TRAFFIC IMPACT STUDY

Proposed Commercial Development
13846 & 13940 Airport Road
Caledon, ON

January 2022

Prepared for
RG Consulting Inc.

TRANS-PLAN
Transportation Engineering

785 Dundas St W
Toronto, ON, M6J 1V2

1 (647) 931 7383
1 (877) 668 8784

trans-plan.com
admin@trans-plan.com

TRANS-PLAN

785 Dundas St W
Toronto, ON M6J 1V2

1 (877) 668 8784
1 (647) 931 7383

admin@trans-plan.com
trans-plan.com

January 27, 2022

c/o Mr. Trevor Alkema, BES
Planning Assistant
RG Consulting Inc.
2201 Finch Avenue West, Suite 27
Toronto, ON M9M 2Y9

Re: **Proposed Commercial Development, 13846 and 13940 Airport Road, Caledon (Sandhill), ON – Traffic Impact Study**

Dear Mr. Alkema,

TRANS-PLAN is pleased to submit this Traffic Impact Study for the proposed commercial development, located at 13846 and 13940 Airport Road, in the community of Sandhill, Town of Caledon.

Our traffic impact analysis indicates that the subject site is expected to have some impact to the study area roadway operations, in the form of delays for some exclusive intersection movements at Airport Road and King Street, as well as the main full movement access. However, the anticipated delays are expected to be minor, and during the interim, with the road improvements along Airport Road in the year 2024, and that traffic operations along the corridor will maintain efficiency once the road improvements have been completed.

The proposed commercial development is to provide 249 parking spaces in total, 5 of which are designated as accessible spaces. It is recommended that the parking requirements be reviewed once each building has been designated with a land use, to determine the parking needs of this development more accurately.

Sincerely,

Anil Seegobin, P.Eng.
Partner, Engineer

Trans-Plan Transportation Inc.
Transportation Consultants

Charles Chung, EIT
Traffic Analyst

TABLE OF CONTENTS

Transmittal Letter

TABLE OF CONTENTS I

1. INTRODUCTION 1

SITE LOCATION 1

2. PROPOSED DEVELOPMENT 1

3. EXISTING CONDITIONS 2

3.1 Road Network 2

3.2 Traffic Counts 2

4. FUTURE BACKGROUND CONDITIONS 3

4.1 Horizon Years 3

4.2 Application of Background Growth Rate 3

4.3 Planned Background Developments 3

4.4 Planned Roadway Improvements 3

5. SITE TRAFFIC 4

5.1 Trip Generation 4

5.2 Trip Distribution and Assignment 5

6. FUTURE TOTAL TRAFFIC CONDITIONS 5

7. CAPACITY ANALYSIS 5

8. PARKING REVIEW 12

9. CONCLUSIONS 12

Appendix A – Turning Movement Counts and Signal Timing Plans

Appendix B – Background Growth Rate

Appendix C – Airport Road Design Plan

Appendix D – Capacity Analysis Sheets

Appendix E – Level of Service Definitions

List of Tables

Table 1 - Current Intersection Turning Movement Counts 3
Table 2 – Site Trip Generation Results 5
Table 3 – Capacity Analysis Results – Existing 9
Table 4 – Capacity Analysis Results – 2023 Conditions 10
Table 5 – Capacity Analysis Results – 2028 Conditions 11
Table 6 – Town of Caledon Zoning By-Law Parking Requirements and Proposed Supply 12

List of Figures

Figure 1 – Site Location 14
Figure 2 – Site Plan 15
Figure 3 – Existing Study Area Roadway Characteristics 16
Figure 4 – Existing Traffic Volumes, Weekday AM, and PM, and Saturday Peak Hours 17
Figure 5 – Future Study Area Roadway Characteristics 18
Figure 6 – 2023 Background Traffic Volumes, Weekday AM, and PM, and Saturday peak hours 19
Figure 7 – 2028 Total Traffic Volumes, Weekday AM, and PM, and Saturday peak hours 20
Figure 8 – Site Traffic Assignment, Weekday AM and PM, and Saturday Peak Hours 21
Figure 9 – Pass-by Trip Adjustment, Weekday AM and PM, and Saturday Peak Hours 22
Figure 10 – 2023 Total Traffic Volumes, Weekday AM and PM, and Saturday Peak Hours 23
Figure 11 – 2028 Total Traffic Volumes, Weekday AM and PM, and Saturday Peak Hours 24

1. INTRODUCTION

Trans-Plan has been retained by RG Consulting Inc. to provide a Traffic Impact Study (TIS) for a proposed commercial development in the community of Sandhill, in the Town of Caledon, Regional Municipality of Peel.

Our Traffic Impact Study will consist of:

- A review of the proposed development
- A review and assessment of the existing road network
- An analysis of existing and future traffic conditions in the study area, based on recent traffic counts at the study area intersections
- Site trip generation estimates for commercial uses, based on development plans
- An assessment of the impact of site-generated traffic on the study area intersections under future background and total traffic conditions at full build-out (2 years), and a 5-year horizon
- Determination of any roadway improvements, if necessary, to accommodate the proposed development

York Region transportation staff were provided a study terms of reference prior to the completion of the study.

SITE LOCATION

The site, shown in Figure 1, is located at 13846 and 13940 Airport Road, on the southwest quadrant of Airport Road and King Street. Currently the site is vacant, with the surrounding area consisting of mostly residential uses, and includes an Auto Market, a Trucking Company, and a Community Church.

2. PROPOSED DEVELOPMENT

The proposed site plan, provided in Figure 2, includes three blocks consisting of 8 buildings designated for commercial uses, and shows the following changes to the lot:

Block 1

- Building 'A' – one-storey building with a total GFA of 4,036 ft² (375m²)
- Building 'B' – two-storey building with a total GFA of 42,334 ft² (3,933m²)
- Building 'C' – two-storey building with a total GFA of 13,024 ft² (1,210m²)
- Building 'H' – one-storey building with a total GFA of 695 ft² (64.6m²)

Block 3

- Building 'D' – two-storey building with a total GFA of 11,786 ft² (1,097 m²)
- Building 'E' – two-storey building with a total GFA of 45,187 ft² (4,198 m²)
- Building 'F' and Building 'G' – two-storey buildings each with a total GFA of 47,318 ft² (4,396m²), and a combined GFA of 94,636 ft² (8,792m²)

Access to the site is proposed via three (3) driveways along Airport Road: one full moves access approximately 300m south of the Airport Road and King Street intersection and is proposed to be signalized. The other two accesses are configured as right-in/right-out (RIRO) and are located approximately 165m and 300m north and south of the full moves access, respectively.

There will be internal laneway connections between Block 1 and Block 2 stemming from the private road allowance to allow connectivity for motorists to each access point.

The development also proposes the implementation of traffic signals at the full moves access to maintain operational efficiency along the corridor, however the Region of Peel has recently approved road improvements for the segment of Airport Road included in the study area, which will be discussed further in this report.

3. EXISTING CONDITIONS

3.1 Road Network

The study area roadway characteristics are shown in Figure 3. The boundary roadways located in the study area are described as follows:

Airport Road (Regional Road 7) is a two-lane arterial road running in a north-south direction, under the jurisdiction of the Region of Peel. Airport Road consists of two travel lanes; one in each direction, with the posted speed limit set at 80 km/h, and a reduction to 60 km/h on the north and south approaches to its intersection with King Street.

King Street (Regional Road 9) is a two-lane arterial road running east-west under the jurisdiction of the Region of Peel, located north of the site. King Street consists of two travel lanes; one in each direction, with the posted speed limit set at 70 km/h. King Street and Airport Road form a signalized intersection, which acts as the northern limit of the study area.

Old School Road is two-lane local road running in an east-west direction under the jurisdiction of the Region of Peel, with the posted speed limit set at 70 km/h. Old School Road intersects with Airport Road approximately 2.5 kilometers south of the site as the west approach, forming an offset unsignalized intersection with Healey Road.

Healey Road is a two-lane local road running in an east-west direction, under the jurisdiction of the Region of Peel, with the posted speed limit set at 70 km/h. Healey Road is located approximately 40m south of the Old School Road and Airport Road intersection, acting as the east approach.

3.2 Traffic Counts

Detailed TMC data for intersections within the study area was either obtained from Spectrum or conducted by Trans-Plan, and current signal timing plans for the Airport Road and King Street intersection provided by the Region of Peel. Source data is provided in Appendix A, and a summary of the count hours and peak hours obtained for each intersection provided in Table 1.

Table 1 - Current Intersection Turning Movement Counts

Intersection (Source)	Count Date	Count Hours	Peak Hours
Airport Road at King Street AM / PM –Spectrum **(Saturday)** – Trans-Plan	Wed. Feb 14, 2018 **(Sat. Aug 28, 2021)**	7:00am – 9:00am 3:00pm – 6:00 pm **11:00am – 3:00pm**	7:15am – 8:15am 4:45pm – 5:45pm **1:30pm – 2:30pm**
Airport Road at Old School Road AM / PM –Spectrum **(Saturday)** – Trans-Plan	Thurs. Oct 3, 2019 **(Sat. Aug 28, 2021)**	7:00am - 9:00am 3:00pm - 6:00pm **11:00am – 3:00pm**	7:15am – 8:15am 4:30pm – 5:30pm **2:00pm – 3:00pm**
Airport Road at Healey Road AM / PM –Spectrum **(Saturday)** – Trans-Plan	Thurs. Oct 3, 2019 **(Sat. Aug 28, 2021)**	7:00am - 9:00am 3:00pm - 6:00pm **11:00am – 3:00pm**	7:00am – 8:00am 4:00pm – 5:00pm **2:00pm – 3:00pm**

Through volumes along the study area roadways, such as Airport Road, were balanced (increased) for corridor volume consistency, where appropriate. Existing traffic volumes for the weekday AM and PM, and Saturday peak hours are illustrated in Figure 4.

4. FUTURE BACKGROUND CONDITIONS

Future background traffic volumes were determined based on a review of planned developments and future traffic volume growth in the study area.

4.1 Horizon Years

The development is anticipated to be completed by 2023, in this regard, a horizon year of 2023 will be analyzed, in addition to the 5-year horizon. Years 2023 and 2028 are considered in our future traffic analysis.

4.2 Application of Background Growth Rate

Traffic growth in the study area is typically analyzed through a linear regression analysis of aggregate Annual Average Daily Traffic (AADT) mid-block volumes. The Region of Peel's Open Traffic Data Portal provided AADT data for the years 2016 and 2017, and Transportation Planning staff at the Region of Peel provided data from 2019. Source data is provided in Appendix B. The growth rate calculation produced a result of 0.5% which was applied uniformly to the study area for background and total traffic conditions.

4.3 Planned Background Developments

Based on a review of the Town of Caledon's Current Development Applications, there are no notable background developments, in the immediate study area, which are to be included in the traffic model and analysis.

4.4 Planned Roadway Improvements

The Region of Peel has approved roadway improvements along Airport Road, which includes the section of the corridor analyzed in this report. The following changes to the road characteristics of Airport Road within the study area are listed below:

- Implementation of two-lane roundabout intersections at:
  - Airport Road & King Street
  - Airport Road and Old School Road / Healey Road
- Road widening from 2 to 4 lanes
- Two-way center left-turn lane

The above-mentioned road improvements are expected to start construction by 2024, with anticipated completion by 2025, and therefor will be included in the analysis of future background and total traffic conditions for the 2028 horizon year. Appendix C provides some design drawings we received, depicting the roundabout designs.

The site plan also proposes traffic signals to be implemented at the main full-movement access due to the anticipated high left-turning volumes and will be analyzed as a signalized intersection in the capacity analysis provided further in this report. The future study area roadway characteristics are illustrated in Figure 5.

It should be noted that for the analysis of background traffic conditions for the horizon year 2028, TMC data used for the offset intersection at Airport Road and Old School Road / Healey Road was adjusted to depict intersection movements more accurately for the new roundabout configuration anticipated in 2025. Based on the review of future background conditions, future background traffic volumes for the 2023 and 2028 horizon years are provided in Figure 6 and Figure 7, respectively.

5. SITE TRAFFIC

5.1 Trip Generation

Site trips for the proposed development were generated using the Institute of Transportation Engineers (ITE) Trip Generation manuals, 10th Edition. Land uses for each building have not yet been designated, as a result, Land Use Code (LUC) 820 for Shopping Centers was utilized. Although the trip generation results are seemingly aggressive, this was done to represent more of a worst-case scenario, as to ensure not to undercut the potential trips generated by the proposed development.

An adjustment for pass-by trips is also included which arise from existing traffic on the roadway network entering the proposed development as an intermediate stop on the way to another ultimate destination along the same travel route. Typical pass-by trip rates are provided in the ITE Trip Generation Handbook for shopping centers and indicates average pass-by trip rates are 0%, 34% and 26% during the AM, PM and Saturday peak periods, respectively.

A summary of the trip generation of the proposed site is provided in Table 2.

Table 2 – Site Trip Generation Results

Land Use	Size (Sq.ft. GFA)		Weekday AM Peak Hour			Weekday PM Peak Hour			Saturday Peak Hour		
			In	Out	Total	In	Out	Total	In	Out	Total
Shopping Center (ITE Code 820)	212.5	Distribution	62%	38%	100%	48%	52%	100%	52%	48%	100%
		Equation	T = 0.50(X) + 151.78			Ln(T) = 0.74 Ln(X) + 2.89			Ln(T) = 0.79 Ln(X) + 2.79		
		Rate	0.75	0.46	1.21	2.15	2.32	4.47	7.27	6.72	13.99
		Trips	160	98	258	456	493	949	584	539	1123
		Pass-by (0% AM, 34% PM, 26% SAT)	0	0	0	161	161	322	146	146	292
Total New Site Trips			**160**	**98**	**258**	**295**	**332**	**627**	**438**	**393**	**831**

Based on the trip generation, the subject site is expected to generate approximately 258 new two-way trips during the weekday AM peak hour, 627 trips in the PM peak hour, and 831 during the Saturday peak hour.

5.2 Trip Distribution and Assignment

Site trips were distributed and assigned to/from the site and the boundary roadways within the study area according to the existing traffic patterns along Airport Road between King Street and Healey Road, as derived from the traffic counts. The existing traffic volume percent split along Airport Road is an approximate 70/30 split during the weekday, with southbound traffic acting as the predominant flow during the AM peak hour, and northbound being predominant in the PM peak hour. The existing traffic volume split during the Saturday peak hour is an approximate 50/50 split.

The site traffic assignment for the development is provided in Figure 8, and pass-by traffic assignment for the weekday AM and PM, and Saturday peak hours is shown in Figure 9.

6. FUTURE TOTAL TRAFFIC CONDITIONS

Site traffic volumes were added to the future background traffic volumes to obtain future total traffic volumes for the peak hours. The future total traffic volumes for the horizon years 2023 and 2028 in the weekday AM and PM, and Saturday peak hours are shown in Figure 10 and Figure 11, respectively.

7. CAPACITY ANALYSIS

A capacity analysis was undertaken for the study area intersections and site driveway access points using Synchro analysis software.

As mentioned previously in this report, road improvements along Airport Road have been approved, with construction anticipated to begin by 2024 and completed by 2025. This in mind, traffic modelling for the

2028 horizon year includes a capacity analysis of the newly proposed roundabout intersections along Airport Road at King Street, as well as Old School Road and Healey Road, which was completed using Sidra Intersection 8, Traffic Engineering software.

The capacity analysis results of the weekday AM and PM, and Saturday peak hours are summarized in Table 3 to Table 5, and the Capacity Analysis Sheets are provided in Appendix C. The results of the capacity analysis are summarized in this section by individual intersection / site entrance.

Airport Road (Regional Road 7) & King Street (Regional Road 9)

Existing Conditions – Synchro analysis

Under existing conditions, this intersection operates at an LOS of C during the weekday AM and PM, and Saturday peak hours. During the PM peak hour, the intersection has an overall v/c ratio and delay of 0.86 and 29 seconds.

Future Background and Total Conditions (2023) – Synchro analysis

Under 2023 future total conditions this intersection is expected to operate at an LOS of C during the weekday AM peak hour, and LOS D during the PM and Saturday peak hours. The overall v/c ratio and delay during the Saturday peak hour are 0.95 and 36 seconds.

Future Background and Total Conditions (2028) – Sidra analysis

With the reconfiguration of this signalized intersection to a two-lane roundabout, under 2028 future background and total traffic conditions this intersection is expected to operate at an LOS of A during the weekday AM and PM, and Saturday peak hours.

Old School Road & Airport Road

Existing Conditions– Synchro analysis

Under existing conditions, this intersection operates at an LOS of D during both the AM and PM peak hour, and LOS B during the Saturday peak hour. During the AM peak hour, the eastbound right and left-turning movements operate at an LOS F, with a v/c ratio and delay of 0.90 and 61 seconds. The northbound and southbound movements experience little to no delay and operate acceptably.

Future Background & Total Conditions (2023) – Synchro analysis

Under future conditions this intersection is expected to operate similarly to the existing conditions, with northbound and southbound movements operating acceptably, with eastbound right and left-turning motorists anticipated to experience significant delays.

Future Background and Total Conditions (2028) – Sidra analysis

With the reconfiguration of this intersection to a two-lane roundabout, under 2028 background and total traffic conditions this intersection is expected to operate at an LOS of A during the weekday AM and PM, and Saturday peak hours.

Airport Road & Healey Road

Existing Conditions– Synchro analysis

Under existing conditions, this intersection operates at an LOS of E during the AM and PM peak hour, and LOS B during the Saturday peak hour. During the PM peak hour, the westbound right and left-turning movements operate at an LOS of F with a v/c ratio and delay of 1.25 and approximately two and a half minutes. The northbound and southbound movements experience little to no delay and operate acceptably.

Future Background & Total Conditions (2023) – Synchro analysis

Under future conditions this intersection is expected to operate similarly to the existing conditions, with northbound and southbound movements operating acceptably and westbound right and left-turning motorists anticipated to experience significant delays.

Future Background and Total Conditions (2028) – Sidra analysis

With the reconfiguration of this intersection to a two-lane roundabout, under 2028 future background and total traffic conditions this intersection is expected to operate at an LOS of A during the weekday AM and PM, and Saturday peak hours.

Airport Road & Proposed Site Access 1 & Proposed Site Access 3 (RIRO)

Future Total Conditions (2023 & 2028) – Synchro analysis

Under future conditions these RIRO accesses are expected to operate at an LOS of A during the AM and PM, and Saturday peak hours.

Airport Road & Proposed Site Access 2 (Full-moves)

Scenario 1 (Unsignalized)

Future Total Conditions (2023)

Under future 2023 conditions this intersection is expected to be operating at an LOS of C during the AM peak hour, and LOS of E during the PM and Saturday peak hours, with the eastbound left-turn operating at an LOS of F, and motorists expected to experience significant delays. The northbound and southbound movements are expected to experience little to no delay and operate acceptably.

Future Total Conditions (2028)

Under future 2028 conditions including the road improvements to Airport Road, this intersection is expected to operate at an LOS of A during the AM and PM, and Saturday peak hours. However, the eastbound left-turn is still expected to operate at an LOS of F, with a v/c ratio and delay of 1.20 and up to 3 minutes.

Scenario 2 (Signalized)

Future Total Conditions (2023)

Under future 2023 conditions this intersection is expected to be operating at an LOS of A during the AM peak hour, LOS D during the PM peak hour, and LOS E during the Saturday peak hour. During the Saturday peak hour, the shared northbound through/left-turn lane is expected to operate at an LOS F with motorists expected to experience delays between one and a half and two minutes.

Future Total Conditions (2028)

Under future 2028 conditions including the road improvements to Airport Road, this intersection is expected to operate at an LOS of A during the AM and Saturday peak hours, and LOS B during the PM peak hour. The overall v/c ratio and delay during the PM peak hour are 0.50 and 12 seconds.

Summary

Under existing conditions, the Airport Road and King Street intersection operates well with little to no delays. Analysis of future background and total conditions indicate site trips generated east of Airport Road may contribute to some delay for the westbound left-turning movement at the intersection. The existing cycle length is approximately 80 seconds, and was increased to 110 seconds, which was noted to improve the westbound left-turning movement and maintain operational efficiency within the intersection until the road improvements are constructed.

Under existing conditions, the Airport Road intersections at Old School Road and Healey Road, specifically the east and westbound left-turning movements, experience significant delay during the AM and PM peak hours. Analysis of future background and total conditions indicate the impacts on LOS of these intersections are likely a result of background traffic growth in the area, and the widening of Airport Road along with the retrofitting of these intersections to a roundabout is expected to increase operational efficiency at the intersection and its approaches.

The main full movement site access was analyzed under both unsignalized and signalized scenarios. The unsignalized scenario illustrated significant delays for eastbound left-turning motorists, and the signalized scenario producing some delay for the shared northbound through/left-turn lane, approximately half that of the unsignalized scenario. Regardless, the delays experienced by motorists will be interim, with the eventual widening of Airport Road anticipated to greatly increase operational efficiency along the corridor. The implementation of traffic signals at this main access should be considered to accommodate the anticipated high volume of left turns at this intersection. It is noted that our trip generation considered a worst-case scenario of all shopping centre GFA which results in a higher number than if warehouse and other land uses are to be provided on-site.

Table 3 - Capacity Analysis Results, Existing Traffic Conditions

Intersection *Configuration* Movement	**Existing Traffic Conditions**								
	Weekday AM Peak			**Weekday PM Peak**			**Saturday Peak Hour**		
	V/C	**Delay**	**LOS**	**V/C**	**Delay**	**LOS**	**V/C**	**Delay**	**LOS**
Airport Road & King Street	**0.76**	**26**	**C**	**0.86**	**30**	**C**	**0.58**	**21**	**C**
Eastbound Left	0.24	20	C	0.62	33	C	0.32	22	C
Eastbound Through / Right	0.63	24	C	0.81	32	C	0.68	27	C
Westbound Left	0.69	31	C	0.45	23	C	0.32	21	C
Westbound Through / Right	0.90	41	D	0.90	42	D	0.80	33	C
Northbound Left	0.07	11	B	0.14	11	B	0.05	8	A
Northbound Through / Right	0.46	15	B	0.83	27	C	0.47	13	B
Southbound Left	0.19	12	B	0.20	13	B	0.10	9	A
Southbound Through / Right	0.67	19	B	0.27	12	B	0.33	11	B
Old School Road & Airport Road *Existing Configuration*	-	-	-	-	-	-	-	-	-
Eastbound Left / Right	-	61	F	-	30	D	-	13	B
Northbound Through / Left	-	6	A	-	5	A	-	2	A
Southbound Through	-	0	A	-	0	A	-	0	A
Southbound Right	-	0	A	-	0	A	-	0	A
Airport Road & Healey Road *Existing Configuration*	-	-	-	-	-	-	-	-	-
Westbound Left / Right	-	108	F	-	167	F	-	18	C
Northbound Through / Right	-	0	A	-	0	A	-	0	A
Southbound Through / Left	-	5	A	-	4	A	-	2	A

Table 4 - Capacity Analysis Results, 2023 Traffic Conditions

Intersection *Configuration* Movement	2023 Horizon Year																	
	Background									Total								
	Weekday AM Peak			Weekday PM Peak			Saturday Peak Hour			Weekday AM Peak			Weekday PM Peak			Saturday Peak Hour		
	V/C	Delay	LOS	V/C	Delay	LOS	V/C	Delay	LOS	V/C	Delay	LOS	V/C	Delay	LOS	V/C	Delay	LOS
Airport Road & King Street	**0.78**	**26**	**C**	**0.88**	**30**	**C**	**0.59**	**21**	**C**	**0.83**	**30**	**C**	**0.89**	**35**	**D**	**0.95**	**35**	**D**
Eastbound Left	0.25	20	B	0.66	36	D	0.32	21	C	0.25	20	B	0.61	34	C	0.32	21	C
Eastbound Through / Right	0.64	24	C	0.81	32	C	0.69	26	C	0.67	25	C	0.87	41	D	0.81	33	C
Westbound Left	0.70	31	C	0.47	22	C	0.33	21	C	0.93	67	E	0.81	59	E	0.85	59	E
Westbound Through / Right	0.91	42	D	0.91	43	D	0.80	32	C	0.91	42	D	0.85	39	D	0.77	30	C
Northbound Left	0.07	11	B	0.14	11	B	0.05	8	A	0.13	12	B	0.20	14	B	0.16	10	A
Northbound Through / Right	0.47	15	B	0.85	29	C	0.48	13	B	0.52	16	B	0.91	37	D	1.01	52	D
Southbound Left	0.20	12	B	0.22	13	B	0.11	9	A	0.21	12	B	0.48	33	C	0.29	15	B
Southbound Through / Right	0.68	19	B	0.28	12	B	0.34	11	B	0.76	22	C	0.33	15	B	0.46	13	B
Airport Road & Site Access 1 (RIRO)																		
Eastbound Right	-	-	-	-	-	-	-	-	-	-	15	B	-	10	B	-	12	B
Northbound Through	-	-	-	-	-	-	-	-	-	-	0	A	-	0	A	-	0	A
Southbound Through / Right	-	-	-	-	-	-	-	-	-	-	0	A	-	0	A	-	0	A
Airport Road & Site Access 2 (Full Moves)	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**0.56**	**7**	**A**	**1.02**	**50**	**D**	**1.09**	**57**	**E**
Eastbound Left	-	-	-	-	-	-	-	-	-	0.22	35	D	0.81	42	D	0.87	50	D
Eastbound Right	-	-	-	-	-	-	-	-	-	0.02	34	C	0.07	25	C	0.10	25	C
Northbound Through / Left	-	-	-	-	-	-	-	-	-	0.30	4	A	1.09	72	E	1.16	105	F
Southbound Through / Right	-	-	-	-	-	-	-	-	-	0.60	6	A	0.33	7	A	0.49	9	A
Airport Road & Site Access 3 (RIRO)																		
Eastbound Right	-	-	-	-	-	-	-	-	-	-	15	B	-	11	B	-	12	B
Northbound Through	-	-	-	-	-	-	-	-	-	-	0	A	-	0	A	-	0	A
Southbound Through / Right	-	-	-	-	-	-	-	-	-	-	0	A	-	0	A	-	0	A
Old School Road & Airport Road *Existing Configuration*																		
Eastbound Left / Right	-	67	F	-	31	D	-	13	B	-	135	F	-	Err	F	-	53	F
Northbound Through / Left	-	6	A	-	5	A	-	2	A	-	6	A	-	10	A	-	3	A
Southbound Through	-	0	A	-	0	A	-	0	A	-	0	A	-	0	A	-	0	A
Southbound Right	-	0	A	-	0	A	-	0	A	-	0	A	-	0	A	-	0	A
Airport Road & Healey Road *Existing Configuration*																		
Westbound Left / Right	-	128	F	-	183	F	-	18	C	-	230	F	-	Err	F	-	274	F
Northbound Through / Right	-	0	A	-	0	A	-	0	A	-	0	A	-	0	A	-	0	A
Southbound Through / Left	-	5	A	-	4	A	-	2	A	-	6	A	-	8	A	-	3	A

Table 5 - Capacity Analysis Results, 2028 Traffic Conditions

Intersection *Configuration* Movement	2028 Horizon Year																	
	Background									Total								
	Weekday AM Peak			Weekday PM Peak			Saturday Peak Hour			Weekday AM Peak			Weekday PM Peak			Saturday Peak Hour		
	V/C	Delay	LOS	V/C	Delay	LOS	V/C	Delay	LOS	V/C	Delay	LOS	V/C	Delay	LOS	V/C	Delay	LOS
Airport Road & King Street	**0.50**	**6**	**A**	**0.51**	**5**	**A**	**0.42**	**5**	**A**	**0.52**	**6**	**A**	**0.57**	**6**	**A**	**0.50**	**5**	**A**
Eastbound Left	0.60	12	B	0.41	10	B	0.42	10	B	0.63	13	B	0.48	11	B	0.51	11	B
Eastbound Through / Right	0.59	5	A	0.40	4	A	0.40	4	A	0.63	6	A	0.47	4	A	0.50	5	A
Westbound Left	0.40	10	B	0.60	13	B	0.44	11	B	0.42	11	B	0.67	13	B	0.53	11	B
Westbound Through / Right	0.39	4	A	0.59	5	A	0.43	4	A	0.41	4	A	0.66	5	A	0.52	5	A
Northbound Left	0.47	11	B	0.56	11	B	0.45	11	B	0.48	11	B	0.61	12	B	0.49	11	B
Northbound Through / Right	0.46	5	A	0.55	5	A	0.44	4	A	0.47	4	A	0.60	5	A	0.48	4	A
Southbound Left	0.60	12	B	0.49	11	B	0.44	11	B	0.61	12	B	0.54	13	B	0.50	11	B
Southbound Through / Right	0.59	5	A	0.48	5	A	0.43	4	A	0.60	5	A	0.53	5	A	0.49	4	A
Airport Road & Site Access 1 (RIRO)																		
Eastbound Right	-	-	-	-	-	-	-	-	-	-	12	B	-	10	A	-	11	B
Northbound Through	-	-	-	-	-	-	-	-	-	-	0	A	-	0	A	-	0	A
Southbound Through	-	-	-	-	-	-	-	-	-	-	0	A	-	0	A	-	0	A
Southbound Through / Right	-	-	-	-	-	-	-	-	-	-	0	A	-	0	A	-	0	A
Airport Road & Site Access 2 (Full Moves)	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**0.34**	**5**	**A**	**0.55**	**12**	**B**	**0.67**	**11**	**B**
Eastbound Left	-	-	-	-	-	-	-	-	-	0.13	22	C	0.72	31	C	0.63	22	C
Eastbound Right	-	-	-	-	-	-	-	-	-	0.02	21	C	0.07	21	C	0.09	17	B
Northbound Left	-	-	-	-	-	-	-	-	-	0.14	4	A	0.49	10	A	0.70	13	B
Northbound Through	-	-	-	-	-	-	-	-	-	0.13	4	A	0.29	6	A	0.19	6	A
Southbound Through / Right	-	-	-	-	-	-	-	-	-	0.38	5	A	0.17	6	A	0.27	6	A
Airport Road & Site Access 3 (RIRO)																		
Eastbound Right	-	-	-	-	-	-	-	-	-	-	10	B	-	10	A	-	11	B
Northbound Through	-	-	-	-	-	-	-	-	-	-	0	A	-	0	A	-	0	A
Southbound Through	-	-	-	-	-	-	-	-	-	-	0	A	-	0	A	-	0	A
Southbound Through / Right	-	-	-	-	-	-	-	-	-	-	0	A	-	0	A	-	0	A
Airport Road & Healey Road / Old School Road																		
Roundabout	**0.37**	**5**	**A**	**0.40**	**6**	**A**	**0.25**	**5**	**A**	**0.38**	**5**	**A**	**0.44**	**6**	**A**	**0.30**	**5**	**A**
Eastbound Left	0.54	12	B	0.39	10	B	0.38	10	B	0.56	12	B	0.46	11	B	0.46	11	B
Eastbound Through / Right	0.53	5	A	0.38	4	A	0.37	4	A	0.55	5	A	0.44	5	A	0.44	5	A
Westbound Left	0.38	10	B	0.55	12	B	0.41	11	B	0.40	11	B	0.60	10	B	0.48	11	B
Westbound Through / Right	0.37	4	A	0.54	5	A	0.40	4	A	0.39	4	A	0.59	4	A	0.48	5	A
Northbound Left	0.35	10	B	0.31	10	A	0.19	10	A	0.36	10	B	0.36	10	A	0.24	10	A
Northbound Through / Right	0.34	4	A	0.30	4	A	0.19	4	A	0.35	4	A	0.35	4	A	0.23	4	A
Southbound Left	0.35	10	B	0.45	11	B	0.27	10	A	0.36	10	B	0.48	11	B	0.29	11	A
Southbound Through / Right	0.34	4	A	0.44	5	A	0.26	4	A	0.35	4	A	0.47	5	A	0.28	5	A

8. PARKING REVIEW

A review of Section 5 of the Town of Caledon's Zoning By-law 2006-50 was undertaken to determine the site parking rate requirements. An analysis of required parking spaces was completed for two scenarios, the first scenario using parking rates for retail stores, and the second using parking rates for warehousing. This was done to obtain a range of parking spaces suitable for the development as exact land uses have not yet been determined. The parking requirements for the above mentioned uses and proposed supply are shown in Table 6.

Table 6 – Town of Caledon Zoning By-Law Parking Requirements and Proposed Supply

Land Use Category (Uses)	Size (sq.m. of GFA)	Minimum Parking Requirement			Proposed Parking Supply	
		Rate	Spaces	Accessible Spaces (2+2% of total required spaces)	Total Spaces	Accessible Spaces
Scenario 1 Retail Store	19,741m²	1 space / 20m² of GFA	987	22	249	5
Scenario 2 Warehouse	19,741m²	*7,000 to 20,000m²:* 78 spaces + 1 / 145m² of GFA or portion thereof over 7000m²	166	5		

Source: City of Windsor Zoning By-Law No. 8600, Section 24.20.5

It should be noted that the above parking rates do not necessarily reflect the projected parking demands for the development and should be reassessed once the buildings within the development have been designated with land uses.

9. CONCLUSIONS

This Traffic Impact Study for the proposed commercial development located at 13846 and 13940 Airport Road, Town of Caledon, is summarized as follows:

- The proposed development consists of 8 buildings with a combined 19,741.3 m² (212,493 ft²) of GFA, which have been designated for commercial use, however exact land usage for each building has not yet been determined.

- The site, located on the west side of Airport Road, proposes three (3) access points; a signalized full-movement intersection, approximately 300m south of the Airport Road and King Street intersection, and two Right-in / Right-Out (RIRO) accesses located 165m and 300m north and south of the full-moves access, respectively.
- As per correspondence with Regional staff, Airport Road between the King Street and Old School Road / Healey Road intersections will be widened from 2 to 4 lanes. Additional improvements include retrofitting of the previously mentioned intersections with two-lane roundabouts, and the addition of a two-way center left-turn lane. Construction for the project is to start in 2024, with completion anticipated by 2025.
- The traffic impact analysis indicates that the study area intersections along Airport Road will be operating near critical capacity approaching horizon year 2023 (pre-construction) and that the implementation of traffic signals at the main full-movement access is recommended to accommodate the high left-turning volumes expected at this intersection and maintain operational efficiency along the corridor.
- The proposed commercial development is to provide 249 parking spaces in total, 5 of which are designated as accessible spaces. It is recommended that the parking requirements be reviewed once each building has been designated with a land use, to determine the parking needs of this development more accurately.

Our Traffic Impact Study indicates that the subject site is expected to have some impact to the study area roadway operations, in the form of delays for some exclusive intersection movements at Airport Road and King Street, as well as the main full movement access. However, the anticipated delays are expected to be minor, and interim, with the road improvements along Airport Road in the year 2024, and that traffic operations along the corridor will maintain efficiency once the road improvements have been completed.

