

**ADDENDUM TRAFFIC IMPACT STUDY**

**AIRSTAR HOLDINGS INC.  
7211 & 7233 AIRPORT ROAD**

**CITY OF MISSISSAUGA  
REGION OF PEEL**

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## 1.0 EXECUTIVE SUMMARY

C.F. Crozier & Associates Inc. (Crozier) was retained by Airstar Holdings Inc. to undertake a Traffic Impact Study in support of a Site plan Application (SPA) for the proposed senior's residential apartment at 7211 & 7233 Airport Road, in the City of Mississauga. An original Traffic Impact Study (TIS) dated December 2017 was previously submitted to support the site. This Addendum TIS was prepared to support the latest site plan and provided an updated assessment regarding the impacts of the new site plan proposal on the boundary road network. Due to the age of the previous traffic data, new traffic counts had to be undertaken for this Addendum TIS.

The proposed development consists of 128 senior's apartment units and 228.7 m<sup>2</sup> (2,462 ft<sup>2</sup>) Gross Floor Area (GFA) of commercial space. A combined total of 132 parking spaces are proposed at grade and underground. One right-in/right-out (RIRO) access to Airport Road and one full moves connection to Collett Road are proposed. The proposed residential development is projected to generate a total of 23 and 36 auto-trips during the weekday a.m. and p.m. peak hours, respectively.

Under 2020 existing traffic conditions, the signalized intersections of Airport Road with Morning Star Drive and Beverly Street/ Victory Street operate below capacity at a Level of Service (LOS) "C" or better during both the weekday a.m. and p.m. peak hours. Similarly, the two stop-controlled access connections from 7256 Airport Road onto Airport Road operate at a LOS "D" or better.

For the 2025 future background (excludes site generated traffic), the signalized intersections of Airport Road with Morning Star Drive and Beverly Street/ Victory Street are projected to operate below capacity and at a LOS "C" or better during both the weekday a.m. and p.m. peak hours. The two stop-controlled private access connections from the 7256 Airport Road building at Airport Road are forecast to operate at a LOS "D" or better during both the a.m. and p.m. peak hours.

Under the 2025 total traffic (includes site generated traffic), the signalized intersections of Airport Road with Morning Star Drive and Beverly Street/ Victory Street as well as the two stop-controlled private access connections from the 7256 Airport Road building are projected to operate below capacity with the same Levels of Service as under the 2025 future background (excludes site generated traffic). The RIRO site access at Airport Road is forecast to operate at a LOS "A" during both a.m. and p.m. peak hours; through traffic on Airport Road is free flowing. The Collett Road connection to Morning Star Drive is projected to operate at a LOS "B" or better. The proposed RIRO site access at Airport Road and the full moves connection to Collett Road are expected to effectively serve the site without safety issues related to sightlines, corner clearances, access conflicts, heavy truck movements and transit operational conflicts.

We recommend that the Region of Peel permit the proposed RIRO site access to Airport Road and full moves connection to Collett Road. Additionally, the Region should continue to monitor the signal timing plans at the intersections of Airport Road with Morning Star Drive and Beverly Street/ Victory Street in the future to determine if changes are warranted for optimal performance of the intersections.

It is our professional conclusion that the traffic generated by the proposed 7211 & 7233 Airport Road development will not materially impact traffic operations on the boundary road network. The Site Plan Application can be supported from a traffic operations perspective as the boundary road system can accommodate the increase in traffic volumes attributable to the proposed development.

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## 2.0 INTRODUCTION

C.F. Crozier & Associates Inc. (Crozier) was retained by Airstar Holdings Inc. to undertake a Traffic Impact Study in support of a Site plan Application (SPA) for the proposed senior's residential apartment development located at 7211 & 7233 Airport Road, in the City of Mississauga. The purpose of the study is to assess the impacts of the proposed development on the boundary road network and to recommend required mitigation measures, if warranted.

An original Traffic Impact Study (TIS) dated December 2017 was previously submitted to support the site. This Addendum TIS was prepared to support the latest site plan and provided an updated assessment impacts of the new site plan proposal on the boundary road network.

The study was completed in accordance with the procedures set out in the Region of Peel's Traffic Impact Study guidelines. Additionally, the scope of work and terms of reference were confirmed with Peel Region and City of Mississauga via email correspondence. Correspondence were between Peter Apasnore (Crozier), Rosalie Shan (Region of Peel) and Gregory Borys (City of Mississauga). Refer to **Appendix A** for relevant correspondence.

## 3.0 DEVELOPMENT PROPOSAL

The proposed development consists of a senior residential development with a portion of the building allocated for commercial use. The development consists of 128 senior's apartment units and 228.7 m<sup>2</sup> (2,462 ft<sup>2</sup>) Gross Floor Area (GFA) of commercial space. A combined total of 132 parking spaces are proposed at grade and below grade (one level).

One right-in/ right-out access to Airport Road and one full moves access to Collett Road are proposed. Refer to **Figure 2** for the Site Plan prepared by Chintan Virani Architect Inc., dated September 23, 2019.

## 4.0 EXISTING CONDITIONS

### 4.1 Study Area

The subject land covers an area of approximately 0.87 ha and is currently vacant with no development on it. Per the City of Mississauga Zoning By-Law, the property at 7211 & 7233 Airport Road is a Residential Zone (R3). Relevant zoning map excerpts are provided in **Appendix B**.

The subject property is located on the east side of Airport Road, between the intersections of Airport Road with Morning Star Drive and Beverley Street/Victory Crescent. The subject lands are bounded by residential developments to the north and south, Victory Park to the east and Airport Road to the west. Refer to **Figure 1** for the site location.

Through correspondence with the Region, the following existing boundary intersections were considered for the study.

- Airport Road at Morning Star Drive
- Airport Road at Beverley Street/ Victory Crescent
- Airport Road at the 7256 Airport Road Northern Access
- Airport Road at the 7256 Airport Road Southern Access

Detailed description of the boundary study road network is presented in the succeeding sections.

## 4.2 Boundary Road Network

Airport Road is a north-south roadway with a six-lane cross-section. The segment of Airport Road fronting the site consists of three through lanes in each direction and a centre median separating opposing traffic. Airport Road is under the jurisdiction of the Region of Peel and is defined as an urban main street per the Region of Peel's Road Characterization Study with a posted speed limit of 50 km/h. Airport Road has a concrete sidewalk located on each side of the roadway at the site frontage.

Morning Star Drive is an east-west roadway with a two-lane cross-section, one lane in each direction. Morning Star Drive is under the jurisdiction of the City of Mississauga and is defined as a major collector per Schedule 5 of the City of Mississauga Official Plan, with a posted speed limit of 50 km/h. Morning Star Drive has concrete sidewalks located on both sides of the roadway, separated from the roadway by a boulevard strip.

Beverley Street Drive is an east-west roadway with a two-lane cross-section, one lane in each direction. Beverley Street is under the jurisdiction of the City of Mississauga and is defined as a local roadway per Schedule 5 of the City of Mississauga Official Plan, with an assumed speed limit of 50 km/h per municipal regulation. Beverley Street has a concrete sidewalk located on the south side, separated from the roadway by a boulevard strip.

Victory Crescent is an east-west roadway with a two-lane cross-section, one lane in each direction. Victory Crescent is under the jurisdiction of the City of Mississauga and is defined as a local roadway per Schedule 5 of the City of Mississauga Official Plan, with an assumed speed limit of 50 km/h per municipal regulation. Victory Crescent has a concrete sidewalk located on the north side.

The four-legged intersection of Airport Road at Morning Star Drive is signalized. The northbound and southbound approaches (Airport Road) both consist of an exclusive left-turn lane, an exclusive right-turn lane and three through lanes. The westbound approach (Morning Star Drive) has an exclusive left-turn lane and a shared through/right-turn lane. The eastbound approach is the access to a private development (Sikh temple) and has a shared left/through/right-turn lane.

The four-legged intersection of Airport Road at Beverley Street/Victory Crescent is signalized. The northbound and southbound approaches (Airport Road) both consist of an exclusive left-turn lane, two through lanes and a shared through/right-turn lane. The eastbound approach (Beverley Street) and westbound approach (Victory Crescent) both consist of a single lane for shared left/through/right-turn movements.

The three-legged intersection of Airport Road at the 7256 Airport Road Northern Driveway Access is one-way stop-controlled. The eastbound approach (Driveway Access) is stop controlled and consists of one egress lane and one ingress lane. The southbound approach (Airport Road) consists of two through lanes and a shared through/right-turn lane. The northbound approach (Airport Road) consists of three through lanes, and an exclusive left-turn lane.

The three-legged intersection of Airport Road at the 7256 Airport Road Southern Driveway Access is one-way stop-controlled. The eastbound approach (Driveway Access) is stop controlled and consists of one egress lane and one ingress lane. The southbound approach (Airport Road) consists of two through lanes and a shared through/right-turn lane. The northbound approach (Airport Road) consists of two through lanes and a shared through/left-turn lane.

#### 4.3 Traffic Data

Given that the counts used in the previous TIS were undertaken in 2016, new counts were undertaken for this Addendum TIS. The new turning movement counts at the study intersections were undertaken in January 2020. A summary of the counts and peak hours are presented in **Table 1**. Existing traffic signal timing plans for the intersections of Airport Road with Morning Star Drive and Beverley Street/Victory Crescent were obtained from Peel Region.

**Table 1: Traffic Data Collection Summary**

Intersection	Data Counts Date	Count Period	Peak Hour Period	Data Collection Firm
Airport Road at Morning Star Drive	Wednesday January 8, 2020	7a.m. – 10a.m.	7:45 - 8:45 a.m.	Spectrum Traffic Data Inc.
		3p.m. - 7p.m.	4:45 – 5:45 p.m.	
Airport Road at the 7256 Airport Road Northern Access		7a.m. – 10a.m.	7:30 - 8:30 a.m.	
		3p.m. - 7p.m.	4:45 – 5:45 p.m.	
Airport Road at the 7256 Airport Road Southern Access		7a.m. – 10a.m.	7:45 - 8:45 a.m.	
		3p.m. - 7p.m.	4:15 – 5:15 p.m.	
Airport Road at Beverley Street/Victory Crescent		7a.m. – 10a.m.	7:30 - 8:30 a.m.	
		3p.m. - 7p.m.	4:45 – 5:45 p.m.	

Refer to **Appendix C** for detailed traffic counts at the study intersections and signal timing plans for the intersections of Airport Road with Morning Star Drive and Beverley Street/Victory Crescent.

#### 4.4 Active Transportation Routes

There are currently pedestrian sidewalks located on both sides of Airport Road and Morning Star Drive. Similarly, pedestrian sidewalks are located one side of Beverley Street and Victory Crescent.

No bicycle facilities are currently located on the boundary roads to the site, however, both the City of Mississauga and Peel Region have plans of improving active transportation on the boundary roads. At the site frontage, Airport Road is characterized as a "Primary On-Road/Boulevard Routes (Regional)" per Schedule 7 "Long Term Cycling Routes" of the City of Mississauga's Official Plan. Per Map 5-2 "Proposed Mississauga Cycling Route Network" of the City of Mississauga, Beverley Street, Victory Crescent and Morning Star Drive are classified as secondary bike routes for future implementation. Similarly, in conformance with Schedule 7 of the City's Official Plan, Airport Road is classified as a primary boulevard route. Relevant maps are included in **Appendix B**.

#### 4.5 Public Transit

There are several transit routes that currently provide services on the boundary roads to the site. **Table 2** summarizes the existing transit services operating in proximity to the site.

**Table 2: Summary of Transit Services**

Transit Service Provider	Route Number	Service Days	Peak Hour Service Headway (Minutes)	Proximity of Bus Stops (Metres) <sup>1</sup>
MiWay Transit (City of Mississauga)	7	All week	20 min. (two-way)	Within 100 m
	15	All week	30 min. (two-way)	Within 100 m
	24	All week	30 min. (two-way)	Within 100 m
	30	All week	30 min. (two-way)	Within 100 m
Brampton Transit	5A	All week	20 min. (two-way)	Within 100 m
	14 and 14A	All week	10 min. (two-way)	Within 100 m
	30	All week	10 min. (two-way)	Within 100 m
	505	All week	20 min. (two-way)	Within 200 m
Toronto Transit Commission (TTC)	52B	All week	20 min. (two-way)	Within 100 m

Note: 1. Proximity of the bus stop to the site.

In addition to the several transit routes located closely to the site (presented in Table 2), the Malton GO Station is also located approximately 800 metres south of the site. Given the numerous transit routes and the proximity of the GO Station, the site is well serviced by transit.

The City of Mississauga Official Plan Schedule 6 "Long Term Transit Network" designates Airport Road as a "Transit Priority Corridor". Therefore, though site's surrounding area is well serviced by transit, more transit provision and improvement in service to the area is further anticipated in the future.

#### 4.6 Traffic Modeling

The assessment of intersections is based on the method outlined in the "Highway Capacity Manual, 2010" using Synchro 9 modeling software. Intersections are assessed using a Level of Service metric, with ranges of delay assigned a letter from "A" to "F". For stop-controlled intersections, a Level of Service "A" or "B" would typically be measured during off-peak hours when lesser traffic volumes are on the roadways. Levels of Service "C" through "F" would typically be measured in the commuter peak hours when greater vehicle volumes cause longer travel times. The Level of Service (LOS) definitions for signalized and stop-controlled intersections are included in **Appendix D**.

#### 4.7 Intersection Operations

The traffic operations at the study intersections of Airport Road with Morning Star Drive, Beverley Street/Victory Crescent and the 7256 Airport Road driveways were analyzed on the basis of the 2020 existing traffic volumes illustrated in **Figure 3**.

**Table 3** outlines the operational measures of effectiveness at the study intersections under the 2020 existing traffic volumes. Detailed capacity analyses are included in **Appendix E**.

**Table 3: 2020 Existing Levels of Service**

Intersection	Control	Peak Hour	Level of Service	Average Delay per Vehicle(s)	V/C Ratio <sup>1</sup>	95 <sup>th</sup> %ile Queues > Storage Length
Airport Road at Morning Star Drive	Signal	A.M.	B	15.4 s	0.69 (WBL)	42.3m > 30m (WBL) 60.6m > 60m (SBL)
		P.M.	C	22.9 s	0.65 (NBT)	46.5m > 30m (WBL) 81.6m > 60m (SBL)
Airport Road at Beverley Street/ Victory Street	Signal	A.M.	A	6.3 s	0.54 (EB)	None
		P.M.	B	10.6 s	0.70 (EB)	None
Airport Road at 7256 Airport Road Northern Access	Stop	A.M.	D	28.4 s	0.39 (SBT)	None
		P.M.	C	18.2 s	0.40 (NBT)	None
Airport Road at 7256 Airport Road Southern Access	Stop	A.M.	C	16.8 s	0.40 (SBT)	None
		P.M.	B	14.2 s	0.49 (NBT)	None

Note: V/C Ratio – illustrates the maximum volume to capacity ratio and other volume to capacity ratios greater than 0.85. The Level of Service (LOS) of a signalized intersection is based on the average control delay per vehicle. The existing signal timing plans obtained from the Region of Peel were used. The LOS of a stop-controlled intersection is based on the delay associated with the critical minor road approach. HCM 2000 was used per Region's requirements. The 95<sup>th</sup> percentile queue lengths were derived from Sim-Traffic reports using 10-minute seeding, 60-minute simulation and an average of three runs.

As presented in **Table 3**, the intersection of Airport Road at Morning Star Drive operates at a Level of Service "C" or better during the a.m. and p.m. peak hours. There is a maximum volume-to-capacity ratio of 0.69 during the weekday a.m. peak hour for the westbound left-turn movement. The 95<sup>th</sup> percentile queues indicate that the westbound and southbound left turn traffic occasionally extends beyond the storage lanes onto the taper and through lanes during the peak hours. Based on the westbound queues, left turns out of Collett Road may be blocked occasionally, but is expected to clear within a single signal cycle of the adjacent intersection of Airport Road at Morning Star Drive.

The intersection of Airport Road at Beverley Street/ Victory Crescent operates at a Level of Service "B" or better during the weekday a.m. and p.m. peak hours. There is a maximum volume-to-capacity ratio of 0.70 during the weekday p.m. peak hour for the eastbound movement.

The intersections of Airport Road with the two private accesses to the existing 7256 Airport Road building both operate at Levels of Service "D" or better during the weekday a.m. and p.m. peak hours. There is a maximum volume-to-capacity ratio of 0.40 for any turning movement at the two intersections during the weekday a.m. and p.m. peak hours.

## 5.0 FUTURE BACKGROUND CONDITIONS

### 5.1 Study Horizons

Per the Region of Peel TIS guideline, five years from the date of the traffic study is required. Therefore, the 2025 horizon year was selected to assess future operations of the boundary road network and was further coordinated with Peel Region staff via email correspondence.

## 5.2 Traffic Growth

In order to determine the traffic growth rate on Airport Road, historical traffic data was requested from the Region of Peel. Given that the remaining study boundary roads are local, and the surrounding areas are fully developed, no traffic growth is expected on those roads. The methodology for estimation of the growth rates were further confirmed by the Region.

The Annual Average Daily Traffic (AADT) data provided by the Region included the various years noted in **Table 4**. Refer to **Appendix C** for details of the historical AADT volumes data.

**Table 4: Historical AADT Traffic Data Summary**

Intersection	Travel Direction	Available Data	Established Growth Rate (%)
Airport Road	Northbound	2008, 2009, 2011 to 2015 and 2017	- 3%
	Southbound	2008, 2009, 2011 to 2015 and 2017	0 %

Given that there is generally a negative traffic growth on Airport Road, it is typical to assume no growth on the road, however, for conservativeness, a 1% growth rate was applied to the through traffic volumes for the analysis herein. The negative growth rate on Airport Road may be due to a continual increase in the use of other transport modes other than single occupant vehicle as evident in the existing modal shares within the zone per TTS. No traffic growth was applied to traffic on Morning Star Drive, Beverley Street/Victory Crescent or the 7256 Airport Road driveways.

## 5.3 Background Developments

Per correspondence with Peel Region and the City of Mississauga, no background developments were considered relevant for inclusion in this study.

## 5.4 Future Roadway Improvements

Per the Region of Peel Long Term Transportation Plan (2019), no future road improvements are currently planned for Airport Road. Similarly, per Schedule 5 of the City of Mississauga Official Plan, no road improvements are planned for Morning Star Drive, Beverley Street, Victory Crescent or the 7256 Airport Road driveways. The analysis herein has maintained the existing road network configurations through future study horizons.

## 5.5 Intersection Operations

Traffic operations at the study intersections of Airport Road with Morning Star Drive, Beverley Street/Victory Crescent and the 7256 Airport Road driveways were analyzed on the basis of the 2025 forecasted future background traffic volumes illustrated in **Figure 4**. **Table 5** outlines the 2025 future background Levels of Service. Detailed capacity analysis worksheets are included in **Appendix E**.

**Table 5: 2025 Future Background Levels of Service**

Intersection	Control	Peak Hour	Level of Service	Average Delay per Vehicle(s)	V/C Ratio <sup>1</sup>	95 <sup>th</sup> %ile Queues > Storage Length
Airport Road at Morning Star Drive	Signal	A.M.	B	15.3 s	0.69 (WBL)	41.7m > 30m (WBL) 62.1m > 60m (SBL)
		P.M.	C	23.8 s	0.69 (NBT)	43.6m > 30m (WBL) 78.2m > 60m (SBL)
Airport Road at Beverley Street/ Victory Street	Signal	A.M.	A	6.2 s	0.54 (EB)	None
		P.M.	B	10.6 s	0.70 (EB)	None
Airport Road at 7256 Airport Road Northern Access	Stop	A.M.	D	30.8 s	0.42 (SBT)	None
		P.M.	C	18.7 s	0.42 (NBT)	None
Airport Road at 7256 Airport Road Southern Access	Stop	A.M.	C	17.7 s	0.42 (SBT)	None
		P.M.	B	14.5 s	0.51 (NBT)	None

Note: V/C Ratio – illustrates the maximum volume to capacity ratio and other volume to capacity ratios greater than 0.85. The Level of Service (LOS) of a signalized intersection is based on the average control delay per vehicle. The existing signal timing plans obtained from the Region of Peel were used. The LOS of a stop-controlled intersection is based on the delay associated with the critical minor road approach. HCM 2000 was used per Region's requirements. The 95<sup>th</sup> percentile queue lengths were derived from Sim-Traffic reports using 10-minute seeding, 60-minute simulation and an average of three runs.

As presented in **Table 5**, the intersection of Airport Road at Morning Star Drive is projected to operate at a Level of Service "C" or better during the a.m. and p.m. peak hours. A maximum volume-to-capacity ratio of 0.69 is projected during the weekday a.m. and p.m. peak hours for the westbound left-turn and northbound through movements, respectively. Per the 95<sup>th</sup> percentile queue, the westbound and southbound left turn traffic are forecast to occasionally extend beyond the storage lanes into the taper and through lanes during the peak hours.

The intersection of Airport Road at Beverley Street/ Victory Crescent is forecast to operate at a Level of Service "B" or better during the weekday a.m. and p.m. peak hours. A maximum volume-to-capacity ratio of 0.70 is projected during the weekday p.m. peak hour for the eastbound movement.

The delays for the a.m. peak hour at the intersections of Airport Road with Morning Star Drive and Beverley Street/Victory Crescent reduced by 0.1 seconds from the 2020 existing conditions. The reduction is attributable to a greater utilization of effective green time by the slight increase in through traffic along Airport Road, thereby resulting in a reduction of the overall intersection delay.

The intersections of Airport Road with the two private accesses to the existing 7256 Airport Road building both operate at Levels of Service "D" or better during the weekday a.m. and p.m. peak hours. There is a maximum volume-to-capacity ratio of 0.51 for the northbound through movement at the intersection of Airport Road and the Southern access during the weekday p.m. peak hour. The Level of Service "D" for the northern access during the weekday a.m. peak hour is attributable to the high through volumes on Airport Road and the resulting extended delay to left-turning vehicles out of the private access. Extended delays during the peak hours are typical for left turn traffic exiting a stop controlled minor road connection at a high-volume major road like Airport Road. Merging traffic from minor unsignalized roads along the Airport Road corridor may resort to choosing lower delay right turns during the peak hours.

## 6.0 SITE GENERATED TRAFFIC

The proposed development will result in additional vehicles on the boundary road network that would otherwise not exist. The development will also result in additional turning movements at the boundary road intersections.

### 6.1 Multimodal Trip Distribution

Consideration was given to the transit, pedestrian and bicycle trip generation for the proposed site expansion. The 2016 Transportation Tomorrow Survey (TTS) data was used to determine the existing modal split for the sites zone. The results were filtered to trips within the 2006 GTA 3712 where the site is located. The results indicate a modal split of 69 percent auto trips, and 31 percent non-auto trips (includes all transit types, walking, biking and school buses).

Per the TTS data, trips generated by this site is expected to consist of active transportation and transit, and though the trips generated by the site may be reduced by 31% to accurately depict the split of trips likely to be made by auto, we have assumed only a 15% non-auto trip reduction for conservativeness.

### 6.2 ITE Trip Generation

To forecast the trips generated by the development, the ITE Trip Generation Manual, 10th Edition was used. It was determined that Land Use Category (LUC) 252, "Senior Adult Housing-Attached" would be an accurate representation of the senior apartment dwellings and LUC 820 "Shopping Centre" would be the best representation for the commercial area. The trips generated by the proposed development are presented in **Table 6**. The fitted curve equations were used for LUC 820 as the equations had coefficients of correlation greater than 0.9.

**Table 6: Site Generated Trips**

Use	Dwelling Units/GFA	Peak Hour	Trips per Dwelling Unit or GFA (ft <sup>2</sup> )	Number of Trips			
				Inbound	Outbound	Total	
Senior Adult Housing-Attached (LUC 252)	128	A.M.	T = 0.20(X) - 0.18	9 (35%)	16 (65%)	25	
		P.M.	T = 0.24(X) + 2.26	18 (55%)	15 (45%)	33	
Shopping Centre (LUC 820)	2,462 ft <sup>2</sup> (228.7 m <sup>2</sup> )	A.M.	0.94 per 1000 ft <sup>2</sup>	1 (62%)	1 (38%)	2	
		P.M.	3.81 per 1000 ft <sup>2</sup>	4 (48%)	5 (52%)	9	
<b>Total</b>		A.M.		10	17	27	
		P.M.		22	20	42	
<b>Site Generated Auto Trips</b>							
<b>Total</b> (after 31% modal reduction)		A.M.		9	14	23	
		P.M.		19	17	36	

Note: X is the number of units; T is the number of trips. Auto trips are 85% of total site generated trips.

Given the high transit and active transportation presence in the site's surrounding area, a reduction for transit is typical. For conservativeness, though TTS data indicates 69% of the site trips were attributed to auto, 85% has been assigned to auto trips for the analysis herein.

### **6.3 Trip Distribution and Assignment**

Vehicles entering and exiting the proposed site were distributed based on the Transportation Tomorrow Survey (TTS) data as requested by both the Region and City. The trips were then distributed to the site accesses based on ease of ingress and egress. Given that the commercial portion is very small and much fewer trips are generated compared to the residential, the TTS distribution was applied to all the trips generated.

The site trip distributions are illustrated in **Figure 5** and the resulting trip assignments to the boundary road network presented in **Figure 6**.

### **6.4 Existing Residential Developments Trip Redistribution**

Under existing conditions, Collett Road is only accessible through the intersection of Airport Road and Morning Star Drive. The proposed site access to Airport Road, along with the extension of Collett Road onto the subject land will create a connection between Airport Road and the existing residential developments on Collett Road. Therefore, this proposed connection is anticipated to be used by commuters from the existing residential developments north of the site.

We assumed that an estimated 15 percent of the existing residential commuters turning right onto Morning Star Drive at the intersection of Airport Road and Morning Star Drive will use the proposed site access to Airport Road in order to by-pass the intersection. The Collett Road trip redistribution is illustrated in **Figure 7**, and trip reassignment for the 2025 future background conditions is illustrated in **Figure 8**.

## **7.0 TOTAL TRAFFIC CONDITIONS**

This section discusses the traffic operations of the study intersections with the addition of site generated trips.

### **7.1 Intersection Operations**

Traffic operations at the proposed site accesses and the study intersections of Airport Road with Morning Star Drive, Beverley Street/Victory Crescent and the 7256 Airport Road driveways were assessed with the addition of the site generated traffic. The 2025 total traffic volumes are illustrated in **Figure 9**. **Table 7** outlines the 2025 total traffic Levels of Service. Detailed capacity analysis worksheets are included in **Appendix E**.

**Table 7: 2025 Total Traffic Levels of Service**

Intersection	Control	Peak Hour	Level of Service	Average Delay per Vehicle(s)	V/C Ratio <sup>1</sup>	95 <sup>th</sup> %ile Queues > Storage Length
Airport Road at Morning Star Drive	Signal	A.M.	B	15.7 s	0.70 (WBL)	43.0m > 30m (WBL) 69.3m > 60m (SBL)
		P.M.	C	24.2 s	0.70 (NBT)	45.8m > 30m (WBL) 80.4m > 60m (SBL)
Airport Road at Beverley Street/ Victory Street	Signal	A.M.	A	6.2 s	0.54 (EB)	None
		P.M.	B	10.6 s	0.70 (EB)	None
Airport Road at 7256 Airport Road Northern Access	Stop	A.M.	D	30.3 s	0.42 (SBT)	None
		P.M.	C	18.7 s	0.42 (NBT)	None
Airport Road at 7256 Airport Road Southern Access	Stop	A.M.	C	17.6 s	0.42 (SBT)	None
		P.M.	B	14.5 s	0.52 (NBT)	None
Morning Star Drive at Collett Road	Stop	A.M.	A	9.7 s	0.14 (EB)	None
		P.M.	B	11.3 s	0.27 (EB)	None
Airport Road at RIRO Site Access	Stop	A.M.	A	9.8 s	0.35 (SBT)	None
		P.M.	A	9.0 s	0.42 (NBT)	None

Note: V/C Ratio – illustrates the maximum volume to capacity ratio and other volume to capacity ratios greater than 0.85. The Level of Service (LOS) of a signalized intersection is based on the average control delay per vehicle. The existing signal timing plans obtained from the Region of Peel were used. The LOS of a stop-controlled intersection is based on the delay associated with the critical minor road approach. HCM 2000 was used per Region's requirements. The 95<sup>th</sup> percentile queue lengths were derived from Sim-Traffic reports using 10-minute seeding, 60-minute simulation and an average of three runs.

As presented in **Table 7**, the intersection of Airport Road at Morning Star Drive is projected to operate at a Level of Service (LOS) "C" or better during the a.m. and p.m. peak hours, the same as the future background and existing conditions. A maximum volume-to-capacity ratio of 0.70 is projected during the weekday a.m. and p.m. peak hours for the westbound left-turn and northbound through movements, respectively. Similar to the existing and future background conditions, the 95<sup>th</sup> percentile queues projects that the westbound and southbound left turn traffic will occasionally extend beyond the storage lanes into the taper and through lanes during the peak hours.

The intersection of Airport Road at Beverley Street/ Victory Crescent is forecast to operate at a LOS "B" or better during the weekday a.m. and p.m. peak hours. A maximum volume-to-capacity ratio of 0.70 is projected during the weekday p.m. peak hour for the eastbound movement. The forecasted LOS are the same as under the existing and future background conditions.

The intersections of Airport Road with the two private accesses to the existing 7256 Airport Road building are both projected to operate at a LOS "D" or better during the a.m. and p.m. peak hours; the same as the future background and existing conditions. There is a maximum volume-to-capacity ratio of 0.52 for the northbound through movement at the intersection of Airport Road and the Southern access during the weekday p.m. peak hour. The reduction in a.m. peak hour delays by 0.5 seconds and 0.1 seconds for the northern and southern private accesses, respectively may be attributed to the redistribution of traffic through the right-in/ right-out (RIRO) site access at Airport Road.

The site generated traffic is expected to access the boundary road network via RIRO site access at Airport Road and through the existing Collette Road at Moring Star Drive intersection. The RIRO access at Airport Road is forecast to operate at a LOS "A" during a.m. and p.m. peak hours and the through traffic on Airport Road is free flowing. The Collett Road connection to Morning Star Drive is projected to operate at a LOS "B" or better and the traffic on Morning Star Drive is free flowing.

It is noted that, though the RIRO site access and the 7256 Airport Road Northern Access will be at the same location, no traffic interaction is expected between the two accesses, a case which could not be accurately modeled in Synchro. Additionally, the preferred HCM 2000 required per the Regional Guidelines could not generate any reports when the two minor legs were combined. The two accesses were modeled separately as presented in **Table 7**, and based on the results, this methodology is considered the most accurate representation of the intersection.

## 7.2 Safety Analysis

The standards set out in the Transportation Association of Canada (TAC) Geometric Design Guide for Canadian Roads (GDGCR) was used to assess the proposed site accesses with regards to the adequacy of available sightlines.

Given that both Airport Road and Morning Star Drive have posted speed limits of 50 km/h, a design speed of 60 km/h was assumed to assess the available site distance. Assuming a right-turn time gap of 6.5 seconds and a left-turn gap of 7.5 seconds for passenger vehicles per Table 9.9.3, and adopting equation 9.9.1 of the TAC-GDGCR, the minimum sight distance required for a right-turn and a left-turn at the proposed site accesses is 110 m and 125 m, respectively. The available sight distance at the proposed site access to Airport Road exceeds 125 m looking south or north, however, this access is a right-in/ right-out and only requires 110 m sight distance. Similarly, the existing Colette Road connection to Morning Star Drive is expected to continue to operate safely, as the available sight distance on the east exceeds 125 m, and looking west, drivers are able to see beyond the adjacent intersection with Airport Road. The internal road connection to Colette Road is expected to operate a low speed and with enough sightlines to see the entire length of roadway.

Therefore, no safety issues related to sightlines are anticipated at the site accesses. Additionally, no issues such as corner clearances, access conflicts, heavy truck movements and transit operational conflicts are forecast.

Vehicle turning plans using a medium single unit vehicle (MSU) and an aerial fire truck as the design vehicles were prepared to assess the ability of the site to accommodate circulation of expected garbage collection and emergency vehicles. Refer to Appendix F for the truck turning plans. A traffic management plan will be prepared as necessary to temporarily control traffic during implementation of the site accesses.

# 8.0 TRANSPORTATION DEMAND MANAGEMENT REVIEW

There are a couple of low impact opportunities for the development to promote Transportation Demand Management (TDM) measures in support of reduced automobile use.

## 8.1 Existing TDM Infrastructure

As presented under section 4.0 of this report, there are currently many effective travel demand measures available to the site. The conveniently close proximity of transit, walking and cycling infrastructures makes walking, cycling and public transit viable transportation mode. This is evident in the modal of share of 31 percent for non-auto trips (includes all transit types, walking, biking and school buses) within the zone where the site is located per the 2016 Transportation Tomorrow Survey

(TTS). Per the City's Official Plan, the City and Region has plans of further improving the modal share of non-auto trips by introducing new cycling routes and high occupancy vehicle (HOV) lanes on the boundary road network.

## **8.2 Education and Active Transportation Incentives**

The provision of up-to-date transit schedules and maps, pedestrian connectivity maps, and information on Smart Commute within the buildings will educate tenants on the potential to utilize alternate modes of transportation. This increased awareness of convenient alternate transportation options has been historically shown to reduce single occupant vehicle (SOV) trips in residential neighborhoods. The landowner may consider providing transit incentives like pre-loaded PRESTO cards to residents upon occupancy to further encourage transit use.

## **8.3 Site Specific Design Features**

Per the site plan, there are pedestrian sidewalks connecting to the municipal sidewalks on Airport Road. This is expected to ensure convenient and safe access to the bus stops for several transit routes which are within 100 m of the site. Upon future implementation of the cycling routes proposed by the City on the boundary roads, more residents may be encouraged to bike.

# **9.0 CONCLUSIONS AND RECOMMENDATIONS**

This study has analyzed the operations of boundary road network to determine the impact of the proposed senior's residential development at 7211 & 7233 Airport Road, in the City of Mississauga. The detailed analyses contained within this report has resulted in the following key findings:

- Under 2020 existing traffic conditions, the signalized intersections of Airport Road with Morning Star Drive and Beverly Street/ Victory Street operate below capacity and at a Level of Service (LOS) "C" or better during both the weekday a.m. and p.m. peak hours. Similarly, the two stop-controlled private access connections from the 7256 Airport Road building onto Airport Road operate at a LOS "D" or better.
- The proposed residential development is projected to generate a total of 23 and 36 auto-trips during the weekday a.m. and p.m. peak hours, respectively.
- Under the 2025 future background (excludes site generated traffic), the signalized intersections of Airport Road with Morning Star Drive and Beverly Street/ Victory Street are projected to operate below capacity and at a LOS "C" or better during both the weekday a.m. and p.m. peak hours.
- The two stop-controlled private access connections from the 7256 Airport Road building at Airport Road are forecast to operate at a LOS "D" or better during both the a.m. and p.m. peak hours.
- Under the 2025 total traffic (includes site generated traffic), the signalized intersections of Airport Road with Morning Star Drive and Beverly Street/ Victory Street as well as the two stop-controlled private access connections from the 7256 Airport Road building are all projected to operate below capacity and at the same Levels of Service as under the 2025 future background (excludes site generated traffic).
- The right-in/ right-out site access at Airport Road is forecast to operate at a LOS "A" during both a.m. and p.m. peak hours; through traffic on Airport Road is free flowing. The Collett

Road connection to Morning Star Drive is projected to operate at a LOS "B" or better and the traffic on Morning Star Drive is free flowing.

- The proposed RIRO site access at Airport Road and the full moves connection to Collett Road are expected to effectively serve the site without safety issues related to sightlines, corner clearances, access conflicts, heavy truck movements and transit operational conflicts.
- We recommend that the Region of Peel permit the proposed RIRO site access as well as the full moves connection from the site to Collett Road. Additionally, the Region should continue to monitor the signal timing plans at the intersections of Airport Road with Morning Star Drive and Beverly Street/ Victory Street in the future to determine if changes are warranted for optimal performance of the intersections.

It is our professional conclusion that the traffic generated from the proposed development at 7211 & 7233 Airport Road will not materially impact the operations of the boundary road network. The Site Plan Application can be supported from a traffic operations perspective as the boundary road system can accommodate the increase in traffic volumes attributable to the proposed development.

Respectfully submitted by,

**C.F. CROZIER & ASSOCIATES INC.**



Peter Apasnoe  
MASC., E.I.T, Transportation

**C.F. CROZIER & ASSOCIATES INC.**



R. Aaron Wignall  
Associate, Transportation

I:\1100\1190-Airstar\4286-7211-7233 Airport Rd\Reports\Second Submission\2020.01.21-7211 Airport Road TIS.docx

# APPENDIX A

## Correspondence

## Peter Apasnore

---

**From:** Peter Apasnore  
**Sent:** January 6, 2020 11:45 AM  
**To:** Shan, Rosalie  
**Subject:** RE: Terms of Reference: 7211 & 7233 Airport Road - D-00704510E

Hi Rosalie,

Happy New Year!!

Thank you for the feedback on the terms of reference for this project. The proposed development will result in a total of 27 and 42 trips (two-way) in the a.m. and p.m. peak hours, respectively. Additionally, per TTS data only 69% of trips are auto-based. Given the small scale of the development and trip generation; we have revised the scope to account for only the Study year 2020 and five years after *i.e.* 2025.

Regards,

---

**From:** Shan, Rosalie <[rosalie.shan@peelregion.ca](mailto:rosalie.shan@peelregion.ca)>  
**Sent:** December 18, 2019 10:09 AM  
**To:** Peter Apasnore <[papasnore@cfcrozier.ca](mailto:papasnore@cfcrozier.ca)>  
**Subject:** FW: Terms of Reference: 7211 & 7233 Airport Road - D-00704510E

Hi Peter,

Now Traffic Development had a chance to review the terms of reference and we offer the following below in red.

