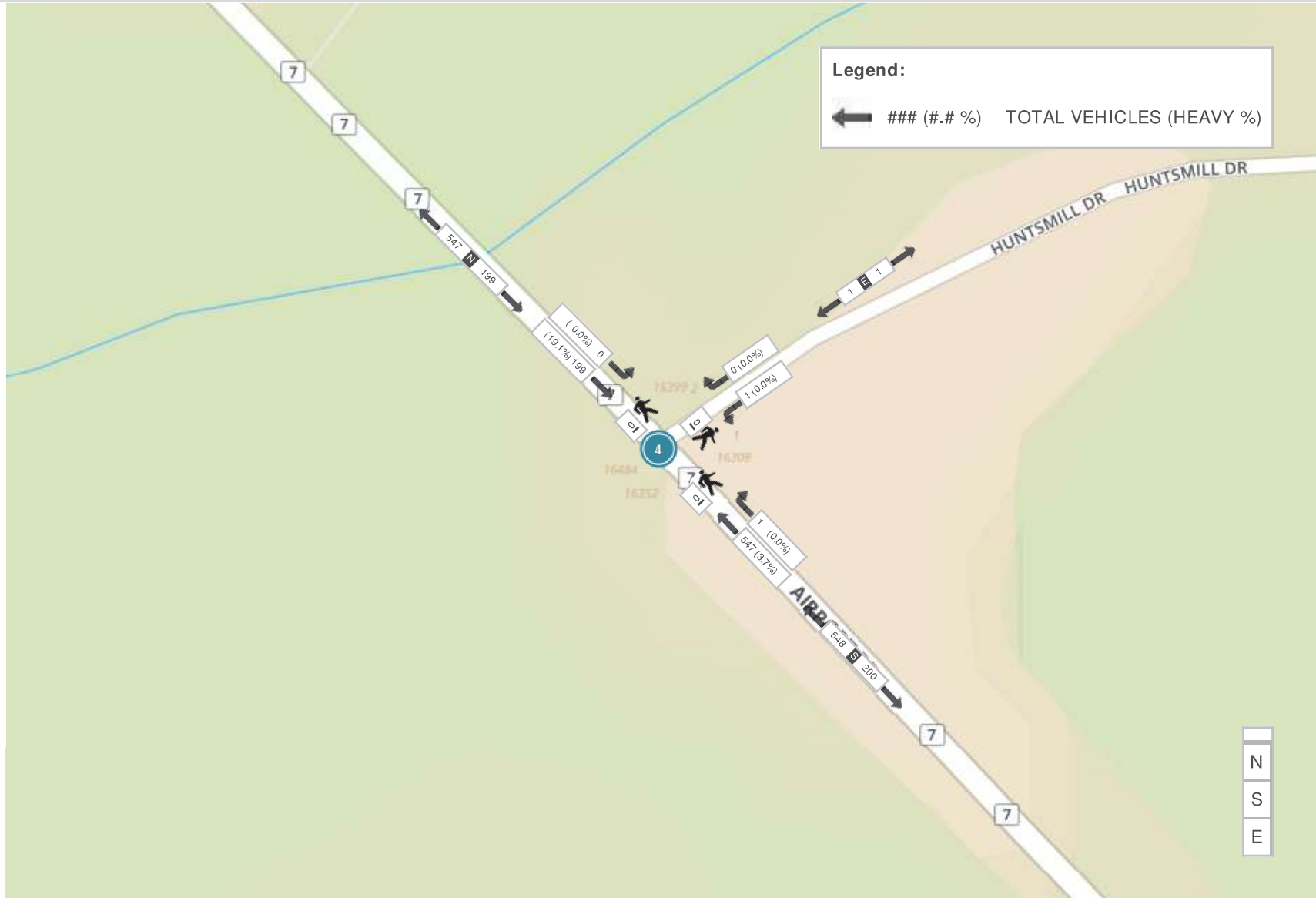
Peak Hour: 07:15 AM - 08:15 AM Weather: Mostly Cloudy (2.8 °C)



Peak Hour: 12:45 PM - 01:45 PM Weather: Mostly Cloudy (4 °C)



Peak Hour: 04:30 PM - 05:30 PM Weather: Scattered Clouds (5.8 °C)





Turning Movement Count (1 . AIRPORT RD & LEAMSTER TRAIL) CustID: 00729325 MioID: 357939

Start Time	Southbound AIRPORT RD					Northbound AIRPORT RD					Eastbound LEAMSTER TRAIL					Int. Total (15 min)	Int. Total (1 hr)
	Thru	Right	U-Turn	Peds	Approach Total	Left	Thru	U-Turn	Peds	Approach Total	Left	Right	U-Turn	Peds	Approach Total		
07:00:00	113	0	0	0	113	0	32	0	0	32	0	3	0	0	3	148	
07:15:00	134	0	0	0	134	0	32	0	2	32	0	0	0	1	0	166	
07:30:00	113	0	0	0	113	0	39	0	0	39	1	2	0	0	3	155	
07:45:00	120	0	0	0	120	0	42	0	0	42	0	3	0	0	3	165	634
08:00:00	87	0	0	0	87	1	48	0	0	49	0	1	0	1	1	137	623
08:15:00	100	1	0	0	101	0	33	0	0	33	0	1	0	0	1	135	592
08:30:00	91	0	0	0	91	0	42	0	0	42	0	1	0	0	1	134	571
08:45:00	104	0	0	0	104	1	39	0	0	40	0	5	0	0	5	149	555
BREAK																	
11:00:00	68	0	0	0	68	3	40	0	0	43	0	3	0	0	3	114	
11:15:00	71	0	0	0	71	0	36	0	0	36	0	2	0	0	2	109	
11:30:00	55	0	0	0	55	0	37	0	0	37	0	0	0	0	0	92	
11:45:00	51	0	0	0	51	1	41	0	0	42	0	0	0	0	0	93	408
12:00:00	43	0	0	0	43	0	36	0	0	36	0	2	0	0	2	81	375
12:15:00	63	0	0	0	63	3	41	0	0	44	0	1	0	0	1	108	374
12:30:00	37	0	0	0	37	1	45	0	0	46	1	2	0	0	3	86	368
12:45:00	64	0	0	0	64	0	54	0	0	54	0	1	0	0	1	119	394
13:00:00	49	0	0	0	49	1	46	1	0	48	0	1	0	0	1	98	411
13:15:00	56	0	0	0	56	1	59	1	0	61	0	1	0	0	1	118	421
13:30:00	49	0	0	0	49	1	56	0	0	57	0	1	0	0	1	107	442
13:45:00	50	0	0	0	50	1	45	1	0	47	0	1	0	0	1	98	421
BREAK																	
15:00:00	43	2	0	0	45	2	70	0	0	72	0	2	0	0	2	119	
15:15:00	53	0	0	0	53	1	103	0	0	104	0	4	0	0	4	161	



15:30:00	46	0	0	0	46	4	104	1	0	109	0	0	0	0	0	155	
15:45:00	66	2	0	0	68	4	110	0	0	114	0	2	0	0	2	184	619
16:00:00	56	0	0	0	56	2	117	0	0	119	1	2	0	0	3	178	678
16:15:00	47	0	0	0	47	2	115	0	0	117	0	1	0	0	1	165	682
16:30:00	49	1	0	0	50	3	131	0	0	134	0	3	0	0	3	187	714
16:45:00	42	0	0	0	42	2	147	0	0	149	0	0	0	0	0	191	721
17:00:00	50	0	0	0	50	2	142	0	0	144	0	2	0	0	2	196	739
17:15:00	59	0	0	0	59	3	128	0	0	131	0	1	0	0	1	191	765
17:30:00	48	1	0	0	49	1	122	0	0	123	0	1	0	0	1	173	751
17:45:00	48	0	0	0	48	4	132	0	0	136	0	1	0	1	1	185	745
Grand Total	2125	7	0	0	2132	44	2264	4	2	2312	3	50	0	3	53	4497	-

Approach%	99.7%	0.3%	0%	-	1.9%	97.9%	0.2%	-	5.7%	94.3%	0%	-	-	-
Totals %	47.3%	0.2%	0%	47.4%	1%	50.3%	0.1%	51.4%	0.1%	1.1%	0%	1.2%	-	-
Heavy	360	0	0	-	0	255	0	-	0	0	0	-	-	-
Heavy %	16.9%	0%	0%	-	0%	11.3%	0%	-	0%	0%	0%	-	-	-
Bicycles	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Bicycle %	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Peak Hour: 07:00 AM - 08:00 AM Weather: Mostly Cloudy (2.8 °C)

Start Time	Southbound AIRPORT RD					Northbound AIRPORT RD					Eastbound LEAMSTER TRAIL					Int. Total (15 min)
	Thru	Right	U-Turn	Peds	Approach Total	Left	Thru	U-Turn	Peds	Approach Total	Left	Right	U-Turn	Peds	Approach Total	
07:00:00	113	0	0	0	113	0	32	0	0	32	0	3	0	0	3	148
07:15:00	134	0	0	0	134	0	32	0	2	32	0	0	0	1	0	166
07:30:00	113	0	0	0	113	0	39	0	0	39	1	2	0	0	3	155
07:45:00	120	0	0	0	120	0	42	0	0	42	0	3	0	0	3	165
Grand Total	480	0	0	0	480	0	145	0	2	145	1	8	0	1	9	634
Approach%	100%	0%	0%		-	0%	100%	0%		-	11.1%	88.9%	0%		-	-
Totals %	75.7%	0%	0%		75.7%	0%	22.9%	0%		22.9%	0.2%	1.3%	0%		1.4%	-
PHF	0.9	0	0		0.9	0	0.86	0		0.86	0.25	0.67	0		0.75	-
Heavy	45	0	0		45	0	49	0		49	0	0	0		0	-
Heavy %	9.4%	0%	0%		9.4%	0%	33.8%	0%		33.8%	0%	0%	0%		0%	-
Lights	435	0	0		435	0	96	0		96	1	8	0		9	-
Lights %	90.6%	0%	0%		90.6%	0%	66.2%	0%		66.2%	100%	100%	0%		100%	-
Single-Unit Trucks	23	0	0		23	0	18	0		18	0	0	0		0	-
Single-Unit Trucks %	4.8%	0%	0%		4.8%	0%	12.4%	0%		12.4%	0%	0%	0%		0%	-
Buses	5	0	0		5	0	8	0		8	0	0	0		0	-
Buses %	1%	0%	0%		1%	0%	5.5%	0%		5.5%	0%	0%	0%		0%	-
Articulated Trucks	17	0	0		17	0	23	0		23	0	0	0		0	-
Articulated Trucks %	3.5%	0%	0%		3.5%	0%	15.9%	0%		15.9%	0%	0%	0%		0%	-
Pedestrians	-	-	-	0	-	-	-	-	2	-	-	-	-	1	-	-
Pedestrians%	-	-	-	0%	-	-	-	-	66.7%	-	-	-	-	33.3%	-	-



Peak Hour: 12:45 PM - 01:45 PM Weather: Mostly Cloudy (4 °C)

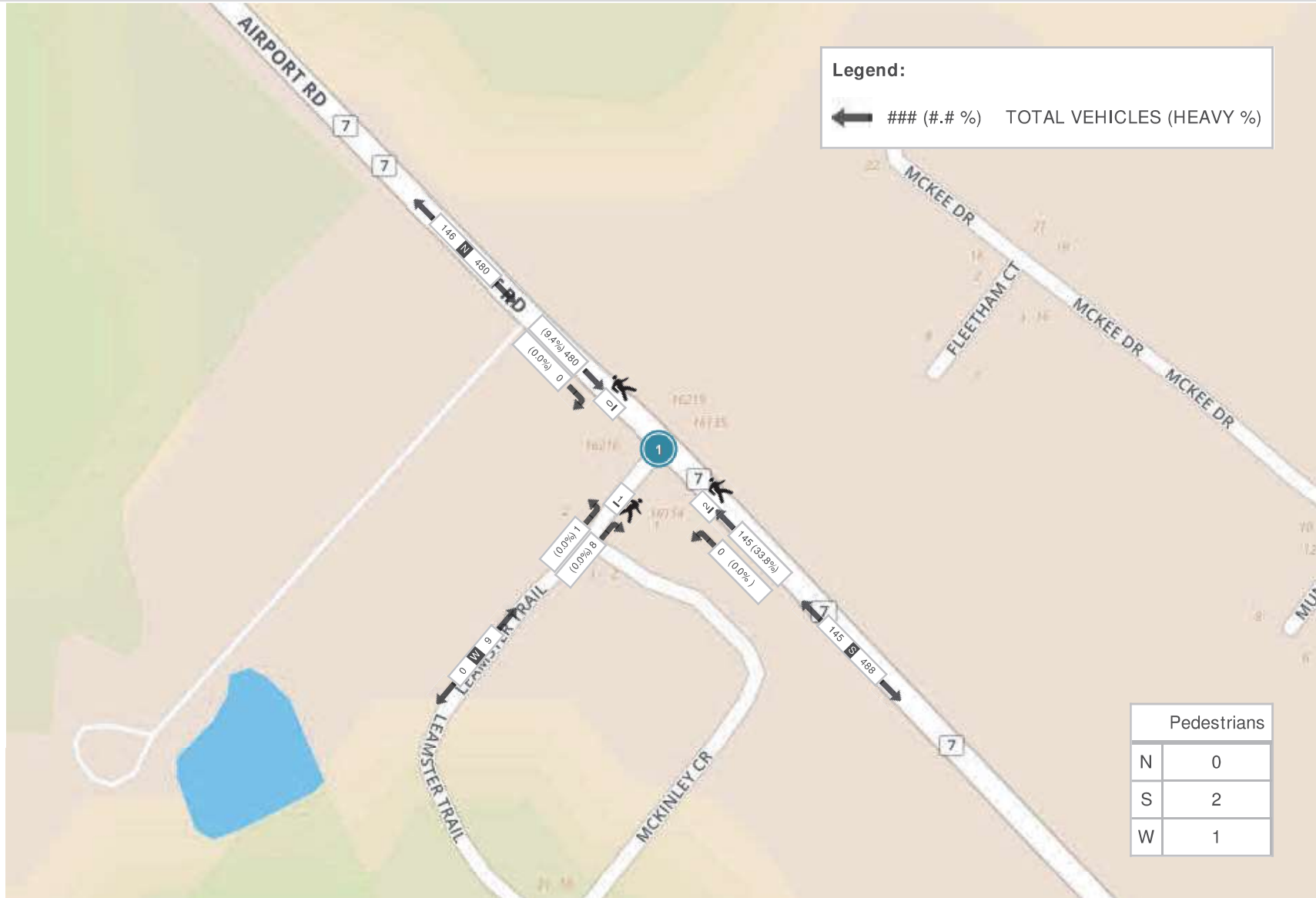
Start Time	Southbound AIRPORT RD					Northbound AIRPORT RD					Eastbound LEAMSTER TRAIL					Int. Total (15 min)
	Thru	Right	U-Turn	Peds	Approach Total	Left	Thru	U-Turn	Peds	Approach Total	Left	Right	U-Turn	Peds	Approach Total	
12:45:00	64	0	0	0	64	0	54	0	0	54	0	1	0	0	1	119
13:00:00	49	0	0	0	49	1	46	1	0	48	0	1	0	0	1	98
13:15:00	56	0	0	0	56	1	59	1	0	61	0	1	0	0	1	118
13:30:00	49	0	0	0	49	1	56	0	0	57	0	1	0	0	1	107
Grand Total	218	0	0	0	218	3	215	2	0	220	0	4	0	0	4	442
Approach%	100%	0%	0%		-	1.4%	97.7%	0.9%		-	0%	100%	0%		-	-
Totals %	49.3%	0%	0%		49.3%	0.7%	48.6%	0.5%		49.8%	0%	0.9%	0%		0.9%	-
PHF	0.85	0	0		0.85	0.75	0.91	0.5		0.9	0	1	0		1	-
Heavy	47	0	0		47	0	25	0		25	0	0	0		0	-
Heavy %	21.6%	0%	0%		21.6%	0%	11.6%	0%		11.4%	0%	0%	0%		0%	-
Lights	171	0	0		171	3	190	2		195	0	4	0		4	-
Lights %	78.4%	0%	0%		78.4%	100%	88.4%	100%		88.6%	0%	100%	0%		100%	-
Single-Unit Trucks	24	0	0		24	0	10	0		10	0	0	0		0	-
Single-Unit Trucks %	11%	0%	0%		11%	0%	4.7%	0%		4.5%	0%	0%	0%		0%	-
Buses	3	0	0		3	0	1	0		1	0	0	0		0	-
Buses %	1.4%	0%	0%		1.4%	0%	0.5%	0%		0.5%	0%	0%	0%		0%	-
Articulated Trucks	20	0	0		20	0	14	0		14	0	0	0		0	-
Articulated Trucks %	9.2%	0%	0%		9.2%	0%	6.5%	0%		6.4%	0%	0%	0%		0%	-
Pedestrians	-	-	-	0	-	-	-	0		-	-	-	0		-	-
Pedestrians%	-	-	-	0%	-	-	-	0%		-	-	-	0%		-	-



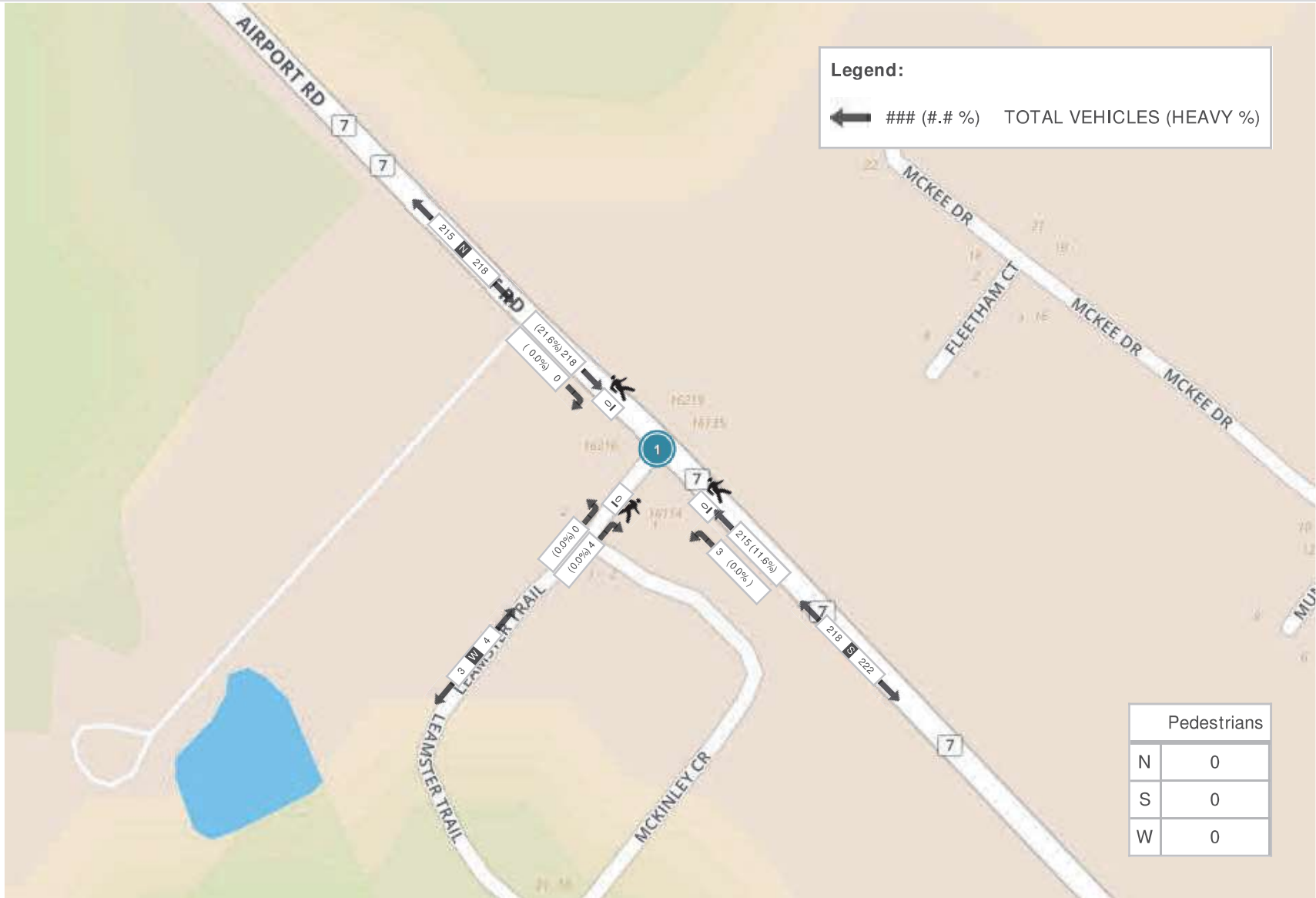
Peak Hour: 04:30 PM - 05:30 PM Weather: Scattered Clouds (5.8 °C)

Start Time	Southbound AIRPORT RD					Northbound AIRPORT RD					Eastbound LEAMSTER TRAIL					Int. Total (15 min)
	Thru	Right	U-Turn	Peds	Approach Total	Left	Thru	U-Turn	Peds	Approach Total	Left	Right	U-Turn	Peds	Approach Total	
16:30:00	49	1	0	0	50	3	131	0	0	134	0	3	0	0	3	187
16:45:00	42	0	0	0	42	2	147	0	0	149	0	0	0	0	0	191
17:00:00	50	0	0	0	50	2	142	0	0	144	0	2	0	0	2	196
17:15:00	59	0	0	0	59	3	128	0	0	131	0	1	0	0	1	191
Grand Total	200	1	0	0	201	10	548	0	0	558	0	6	0	0	6	765
Approach%	99.5%	0.5%	0%		-	1.8%	98.2%	0%		-	0%	100%	0%		-	-
Totals %	26.1%	0.1%	0%		26.3%	1.3%	71.6%	0%		72.9%	0%	0.8%	0%		0.8%	-
PHF	0.85	0.25	0		0.85	0.83	0.93	0		0.94	0	0.5	0		0.5	-
Heavy	37	0	0		37	0	22	0		22	0	0	0		0	-
Heavy %	18.5%	0%	0%		18.4%	0%	4%	0%		3.9%	0%	0%	0%		0%	-
Lights	163	1	0		164	10	526	0		536	0	6	0		6	-
Lights %	81.5%	100%	0%		81.6%	100%	96%	0%		96.1%	0%	100%	0%		100%	-
Single-Unit Trucks	20	0	0		20	0	17	0		17	0	0	0		0	-
Single-Unit Trucks %	10%	0%	0%		10%	0%	3.1%	0%		3%	0%	0%	0%		0%	-
Buses	2	0	0		2	0	1	0		1	0	0	0		0	-
Buses %	1%	0%	0%		1%	0%	0.2%	0%		0.2%	0%	0%	0%		0%	-
Articulated Trucks	15	0	0		15	0	4	0		4	0	0	0		0	-
Articulated Trucks %	7.5%	0%	0%		7.5%	0%	0.7%	0%		0.7%	0%	0%	0%		0%	-
Pedestrians	-	-	-	0	-	-	-	0		-	-	-	0		-	-
Pedestrians%	-	-	-	0%	-	-	-	0%		-	-	-	0%		-	-

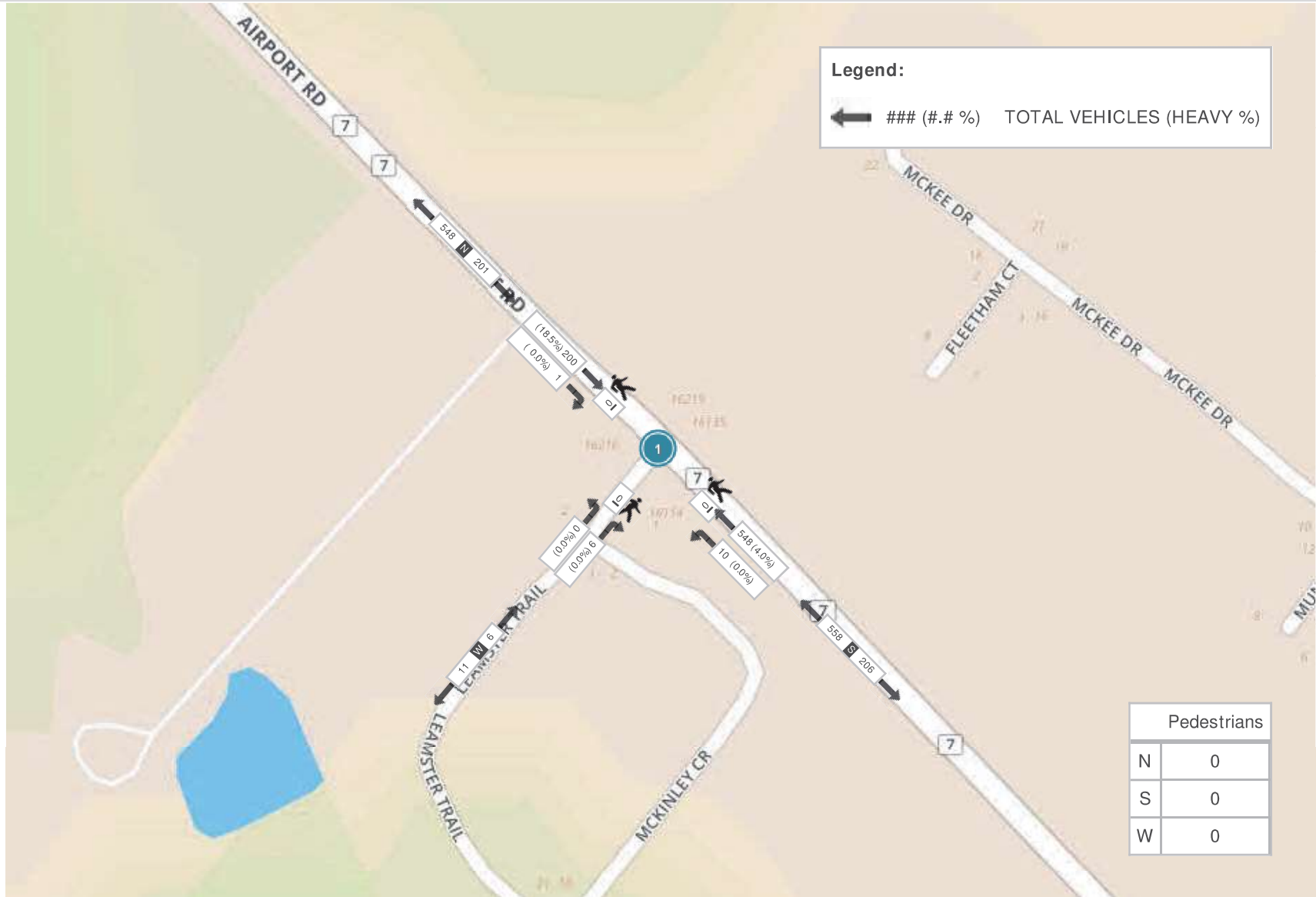
Peak Hour: 07:00 AM - 08:00 AM Weather: Mostly Cloudy (2.8 °C)



Peak Hour: 12:45 PM - 01:45 PM Weather: Mostly Cloudy (4 °C)



Peak Hour: 04:30 PM - 05:30 PM Weather: Scattered Clouds (5.8 °C)





Turning Movement Count (3 . AIRPORT RD & WALKER RD) CustID: 00729630 MioID: 357961

Start Time	Southbound AIRPORT RD						Westbound WALKER RD E						Northbound AIRPORT RD						Eastbound WALKER RD W						Int. Total (15 min)	Int. Total (1 hr)	
	Left	Thru	Right	U-Turn	Peds	Approach Total	Left	Thru	Right	U-Turn	Peds	Approach Total	Left	Thru	Right	U-Turn	Peds	Approach Total	Left	Thru	Right	U-Turn	Peds	Approach Total			
07:00:00	3	100	5	0	0	108	2	1	0	0	0	3	1	29	0	0	0	30	2	1	9	0	2	12	153		
07:15:00	1	143	6	0	0	150	2	4	3	0	0	9	1	28	0	0	0	29	2	2	10	0	0	14	202		
07:30:00	0	93	8	0	0	101	2	2	2	0	0	6	7	36	0	0	0	43	3	1	12	0	0	16	166		
07:45:00	3	114	11	0	0	128	3	0	1	0	0	4	3	37	1	0	1	41	0	5	13	0	1	18	191	712	
08:00:00	0	86	5	0	0	91	2	0	2	0	0	4	8	42	2	0	0	52	3	3	16	0	0	22	169	728	
08:15:00	3	96	6	0	0	105	3	0	0	0	0	3	6	36	1	0	0	43	0	0	16	0	0	16	167	693	
08:30:00	1	80	6	0	0	87	0	3	1	0	0	4	7	38	1	0	3	46	5	1	19	0	0	25	162	689	
08:45:00	6	92	7	0	0	105	4	1	0	0	0	5	4	33	0	0	0	37	7	4	21	0	1	32	179	677	
BREAK																											
11:00:00	0	62	3	0	0	65	1	0	0	0	0	1	13	48	2	0	0	63	1	2	3	0	1	6	135		
11:15:00	0	69	6	0	0	75	1	2	0	0	0	3	4	35	2	0	0	41	2	3	9	0	1	14	133		
11:30:00	1	45	3	0	0	49	0	0	1	0	0	1	7	40	4	0	0	51	2	1	10	0	0	13	114		
11:45:00	2	57	1	0	0	60	2	1	5	0	0	8	10	42	2	0	0	54	1	1	12	0	0	14	136	518	
12:00:00	1	41	3	0	0	45	2	3	0	0	0	5	9	34	0	0	0	43	1	0	4	0	0	5	98	481	
12:15:00	1	61	1	0	0	63	2	2	1	0	0	5	7	39	2	1	0	49	2	1	12	0	0	15	132	480	
12:30:00	0	37	5	0	0	42	3	0	1	0	0	4	9	43	3	1	1	56	3	3	6	0	0	12	114	480	
12:45:00	1	60	2	0	0	63	0	2	2	0	0	4	8	49	1	0	0	58	4	1	6	0	0	11	136	480	
13:00:00	3	43	1	0	0	47	2	2	1	0	0	5	19	44	5	0	1	68	3	3	10	0	0	16	136	518	
13:15:00	5	39	8	0	0	52	0	2	4	0	0	6	3	57	1	0	0	61	2	2	6	0	0	10	129	515	
13:30:00	2	51	3	0	0	56	1	0	1	0	0	2	8	54	2	0	0	64	2	0	8	0	0	10	132	533	
13:45:00	2	49	2	0	0	53	0	1	0	0	0	1	8	41	1	0	0	50	3	0	6	0	0	9	113	510	
BREAK																											
15:00:00	0	43	2	1	0	46	2	0	1	0	0	3	8	67	4	0	0	79	4	5	11	0	1	20	148		
15:15:00	4	46	5	0	0	55	2	1	1	0	0	4	9	97	1	0	0	107	9	3	7	0	1	19	185		
15:30:00	1	43	3	0	0	47	0	2	1	0	0	3	14	93	2	0	0	109	10	9	5	0	0	24	183		
15:45:00	4	65	1	0	0	70	3	3	3	0	0	9	22	114	3	0	0	139	6	3	13	0	0	22	240	756	
16:00:00	4	53	3	0	0	60	6	2	1	0	0	9	18	111	2	0	0	131	8	1	6	0	0	15	215	823	
16:15:00	4	46	2	0	0	52	2	0	2	0	0	4	18	107	9	0	1	134	3	4	5	0	0	12	202	840	
16:30:00	3	48	4	0	0	55	2	1	3	0	0	6	11	123	4	0	1	138	7	5	11	0	0	23	222	879	
16:45:00	2	40	3	0	0	45	1	0	3	0	0	4	15	147	7	0	0	169	3	0	14	0	1	17	235	874	
17:00:00	1	45	4	0	0	50	0	0	2	0	0	2	13	144	8	0	0	165	4	2	11	0	1	17	234	893	
17:15:00	0	53	4	0	0	57	2	0	0	0	0	2	13	123	4	0	0	140	6	2	8	0	0	16	215	906	



17:30:00	0	50	5	0	0	55	3	2	1	0	0	6	20	115	3	0	0	138	6	2	11	0	2	19	218	902
17:45:00	4	48	1	0	0	53	2	0	0	0	0	2	18	130	6	0	1	154	8	2	11	0	2	21	230	897
Grand Total	62	1998	129	1	0	2190	57	37	43	0	0	137	321	2176	83	2	9	2582	122	72	321	0	14	515	5424	-
Approach%	2.8%	91.2%	5.9%	0%	-	41.6%	27%	31.4%	0%	-	-	12.4%	84.3%	3.2%	0.1%	-	23.7%	14%	62.3%	0%	-	-	-	-	-	-
Totals %	1.1%	36.8%	2.4%	0%	40.4%	1.1%	0.7%	0.8%	0%	2.5%	5.9%	40.1%	1.5%	0%	47.6%	2.2%	1.3%	5.9%	0%	9.5%	-	-	-	-	-	-
Heavy	4	356	6	0	-	4	1	2	0	-	17	251	3	0	-	4	2	24	0	-	-	-	-	-	-	-
Heavy %	6.5%	17.8%	4.7%	0%	-	7%	2.7%	4.7%	0%	-	5.3%	11.5%	3.6%	0%	-	3.3%	2.8%	7.5%	0%	-	-	-	-	-	-	-
Bicycles	0	0	0	0	-	0	0	0	0	-	6	0	0	0	-	0	0	6	0	-	-	-	-	-	-	-
Bicycle %	0%	0%	0%	0%	-	0%	0%	0%	0%	-	1.9%	0%	0%	0%	-	0%	0%	1.9%	0%	-	-	-	-	-	-	-



Peak Hour: 07:15 AM - 08:15 AM Weather: Mostly Cloudy (2.8 °C)

Start Time	Southbound AIRPORT RD						Westbound WALKER RD E						Northbound AIRPORT RD						Eastbound WALKER RD W						Int. Total (15 min)
	Left	Thru	Right	U-Turn	Peds	Approach Total	Left	Thru	Right	U-Turn	Peds	Approach Total	Left	Thru	Right	U-Turn	Peds	Approach Total	Left	Thru	Right	U-Turn	Peds	Approach Total	
07:15:00	1	143	6	0	0	150	2	4	3	0	0	9	1	28	0	0	0	29	2	2	10	0	0	14	202
07:30:00	0	93	8	0	0	101	2	2	2	0	0	6	7	36	0	0	0	43	3	1	12	0	0	16	166
07:45:00	3	114	11	0	0	128	3	0	1	0	0	4	3	37	1	0	1	41	0	5	13	0	1	18	191
08:00:00	0	86	5	0	0	91	2	0	2	0	0	4	8	42	2	0	0	52	3	3	16	0	0	22	169
Grand Total	4	436	30	0	0	470	9	6	8	0	0	23	19	143	3	0	1	165	8	11	51	0	1	70	728
Approach%	0.9%	92.8%	6.4%	0%	-	-	39.1%	26.1%	34.8%	0%	-	-	11.5%	86.7%	1.8%	0%	-	-	11.4%	15.7%	72.9%	0%	-	-	-
Totals %	0.5%	59.9%	4.1%	0%	64.6%	1.2%	0.8%	1.1%	0%	3.2%	2.6%	19.6%	0.4%	0%	22.7%	1.1%	1.5%	7%	0%	9.6%	-	-	-	-	
PHF	0.33	0.76	0.68	0	0.78	0.75	0.38	0.67	0	0.64	0.59	0.85	0.38	0	0.79	0.67	0.55	0.8	0	0.8	-	-	-	-	
Heavy	0	46	2	0	48	0	0	0	0	0	0	53	0	0	53	1	1	3	0	5	-	-	-	-	
Heavy %	0%	10.6%	6.7%	0%	10.2%	0%	0%	0%	0%	0%	0%	37.1%	0%	0%	32.1%	12.5%	9.1%	5.9%	0%	7.1%	-	-	-	-	
Lights	4	390	28	0	422	9	6	8	0	23	19	90	3	0	112	7	10	48	0	65	-	-	-	-	
Lights %	100%	89.4%	93.3%	0%	89.8%	100%	100%	100%	0%	100%	100%	62.9%	100%	0%	67.9%	87.5%	90.9%	94.1%	0%	92.9%	-	-	-	-	
Single-Unit Trucks	0	18	1	0	19	0	0	0	0	0	0	15	0	0	15	1	0	0	0	1	-	-	-	-	
Single-Unit Trucks %	0%	4.1%	3.3%	0%	4%	0%	0%	0%	0%	0%	0%	10.5%	0%	0%	9.1%	12.5%	0%	0%	0%	1.4%	-	-	-	-	
Buses	0	7	1	0	8	0	0	0	0	0	0	12	0	0	12	0	1	3	0	4	-	-	-	-	
Buses %	0%	1.6%	3.3%	0%	1.7%	0%	0%	0%	0%	0%	0%	8.4%	0%	0%	7.3%	0%	9.1%	5.9%	0%	5.7%	-	-	-	-	
Articulated Trucks	0	21	0	0	21	0	0	0	0	0	0	26	0	0	26	0	0	0	0	0	-	-	-	-	
Articulated Trucks %	0%	4.8%	0%	0%	4.5%	0%	0%	0%	0%	0%	0%	18.2%	0%	0%	15.8%	0%	0%	0%	0%	0%	-	-	-	-	
Pedestrians	-	-	-	-	0	-	-	-	-	0	-	-	-	-	-	-	1	-	-	-	-	1	-	-	
Pedestrians%	-	-	-	-	0%	-	-	-	-	0%	-	-	-	-	50%	-	-	-	-	50%	-	-	-	-	
Bicycles on Road	0	0	0	0	0	-	0	0	0	0	-	0	0	0	0	-	0	0	0	0	0	-	-	-	
Bicycles on Road%	-	-	-	-	0%	-	-	-	-	0%	-	-	-	-	0%	-	-	-	-	0%	-	-	-	-	



Peak Hour: 12:45 PM - 01:45 PM Weather: Mostly Cloudy (4 °C)

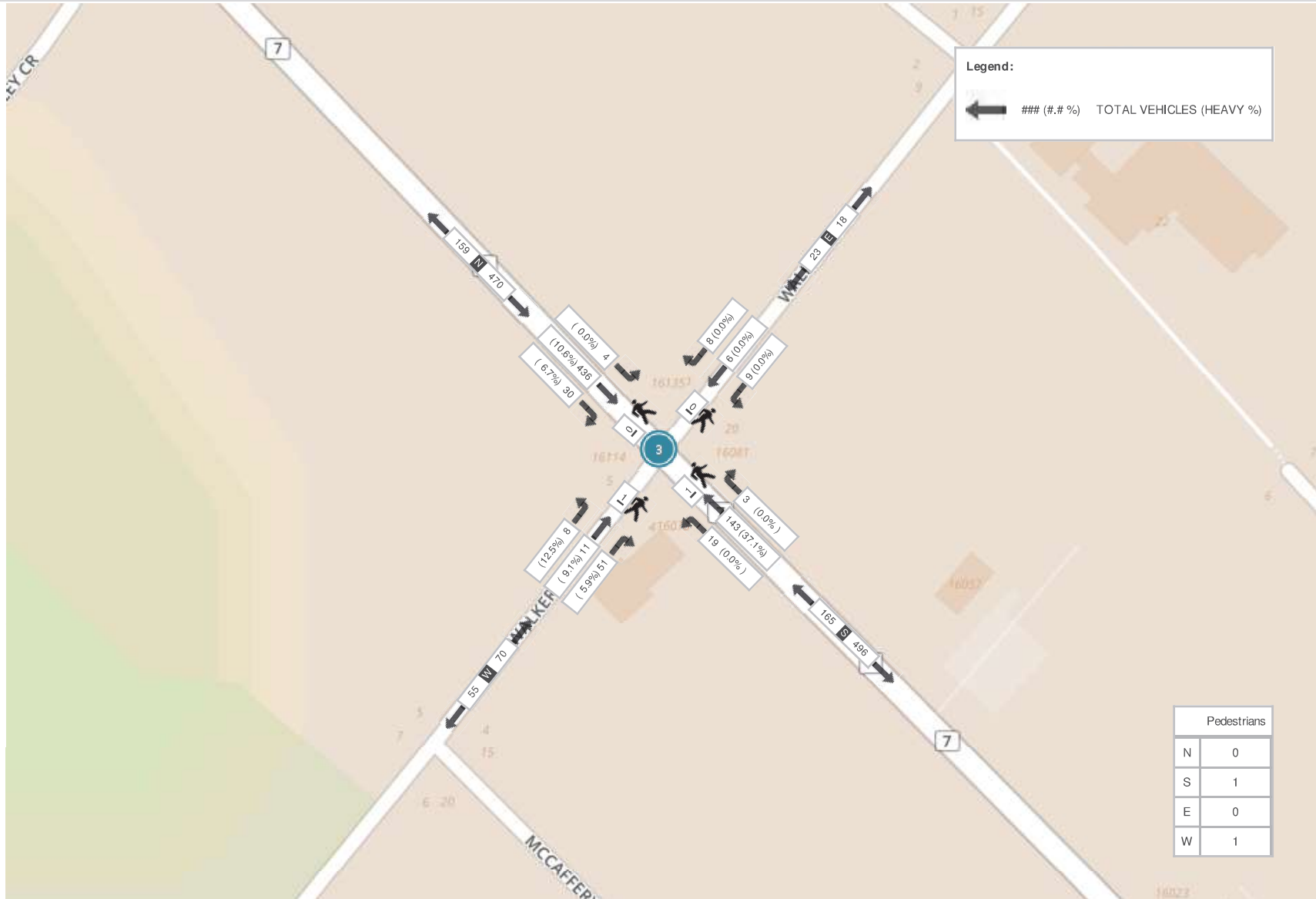
Start Time	Southbound AIRPORT RD						Westbound WALKER RD E						Northbound AIRPORT RD						Eastbound WALKER RD W						Int. Total (15 min)
	Left	Thru	Right	U-Turn	Peds	Approach Total	Left	Thru	Right	U-Turn	Peds	Approach Total	Left	Thru	Right	U-Turn	Peds	Approach Total	Left	Thru	Right	U-Turn	Peds	Approach Total	
12:45:00	1	60	2	0	0	63	0	2	2	0	0	4	8	49	1	0	0	58	4	1	6	0	0	11	136
13:00:00	3	43	1	0	0	47	2	2	1	0	0	5	19	44	5	0	1	68	3	3	10	0	0	16	136
13:15:00	5	39	8	0	0	52	0	2	4	0	0	6	3	57	1	0	0	61	2	2	6	0	0	10	129
13:30:00	2	51	3	0	0	56	1	0	1	0	0	2	8	54	2	0	0	64	2	0	8	0	0	10	132
Grand Total	11	193	14	0	0	218	3	6	8	0	0	17	38	204	9	0	1	251	11	6	30	0	0	47	533
Approach%	5%	88.5%	6.4%	0%	-	-	17.6%	35.3%	47.1%	0%	-	-	15.1%	81.3%	3.6%	0%	-	-	23.4%	12.8%	63.8%	0%	-	-	-
Totals %	2.1%	36.2%	2.6%	0%	40.9%	40.9%	0.6%	1.1%	1.5%	0%	3.2%	3.2%	7.1%	38.3%	1.7%	0%	47.1%	47.1%	2.1%	1.1%	5.6%	0%	8.8%	8.8%	-
PHF	0.55	0.8	0.44	0	0.87	0.87	0.38	0.75	0.5	0	0.71	0.71	0.5	0.89	0.45	0	0.92	0.92	0.69	0.5	0.75	0	0.73	0.73	-
Heavy	0	40	2	0	42	42	0	0	0	0	0	0	1	27	1	0	29	29	0	0	2	0	2	2	-
Heavy %	0%	20.7%	14.3%	0%	19.3%	19.3%	0%	0%	0%	0%	0%	0%	2.6%	13.2%	11.1%	0%	11.6%	11.6%	0%	0%	6.7%	0%	4.3%	4.3%	-
Lights	11	153	12	0	176	176	3	6	8	0	17	17	37	177	8	0	222	222	11	6	28	0	45	45	-
Lights %	100%	79.3%	85.7%	0%	80.7%	80.7%	100%	100%	100%	0%	100%	100%	97.4%	86.8%	88.9%	0%	88.4%	88.4%	100%	100%	93.3%	0%	95.7%	95.7%	-
Single-Unit Trucks	0	18	1	0	19	19	0	0	0	0	0	0	1	12	0	0	13	13	0	0	1	0	1	1	-
Single-Unit Trucks %	0%	9.3%	7.1%	0%	8.7%	8.7%	0%	0%	0%	0%	0%	0%	2.6%	5.9%	0%	0%	5.2%	5.2%	0%	0%	3.3%	0%	2.1%	2.1%	-
Buses	0	1	1	0	2	2	0	0	0	0	0	0	0	1	1	0	2	2	0	0	1	0	1	1	-
Buses %	0%	0.5%	7.1%	0%	0.9%	0.9%	0%	0%	0%	0%	0%	0%	0%	0.5%	11.1%	0%	0.8%	0.8%	0%	0%	3.3%	0%	2.1%	2.1%	-
Articulated Trucks	0	21	0	0	21	21	0	0	0	0	0	0	0	14	0	0	14	14	0	0	0	0	0	0	-
Articulated Trucks %	0%	10.9%	0%	0%	9.6%	9.6%	0%	0%	0%	0%	0%	0%	0%	6.9%	0%	0%	5.6%	5.6%	0%	0%	0%	0%	0%	0%	-
Pedestrians	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	1	-	-	-	-	-	0	-	-
Pedestrians%	-	-	-	-	0%	-	-	-	-	-	0%	-	-	-	-	-	100%	-	-	-	-	-	0%	-	-
Bicycles on Road	0	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	-
Bicycles on Road%	-	-	-	-	0%	-	-	-	-	-	0%	-	-	-	-	-	0%	-	-	-	-	-	0%	-	-



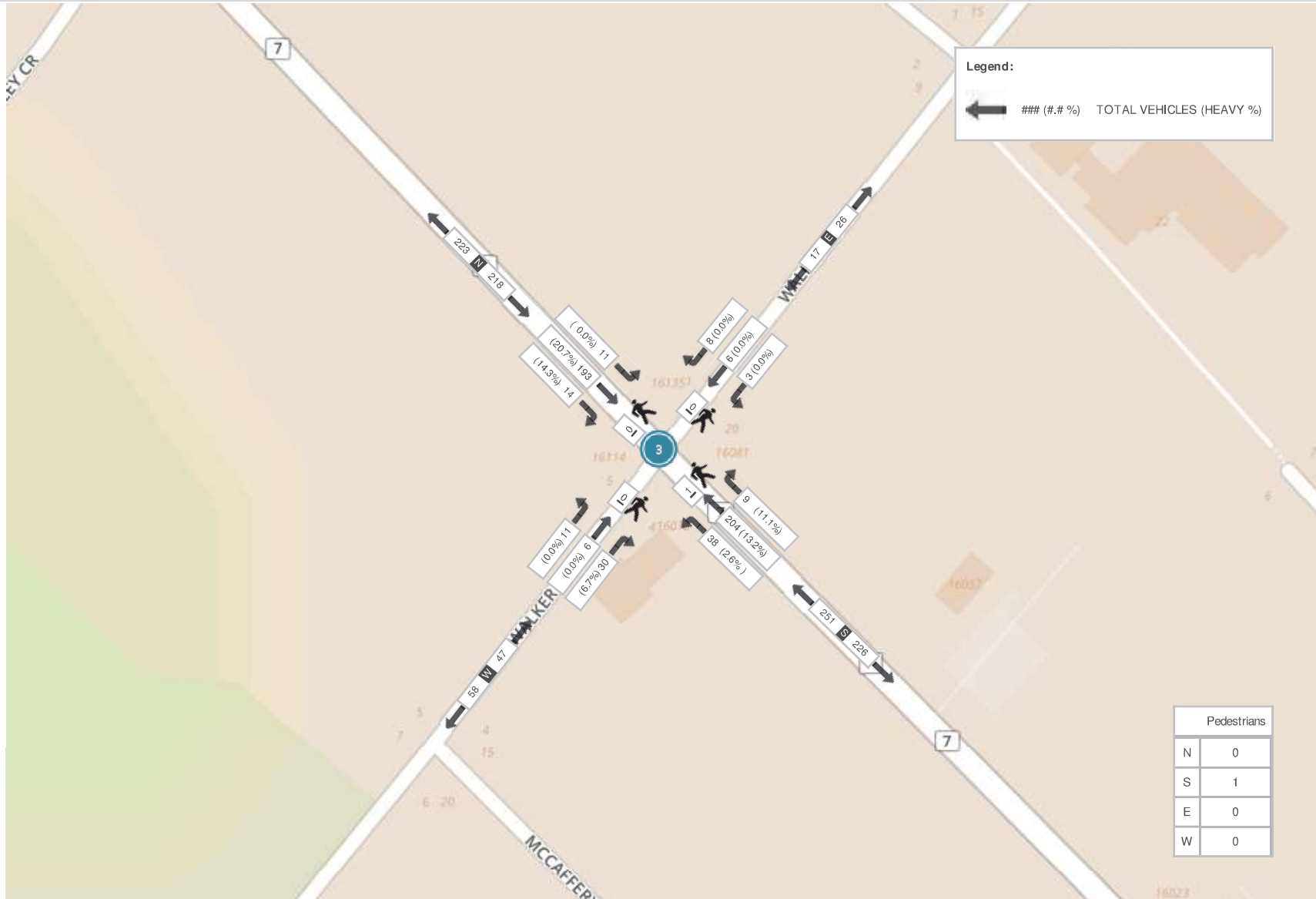
Peak Hour: 04:30 PM - 05:30 PM Weather: Scattered Clouds (5.8 °C)

Start Time	Southbound AIRPORT RD						Westbound WALKER RD E						Northbound AIRPORT RD						Eastbound WALKER RD W						Int. Total (15 min)
	Left	Thru	Right	U-Turn	Peds	Approach Total	Left	Thru	Right	U-Turn	Peds	Approach Total	Left	Thru	Right	U-Turn	Peds	Approach Total	Left	Thru	Right	U-Turn	Peds	Approach Total	
16:30:00	3	48	4	0	0	55	2	1	3	0	0	6	11	123	4	0	1	138	7	5	11	0	0	23	222
16:45:00	2	40	3	0	0	45	1	0	3	0	0	4	15	147	7	0	0	169	3	0	14	0	1	17	235
17:00:00	1	45	4	0	0	50	0	0	2	0	0	2	13	144	8	0	0	165	4	2	11	0	1	17	234
17:15:00	0	53	4	0	0	57	2	0	0	0	0	2	13	123	4	0	0	140	6	2	8	0	0	16	215
Grand Total	6	186	15	0	0	207	5	1	8	0	0	14	52	537	23	0	1	612	20	9	44	0	2	73	906
Approach%	2.9%	89.9%	7.2%	0%	-	-	35.7%	7.1%	57.1%	0%	-	-	8.5%	87.7%	3.8%	0%	-	27.4%	12.3%	60.3%	0%	-	-	-	
Totals %	0.7%	20.5%	1.7%	0%	22.8%	0.6%	0.1%	0.9%	0%	1.5%	5.7%	59.3%	2.5%	0%	67.5%	2.2%	1%	4.9%	0%	8.1%	-	-	-	-	
PHF	0.5	0.88	0.94	0	0.91	0.63	0.25	0.67	0	0.58	0.87	0.91	0.72	0	0.91	0.71	0.45	0.79	0	0.79	-	-	-	-	
Heavy	0	37	1	0	38	1	1	0	0	2	0	20	0	0	20	0	0	1	0	1	-	-	-	-	
Heavy %	0%	19.9%	6.7%	0%	18.4%	20%	100%	0%	0%	14.3%	0%	3.7%	0%	0%	3.3%	0%	0%	2.3%	0%	1.4%	-	-	-	-	
Lights	6	149	14	0	169	4	0	8	0	12	52	517	23	0	592	20	9	43	0	72	-	-	-	-	
Lights %	100%	80.1%	93.3%	0%	81.6%	80%	0%	100%	0%	85.7%	100%	96.3%	100%	0%	96.7%	100%	100%	97.7%	0%	98.6%	-	-	-	-	
Single-Unit Trucks	0	17	0	0	17	1	0	0	0	1	0	14	0	0	14	0	0	1	0	1	-	-	-	-	
Single-Unit Trucks %	0%	9.1%	0%	0%	8.2%	20%	0%	0%	0%	7.1%	0%	2.6%	0%	0%	2.3%	0%	0%	2.3%	0%	1.4%	-	-	-	-	
Buses	0	3	1	0	4	0	1	0	0	1	0	1	0	0	1	0	0	0	0	0	-	-	-	-	
Buses %	0%	1.6%	6.7%	0%	1.9%	0%	100%	0%	0%	7.1%	0%	0.2%	0%	0%	0.2%	0%	0%	0%	0%	0%	-	-	-	-	
Articulated Trucks	0	17	0	0	17	0	0	0	0	0	0	5	0	0	5	0	0	0	0	0	-	-	-	-	
Articulated Trucks %	0%	9.1%	0%	0%	8.2%	0%	0%	0%	0%	0%	0%	0.9%	0%	0%	0.8%	0%	0%	0%	0%	0%	-	-	-	-	
Pedestrians	-	-	-	-	0	-	-	-	-	0	-	-	-	-	1	-	-	-	-	2	-	-	-	-	
Pedestrians%	-	-	-	-	0%	-	-	-	-	0%	-	-	-	-	33.3%	-	-	-	-	66.7%	-	-	-	-	
Bicycles on Road	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	-	-	-	-	
Bicycles on Road%	-	-	-	-	0%	-	-	-	-	0%	-	-	-	-	0%	-	-	-	-	0%	-	-	-	-	

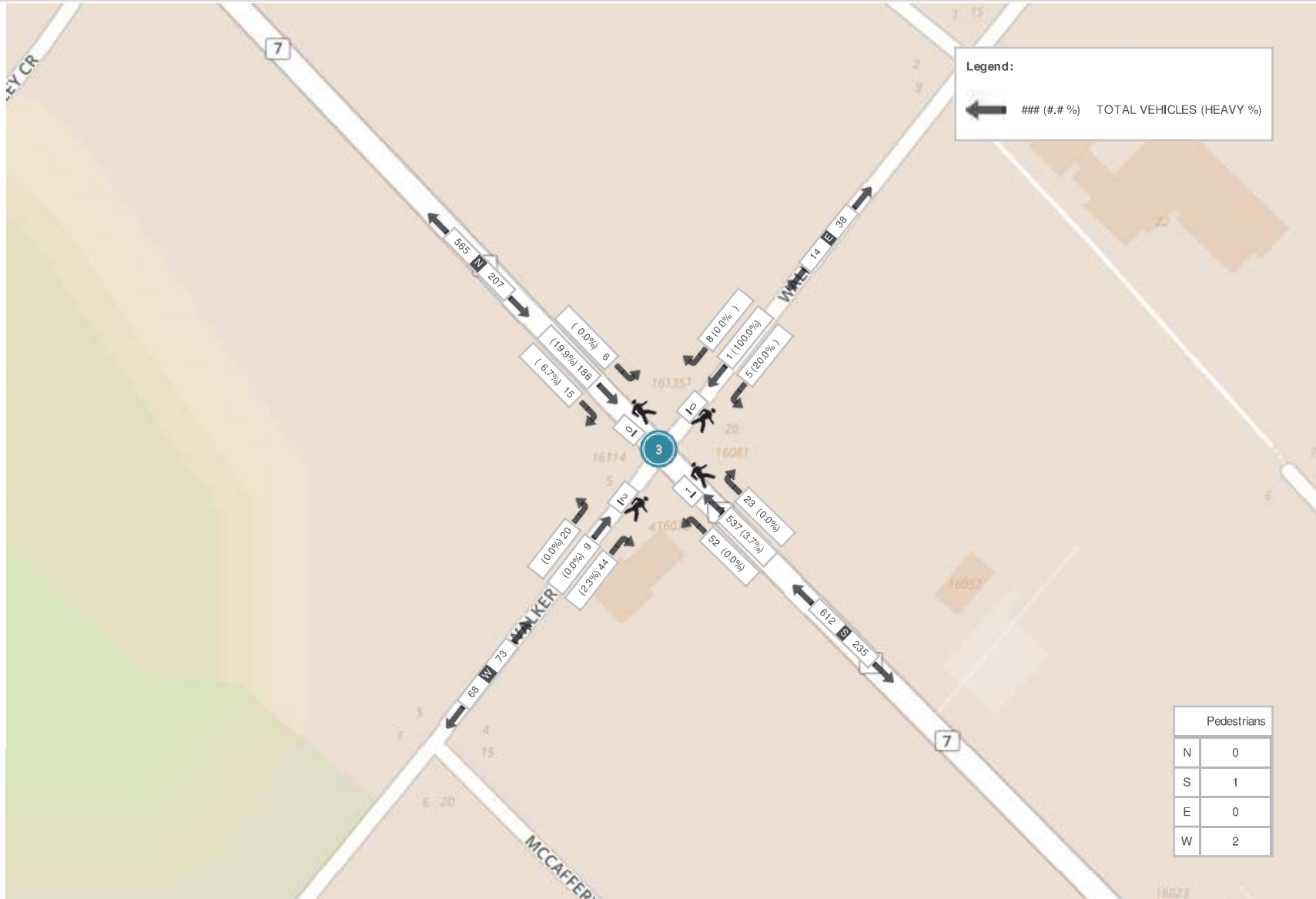
Peak Hour: 07:15 AM - 08:15 AM Weather: Mostly Cloudy (2.8 °C)



Peak Hour: 12:45 PM - 01:45 PM Weather: Mostly Cloudy (4 °C)



Peak Hour: 04:30 PM - 05:30 PM Weather: Scattered Clouds (5.8 °C)





Turning Movement Count (2 . AIRPORT RD & OLD CHURCH RD) CustID: 00729337 MioID: 357951

Start Time	Southbound AIRPORT RD					Westbound OLD CHURCH RD					Northbound AIRPORT RD					Int. Total (15 min)	Int. Total (1 hr)
	Left	Thru	U-Turn	Peds	Approach Total	Left	Right	U-Turn	Peds	Approach Total	Thru	Right	U-Turn	Peds	Approach Total		
07:00:00	18	97	0	0	115	51	6	0	0	57	27	15	0	0	42	214	
07:15:00	13	125	0	0	138	62	5	0	0	67	23	16	0	0	39	244	
07:30:00	17	112	0	0	129	60	13	0	0	73	36	22	0	2	58	260	
07:45:00	18	103	0	0	121	60	10	0	0	70	38	49	0	0	87	278	996
08:00:00	16	94	0	0	110	66	18	0	0	84	37	40	0	1	77	271	1053
08:15:00	33	76	0	1	109	59	12	0	0	71	28	43	0	0	71	251	1060
08:30:00	28	71	0	0	99	63	12	0	0	75	33	41	0	0	74	248	1048
08:45:00	24	75	0	0	99	51	6	0	0	57	32	53	0	1	85	241	1011
BREAK																	
11:00:00	14	68	0	1	82	32	15	0	0	47	46	25	0	1	71	200	
11:15:00	12	69	0	4	81	32	7	0	0	39	38	22	0	2	60	180	
11:30:00	7	50	0	4	57	40	9	0	0	49	41	11	0	1	52	158	
11:45:00	15	55	0	3	70	25	17	0	1	42	40	29	0	0	69	181	719
12:00:00	6	45	0	0	51	32	13	0	6	45	38	23	0	1	61	157	676
12:15:00	11	56	0	3	67	36	9	0	3	45	42	25	0	2	67	179	675
12:30:00	8	50	0	1	58	35	12	0	5	47	46	49	0	0	95	200	717
12:45:00	5	57	0	2	62	27	7	0	0	34	50	39	0	0	89	185	721
13:00:00	10	49	0	1	59	34	12	0	0	46	54	34	0	0	88	193	757
13:15:00	5	41	0	1	46	25	9	0	0	34	52	35	0	0	87	167	745
13:30:00	7	50	0	0	57	22	12	0	3	34	47	40	0	0	87	178	723
13:45:00	7	47	0	0	54	30	13	0	3	43	42	34	0	1	76	173	711
BREAK																	
15:00:00	3	56	0	5	59	35	8	0	1	43	68	46	0	1	114	216	
15:15:00	11	45	0	0	56	28	19	0	0	47	83	47	0	0	130	233	



15:30:00	8	44	0	3	52	31	12	0	2	43	99	46	0	1	145	240	
15:45:00	12	60	0	0	72	58	26	0	1	84	108	56	0	0	164	320	1009
16:00:00	13	52	0	3	65	54	25	0	2	79	103	70	0	1	173	317	1110
16:15:00	4	45	0	4	49	34	19	0	0	53	118	58	0	1	176	278	1155
16:30:00	18	46	0	3	64	51	28	0	0	79	113	84	0	0	197	340	1255
16:45:00	12	47	0	0	59	48	23	0	4	71	135	84	0	2	219	349	1284
17:00:00	21	31	0	1	52	36	24	0	1	60	128	68	0	1	196	308	1275
17:15:00	17	53	0	0	70	41	23	0	1	64	126	73	0	1	199	333	1330
17:30:00	12	49	0	0	61	46	23	0	4	69	101	69	0	0	170	300	1290
17:45:00	13	44	0	2	57	31	15	0	4	46	134	67	0	2	201	304	1245
Grand Total	418	1962	0	42	2380	1335	462	0	41	1797	2106	1413	0	22	3519	7696	-

Approach%	17.6%	82.4%	0%	-	74.3%	25.7%	0%	-	59.8%	40.2%	0%	-	-	-
Totals %	5.4%	25.5%	0%	30.9%	17.3%	6%	0%	23.3%	27.4%	18.4%	0%	45.7%	-	-
Heavy	46	336	0	-	66	45	0	-	227	69	0	-	-	-
Heavy %	11%	17.1%	0%	-	4.9%	9.7%	0%	-	10.8%	4.9%	0%	-	-	-
Bicycles	0	3	0	-	0	0	0	-	6	0	0	-	-	-
Bicycle %	0%	0.2%	0%	-	0%	0%	0%	-	0.3%	0%	0%	-	-	-



Peak Hour: 07:30 AM - 08:30 AM Weather: Mostly Cloudy (2.8 °C)

Start Time	Southbound AIRPORT RD					Westbound OLD CHURCH RD					Northbound AIRPORT RD					Int. Total (15 min)
	Left	Thru	U-Turn	Peds	Approach Total	Left	Right	U-Turn	Peds	Approach Total	Thru	Right	U-Turn	Peds	Approach Total	
07:30:00	17	112	0	0	129	60	13	0	0	73	36	22	0	2	58	260
07:45:00	18	103	0	0	121	60	10	0	0	70	38	49	0	0	87	278
08:00:00	16	94	0	0	110	66	18	0	0	84	37	40	0	1	77	271
08:15:00	33	76	0	1	109	59	12	0	0	71	28	43	0	0	71	251
Grand Total	84	385	0	1	469	245	53	0	0	298	139	154	0	3	293	1060
Approach%	17.9%	82.1%	0%	-	-	82.2%	17.8%	0%	-	-	47.4%	52.6%	0%	-	-	-
Totals %	7.9%	36.3%	0%	44.2%	23.1%	5%	0%	28.1%	13.1%	14.5%	0%	27.6%	-	-	-	-
PHF	0.64	0.86	0	0.91	0.93	0.74	0	0.89	0.91	0.79	0	0.84	-	-	-	-
Heavy	9	36	0	45	9	12	0	21	45	11	0	56	-	-	-	-
Heavy %	10.7%	9.4%	0%	9.6%	3.7%	22.6%	0%	7%	32.4%	7.1%	0%	19.1%	-	-	-	-
Lights	75	349	0	424	236	41	0	277	94	143	0	237	-	-	-	-
Lights %	89.3%	90.6%	0%	90.4%	96.3%	77.4%	0%	93%	67.6%	92.9%	0%	80.9%	-	-	-	-
Single-Unit Trucks	2	17	0	19	3	0	0	3	19	4	0	23	-	-	-	-
Single-Unit Trucks %	2.4%	4.4%	0%	4.1%	1.2%	0%	0%	1%	13.7%	2.6%	0%	7.8%	-	-	-	-
Buses	7	4	0	11	4	9	0	13	4	6	0	10	-	-	-	-
Buses %	8.3%	1%	0%	2.3%	1.6%	17%	0%	4.4%	2.9%	3.9%	0%	3.4%	-	-	-	-
Articulated Trucks	0	15	0	15	2	3	0	5	22	1	0	23	-	-	-	-
Articulated Trucks %	0%	3.9%	0%	3.2%	0.8%	5.7%	0%	1.7%	15.8%	0.6%	0%	7.8%	-	-	-	-
Pedestrians	-	-	-	1	-	-	-	0	-	-	-	3	-	-	-	-
Pedestrians%	-	-	-	25%	-	-	-	0%	-	-	-	75%	-	-	-	-
Bicycles on Crosswalk	-	-	-	0	-	-	-	0	-	-	-	0	-	-	-	-
Bicycles on Crosswalk%	-	-	-	0%	-	-	-	0%	-	-	-	0%	-	-	-	-
Bicycles on Road	0	0	0	0	-	0	0	0	-	0	0	0	-	-	-	-
Bicycles on Road%	-	-	-	0%	-	-	-	0%	-	-	-	0%	-	-	-	-



Peak Hour: 12:15 PM - 01:15 PM Weather: Mostly Cloudy (4 °C)

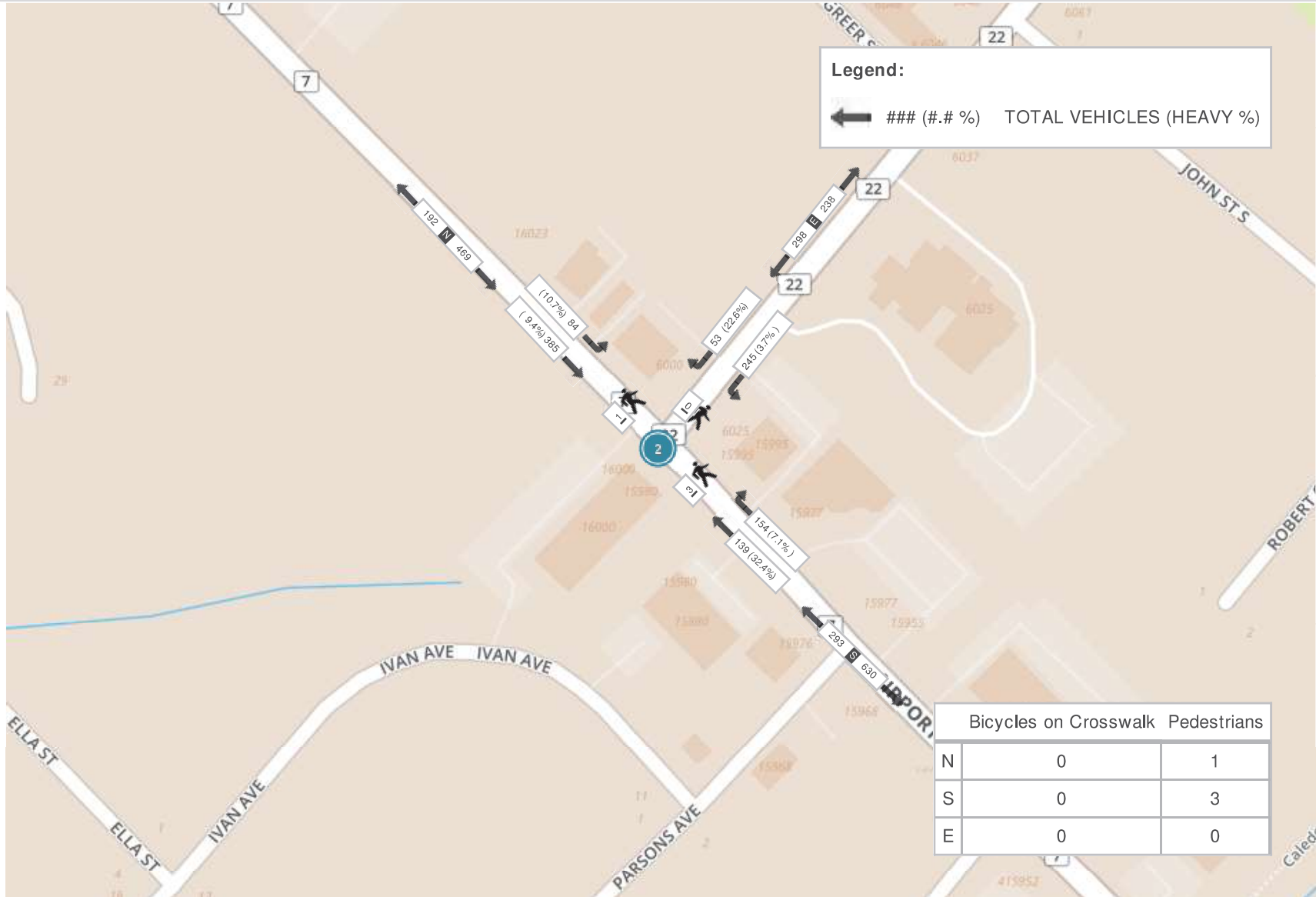
Start Time	Southbound AIRPORT RD					Westbound OLD CHURCH RD					Northbound AIRPORT RD					Int. Total (15 min)
	Left	Thru	U-Turn	Peds	Approach Total	Left	Right	U-Turn	Peds	Approach Total	Thru	Right	U-Turn	Peds	Approach Total	
12:15:00	11	56	0	3	67	36	9	0	3	45	42	25	0	2	67	179
12:30:00	8	50	0	1	58	35	12	0	5	47	46	49	0	0	95	200
12:45:00	5	57	0	2	62	27	7	0	0	34	50	39	0	0	89	185
13:00:00	10	49	0	1	59	34	12	0	0	46	54	34	0	0	88	193
Grand Total	34	212	0	7	246	132	40	0	8	172	192	147	0	2	339	757
Approach%	13.8%	86.2%	0%	-	-	76.7%	23.3%	0%	-	-	56.6%	43.4%	0%	-	-	-
Totals %	4.5%	28%	0%	32.5%	17.4%	5.3%	0%	22.7%	25.4%	19.4%	0%	44.8%	-	-	-	-
PHF	0.77	0.93	0	0.92	0.92	0.83	0	0.91	0.89	0.75	0	0.89	-	-	-	-
Heavy	3	43	0	46	5	2	0	7	23	12	0	35	-	-	-	-
Heavy %	8.8%	20.3%	0%	18.7%	3.8%	5%	0%	4.1%	12%	8.2%	0%	10.3%	-	-	-	-
Lights	31	169	0	200	127	38	0	165	169	135	0	304	-	-	-	-
Lights %	91.2%	79.7%	0%	81.3%	96.2%	95%	0%	95.9%	88%	91.8%	0%	89.7%	-	-	-	-
Single-Unit Trucks	1	22	0	23	4	1	0	5	14	11	0	25	-	-	-	-
Single-Unit Trucks %	2.9%	10.4%	0%	9.3%	3%	2.5%	0%	2.9%	7.3%	7.5%	0%	7.4%	-	-	-	-
Buses	0	2	0	2	1	0	0	1	1	0	0	1	-	-	-	-
Buses %	0%	0.9%	0%	0.8%	0.8%	0%	0%	0.6%	0.5%	0%	0%	0.3%	-	-	-	-
Articulated Trucks	2	19	0	21	0	1	0	1	8	1	0	9	-	-	-	-
Articulated Trucks %	5.9%	9%	0%	8.5%	0%	2.5%	0%	0.6%	4.2%	0.7%	0%	2.7%	-	-	-	-
Pedestrians	-	-	-	7	-	-	-	8	-	-	-	1	-	-	-	-
Pedestrians%	-	-	-	41.2%	-	-	-	47.1%	-	-	-	5.9%	-	-	-	-
Bicycles on Crosswalk	-	-	-	0	-	-	-	0	-	-	-	1	-	-	-	-
Bicycles on Crosswalk%	-	-	-	0%	-	-	-	0%	-	-	-	5.9%	-	-	-	-
Bicycles on Road	0	0	0	0	-	0	0	0	-	0	0	0	-	-	-	-
Bicycles on Road%	-	-	-	0%	-	-	-	0%	-	-	-	0%	-	-	-	-



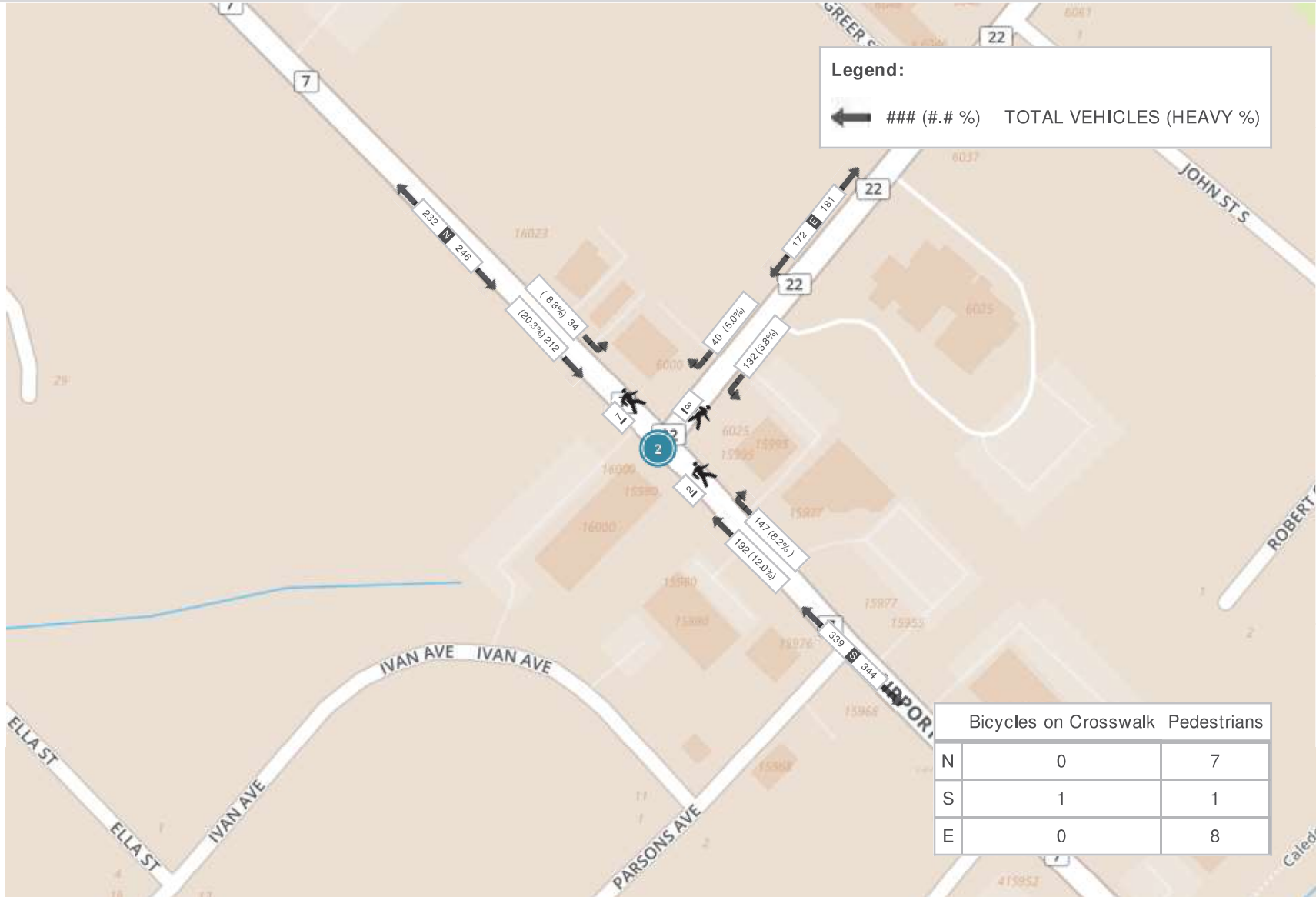
Peak Hour: 04:30 PM - 05:30 PM Weather: Scattered Clouds (5.8 °C)

Start Time	Southbound AIRPORT RD					Westbound OLD CHURCH RD					Northbound AIRPORT RD					Int. Total (15 min)
	Left	Thru	U-Turn	Peds	Approach Total	Left	Right	U-Turn	Peds	Approach Total	Thru	Right	U-Turn	Peds	Approach Total	
16:30:00	18	46	0	3	64	51	28	0	0	79	113	84	0	0	197	340
16:45:00	12	47	0	0	59	48	23	0	4	71	135	84	0	2	219	349
17:00:00	21	31	0	1	52	36	24	0	1	60	128	68	0	1	196	308
17:15:00	17	53	0	0	70	41	23	0	1	64	126	73	0	1	199	333
Grand Total	68	177	0	4	245	176	98	0	6	274	502	309	0	4	811	1330
Approach%	27.8%	72.2%	0%	-	-	64.2%	35.8%	0%	-	-	61.9%	38.1%	0%	-	-	-
Totals %	5.1%	13.3%	0%	-	18.4%	13.2%	7.4%	0%	-	20.6%	37.7%	23.2%	0%	-	61%	-
PHF	0.81	0.83	0	-	0.88	0.86	0.88	0	-	0.87	0.93	0.92	0	-	0.93	-
Heavy	10	31	0	-	41	5	0	0	-	5	18	2	0	-	20	-
Heavy %	14.7%	17.5%	0%	-	16.7%	2.8%	0%	0%	-	1.8%	3.6%	0.6%	0%	-	2.5%	-
Lights	58	146	0	-	204	171	98	0	-	269	484	307	0	-	791	-
Lights %	85.3%	82.5%	0%	-	83.3%	97.2%	100%	0%	-	98.2%	96.4%	99.4%	0%	-	97.5%	-
Single-Unit Trucks	5	15	0	-	20	3	0	0	-	3	12	1	0	-	13	-
Single-Unit Trucks %	7.4%	8.5%	0%	-	8.2%	1.7%	0%	0%	-	1.1%	2.4%	0.3%	0%	-	1.6%	-
Buses	0	3	0	-	3	0	0	0	-	0	1	1	0	-	2	-
Buses %	0%	1.7%	0%	-	1.2%	0%	0%	0%	-	0%	0.2%	0.3%	0%	-	0.2%	-
Articulated Trucks	5	13	0	-	18	2	0	0	-	2	5	0	0	-	5	-
Articulated Trucks %	7.4%	7.3%	0%	-	7.3%	1.1%	0%	0%	-	0.7%	1%	0%	0%	-	0.6%	-
Pedestrians	-	-	-	4	-	-	-	-	6	-	-	-	-	4	-	-
Pedestrians%	-	-	-	28.6%	-	-	-	-	42.9%	-	-	-	-	28.6%	-	-
Bicycles on Crosswalk	-	-	-	0	-	-	-	-	0	-	-	-	-	0	-	-
Bicycles on Crosswalk%	-	-	-	0%	-	-	-	-	0%	-	-	-	-	0%	-	-
Bicycles on Road	0	0	0	0	-	0	0	0	0	-	0	0	0	0	-	-
Bicycles on Road%	-	-	-	0%	-	-	-	-	0%	-	-	-	-	0%	-	-

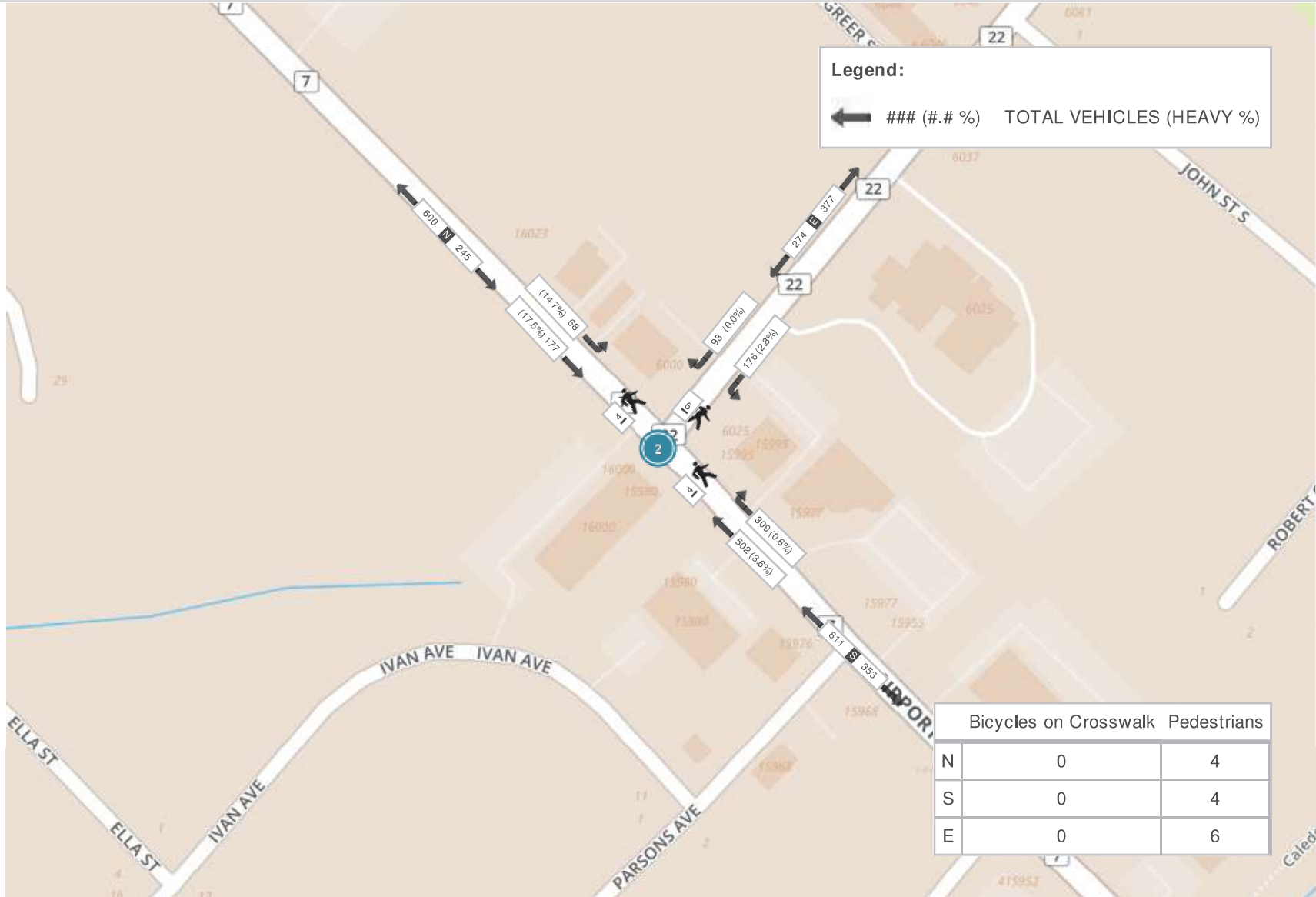
Peak Hour: 07:30 AM - 08:30 AM Weather: Mostly Cloudy (2.8 °C)



Peak Hour: 12:15 PM - 01:15 PM Weather: Mostly Cloudy (4 °C)



Peak Hour: 04:30 PM - 05:30 PM Weather: Scattered Clouds (5.8 °C)





Turning Movement Count (43 . AIRPORT RD & PARSONS AVE) CustID: 00729249 MioID: 358102

Start Time	Southbound AIRPORT RD					Northbound AIRPORT RD					Eastbound PARSONS AVE					Int. Total (15 min)	Int. Total (1 hr)
	Thru	Right	U-Turn	Peds	Approach Total	Left	Thru	U-Turn	Peds	Approach Total	Left	Right	U-Turn	Peds	Approach Total		
07:00:00	151	4	0	0	155	1	42	0	0	43	1	6	0	0	7	205	
07:15:00	167	2	0	0	169	1	34	0	0	35	2	12	0	0	14	218	
07:30:00	160	1	0	0	161	3	50	0	0	53	1	6	0	2	7	221	
07:45:00	173	3	0	0	176	0	80	0	0	80	4	10	0	0	14	270	914
08:00:00	146	0	0	0	146	1	87	0	0	88	2	6	0	0	8	242	951
08:15:00	141	1	0	0	142	2	61	0	0	63	3	4	0	0	7	212	945
08:30:00	120	2	0	2	122	1	80	0	1	81	1	3	0	0	4	207	931
08:45:00	109	2	0	1	111	3	67	0	0	70	1	5	0	2	6	187	848
BREAK																	
11:00:00	83	4	0	2	87	2	43	0	0	45	5	4	0	0	9	141	
11:15:00	76	5	1	3	82	5	58	0	0	63	3	2	0	2	5	150	
11:30:00	86	2	0	0	88	5	77	0	0	82	4	3	0	0	7	177	
11:45:00	67	3	0	2	70	5	55	0	0	60	3	8	0	1	11	141	609
12:00:00	78	1	0	1	79	7	53	0	0	60	3	4	0	2	7	146	614
12:15:00	83	4	0	0	87	5	71	0	0	76	3	6	0	0	9	172	636
12:30:00	73	7	0	0	80	4	70	0	0	74	2	7	0	2	9	163	622
12:45:00	61	3	0	0	64	4	63	0	0	67	3	6	0	2	9	140	621
13:00:00	60	6	0	8	66	6	80	0	0	86	8	4	0	0	12	164	639
13:15:00	62	2	0	2	64	5	76	0	0	81	1	6	0	0	7	152	619
13:30:00	84	6	0	0	90	4	70	0	0	74	6	4	0	2	10	174	630
13:45:00	81	4	0	0	85	6	84	0	0	90	2	7	0	0	9	184	674
BREAK																	
15:00:00	86	7	0	0	93	5	106	0	0	111	6	2	0	0	8	212	
15:15:00	79	1	0	0	80	7	121	0	0	128	2	5	0	0	7	215	



15:30:00	72	4	0	0	76	8	156	0	0	164	2	3	0	0	5	245	
15:45:00	65	5	0	0	70	5	148	0	0	153	4	3	0	1	7	230	902
16:00:00	93	5	0	0	98	10	165	0	0	175	2	7	0	0	9	282	972
16:15:00	91	3	0	0	94	11	153	0	0	164	4	4	0	0	8	266	1023
16:30:00	99	6	0	3	105	14	171	0	1	185	3	12	0	0	15	305	1083
16:45:00	90	4	0	1	94	8	183	0	0	191	0	2	0	2	2	287	1140
17:00:00	82	9	0	0	91	11	175	0	0	186	3	4	0	1	7	284	1142
17:15:00	74	7	0	0	81	10	187	0	2	197	4	11	0	0	15	293	1169
17:30:00	70	4	0	0	74	9	181	0	3	190	2	5	0	0	7	271	1135
17:45:00	71	3	0	0	74	10	169	0	0	179	5	6	0	0	11	264	1112
Grand Total	3033	120	1	25	3154	178	3216	0	7	3394	95	177	0	19	272	6820	-
Approach%	96.2%	3.8%	0%		-	5.2%	94.8%	0%		-	34.9%	65.1%	0%		-	-	-
Totals %	44.5%	1.8%	0%		46.2%	2.6%	47.2%	0%		49.8%	1.4%	2.6%	0%		4%	-	-
Heavy	298	2	0		-	1	221	0		-	3	5	0		-	-	-
Heavy %	9.8%	1.7%	0%		-	0.6%	6.9%	0%		-	3.2%	2.8%	0%		-	-	-
Bicycles	0	0	0		-	0	1	0		-	0	0	0		-	-	-
Bicycle %	0%	0%	0%		-	0%	0%	0%		-	0%	0%	0%		-	-	-



Peak Hour: 07:15 AM - 08:15 AM Weather: Light Rain Showers (11.7 °C)

Start Time	Southbound AIRPORT RD					Northbound AIRPORT RD					Eastbound PARSONS AVE					Int. Total (15 min)
	Thru	Right	U-Turn	Peds	Approach Total	Left	Thru	U-Turn	Peds	Approach Total	Left	Right	U-Turn	Peds	Approach Total	
07:15:00	167	2	0	0	169	1	34	0	0	35	2	12	0	0	14	218
07:30:00	160	1	0	0	161	3	50	0	0	53	1	6	0	2	7	221
07:45:00	173	3	0	0	176	0	80	0	0	80	4	10	0	0	14	270
08:00:00	146	0	0	0	146	1	87	0	0	88	2	6	0	0	8	242
Grand Total	646	6	0	0	652	5	251	0	0	256	9	34	0	2	43	951
Approach%	99.1%	0.9%	0%		-	2%	98%	0%		-	20.9%	79.1%	0%		-	-
Totals %	67.9%	0.6%	0%		68.6%	0.5%	26.4%	0%		26.9%	0.9%	3.6%	0%		4.5%	-
PHF	0.93	0.5	0		0.93	0.42	0.72	0		0.73	0.56	0.71	0		0.77	-
Heavy	36	0	0		36	0	35	0		35	0	0	0		0	-
Heavy %	5.6%	0%	0%		5.5%	0%	13.9%	0%		13.7%	0%	0%	0%		0%	-
Lights	610	6	0		616	5	216	0		221	9	34	0		43	-
Lights %	94.4%	100%	0%		94.5%	100%	86.1%	0%		86.3%	100%	100%	0%		100%	-
Single-Unit Trucks	9	0	0		9	0	11	0		11	0	0	0		0	-
Single-Unit Trucks %	1.4%	0%	0%		1.4%	0%	4.4%	0%		4.3%	0%	0%	0%		0%	-
Buses	8	0	0		8	0	11	0		11	0	0	0		0	-
Buses %	1.2%	0%	0%		1.2%	0%	4.4%	0%		4.3%	0%	0%	0%		0%	-
Articulated Trucks	19	0	0		19	0	13	0		13	0	0	0		0	-
Articulated Trucks %	2.9%	0%	0%		2.9%	0%	5.2%	0%		5.1%	0%	0%	0%		0%	-
Pedestrians	-	-	-	0	-	-	-	-	0	-	-	-	-	2	-	-
Pedestrians%	-	-	-	0%	-	-	-	-	0%	-	-	-	-	100%	-	-
Bicycles on Road	0	0	0	0	-	0	0	0	0	-	0	0	0	0	-	-
Bicycles on Road%	-	-	-	0%	-	-	-	-	0%	-	-	-	-	0%	-	-



Peak Hour: 01:00 PM - 02:00 PM Weather: Light Rain (12.9 °C)

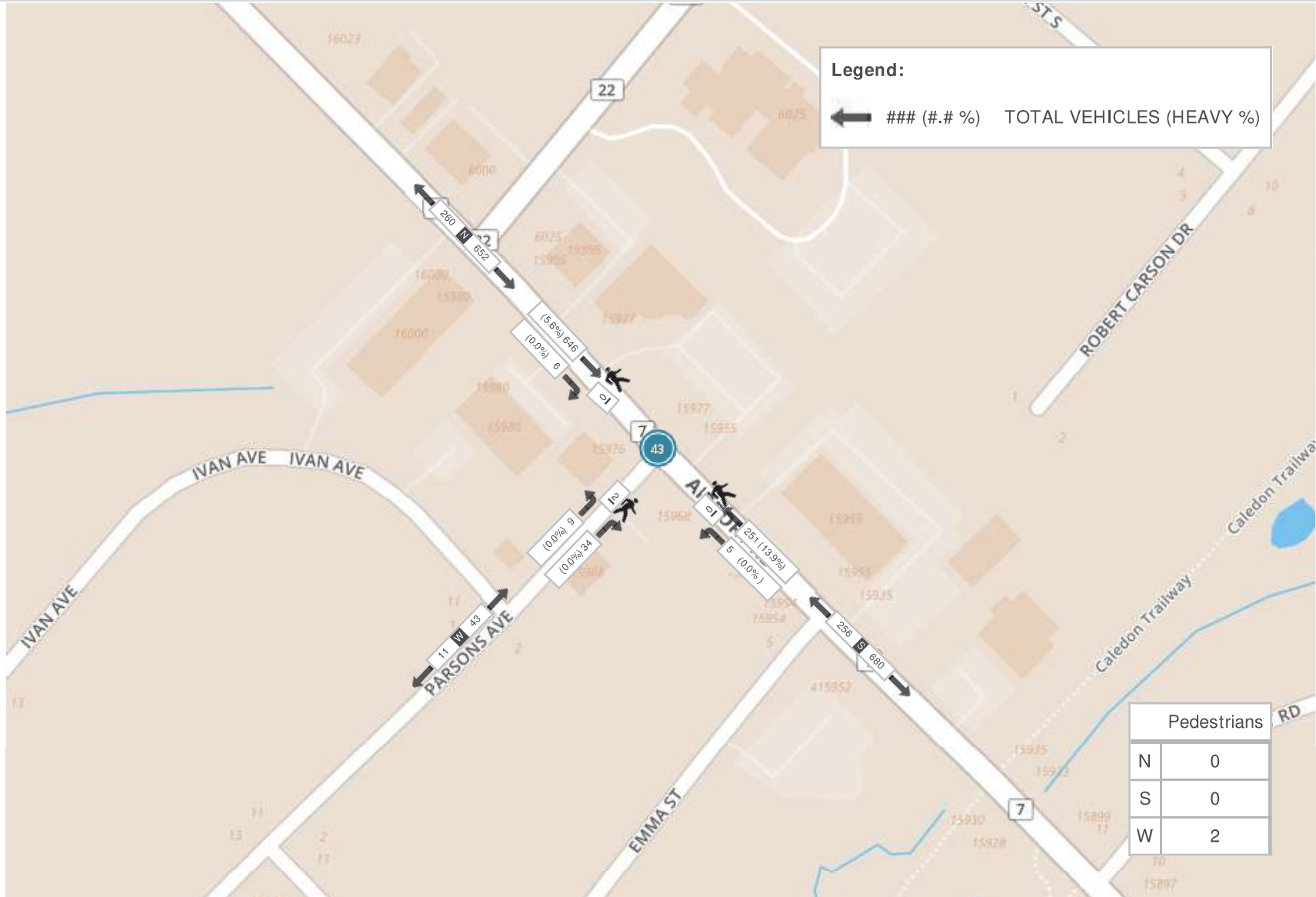
Start Time	Southbound AIRPORT RD					Northbound AIRPORT RD					Eastbound PARSONS AVE					Int. Total (15 min)
	Thru	Right	U-Turn	Peds	Approach Total	Left	Thru	U-Turn	Peds	Approach Total	Left	Right	U-Turn	Peds	Approach Total	
13:00:00	60	6	0	8	66	6	80	0	0	86	8	4	0	0	12	164
13:15:00	62	2	0	2	64	5	76	0	0	81	1	6	0	0	7	152
13:30:00	84	6	0	0	90	4	70	0	0	74	6	4	0	2	10	174
13:45:00	81	4	0	0	85	6	84	0	0	90	2	7	0	0	9	184
Grand Total	287	18	0	10	305	21	310	0	0	331	17	21	0	2	38	674
Approach%	94.1%	5.9%	0%		-	6.3%	93.7%	0%		-	44.7%	55.3%	0%		-	-
Totals %	42.6%	2.7%	0%		45.3%	3.1%	46%	0%		49.1%	2.5%	3.1%	0%		5.6%	-
PHF	0.85	0.75	0		0.85	0.88	0.92	0		0.92	0.53	0.75	0		0.79	-
Heavy	40	1	0		41	0	26	0		26	0	0	0		0	-
Heavy %	13.9%	5.6%	0%		13.4%	0%	8.4%	0%		7.9%	0%	0%	0%		0%	-
Lights	247	17	0		264	21	284	0		305	17	21	0		38	-
Lights %	86.1%	94.4%	0%		86.6%	100%	91.6%	0%		92.1%	100%	100%	0%		100%	-
Single-Unit Trucks	18	1	0		19	0	6	0		6	0	0	0		0	-
Single-Unit Trucks %	6.3%	5.6%	0%		6.2%	0%	1.9%	0%		1.8%	0%	0%	0%		0%	-
Buses	3	0	0		3	0	4	0		4	0	0	0		0	-
Buses %	1%	0%	0%		1%	0%	1.3%	0%		1.2%	0%	0%	0%		0%	-
Articulated Trucks	19	0	0		19	0	16	0		16	0	0	0		0	-
Articulated Trucks %	6.6%	0%	0%		6.2%	0%	5.2%	0%		4.8%	0%	0%	0%		0%	-
Pedestrians	-	-	-	10	-	-	-	0		-	-	-	-	2	-	-
Pedestrians%	-	-	-	83.3%	-	-	-	0%		-	-	-	-	16.7%	-	-
Bicycles on Road	0	0	0	0	-	0	0	0		-	0	0	0	0	-	-
Bicycles on Road%	-	-	-	0%	-	-	-	0%		-	-	-	-	0%	-	-



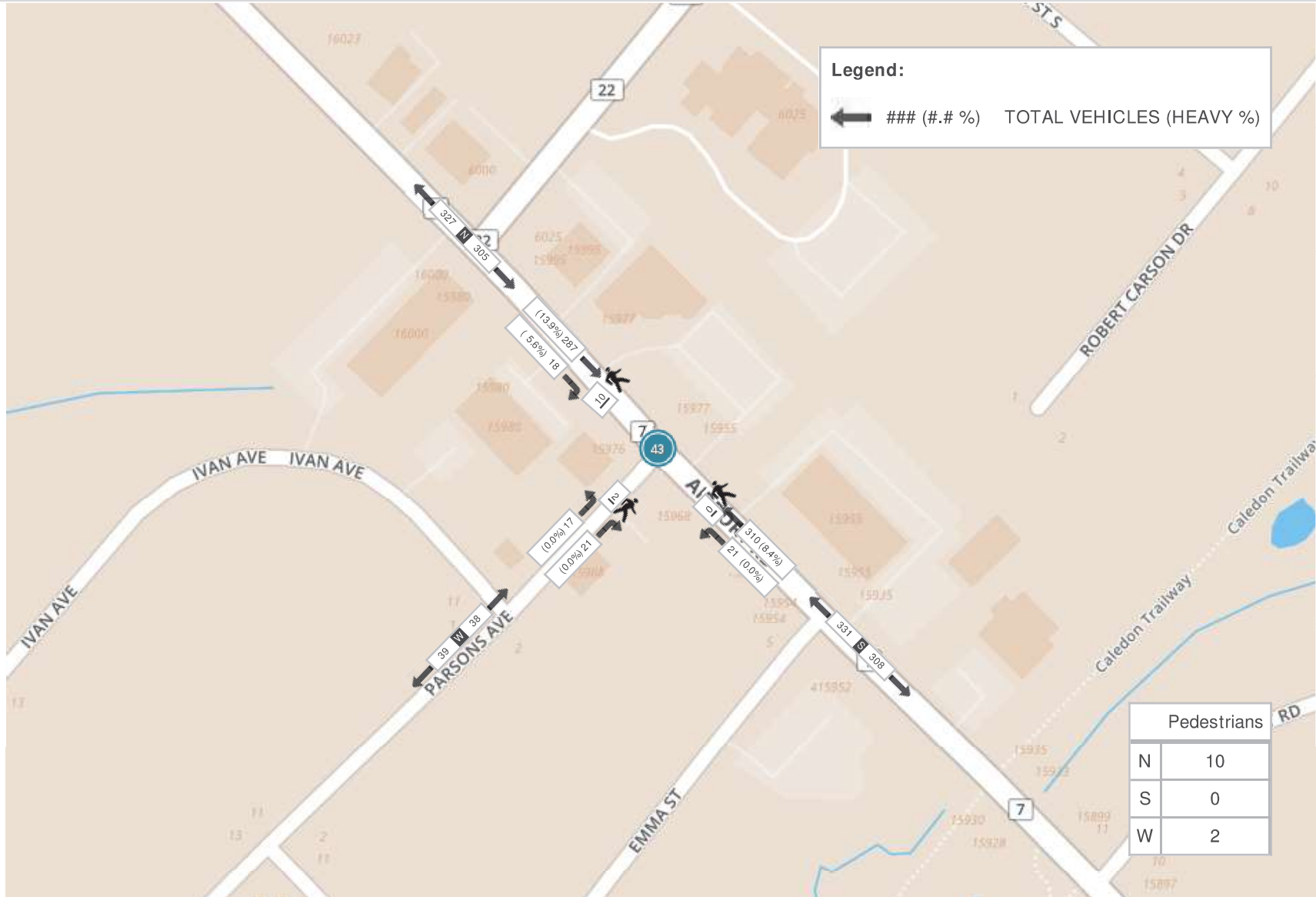
Peak Hour: 04:30 PM - 05:30 PM Weather: Light Rain (11.8 °C)

Start Time	Southbound AIRPORT RD					Northbound AIRPORT RD					Eastbound PARSONS AVE					Int. Total (15 min)
	Thru	Right	U-Turn	Peds	Approach Total	Left	Thru	U-Turn	Peds	Approach Total	Left	Right	U-Turn	Peds	Approach Total	
16:30:00	99	6	0	3	105	14	171	0	1	185	3	12	0	0	15	305
16:45:00	90	4	0	1	94	8	183	0	0	191	0	2	0	2	2	287
17:00:00	82	9	0	0	91	11	175	0	0	186	3	4	0	1	7	284
17:15:00	74	7	0	0	81	10	187	0	2	197	4	11	0	0	15	293
Grand Total	345	26	0	4	371	43	716	0	3	759	10	29	0	3	39	1169
Approach%	93%	7%	0%		-	5.7%	94.3%	0%		-	25.6%	74.4%	0%		-	-
Totals %	29.5%	2.2%	0%		31.7%	3.7%	61.2%	0%		64.9%	0.9%	2.5%	0%		3.3%	-
PHF	0.87	0.72	0		0.88	0.77	0.96	0		0.96	0.63	0.6	0		0.65	-
Heavy	31	0	0		31	0	25	0		25	0	0	0		0	-
Heavy %	9%	0%	0%		8.4%	0%	3.5%	0%		3.3%	0%	0%	0%		0%	-
Lights	314	26	0		340	43	691	0		734	10	29	0		39	-
Lights %	91%	100%	0%		91.6%	100%	96.5%	0%		96.7%	100%	100%	0%		100%	-
Single-Unit Trucks	16	0	0		16	0	12	0		12	0	0	0		0	-
Single-Unit Trucks %	4.6%	0%	0%		4.3%	0%	1.7%	0%		1.6%	0%	0%	0%		0%	-
Buses	3	0	0		3	0	1	0		1	0	0	0		0	-
Buses %	0.9%	0%	0%		0.8%	0%	0.1%	0%		0.1%	0%	0%	0%		0%	-
Articulated Trucks	12	0	0		12	0	12	0		12	0	0	0		0	-
Articulated Trucks %	3.5%	0%	0%		3.2%	0%	1.7%	0%		1.6%	0%	0%	0%		0%	-
Pedestrians	-	-	-	4	-	-	-	3		-	-	-	-	3	-	-
Pedestrians%	-	-	-	40%	-	-	-	30%		-	-	-	-	30%	-	-
Bicycles on Road	0	0	0	0	-	0	0	0		-	0	0	0	0	-	-
Bicycles on Road%	-	-	-	0%	-	-	-	0%		-	-	-	-	0%	-	-

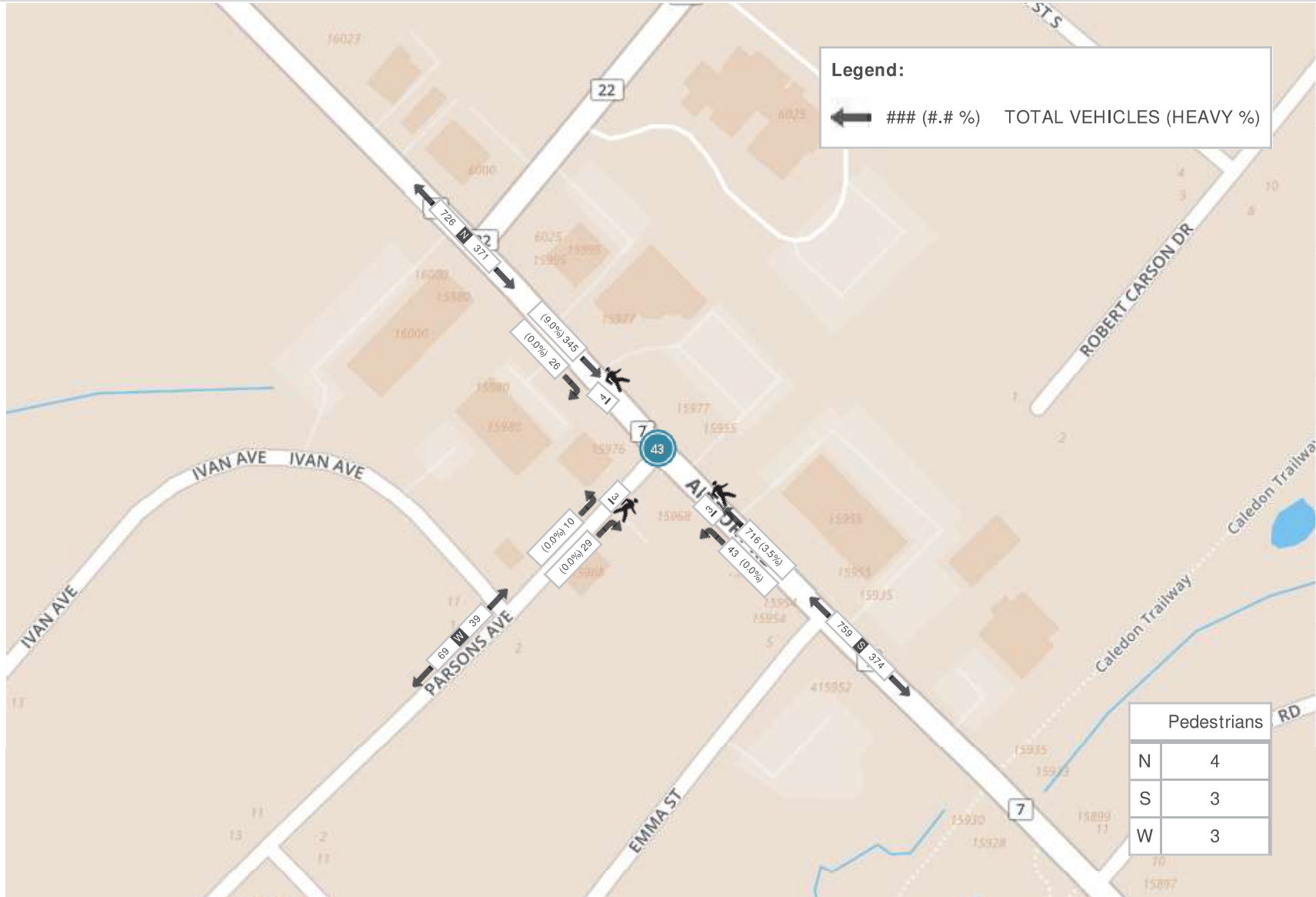
Peak Hour: 07:15 AM - 08:15 AM Weather: Light Rain Showers (11.7 °C)



Peak Hour: 01:00 PM - 02:00 PM Weather: Light Rain (12.9 °C)



Peak Hour: 04:30 PM - 05:30 PM Weather: Light Rain (11.8 °C)





Turning Movement Count (42 . AIRPORT RD & EMMA ST) CustID: 00729178 MioID: 358101

Start Time	Southbound AIRPORT RD					Northbound AIRPORT RD					Eastbound EMMA ST					Int. Total (15 min)	Int. Total (1 hr)
	Thru	Right	U-Turn	Peds	Approach Total	Left	Thru	U-Turn	Peds	Approach Total	Left	Right	U-Turn	Peds	Approach Total		
07:00:00	159	0	0	0	159	0	43	0	0	43	0	1	0	2	1	203	
07:15:00	176	0	0	0	176	0	39	0	0	39	0	3	0	2	3	218	
07:30:00	176	1	0	0	177	1	57	0	0	58	0	2	0	3	2	237	
07:45:00	183	0	0	0	183	0	79	0	0	79	0	3	0	0	3	265	923
08:00:00	153	2	0	0	155	1	92	0	0	93	2	3	0	0	5	253	973
08:15:00	149	0	0	0	149	1	63	0	0	64	0	1	0	1	1	214	969
08:30:00	120	0	0	0	120	0	71	0	0	71	2	1	0	1	3	194	926
08:45:00	107	5	0	0	112	0	74	0	0	74	0	2	0	2	2	188	849
BREAK																	
11:00:00	87	0	0	1	87	0	51	0	0	51	2	1	0	2	3	141	
11:15:00	71	2	0	0	73	1	64	0	0	65	2	0	0	2	2	140	
11:30:00	95	0	0	0	95	1	72	0	0	73	2	4	0	0	6	174	
11:45:00	77	0	1	0	78	1	66	0	0	67	0	2	0	0	2	147	602
12:00:00	72	5	1	0	78	1	68	0	0	69	2	2	0	0	4	151	612
12:15:00	95	1	0	2	96	0	71	0	0	71	0	1	0	2	1	168	640
12:30:00	77	3	0	2	80	0	71	0	0	71	1	2	0	0	3	154	620
12:45:00	67	3	0	0	70	2	70	1	1	73	1	3	0	2	4	147	620
13:00:00	62	4	0	2	66	0	89	0	0	89	2	0	0	1	2	157	626
13:15:00	70	3	0	4	73	1	84	0	0	85	2	1	0	0	3	161	619
13:30:00	89	1	0	2	90	1	74	0	0	75	1	1	0	2	2	167	632
13:45:00	86	2	0	0	88	0	86	0	0	86	3	0	0	1	3	177	662
BREAK																	
15:00:00	89	1	0	1	90	1	112	0	0	113	0	0	0	0	0	203	
15:15:00	81	2	0	0	83	1	130	0	0	131	1	2	0	0	3	217	



15:30:00	72	1	0	1	73	2	166	0	0	168	1	0	0	0	1	242	
15:45:00	72	0	1	0	73	2	159	0	0	161	0	0	0	1	0	234	896
16:00:00	93	3	1	2	97	2	174	0	0	176	2	1	1	0	4	277	970
16:15:00	95	1	0	0	96	1	171	0	0	172	0	1	0	0	1	269	1022
16:30:00	104	2	0	0	106	2	193	0	0	195	1	1	0	0	2	303	1083
16:45:00	86	3	0	2	89	3	189	0	0	192	3	1	0	2	4	285	1134
17:00:00	86	3	0	1	89	3	192	0	1	195	1	4	0	2	5	289	1146
17:15:00	82	3	1	1	86	6	198	0	0	204	2	1	0	0	3	293	1170
17:30:00	69	0	0	1	69	1	189	0	0	190	2	0	0	0	2	261	1128
17:45:00	77	1	0	0	78	3	181	0	0	184	1	1	0	0	2	264	1107
Grand Total	3177	52	5	22	3234	38	3438	1	2	3477	36	45	1	28	82	6793	-

Approach%	98.2%	1.6%	0.2%	-	1.1%	98.9%	0%	-	43.9%	54.9%	1.2%	-	-	-
Totals %	46.8%	0.8%	0.1%	47.6%	0.6%	50.6%	0%	51.2%	0.5%	0.7%	0%	1.2%	-	-
Heavy	300	5	0	-	1	227	0	-	1	2	0	-	-	-
Heavy %	9.4%	9.6%	0%	-	2.6%	6.6%	0%	-	2.8%	4.4%	0%	-	-	-
Bicycles	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Bicycle %	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Peak Hour: 07:15 AM - 08:15 AM Weather: Light Rain Showers (11.7 °C)

Start Time	Southbound AIRPORT RD					Northbound AIRPORT RD					Eastbound EMMA ST					Int. Total (15 min)
	Thru	Right	U-Turn	Peds	Approach Total	Left	Thru	U-Turn	Peds	Approach Total	Left	Right	U-Turn	Peds	Approach Total	
07:15:00	176	0	0	0	176	0	39	0	0	39	0	3	0	2	3	218
07:30:00	176	1	0	0	177	1	57	0	0	58	0	2	0	3	2	237
07:45:00	183	0	0	0	183	0	79	0	0	79	0	3	0	0	3	265
08:00:00	153	2	0	0	155	1	92	0	0	93	2	3	0	0	5	253
Grand Total	688	3	0	0	691	2	267	0	0	269	2	11	0	5	13	973
Approach%	99.6%	0.4%	0%		-	0.7%	99.3%	0%		-	15.4%	84.6%	0%		-	-
Totals %	70.7%	0.3%	0%		71%	0.2%	27.4%	0%		27.6%	0.2%	1.1%	0%		1.3%	-
PHF	0.94	0.38	0		0.94	0.5	0.73	0		0.72	0.25	0.92	0		0.65	-
Heavy	38	0	0		38	1	35	0		36	0	0	0		0	-
Heavy %	5.5%	0%	0%		5.5%	50%	13.1%	0%		13.4%	0%	0%	0%		0%	-
Lights	650	3	0		653	1	232	0		233	2	11	0		13	-
Lights %	94.5%	100%	0%		94.5%	50%	86.9%	0%		86.6%	100%	100%	0%		100%	-
Single-Unit Trucks	11	0	0		11	0	5	0		5	0	0	0		0	-
Single-Unit Trucks %	1.6%	0%	0%		1.6%	0%	1.9%	0%		1.9%	0%	0%	0%		0%	-
Buses	8	0	0		8	0	11	0		11	0	0	0		0	-
Buses %	1.2%	0%	0%		1.2%	0%	4.1%	0%		4.1%	0%	0%	0%		0%	-
Articulated Trucks	19	0	0		19	1	19	0		20	0	0	0		0	-
Articulated Trucks %	2.8%	0%	0%		2.7%	50%	7.1%	0%		7.4%	0%	0%	0%		0%	-
Pedestrians	-	-	-	0	-	-	-	-	0	-	-	-	-	5	-	-
Pedestrians%	-	-	-	0%	-	-	-	-	0%	-	-	-	100%	-	-	-



Peak Hour: 01:00 PM - 02:00 PM Weather: Light Rain (12.9 °C)

