Final Report

Traffic Impact Study
Proposed Warehouse Development
12505 Heart Lake Road, Town of Caledon

Prepared for Caledon HL Developments Inc.
by IBI Group
August 8, 2022

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1 Introduction

IBI Group has been retained by Caledon HL Developments Inc. (the 'Client') to prepare a Traffic Impact Study (TIS) report in support of the Zoning By-law Amendment (ZBA) and Official Plan Amendment (OPA) application for a proposed warehouse development to be located at 12505 Heart Lake Road (the 'development site') in the Town of Caledon (the 'Town') and the Region of Peel (the 'Region').

The development site is currently occupied by agricultural fields. The development site is east of Heart Lake Road between Old School Road and Highway 410 on the south. The development site is bisected into west and east parcels by the future Highway 410 extension.

Six warehouse buildings (four buildings will be west of the future Highway 410 extension and two buildings on the east of the future Highway 410 extension) are proposed on the development site. The west parcel will have three full movements direct access on Heart Lake Road, and the east parcel will be connected to Dixie Road via a future road connection.

The construction of warehouses is expected to be built by 2024. The conceptual plans and the statistics are further discussed in **Section 1.3**.

As per the Development Application Review Team (DART) meeting held on December 16, 2021, the Town requested a Traffic Impact Study parking and loading review.

1.1 Study Purpose

This report aims to analyze the impact the proposed development may have on the surrounding transportation network. This report considers future road configuration, background traffic growth, and other proposed developments in the area. The study also examines site access and sightline requirements and presents a parking study.

The purpose of this study is to provide traffic analysis, where IBI will:

- Assess the 2022 existing traffic operations of the study area intersections during the weekday AM and PM peak hours;
- Considering the proposed development will be fully built by 2024 (opening year), a 5-year after the opening year (i.e., the year 2029) and 10 years after the opening year (i.e., the year 2034) are considered as future horizon years;
- Assess the future background traffic operations during the weekday AM and PM peak hours, incorporating both traffic growth and the traffic generated from the background developments in the vicinity of the proposed development;
- Estimate site traffic based on information published in the *Trip Generation Manual, 11th Edition,* by the *Institute of Transportation Engineers (ITE)*;
- Assess the future total traffic operations during the weekday AM and PM peak hours, incorporating future background traffic and the traffic generated from the proposed development.
- Develop mitigation measures to address any deficiencies at each stage (existing, Future Background and Future Total traffic) for all key study area intersections;

- Review the site access geometry, width, clear throat length, and curb radius with respect to the Town's Development Standard Manual, and determine whether or not additional turning lanes are required;
- Review sightlines at the proposed site access driveways with respect to the requirements as outlined in the 2017 Transportation Association of Canada (TAC) Geometric Design Guide for Canadian Roads (June 2017) Manual; and
- Review the adequacy of the proposed parking supply with regard to the parking requirements per the Town's Zoning By-law, as amended (the "Zoning By-law") for the site.

1.2 Summary of Consultation with Agencies

This report adhered to the scope of investigation developed by IBI Group and discussed with the Ministry of Transportation Ontario, Region of Peel and The Town staff on March 28, 2022. The correspondence is presented in **Appendix A.**

1.3 Report Structure

The scope of the current study is based on the Town's, Region's, and MTO's TIS guidelines. This TIS report examines the anticipated impact of the proposed development on the study area traffic operations and identifies potential improvements to operations if needed. Following is the report structure:

- **Section 2** Examines the existing transportation facilities and discusses the traffic analysis details, such as signal timing plans, turning movement counts, analysis hours, and study intersections.

  The existing traffic operational conditions and identifies existing operational issues. Road improvements to mitigate the identified operational issues are proposed, if necessary.
- **Section 3 Section 6** examines the future transportation improvements planned by the Town and Region, the Future Background traffic operations under the full built-out year of 2024, 5-year horizon from full build-out (2029), and 10-year horizon from full build-out (2034) without the subject site. Road improvements to mitigate the identified operational issues are proposed, if necessary.
- The proposed development, site accesses, site trip generation estimates from the proposed developments and trip assignment to the study area road network are discussed in **Section 7**.
- **Section 8** through **Section 11** examines Future Total traffic operations under the full built-out year of 2024, 5-year horizon from full build-out (2029), and 10-year horizon from full build-out (2034) with the subject site. Road improvements to mitigate the identified operational issues are proposed, if necessary.
- **Section 12** examines the concept site plan based on the location and configuration of the proposed site access, including available sight distance.
- Parking and loading requirements of the proposed site are discussed in **Section 13**.
- **Section 14** reviews the Transportation Demand Management (TDM) measures to reduce the number of single occupancy vehicles.
- **Section 16** provides recommendations made based on the preceding sections.

1.4 Study Area

The proposed development is located east of Heart Lake Road and west of Dixie Road. The future Highway 410 extension bisects the proposed development. The study area is illustrated in **Exhibit 1-1.**

Exhibit 1-1: Study Area



Base Map Source: Google Maps. Retrieved March 26, 2022, from https://www.google.ca/maps

The area surrounding the proposed development is a rural area, with future plans for warehouses and residential developments, as the development is above the north/east limit of the ***Mayfield West Community Secondary Plan.***

The study area intersections were determined through consultation with the Town and Region. It consists of the following locations:

1. Heart Lake Road and Old School Road (unsignalized);
2. Heart lake Road and Mayfield Road (signalized);
3. Mayfield Road and Highway 410 Southbound Off Ramp (signalized);
4. Mayfield Road and Highway 410 Northbound Off Ramp (signalized);
5. Mayfield Road and Ace Drive (signalized);
6. Mayfield Road and Dixie Road (signalized); and,
7. Dixie Road and Old School Road (signalized).

1.5 Analysis Periods

Based on the proposed development's warehouse land use, the following analysis periods were used in this study:

- AM Peak hour – 7:00 a.m. to 9:00 a.m on a typical weekday; and,
- PM Peak hour – 4:00 p.m. to 6:00 p.m on a typical weekday.

1.6 Proposed Development

The Client is proposing to construct six warehouse buildings (four buildings will be west of the future Highway 410 extension and two buildings on the east of the future Highway 410 extension) are proposed on the development site. The west parcel will have three full movements direct access on Heart Lake Road, and the east parcel will be connected to Dixie Road via a future road connection. The proposed development site statistics is summarized in **Exhibit 1-2**.

Exhibit 1-2: Proposed Development Site Statistics

Building #	Gross Floor Area	Auto Parking Provided	Dock-High Level Doors	Grade Level Doors
West Parcel				
Building #1	11,316 m^2 (121,806 ft^2)	130	32	2
Building #2	17,569 m^2 (189,109 ft^2)	190	34	2
Building #3	12,252 m^2 (131,876 ft^2)	160	34	2
Building #4	16,645 m^2 (179,168 ft^2)	170	31	2
East Parcel				
Building #5	19,841 m^2 (213,571 ft^2)	210	43	2
Building #6	23,269 m^2 (250,461 ft^2)	230	44	2

The proposed site plan is presented in **Exhibit 1-3**. It must be noted that small changes in building sizes may occur as this development moves through the approval process. However, the assumptions in this report are conservative, and differences in traffic operations from these changes are expected to be negligible.



PROJECT DATA:

SITE AREA 1:

GROSS:	31.62 AC	12.80 HA
	1,377,507 SF	127,975 m²
BUILDING 1	121,806 SF	11,316 m²
BUILDING 2	189,109 SF	17,569 m²
BUILDING 3	131,876 SF	12,252 m²
BUILDING 4	179,168 SF	16,645 m²
TOTAL:	621,958 SF	57,782 m²
FAR:		
GROSS:		0.45
NET:		0.45
COVERAGE:		
GROSS:		45%
NET:		45%

BUILDING 1

▲ DOCK-HIGH DOORS			32
O GRADE-LEVEL DOORS			2
PARKING REQUIRED:			
WAREHOUSE			
<7000 m²		7,000 m²	78 STALLS
7000-20000 m²		3,750 m²	26 STALLS
OFFICE	@ 5%	566 m²	19 STALLS
TOTAL			123 STALLS
PARKING PROVIDED:			130 STALLS
		@1.07/1000 SF	@1.15/100 m²
REQ. ACCESSIBLE		*To be confimed by City*	

BUILDING 2

▲ DOCK-HIGH DOORS			34
O GRADE-LEVEL DOORS			2
PARKING REQUIRED:			
WAREHOUSE			
<7000 m²		7,000 m²	78 STALLS
7000-20000 m²		9,690 m²	67 STALLS
OFFICE	@ 5%	878 m²	29 STALLS
TOTAL			174 STALLS
PARKING PROVIDED:			190 STALLS
		@1./1000 SF	@1.08/100 m²
REQ. ACCESSIBLE		*To be confimed by City*	

BUILDING 3

▲ DOCK-HIGH DOORS			34
O GRADE-LEVEL DOORS			2
PARKING REQUIRED:			
WAREHOUSE			
<7000 m²		7,000 m²	78 STALLS
7000-20000 m²		4,639 m²	32 STALLS
OFFICE	@ 5%	613 m²	20 STALLS
TOTAL			130 STALLS
PARKING PROVIDED:			160 STALLS
		@0.85/1000 SF	@0.91/100 m²
REQ. ACCESSIBLE		*To be confimed by City*	

BUILDING 4

▲ DOCK-HIGH DOORS			31
O GRADE-LEVEL DOORS			2
PARKING REQUIRED:			
WAREHOUSE			
<7000 m²		7,000 m²	78 STALLS
7000-20000 m²		8,813 m²	61 STALLS
OFFICE	@ 5%	832 m²	28 STALLS
TOTAL			166 STALLS
PARKING PROVIDED:			170 STALLS
		@0.9/1000 SF	@0.97/100 m²
REQ. ACCESSIBLE		*To be confimed by City*	

SITE AREA 2:

GROSS:		29.79 AC	12.06 HA
		1,297,740 SF	120,564 m²
EASEMENT.:		@ 22%	26,358 m²
NET:		23.28 AC	9.42 HA
		1,014,028 SF	94,206 m²
BUILDING 5		213,571 SF	19,841 m²
BUILDING 6		250,461 SF	23,269 m²
TOTAL:		464,033 SF	43,110 m²
FAR:			
GROSS:			0.36
NET:			0.46
COVERAGE:			
GROSS:			36%
NET:			46%

BUILDING 5

▲ DOCK-HIGH DOORS			43
O GRADE-LEVEL DOORS			2
PARKING REQUIRED:			
WAREHOUSE			
<7000 m²		7,000 m²	78 STALLS
7000-20000 m²		12,841 m²	89 STALLS
OFFICE	@ 5%	992 m²	33 STALLS
TOTAL			198 STALLS
PARKING PROVIDED:			210 STALLS
		@0.98/1000 SF	@1.06/100 m²
REQ. ACCESSIBLE		*To be confimed by City*	

BUILDING 6

▲ DOCK-HIGH DOORS			44
O GRADE-LEVEL DOORS			2
PARKING REQUIRED:			
WAREHOUSE			
<7000 m²		7,000 m²	78 STALLS
7000-20000 m²		13,000 m²	90 STALLS
>20000 m²		2,655 m²	16 STALLS
OFFICE	@ 5%	1,133 m²	38 STALLS
TOTAL			221 STALLS
PARKING PROVIDED:			230 STALLS
		@0.94/1000 SF	@1.02/100 m²
REQ. ACCESSIBLE		*To be confimed by City*	

TOTAL SITE AREA:

GROSS:	72.64 AC	29.40 HA
	3,164,261 SF	293,970 m²

LANDSCAPE AREA:	56%
	71,337 m²

PARKING

PARKING PROVIDED:	
SITE AREA 1:	650 STALLS
SITE AREA 2:	440 STALLS
TOTAL PARKING:	1,090 STALLS

DEVELOPMENT STANDARDS:

ZONING:		MP
MAX. COVERAGE:		50%
MAX. HEIGHT:		18 m
BUILDING SETBACKS:		
FRONT:		9 m
SIDE:		7.5 m
REAR:		7.5 m
LANDSCAPE SETBACKS:		
FRONT:		6 m
SIDE:		3 m [3]
REAR:		3 m
LANDSCAPE REQ.:		10%
OFF-STREET PARKING:		
STANDARD:		2.75X6 m
DRIVE AISLE:		6 m
REQ. PARKING RATIO BY USE:		
WAREHOUSE:		1/90 sq m [1]
MANUF		1/60 sq m [2]
OFFICE:		1/30 sq m

NOTES:

1 a.) If accessory office use and retail net floor areas are 15% or less of the total net floor area: Up to 7000m2 - 1/90m2 net floor area; 7000-20000 - 78 spaces plus 1/145m2 of net floor area or portion thereof above 7000m2; Over 20000m2 - 168 spaces plus 1/170m2 or portion thereof over 20000m2;
b.) If associated office and retail net floor areas are more than 15% of the total net floor area: In addition to the standards contained in (a), the applicable net floor areas exceeding 15% shall be subject to the applicable office or retail parking requirements.

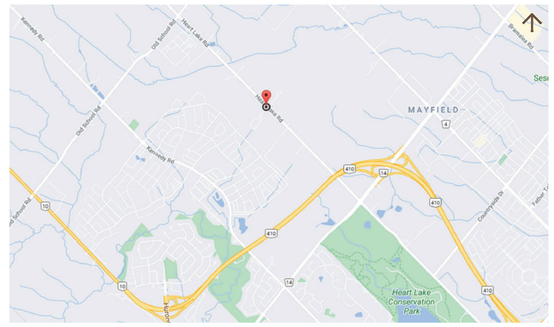
2 a.) IF accessory office and retail net floor areas are 15% of less of the total net floor area:
Up to 5,000 sq m - 1 parking space per 60 sq m net floor area or portion thereof
5,000 to 10,000 sq m - 83 spaces plus 1 space per 90 sq m of net floor area or portion thereof over 5,000 sq m
Over 10,000 sq m - 139 spaces plus 1 parking space per 170 sq m or portion thereof of net floor area or portion thereof over 10,000 sq m.
b.) If associate office and retail net floor area are more than 15% of the total net floor area: in additiona to the standards contained in (a), the applicable net floor areas exceeding 15% shall be subject to the applicable office or retail parking requirements.

3 3 m for all parking spaces.

This conceptual design is based upon a preliminary review of entitlement requirements and on unverified and possibly incomplete site and/or building information, and is intended merely to assist in exploring how the project might be developed.

Stormwater Management Design:
AVERAGE REGIONAL REQUIRED PROVIDED

Boundary Source:
CIVIL CAD FILE



1:1500
0 20m 40m 75m 150m

NORTH

BERKSHIRE AXIS
Unlocking Opportunity™

scheme: 05

Conceptual Site Plan

Heart Lake Rd
Caledon, ON, Canadá

WARE MALCOMB

TOR21-0126-00
08.05.2022

SHEET
1

2 2022 Existing Conditions

This section documents the transportation network in the study area in 2022, including existing roadways, traffic control measures, intersection performance, walking and cycling facilities, and transit operations.

