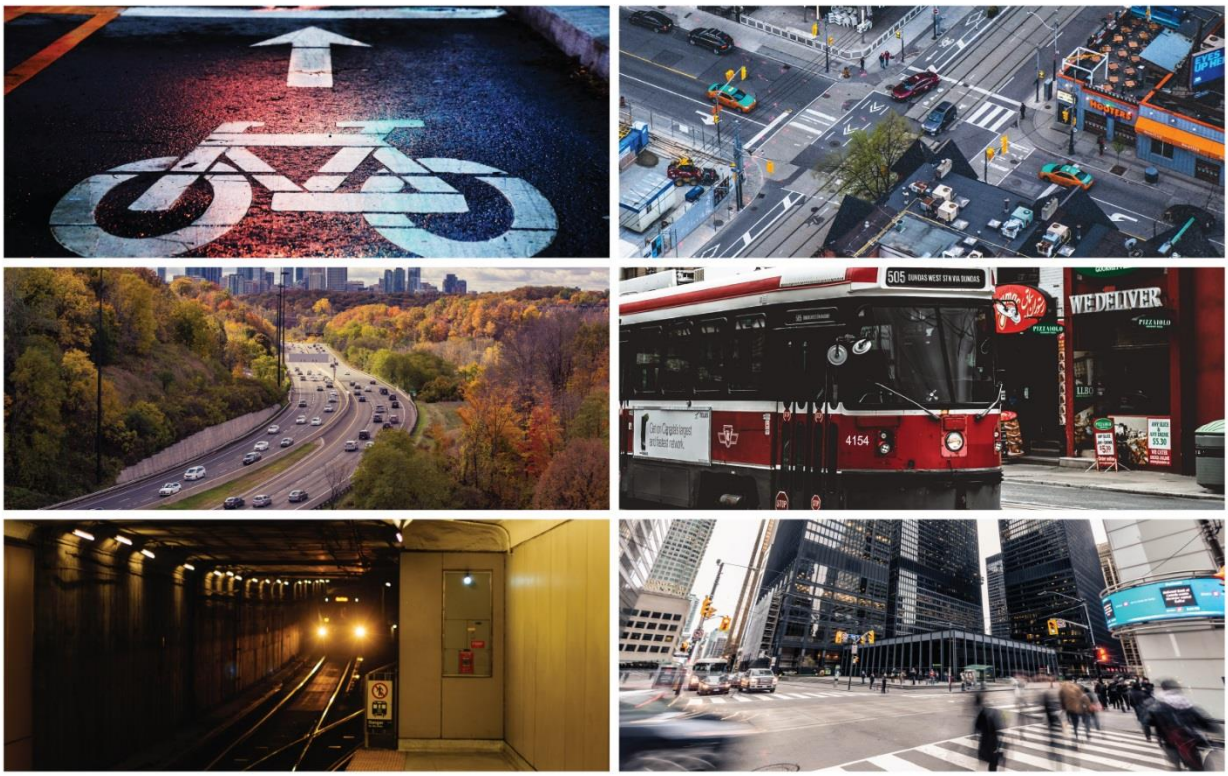
AIRFIELD DEVELOPMENTS INC. & AIRFIELD II DEVELOPMENTS INC.

6034 MAYFIELD ROAD

TRANSPORTATION IMPACT STUDY AND DEMAND MANAGEMENT PLAN

JULY 29, 2021



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TRANSPORTATION IMPACT STUDY AND DEMAND MANAGEMENT PLAN

AIRFIELD DEVELOPMENTS INC. & AIRFIELD II DEVELOPMENTS INC.

PROJECT NO.: XXX
DATE: JULY 2021

WSP
100 COMMERCE VALLEY DRIVE WEST
THORNHILL, ON, CANADA L3T 0A1

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July 29, 2021

AIRFIELD DEVELOPMENTS INC. & AIRFIELD II DEVELOPMENTS INC.
c/o Lilly Wu
Senior Development Manager
SmartCentres REIT
3200 Highway 7
Vaughan, ON L4K 5Z5

Dear Ms. Wu:

Subject: Transportation Impact Study and Demand Management Plan
6034 Mayfield Road
Town of Caledon

WSP Canada Inc. is pleased to submit this Transportation Impact Study (TIS) with respect to the subject site located on the northeast quadrant of the intersection of Airport Road and Mayfield Road, in the Town of Caledon.

The subject site is expected to generate 142 and 109 total trips during the weekday a.m. and p.m. peak hours, respectively. Our analysis indicates that the auto traffic generated by the subject site can be accommodated by the boundary roadway intersections.

We thank you for the opportunity to complete this Transportation Impact Study. We would be pleased to respond to any questions should they arise.

Yours sincerely,

Ismet Medic, BASc
Senior Project Manager
Transportation Planning
and Science

Jason Small, EIT
Jr. Transportation Planner
Transportation Planning
and Science

Binuji Liyanage
Transportation Planning Intern
Transportation Planning
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WSP ref.: XXX

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APPENDICES

1 INTRODUCTION

WSP was retained by Airfield Developments Inc. and Airfield II Developments Inc. to undertake a Transportation Impact Study (TIS) for the proposed development located at the northeast quadrant of the intersection of Airport Road & Mayfield Road in the Town of Caledon. **Figure 1.1** illustrates the site location and context.

The development proposal will consist of two industrial buildings with a combined gross floor area (GFA) of 44,535 m^2.

The development will have three vehicular driveways onto Airport Road and Mayfield Road, one of which will be a full-moves access.

Figure 1.2 illustrates the proposed site plan.

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Figure 1.1

Site Location and Context

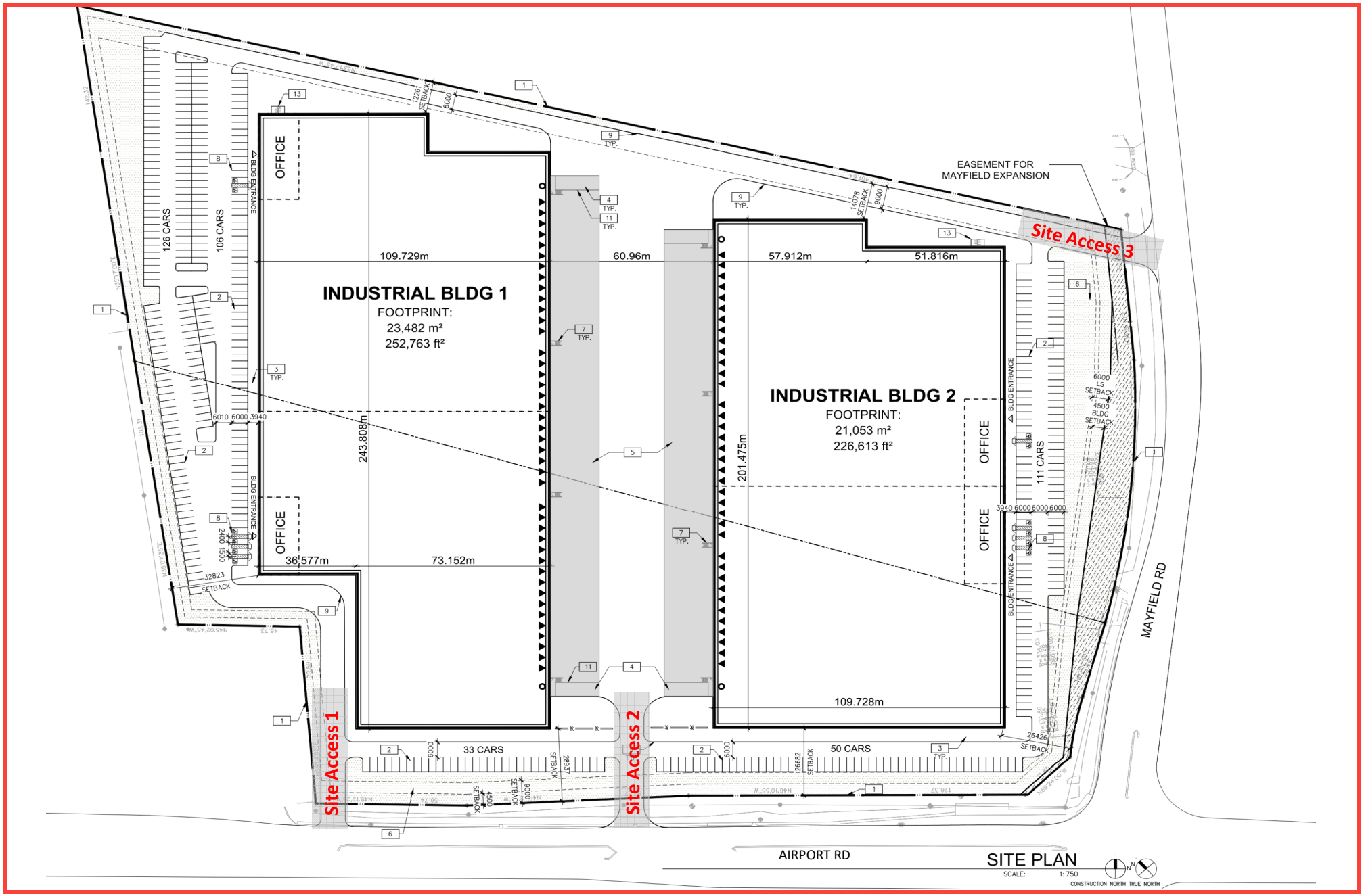


Figure 1.2

Proposed
Site Plan

2 EXISTING TRANSPORTATION CONDITIONS

2.1 BOUNDARY ROADWAYS

The following boundary roadways are within the vicinity of the subject site.

Airport Road is a north-south high capacity arterial roadway under the jurisdiction of the Regional Municipality of Peel. Within the study area, it has a four-lane cross section, with exclusive right and left turn lanes at the intersection with Mayfield Road. It has a posted speed limit of 60 km/h in the vicinity of the site.

Mayfield Road is an east-west high capacity arterial roadway under the jurisdiction of the Regional Municipality of Peel. Within the study area, it has a six-lane cross section west of Airport Road and a two-lane cross section east of Airport Road. It has exclusive right and left turn lanes at the intersection with Airport Road. Mayfield Road has a posted speed limit of 50 km/h west of Airport Road and 60 km/h east of Airport Road.

Based on the extent of the development, the intersection of Airport Road & Mayfield Road as well as all proposed site accesses have been included in the study. The existing lane configurations are shown in **Figure 2.1**.

Legend

Turning Movement

Signalized Intersection

Stop-Controlled Approach

Figure 2.1

Existing Lane Configurations

2.2 TRAFFIC DATA

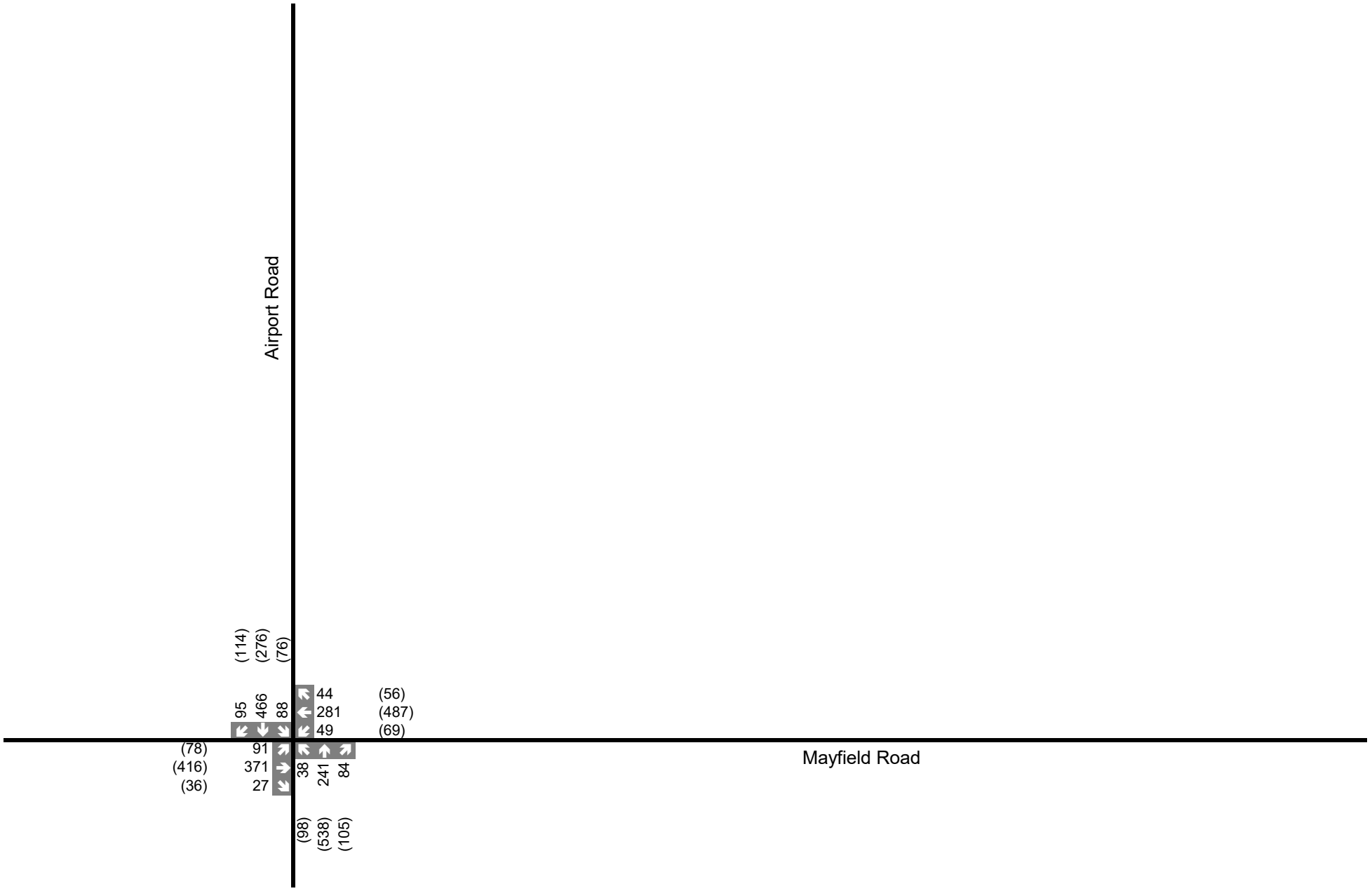
Due to the ongoing COVID-19 pandemic, no new traffic counts were conducted as part of this study. The current traffic conditions would be atypical with people working from home, virtual learning, and public health directives in place influencing travel patterns. Instead, the most recent historical traffic data from the intersection has been reviewed and found to be appropriate for use in this study.

The date and source of the turning movement count (TMC) used in this study are summarized in **Table 2.1** below. Traffic data for weekday a.m. and p.m. peak periods was evaluated. The details of the TMC are provided in **Appendix A**. The signal timing plan for the intersection was obtained from the Region of Peel and is provided in **Appendix A**.

Table 2.1: Traffic Data Information

Intersection	Date	Source
Airport Road & Mayfield Road	January 9, 2019	Spectrum Traffic Data Inc.

Given the recency of the TMC, it has been considered to adequately represent existing traffic conditions without the need for any adjustments. The existing volumes are illustrated in **Figure 2.2**.



Legend

xx A.M. Peak Hour Traffic Volumes

(xx) P.M. Peak Hour Traffic Volumes

Figure 2.2

Existing Traffic Volumes

2.3 EXISTING INTERSECTION OPERATIONS

2.3.1 TRAFFIC ANALYSIS METHODOLOGY

To analyze the existing traffic conditions in the study area, capacity analyses were undertaken using the Synchro 11 traffic analysis software. This software incorporates the methodology outlined in the Highway Capacity Manual (HCM), Transportation Research Board, 2000 and 2010. An intersection capacity analysis provides an indication of traffic operations based on calculations of volume-to-capacity (v/c) and delays for individual movements at an intersection. Level of Service (LOS) denoted by letters 'A' through 'D', represent satisfactory traffic operations. LOS denoted by the letters 'E' and 'F' represent congested traffic operations. The Level of Service definitions for signalized and unsignalized intersections are included in **Appendix B**.

2.3.2 INPUTS AND PARAMETERS

For the same reasons why new traffic counts cannot be conducted due to COVID-19, calibration surveys are not appropriate. The following evaluation parameters have been applied based on the industry best practice and the Peel's Regional Guidelines for Using Synchro 7.0 dated December 2010. All of these evaluation parameters are maintained from existing to future evaluations to allow for "Apples to Apples" comparisons.

PEAK HOUR FACTORS

The intersection-based peak hour factors (PHF) for the study intersections were calculated based on the 15-minute counts and applied in order to reflect the traffic peaking patterns of the study intersections. For the evaluation of the proposed driveway intersections, the default PHF of 0.92 was adopted.

BUS BLOCKAGES & HEAVY VEHICLE PERCENTAGES

No bus blockages were inputted for the approaches at the intersection as there are no near-side bus stops. The existing heavy vehicle percentages at each of the study intersections were inputted based on the observed heavy vehicle proportions for each movement and maintained for future evaluations. For the site access movements, heavy vehicle percentages were calculated based on the generated peak hour truck trips (see **Section 4.2**).

SATURATION FLOW RATE

The default saturation flow rate of 1,900 vphpl from Synchro has been applied as per the Regional Guidelines.

LOST TIME ADJUSTMENTS

The default lost time adjustment of 0.0 seconds from Synchro has been applied as per the Regional Guidelines.

LANE WIDTHS

In accordance with Regional Guidelines, lane widths of 3.7 metres for through lanes and 3.5 metres for exclusive turning lanes have been applied.

2.3.3 INTERSECTION CAPACITY ANALYSIS

Traffic operations were analyzed at the study intersections based on the existing volumes presented in Figure 2.2 to determine the existing intersection operations during the weekday a.m. and p.m. peak hours. **Table 2.2** outlines the existing LOS, and detailed Synchro work sheets are provided in **Appendix C**.

Table 2.2: Existing Intersection Operations

Intersection	Weekday A.M. Peak Hour		Weekday P.M. Peak Hour	
	LOS (Delay in Seconds)	Volume/ Capacity Ratio	LOS (Delay in Seconds)	Volume/ Capacity Ratio
Signalized Intersections				
Airport Road & Mayfield Road	C (29)	-	D (39)	-

1 For signalized intersections, the level of service is based on the overall delay of the intersection. Critical v/c ratios are only listed for movements with values over 0.90.

As indicated in **Table 2.2**, the study intersection is operating at an acceptable LOS 'D' or better during the weekday a.m. and p.m. peak hours. All movements are operating well within capacity.

2.3.4 QUEUING ANALYSIS

The projected queues at exclusive left-turn and right-turn lanes under existing conditions are listed in **Table 2.3**. The detailed Synchro queuing reports are provided in **Appendix C**.

The 50th percentile queue length represents the median queue reach, meaning that half of the queues that occur within a peak hour will be of this length or less. The 95th percentile queue length reach provides the queue length that would only be exceeded five percent of the time. The 95th percentile queue represents the worst-case scenario and are used as an indicator to determine where further examination of storage length is required.

Table 2.3: Existing Intersection Queue Lengths

Intersections	Lane	Storage Length (m)	95th Percentile Queue (m) [50th Percentile Queue (m)]	
			AM Peak Hour	PM Peak Hour
Airport Road & Mayfield Road	EBL	57	24	18
	EBR	55	1	3
	WBL	32	21	24
	WBR	65	2	5
	NBL	94	12	32
	NBR	60	12	15
	SBL	109	25	26
	SBR	100	13	15

1 50th percentile queues are only shown if the 95th percentile queue exceeds its available storage length.

As shown above, all of the existing 95th percentile queues are contained within their available storage lengths.

2.4 PUBLIC TRANSIT

The subject site is situated in an area served by Brampton Transit, which operates the following local bus service:

Route 30 – Airport Road operates along Airport Road from Davis Lane in Caledon to Westwood Mall Terminal in Mississauga.

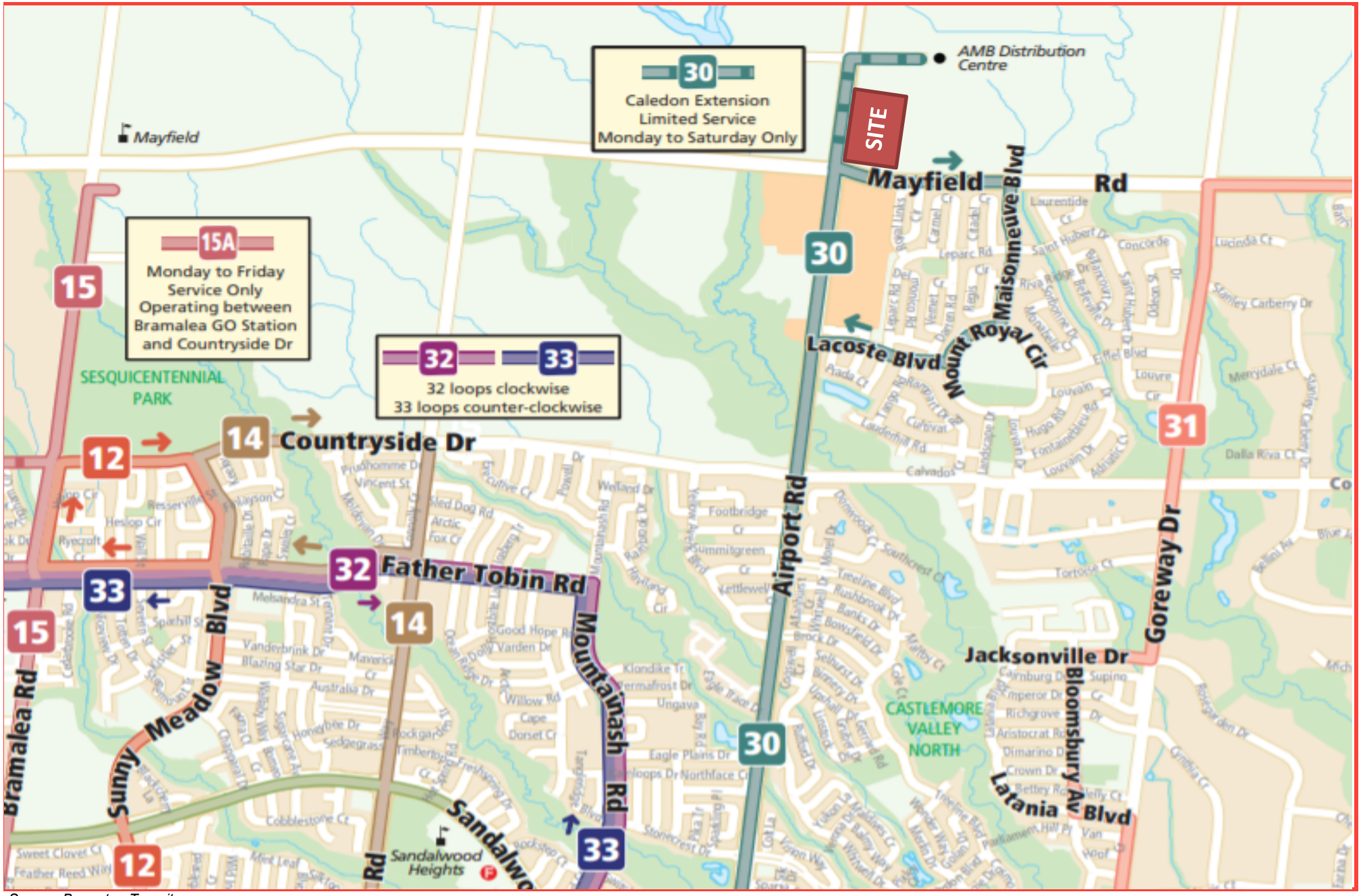
Table 2.4 summarizes the above-noted transit route in operation, along with its approximate headways throughout the service period. **Figure 2.3** illustrates the transit service within the study area.