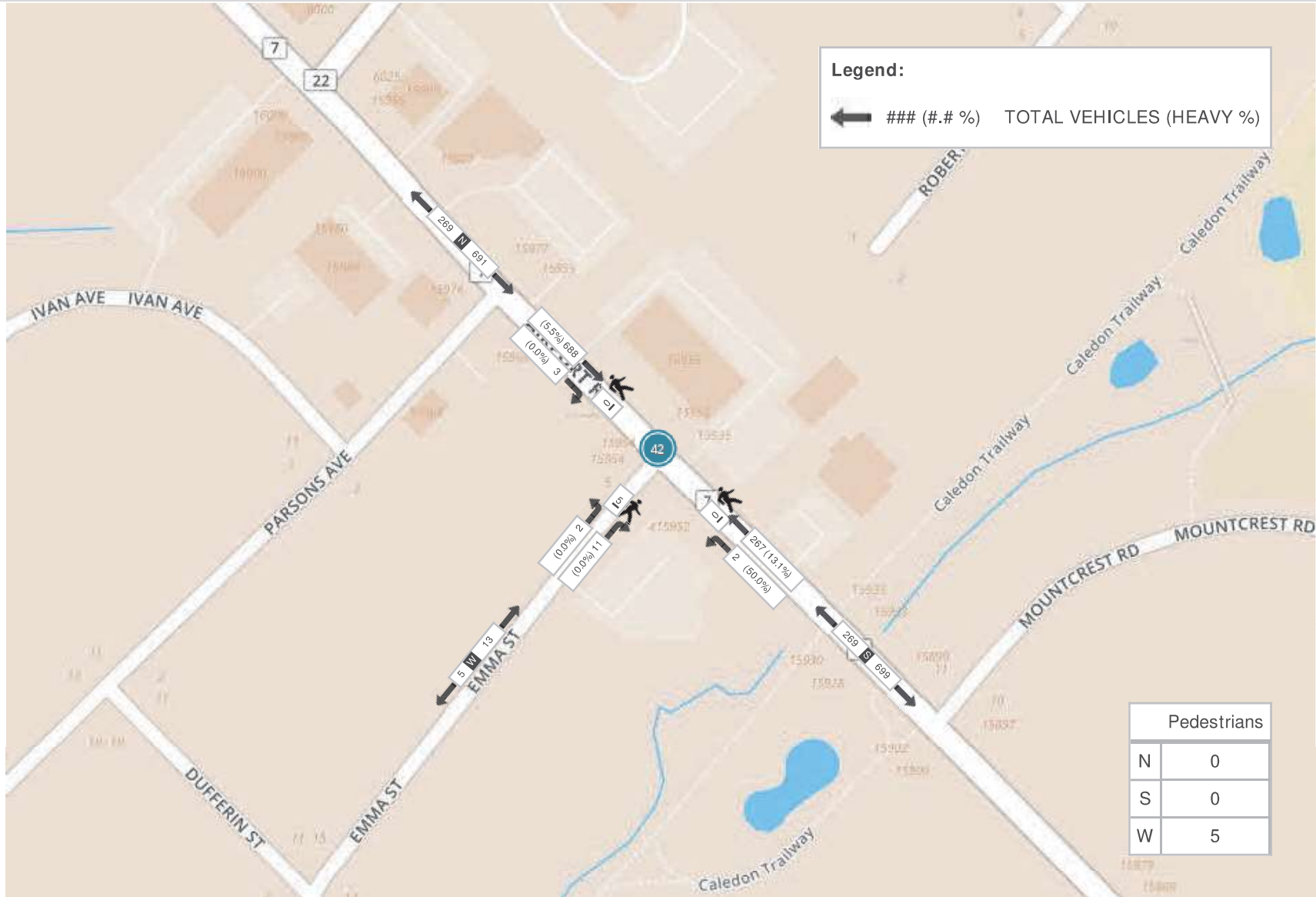
Start Time	Southbound AIRPORT RD					Northbound AIRPORT RD					Eastbound EMMA ST					Int. Total (15 min)
	Thru	Right	U-Turn	Peds	Approach Total	Left	Thru	U-Turn	Peds	Approach Total	Left	Right	U-Turn	Peds	Approach Total	
13:00:00	62	4	0	2	66	0	89	0	0	89	2	0	0	1	2	157
13:15:00	70	3	0	4	73	1	84	0	0	85	2	1	0	0	3	161
13:30:00	89	1	0	2	90	1	74	0	0	75	1	1	0	2	2	167
13:45:00	86	2	0	0	88	0	86	0	0	86	3	0	0	1	3	177
Grand Total	307	10	0	8	317	2	333	0	0	335	8	2	0	4	10	662
Approach%	96.8%	3.2%	0%	-	-	0.6%	99.4%	0%	-	-	80%	20%	0%	-	-	-
Totals %	46.4%	1.5%	0%	-	47.9%	0.3%	50.3%	0%	-	50.6%	1.2%	0.3%	0%	-	1.5%	-
PHF	0.86	0.63	0	-	0.88	0.5	0.94	0	-	0.94	0.67	0.5	0	-	0.83	-
Heavy	39	1	0	-	40	0	28	0	-	28	0	1	0	-	1	-
Heavy %	12.7%	10%	0%	-	12.6%	0%	8.4%	0%	-	8.4%	0%	50%	0%	-	10%	-
Lights	268	9	0	-	277	2	305	0	-	307	8	1	0	-	9	-
Lights %	87.3%	90%	0%	-	87.4%	100%	91.6%	0%	-	91.6%	100%	50%	0%	-	90%	-
Single-Unit Trucks	18	0	0	-	18	0	10	0	-	10	0	1	0	-	1	-
Single-Unit Trucks %	5.9%	0%	0%	-	5.7%	0%	3%	0%	-	3%	0%	50%	0%	-	10%	-
Buses	2	1	0	-	3	0	4	0	-	4	0	0	0	-	0	-
Buses %	0.7%	10%	0%	-	0.9%	0%	1.2%	0%	-	1.2%	0%	0%	0%	-	0%	-
Articulated Trucks	19	0	0	-	19	0	14	0	-	14	0	0	0	-	0	-
Articulated Trucks %	6.2%	0%	0%	-	6%	0%	4.2%	0%	-	4.2%	0%	0%	0%	-	0%	-
Pedestrians	-	-	-	8	-	-	-	0	-	-	-	-	-	4	-	-
Pedestrians%	-	-	-	66.7%	-	-	-	0%	-	-	-	-	-	33.3%	-	-



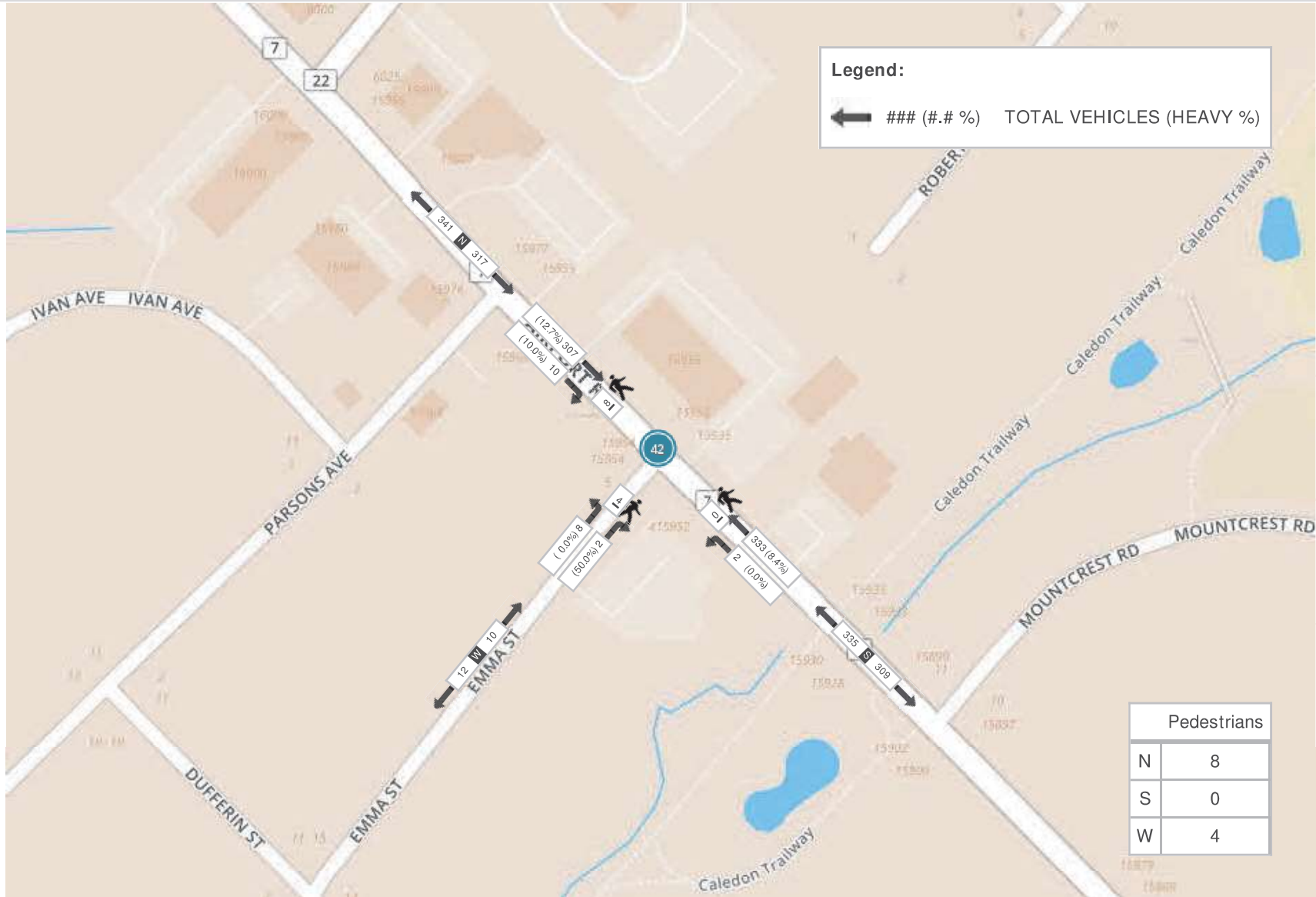
Peak Hour: 04:30 PM - 05:30 PM Weather: Light Rain (11.8 °C)

Start Time	Southbound AIRPORT RD					Northbound AIRPORT RD					Eastbound EMMA ST					Int. Total (15 min)
	Thru	Right	U-Turn	Peds	Approach Total	Left	Thru	U-Turn	Peds	Approach Total	Left	Right	U-Turn	Peds	Approach Total	
16:30:00	104	2	0	0	106	2	193	0	0	195	1	1	0	0	2	303
16:45:00	86	3	0	2	89	3	189	0	0	192	3	1	0	2	4	285
17:00:00	86	3	0	1	89	3	192	0	1	195	1	4	0	2	5	289
17:15:00	82	3	1	1	86	6	198	0	0	204	2	1	0	0	3	293
Grand Total	358	11	1	4	370	14	772	0	1	786	7	7	0	4	14	1170
Approach%	96.8%	3%	0.3%		-	1.8%	98.2%	0%		-	50%	50%	0%		-	-
Totals %	30.6%	0.9%	0.1%		31.6%	1.2%	66%	0%		67.2%	0.6%	0.6%	0%		1.2%	-
PHF	0.86	0.92	0.25		0.87	0.58	0.97	0		0.96	0.58	0.44	0		0.7	-
Heavy	31	0	0		31	0	26	0		26	0	0	0		0	-
Heavy %	8.7%	0%	0%		8.4%	0%	3.4%	0%		3.3%	0%	0%	0%		0%	-
Lights	327	11	1		339	14	746	0		760	7	7	0		14	-
Lights %	91.3%	100%	100%		91.6%	100%	96.6%	0%		96.7%	100%	100%	0%		100%	-
Single-Unit Trucks	14	0	0		14	0	11	0		11	0	0	0		0	-
Single-Unit Trucks %	3.9%	0%	0%		3.8%	0%	1.4%	0%		1.4%	0%	0%	0%		0%	-
Buses	3	0	0		3	0	1	0		1	0	0	0		0	-
Buses %	0.8%	0%	0%		0.8%	0%	0.1%	0%		0.1%	0%	0%	0%		0%	-
Articulated Trucks	14	0	0		14	0	14	0		14	0	0	0		0	-
Articulated Trucks %	3.9%	0%	0%		3.8%	0%	1.8%	0%		1.8%	0%	0%	0%		0%	-
Pedestrians	-	-	-	4	-	-	-	1		-	-	-	-	4	-	-
Pedestrians%	-	-	-	44.4%	-	-	-	11.1%		-	-	-	-	44.4%	-	-

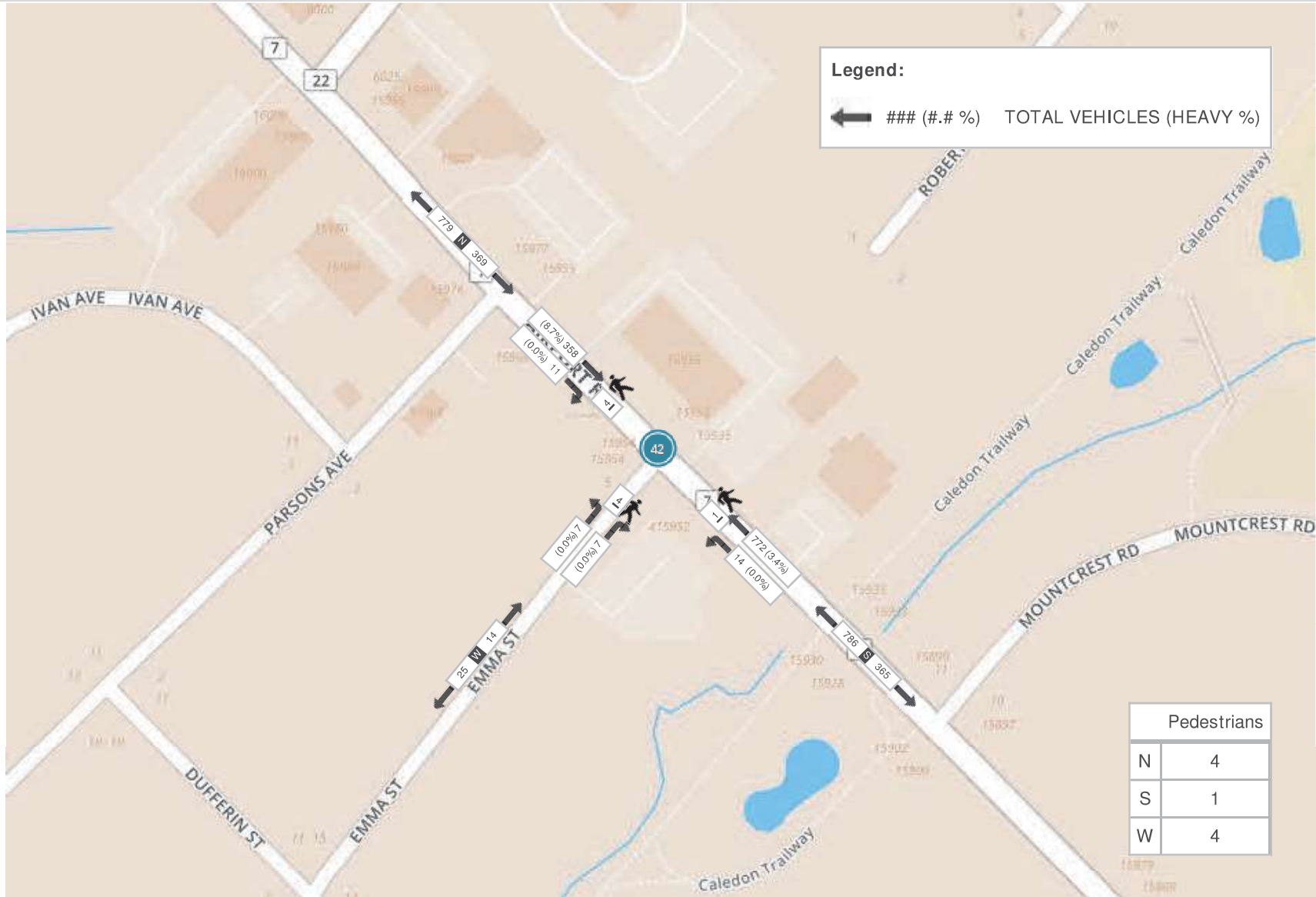
Peak Hour: 07:15 AM - 08:15 AM Weather: Light Rain Showers (11.7 °C)



Peak Hour: 01:00 PM - 02:00 PM Weather: Light Rain (12.9 °C)



Peak Hour: 04:30 PM - 05:30 PM Weather: Light Rain (11.8 °C)





Turning Movement Count (40 . AIRPORT RD & MOUNTCREST RD) CustID: 00729059 MioID: 358099

Start Time	Southbound AIRPORT RD					Westbound AIRPORT RD					Northbound MOUNTCREST RD					Int. Total (15 min)	Int. Total (1 hr)
	Left	Thru	U-Turn	Peds	Approach Total	Left	Right	U-Turn	Peds	Approach Total	Thru	Right	U-Turn	Peds	Approach Total		
07:00:00	1	160	0	0	161	7	2	0	0	9	35	0	0	0	35	205	
07:15:00	0	180	0	0	180	5	1	0	0	6	40	1	0	0	41	227	
07:30:00	0	175	0	0	175	4	2	0	0	6	53	0	0	0	53	234	
07:45:00	0	186	0	0	186	2	3	0	0	5	79	0	0	0	79	270	936
08:00:00	3	152	0	0	155	1	2	0	0	3	92	0	0	0	92	250	981
08:15:00	1	149	0	0	150	0	2	0	1	2	68	0	0	0	68	220	974
08:30:00	0	118	0	0	118	3	0	0	0	3	65	0	0	0	65	186	926
08:45:00	3	104	0	0	107	1	3	0	1	4	72	2	0	0	74	185	841
BREAK																	
11:00:00	0	89	0	0	89	3	2	0	1	5	48	2	0	0	50	144	
11:15:00	0	72	0	0	72	2	3	0	1	5	66	1	0	0	67	144	
11:30:00	2	97	0	0	99	1	0	0	0	1	71	2	0	0	73	173	
11:45:00	1	83	1	0	85	1	0	0	0	1	69	0	0	0	69	155	616
12:00:00	1	72	0	0	73	2	2	0	0	4	67	1	0	0	68	145	617
12:15:00	1	95	0	0	96	1	0	0	0	1	73	1	0	0	74	171	644
12:30:00	1	79	0	0	80	0	2	0	0	2	63	2	0	0	65	147	618
12:45:00	1	71	0	0	72	0	0	0	0	0	83	1	0	0	84	156	619
13:00:00	0	62	0	0	62	1	0	0	0	1	82	2	0	0	84	147	621
13:15:00	1	72	0	0	73	0	0	0	0	0	88	0	0	0	88	161	611
13:30:00	2	90	0	0	92	0	2	0	0	2	73	1	0	0	74	168	632
13:45:00	0	84	0	0	84	2	1	0	0	3	85	1	0	0	86	173	649
BREAK																	
15:00:00	1	91	0	0	92	1	2	0	0	3	114	2	0	0	116	211	
15:15:00	1	84	0	0	85	1	0	0	0	1	129	4	0	0	133	219	



15:30:00	0	71	0	0	71	0	2	0	2	2	171	5	0	0	176	249	
15:45:00	2	69	0	0	71	1	0	0	0	1	161	5	0	0	166	238	917
16:00:00	2	92	0	0	94	5	4	0	1	9	179	6	0	0	185	288	994
16:15:00	3	96	0	0	99	4	3	0	0	7	169	2	0	0	171	277	1052
16:30:00	0	106	0	0	106	1	3	0	0	4	191	2	0	0	193	303	1106
16:45:00	2	84	0	0	86	2	1	0	0	3	197	4	0	0	201	290	1158
17:00:00	5	84	0	0	89	1	2	0	0	3	198	8	0	0	206	298	1168
17:15:00	1	83	0	0	84	1	5	0	1	6	199	4	0	0	203	293	1184
17:30:00	2	65	0	0	67	1	0	0	0	1	192	1	0	0	193	261	1142
17:45:00	1	77	0	0	78	2	0	0	0	2	184	4	0	0	188	268	1120
Grand Total	38	3192	1	0	3231	56	49	0	8	105	3456	64	0	0	3520	6856	-

Approach%	1.2%	98.8%	0%	-	53.3%	46.7%	0%	-	98.2%	1.8%	0%	-	-	-
Totals %	0.6%	46.6%	0%	47.1%	0.8%	0.7%	0%	1.5%	50.4%	0.9%	0%	51.3%	-	-
Heavy	4	304	0	-	3	3	0	-	226	4	0	-	-	-
Heavy %	10.5%	9.5%	0%	-	5.4%	6.1%	0%	-	6.5%	6.3%	0%	-	-	-
Bicycles	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Bicycle %	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Peak Hour: 07:15 AM - 08:15 AM Weather: Light Rain Showers (11.7 °C)

Start Time	Southbound AIRPORT RD					Westbound AIRPORT RD					Northbound MOUNTCREST RD					Int. Total (15 min)
	Left	Thru	U-Turn	Peds	Approach Total	Left	Right	U-Turn	Peds	Approach Total	Thru	Right	U-Turn	Peds	Approach Total	
07:15:00	0	180	0	0	180	5	1	0	0	6	40	1	0	0	41	227
07:30:00	0	175	0	0	175	4	2	0	0	6	53	0	0	0	53	234
07:45:00	0	186	0	0	186	2	3	0	0	5	79	0	0	0	79	270
08:00:00	3	152	0	0	155	1	2	0	0	3	92	0	0	0	92	250
Grand Total	3	693	0	0	696	12	8	0	0	20	264	1	0	0	265	981
Approach%	0.4%	99.6%	0%		-	60%	40%	0%		-	99.6%	0.4%	0%		-	-
Totals %	0.3%	70.6%	0%		70.9%	1.2%	0.8%	0%		2%	26.9%	0.1%	0%		27%	-
PHF	0.25	0.93	0		0.94	0.6	0.67	0		0.83	0.72	0.25	0		0.72	-
Heavy	0	40	0		40	0	0	0		0	35	0	0		35	-
Heavy %	0%	5.8%	0%		5.7%	0%	0%	0%		0%	13.3%	0%	0%		13.2%	-
Lights	3	653	0		656	12	8	0		20	229	1	0		230	-
Lights %	100%	94.2%	0%		94.3%	100%	100%	0%		100%	86.7%	100%	0%		86.8%	-
Single-Unit Trucks	0	14	0		14	0	0	0		0	9	0	0		9	-
Single-Unit Trucks %	0%	2%	0%		2%	0%	0%	0%		0%	3.4%	0%	0%		3.4%	-
Buses	0	8	0		8	0	0	0		0	11	0	0		11	-
Buses %	0%	1.2%	0%		1.1%	0%	0%	0%		0%	4.2%	0%	0%		4.2%	-
Articulated Trucks	0	18	0		18	0	0	0		0	15	0	0		15	-
Articulated Trucks %	0%	2.6%	0%		2.6%	0%	0%	0%		0%	5.7%	0%	0%		5.7%	-
Pedestrians	-	-	-	0	-	-	-	-	0	-	-	-	-	0	-	-
Pedestrians%	-	-	-	0%	-	-	-	-	0%	-	-	-	-	0%	-	-



Peak Hour: 01:00 PM - 02:00 PM Weather: Light Rain (12.9 °C)

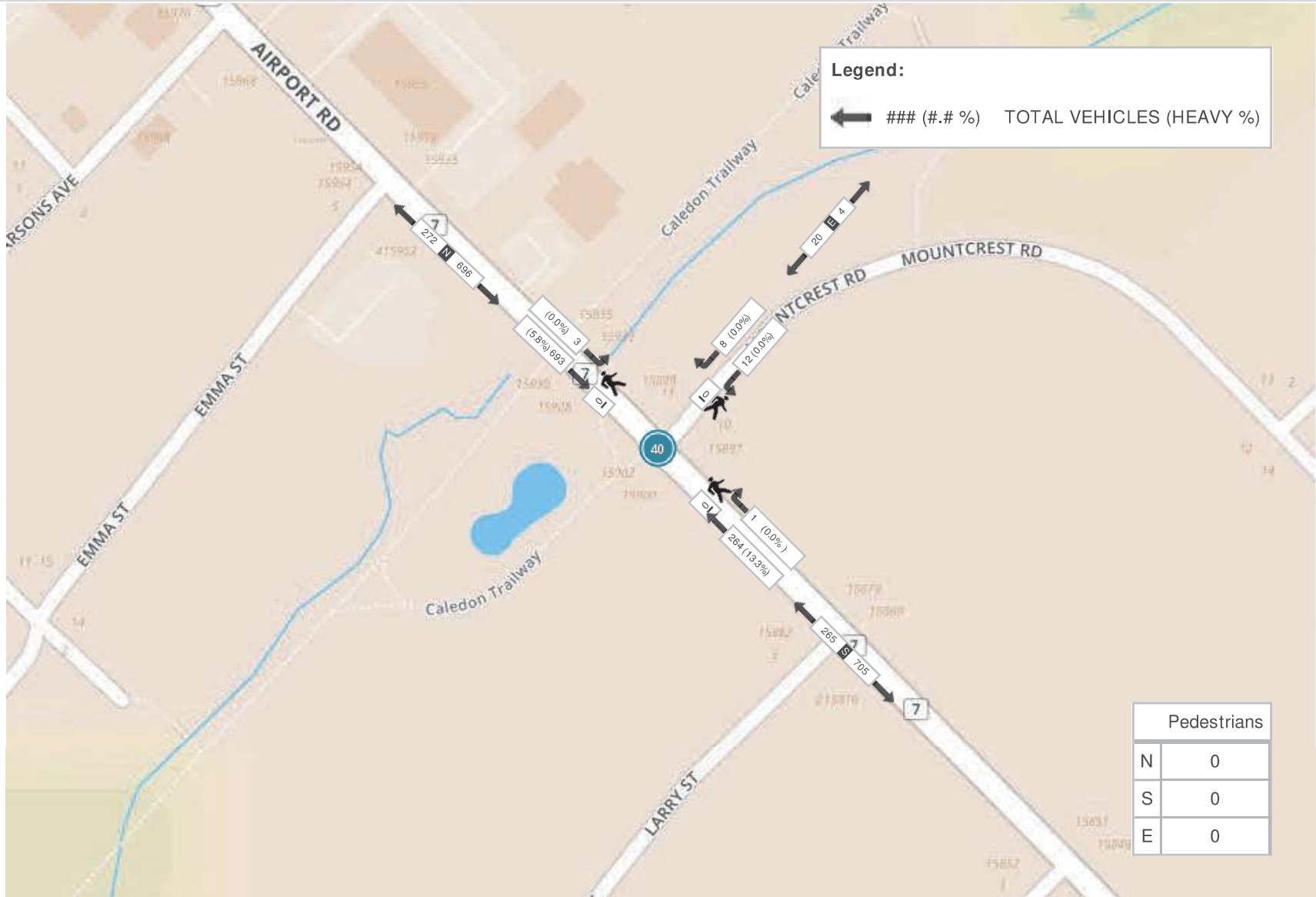
Start Time	Southbound AIRPORT RD					Westbound AIRPORT RD					Northbound MOUNTCREST RD					Int. Total (15 min)
	Left	Thru	U-Turn	Peds	Approach Total	Left	Right	U-Turn	Peds	Approach Total	Thru	Right	U-Turn	Peds	Approach Total	
13:00:00	0	62	0	0	62	1	0	0	0	1	82	2	0	0	84	147
13:15:00	1	72	0	0	73	0	0	0	0	0	88	0	0	0	88	161
13:30:00	2	90	0	0	92	0	2	0	0	2	73	1	0	0	74	168
13:45:00	0	84	0	0	84	2	1	0	0	3	85	1	0	0	86	173
Grand Total	3	308	0	0	311	3	3	0	0	6	328	4	0	0	332	649
Approach%	1%	99%	0%		-	50%	50%	0%		-	98.8%	1.2%	0%		-	-
Totals %	0.5%	47.5%	0%		47.9%	0.5%	0.5%	0%		0.9%	50.5%	0.6%	0%		51.2%	-
PHF	0.38	0.86	0		0.85	0.38	0.38	0		0.5	0.93	0.5	0		0.94	-
Heavy	0	42	0		42	0	0	0		0	31	1	0		32	-
Heavy %	0%	13.6%	0%		13.5%	0%	0%	0%		0%	9.5%	25%	0%		9.6%	-
Lights	3	266	0		269	3	3	0		6	297	3	0		300	-
Lights %	100%	86.4%	0%		86.5%	100%	100%	0%		100%	90.5%	75%	0%		90.4%	-
Single-Unit Trucks	0	21	0		21	0	0	0		0	12	1	0		13	-
Single-Unit Trucks %	0%	6.8%	0%		6.8%	0%	0%	0%		0%	3.7%	25%	0%		3.9%	-
Buses	0	2	0		2	0	0	0		0	4	0	0		4	-
Buses %	0%	0.6%	0%		0.6%	0%	0%	0%		0%	1.2%	0%	0%		1.2%	-
Articulated Trucks	0	19	0		19	0	0	0		0	15	0	0		15	-
Articulated Trucks %	0%	6.2%	0%		6.1%	0%	0%	0%		0%	4.6%	0%	0%		4.5%	-
Pedestrians	-	-	-	0	-	-	-	-	0	-	-	-	-	0	-	-
Pedestrians%	-	-	-	0%	-	-	-	-	0%	-	-	-	-	0%	-	-



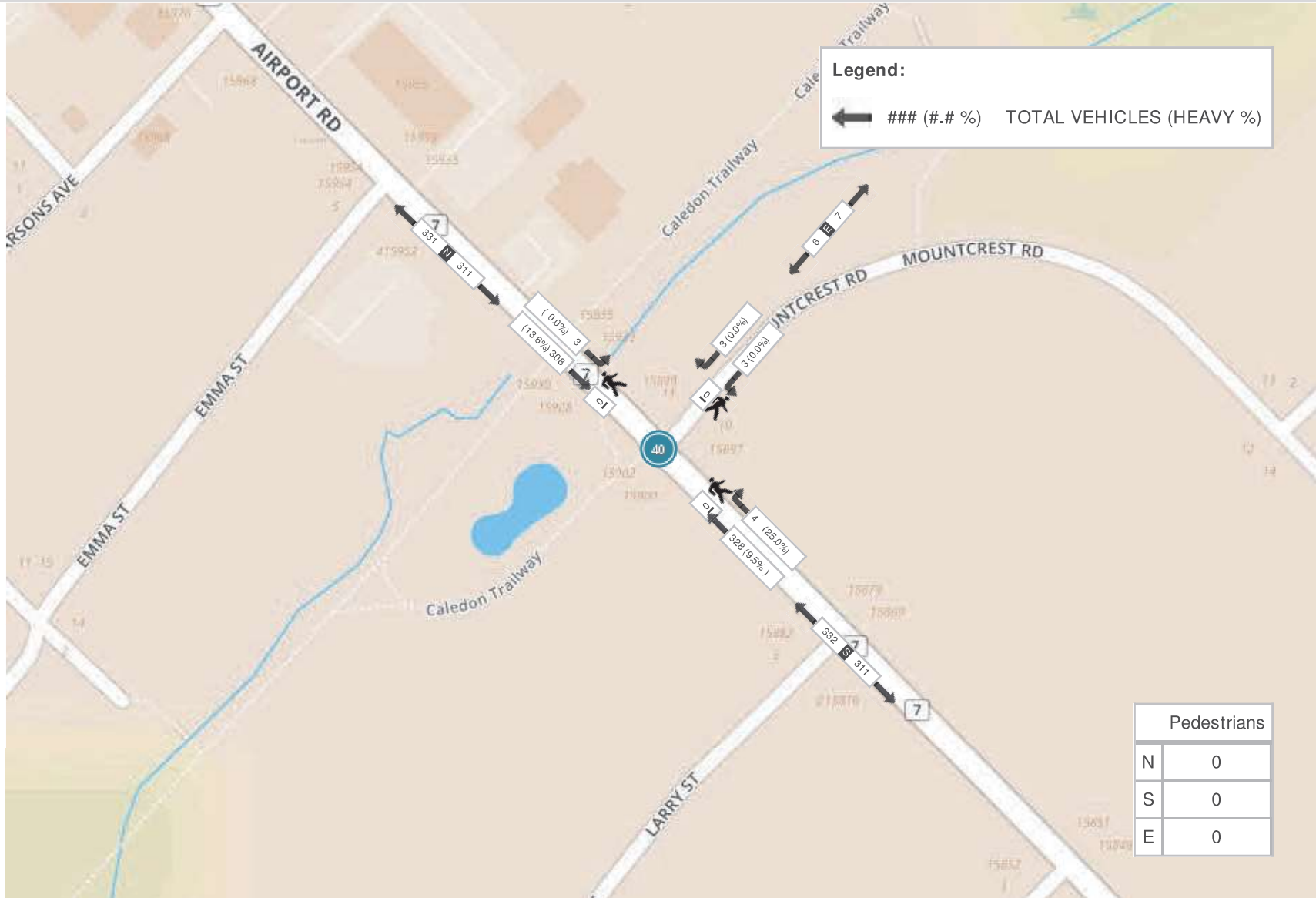
Peak Hour: 04:30 PM - 05:30 PM Weather: Light Rain (11.8 °C)

Start Time	Southbound AIRPORT RD					Westbound AIRPORT RD					Northbound MOUNTCREST RD					Int. Total (15 min)
	Left	Thru	U-Turn	Peds	Approach Total	Left	Right	U-Turn	Peds	Approach Total	Thru	Right	U-Turn	Peds	Approach Total	
16:30:00	0	106	0	0	106	1	3	0	0	4	191	2	0	0	193	303
16:45:00	2	84	0	0	86	2	1	0	0	3	197	4	0	0	201	290
17:00:00	5	84	0	0	89	1	2	0	0	3	198	8	0	0	206	298
17:15:00	1	83	0	0	84	1	5	0	1	6	199	4	0	0	203	293
Grand Total	8	357	0	0	365	5	11	0	1	16	785	18	0	0	803	1184
Approach%	2.2%	97.8%	0%		-	31.3%	68.8%	0%		-	97.8%	2.2%	0%		-	-
Totals %	0.7%	30.2%	0%		30.8%	0.4%	0.9%	0%		1.4%	66.3%	1.5%	0%		67.8%	-
PHF	0.4	0.84	0		0.86	0.63	0.55	0		0.67	0.99	0.56	0		0.97	-
Heavy	1	31	0		32	0	0	0		0	26	0	0		26	-
Heavy %	12.5%	8.7%	0%		8.8%	0%	0%	0%		0%	3.3%	0%	0%		3.2%	-
Lights	7	326	0		333	5	11	0		16	759	18	0		777	-
Lights %	87.5%	91.3%	0%		91.2%	100%	100%	0%		100%	96.7%	100%	0%		96.8%	-
Single-Unit Trucks	1	14	0		15	0	0	0		0	11	0	0		11	-
Single-Unit Trucks %	12.5%	3.9%	0%		4.1%	0%	0%	0%		0%	1.4%	0%	0%		1.4%	-
Buses	0	3	0		3	0	0	0		0	1	0	0		1	-
Buses %	0%	0.8%	0%		0.8%	0%	0%	0%		0%	0.1%	0%	0%		0.1%	-
Articulated Trucks	0	14	0		14	0	0	0		0	14	0	0		14	-
Articulated Trucks %	0%	3.9%	0%		3.8%	0%	0%	0%		0%	1.8%	0%	0%		1.7%	-
Pedestrians	-	-	-	0	-	-	-	-	1	-	-	-	-	0	-	-
Pedestrians%	-	-	-	0%	-	-	-	-	100%	-	-	-	-	0%	-	-

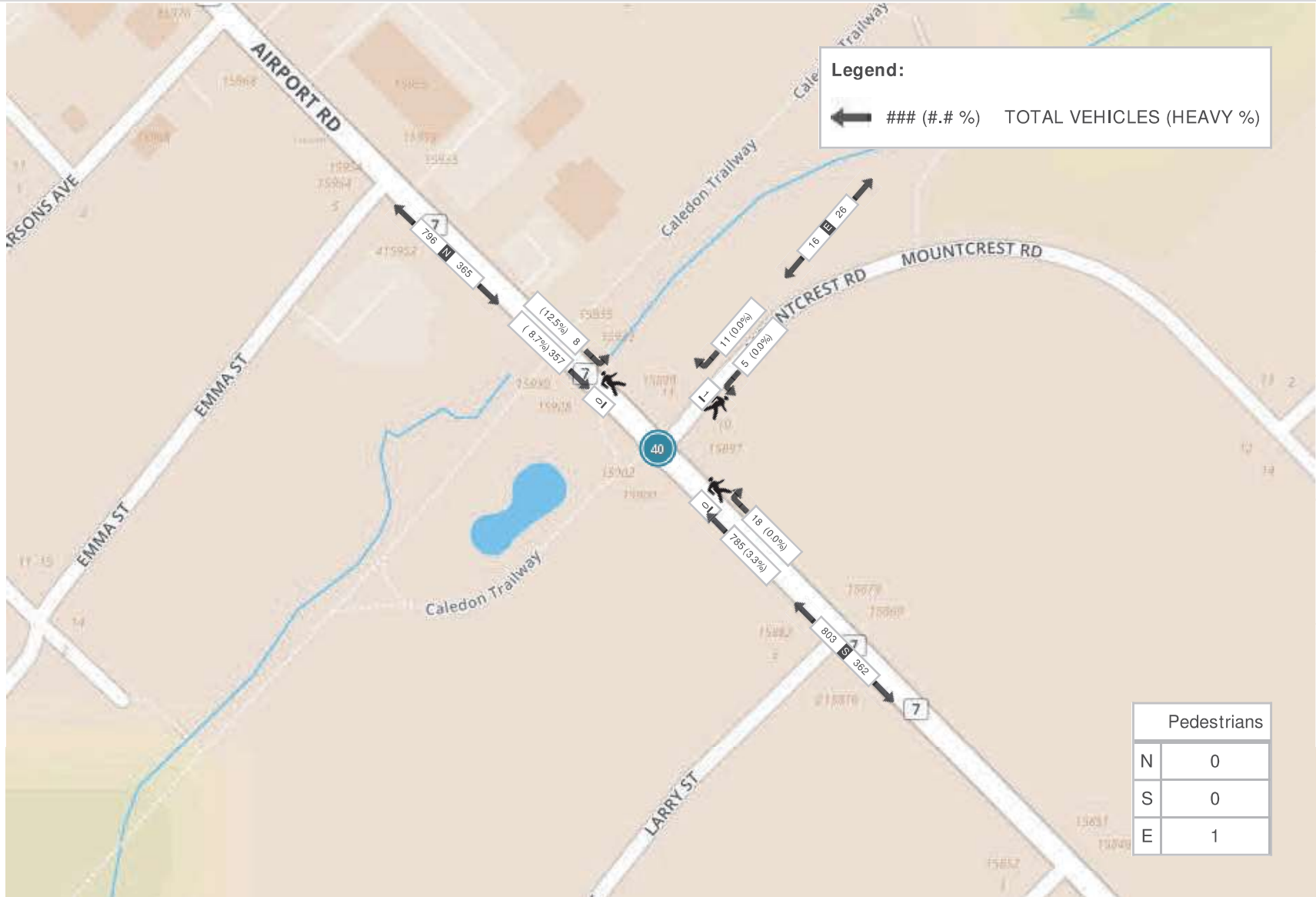
Peak Hour: 07:15 AM - 08:15 AM Weather: Light Rain Showers (11.7 °C)



Peak Hour: 01:00 PM - 02:00 PM Weather: Light Rain (12.9 °C)



Peak Hour: 04:30 PM - 05:30 PM Weather: Light Rain (11.8 °C)





Turning Movement Count (39 . AIRPORT RD & LARRY ST) CustID: 00728979 MioID: 358098

Start Time	Southbound AIRPORT RD					Northbound AIRPORT RD					Eastbound LARRY ST					Int. Total (15 min)	Int. Total (1 hr)
	Thru	Right	U-Turn	Peds	Approach Total	Left	Thru	U-Turn	Peds	Approach Total	Left	Right	U-Turn	Peds	Approach Total		
07:00:00	165	0	0	0	165	0	34	0	0	34	0	4	0	0	4	203	
07:15:00	185	0	0	0	185	0	34	0	0	34	4	3	0	1	7	226	
07:30:00	177	2	0	0	179	1	52	0	0	53	3	1	0	1	4	236	
07:45:00	188	2	0	0	190	0	69	0	0	69	8	1	0	1	9	268	933
08:00:00	147	4	0	0	151	0	90	0	0	90	2	3	0	0	5	246	976
08:15:00	149	0	0	0	149	0	64	0	0	64	1	3	0	0	4	217	967
08:30:00	120	3	0	0	123	1	64	0	0	65	3	3	0	0	6	194	925
08:45:00	105	2	0	0	107	0	71	0	0	71	3	2	0	0	5	183	840
BREAK																	
11:00:00	93	0	0	0	93	1	48	0	0	49	3	1	0	1	4	146	
11:15:00	73	0	0	0	73	0	64	0	0	64	3	0	0	0	3	140	
11:30:00	98	0	0	0	98	1	71	0	0	72	1	1	0	1	2	172	
11:45:00	80	3	0	0	83	0	68	0	0	68	1	0	0	0	1	152	610
12:00:00	72	2	0	0	74	0	64	0	0	64	3	2	0	0	5	143	607
12:15:00	97	1	0	0	98	1	69	0	0	70	3	0	0	0	3	171	638
12:30:00	76	3	0	0	79	0	64	0	0	64	3	0	0	0	3	146	612
12:45:00	67	3	0	0	70	0	82	0	0	82	2	1	0	0	3	155	615
13:00:00	64	0	0	0	64	0	83	0	0	83	0	0	0	0	0	147	619
13:15:00	70	3	0	0	73	1	83	0	0	84	4	0	0	1	4	161	609
13:30:00	87	0	0	0	87	0	71	0	0	71	2	4	0	2	6	164	627
13:45:00	87	2	0	0	89	0	87	0	0	87	0	1	0	0	1	177	649
BREAK																	
15:00:00	90	2	0	0	92	1	115	0	0	116	0	1	0	0	1	209	
15:15:00	82	3	0	0	85	1	134	0	0	135	0	2	0	0	2	222	



15:30:00	68	2	0	0	70	0	174	0	0	174	4	1	0	0	5	249	
15:45:00	65	3	0	0	68	1	167	0	0	168	0	1	0	0	1	237	917
16:00:00	95	4	0	0	99	1	174	0	0	175	4	0	0	1	4	278	986
16:15:00	94	3	0	0	97	1	163	0	0	164	2	0	0	0	2	263	1027
16:30:00	105	2	0	0	107	3	193	0	0	196	4	0	0	0	4	307	1085
16:45:00	83	4	0	0	87	1	189	0	0	190	7	2	0	0	9	286	1134
17:00:00	81	4	0	0	85	2	205	0	0	207	1	3	0	1	4	296	1152
17:15:00	81	1	0	0	82	0	202	0	0	202	2	2	0	0	4	288	1177
17:30:00	67	2	0	0	69	0	189	0	0	189	3	1	0	0	4	262	1132
17:45:00	76	1	0	0	77	1	185	0	0	186	2	3	0	1	5	268	1114
Grand Total	3187	61	0	0	3248	18	3422	0	0	3440	78	46	0	11	124	6812	-

Approach%	98.1%	1.9%	0%	-	0.5%	99.5%	0%	-	62.9%	37.1%	0%	-	-	-
Totals %	46.8%	0.9%	0%	47.7%	0.3%	50.2%	0%	50.5%	1.1%	0.7%	0%	1.8%	-	-
Heavy	300	5	0	-	0	219	0	-	5	0	0	-	-	-
Heavy %	9.4%	8.2%	0%	-	0%	6.4%	0%	-	6.4%	0%	0%	-	-	-
Bicycles	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Bicycle %	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Peak Hour: 07:15 AM - 08:15 AM Weather: Light Rain Showers (11.7 °C)

Start Time	Southbound AIRPORT RD					Northbound AIRPORT RD					Eastbound LARRY ST					Int. Total (15 min)
	Thru	Right	U-Turn	Peds	Approach Total	Left	Thru	U-Turn	Peds	Approach Total	Left	Right	U-Turn	Peds	Approach Total	
07:15:00	185	0	0	0	185	0	34	0	0	34	4	3	0	1	7	226
07:30:00	177	2	0	0	179	1	52	0	0	53	3	1	0	1	4	236
07:45:00	188	2	0	0	190	0	69	0	0	69	8	1	0	1	9	268
08:00:00	147	4	0	0	151	0	90	0	0	90	2	3	0	0	5	246
Grand Total	697	8	0	0	705	1	245	0	0	246	17	8	0	3	25	976
Approach%	98.9%	1.1%	0%	-	-	0.4%	99.6%	0%	-	-	68%	32%	0%	-	-	-
Totals %	71.4%	0.8%	0%	72.2%	0.1%	25.1%	0%	25.2%	1.7%	0.8%	0%	2.6%	-	-	-	-
PHF	0.93	0.5	0	0.93	0.25	0.68	0	0.68	0.53	0.67	0	0.69	-	-	-	-
Heavy	36	1	0	37	0	35	0	35	0	0	0	0	0	0	0	-
Heavy %	5.2%	12.5%	0%	5.2%	0%	14.3%	0%	14.2%	0%	0%	0%	0%	0%	0%	0%	-
Lights	661	7	0	668	1	210	0	211	17	8	0	25	-	-	-	-
Lights %	94.8%	87.5%	0%	94.8%	100%	85.7%	0%	85.8%	100%	100%	0%	100%	-	-	-	-
Single-Unit Trucks	9	1	0	10	0	5	0	5	0	0	0	0	0	0	0	-
Single-Unit Trucks %	1.3%	12.5%	0%	1.4%	0%	2%	0%	2%	0%	0%	0%	0%	0%	0%	0%	-
Buses	8	0	0	8	0	11	0	11	0	0	0	0	0	0	0	-
Buses %	1.1%	0%	0%	1.1%	0%	4.5%	0%	4.5%	0%	0%	0%	0%	0%	0%	0%	-
Articulated Trucks	19	0	0	19	0	19	0	19	0	0	0	0	0	0	0	-
Articulated Trucks %	2.7%	0%	0%	2.7%	0%	7.8%	0%	7.7%	0%	0%	0%	0%	0%	0%	0%	-
Pedestrians	-	-	-	0	-	-	-	0	-	-	-	3	-	-	-	-
Pedestrians%	-	-	-	0%	-	-	-	0%	-	-	-	100%	-	-	-	-



Peak Hour: 01:00 PM - 02:00 PM Weather: Light Rain (12.9 °C)

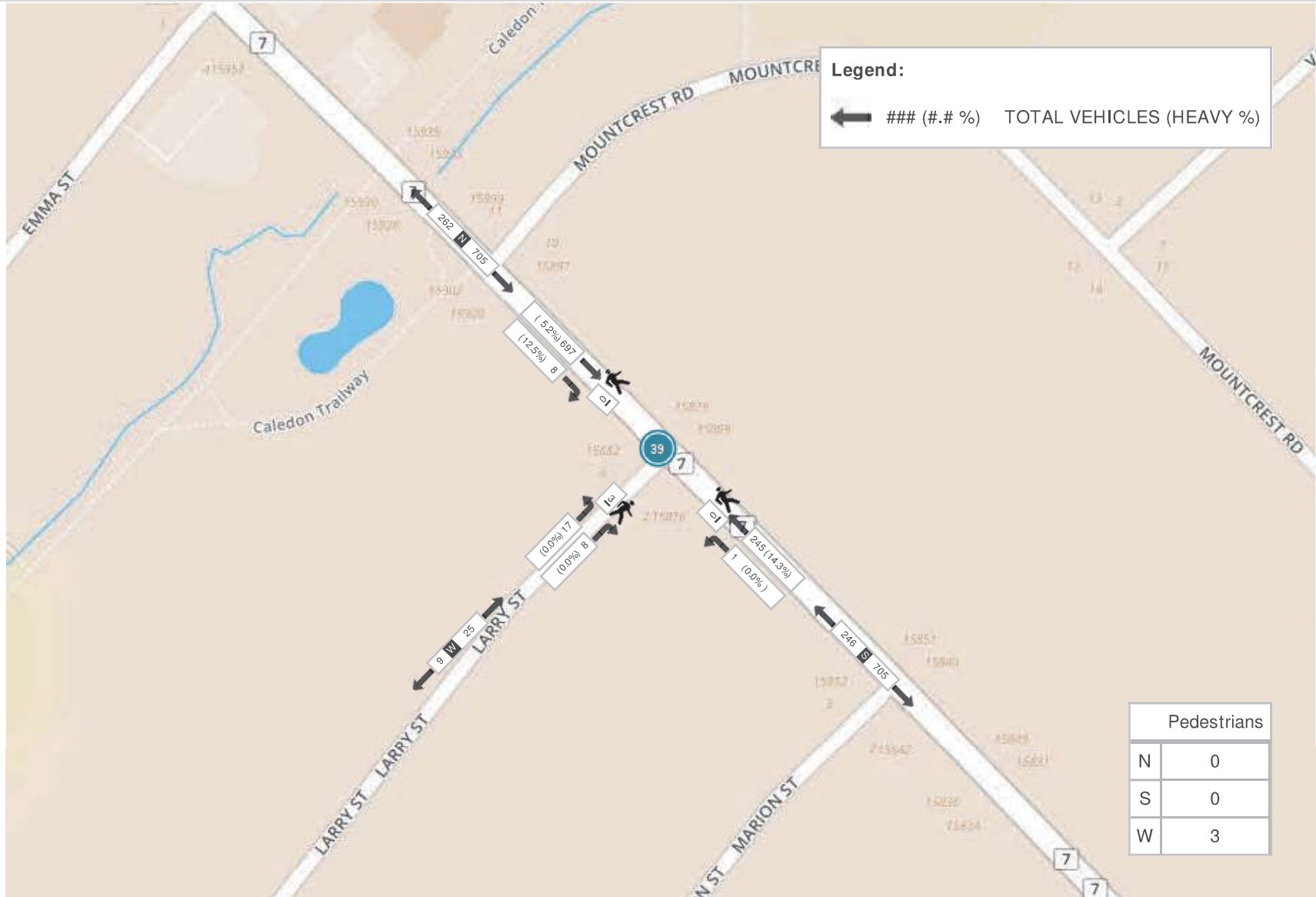
Start Time	Southbound AIRPORT RD					Northbound AIRPORT RD					Eastbound LARRY ST					Int. Total (15 min)
	Thru	Right	U-Turn	Peds	Approach Total	Left	Thru	U-Turn	Peds	Approach Total	Left	Right	U-Turn	Peds	Approach Total	
13:00:00	64	0	0	0	64	0	83	0	0	83	0	0	0	0	0	147
13:15:00	70	3	0	0	73	1	83	0	0	84	4	0	0	1	4	161
13:30:00	87	0	0	0	87	0	71	0	0	71	2	4	0	2	6	164
13:45:00	87	2	0	0	89	0	87	0	0	87	0	1	0	0	1	177
Grand Total	308	5	0	0	313	1	324	0	0	325	6	5	0	3	11	649
Approach%	98.4%	1.6%	0%		-	0.3%	99.7%	0%		-	54.5%	45.5%	0%		-	-
Totals %	47.5%	0.8%	0%		48.2%	0.2%	49.9%	0%		50.1%	0.9%	0.8%	0%		1.7%	-
PHF	0.89	0.42	0		0.88	0.25	0.93	0		0.93	0.38	0.31	0		0.46	-
Heavy	41	0	0		41	0	28	0		28	0	0	0		0	-
Heavy %	13.3%	0%	0%		13.1%	0%	8.6%	0%		8.6%	0%	0%	0%		0%	-
Lights	267	5	0		272	1	296	0		297	6	5	0		11	-
Lights %	86.7%	100%	0%		86.9%	100%	91.4%	0%		91.4%	100%	100%	0%		100%	-
Single-Unit Trucks	19	0	0		19	0	16	0		16	0	0	0		0	-
Single-Unit Trucks %	6.2%	0%	0%		6.1%	0%	4.9%	0%		4.9%	0%	0%	0%		0%	-
Buses	2	0	0		2	0	4	0		4	0	0	0		0	-
Buses %	0.6%	0%	0%		0.6%	0%	1.2%	0%		1.2%	0%	0%	0%		0%	-
Articulated Trucks	20	0	0		20	0	8	0		8	0	0	0		0	-
Articulated Trucks %	6.5%	0%	0%		6.4%	0%	2.5%	0%		2.5%	0%	0%	0%		0%	-
Pedestrians	-	-	-	0	-	-	-	-	0	-	-	-	-	3	-	-
Pedestrians%	-	-	-	0%	-	-	-	-	0%	-	-	-	-	100%	-	-



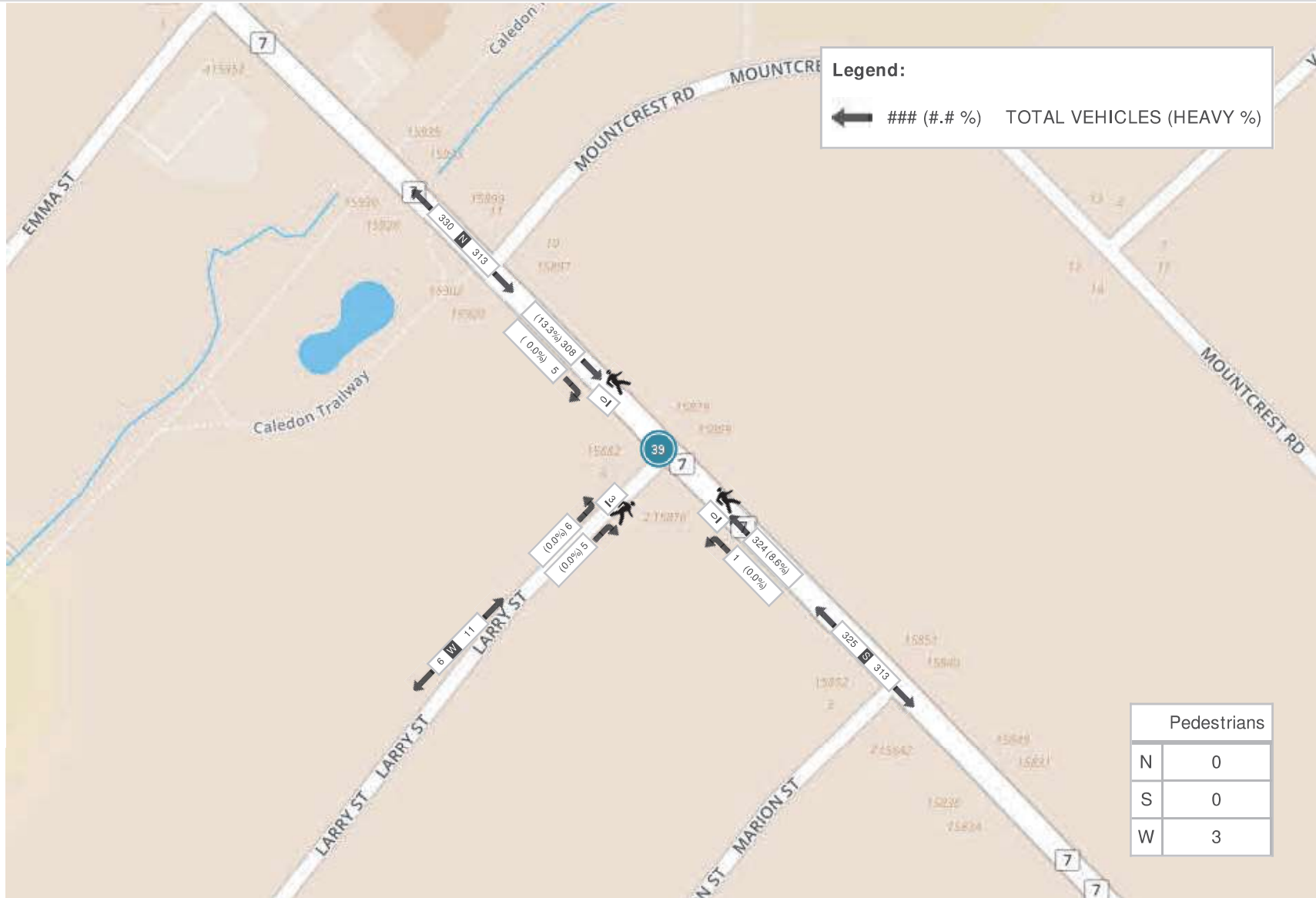
Peak Hour: 04:30 PM - 05:30 PM Weather: Light Rain (11.8 °C)

Start Time	Southbound AIRPORT RD					Northbound AIRPORT RD					Eastbound LARRY ST					Int. Total (15 min)
	Thru	Right	U-Turn	Peds	Approach Total	Left	Thru	U-Turn	Peds	Approach Total	Left	Right	U-Turn	Peds	Approach Total	
16:30:00	105	2	0	0	107	3	193	0	0	196	4	0	0	0	4	307
16:45:00	83	4	0	0	87	1	189	0	0	190	7	2	0	0	9	286
17:00:00	81	4	0	0	85	2	205	0	0	207	1	3	0	1	4	296
17:15:00	81	1	0	0	82	0	202	0	0	202	2	2	0	0	4	288
Grand Total	350	11	0	0	361	6	789	0	0	795	14	7	0	1	21	1177
Approach%	97%	3%	0%		-	0.8%	99.2%	0%		-	66.7%	33.3%	0%		-	-
Totals %	29.7%	0.9%	0%		30.7%	0.5%	67%	0%		67.5%	1.2%	0.6%	0%		1.8%	-
PHF	0.83	0.69	0		0.84	0.5	0.96	0		0.96	0.5	0.58	0		0.58	-
Heavy	30	0	0		30	0	26	0		26	0	0	0		0	-
Heavy %	8.6%	0%	0%		8.3%	0%	3.3%	0%		3.3%	0%	0%	0%		0%	-
Lights	320	11	0		331	6	763	0		769	14	7	0		21	-
Lights %	91.4%	100%	0%		91.7%	100%	96.7%	0%		96.7%	100%	100%	0%		100%	-
Single-Unit Trucks	14	0	0		14	0	13	0		13	0	0	0		0	-
Single-Unit Trucks %	4%	0%	0%		3.9%	0%	1.6%	0%		1.6%	0%	0%	0%		0%	-
Buses	3	0	0		3	0	1	0		1	0	0	0		0	-
Buses %	0.9%	0%	0%		0.8%	0%	0.1%	0%		0.1%	0%	0%	0%		0%	-
Articulated Trucks	13	0	0		13	0	12	0		12	0	0	0		0	-
Articulated Trucks %	3.7%	0%	0%		3.6%	0%	1.5%	0%		1.5%	0%	0%	0%		0%	-
Pedestrians	-	-	-	0	-	-	-	-	0	-	-	-	-	1	-	-
Pedestrians%	-	-	-	0%	-	-	-	-	0%	-	-	-	-	100%	-	-

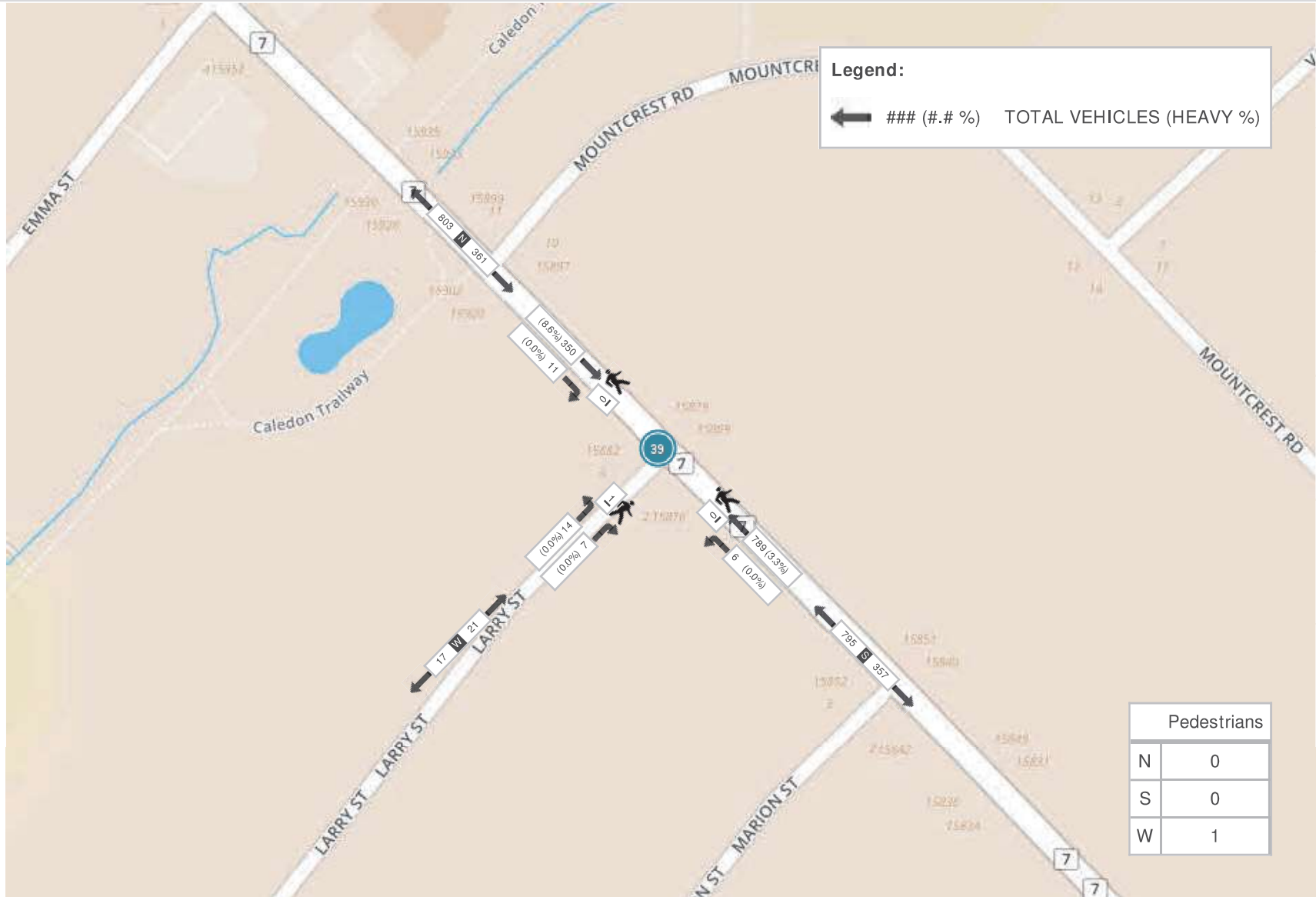
Peak Hour: 07:15 AM - 08:15 AM Weather: Light Rain Showers (11.7 °C)



Peak Hour: 01:00 PM - 02:00 PM Weather: Light Rain (12.9 °C)



Peak Hour: 04:30 PM - 05:30 PM Weather: Light Rain (11.8 °C)





Turning Movement Count (38 . AIRPORT RD & MARION ST) CustID: 00728878 MioID: 358097

Start Time	Southbound AIRPORT RD					Northbound AIRPORT RD					Eastbound MARION ST					Int. Total (15 min)	Int. Total (1 hr)
	Thru	Right	U-Turn	Peds	Approach Total	Left	Thru	U-Turn	Peds	Approach Total	Left	Right	U-Turn	Peds	Approach Total		
07:00:00	171	1	0	0	172	0	38	0	0	38	0	3	0	0	3	213	
07:15:00	185	0	0	0	185	0	31	0	0	31	0	3	0	1	3	219	
07:30:00	181	0	0	0	181	0	44	0	0	44	2	4	0	1	6	231	
07:45:00	188	0	0	0	188	0	71	0	0	71	0	0	0	1	0	259	922
08:00:00	149	0	0	0	149	0	85	0	0	85	1	3	0	0	4	238	947
08:15:00	161	0	0	0	161	0	60	0	0	60	0	1	0	1	1	222	950
08:30:00	118	1	0	0	119	1	69	0	0	70	0	1	0	0	1	190	909
08:45:00	116	0	0	0	116	0	68	0	0	68	1	0	0	2	1	185	835
BREAK																	
11:00:00	100	0	0	0	100	1	50	0	0	51	1	1	0	1	2	153	
11:15:00	78	0	0	0	78	0	55	0	0	55	0	1	0	0	1	134	
11:30:00	91	1	0	0	92	1	80	0	0	81	0	1	0	0	1	174	
11:45:00	81	1	0	0	82	0	66	0	0	66	0	0	0	0	0	148	609
12:00:00	73	0	0	0	73	0	65	0	0	65	0	0	0	0	0	138	594
12:15:00	98	1	1	0	100	1	67	0	0	68	0	0	0	0	0	168	628
12:30:00	75	0	0	0	75	0	65	0	0	65	2	1	0	0	3	143	597
12:45:00	62	2	0	0	64	0	75	0	0	75	1	2	0	0	3	142	591
13:00:00	68	0	0	0	68	1	84	0	0	85	1	0	0	0	1	154	607
13:15:00	71	0	0	0	71	1	82	0	0	83	0	2	0	0	2	156	595
13:30:00	80	2	0	0	82	1	74	0	0	75	1	1	0	0	2	159	611
13:45:00	89	0	0	0	89	0	86	0	0	86	0	1	0	0	1	176	645
BREAK																	
15:00:00	95	1	0	0	96	0	115	0	0	115	1	0	0	0	1	212	
15:15:00	89	0	0	0	89	1	133	0	0	134	0	0	0	0	0	223	



15:30:00	63	1	0	0	64	0	160	0	0	160	1	0	0	0	1	225	
15:45:00	69	1	0	0	70	0	175	0	0	175	0	1	0	0	1	246	906
16:00:00	96	1	0	0	97	0	180	0	0	180	0	1	0	1	1	278	972
16:15:00	83	0	0	0	83	2	174	0	0	176	0	0	0	0	0	259	1008
16:30:00	103	0	0	0	103	1	182	0	0	183	0	1	0	0	1	287	1070
16:45:00	91	3	0	0	94	0	198	0	0	198	0	0	0	1	0	292	1116
17:00:00	87	0	1	0	88	0	202	0	0	202	0	0	0	0	0	290	1128
17:15:00	79	1	0	0	80	0	202	0	1	202	0	0	0	2	0	282	1151
17:30:00	69	1	0	0	70	2	186	0	0	188	0	0	0	0	0	258	1122
17:45:00	77	0	0	0	77	0	196	0	0	196	0	0	0	1	0	273	1103
Grand Total	3236	18	2	0	3256	13	3418	0	1	3431	12	28	0	12	40	6727	-

Approach%	99.4%	0.6%	0.1%	-	0.4%	99.6%	0%	-	30%	70%	0%	-	-	-
Totals %	48.1%	0.3%	0%	48.4%	0.2%	50.8%	0%	51%	0.2%	0.4%	0%	0.6%	-	-
Heavy	301	1	0	-	0	213	0	-	1	0	0	-	-	-
Heavy %	9.3%	5.6%	0%	-	0%	6.2%	0%	-	8.3%	0%	0%	-	-	-
Bicycles	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Bicycle %	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Peak Hour: 07:30 AM - 08:30 AM Weather: Light Rain Showers (11.7 °C)

Start Time	Southbound AIRPORT RD					Northbound AIRPORT RD					Eastbound MARION ST					Int. Total (15 min)
	Thru	Right	U-Turn	Peds	Approach Total	Left	Thru	U-Turn	Peds	Approach Total	Left	Right	U-Turn	Peds	Approach Total	
07:30:00	181	0	0	0	181	0	44	0	0	44	2	4	0	1	6	231
07:45:00	188	0	0	0	188	0	71	0	0	71	0	0	0	1	0	259
08:00:00	149	0	0	0	149	0	85	0	0	85	1	3	0	0	4	238
08:15:00	161	0	0	0	161	0	60	0	0	60	0	1	0	1	1	222
Grand Total	679	0	0	0	679	0	260	0	0	260	3	8	0	3	11	950
Approach%	100%	0%	0%		-	0%	100%	0%		-	27.3%	72.7%	0%		-	-
Totals %	71.5%	0%	0%		71.5%	0%	27.4%	0%		27.4%	0.3%	0.8%	0%		1.2%	-
PHF	0.9	0	0		0.9	0	0.76	0		0.76	0.38	0.5	0		0.46	-
Heavy	35	0	0		35	0	33	0		33	1	0	0		1	-
Heavy %	5.2%	0%	0%		5.2%	0%	12.7%	0%		12.7%	33.3%	0%	0%		9.1%	-
Lights	644	0	0		644	0	227	0		227	2	8	0		10	-
Lights %	94.8%	0%	0%		94.8%	0%	87.3%	0%		87.3%	66.7%	100%	0%		90.9%	-
Single-Unit Trucks	13	0	0		13	0	15	0		15	0	0	0		0	-
Single-Unit Trucks %	1.9%	0%	0%		1.9%	0%	5.8%	0%		5.8%	0%	0%	0%		0%	-
Buses	4	0	0		4	0	7	0		7	1	0	0		1	-
Buses %	0.6%	0%	0%		0.6%	0%	2.7%	0%		2.7%	33.3%	0%	0%		9.1%	-
Articulated Trucks	18	0	0		18	0	11	0		11	0	0	0		0	-
Articulated Trucks %	2.7%	0%	0%		2.7%	0%	4.2%	0%		4.2%	0%	0%	0%		0%	-
Pedestrians	-	-	-	0	-	-	-	-	0	-	-	-	-	3	-	-
Pedestrians%	-	-	-	0%	-	-	-	-	0%	-	-	-	-	100%	-	-



Peak Hour: 01:00 PM - 02:00 PM Weather: Light Rain (12.9 °C)

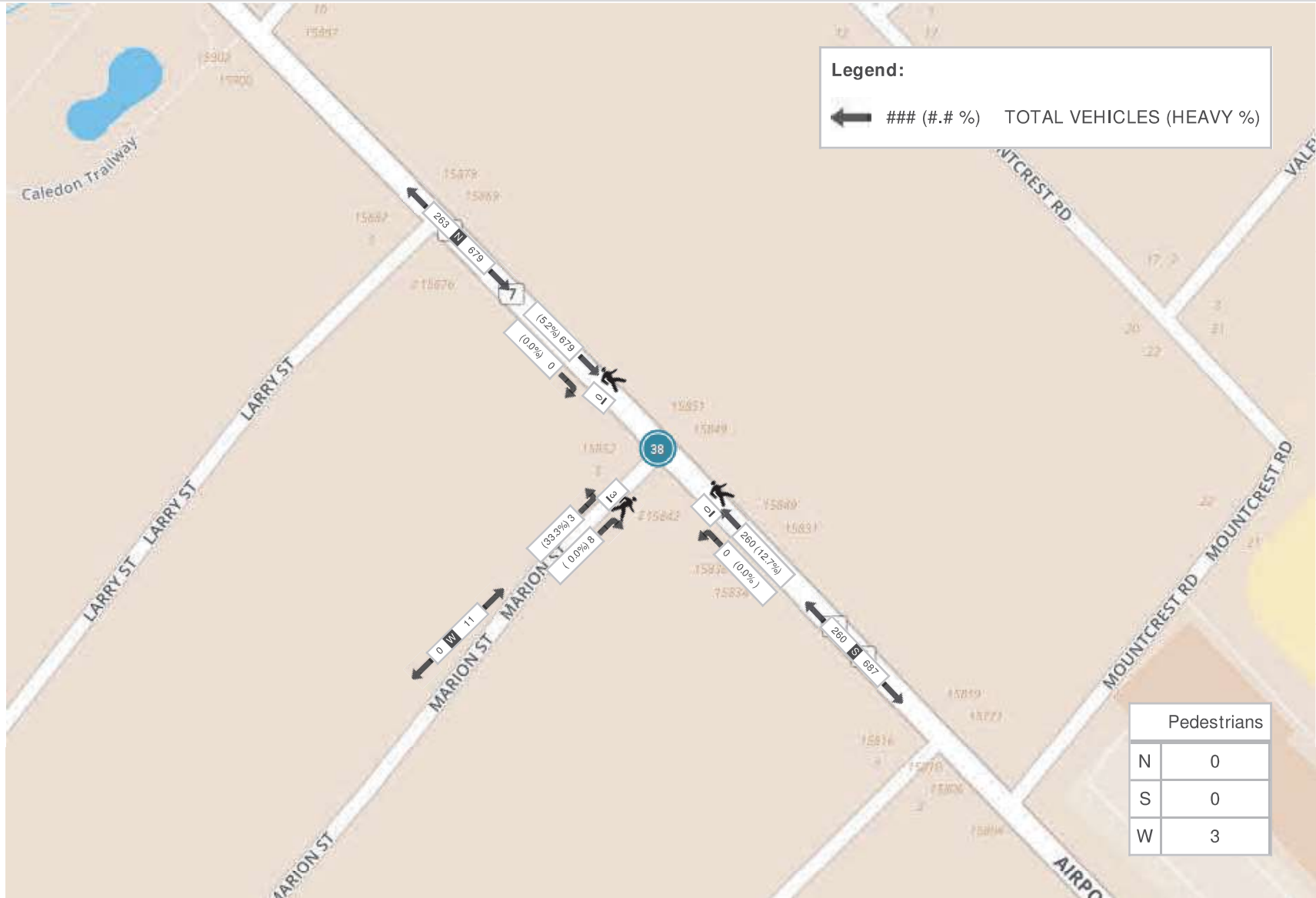
Start Time	Southbound AIRPORT RD					Northbound AIRPORT RD					Eastbound MARION ST					Int. Total (15 min)
	Thru	Right	U-Turn	Peds	Approach Total	Left	Thru	U-Turn	Peds	Approach Total	Left	Right	U-Turn	Peds	Approach Total	
13:00:00	68	0	0	0	68	1	84	0	0	85	1	0	0	0	1	154
13:15:00	71	0	0	0	71	1	82	0	0	83	0	2	0	0	2	156
13:30:00	80	2	0	0	82	1	74	0	0	75	1	1	0	0	2	159
13:45:00	89	0	0	0	89	0	86	0	0	86	0	1	0	0	1	176
Grand Total	308	2	0	0	310	3	326	0	0	329	2	4	0	0	6	645
Approach%	99.4%	0.6%	0%		-	0.9%	99.1%	0%		-	33.3%	66.7%	0%		-	-
Totals %	47.8%	0.3%	0%		48.1%	0.5%	50.5%	0%		51%	0.3%	0.6%	0%		0.9%	-
PHF	0.87	0.25	0		0.87	0.75	0.95	0		0.96	0.5	0.5	0		0.75	-
Heavy	36	0	0		36	0	26	0		26	0	0	0		0	-
Heavy %	11.7%	0%	0%		11.6%	0%	8%	0%		7.9%	0%	0%	0%		0%	-
Lights	272	2	0		274	3	300	0		303	2	4	0		6	-
Lights %	88.3%	100%	0%		88.4%	100%	92%	0%		92.1%	100%	100%	0%		100%	-
Single-Unit Trucks	23	0	0		23	0	8	0		8	0	0	0		0	-
Single-Unit Trucks %	7.5%	0%	0%		7.4%	0%	2.5%	0%		2.4%	0%	0%	0%		0%	-
Buses	3	0	0		3	0	4	0		4	0	0	0		0	-
Buses %	1%	0%	0%		1%	0%	1.2%	0%		1.2%	0%	0%	0%		0%	-
Articulated Trucks	10	0	0		10	0	14	0		14	0	0	0		0	-
Articulated Trucks %	3.2%	0%	0%		3.2%	0%	4.3%	0%		4.3%	0%	0%	0%		0%	-
Pedestrians	-	-	-	0	-	-	-	0		-	-	-	0		-	-
Pedestrians%	-	-	-	0%	-	-	-	0%		-	-	-	0%		-	-



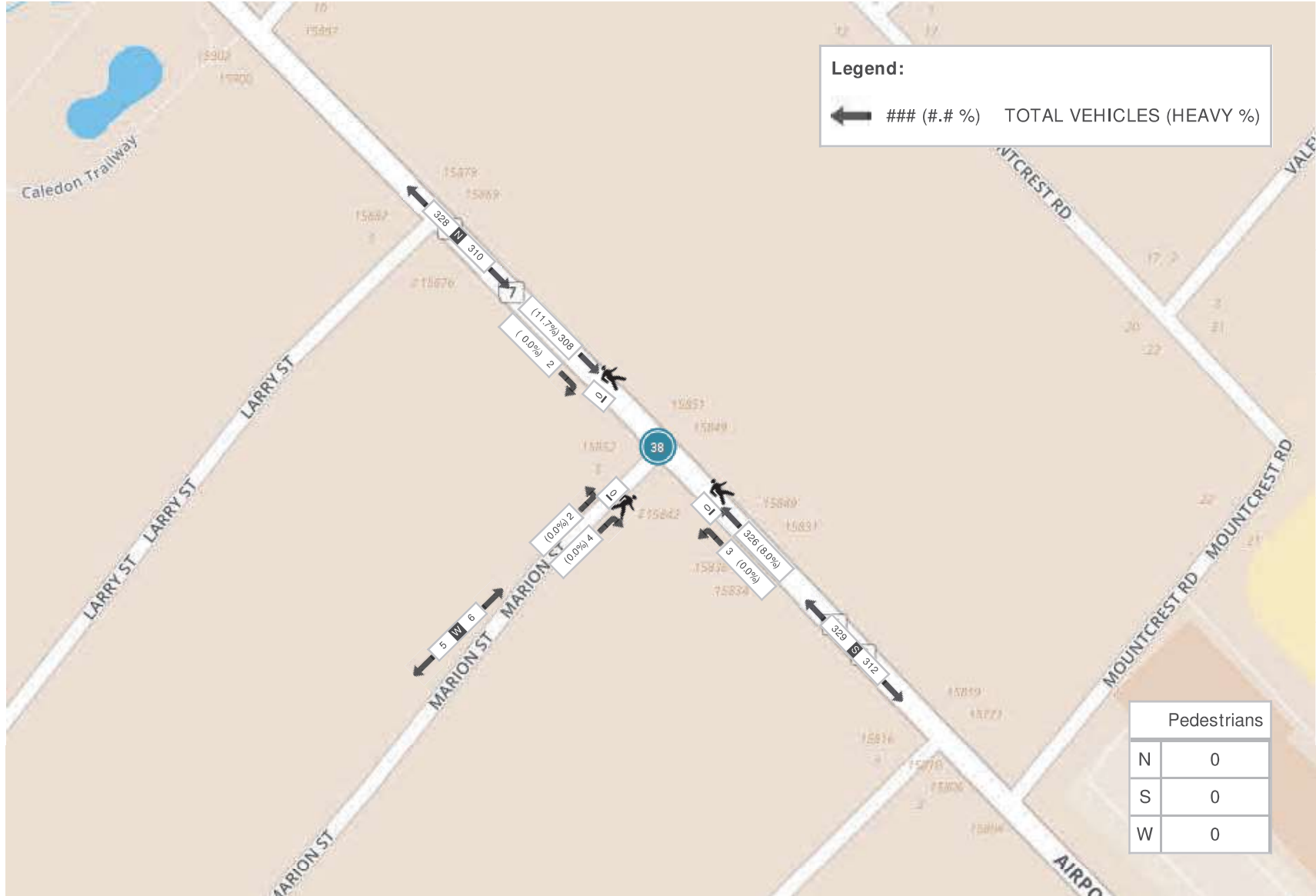
Peak Hour: 04:30 PM - 05:30 PM Weather: Light Rain (11.8 °C)

Start Time	Southbound AIRPORT RD					Northbound AIRPORT RD					Eastbound MARION ST					Int. Total (15 min)
	Thru	Right	U-Turn	Peds	Approach Total	Left	Thru	U-Turn	Peds	Approach Total	Left	Right	U-Turn	Peds	Approach Total	
16:30:00	103	0	0	0	103	1	182	0	0	183	0	1	0	0	1	287
16:45:00	91	3	0	0	94	0	198	0	0	198	0	0	0	1	0	292
17:00:00	87	0	1	0	88	0	202	0	0	202	0	0	0	0	0	290
17:15:00	79	1	0	0	80	0	202	0	1	202	0	0	0	2	0	282
Grand Total	360	4	1	0	365	1	784	0	1	785	0	1	0	3	1	1151
Approach%	98.6%	1.1%	0.3%	-	-	0.1%	99.9%	0%	-	-	0%	100%	0%	-	-	-
Totals %	31.3%	0.3%	0.1%	-	31.7%	0.1%	68.1%	0%	-	68.2%	0%	0.1%	0%	-	0.1%	-
PHF	0.87	0.33	0.25	-	0.89	0.25	0.97	0	-	0.97	0	0.25	0	-	0.25	-
Heavy	32	0	0	-	32	0	25	0	-	25	0	0	0	-	0	-
Heavy %	8.9%	0%	0%	-	8.8%	0%	3.2%	0%	-	3.2%	0%	0%	0%	-	0%	-
Lights	328	4	1	-	333	1	759	0	-	760	0	1	0	-	1	-
Lights %	91.1%	100%	100%	-	91.2%	100%	96.8%	0%	-	96.8%	0%	100%	0%	-	100%	-
Single-Unit Trucks	18	0	0	-	18	0	11	0	-	11	0	0	0	-	0	-
Single-Unit Trucks %	5%	0%	0%	-	4.9%	0%	1.4%	0%	-	1.4%	0%	0%	0%	-	0%	-
Buses	3	0	0	-	3	0	1	0	-	1	0	0	0	-	0	-
Buses %	0.8%	0%	0%	-	0.8%	0%	0.1%	0%	-	0.1%	0%	0%	0%	-	0%	-
Articulated Trucks	11	0	0	-	11	0	13	0	-	13	0	0	0	-	0	-
Articulated Trucks %	3.1%	0%	0%	-	3%	0%	1.7%	0%	-	1.7%	0%	0%	0%	-	0%	-
Pedestrians	-	-	-	0	-	-	-	1	-	-	-	-	-	3	-	-
Pedestrians%	-	-	-	0%	-	-	-	25%	-	-	-	-	-	75%	-	-

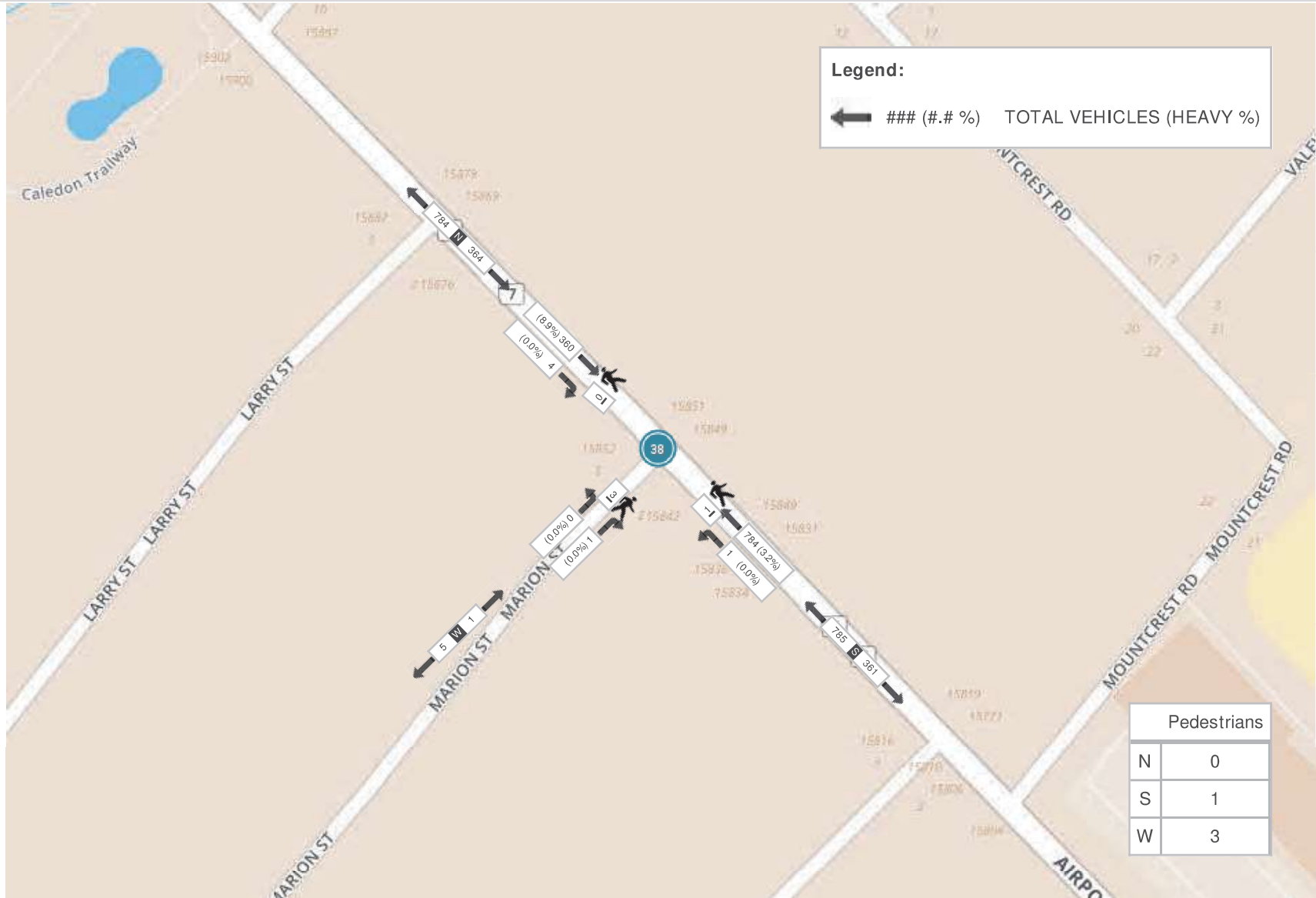
Peak Hour: 07:30 AM - 08:30 AM Weather: Light Rain Showers (11.7 °C)



Peak Hour: 01:00 PM - 02:00 PM Weather: Light Rain (12.9 °C)



Peak Hour: 04:30 PM - 05:30 PM Weather: Light Rain (11.8 °C)





Turning Movement Count (37 . AIRPORT RD & HILLTOP DR) CustID: 00728753 MioID: 358096

Start Time	Southbound AIRPORT RD					Northbound AIRPORT RD					Eastbound HILLTOP DR					Int. Total (15 min)	Int. Total (1 hr)
	Thru	Right	U-Turn	Peds	Approach Total	Left	Thru	U-Turn	Peds	Approach Total	Left	Right	U-Turn	Peds	Approach Total		
07:00:00	164	3	0	0	167	0	35	0	0	35	1	2	0	0	3	205	
07:15:00	193	1	0	0	194	1	35	0	0	36	1	1	0	1	2	232	
07:30:00	183	1	0	0	184	2	49	0	0	51	1	9	0	1	10	245	
07:45:00	176	10	0	0	186	0	68	0	0	68	0	4	0	0	4	258	940
08:00:00	143	11	0	0	154	3	82	0	0	85	4	5	0	0	9	248	983
08:15:00	151	8	0	0	159	1	61	0	0	62	0	2	0	0	2	223	974
08:30:00	115	7	0	0	122	1	67	0	0	68	3	4	0	0	7	197	926
08:45:00	94	14	0	0	108	1	69	0	0	70	0	2	0	0	2	180	848
BREAK																	
11:00:00	101	1	0	0	102	0	50	0	0	50	0	0	0	1	0	152	
11:15:00	73	2	0	0	75	0	62	0	0	62	1	0	0	0	1	138	
11:30:00	94	0	0	0	94	2	73	0	0	75	0	1	0	0	1	170	
11:45:00	77	2	0	0	79	2	65	0	0	67	2	1	0	0	3	149	609
12:00:00	72	3	0	0	75	0	67	0	0	67	0	2	0	0	2	144	601
12:15:00	97	1	0	0	98	1	67	0	0	68	0	2	0	0	2	168	631
12:30:00	75	0	0	0	75	4	65	0	0	69	0	4	0	0	4	148	609
12:45:00	63	2	0	0	65	5	79	0	0	84	2	0	0	0	2	151	611
13:00:00	71	0	0	0	71	2	86	0	0	88	1	1	0	0	2	161	628
13:15:00	70	2	0	0	72	1	85	0	0	86	0	2	0	0	2	160	620
13:30:00	84	2	0	0	86	1	73	0	0	74	1	1	0	0	2	162	634
13:45:00	81	2	0	0	83	4	85	0	0	89	0	4	0	0	4	176	659
BREAK																	
15:00:00	90	1	0	0	91	8	116	0	0	124	0	1	0	0	1	216	
15:15:00	81	9	0	0	90	6	138	0	0	144	3	2	0	0	5	239	



15:30:00	65	2	0	0	67	4	163	0	0	167	4	1	0	0	5	239	
15:45:00	64	1	0	0	65	4	166	0	0	170	1	3	0	0	4	239	933
16:00:00	93	2	0	0	95	4	178	0	0	182	2	2	0	0	4	281	998
16:15:00	95	0	0	0	95	6	172	0	0	178	0	2	0	0	2	275	1034
16:30:00	96	2	0	0	98	7	197	0	0	204	0	2	0	0	2	304	1099
16:45:00	85	6	0	0	91	6	191	0	0	197	1	4	0	0	5	293	1153
17:00:00	83	2	0	0	85	5	206	0	0	211	1	1	0	0	2	298	1170
17:15:00	79	3	0	0	82	11	208	0	0	219	1	3	0	0	4	305	1200
17:30:00	68	2	0	0	70	5	186	0	0	191	1	1	0	0	2	263	1159
17:45:00	74	3	0	0	77	7	183	0	0	190	4	2	0	0	6	273	1139
Grand Total	3150	105	0	0	3255	104	3427	0	0	3531	35	71	0	3	106	6892	-
Approach%	96.8%	3.2%	0%		-	2.9%	97.1%	0%		-	33%	67%	0%		-	-	-
Totals %	45.7%	1.5%	0%		47.2%	1.5%	49.7%	0%		51.2%	0.5%	1%	0%		1.5%	-	-
Heavy	292	5	0		-	9	218	0		-	2	4	0		-	-	-
Heavy %	9.3%	4.8%	0%		-	8.7%	6.4%	0%		-	5.7%	5.6%	0%		-	-	-
Bicycles	-	-	-		-	-	-	-		-	-	-	-		-	-	-
Bicycle %	-	-	-		-	-	-	-		-	-	-	-		-	-	-



Peak Hour: 07:15 AM - 08:15 AM Weather: Light Rain Showers (11.7 °C)

Start Time	Southbound AIRPORT RD					Northbound AIRPORT RD					Eastbound HILLTOP DR					Int. Total (15 min)
	Thru	Right	U-Turn	Peds	Approach Total	Left	Thru	U-Turn	Peds	Approach Total	Left	Right	U-Turn	Peds	Approach Total	
07:15:00	193	1	0	0	194	1	35	0	0	36	1	1	0	1	2	232
07:30:00	183	1	0	0	184	2	49	0	0	51	1	9	0	1	10	245
07:45:00	176	10	0	0	186	0	68	0	0	68	0	4	0	0	4	258
08:00:00	143	11	0	0	154	3	82	0	0	85	4	5	0	0	9	248
Grand Total	695	23	0	0	718	6	234	0	0	240	6	19	0	2	25	983
Approach%	96.8%	3.2%	0%	-	-	2.5%	97.5%	0%	-	-	24%	76%	0%	-	-	-
Totals %	70.7%	2.3%	0%	-	73%	0.6%	23.8%	0%	-	24.4%	0.6%	1.9%	0%	-	2.5%	-
PHF	0.9	0.52	0	-	0.93	0.5	0.71	0	-	0.71	0.38	0.53	0	-	0.63	-
Heavy	36	0	0	-	36	2	34	0	-	36	0	1	0	-	1	-
Heavy %	5.2%	0%	0%	-	5%	33.3%	14.5%	0%	-	15%	0%	5.3%	0%	-	4%	-
Lights	659	23	0	-	682	4	200	0	-	204	6	18	0	-	24	-
Lights %	94.8%	100%	0%	-	95%	66.7%	85.5%	0%	-	85%	100%	94.7%	0%	-	96%	-
Single-Unit Trucks	9	0	0	-	9	0	4	0	-	4	0	0	0	-	0	-
Single-Unit Trucks %	1.3%	0%	0%	-	1.3%	0%	1.7%	0%	-	1.7%	0%	0%	0%	-	0%	-
Buses	8	0	0	-	8	2	12	0	-	14	0	1	0	-	1	-
Buses %	1.2%	0%	0%	-	1.1%	33.3%	5.1%	0%	-	5.8%	0%	5.3%	0%	-	4%	-
Articulated Trucks	19	0	0	-	19	0	18	0	-	18	0	0	0	-	0	-
Articulated Trucks %	2.7%	0%	0%	-	2.6%	0%	7.7%	0%	-	7.5%	0%	0%	0%	-	0%	-
Pedestrians	-	-	-	0	-	-	-	0	-	-	-	-	-	2	-	-
Pedestrians%	-	-	-	0%	-	-	-	0%	-	-	-	-	-	100%	-	-



Peak Hour: 01:00 PM - 02:00 PM Weather: Light Rain (12.9 °C)

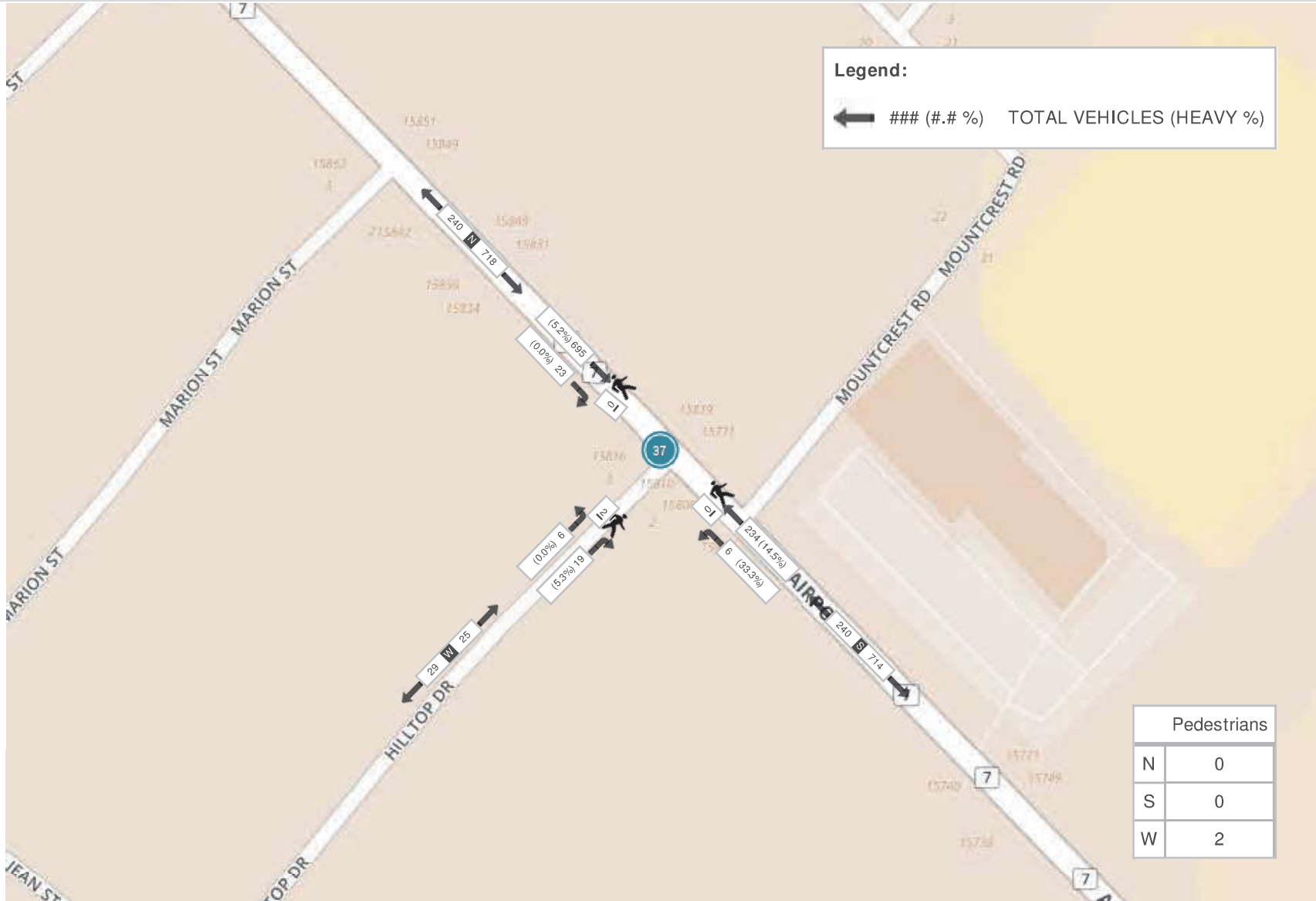
Start Time	Southbound AIRPORT RD					Northbound AIRPORT RD					Eastbound HILLTOP DR					Int. Total (15 min)
	Thru	Right	U-Turn	Peds	Approach Total	Left	Thru	U-Turn	Peds	Approach Total	Left	Right	U-Turn	Peds	Approach Total	
13:00:00	71	0	0	0	71	2	86	0	0	88	1	1	0	0	2	161
13:15:00	70	2	0	0	72	1	85	0	0	86	0	2	0	0	2	160
13:30:00	84	2	0	0	86	1	73	0	0	74	1	1	0	0	2	162
13:45:00	81	2	0	0	83	4	85	0	0	89	0	4	0	0	4	176
Grand Total	306	6	0	0	312	8	329	0	0	337	2	8	0	0	10	659
Approach%	98.1%	1.9%	0%		-	2.4%	97.6%	0%		-	20%	80%	0%		-	-
Totals %	46.4%	0.9%	0%		47.3%	1.2%	49.9%	0%		51.1%	0.3%	1.2%	0%		1.5%	-
PHF	0.91	0.75	0		0.91	0.5	0.96	0		0.95	0.5	0.5	0		0.63	-
Heavy	39	1	0		40	1	28	0		29	0	0	0		0	-
Heavy %	12.7%	16.7%	0%		12.8%	12.5%	8.5%	0%		8.6%	0%	0%	0%		0%	-
Lights	267	5	0		272	7	301	0		308	2	8	0		10	-
Lights %	87.3%	83.3%	0%		87.2%	87.5%	91.5%	0%		91.4%	100%	100%	0%		100%	-
Single-Unit Trucks	18	1	0		19	0	9	0		9	0	0	0		0	-
Single-Unit Trucks %	5.9%	16.7%	0%		6.1%	0%	2.7%	0%		2.7%	0%	0%	0%		0%	-
Buses	3	0	0		3	1	4	0		5	0	0	0		0	-
Buses %	1%	0%	0%		1%	12.5%	1.2%	0%		1.5%	0%	0%	0%		0%	-
Articulated Trucks	18	0	0		18	0	15	0		15	0	0	0		0	-
Articulated Trucks %	5.9%	0%	0%		5.8%	0%	4.6%	0%		4.5%	0%	0%	0%		0%	-
Pedestrians	-	-	-	0	-	-	-	0		-	-	-	0		-	-
Pedestrians%	-	-	-	0%	-	-	-	0%		-	-	-	0%		-	-



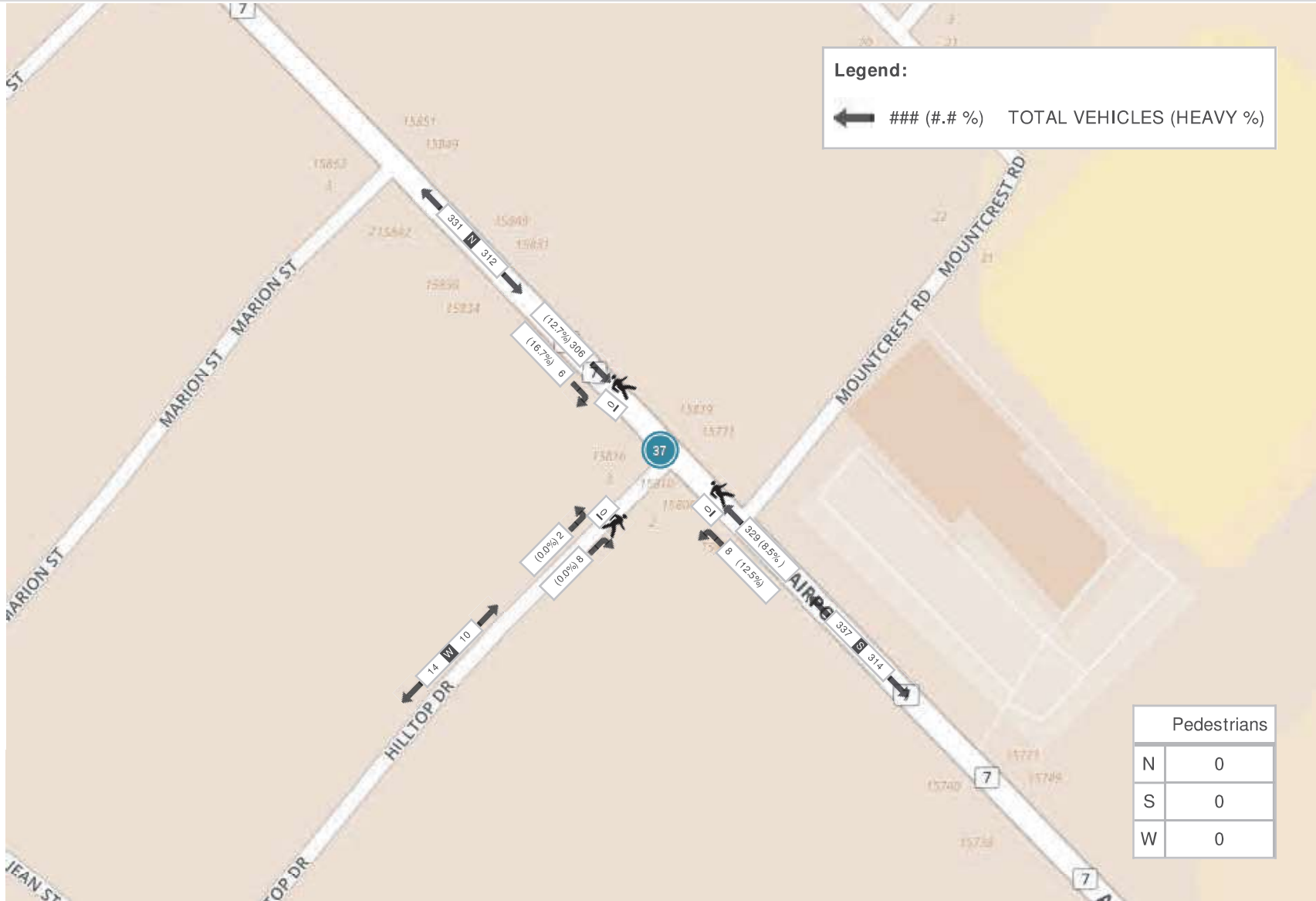
Peak Hour: 04:30 PM - 05:30 PM Weather: Light Rain (11.8 °C)

Start Time	Southbound AIRPORT RD					Northbound AIRPORT RD					Eastbound HILLTOP DR					Int. Total (15 min)
	Thru	Right	U-Turn	Peds	Approach Total	Left	Thru	U-Turn	Peds	Approach Total	Left	Right	U-Turn	Peds	Approach Total	
16:30:00	96	2	0	0	98	7	197	0	0	204	0	2	0	0	2	304
16:45:00	85	6	0	0	91	6	191	0	0	197	1	4	0	0	5	293
17:00:00	83	2	0	0	85	5	206	0	0	211	1	1	0	0	2	298
17:15:00	79	3	0	0	82	11	208	0	0	219	1	3	0	0	4	305
Grand Total	343	13	0	0	356	29	802	0	0	831	3	10	0	0	13	1200
Approach%	96.3%	3.7%	0%		-	3.5%	96.5%	0%		-	23.1%	76.9%	0%		-	-
Totals %	28.6%	1.1%	0%		29.7%	2.4%	66.8%	0%		69.3%	0.3%	0.8%	0%		1.1%	-
PHF	0.89	0.54	0		0.91	0.66	0.96	0		0.95	0.75	0.63	0		0.65	-
Heavy	30	0	0		30	0	26	0		26	0	0	0		0	-
Heavy %	8.7%	0%	0%		8.4%	0%	3.2%	0%		3.1%	0%	0%	0%		0%	-
Lights	313	13	0		326	29	776	0		805	3	10	0		13	-
Lights %	91.3%	100%	0%		91.6%	100%	96.8%	0%		96.9%	100%	100%	0%		100%	-
Single-Unit Trucks	15	0	0		15	0	12	0		12	0	0	0		0	-
Single-Unit Trucks %	4.4%	0%	0%		4.2%	0%	1.5%	0%		1.4%	0%	0%	0%		0%	-
Buses	3	0	0		3	0	1	0		1	0	0	0		0	-
Buses %	0.9%	0%	0%		0.8%	0%	0.1%	0%		0.1%	0%	0%	0%		0%	-
Articulated Trucks	12	0	0		12	0	13	0		13	0	0	0		0	-
Articulated Trucks %	3.5%	0%	0%		3.4%	0%	1.6%	0%		1.6%	0%	0%	0%		0%	-
Pedestrians	-	-	-	0	-	-	-	0		-	-	-	0		-	-
Pedestrians%	-	-	-	0%	-	-	-	0%		-	-	-	0%		-	-

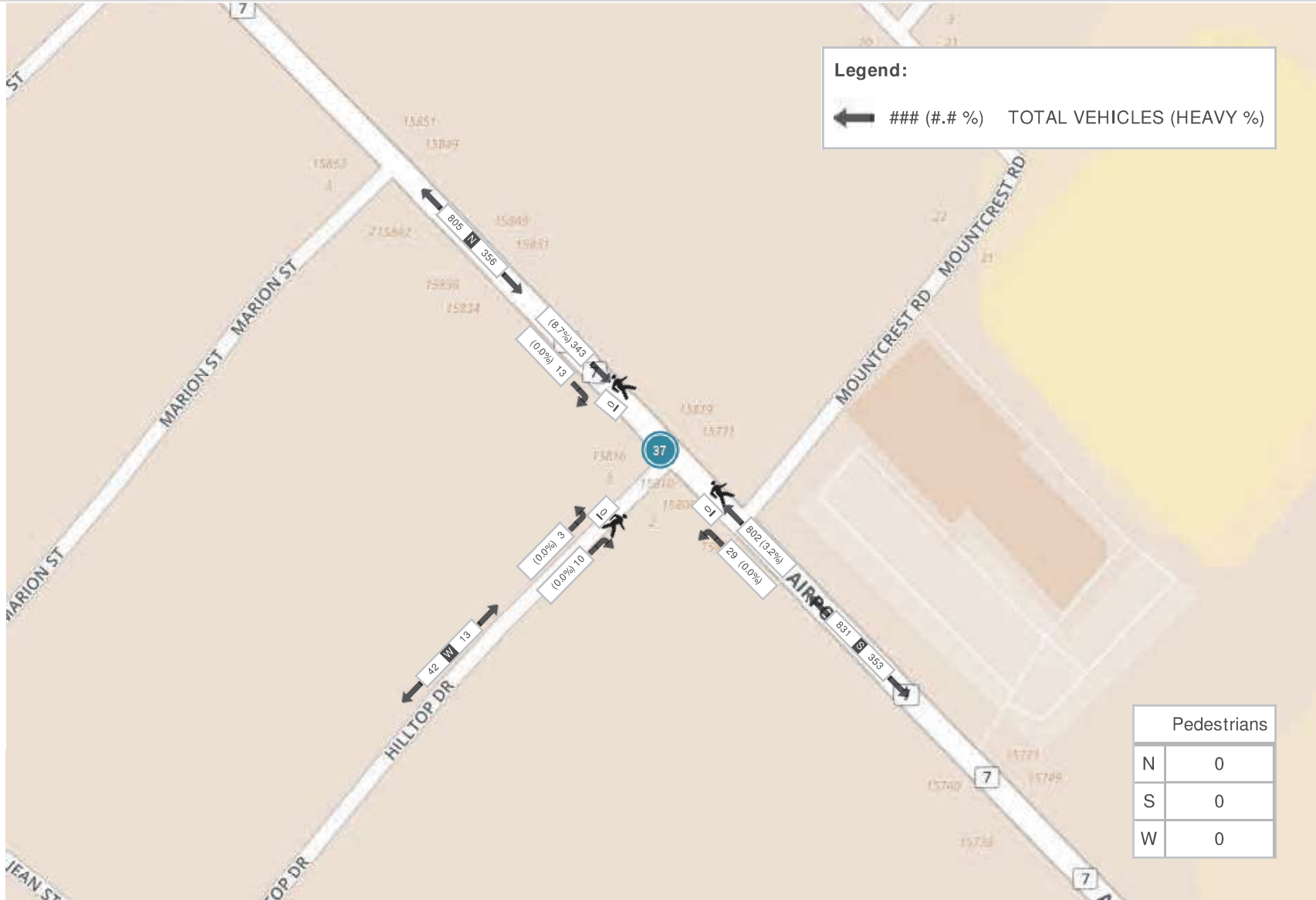
Peak Hour: 07:15 AM - 08:15 AM Weather: Light Rain Showers (11.7 °C)



Peak Hour: 01:00 PM - 02:00 PM Weather: Light Rain (12.9 °C)



Peak Hour: 04:30 PM - 05:30 PM Weather: Light Rain (11.8 °C)





Turning Movement Count (36 . AIRPORT RD & FOODLAND PLAZA) CustID: 00728704 MioID: 358094

Start Time	Southbound AIRPORT RD					Westbound FOODLAND PLAZA					Northbound AIRPORT RD					Int. Total (15 min)	Int. Total (1 hr)
	Left	Thru	U-Turn	Peds	Approach Total	Left	Right	U-Turn	Peds	Approach Total	Thru	Right	U-Turn	Peds	Approach Total		
07:00:00	3	161	0	0	164	4	0	0	0	4	33	1	0	0	34	202	
07:15:00	5	184	0	0	189	1	3	0	0	4	34	1	0	0	35	228	
07:30:00	8	184	0	0	192	5	2	0	0	7	48	2	0	0	50	249	
07:45:00	5	180	0	0	185	2	5	0	0	7	64	5	0	0	69	261	940
08:00:00	10	136	0	0	146	3	7	0	0	10	79	4	0	0	83	239	977
08:15:00	13	141	0	0	154	5	6	0	0	11	62	5	0	0	67	232	981
08:30:00	3	115	0	0	118	5	4	0	0	9	59	3	0	0	62	189	921
08:45:00	11	85	0	0	96	2	2	0	0	4	76	10	0	0	86	186	846
BREAK																	
11:00:00	17	79	0	0	96	6	9	0	0	15	39	7	0	0	46	157	
11:15:00	10	63	0	0	73	8	16	0	0	24	49	8	0	0	57	154	
11:30:00	15	81	0	0	96	6	19	0	0	25	56	13	0	0	69	190	
11:45:00	9	68	0	0	77	4	17	0	0	21	52	5	0	0	57	155	656
12:00:00	9	66	0	0	75	5	13	0	0	18	51	7	0	0	58	151	650
12:15:00	9	88	0	0	97	6	14	0	0	20	59	8	0	0	67	184	680
12:30:00	13	65	0	0	78	1	10	0	0	11	56	8	0	0	64	153	643
12:45:00	12	52	0	0	64	5	20	0	0	25	67	6	0	0	73	162	650
13:00:00	10	59	0	0	69	6	12	0	0	18	73	14	0	0	87	174	673
13:15:00	15	56	0	0	71	7	15	0	0	22	71	7	0	0	78	171	660
13:30:00	13	75	0	0	88	6	9	0	0	15	65	7	0	0	72	175	682
13:45:00	8	76	0	0	84	6	19	0	0	25	74	6	0	0	80	189	709
BREAK																	
15:00:00	18	74	0	0	92	4	24	0	0	28	103	15	0	0	118	238	
15:15:00	15	67	0	0	82	9	28	0	0	37	107	6	0	0	113	232	



15:30:00	12	55	0	0	67	6	15	0	0	21	161	13	0	0	174	262	
15:45:00	12	55	0	0	67	5	28	0	0	33	145	14	0	0	159	259	991
16:00:00	16	77	0	0	93	8	24	0	0	32	156	18	0	0	174	299	1052
16:15:00	14	85	0	0	99	8	33	0	0	41	146	20	0	0	166	306	1126
16:30:00	17	79	0	0	96	8	31	0	0	39	170	21	0	0	191	326	1190
16:45:00	19	70	0	0	89	10	22	0	0	32	175	19	0	0	194	315	1246
17:00:00	10	74	0	0	84	7	29	0	0	36	185	32	0	0	217	337	1284
17:15:00	17	64	0	0	81	4	40	0	0	44	169	24	0	0	193	318	1296
17:30:00	7	62	0	0	69	9	26	0	0	35	171	15	0	0	186	290	1260
17:45:00	12	65	0	0	77	4	25	0	0	29	163	16	0	0	179	285	1230
Grand Total	367	2841	0	0	3208	175	527	0	0	702	3018	340	0	0	3358	7268	-

Approach%	11.4%	88.6%	0%	-	24.9%	75.1%	0%	-	89.9%	10.1%	0%	-	-	-
Totals %	5%	39.1%	0%	44.1%	2.4%	7.3%	0%	9.7%	41.5%	4.7%	0%	46.2%	-	-
Heavy	5	296	0	-	8	7	0	-	228	7	0	-	-	-
Heavy %	1.4%	10.4%	0%	-	4.6%	1.3%	0%	-	7.6%	2.1%	0%	-	-	-
Bicycles	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Bicycle %	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Peak Hour: 07:30 AM - 08:30 AM Weather: Light Rain Showers (11.7 °C)

Start Time	Southbound AIRPORT RD					Westbound FOODLAND PLAZA					Northbound AIRPORT RD					Int. Total (15 min)
	Left	Thru	U-Turn	Peds	Approach Total	Left	Right	U-Turn	Peds	Approach Total	Thru	Right	U-Turn	Peds	Approach Total	
07:30:00	8	184	0	0	192	5	2	0	0	7	48	2	0	0	50	249
07:45:00	5	180	0	0	185	2	5	0	0	7	64	5	0	0	69	261
08:00:00	10	136	0	0	146	3	7	0	0	10	79	4	0	0	83	239
08:15:00	13	141	0	0	154	5	6	0	0	11	62	5	0	0	67	232
Grand Total	36	641	0	0	677	15	20	0	0	35	253	16	0	0	269	981
Approach%	5.3%	94.7%	0%		-	42.9%	57.1%	0%		-	94.1%	5.9%	0%		-	-
Totals %	3.7%	65.3%	0%		69%	1.5%	2%	0%		3.6%	25.8%	1.6%	0%		27.4%	-
PHF	0.69	0.87	0		0.88	0.75	0.71	0		0.8	0.8	0.8	0		0.81	-
Heavy	0	36	0		36	2	1	0		3	37	0	0		37	-
Heavy %	0%	5.6%	0%		5.3%	13.3%	5%	0%		8.6%	14.6%	0%	0%		13.8%	-
Lights	36	605	0		641	13	19	0		32	216	16	0		232	-
Lights %	100%	94.4%	0%		94.7%	86.7%	95%	0%		91.4%	85.4%	100%	0%		86.2%	-
Single-Unit Trucks	0	13	0		13	2	0	0		2	10	0	0		10	-
Single-Unit Trucks %	0%	2%	0%		1.9%	13.3%	0%	0%		5.7%	4%	0%	0%		3.7%	-
Buses	0	4	0		4	0	0	0		0	10	0	0		10	-
Buses %	0%	0.6%	0%		0.6%	0%	0%	0%		0%	4%	0%	0%		3.7%	-
Articulated Trucks	0	19	0		19	0	1	0		1	17	0	0		17	-
Articulated Trucks %	0%	3%	0%		2.8%	0%	5%	0%		2.9%	6.7%	0%	0%		6.3%	-



Peak Hour: 01:00 PM - 02:00 PM Weather: Light Rain (12.9 °C)