Respectfully submitted,

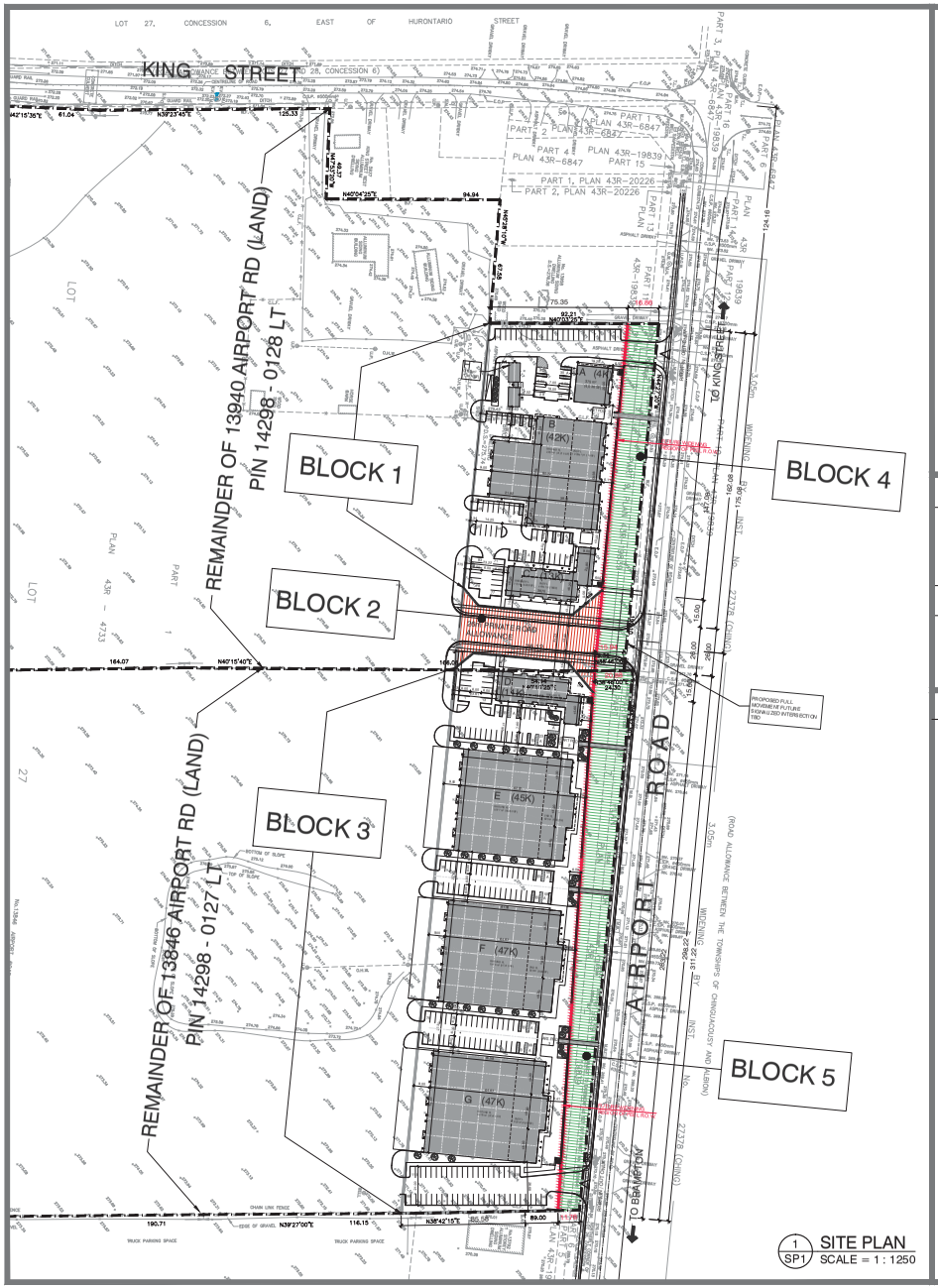
Anil Seegobin, P.Eng.
Partner, Engineer

Charles Chung, EIT
Traffic Analyst

Trans-Plan Transportation Inc.
Transportation Consultants

Figure 1 – Site Location

Source: Google Earth



1 SP1 SITE PLAN
SCALE = 1 : 1250

LEGEND

- SITE BOUNDARY
- PROPOSED ROAD WIDENING BY REGION OF PEEL TRANSPORTATION (13940 AIRPORT RD - 15.94 TO 16.86 m WIDE))
- PROPOSED ROAD WIDENING BY REGION OF PEEL TRANSPORTATION (13846 AIRPORT RD - 11.76 TO 20.88 m WIDE)
- PROPOSED 26M ROAD ALLOWANCE
- PROPOSED BUILDING FOOTPRINT
- SP A B — PROPOSED SIGN PYLON LOCATION / PROPOSED ACCESSIBLE PARKING TYPE A / PROPOSED ACCESSIBLE PARKING TYPE B
- ART POD 1 — PROPOSED ART POD LOCATION REFER TO TYPICAL ENLARGEMENT BY LANDSCAPE ARCHITECT - STUDIO TLA
- a+w=SO — PROPOSED ART+WORK SIGN WALL LOCATION
- DC — PROPOSED DEPRESSED CURB, AS PER TOWN OF CALEDON STANDARDS.

NOTES - SITE PLAN CONSIDERATIONS :
1. AIRPORT ROAD IS PROPOSED TO EXPAND TO A 45m R.O.W.
2. NUMBER OF PARKING STALLS ARE DEPENDANT ON USE OF BUILDING
3. 26m R.O.W. TO SPLIT TWO PROPOSED BLOCKS
4. SUBJECT SITE IS CURRENTLY ZONED HIGHWAY COMMERCIAL UNDER BY-LAW 2006-50, CALEDON

KEY MAP - NTS — SUBJECT PROPERTY

LEGAL DESCRIPTION :

PART OF LOT 27, CONCESSION 6
EAST OF HURONTARIO STREET
FORMERLY IN THE TOWNSHIP OF CHINGUACOUSY,
COUNTY OF PEEL,
NEW IN THE TOWN OF CALEDON
REGIONAL MUNICIPALITY OF PEEL

SURVEY NOTE :

SITE PLAN INFORMATION TAKEN FROM BOUNDARY AND TOPOGRAPHIC SURVEY PLAN PREPARED BY
MANDARIN SURVEYORS LTD. O.L.S., C.L.S.
DATED:
FEBRUARY 10, 2020 - PROPERTY AT 13840 AIRPORT RD AND
FEBRUARY 11, 2020 - PROPERTY AT 13940 AIRPORT RD

CONSULTANT LIST :

PLANNING & ARCHITECTURE:	RG CONSULTING INC.	416.213.0200
LANDSCAPE DESIGN:	STUDIO TLA	416.638.4911
ENGINEERING:	CALDER ENGINEERING LTD.	905.857.7600
ENVIRONMENTAL: GEOTECHNICAL & HYDROGEOLOGICAL:	PEACE ENVIRONMENTAL HLV2K ENGINEERING LIMITED	416.213.1700 905.569.9765
O.L.S.URVEYING:	MANDARIN SURVEY GROUP	647.430.1366

BLOCK AND BUILDING SCHEDULE :

BLOCK 1
ZONING DESIGNATION - CH 563
11,715m² (1.17 hc = 2.90 ac)
BLOCK 1 BUILDING SCHEDULE:

	GROUND FLOOR AREA:	2ND FLOOR:	TOTAL BUILDING AREA:
H -	136.3 m² : 1,467 SF (EX. HOUSE INCLUDED - 64.6 m² - 695 SF)		
A -	375.0 m² : 4,036 SF		
B -	2,900.0 m² : 31,215 SF	1,033.0 m² : 11,119 SF	3,933.0 m² : 42,334 SF
C -	770.0 m² : 8,288 SF	440.0 m² : 4,736 SF	1,210.0 m² : 13,024 SF

TOTAL BUILDING AREA INCLUDING 2ND FLOOR:
5,654.3 m² : 60,862 SF (DENSITY 48.3%)

TOTAL NUMBER OF PARKING : 83
6 TYPE A AND 3 TYPE B ACCESSIBLE PARKING INCLUDED)

BLOCK 2
ZONING DESIGNATION - CH 563 AND SOUTH PART - CH 302
2,280 m² (0.23 hc = 0.56 ac)
26 m WIDE ROAD ALLOWANCE - PRIVATE ROAD

BLOCK 3
ZONING DESIGNATION - CH 302 AND NORTH PART - CH 563
24,221 m² (2.42 hc = 5.99 ac)

	GROUND FLOOR AREA:	2ND FLOOR:	TOTAL BUILDING AREA:
D -	712.0 m² : 7,664 SF	385.0 m² : 4,144 SF	1,097.0 m² : 11,786 SF
E -	3,377.0 m² : 36,350 SF	821.0 m² : 8,837 SF	4,198.0 m² : 45,187 SF
F -	3,476.0 m² : 37,415 SF	920.0 m² : 9,902 SF	4,396.0 m² : 47,318 SF
G -	3,476.0 m² : 37,415 SF	920.0 m² : 9,902 SF	4,396.0 m² : 47,318 SF

TOTAL BUILDING AREA INCLUDING 2ND FLOOR:
14,087 m² : 151,631SF (DENSITY 58.2%)

TOTAL NUMBER OF PARKING : 166
(6 TYPE A AND 6 TYPE B ACCESSIBLE PARKING INCLUDED)

BLOCK 4
ZONING DESIGNATION - CH 563
3,112 m² (0.31 hc = 0.77 ac)
ROAD WIDENING BY REGION OF PEEL TRANSPORTATION

BLOCK 5
ZONING DESIGNATION - CH 302
4,808 m² (0.48 hc = 1.19 ac)
ROAD WIDENING BY REGION OF PEEL TRANSPORTATION

SITE STATISTICS :

TOWN OF CALEDON - ZONING BY-LAW 2006-50 - CH - HIGHWAY COMMERCIAL
ZONING DESIGNATION CH-563 AND CH-302

		PROPOSED			REQUIRED
LOT AREA :	DEVELOPMENT AREA (26 m PRIVATE ROAD ALLOWANCE INCLUDED)	38,216 m² (2,280 m²)	3.82 hc (0.23 hc)	9.45 ac (0.53 ac)	
	PROPOSED ROAD WIDENING BY REGION OF PEEL TRANSPORTATION (13940 AIRPORT RD)	3,112 m²	0.31 hc	0.77 ac	
	PROPOSED ROAD WIDENING BY REGION OF PEEL TRANSPORTATION (13846 AIRPORT RD)	4,808 m²	0.48 hc	1.19 ac	
	TOTAL LOT AREA	46,136m²	4.61 hc	11.40 ac	
TOTAL COVERAGE :		15,222.3 m² (163,851 SF)			
TOTAL 2ND STOREY AREA :		4,519.0 m² (48,642 SF)			
TOTAL BUILDING GFA :		19,741.3 m² (212,493 SF)			
TOTAL DENSITY :		51.7%			
TOTAL NUMBER OF PARKING SPACES: (1 SPACE / 40m²) (ACCESSIBLE PARKING INCLUDED)		249			381
ACCESSIBLE PARKING : (REQUIRED 2 ACCESSIBLE SPACES + 2%)		20			10
TOTAL NUMBER OF LOADING SPACES: (1 / 2,800 m² OF NET FLOOR AREA)		23			6

2 SP1 SITE PLAN SECTION A-A
SCALE = 1 : 250

NO.:	DATE:	REVISION:
1	26/06/17	PRELIMINARY
8	27/05/19	PRELIMINARY
13	25/09/19	PRELIMINARY- FLOOR PLANS
14	15/11/19	ISSUED FOR DART MEETING
15	03/12/19	TOWN COMMENTS CHANGES
16	12/12/19	ISSUED FOR COORDINATION
17	09/01/20	TOWN COMMENTS CHANGES
18	05/02/20	ISSUED FOR COORDINATION
19	26/02/20	ISSUED FOR COORDINATION
20	21/04/20	HERITAGE HOUSE LANDSCAPE
21	06/05/20	ISSUED FOR COORDINATION
25	25/05/20	ISSUED FOR COORDINATION
26	04/06/20	ISSUED FOR COORDINATION
27	17/07/20	ISSUED FOR COORDINATION
28	19/11/20	ISSUED FOR COORDINATION
29	19/01/21	ISSUED FOR COORDINATION
30	23/03/21	ISSUED FOR COORDINATION
31	14/07/21	ISSUED FOR COORDINATION
32	09/08/21	ISSUED FOR COORDINATION

- ☐ ISSUED FOR CONSTRUCTION
- ☐ ISSUED FOR PRICING
- ☐ ISSUED FOR BUILDING PERMIT
- ☐ ISSUED FOR PRELIMINARY REVIEW

www.rgcdesigngroup.com

RGC
R G CONSULTING INC.
2201 Finch Avenue West, Suite #27, Toronto, Ontario M9M 2Y9
Tel.: 416 213 0200, Fax: 416 213 0202

DRAFT FOR DISCUSSION ONLY

PROPOSED DEVELOPMENT
FOR FALCO GROUP
13846 & 13940 AIRPORT ROAD
SANDHILL, CALEDON, ON

project number:	1710
date:	JULY 2021
scale:	AS NOTED
drawn by:	ZL
checked by:	RG
drawing number:	P17-01-01D

MASTER SITE PLAN
SP1

Figure 3: Existing Study Area Roadway Characteristics

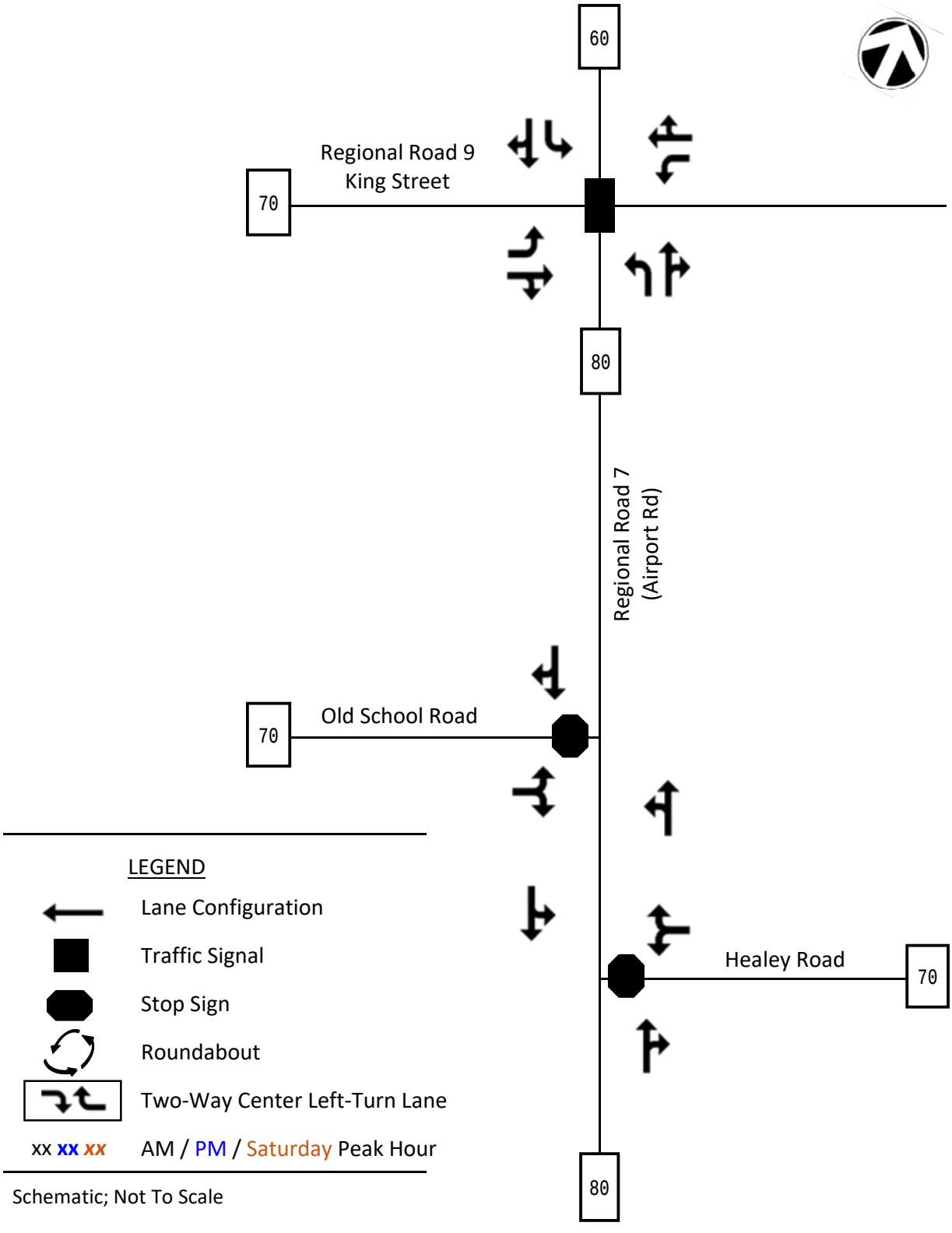


Figure 4: Existing Traffic Volumes, Weekday AM and PM, and Saturday Peak Hours

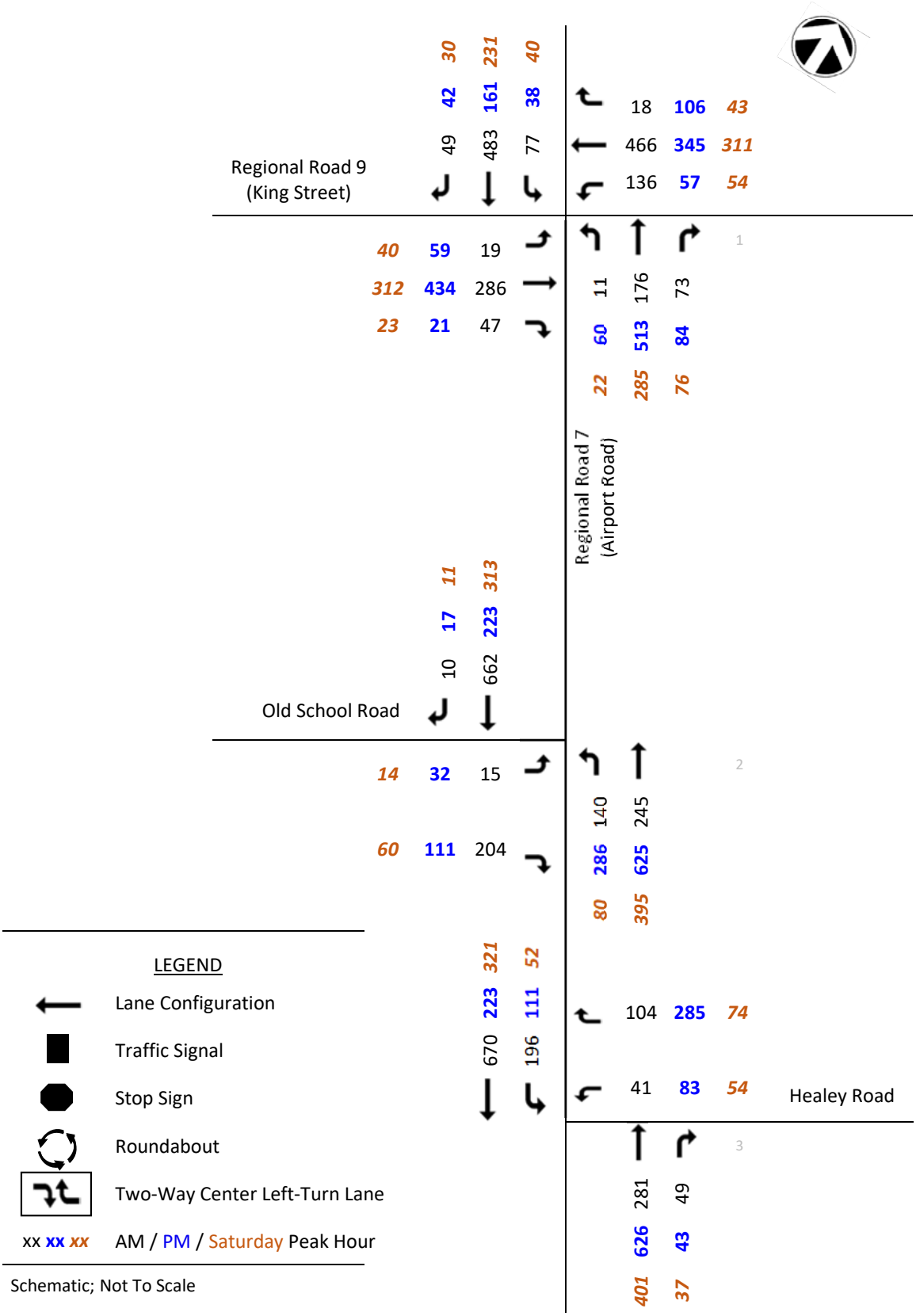


Figure 5: 2025 Future Study Area Roadway Characteristics

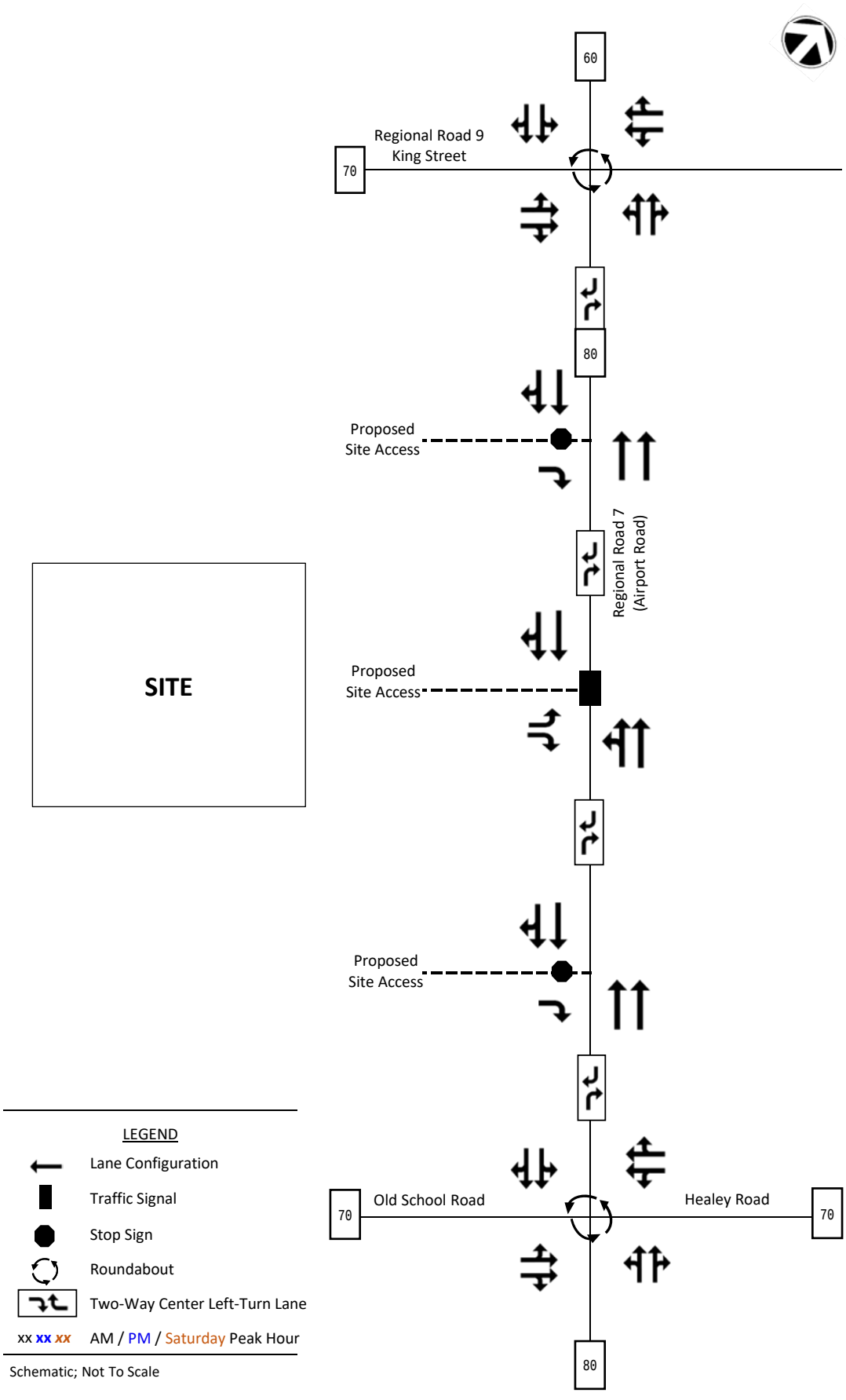


Figure 6: 2023 Background Traffic Volumes, Weekday AM and PM, and Saturday Peak Hours

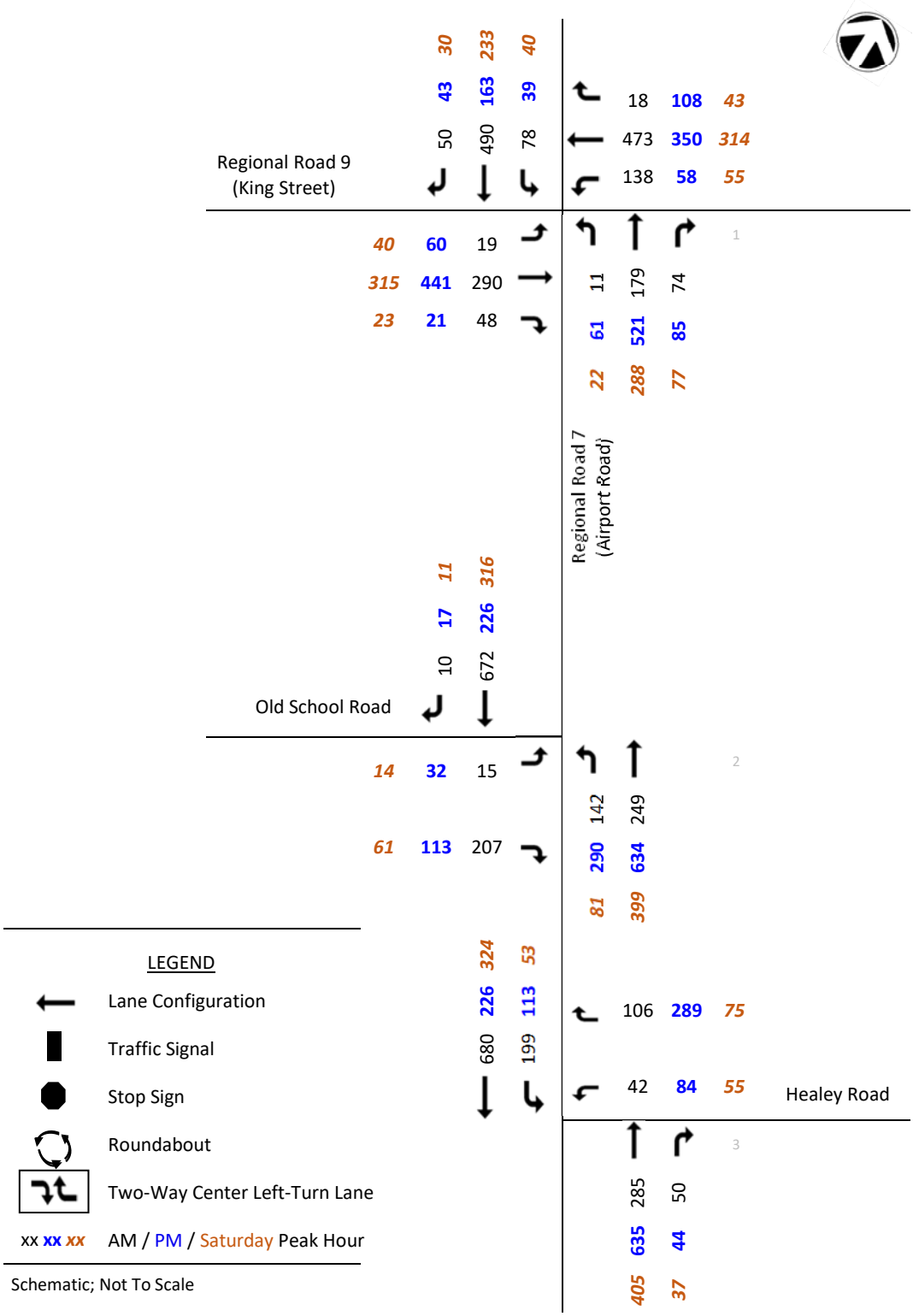


Figure 7: 2028 Background Traffic Volumes, Weekday AM and PM, and Saturday Peak Hou

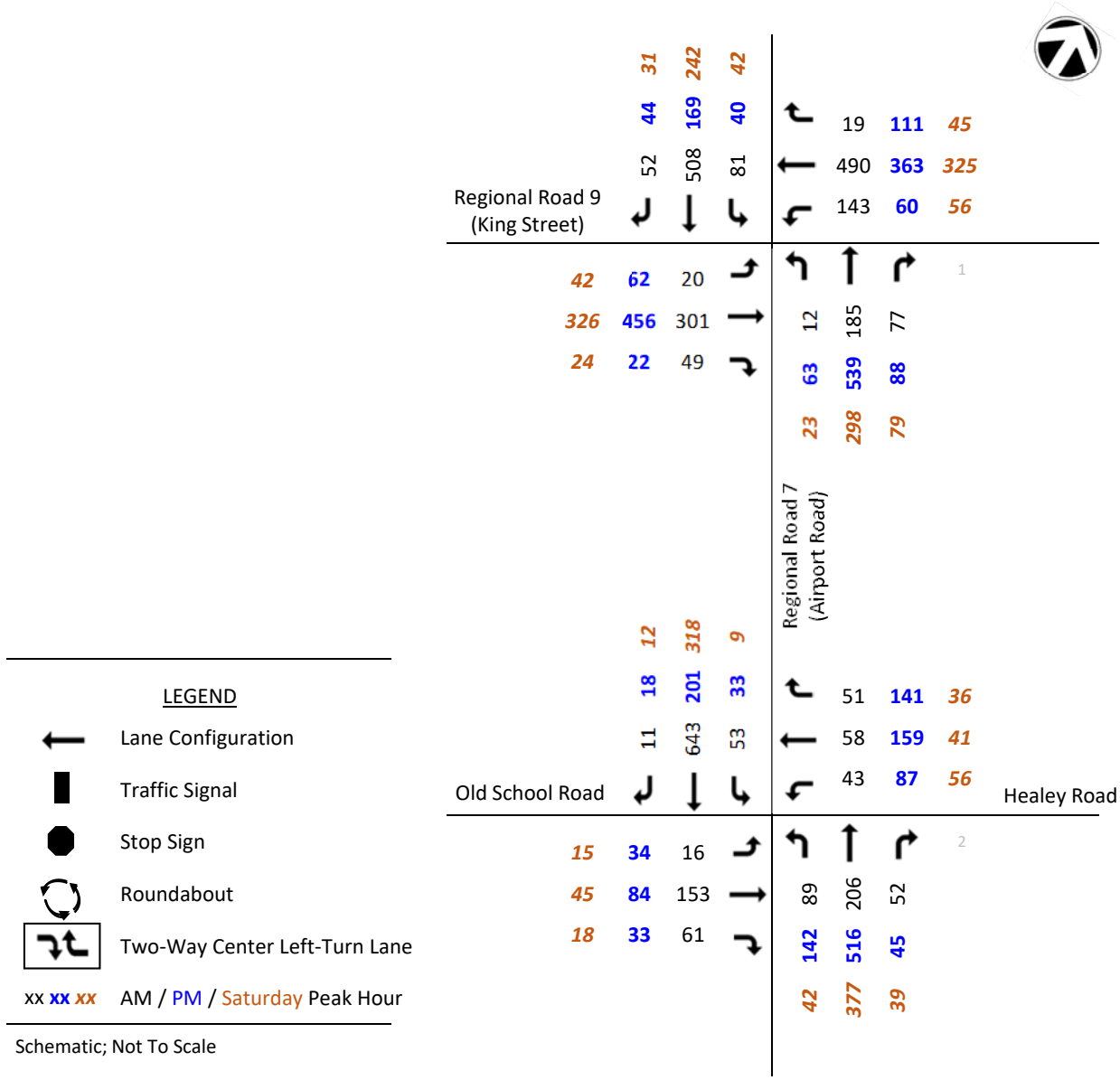


Figure 8: Site Trip Assignment, Weekday AM and PM, and Saturday Peak Hours

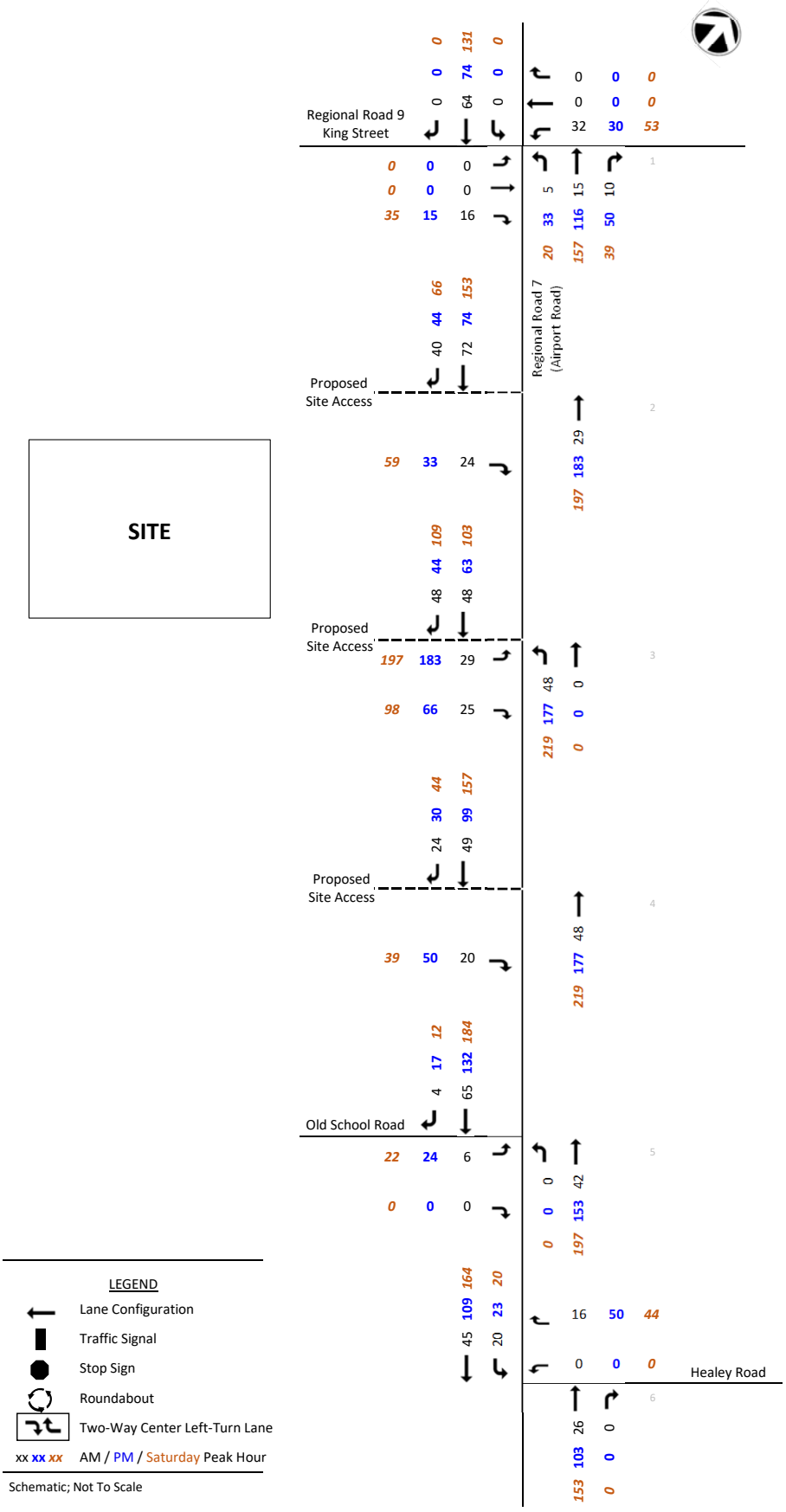


Figure 9: Pass-by Trip Assignment, Weekday AM and PM, and Saturday Peak Hours

Figure 10: 2023 Total Traffic Volumes, Weekday AM and PM, and Saturday Peak Hours