Table 2.4: Existing Transit Services within the Study Area

Route	Transit Service Operating Headway				
	A.M. Peak	Weekday Midday	P.M. Peak	Weekday Evening	Saturday Midday
Route 30 – Airport Road	10 minutes	10-20 minutes	10 minutes	10 minutes	30 minutes

2.5 ACTIVE TRANSPORTATION INFRASTRUCTURE

Sidewalks or multi-use pathways are provided on both sides of Airport Road and along the south side of Mayfield Road west of Airport Road. No exclusive cycling facilities are located within the study area.



Source: Brampton Transit

wsp

Figure 2.3

Existing
Transit Services

3 FUTURE BACKGROUND TRAFFIC CONDITIONS

3.1 TIME FRAME

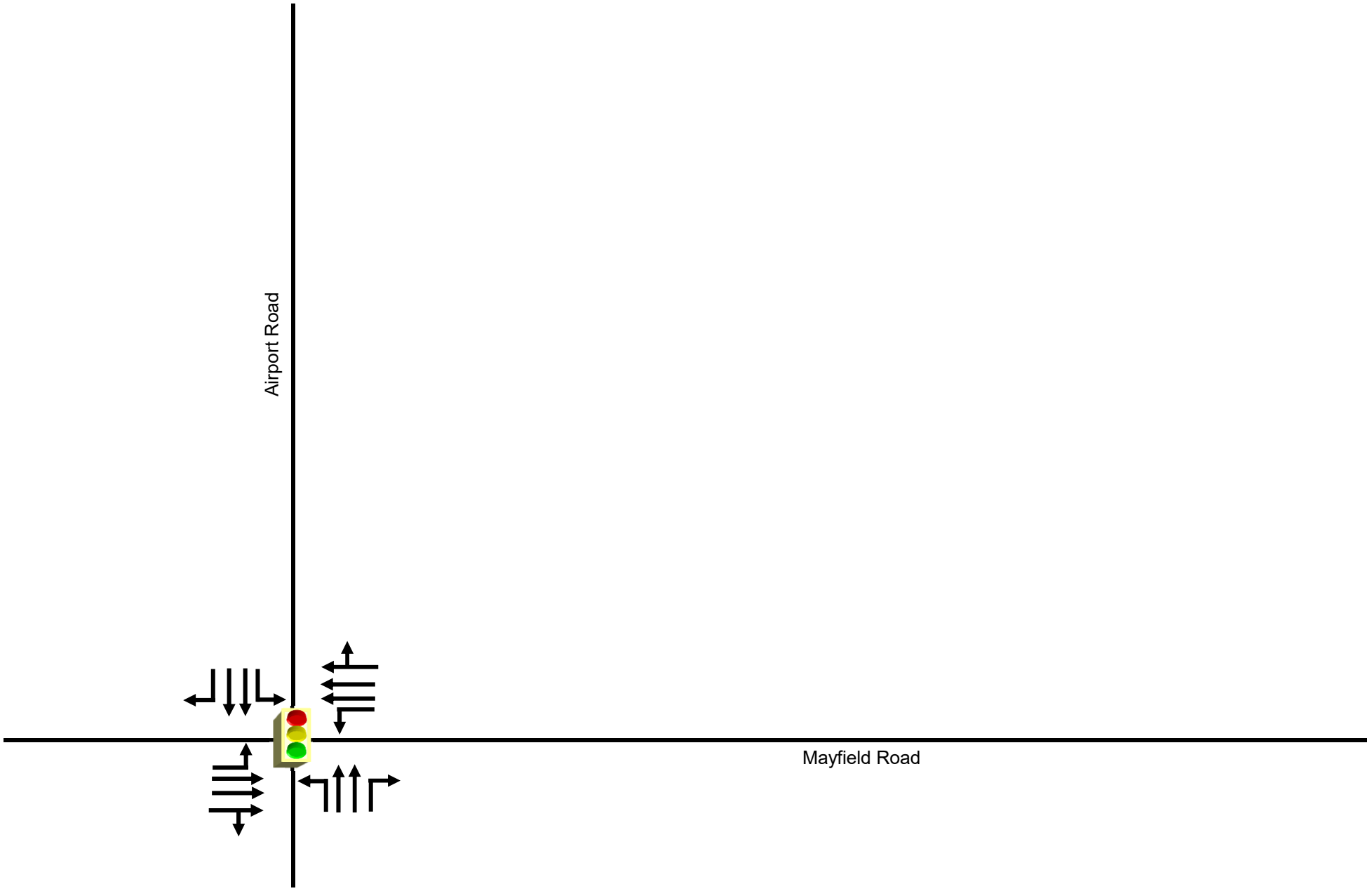
The subject development is expected to be built within five years. As such, horizon years of 2026 (full build-out) and 2031 (five years post build-out) will be assessed.

3.2 PLANNED TRANSPORTATION NETWORK IMPROVEMENTS

Based on the Region of Peel's 2019 Long Range Transportation Plan and 2021 Capital Program, Mayfield Road is expected to be widened east of Airport Road from two to six lanes in 2023. This will complement the recently completed widening west of Airport Road.

WSP is not aware of any changes or improvements to transit services, sidewalks, or cycling facilities in the area that are planned to be implemented by 2031. Therefore, future transit and active transportation network conditions are assumed to remain the same as existing conditions.

Figure 3.1 illustrates the lane configurations analyzed under future background conditions.



Legend

Turning Movement

Signalized Intersection

Stop-Controlled Approach

Figure 3.1

Future Background Lane Configurations

3.3 BACKGROUND CORRIDOR TRAFFIC GROWTH

The general growth rates applicable to the study area road network were determined using a historical turning movement count (included in **Appendix A**) that was conducted at the intersection of Airport Road & Mayfield Road in 2013. Based on a volume comparison between this count and the count used to analyze existing conditions, annual growth rates were calculated for each approach direction during each peak hour, as shown in **Table 3.1**.

Table 3.1: Corridor Growth Rates

Direction	A.M. Peak Hour	P.M. Peak Hour
Northbound	3.3 %	1.3 %
Southbound	-3.8 %	4.9 %
Eastbound	-6.9 %	-5.1 %
Westbound	-8.0 %	-2.4 %

Based on the above review, the growth rates that were found to be positive were applied to the applicable movements at the intersection for both of the horizon years. As a conservative measure, no negative growth rates were applied. The resulting grown traffic volumes are shown in **Figures 3.2 and 3.3** for the 2026 and 2031 horizon years, respectively.

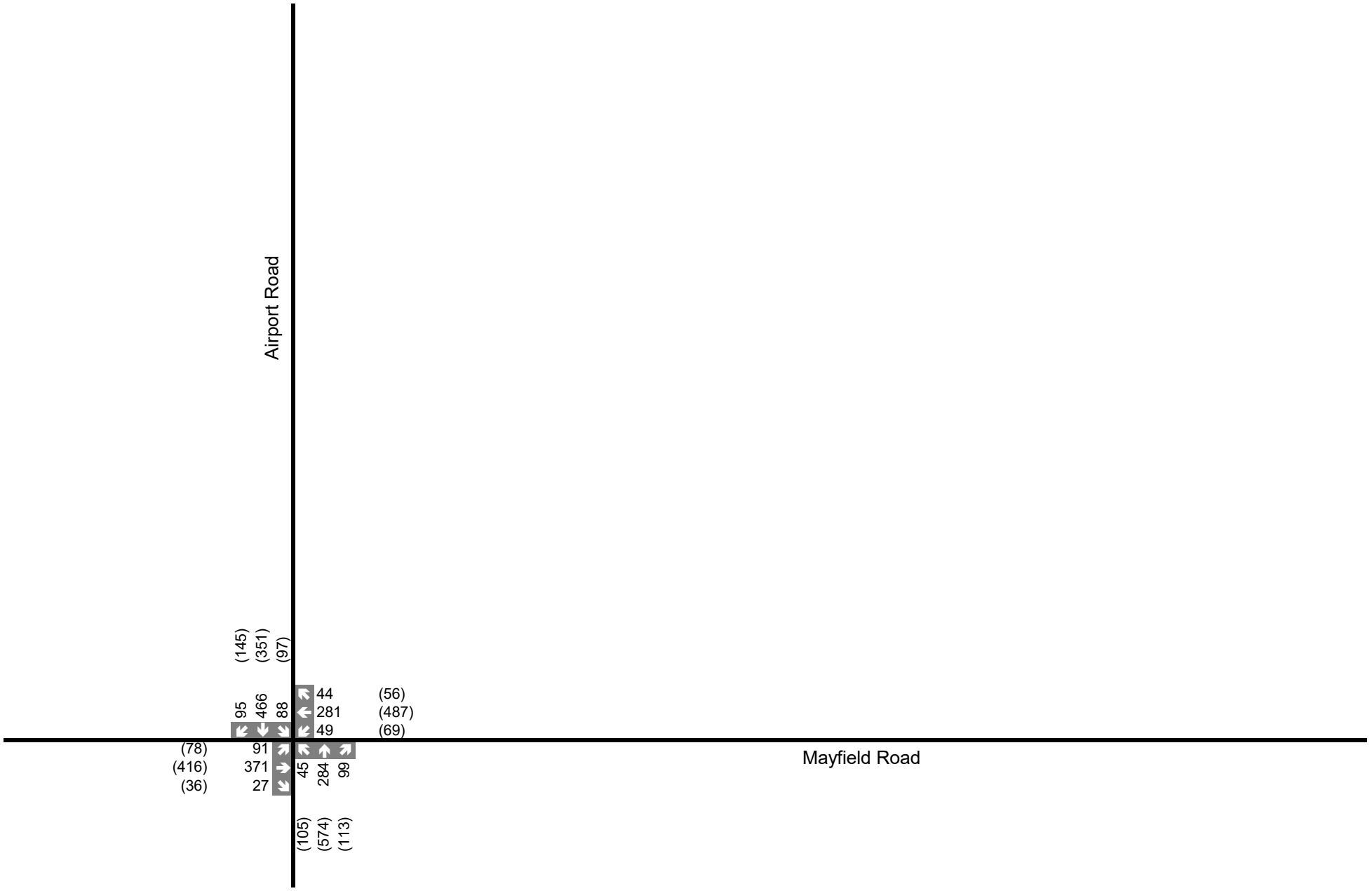
3.4 BACKGROUND DEVELOPMENTS

In addition to the general growth noted in Section 3.3, traffic generated by background developments has also been considered. Two background developments were identified within the study vicinity and have been included in this study. **Table 3.2** details the background developments.

Table 3.2: Background Development Information

Location	Development Statistics	Source
5603 Mayfield Road & 11825 Torbram Road	856.5-1101.5 residential units; 1.463 hectares of retail and mixed-use components; part of 2 schools	Stringham East Plan, Letter Report, September 2019, Cole Engineering
Southeast of Mayfield Road and Airport Road	14 commercial buildings with a GFA of 20,257 m^2	Proposed Commercial Development, Minuk Contracting Company Ltd., Traffic Impact and Parking Study,December 2019, Candevcon

The traffic related to the background developments in Table 3.2 were extracted from their respective studies. It is assumed that all background developments will be built and occupied by the 2026 horizon. **Figure 3.4** illustrates the traffic generated by the background developments. Though the Stringham East Plan TIS did not share any intersections with the study area, it was assumed all site traffic generated along Mayfield Road would travel east along the corridor past the current site access. All site traffic generated along Airport Road was also assumed to travel north past the current site accesses.



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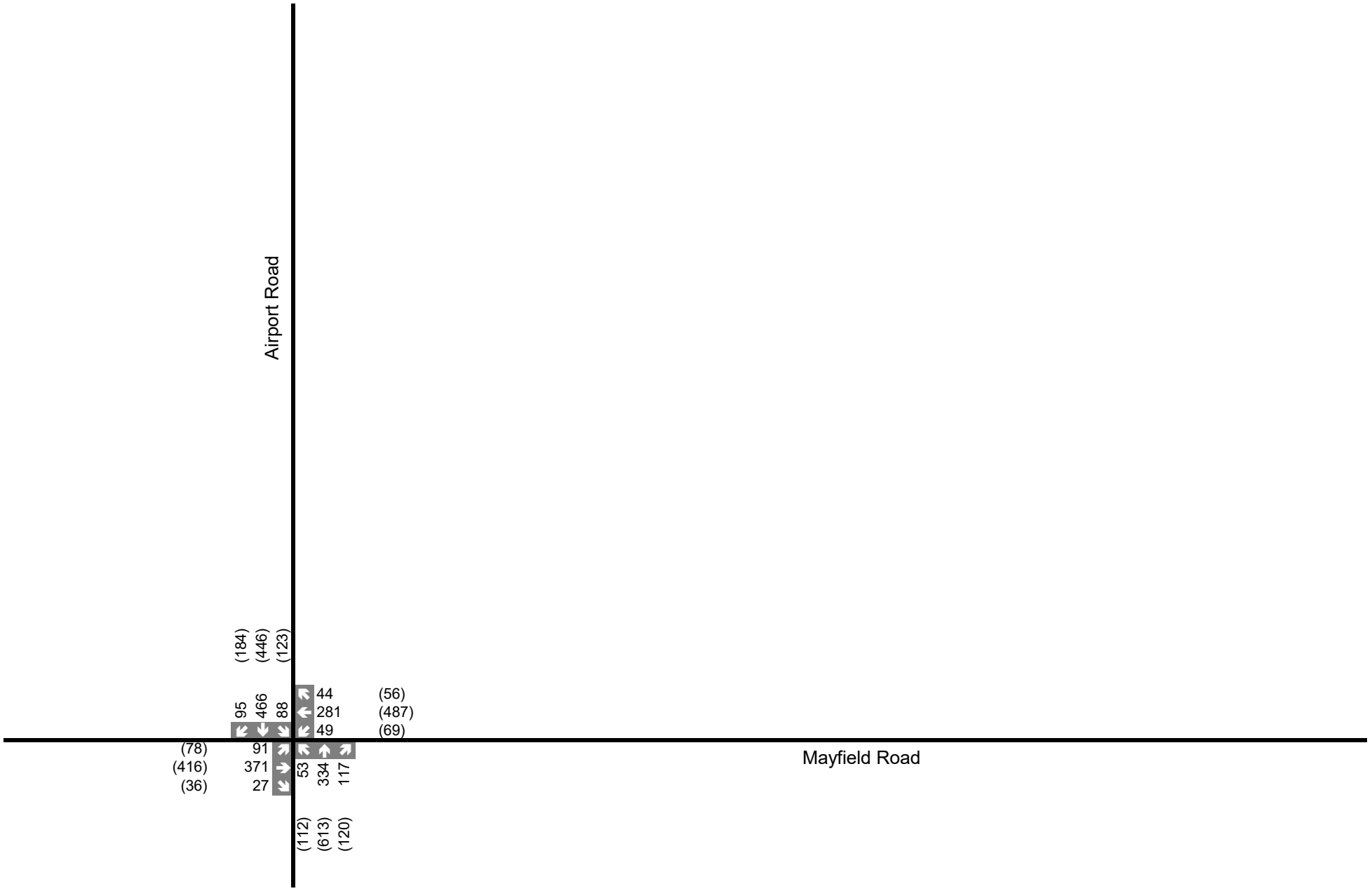
xx A.M. Peak Hour Traffic Volumes

(xx) P.M. Peak Hour Traffic Volumes

Figure 3.2

2026 Grown Traffic Volumes



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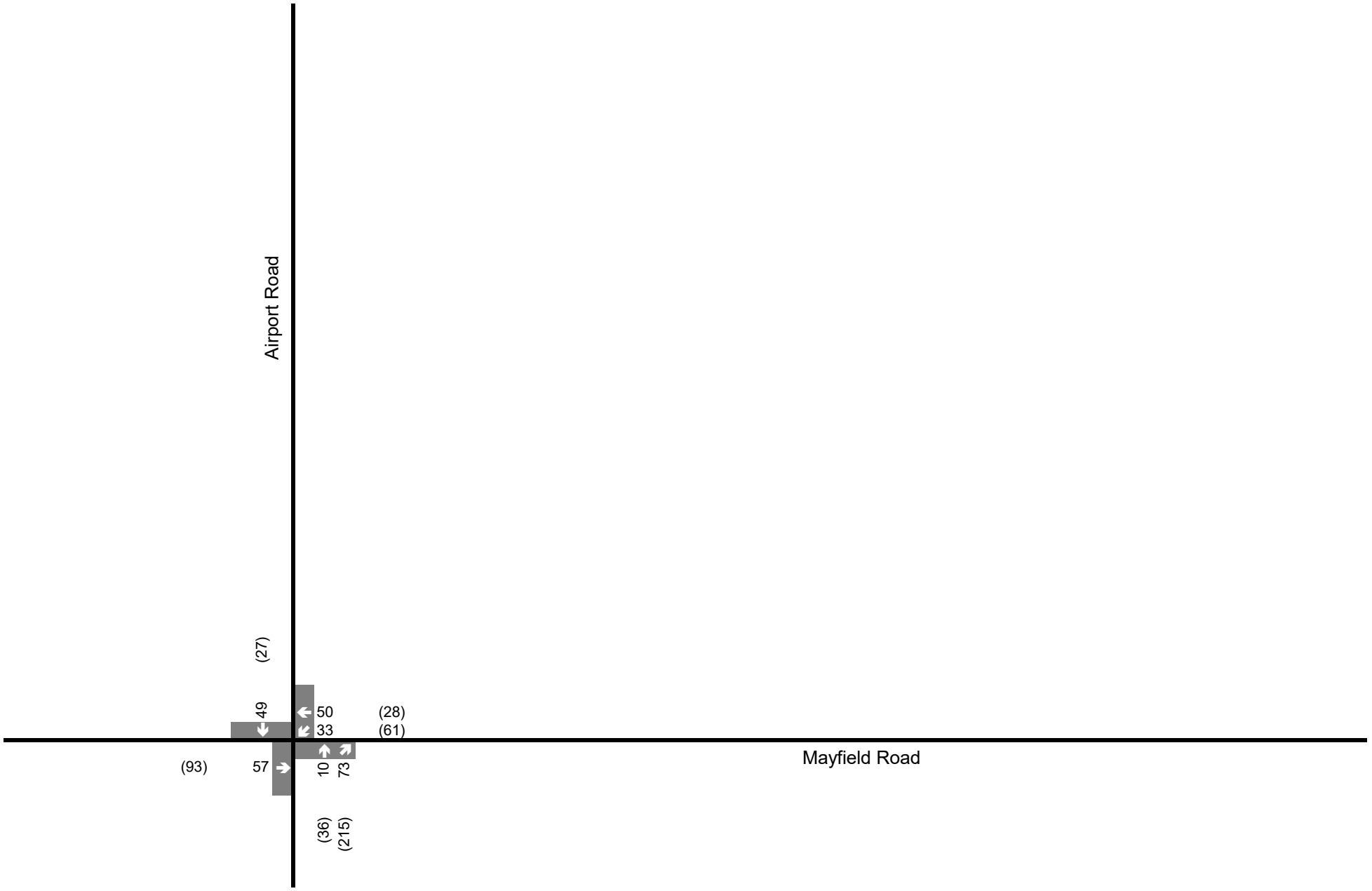
xx A.M. Peak Hour Traffic Volumes

(xx) P.M. Peak Hour Traffic Volumes

Figure 3.3

2031 Grown Traffic Volumes



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xx A.M. Peak Hour Traffic Volumes

(xx) P.M. Peak Hour Traffic Volumes

Figure 3.4

Background Development Traffic Volumes

3.5 2026 FUTURE BACKGROUND TRAFFIC OPERATIONS

3.5.1 INTERSECTION CAPACITY ANALYSIS

The 2026 future background traffic volumes were derived by superimposing the background development traffic volumes in Figure 3.4 onto the grown traffic volumes in Figure 3.2. The resulting future background volumes are shown in **Figure 3.5**, which are the basis of the 2026 future background intersection evaluation.

The resulting levels of service are outlined in **Table 3.3** with the details related to the intersection operations provided in **Appendix D**. The signal timings remain as under existing conditions.

Table 3.3: 2026 Future Background Intersection Operations

Intersection	Weekday A.M. Peak Hour		Weekday P.M. Peak Hour	
	LOS (Delay in Seconds)	Volume/ Capacity Ratio	LOS (Delay in Seconds)	Volume/ Capacity Ratio
Signalized Intersections				
Airport Road & Mayfield Road	C (30)	-	C (32)	-

1 For signalized intersections, the level of service is based on the overall delay of the intersection. Critical v/c ratios are only listed for movements with values over 0.90.

During 2026 future background conditions, the study intersection is projected to operate at an acceptable LOS 'C' during the weekday a.m. and p.m. peak hours. This represents a minimal increase in delays compared to existing conditions during the a.m. peak hour and a decrease in delays compared to existing conditions during the p.m. peak hour. All movements continue to operate well within capacity.