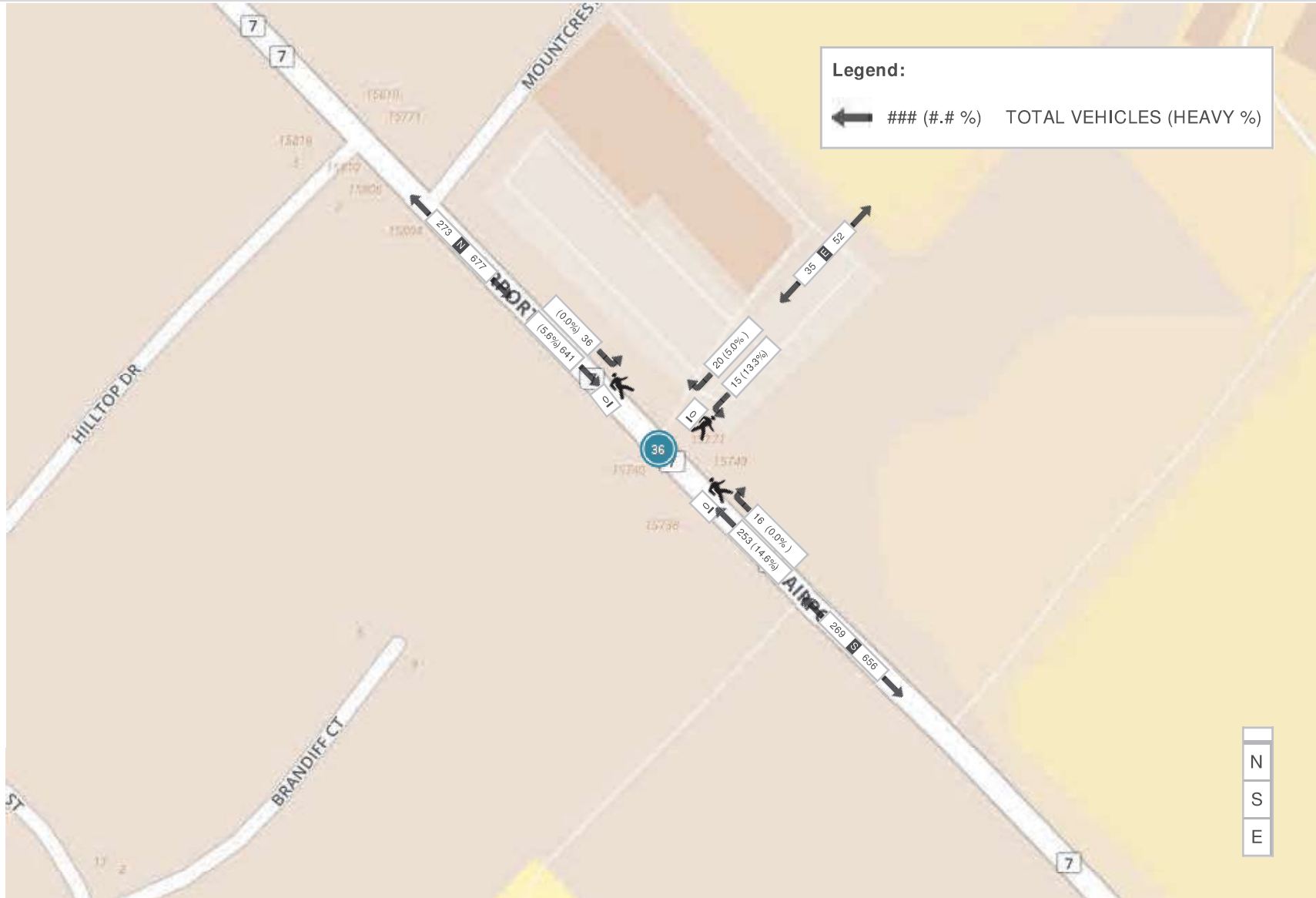
Start Time	Southbound AIRPORT RD					Westbound FOODLAND PLAZA					Northbound AIRPORT RD					Int. Total (15 min)
	Left	Thru	U-Turn	Peds	Approach Total	Left	Right	U-Turn	Peds	Approach Total	Thru	Right	U-Turn	Peds	Approach Total	
13:00:00	10	59	0	0	69	6	12	0	0	18	73	14	0	0	87	174
13:15:00	15	56	0	0	71	7	15	0	0	22	71	7	0	0	78	171
13:30:00	13	75	0	0	88	6	9	0	0	15	65	7	0	0	72	175
13:45:00	8	76	0	0	84	6	19	0	0	25	74	6	0	0	80	189
Grand Total	46	266	0	0	312	25	55	0	0	80	283	34	0	0	317	709
Approach%	14.7%	85.3%	0%	-	-	31.3%	68.8%	0%	-	-	89.3%	10.7%	0%	-	-	-
Totals %	6.5%	37.5%	0%	44%	44%	3.5%	7.8%	0%	11.3%	11.3%	39.9%	4.8%	0%	44.7%	44.7%	-
PHF	0.77	0.88	0	0.89	0.89	0.89	0.72	0	0.8	0.8	0.96	0.61	0	0.91	0.91	-
Heavy	3	39	0	42	42	2	2	0	4	4	31	3	0	34	34	-
Heavy %	6.5%	14.7%	0%	13.5%	13.5%	8%	3.6%	0%	5%	5%	11%	8.8%	0%	10.7%	10.7%	-
Lights	43	227	0	270	270	23	53	0	76	76	252	31	0	283	283	-
Lights %	93.5%	85.3%	0%	86.5%	86.5%	92%	96.4%	0%	95%	95%	89%	91.2%	0%	89.3%	89.3%	-
Single-Unit Trucks	3	18	0	21	21	2	2	0	4	4	10	3	0	13	13	-
Single-Unit Trucks %	6.5%	6.8%	0%	6.7%	6.7%	8%	3.6%	0%	5%	5%	3.5%	8.8%	0%	4.1%	4.1%	-
Buses	0	3	0	3	3	0	0	0	0	0	5	0	0	5	5	-
Buses %	0%	1.1%	0%	1%	1%	0%	0%	0%	0%	0%	1.8%	0%	0%	1.6%	1.6%	-
Articulated Trucks	0	18	0	18	18	0	0	0	0	0	16	0	0	16	16	-
Articulated Trucks %	0%	6.8%	0%	5.8%	5.8%	0%	0%	0%	0%	0%	5.7%	0%	0%	5%	5%	-



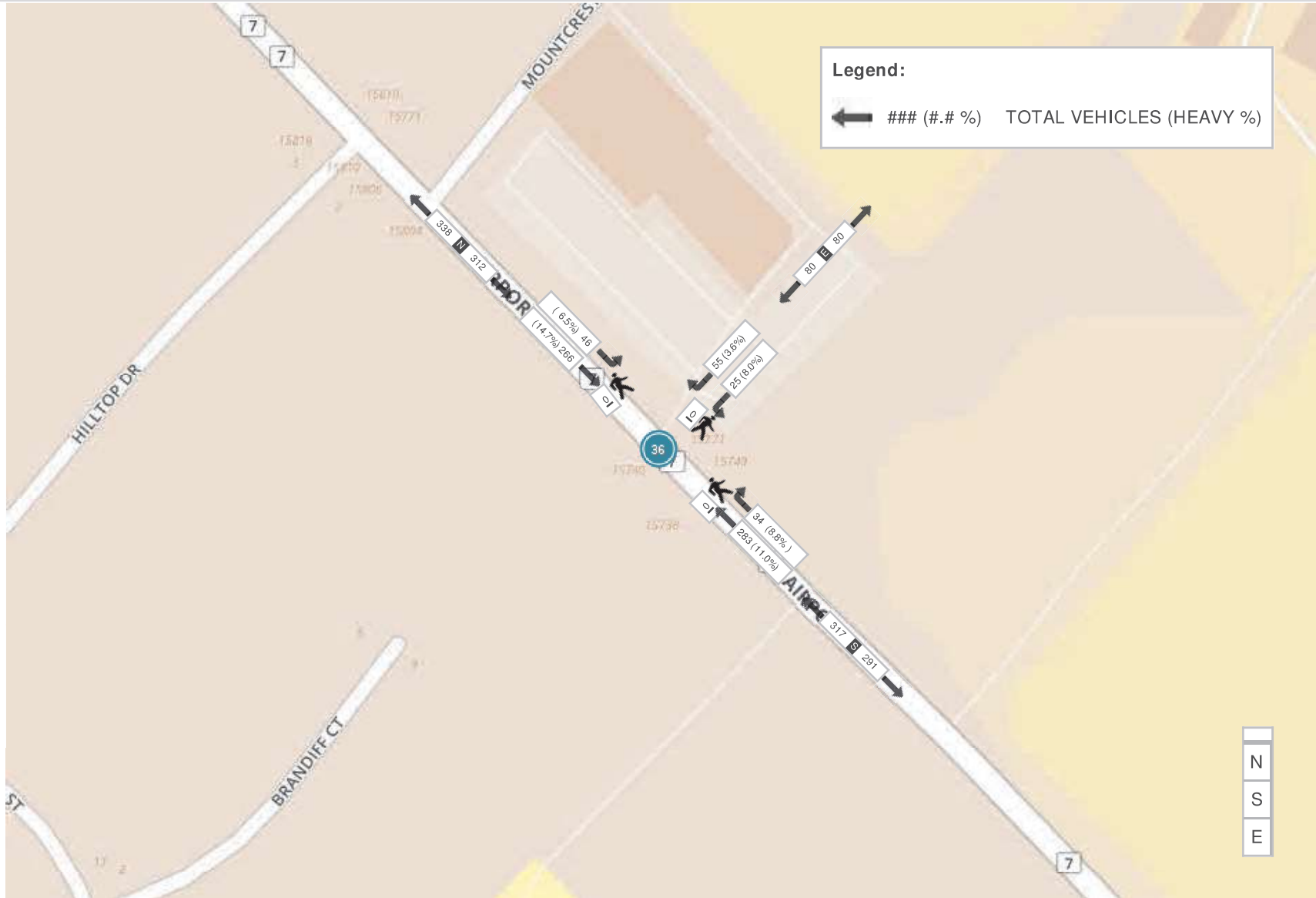
Peak Hour: 04:30 PM - 05:30 PM Weather: Light Rain (11.8 °C)

Start Time	Southbound AIRPORT RD					Westbound FOODLAND PLAZA					Northbound AIRPORT RD					Int. Total (15 min)
	Left	Thru	U-Turn	Peds	Approach Total	Left	Right	U-Turn	Peds	Approach Total	Thru	Right	U-Turn	Peds	Approach Total	
16:30:00	17	79	0	0	96	8	31	0	0	39	170	21	0	0	191	326
16:45:00	19	70	0	0	89	10	22	0	0	32	175	19	0	0	194	315
17:00:00	10	74	0	0	84	7	29	0	0	36	185	32	0	0	217	337
17:15:00	17	64	0	0	81	4	40	0	0	44	169	24	0	0	193	318
Grand Total	63	287	0	0	350	29	122	0	0	151	699	96	0	0	795	1296
Approach%	18%	82%	0%		-	19.2%	80.8%	0%		-	87.9%	12.1%	0%		-	-
Totals %	4.9%	22.1%	0%		27%	2.2%	9.4%	0%		11.7%	53.9%	7.4%	0%		61.3%	-
PHF	0.83	0.91	0		0.91	0.73	0.76	0		0.86	0.94	0.75	0		0.92	-
Heavy	0	29	0		29	0	0	0		0	26	0	0		26	-
Heavy %	0%	10.1%	0%		8.3%	0%	0%	0%		0%	3.7%	0%	0%		3.3%	-
Lights	63	258	0		321	29	122	0		151	673	96	0		769	-
Lights %	100%	89.9%	0%		91.7%	100%	100%	0%		100%	96.3%	100%	0%		96.7%	-
Single-Unit Trucks	0	13	0		13	0	0	0		0	11	0	0		11	-
Single-Unit Trucks %	0%	4.5%	0%		3.7%	0%	0%	0%		0%	1.6%	0%	0%		1.4%	-
Buses	0	3	0		3	0	0	0		0	1	0	0		1	-
Buses %	0%	1%	0%		0.9%	0%	0%	0%		0%	0.1%	0%	0%		0.1%	-
Articulated Trucks	0	13	0		13	0	0	0		0	14	0	0		14	-
Articulated Trucks %	0%	4.5%	0%		3.7%	0%	0%	0%		0%	2%	0%	0%		1.8%	-

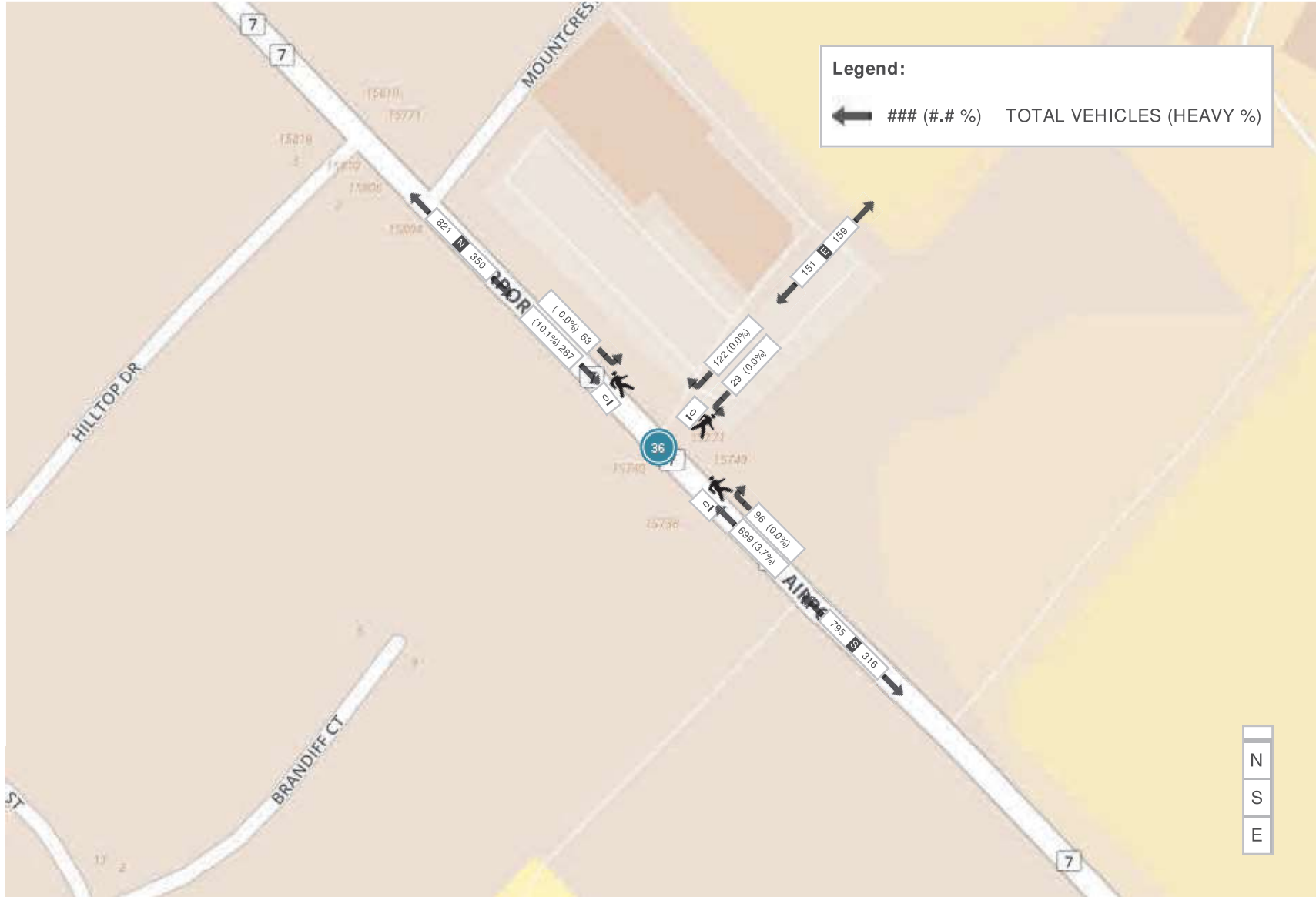
Peak Hour: 07:30 AM - 08:30 AM Weather: Light Rain Showers (11.7 °C)



Peak Hour: 01:00 PM - 02:00 PM Weather: Light Rain (12.9 °C)



Peak Hour: 04:30 PM - 05:30 PM Weather: Light Rain (11.8 °C)





Turning Movement Count (41 . AIRPORT RD & CALEDON TRAILWAY PATH) CustID: 00729105 MioID: 358100

Start Time	Southbound AIRPORT RD				Northbound AIRPORT RD				Int. Total (15 min)	Int. Total (1 hr)
	Thru	U-Turn	Peds	Approach Total	Thru	U-Turn	Peds	Approach Total		
07:00:00	157	0	0	157	43	0	0	43	200	
07:15:00	183	0	0	183	39	0	0	39	222	
07:30:00	170	0	2	170	57	0	0	57	227	
07:45:00	192	0	0	192	82	0	0	82	274	923
08:00:00	154	0	0	154	91	0	0	91	245	968
08:15:00	146	0	0	146	63	0	0	63	209	955
08:30:00	126	0	0	126	74	0	0	74	200	928
08:45:00	110	0	0	110	70	0	0	70	180	834
BREAK										
11:00:00	92	0	1	92	50	0	0	50	142	
11:15:00	71	0	4	71	66	0	0	66	137	
11:30:00	100	0	0	100	74	0	1	74	174	
11:45:00	80	0	0	80	67	0	0	67	147	600
12:00:00	77	0	0	77	68	0	0	68	145	603
12:15:00	97	0	0	97	67	0	0	67	164	630
12:30:00	80	0	0	80	73	0	0	73	153	609
12:45:00	69	0	0	69	77	0	0	77	146	608
13:00:00	63	0	0	63	84	0	0	84	147	610
13:15:00	73	0	3	73	90	0	0	90	163	609
13:30:00	89	0	0	89	74	0	0	74	163	619
13:45:00	89	0	0	89	90	0	0	90	179	652
BREAK										
15:00:00	88	0	0	88	115	0	0	115	203	
15:15:00	87	0	0	87	131	0	0	131	218	



15:30:00	73	0	0	73	169	0	0	169	242	
15:45:00	70	0	0	70	165	0	0	165	235	898
16:00:00	92	0	1	92	178	0	0	178	270	965
16:15:00	97	0	0	97	176	0	0	176	273	1020
16:30:00	101	0	0	101	196	0	0	196	297	1075
16:45:00	88	0	0	88	192	0	0	192	280	1120
17:00:00	89	0	0	89	198	0	0	198	287	1137
17:15:00	82	0	4	82	209	0	0	209	291	1155
17:30:00	70	0	0	70	190	0	0	190	260	1118
17:45:00	77	0	0	77	183	0	0	183	260	1098
Grand Total	3232	0	15	3232	3501	0	1	3501	6733	-

Approach%	100%	0%	-	100%	0%	-	-	-	-	-
Totals %	48%	0%	48%	52%	0%	52%	-	-	-	-
Heavy	304	0	-	222	0	-	-	-	-	-
Heavy %	9.4%	0%	-	6.3%	0%	-	-	-	-	-
Bicycles	-	-	-	-	-	-	-	-	-	-
Bicycle %	-	-	-	-	-	-	-	-	-	-



Peak Hour: 07:15 AM - 08:15 AM Weather: Light Rain Showers (11.7 °C)

Start Time	Southbound AIRPORT RD				Northbound AIRPORT RD				Int. Total (15 min)
	Thru	U-Turn	Peds	Approach Total	Thru	U-Turn	Peds	Approach Total	
07:15:00	183	0	0	183	39	0	0	39	222
07:30:00	170	0	2	170	57	0	0	57	227
07:45:00	192	0	0	192	82	0	0	82	274
08:00:00	154	0	0	154	91	0	0	91	245
Grand Total	699	0	2	699	269	0	0	269	968
Approach%	100%	0%		-	100%	0%		-	-
Totals %	72.2%	0%		72.2%	27.8%	0%		27.8%	-
PHF	0.91	0		0.91	0.74	0		0.74	-
Heavy	36	0		36	31	0		31	-
Heavy %	5.2%	0%		5.2%	11.5%	0%		11.5%	-
Lights	663	0		663	238	0		238	-
Lights %	94.8%	0%		94.8%	88.5%	0%		88.5%	-
Single-Unit Trucks	9	0		9	9	0		9	-
Single-Unit Trucks %	1.3%	0%		1.3%	3.3%	0%		3.3%	-
Buses	8	0		8	8	0		8	-
Buses %	1.1%	0%		1.1%	3%	0%		3%	-
Articulated Trucks	19	0		19	14	0		14	-
Articulated Trucks %	2.7%	0%		2.7%	5.2%	0%		5.2%	-
Pedestrians	-	-	2	-	-	-	0	-	-
Pedestrians%	-	-	100%	-	-	-	0%	-	-



Peak Hour: 01:00 PM - 02:00 PM Weather: Light Rain (12.9 °C)

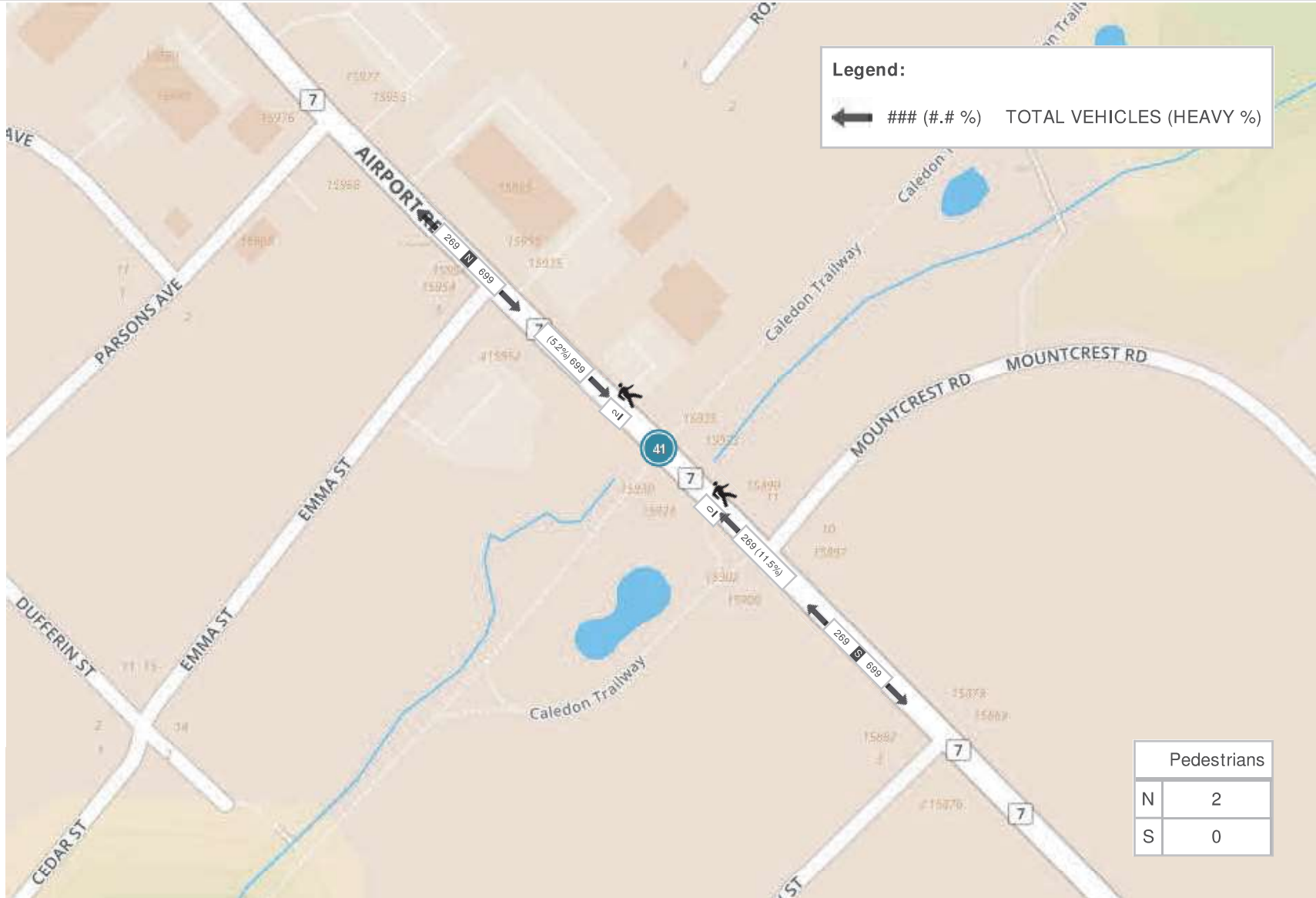
Start Time	Southbound AIRPORT RD				Northbound AIRPORT RD				Int. Total (15 min)
	Thru	U-Turn	Peds	Approach Total	Thru	U-Turn	Peds	Approach Total	
13:00:00	63	0	0	63	84	0	0	84	147
13:15:00	73	0	3	73	90	0	0	90	163
13:30:00	89	0	0	89	74	0	0	74	163
13:45:00	89	0	0	89	90	0	0	90	179
Grand Total	314	0	3	314	338	0	0	338	652
Approach%	100%	0%	-	-	100%	0%	-	-	-
Totals %	48.2%	0%	-	48.2%	51.8%	0%	-	51.8%	-
PHF	0.88	0	-	0.88	0.94	0	-	0.94	-
Heavy	42	0	-	42	27	0	-	27	-
Heavy %	13.4%	0%	-	13.4%	8%	0%	-	8%	-
Lights	272	0	-	272	311	0	-	311	-
Lights %	86.6%	0%	-	86.6%	92%	0%	-	92%	-
Single-Unit Trucks	24	0	-	24	12	0	-	12	-
Single-Unit Trucks %	7.6%	0%	-	7.6%	3.6%	0%	-	3.6%	-
Buses	2	0	-	2	4	0	-	4	-
Buses %	0.6%	0%	-	0.6%	1.2%	0%	-	1.2%	-
Articulated Trucks	16	0	-	16	11	0	-	11	-
Articulated Trucks %	5.1%	0%	-	5.1%	3.3%	0%	-	3.3%	-
Pedestrians	-	-	3	-	-	-	0	-	-
Pedestrians%	-	-	100%	-	-	-	0%	-	-



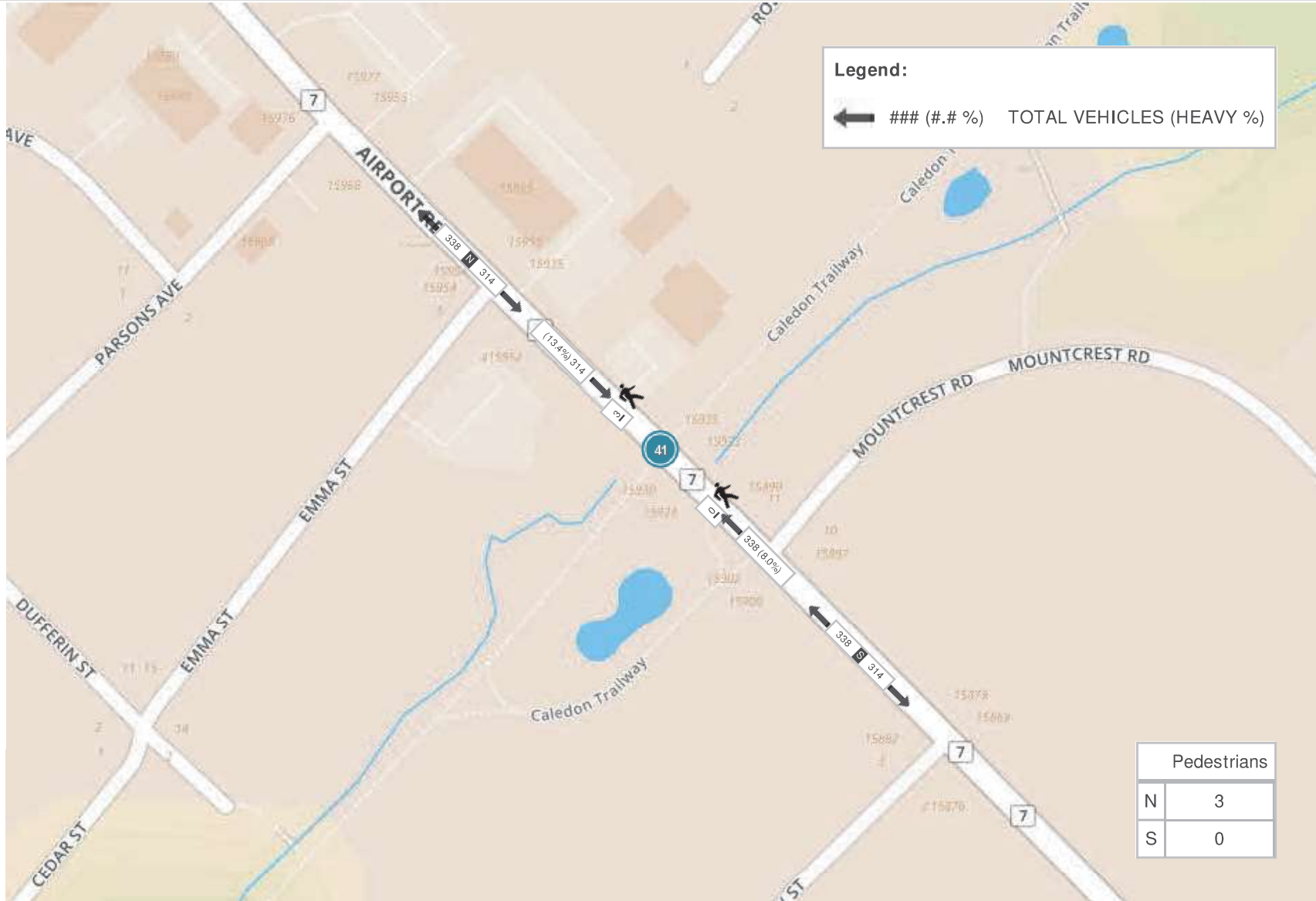
Peak Hour: 04:30 PM - 05:30 PM Weather: Light Rain (11.8 °C)

Start Time	Southbound AIRPORT RD				Northbound AIRPORT RD				Int. Total (15 min)
	Thru	U-Turn	Peds	Approach Total	Thru	U-Turn	Peds	Approach Total	
16:30:00	101	0	0	101	196	0	0	196	297
16:45:00	88	0	0	88	192	0	0	192	280
17:00:00	89	0	0	89	198	0	0	198	287
17:15:00	82	0	4	82	209	0	0	209	291
Grand Total	360	0	4	360	795	0	0	795	1155
Approach%	100%	0%		-	100%	0%		-	-
Totals %	31.2%	0%		31.2%	68.8%	0%		68.8%	-
PHF	0.89	0		0.89	0.95	0		0.95	-
Heavy	30	0		30	26	0		26	-
Heavy %	8.3%	0%		8.3%	3.3%	0%		3.3%	-
Lights	330	0		330	769	0		769	-
Lights %	91.7%	0%		91.7%	96.7%	0%		96.7%	-
Single-Unit Trucks	16	0		16	12	0		12	-
Single-Unit Trucks %	4.4%	0%		4.4%	1.5%	0%		1.5%	-
Buses	3	0		3	1	0		1	-
Buses %	0.8%	0%		0.8%	0.1%	0%		0.1%	-
Articulated Trucks	11	0		11	13	0		13	-
Articulated Trucks %	3.1%	0%		3.1%	1.6%	0%		1.6%	-
Pedestrians	-	-	4	-	-	-	0	-	-
Pedestrians%	-	-	100%	-	-	-	0%	-	-

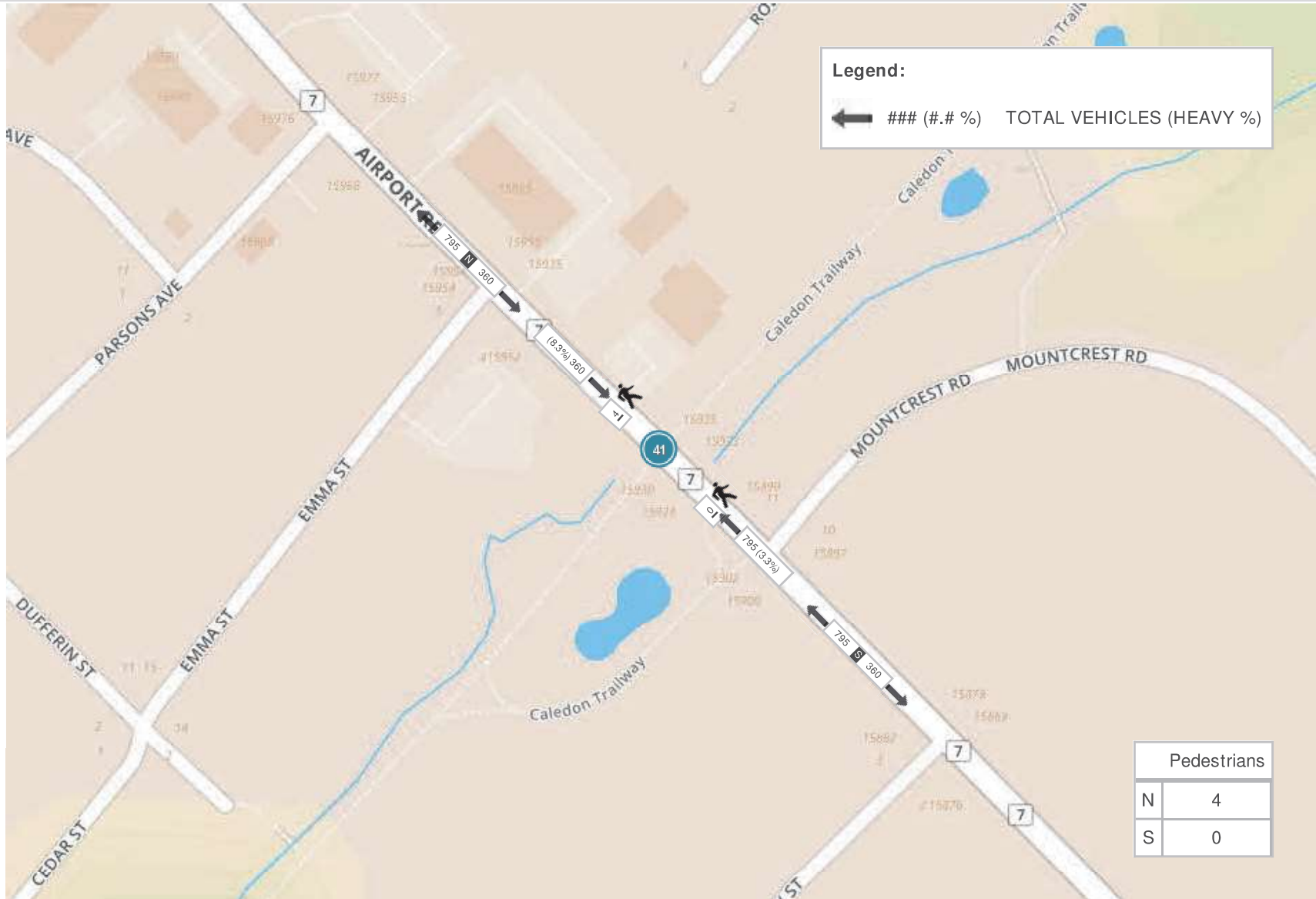
Peak Hour: 07:15 AM - 08:15 AM Weather: Light Rain Showers (11.7 °C)



Peak Hour: 01:00 PM - 02:00 PM Weather: Light Rain (12.9 °C)



Peak Hour: 04:30 PM - 05:30 PM Weather: Light Rain (11.8 °C)





Turning Movement Count (35 . AIRPORT RD & CRANSTON DR) CustID: 00728606 MioID: 358093

Start Time	Southbound AIRPORT RD					Northbound AIRPORT RD					Eastbound CRANSTON DR					Int. Total (15 min)	Int. Total (1 hr)
	Thru	Right	U-Turn	Peds	Approach Total	Left	Thru	U-Turn	Peds	Approach Total	Left	Right	U-Turn	Peds	Approach Total		
07:00:00	170	0	0	0	170	1	33	0	0	34	0	5	0	0	5	209	
07:15:00	190	2	0	0	192	1	34	0	0	35	1	4	0	0	5	232	
07:30:00	184	0	0	0	184	0	47	0	0	47	2	4	0	0	6	237	
07:45:00	173	1	0	0	174	4	68	0	0	72	2	5	0	0	7	253	931
08:00:00	139	3	0	0	142	2	68	0	0	70	4	8	0	0	12	224	946
08:15:00	148	2	0	0	150	1	62	0	0	63	2	4	0	0	6	219	933
08:30:00	115	1	0	0	116	3	60	0	0	63	2	1	0	0	3	182	878
08:45:00	95	0	0	0	95	7	81	0	0	88	2	7	0	0	9	192	817
BREAK																	
11:00:00	84	3	0	0	87	3	46	0	0	49	0	3	0	0	3	139	
11:15:00	70	2	0	0	72	1	58	0	0	59	1	2	0	0	3	134	
11:30:00	83	3	0	0	86	3	63	0	0	66	2	2	0	0	4	156	
11:45:00	76	3	0	0	79	2	55	0	0	57	2	2	0	0	4	140	569
12:00:00	68	3	0	0	71	2	57	0	0	59	2	3	0	0	5	135	565
12:15:00	94	1	0	0	95	0	63	0	0	63	1	5	0	0	6	164	595
12:30:00	63	2	0	0	65	0	60	0	0	60	3	2	0	0	5	130	569
12:45:00	52	3	0	0	55	3	69	0	0	72	2	1	0	0	3	130	559
13:00:00	69	2	0	0	71	2	82	0	0	84	0	1	0	0	1	156	580
13:15:00	60	3	0	0	63	3	78	0	0	81	0	2	0	0	2	146	562
13:30:00	77	3	0	0	80	2	69	0	0	71	0	3	0	0	3	154	586
13:45:00	77	4	0	0	81	1	78	0	0	79	2	4	0	0	6	166	622
BREAK																	
15:00:00	77	1	0	0	78	7	117	0	0	124	1	0	0	0	1	203	
15:15:00	77	2	0	0	79	11	110	0	0	121	1	1	0	0	2	202	



15:30:00	68	9	0	0	77	9	159	1	0	169	5	1	0	0	6	252	
15:45:00	58	2	0	0	60	4	145	0	0	149	2	2	0	0	4	213	870
16:00:00	84	4	0	0	88	4	170	0	0	174	0	1	0	0	1	263	930
16:15:00	85	3	0	0	88	3	164	0	0	167	2	3	0	0	5	260	988
16:30:00	85	4	0	0	89	5	195	0	0	200	1	2	0	0	3	292	1028
16:45:00	82	2	0	0	84	3	184	0	0	187	3	8	0	0	11	282	1097
17:00:00	79	3	0	0	82	6	213	0	0	219	3	3	0	0	6	307	1141
17:15:00	65	3	0	0	68	6	185	0	0	191	2	4	0	0	6	265	1146
17:30:00	67	1	0	0	68	3	174	0	0	177	3	6	0	0	9	254	1108
17:45:00	69	0	0	0	69	3	177	0	0	180	2	2	0	0	4	253	1079
Grand Total	2983	75	0	0	3058	105	3224	1	0	3330	55	101	0	0	156	6544	-

Approach%	97.5%	2.5%	0%	-	3.2%	96.8%	0%	-	35.3%	64.7%	0%	-	-	-
Totals %	45.6%	1.1%	0%	46.7%	1.6%	49.3%	0%	50.9%	0.8%	1.5%	0%	2.4%	-	-
Heavy	305	3	0	-	12	226	0	-	1	2	0	-	-	-
Heavy %	10.2%	4%	0%	-	11.4%	7%	0%	-	1.8%	2%	0%	-	-	-
Bicycles	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Bicycle %	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Peak Hour: 07:15 AM - 08:15 AM Weather: Light Rain Showers (11.7 °C)

Start Time	Southbound AIRPORT RD					Northbound AIRPORT RD					Eastbound CRANSTON DR					Int. Total (15 min)
	Thru	Right	U-Turn	Peds	Approach Total	Left	Thru	U-Turn	Peds	Approach Total	Left	Right	U-Turn	Peds	Approach Total	
07:15:00	190	2	0	0	192	1	34	0	0	35	1	4	0	0	5	232
07:30:00	184	0	0	0	184	0	47	0	0	47	2	4	0	0	6	237
07:45:00	173	1	0	0	174	4	68	0	0	72	2	5	0	0	7	253
08:00:00	139	3	0	0	142	2	68	0	0	70	4	8	0	0	12	224
Grand Total	686	6	0	0	692	7	217	0	0	224	9	21	0	0	30	946
Approach%	99.1%	0.9%	0%		-	3.1%	96.9%	0%		-	30%	70%	0%		-	-
Totals %	72.5%	0.6%	0%		73.2%	0.7%	22.9%	0%		23.7%	1%	2.2%	0%		3.2%	-
PHF	0.9	0.5	0		0.9	0.44	0.8	0		0.78	0.56	0.66	0		0.63	-
Heavy	32	2	0		34	0	36	0		36	1	1	0		2	-
Heavy %	4.7%	33.3%	0%		4.9%	0%	16.6%	0%		16.1%	11.1%	4.8%	0%		6.7%	-
Lights	654	4	0		658	7	181	0		188	8	20	0		28	-
Lights %	95.3%	66.7%	0%		95.1%	100%	83.4%	0%		83.9%	88.9%	95.2%	0%		93.3%	-
Single-Unit Trucks	9	1	0		10	0	8	0		8	0	0	0		0	-
Single-Unit Trucks %	1.3%	16.7%	0%		1.4%	0%	3.7%	0%		3.6%	0%	0%	0%		0%	-
Buses	5	1	0		6	0	11	0		11	1	1	0		2	-
Buses %	0.7%	16.7%	0%		0.9%	0%	5.1%	0%		4.9%	11.1%	4.8%	0%		6.7%	-
Articulated Trucks	18	0	0		18	0	17	0		17	0	0	0		0	-
Articulated Trucks %	2.6%	0%	0%		2.6%	0%	7.8%	0%		7.6%	0%	0%	0%		0%	-



Peak Hour: 01:00 PM - 02:00 PM Weather: Light Rain (12.9 °C)

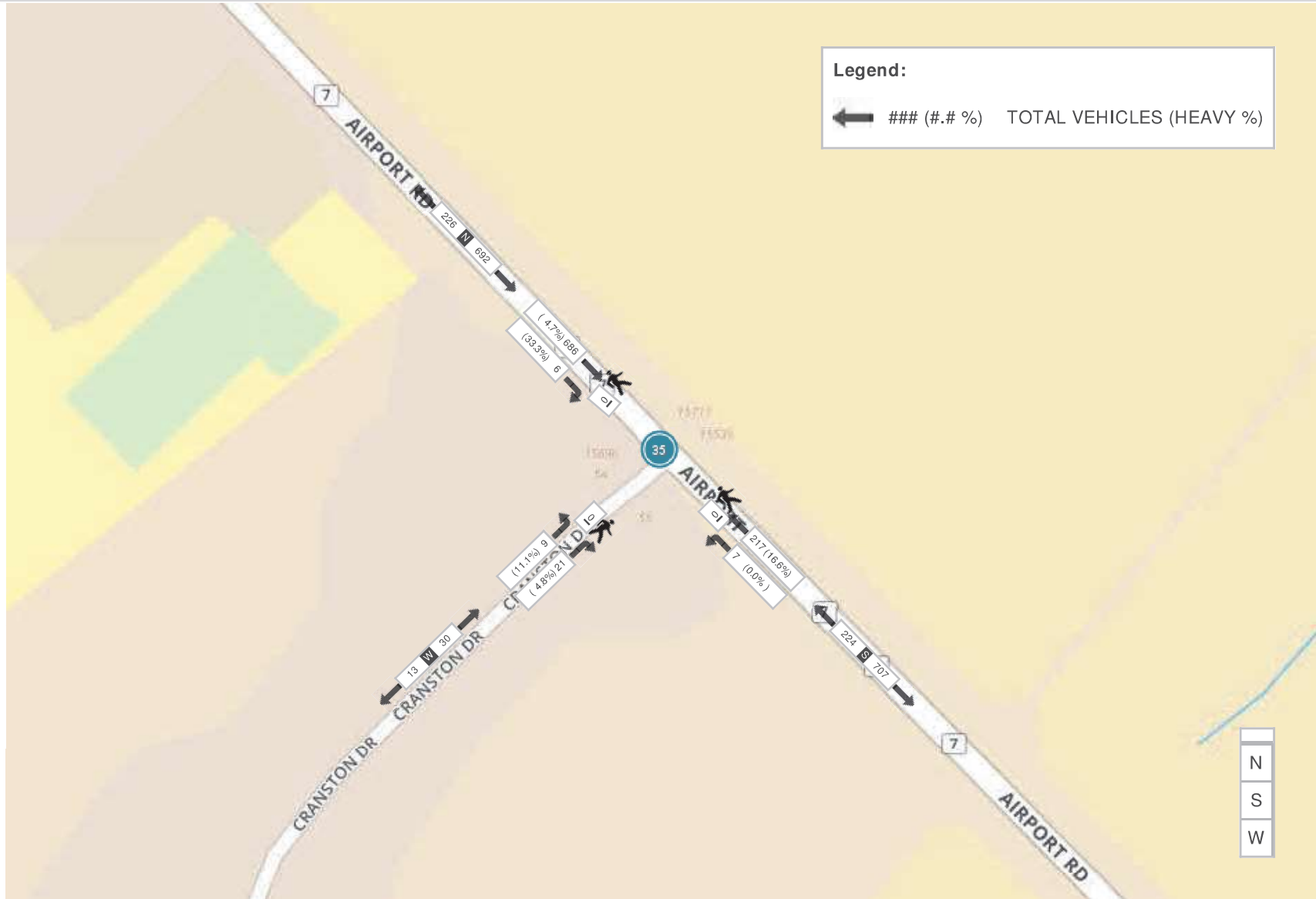
Start Time	Southbound AIRPORT RD					Northbound AIRPORT RD					Eastbound CRANSTON DR					Int. Total (15 min)
	Thru	Right	U-Turn	Peds	Approach Total	Left	Thru	U-Turn	Peds	Approach Total	Left	Right	U-Turn	Peds	Approach Total	
13:00:00	69	2	0	0	71	2	82	0	0	84	0	1	0	0	1	156
13:15:00	60	3	0	0	63	3	78	0	0	81	0	2	0	0	2	146
13:30:00	77	3	0	0	80	2	69	0	0	71	0	3	0	0	3	154
13:45:00	77	4	0	0	81	1	78	0	0	79	2	4	0	0	6	166
Grand Total	283	12	0	0	295	8	307	0	0	315	2	10	0	0	12	622
Approach%	95.9%	4.1%	0%		-	2.5%	97.5%	0%		-	16.7%	83.3%	0%		-	-
Totals %	45.5%	1.9%	0%		47.4%	1.3%	49.4%	0%		50.6%	0.3%	1.6%	0%		1.9%	-
PHF	0.92	0.75	0		0.91	0.67	0.94	0		0.94	0.25	0.63	0		0.5	-
Heavy	41	0	0		41	0	31	0		31	0	0	0		0	-
Heavy %	14.5%	0%	0%		13.9%	0%	10.1%	0%		9.8%	0%	0%	0%		0%	-
Lights	242	12	0		254	8	276	0		284	2	10	0		12	-
Lights %	85.5%	100%	0%		86.1%	100%	89.9%	0%		90.2%	100%	100%	0%		100%	-
Single-Unit Trucks	20	0	0		20	0	15	0		15	0	0	0		0	-
Single-Unit Trucks %	7.1%	0%	0%		6.8%	0%	4.9%	0%		4.8%	0%	0%	0%		0%	-
Buses	3	0	0		3	0	0	0		0	0	0	0		0	-
Buses %	1.1%	0%	0%		1%	0%	0%	0%		0%	0%	0%	0%		0%	-
Articulated Trucks	18	0	0		18	0	16	0		16	0	0	0		0	-
Articulated Trucks %	6.4%	0%	0%		6.1%	0%	5.2%	0%		5.1%	0%	0%	0%		0%	-



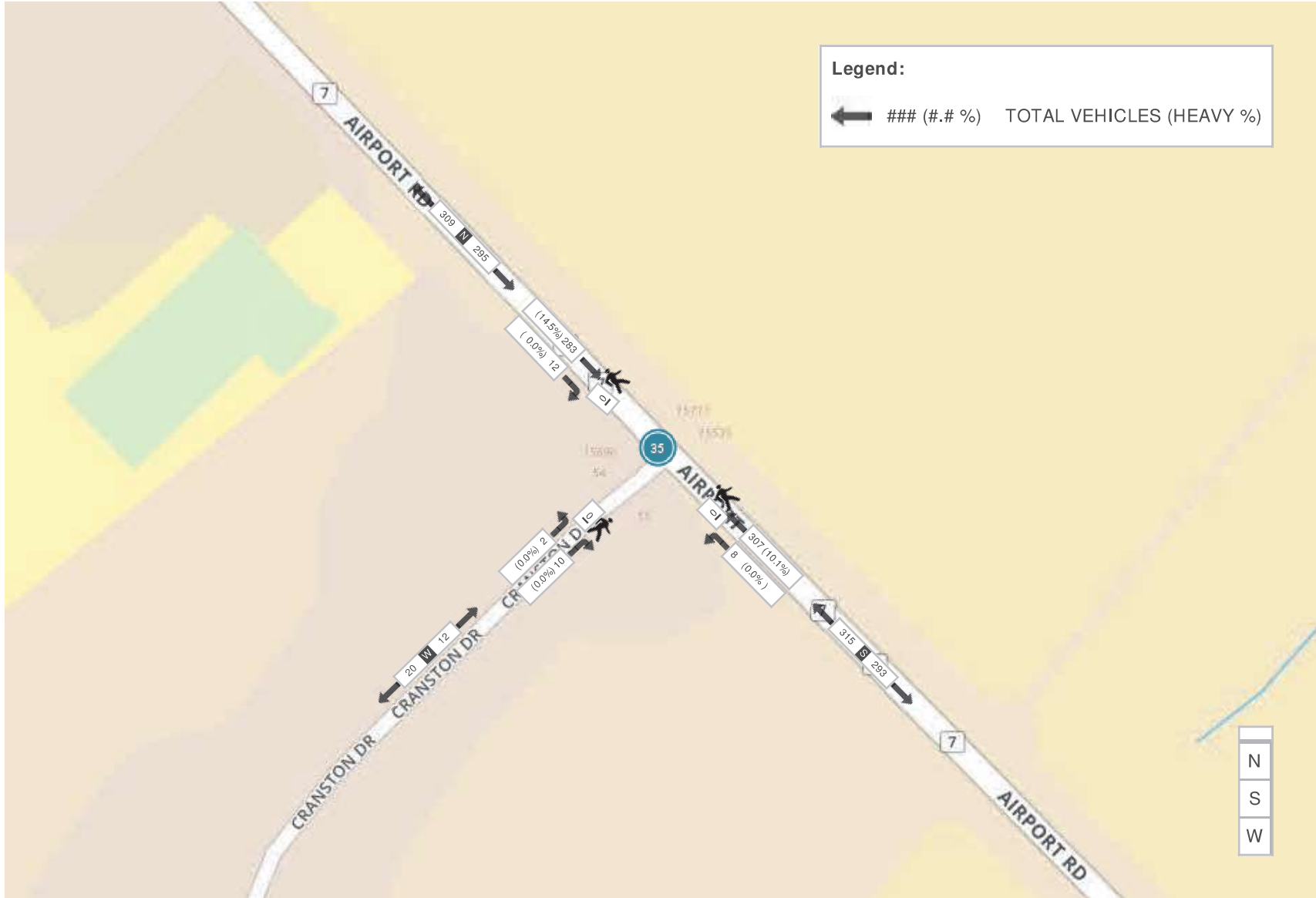
Peak Hour: 04:30 PM - 05:30 PM Weather: Light Rain (11.8 °C)

Start Time	Southbound AIRPORT RD					Northbound AIRPORT RD					Eastbound CRANSTON DR					Int. Total (15 min)
	Thru	Right	U-Turn	Peds	Approach Total	Left	Thru	U-Turn	Peds	Approach Total	Left	Right	U-Turn	Peds	Approach Total	
16:30:00	85	4	0	0	89	5	195	0	0	200	1	2	0	0	3	292
16:45:00	82	2	0	0	84	3	184	0	0	187	3	8	0	0	11	282
17:00:00	79	3	0	0	82	6	213	0	0	219	3	3	0	0	6	307
17:15:00	65	3	0	0	68	6	185	0	0	191	2	4	0	0	6	265
Grand Total	311	12	0	0	323	20	777	0	0	797	9	17	0	0	26	1146
Approach%	96.3%	3.7%	0%		-	2.5%	97.5%	0%		-	34.6%	65.4%	0%		-	-
Totals %	27.1%	1%	0%		28.2%	1.7%	67.8%	0%		69.5%	0.8%	1.5%	0%		2.3%	-
PHF	0.91	0.75	0		0.91	0.83	0.91	0		0.91	0.75	0.53	0		0.59	-
Heavy	31	0	0		31	1	26	0		27	0	1	0		1	-
Heavy %	10%	0%	0%		9.6%	5%	3.3%	0%		3.4%	0%	5.9%	0%		3.8%	-
Lights	280	12	0		292	19	751	0		770	9	16	0		25	-
Lights %	90%	100%	0%		90.4%	95%	96.7%	0%		96.6%	100%	94.1%	0%		96.2%	-
Single-Unit Trucks	20	0	0		20	1	12	0		13	0	1	0		1	-
Single-Unit Trucks %	6.4%	0%	0%		6.2%	5%	1.5%	0%		1.6%	0%	5.9%	0%		3.8%	-
Buses	3	0	0		3	0	1	0		1	0	0	0		0	-
Buses %	1%	0%	0%		0.9%	0%	0.1%	0%		0.1%	0%	0%	0%		0%	-
Articulated Trucks	8	0	0		8	0	13	0		13	0	0	0		0	-
Articulated Trucks %	2.6%	0%	0%		2.5%	0%	1.7%	0%		1.6%	0%	0%	0%		0%	-

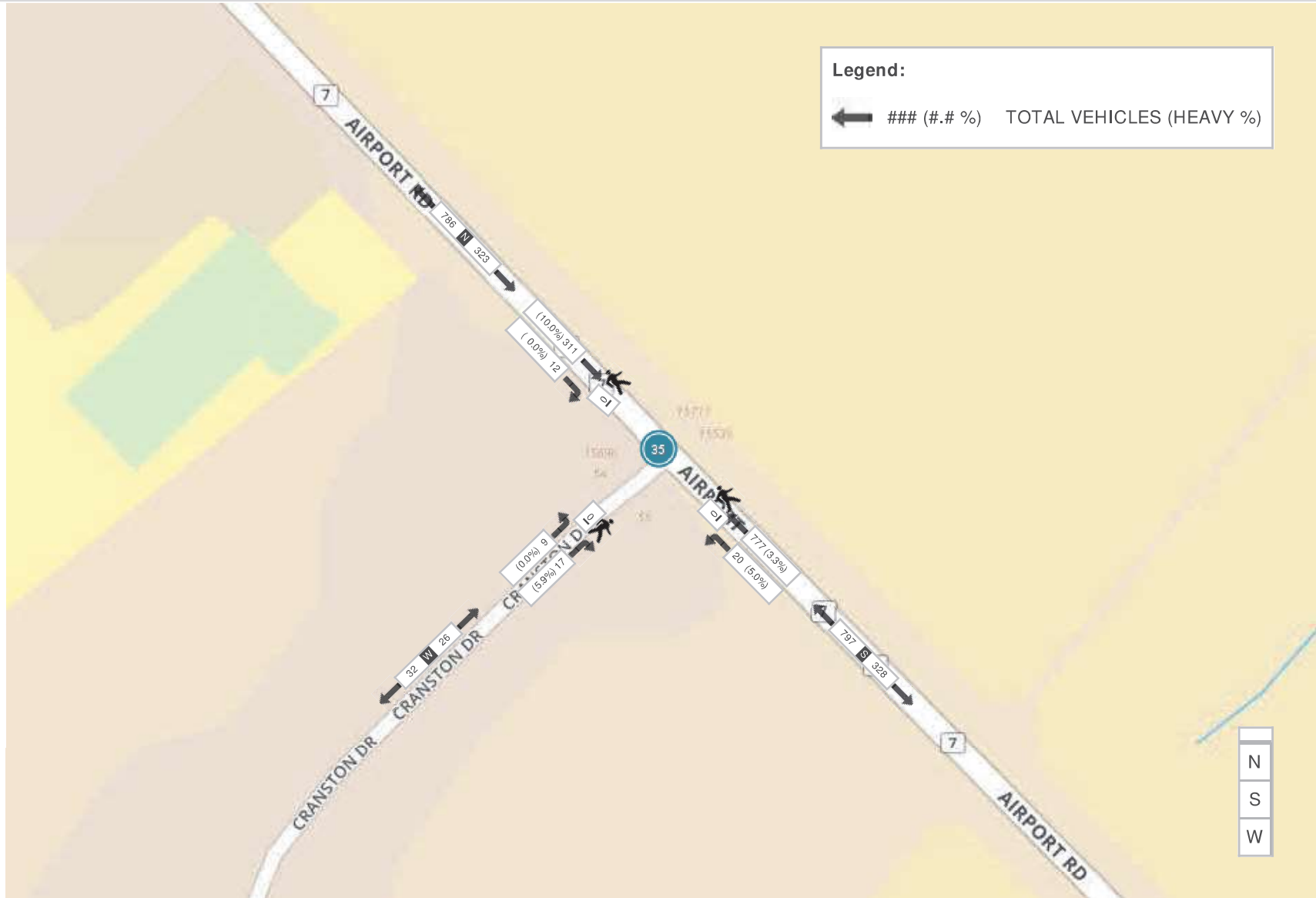
Peak Hour: 07:15 AM - 08:15 AM Weather: Light Rain Showers (11.7 °C)



Peak Hour: 01:00 PM - 02:00 PM Weather: Light Rain (12.9 °C)



Peak Hour: 04:30 PM - 05:30 PM Weather: Light Rain (11.8 °C)





Turning Movement Count (34 . AIRPORT RD & OLDE BASE LINE RD) CustID: 00727873 MioID: 358092

Start Time	Southbound AIRPORT RD					Northbound AIRPORT RD					Eastbound OLDE BASE LINE RD					Int. Total (15 min)	Int. Total (1 hr)
	Thru	Right	U-Turn	Peds	Approach Total	Left	Thru	U-Turn	Peds	Approach Total	Left	Right	U-Turn	Peds	Approach Total		
07:00:00	112	48	0	0	160	1	36	0	0	37	4	20	0	0	24	221	
07:15:00	128	56	0	0	184	6	21	0	0	27	12	28	0	0	40	251	
07:30:00	131	62	0	0	193	8	30	0	0	38	15	32	0	0	47	278	
07:45:00	127	46	0	0	173	6	41	0	0	47	36	35	0	0	71	291	1041
08:00:00	115	40	0	0	155	8	34	0	0	42	29	36	0	0	65	262	1082
08:15:00	104	47	0	0	151	7	35	0	0	42	28	23	0	0	51	244	1075
08:30:00	81	37	0	0	118	6	33	0	0	39	32	14	0	0	46	203	1000
08:45:00	77	29	0	0	106	2	54	0	0	56	35	22	0	0	57	219	928
BREAK																	
11:00:00	66	25	0	0	91	0	36	0	0	36	11	7	0	0	18	145	
11:15:00	58	17	0	0	75	4	41	0	0	45	18	5	0	0	23	143	
11:30:00	58	24	0	0	82	9	43	0	0	52	22	4	0	0	26	160	
11:45:00	61	17	0	0	78	9	42	0	0	51	14	5	0	0	19	148	596
12:00:00	56	14	0	0	70	12	33	0	0	45	24	12	0	0	36	151	602
12:15:00	70	30	0	0	100	3	42	0	0	45	21	11	0	0	32	177	636
12:30:00	54	14	0	0	68	5	44	0	1	49	16	6	0	0	22	139	615
12:45:00	36	15	0	0	51	12	58	0	0	70	16	7	0	0	23	144	611
13:00:00	50	16	0	0	66	10	50	0	0	60	28	7	0	0	35	161	621
13:15:00	51	11	0	0	62	8	61	0	1	69	19	3	0	0	22	153	597
13:30:00	59	14	0	0	73	7	47	0	0	54	28	5	0	0	33	160	618
13:45:00	72	19	0	0	91	10	57	0	0	67	24	6	0	0	30	188	662
BREAK																	
15:00:00	57	22	0	0	79	8	92	0	0	100	27	5	0	0	32	211	
15:15:00	53	26	0	0	79	13	95	0	0	108	35	7	0	0	42	229	



15:30:00	42	21	0	0	63	23	119	0	0	142	46	11	0	0	57	262	
15:45:00	42	20	0	0	62	13	102	0	0	115	47	9	0	0	56	233	935
16:00:00	56	26	0	0	82	10	106	0	0	116	69	3	0	0	72	270	994
16:15:00	59	28	0	0	87	21	120	0	0	141	47	3	0	0	50	278	1043
16:30:00	54	36	0	0	90	20	143	0	0	163	61	11	0	0	72	325	1106
16:45:00	65	29	0	0	94	19	139	0	0	158	54	7	0	0	61	313	1186
17:00:00	57	25	0	0	82	31	139	0	0	170	77	9	0	0	86	338	1254
17:15:00	43	27	0	0	70	28	124	0	0	152	63	7	0	0	70	292	1268
17:30:00	56	15	0	0	71	24	124	0	0	148	59	8	0	0	67	286	1229
17:45:00	45	29	0	0	74	13	114	0	0	127	67	6	0	0	73	274	1190
Grand Total	2195	885	0	0	3080	356	2255	0	2	2611	1084	374	0	0	1458	7149	-

Approach%	71.3%	28.7%	0%	-	13.6%	86.4%	0%	-	74.3%	25.7%	0%	-	-	-
Totals %	30.7%	12.4%	0%	43.1%	5%	31.5%	0%	36.5%	15.2%	5.2%	0%	20.4%	-	-
Heavy	288	20	0	-	10	217	0	-	26	15	0	-	-	-
Heavy %	13.1%	2.3%	0%	-	2.8%	9.6%	0%	-	2.4%	4%	0%	-	-	-
Bicycles	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Bicycle %	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Peak Hour: 07:15 AM - 08:15 AM Weather: Light Rain Showers (11.7 °C)

Start Time	Southbound AIRPORT RD					Northbound AIRPORT RD					Eastbound OLDE BASE LINE RD					Int. Total (15 min)
	Thru	Right	U-Turn	Peds	Approach Total	Left	Thru	U-Turn	Peds	Approach Total	Left	Right	U-Turn	Peds	Approach Total	
07:15:00	128	56	0	0	184	6	21	0	0	27	12	28	0	0	40	251
07:30:00	131	62	0	0	193	8	30	0	0	38	15	32	0	0	47	278
07:45:00	127	46	0	0	173	6	41	0	0	47	36	35	0	0	71	291
08:00:00	115	40	0	0	155	8	34	0	0	42	29	36	0	0	65	262
Grand Total	501	204	0	0	705	28	126	0	0	154	92	131	0	0	223	1082
Approach%	71.1%	28.9%	0%		-	18.2%	81.8%	0%		-	41.3%	58.7%	0%		-	-
Totals %	46.3%	18.9%	0%		65.2%	2.6%	11.6%	0%		14.2%	8.5%	12.1%	0%		20.6%	-
PHF	0.96	0.82	0		0.91	0.88	0.77	0		0.82	0.64	0.91	0		0.79	-
Heavy	32	3	0		35	1	29	0		30	7	8	0		15	-
Heavy %	6.4%	1.5%	0%		5%	3.6%	23%	0%		19.5%	7.6%	6.1%	0%		6.7%	-
Lights	469	201	0		670	27	97	0		124	85	123	0		208	-
Lights %	93.6%	98.5%	0%		95%	96.4%	77%	0%		80.5%	92.4%	93.9%	0%		93.3%	-
Single-Unit Trucks	11	1	0		12	0	9	0		9	1	4	0		5	-
Single-Unit Trucks %	2.2%	0.5%	0%		1.7%	0%	7.1%	0%		5.8%	1.1%	3.1%	0%		2.2%	-
Buses	5	2	0		7	1	4	0		5	6	4	0		10	-
Buses %	1%	1%	0%		1%	3.6%	3.2%	0%		3.2%	6.5%	3.1%	0%		4.5%	-
Articulated Trucks	16	0	0		16	0	16	0		16	0	0	0		0	-
Articulated Trucks %	3.2%	0%	0%		2.3%	0%	12.7%	0%		10.4%	0%	0%	0%		0%	-
Pedestrians	-	-	-	0	-	-	-	0		-	-	-	0		-	-
Pedestrians%	-	-	-	0%	-	-	-	0%		-	-	-	0%		-	-



Peak Hour: 01:00 PM - 02:00 PM Weather: Light Rain (12.9 °C)

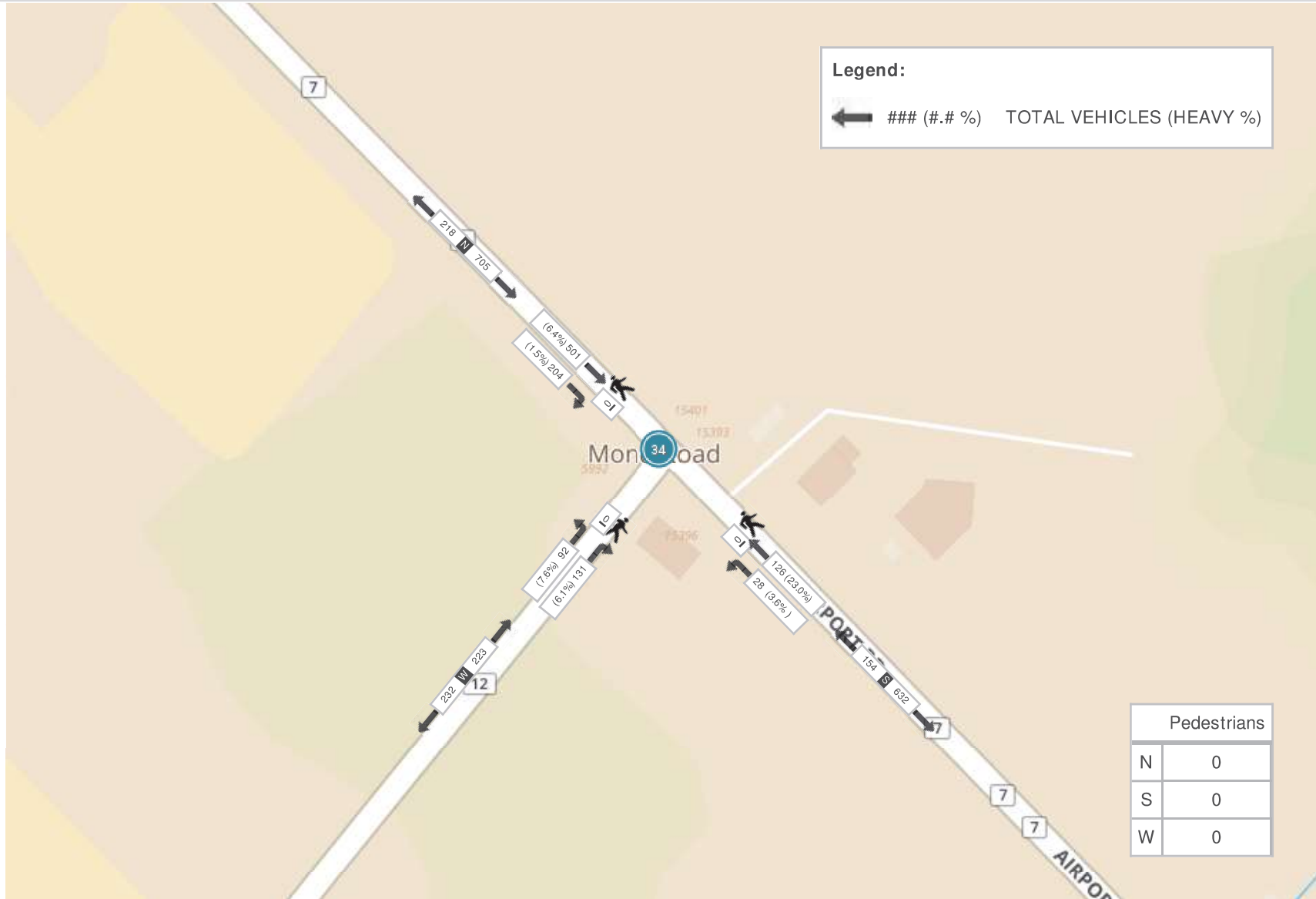
Start Time	Southbound AIRPORT RD					Northbound AIRPORT RD					Eastbound OLDE BASE LINE RD					Int. Total (15 min)
	Thru	Right	U-Turn	Peds	Approach Total	Left	Thru	U-Turn	Peds	Approach Total	Left	Right	U-Turn	Peds	Approach Total	
13:00:00	50	16	0	0	66	10	50	0	0	60	28	7	0	0	35	161
13:15:00	51	11	0	0	62	8	61	0	1	69	19	3	0	0	22	153
13:30:00	59	14	0	0	73	7	47	0	0	54	28	5	0	0	33	160
13:45:00	72	19	0	0	91	10	57	0	0	67	24	6	0	0	30	188
Grand Total	232	60	0	0	292	35	215	0	1	250	99	21	0	0	120	662
Approach%	79.5%	20.5%	0%		-	14%	86%	0%		-	82.5%	17.5%	0%		-	-
Totals %	35%	9.1%	0%		44.1%	5.3%	32.5%	0%		37.8%	15%	3.2%	0%		18.1%	-
PHF	0.81	0.79	0		0.8	0.88	0.88	0		0.91	0.88	0.75	0		0.86	-
Heavy	38	2	0		40	1	28	0		29	3	1	0		4	-
Heavy %	16.4%	3.3%	0%		13.7%	2.9%	13%	0%		11.6%	3%	4.8%	0%		3.3%	-
Lights	194	58	0		252	34	187	0		221	96	20	0		116	-
Lights %	83.6%	96.7%	0%		86.3%	97.1%	87%	0%		88.4%	97%	95.2%	0%		96.7%	-
Single-Unit Trucks	18	1	0		19	1	11	0		12	0	1	0		1	-
Single-Unit Trucks %	7.8%	1.7%	0%		6.5%	2.9%	5.1%	0%		4.8%	0%	4.8%	0%		0.8%	-
Buses	2	1	0		3	0	1	0		1	3	0	0		3	-
Buses %	0.9%	1.7%	0%		1%	0%	0.5%	0%		0.4%	3%	0%	0%		2.5%	-
Articulated Trucks	18	0	0		18	0	16	0		16	0	0	0		0	-
Articulated Trucks %	7.8%	0%	0%		6.2%	0%	7.4%	0%		6.4%	0%	0%	0%		0%	-
Pedestrians	-	-	-	0	-	-	-	-	1	-	-	-	-	0	-	-
Pedestrians%	-	-	-	0%	-	-	-	-	100%	-	-	-	-	0%	-	-



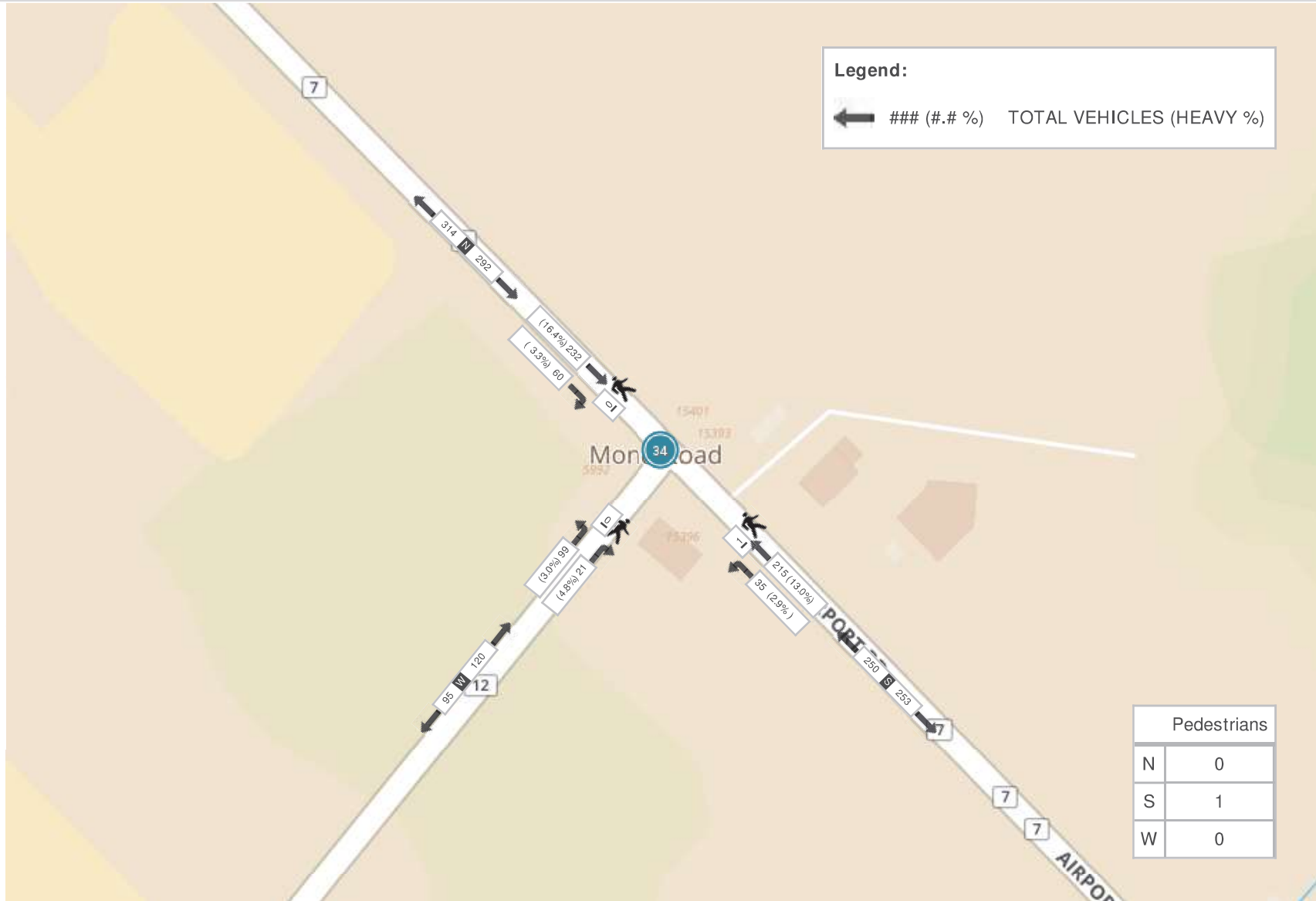
Peak Hour: 04:30 PM - 05:30 PM Weather: Light Rain (11.8 °C)

Start Time	Southbound AIRPORT RD					Northbound AIRPORT RD					Eastbound OLDE BASE LINE RD					Int. Total (15 min)
	Thru	Right	U-Turn	Peds	Approach Total	Left	Thru	U-Turn	Peds	Approach Total	Left	Right	U-Turn	Peds	Approach Total	
16:30:00	54	36	0	0	90	20	143	0	0	163	61	11	0	0	72	325
16:45:00	65	29	0	0	94	19	139	0	0	158	54	7	0	0	61	313
17:00:00	57	25	0	0	82	31	139	0	0	170	77	9	0	0	86	338
17:15:00	43	27	0	0	70	28	124	0	0	152	63	7	0	0	70	292
Grand Total	219	117	0	0	336	98	545	0	0	643	255	34	0	0	289	1268
Approach%	65.2%	34.8%	0%		-	15.2%	84.8%	0%		-	88.2%	11.8%	0%		-	-
Totals %	17.3%	9.2%	0%		26.5%	7.7%	43%	0%		50.7%	20.1%	2.7%	0%		22.8%	-
PHF	0.84	0.81	0		0.89	0.79	0.95	0		0.95	0.83	0.77	0		0.84	-
Heavy	33	1	0		34	1	25	0		26	3	3	0		6	-
Heavy %	15.1%	0.9%	0%		10.1%	1%	4.6%	0%		4%	1.2%	8.8%	0%		2.1%	-
Lights	186	116	0		302	97	520	0		617	252	31	0		283	-
Lights %	84.9%	99.1%	0%		89.9%	99%	95.4%	0%		96%	98.8%	91.2%	0%		97.9%	-
Single-Unit Trucks	21	1	0		22	1	11	0		12	2	1	0		3	-
Single-Unit Trucks %	9.6%	0.9%	0%		6.5%	1%	2%	0%		1.9%	0.8%	2.9%	0%		1%	-
Buses	3	0	0		3	0	0	0		0	1	2	0		3	-
Buses %	1.4%	0%	0%		0.9%	0%	0%	0%		0%	0.4%	5.9%	0%		1%	-
Articulated Trucks	9	0	0		9	0	14	0		14	0	0	0		0	-
Articulated Trucks %	4.1%	0%	0%		2.7%	0%	2.6%	0%		2.2%	0%	0%	0%		0%	-
Pedestrians	-	-	-	0	-	-	-	0		-	-	-	0		-	-
Pedestrians%	-	-	-	0%	-	-	-	0%		-	-	-	0%		-	-

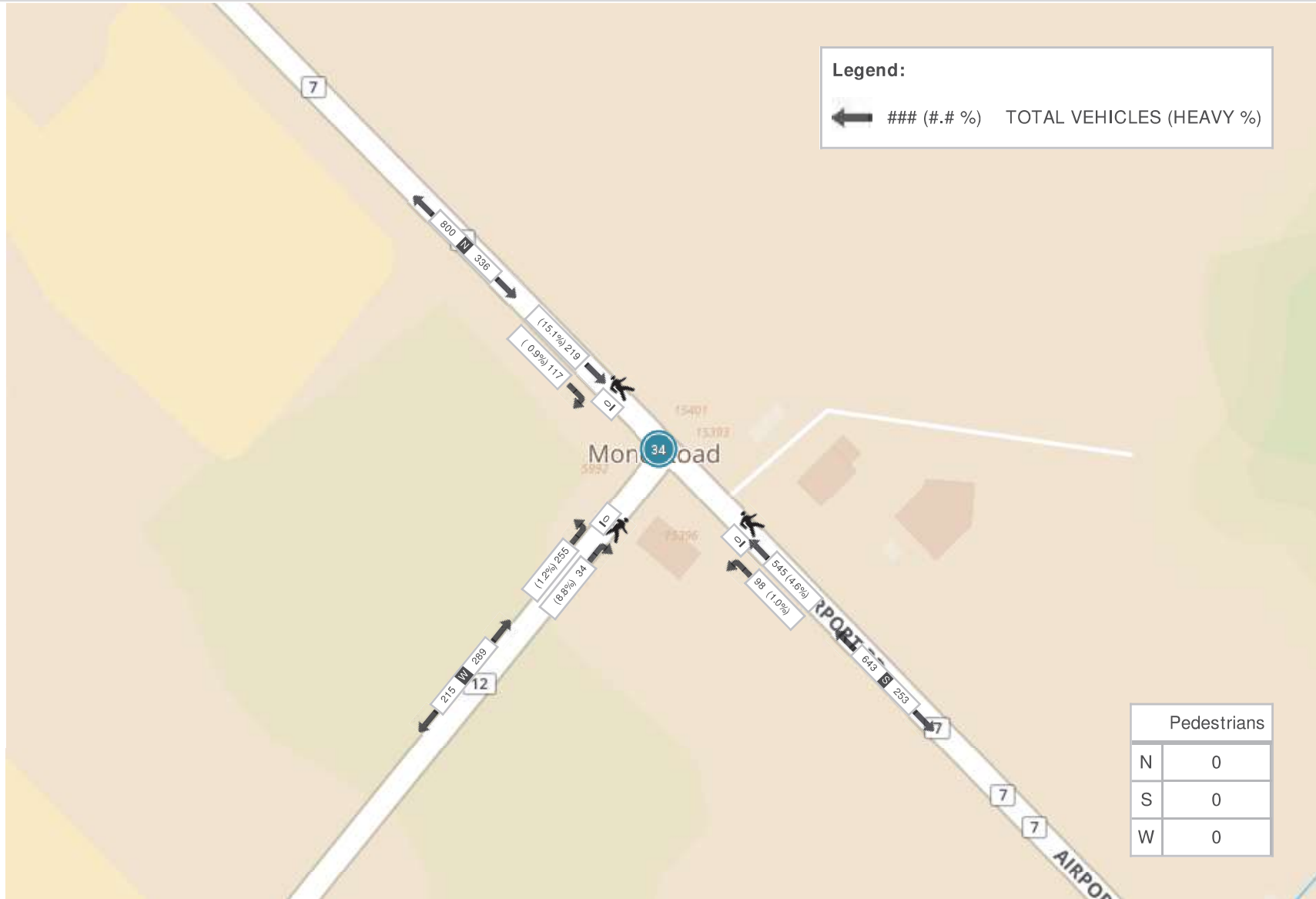
Peak Hour: 07:15 AM - 08:15 AM Weather: Light Rain Showers (11.7 °C)



Peak Hour: 01:00 PM - 02:00 PM Weather: Light Rain (12.9 °C)



Peak Hour: 04:30 PM - 05:30 PM Weather: Light Rain (11.8 °C)





Turning Movement Count (33 . AIRPORT RD & BOSTON MILLS RD / CASTLEDERG SIDE RD) CustID: 00726646 MioID: 358091

Start Time	Southbound AIRPORT RD						Westbound CASTLEDERG SIDE RD						Northbound AIRPORT RD						Eastbound BOSTON MILLS RD						Int. Total (15 min)	Int. Total (1 hr)
	Left	Thru	Right	U-Turn	Peds	Approach Total	Left	Thru	Right	U-Turn	Peds	Approach Total	Left	Thru	Right	U-Turn	Peds	Approach Total	Left	Thru	Right	U-Turn	Peds	Approach Total		
07:00:00	7	131	0	0	0	138	6	0	2	0	0	8	0	33	3	0	0	36	0	0	0	0	0	0	182	
07:15:00	13	154	0	0	0	167	12	0	1	0	0	13	1	25	0	0	0	26	0	0	1	0	0	1	207	
07:30:00	8	155	0	0	0	163	17	0	11	0	0	28	0	32	2	0	0	34	0	1	1	0	0	2	227	
07:45:00	14	151	0	0	0	165	14	2	5	0	0	21	1	45	0	0	0	46	0	0	0	0	0	0	232	848
08:00:00	11	139	0	0	0	150	12	0	6	0	0	18	0	35	2	0	0	37	0	0	0	0	0	0	205	871
08:15:00	17	117	0	0	0	134	7	2	2	0	0	11	0	33	3	0	0	36	0	0	0	0	0	0	181	845
08:30:00	5	94	0	0	0	99	8	0	3	0	0	11	0	32	2	0	0	34	1	0	0	0	0	1	145	763
08:45:00	13	83	0	0	0	96	3	0	5	0	0	8	0	60	0	0	0	60	1	0	0	0	0	1	165	696
BREAK																										
11:00:00	6	65	1	0	0	72	1	0	7	0	0	8	1	27	3	0	0	31	0	0	0	0	0	0	111	
11:15:00	4	50	0	0	0	54	1	1	6	0	0	8	0	32	2	0	0	34	1	0	0	0	0	1	97	
11:30:00	8	54	0	0	0	62	1	0	11	0	0	12	0	42	2	0	0	44	1	2	0	0	0	3	121	
11:45:00	3	55	0	0	0	58	3	0	4	0	0	7	0	43	1	0	0	44	0	0	2	0	0	2	111	440
12:00:00	10	61	0	0	0	71	1	0	7	0	0	8	1	35	2	0	0	38	0	1	0	0	0	1	118	447
12:15:00	10	64	0	0	0	74	4	0	7	0	0	11	1	39	1	0	0	41	0	0	1	0	0	1	127	477
12:30:00	2	58	0	0	0	60	1	1	7	0	0	9	0	44	0	0	0	44	0	0	0	0	0	0	113	469
12:45:00	4	39	0	0	0	43	2	0	9	0	0	11	0	55	1	0	0	56	0	1	0	0	0	1	111	469
13:00:00	6	49	0	0	0	55	1	0	8	0	0	9	0	61	1	0	0	62	0	0	0	0	0	0	126	477
13:15:00	3	49	0	0	0	52	4	0	8	0	0	12	0	55	2	0	0	57	0	0	0	0	0	0	121	471
13:30:00	8	59	0	0	0	67	1	2	5	0	0	8	0	46	3	0	0	49	0	1	0	0	0	1	125	483
13:45:00	6	76	0	0	0	82	3	0	8	0	0	11	0	55	3	0	0	58	0	0	0	0	0	0	151	523
BREAK																										
15:00:00	8	57	0	0	0	65	0	3	15	0	0	18	0	86	2	0	0	88	1	1	1	0	0	3	174	
15:15:00	5	53	0	0	0	58	3	0	17	0	0	20	0	94	6	0	0	100	1	1	1	0	0	3	181	
15:30:00	3	49	1	0	0	53	2	1	19	0	0	22	0	118	11	0	0	129	0	0	0	0	0	0	204	
15:45:00	5	39	0	0	0	44	4	1	9	0	0	14	0	111	9	0	0	120	1	1	0	0	0	2	180	739
16:00:00	4	50	1	0	0	55	3	0	13	0	0	16	0	104	6	0	0	110	0	0	0	0	0	0	181	746
16:15:00	7	42	0	0	0	49	2	0	8	0	0	10	0	126	8	0	0	134	0	0	0	0	0	0	193	758
16:30:00	9	52	0	0	0	61	3	0	18	0	0	21	1	149	10	0	0	160	1	0	0	0	0	1	243	797
16:45:00	9	47	0	0	0	56	1	1	4	0	0	6	0	154	6	0	0	160	1	0	0	0	0	1	223	840
17:00:00	9	58	1	0	0	68	2	1	15	0	0	18	0	149	8	0	0	157	0	0	0	0	0	0	243	902
17:15:00	6	43	0	0	0	49	2	0	16	0	0	18	1	136	7	0	0	144	0	1	0	0	0	1	212	921



17:30:00	5	54	0	0	0	59	7	0	14	0	0	21	2	124	8	0	0	134	0	2	0	0	0	2	216	894
17:45:00	5	37	1	0	0	43	1	1	8	0	0	10	0	117	4	0	0	121	0	1	0	0	0	1	175	846
Grand Total	233	2284	5	0	0	2522	132	16	278	0	0	426	9	2297	118	0	0	2424	9	13	7	0	0	29	5401	-
Approach%	9.2%	90.6%	0.2%	0%	-	31%	3.8%	65.3%	0%	-	0.4%	94.8%	4.9%	0%	-	31%	44.8%	24.1%	0%	-	-	-	-	-	-	-
Totals %	4.3%	42.3%	0.1%	0%	46.7%	2.4%	0.3%	5.1%	0%	7.9%	0.2%	42.5%	2.2%	0%	44.9%	0.2%	0.2%	0.1%	0%	0.5%	-	-	-	-	-	-
Heavy	13	298	1	0	-	2	1	12	0	-	0	214	3	0	-	3	1	1	0	-	-	-	-	-	-	-
Heavy %	5.6%	13%	20%	0%	-	1.5%	6.3%	4.3%	0%	-	0%	9.3%	2.5%	0%	-	33.3%	7.7%	14.3%	0%	-	-	-	-	-	-	-
Bicycles	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Bicycle %	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Peak Hour: 07:15 AM - 08:15 AM Weather: Light Rain Showers (11.7 °C)

Start Time	Southbound AIRPORT RD						Westbound CASTLEDERG SIDE RD						Northbound AIRPORT RD						Eastbound BOSTON MILLS RD						Int. Total (15 min)
	Left	Thru	Right	U-Turn	Peds	Approach Total	Left	Thru	Right	U-Turn	Peds	Approach Total	Left	Thru	Right	U-Turn	Peds	Approach Total	Left	Thru	Right	U-Turn	Peds	Approach Total	
07:15:00	13	154	0	0	0	167	12	0	1	0	0	13	1	25	0	0	0	26	0	0	1	0	0	1	207
07:30:00	8	155	0	0	0	163	17	0	11	0	0	28	0	32	2	0	0	34	0	1	1	0	0	2	227
07:45:00	14	151	0	0	0	165	14	2	5	0	0	21	1	45	0	0	0	46	0	0	0	0	0	0	232
08:00:00	11	139	0	0	0	150	12	0	6	0	0	18	0	35	2	0	0	37	0	0	0	0	0	0	205
Grand Total	46	599	0	0	0	645	55	2	23	0	0	80	2	137	4	0	0	143	0	1	2	0	0	3	871
Approach%	7.1%	92.9%	0%	0%	-	-	68.8%	2.5%	28.8%	0%	-	-	1.4%	95.8%	2.8%	0%	-	0%	33.3%	66.7%	0%	-	-	-	-
Totals %	5.3%	68.8%	0%	0%	74.1%	74.1%	6.3%	0.2%	2.6%	0%	9.2%	9.2%	0.2%	15.7%	0.5%	0%	16.4%	16.4%	0%	0.1%	0.2%	0%	0.3%	0.3%	-
PHF	0.82	0.97	0	0	0.97	0.97	0.81	0.25	0.52	0	0.71	0.71	0.5	0.76	0.5	0	0.78	0.78	0	0.25	0.5	0	0.38	0.38	-
Heavy	3	37	0	0	40	40	1	0	0	0	1	1	0	31	0	0	31	31	0	0	1	0	1	1	-
Heavy %	6.5%	6.2%	0%	0%	6.2%	6.2%	1.8%	0%	0%	0%	1.3%	1.3%	0%	22.6%	0%	0%	21.7%	21.7%	0%	0%	50%	0%	33.3%	33.3%	-
Lights	43	562	0	0	605	605	54	2	23	0	79	79	2	106	4	0	112	112	0	1	1	0	2	2	-
Lights %	93.5%	93.8%	0%	0%	93.8%	93.8%	98.2%	100%	100%	0%	98.8%	98.8%	100%	77.4%	100%	0%	78.3%	78.3%	0%	100%	50%	0%	66.7%	66.7%	-
Single-Unit Trucks	0	12	0	0	12	12	1	0	0	0	1	1	0	9	0	0	9	9	0	0	0	0	0	0	-
Single-Unit Trucks %	0%	2%	0%	0%	1.9%	1.9%	1.8%	0%	0%	0%	1.3%	1.3%	0%	6.6%	0%	0%	6.3%	6.3%	0%	0%	0%	0%	0%	0%	-
Buses	3	7	0	0	10	10	0	0	0	0	0	0	0	6	0	0	6	6	0	0	1	0	1	1	-
Buses %	6.5%	1.2%	0%	0%	1.6%	1.6%	0%	0%	0%	0%	0%	0%	0%	4.4%	0%	0%	4.2%	4.2%	0%	0%	50%	0%	33.3%	33.3%	-
Articulated Trucks	0	18	0	0	18	18	0	0	0	0	0	0	0	16	0	0	16	16	0	0	0	0	0	0	-
Articulated Trucks %	0%	3%	0%	0%	2.8%	2.8%	0%	0%	0%	0%	0%	0%	0%	11.7%	0%	0%	11.2%	11.2%	0%	0%	0%	0%	0%	0%	-



Peak Hour: 01:00 PM - 02:00 PM Weather: Light Rain (12.9 °C)

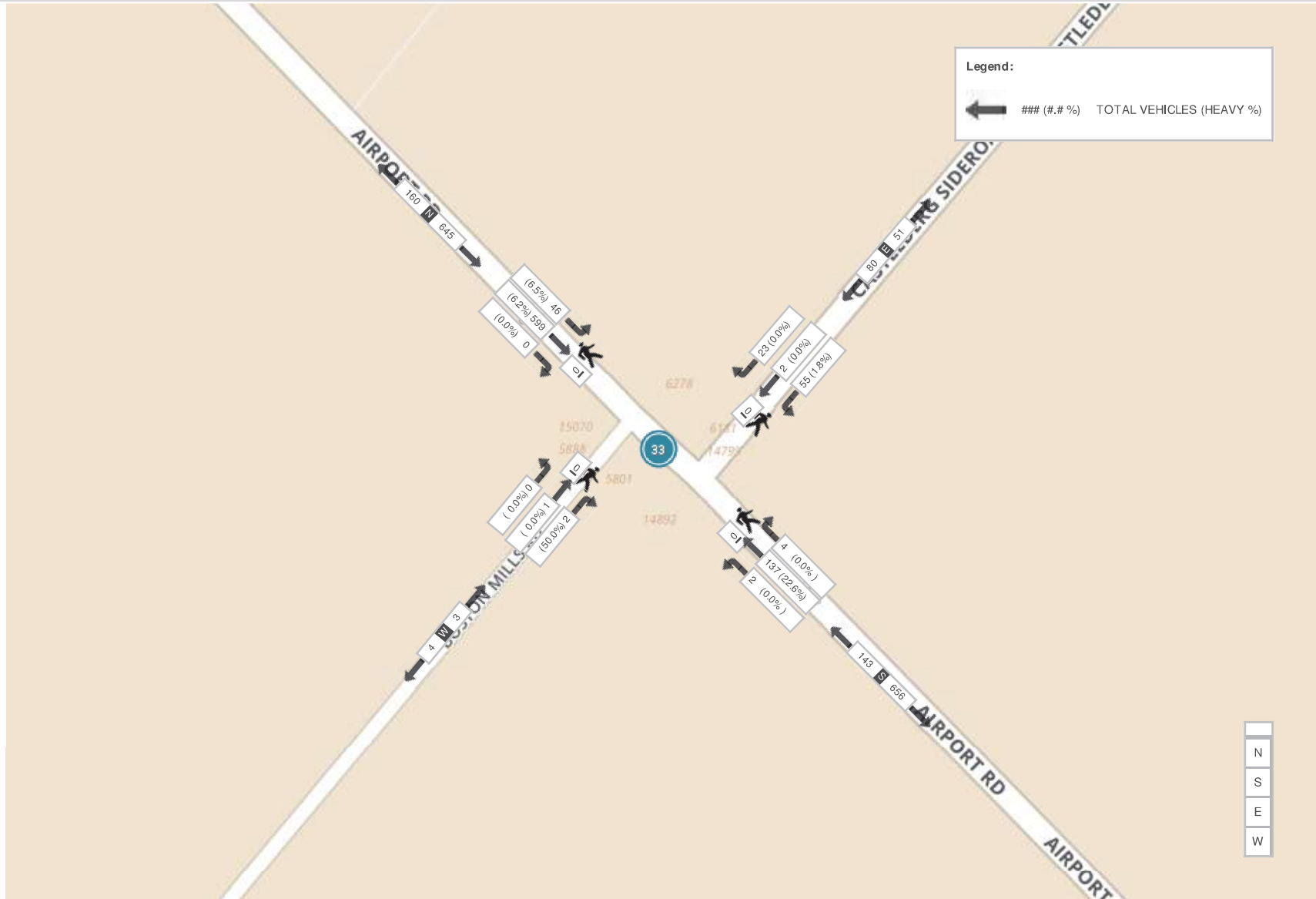
Start Time	Southbound AIRPORT RD						Westbound CASTLEDERG SIDE RD						Northbound AIRPORT RD						Eastbound BOSTON MILLS RD						Int. Total (15 min)
	Left	Thru	Right	U-Turn	Peds	Approach Total	Left	Thru	Right	U-Turn	Peds	Approach Total	Left	Thru	Right	U-Turn	Peds	Approach Total	Left	Thru	Right	U-Turn	Peds	Approach Total	
13:00:00	6	49	0	0	0	55	1	0	8	0	0	9	0	61	1	0	0	62	0	0	0	0	0	0	126
13:15:00	3	49	0	0	0	52	4	0	8	0	0	12	0	55	2	0	0	57	0	0	0	0	0	0	121
13:30:00	8	59	0	0	0	67	1	2	5	0	0	8	0	46	3	0	0	49	0	1	0	0	0	1	125
13:45:00	6	76	0	0	0	82	3	0	8	0	0	11	0	55	3	0	0	58	0	0	0	0	0	0	151
Grand Total	23	233	0	0	0	256	9	2	29	0	0	40	0	217	9	0	0	226	0	1	0	0	0	1	523
Approach%	9%	91%	0%	0%	-	-	22.5%	5%	72.5%	0%	-	-	0%	96%	4%	0%	-	0%	100%	0%	0%	-	-	-	-
Totals %	4.4%	44.6%	0%	0%	48.9%	1.7%	0.4%	5.5%	0%	7.6%	0%	41.5%	1.7%	0%	43.2%	0%	0.2%	0%	0%	0.2%	-	-	-	-	
PHF	0.72	0.77	0	0	0.78	0.56	0.25	0.91	0	0.83	0	0.89	0.75	0	0.91	0	0.25	0	0	0.25	-	-	-	-	
Heavy	3	41	0	0	44	0	0	2	0	2	0	28	0	0	28	0	0	0	0	0	0	0	0	-	
Heavy %	13%	17.6%	0%	0%	17.2%	0%	0%	6.9%	0%	5%	0%	12.9%	0%	0%	12.4%	0%	0%	0%	0%	0%	0%	0%	0%	-	
Lights	20	192	0	0	212	9	2	27	0	38	0	189	9	0	198	0	1	0	0	1	-	-	-	-	
Lights %	87%	82.4%	0%	0%	82.8%	100%	100%	93.1%	0%	95%	0%	87.1%	100%	0%	87.6%	0%	100%	0%	0%	100%	-	-	-	-	
Single-Unit Trucks	3	23	0	0	26	0	0	2	0	2	0	12	0	0	12	0	0	0	0	0	0	0	0	-	
Single-Unit Trucks %	13%	9.9%	0%	0%	10.2%	0%	0%	6.9%	0%	5%	0%	5.5%	0%	0%	5.3%	0%	0%	0%	0%	0%	0%	0%	0%	-	
Buses	0	2	0	0	2	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	0	0	0	-	
Buses %	0%	0.9%	0%	0%	0.8%	0%	0%	0%	0%	0%	0%	0.5%	0%	0%	0.4%	0%	0%	0%	0%	0%	0%	0%	0%	-	
Articulated Trucks	0	16	0	0	16	0	0	0	0	0	0	15	0	0	15	0	0	0	0	0	0	0	0	-	
Articulated Trucks %	0%	6.9%	0%	0%	6.3%	0%	0%	0%	0%	0%	0%	6.9%	0%	0%	6.6%	0%	0%	0%	0%	0%	0%	0%	0%	-	



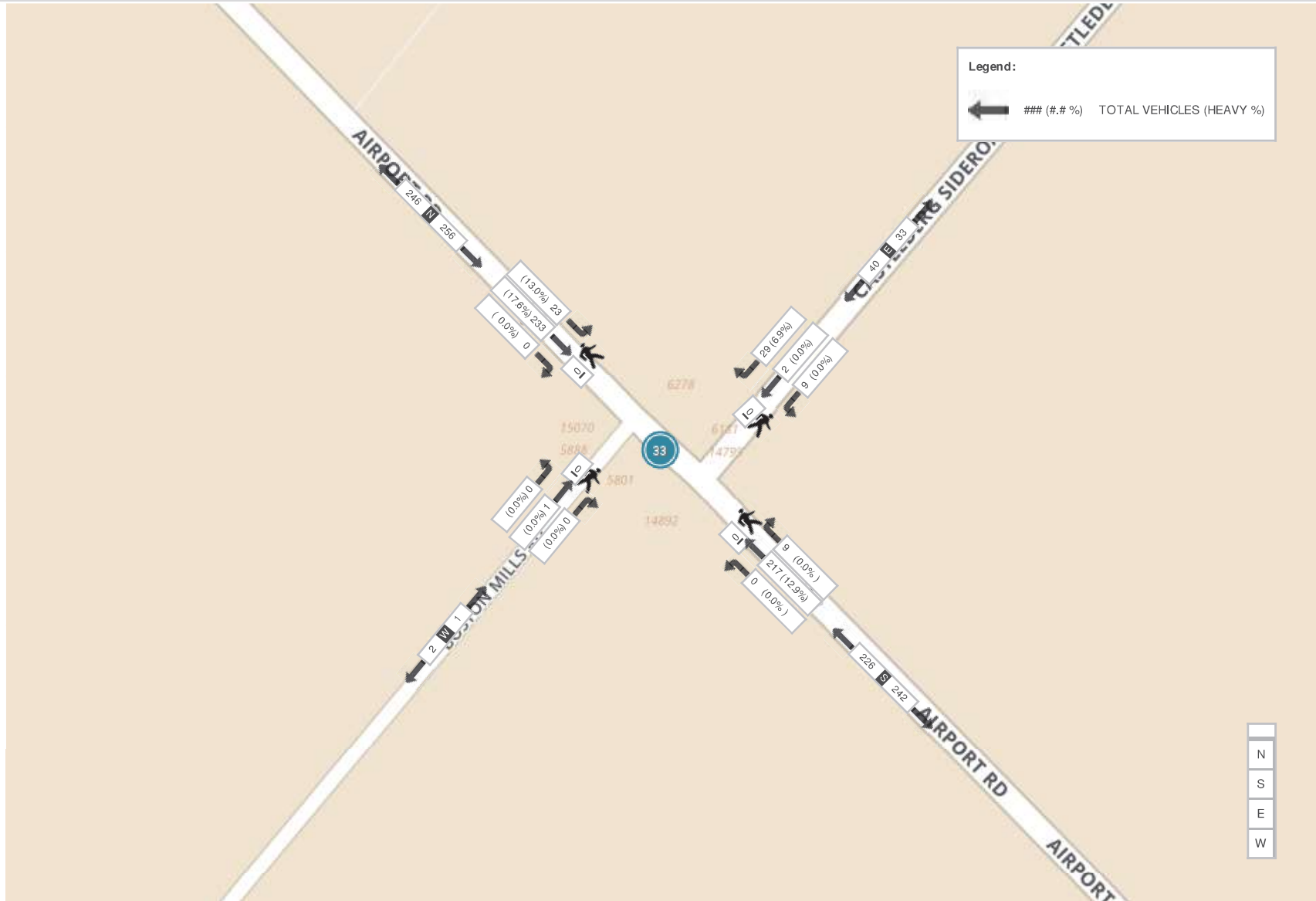
Peak Hour: 04:30 PM - 05:30 PM Weather: Light Rain (11.8 °C)

Start Time	Southbound AIRPORT RD						Westbound CASTLEDERG SIDE RD						Northbound AIRPORT RD						Eastbound BOSTON MILLS RD						Int. Total (15 min)
	Left	Thru	Right	U-Turn	Peds	Approach Total	Left	Thru	Right	U-Turn	Peds	Approach Total	Left	Thru	Right	U-Turn	Peds	Approach Total	Left	Thru	Right	U-Turn	Peds	Approach Total	
16:30:00	9	52	0	0	0	61	3	0	18	0	0	21	1	149	10	0	0	160	1	0	0	0	0	1	243
16:45:00	9	47	0	0	0	56	1	1	4	0	0	6	0	154	6	0	0	160	1	0	0	0	0	1	223
17:00:00	9	58	1	0	0	68	2	1	15	0	0	18	0	149	8	0	0	157	0	0	0	0	0	0	243
17:15:00	6	43	0	0	0	49	2	0	16	0	0	18	1	136	7	0	0	144	0	1	0	0	0	1	212
Grand Total	33	200	1	0	0	234	8	2	53	0	0	63	2	588	31	0	0	621	2	1	0	0	0	3	921
Approach%	14.1%	85.5%	0.4%	0%	-	-	12.7%	3.2%	84.1%	0%	-	-	0.3%	94.7%	5%	0%	-	66.7%	33.3%	0%	0%	-	-	-	
Totals %	3.6%	21.7%	0.1%	0%	25.4%	6.8%	0.9%	0.2%	5.8%	0%	6.8%	0.2%	63.8%	3.4%	0%	67.4%	0.2%	0.1%	0%	0%	0.3%	-	-		
PHF	0.92	0.86	0.25	0	0.86	0.67	0.5	0.74	0	0.75	0.5	0.95	0.78	0	0.97	0.5	0.25	0	0	0.75	-	-			
Heavy	2	32	0	0	34	0	1	1	0	2	0	25	1	0	26	0	0	0	0	0	0	-	-		
Heavy %	6.1%	16%	0%	0%	14.5%	0%	50%	1.9%	0%	3.2%	0%	4.3%	3.2%	0%	4.2%	0%	0%	0%	0%	0%	0%	-	-		
Lights	31	168	1	0	200	8	1	52	0	61	2	563	30	0	595	2	1	0	0	3	-	-			
Lights %	93.9%	84%	100%	0%	85.5%	100%	50%	98.1%	0%	96.8%	100%	95.7%	96.8%	0%	95.8%	100%	100%	0%	0%	100%	-	-			
Single-Unit Trucks	1	19	0	0	20	0	1	1	0	2	0	13	1	0	14	0	0	0	0	0	-	-			
Single-Unit Trucks %	3%	9.5%	0%	0%	8.5%	0%	50%	1.9%	0%	3.2%	0%	2.2%	3.2%	0%	2.3%	0%	0%	0%	0%	0%	-	-			
Buses	1	4	0	0	5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	-	-			
Buses %	3%	2%	0%	0%	2.1%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	-	-			
Articulated Trucks	0	9	0	0	9	0	0	0	0	0	0	12	0	0	12	0	0	0	0	0	-	-			
Articulated Trucks %	0%	4.5%	0%	0%	3.8%	0%	0%	0%	0%	0%	0%	2%	0%	0%	1.9%	0%	0%	0%	0%	0%	-	-			

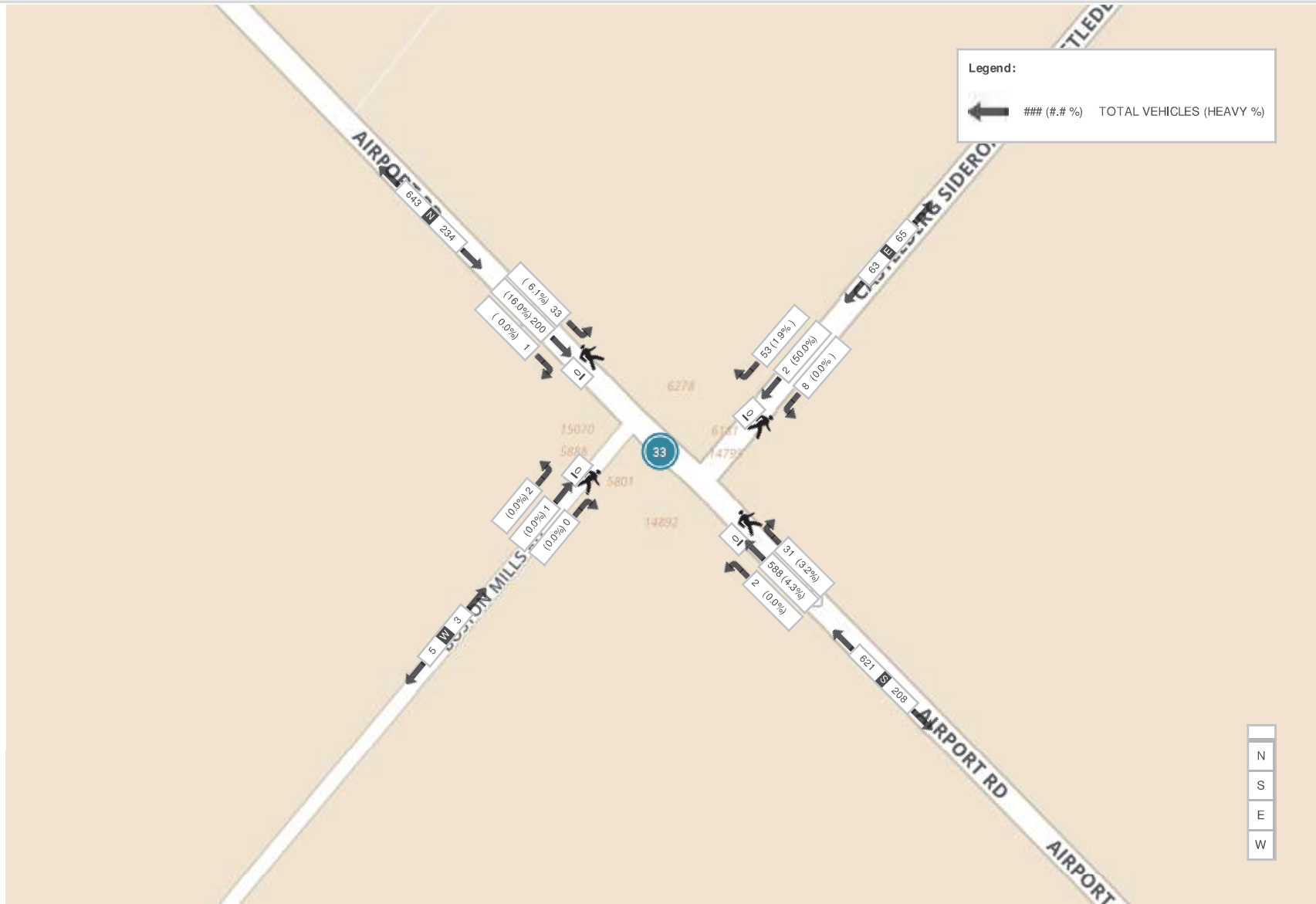
Peak Hour: 07:15 AM - 08:15 AM Weather: Light Rain Showers (11.7 °C)



Peak Hour: 01:00 PM - 02:00 PM Weather: Light Rain (12.9 °C)



Peak Hour: 04:30 PM - 05:30 PM Weather: Light Rain (11.8 °C)



TMC - Intersection Count Summary

Company name: Trans-Plan Inc.
Company address: 24 Ryerson Avenue, Suite 211, Toronto, Ontario, Canada
Company phone: (647) 931-7383

Site: 00723569
Location: Airport Road at King Street, Caledon
N/S Street: Airport Road
E/W Street: King Street
GPS Coordinates: 43.830639, -79.815892
Date: 06 April 2016
Day of week: Wednesday
Analyst(s): Doug Barr

VEHICLE TRAFFIC

Interval	SouthBound				WestBound				NorthBound				EastBound				Total
	Left	Thru	Right	B. Total	Left	Thru	Right	B. Total	Left	Thru	Right	B. Total	Left	Thru	Right	B. Total	
06/04/2016 07:00	14	108	5	127	18	87	3	108	2	16	5	23	4	41	11	56	314
06/04/2016 07:15	22	133	6	161	20	105	6	131	2	29	8	39	2	47	10	59	390
06/04/2016 07:30	24	129	15	168	36	115	4	155	1	21	3	25	3	65	18	86	434
06/04/2016 07:45	25	98	19	142	26	126	3	155	0	15	4	19	6	76	13	95	411
Hourly Total	85	468	45	598	100	433	16	549	5	81	20	106	15	229	52	296	1549
06/04/2016 08:00	27	97	8	132	23	110	1	134	0	20	3	23	4	49	17	70	359
06/04/2016 08:15	12	93	11	116	18	71	4	93	3	24	6	33	1	56	12	69	311
06/04/2016 08:30	21	58	9	88	22	55	8	85	1	34	6	41	3	36	6	45	259
06/04/2016 08:45	23	48	8	79	9	40	10	59	3	30	6	39	5	40	8	53	230
Hourly Total	83	296	36	415	72	276	23	371	7	108	21	136	13	181	43	237	1159
06/04/2016 09:00	1	2	0	3	1	5	1	7	0	1	0	1	0	1	0	1	12
06/04/2016 09:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Hourly Total	1	2	0	3	1	5	1	7	0	1	0	1	0	1	0	1	12
Grand Total	169	766	81	1016	173	714	40	927	12	190	41	243	28	411	95	534	2720
Approach %	17	75	8	100	19	77	4	100	5	78	17	100	5	77	18	100	-
Total %	6	28	3	37	6	26	1	33	0	7	2	9	1	15	3	19	-

AM Peak Hour 7:15 AM - 8:15 AM

Vehicle Total	98	457	48	603	105	456	14	575	3	85	18	106	15	237	58	310	1594
Car	95	430	45	570	101	441	9	551	1	75	14	90	11	224	56	291	1502
Truck	3	27	3	33	4	15	5	24	2	10	4	16	4	13	2	19	92
Bicycle	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Interval	SouthBound				WestBound				NorthBound				EastBound				Total
	Left	Thru	Right	B. Total	Left	Thru	Right	B. Total	Left	Thru	Right	B. Total	Left	Thru	Right	B. Total	
06/04/2016 11:00	7	32	4	43	3	26	5	34	2	15	6	23	9	16	5	30	130
06/04/2016 11:15	12	37	1	50	9	22	2	33	2	38	6	46	4	20	0	24	153
06/04/2016 11:30	15	43	3	61	10	19	11	40	1	17	8	26	4	15	1	20	147
06/04/2016 11:45	13	27	7	47	6	15	7	28	2	27	3	32	7	17	3	27	134
Hourly Total	47	139	15	201	28	82	25	135	7	97	23	127	24	68	9	101	564
06/04/2016 12:00	6	37	7	50	5	17	6	28	3	25	4	32	5	21	1	27	137
06/04/2016 12:15	5	34	3	42	6	19	9	34	4	16	2	22	2	22	2	26	124
06/04/2016 12:30	10	32	8	50	5	30	12	47	4	26	2	32	4	25	3	32	161
06/04/2016 12:45	5	22	5	32	3	24	6	33	1	26	1	28	3	22	1	26	119
Hourly Total	26	125	23	174	19	90	33	142	12	93	9	114	14	90	7	111	541
06/04/2016 13:00	8	27	6	41	6	18	7	31	4	33	7	44	3	17	1	21	137
06/04/2016 13:15	11	42	8	61	5	23	9	37	1	30	5	36	6	23	4	33	167
06/04/2016 13:30	15	44	7	66	4	24	5	33	5	33	9	47	5	18	4	27	173
06/04/2016 13:45	11	28	4	43	8	27	6	41	0	37	9	46	2	33	1	36	166
Hourly Total	45	141	25	211	23	92	27	142	10	133	30	173	16	91	10	117	643
06/04/2016 14:00	0	2	0	2	0	2	0	2	0	0	2	2	0	0	0	0	6
06/04/2016 14:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Hourly Total	0	2	0	2	0	2	0	2	0	0	2	2	0	0	0	0	6
Grand Total	118	407	63	588	70	266	85	421	29	323	64	416	54	249	26	329	1754
Approach %	20	69	11	100	17	63	20	100	7	78	15	100	16	76	8	100	-
Total %	7	23	4	34	4	15	5	24	2	18	4	24	3	14	1	18	-

Midday Peak Hour 1:00 PM - 2:00 PM

Vehicle Total	45	141	25	211	23	92	27	142	10	133	30	173	16	91	10	117	643
Car	42	118	20	180	16	81	25	122	8	109	23	140	14	74	6	94	536
Truck	3	23	5	31	7	11	2	20	2	24	7	33	2	17	4	23	107
Bicycle	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Interval	SouthBound				WestBound				NorthBound				EastBound				Total
	Left	Thru	Right	B. Total	Left	Thru	Right	B. Total	Left	Thru	Right	B. Total	Left	Thru	Right	B. Total	
06/04/2016 15:00	3	22	4	29	5	38	15	58	8	58	18	84	12	45	5	62	233
06/04/2016 15:15	7	29	8	44	2	25	11	38	5	76	15	96	2	55	0	57	235
06/04/2016 15:30	11	37	4	52	8	58	20	86	7	47	14	68	10	55	1	66	272
06/04/2016 15:45	9	15	6	30	4	62	13	79	8	81	10	99	21	74	5	100	308
Hourly Total	30	103	22	155	19	183	59	261	28	262	57	347	45	229	11	285	1048
06/04/2016 16:00	10	34	6	50	14	45	20	79	6	70	16	92	9	90	5	104	325
06/04/2016 16:15	13	32	8	53	6	63	21	90	8	94	19	121	8	103	6	117	381
06/04/2016 16:30	10	29	4	43	10	52	21	83	8	94	16	118	15	85	0	100	344
06/04/2016 16:45	11	17	4	32	9	65	23	97	14	108	19	141	10	94	4	108	378
Hourly Total	44	112	22	178	39	225	85	349	36	366	70	472	42	372	15	429	1428
06/04/2016 17:00	5	30	5	40	11	63	27	101	12	107	16	135	11	84	4	99	375
06/04/2016 17:15	7	29	8	44	4	82	31	117	7	80	11	98	4	107	2	113	372
06/04/2016 17:30	7	31	6	44	4	78	21	103	9	88	15	112	13	93	3	109	368
06/04/2016 17:45	9	21	4	34	8	46	20	74	10	87	11	108	11	88	0	99	315
Hourly Total	28	111	23	162	27	269	99	395	38	362	53	453	39	372	9	420	1430
06/04/2016 18:00	0	0	0	0	0	3	0	3	0	1	0	1	0	2	0	2	6
06/04/2016 18:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Hourly Total	0	0	0	0	0	3	0	3	0	1	0	1	0	2	0	2	6
Grand Total	102	326	67	495	85	680	243	1008	102	991	180	1273	126	975	35	1136	3912
Approach %	21	66	14	101	8	67	24	99	8	78	14	100	11	86	3	100	-
Total %	3	8	2	13	2	17	6	25	3	25	5	33	3	25	1	29	-

PM Peak Hour 4:45 PM - 5:45 PM

Vehicle Total	30	107	23	160	28	288	102	418	42	383	61	486	38	378	13	429	1493
Car	27	92	21	140	26	285	101	412	40	376	61	477	38	375	10	423	1452
Truck	3	15	2	20	2	3	1	6	2	7	0	9	0	3	3	6	41
Bicycle	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

PEDESTRIAN CROSSING

No pedestrian crossing for AM.