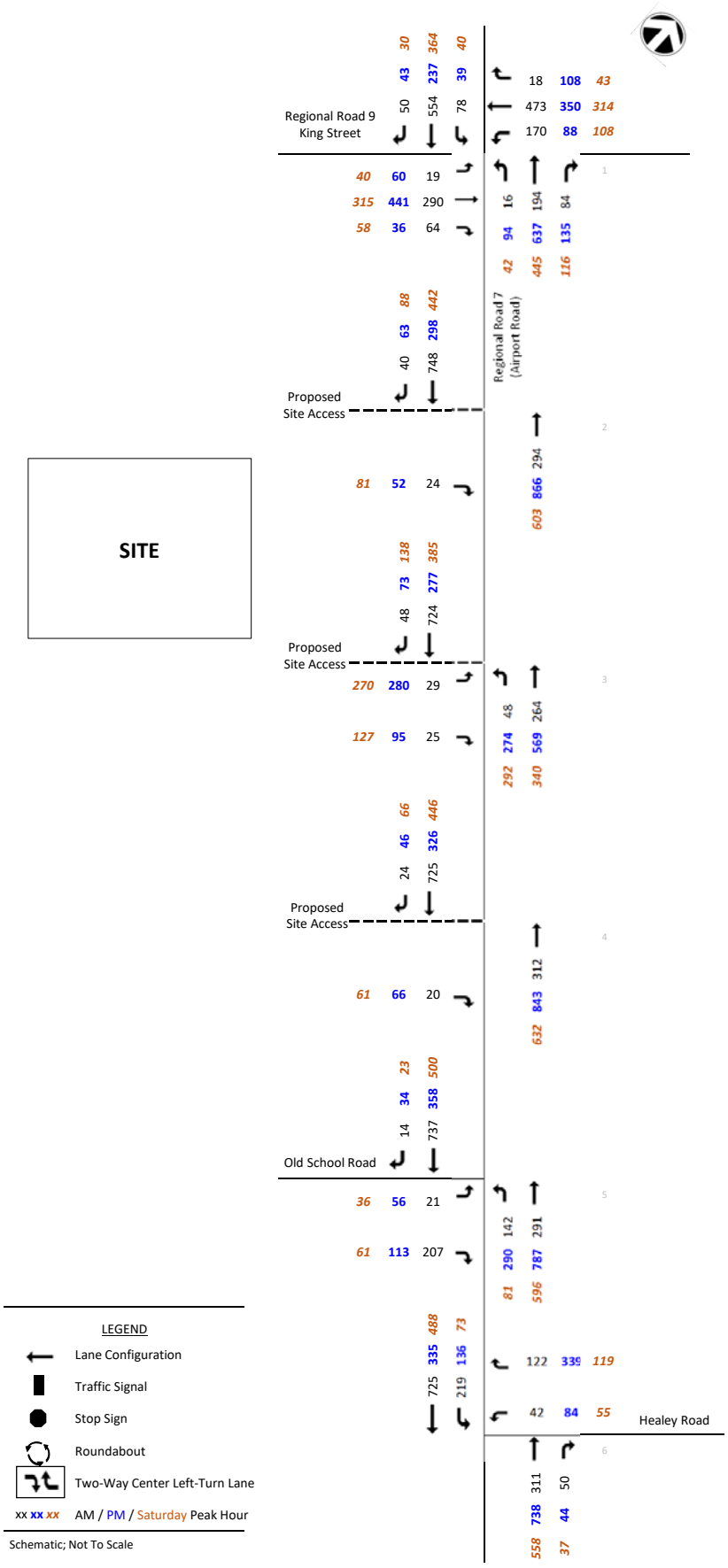
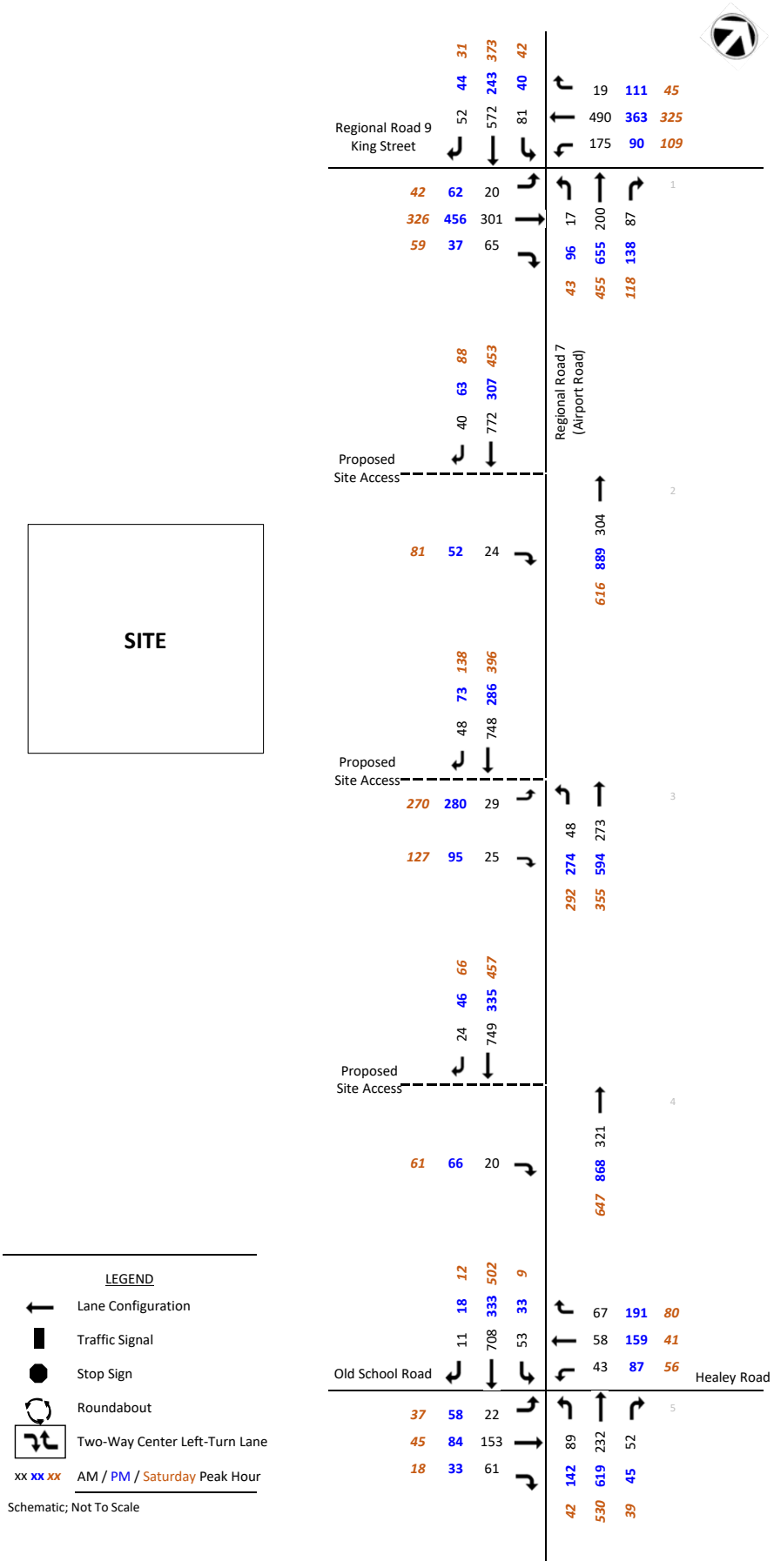


Figure 11: 2028 Total Traffic Volumes, Weekday AM and PM, and Saturday Peak Hours



APPENDICES

Appendix A – Turning Movement Counts and Signal Timing Plans

Appendix B – Background Growth Rate

Appendix C – Airport Road Design Plan

Appendix D – Capacity Analysis Sheets

Appendix E – Level of Service Definitions

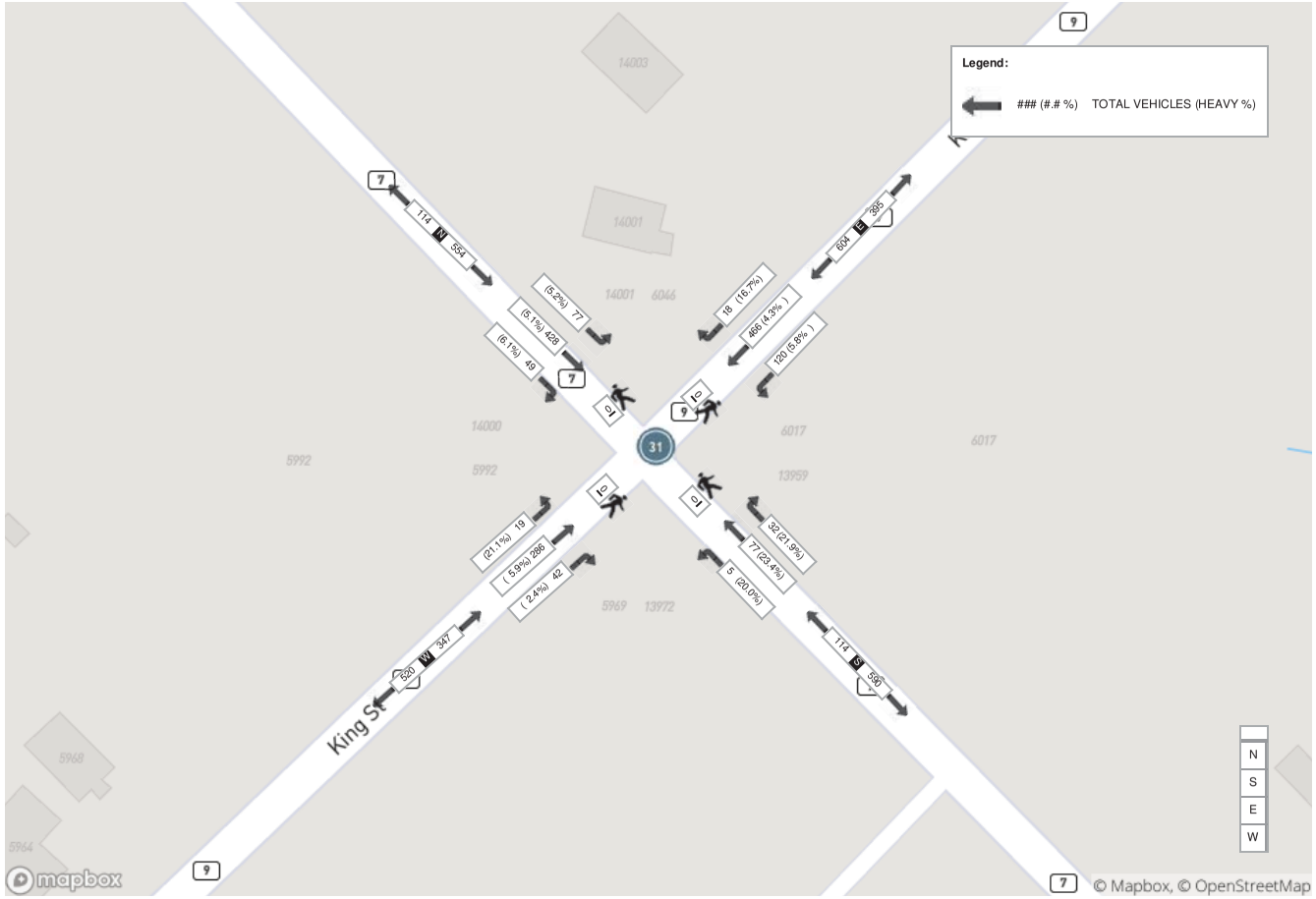
APPENDIX A

Turning Movement Counts & Signal Timing Plans

Spectrum

Turning Movement Count
Location Name: AIRPORT RD & KING ST
Date: Wed, Feb 14, 2018 Deployment Lead: Theo Daglis

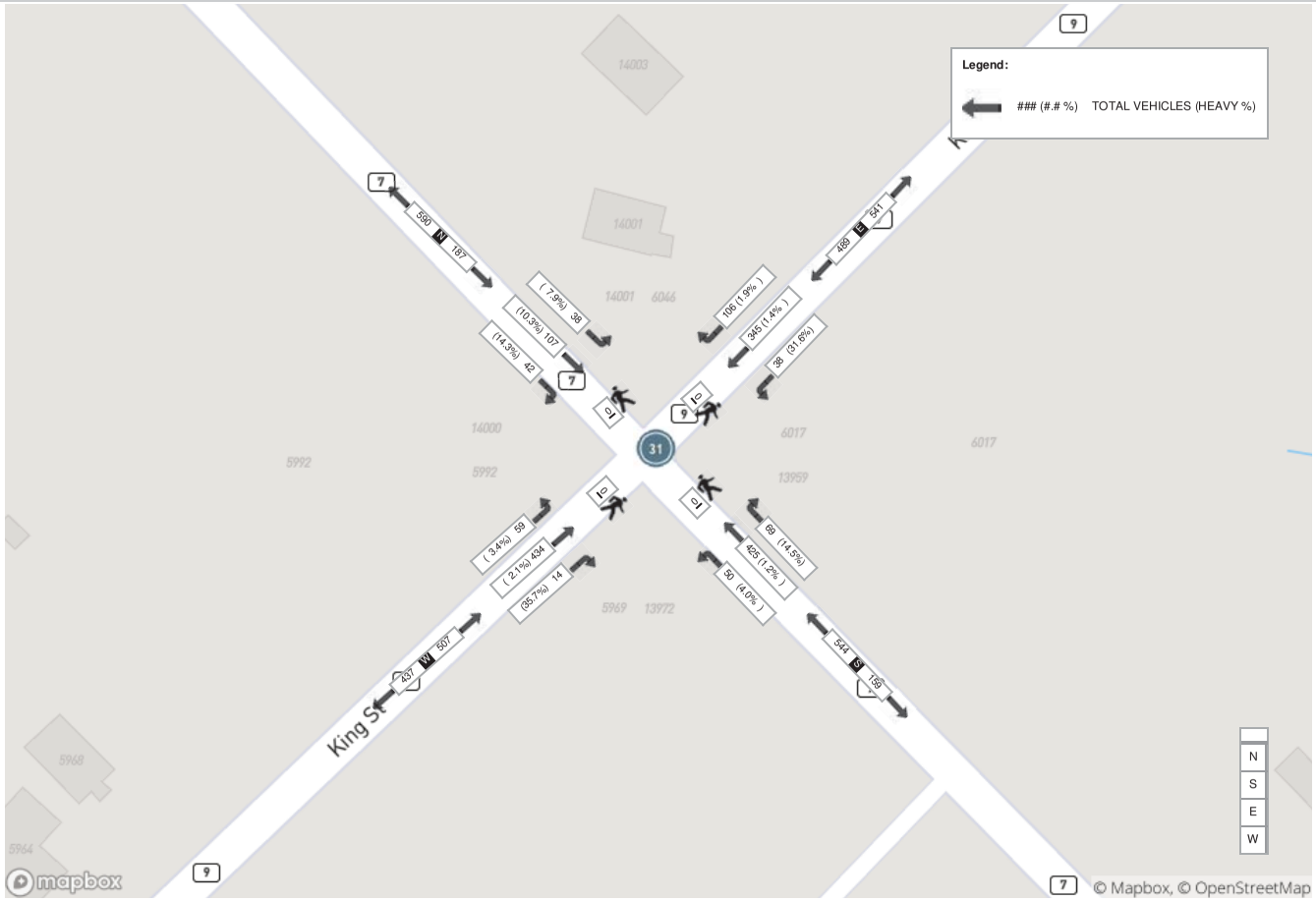
Peak Hour: 07:15 AM - 08:15 AM Weather: Clear (-2.0 °C)



Spectrum

Turning Movement Count
Location Name: AIRPORT RD & KING ST
Date: Wed, Feb 14, 2018 Deployment Lead: Theo Daglis

Peak Hour: 04:45 PM - 05:45 PM Weather: Clear (5.0 °C)



TRANS-PLAN
transportation engineering

Turning Movement Count Diagram

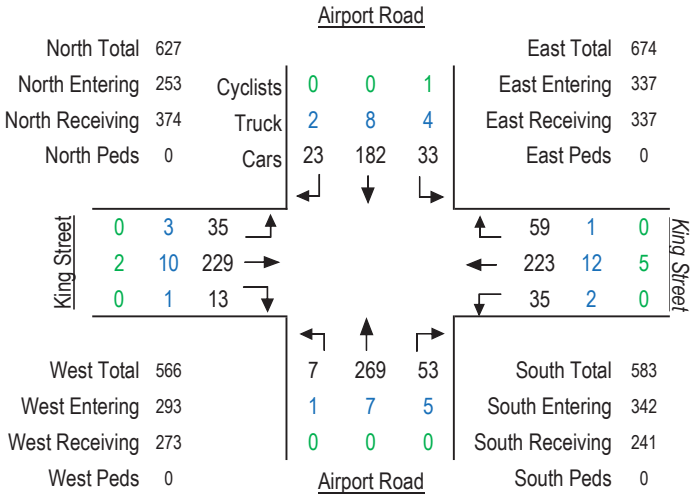
Intersection: Airport Road at King Street

Municipality: Caledon, Ontario

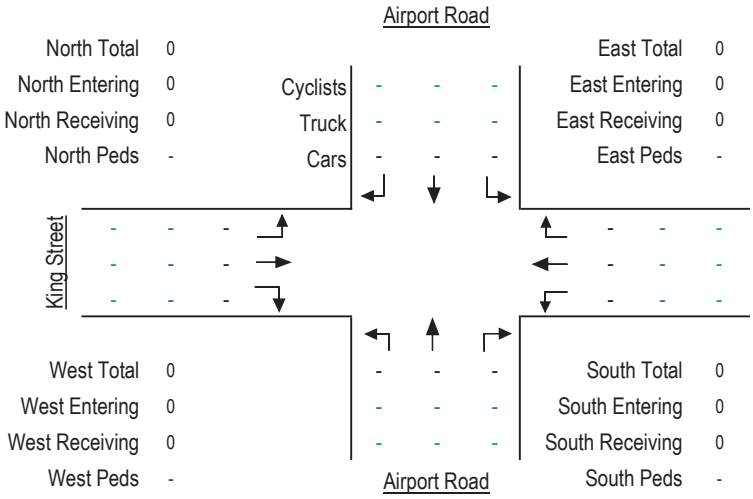
Intersection ID:

Date: 8/28/2021

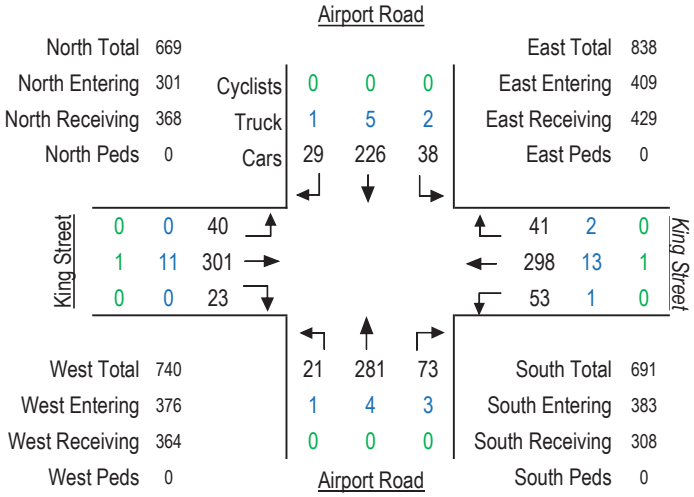
AM Peak Hour: 11:00 to 12:00



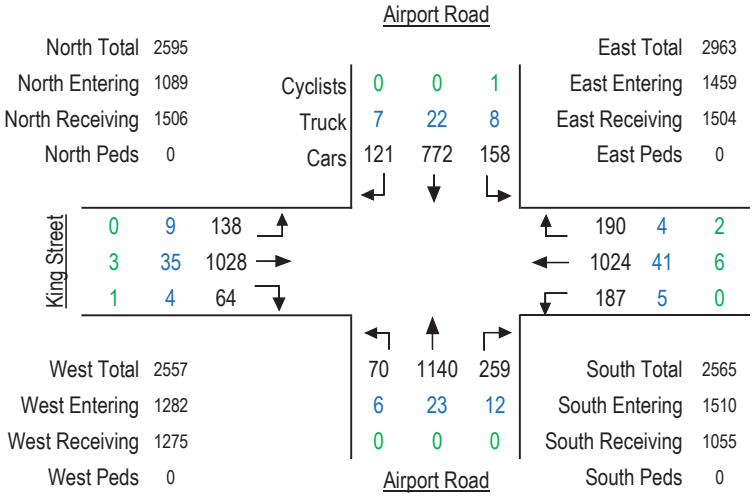
MD Peak Hour: - to -



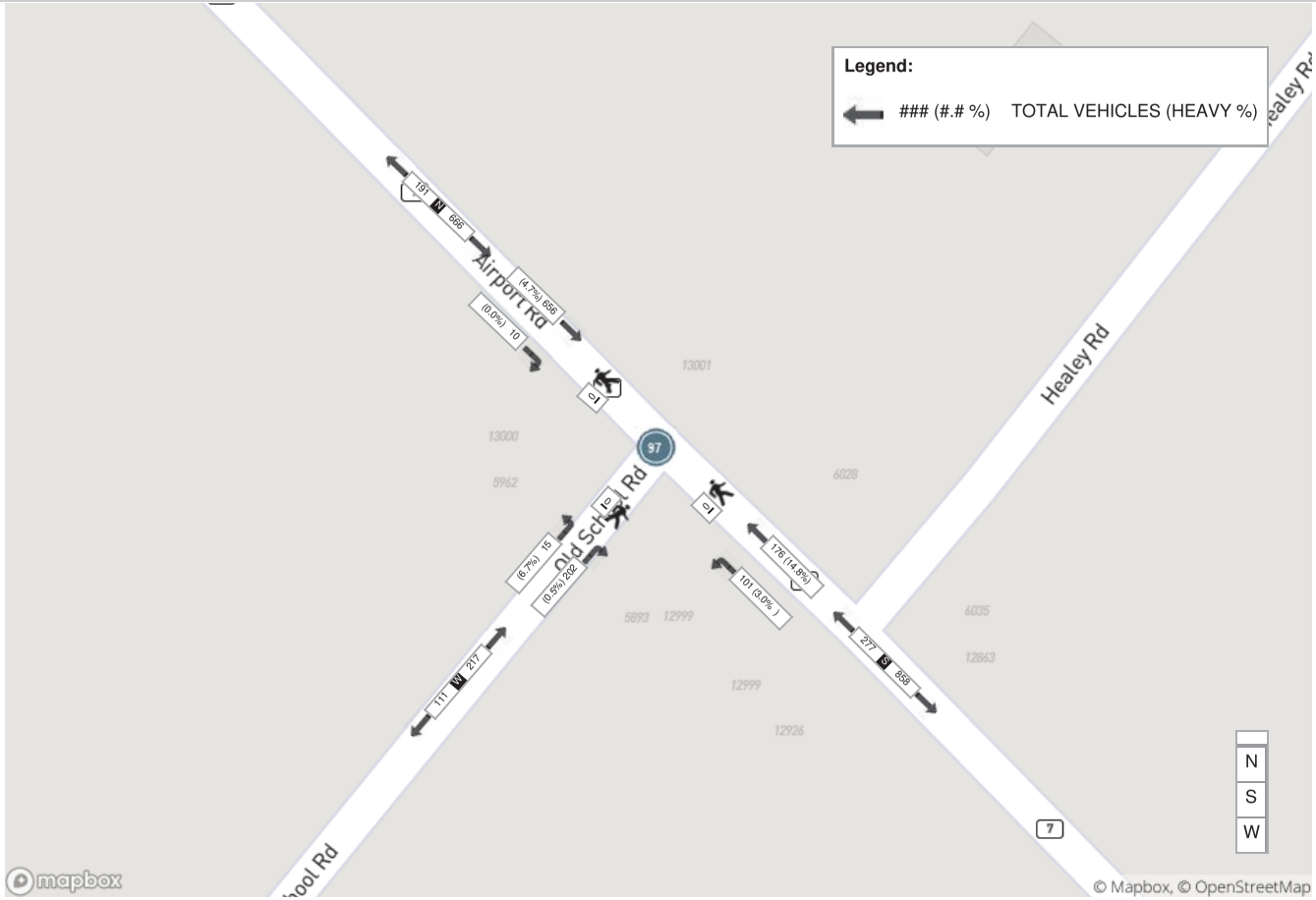
PM Peak Hour: 13:30 to 14:30



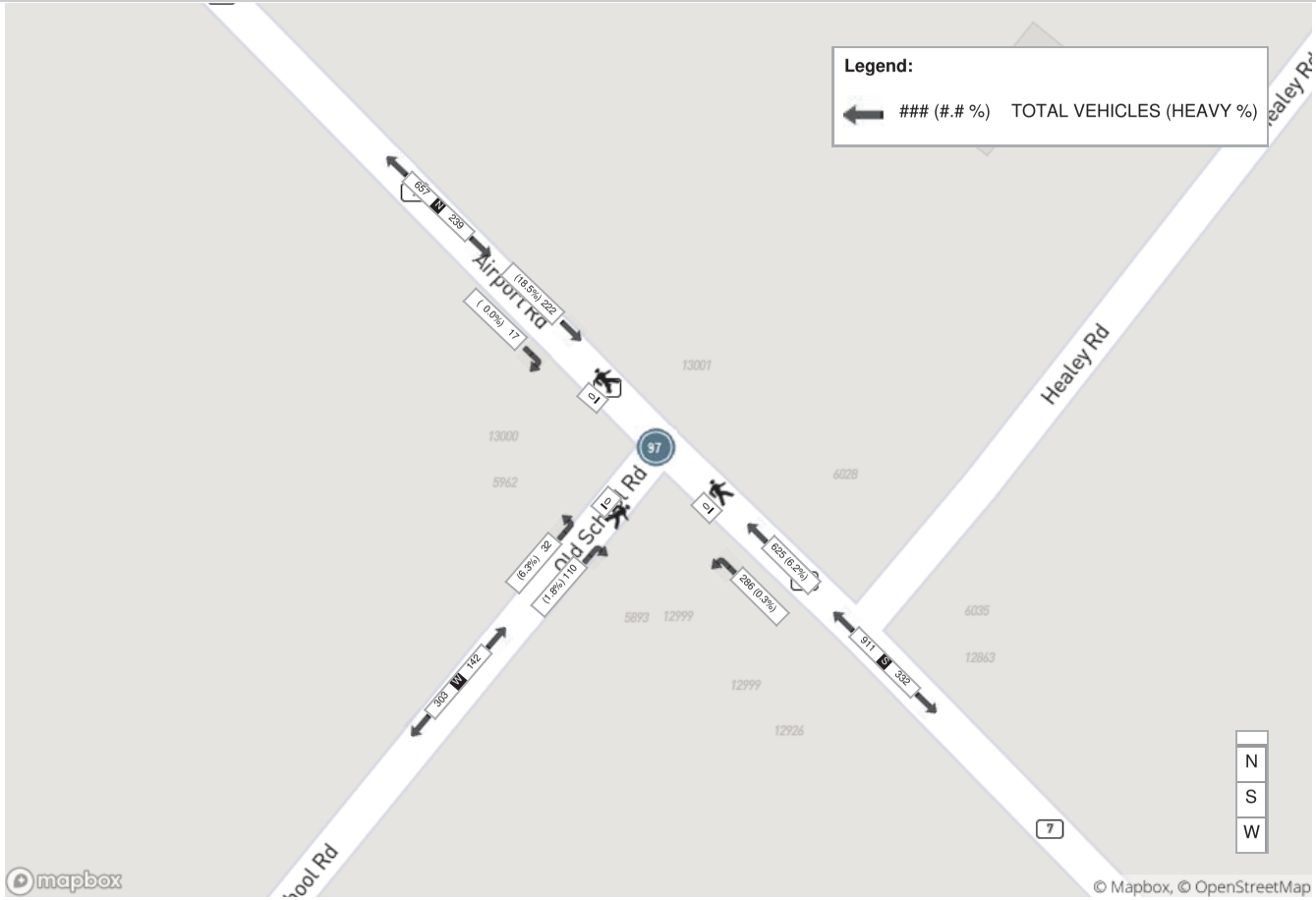
Total 8-Hour Count



Peak Hour: 07:15 AM - 08:15 AM Weather: Moderate Rain (9.08 °C)



Peak Hour: 04:30 PM - 05:30 PM Weather: Light Rain (10.54 °C)



TRANS-PLAN
transportation engineering

Turning Movement Count Diagram

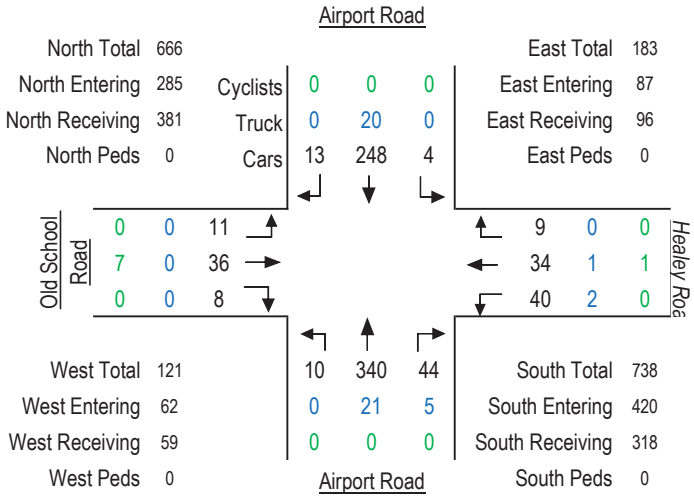
Intersection: Airport Road at Old School Road

Intersection ID:

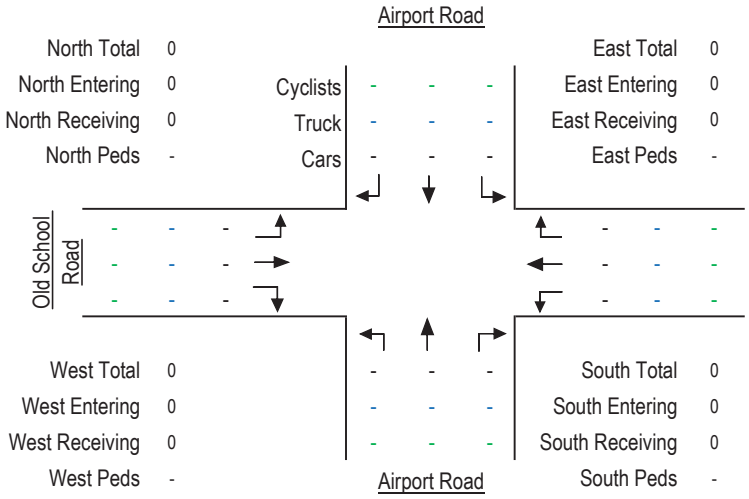
Municipality: Caledon, Ontario

Date: 8/28/2021

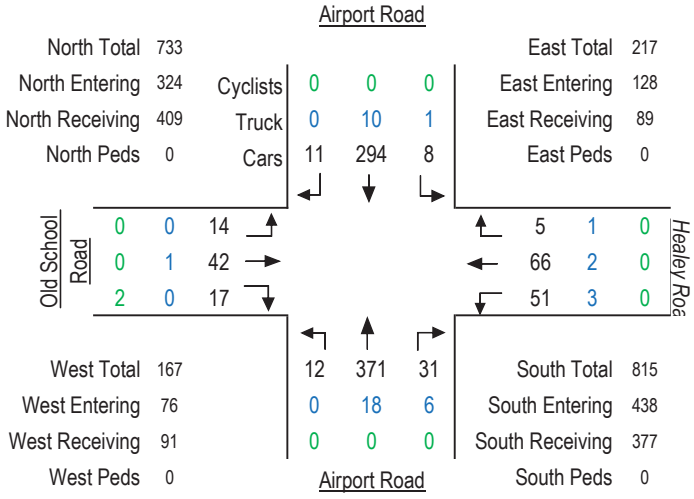
AM Peak Hour: 11:00 to 12:00



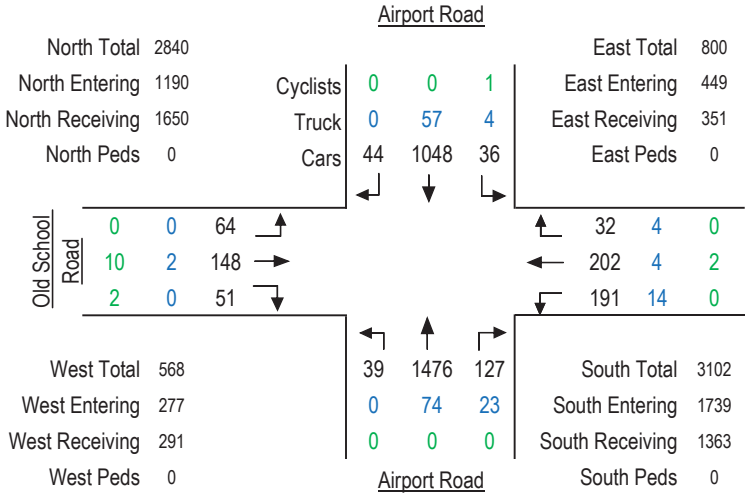
MD Peak Hour: - to -



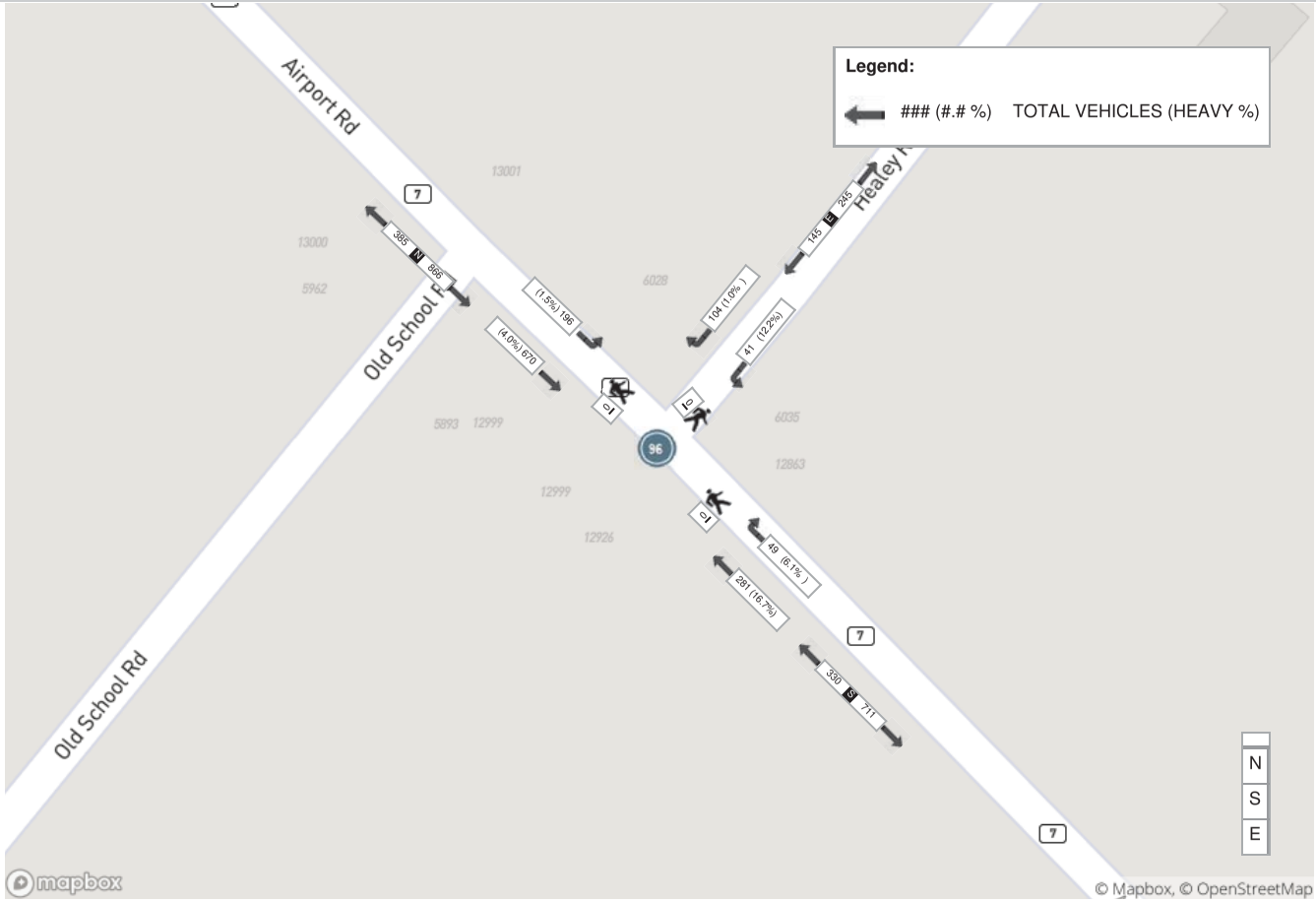
PM Peak Hour: 14:00 to 15:00



Total 8-Hour Count



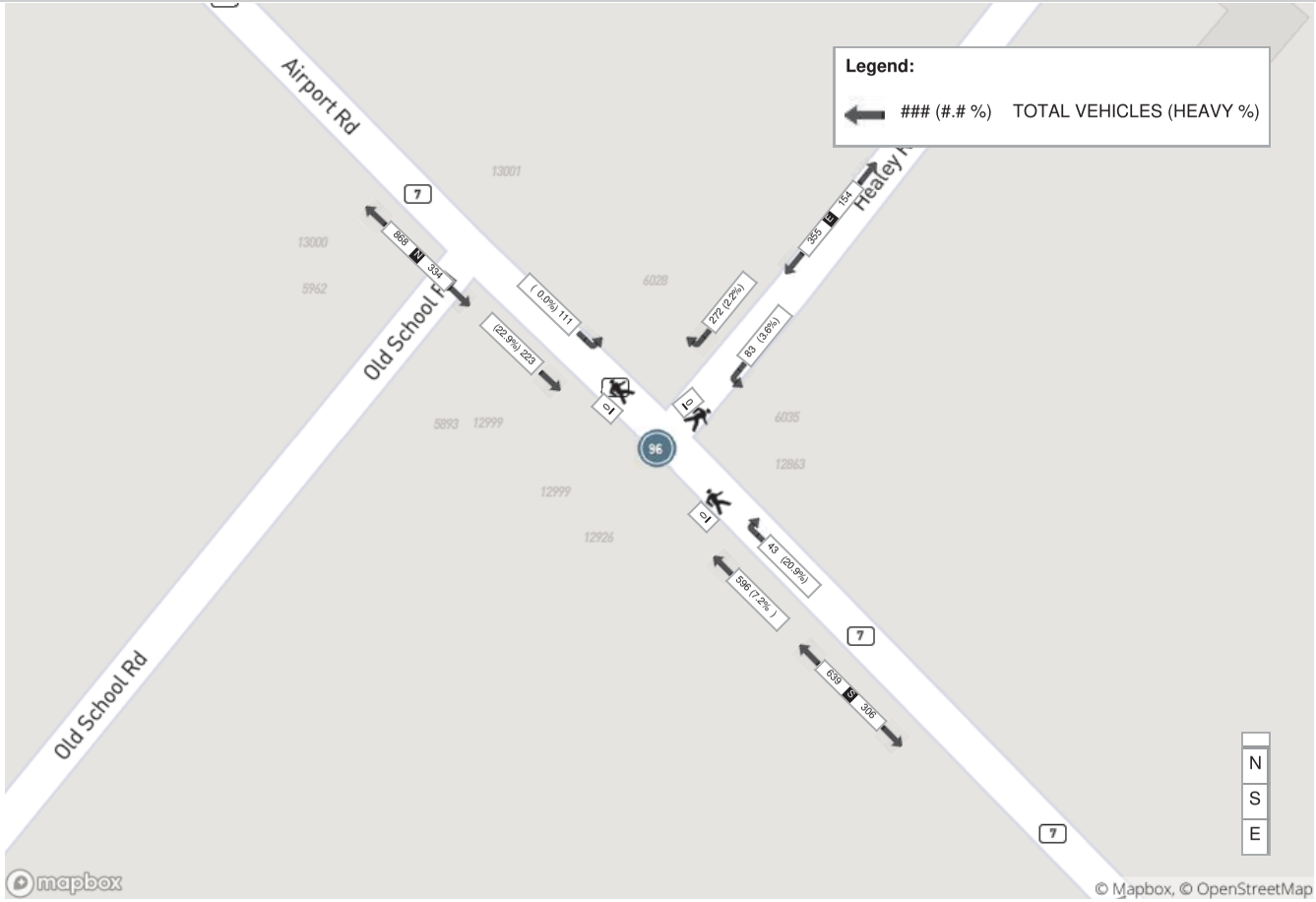
Peak Hour: 07:00 AM - 08:00 AM Weather: Moderate Rain (9.08 °C)