3.5.2 QUEUING ANALYSIS

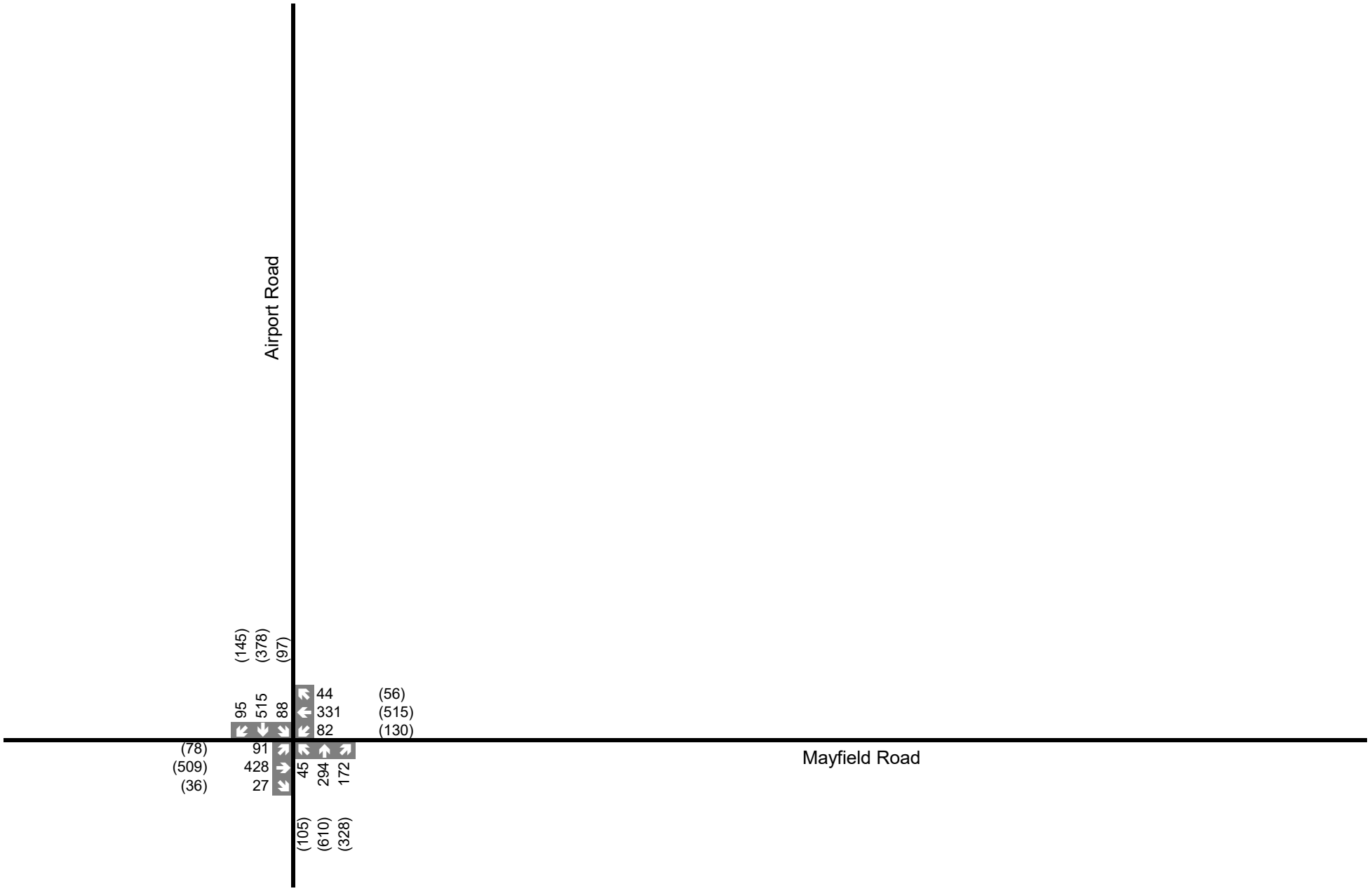
The projected queues at exclusive left-turn and right-turn lanes under 2026 future background conditions are listed in **Table 3.4**. The detailed Synchro queuing reports are provided in **Appendix D**.

Table 3.4: 2026 Future Background Intersection Queue Lengths

Intersections	Lane	Storage Length (m)	95th Percentile Queue (m) [50th Percentile Queue (m)]	
			AM Peak Hour	PM Peak Hour
Airport Road & Mayfield Road	EBL	57	27	21
	WBL	32	38 [23]	55 [35]
	NBL	94	13	30
	NBR	60	16	34
	SBL	109	23	28
	SBR	100	12	16

1 50th percentile queues are only shown if the 95th percentile queue exceeds its available storage length.

As shown above, all of the 95th percentile queues are contained within their available storage lengths with the exception of the westbound left-turn lane at Airport Road & Mayfield Road. However, this analysis was conducted under the assumption that all storage lengths would remain the same as under existing conditions. Since the westbound approach is to be reconfigured as part of the planned widening of Mayfield Road, the opportunity exists for the Region to increase the storage length of the westbound left-turn lane. As such, it is recommended that the storage length be increased to accommodate these expected queues.



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xx A.M. Peak Hour Traffic Volumes

(xx) P.M. Peak Hour Traffic Volumes

Figure 3.5

2026 Future Background Traffic Volumes

3.6 2031 FUTURE BACKGROUND TRAFFIC OPERATIONS

3.6.1 INTERSECTION CAPACITY ANALYSIS

The 2031 future background traffic volumes were derived by superimposing the background development traffic volumes in Figure 3.4 onto the grown traffic volumes in Figure 3.3. The resulting future background volumes are shown in **Figure 3.6**, which are the basis of the 2031 future background intersection evaluation.

The resulting levels of service are outlined in **Table 3.5** with the details related to the intersection operations provided in **Appendix E**. The signal timings remain as under existing conditions.

Table 3.5: 2031 Future Background Intersection Operations

Intersection	Weekday A.M. Peak Hour		Weekday P.M. Peak Hour	
	LOS (Delay in Seconds)	Volume/ Capacity Ratio	LOS (Delay in Seconds)	Volume/ Capacity Ratio
Signalized Intersections				
Airport Road & Mayfield Road	C (29)	-	C (32)	-

1 For signalized intersections, the level of service is based on the overall delay of the intersection. Critical v/c ratios are only listed for movements with values over 0.90.

During 2031 future background conditions, the study intersection is projected to operate at an acceptable LOS 'C' during the weekday a.m. and p.m. peak hours. This represents a minimal decrease in delays compared to 2026 future background conditions during the a.m. peak hour and no change in delays compared to 2026 future background conditions during the p.m. peak hour. All movements continue to operate well within capacity.

3.6.2 QUEUING ANALYSIS

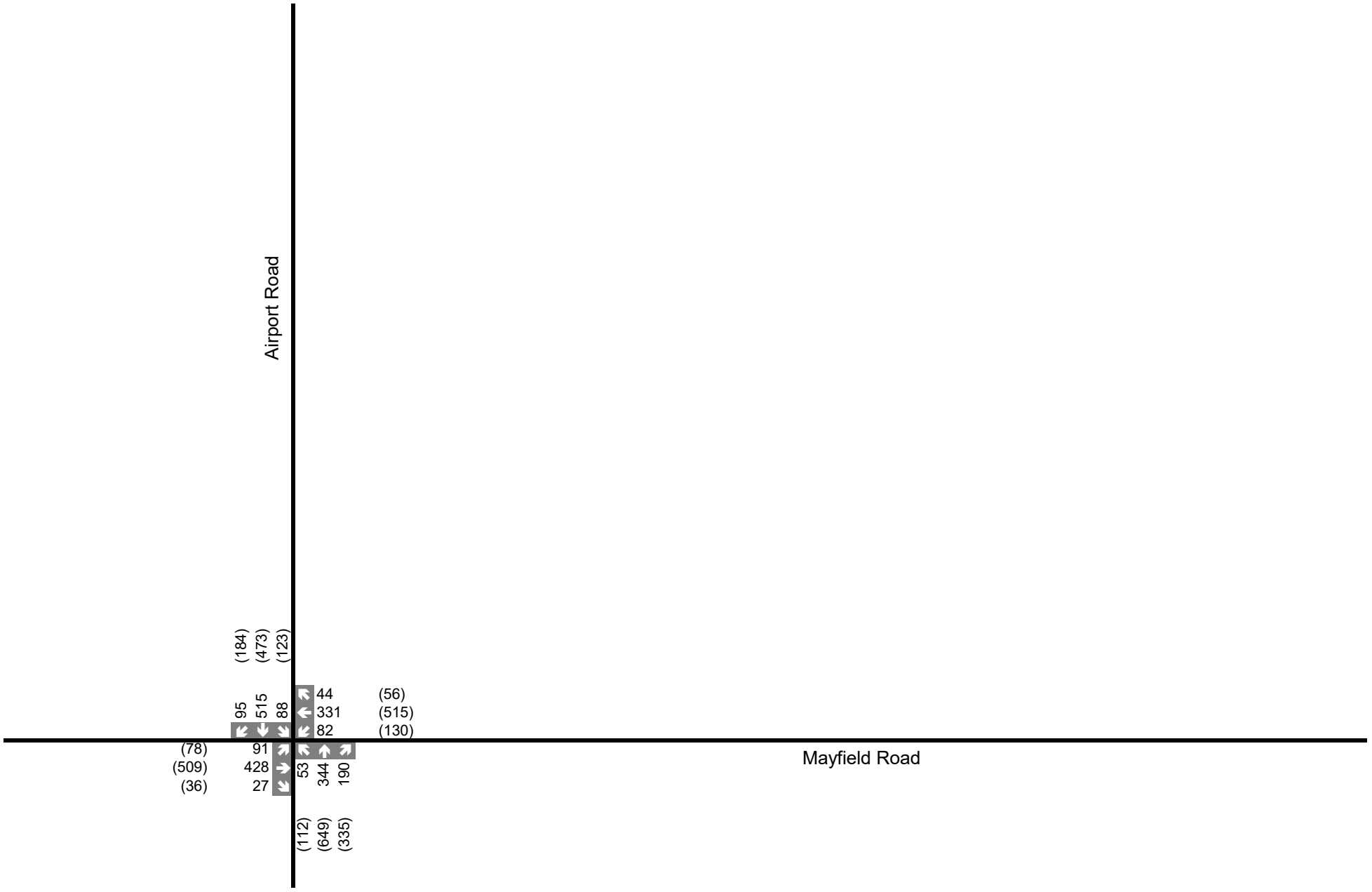
The projected queues at exclusive left-turn and right-turn lanes under 2031 future background conditions are listed in **Table 3.6**. The detailed Synchro queuing reports are provided in **Appendix E**.

Table 3.6: 2031 Future Background Intersection Queue Lengths

Intersections	Lane	Storage Length (m)	95th Percentile Queue (m) [50th Percentile Queue (m)]	
			AM Peak Hour	PM Peak Hour
Airport Road & Mayfield Road	EBL	57	27	21
	WBL	32	38 [23]	55 [35]
	NBL	94	15	31
	NBR	60	17	42
	SBL	109	23	35
	SBR	100	12	19

1 50th percentile queues are only shown if the 95th percentile queue exceeds its available storage length.

As shown above, all of the 95th percentile queues continue to be contained within their available storage lengths with the continuing exception of the westbound left-turn at Airport Road & Mayfield Road, whose queues remain similar to those under 2026 future background conditions.



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xx A.M. Peak Hour Traffic Volumes

(xx) P.M. Peak Hour Traffic Volumes

Figure 3.6

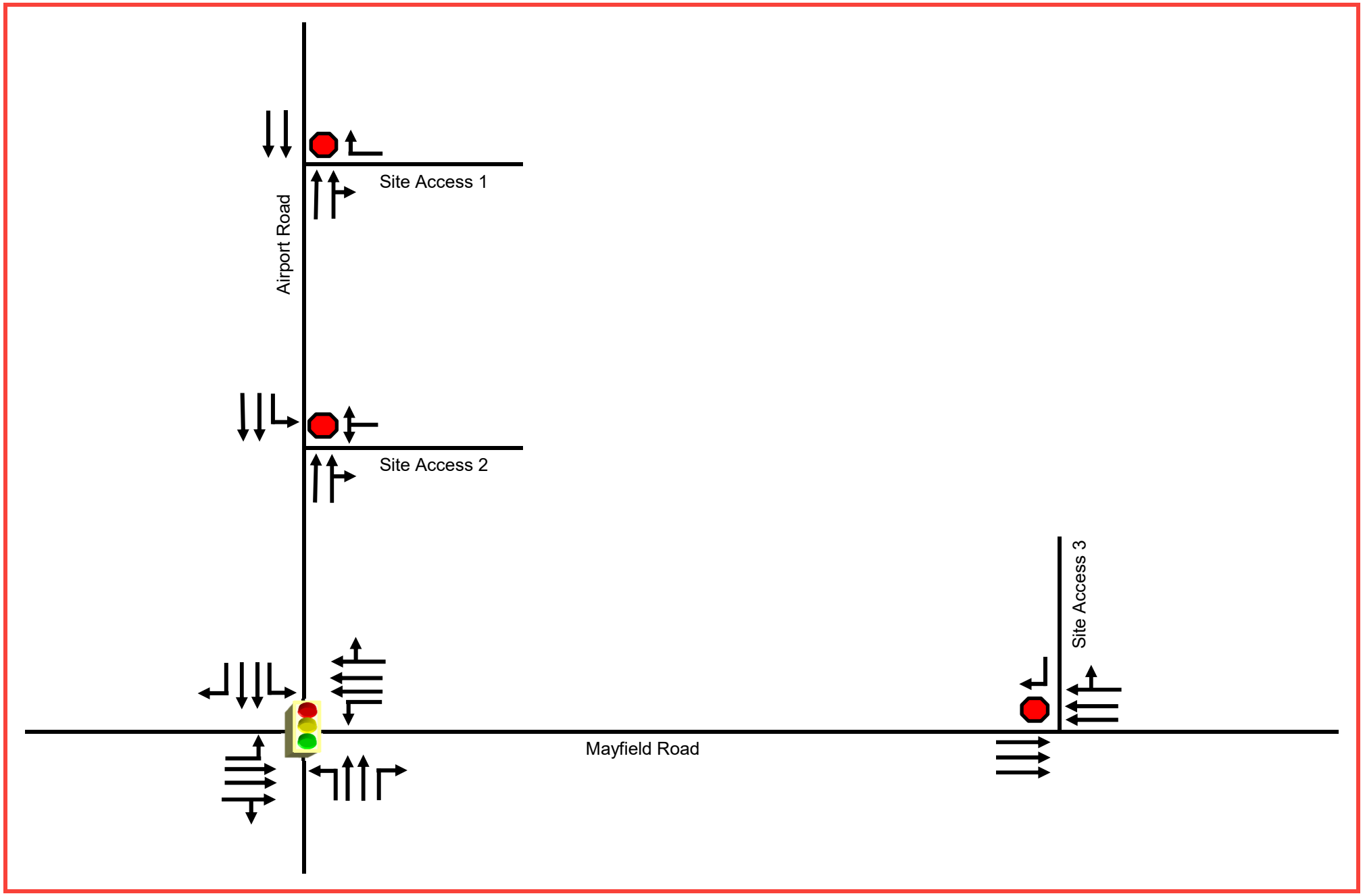
2031 Future Background Traffic Volumes

4 SITE-GENERATED TRAFFIC

4.1 SITE ACCESSES

At full buildout, the proposed development will feature three vehicular driveways connecting to Airport Road and Mayfield Road as illustrated in the site plan (Figure 1.2). Site accesses 1 and 3 will operate as right-in/right-out access while site access 2 will operate with full-moves. For site access 2, WSP is proposing a southbound left-turn auxiliary lane with, in accordance with Transportation Association of Canada guidelines, a storage length of 77 metres and a taper of 60 metres. All three site accesses are proposed to be stop-controlled.

The lane configurations under future total conditions are illustrated in **Figure 4.1**.



Legend

Turning Movement

Signalized Intersection

Stop-Controlled Approach

Figure 4.1

Future Total Lane Configurations

4.2 TRIP GENERATION

The trips generated by the proposed development during the weekday a.m. and p.m. peak hours were estimated using the trip generation equations outlined in the Institute of Transportation Engineers (ITE) *Trip Generation Manual, 10th Edition*. As both warehouse and general industrial uses are currently being contemplated for the development, trip generation estimates using the ITE Land Use Codes 150 (Warehousing) and 110 (General Light Industrial) are compared in **Table 4.1**. Since, as shown in the table, general industrial uses are expected to generate a greater number of peak hour trips, the trip generation estimate for this use was conservatively adopted for this study.

It should be noted that these equations include both vehicle and truck trips to the development; truck trips were assumed to account for 13% of total peak hour trips based on truck trip generation information available from the ITE.

Based on Transportation Tomorrow Survey (TTS) 2016 data for employment trips to/from zones 3014, 3015, 3441, and 3442, it was determined that there was very minimal use of non-auto modes of travel. As such, no mode share adjustments were applied to the ITE-derived trips.

Table 4.1: Site Generated Trips

ITE Land Use (Code)		Weekday A.M. Peak Hour			Weekday P.M. Peak Hour		
		In	Out	Total	In	Out	Total
Warehousing (150)	Equation (X=1000 ft²)	T = 0.12 X + 25.32			T = 0.12 X + 27.82		
	Directional Splits	77%	23%	100%	27%	73%	100%
	Trips (479,375 ft²)	**64**	**19**	**83**	**23**	**62**	**85**
General Light Industrial (110)	Equation (X=1000 ft²)	Ln(T) = 0.74 Ln(X) + 0.39			Ln(T) = 0.69 Ln(X) + 0.43		
	Directional Splits	88%	12%	100%	13%	87%	100%
	Trips (479,375 ft²)	**125**	**17**	**142**	**14**	**95**	**109**
	Vehicle Trips (87%)	109	15	124	12	83	95
	Truck Trips (13%)	16	2	18	2	12	14

As presented above, the proposed development is forecasted to generate **142 and 109 total trips** during the a.m. and p.m. peak hours, respectively.

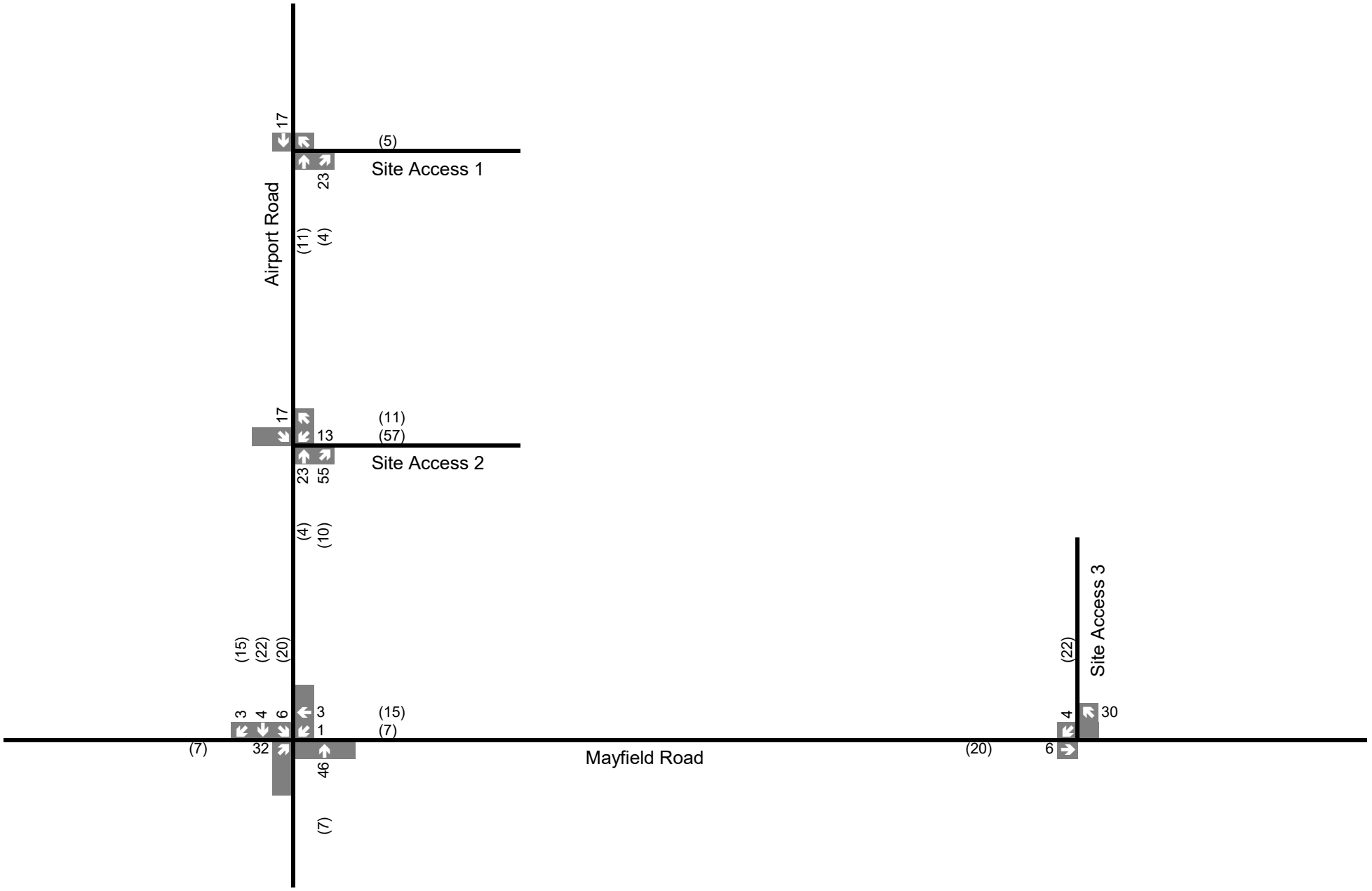
4.3 TRIP DISTRIBUTION AND ASSIGNMENT

Trip distribution and assignment of the site-generated trips was derived from the TTS data and assigned to the gateways based on local road network and land use considerations. The overall trip distribution is shown in **Table 4.2.**

Table 4.2: Trip Distribution

Gateway Direction	AM Inbound	AM Outbound	PM Inbound	PM Outbound
North	14%	0%	0%	17%
West	26%	34%	50%	31%
South	37%	34%	50%	31%
East	24%	32%	0%	20%

Figure 4.2 illustrates the resulting site traffic volumes for future horizon years.