06/04/2016 11:00:00	0	0	0	0	0	0	0	0	0	0	0	0	0
06/04/2016 11:15:00	0	0	0	0	0	0	0	0	0	0	0	0	0
06/04/2016 11:30:00	0	0	0	0	0	0	0	0	0	0	0	0	0
06/04/2016 11:45:00	0	0	0	0	0	0	0	0	0	0	0	0	0
Hourly Total	0	0	0	0	0	0	0	0	0	0	0	0	0
06/04/2016 12:00:00	0	0	0	0	0	0	0	0	0	0	0	0	0
06/04/2016 12:15:00	0	0	0	0	0	0	0	0	0	0	0	0	0
06/04/2016 12:30:00	0	0	0	0	0	0	0	0	0	0	0	0	0
06/04/2016 12:45:00	0	0	0	0	0	0	0	0	0	0	0	0	0
Hourly Total	0	0	0	0	0	0	0	0	0	0	0	0	0
06/04/2016 13:00:00	0	0	0	0	0	0	0	0	0	0	1	1	1
06/04/2016 13:15:00	0	0	0	0	0	0	0	0	0	0	0	0	0
06/04/2016 13:30:00	0	0	0	0	0	0	0	0	0	0	0	0	0
06/04/2016 13:45:00	0	0	0	0	0	0	0	0	0	0	0	0	0
Hourly Total	0	0	0	0	0	0	0	0	0	0	1	1	1
06/04/2016 14:00:00	0	0	0	0	0	0	0	0	0	0	0	0	0
06/04/2016 14:15:00	0	0	0	0	0	0	0	0	0	0	0	0	0
Hourly Total	0	0	0	0	0	0	0	0	0	0	0	0	0
Grand Total	0	0	0	0	0	0	0	0	0	0	1	1	1

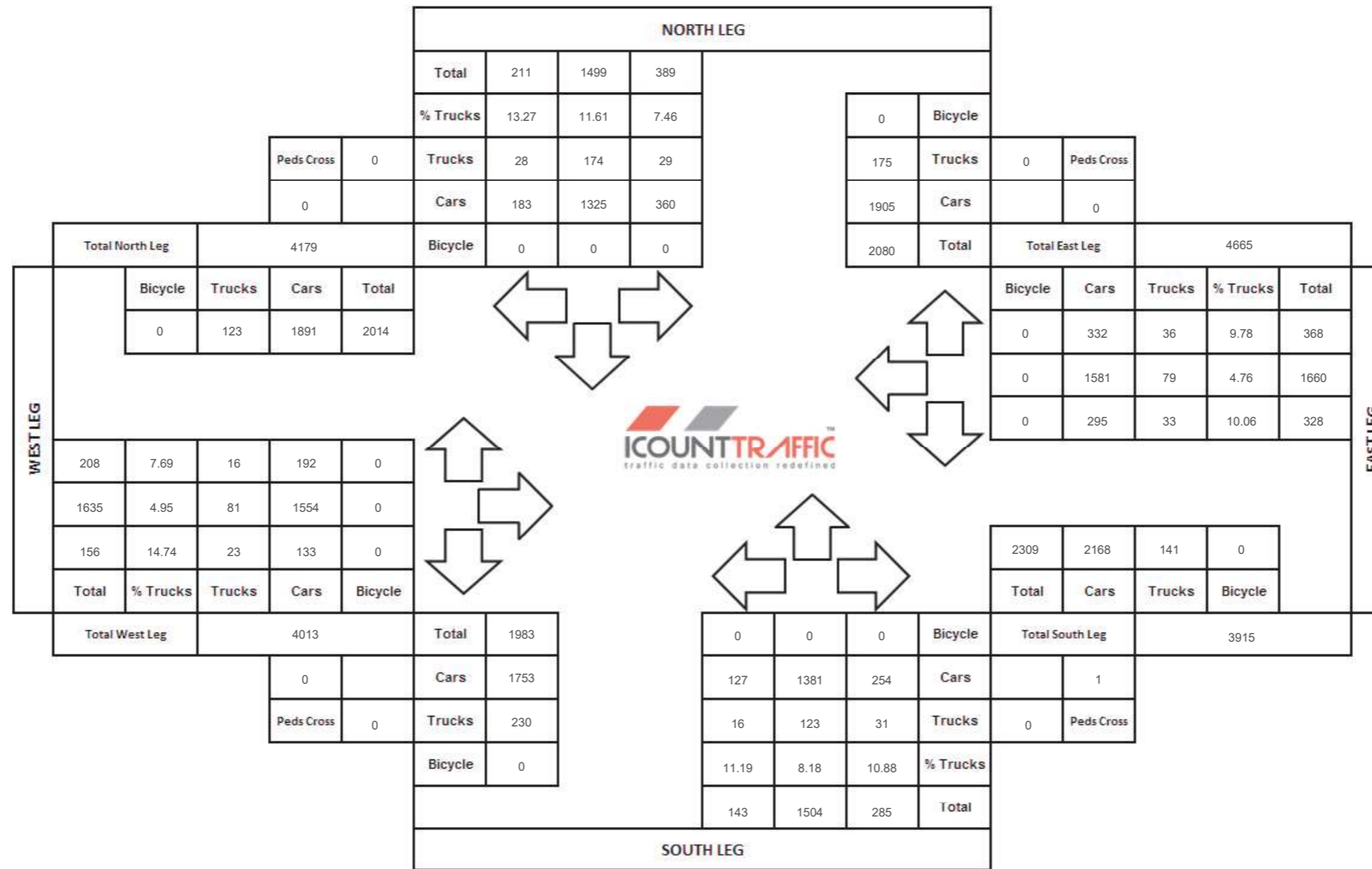
Midday Peak Hour 12:15 PM - 1:15 PM

Pedestrians	0	0	0	0	0	0	0	0	0	0	1	1	1
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No pedestrian crossing for PM.

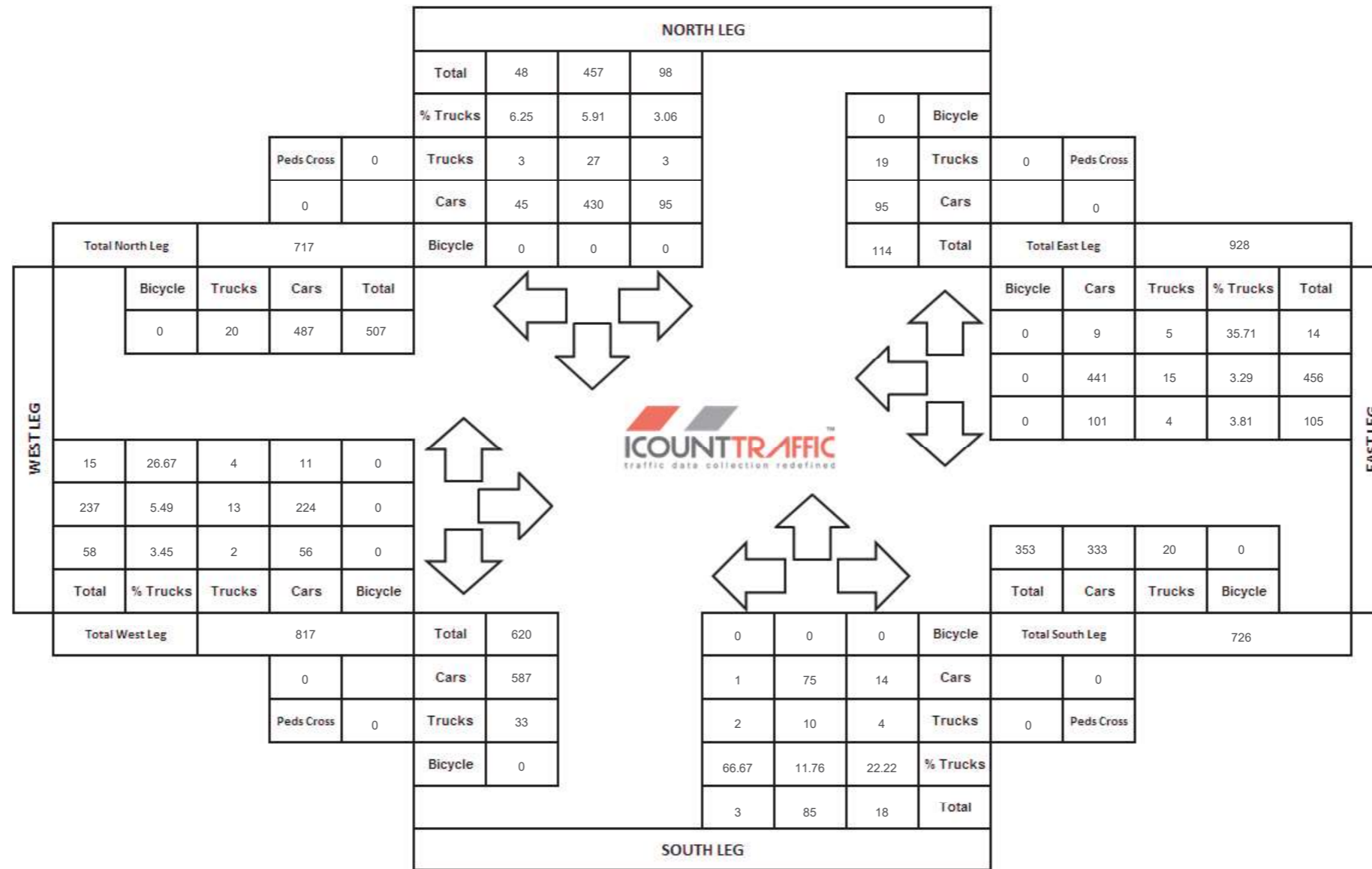
TOTAL TMC COUNT DIAGRAM

City:	Caledon	Weather:	
North/South Street:	Airport Road	Count Date:	06/04/2016
East/West Street:	King Street	Count Period:	AM, Noon, PM
GPS Coordinates:	43.830639, -79.815892	Peak Period:	7:15 AM - 8:15 AM, 1:00 PM - 2:00 PM, 4:45 PM - 5:45 PM
Site Number:	00723569	Major Road:	Airport Road
Control:	Signalized	Surveyor:	Doug Barr



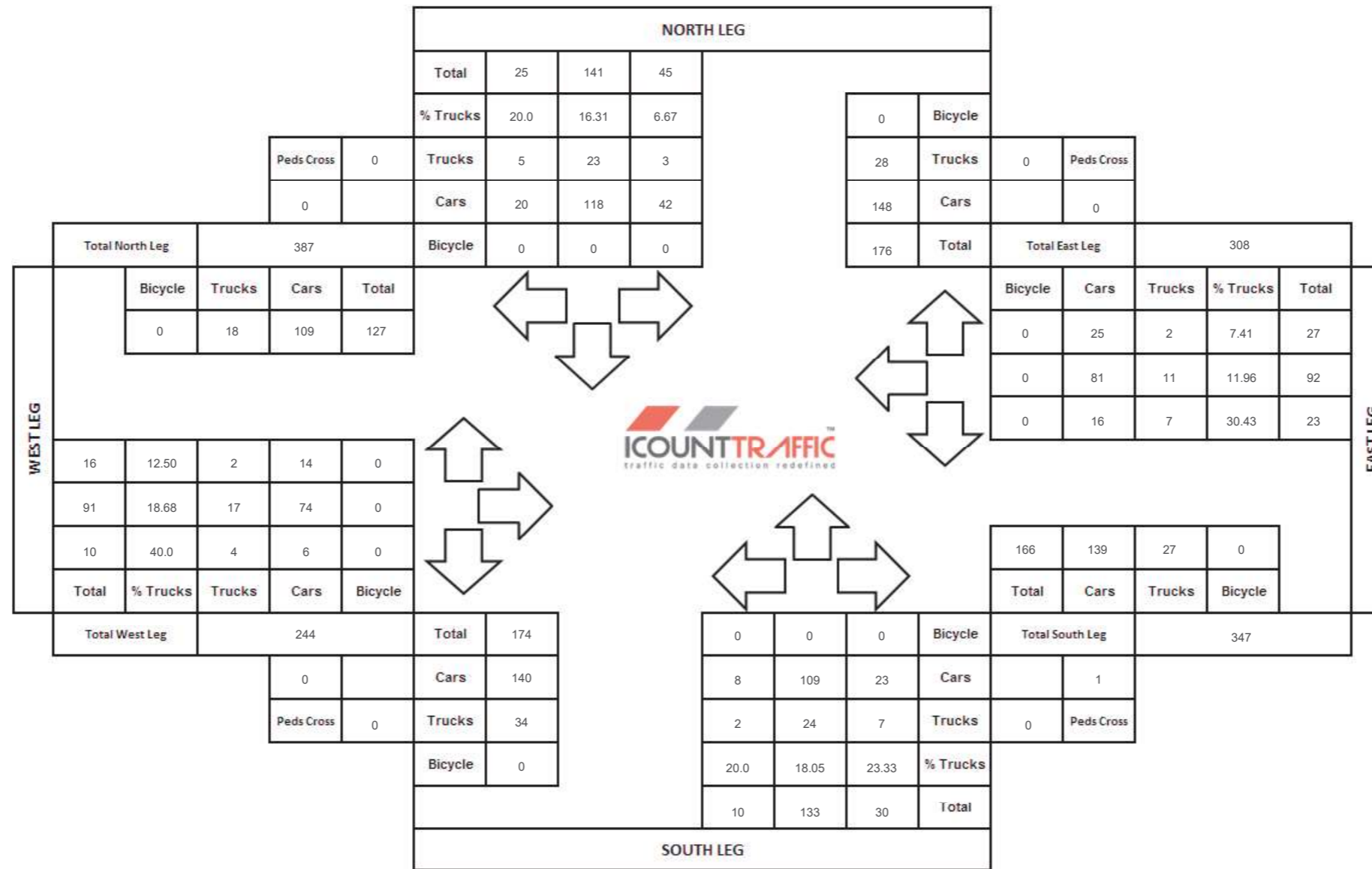
AM Peak Hour Count Diagram

City:	Caledon	Weather:	
North/South Street:	Airport Road	Count Date:	06/04/2016
East/West Street:	King Street	Count Period:	AM
GPS Coordinates:	43.830639, -79.815892	Peak Period:	7:15 AM - 8:15 AM
Site Number:	00723569	Major Road:	Airport Road
Control:	Signalized	Surveyor:	Doug Barr



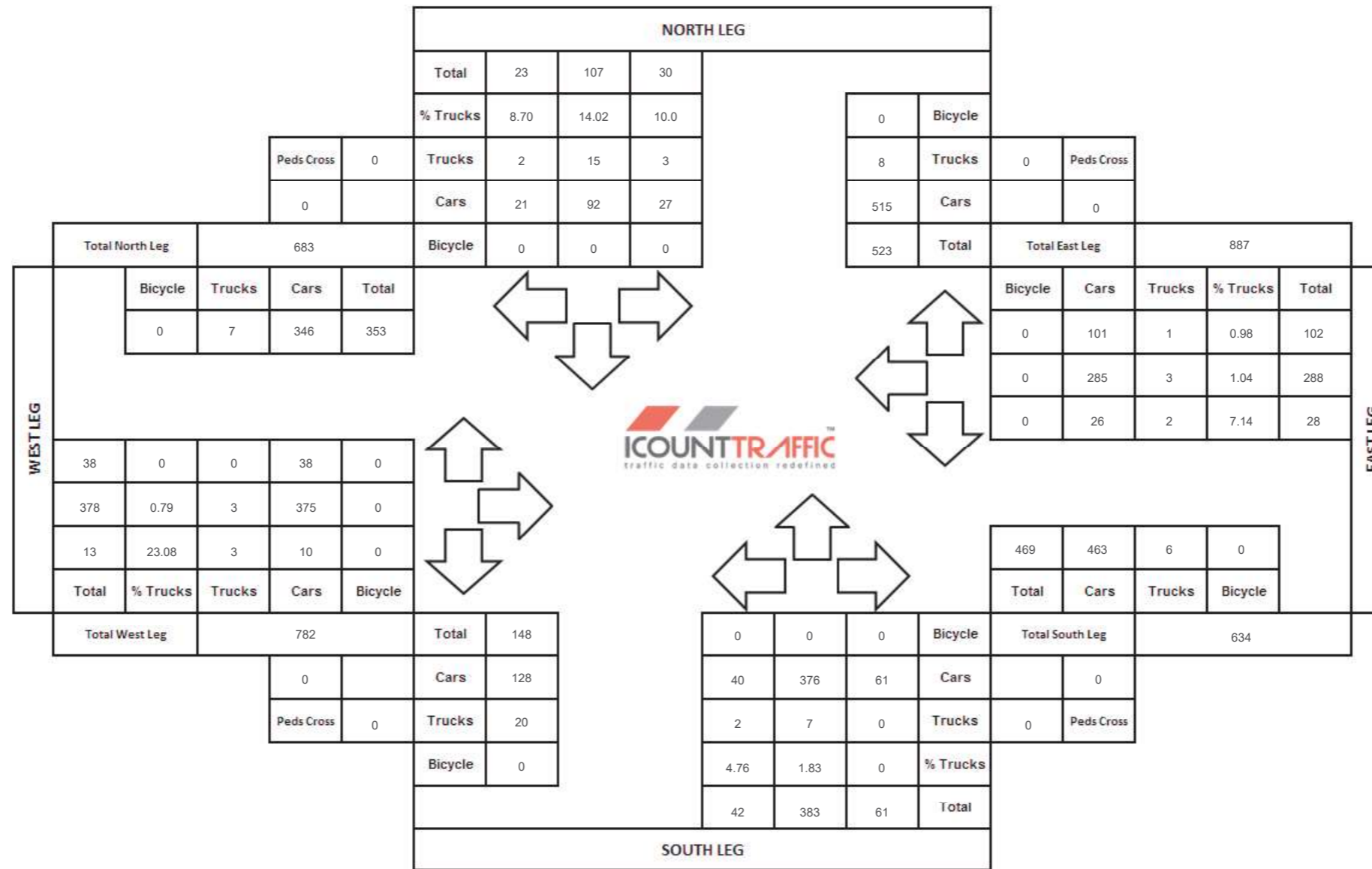
Noon Peak Hour Count Diagram

City:	Caledon	Weather:	
North/South Street:	Airport Road	Count Date:	06/04/2016
East/West Street:	King Street	Count Period:	Noon
GPS Coordinates:	43.830639, -79.815892	Peak Period:	1:00 PM - 2:00 PM
Site Number:	00723569	Major Road:	Airport Road
Control:	Signalized	Surveyor:	Doug Barr

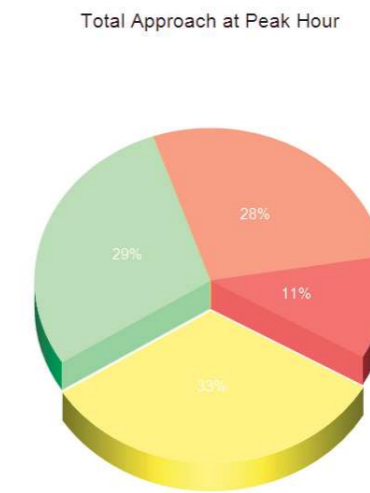
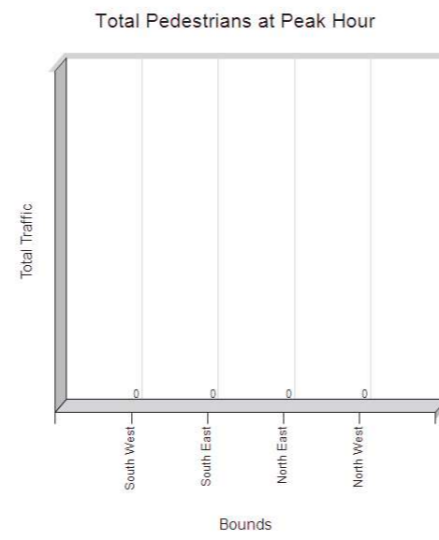
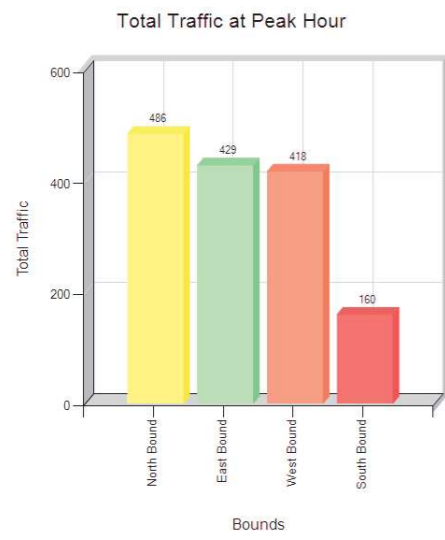
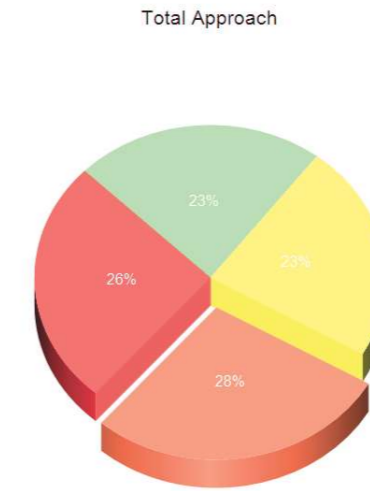
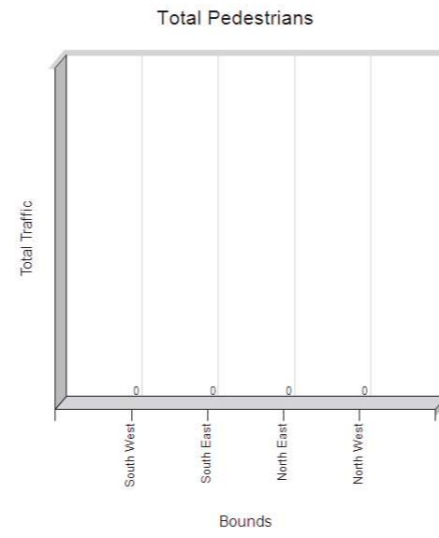
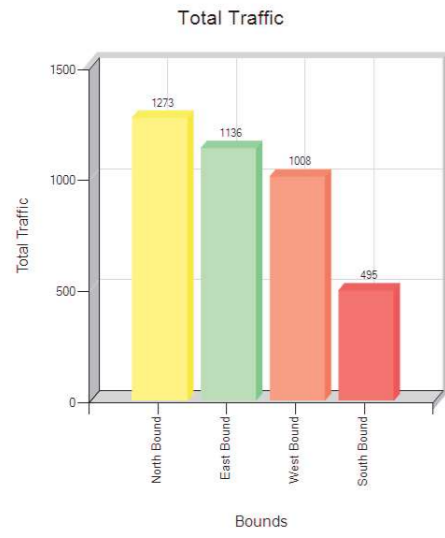


PM Peak Hour Count Diagram

City:	Caledon	Weather:	
North/South Street:	Airport Road	Count Date:	06/04/2016
East/West Street:	King Street	Count Period:	PM
GPS Coordinates:	43.830639, -79.815892	Peak Period:	4:45 PM - 5:45 PM
Site Number:	00723569	Major Road:	Airport Road
Control:	Signalized	Surveyor:	Doug Barr



TMC chart data



	SouthBound		NorthEast
	WestBound		NorthWest
	NorthBound		SouthWest
	EastBound		SouthEast

NOTES & IMAGES



Airport Road Northbound



King Road Eastbound



King Road Westbound



Airport Road Southbound

Appendix B – Synchro Outputs Existing Conditions (2018)

HCM Unsignalized Intersection Capacity Analysis
 1: Airport Road & Huntsmill Drive

AM Peak Period
 04/11/2018



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	W		T	T		T
Traffic Volume (veh/h)	0	0	157	0	0	469
Future Volume (Veh/h)	0	0	157	0	0	469
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)	0	0	157	0	0	469
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None		None	
Median storage (veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	626	157			157	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	626	157			157	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	100	100			100	
cM capacity (veh/h)	451	894			1435	
Direction, Lane #	WB 1	NB 1	NB 2	SB 1		
Volume Total	0	157	0	469		
Volume Left	0	0	0	0		
Volume Right	0	0	0	0		
cSH	1700	1700	1700	1435		
Volume to Capacity	0.00	0.09	0.00	0.00		
Queue Length 95th (m)	0.0	0.0	0.0	0.0		
Control Delay (s)	0.0	0.0	0.0	0.0		
Lane LOS	A					
Approach Delay (s)	0.0	0.0		0.0		
Approach LOS	A					
Intersection Summary						
Average Delay			0.0			
Intersection Capacity Utilization			28.0%		ICU Level of Service	A
Analysis Period (min)			15			

HCM Unsignalized Intersection Capacity Analysis
 1: Airport Road & Huntsmill Drive

PM Peak Period
 04/12/2018



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	↔		↑	↗		↘
Traffic Volume (veh/h)	1	0	557	1	0	202
Future Volume (Veh/h)	1	0	557	1	0	202
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	0	557	1	0	202
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None		None	
Median storage (veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	759	557			558	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	759	557			558	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	100	100			100	
cM capacity (veh/h)	377	534			1023	
Direction, Lane #	WB 1	NB 1	NB 2	SB 1		
Volume Total	1	557	1	202		
Volume Left	1	0	0	0		
Volume Right	0	0	1	0		
cSH	377	1700	1700	1023		
Volume to Capacity	0.00	0.33	0.00	0.00		
Queue Length 95th (m)	0.1	0.0	0.0	0.0		
Control Delay (s)	14.6	0.0	0.0	0.0		
Lane LOS	B					
Approach Delay (s)	14.6	0.0		0.0		
Approach LOS	B					
Intersection Summary						
Average Delay			0.0			
Intersection Capacity Utilization			39.3%		ICU Level of Service	A
Analysis Period (min)			15			

HCM Unsignalized Intersection Capacity Analysis

2: Leamster Trail & Airport Road

AM Peak Period
04/11/2018



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	1	8	0	147	488	0
Future Volume (Veh/h)	1	8	0	147	488	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	0	147	488	0
Pedestrians	1			2		
Lane Width (m)	3.7			3.7		
Walking Speed (m/s)	1.1			1.1		
Percent Blockage	0			0		
Right turn flare (veh)						
Median type				None	None	
Median storage (veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	636	491	489			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	636	491	489			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	100	99	100			
cM capacity (veh/h)	445	580	1084			
Direction, Lane #	EB 1	NB 1	NB 2	SB 1	SB 2	
Volume Total	9	0	147	488	0	
Volume Left	1	0	0	0	0	
Volume Right	8	0	0	0	0	
cSH	561	1700	1700	1700	1700	
Volume to Capacity	0.02	0.00	0.09	0.29	0.00	
Queue Length 95th (m)	0.4	0.0	0.0	0.0	0.0	
Control Delay (s)	11.5	0.0	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			36.3%	ICU Level of Service	A	
Analysis Period (min)			15			

HCM Unsignalized Intersection Capacity Analysis

2: Leamster Trail & Airport Road

PM Peak Period
04/12/2018



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	0	6	10	558	203	1
Future Volume (Veh/h)	0	6	10	558	203	1
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)	0	6	10	558	203	1
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	None	
Median storage (veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	781	203	204			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	781	203	204			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	100	99	99			
cM capacity (veh/h)	364	843	1380			
Direction, Lane #	EB 1	NB 1	NB 2	SB 1	SB 2	
Volume Total	6	10	558	203	1	
Volume Left	0	10	0	0	0	
Volume Right	6	0	0	0	1	
cSH	843	1380	1700	1700	1700	
Volume to Capacity	0.01	0.01	0.33	0.12	0.00	
Queue Length 95th (m)	0.2	0.2	0.0	0.0	0.0	
Control Delay (s)	9.3	7.6	0.0	0.0	0.0	
Lane LOS	A	A				
Approach Delay (s)	9.3	0.1		0.0		
Approach LOS	A					
Intersection Summary						
Average Delay			0.2			
Intersection Capacity Utilization			39.4%		ICU Level of Service	A
Analysis Period (min)			15			

HCM Unsignalized Intersection Capacity Analysis
3: Airport Road & Walker Road West/Walker Road East

AM Peak Period
04/11/2018



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕	↕		↕	
Traffic Volume (veh/h)	8	11	52	9	6	8	19	145	3	4	444	31
Future Volume (Veh/h)	8	11	52	9	6	8	19	145	3	4	444	31
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)	8	11	52	9	6	8	19	145	3	4	444	31
Pedestrians		1						1				
Lane Width (m)		3.7						3.7				
Walking Speed (m/s)		1.1						1.1				
Percent Blockage		0						0				
Right turn flare (veh)												
Median type								None			None	
Median storage veh												
Upstream signal (m)								199				
pX, platoon unblocked												
vC, conflicting volume	662	654	462	709	667	145	476			148		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	662	654	462	709	667	145	476			148		
tC, single (s)	7.2	6.6	6.3	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.6	4.1	3.4	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	98	97	91	97	98	99	98			100		
cM capacity (veh/h)	347	369	591	308	374	902	1096			1446		
Direction, Lane #	EB 1	WB 1	NB 1	NB 2	SB 1							
Volume Total	71	23	164	3	479							
Volume Left	8	9	19	0	4							
Volume Right	52	8	0	3	31							
cSH	504	425	1096	1700	1446							
Volume to Capacity	0.14	0.05	0.02	0.00	0.00							
Queue Length 95th (m)	3.7	1.3	0.4	0.0	0.1							
Control Delay (s)	13.3	14.0	1.1	0.0	0.1							
Lane LOS	B	B	A		A							
Approach Delay (s)	13.3	14.0	1.1		0.1							
Approach LOS	B	B										
Intersection Summary												
Average Delay			2.0									
Intersection Capacity Utilization			43.4%	ICU Level of Service		A						
Analysis Period (min)			15									

HCM Unsignalized Intersection Capacity Analysis

3: Airport Road & Walker Road West/Walker Road East

PM Peak Period
04/12/2018



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕	↕		↕	
Traffic Volume (veh/h)	20	9	45	5	1	8	53	546	23	6	189	15
Future Volume (Veh/h)	20	9	45	5	1	8	53	546	23	6	189	15
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)	20	9	45	5	1	8	53	546	23	6	189	15
Pedestrians		2						1				
Lane Width (m)		3.7						3.7				
Walking Speed (m/s)		1.1						1.1				
Percent Blockage		0						0				
Right turn flare (veh)												
Median type								None			None	
Median storage veh												
Upstream signal (m)								199				
pX, platoon unblocked	0.85	0.85		0.85	0.85	0.85				0.85		
vC, conflicting volume	871	886	200	911	870	546	206			569		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	762	779	200	809	761	380	206			407		
tC, single (s)	7.1	6.5	6.2	7.3	7.5	6.2	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.7	4.9	3.3	2.2			2.2		
p0 queue free %	92	97	95	98	99	99	96			99		
cM capacity (veh/h)	261	268	839	211	197	572	1375			990		
Direction, Lane #	EB 1	WB 1	NB 1	NB 2	SB 1							
Volume Total	74	14	599	23	210							
Volume Left	20	5	53	0	6							
Volume Right	45	8	0	23	15							
cSH	452	328	1375	1700	990							
Volume to Capacity	0.16	0.04	0.04	0.01	0.01							
Queue Length 95th (m)	4.4	1.0	0.9	0.0	0.1							
Control Delay (s)	14.5	16.5	1.1	0.0	0.3							
Lane LOS	B	C	A		A							
Approach Delay (s)	14.5	16.5	1.0		0.3							
Approach LOS	B	C										
Intersection Summary												
Average Delay			2.2									
Intersection Capacity Utilization			58.5%	ICU Level of Service		B						
Analysis Period (min)			15									

Queues
4: Old Church Road & Airport Road

AM Peak Period
04/11/2018



Lane Group	WBL	WBR	NBT	NBR	SBT
Lane Group Flow (vph)	249	54	141	156	477
v/c Ratio	0.65	0.17	0.17	0.17	0.52
Control Delay	30.6	7.4	8.4	2.2	12.2
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	30.6	7.4	8.4	2.2	12.2
Queue Length 50th (m)	26.1	0.0	7.1	0.0	31.0
Queue Length 95th (m)	45.6	7.0	18.2	7.6	66.4
Internal Link Dist (m)	119.3		41.8		175.1
Turn Bay Length (m)		20.0		40.0	
Base Capacity (vph)	580	465	827	934	915
Starvation Cap Reductn	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.43	0.12	0.17	0.17	0.52

Intersection Summary

Queues
4: Old Church Road & Airport Road

PM Peak Period
04/12/2018



Lane Group	WBL	WBR	NBT	NBR	SBT
Lane Group Flow (vph)	179	100	511	314	249
v/c Ratio	0.55	0.27	0.46	0.29	0.33
Control Delay	29.0	7.0	9.5	1.8	8.6
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	29.0	7.0	9.5	1.8	8.6
Queue Length 50th (m)	17.9	0.0	28.2	0.0	12.3
Queue Length 95th (m)	33.7	9.7	57.5	9.2	28.9
Internal Link Dist (m)	119.3		41.8		175.2
Turn Bay Length (m)		20.0		45.0	
Base Capacity (vph)	603	607	1104	1065	766
Starvation Cap Reductn	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.30	0.16	0.46	0.29	0.33

Intersection Summary

HCM Signalized Intersection Capacity Analysis
4: Old Church Road & Airport Road

AM Peak Period
04/11/2018



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	249	54	141	156	85	392
Future Volume (vph)	249	54	141	156	85	392
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.6	6.6	7.1	7.1		7.1
Lane Util. Factor	1.00	1.00	1.00	1.00		1.00
Frpb, ped/bikes	1.00	0.98	1.00	1.00		1.00
Flpb, ped/bikes	1.00	1.00	1.00	1.00		1.00
Frt	1.00	0.85	1.00	0.85		1.00
Flt Protected	0.95	1.00	1.00	1.00		0.99
Satd. Flow (prot)	1755	1299	1455	1526		1741
Flt Permitted	0.95	1.00	1.00	1.00		0.92
Satd. Flow (perm)	1755	1299	1455	1526		1610
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	249	54	141	156	85	392
RTOR Reduction (vph)	0	42	0	67	0	0
Lane Group Flow (vph)	249	12	141	89	0	477
Confl. Peds. (#/hr)	3	1				
Heavy Vehicles (%)	4%	23%	32%	7%	11%	9%
Turn Type	Prot	Perm	NA	Perm	Perm	NA
Protected Phases	8		2			6
Permitted Phases		8		2	6	
Actuated Green, G (s)	14.2	14.2	36.8	36.8		36.8
Effective Green, g (s)	14.2	14.2	36.8	36.8		36.8
Actuated g/C Ratio	0.22	0.22	0.57	0.57		0.57
Clearance Time (s)	6.6	6.6	7.1	7.1		7.1
Vehicle Extension (s)	3.0	3.0	3.0	3.0		3.0
Lane Grp Cap (vph)	385	285	827	867		915
v/s Ratio Prot	c0.14		0.10			
v/s Ratio Perm		0.01		0.06		c0.30
v/c Ratio	0.65	0.04	0.17	0.10		0.52
Uniform Delay, d1	23.0	19.9	6.7	6.4		8.6
Progression Factor	1.00	1.00	1.00	1.00		1.00
Incremental Delay, d2	3.7	0.1	0.4	0.2		2.1
Delay (s)	26.7	20.0	7.1	6.6		10.7
Level of Service	C	B	A	A		B
Approach Delay (s)	25.5		6.9			10.7
Approach LOS	C		A			B

Intersection Summary			
HCM 2000 Control Delay	13.8	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.56		
Actuated Cycle Length (s)	64.7	Sum of lost time (s)	13.7
Intersection Capacity Utilization	63.9%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis

4: Old Church Road & Airport Road

PM Peak Period
04/12/2018



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	179	100	511	314	69	180
Future Volume (vph)	179	100	511	314	69	180
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.6	6.6	7.1	7.1		7.1
Lane Util. Factor	1.00	1.00	1.00	1.00		1.00
Frpb, ped/bikes	1.00	0.97	1.00	0.97		1.00
Flpb, ped/bikes	1.00	1.00	1.00	1.00		1.00
Frt	1.00	0.85	1.00	0.85		1.00
Flt Protected	0.95	1.00	1.00	1.00		0.99
Satd. Flow (prot)	1772	1589	1847	1572		1616
Flt Permitted	0.95	1.00	1.00	1.00		0.78
Satd. Flow (perm)	1772	1589	1847	1572		1282
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	179	100	511	314	69	180
RTOR Reduction (vph)	0	82	0	126	0	0
Lane Group Flow (vph)	179	18	511	188	0	249
Confl. Peds. (#/hr)	4	4		6	6	
Heavy Vehicles (%)	3%	0%	4%	1%	15%	18%
Turn Type	Prot	Perm	NA	Perm	Perm	NA
Protected Phases	8		2			6
Permitted Phases		8		2	6	
Actuated Green, G (s)	11.6	11.6	37.7	37.7		37.7
Effective Green, g (s)	11.6	11.6	37.7	37.7		37.7
Actuated g/C Ratio	0.18	0.18	0.60	0.60		0.60
Clearance Time (s)	6.6	6.6	7.1	7.1		7.1
Vehicle Extension (s)	3.0	3.0	3.0	3.0		3.0
Lane Grp Cap (vph)	326	292	1105	940		767
v/s Ratio Prot	c0.10		c0.28			
v/s Ratio Perm		0.01		0.12		0.19
v/c Ratio	0.55	0.06	0.46	0.20		0.32
Uniform Delay, d1	23.3	21.2	7.0	5.8		6.3
Progression Factor	1.00	1.00	1.00	1.00		1.00
Incremental Delay, d2	1.9	0.1	1.4	0.5		1.1
Delay (s)	25.2	21.3	8.4	6.2		7.4
Level of Service	C	C	A	A		A
Approach Delay (s)	23.8		7.6			7.4
Approach LOS	C		A			A

Intersection Summary

HCM 2000 Control Delay	10.9	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.48		
Actuated Cycle Length (s)	63.0	Sum of lost time (s)	13.7
Intersection Capacity Utilization	68.1%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

HCM Unsignalized Intersection Capacity Analysis
5: Airport Road & Parsons Avenue

AM Peak Period
04/11/2018



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	9	35	5	255	657	6
Future Volume (Veh/h)	9	35	5	255	657	6
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)	9	35	5	255	657	6
Pedestrians	2					
Lane Width (m)	3.7					
Walking Speed (m/s)	1.1					
Percent Blockage	0					
Right turn flare (veh)						
Median type				None	None	
Median storage veh						
Upstream signal (m)				100	66	
pX, platoon unblocked	0.86	0.86	0.86			
vC, conflicting volume	927	662	665			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	830	521	524			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	97	93	99			
cM capacity (veh/h)	291	478	899			
Direction, Lane #	EB 1	NB 1	SB 1			
Volume Total	44	260	663			
Volume Left	9	5	0			
Volume Right	35	0	6			
cSH	422	899	1700			
Volume to Capacity	0.10	0.01	0.39			
Queue Length 95th (m)	2.6	0.1	0.0			
Control Delay (s)	14.5	0.2	0.0			
Lane LOS	B	A				
Approach Delay (s)	14.5	0.2	0.0			
Approach LOS	B					
Intersection Summary						
Average Delay			0.7			
Intersection Capacity Utilization			44.9%	ICU Level of Service	A	
Analysis Period (min)			15			

HCM Unsignalized Intersection Capacity Analysis
5: Airport Road & Parsons Avenue

PM Peak Period
04/12/2018



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	10	30	44	729	350	26
Future Volume (Veh/h)	10	30	44	729	350	26
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)	10	30	44	729	350	26
Pedestrians	3			3	4	
Lane Width (m)	3.7			3.7	3.7	
Walking Speed (m/s)	1.1			1.1	1.1	
Percent Blockage	0			0	0	
Right turn flare (veh)						
Median type				None	None	
Median storage (veh)						
Upstream signal (m)				100	66	
pX, platoon unblocked	0.98	0.98	0.98			
vC, conflicting volume	1187	369	379			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1180	345	355			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	95	96	96			
cM capacity (veh/h)	199	684	1186			
Direction, Lane #	EB 1	NB 1	SB 1			
Volume Total	40	773	376			
Volume Left	10	44	0			
Volume Right	30	0	26			
cSH	425	1186	1700			
Volume to Capacity	0.09	0.04	0.22			
Queue Length 95th (m)	2.4	0.9	0.0			
Control Delay (s)	14.4	1.0	0.0			
Lane LOS	B	A				
Approach Delay (s)	14.4	1.0	0.0			
Approach LOS	B					
Intersection Summary						
Average Delay			1.1			
Intersection Capacity Utilization			75.1%	ICU Level of Service	D	
Analysis Period (min)			15			

HCM Unsignalized Intersection Capacity Analysis
6: Emma Street & Airport Road

AM Peak Period
04/11/2018



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	2	11	2	271	700	3
Future Volume (Veh/h)	2	11	2	271	700	3
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	11	2	271	700	3
Pedestrians	5					
Lane Width (m)	3.7					
Walking Speed (m/s)	1.1					
Percent Blockage	0					
Right turn flare (veh)						
Median type				None	None	
Median storage veh						
Upstream signal (m)				49	116	
pX, platoon unblocked	0.87	0.87	0.87			
vC, conflicting volume	982	706	708			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	904	588	590			
tC, single (s)	6.4	6.2	4.6			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.7			
p0 queue free %	99	98	100			
cM capacity (veh/h)	268	444	683			
Direction, Lane #	EB 1	NB 1	SB 1			
Volume Total	13	273	703			
Volume Left	2	2	0			
Volume Right	11	0	3			
cSH	403	683	1700			
Volume to Capacity	0.03	0.00	0.41			
Queue Length 95th (m)	0.8	0.1	0.0			
Control Delay (s)	14.2	0.1	0.0			
Lane LOS	B	A				
Approach Delay (s)	14.2	0.1	0.0			
Approach LOS	B					
Intersection Summary						
Average Delay				0.2		
Intersection Capacity Utilization				47.0%	ICU Level of Service	A
Analysis Period (min)				15		

HCM Unsignalized Intersection Capacity Analysis
6: Emma Street & Airport Road

PM Peak Period
04/12/2018



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	7	7	14	786	363	11
Future Volume (Veh/h)	7	7	14	786	363	11
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)	7	7	14	786	363	11
Pedestrians	4			1	4	
Lane Width (m)	3.7			3.7	3.7	
Walking Speed (m/s)	1.1			1.1	1.1	
Percent Blockage	0			0	0	
Right turn flare (veh)						
Median type				None	None	
Median storage veh						
Upstream signal (m)				49	116	
pX, platoon unblocked						
vC, conflicting volume	1190	374	378			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1190	374	378			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	97	99	99			
cM capacity (veh/h)	205	674	1187			
Direction, Lane #	EB 1	NB 1	SB 1			
Volume Total	14	800	374			
Volume Left	7	14	0			
Volume Right	7	0	11			
cSH	315	1187	1700			
Volume to Capacity	0.04	0.01	0.22			
Queue Length 95th (m)	1.1	0.3	0.0			
Control Delay (s)	17.0	0.3	0.0			
Lane LOS	C	A				
Approach Delay (s)	17.0	0.3	0.0			
Approach LOS	C					
Intersection Summary						
Average Delay			0.4			
Intersection Capacity Utilization			62.9%	ICU Level of Service	B	
Analysis Period (min)			15			

Queues
7: Airport Road & Caledon Trailway Path

AM Peak Period
04/11/2018



Lane Group	NBT	SBT
Lane Group Flow (vph)	273	711
v/c Ratio	0.16	0.39
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	25.5
Turn Bay Length (m)		
Base Capacity (vph)	1715	1830
Starvation Cap Reductn	0	0
Spillback Cap Reductn	0	0
Storage Cap Reductn	0	0
Reduced v/c Ratio	0.16	0.39
Intersection Summary		

Queues
7: Airport Road & Caledon Trailway Path

















PM Peak Period
04/12/2018



Lane Group	NBT	SBT
Lane Group Flow (vph)	809	365
v/c Ratio	0.43	0.21
Control Delay	0.7	0.3
Queue Delay	0.0	0.0
Total Delay	0.7	0.3
Queue Length 50th (m)	0.0	0.0
Queue Length 95th (m)	0.0	0.0
Internal Link Dist (m)	16.2	25.5
Turn Bay Length (m)		
Base Capacity (vph)	1865	1779
Starvation Cap Reductn	0	0
Spillback Cap Reductn	0	0
Storage Cap Reductn	0	0
Reduced v/c Ratio	0.43	0.21
Intersection Summary		

HCM Signalized Intersection Capacity Analysis
7: Airport Road & Caledon Trailway Path

AM Peak Period
04/11/2018

												
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	273	0	0	711	0
Future Volume (vph)	0	0	0	0	0	0	0	273	0	0	711	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)								1715			1830	
Flt Permitted								1.00			1.00	
Satd. Flow (perm)								1715			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)	0	0	0	0	0	0	0	273	0	0	711	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	273	0	0	711	0
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	0%	12%	0%	0%	5%	0%
Turn Type								NA			NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8								
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)								1715			1830	
v/s Ratio Prot								0.16			c0.39	
v/s Ratio Perm												
v/c Ratio								0.16			0.39	
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	
Intersection Summary												
HCM 2000 Control Delay			0.5					HCM 2000 Level of Service			A	
HCM 2000 Volume to Capacity ratio			0.48									
Actuated Cycle Length (s)			64.0					Sum of lost time (s)		12.0		
Intersection Capacity Utilization			42.4%					ICU Level of Service		A		
Analysis Period (min)			15									
c Critical Lane Group												

HCM Signalized Intersection Capacity Analysis
7: Airport Road & Caledon Trailway Path

PM Peak Period
04/12/2018



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	809	0	0	365	0
Future Volume (vph)	0	0	0	0	0	0	0	809	0	0	365	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)								1865			1779	
Flt Permitted								1.00			1.00	
Satd. Flow (perm)								1865			1779	
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	809	0	0	365	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	809	0	0	365	0
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	0%	3%	0%	0%	8%	0%
Turn Type								NA			NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8								
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)								1865			1779	
v/s Ratio Prot								c0.43			0.21	
v/s Ratio Perm												
v/c Ratio								0.43			0.21	
Uniform Delay, d1								0.0			0.0	
Progression Factor								1.00			1.00	
Incremental Delay, d2								0.7			0.3	
Delay (s)								0.7			0.3	
Level of Service								A			A	
Approach Delay (s)		0.0			0.0			0.7			0.3	
Approach LOS		A			A			A			A	
Intersection Summary												
HCM 2000 Control Delay			0.6					HCM 2000 Level of Service			A	
HCM 2000 Volume to Capacity ratio			0.53									
Actuated Cycle Length (s)			64.0					Sum of lost time (s)		12.0		
Intersection Capacity Utilization			47.6%					ICU Level of Service		A		
Analysis Period (min)			15									
c Critical Lane Group												

HCM Unsignalized Intersection Capacity Analysis

8: Mountcrest Road & Airport Road

AM Peak Period
04/11/2018



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	↔		↑	↗		↖
Traffic Volume (veh/h)	12	8	268	1	3	705
Future Volume (Veh/h)	12	8	268	1	3	705
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	8	268	1	3	705
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None		None	
Median storage (veh)						
Upstream signal (m)						40
pX, platoon unblocked						
vC, conflicting volume		979	268			269
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol		979	268			269
tC, single (s)		6.4	6.2			4.1
tC, 2 stage (s)						
tF (s)		3.5	3.3			2.2
p0 queue free %		96	99			100
cM capacity (veh/h)		279	776			1306
Direction, Lane #	WB 1	NB 1	NB 2	SB 1		
Volume Total	20	268	1	708		
Volume Left	12	0	0	3		
Volume Right	8	0	1	0		
cSH	375	1700	1700	1306		
Volume to Capacity	0.05	0.16	0.00	0.00		
Queue Length 95th (m)	1.3	0.0	0.0	0.1		
Control Delay (s)	15.1	0.0	0.0	0.1		
Lane LOS	C			A		
Approach Delay (s)	15.1	0.0			0.1	
Approach LOS	C					
Intersection Summary						
Average Delay			0.3			
Intersection Capacity Utilization			49.5%		ICU Level of Service A	
Analysis Period (min)			15			

HCM Unsignalized Intersection Capacity Analysis
8: Mountcrest Road & Airport Road

PM Peak Period
04/12/2018



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	5	11	799	18	8	362
Future Volume (Veh/h)	5	11	799	18	8	362
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	11	799	18	8	362
Pedestrians	1					
Lane Width (m)	3.7					
Walking Speed (m/s)	1.1					
Percent Blockage	0					
Right turn flare (veh)						
Median type	None			None		
Median storage veh						
Upstream signal (m)	40					
pX, platoon unblocked						
vC, conflicting volume	1178	800			818	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1178	800			818	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	98	97			99	
cM capacity (veh/h)	209	385			810	
Direction, Lane #	WB 1	NB 1	NB 2	SB 1		
Volume Total	16	799	18	370		
Volume Left	5	0	0	8		
Volume Right	11	0	18	0		
cSH	304	1700	1700	810		
Volume to Capacity	0.05	0.47	0.01	0.01		
Queue Length 95th (m)	1.3	0.0	0.0	0.2		
Control Delay (s)	17.5	0.0	0.0	0.3		
Lane LOS	C			A		
Approach Delay (s)	17.5	0.0			0.3	
Approach LOS	C					
Intersection Summary						
Average Delay			0.3			
Intersection Capacity Utilization			52.1%		ICU Level of Service	A
Analysis Period (min)			15			

HCM Unsignalized Intersection Capacity Analysis
 9: Airport Road & Larry Street

AM Peak Period
 04/11/2018



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	17	8	1	249	709	8
Future Volume (Veh/h)	17	8	1	249	709	8
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)	17	8	1	249	709	8
Pedestrians	3					
Lane Width (m)	3.7					
Walking Speed (m/s)	1.1					
Percent Blockage	0					
Right turn flare (veh)						
Median type				None	None	
Median storage veh						
Upstream signal (m)						98
pX, platoon unblocked						
vC, conflicting volume	967	716	720			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	967	716	720			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	94	98	100			
cM capacity (veh/h)	283	432	888			
Direction, Lane #	EB 1	NB 1	SB 1			
Volume Total	25	250	717			
Volume Left	17	1	0			
Volume Right	8	0	8			
cSH	318	888	1700			
Volume to Capacity	0.08	0.00	0.42			
Queue Length 95th (m)	1.9	0.0	0.0			
Control Delay (s)	17.3	0.0	0.0			
Lane LOS	C	A				
Approach Delay (s)	17.3	0.0	0.0			
Approach LOS	C					
Intersection Summary						
Average Delay			0.4			
Intersection Capacity Utilization			47.8%	ICU Level of Service	A	
Analysis Period (min)			15			

HCM Unsignalized Intersection Capacity Analysis
 9: Airport Road & Larry Street

PM Peak Period
 04/12/2018



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	14	7	6	803	355	11
Future Volume (Veh/h)	14	7	6	803	355	11
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)	14	7	6	803	355	11
Pedestrians	1					
Lane Width (m)	3.7					
Walking Speed (m/s)	1.1					
Percent Blockage	0					
Right turn flare (veh)						
Median type				None	None	
Median storage veh						
Upstream signal (m)						98
pX, platoon unblocked						
vC, conflicting volume	1176	362	367			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1176	362	367			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	93	99	100			
cM capacity (veh/h)	212	687	1202			
Direction, Lane #	EB 1	NB 1	SB 1			
Volume Total	21	809	366			
Volume Left	14	6	0			
Volume Right	7	0	11			
cSH	275	1202	1700			
Volume to Capacity	0.08	0.00	0.22			
Queue Length 95th (m)	1.9	0.1	0.0			
Control Delay (s)	19.1	0.1	0.0			
Lane LOS	C	A				
Approach Delay (s)	19.1	0.1	0.0			
Approach LOS	C					
Intersection Summary						
Average Delay			0.4			
Intersection Capacity Utilization			57.0%	ICU Level of Service	B	
Analysis Period (min)			15			

HCM Unsignalized Intersection Capacity Analysis
 10: Marion Street & Airport Road

AM Peak Period
 04/11/2018



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	3	8	0	264	691	0
Future Volume (Veh/h)	3	8	0	264	691	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	8	0	264	691	0
Pedestrians	3					
Lane Width (m)	3.7					
Walking Speed (m/s)	1.1					
Percent Blockage	0					
Right turn flare (veh)						
Median type				None	None	
Median storage veh						
Upstream signal (m)						173
pX, platoon unblocked						
vC, conflicting volume	958	694	694			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	958	694	694			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	99	98	100			
cM capacity (veh/h)	287	445	908			
Direction, Lane #	EB 1	NB 1	SB 1			
Volume Total	11	264	691			
Volume Left	3	0	0			
Volume Right	8	0	0			
cSH	387	908	1700			
Volume to Capacity	0.03	0.00	0.41			
Queue Length 95th (m)	0.7	0.0	0.0			
Control Delay (s)	14.6	0.0	0.0			
Lane LOS	B					
Approach Delay (s)	14.6	0.0	0.0			
Approach LOS	B					
Intersection Summary						
Average Delay			0.2			
Intersection Capacity Utilization			46.4%	ICU Level of Service	A	
Analysis Period (min)			15			

HCM Unsignalized Intersection Capacity Analysis
 10: Marion Street & Airport Road

PM Peak Period
 04/12/2018



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	0	1	1	798	365	4
Future Volume (Veh/h)	0	1	1	798	365	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)	0	1	1	798	365	4
Pedestrians	3			1		
Lane Width (m)	3.7			3.7		
Walking Speed (m/s)	1.1			1.1		
Percent Blockage	0			0		
Right turn flare (veh)						
Median type				None	None	
Median storage veh						
Upstream signal (m)						173
pX, platoon unblocked						
vC, conflicting volume	1170	371	372			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1170	371	372			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	100	100	100			
cM capacity (veh/h)	214	677	1194			
Direction, Lane #	EB 1	NB 1	SB 1			
Volume Total	1	799	369			
Volume Left	0	1	0			
Volume Right	1	0	4			
cSH	677	1194	1700			
Volume to Capacity	0.00	0.00	0.22			
Queue Length 95th (m)	0.0	0.0	0.0			
Control Delay (s)	10.3	0.0	0.0			
Lane LOS	B	A				
Approach Delay (s)	10.3	0.0	0.0			
Approach LOS	B					
Intersection Summary						
Average Delay			0.0			
Intersection Capacity Utilization			53.1%	ICU Level of Service	A	
Analysis Period (min)			15			

HCM Unsignalized Intersection Capacity Analysis
 11: Airport Road & Hilltop Drive

AM Peak Period
 04/11/2018



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	6	19	6	238	707	23
Future Volume (Veh/h)	6	19	6	238	707	23
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)	6	19	6	238	707	23
Pedestrians	2					
Lane Width (m)	3.7					
Walking Speed (m/s)	1.1					
Percent Blockage	0					
Right turn flare (veh)						
Median type				None	None	
Median storage veh						
Upstream signal (m)						266
pX, platoon unblocked						
vC, conflicting volume	970	720	732			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	970	720	732			
tC, single (s)	6.4	6.2	4.4			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.5			
p0 queue free %	98	95	99			
cM capacity (veh/h)	280	422	746			
Direction, Lane #	EB 1	NB 1	NB 2	SB 1		
Volume Total	25	6	238	730		
Volume Left	6	6	0	0		
Volume Right	19	0	0	23		
cSH	376	746	1700	1700		
Volume to Capacity	0.07	0.01	0.14	0.43		
Queue Length 95th (m)	1.6	0.2	0.0	0.0		
Control Delay (s)	15.2	9.9	0.0	0.0		
Lane LOS	C	A				
Approach Delay (s)	15.2	0.2		0.0		
Approach LOS	C					
Intersection Summary						
Average Delay			0.4			
Intersection Capacity Utilization			48.6%	ICU Level of Service	A	
Analysis Period (min)			15			

HCM Unsignalized Intersection Capacity Analysis
 11: Airport Road & Hilltop Drive

PM Peak Period
 04/12/2018



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	3	10	30	816	348	13
Future Volume (Veh/h)	3	10	30	816	348	13
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	10	30	816	348	13
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	None	
Median storage veh						
Upstream signal (m)					266	
pX, platoon unblocked						
vC, conflicting volume	1230	354	361			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1230	354	361			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	98	99	98			
cM capacity (veh/h)	193	694	1209			
Direction, Lane #	EB 1	NB 1	NB 2	SB 1		
Volume Total	13	30	816	361		
Volume Left	3	30	0	0		
Volume Right	10	0	0	13		
cSH	434	1209	1700	1700		
Volume to Capacity	0.03	0.02	0.48	0.21		
Queue Length 95th (m)	0.7	0.6	0.0	0.0		
Control Delay (s)	13.6	8.1	0.0	0.0		
Lane LOS	B	A				
Approach Delay (s)	13.6	0.3		0.0		
Approach LOS	B					
Intersection Summary						
Average Delay			0.3			
Intersection Capacity Utilization			52.9%		ICU Level of Service	A
Analysis Period (min)			15			

HCM Unsignalized Intersection Capacity Analysis
 12: Foodland Plaza & Airport Road

AM Peak Period
 04/11/2018



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	15	20	257	16	37	652
Future Volume (Veh/h)	15	20	257	16	37	652
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)	15	20	257	16	37	652
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None		None	
Median storage veh						
Upstream signal (m)					369	
pX, platoon unblocked						
vC, conflicting volume	991	265			273	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	991	265			273	
tC, single (s)	6.5	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.6	3.3			2.2	
p0 queue free %	94	97			97	
cM capacity (veh/h)	253	766			1302	
Direction, Lane #	WB 1	WB 2	NB 1	SB 1	SB 2	
Volume Total	15	20	273	37	652	
Volume Left	15	0	0	37	0	
Volume Right	0	20	16	0	0	
cSH	253	766	1700	1302	1700	
Volume to Capacity	0.06	0.03	0.16	0.03	0.38	
Queue Length 95th (m)	1.4	0.6	0.0	0.7	0.0	
Control Delay (s)	20.1	9.8	0.0	7.8	0.0	
Lane LOS	C	A		A		
Approach Delay (s)	14.2		0.0	0.4		
Approach LOS	B					
Intersection Summary						
Average Delay			0.8			
Intersection Capacity Utilization			44.3%		ICU Level of Service	A
Analysis Period (min)			15			

HCM Unsignalized Intersection Capacity Analysis
 12: Foodland Plaza & Airport Road

PM Peak Period
 04/12/2018



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	30	124	711	98	64	291
Future Volume (Veh/h)	30	124	711	98	64	291
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)	30	124	711	98	64	291
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None		None	
Median storage veh						
Upstream signal (m)					369	
pX, platoon unblocked						
vC, conflicting volume	1179	760			809	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1179	760			809	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	85	70			92	
cM capacity (veh/h)	196	409			825	
Direction, Lane #	WB 1	WB 2	NB 1	SB 1	SB 2	
Volume Total	30	124	809	64	291	
Volume Left	30	0	0	64	0	
Volume Right	0	124	98	0	0	
cSH	196	409	1700	825	1700	
Volume to Capacity	0.15	0.30	0.48	0.08	0.17	
Queue Length 95th (m)	4.0	9.6	0.0	1.9	0.0	
Control Delay (s)	26.7	17.6	0.0	9.7	0.0	
Lane LOS	D	C		A		
Approach Delay (s)	19.3		0.0	1.8		
Approach LOS	C					
Intersection Summary						
Average Delay			2.7			
Intersection Capacity Utilization			60.2%		ICU Level of Service	B
Analysis Period (min)			15			

HCM Unsignalized Intersection Capacity Analysis
 13: Airport Road & Cranston Drive

AM Peak Period
 04/11/2018



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	9	21	7	220	698	6
Future Volume (Veh/h)	9	21	7	220	698	6
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)	9	21	7	220	698	6
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	None	
Median storage (veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	932	698	704			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	932	698	704			
tC, single (s)	6.5	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.6	3.3	2.2			
p0 queue free %	97	95	99			
cM capacity (veh/h)	283	435	903			
Direction, Lane #	EB 1	NB 1	NB 2	SB 1	SB 2	
Volume Total	30	7	220	698	6	
Volume Left	9	7	0	0	0	
Volume Right	21	0	0	0	6	
cSH	375	903	1700	1700	1700	
Volume to Capacity	0.08	0.01	0.13	0.41	0.00	
Queue Length 95th (m)	2.0	0.2	0.0	0.0	0.0	
Control Delay (s)	15.4	9.0	0.0	0.0	0.0	
Lane LOS	C	A				
Approach Delay (s)	15.4	0.3		0.0		
Approach LOS	C					
Intersection Summary						
Average Delay			0.5			
Intersection Capacity Utilization			46.7%	ICU Level of Service		A
Analysis Period (min)			15			

HCM Unsignalized Intersection Capacity Analysis
 13: Airport Road & Cranston Drive

PM Peak Period
 04/12/2018



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	9	17	20	791	316	12
Future Volume (Veh/h)	9	17	20	791	316	12
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)	9	17	20	791	316	12
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	None	
Median storage (veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	1147	316	328			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1147	316	328			
tC, single (s)	6.4	6.3	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.4	2.2			
p0 queue free %	96	98	98			
cM capacity (veh/h)	218	715	1215			
Direction, Lane #	EB 1	NB 1	NB 2	SB 1	SB 2	
Volume Total	26	20	791	316	12	
Volume Left	9	20	0	0	0	
Volume Right	17	0	0	0	12	
cSH	400	1215	1700	1700	1700	
Volume to Capacity	0.06	0.02	0.47	0.19	0.01	
Queue Length 95th (m)	1.6	0.4	0.0	0.0	0.0	
Control Delay (s)	14.6	8.0	0.0	0.0	0.0	
Lane LOS	B	A				
Approach Delay (s)	14.6	0.2		0.0		
Approach LOS	B					
Intersection Summary						
Average Delay			0.5			
Intersection Capacity Utilization			51.6%		ICU Level of Service	A
Analysis Period (min)			15			

Queues
 14: Olde Base Line Road & Airport Road

AM Peak Period
 04/11/2018



Lane Group	EBL	NBT	SBT
Lane Group Flow (vph)	227	156	718
v/c Ratio	0.70	0.17	0.59
Control Delay	33.8	5.9	9.5
Queue Delay	0.0	0.0	0.0
Total Delay	33.8	5.9	9.5
Queue Length 50th (m)	22.4	7.4	46.6
Queue Length 95th (m)	44.7	17.8	96.8
Internal Link Dist (m)	154.8	657.4	514.5
Turn Bay Length (m)			
Base Capacity (vph)	443	945	1226
Starvation Cap Reductn	0	0	0
Spillback Cap Reductn	0	0	0
Storage Cap Reductn	0	0	0
Reduced v/c Ratio	0.51	0.17	0.59
Intersection Summary			

Queues
14: Olde Base Line Road & Airport Road

PM Peak Period
04/12/2018



Lane Group	EBL	NBT	SBT
Lane Group Flow (vph)	294	655	341
v/c Ratio	0.72	0.64	0.32
Control Delay	42.7	13.6	7.0
Queue Delay	0.0	0.0	0.0
Total Delay	42.7	13.6	7.0
Queue Length 50th (m)	45.3	61.5	19.1
Queue Length 95th (m)	#79.2	95.2	32.4
Internal Link Dist (m)	154.8	658.2	514.4
Turn Bay Length (m)			
Base Capacity (vph)	406	1030	1072
Starvation Cap Reductn	0	0	0
Spillback Cap Reductn	0	0	0
Storage Cap Reductn	0	0	0
Reduced v/c Ratio	0.72	0.64	0.32

Intersection Summary

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

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

AM Peak Period
 04/11/2018



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	94	133	28	128	510	208
Future Volume (vph)	94	133	28	128	510	208
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.6			6.0	6.0	
Lane Util. Factor	1.00			1.00	1.00	
Frt	0.92			1.00	0.96	
Flt Protected	0.98			0.99	1.00	
Satd. Flow (prot)	1622			1592	1761	
Flt Permitted	0.98			0.85	1.00	
Satd. Flow (perm)	1622			1372	1761	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	94	133	28	128	510	208
RTOR Reduction (vph)	62	0	0	0	14	0
Lane Group Flow (vph)	165	0	0	156	704	0
Heavy Vehicles (%)	8%	6%	4%	23%	6%	2%
Turn Type	Prot		Perm	NA	NA	
Protected Phases	4			2	6	
Permitted Phases			2			
Actuated Green, G (s)	13.5			57.8	57.8	
Effective Green, g (s)	13.5			57.8	57.8	
Actuated g/C Ratio	0.16			0.69	0.69	
Clearance Time (s)	6.6			6.0	6.0	
Vehicle Extension (s)	3.0			3.0	3.0	
Lane Grp Cap (vph)	260			945	1213	
v/s Ratio Prot	c0.10				c0.40	
v/s Ratio Perm				0.11		
v/c Ratio	0.63			0.17	0.58	
Uniform Delay, d1	32.9			4.6	6.8	
Progression Factor	1.00			1.00	1.00	
Incremental Delay, d2	5.0			0.4	2.0	
Delay (s)	37.9			5.0	8.8	
Level of Service	D			A	A	
Approach Delay (s)	37.9			5.0	8.8	
Approach LOS	D			A	A	

Intersection Summary			
HCM 2000 Control Delay	14.2	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.59		
Actuated Cycle Length (s)	83.9	Sum of lost time (s)	12.6
Intersection Capacity Utilization	63.4%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

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

PM Peak Period
 04/12/2018



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	259	35	100	555	222	119
Future Volume (vph)	259	35	100	555	222	119
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.6			6.0	6.0	
Lane Util. Factor	1.00			1.00	1.00	
Frt	0.98			1.00	0.95	
Flt Protected	0.96			0.99	1.00	
Satd. Flow (prot)	1776			1826	1662	
Flt Permitted	0.96			0.89	1.00	
Satd. Flow (perm)	1776			1631	1662	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	259	35	100	555	222	119
RTOR Reduction (vph)	5	0	0	0	22	0
Lane Group Flow (vph)	289	0	0	655	319	0
Heavy Vehicles (%)	1%	9%	1%	5%	15%	1%
Turn Type	Prot		Perm	NA	NA	
Protected Phases	4			2	6	
Permitted Phases			2			
Actuated Green, G (s)	20.0			56.0	56.0	
Effective Green, g (s)	20.0			56.0	56.0	
Actuated g/C Ratio	0.23			0.63	0.63	
Clearance Time (s)	6.6			6.0	6.0	
Lane Grp Cap (vph)	400			1030	1050	
v/s Ratio Prot	c0.16				0.19	
v/s Ratio Perm				c0.40		
v/c Ratio	0.72			0.64	0.30	
Uniform Delay, d1	31.7			10.0	7.4	
Progression Factor	1.00			1.00	1.00	
Incremental Delay, d2	10.7			3.0	0.7	
Delay (s)	42.5			13.0	8.2	
Level of Service	D			B	A	
Approach Delay (s)	42.5			13.0	8.2	
Approach LOS	D			B	A	

Intersection Summary			
HCM 2000 Control Delay	18.5	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.66		
Actuated Cycle Length (s)	88.6	Sum of lost time (s)	12.6
Intersection Capacity Utilization	85.7%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

HCM Unsignalized Intersection Capacity Analysis
 15: Plant Nursery Entrance

AM Peak Period
 04/11/2018



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	10	16	10	162	643	16
Future Volume (Veh/h)	10	16	10	162	643	16
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)	10	16	10	162	643	16
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	None	
Median storage veh						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	833	651	659			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	833	651	659			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	97	97	99			
cM capacity (veh/h)	335	469	929			
Direction, Lane #	EB 1	NB 1	SB 1			
Volume Total	26	172	659			
Volume Left	10	10	0			
Volume Right	16	0	16			
cSH	406	929	1700			
Volume to Capacity	0.06	0.01	0.39			
Queue Length 95th (m)	1.6	0.2	0.0			
Control Delay (s)	14.5	0.6	0.0			
Lane LOS	B	A				
Approach Delay (s)	14.5	0.6	0.0			
Approach LOS	B					
Intersection Summary						
Average Delay			0.6			
Intersection Capacity Utilization			44.8%	ICU Level of Service	A	
Analysis Period (min)			15			

HCM Unsignalized Intersection Capacity Analysis

PM Peak Period

15: Plant Nursery Entrance

04/12/2018



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	29	44	29	654	257	44
Future Volume (Veh/h)	29	44	29	654	257	44
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	44	29	654	257	44
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	None	
Median storage (veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	991	279	301			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	991	279	301			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	89	94	98			
cM capacity (veh/h)	267	760	1260			
Direction, Lane #						
	EB 1	NB 1	SB 1			
Volume Total	73	683	301			
Volume Left	29	29	0			
Volume Right	44	0	44			
cSH	438	1260	1700			
Volume to Capacity	0.17	0.02	0.18			
Queue Length 95th (m)	4.5	0.5	0.0			
Control Delay (s)	14.9	0.6	0.0			
Lane LOS	B	A				
Approach Delay (s)	14.9	0.6	0.0			
Approach LOS	B					
Intersection Summary						
Average Delay			1.4			
Intersection Capacity Utilization		66.5%		ICU Level of Service		C
Analysis Period (min)			15			

HCM Unsignalized Intersection Capacity Analysis
 16: Airport Road & Boston Mills Road/Castleberg Side Road

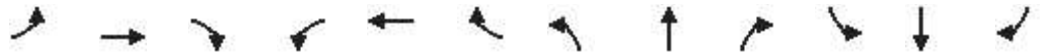
AM Peak Period
 04/11/2018



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔			↑	↗		↑	↗		↑	↗
Traffic Volume (veh/h)	0	1	2	56	2	23	2	139	4	47	609	0
Future Volume (Veh/h)	0	1	2	56	2	23	2	139	4	47	609	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)	0	1	2	56	2	23	2	139	4	47	609	0
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)						1						
Median type								None			None	
Median storage (veh)												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	858	850	609	848	846	139	609			143		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	858	850	609	848	846	139	609			143		
tC, single (s)	7.1	6.5	6.7	7.1	6.5	6.2	4.1			4.2		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.8	3.5	4.0	3.3	2.2			2.3		
p0 queue free %	100	100	100	79	99	97	100			97		
cM capacity (veh/h)	263	289	417	272	291	915	979			1409		
Direction, Lane #	EB 1	WB 1	NB 1	NB 2	SB 1	SB 2						
Volume Total	3	81	141	4	656	0						
Volume Left	0	56	2	0	47	0						
Volume Right	2	23	0	4	0	0						
cSH	364	380	979	1700	1409	1700						
Volume to Capacity	0.01	0.21	0.00	0.00	0.03	0.00						
Queue Length 95th (m)	0.2	6.0	0.0	0.0	0.8	0.0						
Control Delay (s)	15.0	18.2	0.1	0.0	0.9	0.0						
Lane LOS	B	C	A		A							
Approach Delay (s)	15.0	18.2	0.1		0.9							
Approach LOS	B	C										
Intersection Summary												
Average Delay			2.4									
Intersection Capacity Utilization			62.0%		ICU Level of Service				B			
Analysis Period (min)			15									

HCM Unsignalized Intersection Capacity Analysis
 16: Airport Road & Boston Mills Road/Castleberg Side Road

PM Peak Period
 04/12/2018



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔			↔	↔		↔	↔		↔	↔
Traffic Volume (veh/h)	2	1	0	8	2	54	2	598	32	33	203	1
Future Volume (Veh/h)	2	1	0	8	2	54	2	598	32	33	203	1
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)	2	1	0	8	2	54	2	598	32	33	203	1
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)						1						
Median type								None			None	
Median storage (veh)												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	899	903	203	872	872	598	204			630		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	899	903	203	872	872	598	204			630		
tC, single (s)	7.1	6.5	6.2	7.1	7.0	6.2	4.1			4.2		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.5	3.3	2.2			2.3		
p0 queue free %	99	100	100	97	99	89	100			96		
cM capacity (veh/h)	226	269	843	265	234	502	1380			933		
Direction, Lane #	EB 1	WB 1	NB 1	NB 2	SB 1	SB 2						
Volume Total	3	64	600	32	236	1						
Volume Left	2	8	2	0	33	0						
Volume Right	0	54	0	32	0	1						
cSH	239	595	1380	1700	933	1700						
Volume to Capacity	0.01	0.11	0.00	0.02	0.04	0.00						
Queue Length 95th (m)	0.3	2.7	0.0	0.0	0.8	0.0						
Control Delay (s)	20.3	14.0	0.0	0.0	1.6	0.0						
Lane LOS	C	B	A		A							
Approach Delay (s)	20.3	14.0	0.0		1.6							
Approach LOS	C	B										
Intersection Summary												
Average Delay			1.4									
Intersection Capacity Utilization			48.7%		ICU Level of Service				A			
Analysis Period (min)			15									

Queues
17: King Street & Airport Road

AM Peak Period
04/11/2018



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	15	300	107	478	3	104	100	514
v/c Ratio	0.23	0.58	0.49	0.91	0.01	0.11	0.13	0.48
Control Delay	36.7	33.8	37.9	57.1	9.3	8.0	10.0	13.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	36.7	33.8	37.9	57.1	9.3	8.0	10.0	13.6
Queue Length 50th (m)	2.2	46.6	16.8	87.2	0.2	7.0	8.3	54.1
Queue Length 95th (m)	8.2	73.0	33.8	#142.1	1.4	14.2	15.9	79.6
Internal Link Dist (m)		614.4		817.2		572.1		2217.7
Turn Bay Length (m)	65.0		50.0		60.0		55.0	
Base Capacity (vph)	71	553	234	564	266	979	760	1060
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.21	0.54	0.46	0.85	0.01	0.11	0.13	0.48

Intersection Summary

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

Queues
17: King Street & Airport Road

PM Peak Period
04/12/2018



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	39	398	28	397	43	452	30	132
v/c Ratio	0.24	0.71	0.18	0.71	0.06	0.42	0.07	0.14
Control Delay	31.2	39.0	29.9	37.9	9.6	12.8	9.8	8.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	31.2	39.0	29.9	37.9	9.6	12.8	9.8	8.7
Queue Length 50th (m)	5.7	68.1	4.0	65.4	3.4	44.1	2.4	9.4
Queue Length 95th (m)	14.8	101.3	11.3	98.4	8.1	65.5	6.5	17.7
Internal Link Dist (m)		614.4		817.3		572.1		2217.8
Turn Bay Length (m)	65.0		50.0		60.0		55.0	
Base Capacity (vph)	164	563	153	559	712	1076	435	964
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.24	0.71	0.18	0.71	0.06	0.42	0.07	0.14

Intersection Summary

HCM Signalized Intersection Capacity Analysis
17: King Street & Airport Road

AM Peak Period
04/11/2018

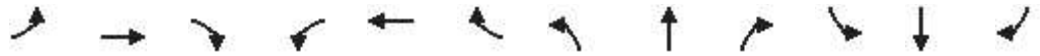


Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖	↗		↖	↗		↖	↗		↖	↗	
Traffic Volume (vph)	15	241	59	107	464	14	3	86	18	100	465	49
Future Volume (vph)	15	241	59	107	464	14	3	86	18	100	465	49
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.2	6.2		6.2	6.2		6.0	6.0		6.0	6.0	
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Frt	1.00	0.97		1.00	1.00		1.00	0.97		1.00	0.99	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1437	1782		1755	1840		1093	1645		1772	1786	
Flt Permitted	0.15	1.00		0.42	1.00		0.39	1.00		0.69	1.00	
Satd. Flow (perm)	232	1782		767	1840		451	1645		1287	1786	
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)	15	241	59	107	464	14	3	86	18	100	465	49
RTOR Reduction (vph)	0	9	0	0	1	0	0	7	0	0	4	0
Lane Group Flow (vph)	15	291	0	107	477	0	3	97	0	100	510	0
Heavy Vehicles (%)	27%	5%	3%	4%	3%	36%	67%	12%	22%	3%	6%	6%
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)	28.0	28.0		28.0	28.0		58.1	58.1		58.1	58.1	
Effective Green, g (s)	28.0	28.0		28.0	28.0		58.1	58.1		58.1	58.1	
Actuated g/C Ratio	0.28	0.28		0.28	0.28		0.59	0.59		0.59	0.59	
Clearance Time (s)	6.2	6.2		6.2	6.2		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	3.0	
Lane Grp Cap (vph)	66	507		218	524		266	972		760	1055	
v/s Ratio Prot		0.16			c0.26			0.06			c0.29	
v/s Ratio Perm	0.06			0.14			0.01			0.08		
v/c Ratio	0.23	0.57		0.49	0.91		0.01	0.10		0.13	0.48	
Uniform Delay, d1	26.9	30.0		29.2	33.9		8.3	8.7		8.9	11.5	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	1.8	1.6		1.7	19.6		0.1	0.2		0.4	1.6	
Delay (s)	28.6	31.6		31.0	53.5		8.4	8.9		9.3	13.1	
Level of Service	C	C		C	D		A	A		A	B	
Approach Delay (s)		31.5			49.4			8.9			12.5	
Approach LOS		C			D			A			B	

Intersection Summary		
HCM 2000 Control Delay	29.3	HCM 2000 Level of Service C
HCM 2000 Volume to Capacity ratio	0.62	
Actuated Cycle Length (s)	98.3	Sum of lost time (s) 12.2
Intersection Capacity Utilization	78.9%	ICU Level of Service D
Analysis Period (min)	15	
c Critical Lane Group		

HCM Signalized Intersection Capacity Analysis
17: King Street & Airport Road

PM Peak Period
04/12/2018



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	39	385	13	28	293	104	43	390	62	30	109	23
Future Volume (vph)	39	385	13	28	293	104	43	390	62	30	109	23
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.2	6.2		6.2	6.2		6.0	6.0		6.0	6.0	
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Frt	1.00	1.00		1.00	0.96		1.00	0.98		1.00	0.97	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1825	1879		1706	1827		1738	1850		1659	1654	
Flt Permitted	0.29	1.00		0.29	1.00		0.67	1.00		0.43	1.00	
Satd. Flow (perm)	552	1879		514	1827		1230	1850		753	1654	
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)	39	385	13	28	293	104	43	390	62	30	109	23
RTOR Reduction (vph)	0	1	0	0	13	0	0	6	0	0	8	0
Lane Group Flow (vph)	39	397	0	28	384	0	43	446	0	30	124	0
Heavy Vehicles (%)	0%	1%	23%	7%	1%	1%	5%	2%	0%	10%	14%	9%
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)	30.0	30.0		30.0	30.0		58.0	58.0		58.0	58.0	
Effective Green, g (s)	30.0	30.0		30.0	30.0		58.0	58.0		58.0	58.0	
Actuated g/C Ratio	0.30	0.30		0.30	0.30		0.58	0.58		0.58	0.58	
Clearance Time (s)	6.2	6.2		6.2	6.2		6.0	6.0		6.0	6.0	
Lane Grp Cap (vph)	165	562		153	547		711	1070		435	957	
v/s Ratio Prot		c0.21			0.21			c0.24			0.08	
v/s Ratio Perm	0.07			0.05			0.03			0.04		
v/c Ratio	0.24	0.71		0.18	0.70		0.06	0.42		0.07	0.13	
Uniform Delay, d1	26.5	31.2		26.0	31.1		9.2	11.7		9.3	9.6	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	3.3	7.3		2.6	7.4		0.2	1.2		0.3	0.3	
Delay (s)	29.8	38.5		28.6	38.5		9.4	12.9		9.6	9.9	
Level of Service	C	D		C	D		A	B		A	A	
Approach Delay (s)		37.7			37.9			12.6			9.8	
Approach LOS		D			D			B			A	

Intersection Summary		
HCM 2000 Control Delay	26.6	HCM 2000 Level of Service C
HCM 2000 Volume to Capacity ratio	0.51	
Actuated Cycle Length (s)	100.2	Sum of lost time (s) 12.2
Intersection Capacity Utilization	78.3%	ICU Level of Service D
Analysis Period (min)	15	

c Critical Lane Group

Appendix C – Synchro Outputs Future Year 2021 Do-Nothing Conditions

HCM Unsignalized Intersection Capacity Analysis
 1: Airport Road & Huntsmill Drive

AM Peak Period
 04/13/2018



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	W		T	T		T
Traffic Volume (veh/h)	0	0	167	0	0	503
Future Volume (Veh/h)	0	0	167	0	0	503
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)	0	0	167	0	0	503
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage (veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	670	167			167	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	670	167			167	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	100	100			100	
cM capacity (veh/h)	425	882			1423	
Direction, Lane #	WB 1	NB 1	NB 2	SB 1		
Volume Total	0	167	0	503		
Volume Left	0	0	0	0		
Volume Right	0	0	0	0		
cSH	1700	1700	1700	1423		
Volume to Capacity	0.00	0.10	0.00	0.00		
Queue Length 95th (m)	0.0	0.0	0.0	0.0		
Control Delay (s)	0.0	0.0	0.0	0.0		
Lane LOS	A					
Approach Delay (s)	0.0	0.0		0.0		
Approach LOS	A					
Intersection Summary						
Average Delay			0.0			
Intersection Capacity Utilization			29.8%	ICU Level of Service	A	
Analysis Period (min)			15			

HCM Unsignalized Intersection Capacity Analysis
 1: Airport Road & Huntsmill Drive

PM Peak Period
 04/13/2018



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	↔		↑	↗		↘
Traffic Volume (veh/h)	1	0	597	1	0	214
Future Volume (Veh/h)	1	0	597	1	0	214
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	0	597	1	0	214
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None		None	
Median storage (veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	811	597			598	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	811	597			598	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	100	100			100	
cM capacity (veh/h)	352	507			989	
Direction, Lane #	WB 1	NB 1	NB 2	SB 1		
Volume Total	1	597	1	214		
Volume Left	1	0	0	0		
Volume Right	0	0	1	0		
cSH	352	1700	1700	989		
Volume to Capacity	0.00	0.35	0.00	0.00		
Queue Length 95th (m)	0.1	0.0	0.0	0.0		
Control Delay (s)	15.3	0.0	0.0	0.0		
Lane LOS	C					
Approach Delay (s)	15.3	0.0		0.0		
Approach LOS	C					
Intersection Summary						
Average Delay			0.0			
Intersection Capacity Utilization			41.4%		ICU Level of Service	A
Analysis Period (min)			15			

HCM Unsignalized Intersection Capacity Analysis

2: Leamster Trail & Airport Road

AM Peak Period
04/13/2018



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	↔		↔	↑	↑	↔
Traffic Volume (veh/h)	1	9	0	156	523	0
Future Volume (Veh/h)	1	9	0	156	523	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	9	0	156	523	0
Pedestrians	1			2		
Lane Width (m)	3.7			3.7		
Walking Speed (m/s)	1.1			1.1		
Percent Blockage	0			0		
Right turn flare (veh)						
Median type				None	None	
Median storage (veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	680	526	524			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	680	526	524			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	100	98	100			
cM capacity (veh/h)	419	554	1052			
Direction, Lane #	EB 1	NB 1	NB 2	SB 1	SB 2	
Volume Total	10	0	156	523	0	
Volume Left	1	0	0	0	0	
Volume Right	9	0	0	0	0	
cSH	537	1700	1700	1700	1700	
Volume to Capacity	0.02	0.00	0.09	0.31	0.00	
Queue Length 95th (m)	0.4	0.0	0.0	0.0	0.0	
Control Delay (s)	11.8	0.0	0.0	0.0	0.0	
Lane LOS	B					
Approach Delay (s)	11.8	0.0		0.0		
Approach LOS	B					
Intersection Summary						
Average Delay			0.2			
Intersection Capacity Utilization			38.2%	ICU Level of Service	A	
Analysis Period (min)			15			

HCM Unsignalized Intersection Capacity Analysis

2: Leamster Trail & Airport Road

PM Peak Period
04/13/2018



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	0	6	11	598	215	1
Future Volume (Veh/h)	0	6	11	598	215	1
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)	0	6	11	598	215	1
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	None	
Median storage veh						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	835	215	216			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	835	215	216			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	100	99	99			
cM capacity (veh/h)	338	830	1366			
Direction, Lane #	EB 1	NB 1	NB 2	SB 1	SB 2	
Volume Total	6	11	598	215	1	
Volume Left	0	11	0	0	0	
Volume Right	6	0	0	0	1	
cSH	830	1366	1700	1700	1700	
Volume to Capacity	0.01	0.01	0.35	0.13	0.00	
Queue Length 95th (m)	0.2	0.2	0.0	0.0	0.0	
Control Delay (s)	9.4	7.7	0.0	0.0	0.0	
Lane LOS	A	A				
Approach Delay (s)	9.4	0.1		0.0		
Approach LOS	A					
Intersection Summary						
Average Delay			0.2			
Intersection Capacity Utilization			41.5%		ICU Level of Service	A
Analysis Period (min)			15			

HCM Unsignalized Intersection Capacity Analysis
3: 16114 North Access

AM Peak Period
04/13/2018



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	2	17	3	156	523	1
Future Volume (Veh/h)	2	17	3	156	523	1
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	17	3	156	523	1
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	None	
Median storage veh						
Upstream signal (m)				342		
pX, platoon unblocked						
vC, conflicting volume	686	524	524			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	686	524	524			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	100	97	100			
cM capacity (veh/h)	412	554	1043			
Direction, Lane #	EB 1	NB 1	NB 2	SB 1		
Volume Total	19	3	156	524		
Volume Left	2	3	0	0		
Volume Right	17	0	0	1		
cSH	534	1043	1700	1700		
Volume to Capacity	0.04	0.00	0.09	0.31		
Queue Length 95th (m)	0.8	0.1	0.0	0.0		
Control Delay (s)	12.0	8.5	0.0	0.0		
Lane LOS	B	A				
Approach Delay (s)	12.0	0.2		0.0		
Approach LOS	B					
Intersection Summary						
Average Delay			0.4			
Intersection Capacity Utilization			37.6%		ICU Level of Service	A
Analysis Period (min)			15			

HCM Unsignalized Intersection Capacity Analysis
3: 16114 North Access

PM Peak Period
04/13/2018



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	3	6	16	598	215	2
Future Volume (Veh/h)	3	6	16	598	215	2
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	6	16	598	215	2
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	None	
Median storage veh						
Upstream signal (m)				342		
pX, platoon unblocked	0.93					
vC, conflicting volume	846	216	217			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	800	216	217			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	99	99	99			
cM capacity (veh/h)	327	824	1353			
Direction, Lane #	EB 1	NB 1	NB 2	SB 1		
Volume Total	9	16	598	217		
Volume Left	3	16	0	0		
Volume Right	6	0	0	2		
cSH	547	1353	1700	1700		
Volume to Capacity	0.02	0.01	0.35	0.13		
Queue Length 95th (m)	0.4	0.3	0.0	0.0		
Control Delay (s)	11.7	7.7	0.0	0.0		
Lane LOS	B	A				
Approach Delay (s)	11.7	0.2		0.0		
Approach LOS	B					
Intersection Summary						
Average Delay			0.3			
Intersection Capacity Utilization			41.5%		ICU Level of Service	A
Analysis Period (min)			15			

HCM Unsignalized Intersection Capacity Analysis
4: 16114 South Access

AM Peak Period
04/13/2018



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	5	7	9	156	523	15
Future Volume (Veh/h)	5	7	9	156	523	15
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	7	9	156	523	15
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	None	
Median storage veh						
Upstream signal (m)				262		
pX, platoon unblocked						
vC, conflicting volume	704	530	538			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	704	530	538			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	99	99	99			
cM capacity (veh/h)	400	549	1030			
Direction, Lane #						
	EB 1	NB 1	NB 2	SB 1		
Volume Total	12	9	156	538		
Volume Left	5	9	0	0		
Volume Right	7	0	0	15		
cSH	475	1030	1700	1700		
Volume to Capacity	0.03	0.01	0.09	0.32		
Queue Length 95th (m)	0.6	0.2	0.0	0.0		
Control Delay (s)	12.8	8.5	0.0	0.0		
Lane LOS	B	A				
Approach Delay (s)	12.8	0.5		0.0		
Approach LOS	B					
Intersection Summary						
Average Delay			0.3			
Intersection Capacity Utilization			38.4%		ICU Level of Service	A
Analysis Period (min)			15			

HCM Unsignalized Intersection Capacity Analysis

4: 16114 South Access

PM Peak Period
04/13/2018



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	22	41	27	598	215	30
Future Volume (Veh/h)	22	41	27	598	215	30
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)	22	41	27	598	215	30
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	None	
Median storage (veh)						
Upstream signal (m)	262					
pX, platoon unblocked	0.88					
vC, conflicting volume	882	230	245			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	801	230	245			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	93	95	98			
cM capacity (veh/h)	306	809	1321			
Direction, Lane #	EB 1	NB 1	NB 2	SB 1		
Volume Total	63	27	598	245		
Volume Left	22	27	0	0		
Volume Right	41	0	0	30		
cSH	514	1321	1700	1700		
Volume to Capacity	0.12	0.02	0.35	0.14		
Queue Length 95th (m)	3.2	0.5	0.0	0.0		
Control Delay (s)	13.0	7.8	0.0	0.0		
Lane LOS	B	A				
Approach Delay (s)	13.0	0.3	0.0			
Approach LOS	B					
Intersection Summary						
Average Delay	1.1					
Intersection Capacity Utilization	41.9%			ICU Level of Service	A	
Analysis Period (min)	15					

HCM Unsignalized Intersection Capacity Analysis
 5: Airport Road & Walker Road West/Walker Road East

AM Peak Period
 04/13/2018



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔			↔			↑	↗		↔	
Traffic Volume (veh/h)	9	12	56	10	6	9	20	154	3	4	476	33
Future Volume (Veh/h)	9	12	56	10	6	9	20	154	3	4	476	33
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)	9	12	56	10	6	9	20	154	3	4	476	33
Pedestrians		1						1				
Lane Width (m)		3.7						3.7				
Walking Speed (m/s)		1.1						1.1				
Percent Blockage		0						0				
Right turn flare (veh)												
Median type								None			None	
Median storage veh												
Upstream signal (m)								199				
pX, platoon unblocked												
vC, conflicting volume	708	698	494	758	712	154	510			157		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	708	698	494	758	712	154	510			157		
tC, single (s)	7.2	6.6	6.3	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.6	4.1	3.4	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	97	97	90	96	98	99	98			100		
cM capacity (veh/h)	322	348	566	281	352	892	1064			1435		
Direction, Lane #	EB 1	WB 1	NB 1	NB 2	SB 1							
Volume Total	77	25	174	3	513							
Volume Left	9	10	20	0	4							
Volume Right	56	9	0	3	33							
cSH	477	399	1064	1700	1435							
Volume to Capacity	0.16	0.06	0.02	0.00	0.00							
Queue Length 95th (m)	4.3	1.5	0.4	0.0	0.1							
Control Delay (s)	14.0	14.6	1.1	0.0	0.1							
Lane LOS	B	B	A		A							
Approach Delay (s)	14.0	14.6	1.1		0.1							
Approach LOS	B	B										
Intersection Summary												
Average Delay			2.1									
Intersection Capacity Utilization			45.6%	ICU Level of Service		A						
Analysis Period (min)			15									

HCM Unsignalized Intersection Capacity Analysis
5: Airport Road & Walker Road West/Walker Road East

PM Peak Period
04/13/2018



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕	↕		↕	
Traffic Volume (veh/h)	22	10	47	5	1	9	57	586	25	6	200	16
Future Volume (Veh/h)	22	10	47	5	1	9	57	586	25	6	200	16
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)	22	10	47	5	1	9	57	586	25	6	200	16
Pedestrians		2						1				
Lane Width (m)		3.7						3.7				
Walking Speed (m/s)		1.1						1.1				
Percent Blockage		0						0				
Right turn flare (veh)												
Median type								None			None	
Median storage veh												
Upstream signal (m)								199				
pX, platoon unblocked	0.83	0.83		0.83	0.83	0.83				0.83		
vC, conflicting volume	932	947	211	973	930	586	218			611		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	814	833	211	865	813	398	218			428		
tC, single (s)	7.1	6.5	6.2	7.3	7.5	6.2	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.7	4.9	3.3	2.2			2.2		
p0 queue free %	91	96	94	97	99	98	96			99		
cM capacity (veh/h)	233	242	827	186	176	544	1361			947		
Direction, Lane #	EB 1	WB 1	NB 1	NB 2	SB 1							
Volume Total	79	15	643	25	222							
Volume Left	22	5	57	0	6							
Volume Right	47	9	0	25	16							
cSH	410	305	1361	1700	947							
Volume to Capacity	0.19	0.05	0.04	0.01	0.01							
Queue Length 95th (m)	5.4	1.2	1.0	0.0	0.1							
Control Delay (s)	15.9	17.4	1.1	0.0	0.3							
Lane LOS	C	C	A		A							
Approach Delay (s)	15.9	17.4	1.1		0.3							
Approach LOS	C	C										
Intersection Summary												
Average Delay			2.4									
Intersection Capacity Utilization			62.0%		ICU Level of Service				B			
Analysis Period (min)			15									

Queues
6: Old Church Road & Airport Road

AM Peak Period
04/13/2018



Lane Group	WBL	WBR	NBT	NBR	SBT
Lane Group Flow (vph)	267	57	150	166	512
v/c Ratio	0.66	0.17	0.18	0.18	0.57
Control Delay	30.7	7.0	8.9	2.3	13.6
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	30.7	7.0	8.9	2.3	13.6
Queue Length 50th (m)	28.3	0.0	7.9	0.0	35.4
Queue Length 95th (m)	48.8	7.1	19.9	8.0	76.7
Internal Link Dist (m)	119.4		41.8		175.2
Turn Bay Length (m)		20.0		45.0	
Base Capacity (vph)	578	466	814	927	896
Starvation Cap Reductn	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.46	0.12	0.18	0.18	0.57
Intersection Summary					

Queues
6: Old Church Road & Airport Road

PM Peak Period
04/13/2018



Lane Group	WBL	WBR	NBT	NBR	SBT
Lane Group Flow (vph)	190	107	547	337	264
v/c Ratio	0.57	0.28	0.50	0.31	0.35
Control Delay	29.4	6.8	10.1	1.9	9.1
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	29.4	6.8	10.1	1.9	9.1
Queue Length 50th (m)	19.2	0.0	31.7	0.0	13.6
Queue Length 95th (m)	35.4	9.9	64.9	9.7	32.0
Internal Link Dist (m)	119.4		41.8		175.2
Turn Bay Length (m)		20.0		45.0	
Base Capacity (vph)	600	608	1097	1070	748
Starvation Cap Reductn	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.32	0.18	0.50	0.31	0.35

Intersection Summary

HCM Signalized Intersection Capacity Analysis

6: Old Church Road & Airport Road

AM Peak Period
04/13/2018



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	267	57	150	166	92	420
Future Volume (vph)	267	57	150	166	92	420
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.6	6.6	7.1	7.1		7.1
Lane Util. Factor	1.00	1.00	1.00	1.00		1.00
Frpb, ped/bikes	1.00	0.98	1.00	1.00		1.00
Flpb, ped/bikes	1.00	1.00	1.00	1.00		1.00
Frt	1.00	0.85	1.00	0.85		1.00
Flt Protected	0.95	1.00	1.00	1.00		0.99
Satd. Flow (prot)	1755	1299	1455	1526		1741
Flt Permitted	0.95	1.00	1.00	1.00		0.91
Satd. Flow (perm)	1755	1299	1455	1526		1602
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	267	57	150	166	92	420
RTOR Reduction (vph)	0	44	0	73	0	0
Lane Group Flow (vph)	267	13	150	93	0	512
Confl. Peds. (#/hr)	3	1				
Heavy Vehicles (%)	4%	23%	32%	7%	11%	9%
Turn Type	Prot	Perm	NA	Perm	Perm	NA
Protected Phases	8		2			6
Permitted Phases		8		2	6	
Actuated Green, G (s)	14.9	14.9	36.4	36.4		36.4
Effective Green, g (s)	14.9	14.9	36.4	36.4		36.4
Actuated g/C Ratio	0.23	0.23	0.56	0.56		0.56
Clearance Time (s)	6.6	6.6	7.1	7.1		7.1
Vehicle Extension (s)	3.0	3.0	3.0	3.0		3.0
Lane Grp Cap (vph)	402	297	814	854		897
v/s Ratio Prot	c0.15		0.10			
v/s Ratio Perm		0.01		0.06		c0.32
v/c Ratio	0.66	0.04	0.18	0.11		0.57
Uniform Delay, d1	22.8	19.5	7.0	6.7		9.2
Progression Factor	1.00	1.00	1.00	1.00		1.00
Incremental Delay, d2	4.1	0.1	0.5	0.3		2.6
Delay (s)	26.9	19.6	7.5	7.0		11.9
Level of Service	C	B	A	A		B
Approach Delay (s)	25.6		7.2			11.9
Approach LOS	C		A			B

Intersection Summary

HCM 2000 Control Delay	14.5	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.60		
Actuated Cycle Length (s)	65.0	Sum of lost time (s)	13.7
Intersection Capacity Utilization	67.2%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis

6: Old Church Road & Airport Road

PM Peak Period
04/13/2018



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	190	107	547	337	73	191
Future Volume (vph)	190	107	547	337	73	191
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.6	6.6	7.1	7.1		7.1
Lane Util. Factor	1.00	1.00	1.00	1.00		1.00
Frpb, ped/bikes	1.00	0.97	1.00	0.97		1.00
Flpb, ped/bikes	1.00	1.00	1.00	1.00		1.00
Frt	1.00	0.85	1.00	0.85		1.00
Flt Protected	0.95	1.00	1.00	1.00		0.99
Satd. Flow (prot)	1772	1589	1847	1572		1616
Flt Permitted	0.95	1.00	1.00	1.00		0.77
Satd. Flow (perm)	1772	1589	1847	1572		1260
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	190	107	547	337	73	191
RTOR Reduction (vph)	0	87	0	137	0	0
Lane Group Flow (vph)	190	20	547	200	0	264
Confl. Peds. (#/hr)	4	4		6	6	
Heavy Vehicles (%)	3%	0%	4%	1%	15%	18%
Turn Type	Prot	Perm	NA	Perm	Perm	NA
Protected Phases	8		2			6
Permitted Phases		8		2	6	
Actuated Green, G (s)	12.0	12.0	37.7	37.7		37.7
Effective Green, g (s)	12.0	12.0	37.7	37.7		37.7
Actuated g/C Ratio	0.19	0.19	0.59	0.59		0.59
Clearance Time (s)	6.6	6.6	7.1	7.1		7.1
Vehicle Extension (s)	3.0	3.0	3.0	3.0		3.0
Lane Grp Cap (vph)	335	300	1098	934		749
v/s Ratio Prot	c0.11		c0.30			
v/s Ratio Perm		0.01		0.13		0.21
v/c Ratio	0.57	0.07	0.50	0.21		0.35
Uniform Delay, d1	23.3	21.1	7.4	6.0		6.6
Progression Factor	1.00	1.00	1.00	1.00		1.00
Incremental Delay, d2	2.2	0.1	1.6	0.5		1.3
Delay (s)	25.5	21.2	9.0	6.5		7.9
Level of Service	C	C	A	A		A
Approach Delay (s)	24.0		8.1			7.9
Approach LOS	C		A			A

Intersection Summary

HCM 2000 Control Delay	11.3	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.51		
Actuated Cycle Length (s)	63.4	Sum of lost time (s)	13.7
Intersection Capacity Utilization	71.3%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

HCM Unsignalized Intersection Capacity Analysis
7: Airport Road & Parsons Avenue

AM Peak Period
04/13/2018



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	10	37	5	270	705	7
Future Volume (Veh/h)	10	37	5	270	705	7
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)	10	37	5	270	705	7
Pedestrians	2					
Lane Width (m)	3.7					
Walking Speed (m/s)	1.1					
Percent Blockage	0					
Right turn flare (veh)						
Median type				None	None	
Median storage (veh)						
Upstream signal (m)				100	66	
pX, platoon unblocked	0.83	0.83	0.83			
vC, conflicting volume	990	710	714			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	890	554	558			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	96	92	99			
cM capacity (veh/h)	262	446	852			
Direction, Lane #	EB 1	NB 1	SB 1			
Volume Total	47	275	712			
Volume Left	10	5	0			
Volume Right	37	0	7			
cSH	388	852	1700			
Volume to Capacity	0.12	0.01	0.42			
Queue Length 95th (m)	3.1	0.1	0.0			
Control Delay (s)	15.5	0.2	0.0			
Lane LOS	C	A				
Approach Delay (s)	15.5	0.2	0.0			
Approach LOS	C					
Intersection Summary						
Average Delay			0.8			
Intersection Capacity Utilization			47.5%	ICU Level of Service	A	
Analysis Period (min)			15			

HCM Unsignalized Intersection Capacity Analysis
7: Airport Road & Parsons Avenue

PM Peak Period
04/13/2018



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	11	31	47	781	372	28
Future Volume (Veh/h)	11	31	47	781	372	28
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)	11	31	47	781	372	28
Pedestrians	3			3	4	
Lane Width (m)	3.7			3.7	3.7	
Walking Speed (m/s)	1.1			1.1	1.1	
Percent Blockage	0			0	0	
Right turn flare (veh)						
Median type				None	None	
Median storage veh						
Upstream signal (m)				100	66	
pX, platoon unblocked	0.97	0.97	0.97			
vC, conflicting volume	1268	392	403			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1261	360	372			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	94	95	96			
cM capacity (veh/h)	176	666	1161			
Direction, Lane #	EB 1	NB 1	SB 1			
Volume Total	42	828	400			
Volume Left	11	47	0			
Volume Right	31	0	28			
cSH	385	1161	1700			
Volume to Capacity	0.11	0.04	0.24			
Queue Length 95th (m)	2.8	1.0	0.0			
Control Delay (s)	15.5	1.0	0.0			
Lane LOS	C	A				
Approach Delay (s)	15.5	1.0	0.0			
Approach LOS	C					
Intersection Summary						
Average Delay			1.2			
Intersection Capacity Utilization			79.3%	ICU Level of Service	D	
Analysis Period (min)			15			

HCM Unsignalized Intersection Capacity Analysis

8: Emma Street & Airport Road

AM Peak Period
04/13/2018



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	2	12	2	288	750	3
Future Volume (Veh/h)	2	12	2	288	750	3
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	12	2	288	750	3
Pedestrians	5					
Lane Width (m)	3.7					
Walking Speed (m/s)	1.1					
Percent Blockage	0					
Right turn flare (veh)						
Median type				None	None	
Median storage veh						
Upstream signal (m)				49	116	
pX, platoon unblocked	0.85	0.85	0.85			
vC, conflicting volume	1048	756	758			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	968	624	626			
tC, single (s)	6.4	6.2	4.6			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.7			
p0 queue free %	99	97	100			
cM capacity (veh/h)	239	413	644			
Direction, Lane #	EB 1	NB 1	SB 1			
Volume Total	14	290	753			
Volume Left	2	2	0			
Volume Right	12	0	3			
cSH	374	644	1700			
Volume to Capacity	0.04	0.00	0.44			
Queue Length 95th (m)	0.9	0.1	0.0			
Control Delay (s)	15.0	0.1	0.0			
Lane LOS	B	A				
Approach Delay (s)	15.0	0.1	0.0			
Approach LOS	B					
Intersection Summary						
Average Delay				0.2		
Intersection Capacity Utilization				49.7%	ICU Level of Service	A
Analysis Period (min)				15		

HCM Unsignalized Intersection Capacity Analysis
8: Emma Street & Airport Road

PM Peak Period
04/13/2018



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	8	8	15	842	386	12
Future Volume (Veh/h)	8	8	15	842	386	12
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)	8	8	15	842	386	12
Pedestrians	4			1	4	
Lane Width (m)	3.7			3.7	3.7	
Walking Speed (m/s)	1.1			1.1	1.1	
Percent Blockage	0			0	0	
Right turn flare (veh)						
Median type				None	None	
Median storage veh						
Upstream signal (m)				49	116	
pX, platoon unblocked						
vC, conflicting volume	1272	397	402			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1272	397	402			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	96	99	99			
cM capacity (veh/h)	183	654	1163			
Direction, Lane #	EB 1	NB 1	SB 1			
Volume Total	16	857	398			
Volume Left	8	15	0			
Volume Right	8	0	12			
cSH	286	1163	1700			
Volume to Capacity	0.06	0.01	0.23			
Queue Length 95th (m)	1.3	0.3	0.0			
Control Delay (s)	18.3	0.3	0.0			
Lane LOS	C	A				
Approach Delay (s)	18.3	0.3	0.0			
Approach LOS	C					
Intersection Summary						
Average Delay			0.5			
Intersection Capacity Utilization			66.7%	ICU Level of Service	C	
Analysis Period (min)			15			

Queues
9: Airport Road & Caledon Trailway Path

AM Peak Period
04/13/2018



Lane Group	NBT	SBT
Lane Group Flow (vph)	290	762
v/c Ratio	0.17	0.42
Control Delay	0.2	0.7
Queue Delay	0.0	0.0
Total Delay	0.2	0.7
Queue Length 50th (m)	0.0	0.0
Queue Length 95th (m)	0.0	0.0
Internal Link Dist (m)	16.2	25.5
Turn Bay Length (m)		
Base Capacity (vph)	1715	1830
Starvation Cap Reductn	0	0
Spillback Cap Reductn	0	0
Storage Cap Reductn	0	0
Reduced v/c Ratio	0.17	0.42
Intersection Summary		

Queues
 9: Airport Road & Caledon Trailway Path

PM Peak Period
 04/13/2018



Lane Group	NBT	SBT
Lane Group Flow (vph)	867	388
v/c Ratio	0.46	0.22
Control Delay	0.8	0.3
Queue Delay	0.0	0.0
Total Delay	0.8	0.3
Queue Length 50th (m)	0.0	0.0
Queue Length 95th (m)	0.0	0.0
Internal Link Dist (m)	16.2	25.5
Turn Bay Length (m)		
Base Capacity (vph)	1865	1779
Starvation Cap Reductn	0	0
Spillback Cap Reductn	0	0
Storage Cap Reductn	0	0
Reduced v/c Ratio	0.46	0.22
Intersection Summary		

HCM Signalized Intersection Capacity Analysis
9: Airport Road & Caledon Trailway Path

AM Peak Period
04/13/2018



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	290	0	0	762	0
Future Volume (vph)	0	0	0	0	0	0	0	290	0	0	762	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)								1715			1830	
Flt Permitted								1.00			1.00	
Satd. Flow (perm)								1715			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)	0	0	0	0	0	0	0	290	0	0	762	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	290	0	0	762	0
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	0%	12%	0%	0%	5%	0%
Turn Type								NA			NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8								
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)								1715			1830	
v/s Ratio Prot								0.17			c0.42	
v/s Ratio Perm												
v/c Ratio								0.17			0.42	
Uniform Delay, d1								0.0			0.0	
Progression Factor								1.00			1.00	
Incremental Delay, d2								0.2			0.7	
Delay (s)								0.2			0.7	
Level of Service								A			A	
Approach Delay (s)		0.0			0.0			0.2			0.7	
Approach LOS		A			A			A			A	
Intersection Summary												
HCM 2000 Control Delay			0.6					HCM 2000 Level of Service			A	
HCM 2000 Volume to Capacity ratio			0.51									
Actuated Cycle Length (s)			64.0					Sum of lost time (s)		12.0		
Intersection Capacity Utilization			45.1%					ICU Level of Service		A		
Analysis Period (min)			15									
c Critical Lane Group												

HCM Signalized Intersection Capacity Analysis
9: Airport Road & Caledon Trailway Path

PM Peak Period
04/13/2018



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	867	0	0	388	0
Future Volume (vph)	0	0	0	0	0	0	0	867	0	0	388	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)								1865			1779	
Flt Permitted								1.00			1.00	
Satd. Flow (perm)								1865			1779	
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	867	0	0	388	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	867	0	0	388	0
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	0%	3%	0%	0%	8%	0%
Turn Type								NA			NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8								
Actuated Green, G (s)								67.0			67.0	
Effective Green, g (s)								67.0			67.0	
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)								1865			1779	
v/s Ratio Prot								c0.46			0.22	
v/s Ratio Perm												
v/c Ratio								0.46			0.22	
Uniform Delay, d1								0.0			0.0	
Progression Factor								1.00			1.00	
Incremental Delay, d2								0.8			0.3	
Delay (s)								0.8			0.3	
Level of Service								A			A	
Approach Delay (s)		0.0			0.0			0.8			0.3	
Approach LOS		A			A			A			A	
Intersection Summary												
HCM 2000 Control Delay			0.7					HCM 2000 Level of Service			A	
HCM 2000 Volume to Capacity ratio			0.57									
Actuated Cycle Length (s)			67.0					Sum of lost time (s)		12.0		
Intersection Capacity Utilization			50.6%					ICU Level of Service		A		
Analysis Period (min)			15									
c Critical Lane Group												

HCM Unsignalized Intersection Capacity Analysis
 10: Mountcrest Road & Airport Road

AM Peak Period
 04/13/2018



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	13	9	284	1	3	756
Future Volume (Veh/h)	13	9	284	1	3	756
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	9	284	1	3	756
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None		None	
Median storage veh						
Upstream signal (m)					40	
pX, platoon unblocked						
vC, conflicting volume	1046	284			285	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1046	284			285	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	95	99			100	
cM capacity (veh/h)	255	760			1289	
Direction, Lane #	WB 1	NB 1	NB 2	SB 1		
Volume Total	22	284	1	759		
Volume Left	13	0	0	3		
Volume Right	9	0	1	0		
cSH	350	1700	1700	1289		
Volume to Capacity	0.06	0.17	0.00	0.00		
Queue Length 95th (m)	1.5	0.0	0.0	0.1		
Control Delay (s)	16.0	0.0	0.0	0.1		
Lane LOS	C			A		
Approach Delay (s)	16.0	0.0		0.1		
Approach LOS	C					
Intersection Summary						
Average Delay			0.4			
Intersection Capacity Utilization			52.2%		ICU Level of Service	A
Analysis Period (min)			15			

HCM Unsignalized Intersection Capacity Analysis
 10: Mountcrest Road & Airport Road

PM Peak Period
 04/13/2018



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	5	12	856	20	9	385
Future Volume (Veh/h)	5	12	856	20	9	385
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	12	856	20	9	385
Pedestrians	1					
Lane Width (m)	3.7					
Walking Speed (m/s)	1.1					
Percent Blockage	0					
Right turn flare (veh)						
Median type	None			None		
Median storage veh						
Upstream signal (m)	40					
pX, platoon unblocked						
vC, conflicting volume	1260	857			877	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1260	857			877	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	97	97			99	
cM capacity (veh/h)	186	357			769	
Direction, Lane #	WB 1	NB 1	NB 2	SB 1		
Volume Total	17	856	20	394		
Volume Left	5	0	0	9		
Volume Right	12	0	20	0		
cSH	281	1700	1700	769		
Volume to Capacity	0.06	0.50	0.01	0.01		
Queue Length 95th (m)	1.5	0.0	0.0	0.3		
Control Delay (s)	18.7	0.0	0.0	0.4		
Lane LOS	C			A		
Approach Delay (s)	18.7	0.0			0.4	
Approach LOS	C					
Intersection Summary						
Average Delay			0.4			
Intersection Capacity Utilization			55.1%		ICU Level of Service	B
Analysis Period (min)			15			

HCM Unsignalized Intersection Capacity Analysis
 11: Airport Road & Larry Street

AM Peak Period
 04/13/2018



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	18	9	1	264	760	9
Future Volume (Veh/h)	18	9	1	264	760	9
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)	18	9	1	264	760	9
Pedestrians	3					
Lane Width (m)	3.7					
Walking Speed (m/s)	1.1					
Percent Blockage	0					
Right turn flare (veh)						
Median type				None	None	
Median storage veh						
Upstream signal (m)						98
pX, platoon unblocked						
vC, conflicting volume	1034	768	772			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1034	768	772			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	93	98	100			
cM capacity (veh/h)	259	404	850			
Direction, Lane #	EB 1	NB 1	SB 1			
Volume Total	27	265	769			
Volume Left	18	1	0			
Volume Right	9	0	9			
cSH	294	850	1700			
Volume to Capacity	0.09	0.00	0.45			
Queue Length 95th (m)	2.3	0.0	0.0			
Control Delay (s)	18.5	0.0	0.0			
Lane LOS	C	A				
Approach Delay (s)	18.5	0.0	0.0			
Approach LOS	C					
Intersection Summary						
Average Delay			0.5			
Intersection Capacity Utilization			50.5%	ICU Level of Service	A	
Analysis Period (min)			15			

HCM Unsignalized Intersection Capacity Analysis
 11: Airport Road & Larry Street

PM Peak Period
 04/13/2018



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	15	8	7	860	377	12
Future Volume (Veh/h)	15	8	7	860	377	12
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)	15	8	7	860	377	12
Pedestrians	1					
Lane Width (m)	3.7					
Walking Speed (m/s)	1.1					
Percent Blockage	0					
Right turn flare (veh)						
Median type				None	None	
Median storage veh						
Upstream signal (m)					98	
pX, platoon unblocked						
vC, conflicting volume	1258	384	390			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1258	384	390			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	92	99	99			
cM capacity (veh/h)	189	667	1178			
Direction, Lane #	EB 1	NB 1	SB 1			
Volume Total	23	867	389			
Volume Left	15	7	0			
Volume Right	8	0	12			
cSH	252	1178	1700			
Volume to Capacity	0.09	0.01	0.23			
Queue Length 95th (m)	2.3	0.1	0.0			
Control Delay (s)	20.7	0.2	0.0			
Lane LOS	C	A				
Approach Delay (s)	20.7	0.2	0.0			
Approach LOS	C					
Intersection Summary						
Average Delay			0.5			
Intersection Capacity Utilization			60.8%	ICU Level of Service		B
Analysis Period (min)			15			

HCM Unsignalized Intersection Capacity Analysis
 12: Marion Street & Airport Road