Spectrum

Turning Movement Count
Location Name: AIRPORT RD & HEALEY RD
Date: Thu, Oct 03, 2019 Deployment Lead: Patrick Filopoulos

Peak Hour: 04:00 PM - 05:00 PM Weather: Light Rain (10.54 °C)



REGIONAL MUNICIPALITY OF PEEL

Traffic Signal Timing Parameters

Database Date	**August 19, 2020**		**Prepared Date**	**March 15, 2021**
Database Rev	**iNET**		**Completed By**	**JP**
Timing Card / Field rev	**-**		**Checked By**	**BL**

Location **Airport Road North @ King Street**

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	OFF	PM
1	Not in use	-	-	-	-	-	-		
2	Airport Road - S/B	18	8	18	4.0	2.0	24 (min), 46 (max)		
3	Not in use	-	-	-	-	-	-		
4	King Street - W/B	14	8	14	4.2	2.0	20.2 (min), 36.2 (max)		
5	Not in use	-	-	-	-	-	-		
6	Airport Road - N/B	18	8	18	4.0	2.0	24 (min), 46 (max)		
7	Not in use	-	-	-	-	-	-		
8	King Street - E/B	14	8	14	4.2	2.0	20.2 (min), 36.2 (max)		

System Control
Yes

Semi-Actuated Mode
Yes

TIME (M-F)	PEAK	CYCLE LENGTH (s)	OFFSET (s)
FREE	AM	0	0
FREE	OFF	0	0
FREE	PM	0	0

APPENDIX B

Background Growth Rate

AADT Growth Calculation

Airport Road 0.1km (2016 & 2017) and 1.5km (2019) North of Old School Road

Year	AADT (vehicles)	xy	x^2	Growth by Linear Regression	Annual Growth Rate
2016	8,700	17539200	4064256	8917	
2017	9,291	18739947	4068289	8965	
2019	8,952	18074088	4076361	9061	0.5%
6052	26,943	54353235	12208906		

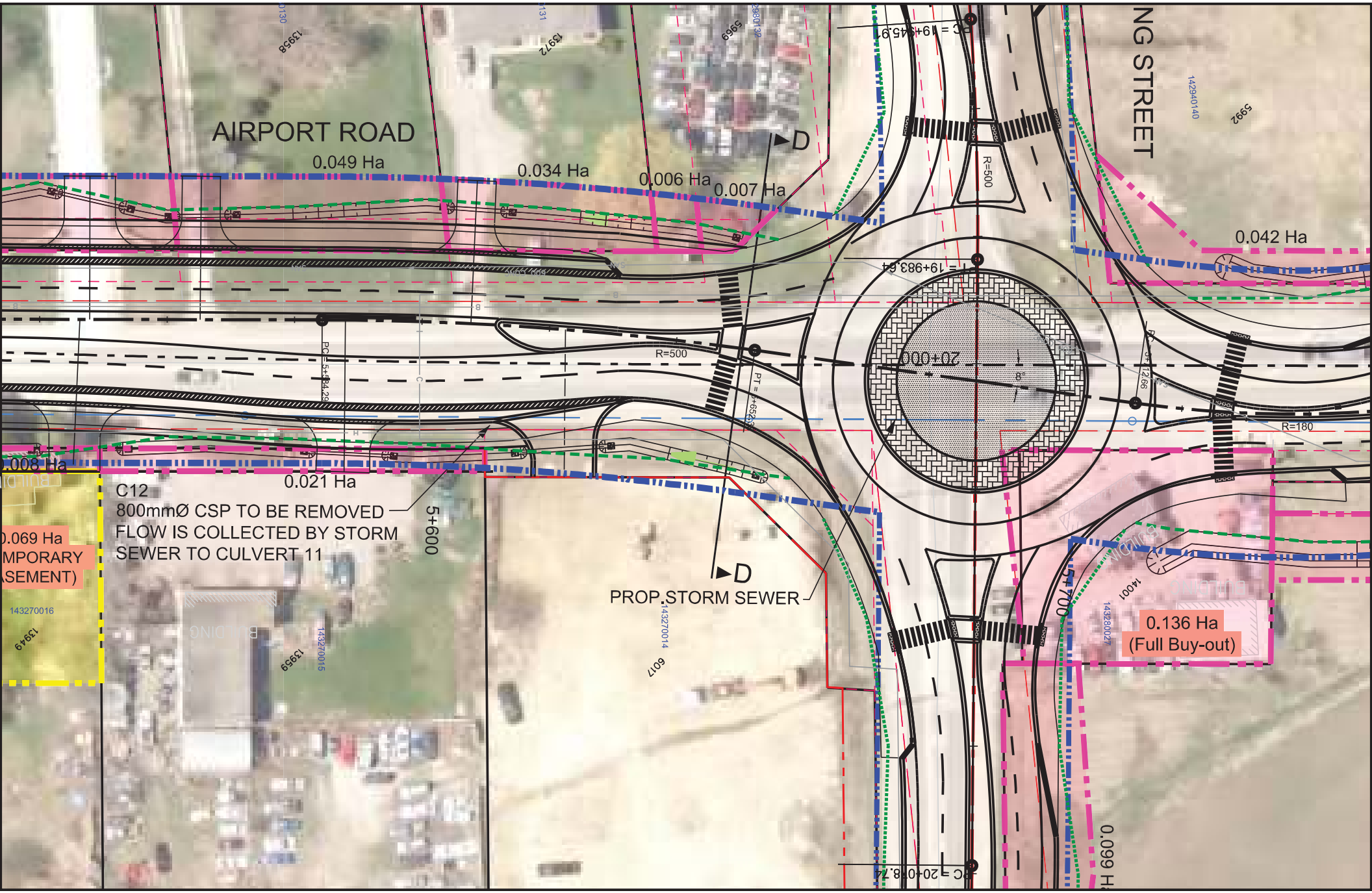
Sources: Region of Peel Open Traffic Data (2016 & 2017), Region of Peel Transportation Planning Division (201

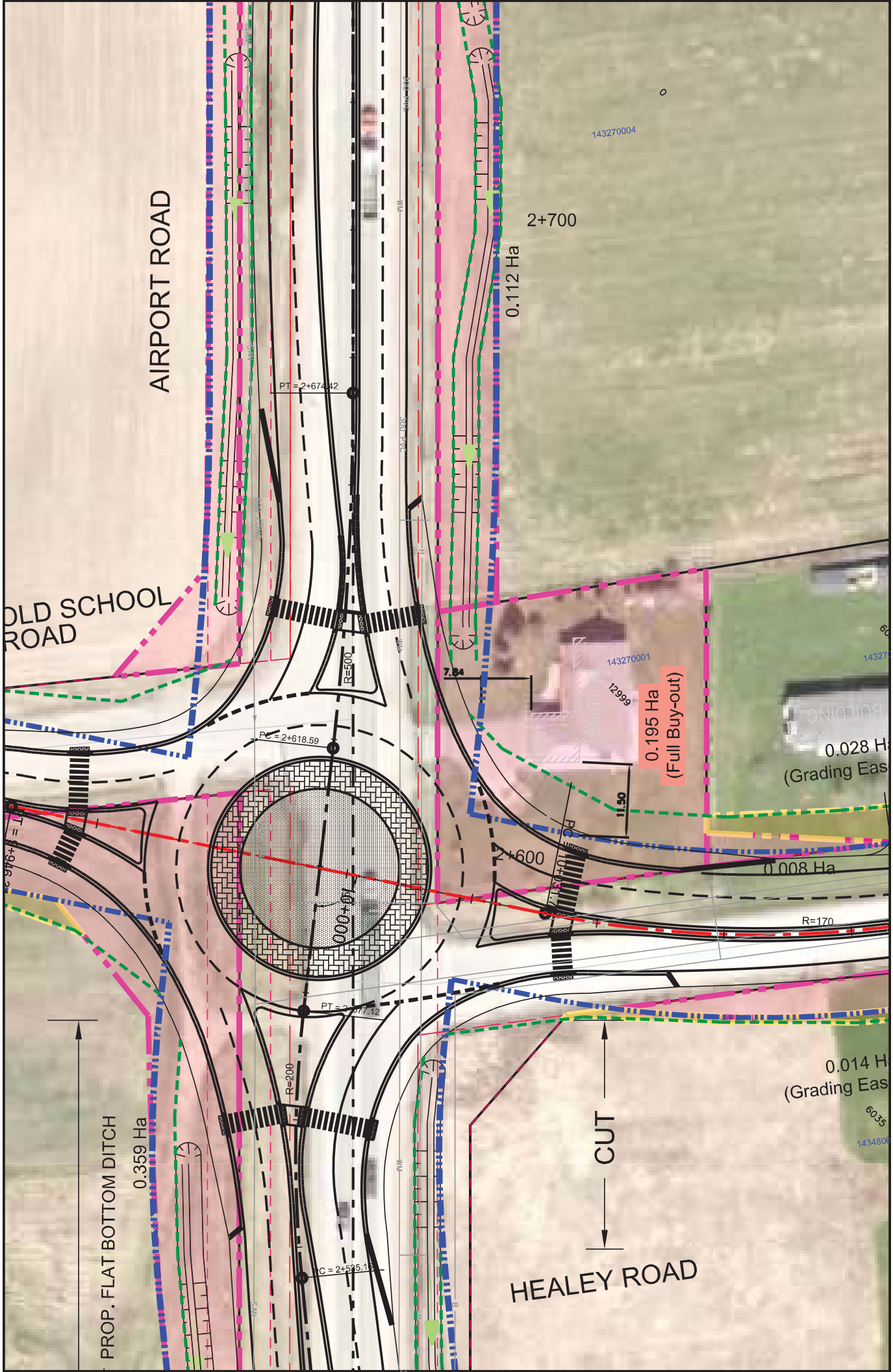
events	3
m	47.7857143
b	-87418.7143

OBJECTID	99
STATION_ID	00720610
ROAD_NAME	AIRPORT ROAD
LOCATION	0.1 KM NORTH OF OLD SCHOOL RD.
DIR	NS
COUNT_TYPE	DIRECTIONAL
NUM_LANES	2
MEDIAN	N
MED_TYPE	N/A
TURN_LANE	1
LAT	43.81164600000005
LONG	-79.78785299999998
UTM_E	597490.0377816161
UTM_N	4851667.099836347
COMMENTS	
Y_2016_NE	4279
Y_2016_SW	4421
Y_2017_NE	4433
Y_2017_SW	4858
Y_2018_NE	
Y_2018_SW	

APPENDIX C

Airport Road Design Plan


AIRPORT ROAD
0.049 Ha
0.034 Ha
0.006 Ha
0.007 Ha
D
NG STREET
0.042 Ha
R=500
R=500
R=180
20+000
5+600
5+700
0.021 Ha
C12
800mmØ CSP TO BE REMOVED
FLOW IS COLLECTED BY STORM
SEWER TO CULVERT 11
PROP. STORM SEWER
0.136 Ha
(Full Buy-out)
0.099 Ha
0.008 Ha
0.069 Ha
MPORARY
ASEMENT)
BUILDING
BUILDING


AIRPORT ROAD
OLD SCHOOL ROAD
HEALEY ROAD
2+700
2+600
0.112 Ha
0.195 Ha
(Full Buy-out)
0.008 Ha
0.359 Ha
0.014 Ha
(Grading Eas
0.028 Ha
(Grading Eas
CUT
PROP. FLAT BOTTOM DITCH
PT = 2+674.42
PC = 2+618.59
R=500
R=200
R=170
143270004
143270001
12999
6035

APPENDIX D

Capacity Analysis Sheets

Existing

HCM Signalized Intersection Capacity Analysis <Existing> Weekday AM Peak Hour
1: Airport Road & King Street 09/30/2021

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	19	286	47	136	466	18	11	176	73	77	483	49
Future Volume (vph)	19	286	47	136	466	18	11	176	73	77	483	49
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.2	6.2		6.2	6.2		6.0	6.0		6.0	6.0	
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Frt	1.00	0.98		1.00	0.99		1.00	0.96		1.00	0.99	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1475	1744		1684	1788		1487	1464		1700	1763	
Flt Permitted	0.17	1.00		0.37	1.00		0.29	1.00		0.50	1.00	
Satd. Flow (perm)	260	1744		661	1788		457	1464		888	1763	
Peak-hour factor, PHF	0.85	0.85	0.85	0.86	0.86	0.86	0.70	0.70	0.70	0.90	0.90	0.90
Adj. Flow (vph)	22	336	55	158	542	21	16	251	104	86	537	54
RTOR Reduction (vph)	0	7	0	0	2	0	0	18	0	0	5	0
Lane Group Flow (vph)	22	384	0	158	561	0	16	338	0	86	587	0
Heavy Vehicles (%)	21%	6%	2%	6%	4%	17%	20%	23%	22%	5%	5%	6%
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		8			4			6			2	
Permitted Phases	8			4			6			2		
Actuated Green, G (s)	27.9	27.9		27.9	27.9		40.1	40.1		40.1	40.1	
Effective Green, g (s)	27.9	27.9		27.9	27.9		40.1	40.1		40.1	40.1	
Actuated g/C Ratio	0.35	0.35		0.35	0.35		0.50	0.50		0.50	0.50	
Clearance Time (s)	6.2	6.2		6.2	6.2		6.0	6.0		6.0	6.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	90	606		229	622		228	732		444	881	
v/s Ratio Prot		0.22			c0.31			0.23			c0.33	
v/s Ratio Perm	0.08			0.24			0.04			0.10		
v/c Ratio	0.24	0.63		0.69	0.90		0.07	0.46		0.19	0.67	
Uniform Delay, d1	18.6	21.9		22.4	24.9		10.4	13.0		11.1	15.0	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	1.4	2.2		8.4	16.3		0.6	2.1		1.0	4.0	
Delay (s)	20.1	24.0		30.8	41.2		11.0	15.1		12.1	19.0	
Level of Service	C	C		C	D		B	B		B	B	
Approach Delay (s)		23.8			38.9			14.9			18.1	
Approach LOS		C			D			B			B	

Intersection Summary				
HCM 2000 Control Delay	25.5	HCM 2000 Level of Service	C	
HCM 2000 Volume to Capacity ratio	0.76			
Actuated Cycle Length (s)	80.2	Sum of lost time (s)	12.2	
Intersection Capacity Utilization	101.0%	ICU Level of Service	G	
Analysis Period (min)	15			
c Critical Lane Group				

HCM Unsignalized Intersection Capacity Analysis <Existing> Weekday AM Peak Hour
2: Old School Road & Airport Road 09/30/2021

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	15	204	140	245	662	10
Future Volume (Veh/h)	15	204	140	245	662	10
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.69	0.69	0.71	0.71	0.91	0.91
Hourly flow rate (vph)	22	296	197	345	727	11
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	None	
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	1466	727	738			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1466	727	738			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	80	30	77			
cM capacity (veh/h)	109	424	868			

Direction, Lane #	EB 1	NB 1	SB 1	SB 2
Volume Total	318	542	727	11
Volume Left	22	197	0	0
Volume Right	296	0	0	11
cSH	353	868	1700	1700
Volume to Capacity	0.90	0.23	0.43	0.01
Queue Length 95th (m)	67.9	6.6	0.0	0.0
Control Delay (s)	60.8	5.6	0.0	0.0
Lane LOS	F	A		
Approach Delay (s)	60.8	5.6	0.0	
Approach LOS	F			

Intersection Summary				
Average Delay	14.0			
Intersection Capacity Utilization	78.9%	ICU Level of Service	D	
Analysis Period (min)	15			

HCM Unsignalized Intersection Capacity Analysis <Existing> Weekday AM Peak Hour
3: Airport Road & Healey Road 09/30/2021

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	41	104	281	49	196	670
Future Volume (Veh/h)	41	104	281	49	196	670
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.68	0.68	0.59	0.59	0.92	0.92
Hourly flow rate (vph)	60	153	476	83	213	728
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	1672	518			559	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1672	518			559	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	28	73			79	
cM capacity (veh/h)	83	558			1012	

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	213	559	941
Volume Left	60	0	213
Volume Right	153	83	0
cSH	214	1700	1012
Volume to Capacity	1.00	0.33	0.21
Queue Length 95th (m)	67.4	0.0	6.0
Control Delay (s)	107.5	0.0	4.9
Lane LOS	F		A
Approach Delay (s)	107.5	0.0	4.9
Approach LOS	F		

Intersection Summary				
Average Delay		16.0		
Intersection Capacity Utilization		82.5%	ICU Level of Service	E
Analysis Period (min)		15		

HCM Signalized Intersection Capacity Analysis <Existing> Weekday PM Peak Hour
1: Airport Road & King Street 09/30/2021

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	59	434	21	57	345	106	60	513	84	38	161	42
Future Volume (vph)	59	434	21	57	345	106	60	513	84	38	161	42
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.2	6.2		6.2	6.2		6.0	6.0		6.0	6.0	
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Frt	1.00	0.99		1.00	0.96		1.00	0.98		1.00	0.97	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1475	1763		1684	1693		1487	1497		1700	1731	
Flt Permitted	0.19	1.00		0.25	1.00		0.60	1.00		0.26	1.00	
Satd. Flow (perm)	297	1763		439	1693		942	1497		465	1731	
Peak-hour factor, PHF	0.93	0.93	0.93	0.84	0.84	0.84	0.94	0.94	0.94	0.82	0.82	0.82
Adj. Flow (vph)	63	467	23	68	411	126	64	546	89	46	196	51
RTOR Reduction (vph)	0	2	0	0	14	0	0	7	0	0	11	0
Lane Group Flow (vph)	63	488	0	68	523	0	64	628	0	46	236	0
Heavy Vehicles (%)	21%	6%	2%	6%	4%	17%	20%	23%	22%	5%	5%	6%
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		8			4			6			2	
Permitted Phases	8			4			6			2		
Actuated Green, G (s)	27.3	27.3		27.3	27.3		40.1	40.1		40.1	40.1	
Effective Green, g (s)	27.3	27.3		27.3	27.3		40.1	40.1		40.1	40.1	
Actuated g/C Ratio	0.34	0.34		0.34	0.34		0.50	0.50		0.50	0.50	
Clearance Time (s)	6.2	6.2		6.2	6.2		6.0	6.0		6.0	6.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	101	604		150	580		474	754		234	872	
v/s Ratio Prot		0.28			c0.31			c0.42			0.14	
v/s Ratio Perm	0.21			0.16			0.07			0.10		
v/c Ratio	0.62	0.81		0.45	0.90		0.14	0.83		0.20	0.27	
Uniform Delay, d1	21.9	23.8		20.3	24.9		10.5	16.9		10.9	11.3	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	11.4	7.8		2.2	17.3		0.6	10.5		1.9	0.8	
Delay (s)	33.3	31.6		22.5	42.1		11.1	27.3		12.8	12.1	
Level of Service	C	C		C	D		B	C		B	B	
Approach Delay (s)		31.8			39.9			25.9			12.2	
Approach LOS		C			D			C			B	

Intersection Summary					
HCM 2000 Control Delay		29.5	HCM 2000 Level of Service	C	
HCM 2000 Volume to Capacity ratio		0.86			
Actuated Cycle Length (s)		79.6	Sum of lost time (s)	12.2	
Intersection Capacity Utilization		101.5%	ICU Level of Service	G	
Analysis Period (min)		15			
c Critical Lane Group					

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	32	111	286	625	223	17
Future Volume (Veh/h)	32	111	286	625	223	17
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.76	0.76	0.97	0.97	0.91	0.91
Hourly flow rate (vph)	42	146	295	644	245	19
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	None	
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	1479	245	264			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1479	245	264			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	61	82	77			
cM capacity (veh/h)	107	794	1300			

Direction, Lane #	EB 1	NB 1	SB 1	SB 2
Volume Total	188	939	245	19
Volume Left	42	295	0	0
Volume Right	146	0	0	19
cSH	326	1300	1700	1700
Volume to Capacity	0.58	0.23	0.14	0.01
Queue Length 95th (m)	25.9	6.6	0.0	0.0
Control Delay (s)	30.0	4.8	0.0	0.0
Lane LOS	D	A		
Approach Delay (s)	30.0	4.8	0.0	
Approach LOS	D			

Intersection Summary				
Average Delay			7.3	
Intersection Capacity Utilization			79.1%	ICU Level of Service D
Analysis Period (min)			15	

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	83	285	626	43	111	223
Future Volume (Veh/h)	83	285	626	43	111	223
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.85	0.85	0.96	0.96	0.94	0.94
Hourly flow rate (vph)	98	335	652	45	118	237
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	1148	674			697	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1148	674			697	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	49	26			87	
cM capacity (veh/h)	191	454			899	

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	433	697	355
Volume Left	98	0	118
Volume Right	335	45	0
cSH	346	1700	899
Volume to Capacity	1.25	0.41	0.13
Queue Length 95th (m)	146.4	0.0	3.4
Control Delay (s)	166.7	0.0	4.2
Lane LOS	F		A
Approach Delay (s)	166.7	0.0	4.2
Approach LOS	F		

Intersection Summary				
Average Delay			49.6	
Intersection Capacity Utilization			85.6%	ICU Level of Service E
Analysis Period (min)			15	

HCM Signalized Intersection Capacity Analysis <Existing> Saturday Peak Hour
1: Airport Road & King Street 09/30/2021

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	40	312	23	54	311	43	22	285	76	40	231	30
Future Volume (vph)	40	312	23	54	311	43	22	285	76	40	231	30
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.2	6.2		6.2	6.2		6.0	6.0		6.0	6.0	
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Frt	1.00	0.99		1.00	0.98		1.00	0.97		1.00	0.98	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1475	1759		1684	1747		1487	1482		1700	1756	
Flt Permitted	0.29	1.00		0.38	1.00		0.55	1.00		0.49	1.00	
Satd. Flow (perm)	448	1759		667	1747		857	1482		877	1756	
Peak-hour factor, PHF	0.93	0.93	0.93	0.84	0.84	0.84	0.94	0.94	0.94	0.82	0.82	0.82
Adj. Flow (vph)	43	335	25	64	370	51	23	303	81	49	282	37
RTOR Reduction (vph)	0	4	0	0	7	0	0	11	0	0	5	0
Lane Group Flow (vph)	43	356	0	64	414	0	23	373	0	49	314	0
Heavy Vehicles (%)	21%	6%	2%	6%	4%	17%	20%	23%	22%	5%	5%	6%
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		8			4			6			2	
Permitted Phases	8			4			6			2		
Actuated Green, G (s)	22.2	22.2		22.2	22.2		40.2	40.2		40.2	40.2	
Effective Green, g (s)	22.2	22.2		22.2	22.2		40.2	40.2		40.2	40.2	
Actuated g/C Ratio	0.30	0.30		0.30	0.30		0.54	0.54		0.54	0.54	
Clearance Time (s)	6.2	6.2		6.2	6.2		6.0	6.0		6.0	6.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	133	523		198	519		461	798		472	946	
v/s Ratio Prot		0.20			c0.24			c0.25			0.18	
v/s Ratio Perm	0.10			0.10			0.03			0.06		
v/c Ratio	0.32	0.68		0.32	0.80		0.05	0.47		0.10	0.33	
Uniform Delay, d1	20.4	23.1		20.4	24.1		8.2	10.6		8.4	9.7	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	1.4	3.7		1.0	8.3		0.2	2.0		0.4	0.9	
Delay (s)	21.8	26.7		21.3	32.5		8.4	12.6		8.8	10.6	
Level of Service	C	C		C	C		A	B		A	B	
Approach Delay (s)		26.2			31.0			12.3			10.4	
Approach LOS		C			C			B			B	

Intersection Summary				
HCM 2000 Control Delay	20.7	HCM 2000 Level of Service	C	
HCM 2000 Volume to Capacity ratio	0.58			
Actuated Cycle Length (s)	74.6	Sum of lost time (s)	12.2	
Intersection Capacity Utilization	79.2%	ICU Level of Service	D	
Analysis Period (min)	15			
c Critical Lane Group				

HCM Unsignalized Intersection Capacity Analysis <Existing> Saturday Peak Hour
2: Old School Road & Airport Road 09/30/2021

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	14	60	80	395	313	11
Future Volume (Veh/h)	14	60	80	395	313	11
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.76	0.76	0.97	0.97	0.91	0.91
Hourly flow rate (vph)	18	79	82	407	344	12
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	None	
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	915	344	356			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	915	344	356			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	94	89	93			
cM capacity (veh/h)	282	699	1203			

Direction, Lane #	EB 1	NB 1	SB 1	SB 2
Volume Total	97	489	344	12
Volume Left	18	82	0	0
Volume Right	79	0	0	12
cSH	548	1203	1700	1700
Volume to Capacity	0.18	0.07	0.20	0.01
Queue Length 95th (m)	4.8	1.7	0.0	0.0
Control Delay (s)	13.0	2.0	0.0	0.0
Lane LOS	B	A		
Approach Delay (s)	13.0	2.0	0.0	
Approach LOS	B			

Intersection Summary				
Average Delay	2.4			
Intersection Capacity Utilization	56.2%	ICU Level of Service		B
Analysis Period (min)	15			

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	54	74	401	37	52	321
Future Volume (Veh/h)	54	74	401	37	52	321
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.85	0.85	0.96	0.96	0.94	0.94
Hourly flow rate (vph)	64	87	418	39	55	341
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	888	438			457	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	888	438			457	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	79	86			95	
cM capacity (veh/h)	298	619			1104	

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	151	457	396
Volume Left	64	0	55
Volume Right	87	39	0
cSH	425	1700	1104
Volume to Capacity	0.36	0.27	0.05
Queue Length 95th (m)	12.0	0.0	1.2
Control Delay (s)	18.1	0.0	1.6
Lane LOS	C		A
Approach Delay (s)	18.1	0.0	1.6
Approach LOS	C		

Intersection Summary				
Average Delay		3.4		
Intersection Capacity Utilization		60.7%	ICU Level of Service	B
Analysis Period (min)		15		

2023 Conditions

HCM Signalized Intersection Capacity Analysis <Background> 2023 Weekday AM Peak Hour
1: Airport Road & King Street 09/30/2021

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	19	290	48	138	473	18	11	179	74	78	490	50
Future Volume (vph)	19	290	48	138	473	18	11	179	74	78	490	50
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.2	6.2		6.2	6.2		6.0	6.0		6.0	6.0	
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Frt	1.00	0.98		1.00	0.99		1.00	0.96		1.00	0.99	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1475	1744		1684	1788		1487	1464		1700	1763	
Flt Permitted	0.16	1.00		0.37	1.00		0.28	1.00		0.49	1.00	
Satd. Flow (perm)	251	1744		654	1788		442	1464		876	1763	
Peak-hour factor, PHF	0.85	0.85	0.85	0.86	0.86	0.86	0.70	0.70	0.70	0.90	0.90	0.90
Adj. Flow (vph)	22	341	56	160	550	21	16	256	106	87	544	56
RTOR Reduction (vph)	0	8	0	0	2	0	0	18	0	0	5	0
Lane Group Flow (vph)	22	389	0	160	569	0	16	344	0	87	595	0
Heavy Vehicles (%)	21%	6%	2%	6%	4%	17%	20%	23%	22%	5%	5%	6%
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		8			4			6			2	
Permitted Phases	8			4			6			2		
Actuated Green, G (s)	27.4	27.4		27.4	27.4		38.9	38.9		38.9	38.9	
Effective Green, g (s)	27.4	27.4		27.4	27.4		38.9	38.9		38.9	38.9	
Actuated g/C Ratio	0.35	0.35		0.35	0.35		0.50	0.50		0.50	0.50	
Clearance Time (s)	6.2	6.2		6.2	6.2		6.0	6.0		6.0	6.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	87	608		228	624		219	725		434	873	
v/s Ratio Prot		0.22			c0.32			0.23			c0.34	
v/s Ratio Perm	0.09			0.24			0.04			0.10		
v/c Ratio	0.25	0.64		0.70	0.91		0.07	0.47		0.20	0.68	
Uniform Delay, d1	18.2	21.4		22.0	24.4		10.4	13.1		11.1	15.1	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	1.5	2.3		9.4	17.7		0.6	2.2		1.0	4.3	
Delay (s)	19.8	23.7		31.4	42.1		11.0	15.3		12.1	19.4	
Level of Service	B	C		C	D		B	B		B	B	
Approach Delay (s)		23.5			39.7			15.1			18.5	
Approach LOS		C			D			B			B	

Intersection Summary				
HCM 2000 Control Delay	25.9	HCM 2000 Level of Service	C	
HCM 2000 Volume to Capacity ratio	0.78			
Actuated Cycle Length (s)	78.5	Sum of lost time (s)	12.2	
Intersection Capacity Utilization	101.8%	ICU Level of Service	G	
Analysis Period (min)	15			
c Critical Lane Group				

HCM Unsignalized Intersection Capacity Analysis <Background> 2023 Weekday AM Peak Hour
2: Old School Road & Airport Road 09/30/2021

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	15	207	142	249	672	10
Future Volume (Veh/h)	15	207	142	249	672	10
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.69	0.69	0.71	0.71	0.91	0.91
Hourly flow rate (vph)	22	300	200	351	738	11
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	None	
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	1489	738	749			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1489	738	749			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	79	28	77			
cM capacity (veh/h)	105	418	860			

Direction, Lane #	EB 1	NB 1	SB 1	SB 2
Volume Total	322	551	738	11
Volume Left	22	200	0	0
Volume Right	300	0	0	11
cSH	347	860	1700	1700
Volume to Capacity	0.93	0.23	0.43	0.01
Queue Length 95th (m)	72.5	6.8	0.0	0.0
Control Delay (s)	67.0	5.7	0.0	0.0
Lane LOS	F	A		
Approach Delay (s)	67.0	5.7	0.0	
Approach LOS	F			

Intersection Summary				
Average Delay	15.2			
Intersection Capacity Utilization	80.0%	ICU Level of Service	D	
Analysis Period (min)	15			

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	42	106	285	50	199	680
Future Volume (Veh/h)	42	106	285	50	199	680
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.68	0.68	0.59	0.59	0.92	0.92
Hourly flow rate (vph)	62	156	483	85	216	739
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	1696	526			568	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1696	526			568	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	22	72			78	
cM capacity (veh/h)	80	552			1004	

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	218	568	955
Volume Left	62	0	216
Volume Right	156	85	0
cSH	206	1700	1004
Volume to Capacity	1.06	0.33	0.22
Queue Length 95th (m)	74.7	0.0	6.2
Control Delay (s)	128.0	0.0	5.0
Lane LOS	F		A
Approach Delay (s)	128.0	0.0	5.0
Approach LOS	F		

Intersection Summary				
Average Delay		18.8		
Intersection Capacity Utilization		83.7%	ICU Level of Service	E
Analysis Period (min)		15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	60	441	21	58	350	108	61	521	85	39	163	43
Future Volume (vph)	60	441	21	58	350	108	61	521	85	39	163	43
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.2	6.2		6.2	6.2		6.0	6.0		6.0	6.0	
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Frt	1.00	0.99		1.00	0.96		1.00	0.98		1.00	0.97	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1475	1763		1684	1693		1487	1497		1700	1730	
Flt Permitted	0.19	1.00		0.24	1.00		0.60	1.00		0.25	1.00	
Satd. Flow (perm)	288	1763		432	1693		937	1497		447	1730	
Peak-hour factor, PHF	0.93	0.93	0.93	0.84	0.84	0.84	0.94	0.94	0.94	0.82	0.82	0.82
Adj. Flow (vph)	65	474	23	69	417	129	65	554	90	48	199	52
RTOR Reduction (vph)	0	2	0	0	14	0	0	7	0	0	12	0
Lane Group Flow (vph)	65	495	0	69	532	0	65	637	0	48	239	0
Heavy Vehicles (%)	21%	6%	2%	6%	4%	17%	20%	23%	22%	5%	5%	6%
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		8			4			6			2	
Permitted Phases	8			4			6			2		
Actuated Green, G (s)	26.9	26.9		26.9	26.9		38.9	38.9		38.9	38.9	
Effective Green, g (s)	26.9	26.9		26.9	26.9		38.9	38.9		38.9	38.9	
Actuated g/C Ratio	0.34	0.34		0.34	0.34		0.50	0.50		0.50	0.50	
Clearance Time (s)	6.2	6.2		6.2	6.2		6.0	6.0		6.0	6.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	99	608		148	583		467	746		222	862	
v/s Ratio Prot		0.28			c0.31			c0.43			0.14	
v/s Ratio Perm	0.23			0.16			0.07			0.11		
v/c Ratio	0.66	0.81		0.47	0.91		0.14	0.85		0.22	0.28	
Uniform Delay, d1	21.6	23.3		19.9	24.4		10.5	17.1		11.0	11.4	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	14.6	8.2		2.3	18.6		0.6	11.9		2.2	0.8	
Delay (s)	36.2	31.5		22.3	43.0		11.2	29.0		13.2	12.2	
Level of Service	D	C		C	D		B	C		B	B	
Approach Delay (s)		32.0			40.7			27.4			12.3	
Approach LOS		C			D			C			B	

Intersection Summary					
HCM 2000 Control Delay		30.3	HCM 2000 Level of Service	C	
HCM 2000 Volume to Capacity ratio		0.88			
Actuated Cycle Length (s)		78.0	Sum of lost time (s)	12.2	
Intersection Capacity Utilization		92.9%	ICU Level of Service	F	
Analysis Period (min)		15			
c Critical Lane Group					

HCM Unsignalized Intersection Capacity Analysis<Background> 2023 Weekday PM Peak Hour
2: Old School Road & Airport Road

09/30/2021

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	32	113	290	634	226	17
Future Volume (Veh/h)	32	113	290	634	226	17
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.76	0.76	0.97	0.97	0.91	0.91
Hourly flow rate (vph)	42	149	299	654	248	19
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	None	
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	1500	248	267			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1500	248	267			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	59	81	77			
cM capacity (veh/h)	103	791	1297			

Direction, Lane #	EB 1	NB 1	SB 1	SB 2
Volume Total	191	953	248	19
Volume Left	42	299	0	0
Volume Right	149	0	0	19
cSH	321	1297	1700	1700
Volume to Capacity	0.59	0.23	0.15	0.01
Queue Length 95th (m)	27.4	6.8	0.0	0.0
Control Delay (s)	31.4	4.9	0.0	0.0
Lane LOS	D	A		
Approach Delay (s)	31.4	4.9	0.0	
Approach LOS	D			

Intersection Summary				
Average Delay			7.6	
Intersection Capacity Utilization			80.0%	ICU Level of Service D
Analysis Period (min)			15	

HCM Unsignalized Intersection Capacity Analysis<Background> 2023 Weekday PM Peak Hour
3: Airport Road & Healey Road

09/30/2021

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	84	289	635	44	113	226
Future Volume (Veh/h)	84	289	635	44	113	226
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.85	0.85	0.96	0.96	0.94	0.94
Hourly flow rate (vph)	99	340	661	46	120	240
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	1164	684			707	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1164	684			707	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	47	24			87	
cM capacity (veh/h)	186	449			891	

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	439	707	360
Volume Left	99	0	120
Volume Right	340	46	0
cSH	340	1700	891
Volume to Capacity	1.29	0.42	0.13
Queue Length 95th (m)	155.1	0.0	3.5
Control Delay (s)	182.8	0.0	4.2
Lane LOS	F		A
Approach Delay (s)	182.8	0.0	4.2
Approach LOS	F		

Intersection Summary				
Average Delay			54.3	
Intersection Capacity Utilization			86.7%	ICU Level of Service E
Analysis Period (min)			15	

HCM Signalized Intersection Capacity Analysis <Background> 2023 Saturday Peak Hour
1: Airport Road & King Street 09/30/2021