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xx A.M. Peak Hour Traffic Volumes

(xx) P.M. Peak Hour Traffic Volumes

Figure 4.2

Site Generated Traffic Volumes

5 FUTURE TOTAL TRAFFIC CONDITIONS

5.1 BASIS OF ASSESSMENT

The future total traffic volumes for the horizon years evaluated were developed by aggregating the site-generated traffic volumes illustrated in Figure 4.2 onto the respective future background traffic volumes shown in Figures 3.6 and 3.7. The total future intersection operations were assessed based on these volumes and with signal timings maintained as in existing conditions.

5.2 2026 FUTURE TOTAL INTERSECTION OPERATIONS

5.2.1 INTERSECTION CAPACITY ANALYSIS

The resulting 2026 future total traffic volumes are illustrated in **Figure 5.1**. The resulting levels of service are outlined in **Table 5.1**. Detailed Synchro worksheets are available in **Appendix F**.

Table 5.1: 2026 Future Total Intersection Operations

Intersection	Weekday A.M. Peak Hour		Weekday P.M. Peak Hour	
	LOS (Delay in Seconds)	Volume/ Capacity Ratio	LOS (Delay in Seconds)	Volume/ Capacity Ratio
Signalized Intersections				
Airport Road & Mayfield Road	C (30)	-	C (32)	-
Unsignalized Intersections				
Airport Road & Site Access 1	A (0.0)	WB-R (0.00)	A (9)	WB-R (0.01)
Airport Road & Site Access 2	C (19)	WB-LR (0.05)	C (24)	WB-LR (0.28)
Mayfield Road & Site Access 3	A (10)	SB-R (0.01)	B (10)	SB-R (0.03)

1 For signalized intersections, the level of service is based on the overall delay of the intersection. Critical v/c ratios are only listed for movements with values over 0.90.

2 For unsignalized intersections, the level of service is based on the critical movement, which is the movement with the highest delay.

During 2026 future total conditions, the signalized intersection of Airport Road & Mayfield Road is projected to operate at an acceptable LOS 'C' during the weekday a.m. and p.m. peak hours. This represents virtually no change in delays compared to 2026 future background conditions. All movements continue to operate well within capacity.

The site access intersections are all projected to operate at an acceptable LOS 'C' or better during the weekday a.m. and p.m. peak hours. All movements are expected to operate well within capacity.

5.2.2 QUEUING ANALYSIS

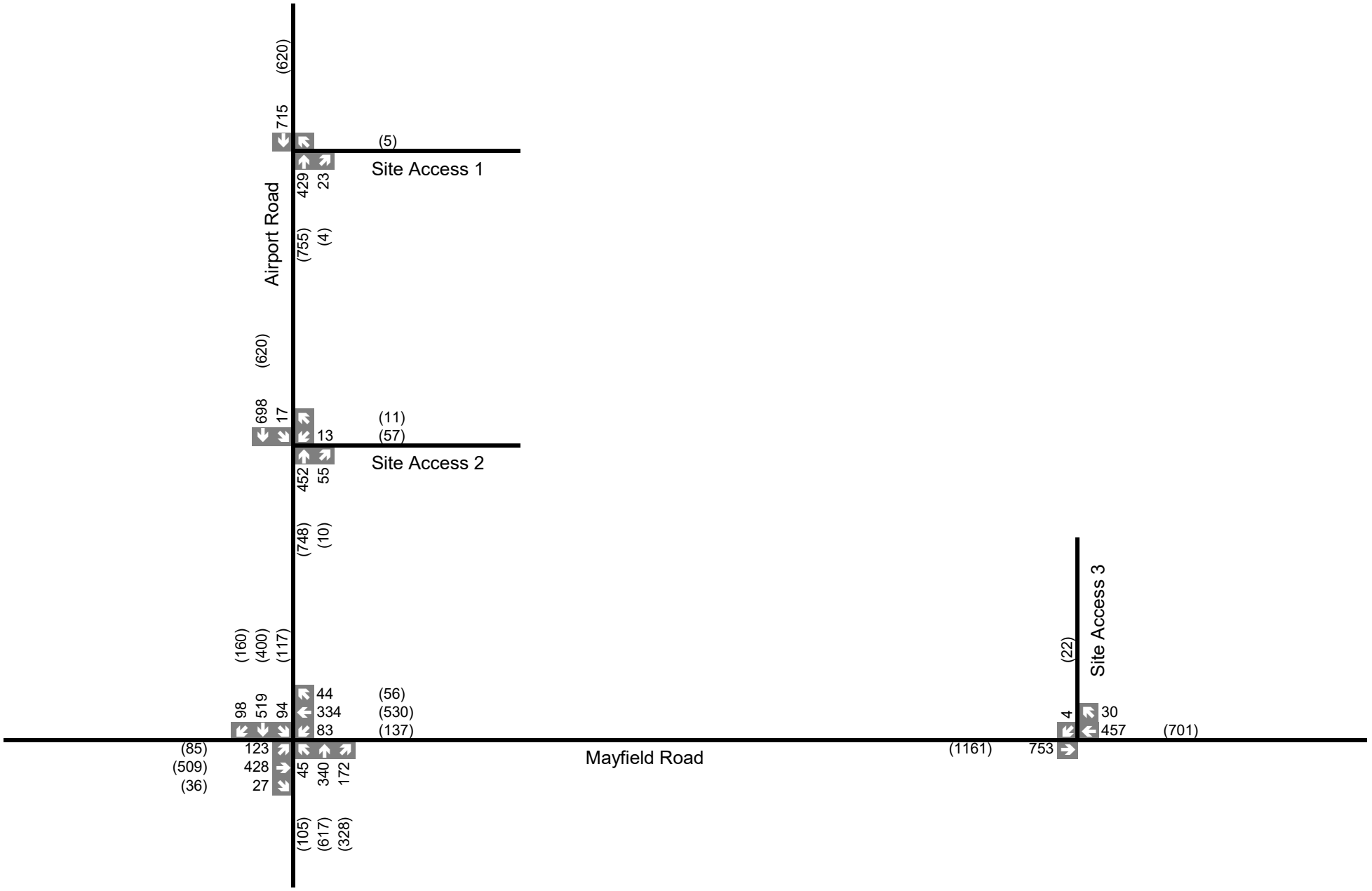
The projected queues at exclusive left-turn and right-turn lanes under 2026 future total conditions are listed in **Table 5.2**. The detailed Synchro queuing reports are provided in **Appendix F**.

Table 5.2: 2026 Future Total Intersection Queue Lengths

Intersections	Lane	Storage Length (m)	95th Percentile Queue (m) [50th Percentile Queue (m)]	
			AM Peak Hour	PM Peak Hour
Airport Road & Mayfield Road	EBL	57	34	22
	WBL	32	38 [23]	57 [37]
	NBL	94	14	31
	NBR	60	17	37
	SBL	109	25	34
	SBR	100	12	18
Airport Road & Site Access 2	SBL	77	0.4	0.0

1 50th percentile queues are only shown if the 95th percentile queue exceeds its available storage length.

As shown above, all of the 95th percentile queues continue to be contained within their available storage lengths with the continuing exception of the westbound left-turn at Airport Road & Mayfield Road, whose queues remain similar to those under 2026 future background conditions.



Legend

xx A.M. Peak Hour Traffic Volumes

(xx) P.M. Peak Hour Traffic Volumes

Figure 5.1

2026 Total Future Traffic Volumes

5.3 2031 FUTURE TOTAL INTERSECTION OPERATIONS

5.3.1 INTERSECTION CAPACITY ANALYSIS

The 2031 future total traffic forecasts are illustrated in **Figure 5.2**. The resulting levels of service are outlined in **Table 5.3**. Detailed Synchro worksheets are available in **Appendix G**.

Table 5.3: 2031 Total Future Intersection Operations

Intersection	Weekday A.M. Peak Hour		Weekday P.M. Peak Hour	
	LOS (Delay in Seconds)	Volume/ Capacity Ratio	LOS (Delay in Seconds)	Volume/ Capacity Ratio
Signalized Intersections				
Airport Road & Mayfield Road	C (30)	-	C (32)	-
Unsignalized Intersections				
Airport Road & Site Access 1	A (0.0)	WB-R (0.01)	A (9)	WB-R (0.01)
Airport Road & Site Access 2	C (22)	WB-LR (0.06)	D (30)	WB-LR (0.34)
Mayfield Road & Site Access 3	A (10)	SB-R (0.01)	B (10)	SB-R (0.03)

1 For signalized intersections, the level of service is based on the overall delay of the intersection. Critical v/c ratios are only listed for movements with values over 0.90.

2 For unsignalized intersections, the level of service is based on the critical movement, which is the movement with the highest delay.

During 2031 future total conditions, the signalized intersection of Airport Road & Mayfield Road is projected to operate at an acceptable LOS 'C' during the weekday a.m. and p.m. peak hours. This represents a marginal increase in delays compared to 2031 future background conditions during the a.m. peak hour and no change in delays compared to 2031 future background conditions during the p.m. peak hour. All movements continue to operate well within capacity.

The site access intersections are all projected to operate at an acceptable LOS 'D' or better during the weekday a.m. and p.m. peak hours. All movements are expected to operate well within capacity.

Based on the above results, it can be concluded that the traffic anticipated to be generated by the proposed development can be accommodated by the study road network.

5.3.2 QUEUING ANALYSIS

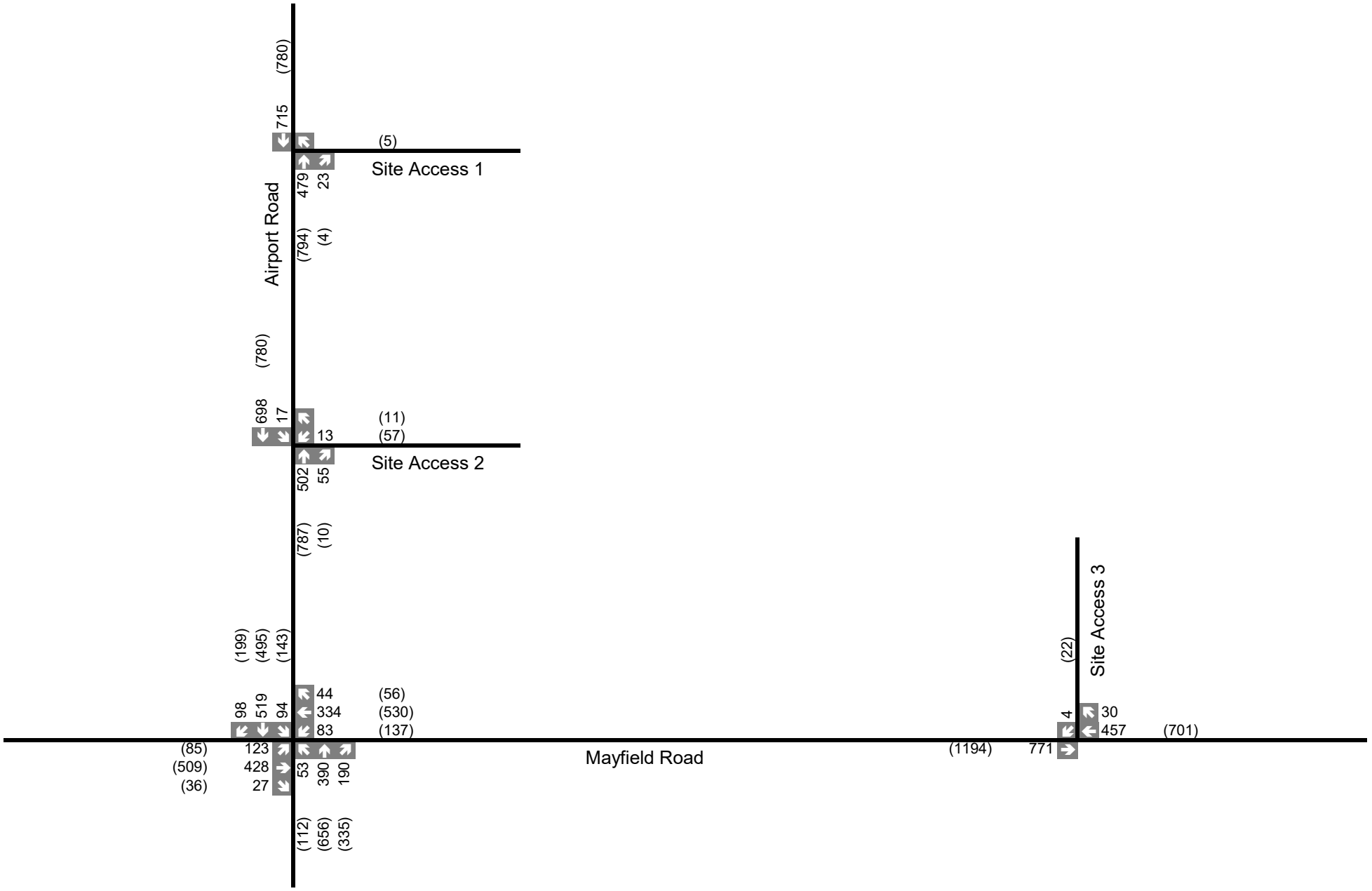
The projected queues at exclusive left-turn and right-turn lanes under 2031 future total conditions are listed in **Table 5.4**. The detailed Synchro queuing reports are provided in **Appendix G**.

Table 5.4: 2031 Future Total Intersection Queue Lengths

Intersections	Lane	Storage Length (m)	95th Percentile Queue (m) [50th Percentile Queue (m)]	
			AM Peak Hour	PM Peak Hour
Airport Road & Mayfield Road	EBL	57	34	22
	WBL	32	38 [23]	57 [37]
	NBL	94	15	32
	NBR	60	18	44
	SBL	109	25	41
	SBR	100	13	20
Airport Road & Site Access 2	SBL	77	0.4	0.0

1 50th percentile queues are only shown if the 95th percentile queue exceeds its available storage length.

As shown above, all of the 95th percentile queues continue to be contained within their available storage lengths with the continuing exception of the westbound left-turn at Airport Road & Mayfield Road, whose queues remain similar to those under 2031 future background conditions.



Legend

xx A.M. Peak Hour Traffic Volumes

(xx) P.M. Peak Hour Traffic Volumes

Figure 5.2

2031 Total Future Traffic Volumes

6 PARKING SUPPLY ASSESSMENT

The minimum parking requirements for the development have been evaluated under both the "Warehouse" and "Industrial Use" standards stated in the Town of Caledon's Zoning By-law. Office floor area is included in the floor area for either assessed use as it is less than 15% of the total floor area. **Table 6.1** summarizes the minimum parking requirements.

Table 6.1: Overall Parking Requirements

Assessed Land Use	Unit	GFA	By-Law Requirement	Minimum Parking Required
Warehouse	Building 1	23,482 m^2	168 spaces, plus one space per 170 m^2 or portion thereof over 20,000 m^2	189 spaces
	Building 2	21,053 m^2	168 spaces, plus one space per 170 m^2 or portion thereof over 20,000 m^2	175 spaces
	Total Parking Requirement			**364 spaces**
Industrial Use	Building 1	23,482 m^2	139 spaces, plus one space per 170 m^2 or portion thereof over 10,000 m^2	219 spaces
	Building 2	21,053 m^2	139 spaces, plus one space per 170 m^2 or portion thereof over 10,000 m^2	204 spaces
	Total Parking Requirement			**423 spaces**

As shown above, the minimum required vehicular parking for the development is **364 spaces** if used as a warehouse or **423 spaces** if used for industrial purposes. The current site plan proposes **426 spaces**. Therefore, the proposed vehicular parking supply can accommodate either proposed use for the development.

Based on By-law 2015-058, which requires two barrier free parking spaces plus 2% of the number of required parking spaces to be designated barrier free parking spaces, the proposed development requires **eleven (11)** barrier free parking spaces. The development proposes **twelve (12)** barrier free parking spaces. Therefore, the by-law requirement is met.

7 TRANSPORTATION DEMAND MANAGEMENT

7.1 RATIONALE

Transportation Demand Management (TDM) is a set of policies and programs that support the reduction of single-occupant vehicle (SOV) trips, especially during peak hours. This can be done through shifting when the trips occur (out of peak hours), increasing vehicle occupancy, or increasing use of non-auto modes. An effective TDM program is successful at reducing peak hour roadway demand. This section of the report details the specific TDM initiatives that are proposed for the subject development. Additionally, it should be noted that, due to the nature of the operations of the proposed development, employees would not necessarily arrive or depart for their shifts during peak traffic conditions.

7.2 CARPOOLING

A TDM initiative currently used in Peel Region is carpooling. The Smart Commute Brampton-Caledon program operates to encourage employee carpooling by allowing carpools registered with Smart Commute to park in reserved carpool parking spaces. The Smart Commute website also provides links to programs where commuters can find other drivers to carpool with. It is recommended that 2 parking spaces, conveniently located near employee entrances to the buildings, be reserved for carpooling. It is also recommended that notices encouraging and facilitating carpooling be posted on the employee message boards on site.

7.3 BICYCLE PARKING

In order to facilitate commuters choosing to commute to work by bicycle, it is recommended that 16 bicycle parking spaces be provided in a convenient location.

8 CONCLUSIONS AND RECOMMENDATIONS

This study has evaluated the transportation aspects of the proposed development by Airfield Developments Inc. and Airfield II Developments Inc. located at the northeast quadrant of the intersection of Airport Road & Mayfield Road. The proposal consists of two industrial buildings with a combined gross floor area (GFA) of 44,535 m^2 and three vehicular driveways onto Airport Road and Mayfield Road, one of which will be a full-moves access.

Based on the analysis contained in this report, our conclusions and recommendations are as follows:

- The site is expected to generate a total of 142 and 109 trips (including both truck and vehicle trips) during the weekday a.m. and p.m. peak hours, respectively.
- Under 2031 future total conditions, the intersection of Airport Road & Mayfield Road operates at an acceptable LOS 'C' while the site accesses operate at an acceptable LOS 'D' or better. All movements continue to operate well within capacity. As such, it can be concluded that the traffic anticipated to be generated by the proposed development can be accommodated by the study road network.
- Under 2031 future total conditions, the queuing results indicate that the storage lengths at all intersections, with the exception of the westbound left-turn lane at Airport Road & Mayfield Road, will be adequate to accommodate the 95th percentile queues in both the a.m. and p.m. peak hours. However, this analysis was conducted under the assumption that all storage lengths would remain the same as under existing conditions. Since the westbound approach is to be reconfigured as part of the planned widening of Mayfield Road, the opportunity exists for the Region to increase the storage length of the westbound left-turn lane. As such, it is recommended that the storage length be increased to accommodate the expected queues. Since queues exceeding the storage length were observed under future background conditions, this improvement would be required regardless of this development.
- The proposed vehicular parking supply satisfies the Town of Caledon's minimum requirements for both warehouse and industrial uses.
- The following TDM measures are recommended for the development:
  - 2 parking spaces, conveniently located near employee entrances to the building, be reserved for carpooling;
  - notices encouraging and facilitating carpooling be posted on the employee message boards on site; and
  - 16 bicycle parking spaces be provided in a convenient location.

APPENDIX

A TRAFFIC DATA

Spectrum

Turning Movement Count
Location Name: AIRPORT RD & MAYFIELD RD
Date: Wed, Jan 09, 2019 Deployment Lead: Patrick Filopoulos

Turning Movement Count (2 . AIRPORT RD & MAYFIELD RD) CustID: 00717433 MioID: 610538