AM Peak Period
 04/13/2018



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	3	9	0	280	741	0
Future Volume (Veh/h)	3	9	0	280	741	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	9	0	280	741	0
Pedestrians	3					
Lane Width (m)	3.7					
Walking Speed (m/s)	1.1					
Percent Blockage	0					
Right turn flare (veh)						
Median type				None	None	
Median storage veh						
Upstream signal (m)						173
pX, platoon unblocked						
vC, conflicting volume	1024	744	744			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1024	744	744			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	99	98	100			
cM capacity (veh/h)	262	417	870			
Direction, Lane #	EB 1	NB 1	SB 1			
Volume Total	12	280	741			
Volume Left	3	0	0			
Volume Right	9	0	0			
cSH	363	870	1700			
Volume to Capacity	0.03	0.00	0.44			
Queue Length 95th (m)	0.8	0.0	0.0			
Control Delay (s)	15.2	0.0	0.0			
Lane LOS	C					
Approach Delay (s)	15.2	0.0	0.0			
Approach LOS	C					
Intersection Summary						
Average Delay			0.2			
Intersection Capacity Utilization			49.0%	ICU Level of Service	A	
Analysis Period (min)			15			

HCM Unsignalized Intersection Capacity Analysis
 12: Marion Street & Airport Road

PM Peak Period
 04/13/2018



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	0	1	1	855	388	4
Future Volume (Veh/h)	0	1	1	855	388	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)	0	1	1	855	388	4
Pedestrians	3			1		
Lane Width (m)	3.7			3.7		
Walking Speed (m/s)	1.1			1.1		
Percent Blockage	0			0		
Right turn flare (veh)						
Median type				None	None	
Median storage veh						
Upstream signal (m)	173					
pX, platoon unblocked						
vC, conflicting volume	1250	394	395			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1250	394	395			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	100	100	100			
cM capacity (veh/h)	192	657	1171			
Direction, Lane #	EB 1	NB 1	SB 1			
Volume Total	1	856	392			
Volume Left	0	1	0			
Volume Right	1	0	4			
cSH	657	1171	1700			
Volume to Capacity	0.00	0.00	0.23			
Queue Length 95th (m)	0.0	0.0	0.0			
Control Delay (s)	10.5	0.0	0.0			
Lane LOS	B	A				
Approach Delay (s)	10.5	0.0	0.0			
Approach LOS	B					
Intersection Summary						
Average Delay	0.0					
Intersection Capacity Utilization	56.1%			ICU Level of Service	B	
Analysis Period (min)	15					

HCM Unsignalized Intersection Capacity Analysis
 13: Airport Road & Hilltop Drive

AM Peak Period
 04/13/2018



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	6	21	6	252	758	25
Future Volume (Veh/h)	6	21	6	252	758	25
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)	6	21	6	252	758	25
Pedestrians	2					
Lane Width (m)	3.7					
Walking Speed (m/s)	1.1					
Percent Blockage	0					
Right turn flare (veh)						
Median type				None	None	
Median storage veh						
Upstream signal (m)						266
pX, platoon unblocked						
vC, conflicting volume	1036	772	785			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1036	772	785			
tC, single (s)	6.4	6.2	4.4			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.5			
p0 queue free %	98	95	99			
cM capacity (veh/h)	256	394	710			
Direction, Lane #	EB 1	NB 1	NB 2	SB 1		
Volume Total	27	6	252	783		
Volume Left	6	6	0	0		
Volume Right	21	0	0	25		
cSH	352	710	1700	1700		
Volume to Capacity	0.08	0.01	0.15	0.46		
Queue Length 95th (m)	1.9	0.2	0.0	0.0		
Control Delay (s)	16.1	10.1	0.0	0.0		
Lane LOS	C	B				
Approach Delay (s)	16.1	0.2		0.0		
Approach LOS	C					
Intersection Summary						
Average Delay			0.5			
Intersection Capacity Utilization			51.4%	ICU Level of Service	A	
Analysis Period (min)			15			

HCM Unsignalized Intersection Capacity Analysis
 13: Airport Road & Hilltop Drive

PM Peak Period
 04/13/2018



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	3	11	32	875	370	14
Future Volume (Veh/h)	3	11	32	875	370	14
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	11	32	875	370	14
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	None	
Median storage veh						
Upstream signal (m)					266	
pX, platoon unblocked						
vC, conflicting volume	1316	377	384			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1316	377	384			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	98	98	97			
cM capacity (veh/h)	171	674	1186			
Direction, Lane #	EB 1	NB 1	NB 2	SB 1		
Volume Total	14	32	875	384		
Volume Left	3	32	0	0		
Volume Right	11	0	0	14		
cSH	413	1186	1700	1700		
Volume to Capacity	0.03	0.03	0.51	0.23		
Queue Length 95th (m)	0.8	0.6	0.0	0.0		
Control Delay (s)	14.0	8.1	0.0	0.0		
Lane LOS	B	A				
Approach Delay (s)	14.0	0.3		0.0		
Approach LOS	B					
Intersection Summary						
Average Delay			0.3			
Intersection Capacity Utilization			56.1%		ICU Level of Service	B
Analysis Period (min)			15			

HCM Unsignalized Intersection Capacity Analysis
 14: Foodland Plaza & Airport Road

AM Peak Period
 04/13/2018



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	16	22	273	17	39	699
Future Volume (Veh/h)	16	22	273	17	39	699
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)	16	22	273	17	39	699
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None		None	
Median storage veh						
Upstream signal (m)					369	
pX, platoon unblocked						
vC, conflicting volume	1058	282			290	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1058	282			290	
tC, single (s)	6.5	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.6	3.3			2.2	
p0 queue free %	93	97			97	
cM capacity (veh/h)	230	750			1283	
Direction, Lane #	WB 1	WB 2	NB 1	SB 1	SB 2	
Volume Total	16	22	290	39	699	
Volume Left	16	0	0	39	0	
Volume Right	0	22	17	0	0	
cSH	230	750	1700	1283	1700	
Volume to Capacity	0.07	0.03	0.17	0.03	0.41	
Queue Length 95th (m)	1.7	0.7	0.0	0.7	0.0	
Control Delay (s)	21.8	9.9	0.0	7.9	0.0	
Lane LOS	C	A		A		
Approach Delay (s)	14.9		0.0	0.4		
Approach LOS	B					
Intersection Summary						
Average Delay			0.8			
Intersection Capacity Utilization			46.8%		ICU Level of Service	A
Analysis Period (min)			15			

HCM Unsignalized Intersection Capacity Analysis
 14: Foodland Plaza & Airport Road

PM Peak Period
 04/13/2018



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	31	133	762	105	68	309
Future Volume (Veh/h)	31	133	762	105	68	309
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)	31	133	762	105	68	309
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None		None	
Median storage (veh)						
Upstream signal (m)						369
pX, platoon unblocked						
vC, conflicting volume	1260	814			867	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1260	814			867	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	82	65			91	
cM capacity (veh/h)	174	381			785	
Direction, Lane #	WB 1	WB 2	NB 1	SB 1	SB 2	
Volume Total	31	133	867	68	309	
Volume Left	31	0	0	68	0	
Volume Right	0	133	105	0	0	
cSH	174	381	1700	785	1700	
Volume to Capacity	0.18	0.35	0.51	0.09	0.18	
Queue Length 95th (m)	4.8	11.7	0.0	2.2	0.0	
Control Delay (s)	30.2	19.4	0.0	10.0	0.0	
Lane LOS	D	C		B		
Approach Delay (s)	21.5		0.0	1.8		
Approach LOS	C					
Intersection Summary						
Average Delay			3.0			
Intersection Capacity Utilization			63.6%		ICU Level of Service	
Analysis Period (min)			15			
			B			

HCM Unsignalized Intersection Capacity Analysis
 15: Caledon P.S. Driveway

AM Peak Period
 04/13/2018



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	0	0	0	273	699	0
Future Volume (Veh/h)	0	0	0	273	699	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)	0	0	0	273	699	0
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	None	
Median storage (veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	972	699	699			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	972	699	699			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	100	100	100			
cM capacity (veh/h)	280	440	898			
Direction, Lane #	EB 1	NB 1	SB 1			
Volume Total	0	273	699			
Volume Left	0	0	0			
Volume Right	0	0	0			
cSH	1700	1700	1700			
Volume to Capacity	0.00	0.16	0.41			
Queue Length 95th (m)	0.0	0.0	0.0			
Control Delay (s)	0.0	0.0	0.0			
Lane LOS	A					
Approach Delay (s)	0.0	0.0	0.0			
Approach LOS	A					
Intersection Summary						
Average Delay			0.0			
Intersection Capacity Utilization			40.1%	ICU Level of Service		A
Analysis Period (min)			15			

HCM Unsignalized Intersection Capacity Analysis
 15: Caledon P.S. Driveway

PM Peak Period
 04/13/2018



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	0	0	0	762	309	0
Future Volume (Veh/h)	0	0	0	762	309	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)	0	0	0	762	309	0
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	None	
Median storage (veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	1071	309	309			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1071	309	309			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	100	100	100			
cM capacity (veh/h)	244	731	1252			
Direction, Lane #						
	EB 1	NB 1	SB 1			
Volume Total	0	762	309			
Volume Left	0	0	0			
Volume Right	0	0	0			
cSH	1700	1700	1700			
Volume to Capacity	0.00	0.45	0.18			
Queue Length 95th (m)	0.0	0.0	0.0			
Control Delay (s)	0.0	0.0	0.0			
Lane LOS	A					
Approach Delay (s)	0.0	0.0	0.0			
Approach LOS	A					
Intersection Summary						
Average Delay			0.0			
Intersection Capacity Utilization			43.4%	ICU Level of Service		A
Analysis Period (min)			15			

HCM Unsignalized Intersection Capacity Analysis
 16: Airport Road & Cranston Drive

AM Peak Period
 04/13/2018



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	10	23	8	234	748	7
Future Volume (Veh/h)	10	23	8	234	748	7
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)	10	23	8	234	748	7
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	None	
Median storage veh						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	998	748	755			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	998	748	755			
tC, single (s)	6.5	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.6	3.3	2.2			
p0 queue free %	96	94	99			
cM capacity (veh/h)	258	408	865			
Direction, Lane #	EB 1	NB 1	NB 2	SB 1	SB 2	
Volume Total	33	8	234	748	7	
Volume Left	10	8	0	0	0	
Volume Right	23	0	0	0	7	
cSH	346	865	1700	1700	1700	
Volume to Capacity	0.10	0.01	0.14	0.44	0.00	
Queue Length 95th (m)	2.4	0.2	0.0	0.0	0.0	
Control Delay (s)	16.5	9.2	0.0	0.0	0.0	
Lane LOS	C	A				
Approach Delay (s)	16.5	0.3		0.0		
Approach LOS	C					
Intersection Summary						
Average Delay			0.6			
Intersection Capacity Utilization			49.4%	ICU Level of Service	A	
Analysis Period (min)			15			

HCM Unsignalized Intersection Capacity Analysis
16: Airport Road & Cranston Drive

PM Peak Period
04/13/2018



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	10	18	22	847	335	13
Future Volume (Veh/h)	10	18	22	847	335	13
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)	10	18	22	847	335	13
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	None	
Median storage (veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	1226	335	348			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1226	335	348			
tC, single (s)	6.4	6.3	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.4	2.2			
p0 queue free %	95	97	98			
cM capacity (veh/h)	195	698	1194			
Direction, Lane #	EB 1	NB 1	NB 2	SB 1	SB 2	
Volume Total	28	22	847	335	13	
Volume Left	10	22	0	0	0	
Volume Right	18	0	0	0	13	
cSH	364	1194	1700	1700	1700	
Volume to Capacity	0.08	0.02	0.50	0.20	0.01	
Queue Length 95th (m)	1.9	0.4	0.0	0.0	0.0	
Control Delay (s)	15.7	8.1	0.0	0.0	0.0	
Lane LOS	C	A				
Approach Delay (s)	15.7	0.2		0.0		
Approach LOS	C					
Intersection Summary						
Average Delay			0.5			
Intersection Capacity Utilization			54.6%		ICU Level of Service	A
Analysis Period (min)			15			

Queues
17: Olde Base Line Road & Airport Road

AM Peak Period
04/13/2018



Lane Group	EBL	NBT	SBT
Lane Group Flow (vph)	242	166	768
v/c Ratio	0.73	0.18	0.63
Control Delay	35.3	6.2	10.7
Queue Delay	0.0	0.0	0.0
Total Delay	35.3	6.2	10.7
Queue Length 50th (m)	24.7	8.3	54.8
Queue Length 95th (m)	48.1	19.0	110.1
Internal Link Dist (m)	154.8	875.3	514.4
Turn Bay Length (m)			
Base Capacity (vph)	444	923	1218
Starvation Cap Reductn	0	0	0
Spillback Cap Reductn	0	0	0
Storage Cap Reductn	0	0	0
Reduced v/c Ratio	0.55	0.18	0.63
Intersection Summary			

Queues
17: Olde Base Line Road & Airport Road

PM Peak Period
04/13/2018



Lane Group	EBL	NBT	SBT
Lane Group Flow (vph)	315	701	362
v/c Ratio	0.78	0.69	0.34
Control Delay	46.3	15.0	7.3
Queue Delay	0.0	0.0	0.0
Total Delay	46.3	15.0	7.3
Queue Length 50th (m)	49.4	69.5	20.8
Queue Length 95th (m)	#87.9	108.7	35.1
Internal Link Dist (m)	154.7	875.4	514.4
Turn Bay Length (m)			
Base Capacity (vph)	406	1023	1072
Starvation Cap Reductn	0	0	0
Spillback Cap Reductn	0	0	0
Storage Cap Reductn	0	0	0
Reduced v/c Ratio	0.78	0.69	0.34

Intersection Summary

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

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

AM Peak Period
 04/13/2018



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	99	143	30	136	546	222
Future Volume (vph)	99	143	30	136	546	222
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.6			6.0	6.0	
Lane Util. Factor	1.00			1.00	1.00	
Frt	0.92			1.00	0.96	
Flt Protected	0.98			0.99	1.00	
Satd. Flow (prot)	1622			1592	1761	
Flt Permitted	0.98			0.84	1.00	
Satd. Flow (perm)	1622			1351	1761	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	99	143	30	136	546	222
RTOR Reduction (vph)	63	0	0	0	14	0
Lane Group Flow (vph)	179	0	0	166	754	0
Heavy Vehicles (%)	8%	6%	4%	23%	6%	2%
Turn Type	Prot		Perm	NA	NA	
Protected Phases	4			2	6	
Permitted Phases			2			
Actuated Green, G (s)	13.9			57.4	57.4	
Effective Green, g (s)	13.9			57.4	57.4	
Actuated g/C Ratio	0.17			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)	268			924	1204	
v/s Ratio Prot	c0.11				c0.43	
v/s Ratio Perm				0.12		
v/c Ratio	0.67			0.18	0.63	
Uniform Delay, d1	32.8			4.8	7.3	
Progression Factor	1.00			1.00	1.00	
Incremental Delay, d2	6.1			0.4	2.5	
Delay (s)	39.0			5.2	9.8	
Level of Service	D			A	A	
Approach Delay (s)	39.0			5.2	9.8	
Approach LOS	D			A	A	

Intersection Summary			
HCM 2000 Control Delay	15.1	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.63		
Actuated Cycle Length (s)	83.9	Sum of lost time (s)	12.6
Intersection Capacity Utilization	67.0%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

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

PM Peak Period
 04/13/2018



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	278	37	107	594	236	126
Future Volume (vph)	278	37	107	594	236	126
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.6			6.0	6.0	
Lane Util. Factor	1.00			1.00	1.00	
Frt	0.98			1.00	0.95	
Flt Protected	0.96			0.99	1.00	
Satd. Flow (prot)	1776			1826	1662	
Flt Permitted	0.96			0.88	1.00	
Satd. Flow (perm)	1776			1620	1662	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	278	37	107	594	236	126
RTOR Reduction (vph)	5	0	0	0	22	0
Lane Group Flow (vph)	310	0	0	701	340	0
Heavy Vehicles (%)	1%	9%	1%	5%	15%	1%
Turn Type	Prot		Perm	NA	NA	
Protected Phases	4			2	6	
Permitted Phases			2			
Actuated Green, G (s)	20.0			56.0	56.0	
Effective Green, g (s)	20.0			56.0	56.0	
Actuated g/C Ratio	0.23			0.63	0.63	
Clearance Time (s)	6.6			6.0	6.0	
Lane Grp Cap (vph)	400			1023	1050	
v/s Ratio Prot	c0.17				0.20	
v/s Ratio Perm				c0.43		
v/c Ratio	0.77			0.69	0.32	
Uniform Delay, d1	32.2			10.6	7.5	
Progression Factor	1.00			1.00	1.00	
Incremental Delay, d2	13.6			3.7	0.8	
Delay (s)	45.8			14.3	8.4	
Level of Service	D			B	A	
Approach Delay (s)	45.8			14.3	8.4	
Approach LOS	D			B	A	

Intersection Summary			
HCM 2000 Control Delay	19.9	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.71		
Actuated Cycle Length (s)	88.6	Sum of lost time (s)	12.6
Intersection Capacity Utilization	90.4%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

HCM Unsignalized Intersection Capacity Analysis
 18: Airport Road & Boston Mills Road/Castleberg Side Road

AM Peak Period
 04/13/2018



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔			↔	↔		↔	↔		↔	↔
Traffic Volume (veh/h)	0	1	2	60	2	25	2	148	4	50	653	0
Future Volume (Veh/h)	0	1	2	60	2	25	2	148	4	50	653	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)	0	1	2	60	2	25	2	148	4	50	653	0
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)						1						
Median type								None			None	
Median storage (veh)												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	918	909	653	908	905	148	653			152		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	918	909	653	908	905	148	653			152		
tC, single (s)	7.1	6.5	6.7	7.1	6.5	6.2	4.1			4.2		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.8	3.5	4.0	3.3	2.2			2.3		
p0 queue free %	100	100	99	76	99	97	100			96		
cM capacity (veh/h)	239	267	392	247	268	904	943			1399		
Direction, Lane #	EB 1	WB 1	NB 1	NB 2	SB 1	SB 2						
Volume Total	3	87	150	4	703	0						
Volume Left	0	60	2	0	50	0						
Volume Right	2	25	0	4	0	0						
cSH	339	348	943	1700	1399	1700						
Volume to Capacity	0.01	0.25	0.00	0.00	0.04	0.00						
Queue Length 95th (m)	0.2	7.4	0.0	0.0	0.8	0.0						
Control Delay (s)	15.7	19.9	0.1	0.0	1.0	0.0						
Lane LOS	C	C	A		A							
Approach Delay (s)	15.7	19.9	0.1		1.0							
Approach LOS	C	C										
Intersection Summary												
Average Delay			2.6									
Intersection Capacity Utilization			65.1%		ICU Level of Service				C			
Analysis Period (min)			15									

HCM Unsignalized Intersection Capacity Analysis
 18: Airport Road & Boston Mills Road/Castleberg Side Road

PM Peak Period
 04/13/2018



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔			↔	↔		↔	↔		↔	↔
Traffic Volume (veh/h)	2	1	0	9	2	58	2	641	34	36	215	1
Future Volume (Veh/h)	2	1	0	9	2	58	2	641	34	36	215	1
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)	2	1	0	9	2	58	2	641	34	36	215	1
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)						1						
Median type								None			None	
Median storage (veh)												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	962	966	215	932	933	641	216			675		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	962	966	215	932	933	641	216			675		
tC, single (s)	7.1	6.5	6.2	7.1	7.0	6.2	4.1			4.2		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.5	3.3	2.2			2.3		
p0 queue free %	99	100	100	96	99	88	100			96		
cM capacity (veh/h)	200	246	830	240	213	475	1366			898		
Direction, Lane #	EB 1	WB 1	NB 1	NB 2	SB 1	SB 2						
Volume Total	3	69	643	34	251	1						
Volume Left	2	9	2	0	36	0						
Volume Right	0	58	0	34	0	1						
cSH	214	565	1366	1700	898	1700						
Volume to Capacity	0.01	0.12	0.00	0.02	0.04	0.00						
Queue Length 95th (m)	0.3	3.2	0.0	0.0	1.0	0.0						
Control Delay (s)	22.1	14.8	0.0	0.0	1.7	0.0						
Lane LOS	C	B	A		A							
Approach Delay (s)	22.1	14.8	0.0		1.7							
Approach LOS	C	B										
Intersection Summary												
Average Delay			1.5									
Intersection Capacity Utilization			51.9%		ICU Level of Service				A			
Analysis Period (min)			15									

HCM Unsignalized Intersection Capacity Analysis
 19: Airport Road & 5992 King Access

AM Peak Period
 04/13/2018



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	11	67	20	123	715	113
Future Volume (Veh/h)	11	67	20	123	715	113
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)	11	67	20	123	715	113
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	None	
Median storage veh						
Upstream signal (m)				50		
pX, platoon unblocked	0.98					
vC, conflicting volume	878	715	828			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	866	715	828			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	96	84	98			
cM capacity (veh/h)	310	431	803			
Direction, Lane #	EB 1	NB 1	SB 1	SB 2		
Volume Total	78	143	715	113		
Volume Left	11	20	0	0		
Volume Right	67	0	0	113		
cSH	408	803	1700	1700		
Volume to Capacity	0.19	0.02	0.42	0.07		
Queue Length 95th (m)	5.3	0.6	0.0	0.0		
Control Delay (s)	15.9	1.6	0.0	0.0		
Lane LOS	C	A				
Approach Delay (s)	15.9	1.6	0.0			
Approach LOS	C					
Intersection Summary						
Average Delay			1.4			
Intersection Capacity Utilization			49.0%	ICU Level of Service	A	
Analysis Period (min)			15			

HCM Unsignalized Intersection Capacity Analysis
 19: Airport Road & 5992 King Access

PM Peak Period
 04/13/2018



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	58	18	94	570	224	28
Future Volume (Veh/h)	58	18	94	570	224	28
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)	58	18	94	570	224	28
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	None	
Median storage veh						
Upstream signal (m)				78		
pX, platoon unblocked	0.85					
vC, conflicting volume	982	224	252			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	888	224	252			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	77	98	93			
cM capacity (veh/h)	247	815	1313			
Direction, Lane #	EB 1	NB 1	SB 1	SB 2		
Volume Total	76	664	224	28		
Volume Left	58	94	0	0		
Volume Right	18	0	0	28		
cSH	296	1313	1700	1700		
Volume to Capacity	0.26	0.07	0.13	0.02		
Queue Length 95th (m)	7.6	1.8	0.0	0.0		
Control Delay (s)	21.3	1.9	0.0	0.0		
Lane LOS	C	A				
Approach Delay (s)	21.3	1.9	0.0			
Approach LOS	C					
Intersection Summary						
Average Delay	2.9					
Intersection Capacity Utilization	61.3%			ICU Level of Service	B	
Analysis Period (min)	15					

Queues
20: King Street & Airport Road

AM Peak Period
04/13/2018



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	16	318	115	506	3	111	107	550
v/c Ratio	0.27	0.60	0.54	0.94	0.01	0.11	0.14	0.52
Control Delay	40.1	34.3	40.5	61.7	9.3	8.3	10.3	14.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	40.1	34.3	40.5	61.7	9.3	8.3	10.3	14.6
Queue Length 50th (m)	2.4	50.1	18.5	94.2	0.2	7.5	8.9	59.5
Queue Length 95th (m)	8.9	77.8	37.2	#154.5	1.4	15.1	16.9	87.3
Internal Link Dist (m)		614.4		817.3		572.1		54.1
Turn Bay Length (m)	65.0		50.0		60.0		55.0	
Base Capacity (vph)	63	548	219	558	244	970	747	1049
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.25	0.58	0.53	0.91	0.01	0.11	0.14	0.52

Intersection Summary

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



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	41	421	30	421	46	485	32	140
v/c Ratio	0.28	0.75	0.22	0.75	0.07	0.45	0.08	0.15
Control Delay	33.2	41.1	31.5	40.3	9.6	13.3	10.0	8.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	33.2	41.1	31.5	40.3	9.6	13.3	10.0	8.8
Queue Length 50th (m)	6.1	73.2	4.4	70.7	3.7	48.6	2.6	10.0
Queue Length 95th (m)	15.8	108.0	12.4	#106.5	8.5	71.6	6.8	18.6
Internal Link Dist (m)		614.4		817.2		572.1		54.2
Turn Bay Length (m)	65.0		50.0		60.0		55.0	
Base Capacity (vph)	146	563	136	559	707	1076	411	964
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.28	0.75	0.22	0.75	0.07	0.45	0.08	0.15

Intersection Summary

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

HCM Signalized Intersection Capacity Analysis
20: King Street & Airport Road

AM Peak Period
04/13/2018



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖	↗		↖	↗		↖	↗		↖	↗	
Traffic Volume (vph)	16	255	63	115	491	15	3	92	19	107	498	52
Future Volume (vph)	16	255	63	115	491	15	3	92	19	107	498	52
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.2	6.2		6.2	6.2		6.0	6.0		6.0	6.0	
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Frt	1.00	0.97		1.00	1.00		1.00	0.97		1.00	0.99	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1437	1782		1755	1839		1093	1646		1772	1787	
Flt Permitted	0.14	1.00		0.39	1.00		0.36	1.00		0.69	1.00	
Satd. Flow (perm)	209	1782		727	1839		418	1646		1278	1787	
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	255	63	115	491	15	3	92	19	107	498	52
RTOR Reduction (vph)	0	9	0	0	1	0	0	7	0	0	4	0
Lane Group Flow (vph)	16	309	0	115	505	0	3	104	0	107	546	0
Heavy Vehicles (%)	27%	5%	3%	4%	3%	36%	67%	12%	22%	3%	6%	6%
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)	28.9	28.9		28.9	28.9		58.0	58.0		58.0	58.0	
Effective Green, g (s)	28.9	28.9		28.9	28.9		58.0	58.0		58.0	58.0	
Actuated g/C Ratio	0.29	0.29		0.29	0.29		0.59	0.59		0.59	0.59	
Clearance Time (s)	6.2	6.2		6.2	6.2		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	3.0	
Lane Grp Cap (vph)	60	519		212	536		244	963		747	1045	
v/s Ratio Prot		0.17			c0.27			0.06			c0.31	
v/s Ratio Perm	0.08			0.16			0.01			0.08		
v/c Ratio	0.27	0.59		0.54	0.94		0.01	0.11		0.14	0.52	
Uniform Delay, d1	27.0	30.1		29.5	34.3		8.6	9.1		9.3	12.3	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	2.4	1.8		2.8	25.0		0.1	0.2		0.4	1.9	
Delay (s)	29.3	31.9		32.4	59.3		8.7	9.3		9.7	14.2	
Level of Service	C	C		C	E		A	A		A	B	
Approach Delay (s)		31.8			54.3			9.3			13.4	
Approach LOS		C			D			A			B	

Intersection Summary

HCM 2000 Control Delay	31.4	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.66		
Actuated Cycle Length (s)	99.1	Sum of lost time (s)	12.2
Intersection Capacity Utilization	82.3%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			

HCM Signalized Intersection Capacity Analysis
20: King Street & Airport Road

PM Peak Period
04/13/2018



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖	↗		↖	↗		↖	↗		↖	↗	
Traffic Volume (vph)	41	407	14	30	310	111	46	418	67	32	115	25
Future Volume (vph)	41	407	14	30	310	111	46	418	67	32	115	25
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.2	6.2		6.2	6.2		6.0	6.0		6.0	6.0	
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Frt	1.00	1.00		1.00	0.96		1.00	0.98		1.00	0.97	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1825	1879		1706	1827		1738	1849		1659	1653	
Flt Permitted	0.25	1.00		0.25	1.00		0.67	1.00		0.41	1.00	
Satd. Flow (perm)	488	1879		456	1827		1222	1849		710	1653	
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)	41	407	14	30	310	111	46	418	67	32	115	25
RTOR Reduction (vph)	0	1	0	0	13	0	0	6	0	0	8	0
Lane Group Flow (vph)	41	420	0	30	408	0	46	479	0	32	132	0
Heavy Vehicles (%)	0%	1%	23%	7%	1%	1%	5%	2%	0%	10%	14%	9%
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)	30.0	30.0		30.0	30.0		58.0	58.0		58.0	58.0	
Effective Green, g (s)	30.0	30.0		30.0	30.0		58.0	58.0		58.0	58.0	
Actuated g/C Ratio	0.30	0.30		0.30	0.30		0.58	0.58		0.58	0.58	
Clearance Time (s)	6.2	6.2		6.2	6.2		6.0	6.0		6.0	6.0	
Lane Grp Cap (vph)	146	562		136	547		707	1070		410	956	
v/s Ratio Prot		0.22			c0.22			c0.26			0.08	
v/s Ratio Perm	0.08			0.07			0.04			0.05		
v/c Ratio	0.28	0.75		0.22	0.75		0.07	0.45		0.08	0.14	
Uniform Delay, d1	26.8	31.7		26.3	31.7		9.2	12.0		9.3	9.7	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	4.7	8.8		3.7	9.0		0.2	1.4		0.4	0.3	
Delay (s)	31.6	40.4		30.0	40.7		9.4	13.4		9.7	10.0	
Level of Service	C	D		C	D		A	B		A	A	
Approach Delay (s)		39.6			40.0			13.0			9.9	
Approach LOS		D			D			B			A	

Intersection Summary		
HCM 2000 Control Delay	27.8	HCM 2000 Level of Service C
HCM 2000 Volume to Capacity ratio	0.55	
Actuated Cycle Length (s)	100.2	Sum of lost time (s) 12.2
Intersection Capacity Utilization	82.5%	ICU Level of Service E
Analysis Period (min)	15	

c Critical Lane Group

Appendix D – Synchro Outputs Future Year 2031 Do Nothing Conditions

HCM Unsignalized Intersection Capacity Analysis
 1: Airport Road & Huntsmill Drive

AM Peak Period
 04/13/2018



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	↙		↑	↗		↓
Traffic Volume (veh/h)	0	0	194	0	0	598
Future Volume (Veh/h)	0	0	194	0	0	598
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)	0	0	194	0	0	598
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None		None	
Median storage (veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	792	194			194	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	792	194			194	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	100	100			100	
cM capacity (veh/h)	361	853			1391	
Direction, Lane #	WB 1	NB 1	NB 2	SB 1		
Volume Total	0	194	0	598		
Volume Left	0	0	0	0		
Volume Right	0	0	0	0		
cSH	1700	1700	1700	1391		
Volume to Capacity	0.00	0.11	0.00	0.00		
Queue Length 95th (m)	0.0	0.0	0.0	0.0		
Control Delay (s)	0.0	0.0	0.0	0.0		
Lane LOS	A					
Approach Delay (s)	0.0	0.0		0.0		
Approach LOS	A					
Intersection Summary						
Average Delay			0.0			
Intersection Capacity Utilization			34.8%		ICU Level of Service	A
Analysis Period (min)			15			

HCM Unsignalized Intersection Capacity Analysis
 1: Airport Road & Huntsmill Drive

PM Peak Period
 04/13/2018



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	W		T	T		T
Traffic Volume (veh/h)	1	0	710	1	0	249
Future Volume (Veh/h)	1	0	710	1	0	249
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	0	710	1	0	249
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None		None	
Median storage (veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	959	710			711	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	959	710			711	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	100	100			100	
cM capacity (veh/h)	288	437			898	
Direction, Lane #	WB 1	NB 1	NB 2	SB 1		
Volume Total	1	710	1	249		
Volume Left	1	0	0	0		
Volume Right	0	0	1	0		
cSH	288	1700	1700	898		
Volume to Capacity	0.00	0.42	0.00	0.00		
Queue Length 95th (m)	0.1	0.0	0.0	0.0		
Control Delay (s)	17.6	0.0	0.0	0.0		
Lane LOS	C					
Approach Delay (s)	17.6	0.0		0.0		
Approach LOS	C					
Intersection Summary						
Average Delay			0.0			
Intersection Capacity Utilization			47.4%		ICU Level of Service	A
Analysis Period (min)			15			

HCM Unsignalized Intersection Capacity Analysis

2: Leamster Trail & Airport Road

AM Peak Period
04/13/2018



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	1	10	0	181	623	0
Future Volume (Veh/h)	1	10	0	181	623	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	10	0	181	623	0
Pedestrians	1			2		
Lane Width (m)	3.7			3.7		
Walking Speed (m/s)	1.1			1.1		
Percent Blockage	0			0		
Right turn flare (veh)						
Median type				None	None	
Median storage (veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	805	626	624			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	805	626	624			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	100	98	100			
cM capacity (veh/h)	354	486	966			
Direction, Lane #	EB 1	NB 1	NB 2	SB 1	SB 2	
Volume Total	11	0	181	623	0	
Volume Left	1	0	0	0	0	
Volume Right	10	0	0	0	0	
cSH	470	1700	1700	1700	1700	
Volume to Capacity	0.02	0.00	0.11	0.37	0.00	
Queue Length 95th (m)	0.5	0.0	0.0	0.0	0.0	
Control Delay (s)	12.8	0.0	0.0	0.0	0.0	
Lane LOS	B					
Approach Delay (s)	12.8	0.0		0.0		
Approach LOS	B					
Intersection Summary						
Average Delay			0.2			
Intersection Capacity Utilization			43.4%	ICU Level of Service	A	
Analysis Period (min)			15			

HCM Unsignalized Intersection Capacity Analysis

2: Leamster Trail & Airport Road

PM Peak Period
04/13/2018



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	0	8	13	711	250	1
Future Volume (Veh/h)	0	8	13	711	250	1
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)	0	8	13	711	250	1
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	None	
Median storage (veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	987	250	251			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	987	250	251			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	100	99	99			
cM capacity (veh/h)	274	794	1326			
Direction, Lane #	EB 1	NB 1	NB 2	SB 1	SB 2	
Volume Total	8	13	711	250	1	
Volume Left	0	13	0	0	0	
Volume Right	8	0	0	0	1	
cSH	794	1326	1700	1700	1700	
Volume to Capacity	0.01	0.01	0.42	0.15	0.00	
Queue Length 95th (m)	0.2	0.2	0.0	0.0	0.0	
Control Delay (s)	9.6	7.7	0.0	0.0	0.0	
Lane LOS	A	A				
Approach Delay (s)	9.6	0.1		0.0		
Approach LOS	A					
Intersection Summary						
Average Delay			0.2			
Intersection Capacity Utilization			47.4%		ICU Level of Service	A
Analysis Period (min)			15			

HCM Unsignalized Intersection Capacity Analysis
3: 16114 North Access

AM Peak Period
04/13/2018



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	2	17	3	181	623	1
Future Volume (Veh/h)	2	17	3	181	623	1
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	17	3	181	623	1
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	None	
Median storage veh						
Upstream signal (m)				342		
pX, platoon unblocked						
vC, conflicting volume	810	624	624			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	810	624	624			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	99	97	100			
cM capacity (veh/h)	348	486	957			
Direction, Lane #	EB 1	NB 1	NB 2	SB 1		
Volume Total	19	3	181	624		
Volume Left	2	3	0	0		
Volume Right	17	0	0	1		
cSH	466	957	1700	1700		
Volume to Capacity	0.04	0.00	0.11	0.37		
Queue Length 95th (m)	1.0	0.1	0.0	0.0		
Control Delay (s)	13.0	8.8	0.0	0.0		
Lane LOS	B	A				
Approach Delay (s)	13.0	0.1		0.0		
Approach LOS	B					
Intersection Summary						
Average Delay			0.3			
Intersection Capacity Utilization			42.9%		ICU Level of Service	A
Analysis Period (min)			15			

HCM Unsignalized Intersection Capacity Analysis

3: 16114 North Access

PM Peak Period
04/13/2018



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	3	6	16	711	250	2
Future Volume (Veh/h)	3	6	16	711	250	2
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	6	16	711	250	2
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	None	
Median storage (veh)						
Upstream signal (m)	342					
pX, platoon unblocked	0.84					
vC, conflicting volume	994	251	252			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	898	251	252			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	99	99	99			
cM capacity (veh/h)	257	788	1313			
Direction, Lane #	EB 1	NB 1	NB 2	SB 1		
Volume Total	9	16	711	252		
Volume Left	3	16	0	0		
Volume Right	6	0	0	2		
cSH	467	1313	1700	1700		
Volume to Capacity	0.02	0.01	0.42	0.15		
Queue Length 95th (m)	0.4	0.3	0.0	0.0		
Control Delay (s)	12.9	7.8	0.0	0.0		
Lane LOS	B	A				
Approach Delay (s)	12.9	0.2	0.0			
Approach LOS	B					
Intersection Summary						
Average Delay	0.2					
Intersection Capacity Utilization	47.4%			ICU Level of Service	A	
Analysis Period (min)	15					

HCM Unsignalized Intersection Capacity Analysis
4: 16114 South Access

AM Peak Period
04/13/2018



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	5	7	9	181	623	15
Future Volume (Veh/h)	5	7	9	181	623	15
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	7	9	181	623	15
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	None	
Median storage veh)						
Upstream signal (m)				262		
pX, platoon unblocked						
vC, conflicting volume	830	630	638			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	830	630	638			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	99	99	99			
cM capacity (veh/h)	337	481	946			
Direction, Lane #	EB 1	NB 1	NB 2	SB 1		
Volume Total	12	9	181	638		
Volume Left	5	9	0	0		
Volume Right	7	0	0	15		
cSH	408	946	1700	1700		
Volume to Capacity	0.03	0.01	0.11	0.38		
Queue Length 95th (m)	0.7	0.2	0.0	0.0		
Control Delay (s)	14.1	8.8	0.0	0.0		
Lane LOS	B	A				
Approach Delay (s)	14.1	0.4		0.0		
Approach LOS	B					
Intersection Summary						
Average Delay			0.3			
Intersection Capacity Utilization			43.7%	ICU Level of Service	A	
Analysis Period (min)			15			

HCM Unsignalized Intersection Capacity Analysis
4: 16114 South Access

PM Peak Period
04/13/2018



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	22	41	27	711	250	30
Future Volume (Veh/h)	22	41	27	711	250	30
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)	22	41	27	711	250	30
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	None	
Median storage (veh)						
Upstream signal (m)				262		
pX, platoon unblocked	0.80					
vC, conflicting volume	1030	265	280			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	915	265	280			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	91	95	98			
cM capacity (veh/h)	238	774	1283			
Direction, Lane #	EB 1	NB 1	NB 2	SB 1		
Volume Total	63	27	711	280		
Volume Left	22	27	0	0		
Volume Right	41	0	0	30		
cSH	433	1283	1700	1700		
Volume to Capacity	0.15	0.02	0.42	0.16		
Queue Length 95th (m)	3.8	0.5	0.0	0.0		
Control Delay (s)	14.7	7.9	0.0	0.0		
Lane LOS	B	A				
Approach Delay (s)	14.7	0.3		0.0		
Approach LOS	B					
Intersection Summary						
Average Delay			1.1			
Intersection Capacity Utilization			47.8%	ICU Level of Service	A	
Analysis Period (min)			15			

HCM Unsignalized Intersection Capacity Analysis
 5: Airport Road & Walker Road West/Walker Road East

AM Peak Period
 04/13/2018



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔			↔			↑	↗		↔	
Traffic Volume (veh/h)	10	14	66	12	8	10	24	179	4	5	566	39
Future Volume (Veh/h)	10	14	66	12	8	10	24	179	4	5	566	39
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)	10	14	66	12	8	10	24	179	4	5	566	39
Pedestrians		1						1				
Lane Width (m)		3.7						3.7				
Walking Speed (m/s)		1.1						1.1				
Percent Blockage		0						0				
Right turn flare (veh)												
Median type								None			None	
Median storage veh												
Upstream signal (m)								199				
pX, platoon unblocked												
vC, conflicting volume	838	828	588	896	843	179	606			183		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	838	828	588	896	843	179	606			183		
tC, single (s)	7.2	6.6	6.3	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.6	4.1	3.4	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	96	95	87	94	97	99	98			100		
cM capacity (veh/h)	259	290	501	215	294	864	981			1404		
Direction, Lane #	EB 1	WB 1	NB 1	NB 2	SB 1							
Volume Total	90	30	203	4	610							
Volume Left	10	12	24	0	5							
Volume Right	66	10	0	4	39							
cSH	412	317	981	1700	1404							
Volume to Capacity	0.22	0.09	0.02	0.00	0.00							
Queue Length 95th (m)	6.3	2.4	0.6	0.0	0.1							
Control Delay (s)	16.2	17.5	1.2	0.0	0.1							
Lane LOS	C	C	A		A							
Approach Delay (s)	16.2	17.5	1.2		0.1							
Approach LOS	C	C										
Intersection Summary												
Average Delay			2.5									
Intersection Capacity Utilization			51.5%		ICU Level of Service				A			
Analysis Period (min)			15									

HCM Unsignalized Intersection Capacity Analysis
5: Airport Road & Walker Road West/Walker Road East

PM Peak Period
04/13/2018



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕	↕		↕	
Traffic Volume (veh/h)	26	11	55	6	1	10	67	697	30	8	233	19
Future Volume (Veh/h)	26	11	55	6	1	10	67	697	30	8	233	19
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)	26	11	55	6	1	10	67	697	30	8	233	19
Pedestrians		2						1				
Lane Width (m)		3.7						3.7				
Walking Speed (m/s)		1.1						1.1				
Percent Blockage		0						0				
Right turn flare (veh)												
Median type								None			None	
Median storage veh												
Upstream signal (m)								199				
pX, platoon unblocked	0.75	0.75		0.75	0.75	0.75				0.75		
vC, conflicting volume	1102	1122	246	1151	1101	697	254			727		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	972	998	246	1037	970	434	254			474		
tC, single (s)	7.1	6.5	6.2	7.3	7.5	6.2	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.7	4.9	3.3	2.2			2.2		
p0 queue free %	84	94	93	95	99	98	95			99		
cM capacity (veh/h)	163	174	791	123	124	472	1320			828		
Direction, Lane #	EB 1	WB 1	NB 1	NB 2	SB 1							
Volume Total	92	17	764	30	260							
Volume Left	26	6	67	0	8							
Volume Right	55	10	0	30	19							
cSH	315	218	1320	1700	828							
Volume to Capacity	0.29	0.08	0.05	0.02	0.01							
Queue Length 95th (m)	9.0	1.9	1.2	0.0	0.2							
Control Delay (s)	21.1	22.9	1.3	0.0	0.4							
Lane LOS	C	C	A		A							
Approach Delay (s)	21.1	22.9	1.3		0.4							
Approach LOS	C	C										
Intersection Summary												
Average Delay			3.0									
Intersection Capacity Utilization			71.1%		ICU Level of Service					C		
Analysis Period (min)			15									

Queues
6: Old Church Road & Airport Road

AM Peak Period
04/13/2018



Lane Group	WBL	WBR	NBT	NBR	SBT
Lane Group Flow (vph)	318	66	174	193	608
v/c Ratio	0.73	0.18	0.22	0.21	0.71
Control Delay	32.6	8.3	9.8	2.3	18.5
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	32.6	8.3	9.8	2.3	18.5
Queue Length 50th (m)	35.0	0.9	10.2	0.0	51.0
Queue Length 95th (m)	58.6	8.7	23.0	8.6	#106.7
Internal Link Dist (m)	119.4		41.8		175.2
Turn Bay Length (m)		20.0		45.0	
Base Capacity (vph)	574	462	786	913	856
Starvation Cap Reductn	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.55	0.14	0.22	0.21	0.71

Intersection Summary

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

Queues
6: Old Church Road & Airport Road

PM Peak Period
04/13/2018



Lane Group	WBL	WBR	NBT	NBR	SBT
Lane Group Flow (vph)	220	127	651	401	306
v/c Ratio	0.61	0.30	0.61	0.37	0.48
Control Delay	29.6	6.3	12.7	2.1	12.1
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	29.6	6.3	12.7	2.1	12.1
Queue Length 50th (m)	22.6	0.0	43.4	0.0	18.3
Queue Length 95th (m)	40.5	10.6	89.0	11.0	44.3
Internal Link Dist (m)	119.3		41.8		175.2
Turn Bay Length (m)		20.0		45.0	
Base Capacity (vph)	600	622	1067	1077	633
Starvation Cap Reductn	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.37	0.20	0.61	0.37	0.48
Intersection Summary					

HCM Signalized Intersection Capacity Analysis
6: Old Church Road & Airport Road

AM Peak Period
04/13/2018



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	318	66	174	193	109	499
Future Volume (vph)	318	66	174	193	109	499
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.6	6.6	7.1	7.1		7.1
Lane Util. Factor	1.00	1.00	1.00	1.00		1.00
Frbp, ped/bikes	1.00	0.98	1.00	1.00		1.00
Flpb, ped/bikes	1.00	1.00	1.00	1.00		1.00
Frt	1.00	0.85	1.00	0.85		1.00
Flt Protected	0.95	1.00	1.00	1.00		0.99
Satd. Flow (prot)	1755	1299	1455	1526		1741
Flt Permitted	0.95	1.00	1.00	1.00		0.90
Satd. Flow (perm)	1755	1299	1455	1526		1585
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	318	66	174	193	109	499
RTOR Reduction (vph)	0	42	0	89	0	0
Lane Group Flow (vph)	318	24	174	104	0	608
Confl. Peds. (#/hr)	3	1				
Heavy Vehicles (%)	4%	23%	32%	7%	11%	9%
Turn Type	Prot	Perm	NA	Perm	Perm	NA
Protected Phases	8		2			6
Permitted Phases		8		2	6	
Actuated Green, G (s)	16.4	16.4	35.4	35.4		35.4
Effective Green, g (s)	16.4	16.4	35.4	35.4		35.4
Actuated g/C Ratio	0.25	0.25	0.54	0.54		0.54
Clearance Time (s)	6.6	6.6	7.1	7.1		7.1
Vehicle Extension (s)	3.0	3.0	3.0	3.0		3.0
Lane Grp Cap (vph)	439	325	786	824		856
v/s Ratio Prot	c0.18		0.12			
v/s Ratio Perm		0.02		0.07		c0.38
v/c Ratio	0.72	0.07	0.22	0.13		0.71
Uniform Delay, d1	22.5	18.8	7.9	7.4		11.2
Progression Factor	1.00	1.00	1.00	1.00		1.00
Incremental Delay, d2	5.8	0.1	0.6	0.3		5.0
Delay (s)	28.3	18.8	8.5	7.7		16.2
Level of Service	C	B	A	A		B
Approach Delay (s)	26.7		8.1			16.2
Approach LOS	C		A			B

Intersection Summary			
HCM 2000 Control Delay	17.0	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.71		
Actuated Cycle Length (s)	65.5	Sum of lost time (s)	13.7
Intersection Capacity Utilization	76.4%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis
6: Old Church Road & Airport Road

PM Peak Period
04/13/2018



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	220	127	651	401	85	221
Future Volume (vph)	220	127	651	401	85	221
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.6	6.6	7.1	7.1		7.1
Lane Util. Factor	1.00	1.00	1.00	1.00		1.00
Frpb, ped/bikes	1.00	0.97	1.00	0.97		1.00
Flpb, ped/bikes	1.00	1.00	1.00	1.00		1.00
Frt	1.00	0.85	1.00	0.85		1.00
Flt Protected	0.95	1.00	1.00	1.00		0.99
Satd. Flow (prot)	1772	1589	1847	1572		1616
Flt Permitted	0.95	1.00	1.00	1.00		0.67
Satd. Flow (perm)	1772	1589	1847	1572		1097
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	220	127	651	401	85	221
RTOR Reduction (vph)	0	101	0	169	0	0
Lane Group Flow (vph)	220	26	651	232	0	306
Confl. Peds. (#/hr)	4	4		6	6	
Heavy Vehicles (%)	3%	0%	4%	1%	15%	18%
Turn Type	Prot	Perm	NA	Perm	Perm	NA
Protected Phases	8		2			6
Permitted Phases		8		2	6	
Actuated Green, G (s)	13.0	13.0	36.5	36.5		36.5
Effective Green, g (s)	13.0	13.0	36.5	36.5		36.5
Actuated g/C Ratio	0.21	0.21	0.58	0.58		0.58
Clearance Time (s)	6.6	6.6	7.1	7.1		7.1
Vehicle Extension (s)	3.0	3.0	3.0	3.0		3.0
Lane Grp Cap (vph)	364	326	1066	907		633
v/s Ratio Prot	c0.12		c0.35			
v/s Ratio Perm		0.02		0.15		0.28
v/c Ratio	0.60	0.08	0.61	0.26		0.48
Uniform Delay, d1	22.8	20.3	8.7	6.6		7.8
Progression Factor	1.00	1.00	1.00	1.00		1.00
Incremental Delay, d2	2.8	0.1	2.6	0.7		2.6
Delay (s)	25.6	20.4	11.3	7.3		10.5
Level of Service	C	C	B	A		B
Approach Delay (s)	23.7		9.8			10.5
Approach LOS	C		A			B

Intersection Summary			
HCM 2000 Control Delay	12.7	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.61		
Actuated Cycle Length (s)	63.2	Sum of lost time (s)	13.7
Intersection Capacity Utilization	80.5%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

HCM Unsignalized Intersection Capacity Analysis
7: Airport Road & Parsons Avenue

AM Peak Period
04/13/2018



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	11	44	6	314	838	8
Future Volume (Veh/h)	11	44	6	314	838	8
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)	11	44	6	314	838	8
Pedestrians	2					
Lane Width (m)	3.7					
Walking Speed (m/s)	1.1					
Percent Blockage	0					
Right turn flare (veh)						
Median type				None	None	
Median storage (veh)						
Upstream signal (m)				100	66	
pX, platoon unblocked	0.77	0.77	0.77			
vC, conflicting volume	1170	844	848			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1071	647	653			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	94	88	99			
cM capacity (veh/h)	188	364	725			
Direction, Lane #	EB 1	NB 1	SB 1			
Volume Total	55	320	846			
Volume Left	11	6	0			
Volume Right	44	0	8			
cSH	307	725	1700			
Volume to Capacity	0.18	0.01	0.50			
Queue Length 95th (m)	4.9	0.2	0.0			
Control Delay (s)	19.3	0.3	0.0			
Lane LOS	C	A				
Approach Delay (s)	19.3	0.3	0.0			
Approach LOS	C					
Intersection Summary						
Average Delay			0.9			
Intersection Capacity Utilization			54.6%	ICU Level of Service	A	
Analysis Period (min)			15			

HCM Unsignalized Intersection Capacity Analysis
7: Airport Road & Parsons Avenue

PM Peak Period
04/13/2018



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	13	36	56	929	431	33
Future Volume (Veh/h)	13	36	56	929	431	33
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	36	56	929	431	33
Pedestrians	3			3	4	
Lane Width (m)	3.7			3.7	3.7	
Walking Speed (m/s)	1.1			1.1	1.1	
Percent Blockage	0			0	0	
Right turn flare (veh)						
Median type				None	None	
Median storage (veh)						
Upstream signal (m)				100	66	
pX, platoon unblocked	0.95	0.95	0.95			
vC, conflicting volume	1496	454	467			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1495	401	415			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	89	94	95			
cM capacity (veh/h)	123	619	1096			
Direction, Lane #	EB 1	NB 1	SB 1			
Volume Total	49	985	464			
Volume Left	13	56	0			
Volume Right	36	0	33			
cSH	299	1096	1700			
Volume to Capacity	0.16	0.05	0.27			
Queue Length 95th (m)	4.4	1.2	0.0			
Control Delay (s)	19.4	1.4	0.0			
Lane LOS	C	A				
Approach Delay (s)	19.4	1.4	0.0			
Approach LOS	C					
Intersection Summary						
Average Delay			1.5			
Intersection Capacity Utilization			91.0%	ICU Level of Service	E	
Analysis Period (min)			15			

HCM Unsignalized Intersection Capacity Analysis
8: Emma Street & Airport Road

AM Peak Period
04/13/2018



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	3	14	3	334	892	4
Future Volume (Veh/h)	3	14	3	334	892	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)	3	14	3	334	892	4
Pedestrians	5					
Lane Width (m)	3.7					
Walking Speed (m/s)	1.1					
Percent Blockage	0					
Right turn flare (veh)						
Median type				None	None	
Median storage veh						
Upstream signal (m)				49	116	
pX, platoon unblocked	0.78	0.78	0.78			
vC, conflicting volume	1239	899	901			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1166	731	733			
tC, single (s)	6.4	6.2	4.6			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.7			
p0 queue free %	98	96	99			
cM capacity (veh/h)	167	331	536			
Direction, Lane #	EB 1	NB 1	SB 1			
Volume Total	17	337	896			
Volume Left	3	3	0			
Volume Right	14	0	4			
cSH	282	536	1700			
Volume to Capacity	0.06	0.01	0.53			
Queue Length 95th (m)	1.5	0.1	0.0			
Control Delay (s)	18.6	0.2	0.0			
Lane LOS	C	A				
Approach Delay (s)	18.6	0.2	0.0			
Approach LOS	C					
Intersection Summary						
Average Delay			0.3			
Intersection Capacity Utilization			57.2%	ICU Level of Service	B	
Analysis Period (min)			15			

HCM Unsignalized Intersection Capacity Analysis
8: Emma Street & Airport Road

PM Peak Period
04/13/2018



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	9	9	18	1001	448	14
Future Volume (Veh/h)	9	9	18	1001	448	14
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)	9	9	18	1001	448	14
Pedestrians	4			1	4	
Lane Width (m)	3.7			3.7	3.7	
Walking Speed (m/s)	1.1			1.1	1.1	
Percent Blockage	0			0	0	
Right turn flare (veh)						
Median type				None	None	
Median storage (veh)						
Upstream signal (m)				49	116	
pX, platoon unblocked	0.08					
vC, conflicting volume	1500	460	466			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1500	460	466			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	10	99	98			
cM capacity (veh/h)	10	603	1102			
Direction, Lane #	EB 1	NB 1	SB 1			
Volume Total	18	1019	462			
Volume Left	9	18	0			
Volume Right	9	0	14			
cSH	20	1102	1700			
Volume to Capacity	0.92	0.02	0.27			
Queue Length 95th (m)	19.0	0.4	0.0			
Control Delay (s)	446.6	0.5	0.0			
Lane LOS	F	A				
Approach Delay (s)	446.6	0.5	0.0			
Approach LOS	F					
Intersection Summary						
Average Delay			5.7			
Intersection Capacity Utilization			77.4%	ICU Level of Service	D	
Analysis Period (min)			15			

Queues
 9: Airport Road & Caledon Trailway Path

AM Peak Period
 04/13/2018



Lane Group	NBT	SBT
Lane Group Flow (vph)	336	907
v/c Ratio	0.20	0.50
Control Delay	0.3	1.0
Queue Delay	0.0	0.0
Total Delay	0.3	1.0
Queue Length 50th (m)	0.0	0.0
Queue Length 95th (m)	0.0	0.0
Internal Link Dist (m)	16.2	25.5
Turn Bay Length (m)		
Base Capacity (vph)	1715	1830
Starvation Cap Reductn	0	0
Spillback Cap Reductn	0	0
Storage Cap Reductn	0	0
Reduced v/c Ratio	0.20	0.50
Intersection Summary		

Queues
 9: Airport Road & Caledon Trailway Path

PM Peak Period
 04/13/2018



Lane Group	NBT	SBT
Lane Group Flow (vph)	1031	450
v/c Ratio	0.55	0.25
Control Delay	1.2	0.3
Queue Delay	0.0	0.0
Total Delay	1.2	0.3
Queue Length 50th (m)	0.0	0.0
Queue Length 95th (m)	0.0	0.0
Internal Link Dist (m)	16.2	25.5
Turn Bay Length (m)		
Base Capacity (vph)	1865	1779
Starvation Cap Reductn	0	0
Spillback Cap Reductn	0	0
Storage Cap Reductn	0	0
Reduced v/c Ratio	0.55	0.25
Intersection Summary		

HCM Signalized Intersection Capacity Analysis
9: Airport Road & Caledon Trailway Path

AM Peak Period
04/13/2018



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	336	0	0	907	0
Future Volume (vph)	0	0	0	0	0	0	0	336	0	0	907	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)								1715			1830	
Flt Permitted								1.00			1.00	
Satd. Flow (perm)								1715			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)	0	0	0	0	0	0	0	336	0	0	907	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	336	0	0	907	0
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	0%	12%	0%	0%	5%	0%
Turn Type								NA			NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8								
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)								1715			1830	
v/s Ratio Prot								0.20			c0.50	
v/s Ratio Perm												
v/c Ratio								0.20			0.50	
Uniform Delay, d1								0.0			0.0	
Progression Factor								1.00			1.00	
Incremental Delay, d2								0.3			1.0	
Delay (s)								0.3			1.0	
Level of Service								A			A	
Approach Delay (s)		0.0			0.0			0.3			1.0	
Approach LOS		A			A			A			A	
Intersection Summary												
HCM 2000 Control Delay			0.8					HCM 2000 Level of Service			A	
HCM 2000 Volume to Capacity ratio			0.61									
Actuated Cycle Length (s)			64.0					Sum of lost time (s)		12.0		
Intersection Capacity Utilization			52.7%					ICU Level of Service		A		
Analysis Period (min)			15									
c Critical Lane Group												

HCM Signalized Intersection Capacity Analysis
9: Airport Road & Caledon Trailway Path

PM Peak Period
04/13/2018



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	1031	0	0	450	0
Future Volume (vph)	0	0	0	0	0	0	0	1031	0	0	450	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)								1865			1779	
Flt Permitted								1.00			1.00	
Satd. Flow (perm)								1865			1779	
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	1031	0	0	450	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	1031	0	0	450	0
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	0%	3%	0%	0%	8%	0%
Turn Type								NA			NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8								
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)								1865			1779	
v/s Ratio Prot								c0.55			0.25	
v/s Ratio Perm												
v/c Ratio								0.55			0.25	
Uniform Delay, d1								0.0			0.0	
Progression Factor								1.00			1.00	
Incremental Delay, d2								1.2			0.3	
Delay (s)								1.2			0.3	
Level of Service								A			A	
Approach Delay (s)		0.0			0.0			1.2			0.3	
Approach LOS		A			A			A			A	
Intersection Summary												
HCM 2000 Control Delay			0.9					HCM 2000 Level of Service			A	
HCM 2000 Volume to Capacity ratio			0.68									
Actuated Cycle Length (s)			64.0					Sum of lost time (s)		12.0		
Intersection Capacity Utilization			59.3%					ICU Level of Service		B		
Analysis Period (min)			15									
c Critical Lane Group												

HCM Unsignalized Intersection Capacity Analysis
 10: Mountcrest Road & Airport Road

AM Peak Period
 04/13/2018



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	16	10	330	1	4	899
Future Volume (Veh/h)	16	10	330	1	4	899
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)	16	10	330	1	4	899
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None		None	
Median storage veh						
Upstream signal (m)						40
pX, platoon unblocked						
vC, conflicting volume		1237	330		331	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol		1237	330		331	
tC, single (s)		6.4	6.2		4.1	
tC, 2 stage (s)						
tF (s)		3.5	3.3		2.2	
p0 queue free %		92	99		100	
cM capacity (veh/h)		195	716		1240	
Direction, Lane #	WB 1	NB 1	NB 2	SB 1		
Volume Total	26	330	1	903		
Volume Left	16	0	0	4		
Volume Right	10	0	1	0		
cSH	271	1700	1700	1240		
Volume to Capacity	0.10	0.19	0.00	0.00		
Queue Length 95th (m)	2.4	0.0	0.0	0.1		
Control Delay (s)	19.7	0.0	0.0	0.1		
Lane LOS	C			A		
Approach Delay (s)	19.7	0.0		0.1		
Approach LOS	C					
Intersection Summary						
Average Delay			0.5			
Intersection Capacity Utilization			60.5%		ICU Level of Service B	
Analysis Period (min)			15			

HCM Unsignalized Intersection Capacity Analysis
 10: Mountcrest Road & Airport Road

PM Peak Period
 04/13/2018



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	6	14	1018	23	10	446
Future Volume (Veh/h)	6	14	1018	23	10	446
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)	6	14	1018	23	10	446
Pedestrians	1					
Lane Width (m)	3.7					
Walking Speed (m/s)	1.1					
Percent Blockage	0					
Right turn flare (veh)						
Median type	None			None		
Median storage veh						
Upstream signal (m)	40					
pX, platoon unblocked						
vC, conflicting volume	1485	1019			1042	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1485	1019			1042	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	96	95			99	
cM capacity (veh/h)	135	287			667	
Direction, Lane #	WB 1	NB 1	NB 2	SB 1		
Volume Total	20	1018	23	456		
Volume Left	6	0	0	10		
Volume Right	14	0	23	0		
cSH	215	1700	1700	667		
Volume to Capacity	0.09	0.60	0.01	0.01		
Queue Length 95th (m)	2.3	0.0	0.0	0.3		
Control Delay (s)	23.5	0.0	0.0	0.4		
Lane LOS	C			A		
Approach Delay (s)	23.5	0.0			0.4	
Approach LOS	C					
Intersection Summary						
Average Delay			0.4			
Intersection Capacity Utilization			63.6%		ICU Level of Service	B
Analysis Period (min)			15			

HCM Unsignalized Intersection Capacity Analysis
 11: Airport Road & Larry Street

AM Peak Period
 04/13/2018



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	21	10	1	306	904	10
Future Volume (Veh/h)	21	10	1	306	904	10
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)	21	10	1	306	904	10
Pedestrians	3					
Lane Width (m)	3.7					
Walking Speed (m/s)	1.1					
Percent Blockage	0					
Right turn flare (veh)						
Median type				None	None	
Median storage veh						
Upstream signal (m)				358	98	
pX, platoon unblocked						
vC, conflicting volume	1220	912	917			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1220	912	917			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	89	97	100			
cM capacity (veh/h)	200	334	750			
Direction, Lane #	EB 1	NB 1	SB 1			
Volume Total	31	307	914			
Volume Left	21	1	0			
Volume Right	10	0	10			
cSH	230	750	1700			
Volume to Capacity	0.13	0.00	0.54			
Queue Length 95th (m)	3.5	0.0	0.0			
Control Delay (s)	23.1	0.0	0.0			
Lane LOS	C	A				
Approach Delay (s)	23.1	0.0	0.0			
Approach LOS	C					
Intersection Summary						
Average Delay			0.6			
Intersection Capacity Utilization			58.2%	ICU Level of Service	B	
Analysis Period (min)			15			

HCM Unsignalized Intersection Capacity Analysis
 11: Airport Road & Larry Street

PM Peak Period
 04/13/2018



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	18	9	8	1024	438	14
Future Volume (Veh/h)	18	9	8	1024	438	14
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)	18	9	8	1024	438	14
Pedestrians	1					
Lane Width (m)	3.7					
Walking Speed (m/s)	1.1					
Percent Blockage	0					
Right turn flare (veh)						
Median type				None	None	
Median storage veh						
Upstream signal (m)				358	98	
pX, platoon unblocked	0.78					
vC, conflicting volume	1486	446	453			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1482	446	453			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	83	99	99			
cM capacity (veh/h)	107	616	1117			
Direction, Lane #	EB 1	NB 1	SB 1			
Volume Total	27	1032	452			
Volume Left	18	8	0			
Volume Right	9	0	14			
cSH	148	1117	1700			
Volume to Capacity	0.18	0.01	0.27			
Queue Length 95th (m)	4.9	0.2	0.0			
Control Delay (s)	34.7	0.2	0.0			
Lane LOS	D	A				
Approach Delay (s)	34.7	0.2	0.0			
Approach LOS	D					
Intersection Summary						
Average Delay			0.8			
Intersection Capacity Utilization			70.3%	ICU Level of Service		C
Analysis Period (min)			15			

HCM Unsignalized Intersection Capacity Analysis
 12: Marion Street & Airport Road

AM Peak Period
 04/13/2018



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	4	10	0	325	881	0
Future Volume (Veh/h)	4	10	0	325	881	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)	4	10	0	325	881	0
Pedestrians	3					
Lane Width (m)	3.7					
Walking Speed (m/s)	1.1					
Percent Blockage	0					
Right turn flare (veh)						
Median type				None	None	
Median storage veh						
Upstream signal (m)				283	173	
pX, platoon unblocked						
vC, conflicting volume	1209	884	884			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1209	884	884			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	98	97	100			
cM capacity (veh/h)	203	346	772			
Direction, Lane #	EB 1	NB 1	SB 1			
Volume Total	14	325	881			
Volume Left	4	0	0			
Volume Right	10	0	0			
cSH	288	772	1700			
Volume to Capacity	0.05	0.00	0.52			
Queue Length 95th (m)	1.2	0.0	0.0			
Control Delay (s)	18.1	0.0	0.0			
Lane LOS	C					
Approach Delay (s)	18.1	0.0	0.0			
Approach LOS	C					
Intersection Summary						
Average Delay			0.2			
Intersection Capacity Utilization			56.4%	ICU Level of Service	B	
Analysis Period (min)			15			

HCM Unsignalized Intersection Capacity Analysis
 12: Marion Street & Airport Road

PM Peak Period
 04/13/2018



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	0	1	1	1017	450	5
Future Volume (Veh/h)	0	1	1	1017	450	5
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)	0	1	1	1017	450	5
Pedestrians	3			1		
Lane Width (m)	3.7			3.7		
Walking Speed (m/s)	1.1			1.1		
Percent Blockage	0			0		
Right turn flare (veh)						
Median type				None	None	
Median storage veh						
Upstream signal (m)				283	173	
pX, platoon unblocked	0.76					
vC, conflicting volume	1474	456	458			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1466	456	458			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	100	100	100			
cM capacity (veh/h)	108	606	1110			
Direction, Lane #	EB 1	NB 1	SB 1			
Volume Total	1	1018	455			
Volume Left	0	1	0			
Volume Right	1	0	5			
cSH	606	1110	1700			
Volume to Capacity	0.00	0.00	0.27			
Queue Length 95th (m)	0.0	0.0	0.0			
Control Delay (s)	11.0	0.0	0.0			
Lane LOS	B	A				
Approach Delay (s)	11.0	0.0	0.0			
Approach LOS	B					
Intersection Summary						
Average Delay	0.0					
Intersection Capacity Utilization	64.6%			ICU Level of Service	C	
Analysis Period (min)	15					

HCM Unsignalized Intersection Capacity Analysis
 13: Airport Road & Hilltop Drive

AM Peak Period
 04/13/2018



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	8	25	8	293	902	30
Future Volume (Veh/h)	8	25	8	293	902	30
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)	8	25	8	293	902	30
Pedestrians	2					
Lane Width (m)	3.7					
Walking Speed (m/s)	1.1					
Percent Blockage	0					
Right turn flare (veh)						
Median type				None	None	
Median storage veh						
Upstream signal (m)				191	266	
pX, platoon unblocked						
vC, conflicting volume	1228	919	934			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1228	919	934			
tC, single (s)	6.4	6.2	4.4			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.5			
p0 queue free %	96	92	99			
cM capacity (veh/h)	196	324	619			
Direction, Lane #	EB 1	NB 1	NB 2	SB 1		
Volume Total	33	8	293	932		
Volume Left	8	8	0	0		
Volume Right	25	0	0	30		
cSH	280	619	1700	1700		
Volume to Capacity	0.12	0.01	0.17	0.55		
Queue Length 95th (m)	3.0	0.3	0.0	0.0		
Control Delay (s)	19.6	10.9	0.0	0.0		
Lane LOS	C	B				
Approach Delay (s)	19.6	0.3		0.0		
Approach LOS	C					
Intersection Summary						
Average Delay			0.6			
Intersection Capacity Utilization			59.3%	ICU Level of Service	B	
Analysis Period (min)			15			

HCM Unsignalized Intersection Capacity Analysis
 13: Airport Road & Hilltop Drive

PM Peak Period
 04/13/2018



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	4	13	38	1040	429	16
Future Volume (Veh/h)	4	13	38	1040	429	16
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)	4	13	38	1040	429	16
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	None	
Median storage (veh)						
Upstream signal (m)				191	266	
pX, platoon unblocked	0.74					
vC, conflicting volume	1553	437	445			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1571	437	445			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	95	98	97			
cM capacity (veh/h)	88	624	1126			
Direction, Lane #	EB 1	NB 1	NB 2	SB 1		
Volume Total	17	38	1040	445		
Volume Left	4	38	0	0		
Volume Right	13	0	0	16		
cSH	257	1126	1700	1700		
Volume to Capacity	0.07	0.03	0.61	0.26		
Queue Length 95th (m)	1.6	0.8	0.0	0.0		
Control Delay (s)	20.0	8.3	0.0	0.0		
Lane LOS	C	A				
Approach Delay (s)	20.0	0.3		0.0		
Approach LOS	C					
Intersection Summary						
Average Delay			0.4			
Intersection Capacity Utilization			64.7%	ICU Level of Service	C	
Analysis Period (min)			15			

HCM Unsignalized Intersection Capacity Analysis
 14: Foodland Plaza & Airport Road

AM Peak Period
 04/13/2018



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	19	25	316	20	47	823
Future Volume (Veh/h)	19	25	316	20	47	823
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)	19	25	316	20	47	823
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage veh						
Upstream signal (m)	88			369		
pX, platoon unblocked	0.95	0.95			0.95	
vC, conflicting volume	1243	326			336	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1230	268			279	
tC, single (s)	6.5	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.6	3.3			2.2	
p0 queue free %	89	97			96	
cM capacity (veh/h)	171	727			1235	
Direction, Lane #	WB 1	WB 2	NB 1	SB 1	SB 2	
Volume Total	19	25	336	47	823	
Volume Left	19	0	0	47	0	
Volume Right	0	25	20	0	0	
cSH	171	727	1700	1235	1700	
Volume to Capacity	0.11	0.03	0.20	0.04	0.48	
Queue Length 95th (m)	2.8	0.8	0.0	0.9	0.0	
Control Delay (s)	28.7	10.1	0.0	8.0	0.0	
Lane LOS	D	B		A		
Approach Delay (s)	18.2		0.0	0.4		
Approach LOS	C					
Intersection Summary						
Average Delay			0.9			
Intersection Capacity Utilization			53.3%	ICU Level of Service	A	
Analysis Period (min)			15			

HCM Unsignalized Intersection Capacity Analysis
 14: Foodland Plaza & Airport Road

PM Peak Period
 04/13/2018



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	36	158	907	125	79	359
Future Volume (Veh/h)	36	158	907	125	79	359
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)	36	158	907	125	79	359
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None		None	
Median storage veh						
Upstream signal (m)			88		369	
pX, platoon unblocked	0.70	0.70			0.70	
vC, conflicting volume	1486	970			1032	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1481	747			836	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	57	46			86	
cM capacity (veh/h)	85	293			568	
Direction, Lane #	WB 1	WB 2	NB 1	SB 1	SB 2	
Volume Total	36	158	1032	79	359	
Volume Left	36	0	0	79	0	
Volume Right	0	158	125	0	0	
cSH	85	293	1700	568	1700	
Volume to Capacity	0.43	0.54	0.61	0.14	0.21	
Queue Length 95th (m)	13.1	22.6	0.0	3.7	0.0	
Control Delay (s)	75.8	30.7	0.0	12.4	0.0	
Lane LOS	F	D		B		
Approach Delay (s)	39.1		0.0	2.2		
Approach LOS	E					
Intersection Summary						
Average Delay			5.1			
Intersection Capacity Utilization			73.0%		ICU Level of Service	D
Analysis Period (min)			15			

Queues
 15: Caledon P.S. Driveway/15717 North Access

AM Peak Period
 04/13/2018



Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	91	57	316	5	12	832
v/c Ratio	0.44	0.20	0.23	0.00	0.02	0.61
Control Delay	31.0	8.9	5.1	0.0	4.7	9.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	31.0	8.9	5.1	0.0	4.7	9.2
Queue Length 50th (m)	9.9	0.0	12.3	0.0	0.4	48.2
Queue Length 95th (m)	20.6	7.8	26.2	0.0	2.1	100.1
Internal Link Dist (m)			290.0			63.7
Turn Bay Length (m)				20.0	20.0	
Base Capacity (vph)	421	512	1368	1176	779	1368
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	0.22	0.11	0.23	0.00	0.02	0.61
Intersection Summary						

Queues
15: Caledon P.S. Driveway/15717 North Access

PM Peak Period
04/13/2018

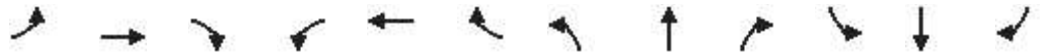


Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	52	29	907	18	61	359
v/c Ratio	0.30	0.12	0.60	0.01	0.16	0.24
Control Delay	29.8	6.0	7.4	0.5	5.1	3.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	29.8	6.0	7.4	0.5	5.1	3.8
Queue Length 50th (m)	6.9	0.0	51.8	0.0	2.1	13.2
Queue Length 95th (m)	13.5	3.9	103.5	0.6	7.1	26.0
Internal Link Dist (m)			159.1			63.7
Turn Bay Length (m)				20.0	20.0	
Base Capacity (vph)	424	509	1524	1305	384	1524
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	0.12	0.06	0.60	0.01	0.16	0.24

Intersection Summary

HCM Signalized Intersection Capacity Analysis
 15: Caledon P.S. Driveway/15717 North Access

AM Peak Period
 04/13/2018



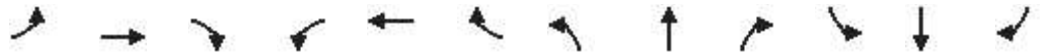
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔		↖		↗		↑	↗	↖	↑	
Traffic Volume (vph)	0	0	0	91	0	57	0	316	5	12	832	0
Future Volume (vph)	0	0	0	91	0	57	0	316	5	12	832	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)				6.0		6.0		6.0	6.0	6.0	6.0	
Lane Util. Factor				1.00		1.00		1.00	1.00	1.00	1.00	
Frt				1.00		0.85		1.00	0.85	1.00	1.00	
Flt Protected				0.95		1.00		1.00	1.00	0.95	1.00	
Satd. Flow (prot)				1789		1601		1883	1601	1789	1883	
Flt Permitted				0.76		1.00		1.00	1.00	0.57	1.00	
Satd. Flow (perm)				1426		1601		1883	1601	1071	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	91	0	57	0	316	5	12	832	0
RTOR Reduction (vph)	0	0	0	0	0	50	0	0	2	0	0	0
Lane Group Flow (vph)	0	0	0	91	0	7	0	316	3	12	832	0
Turn Type				Perm		Perm		NA	Perm	Perm	NA	
Protected Phases		4						2				6
Permitted Phases	4			8		8			2	6		
Actuated Green, G (s)				8.2		8.2		45.7	45.7	45.7	45.7	
Effective Green, g (s)				8.2		8.2		45.7	45.7	45.7	45.7	
Actuated g/C Ratio				0.12		0.12		0.69	0.69	0.69	0.69	
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)				177		199		1305	1110	742	1305	
v/s Ratio Prot								0.17			c0.44	
v/s Ratio Perm				c0.06		0.00			0.00	0.01		
v/c Ratio				0.51		0.04		0.24	0.00	0.02	0.64	
Uniform Delay, d1				27.0		25.4		3.7	3.1	3.1	5.5	
Progression Factor				1.00		1.00		1.00	1.00	1.00	1.00	
Incremental Delay, d2				2.5		0.1		0.4	0.0	0.0	2.4	
Delay (s)				29.5		25.4		4.2	3.1	3.2	7.9	
Level of Service				C		C		A	A	A	A	
Approach Delay (s)		0.0			27.9			4.1			7.9	
Approach LOS		A			C			A			A	

Intersection Summary		
HCM 2000 Control Delay	9.2	HCM 2000 Level of Service
HCM 2000 Volume to Capacity ratio	0.62	A
Actuated Cycle Length (s)	65.9	Sum of lost time (s)
Intersection Capacity Utilization	57.2%	12.0
Analysis Period (min)	15	ICU Level of Service
		B

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis
 15: Caledon P.S. Driveway/15717 North Access

PM Peak Period
 04/13/2018



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔		↖		↗		↑	↗	↖	↑	
Traffic Volume (vph)	0	0	0	52	0	29	0	907	18	61	359	0
Future Volume (vph)	0	0	0	52	0	29	0	907	18	61	359	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)				6.0		6.0		6.0	6.0	6.0	6.0	
Lane Util. Factor				1.00		1.00		1.00	1.00	1.00	1.00	
Frt				1.00		0.85		1.00	0.85	1.00	1.00	
Flt Protected				0.95		1.00		1.00	1.00	0.95	1.00	
Satd. Flow (prot)				1789		1601		1883	1601	1789	1883	
Flt Permitted				0.76		1.00		1.00	1.00	0.25	1.00	
Satd. Flow (perm)				1426		1601		1883	1601	474	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	52	0	29	0	907	18	61	359	0
RTOR Reduction (vph)	0	0	0	0	0	27	0	0	5	0	0	0
Lane Group Flow (vph)	0	0	0	52	0	2	0	907	13	61	359	0
Turn Type				Perm		Perm		NA	Perm	Perm	NA	
Protected Phases		4						2				6
Permitted Phases	4			8		8			2		6	
Actuated Green, G (s)				5.3		5.3		49.4	49.4	49.4	49.4	
Effective Green, g (s)				5.3		5.3		49.4	49.4	49.4	49.4	
Actuated g/C Ratio				0.08		0.08		0.74	0.74	0.74	0.74	
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)				113		127		1394	1185	351	1394	
v/s Ratio Prot								c0.48				0.19
v/s Ratio Perm				c0.04		0.00			0.01	0.13		
v/c Ratio				0.46		0.02		0.65	0.01	0.17	0.26	
Uniform Delay, d1				29.3		28.3		4.3	2.3	2.6	2.8	
Progression Factor				1.00		1.00		1.00	1.00	1.00	1.00	
Incremental Delay, d2				3.0		0.1		2.4	0.0	1.1	0.4	
Delay (s)				32.3		28.4		6.7	2.3	3.7	3.2	
Level of Service				C		C		A	A	A	A	
Approach Delay (s)		0.0			30.9			6.6			3.3	
Approach LOS		A			C			A			A	

Intersection Summary		
HCM 2000 Control Delay	7.0	HCM 2000 Level of Service
HCM 2000 Volume to Capacity ratio	0.63	A
Actuated Cycle Length (s)	66.7	Sum of lost time (s)
Intersection Capacity Utilization	62.4%	12.0
Analysis Period (min)	15	ICU Level of Service
		B

c Critical Lane Group

HCM Unsignalized Intersection Capacity Analysis
 16: Airport Road & Cranston Drive/15717 South Access

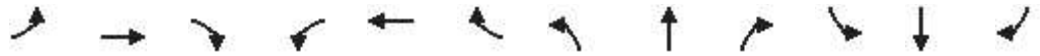
AM Peak Period
 04/13/2018



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔			↔		↗	↖	↗	↖	↖	↗
Traffic Volume (veh/h)	11	0	27	59	0	16	9	271	26	3	890	8
Future Volume (Veh/h)	11	0	27	59	0	16	9	271	26	3	890	8
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)	11	0	27	59	0	16	9	271	26	3	890	8
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage veh												
Upstream signal (m)												183
pX, platoon unblocked	0.71	0.71	0.71	0.71	0.71		0.71					
vC, conflicting volume	1201	1211	890	1212	1193	271	898			297		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	1080	1095	644	1096	1069	271	655			297		
tC, single (s)	7.2	6.5	6.2	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.6	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	92	100	92	52	100	98	99			100		
cM capacity (veh/h)	130	150	333	123	155	768	671			1264		
Direction, Lane #	EB 1	WB 1	NB 1	NB 2	NB 3	SB 1	SB 2	SB 3				
Volume Total	38	75	9	271	26	3	890	8				
Volume Left	11	59	9	0	0	3	0	0				
Volume Right	27	16	0	0	26	0	0	8				
cSH	229	150	671	1700	1700	1264	1700	1700				
Volume to Capacity	0.17	0.50	0.01	0.16	0.02	0.00	0.52	0.00				
Queue Length 95th (m)	4.4	18.1	0.3	0.0	0.0	0.1	0.0	0.0				
Control Delay (s)	23.8	50.6	10.4	0.0	0.0	7.9	0.0	0.0				
Lane LOS	C	F	B			A						
Approach Delay (s)	23.8	50.6	0.3			0.0						
Approach LOS	C	F										
Intersection Summary												
Average Delay			3.7									
Intersection Capacity Utilization			63.4%		ICU Level of Service				B			
Analysis Period (min)			15									

HCM Unsignalized Intersection Capacity Analysis
 16: Airport Road & Cranston Drive/15717 South Access

PM Peak Period
 04/13/2018



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔			↔		↗	↑	↘	↗	↑	↘
Traffic Volume (veh/h)	12	0	21	19	0	7	26	1008	125	6	389	15
Future Volume (Veh/h)	12	0	21	19	0	7	26	1008	125	6	389	15
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)	12	0	21	19	0	7	26	1008	125	6	389	15
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage veh												
Upstream signal (m)												183
pX, platoon unblocked	0.97	0.97	0.97	0.97	0.97		0.97					
vC, conflicting volume	1468	1586	389	1482	1476	1008	404			1133		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	1467	1589	353	1481	1475	1008	369			1133		
tC, single (s)	7.1	6.5	6.3	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.4	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	88	100	97	80	100	98	98			99		
cM capacity (veh/h)	99	101	660	95	118	292	1137			617		
Direction, Lane #	EB 1	WB 1	NB 1	NB 2	NB 3	SB 1	SB 2	SB 3				
Volume Total	33	26	26	1008	125	6	389	15				
Volume Left	12	19	26	0	0	6	0	0				
Volume Right	21	7	0	0	125	0	0	15				
cSH	215	116	1137	1700	1700	617	1700	1700				
Volume to Capacity	0.15	0.22	0.02	0.59	0.07	0.01	0.23	0.01				
Queue Length 95th (m)	4.0	6.2	0.5	0.0	0.0	0.2	0.0	0.0				
Control Delay (s)	24.7	44.9	8.2	0.0	0.0	10.9	0.0	0.0				
Lane LOS	C	E	A			B						
Approach Delay (s)	24.7	44.9	0.2			0.2						
Approach LOS	C	E										
Intersection Summary												
Average Delay			1.4									
Intersection Capacity Utilization			63.1%	ICU Level of Service				B				
Analysis Period (min)			15									

Queues
17: Olde Base Line Road & Airport Road

AM Peak Period
04/13/2018



Lane Group	EBL	NBT	SBT
Lane Group Flow (vph)	285	193	915
v/c Ratio	0.79	0.23	0.77
Control Delay	39.7	7.2	15.8
Queue Delay	0.0	0.0	0.0
Total Delay	39.7	7.2	15.8
Queue Length 50th (m)	32.0	11.1	87.3
Queue Length 95th (m)	58.8	22.8	160.2
Internal Link Dist (m)	154.7	875.4	514.4
Turn Bay Length (m)			
Base Capacity (vph)	443	825	1189
Starvation Cap Reductn	0	0	0
Spillback Cap Reductn	0	0	0
Storage Cap Reductn	0	0	0
Reduced v/c Ratio	0.64	0.23	0.77
Intersection Summary			

Queues
17: Olde Base Line Road & Airport Road

PM Peak Period
04/13/2018



Lane Group	EBL	NBT	SBT
Lane Group Flow (vph)	374	834	420
v/c Ratio	0.92	0.83	0.39
Control Delay	63.5	22.3	8.0
Queue Delay	0.0	0.0	0.0
Total Delay	63.5	22.3	8.0
Queue Length 50th (m)	61.3	99.2	26.1
Queue Length 95th (m)	#112.8	#187.1	42.9
Internal Link Dist (m)	154.8	875.4	514.4
Turn Bay Length (m)			
Base Capacity (vph)	406	999	1072
Starvation Cap Reductn	0	0	0
Spillback Cap Reductn	0	0	0
Storage Cap Reductn	0	0	0
Reduced v/c Ratio	0.92	0.83	0.39

Intersection Summary

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

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

AM Peak Period
 04/13/2018



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	115	170	35	158	650	265
Future Volume (vph)	115	170	35	158	650	265
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.6			6.0	6.0	
Lane Util. Factor	1.00			1.00	1.00	
Frt	0.92			1.00	0.96	
Flt Protected	0.98			0.99	1.00	
Satd. Flow (prot)	1621			1592	1761	
Flt Permitted	0.98			0.77	1.00	
Satd. Flow (perm)	1621			1237	1761	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	115	170	35	158	650	265
RTOR Reduction (vph)	64	0	0	0	15	0
Lane Group Flow (vph)	221	0	0	193	900	0
Heavy Vehicles (%)	8%	6%	4%	23%	6%	2%
Turn Type	Prot		Perm	NA	NA	
Protected Phases	4			2	6	
Permitted Phases			2			
Actuated Green, G (s)	15.6			56.5	56.5	
Effective Green, g (s)	15.6			56.5	56.5	
Actuated g/C Ratio	0.18			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)	298			825	1174	
v/s Ratio Prot	c0.14				c0.51	
v/s Ratio Perm				0.16		
v/c Ratio	0.74			0.23	0.77	
Uniform Delay, d1	32.7			5.6	9.6	
Progression Factor	1.00			1.00	1.00	
Incremental Delay, d2	9.6			0.7	4.8	
Delay (s)	42.3			6.2	14.4	
Level of Service	D			A	B	
Approach Delay (s)	42.3			6.2	14.4	
Approach LOS	D			A	B	

Intersection Summary			
HCM 2000 Control Delay	19.0	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.76		
Actuated Cycle Length (s)	84.7	Sum of lost time (s)	12.6
Intersection Capacity Utilization	77.7%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

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

PM Peak Period
 04/13/2018



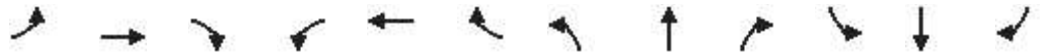
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	331	43	127	707	274	146
Future Volume (vph)	331	43	127	707	274	146
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.6			6.0	6.0	
Lane Util. Factor	1.00			1.00	1.00	
Frt	0.98			1.00	0.95	
Flt Protected	0.96			0.99	1.00	
Satd. Flow (prot)	1777			1826	1662	
Flt Permitted	0.96			0.86	1.00	
Satd. Flow (perm)	1777			1580	1662	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	331	43	127	707	274	146
RTOR Reduction (vph)	5	0	0	0	22	0
Lane Group Flow (vph)	369	0	0	834	398	0
Heavy Vehicles (%)	1%	9%	1%	5%	15%	1%
Turn Type	Prot		Perm	NA	NA	
Protected Phases	4			2	6	
Permitted Phases			2			
Actuated Green, G (s)	20.0			56.0	56.0	
Effective Green, g (s)	20.0			56.0	56.0	
Actuated g/C Ratio	0.23			0.63	0.63	
Clearance Time (s)	6.6			6.0	6.0	
Lane Grp Cap (vph)	401			998	1050	
v/s Ratio Prot	c0.21				0.24	
v/s Ratio Perm				c0.53		
v/c Ratio	0.92			0.84	0.38	
Uniform Delay, d1	33.5			12.7	7.9	
Progression Factor	1.00			1.00	1.00	
Incremental Delay, d2	28.6			8.3	1.0	
Delay (s)	62.1			21.0	8.9	
Level of Service	E			C	A	
Approach Delay (s)	62.1			21.0	8.9	
Approach LOS	E			C	A	

Intersection Summary			
HCM 2000 Control Delay	27.3	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.86		
Actuated Cycle Length (s)	88.6	Sum of lost time (s)	12.6
Intersection Capacity Utilization	104.0%	ICU Level of Service	G
Analysis Period (min)	15		

c Critical Lane Group

HCM Unsignalized Intersection Capacity Analysis
 18: Airport Road & Boston Mills Road/Castleberg Side Road

AM Peak Period
 04/13/2018



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔			↔	↔		↔	↔		↔	↔
Traffic Volume (veh/h)	0	1	3	71	3	29	3	171	5	60	777	0
Future Volume (Veh/h)	0	1	3	71	3	29	3	171	5	60	777	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)	0	1	3	71	3	29	3	171	5	60	777	0
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)						1						
Median type								None			None	
Median storage (veh)												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	1090	1079	777	1078	1074	171	777			176		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	1090	1079	777	1078	1074	171	777			176		
tC, single (s)	7.1	6.5	6.7	7.1	6.5	6.2	4.1			4.2		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.8	3.5	4.0	3.3	2.2			2.3		
p0 queue free %	100	100	99	62	99	97	100			96		
cM capacity (veh/h)	179	210	330	187	211	878	848			1371		
Direction, Lane #	EB 1	WB 1	NB 1	NB 2	SB 1	SB 2						
Volume Total	4	103	174	5	837	0						
Volume Left	0	71	3	0	60	0						
Volume Right	3	29	0	5	0	0						
cSH	289	251	848	1700	1371	1700						
Volume to Capacity	0.01	0.41	0.00	0.00	0.04	0.00						
Queue Length 95th (m)	0.3	14.4	0.1	0.0	1.0	0.0						
Control Delay (s)	17.7	28.9	0.2	0.0	1.1	0.0						
Lane LOS	C	D	A		A							
Approach Delay (s)	17.7	28.9	0.2		1.1							
Approach LOS	C	D										
Intersection Summary												
Average Delay			3.6									
Intersection Capacity Utilization			74.1%		ICU Level of Service					D		
Analysis Period (min)			15									

HCM Unsignalized Intersection Capacity Analysis
 18: Airport Road & Boston Mills Road/Castleberg Side Road

PM Peak Period
 04/13/2018



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔			↑	↑		↑	↑		↑	↑
Traffic Volume (veh/h)	3	1	0	10	3	69	3	763	40	41	250	1
Future Volume (Veh/h)	3	1	0	10	3	69	3	763	40	41	250	1
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	1	0	10	3	69	3	763	40	41	250	1
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)						1						
Median type								None			None	
Median storage (veh)												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	1137	1141	250	1102	1102	763	251			803		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	1137	1141	250	1102	1102	763	251			803		
tC, single (s)	7.1	6.5	6.2	7.1	7.0	6.2	4.1			4.2		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.5	3.3	2.2			2.3		
p0 queue free %	98	99	100	95	98	83	100			95		
cM capacity (veh/h)	142	192	794	182	165	404	1326			803		
Direction, Lane #	EB 1	WB 1	NB 1	NB 2	SB 1	SB 2						
Volume Total	4	82	766	40	291	1						
Volume Left	3	10	3	0	41	0						
Volume Right	0	69	0	40	0	1						
cSH	152	480	1326	1700	803	1700						
Volume to Capacity	0.03	0.17	0.00	0.02	0.05	0.00						
Queue Length 95th (m)	0.6	4.6	0.1	0.0	1.2	0.0						
Control Delay (s)	29.4	17.5	0.1	0.0	1.9	0.0						
Lane LOS	D	C	A		A							
Approach Delay (s)	29.4	17.5	0.1		1.9							
Approach LOS	D	C										
Intersection Summary												
Average Delay			1.8									
Intersection Capacity Utilization			57.9%		ICU Level of Service				B			
Analysis Period (min)			15									

HCM Unsignalized Intersection Capacity Analysis
 19: Airport Road & 5992 King Access

AM Peak Period
 04/13/2018



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	11	67	20	143	851	113
Future Volume (Veh/h)	11	67	20	143	851	113
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)	11	67	20	143	851	113
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	None	
Median storage (veh)						
Upstream signal (m)	50					
pX, platoon unblocked	0.98					
vC, conflicting volume	1034	851	964			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1022	851	964			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	96	81	97			
cM capacity (veh/h)	248	360	714			
Direction, Lane #	EB 1	NB 1	SB 1	SB 2		
Volume Total	78	163	851	113		
Volume Left	11	20	0	0		
Volume Right	67	0	0	113		
cSH	338	714	1700	1700		
Volume to Capacity	0.23	0.03	0.50	0.07		
Queue Length 95th (m)	6.7	0.7	0.0	0.0		
Control Delay (s)	18.8	1.5	0.0	0.0		
Lane LOS	C	A				
Approach Delay (s)	18.8	1.5	0.0			
Approach LOS	C					
Intersection Summary						
Average Delay	1.4					
Intersection Capacity Utilization	56.2%			ICU Level of Service	B	
Analysis Period (min)	15					

HCM Unsignalized Intersection Capacity Analysis
 19: Airport Road & 5992 King Access

PM Peak Period
 04/13/2018



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	58	18	94	678	260	28
Future Volume (Veh/h)	58	18	94	678	260	28
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)	58	18	94	678	260	28
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	None	
Median storage veh						
Upstream signal (m)				78		
pX, platoon unblocked	0.80					
vC, conflicting volume	1126	260	288			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1032	260	288			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	70	98	93			
cM capacity (veh/h)	191	779	1274			
Direction, Lane #	EB 1	NB 1	SB 1	SB 2		
Volume Total	76	772	260	28		
Volume Left	58	94	0	0		
Volume Right	18	0	0	28		
cSH	233	1274	1700	1700		
Volume to Capacity	0.33	0.07	0.15	0.02		
Queue Length 95th (m)	10.3	1.8	0.0	0.0		
Control Delay (s)	27.8	1.8	0.0	0.0		
Lane LOS	D	A				
Approach Delay (s)	27.8	1.8	0.0			
Approach LOS	D					
Intersection Summary						
Average Delay	3.1					
Intersection Capacity Utilization	68.9%			ICU Level of Service	C	
Analysis Period (min)	15					



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	19	371	136	588	4	129	127	655
v/c Ratio	0.32	0.68	0.76	1.07	0.02	0.13	0.17	0.63
Control Delay	43.9	37.4	60.3	92.6	9.5	8.6	10.7	17.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	43.9	37.4	60.3	92.6	9.5	8.6	10.7	17.2
Queue Length 50th (m)	2.9	61.1	23.9	~126.9	0.3	9.0	10.8	77.8
Queue Length 95th (m)	10.5	92.8	#55.5	#191.6	1.8	17.2	19.7	113.3
Internal Link Dist (m)		614.4		817.2		572.1		54.2
Turn Bay Length (m)	65.0		50.0		60.0		55.0	
Base Capacity (vph)	60	542	179	551	190	959	727	1038
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.32	0.68	0.76	1.07	0.02	0.13	0.17	0.63

Intersection Summary

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

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



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	49	489	35	492	54	576	38	163
v/c Ratio	0.54	0.87	0.40	0.88	0.08	0.54	0.11	0.17
Control Delay	54.4	50.7	44.3	50.8	9.7	14.8	10.6	9.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	54.4	50.7	44.3	50.8	9.7	14.8	10.6	9.2
Queue Length 50th (m)	7.9	89.2	5.4	87.4	4.3	62.2	3.1	12.2
Queue Length 95th (m)	#24.6	#144.2	16.0	#144.2	9.5	90.6	8.0	21.7
Internal Link Dist (m)		614.4		817.3		572.1		54.2
Turn Bay Length (m)	65.0		50.0		60.0		55.0	
Base Capacity (vph)	91	563	87	560	692	1076	344	964
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.54	0.87	0.40	0.88	0.08	0.54	0.11	0.17

Intersection Summary

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

HCM Signalized Intersection Capacity Analysis
20: King Street & Airport Road

AM Peak Period
04/13/2018



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	19	296	75	136	570	18	4	106	23	127	593	62
Future Volume (vph)	19	296	75	136	570	18	4	106	23	127	593	62
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.2	6.2		6.2	6.2		6.0	6.0		6.0	6.0	
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Frt	1.00	0.97		1.00	1.00		1.00	0.97		1.00	0.99	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1437	1781		1755	1839		1093	1643		1772	1787	
Flt Permitted	0.13	1.00		0.32	1.00		0.29	1.00		0.67	1.00	
Satd. Flow (perm)	202	1781		598	1839		329	1643		1258	1787	
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)	19	296	75	136	570	18	4	106	23	127	593	62
RTOR Reduction (vph)	0	9	0	0	1	0	0	8	0	0	4	0
Lane Group Flow (vph)	19	362	0	136	587	0	4	121	0	127	651	0
Heavy Vehicles (%)	27%	5%	3%	4%	3%	36%	67%	12%	22%	3%	6%	6%
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)	30.0	30.0		30.0	30.0		58.0	58.0		58.0	58.0	
Effective Green, g (s)	30.0	30.0		30.0	30.0		58.0	58.0		58.0	58.0	
Actuated g/C Ratio	0.30	0.30		0.30	0.30		0.58	0.58		0.58	0.58	
Clearance Time (s)	6.2	6.2		6.2	6.2		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	3.0	
Lane Grp Cap (vph)	60	533		179	550		190	951		728	1034	
v/s Ratio Prot		0.20			c0.32			0.07			c0.36	
v/s Ratio Perm	0.09			0.23			0.01			0.10		
v/c Ratio	0.32	0.68		0.76	1.07		0.02	0.13		0.17	0.63	
Uniform Delay, d1	27.2	30.9		31.8	35.1		9.0	9.6		9.9	14.0	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	3.0	3.4		16.8	57.3		0.2	0.3		0.5	2.9	
Delay (s)	30.2	34.3		48.6	92.4		9.2	9.9		10.4	16.9	
Level of Service	C	C		D	F		A	A		B	B	
Approach Delay (s)		34.1			84.2			9.8			15.8	
Approach LOS		C			F			A			B	

Intersection Summary			
HCM 2000 Control Delay	43.4	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.78		
Actuated Cycle Length (s)	100.2	Sum of lost time (s)	12.2
Intersection Capacity Utilization	112.2%	ICU Level of Service	H
Analysis Period (min)	15		
c Critical Lane Group			

HCM Signalized Intersection Capacity Analysis
20: King Street & Airport Road

PM Peak Period
04/13/2018



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖	↗		↖	↗		↖	↗		↖	↗	
Traffic Volume (vph)	49	473	16	35	360	132	54	497	79	38	134	29
Future Volume (vph)	49	473	16	35	360	132	54	497	79	38	134	29
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.2	6.2		6.2	6.2		6.0	6.0		6.0	6.0	
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Frt	1.00	1.00		1.00	0.96		1.00	0.98		1.00	0.97	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1825	1879		1706	1826		1738	1850		1659	1653	
Flt Permitted	0.16	1.00		0.16	1.00		0.65	1.00		0.34	1.00	
Satd. Flow (perm)	303	1879		291	1826		1196	1850		595	1653	
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)	49	473	16	35	360	132	54	497	79	38	134	29
RTOR Reduction (vph)	0	1	0	0	13	0	0	6	0	0	8	0
Lane Group Flow (vph)	49	488	0	35	479	0	54	570	0	38	155	0
Heavy Vehicles (%)	0%	1%	23%	7%	1%	1%	5%	2%	0%	10%	14%	9%
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)	30.0	30.0		30.0	30.0		58.0	58.0		58.0	58.0	
Effective Green, g (s)	30.0	30.0		30.0	30.0		58.0	58.0		58.0	58.0	
Actuated g/C Ratio	0.30	0.30		0.30	0.30		0.58	0.58		0.58	0.58	
Clearance Time (s)	6.2	6.2		6.2	6.2		6.0	6.0		6.0	6.0	
Lane Grp Cap (vph)	90	562		87	546		692	1070		344	956	
v/s Ratio Prot		0.26			c0.26			c0.31			0.09	
v/s Ratio Perm	0.16			0.12			0.05			0.06		
v/c Ratio	0.54	0.87		0.40	0.88		0.08	0.53		0.11	0.16	
Uniform Delay, d1	29.4	33.2		28.0	33.3		9.3	12.8		9.5	9.8	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	21.6	16.4		13.3	17.8		0.2	1.9		0.6	0.4	
Delay (s)	51.0	49.7		41.2	51.1		9.5	14.8		10.1	10.2	
Level of Service	D	D		D	D		A	B		B	B	
Approach Delay (s)		49.8			50.4			14.3			10.2	
Approach LOS		D			D			B			B	

Intersection Summary		
HCM 2000 Control Delay	34.0	HCM 2000 Level of Service
HCM 2000 Volume to Capacity ratio	0.65	C
Actuated Cycle Length (s)	100.2	Sum of lost time (s)
Intersection Capacity Utilization	95.8%	12.2
Analysis Period (min)	15	ICU Level of Service
		F

c Critical Lane Group

Appendix E – Synchro Outputs Future Year 2041 Do-Nothing Conditions

HCM Unsignalized Intersection Capacity Analysis
 1: Airport Road & Huntsmill Drive

AM Peak Period
 04/13/2018



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	0	0	225	0	0	711
Future Volume (Veh/h)	0	0	225	0	0	711
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)	0	0	225	0	0	711
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None		None	
Median storage (veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	936	225			225	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	936	225			225	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	100	100			100	
cM capacity (veh/h)	297	819			1356	
Direction, Lane #	WB 1	NB 1	SB 1			
Volume Total	0	225	711			
Volume Left	0	0	0			
Volume Right	0	0	0			
cSH	1700	1700	1356			
Volume to Capacity	0.00	0.13	0.00			
Queue Length 95th (m)	0.0	0.0	0.0			
Control Delay (s)	0.0	0.0	0.0			
Lane LOS	A					
Approach Delay (s)	0.0	0.0	0.0			
Approach LOS	A					
Intersection Summary						
Average Delay			0.0			
Intersection Capacity Utilization			40.8%	ICU Level of Service	A	
Analysis Period (min)			15			

HCM Unsignalized Intersection Capacity Analysis
1: Airport Road & Huntsmill Drive

PM Peak Period
04/13/2018



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	1	0	844	2	0	289
Future Volume (Veh/h)	1	0	844	2	0	289
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	0	844	2	0	289
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type						
Median storage veh						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	1134	845			846	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1134	845			846	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	100	100			100	
cM capacity (veh/h)	226	366			800	
Direction, Lane #						
	WB 1	NB 1	SB 1			
Volume Total	1	846	289			
Volume Left	1	0	0			
Volume Right	0	2	0			
cSH	226	1700	800			
Volume to Capacity	0.00	0.50	0.00			
Queue Length 95th (m)	0.1	0.0	0.0			
Control Delay (s)	21.0	0.0	0.0			
Lane LOS	C					
Approach Delay (s)	21.0	0.0	0.0			
Approach LOS	C					
Intersection Summary						
Average Delay			0.0			
Intersection Capacity Utilization			54.5%		ICU Level of Service	A
Analysis Period (min)			15			

HCM Unsignalized Intersection Capacity Analysis

2: Leamster Trail & Airport Road

AM Peak Period
04/13/2018



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	1	12	0	210	741	0
Future Volume (Veh/h)	1	12	0	210	741	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	12	0	210	741	0
Pedestrians	1			2		
Lane Width (m)	3.7			3.7		
Walking Speed (m/s)	1.1			1.1		
Percent Blockage	0			0		
Right turn flare (veh)						
Median type				None	None	
Median storage veh						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	952	744	742			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	952	744	742			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	100	97	100			
cM capacity (veh/h)	290	417	873			
Direction, Lane #	EB 1	NB 1	NB 2	SB 1	SB 2	
Volume Total	13	0	210	741	0	
Volume Left	1	0	0	0	0	
Volume Right	12	0	0	0	0	
cSH	403	1700	1700	1700	1700	
Volume to Capacity	0.03	0.00	0.12	0.44	0.00	
Queue Length 95th (m)	0.8	0.0	0.0	0.0	0.0	
Control Delay (s)	14.2	0.0	0.0	0.0	0.0	
Lane LOS	B					
Approach Delay (s)	14.2	0.0		0.0		
Approach LOS	B					
Intersection Summary						
Average Delay			0.2			
Intersection Capacity Utilization			49.6%	ICU Level of Service	A	
Analysis Period (min)			15			

HCM Unsignalized Intersection Capacity Analysis

2: Leamster Trail & Airport Road

PM Peak Period
04/13/2018



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	0	9	15	846	290	1
Future Volume (Veh/h)	0	9	15	846	290	1
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)	0	9	15	846	290	1
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type						
				None	None	
Median storage (veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	1166	290	291			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1166	290	291			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	100	99	99			
cM capacity (veh/h)	214	754	1282			
Direction, Lane #	EB 1	NB 1	NB 2	SB 1	SB 2	
Volume Total	9	15	846	290	1	
Volume Left	0	15	0	0	0	
Volume Right	9	0	0	0	1	
cSH	754	1282	1700	1700	1700	
Volume to Capacity	0.01	0.01	0.50	0.17	0.00	
Queue Length 95th (m)	0.3	0.3	0.0	0.0	0.0	
Control Delay (s)	9.8	7.8	0.0	0.0	0.0	
Lane LOS	A	A				
Approach Delay (s)	9.8	0.1		0.0		
Approach LOS	A					
Intersection Summary						
Average Delay			0.2			
Intersection Capacity Utilization			54.5%	ICU Level of Service	A	
Analysis Period (min)			15			

HCM Unsignalized Intersection Capacity Analysis
 3: 16114 North Access

AM Peak Period
 04/13/2018



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	2	17	3	210	741	1
Future Volume (Veh/h)	2	17	3	210	741	1
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	17	3	210	741	1
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	None	
Median storage (veh)						
Upstream signal (m)				342		
pX, platoon unblocked						
vC, conflicting volume	958	742	742			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	958	742	742			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	99	96	100			
cM capacity (veh/h)	285	416	865			
Direction, Lane #	EB 1	NB 1	NB 2	SB 1		
Volume Total	19	3	210	742		
Volume Left	2	3	0	0		
Volume Right	17	0	0	1		
cSH	397	865	1700	1700		
Volume to Capacity	0.05	0.00	0.12	0.44		
Queue Length 95th (m)	1.1	0.1	0.0	0.0		
Control Delay (s)	14.5	9.2	0.0	0.0		
Lane LOS	B	A				
Approach Delay (s)	14.5	0.1		0.0		
Approach LOS	B					
Intersection Summary						
Average Delay			0.3			
Intersection Capacity Utilization			49.1%		ICU Level of Service	A
Analysis Period (min)			15			

HCM Unsignalized Intersection Capacity Analysis

3: 16114 North Access

PM Peak Period
04/13/2018



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	3	6	16	846	290	2
Future Volume (Veh/h)	3	6	16	846	290	2
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	6	16	846	290	2
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	None	
Median storage (veh)						
Upstream signal (m)	342					
pX, platoon unblocked	0.71					
vC, conflicting volume	1169	291	292			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1036	291	292			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	98	99	99			
cM capacity (veh/h)	181	748	1270			
Direction, Lane #	EB 1	NB 1	NB 2	SB 1		
Volume Total	9	16	846	292		
Volume Left	3	16	0	0		
Volume Right	6	0	0	2		
cSH	366	1270	1700	1700		
Volume to Capacity	0.02	0.01	0.50	0.17		
Queue Length 95th (m)	0.6	0.3	0.0	0.0		
Control Delay (s)	15.1	7.9	0.0	0.0		
Lane LOS	C	A				
Approach Delay (s)	15.1	0.1	0.0			
Approach LOS	C					
Intersection Summary						
Average Delay	0.2					
Intersection Capacity Utilization	54.5%			ICU Level of Service	A	
Analysis Period (min)	15					

HCM Unsignalized Intersection Capacity Analysis

4: 16114 South Access

AM Peak Period
04/13/2018



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	5	7	9	210	741	15
Future Volume (Veh/h)	5	7	9	210	741	15
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	7	9	210	741	15
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	None	
Median storage (veh)						
Upstream signal (m)	262					
pX, platoon unblocked						
vC, conflicting volume	976	748	756			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	976	748	756			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	98	98	99			
cM capacity (veh/h)	275	412	855			
Direction, Lane #	EB 1	NB 1	NB 2	SB 1		
Volume Total	12	9	210	756		
Volume Left	5	9	0	0		
Volume Right	7	0	0	15		
cSH	341	855	1700	1700		
Volume to Capacity	0.04	0.01	0.12	0.44		
Queue Length 95th (m)	0.8	0.2	0.0	0.0		
Control Delay (s)	15.9	9.3	0.0	0.0		
Lane LOS	C	A				
Approach Delay (s)	15.9	0.4		0.0		
Approach LOS	C					
Intersection Summary						
Average Delay	0.3					
Intersection Capacity Utilization	49.9%			ICU Level of Service	A	
Analysis Period (min)	15					

HCM Unsignalized Intersection Capacity Analysis

4: 16114 South Access

PM Peak Period
04/13/2018



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	22	41	27	846	290	30
Future Volume (Veh/h)	22	41	27	846	290	30
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)	22	41	27	846	290	30
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	None	
Median storage (veh)						
Upstream signal (m)	262					
pX, platoon unblocked	0.69					
vC, conflicting volume	1205	305	320			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1072	305	320			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	87	94	98			
cM capacity (veh/h)	165	735	1240			
Direction, Lane #	EB 1	NB 1	NB 2	SB 1		
Volume Total	63	27	846	320		
Volume Left	22	27	0	0		
Volume Right	41	0	0	30		
cSH	332	1240	1700	1700		
Volume to Capacity	0.19	0.02	0.50	0.19		
Queue Length 95th (m)	5.2	0.5	0.0	0.0		
Control Delay (s)	18.3	8.0	0.0	0.0		
Lane LOS	C	A				
Approach Delay (s)	18.3	0.2		0.0		
Approach LOS	C					
Intersection Summary						
Average Delay			1.1			
Intersection Capacity Utilization			54.9%	ICU Level of Service	A	
Analysis Period (min)			15			

HCM Unsignalized Intersection Capacity Analysis
5: Airport Road & Walker Road West/Walker Road East

AM Peak Period
04/13/2018



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Volume (veh/h)	12	16	79	14	9	12	28	207	4	6	673	46
Future Volume (Veh/h)	12	16	79	14	9	12	28	207	4	6	673	46
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)	12	16	79	14	9	12	28	207	4	6	673	46
Pedestrians		1						1				
Lane Width (m)		3.7						3.7				
Walking Speed (m/s)		1.1						1.1				
Percent Blockage		0						0				
Right turn flare (veh)												
Median type								None			None	
Median storage veh												
Upstream signal (m)								199				
pX, platoon unblocked												
vC, conflicting volume	990	976	698	1061	997	209	720			211		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	990	976	698	1061	997	209	720			211		
tC, single (s)	7.2	6.6	6.3	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.6	4.1	3.4	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	94	93	82	91	96	99	97			100		
cM capacity (veh/h)	200	235	433	153	237	831	890			1372		
Direction, Lane #	EB 1	WB 1	NB 1	SB 1								
Volume Total	107	35	239	725								
Volume Left	12	14	28	6								
Volume Right	79	12	4	46								
cSH	345	243	890	1372								
Volume to Capacity	0.31	0.14	0.03	0.00								
Queue Length 95th (m)	9.8	3.8	0.7	0.1								
Control Delay (s)	20.1	22.3	1.4	0.1								
Lane LOS	C	C	A	A								
Approach Delay (s)	20.1	22.3	1.4	0.1								
Approach LOS	C	C										
Intersection Summary												
Average Delay			3.0									
Intersection Capacity Utilization			52.9%		ICU Level of Service					A		
Analysis Period (min)			15									

HCM Unsignalized Intersection Capacity Analysis
5: Airport Road & Walker Road West/Walker Road East

PM Peak Period
04/13/2018



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔			↔			↔			↔	
Traffic Volume (veh/h)	31	13	64	7	1	12	80	829	35	9	270	22
Future Volume (Veh/h)	31	13	64	7	1	12	80	829	35	9	270	22
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)	31	13	64	7	1	12	80	829	35	9	270	22
Pedestrians		2						1				
Lane Width (m)		3.7						3.7				
Walking Speed (m/s)		1.1						1.1				
Percent Blockage		0						0				
Right turn flare (veh)												
Median type								None			None	
Median storage veh												
Upstream signal (m)								199				
pX, platoon unblocked	0.63	0.63		0.63	0.63	0.63				0.63		
vC, conflicting volume	1320	1325	284	1377	1318	846	294			864		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	1213	1221	284	1304	1210	457	294			485		
tC, single (s)	7.1	6.5	6.2	7.3	7.5	6.2	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.7	4.9	3.3	2.2			2.2		
p0 queue free %	66	88	91	89	99	97	94			99		
cM capacity (veh/h)	90	105	753	62	70	381	1277			682		
Direction, Lane #	EB 1	WB 1	NB 1	SB 1								
Volume Total	108	20	944	301								
Volume Left	31	7	80	9								
Volume Right	64	12	35	22								
cSH	196	125	1277	682								
Volume to Capacity	0.55	0.16	0.06	0.01								
Queue Length 95th (m)	22.2	4.2	1.5	0.3								
Control Delay (s)	44.0	39.1	1.6	0.5								
Lane LOS	E	E	A	A								
Approach Delay (s)	44.0	39.1	1.6	0.5								
Approach LOS	E	E										
Intersection Summary												
Average Delay			5.2									
Intersection Capacity Utilization			84.3%	ICU Level of Service		E						
Analysis Period (min)			15									

Queues
6: Old Church Road & Airport Road

AM Peak Period
04/13/2018



Lane Group	WBL	WBR	NBT	NBR	SBT
Lane Group Flow (vph)	378	77	202	223	724
v/c Ratio	0.80	0.20	0.27	0.25	0.89
Control Delay	36.2	9.5	10.8	2.3	31.1
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	36.2	9.5	10.8	2.3	31.1
Queue Length 50th (m)	43.4	2.0	13.6	0.0	78.2
Queue Length 95th (m)	#73.2	10.6	26.5	9.2	#152.7
Internal Link Dist (m)	119.4		41.7		175.1
Turn Bay Length (m)		20.0		45.0	
Base Capacity (vph)	563	454	762	905	818
Starvation Cap Reductn	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.67	0.17	0.27	0.25	0.89

Intersection Summary

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

Queues
6: Old Church Road & Airport Road

PM Peak Period
04/13/2018



Lane Group	WBL	WBR	NBT	NBR	SBT
Lane Group Flow (vph)	255	151	775	477	356
v/c Ratio	0.64	0.33	0.75	0.45	0.81
Control Delay	29.9	7.1	18.1	3.0	30.6
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	29.9	7.1	18.1	3.0	30.6
Queue Length 50th (m)	26.8	1.4	61.3	1.9	29.7
Queue Length 95th (m)	46.7	12.9	#145.0	15.7	#88.4
Internal Link Dist (m)	119.4		41.8		175.2
Turn Bay Length (m)		20.0		45.0	
Base Capacity (vph)	600	628	1033	1071	442
Starvation Cap Reductn	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.42	0.24	0.75	0.45	0.81

Intersection Summary

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

HCM Signalized Intersection Capacity Analysis

6: Old Church Road & Airport Road

AM Peak Period
04/13/2018



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	378	77	202	223	130	594
Future Volume (vph)	378	77	202	223	130	594
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.6	6.6	7.1	7.1		7.1
Lane Util. Factor	1.00	1.00	1.00	1.00		1.00
Frbp, ped/bikes	1.00	0.98	1.00	1.00		1.00
Flpb, ped/bikes	1.00	1.00	1.00	1.00		1.00
Frt	1.00	0.85	1.00	0.85		1.00
Flt Protected	0.95	1.00	1.00	1.00		0.99
Satd. Flow (prot)	1755	1298	1455	1526		1741
Flt Permitted	0.95	1.00	1.00	1.00		0.89
Satd. Flow (perm)	1755	1298	1455	1526		1564
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	378	77	202	223	130	594
RTOR Reduction (vph)	0	40	0	106	0	0
Lane Group Flow (vph)	378	37	202	117	0	724
Confl. Peds. (#/hr)	3	1				
Heavy Vehicles (%)	4%	23%	32%	7%	11%	9%
Turn Type	Prot	Perm	NA	Perm	Perm	NA
Protected Phases	8		2			6
Permitted Phases		8		2	6	
Actuated Green, G (s)	18.1	18.1	35.0	35.0		35.0
Effective Green, g (s)	18.1	18.1	35.0	35.0		35.0
Actuated g/C Ratio	0.27	0.27	0.52	0.52		0.52
Clearance Time (s)	6.6	6.6	7.1	7.1		7.1
Vehicle Extension (s)	3.0	3.0	3.0	3.0		3.0
Lane Grp Cap (vph)	475	351	762	799		819
v/s Ratio Prot	c0.22		0.14			
v/s Ratio Perm		0.03		0.08		c0.46
v/c Ratio	0.80	0.11	0.27	0.15		0.88
Uniform Delay, d1	22.6	18.3	8.8	8.2		14.1
Progression Factor	1.00	1.00	1.00	1.00		1.00
Incremental Delay, d2	9.0	0.1	0.8	0.4		13.3
Delay (s)	31.6	18.4	9.6	8.6		27.4
Level of Service	C	B	A	A		C
Approach Delay (s)	29.4		9.1			27.4
Approach LOS	C		A			C