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	40	315	23	55	314	43	22	288	77	40	233	30
Future Volume (vph)	40	315	23	55	314	43	22	288	77	40	233	30
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.2	6.2		6.2	6.2		6.0	6.0		6.0	6.0	
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Frt	1.00	0.99		1.00	0.98		1.00	0.97		1.00	0.98	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1475	1759		1684	1748		1487	1482		1700	1757	
Flt Permitted	0.29	1.00		0.38	1.00		0.55	1.00		0.49	1.00	
Satd. Flow (perm)	448	1759		666	1748		854	1482		870	1757	
Peak-hour factor, PHF	0.93	0.93	0.93	0.84	0.84	0.84	0.94	0.94	0.94	0.82	0.82	0.82
Adj. Flow (vph)	43	339	25	65	374	51	23	306	82	49	284	37
RTOR Reduction (vph)	0	4	0	0	7	0	0	11	0	0	5	0
Lane Group Flow (vph)	43	360	0	65	418	0	23	377	0	49	316	0
Heavy Vehicles (%)	21%	6%	2%	6%	4%	17%	20%	23%	22%	5%	5%	6%
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		8			4			6			2	
Permitted Phases	8			4			6			2		
Actuated Green, G (s)	21.9	21.9		21.9	21.9		39.0	39.0		39.0	39.0	
Effective Green, g (s)	21.9	21.9		21.9	21.9		39.0	39.0		39.0	39.0	
Actuated g/C Ratio	0.30	0.30		0.30	0.30		0.53	0.53		0.53	0.53	
Clearance Time (s)	6.2	6.2		6.2	6.2		6.0	6.0		6.0	6.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	134	526		199	523		455	790		464	937	
v/s Ratio Prot		0.20			c0.24			c0.25			0.18	
v/s Ratio Perm	0.10			0.10			0.03			0.06		
v/c Ratio	0.32	0.69		0.33	0.80		0.05	0.48		0.11	0.34	
Uniform Delay, d1	19.8	22.6		19.9	23.6		8.2	10.7		8.4	9.7	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	1.4	3.7		1.0	8.4		0.2	2.1		0.5	1.0	
Delay (s)	21.2	26.3		20.8	31.9		8.4	12.7		8.9	10.7	
Level of Service	C	C		C	C		A	B		A	B	
Approach Delay (s)		25.7			30.5			12.5			10.4	
Approach LOS		C			C			B			B	

Intersection Summary				
HCM 2000 Control Delay	20.5	HCM 2000 Level of Service	C	
HCM 2000 Volume to Capacity ratio	0.59			
Actuated Cycle Length (s)	73.1	Sum of lost time (s)	12.2	
Intersection Capacity Utilization	79.4%	ICU Level of Service	D	
Analysis Period (min)	15			
c Critical Lane Group				

HCM Unsignalized Intersection Capacity Analysis <Background> 2023 Saturday Peak Hour
2: Old School Road & Airport Road 09/30/2021

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	14	61	81	399	316	11
Future Volume (Veh/h)	14	61	81	399	316	11
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.76	0.76	0.97	0.97	0.91	0.91
Hourly flow rate (vph)	18	80	84	411	347	12
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	None	
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	926	347	359			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	926	347	359			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	94	89	93			
cM capacity (veh/h)	277	696	1200			

Direction, Lane #	EB 1	NB 1	SB 1	SB 2
Volume Total	98	495	347	12
Volume Left	18	84	0	0
Volume Right	80	0	0	12
cSH	545	1200	1700	1700
Volume to Capacity	0.18	0.07	0.20	0.01
Queue Length 95th (m)	4.9	1.7	0.0	0.0
Control Delay (s)	13.0	2.0	0.0	0.0
Lane LOS	B	A		
Approach Delay (s)	13.0	2.0	0.0	
Approach LOS	B			

Intersection Summary				
Average Delay	2.4			
Intersection Capacity Utilization	56.6%	ICU Level of Service	B	
Analysis Period (min)	15			

HCM Unsignalized Intersection Capacity Analysis <Background> 2023 Saturday Peak Hour
3: Airport Road & Healey Road 09/30/2021

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	55	75	405	37	53	324
Future Volume (Veh/h)	55	75	405	37	53	324
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.85	0.85	0.96	0.96	0.94	0.94
Hourly flow rate (vph)	65	88	422	39	56	345
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	898	442			461	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	898	442			461	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	78	86			95	
cM capacity (veh/h)	294	616			1100	

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	153	461	401
Volume Left	65	0	56
Volume Right	88	39	0
cSH	420	1700	1100
Volume to Capacity	0.36	0.27	0.05
Queue Length 95th (m)	12.4	0.0	1.2
Control Delay (s)	18.4	0.0	1.6
Lane LOS	C		A
Approach Delay (s)	18.4	0.0	1.6
Approach LOS	C		

Intersection Summary			
Average Delay		3.4	
Intersection Capacity Utilization		61.2%	ICU Level of Service B
Analysis Period (min)		15	

HCM Signalized Intersection Capacity Analysis <Total> 2023 Weekday AM Peak Hour
1: Airport Road & King Street 09/27/2021

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	19	290	64	170	473	18	16	194	84	78	554	50
Future Volume (vph)	19	290	64	170	473	18	16	194	84	78	554	50
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.2	6.2		6.2	6.2		6.0	6.0		6.0	6.0	
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Frt	1.00	0.97		1.00	0.99		1.00	0.95		1.00	0.99	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1475	1736		1684	1788		1487	1462		1700	1766	
Flt Permitted	0.16	1.00		0.35	1.00		0.22	1.00		0.46	1.00	
Satd. Flow (perm)	251	1736		612	1788		351	1462		818	1766	
Peak-hour factor, PHF	0.85	0.85	0.85	0.86	0.86	0.86	0.70	0.70	0.70	0.90	0.90	0.90
Adj. Flow (vph)	22	341	75	198	550	21	23	277	120	87	616	56
RTOR Reduction (vph)	0	10	0	0	2	0	0	19	0	0	4	0
Lane Group Flow (vph)	22	406	0	198	569	0	23	378	0	87	668	0
Heavy Vehicles (%)	21%	6%	2%	6%	4%	17%	20%	23%	22%	5%	5%	6%
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		8			4			6			2	
Permitted Phases	8			4			6			2		
Actuated Green, G (s)	27.4	27.4		27.4	27.4		38.9	38.9		38.9	38.9	
Effective Green, g (s)	27.4	27.4		27.4	27.4		38.9	38.9		38.9	38.9	
Actuated g/C Ratio	0.35	0.35		0.35	0.35		0.50	0.50		0.50	0.50	
Clearance Time (s)	6.2	6.2		6.2	6.2		6.0	6.0		6.0	6.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	87	605		213	624		173	724		405	875	
v/s Ratio Prot		0.23			0.32			0.26			c0.38	
v/s Ratio Perm	0.09			c0.32			0.07			0.11		
v/c Ratio	0.25	0.67		0.93	0.91		0.13	0.52		0.21	0.76	
Uniform Delay, d1	18.2	21.7		24.6	24.4		10.7	13.5		11.2	16.1	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	1.5	2.9		41.9	17.7		1.6	2.7		1.2	6.3	
Delay (s)	19.8	24.6		66.5	42.1		12.3	16.2		12.4	22.3	
Level of Service	B	C		E	D		B	B		B	C	
Approach Delay (s)		24.4			48.4			15.9			21.2	
Approach LOS		C			D			B			C	

Intersection Summary					
HCM 2000 Control Delay	29.6	HCM 2000 Level of Service	C		
HCM 2000 Volume to Capacity ratio	0.83				
Actuated Cycle Length (s)	78.5	Sum of lost time (s)	12.2		
Intersection Capacity Utilization	105.2%	ICU Level of Service	G		
Analysis Period (min)	15				
c Critical Lane Group					

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	0	24	0	294	748	40
Future Volume (Veh/h)	0	24	0	294	748	40
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	26	0	320	813	43
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	None	
Median storage veh)						
Upstream signal (m)					159	
pX, platoon unblocked	0.64	0.64	0.64			
vC, conflicting volume	1154	834	856			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	961	462	496			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	100	93	100			
cM capacity (veh/h)	182	384	685			

Direction, Lane #	EB 1	NB 1	SB 1
Volume Total	26	320	856
Volume Left	0	0	0
Volume Right	26	0	43
cSH	384	1700	1700
Volume to Capacity	0.07	0.19	0.50
Queue Length 95th (m)	1.6	0.0	0.0
Control Delay (s)	15.0	0.0	0.0
Lane LOS	C		
Approach Delay (s)	15.0	0.0	0.0
Approach LOS	C		

Intersection Summary			
Average Delay		0.3	
Intersection Capacity Utilization		51.8%	ICU Level of Service A
Analysis Period (min)		15	

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	29	25	48	264	724	48
Future Volume (Veh/h)	29	25	48	264	724	48
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)	32	27	52	287	787	52
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	None	
Median storage veh)						
Upstream signal (m)					331	
pX, platoon unblocked	0.73	0.73	0.73			
vC, conflicting volume	1204	813	839			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1096	563	599			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	80	93	93			
cM capacity (veh/h)	161	385	717			

Direction, Lane #	EB 1	EB 2	NB 1	SB 1
Volume Total	32	27	339	839
Volume Left	32	0	52	0
Volume Right	0	27	0	52
cSH	161	385	717	1700
Volume to Capacity	0.20	0.07	0.07	0.49
Queue Length 95th (m)	5.4	1.7	1.8	0.0
Control Delay (s)	32.9	15.0	2.4	0.0
Lane LOS	D	C	A	
Approach Delay (s)	24.7		2.4	0.0
Approach LOS	C			

Intersection Summary			
Average Delay		1.8	
Intersection Capacity Utilization		64.8%	ICU Level of Service C
Analysis Period (min)		15	

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	29	25	48	264	724	48
Future Volume (vph)	29	25	48	264	724	48
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width	2.5	2.5	3.5	3.5	3.5	3.5
Total Lost time (s)	6.0	6.0		6.0	6.0	
Lane Util. Factor	1.00	1.00		1.00	1.00	
Frt	1.00	0.85		1.00	0.99	
Flt Protected	0.95	1.00		0.99	1.00	
Satd. Flow (prot)	1553	1390		1828	1827	
Flt Permitted	0.95	1.00		0.82	1.00	
Satd. Flow (perm)	1553	1390		1511	1827	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	32	27	52	287	787	52
RTOR Reduction (vph)	0	24	0	0	2	0
Lane Group Flow (vph)	32	3	0	339	837	0
Turn Type	Prot	Perm	Perm	NA	NA	
Protected Phases	4			2	6	
Permitted Phases		4	2			
Actuated Green, G (s)	7.8	7.8		62.7	62.7	
Effective Green, g (s)	7.8	7.8		62.7	62.7	
Actuated g/C Ratio	0.09	0.09		0.76	0.76	
Clearance Time (s)	6.0	6.0		6.0	6.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	146	131		1148	1388	
v/s Ratio Prot	c0.02				c0.46	
v/s Ratio Perm		0.00		0.22		
v/c Ratio	0.22	0.02		0.30	0.60	
Uniform Delay, d1	34.5	33.9		3.1	4.4	
Progression Factor	1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.8	0.1		0.7	1.9	
Delay (s)	35.3	33.9		3.7	6.3	
Level of Service	D	C		A	A	
Approach Delay (s)	34.7			3.7	6.3	
Approach LOS	C			A	A	

Intersection Summary				
HCM 2000 Control Delay	7.0	HCM 2000 Level of Service	A	
HCM 2000 Volume to Capacity ratio	0.56			
Actuated Cycle Length (s)	82.5	Sum of lost time (s)	12.0	
Intersection Capacity Utilization	76.4%	ICU Level of Service	D	
Analysis Period (min)	15			

c Critical Lane Group

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	0	20	0	312	725	24
Future Volume (Veh/h)	0	20	0	312	725	24
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	22	0	339	788	26
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	None	
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	1140	801	814			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1140	801	814			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	100	94	100			
cM capacity (veh/h)	222	384	813			

Direction, Lane #	EB 1	NB 1	SB 1
Volume Total	22	339	814
Volume Left	0	0	0
Volume Right	22	0	26
cSH	384	1700	1700
Volume to Capacity	0.06	0.20	0.48
Queue Length 95th (m)	1.4	0.0	0.0
Control Delay (s)	14.9	0.0	0.0
Lane LOS	B		
Approach Delay (s)	14.9	0.0	0.0
Approach LOS	B		

Intersection Summary			
Average Delay	0.3		
Intersection Capacity Utilization	49.6%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	21	207	142	291	737	14
Future Volume (Veh/h)	21	207	142	291	737	14
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.69	0.69	0.71	0.71	0.91	0.91
Hourly flow rate (vph)	30	300	200	410	810	15
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	None	
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	1620	810	825			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1620	810	825			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	65	21	75			
cM capacity (veh/h)	85	380	805			

Direction, Lane #	EB 1	NB 1	SB 1	SB 2
Volume Total	330	610	810	15
Volume Left	30	200	0	0
Volume Right	300	0	0	15
cSH	289	805	1700	1700
Volume to Capacity	1.14	0.25	0.48	0.01
Queue Length 95th (m)	106.2	7.4	0.0	0.0
Control Delay (s)	135.4	6.0	0.0	0.0
Lane LOS	F	A		
Approach Delay (s)	135.4	6.0	0.0	
Approach LOS	F			

Intersection Summary				
Average Delay		27.4		
Intersection Capacity Utilization		85.9%	ICU Level of Service	E
Analysis Period (min)		15		

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	42	122	311	50	219	725
Future Volume (Veh/h)	42	122	311	50	219	725
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.68	0.68	0.59	0.59	0.92	0.92
Hourly flow rate (vph)	62	179	527	85	238	788
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	1834	570			612	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1834	570			612	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	2	66			75	
cM capacity (veh/h)	63	521			967	

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	241	612	1026
Volume Left	62	0	238
Volume Right	179	85	0
cSH	182	1700	967
Volume to Capacity	1.33	0.36	0.25
Queue Length 95th (m)	105.7	0.0	7.4
Control Delay (s)	229.6	0.0	5.8
Lane LOS	F		A
Approach Delay (s)	229.6	0.0	5.8
Approach LOS	F		

Intersection Summary				
Average Delay		32.6		
Intersection Capacity Utilization		89.5%	ICU Level of Service	E
Analysis Period (min)		15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	60	441	36	88	350	108	94	637	135	39	237	43
Future Volume (vph)	60	441	36	88	350	108	94	637	135	39	237	43
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.2	6.2		6.2	6.2		6.0	6.0		6.0	6.0	
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Frt	1.00	0.99		1.00	0.96		1.00	0.97		1.00	0.98	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1475	1759		1750	1693		1750	1794		1700	1788	
Flt Permitted	0.20	1.00		0.17	1.00		0.54	1.00		0.10	1.00	
Satd. Flow (perm)	315	1759		320	1693		1001	1794		184	1788	
Peak-hour factor, PHF	0.85	0.85	0.92	0.92	0.86	0.86	0.92	0.92	0.92	0.90	0.92	0.90
Adj. Flow (vph)	71	519	39	96	407	126	102	692	147	43	258	48
RTOR Reduction (vph)	0	3	0	0	14	0	0	10	0	0	8	0
Lane Group Flow (vph)	71	555	0	96	519	0	102	829	0	43	298	0
Heavy Vehicles (%)	21%	6%	2%	2%	4%	17%	2%	2%	2%	5%	2%	6%
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		8			4			2			6	
Permitted Phases	8			4			2			6		
Actuated Green, G (s)	27.1	27.1		27.1	27.1		38.9	38.9		38.9	38.9	
Effective Green, g (s)	27.1	27.1		27.1	27.1		38.9	38.9		38.9	38.9	
Actuated g/C Ratio	0.35	0.35		0.35	0.35		0.50	0.50		0.50	0.50	
Clearance Time (s)	6.2	6.2		6.2	6.2		6.0	6.0		6.0	6.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	109	609		110	586		497	892		91	889	
v/s Ratio Prot		c0.32			0.31			c0.46			0.17	
v/s Ratio Perm	0.23			0.30			0.10			0.23		
v/c Ratio	0.65	0.91		0.87	0.89		0.21	0.93		0.47	0.34	
Uniform Delay, d1	21.6	24.4		23.9	24.1		11.0	18.4		12.9	11.9	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	13.1	17.9		48.2	14.8		0.9	17.3		16.6	1.0	
Delay (s)	34.7	42.3		72.2	38.9		11.9	35.7		29.5	12.9	
Level of Service	C	D		E	D		B	D		C	B	
Approach Delay (s)		41.4			44.0			33.1			14.9	
Approach LOS		D			D			C			B	

Intersection Summary				
HCM 2000 Control Delay	35.4	HCM 2000 Level of Service	D	
HCM 2000 Volume to Capacity ratio	0.92			
Actuated Cycle Length (s)	78.2	Sum of lost time (s)	12.2	
Intersection Capacity Utilization	130.5%	ICU Level of Service	H	
Analysis Period (min)	15			

c Critical Lane Group

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	0	52	0	866	298	63
Future Volume (Veh/h)	0	52	0	866	298	63
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	57	0	941	324	68
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	None	
Median storage veh)						
Upstream signal (m)					159	
pX, platoon unblocked	0.93	0.93	0.93			
vC, conflicting volume	1299	358	392			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1285	276	312			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	100	92	100			
cM capacity (veh/h)	170	712	1164			

Direction, Lane #	EB 1	NB 1	SB 1
Volume Total	57	941	392
Volume Left	0	0	0
Volume Right	57	0	68
cSH	712	1700	1700
Volume to Capacity	0.08	0.55	0.23
Queue Length 95th (m)	2.0	0.0	0.0
Control Delay (s)	10.5	0.0	0.0
Lane LOS	B		
Approach Delay (s)	10.5	0.0	0.0
Approach LOS	B		

Intersection Summary				
Average Delay	0.4			
Intersection Capacity Utilization	48.9%	ICU Level of Service		A
Analysis Period (min)	15			

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	280	95	274	569	277	73
Future Volume (Veh/h)	280	95	274	569	277	73
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)	304	103	298	618	301	79
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	None	
Median storage veh)						
Upstream signal (m)					331	
pX, platoon unblocked						
vC, conflicting volume	1554	340	380			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1554	340	380			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	0	85	75			
cM capacity (veh/h)	93	702	1178			

Direction, Lane #	EB 1	EB 2	NB 1	SB 1
Volume Total	304	103	916	380
Volume Left	304	0	298	0
Volume Right	0	103	0	79
cSH	93	702	1178	1700
Volume to Capacity	3.27	0.15	0.25	0.22
Queue Length 95th (m)	Err	3.9	7.6	0.0
Control Delay (s)	Err	11.0	5.4	0.0
Lane LOS	F	B	A	
Approach Delay (s)	7471.3		5.4	0.0
Approach LOS	F			

Intersection Summary				
Average Delay	1788.5			
Intersection Capacity Utilization	89.6%	ICU Level of Service	E	
Analysis Period (min)	15			

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	280	95	274	569	277	73
Future Volume (vph)	280	95	274	569	277	73
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0	6.0		6.0	6.0	
Lane Util. Factor	1.00	1.00		1.00	1.00	
Frt	1.00	0.85		1.00	0.97	
Flt Protected	0.95	1.00		0.98	1.00	
Satd. Flow (prot)	1750	1566		1813	1790	
Flt Permitted	0.95	1.00		0.72	1.00	
Satd. Flow (perm)	1750	1566		1329	1790	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	304	103	298	618	301	79
RTOR Reduction (vph)	0	81	0	0	11	0
Lane Group Flow (vph)	304	22	0	916	369	0
Turn Type	Prot	Perm	Perm	NA	NA	
Protected Phases	4			2	6	
Permitted Phases		4	2			
Actuated Green, G (s)	16.9	16.9		50.0	50.0	
Effective Green, g (s)	16.9	16.9		50.0	50.0	
Actuated g/C Ratio	0.21	0.21		0.63	0.63	
Clearance Time (s)	6.0	6.0		6.0	6.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	374	335		842	1134	
v/s Ratio Prot	c0.17				0.21	
v/s Ratio Perm		0.01		c0.69		
v/c Ratio	0.81	0.07		1.09	0.33	
Uniform Delay, d1	29.5	24.7		14.5	6.7	
Progression Factor	1.00	1.00		1.00	1.00	
Incremental Delay, d2	12.6	0.1		57.7	0.8	
Delay (s)	42.1	24.8		72.1	7.4	
Level of Service	D	C		E	A	
Approach Delay (s)	37.8			72.1	7.4	
Approach LOS	D			E	A	

Intersection Summary			
HCM 2000 Control Delay	49.5	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	1.02		
Actuated Cycle Length (s)	78.9	Sum of lost time (s)	12.0
Intersection Capacity Utilization	99.8%	ICU Level of Service	F
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	0	66	0	843	326	46
Future Volume (Veh/h)	0	66	0	843	326	46
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	72	0	916	354	50
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	None	
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	1295	379	404			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1295	379	404			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	100	89	100			
cM capacity (veh/h)	179	668	1155			

Direction, Lane #	EB 1	NB 1	SB 1
Volume Total	72	916	404
Volume Left	0	0	0
Volume Right	72	0	50
cSH	668	1700	1700
Volume to Capacity	0.11	0.54	0.24
Queue Length 95th (m)	2.7	0.0	0.0
Control Delay (s)	11.0	0.0	0.0
Lane LOS	B		
Approach Delay (s)	11.0	0.0	0.0
Approach LOS	B		

Intersection Summary				
Average Delay		0.6		
Intersection Capacity Utilization		47.7%	ICU Level of Service	A
Analysis Period (min)		15		

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	56	113	290	787	358	34
Future Volume (Veh/h)	56	113	290	787	358	34
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.69	0.69	0.71	0.71	0.91	0.91
Hourly flow rate (vph)	81	164	408	1108	393	37
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	None	
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	2317	393	430			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	2317	393	430			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	0	75	64			
cM capacity (veh/h)	27	656	1129			

Direction, Lane #	EB 1	NB 1	SB 1	SB 2
Volume Total	245	1516	393	37
Volume Left	81	408	0	0
Volume Right	164	0	0	37
cSH	74	1129	1700	1700
Volume to Capacity	3.31	0.36	0.23	0.02
Queue Length 95th (m)	Err	12.7	0.0	0.0
Control Delay (s)	Err	10.0	0.0	0.0
Lane LOS	F	A		
Approach Delay (s)	Err	10.0	0.0	
Approach LOS	F			

Intersection Summary				
Average Delay		1125.0		
Intersection Capacity Utilization		96.4%	ICU Level of Service	F
Analysis Period (min)		15		

HCM Unsignalized Intersection Capacity Analysis <Total> 2023 Weekday PM Peak Hour
6: Airport Road & Healey Road 09/27/2021

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	84	339	738	44	136	335
Future Volume (Veh/h)	84	339	738	44	136	335
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.68	0.68	0.59	0.59	0.92	0.92
Hourly flow rate (vph)	124	499	1251	75	148	364
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	1948	1288			1326	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1948	1288			1326	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	0	0			72	
cM capacity (veh/h)	51	200			521	

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	623	1326	512
Volume Left	124	0	148
Volume Right	499	75	0
cSH	126	1700	521
Volume to Capacity	4.94	0.78	0.28
Queue Length 95th (m)	Err	0.0	8.8
Control Delay (s)	Err	0.0	8.0
Lane LOS	F		A
Approach Delay (s)	Err	0.0	8.0
Approach LOS	F		

Intersection Summary			
Average Delay	2532.9		
Intersection Capacity Utilization	102.2%	ICU Level of Service	G
Analysis Period (min)	15		

HCM Signalized Intersection Capacity Analysis <Total> 2023 Saturday Peak Hour
1: Airport Road & King Street 09/27/2021

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	40	315	58	108	314	43	42	445	116	40	364	30
Future Volume (vph)	40	315	58	108	314	43	42	445	116	40	364	30
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.2	6.2		6.2	6.2		6.0	6.0		6.0	6.0	
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Frt	1.00	0.98		1.00	0.98		1.00	0.97		1.00	0.99	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1475	1742		1684	1748		1487	1483		1700	1768	
Flt Permitted	0.31	1.00		0.28	1.00		0.44	1.00		0.16	1.00	
Satd. Flow (perm)	479	1742		488	1748		692	1483		285	1768	
Peak-hour factor, PHF	0.85	0.85	0.85	0.86	0.86	0.86	0.70	0.70	0.70	0.90	0.90	0.90
Adj. Flow (vph)	47	371	68	126	365	50	60	636	166	44	404	33
RTOR Reduction (vph)	0	9	0	0	7	0	0	11	0	0	3	0
Lane Group Flow (vph)	47	430	0	126	408	0	60	791	0	44	434	0
Heavy Vehicles (%)	21%	6%	2%	6%	4%	17%	20%	23%	22%	5%	5%	6%
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		8			4			6			2	
Permitted Phases	8			4			6			2		
Actuated Green, G (s)	22.5	22.5		22.5	22.5		39.0	39.0		39.0	39.0	
Effective Green, g (s)	22.5	22.5		22.5	22.5		39.0	39.0		39.0	39.0	
Actuated g/C Ratio	0.31	0.31		0.31	0.31		0.53	0.53		0.53	0.53	
Clearance Time (s)	6.2	6.2		6.2	6.2		6.0	6.0		6.0	6.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	146	531		148	533		366	784		150	935	
v/s Ratio Prot		0.25			0.23			c0.53			0.25	
v/s Ratio Perm	0.10			c0.26			0.09			0.15		
v/c Ratio	0.32	0.81		0.85	0.77		0.16	1.01		0.29	0.46	
Uniform Delay, d1	19.7	23.6		24.0	23.2		8.9	17.4		9.7	10.8	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	1.3	8.9		34.8	6.5		1.0	34.4		4.9	1.7	
Delay (s)	21.0	32.5		58.8	29.7		9.9	51.8		14.6	12.5	
Level of Service	C	C		E	C		A	D		B	B	
Approach Delay (s)		31.4			36.5			48.8			12.7	
Approach LOS		C			D			D			B	

Intersection Summary					
HCM 2000 Control Delay	35.1	HCM 2000 Level of Service		D	
HCM 2000 Volume to Capacity ratio	0.95				
Actuated Cycle Length (s)	73.7	Sum of lost time (s)		12.2	
Intersection Capacity Utilization	82.0%	ICU Level of Service		E	
Analysis Period (min)	15				
c Critical Lane Group					

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	0	81	0	603	442	88
Future Volume (Veh/h)	0	81	0	603	442	88
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	88	0	655	480	96
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	None	
Median storage veh)						
Upstream signal (m)					159	
pX, platoon unblocked	0.86	0.86	0.86			
vC, conflicting volume	1183	528	576			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1131	367	423			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	100	85	100			
cM capacity (veh/h)	193	582	975			

Direction, Lane #	EB 1	NB 1	SB 1
Volume Total	88	655	576
Volume Left	0	0	0
Volume Right	88	0	96
cSH	582	1700	1700
Volume to Capacity	0.15	0.39	0.34
Queue Length 95th (m)	4.0	0.0	0.0
Control Delay (s)	12.3	0.0	0.0
Lane LOS	B		
Approach Delay (s)	12.3	0.0	0.0
Approach LOS	B		

Intersection Summary				
Average Delay		0.8		
Intersection Capacity Utilization	40.3%	ICU Level of Service	A	
Analysis Period (min)	15			

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	270	127	292	340	385	138
Future Volume (Veh/h)	270	127	292	340	385	138
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)	293	138	317	370	418	150
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	None	
Median storage veh)						
Upstream signal (m)					331	
pX, platoon unblocked	0.99	0.99	0.99			
vC, conflicting volume	1497	493	568			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1497	483	559			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	0	76	68			
cM capacity (veh/h)	91	578	1002			

Direction, Lane #	EB 1	EB 2	NB 1	SB 1
Volume Total	293	138	687	568
Volume Left	293	0	317	0
Volume Right	0	138	0	150
cSH	91	578	1002	1700
Volume to Capacity	3.21	0.24	0.32	0.33
Queue Length 95th (m)	Err	7.0	10.4	0.0
Control Delay (s)	Err	13.2	7.0	0.0
Lane LOS	F	B	A	
Approach Delay (s)	6801.7		7.0	0.0
Approach LOS	F			

Intersection Summary				
Average Delay		1741.6		
Intersection Capacity Utilization	87.7%	ICU Level of Service	E	
Analysis Period (min)	15			

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	270	127	292	340	385	138
Future Volume (vph)	270	127	292	340	385	138
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width	2.5	2.5	3.5	3.5	3.5	3.5
Total Lost time (s)	6.0	6.0		6.0	6.0	
Lane Util. Factor	1.00	1.00		1.00	1.00	
Frt	1.00	0.85		1.00	0.96	
Flt Protected	0.95	1.00		0.98	1.00	
Satd. Flow (prot)	1553	1390		1801	1776	
Flt Permitted	0.95	1.00		0.51	1.00	
Satd. Flow (perm)	1553	1390		937	1776	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	293	138	317	370	418	150
RTOR Reduction (vph)	0	108	0	0	16	0
Lane Group Flow (vph)	293	30	0	687	552	0
Turn Type	Prot	Perm	Perm	NA	NA	
Protected Phases	4			2	6	
Permitted Phases		4	2			
Actuated Green, G (s)	17.2	17.2		50.0	50.0	
Effective Green, g (s)	17.2	17.2		50.0	50.0	
Actuated g/C Ratio	0.22	0.22		0.63	0.63	
Clearance Time (s)	6.0	6.0		6.0	6.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	337	301		591	1121	
v/s Ratio Prot	c0.19				0.31	
v/s Ratio Perm		0.02		c0.73		
v/c Ratio	0.87	0.10		1.16	0.49	
Uniform Delay, d1	29.9	24.8		14.6	7.8	
Progression Factor	1.00	1.00		1.00	1.00	
Incremental Delay, d2	20.5	0.1		90.7	1.5	
Delay (s)	50.4	24.9		105.3	9.4	
Level of Service	D	C		F	A	
Approach Delay (s)	42.2			105.3	9.4	
Approach LOS	D			F	A	

Intersection Summary				
HCM 2000 Control Delay	56.8	HCM 2000 Level of Service	E	
HCM 2000 Volume to Capacity ratio	1.09			
Actuated Cycle Length (s)	79.2	Sum of lost time (s)	12.0	
Intersection Capacity Utilization	92.7%	ICU Level of Service	F	
Analysis Period (min)	15			

c Critical Lane Group

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	0	61	0	632	446	66
Future Volume (Veh/h)	0	61	0	632	446	66
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	66	0	687	485	72
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	None	
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	1208	521	557			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1208	521	557			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	100	88	100			
cM capacity (veh/h)	202	555	1014			

Direction, Lane #	EB 1	NB 1	SB 1
Volume Total	66	687	557
Volume Left	0	0	0
Volume Right	66	0	72
cSH	555	1700	1700
Volume to Capacity	0.12	0.40	0.33
Queue Length 95th (m)	3.1	0.0	0.0
Control Delay (s)	12.4	0.0	0.0
Lane LOS	B		
Approach Delay (s)	12.4	0.0	0.0
Approach LOS	B		

Intersection Summary			
Average Delay	0.6		
Intersection Capacity Utilization	37.9%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	36	61	81	596	500	23
Future Volume (Veh/h)	36	61	81	596	500	23
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.69	0.69	0.71	0.71	0.91	0.91
Hourly flow rate (vph)	52	88	114	839	549	25
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	None	
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	1616	549	574			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1616	549	574			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	49	84	89			
cM capacity (veh/h)	101	535	999			

Direction, Lane #	EB 1	NB 1	SB 1	SB 2
Volume Total	140	953	549	25
Volume Left	52	114	0	0
Volume Right	88	0	0	25
cSH	206	999	1700	1700
Volume to Capacity	0.68	0.11	0.32	0.01
Queue Length 95th (m)	32.0	2.9	0.0	0.0
Control Delay (s)	53.0	2.9	0.0	0.0
Lane LOS	F	A		
Approach Delay (s)	53.0	2.9	0.0	
Approach LOS	F			

Intersection Summary				
Average Delay		6.1		
Intersection Capacity Utilization		77.9%	ICU Level of Service	D
Analysis Period (min)		15		

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	55	119	558	37	73	488
Future Volume (Veh/h)	55	119	558	37	73	488
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.68	0.68	0.59	0.59	0.92	0.92
Hourly flow rate (vph)	81	175	946	63	79	530
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	1666	978			1009	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1666	978			1009	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	14	42			88	
cM capacity (veh/h)	94	304			687	

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	256	1009	609
Volume Left	81	0	79
Volume Right	175	63	0
cSH	178	1700	687
Volume to Capacity	1.44	0.59	0.12
Queue Length 95th (m)	120.1	0.0	2.9
Control Delay (s)	274.1	0.0	3.0
Lane LOS	F		A
Approach Delay (s)	274.1	0.0	3.0
Approach LOS	F		

Intersection Summary				
Average Delay		38.4		
Intersection Capacity Utilization		81.7%	ICU Level of Service	D
Analysis Period (min)		15		

2028 Conditions

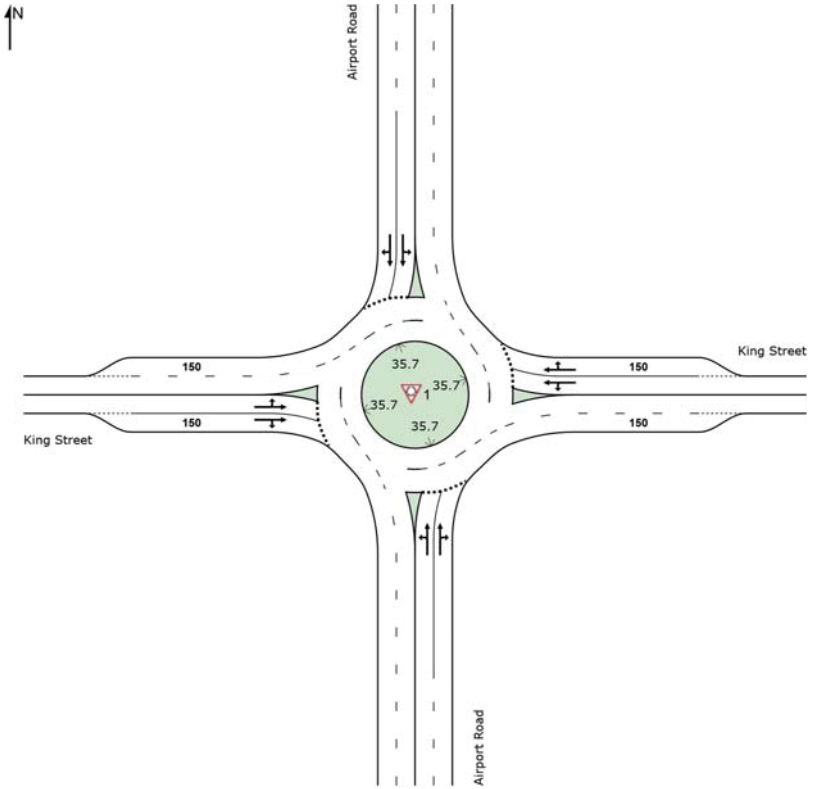
USER REPORT FOR SITE

Project: Airport Road & King Street — **Template: TP**

Site: 1 [<Background> 2028 Weekday AM Peak Hour]

New Site
Site Category: (None)
Roundabout

Site Layout



Movement Performance - Vehicles

Mov ID	Turn	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed km/h
South: Airport Road												
1	L2	13	20.0	0.144	11.1	LOS B	0.6	4.9	0.47	0.49	0.47	56.2
2	T1	195	23.0	0.144	4.6	LOS A	0.6	5.1	0.46	0.49	0.46	56.2
3	R2	81	22.0	0.144	4.7	LOS A	0.6	5.1	0.45	0.49	0.45	54.5
Approach		288	22.6	0.144	4.9	LOS A	0.6	5.1	0.46	0.49	0.46	55.7
East: King Street												
4	L2	151	6.0	0.281	10.4	LOS B	1.3	9.5	0.40	0.55	0.40	55.7
5	T1	516	4.0	0.281	3.9	LOS A	1.3	9.7	0.39	0.44	0.39	56.5
6	R2	20	17.0	0.281	4.3	LOS A	1.3	9.7	0.38	0.39	0.38	54.8
Approach		686	4.8	0.281	5.3	LOS A	1.3	9.7	0.39	0.46	0.39	56.2
North: Airport Road												
7	L2	85	5.0	0.326	11.6	LOS B	1.5	10.6	0.58	0.63	0.58	55.4
8	T1	535	5.0	0.326	5.0	LOS A	1.5	11.1	0.57	0.55	0.57	55.6
9	R2	55	6.0	0.326	5.0	LOS A	1.5	11.1	0.56	0.49	0.56	54.1
Approach		675	5.1	0.326	5.8	LOS A	1.5	11.1	0.57	0.55	0.57	55.5
West: King Street												
10	L2	21	21.0	0.204	12.3	LOS B	0.9	6.7	0.60	0.59	0.60	55.4
11	T1	317	6.0	0.204	5.2	LOS A	1.0	7.0	0.59	0.55	0.59	55.8
12	R2	52	2.0	0.204	5.0	LOS A	1.0	7.0	0.58	0.51	0.58	54.2
Approach		389	6.3	0.204	5.5	LOS A	1.0	7.0	0.59	0.55	0.59	55.5
All Vehicles		2039	7.7	0.326	5.5	LOS A	1.5	11.1	0.50	0.51	0.50	55.8

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Roundabout LOS Method: SIDRA Roundabout LOS.
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
Roundabout Capacity Model: SIDRA Standard.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Lane Use and Performance

	Demand Flows Total veh/h	HV %	Cap. veh/h	Deg. Satn v/c	Lane Util. %	Average Delay sec	Level of Service	95% Back of Queue Veh	Dist m	Lane Config	Lane Length m	Cap. Adj. %	Prob. Block. %
South: Airport Road													
Lane 1	131	22.7	910	0.144	100	5.4	LOS A	0.6	4.9	Full	500	0.0	0.0
Lane 2[d]	157	22.5	1087	0.144	100	4.5	LOS A	0.6	5.1	Full	500	0.0	0.0
Approach	288	22.6		0.144		4.9	LOS A	0.6	5.1				
East: King Street													
Lane 1	318	4.9	1131	0.281	100	7.0	LOS A	1.3	9.5	Full	500	0.0	0.0
Lane 2[d]	368	4.7	1309	0.281	100	3.9	LOS A	1.3	9.7	Short	150	0.0	NA
Approach	686	4.8		0.281		5.3	LOS A	1.3	9.7				
North: Airport Road													
Lane 1	299	5.0	917	0.326	100	7.1	LOS A	1.5	10.6	Full	500	0.0	0.0
Lane 2[d]	376	5.1	1154	0.326	100	4.8	LOS A	1.5	11.1	Full	500	0.0	0.0
Approach	675	5.1		0.326		5.8	LOS A	1.5	11.1				
West: King Street													
Lane 1	169	7.9	832	0.204	100	6.3	LOS A	0.9	6.7	Full	500	0.0	0.0
Lane 2[d]	220	5.1	1080	0.204	100	4.9	LOS A	1.0	7.0	Short	150	0.0	NA
Approach	389	6.3		0.204		5.5	LOS A	1.0	7.0				

Intersection	2039	7.7	0.326	5.5	LOS A	1.5	11.1	

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Roundabout LOS Method: SIDRA Roundabout LOS.
Lane LOS values are based on average delay per lane.
Intersection and Approach LOS values are based on average delay for all lanes.
Roundabout Capacity Model: SIDRA Standard.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

d Dominant lane on roundabout approach

Roundabout Basic Parameters

Location	Name	Central Island Diam	Circ Width	Insc Diam	Entry Radius	Entry Angle	Circ Lanes	Entry Lanes	Av.Entry Lane Width	App. Dist	Prop Queued Upstr Signal	Extra Bunching
		m	m	m	m	°			m	m		%
South	Airport Road	35.70	10.00	56.4[7]	37.1	27.0	2	2	4.00	500.0	NA[5]	0.0[1]
East	King Street	35.70	10.00	56.4[7]	30.0	24.0	2	2	4.00	500.0	NA[5]	0.0[1]
North	Airport Road	35.70	10.00	56.4[7]	41.3	24.0	2	2	4.00	500.0	NA[5]	0.0[1]
West	King Street	35.70	10.00	56.4[7]	30.8	24.0	2	2	4.00	500.0	NA[5]	0.0[1]

Roundabout Capacity Model: SIDRA Standard

1 Program option resulted in zero value (single Site analysis or unconnected Site in Network analysis).
5 Not Applicable (single Site analysis or unconnected Site in Network analysis).
7 Inscribed diameter value was specified by the user.