Please let me know if you need more information on this. Thank you.

Regards,  
**Rosalie Shan**  
Technical Analyst  
Traffic Development & Permits  
Region of Peel  
10 Peel Centre Drive Suite B, 4<sup>th</sup> Floor  
Brampton, ON L6T 4B9  
905 791-7800 Ext. 7999



---

**From:** Peter Apasnore <[papasnore@cfcrozier.ca](mailto:papasnore@cfcrozier.ca)>  
**Sent:** December 6, 2019 3:53 PM  
**To:** Kol, Rani <[rani.kol@peelregion.ca](mailto:rani.kol@peelregion.ca)>  
**Subject:** RE: Terms of Reference: 7211 & 7233 Airport Road

**CAUTION: EXTERNAL MAIL. DO NOT CLICK ON LINKS OR OPEN ATTACHMENTS YOU DO NOT TRUST.**

Hi Rani,

This is a follow up on the terms of reference below. I also left two previous voicemails regarding this. We have elected to undertake the traffic counts in the new year between January 7<sup>th</sup> to 9<sup>th</sup>.

Please provide feedback on the terms of reference below at the earliest possible.

Thank you.

**Peter Apasnore** M.A.Sc., EIT | Transportation  
C.F. Crozier & Associates Consulting Engineers  
211 Yonge Street, Suite 301 | Toronto, ON M5B 1M4  
[cfcrozier.ca](http://cfcrozier.ca) | [papasnore@cfcrozier.ca](mailto:papasnore@cfcrozier.ca)  
tel: 416.477.3392 ext: 306



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The project proposal is for a six-storey senior's rental apartment building (128 units) and 228.7 m<sup>2</sup> Gross Floor Area (GFA) of retail space. A total of 132 onsite for the development. The site plan is attached for your review.

### Traffic Impact Study (TIS)

The study will be completed in accordance with the Region of Peel/ City of Mississauga Traffic Impact Study Guidelines. To conduct the study, we will:

- Commission traffic counts and analyze the 2019 existing traffic operations for the Weekday a.m., and Weekday p.m. peak hours at the proposed study intersections as used in the original TIS, listed below:
  - Airport Road and Morning Star Drive
  - Airport Road and Beverley Street/Victory Street
  - Airport Road and 7256 Airport Road North Access
  - Airport Road and 7256 Airport Road South Access

Agree

- Forecast the future background traffic volumes (excludes site generated trips) for five and ten years from date of the TIS, i.e., 2024 and 2029 horizon years. The forecast will be as follows:
  - We will obtain historical AADT data to calculate the traffic growth rate for Airport Road, should data not be readily available a standard growth rate of 2% will be applied to the through traffic volumes. No growth rate will be applied to Morning Star Drive or the accesses to 7256 Airport Road.
  - Currently, no background developments relevant to the study intersections have been identified. Please advise if any background developments needs to be considered.

Please find the contact via the link here to obtain historical AADT data

<https://www.peelregion.ca/pw/transportation/business/traffic-impact-study.asp>

- Forecast the development trips and assign to boundary road network as follows:
  - Use the Institute of Transportation Engineers' (ITE - 10<sup>th</sup> edition) data to generate the development trips.
  - Assign trips to the boundary road network using the TTS data.

Agree

- Analyze the total traffic operations (includes site generated trips) for the study horizon years. All analysis will be conducted using Synchro (Version 10) modelling software

Agree

- Compare the future background and total traffic operations to identify if capacity issues are forecast to occur per the development proposal herein and recommend mitigation measures if required.

Agree

- Review the proposed site access connection to Airport Road from a safety perspective with regards to driver sight lines, intersection spacing, access configuration, and corner clearance.

The Region requested internal connection to be provided via Collett Road extension. The primary access to the site shall be from Collett Road. The proposed right-in/right-out access on to Airport Road can only be considered as a secondary access. Please refer to the comments provided in the previous application (attached).

- Document all analysis and recommendations regarding the findings of the study to maintain acceptable operations of the boundary road network.

Agree

The Region is support your proposed study scope in the above. For the detailed formatting and background information contacts, please find the link here <https://www.peelregion.ca/pw/transportation/business/traffic-impact-study.asp>

## Peter Apasnore

---

**From:** Kol, Rani <rani.kol@peelregion.ca>  
**Sent:** July 26, 2017 10:52 AM  
**To:** Alex Martino  
**Cc:** Linda Wu  
**Subject:** Traffic Engineering Comments - DI-17-199M - 7211 & 7233 Airport Road - our file D-00704510E

Alex,

Traffic Development staff have reviewed the above noted DARC circulation and would like to offer the following comments to assist the Applicant with the submission of a complete Site Plan Application.

### **Standards, Specifications, and Submission Requirements**

Please review the Public Works Design, Specifications & Procedures Manuals, and the Region of Peel's Standard Drawings which can be found at the following links. Digital copies can be provided upon request.

- Linear Infrastructure – Site Plan Process: <http://www.peelregion.ca/pw/other/standards/linear/procedures/pdf/site-plan-process2009.pdf>
- Public Works Design, Specifications and Procedures Manual – Linear Infrastructure: <http://www.peelregion.ca/pw/other/standards/linear/design/pdfs/designroads-july2009.pdf>
- Public Works Cad Submission Requirements – Development: <http://www.peelregion.ca/pw/other/standards/linear/design/pdfs/pw-cad-sub-req-dev.pdf>
- Standard Drawings - Roads & Traffic: <http://www.peelregion.ca/pw/other/standards/linear/drawings/roads-index.htm>

### **Property Dedication**

- Property dedication will be required as a condition of Site Plan approval as per Section 7.7 of the Region of Peel Official Plan. Property dedication may be up to 50.5 metres, 25.25 metres from the centreline of Airport Road. Property requirements will be confirmed after receipt/review of a Site Plan application, and any additional information/studies that may be required.

### **Drawings**

- Four (4) full sized folded copies of the Site Plan and Landscaping drawings will be required
- Please indicate the following on the drawings:
  - Dimension from the Centreline of Airport Road to the property line;
  - 0.3 metre reserve behind the property line, except at any approved access location;
  - All registered easements.
- Please ensure that no landscaping, signs, fences, gateway features or any other encroachments are proposed within the region's easements and/or right of way.
- Detailed Engineering Drawings will be required for any works proposed within the Region's right of way limits.

### **Access Requirements / Studies**

- Access is to be obtained via the extension of Collett Road; full movement access to Regional Road 7 (Airport Road) will not be permitted. Please note that a restricted access onto Airport Road can be evaluated through the TIS, and will be considered if it meets all Regional requirements and if there is a demonstrated need for a restricted access in addition to the full access via Collett Road.
- Please note that a temporary construction access to the site may be accommodated via Airport road with a right-in/right-out restriction.
- A Traffic Impact Study (TIS) will be required; terms of reference **must** be submitted to the Region for review and comment prior to study commencement.
- Access type and location will be determined through the review of the TIS.

**Please note that additional and detailed comments will be provided after the review of a Site Plan Application Circulation.**

I trust this to be satisfactory; please do not hesitate to contact me should you have any questions or concerns.

Regards,

**Rani Kol**

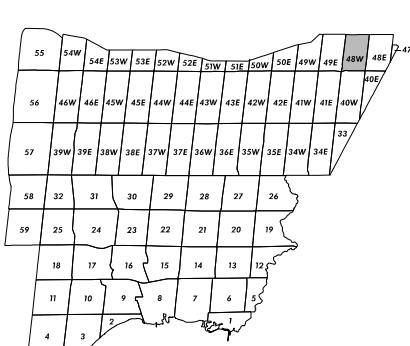
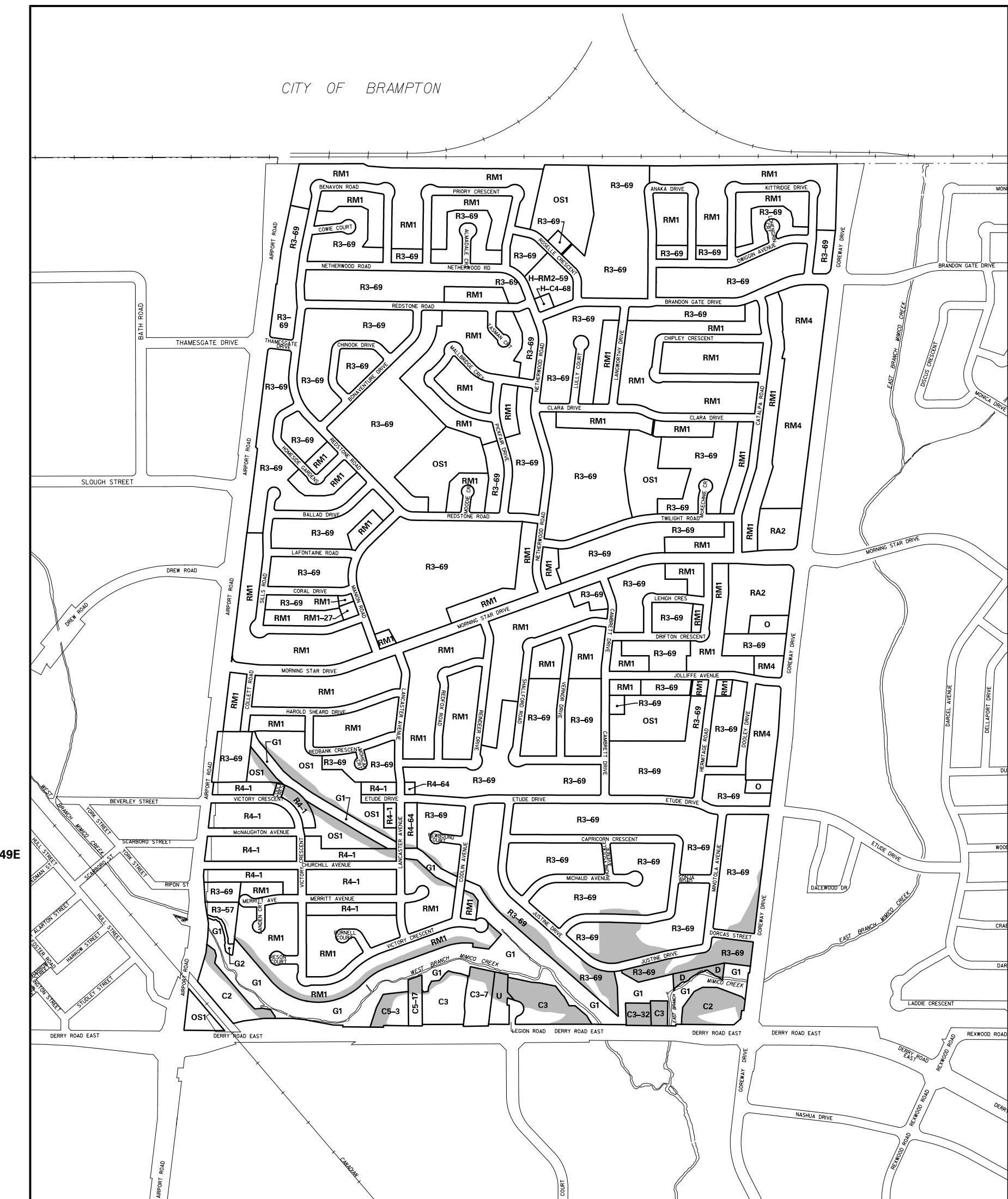
Technical Analyst, Traffic Development & Permits  
Transportation Division, Public Works

Tel: (905) 791-7800 ext. 7858  
Fax: (905) 791-1442

# APPENDIX B

City of Mississauga Zoning By-law Excerpts and Maps

CITY OF BRAMPTON



0 100 200  
METRES

Greenlands Overlay

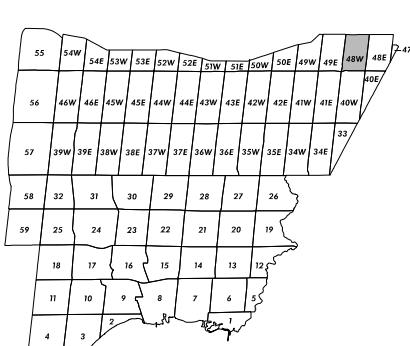
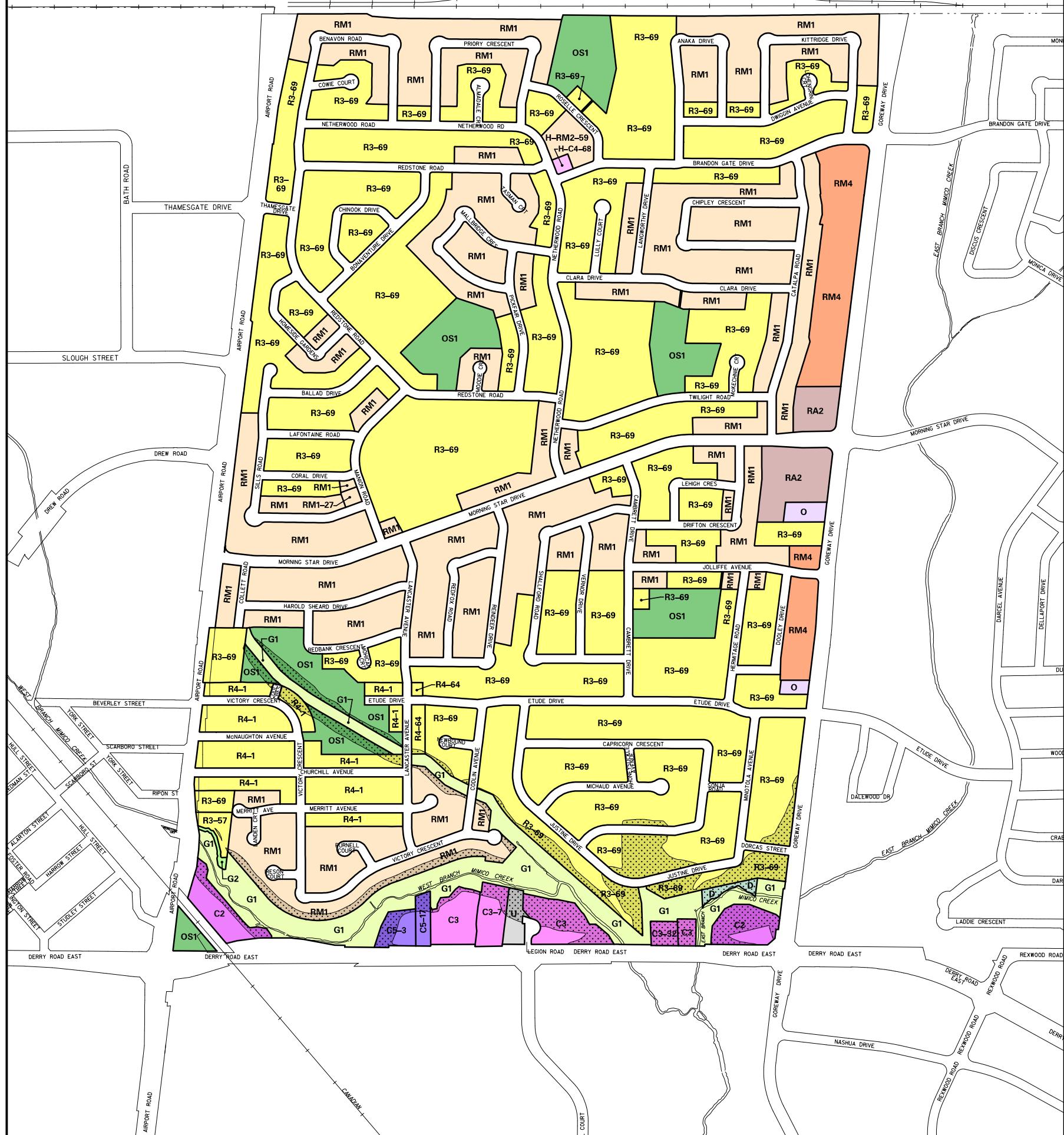
Zoning Notation Example:  
R4-12 = R4-Exception 12

## Zoning Map 48W

Schedule "B" To  
By-law No. 0225-2007

Revised: 2017 July 31

CITY OF BRAMPTON



Zoning  
Map 48W

Schedule "B" To  
By-law No. 0225-2007

Revised: 2017 July 31

Greenlands Overlay

Zoning Notation Example:  
R4-12 = R4-Exception 12



0 100 200  
METRES

**4.2.4 R3 Exception Zones**

Refer to Article 1.1.2.3 - Exception Zones and Exception Zone Schedules

In addition to the uses and regulations of Table 4.2.1 - R1 to R5 Permitted Uses and Regulations, the regulations of Table 4.2.4 - R3 Infill Exception Regulations shall apply where specified by an R3 Exception Zone.

**Table 4.2.4 - R3 Infill Exception Regulations**

<b>Column</b>	<b>A</b>	<b>B</b>
<b>Line</b>		
<b>1.0</b>	<b>MINIMUM INTERIOR SIDE YARD</b>	
1.1	<b>Interior lot - lot having a lot frontage less than 18.0 m</b>	1.2 m + 0.61 m for each additional storey or portion thereof above one (1) storey
1.2	<b>Interior lot - lot having a lot frontage equal to or greater than 18.0 m</b>	1.8 m + 0.61 m for each additional storey or portion thereof above one (1) storey
<b>2.0</b>	<b>MINIMUM COMBINED WIDTH OF SIDE YARDS</b>	
2.1	<b>One (1) storey detached dwelling - interior lots having a lot frontage less than 18.0 m</b>	2.4 m + 0.2 m for each 0.5 m the lot exceeds 15.0 m
2.2	<b>Dwelling having more than one (1) storey - interior lots having a lot frontage less than 18.0 m</b>	3.6 m + 0.2 m for each 0.5 m the lot exceeds 15.0 m
2.3	<b>One (1) storey detached dwelling - interior lots having a lot frontage equal to or greater than 18.0 m</b>	20% of the lot frontage
2.4	<b>Dwelling having more than one (1) storey - interior lots having a lot frontage equal to or greater than 18.0 m</b>	27% of the lot frontage
<b>3.0</b>	<b>MAXIMUM HEIGHT - HIGHEST RIDGE:</b> lots having a lot frontage equal to or greater than 22.5 m <b>sloped roof</b>	9.5 m
<b>4.0</b>	<b>MAXIMUM HEIGHT - HIGHEST RIDGE:</b> lots having a lot frontage less than 22.5 m <b>sloped roof</b>	9.0 m
<b>5.0</b>	<b>MAXIMUM HEIGHT:</b> <b>flat roof</b>	7.5 m
<b>6.0</b>	<b>MAXIMUM HEIGHT OF EAVES:</b> from average grade to lower edge of the eaves	6.4 m
<b>7.0</b>	<b>MAXIMUM GROSS FLOOR AREA - INFILL RESIDENTIAL</b>	190 m <sup>2</sup> plus 0.20 times the lot area
<b>8.0</b>	<b>GARAGE PROJECTION:</b> maximum projection of the garage beyond the front wall or exterior side wall of the first storey (0325-2008), (0308-2011)	0.0 m
<b>9.0</b>	<b>MAXIMUM DWELLING UNIT DEPTH</b>	20.0 m
<b>10.0</b>	<b>Driveways</b> may be constructed of a permeable type of material	✓













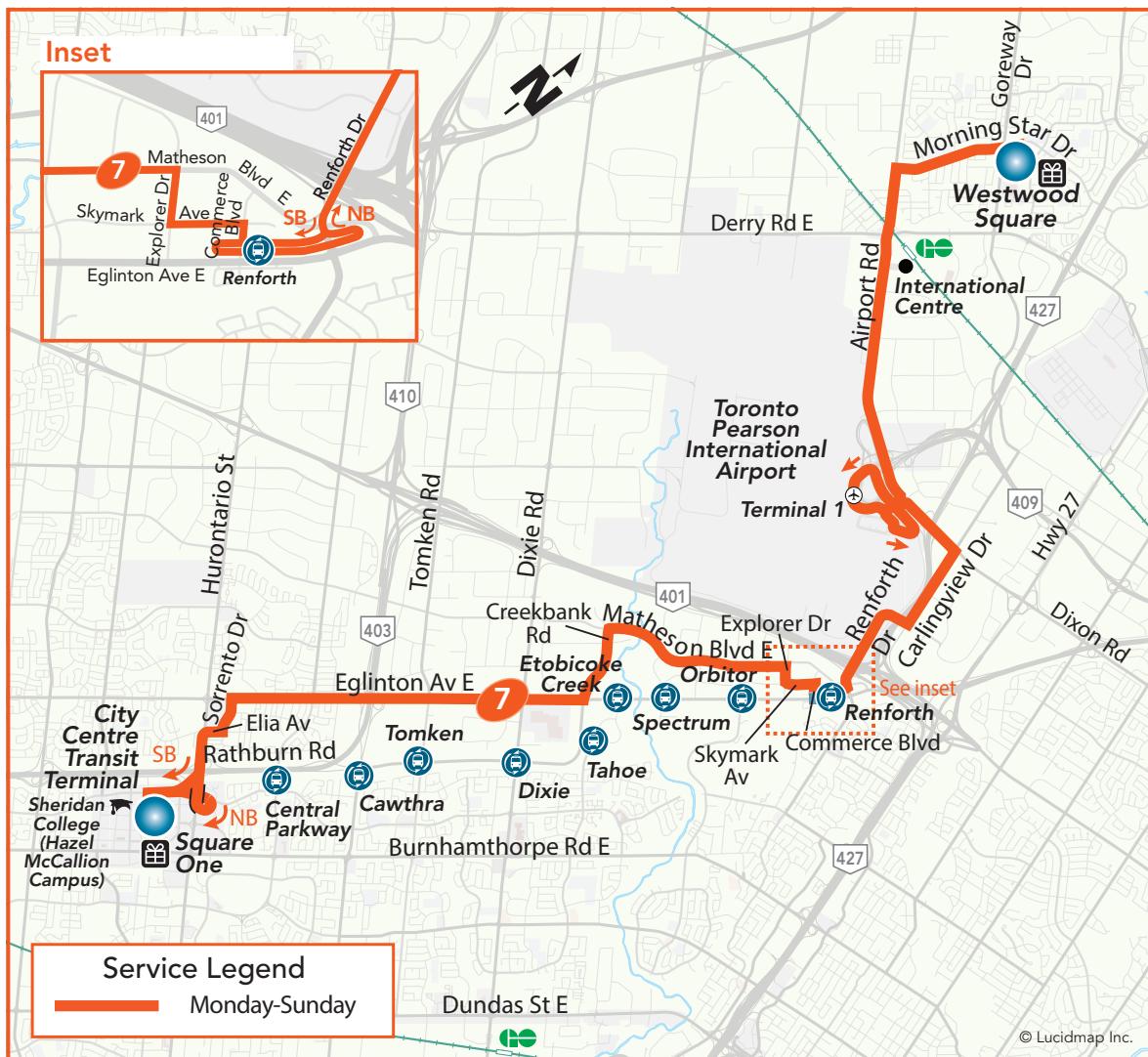




# 7 Airport

**Monday-Sunday Service**

Effective: October 28, 2019



## Legend

	TTC Subway Station		Major Transit Terminal		Shopping Centre		Public Library
	GO Train Station		Hospital		High School, University or College		Living Arts Centre
	Transitway Station		Ice Rink		Recreation or Community Centre		Civic Centre (City Hall)

## MiWay Customer Service

## Trip Plans & Schedules

- @MiWayHelps
- miway.ca/feedback
- 905-615-INFO (4636)

- TTY: 905-615-3886
- miwayhelps@mississauga.ca
- Customer Service Ambassadors  
In person at various locations



m.miway.ca  
Mobile Site



miway.ca/planatrip  
Online Trip Planner

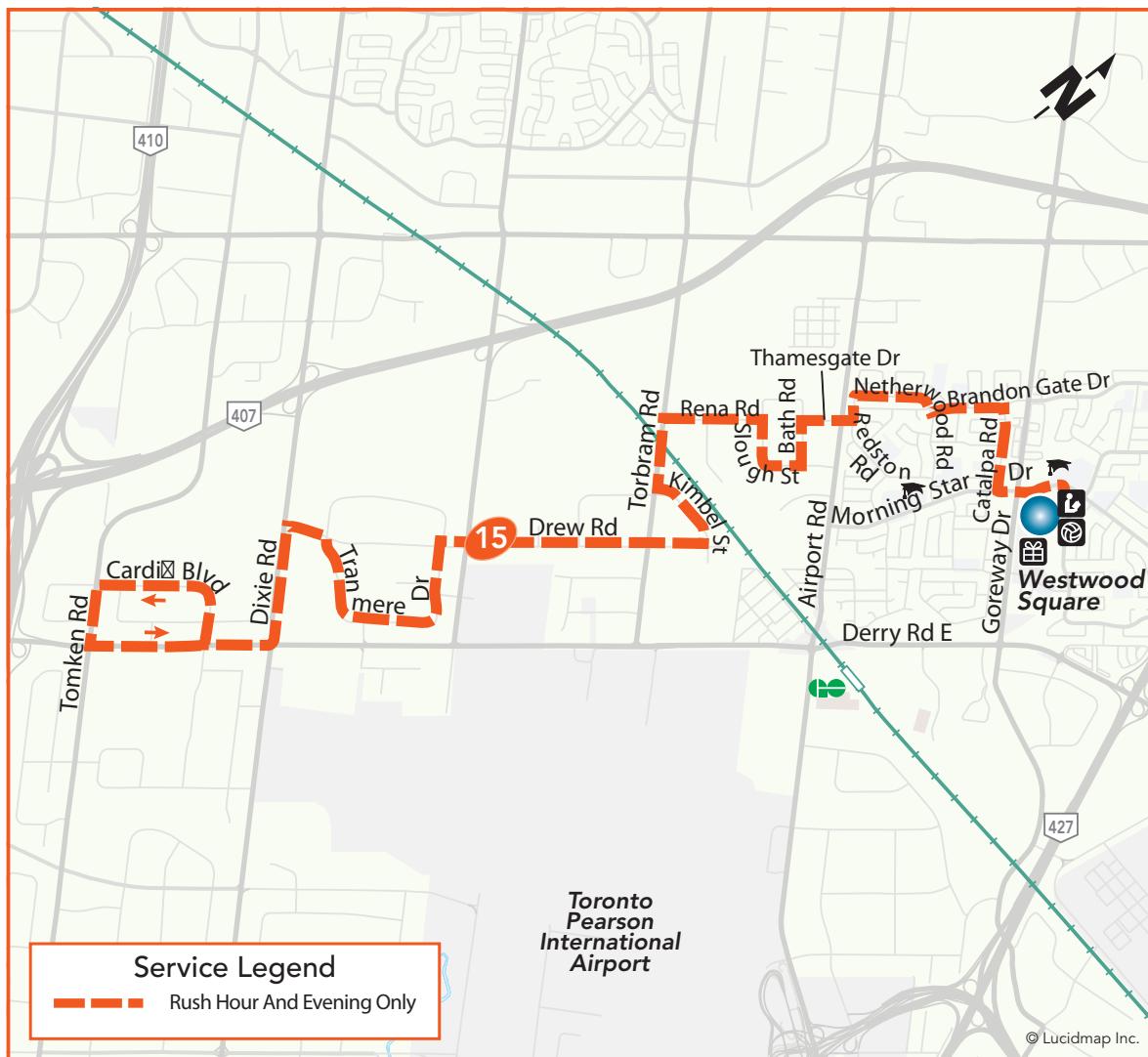


Call and enter a four-digit  
bus stop number.

# 15 Drew

**Monday-Friday Service**

Effective: April 27, 2015



## Legend

	TTC Subway Station		Major Transit Terminal		Shopping Centre		Public Library
	GO Train Station		Hospital		High School, University or College		Living Arts Centre
	Transitway Station		Ice Rink		Recreation or Community Centre		Civic Centre (City Hall)

## MiWay Customer Service

## Trip Plans & Schedules

@MiWayHelps

miway.ca/feedback

905-615-INFO (4636)

TTY: 905-615-3886

miwayhelps@mississauga.ca

Customer Service Ambassadors  
In person at various locations



m.miway.ca  
Mobile Site



miway.ca/planatrip  
Online Trip Planner

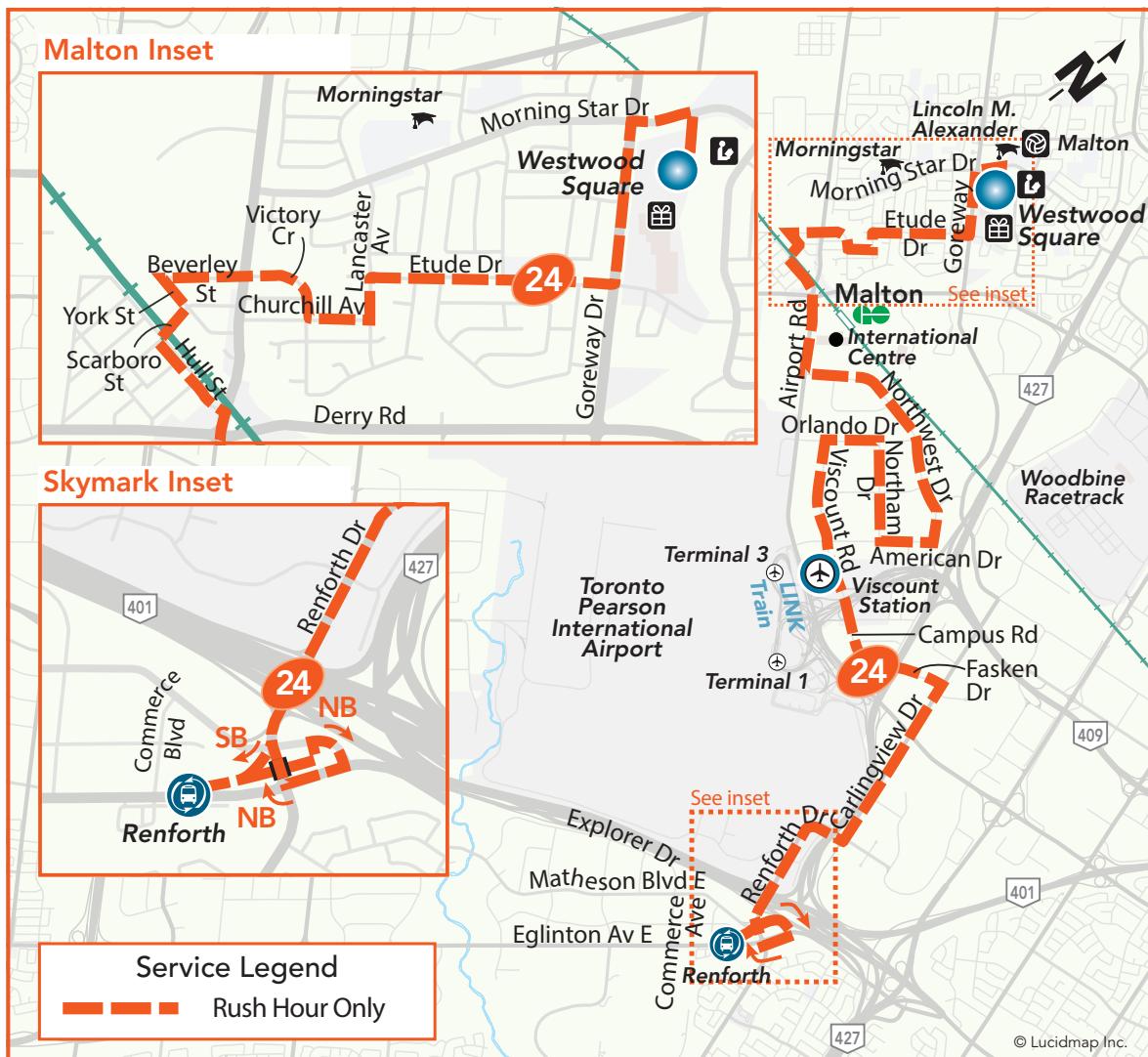
**citylink**  
905-615-4BUS(4287)

Call and enter a four-digit  
bus stop number.

# 24 Northwest

**Monday-Friday Service**

Effective: November 22, 2017



## Legend

	TTC Subway Station		Major Transit Terminal		Shopping Centre		Public Library
	GO Train Station		Hospital		High School, University or College		Living Arts Centre
	Transitway Station		Ice Rink		Recreation or Community Centre		Civic Centre (City Hall)

## MiWay Customer Service

## Trip Plans & Schedules

- @MiWayHelps
- miway.ca/feedback
- 905-615-INFO (4636)

- TTY: 905-615-3886
- miwayhelps@mississauga.ca
- Customer Service Ambassadors  
In person at various locations

m.miway.ca  
Mobile Site

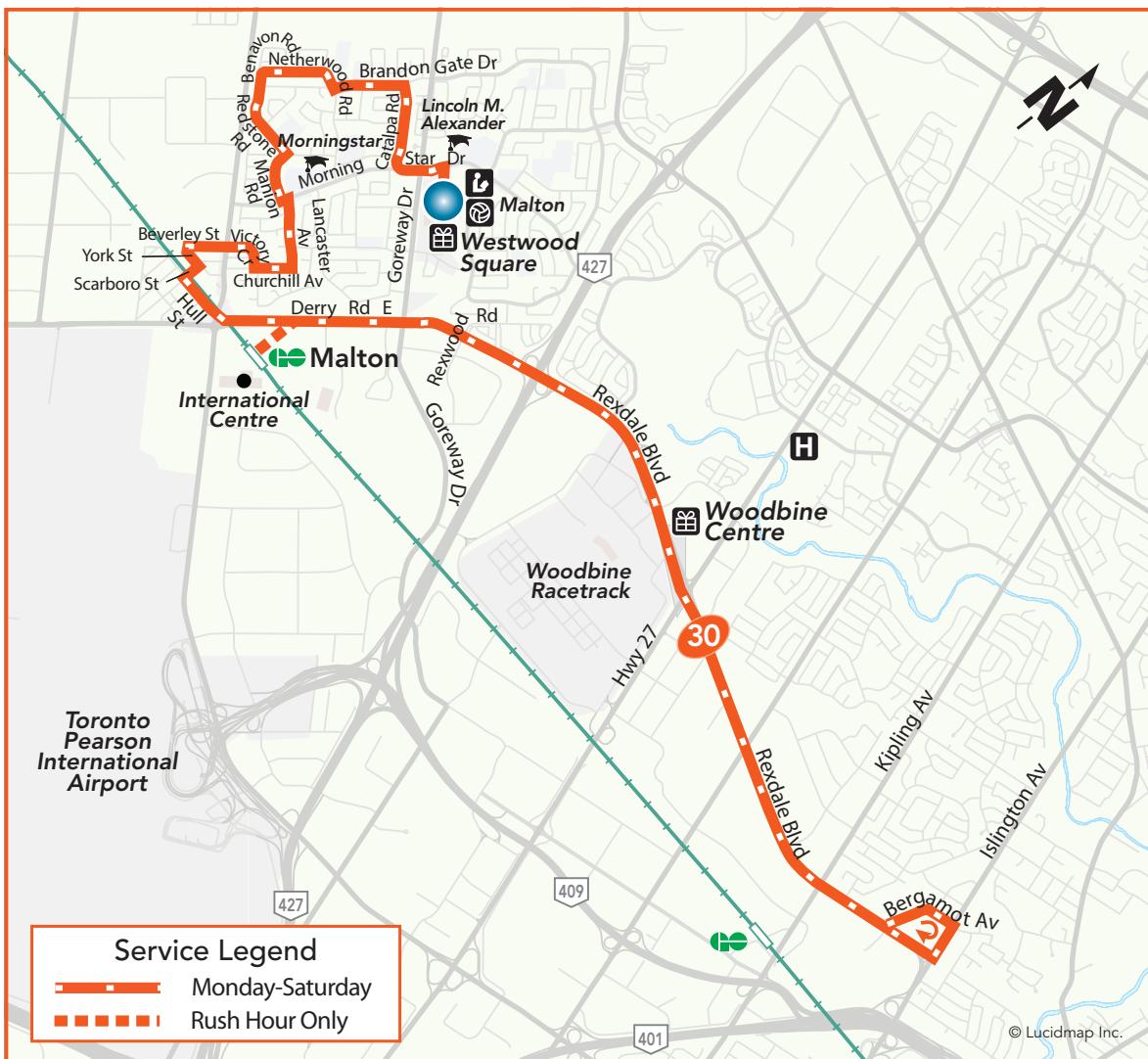
miway.ca/planatrip  
Online Trip Planner

**citylink**  
905-615-4BUS(4287)  
Call and enter a four-digit  
bus stop number.

## 30 Rexdale

**Monday-Saturday Service**

Effective: July 1, 2019



### Legend

	TTC Subway Station		Major Transit Terminal		Shopping Centre		Public Library
	GO Train Station		Hospital		High School, University or College		Living Arts Centre
	Transitway Station		Ice Rink		Recreation or Community Centre		Civic Centre (City Hall)

### MiWay Customer Service

- @MiWayHelps
- miway.ca/feedback
- 905-615-INFO (4636)

- TTY: 905-615-3886
- miwayhelps@mississauga.ca
- Customer Service Ambassadors  
In person at various locations

### Trip Plans & Schedules

- m.miway.ca Mobile Site
- miway.ca/planatrip Online Trip Planner
- citylink**  
905-615-4BUS(4287)

Call and enter a four-digit bus stop number.