2.1 Existing Road Network

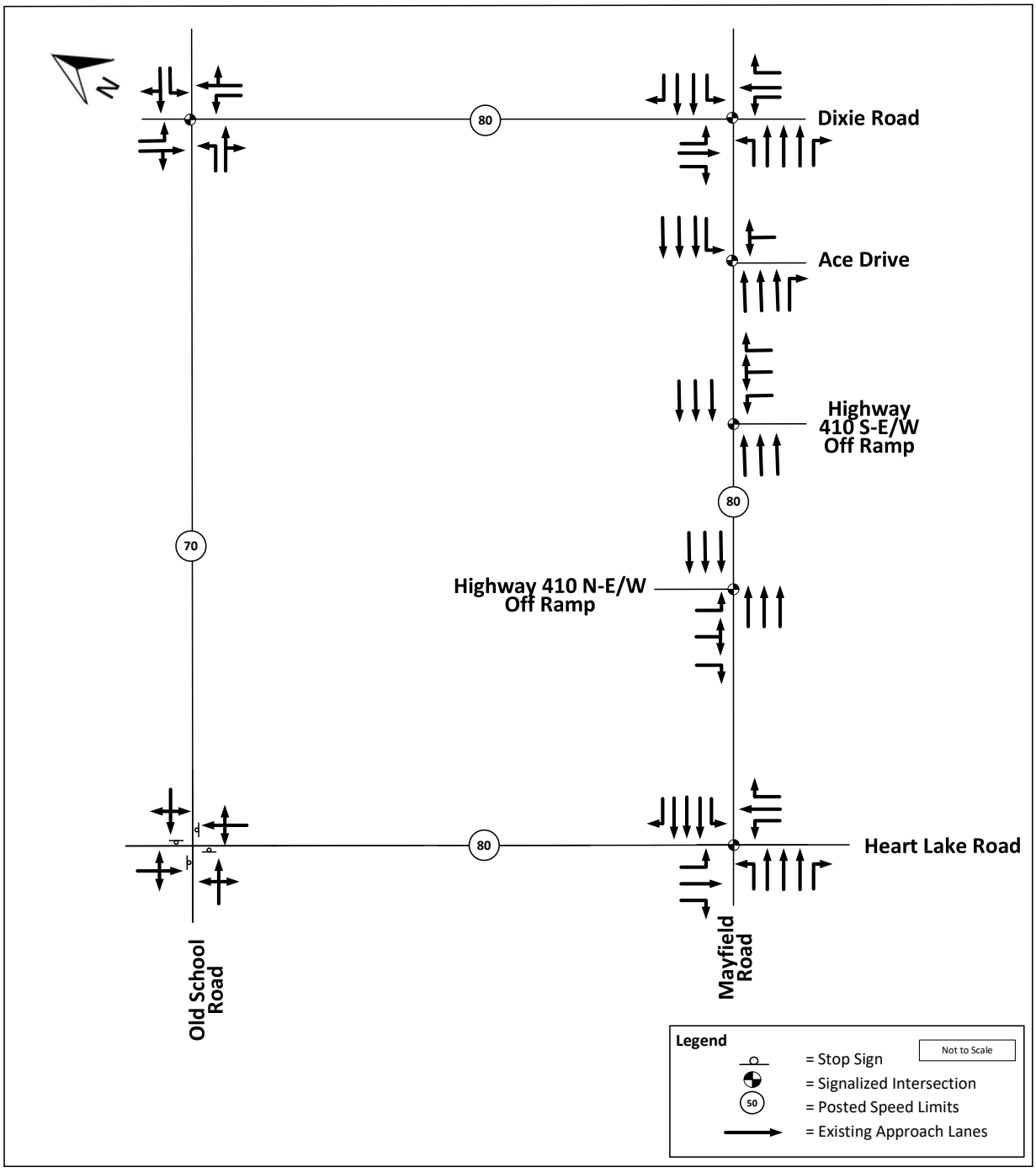
Exhibit 2-1 below summarizes the characteristics of the study area roadways.

Exhibit 2-1: Study Roadway Characteristics

Street Name	Class.	Orientation	Road Width (Lanes)	Traffic Direction	From	To	On-Street Parking	Speed Limit
Heart Lake Road	Collector	North / South	2	Two-way	Mayfield Road	Old School Road	Prohibited	80 km/h
Dixie Road	Suburban Connector	North / South	2	Two-way	Mayfield Road	Old School Road	Prohibited	80 km/h
Old School Road	Collector	East / West	2	Two-way	Heart Lake Road	Dixie Road	Prohibited	70 km/h
Mayfield Road	Major Arterial	East / West	6	Two-way	Heart Lake Road	Dixie Road	Prohibited	80 km/h
Ace Drive	Collector	North / South	2	Two-way	Inspire Boulevard	Mayfield Road	Permitted	40 km/h
Highway 410 NB Off-Ramp	Freeway Ramp	North	3	One-way	Highway 410	Mayfield Road	Prohibited	60 km/h
Highway 410 SB Off-Ramp	Freeway Ramp	South	3	One-way	Highway 410	Mayfield Road	Prohibited	80 km/h

Lane configurations for the study area roadways are illustrated in **Exhibit 2-2**.

Exhibit 2-2: Existing Study Area Lane Configurations



2.2 Existing Transit Network

Currently, there is no transit service available on Heart Lake Road or Dixie Road. With no plans in the future to extend the service to these streets, the closest bus service is from Brampton Transit – Route 81, as illustrated in **Exhibit 2-3.**

Exhibit 2-3: Existing Transit Service



Map Source: moovit, Retrieved March 26, 2022, from https://moovitapp.com/

The Town doesn't have an exclusive bus service. It relies on Brampton Transit to service the south area of the Town, and Route 81 go across the residential area with 12 minutes of headway during the peak hour. The distance between the site and the closest bus stop is 30 minutes by walking and 9 minutes by cycling, as listed in **Exhibit 2-4**.

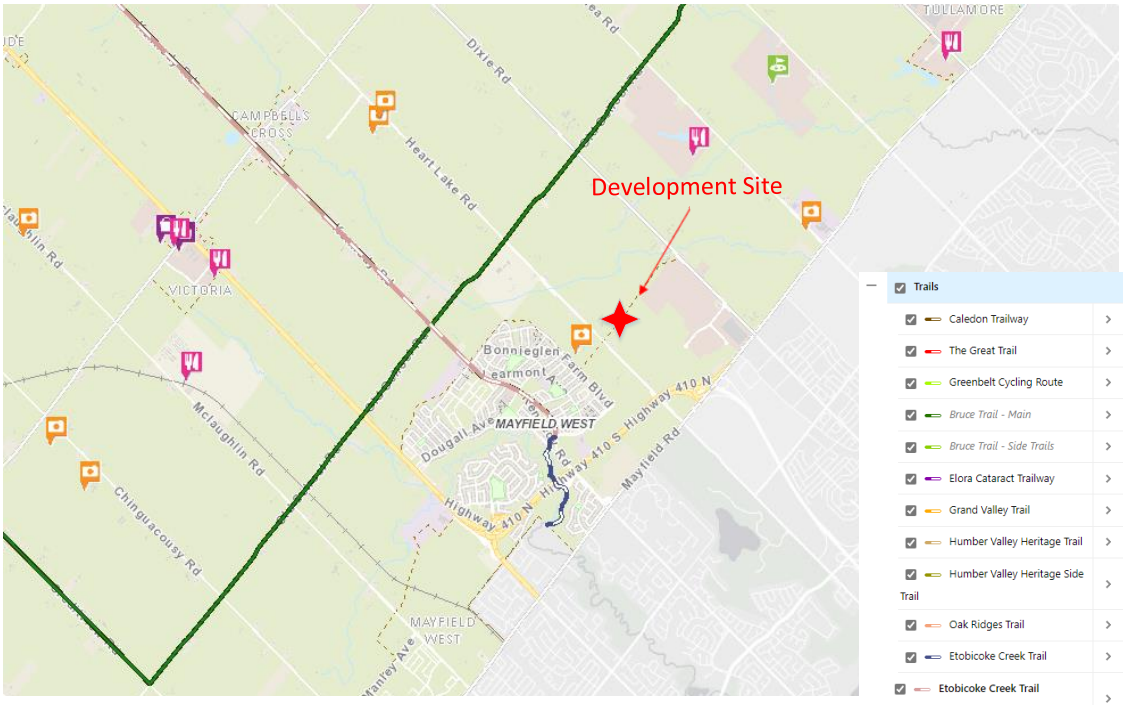
Exhibit 2-4: Existing Transit Service Patterns

Route	Onward Transit Connections	Walking Distance to Nearest Stop	Cycling distance to the nearest stop	Average Peak Hour Frequency
Brampton Transit 81 – Mayfield West	Sandalwood Loop	2.3 km (30 minutes)	2.3 km (9 minutes)	12 minutes

2.3 Existing Active Transportation Network

The development site is in proximity to a shared cycling network along Old School Road. Also, the development site has close access to the Etobicoke Creek Trail, as illustrated in **Exhibit 2-5.**

Exhibit 2-5: Existing Active Transportation Network



Map Source: Trails and Cycling Routes – Caledon Maps. Retrieved March 26, 2022, from https://maps.caledon.ca

2.4 Turning Movement Counts

Turning movement counts (TMCs) for the study area intersections were collected from different sources. The data source and collection dates are summarized below in **Exhibit 2-6.** Pre-COVID-19 traffic counts were used with the exception of Heart Lake Road and Old School Road, which were collected in December of 2020. The Town's staff approved the collected data dates on May 02, 2022. Full correspondence is attached in **Appendix A**. The full turning movement count data is presented in **Appendix B.**

Exhibit 2-6: Traffic Data Information

Intersection	Data Source	Date	Peak Hour	
			AM	PM
Heart Lake Road and Old School Road	LEA Consulting	December 15, 2020	07:15 AM – 08:30 AM	04:45 PM – 05:45 PM
Heart Lake Road and Mayfield Road	Spectrum	November 29, 2016	07:30 AM – 08:30 AM	04:00 PM – 05:00 PM
Mayfield Road and Highway 410 SB Off-Ramp	MTO	May 26, 2016	07:15 AM – 08:15 AM	05:15 PM – 06:15 PM
Mayfield Road and Highway 410 NB Off-Ramp	MTO	May 26, 2016	07:15 AM – 08:15 AM	04:45 AM – 05:45 PM
Mayfield Road and Ace Drive	Spectrum	September 25, 2019	07:15 AM – 08:15 AM	04:15 PM – 05:15 PM
Dixie Road and Mayfield Road	Spectrum	October 03, 2019	07:15 AM – 08:15 AM	04:15 PM – 05:15 PM
Dixie Road and Old School Road	Spectrum	October 03, 2019	07:15 AM – 08:15 AM	04:00 PM – 05:00 PM

The collected traffic counts were projected to be representative of the 2022 existing conditions by applying growth rates to through movements only, which is discussed in **Section 3.2**. In addition, since traffic counts were collected during different times, the collected traffic counts were adjusted to fix the unbalancing as the TMC data were collected on different dates. Balancing was done on Mayfield Road to fill any gaps. Collected traffic counts by total and by trucks are presented in **Exhibit 2-7** and **Exhibit 2-8,** respectively.