Organisation: Fenerbahce | Created: Thursday, September 30, 2021 11:43:22 AM
Project: C:\Users\TPI-17\Trans Plan\Traffic - Documents\Projects\Projects\2020\55 13846&13940AirportRoad_Caledon_Commercial-Traffic Noise \Traffic\Data\Synchro\BKGD&TOT\BKGD&TOT2028(Roundabouts)\AirportRoad@KingStreet\Airport Road & King Street.sip8

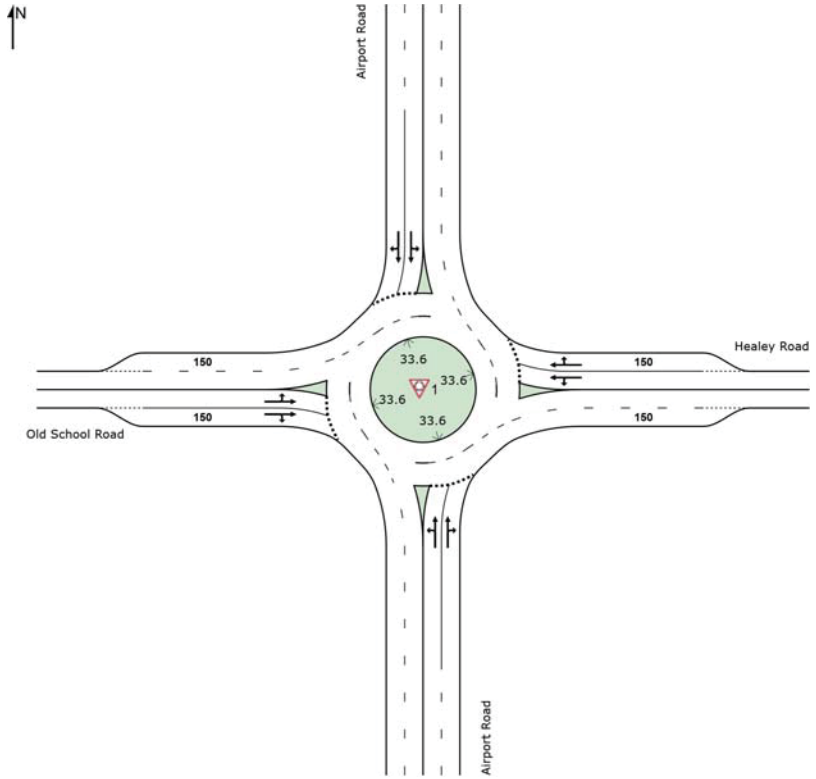
USER REPORT FOR SITE

Project: Airport Rd & Old School_Healey **Template: TP**

Site: 1 [<Background> 2028 Weekday AM Peak Hour]

New Site
Site Category: (None)
Roundabout

Site Layout



Movement Performance - Vehicles

Mov ID	Turn	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed km/h
South: Airport Road												

1	L2	94	3.0	0.155	10.0	LOS B	0.7	4.9	0.35	0.57	0.35	55.0
2	T1	217	15.0	0.155	4.2	LOS A	0.7	5.1	0.34	0.48	0.34	55.9
3	R2	55	7.0	0.155	4.2	LOS A	0.7	5.1	0.34	0.43	0.34	54.9
Approach		365	10.7	0.155	5.7	LOS A	0.7	5.1	0.34	0.49	0.34	55.5
East: Healey Road												
4	L2	45	12.0	0.070	10.4	LOS B	0.3	2.0	0.38	0.60	0.38	54.4
5	T1	61	4.0	0.070	4.3	LOS A	0.3	1.9	0.37	0.53	0.37	55.7
6	R2	54	1.0	0.070	4.3	LOS A	0.3	1.9	0.36	0.47	0.36	55.1
Approach		160	5.3	0.070	6.0	LOS A	0.3	2.0	0.37	0.53	0.37	55.1
North: Airport Road												
7	L2	56	2.0	0.294	10.1	LOS B	1.4	9.7	0.35	0.46	0.35	56.6
8	T1	677	4.0	0.294	4.1	LOS A	1.4	9.9	0.34	0.43	0.34	56.6
9	R2	12	0.0	0.294	4.1	LOS A	1.4	9.9	0.33	0.40	0.33	55.0
Approach		744	3.8	0.294	4.6	LOS A	1.4	9.9	0.34	0.43	0.34	56.5
West: Old School Road												
10	L2	17	7.0	0.119	11.5	LOS B	0.5	3.3	0.54	0.59	0.54	55.5
11	T1	161	1.0	0.119	5.2	LOS A	0.5	3.4	0.53	0.57	0.53	55.6
12	R2	64	1.0	0.118	5.0	LOS A	0.5	3.4	0.51	0.54	0.51	54.3
Approach		242	1.4	0.119	5.6	LOS A	0.5	3.4	0.52	0.56	0.52	55.3
All Vehicles		1512	5.2	0.294	5.2	LOS A	1.4	9.9	0.37	0.48	0.37	55.9

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Roundabout LOS Method: SIDRA Roundabout LOS.
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
Roundabout Capacity Model: SIDRA Standard.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Lane Use and Performance

	Demand Flows Total veh/h	HV %	Cap. veh/h	Deg. Satn v/c	Lane Util. %	Average Delay sec	Level of Service	95% Back of Queue Veh	Dist m	Lane Config	Lane Length m	Cap. Adj. %	Prob. Block. %
South: Airport Road													
Lane 1	173	8.5	1119	0.155	100	7.4	LOS A	0.7	4.9	Full	500	0.0	0.0
Lane 2 [d]	192	12.7	1239	0.155	100	4.2	LOS A	0.7	5.1	Full	500	0.0	0.0
Approach	365	10.7		0.155		5.7	LOS A	0.7	5.1				
East: Healey Road													
Lane 1	73	9.0	1038	0.070	100	8.2	LOS A	0.3	2.0	Full	500	0.0	0.0
Lane 2 [d]	87	2.2	1248	0.070	100 [6]	4.3	LOS A	0.3	1.9	Short	150	0.0	NA
Approach	160	5.3		0.070		6.0	LOS A	0.3	2.0				
North: Airport Road													
Lane 1	348	3.7	1183	0.294	100	5.1	LOS A	1.4	9.7	Full	500	0.0	0.0
Lane 2 [d]	396	3.9	1345	0.294	100	4.1	LOS A	1.4	9.9	Full	500	0.0	0.0
Approach	744	3.8		0.294		4.6	LOS A	1.4	9.9				
West: Old School Road													
Lane 1	107	1.9	900	0.119	100	6.4	LOS A	0.5	3.3	Full	500	0.0	0.0
Lane 2 [d]	135	1.0	1144	0.118	100 [6]	5.0	LOS A	0.5	3.4	Short	150	0.0	NA
Approach	242	1.4		0.119		5.6	LOS A	0.5	3.4				
Intersection	1512	5.2		0.294		5.2	LOS A	1.4	9.9				

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Roundabout LOS Method: SIDRA Roundabout LOS.
Lane LOS values are based on average delay per lane.
Intersection and Approach LOS values are based on average delay for all lanes.
Roundabout Capacity Model: SIDRA Standard.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

6 Lane under-utilisation due to downstream effects
d Dominant lane on roundabout approach

Roundabout Basic Parameters

Location	Name	Central Island Diam m	Circ Width m	Insc Diam m	Entry Radius m	Entry Angle °	Circ Lanes	Entry Lanes	Av.Entry Lane Width m	App. Dist m	Prop Queued Upstr Signal	Extra Bunching %
South	Airport Road	33.63	10.00	52.1 [7]	37.2	24.0	2	2	4.00	500.0	NA [5]	0.0 [1]
East	Healey Road	33.63	10.00	52.1 [7]	30.9	26.0	2	2	4.00	500.0	NA [5]	0.0 [1]
North	Airport Road	33.63	10.00	52.1 [7]	33.4	24.0	2	2	4.00	500.0	NA [5]	0.0 [1]
West	Old School Road	33.63	10.00	52.1 [7]	59.3	26.0	2	2	4.00	500.0	NA [5]	0.0 [1]

Roundabout Capacity Model: SIDRA Standard

1 Program option resulted in zero value (single Site analysis or unconnected Site in Network analysis).
5 Not Applicable (single Site analysis or unconnected Site in Network analysis).
7 Inscribed diameter value was specified by the user.

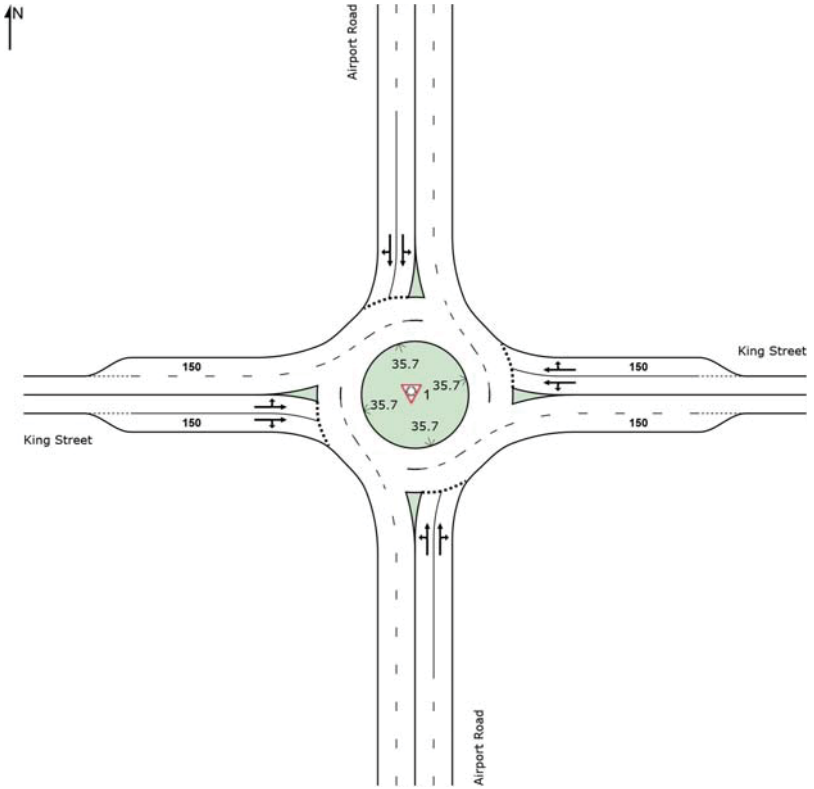
USER REPORT FOR SITE

Project: Airport Road & King Street — **Template: TP**

Site: 1 [<Background> 2028 Weekday PM Peak Hour]

New Site
Site Category: (None)
Roundabout

Site Layout



Movement Performance - Vehicles

Mov ID	Turn	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed km/h
South: Airport Road												
1	L2	66	4.0	0.339	11.4	LOS B	1.5	10.9	0.56	0.57	0.56	55.9
2	T1	567	1.0	0.339	4.8	LOS A	1.6	11.5	0.55	0.53	0.55	55.9
3	R2	93	15.0	0.339	5.1	LOS A	1.6	11.5	0.54	0.49	0.54	54.1
Approach		726	3.1	0.339	5.4	LOS A	1.6	11.5	0.55	0.53	0.55	55.7
East: King Street												
4	L2	63	32.0	0.283	12.5	LOS B	1.3	9.7	0.60	0.62	0.60	54.7
5	T1	382	1.0	0.283	5.0	LOS A	1.4	9.7	0.59	0.57	0.59	55.7
6	R2	117	2.0	0.283	5.0	LOS A	1.4	9.7	0.58	0.52	0.58	54.2
Approach		562	4.7	0.283	5.8	LOS A	1.4	9.7	0.59	0.56	0.59	55.3
North: Airport Road												
7	L2	42	8.0	0.128	11.0	LOS B	0.5	4.0	0.49	0.57	0.49	55.6
8	T1	178	10.0	0.128	4.5	LOS A	0.6	4.2	0.48	0.51	0.48	55.9
9	R2	46	14.0	0.128	4.7	LOS A	0.6	4.2	0.48	0.47	0.48	54.4
Approach		266	10.4	0.128	5.6	LOS A	0.6	4.2	0.48	0.52	0.48	55.6
West: King Street												
10	L2	65	3.0	0.236	10.4	LOS B	1.0	7.4	0.41	0.49	0.41	56.6
11	T1	480	2.0	0.236	4.0	LOS A	1.1	7.7	0.40	0.44	0.40	56.7
12	R2	23	36.0	0.236	4.7	LOS A	1.1	7.7	0.39	0.40	0.39	54.3
Approach		568	3.5	0.236	4.8	LOS A	1.1	7.7	0.40	0.44	0.40	56.6
All Vehicles		2123	4.5	0.339	5.4	LOS A	1.6	11.5	0.51	0.51	0.51	55.8

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Roundabout LOS Method: SIDRA Roundabout LOS.
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
Roundabout Capacity Model: SIDRA Standard.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Lane Use and Performance

	Demand Flows Total veh/h	HV %	Cap. veh/h	Deg. Satn v/c	Lane Util. %	Average Delay sec	Level of Service	95% Back of Queue Veh	Dist m	Lane Config	Lane Length m	Cap. Adj. %	Prob. Block. %
South: Airport Road													
Lane 1	330	1.6	974	0.339	100	6.3	LOS A	1.5	10.9	Full	500	0.0	0.0
Lane 2[d]	396	4.3	1169	0.339	100	4.7	LOS A	1.6	11.5	Full	500	0.0	0.0
Approach	726	3.1		0.339		5.4	LOS A	1.6	11.5				
East: King Street													
Lane 1	242	9.1	855	0.283	100	7.2	LOS A	1.3	9.7	Full	500	0.0	0.0
Lane 2[d]	320	1.4	1133	0.283	100	4.8	LOS A	1.4	9.7	Short	150	0.0	NA
Approach	562	4.7		0.283		5.8	LOS A	1.4	9.7				
North: Airport Road													
Lane 1	121	9.3	945	0.128	100	6.9	LOS A	0.5	4.0	Full	500	0.0	0.0
Lane 2[d]	145	11.3	1137	0.128	100	4.5	LOS A	0.6	4.2	Full	500	0.0	0.0
Approach	266	10.4		0.128		5.6	LOS A	0.6	4.2				
West: King Street													
Lane 1	265	2.2	1122	0.236	100	5.7	LOS A	1.0	7.4	Full	500	0.0	0.0
Lane 2[d]	303	4.6	1282	0.236	100	4.0	LOS A	1.1	7.7	Short	150	0.0	NA
Approach	568	3.5		0.236		4.8	LOS A	1.1	7.7				

Intersection	2123	4.5	0.339	5.4	LOS A	1.6	11.5	

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Roundabout LOS Method: SIDRA Roundabout LOS.
Lane LOS values are based on average delay per lane.
Intersection and Approach LOS values are based on average delay for all lanes.
Roundabout Capacity Model: SIDRA Standard.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

d Dominant lane on roundabout approach

Roundabout Basic Parameters

Location	Name	Central Island Diam	Circ Width	Insc Diam	Entry Radius	Entry Angle	Circ Lanes	Entry Lanes	Av.Entry Lane Width	App. Dist	Prop Queued Upstr Signal	Extra Bunching
		m	m	m	m	°			m	m		%
South	Airport Road	35.70	10.00	56.4[7]	37.1	27.0	2	2	4.00	500.0	NA[5]	0.0[1]
East	King Street	35.70	10.00	56.4[7]	30.0	24.0	2	2	4.00	500.0	NA[5]	0.0[1]
North	Airport Road	35.70	10.00	56.4[7]	41.3	24.0	2	2	4.00	500.0	NA[5]	0.0[1]
West	King Street	35.70	10.00	56.4[7]	30.8	24.0	2	2	4.00	500.0	NA[5]	0.0[1]

Roundabout Capacity Model: SIDRA Standard

1 Program option resulted in zero value (single Site analysis or unconnected Site in Network analysis).
5 Not Applicable (single Site analysis or unconnected Site in Network analysis).
7 Inscribed diameter value was specified by the user.

Organisation: Fenerbahce | Created: Thursday, September 30, 2021 11:45:46 AM
Project: C:\Users\TPI-17\Trans Plan\Traffic - Documents\Projects\Projects\2020\55 13846&13940AirportRoad_Caledon_Commercial-Traffic Noise \Traffic\Data\Synchro\BKGD&TOT\BKGD&TOT2028(Roundabouts)\AirportRoad@KingStreet\Airport Road & King Street.sip8

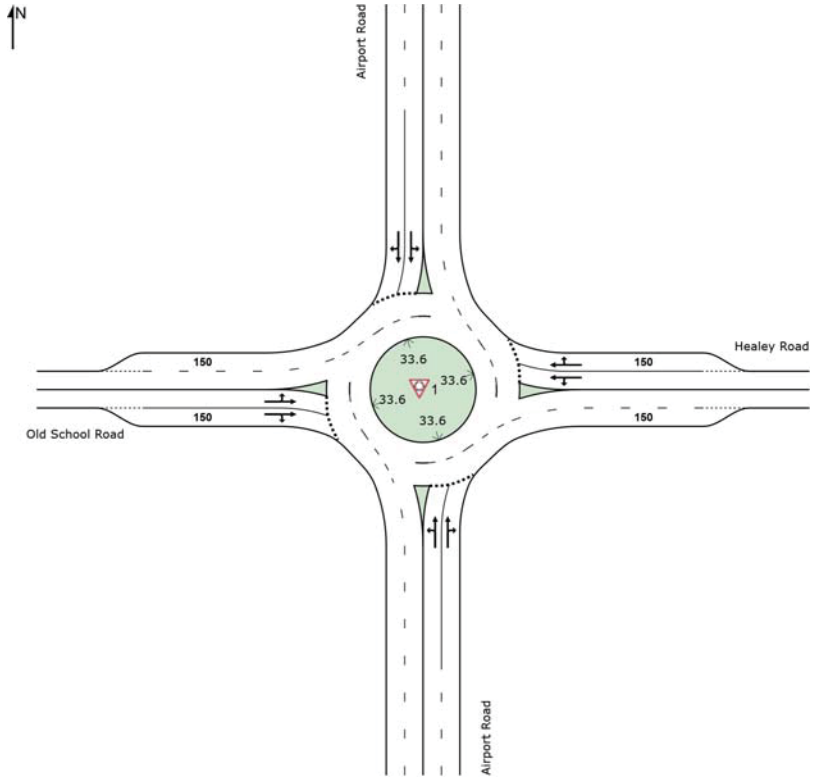
USER REPORT FOR SITE

Project: Airport Rd & Old School_Healey **Template: TP**

Site: 1 [<Background> 2028 Weekday PM Peak Hour]

New Site
Site Category: (None)
Roundabout

Site Layout



Movement Performance - Vehicles

Mov ID	Turn	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed km/h
South: Airport Road												

1	L2	149	0.5	0.286	9.8	LOS A	1.3	9.6	0.31	0.52	0.31	55.8
2	T1	543	6.0	0.286	4.0	LOS A	1.3	9.8	0.30	0.44	0.30	56.4
3	R2	47	2.0	0.286	4.0	LOS A	1.3	9.8	0.30	0.39	0.30	55.2
Approach		740	4.6	0.286	5.2	LOS A	1.3	9.8	0.31	0.46	0.31	55.2
East: Healey Road												
4	L2	92	4.0	0.202	11.5	LOS B	0.8	5.9	0.55	0.70	0.55	54.3
5	T1	167	3.0	0.202	5.3	LOS A	0.9	6.1	0.54	0.64	0.54	55.0
6	R2	148	2.0	0.201	5.2	LOS A	0.9	6.1	0.53	0.58	0.53	54.3
Approach		407	2.9	0.202	6.7	LOS A	0.9	6.1	0.54	0.63	0.54	54.6
North: Airport Road												
7	L2	35	0.0	0.129	10.5	LOS B	0.5	4.2	0.45	0.56	0.45	55.6
8	T1	212	23.0	0.129	4.9	LOS A	0.5	4.5	0.44	0.50	0.44	55.5
9	R2	19	0.0	0.129	4.5	LOS A	0.5	4.5	0.43	0.47	0.43	54.6
Approach		265	18.3	0.129	5.6	LOS A	0.5	4.5	0.44	0.51	0.44	55.4
West: Old School Road												
10	L2	36	6.0	0.068	10.4	LOS B	0.3	1.9	0.39	0.57	0.39	55.1
11	T1	88	3.0	0.068	4.3	LOS A	0.3	1.9	0.38	0.50	0.38	55.9
12	R2	35	2.0	0.068	4.3	LOS A	0.3	1.9	0.37	0.45	0.37	54.9
Approach		159	3.5	0.068	5.7	LOS A	0.3	1.9	0.38	0.51	0.38	55.5
All Vehicles		1572	6.4	0.286	5.7	LOS A	1.3	9.8	0.40	0.52	0.40	55.6

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Roundabout LOS Method: SIDRA Roundabout LOS.
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
Roundabout Capacity Model: SIDRA Standard.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Lane Use and Performance

	Demand Flows Total veh/h	HV %	Cap. veh/h	Deg. Satn v/c	Lane Util. %	Average Delay sec	Level of Service	95% Back of Queue Veh	Dist m	Lane Config	Lane Length m	Cap. Adj. %	Prob. Block. %
South: Airport Road													
Lane 1	348	3.6	1220	0.286	100	6.5	LOS A	1.3	9.6	Full	500	0.0	0.0
Lane 2 [d]	392	5.5	1372	0.286	100	3.9	LOS A	1.3	9.8	Full	500	0.0	0.0
Approach	740	4.6		0.286		5.2	LOS A	1.3	9.8				
East: Healey Road													
Lane 1	182	3.5	900	0.202	100	8.6	LOS A	0.8	5.9	Full	500	0.0	0.0
Lane 2 [d]	226	2.3	1121	0.201	100 [6]	5.1	LOS A	0.9	6.1	Short	150	0.0	NA
Approach	407	2.9		0.202		6.7	LOS A	0.9	6.1				
North: Airport Road													
Lane 1	123	16.5	958	0.129	100	6.6	LOS A	0.5	4.2	Full	500	0.0	0.0
Lane 2 [d]	142	19.9	1100	0.129	100	4.7	LOS A	0.5	4.5	Full	500	0.0	0.0
Approach	265	18.3		0.129		5.6	LOS A	0.5	4.5				
West: Old School Road													
Lane 1	73	4.5	1069	0.068	100	7.3	LOS A	0.3	1.9	Full	500	0.0	0.0
Lane 2 [d]	86	2.6	1260	0.068	100 [6]	4.3	LOS A	0.3	1.9	Short	150	0.0	NA
Approach	159	3.5		0.068		5.7	LOS A	0.3	1.9				
Intersection	1572	6.4		0.286		5.7	LOS A	1.3	9.8				

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Roundabout LOS Method: SIDRA Roundabout LOS.
Lane LOS values are based on average delay per lane.
Intersection and Approach LOS values are based on average delay for all lanes.
Roundabout Capacity Model: SIDRA Standard.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

6 Lane under-utilisation due to downstream effects
d Dominant lane on roundabout approach

Roundabout Basic Parameters

Location	Name	Central Island Diam m	Circ Width m	Insc Diam m	Entry Radius m	Entry Angle °	Circ Lanes	Entry Lanes	Av.Entry Lane Width m	App. Dist m	Prop Queued Upstr Signal	Extra Bunching %
South	Airport Road	33.63	10.00	52.1 [7]	37.2	24.0	2	2	4.00	500.0	NA [5]	0.0 [1]
East	Healey Road	33.63	10.00	52.1 [7]	30.9	26.0	2	2	4.00	500.0	NA [5]	0.0 [1]
North	Airport Road	33.63	10.00	52.1 [7]	34.4	24.0	2	2	4.00	500.0	NA [5]	0.0 [1]
West	Old School Road	33.63	10.00	52.1 [7]	59.3	26.0	2	2	4.00	500.0	NA [5]	0.0 [1]

Roundabout Capacity Model: SIDRA Standard

1 Program option resulted in zero value (single Site analysis or unconnected Site in Network analysis).
5 Not Applicable (single Site analysis or unconnected Site in Network analysis).
7 Inscribed diameter value was specified by the user.

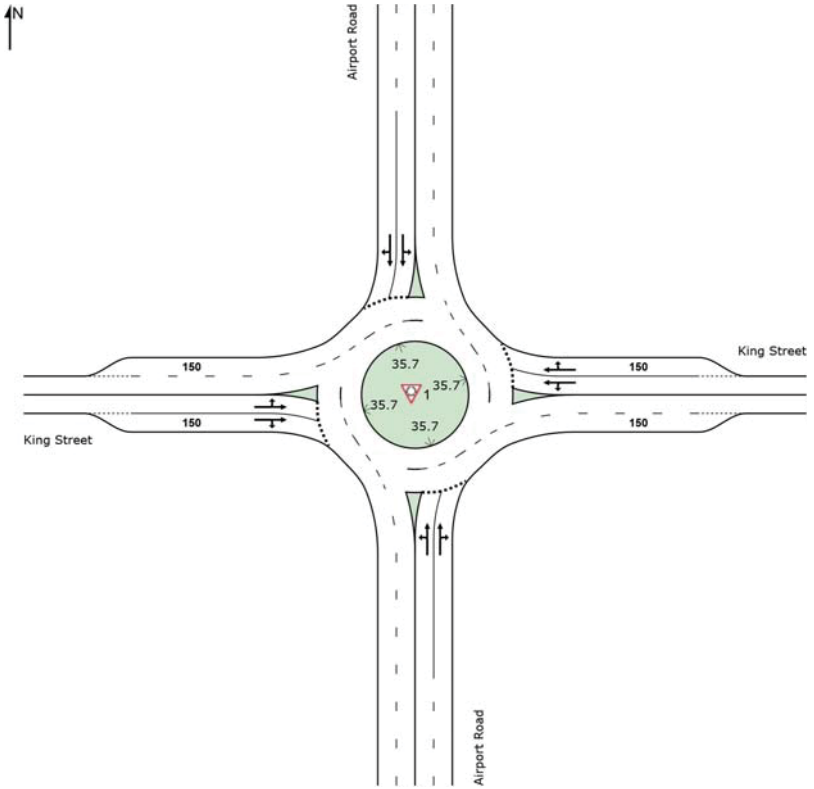
USER REPORT FOR SITE

Project: Airport Road & King Street — **Template: TP**

Site: 1 [<Background> 2028 Saturday Peak Hour]

New Site
Site Category: (None)
Roundabout

Site Layout



Movement Performance - Vehicles

Mov ID	Turn	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed km/h
South: Airport Road												
1	L2	24	5.0	0.183	10.8	LOS B	0.8	5.3	0.45	0.48	0.45	56.8
2	T1	314	1.0	0.183	4.3	LOS A	0.8	5.5	0.44	0.47	0.44	56.6
3	R2	83	4.0	0.183	4.4	LOS A	0.8	5.5	0.43	0.45	0.43	54.9
Approach		421	1.8	0.183	4.7	LOS A	0.8	5.5	0.44	0.47	0.44	56.3
East: King Street												
4	L2	59	2.0	0.194	10.6	LOS B	0.8	5.9	0.44	0.53	0.44	56.4
5	T1	342	4.0	0.194	4.2	LOS A	0.8	6.1	0.43	0.47	0.43	56.4
6	R2	47	5.0	0.194	4.3	LOS A	0.8	6.1	0.42	0.43	0.42	54.9
Approach		448	3.8	0.194	5.0	LOS A	0.8	6.1	0.43	0.47	0.43	56.2
North: Airport Road												
7	L2	44	5.0	0.144	10.7	LOS B	0.6	4.2	0.44	0.53	0.44	56.2
8	T1	255	2.0	0.144	4.2	LOS A	0.6	4.3	0.43	0.47	0.43	56.5
9	R2	33	3.0	0.144	4.3	LOS A	0.6	4.3	0.42	0.42	0.42	54.9
Approach		332	2.5	0.144	5.1	LOS A	0.6	4.3	0.43	0.47	0.43	56.3
West: King Street												
10	L2	44	0.0	0.175	10.4	LOS B	0.7	5.2	0.42	0.50	0.42	56.7
11	T1	343	4.0	0.175	4.1	LOS A	0.7	5.3	0.40	0.45	0.40	56.6
12	R2	25	0.0	0.175	4.2	LOS A	0.7	5.3	0.40	0.41	0.40	55.1
Approach		413	3.3	0.175	4.8	LOS A	0.7	5.3	0.41	0.45	0.41	56.5
All Vehicles		1614	2.9	0.194	4.9	LOS A	0.8	6.1	0.42	0.47	0.42	56.3

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Roundabout LOS Method: SIDRA Roundabout LOS.
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
Roundabout Capacity Model: SIDRA Standard.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Lane Use and Performance

	Demand Flows Total veh/h	HV %	Cap. veh/h	Deg. Satn v/c	Lane Util. %	Average Delay sec	Level of Service	95% Back of Queue Veh	Dist m	Lane Config	Lane Length m	Cap. Adj. %	Prob. Block. %
South: Airport Road													
Lane 1	193	1.5	1052	0.183	100	5.2	LOS A	0.8	5.3	Full	500	0.0	0.0
Lane 2[d]	228	2.1	1243	0.183	100	4.2	LOS A	0.8	5.5	Full	500	0.0	0.0
Approach	421	1.8		0.183		4.7	LOS A	0.8	5.5				
East: King Street													
Lane 1	207	3.4	1066	0.194	100	6.1	LOS A	0.8	5.9	Full	500	0.0	0.0
Lane 2[d]	242	4.2	1248	0.194	100	4.1	LOS A	0.8	6.1	Short	150	0.0	NA
Approach	448	3.8		0.194		5.0	LOS A	0.8	6.1				
North: Airport Road													
Lane 1	151	2.9	1050	0.144	100	6.2	LOS A	0.6	4.2	Full	500	0.0	0.0
Lane 2[d]	181	2.2	1261	0.144	100	4.1	LOS A	0.6	4.3	Full	500	0.0	0.0
Approach	332	2.5		0.144		5.1	LOS A	0.6	4.3				
West: King Street													
Lane 1	190	3.1	1085	0.175	100	5.7	LOS A	0.7	5.2	Full	500	0.0	0.0
Lane 2[d]	222	3.5	1268	0.175	100	4.0	LOS A	0.7	5.3	Short	150	0.0	NA
Approach	413	3.3		0.175		4.8	LOS A	0.7	5.3				

Intersection	1614	2.9	0.194	4.9	LOS A	0.8	6.1

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Roundabout LOS Method: SIDRA Roundabout LOS.
Lane LOS values are based on average delay per lane.
Intersection and Approach LOS values are based on average delay for all lanes.
Roundabout Capacity Model: SIDRA Standard.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

d Dominant lane on roundabout approach

Roundabout Basic Parameters

Location	Name	Central Island Diam	Circ Width	Insc Diam	Entry Radius	Entry Angle	Circ Lanes	Entry Lanes	Av.Entry Lane Width	App. Dist	Prop Queued Upstr Signal	Extra Bunching
		m	m	m	m	°			m	m		%
South	Airport Road	35.70	10.00	56.4[7]	37.1	27.0	2	2	4.00	500.0	NA[5]	0.0[1]
East	King Street	35.70	10.00	56.4[7]	30.0	24.0	2	2	4.00	500.0	NA[5]	0.0[1]
North	Airport Road	35.70	10.00	56.4[7]	41.3	24.0	2	2	4.00	500.0	NA[5]	0.0[1]
West	King Street	35.70	10.00	56.4[7]	30.8	24.0	2	2	4.00	500.0	NA[5]	0.0[1]

Roundabout Capacity Model: SIDRA Standard

1 Program option resulted in zero value (single Site analysis or unconnected Site in Network analysis).
5 Not Applicable (single Site analysis or unconnected Site in Network analysis).
7 Inscribed diameter value was specified by the user.