Start Time	N Approach AIRPORT RD						E Approach MAYFIELD RD						S Approach AIRPORT RD						W Approach MAYFIELD RD						Int. Total (15 min)	Int. Total (1 hr)
	Right N:W	Thru N:S	Left N:E	U-Turn N:N	Peds N:	Approach Total	Right E:N	Thru E:W	Left E:S	U-Turn E:E	Peds E:	Approach Total	Right S:E	Thru S:N	Left S:W	U-Turn S:S	Peds S:	Approach Total	Right W:S	Thru W:E	Left W:N	U-Turn W:W	Peds W:	Approach Total		
06:00:00	12	90	10	1	0	113	7	55	13	0	0	75	11	23	7	0	0	41	10	73	15	0	0	98	327	
06:15:00	17	103	17	2	0	139	8	46	10	0	0	64	22	35	9	0	0	66	6	86	29	0	0	121	390	
06:30:00	24	121	16	1	2	162	7	65	17	0	3	89	27	68	12	0	0	107	3	121	30	0	0	154	512	
06:45:00	15	101	24	2	0	142	12	61	8	0	0	81	23	82	10	0	0	115	3	80	31	0	0	114	452	1681
07:00:00	37	124	23	0	0	184	11	89	12	0	0	112	12	51	7	0	0	70	5	70	18	0	0	93	459	1813
07:15:00	19	120	25	0	0	164	14	66	12	0	0	92	22	40	9	0	0	71	16	100	12	0	0	128	455	1878
07:30:00	23	140	19	1	0	183	7	59	9	0	2	75	18	42	18	0	0	78	12	91	14	0	0	117	453	1819
07:45:00	16	117	20	3	0	156	7	89	10	0	1	106	14	39	16	0	0	69	7	122	23	0	0	152	483	1850
08:00:00	9	107	22	4	1	142	10	75	15	0	2	100	16	36	22	0	1	74	15	102	27	0	1	144	460	1851
08:15:00	16	91	16	4	2	127	8	73	19	0	1	100	15	35	20	0	1	70	8	103	31	0	2	142	439	1835
08:30:00	19	86	18	2	0	125	15	70	13	0	0	98	24	48	7	0	1	79	8	82	24	0	1	114	416	1798
08:45:00	17	86	18	1	2	122	12	79	23	0	4	114	23	57	16	0	0	96	13	99	17	0	0	129	461	1776
09:00:00	26	78	18	1	1	123	13	70	17	0	1	100	14	49	19	0	0	82	9	71	33	0	0	113	418	1734
09:15:00	25	106	22	1	0	154	17	81	19	0	0	117	22	51	19	0	2	92	8	65	26	0	2	99	462	1757
09:30:00	17	82	21	3	0	123	10	70	11	0	0	91	12	36	16	0	0	64	10	84	22	1	0	117	395	1736
09:45:00	25	78	28	1	0	132	5	61	13	0	1	79	17	37	18	0	0	72	14	63	18	0	0	95	378	1653
BREAK																										
15:00:00	30	73	24	2		130	9	92	26	0	2	127	19	87	23	0	3	129	8	78	24	0	1	110	496	
15:15:00	26	55	19	1	0	101	9	103	14	0	12	126	25	108	15	0	1	148	10	120	18	0	1	148	523	
15:30:00	20	65	20	0	1	105	8	84	9	0	7	101	31	77	13	0	0	121	14	102	20	1	1	137	464	
15:45:00	31	67	15	1	1	114	16	112	24	0	1	152	23	115	25	0	0	163	12	102	23	0	0	137	566	2049
16:00:00	16	56	24	2	0	98	20	117	26	0	0	163	18	114	28	0	1	160	14	101	23	0	0	138	559	2112
16:15:00	28	75	22	0	1	125	20	111	14	0	1	145	26	150	29	0	1	205	6	90	25	0	1	121	596	2185
16:30:00	26	70	16	2	2	114	15	112	20	0	3	147	31	132	18	1	1	182	7	117	15	0	0	139	582	2303
16:45:00	25	61	16	1	1	103	13	153	19	0	4	185	18	115	25	0	2	158	15	120	20	0	2	155	601	2338
17:00:00	35	70	22	1	0	128	8	111	16	0	1	135	30	141	26	0	0	197	8	89	18	0	0	115	575	2354
17:15:00	38	72	16	0	0	126	15	135	29	0	2	179	18	121	22	0	0	161	10	86	27	0	0	123	589	2347
17:30:00	21	43	14	0	0	78	8	119	34	0	3	161	18	94	18	0	1	130	14	88	18	0	1	120	489	2254
17:45:00	17	60	17	1	2	95	7	112	22	0	1	141	22	116	24	0	0	162	11	110	18	1	0	140	538	2191
18:00:00	21	51	14	0	0	86	5	91	21	0	1	117	27	94	29	0	0	150	16	80	23	0	1	119	472	2088
18:15:00	23	33	9	0	0	65	6	95	14	0	1	115	18	90	19	0	0	127	14	82	23	0	0	119	426	1925
18:30:00	14	43	15	0	0	72	11	76	17	0	0	104	22	75	22	0	2	119	11	81	12	0	0	104	399	1835
18:45:00	22	33	16	3	0	74	5	74	19	0	1	98	11	67	16	0	0	94	8	63	16	0	0	87	353	1650
Grand Total	710	2557	596	41	17	3905	338	2806	545	0	55	3689	649	2425	577	1	17	3652	325	2921	693	3	14	3942	**15188**	-
Approach%	18.2%	65.5%	15.3%	1%		-	9.2%	76.1%	14.8%	0%		-	17.8%	66.4%	15.8%	0%		-	8.2%	74.1%	17.6%	0.1%		-	-	-
Totals %	4.7%	16.8%	3.9%	0.3%		25.7%	2.2%	18.5%	3.6%	0%		24.3%	4.3%	16%	3.8%	0%		24%	2.1%	19.2%	4.6%	0%		26%	-	-
Heavy	208	288	138	1		-	137	382	117	0		-	204	353	30	0		-	26	354	199	0		-	-	-
Heavy %	29.3%	11.3%	23.2%	2.4%		-	40.5%	13.6%	21.5%	0%		-	31.4%	14.6%	5.2%	0%		-	8%	12.1%	28.7%	0%		-	-	-
Bicycles	-	-	-	-		-	-	-	-	-		-	-	-	-	-		-	-	-	-	-		-	-	-
Bicycle %	-	-	-	-		-	-	-	-	-		-	-	-	-	-		-	-	-	-	-		-	-	-

Spectrum

Turning Movement Count
Location Name: AIRPORT RD & MAYFIELD RD
Date: Wed, Jan 09, 2019 Deployment Lead: Patrick Filopoulos

Peak Hour: 06:30 AM - 07:30 AM Weather: Overcast Clouds (-0.22 °C)

Start Time	N Approach AIRPORT RD						E Approach MAYFIELD RD						S Approach AIRPORT RD						W Approach MAYFIELD RD						Int. Total (15 min)
	Right	Thru	Left	U-Turn	Peds	Approach Total	Right	Thru	Left	U-Turn	Peds	Approach Total	Right	Thru	Left	U-Turn	Peds	Approach Total	Right	Thru	Left	U-Turn	Peds	Approach Total	
06:30:00	24	121	16	1	2	162	7	65	17	0	3	89	27	68	12	0	0	107	3	121	30	0	0	154	512
06:45:00	15	101	24	2	0	142	12	61	8	0	0	81	23	82	10	0	0	115	3	80	31	0	0	114	452
07:00:00	37	124	23	0	0	184	11	89	12	0	0	112	12	51	7	0	0	70	5	70	18	0	0	93	459
07:15:00	19	120	25	0	0	164	14	66	12	0	0	92	22	40	9	0	0	71	16	100	12	0	0	128	455
Grand Total	95	466	88	3	2	652	44	281	49	0	3	374	84	241	38	0	0	363	27	371	91	0	0	489	**1878**
Approach%	14.6%	71.5%	13.5%	0.5%		-	11.8%	75.1%	13.1%	0%		-	23.1%	66.4%	10.5%	0%		-	5.5%	75.9%	18.6%	0%		-	**-**
Totals %	5.1%	24.8%	4.7%	0.2%		34.7%	2.3%	15%	2.6%	0%		19.9%	4.5%	12.8%	2%	0%		19.3%	1.4%	19.8%	4.8%	0%		26%	**-**
PHF	0.64	0.94	0.88	0.38		0.89	0.79	0.79	0.72	0		0.83	0.78	0.73	0.79	0		0.79	0.42	0.77	0.73	0		0.79	**-**
Heavy	39	61	30	1		131	13	68	18	0		99	20	29	4	0		53	4	35	7	0		46	**-**
Heavy %	41.1%	13.1%	34.1%	33.3%		20.1%	29.5%	24.2%	36.7%	0%		26.5%	23.8%	12%	10.5%	0%		14.6%	14.8%	9.4%	7.7%	0%		9.4%	**-**
Lights	56	405	58	2		521	31	213	31	0		275	64	212	34	0		310	23	336	84	0		443	**-**
Lights %	58.9%	86.9%	65.9%	66.7%		79.9%	70.5%	75.8%	63.3%	0%		73.5%	76.2%	88%	89.5%	0%		85.4%	85.2%	90.6%	92.3%	0%		90.6%	**-**
Single-Unit Trucks	7	23	5	1		36	8	20	7	0		35	4	10	2	0		16	1	14	2	0		17	**-**
Single-Unit Trucks %	7.4%	4.9%	5.7%	33.3%		5.5%	18.2%	7.1%	14.3%	0%		9.4%	4.8%	4.1%	5.3%	0%		4.4%	3.7%	3.8%	2.2%	0%		3.5%	**-**
Buses	21	17	20	0		58	2	1	0	0		3	4	8	0	0		12	0	3	0	0		3	**-**
Buses %	22.1%	3.6%	22.7%	0%		8.9%	4.5%	0.4%	0%	0%		0.8%	4.8%	3.3%	0%	0%		3.3%	0%	0.8%	0%	0%		0.6%	**-**
Articulated Trucks	11	21	5	0		37	3	47	11	0		61	12	11	2	0		25	3	18	5	0		26	**-**
Articulated Trucks %	11.6%	4.5%	5.7%	0%		5.7%	6.8%	16.7%	22.4%	0%		16.3%	14.3%	4.6%	5.3%	0%		6.9%	11.1%	4.9%	5.5%	0%		5.3%	**-**
Bicycles on Road	0	0	0	0		0	0	0	0	0		0	0	0	0	0		0	0	0	0	0		0	**-**
Bicycles on Road %	0%	0%	0%	0%		0%	0%	0%	0%	0%		0%	0%	0%	0%	0%		0%	0%	0%	0%	0%		0%	**-**
Pedestrians	-	-	-	-	2	-	-	-	-	-	3	-	-	-	-	-	0	-	-	-	-	-	0	-	**-**
Pedestrians%	-	-	-	-	40%		-	-	-	-	60%		-	-	-	-	0%		-	-	-	-	0%		**-**

Spectrum

Turning Movement Count
Location Name: AIRPORT RD & MAYFIELD RD
Date: Wed, Jan 09, 2019 Deployment Lead: Patrick Filopoulos

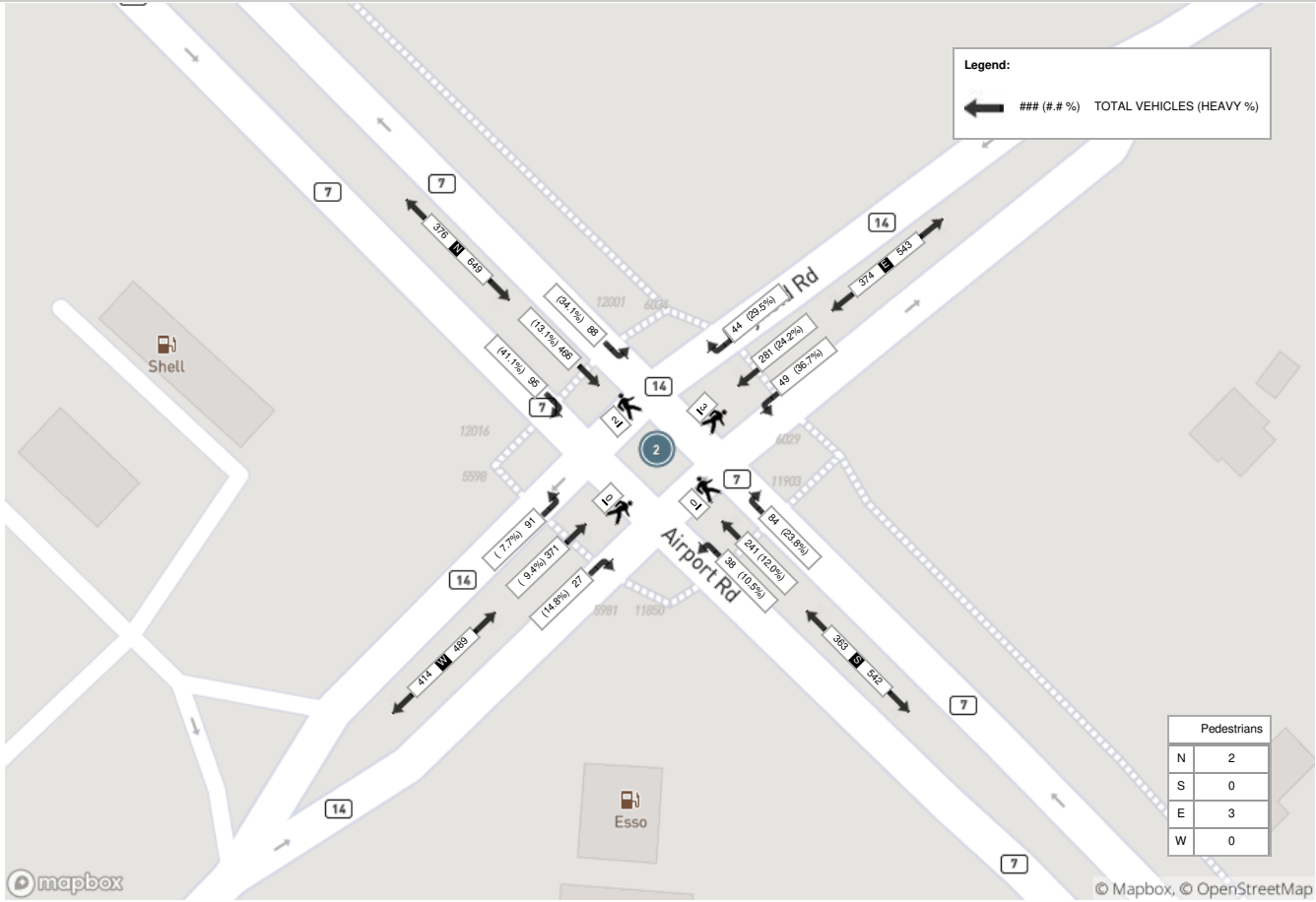
Peak Hour: 04:15 PM - 05:15 PM Weather: Light Shower Snow (-1.55 °C)

Start Time	N Approach AIRPORT RD						E Approach MAYFIELD RD						S Approach AIRPORT RD						W Approach MAYFIELD RD						Int. Total (15 min)
	Right	Thru	Left	U-Turn	Peds	Approach Total	Right	Thru	Left	U-Turn	Peds	Approach Total	Right	Thru	Left	U-Turn	Peds	Approach Total	Right	Thru	Left	U-Turn	Peds	Approach Total	
16:15:00	28	75	22	0	1	125	20	111	14	0	1	145	26	150	29	0	1	205	6	90	25	0	1	121	596
16:30:00	26	70	16	2	2	114	15	112	20	0	3	147	31	132	18	1	1	182	7	117	15	0	0	139	582
16:45:00	25	61	16	1	1	103	13	153	19	0	4	185	18	115	25	0	2	158	15	120	20	0	2	155	601
17:00:00	35	70	22	1	0	128	8	111	16	0	1	135	30	141	26	0	0	197	8	89	18	0	0	115	575
Grand Total	114	276	76	4	4	470	56	487	69	0	9	612	105	538	98	1	4	742	36	416	78	0	3	530	**2354**
Approach%	24.3%	58.7%	16.2%	0.9%		-	9.2%	79.6%	11.3%	0%		-	14.2%	72.5%	13.2%	0.1%		-	6.8%	78.5%	14.7%	0%		-	-
Totals %	4.8%	11.7%	3.2%	0.2%		20%	2.4%	20.7%	2.9%	0%		26%	4.5%	22.9%	4.2%	0%		31.5%	1.5%	17.7%	3.3%	0%		22.5%	-
PHF	0.81	0.92	0.86	0.5		0.92	0.7	0.8	0.86	0		0.83	0.85	0.9	0.84	0.25		0.9	0.6	0.87	0.78	0		0.85	-
Heavy	23	32	13	0		68	29	45	15	0		89	37	56	0	0		93	1	46	29	0		76	-
Heavy %	20.2%	11.6%	17.1%	0%		14.5%	51.8%	9.2%	21.7%	0%		14.5%	35.2%	10.4%	0%	0%		12.5%	2.8%	11.1%	37.2%	0%		14.3%	-
Lights	91	244	63	4		402	27	442	54	0		523	68	482	98	1		649	35	370	49	0		454	-
Lights %	79.8%	88.4%	82.9%	100%		85.5%	48.2%	90.8%	78.3%	0%		85.5%	64.8%	89.6%	100%	100%		87.5%	97.2%	88.9%	62.8%	0%		85.7%	-
Single-Unit Trucks	7	9	4	0		20	8	15	7	0		30	12	11	0	0		23	0	13	6	0		19	-
Single-Unit Trucks %	6.1%	3.3%	5.3%	0%		4.3%	14.3%	3.1%	10.1%	0%		4.9%	11.4%	2%	0%	0%		3.1%	0%	3.1%	7.7%	0%		3.6%	-
Buses	3	7	0	0		10	5	1	1	0		7	5	19	0	0		24	0	3	9	0		12	-
Buses %	2.6%	2.5%	0%	0%		2.1%	8.9%	0.2%	1.4%	0%		1.1%	4.8%	3.5%	0%	0%		3.2%	0%	0.7%	11.5%	0%		2.3%	-
Articulated Trucks	13	16	9	0		38	16	29	7	0		52	20	26	0	0		46	1	30	14	0		45	-
Articulated Trucks %	11.4%	5.8%	11.8%	0%		8.1%	28.6%	6%	10.1%	0%		8.5%	19%	4.8%	0%	0%		6.2%	2.8%	7.2%	17.9%	0%		8.5%	-
Bicycles on Road	0	0	0	0		0	0	0	0	0		0	0	0	0	0		0	0	0	0	0		0	-
Bicycles on Road %	0%	0%	0%	0%		0%	0%	0%	0%	0%		0%	0%	0%	0%	0%		0%	0%	0%	0%	0%		0%	-
Pedestrians	-	-	-	-	4	-	-	-	-	-	9	-	-	-	-	-	4	-	-	-	-	-	3	-	-
Pedestrians%	-	-	-	-	20%		-	-	-	-	45%		-	-	-	-	20%		-	-	-	-	15%		-

Spectrum

Turning Movement Count
Location Name: AIRPORT RD & MAYFIELD RD
Date: Wed, Jan 09, 2019 Deployment Lead: Patrick Filopoulos

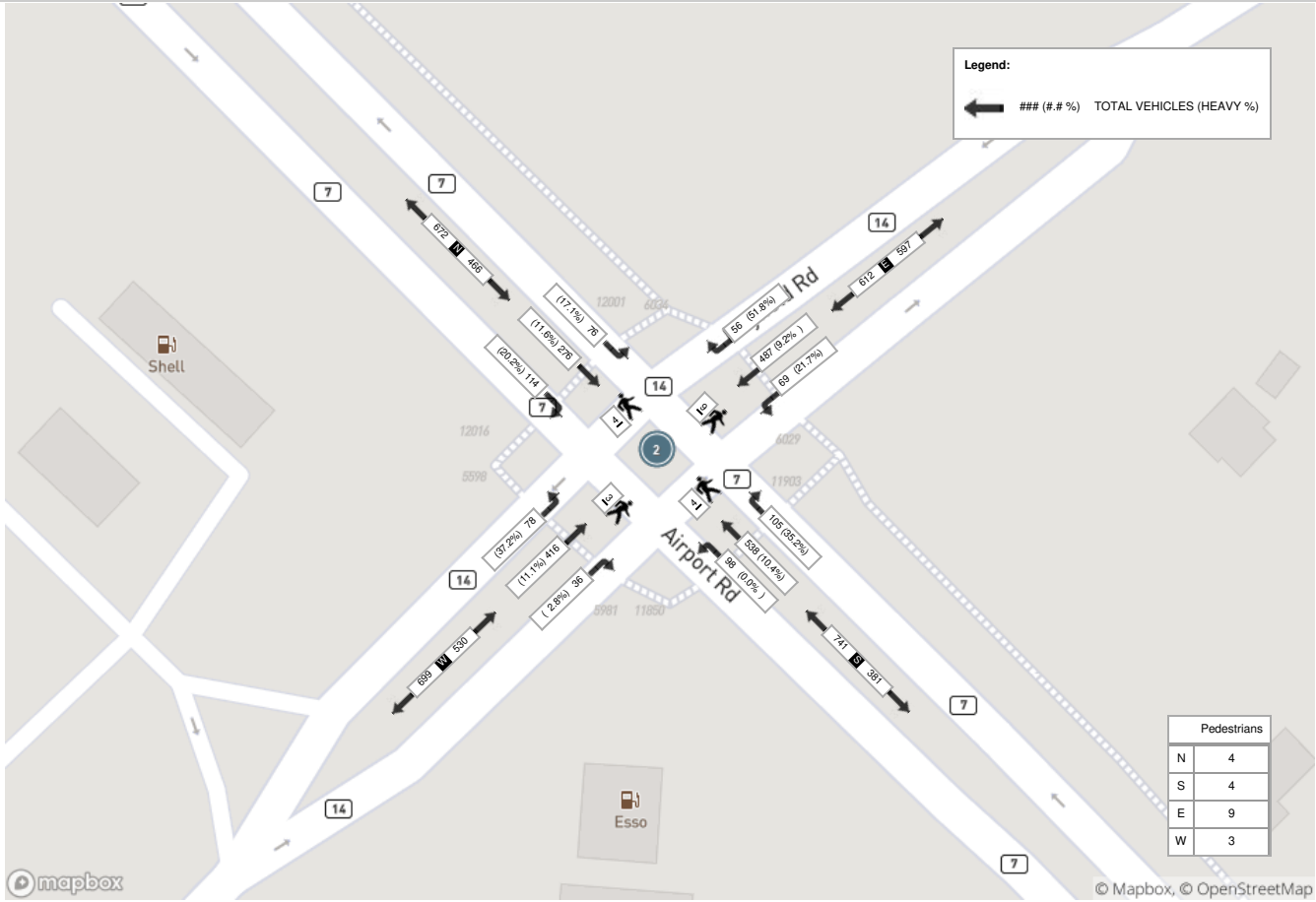
Peak Hour: 06:30 AM - 07:30 AM Weather: Overcast Clouds (-0.22 °C)



Spectrum

Turning Movement Count
Location Name: AIRPORT RD & MAYFIELD RD
Date: Wed, Jan 09, 2019 Deployment Lead: Patrick Filopoulos

Peak Hour: 04:15 PM - 05:15 PM Weather: Light Shower Snow (-1.55 °C)



MG8 ENG

Morning Peak Diagram

Specified Period
From: 7:00:00
To: 9:00:00

One Hour Peak
From: 7:30:00
To: 8:30:00

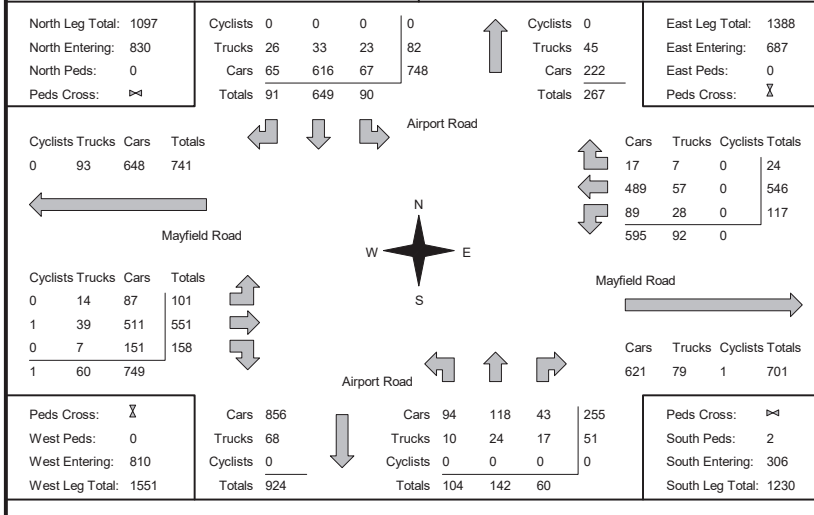
Municipality: Region of Peel
Site #: 0000717433
Intersection: Airport Road & Mayfield Road
TFR File #: 8
Count date: 18-Apr-2013

Weather conditions:

Person(s) who counted:
STEVE

**** Signalized Intersection ****

Major Road: Airport Road runs N/S



Comments

MG8 ENG

Mid-day Peak Diagram

Specified Period
From: 11:00:00
To: 14:00:00

One Hour Peak
From: 12:45:00
To: 13:45:00

Municipality: Region of Peel
Site #: 0000717433
Intersection: Airport Road & Mayfield Road
TFR File #: 8
Count date: 18-Apr-2013