Exhibit 2-7: Collected Traffic Data - Total TMC

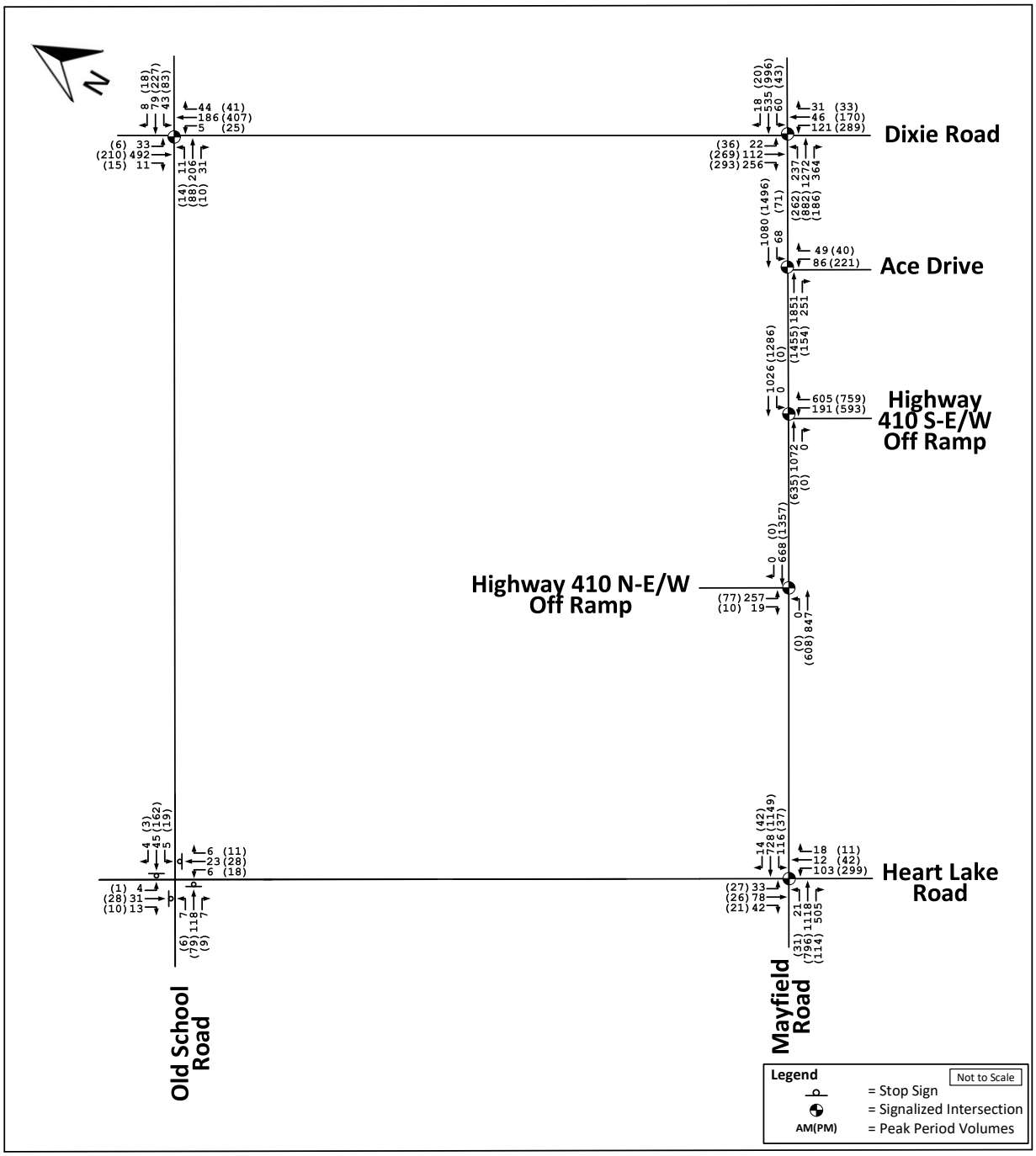


Exhibit 2-8: Collected Traffic Counts - Trucks Only

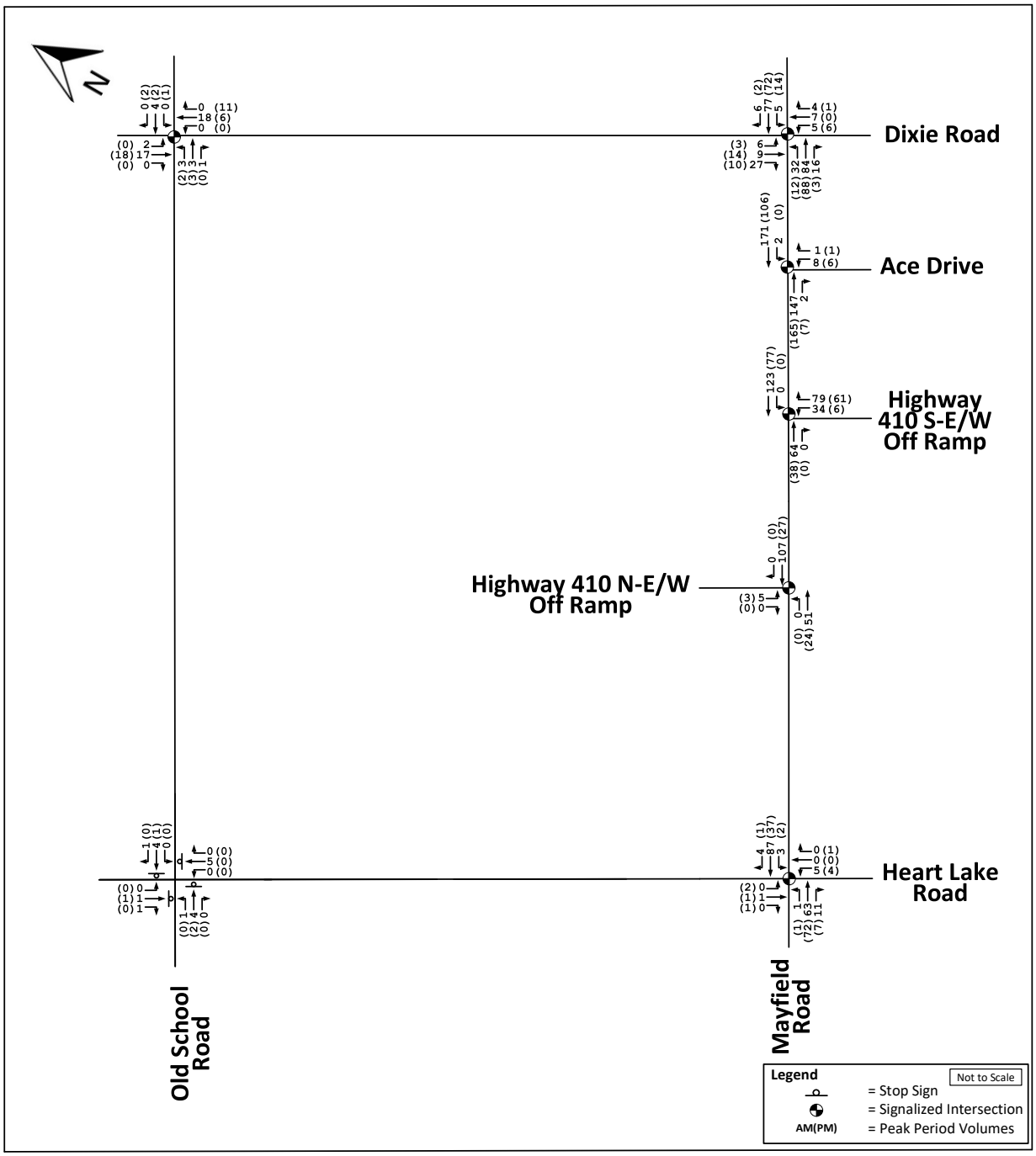
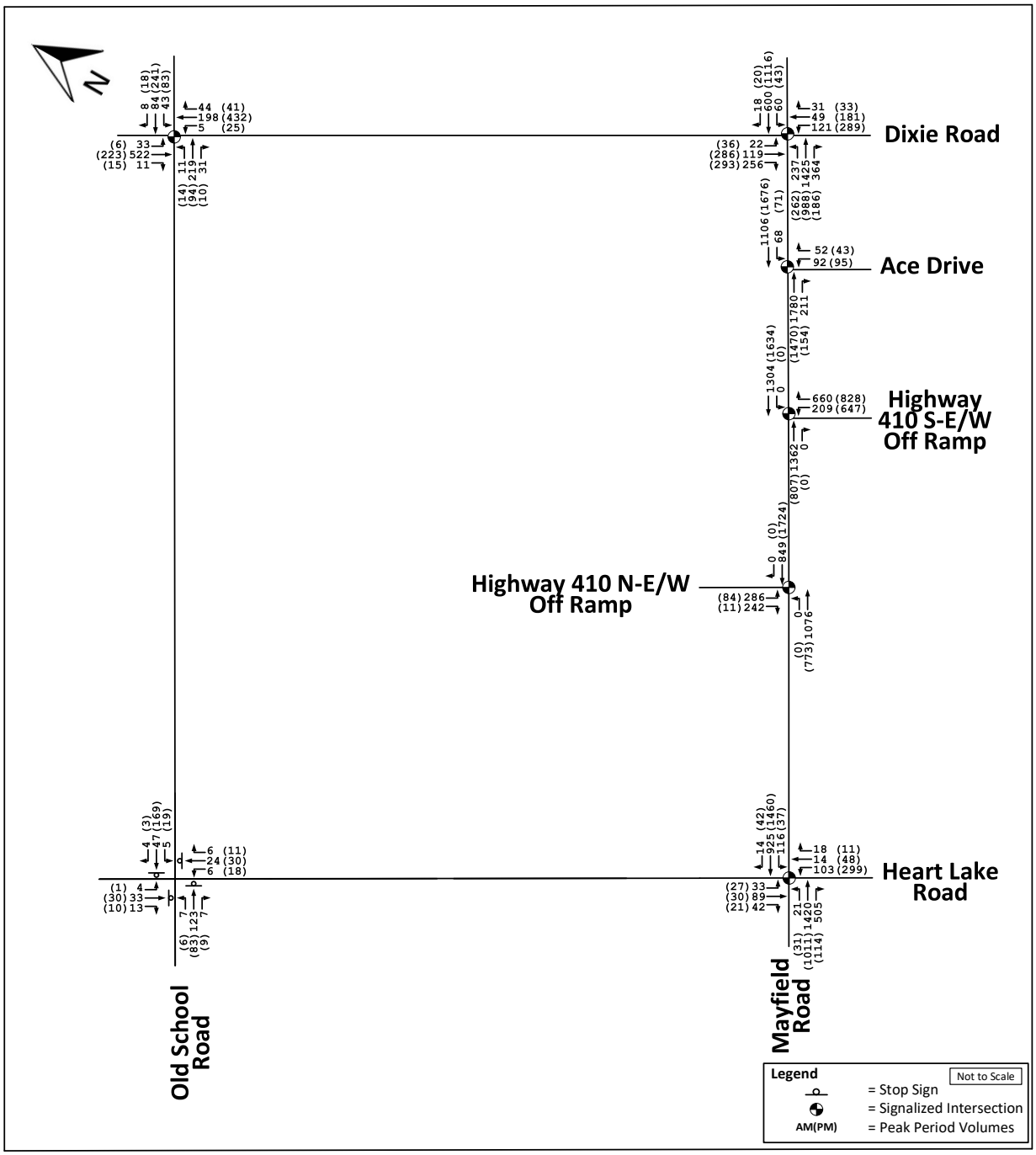


Exhibit 2-9: Balanced Projected 2022 - Total Traffic



2.5 Signal Timing Plans

The Region provided the signal timing plans for the signalized intersections in the study area, which are presented in **Appendix C.** The signalized intersections operate using a semi-actuated mode of control during weekday AM and PM peak hours.

2.6 2022 Existing Conditions

The criteria for identifying movements that exceed the critical threshold at signalized intersections under the Town's jurisdiction were assessed based on ***Town's Transportation Impact Studies – Terms of Reference and Guidelines, March 2017*** and as follows:

- Volume to capacity (v/c) ratio equal to or exceed 0.90 for through movements or shared though/turning movements;
- Volume to capacity (v/c) ratio equal to or exceed 1.00 for exclusive turning movements; and
- 95th Percentile queue lengths for an individual movement exceed available storage.

Furthermore, the following criteria were used to identify unsignalized intersections or individual movements under the Town's jurisdiction that exceed the critical threshold as follows:

- Level of Service (LOS), based on average delay per vehicle, on individual movements exceeds LOS 'E"; and
- 95th Percentile queue lengths for an individual movement exceed available storage.

The criteria for identifying movements that exceed the critical threshold at a signalized intersection under the Region's jurisdiction were assessed based on ***Traffic Impact Study Guidelines***, retrieved March 2022 from Region's website and are as follows:

- Volume to capacity (v/c) ratio equal to or exceed 0.90 for through movements or shared though/turning movements;
- Volume to capacity (v/c) ratio equal to or exceed 1.00 for exclusive turning movements; and
- 95th Percentile queue lengths for an individual movement exceed available storage.

The criteria for identifying movements that exceed the critical threshold at Ramps under the Ministry's jurisdiction were assessed based on **MTO's *General Guidelines for the preparation of Traffic Impact Studies, February 2021*** and are as follows:

- Volume to capacity (v/c) ratio exceeds 0.75 for terminal ramp approach turning movements for ramps.

2.6.1 Signalized Intersections

The results of the 2022 existing conditions traffic operations analysis for signalized intersections are presented in **Exhibit 2-10.** The Synchro analysis reports are presented in **Appendix D.**

Exhibit 2-10: 2022 Existing Conditions Traffic Operations - Signalized Intersections

Intersection	Intersection			Movement	LOS	Delay (s)	v/c Ratio	95th Percentile Queue (m)	Storage Length (m)
	LOS	Delay (s)	v/c Ratio						
AM Peak Hour									
Heart Lake Road and Mayfield Road	B	14.4	0.53	EBL	A	9.6	0.07	6	115
				EBT	B	13.5	0.52	82	-
				EBR	B	12.3	0.36	13	180
				WBL	B	10.8	0.50	14	80
				WBT	A	7.4	0.32	38	-
				WBR	A	5.6	0.01	-	150
				NBL	D	43.0	0.47	35	110
				NBT	D	37.9	0.04	8	-
				NBR	D	37.6	0.01	-	44
				SBL	D	48.0	0.23	17	20
				SBT	D	51.0	0.45	35	-
				SBR	D	45.4	0.03	-	20
Mayfield Road and Highway 410 SB	A	9.9	0.39	EBT	A	7.3	0.38	34	-
				WBT	A	6.7	0.28	26	-
				SBL	C	20.4	0.41	24	-
				SBR	C	20.0	0.28	22	-
Highway 410 NB Off-Ramp and Mayfield Road	B	15.3	0.62	EBT	B	11.6	0.51	64	-
				WBT	B	11.3	0.52	62	-
				NBL	C	23.1	0.60	45	-
				NBR	C	34.0	0.79	74	-
Ace Drive and Mayfield Road	A	8.1	0.50	EBT	A	6.8	0.49	69	-
				EBR	A	4.9	0.13	7	65
				WBL	B	19.0	0.50	29	35
				WBT	A	5.5	0.30	37	-
				NBL	D	43.6	0.52	41	-
Dixie Road and Mayfield Road	B	15.2	0.52	EBL	A	7.4	0.46	25	140
				EBT	B	11.9	0.50	76	-
				EBR	A	9.9	0.24	13	70
				WBL	A	7.6	0.24	8	65
				WBT	B	10.8	0.33	45	-
				WBR	A	8.7	0.02	-	30
				NBL	D	40.4	0.57	37	75
				NBT	C	32.9	0.17	17	-
				NBR	C	31.5	0.02	1	60
				SBL	C	32.6	0.12	10	30
				SBT	D	35.3	0.39	35	-
				SBR	C	33.0	0.18	19	138
Dixie Road and Old School Road	B	13.7	0.53	EBL	B	18.6	0.04	4	35
				EBT	C	23.6	0.55	42	-
				WBL	B	19.8	0.18	11	45
				WBT	B	19.7	0.20	17	-
				NBL	A	6.3	0.01	2	40
				NBT	A	7.8	0.24	27	-
				SBL	A	6.6	0.06	6	35
				SBT	B	10.6	0.52	70	-
PM Peak Hour									
Heart Lake Road and Mayfield Road	C	33.0	0.70	EBL	B	10.1	0.18	8	115
				EBT	A	9.6	0.37	48	-
				EBR	A	7.6	0.08	7	180
				WBL	A	5.1	0.11	5	80
				WBT	A	7.5	0.45	58	-
				WBR	A	4.9	0.03	2	150

Intersection	Intersection			Movement	LOS	Delay (s)	v/c Ratio	95th Percentile Queue (m)	Storage Length (m)
	LOS	Delay (s)	v/c Ratio						
				NBL	F	251.2	1.40	129	110
				NBT	D	38.8	0.16	19	-
				NBR	D	37.2	0.01	-	44
				SBL	D	51.5	0.31	14	20
				SBT	D	49.0	0.24	15	-
				SBR	D	46.3	0.02	-	20
Mayfield Road and Highway 410 SB	A	4.7	0.44	EBT	A	3.2	0.22	16	-
				WBT	A	4.2	0.46	41	-
				SBL	C	26.3	0.27	9	-
				SBR	C	24.9	0.03	4	-
Highway 410 NB Off-Ramp and Mayfield Road	C	20.2	0.73	EBT	B	11.7	0.32	34	-
				WBT	B	15.0	0.65	82	-
				NBL	C	28.1	0.82	84	-
				NBR	D	35.7	0.84	110	-
Ace Drive and Mayfield Road	B	18.1	0.45	EBT	B	16.9	0.51	86	-
				EBR	B	12.5	0.10	9	65
				WBL	C	31.4	0.54	30	35
				WBT	B	18.0	0.58	104	-
				NBL	C	30.8	0.22	36	-
Dixie Road and Mayfield Road	D	38.8	1.13	EBL	F	155.9	1.22	90	140
				EBT	C	22.1	0.45	71	-
				EBR	B	18.3	0.12	13	70
				WBL	B	16.0	0.20	10	65
				WBT	C	28.6	0.73	138	-
				WBR	B	17.9	0.01	-	30
				NBL	E	75.2	0.95	118	75
				NBT	C	27.8	0.27	47	-
				NBR	C	25.0	0.02	1	60
				SBL	C	25.8	0.10	13	30
				SBT	C	30.4	0.45	75	-
				SBR	C	29.3	0.37	50	138
Dixie Road and Old School Road	B	13.5	0.51	EBL	B	16.4	0.06	4	35
				EBT	B	17.3	0.21	17	-
				WBL	B	17.9	0.25	15	45
				WBT	C	20.5	0.53	39	-
				NBL	A	7.0	0.04	5	40
				NBT	B	10.9	0.50	61	-
				SBL	A	6.8	0.01	2	35
				SBT	A	8.4	0.26	29	-

Note: Red font represents a critical movement.

As shown in Exhibit 2-10**,** two movements at the study area signalized intersections operating above capacity levels during the weekday PM peak hour where as follows:

- The northbound left-turn of Mayfield Road and Heart Lake Road is operating above capacity levels during the weekday PM peak hour, with a (v/c of 1.40); and
- At the intersection of Mayfield Road and Dixie Road, the eastbound left-turn movement is operating above capacity (v/c ratio of 1.22) during the weekday PM peak hour.
- The v/c ratios for the turning movements on the ramp are above the threshold values. However, they are operating below capacity levels.

2.6.2 Signalized Intersections – Mitigation Measures

In order to improve the capacity performance at the movements that exceed the critical threshold, the following mitigation measures outlined in **Exhibit 2-11** were applied to improve the intersections operation.

Exhibit 2-11: 2022 Signalized Intersections - Mitigation Measures

Intersection	Movement	Peak Hour	Improvement
Mayfield Road and Heart Lake Road	NBL	PM	Manually adjusted the total splits
Mayfield Road and Dixie Road	EBL	PM	Manually adjusted the total splits

The analysis results with the proposed mitigation measures listed above are summarized in **Exhibit 2-12.** Full Synchro results are available in **Appendix E.**

Exhibit 2-12: 2022 Signalized Intersections with Improvements

Intersection	Intersection			Movement	LOS	Delay (s)	v/c Ratio	95th Percentile Queue (m)	Storage Length (m)
	LOS	Delay (s)	v/c Ratio						
PM Peak Hour									
Heart Lake Road and Mayfield Road	C	20.1	0.67	EBL	B	13.5	0.20	10.0	115
				EBT	B	12.7	0.40	57.2	-
				EBR	B	10.0	0.08	8.2	180
				WBL	A	7.2	0.13	6.3	80
				WBT	B	10.4	0.49	72.1	-
				WBR	A	6.9	0.03	2.3	150
				NBL	F	90.7	1.00	101.7	110
				NBT	C	33.3	0.12	17.1	-
				NBR	C	32.2	0.01	-	44
				SBL	D	51.1	0.31	13.9	20
				SBT	D	48.6	0.24	14.9	-
				SBR	D	45.9	0.02	-	20
Dixie Road and Mayfield Road	D	36.1	0.96	EBL	E	67.8	0.92	95.5	140
				EBT	C	22.3	0.45	72.0	-
				EBR	B	18.5	0.12	12.8	70
				WBL	C	20.3	0.20	10.0	65
				WBT	D	41.3	0.88	162.5	-
				WBR	C	22.8	0.01	-	30
				NBL	E	71.7	0.94	115.6	75
				NBT	C	27.4	0.27	46.8	-
				NBR	C	24.6	0.02	-	60
				SBL	C	25.5	0.10	12.9	30
				SBT	C	30.0	0.45	74.2	-
				SBR	C	27.7	0.28	33.3	138

Note: Red font represents a critical movement.

As seen in Exhibit 2-12**,** the mitigation measures considered improved the level of service.

2.6.3 Unsignalized Intersections

The results of the 2022 existing conditions traffic operations analysis for unsignalized intersections are presented in **Exhibit 2-13**.

Exhibit 2-13: 2022 Existing Conditions Traffic Operations - Unsignalized Intersections

Intersection	Intersection Delay (s)	Lane	Lane LOS	Lane Delay (s)	Lane v/c Ratio	Lane 95th Percentile Queue (m)	Lane Storage Capacity (m)
AM Peak Hour							
Heart Lake Road and Old School Road	8.0	EB LTR	A	8.2	-	-	-
		WB LTR	A	7.8	-	-	-
		NB LTR	A	7.9	-	-	-
		SB LTR	A	7.7	-	-	-
PM Peak Hour							
Heart Lake Road and Old School Road	8.3	EB LTR	A	8.0	-	-	-
		WB LTR	A	8.7	-	-	-
		NB LTR	A	8.0	-	-	-
		SB LTR	A	7.8	-	-	-

Exhibit 2-13 shows no capacity or queuing concerns at the unsignalized intersections within the study area during weekday AM and PM peak hours.

3 Future Background Traffic Conditions

This section discusses the proposed development horizon years, background traffic growth rates, anticipated future road network improvements, and other development-related traffic in the study area under the 2024 opening year, 2029 5 years after the opening year and 2034, 10 years after the opening year.