Organisation: Fenerbahce | Created: Thursday, September 30, 2021 11:50:15 AM
Project: C:\Users\TPI-17\Trans Plan\Traffic - Documents\Projects\Projects\2020\55 13846&13940AirportRoad_Caledon_Commercial-Traffic Noise \Traffic\Data\Synchro\BKGD&TOT\BKGD&TOT2028(Roundabouts)\AirportRoad@KingStreet\Airport Road & King Street.sip8

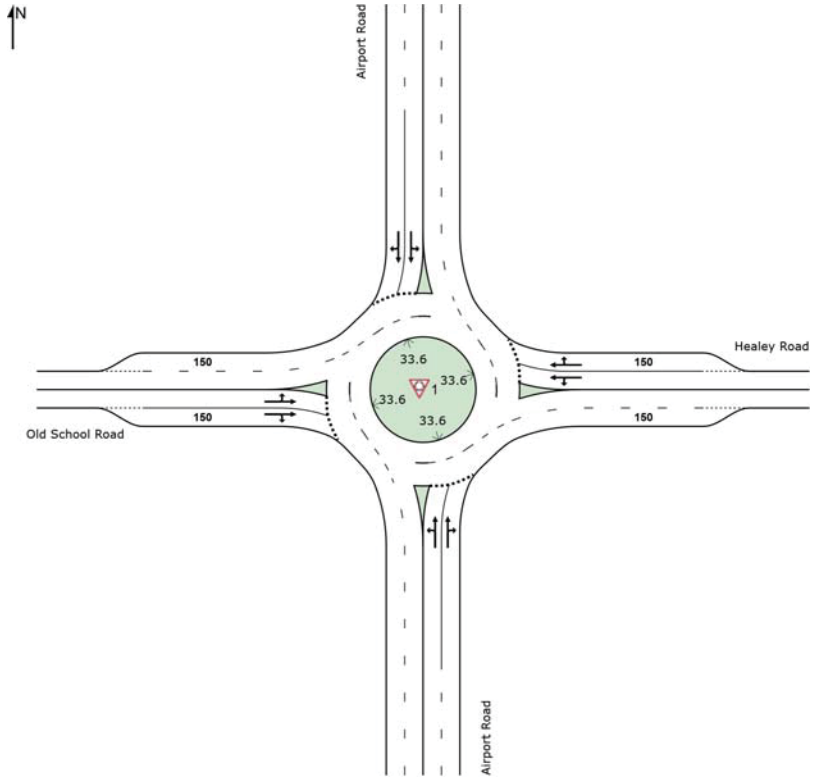
USER REPORT FOR SITE

Project: Airport Rd & Old School_Healey **Template: TP**

Site: 1 [<Background> 2028 Saturday Peak Hour]

New Site
Site Category: (None)
Roundabout

Site Layout



Movement Performance - Vehicles

Mov ID	Turn	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed km/h
South: Airport Road												

1	L2	44	0.0	0.176	9.5	LOS A	0.8	5.5	0.19	0.42	0.19	57.3
2	T1	397	5.0	0.176	3.6	LOS A	0.8	5.7	0.19	0.39	0.19	57.3
3	R2	41	16.0	0.176	3.9	LOS A	0.8	5.7	0.18	0.36	0.18	55.5
Approach		482	5.5	0.176	4.2	LOS A	0.8	5.7	0.19	0.39	0.19	57.1
East: Healey Road												
4	L2	59	6.0	0.064	10.6	LOS B	0.2	1.7	0.41	0.67	0.41	53.3
5	T1	43	3.0	0.064	4.4	LOS A	0.2	1.8	0.40	0.52	0.40	56.1
6	R2	38	17.0	0.064	4.8	LOS A	0.2	1.8	0.39	0.49	0.39	54.5
Approach		140	8.1	0.064	7.1	LOS A	0.2	1.8	0.40	0.57	0.40	54.4
North: Airport Road												
7	L2	9	11.0	0.138	9.9	LOS A	0.6	4.1	0.27	0.40	0.27	57.2
8	T1	335	3.0	0.138	3.8	LOS A	0.6	4.1	0.26	0.39	0.26	57.2
9	R2	13	0.0	0.138	3.9	LOS A	0.6	4.1	0.25	0.38	0.25	55.5
Approach		357	3.1	0.138	4.0	LOS A	0.6	4.1	0.26	0.39	0.26	57.1
West: Old School Road												
10	L2	16	0.0	0.035	10.3	LOS B	0.1	0.9	0.38	0.55	0.38	55.6
11	T1	47	2.0	0.035	4.3	LOS A	0.1	0.9	0.37	0.50	0.37	56.0
12	R2	19	0.0	0.035	4.3	LOS A	0.1	0.9	0.36	0.45	0.36	55.0
Approach		82	1.2	0.035	5.5	LOS A	0.1	0.9	0.37	0.50	0.37	55.7
All Vehicles		1061	4.7	0.176	4.6	LOS A	0.8	5.7	0.25	0.42	0.25	56.6

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Roundabout LOS Method: SIDRA Roundabout LOS.
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
Roundabout Capacity Model: SIDRA Standard.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Lane Use and Performance

	Demand Flows Total veh/h	HV %	Cap. veh/h	Deg. Satn v/c	Lane Util. %	Average Delay sec	Level of Service	95% Back of Queue Veh	Dist m	Lane Config	Lane Length m	Cap. Adj. %	Prob. Block. %
South: Airport Road													
Lane 1	229	4.0	1303	0.176	100	4.8	LOS A	0.8	5.5	Full	500	0.0	0.0
Lane 2 [d]	253	6.8	1444	0.176	100	3.7	LOS A	0.8	5.7	Full	500	0.0	0.0
Approach	482	5.5		0.176		4.2	LOS A	0.8	5.7				
East: Healey Road													
Lane 1	66	5.7	1022	0.064	100	10.0	LOS A	0.2	1.7	Full	500	0.0	0.0
Lane 2 [d]	74	10.1	1161	0.064	100 [6]	4.6	LOS A	0.2	1.8	Short	150	0.0	NA
Approach	140	8.1		0.064		7.1	LOS A	0.2	1.8				
North: Airport Road													
Lane 1	168	3.5	1222	0.138	100	4.2	LOS A	0.6	4.1	Full	500	0.0	0.0
Lane 2 [d]	189	2.8	1369	0.138	100	3.8	LOS A	0.6	4.1	Full	500	0.0	0.0
Approach	357	3.1		0.138		4.0	LOS A	0.6	4.1				
West: Old School Road													
Lane 1	38	1.2	1082	0.035	100	6.9	LOS A	0.1	0.9	Full	500	0.0	0.0
Lane 2 [d]	44	1.1	1269	0.035	100 [6]	4.3	LOS A	0.1	0.9	Short	150	0.0	NA
Approach	82	1.2		0.035		5.5	LOS A	0.1	0.9				
Intersection	1061	4.7		0.176		4.6	LOS A	0.8	5.7				

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Roundabout LOS Method: SIDRA Roundabout LOS.
Lane LOS values are based on average delay per lane.
Intersection and Approach LOS values are based on average delay for all lanes.
Roundabout Capacity Model: SIDRA Standard.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

6 Lane under-utilisation due to downstream effects
d Dominant lane on roundabout approach

Roundabout Basic Parameters

Location	Name	Central Island Diam m	Circ Width m	Insc Diam m	Entry Radius m	Entry Angle °	Circ Lanes	Entry Lanes	Av.Entry Lane Width m	App. Dist m	Prop Queued Upstr Signal	Extra Bunching %
South	Airport Road	33.63	10.00	52.1 [7]	37.2	24.0	2	2	4.00	500.0	NA [5]	0.0 [1]
East	Healey Road	33.63	10.00	52.1 [7]	30.9	26.0	2	2	4.00	500.0	NA [5]	0.0 [1]
North	Airport Road	33.63	10.00	52.1 [7]	33.4	24.0	2	2	4.00	500.0	NA [5]	0.0 [1]
West	Old School Road	33.63	10.00	52.1 [7]	59.3	26.0	2	2	4.00	500.0	NA [5]	0.0 [1]

Roundabout Capacity Model: SIDRA Standard

1 Program option resulted in zero value (single Site analysis or unconnected Site in Network analysis).
5 Not Applicable (single Site analysis or unconnected Site in Network analysis).
7 Inscribed diameter value was specified by the user.

Organisation: Fenerbahce | Created: Thursday, September 30, 2021 1:31:02 PM
Project: C:\Users\TPI-17\Trans Plan\Traffic - Documents\Projects\Projects\2020\55 13846&13940AirportRoad_Caledon_Commercial-Traffic Noise \Traffic\Data\Synchro\BKGD&TOT\BKGD&TOT2028(Roundabouts)\AirportRoad@OldSchool+HealeyRoad\Airport Rd & Old School_Healey.sip8

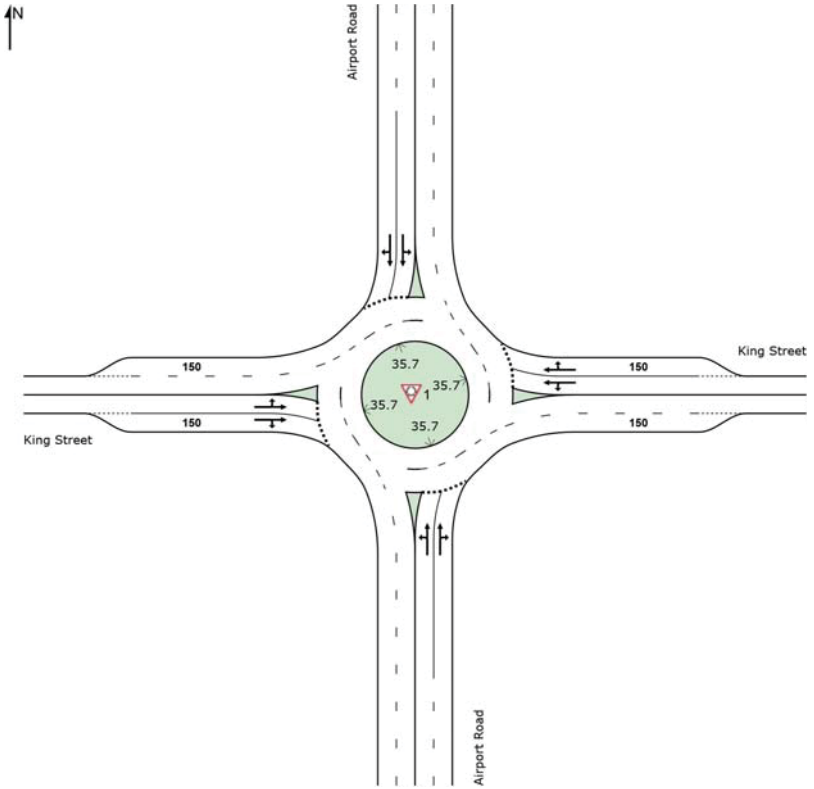
USER REPORT FOR SITE

Project: Airport Road & King Street — **Template: TP**

Site: 1 [<Total> 2028 Weekday AM Peak Hour]

New Site
Site Category: (None)
Roundabout

Site Layout



Movement Performance - Vehicles

Mov ID	Turn	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed km/h
South: Airport Road												
1	L2	18	20.0	0.161	11.1	LOS B	0.7	5.6	0.48	0.50	0.48	56.1
2	T1	211	23.0	0.161	4.7	LOS A	0.7	5.8	0.47	0.50	0.47	56.1
3	R2	92	22.0	0.161	4.7	LOS A	0.7	5.8	0.46	0.49	0.46	54.5
Approach		320	22.5	0.161	5.0	LOS A	0.7	5.8	0.47	0.50	0.47	55.6
East: King Street												
4	L2	184	6.0	0.299	10.5	LOS B	1.4	10.3	0.42	0.58	0.42	55.2
5	T1	516	4.0	0.299	4.0	LOS A	1.4	10.5	0.41	0.45	0.41	56.3
6	R2	20	17.0	0.299	4.4	LOS A	1.4	10.5	0.40	0.40	0.40	54.7
Approach		720	4.9	0.299	5.7	LOS A	1.4	10.5	0.41	0.48	0.41	56.0
North: Airport Road												
7	L2	85	5.0	0.364	11.8	LOS B	1.7	12.3	0.61	0.64	0.62	55.4
8	T1	602	5.0	0.364	5.2	LOS A	1.8	12.9	0.60	0.56	0.60	55.5
9	R2	55	6.0	0.364	5.1	LOS A	1.8	12.9	0.59	0.50	0.59	54.0
Approach		742	5.1	0.364	5.9	LOS A	1.8	12.9	0.60	0.56	0.60	55.4
West: King Street												
10	L2	21	21.0	0.222	12.6	LOS B	1.0	7.5	0.63	0.62	0.63	55.2
11	T1	317	6.0	0.222	5.5	LOS A	1.1	7.9	0.63	0.58	0.63	55.6
12	R2	68	2.0	0.222	5.3	LOS A	1.1	7.9	0.62	0.55	0.62	54.0
Approach		406	6.1	0.222	5.8	LOS A	1.1	7.9	0.63	0.58	0.63	55.3
All Vehicles		2188	7.8	0.364	5.7	LOS A	1.8	12.9	0.52	0.53	0.52	55.6

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Roundabout LOS Method: SIDRA Roundabout LOS.
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
Roundabout Capacity Model: SIDRA Standard.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Lane Use and Performance

	Demand Flows Total veh/h	HV %	Cap. veh/h	Deg. Satn v/c	Lane Util. %	Average Delay sec	Level of Service	95% Back of Queue Veh	Dist m	Lane Config	Lane Length m	Cap. Adj. %	Prob. Block. %
South: Airport Road													
Lane 1	146	22.6	907	0.161	100	5.6	LOS A	0.7	5.6	Full	500	0.0	0.0
Lane 2[d]	174	22.5	1083	0.161	100	4.6	LOS A	0.7	5.8	Full	500	0.0	0.0
Approach	320	22.5		0.161		5.0	LOS A	0.7	5.8				
East: King Street													
Lane 1	333	5.1	1113	0.299	100	7.6	LOS A	1.4	10.3	Full	500	0.0	0.0
Lane 2[d]	387	4.7	1294	0.299	100	4.0	LOS A	1.4	10.5	Short	150	0.0	NA
Approach	720	4.9		0.299		5.7	LOS A	1.4	10.5				
North: Airport Road													
Lane 1	327	5.0	899	0.364	100	7.2	LOS A	1.7	12.3	Full	500	0.0	0.0
Lane 2[d]	415	5.1	1139	0.364	100	4.9	LOS A	1.8	12.9	Full	500	0.0	0.0
Approach	742	5.1		0.364		5.9	LOS A	1.8	12.9				
West: King Street													
Lane 1	175	7.8	787	0.222	100	6.7	LOS A	1.0	7.5	Full	500	0.0	0.0
Lane 2[d]	232	4.8	1043	0.222	100	5.2	LOS A	1.1	7.9	Short	150	0.0	NA
Approach	406	6.1		0.222		5.8	LOS A	1.1	7.9				

Intersection	2188	7.8	0.364	5.7	LOS A	1.8	12.9	

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Roundabout LOS Method: SIDRA Roundabout LOS.
Lane LOS values are based on average delay per lane.
Intersection and Approach LOS values are based on average delay for all lanes.
Roundabout Capacity Model: SIDRA Standard.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

d Dominant lane on roundabout approach

Roundabout Basic Parameters

Location	Name	Central Island Diam	Circ Width	Insc Diam	Entry Radius	Entry Angle	Circ Lanes	Entry Lanes	Av.Entry Lane Width	App. Dist	Prop Queued Upstr Signal	Extra Bunching
		m	m	m	m	°			m	m		%
South	Airport Road	35.70	10.00	56.4[7]	37.1	27.0	2	2	4.00	500.0	NA[5]	0.0[1]
East	King Street	35.70	10.00	56.4[7]	30.0	24.0	2	2	4.00	500.0	NA[5]	0.0[1]
North	Airport Road	35.70	10.00	56.4[7]	41.3	24.0	2	2	4.00	500.0	NA[5]	0.0[1]
West	King Street	35.70	10.00	56.4[7]	30.8	24.0	2	2	4.00	500.0	NA[5]	0.0[1]

Roundabout Capacity Model: SIDRA Standard

1 Program option resulted in zero value (single Site analysis or unconnected Site in Network analysis).
5 Not Applicable (single Site analysis or unconnected Site in Network analysis).
7 Inscribed diameter value was specified by the user.

Organisation: Fenerbahce | Created: Thursday, September 30, 2021 11:53:43 AM
Project: C:\Users\TPI-17\Trans Plan\Traffic - Documents\Projects\Projects\2020\55 13846&13940AirportRoad_Caledon_Commercial-Traffic Noise \Traffic\Data\Synchro\BKGD&TOT\BKGD&TOT2028(Roundabouts)\AirportRoad@KingStreet\Airport Road & King Street.sip8

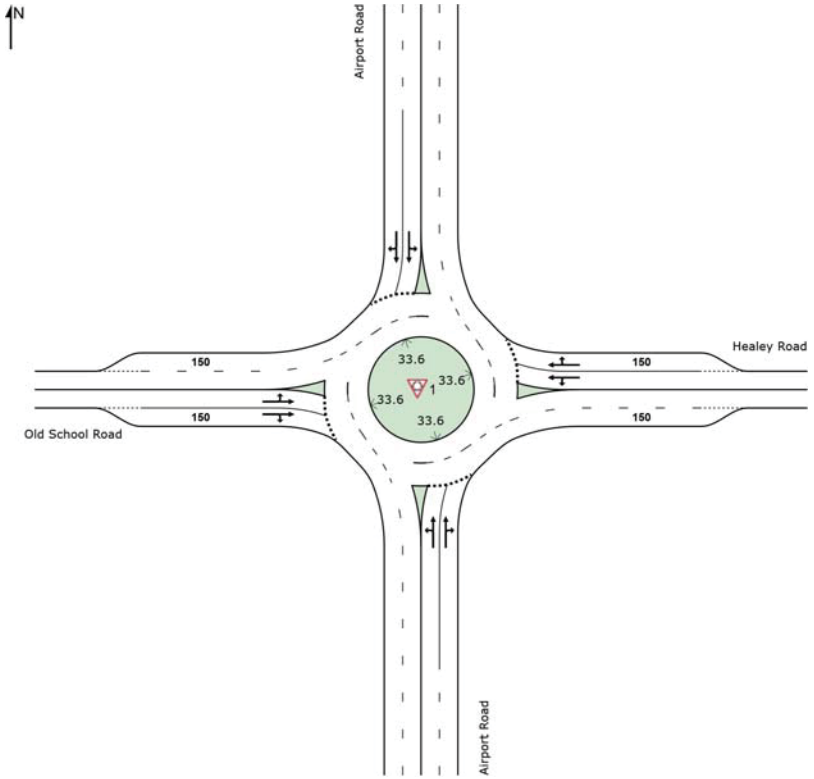
USER REPORT FOR SITE

Project: Airport Rd & Old School_Healey **Template: TP**

Site: 1 [<Total> 2028 Weekday AM Peak Hour]

New Site
Site Category: (None)
Roundabout

Site Layout



Movement Performance - Vehicles

Mov ID	Turn	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed km/h
South: Airport Road												

1	L2	94	3.0	0.168	10.1	LOS B	0.7	5.4	0.36	0.56	0.36	55.1
2	T1	244	15.0	0.168	4.2	LOS A	0.7	5.6	0.35	0.48	0.35	55.9
3	R2	55	7.0	0.168	4.2	LOS A	0.7	5.6	0.35	0.43	0.35	54.9
Approach		393	11.0	0.168	5.6	LOS A	0.7	5.6	0.35	0.49	0.35	55.5
East: Healey Road												
4	L2	45	12.0	0.079	10.6	LOS B	0.3	2.2	0.40	0.60	0.40	54.6
5	T1	61	4.0	0.079	4.4	LOS A	0.3	2.2	0.39	0.55	0.39	55.5
6	R2	71	1.0	0.079	4.4	LOS A	0.3	2.2	0.38	0.49	0.38	55.0
Approach		177	4.9	0.079	6.0	LOS A	0.3	2.2	0.39	0.54	0.39	55.1
North: Airport Road												
7	L2	56	2.0	0.322	10.1	LOS B	1.5	11.0	0.36	0.46	0.36	56.6
8	T1	745	4.0	0.322	4.1	LOS A	1.5	11.2	0.35	0.43	0.35	56.5
9	R2	12	0.0	0.322	4.2	LOS A	1.5	11.2	0.34	0.40	0.34	55.0
Approach		813	3.8	0.322	4.6	LOS A	1.5	11.2	0.35	0.43	0.35	56.5
West: Old School Road												
10	L2	23	7.0	0.125	11.7	LOS B	0.5	3.5	0.56	0.62	0.56	55.2
11	T1	161	1.0	0.125	5.3	LOS A	0.5	3.7	0.55	0.59	0.55	55.5
12	R2	64	1.0	0.125	5.1	LOS A	0.5	3.7	0.54	0.55	0.54	54.2
Approach		248	1.6	0.125	5.9	LOS A	0.5	3.7	0.54	0.58	0.54	55.1
All Vehicles		1631	5.3	0.322	5.2	LOS A	1.5	11.2	0.38	0.48	0.38	55.9

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Roundabout LOS Method: SIDRA Roundabout LOS.
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
Roundabout Capacity Model: SIDRA Standard.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Lane Use and Performance

	Demand Flows Total veh/h	HV %	Cap. veh/h	Deg. Satn v/c	Lane Util. %	Average Delay sec	Level of Service	95% Back of Queue Veh	Dist m	Lane Config	Lane Length m	Cap. Adj. %	Prob. Block. %
South: Airport Road													
Lane 1	186	9.0	1107	0.168	100	7.2	LOS A	0.7	5.4	Full	500	0.0	0.0
Lane 2 [d]	207	12.9	1231	0.168	100	4.2	LOS A	0.7	5.6	Full	500	0.0	0.0
Approach	393	11.0		0.168		5.6	LOS A	0.7	5.6				
East: Healey Road													
Lane 1	80	8.5	1016	0.079	100	7.9	LOS A	0.3	2.2	Full	500	0.0	0.0
Lane 2 [d]	97	1.8	1232	0.079	100 [6]	4.3	LOS A	0.3	2.2	Short	150	0.0	NA
Approach	177	4.9		0.079		6.0	LOS A	0.3	2.2				
North: Airport Road													
Lane 1	380	3.7	1181	0.322	100	5.1	LOS A	1.5	11.0	Full	500	0.0	0.0
Lane 2 [d]	433	3.9	1347	0.322	100	4.1	LOS A	1.5	11.2	Full	500	0.0	0.0
Approach	813	3.8		0.322		4.6	LOS A	1.5	11.2				
West: Old School Road													
Lane 1	109	2.3	867	0.125	100	6.9	LOS A	0.5	3.5	Full	500	0.0	0.0
Lane 2 [d]	140	1.0	1120	0.125	100 [6]	5.1	LOS A	0.5	3.7	Short	150	0.0	NA
Approach	248	1.6		0.125		5.9	LOS A	0.5	3.7				
Intersection	1631	5.3		0.322		5.2	LOS A	1.5	11.2				

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Roundabout LOS Method: SIDRA Roundabout LOS.
Lane LOS values are based on average delay per lane.
Intersection and Approach LOS values are based on average delay for all lanes.
Roundabout Capacity Model: SIDRA Standard.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

6 Lane under-utilisation due to downstream effects
d Dominant lane on roundabout approach

Roundabout Basic Parameters

Location	Name	Central Island Diam m	Circ Width m	Insc Diam m	Entry Radius m	Entry Angle °	Circ Lanes	Entry Lanes	Av.Entry Lane Width m	App. Dist m	Prop Queued Upstr Signal	Extra Bunching %
South	Airport Road	33.63	10.00	52.1 [7]	37.2	24.0	2	2	4.00	500.0	NA [5]	0.0 [1]
East	Healey Road	33.63	10.00	52.1 [7]	30.9	26.0	2	2	4.00	500.0	NA [5]	0.0 [1]
North	Airport Road	33.63	10.00	52.1 [7]	33.4	24.0	2	2	4.00	500.0	NA [5]	0.0 [1]
West	Old School Road	33.63	10.00	52.1 [7]	59.3	26.0	2	2	4.00	500.0	NA [5]	0.0 [1]

Roundabout Capacity Model: SIDRA Standard

1 Program option resulted in zero value (single Site analysis or unconnected Site in Network analysis).
5 Not Applicable (single Site analysis or unconnected Site in Network analysis).
7 Inscribed diameter value was specified by the user.

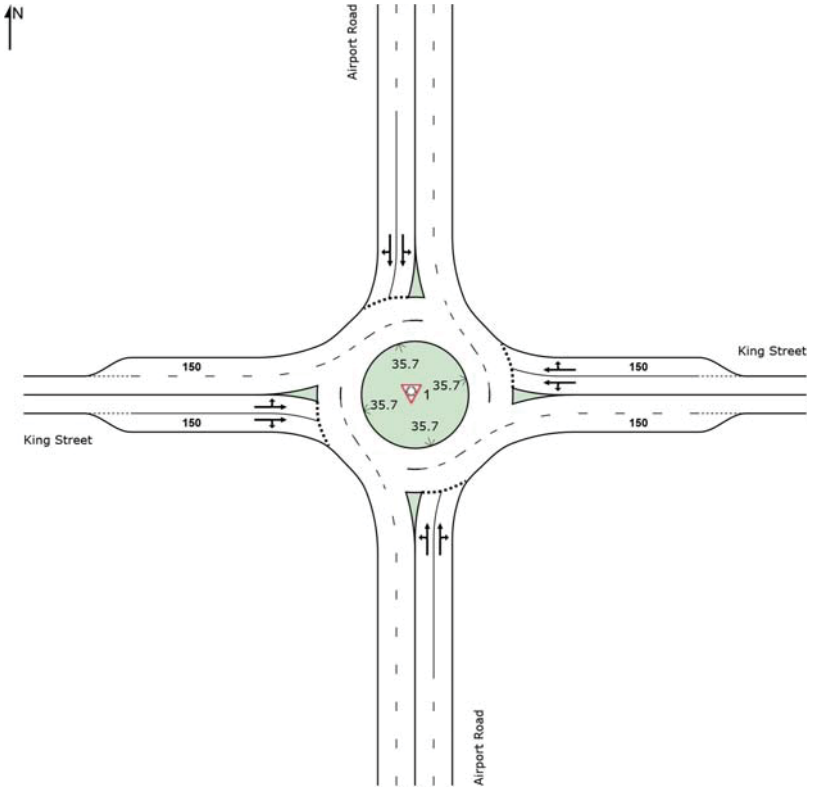
USER REPORT FOR SITE

Project: Airport Road & King Street — **Template: TP**

Site: 1 [<Total> 2028 Weekday PM Peak Hour]

New Site
Site Category: (None)
Roundabout

Site Layout



Movement Performance - Vehicles

Mov ID	Turn	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed km/h
South: Airport Road												
1	L2	101	4.0	0.443	11.8	LOS B	2.3	16.4	0.61	0.64	0.64	55.5
2	T1	689	1.0	0.443	5.1	LOS A	2.3	17.1	0.60	0.58	0.62	55.6
3	R2	145	15.0	0.443	5.4	LOS A	2.3	17.1	0.59	0.53	0.60	53.8
Approach		936	3.5	0.443	5.9	LOS A	2.3	17.1	0.60	0.58	0.62	55.3
East: King Street												
4	L2	95	32.0	0.327	13.2	LOS B	1.5	12.0	0.67	0.71	0.67	54.0
5	T1	382	1.0	0.327	5.4	LOS A	1.7	12.1	0.66	0.61	0.66	55.2
6	R2	117	2.0	0.327	5.3	LOS A	1.7	12.1	0.65	0.55	0.65	53.9
Approach		594	6.1	0.327	6.6	LOS A	1.7	12.1	0.66	0.62	0.66	54.8
North: Airport Road												
7	L2	42	8.0	0.172	11.3	LOS B	0.7	5.6	0.54	0.58	0.54	55.6
8	T1	256	10.0	0.172	4.7	LOS A	0.8	6.0	0.53	0.52	0.53	55.8
9	R2	46	14.0	0.172	4.9	LOS A	0.8	6.0	0.52	0.48	0.52	54.2
Approach		344	10.3	0.172	5.6	LOS A	0.8	6.0	0.53	0.52	0.53	55.6
West: King Street												
10	L2	65	3.0	0.259	10.8	LOS B	1.2	8.2	0.48	0.53	0.48	56.3
11	T1	480	2.0	0.259	4.3	LOS A	1.2	8.7	0.47	0.48	0.47	56.3
12	R2	39	36.0	0.259	5.1	LOS A	1.2	8.7	0.46	0.43	0.46	54.0
Approach		584	4.4	0.259	5.1	LOS A	1.2	8.7	0.47	0.48	0.47	56.1
All Vehicles		2458	5.3	0.443	5.8	LOS A	2.3	17.1	0.57	0.56	0.58	55.4

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Roundabout LOS Method: SIDRA Roundabout LOS.
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
Roundabout Capacity Model: SIDRA Standard.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Lane Use and Performance

	Demand Flows Total veh/h	HV %	Cap. veh/h	Deg. Satn v/c	Lane Util. %	Average Delay sec	Level of Service	95% Back of Queue Veh	Dist m	Lane Config	Lane Length m	Cap. Adj. %	Prob. Block. %
South: Airport Road													
Lane 1	426	1.7	962	0.443	100	6.9	LOS A	2.3	16.4	Full	500	0.0	0.0
Lane 2[d]	510	5.0	1151	0.443	100	5.0	LOS A	2.3	17.1	Full	500	0.0	0.0
Approach	936	3.5		0.443		5.9	LOS A	2.3	17.1				
East: King Street													
Lane 1	247	12.9	754	0.327	100	8.6	LOS A	1.5	12.0	Full	500	0.0	0.0
Lane 2[d]	347	1.3	1061	0.327	100	5.2	LOS A	1.7	12.1	Short	150	0.0	NA
Approach	594	6.1		0.327		6.6	LOS A	1.7	12.1				
North: Airport Road													
Lane 1	155	9.5	899	0.172	100	6.7	LOS A	0.7	5.6	Full	500	0.0	0.0
Lane 2[d]	189	11.0	1101	0.172	100	4.6	LOS A	0.8	6.0	Full	500	0.0	0.0
Approach	344	10.3		0.172		5.6	LOS A	0.8	6.0				
West: King Street													
Lane 1	271	2.2	1048	0.259	100	6.0	LOS A	1.2	8.2	Full	500	0.0	0.0
Lane 2[d]	313	6.2	1211	0.259	100	4.3	LOS A	1.2	8.7	Short	150	0.0	NA
Approach	584	4.4		0.259		5.1	LOS A	1.2	8.7				

Intersection	2458	5.3	0.443	5.8	LOS A	2.3	17.1	

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Roundabout LOS Method: SIDRA Roundabout LOS.
Lane LOS values are based on average delay per lane.
Intersection and Approach LOS values are based on average delay for all lanes.
Roundabout Capacity Model: SIDRA Standard.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

d Dominant lane on roundabout approach

Roundabout Basic Parameters

Location	Name	Central Island Diam	Circ Width	Insc Diam	Entry Radius	Entry Angle	Circ Lanes	Entry Lanes	Av.Entry Lane Width	App. Dist	Prop Queued Upstr Signal	Extra Bunching
		m	m	m	m	°			m	m		%
South	Airport Road	35.70	10.00	56.4[7]	37.1	27.0	2	2	4.00	500.0	NA[5]	0.0[1]
East	King Street	35.70	10.00	56.4[7]	30.0	24.0	2	2	4.00	500.0	NA[5]	0.0[1]
North	Airport Road	35.70	10.00	56.4[7]	41.3	24.0	2	2	4.00	500.0	NA[5]	0.0[1]
West	King Street	35.70	10.00	56.4[7]	30.8	24.0	2	2	4.00	500.0	NA[5]	0.0[1]

Roundabout Capacity Model: SIDRA Standard

1 Program option resulted in zero value (single Site analysis or unconnected Site in Network analysis).
5 Not Applicable (single Site analysis or unconnected Site in Network analysis).
7 Inscribed diameter value was specified by the user.

Organisation: Fenerbahce | Created: Thursday, September 30, 2021 12:02:57 PM
Project: C:\Users\TPI-17\Trans Plan\Traffic - Documents\Projects\Projects\2020\55 13846&13940AirportRoad_Caledon_Commercial-Traffic Noise \Traffic\Data\Synchro\BKGD&TOT\BKGD&TOT2028(Roundabouts)\AirportRoad@KingStreet\Airport Road & King Street.sip8

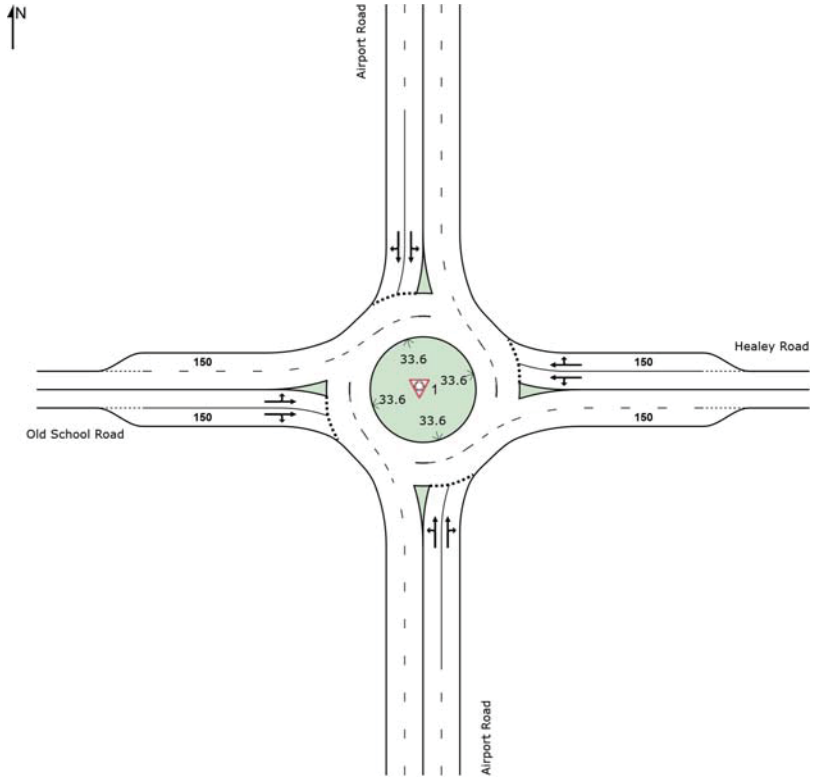
USER REPORT FOR SITE

Project: Airport Rd & Old School_Healey **Template: TP**

Site: 1 [<Total> 2028 Weekday PM Peak Hour]

New Site
Site Category: (None)
Roundabout

Site Layout



Movement Performance - Vehicles

Mov ID	Turn	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed km/h
South: Airport Road												

1	L2	149	0.5	0.334	10.0	LOS A	1.6	11.8	0.36	0.52	0.36	55.8
2	T1	652	6.0	0.334	4.1	LOS A	1.7	12.2	0.35	0.45	0.35	56.2
3	R2	47	2.0	0.334	4.1	LOS A	1.7	12.2	0.34	0.40	0.34	55.0
Approach		848	4.8	0.334	5.1	LOS A	1.7	12.2	0.35	0.46	0.35	56.1
East: Healey Road												
4	L2	92	4.0	0.241	11.9	LOS B	1.0	7.4	0.60	0.73	0.60	54.2
5	T1	167	3.0	0.241	5.8	LOS A	1.1	7.7	0.59	0.69	0.59	54.6
6	R2	201	2.0	0.240	5.5	LOS A	1.1	7.7	0.58	0.63	0.58	54.2
Approach		460	2.8	0.241	6.9	LOS A	1.1	7.7	0.59	0.67	0.59	54.3
North: Airport Road												
7	L2	35	0.0	0.200	10.6	LOS B	0.9	7.1	0.48	0.55	0.48	55.8
8	T1	351	23.0	0.200	5.0	LOS A	0.9	7.5	0.47	0.51	0.47	55.5
9	R2	19	0.0	0.200	4.6	LOS A	0.9	7.5	0.46	0.47	0.46	54.4
Approach		404	19.9	0.200	5.5	LOS A	0.9	7.5	0.47	0.51	0.47	55.4
West: Old School Road												
10	L2	61	6.0	0.085	10.8	LOS B	0.3	2.4	0.46	0.66	0.46	53.8
11	T1	88	3.0	0.085	4.6	LOS A	0.3	2.5	0.44	0.53	0.44	55.7
12	R2	35	2.0	0.085	4.6	LOS A	0.3	2.5	0.44	0.48	0.44	54.6
Approach		184	3.8	0.085	6.6	LOS A	0.3	2.5	0.45	0.56	0.45	54.8
All Vehicles		1897	7.4	0.334	5.8	LOS A	1.7	12.2	0.44	0.53	0.44	55.4

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Roundabout LOS Method: SIDRA Roundabout LOS.
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
Roundabout Capacity Model: SIDRA Standard.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Lane Use and Performance

	Demand Flows Total veh/h	HV %	Cap. veh/h	Deg. Satn v/c	Lane Util. %	Average Delay sec	Level of Service	95% Back of Queue Veh	Dist m	Lane Config	Lane Length m	Cap. Adj. %	Prob. Block. %
South: Airport Road													
Lane 1	398	3.9	1191	0.334	100	6.4	LOS A	1.6	11.8	Full	500	0.0	0.0
Lane 2 [d]	450	5.6	1348	0.334	100	4.0	LOS A	1.7	12.2	Full	500	0.0	0.0
Approach	848	4.8		0.334		5.1	LOS A	1.7	12.2				
East: Healey Road													
Lane 1	202	3.5	840	0.241	100	8.7	LOS A	1.0	7.4	Full	500	0.0	0.0
Lane 2 [d]	258	2.2	1076	0.240	100 [6]	5.4	LOS A	1.1	7.7	Short	150	0.0	NA
Approach	460	2.8		0.241		6.9	LOS A	1.1	7.7				
North: Airport Road													
Lane 1	187	18.7	937	0.200	100	6.2	LOS A	0.9	7.1	Full	500	0.0	0.0
Lane 2 [d]	217	21.0	1084	0.200	100	4.9	LOS A	0.9	7.5	Full	500	0.0	0.0
Approach	404	19.9		0.200		5.5	LOS A	0.9	7.5				
West: Old School Road													
Lane 1	83	5.2	973	0.085	100	9.2	LOS A	0.3	2.4	Full	500	0.0	0.0
Lane 2 [d]	101	2.7	1190	0.085	100 [6]	4.5	LOS A	0.3	2.5	Short	150	0.0	NA
Approach	184	3.8		0.085		6.6	LOS A	0.3	2.5				
Intersection	1897	7.4		0.334		5.8	LOS A	1.7	12.2				

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Roundabout LOS Method: SIDRA Roundabout LOS.
Lane LOS values are based on average delay per lane.
Intersection and Approach LOS values are based on average delay for all lanes.
Roundabout Capacity Model: SIDRA Standard.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

6 Lane under-utilisation due to downstream effects
d Dominant lane on roundabout approach

Roundabout Basic Parameters

Location	Name	Central Island Diam m	Circ Width m	Insc Diam m	Entry Radius m	Entry Angle °	Circ Lanes	Entry Lanes	Av.Entry Lane Width m	App. Dist m	Prop Queued Upstr Signal	Extra Bunching %
South	Airport Road	33.63	10.00	52.1 [7]	37.2	24.0	2	2	4.00	500.0	NA [5]	0.0 [1]
East	Healey Road	33.63	10.00	52.1 [7]	30.9	26.0	2	2	4.00	500.0	NA [5]	0.0 [1]
North	Airport Road	33.63	10.00	52.1 [7]	33.4	24.0	2	2	4.00	500.0	NA [5]	0.0 [1]
West	Old School Road	33.63	10.00	52.1 [7]	59.3	26.0	2	2	4.00	500.0	NA [5]	0.0 [1]

Roundabout Capacity Model: SIDRA Standard

1 Program option resulted in zero value (single Site analysis or unconnected Site in Network analysis).
5 Not Applicable (single Site analysis or unconnected Site in Network analysis).
7 Inscribed diameter value was specified by the user.