Intersection Summary			
HCM 2000 Control Delay	23.1	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.85		
Actuated Cycle Length (s)	66.8	Sum of lost time (s)	13.7
Intersection Capacity Utilization	87.4%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis

6: Old Church Road & Airport Road

PM Peak Period
04/13/2018



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	255	151	775	477	99	257
Future Volume (vph)	255	151	775	477	99	257
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.6	6.6	7.1	7.1		7.1
Lane Util. Factor	1.00	1.00	1.00	1.00		1.00
Frpb, ped/bikes	1.00	0.97	1.00	0.97		1.00
Flpb, ped/bikes	1.00	1.00	1.00	1.00		1.00
Frt	1.00	0.85	1.00	0.85		1.00
Flt Protected	0.95	1.00	1.00	1.00		0.99
Satd. Flow (prot)	1772	1589	1847	1572		1616
Flt Permitted	0.95	1.00	1.00	1.00		0.48
Satd. Flow (perm)	1772	1589	1847	1572		792
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	255	151	775	477	99	257
RTOR Reduction (vph)	0	105	0	193	0	0
Lane Group Flow (vph)	255	46	775	284	0	356
Confl. Peds. (#/hr)	4	4		6	6	
Heavy Vehicles (%)	3%	0%	4%	1%	15%	18%
Turn Type	Prot	Perm	NA	Perm	Perm	NA
Protected Phases	8		2			6
Permitted Phases		8		2	6	
Actuated Green, G (s)	14.2	14.2	35.4	35.4		35.4
Effective Green, g (s)	14.2	14.2	35.4	35.4		35.4
Actuated g/C Ratio	0.22	0.22	0.56	0.56		0.56
Clearance Time (s)	6.6	6.6	7.1	7.1		7.1
Vehicle Extension (s)	3.0	3.0	3.0	3.0		3.0
Lane Grp Cap (vph)	397	356	1032	879		442
v/s Ratio Prot	c0.14		0.42			
v/s Ratio Perm		0.03		0.18		c0.45
v/c Ratio	0.64	0.13	0.75	0.32		0.81
Uniform Delay, d1	22.2	19.6	10.6	7.5		11.2
Progression Factor	1.00	1.00	1.00	1.00		1.00
Incremental Delay, d2	3.5	0.2	5.0	1.0		14.5
Delay (s)	25.8	19.8	15.6	8.5		25.7
Level of Service	C	B	B	A		C
Approach Delay (s)	23.5		12.9			25.7
Approach LOS	C		B			C

Intersection Summary

HCM 2000 Control Delay	17.3	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.76		
Actuated Cycle Length (s)	63.3	Sum of lost time (s)	13.7
Intersection Capacity Utilization	91.4%	ICU Level of Service	F
Analysis Period (min)	15		

c Critical Lane Group

HCM Unsignalized Intersection Capacity Analysis

7: Airport Road & Parsons Avenue

AM Peak Period
04/13/2018



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	13	52	7	364	997	9
Future Volume (Veh/h)	13	52	7	364	997	9
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	52	7	364	997	9
Pedestrians	2					
Lane Width (m)	3.7					
Walking Speed (m/s)	1.1					
Percent Blockage	0					
Right turn flare (veh)						
Median type				None	None	
Median storage (veh)						
Upstream signal (m)				100	66	
pX, platoon unblocked	0.67	0.67	0.67			
vC, conflicting volume	1382	1004	1008			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1324	763	770			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	89	81	99			
cM capacity (veh/h)	115	274	574			
Direction, Lane #	EB 1	NB 1	SB 1			
Volume Total	65	371	1006			
Volume Left	13	7	0			
Volume Right	52	0	9			
cSH	215	574	1700			
Volume to Capacity	0.30	0.01	0.59			
Queue Length 95th (m)	9.3	0.3	0.0			
Control Delay (s)	28.8	0.4	0.0			
Lane LOS	D	A				
Approach Delay (s)	28.8	0.4	0.0			
Approach LOS	D					
Intersection Summary						
Average Delay			1.4			
Intersection Capacity Utilization			63.6%	ICU Level of Service	B	
Analysis Period (min)			15			

HCM Unsignalized Intersection Capacity Analysis
7: Airport Road & Parsons Avenue

PM Peak Period
04/13/2018



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	15	42	66	1105	507	38
Future Volume (Veh/h)	15	42	66	1105	507	38
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)	15	42	66	1105	507	38
Pedestrians	3			3	4	
Lane Width (m)	3.7			3.7	3.7	
Walking Speed (m/s)	1.1			1.1	1.1	
Percent Blockage	0			0	0	
Right turn flare (veh)						
Median type				None	None	
Median storage (veh)						
Upstream signal (m)				100	66	
pX, platoon unblocked	0.08	0.93	0.93			
vC, conflicting volume	1770	532	548			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	2733	454	471			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	0	93	94			
cM capacity (veh/h)	2	562	1016			
Direction, Lane #	EB 1	NB 1	SB 1			
Volume Total	57	1171	545			
Volume Left	15	66	0			
Volume Right	42	0	38			
cSH	7	1016	1700			
Volume to Capacity	8.62	0.06	0.32			
Queue Length 95th (m)	Err	1.6	0.0			
Control Delay (s)	Err	2.0	0.0			
Lane LOS	F	A				
Approach Delay (s)	Err	2.0	0.0			
Approach LOS	F					
Intersection Summary						
Average Delay			322.8			
Intersection Capacity Utilization			105.4%	ICU Level of Service	G	
Analysis Period (min)			15			

HCM Unsignalized Intersection Capacity Analysis
8: Emma Street & Airport Road

AM Peak Period
04/13/2018



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	3			4	2	
Traffic Volume (veh/h)	3	17	3	387	1062	5
Future Volume (Veh/h)	3	17	3	387	1062	5
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	17	3	387	1062	5
Pedestrians	5					
Lane Width (m)	3.7					
Walking Speed (m/s)	1.1					
Percent Blockage	0					
Right turn flare (veh)						
Median type				None	None	
Median storage veh						
Upstream signal (m)				50	116	
pX, platoon unblocked	0.68	0.68	0.68			
vC, conflicting volume	1462	1070	1072			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1445	871	874			
tC, single (s)	6.4	6.2	4.6			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.7			
p0 queue free %	97	93	99			
cM capacity (veh/h)	99	241	410			
Direction, Lane #	EB 1	NB 1	SB 1			
Volume Total	20	390	1067			
Volume Left	3	3	0			
Volume Right	17	0	5			
cSH	198	410	1700			
Volume to Capacity	0.10	0.01	0.63			
Queue Length 95th (m)	2.5	0.2	0.0			
Control Delay (s)	25.2	0.2	0.0			
Lane LOS	D	A				
Approach Delay (s)	25.2	0.2	0.0			
Approach LOS	D					
Intersection Summary						
Average Delay			0.4			
Intersection Capacity Utilization			66.2%	ICU Level of Service	C	
Analysis Period (min)			15			

HCM Unsignalized Intersection Capacity Analysis
8: Emma Street & Airport Road

PM Peak Period
04/13/2018



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	11	10	22	1191	519	16
Future Volume (Veh/h)	11	10	22	1191	519	16
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)	11	10	22	1191	519	16
Pedestrians	4			1	4	
Lane Width (m)	3.7			3.7	3.7	
Walking Speed (m/s)	1.1			1.1	1.1	
Percent Blockage	0			0	0	
Right turn flare (veh)						
Median type				None	None	
Median storage veh						
Upstream signal (m)				49	116	
pX, platoon unblocked	0.02					
vC, conflicting volume	1770	532	539			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	13510	532	539			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	0	98	98			
cM capacity (veh/h)	0	549	1036			
Direction, Lane #	EB 1	NB 1	SB 1			
Volume Total	21	1213	535			
Volume Left	11	22	0			
Volume Right	10	0	16			
cSH	0	1036	1700			
Volume to Capacity	Err	0.02	0.31			
Queue Length 95th (m)	Err	0.5	0.0			
Control Delay (s)	Err	0.8	0.0			
Lane LOS	F	A				
Approach Delay (s)	Err	0.8	0.0			
Approach LOS	F					
Intersection Summary						
Average Delay			119.2			
Intersection Capacity Utilization			90.6%	ICU Level of Service	E	
Analysis Period (min)			15			

Queues
9: Airport Road & Caledon Trailway Path

AM Peak Period
04/13/2018



Lane Group	NBT	SBT
Lane Group Flow (vph)	390	1079
v/c Ratio	0.23	0.59
Control Delay	0.3	1.4
Queue Delay	0.0	0.0
Total Delay	0.3	1.4
Queue Length 50th (m)	0.0	0.0
Queue Length 95th (m)	0.0	0.0
Internal Link Dist (m)	16.1	25.7
Turn Bay Length (m)		
Base Capacity (vph)	1715	1830
Starvation Cap Reductn	0	0
Spillback Cap Reductn	0	0
Storage Cap Reductn	0	0
Reduced v/c Ratio	0.23	0.59
Intersection Summary		

Queues
 9: Airport Road & Caledon Trailway Path

PM Peak Period
 04/13/2018



Lane Group	NBT	SBT
Lane Group Flow (vph)	1227	522
v/c Ratio	0.66	0.29
Control Delay	1.8	0.4
Queue Delay	0.0	0.0
Total Delay	1.8	0.4
Queue Length 50th (m)	0.0	0.0
Queue Length 95th (m)	0.0	0.0
Internal Link Dist (m)	16.2	25.4
Turn Bay Length (m)		
Base Capacity (vph)	1865	1779
Starvation Cap Reductn	0	0
Spillback Cap Reductn	0	0
Storage Cap Reductn	0	0
Reduced v/c Ratio	0.66	0.29
Intersection Summary		

HCM Signalized Intersection Capacity Analysis
9: Airport Road & Caledon Trailway Path

AM Peak Period
04/13/2018



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	390	0	0	1079	0
Future Volume (vph)	0	0	0	0	0	0	0	390	0	0	1079	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)								1715			1830	
Flt Permitted								1.00			1.00	
Satd. Flow (perm)								1715			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)	0	0	0	0	0	0	0	390	0	0	1079	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	390	0	0	1079	0
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	0%	12%	0%	0%	5%	0%
Turn Type								NA			NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8								
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)								1715			1830	
v/s Ratio Prot								0.23			c0.59	
v/s Ratio Perm												
v/c Ratio								0.23			0.59	
Uniform Delay, d1								0.0			0.0	
Progression Factor								1.00			1.00	
Incremental Delay, d2								0.3			1.4	
Delay (s)								0.3			1.4	
Level of Service								A			A	
Approach Delay (s)		0.0			0.0			0.3			1.4	
Approach LOS		A			A			A			A	
Intersection Summary												
HCM 2000 Control Delay			1.1					HCM 2000 Level of Service			A	
HCM 2000 Volume to Capacity ratio			0.73									
Actuated Cycle Length (s)			64.0					Sum of lost time (s)		12.0		
Intersection Capacity Utilization			61.8%					ICU Level of Service		B		
Analysis Period (min)			15									
c Critical Lane Group												

HCM Signalized Intersection Capacity Analysis
9: Airport Road & Caledon Trailway Path

PM Peak Period
04/13/2018



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	1227	0	0	522	0
Future Volume (vph)	0	0	0	0	0	0	0	1227	0	0	522	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)								1865			1779	
Flt Permitted								1.00			1.00	
Satd. Flow (perm)								1865			1779	
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	1227	0	0	522	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	1227	0	0	522	0
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	0%	3%	0%	0%	8%	0%
Turn Type								NA			NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8								
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)								1865			1779	
v/s Ratio Prot								0.66			0.29	
v/s Ratio Perm												
v/c Ratio								0.66			0.29	
Uniform Delay, d1								0.0			0.0	
Progression Factor								1.00			1.00	
Incremental Delay, d2								1.8			0.4	
Delay (s)								1.8			0.4	
Level of Service								A			A	
Approach Delay (s)		0.0			0.0			1.8			0.4	
Approach LOS		A			A			A			A	
Intersection Summary												
HCM 2000 Control Delay			1.4					HCM 2000 Level of Service			A	
HCM 2000 Volume to Capacity ratio			0.81									
Actuated Cycle Length (s)			64.0					Sum of lost time (s)		12.0		
Intersection Capacity Utilization			69.6%					ICU Level of Service			C	
Analysis Period (min)			15									
c Critical Lane Group												

HCM Unsignalized Intersection Capacity Analysis
 10: Mountcrest Road & Airport Road

AM Peak Period
 04/13/2018



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	19	12	383	1	5	1069
Future Volume (Veh/h)	19	12	383	1	5	1069
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)	19	12	383	1	5	1069
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None		None	
Median storage (veh)						
Upstream signal (m)						40
pX, platoon unblocked						
	0.04					
vC, conflicting volume						
	1462	383			384	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol						
	475	383			384	
tC, single (s)						
	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)						
	3.5	3.3			2.2	
p0 queue free %						
	7	98			100	
cM capacity (veh/h)						
	20	669			1186	
Direction, Lane #	WB 1	NB 1	NB 2	SB 1		
Volume Total	31	383	1	1074		
Volume Left	19	0	0	5		
Volume Right	12	0	1	0		
cSH	33	1700	1700	1186		
Volume to Capacity	0.95	0.23	0.00	0.00		
Queue Length 95th (m)	25.2	0.0	0.0	0.1		
Control Delay (s)	321.8	0.0	0.0	0.1		
Lane LOS	F			A		
Approach Delay (s)	321.8	0.0			0.1	
Approach LOS	F					
Intersection Summary						
Average Delay			6.8			
Intersection Capacity Utilization			70.2%		ICU Level of Service C	
Analysis Period (min)			15			

HCM Unsignalized Intersection Capacity Analysis
10: Mountcrest Road & Airport Road

PM Peak Period
04/13/2018



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	7	17	1211	28	12	518
Future Volume (Veh/h)	7	17	1211	28	12	518
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)	7	17	1211	28	12	518
Pedestrians	1					
Lane Width (m)	3.7					
Walking Speed (m/s)	1.1					
Percent Blockage	0					
Right turn flare (veh)						
Median type	None			None		
Median storage veh						
Upstream signal (m)	40					
pX, platoon unblocked						
vC, conflicting volume	1754	1212			1240	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1754	1212			1240	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	92	92			98	
cM capacity (veh/h)	92	222			561	
Direction, Lane #	WB 1	NB 1	NB 2	SB 1		
Volume Total	24	1211	28	530		
Volume Left	7	0	0	12		
Volume Right	17	0	28	0		
cSH	157	1700	1700	561		
Volume to Capacity	0.15	0.71	0.02	0.02		
Queue Length 95th (m)	4.0	0.0	0.0	0.5		
Control Delay (s)	32.1	0.0	0.0	0.6		
Lane LOS	D			A		
Approach Delay (s)	32.1	0.0			0.6	
Approach LOS	D					
Intersection Summary						
Average Delay			0.6			
Intersection Capacity Utilization			73.7%		ICU Level of Service	D
Analysis Period (min)			15			

HCM Unsignalized Intersection Capacity Analysis
 11: Airport Road & Larry Street

AM Peak Period
 04/13/2018



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	25	12	1	355	1075	12
Future Volume (Veh/h)	25	12	1	355	1075	12
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)	25	12	1	355	1075	12
Pedestrians	3					
Lane Width (m)	3.7					
Walking Speed (m/s)	1.1					
Percent Blockage	0					
Right turn flare (veh)						
Median type				None	None	
Median storage veh						
Upstream signal (m)				358	98	
pX, platoon unblocked	0.08	0.08	0.08			
vC, conflicting volume	1441	1084	1090			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	724	0	0			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	16	85	99			
cM capacity (veh/h)	30	83	124			
Direction, Lane #	EB 1	NB 1	SB 1			
Volume Total	37	356	1087			
Volume Left	25	1	0			
Volume Right	12	0	12			
cSH	38	124	1700			
Volume to Capacity	0.99	0.01	0.64			
Queue Length 95th (m)	28.1	0.2	0.0			
Control Delay (s)	303.8	0.4	0.0			
Lane LOS	F	A				
Approach Delay (s)	303.8	0.4	0.0			
Approach LOS	F					
Intersection Summary						
Average Delay			7.7			
Intersection Capacity Utilization			67.3%	ICU Level of Service	C	
Analysis Period (min)			15			

HCM Unsignalized Intersection Capacity Analysis
 11: Airport Road & Larry Street

PM Peak Period
 04/13/2018



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	22	10	9	1217	508	16
Future Volume (Veh/h)	22	10	9	1217	508	16
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)	22	10	9	1217	508	16
Pedestrians	1					
Lane Width (m)	3.7					
Walking Speed (m/s)	1.1					
Percent Blockage	0					
Right turn flare (veh)						
Median type				None	None	
Median storage veh						
Upstream signal (m)				358	98	
pX, platoon unblocked	0.63					
vC, conflicting volume	1752	517	525			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1901	517	525			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	54	98	99			
cM capacity (veh/h)	48	562	1051			
Direction, Lane #	EB 1	NB 1	SB 1			
Volume Total	32	1226	524			
Volume Left	22	9	0			
Volume Right	10	0	16			
cSH	67	1051	1700			
Volume to Capacity	0.48	0.01	0.31			
Queue Length 95th (m)	14.5	0.2	0.0			
Control Delay (s)	100.5	0.3	0.0			
Lane LOS	F	A				
Approach Delay (s)	100.5	0.3	0.0			
Approach LOS	F					
Intersection Summary						
Average Delay			2.0			
Intersection Capacity Utilization			81.2%	ICU Level of Service		D
Analysis Period (min)			15			

HCM Unsignalized Intersection Capacity Analysis
 12: Marion Street & Airport Road

AM Peak Period
 04/13/2018



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	4	12	0	377	1048	0
Future Volume (Veh/h)	4	12	0	377	1048	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)	4	12	0	377	1048	0
Pedestrians	3					
Lane Width (m)	3.7					
Walking Speed (m/s)	1.1					
Percent Blockage	0					
Right turn flare (veh)						
Median type				None	None	
Median storage (veh)						
Upstream signal (m)				283	173	
pX, platoon unblocked	0.20	0.20	0.20			
vC, conflicting volume	1428	1051	1051			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1139	0	0			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	91	94	100			
cM capacity (veh/h)	45	217	326			
Direction, Lane #	EB 1	NB 1	SB 1			
Volume Total	16	377	1048			
Volume Left	4	0	0			
Volume Right	12	0	0			
cSH	110	326	1700			
Volume to Capacity	0.14	0.00	0.62			
Queue Length 95th (m)	3.7	0.0	0.0			
Control Delay (s)	43.0	0.0	0.0			
Lane LOS	E					
Approach Delay (s)	43.0	0.0	0.0			
Approach LOS	E					
Intersection Summary						
Average Delay	0.5					
Intersection Capacity Utilization	65.2%			ICU Level of Service	C	
Analysis Period (min)	15					

HCM Unsignalized Intersection Capacity Analysis
 12: Marion Street & Airport Road

PM Peak Period
 04/13/2018



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	0	1	2	1210	522	6
Future Volume (Veh/h)	0	1	2	1210	522	6
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)	0	1	2	1210	522	6
Pedestrians	3			1		
Lane Width (m)	3.7			3.7		
Walking Speed (m/s)	1.1			1.1		
Percent Blockage	0			0		
Right turn flare (veh)						
Median type				None	None	
Median storage veh						
Upstream signal (m)				283	173	
pX, platoon unblocked	0.63					
vC, conflicting volume	1742	529	531			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1886	529	531			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	100	100	100			
cM capacity (veh/h)	49	552	1044			
Direction, Lane #	EB 1	NB 1	SB 1			
Volume Total	1	1212	528			
Volume Left	0	2	0			
Volume Right	1	0	6			
cSH	552	1044	1700			
Volume to Capacity	0.00	0.00	0.31			
Queue Length 95th (m)	0.0	0.0	0.0			
Control Delay (s)	11.5	0.1	0.0			
Lane LOS	B	A				
Approach Delay (s)	11.5	0.1	0.0			
Approach LOS	B					
Intersection Summary						
Average Delay	0.1					
Intersection Capacity Utilization	75.6%			ICU Level of Service	D	
Analysis Period (min)	15					

HCM Unsignalized Intersection Capacity Analysis
 13: Airport Road & Hilltop Drive

AM Peak Period
 04/13/2018



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	9	29	9	340	1072	35
Future Volume (Veh/h)	9	29	9	340	1072	35
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)	9	29	9	340	1072	35
Pedestrians	2					
Lane Width (m)	3.7					
Walking Speed (m/s)	1.1					
Percent Blockage	0					
Right turn flare (veh)						
Median type				None	None	
Median storage veh						
Upstream signal (m)				191	265	
pX, platoon unblocked	0.29	0.29	0.29			
vC, conflicting volume	1450	1092	1109			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1328	111	171			
tC, single (s)	6.4	6.2	4.4			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.5			
p0 queue free %	82	89	98			
cM capacity (veh/h)	49	274	364			
Direction, Lane #	EB 1	NB 1	NB 2	SB 1		
Volume Total	38	9	340	1107		
Volume Left	9	9	0	0		
Volume Right	29	0	0	35		
cSH	132	364	1700	1700		
Volume to Capacity	0.29	0.02	0.20	0.65		
Queue Length 95th (m)	8.4	0.6	0.0	0.0		
Control Delay (s)	42.9	15.1	0.0	0.0		
Lane LOS	E	C				
Approach Delay (s)	42.9	0.4		0.0		
Approach LOS	E					
Intersection Summary						
Average Delay			1.2			
Intersection Capacity Utilization			68.5%	ICU Level of Service	C	
Analysis Period (min)			15			

HCM Unsignalized Intersection Capacity Analysis
 13: Airport Road & Hilltop Drive

PM Peak Period
 04/13/2018



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	5	15	45	1237	498	19
Future Volume (Veh/h)	5	15	45	1237	498	19
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	15	45	1237	498	19
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	None	
Median storage (veh)						
Upstream signal (m)				191	266	
pX, platoon unblocked						
vC, conflicting volume						
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol						
tC, single (s)						
tC, 2 stage (s)						
tF (s)						
p0 queue free %						
cM capacity (veh/h)						
Direction, Lane #	EB 1	NB 1	NB 2	SB 1		
Volume Total	20	45	1237	517		
Volume Left	5	45	0	0		
Volume Right	15	0	0	19		
cSH	125	1059	1700	1700		
Volume to Capacity	0.16	0.04	0.73	0.30		
Queue Length 95th (m)	4.2	1.0	0.0	0.0		
Control Delay (s)	39.3	8.5	0.0	0.0		
Lane LOS	E	A				
Approach Delay (s)	39.3	0.3		0.0		
Approach LOS	E					
Intersection Summary						
Average Delay			0.6			
Intersection Capacity Utilization			75.1%	ICU Level of Service	D	
Analysis Period (min)			15			

HCM Unsignalized Intersection Capacity Analysis
 14: Foodland Plaza & Airport Road

AM Peak Period
 04/13/2018



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	23	29	367	23	56	989
Future Volume (Veh/h)	23	29	367	23	56	989
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)	23	29	367	23	56	989
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None		None	
Median storage veh						
Upstream signal (m)			88		369	
pX, platoon unblocked	0.95	0.95			0.95	
vC, conflicting volume	1480	378			390	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1478	318			330	
tC, single (s)	6.5	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.6	3.3			2.2	
p0 queue free %	81	96			95	
cM capacity (veh/h)	118	679			1177	
Direction, Lane #	WB 1	WB 2	NB 1	SB 1	SB 2	
Volume Total	23	29	390	56	989	
Volume Left	23	0	0	56	0	
Volume Right	0	29	23	0	0	
cSH	118	679	1700	1177	1700	
Volume to Capacity	0.19	0.04	0.23	0.05	0.58	
Queue Length 95th (m)	5.2	1.0	0.0	1.1	0.0	
Control Delay (s)	42.7	10.5	0.0	8.2	0.0	
Lane LOS	E	B		A		
Approach Delay (s)	24.7		0.0	0.4		
Approach LOS	C					
Intersection Summary						
Average Delay			1.2			
Intersection Capacity Utilization			62.1%		ICU Level of Service	B
Analysis Period (min)			15			

HCM Unsignalized Intersection Capacity Analysis
 14: Foodland Plaza & Airport Road

PM Peak Period
 04/13/2018



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	42	188	1079	148	91	416
Future Volume (Veh/h)	42	188	1079	148	91	416
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)	42	188	1079	148	91	416
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage veh						
Upstream signal (m)	87			369		
pX, platoon unblocked	0.25	0.25			0.25	
vC, conflicting volume	1751	1153			1227	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	2500	118			413	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	0	20			69	
cM capacity (veh/h)	6	236			291	
Direction, Lane #	WB 1	WB 2	NB 1	SB 1	SB 2	
Volume Total	42	188	1227	91	416	
Volume Left	42	0	0	91	0	
Volume Right	0	188	148	0	0	
cSH	6	236	1700	291	1700	
Volume to Capacity	7.56	0.80	0.72	0.31	0.24	
Queue Length 95th (m)	Err	45.0	0.0	9.9	0.0	
Control Delay (s)	Err	61.6	0.0	22.9	0.0	
Lane LOS	F	F			C	
Approach Delay (s)	1876.2		0.0	4.1		
Approach LOS	F					
Intersection Summary						
Average Delay			220.8			
Intersection Capacity Utilization			84.1%		ICU Level of Service	E
Analysis Period (min)			15			

Queues
 15: Caledon P.S. Driveway/15717 North Access

AM Peak Period
 04/13/2018



Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	91	57	367	5	12	989
v/c Ratio	0.45	0.21	0.25	0.00	0.02	0.68
Control Delay	31.9	9.0	4.0	0.2	3.6	9.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	31.9	9.0	4.0	0.2	3.6	9.5
Queue Length 50th (m)	10.4	0.0	12.1	0.0	0.3	55.0
Queue Length 95th (m)	20.9	7.9	26.1	0.3	1.8	124.3
Internal Link Dist (m)			290.0			63.7
Turn Bay Length (m)				20.0	20.0	
Base Capacity (vph)	388	477	1444	1233	784	1444
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	0.23	0.12	0.25	0.00	0.02	0.68
Intersection Summary						

Queues
15: Caledon P.S. Driveway/15717 North Access

PM Peak Period
04/13/2018



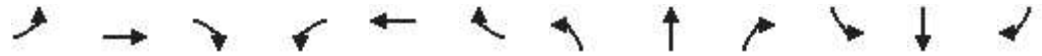
Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	52	29	1079	18	61	416
v/c Ratio	0.24	0.12	0.68	0.01	0.21	0.26
Control Delay	28.8	11.8	8.1	1.2	5.1	3.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	28.8	11.8	8.1	1.2	5.1	3.0
Queue Length 50th (m)	6.9	0.0	59.3	0.0	1.7	12.5
Queue Length 95th (m)	14.0	6.1	#137.1	1.2	6.8	25.2
Internal Link Dist (m)			159.2			63.6
Turn Bay Length (m)				20.0	20.0	
Base Capacity (vph)	525	544	1574	1342	290	1574
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	0.10	0.05	0.69	0.01	0.21	0.26

Intersection Summary

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

HCM Signalized Intersection Capacity Analysis
 15: Caledon P.S. Driveway/15717 North Access

AM Peak Period
 04/13/2018



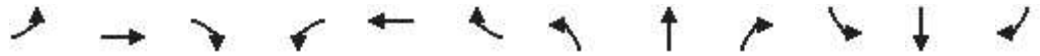
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔		↖		↗		↑	↗	↖	↑	
Traffic Volume (vph)	0	0	0	91	0	57	0	367	5	12	989	0
Future Volume (vph)	0	0	0	91	0	57	0	367	5	12	989	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)				4.5		4.5		4.5	4.5	4.5	4.5	
Lane Util. Factor				1.00		1.00		1.00	1.00	1.00	1.00	
Frt				1.00		0.85		1.00	0.85	1.00	1.00	
Flt Protected				0.95		1.00		1.00	1.00	0.95	1.00	
Satd. Flow (prot)				1789		1601		1883	1601	1789	1883	
Flt Permitted				0.76		1.00		1.00	1.00	0.54	1.00	
Satd. Flow (perm)				1426		1601		1883	1601	1022	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	91	0	57	0	367	5	12	989	0
RTOR Reduction (vph)	0	0	0	0	0	50	0	0	1	0	0	0
Lane Group Flow (vph)	0	0	0	91	0	7	0	367	4	12	989	0
Turn Type				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		50.0	50.0	50.0	50.0	
Effective Green, g (s)				8.3		8.3		50.0	50.0	50.0	50.0	
Actuated g/C Ratio				0.12		0.12		0.74	0.74	0.74	0.74	
Clearance Time (s)				4.5		4.5		4.5	4.5	4.5	4.5	
Vehicle Extension (s)				3.0		3.0		3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)				175		197		1398	1189	759	1398	
v/s Ratio Prot								0.19			c0.53	
v/s Ratio Perm				c0.06		0.00			0.00	0.01		
v/c Ratio				0.52		0.04		0.26	0.00	0.02	0.71	
Uniform Delay, d1				27.6		26.0		2.8	2.2	2.2	4.7	
Progression Factor				1.00		1.00		1.00	1.00	1.00	1.00	
Incremental Delay, d2				2.8		0.1		0.5	0.0	0.0	3.0	
Delay (s)				30.4		26.1		3.2	2.2	2.3	7.7	
Level of Service				C		C		A	A	A	A	
Approach Delay (s)		0.0			28.7			3.2			7.7	
Approach LOS		A			C			A			A	

Intersection Summary			
HCM 2000 Control Delay	8.6	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.68		
Actuated Cycle Length (s)	67.3	Sum of lost time (s)	9.0
Intersection Capacity Utilization	64.2%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis
 15: Caledon P.S. Driveway/15717 North Access

PM Peak Period
 04/13/2018



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔		↖		↗		↑	↗	↖	↑	
Traffic Volume (vph)	0	0	0	52	0	29	0	1079	18	61	416	0
Future Volume (vph)	0	0	0	52	0	29	0	1079	18	61	416	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)				4.5		4.5		4.5	4.5	4.5	4.5	
Lane Util. Factor				1.00		1.00		1.00	1.00	1.00	1.00	
Frt				1.00		0.85		1.00	0.85	1.00	1.00	
Flt Protected				0.95		1.00		1.00	1.00	0.95	1.00	
Satd. Flow (prot)				1789		1601		1883	1601	1789	1883	
Flt Permitted				0.85		1.00		1.00	1.00	0.18	1.00	
Satd. Flow (perm)				1603		1601		1883	1601	347	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	52	0	29	0	1079	18	61	416	0
RTOR Reduction (vph)	0	0	0	0	0	27	0	0	4	0	0	0
Lane Group Flow (vph)	0	0	0	52	0	2	0	1079	14	61	416	0
Turn Type				Perm		Perm		NA	Perm	Perm	NA	
Protected Phases		4						2				6
Permitted Phases	4			8		8			2	6		
Actuated Green, G (s)				4.7		4.7		47.0	47.0	47.0	47.0	
Effective Green, g (s)				4.7		4.7		47.0	47.0	47.0	47.0	
Actuated g/C Ratio				0.08		0.08		0.77	0.77	0.77	0.77	
Clearance Time (s)				4.5		4.5		4.5	4.5	4.5	4.5	
Vehicle Extension (s)				3.0		3.0		3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)				124		123		1458	1239	268	1458	
v/s Ratio Prot								c0.57			0.22	
v/s Ratio Perm				c0.03		0.00			0.01	0.18		
v/c Ratio				0.42		0.02		0.74	0.01	0.23	0.29	
Uniform Delay, d1				26.7		25.9		3.6	1.6	1.9	2.0	
Progression Factor				1.00		1.00		1.00	1.00	1.00	1.00	
Incremental Delay, d2				2.3		0.1		2.1	0.0	0.4	0.1	
Delay (s)				29.0		25.9		5.7	1.6	2.3	2.1	
Level of Service				C		C		A	A	A	A	
Approach Delay (s)		0.0			27.9			5.6			2.1	
Approach LOS		A			C			A			A	

Intersection Summary			
HCM 2000 Control Delay	5.7	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.71		
Actuated Cycle Length (s)	60.7	Sum of lost time (s)	9.0
Intersection Capacity Utilization	68.5%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

HCM Unsignalized Intersection Capacity Analysis
 16: Airport Road & Cranston Drive/15717 South Access

AM Peak Period
 04/13/2018



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔			↔		↗	↖	↗	↖	↖	↗
Traffic Volume (veh/h)	13	0	32	59	0	16	10	315	26	3	1058	9
Future Volume (Veh/h)	13	0	32	59	0	16	10	315	26	3	1058	9
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)	13	0	32	59	0	16	10	315	26	3	1058	9
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage veh												
Upstream signal (m)												183
pX, platoon unblocked	0.58	0.58	0.58	0.58	0.58		0.58					
vC, conflicting volume	1415	1425	1058	1431	1408	315	1067			341		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	1352	1370	733	1380	1340	315	748			341		
tC, single (s)	7.2	6.5	6.2	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.6	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	81	100	87	1	100	98	98			100		
cM capacity (veh/h)	67	82	240	60	86	725	501			1218		
Direction, Lane #	EB 1	WB 1	NB 1	NB 2	NB 3	SB 1	SB 2	SB 3				
Volume Total	45	75	10	315	26	3	1058	9				
Volume Left	13	59	10	0	0	3	0	0				
Volume Right	32	16	0	0	26	0	0	9				
cSH	138	74	501	1700	1700	1218	1700	1700				
Volume to Capacity	0.33	1.01	0.02	0.19	0.02	0.00	0.62	0.01				
Queue Length 95th (m)	9.9	40.7	0.5	0.0	0.0	0.1	0.0	0.0				
Control Delay (s)	43.3	204.7	12.3	0.0	0.0	8.0	0.0	0.0				
Lane LOS	E	F	B			A						
Approach Delay (s)	43.3	204.7	0.4			0.0						
Approach LOS	E	F										
Intersection Summary												
Average Delay			11.3									
Intersection Capacity Utilization			72.3%	ICU Level of Service	C							
Analysis Period (min)			15									

HCM Unsignalized Intersection Capacity Analysis
 16: Airport Road & Cranston Drive/15717 South Access

PM Peak Period
 04/13/2018



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔			↔		↔	↑	↔	↔	↑	↔
Traffic Volume (veh/h)	14	0	25	19	0	7	31	1199	125	6	451	17
Future Volume (Veh/h)	14	0	25	19	0	7	31	1199	125	6	451	17
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)	14	0	25	19	0	7	31	1199	125	6	451	17
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage veh												
Upstream signal (m)												183
pX, platoon unblocked	0.97	0.97	0.97	0.97	0.97		0.97					
vC, conflicting volume	1731	1849	451	1749	1741	1199	468			1324		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	1738	1860	418	1757	1749	1199	435			1324		
tC, single (s)	7.1	6.5	6.3	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.4	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	78	100	96	68	100	97	97			99		
cM capacity (veh/h)	63	68	607	60	80	226	1075			522		
Direction, Lane #	EB 1	WB 1	NB 1	NB 2	NB 3	SB 1	SB 2	SB 3				
Volume Total	39	26	31	1199	125	6	451	17				
Volume Left	14	19	31	0	0	6	0	0				
Volume Right	25	7	0	0	125	0	0	17				
cSH	148	75	1075	1700	1700	522	1700	1700				
Volume to Capacity	0.26	0.35	0.03	0.71	0.07	0.01	0.27	0.01				
Queue Length 95th (m)	7.6	10.0	0.7	0.0	0.0	0.3	0.0	0.0				
Control Delay (s)	37.8	77.3	8.4	0.0	0.0	12.0	0.0	0.0				
Lane LOS	E	F	A			B						
Approach Delay (s)	37.8	77.3	0.2			0.2						
Approach LOS	E	F										
Intersection Summary												
Average Delay			2.0									
Intersection Capacity Utilization			73.1%		ICU Level of Service				D			
Analysis Period (min)			15									

Queues
17: Olde Base Line Road & Airport Road

AM Peak Period
04/13/2018



Lane Group	EBL	NBT	SBT
Lane Group Flow (vph)	335	224	1088
v/c Ratio	0.85	0.43	0.94
Control Delay	46.2	11.0	30.6
Queue Delay	0.0	0.0	0.0
Total Delay	46.2	11.0	30.6
Queue Length 50th (m)	41.2	17.4	151.8
Queue Length 95th (m)	#81.7	33.5	#257.8
Internal Link Dist (m)	154.8	875.2	514.3
Turn Bay Length (m)			
Base Capacity (vph)	438	526	1161
Starvation Cap Reductn	0	0	0
Spillback Cap Reductn	0	0	0
Storage Cap Reductn	0	0	0
Reduced v/c Ratio	0.76	0.43	0.94

Intersection Summary

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



Lane Group	EBL	NBT	SBT
Lane Group Flow (vph)	442	992	488
v/c Ratio	1.09	1.09	0.46
Control Delay	104.9	78.5	8.9
Queue Delay	0.0	0.0	0.0
Total Delay	104.9	78.5	8.9
Queue Length 50th (m)	~84.6	~192.6	33.1
Queue Length 95th (m)	#140.9	#263.3	53.1
Internal Link Dist (m)	154.6	875.3	514.4
Turn Bay Length (m)			
Base Capacity (vph)	406	906	1072
Starvation Cap Reductn	0	0	0
Spillback Cap Reductn	0	0	0
Storage Cap Reductn	0	0	0
Reduced v/c Ratio	1.09	1.09	0.46

Intersection Summary

- ~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
- # 95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

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

AM Peak Period
 04/13/2018



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	133	202	41	183	773	315
Future Volume (vph)	133	202	41	183	773	315
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.6			6.0	6.0	
Lane Util. Factor	1.00			1.00	1.00	
Frt	0.92			1.00	0.96	
Flt Protected	0.98			0.99	1.00	
Satd. Flow (prot)	1620			1593	1761	
Flt Permitted	0.98			0.50	1.00	
Satd. Flow (perm)	1620			811	1761	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	133	202	41	183	773	315
RTOR Reduction (vph)	64	0	0	0	16	0
Lane Group Flow (vph)	271	0	0	224	1072	0
Heavy Vehicles (%)	8%	6%	4%	23%	6%	2%
Turn Type	Prot		Perm	NA	NA	
Protected Phases	4			2	6	
Permitted Phases			2			
Actuated Green, G (s)	17.5			56.1	56.1	
Effective Green, g (s)	17.5			56.1	56.1	
Actuated g/C Ratio	0.20			0.65	0.65	
Clearance Time (s)	6.6			6.0	6.0	
Vehicle Extension (s)	3.0			3.0	3.0	
Lane Grp Cap (vph)	328			527	1146	
v/s Ratio Prot	c0.17				c0.61	
v/s Ratio Perm				0.28		
v/c Ratio	0.83			0.43	0.94	
Uniform Delay, d1	32.9			7.3	13.4	
Progression Factor	1.00			1.00	1.00	
Incremental Delay, d2	15.6			2.5	15.0	
Delay (s)	48.5			9.8	28.5	
Level of Service	D			A	C	
Approach Delay (s)	48.5			9.8	28.5	
Approach LOS	D			A	C	

Intersection Summary			
HCM 2000 Control Delay	30.0	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.91		
Actuated Cycle Length (s)	86.2	Sum of lost time (s)	12.6
Intersection Capacity Utilization	90.1%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			

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

PM Peak Period
 04/13/2018



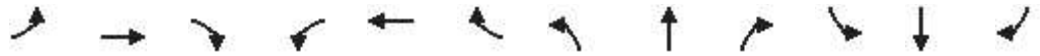
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	393	49	151	841	318	170
Future Volume (vph)	393	49	151	841	318	170
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.6			6.0	6.0	
Lane Util. Factor	1.00			1.00	1.00	
Frt	0.99			1.00	0.95	
Flt Protected	0.96			0.99	1.00	
Satd. Flow (prot)	1778			1826	1662	
Flt Permitted	0.96			0.78	1.00	
Satd. Flow (perm)	1778			1434	1662	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	393	49	151	841	318	170
RTOR Reduction (vph)	5	0	0	0	22	0
Lane Group Flow (vph)	437	0	0	992	466	0
Heavy Vehicles (%)	1%	9%	1%	5%	15%	1%
Turn Type	Prot		Perm	NA	NA	
Protected Phases	4			2	6	
Permitted Phases			2			
Actuated Green, G (s)	20.0			56.0	56.0	
Effective Green, g (s)	20.0			56.0	56.0	
Actuated g/C Ratio	0.23			0.63	0.63	
Clearance Time (s)	6.6			6.0	6.0	
Lane Grp Cap (vph)	401			906	1050	
v/s Ratio Prot	c0.25				0.28	
v/s Ratio Perm				c0.69		
v/c Ratio	1.09			1.09	0.44	
Uniform Delay, d1	34.3			16.3	8.3	
Progression Factor	1.00			1.00	1.00	
Incremental Delay, d2	70.9			59.2	1.4	
Delay (s)	105.2			75.5	9.7	
Level of Service	F			E	A	
Approach Delay (s)	105.2			75.5	9.7	
Approach LOS	F			E	A	

Intersection Summary			
HCM 2000 Control Delay	65.7	HCM 2000 Level of Service	E
HCM 2000 Volume to Capacity ratio	1.09		
Actuated Cycle Length (s)	88.6	Sum of lost time (s)	12.6
Intersection Capacity Utilization	120.0%	ICU Level of Service	H
Analysis Period (min)	15		

c Critical Lane Group

HCM Unsignalized Intersection Capacity Analysis
 18: Airport Road & Boston Mills Road/Castleberg Side Road

AM Peak Period
 04/13/2018



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Volume (veh/h)	0	1	3	85	3	33	3	199	6	71	924	0
Future Volume (Veh/h)	0	1	3	85	3	33	3	199	6	71	924	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)	0	1	3	85	3	33	3	199	6	71	924	0
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage veh												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	1308	1277	924	1278	1274	202	924			205		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	1308	1277	924	1278	1274	202	924			205		
tC, single (s)	7.1	6.5	6.7	7.1	6.5	6.2	4.1			4.2		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.8	3.5	4.0	3.3	2.2			2.3		
p0 queue free %	100	99	99	37	98	96	100			95		
cM capacity (veh/h)	125	158	268	135	159	844	748			1337		
Direction, Lane #	EB 1	WB 1	NB 1	SB 1								
Volume Total	4	121	208	995								
Volume Left	0	85	3	71								
Volume Right	3	33	6	0								
cSH	228	176	748	1337								
Volume to Capacity	0.02	0.69	0.00	0.05								
Queue Length 95th (m)	0.4	31.4	0.1	1.3								
Control Delay (s)	21.0	61.5	0.2	1.4								
Lane LOS	C	F	A	A								
Approach Delay (s)	21.0	61.5	0.2	1.4								
Approach LOS	C	F										
Intersection Summary												
Average Delay			6.8									
Intersection Capacity Utilization			87.1%		ICU Level of Service				E			
Analysis Period (min)			15									

HCM Unsignalized Intersection Capacity Analysis
 18: Airport Road & Boston Mills Road/Castleberg Side Road

PM Peak Period
 04/13/2018



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Volume (veh/h)	3	1	0	12	3	82	3	907	48	48	290	1
Future Volume (Veh/h)	3	1	0	12	3	82	3	907	48	48	290	1
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	1	0	12	3	82	3	907	48	48	290	1
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage veh												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	1407	1348	290	1324	1324	931	291			955		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	1407	1348	290	1324	1324	931	291			955		
tC, single (s)	7.1	6.5	6.2	7.1	7.0	6.2	4.1			4.2		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.5	3.3	2.2			2.3		
p0 queue free %	96	99	100	91	97	75	100			93		
cM capacity (veh/h)	82	142	753	126	116	324	1282			704		
Direction, Lane #	EB 1	WB 1	NB 1	SB 1								
Volume Total	4	97	958	339								
Volume Left	3	12	3	48								
Volume Right	0	82	48	1								
cSH	91	259	1282	704								
Volume to Capacity	0.04	0.37	0.00	0.07								
Queue Length 95th (m)	1.0	12.6	0.1	1.7								
Control Delay (s)	46.3	27.0	0.1	2.2								
Lane LOS	E	D	A	A								
Approach Delay (s)	46.3	27.0	0.1	2.2								
Approach LOS	E	D										
Intersection Summary												
Average Delay			2.6									
Intersection Capacity Utilization			65.3%		ICU Level of Service					C		
Analysis Period (min)			15									

HCM Unsignalized Intersection Capacity Analysis
 19: Airport Road & 5992 King Access

AM Peak Period
 04/13/2018



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	11	67	20	165	1012	113
Future Volume (Veh/h)	11	67	20	165	1012	113
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)	11	67	20	165	1012	113
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	None	
Median storage veh						
Upstream signal (m)				50		
pX, platoon unblocked	0.97					
vC, conflicting volume	1217	1012	1125			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1208	1012	1125			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	94	77	97			
cM capacity (veh/h)	190	290	621			
Direction, Lane #	EB 1	NB 1	SB 1	SB 2		
Volume Total	78	185	1012	113		
Volume Left	11	20	0	0		
Volume Right	67	0	0	113		
cSH	270	621	1700	1700		
Volume to Capacity	0.29	0.03	0.60	0.07		
Queue Length 95th (m)	8.8	0.8	0.0	0.0		
Control Delay (s)	23.6	1.5	0.0	0.0		
Lane LOS	C	A				
Approach Delay (s)	23.6	1.5	0.0			
Approach LOS	C					
Intersection Summary						
Average Delay			1.5			
Intersection Capacity Utilization			64.7%	ICU Level of Service	C	
Analysis Period (min)			15			

HCM Unsignalized Intersection Capacity Analysis
 19: 16114 North Access

PM Peak Period
 04/13/2018



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	58	18	94	807	302	28
Future Volume (Veh/h)	58	18	94	807	302	28
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)	58	18	94	807	302	28
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	None	
Median storage veh)						
Upstream signal (m)				78		
pX, platoon unblocked	0.76					
vC, conflicting volume	1311	316	330			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1250	316	330			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	57	98	92			
cM capacity (veh/h)	133	724	1229			
Direction, Lane #	EB 1	NB 1	NB 2	SB 1		
Volume Total	76	94	807	330		
Volume Left	58	94	0	0		
Volume Right	18	0	0	28		
cSH	165	1229	1700	1700		
Volume to Capacity	0.46	0.08	0.47	0.19		
Queue Length 95th (m)	16.3	1.9	0.0	0.0		
Control Delay (s)	44.1	8.2	0.0	0.0		
Lane LOS	E	A				
Approach Delay (s)	44.1	0.9		0.0		
Approach LOS	E					
Intersection Summary						
Average Delay			3.2			
Intersection Capacity Utilization			53.5%	ICU Level of Service	A	
Analysis Period (min)			15			



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	22	433	162	682	4	149	151	779
v/c Ratio	0.37	0.80	1.24	1.24	0.03	0.16	0.21	0.75
Control Delay	47.9	44.0	189.2	153.3	10.0	9.0	11.1	21.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	47.9	44.0	189.2	153.3	10.0	9.0	11.1	21.3
Queue Length 50th (m)	3.4	75.0	~39.1	~165.7	0.3	10.9	13.2	104.2
Queue Length 95th (m)	#12.1	#121.5	#78.1	#233.3	1.9	19.9	23.4	153.2
Internal Link Dist (m)		614.3		817.3		572.1		54.1
Turn Bay Length (m)	65.0		50.0		60.0		55.0	
Base Capacity (vph)	60	542	131	552	135	959	714	1038
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.37	0.80	1.24	1.24	0.03	0.16	0.21	0.75

Intersection Summary

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

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



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	59	567	41	575	65	685	44	188
v/c Ratio	0.78	1.01	0.58	1.03	0.10	0.64	0.16	0.20
Control Delay	91.4	75.9	64.8	80.4	9.9	17.1	11.8	9.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	91.4	75.9	64.8	80.4	9.9	17.1	11.8	9.6
Queue Length 50th (m)	10.4	~110.7	6.7	~117.3	5.3	81.3	3.7	14.5
Queue Length 95th (m)	#34.0	#179.8	#23.7	#181.6	11.2	117.9	9.5	25.0
Internal Link Dist (m)		614.3		817.2		572.1		54.1
Turn Bay Length (m)	65.0		50.0		60.0		55.0	
Base Capacity (vph)	76	563	71	559	676	1076	269	964
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.78	1.01	0.58	1.03	0.10	0.64	0.16	0.20

Intersection Summary

- ~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
- # 95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

HCM Signalized Intersection Capacity Analysis

20: King Street & Airport Road

AM Peak Period
04/13/2018



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	22	344	89	162	662	20	4	123	26	151	705	74
Future Volume (vph)	22	344	89	162	662	20	4	123	26	151	705	74
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.2	6.2		6.2	6.2		6.0	6.0		6.0	6.0	
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Frt	1.00	0.97		1.00	1.00		1.00	0.97		1.00	0.99	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1437	1780		1755	1840		1093	1645		1772	1787	
Flt Permitted	0.13	1.00		0.24	1.00		0.20	1.00		0.66	1.00	
Satd. Flow (perm)	202	1780		439	1840		234	1645		1235	1787	
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)	22	344	89	162	662	20	4	123	26	151	705	74
RTOR Reduction (vph)	0	9	0	0	1	0	0	8	0	0	4	0
Lane Group Flow (vph)	22	424	0	162	681	0	4	141	0	151	775	0
Heavy Vehicles (%)	27%	5%	3%	4%	3%	36%	67%	12%	22%	3%	6%	6%
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)	30.0	30.0		30.0	30.0		58.0	58.0		58.0	58.0	
Effective Green, g (s)	30.0	30.0		30.0	30.0		58.0	58.0		58.0	58.0	
Actuated g/C Ratio	0.30	0.30		0.30	0.30		0.58	0.58		0.58	0.58	
Clearance Time (s)	6.2	6.2		6.2	6.2		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	3.0	
Lane Grp Cap (vph)	60	532		131	550		135	952		714	1034	
v/s Ratio Prot		0.24			c0.37			0.09			c0.43	
v/s Ratio Perm	0.11			0.37			0.02			0.12		
v/c Ratio	0.37	0.80		1.24	1.24		0.03	0.15		0.21	0.75	
Uniform Delay, d1	27.6	32.3		35.1	35.1		9.0	9.7		10.1	15.7	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	3.8	8.1		155.6	121.8		0.4	0.3		0.7	5.0	
Delay (s)	31.4	40.4		190.7	156.9		9.4	10.1		10.8	20.7	
Level of Service	C	D		F	F		A	B		B	C	
Approach Delay (s)		40.0			163.4			10.0			19.1	
Approach LOS		D			F			B			B	

Intersection Summary

HCM 2000 Control Delay	73.6	HCM 2000 Level of Service	E
HCM 2000 Volume to Capacity ratio	0.92		
Actuated Cycle Length (s)	100.2	Sum of lost time (s)	12.2
Intersection Capacity Utilization	123.8%	ICU Level of Service	H
Analysis Period (min)	15		
c Critical Lane Group			

HCM Signalized Intersection Capacity Analysis
20: King Street & Airport Road

PM Peak Period
04/13/2018



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	59	548	19	41	418	157	65	591	94	44	155	33
Future Volume (vph)	59	548	19	41	418	157	65	591	94	44	155	33
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.2	6.2		6.2	6.2		6.0	6.0		6.0	6.0	
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Frt	1.00	0.99		1.00	0.96		1.00	0.98		1.00	0.97	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1825	1879		1706	1824		1738	1850		1659	1654	
Flt Permitted	0.13	1.00		0.13	1.00		0.64	1.00		0.27	1.00	
Satd. Flow (perm)	256	1879		239	1824		1169	1850		464	1654	
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)	59	548	19	41	418	157	65	591	94	44	155	33
RTOR Reduction (vph)	0	1	0	0	13	0	0	6	0	0	8	0
Lane Group Flow (vph)	59	566	0	41	562	0	65	679	0	44	180	0
Heavy Vehicles (%)	0%	1%	23%	7%	1%	1%	5%	2%	0%	10%	14%	9%
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)	30.0	30.0		30.0	30.0		58.0	58.0		58.0	58.0	
Effective Green, g (s)	30.0	30.0		30.0	30.0		58.0	58.0		58.0	58.0	
Actuated g/C Ratio	0.30	0.30		0.30	0.30		0.58	0.58		0.58	0.58	
Clearance Time (s)	6.2	6.2		6.2	6.2		6.0	6.0		6.0	6.0	
Lane Grp Cap (vph)	76	562		71	546		676	1070		268	957	
v/s Ratio Prot		0.30			c0.31			c0.37			0.11	
v/s Ratio Perm	0.23			0.17			0.06			0.09		
v/c Ratio	0.78	1.01		0.58	1.03		0.10	0.63		0.16	0.19	
Uniform Delay, d1	32.0	35.1		29.7	35.1		9.4	14.0		9.8	10.0	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	53.6	39.6		29.9	46.1		0.3	2.9		1.3	0.4	
Delay (s)	85.7	74.7		59.7	81.2		9.7	16.9		11.1	10.4	
Level of Service	F	E		E	F		A	B		B	B	
Approach Delay (s)		75.7			79.7			16.3			10.5	
Approach LOS		E			E			B			B	

Intersection Summary		
HCM 2000 Control Delay	50.0	HCM 2000 Level of Service
HCM 2000 Volume to Capacity ratio	0.77	D
Actuated Cycle Length (s)	100.2	Sum of lost time (s)
Intersection Capacity Utilization	111.7%	12.2
Analysis Period (min)	15	ICU Level of Service
		H

c Critical Lane Group

Appendix F – Future Year 2041 Mitigation Options

HCM Unsignalized Intersection Capacity Analysis
5: Airport Road & Walker Road West/Walker Road East

AM Peak Period
04/13/2018



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	12	16	79	14	9	12	28	207	4	6	673	46
Future Volume (Veh/h)	12	16	79	14	9	12	28	207	4	6	673	46
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)	12	16	79	14	9	12	28	207	4	6	673	46
Pedestrians		1						1				
Lane Width (m)		3.7						3.7				
Walking Speed (m/s)		1.1						1.1				
Percent Blockage		0						0				
Right turn flare (veh)			4									
Median type								None			None	
Median storage veh												
Upstream signal (m)								199				
pX, platoon unblocked												
vC, conflicting volume	968	953	675	998	997	209	720			211		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	968	953	675	998	997	209	720			211		
tC, single (s)	7.2	6.6	6.3	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.6	4.1	3.4	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	94	93	82	92	96	99	97			100		
cM capacity (veh/h)	207	243	446	170	237	831	890			1372		
Direction, Lane #	EB 1	EB 2	WB 1	NB 1	SB 1	SB 2						
Volume Total	12	95	35	239	679	46						
Volume Left	12	0	14	28	6	0						
Volume Right	0	79	12	4	0	46						
cSH	207	537	260	890	1372	1700						
Volume to Capacity	0.06	0.18	0.13	0.03	0.00	0.03						
Queue Length 95th (m)	1.4	4.8	3.5	0.7	0.1	0.0						
Control Delay (s)	23.4	15.8	21.0	1.4	0.1	0.0						
Lane LOS	C	C	C	A	A							
Approach Delay (s)	16.7		21.0	1.4	0.1							
Approach LOS	C		C									
Intersection Summary												
Average Delay			2.6									
Intersection Capacity Utilization			54.4%		ICU Level of Service				A			
Analysis Period (min)			15									

HCM Unsignalized Intersection Capacity Analysis
5: Airport Road & Walker Road West/Walker Road East

PM Peak Period
04/13/2018



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	31	13	64	7	1	12	80	829	35	9	270	22
Future Volume (Veh/h)	31	13	64	7	1	12	80	829	35	9	270	22
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)	31	13	64	7	1	12	80	829	35	9	270	22
Pedestrians		2						1				
Lane Width (m)		3.7						3.7				
Walking Speed (m/s)		1.1						1.1				
Percent Blockage		0						0				
Right turn flare (veh)			4									
Median type								None			None	
Median storage veh												
Upstream signal (m)								199				
pX, platoon unblocked	0.65	0.65		0.65	0.65	0.65				0.65		
vC, conflicting volume	1309	1314	273	1334	1318	846	294			864		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	1207	1214	273	1245	1221	497	294			524		
tC, single (s)	7.1	6.5	6.2	7.3	7.5	6.2	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.7	4.9	3.3	2.2			2.2		
p0 queue free %	67	88	92	90	99	97	94			99		
cM capacity (veh/h)	95	110	764	71	71	376	1277			686		
Direction, Lane #	EB 1	EB 2	WB 1	NB 1	SB 1	SB 2						
Volume Total	31	77	20	944	279	22						
Volume Left	31	0	7	80	9	0						
Volume Right	0	64	12	35	0	22						
cSH	95	652	138	1277	686	1700						
Volume to Capacity	0.33	0.12	0.14	0.06	0.01	0.01						
Queue Length 95th (m)	9.6	3.0	3.7	1.5	0.3	0.0						
Control Delay (s)	60.4	15.5	35.4	1.6	0.5	0.0						
Lane LOS	F	C	E	A	A							
Approach Delay (s)	28.4		35.4	1.6	0.5							
Approach LOS	D		E									
Intersection Summary												
Average Delay			4.0									
Intersection Capacity Utilization			82.5%		ICU Level of Service					E		
Analysis Period (min)			15									

Queues
6: Old Church Road & Airport Road

AM Peak Period
04/13/2018



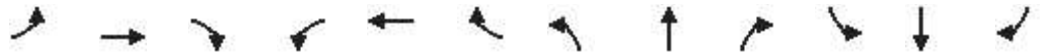
Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	6	12	378	83	6	202	223	130	600
v/c Ratio	0.01	0.02	0.85	0.17	0.02	0.28	0.26	0.24	0.69
Control Delay	16.3	12.6	42.7	6.1	12.0	13.8	2.8	13.9	21.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	16.3	12.6	42.7	6.1	12.0	13.8	2.8	13.9	21.0
Queue Length 50th (m)	0.6	0.6	49.1	0.6	0.4	16.9	0.0	10.7	65.5
Queue Length 95th (m)	2.9	3.8	#90.3	9.0	2.5	32.5	10.8	22.9	110.3
Internal Link Dist (m)		38.3		119.4		41.7			175.2
Turn Bay Length (m)	30.0		30.0		30.0		45.0	45.0	
Base Capacity (vph)	520	688	541	571	275	718	866	539	869
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.01	0.02	0.70	0.15	0.02	0.28	0.26	0.24	0.69

Intersection Summary

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

HCM Signalized Intersection Capacity Analysis
6: Old Church Road & Airport Road

AM Peak Period
04/13/2018



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖	↗		↖	↗		↖	↑	↗	↖	↗	
Traffic Volume (vph)	6	6	6	378	6	77	6	202	223	130	594	6
Future Volume (vph)	6	6	6	378	6	77	6	202	223	130	594	6
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.6	6.6		6.6	6.6		7.1	7.1	7.1	7.1	7.1	
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	
Frbp, ped/bikes	1.00	1.00		1.00	0.98		1.00	1.00	1.00	1.00	1.00	
Flpb, ped/bikes	1.00	1.00		0.99	1.00		1.00	1.00	1.00	1.00	1.00	
Frt	1.00	0.93		1.00	0.86		1.00	1.00	0.85	1.00	1.00	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1789	1742		1744	1333		1789	1455	1526	1644	1761	
Flt Permitted	0.70	1.00		0.75	1.00		0.30	1.00	1.00	0.63	1.00	
Satd. Flow (perm)	1324	1742		1376	1333		560	1455	1526	1092	1761	
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)	6	6	6	378	6	77	6	202	223	130	594	6
RTOR Reduction (vph)	0	4	0	0	52	0	0	0	113	0	1	0
Lane Group Flow (vph)	6	8	0	378	31	0	6	202	110	130	599	0
Confl. Peds. (#/hr)				3		1						
Heavy Vehicles (%)	2%	2%	2%	4%	2%	23%	2%	32%	7%	11%	9%	2%
Turn Type	Perm	NA		Perm	NA		Perm	NA	Perm	Perm	NA	
Protected Phases		4			8			2		6		6
Permitted Phases	4			8			2		2	6		
Actuated Green, G (s)	24.3	24.3		24.3	24.3		37.1	37.1	37.1	37.1	37.1	
Effective Green, g (s)	24.3	24.3		24.3	24.3		37.1	37.1	37.1	37.1	37.1	
Actuated g/C Ratio	0.32	0.32		0.32	0.32		0.49	0.49	0.49	0.49	0.49	
Clearance Time (s)	6.6	6.6		6.6	6.6		7.1	7.1	7.1	7.1	7.1	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	428	563		445	431		276	718	753	539	869	
v/s Ratio Prot		0.00			0.02			0.14			c0.34	
v/s Ratio Perm	0.00			c0.27			0.01		0.07	0.12		
v/c Ratio	0.01	0.01		0.85	0.07		0.02	0.28	0.15	0.24	0.69	
Uniform Delay, d1	17.3	17.3		23.7	17.6		9.7	11.2	10.4	10.9	14.6	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	0.0	0.0		14.1	0.1		0.1	1.0	0.4	1.1	4.5	
Delay (s)	17.3	17.3		37.8	17.7		9.9	12.1	10.8	12.0	19.0	
Level of Service	B	B		D	B		A	B	B	B	B	
Approach Delay (s)		17.3			34.1			11.4			17.8	
Approach LOS		B			C			B			B	

Intersection Summary		
HCM 2000 Control Delay	20.7	HCM 2000 Level of Service
HCM 2000 Volume to Capacity ratio	0.75	C
Actuated Cycle Length (s)	75.1	Sum of lost time (s)
Intersection Capacity Utilization	83.2%	13.7
Analysis Period (min)	15	ICU Level of Service
		E

c Critical Lane Group

Queues
6: Old Church Road & Airport Road

PM Peak Period
04/13/2018



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	7	14	255	158	7	775	477	99	264
v/c Ratio	0.02	0.03	0.78	0.32	0.01	0.72	0.44	0.45	0.28
Control Delay	19.9	15.0	44.0	6.6	8.1	17.3	3.0	18.6	9.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	1.0	0.0	0.0	0.0
Total Delay	19.9	15.0	44.0	6.6	8.1	18.3	3.0	18.6	9.6
Queue Length 50th (m)	0.7	0.7	34.1	0.8	0.4	75.7	3.1	7.6	17.6
Queue Length 95th (m)	3.4	4.6	#59.0	13.6	2.1	131.1	16.4	23.5	33.3
Internal Link Dist (m)		24.7		119.4		41.8			175.1
Turn Bay Length (m)	30.0		30.0		30.0		45.0	45.0	
Base Capacity (vph)	401	570	410	581	653	1074	1090	222	947
Starvation Cap Reductn	0	0	0	0	0	112	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.02	0.02	0.62	0.27	0.01	0.81	0.44	0.45	0.28

Intersection Summary

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

HCM Signalized Intersection Capacity Analysis

6: Old Church Road & Airport Road

PM Peak Period
04/13/2018



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖	↗		↖	↗		↖	↑	↗	↖	↗	
Traffic Volume (vph)	7	7	7	255	7	151	7	775	477	99	257	7
Future Volume (vph)	7	7	7	255	7	151	7	775	477	99	257	7
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	4.5		6.6	6.6		7.1	7.1	7.1	7.1	7.1	
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	
Frbp, ped/bikes	1.00	1.00		1.00	0.97		1.00	1.00	0.97	1.00	1.00	
Flpb, ped/bikes	1.00	1.00		0.99	1.00		1.00	1.00	1.00	1.00	1.00	
Frt	1.00	0.93		1.00	0.86		1.00	1.00	0.85	1.00	1.00	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1789	1742		1757	1600		1789	1847	1570	1584	1627	
Flt Permitted	0.66	1.00		0.75	1.00		0.60	1.00	1.00	0.23	1.00	
Satd. Flow (perm)	1237	1742		1384	1600		1123	1847	1570	383	1627	
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)	7	7	7	255	7	151	7	775	477	99	257	7
RTOR Reduction (vph)	0	5	0	0	115	0	0	0	178	0	1	0
Lane Group Flow (vph)	7	9	0	255	43	0	7	775	299	99	263	0
Confl. Peds. (#/hr)				4		4			6	6		
Heavy Vehicles (%)	2%	2%	2%	3%	2%	0%	2%	4%	1%	15%	18%	2%
Turn Type	Perm	NA		Perm	NA		Perm	NA	Perm	Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2		2	6		
Actuated Green, G (s)	20.0	20.0		17.9	17.9		44.0	44.0	44.0	44.0	44.0	
Effective Green, g (s)	20.0	20.0		17.9	17.9		44.0	44.0	44.0	44.0	44.0	
Actuated g/C Ratio	0.26	0.26		0.24	0.24		0.58	0.58	0.58	0.58	0.58	
Clearance Time (s)	4.5	4.5		6.6	6.6		7.1	7.1	7.1	7.1	7.1	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	327	460		327	378		653	1074	913	222	946	
v/s Ratio Prot		0.01			0.03			c0.42			0.16	
v/s Ratio Perm	0.01			c0.18			0.01		0.19	0.26		
v/c Ratio	0.02	0.02		0.78	0.11		0.01	0.72	0.33	0.45	0.28	
Uniform Delay, d1	20.6	20.6		27.0	22.6		6.6	11.4	8.2	8.9	7.9	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	0.0	0.0		11.2	0.1		0.0	4.2	1.0	6.4	0.7	
Delay (s)	20.6	20.6		38.2	22.8		6.7	15.6	9.1	15.3	8.6	
Level of Service	C	C		D	C		A	B	A	B	A	
Approach Delay (s)		20.6			32.3			13.1			10.4	
Approach LOS		C			C			B			B	

Intersection Summary

HCM 2000 Control Delay	16.6	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.74		
Actuated Cycle Length (s)	75.6	Sum of lost time (s)	13.7
Intersection Capacity Utilization	85.6%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

Queues
6: Old Church Road & Airport Road

AM Peak Period
04/13/2018



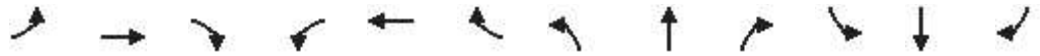
Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	6	12	378	83	6	202	223	130	600
v/c Ratio	0.04	0.09	0.78	0.20	0.02	0.29	0.26	0.25	0.70
Control Delay	38.0	30.0	40.1	8.5	15.0	15.7	3.3	15.9	23.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	38.0	30.0	40.1	8.5	15.0	15.7	3.3	15.9	23.7
Queue Length 50th (m)	0.8	0.8	45.9	0.6	0.4	15.1	0.0	9.5	58.5
Queue Length 95th (m)	4.7	6.1	#101.6	11.0	3.0	39.1	12.4	27.3	#144.4
Internal Link Dist (m)		39.7		119.4		41.7			175.2
Turn Bay Length (m)	30.0		30.0		30.0		45.0	45.0	
Base Capacity (vph)	419	413	558	476	242	707	856	530	856
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.01	0.03	0.68	0.17	0.02	0.29	0.26	0.25	0.70

Intersection Summary

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

HCM Signalized Intersection Capacity Analysis
6: Old Church Road & Airport Road

AM Peak Period
04/13/2018



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations	↖	↗		↖	↗		↖	↑	↗	↖	↗		
Traffic Volume (vph)	6	6	6	378	6	77	6	202	223	130	594	6	
Future Volume (vph)	6	6	6	378	6	77	6	202	223	130	594	6	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	
Total Lost time (s)	6.6	6.6		6.6	6.6		7.1	7.1	7.1	7.1	7.1		
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00		
Frbp, ped/bikes	1.00	1.00		1.00	0.98		1.00	1.00	1.00	1.00	1.00		
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00		
Frt	1.00	0.93		1.00	0.86		1.00	1.00	0.85	1.00	1.00		
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00		
Satd. Flow (prot)	1789	1742		1755	1333		1789	1455	1526	1644	1761		
Flt Permitted	0.95	1.00		0.95	1.00		0.27	1.00	1.00	0.63	1.00		
Satd. Flow (perm)	1789	1742		1755	1333		499	1455	1526	1092	1761		
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)	6	6	6	378	6	77	6	202	223	130	594	6	
RTOR Reduction (vph)	0	6	0	0	57	0	0	0	120	0	1	0	
Lane Group Flow (vph)	6	6	0	378	26	0	6	202	103	130	599	0	
Confl. Peds. (#/hr)				3		1							
Heavy Vehicles (%)	2%	2%	2%	4%	2%	23%	2%	32%	7%	11%	9%	2%	
Turn Type	Split	NA		Split	NA		Perm	NA	Perm	Perm	NA		
Protected Phases	4	4		8	8			2		6		6	
Permitted Phases							2		2			6	
Actuated Green, G (s)	2.3	2.3		21.4	21.4		37.8	37.8	37.8	37.8	37.8	37.8	
Effective Green, g (s)	2.3	2.3		21.4	21.4		37.8	37.8	37.8	37.8	37.8	37.8	
Actuated g/C Ratio	0.03	0.03		0.26	0.26		0.46	0.46	0.46	0.46	0.46	0.46	
Clearance Time (s)	6.6	6.6		6.6	6.6		7.1	7.1	7.1	7.1	7.1	7.1	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	50	48		459	348		230	672	705	504	813		
v/s Ratio Prot	0.00	c0.00		c0.22	0.02			0.14			c0.34		
v/s Ratio Perm							0.01		0.07	0.12			
v/c Ratio	0.12	0.13		0.82	0.08		0.03	0.30	0.15	0.26	0.74		
Uniform Delay, d1	38.8	38.8		28.4	22.7		12.0	13.7	12.7	13.4	17.9		
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00		
Incremental Delay, d2	1.1	1.2		11.4	0.1		0.2	1.1	0.4	1.2	5.9		
Delay (s)	39.8	40.0		39.8	22.8		12.2	14.9	13.1	14.7	23.9		
Level of Service	D	D		D	C		B	B	B	B	C		
Approach Delay (s)		39.9			36.8			13.9			22.2		
Approach LOS		D			D			B			C		
Intersection Summary													
HCM 2000 Control Delay			24.3									HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio			0.74										
Actuated Cycle Length (s)			81.8									Sum of lost time (s)	20.3
Intersection Capacity Utilization			83.2%									ICU Level of Service	E
Analysis Period (min)			15										

c Critical Lane Group

Queues
6: Old Church Road & Airport Road

PM Peak Period
04/13/2018



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	7	14	255	158	7	775	477	99	264
v/c Ratio	0.05	0.09	0.69	0.35	0.01	0.78	0.50	0.65	0.30
Control Delay	37.1	29.1	38.1	7.9	12.6	24.1	8.4	42.4	13.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.8	0.0	0.0	0.0
Total Delay	37.1	29.1	38.1	7.9	12.6	24.8	8.4	42.4	13.1
Queue Length 50th (m)	0.8	0.8	29.6	0.7	0.3	63.6	12.4	7.2	14.9
Queue Length 95th (m)	5.2	6.7	62.3	15.2	3.0	#195.5	53.0	#43.0	46.5
Internal Link Dist (m)		40.0		119.4		41.8			175.1
Turn Bay Length (m)	30.0		30.0		30.0		45.0	45.0	
Base Capacity (vph)	467	460	521	576	606	997	961	153	880
Starvation Cap Reductn	0	0	0	0	0	57	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.01	0.03	0.49	0.27	0.01	0.82	0.50	0.65	0.30

Intersection Summary

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

HCM Signalized Intersection Capacity Analysis
6: Old Church Road & Airport Road

PM Peak Period
04/13/2018



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖	↗		↖	↗		↖	↗	↗	↖	↗	
Traffic Volume (vph)	7	7	7	255	7	151	7	775	477	99	257	7
Future Volume (vph)	7	7	7	255	7	151	7	775	477	99	257	7
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.6	6.6		6.6	6.6		7.1	7.1	7.1	7.1	7.1	
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	
Frbp, ped/bikes	1.00	1.00		1.00	0.97		1.00	1.00	0.97	1.00	1.00	
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	
Frt	1.00	0.93		1.00	0.86		1.00	1.00	0.85	1.00	1.00	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1789	1742		1772	1599		1789	1847	1570	1584	1627	
Flt Permitted	0.95	1.00		0.95	1.00		0.60	1.00	1.00	0.17	1.00	
Satd. Flow (perm)	1789	1742		1772	1599		1123	1847	1570	283	1627	
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)	7	7	7	255	7	151	7	775	477	99	257	7
RTOR Reduction (vph)	0	7	0	0	121	0	0	0	123	0	1	0
Lane Group Flow (vph)	7	7	0	255	37	0	7	775	354	99	263	0
Confl. Peds. (#/hr)				4		4			6	6		
Heavy Vehicles (%)	2%	2%	2%	3%	2%	0%	2%	4%	1%	15%	18%	2%
Turn Type	Split	NA		Split	NA		Perm	NA	Perm	Perm	NA	
Protected Phases	4	4		8	8			2			6	
Permitted Phases							2		2		6	
Actuated Green, G (s)	2.3	2.3		15.6	15.6		40.1	40.1	40.1	40.1	40.1	
Effective Green, g (s)	2.3	2.3		15.6	15.6		40.1	40.1	40.1	40.1	40.1	
Actuated g/C Ratio	0.03	0.03		0.20	0.20		0.51	0.51	0.51	0.51	0.51	
Clearance Time (s)	6.6	6.6		6.6	6.6		7.1	7.1	7.1	7.1	7.1	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	52	51		353	318		575	945	804	144	833	
v/s Ratio Prot	0.00	c0.00		c0.14	0.02			c0.42			0.16	
v/s Ratio Perm							0.01		0.23	0.35		
v/c Ratio	0.13	0.14		0.72	0.12		0.01	0.82	0.44	0.69	0.32	
Uniform Delay, d1	37.0	37.0		29.3	25.7		9.4	16.1	12.0	14.4	11.1	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	1.2	1.3		7.1	0.2		0.0	7.9	1.7	23.6	1.0	
Delay (s)	38.2	38.3		36.5	25.9		9.4	24.0	13.8	37.9	12.1	
Level of Service	D	D		D	C		A	C	B	D	B	
Approach Delay (s)		38.3			32.4			20.0			19.2	
Approach LOS		D			C			C			B	

Intersection Summary		
HCM 2000 Control Delay	22.5	HCM 2000 Level of Service
HCM 2000 Volume to Capacity ratio	0.77	C
Actuated Cycle Length (s)	78.3	Sum of lost time (s)
Intersection Capacity Utilization	85.6%	20.3
Analysis Period (min)	15	ICU Level of Service
		E

c Critical Lane Group

HCM Unsignalized Intersection Capacity Analysis
 15: Caledon P.S. Driveway/15717 North Access

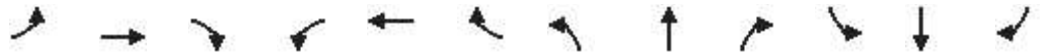
AM Peak Period
 04/13/2018



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔		↖		↗		↑	↗	↖	↑	
Traffic Volume (veh/h)	0	0	0	91	0	57	0	367	5	12	989	0
Future Volume (Veh/h)	0	0	0	91	0	57	0	367	5	12	989	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)	0	0	0	91	0	57	0	367	5	12	989	0
Pedestrians								243				
Lane Width (m)								3.7				
Walking Speed (m/s)								1.1				
Percent Blockage								23				
Right turn flare (veh)												
Median type								None			None	
Median storage veh												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	1437	1385	1232	1623	1380	367	989			372		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	1437	1385	1232	1623	1380	367	989			372		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	100	100	100	0	100	92	100			99		
cM capacity (veh/h)	101	142	167	63	143	678	699			1186		
Direction, Lane #	EB 1	WB 1	WB 2	NB 1	NB 2	SB 1	SB 2					
Volume Total	0	91	57	367	5	12	989					
Volume Left	0	91	0	0	0	12	0					
Volume Right	0	0	57	0	5	0	0					
cSH	1700	63	678	1700	1700	1186	1700					
Volume to Capacity	0.00	1.44	0.08	0.22	0.00	0.01	0.58					
Queue Length 95th (m)	0.0	59.5	2.1	0.0	0.0	0.2	0.0					
Control Delay (s)	0.0	377.3	10.8	0.0	0.0	8.1	0.0					
Lane LOS	A	F	B			A						
Approach Delay (s)	0.0	236.2		0.0		0.1						
Approach LOS	A	F										
Intersection Summary												
Average Delay				23.0								
Intersection Capacity Utilization			63.8%		ICU Level of Service				B			
Analysis Period (min)			15									

HCM Unsignalized Intersection Capacity Analysis
 15: Caledon P.S. Driveway/15717 North Access

PM Peak Period
 04/13/2018



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔		↖		↗		↑	↗	↖	↑	
Traffic Volume (veh/h)	0	0	0	52	0	29	0	1079	18	61	416	0
Future Volume (Veh/h)	0	0	0	52	0	29	0	1079	18	61	416	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)	0	0	0	52	0	29	0	1079	18	61	416	0
Pedestrians								243				
Lane Width (m)								3.7				
Walking Speed (m/s)								1.1				
Percent Blockage								23				
Right turn flare (veh)												
Median type								None			None	
Median storage veh												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	1646	1635	659	1860	1617	1079	416			1097		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	1646	1635	659	1860	1617	1079	416			1097		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	100	100	100	0	100	89	100			90		
cM capacity (veh/h)	66	91	358	40	94	265	1143			636		
Direction, Lane #	EB 1	WB 1	WB 2	NB 1	NB 2	SB 1	SB 2					
Volume Total	0	52	29	1079	18	61	416					
Volume Left	0	52	0	0	0	61	0					
Volume Right	0	0	29	0	18	0	0					
cSH	1700	40	265	1700	1700	636	1700					
Volume to Capacity	0.00	1.29	0.11	0.63	0.01	0.10	0.24					
Queue Length 95th (m)	0.0	39.6	2.8	0.0	0.0	2.4	0.0					
Control Delay (s)	0.0	398.8	20.2	0.0	0.0	11.3	0.0					
Lane LOS	A	F	C			B						
Approach Delay (s)	0.0	263.2		0.0		1.4						
Approach LOS	A	F										
Intersection Summary												
Average Delay				13.3								
Intersection Capacity Utilization			66.8%		ICU Level of Service					C		
Analysis Period (min)			15									

Queues
15: Caledon P.S. Driveway/15717 North Access

AM Peak Period
04/13/2018



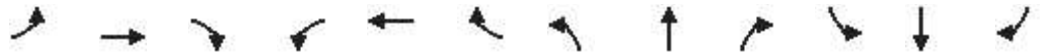
Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	91	57	367	5	12	989
v/c Ratio	0.43	0.12	0.34	0.01	0.02	0.91
Control Delay	29.5	7.1	7.8	0.4	5.5	25.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	29.5	7.1	7.8	0.4	5.5	25.3
Queue Length 50th (m)	10.1	0.0	20.3	0.0	0.5	92.4
Queue Length 95th (m)	23.7	7.6	33.1	0.3	2.3	#180.1
Internal Link Dist (m)			290.0			63.7
Turn Bay Length (m)				20.0	20.0	
Base Capacity (vph)	210	489	1258	1077	638	1258
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.43	0.12	0.29	0.00	0.02	0.79

Intersection Summary

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

HCM Signalized Intersection Capacity Analysis
 15: Caledon P.S. Driveway/15717 North Access

AM Peak Period
 04/13/2018



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations		↔		↖		↗		↑	↗	↖	↑		
Traffic Volume (vph)	0	0	0	91	0	57	0	367	5	12	989	0	
Future Volume (vph)	0	0	0	91	0	57	0	367	5	12	989	0	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	
Total Lost time (s)				4.5		4.5		4.5	4.5	4.5	4.5		
Lane Util. Factor				1.00		1.00		1.00	1.00	1.00	1.00		
Frbp, ped/bikes				1.00		1.00		1.00	1.00	1.00	1.00		
Flpb, ped/bikes				0.56		1.00		1.00	1.00	1.00	1.00		
Frt				1.00		0.85		1.00	0.85	1.00	1.00		
Flt Protected				0.95		1.00		1.00	1.00	0.95	1.00		
Satd. Flow (prot)				1004		1601		1883	1601	1789	1883		
Flt Permitted				0.76		1.00		1.00	1.00	0.51	1.00		
Satd. Flow (perm)				800		1601		1883	1601	955	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	91	0	57	0	367	5	12	989	0	
RTOR Reduction (vph)	0	0	0	0	0	41	0	0	2	0	0	0	
Lane Group Flow (vph)	0	0	0	91	0	16	0	367	3	12	989	0	
Confl. Peds. (#/hr)				243									
Turn Type				Perm		Perm		NA	Perm	Perm	NA		
Protected Phases		4						2				6	
Permitted Phases	4			8		8			2	6			
Actuated Green, G (s)				18.2		18.2		37.8	37.8	37.8	37.8		
Effective Green, g (s)				18.2		18.2		37.8	37.8	37.8	37.8		
Actuated g/C Ratio				0.28		0.28		0.58	0.58	0.58	0.58		
Clearance Time (s)				4.5		4.5		4.5	4.5	4.5	4.5		
Vehicle Extension (s)				3.0		3.0		3.0	3.0	3.0	3.0		
Lane Grp Cap (vph)				224		448		1095	931	555	1095		
v/s Ratio Prot								0.19				c0.53	
v/s Ratio Perm				c0.11		0.01			0.00	0.01			
v/c Ratio				0.41		0.04		0.34	0.00	0.02	0.90		
Uniform Delay, d1				19.0		17.0		7.1	5.7	5.8	12.0		
Progression Factor				1.00		1.00		1.00	1.00	1.00	1.00		
Incremental Delay, d2				1.2		0.0		0.2	0.0	0.0	10.4		
Delay (s)				20.2		17.1		7.3	5.7	5.8	22.4		
Level of Service				C		B		A	A	A	C		
Approach Delay (s)		0.0			19.0			7.2			22.2		
Approach LOS		A			B			A			C		
Intersection Summary													
HCM 2000 Control Delay				18.2								HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio				0.74									
Actuated Cycle Length (s)				65.0								Sum of lost time (s)	9.0
Intersection Capacity Utilization				64.2%								ICU Level of Service	C
Analysis Period (min)				15									
c Critical Lane Group													

Queues
15: Caledon P.S. Driveway/15717 North Access

PM Peak Period
04/13/2018



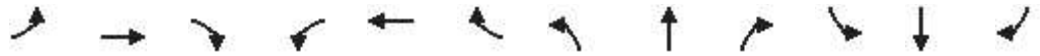
Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	52	29	1079	18	61	416
v/c Ratio	0.26	0.07	0.95	0.02	0.55	0.37
Control Delay	25.0	8.7	31.7	2.2	32.4	7.9
Queue Delay	0.0	0.0	2.5	0.0	0.0	0.0
Total Delay	25.0	8.7	34.2	2.2	32.4	7.9
Queue Length 50th (m)	5.4	0.0	112.2	0.0	4.1	23.7
Queue Length 95th (m)	14.3	5.5	#206.8	1.7	#22.8	38.2
Internal Link Dist (m)			159.2			63.7
Turn Bay Length (m)				20.0	20.0	
Base Capacity (vph)	198	444	1189	1019	115	1189
Starvation Cap Reductn	0	0	49	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	0.26	0.07	0.95	0.02	0.53	0.35

Intersection Summary

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

HCM Signalized Intersection Capacity Analysis
 15: Caledon P.S. Driveway/15717 North Access

PM Peak Period
 04/13/2018



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations		↔		↖		↗		↑	↗	↖	↑		
Traffic Volume (vph)	0	0	0	52	0	29	0	1079	18	61	416	0	
Future Volume (vph)	0	0	0	52	0	29	0	1079	18	61	416	0	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	
Total Lost time (s)				4.5		4.5		4.5	4.5	4.5	4.5		
Lane Util. Factor				1.00		1.00		1.00	1.00	1.00	1.00		
Frbp, ped/bikes				1.00		1.00		1.00	1.00	1.00	1.00		
Flpb, ped/bikes				0.54		1.00		1.00	1.00	1.00	1.00		
Frt				1.00		0.85		1.00	0.85	1.00	1.00		
Flt Protected				0.95		1.00		1.00	1.00	0.95	1.00		
Satd. Flow (prot)				964		1601		1883	1601	1789	1883		
Flt Permitted				0.76		1.00		1.00	1.00	0.10	1.00		
Satd. Flow (perm)				769		1601		1883	1601	183	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	52	0	29	0	1079	18	61	416	0	
RTOR Reduction (vph)	0	0	0	0	0	21	0	0	7	0	0	0	
Lane Group Flow (vph)	0	0	0	52	0	8	0	1079	11	61	416	0	
Confl. Peds. (#/hr)				243									
Turn Type				Perm		Perm		NA	Perm	Perm	NA		
Protected Phases		4						2				6	
Permitted Phases	4			8		8			2	6			
Actuated Green, G (s)				18.1		18.1		41.2	41.2	41.2	41.2		
Effective Green, g (s)				18.1		18.1		41.2	41.2	41.2	41.2		
Actuated g/C Ratio				0.27		0.27		0.60	0.60	0.60	0.60		
Clearance Time (s)				4.5		4.5		4.5	4.5	4.5	4.5		
Vehicle Extension (s)				3.0		3.0		3.0	3.0	3.0	3.0		
Lane Grp Cap (vph)				203		424		1135	965	110	1135		
v/s Ratio Prot								c0.57				0.22	
v/s Ratio Perm				c0.07		0.00			0.01	0.33			
v/c Ratio				0.26		0.02		0.95	0.01	0.55	0.37		
Uniform Delay, d1				19.8		18.5		12.6	5.4	8.1	6.9		
Progression Factor				1.00		1.00		1.00	1.00	1.00	1.00		
Incremental Delay, d2				0.7		0.0		16.2	0.0	5.9	0.2		
Delay (s)				20.5		18.6		28.8	5.4	14.0	7.1		
Level of Service				C		B		C	A	B	A		
Approach Delay (s)		0.0			19.8			28.5				8.0	
Approach LOS		A			B			C				A	
Intersection Summary													
HCM 2000 Control Delay				22.1								HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio				0.74									
Actuated Cycle Length (s)				68.3								Sum of lost time (s)	9.0
Intersection Capacity Utilization				68.5%								ICU Level of Service	C
Analysis Period (min)				15									
c Critical Lane Group													

HCM Unsignalized Intersection Capacity Analysis
 16: Airport Road & Cranston Drive/15717 South Access

AM Peak Period
 04/13/2018



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	13	0	32	59	0	16	10	315	26	3	1058	9
Future Volume (Veh/h)	13	0	32	59	0	16	10	315	26	3	1058	9
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)	13	0	32	59	0	16	10	315	26	3	1058	9
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type							None			None		
Median storage veh												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	1415	1425	1058	1431	1408	315	1067				341	
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	1415	1425	1058	1431	1408	315	1067				341	
tC, single (s)	7.2	6.5	6.2	7.1	6.5	6.2	4.1				4.1	
tC, 2 stage (s)												
tF (s)	3.6	4.0	3.3	3.5	4.0	3.3	2.2				2.2	
p0 queue free %	88	100	88	39	100	98	98				100	
cM capacity (veh/h)	106	133	269	97	136	725	661				1218	
Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	NB 2	NB 3	SB 1	SB 2	SB 3		
Volume Total	13	32	59	16	10	315	26	3	1058	9		
Volume Left	13	0	59	0	10	0	0	3	0	0		
Volume Right	0	32	0	16	0	0	26	0	0	9		
cSH	106	269	97	725	661	1700	1700	1218	1700	1700		
Volume to Capacity	0.12	0.12	0.61	0.02	0.02	0.19	0.02	0.00	0.62	0.01		
Queue Length 95th (m)	3.1	3.0	21.9	0.5	0.4	0.0	0.0	0.1	0.0	0.0		
Control Delay (s)	43.6	20.2	87.1	10.1	10.5	0.0	0.0	8.0	0.0	0.0		
Lane LOS	E	C	F	B	B			A				
Approach Delay (s)	26.9	70.7		0.3				0.0				
Approach LOS	D	F										
Intersection Summary												
Average Delay			4.3									
Intersection Capacity Utilization			72.3%		ICU Level of Service				C			
Analysis Period (min)			15									

HCM Unsignalized Intersection Capacity Analysis
 16: Airport Road & Cranston Drive/15717 South Access

PM Peak Period
 04/13/2018



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	14	0	25	19	0	7	31	1199	125	6	451	17
Future Volume (Veh/h)	14	0	25	19	0	7	31	1199	125	6	451	17
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)	14	0	25	19	0	7	31	1199	125	6	451	17
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage veh												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	1731	1849	451	1749	1741	1199	468			1324		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	1731	1849	451	1749	1741	1199	468			1324		
tC, single (s)	7.1	6.5	6.3	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.4	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	79	100	96	70	100	97	97			99		
cM capacity (veh/h)	66	71	600	62	83	226	1078			522		
Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	NB 2	NB 3	SB 1	SB 2	SB 3		
Volume Total	14	25	19	7	31	1199	125	6	451	17		
Volume Left	14	0	19	0	31	0	0	6	0	0		
Volume Right	0	25	0	7	0	0	125	0	0	17		
cSH	66	600	62	226	1078	1700	1700	522	1700	1700		
Volume to Capacity	0.21	0.04	0.30	0.03	0.03	0.71	0.07	0.01	0.27	0.01		
Queue Length 95th (m)	5.5	1.0	8.3	0.7	0.7	0.0	0.0	0.3	0.0	0.0		
Control Delay (s)	74.0	11.3	86.2	21.4	8.4	0.0	0.0	12.0	0.0	0.0		
Lane LOS	F	B	F	C	A			B				
Approach Delay (s)	33.8		68.7		0.2			0.2				
Approach LOS	D		F									
Intersection Summary												
Average Delay			1.8									
Intersection Capacity Utilization			77.5%		ICU Level of Service				D			
Analysis Period (min)			15									

Queues
16: Airport Road & Cranston Drive/15717 South Access

AM Peak Period
04/13/2018



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	13	32	59	16	10	315	26	3	1058	9
v/c Ratio	0.08	0.11	0.33	0.02	0.03	0.23	0.02	0.00	0.70	0.01
Control Delay	24.0	0.8	29.6	0.1	3.4	3.2	1.5	3.0	9.3	0.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.3	0.0
Total Delay	24.0	0.8	29.6	0.1	3.4	3.2	1.5	3.0	9.5	0.7
Queue Length 50th (m)	1.5	0.0	7.0	0.0	0.2	9.2	0.0	0.1	59.5	0.0
Queue Length 95th (m)	5.3	0.0	15.0	0.0	1.5	20.3	1.7	0.7	#172.9	0.6
Internal Link Dist (m)		93.1		98.2		514.4			159.3	
Turn Bay Length (m)	30.0		30.0		70.0		25.0	40.0		25.0
Base Capacity (vph)	367	521	393	859	305	1357	1328	886	1512	1019
Starvation Cap Reductn	0	0	0	0	0	0	0	0	96	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.04	0.06	0.15	0.02	0.03	0.23	0.02	0.00	0.75	0.01

Intersection Summary

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

HCM Signalized Intersection Capacity Analysis
 16: Airport Road & Cranston Drive/15717 South Access

AM Peak Period
 04/13/2018



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	13	0	32	59	0	16	10	315	26	3	1058	9
Future Volume (vph)	13	0	32	59	0	16	10	315	26	3	1058	9
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	4.5		4.5	4.5		4.5	4.5	4.5	4.5	4.5	4.5
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	0.85		1.00	0.85		1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1644	1555		1789	1601		1825	1642	1601	1789	1830	1228
Flt Permitted	0.75	1.00		0.74	1.00		0.19	1.00	1.00	0.57	1.00	1.00
Satd. Flow (perm)	1293	1555		1387	1601		370	1642	1601	1072	1830	1228
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)	13	0	32	59	0	16	10	315	26	3	1058	9
RTOR Reduction (vph)	0	29	0	0	15	0	0	0	6	0	0	2
Lane Group Flow (vph)	13	3	0	59	1	0	10	315	20	3	1058	7
Heavy Vehicles (%)	11%	2%	5%	2%	2%	2%	0%	17%	2%	2%	5%	33%
Turn Type	Perm	NA		Perm	NA		Perm	NA	Perm	Perm	NA	Perm
Protected Phases		4			8			2		2	6	6
Permitted Phases	4			8			2		2	6		6
Actuated Green, G (s)	5.7	5.7		5.7	5.7		50.6	50.6	50.6	50.6	50.6	50.6
Effective Green, g (s)	5.7	5.7		5.7	5.7		50.6	50.6	50.6	50.6	50.6	50.6
Actuated g/C Ratio	0.09	0.09		0.09	0.09		0.77	0.77	0.77	0.77	0.77	0.77
Clearance Time (s)	4.5	4.5		4.5	4.5		4.5	4.5	4.5	4.5	4.5	4.5
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	112	135		121	139		286	1272	1240	830	1418	951
v/s Ratio Prot		0.00			0.00			0.19			c0.58	
v/s Ratio Perm	0.01			c0.04			0.03		0.01	0.00		0.01
v/c Ratio	0.12	0.02		0.49	0.01		0.03	0.25	0.02	0.00	0.75	0.01
Uniform Delay, d1	27.5	27.2		28.4	27.2		1.7	2.0	1.7	1.7	3.9	1.7
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	0.5	0.1		3.1	0.0		0.2	0.5	0.0	0.0	3.6	0.0
Delay (s)	27.9	27.3		31.5	27.3		1.9	2.5	1.7	1.7	7.5	1.7
Level of Service	C	C		C	C		A	A	A	A	A	A
Approach Delay (s)		27.5			30.6			2.4			7.5	
Approach LOS		C			C			A			A	

Intersection Summary		
HCM 2000 Control Delay	8.0	HCM 2000 Level of Service
HCM 2000 Volume to Capacity ratio	0.72	A
Actuated Cycle Length (s)	65.3	Sum of lost time (s)
Intersection Capacity Utilization	73.1%	9.0
Analysis Period (min)	15	ICU Level of Service
c Critical Lane Group		D

Queues
 16: Airport Road & Cranston Drive/15717 South Access

PM Peak Period
 04/13/2018



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	14	25	19	7	31	1199	125	6	451	17
v/c Ratio	0.07	0.05	0.10	0.03	0.04	0.72	0.09	0.02	0.29	0.01
Control Delay	25.4	0.2	25.8	0.3	2.0	8.1	1.2	2.3	2.3	0.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	25.4	0.2	25.8	0.3	2.0	8.1	1.2	2.3	2.3	0.9
Queue Length 50th (m)	1.5	0.0	2.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Queue Length 95th (m)	5.6	0.0	6.9	0.0	2.4	#190.8	4.7	0.9	24.0	1.0
Internal Link Dist (m)		93.3		96.8		514.3			159.2	
Turn Bay Length (m)	30.0		30.0		70.0		25.0	40.0		25.0
Base Capacity (vph)	552	743	541	517	821	1669	1439	267	1563	1464
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.03	0.03	0.04	0.01	0.04	0.72	0.09	0.02	0.29	0.01

Intersection Summary

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

HCM Signalized Intersection Capacity Analysis
 16: Airport Road & Cranston Drive/15717 South Access

PM Peak Period
 04/13/2018



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖	↗		↖	↗		↖	↑	↗	↖	↑	↗
Traffic Volume (vph)	14	0	25	19	0	7	31	1199	125	6	451	17
Future Volume (vph)	14	0	25	19	0	7	31	1199	125	6	451	17
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	4.5		4.5	4.5		4.5	4.5	4.5	4.5	4.5	4.5
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	0.85		1.00	0.85		1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1825	1541		1789	1601		1738	1865	1601	1789	1746	1633
Flt Permitted	1.00	1.00		1.00	1.00		0.50	1.00	1.00	0.16	1.00	1.00
Satd. Flow (perm)	1921	1541		1883	1601		919	1865	1601	299	1746	1633
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)	14	0	25	19	0	7	31	1199	125	6	451	17
RTOR Reduction (vph)	0	24	0	0	7	0	0	0	11	0	0	3
Lane Group Flow (vph)	14	1	0	19	0	0	31	1199	114	6	451	14
Heavy Vehicles (%)	0%	2%	6%	2%	2%	2%	5%	3%	2%	2%	10%	0%
Turn Type	Perm	NA		Perm	NA		Perm	NA	Perm	Perm	NA	Perm
Protected Phases		4			8			2				6
Permitted Phases	4			8			2		2	6		6
Actuated Green, G (s)	3.0	3.0		3.0	3.0		53.4	53.4	53.4	53.4	53.4	53.4
Effective Green, g (s)	3.0	3.0		3.0	3.0		53.4	53.4	53.4	53.4	53.4	53.4
Actuated g/C Ratio	0.05	0.05		0.05	0.05		0.82	0.82	0.82	0.82	0.82	0.82
Clearance Time (s)	4.5	4.5		4.5	4.5		4.5	4.5	4.5	4.5	4.5	4.5
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	88	70		86	73		750	1522	1307	244	1425	1333
v/s Ratio Prot		0.00			0.00			c0.64				0.26
v/s Ratio Perm	0.01			c0.01			0.03		0.07	0.02		0.01
v/c Ratio	0.16	0.02		0.22	0.00		0.04	0.79	0.09	0.02	0.32	0.01
Uniform Delay, d1	30.0	29.8		30.1	29.8		1.1	3.1	1.2	1.1	1.5	1.1
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	0.8	0.1		1.3	0.0		0.1	4.2	0.1	0.2	0.6	0.0
Delay (s)	30.8	29.9		31.4	29.8		1.2	7.3	1.3	1.3	2.1	1.1
Level of Service	C	C		C	C		A	A	A	A	A	A
Approach Delay (s)		30.2			31.0			6.6			2.0	
Approach LOS		C			C			A			A	

Intersection Summary		
HCM 2000 Control Delay	6.3	HCM 2000 Level of Service
HCM 2000 Volume to Capacity ratio	0.76	A
Actuated Cycle Length (s)	65.4	Sum of lost time (s)
Intersection Capacity Utilization	78.3%	9.0
Analysis Period (min)	15	ICU Level of Service
c Critical Lane Group		D

Phasings
16: Airport Road & Cranston Drive/15717 South Access

AM Peak Period
04/16/2018



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Protected Phases		4		8		2			6	
Permitted Phases	4		8		2		2	6		6
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	22.5	22.5	22.5	22.5	22.5	22.5	22.5	22.5	22.5	22.5
Total Split (s)	22.5	22.5	22.5	22.5	47.5	47.5	47.5	47.5	47.5	47.5
Total Split (%)	32.1%	32.1%	32.1%	32.1%	67.9%	67.9%	67.9%	67.9%	67.9%	67.9%
Maximum Green (s)	18.0	18.0	18.0	18.0	43.0	43.0	43.0	43.0	43.0	43.0
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lead/Lag										
Lead-Lag Optimize?										
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Minimum Gap (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Time Before Reduce (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Time To Reduce (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Recall Mode	None	None	Ped	Ped	None	None	None	None	None	None
Walk Time (s)	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
Flash Dont Walk (s)	11.0	11.0	11.0	11.0	11.0	11.0	11.0	11.0	11.0	11.0
Pedestrian Calls (#/hr)	0	0	0	0	0	0	0	0	0	0
90th %ile Green (s)	18.0	18.0	18.0	18.0	43.0	43.0	43.0	43.0	43.0	43.0
90th %ile Term Code	Hold	Hold	Ped	Ped	Hold	Hold	Hold	Max	Max	Max
70th %ile Green (s)	18.0	18.0	18.0	18.0	43.0	43.0	43.0	43.0	43.0	43.0
70th %ile Term Code	Hold	Hold	Ped	Ped	Hold	Hold	Hold	Max	Max	Max
50th %ile Green (s)	18.0	18.0	18.0	18.0	43.0	43.0	43.0	43.0	43.0	43.0
50th %ile Term Code	Hold	Hold	Ped	Ped	Hold	Hold	Hold	Max	Max	Max
30th %ile Green (s)	18.0	18.0	18.0	18.0	43.0	43.0	43.0	43.0	43.0	43.0
30th %ile Term Code	Hold	Hold	Ped	Ped	Hold	Hold	Hold	Max	Max	Max
10th %ile Green (s)	18.0	18.0	18.0	18.0	35.6	35.6	35.6	35.6	35.6	35.6
10th %ile Term Code	Hold	Hold	Ped	Ped	Hold	Hold	Hold	Gap	Gap	Gap

Intersection Summary

Cycle Length: 70
 Actuated Cycle Length: 68.5
 Control Type: Semi Act-Uncoord
 90th %ile Actuated Cycle: 70
 70th %ile Actuated Cycle: 70
 50th %ile Actuated Cycle: 70
 30th %ile Actuated Cycle: 70
 10th %ile Actuated Cycle: 62.6

Queues
16: Airport Road & Cranston Drive/15717 South Access

AM Peak Period
04/16/2018



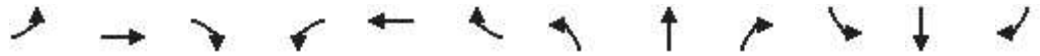
Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	13	32	59	16	10	315	26	3	1058	9
v/c Ratio	0.04	0.07	0.29	0.02	0.09	0.32	0.03	0.00	0.96	0.01
Control Delay	20.1	0.2	25.8	0.1	7.8	7.6	2.4	5.3	33.0	1.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2.1	0.0
Total Delay	20.1	0.2	25.8	0.1	7.8	7.6	2.4	5.3	35.2	1.1
Queue Length 50th (m)	1.3	0.0	6.2	0.0	0.5	17.3	0.0	0.2	111.6	0.0
Queue Length 95th (m)	5.1	0.0	16.0	0.0	2.4	29.3	2.4	1.0	#205.2	0.8
Internal Link Dist (m)		93.1		98.2		514.4			159.3	
Turn Bay Length (m)	30.0		30.0		70.0		25.0	40.0		25.0
Base Capacity (vph)	340	492	200	837	116	1032	1016	653	1151	780
Starvation Cap Reductn	0	0	0	0	0	0	0	0	35	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.04	0.07	0.29	0.02	0.09	0.31	0.03	0.00	0.95	0.01

Intersection Summary

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

HCM Signalized Intersection Capacity Analysis
 16: Airport Road & Cranston Drive/15717 South Access

AM Peak Period
 04/16/2018



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖	↗		↖	↗		↖	↗	↗	↖	↗	↗
Traffic Volume (vph)	13	0	32	59	0	16	10	315	26	3	1058	9
Future Volume (vph)	13	0	32	59	0	16	10	315	26	3	1058	9
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	4.5		4.5	4.5		4.5	4.5	4.5	4.5	4.5	4.5
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00
Frbp, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00
Flpb, ped/bikes	1.00	1.00		0.56	1.00		1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	0.85		1.00	0.85		1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1644	1555		998	1601		1825	1642	1601	1789	1830	1228
Flt Permitted	0.75	1.00		0.74	1.00		0.10	1.00	1.00	0.55	1.00	1.00
Satd. Flow (perm)	1293	1555		773	1601		185	1642	1601	1040	1830	1228
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)	13	0	32	59	0	16	10	315	26	3	1058	9
RTOR Reduction (vph)	0	24	0	0	12	0	0	0	10	0	0	4
Lane Group Flow (vph)	13	8	0	59	4	0	10	315	16	3	1058	5
Confl. Peds. (#/hr)	243											
Heavy Vehicles (%)	11%	2%	5%	2%	2%	2%	0%	17%	2%	2%	5%	33%
Turn Type	Perm	NA		Perm	NA		Perm	NA	Perm	Perm	NA	Perm
Protected Phases		4			8			2		2		6
Permitted Phases	4			8			2		2	6		6
Actuated Green, G (s)	18.0	18.0		18.0	18.0		41.5	41.5	41.5	41.5	41.5	41.5
Effective Green, g (s)	18.0	18.0		18.0	18.0		41.5	41.5	41.5	41.5	41.5	41.5
Actuated g/C Ratio	0.26	0.26		0.26	0.26		0.61	0.61	0.61	0.61	0.61	0.61
Clearance Time (s)	4.5	4.5		4.5	4.5		4.5	4.5	4.5	4.5	4.5	4.5
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	339	408		203	420		112	994	969	630	1108	743
v/s Ratio Prot		0.01			0.00			0.19			c0.58	
v/s Ratio Perm	0.01			c0.08			0.05		0.01	0.00		0.00
v/c Ratio	0.04	0.02		0.29	0.01		0.09	0.32	0.02	0.00	0.95	0.01
Uniform Delay, d1	18.8	18.7		20.2	18.7		5.6	6.6	5.4	5.3	12.6	5.3
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	0.0	0.0		0.8	0.0		0.3	0.2	0.0	0.0	17.1	0.0
Delay (s)	18.9	18.7		21.0	18.7		6.0	6.8	5.4	5.3	29.8	5.3
Level of Service	B	B		C	B		A	A	A	A	C	A
Approach Delay (s)		18.8			20.5			6.6			29.5	
Approach LOS		B			C			A			C	

Intersection Summary		
HCM 2000 Control Delay	23.5	HCM 2000 Level of Service C
HCM 2000 Volume to Capacity ratio	0.75	
Actuated Cycle Length (s)	68.5	Sum of lost time (s) 9.0
Intersection Capacity Utilization	73.1%	ICU Level of Service D
Analysis Period (min)	15	

c Critical Lane Group

Phasings

16: Airport Road & Cranston Drive/15717 South Access

04/16/2018



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Protected Phases		4		8		2			6	
Permitted Phases	4		8		2		2	6		6
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	22.5	22.5	22.5	22.5	22.5	22.5	22.5	22.5	22.5	22.5
Total Split (s)	22.5	22.5	22.5	22.5	47.5	47.5	47.5	47.5	47.5	47.5
Total Split (%)	32.1%	32.1%	32.1%	32.1%	67.9%	67.9%	67.9%	67.9%	67.9%	67.9%
Maximum Green (s)	18.0	18.0	18.0	18.0	43.0	43.0	43.0	43.0	43.0	43.0
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lead/Lag										
Lead-Lag Optimize?										
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Minimum Gap (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Time Before Reduce (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Time To Reduce (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Recall Mode	None	None	Ped	Ped	None	None	None	None	None	None
Walk Time (s)	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
Flash Dont Walk (s)	11.0	11.0	11.0	11.0	11.0	11.0	11.0	11.0	11.0	11.0
Pedestrian Calls (#/hr)	0	0	0	0	0	0	0	0	0	0
90th %ile Green (s)	18.0	18.0	18.0	18.0	43.0	43.0	43.0	43.0	43.0	43.0
90th %ile Term Code	Hold	Hold	Ped	Ped	Max	Max	Max	Hold	Hold	Hold
70th %ile Green (s)	18.0	18.0	18.0	18.0	43.0	43.0	43.0	43.0	43.0	43.0
70th %ile Term Code	Hold	Hold	Ped	Ped	Max	Max	Max	Hold	Hold	Hold
50th %ile Green (s)	18.0	18.0	18.0	18.0	43.0	43.0	43.0	43.0	43.0	43.0
50th %ile Term Code	Hold	Hold	Ped	Ped	Max	Max	Max	Hold	Hold	Hold
30th %ile Green (s)	18.0	18.0	18.0	18.0	43.0	43.0	43.0	43.0	43.0	43.0
30th %ile Term Code	Hold	Hold	Ped	Ped	Max	Max	Max	Hold	Hold	Hold
10th %ile Green (s)	18.0	18.0	18.0	18.0	43.0	43.0	43.0	43.0	43.0	43.0
10th %ile Term Code	Hold	Hold	Ped	Ped	Max	Max	Max	Hold	Hold	Hold

Intersection Summary

Cycle Length: 70

Actuated Cycle Length: 70

Control Type: Semi Act-Uncoord

90th %ile Actuated Cycle: 70

70th %ile Actuated Cycle: 70

50th %ile Actuated Cycle: 70

30th %ile Actuated Cycle: 70

10th %ile Actuated Cycle: 70

Queues

16: Airport Road & Cranston Drive/15717 South Access

04/16/2018



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	14	25	19	7	31	1199	125	6	451	17
v/c Ratio	0.04	0.04	0.10	0.01	0.06	1.05	0.12	0.06	0.42	0.02
Control Delay	20.0	0.1	21.5	0.0	5.8	56.5	3.5	7.0	8.5	2.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	20.0	0.1	21.5	0.0	5.8	56.5	3.5	7.0	8.5	2.1
Queue Length 50th (m)	1.4	0.0	1.9	0.0	1.4	~174.6	3.0	0.3	27.0	0.0
Queue Length 95th (m)	5.3	0.0	6.7	0.0	4.3	#243.5	8.5	1.7	44.1	1.6
Internal Link Dist (m)		93.3		96.8		514.3			159.2	
Turn Bay Length (m)	30.0		30.0		70.0		25.0	40.0		25.0
Base Capacity (vph)	372	710	195	471	504	1145	1006	107	1072	1012
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.04	0.04	0.10	0.01	0.06	1.05	0.12	0.06	0.42	0.02

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.

Queue shown is maximum after two cycles.

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

Queue shown is maximum after two cycles.