Weather conditions:

Person(s) who counted:
STEVE

**** Signalized Intersection ****

Major Road: Airport Road runs N/S

Comments

MG8 ENG

Afternoon Peak Diagram

Specified Period
From: 15:00:00
To: 18:00:00

One Hour Peak
From: 16:30:00
To: 17:30:00

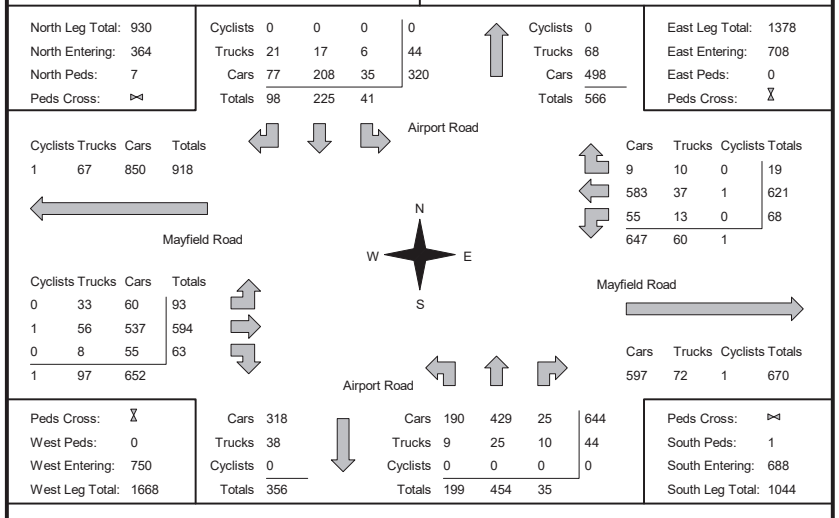
Municipality: Region of Peel
Site #: 0000717433
Intersection: Airport Road & Mayfield Road
TFR File #: 8
Count date: 18-Apr-2013

Weather conditions:

Person(s) who counted:
STEVE

**** Signalized Intersection ****

Major Road: Airport Road runs N/S



Comments

MG8 ENG

Total Count Diagram

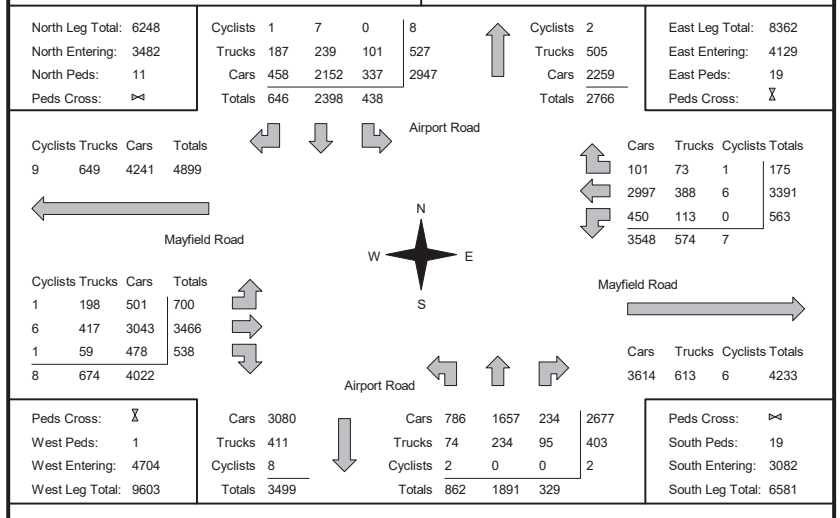
Municipality: Region of Peel
Site #: 0000717433
Intersection: Airport Road & Mayfield Road
TFR File #: 8
Count date: 18-Apr-2013

Weather conditions:

Person(s) who counted:
STEVE

**** Signalized Intersection ****

Major Road: Airport Road runs N/S



Comments

REGIONAL MUNICIPALITY OF PEEL

Traffic Signal Timing Parameters

Database Date	**June 23, 2021**		**Prepared Date**	**June 23, 2021**
Database Rev	**MaxView**		**Completed By**	**S.J**
Timing Card / Field rev	**-**		**Checked By**	**B.L**

Location	**Airport Road at Mayfield Road**

Phase #	**Street Name - Direction**	**Vehicle Minimum (s)**	**Pedestrian Minimum (s)**		**Amber (s)**	**All Red (s)**	**TIME PERIOD (s) (Green+Amber+All Red)**		
			WALK	**FDWALK**			**AM SPLITS**	**OFF SPLITS**	**PM SPLITS**
1	Airport Road - NBLT Prot. Perm.	5	-	-	3.0	-	12	12	12
2	Airport Road - SB	12	12	23	4.0	2.9	43	43	43
3	Mayfield Road - EBLT Prot. Perm.	5	-	-	3.0	-	15	15	25
4	Mayfield Road - WB	12	12	27	4.0	3.1	50	50	55
5	Airport Road - SBLT Prot. Perm.	5	-	-	3.0	-	12	12	12
6	Airport Road - NB	12	12	23	4.0	2.9	43	43	43
7	Not In Use	-	-	-	-	-	-	-	-
8	Mayfield Road - EB	12	12	27	4.0	3.1	65	65	80

System Control
Yes

Semi-Actuated Mode
Yes

TIME (M-F)	**PEAK**	**CYCLE LENGTH (s)**	**OFFSET (s)**
06:30 - 09:00	AM	120	30
09:00 - 15:00	OFF	120	94
15:00 - 19:30	PM	135	65

APPENDIX

B LEVEL OF SERVICE DEFINITIONS

LEVEL OF SERVICE DEFINITIONS AT SIGNALIZED INTERSECTIONS[1]

Level of service for signalized intersections is defined in terms of delay, which is a measure of driver discomfort and frustration, fuel consumption, and lost travel time. Specifically, level-of-service (LOS) criteria are stated in terms of the average control delay per vehicle, typically for a 15-min analysis period. The criteria are given in the table below. Delay may be measured in the field or estimated using software such as Highway Capacity Software. Delay is a complex measure and is dependent upon a number of variables, including quality of progression, the cycle length, the green ratio, and the *v/c* ratio for the lane group in question.

Level of Service	Features	Control Delay per vehicle (sec)
A	LOS A describes operations with very low delay, up to 10 sec per vehicle. This level of service occurs when progression is extremely favourable and most vehicles arrive during the green phase. Most vehicles do not stop at all. Short cycle lengths may also contribute to low delay.	≤ 10
B	LOS B describes operations with delay greater than 10 and up to 20 sec per vehicle. This level generally occurs with good progression, short cycle lengths, or both. More vehicles stop than with LOS A, causing higher levels of average delay.	> 10 and ≤ 20
C	LOS C describes operations with delay greater than 20 and up to 35 sec per vehicle. These higher delays may result from fair progression, longer cycle lengths, or both. Individual cycle failures may begin to appear at this level. The number of vehicles stopping is significant at this level, though many still pass through the intersection without stopping.	> 20 and ≤ 35
D	LOS D describes operations with delay greater than 35 and up to 55 sec per vehicle. At level D, the influence of congestion becomes more noticeable. Longer delays may result from some combination of unfavourable progression, long cycle lengths, of high *v/c* ratios. Many vehicles stop, and the proportion of vehicles not stopping declines. Individual cycle failures are noticeable.	> 35 and ≤ 55
E	LOS E describes operations with delay greater than 55 and up to 80 sec per vehicle. This level is considered by many agencies to be the limit of acceptable delay. These high delay values generally indicate poor progression, long cycle lengths, and high *v/c* ratios. Individual cycle failures are frequent occurrences.	> 55 and ≤ 80
F	LOS F describes operations with delay in excess of 80 sec per vehicle. This level, considered to be unacceptable to most drivers, often occurs with oversaturation, that is, when arrival flow rates exceed the capacity of the intersection. It may also occur at high *v/c* ratios below 1.0 with many individual cycle failures. Poor progression and long cycle lengths may also be major contributing causes to such delay levels.	> 80

(1) Highway Capacity Manual 2000

LEVEL OF SERVICE DEFINITIONS AT UNSIGNALIZED INTERSECTIONS[1]

The level of service criteria for unsignalized intersections are given in the table below. As used here, total delay is defined as the total elapsed time from when a vehicle stops at the end of the queue until the vehicle departs from the stop line; this time includes the time required for the vehicle to travel from the last-in-queue position to the first-in-queue position. The average total delay for any particular minor movement is a function of the service rate or capacity of the approach and the degree of saturation.

Level of Service	Features	Average Total Delay (sec/veh)
A	Little or no traffic delay occurs. Approaches appear open, turning movements are easily made, and drivers have freedom of operation.	≤ 10
B	Short traffic delays occur. Many drivers begin to feel somewhat restricted in terms of freedom of operation.	> 10 and ≤ 15
C	Average traffic delays occur. Operations are generally stable, but drivers emerging from the minor street may experience difficulty in completing their movement. This may occasionally impact on the stability of flow on the major street.	> 15 and ≤ 25
D	Long traffic delays occur. Motorists emerging from the minor street experience significant restriction and frustration. Drivers on the major street will experience congestion and delay as drivers emerging from the minor street interfere with the major through movements.	> 25 and ≤ 35
E	Very long traffic delays occur. Operations approach the capacity of the intersection.	> 35 and ≤ 50
F	Saturation occurs, with vehicle demand exceeding the available capacity. Very long traffic delays occur.	> 50

(1) Highway Capacity Manual 2000.

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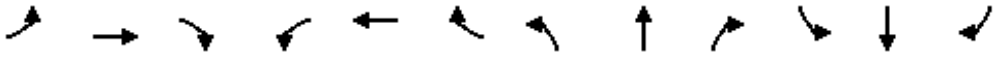
APPENDIX

C EXISTING INTERSECTION OPERATIONS

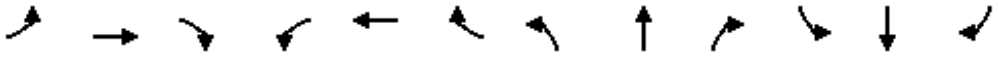
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	99	403	29	53	305	48	41	262	91	96	507	103
v/c Ratio	0.32	0.34	0.05	0.31	0.81	0.13	0.09	0.19	0.15	0.20	0.34	0.18
Control Delay	24.5	28.2	0.7	39.3	58.7	1.5	15.6	24.8	6.5	16.0	24.3	5.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	24.5	28.2	0.7	39.3	58.7	1.5	15.6	24.8	6.5	16.0	24.3	5.9
Queue Length 50th (m)	15.7	38.1	0.0	10.8	71.5	0.0	4.4	21.2	0.0	10.8	42.8	0.0
Queue Length 95th (m)	23.5	43.8	0.9	21.0	95.1	1.5	12.2	37.7	12.3	24.5	69.1	12.7
Internal Link Dist (m)		1322.3			91.7			681.5			413.1	
Turn Bay Length (m)	57.0		55.0	32.0		65.0	94.0		60.0	109.0		100.0
Base Capacity (vph)	325	1600	702	252	549	491	475	1368	590	481	1471	572
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.30	0.25	0.04	0.21	0.56	0.10	0.09	0.19	0.15	0.20	0.34	0.18

Intersection Summary



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	91	371	27	49	281	44	38	241	84	88	466	95
Future Volume (vph)	91	371	27	49	281	44	38	241	84	88	466	95
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5
Total Lost time (s)	3.0	7.1	7.1	7.1	7.1	7.1	3.0	6.9	6.9	3.0	6.9	6.9
Lane Util. Factor	1.00	0.95	1.00	1.00	1.00	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Frpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	0.99	1.00	1.00	0.98	1.00	1.00	1.00
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1652	3318	1389	1303	1537	1212	1608	3230	1269	1321	3202	1125
Flt Permitted	0.32	1.00	1.00	0.51	1.00	1.00	0.46	1.00	1.00	0.56	1.00	1.00
Satd. Flow (perm)	556	3318	1389	706	1537	1212	777	3230	1269	774	3202	1125
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	99	403	29	53	305	48	41	262	91	96	507	103
RTOR Reduction (vph)	0	0	19	0	0	36	0	0	52	0	0	56
Lane Group Flow (vph)	99	403	10	53	305	12	41	262	39	96	507	47
Confl. Peds. (#/hr)	2					2			3	3		
Heavy Vehicles (%)	8%	10%	15%	37%	25%	30%	11%	13%	24%	35%	14%	42%
Turn Type	pm+pt	NA	Perm	Perm	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases	3	8			4		1	6		5	2	
Permitted Phases	8		8	4		4	6		6	2		2
Actuated Green, G (s)	42.5	42.5	42.5	29.4	29.4	29.4	56.7	50.8	50.8	63.5	54.6	54.6
Effective Green, g (s)	42.5	42.5	42.5	29.4	29.4	29.4	56.7	50.8	50.8	63.5	54.6	54.6
Actuated g/C Ratio	0.35	0.35	0.35	0.24	0.24	0.24	0.47	0.42	0.42	0.53	0.46	0.46
Clearance Time (s)	3.0	7.1	7.1	7.1	7.1	7.1	3.0	6.9	6.9	3.0	6.9	6.9
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	289	1175	491	172	376	296	407	1367	537	453	1456	511
v/s Ratio Prot	0.03	c0.12			c0.20		0.00	0.08		c0.02	c0.16	
v/s Ratio Perm	0.09		0.01	0.08		0.01	0.04		0.03	0.09		0.04
v/c Ratio	0.34	0.34	0.02	0.31	0.81	0.04	0.10	0.19	0.07	0.21	0.35	0.09
Uniform Delay, d1	27.6	28.5	25.2	37.0	42.7	34.5	17.1	21.7	20.6	14.4	21.2	18.6
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	0.7	0.2	0.0	1.0	12.5	0.1	0.1	0.3	0.3	0.2	0.7	0.4
Delay (s)	28.3	28.7	25.2	38.0	55.2	34.6	17.2	22.0	20.8	14.6	21.8	19.0
Level of Service	C	C	C	D	E	C	B	C	C	B	C	B
Approach Delay (s)		28.4			50.5			21.3			20.4	
Approach LOS		C			D			C			C	

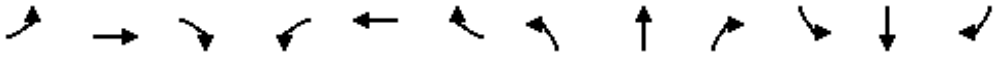
Intersection Summary			
HCM 2000 Control Delay	28.7	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.48		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	20.0
Intersection Capacity Utilization	75.2%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	80	424	37	70	497	57	100	549	107	78	282	116
v/c Ratio	0.26	0.31	0.04	0.19	0.83	0.10	0.24	0.86	0.28	0.31	0.38	0.27
Control Delay	15.4	18.0	1.7	24.7	46.9	2.4	28.7	61.8	8.6	30.5	42.0	8.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	15.4	18.0	1.7	24.7	46.9	2.4	28.7	61.8	8.6	30.5	42.0	8.1
Queue Length 50th (m)	9.8	33.4	0.0	11.6	120.5	0.0	18.1	78.0	0.0	14.1	34.1	0.0
Queue Length 95th (m)	18.0	45.1	3.0	23.7	#193.6	4.7	31.5	#110.4	15.2	25.9	48.3	15.3
Internal Link Dist (m)		1322.3			91.7			681.5			413.1	
Turn Bay Length (m)	57.0		55.0	32.0		65.0	94.0		60.0	109.0		100.0
Base Capacity (vph)	402	1350	866	370	597	592	426	636	388	255	747	429
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.20	0.31	0.04	0.19	0.83	0.10	0.23	0.86	0.28	0.31	0.38	0.27

Intersection Summary

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



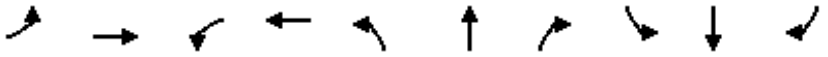
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	78	416	36	69	487	56	98	538	105	76	276	114
Future Volume (vph)	78	416	36	69	487	56	98	538	105	76	276	114
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5
Total Lost time (s)	3.0	7.1	7.1	7.1	7.1	7.1	3.0	6.9	6.9	3.0	6.9	6.9
Lane Util. Factor	1.00	0.95	1.00	1.00	1.00	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Frpb, ped/bikes	1.00	1.00	0.98	1.00	1.00	0.98	1.00	1.00	0.98	1.00	1.00	0.98
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1383	2500	1556	1549	1325	1218	1783	2340	1140	1578	2765	1278
Flt Permitted	0.30	1.00	1.00	0.50	1.00	1.00	0.54	1.00	1.00	0.30	1.00	1.00
Satd. Flow (perm)	435	2500	1556	822	1325	1218	1022	2340	1140	504	2765	1278
Peak-hour factor, PHF	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Adj. Flow (vph)	80	424	37	70	497	57	100	549	107	78	282	116
RTOR Reduction (vph)	0	0	17	0	0	31	0	0	78	0	0	85
Lane Group Flow (vph)	80	424	20	70	497	26	100	549	29	78	282	31
Confl. Peds. (#/hr)	4		4	4		4	3		9	9		3
Heavy Vehicles (%)	29%	46%	1%	15%	45%	29%	0%	56%	37%	13%	32%	23%
Turn Type	pm+pt	NA	Perm	Perm	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases	3	8			4		1	6		5	2	
Permitted Phases	8		8	4		4	6		6	2		2
Actuated Green, G (s)	72.9	72.9	72.9	60.8	60.8	60.8	45.3	36.7	36.7	44.9	36.5	36.5
Effective Green, g (s)	72.9	72.9	72.9	60.8	60.8	60.8	45.3	36.7	36.7	44.9	36.5	36.5
Actuated g/C Ratio	0.54	0.54	0.54	0.45	0.45	0.45	0.34	0.27	0.27	0.33	0.27	0.27
Clearance Time (s)	3.0	7.1	7.1	7.1	7.1	7.1	3.0	6.9	6.9	3.0	6.9	6.9
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	298	1350	840	370	596	548	391	636	309	234	747	345
v/s Ratio Prot	0.02	c0.17			c0.38		0.02	c0.23		c0.02	0.10	
v/s Ratio Perm	0.13		0.01	0.09		0.02	0.07		0.03	0.09		0.02
v/c Ratio	0.27	0.31	0.02	0.19	0.83	0.05	0.26	0.86	0.09	0.33	0.38	0.09
Uniform Delay, d1	17.6	17.2	14.5	22.3	32.7	20.8	31.6	46.8	36.7	32.2	40.0	36.8
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	0.5	0.1	0.0	0.2	9.8	0.0	0.3	14.5	0.6	0.8	1.5	0.5
Delay (s)	18.1	17.3	14.5	22.5	42.4	20.9	31.9	61.2	37.3	33.0	41.5	37.4
Level of Service	B	B	B	C	D	C	C	E	D	C	D	D
Approach Delay (s)		17.3			38.2			54.0			39.1	
Approach LOS		B			D			D			D	

Intersection Summary			
HCM 2000 Control Delay	38.6	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.77		
Actuated Cycle Length (s)	135.0	Sum of lost time (s)	20.0
Intersection Capacity Utilization	83.7%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			

APPENDIX

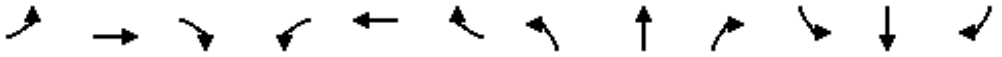
D

2026 FUTURE BACKGROUND INTERSECTION OPERATIONS



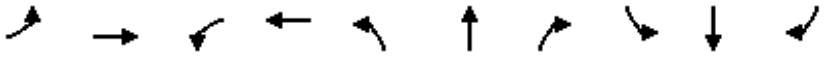
Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	93	465	84	383	46	300	176	90	526	97
v/c Ratio	0.31	0.35	0.72	0.51	0.09	0.18	0.24	0.17	0.30	0.15
Control Delay	33.3	36.8	81.7	48.3	12.9	20.4	4.6	12.9	19.8	5.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	33.3	36.8	81.7	48.3	12.9	20.4	4.6	12.9	19.8	5.0
Queue Length 50th (m)	19.1	37.5	22.7	34.4	4.4	22.2	0.0	8.9	40.7	0.0
Queue Length 95th (m)	26.9	38.9	37.7	39.4	13.2	43.2	16.1	23.1	72.3	11.9
Internal Link Dist (m)		1322.3		91.7		681.5			157.2	
Turn Bay Length (m)	57.0		32.0		94.0		60.0	109.0		100.0
Base Capacity (vph)	378	2549	230	1465	528	1681	744	527	1761	662
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.25	0.18	0.37	0.26	0.09	0.18	0.24	0.17	0.30	0.15

Intersection Summary



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	91	428	27	82	331	44	45	294	172	88	515	95
Future Volume (vph)	91	428	27	82	331	44	45	294	172	88	515	95
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5
Total Lost time (s)	3.0	7.1		7.1	7.1		3.0	6.9	6.9	3.0	6.9	6.9
Lane Util. Factor	1.00	0.91		1.00	0.91		1.00	0.95	1.00	1.00	0.95	1.00
Frpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00	0.98	1.00	1.00	1.00
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	0.99		1.00	0.98		1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1652	4712		1303	4096		1608	3230	1268	1321	3202	1125
Flt Permitted	0.42	1.00		0.48	1.00		0.45	1.00	1.00	0.55	1.00	1.00
Satd. Flow (perm)	725	4712		652	4096		765	3230	1268	758	3202	1125
Peak-hour factor, PHF	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Adj. Flow (vph)	93	437	28	84	338	45	46	300	176	90	526	97
RTOR Reduction (vph)	0	8	0	0	16	0	0	0	84	0	0	44
Lane Group Flow (vph)	93	457	0	84	367	0	46	300	92	90	526	53
Confl. Peds. (#/hr)	2					2			3	3		
Heavy Vehicles (%)	8%	10%	15%	37%	25%	30%	11%	13%	24%	35%	14%	42%
Turn Type	pm+pt	NA		Perm	NA		pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases	3	8			4		1	6		5	2	
Permitted Phases	8			4			6		6	2		2
Actuated Green, G (s)	38.3	38.3		24.3	24.3		76.2	70.2	70.2	82.7	73.7	73.7
Effective Green, g (s)	38.3	38.3		24.3	24.3		76.2	70.2	70.2	82.7	73.7	73.7
Actuated g/C Ratio	0.28	0.28		0.18	0.18		0.56	0.52	0.52	0.61	0.55	0.55
Clearance Time (s)	3.0	7.1		7.1	7.1		3.0	6.9	6.9	3.0	6.9	6.9
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	281	1336		117	737		469	1679	659	503	1748	614
v/s Ratio Prot	0.03	c0.10			0.09		0.00	0.09		c0.01	c0.16	
v/s Ratio Perm	0.07			c0.13			0.05		0.07	0.10		0.05
v/c Ratio	0.33	0.34		0.72	0.50		0.10	0.18	0.14	0.18	0.30	0.09
Uniform Delay, d1	36.8	38.4		52.1	49.9		13.2	17.1	16.8	10.9	16.7	14.6
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	0.7	0.2		18.9	0.5		0.1	0.2	0.4	0.2	0.4	0.3
Delay (s)	37.5	38.5		71.0	50.4		13.3	17.4	17.2	11.1	17.1	14.9
Level of Service	D	D		E	D		B	B	B	B	B	B
Approach Delay (s)		38.3			54.1			17.0			16.0	
Approach LOS		D			D			B			B	