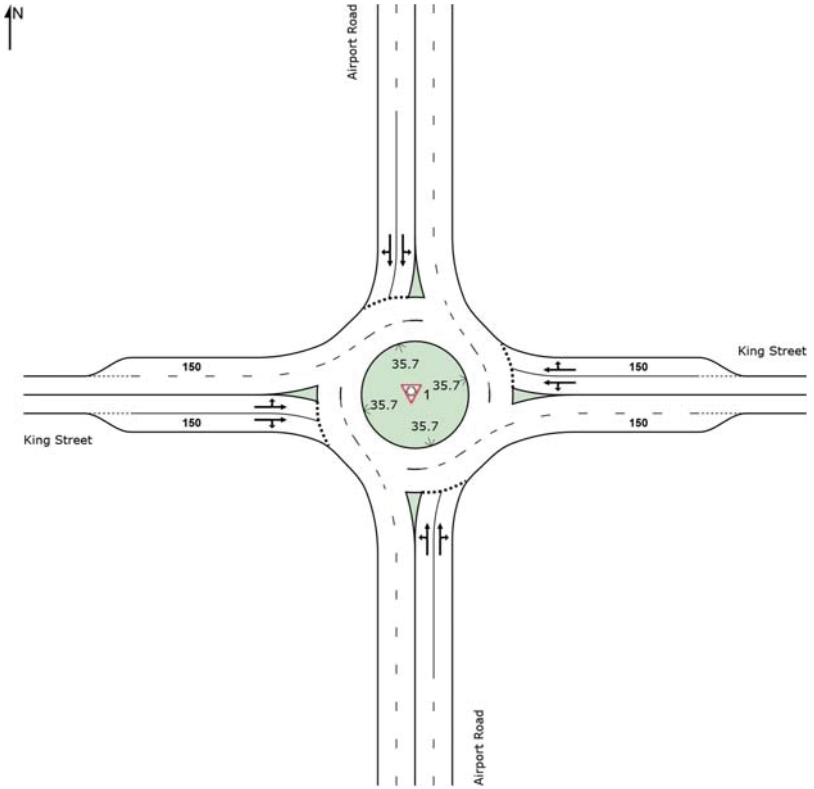
USER REPORT FOR SITE

Project: Airport Road & King Street — **Template: TP**

Site: 1 [<Total> 2028 Saturday Peak Hour]

New Site
Site Category: (None)
Roundabout

Site Layout



Movement Performance - Vehicles

Mov ID	Turn	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed km/h
South: Airport Road												
1	L2	45	5.0	0.285	10.9	LOS B	1.3	9.2	0.49	0.51	0.49	56.4
2	T1	479	1.0	0.285	4.4	LOS A	1.3	9.5	0.48	0.49	0.48	56.3
3	R2	124	4.0	0.285	4.5	LOS A	1.3	9.5	0.47	0.46	0.47	54.7
Approach		648	1.9	0.285	4.9	LOS A	1.3	9.5	0.48	0.48	0.48	56.0
East: King Street												
4	L2	115	2.0	0.236	11.1	LOS B	1.0	7.5	0.53	0.65	0.53	55.1
5	T1	342	4.0	0.236	4.6	LOS A	1.1	7.9	0.52	0.53	0.52	55.8
6	R2	47	5.0	0.236	4.8	LOS A	1.1	7.9	0.51	0.47	0.51	54.4
Approach		504	3.6	0.236	6.1	LOS A	1.1	7.9	0.52	0.55	0.52	55.5
North: Airport Road												
7	L2	44	5.0	0.211	11.0	LOS B	0.9	6.5	0.50	0.53	0.50	56.2
8	T1	393	2.0	0.211	4.4	LOS A	0.9	6.7	0.49	0.48	0.49	56.2
9	R2	33	3.0	0.211	4.5	LOS A	0.9	6.7	0.48	0.44	0.48	54.6
Approach		469	2.4	0.211	5.0	LOS A	0.9	6.7	0.49	0.48	0.49	56.1
West: King Street												
10	L2	44	0.0	0.207	11.0	LOS B	0.9	6.4	0.51	0.55	0.51	56.2
11	T1	343	4.0	0.207	4.6	LOS A	0.9	6.6	0.50	0.51	0.50	56.1
12	R2	62	0.0	0.207	4.6	LOS A	0.9	6.6	0.49	0.47	0.49	54.7
Approach		449	3.1	0.207	5.2	LOS A	0.9	6.6	0.50	0.51	0.50	55.9
All Vehicles		2072	2.7	0.285	5.3	LOS A	1.3	9.5	0.50	0.50	0.50	55.9

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Roundabout LOS Method: SIDRA Roundabout LOS.
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
Roundabout Capacity Model: SIDRA Standard.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Lane Use and Performance

	Demand Flows Total veh/h	HV %	Cap. veh/h	Deg. Satn v/c	Lane Util. %	Average Delay sec	Level of Service	95% Back of Queue Veh	Dist m	Lane Config	Lane Length m	Cap. Adj. %	Prob. Block. %
South: Airport Road													
Lane 1	297	1.6	1042	0.285	100	5.5	LOS A	1.3	9.2	Full	500	0.0	0.0
Lane 2[d]	351	2.1	1233	0.285	100	4.3	LOS A	1.3	9.5	Full	500	0.0	0.0
Approach	648	1.9		0.285		4.9	LOS A	1.3	9.5				
East: King Street													
Lane 1	228	3.0	968	0.236	100	8.1	LOS A	1.0	7.5	Full	500	0.0	0.0
Lane 2[d]	276	4.2	1170	0.236	100	4.5	LOS A	1.1	7.9	Short	150	0.0	NA
Approach	504	3.6		0.236		6.1	LOS A	1.1	7.9				
North: Airport Road													
Lane 1	212	2.6	1005	0.211	100	6.0	LOS A	0.9	6.5	Full	500	0.0	0.0
Lane 2[d]	258	2.1	1223	0.211	100	4.3	LOS A	0.9	6.7	Full	500	0.0	0.0
Approach	469	2.4		0.211		5.0	LOS A	0.9	6.7				
West: King Street													
Lane 1	203	3.1	980	0.207	100	6.2	LOS A	0.9	6.4	Full	500	0.0	0.0
Lane 2[d]	247	3.0	1192	0.207	100	4.5	LOS A	0.9	6.6	Short	150	0.0	NA
Approach	449	3.1		0.207		5.2	LOS A	0.9	6.6				

Intersection	2072	2.7	0.285	5.3	LOS A	1.3	9.5	

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Roundabout LOS Method: SIDRA Roundabout LOS.
Lane LOS values are based on average delay per lane.
Intersection and Approach LOS values are based on average delay for all lanes.
Roundabout Capacity Model: SIDRA Standard.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

d Dominant lane on roundabout approach

Roundabout Basic Parameters

Location	Name	Central Island Diam	Circ Width	Insc Diam	Entry Radius	Entry Angle	Circ Lanes	Entry Lanes	Av.Entry Lane Width	App. Dist	Prop Queued Upstr Signal	Extra Bunching
		m	m	m	m	°			m	m		%
South	Airport Road	35.70	10.00	56.4[7]	37.1	27.0	2	2	4.00	500.0	NA[5]	0.0[1]
East	King Street	35.70	10.00	56.4[7]	30.0	24.0	2	2	4.00	500.0	NA[5]	0.0[1]
North	Airport Road	35.70	10.00	56.4[7]	41.3	24.0	2	2	4.00	500.0	NA[5]	0.0[1]
West	King Street	35.70	10.00	56.4[7]	30.8	24.0	2	2	4.00	500.0	NA[5]	0.0[1]

Roundabout Capacity Model: SIDRA Standard

1 Program option resulted in zero value (single Site analysis or unconnected Site in Network analysis).
5 Not Applicable (single Site analysis or unconnected Site in Network analysis).
7 Inscribed diameter value was specified by the user.

Organisation: Fenerbahce | Created: Thursday, September 30, 2021 12:05:12 PM
Project: C:\Users\TPI-17\Trans Plan\Traffic - Documents\Projects\Projects\2020\55 13846&13940AirportRoad_Caledon_Commercial-Traffic Noise \Traffic\Data\Synchro\BKGD&TOT\BKGD&TOT2028(Roundabouts)\AirportRoad@KingStreet\Airport Road & King Street.sip8

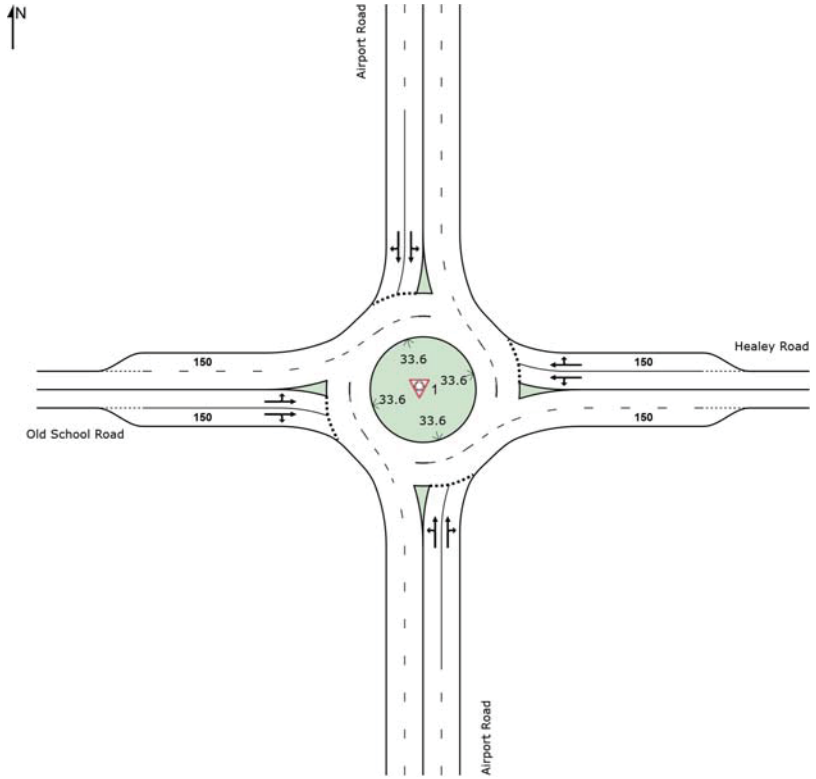
USER REPORT FOR SITE

Project: Airport Rd & Old School_Healey **Template: TP**

Site: 1 [<Total> 2028 Saturday Peak Hour]

New Site
Site Category: (None)
Roundabout

Site Layout



Movement Performance - Vehicles

Mov ID	Turn	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed km/h
South: Airport Road												

1	L2	44	0.0	0.238	9.6	LOS A	1.1	8.1	0.24	0.42	0.24	57.3
2	T1	558	5.0	0.238	3.7	LOS A	1.1	8.3	0.23	0.39	0.23	57.1
3	R2	41	16.0	0.238	4.0	LOS A	1.1	8.3	0.23	0.37	0.23	55.2
Approach		643	5.4	0.238	4.1	LOS A	1.1	8.3	0.23	0.39	0.23	57.0
East: Healey Road												
4	L2	59	6.0	0.093	11.1	LOS B	0.3	2.5	0.48	0.68	0.48	54.0
5	T1	43	3.0	0.093	5.0	LOS A	0.4	2.8	0.48	0.65	0.48	54.6
6	R2	84	17.0	0.093	5.2	LOS A	0.4	2.8	0.47	0.59	0.47	54.3
Approach		186	10.3	0.093	7.0	LOS A	0.4	2.8	0.47	0.63	0.47	54.3
North: Airport Road												
7	L2	9	11.0	0.211	9.9	LOS A	1.0	6.8	0.29	0.40	0.29	57.1
8	T1	528	3.0	0.211	3.9	LOS A	1.0	6.9	0.28	0.39	0.28	57.1
9	R2	13	0.0	0.211	3.9	LOS A	1.0	6.9	0.28	0.38	0.28	55.3
Approach		551	3.1	0.211	4.0	LOS A	1.0	6.9	0.28	0.39	0.28	57.1
West: Old School Road												
10	L2	39	0.0	0.048	10.8	LOS B	0.2	1.2	0.46	0.68	0.46	53.7
11	T1	47	2.0	0.048	4.6	LOS A	0.2	1.3	0.44	0.52	0.44	55.8
12	R2	19	0.0	0.048	4.7	LOS A	0.2	1.3	0.44	0.48	0.44	54.6
Approach		105	0.9	0.048	6.9	LOS A	0.2	1.3	0.45	0.57	0.45	54.8
All Vehicles		1485	4.8	0.238	4.6	LOS A	1.1	8.3	0.30	0.43	0.30	56.5

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Roundabout LOS Method: SIDRA Roundabout LOS.
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
Roundabout Capacity Model: SIDRA Standard.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Lane Use and Performance

	Demand Flows Total veh/h	HV %	Cap. veh/h	Deg. Satn v/c	Lane Util. %	Average Delay sec	Level of Service	95% Back of Queue Veh	Dist m	Lane Config	Lane Length m	Cap. Adj. %	Prob. Block. %
South: Airport Road													
Lane 1	304	4.3	1274	0.238	100	4.6	LOS A	1.1	8.1	Full	500	0.0	0.0
Lane 2 [d]	340	6.3	1425	0.238	100	3.7	LOS A	1.1	8.3	Full	500	0.0	0.0
Approach	643	5.4		0.238		4.1	LOS A	1.1	8.3				
East: Healey Road													
Lane 1	88	5.0	941	0.093	100	9.2	LOS A	0.3	2.5	Full	500	0.0	0.0
Lane 2 [d]	99	14.9	1066	0.093	100 [6]	5.1	LOS A	0.4	2.8	Short	150	0.0	NA
Approach	186	10.3		0.093		7.0	LOS A	0.4	2.8				
North: Airport Road													
Lane 1	258	3.3	1222	0.211	100	4.2	LOS A	1.0	6.8	Full	500	0.0	0.0
Lane 2 [d]	292	2.9	1382	0.211	100	3.8	LOS A	1.0	6.9	Full	500	0.0	0.0
Approach	551	3.1		0.211		4.0	LOS A	1.0	6.9				
West: Old School Road													
Lane 1	48	0.4	990	0.048	100	9.7	LOS A	0.2	1.2	Full	500	0.0	0.0
Lane 2 [d]	58	1.3	1198	0.048	100 [6]	4.6	LOS A	0.2	1.3	Short	150	0.0	NA
Approach	105	0.9		0.048		6.9	LOS A	0.2	1.3				
Intersection	1485	4.8		0.238		4.6	LOS A	1.1	8.3				

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Roundabout LOS Method: SIDRA Roundabout LOS.
Lane LOS values are based on average delay per lane.
Intersection and Approach LOS values are based on average delay for all lanes.
Roundabout Capacity Model: SIDRA Standard.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

6 Lane under-utilisation due to downstream effects
d Dominant lane on roundabout approach

Roundabout Basic Parameters

Location	Name	Central Island Diam m	Circ Width m	Insc Diam m	Entry Radius m	Entry Angle °	Circ Lanes	Entry Lanes	Av.Entry Lane Width m	App. Dist m	Prop Queued Upstr Signal	Extra Bunching %
South	Airport Road	33.63	10.00	52.1 [7]	37.2	24.0	2	2	4.00	500.0	NA [5]	0.0 [1]
East	Healey Road	33.63	10.00	52.1 [7]	30.9	26.0	2	2	4.00	500.0	NA [5]	0.0 [1]
North	Airport Road	33.63	10.00	52.1 [7]	33.4	24.0	2	2	4.00	500.0	NA [5]	0.0 [1]
West	Old School Road	33.63	10.00	52.1 [7]	59.3	26.0	2	2	4.00	500.0	NA [5]	0.0 [1]

Roundabout Capacity Model: SIDRA Standard

1 Program option resulted in zero value (single Site analysis or unconnected Site in Network analysis).
5 Not Applicable (single Site analysis or unconnected Site in Network analysis).
7 Inscribed diameter value was specified by the user.

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	0	24	0	304	772	40
Future Volume (Veh/h)	0	24	0	304	772	40
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	26	0	330	839	43
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				TWLTL	TWLTL	
Median storage veh)				2	2	
Upstream signal (m)				147		
pX, platoon unblocked						
vC, conflicting volume	1026	441	882			
vC1, stage 1 conf vol	860					
vC2, stage 2 conf vol	165					
vCu, unblocked vol	1026	441	882			
tC, single (s)	6.8	6.9	4.1			
tC, 2 stage (s)	5.8					
tF (s)	3.5	3.3	2.2			
p0 queue free %	100	95	100			
cM capacity (veh/h)	360	564	762			

Direction, Lane #	EB 1	NB 1	NB 2	SB 1	SB 2
Volume Total	26	165	165	559	323
Volume Left	0	0	0	0	0
Volume Right	26	0	0	0	43
cSH	564	1700	1700	1700	1700
Volume to Capacity	0.05	0.10	0.10	0.33	0.19
Queue Length 95th (m)	1.1	0.0	0.0	0.0	0.0
Control Delay (s)	11.7	0.0	0.0	0.0	0.0
Lane LOS	B				
Approach Delay (s)	11.7	0.0		0.0	
Approach LOS	B				

Intersection Summary				
Average Delay	0.2			
Intersection Capacity Utilization	32.6%	ICU Level of Service	A	
Analysis Period (min)	15			

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	29	25	48	273	748	48
Future Volume (Veh/h)	29	25	48	273	748	48
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)	32	27	52	297	813	52
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				TWLTL	TWLTL	
Median storage veh)				2	2	
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	1092	432	865			
vC1, stage 1 conf vol	839					
vC2, stage 2 conf vol	252					
vCu, unblocked vol	1092	432	865			
tC, single (s)	6.8	6.9	4.1			
tC, 2 stage (s)	5.8					
tF (s)	3.5	3.3	2.2			
p0 queue free %	91	95	93			
cM capacity (veh/h)	359	571	774			

Direction, Lane #	EB 1	EB 2	NB 1	NB 2	NB 3	SB 1	SB 2
Volume Total	32	27	35	116	198	542	323
Volume Left	32	0	35	17	0	0	0
Volume Right	0	27	0	0	0	0	52
cSH	359	571	774	774	1700	1700	1700
Volume to Capacity	0.09	0.05	0.07	0.07	0.12	0.32	0.19
Queue Length 95th (m)	2.2	1.1	1.6	1.6	0.0	0.0	0.0
Control Delay (s)	16.0	11.6	10.0	2.1	0.0	0.0	0.0
Lane LOS	C	B	A	A			
Approach Delay (s)	14.0		1.7			0.0	
Approach LOS	B						

Intersection Summary				
Average Delay	1.1			
Intersection Capacity Utilization	39.1%	ICU Level of Service	A	
Analysis Period (min)	15			

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	29	25	48	273	748	48
Future Volume (vph)	29	25	48	273	748	48
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0	6.0	6.0	6.0	6.0	
Lane Util. Factor	1.00	1.00	1.00	0.95	0.95	
Frt	1.00	0.85	1.00	1.00	0.99	
Flt Protected	0.95	1.00	0.95	1.00	1.00	
Satd. Flow (prot)	1750	1566	1750	3500	3468	
Flt Permitted	0.95	1.00	0.32	1.00	1.00	
Satd. Flow (perm)	1750	1566	591	3500	3468	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	32	27	52	297	813	52
RTOR Reduction (vph)	0	23	0	0	5	0
Lane Group Flow (vph)	32	4	52	297	860	0
Turn Type	Prot	Perm	Perm	NA	NA	
Protected Phases	4			2	6	
Permitted Phases		4	2			
Actuated Green, G (s)	8.0	8.0	36.9	36.9	36.9	
Effective Green, g (s)	8.0	8.0	36.9	36.9	36.9	
Actuated g/C Ratio	0.14	0.14	0.65	0.65	0.65	
Clearance Time (s)	6.0	6.0	6.0	6.0	6.0	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	246	220	383	2269	2249	
v/s Ratio Prot	c0.02			0.08	c0.25	
v/s Ratio Perm		0.00	0.09			
v/c Ratio	0.13	0.02	0.14	0.13	0.38	
Uniform Delay, d1	21.4	21.1	3.9	3.8	4.7	
Progression Factor	1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	0.2	0.0	0.2	0.0	0.1	
Delay (s)	21.6	21.1	4.0	3.9	4.8	
Level of Service	C	C	A	A	A	
Approach Delay (s)	21.4			3.9	4.8	
Approach LOS	C			A	A	

Intersection Summary				
HCM 2000 Control Delay	5.3	HCM 2000 Level of Service	A	
HCM 2000 Volume to Capacity ratio	0.34			
Actuated Cycle Length (s)	56.9	Sum of lost time (s)	12.0	
Intersection Capacity Utilization	61.6%	ICU Level of Service	B	
Analysis Period (min)	15			

c Critical Lane Group

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	0	20	0	321	749	24
Future Volume (Veh/h)	0	20	0	321	749	24
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	22	0	349	814	26
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				TWLTL	TWLTL	
Median storage veh)				2	2	
Upstream signal (m)					271	
pX, platoon unblocked	0.93	0.93	0.93			
vC, conflicting volume	1002	420	840			
vC1, stage 1 conf vol	827					
vC2, stage 2 conf vol	174					
vCu, unblocked vol	861	239	689			
tC, single (s)	6.8	6.9	4.1			
tC, 2 stage (s)	5.8					
tF (s)	3.5	3.3	2.2			
p0 queue free %	100	97	100			
cM capacity (veh/h)	417	712	842			

Direction, Lane #	EB 1	NB 1	NB 2	SB 1	SB 2
Volume Total	22	174	174	543	297
Volume Left	0	0	0	0	0
Volume Right	22	0	0	0	26
cSH	712	1700	1700	1700	1700
Volume to Capacity	0.03	0.10	0.10	0.32	0.17
Queue Length 95th (m)	0.7	0.0	0.0	0.0	0.0
Control Delay (s)	10.2	0.0	0.0	0.0	0.0
Lane LOS	B				
Approach Delay (s)	10.2	0.0		0.0	
Approach LOS	B				

Intersection Summary				
Average Delay	0.2			
Intersection Capacity Utilization	31.5%	ICU Level of Service	A	
Analysis Period (min)	15			

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	0	52	0	889	307	63
Future Volume (Veh/h)	0	52	0	889	307	63
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	57	0	966	334	68
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				TWLTL	TWLTL	
Median storage veh)				2	2	
Upstream signal (m)				147		
pX, platoon unblocked	0.93					
vC, conflicting volume	851	201	402			
vC1, stage 1 conf vol	368					
vC2, stage 2 conf vol	483					
vCu, unblocked vol	681	201	402			
tC, single (s)	6.8	6.9	4.1			
tC, 2 stage (s)	5.8					
tF (s)	3.5	3.3	2.2			
p0 queue free %	100	93	100			
cM capacity (veh/h)	557	806	1153			

Direction, Lane #	EB 1	NB 1	NB 2	SB 1	SB 2
Volume Total	57	483	483	223	179
Volume Left	0	0	0	0	0
Volume Right	57	0	0	0	68
cSH	806	1700	1700	1700	1700
Volume to Capacity	0.07	0.28	0.28	0.13	0.11
Queue Length 95th (m)	1.7	0.0	0.0	0.0	0.0
Control Delay (s)	9.8	0.0	0.0	0.0	0.0
Lane LOS	A				
Approach Delay (s)	9.8	0.0		0.0	
Approach LOS	A				

Intersection Summary				
Average Delay	0.4			
Intersection Capacity Utilization	27.9%	ICU Level of Service		A
Analysis Period (min)	15			

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	280	95	274	594	286	73
Future Volume (Veh/h)	280	95	274	594	286	73
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)	304	103	298	646	311	79
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				TWLTL	TWLTL	
Median storage veh)				2	2	
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	1270	195	390			
vC1, stage 1 conf vol	350					
vC2, stage 2 conf vol	919					
vCu, unblocked vol	1270	195	390			
tC, single (s)	6.8	6.9	4.1			
tC, 2 stage (s)	5.8					
tF (s)	3.5	3.3	2.2			
p0 queue free %	0	87	74			
cM capacity (veh/h)	247	814	1165			

Direction, Lane #	EB 1	EB 2	NB 1	NB 2	NB 3	SB 1	SB 2
Volume Total	304	103	199	315	431	207	183
Volume Left	304	0	199	99	0	0	0
Volume Right	0	103	0	0	0	0	79
cSH	247	814	1165	1165	1700	1700	1700
Volume to Capacity	1.23	0.13	0.26	0.26	0.25	0.12	0.11
Queue Length 95th (m)	112.5	3.3	7.8	7.8	0.0	0.0	0.0
Control Delay (s)	175.0	10.1	9.1	4.7	0.0	0.0	0.0
Lane LOS	F	B	A	A			
Approach Delay (s)	133.3		3.5			0.0	
Approach LOS	F						

Intersection Summary				
Average Delay	33.1			
Intersection Capacity Utilization	52.2%	ICU Level of Service		A
Analysis Period (min)	15			

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	280	95	274	594	286	73
Future Volume (vph)	280	95	274	594	286	73
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	4.5	4.5	4.5	4.5	
Lane Util. Factor	1.00	1.00	1.00	0.95	0.95	
Frt	1.00	0.85	1.00	1.00	0.97	
Flt Protected	0.95	1.00	0.95	1.00	1.00	
Satd. Flow (prot)	1750	1566	1750	3500	3394	
Flt Permitted	0.95	1.00	0.52	1.00	1.00	
Satd. Flow (perm)	1750	1566	960	3500	3394	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	304	103	298	646	311	79
RTOR Reduction (vph)	0	78	0	0	24	0
Lane Group Flow (vph)	304	25	298	646	366	0
Turn Type	Prot	Perm	Perm	NA	NA	
Protected Phases	4			2	6	
Permitted Phases		4	2			
Actuated Green, G (s)	17.6	17.6	46.2	46.2	46.2	
Effective Green, g (s)	17.6	17.6	46.2	46.2	46.2	
Actuated g/C Ratio	0.24	0.24	0.63	0.63	0.63	
Clearance Time (s)	4.5	4.5	4.5	4.5	4.5	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	423	378	609	2221	2153	
v/s Ratio Prot	c0.17			0.18	0.11	
v/s Ratio Perm		0.02	c0.31			
v/c Ratio	0.72	0.07	0.49	0.29	0.17	
Uniform Delay, d1	25.3	21.3	7.0	6.0	5.4	
Progression Factor	1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	5.8	0.1	2.8	0.3	0.2	
Delay (s)	31.1	21.3	9.8	6.3	5.6	
Level of Service	C	C	A	A	A	
Approach Delay (s)	28.6			7.4	5.6	
Approach LOS	C			A	A	

Intersection Summary				
HCM 2000 Control Delay	12.0	HCM 2000 Level of Service	B	
HCM 2000 Volume to Capacity ratio	0.55			
Actuated Cycle Length (s)	72.8	Sum of lost time (s)	9.0	
Intersection Capacity Utilization	52.2%	ICU Level of Service	A	
Analysis Period (min)	15			

c Critical Lane Group

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	0	66	0	868	335	46
Future Volume (Veh/h)	0	66	0	868	335	46
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	72	0	943	364	50
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				TWLTL	TWLTL	
Median storage veh)				2	2	
Upstream signal (m)					271	
pX, platoon unblocked						
vC, conflicting volume	860	207	414			
vC1, stage 1 conf vol	389					
vC2, stage 2 conf vol	472					
vCu, unblocked vol	860	207	414			
tC, single (s)	6.8	6.9	4.1			
tC, 2 stage (s)	5.8					
tF (s)	3.5	3.3	2.2			
p0 queue free %	100	91	100			
cM capacity (veh/h)	500	799	1141			

Direction, Lane #	EB 1	NB 1	NB 2	SB 1	SB 2
Volume Total	72	472	472	243	171
Volume Left	0	0	0	0	0
Volume Right	72	0	0	0	50
cSH	799	1700	1700	1700	1700
Volume to Capacity	0.09	0.28	0.28	0.14	0.10
Queue Length 95th (m)	2.3	0.0	0.0	0.0	0.0
Control Delay (s)	10.0	0.0	0.0	0.0	0.0
Lane LOS	A				
Approach Delay (s)	10.0	0.0		0.0	
Approach LOS	A				

Intersection Summary				
Average Delay	0.5			
Intersection Capacity Utilization	27.3%	ICU Level of Service	A	
Analysis Period (min)	15			

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	0	81	0	616	453	88
Future Volume (Veh/h)	0	81	0	616	453	88
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	88	0	670	492	96
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				TWLTL	TWLTL	
Median storage veh)				2	2	
Upstream signal (m)				147		
pX, platoon unblocked	0.98					
vC, conflicting volume	875	294	588			
vC1, stage 1 conf vol	540					
vC2, stage 2 conf vol	335					
vCu, unblocked vol	830	294	588			
tC, single (s)	6.8	6.9	4.1			
tC, 2 stage (s)	5.8					
tF (s)	3.5	3.3	2.2			
p0 queue free %	100	87	100			
cM capacity (veh/h)	493	702	983			

Direction, Lane #	EB 1	NB 1	NB 2	SB 1	SB 2
Volume Total	88	335	335	328	260
Volume Left	0	0	0	0	0
Volume Right	88	0	0	0	96
cSH	702	1700	1700	1700	1700
Volume to Capacity	0.13	0.20	0.20	0.19	0.15
Queue Length 95th (m)	3.2	0.0	0.0	0.0	0.0
Control Delay (s)	10.9	0.0	0.0	0.0	0.0
Lane LOS	B				
Approach Delay (s)	10.9	0.0		0.0	
Approach LOS	B				

Intersection Summary				
Average Delay	0.7			
Intersection Capacity Utilization	27.0%	ICU Level of Service		A
Analysis Period (min)	15			

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	270	127	292	355	396	138
Future Volume (Veh/h)	270	127	292	355	396	138
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)	293	138	317	386	430	150
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				TWLTL	TWLTL	
Median storage veh)				2	2	
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	1332	290	580			
vC1, stage 1 conf vol	505					
vC2, stage 2 conf vol	827					
vCu, unblocked vol	1332	290	580			
tC, single (s)	6.8	6.9	4.1			
tC, 2 stage (s)	5.8					
tF (s)	3.5	3.3	2.2			
p0 queue free %	0	80	68			
cM capacity (veh/h)	245	707	990			

Direction, Lane #	EB 1	EB 2	NB 1	NB 2	NB 3	SB 1	SB 2
Volume Total	293	138	211	234	257	287	293
Volume Left	293	0	211	106	0	0	0
Volume Right	0	138	0	0	0	0	150
cSH	245	707	990	990	1700	1700	1700
Volume to Capacity	1.20	0.20	0.32	0.32	0.15	0.17	0.17
Queue Length 95th (m)	105.6	5.5	10.6	10.6	0.0	0.0	0.0
Control Delay (s)	162.7	11.3	10.3	6.6	0.0	0.0	0.0
Lane LOS	F	B	B	A			
Approach Delay (s)	114.2		5.3			0.0	
Approach LOS	F						

Intersection Summary				
Average Delay	30.9			
Intersection Capacity Utilization	52.5%	ICU Level of Service		A
Analysis Period (min)	15			

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	270	127	292	355	396	138
Future Volume (vph)	270	127	292	355	396	138
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	4.5	4.5	4.5	4.5	
Lane Util. Factor	1.00	1.00	1.00	0.95	0.95	
Frt	1.00	0.85	1.00	1.00	0.96	
Flt Protected	0.95	1.00	0.95	1.00	1.00	
Satd. Flow (prot)	1750	1566	1750	3500	3364	
Flt Permitted	0.95	1.00	0.43	1.00	1.00	
Satd. Flow (perm)	1750	1566	785	3500	3364	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	293	138	317	386	430	150
RTOR Reduction (vph)	0	101	0	0	51	0
Lane Group Flow (vph)	293	37	317	386	529	0
Turn Type	Prot	Perm	Perm	NA	NA	
Protected Phases	4			2	6	
Permitted Phases		4	2			
Actuated Green, G (s)	16.0	16.0	34.8	34.8	34.8	
Effective Green, g (s)	16.0	16.0	34.8	34.8	34.8	
Actuated g/C Ratio	0.27	0.27	0.58	0.58	0.58	
Clearance Time (s)	4.5	4.5	4.5	4.5	4.5	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	468	418	456	2036	1957	
v/s Ratio Prot	c0.17			0.11	0.16	
v/s Ratio Perm		0.02	c0.40			
v/c Ratio	0.63	0.09	0.70	0.19	0.27	
Uniform Delay, d1	19.3	16.4	8.8	5.9	6.2	
Progression Factor	1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	2.6	0.1	4.6	0.0	0.1	
Delay (s)	21.9	16.5	13.3	5.9	6.3	
Level of Service	C	B	B	A	A	
Approach Delay (s)	20.2			9.3	6.3	
Approach LOS	C			A	A	

Intersection Summary				
HCM 2000 Control Delay	11.0	HCM 2000 Level of Service	B	
HCM 2000 Volume to Capacity ratio	0.67			
Actuated Cycle Length (s)	59.8	Sum of lost time (s)	9.0	
Intersection Capacity Utilization	74.5%	ICU Level of Service	D	
Analysis Period (min)	15			

c Critical Lane Group

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	0	61	0	647	457	66
Future Volume (Veh/h)	0	61	0	647	457	66
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	66	0	703	497	72
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				TWLTL	TWLTL	
Median storage veh)				2	2	
Upstream signal (m)					271	
pX, platoon unblocked						
vC, conflicting volume	884	284	569			
vC1, stage 1 conf vol	533					
vC2, stage 2 conf vol	352					
vCu, unblocked vol	884	284	569			
tC, single (s)	6.8	6.9	4.1			
tC, 2 stage (s)	5.8					
tF (s)	3.5	3.3	2.2			
p0 queue free %	100	91	100			
cM capacity (veh/h)	484	712	999			

Direction, Lane #	EB 1	NB 1	NB 2	SB 1	SB 2
Volume Total	66	352	352	331	238
Volume Left	0	0	0	0	0
Volume Right	66	0	0	0	72
cSH	712	1700	1700	1700	1700
Volume to Capacity	0.09	0.21	0.21	0.19	0.14
Queue Length 95th (m)	2.3	0.0	0.0	0.0	0.0
Control Delay (s)	10.6	0.0	0.0	0.0	0.0
Lane LOS	B				
Approach Delay (s)	10.6	0.0		0.0	
Approach LOS	B				

Intersection Summary				
Average Delay	0.5			
Intersection Capacity Utilization	25.2%	ICU Level of Service	A	
Analysis Period (min)	15			

APPENDIX E

Level of Service Definitions

LEVEL OF SERVICE ANALYSIS AT SIGNALIZED INTERSECTIONS

To assist in clarifying the arithmetic analysis associated with traffic engineering, it is often useful to refer to "Level of Service". The term Level of Service implies a qualitative measure of traffic flow at an intersection. It is dependent upon vehicle delay and vehicle queue lengths at the approaches. Specifically, Level of Service criteria are stated in terms of the average stopped delay per vehicle for a 15-minute analysis period. The following table describes the characteristics of each level:

Level of Service	Features	Stopped Delay per Vehicle (sec)
A	At this level of service, almost no signal phase is fully utilized by traffic. Very seldom does a vehicle wait longer than one red indication. The approach appears open, turning movements are easily made and drivers have freedom of operation.	≤ 5.0
B	At this level, an occasional signal phase is fully utilized and many phases approach full use. Many drivers begin to feel somewhat restricted within platoons of vehicles approaching the intersection.	> 5.0 and ≤ 15.0
C	At this level, the operation is stable though with more frequent fully utilized signal phases. Drivers feel more restricted and occasionally may have to wait more than one red signal indication, and queues may develop behind turning vehicles. This level is normally employed in urban intersection design.	> 15.0 and ≤ 25.0
D	At this level, the motorist experiences increasing restriction and instability of flow. There are substantial delays to approaching vehicles during short peaks within the peak period, but there are enough cycles with lower demand to permit occasional clearance of developing queues and prevent excessive backups.	> 25.0 and ≤ 40.0
E	At this level, capacity is reached. There are long queues of vehicles waiting upstream of the intersection and delays to vehicles may extend to several signal cycles.	> 40.0 and ≤ 60.0
F	At this level, saturation occurs, with vehicle demand exceeding the available capacity.	> 60.0

LEVEL OF SERVICE ANALYSIS AT UNSIGNALIZED INTERSECTIONS[1]

The term "level of service" implies a qualitative measure of traffic flow at an intersection. It is dependent upon the vehicle delay and vehicle queue lengths at approaches. The level of service at unsignalized intersections is often related to the delay accumulated by flows on the minor streets, caused by all other conflicting movements. The following table describes the characteristics of each level.

Level of Service	Features
A	Little or no traffic delay occurs. Approaches appear open, turning movements are easily made, and drivers have freedom of operation.
B	Short traffic delays occur. Many drivers begin to feel somewhat restricted in terms of freedom of operation.
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.
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.
E	Very long traffic delays occur. Operations approach the capacity of the intersection.
F	Saturation occurs, with vehicle demand exceeding the available capacity. Very long traffic delays occur.

---

(1) Highway Capacity Manual - Special Report No. 209, Transportation Research Board, 1985.