HCM Signalized Intersection Capacity Analysis

16: Airport Road & Cranston Drive/15717 South Access

04/16/2018



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖	↗		↖	↗		↖	↑	↗	↖	↑	↗
Traffic Volume (vph)	14	0	25	19	0	7	31	1199	125	6	451	17
Future Volume (vph)	14	0	25	19	0	7	31	1199	125	6	451	17
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	4.5		4.5	4.5		4.5	4.5	4.5	4.5	4.5	4.5
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00
Frbp, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00
Flpb, ped/bikes	1.00	1.00		0.54	1.00		1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	0.85		1.00	0.85		1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1825	1541		973	1601		1738	1865	1601	1789	1746	1633
Flt Permitted	0.75	1.00		0.74	1.00		0.45	1.00	1.00	0.09	1.00	1.00
Satd. Flow (perm)	1447	1541		759	1601		822	1865	1601	175	1746	1633
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)	14	0	25	19	0	7	31	1199	125	6	451	17
RTOR Reduction (vph)	0	19	0	0	5	0	0	0	23	0	0	7
Lane Group Flow (vph)	14	6	0	19	2	0	31	1199	102	6	451	10
Confl. Peds. (#/hr)	243											
Heavy Vehicles (%)	0%	2%	6%	2%	2%	2%	5%	3%	2%	2%	10%	0%
Turn Type	Perm	NA		Perm	NA		Perm	NA	Perm	Perm	NA	Perm
Protected Phases		4			8			2		6		6
Permitted Phases	4			8			2		2	6		6
Actuated Green, G (s)	18.0	18.0		18.0	18.0		43.0	43.0	43.0	43.0	43.0	43.0
Effective Green, g (s)	18.0	18.0		18.0	18.0		43.0	43.0	43.0	43.0	43.0	43.0
Actuated g/C Ratio	0.26	0.26		0.26	0.26		0.61	0.61	0.61	0.61	0.61	0.61
Clearance Time (s)	4.5	4.5		4.5	4.5		4.5	4.5	4.5	4.5	4.5	4.5
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	372	396		195	411		504	1145	983	107	1072	1003
v/s Ratio Prot		0.00			0.00			c0.64			0.26	
v/s Ratio Perm	0.01			c0.03			0.04		0.06	0.03		0.01
v/c Ratio	0.04	0.02		0.10	0.00		0.06	1.05	0.10	0.06	0.42	0.01
Uniform Delay, d1	19.5	19.4		19.8	19.3		5.4	13.5	5.6	5.4	7.0	5.2
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	0.0	0.0		0.2	0.0		0.1	39.8	0.0	0.2	0.3	0.0
Delay (s)	19.5	19.4		20.0	19.3		5.5	53.3	5.6	5.6	7.3	5.2
Level of Service	B	B		C	B		A	D	A	A	A	A
Approach Delay (s)		19.5			19.8			47.8			7.2	
Approach LOS		B			B			D			A	

Intersection Summary			
HCM 2000 Control Delay	36.7	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.77		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	9.0
Intersection Capacity Utilization	78.3%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

Queues
17: Olde Base Line Road & Airport Road

AM Peak Period
04/13/2018



Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Group Flow (vph)	133	202	41	183	773	315
v/c Ratio	0.57	0.52	0.10	0.16	0.60	0.26
Control Delay	44.5	10.4	5.1	4.7	8.9	2.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	44.5	10.4	5.1	4.7	8.9	2.5
Queue Length 50th (m)	20.5	0.0	1.7	8.1	52.8	5.3
Queue Length 95th (m)	37.6	17.5	5.5	16.7	94.9	14.5
Internal Link Dist (m)	154.7			875.1	514.4	
Turn Bay Length (m)		25.0	25.0			20.0
Base Capacity (vph)	302	442	394	1118	1297	1200
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	0.44	0.46	0.10	0.16	0.60	0.26

Intersection Summary

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

AM Peak Period
 04/13/2018



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	133	202	41	183	773	315
Future Volume (vph)	133	202	41	183	773	315
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.6	6.6	6.0	6.0	6.0	6.0
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	0.85	1.00	1.00	1.00	0.85
Flt Protected	0.95	1.00	0.95	1.00	1.00	1.00
Satd. Flow (prot)	1690	1541	1755	1562	1812	1601
Flt Permitted	0.95	1.00	0.30	1.00	1.00	1.00
Satd. Flow (perm)	1690	1541	550	1562	1812	1601
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	133	202	41	183	773	315
RTOR Reduction (vph)	0	174	0	0	0	54
Lane Group Flow (vph)	133	28	41	183	773	261
Heavy Vehicles (%)	8%	6%	4%	23%	6%	2%
Turn Type	Prot	Perm	Perm	NA	NA	Perm
Protected Phases	4			2	6	
Permitted Phases		4	2			6
Actuated Green, G (s)	11.8	11.8	61.6	61.6	61.6	61.6
Effective Green, g (s)	11.8	11.8	61.6	61.6	61.6	61.6
Actuated g/C Ratio	0.14	0.14	0.72	0.72	0.72	0.72
Clearance Time (s)	6.6	6.6	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)	231	211	393	1118	1297	1146
v/s Ratio Prot	c0.08			0.12	c0.43	
v/s Ratio Perm		0.02	0.07			0.16
v/c Ratio	0.58	0.13	0.10	0.16	0.60	0.23
Uniform Delay, d1	34.8	32.6	3.7	3.9	6.0	4.1
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	3.4	0.3	0.5	0.3	2.0	0.5
Delay (s)	38.2	32.9	4.3	4.2	8.1	4.6
Level of Service	D	C	A	A	A	A
Approach Delay (s)	35.0			4.2	7.1	
Approach LOS	C			A	A	

Intersection Summary			
HCM 2000 Control Delay	12.4	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.59		
Actuated Cycle Length (s)	86.0	Sum of lost time (s)	12.6
Intersection Capacity Utilization	63.7%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

Queues
17: Olde Base Line Road & Airport Road

PM Peak Period
04/13/2018



Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Group Flow (vph)	393	49	151	841	318	170
v/c Ratio	0.93	0.13	0.23	0.74	0.30	0.16
Control Delay	64.7	16.1	8.5	16.7	8.8	1.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	64.7	16.1	8.5	16.7	8.8	1.5
Queue Length 50th (m)	66.3	2.8	10.4	92.1	23.2	0.0
Queue Length 95th (m)	#117.8	11.5	19.5	139.1	36.9	6.6
Internal Link Dist (m)	154.7			875.3	514.3	
Turn Bay Length (m)		25.0	25.0			20.0
Base Capacity (vph)	431	379	660	1143	1044	1074
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	0.91	0.13	0.23	0.74	0.30	0.16

Intersection Summary

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

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

PM Peak Period
 04/13/2018























Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	393	49	151	841	318	170
Future Volume (vph)	393	49	151	841	318	170
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.6	6.6	6.0	6.0	6.0	6.0
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	0.85	1.00	1.00	1.00	0.85
Flt Protected	0.95	1.00	0.95	1.00	1.00	1.00
Satd. Flow (prot)	1807	1498	1807	1830	1671	1617
Flt Permitted	0.95	1.00	0.56	1.00	1.00	1.00
Satd. Flow (perm)	1807	1498	1056	1830	1671	1617
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	393	49	151	841	318	170
RTOR Reduction (vph)	0	21	0	0	0	64
Lane Group Flow (vph)	393	28	151	841	318	106
Heavy Vehicles (%)	1%	9%	1%	5%	15%	1%
Turn Type	Prot	Perm	Perm	NA	NA	Perm
Protected Phases	4			2	6	
Permitted Phases		4	2			6
Actuated Green, G (s)	21.0	21.0	56.0	56.0	56.0	56.0
Effective Green, g (s)	21.0	21.0	56.0	56.0	56.0	56.0
Actuated g/C Ratio	0.23	0.23	0.63	0.63	0.63	0.63
Clearance Time (s)	6.6	6.6	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)	423	351	660	1143	1044	1010
v/s Ratio Prot	c0.22			c0.46	0.19	
v/s Ratio Perm		0.02	0.14			0.07
v/c Ratio	0.93	0.08	0.23	0.74	0.30	0.11
Uniform Delay, d1	33.6	26.8	7.4	11.7	7.8	6.7
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	26.5	0.1	0.8	4.2	0.8	0.2
Delay (s)	60.1	26.8	8.2	15.9	8.5	7.0
Level of Service	E	C	A	B	A	A
Approach Delay (s)	56.4			14.7	8.0	
Approach LOS	E			B	A	

Intersection Summary			
HCM 2000 Control Delay	22.6	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.79		
Actuated Cycle Length (s)	89.6	Sum of lost time (s)	12.6
Intersection Capacity Utilization	76.5%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

HCM Unsignalized Intersection Capacity Analysis
 18: Airport Road & Boston Mills Road/Castleberg Side Road

AM Peak Period
 04/13/2018

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	1	3	85	3	33	3	199	6	71	924	0
Future Volume (Veh/h)	0	1	3	85	3	33	3	199	6	71	924	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)	0	1	3	85	3	33	3	199	6	71	924	0
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)			4			4						
Median type							None				None	
Median storage (veh)												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	1292	1277	924	1276	1274	202	924			205		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	1292	1277	924	1276	1274	202	924			205		
tC, single (s)	7.1	6.5	6.7	7.1	6.5	6.2	4.1			4.2		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.8	3.5	4.0	3.3	2.2			2.3		
p0 queue free %	100	99	99	37	98	96	100			95		
cM capacity (veh/h)	128	158	268	135	159	844	748			1337		
Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	SB 1						
Volume Total	0	4	85	36	208	995						
Volume Left	0	0	85	0	3	71						
Volume Right	0	3	0	33	6	0						
cSH	1700	357	135	921	748	1337						
Volume to Capacity	0.00	0.01	0.63	0.04	0.00	0.05						
Queue Length 95th (m)	0.0	0.3	25.3	0.9	0.1	1.3						
Control Delay (s)	0.0	20.9	68.6	11.0	0.2	1.4						
Lane LOS	A	C	F	B	A	A						
Approach Delay (s)	20.9		51.5		0.2	1.4						
Approach LOS	C		F									
Intersection Summary												
Average Delay			5.8									
Intersection Capacity Utilization			84.9%		ICU Level of Service				E			
Analysis Period (min)			15									

HCM Unsignalized Intersection Capacity Analysis
 18: Airport Road & Boston Mills Road/Castledegr Side Road























PM Peak Period
 04/13/2018



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations													
Traffic Volume (veh/h)	3	1	0	12	3	82	3	907	48	48	290	1	
Future Volume (Veh/h)	3	1	0	12	3	82	3	907	48	48	290	1	
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	1	0	12	3	82	3	907	48	48	290	1	
Pedestrians													
Lane Width (m)													
Walking Speed (m/s)													
Percent Blockage													
Right turn flare (veh)				4			4						
Median type							None			None			
Median storage veh													
Upstream signal (m)													
pX, platoon unblocked													
vC, conflicting volume	1366	1348	290	1324	1324	931	291				955		
vC1, stage 1 conf vol													
vC2, stage 2 conf vol													
vCu, unblocked vol	1366	1348	290	1324	1324	931	291				955		
tC, single (s)	7.1	6.5	6.2	7.1	7.0	6.2	4.1				4.2		
tC, 2 stage (s)													
tF (s)	3.5	4.0	3.3	3.5	4.5	3.3	2.2				2.3		
p0 queue free %	97	99	100	91	97	75	100				93		
cM capacity (veh/h)	87	142	753	126	116	324	1282				704		
Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	SB 1							
Volume Total	3	1	12	85	958	339							
Volume Left	3	0	12	0	3	48							
Volume Right	0	0	0	82	48	1							
cSH	87	0	126	335	1282	704							
Volume to Capacity	0.03	Err	0.09	0.25	0.00	0.07							
Queue Length 95th (m)	0.8	Err	2.3	7.5	0.1	1.7							
Control Delay (s)	47.8	Err	36.4	20.5	0.1	2.2							
Lane LOS	E	F	E	C	A	A							
Approach Delay (s)	Err		22.4		0.1	2.2							
Approach LOS	F		C										
Intersection Summary													
Average Delay			Err										
Intersection Capacity Utilization			69.2%			ICU Level of Service				C			
Analysis Period (min)			15										
























HCM Unsignalized Intersection Capacity Analysis
 18: Airport Road & Boston Mills Road/Castleberg Side Road

AM Peak Period
 04/13/2018

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	1	3	85	3	33	3	199	6	71	924	0
Future Volume (Veh/h)	0	1	3	85	3	33	3	199	6	71	924	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)	0	1	3	85	3	33	3	199	6	71	924	0
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)			4			4						
Median type								None			None	
Median storage (veh)												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	1289	1277	924	1276	1274	202	924			205		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	1289	1277	924	1276	1274	202	924			205		
tC, single (s)	7.1	6.5	6.7	7.1	6.5	6.2	4.1			4.2		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.8	3.5	4.0	3.3	2.2			2.3		
p0 queue free %	100	99	99	37	98	96	100			95		
cM capacity (veh/h)	129	158	268	135	159	844	748			1337		
Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	NB 2	SB 1	SB 2				
Volume Total	0	4	85	36	3	205	71	924				
Volume Left	0	0	85	0	3	0	71	0				
Volume Right	0	3	0	33	0	6	0	0				
cSH	1700	357	135	921	748	1700	1337	1700				
Volume to Capacity	0.00	0.01	0.63	0.04	0.00	0.12	0.05	0.54				
Queue Length 95th (m)	0.0	0.3	25.3	0.9	0.1	0.0	1.3	0.0				
Control Delay (s)	0.0	20.9	68.6	11.0	9.8	0.0	7.8	0.0				
Lane LOS	A	C	F	B	A		A					
Approach Delay (s)	20.9		51.5		0.1		0.6					
Approach LOS	C		F									
Intersection Summary												
Average Delay			5.2									
Intersection Capacity Utilization			73.3%		ICU Level of Service				D			
Analysis Period (min)			15									

HCM Unsignalized Intersection Capacity Analysis
 18: Airport Road & Boston Mills Road/Castleberg Side Road

PM Peak Period
 04/13/2018

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	3	1	0	12	3	82	3	907	48	48	290	1
Future Volume (Veh/h)	3	1	0	12	3	82	3	907	48	48	290	1
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	1	0	12	3	82	3	907	48	48	290	1
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)				4			4					
Median type							None			None		
Median storage (veh)												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	1342	1348	290	1324	1324	931	291				955	
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	1342	1348	290	1324	1324	931	291				955	
tC, single (s)	7.1	6.5	6.2	7.1	7.0	6.2	4.1				4.2	
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.5	3.3	2.2				2.3	
p0 queue free %	97	99	100	91	97	75	100				93	
cM capacity (veh/h)	90	142	753	127	116	324	1282				704	
Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	NB 2	SB 1	SB 2				
Volume Total	3	1	12	85	3	955	48	291				
Volume Left	3	0	12	0	3	0	48	0				
Volume Right	0	0	0	82	0	48	0	1				
cSH	90	0	127	335	1282	1700	704	1700				
Volume to Capacity	0.03	Err	0.09	0.25	0.00	0.56	0.07	0.17				
Queue Length 95th (m)	0.8	Err	2.3	7.5	0.1	0.0	1.7	0.0				
Control Delay (s)	46.2	Err	36.4	20.5	7.8	0.0	10.5	0.0				
Lane LOS	E	F	E	C	A		B					
Approach Delay (s)	Err		22.4		0.0		1.5					
Approach LOS	F		C									
Intersection Summary												
Average Delay			Err									
Intersection Capacity Utilization			69.1%		ICU Level of Service				C			
Analysis Period (min)			15									

Appendix G – ITE Guidelines for Left-turn Lanes

Table 2

GUIDELINES FOR LEFT-TURN LANE AT UNSIGNALIZED INTERSECTION

Two-lane Roadway Opposing Volume (vph)	Advancing Volume - vph																				Operating Speed = 50 mph Speed Limit = 55 mph Design Speed = 60 mph							
	Left-turn - percent																											
	0.5	1.0	1.5	2.0	2.5	3.0	3.5	4.0	4.5	5.0	5.5	6.0	6.5	7.0	7.5	8.0	9.0	10	15	20	25	30	35	40	50			
50	1723	1221	1000	868	778	712	661	620	586	557	533	512	493	476	461	448	425	405	340	304	281	265	255	248	243			
100	1517	1075	880	764	685	627	582	546	516	491	469	451	434	419	406	394	374	357	300	268	247	233	224	218	214			
150	1355	961	786	683	612	560	520	488	461	439	419	402	388	375	363	352	334	319	268	239	221	209	200	195	191			
200	1238	878	718	624	559	512	475	446	421	401	383	368	354	342	331	322	305	291	245	218	202	191	183	178	175			
250	1112	788	645	560	502	460	427	400	378	360	344	330	318	307	298	289	274	262	220	196	181	171	164	160	157			
300	1031	731	598	520	466	426	396	371	351	334	319	306	295	285	276	268	254	242	204	182	168	159	152	148	145			
350	940	667	546	474	425	389	361	338	320	304	291	279	269	260	252	244	232	221	186	166	153	145	139	135	133			
400	866	614	503	436	391	358	333	312	295	280	268	257	248	240	232	225	214	204	171	153	141	133	128	125	122			
450	795	564	461	401	359	329	305	286	271	257	246	236	227	220	213	207	196	187	157	140	130	122	118	114	112			
500	726	515	421	366	328	300	279	261	247	235	225	216	208	201	194	189	179	171	143	128	118	112	107	105	102			
550	673	477	391	339	304	278	258	242	229	218	208	200	193	186	180	175	166	158	133	119	110	104	100	97	95			
600	637	452	370	321	288	263	245	229	217	206	197	189	182	176	171	166	157	150	126	112	104	98	94	92	90			
650	588	417	341	296	266	243	226	212	200	190	182	175	168	163	157	153	145	138	116	104	96	91	87	85	83			
700	555	394	322	280	251	230	213	200	189	180	172	165	159	153	149	144	137	131	110	98	90	85	82	80	78			
750	509	361	295	256	230	210	195	183	173	165	157	151	146	141	136	132	125	120	100	90	83	78	75	73	72			
800	463	328	269	233	209	192	178	167	158	150	143	138	133	128	124	120	114	109	92	82	75	71	69	67	65			
850	434	308	252	219	196	179	167	156	148	140	134	129	124	120	116	113	107	102	86	77	71	67	64	62	61			
900	406	288	235	204	183	168	156	146	138	131	125	120	116	112	109	105	100	95	80	72	66	62	60	58	57			
950	378	268	219	190	171	156	145	136	129	122	117	112	108	105	101	98	93	89	75	67	62	58	56	54	53			
1000	351	249	204	177	159	145	135	126	120	114	109	104	101	97	94	91	87	83	69	62	57	54	52	51	50			
1050	325	231	189	164	147	134	125	117	111	105	101	97	93	90	87	85	80	76	64	57	53	50	48	47	46			
1100	282	200	164	142	128	117	108	102	96	91	87	84	81	78	76	73	70	66	56	50	46	43	42	41	40			
1150	257	182	149	129	116	106	98	92	87	83	79	76	73	71	69	67	63	60	51	45	42	39	38	37	36			
1200	211	149	122	106	95	87	81	76	72	68	65	63	60	58	56	55	52	50	42	37	34	32	31	30	30			
1250	183	130	106	92	83	76	70	66	62	59	57	54	52	51	49	48	45	43	36	32	30	28	27	26	26			
1300	154	109	89	78	70	64	59	55	52	50	48	46	44	43	41	40	38	36	30	27	25	24	23	22	22			

Table 3

GUIDELINES FOR LEFT-TURN LANE AT UNSIGNALIZED INTERSECTION

Four-lane Roadway Opposing Volume (vph)	Advancing Volume - vph									Undivided
	Left-turn - percent									
	1.0	2.5	5.0	10	15	20	30	40	50	
50	1615	1030	737	536	450	402	351	328	321	
100	1431	912	653	475	399	356	311	291	285	
150	1271	810	580	421	354	316	276	258	253	
200	1140	727	521	378	318	284	248	232	227	
250	1028	655	469	341	287	256	223	209	205	
300	914	582	417	303	255	227	198	186	182	
350	824	525	376	273	230	205	179	167	164	
400	739	471	338	245	206	184	161	150	147	
450	658	419	300	218	183	164	143	134	131	
500	590	376	269	196	164	147	128	120	117	
550	529	337	242	176	147	132	115	107	105	
600	470	300	215	156	131	117	102	96	94	
650	419	267	191	139	117	104	91	85	83	
700	379	242	173	126	106	94	82	77	76	
750	342	218	156	113	95	85	74	69	68	
800	308	196	140	102	86	77	67	62	61	
850	276	176	126	91	77	69	60	56	55	
900	245	156	112	81	68	61	53	50	49	
950	216	137	98	71	60	54	47	44	43	
1000	195	124	89	65	54	49	42	40	39	
1100	150	96	68	50	42	37	33	30	30	
1200	114	73	52	38	32	28	25	23	23	
1300	91	58	42	30	25	23	20	19	18	
1400	74	47	34	24	21	18	16	15	15	
1500	60	38	27	20	17	15	13	12	12	
1600	49	31	22	16	14	12	11	10	10	
1700	41	26	19	13	11	10	9	8	8	
1800	31	20	14	10	9	8	7	6	6	

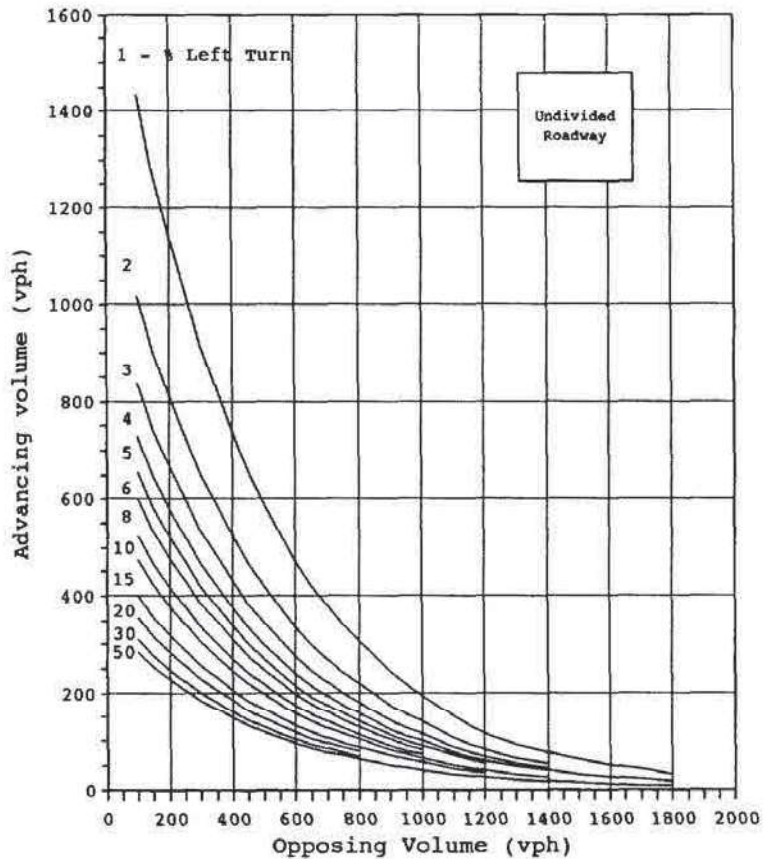


Figure 3 Guidelines for Left-turn Lane at Unsignalized Intersection - Four-lane, Undivided Roadway

Table 2

GUIDELINES FOR LEFT-TURN LANE AT UNSIGNALIZED INTERSECTION

Two-lane Roadway Opposing Volume (vph)	Advancing Volume - vph																				Operating Speed = 50 mph Speed Limit = 55 mph Design Speed = 60 mph				
	Left-turn - percent																								
	0.5	1.0	1.5	2.0	2.5	3.0	3.5	4.0	4.5	5.0	5.5	6.0	6.5	7.0	7.5	8.0	9.0	10	15	20	25	30	35	40	50
50	1723	1221	1000	868	778	712	661	620	586	557	533	512	493	476	461	448	425	405	340	304	281	265	255	248	243
100	1517	1075	880	764	685	627	582	546	516	491	469	451	434	419	406	394	374	357	300	268	247	233	224	218	214
150	1355	961	786	683	612	560	520	488	461	439	419	402	388	375	363	352	334	319	268	239	221	209	200	195	191
200	1238	878	718	624	559	512	475	446	421	401	383	368	354	342	331	322	305	291	245	218	202	191	183	178	175
250	1112	788	645	560	502	460	427	400	378	360	344	330	318	307	298	289	274	262	220	196	181	171	164	160	157
300	1031	731	598	520	466	426	396	371	351	334	319	306	295	285	276	268	254	242	204	182	168	159	152	148	145
350	940	667	546	474	425	389	361	338	320	304	291	279	269	260	252	244	232	221	186	166	153	145	139	135	133
400	866	614	503	436	391	358	333	312	295	280	268	257	248	240	232	225	214	204	171	153	141	133	128	125	122
450	795	564	461	401	359	329	305	286	271	257	246	236	227	220	213	207	196	187	157	140	130	122	118	114	112
500	726	515	421	366	328	300	279	261	247	235	225	216	208	201	194	189	179	171	143	128	118	112	107	105	102
550	673	477	391	339	304	278	258	242	229	218	208	200	193	186	180	175	166	158	133	119	110	104	100	97	95
600	637	452	370	321	288	263	245	229	217	206	197	189	182	176	171	166	157	150	126	112	104	98	94	92	90
650	588	417	341	296	266	243	226	212	200	190	182	175	168	163	157	153	145	138	116	104	96	91	87	85	83
700	555	394	322	280	251	230	213	200	189	180	172	165	159	153	149	144	137	131	110	98	90	85	82	80	78
750	509	361	295	256	230	210	195	183	173	165	157	151	146	141	136	132	125	120	100	90	83	78	75	73	72
800	463	328	269	233	209	192	178	167	158	150	143	138	133	128	124	120	114	109	92	82	75	71	69	67	65
850	434	308	252	219	196	179	167	156	148	140	134	129	124	120	116	113	107	102	86	77	71	67	64	62	61
900	406	288	235	204	183	168	156	146	138	131	125	120	116	112	109	105	100	95	80	72	66	62	60	58	57
950	378	268	219	190	171	156	145	136	129	122	117	112	108	105	101	98	93	89	75	67	62	58	56	54	53
1000	351	249	204	177	159	145	135	126	120	114	109	104	101	97	94	91	87	83	69	62	57	54	52	51	50
1050	325	231	189	164	147	134	125	117	111	105	101	97	93	90	87	85	80	76	64	57	53	50	48	47	46
1100	282	200	164	142	128	117	108	102	96	91	87	84	81	78	76	73	70	66	56	50	46	43	42	41	40
1150	257	182	149	129	116	106	98	92	87	83	79	76	73	71	69	67	63	60	51	45	42	39	38	37	36
1200	211	149	122	106	95	87	81	76	72	68	65	63	60	58	56	55	52	50	42	37	34	32	31	30	30
1250	183	130	106	92	83	76	70	66	62	59	57	54	52	51	49	48	45	43	36	32	30	28	27	26	26
1300	154	109	89	78	70	64	59	55	52	50	48	46	44	43	41	40	38	36	30	27	25	24	23	22	22

Table 3

GUIDELINES FOR LEFT-TURN LANE AT UNSIGNALIZED INTERSECTION

Four-lane Roadway Opposing Volume (vph)	Advancing Volume - vph								
	Undivided								
	Left-turn - percent								
	1.0	2.5	5.0	10	15	20	30	40	50
50	1615	1030	737	536	450	402	351	328	321
100	1431	912	653	475	399	356	311	291	285
150	1271	810	580	421	354	316	276	258	253
200	1140	727	521	378	318	284	248	232	227
250	1028	655	469	341	287	256	223	209	205
300	914	582	417	303	255	227	198	186	182
350	824	525	376	273	230	205	179	167	164
400	739	471	338	245	206	184	161	150	147
450	658	419	300	218	183	164	143	134	131
500	590	376	269	196	164	147	128	120	117
550	529	337	242	176	147	132	115	107	105
600	470	300	215	156	131	117	102	96	94
650	419	267	191	139	117	104	91	85	83
700	379	242	173	126	106	94	82	77	76
750	342	218	156	113	95	85	74	69	68
800	308	196	140	102	86	77	67	62	61
850	276	176	126	91	77	69	60	56	55
900	245	156	112	81	68	61	53	50	49
950	216	137	98	71	60	54	47	44	43
1000	195	124	89	65	54	49	42	40	39
1100	150	96	68	50	42	37	33	30	30
1200	114	73	52	38	32	28	25	23	23
1300	91	58	42	30	25	23	20	19	18
1400	74	47	34	24	21	18	16	15	15
1500	60	38	27	20	17	15	13	12	12
1600	49	31	22	16	14	12	11	10	10
1700	41	26	19	13	11	10	9	8	8
1800	31	20	14	10	9	8	7	6	6

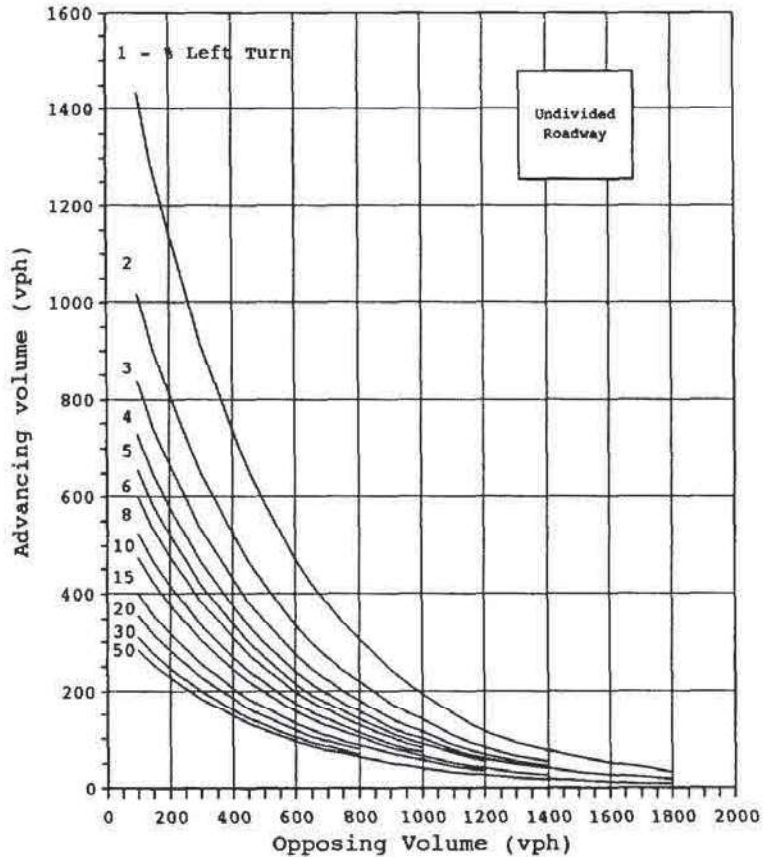


Figure 3 Guidelines for Left-turn Lane at Unsignalized Intersection - Four-lane, Undivided Roadway

Table 2

GUIDELINES FOR LEFT-TURN LANE AT UNSIGNALIZED INTERSECTION

Two-lane Roadway Opposing Volume (vph)	Advancing Volume - vph																				Operating Speed = 50 mph Speed Limit = 55 mph Design Speed = 60 mph				
	Left-turn - percent																								
	0.5	1.0	1.5	2.0	2.5	3.0	3.5	4.0	4.5	5.0	5.5	6.0	6.5	7.0	7.5	8.0	9.0	10	15	20	25	30	35	40	50
50	1723	1221	1000	868	778	712	661	620	586	557	533	512	493	476	461	448	425	405	340	304	281	265	255	248	243
100	1517	1075	880	764	685	627	582	546	516	491	469	451	434	419	406	394	374	357	300	268	247	233	224	218	214
150	1355	961	786	683	612	560	520	488	461	439	419	402	388	375	363	352	334	319	268	239	221	209	200	195	191
200	1238	878	718	624	559	512	475	446	421	401	383	368	354	342	331	322	305	291	245	218	202	191	183	178	175
250	1112	788	645	560	502	460	427	400	378	360	344	330	318	307	298	289	274	262	220	196	181	171	164	160	157
300	1031	731	598	520	466	426	396	371	351	334	319	306	295	285	276	268	254	242	204	182	168	159	152	148	145
350	940	667	546	474	425	389	361	338	320	304	291	279	269	260	252	244	232	221	186	166	153	145	139	135	133
400	866	614	503	436	391	358	333	312	295	280	268	257	248	240	232	225	214	204	171	153	141	133	128	125	122
450	795	564	461	401	359	329	305	286	271	257	246	236	227	220	213	207	196	187	157	140	130	122	118	114	112
500	726	515	421	366	328	300	279	261	247	235	225	216	208	201	194	189	179	171	143	128	118	112	107	105	102
550	673	477	391	339	304	278	258	242	229	218	208	200	193	186	180	175	166	158	133	119	110	104	100	97	95
600	637	452	370	321	288	263	245	229	217	206	197	189	182	176	171	166	157	150	126	112	104	98	94	92	90
650	588	417	341	296	266	243	226	212	200	190	182	175	168	163	157	153	145	138	116	104	96	91	87	85	83
700	555	394	322	280	251	230	213	200	189	180	172	165	159	153	149	144	137	131	110	98	90	85	82	80	78
750	509	361	295	256	230	210	195	183	173	165	157	151	146	141	136	132	125	120	100	90	83	78	75	73	72
800	463	328	269	233	209	192	178	167	158	150	143	138	133	128	124	120	114	109	92	82	75	71	69	67	65
850	434	308	252	219	196	179	167	156	148	140	134	129	124	120	116	113	107	102	86	77	71	67	64	62	61
900	406	288	235	204	183	168	156	146	138	131	125	120	116	112	109	105	100	95	80	72	66	62	60	58	57
950	378	268	219	190	171	156	145	136	129	122	117	112	108	105	101	98	93	89	75	67	62	58	56	54	53
1000	351	249	204	177	159	145	135	126	120	114	109	104	101	97	94	91	87	83	69	62	57	54	52	51	50
1050	325	231	189	164	147	134	125	117	111	105	101	97	93	90	87	85	80	76	64	57	53	50	48	47	46
1100	282	200	164	142	128	117	108	102	96	91	87	84	81	78	76	73	70	66	56	50	46	43	42	41	40
1150	257	182	149	129	116	106	98	92	87	83	79	76	73	71	69	67	63	60	51	45	42	39	38	37	36
1200	211	149	122	106	95	87	81	76	72	68	65	63	60	58	56	55	52	50	42	37	34	32	31	30	30
1250	183	130	106	92	83	76	70	66	62	59	57	54	52	51	49	48	45	43	36	32	30	28	27	26	26
1300	154	109	89	78	70	64	59	55	52	50	48	46	44	43	41	40	38	36	30	27	25	24	23	22	22

Table 3

GUIDELINES FOR LEFT-TURN LANE AT UNSIGNALIZED INTERSECTION

Four-lane Roadway Opposing Volume (vph)	Advancing Volume - vph								
	Undivided								
	Left-turn - percent								
	1.0	2.5	5.0	10	15	20	30	40	50
50	1615	1030	737	536	450	402	351	328	321
100	1431	912	653	475	399	356	311	291	285
150	1271	810	580	421	354	316	276	258	253
200	1140	727	521	378	318	284	248	232	227
250	1028	655	469	341	287	256	223	209	205
300	914	582	417	303	255	227	198	186	182
350	824	525	376	273	230	205	179	167	164
400	739	471	338	245	206	184	161	150	147
450	658	419	300	218	183	164	143	134	131
500	590	376	269	196	164	147	128	120	117
550	529	337	242	176	147	132	115	107	105
600	470	300	215	156	131	117	102	96	94
650	419	267	191	139	117	104	91	85	83
700	379	242	173	126	106	94	82	77	76
750	342	218	156	113	95	85	74	69	68
800	308	196	140	102	86	77	67	62	61
850	276	176	126	91	77	69	60	56	55
900	245	156	112	81	68	61	53	50	49
950	216	137	98	71	60	54	47	44	43
1000	195	124	89	65	54	49	42	40	39
1100	150	96	68	50	42	37	33	30	30
1200	114	73	52	38	32	28	25	23	23
1300	91	58	42	30	25	23	20	19	18
1400	74	47	34	24	21	18	16	15	15
1500	60	38	27	20	17	15	13	12	12
1600	49	31	22	16	14	12	11	10	10
1700	41	26	19	13	11	10	9	8	8
1800	31	20	14	10	9	8	7	6	6

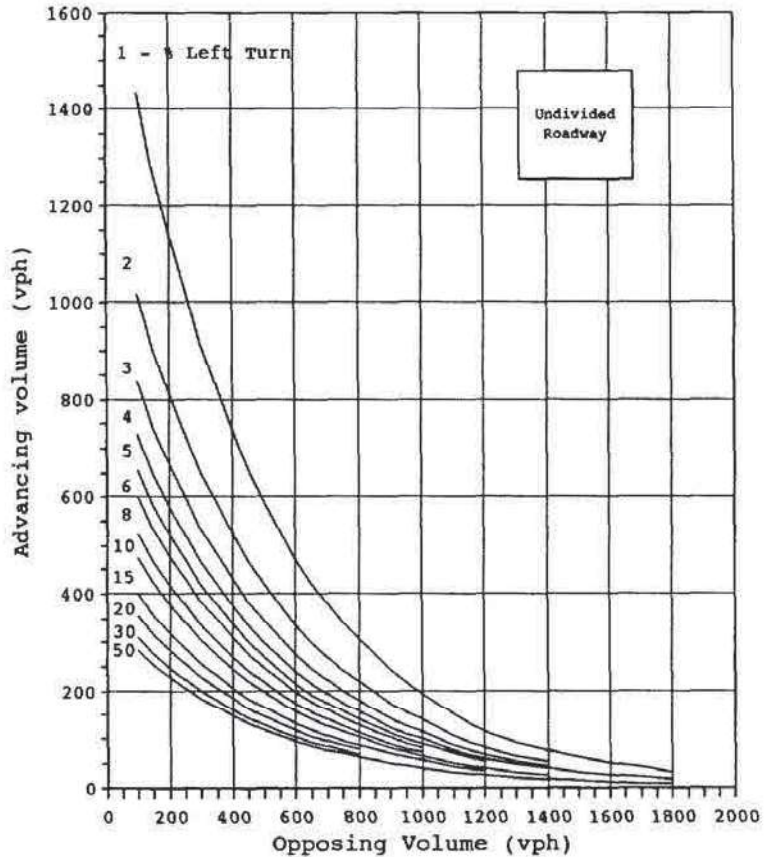


Figure 3 Guidelines for Left-turn Lane at Unsignalized Intersection - Four-lane, Undivided Roadway

Table 2

GUIDELINES FOR LEFT-TURN LANE AT UNSIGNALIZED INTERSECTION

Two-lane Roadway Opposing Volume (vph)	Advancing Volume - vph																				Operating Speed = 50 mph Speed Limit = 55 mph Design Speed = 60 mph				
	Left-turn - percent																								
	0.5	1.0	1.5	2.0	2.5	3.0	3.5	4.0	4.5	5.0	5.5	6.0	6.5	7.0	7.5	8.0	9.0	10	15	20	25	30	35	40	50
50	1723	1221	1000	868	778	712	661	620	586	557	533	512	493	476	461	448	425	405	340	304	281	265	255	248	243
100	1517	1075	880	764	685	627	582	546	516	491	469	451	434	419	406	394	374	357	300	268	247	233	224	218	214
150	1355	961	786	683	612	560	520	488	461	439	419	402	388	375	363	352	334	319	268	239	221	209	200	195	191
200	1238	878	718	624	559	512	475	446	421	401	383	368	354	342	331	322	305	291	245	218	202	191	183	178	175
250	1112	788	645	560	502	460	427	400	378	360	344	330	318	307	298	289	274	262	220	196	181	171	164	160	157
300	1031	731	598	520	466	426	396	371	351	334	319	306	295	285	276	268	254	242	204	182	168	159	152	148	145
350	940	667	546	474	425	389	361	338	320	304	291	279	269	260	252	244	232	221	186	166	153	145	139	135	133
400	866	614	503	436	391	358	333	312	295	280	268	257	248	240	232	225	214	204	171	153	141	133	128	125	122
450	795	564	461	401	359	329	305	286	271	257	246	236	227	220	213	207	196	187	157	140	130	122	118	114	112
500	726	515	421	366	328	300	279	261	247	235	225	216	208	201	194	189	179	171	143	128	118	112	107	105	102
550	673	477	391	339	304	278	258	242	229	218	208	200	193	186	180	175	166	158	133	119	110	104	100	97	95
600	637	452	370	321	288	263	245	229	217	206	197	189	182	176	171	166	157	150	126	112	104	98	94	92	90
650	588	417	341	296	266	243	226	212	200	190	182	175	168	163	157	153	145	138	116	104	96	91	87	85	83
700	555	394	322	280	251	230	213	200	189	180	172	165	159	153	149	144	137	131	110	98	90	85	82	80	78
750	509	361	295	256	230	210	195	183	173	165	157	151	146	141	136	132	125	120	100	90	83	78	75	73	72
800	463	328	269	233	209	192	178	167	158	150	143	138	133	128	124	120	114	109	92	82	75	71	69	67	65
850	434	308	252	219	196	179	167	156	148	140	134	129	124	120	116	113	107	102	86	77	71	67	64	62	61
900	406	288	235	204	183	168	156	146	138	131	125	120	116	112	109	105	100	95	80	72	66	62	60	58	57
950	378	268	219	190	171	156	145	136	129	122	117	112	108	105	101	98	93	89	75	67	62	58	56	54	53
1000	351	249	204	177	159	145	135	126	120	114	109	104	101	97	94	91	87	83	69	62	57	54	52	51	50
1050	325	231	189	164	147	134	125	117	111	105	101	97	93	90	87	85	80	76	64	57	53	50	48	47	46
1100	282	200	164	142	128	117	108	102	96	91	87	84	81	78	76	73	70	66	56	50	46	43	42	41	40
1150	257	182	149	129	116	106	98	92	87	83	79	76	73	71	69	67	63	60	51	45	42	39	38	37	36
1200	211	149	122	106	95	87	81	76	72	68	65	63	60	58	56	55	52	50	42	37	34	32	31	30	30
1250	183	130	106	92	83	76	70	66	62	59	57	54	52	51	49	48	45	43	36	32	30	28	27	26	26
1300	154	109	89	78	70	64	59	55	52	50	48	46	44	43	41	40	38	36	30	27	25	24	23	22	22

Table 3

GUIDELINES FOR LEFT-TURN LANE AT UNSIGNALIZED INTERSECTION

Four-lane Roadway Opposing Volume (vph)	Advancing Volume - vph									
	Undivided									
	Left-turn - percent									
	1.0	2.5	5.0	10	15	20	30	40	50	
50	1615	1030	737	536	450	402	351	328	321	
100	1431	912	653	475	399	356	311	291	285	
150	1271	810	580	421	354	316	276	258	253	
200	1140	727	521	378	318	284	248	232	227	
250	1028	655	469	341	287	256	223	209	205	
300	914	582	417	303	255	227	198	186	182	
350	824	525	376	273	230	205	179	167	164	
400	739	471	338	245	206	184	161	150	147	
450	658	419	300	218	183	164	143	134	131	
500	590	376	269	196	164	147	128	120	117	
550	529	337	242	176	147	132	115	107	105	
600	470	300	215	156	131	117	102	96	94	
650	419	267	191	139	117	104	91	85	83	
700	379	242	173	126	106	94	82	77	76	
750	342	218	156	113	95	85	74	69	68	
800	308	196	140	102	86	77	67	62	61	
850	276	176	126	91	77	69	60	56	55	
900	245	156	112	81	68	61	53	50	49	
950	216	137	98	71	60	54	47	44	43	
1000	195	124	89	65	54	49	42	40	39	
1100	150	96	68	50	42	37	33	30	30	
1200	114	73	52	38	32	28	25	23	23	
1300	91	58	42	30	25	23	20	19	18	
1400	74	47	34	24	21	18	16	15	15	
1500	60	38	27	20	17	15	13	12	12	
1600	49	31	22	16	14	12	11	10	10	
1700	41	26	19	13	11	10	9	8	8	
1800	31	20	14	10	9	8	7	6	6	

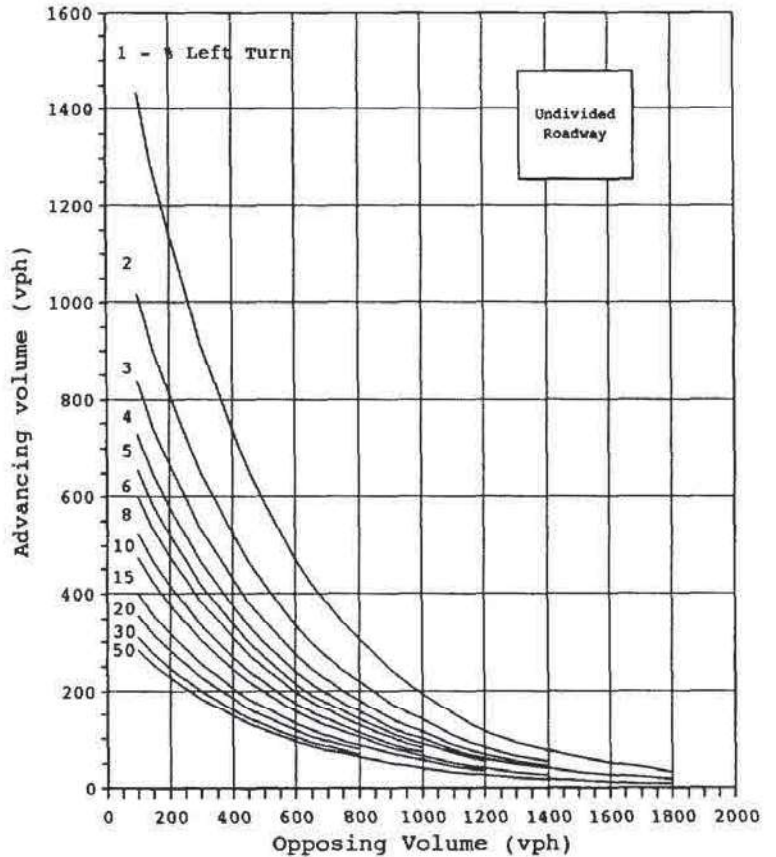


Figure 3 Guidelines for Left-turn Lane at Unsignalized Intersection - Four-lane, Undivided Roadway

Table 2

GUIDELINES FOR LEFT-TURN LANE AT UNSIGNALIZED INTERSECTION

Two-lane Roadway Opposing Volume (vph)	Advancing Volume - vph																				Operating Speed = 50 mph Speed Limit = 55 mph Design Speed = 60 mph							
	Left-turn - percent																											
	0.5	1.0	1.5	2.0	2.5	3.0	3.5	4.0	4.5	5.0	5.5	6.0	6.5	7.0	7.5	8.0	9.0	10	15	20	25	30	35	40	50			
50	1723	1221	1000	868	778	712	661	620	586	557	533	512	493	476	461	448	425	405	340	304	281	265	255	248	243			
100	1517	1075	880	764	685	627	582	546	516	491	469	451	434	419	406	394	374	357	300	268	247	233	224	218	214			
150	1355	961	786	683	612	560	520	488	461	439	419	402	388	375	363	352	334	319	268	239	221	209	200	195	191			
200	1238	878	718	624	559	512	475	446	421	401	383	368	354	342	331	322	305	291	245	218	202	191	183	178	175			
250	1112	788	645	560	502	460	427	400	378	360	344	330	318	307	298	289	274	262	220	196	181	171	164	160	157			
300	1031	731	598	520	466	426	396	371	351	334	319	306	295	285	276	268	254	242	204	182	168	159	152	148	145			
350	940	667	546	474	425	389	361	338	320	304	291	279	269	260	252	244	232	221	186	166	153	145	139	135	133			
400	866	614	503	436	391	358	333	312	295	280	268	257	248	240	232	225	214	204	171	153	141	133	128	125	122			
450	795	564	461	401	359	329	305	286	271	257	246	236	227	220	213	207	196	187	157	140	130	122	118	114	112			
500	726	515	421	366	328	300	279	261	247	235	225	216	208	201	194	189	179	171	143	128	118	112	107	105	102			
550	673	477	391	339	304	278	258	242	229	218	208	200	193	186	180	175	166	158	133	119	110	104	100	97	95			
600	637	452	370	321	288	263	245	229	217	206	197	189	182	176	171	166	157	150	126	112	104	98	94	92	90			
650	588	417	341	296	266	243	226	212	200	190	182	175	168	163	157	153	145	138	116	104	96	91	87	85	83			
700	555	394	322	280	251	230	213	200	189	180	172	165	159	153	149	144	137	131	110	98	90	85	82	80	78			
750	509	361	295	256	230	210	195	183	173	165	157	151	146	141	136	132	125	120	100	90	83	78	75	73	72			
800	463	328	269	233	209	192	178	167	158	150	143	138	133	128	124	120	114	109	92	82	75	71	69	67	65			
850	434	308	252	219	196	179	167	156	148	140	134	129	124	120	116	113	107	102	86	77	71	67	64	62	61			
900	406	288	235	204	183	168	156	146	138	131	125	120	116	112	109	105	100	95	80	72	66	62	60	58	57			
950	378	268	219	190	171	156	145	136	129	122	117	112	108	105	101	98	93	89	75	67	62	58	56	54	53			
1000	351	249	204	177	159	145	135	126	120	114	109	104	101	97	94	91	87	83	69	62	57	54	52	51	50			
1050	325	231	189	164	147	134	125	117	111	105	101	97	93	90	87	85	80	76	64	57	53	50	48	47	46			
1100	282	200	164	142	128	117	108	102	96	91	87	84	81	78	76	73	70	66	56	50	46	43	42	41	40			
1150	257	182	149	129	116	106	98	92	87	83	79	76	73	71	69	67	63	60	51	45	42	39	38	37	36			
1200	211	149	122	106	95	87	81	76	72	68	65	63	60	58	56	55	52	50	42	37	34	32	31	30	30			
1250	183	130	106	92	83	76	70	66	62	59	57	54	52	51	49	48	45	43	36	32	30	28	27	26	26			
1300	154	109	89	78	70	64	59	55	52	50	48	46	44	43	41	40	38	36	30	27	25	24	23	22	22			

Table 3

GUIDELINES FOR LEFT-TURN LANE AT UNSIGNALIZED INTERSECTION

Four-lane Roadway Opposing Volume (vph)	Advancing Volume - vph									Undivided
	Left-turn - percent									
	1.0	2.5	5.0	10	15	20	30	40	50	
50	1615	1030	737	536	450	402	351	328	321	
100	1431	912	653	475	399	356	311	291	285	
150	1271	810	580	421	354	316	276	258	253	
200	1140	727	521	378	318	284	248	232	227	
250	1028	655	469	341	287	256	223	209	205	
300	914	582	417	303	255	227	198	186	182	
350	824	525	376	273	230	205	179	167	164	
400	739	471	338	245	206	184	161	150	147	
450	658	419	300	218	183	164	143	134	131	
500	590	376	269	196	164	147	128	120	117	
550	529	337	242	176	147	132	115	107	105	
600	470	300	215	156	131	117	102	96	94	
650	419	267	191	139	117	104	91	85	83	
700	379	242	173	126	106	94	82	77	76	
750	342	218	156	113	95	85	74	69	68	
800	308	196	140	102	86	77	67	62	61	
850	276	176	126	91	77	69	60	56	55	
900	245	156	112	81	68	61	53	50	49	
950	216	137	98	71	60	54	47	44	43	
1000	195	124	89	65	54	49	42	40	39	
1100	150	96	68	50	42	37	33	30	30	
1200	114	73	52	38	32	28	25	23	23	
1300	91	58	42	30	25	23	20	19	18	
1400	74	47	34	24	21	18	16	15	15	
1500	60	38	27	20	17	15	13	12	12	
1600	49	31	22	16	14	12	11	10	10	
1700	41	26	19	13	11	10	9	8	8	
1800	31	20	14	10	9	8	7	6	6	

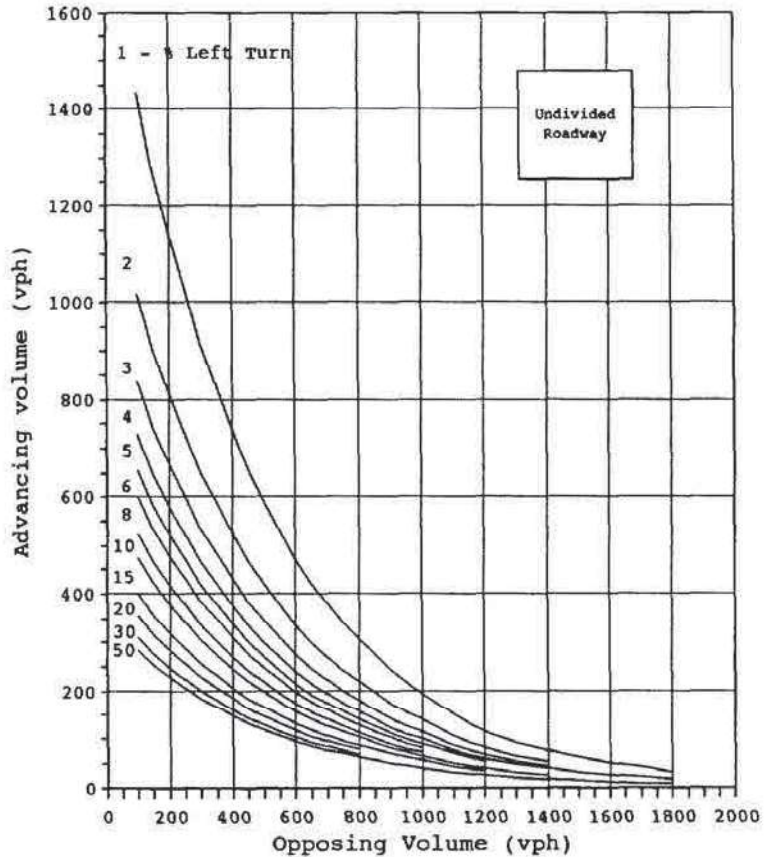


Figure 3 Guidelines for Left-turn Lane at Unsignalized Intersection - Four-lane, Undivided Roadway

Table 2

GUIDELINES FOR LEFT-TURN LANE AT UNSIGNALIZED INTERSECTION

Two-lane Roadway Opposing Volume (vph)	Advancing Volume - vph																				Operating Speed = 50 mph Speed Limit = 55 mph Design Speed = 60 mph				
	Left-turn - percent																								
	0.5	1.0	1.5	2.0	2.5	3.0	3.5	4.0	4.5	5.0	5.5	6.0	6.5	7.0	7.5	8.0	9.0	10	15	20	25	30	35	40	50
50	1723	1221	1000	868	778	712	661	620	586	557	533	512	493	476	461	448	425	405	340	304	281	265	255	248	243
100	1517	1075	880	764	685	627	582	546	516	491	469	451	434	419	406	394	374	357	300	268	247	233	224	218	214
150	1355	961	786	683	612	560	520	488	461	439	419	402	388	375	363	352	334	319	268	239	221	209	200	195	191
200	1238	878	718	624	559	512	475	446	421	401	383	368	354	342	331	322	305	291	245	218	202	191	183	178	175
250	1112	788	645	560	502	460	427	400	378	360	344	330	318	307	298	289	274	262	220	196	181	171	164	160	157
300	1031	731	598	520	466	426	396	371	351	334	319	306	295	285	276	268	254	242	204	182	168	159	152	148	145
350	940	667	546	474	425	389	361	338	320	304	291	279	269	260	252	244	232	221	186	166	153	145	139	135	133
400	866	614	503	436	391	358	333	312	295	280	268	257	248	240	232	225	214	204	171	153	141	133	128	125	122
450	795	564	461	401	359	329	305	286	271	257	246	236	227	220	213	207	196	187	157	140	130	122	118	114	112
500	726	515	421	366	328	300	279	261	247	235	225	216	208	201	194	189	179	171	143	128	118	112	107	105	102
550	673	477	391	339	304	278	258	242	229	218	208	200	193	186	180	175	166	158	133	119	110	104	100	97	95
600	637	452	370	321	288	263	245	229	217	206	197	189	182	176	171	166	157	150	126	112	104	98	94	92	90
650	588	417	341	296	266	243	226	212	200	190	182	175	168	163	157	153	145	138	116	104	96	91	87	85	83
700	555	394	322	280	251	230	213	200	189	180	172	165	159	153	149	144	137	131	110	98	90	85	82	80	78
750	509	361	295	256	230	210	195	183	173	165	157	151	146	141	136	132	125	120	100	90	83	78	75	73	72
800	463	328	269	233	209	192	178	167	158	150	143	138	133	128	124	120	114	109	92	82	75	71	69	67	65
850	434	308	252	219	196	179	167	156	148	140	134	129	124	120	116	113	107	102	86	77	71	67	64	62	61
900	406	288	235	204	183	168	156	146	138	131	125	120	116	112	109	105	100	95	80	72	66	62	60	58	57
950	378	268	219	190	171	156	145	136	129	122	117	112	108	105	101	98	93	89	75	67	62	58	56	54	53
1000	351	249	204	177	159	145	135	126	120	114	109	104	101	97	94	91	87	83	69	62	57	54	52	51	50
1050	325	231	189	164	147	134	125	117	111	105	101	97	93	90	87	85	80	76	64	57	53	50	48	47	46
1100	282	200	164	142	128	117	108	102	96	91	87	84	81	78	76	73	70	66	56	50	46	43	42	41	40
1150	257	182	149	129	116	106	98	92	87	83	79	76	73	71	69	67	63	60	51	45	42	39	38	37	36
1200	211	149	122	106	95	87	81	76	72	68	65	63	60	58	56	55	52	50	42	37	34	32	31	30	30
1250	183	130	106	92	83	76	70	66	62	59	57	54	52	51	49	48	45	43	36	32	30	28	27	26	26
1300	154	109	89	78	70	64	59	55	52	50	48	46	44	43	41	40	38	36	30	27	25	24	23	22	22

Table 3

GUIDELINES FOR LEFT-TURN LANE AT UNSIGNALIZED INTERSECTION

Four-lane Roadway Opposing Volume (vph)	Advancing Volume - vph								
	Undivided								
	Left-turn - percent								
	1.0	2.5	5.0	10	15	20	30	40	50
50	1615	1030	737	536	450	402	351	328	321
100	1431	912	653	475	399	356	311	291	285
150	1271	810	580	421	354	316	276	258	253
200	1140	727	521	378	318	284	248	232	227
250	1028	655	469	341	287	256	223	209	205
300	914	582	417	303	255	227	198	186	182
350	824	525	376	273	230	205	179	167	164
400	739	471	338	245	206	184	161	150	147
450	658	419	300	218	183	164	143	134	131
500	590	376	269	196	164	147	128	120	117
550	529	337	242	176	147	132	115	107	105
600	470	300	215	156	131	117	102	96	94
650	419	267	191	139	117	104	91	85	83
700	379	242	173	126	106	94	82	77	76
750	342	218	156	113	95	85	74	69	68
800	308	196	140	102	86	77	67	62	61
850	276	176	126	91	77	69	60	56	55
900	245	156	112	81	68	61	53	50	49
950	216	137	98	71	60	54	47	44	43
1000	195	124	89	65	54	49	42	40	39
1100	150	96	68	50	42	37	33	30	30
1200	114	73	52	38	32	28	25	23	23
1300	91	58	42	30	25	23	20	19	18
1400	74	47	34	24	21	18	16	15	15
1500	60	38	27	20	17	15	13	12	12
1600	49	31	22	16	14	12	11	10	10
1700	41	26	19	13	11	10	9	8	8
1800	31	20	14	10	9	8	7	6	6

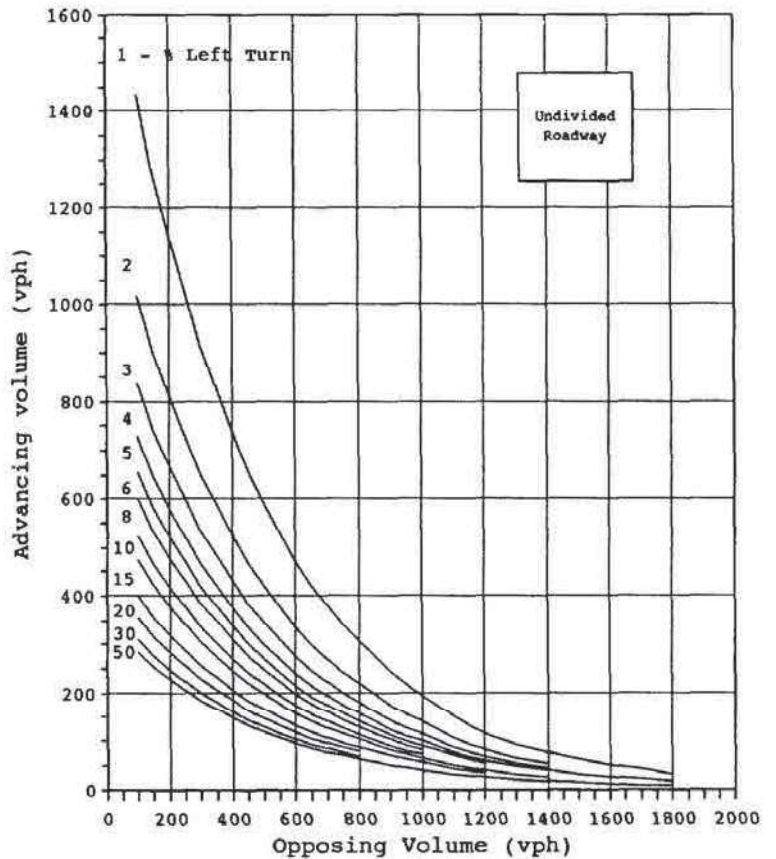


Figure 3 Guidelines for Left-turn Lane at Unsignalized Intersection - Four-lane, Undivided Roadway

Table 1

GUIDELINES FOR LEFT-TURN LANE AT UNSIGNALIZED INTERSECTION

Two-lane Roadway Opposing Volume (vph)	Advancing Volume - vph																				Operating Speed = 30 mph Speed Limit = 35 mph Design Speed = 40 mph				
	Left-turn - percent																								
	0.5	1.0	1.5	2.0	2.5	3.0	3.5	4.0	4.5	5.0	5.5	6.0	6.5	7.0	7.5	8.0	9.0	10	15	20	25	30	35	40	50
50	2224	1576	1290	1120	1005	920	854	800	757	720	688	660	636	615	596	578	548	523	439	392	362	342	329	320	314
100	1958	1388	1136	987	885	810	752	705	666	634	606	582	560	541	524	509	483	460	387	345	319	301	290	282	276
150	1749	1240	1015	881	790	723	671	630	595	566	541	520	501	484	468	455	431	411	346	308	285	269	259	252	247
200	1598	1133	927	805	722	661	613	575	544	517	494	475	457	442	428	415	394	376	316	282	260	246	236	230	225
250	1436	1018	833	723	649	594	551	517	489	465	444	426	411	397	385	373	354	338	284	253	234	221	212	207	203
300	1331	944	773	671	601	550	511	479	453	431	412	395	381	368	357	346	328	313	263	235	217	205	197	192	188
350	1214	861	704	612	548	502	466	437	413	393	376	361	347	336	325	316	299	285	240	214	198	187	180	175	171
400	1118	793	649	564	505	462	429	403	381	362	346	332	320	309	300	291	276	263	221	197	182	172	165	161	158
450	1026	728	596	517	464	424	394	369	349	332	318	305	294	284	275	267	253	241	203	181	167	158	152	148	145
500	937	664	544	472	423	388	360	337	319	303	290	278	268	259	251	244	231	220	185	165	153	144	139	135	132
550	869	616	504	438	393	359	334	313	296	281	269	258	249	240	233	226	214	204	172	153	142	134	129	125	123
600	823	583	477	414	372	340	316	296	280	266	254	244	235	227	220	214	203	193	162	145	134	127	122	118	116
650	759	538	441	382	343	314	291	273	258	246	235	225	217	210	203	197	187	178	150	134	124	117	112	109	107
700	717	508	416	361	324	296	275	258	244	232	222	213	205	198	192	186	177	168	142	126	117	110	106	103	101
750	657	466	381	331	297	272	252	236	223	213	203	195	188	182	176	171	162	154	130	116	107	101	97	95	93
800	598	424	347	301	270	247	230	215	203	194	185	178	171	165	160	155	147	141	118	105	97	92	88	86	84
850	560	397	325	282	253	232	215	202	191	181	173	166	160	155	150	146	138	132	111	99	91	86	83	81	79
900	524	371	304	264	237	217	201	188	178	169	162	156	150	145	140	136	129	123	103	92	85	81	77	75	74
950	488	346	283	246	221	202	187	176	166	158	151	145	140	135	131	127	120	115	96	86	80	75	72	70	69
1000	454	322	263	229	205	188	174	163	154	147	140	135	130	125	121	118	112	107	90	80	74	70	67	65	64
1050	420	298	244	212	190	174	161	151	143	136	130	125	120	116	112	109	103	99	83	74	68	65	62	60	59
1100	365	258	212	184	165	151	140	131	124	118	113	108	104	101	98	95	90	86	72	64	59	56	54	52	51
1150	331	235	192	167	150	137	127	119	113	107	102	98	95	92	89	86	82	78	65	58	54	51	49	48	47
1200	272	193	158	137	123	112	104	98	93	88	84	81	78	75	73	71	67	64	54	48	44	42	40	39	38
1250	236	168	137	119	107	98	91	85	80	76	73	70	68	65	63	61	58	56	47	42	38	36	35	34	33
1300	199	141	115	100	90	82	76	72	68	64	62	59	57	55	53	52	49	47	39	35	32	31	29	29	28

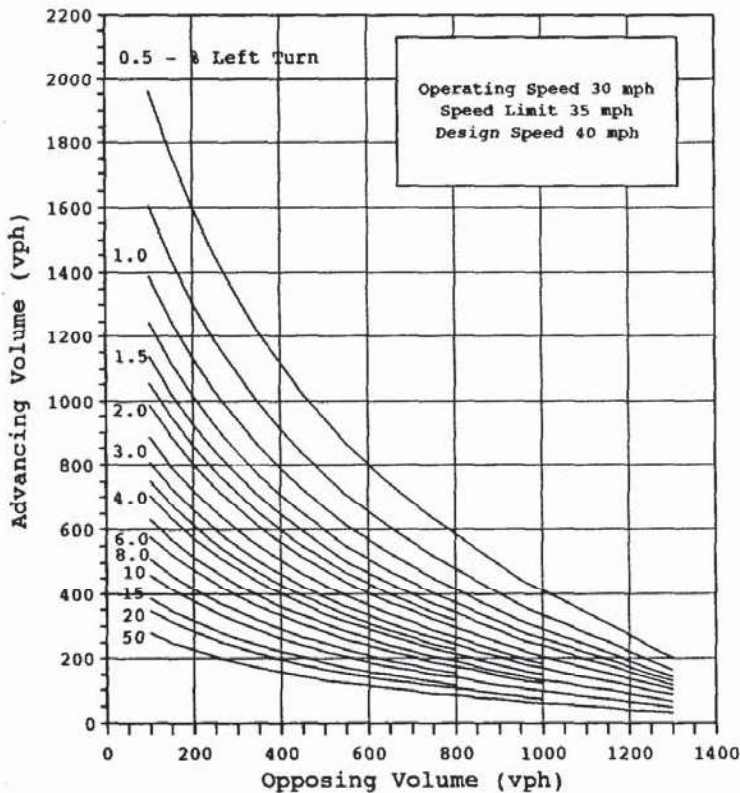


Figure 1 Guidelines for Left-turn Lane at Unsignalized Intersection - Two-lane Roadway

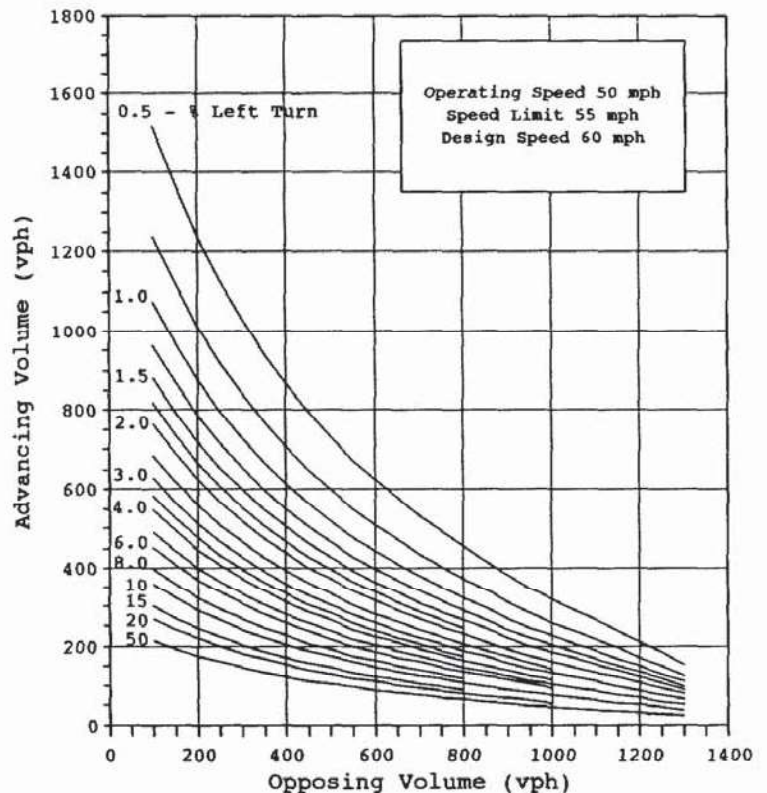


Figure 2 Guidelines for Left-turn Lane at Unsignalized Intersection - Two-lane Roadway

Table 1

GUIDELINES FOR LEFT-TURN LANE AT UNSIGNALIZED INTERSECTION

Two-lane Roadway Opposing Volume (vph)	Advancing Volume - vph																				Operating Speed = 30 mph Speed Limit = 35 mph Design Speed = 40 mph				
	Left-turn - percent																								
	0.5	1.0	1.5	2.0	2.5	3.0	3.5	4.0	4.5	5.0	5.5	6.0	6.5	7.0	7.5	8.0	9.0	10	15	20	25	30	35	40	50
50	2224	1576	1290	1120	1005	920	854	800	757	720	688	660	636	615	596	578	548	523	439	392	362	342	329	320	314
100	1958	1388	1136	987	885	810	752	705	666	634	606	582	560	541	524	509	483	460	387	345	319	301	290	282	276
150	1749	1240	1015	881	790	723	671	630	595	566	541	520	501	484	468	455	431	411	346	308	285	269	259	252	247
200	1598	1133	927	805	722	661	613	575	544	517	494	475	457	442	428	415	394	376	316	282	260	246	236	230	225
250	1436	1018	833	723	649	594	551	517	489	465	444	426	411	397	385	373	354	338	284	253	234	221	212	207	203
300	1331	944	773	671	601	550	511	479	453	431	412	395	381	368	357	346	328	313	263	235	217	205	197	192	188
350	1214	861	704	612	548	502	466	437	413	393	376	361	347	336	325	316	299	285	240	214	198	187	180	175	171
400	1118	793	649	564	505	462	429	403	381	362	346	332	320	309	300	291	276	263	221	197	182	172	165	161	158
450	1026	728	596	517	464	424	394	369	349	332	318	305	294	284	275	267	253	241	203	181	167	158	152	148	145
500	937	664	544	472	423	388	360	337	319	303	290	278	268	259	251	244	231	220	185	165	153	144	139	135	132
550	869	616	504	438	393	359	334	313	296	281	269	258	249	240	233	226	214	204	172	153	142	134	129	125	123
600	823	583	477	414	372	340	316	296	280	266	254	244	235	227	220	214	203	193	162	145	134	127	122	118	116
650	759	538	441	382	343	314	291	273	258	246	235	225	217	210	203	197	187	178	150	134	124	117	112	109	107
700	717	508	416	361	324	296	275	258	244	232	222	213	205	198	192	186	177	168	142	126	117	110	106	103	101
750	657	466	381	331	297	272	252	236	223	213	203	195	188	182	176	171	162	154	130	116	107	101	97	95	93
800	598	424	347	301	270	247	230	215	203	194	185	178	171	165	160	155	147	141	118	105	97	92	88	86	84
850	560	397	325	282	253	232	215	202	191	181	173	166	160	155	150	146	138	132	111	99	91	86	83	81	79
900	524	371	304	264	237	217	201	188	178	169	162	156	150	145	140	136	129	123	103	92	85	81	77	75	74
950	488	346	283	246	221	202	187	176	166	158	151	145	140	135	131	127	120	115	96	86	80	75	72	70	69
1000	454	322	263	229	205	188	174	163	154	147	140	135	130	125	121	118	112	107	90	80	74	70	67	65	64
1050	420	298	244	212	190	174	161	151	143	136	130	125	120	116	112	109	103	99	83	74	68	65	62	60	59
1100	365	258	212	184	165	151	140	131	124	118	113	108	104	101	98	95	90	86	72	64	59	56	54	52	51
1150	331	235	192	167	150	137	127	119	113	107	102	98	95	92	89	86	82	78	65	58	54	51	49	48	47
1200	272	193	158	137	123	112	104	98	93	88	84	81	78	75	73	71	67	64	54	48	44	42	40	39	38
1250	236	168	137	119	107	98	91	85	80	76	73	70	68	65	63	61	58	56	47	42	38	36	35	34	33
1300	199	141	115	100	90	82	76	72	68	64	62	59	57	55	53	52	49	47	39	35	32	31	29	29	28

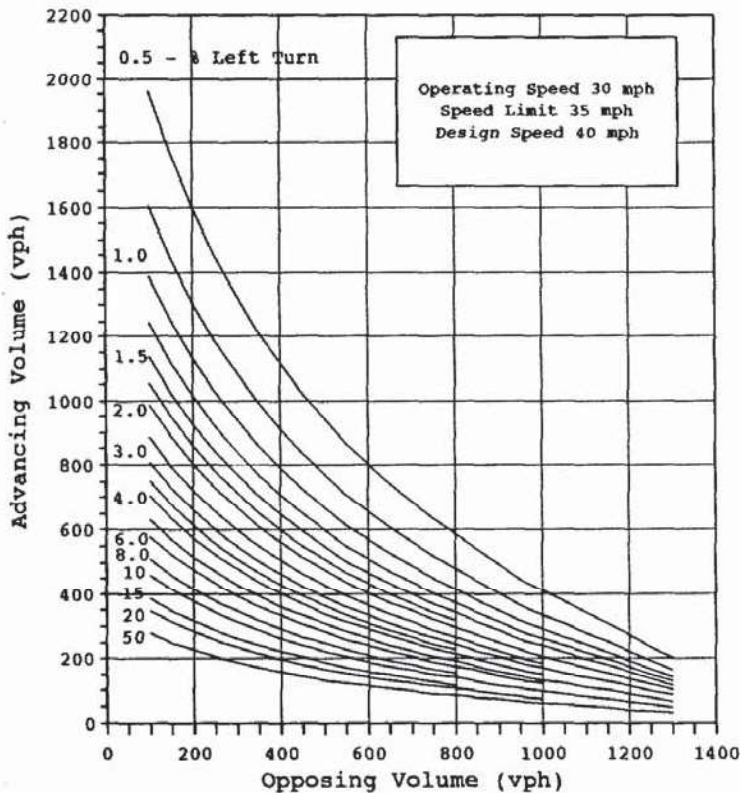


Figure 1 Guidelines for Left-turn Lane at Unsignalized Intersection - Two-lane Roadway

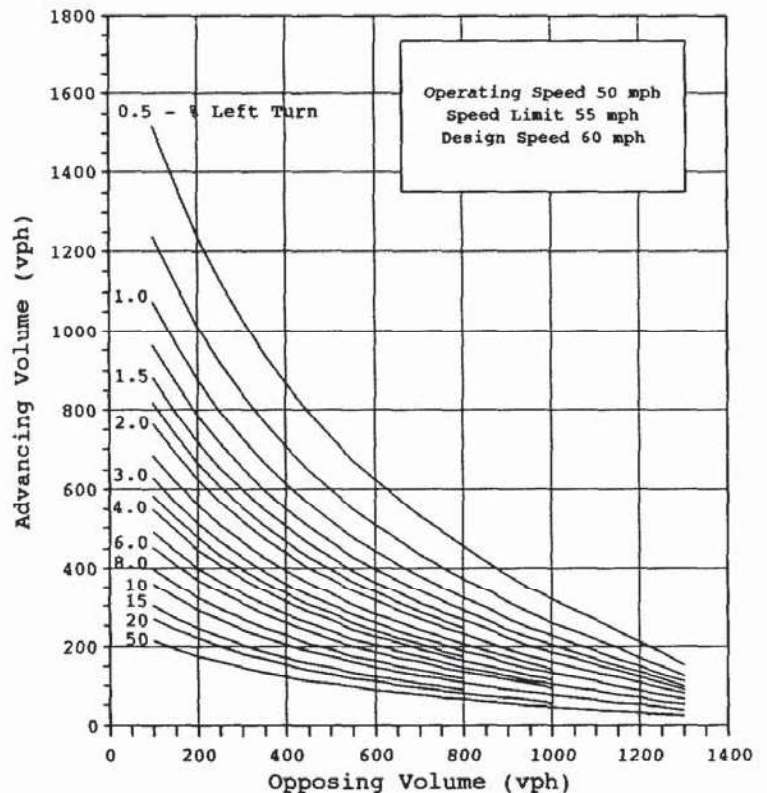


Figure 2 Guidelines for Left-turn Lane at Unsignalized Intersection - Two-lane Roadway

Table 1

GUIDELINES FOR LEFT-TURN LANE AT UNSIGNALIZED INTERSECTION

Two-lane Roadway Opposing Volume (vph)	Advancing Volume - vph																				Operating Speed = 30 mph Speed Limit = 35 mph Design Speed = 40 mph							
	Left-turn - percent																											
	0.5	1.0	1.5	2.0	2.5	3.0	3.5	4.0	4.5	5.0	5.5	6.0	6.5	7.0	7.5	8.0	9.0	10	15	20	25	30	35	40	50			
50	2224	1576	1290	1120	1005	920	854	800	757	720	688	660	636	615	596	578	548	523	439	392	362	342	329	320	314			
100	1958	1388	1136	987	885	810	752	705	666	634	606	582	560	541	524	509	483	460	387	345	319	301	290	282	276			
150	1749	1240	1015	881	790	723	671	630	595	566	541	520	501	484	468	455	431	411	346	308	285	269	259	252	247			
200	1598	1133	927	805	722	661	613	575	544	517	494	475	457	442	428	415	394	376	316	282	260	246	236	230	225			
250	1436	1018	833	723	649	594	551	517	489	465	444	426	411	397	385	373	354	338	284	253	234	221	212	207	203			
300	1331	944	773	671	601	550	511	479	453	431	412	395	381	368	357	346	328	313	263	235	217	205	197	192	188			
350	1214	861	704	612	548	502	466	437	413	393	376	361	347	336	325	316	299	285	240	214	198	187	180	175	171			
400	1118	793	649	564	505	462	429	403	381	362	346	332	320	309	300	291	276	263	221	197	182	172	165	161	158			
450	1026	728	596	517	464	424	394	369	349	332	318	305	294	284	275	267	253	241	203	181	167	158	152	148	145			
500	937	664	544	472	423	388	360	337	319	303	290	278	268	259	251	244	231	220	185	165	153	144	139	135	132			
550	869	616	504	438	393	359	334	313	296	281	269	258	249	240	233	226	214	204	172	153	142	134	129	125	123			
600	823	583	477	414	372	340	316	296	280	266	254	244	235	227	220	214	203	193	162	145	134	127	122	118	116			
650	759	538	441	382	343	314	291	273	258	246	235	225	217	210	203	197	187	178	150	134	124	117	112	109	107			
700	717	508	416	361	324	296	275	258	244	232	222	213	205	198	192	186	177	168	142	126	117	110	106	103	101			
750	657	466	381	331	297	272	252	236	223	213	203	195	188	182	176	171	162	154	130	116	107	101	97	95	93			
800	598	424	347	301	270	247	230	215	203	194	185	178	171	165	160	155	147	141	118	105	97	92	88	86	84			
850	560	397	325	282	253	232	215	202	191	181	173	166	160	155	150	146	138	132	111	99	91	86	83	81	79			
900	524	371	304	264	237	217	201	188	178	169	162	156	150	145	140	136	129	123	103	92	85	81	77	75	74			
950	488	346	283	246	221	202	187	176	166	158	151	145	140	135	131	127	120	115	96	86	80	75	72	70	69			
1000	454	322	263	229	205	188	174	163	154	147	140	135	130	125	121	118	112	107	90	80	74	70	67	65	64			
1050	420	298	244	212	190	174	161	151	143	136	130	125	120	116	112	109	103	99	83	74	68	65	62	60	59			
1100	365	258	212	184	165	151	140	131	124	118	113	108	104	101	98	95	90	86	72	64	59	56	54	52	51			
1150	331	235	192	167	150	137	127	119	113	107	102	98	95	92	89	86	82	78	65	58	54	51	49	48	47			
1200	272	193	158	137	123	112	104	98	93	88	84	81	78	75	73	71	67	64	54	48	44	42	40	39	38			
1250	236	168	137	119	107	98	91	85	80	76	73	70	68	65	63	61	58	56	47	42	38	36	35	34	33			
1300	199	141	115	100	90	82	76	72	68	64	62	59	57	55	53	52	49	47	39	35	32	31	29	29	28			

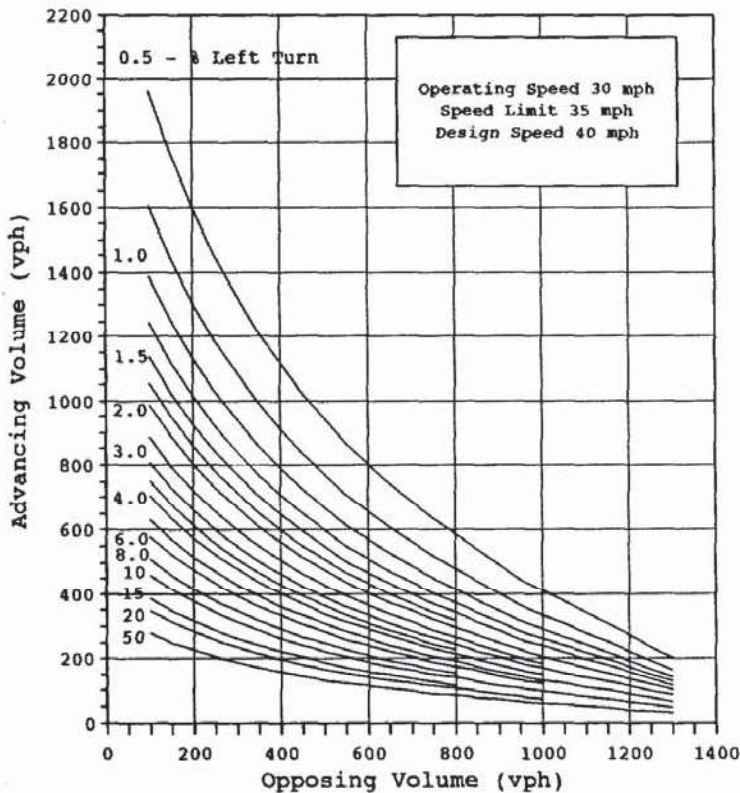


Figure 1 Guidelines for Left-turn Lane at Unsignalized Intersection - Two-lane Roadway

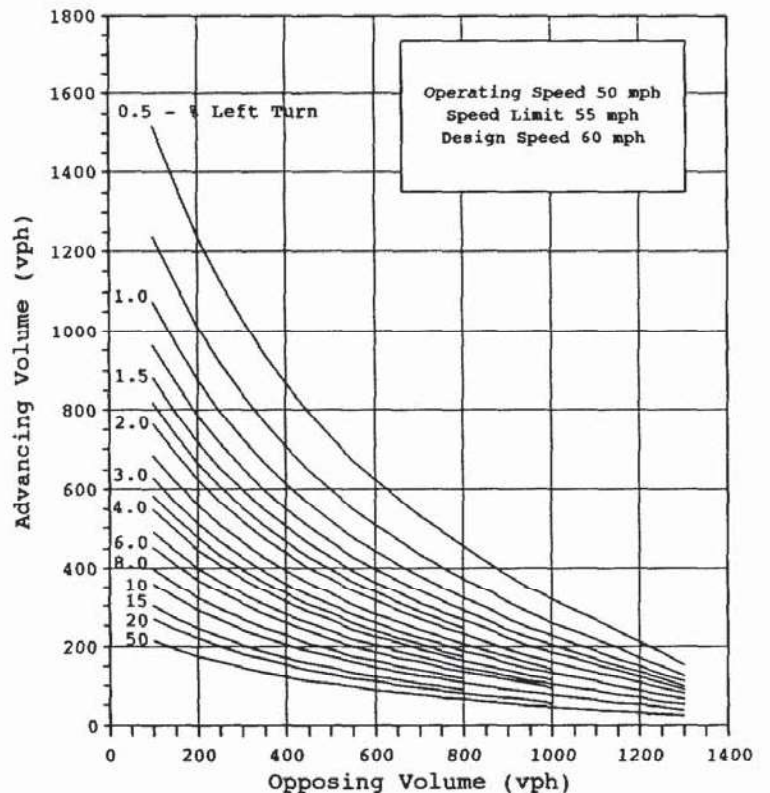


Figure 2 Guidelines for Left-turn Lane at Unsignalized Intersection - Two-lane Roadway

Table 1

GUIDELINES FOR LEFT-TURN LANE AT UNSIGNALIZED INTERSECTION

Two-lane Roadway Opposing Volume (vph)	Advancing Volume - vph																				Operating Speed = 30 mph Speed Limit = 35 mph Design Speed = 40 mph				
	Left-turn - percent																								
	0.5	1.0	1.5	2.0	2.5	3.0	3.5	4.0	4.5	5.0	5.5	6.0	6.5	7.0	7.5	8.0	9.0	10	15	20	25	30	35	40	50
50	2224	1576	1290	1120	1005	920	854	800	757	720	688	660	636	615	596	578	548	523	439	392	362	342	329	320	314
100	1958	1388	1136	987	885	810	752	705	666	634	606	582	560	541	524	509	483	460	387	345	319	301	290	282	276
150	1749	1240	1015	881	790	723	671	630	595	566	541	520	501	484	468	455	431	411	346	308	285	269	259	252	247
200	1598	1133	927	805	722	661	613	575	544	517	494	475	457	442	428	415	394	376	316	282	260	246	236	230	225
250	1436	1018	833	723	649	594	551	517	489	465	444	426	411	397	385	373	354	338	284	253	234	221	212	207	203
300	1331	944	773	671	601	550	511	479	453	431	412	395	381	368	357	346	328	313	263	235	217	205	197	192	188
350	1214	861	704	612	548	502	466	437	413	393	376	361	347	336	325	316	299	285	240	214	198	187	180	175	171
400	1118	793	649	564	505	462	429	403	381	362	346	332	320	309	300	291	276	263	221	197	182	172	165	161	158
450	1026	728	596	517	464	424	394	369	349	332	318	305	294	284	275	267	253	241	203	181	167	158	152	148	145
500	937	664	544	472	423	388	360	337	319	303	290	278	268	259	251	244	231	220	185	165	153	144	139	135	132
550	869	616	504	438	393	359	334	313	296	281	269	258	249	240	233	226	214	204	172	153	142	134	129	125	123
600	823	583	477	414	372	340	316	296	280	266	254	244	235	227	220	214	203	193	162	145	134	127	122	118	116
650	759	538	441	382	343	314	291	273	258	246	235	225	217	210	203	197	187	178	150	134	124	117	112	109	107
700	717	508	416	361	324	296	275	258	244	232	222	213	205	198	192	186	177	168	142	126	117	110	106	103	101
750	657	466	381	331	297	272	252	236	223	213	203	195	188	182	176	171	162	154	130	116	107	101	97	95	93
800	598	424	347	301	270	247	230	215	203	194	185	178	171	165	160	155	147	141	118	105	97	92	88	86	84
850	560	397	325	282	253	232	215	202	191	181	173	166	160	155	150	146	138	132	111	99	91	86	83	81	79
900	524	371	304	264	237	217	201	188	178	169	162	156	150	145	140	136	129	123	103	92	85	81	77	75	74
950	488	346	283	246	221	202	187	176	166	158	151	145	140	135	131	127	120	115	96	86	80	75	72	70	69
1000	454	322	263	229	205	188	174	163	154	147	140	135	130	125	121	118	112	107	90	80	74	70	67	65	64
1050	420	298	244	212	190	174	161	151	143	136	130	125	120	116	112	109	103	99	83	74	68	65	62	60	59
1100	365	258	212	184	165	151	140	131	124	118	113	108	104	101	98	95	90	86	72	64	59	56	54	52	51
1150	331	235	192	167	150	137	127	119	113	107	102	98	95	92	89	86	82	78	65	58	54	51	49	48	47
1200	272	193	158	137	123	112	104	98	93	88	84	81	78	75	73	71	67	64	54	48	44	42	40	39	38
1250	236	168	137	119	107	98	91	85	80	76	73	70	68	65	63	61	58	56	47	42	38	36	35	34	33
1300	199	141	115	100	90	82	76	72	68	64	62	59	57	55	53	52	49	47	39	35	32	31	29	29	28

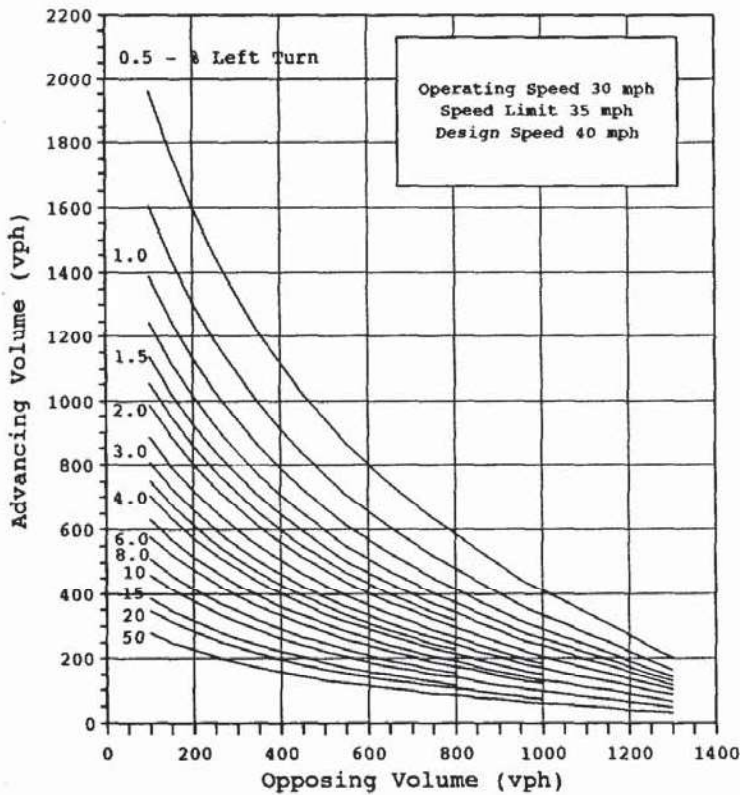


Figure 1 Guidelines for Left-turn Lane at Unsignalized Intersection - Two-lane Roadway

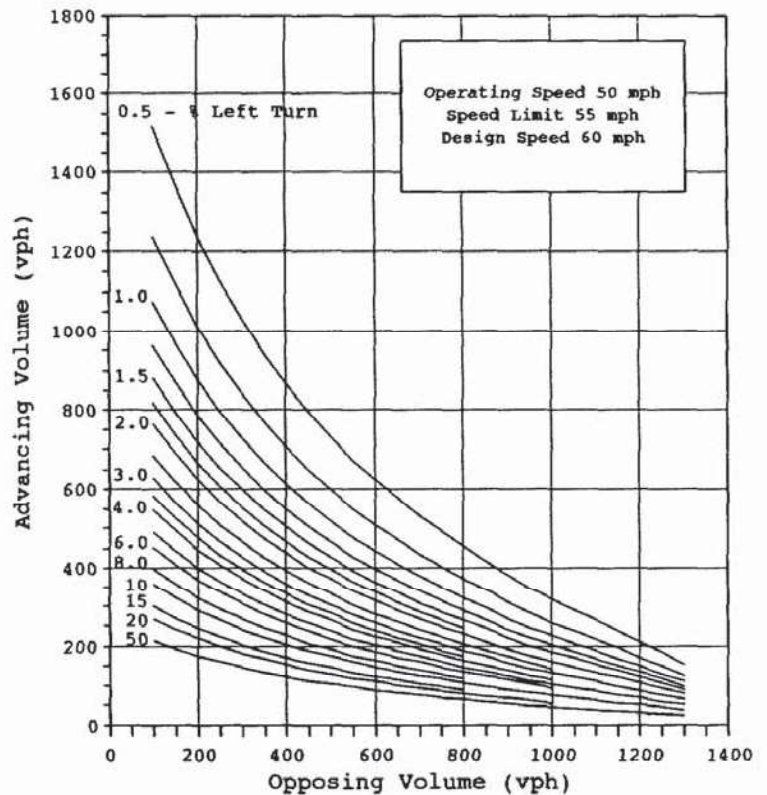


Figure 2 Guidelines for Left-turn Lane at Unsignalized Intersection - Two-lane Roadway

GUIDELINES FOR LEFT-TURN LANE AT UNSIGNALIZED INTERSECTION

Two-lane Roadway Opposing Volume (vph)	Advancing Volume - vph																				Operating Speed = 30 mph Speed Limit = 35 mph Design Speed = 40 mph							
	Left-turn - percent																											
	0.5	1.0	1.5	2.0	2.5	3.0	3.5	4.0	4.5	5.0	5.5	6.0	6.5	7.0	7.5	8.0	9.0	10	15	20	25	30	35	40	50			
50	2224	1576	1290	1120	1005	920	854	800	757	720	688	660	636	615	596	578	548	523	439	392	362	342	329	320	314			
100	1958	1388	1136	987	885	810	752	705	666	634	606	582	560	541	524	509	483	460	387	345	319	301	290	282	276			
150	1749	1240	1015	881	790	723	671	630	595	566	541	520	501	484	468	455	431	411	346	308	285	269	259	252	247			
200	1598	1133	927	805	722	661	613	575	544	517	494	475	457	442	428	415	394	376	316	282	260	246	236	230	225			
250	1436	1018	833	723	649	594	551	517	489	465	444	426	411	397	385	373	354	338	284	253	234	221	212	207	203			
300	1331	944	773	671	601	550	511	479	453	431	412	395	381	368	357	346	328	313	263	235	217	205	197	192	188			
350	1214	861	704	612	548	502	466	437	413	393	376	361	347	336	325	316	299	285	240	214	198	187	180	175	171			
400	1118	793	649	564	505	462	429	403	381	362	346	332	320	309	300	291	276	263	221	197	182	172	165	161	158			
450	1026	728	596	517	464	424	394	369	349	332	318	305	294	284	275	267	253	241	203	181	167	158	152	148	145			
500	937	664	544	472	423	388	360	337	319	303	290	278	268	259	251	244	231	220	185	165	153	144	139	135	132			
550	869	616	504	438	393	359	334	313	296	281	269	258	249	240	233	226	214	204	172	153	142	134	129	125	123			
600	823	583	477	414	372	340	316	296	280	266	254	244	235	227	220	214	203	193	162	145	134	127	122	118	116			
650	759	538	441	382	343	314	291	273	258	246	235	225	217	210	203	197	187	178	150	134	124	117	112	109	107			
700	717	508	416	361	324	296	275	258	244	232	222	213	205	198	192	186	177	168	142	126	117	110	106	103	101			
750	657	466	381	331	297	272	252	236	223	213	203	195	188	182	176	171	162	154	130	116	107	101	97	95	93			
800	598	424	347	301	270	247	230	215	203	194	185	178	171	165	160	155	147	141	118	105	97	92	88	86	84			
850	560	397	325	282	253	232	215	202	191	181	173	166	160	155	150	146	138	132	111	99	91	86	83	81	79			
900	524	371	304	264	237	217	201	188	178	169	162	156	150	145	140	136	129	123	103	92	85	81	77	75	74			
950	488	346	283	246	221	202	187	176	166	158	151	145	140	135	131	127	120	115	96	86	80	75	72	70	69			
1000	454	322	263	229	205	188	174	163	154	147	140	135	130	125	121	118	112	107	90	80	74	70	67	65	64			
1050	420	298	244	212	190	174	161	151	143	136	130	125	120	116	112	109	103	99	83	74	68	65	62	60	59			
1100	365	258	212	184	165	151	140	131	124	118	113	108	104	101	98	95	90	86	72	64	59	56	54	52	51			
1150	331	235	192	167	150	137	127	119	113	107	102	98	95	92	89	86	82	78	65	58	54	51	49	48	47			
1200	272	193	158	137	123	112	104	98	93	88	84	81	78	75	73	71	67	64	54	48	44	42	40	39	38			
1250	236	168	137	119	107	98	91	85	80	76	73	70	68	65	63	61	58	56	47	42	38	36	35	34	33			
1300	199	141	115	100	90	82	76	72	68	64	62	59	57	55	53	52	49	47	39	35	32	31	29	29	28			

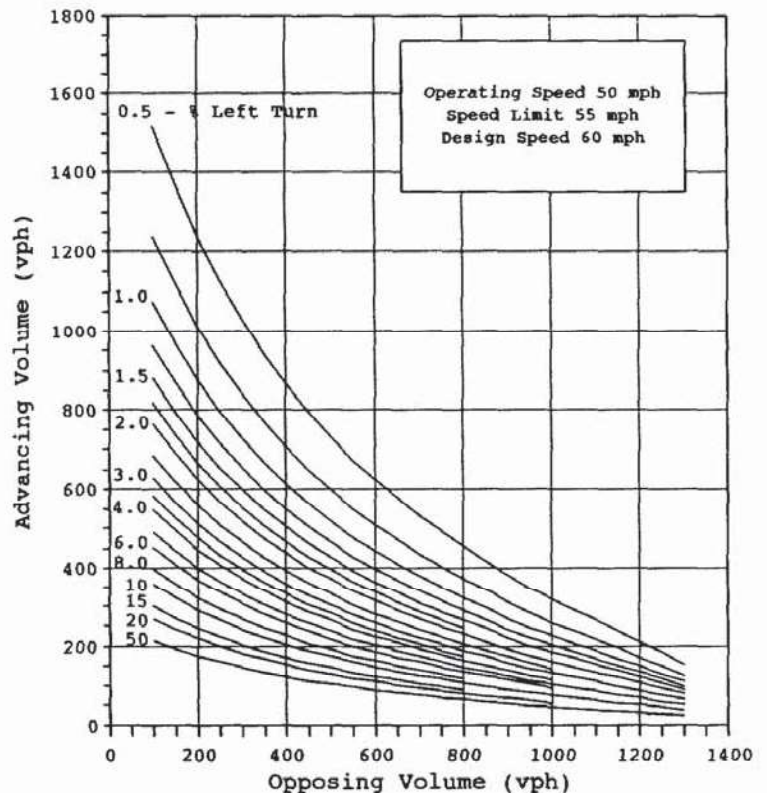
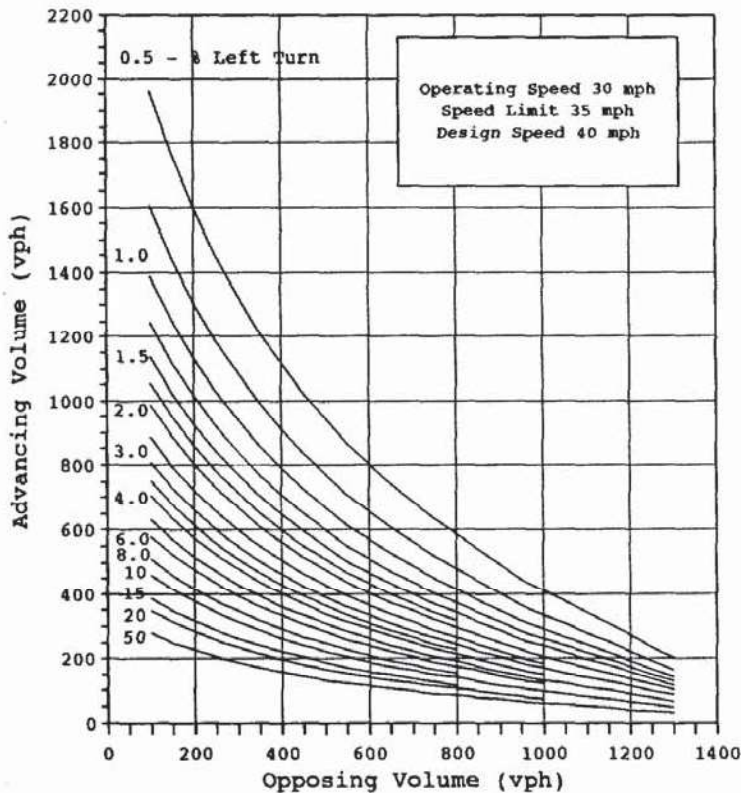


Figure 1 Guidelines for Left-turn Lane at Unsignalized Intersection - Two-lane Roadway

Figure 2 Guidelines for Left-turn Lane at Unsignalized Intersection - Two-lane Roadway

GUIDELINES FOR LEFT-TURN LANE AT UNSIGNALIZED INTERSECTION

Two-lane Roadway Opposing Volume (vph)	Advancing Volume - vph																				Operating Speed = 30 mph Speed Limit = 35 mph Design Speed = 40 mph							
	Left-turn - percent																											
	0.5	1.0	1.5	2.0	2.5	3.0	3.5	4.0	4.5	5.0	5.5	6.0	6.5	7.0	7.5	8.0	9.0	10	15	20	25	30	35	40	50			
50	2224	1576	1290	1120	1005	920	854	800	757	720	688	660	636	615	596	578	548	523	439	392	362	342	329	320	314			
100	1958	1388	1136	987	885	810	752	705	666	634	606	582	560	541	524	509	483	460	387	345	319	301	290	282	276			
150	1749	1240	1015	881	790	723	671	630	595	566	541	520	501	484	468	455	431	411	346	308	285	269	259	252	247			
200	1598	1133	927	805	722	661	613	575	544	517	494	475	457	442	428	415	394	376	316	282	260	246	236	230	225			
250	1436	1018	833	723	649	594	551	517	489	465	444	426	411	397	385	373	354	338	284	253	234	221	212	207	203			
300	1331	944	773	671	601	550	511	479	453	431	412	395	381	368	357	346	328	313	263	235	217	205	197	192	188			
350	1214	861	704	612	548	502	466	437	413	393	376	361	347	336	325	316	299	285	240	214	198	187	180	175	171			
400	1118	793	649	564	505	462	429	403	381	362	346	332	320	309	300	291	276	263	221	197	182	172	165	161	158			
450	1026	728	596	517	464	424	394	369	349	332	318	305	294	284	275	267	253	241	203	181	167	158	152	148	145			
500	937	664	544	472	423	388	360	337	319	303	290	278	268	259	251	244	231	220	185	165	153	144	139	135	132			
550	869	616	504	438	393	359	334	313	296	281	269	258	249	240	233	226	214	204	172	153	142	134	129	125	123			
600	823	583	477	414	372	340	316	296	280	266	254	244	235	227	220	214	203	193	162	145	134	127	122	118	116			
650	759	538	441	382	343	314	291	273	258	246	235	225	217	210	203	197	187	178	150	134	124	117	112	109	107			
700	717	508	416	361	324	296	275	258	244	232	222	213	205	198	192	186	177	168	142	126	117	110	106	103	101			
750	657	466	381	331	297	272	252	236	223	213	203	195	188	182	176	171	162	154	130	116	107	101	97	95	93			
800	598	424	347	301	270	247	230	215	203	194	185	178	171	165	160	155	147	141	118	105	97	92	88	86	84			
850	560	397	325	282	253	232	215	202	191	181	173	166	160	155	150	146	138	132	111	99	91	86	83	81	79			
900	524	371	304	264	237	217	201	188	178	169	162	156	150	145	140	136	129	123	103	92	85	81	77	75	74			
950	488	346	283	246	221	202	187	176	166	158	151	145	140	135	131	127	120	115	96	86	80	75	72	70	69			
1000	454	322	263	229	205	188	174	163	154	147	140	135	130	125	121	118	112	107	90	80	74	70	67	65	64			
1050	420	298	244	212	190	174	161	151	143	136	130	125	120	116	112	109	103	99	83	74	68	65	62	60	59			
1100	365	258	212	184	165	151	140	131	124	118	113	108	104	101	98	95	90	86	72	64	59	56	54	52	51			
1150	331	235	192	167	150	137	127	119	113	107	102	98	95	92	89	86	82	78	65	58	54	51	49	48	47			
1200	272	193	158	137	123	112	104	98	93	88	84	81	78	75	73	71	67	64	54	48	44	42	40	39	38			
1250	236	168	137	119	107	98	91	85	80	76	73	70	68	65	63	61	58	56	47	42	38	36	35	34	33			
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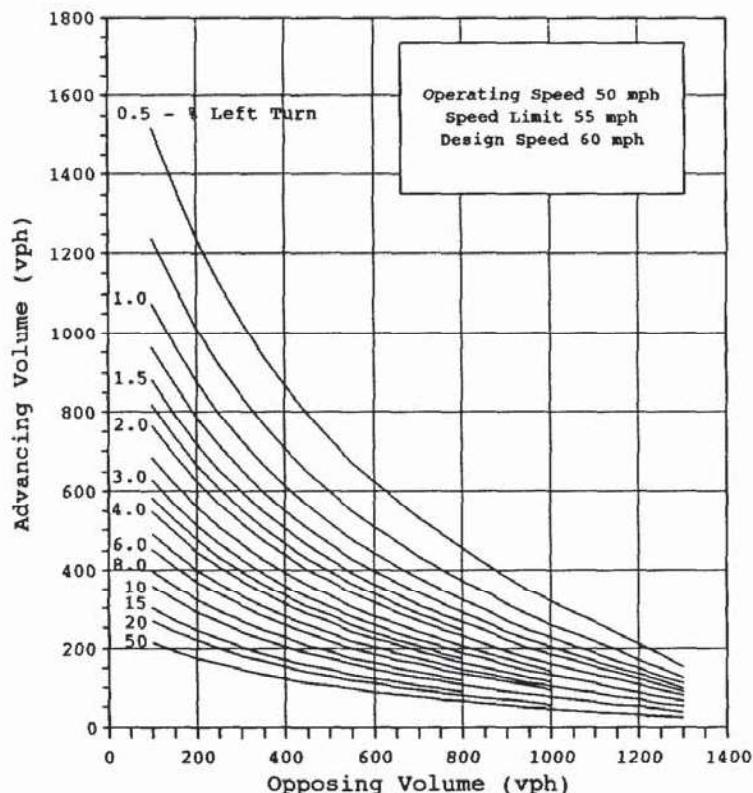
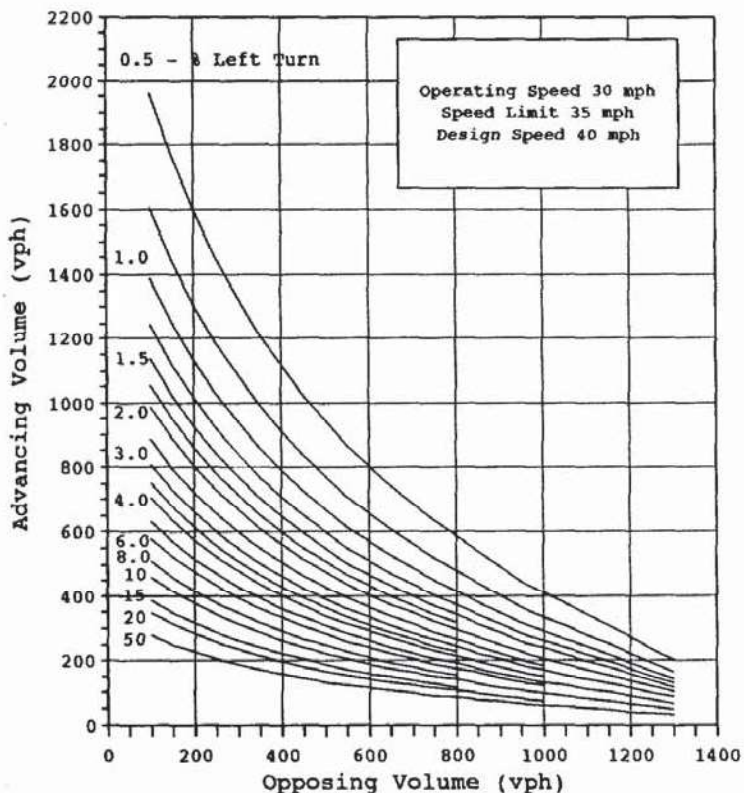


Figure 1 Guidelines for Left-turn Lane at Unsignalized Intersection - Two-lane Roadway

Figure 2 Guidelines for Left-turn Lane at Unsignalized Intersection - Two-lane Roadway

GUIDELINES FOR LEFT-TURN LANE AT UNSIGNALIZED INTERSECTION

Two-lane Roadway Opposing Volume (vph)	Advancing Volume - vph																				Operating Speed = 30 mph Speed Limit = 35 mph Design Speed = 40 mph							
	Left-turn - percent																											
	0.5	1.0	1.5	2.0	2.5	3.0	3.5	4.0	4.5	5.0	5.5	6.0	6.5	7.0	7.5	8.0	9.0	10	15	20	25	30	35	40	50			
50	2224	1576	1290	1120	1005	920	854	800	757	720	688	660	636	615	596	578	548	523	439	392	362	342	329	320	314			
100	1958	1388	1136	987	885	810	752	705	666	634	606	582	560	541	524	509	483	460	387	345	319	301	290	282	276			
150	1749	1240	1015	881	790	723	671	630	595	566	541	520	501	484	468	455	431	411	346	308	285	269	259	252	247			
200	1598	1133	927	805	722	661	613	575	544	517	494	475	457	442	428	415	394	376	316	282	260	246	236	230	225			
250	1436	1018	833	723	649	594	551	517	489	465	444	426	411	397	385	373	354	338	284	253	234	221	212	207	203			
300	1331	944	773	671	601	550	511	479	453	431	412	395	381	368	357	346	328	313	263	235	217	205	197	192	188			
350	1214	861	704	612	548	502	466	437	413	393	376	361	347	336	325	316	299	285	240	214	198	187	180	175	171			
400	1118	793	649	564	505	462	429	403	381	362	346	332	320	309	300	291	276	263	221	197	182	172	165	161	158			
450	1026	728	596	517	464	424	394	369	349	332	318	305	294	284	275	267	253	241	203	181	167	158	152	148	145			
500	937	664	544	472	423	388	360	337	319	303	290	278	268	259	251	244	231	220	185	165	153	144	139	135	132			
550	869	616	504	438	393	359	334	313	296	281	269	258	249	240	233	226	214	204	172	153	142	134	129	125	123			
600	823	583	477	414	372	340	316	296	280	266	254	244	235	227	220	214	203	193	162	145	134	127	122	118	116			
650	759	538	441	382	343	314	291	273	258	246	235	225	217	210	203	197	187	178	150	134	124	117	112	109	107			
700	717	508	416	361	324	296	275	258	244	232	222	213	205	198	192	186	177	168	142	126	117	110	106	103	101			
750	657	466	381	331	297	272	252	236	223	213	203	195	188	182	176	171	162	154	130	116	107	101	97	95	93			
800	598	424	347	301	270	247	230	215	203	194	185	178	171	165	160	155	147	141	118	105	97	92	88	86	84			
850	560	397	325	282	253	232	215	202	191	181	173	166	160	155	150	146	138	132	111	99	91	86	83	81	79			
900	524	371	304	264	237	217	201	188	178	169	162	156	150	145	140	136	129	123	103	92	85	81	77	75	74			
950	488	346	283	246	221	202	187	176	166	158	151	145	140	135	131	127	120	115	96	86	80	75	72	70	69			
1000	454	322	263	229	205	188	174	163	154	147	140	135	130	125	121	118	112	107	90	80	74	70	67	65	64			
1050	420	298	244	212	190	174	161	151	143	136	130	125	120	116	112	109	103	99	83	74	68	65	62	60	59			
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1150	331	235	192	167	150	137	127	119	113	107	102	98	95	92	89	86	82	78	65	58	54	51	49	48	47			
1200	272	193	158	137	123	112	104	98	93	88	84	81	78	75	73	71	67	64	54	48	44	42	40	39	38			
1250	236	168	137	119	107	98	91	85	80	76	73	70	68	65	63	61	58	56	47	42	38	36	35	34	33			
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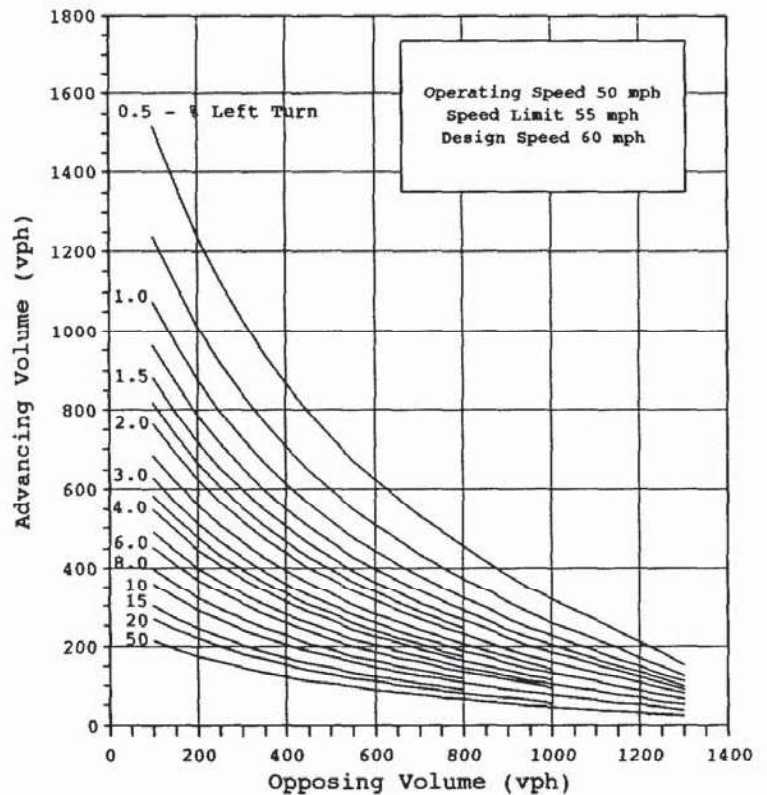
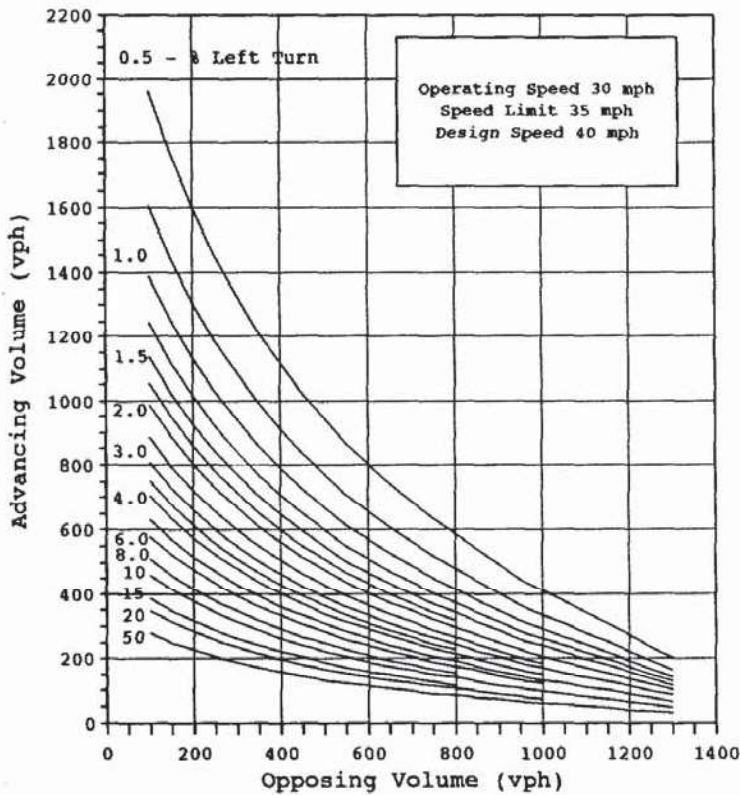


Figure 1 Guidelines for Left-turn Lane at Unsignalized Intersection - Two-lane Roadway

Figure 2 Guidelines for Left-turn Lane at Unsignalized Intersection - Two-lane Roadway

GUIDELINES FOR LEFT-TURN LANE AT UNSIGNALIZED INTERSECTION

Two-lane Roadway Opposing Volume (vph)	Advancing Volume - vph																				Operating Speed = 30 mph Speed Limit = 35 mph Design Speed = 40 mph							
	Left-turn - percent																											
	0.5	1.0	1.5	2.0	2.5	3.0	3.5	4.0	4.5	5.0	5.5	6.0	6.5	7.0	7.5	8.0	9.0	10	15	20	25	30	35	40	50			
50	2224	1576	1290	1120	1005	920	854	800	757	720	688	660	636	615	596	578	548	523	439	392	362	342	329	320	314			
100	1958	1388	1136	987	885	810	752	705	666	634	606	582	560	541	524	509	483	460	387	345	319	301	290	282	276			
150	1749	1240	1015	881	790	723	671	630	595	566	541	520	501	484	468	455	431	411	346	308	285	269	259	252	247			
200	1598	1133	927	805	722	661	613	575	544	517	494	475	457	442	428	415	394	376	316	282	260	246	236	230	225			
250	1436	1018	833	723	649	594	551	517	489	465	444	426	411	397	385	373	354	338	284	253	234	221	212	207	203			
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350	1214	861	704	612	548	502	466	437	413	393	376	361	347	336	325	316	299	285	240	214	198	187	180	175	171			
400	1118	793	649	564	505	462	429	403	381	362	346	332	320	309	300	291	276	263	221	197	182	172	165	161	158			
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550	869	616	504	438	393	359	334	313	296	281	269	258	249	240	233	226	214	204	172	153	142	134	129	125	123			
600	823	583	477	414	372	340	316	296	280	266	254	244	235	227	220	214	203	193	162	145	134	127	122	118	116			
650	759	538	441	382	343	314	291	273	258	246	235	225	217	210	203	197	187	178	150	134	124	117	112	109	107			
700	717	508	416	361	324	296	275	258	244	232	222	213	205	198	192	186	177	168	142	126	117	110	106	103	101			
750	657	466	381	331	297	272	252	236	223	213	203	195	188	182	176	171	162	154	130	116	107	101	97	95	93			
800	598	424	347	301	270	247	230	215	203	194	185	178	171	165	160	155	147	141	118	105	97	92	88	86	84			
850	560	397	325	282	253	232	215	202	191	181	173	166	160	155	150	146	138	132	111	99	91	86	83	81	79			
900	524	371	304	264	237	217	201	188	178	169	162	156	150	145	140	136	129	123	103	92	85	81	77	75	74			
950	488	346	283	246	221	202	187	176	166	158	151	145	140	135	131	127	120	115	96	86	80	75	72	70	69			
1000	454	322	263	229	205	188	174	163	154	147	140	135	130	125	121	118	112	107	90	80	74	70	67	65	64			
1050	420	298	244	212	190	174	161	151	143	136	130	125	120	116	112	109	103	99	83	74	68	65	62	60	59			
1100	365	258	212	184	165	151	140	131	124	118	113	108	104	101	98	95	90	86	72	64	59	56	54	52	51			
1150	331	235	192	167	150	137	127	119	113	107	102	98	95	92	89	86	82	78	65	58	54	51	49	48	47			
1200	272	193	158	137	123	112	104	98	93	88	84	81	78	75	73	71	67	64	54	48	44	42	40	39	38			
1250	236	168	137	119	107	98	91	85	80	76	73	70	68	65	63	61	58	56	47	42	38	36	35	34	33			
1300	199	141	115	100	90	82	76	72	68	64	62	59	57	55	53	52	49	47	39	35	32	31	29	29	28			