Intersection Summary			
HCM 2000 Control Delay	29.6	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.39		
Actuated Cycle Length (s)	135.0	Sum of lost time (s)	20.0
Intersection Capacity Utilization	75.0%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	80	556	133	583	107	622	335	99	386	148
v/c Ratio	0.35	0.34	0.82	0.52	0.18	0.42	0.48	0.26	0.26	0.22
Control Delay	28.5	31.1	81.2	43.5	17.0	29.5	7.2	18.2	26.7	5.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	28.5	31.1	81.2	43.5	17.0	29.5	7.2	18.2	26.7	5.9
Queue Length 50th (m)	14.6	40.6	35.2	50.5	13.2	61.4	2.8	12.3	34.9	0.0
Queue Length 95th (m)	21.1	41.0	54.7	54.3	29.7	102.4	33.5	28.4	61.1	16.4
Internal Link Dist (m)		1322.3		91.7		681.5			157.2	
Turn Bay Length (m)	57.0		32.0		94.0		60.0	109.0		100.0
Base Capacity (vph)	301	2520	236	1613	592	1486	692	388	1484	672
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.27	0.22	0.56	0.36	0.18	0.42	0.48	0.26	0.26	0.22

Intersection Summary

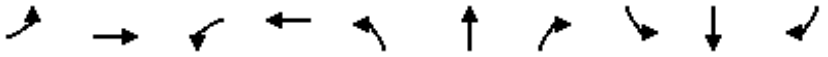
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	78	509	36	130	515	56	105	610	328	97	378	145
Future Volume (vph)	78	509	36	130	515	56	105	610	328	97	378	145
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5
Total Lost time (s)	3.0	7.1		7.1	7.1		3.0	6.9	6.9	3.0	6.9	6.9
Lane Util. Factor	1.00	0.91		1.00	0.91		1.00	0.95	1.00	1.00	0.95	1.00
Frpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00	0.98	1.00	1.00	0.98
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	0.99		1.00	0.99		1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1293	4656		1460	4522		1783	3288	1148	1511	3259	1300
Flt Permitted	0.31	1.00		0.43	1.00		0.51	1.00	1.00	0.35	1.00	1.00
Satd. Flow (perm)	420	4656		666	4522		950	3288	1148	555	3259	1300
Peak-hour factor, PHF	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Adj. Flow (vph)	80	519	37	133	526	57	107	622	335	99	386	148
RTOR Reduction (vph)	0	8	0	0	11	0	0	0	174	0	0	81
Lane Group Flow (vph)	80	548	0	133	572	0	107	622	161	99	386	67
Confl. Peds. (#/hr)	4		4	4		4	3		9	9		3
Heavy Vehicles (%)	38%	12%	3%	22%	10%	52%	0%	11%	36%	18%	12%	21%
Turn Type	pm+pt	NA		Perm	NA		pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases	3	8			4		1	6		5	2	
Permitted Phases	8			4			6		6	2		2
Actuated Green, G (s)	47.0	47.0		33.0	33.0		70.6	61.1	61.1	71.4	61.5	61.5
Effective Green, g (s)	47.0	47.0		33.0	33.0		70.6	61.1	61.1	71.4	61.5	61.5
Actuated g/C Ratio	0.35	0.35		0.24	0.24		0.52	0.45	0.45	0.53	0.46	0.46
Clearance Time (s)	3.0	7.1		7.1	7.1		3.0	6.9	6.9	3.0	6.9	6.9
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	217	1620		162	1105		555	1488	519	363	1484	592
v/s Ratio Prot	c0.03	0.12			0.13		0.01	c0.19		c0.02	0.12	
v/s Ratio Perm	0.10			c0.20			0.09		0.14	0.12		0.05
v/c Ratio	0.37	0.34		0.82	0.52		0.19	0.42	0.31	0.27	0.26	0.11
Uniform Delay, d1	31.0	32.5		48.2	44.1		16.4	24.9	23.5	16.5	22.7	21.1
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	1.1	0.1		27.1	0.4		0.2	0.9	1.6	0.4	0.4	0.4
Delay (s)	32.0	32.6		75.3	44.5		16.5	25.8	25.1	16.9	23.1	21.5
Level of Service	C	C		E	D		B	C	C	B	C	C
Approach Delay (s)		32.6			50.2			24.7			21.8	
Approach LOS		C			D			C			C	

Intersection Summary			
HCM 2000 Control Delay	31.7	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.52		
Actuated Cycle Length (s)	135.0	Sum of lost time (s)	20.0
Intersection Capacity Utilization	79.3%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

APPENDIX

E

2031 FUTURE BACKGROUND INTERSECTION OPERATIONS

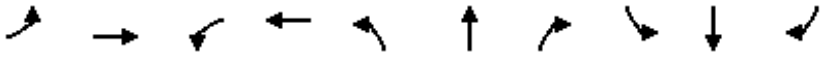


Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	93	465	84	383	54	351	194	90	526	97
v/c Ratio	0.31	0.35	0.72	0.51	0.11	0.21	0.26	0.18	0.30	0.15
Control Delay	33.3	36.8	81.7	48.3	12.8	20.7	4.5	13.0	20.0	5.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	33.3	36.8	81.7	48.3	12.8	20.7	4.5	13.0	20.0	5.1
Queue Length 50th (m)	19.1	37.5	22.7	34.4	5.2	26.4	0.0	8.9	40.9	0.0
Queue Length 95th (m)	26.9	38.9	37.7	39.4	14.8	50.4	16.8	23.1	72.8	11.9
Internal Link Dist (m)		1322.3		91.7		681.5			157.2	
Turn Bay Length (m)	57.0		32.0		94.0		60.0	109.0		100.0
Base Capacity (vph)	378	2549	230	1465	528	1681	752	503	1756	660
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.25	0.18	0.37	0.26	0.10	0.21	0.26	0.18	0.30	0.15

Intersection Summary

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	91	428	27	82	331	44	53	344	190	88	515	95
Future Volume (vph)	91	428	27	82	331	44	53	344	190	88	515	95
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5
Total Lost time (s)	3.0	7.1		7.1	7.1		3.0	6.9	6.9	3.0	6.9	6.9
Lane Util. Factor	1.00	0.91		1.00	0.91		1.00	0.95	1.00	1.00	0.95	1.00
Frpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00	0.98	1.00	1.00	1.00
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	0.99		1.00	0.98		1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1652	4712		1303	4096		1608	3230	1268	1321	3202	1125
Flt Permitted	0.42	1.00		0.48	1.00		0.45	1.00	1.00	0.52	1.00	1.00
Satd. Flow (perm)	725	4712		652	4096		761	3230	1268	717	3202	1125
Peak-hour factor, PHF	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Adj. Flow (vph)	93	437	28	84	338	45	54	351	194	90	526	97
RTOR Reduction (vph)	0	8	0	0	16	0	0	0	93	0	0	44
Lane Group Flow (vph)	93	457	0	84	367	0	54	351	101	90	526	53
Confl. Peds. (#/hr)	2					2			3	3		
Heavy Vehicles (%)	8%	10%	15%	37%	25%	30%	11%	13%	24%	35%	14%	42%
Turn Type	pm+pt	NA		Perm	NA		pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases	3	8			4		1	6		5	2	
Permitted Phases	8			4			6		6	2		2
Actuated Green, G (s)	38.3	38.3		24.3	24.3		76.5	70.2	70.2	82.7	73.4	73.4
Effective Green, g (s)	38.3	38.3		24.3	24.3		76.5	70.2	70.2	82.7	73.4	73.4
Actuated g/C Ratio	0.28	0.28		0.18	0.18		0.57	0.52	0.52	0.61	0.54	0.54
Clearance Time (s)	3.0	7.1		7.1	7.1		3.0	6.9	6.9	3.0	6.9	6.9
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	281	1336		117	737		470	1679	659	481	1740	611
v/s Ratio Prot	0.03	c0.10			0.09		0.01	0.11		c0.01	c0.16	
v/s Ratio Perm	0.07			c0.13			0.06		0.08	0.10		0.05
v/c Ratio	0.33	0.34		0.72	0.50		0.11	0.21	0.15	0.19	0.30	0.09
Uniform Delay, d1	36.8	38.4		52.1	49.9		13.1	17.4	16.9	10.9	16.8	14.7
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	0.7	0.2		18.9	0.5		0.1	0.3	0.5	0.2	0.4	0.3
Delay (s)	37.5	38.5		71.0	50.4		13.2	17.7	17.4	11.1	17.3	15.0
Level of Service	D	D		E	D		B	B	B	B	B	B
Approach Delay (s)		38.3			54.1			17.2			16.2	
Approach LOS		D			D			B			B	

Intersection Summary			
HCM 2000 Control Delay	29.3	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.39		
Actuated Cycle Length (s)	135.0	Sum of lost time (s)	20.0
Intersection Capacity Utilization	75.0%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	80	556	133	583	114	662	342	126	483	188
v/c Ratio	0.35	0.34	0.82	0.52	0.22	0.45	0.51	0.34	0.33	0.27
Control Delay	28.5	31.1	81.2	43.5	17.3	31.2	8.8	19.1	27.8	5.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	28.5	31.1	81.2	43.5	17.3	31.2	8.8	19.1	27.8	5.6
Queue Length 50th (m)	14.6	40.6	35.2	50.5	14.1	67.5	6.1	15.9	45.4	0.0
Queue Length 95th (m)	21.1	41.0	54.7	54.3	31.4	112.7	42.2	34.9	77.4	18.5
Internal Link Dist (m)		1322.3		91.7		681.5			157.2	
Turn Bay Length (m)	57.0		32.0		94.0		60.0	109.0		100.0
Base Capacity (vph)	301	2520	236	1613	533	1455	677	374	1477	692
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.27	0.22	0.56	0.36	0.21	0.45	0.51	0.34	0.33	0.27

Intersection Summary

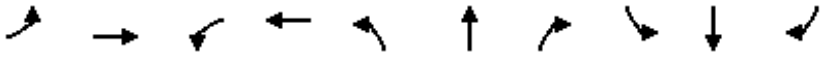
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	78	509	36	130	515	56	112	649	335	123	473	184
Future Volume (vph)	78	509	36	130	515	56	112	649	335	123	473	184
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5
Total Lost time (s)	3.0	7.1		7.1	7.1		3.0	6.9	6.9	3.0	6.9	6.9
Lane Util. Factor	1.00	0.91		1.00	0.91		1.00	0.95	1.00	1.00	0.95	1.00
Frpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00	0.98	1.00	1.00	0.98
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	0.99		1.00	0.99		1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1293	4656		1460	4522		1784	3288	1148	1511	3259	1300
Flt Permitted	0.31	1.00		0.43	1.00		0.45	1.00	1.00	0.32	1.00	1.00
Satd. Flow (perm)	420	4656		666	4522		837	3288	1148	506	3259	1300
Peak-hour factor, PHF	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Adj. Flow (vph)	80	519	37	133	526	57	114	662	342	126	483	188
RTOR Reduction (vph)	0	8	0	0	11	0	0	0	169	0	0	103
Lane Group Flow (vph)	80	548	0	133	572	0	114	662	173	126	483	85
Confl. Peds. (#/hr)	4		4	4		4	3		9	9		3
Heavy Vehicles (%)	38%	12%	3%	22%	10%	52%	0%	11%	36%	18%	12%	21%
Turn Type	pm+pt	NA		Perm	NA		pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases	3	8			4		1	6		5	2	
Permitted Phases	8			4			6		6	2		2
Actuated Green, G (s)	47.0	47.0		33.0	33.0		69.6	59.8	59.8	72.4	61.2	61.2
Effective Green, g (s)	47.0	47.0		33.0	33.0		69.6	59.8	59.8	72.4	61.2	61.2
Actuated g/C Ratio	0.35	0.35		0.24	0.24		0.52	0.44	0.44	0.54	0.45	0.45
Clearance Time (s)	3.0	7.1		7.1	7.1		3.0	6.9	6.9	3.0	6.9	6.9
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	217	1620		162	1105		500	1456	508	354	1477	589
v/s Ratio Prot	c0.03	0.12			0.13		0.02	c0.20		c0.03	0.15	
v/s Ratio Perm	0.10			c0.20			0.10		0.15	0.16		0.07
v/c Ratio	0.37	0.34		0.82	0.52		0.23	0.45	0.34	0.36	0.33	0.14
Uniform Delay, d1	31.0	32.5		48.2	44.1		17.0	26.2	24.7	16.6	23.7	21.6
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	1.1	0.1		27.1	0.4		0.2	1.0	1.8	0.6	0.6	0.5
Delay (s)	32.0	32.6		75.3	44.5		17.2	27.3	26.5	17.2	24.3	22.1
Level of Service	C	C		E	D		B	C	C	B	C	C
Approach Delay (s)		32.6			50.2			26.0			22.6	
Approach LOS		C			D			C			C	

Intersection Summary			
HCM 2000 Control Delay	31.8	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.54		
Actuated Cycle Length (s)	135.0	Sum of lost time (s)	20.0
Intersection Capacity Utilization	80.3%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

APPENDIX

F

2026 FUTURE TOTAL INTERSECTION OPERATIONS



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	126	465	85	386	46	347	176	96	530	100
v/c Ratio	0.38	0.33	0.73	0.51	0.09	0.21	0.24	0.20	0.31	0.15
Control Delay	33.6	35.1	82.1	48.4	14.0	22.4	4.9	14.1	21.2	5.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	33.6	35.1	82.1	48.4	14.0	22.4	4.9	14.1	21.2	5.3
Queue Length 50th (m)	25.8	36.4	23.0	34.7	4.6	27.4	0.0	10.1	42.9	0.0
Queue Length 95th (m)	33.8	37.7	38.0	39.8	13.7	51.8	16.8	25.3	75.1	12.4
Internal Link Dist (m)		1322.3		91.7		681.5			157.2	
Turn Bay Length (m)	57.0		32.0		94.0		60.0	109.0		100.0
Base Capacity (vph)	389	2549	230	1466	510	1616	722	494	1708	646
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.32	0.18	0.37	0.26	0.09	0.21	0.24	0.19	0.31	0.15

Intersection Summary

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	123	428	27	83	334	44	45	340	172	94	519	98
Future Volume (vph)	123	428	27	83	334	44	45	340	172	94	519	98
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5
Total Lost time (s)	3.0	7.1		7.1	7.1		3.0	6.9	6.9	3.0	6.9	6.9
Lane Util. Factor	1.00	0.91		1.00	0.91		1.00	0.95	1.00	1.00	0.95	1.00
Frpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00	0.98	1.00	1.00	1.00
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	0.99		1.00	0.98		1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1652	4712		1303	4096		1608	3230	1268	1321	3202	1125
Flt Permitted	0.41	1.00		0.48	1.00		0.45	1.00	1.00	0.51	1.00	1.00
Satd. Flow (perm)	721	4712		652	4096		759	3230	1268	716	3202	1125
Peak-hour factor, PHF	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Adj. Flow (vph)	126	437	28	85	341	45	46	347	176	96	530	100
RTOR Reduction (vph)	0	8	0	0	16	0	0	0	88	0	0	47
Lane Group Flow (vph)	126	457	0	85	370	0	46	347	88	96	530	53
Confl. Peds. (#/hr)	2					2			3	3		
Heavy Vehicles (%)	8%	10%	15%	37%	25%	30%	11%	13%	24%	35%	14%	42%
Turn Type	pm+pt	NA		Perm	NA		pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases	3	8			4		1	6		5	2	
Permitted Phases	8			4			6		6	2		2
Actuated Green, G (s)	40.5	40.5		24.4	24.4		73.7	67.6	67.6	80.5	71.4	71.4
Effective Green, g (s)	40.5	40.5		24.4	24.4		73.7	67.6	67.6	80.5	71.4	71.4
Actuated g/C Ratio	0.30	0.30		0.18	0.18		0.55	0.50	0.50	0.60	0.53	0.53
Clearance Time (s)	3.0	7.1		7.1	7.1		3.0	6.9	6.9	3.0	6.9	6.9
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	306	1413		117	740		452	1617	634	471	1693	595
v/s Ratio Prot	c0.04	0.10			0.09		0.00	0.11		c0.01	c0.17	
v/s Ratio Perm	0.08			c0.13			0.05		0.07	0.11		0.05
v/c Ratio	0.41	0.32		0.73	0.50		0.10	0.21	0.14	0.20	0.31	0.09
Uniform Delay, d1	35.9	36.6		52.2	49.8		14.3	18.9	18.1	11.9	18.0	15.7
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	0.9	0.1		20.0	0.5		0.1	0.3	0.5	0.2	0.5	0.3
Delay (s)	36.8	36.8		72.1	50.3		14.4	19.2	18.5	12.1	18.4	16.0
Level of Service	D	D		E	D		B	B	B	B	B	B
Approach Delay (s)		36.8			54.3			18.6			17.3	
Approach LOS		D			D			B			B	

Intersection Summary			
HCM 2000 Control Delay	29.9	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.41		
Actuated Cycle Length (s)	135.0	Sum of lost time (s)	20.0
Intersection Capacity Utilization	75.3%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	13	0	452	55	17	698
Future Volume (Veh/h)	13	0	452	55	17	698
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	14	0	491	60	18	759
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (m)			181			
pX, platoon unblocked	0.95	0.95			0.95	
vC, conflicting volume	936	276			551	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	833	139			429	
tC, single (s)	7.1	7.2			4.4	
tC, 2 stage (s)						
tF (s)	3.6	3.4			2.4	
p0 queue free %	95	100			98	
cM capacity (veh/h)	267	809			985	

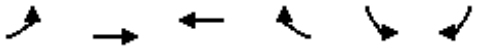
Direction, Lane #	WB 1	NB 1	NB 2	SB 1	SB 2	SB 3
Volume Total	14	327	224	18	380	380
Volume Left	14	0	0	18	0	0
Volume Right	0	0	60	0	0	0
cSH	267	1700	1700	985	1700	1700
Volume to Capacity	0.05	0.19	0.13	0.02	0.22	0.22
Queue Length 95th (m)	1.3	0.0	0.0	0.4	0.0	0.0
Control Delay (s)	19.2	0.0	0.0	8.7	0.0	0.0
Lane LOS	C			A		
Approach Delay (s)	19.2	0.0		0.2		
Approach LOS	C					

Intersection Summary			
Average Delay	0.3		
Intersection Capacity Utilization	29.3%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	0	0	429	23	0	715
Future Volume (Veh/h)	0	0	429	23	0	715
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	0	466	25	0	777
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (m)			284			
pX, platoon unblocked	0.98	0.98			0.98	
vC, conflicting volume	867	246			491	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	816	180			431	
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)	311	819			1113	

Direction, Lane #	WB 1	NB 1	NB 2	SB 1	SB 2
Volume Total	0	311	180	388	388
Volume Left	0	0	0	0	0
Volume Right	0	0	25	0	0
cSH	1700	1700	1700	1700	1700
Volume to Capacity	0.00	0.18	0.11	0.23	0.23
Queue Length 95th (m)	0.0	0.0	0.0	0.0	0.0
Control Delay (s)	0.0	0.0	0.0	0.0	0.0
Lane LOS	A				
Approach Delay (s)	0.0	0.0		0.0	
Approach LOS	A				

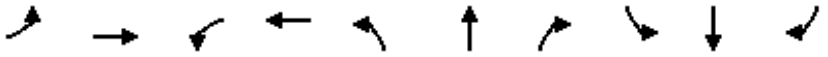
Intersection Summary			
Average Delay	0.0		
Intersection Capacity Utilization	23.1%	ICU Level of Service	A
Analysis Period (min)	15		



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	0	753	457	30	0	4
Future Volume (Veh/h)	0	753	457	30	0	4
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	818	497	33	0	4
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		None	None			
Median storage veh)						
Upstream signal (m)		247				
pX, platoon unblocked					0.95	
vC, conflicting volume	530				786	182
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	530				586	182
tC, single (s)	4.1				6.8	7.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.4
p0 queue free %	100				100	99
cM capacity (veh/h)	1048				423	796

Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	WB 3	SB 1
Volume Total	273	273	273	199	199	132	4
Volume Left	0	0	0	0	0	0	0
Volume Right	0	0	0	0	0	33	4
cSH	1700	1700	1700	1700	1700	1700	796
Volume to Capacity	0.16	0.16	0.16	0.12	0.12	0.08	0.01
Queue Length 95th (m)	0.0	0.0	0.0	0.0	0.0	0.0	0.1
Control Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	9.5
Lane LOS							A
Approach Delay (s)	0.0			0.0			9.5
Approach LOS							A

Intersection Summary			
Average Delay	0.0		
Intersection Capacity Utilization	19.5%	ICU Level of Service	A
Analysis Period (min)	15		



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	87	556	140	598	107	630	335	119	408	163
v/c Ratio	0.37	0.33	0.83	0.51	0.19	0.44	0.50	0.32	0.28	0.24
Control Delay	28.0	29.9	80.9	42.4	18.0	31.7	8.0	19.8	28.2	6.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	28.0	29.9	80.9	42.4	18.0	31.7	8.0	19.8	28.2	6.0
Queue Length 50th (m)	15.6	39.6	37.1	51.3	13.7	65.1	3.7	15.5	38.2	0.0
Queue Length 95th (m)	21.9	39.8	56.9	54.6	30.6	107.2	36.5	34.2	66.2	17.5
Internal Link Dist (m)		1322.3		91.7		681.5			157.2	
Turn Bay Length (m)	57.0		32.0		94.0		60.0	109.0		100.0
Base Capacity (vph)	304	2520	238	1627	566	1425	674	376	1442	666
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.29	0.22	0.59	0.37	0.19	0.44	0.50	0.32	0.28	0.24