3.1 Future Transportation Network Improvements

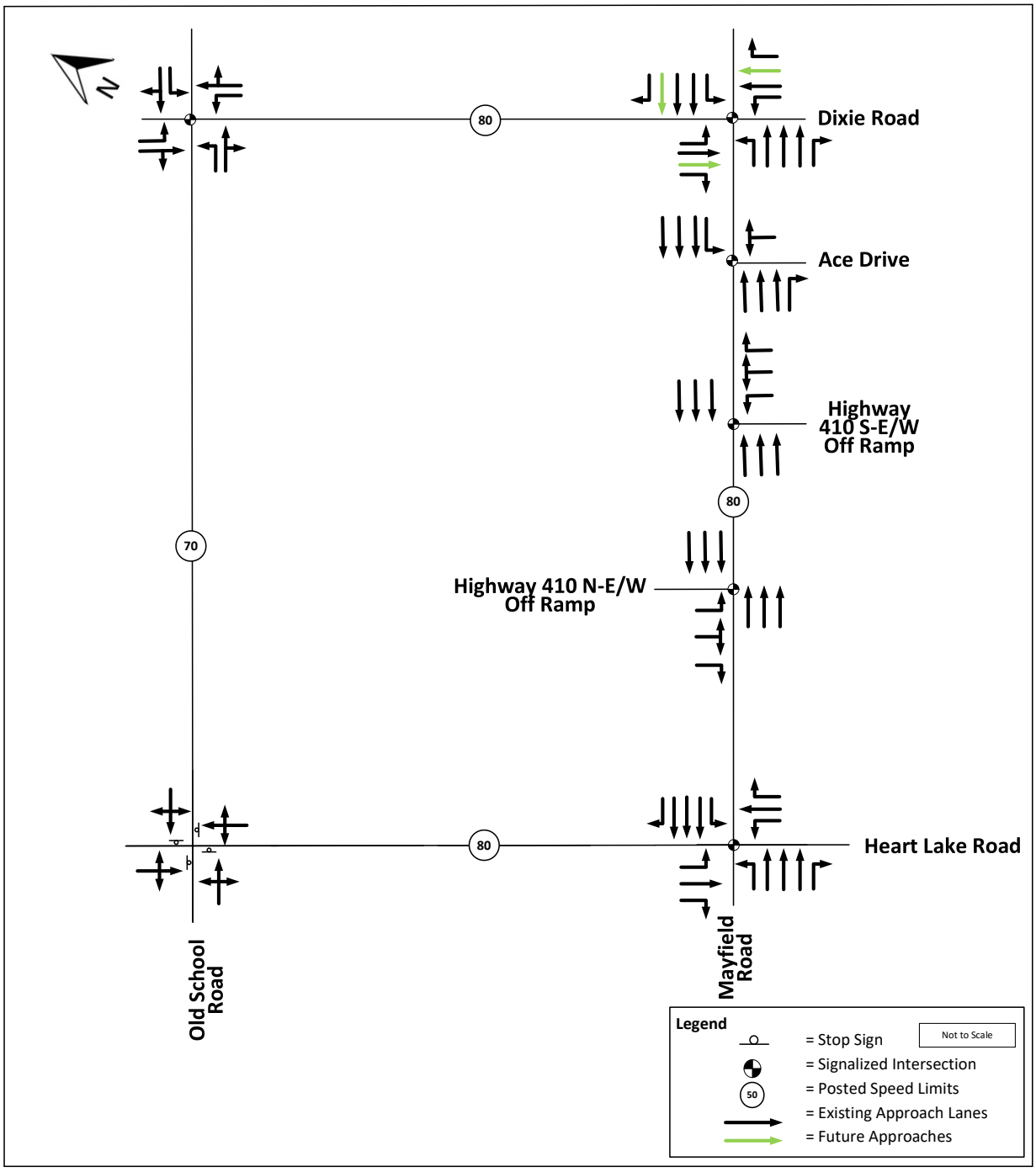
As per ***10 Year Capital Program by Region of Peel for The Town of Caledon 2021,*** the following road improvements are as follows:

1. Widening Dixie Road from Mayfield Road to 2 km northerly from 2 to 4 lanes by 2024;
2. Widening Mayfield Road from Dixie Road to Bramalea Road from5 to 6 lanes by 2024; and
3. Widening Mayfield Road from Heart Lake Road to Hurontario from 4 to 6 lanes by 2026.

Also, the **Ministry of Transportation Ontario** plans to extend Highway 410 (GTA west corridor). There is no schedule yet to determine the construction time of the project.

The network improvements are illustrated in **Exhibit 3-1.**

Exhibit 3-1: Future Network Improvements



3.2 Horizon Year and Growth Rate

As per the ***Town of Caledon TIS Guidelines (March 2017)*** and after discussions with the Town, three horizon years were selected for this study, 2024 opening year, 2029, 5 years after the opening year and 2034, 10-year after the opening year for the future background and future total analysis. Growth Rates were selected from TIS reports that were done by IBI Group and

LEA consulting, which got approved by the Town's staff. The growth rates are as illustrated in **Exhibit 3-2.**

Exhibit 3-2: Growth Rates

Intersection	Traffic Growth Rate	Source
Mayfield Road from 2016 to 2021	4%	TIS report for proposed Industrial development at 12304 Heart Lake Road, IBI Group
Mayfield Road from 2021 moving forward	2.5%	
Highway 410 SB Off-Ramp	1.5%	
Highway 410 NB Off-Ramp	1.5%	
Heart Lake Road	2.0%	
Dixie Road	2.0%	TIS report for proposed Industrial development at 12892 Dixie Road, LEA Consulting
Old School Road	2.0%	

Correspondence with the Town's staff is attached in **Appendix A.**

3.3 Background Developments

A review of the ***Town of Caledon Development Application Map*** identified 8 developments in the vicinity of the study area, which are likely to generate notable numbers of new automobile trips. These developments are shown in **Exhibit 3-3,** which got approved by the Town staff. The site generated traffic from the background developments is illustrated in **Exhibit 3-4** and **Exhibit 3-5.** The full background development data are provided in **Appendix F.**

Exhibit 3-3: Background Development Map



As shown in **Exhibit 3-4** and **Exhibit 3-5,** the background development is included in the 2024 Horizon year and 2029, respectively.

Exhibit 3-4: 2024 Background Development Trip Assignment

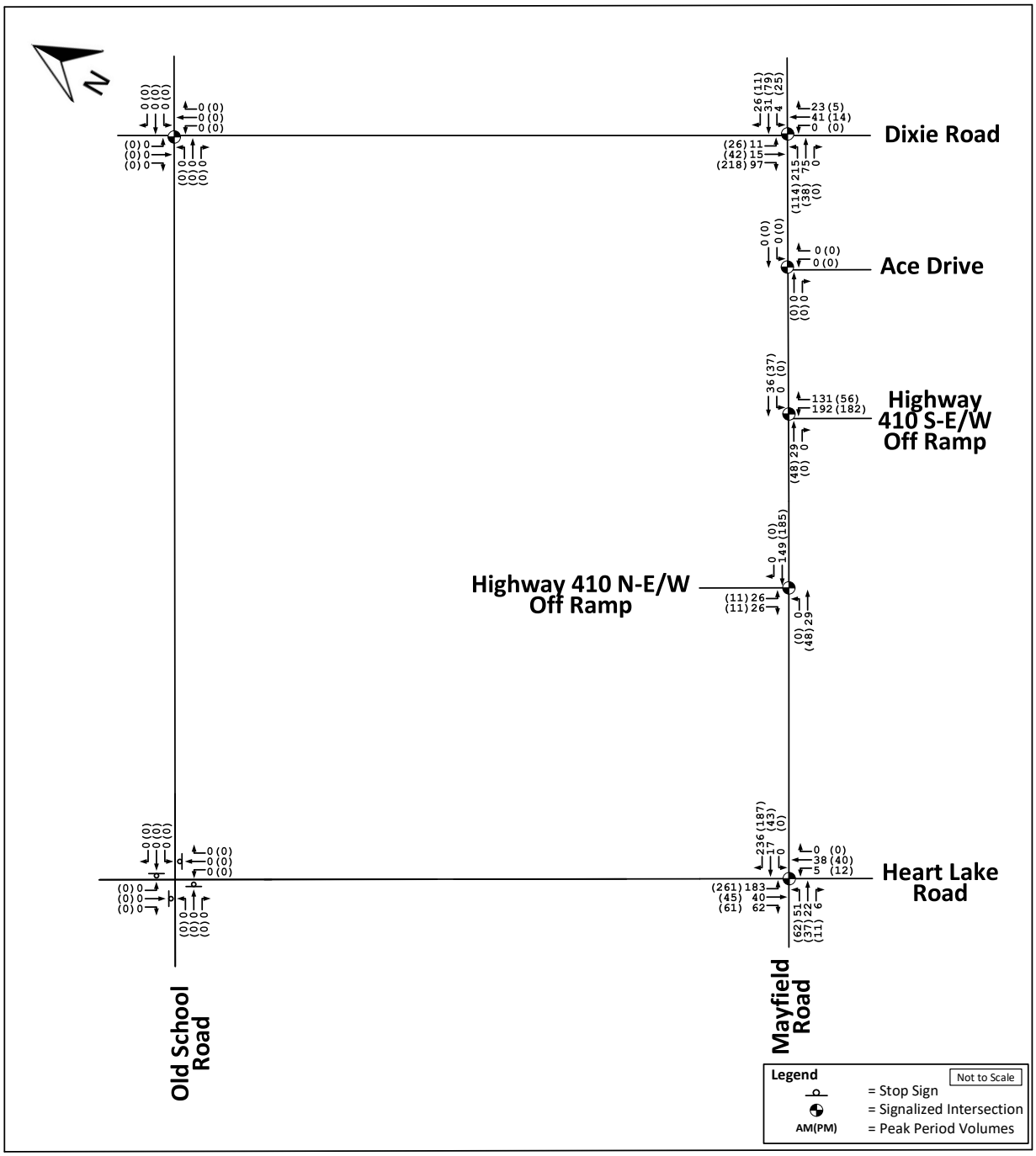
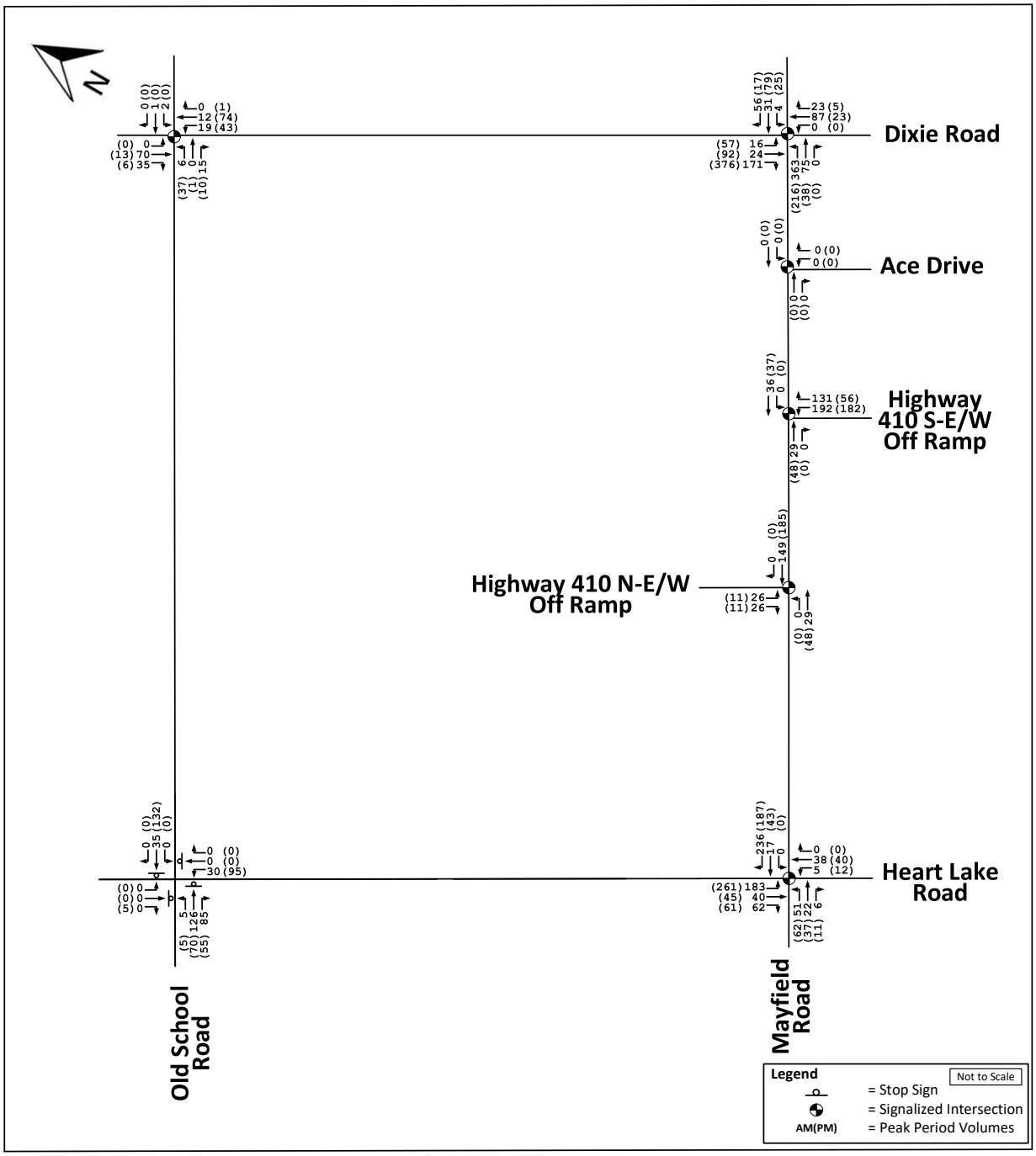


Exhibit 3-5: 2029 Background Development Trip Assignment



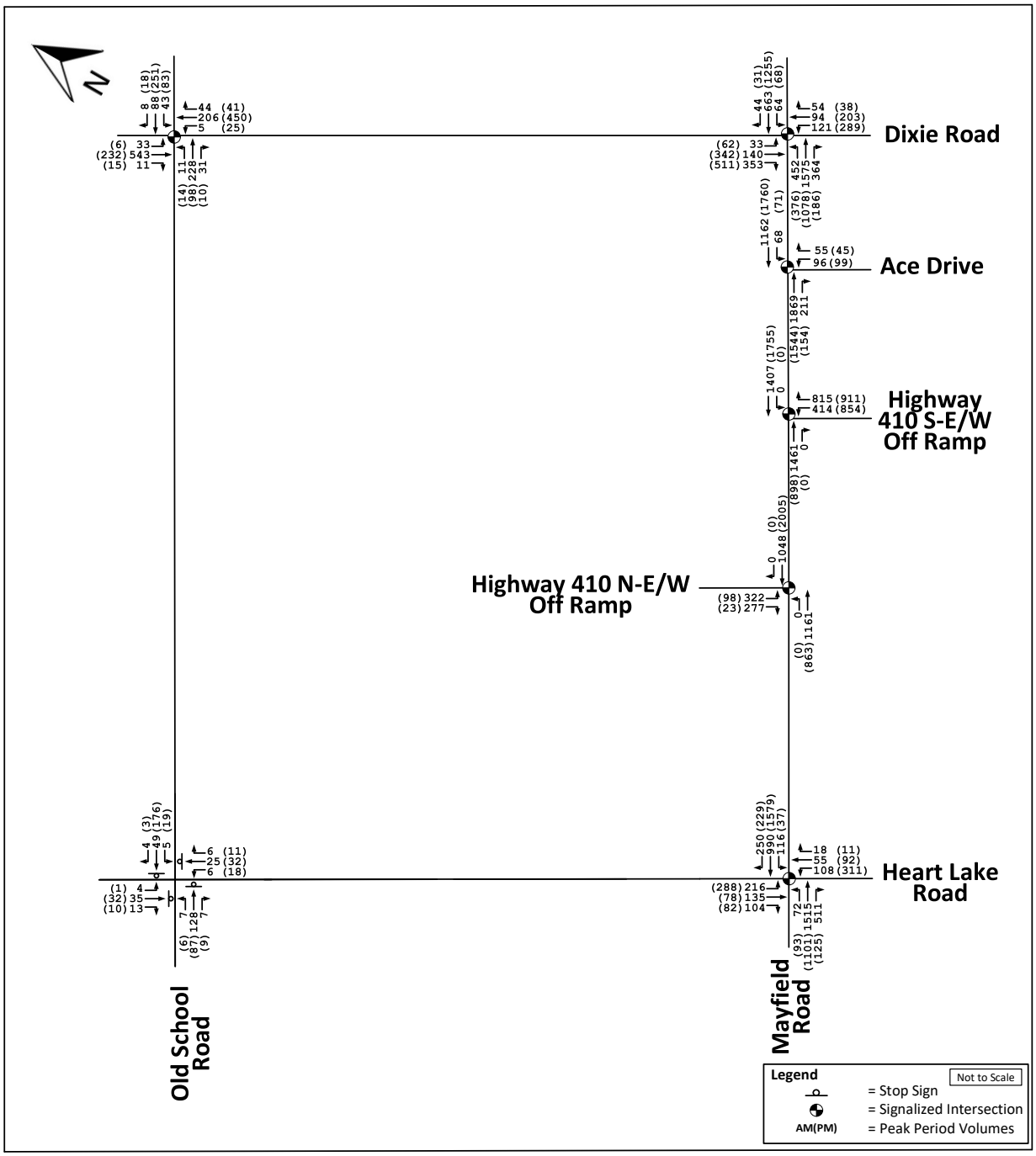
4 2024 Future Background Traffic Conditions

The following section covers the traffic analysis under 2024 future background traffic conditions. The 2024 future background traffic columns consist of the following components:

- Traffic generated from planned development in the study area; and
- 2024 projected traffic growth rate applied to the through movements only.