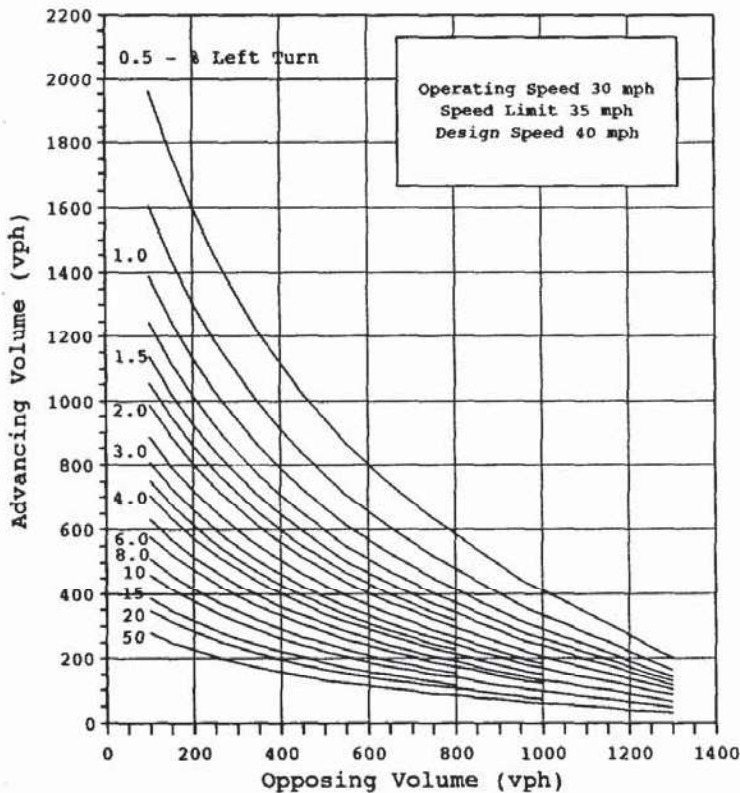


Figure 1 Guidelines for Left-turn Lane at Unsignalized Intersection - Two-lane Roadway

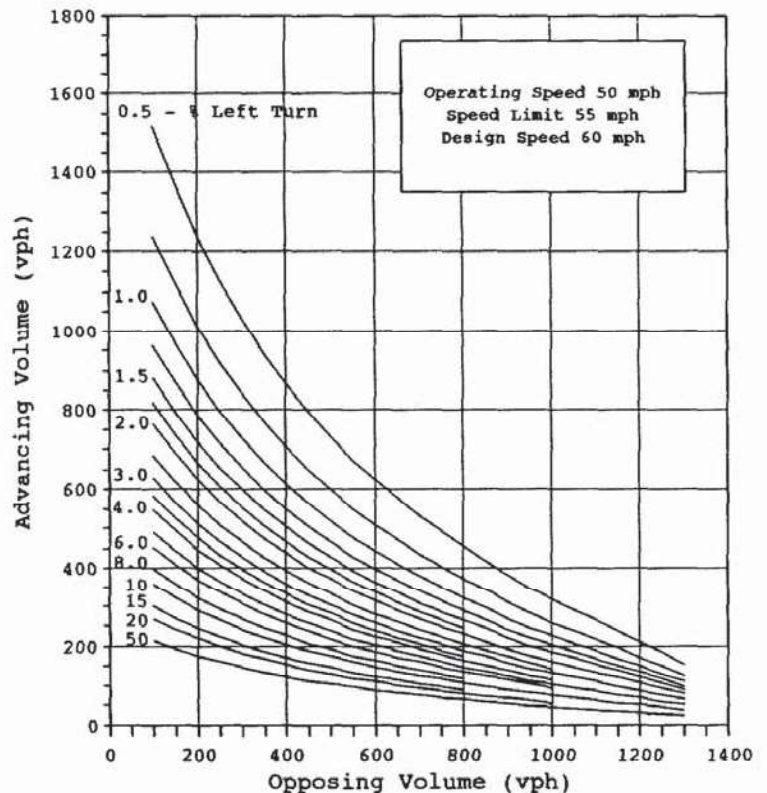


Figure 2 Guidelines for Left-turn Lane at Unsignalized Intersection - Two-lane Roadway

Table 1

GUIDELINES FOR LEFT-TURN LANE AT UNSIGNALIZED INTERSECTION

Two-lane Roadway Opposing Volume (vph)	Advancing Volume - vph																				Operating Speed = 30 mph Speed Limit = 35 mph Design Speed = 40 mph							
	Left-turn - percent																											
	0.5	1.0	1.5	2.0	2.5	3.0	3.5	4.0	4.5	5.0	5.5	6.0	6.5	7.0	7.5	8.0	9.0	10	15	20	25	30	35	40	50			
50	2224	1576	1290	1120	1005	920	854	800	757	720	688	660	636	615	596	578	548	523	439	392	362	342	329	320	314			
100	1958	1388	1136	987	885	810	752	705	666	634	606	582	560	541	524	509	483	460	387	345	319	301	290	282	276			
150	1749	1240	1015	881	790	723	671	630	595	566	541	520	501	484	468	455	431	411	346	308	285	269	259	252	247			
200	1598	1133	927	805	722	661	613	575	544	517	494	475	457	442	428	415	394	376	316	282	260	246	236	230	225			
250	1436	1018	833	723	649	594	551	517	489	465	444	426	411	397	385	373	354	338	284	253	234	221	212	207	203			
300	1331	944	773	671	601	550	511	479	453	431	412	395	381	368	357	346	328	313	263	235	217	205	197	192	188			
350	1214	861	704	612	548	502	466	437	413	393	376	361	347	336	325	316	299	285	240	214	198	187	180	175	171			
400	1118	793	649	564	505	462	429	403	381	362	346	332	320	309	300	291	276	263	221	197	182	172	165	161	158			
450	1026	728	596	517	464	424	394	369	349	332	318	305	294	284	275	267	253	241	203	181	167	158	152	148	145			
500	937	664	544	472	423	388	360	337	319	303	290	278	268	259	251	244	231	220	185	165	153	144	139	135	132			
550	869	616	504	438	393	359	334	313	296	281	269	258	249	240	233	226	214	204	172	153	142	134	129	125	123			
600	823	583	477	414	372	340	316	296	280	266	254	244	235	227	220	214	203	193	162	145	134	127	122	118	116			
650	759	538	441	382	343	314	291	273	258	246	235	225	217	210	203	197	187	178	150	134	124	117	112	109	107			
700	717	508	416	361	324	296	275	258	244	232	222	213	205	198	192	186	177	168	142	126	117	110	106	103	101			
750	657	466	381	331	297	272	252	236	223	213	203	195	188	182	176	171	162	154	130	116	107	101	97	95	93			
800	598	424	347	301	270	247	230	215	203	194	185	178	171	165	160	155	147	141	118	105	97	92	88	86	84			
850	560	397	325	282	253	232	215	202	191	181	173	166	160	155	150	146	138	132	111	99	91	86	83	81	79			
900	524	371	304	264	237	217	201	188	178	169	162	156	150	145	140	136	129	123	103	92	85	81	77	75	74			
950	488	346	283	246	221	202	187	176	166	158	151	145	140	135	131	127	120	115	96	86	80	75	72	70	69			
1000	454	322	263	229	205	188	174	163	154	147	140	135	130	125	121	118	112	107	90	80	74	70	67	65	64			
1050	420	298	244	212	190	174	161	151	143	136	130	125	120	116	112	109	103	99	83	74	68	65	62	60	59			
1100	365	258	212	184	165	151	140	131	124	118	113	108	104	101	98	95	90	86	72	64	59	56	54	52	51			
1150	331	235	192	167	150	137	127	119	113	107	102	98	95	92	89	86	82	78	65	58	54	51	49	48	47			
1200	272	193	158	137	123	112	104	98	93	88	84	81	78	75	73	71	67	64	54	48	44	42	40	39	38			
1250	236	168	137	119	107	98	91	85	80	76	73	70	68	65	63	61	58	56	47	42	38	36	35	34	33			
1300	199	141	115	100	90	82	76	72	68	64	62	59	57	55	53	52	49	47	39	35	32	31	29	29	28			

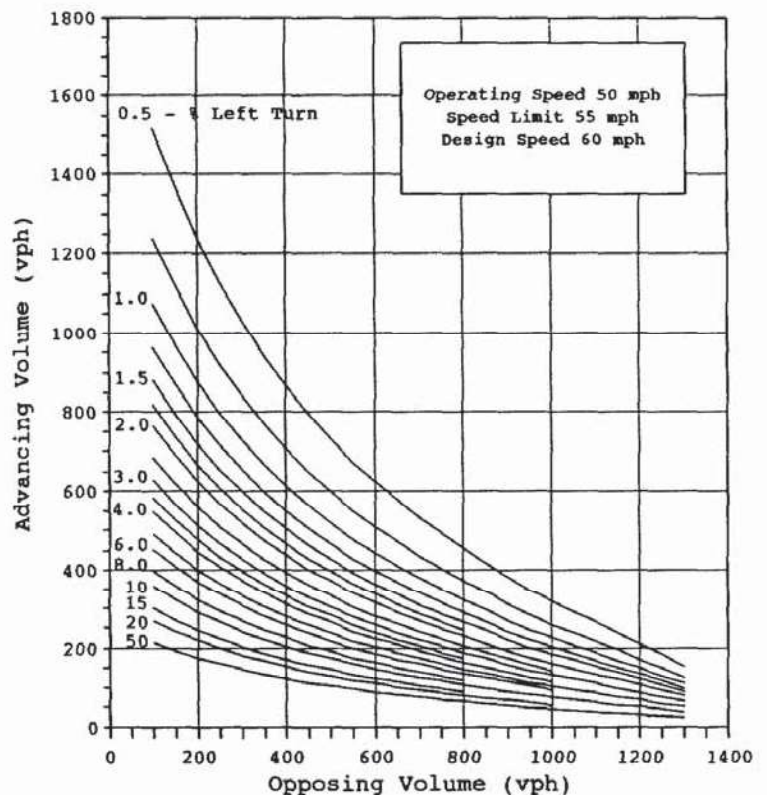
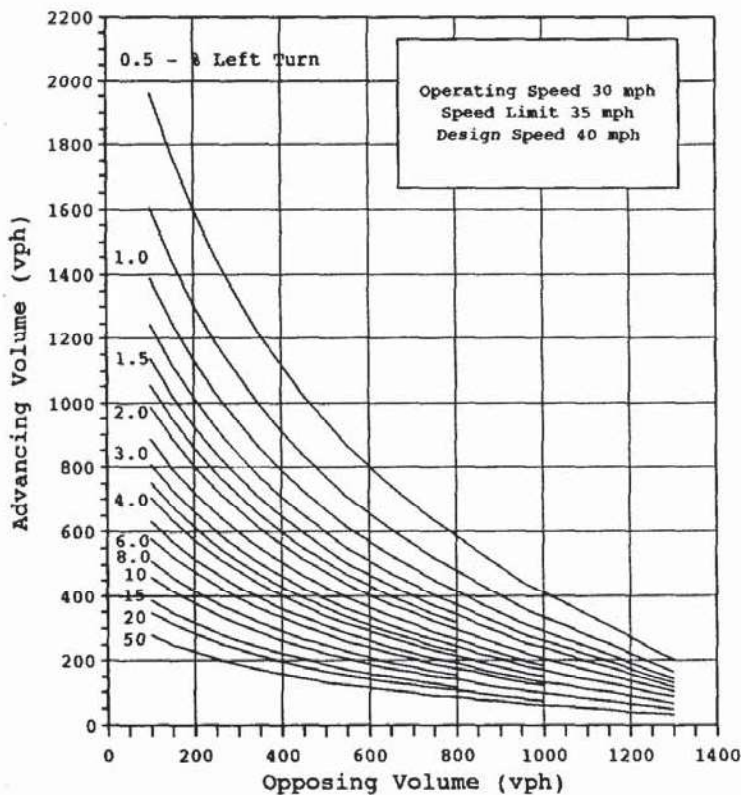


Figure 1 Guidelines for Left-turn Lane at Unsignalized Intersection - Two-lane Roadway

Figure 2 Guidelines for Left-turn Lane at Unsignalized Intersection - Two-lane Roadway

GUIDELINES FOR LEFT-TURN LANE AT UNSIGNALIZED INTERSECTION

Two-lane Roadway Opposing Volume (vph)	Advancing Volume - vph																				Operating Speed = 30 mph Speed Limit = 35 mph Design Speed = 40 mph							
	Left-turn - percent																											
	0.5	1.0	1.5	2.0	2.5	3.0	3.5	4.0	4.5	5.0	5.5	6.0	6.5	7.0	7.5	8.0	9.0	10	15	20	25	30	35	40	50			
50	2224	1576	1290	1120	1005	920	854	800	757	720	688	660	636	615	596	578	548	523	439	392	362	342	329	320	314			
100	1958	1388	1136	987	885	810	752	705	666	634	606	582	560	541	524	509	483	460	387	345	319	301	290	282	276			
150	1749	1240	1015	881	790	723	671	630	595	566	541	520	501	484	468	455	431	411	346	308	285	269	259	252	247			
200	1598	1133	927	805	722	661	613	575	544	517	494	475	457	442	428	415	394	376	316	282	260	246	236	230	225			
250	1436	1018	833	723	649	594	551	517	489	465	444	426	411	397	385	373	354	338	284	253	234	221	212	207	203			
300	1331	944	773	671	601	550	511	479	453	431	412	395	381	368	357	346	328	313	263	235	217	205	197	192	188			
350	1214	861	704	612	548	502	466	437	413	393	376	361	347	336	325	316	299	285	240	214	198	187	180	175	171			
400	1118	793	649	564	505	462	429	403	381	362	346	332	320	309	300	291	276	263	221	197	182	172	165	161	158			
450	1026	728	596	517	464	424	394	369	349	332	318	305	294	284	275	267	253	241	203	181	167	158	152	148	145			
500	937	664	544	472	423	388	360	337	319	303	290	278	268	259	251	244	231	220	185	165	153	144	139	135	132			
550	869	616	504	438	393	359	334	313	296	281	269	258	249	240	233	226	214	204	172	153	142	134	129	125	123			
600	823	583	477	414	372	340	316	296	280	266	254	244	235	227	220	214	203	193	162	145	134	127	122	118	116			
650	759	538	441	382	343	314	291	273	258	246	235	225	217	210	203	197	187	178	150	134	124	117	112	109	107			
700	717	508	416	361	324	296	275	258	244	232	222	213	205	198	192	186	177	168	142	126	117	110	106	103	101			
750	657	466	381	331	297	272	252	236	223	213	203	195	188	182	176	171	162	154	130	116	107	101	97	95	93			
800	598	424	347	301	270	247	230	215	203	194	185	178	171	165	160	155	147	141	118	105	97	92	88	86	84			
850	560	397	325	282	253	232	215	202	191	181	173	166	160	155	150	146	138	132	111	99	91	86	83	81	79			
900	524	371	304	264	237	217	201	188	178	169	162	156	150	145	140	136	129	123	103	92	85	81	77	75	74			
950	488	346	283	246	221	202	187	176	166	158	151	145	140	135	131	127	120	115	96	86	80	75	72	70	69			
1000	454	322	263	229	205	188	174	163	154	147	140	135	130	125	121	118	112	107	90	80	74	70	67	65	64			
1050	420	298	244	212	190	174	161	151	143	136	130	125	120	116	112	109	103	99	83	74	68	65	62	60	59			
1100	365	258	212	184	165	151	140	131	124	118	113	108	104	101	98	95	90	86	72	64	59	56	54	52	51			
1150	331	235	192	167	150	137	127	119	113	107	102	98	95	92	89	86	82	78	65	58	54	51	49	48	47			
1200	272	193	158	137	123	112	104	98	93	88	84	81	78	75	73	71	67	64	54	48	44	42	40	39	38			
1250	236	168	137	119	107	98	91	85	80	76	73	70	68	65	63	61	58	56	47	42	38	36	35	34	33			
1300	199	141	115	100	90	82	76	72	68	64	62	59	57	55	53	52	49	47	39	35	32	31	29	29	28			

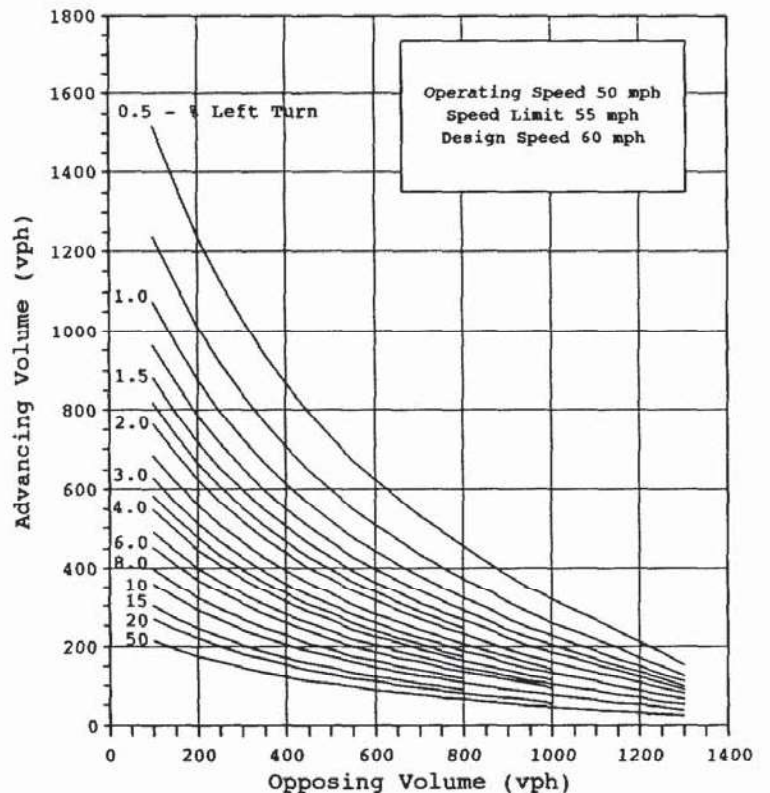
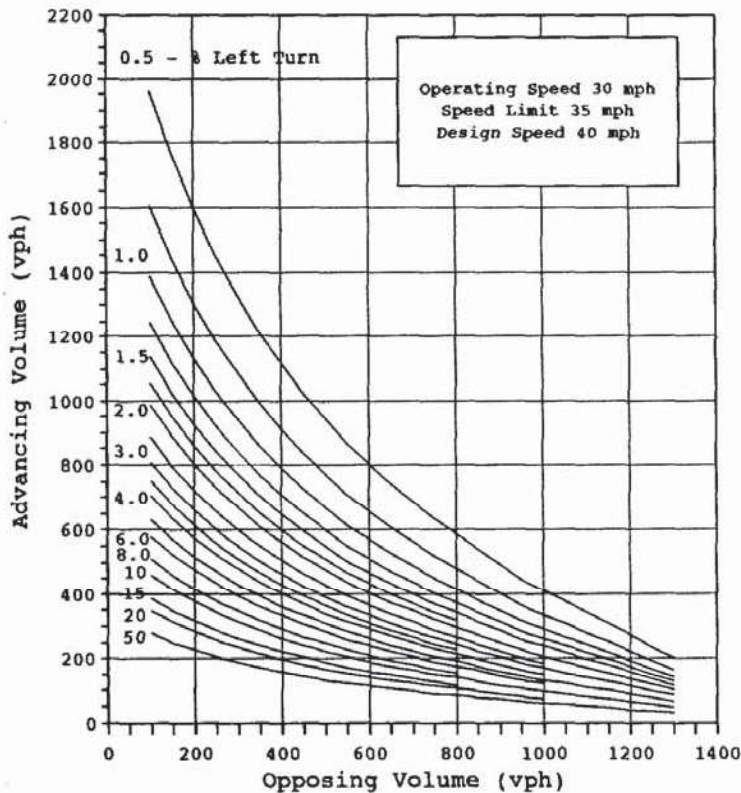
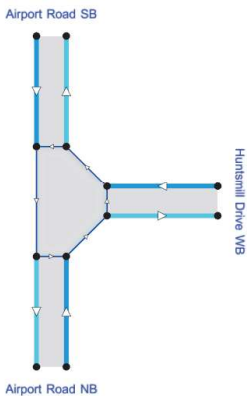


Figure 1 Guidelines for Left-turn Lane at Unsignalized Intersection - Two-lane Roadway

Figure 2 Guidelines for Left-turn Lane at Unsignalized Intersection - Two-lane Roadway

Appendix H – ARCADY Outputs for Roundabouts

Airport Road at Huntsmill Drive



Single-Lane Entry

Roundabout Geometry

Name	V - Approach road half-width (m)	E - Entry width (m)	l' - Effective flare length (m)	R - Entry radius (m)	D - Inscribed circle diameter (m)	PHI - Conflict (entry) angle (deg)	Exit Only
Airport Road NB	4.25	4.25	0.00	25.00	55.00	20.00	
Huntsmill Drive WB	4.25	4.25	0.00	25.00	55.00	20.00	
Airport Road SB	4.25	4.25	0.00	25.00	55.00	20.00	

2021 Volumes

AM Peak							
	Queue (PCU)	Delay (s)	RFC	LOS	Junction Delay (s)	Junction LOS	Network Residual Capacity
Single-lane Entry - 2021							
Airport Road NB	0.18	3.58	0.15	A	5.09	A	102 % [Airport Road SB]
Huntsmill Drive WB	0.00	0.00	0.00	A			
Airport Road SB	0.86	5.59	0.46	A			

PM Peak							
	Queue (PCU)	Delay (s)	RFC	LOS	Junction Delay (s)	Junction LOS	Network Residual Capacity
Single-lane Entry - 2021							
Airport Road NB	1.21	6.65	0.54	A	5.89	A	70 % [Airport Road NB]
Huntsmill Drive WB	0.00	0.00	0.00	A			
Airport Road SB	0.25	3.77	0.19	A			

2031 Volumes

AM Peak							
	Queue (PCU)	Delay (s)	RFC	LOS	Junction Delay (s)	Junction LOS	Network Residual Capacity
Single-lane Entry - 2031							
Airport Road NB	0.22	3.68	0.18	A	5.92	A	70 % [Airport Road SB]
Huntsmill Drive WB	0.00	0.00	0.00	A			
Airport Road SB	1.21	6.65	0.54	A			

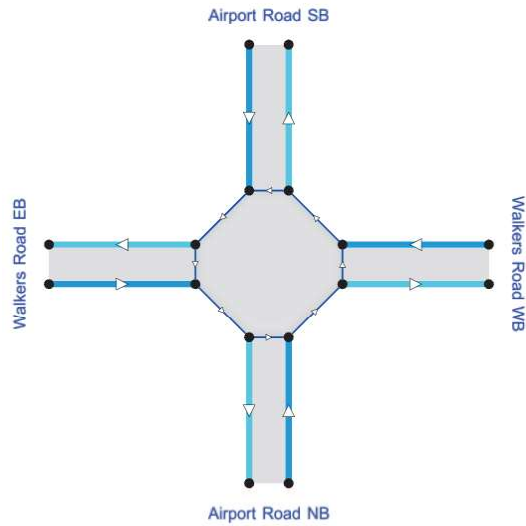
PM Peak							
	Queue (PCU)	Delay (s)	RFC	LOS	Junction Delay (s)	Junction LOS	Network Residual Capacity
Single-lane Entry - 2031							
Airport Road NB	1.84	8.58	0.65	A	7.37	A	43 % [Airport Road NB]
Huntsmill Drive WB	0.00	0.00	0.00	A			
Airport Road SB	0.30	3.92	0.23	A			

2041 Volumes

AM Peak							
	Queue (PCU)	Delay (s)	RFC	LOS	Junction Delay (s)	Junction LOS	Network Residual Capacity
Single-lane Entry - 2041							
Airport Road NB	0.26	3.81	0.20	A	7.43	A	43 % [Airport Road SB]
Huntsmill Drive WB	0.00	0.00	0.00	A			
Airport Road SB	1.84	8.58	0.65	A			

PM Peak							
	Queue (PCU)	Delay (s)	RFC	LOS	Junction Delay (s)	Junction LOS	Network Residual Capacity
Single-lane Entry - 2041							
Airport Road NB	3.30	13.10	0.77	B	10.81	B	20 % [Airport Road NB]
Huntsmill Drive WB	0.00	0.00	0.00	A			
Airport Road SB	0.36	4.11	0.26	A			

Airport Road at Walkers Road



Single-Lane Entry

Roundabout Geometry

Name	V - Approach road half-width (m)	E - Entry width (m)	l' - Effective flare length (m)	R - Entry radius (m)	D - Inscribed circle diameter (m)	PHI - Conflict (entry) angle (deg)	Exit Only
Walkers Road EB	4.25	4.25	0.00	25.00	55.00	20.00	
Airport Road NB	4.25	4.25	0.00	25.00	55.00	20.00	
Walkers Road WB	4.25	4.25	0.00	25.00	55.00	20.00	
Airport Road SB	4.25	4.25	0.00	25.00	55.00	20.00	

2021 Volumes

	AM Peak						
	Queue (PCU)	Delay (s)	RFC	LOS	Junction Delay (s)	Junction LOS	Network Residual Capacity
Single-lane Entry - 2021							
Walkers Road EB	0.10	4.23	0.09	A	5.13	A	91 % [Airport Road SB]
Airport Road NB	0.20	3.66	0.16	A			
Walkers Road WB	0.03	3.39	0.03	A			
Airport Road SB	0.92	5.87	0.47	A			

PM Peak							
	Queue (PCU)	Delay (s)	RFC	LOS	Junction Delay (s)	Junction LOS	Network Residual Capacity
Single-lane Entry - 2021							
Walkers Road EB	0.09	3.63	0.08	A	6.72	A	48 % [Airport Road NB]
Airport Road NB	1.63	8.06	0.62	A			
Walkers Road WB	0.02	4.35	0.02	A			
Airport Road SB	0.27	3.94	0.21	A			

2031 Volumes

AM Peak							
	Queue (PCU)	Delay (s)	RFC	LOS	Junction Delay (s)	Junction LOS	Network Residual Capacity
Single-lane Entry - 2031							
Walkers Road EB	0.13	4.57	0.11	A	6.02	A	61 % [Airport Road SB]
Airport Road NB	0.24	3.79	0.19	A			
Walkers Road WB	0.03	3.45	0.03	A			
Airport Road SB	1.32	7.12	0.57	A			

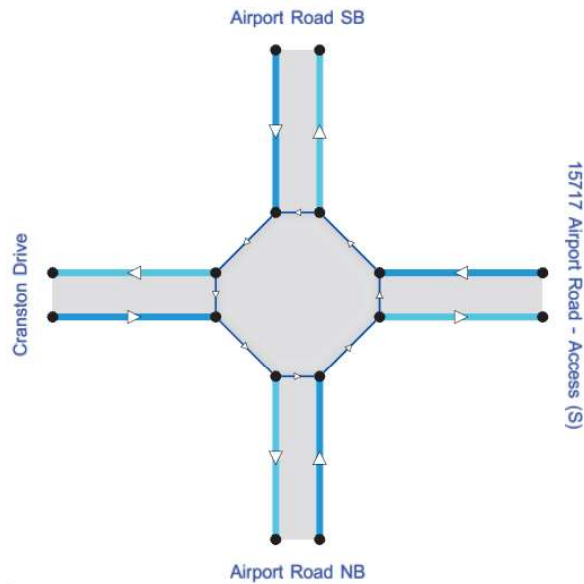
PM Peak							
	Queue (PCU)	Delay (s)	RFC	LOS	Junction Delay (s)	Junction LOS	Network Residual Capacity
Single-lane Entry - 2031							
Walkers Road EB	0.11	3.75	0.09	A	9.29	A	25 % [Airport Road NB]
Airport Road NB	2.79	11.71	0.74	B			
Walkers Road WB	0.02	4.73	0.02	A			
Airport Road SB	0.33	4.15	0.24	A			

2041 Volumes

AM Peak							
	Queue (PCU)	Delay (s)	RFC	LOS	Junction Delay (s)	Junction LOS	Network Residual Capacity
Single-lane Entry - 2041							
Walkers Road EB	0.16	5.05	0.14	A	7.69	A	36 % [Airport Road SB]
Airport Road NB	0.29	3.95	0.22	A			
Walkers Road WB	0.04	3.52	0.04	A			
Airport Road SB	2.08	9.52	0.67	A			

PM Peak							
	Queue (PCU)	Delay (s)	RFC	LOS	Junction Delay (s)	Junction LOS	Network Residual Capacity
Single-lane Entry - 2041							
Walkers Road EB	0.13	3.90	0.11	A	18.20	C	5 % [Airport Road NB]
Airport Road NB	6.70	24.51	0.88	C			
Walkers Road WB	0.03	5.29	0.03	A			
Airport Road SB	0.40	4.41	0.28	A			

Airport Road at Cranston Drive



Single-Lane Entry

Roundabout Geometry

Name	V - Approach road half-width (m)	E - Entry width (m)	l' - Effective flare length (m)	R - Entry radius (m)	D - Inscribed circle diameter (m)	PHI - Conflict (entry) angle (deg)	Exit Only
Cranston Drive	4.25	4.25	0.00	25.00	55.00	20.00	
Airport Road NB	4.25	4.25	0.00	25.00	55.00	20.00	
15717 Airport Road - Access (S)	4.25	4.25	0.00	25.00	55.00	20.00	
Airport Road SB	4.25	4.25	0.00	25.00	55.00	20.00	

2021 Volumes

AM Peak							
	Queue (PCU)	Delay (s)	RFC	LOS	Junction Delay (s)	Junction LOS	Network Residual Capacity
Single-lane Entry - 2021							
Cranston Drive	0.05	4.71	0.04	A	8.24	A	34 % [Airport Road SB]
Airport Road NB	0.29	3.91	0.22	A			
15717 Airport Road - Access (S)	0.00	0.00	0.00	A			
Airport Road SB	2.22	9.78	0.69	A			

PM Peak							
	Queue (PCU)	Delay (s)	RFC	LOS	Junction Delay (s)	Junction LOS	Network Residual Capacity
Single-lane Entry - 2021							
Cranston Drive	0.03	3.66	0.03	A	11.58	B	16 % [Airport Road NB]
Airport Road NB	3.78	14.67	0.79	B			
15717 Airport Road - Access (S)	0.00	0.00	0.00	A			
Airport Road SB	0.48	4.50	0.32	A			

2031 Volumes

AM Peak							
	Queue (PCU)	Delay (s)	RFC	LOS	Junction Delay (s)	Junction LOS	Network Residual Capacity
Single-lane Entry - 2031							
Cranston Drive	0.06	5.50	0.06	A	14.79	B	9 % [Airport Road SB]
Airport Road NB	0.40	4.24	0.28	A			
15717 Airport Road - Access (S)	0.09	3.77	0.08	A			
Airport Road SB	5.19	19.69	0.84	C			

PM Peak							
	Queue (PCU)	Delay (s)	RFC	LOS	Junction Delay (s)	Junction LOS	Network Residual Capacity
Single-lane Entry - 2031							
Cranston Drive	0.04	3.84	0.04	A	96.80	F	-13 % [Airport Road NB]
Airport Road NB	51.39	133.97	1.06	F			
15717 Airport Road - Access (S)	0.04	5.52	0.04	A			
Airport Road SB	0.62	4.99	0.38	A			

2041 Volumes

AM Peak							
	Queue (PCU)	Delay (s)	RFC	LOS	Junction Delay (s)	Junction LOS	Network Residual Capacity
Single-lane Entry - 2041							
Cranston Drive	0.09	6.28	0.08	A	55.36	F	-8 % [Airport Road SB]
Airport Road NB	0.48	4.50	0.32	A			
15717 Airport Road - Access (S)	0.09	3.87	0.08	A			
Airport Road SB	25.45	77.71	1.00	F			

PM Peak							
	Queue (PCU)	Delay (s)	RFC	LOS	Junction Delay (s)	Junction LOS	Network Residual Capacity
Single-lane Entry - 2041							
Cranston Drive	0.05	4.01	0.04	A	367.45	F	-26 % [Airport Road NB]
Airport Road NB	171.36	511.46	1.24	F			
15717 Airport Road - Access (S)	0.04	5.62	0.04	A			
Airport Road SB	0.80	5.52	0.44	A			

N/S Flared Two-lane Entry

Roundabout Geometry

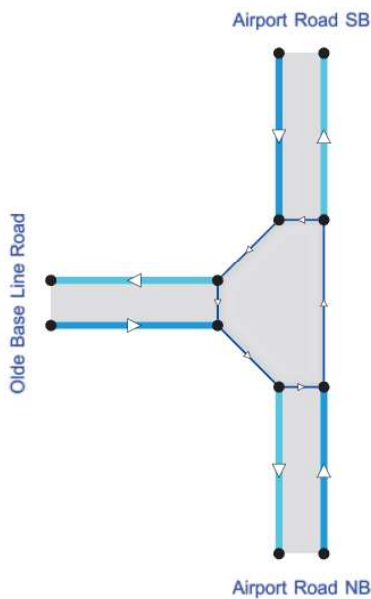
Name	V - Approach road half-width (m)	E - Entry width (m)	Γ - Effective flare length (m)	R - Entry radius (m)	D - Inscribed circle diameter (m)	PHI - Conflict (entry) angle (deg)	Exit Only
Cranston Drive	4.25	4.25	0.00	25.00	55.00	20.00	
Airport Road NB	4.25	8.00	20.00	25.00	49.00	20.00	
15717 Airport Road - Access (S)	4.25	4.25	0.00	25.00	55.00	20.00	
Airport Road SB	4.25	8.00	20.00	25.00	49.00	20.00	

2041 Volumes

AM Peak							
	Queue (PCU)	Delay (s)	RFC	LOS	Junction Delay (s)	Junction LOS	Network Residual Capacity
Flared Two-lane Entry - 2041							
Cranston Drive	0.09	6.44	0.08	A	4.85	A	47 % [Airport Road SB]
Airport Road NB	0.27	2.48	0.21	A			
15717 Airport Road - Access (S)	0.09	3.87	0.08	A			
Airport Road SB	1.83	5.63	0.64	A			

PM Peak							
	Queue (PCU)	Delay (s)	RFC	LOS	Junction Delay (s)	Junction LOS	Network Residual Capacity
Flared Two-lane Entry - 2041							
Cranston Drive	0.05	4.01	0.04	A	7.90	A	19 % [Airport Road NB]
Airport Road NB	3.98	9.82	0.80	A			
15717 Airport Road - Access (S)	0.06	6.98	0.05	A			
Airport Road SB	0.40	2.78	0.28	A			

Airport Road at Olde Base Line Road



Single-Lane Entry

Roundabout Geometry

Name	V - Approach road half-width (m)	E - Entry width (m)	I' - Effective flare length (m)	R - Entry radius (m)	D - Inscribed circle diameter (m)	PHI - Conflict (entry) angle (deg)	Exit Only
Olde Base Line Road	4.25	4.25	0.00	25.00	55.00	20.00	
Airport Road NB	4.25	4.25	0.00	25.00	55.00	20.00	
Airport Road SB	4.25	4.25	0.00	25.00	55.00	20.00	

2021 Volumes

AM Peak							
	Queue (PCU)	Delay (s)	RFC	LOS	Junction Delay (s)	Junction LOS	Network Residual Capacity
Single-lane Entry - 2021							
Olde Base Line Road	0.41	5.59	0.29	A	8.54	A	30 % [Airport Road SB]
Airport Road NB	0.19	3.76	0.16	A			
Airport Road SB	2.42	10.50	0.71	B			

PM Peak							
	Queue (PCU)	Delay (s)	RFC	LOS	Junction Delay (s)	Junction LOS	Network Residual Capacity
Single-lane Entry - 2021							
Olde Base Line Road	0.48	4.97	0.32	A	8.79	A	22 % [Airport Road NB]
Airport Road NB	2.63	12.53	0.73	B			
Airport Road SB	0.54	4.86	0.35	A			

2031 Volumes

AM Peak							
	Queue (PCU)	Delay (s)	RFC	LOS	Junction Delay (s)	Junction LOS	Network Residual Capacity
Single-lane Entry - 2031							
Olde Base Line Road	0.57	6.62	0.36	A	14.69	B	9 % [Airport Road SB]
Airport Road NB	0.23	3.92	0.18	A			
Airport Road SB	5.22	19.48	0.85	C			

PM Peak							
	Queue (PCU)	Delay (s)	RFC	LOS	Junction Delay (s)	Junction LOS	Network Residual Capacity
Single-lane Entry - 2031							
Olde Base Line Road	0.64	5.61	0.39	A	17.65	C	2 % [Airport Road NB]
Airport Road NB	7.01	29.21	0.89	D			
Airport Road SB	0.69	5.39	0.40	A			

2041 Volumes

AM Peak							
	Queue (PCU)	Delay (s)	RFC	LOS	Junction Delay (s)	Junction LOS	Network Residual Capacity
Single-lane Entry - 2041							
Olde Base Line Road	0.84	8.24	0.45	A	55.49	F	-8 % [Airport Road SB]
Airport Road NB	0.28	4.11	0.22	A			
Airport Road SB	27.04	80.62	1.01	F			
PM Peak							
	Queue (PCU)	Delay (s)	RFC	LOS	Junction Delay (s)	Junction LOS	Network Residual Capacity
Single-lane Entry - 2041							
Olde Base Line Road	0.89	6.60	0.47	A	89.90	F	-14 % [Airport Road NB]
Airport Road NB	55.59	168.23	1.09	F			
Airport Road SB	0.91	6.11	0.47	A			

Single-Lane Entry with SB By-Pass Lane

Roundabout Geometry

Name	V - Approach road half-width (m)	E - Entry width (m)	I' - Effective flare length (m)	R - Entry radius (m)	D - Inscribed circle diameter (m)	PHI - Conflict (entry) angle (deg)	Exit Only
Olde Base Line Road	4.25	4.25	0.00	25.00	55.00	20.00	
Airport Road NB	4.25	4.25	0.00	25.00	55.00	20.00	
Airport Road SB	4.25	4.25	0.00	25.00	55.00	20.00	

Bypass

Name	Arm Has Bypass	Bypass Utilisation (%)
Olde Base Line Road		
Airport Road NB		
Airport Road SB	✓	100

2041 Volumes

AM Peak							
	Queue (PCU)	Delay (s)	RFC	LOS	Junction Delay (s)	Junction LOS	Network Residual Capacity
Single-lane Entry With SB By-Pass - 2041							
Olde Base Line Road	0.86	8.45	0.46	A	9.44	A	28 % [Airport Road SB]
Airport Road NB	0.28	4.11	0.22	A			
Airport Road SB	2.52	10.85	0.72	B			
PM Peak							
	Queue (PCU)	Delay (s)	RFC	LOS	Junction Delay (s)	Junction LOS	Network Residual Capacity
Single-lane Entry With SB By-Pass - 2041							
Olde Base Line Road	0.89	6.60	0.47	A	89.53	F	-14 % [Airport Road NB]
Airport Road NB	55.59	168.23	1.09	F			
Airport Road SB	0.45	4.66	0.31	A			

NB Flared Two-Lane Entry with SB By-Pass Lane

Roundabout Geometry

Name	V - Approach road half-width (m)	E - Entry width (m)	I' - Effective flare length (m)	R - Entry radius (m)	D - Inscribed circle diameter (m)	PHI - Conflict (entry) angle (deg)	Exit Only
Olde Base Line Road	4.25	4.25	0.00	25.00	55.00	20.00	
Airport Road NB	4.25	8.00	20.00	25.00	49.00	20.00	
Airport Road SB	4.25	4.25	0.00	25.00	55.00	20.00	

Bypass

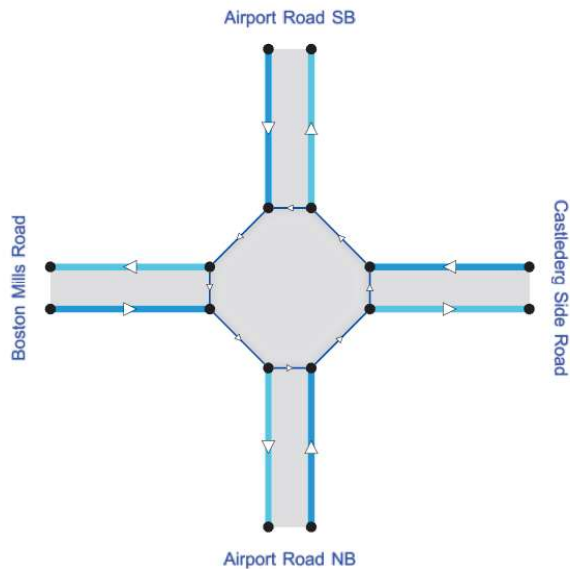
Name	Arm Has Bypass	Bypass Utilisation (%)
Olde Base Line Road		
Airport Road NB		
Airport Road SB	✓	100

2041 Volumes

AM Peak							
	Queue (PCU)	Delay (s)	RFC	LOS	Junction Delay (s)	Junction LOS	Network Residual Capacity
NB Flared Two-lane Entry with SB By-Pass Lane - 2041							
Olde Base Line Road	0.86	8.45	0.46	A	9.21	A	28 % [Airport Road SB]
Airport Road NB	0.16	2.38	0.14	A			
Airport Road SB	2.52	10.85	0.72	B			

PM Peak							
	Queue (PCU)	Delay (s)	RFC	LOS	Junction Delay (s)	Junction LOS	Network Residual Capacity
NB Flared Two-lane Entry with SB By-Pass Lane - 2041							
Olde Base Line Road	0.89	6.60	0.47	A	6.40	A	31 % [Airport Road NB]
Airport Road NB	2.14	7.14	0.68	A			
Airport Road SB	0.46	4.70	0.31	A			

Airport Road at Boston Mills Road / Castleberg Side Road



Single-Lane Entry

Roundabout Geometry

Name	V - Approach road half-width (m)	E - Entry width (m)	l' - Effective flare length (m)	R - Entry radius (m)	D - Inscribed circle diameter (m)	PHI - Conflict (entry) angle (deg)	Exit Only
Boston Mills Road	4.25	4.25	0.00	25.00	55.00	20.00	
Airport Road NB	4.25	4.25	0.00	25.00	55.00	20.00	
Castleberg Side Road	4.25	4.25	0.00	25.00	55.00	20.00	
Airport Road SB	4.25	4.25	0.00	25.00	55.00	20.00	

2021 Volumes

AM Peak							
	Queue (PCU)	Delay (s)	RFC	LOS	Junction Delay (s)	Junction LOS	Network Residual Capacity
Single-lane Entry - 2021							
Boston Mills Road	0.00	0.00	0.00	A	7.70	A	39 % [Airport Road SB]
Airport Road NB	0.17	3.62	0.14	A			
Castleberg Side Road	0.09	3.54	0.08	A			
Airport Road SB	1.93	9.11	0.66	A			

PM Peak							
	Queue (PCU)	Delay (s)	RFC	LOS	Junction Delay (s)	Junction LOS	Network Residual Capacity
Single-lane Entry - 2021							
Boston Mills Road	0.00	0.00	0.00	A	6.90	A	46 % [Airport Road NB]
Airport Road NB	1.68	8.22	0.63	A			
Castleberg Side Road	0.10	4.61	0.09	A			
Airport Road SB	0.30	3.96	0.23	A			

2031 Volumes

AM Peak							
	Queue (PCU)	Delay (s)	RFC	LOS	Junction Delay (s)	Junction LOS	Network Residual Capacity
Single-lane Entry - 2031							
Boston Mills Road	0.00	0.00	0.00	A	11.92	B	16 % [Airport Road SB]
Airport Road NB	0.20	3.74	0.17	A			
Castlederg Side Road	0.11	3.65	0.10	A			
Airport Road SB	3.65	14.68	0.79	B			

PM Peak							
	Queue (PCU)	Delay (s)	RFC	LOS	Junction Delay (s)	Junction LOS	Network Residual Capacity
Single-lane Entry - 2031							
Boston Mills Road	0.00	0.00	0.00	A	9.68	A	23 % [Airport Road NB]
Airport Road NB	2.93	12.14	0.75	B			
Castlederg Side Road	0.13	5.12	0.11	A			
Airport Road SB	0.37	4.17	0.27	A			

2041 Volumes

AM Peak							
	Queue (PCU)	Delay (s)	RFC	LOS	Junction Delay (s)	Junction LOS	Network Residual Capacity
Single-lane Entry - 2041							
Boston Mills Road	0.00	0.00	0.00	A	32.79	D	-2 % [Airport Road SB]
Airport Road NB	0.25	3.89	0.20	A			
Castlederg Side Road	0.14	3.78	0.12	A			
Airport Road SB	12.08	42.36	0.94	E			

PM Peak							
	Queue (PCU)	Delay (s)	RFC	LOS	Junction Delay (s)	Junction LOS	Network Residual Capacity
Single-lane Entry - 2041							
Boston Mills Road	0.00	0.00	0.00	A	19.72	C	4 % [Airport Road NB]
Airport Road NB	7.33	26.54	0.89	D			
Castlederg Side Road	0.17	5.87	0.15	A			
Airport Road SB	0.46	4.44	0.31	A			

Single-Lane Entry with NB By-Pass Lane

Roundabout Geometry

Name	V - Approach road half-width (m)	E - Entry width (m)	l' - Effective flare length (m)	R - Entry radius (m)	D - Inscribed circle diameter (m)	PHI - Conflict (entry) angle (deg)	Exit Only
Boston Mills Road	4.25	4.25	0.00	25.00	55.00	20.00	
Airport Road NB	4.25	4.25	0.00	25.00	55.00	20.00	
Castledeerg Side Road	4.25	4.25	0.00	25.00	55.00	20.00	
Airport Road SB	4.25	4.25	0.00	25.00	55.00	20.00	

Bypass

Name	Arm Has Bypass	Bypass Utilisation (%)
Boston Mills Road		
Airport Road NB	✓	100
Castledeerg Side Road		
Airport Road SB		

2041 Volumes

AM Peak							
	Queue (PCU)	Delay (s)	RFC	LOS	Junction Delay (s)	Junction LOS	Network Residual Capacity
Single-lane Entry with NB By-Pass - 2041							
Boston Mills Road	0.00	0.00	0.00	A	32.78	D	-2 % [Airport Road SB]
Airport Road NB	0.24	3.86	0.19	A			
Castledeerg Side Road	0.14	3.78	0.12	A			
Airport Road SB	12.08	42.36	0.94	E			

PM Peak							
	Queue (PCU)	Delay (s)	RFC	LOS	Junction Delay (s)	Junction LOS	Network Residual Capacity
Single-lane Entry with NB By-Pass - 2041							
Boston Mills Road	0.00	0.00	0.00	A	14.97	B	9 % [Airport Road NB]
Airport Road NB	5.23	19.62	0.85	C			
Castledeerg Side Road	0.17	5.88	0.15	A			
Airport Road SB	0.46	4.44	0.31	A			

SB Flared Two-Lane Entry with NB By-Pass Lane

Roundabout Geometry

Name	V - Approach road half-width (m)	E - Entry width (m)	l' - Effective flare length (m)	R - Entry radius (m)	D - Inscribed circle diameter (m)	PHI - Conflict (entry) angle (deg)	Exit Only
Boston Mills Road	4.25	4.25	0.00	25.00	55.00	20.00	
Airport Road NB	4.25	4.25	0.00	25.00	55.00	20.00	
Castleberg Side Road	4.25	4.25	0.00	25.00	55.00	20.00	
Airport Road SB	4.25	8.00	20.00	25.00	49.00	20.00	

Bypass

Name	Arm Has Bypass	Bypass Utilisation (%)
Boston Mills Road		
Airport Road NB	✓	100
Castleberg Side Road		
Airport Road SB		

2041 Volumes

AM Peak							
	Queue (PCU)	Delay (s)	RFC	LOS	Junction Delay (s)	Junction LOS	Network Residual Capacity
SB Flared Two-Lane Entry with NB By-Pass - 2041							
Boston Mills Road	0.00	0.00	0.00	A	4.79	A	55 % [Airport Road SB]
Airport Road NB	0.24	3.86	0.19	A			
Castleberg Side Road	0.14	3.78	0.12	A			
Airport Road SB	1.54	5.10	0.60	A			

PM Peak							
	Queue (PCU)	Delay (s)	RFC	LOS	Junction Delay (s)	Junction LOS	Network Residual Capacity
SB Flared Two-Lane Entry with NB By-Pass - 2041							
Boston Mills Road	0.00	0.00	0.00	A	14.49	B	9 % [Airport Road NB]
Airport Road NB	5.23	19.62	0.85	C			
Castleberg Side Road	0.17	5.88	0.15	A			
Airport Road SB	0.25	2.46	0.20	A			

N/S Flared Two-Lane Entry (no By-Pass Lane)

Roundabout Geometry

Name	V - Approach road half-width (m)	E - Entry width (m)	l' - Effective flare length (m)	R - Entry radius (m)	D - Inscribed circle diameter (m)	PHI - Conflict (entry) angle (deg)	Exit Only
Boston Mills Road	4.25	4.25	0.00	25.00	55.00	20.00	
Airport Road NB	4.25	8.00	20.00	25.00	49.00	20.00	
Castleberg Side Road	4.25	4.25	0.00	25.00	55.00	20.00	
Airport Road SB	4.25	8.00	20.00	25.00	49.00	20.00	

2041 Volumes

AM Peak							
	Queue (PCU)	Delay (s)	RFC	LOS	Junction Delay (s)	Junction LOS	Network Residual Capacity
N/S Flared Two-Lane Entry - 2041							
Boston Mills Road	0.00	0.00	0.00	A	4.54	A	55 % [Airport Road SB]
Airport Road NB	0.15	2.29	0.13	A			
Castledeerg Side Road	0.14	3.78	0.12	A			
Airport Road SB	1.54	5.10	0.60	A			

PM Peak							
	Queue (PCU)	Delay (s)	RFC	LOS	Junction Delay (s)	Junction LOS	Network Residual Capacity
N/S Flared Two-Lane Entry - 2041							
Boston Mills Road	0.00	0.00	0.00	A	4.20	A	65 % [Airport Road NB]
Airport Road NB	1.35	4.65	0.57	A			
Castledeerg Side Road	0.17	5.88	0.15	A			
Airport Road SB	0.25	2.46	0.20	A			

Appendix I – Roundabout Screening



Region of Peel Roundabout Feasibility Screening Tool

		Roundabout Supportive?
1)	<p>Project name, File #, Intersection Location (B/C/M, Street name, distance from major intersections, etc.):</p> <p style="margin-left: 40px;">Airport Road EA King Street to Huntsmill Drive – intersection of Airport and Huntsmill Drive. Approximately 500m from nearest unsignalized intersection to the south, and 2km from nearest unsignalized intersection to the north.</p> <p>_____</p> <p>_____</p>	
2)	<p>Brief description of Intersection (No. of legs, Lanes on each leg, Total AADT, ADDT on each road). Attach or sketch a diagram of existing and horizon year TMCs:</p> <p style="margin-left: 40px;">Currently an east-west stop controlled intersection with two-lane cross sections on all approaches.</p> <p>_____</p> <p style="margin-left: 40px;">AADT on Airport Road – 8,100</p> <p>_____</p> <p style="margin-left: 40px;">AADT on Huntsmill Drive - 30</p> <p>_____</p> <p style="margin-left: 40px;">TMC included in report / appendix.</p> <p>_____</p> <p>_____</p>	<p>YES <input type="checkbox"/></p> <p>NO <input type="checkbox"/></p> <p>NEUTRAL <input checked="" type="checkbox"/></p>
3)	<p>What operational problems are being experienced at this location?</p> <p style="margin-left: 40px;">Intersection currently operates well as two-way stop control.</p> <p>_____</p> <p>_____</p>	<p>YES <input type="checkbox"/></p> <p>NO <input checked="" type="checkbox"/></p> <p>NEUTRAL <input type="checkbox"/></p>
4)	<p>Is it a new intersection or a retrofit of an existing intersection? If existing, what is the existing type of traffic control?</p> <p style="margin-left: 40px;">Currently an east-west stop controlled intersection with two-lane cross sections on all approaches.</p> <p>_____</p> <p>_____</p>	<p>YES <input type="checkbox"/></p> <p>NO <input checked="" type="checkbox"/></p> <p>NEUTRAL <input type="checkbox"/></p>

<p>5)</p>	<p>Is the intersection near a major intersection or a railroad crossing? If so, how close and what type of traffic control exists at the adjacent intersection(s)? Will queues be a problem? Describe the corridor (eg.: average intersection spacing).</p> <p><u>No nearby major intersections or crossings.</u></p> <p>_____</p> <p>_____</p> <p>_____</p>	<p>YES <input type="checkbox"/></p> <p>NO <input checked="" type="checkbox"/></p> <p>NEUTRAL <input type="checkbox"/></p>
<p>6)</p>	<p>Would the intersection be located within a coordinated signal network?</p> <p><u>No nearby signals.</u></p> <p>_____</p> <p>_____</p> <p>_____</p>	<p>YES <input type="checkbox"/></p> <p>NO <input checked="" type="checkbox"/></p> <p>NEUTRAL <input type="checkbox"/></p>
<p>7)</p>	<p>Would the intersection be located on a preferred roundabout corridor? If yes why?</p> <p><u>Airport Road has roundabouts planned south of Caledon East but this area has no planned roundabouts.</u></p> <p>_____</p> <p>_____</p> <p>_____</p> <p>_____</p>	<p>YES <input type="checkbox"/></p> <p>NO <input type="checkbox"/></p> <p>NEUTRAL <input checked="" type="checkbox"/></p>
<p>8)</p>	<p>What is the collision history of the intersection over the past five years? Is there a collision problem that needs to be addressed?</p> <p><u>Two collisions in past five years, one of which was collision with construction equipment. Given the low traffic on Huntsmill Drive.</u></p> <p>_____</p>	<p>YES <input type="checkbox"/></p> <p>NO <input type="checkbox"/></p> <p>NEUTRAL <input checked="" type="checkbox"/></p>
<p>9)</p>	<p>Is the intersection scheduled for improvements or is it located within a corridor that is scheduled for improvements in the next 10 years? What is the ultimate cross-section of the approaching legs?</p> <p><u>No improvements warranted or scheduled.</u></p> <p>_____</p> <p>_____</p> <p>_____</p> <p>_____</p>	<p>YES <input type="checkbox"/></p> <p>NO <input checked="" type="checkbox"/></p> <p>NEUTRAL <input type="checkbox"/></p>

<p>10)</p>	<p>Are there expected to be special users at this intersection in the near future (ie. a person with disability, pedestrians, cyclists, large agricultural machinery, horses, etc.)? If yes, what special considerations would be required?</p> <p><u>Low pedestrian activity as the area is rural.</u></p> <p>_____</p> <p>_____</p> <p>_____</p>	<p>YES <input type="checkbox"/></p> <p>NO <input type="checkbox"/></p> <p>NEUTRAL <input checked="" type="checkbox"/></p>
<p>11)</p>	<p>What traditional improvements are proposed for this intersection (traffic signals, all-way stop, auxiliary lanes, off-set re-alignment, etc)?</p> <p><u>No traditional improvements are proposed.</u></p> <p>_____</p> <p>_____</p> <p>_____</p>	<p>YES <input type="checkbox"/></p> <p>NO <input type="checkbox"/></p> <p>NEUTRAL <input checked="" type="checkbox"/></p>
<p>12)</p>	<p>If traffic signals are considered, does it meet the warrant for the horizon year?</p> <p><u>Warrants for 2041 not met.</u></p> <p>_____</p> <p>_____</p>	<p>YES <input type="checkbox"/></p> <p>NO <input checked="" type="checkbox"/></p> <p>NEUTRAL <input type="checkbox"/></p>
<p>13)</p>	<p>What size of roundabout is being considered for this intersection (ie. single, two, three lane entry)? Please attach a Traffic Flow Worksheet, a lane configuration diagram and a sketch of how a roundabout would fit into the ROW.</p> <p><u>Single lane roundabout.</u></p> <p>_____</p> <p>_____</p> <p>_____</p> <p>_____</p>	<p>YES <input type="checkbox"/></p> <p>NO <input type="checkbox"/></p> <p>NEUTRAL <input checked="" type="checkbox"/></p>
<p>14)</p>	<p>Are there property constraints at/near the intersection or is it restricted by a watercourse/parks/cemeteries/etc? If yes, what are they?</p> <p><u>Minor property acquisition may be required.</u></p> <p>_____</p> <p>_____</p>	<p>YES <input type="checkbox"/></p> <p>NO <input type="checkbox"/></p> <p>NEUTRAL <input checked="" type="checkbox"/></p>

15)	Terrain – Is the area on a grade/flat/rolling? <u>Generally flat.</u> <hr/> <hr/>	YES <input checked="" type="checkbox"/> NO <input type="checkbox"/> NEUTRAL <input type="checkbox"/>
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16)	20 Year Life Cycle Cost Estimate Injury Collision Cost (ICC): _____ Discount Rate (i): _____ <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr style="background-color: #e0e0e0;"> <th colspan="3" style="text-align: center;">20 YEAR LIFE- CYCLE COST COMPARISON</th> </tr> <tr style="background-color: #e0e0e0;"> <th style="width: 35%;">Cost Item</th> <th style="width: 30%;">Other Traffic Control</th> <th style="width: 35%;">Roundabout</th> </tr> </thead> <tbody> <tr> <td>Implementation Cost</td> <td style="text-align: center;">\$</td> <td style="text-align: center;">\$</td> </tr> <tr> <td>Injury Collision Cost (Present Value)</td> <td style="text-align: center;">\$</td> <td style="text-align: center;">\$</td> </tr> <tr> <td>Total Life Cycle Cost</td> <td style="text-align: center;">\$</td> <td style="text-align: center;">\$</td> </tr> </tbody> </table> <p>Notes:</p> <ul style="list-style-type: none"> • Implementation Cost = sum of costs for construction, property, utility relocation, illumination, engineering (20%), contingency (20%) and maintenance (5%) • Present Value of 20 Year Injury Collision Cost = expected annual collision frequency x ICC $((1+i)^{20}-1)/i(1+i)^{20}$ • Monte Carlo Analysis may be required. If so, a range for the implementation cost (i.e. 10%, 50%, 90% probability) is required 	20 YEAR LIFE- CYCLE COST COMPARISON			Cost Item	Other Traffic Control	Roundabout	Implementation Cost	\$	\$	Injury Collision Cost (Present Value)	\$	\$	Total Life Cycle Cost	\$	\$	YES <input type="checkbox"/> NO <input type="checkbox"/> NEUTRAL <input type="checkbox"/>
20 YEAR LIFE- CYCLE COST COMPARISON																	
Cost Item	Other Traffic Control	Roundabout															
Implementation Cost	\$	\$															
Injury Collision Cost (Present Value)	\$	\$															
Total Life Cycle Cost	\$	\$															

17)	Conclusions and Recommendations: As the intersection is expected to continue to operate well, a roundabout is not recommended. <hr/> <hr/> <hr/>	YES <input type="checkbox"/> NO <input type="checkbox"/>
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Region of Peel Roundabout Feasibility Screening Tool

		Roundabout Supportive?
1)	<p>Project name, File #, Intersection Location (B/C/M, Street name, distance from major intersections, etc.):</p> <p style="margin-left: 40px;">Airport Road EA King Street to Huntsmill Drive – intersection of Airport and Walker Road. Approximately 300m from nearest unsignalized intersection to the north, and 280m from nearest signalized intersections to the south.</p> <hr style="margin-left: 40px;"/> <hr style="margin-left: 40px;"/>	
2)	<p>Brief description of Intersection (No. of legs, Lanes on each leg, Total AADT, ADDT on each road). Attach or sketch a diagram of existing and horizon year TMCs:</p> <p style="margin-left: 40px;">Currently an east-west stop controlled intersection with two-lane cross sections on all approaches.</p> <hr style="margin-left: 40px;"/> <p style="margin-left: 40px;">AADT on Airport Road – 8,097</p> <hr style="margin-left: 40px;"/> <p style="margin-left: 40px;">AADT on Walker Rd (estimate using 10.0 factor of AM PH) – 930</p> <hr style="margin-left: 40px;"/> <p style="margin-left: 40px;">TMC included in report / appendix.</p> <hr style="margin-left: 40px;"/> <hr style="margin-left: 40px;"/>	<p>YES <input type="checkbox"/></p> <p>NO <input type="checkbox"/></p> <p>NEUTRAL <input checked="" type="checkbox"/></p>
3)	<p>What operational problems are being experienced at this location?</p> <p style="margin-left: 40px;">Intersection currently operates well as two-way stop control. In the AM peak the eastbound and westbound approaches operate at LOS B with some delay for gaps in traffic. In the PM peak the eastbound and westbound approaches operate at LOC B and C respectively.</p> <hr style="margin-left: 40px;"/> <hr style="margin-left: 40px;"/>	<p>YES <input type="checkbox"/></p> <p>NO <input checked="" type="checkbox"/></p> <p>NEUTRAL <input type="checkbox"/></p>
4)	<p>Is it a new intersection or a retrofit of an existing intersection? If existing, what is the existing type of traffic control?</p> <p style="margin-left: 40px;">Currently an east-west stop controlled intersection with two-lane cross sections on all approaches.</p> <hr style="margin-left: 40px;"/> <hr style="margin-left: 40px;"/> <hr style="margin-left: 40px;"/>	<p>YES <input type="checkbox"/></p> <p>NO <input checked="" type="checkbox"/></p> <p>NEUTRAL <input type="checkbox"/></p>

<p>5)</p>	<p>Is the intersection near a major intersection or a railroad crossing? If so, how close and what type of traffic control exists at the adjacent intersection(s)? Will queues be a problem? Describe the corridor (eg.: average intersection spacing).</p> <p>There is a signalized intersection approximately 280m south, but operating well under existing conditions. Queues are not likely to reach this far.</p> <hr/> <hr/> <hr/>	<p>YES <input type="checkbox"/></p> <p>NO <input checked="" type="checkbox"/></p> <p>NEUTRAL <input type="checkbox"/></p>
<p>6)</p>	<p>Would the intersection be located within a coordinated signal network?</p> <p>Beyond the intersection to the south, the signalized intersections are generally too far away for significant coordination.</p> <hr/> <hr/> <hr/>	<p>YES <input type="checkbox"/></p> <p>NO <input checked="" type="checkbox"/></p> <p>NEUTRAL <input type="checkbox"/></p>
<p>7)</p>	<p>Would the intersection be located on a preferred roundabout corridor? If yes why?</p> <p>The Region is planning two roundabouts to the south as part of prior EA. This corridor is a good candidate for roundabouts because they can help reduce traffic speeds through these smaller communities, and background traffic speeds and truck traffic have been identified as concerns.</p> <hr/> <hr/> <hr/>	<p>YES <input checked="" type="checkbox"/></p> <p>NO <input type="checkbox"/></p> <p>NEUTRAL <input type="checkbox"/></p>
<p>8)</p>	<p>What is the collision history of the intersection over the past five years? Is there a collision problem that needs to be addressed?</p> <p>4 collisions over past 5 years, 3 of which are rear end. This collision rate is not excessive for Ontario. Rear end collisions should be improved by either a roundabout or widening for turning lanes.</p> <hr/> <hr/> <hr/>	<p>YES <input type="checkbox"/></p> <p>NO <input type="checkbox"/></p> <p>NEUTRAL <input checked="" type="checkbox"/></p>
<p>9)</p>	<p>Is the intersection scheduled for improvements or is it located within a corridor that is scheduled for improvements in the next 10 years? What is the ultimate cross-section of the approaching legs?</p> <p>Improvements are likely warranted within 10 years due to the geometric deficiencies (lack of turning lanes). The EA is recommending that the corridor remain two lanes, as widening through Mono Road and Caledon East would not be supportable by the community (insufficient right-of-way).</p> <hr/> <hr/> <hr/>	<p>YES <input type="checkbox"/></p> <p>NO <input checked="" type="checkbox"/></p> <p>NEUTRAL <input type="checkbox"/></p>

<p>10)</p>	<p>Are there expected to be special users at this intersection in the near future (ie. a person with disability, pedestrians, cyclists, large agricultural machinery, horses, etc.)? If yes, what special considerations would be required?</p> <p>There are pedestrian sidewalks on both side of Airport Road south of this intersection, extending approximately 1km to serve the small community. Airport Road is part of Regional cycling network with paved shoulders planned.</p> <hr/> <hr/> <hr/>	<p>YES <input type="checkbox"/> NO <input type="checkbox"/> NEUTRAL <input checked="" type="checkbox"/></p>
<p>11)</p>	<p>What traditional improvements are proposed for this intersection (traffic signals, all-way stop, auxiliary lanes, off-set re-alignment, etc)?</p> <p>Widening to provide eastbound left, eastbound right, and southbound right turning lanes would be recommended.</p> <hr/> <hr/> <hr/>	<p>YES <input type="checkbox"/> NO <input type="checkbox"/> NEUTRAL <input checked="" type="checkbox"/></p>
<p>12)</p>	<p>If traffic signals are considered, does it meet the warrant for the horizon year?</p> <p>Warrants for 2041 not met.</p> <hr/> <hr/>	<p>YES <input type="checkbox"/> NO <input checked="" type="checkbox"/> NEUTRAL <input type="checkbox"/></p>
<p>13)</p>	<p>What size of roundabout is being considered for this intersection (ie. single, two, three lane entry)? Please attach a Traffic Flow Worksheet, a lane configuration diagram and a sketch of how a roundabout would fit into the ROW.</p> <p>Single lane roundabout. Traffic flow is included in report.</p> <hr/> <hr/> <hr/>	<p>YES <input type="checkbox"/> NO <input type="checkbox"/> NEUTRAL <input checked="" type="checkbox"/></p>
<p>14)</p>	<p>Are there property constraints at/near the intersection or is it restricted by a watercourse/parks/cemeteries/etc? If yes, what are they?</p> <p>Several constraints. There is a heritage building at the SW corner of the intersection. It would like need to be removed for a roundabout. A roundabout would also require some property on NW and NE corner, though the property take is small and not likely to require acquiring the homes.</p> <hr/>	<p>YES <input type="checkbox"/> NO <input type="checkbox"/> NEUTRAL <input checked="" type="checkbox"/></p>

15) Terrain – Is the area on a grade/flat/rolling?
Generally flat.

YES
 NO
 NEUTRAL

16) 20 Year Life Cycle Cost Estimate

Injury Collision Cost (ICC): _____

Discount Rate (i): _____

20 YEAR LIFE- CYCLE COST COMPARISON		
Cost Item	Other Traffic Control	Roundabout
Implementation Cost	\$	\$
Injury Collision Cost (Present Value)	\$	\$
Total Life Cycle Cost	\$	\$

Notes:

- Implementation Cost
 = sum of costs for construction, property, utility relocation, illumination, engineering (20%), contingency (20%) and maintenance (5%)
- Present Value of 20 Year Injury Collision Cost
 = expected annual collision frequency x ICC $((1+i)^{20}-1)/i(1+i)^{20}$
- Monte Carlo Analysis may be required. If so, a range for the implementation cost (i.e. 10%, 50%, 90% probability) is required

YES
 NO
 NEUTRAL

17) Conclusions and Recommendations:

Traffic analysis indicates that the two-way stop control would not be sufficient to 2041, and a signal would provide better traffic conditions. However, a signal is not warranted for 2041 traffic volumes.

The main concerns for this roundabout option are the significant property constraints and the heritage building at the SW corner. Therefore, a roundabout is not recommended.

YES
 NO



**Region of Peel
Roundabout Feasibility Screening Tool**

		Roundabout Supportive?
1)	<p>Project name, File #, Intersection Location (B/C/M, Street name, distance from major intersections, etc.):</p> <p>Airport Road EA King Street to Huntsmill Drive - Airport Road and Olde Base Line Road, approximately 1km from the nearest unsignalized intersections at Boston Mills Rd (to the south) and Cranston Drive (to the north). Nearest major intersection to the south is King Street at 4km. Within the small community of Mono Road.</p>	
2)	<p>Brief description of Intersection (No. of legs, Lanes on each leg, Total AADT, ADDT on each road). Attach or sketch a diagram of existing and horizon year TMCs:</p> <p>Three legged 'T' intersection. Single lane approaches on all sides with no turning lanes.</p> <hr/> <p>2016 AADT north of Olde Base Line Road – 11,600</p> <hr/> <p>AADT Olde Base Line Rd (estimate using 10.0 factor of AM PH) 5,000</p> <hr/> <p>TMC included in report / appendix.</p> <hr/> <hr/> <hr/>	<p align="right">YES <input type="checkbox"/> NO <input type="checkbox"/> NEUTRAL <input checked="" type="checkbox"/></p>
3)	<p>What operational problems are being experienced at this location?</p> <p>Currently operating well with LOS B overall and no critical movements. Lack of turning lanes is a concern for safety and delay to through traffic.</p> <hr/>	<p align="right">YES <input type="checkbox"/> NO <input checked="" type="checkbox"/> NEUTRAL <input type="checkbox"/></p>
4)	<p>Is it a new intersection or a retrofit of an existing intersection? If existing, what is the existing type of traffic control?</p> <p>Currently signalized. The EA will recommend either local widening to provide NBL, SBR, and EBL/EBR turning lanes, or a roundabout.</p> <hr/> <hr/>	<p align="right">YES <input checked="" type="checkbox"/> NO <input type="checkbox"/> NEUTRAL <input type="checkbox"/></p>

<p>5)</p>	<p>Is the intersection near a major intersection or a railroad crossing? If so, how close and what type of traffic control exists at the adjacent intersection(s)? Will queues be a problem? Describe the corridor (eg.: average intersection spacing).</p> <p>The nearest major intersection is at King Street at 4km, which is planned as a two-lane roundabout. There is a two-way stop control intersection to the south at Boston Mills which by 2041 will require signals or a roundabout. There is a two-way stop control to the north at Cranston Dr at which signals are not warranted, however high traffic on Airport Road plus crossing pedestrians may warrant a pedestrian signal and/or intersection traffic control.</p>	<p>YES <input type="checkbox"/> NO <input checked="" type="checkbox"/> NEUTRAL <input type="checkbox"/></p>
<p>6)</p>	<p>Would the intersection be located within a coordinated signal network?</p> <p>Signals are too far away to coordinate.</p> <hr/> <hr/> <hr/>	<p>YES <input type="checkbox"/> NO <input type="checkbox"/> NEUTRAL <input checked="" type="checkbox"/></p>
<p>7)</p>	<p>Would the intersection be located on a preferred roundabout corridor? If yes why?</p> <p>The Region is planning two roundabouts to the south as part of prior EA. This corridor is a good candidate for roundabouts because they can help reduce traffic speeds through these smaller communities, and background traffic speeds and truck traffic have been identified as concerns.</p> <hr/>	<p>YES <input checked="" type="checkbox"/> NO <input type="checkbox"/> NEUTRAL <input type="checkbox"/></p>
<p>8)</p>	<p>What is the collision history of the intersection over the past five years? Is there a collision problem that needs to be addressed?</p> <p>12 collisions over past 5 years, 9 of which are rear end. This collision rate is not excessive for Ontario. Rear end collisions should be improved by either a roundabout or widening for turning lanes.</p> <hr/> <hr/>	<p>YES <input type="checkbox"/> NO <input type="checkbox"/> NEUTRAL <input checked="" type="checkbox"/></p>
<p>9)</p>	<p>Is the intersection scheduled for improvements or is it located within a corridor that is scheduled for improvements in the next 10 years? What is the ultimate cross-section of the approaching legs?</p> <p>Improvements are likely warranted within 10 years due to the geometric deficiencies (lack of turning lanes). The EA is recommending that the corridor remain two lanes, as widening through Mono Road and Caledon East would not be supportable by the community (insufficient right-of-way).</p> <hr/>	<p>YES <input checked="" type="checkbox"/> NO <input type="checkbox"/> NEUTRAL <input type="checkbox"/></p>

<p>10)</p>	<p>Are there expected to be special users at this intersection in the near future (ie. a person with disability, pedestrians, cyclists, large agricultural machinery, horses, etc.)? If yes, what special considerations would be required?</p> <p>There is potential for some pedestrian traffic with the small community, though lack of sidewalks and busy nature of road seem to keep pedestrian volumes low. Airport Road is part of Regional cycling network with paved shoulders planned.</p> <hr/> <hr/> <hr/>	<p>YES <input type="checkbox"/> NO <input type="checkbox"/> NEUTRAL <input checked="" type="checkbox"/></p>
<p>11)</p>	<p>What traditional improvements are proposed for this intersection (traffic signals, all-way stop, auxiliary lanes, off-set re-alignment, etc)?</p> <p>Widening to provide northbound left, southbound right, and eastbound left/right turning lanes would be recommended.</p> <hr/>	<p>YES <input type="checkbox"/> NO <input type="checkbox"/> NEUTRAL <input checked="" type="checkbox"/></p>
<p>12)</p>	<p>If traffic signals are considered, does it meet the warrant for the horizon year?</p> <p>Signals currently exist and are warranted under base and future conditions.</p> <hr/> <hr/> <hr/>	<p>YES <input checked="" type="checkbox"/> NO <input type="checkbox"/> NEUTRAL <input type="checkbox"/></p>
<p>13)</p>	<p>What size of roundabout is being considered for this intersection (ie. single, two, three lane entry)? Please attach a Traffic Flow Worksheet, a lane configuration diagram and a sketch of how a roundabout would fit into the ROW.</p> <p>Analysis shows single lane operations are near thresholds in 2041. Flaring to two entry lanes and potentially a southbound bypass lane may be required.</p> <hr/> <hr/>	<p>YES <input type="checkbox"/> NO <input type="checkbox"/> NEUTRAL <input checked="" type="checkbox"/></p>
<p>14)</p>	<p>Are there property constraints at/near the intersection or is it restricted by a watercourse/parks/cemeteries/etc? If yes, what are they?</p> <p>Several constraints. There is a wetland opposite Olde Base Line Road however it is not provincially significant – therefore compensation should be an option. On the SW corner there is an auto shop which would need to be acquired / removed for a roundabout, and likely for signalized improvements as well. A roundabout will also require some property on NW corner though the property take is small and not likely to require</p>	<p>YES <input type="checkbox"/> NO <input type="checkbox"/> NEUTRAL <input checked="" type="checkbox"/></p>

_____ acquiring the homes. _____

15) Terrain – Is the area on a grade/flat/rolling?

 Generally flat. _____

YES
 NO
 NEUTRAL

16) 20 Year Life Cycle Cost Estimate

Injury Collision Cost (ICC): _____

Discount Rate (i): _____

YES
 NO
 NEUTRAL

20 YEAR LIFE- CYCLE COST COMPARISON		
Cost Item	Other Traffic Control	Roundabout
Implementation Cost		
Injury Collision Cost (Present Value)	\$	\$
Total Life Cycle Cost	\$	\$

- Notes:
- Implementation Cost
 = sum of costs for construction, property, utility relocation, illumination, engineering (20%), contingency (20%) and maintenance (5%)
 - Present Value of 20 Year Injury Collision Cost
 = expected annual collision frequency x ICC $((1+i)^{20}-1)/i(1+i)^{20}$
 - Monte Carlo Analysis may be required. If so, a range for the implementation cost (i.e. 10%, 50%, 90% probability) is required

17) Conclusions and Recommendations:

This intersection is a good candidate for a roundabout. Main concern is that long-term 2041 forecasts are at or above capacity for single lane roundabout, necessitating bypass lanes or other strategic network improvements.

YES
 NO



Region of Peel Roundabout Feasibility Screening Tool

		Roundabout Supportive?
1)	<p>Project name, File #, Intersection Location (B/C/M, Street name, distance from major intersections, etc.):</p> <p style="text-align: center;">Airport Road EA King Street to Huntsmill Drive – intersection of Airport Road and Cranston Drive. Approximately 500m from nearest unsignalized intersection to the north and 1km from nearest signalized intersections both north and south.</p> <hr/>	
2)	<p>Brief description of Intersection (No. of legs, Lanes on each leg, Total AADT, ADDT on each road). Attach or sketch a diagram of existing and horizon year TMCs:</p> <p style="text-align: center;">Currently 3 legs ‘T’ intersection, however development is currently at site-plan-application which proposes fourth leg to east serving residential community.</p> <hr/> <p style="text-align: center;">AADT on Airport Road – 11,600</p> <hr/> <p style="text-align: center;">AADT Cranston Dr (estimate using 10.0 factor of AM PH) – 800</p> <hr/> <p style="text-align: center;">TMC included in report / appendix.</p> <hr/>	<p>YES <input type="checkbox"/></p> <p>NO <input type="checkbox"/></p> <p>NEUTRAL <input checked="" type="checkbox"/></p>
3)	<p>What operational problems are being experienced at this location?</p> <p style="text-align: center;">Intersection currently operates well as two-way stop control. In the AM peak the eastbound approach operates at LOS C with some delay for gaps in traffic. There is a northbound left and southbound right turn lane which limit delay to through traffic.</p> <hr/>	<p>YES <input type="checkbox"/></p> <p>NO <input checked="" type="checkbox"/></p> <p>NEUTRAL <input type="checkbox"/></p>
4)	<p>Is it a new intersection or a retrofit of an existing intersection? If existing, what is the existing type of traffic control?</p> <p style="text-align: center;">Currently unsignalized two-way stop control. The new development to the east will construct a fourth leg to the intersection.</p> <hr/> <hr/> <hr/>	<p>YES <input type="checkbox"/></p> <p>NO <input type="checkbox"/></p> <p>NEUTRAL <input checked="" type="checkbox"/></p>

<p>5)</p>	<p>Is the intersection near a major intersection or a railroad crossing? If so, how close and what type of traffic control exists at the adjacent intersection(s)? Will queues be a problem? Describe the corridor (eg.: average intersection spacing).</p> <p>There is a grocery store / retail access approximately 370m north but queues are not likely to reach this far.</p> <hr/> <hr/> <hr/>	<p>YES <input type="checkbox"/> NO <input checked="" type="checkbox"/> NEUTRAL <input type="checkbox"/></p>
<p>6)</p>	<p>Would the intersection be located within a coordinated signal network?</p> <p>Signalized intersections generally too far away for significant coordination.</p> <hr/> <hr/> <hr/>	<p>YES <input type="checkbox"/> NO <input checked="" type="checkbox"/> NEUTRAL <input type="checkbox"/></p>
<p>7)</p>	<p>Would the intersection be located on a preferred roundabout corridor? If yes why?</p> <p>The Region is planning two roundabouts to the south as part of prior EA. This corridor is a good candidate for roundabouts because they can help reduce traffic speeds through these smaller communities, and background traffic speeds and truck traffic have been identified as concerns.</p> <hr/> <hr/>	<p>YES <input checked="" type="checkbox"/> NO <input type="checkbox"/> NEUTRAL <input type="checkbox"/></p>
<p>8)</p>	<p>What is the collision history of the intersection over the past five years? Is there a collision problem that needs to be addressed?</p> <p>Over the past five years this intersection has had two collisions, indicating that there is no significant problem to address.</p> <hr/>	<p>YES <input type="checkbox"/> NO <input type="checkbox"/> NEUTRAL <input checked="" type="checkbox"/></p>
<p>9)</p>	<p>Is the intersection scheduled for improvements or is it located within a corridor that is scheduled for improvements in the next 10 years? What is the ultimate cross-section of the approaching legs?</p> <p>The intersection will change with the construction of the east leg, however further improvements / widening are not justified. There is potential for future pedestrian crossings between the planned residential development and the school (northwest of intersection). Given the potential for increased traffic volumes and pedestrians, the intersection is a candidate for signalization or a roundabout.</p> <hr/> <hr/> <hr/>	<p>YES <input type="checkbox"/> NO <input checked="" type="checkbox"/> NEUTRAL <input type="checkbox"/></p>

<p>10)</p>	<p>Are there expected to be special users at this intersection in the near future (ie. a person with disability, pedestrians, cyclists, large agricultural machinery, horses, etc.)? If yes, what special considerations would be required?</p> <p>There is likely potential for school children walking across Airport Road between the residential development and the school northwest of the intersection. Because Airport Road is a busy corridor with heavy trucks plus concerns about speeds, a signal may be preferable to a roundabout to accommodate pedestrians safely.</p> <hr/>	<p>YES <input type="checkbox"/> NO <input checked="" type="checkbox"/> NEUTRAL <input type="checkbox"/></p>
<p>11)</p>	<p>What traditional improvements are proposed for this intersection (traffic signals, all-way stop, auxiliary lanes, off-set re-alignment, etc)?</p> <p>Aside from the construction of the east leg, warrants indicate no major improvements are required. Minor flaring / widening of west leg (eastbound approach) to accommodate a left/through lane and separate right turning lane would improve traffic operations.</p> <hr/> <hr/>	<p>YES <input type="checkbox"/> NO <input checked="" type="checkbox"/> NEUTRAL <input type="checkbox"/></p>
<p>12)</p>	<p>If traffic signals are considered, does it meet the warrant for the horizon year?</p> <p>Warrants for 2041 not met.</p> <hr/> <hr/> <hr/>	<p>YES <input type="checkbox"/> NO <input checked="" type="checkbox"/> NEUTRAL <input type="checkbox"/></p>
<p>13)</p>	<p>What size of roundabout is being considered for this intersection (ie. single, two, three lane entry)? Please attach a Traffic Flow Worksheet, a lane configuration diagram and a sketch of how a roundabout would fit into the ROW.</p> <p>Single lane roundabout. Traffic flow is included in report.</p> <hr/> <hr/> <hr/> <hr/>	<p>YES <input type="checkbox"/> NO <input type="checkbox"/> NEUTRAL <input checked="" type="checkbox"/></p>
<p>14)</p>	<p>Are there property constraints at/near the intersection or is it restricted by a watercourse/parks/cemeteries/etc? If yes, what are they?</p> <p>A roundabout would have little to no impact on existing residences. The roundabout would require some property from the lands to the east. It is likely that the property take between a roundabout and a road with left turn lane are similar.</p> <hr/> <hr/>	<p>YES <input type="checkbox"/> NO <input type="checkbox"/> NEUTRAL <input checked="" type="checkbox"/></p>

15)	Terrain – Is the area on a grade/flat/rolling? Flat though there is a down gradient to the north (at approximately 400m so does beyond minimum sight lines). _____ _____	YES <input type="checkbox"/> NO <input type="checkbox"/> NEUTRAL <input checked="" type="checkbox"/>
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16)	20 Year Life Cycle Cost Estimate Injury Collision Cost (ICC): _____ Discount Rate (i): _____	YES <input type="checkbox"/> NO <input type="checkbox"/> NEUTRAL <input type="checkbox"/>
20 YEAR LIFE- CYCLE COST COMPARISON		
Cost Item	Other Traffic Control	Roundabout
Implementation Cost	\$	\$
Injury Collision Cost (Present Value)	\$	\$
Total Life Cycle Cost	\$	\$
Notes: <ul style="list-style-type: none"> • Implementation Cost = sum of costs for construction, property, utility relocation, illumination, engineering (20%), contingency (20%) and maintenance (5%) • Present Value of 20 Year Injury Collision Cost = expected annual collision frequency x ICC $((1+i)^{20}-1)/i(1+i)^{20}$ • Monte Carlo Analysis may be required. If so, a range for the implementation cost (i.e. 10%, 50%, 90% probability) is required 		

17)	Conclusions and Recommendations:	YES <input type="checkbox"/> NO <input type="checkbox"/>
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	<p>The signal warrant indicates that two-way stop control may be sufficient to 2041, though a signal / roundabout may be considered for other network reasons including the potential for pedestrians and the lack of gaps in traffic especially by 2041.</p> <hr/> <p>Overall the analysis indicates a signal may be preferable mainly on the basis of enabling pedestrians to safely cross. If a separate pedestrian crossing / signal is provided further north, this intersection would likely remain two-way stop control.</p>	



Region of Peel Roundabout Feasibility Screening Tool

		Roundabout Supportive?
1)	<p>Project name, File #, Intersection Location (B/C/M, Street name, distance from major intersections, etc.):</p> <p style="text-align: center;">Airport Road EA King Street to Huntmill Drive – intersection of Airport Road & Boston Mills Road. Approximately 1.2km and 3.1 km away from the nearest signalized intersection to the north and south respectively.</p> <hr/> <hr/>	
2)	<p>Brief description of Intersection (No. of legs, Lanes on each leg, Total AADT, ADDT on each road). Attach or sketch a diagram of existing and horizon year TMCs:</p> <p style="text-align: center;">4-leg offset unsignalized intersection, single lane on all four approaches.</p> <hr/> <p style="text-align: center;">Existing AADT on Airport Road = 8700</p> <hr/> <p style="text-align: center;">Existing AADT on Boston Mills Road (estimate using 10.0 factor of AM PH) – 30</p> <hr/> <p style="text-align: center;">Existing AADT on Castleberg Side Road (estimate using 10.0 factor of AM PH) – 800</p> <hr/> <p style="text-align: center;">TMC included in report / appendix.</p> <hr/>	<p style="text-align: right;">YES <input type="checkbox"/> NO <input type="checkbox"/> NEUTRAL <input checked="" type="checkbox"/></p>
3)	<p>What operational problems are being experienced at this location?</p> <p style="text-align: center;">Eastbound and westbound approaches are offset, which is a safety concern. All approaches operate at LOS C or better under existing conditions</p> <hr/> <hr/>	<p style="text-align: right;">YES <input checked="" type="checkbox"/> NO <input type="checkbox"/> NEUTRAL <input type="checkbox"/></p>
4)	<p>Is it a new intersection or a retrofit of an existing intersection? If existing, what is the existing type of traffic control?</p> <p style="text-align: center;">Currently unsignalized with two-way stop control on minor approaches. The EA will recommend either realign eastbound/westbound, and implement EBL/EBR, WBL/WBR, NBL, SBL turning lanes, or a roundabout.</p> <hr/> <hr/>	<p style="text-align: right;">YES <input checked="" type="checkbox"/> NO <input type="checkbox"/> NEUTRAL <input type="checkbox"/></p>

<p>5)</p>	<p>Is the intersection near a major intersection or a railroad crossing? If so, how close and what type of traffic control exists at the adjacent intersection(s)? Will queues be a problem? Describe the corridor (eg.: average intersection spacing).</p> <p>The nearest intersection is at Olde Base Line Road at 1.2km, which is recommended as a potential roundabout location.</p> <hr/> <hr/> <hr/>	<p>YES <input type="checkbox"/> NO <input checked="" type="checkbox"/> NEUTRAL <input type="checkbox"/></p>
<p>6)</p>	<p>Would the intersection be located within a coordinated signal network?</p> <p>Signals are too far away to coordinate.</p> <hr/> <hr/> <hr/>	<p>YES <input type="checkbox"/> NO <input type="checkbox"/> NEUTRAL <input checked="" type="checkbox"/></p>
<p>7)</p>	<p>Would the intersection be located on a preferred roundabout corridor? If yes why?</p> <p>The Region is planning two roundabouts to the south as part of prior EA. This corridor is a good candidate for roundabouts because they can help reduce traffic speeds through these smaller communities, and background traffic speeds and truck traffic have been identified as concerns.</p> <hr/>	<p>YES <input checked="" type="checkbox"/> NO <input type="checkbox"/> NEUTRAL <input type="checkbox"/></p>
<p>8)</p>	<p>What is the collision history of the intersection over the past five years? Is there a collision problem that needs to be addressed?</p> <p>Over the past five years this intersection has had two collisions, indicating that there is no significant problem to address.</p> <hr/> <hr/> <hr/>	<p>YES <input type="checkbox"/> NO <input type="checkbox"/> NEUTRAL <input checked="" type="checkbox"/></p>
<p>9)</p>	<p>Is the intersection scheduled for improvements or is it located within a corridor that is scheduled for improvements in the next 10 years? What is the ultimate cross-section of the approaching legs?</p> <p>Improvements are likely warranted within 10 years due to the geometric deficiencies (offset intersection, lack of turning lanes). The EA is recommending that the corridor remain two lanes, as widening through Mono Road and Caledon East would not be supportable by the community (insufficient right-of-way).</p> <hr/>	<p>YES <input checked="" type="checkbox"/> NO <input type="checkbox"/> NEUTRAL <input type="checkbox"/></p>

<p>10)</p>	<p>Are there expected to be special users at this intersection in the near future (ie. a person with disability, pedestrians, cyclists, large agricultural machinery, horses, etc.)? If yes, what special considerations would be required?</p> <p><u>Airport Road is part of Regional cycling network with paved shoulders planned.</u></p>	<p>YES <input type="checkbox"/> NO <input type="checkbox"/> NEUTRAL <input checked="" type="checkbox"/></p>
<p>11)</p>	<p>What traditional improvements are proposed for this intersection (traffic signals, all-way stop, auxiliary lanes, off-set re-alignment, etc)?</p> <p><u>Realigning eastbound/westbound approaches, as well as widening to provide northbound left, southbound left, eastbound left and right, westbound left and right turning lanes would be recommended.</u></p>	<p>YES <input type="checkbox"/> NO <input type="checkbox"/> NEUTRAL <input checked="" type="checkbox"/></p>
<p>12)</p>	<p>If traffic signals are considered, does it meet the warrant for the horizon year?</p> <p><u>Signal is not warranted for 2041 traffic volumes.</u></p>	<p>YES <input type="checkbox"/> NO <input checked="" type="checkbox"/> NEUTRAL <input type="checkbox"/></p>
<p>13)</p>	<p>What size of roundabout is being considered for this intersection (ie. single, two, three lane entry)? Please attach a Traffic Flow Worksheet, a lane configuration diagram and a sketch of how a roundabout would fit into the ROW.</p> <p><u>Analysis shows single lane operations are near thresholds in 2041. Flaring to two entry lanes and potentially a northbound bypass lane may be required.</u></p>	<p>YES <input type="checkbox"/> NO <input type="checkbox"/> NEUTRAL <input checked="" type="checkbox"/></p>
<p>14)</p>	<p>Are there property constraints at/near the intersection or is it restricted by a watercourse/parks/cemeteries/etc? If yes, what are they?</p> <p><u>A roundabout would have little to no impact on existing properties.</u></p>	<p>YES <input type="checkbox"/> NO <input checked="" type="checkbox"/> NEUTRAL <input type="checkbox"/></p>

15)	Terrain – Is the area on a grade/flat/rolling? Flat _____ _____ _____ _____	YES <input type="checkbox"/> NO <input checked="" type="checkbox"/> NEUTRAL <input type="checkbox"/>
------------	---	--

16)	20 Year Life Cycle Cost Estimate Injury Collision Cost (ICC): _____ Discount Rate (i): _____	YES <input type="checkbox"/> NO <input type="checkbox"/> NEUTRAL <input type="checkbox"/>												
20 YEAR LIFE- CYCLE COST COMPARISON														
<table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr style="background-color: #e0e0e0;"> <th style="width: 33%;">Cost Item</th> <th style="width: 33%;">Other Traffic Control</th> <th style="width: 33%;">Roundabout</th> </tr> </thead> <tbody> <tr> <td>Implementation Cost</td> <td style="text-align: center;">\$</td> <td style="text-align: center;">\$</td> </tr> <tr> <td>Injury Collision Cost (Present Value)</td> <td style="text-align: center;">\$</td> <td style="text-align: center;">\$</td> </tr> <tr> <td>Total Life Cycle Cost</td> <td style="text-align: center;">\$</td> <td style="text-align: center;">\$</td> </tr> </tbody> </table>			Cost Item	Other Traffic Control	Roundabout	Implementation Cost	\$	\$	Injury Collision Cost (Present Value)	\$	\$	Total Life Cycle Cost	\$	\$
Cost Item	Other Traffic Control	Roundabout												
Implementation Cost	\$	\$												
Injury Collision Cost (Present Value)	\$	\$												
Total Life Cycle Cost	\$	\$												
Notes: <ul style="list-style-type: none"> • Implementation Cost = sum of costs for construction, property, utility relocation, illumination, engineering (20%), contingency (20%) and maintenance (5%) • Present Value of 20 Year Injury Collision Cost = expected annual collision frequency x ICC $((1+i)^{20}-1)/i(1+i)^{20}$ • Monte Carlo Analysis may be required. If so, a range for the implementation cost (i.e. 10%, 50%, 90% probability) is required 														

17)	Conclusions and Recommendations: Because the intersection operates well as two-way stop control, a roundabout is not recommended as part of the EA. However, traffic growth may occur due to developments, and this location is a good candidate for a roundabout. Therefore, protection of property for a future roundabout is recommended.	YES <input type="checkbox"/> NO <input type="checkbox"/>

Appendix J – Sightline Analysis

- A - Minimum Stopping Sight Distance, Table E3-1.
- A₁ - Distance travelled in 3 s, Table E3-2.
- B - Safe Sight Distance for P vehicle, crossing 2-lane highway from stop.
- C - Safe Sight Distance for P vehicle, turning left into 2-lane highway across P vehicle approaching from left.
- D - Safe Sight Distance for P vehicle to turn left into 2-lane highway and attain assumed operating speed before being overtaken by P vehicle approaching in same direction at design speed.
- E - Safe Sight Distance for P vehicle to turn right into 2-lane highway and attain assumed operating speed before being overtaken by P vehicle approaching in same direction at design speed.

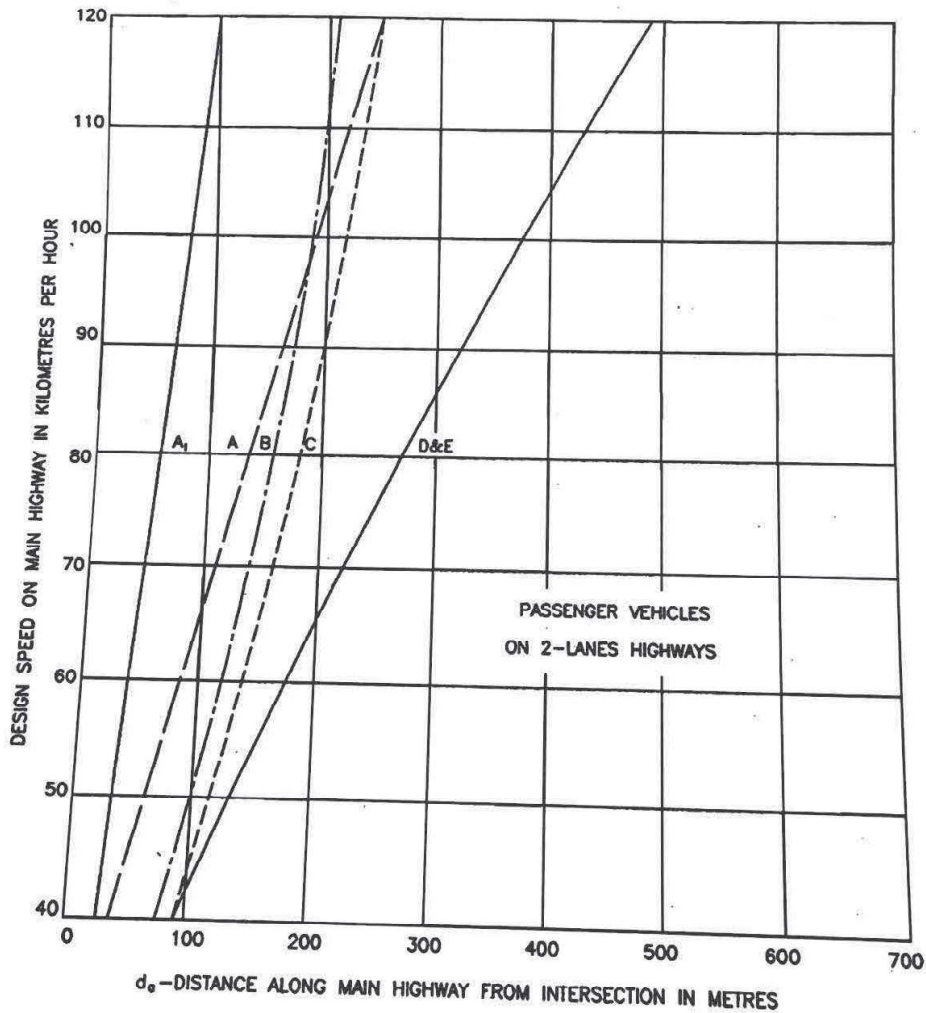



Figure E3-6

Sight Distance Requirements for Stopping
Crossing and Turning Movements

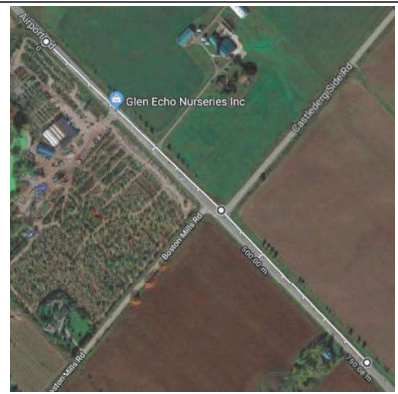
Intersection Road (w/ Airport Road)	Approach	Minimum Sight Distance (m)	Desirable Sight Distance (m)	Measured Sight Distance (m)		Meet Requirements				Site Picture (Google Map)	Notes
				Looking North	Looking South	Minimum		Desirable			
						N	S	N	S		
Huntsmill Drive	WB	85	180	200	180	Y	Y	Y	Y	 <ul style="list-style-type: none"> • Recommended cleaning vegetation on the left side of the road • Vehicles likely move forward for visibility 	
Leamster Trail	EB	85	180	65	230	N	Y	N	Y	 <ul style="list-style-type: none"> • Vegetation blocking sight lines to be cut back (looking north) • Vehicles likely move forward for visibility 	

Walker Road	EB	85	180	200	200	Y	Y	Y	Y		<ul style="list-style-type: none"> • No Obstruction
	WB	85	180	200	120	Y	Y	Y	N		<ul style="list-style-type: none"> • Trees on the left side of the road might block sightline • Recommend cleaning vegetation
Old Church Road	WB	85	180	60	75	N	N	N	N		<ul style="list-style-type: none"> • This is a signalized intersection

LCBO Driveway	EB	85	180	160	130	Y	Y	N	N		<ul style="list-style-type: none"> • LCBO building blocks view to the south • Vehicles might drive out onto the sidewalk for visibility
Parsons Avenue	EB	85	180	190	200	Y	Y	Y	Y		<ul style="list-style-type: none"> • No Obstruction
Emma Street	EB	85	180	50	250	N	Y	N	Y		<ul style="list-style-type: none"> • Pizza shop on the left side blocks sightline • Vehicles might drive out for visibility

Mountcrest Road	WB	85	180	200	180	Y	Y	Y	Y		<ul style="list-style-type: none"> • Recommend cleaning vegetation on both sides
Larry Street	EB	85	180	90	85	Y	Y	N	N		<ul style="list-style-type: none"> • Trees on the both sides of the road block sightline • Vehicles might drive out for visibility • Recommend cleaning vegetation on both sides
Marion Street	EB	85	180	35	50	N	N	N	N		<ul style="list-style-type: none"> • Trees on the both sides of the road block sightline • Vehicles might drive out for visibility • Recommend cleaning vegetation on both sides • Upward slope on Airport Rd on the right side of Marion Street

Hilltop Drive	EB	85	180	300	135	Y	Y	Y	N	 <ul style="list-style-type: none"> • Trees and fence on the both sides of the road might block sightline • Vehicles might drive out for visibility • Visibility might be affected due to upward sloping on Airport Rd to the south of the Hilltop Dr
Foodland Plaza Drive	WB	85	180	140	370	Y	Y	N	Y	 <ul style="list-style-type: none"> • Visibility might be affected due to downward sloping on Airport Rd to the south of the Hilltop Dr
Cranston Drive	EB	110	220	130	400	Y	Y	N	Y	 <ul style="list-style-type: none"> • Trees on Airport Rd might affect visibility to the left. • Recommend cleaning vegetation on both sides

Olde Base Line Road	EB	110	220	150	90	Y	N	N	N		<ul style="list-style-type: none"> • This is a signalized intersection.
Boston Mills Road	EB	160	320	400	400	Y	Y	Y	Y		<ul style="list-style-type: none"> • No Obstructions
Castleberg Side Road	WB	160	320	400	350	Y	Y	Y	Y		<ul style="list-style-type: none"> • No Obstructions

Appendix K – Speed Limit Assessment

Location	Posted Speed Limit (km/h)	Data Collection Date	Northbound		Southbound		Combined	
			50% Percentile (km/h)	85% Percentile (km/h)	50% Percentile (km/h)	85% Percentile (km/h)	50% Percentile (km/h)	85% Percentile (km/h)
1.5km North of Old Church Road	80	2015-04-28 (Tuesday)	80	89	79	88	80	89
		2015-04-29 (Wednesday)	80	89	79	88	79	89
		2015-04-30 (Thursday)	80	89	80	89	80	89
		Average	80	89	79	88	80	89
0.8km North of Olde Base Line Road	60	2015-04-22 (Wednesday)	62	72	66	75	64	74
		2015-04-23 (Thursday)	62	71	66	75	65	74
		2015-04-24 (Friday)	63	71	66	76	65	74
		Average	62	71	66	75	65	74
2.8km North of King Street	80	2015-04-22 (Wednesday)	88	97	93	102	91	99
		2015-04-23 (Thursday)	87	96	94	104	91	100
		2015-04-24 (Friday)	87	97	94	104	91	100
		Average	87	97	94	103	91	100



Automated Speed Limit Guidelines

FORM A - Automated Speed Limit Guidelines Spreadsheet

Version:
10-Apr-09

Name of Corridor:	Airport Road		
Segment Evaluated:	Huntsmill Drive	to	Walker Road
Geographic Region:	North of Caledon East		
Road Agency:	Region of Peel		
Road Classification:	Arterial	Length of Corridor:	800 m
Urban / Rural:	Rural	Design Speed: (Required for Freeway, Expressway, Highway)	km/h
Divided / Undivided:	Undivided	Current Posted Speed: (For information only)	50 km/h
Major / Minor:	Major	Prevailing Speed: (85th Percentile - for information only)	km/h
# Through Lanes Per Direction:	1 lane	Policy: (Maximum Posted Speed)	

		RISK	Score
A1	GEOMETRY (Horizontal)	Lower	3
A2	GEOMETRY (Vertical)	Medium	6
A3	AVERAGE LANE WIDTH	Medium	6
B	ROADSIDE HAZARDS	Medium	6
C1	PEDESTRIAN EXPOSURE	Lower	2
C2	CYCLIST EXPOSURE	Medium	6
D	PAVEMENT SURFACE	Lower	3
E1	NUMBER OF INTERSECTIONS WITH PUBLIC ROADS	<i>Number of Occurrences</i>	8
	STOP controlled intersection	0	
	Signalized intersection	0	
	Roundabout or traffic circle	0	
	Crosswalk	0	
	Active, at-grade railroad crossing	0	
E2	NUMBER OF INTERSECTIONS WITH PRIVATE ACCESS DRIVEWAYS	<i>Number of Occurrences</i>	7
	Left turn movements permitted	9	
	Right-in / Right-out only	0	
E3	NUMBER OF INTERCHANGES	<i>Number of Occurrences</i>	0
	Number of interchanges along corridor	0	
F	ON-STREET PARKING	N/A	0

Total Risk Score:

47

Recommended Posted Speed Limit (km/h):

As determined by road characteristics

70

As determined by policy

The recommended posted speed limit may be checked against the prevailing speeds of the roadway and the road's safety performance.

Comments:



Automated Speed Limit Guidelines

FORM A - Automated Speed Limit Guidelines Spreadsheet

Version:
10-Apr-09

Name of Corridor:	Airport Road		
Segment Evaluated:	South of Walker Road	to	Caledon Trailway Path
Geographic Region:	Caledon East		
Road Agency:	Region of Peel		
Road Classification:	Arterial	Length of Corridor:	500 m
Urban / Rural:	Urban	Design Speed: (Required for Freeway, Expressway, Highway)	km/h
Divided / Undivided:	Undivided	Current Posted Speed: (For information only)	50 km/h
Major / Minor:	Major	Prevailing Speed: (85th Percentile - for information only)	km/h
# Through Lanes	1 lane	Policy: (Maximum Posted Speed)	
Per Direction:			

		RISK	Score
A1	GEOMETRY (Horizontal)	Lower	2
A2	GEOMETRY (Vertical)	Lower	2
A3	AVERAGE LANE WIDTH	Medium	4
B	ROADSIDE HAZARDS	Higher	3
C1	PEDESTRIAN EXPOSURE	Lower	3
C2	CYCLIST EXPOSURE	Higher	9
D	PAVEMENT SURFACE	Lower	1
E1	NUMBER OF INTERSECTIONS WITH PUBLIC ROADS	<i>Number of Occurrences</i>	22
	STOP controlled intersection		
	Signalized intersection	1	
	Roundabout or traffic circle		
	Crosswalk	1	
	Active, at-grade railroad crossing		
E2	NUMBER OF INTERSECTIONS WITH PRIVATE ACCESS DRIVEWAYS	<i>Number of Occurrences</i>	15
	Left turn movements permitted	25	
	Right-in / Right-out only		
E3	NUMBER OF INTERCHANGES	<i>Number of Occurrences</i>	0
	Number of interchanges along corridor	0	
F	ON-STREET PARKING	Higher	9

Total Risk Score:

70

Recommended Posted Speed Limit (km/h):

As determined by road characteristics

50

As determined by policy

--

The recommended posted speed limit may be checked against the prevailing speeds of the roadway and the road's safety performance.

Comments:

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Automated Speed Limit Guidelines

FORM A - Automated Speed Limit Guidelines Spreadsheet

Version:
10-Apr-09

Name of Corridor:	Airport Road		
Segment Evaluated:	South of Caledon Trailway	to	South of Caledon East Public School Driveway
Geographic Region:	South of Caledon East		
Road Agency:	Region of Peel		
Road Classification:	Arterial	Length of Corridor:	550 m
Urban / Rural:	Urban	Design Speed: (Required for Freeway, Expressway, Highway)	km/h
Divided / Undivided:	Undivided	Current Posted Speed: (For information only)	50 km/h
Major / Minor:	Major	Prevailing Speed: (85th Percentile - for information only)	km/h
# Through Lanes Per Direction:	1 lane	Policy: (Maximum Posted Speed)	

		RISK	Score
A1	GEOMETRY (Horizontal)	Lower	2
A2	GEOMETRY (Vertical)	Higher	6
A3	AVERAGE LANE WIDTH	Higher	6
B	ROADSIDE HAZARDS	Higher	3
C1	PEDESTRIAN EXPOSURE	Medium	6
C2	CYCLIST EXPOSURE	Higher	9
D	PAVEMENT SURFACE	Medium	2
E1	NUMBER OF INTERSECTIONS WITH PUBLIC ROADS	<i>Number of Occurrences</i>	5
	STOP controlled intersection	0	
	Signalized intersection	0	
	Roundabout or traffic circle	0	
	Crosswalk	0	
	Active, at-grade railroad crossing	0	
E2	NUMBER OF INTERSECTIONS WITH PRIVATE ACCESS DRIVEWAYS	<i>Number of Occurrences</i>	15
	Left turn movements permitted	30	
	Right-in / Right-out only	0	
E3	NUMBER OF INTERCHANGES	<i>Number of Occurrences</i>	0
	Number of interchanges along corridor	0	
F	ON-STREET PARKING	N/A	0

Total Risk Score:

54

Recommended Posted Speed Limit (km/h):

As determined by road characteristics

60

As determined by policy

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The recommended posted speed limit may be checked against the prevailing speeds of the roadway and the road's safety performance.

Comments:

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Automated Speed Limit Guidelines

FORM A - Automated Speed Limit Guidelines Spreadsheet

Version:
10-Apr-09

Name of Corridor:	Airport Road		
Segment Evaluated:	South of Caledon East Public School	to	560m South of Cranston Drive
Geographic Region:	South of Caledon East		
Road Agency:	Region of Peel		
Road Classification:	Arterial	Length of Corridor:	870 m
Urban / Rural:	Rural	Design Speed: (Required for Freeway, Expressway, Highway)	km/h
Divided / Undivided:	Undivided	Current Posted Speed: (For information only)	60 km/h
Major / Minor:	Major	Prevailing Speed: (85th Percentile - for information only)	km/h
# Through Lanes Per Direction:	1 lane	Policy: (Maximum Posted Speed)	

		RISK	Score
A1	GEOMETRY (Horizontal)	Lower	3
A2	GEOMETRY (Vertical)	Lower	3
A3	AVERAGE LANE WIDTH	Medium	6
B	ROADSIDE HAZARDS	Medium	6
C1	PEDESTRIAN EXPOSURE	Lower	2
C2	CYCLIST EXPOSURE	Lower	3
D	PAVEMENT SURFACE	Lower	3
E1	NUMBER OF INTERSECTIONS WITH PUBLIC ROADS	<i>Number of Occurrences</i>	2
	STOP controlled intersection	0	
	Signalized intersection	0	
	Roundabout or traffic circle	0	
	Crosswalk	0	
	Active, at-grade railroad crossing	0	
Sidestreet STOP-controlled or lane	1		
E2	NUMBER OF INTERSECTIONS WITH PRIVATE ACCESS DRIVEWAYS	<i>Number of Occurrences</i>	3
	Left turn movements permitted	4	
	Right-in / Right-out only	0	
E3	NUMBER OF INTERCHANGES	<i>Number of Occurrences</i>	0
	Number of interchanges along corridor	0	
F	ON-STREET PARKING	N/A	0

Total Risk Score:

31

Recommended Posted Speed Limit (km/h):

As determined by road characteristics

80

As determined by policy

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The recommended posted speed limit may be checked against the prevailing speeds of the roadway and the road's safety performance.

Comments:

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Automated Speed Limit Guidelines

FORM A - Automated Speed Limit Guidelines Spreadsheet

Version:
10-Apr-09

Name of Corridor:	Airport Road		
Segment Evaluated:	560m South of Cranston	to	635m South of Olde Base Line Road
Geographic Region:	Mono Road		
Road Agency:	Region of Peel		
Road Classification:	Arterial	Length of Corridor:	810 m
Urban / Rural:	Urban	Design Speed: (Required for Freeway, Expressway, Highway)	km/h
Divided / Undivided:	Undivided	Current Posted Speed: (For information only)	60 km/h
Major / Minor:	Major	Prevailing Speed: (85th Percentile - for information only)	km/h
# Through Lanes Per Direction:	1 lane	Policy: (Maximum Posted Speed)	

		RISK	Score
A1	GEOMETRY (Horizontal)	Lower	2
A2	GEOMETRY (Vertical)	Lower	2
A3	AVERAGE LANE WIDTH	Medium	4
B	ROADSIDE HAZARDS	Higher	3
C1	PEDESTRIAN EXPOSURE	Higher	9
C2	CYCLIST EXPOSURE	Medium	6
D	PAVEMENT SURFACE	Lower	1
E1	NUMBER OF INTERSECTIONS WITH PUBLIC ROADS	<i>Number of Occurrences</i>	6
	STOP controlled intersection	0	
	Signalized intersection	1	
	Roundabout or traffic circle	0	
	Crosswalk	0	
	Active, at-grade railroad crossing	0	
E2	NUMBER OF INTERSECTIONS WITH PRIVATE ACCESS DRIVEWAYS	<i>Number of Occurrences</i>	15
	Left turn movements permitted	41	
	Right-in / Right-out only	0	
E3	NUMBER OF INTERCHANGES	<i>Number of Occurrences</i>	0
	Number of interchanges along corridor	0	
F	ON-STREET PARKING	N/A	0

Total Risk Score:

48

Recommended Posted Speed Limit (km/h):

As determined by road characteristics

70

As determined by policy

--

The recommended posted speed limit may be checked against the prevailing speeds of the roadway and the road's safety performance.

Comments:

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Automated Speed Limit Guidelines

FORM A - Automated Speed Limit Guidelines Spreadsheet

Version:
10-Apr-09

Name of Corridor:	Airport Road		
Segment Evaluated:	635m South of Olde Base Line	to	North of King Street
Geographic Region:	South of Mono Road		
Road Agency:	Region of Peel		
Road Classification:	Arterial	Length of Corridor:	3,600 m
Urban / Rural:	Rural	Design Speed: (Required for Freeway, Expressway, Highway)	
Divided / Undivided:	Undivided	Current Posted Speed: (For information only)	80 km/h
Major / Minor:	Major	Prevailing Speed: (85th Percentile - for information only)	
# Through Lanes	1 lane	Policy: (Maximum Posted Speed)	
Per Direction:			

		RISK	Score
A1	GEOMETRY (Horizontal)	Lower	3
A2	GEOMETRY (Vertical)	Lower	3
A3	AVERAGE LANE WIDTH	Medium	6
B	ROADSIDE HAZARDS	Lower	3
C1	PEDESTRIAN EXPOSURE	Lower	2
C2	CYCLIST EXPOSURE	Lower	3
D	PAVEMENT SURFACE	Lower	3
E1	NUMBER OF INTERSECTIONS WITH PUBLIC ROADS	<i>Number of Occurrences</i>	1
	STOP controlled intersection	0	
	Signalized intersection	0	
	Roundabout or traffic circle	0	
	Crosswalk	0	
	Active, at-grade railroad crossing	0	
	Sidestreet STOP-controlled or lane	2	
E2	NUMBER OF INTERSECTIONS WITH PRIVATE ACCESS DRIVEWAYS	<i>Number of Occurrences</i>	5
	Left turn movements permitted	27	
	Right-in / Right-out only	0	
E3	NUMBER OF INTERCHANGES	<i>Number of Occurrences</i>	0
	Number of interchanges along corridor	0	
F	ON-STREET PARKING	N/A	0

Total Risk Score:

29

Recommended Posted Speed Limit (km/h):

As determined by road characteristics

90

As determined by policy

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The recommended posted speed limit may be checked against the prevailing speeds of the roadway and the road's safety performance.

Comments:

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Appendix L – Signal Warrant for Proposed 1577 Airport Road North Access

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.

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:

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

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

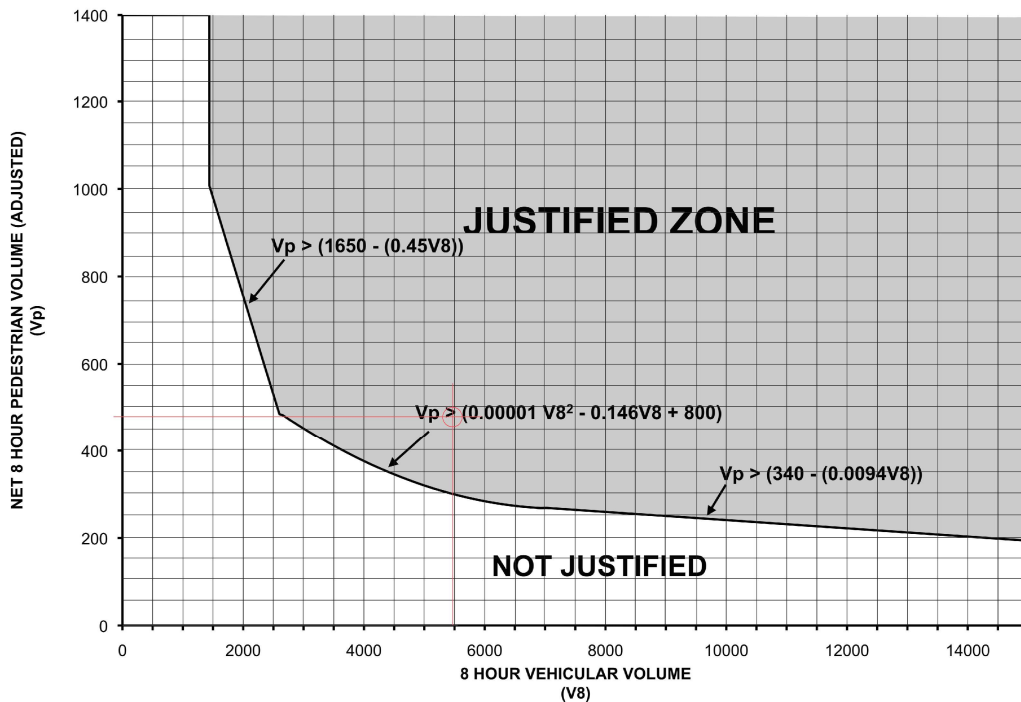


Figure 22 – Justification 6 – Pedestrian Volume