**Additional Fare Required west of Pearson Airport**

	Frequent Service
	Regular Service
	Limited Service
	Blue Night Route
<b>52A</b>	Terminal Point
	Major Stops
<b>89</b>	Connecting TTC Route

52-01/19

### 1 Yonge-University Line


Pine St **32C** **79**  
Jane St **32C** **35** **79**  
**935** **335**

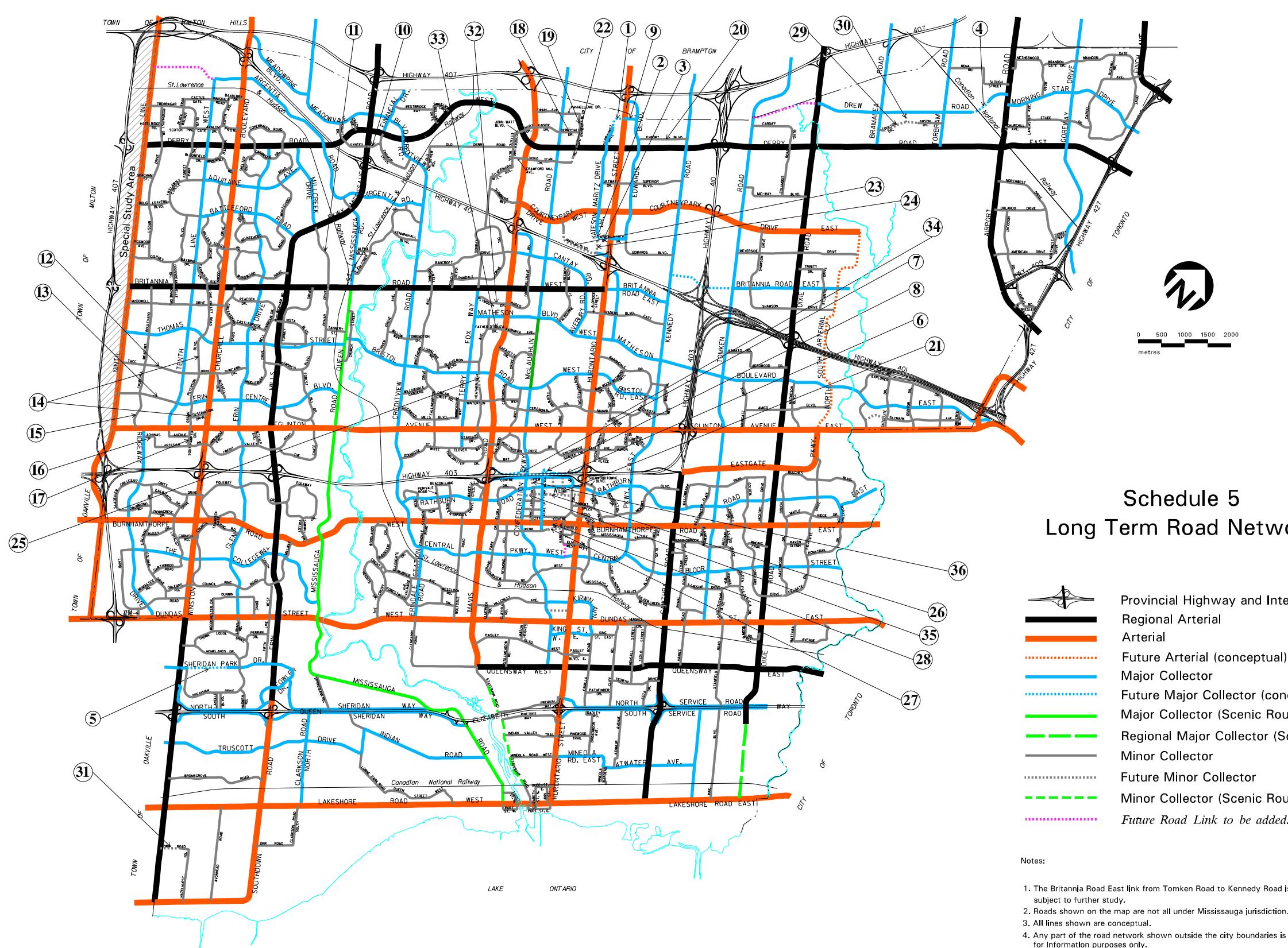
Connecting GTA Transit Service

**Lawrence West**  
**52** **59** **109** **952** **400**

**Lawrence**  
**52ABDF** **124** **162** **952**







## Schedule 5 Long Term Road Network

- Provincial Highway and Interchange
- Regional Arterial
- Arterial
- Future Arterial (conceptual)
- Major Collector
- Future Major Collector (conceptual)
- Major Collector (Scenic Route)
- Regional Major Collector (Scenic Route)
- Minor Collector
- Future Minor Collector
- Minor Collector (Scenic Route)
- Future Road Link to be added.

### Notes:

1. The Britannia Road East link from Tomken Road to Kennedy Road is conceptual and is subject to further study.
2. Roads shown on the map are not all under Mississauga jurisdiction.
3. All lines shown are conceptual.
4. Any part of the road network shown outside the city boundaries is shown for information purposes only.

The following amendments have been made:

Major Collector Roads to be shown as Future Major Collector Roads

1. Derrycrest Drive, west of Hurontario Street;
2. Kateson Drive, north of Capston Drive;
3. Capston Drive, from Kateson Drive to Hurontario Street;
4. Drew Road, just west of West Mimico Creek to south of CNR tracks;
5. Sheridan Park Drive, between the west and east leg of Speakman Drive;
6. North Service Road, from Mavis Road to Cawthra Road;
7. Confederation Parkway, North Service Road ramps;
8. Duke of York, Highway 403 flyover;

Minor Collector Roads to be shown as Major Collector Roads

9. Topflight Drive, between Hurontario Street to Edwards Boulevard (revised to complete the ring road);

Future Minor Collector Roads to be shown as Built Minor Collector Roads

10. Syntex Court, between Mississauga Road and Financial Drive;
11. Millcreek Drive, south of Southfield Road to Britannia Road West;
12. Tacc Drive, between Ninth Line and Winston Churchill Boulevard;
13. Erin Centre Boulevard, between Churchill Meadows Boulevard and Tenth Line West;
14. Oscar Peterson Boulevard, between Thomas Street and Tacc Drive, between Erin Centre Boulevard and Eglinton Avenue;
15. Churchill Meadows Boulevard, between Erin Centre Boulevard and Eglinton Avenue West;
16. Aquinas Avenue, between Ridgeway Drive and Sebastian Drive;
17. Southampton Drive, between Eglinton Avenue West and Artesian Drive;
18. Derrydale Drive, between McLaughlin Road and Saint Barbara Boulevard;
19. Saint Barbara Boulevard, between Panhellenic Drive and Derry Road West;
20. Export Boulevard, between Beckett Drive and Kennedy Road;
21. Hammerson Drive, between Rathburn Road West and the future Square One Drive;

Minor Collector Roads to be shown as Future Minor Collector Roads

22. Saint Barbara Boulevard, between Derry Road West and Longview Place;
23. Madill Boulevard, south of Courtneypark Drive to Kateson Drive;
24. Kateson Drive, between Capston Drive and Madill Boulevard;
25. Heatherleigh Avenue, between Bristol Road West and Fairford Crescent;
26. Square One Drive, between Living Arts Drive and City Centre Drive;
27. Webb Drive, east of Duke of York to Kariya Drive;
28. Proposed north/south road, between City Centre Drive and Webb Drive;
29. Logistics Drive, east of Bramalea Road to Anson Drive;
30. David Hunting Drive, between Drew Road and Logistics Drive;
31. Orr Road, west of Hazelhurst Road to Winston Churchill Boulevard;

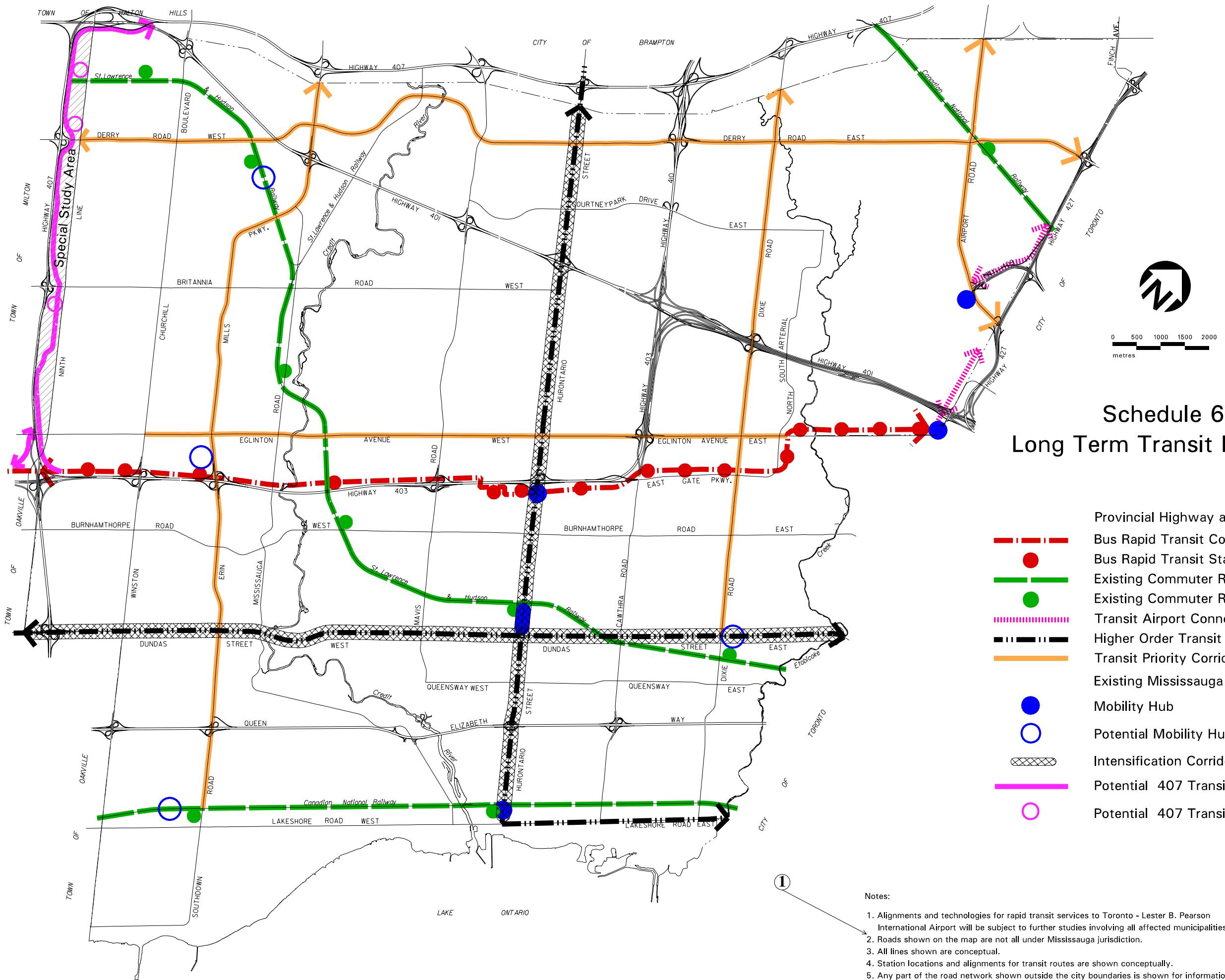
Roads to be Added as Built Minor Collectors

32. Plymouth Drive, between Terry Fox Way to Mavis Road;
33. Father D'Souza Drive, between Heatherleigh Avenue to Mavis Road;

Roads to be Added as Future Minor Collectors

34. Sorrento Drive, between Eglinton Avenue East and Forum Drive;
35. Square One Drive, east of Confederation Parkway to Living Arts Drive; and
36. Living Arts Drive, between Rathburn Road West and Centre View Drive.

The following amendments have been made:  
 1. Note 2, stating that "The Britannia Road East link from Tomken Road to Kennedy Road is conceptual and is subject to further study" has been removed.



## Schedule 6 Long Term Transit Network

This Schedule has been replaced to include the new cycling network outlined in the approved Cycling Master Plan.



0 500 1000 1500 2000  
metres

## Schedule 7 Long Term Cycling Routes

- Primary Off-Road Routes
- Primary On-Road / Boulevard Routes
- Primary On-Road / Boulevard Routes (Regional)
- Crossings
- Connections to Adjacent Municipalities

### Notes:

1. Off-Road routes will be outside of the road right-of-way.
2. Primary On-Road / Boulevard Routes will be within the road right-of-way.
3. Primary On-Road / Boulevard Routes (Regional) are shown for information purposes only, and are subject to further review by the Region of Peel.
4. Type of cycling facility and exact location to be determined through detailed study.
5. Any part of the road network shown outside the city boundaries is shown for information purposes only.
6. For Secondary Routes and further information refer to the Cycling Master Plan.

# APPENDIX C

Traffic Data, Signal Timings and AADT Data





Turning Movement Count  
Location Name: AIRPORT RD & 7256 AIRPORT RD NORTH ACCESS  
Date: Wed, Jan 08, 2020 Deployment Lead: Theo Daglis

Crozier & Associates

17:45:00	3	208	0	0	211	435	0	0	0	435	0	0	0	5	0	646	2861
18:00:00	1	205	0	0	206	492	4	0	0	496	0	0	0	8	0	702	2825
18:15:00	2	200	0	0	202	438	2	0	0	440	0	0	0	6	0	642	2745
18:30:00	2	196	0	0	198	318	3	0	0	321	1	0	0	9	1	520	2510
18:45:00	1	187	0	0	188	296	0	0	1	296	0	0	0	6	0	484	2348
<b>Grand Total</b>	37	7987	8	0	8032	9541	31	5	2	9577	7	10	0	171	17	<b>17626</b>	-
<b>Approach%</b>	0.5%	99.4%	0.1%		-	99.6%	0.3%	0.1%		-	41.2%	58.8%	0%		-	-	-
<b>Totals %</b>	0.2%	45.3%	0%		45.6%	54.1%	0.2%	0%		54.3%	0%	0.1%	0%		0.1%	-	-
<b>Heavy</b>	2	739	0		-	824	0	0		-	0	0	0		-	-	-
<b>Heavy %</b>	5.4%	9.3%	0%		-	8.6%	0%	0%		-	0%	0%	0%		-	-	-
<b>Bicycles</b>	-	-	-		-	-	-	-		-	-	-	-		-	-	-
<b>Bicycle %</b>	-	-	-		-	-	-	-		-	-	-	-		-	-	-



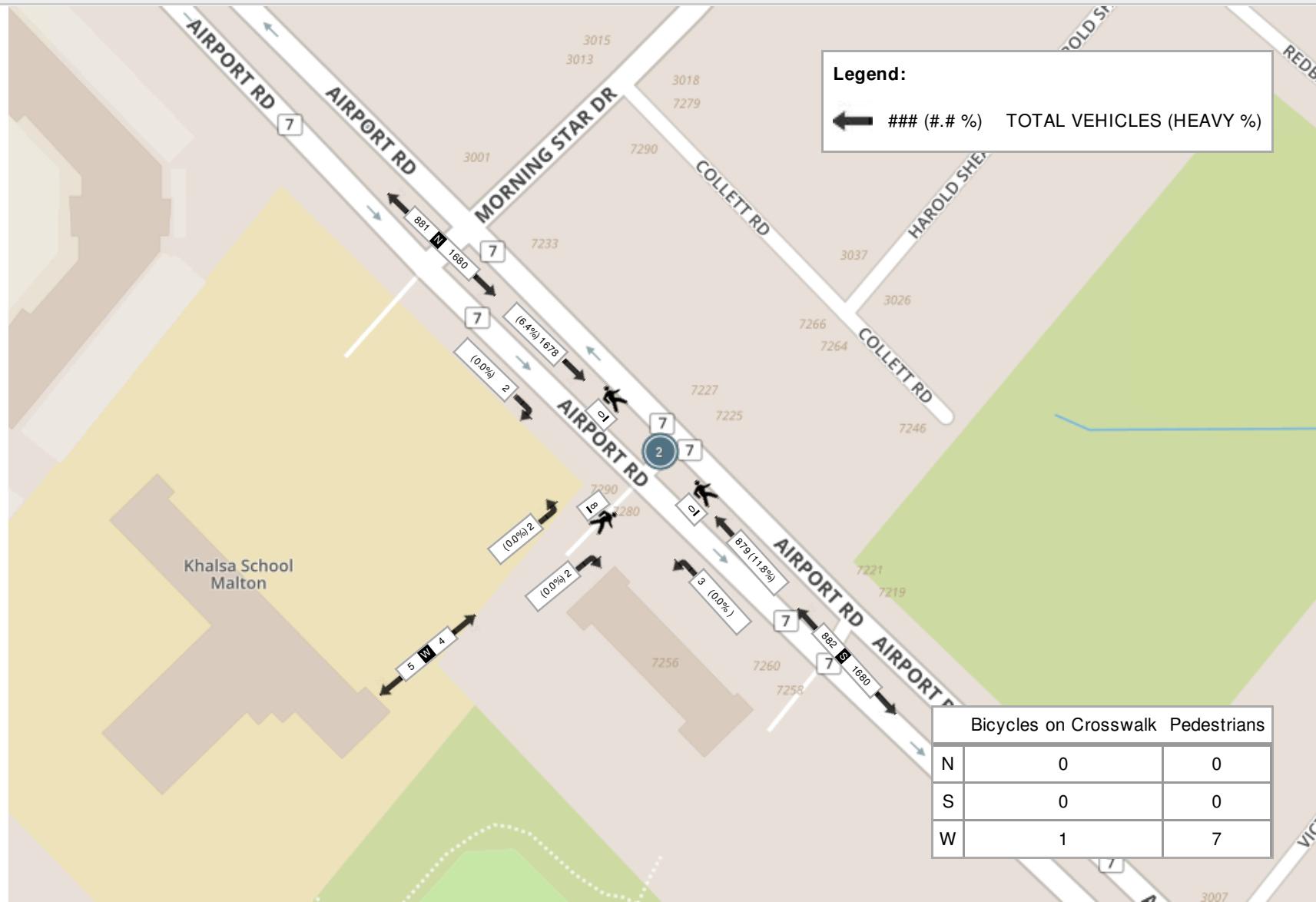
**Peak Hour: 07:30 AM - 08:30 AM Weather: Broken Clouds (-3.46 °C)**

Start Time	N Approach AIRPORT RD					S Approach AIRPORT RD					W Approach 7256 AIRPORT RD NORTH ACCESS					Int. Total (15 min)
	Right	Thru	U-Turn	Peds	Approach Total	Thru	Left	U-Turn	Peds	Approach Total	Right	Left	U-Turn	Peds	Approach Total	
07:30:00	1	373	1	0	375	234	1	0	0	235	0	0	0	2	0	610
07:45:00	0	505	0	0	505	211	1	0	0	212	0	0	0	1	0	717
08:00:00	0	421	0	0	421	188	0	0	0	188	0	2	0	1	2	611
08:15:00	1	379	0	0	380	246	1	0	0	247	2	0	0	4	2	629
<b>Grand Total</b>	2	1678	1	0	1681	879	3	0	0	882	2	2	0	8	4	<b>2567</b>
<b>Approach%</b>	0.1%	99.8%	0.1%	-	99.7%	0.3%	0%	-	50%	50%	0%	-	-	-	-	-
<b>Totals %</b>	0.1%	65.4%	0%	65.5%	34.2%	0.1%	0%	34.4%	0.1%	0.1%	0%	0.2%	-	-	-	-
<b>PHF</b>	0.5	0.83	0.25	0.83	0.89	0.75	0	0.89	0.25	0.25	0	0.5	-	-	-	-
<b>Heavy</b>	0	107	0	107	104	0	0	104	0	0	0	0	0	0	0	-
<b>Heavy %</b>	0%	6.4%	0%	6.4%	11.8%	0%	0%	11.8%	0%	0%	0%	0%	0%	0%	0%	-
<b>Lights</b>	2	1571	1	1574	775	3	0	778	2	2	0	4	-	-	-	-
<b>Lights %</b>	100%	93.6%	100%	93.6%	88.2%	100%	0%	88.2%	100%	100%	0%	100%	-	-	-	-
<b>Single-Unit Trucks</b>	0	40	0	40	43	0	0	43	0	0	0	0	-	-	-	-
<b>Single-Unit Trucks %</b>	0%	2.4%	0%	2.4%	4.9%	0%	0%	4.9%	0%	0%	0%	0%	-	-	-	-
<b>Buses</b>	0	12	0	12	10	0	0	10	0	0	0	0	-	-	-	-
<b>Buses %</b>	0%	0.7%	0%	0.7%	1.1%	0%	0%	1.1%	0%	0%	0%	0%	-	-	-	-
<b>Articulated Trucks</b>	0	55	0	55	51	0	0	51	0	0	0	0	-	-	-	-
<b>Articulated Trucks %</b>	0%	3.3%	0%	3.3%	5.8%	0%	0%	5.8%	0%	0%	0%	0%	-	-	-	-
<b>Pedestrians</b>	-	-	-	0	-	-	-	0	-	-	-	7	-	-	-	-
<b>Pedestrians%</b>	-	-	-	0%	-	-	-	0%	-	-	-	87.5%	-	-	-	-
<b>Bicycles on Crosswalk</b>	-	-	-	0	-	-	-	0	-	-	-	1	-	-	-	-
<b>Bicycles on Crosswalk%</b>	-	-	-	0%	-	-	-	0%	-	-	-	12.5%	-	-	-	-

**Peak Hour: 04:45 PM - 05:45 PM Weather: Shower Rain (-4.99 °C)**

Start Time	N Approach AIRPORT RD					S Approach AIRPORT RD					W Approach 7256 AIRPORT RD NORTH ACCESS					Int. Total (15 min)
	Right	Thru	U-Turn	Peds	Approach Total	Thru	Left	U-Turn	Peds	Approach Total	Right	Left	U-Turn	Peds	Approach Total	
16:45:00	3	248	0	0	251	547	2	0	0	549	1	3	0	10	4	804
17:00:00	2	249	0	0	251	483	3	1	0	487	0	0	0	8	0	738
17:15:00	2	231	3	0	236	485	0	1	1	486	0	0	0	10	0	722
17:30:00	1	233	1	0	235	517	3	0	0	520	0	0	0	8	0	755
<b>Grand Total</b>	8	961	4	0	973	2032	8	2	1	2042	1	3	0	36	4	<b>3019</b>
<b>Approach%</b>	0.8%	98.8%	0.4%	-	99.5%	0.4%	0.1%	-	-	25%	75%	0%	-	-	-	-
<b>Totals %</b>	0.3%	31.8%	0.1%	32.2%	67.3%	0.3%	0.1%	67.6%	0%	0.1%	0%	0.1%	0.1%	-	-	-
<b>PHF</b>	0.67	0.96	0.33	0.97	0.93	0.67	0.5	0.93	0.25	0.25	0	-	0.25	-	-	-
<b>Heavy</b>	0	83	0	83	111	0	0	111	0	0	0	-	0	-	-	-
<b>Heavy %</b>	0%	8.6%	0%	8.5%	5.5%	0%	0%	5.4%	0%	0%	0%	-	0%	-	-	-
<b>Lights</b>	8	878	4	890	1921	8	2	1931	1	3	0	-	4	-	-	-
<b>Lights %</b>	100%	91.4%	100%	91.5%	94.5%	100%	100%	94.6%	100%	100%	0%	-	100%	-	-	-
<b>Single-Unit Trucks</b>	0	29	0	29	34	0	0	34	0	0	0	-	0	-	-	-
<b>Single-Unit Trucks %</b>	0%	3%	0%	3%	1.7%	0%	0%	1.7%	0%	0%	0%	-	0%	-	-	-
<b>Buses</b>	0	7	0	7	10	0	0	10	0	0	0	-	0	-	-	-
<b>Buses %</b>	0%	0.7%	0%	0.7%	0.5%	0%	0%	0.5%	0%	0%	0%	-	0%	-	-	-
<b>Articulated Trucks</b>	0	47	0	47	67	0	0	67	0	0	0	-	0	-	-	-
<b>Articulated Trucks %</b>	0%	4.9%	0%	4.8%	3.3%	0%	0%	3.3%	0%	0%	0%	-	0%	-	-	-
<b>Pedestrians</b>	-	-	-	0	-	-	-	1	-	-	-	-	35	-	-	-
<b>Pedestrians%</b>	-	-	-	0%	-	-	-	2.7%	-	-	-	-	94.6%	-	-	-
<b>Bicycles on Crosswalk</b>	-	-	-	0	-	-	-	0	-	-	-	-	1	-	-	-
<b>Bicycles on Crosswalk%</b>	-	-	-	0%	-	-	-	0%	-	-	-	-	2.7%	-	-	-

**Peak Hour: 07:30 AM - 08:30 AM Weather: Broken Clouds (-3.46 °C)**



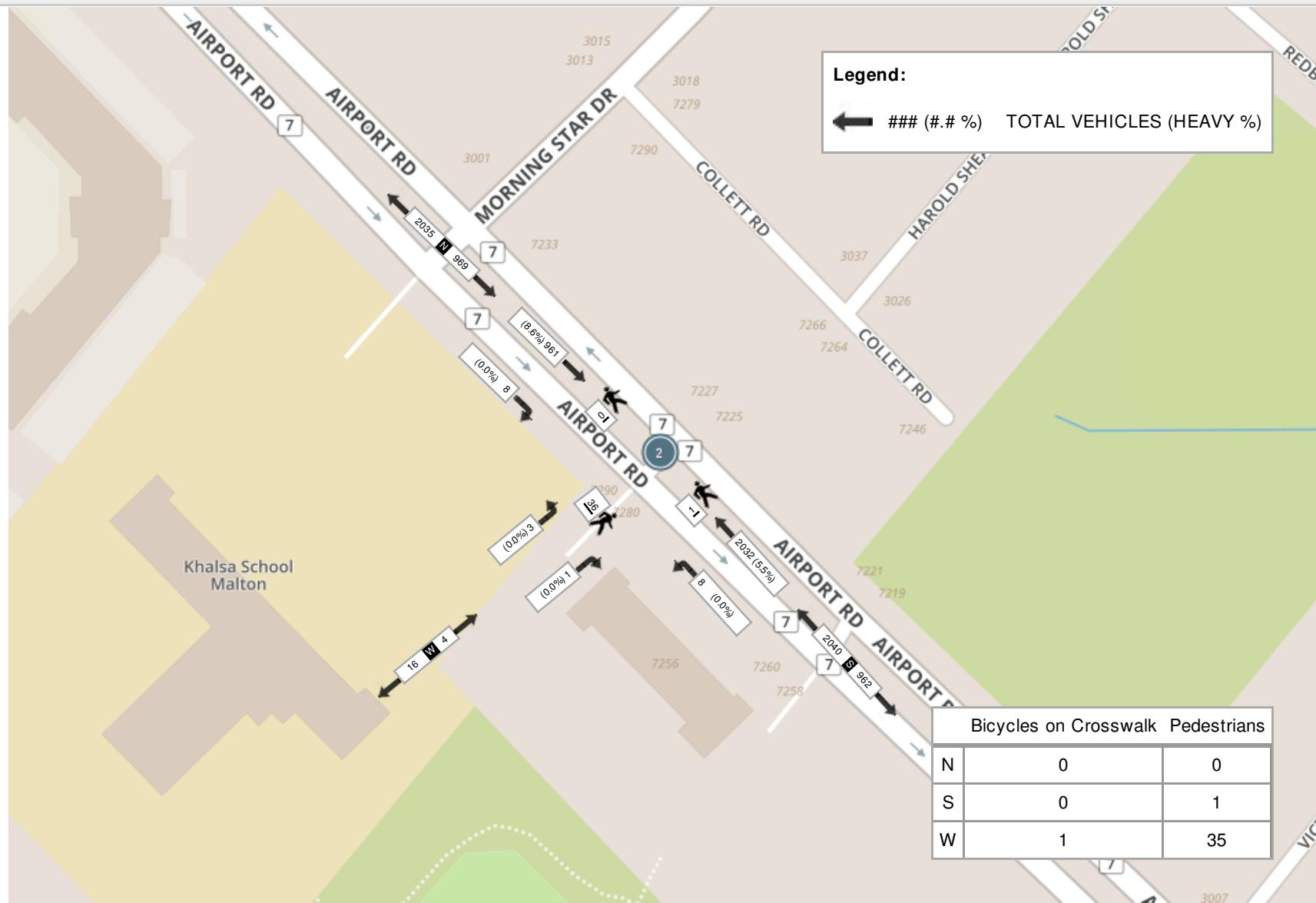


Spectrum

Turning Movement Count  
Location Name: AIRPORT RD & 7256 AIRPORT RD NORTH ACCESS  
Date: Wed, Jan 08, 2020 Deployment Lead: Theo Daglis

Crozier & Associates

Peak Hour: 04:45 PM - 05:45 PM Weather: Shower Rain (-4.99 °C)







**Spectrum**

Turning Movement Count

Crozier & Associates

Location Name: AIRPORT RD & 7256 AIRPORT RD SOUTH ACCESS

Date: Wed, Jan 08, 2020 Deployment Lead: Theo Daglis

17:45:00	0	209	0	0	209	503	0	0	0	503	4	1	0	7	5	717	2947
18:00:00	0	205	0	0	205	461	0	0	0	461	0	1	0	4	1	667	2828
18:15:00	0	201	0	0	201	394	0	0	0	394	1	1	0	5	2	597	2699
18:30:00	0	198	0	0	198	357	0	0	0	357	1	0	0	4	1	556	2537
18:45:00	0	186	0	0	186	252	0	1	0	253	2	1	0	5	3	442	2262
<b>Grand Total</b>	<b>4</b>	<b>8018</b>	<b>2</b>	<b>0</b>	<b>8024</b>	<b>9495</b>	<b>3</b>	<b>1</b>	<b>0</b>	<b>9499</b>	<b>42</b>	<b>18</b>	<b>0</b>	<b>154</b>	<b>60</b>	<b>17583</b>	<b>-</b>
<b>Approach%</b>	0%	99.9%	0%		-	100%	0%	0%		-	70%	30%	0%		-	-	-
<b>Totals %</b>	0%	45.6%	0%		45.6%	54%	0%	0%		54%	0.2%	0.1%	0%		0.3%	-	-
<b>Heavy</b>	0	730	0		-	817	0	0		-	2	1	0		-	-	-
<b>Heavy %</b>	0%	9.1%	0%		-	8.6%	0%	0%		-	4.8%	5.6%	0%		-	-	-
<b>Bicycles</b>	-	-	-		-	-	-	-		-	-	-	-		-	-	-
<b>Bicycle %</b>	-	-	-		-	-	-	-		-	-	-	-		-	-	-



**Peak Hour: 07:45 AM - 08:45 AM Weather: Broken Clouds (-3.46 °C)**

Start Time	N Approach AIRPORT RD					S Approach AIRPORT RD					W Approach 7256 AIRPORT RD SOUTH ACCESS					Int. Total (15 min)
	Right	Thru	U-Turn	Peds	Approach Total	Thru	Left	U-Turn	Peds	Approach Total	Right	Left	U-Turn	Peds	Approach Total	
07:45:00	0	502	0	0	502	216	0	0	0	216	2	1	0	1	3	721
08:00:00	0	419	0	0	419	170	0	0	0	170	2	1	0	0	3	592
08:15:00	2	384	0	0	386	258	0	0	0	258	4	1	0	4	5	649
08:30:00	0	385	0	0	385	216	0	0	0	216	3	0	0	9	3	604
<b>Grand Total</b>	<b>2</b>	<b>1690</b>	<b>0</b>	<b>0</b>	<b>1692</b>	<b>860</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>860</b>	<b>11</b>	<b>3</b>	<b>0</b>	<b>14</b>	<b>14</b>	<b>2566</b>
<b>Approach%</b>	0.1%	99.9%	0%		-	100%	0%	0%		-	78.6%	21.4%	0%		-	-
<b>Totals %</b>	0.1%	65.9%	0%		65.9%	33.5%	0%	0%		33.5%	0.4%	0.1%	0%		0.5%	-
<b>PHF</b>	0.25	0.84	0		0.84	0.83	0	0		0.83	0.69	0.75	0		0.7	-
<b>Heavy</b>	0	111	0		111	108	0	0		108	0	0	0		0	-
<b>Heavy %</b>	0%	6.6%	0%		6.6%	12.6%	0%	0%		12.6%	0%	0%	0%		0%	-
<b>Lights</b>	2	1579	0		1581	752	0	0		752	11	3	0		14	-
<b>Lights %</b>	100%	93.4%	0%		93.4%	87.4%	0%	0%		87.4%	100%	100%	0%		100%	-
<b>Single-Unit Trucks</b>	0	40	0		40	44	0	0		44	0	0	0		0	-
<b>Single-Unit Trucks %</b>	0%	2.4%	0%		2.4%	5.1%	0%	0%		5.1%	0%	0%	0%		0%	-
<b>Buses</b>	0	12	0		12	10	0	0		10	0	0	0		0	-
<b>Buses %</b>	0%	0.7%	0%		0.7%	1.2%	0%	0%		1.2%	0%	0%	0%		0%	-
<b>Articulated Trucks</b>	0	59	0		59	54	0	0		54	0	0	0		0	-
<b>Articulated Trucks %</b>	0%	3.5%	0%		3.5%	6.3%	0%	0%		6.3%	0%	0%	0%		0%	-
<b>Pedestrians</b>	-	-	-	0	-	-	-	-	0	-	-	-	-	13	-	-
<b>Pedestrians%</b>	-	-	-	0%		-	-	-	0%		-	-	-	92.9%	-	-
<b>Bicycles on Crosswalk</b>	-	-	-	0	-	-	-	-	0	-	-	-	-	1	-	-
<b>Bicycles on Crosswalk%</b>	-	-	-	0%		-	-	-	0%		-	-	-	7.1%	-	-



**Peak Hour: 04:15 PM - 05:15 PM Weather: Shower Rain (-4.99 °C)**

Start Time	N Approach AIRPORT RD					S Approach AIRPORT RD					W Approach 7256 AIRPORT RD SOUTH ACCESS					Int. Total (15 min)
	Right	Thru	U-Turn	Peds	Approach Total	Thru	Left	U-Turn	Peds	Approach Total	Right	Left	U-Turn	Peds	Approach Total	
16:15:00	0	208	1	0	209	523	0	0	0	523	0	0	0	4	0	732
16:30:00	0	259	0	0	259	518	0	0	0	518	1	0	0	6	1	778
16:45:00	1	246	0	0	247	496	0	0	0	496	2	1	0	12	3	746
17:00:00	0	250	0	0	250	535	0	0	0	535	0	1	0	7	1	786
<b>Grand Total</b>	<b>1</b>	<b>963</b>	<b>1</b>	<b>0</b>	<b>965</b>	<b>2072</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>2072</b>	<b>3</b>	<b>2</b>	<b>0</b>	<b>29</b>	<b>5</b>	<b>3042</b>
<b>Approach%</b>	0.1%	99.8%	0.1%	-	100%	0%	0%	-	60%	40%	0%	-	-	-	-	-
<b>Totals %</b>	0%	31.7%	0%	31.7%	68.1%	0%	0%	68.1%	0.1%	0.1%	0%	0.2%	-	-	-	-
<b>PHF</b>	0.25	0.93	0.25	0.93	0.97	0	0	0.97	0.38	0.5	0	0.42	-	-	-	-
<b>Heavy</b>	0	88	0	88	131	0	0	131	0	0	0	0	-	0	-	-
<b>Heavy %</b>	0%	9.1%	0%	9.1%	6.3%	0%	0%	6.3%	0%	0%	0%	0%	-	-	-	-
<b>Lights</b>	1	875	1	877	1941	0	0	1941	3	2	0	5	-	-	-	-
<b>Lights %</b>	100%	90.9%	100%	90.9%	93.7%	0%	0%	93.7%	100%	100%	0%	100%	-	-	-	-
<b>Single-Unit Trucks</b>	0	33	0	33	52	0	0	52	0	0	0	0	-	-	-	-
<b>Single-Unit Trucks %</b>	0%	3.4%	0%	3.4%	2.5%	0%	0%	2.5%	0%	0%	0%	0%	-	-	-	-
<b>Buses</b>	0	9	0	9	12	0	0	12	0	0	0	0	-	-	-	-
<b>Buses %</b>	0%	0.9%	0%	0.9%	0.6%	0%	0%	0.6%	0%	0%	0%	0%	-	-	-	-
<b>Articulated Trucks</b>	0	46	0	46	67	0	0	67	0	0	0	0	-	-	-	-
<b>Articulated Trucks %</b>	0%	4.8%	0%	4.8%	3.2%	0%	0%	3.2%	0%	0%	0%	0%	-	-	-	-
<b>Pedestrians</b>	-	-	-	0	-	-	-	0	-	-	-	26	-	-	-	-
<b>Pedestrians%</b>	-	-	-	0%	-	-	-	0%	-	-	-	89.7%	-	-	-	-
<b>Bicycles on Crosswalk</b>	-	-	-	0	-	-	-	0	-	-	-	3	-	-	-	-
<b>Bicycles on Crosswalk%</b>	-	-	-	0%	-	-	-	0%	-	-	-	10.3%	-	-	-	-