The 2024 future background traffic volumes are illustrated in **Exhibit 4-1.**

Exhibit 4-1: 2024 Future Background Traffic Volumes



The traffic analysis results in Synchro software based on the Highway Capacity Manual methodology were used to assess traffic operation conditions. The detailed Synchro HCM reports under the 2024 future background traffic conditions are presented in **Appendix G.**

4.1 Signalized Intersections

The traffic analysis results for the signalized intersections under the 2024 future background traffic conditions are presented in **Exhibit 4-2**.

Exhibit 4-2: 2024 Future Background Traffic Conditions - Signalized Intersections Traffic Operations

Intersection	Intersection			Movement	LOS	Delay (s)	v/c Ratio	95th Percentile Queue (m)	Storage Length (m)
	LOS	Delay (s)	v/c Ratio						
AM Peak Hour									
Heart Lake Road and Mayfield Road	C	23.6	0.71	EBL	C	20.2	0.30	24	115
				EBT	C	22.8	0.64	130	-
				EBR	B	19.0	0.36	18	180
				WBL	C	27.3	0.67	29	80
				WBT	B	13.9	0.39	65	-
				WBR	B	12.7	0.22	12	150
				NBL	D	36.7	0.35	35	110
				NBT	C	34.2	0.11	21	-
				NBR	C	33.1	0.01	-	44
				SBL	E	64.5	0.79	82	20
				SBT	D	44.2	0.35	48	-
				SBR	D	40.6	0.08	15	20
Mayfield Road and Highway 410 SB	B	10.7	0.43	EBT	A	8.3	0.42	43	-
				WBT	A	7.8	0.36	37	-
				SBL	C	20.2	0.44	28	-
				SBR	C	20.9	0.41	31	-
Highway 410 NB Off-Ramp and Mayfield Road	B	20.0	0.71	EBT	B	14.6	0.59	70	-
				WBT	B	14.3	0.60	68	-
				NBL	C	28.5	0.82	76	-
				NBR	D	41.9	0.88	113	-
Ace Drive and Mayfield Road	A	8.6	0.56	EBT	A	7.3	0.51	76	-
				EBR	A	5.0	0.14	8	65
				WBL	C	25.6	0.57	32	35
				WBT	A	5.8	0.32	40	-
				NBL	D	43.7	0.54	43	-
Dixie Road and Mayfield Road	C	20.1	0.88	EBL	D	38.6	0.94	116	140
				EBT	B	13.6	0.56	102	-
				EBR	B	10.6	0.24	14	70
				WBL	A	9.3	0.30	10	65
				WBT	B	11.0	0.26	37	-
				WBR	A	9.5	0.04	3	30
				NBL	D	38.6	0.53	37	75
				NBT	C	32.0	0.16	14	-
				NBR	C	31.2	0.04	6	60
				SBL	C	32.7	0.17	13	30
				SBT	C	32.5	0.22	19	-
				SBR	D	38.5	0.55	47	138
Dixie Road and Old School Road	B	14.0	0.55	EBL	B	18.4	0.04	4	35
				EBT	C	23.5	0.56	43	-
				WBL	B	19.6	0.18	11	45
				WBT	B	19.5	0.21	18	-
				NBL	A	6.5	0.01	2	40
				NBT	A	8.0	0.25	28	-
				SBL	A	6.7	0.06	6	35
				SBT	B	11.2	0.54	75	-
PM Peak Hour									
Heart Lake Road and Mayfield Road	C	33.0	0.70	EBL	F	200.0	1.19	66	115
				EBT	C	28.9	0.57	96	-
				EBR	C	21.8	0.09	12	180
				WBL	B	18.7	0.19	10	80
				WBT	C	26.7	0.68	132	-
				WBR	B	18.4	0.16	13	150

Intersection	Intersection			Movement	LOS	Delay (s)	v/c Ratio	95th Percentile Queue (m)	Storage Length (m)
	LOS	Delay (s)	v/c Ratio						
				NBL	D	35.1	0.64	84	110
				NBT	C	26.4	0.14	27	-
				NBR	C	24.9	0.01	-	44
				SBL	F	88.0	0.95	129	20
				SBT	D	37.6	0.17	29	-
				SBR	D	36.2	0.06	10	20
Mayfield Road and Highway 410 SB	A	4.7	0.44	EBT	A	3.9	0.25	18	-
				WBT	A	5.7	0.56	53	-
				SBL	C	24.5	0.24	10	-
				SBR	C	24.0	0.11	7	-
Highway 410 NB Off-Ramp and Mayfield Road	C	20.2	0.73	EBT	B	13.3	0.37	39	-
				WBT	B	17.7	0.73	90	-
				NBL	D	40.0	0.95	128	-
				NBR	E	64.2	0.99	151	-
Ace Drive and Mayfield Road	B	18.1	0.45	EBT	B	17.3	0.54	92	-
				EBR	B	12.5	0.10	9	65
				WBL	D	38.1	0.60	36	35
				WBT	B	18.6	0.61	111	-
				NBL	C	31.0	0.23	38	-
Dixie Road and Mayfield Road	D	38.8	1.13	EBL	F	138.0	1.18	147	140
				EBT	C	21.5	0.48	80	-
				EBR	B	17.3	0.12	13	70
				WBL	C	20.6	0.33	14	65
				WBT	C	30.2	0.67	108	-
				WBR	C	21.8	0.02	-	30
				NBL	E	62.6	0.89	108	75
				NBT	C	26.6	0.17	25	-
				NBR	C	25.3	0.02	-	60
				SBL	C	27.0	0.17	20	30
				SBT	C	28.1	0.29	41	-
				SBR	D	38.7	0.72	105	138
Dixie Road and Old School Road	B	13.5	0.51	EBL	B	16.1	0.06	4	35
				EBT	B	17.0	0.21	17	-
				WBL	B	17.6	0.25	15	45
				WBT	C	20.3	0.54	41	-
				NBL	A	7.2	0.04	5	40
				NBT	B	11.5	0.52	65	-
				SBL	A	7.0	0.01	2	35
				SBT	A	8.8	0.27	30	-

Note: Red font represents a critical movement.

As shown in **Exhibit 4-2,** two intersections at the study area signalized intersections operating above capacity levels and one above the critical threshold during the weekday AM and PM peak hours were noted:

- Mayfield Road and Heart Lake Road intersect in the PM peak hour (v/c of 1.19) on the eastbound left-turn movement.
- Highway 410 Northbound Off-Ramp and Mayfield Road intersect during AM and PM peak hours.
    - Northbound right-turn has (v/c of 0.88) in the AM peak and (v/c of 0.99) in the PM peak.

- Northbound left-turn has (v/c of 0.82) in the AM peak and (v/c of 0.95) in the PM peak.

- At the intersection of Mayfield Road and Dixie Road, the eastbound left-turn movement is operating above capacity (v/c ratio of 1.18) during the weekday PM peak hour.
- The v/c ratios for the turning movements on the ramp are above the threshold values. However, they are operating below capacity levels.

4.2 Signalized Intersections – Mitigation Measures

In order to improve the capacity performance at the movements that exceed the capacity levels, the following mitigation measures outlined in **Exhibit 4-3** were applied to improve the intersections operation.

Exhibit 4-3: Future Background Traffic Conditions - Signalized Intersections - Mitigation Measures

INTERSECTION	MOVEMENT	PEAK Hour	IMPROVEMENT
Mayfield Road and Heart Lake Road	EBL	PM	Manually Adjusted the Total Splits
Highway 410 NB Off-Ramp and Mayfield Road	NBR	PM	Manually Adjusted the Total Splits
Highway 410 NB Off-Ramp and Mayfield Road	NBL	PM	Manually Adjusted the Total Splits
Mayfield Road and Dixie Road	EBL	PM	Manually Adjusted the Total Splits

The analysis results with the proposed mitigation measures listed above are summarized in **Exhibit 4-4**. Full Synchro results are available in **Appendix H.**

Exhibit 4-4: 2024 Future Background Traffic Conditions - Signalized Intersections Traffic with Improvements

Intersection	Intersection			Movement	LOS	Delay (s)	v/c Ratio	95th Percentile Queue (m)	Storage Length (m)
	LOS	Delay (s)	v/c Ratio						
PM Peak Hour									
Heart Lake Road and Mayfield Road	C	30.5	0.91	EBL	F	92.1	0.89	59	115
				EBT	C	21.8	0.49	82	-
				EBR	B	16.7	0.09	10	180
				WBL	B	13.5	0.16	9	80
				WBT	B	19.4	0.60	111	-
				WBR	B	13.7	0.16	11	150
				NBL	E	57.5	0.83	98	110
				NBT	C	32.8	0.17	31	-
				NBR	C	30.9	0.01	-	44
				SBL	F	92.4	0.97	130	20
				SBT	D	37.8	0.17	29	-
				SBR	D	36.4	0.06	10	20
Dixie Road and Mayfield Road	D	35.5	0.99	EBL	E	76.2	0.99	136	140
				EBT	C	21.2	0.48	77	-
				EBR	B	17.1	0.12	12	70
				WBL	C	24.5	0.36	14	65
				WBT	D	36.1	0.76	114	-

Intersection	Intersection			Movement	LOS	Delay (s)	v/c Ratio	95th Percentile Queue (m)	Storage Length (m)
	LOS	Delay (s)	v/c Ratio						
				WBR	C	25.3	0.02	-	30
				NBL	E	67.2	0.91	112	75
				NBT	C	27.4	0.17	26	-
				NBR	C	26.0	0.02	-	60
				SBL	C	27.8	0.17	21	30
				SBT	C	28.9	0.30	42	-
				SBR	C	34.6	0.59	79	138
Highway 410 NB Off-Ramp and Mayfield Road	C	24.9	0.88	EBT	B	18.3	0.47	50	-
				WBT	C	30.2	0.92	129	-
				NBL	C	20.1	0.78	93	-
				NBR	C	29.2	0.85	134	-

As seen in **Exhibit 4-4,** the mitigation measures considered improved the capacity performance to below capacity levels.

4.3 Unsignalized Intersections

The results of the traffic analysis under the 2024 Future Background conditions traffic operations for the unsignalized intersections are presented in **Exhibit 4-5.**

Exhibit 4-5: 2024 Future Background Traffic Conditions - Unsignalized Intersections Traffic Operations

Intersection	Intersection Delay (s)	Lane	Lane LOS	Lane Delay (s)	Lane v/c Ratio	Lane 95th Percentile Queue (m)	Lane Storage Capacity (m)
AM Peak Hour							
Heart Lake Road and Old School Road	8.1	EB LTR	A	8.3	-	-	-
		WB LTR	A	7.9	-	-	-
		NB LTR	A	8.0	-	-	-
		SB LTR	A	7.8	-	-	-
PM Peak Hour							
Heart Lake Road and Old School Road	8.4	EB LTR	A	8.0	-	-	-
		WB LTR	A	8.8	-	-	-
		NB LTR	A	8.0	-	-	-
		SB LTR	A	7.9	-	-	-

As shown in Exhibit 4-5, no capacity concerns are observed at the unsignalized intersection.

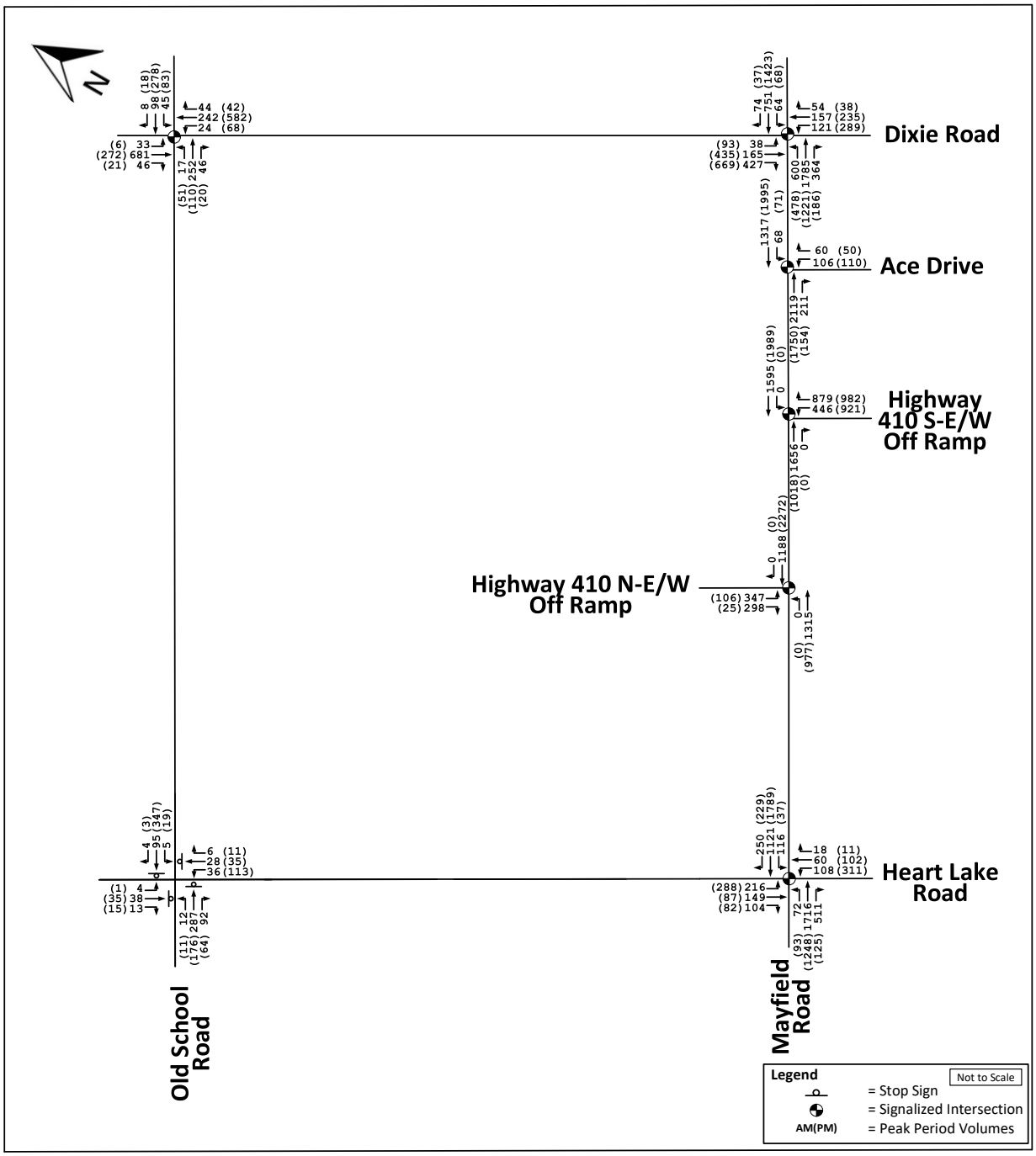
5 2029 Future Background Traffic Conditions

The following section covers the traffic analysis under the 2029 future background traffic conditions. The 2029 future background traffic columns consist of the following components:

- Traffic generated from planned development in the study area; and
- 2029 projected traffic growth rate applied to the through movements only.