Intersection Summary

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	85	509	36	137	530	56	105	617	328	117	400	160
Future Volume (vph)	85	509	36	137	530	56	105	617	328	117	400	160
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5
Total Lost time (s)	3.0	7.1		7.1	7.1		3.0	6.9	6.9	3.0	6.9	6.9
Lane Util. Factor	1.00	0.91		1.00	0.91		1.00	0.95	1.00	1.00	0.95	1.00
Frpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00	0.98	1.00	1.00	0.98
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	0.99		1.00	0.99		1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1293	4656		1460	4528		1783	3288	1148	1511	3259	1300
Flt Permitted	0.31	1.00		0.43	1.00		0.50	1.00	1.00	0.33	1.00	1.00
Satd. Flow (perm)	416	4656		666	4528		929	3288	1148	528	3259	1300
Peak-hour factor, PHF	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Adj. Flow (vph)	87	519	37	140	541	57	107	630	335	119	408	163
RTOR Reduction (vph)	0	8	0	0	11	0	0	0	177	0	0	91
Lane Group Flow (vph)	87	548	0	140	587	0	107	630	158	119	408	72
Confl. Peds. (#/hr)	4		4	4		4	3		9	9		3
Heavy Vehicles (%)	38%	12%	3%	22%	10%	52%	0%	11%	36%	18%	12%	21%
Turn Type	pm+pt	NA		Perm	NA		pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases	3	8			4		1	6		5	2	
Permitted Phases	8			4			6		6	2		2
Actuated Green, G (s)	48.6	48.6		34.3	34.3		68.1	58.5	58.5	70.7	59.8	59.8
Effective Green, g (s)	48.6	48.6		34.3	34.3		68.1	58.5	58.5	70.7	59.8	59.8
Actuated g/C Ratio	0.36	0.36		0.25	0.25		0.50	0.43	0.43	0.52	0.44	0.44
Clearance Time (s)	3.0	7.1		7.1	7.1		3.0	6.9	6.9	3.0	6.9	6.9
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	223	1676		169	1150		529	1424	497	355	1443	575
v/s Ratio Prot	c0.03	0.12			0.13		0.01	c0.19		c0.03	0.13	
v/s Ratio Perm	0.11			c0.21			0.09		0.14	0.15		0.06
v/c Ratio	0.39	0.33		0.83	0.51		0.20	0.44	0.32	0.34	0.28	0.13
Uniform Delay, d1	30.1	31.3		47.6	43.2		17.7	26.8	25.1	17.2	23.9	22.2
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	1.1	0.1		27.1	0.4		0.2	1.0	1.7	0.6	0.5	0.4
Delay (s)	31.2	31.4		74.7	43.5		17.8	27.8	26.8	17.8	24.4	22.6
Level of Service	C	C		E	D		B	C	C	B	C	C
Approach Delay (s)		31.4			49.4			26.5			22.9	
Approach LOS		C			D			C			C	

Intersection Summary			
HCM 2000 Control Delay	32.1	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.54		
Actuated Cycle Length (s)	135.0	Sum of lost time (s)	20.0
Intersection Capacity Utilization	80.0%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	57	11	748	10	0	620
Future Volume (Veh/h)	57	11	748	10	0	620
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	62	12	813	11	0	674
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (m)			181			
pX, platoon unblocked	0.87	0.87			0.87	
vC, conflicting volume	1156	412			824	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	886	34			506	
tC, single (s)	7.1	7.2			4.5	
tC, 2 stage (s)						
tF (s)	3.6	3.4			2.4	
p0 queue free %	73	99			100	
cM capacity (veh/h)	229	867			824	

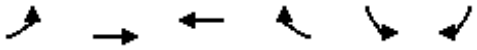
Direction, Lane #	WB 1	NB 1	NB 2	SB 1	SB 2	SB 3
Volume Total	74	542	282	0	337	337
Volume Left	62	0	0	0	0	0
Volume Right	12	0	11	0	0	0
cSH	260	1700	1700	1700	1700	1700
Volume to Capacity	0.28	0.32	0.17	0.00	0.20	0.20
Queue Length 95th (m)	9.1	0.0	0.0	0.0	0.0	0.0
Control Delay (s)	24.3	0.0	0.0	0.0	0.0	0.0
Lane LOS	C					
Approach Delay (s)	24.3	0.0		0.0		
Approach LOS	C					

Intersection Summary			
Average Delay	1.1		
Intersection Capacity Utilization	31.5%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	0	5	755	4	0	620
Future Volume (Veh/h)	0	5	755	4	0	620
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	5	821	4	0	674
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (m)			284			
pX, platoon unblocked	0.88	0.88			0.88	
vC, conflicting volume	1160	412			825	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	905	54			524	
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	99			100	
cM capacity (veh/h)	246	886			925	

Direction, Lane #	WB 1	NB 1	NB 2	SB 1	SB 2
Volume Total	5	547	278	337	337
Volume Left	0	0	0	0	0
Volume Right	5	0	4	0	0
cSH	886	1700	1700	1700	1700
Volume to Capacity	0.01	0.32	0.16	0.20	0.20
Queue Length 95th (m)	0.1	0.0	0.0	0.0	0.0
Control Delay (s)	9.1	0.0	0.0	0.0	0.0
Lane LOS	A				
Approach Delay (s)	9.1	0.0		0.0	
Approach LOS	A				

Intersection Summary			
Average Delay	0.0		
Intersection Capacity Utilization	31.0%	ICU Level of Service	A
Analysis Period (min)	15		



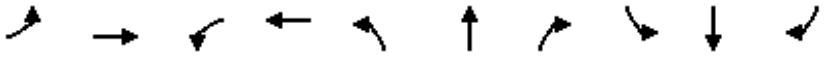
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	0	1161	701	0	0	22
Future Volume (Veh/h)	0	1161	701	0	0	22
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	1262	762	0	0	24
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		None	None			
Median storage veh)						
Upstream signal (m)		247				
pX, platoon unblocked					0.94	
vC, conflicting volume	762				1183	254
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	762				968	254
tC, single (s)	4.1				6.8	7.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.4
p0 queue free %	100				100	97
cM capacity (veh/h)	859				239	710

Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	WB 3	SB 1
Volume Total	421	421	421	305	305	152	24
Volume Left	0	0	0	0	0	0	0
Volume Right	0	0	0	0	0	0	24
cSH	1700	1700	1700	1700	1700	1700	710
Volume to Capacity	0.25	0.25	0.25	0.18	0.18	0.09	0.03
Queue Length 95th (m)	0.0	0.0	0.0	0.0	0.0	0.0	0.8
Control Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	10.2
Lane LOS							B
Approach Delay (s)	0.0			0.0			10.2
Approach LOS							B

Intersection Summary			
Average Delay	0.1		
Intersection Capacity Utilization	25.8%	ICU Level of Service	A
Analysis Period (min)	15		

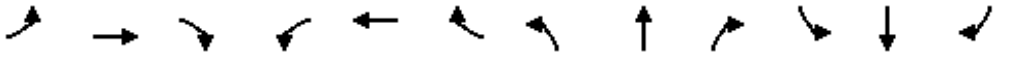
APPENDIX

G 2031 FUTURE TOTAL INTERSECTION OPERATIONS



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	126	465	85	386	54	398	194	96	530	100
v/c Ratio	0.38	0.33	0.73	0.51	0.11	0.25	0.27	0.21	0.31	0.16
Control Delay	33.6	35.1	82.1	48.4	13.9	22.7	4.8	14.2	21.4	5.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	33.6	35.1	82.1	48.4	13.9	22.7	4.8	14.2	21.4	5.3
Queue Length 50th (m)	25.8	36.4	23.0	34.7	5.5	32.0	0.0	10.1	43.2	0.0
Queue Length 95th (m)	33.8	37.7	38.0	39.8	15.3	59.3	17.5	25.3	75.7	12.5
Internal Link Dist (m)		1322.3		91.7		681.5			157.2	
Turn Bay Length (m)	57.0		32.0		94.0		60.0	109.0		100.0
Base Capacity (vph)	389	2549	230	1466	509	1616	731	468	1701	644
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.32	0.18	0.37	0.26	0.11	0.25	0.27	0.21	0.31	0.16

Intersection Summary



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	123	428	27	83	334	44	53	390	190	94	519	98
Future Volume (vph)	123	428	27	83	334	44	53	390	190	94	519	98
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5
Total Lost time (s)	3.0	7.1		7.1	7.1		3.0	6.9	6.9	3.0	6.9	6.9
Lane Util. Factor	1.00	0.91		1.00	0.91		1.00	0.95	1.00	1.00	0.95	1.00
Frpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00	0.98	1.00	1.00	1.00
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	0.99		1.00	0.98		1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1652	4712		1303	4096		1608	3230	1268	1321	3202	1125
Flt Permitted	0.41	1.00		0.48	1.00		0.45	1.00	1.00	0.48	1.00	1.00
Satd. Flow (perm)	721	4712		652	4096		755	3230	1268	669	3202	1125
Peak-hour factor, PHF	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Adj. Flow (vph)	126	437	28	85	341	45	54	398	194	96	530	100
RTOR Reduction (vph)	0	8	0	0	16	0	0	0	97	0	0	47
Lane Group Flow (vph)	126	457	0	85	370	0	54	398	97	96	530	53
Confl. Peds. (#/hr)	2					2			3	3		
Heavy Vehicles (%)	8%	10%	15%	37%	25%	30%	11%	13%	24%	35%	14%	42%
Turn Type	pm+pt	NA		Perm	NA		pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases	3	8			4		1	6		5	2	
Permitted Phases	8			4			6		6	2		2
Actuated Green, G (s)	40.5	40.5		24.4	24.4		74.0	67.6	67.6	80.5	71.1	71.1
Effective Green, g (s)	40.5	40.5		24.4	24.4		74.0	67.6	67.6	80.5	71.1	71.1
Actuated g/C Ratio	0.30	0.30		0.18	0.18		0.55	0.50	0.50	0.60	0.53	0.53
Clearance Time (s)	3.0	7.1		7.1	7.1		3.0	6.9	6.9	3.0	6.9	6.9
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	306	1413		117	740		454	1617	634	446	1686	592
v/s Ratio Prot	c0.04	0.10			0.09		0.01	0.12		c0.02	c0.17	
v/s Ratio Perm	0.08			c0.13			0.06		0.08	0.11		0.05
v/c Ratio	0.41	0.32		0.73	0.50		0.12	0.25	0.15	0.22	0.31	0.09
Uniform Delay, d1	35.9	36.6		52.2	49.8		14.3	19.2	18.2	12.0	18.1	15.9
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	0.9	0.1		20.0	0.5		0.1	0.4	0.5	0.2	0.5	0.3
Delay (s)	36.8	36.8		72.1	50.3		14.4	19.6	18.7	12.2	18.6	16.2
Level of Service	D	D		E	D		B	B	B	B	B	B
Approach Delay (s)		36.8			54.3			18.9			17.4	
Approach LOS		D			D			B			B	

Intersection Summary			
HCM 2000 Control Delay	29.6	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.41		
Actuated Cycle Length (s)	135.0	Sum of lost time (s)	20.0
Intersection Capacity Utilization	75.3%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	13	0	502	55	17	698
Future Volume (Veh/h)	13	0	502	55	17	698
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	14	0	546	60	18	759
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (m)			181			
pX, platoon unblocked	0.94	0.94			0.94	
vC, conflicting volume	992	303			606	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	866	134			456	
tC, single (s)	7.3	7.4			4.3	
tC, 2 stage (s)						
tF (s)	3.8	3.6			2.3	
p0 queue free %	94	100			98	
cM capacity (veh/h)	230	768			985	

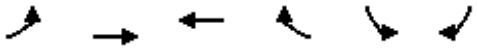
Direction, Lane #	WB 1	NB 1	NB 2	SB 1	SB 2	SB 3
Volume Total	14	364	242	18	380	380
Volume Left	14	0	0	18	0	0
Volume Right	0	0	60	0	0	0
cSH	230	1700	1700	985	1700	1700
Volume to Capacity	0.06	0.21	0.14	0.02	0.22	0.22
Queue Length 95th (m)	1.5	0.0	0.0	0.4	0.0	0.0
Control Delay (s)	21.7	0.0	0.0	8.7	0.0	0.0
Lane LOS	C			A		
Approach Delay (s)	21.7	0.0		0.2		
Approach LOS	C					

Intersection Summary			
Average Delay	0.3		
Intersection Capacity Utilization	29.3%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	0	0	479	23	0	715
Future Volume (Veh/h)	0	0	479	23	0	715
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	0	521	25	0	777
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (m)			284			
pX, platoon unblocked	0.96	0.96			0.96	
vC, conflicting volume	922	273			546	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	842	167			451	
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)	296	822			1078	

Direction, Lane #	WB 1	NB 1	NB 2	SB 1	SB 2
Volume Total	0	347	199	388	388
Volume Left	0	0	0	0	0
Volume Right	0	0	25	0	0
cSH	1700	1700	1700	1700	1700
Volume to Capacity	0.01	0.20	0.12	0.23	0.23
Queue Length 95th (m)	0.0	0.0	0.0	0.0	0.0
Control Delay (s)	0.0	0.0	0.0	0.0	0.0
Lane LOS	A				
Approach Delay (s)	0.0	0.0		0.0	
Approach LOS	A				

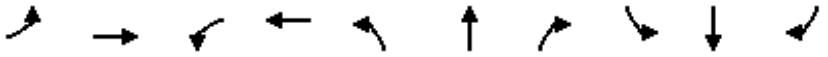
Intersection Summary			
Average Delay	0.0		
Intersection Capacity Utilization	23.1%	ICU Level of Service	A
Analysis Period (min)	15		



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	0	771	457	30	0	4
Future Volume (Veh/h)	0	771	457	30	0	4
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	838	497	33	0	4
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		None	None			
Median storage veh)						
Upstream signal (m)		247				
pX, platoon unblocked					0.95	
vC, conflicting volume	530				793	182
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	530				593	182
tC, single (s)	4.1				6.8	7.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.4
p0 queue free %	100				100	99
cM capacity (veh/h)	1048				419	796

Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	WB 3	SB 1
Volume Total	279	279	279	199	199	132	4
Volume Left	0	0	0	0	0	0	0
Volume Right	0	0	0	0	0	33	4
cSH	1700	1700	1700	1700	1700	1700	796
Volume to Capacity	0.16	0.16	0.16	0.12	0.12	0.08	0.01
Queue Length 95th (m)	0.0	0.0	0.0	0.0	0.0	0.0	0.1
Control Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	9.5
Lane LOS							A
Approach Delay (s)	0.0			0.0			9.5
Approach LOS							A

Intersection Summary			
Average Delay	0.0		
Intersection Capacity Utilization	19.5%	ICU Level of Service	A
Analysis Period (min)	15		



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	87	556	140	598	114	669	342	146	505	203
v/c Ratio	0.37	0.33	0.83	0.51	0.23	0.48	0.52	0.40	0.35	0.30
Control Delay	28.0	29.9	80.9	42.4	18.4	33.3	9.5	21.0	29.4	5.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	28.0	29.9	80.9	42.4	18.4	33.3	9.5	21.0	29.4	5.7
Queue Length 50th (m)	15.6	39.6	37.1	51.3	14.6	72.0	6.9	19.4	49.1	0.0
Queue Length 95th (m)	21.9	39.8	56.9	54.6	32.3	114.9	43.7	41.2	83.0	19.9
Internal Link Dist (m)		1322.3		91.7		681.5			157.2	
Turn Bay Length (m)	57.0		32.0		94.0		60.0	109.0		100.0
Base Capacity (vph)	304	2520	238	1627	509	1391	659	364	1436	686
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.29	0.22	0.59	0.37	0.22	0.48	0.52	0.40	0.35	0.30

Intersection Summary

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	85	509	36	137	530	56	112	656	335	143	495	199
Future Volume (vph)	85	509	36	137	530	56	112	656	335	143	495	199
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5
Total Lost time (s)	3.0	7.1		7.1	7.1		3.0	6.9	6.9	3.0	6.9	6.9
Lane Util. Factor	1.00	0.91		1.00	0.91		1.00	0.95	1.00	1.00	0.95	1.00
Frpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00	0.98	1.00	1.00	0.98
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	0.99		1.00	0.99		1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1293	4656		1460	4528		1784	3288	1148	1511	3259	1300
Flt Permitted	0.31	1.00		0.43	1.00		0.44	1.00	1.00	0.30	1.00	1.00
Satd. Flow (perm)	416	4656		666	4528		818	3288	1148	479	3259	1300
Peak-hour factor, PHF	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Adj. Flow (vph)	87	519	37	140	541	57	114	669	342	146	505	203
RTOR Reduction (vph)	0	8	0	0	11	0	0	0	174	0	0	114
Lane Group Flow (vph)	87	548	0	140	587	0	114	669	168	146	505	89
Confl. Peds. (#/hr)	4		4	4		4	3		9	9		3
Heavy Vehicles (%)	38%	12%	3%	22%	10%	52%	0%	11%	36%	18%	12%	21%
Turn Type	pm+pt	NA		Perm	NA		pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases	3	8			4		1	6		5	2	
Permitted Phases	8			4			6		6	2		2
Actuated Green, G (s)	48.6	48.6		34.3	34.3		67.0	57.1	57.1	71.8	59.5	59.5
Effective Green, g (s)	48.6	48.6		34.3	34.3		67.0	57.1	57.1	71.8	59.5	59.5
Actuated g/C Ratio	0.36	0.36		0.25	0.25		0.50	0.42	0.42	0.53	0.44	0.44
Clearance Time (s)	3.0	7.1		7.1	7.1		3.0	6.9	6.9	3.0	6.9	6.9
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	223	1676		169	1150		476	1390	485	348	1436	572
v/s Ratio Prot	c0.03	0.12			0.13		0.02	c0.20		c0.04	0.15	
v/s Ratio Perm	0.11			c0.21			0.10		0.15	0.18		0.07
v/c Ratio	0.39	0.33		0.83	0.51		0.24	0.48	0.35	0.42	0.35	0.16
Uniform Delay, d1	30.1	31.3		47.6	43.2		18.4	28.2	26.3	17.4	25.0	22.7
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	1.1	0.1		27.1	0.4		0.3	1.2	2.0	0.8	0.7	0.6
Delay (s)	31.2	31.4		74.7	43.5		18.6	29.4	28.3	18.2	25.7	23.3
Level of Service	C	C		E	D		B	C	C	B	C	C
Approach Delay (s)		31.4			49.4			28.0			23.8	
Approach LOS		C			D			C			C	

Intersection Summary			
HCM 2000 Control Delay	32.3	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.57		
Actuated Cycle Length (s)	135.0	Sum of lost time (s)	20.0
Intersection Capacity Utilization	81.4%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	57	11	787	10	0	780
Future Volume (Veh/h)	57	11	787	10	0	780
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	62	12	855	11	0	848
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (m)			181			
pX, platoon unblocked	0.86	0.86			0.86	
vC, conflicting volume	1284	433			866	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1003	12			516	
tC, single (s)	7.0	7.1			5.0	
tC, 2 stage (s)						
tF (s)	3.6	3.4			2.6	
p0 queue free %	68	99			100	
cM capacity (veh/h)	191	888			689	

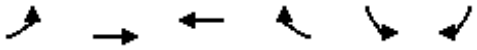
Direction, Lane #	WB 1	NB 1	NB 2	SB 1	SB 2	SB 3
Volume Total	74	570	296	0	424	424
Volume Left	62	0	0	0	0	0
Volume Right	12	0	11	0	0	0
cSH	219	1700	1700	1700	1700	1700
Volume to Capacity	0.34	0.34	0.17	0.00	0.25	0.25
Queue Length 95th (m)	11.4	0.0	0.0	0.0	0.0	0.0
Control Delay (s)	29.7	0.0	0.0	0.0	0.0	0.0
Lane LOS	D					
Approach Delay (s)	29.7	0.0		0.0		
Approach LOS	D					

Intersection Summary			
Average Delay	1.2		
Intersection Capacity Utilization	32.6%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	0	5	794	4	0	780
Future Volume (Veh/h)	0	5	794	4	0	780
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	5	863	4	0	848
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (m)			284			
pX, platoon unblocked	0.86	0.86			0.86	
vC, conflicting volume	1289	434			867	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1020	31			532	
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	99			100	
cM capacity (veh/h)	204	902			904	

Direction, Lane #	WB 1	NB 1	NB 2	SB 1	SB 2
Volume Total	5	575	292	424	424
Volume Left	0	0	0	0	0
Volume Right	5	0	4	0	0
cSH	902	1700	1700	1700	1700
Volume to Capacity	0.01	0.34	0.17	0.25	0.25
Queue Length 95th (m)	0.1	0.0	0.0	0.0	0.0
Control Delay (s)	9.0	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	32.1%	ICU Level of Service	A
Analysis Period (min)	15		



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	0	1194	701	0	0	22
Future Volume (Veh/h)	0	1194	701	0	0	22
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	1298	762	0	0	24
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		None	None			
Median storage veh)						
Upstream signal (m)		247				
pX, platoon unblocked					0.94	
vC, conflicting volume	762				1195	254
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	762				981	254
tC, single (s)	4.1				6.8	7.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.4
p0 queue free %	100				100	97
cM capacity (veh/h)	859				235	710

Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	WB 3	SB 1
Volume Total	433	433	433	305	305	152	24
Volume Left	0	0	0	0	0	0	0
Volume Right	0	0	0	0	0	0	24
cSH	1700	1700	1700	1700	1700	1700	710
Volume to Capacity	0.25	0.25	0.25	0.18	0.18	0.09	0.03
Queue Length 95th (m)	0.0	0.0	0.0	0.0	0.0	0.0	0.8
Control Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	10.2
Lane LOS							B
Approach Delay (s)	0.0			0.0			10.2
Approach LOS							B

Intersection Summary			
Average Delay	0.1		
Intersection Capacity Utilization	26.4%	ICU Level of Service	A
Analysis Period (min)	15		