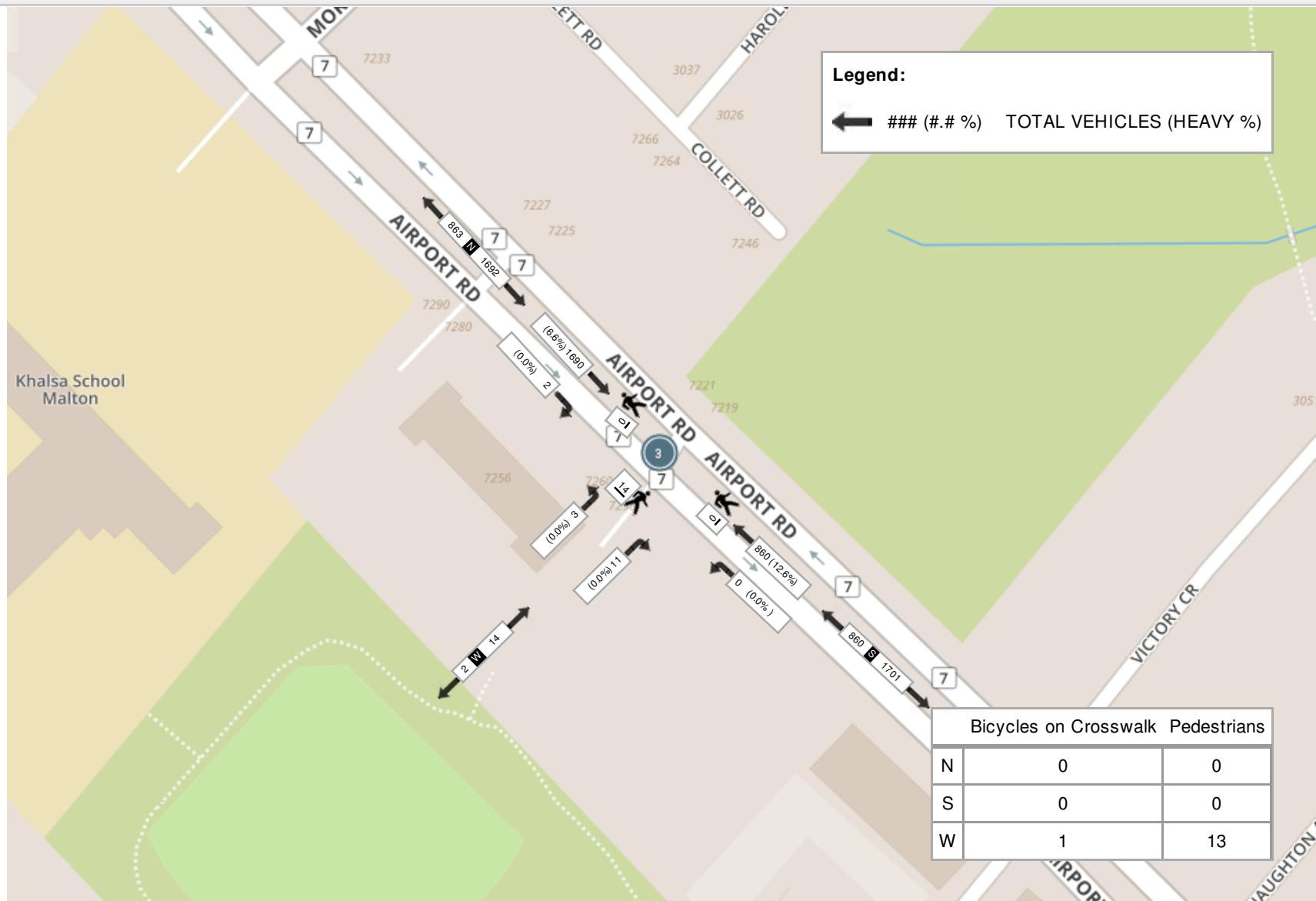


Spectrum

Turning Movement Count  
Location Name: AIRPORT RD & 7256 AIRPORT RD SOUTH ACCESS  
Date: Wed, Jan 08, 2020 Deployment Lead: Theo Daglis

Crozier & Associates

Peak Hour: 07:45 AM - 08:45 AM Weather: Broken Clouds (-3.46 °C)



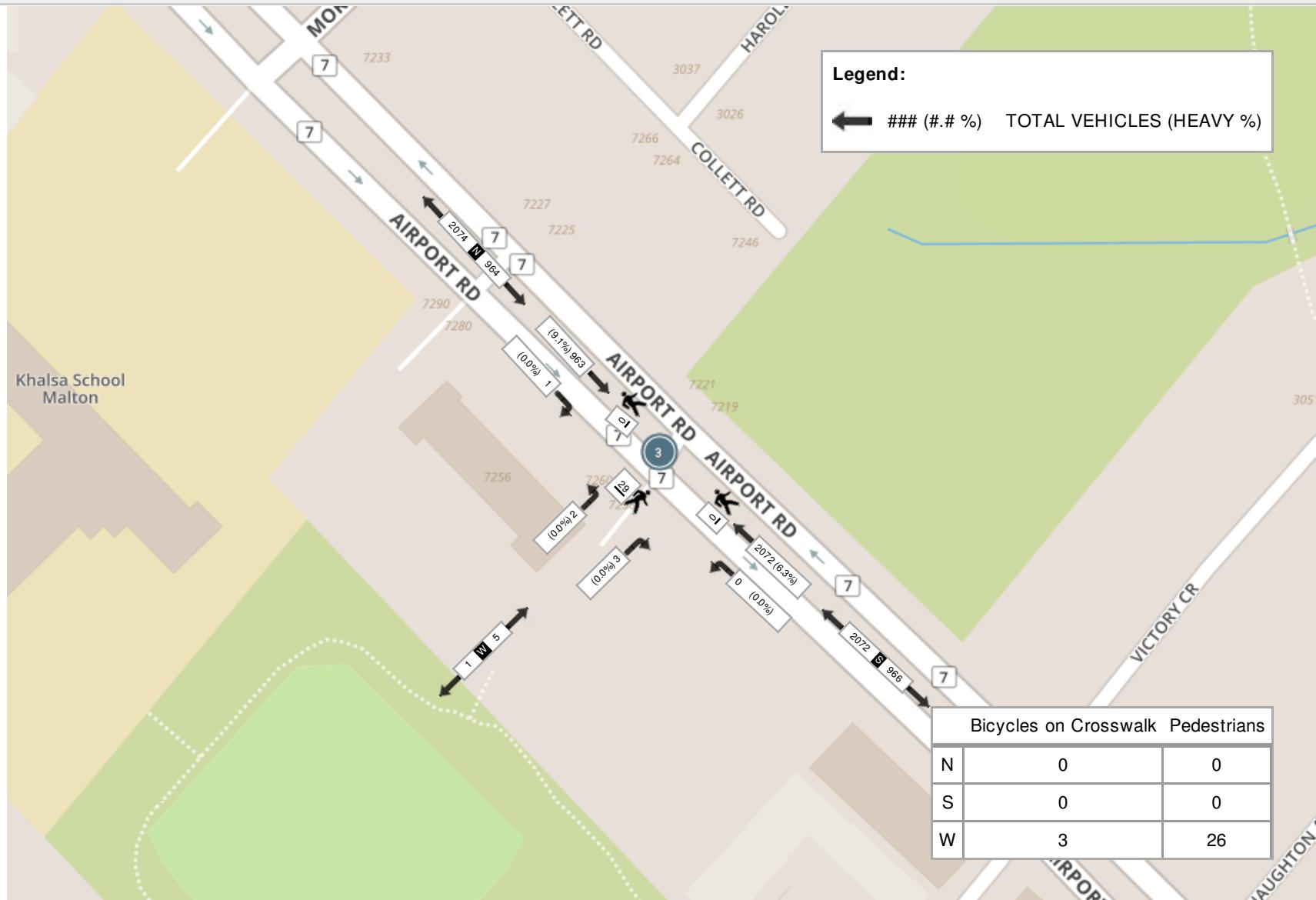


Spectrum

Turning Movement Count  
Location Name: AIRPORT RD & 7256 AIRPORT RD SOUTH ACCESS  
Date: Wed, Jan 08, 2020 Deployment Lead: Theo Daglis

Crozier & Associates

Peak Hour: 04:15 PM - 05:15 PM Weather: Shower Rain (-4.99 °C)







**Spectrum**

Crozier & Associates

Turning Movement Count

Location Name: AIRPORT RD & BEVERLEY ST / VICTORY ST

Date: Wed, Jan 08, 2020 Deployment Lead: Theo Daglis

<b>Totals %</b>	1.7%	42.4%	0.6%	0%	44.7%	0.4%	0.5%	0.3%	0%	1.2%	0.2%	49.5%	0.5%	0.1%	50.3%	0.4%	0.7%	2.7%	0%	3.8%	-	-
<b>Heavy</b>	7	724	2	0	-	1	28	2	0	-	3	829	0	0	-	0	30	3	0	-	-	-
<b>Heavy %</b>	2.3%	9.6%	1.9%	0%	-	1.3%	31.8%	3.8%	0%	-	7.3%	9.4%	0%	0%	-	0%	22.7%	0.6%	0%	-	-	-
<b>Bicycles</b>	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
<b>Bicycle %</b>	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	





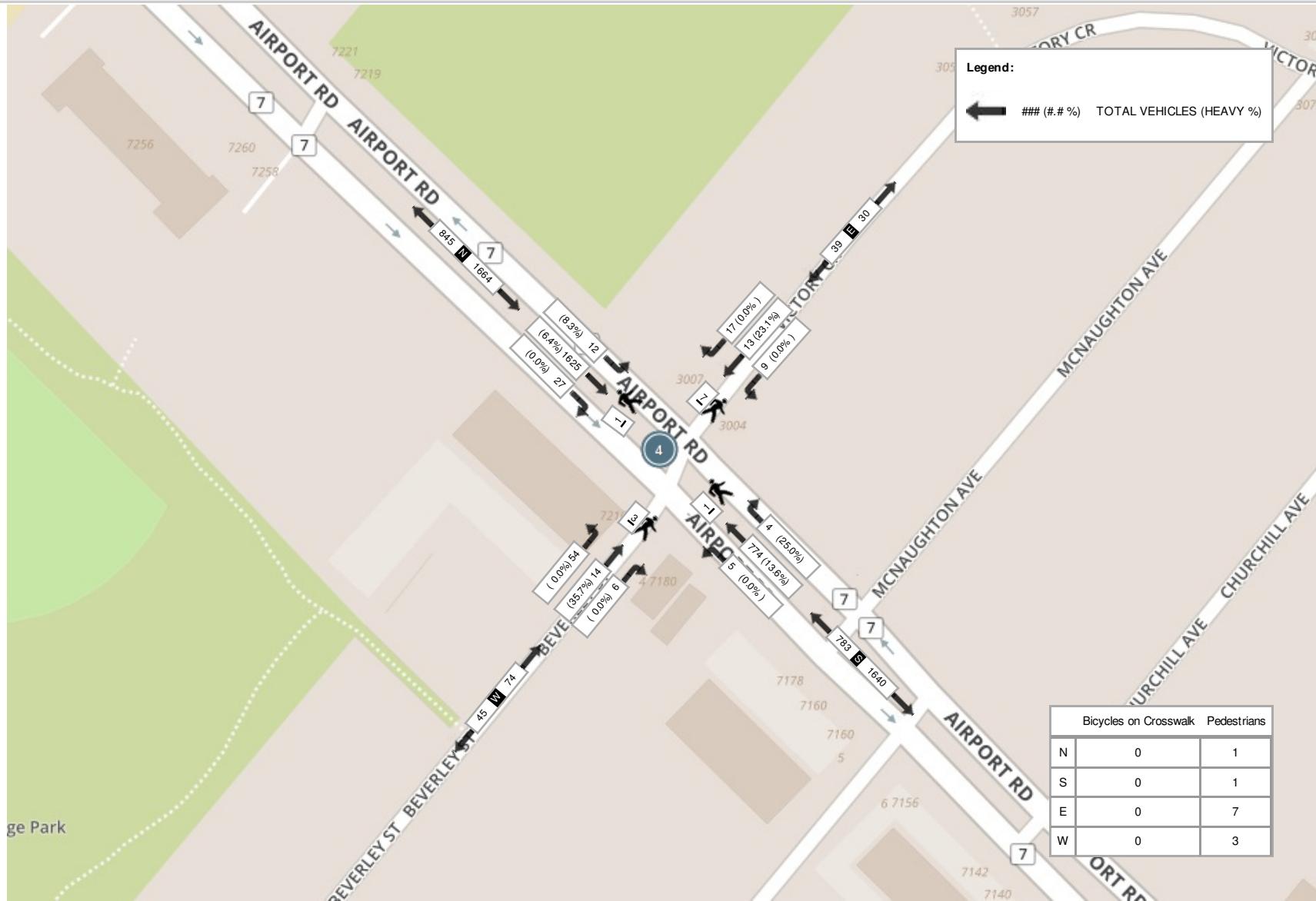


Spectrum

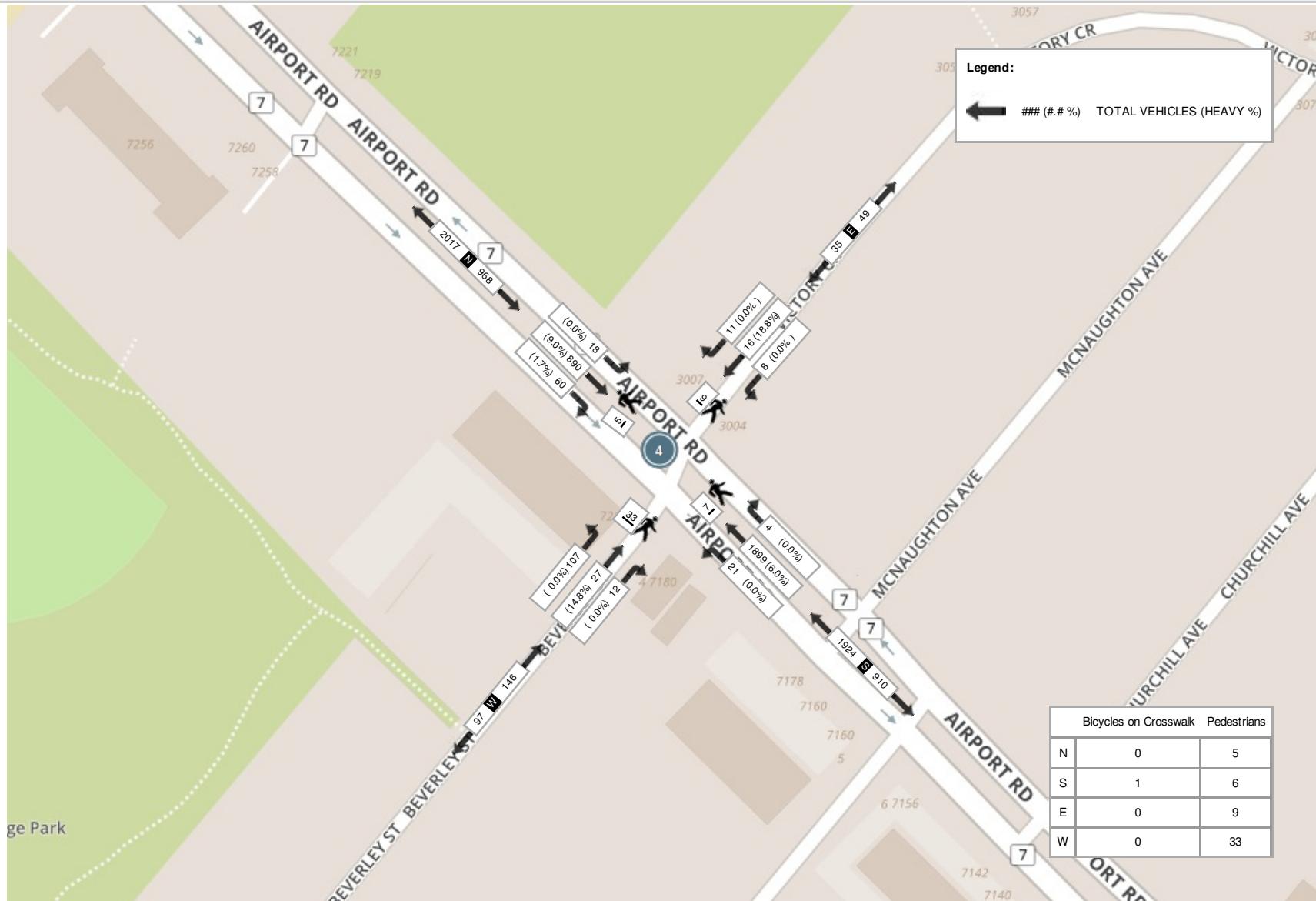
Turning Movement Count  
Location Name: AIRPORT RD & BEVERLEY ST / VICTORY ST  
Date: Wed, Jan 08, 2020 Deployment Lead: Theo Daglis

Crozier & Associates

Peak Hour: 07:30 AM - 08:30 AM Weather: Broken Clouds (-3.46 °C)



**Peak Hour: 04:45 PM - 05:45 PM Weather: Shower Rain (-4.99 °C)**







**Spectrum**

Crozier & Associates

Turning Movement Count

Location Name: AIRPORT RD & MORNING STAR DR

Date: Wed, Jan 08, 2020 Deployment Lead: Theo Daglis

<b>Totals %</b>	0.7%	34.1%	6.8%	0%	41.6%	6.1%	0.6%	3.8%	0%	10.5%	5.1%	40.5%	0.5%	0%	46.2%	0.5%	0.6%	0.7%	0%	1.7%	-	-
<b>Heavy</b>	0	673	96	0	-	91	0	52	0	-	52	764	0	0	-	0	0	0	0	-	-	-
<b>Heavy %</b>	0%	9.6%	6.9%	0%	-	7.2%	0%	6.7%	0%	-	4.9%	9.2%	0%	0%	-	0%	0%	0%	0%	-	-	-
<b>Bicycles</b>	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
<b>Bicycle %</b>	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-





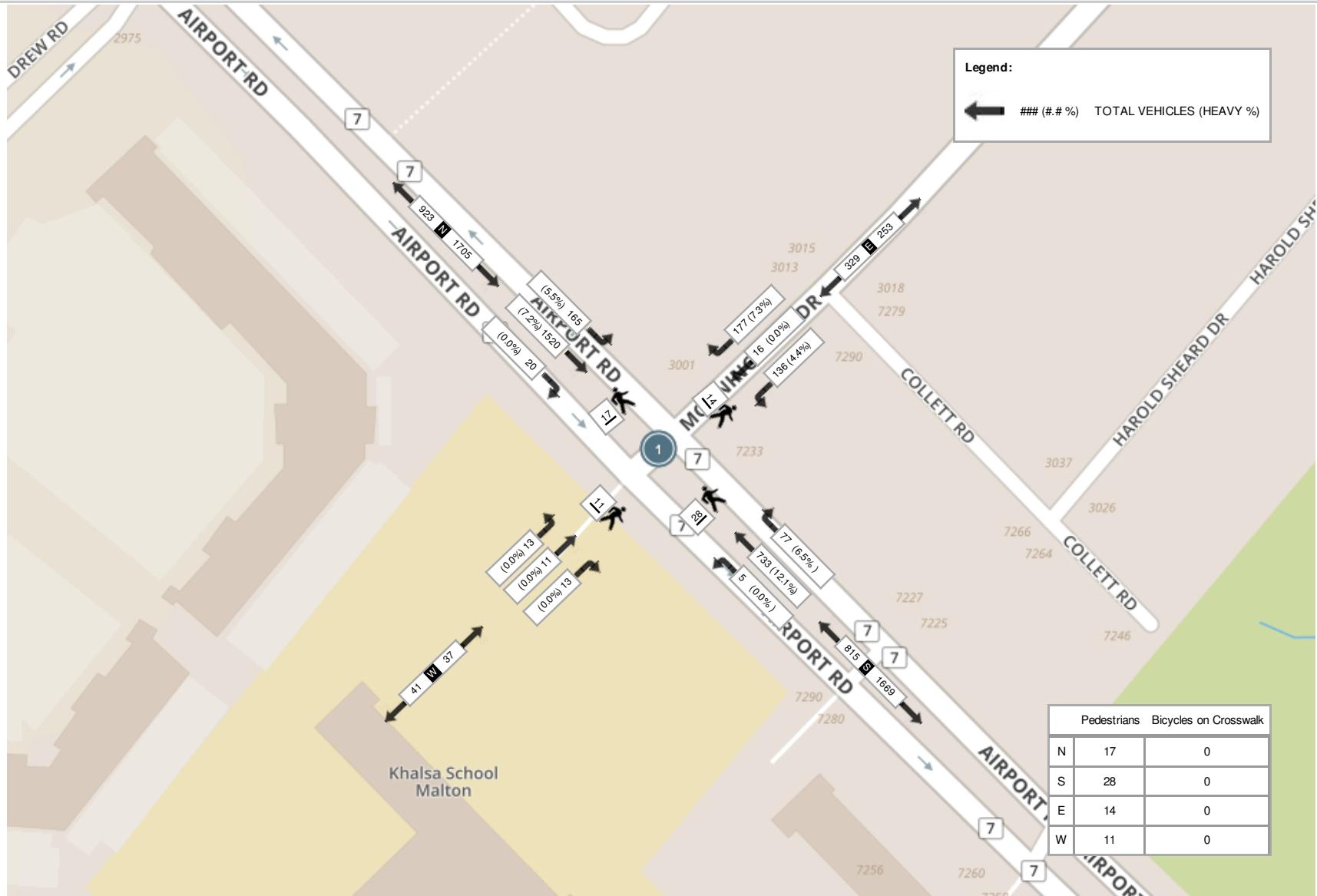


Spectrum

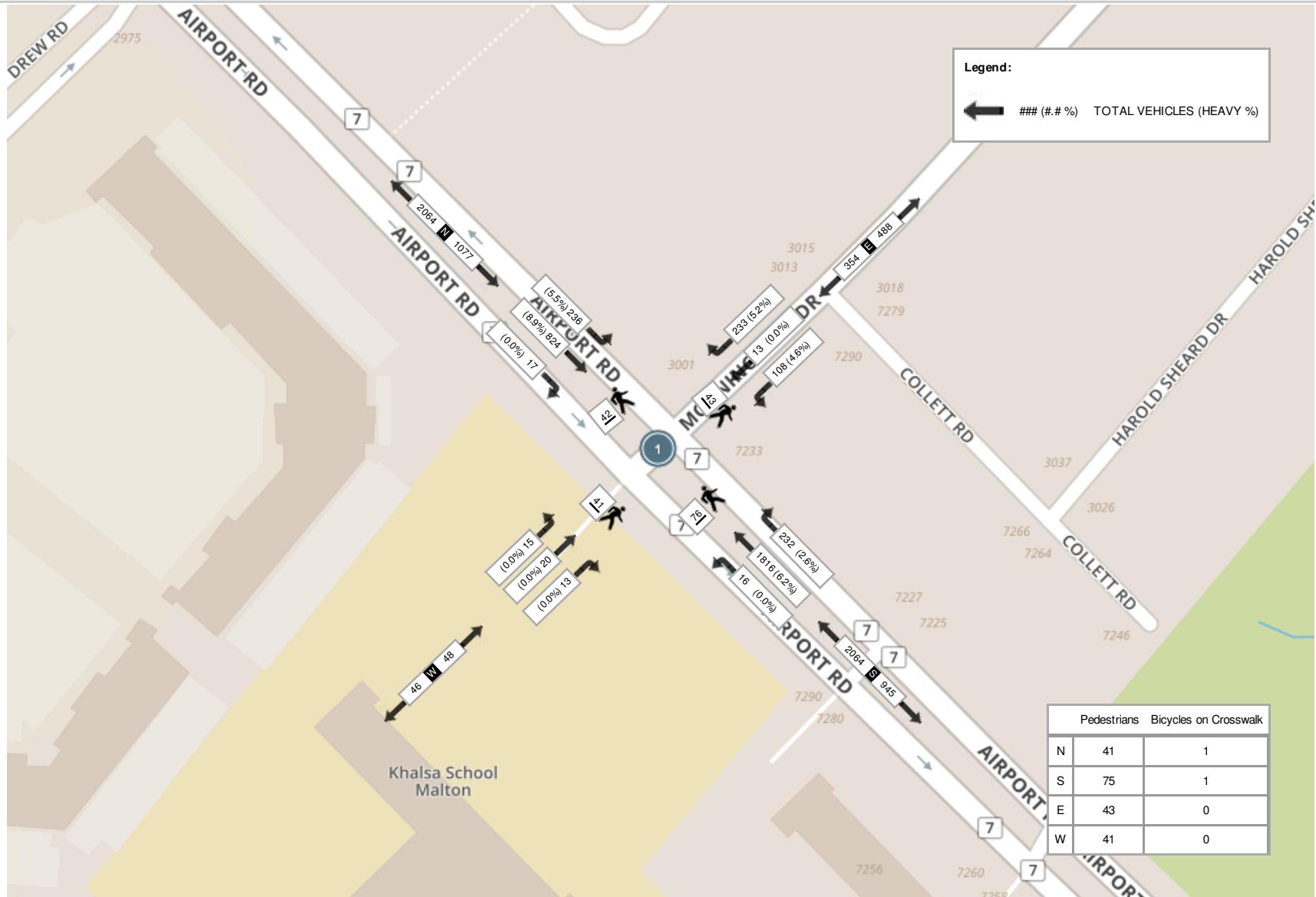
Turning Movement Count  
Location Name: AIRPORT RD & MORNING STAR DR  
Date: Wed, Jan 08, 2020 Deployment Lead: Theo Daglis

Crozier & Associates

Peak Hour: 07:45 AM - 08:45 AM Weather: Broken Clouds (-3.46 °C)



Peak Hour: 04:45 PM - 05:45 PM Weather: Shower Rain (-4.99 °C)



## REGIONAL MUNICIPALITY OF PEEL

### Traffic Signal Timing Parameters

Database Date		December 11, 2019			Prepared Date:		December 12, 2019			
Database Rev		iNet			Completed By:		BL			
Timing Card / Field rev		iNet			Checked By:		MA			
Location:	Airport Road @ Beverly Street / Victory Crescent							TIME PERIOD (sec.)		
Phase #	Direction	Vehicle Minimum (sec.)	Pedestrian Minimum (sec.)		Amber (sec.)	All Red (sec.)	(Green+Amber+All Red)			
			WALK	FDWALK			AM SPLITS	OFF SPLITS	PM SPLITS	
1	Not In Use	-	-	-	-	-	-	-	-	
2	Airport Road - S/B	8	8	15	4	2.7	108	104	108	
3	Not In Use	-	-	-	-	-	-	-	-	
4	Victory Crescent - W/B	8	14	30	4	3.3	52	56	52	
5	Not In Use	-	-	-	-	-	-	-	-	
6	Airport Road - N/B	8	8	15	4	2.7	108	104	108	
7	Not In Use	-	-	-	-	-	-	-	-	
8	Beverly Street - E/B	8	14	30	4	3.3	52	56	52	
System Control		YES								
Local Control		NO								
Semi-Actuated Mode		YES								
							TIME (M-F)	PEAK	CYCLE LENGTH (sec.)	OFFSET (sec.)
							06:00 - 09:30	AM	160	6
							09:30 - 15:00	OFF	160	75
							19:30 - 00:00			
							15:30 - 19:30	PM	160	134

## REGIONAL MUNICIPALITY OF PEEL

### Traffic Signal Timing Parameters

Database Date		December 11, 2019			Prepared Date:		December 12, 2019		
Database Rev		iNet			Completed By:		BL		
Timing Card / Field rev		iNet			Checked By:		MA		
Location:	Airport Road @ Morning Star Drive							TIME PERIOD (sec.)	
Phase #	Direction	Vehicle Minimum (sec.)	Pedestrian Minimum (sec.)		Amber (sec.)	All Red (sec.)	(Green+Amber+All Red)		
			WALK	FDWALK			AM SPLITS	OFF SPLITS	PM SPLITS
1	Airport Road - N/B P.P LT	5	0	0	3	0	0	13	0
2	Airport Road - S/B	8	9	14	4	2.2	106	86	108
3	Not In Use	-	-	-	-	-	-	-	-
4	Morning Star Drive - W/B	8	14	23	4	2.7	54	61	52
5	Airport Road - S/B P.P LT	5	0	0	3	0	14	16	0
6	Airport Road - N/B	8	9	14	4	2.2	92	83	108
7	Not In Use	-	-	-	-	-	-	-	-
8	Private Drive - E/B	8	14	23	4	2.7	54	61	52
System Control		YES							
Local Control		NO							
Semi-Actuated Mode		YES							
				TIME (M-F)	PEAK	CYCLE LENGTH (sec.)	OFFSET (sec.)		
				06:00 - 09:30	AM	160	34		
				09:30 - 15:00	OFF	160	67		
				19:30 - 00:00					
				15:30 - 19:30	PM	160	155		

## Peter Apasnore

---

**From:** Mathew, Steve <steve.mathew@peelregion.ca>  
**Sent:** December 13, 2019 10:29 AM  
**To:** Peter Apasnore  
**Subject:** RE: Signal TIming Plans

Please see table below with the historical data:

Airport Road- 0.5KM north of Derry Road		
Historical AADT Data		
Year	NB	SB
2017	14,416	15,193
2015	16,664	14,238
2014	15,680	14,726
2013	9,492	9,246
2012	13,982	13,975
2011	19,320	18,660
2009	16,057	16,817
2008	18,177	18,452

\*\*Please Note: The Region of Peel makes no claim concerning the accuracy of this data, nor assumes any liability resulting from the use of the information herein. The data provided is the property of the Region of Peel and is not to be distributed in any form nor used in any manner not authorized by the Region of Peel in writing.\*\*

Steve

---

**From:** Peter Apasnore <papasnore@cfcrozier.ca>  
**Sent:** December 13, 2019 8:28 AM  
**To:** Mathew, Steve <steve.mathew@peelregion.ca>  
**Subject:** RE: Signal TIming Plans

**CAUTION: EXTERNAL MAIL. DO NOT CLICK ON LINKS OR OPEN ATTACHMENTS YOU DO NOT TRUST.**

Hi Steve,

As discussed yesterday. Please send me available AADT for the past 10 years or more. Thank you, and if you can send it today, that will be greatly appreciated.

**Peter Apasnore M.A.Sc., EIT | Transportation**  
C.F. Crozier & Associates Consulting Engineers

Direction			Growth Rates	
Y	Year	NB	SB	
8	2008	18,177	18,452	-3%
7	2009	16,057	16,817	-2%
6	2011	19,320	18,660	-5%
5	2012	13,982	13,975	1%
4	2013	9,492	9,246	Outlier
3	2014	15,680	14,726	-3%
2	2015	16,664	14,238	-7%
	2017	14,416	15,193	3%
<b>Average Growth Rate</b>			-3%	0%

Growth rates are all calculated in comparison to the latest AADT volumes in 2017.

Y - is the number of years from the latest 2017 year

Wed Dec 11 2019 17:19:27 GMT-0500 (Eastern Standard Time) - Run Time: 2688ms

Cross Tabulation Query Form - Trip - 2016 v1.1

Row: Planning district of origin - pd\_orig

Column: Planning district of destination - pd\_dest

Filters:

(2006 GTA zone of origin - gta06\_orig In 3712  
and  
Start time of trip - start\_time In 700-1000)

Trip 2016

Table:

	Mississauga	Proportions (%)
PD 1 of Toronto	81	7%
PD 2 of Toronto	5	0%
PD 8 of Toronto	23	2%
PD 9 of Toronto	197	16%
PD 10 of Toronto	28	2%
PD 11 of Toronto	20	2%
Caledon	5	0%
Brampton	68	5%
Mississauga	803	64%
Oakville	15	1%
TOTAL	1245	100%

Wed Dec 11 2019 17:22:05 GMT-0500 (Eastern Standard Time) - Run Time: 2501ms

Cross Tabulation Query Form - Trip - 2016 v1.1

Row: Planning district of origin - pd\_orig

Column: Planning district of destination - pd\_dest

Filters:

(2006 GTA zone of origin - gta06\_orig In 3712

and

Start time of trip - start\_time In 1500-1700)

Trip 2016

Table:

	Mississauga	Proportions (%)
PD 9 of Toronto	18	3%
PD 10 of Toronto	87	15%
Georgina	64	11%
Vaughan	16	3%
Brampton	67	11%
Mississauga	267	45%
Halton Hills	52	9%
Milton	5	1%
City of Guelph	12	2%
Total	588	100%

Wed Dec 11 2019 17:20:34 GMT-0500 (Eastern Standard Time) - Run Time: 2294ms

Cross Tabulation Query Form - Trip - 2016 v1.1

Row: Planning district of origin - pd\_orig

Column: Planning district of destination - pd\_dest

Filters:

(2006 GTA zone of destination - gta06\_dest In 3712  
and  
Start time of trip - start\_time In 700-1000)

Trip 2016

Table:

	Mississauga	Proportions (%)
PD 9 of Toror	18	6%
Brampton	53	18%
Mississauga	171	58%
Halton Hills	52	18%
Total	294	100%

Wed Dec 11 2019 17:21:27 GMT-0500 (Eastern Standard Time) - Run Time: 2801ms

Cross Tabulation Query Form - Trip - 2016 v1.1

Row: Planning district of origin - pd\_orig

Column: Planning district of destination - pd\_dest

Filters:

(2006 GTA zone of destination - gta06\_dest In 3712  
and  
Start time of trip - start\_time In 1500-1700)

Trip 2016

Table:

	Mississauga	Proportions (%)
PD 1 of Toronto	23	2%
PD 2 of Toronto	5	0%
PD 8 of Toronto	35	3%
PD 9 of Toronto	174	14%
PD 10 of Toronto	87	7%
Vaughan	21	2%
Brampton	64	5%
Mississauga	815	66%
Oakville	15	1%
Total	1239	100%

Wed Dec 11 2019 17:26:39 GMT-0500 (Eastern Standard Time) - Run Time: 1601ms

Cross Tabulation Query Form - Trip - 2016 v1.1

Row: Planning district of household - pd\_hhld

Column: Primary travel mode of trip - mode\_prime

Filters:

(2006 GTA zone of household - gta06\_hhld In 3712)

Trip 2016

Table:

	Mississauga	Proportions (%)
Transit excluding GO rail	578	12%
Cycle	170	4%
Auto driver	2703	56%
GO rail only	12	0%
Auto passenger	608	13%
School bus	249	5%
Taxi passenger	6	0%
Walk	528	11%
Total	4854	100%

# APPENDIX D

## Levels of Service Definitions

## Level of Service Definitions

### Two-Way Stop Controlled Intersections

<b>Level of Service</b>	<b>Control Delay per Vehicle (seconds)</b>	<b>Interpretation</b>
A	$\leq 10$	EXCELLENT. Large and frequent gaps in traffic on the main roadway. Queuing on the minor street is rare.
B	$> 10 \text{ and } \leq 15$	VERY GOOD. Many gaps exist in traffic on the main roadway. Queuing on the minor street is minimal.
C	$> 15 \text{ and } \leq 25$	GOOD. Fewer gaps exist in traffic on the main roadway. Delay on minor approach becomes more noticeable.
D	$> 25 \text{ and } \leq 35$	FAIR. Infrequent and shorter gaps in traffic on the main roadway. Queue lengths develop on the minor street.
E	$> 35 \text{ and } \leq 50$	POOR. Very infrequent gaps in traffic on the main roadway. Queue lengths become noticeable.
F	$> 50$	UNSATISFACTORY. Very few gaps in traffic on the main roadway. Excessive delay with significant queue lengths on the minor street.

Adapted from Highway Capacity Manual 2000, Transportation Research Board

## Level of Service Definitions

### Signalized Intersections

<b>Level of Service</b>	<b>Control Delay per Vehicle (seconds)</b>	<b>Interpretation</b>
A	$\leq 10$	EXCELLENT. Extremely favourable progression with most vehicles arriving during the green phase. Most vehicles do not stop and short cycle lengths may contribute to low delay.
B	$> 10 \text{ and } \leq 20$	VERY GOOD. Very good progression and/or short cycle lengths with slightly more vehicles stopping than LOS "A" causing slightly higher levels of average delay.
C	$> 20 \text{ and } \leq 35$	GOOD. Fair progression and longer cycle lengths lead to a greater number of vehicles stopping than LOS "B".
D	$> 35 \text{ and } \leq 55$	FAIR. Congestion becomes noticeable with higher average delays resulting from a combination of long cycle lengths, high volume-to-capacity ratios and unfavourable progression.
E	$> 55 \text{ and } \leq 80$	POOR. Lengthy delays values are indicative of poor progression, long cycle lengths and high volume-to-capacity ratios. Individual cycle failures are common with individual movement failures also common.
F	$> 80$	UNSATISFACTORY. Indicative of oversaturated conditions with vehicular demand greater than the capacity of the intersection.