The 2029 future background traffic volumes are illustrated in **Exhibit 5-1.**

Exhibit 5-1: 2029 Future Background Traffic Volumes



The traffic analysis results in Synchro software based on the Highway Capacity Manual methodology were used to assess traffic operation conditions. The detailed Synchro HCM reports under the 2029 future background traffic conditions are presented in **Appendix I.**

5.1 Signalized Intersections

The traffic analysis results for the signalized intersections under the 2029 future background traffic conditions are presented in **Exhibit 5-2.**

Exhibit 5-2: 2029 Future Background Traffic Conditions - Signalized Intersections Traffic Operations

Intersection	Intersection			Movement	LOS	Delay (s)	v/c Ratio	95th Percentile Queue (m)	Storage Length (m)
	LOS	Delay (s)	v/c Ratio						
AM Peak Hour									
Heart Lake Road and Mayfield Road	C	25.1	0.80	EBL	C	22.0	0.35	26	115
				EBT	C	25.1	0.72	157	-
				EBR	B	19.5	0.39	30	180
				WBL	D	48.0	0.81	37	80
				WBT	B	14.7	0.44	76	-
				WBR	B	12.7	0.22	12	150
				NBL	D	37.0	0.36	35	110
				NBT	C	34.3	0.12	22	-
				NBR	C	33.1	0.01	-	44
				SBL	E	64.8	0.79	83	20
				SBT	D	44.7	0.39	53	-
				SBR	D	40.8	0.10	17	20
Mayfield Road and Highway 410 SB	B	11.5	0.48	EBT	A	9.6	0.49	55	-
				WBT	A	8.9	0.42	47	-
				SBL	C	20.1	0.46	31	-
				SBR	C	21.0	0.46	35	-
Highway 410 NB Off-Ramp and Mayfield Road	C	21.5	0.80	EBT	C	20.2	0.76	100	-
				WBT	B	20.0	0.78	98	-
				NBL	C	22.0	0.76	72	-
				NBR	C	30.8	0.83	101	-
Ace Drive and Mayfield Road	B	10.4	0.78	EBT	A	8.6	0.59	97	-
				EBR	A	5.4	0.14	10	65
				WBL	E	73.6	0.84	24	35
				WBT	A	6.5	0.37	49	-
				NBL	D	43.9	0.57	48	-
Dixie Road and Mayfield Road	D	51.1	1.30	EBL	F	245.9	1.48	276	140
				EBT	B	19.2	0.69	152	-
				EBR	B	13.8	0.26	23	70
				WBL	B	15.2	0.40	13	65
				WBT	B	14.4	0.32	53	-
				WBR	B	12.4	0.06	9	30
				NBL	C	34.0	0.41	36	75
				NBT	C	30.5	0.20	21	-
				NBR	C	29.1	0.04	6	60
				SBL	C	30.6	0.16	14	30
				SBT	C	30.4	0.20	22	-
				SBR	D	44.2	0.73	77	138
Dixie Road and Old School Road	B	16.4	0.69	EBL	B	17.8	0.06	5	35
				EBT	C	23.5	0.60	49	-
				WBL	B	19.0	0.19	11	45
				WBT	B	18.8	0.21	19	-
				NBL	A	8.2	0.10	6	40
				NBT	A	9.1	0.30	36	-
				SBL	A	7.4	0.06	7	35
				SBT	B	16.5	0.74	140	-
PM Peak Hour									
Heart Lake Road and Mayfield Road	C	33.7	1.12	EBL	F	221.0	1.26	48	115
				EBT	C	23.2	0.56	97	-
				EBR	B	16.8	0.09	10	180
				WBL	B	14.4	0.19	9	80
				WBT	C	21.3	0.68	134	-
				WBR	B	13.8	0.16	11	150

Intersection	Intersection			Movement	LOS	Delay (s)	v/c Ratio	95th Percentile Queue (m)	Storage Length (m)
	LOS	Delay (s)	v/c Ratio						
				NBL	E	57.9	0.83	99	110
				NBT	C	32.9	0.18	33	-
				NBR	C	30.8	0.01	-	44
				SBL	F	93.5	0.97	131	20
				SBT	D	38.0	0.19	32	-
				SBR	D	36.3	0.06	10	20
Mayfield Road and Highway 410 SB	A	6.6	0.58	EBT	A	4.2	0.29	21	-
				WBT	A	6.6	0.64	66	-
				SBL	C	24.3	0.25	10	-
				SBR	C	23.8	0.11	7	-
Highway 410 NB Off-Ramp and Mayfield Road	D	42.4	0.98	EBT	C	20.5	0.55	57	-
				WBT	E	70.0	1.08	157	-
				NBL	C	21.1	0.82	106	-
				NBR	C	34.7	0.90	154	-
Ace Drive and Mayfield Road	C	20.7	0.63	EBT	B	18.5	0.61	110	-
				EBR	B	12.5	0.10	9	65
				WBL	F	81.3	0.84	44	35
				WBT	C	20.3	0.69	134	-
				NBL	C	31.5	0.27	43	-
Dixie Road and Mayfield Road	D	54.7	1.26	EBL	F	212.8	1.35	196	140
				EBT	C	24.3	0.55	90	-
				EBR	B	18.7	0.12	12	70
				WBL	C	26.5	0.40	14	65
				WBT	D	42.3	0.86	134	-
				WBR	C	26.7	0.03	-	30
				NBL	F	96.3	1.01	125	75
				NBT	C	27.5	0.18	30	-
				NBR	C	25.9	0.02	-	60
				SBL	C	28.9	0.25	29	30
				SBT	C	29.7	0.36	53	-
				SBR	D	51.0	0.86	164	138
Dixie Road and Old School Road	B	15.1	0.64	EBL	B	17.0	0.22	11	35
				EBT	B	16.6	0.23	19	-
				WBL	B	16.9	0.24	15	45
				WBT	C	20.0	0.56	44	-
				NBL	A	8.3	0.13	11	40
				NBT	B	15.2	0.68	111	-
				SBL	A	7.6	0.02	2	35
				SBT	A	9.8	0.33	39	-

As shown in **Exhibit 5-2,** two at the study area signalized intersections operating above capacity levels and one above a critical threshold during the weekday AM and PM peak hours were noted:

- Mayfield Road and Heart Lake Road intersect in the PM peak hour (v/c of 1.26) on the eastbound left-turn movement.
- Highway 410 Northbound Off-Ramp and Mayfield Road intersect during AM and PM peak hours.
    - Northbound right-turn has (v/c of 0.83) in the AM peak and (v/c of 0.90) in the peak hour.
    - Northbound left-turn has (v/c of 0.76) in the AM peak and (v/c of 0.82) in the PM peak hour.

- Westbound through has (v/c of 1.08) in the PM peak hour.

- At the intersection of Mayfield Road and Dixie Road
  - The eastbound left-turn movement is operating above capacity (v/c ratio of 1.48) during the weekday AM peak hour and (v/c of 1.35) during the PM peak hour. Also, the
  - The northbound left turn operates above capacity levels and has a (v/c of 1.01) in the PM peak hour.
- The v/c ratios for the turning movements on the ramp are above the threshold values. However, they are operating below capacity.

5.2 Signalized Intersections – Mitigation Measures

In order to improve the capacity performance at the movements that exceed the capacity levels, the following mitigation measures outlined in **Exhibit 5-3** were applied to improve the intersections operation.

Exhibit 5-3: 2029 Future Background Traffic Conditions - Signalized Intersections Traffic Operations - Mitigation Measures

INTERSECTION	MOVEMENT	PEAK Hour	IMPROVEMENT
Mayfield Road and Heart Lake Road	EBL	PM	The left turn phase is warranted and has been implemented
Highway 410 NB Off-Ramp	NBR	PM	Increase the Cycle length from 80 s to 100 s and adjust the total splits
	NBL	PM	
	WBT	PM	
Mayfield Road and Dixie Road	EBL	AM	Manually adjusted the total splits
	EBL	PM	Increasing the Cycle length from 120 s to 130 s and adjusting the total splits.
	NBL	PM	

The traffic analysis results with the proposed mitigation measures listed above are summarized in **Exhibit 5-4.** Full Synchro results are available in **Appendix J.**

Exhibit 5-4: 2029 Future Background Traffic Conditions - Signalized Intersections Traffic Operations with Improvements

Intersection	Intersection			Movement	LOS	Delay (s)	v/c Ratio	95th Percentile Queue (m)	Storage Length (m)
	LOS	Delay (s)	v/c Ratio						
AM Peak Hour									
Dixie Road and Mayfield Road	C	23.9	0.94	EBL	D	48.0	0.99	160	140
				EBT	B	13.5	0.62	114	-
				EBR	A	10.0	0.25	15	70
				WBL	B	18.0	0.38	9	65
				WBT	C	21.6	0.42	55	-
				WBR	B	18.4	0.06	4	30
				NBL	D	41.6	0.57	38	75
				NBT	C	34.3	0.27	22	-
				NBR	C	32.4	0.04	1	60
				SBL	C	34.7	0.22	15	30
				SBT	C	34.2	0.27	23	-
				SBR	D	36.7	0.40	34	138

Intersection	Intersection			Movement	LOS	Delay (s)	v/c Ratio	95th Percentile Queue (m)	Storage Length (m)
	LOS	Delay (s)	v/c Ratio						
PM Peak Hour									
Highway 410 NB Off-Ramp and Mayfield Road	D	37.5	0.95	EBT	C	22.9	0.52	70	-
				WBT	D	54.2	1.02	189	-
				NBL	C	24.0	0.81	124	-
				NBR	D	36.3	0.89	176	-
Dixie Road and Mayfield Road	D	52.4	1.11	EBL	F	130.5	1.14	192	140
				EBT	C	26.6	0.56	98	-
				EBR	C	20.4	0.12	13	70
				WBL	C	32.3	0.42	15	65
				WBT	E	63.8	0.98	167	-
				WBR	C	32.6	0.03	-	30
				NBL	F	90.2	0.99	130	75
				NBT	C	28.8	0.18	31	-
				NBR	C	27.1	0.02	-	60
				SBL	C	30.1	0.25	30	30
				SBT	C	31.0	0.35	56	-
				SBR	D	42.0	0.73	122	138

As seen in Exhibit 5-4**,** the mitigation measures that were considered improved the capacity performance to below capacity levels on all intersections except the intersections of Highway 410 NB Off-Ramp and Mayfield Road with Mayfield Road and Dixie Road.

5.1 Unsignalized Intersections

The traffic analysis results of the 2029 future background conditions traffic operations for unsignalized intersections are presented in **Exhibit 5-5.**

Exhibit 5-5: 2029 Future Background Traffic Conditions - Unsignalized Intersections

Intersection	Intersection Delay (s)	Lane	Lane LOS	Lane Delay (s)	Lane v/c Ratio	Lane 95th Percentile Queue (m)	Lane Storage Capacity (m)
AM Peak Hour							
Heart Lake Road and Old School Road	11.4	EB LTR	B	12.8	-	-	-
		WB LTR	A	9.0	-	-	-
		NB LTR	A	9.4	-	-	-
		SB LTR	A	8.9	-	-	-
PM Peak Hour							
Heart Lake Road and Old School Road	12.0	EB LTR	B	10.9	-	-	-
		WB LTR	B	13.6	-	-	-
		NB LTR	B	10.9	-	-	-
		SB LTR	A	9.3	-	-	-

As shown in Exhibit 5-5, no capacity concerns are observed at the unsignalized intersection.

6 2034 Future Background Traffic

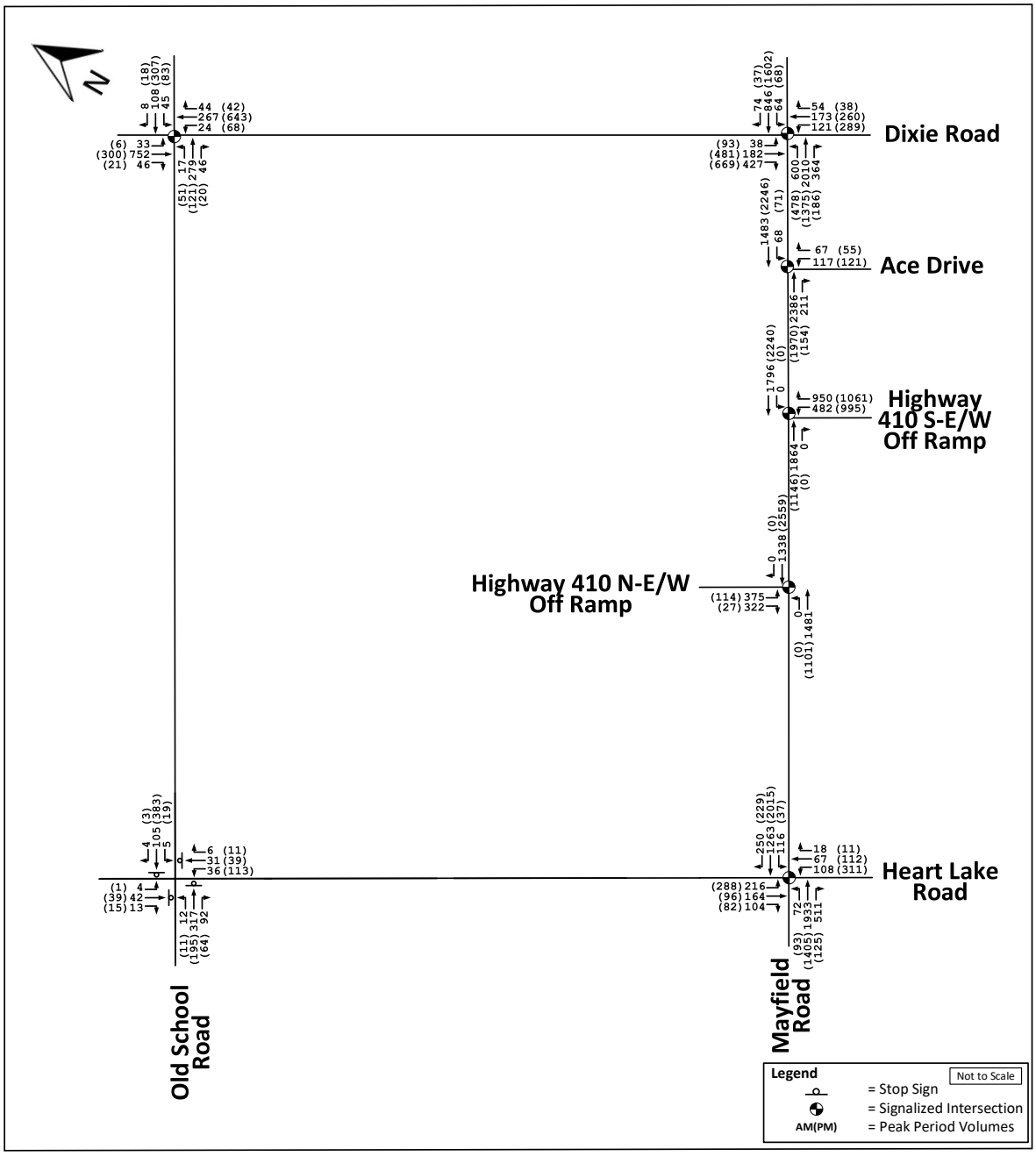
The following section covers the traffic analysis under 2034 future background traffic conditions. The 2034 future background traffic columns consist of the following components:

- Traffic generated from planned development in the study area; and

- 2034 projected traffic growth rate applied to the through movements.

The 2034 future background traffic volumes are illustrated in **Exhibit 6-1.**

Exhibit 6-1: 2034 Future Background Traffic Volumes



The traffic analysis results under the 2034 future background traffic conditions are summarized in the following subsections. Synchro software based on the Highway Capacity Manual methodology was used to assess traffic operation conditions under the 2034 future background traffic conditions. The detailed Synchro HCM reports under the 2034 future background traffic conditions are presented in **Appendix K.**

6.1 Signalized Intersections

The traffic analysis results under the 2034 Future Background conditions traffic operations analysis for signalized intersections are presented in **Exhibit 6-2.**

Exhibit 6-2: 2034 Future Background Traffic Conditions - Signalized Intersections Traffic Operations

Intersection	Intersection			Movement	LOS	Delay (s)	v/c Ratio	95th Percentile Queue (m)	Storage Length (m)
	LOS	Delay (s)	v/c Ratio						
AM Peak Hour									
Heart Lake Road and Mayfield Road	C	27.9	0.92	EBL	C	25.6	0.42	29	115
				EBT	C	28.3	0.81	191	-
				EBR	C	20.2	0.43	44	180
				WBL	F	103.2	0.97	59	80
				WBT	B	15.5	0.50	89	-
				WBR	B	12.8	0.22	12	150
				NBL	D	37.2	0.38	35	110
				NBT	C	34.5	0.13	24	-
				NBR	C	33.0	0.01	-	44
				SBL	E	65.1	0.80	83	20
				SBT	D	45.3	0.43	58	-
				SBR	D	40.8	0.10	17	20
Mayfield Road and Highway 410 SB	B	12.3	0.54	EBT	B	10.7	0.56	67	-
				WBT	A	9.8	0.48	57	-
				SBL	C	20.1	0.48	34	-
				SBR	C	21.4	0.50	40	-
Highway 410 NB Off-Ramp and Mayfield Road	C	26.5	0.88	EBT	C	26.3	0.89	131	-
				WBT	C	27.1	0.90	130	-
				NBL	C	22.6	0.79	81	-
				NBR	C	33.3	0.86	123	-
Ace Drive and Mayfield Road	B	12.1	0.87	EBT	B	10.4	0.68	126	-
				EBR	A	5.9	0.15	12	65
				WBL	F	105.5	0.94	29	35
				WBT	A	7.4	0.42	61	-
				NBL	D	44.0	0.61	54	-
Dixie Road and Mayfield Road	C	26.4	0.98	EBL	E	65.4	1.04	176	140
				EBT	B	15.1	0.70	140	-
				EBR	B	10.3	0.26	21	70
				WBL	B	18.7	0.41	10	65
				WBT	C	22.4	0.47	64	-
				WBR	B	18.5	0.06	4	30
				NBL	D	41.7	0.57	38	75
				NBT	C	34.4	0.30	24	-
				NBR	C	32.3	0.04	1	60
				SBL	C	34.6	0.22	15	30
				SBT	C	34.4	0.29	25	-
				SBR	D	37.1	0.43	37	138
Dixie Road and Old School Road	B	18.7	0.76	EBL	B	17.4	0.06	5	35
				EBT	C	23.9	0.63	54	-
				WBL	B	18.8	0.20	11	45
				WBT	B	18.5	0.23	21	-
				NBL	A	9.6	0.14	6	40
				NBT	A	9.8	0.33	40	-
				SBL	A	7.7	0.06	7	35
				SBT	C	20.8	0.83	162	-

Intersection	Intersection LOS	Intersection Delay (s)	Intersection v/c Ratio	Movement	LOS	Delay (s)	v/c Ratio	95th Percentile Queue (m)	Storage Length (m)
PM Peak Hour									
Heart Lake Road and Mayfield Road	D	40.6	0.93	EBL	E	63.2	0.82	43	115
				EBT	C	29.0	0.68	127	-
				EBR	B	19.5	0.09	11	180
				WBL	C	20.2	0.25	10	80
				WBT	D	46.6	0.96	230	-
				WBR	C	21.6	0.16	15	150
				NBL	D	43.3	0.73	88	110
				NBT	C	29.1	0.18	33	-
				NBR	C	27.1	0.01	-	44
				SBL	E	79.3	0.93	124	20
				SBT	D	36.2	0.20	33	-
				SBR	C	34.5	0.06	9	20
Mayfield Road and Highway 410 SB	A	7.4	0.65	EBT	A	4.4	0.33	25	-
				WBT	A	7.7	0.73	84	-
				SBL	C	24.1	0.27	11	-
				SBR	C	23.6	0.13	8	-
Highway 410 NB Off-Ramp and Mayfield Road	E	67.7	1.05	EBT	C	26.0	0.61	80	-
				WBT	F	122.9	1.19	226	-
				NBL	C	25.3	0.84	142	-
				NBR	D	42.7	0.93	201	-
Ace Drive and Mayfield Road	C	24.2	0.85	EBT	C	20.1	0.68	132	-
				EBR	B	12.5	0.11	11	65
				WBL	F	192.9	1.16	36	35
				WBT	C	22.7	0.78	163	-
				NBL	C	32.1	0.30	48	-
Dixie Road and Mayfield Road	E	64.5	1.15	EBL	F	130.8	1.14	192	140
				EBT	C	28.1	0.63	114	-
				EBR	C	20.4	0.12	13	70
				WBL	C	33.4	0.46	15	65
				WBT	F	101.7	1.10	202	-
				WBR	C	32.6	0.03	-	30
				NBL	F	116.5	1.07	136	75
				NBT	C	29.0	0.20	34	-
				NBR	C	27.1	0.02	-	60
				SBL	C	30.2	0.25	30	30
				SBT	C	31.5	0.38	63	-
				SBR	D	42.0	0.73	122	138
Dixie Road and Old School Road	B	16.5	0.70	EBL	B	16.9	0.23	11	35
				EBT	B	16.4	0.25	21	-
				WBL	B	16.5	0.23	15	45
				WBT	C	20.5	0.59	49	-
				NBL	A	8.7	0.13	12	40
				NBT	B	18.1	0.76	130	-
				SBL	A	8.0	0.03	2	35
				SBT	B	10.6	0.37	43	-

Note: Red font represents a critical movement.

As shown in Exhibit 6-2, three intersections at the study area signalized intersections operating above capacity levels during the weekday AM and PM peak hours were noted:

- The intersection of Highway 410 Northbound Off-Ramp and Mayfield Road during the AM and PM peak hours

  - Northbound right-turn has (v/c of 0.86) in the AM peak and (v/c of 0.93) in the PM peak hour;
  - Northbound left-turn has (v/c of 0.79) in the AM peak, (v/c of 0.84) in the PM peak hour.; and
  - Westbound through has (v/c of 1.19) in the PM peak hour.
- The intersection of Ace Drive and Mayfield Road during the PM peak hour
  - Westbound left-turn has (v/c of 1.16) in the AM peak hour.
- At the intersection of Mayfield Road and Dixie Road during the AM and PM peak hours:
  - The eastbound left-turn movement operates above capacity (v/c ratio of 1.04) during the weekday AM peak hour. And a (v/c of 1.14) during the PM peak hour;
  - Northbound left-turn has a (v/c of 1.07) during the PM peak hour; and
  - Westbound through has a (v/c of 1.10) during the PM peak hour.

6.2 Signalized Intersections – Mitigation Measures

In order to improve the capacity performance at the movements that exceed the critical threshold, the following mitigation measures outlined in **Exhibit 6-3** were applied to improve the intersections operation.

Exhibit 6-3: 2034 Future Background Traffic Conditions - Signalized Intersections Traffic Operations – Mitigation Measures

INTERSECTION	MOVEMENT	PEAK Hour	IMPROVEMENT
Mayfield Road and Heart Lake Road	EBL	AM	Manually Adjusted the Total Splits
Highway 410 NB Off-Ramp	NBR	AM	Increase the Cycle Length from 80 s to 85 s
	NBL	AM	
	NBR	PM	Increase the Cycle Length from 100 s to 110 s
	NBL	PM	
	WBT	PM	
Mayfield Road and Ace Drive	WBL	PM	The left turn phase is warranted and has been implemented
Mayfield Road and Dixie Road	EBL	AM	Manually Adjusted the Total Splits
	EBL	PM	Manually Adjusted the Total Splits
	NBL	PM	
	WBT	PM	

The traffic analysis results with the proposed mitigation measures listed above are summarized in **Exhibit 6-4**. Full Synchro results are available in **Appendix L.**

Exhibit 6-4: 2034 Future Background Traffic Conditions - Signalized Intersections Traffic Operations with Improvements

Intersection	Intersection			Movement	LOS	Delay (s)	v/c Ratio	95th Percentile Queue (m)	Storage Length (m)
	LOS	Delay (s)	v/c Ratio						
AM Peak Hour									
Dixie Road and Mayfield Road	C	24.0	0.90	EBL	D	40.1	0.94	162	140
				EBT	B	14.7	0.69	130	-
				EBR	B	10.0	0.26	19	70
				WBL	C	22.0	0.41	9	65
				WBT	C	27.2	0.56	67	-
				WBR	C	22.1	0.06	5	30
				NBL	D	42.4	0.59	38	75
				NBT	C	34.6	0.30	24	-
				NBR	C	32.5	0.04	1	60
				SBL	C	34.9	0.22	15	30
				SBT	C	34.6	0.30	25	-
				SBR	D	35.2	0.29	26	138
Highway 410 NB Off-Ramp and Mayfield Road	C	30.0	0.88	EBT	C	31.8	0.94	153	-
				WBT	C	34.1	0.96	150	-
				NBL	C	20.1	0.75	75	-
				NBR	C	27.7	0.82	103	-
PM Peak Hour									
Highway 410 NB Off-Ramp and Mayfield Road	F	85.0	1.04	EBT	C	29.7	0.66	96	-
				WBT	F	168.2	1.29	267	-
				NBL	C	21.8	0.79	134	-
				NBR	C	33.1	0.88	182	-
Ace Drive and Mayfield Road	C	25.0	0.63	EBT	C	28.3	0.79	162	-
				EBR	B	17.3	0.12	16	65
				WBL	C	23.7	0.52	16	35
				WBT	C	22.1	0.77	162	-
Dixie Road and Mayfield Road	E	61.4	1.13	EBL	E	78.5	0.99	174	140
				EBT	C	23.3	0.57	104	-
				EBR	B	17.2	0.12	12	70
				WBL	C	32.5	0.46	13	65
				WBT	F	90.5	1.07	198	-
				WBR	C	31.9	0.03	-	30
				NBL	F	204.6	1.29	149	75
				NBT	C	33.3	0.23	37	-
				NBR	C	31.0	0.02	-	60
				SBL	C	34.9	0.29	33	30
				SBT	D	36.3	0.44	67	-
				SBR	D	46.7	0.73	116	138

Note: Red font represents a critical movement.

As seen in Exhibit 6-4**,** the mitigation measures that were considered improved the capacity performance to below critical threshold levels on all intersections except the intersection of Highway 410 NB Off-Ramp and Mayfield Road and Dixie Road and Mayfield Road during the PM peak hour.

6.1 Unsignalized Intersections

The results of the 2034 Future Background conditions traffic operations analysis for unsignalized intersections are presented in **Exhibit 6-5.**

Exhibit 6-5: 2034 Future Background Traffic Conditions - Unsignalized Intersections Traffic Operations

Intersection	Intersection Delay (s)	Lane	Lane LOS	Lane Delay (s)	Lane v/c Ratio	Lane 95th Percentile Queue (m)	Lane Storage Capacity (m)
AM Peak Hour							
Heart Lake Road and Old School Road	12.4	EB LTR	B	14.2	-	-	-
		WB LTR	A	9.2	-	-	-
		NB LTR	A	9.6	-	-	-
		SB LTR	A	9.1	-	-	-
PM Peak Hour							
Heart Lake Road and Old School Road	13.2	EB LTR	B	11.6	-	-	-
		WB LTR	C	15.4	-	-	-
		NB LTR	B	11.3	-	-	-
		SB LTR	A	9.6	-	-	-

As shown in Exhibit 6-5, no capacity concerns are observed at the unsignalized intersections.

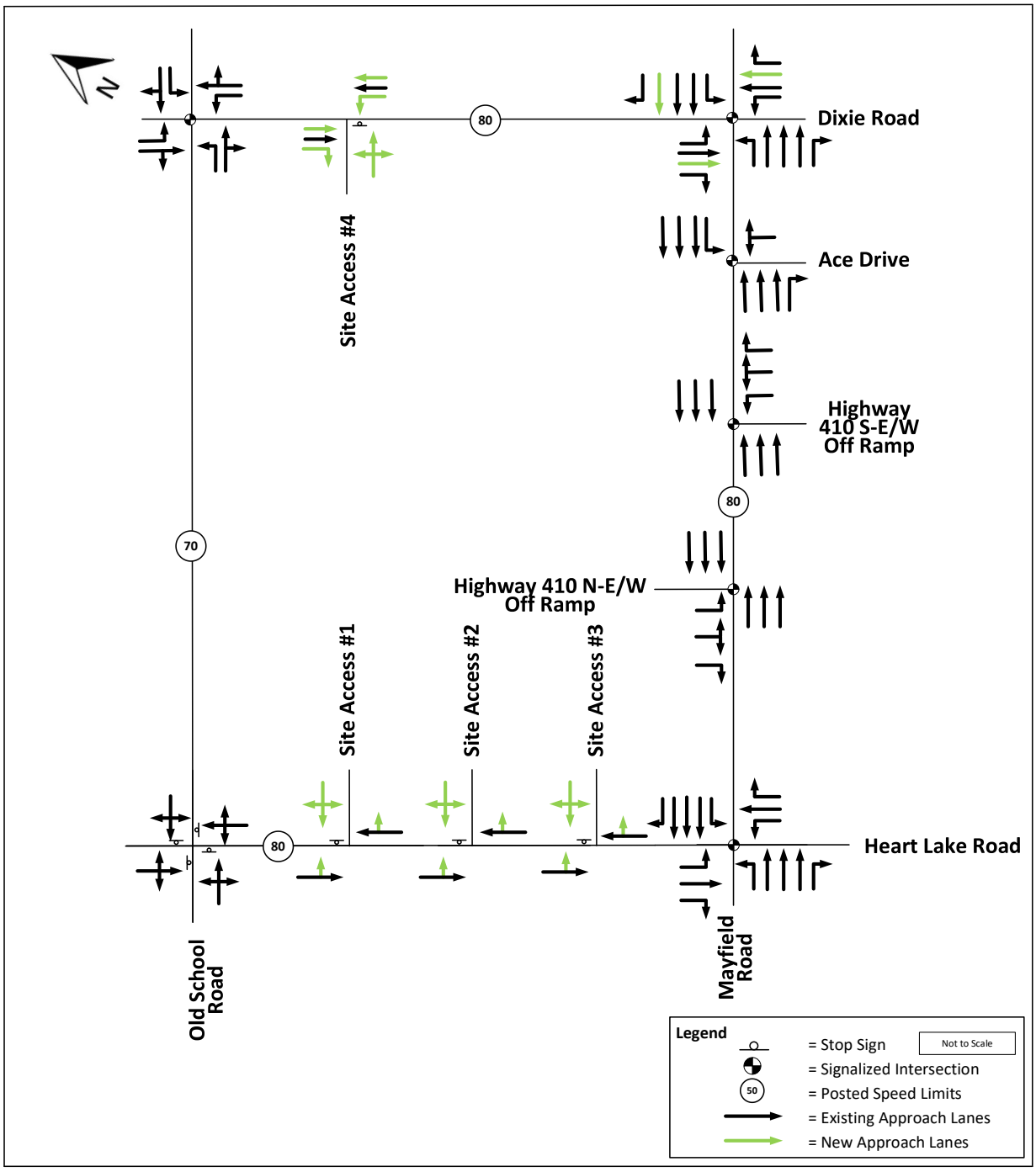
7 Future Total Traffic Conditions

This section of the report analyzes the impact of the proposed development on the future background traffic conditions for three horizon years: 2024 opening year, 2029, 5 years after the opening year, and 2034 10 years after the opening year. This analysis includes the impacts on the traffic conditions, including the site traffic associated with the proposed development.

7.1 Future Site Access

As discussed in Section 1.6, vehicular traffic will access the west parcel of the proposed development via three full movement accesses and the east parcel of the development by one full movement. The proposed full build-out lane configurations are illustrated in **Exhibit 7-1.**

Exhibit 7-1: Future Total Lane Configuration



7.2 Left-Turn Lane Warrant Analysis

This left turn lane warrant analysis at the new four site accesses under the three horizon years (2024, 2029, and 2034) is discussed in the following subsections.

7.2.1 Left Turn Lane Warrant Analysis

The left turn lane warrant analysis was completed for the Main Streets turns into the four proposed site accesses (three on Heart Lake Road and one on Dixie Road). The analysis was based on ***MTO Design Supplement for TAC Geometric Design Guide (GDE) For Canadian Roads – April 2020*** (the 'MTO Design Supplement'). The warrant calculations are included in **Appendix M.** The analysis concluded with the following results:

- Site Access #1 on Heart Lake Road is not warranted on all three horizons years;
- Site Access #2 on Heart Lake Road is not warranted on all three horizons years;
- Site Access #3 on Heart Lake Road is not warranted on all three horizons years; and
- Site Access #4 on Dixie Road is warranted with a Storage of 25 m on all three horizon years.