Adapted from Highway Capacity Manual 2000, Transportation Research Board

# APPENDIX E

## Detailed Capacity Analysis

HCM Signalized Intersection Capacity Analysis  
1: Airport Road & Private Road/Morning Star Drive

2020 Existing Traffic Volumes AM  
01-14-2020



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	13	11	13	136	16	177	5	733	77	165	1520	20
Future Volume (vph)	13	11	13	136	16	177	5	733	77	165	1520	20
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.7	3.7	3.7	3.5	3.7	3.7	3.5	3.7	3.5	3.5	3.7	3.5
Total Lost time (s)												
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.91	1.00	1.00	0.91	1.00
Frbp, ped/bikes	0.98	1.00	0.97		1.00	1.00	0.93	1.00	1.00	1.00	1.00	0.94
Flpb, ped/bikes	0.99	0.97	1.00		1.00	1.00	1.00	0.99	1.00	1.00	1.00	1.00
Fr <sub>t</sub>	0.95		1.00	0.86		1.00	1.00	0.85	1.00	1.00	1.00	0.85
Flt Protected		0.98	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00	1.00
Satd. Flow (prot)	1759		1657	1509		1784	4641	1394	1675	4882	1505	
Flt Permitted		0.77		0.73	1.00		0.15	1.00	1.00	0.34	1.00	1.00
Satd. Flow (perm)	1373		1279	1509		290	4641	1394	603	4882	1505	
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	11	13	136	16	177	5	733	77	165	1520	20
RTOR Reduction (vph)	0	11	0	0	150	0	0	0	25	0	0	5
Lane Group Flow (vph)	0	26	0	136	43	0	5	733	52	165	1520	15
Confl. Peds. (#/hr)	17		28	28		17	11		16	16		11
Heavy Vehicles (%)	0%	0%	0%	4%	0%	7%	0%	13%	6%	6%	7%	0%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	3	0
Turn Type	Perm	NA		Perm	NA		pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases		4			8			1	6		5	2
Permitted Phases	4			8			6		6	2		2
Actuated Green, G (s)	24.7		24.7	24.7		109.5	107.9	107.9	122.4	117.8	117.8	
Effective Green, g (s)	24.7		24.7	24.7		109.5	107.9	107.9	122.4	117.8	117.8	
Actuated g/C Ratio	0.15		0.15	0.15		0.68	0.67	0.67	0.77	0.74	0.74	
Clearance Time (s)	6.7		6.7	6.7		3.0	6.2	6.2	3.0	6.2	6.2	
Vehicle Extension (s)	5.0		5.0	5.0		5.0	5.0	5.0	5.0	5.0	5.0	
Lane Grp Cap (vph)	211		197	232		213	3129	940	538	3594	1108	
v/s Ratio Prot				0.03		0.00	0.16		c0.02	c0.31		
v/s Ratio Perm	0.02		c0.11			0.02		0.04	0.21		0.01	
v/c Ratio	0.12		0.69	0.19		0.02	0.23	0.06	0.31	0.42	0.01	
Uniform Delay, d1	58.3		64.0	58.9		8.0	10.1	8.8	5.0	8.1	5.6	
Progression Factor	1.00		1.00	1.00		0.86	0.82	0.43	1.00	1.00	1.00	
Incremental Delay, d2	0.6		12.5	0.8		0.1	0.2	0.1	0.7	0.4	0.0	
Delay (s)	58.9		76.5	59.7		7.0	8.5	3.9	5.7	8.4	5.6	
Level of Service	E		E	E		A	A	A	A	A	A	A
Approach Delay (s)	58.9			66.7			8.0			8.2		
Approach LOS	E			E			A			A		

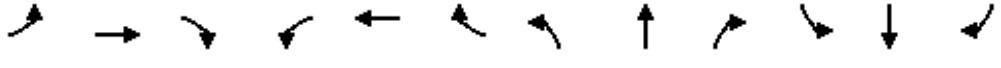
Intersection Summary

HCM 2000 Control Delay	15.4	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.47		
Actuated Cycle Length (s)	160.0	Sum of lost time (s)	15.9
Intersection Capacity Utilization	72.0%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis  
2: Airport Road & Beverley Street/Victory Crescent

2020 Existing Traffic Volumes AM  
01-14-2020

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	54	14	6	9	13	17	5	774	4	12	1625	27
Future Volume (vph)	54	14	6	9	13	17	5	774	4	12	1625	27
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.7	3.7	3.7	3.7	3.7	3.7	3.5	3.7	3.7	3.5	3.7	3.7
Total Lost time (s)					7.3		6.7	6.7		6.7	6.7	
Lane Util. Factor	1.00				1.00		1.00	0.91		1.00	0.91	
Frpb, ped/bikes	1.00				0.99		1.00	1.00		1.00	1.00	
Flpb, ped/bikes	1.00				1.00		1.00	1.00		0.99	1.00	
Frt	0.99				0.94		1.00	1.00		1.00	1.00	
Flt Protected	0.96				0.99		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1713				1650		1783	4575		1639	4918	
Flt Permitted	0.76				0.93		0.13	1.00		0.35	1.00	
Satd. Flow (perm)	1349				1547		242	4575		596	4918	
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)	54	14	6	9	13	17	5	774	4	12	1625	27
RTOR Reduction (vph)	0	3	0	0	15	0	0	0	0	0	1	0
Lane Group Flow (vph)	0	71	0	0	24	0	5	778	0	12	1651	0
Confl. Peds. (#/hr)	1		1	1		1	3		7	7		3
Heavy Vehicles (%)	0%	36%	0%	0%	23%	0%	0%	14%	25%	8%	6%	0%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	3	3	0	3	3
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		8				4			6			2
Permitted Phases		8			4		6			2		
Actuated Green, G (s)		15.6			15.6		130.4	130.4		130.4	130.4	
Effective Green, g (s)		15.6			15.6		130.4	130.4		130.4	130.4	
Actuated g/C Ratio		0.10			0.10		0.82	0.82		0.82	0.82	
Clearance Time (s)		7.3			7.3		6.7	6.7		6.7	6.7	
Vehicle Extension (s)		5.0			5.0		5.0	5.0		5.0	5.0	
Lane Grp Cap (vph)		131			150		197	3728		485	4008	
v/s Ratio Prot								0.17			c0.34	
v/s Ratio Perm		c0.05			0.02		0.02			0.02		
v/c Ratio		0.54			0.16		0.03	0.21		0.02	0.41	
Uniform Delay, d1		68.8			66.2		2.8	3.3		2.8	4.1	
Progression Factor		1.00			1.00		1.00	1.00		0.80	0.67	
Incremental Delay, d2		7.9			1.0		0.2	0.1		0.1	0.3	
Delay (s)		76.7			67.2		3.0	3.4		2.3	3.1	
Level of Service		E			E		A	A		A	A	
Approach Delay (s)		76.7			67.2			3.4			3.1	
Approach LOS		E			E			A			A	

#### Intersection Summary

HCM 2000 Control Delay	6.3	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.43		
Actuated Cycle Length (s)	160.0	Sum of lost time (s)	14.0

Intersection Capacity Utilization 55.2% ICU Level of Service B

Analysis Period (min) 15

c Critical Lane Group

Timing Report, Sorted By Phase  
1: Airport Road & Private Road/Morning Star Drive

2020 Existing Traffic Volumes AM  
01-14-2020



Phase Number	1	2	4	5	6	8
Movement	NBL	SBTL	EBTL	SBL	NBTL	WBTL
Lead/Lag	Lead	Lag		Lead	Lag	
Lead-Lag Optimize	Yes			Yes		
Recall Mode	None	C-Max	None	None	C-Max	None
Maximum Split (s)	14	92	54	14	92	54
Maximum Split (%)	8.8%	57.5%	33.8%	8.8%	57.5%	33.8%
Minimum Split (s)	9.5	29.2	43.7	8	29.2	43.7
Yellow Time (s)	3	4	4	3	4	4
All-Red Time (s)	0	2.2	2.7	0	2.2	2.7
Minimum Initial (s)	5	8	8	5	8	8
Vehicle Extension (s)	5	5	5	5	5	5
Minimum Gap (s)	3	3	3	3	3	3
Time Before Reduce (s)	0	0	0	0	0	0
Time To Reduce (s)	0	0	0	0	0	0
Walk Time (s)		9	14		9	14
Flash Dont Walk (s)		14	23		14	23
Dual Entry	No	Yes	Yes	No	Yes	Yes
Inhibit Max	Yes	Yes	Yes	Yes	Yes	Yes
Start Time (s)	2.8	16.8	108.8	2.8	16.8	108.8
End Time (s)	16.8	108.8	2.8	16.8	108.8	2.8
Yield/Force Off (s)	13.8	102.6	156.1	13.8	102.6	156.1
Yield/Force Off 170(s)	13.8	88.6	133.1	13.8	88.6	133.1
Local Start Time (s)	146	0	92	146	0	92
Local Yield (s)	157	85.8	139.3	157	85.8	139.3
Local Yield 170(s)	157	71.8	116.3	157	71.8	116.3

Intersection Summary

Cycle Length 160

Control Type Actuated-Coordinated

Natural Cycle 85

Offset: 16.8 (11%), Referenced to phase 2:SBTL and 6:NBTL, Start of Green

Splits and Phases: 1: Airport Road & Private Road/Morning Star Drive



Timing Report, Sorted By Phase  
2: Airport Road & Beverley Street/Victory Crescent

2020 Existing Traffic Volumes AM

01-14-2020



Phase Number	2	4	6	8
Movement	SBTL	WBTL	NBTL	EBTL
Lead/Lag				
Lead-Lag Optimize				
Recall Mode	C-Max	None	C-Max	None
Maximum Split (s)	108	52	108	52
Maximum Split (%)	67.5%	32.5%	67.5%	32.5%
Minimum Split (s)	29.7	51.3	29.7	51.3
Yellow Time (s)	4	4	4	4
All-Red Time (s)	2.7	3.3	2.7	3.3
Minimum Initial (s)	8	8	8	8
Vehicle Extension (s)	5	5	5	5
Minimum Gap (s)	3	3	3	3
Time Before Reduce (s)	0	0	0	0
Time To Reduce (s)	0	0	0	0
Walk Time (s)	8	14	8	14
Flash Dont Walk (s)	15	30	15	30
Dual Entry	Yes	Yes	Yes	Yes
Inhibit Max	Yes	Yes	Yes	Yes
Start Time (s)	5.6	113.6	5.6	113.6
End Time (s)	113.6	5.6	113.6	5.6
Yield/Force Off (s)	106.9	158.3	106.9	158.3
Yield/Force Off 170(s)	91.9	128.3	91.9	128.3
Local Start Time (s)	0	108	0	108
Local Yield (s)	101.3	152.7	101.3	152.7
Local Yield 170(s)	86.3	122.7	86.3	122.7

Intersection Summary

Cycle Length	160
Control Type	Actuated-Coordinated
Natural Cycle	85
Offset: 5.6 (4%), Referenced to phase 2:SBTL and 6:NBTL, Start of Green	

Splits and Phases: 2: Airport Road & Beverley Street/Victory Crescent



HCM Unsignalized Intersection Capacity Analysis  
3: Airport Road & 7256 Airport Road North Access

2020 Existing Traffic Volumes AM  
01-14-2020



Movement	EBL	EBR	NBL	NBT	SBT	SBR		
Lane Configurations	2	2	3	879	1678	2		
Traffic Volume (veh/h)	2	2	3	879	1678	2		
Future Volume (Veh/h)	2	2	3	879	1678	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)	2	2	3	879	1678	2		
Pedestrians	8							
Lane Width (m)	3.7							
Walking Speed (m/s)	1.1							
Percent Blockage	1							
Right turn flare (veh)								
Median type				None	None			
Median storage veh								
Upstream signal (m)				230	97			
pX, platoon unblocked	0.89	0.88	0.88					
vC, conflicting volume	1986	568	1688					
vC1, stage 1 conf vol								
vC2, stage 2 conf vol								
vCu, unblocked vol	1599	46	1314					
tC, single (s)	6.8	6.9	4.1					
tC, 2 stage (s)								
tF (s)	3.5	3.3	2.2					
p0 queue free %	98	100	99					
cM capacity (veh/h)	87	894	467					
Direction, Lane #	EB 1	NB 1	NB 2	NB 3	NB 4	SB 1	SB 2	SB 3
Volume Total	4	3	293	293	293	671	671	338
Volume Left	2	3	0	0	0	0	0	0
Volume Right	2	0	0	0	0	0	0	2
cSH	158	467	1700	1700	1700	1700	1700	1700
Volume to Capacity	0.03	0.01	0.17	0.17	0.17	0.39	0.39	0.20
Queue Length 95th (m)	0.5	0.1	0.0	0.0	0.0	0.0	0.0	0.0
Control Delay (s)	28.4	12.8	0.0	0.0	0.0	0.0	0.0	0.0
Lane LOS	D	B						
Approach Delay (s)	28.4	0.0				0.0		
Approach LOS	D							
Intersection Summary								
Average Delay			0.1					
Intersection Capacity Utilization		42.5%		ICU Level of Service				A
Analysis Period (min)			15					

HCM Unsignalized Intersection Capacity Analysis  
4: Airport Road & 7256 Airport Road South Access

2020 Existing Traffic Volumes AM  
01-14-2020



Movement	EBL	EBR	NBL	NBT	SBT	SBR	
Lane Configurations							
Traffic Volume (veh/h)	3	11	0	860	1690	2	
Future Volume (Veh/h)	3	11	0	860	1690	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	11	0	860	1690	2	
Pedestrians	14						
Lane Width (m)	3.7						
Walking Speed (m/s)	1.1						
Percent Blockage	1						
Right turn flare (veh)							
Median type				None	None		
Median storage veh							
Upstream signal (m)				154	173		
pX, platoon unblocked	0.90	0.88	0.88				
vC, conflicting volume	1992	578	1706				
vC1, stage 1 conf vol							
vC2, stage 2 conf vol							
vCu, unblocked vol	1533	64	1340				
tC, single (s)	6.8	6.9	4.1				
tC, 2 stage (s)							
tF (s)	3.5	3.3	2.2				
p0 queue free %	97	99	100				
cM capacity (veh/h)	97	866	455				
Direction, Lane #	EB 1	NB 1	NB 2	NB 3	SB 1	SB 2	SB 3
Volume Total	14	172	344	344	676	676	340
Volume Left	3	0	0	0	0	0	0
Volume Right	11	0	0	0	0	0	2
cSH	320	455	1700	1700	1700	1700	1700
Volume to Capacity	0.04	0.00	0.20	0.20	0.40	0.40	0.20
Queue Length 95th (m)	1.0	0.0	0.0	0.0	0.0	0.0	0.0
Control Delay (s)	16.8	0.0	0.0	0.0	0.0	0.0	0.0
Lane LOS	C						
Approach Delay (s)	16.8	0.0			0.0		
Approach LOS	C						
Intersection Summary							
Average Delay		0.1					
Intersection Capacity Utilization		42.7%		ICU Level of Service			A
Analysis Period (min)		15					

Intersection: 1: Airport Road & Private Road/Morning Star Drive

Movement	EB	WB	WB	NB	NB	NB	NB	NB	SB	SB	SB	SB
Directions Served	LTR	L	TR	L	T	T	T	R	L	T	T	T
Maximum Queue (m)	14.5	37.3	108.7	8.7	67.8	76.2	57.2	22.0	67.3	124.1	109.1	72.9
Average Queue (m)	5.1	29.5	36.1	1.0	31.5	30.3	18.8	6.8	28.8	65.1	55.9	34.3
95th Queue (m)	12.3	42.3	86.1	5.6	55.4	56.6	42.7	17.2	60.6	106.6	93.1	69.7
Link Distance (m)	67.3		190.9		82.0	82.0	82.0			214.6	214.6	214.6
Upstream Blk Time (%)					0	0						
Queuing Penalty (veh)					0	0						
Storage Bay Dist (m)		30.0		70.0			70.0	60.0				
Storage Blk Time (%)		21	3		0		0		0	8		0
Queuing Penalty (veh)		41	5		0		0		0	14		0

Intersection: 1: Airport Road & Private Road/Morning Star Drive

Movement	SB
Directions Served	R
Maximum Queue (m)	8.3
Average Queue (m)	1.6
95th Queue (m)	7.3
Link Distance (m)	
Upstream Blk Time (%)	
Queuing Penalty (veh)	
Storage Bay Dist (m)	80.0
Storage Blk Time (%)	
Queuing Penalty (veh)	

Intersection: 2: Airport Road & Beverley Street/Victory Crescent

Movement	EB	WB	NB	NB	NB	NB	SB	SB	SB	SB
Directions Served	LTR	LTR	L	T	T	TR	L	T	T	TR
Maximum Queue (m)	51.8	46.1	15.0	73.9	66.3	33.9	17.1	50.2	56.9	54.4
Average Queue (m)	21.0	11.2	1.1	28.5	16.2	6.1	3.2	22.5	22.9	18.5
95th Queue (m)	41.0	29.4	6.8	62.8	47.0	20.4	11.7	45.8	47.8	43.4
Link Distance (m)	136.7	163.4		201.0	201.0	201.0		141.3	141.3	141.3
Upstream Blk Time (%)				16.0			70.0			
Queuing Penalty (veh)					0	12				
Storage Bay Dist (m)					1	1				
Storage Blk Time (%)										
Queuing Penalty (veh)										

Intersection: 3: Airport Road & 7256 Airport Road North Access

Movement	EB	NB	NB	NB	SB
Directions Served	LR	L	T	T	TR
Maximum Queue (m)	8.8	9.0	8.2	3.3	4.0
Average Queue (m)	0.8	1.0	0.5	0.1	0.1
95th Queue (m)	5.0	5.5	7.4	2.1	2.5
Link Distance (m)	61.9		65.4	65.4	82.0
Upstream Blk Time (%)					
Queuing Penalty (veh)					
Storage Bay Dist (m)		65.0			
Storage Blk Time (%)					
Queuing Penalty (veh)					

Intersection: 4: Airport Road & 7256 Airport Road South Access

Movement	EB	SB
Directions Served	LR	TR
Maximum Queue (m)	11.0	3.1
Average Queue (m)	2.5	0.1
95th Queue (m)	9.4	2.0
Link Distance (m)	74.4	65.4
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (m)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Network Summary

Network wide Queuing Penalty: 62

HCM Signalized Intersection Capacity Analysis  
1: Airport Road & Private Road/Morning Star Drive

2020 Existing Traffic Volumes PM  
01-14-2020

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	15	20	13	108	13	233	16	1816	232	236	824	17
Future Volume (vph)	15	20	13	108	13	233	16	1816	232	236	824	17
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.7	3.7	3.7	3.5	3.7	3.7	3.5	3.7	3.5	3.5	3.7	3.5
Total Lost time (s)	6.7			6.7	6.7		3.0	6.2	6.2	3.0	6.2	6.2
Lane Util. Factor	1.00			1.00	1.00		1.00	0.91	1.00	1.00	0.91	1.00
Frpb, ped/bikes	0.97			1.00	0.94		1.00	1.00	0.83	1.00	1.00	0.84
Flpb, ped/bikes	0.99			0.91	1.00		0.99	1.00	1.00	1.00	1.00	1.00
Fr <sub>t</sub>	0.96			1.00	0.86		1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.98			0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1752			1545	1476		1761	4948	1292	1684	4792	1342
Flt Permitted	0.50			0.78	1.00		0.33	1.00	1.00	0.07	1.00	1.00
Satd. Flow (perm)	894			1267	1476		610	4948	1292	122	4792	1342
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	20	13	108	13	233	16	1816	232	236	824	17
RTOR Reduction (vph)	0	10	0	0	111	0	0	0	83	0	0	4
Lane Group Flow (vph)	0	38	0	108	135	0	16	1816	149	236	824	13
Confl. Peds. (#/hr)	42			76	76		42	41		43	43	41
Heavy Vehicles (%)	0%	0%	0%	5%	0%	5%	0%	6%	3%	6%	9%	0%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	3	0
Turn Type	Perm	NA		Perm	NA		pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases		4			8		1	6		5	2	
Permitted Phases	4			8			6		6	2		2
Actuated Green, G (s)	23.0			23.0	23.0		93.5	90.2	90.2	124.1	117.8	117.8
Effective Green, g (s)	23.0			23.0	23.0		93.5	90.2	90.2	124.1	117.8	117.8
Actuated g/C Ratio	0.14			0.14	0.14		0.58	0.56	0.56	0.78	0.74	0.74
Clearance Time (s)	6.7			6.7	6.7		3.0	6.2	6.2	3.0	6.2	6.2
Vehicle Extension (s)	5.0			5.0	5.0		5.0	5.0	5.0	5.0	5.0	5.0
Lane Grp Cap (vph)	128			182	212		380	2789	728	396	3528	988
v/s Ratio Prot				c0.09			0.00	c0.37		c0.12	0.17	
v/s Ratio Perm	0.04			0.09			0.02		0.12	0.35	0.01	
v/c Ratio	0.29			0.59	0.64		0.04	0.65	0.20	0.60	0.23	0.01
Uniform Delay, d1	61.2			64.1	64.5		13.9	24.1	17.2	36.3	6.7	5.6
Progression Factor	1.00			1.00	1.00		0.69	0.78	0.24	1.00	1.00	1.00
Incremental Delay, d2	2.7			7.6	8.4		0.1	1.1	0.6	3.6	0.2	0.0
Delay (s)	63.9			71.7	72.9		9.6	19.8	4.7	39.9	6.9	5.6
Level of Service	E			E	E		A	B	A	D	A	A
Approach Delay (s)	63.9				72.6			18.0			14.1	
Approach LOS	E				E			B			B	
Intersection Summary												
HCM 2000 Control Delay	22.9					HCM 2000 Level of Service			C			
HCM 2000 Volume to Capacity ratio	0.64											
Actuated Cycle Length (s)	160.0					Sum of lost time (s)			15.9			
Intersection Capacity Utilization	92.0%					ICU Level of Service			F			
Analysis Period (min)	15											
c Critical Lane Group												

HCM Signalized Intersection Capacity Analysis  
2: Airport Road & Beverley Street/Victory Crescent

2020 Existing Traffic Volumes PM

01-14-2020

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	107	27	12	8	16	11	21	1899	4	18	890	60
Future Volume (vph)	107	27	12	8	16	11	21	1899	4	18	890	60
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.7	3.7	3.7	3.7	3.7	3.7	3.5	3.7	3.7	3.5	3.7	3.7
Total Lost time (s)							7.3	6.7	6.7	6.7	6.7	6.7
Lane Util. Factor	1.00					1.00	1.00	0.91	1.00	0.91		
Frpb, ped/bikes	1.00					0.99	1.00	1.00	1.00	1.00	0.99	
Fpb, ped/bikes	1.00					1.00	0.97	1.00	1.00	1.00	1.00	
Fr	0.99					0.96	1.00	1.00	1.00	1.00	0.99	
Flt Protected	0.96					0.99	0.95	1.00	0.95	1.00		
Satd. Flow (prot)	1774					1662	1733	4926	1782	4726		
Flt Permitted	0.76					0.93	0.28	1.00	0.09	1.00		
Satd. Flow (perm)	1400					1562	517	4926	170	4726		
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)	107	27	12	8	16	11	21	1899	4	18	890	60
RTOR Reduction (vph)	0	3	0	0	9	0	0	0	0	0	3	0
Lane Group Flow (vph)	0	143	0	0	26	0	21	1903	0	18	947	0
Confl. Peds. (#/hr)	5		7	7		5	33		9	9		33
Heavy Vehicles (%)	0%	15%	0%	0%	19%	0%	0%	6%	0%	0%	9%	2%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	3	3	0	3	3
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		8				4			6			2
Permitted Phases	8			4			6			2		
Actuated Green, G (s)	23.6				23.6		122.4	122.4		122.4	122.4	
Effective Green, g (s)	23.6				23.6		122.4	122.4		122.4	122.4	
Actuated g/C Ratio	0.15				0.15		0.77	0.77		0.77	0.77	
Clearance Time (s)	7.3			7.3			6.7	6.7		6.7	6.7	
Vehicle Extension (s)	5.0			5.0			5.0	5.0		5.0	5.0	
Lane Grp Cap (vph)	206			230			395	3768		130	3615	
v/s Ratio Prot								c0.39			0.20	
v/s Ratio Perm	c0.10			0.02			0.04			0.11		
v/c Ratio	0.70			0.11			0.05	0.51		0.14	0.26	
Uniform Delay, d1	64.8			59.1			4.6	7.2		4.9	5.5	
Progression Factor	1.00			1.00			1.00	1.00		0.78	0.78	
Incremental Delay, d2	12.3			0.5			0.3	0.5		2.2	0.2	
Delay (s)	77.1			59.6			4.9	7.7		6.0	4.5	
Level of Service	E			E			A	A		A	A	
Approach Delay (s)	77.1			59.6				7.7			4.5	
Approach LOS	E			E				A			A	

Intersection Summary

HCM 2000 Control Delay	10.6	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.54		
Actuated Cycle Length (s)	160.0	Sum of lost time (s)	14.0
Intersection Capacity Utilization	67.8%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

Timing Report, Sorted By Phase  
1: Airport Road & Private Road/Morning Star Drive

2020 Existing Traffic Volumes PM  
01-14-2020



Phase Number	1	2	4	5	6	8
Movement	NBL	SBTL	EBTL	SBL	NBTL	WBTL
Lead/Lag	Lead	Lag		Lead	Lag	
Lead-Lag Optimize	Yes				Yes	
Recall Mode	None	C-Max	None	None	C-Max	None
Maximum Split (s)	14	94	52	14	94	52
Maximum Split (%)	8.8%	58.8%	32.5%	8.8%	58.8%	32.5%
Minimum Split (s)	9.5	29.2	43.7	8	29.2	43.7
Yellow Time (s)	3	4	4	3	4	4
All-Red Time (s)	0	2.2	2.7	0	2.2	2.7
Minimum Initial (s)	5	8	8	5	8	8
Vehicle Extension (s)	5	5	5	5	5	5
Minimum Gap (s)	3	3	3	3	3	3
Time Before Reduce (s)	0	0	0	0	0	0
Time To Reduce (s)	0	0	0	0	0	0
Walk Time (s)		9	14		9	14
Flash Dont Walk (s)		14	23		14	23
Dual Entry	No	Yes	Yes	No	Yes	Yes
Inhibit Max	Yes	Yes	Yes	Yes	Yes	Yes
Start Time (s)	2.8	16.8	110.8	2.8	16.8	110.8
End Time (s)	16.8	110.8	2.8	16.8	110.8	2.8
Yield/Force Off (s)	13.8	104.6	156.1	13.8	104.6	156.1
Yield/Force Off 170(s)	13.8	90.6	133.1	13.8	90.6	133.1
Local Start Time (s)	146	0	94	146	0	94
Local Yield (s)	157	87.8	139.3	157	87.8	139.3
Local Yield 170(s)	157	73.8	116.3	157	73.8	116.3

Intersection Summary

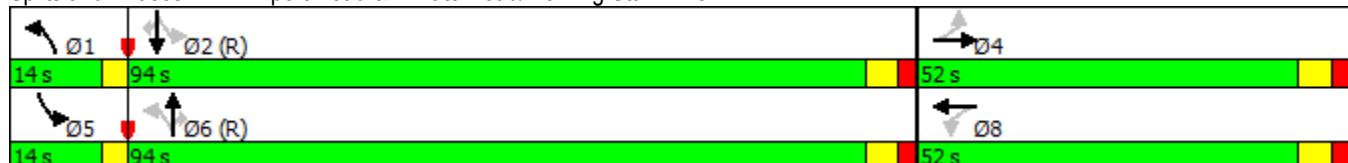
Cycle Length 160

Control Type Actuated-Coordinated

Natural Cycle 95

Offset: 16.8 (11%), Referenced to phase 2:SBTL and 6:NBTL, Start of Green

Splits and Phases: 1: Airport Road & Private Road/Morning Star Drive



Timing Report, Sorted By Phase  
2: Airport Road & Beverley Street/Victory Crescent

2020 Existing Traffic Volumes PM

01-14-2020



Phase Number	2	4	6	8
Movement	SBTL	WBTL	NBTL	EBTL
Lead/Lag				
Lead-Lag Optimize				
Recall Mode	C-Max	None	C-Max	None
Maximum Split (s)	108	52	108	52
Maximum Split (%)	67.5%	32.5%	67.5%	32.5%
Minimum Split (s)	29.7	51.3	29.7	51.3
Yellow Time (s)	4	4	4	4
All-Red Time (s)	2.7	3.3	2.7	3.3
Minimum Initial (s)	8	8	8	8
Vehicle Extension (s)	5	5	5	5
Minimum Gap (s)	3	3	3	3
Time Before Reduce (s)	0	0	0	0
Time To Reduce (s)	0	0	0	0
Walk Time (s)	8	14	8	14
Flash Dont Walk (s)	15	30	15	30
Dual Entry	Yes	Yes	Yes	Yes
Inhibit Max	Yes	Yes	Yes	Yes
Start Time (s)	5.6	113.6	5.6	113.6
End Time (s)	113.6	5.6	113.6	5.6
Yield/Force Off (s)	106.9	158.3	106.9	158.3
Yield/Force Off 170(s)	91.9	128.3	91.9	128.3
Local Start Time (s)	0	108	0	108
Local Yield (s)	101.3	152.7	101.3	152.7
Local Yield 170(s)	86.3	122.7	86.3	122.7

Intersection Summary

Cycle Length	160
Control Type	Actuated-Coordinated
Natural Cycle	95
Offset: 5.6 (4%), Referenced to phase 2:SBTL and 6:NBTL, Start of Green	

Splits and Phases: 2: Airport Road & Beverley Street/Victory Crescent



HCM Unsignalized Intersection Capacity Analysis  
3: Airport Road & 7256 Airport Road North Access

2020 Existing Traffic Volumes PM  
01-14-2020



Movement	EBL	EBR	NBL	NBT	SBT	SBR		
Lane Configurations								
Traffic Volume (veh/h)	3	1	8	2032	961	8		
Future Volume (Veh/h)	3	1	8	2032	961	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)	3	1	8	2032	961	8		
Pedestrians	36			1				
Lane Width (m)	3.7			3.6				
Walking Speed (m/s)	1.1			1.1				
Percent Blockage	3			0				
Right turn flare (veh)								
Median type				None	None			
Median storage veh								
Upstream signal (m)				230	97			
pX, platoon unblocked	0.88	0.95	0.95					
vC, conflicting volume	1694	361	1005					
vC1, stage 1 conf vol								
vC2, stage 2 conf vol								
vCu, unblocked vol	927	148	825					
tC, single (s)	6.8	6.9	4.1					
tC, 2 stage (s)								
tF (s)	3.5	3.3	2.2					
p0 queue free %	99	100	99					
cM capacity (veh/h)	227	806	748					
Direction, Lane #	EB 1	NB 1	NB 2	NB 3	NB 4	SB 1	SB 2	SB 3
Volume Total	4	8	677	677	677	384	384	200
Volume Left	3	8	0	0	0	0	0	0
Volume Right	1	0	0	0	0	0	0	8
cSH	277	748	1700	1700	1700	1700	1700	1700
Volume to Capacity	0.01	0.01	0.40	0.40	0.40	0.23	0.23	0.12
Queue Length 95th (m)	0.3	0.2	0.0	0.0	0.0	0.0	0.0	0.0
Control Delay (s)	18.2	9.9	0.0	0.0	0.0	0.0	0.0	0.0
Lane LOS	C	A						
Approach Delay (s)	18.2	0.0				0.0		
Approach LOS	C							
Intersection Summary								
Average Delay			0.1					
Intersection Capacity Utilization		49.6%		ICU Level of Service				A
Analysis Period (min)			15					

HCM Unsignalized Intersection Capacity Analysis  
4: Airport Road & 7256 Airport Road South Access

2020 Existing Traffic Volumes PM  
01-14-2020



Movement	EBL	EBR	NBL	NBT	SBT	SBR	
Lane Configurations							
Traffic Volume (veh/h)	2	3	0	2072	963	1	
Future Volume (Veh/h)	2	3	0	2072	963	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	3	0	2072	963	1	
Pedestrians	29						
Lane Width (m)	3.7						
Walking Speed (m/s)	1.1						
Percent Blockage	3						
Right turn flare (veh)							
Median type				None	None		
Median storage veh							
Upstream signal (m)				154	173		
pX, platoon unblocked	0.87	0.96	0.96				
vC, conflicting volume	1683	350	993				
vC1, stage 1 conf vol							
vC2, stage 2 conf vol							
vCu, unblocked vol	941	167	837				
tC, single (s)	6.8	6.9	4.1				
tC, 2 stage (s)							
tF (s)	3.5	3.3	2.2				
p0 queue free %	99	100	100				
cM capacity (veh/h)	225	796	750				
Direction, Lane #	EB 1	NB 1	NB 2	NB 3	SB 1	SB 2	SB 3
Volume Total	5	414	829	829	385	385	194
Volume Left	2	0	0	0	0	0	0
Volume Right	3	0	0	0	0	0	1
cSH	395	750	1700	1700	1700	1700	1700
Volume to Capacity	0.01	0.00	0.49	0.49	0.23	0.23	0.11
Queue Length 95th (m)	0.3	0.0	0.0	0.0	0.0	0.0	0.0
Control Delay (s)	14.2	0.0	0.0	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			0.0				
Intersection Capacity Utilization		50.0%		ICU Level of Service			A
Analysis Period (min)			15				

Queuing and Blocking Report  
7211 & 7233 Airport Road

2020 Existing Traffic Volumes PM  
01-11-2020

Intersection: 1: Airport Road & Private Road/Morning Star Drive

Movement	EB	WB	WB	NB	NB	NB	NB	NB	SB	SB	SB	SB
Directions Served	LTR	L	TR	L	T	T	T	R	L	T	T	T
Maximum Queue (m)	22.5	37.4	126.1	11.8	87.3	87.2	85.8	77.5	67.5	196.1	184.7	80.8
Average Queue (m)	8.1	27.4	48.0	3.4	59.1	57.2	52.7	20.5	59.3	115.7	90.9	23.7
95th Queue (m)	19.1	46.5	97.3	10.7	83.7	84.3	81.4	52.8	81.6	219.0	195.3	56.2
Link Distance (m)	67.3		190.9		82.0	82.0	82.0			214.6	214.6	214.6
Upstream Blk Time (%)					1	1	1	0		9	0	
Queuing Penalty (veh)					7	8	3	0		0	0	
Storage Bay Dist (m)	30.0		70.0				70.0	60.0				
Storage Blk Time (%)	11	21			3		2	0	54	3		0
Queuing Penalty (veh)	28	23			0		4	0	147	8		

Intersection: 1: Airport Road & Private Road/Morning Star Drive

Movement	SB
Directions Served	R
Maximum Queue (m)	10.6
Average Queue (m)	1.2
95th Queue (m)	6.4
Link Distance (m)	
Upstream Blk Time (%)	
Queuing Penalty (veh)	
Storage Bay Dist (m)	80.0
Storage Blk Time (%)	
Queuing Penalty (veh)	

Intersection: 2: Airport Road & Beverley Street/Victory Crescent

Movement	EB	WB	NB	NB	NB	NB	SB	SB	SB	SB
Directions Served	LTR	LTR	L	T	T	TR	L	T	T	TR
Maximum Queue (m)	69.1	34.9	21.7	137.5	131.8	105.5	15.6	37.0	34.0	36.5
Average Queue (m)	35.9	10.6	4.3	76.1	62.7	44.4	4.2	16.2	17.6	12.2
95th Queue (m)	58.8	26.1	13.9	124.0	112.3	85.3	13.0	32.7	31.4	28.2
Link Distance (m)	136.7	163.4		201.0	201.0	201.0		141.3	141.3	141.3
Upstream Blk Time (%)				16.0			70.0			
Queuing Penalty (veh)				0	24					
Storage Bay Dist (m)				1	5					
Storage Blk Time (%)										
Queuing Penalty (veh)										

Intersection: 3: Airport Road & 7256 Airport Road North Access

Movement	EB	NB	NB	NB	NB	SB	SB	SB
Directions Served	LR	L	T	T	T	T	T	TR
Maximum Queue (m)	8.9	9.0	45.7	54.9	35.2	7.1	3.9	1.7
Average Queue (m)	1.1	1.6	4.8	6.2	2.8	0.2	0.1	0.1
95th Queue (m)	5.8	7.3	25.0	29.2	19.0	4.5	2.5	1.1
Link Distance (m)	61.9		65.4	65.4	65.4	82.0	82.0	82.0
Upstream Blk Time (%)			0	0	0			
Queuing Penalty (veh)			0	0	0			
Storage Bay Dist (m)		65.0						
Storage Blk Time (%)			0					
Queuing Penalty (veh)			0					

Intersection: 4: Airport Road & 7256 Airport Road South Access

Movement	EB	NB	NB	NB
Directions Served	LR	LT	T	T
Maximum Queue (m)	9.2	4.2	7.8	5.1
Average Queue (m)	1.6	0.3	0.3	0.2
95th Queue (m)	7.1	3.8	3.5	2.3
Link Distance (m)	74.4	141.3	141.3	141.3
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (m)				
Storage Blk Time (%)				
Queuing Penalty (veh)				

Network Summary

Network wide Queuing Penalty: 235

HCM Signalized Intersection Capacity Analysis  
1: Airport Road & Private Road/Morning Star Drive

2025 Future Background AM

01-15-2020

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	13	11	13	136	16	177	5	770	77	165	1598	20
Future Volume (vph)	13	11	13	136	16	177	5	770	77	165	1598	20
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.7	3.7	3.7	3.5	3.7	3.7	3.5	3.7	3.5	3.5	3.7	3.5
Total Lost time (s)												
	6.7			6.7			3.0	6.2	6.2	3.0	6.2	6.2
Lane Util. Factor	1.00			1.00			1.00	0.91	1.00	1.00	0.91	1.00
Frpb, ped/bikes	0.98			1.00	0.97		1.00	1.00	0.93	1.00	1.00	0.94
Fpb, ped/bikes	0.99			0.97	1.00		1.00	1.00	1.00	1.00	1.00	1.00
Fr	0.95			1.00	0.86		1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.98			0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1759			1657	1509		1784	4641	1394	1676	4882	1505
Flt Permitted	0.77			0.73	1.00		0.14	1.00	1.00	0.33	1.00	1.00
Satd. Flow (perm)	1373			1279	1509		264	4641	1394	578	4882	1505
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	11	13	136	16	177	5	770	77	165	1598	20
RTOR Reduction (vph)	0	11	0	0	150	0	0	0	25	0	0	5
Lane Group Flow (vph)	0	26	0	136	43	0	5	770	52	165	1598	15
Confl. Peds. (#/hr)	17		28	28		17	11		16	16		11
Heavy Vehicles (%)	0%	0%	0%	4%	0%	7%	0%	13%	6%	6%	7%	0%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	3	0
Turn Type	Perm	NA		Perm	NA		pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases		4			8			1	6		5	2
Permitted Phases	4			8			6		6	2		2
Actuated Green, G (s)	24.7		24.7	24.7		109.5	107.9	107.9	122.4	117.8	117.8	
Effective Green, g (s)	24.7		24.7	24.7		109.5	107.9	107.9	122.4	117.8	117.8	
Actuated g/C Ratio	0.15		0.15	0.15		0.68	0.67	0.67	0.77	0.74	0.74	
Clearance Time (s)	6.7		6.7	6.7		3.0	6.2	6.2	3.0	6.2	6.2	
Vehicle Extension (s)	5.0		5.0	5.0		5.0	5.0	5.0	5.0	5.0	5.0	
Lane Grp Cap (vph)	211		197	232		195	3129	940	521	3594	1108	
v/s Ratio Prot				0.03			0.00	0.17		c0.02	c0.33	
v/s Ratio Perm	0.02		c0.11			0.02		0.04	0.22		0.01	
v/c Ratio	0.12		0.69	0.19		0.03	0.25	0.06	0.32	0.44	0.01	
Uniform Delay, d1	58.3		64.0	58.9		8.0	10.2	8.8	5.1	8.3	5.6	
Progression Factor	1.00		1.00	1.00		0.85	0.82	0.41	1.00	1.00	1.00	
Incremental Delay, d2	0.6		12.5	0.8		0.1	0.2	0.1	0.7	0.4	0.0	
Delay (s)	58.9		76.5	59.7		7.0	8.5	3.8	5.8	8.7	5.6	
Level of Service	E		E	E		A	A	A	A	A	A	
Approach Delay (s)	58.9			66.7			8.1			8.4		
Approach LOS	E			E			A			A		

Intersection Summary

HCM 2000 Control Delay	15.3	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.49		
Actuated Cycle Length (s)	160.0	Sum of lost time (s)	15.9
Intersection Capacity Utilization	73.5%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis  
2: Airport Road & Beverley Street/Victory Crescent

2025 Future Background AM

01-15-2020

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	54	14	6	9	13	17	5	813	4	12	1708	27
Future Volume (vph)	54	14	6	9	13	17	5	813	4	12	1708	27
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.7	3.7	3.7	3.7	3.7	3.7	3.5	3.7	3.7	3.5	3.7	3.7
Total Lost time (s)							7.3	6.7	6.7	6.7	6.7	6.7
Lane Util. Factor							1.00	1.00	0.91	1.00	0.91	
Frpb, ped/bikes							1.00	1.00	1.00	1.00	1.00	
Fpb, ped/bikes							1.00	1.00	1.00	0.99	1.00	
Fr							0.99	0.94	1.00	1.00	1.00	
Flt Protected							0.96	0.99	0.95	1.00	0.95	1.00
Satd. Flow (prot)							1713	1650	1784	4576	1640	4918
Flt Permitted							0.76	0.93	0.12	1.00	0.33	1.00
Satd. Flow (perm)							1349	1547	220	4576	572	4918
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)	54	14	6	9	13	17	5	813	4	12	1708	27
RTOR Reduction (vph)	0	3	0	0	15	0	0	0	0	0	1	0
Lane Group Flow (vph)	0	71	0	0	24	0	5	817	0	12	1734	0
Confl. Peds. (#/hr)	1	1	1			1	3		7	7		3
Heavy Vehicles (%)	0%	36%	0%	0%	23%	0%	0%	14%	25%	8%	6%	0%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	3	3	0	3	3
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		8			4			6			2	
Permitted Phases	8		4			6			2			
Actuated Green, G (s)		15.6			15.6		130.4	130.4		130.4	130.4	
Effective Green, g (s)		15.6			15.6		130.4	130.4		130.4	130.4	
Actuated g/C Ratio		0.10			0.10		0.82	0.82		0.82	0.82	
Clearance Time (s)		7.3			7.3		6.7	6.7		6.7	6.7	
Vehicle Extension (s)		5.0			5.0		5.0	5.0		5.0	5.0	
Lane Grp Cap (vph)	131			150			179	3729		466	4008	
v/s Ratio Prot								0.18			c0.35	
v/s Ratio Perm		c0.05			0.02		0.02			0.02		
v/c Ratio		0.54			0.16		0.03	0.22		0.03	0.43	
Uniform Delay, d1		68.8			66.2		2.8	3.3		2.8	4.2	
Progression Factor		1.00			1.00		1.00	1.00		0.80	0.66	
Incremental Delay, d2		7.9			1.0		0.3	0.1		0.1	0.3	
Delay (s)		76.7			67.2		3.1	3.5		2.3	3.1	
Level of Service		E			E		A	A		A	A	
Approach Delay (s)		76.7			67.2			3.5			3.1	
Approach LOS		E			E			A			A	
<b>Intersection Summary</b>												
HCM 2000 Control Delay		6.2			HCM 2000 Level of Service					A		
HCM 2000 Volume to Capacity ratio		0.44										
Actuated Cycle Length (s)		160.0			Sum of lost time (s)					14.0		
Intersection Capacity Utilization		56.8%			ICU Level of Service					B		
Analysis Period (min)		15										
c Critical Lane Group												

HCM Unsignalized Intersection Capacity Analysis  
3: Airport Road & 7256 Airport Road North Access

2025 Future Background AM  
01-14-2020

Movement	EBL	EBR	NBL	NBT	SBT	SBR		
Lane Configurations								
Traffic Volume (veh/h)	2	2	3	924	1764	2		
Future Volume (Veh/h)	2	2	3	924	1764	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)	2	2	3	924	1764	2		
Pedestrians	8							
Lane Width (m)	3.7							
Walking Speed (m/s)	1.1							
Percent Blockage	1							
Right turn flare (veh)								
Median type				None	None			
Median storage veh								
Upstream signal (m)				230	97			
pX, platoon unblocked	0.88	0.87	0.87					
vC, conflicting volume	2087	597	1774					
vC1, stage 1 conf vol								
vC2, stage 2 conf vol								
vCu, unblocked vol	1661	30	1378					
tC, single (s)	6.8	6.9	4.1					
tC, 2 stage (s)								
tF (s)	3.5	3.3	2.2					
p0 queue free %	97	100	99					
cM capacity (veh/h)	78	905	437					
Direction, Lane #	EB 1	NB 1	NB 2	NB 3	NB 4	SB 1	SB 2	SB 3
Volume Total	4	3	308	308	308	706	706	355
Volume Left	2	3	0	0	0	0	0	0
Volume Right	2	0	0	0	0	0	0	2
cSH	144	437	1700	1700	1700	1700	1700	1700
Volume to Capacity	0.03	0.01	0.18	0.18	0.18	0.42	0.42	0.21
Queue Length 95th (m)	0.6	0.1	0.0	0.0	0.0	0.0	0.0	0.0
Control Delay (s)	30.8	13.3	0.0	0.0	0.0	0.0	0.0	0.0
Lane LOS	D	B						
Approach Delay (s)	30.8	0.0				0.0		
Approach LOS	D							
Intersection Summary								
Average Delay			0.1					
Intersection Capacity Utilization		44.1%		ICU Level of Service				A
Analysis Period (min)			15					

HCM Unsignalized Intersection Capacity Analysis  
4: Airport Road & 7256 Airport Road South Access

2025 Future Background AM  
01-14-2020



Movement	EBL	EBR	NBL	NBT	SBT	SBR	
Lane Configurations							
Traffic Volume (veh/h)	3	11	0	904	1776	2	
Future Volume (Veh/h)	3	11	0	904	1776	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	11	0	904	1776	2	
Pedestrians	14						
Lane Width (m)	3.7						
Walking Speed (m/s)	1.1						
Percent Blockage	1						
Right turn flare (veh)							
Median type				None	None		
Median storage veh							
Upstream signal (m)				154	173		
pX, platoon unblocked	0.89	0.87	0.87				
vC, conflicting volume	2092	607	1792				
vC1, stage 1 conf vol							
vC2, stage 2 conf vol							
vCu, unblocked vol	1596	47	1403				
tC, single (s)	6.8	6.9	4.1				
tC, 2 stage (s)							
tF (s)	3.5	3.3	2.2				
p0 queue free %	97	99	100				
cM capacity (veh/h)	87	879	426				
Direction, Lane #	EB 1	NB 1	NB 2	NB 3	SB 1	SB 2	SB 3
Volume Total	14	181	362	362	710	710	357
Volume Left	3	0	0	0	0	0	0
Volume Right	11	0	0	0	0	0	2
cSH	298	426	1700	1700	1700	1700	1700
Volume to Capacity	0.05	0.00	0.21	0.21	0.42	0.42	0.21
Queue Length 95th (m)	1.0	0.0	0.0	0.0	0.0	0.0	0.0
Control Delay (s)	17.7	0.0	0.0	0.0	0.0	0.0	0.0
Lane LOS	C						
Approach Delay (s)	17.7	0.0			0.0		
Approach LOS	C						
Intersection Summary							
Average Delay			0.1				
Intersection Capacity Utilization		44.4%		ICU Level of Service			A
Analysis Period (min)			15				

Queuing and Blocking Report  
7211 & 7233 Airport Road

2025 Future Background AM  
01-13-2020

Intersection: 1: Airport Road & Private Road/Morning Star Drive

Movement	EB	WB	WB	NB	NB	NB	NB	NB	SB	SB	SB	SB
Directions Served	LTR	L	TR	L	T	T	T	R	L	T	T	T
Maximum Queue (m)	20.4	37.3	127.9	8.8	60.1	57.8	49.1	24.4	67.3	141.2	123.0	101.7
Average Queue (m)	5.9	26.7	31.2	0.9	32.4	32.4	20.6	5.7	29.7	74.5	63.6	39.7
95th Queue (m)	14.9	41.7	78.9	5.1	53.6	54.0	45.1	16.6	62.1	123.4	107.5	78.1
Link Distance (m)	67.3		190.9		82.0	82.0	82.0			214.6	214.6	214.6
Upstream Blk Time (%)												
Queuing Penalty (veh)												
Storage Bay Dist (m)	30.0		70.0					70.0	60.0			
Storage Blk Time (%)	17	3		0					0	11		0
Queuing Penalty (veh)	32	4		0					0	19		0

Intersection: 1: Airport Road & Private Road/Morning Star Drive

Movement	SB
Directions Served	R
Maximum Queue (m)	10.9
Average Queue (m)	1.4
95th Queue (m)	7.0
Link Distance (m)	
Upstream Blk Time (%)	
Queuing Penalty (veh)	
Storage Bay Dist (m)	80.0
Storage Blk Time (%)	
Queuing Penalty (veh)	

Intersection: 2: Airport Road & Beverley Street/Victory Crescent

Movement	EB	WB	NB	NB	NB	NB	SB	SB	SB	SB
Directions Served	LTR	LTR	L	T	T	TR	L	T	T	TR
Maximum Queue (m)	56.6	35.6	9.1	61.8	59.6	31.8	12.2	57.4	62.5	58.1
Average Queue (m)	23.1	10.9	1.1	31.0	16.2	5.4	1.4	24.0	25.5	20.9
95th Queue (m)	45.3	27.2	5.8	58.6	44.5	20.0	7.2	45.9	49.3	45.2
Link Distance (m)	136.7	163.4		201.0	201.0	201.0		141.3	141.3	141.3
Upstream Blk Time (%)										
Queuing Penalty (veh)										
Storage Bay Dist (m)		16.0					70.0			
Storage Blk Time (%)			13					0		
Queuing Penalty (veh)			1					0		

Intersection: 3: Airport Road & 7256 Airport Road North Access

Movement	EB	NB	SB
Directions Served	LR	L	T
Maximum Queue (m)	9.0	9.1	2.8
Average Queue (m)	0.9	0.4	0.1
95th Queue (m)	5.1	3.7	1.8
Link Distance (m)	61.9		82.0
Upstream Blk Time (%)			
Queuing Penalty (veh)			
Storage Bay Dist (m)	65.0		
Storage Blk Time (%)			
Queuing Penalty (veh)			

Intersection: 4: Airport Road & 7256 Airport Road South Access

Movement	EB	NB
Directions Served	LR	T
Maximum Queue (m)	12.4	4.2
Average Queue (m)	3.8	0.1
95th Queue (m)	11.1	2.7
Link Distance (m)	74.4	141.3
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (m)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Network Summary

Network wide Queuing Penalty: 56

HCM Signalized Intersection Capacity Analysis  
1: Airport Road & Private Road/Morning Star Drive

2025 Future Background PM  
01-15-2020

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	15	20	13	108	13	233	16	1909	232	236	866	17
Future Volume (vph)	15	20	13	108	13	233	16	1909	232	236	866	17
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.7	3.7	3.7	3.5	3.7	3.7	3.5	3.7	3.5	3.5	3.7	3.5
Total Lost time (s)	6.7			6.7	6.7		3.0	6.2	6.2	3.0	6.2	6.2
Lane Util. Factor	1.00			1.00	1.00		1.00	0.91	1.00	1.00	0.91	1.00
Frpb, ped/bikes	0.97			1.00	0.94		1.00	1.00	0.83	1.00	1.00	0.84
Fpb, ped/bikes	0.99			0.91	1.00		0.99	1.00	1.00	1.00	1.00	1.00
Fr	0.96			1.00	0.86		1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.98			0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1752			1545	1476		1764	4948	1292	1684	4792	1342
Flt Permitted	0.51			0.78	1.00		0.32	1.00	1.00	0.06	1.00	1.00
Satd. Flow (perm)	901			1267	1476		585	4948	1292	101	4792	1342
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	20	13	108	13	233	16	1909	232	236	866	17
RTOR Reduction (vph)	0	10	0	0	110	0	0	0	81	0	0	4
Lane Group Flow (vph)	0	38	0	108	136	0	16	1909	151	236	866	13
Confl. Peds. (#/hr)	42			76	76		42	41		43	43	41
Heavy Vehicles (%)	0%	0%	0%	5%	0%	5%	0%	6%	3%	6%	9%	0%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	3	0
Turn Type	Perm	NA		Perm	NA		pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases		4			8			1	6		5	2
Permitted Phases	4			8			6		6	2		2
Actuated Green, G (s)	23.1			23.1	23.1		92.2	88.9	88.9	124.0	117.7	117.7
Effective Green, g (s)	23.1			23.1	23.1		92.2	88.9	88.9	124.0	117.7	117.7
Actuated g/C Ratio	0.14			0.14	0.14		0.58	0.56	0.56	0.78	0.74	0.74
Clearance Time (s)	6.7			6.7	6.7		3.0	6.2	6.2	3.0	6.2	6.2
Vehicle Extension (s)	5.0			5.0	5.0		5.0	5.0	5.0	5.0	5.0	5.0
Lane Grp Cap (vph)	130			182	213		361	2749	717	395	3525	987
v/s Ratio Prot				c0.09			0.00	c0.39		c0.12	0.18	
v/s Ratio Perm	0.04			0.09			0.02		0.12	0.34		0.01
v/c Ratio	0.29			0.59	0.64		0.04	0.69	0.21	0.60	0.25	0.01
Uniform Delay, d1	61.1			64.1	64.5		14.5	25.7	17.9	40.2	6.8	5.6
Progression Factor	1.00			1.00	1.00		0.68	0.78	0.26	1.00	1.00	1.00
Incremental Delay, d2	2.6			7.6	8.7		0.1	1.3	0.6	3.6	0.2	0.0
Delay (s)	63.7			71.7	73.2		9.9	21.4	5.2	43.8	7.0	5.7
Level of Service	E			E	E		A	C	A	D	A	A
Approach Delay (s)	63.7				72.8			19.6			14.7	
Approach LOS	E				E			B			B	
Intersection Summary												
HCM 2000 Control Delay	23.8						HCM 2000 Level of Service			C		
HCM 2000 Volume to Capacity ratio	0.66											
Actuated Cycle Length (s)	160.0						Sum of lost time (s)			15.9		
Intersection Capacity Utilization	93.8%						ICU Level of Service			F		
Analysis Period (min)	15											
c Critical Lane Group												

HCM Signalized Intersection Capacity Analysis  
2: Airport Road & Beverley Street/Victory Crescent

2025 Future Background PM

01-15-2020

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	107	27	12	8	16	11	21	1996	4	18	935	60
Future Volume (vph)	107	27	12	8	16	11	21	1996	4	18	935	60
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.7	3.7	3.7	3.7	3.7	3.7	3.5	3.7	3.7	3.5	3.7	3.7
Total Lost time (s)							7.3	6.7	6.7	6.7	6.7	6.7
Lane Util. Factor	1.00					1.00	1.00	0.91	1.00	0.91		
Frpb, ped/bikes	1.00					0.99	1.00	1.00	1.00	1.00	0.99	
Flpb, ped/bikes	1.00					1.00	0.97	1.00	1.00	1.00	1.00	
Fr <sub>t</sub>	0.99					0.96	1.00	1.00	1.00	1.00	0.99	
Flt Protected	0.96					0.99	0.95	1.00	0.95	1.00		
Satd. Flow (prot)	1774					1662	1737	4927	1783	4729		
Flt Permitted	0.76					0.93	0.27	1.00	0.08	1.00		
Satd. Flow (perm)	1400					1562	492	4927	150	4729		
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)	107	27	12	8	16	11	21	1996	4	18	935	60
RTOR Reduction (vph)	0	3	0	0	9	0	0	0	0	0	3	0
Lane Group Flow (vph)	0	143	0	0	26	0	21	2000	0	18	992	0
Confl. Peds. (#/hr)	5		7	7		5	33		9	9		33
Heavy Vehicles (%)	0%	15%	0%	0%	19%	0%	0%	6%	0%	0%	9%	2%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	3	3	0	3	3
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		8			4			6			2	
Permitted Phases	8		4			6			2			
Actuated Green, G (s)	23.6				23.6		122.4	122.4		122.4	122.4	
Effective Green, g (s)	23.6				23.6		122.4	122.4		122.4	122.4	
Actuated g/C Ratio	0.15				0.15		0.77	0.77		0.77	0.77	
Clearance Time (s)	7.3				7.3		6.7	6.7		6.7	6.7	
Vehicle Extension (s)	5.0				5.0		5.0	5.0		5.0	5.0	
Lane Grp Cap (vph)	206			230			376	3769		114	3617	
v/s Ratio Prot								c0.41			0.21	
v/s Ratio Perm	c0.10			0.02			0.04			0.12		
v/c Ratio	0.70			0.11			0.06	0.53		0.16	0.27	
Uniform Delay, d1	64.8			59.1			4.6	7.4		5.0	5.6	
Progression Factor	1.00			1.00			1.00	1.00		0.79	0.78	
Incremental Delay, d2	12.3			0.5			0.3	0.5		2.9	0.2	
Delay (s)	77.1			59.6			4.9	8.0		6.8	4.5	
Level of Service	E			E			A	A		A	A	
Approach Delay (s)	77.1			59.6				7.9			4.6	
Approach LOS	E			E				A			A	
Intersection Summary												
HCM 2000 Control Delay	10.6				HCM 2000 Level of Service			B				
HCM 2000 Volume to Capacity ratio	0.56											
Actuated Cycle Length (s)	160.0				Sum of lost time (s)			14.0				
Intersection Capacity Utilization	69.7%				ICU Level of Service			C				
Analysis Period (min)	15											

c Critical Lane Group

HCM Unsignalized Intersection Capacity Analysis  
3: Airport Road & 7256 Airport Road North Access

2025 Future Background PM  
01-14-2020



Movement	EBL	EBR	NBL	NBT	SBT	SBR		
Lane Configurations	Y		T	↑↑↑	↑↑↑			
Traffic Volume (veh/h)	3	1	8	2136	1010	8		
Future Volume (Veh/h)	3	1	8	2136	1010	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)	3	1	8	2136	1010	8		
Pedestrians	36			1				
Lane Width (m)	3.7			3.6				
Walking Speed (m/s)	1.1			1.1				
Percent Blockage	3			0				
Right turn flare (veh)								
Median type				None	None			
Median storage veh								
Upstream signal (m)				230	97			
pX, platoon unblocked	0.87	0.95	0.95					
vC, conflicting volume	1778	378	1054					
vC1, stage 1 conf vol								
vC2, stage 2 conf vol								
vCu, unblocked vol	942	148	862					
tC, single (s)	6.8	6.9	4.1					
tC, 2 stage (s)								
tF (s)	3.5	3.3	2.2					
p0 queue free %	99	100	99					
cM capacity (veh/h)	219	803	722					
Direction, Lane #	EB 1	NB 1	NB 2	NB 3	NB 4	SB 1	SB 2	SB 3
Volume Total	4	8	712	712	712	404	404	210
Volume Left	3	8	0	0	0	0	0	0
Volume Right	1	0	0	0	0	0	0	8
cSH	268	722	1700	1700	1700	1700	1700	1700
Volume to Capacity	0.01	0.01	0.42	0.42	0.42	0.24	0.24	0.12
Queue Length 95th (m)	0.3	0.2	0.0	0.0	0.0	0.0	0.0	0.0
Control Delay (s)	18.7	10.0	0.0	0.0	0.0	0.0	0.0	0.0
Lane LOS	C	B						
Approach Delay (s)	18.7	0.0				0.0		
Approach LOS	C							
Intersection Summary								
Average Delay			0.0					
Intersection Capacity Utilization		51.6%		ICU Level of Service				A
Analysis Period (min)			15					

HCM Unsignalized Intersection Capacity Analysis  
4: Airport Road & 7256 Airport Road South Access

2025 Future Background PM  
01-14-2020



Movement	EBL	EBR	NBL	NBT	SBT	SBR	
Lane Configurations							
Traffic Volume (veh/h)	2	3	0	2178	1012	1	
Future Volume (Veh/h)	2	3	0	2178	1012	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	3	0	2178	1012	1	
Pedestrians	29						
Lane Width (m)	3.7						
Walking Speed (m/s)	1.1						
Percent Blockage	3						
Right turn flare (veh)							
Median type				None	None		
Median storage veh							
Upstream signal (m)				154	173		
pX, platoon unblocked	0.86	0.95	0.95				
vC, conflicting volume	1768	367	1042				
vC1, stage 1 conf vol							
vC2, stage 2 conf vol							
vCu, unblocked vol	957	165	873				
tC, single (s)	6.8	6.9	4.1				
tC, 2 stage (s)							
tF (s)	3.5	3.3	2.2				
p0 queue free %	99	100	100				
cM capacity (veh/h)	217	795	725				
Direction, Lane #	EB 1	NB 1	NB 2	NB 3	SB 1	SB 2	SB 3
Volume Total	5	436	871	871	405	405	203
Volume Left	2	0	0	0	0	0	0
Volume Right	3	0	0	0	0	0	1
cSH	385	725	1700	1700	1700	1700	1700
Volume to Capacity	0.01	0.00	0.51	0.51	0.24	0.24	0.12
Queue Length 95th (m)	0.3	0.0	0.0	0.0	0.0	0.0	0.0
Control Delay (s)	14.5	0.0	0.0	0.0	0.0	0.0	0.0
Lane LOS	B						
Approach Delay (s)	14.5	0.0			0.0		
Approach LOS	B						
Intersection Summary							
Average Delay			0.0				
Intersection Capacity Utilization		52.1%		ICU Level of Service			A
Analysis Period (min)			15				

Intersection: 1: Airport Road & Private Road/Morning Star Drive

Movement	EB	WB	WB	NB	NB	NB	NB	NB	SB	SB	SB	SB
Directions Served	LTR	L	TR	L	T	T	T	R	L	T	T	T
Maximum Queue (m)	20.0	37.3	99.6	44.4	86.5	91.1	89.3	65.3	67.5	217.1	204.8	133.3
Average Queue (m)	7.0	26.4	43.0	4.6	62.8	62.0	55.9	15.4	64.5	143.6	119.4	29.8
95th Queue (m)	16.5	43.6	84.5	24.9	89.6	91.8	85.9	43.4	78.2	243.7	219.7	79.3
Link Distance (m)	67.3		190.9		82.0	82.0	82.0			214.6	214.6	214.6
Upstream Blk Time (%)				0	2	2	1	0		9	0	
Queuing Penalty (veh)				0	12	11	5	0		0	0	
Storage Bay Dist (m)	30.0		70.0				70.0	60.0				
Storage Blk Time (%)	11	19		5			2	0	71	2		0
Queuing Penalty (veh)	27	20		1			4	0	203	4		0

Intersection: 1: Airport Road & Private Road/Morning Star Drive

Movement	SB
Directions Served	R
Maximum Queue (m)	10.7
Average Queue (m)	2.2
95th Queue (m)	8.7
Link Distance (m)	
Upstream Blk Time (%)	
Queuing Penalty (veh)	
Storage Bay Dist (m)	80.0
Storage Blk Time (%)	
Queuing Penalty (veh)	

Intersection: 2: Airport Road & Beverley Street/Victory Crescent

Movement	EB	WB	NB	NB	NB	NB	SB	SB	SB	SB
Directions Served	LTR	LTR	L	T	T	TR	L	T	T	TR
Maximum Queue (m)	73.0	29.4	15.8	152.4	141.7	110.9	17.0	42.4	39.0	42.3
Average Queue (m)	36.2	9.5	3.6	85.0	74.0	47.9	4.9	14.3	18.3	12.1
95th Queue (m)	62.6	22.5	11.6	137.7	130.3	94.0	13.5	33.8	35.4	30.1
Link Distance (m)	136.7	163.4		201.0	201.0	201.0		141.3	141.3	141.3
Upstream Blk Time (%)				16.0			70.0			
Queuing Penalty (veh)				0	24					
Storage Bay Dist (m)				0	5					
Storage Blk Time (%)										
Queuing Penalty (veh)										

Intersection: 3: Airport Road & 7256 Airport Road North Access

Movement	EB	NB	NB	NB	NB	SB	SB	SB
Directions Served	LR	L	T	T	T	T	T	TR
Maximum Queue (m)	10.6	9.3	45.8	41.7	32.1	10.9	9.0	2.3
Average Queue (m)	1.3	1.7	5.5	5.5	4.0	0.4	0.3	0.1
95th Queue (m)	6.8	7.4	26.1	24.0	20.5	5.4	4.5	1.5
Link Distance (m)	61.9		65.4	65.4	65.4	82.0	82.0	82.0
Upstream Blk Time (%)								
Queuing Penalty (veh)								
Storage Bay Dist (m)		65.0						
Storage Blk Time (%)								
Queuing Penalty (veh)								

Intersection: 4: Airport Road & 7256 Airport Road South Access

Movement	EB
Directions Served	LR
Maximum Queue (m)	9.2
Average Queue (m)	1.1
95th Queue (m)	5.9
Link Distance (m)	74.4
Upstream Blk Time (%)	
Queuing Penalty (veh)	
Storage Bay Dist (m)	
Storage Blk Time (%)	
Queuing Penalty (veh)	

Network Summary

Network wide Queuing Penalty: 294

HCM Signalized Intersection Capacity Analysis  
1: Airport Road & Private Road/Morning Star Drive

2025 Total Traffic AM  
01-17-2020

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	13	11	13	143	16	177	5	770	65	167	1598	20
Future Volume (vph)	13	11	13	143	16	177	5	770	65	167	1598	20
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.7	3.7	3.7	3.5	3.7	3.7	3.5	3.7	3.5	3.5	3.7	3.5
Total Lost time (s)	6.7			6.7	6.7		3.0	6.2	6.2	3.0	6.2	6.2
Lane Util. Factor	1.00			1.00	1.00		1.00	0.91	1.00	1.00	0.91	1.00
Frpb, ped/bikes	0.98			1.00	0.97		1.00	1.00	0.93	1.00	1.00	0.94
Flpb, ped/bikes	0.99			0.97	1.00		1.00	1.00	1.00	1.00	1.00	1.00
Fr <sub>t</sub>	0.95			1.00	0.86		1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.98			0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1759			1657	1509		1784	4641	1394	1676	4882	1505
Flt Permitted	0.79			0.73	1.00		0.14	1.00	1.00	0.33	1.00	1.00
Satd. Flow (perm)	1416			1279	1509		263	4641	1394	577	4882	1505
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	11	13	143	16	177	5	770	65	167	1598	20
RTOR Reduction (vph)	0	11	0	0	149	0	0	0	22	0	0	5
Lane Group Flow (vph)	0	26	0	143	44	0	5	770	43	167	1598	15
Confl. Peds. (#/hr)	17		28	28		17	11		16	16		11
Heavy Vehicles (%)	0%	0%	0%	4%	0%	7%	0%	13%	6%	6%	7%	0%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	3	0
Turn Type	Perm	NA		Perm	NA		pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases		4			8			1	6		5	2
Permitted Phases	4			8			6		6	2		2
Actuated Green, G (s)	25.6		25.6	25.6		108.4	106.8	106.8	121.5	116.9	116.9	
Effective Green, g (s)	25.6		25.6	25.6		108.4	106.8	106.8	121.5	116.9	116.9	
Actuated g/C Ratio	0.16		0.16	0.16		0.68	0.67	0.67	0.76	0.73	0.73	
Clearance Time (s)	6.7		6.7	6.7		3.0	6.2	6.2	3.0	6.2	6.2	
Vehicle Extension (s)	5.0		5.0	5.0		5.0	5.0	5.0	5.0	5.0	5.0	
Lane Grp Cap (vph)	226		204	241		193	3097	930	518	3566	1099	
v/s Ratio Prot				0.03			0.00	0.17		c0.02	c0.33	
v/s Ratio Perm	0.02		c0.11			0.02		0.03	0.22		0.01	
v/c Ratio	0.12		0.70	0.18		0.03	0.25	0.05	0.32	0.45	0.01	
Uniform Delay, d1	57.5		63.6	58.2		8.4	10.6	9.1	5.3	8.6	5.9	
Progression Factor	1.00		1.00	1.00		0.86	0.82	0.42	1.00	1.00	1.00	
Incremental Delay, d2	0.5		12.8	0.8		0.1	0.2	0.1	0.8	0.4	0.0	
Delay (s)	58.0		76.4	58.9		7.3	8.9	3.9	6.1	9.0	5.9	
Level of Service	E		E	E		A	A	A	A	A	A	
Approach Delay (s)	58.0			66.4			8.5			8.7		
Approach LOS	E			E			A			A		

Intersection Summary

HCM 2000 Control Delay	15.7	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.49		
Actuated Cycle Length (s)	160.0	Sum of lost time (s)	15.9
Intersection Capacity Utilization	73.5%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis  
2: Airport Road & Beverley Street/Victory Crescent

2025 Total Traffic AM

01-17-2020

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	54	14	6	9	13	17	5	819	4	12	1715	27
Future Volume (vph)	54	14	6	9	13	17	5	819	4	12	1715	27
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.7	3.7	3.7	3.7	3.7	3.7	3.5	3.7	3.7	3.5	3.7	3.7
Total Lost time (s)							7.3	6.7	6.7	6.7	6.7	6.7
Lane Util. Factor							1.00	1.00	0.91	1.00	0.91	
Frpb, ped/bikes							1.00	1.00	1.00	1.00	1.00	
Flpb, ped/bikes							1.00	1.00	1.00	0.99	1.00	
Fr <sub>t</sub>							0.99	0.94	1.00	1.00	1.00	
Flt Protected							0.96	0.99	0.95	1.00	0.95	1.00
Satd. Flow (prot)							1713	1650	1784	4576	1640	4919
Flt Permitted							0.76	0.93	0.12	1.00	0.33	1.00
Satd. Flow (perm)							1349	1547	218	4576	569	4919
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)	54	14	6	9	13	17	5	819	4	12	1715	27
RTOR Reduction (vph)	0	3	0	0	15	0	0	0	0	0	1	0
Lane Group Flow (vph)	0	71	0	0	24	0	5	823	0	12	1741	0
Confl. Peds. (#/hr)	1	1	1			1	3		7	7		3
Heavy Vehicles (%)	0%	36%	0%	0%	23%	0%	0%	14%	25%	8%	6%	0%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	3	3	0	3	3
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		8			4			6			2	
Permitted Phases	8		4			6			2			
Actuated Green, G (s)		15.6			15.6		130.4	130.4		130.4	130.4	
Effective Green, g (s)		15.6			15.6		130.4	130.4		130.4	130.4	
Actuated g/C Ratio		0.10			0.10		0.82	0.82		0.82	0.82	
Clearance Time (s)		7.3			7.3		6.7	6.7		6.7	6.7	
Vehicle Extension (s)		5.0			5.0		5.0	5.0		5.0	5.0	
Lane Grp Cap (vph)		131			150		177	3729		463	4008	
v/s Ratio Prot								0.18			c0.35	
v/s Ratio Perm		c0.05			0.02		0.02			0.02		
v/c Ratio		0.54			0.16		0.03	0.22		0.03	0.43	
Uniform Delay, d1		68.8			66.2		2.8	3.3		2.8	4.2	
Progression Factor		1.00			1.00		1.00	1.00		0.80	0.66	
Incremental Delay, d2		7.9			1.0		0.3	0.1		0.1	0.3	
Delay (s)		76.7			67.2		3.1	3.5		2.3	3.1	
Level of Service		E			E		A	A		A	A	
Approach Delay (s)		76.7			67.2			3.5			3.1	
Approach LOS		E			E			A			A	

Intersection Summary

HCM 2000 Control Delay	6.2	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.45		
Actuated Cycle Length (s)	160.0	Sum of lost time (s)	14.0
Intersection Capacity Utilization	56.9%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

HCM Unsignalized Intersection Capacity Analysis  
3: Airport Road & 7256 Airport Road North Access

2025 Total Traffic AM  
01-17-2020



Movement	EBL	EBR	NBL	NBT	SBT	SBR		
Lane Configurations								
Traffic Volume (veh/h)	2	2	3	895	1772	2		
Future Volume (Veh/h)	2	2	3	895	1772	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)	2	2	3	895	1772	2		
Pedestrians	8							
Lane Width (m)	3.7							
Walking Speed (m/s)	1.1							
Percent Blockage	1							
Right turn flare (veh)								
Median type				None	None			
Median storage veh								
Upstream signal (m)				221	105			
pX, platoon unblocked	0.88	0.87	0.87					
vC, conflicting volume	2085	600	1782					
vC1, stage 1 conf vol								
vC2, stage 2 conf vol								
vCu, unblocked vol	1646	18	1376					
tC, single (s)	6.8	6.9	4.1					
tC, 2 stage (s)								
tF (s)	3.5	3.3	2.2					
p0 queue free %	97	100	99					
cM capacity (veh/h)	80	918	436					
Direction, Lane #	EB 1	NB 1	NB 2	NB 3	NB 4	SB 1	SB 2	SB 3
Volume Total	4	3	298	298	298	709	709	356
Volume Left	2	3	0	0	0	0	0	0
Volume Right	2	0	0	0	0	0	0	2
cSH	146	436	1700	1700	1700	1700	1700	1700
Volume to Capacity	0.03	0.01	0.18	0.18	0.18	0.42	0.42	0.21
Queue Length 95th (m)	0.6	0.1	0.0	0.0	0.0	0.0	0.0	0.0
Control Delay (s)	30.3	13.3	0.0	0.0	0.0	0.0	0.0	0.0
Lane LOS	D	B						
Approach Delay (s)	30.3	0.0				0.0		
Approach LOS	D							
Intersection Summary								
Average Delay			0.1					
Intersection Capacity Utilization		44.3%		ICU Level of Service				A
Analysis Period (min)			15					

HCM Unsignalized Intersection Capacity Analysis  
4: Airport Road & 7256 Airport Road South Access

2025 Total Traffic AM  
01-17-2020



Movement	EBL	EBR	NBL	NBT	SBT	SBR	
Lane Configurations							
Traffic Volume (veh/h)	3	11	0	908	1783	2	
Future Volume (Veh/h)	3	11	0	908	1783	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	11	0	908	1783	2	
Pedestrians	14						
Lane Width (m)	3.7						
Walking Speed (m/s)	1.1						
Percent Blockage	1						
Right turn flare (veh)							
Median type				None	None		
Median storage veh							
Upstream signal (m)				154	173		
pX, platoon unblocked	0.88	0.87	0.87				
vC, conflicting volume	2101	609	1799				
vC1, stage 1 conf vol							
vC2, stage 2 conf vol							
vCu, unblocked vol	1593	36	1401				
tC, single (s)	6.8	6.9	4.1				
tC, 2 stage (s)							
tF (s)	3.5	3.3	2.2				
p0 queue free %	97	99	100				
cM capacity (veh/h)	87	891	425				
Direction, Lane #	EB 1	NB 1	NB 2	NB 3	SB 1	SB 2	SB 3
Volume Total	14	182	363	363	713	713	359
Volume Left	3	0	0	0	0	0	0
Volume Right	11	0	0	0	0	0	2
cSH	299	425	1700	1700	1700	1700	1700
Volume to Capacity	0.05	0.00	0.21	0.21	0.42	0.42	0.21
Queue Length 95th (m)	1.0	0.0	0.0	0.0	0.0	0.0	0.0
Control Delay (s)	17.6	0.0	0.0	0.0	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			0.1				
Intersection Capacity Utilization		44.5%		ICU Level of Service			A
Analysis Period (min)			15				

HCM Unsignalized Intersection Capacity Analysis  
3: Airport Road & RIRO Access

2025 Total Traffic AM  
01-17-2020



Movement	WBL	WBR	NBT	NBR	SBL	SBT		
Lane Configurations		↑	↑↑↑	↑		↑↑↑		
Traffic Volume (veh/h)	0	1	895	18	0	1772		
Future Volume (Veh/h)	0	1	895	18	0	1772		
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	895	18	0	1772		
Pedestrians								
Lane Width (m)								
Walking Speed (m/s)								
Percent Blockage								
Right turn flare (veh)								
Median type			None			None		
Median storage veh								
Upstream signal (m)			221			105		
pX, platoon unblocked	0.88	0.99			0.99			
vC, conflicting volume	1486	298			895			
vC1, stage 1 conf vol								
vC2, stage 2 conf vol								
vCu, unblocked vol	962	243			848			
tC, single (s)	6.8	6.9			4.1			
tC, 2 stage (s)								
tF (s)	3.5	3.3			2.2			
p0 queue free %	100	100			100			
cM capacity (veh/h)	223	748			775			
Direction, Lane #	WB 1	NB 1	NB 2	NB 3	NB 4	SB 1	SB 2	SB 3
Volume Total	1	298	298	298	18	591	591	591
Volume Left	0	0	0	0	0	0	0	0
Volume Right	1	0	0	0	18	0	0	0
cSH	748	1700	1700	1700	1700	1700	1700	1700
Volume to Capacity	0.00	0.18	0.18	0.18	0.01	0.35	0.35	0.35
Queue Length 95th (m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Control Delay (s)	9.8	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Lane LOS	A							
Approach Delay (s)	9.8	0.0				0.0		
Approach LOS	A							
Intersection Summary								
Average Delay			0.0					
Intersection Capacity Utilization		37.6%		ICU Level of Service				A
Analysis Period (min)			15					

HCM Unsignalized Intersection Capacity Analysis  
6: Collett Road & Morning Star Drive

2025 Total Traffic AM  
01-17-2020



Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑			↖	↗	
Traffic Volume (veh/h)	242	2	1	0	7	12
Future Volume (Veh/h)	242	2	1	0	7	12
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	242	2	1	0	7	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)	77					
pX, platoon unblocked		0.98		0.98	0.98	
vC, conflicting volume		244		245	243	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol		213		214	212	
tC, single (s)		4.1		6.4	6.2	
tC, 2 stage (s)						
tF (s)		2.2		3.5	3.3	
p0 queue free %		100		99	99	
cM capacity (veh/h)		1325		755	808	
Direction, Lane #	EB 1	WB 1	NB 1			
Volume Total	244	1	19			
Volume Left	0	1	7			
Volume Right	2	0	12			
cSH	1700	1325	788			
Volume to Capacity	0.14	0.00	0.02			
Queue Length 95th (m)	0.0	0.0	0.5			
Control Delay (s)	0.0	7.7	9.7			
Lane LOS		A	A			
Approach Delay (s)	0.0	7.7	9.7			
Approach LOS		A				
Intersection Summary						
Average Delay		0.7				
Intersection Capacity Utilization		22.9%		ICU Level of Service		A
Analysis Period (min)		15				

Queuing and Blocking Report  
7211 & 7233 Airport Road

2025 Total Traffic AM  
01-13-2020

Intersection: 1: Airport Road & Private Road/Morning Star Drive

Movement	EB	WB	WB	NB	NB	NB	NB	NB	SB	SB	SB	SB
Directions Served	LTR	L	TR	L	T	T	T	R	L	T	T	T
Maximum Queue (m)	23.6	37.2	104.9	8.6	70.9	74.0	57.1	22.0	67.4	128.5	120.2	79.7
Average Queue (m)	5.2	28.7	37.4	0.9	35.3	35.4	22.3	6.4	33.6	74.4	65.3	40.4
95th Queue (m)	14.7	43.0	82.7	5.1	61.5	62.1	47.0	17.4	69.3	122.9	107.9	74.5
Link Distance (m)	67.3		195.9		90.6	90.6	90.6			214.6	214.6	214.6
Upstream Blk Time (%)					0	0						
Queuing Penalty (veh)					0	0						
Storage Bay Dist (m)	30.0		70.0				70.0	60.0				
Storage Blk Time (%)	21	6		0					0	11		0
Queuing Penalty (veh)	41	9		0					2	19		0

Intersection: 1: Airport Road & Private Road/Morning Star Drive

Movement	SB
Directions Served	R
Maximum Queue (m)	11.1
Average Queue (m)	1.5
95th Queue (m)	7.2
Link Distance (m)	
Upstream Blk Time (%)	
Queuing Penalty (veh)	
Storage Bay Dist (m)	80.0
Storage Blk Time (%)	
Queuing Penalty (veh)	

**Intersection: 3: Airport Road & 7256 Airport Road North Access/RIRO Access**

Movement	EB	NB
Directions Served	LTR	L
Maximum Queue (m)	8.9	9.0
Average Queue (m)	0.9	0.6
95th Queue (m)	5.4	4.1
Link Distance (m)	61.8	
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (m)	65.0	
Storage Blk Time (%)		
Queuing Penalty (veh)		

**Intersection: 4: Airport Road & 7256 Airport Road South Access**

Movement	EB
Directions Served	LR
Maximum Queue (m)	15.7
Average Queue (m)	4.2
95th Queue (m)	12.4
Link Distance (m)	74.4
Upstream Blk Time (%)	
Queuing Penalty (veh)	
Storage Bay Dist (m)	
Storage Blk Time (%)	
Queuing Penalty (veh)	

**Intersection: 6: Ful-moves Access & Morning Star Drive**

Movement	NB
Directions Served	LR
Maximum Queue (m)	10.9
Average Queue (m)	4.2
95th Queue (m)	11.7
Link Distance (m)	54.3
Upstream Blk Time (%)	
Queuing Penalty (veh)	
Storage Bay Dist (m)	
Storage Blk Time (%)	
Queuing Penalty (veh)	

**Zone Summary**

Zone wide Queuing Penalty: 0

Intersection: 2: Airport Road & Beverley Street/Victory Crescent

Movement	EB	WB	NB	NB	NB	NB	SB	SB	SB	SB
Directions Served	LTR	LTR	L	T	T	TR	L	T	T	TR
Maximum Queue (m)	59.2	27.9	12.7	68.6	46.2	33.4	12.5	49.4	53.8	48.2
Average Queue (m)	22.9	9.4	2.3	27.4	14.2	5.0	2.0	23.2	24.2	20.6
95th Queue (m)	45.9	22.1	9.2	57.9	38.7	19.1	8.5	43.9	46.7	43.0
Link Distance (m)	136.7	163.4		201.0	201.0	201.0		141.3	141.3	141.3
Upstream Blk Time (%)										
Queuing Penalty (veh)										
Storage Bay Dist (m)			16.0				70.0			
Storage Blk Time (%)				10				0		
Queuing Penalty (veh)				0				0		

HCM Signalized Intersection Capacity Analysis  
1: Airport Road & Private Road/Morning Star Drive

2025 Total Traffic Volumes PM  
01-17-2020

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	15	20	13	114	13	233	16	1909	197	237	866	17
Future Volume (vph)	15	20	13	114	13	233	16	1909	197	237	866	17
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.7	3.7	3.7	3.5	3.7	3.7	3.5	3.7	3.5	3.5	3.7	3.5
Total Lost time (s)	6.7			6.7	6.7		3.0	6.2	6.2	3.0	6.2	6.2
Lane Util. Factor	1.00			1.00	1.00		1.00	0.91	1.00	1.00	0.91	1.00
Frpb, ped/bikes	0.97			1.00	0.94		1.00	1.00	0.83	1.00	1.00	0.84
Flpb, ped/bikes	0.99			0.91	1.00		0.99	1.00	1.00	1.00	1.00	1.00
Fr <sub>t</sub>	0.96			1.00	0.86		1.00	1.00	0.85	1.00	1.00	0.85
Fl <sub>t</sub> Protected	0.98			0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1752			1545	1476		1764	4948	1292	1684	4792	1342
Fl <sub>t</sub> Permitted	0.53			0.78	1.00		0.32	1.00	1.00	0.06	1.00	1.00
Satd. Flow (perm)	936			1266	1476		585	4948	1292	100	4792	1342
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	20	13	114	13	233	16	1909	197	237	866	17
RTOR Reduction (vph)	0	10	0	0	109	0	0	0	69	0	0	5
Lane Group Flow (vph)	0	38	0	114	137	0	16	1909	128	237	866	12
Confl. Peds. (#/hr)	42			76	76		42	41	43	43		41
Heavy Vehicles (%)	0%	0%	0%	5%	0%	5%	0%	6%	3%	6%	9%	0%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	3	0
Turn Type	Perm	NA		Perm	NA		pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases		4			8			1	6		5	2
Permitted Phases		4			8			6		6	2	
Actuated Green, G (s)	23.6			23.6	23.6		91.8	88.5	88.5	123.5	117.2	117.2
Effective Green, g (s)	23.6			23.6	23.6		91.8	88.5	88.5	123.5	117.2	117.2
Actuated g/C Ratio	0.15			0.15	0.15		0.57	0.55	0.55	0.77	0.73	0.73
Clearance Time (s)	6.7			6.7	6.7		3.0	6.2	6.2	3.0	6.2	6.2
Vehicle Extension (s)	5.0			5.0	5.0		5.0	5.0	5.0	5.0	5.0	5.0
Lane Grp Cap (vph)	138			186	217		359	2736	714	393	3510	983
v/s Ratio Prot				c0.09			0.00	c0.39		c0.12	0.18	
v/s Ratio Perm	0.04			0.09			0.02		0.10	0.34		0.01
v/c Ratio	0.27			0.61	0.63		0.04	0.70	0.18	0.60	0.25	0.01
Uniform Delay, d1	60.6			63.9	64.1		14.7	26.0	17.7	40.6	7.0	5.8
Progression Factor	1.00			1.00	1.00		0.68	0.78	0.27	1.00	1.00	1.00
Incremental Delay, d2	2.2			8.4	8.1		0.1	1.3	0.5	3.8	0.2	0.0
Delay (s)	62.8			72.3	72.2		10.1	21.6	5.2	44.4	7.2	5.8
Level of Service	E			E	E		B	C	A	D	A	A
Approach Delay (s)	62.8				72.2			20.0			15.0	
Approach LOS	E				E			C			B	

Intersection Summary

HCM 2000 Control Delay	24.2	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.67		
Actuated Cycle Length (s)	160.0	Sum of lost time (s)	15.9
Intersection Capacity Utilization	93.8%	ICU Level of Service	F
Analysis Period (min)	15		

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis  
2: Airport Road & Beverley Street/Victory Crescent

2025 Total Traffic Volumes PM  
01-17-2020

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	107	27	12	8	16	11	21	2008	4	18	941	60
Future Volume (vph)	107	27	12	8	16	11	21	2008	4	18	941	60
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.7	3.7	3.7	3.7	3.7	3.7	3.5	3.7	3.7	3.5	3.7	3.7
Total Lost time (s)	7.3			7.3			6.7	6.7		6.7	6.7	
Lane Util. Factor	1.00			1.00			1.00	0.91		1.00	0.91	
Frpb, ped/bikes	1.00			0.99			1.00	1.00		1.00	0.99	
Flpb, ped/bikes	1.00			1.00			0.97	1.00		1.00	1.00	
Fr <sub>t</sub>	0.99			0.96			1.00	1.00		1.00	0.99	
Fl <sub>t</sub> Protected	0.96			0.99			0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1774			1662			1737	4927		1783	4730	
Fl <sub>t</sub> Permitted	0.76			0.93			0.27	1.00		0.08	1.00	
Satd. Flow (perm)	1400			1562			489	4927		148	4730	
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)	107	27	12	8	16	11	21	2008	4	18	941	60
RTOR Reduction (vph)	0	3	0	0	9	0	0	0	0	0	3	0
Lane Group Flow (vph)	0	143	0	0	26	0	21	2012	0	18	998	0
Confl. Peds. (#/hr)	5		7	7		5	33		9	9		33
Heavy Vehicles (%)	0%	15%	0%	0%	19%	0%	0%	6%	0%	0%	9%	2%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	3	3	0	3	3
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		8			4			6			2	
Permitted Phases	8		4			6			2			
Actuated Green, G (s)	23.6			23.6			122.4	122.4		122.4	122.4	
Effective Green, g (s)	23.6			23.6			122.4	122.4		122.4	122.4	
Actuated g/C Ratio	0.15			0.15			0.77	0.77		0.77	0.77	
Clearance Time (s)	7.3			7.3			6.7	6.7		6.7	6.7	
Vehicle Extension (s)	5.0			5.0			5.0	5.0		5.0	5.0	
Lane Grp Cap (vph)	206			230			374	3769		113	3618	
v/s Ratio Prot							c0.41				0.21	
v/s Ratio Perm	c0.10			0.02			0.04			0.12		
v/c Ratio	0.70			0.11			0.06	0.53		0.16	0.28	
Uniform Delay, d1	64.8			59.1			4.6	7.5		5.0	5.6	
Progression Factor	1.00			1.00			1.00	1.00		0.79	0.78	
Incremental Delay, d2	12.3			0.5			0.3	0.5		2.9	0.2	
Delay (s)	77.1			59.6			4.9	8.0		6.9	4.5	
Level of Service	E			E			A	A		A	A	
Approach Delay (s)	77.1			59.6				8.0			4.6	
Approach LOS	E			E				A			A	
Intersection Summary												
HCM 2000 Control Delay	10.6			HCM 2000 Level of Service			B					
HCM 2000 Volume to Capacity ratio	0.56											
Actuated Cycle Length (s)	160.0			Sum of lost time (s)			14.0					
Intersection Capacity Utilization	69.9%			ICU Level of Service			C					
Analysis Period (min)	15											
c Critical Lane Group												

HCM Unsignalized Intersection Capacity Analysis  
3: Airport Road & 7256 Airport Road North Access

2025 Total Traffic Volumes PM  
01-17-2020



Movement	EBL	EBR	NBL	NBT	SBT	SBR		
Lane Configurations								
Traffic Volume (veh/h)	3	1	8	2146	1019	8		
Future Volume (Veh/h)	3	1	8	2146	1019	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)	3	1	8	2146	1019	8		
Pedestrians	36			1				
Lane Width (m)	3.7			3.6				
Walking Speed (m/s)	1.1			1.1				
Percent Blockage	3			0				
Right turn flare (veh)								
Median type				None	None			
Median storage veh								
Upstream signal (m)				223	104			
pX, platoon unblocked	0.86	0.95	0.95					
vC, conflicting volume	1790	381	1063					
vC1, stage 1 conf vol								
vC2, stage 2 conf vol								
vCu, unblocked vol	943	148	869					
tC, single (s)	6.8	6.9	4.1					
tC, 2 stage (s)								
tF (s)	3.5	3.3	2.2					
p0 queue free %	99	100	99					
cM capacity (veh/h)	218	803	717					
Direction, Lane #	EB 1	NB 1	NB 2	NB 3	NB 4	SB 1	SB 2	SB 3
Volume Total	4	8	715	715	715	408	408	212
Volume Left	3	8	0	0	0	0	0	0
Volume Right	1	0	0	0	0	0	0	8
cSH	267	717	1700	1700	1700	1700	1700	1700
Volume to Capacity	0.01	0.01	0.42	0.42	0.42	0.24	0.24	0.12
Queue Length 95th (m)	0.3	0.2	0.0	0.0	0.0	0.0	0.0	0.0
Control Delay (s)	18.7	10.1	0.0	0.0	0.0	0.0	0.0	0.0
Lane LOS	C	B						
Approach Delay (s)	18.7	0.0				0.0		
Approach LOS	C							
Intersection Summary								
Average Delay			0.0					
Intersection Capacity Utilization		51.8%		ICU Level of Service				A
Analysis Period (min)			15					

HCM Unsignalized Intersection Capacity Analysis  
4: Airport Road & 7256 Airport Road South Access

2025 Total Traffic Volumes PM  
01-17-2020



Movement	EBL	EBR	NBL	NBT	SBT	SBR	
Lane Configurations							
Traffic Volume (veh/h)	2	3	0	2190	1018	1	
Future Volume (Veh/h)	2	3	0	2190	1018	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	3	0	2190	1018	1	
Pedestrians	29						
Lane Width (m)	3.7						
Walking Speed (m/s)	1.1						
Percent Blockage	3						
Right turn flare (veh)							
Median type				None	None		
Median storage veh							
Upstream signal (m)				154	173		
pX, platoon unblocked	0.86	0.95	0.95				
vC, conflicting volume	1778	369	1048				
vC1, stage 1 conf vol							
vC2, stage 2 conf vol							
vCu, unblocked vol	957	163	876				
tC, single (s)	6.8	6.9	4.1				
tC, 2 stage (s)							
tF (s)	3.5	3.3	2.2				
p0 queue free %	99	100	100				
cM capacity (veh/h)	217	796	722				
Direction, Lane #	EB 1	NB 1	NB 2	NB 3	SB 1	SB 2	SB 3
Volume Total	5	438	876	876	407	407	205
Volume Left	2	0	0	0	0	0	0
Volume Right	3	0	0	0	0	0	1
cSH	384	722	1700	1700	1700	1700	1700
Volume to Capacity	0.01	0.00	0.52	0.52	0.24	0.24	0.12
Queue Length 95th (m)	0.3	0.0	0.0	0.0	0.0	0.0	0.0
Control Delay (s)	14.5	0.0	0.0	0.0	0.0	0.0	0.0
Lane LOS	B						
Approach Delay (s)	14.5	0.0			0.0		
Approach LOS	B						
Intersection Summary							
Average Delay		0.0					
Intersection Capacity Utilization		52.3%		ICU Level of Service			A
Analysis Period (min)		15					

HCM Unsignalized Intersection Capacity Analysis  
3: Airport Road & RIRO Access

2025 Total Traffic Volumes PM  
01-17-2020



Movement	WBL	WBR	NBT	NBR	SBL	SBT		
Lane Configurations		↑	↑↑↑	↑		↑↑↑		
Traffic Volume (veh/h)	0	4	2146	51	0	1019		
Future Volume (Veh/h)	0	4	2146	51	0	1019		
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	4	2146	51	0	1019		
Pedestrians								
Lane Width (m)								
Walking Speed (m/s)								
Percent Blockage								
Right turn flare (veh)								
Median type			None			None		
Median storage veh								
Upstream signal (m)			223			104		
pX, platoon unblocked	0.86	0.84			0.84			
vC, conflicting volume	2486	715			2146			
vC1, stage 1 conf vol								
vC2, stage 2 conf vol								
vCu, unblocked vol	1749	0			1686			
tC, single (s)	6.8	6.9			4.1			
tC, 2 stage (s)								
tF (s)	3.5	3.3			2.2			
p0 queue free %	100	100			100			
cM capacity (veh/h)	66	907			314			
Direction, Lane #	WB 1	NB 1	NB 2	NB 3	NB 4	SB 1	SB 2	SB 3
Volume Total	4	715	715	715	51	340	340	340
Volume Left	0	0	0	0	0	0	0	0
Volume Right	4	0	0	0	51	0	0	0
cSH	907	1700	1700	1700	1700	1700	1700	1700
Volume to Capacity	0.00	0.42	0.42	0.42	0.03	0.20	0.20	0.20
Queue Length 95th (m)	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Control Delay (s)	9.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Lane LOS	A							
Approach Delay (s)	9.0	0.0				0.0		
Approach LOS	A							
Intersection Summary								
Average Delay			0.0					
Intersection Capacity Utilization		51.5%		ICU Level of Service				A
Analysis Period (min)			15					

HCM Unsignalized Intersection Capacity Analysis  
6: Collett Road & Morning Star Drive

2025 Total Traffic Volumes PM  
01-17-2020



Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑			↖	↗	
Traffic Volume (veh/h)	453	1	2	0	6	27
Future Volume (Veh/h)	453	1	2	0	6	27
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	453	1	2	0	6	27
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage veh						
Upstream signal (m)	77					
pX, platoon unblocked		0.96		0.96	0.96	
vC, conflicting volume		454		458	454	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol		410		414	410	
tC, single (s)		4.1		6.4	6.2	
tC, 2 stage (s)						
tF (s)		2.2		3.5	3.3	
p0 queue free %		100		99	96	
cM capacity (veh/h)		1102		570	616	
Direction, Lane #	EB 1	WB 1	NB 1			
Volume Total	454	2	33			
Volume Left	0	2	6			
Volume Right	1	0	27			
cSH	1700	1102	607			
Volume to Capacity	0.27	0.00	0.05			
Queue Length 95th (m)	0.0	0.0	1.2			
Control Delay (s)	0.0	8.3	11.3			
Lane LOS		A	B			
Approach Delay (s)	0.0	8.3	11.3			
Approach LOS			B			
Intersection Summary						
Average Delay		0.8				
Intersection Capacity Utilization		33.9%		ICU Level of Service		A
Analysis Period (min)		15				

Intersection: 1: Airport Road & Private Road/Morning Star Drive

Movement	EB	WB	WB	NB	NB	NB	NB	NB	SB	SB	SB	SB
Directions Served	LTR	L	TR	L	T	T	T	R	L	T	T	T
Maximum Queue (m)	22.5	37.4	118.4	11.6	93.5	97.4	94.6	77.4	67.4	203.0	191.0	126.2
Average Queue (m)	8.1	26.9	48.8	4.1	63.5	62.7	60.4	20.5	60.5	128.4	107.6	30.4
95th Queue (m)	18.6	45.8	94.9	11.1	93.1	94.3	94.4	59.8	80.4	252.8	228.3	88.7
Link Distance (m)	67.3		137.5		89.1	89.1	89.1			214.6	214.6	214.6
Upstream Blk Time (%)			0		1	1	1			16	0	0
Queuing Penalty (veh)			0		7	10	7			0	0	0
Storage Bay Dist (m)	30.0		70.0				70.0	60.0				
Storage Blk Time (%)	13	19		4			4	0	57	3		0
Queuing Penalty (veh)	32	22		1			8	0	164	7		0

Intersection: 1: Airport Road & Private Road/Morning Star Drive

Movement	SB
Directions Served	R
Maximum Queue (m)	10.9
Average Queue (m)	1.9
95th Queue (m)	8.3
Link Distance (m)	
Upstream Blk Time (%)	
Queuing Penalty (veh)	
Storage Bay Dist (m)	80.0
Storage Blk Time (%)	
Queuing Penalty (veh)	

Queuing and Blocking Report  
7211 & 7233 Airport Road

2025 Total Traffic Volumes PM  
01-13-2020

Intersection: 3: Airport Road & 7256 Airport Road North Access/RIRO Access

Movement	EB	NB	NB	NB	NB	SB	SB	SB
Directions Served	LTR	L	T	T	T	T	T	TR
Maximum Queue (m)	10.6	8.9	43.9	43.7	48.1	5.0	5.9	15.6
Average Queue (m)	1.3	1.4	5.4	5.2	4.2	0.2	0.3	0.6
95th Queue (m)	6.7	6.6	26.6	25.2	24.9	3.2	3.1	7.3
Link Distance (m)	61.8		56.2	56.2	56.2	90.6	90.6	90.6
Upstream Blk Time (%)			0	0	0			
Queuing Penalty (veh)			1	0	1			
Storage Bay Dist (m)		65.0						
Storage Blk Time (%)			0		1			
Queuing Penalty (veh)			0		0			

Intersection: 4: Airport Road & 7256 Airport Road South Access

Movement	EB	NB	NB	NB
Directions Served	LR	LT	T	T
Maximum Queue (m)	9.1	18.7	17.4	19.7
Average Queue (m)	1.5	0.7	0.6	0.8
95th Queue (m)	6.9	9.8	11.0	10.9
Link Distance (m)	74.4	141.3	141.3	141.3
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (m)				
Storage Blk Time (%)				
Queuing Penalty (veh)				

Intersection: 6: Full-moves Access & Morning Star Drive

Movement	WB	NB
Directions Served	LT	LR
Maximum Queue (m)	4.3	15.9
Average Queue (m)	0.2	6.3
95th Queue (m)	2.4	14.0
Link Distance (m)	128.9	52.3
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (m)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Zone Summary

Zone wide Queuing Penalty: 2

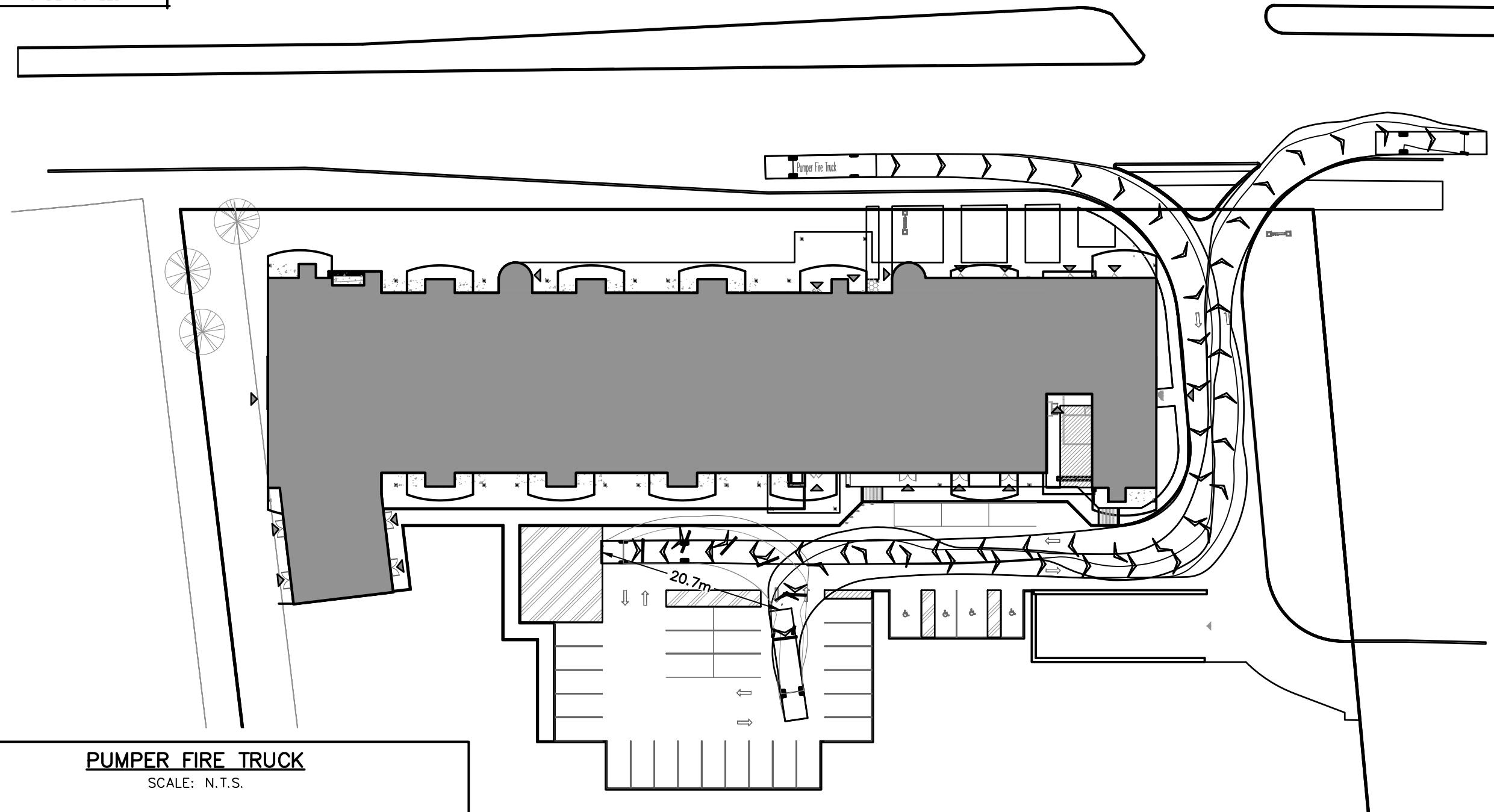
Intersection: 2: Airport Road & Beverley Street/Victory Crescent

Movement	EB	WB	NB	NB	NB	NB	SB	SB	SB	SB
Directions Served	LTR	LTR	L	T	T	TR	L	T	T	TR
Maximum Queue (m)	78.6	29.5	19.0	150.6	131.0	103.6	20.2	43.6	43.8	40.8
Average Queue (m)	36.5	9.9	4.3	79.4	64.5	45.5	5.3	18.5	20.6	15.8
95th Queue (m)	63.4	23.6	13.3	136.1	117.2	89.3	14.8	36.8	37.4	34.4
Link Distance (m)	136.7	163.4		201.0	201.0	201.0		141.3	141.3	141.3
Upstream Blk Time (%)										
Queuing Penalty (veh)										
Storage Bay Dist (m)			16.0				70.0			
Storage Blk Time (%)			0	23						
Queuing Penalty (veh)			1	5						

# APPENDIX F

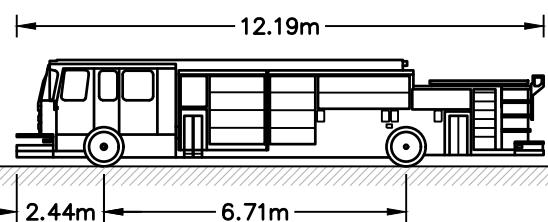
## Vehicle Turning Plans

NOTE:  
THIS FIGURE IS SCHEMATIC ONLY  
AND IS NOT TO BE SCALED.



### PUMPER FIRE TRUCK

SCALE: N.T.S.



#### VEHICLE STATISTICS:

OVERALL VEHICLE LENGTH:	12.19 m
OVERALL VEHICLE WIDTH:	2.49 m
OVERALL VEHICLE HEIGHT:	2.36 m
MIN. BODY/GROUND CLEARANCE:	0.20 m
VEHICLE TRACK WIDTH:	2.49 m
LOCK-TO-LOCK TIME:	5.00 sec
MAX. WHEEL ANGLE:	45.00°

7211-7233 AIRPORT ROAD  
CITY OF MISSISSAUGA

PUMPER FIRE TRUCK  
TURNING MOVEMENT DIAGRAM

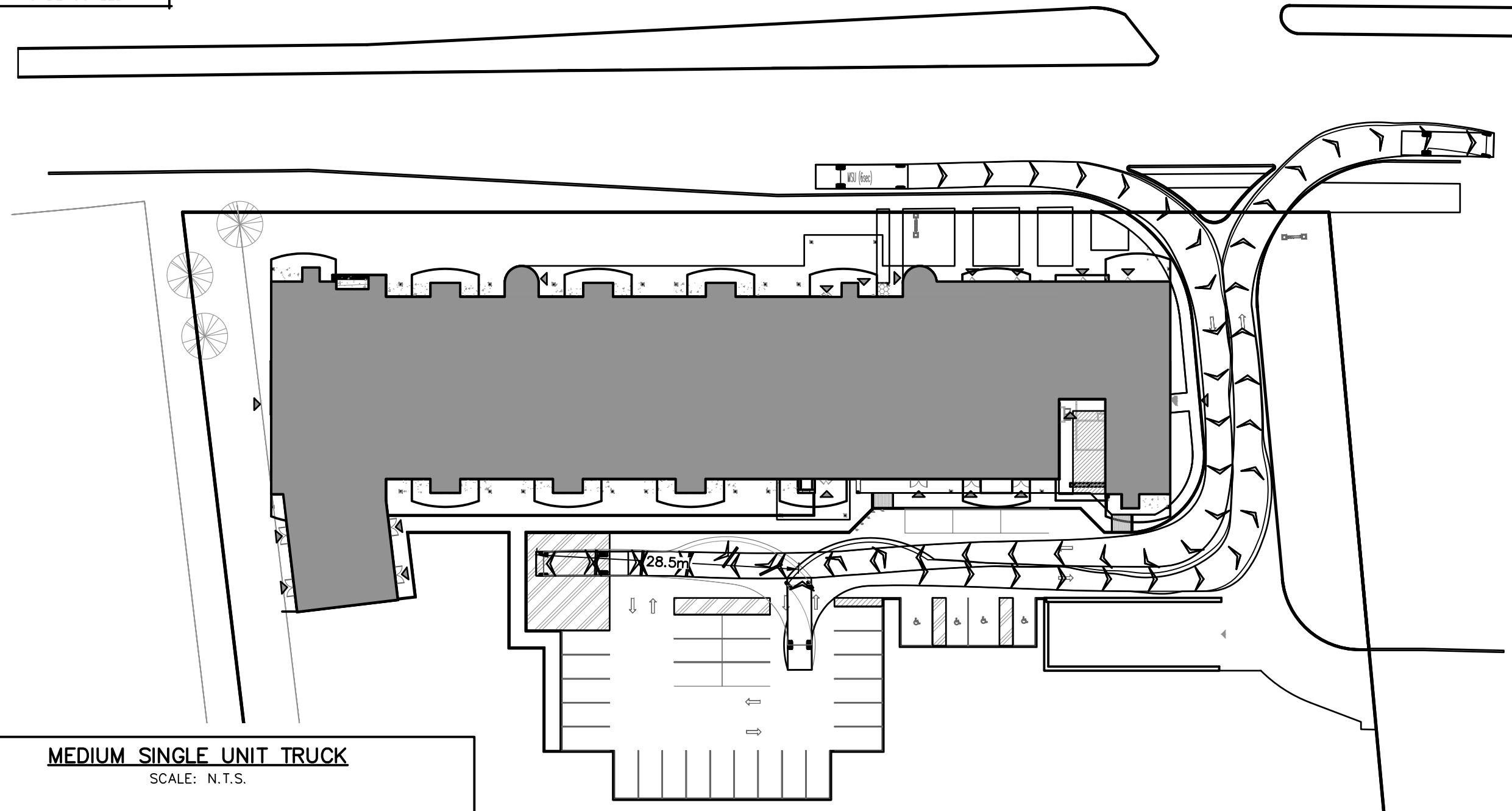


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**& ASSOCIATES**  
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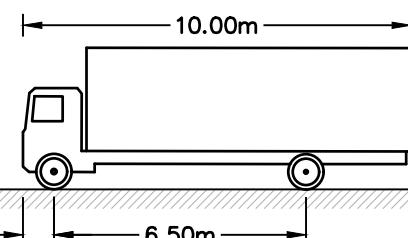
Drawn	A.K.	Design	P.A.	Project No.
Check	Check	Check	P.A.	1190-4286
			Scale	N.T.S
			Dwg.	FIG. 01

NOTE:  
THIS FIGURE IS SCHEMATIC ONLY  
AND IS NOT TO BE SCALED.



MEDIUM SINGLE UNIT TRUCK

SCALE: N.T.S.



VEHICLE STATISTICS:

OVERALL VEHICLE LENGTH:	10.00 m
OVERALL VEHICLE WIDTH:	2.60 m
OVERALL VEHICLE HEIGHT:	3.65 m
MIN. BODY/GROUND CLEARANCE:	0.45 m
VEHICLE TRACK WIDTH:	2.60 m
LOCK-TO-LOCK TIME:	4.00 sec
CURB TO CURB TURNING RADIUS:	11.10 m

7211-7233 AIRPORT ROAD  
CITY OF MISSISSAUGA

MEDIUM SINGLE UNIT TRUCK  
TURNING MOVEMENT DIAGRAM

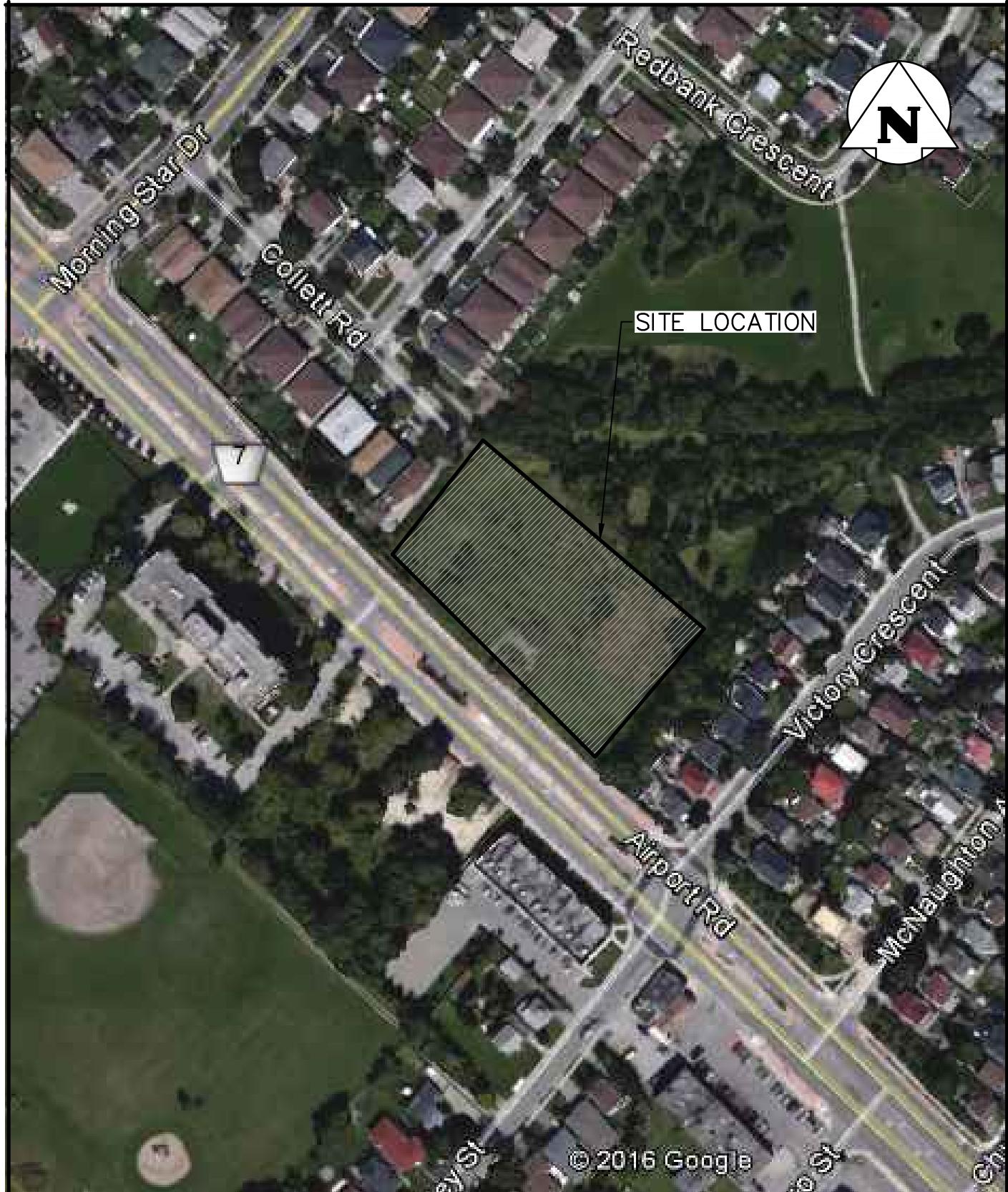


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Drawn	A.K.	Design	P.A.	Project No.
Check	Check	Check	P.A.	1190-4286
			Scale	N.T.S.
			Dwg.	FIG. 02

# FIGURES



AIRSTAR HOLDINGS INC.  
7211 & 7233 AIRPORT ROAD  
CITY OF MISSISSAUGA

SITE LOCATION



**CROZIER**  
**& ASSOCIATES**  
Consulting Engineers

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MILTON, ON L9T 6P4  
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905 875-4915 F  
WWW.CFCROZIER.CA

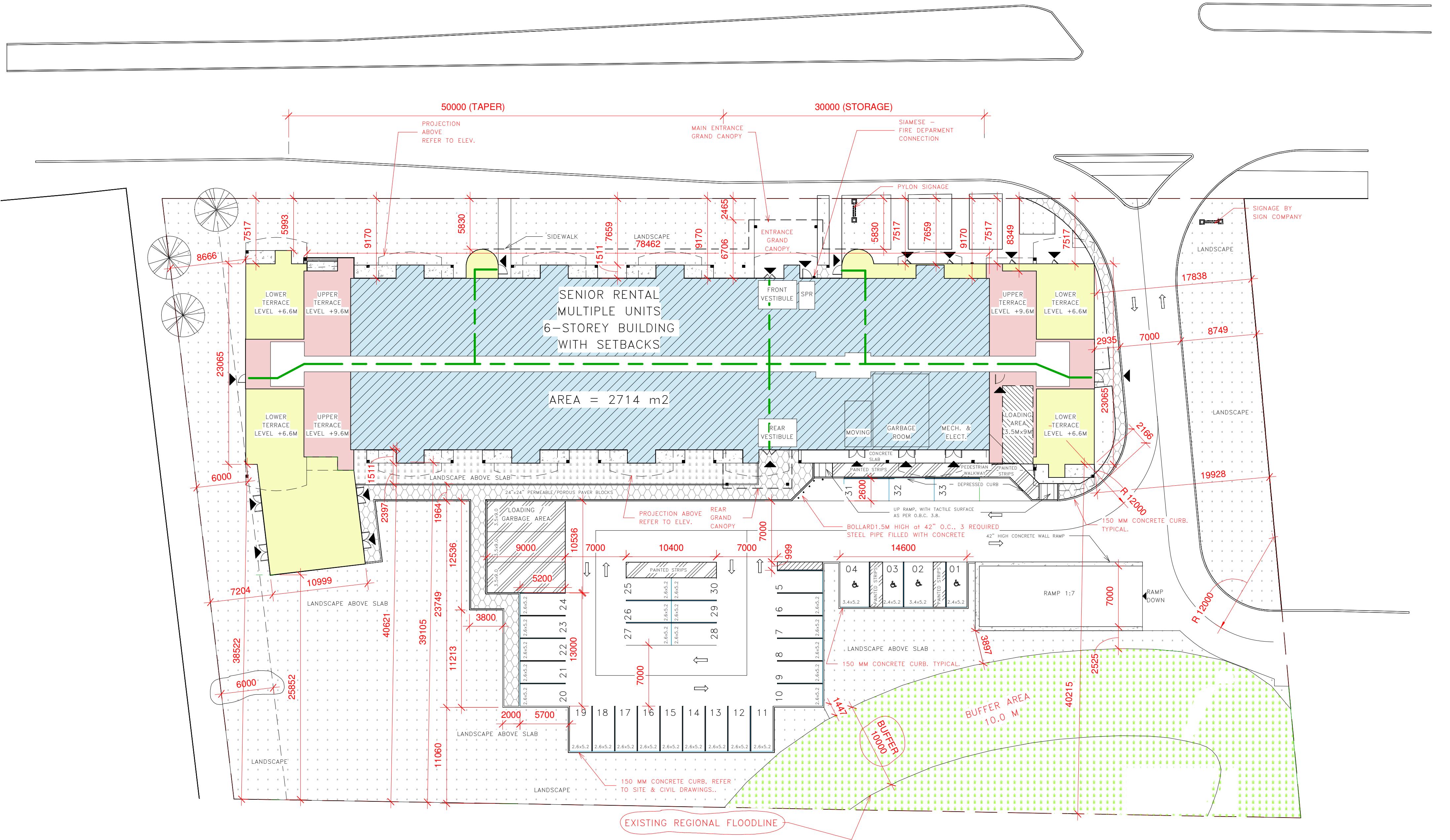
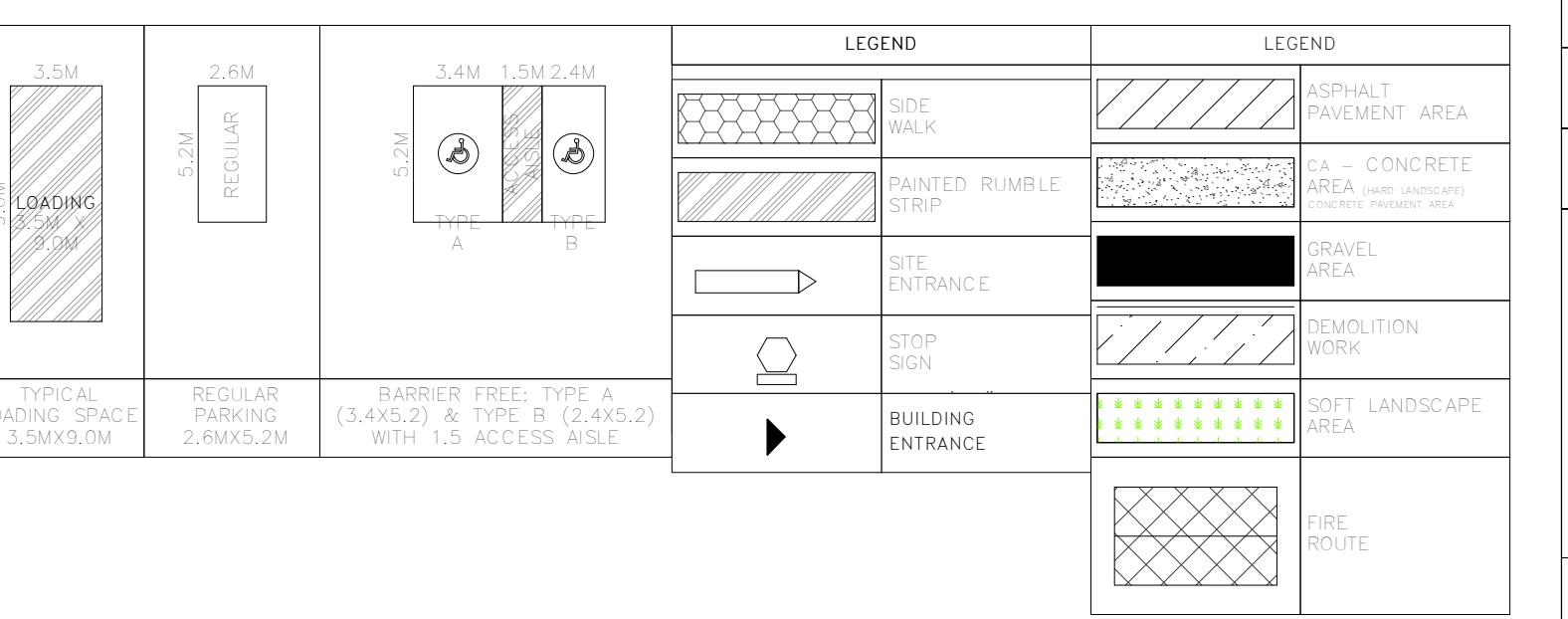
Drawn	R.G.	Design	R.G.	Project No.	1190-4286	
Check	P.A.	Check	R.A.W.	Scale	N.T.S.	Dwg.

FIG. 01

**CHINTAN VIRANI  
ARCHITECT INC.**

CHINTAN J. VIRANI  
B. ARCH. | OAA, MRAIC, AIA | COA

9898 HOLY CRESCENT,  
MISSISSAUGA,  
ONTARIO,  
CANADA N1R 1Z3  
PHONE: (519) 979-0017  
CELL: (519) 567-1800  
FAX: (519) 979-4909  
EMAIL: chintan@chintan.ca  
WWW.CHINTAN.CA



BUILT-UP AREA STATISTICS					
AREA (Sq.m)	EXISTING AREA (Sq.m)	DEMOLISH AREA (Sq.m)	TOTAL EXISTING TO REMAIN (Sq.m)	PROPOSED AREA (Sq.m)	TOTAL AREA (Sq.m)
SITE AREA	8,656.00	-	-	-	-
BASEMENT (BELOW FIRST FLOOR)	-	-	-	1,184.28	-
BASEMENT PARKING (BELOW GRADE)	-	-	-	3,682.27	-
BASEMENT TOTAL	-	-	-	4,866.55	-
FIRST FLOOR AREA	-	-	-	2,171.00	-
SECOND FLOOR AREA	-	-	-	2,085.00	-
THIRD FLOOR AREA	-	-	-	1,840.00	-
FOURTH FLOOR AREA	-	-	-	1,498.18	-
FIFTH FLOOR AREA	-	-	-	1,498.18	-
SIXTH FLOOR AREA	-	-	-	1,498.18	-
TOTAL GROSS BUILDING AREA	-	-	-	15,457.09	-
TOTAL LOT COVERAGE	-	-	-	2,171.00	2,171.00
ASPHALT PAVEMENT AREA	-	-	-	2,397.60	2,397.60
<b>LANDSCAPE AREA STATISTICS</b>					
SOIL	3,643.15	-	-	-	-
HARD LANDSCAPE CONCRETE AREA	0.444.25	-	-	-	-
POROUS PAVEMENT AREA	0.000.00	-	-	-	-
TOTAL LANDSCAPE AREA	4,087.40	-	-	4,087.40	4,087.40

SINGLE BEDROOM UNITS = 1.18 SPACES FOR RESIDENTS - TOTAL UNITS = 118 = 16 + 26 + 22 + 18 + 18 + 18  
TWO BED ROOM UNITS = 1.36 SPACES FOR RESIDENTS - TOTAL UNITS = 10  
TOTAL UNITS = 128 UNITS

PERSONAL SERVICE SHOPS/ RETAIL = 5.4 SPACES PER 100M GFA. COMMERCIAL AREA = 228.70 S.M.

PARKING SPACES REQUIRED FOR RESIDENTIAL- 1 BED ROOM UNITS = 118 X 1.18 = 139 SPACES - 1 BED UNIT

- 2 BED ROOM UNITS = 20 X 1.36 = 26 SPACES - 2 BED UNIT

- 0.20 PER UNIT = 10 X 1.36 = 14 SPACES - 2 BED UNIT

VISITOR PARKING SPACES

PARKING SPACES REQUIRED FOR SHOPS/RETAIL = 228.70 M<sup>2</sup> / 100 = 15 SPACES FOR COMMERCIAL AREA

= 2.287 X 5.4 = 12.34 = 192 SPACES

**TOTAL REQUIRED SPACES**

REQUIRED REGULAR PARKING = 188 SPACES

REQUIRED HANDICAPPED PARKING = 7 SPACES

REQUIRED TOTAL PARKING = 192 SPACES

PROVIDED HANDICAPPED PARKING = 07 SPACES (BASEMENT 3 + 4 ON GRADE)

PROVIDED REGULAR PARKING = 125 SPACES (BASEMENT 97 + 28 ON GRADE)

PROVIDED TOTAL PARKING = 132 SPACES

- LOADING SPACES REQUIRED = 1 - LOADING SPACES PROVIDED = 1

PARKING DEFICIENCY = 202-132 = 60 SPACES - VARIANCE REQUIRED OR NOT, TO DEPEND ON NEW ZONING BY-LAWS; REFER TO NEW ZONING BY-LAWS PREPARED BY WESTON CONSULTING;

**UNITS:**  
FIRST FLOOR = 16 UNITS - ALL 1 BED ROOM  
SECOND FLOOR = 28 UNITS - 2 UNITS OF 2 BED ROOM + 26 UNITS OF 1 BED ROOM  
THIRD FLOOR = 20 UNITS - 2 UNITS OF 2 BED ROOM + 22 UNITS OF 1 BED ROOM  
FOURTH FLOOR = 20 UNITS - 2 UNITS OF 2 BED ROOM + 18 UNITS OF 1 BED ROOM  
FIFTH FLOOR = 20 UNITS - 2 UNITS OF 2 BED ROOM + 18 UNITS OF 1 BED ROOM  
SIXTH FLOOR = 20 UNITS - 2 UNITS OF 2 BED ROOM + 18 UNITS OF 1 BED ROOM  
TOTAL = 128 UNITS - 8 UNITS OF 2 BED ROOM + 120 UNITS OF 1 BED ROOM

BARRIER FREE UNITS REQUIRED AS PER O.B.C. 3.8.2.1.(5)

15% OF 128 UNITS = 19 UNITS

1 UNITS OF 2 BED ROOM + 18 UNITS OF 1 BED ROOM = (1 ON 2ND FLOOR) + (3 UNITS ON EACH FLOOR)

**SITE PLAN**  
1 : 250

**A-100**  
0'-0" 10'-0" 20'-0" 30'-0" 40'-0"  
Imperial Imperial Imperial Imperial Imperial

NOTE:  
DO NOT SCALE DRAWINGS.  
ALL DIMENSIONS TO BE CHECKED AND VERIFIED  
ON THE JOB SITE.  
ANY DIMENSIONAL IRREGULARITIES TO BE REPORTED  
TO THE ARCHITECT.  
ALL DRAWINGS REMAIN THE PROPERTY OF THE  
ARCHITECT.

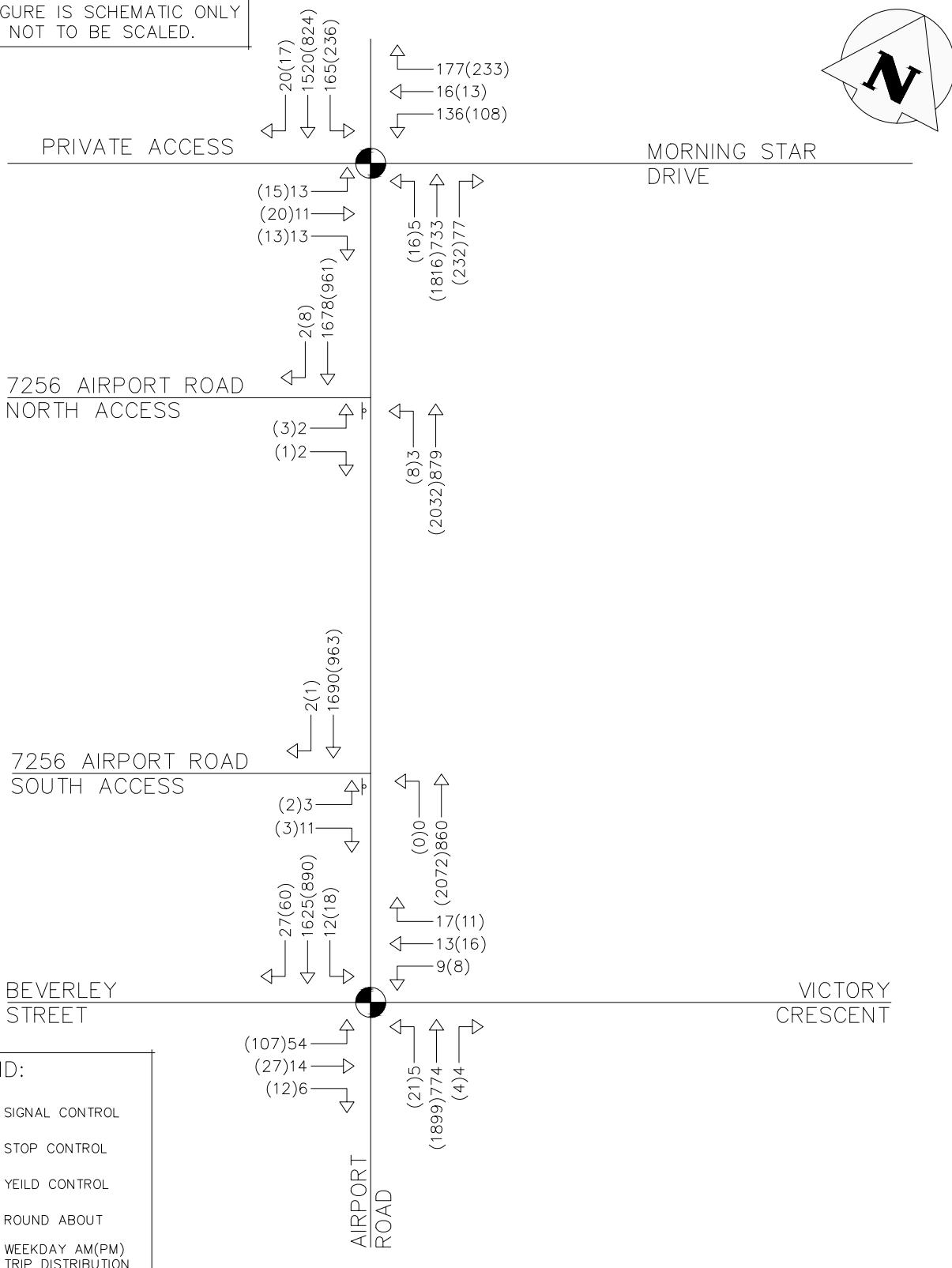
A. DETAIL NO.  
B. LOCATION SHEET  
C. DETAILED ON

BUSINESS NUMBER: 1625 DRAWN BY: A.V.  
DATE: June 2016 CHECKED BY: C.W.

DRAWING NO.

NOTE:

THIS FIGURE IS SCHEMATIC ONLY  
AND IS NOT TO BE SCALED.



LEGEND:

- SIGNAL CONTROL
- STOP CONTROL
- YEILD CONTROL
- ROUND AROUND
- XX(YY) WEEKDAY AM(PM)  
TRIP DISTRIBUTION

AIRSTAR HOLDINGS INC.  
7211 & 7233 AIRPORT ROAD  
CITY OF MISSISSAUGA

2020 EXISTING TRAFFIC VOLUMES



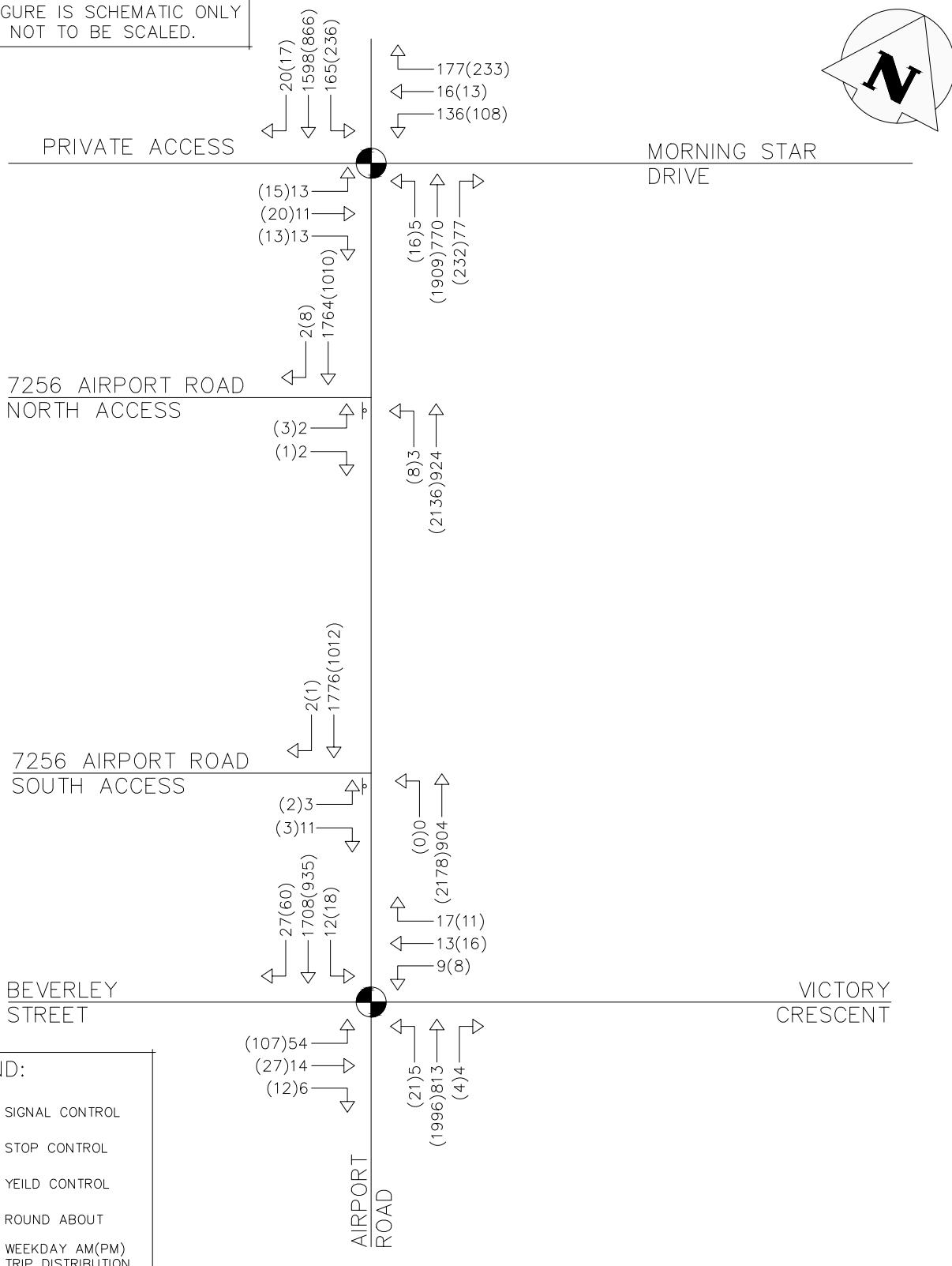
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Drawn	B.B.	Design	Project No.	1190-4286	
Check	P.A.	Check	Scale	N.T.S.	Dwg. FIG. 03

NOTE:

THIS FIGURE IS SCHEMATIC ONLY  
AND IS NOT TO BE SCALED.



AIRSTAR HOLDINGS INC.  
7211 & 7233 AIRPORT ROAD  
CITY OF MISSISSAUGA

2025 FUTURE BACKGROUND TRAFFIC VOLUMES



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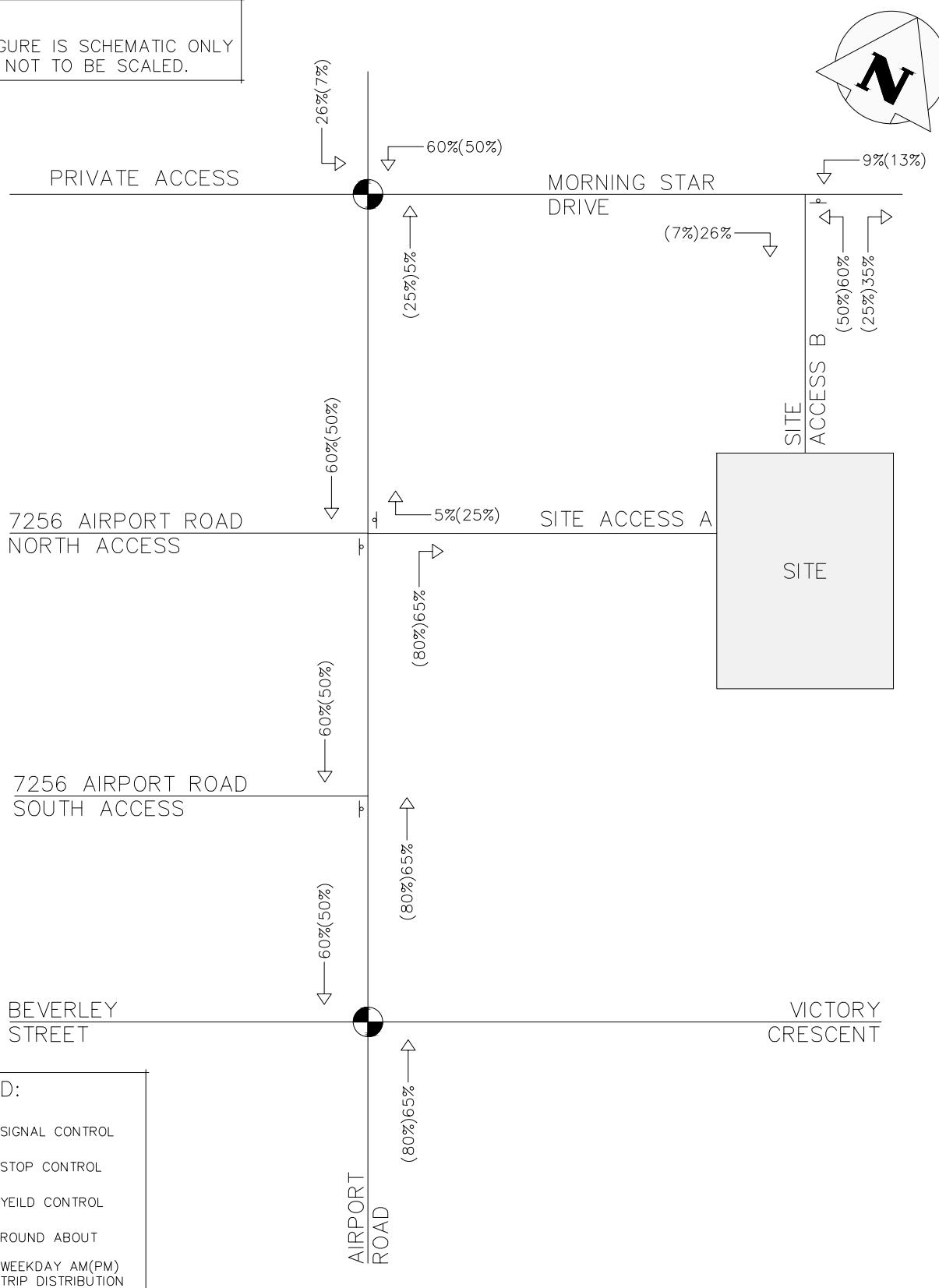
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Drawn	B.B.	Design	Project No.	1190-4286	
Check	P.A.	Check	Scale	N.T.S	Dwg.

FIG. 04

NOTE:

THIS FIGURE IS SCHEMATIC ONLY  
AND IS NOT TO BE SCALED.



LEGEND:

- SIGNAL CONTROL
- STOP CONTROL
- YIELD CONTROL
- ROUND ABOUT
- XX(YY) WEEKDAY AM(PM)  
TRIP DISTRIBUTION

AIRSTAR HOLDINGS INC.  
7211 & 7233 AIRPORT ROAD  
CITY OF MISSISSAUGA

SITE TRIP DISTRIBUTION



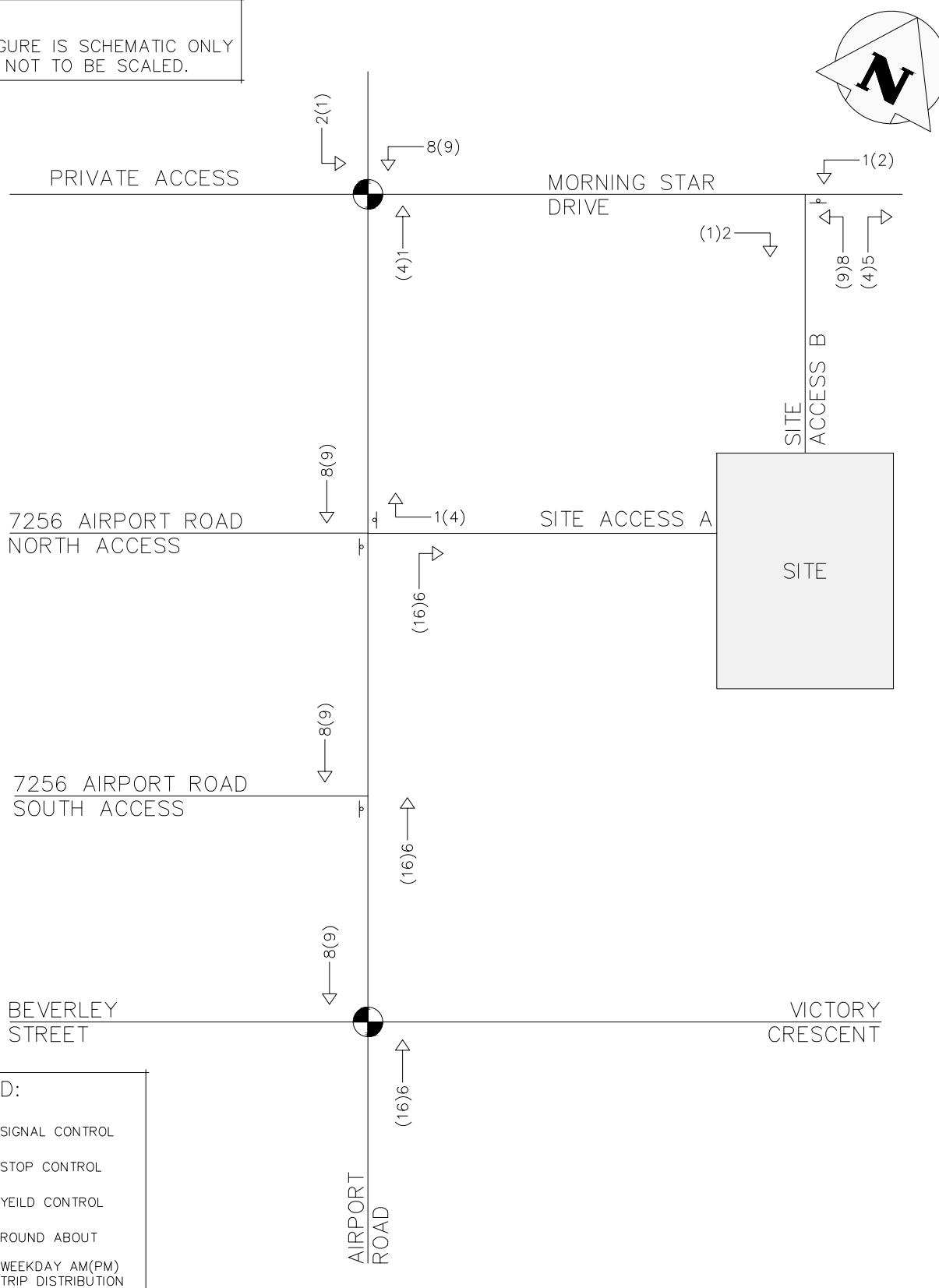
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Drawn	B.B.	Design	Project No.	1190-4286	
Check	P.A.	Check	Scale	N.T.S.	Dwg. FIG. 05

NOTE:

THIS FIGURE IS SCHEMATIC ONLY  
AND IS NOT TO BE SCALED.



AIRSTAR HOLDINGS INC.  
7211 & 7233 AIRPORT ROAD  
CITY OF MISSISSAUGA

SITE TRIP ASSIGNMENT



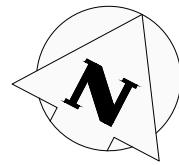
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Drawn	B.B.	Design	Project No.	1190-4286	
Check	P.A.	Check	Scale	N.T.S.	Dwg. FIG. 06

NOTE:

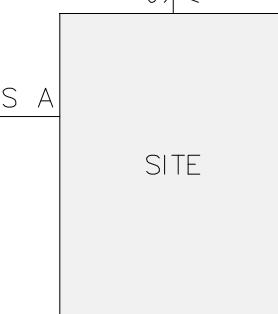
THIS FIGURE IS SCHEMATIC ONLY  
AND IS NOT TO BE SCALED.



PRIVATE ACCESS

MORNING STAR  
DRIVE

7256 AIRPORT ROAD  
NORTH ACCESS



7256 AIRPORT ROAD  
SOUTH ACCESS

BEVERLEY  
STREET

VICTORY  
CRESCENT

AIRPORT  
ROAD

LEGEND:

- SIGNAL CONTROL
- STOP CONTROL
- YIELD CONTROL
- ROUND ABOUT
- WEEKDAY AM(PM)  
TRIP DISTRIBUTION

AIRSTAR HOLDINGS INC.  
7211 & 7233 AIRPORT ROAD  
CITY OF MISSISSAUGA

EXISTING RESIDENTIAL  
TRIP REDISTRIBUTION

NOTE: The percentages are based on  
the northbound right-turning traffic  
volume at the intersection of Airport  
Road at Morning Star Drive.



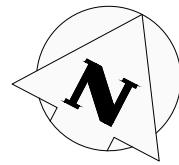
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Drawn	B.B.	Design	Project No.	1190-4286	
Check	P.A.	Check	Scale	N.T.S.	Dwg. FIG. 07

NOTE:

THIS FIGURE IS SCHEMATIC ONLY  
AND IS NOT TO BE SCALED.



PRIVATE ACCESS

MORNING STAR  
DRIVE

7256 AIRPORT ROAD  
NORTH ACCESS

SITE ACCESS A

7256 AIRPORT ROAD  
SOUTH ACCESS

SITE

BEVERLEY  
STREET

VICTORY  
CRESCENT

AIRPORT  
ROAD

LEGEND:

- SIGNAL CONTROL
- STOP CONTROL
- YIELD CONTROL
- ROUND ABOUT
- XX(YY) WEEKDAY AM(PM)  
TRIP DISTRIBUTION

AIRSTAR HOLDINGS INC.  
7211 & 7233 AIRPORT ROAD  
CITY OF MISSISSAUGA

2025 EXISTING RESIDENTIAL  
TRIP REASSIGNMENT



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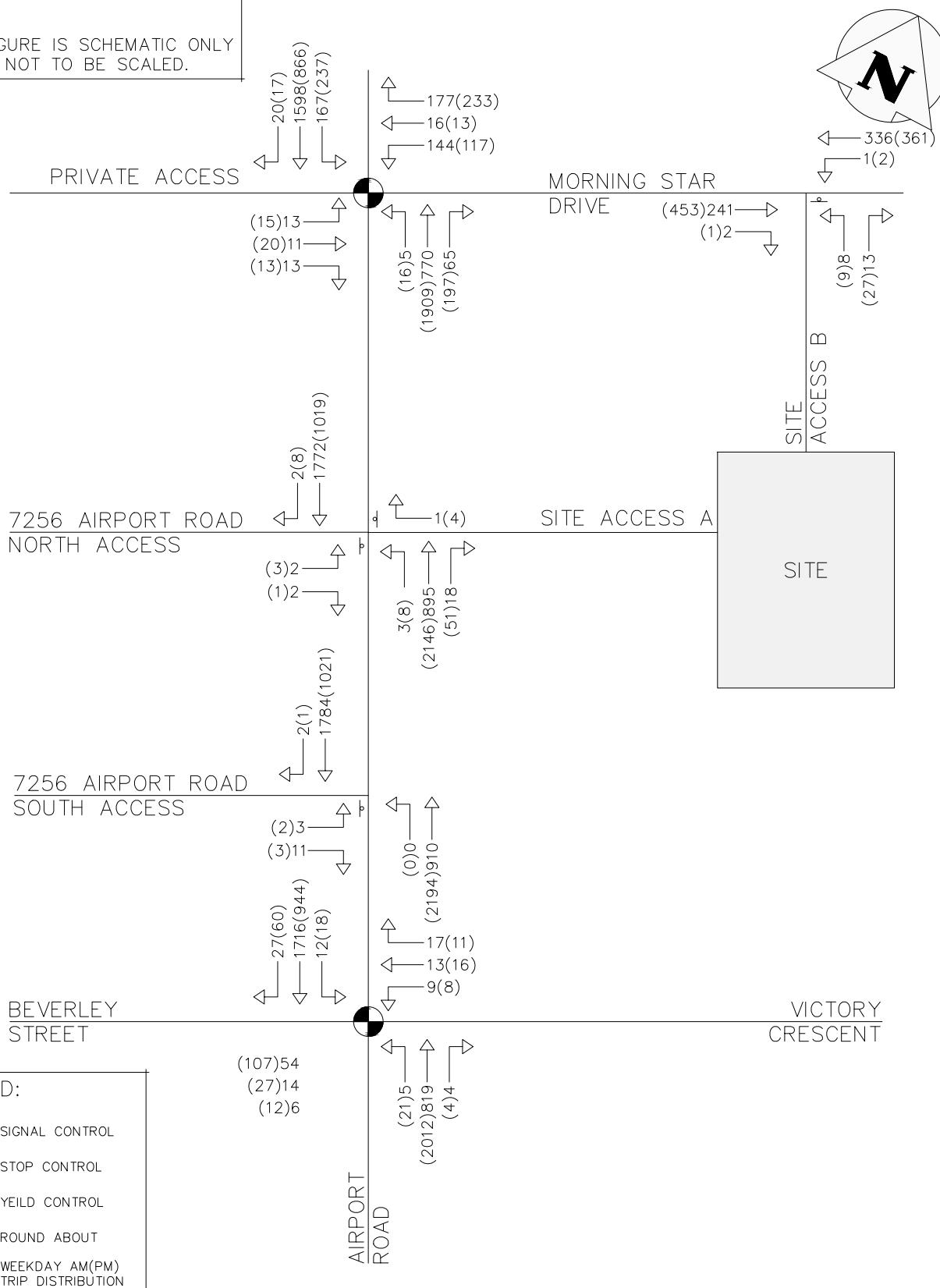
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Drawn	B.B.	Design	R.G.	Project No.	1190-4286	
Check	P.A.	Check	R.A.W.	Scale	N.T.S.	Dwg.

FIG. 08

NOTE:

THIS FIGURE IS SCHEMATIC ONLY  
AND IS NOT TO BE SCALED.



AIRSTAR HOLDINGS INC.  
7211 & 7233 AIRPORT ROAD  
CITY OF MISSISSAUGA

2025 TOTAL TRAFFIC VOLUMES



**CROZIER**  
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Drawn	B.B.	Design	Project No.	1190-4286	
Check	P.A.	Check	Scale	N.T.S.	Dwg. FIG. 9