Therefore, an addition of left-turn lane is added to the Lane configuration starting from the future total of 2024 going forward

7.2.2 Right Turn Lane Analysis

The right lane for the fourth site access on Dixie Road is required per the Region of Peel Road Characterization Study, 2013. Considering Dixie Road is a suburban connector. Therefore, a right-turn lane will be added to the configuration starting in 2024.

7.3 Trip Generation

The gross trips expected to be generated by the proposed development are examined in this section. The net trips generated are then assigned and distributed to the study area road network.

7.3.1 Gross Trip Generation

Trip generation rates from the publication ***Trip Generation Manual, 11th Edition*** (Institute of Transportation Engineers, September 2021) were used to estimate future automobile trips associated with the proposed development. Based on the nature of the development, its location context, and the data quality, fitted curve data for vehicle trips, average rates for truck trips and Warehouse 150 land use code was used. The estimated net inbound and outbound vehicle trips for the proposed development are presented in **Exhibit 7-2**.

Exhibit 7-2: Proposed Development Trip Generation

Term	Unit	Weekday AM Peak Hour		Weekday PM Peak Hour	
BLDG 1,2,3 and 4 – LUC 150 Warehouse - 621,961 (1,000 sq.ft. GFA) – Employee Auto Trips					
Trip Generation Equation	Vehicle trips / 1,000 sq.ft GFA	T = 0.12(X) + 23.62		T = 0.12(X) + 26.48	
Total Trips	vehicles/hour	**168**		**180**	
New Inbound Trips	vehicles/hour	129	77%	50	28%
New Outbound Trips	vehicles/hour	39	23%	130	72%
BLDG 1,2,3 and 4 – LUC 150 Warehouse - 621,961 (1,000 sq.ft. GFA) –Trucks Trips					
Trip Generation Rate		0.02		0.03	
Total Trips	truck trips/hour	**13**		**19**	
New Inbound Trips	truck/hour	6	52%	9	52%
New Outbound Trips	truck/hour	7	48%	10	48%
BLDG 5 and 6 – LUC 150 Warehouse - 464,032 (1,000 sq. ft. GFA) – Employee Auto Trips					
Trip Generation Equation	Vehicle trips / 1,000 sq.ft GFA	T = 0.12(X) + 23.62		T = 0.12(X) + 26.48	
Total Trips	vehicles/hour	**103**		**109**	
New Inbound Trips	vehicles/hour	79	77%	30	28%
New Outbound Trips	vehicles/hour	24	23%	79	72%
BLDG 5 and 6 – LUC 150 Warehouse - 464,032 (1,000 sq.ft. GFA) –Trucks Trips					
Trip Generation Rate		0.02		0.03	
Total Trips	truck trips/hour	**9**		**14**	
New Inbound Trips	truck/hour	5	52%	7	52%
New Outbound Trips	truck/hour	4	48%	7	48%
Total					
Total Trips	vehicles/hour	**293**		**322**	
New Inbound Trips	vehicles/hour	219		96	
New Outbound Trips	vehicles/hour	74		226	

7.3.2 Trip Reductions

For this study, providing a more conservative estimate, no trip reductions were considered for the proposed development tip generation due to a lack of quantitative data.

7.3.3 Trip Distribution and Assignment

The trip distribution for site trips was determined based on 2016 TTS data. The trip distribution used for the east and west parcels is presented in **Exhibit 7-3** and **Exhibit 7-4**, respectively. The detailed TTS data analysis is presented in **Appendix N.**

Exhibit 7-3: East Parcel Site Trip Distribution

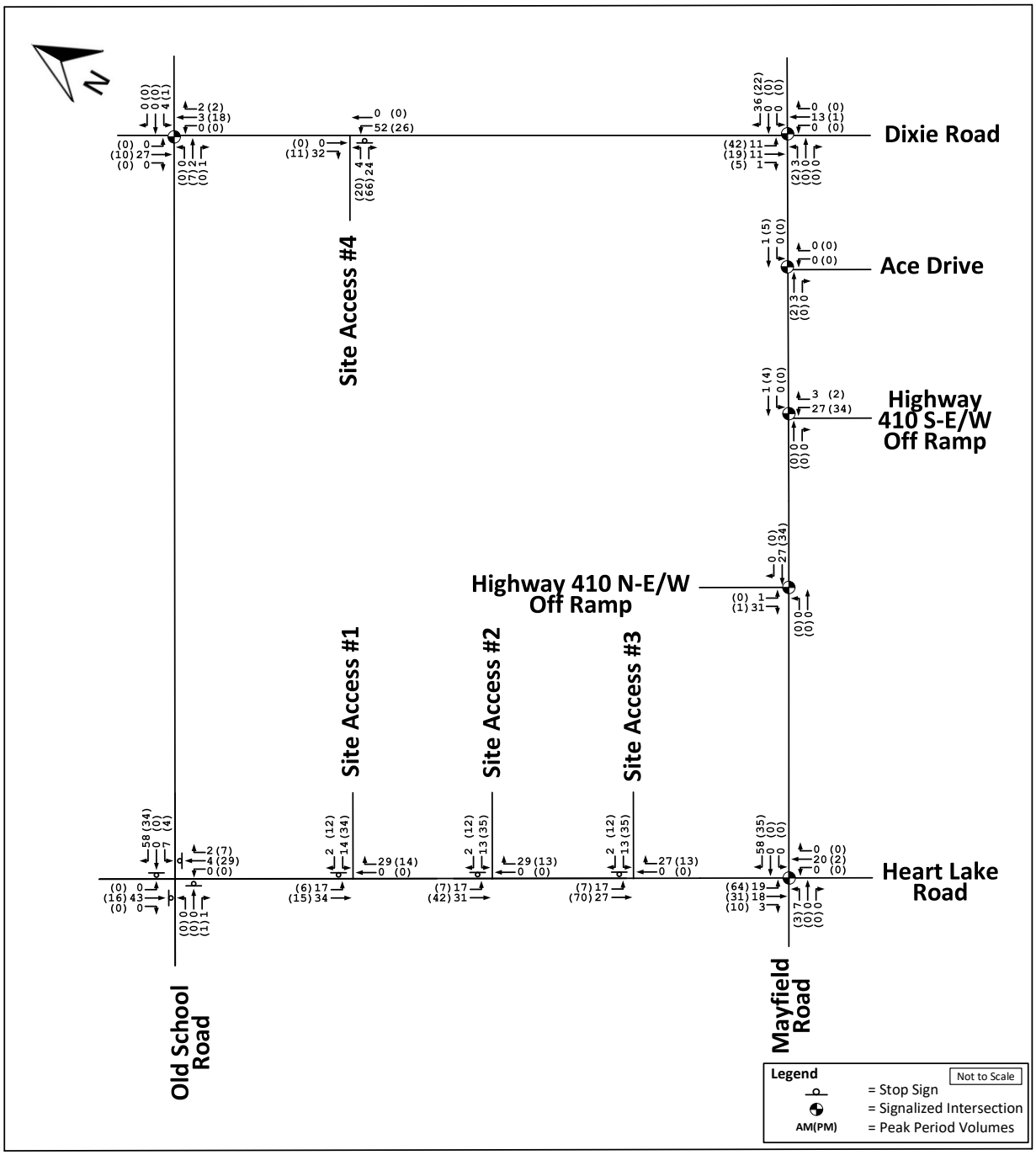
To / From	Via	AM		PM	
		Inbound	Outbound	Inbound	Outbound
North	Dixie Road	32%	9%	27%	21%
South	Dixie Road	15%	40%	4%	22%
East	Old School Road	5%	6%	4%	2%
	Mayfield Road	43%	41%	60%	49%
West	Old School Road	1%	1%	0%	0%
	Mayfield Road	4%	3%	5%	6%
Total		**100%**	**100%**	**100%**	**100%**

Exhibit 7-4: West Parcel Trip Distribution

To / From	Via	AM		PM	
		Inbound	Outbound	Inbound	Outbound
North	Heart Lake Road	32%	9%	27%	21%
South	Heart Lake Road	15%	40%	4%	22%
East	Old School Road	5%	5%	6%	5%
	Mayfield Road	43%	42%	58%	46%
West	Old School Road	1%	0%	1%	0%
	Mayfield Road	5%	4%	5%	6%
Total		**100%**	**100%**	**100%**	**100%**

The net new site traffic is presented as per the above tables in **Exhibit 7-5.**

Exhibit 7-5: Net New Site Traffic Volumes

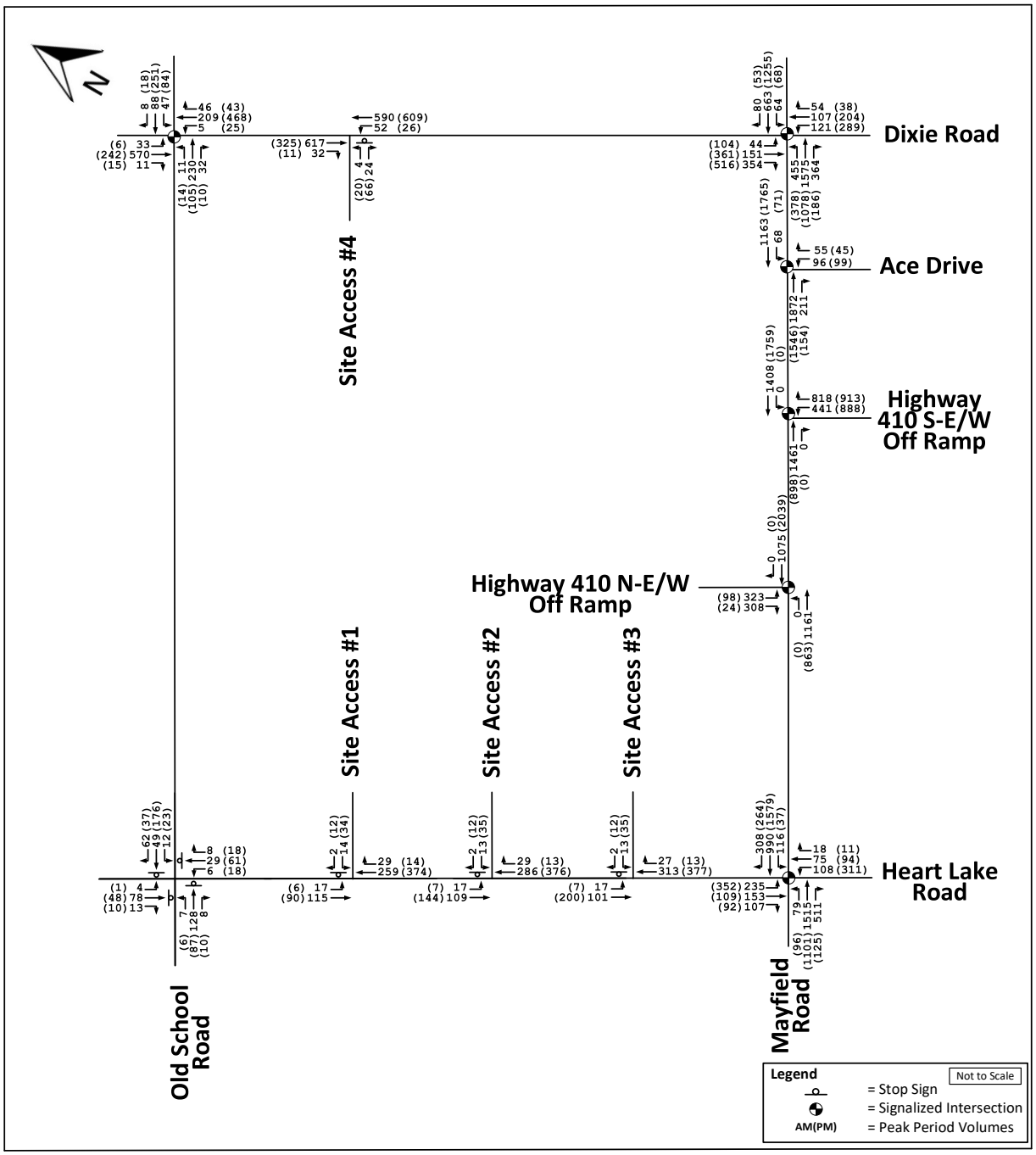


8 2024 Future Total Traffic Conditions

New trips resulting from the proposed development were added to the 2024 Future Background conditions scenario, producing 2024 future total traffic volumes presented in **Exhibit 8-1**

Traffic Operations analysis was conducted using the 2024 future total traffic volumes to determine future intersection performance with the impact of the proposed development. The result of the traffic operations analysis is presented in the following subsections. The traffic analysis under the 2024 future total traffic conditions scenario is presented in **Appendix O.**

Exhibit 8-1: 2024 Future Total Traffic Conditions Traffic Volumes



The results of the 2024 future total analysis are summarized in the following subsections. Synchro software based on the Highway Capacity Manual methodology was used to assess

traffic operation conditions under the 2024 future total traffic conditions. The detailed Synchro HCM reports under the 2024 future total traffic conditions are presented in **Appendix O.**

8.1 Signalized Intersections

The results of the 2024 future total conditions traffic operations analysis for signalized intersections are presented in **Exhibit 8-2**.

Exhibit 8-2: 2024 Future Total Traffic Conditions - Signalized Intersections Traffic

Intersection	Intersection			Movement	LOS	Delay (s)	v/c Ratio	95th Percentile Queue (m)	Storage Length (m)
	LOS	Delay (s)	v/c Ratio						
AM Peak Hour									
Heart Lake Road and Mayfield Road	C	25.1	0.73	EBL	C	22.0	0.34	26.9	115
				EBT	C	24.1	0.65	129.9	-
				EBR	B	19.9	0.36	17.5	180
				WBL	C	30.3	0.69	29.0	80
				WBT	B	14.9	0.40	65.0	-
				WBR	B	13.5	0.22	11.9	150
				NBL	D	36.3	0.35	34.9	110
				NBT	C	34.1	0.14	26.2	-
				NBR	C	32.5	0.01	-	44
				SBL	E	68.6	0.83	91.6	20
				SBT	D	44.0	0.38	53.8	-
				SBR	D	40.3	0.11	17.6	20
Mayfield Road and Highway 410 SB	B	11.1	0.43	EBT	A	8.7	0.43	44.1	-
				WBT	A	8.2	0.36	38.4	-
				SBL	C	20.2	0.45	29.3	-
				SBR	C	20.9	0.43	32.8	-
Highway 410 NB Off-Ramp and Mayfield Road	B	19.2	0.73	EBT	B	17.3	0.66	83.8	-
				WBT	B	17.0	0.67	81.9	-
				NBL	C	21.8	0.75	67.7	-
				NBR	C	27.9	0.79	87.1	-
Ace Drive and Mayfield Road	A	8.6	0.56	EBT	A	7.3	0.51	75.7	-
				EBR	A	5.0	0.14	7.6	65
				WBL	C	25.6	0.57	32.2	35
				WBT	A	5.8	0.32	40.0	-
				NBL	D	43.7	0.54	43.1	-
Dixie Road and Mayfield Road	C	20.3	0.89	EBL	D	39.9	0.95	117.6	140
				EBT	B	13.6	0.56	101.6	-
				EBR	B	10.7	0.24	14.0	70
				WBL	A	9.3	0.30	9.8	65
				WBT	B	11.0	0.26	36.8	-
				WBR	A	9.8	0.07	7.4	30
				NBL	D	38.7	0.54	36.7	75
				NBT	C	32.1	0.18	15.4	-
				NBR	C	31.1	0.04	6.2	60
				SBL	C	33.4	0.23	15.9	30
				SBT	C	32.6	0.23	20.4	-
				SBR	D	38.5	0.56	47.7	138
Dixie Road and Old School Road	B	14.1	0.57	EBL	B	18.4	0.04	4.1	35
				EBT	C	23.6	0.56	43.5	-
				WBL	B	19.8	0.19	11.2	45
				WBT	B	19.5	0.21	17.7	-
				NBL	A	6.5	0.01	1.8	40
				NBT	A	8.1	0.26	28.9	-

Intersection	Intersection			Movement	LOS	Delay (s)	v/c Ratio	95th Percentile Queue (m)	Storage Length (m)
	LOS	Delay (s)	v/c Ratio						
				SBL	A	6.7	0.06	5.9	35
				SBT	B	11.6	0.57	80.2	-
PM Peak Hour									
Heart Lake Road and Mayfield Road	D	37.5	1	EBL	F	105.2	0.94	61.4	115
				EBT	C	22.3	0.50	82.1	-
				EBR	B	17.1	0.09	9.9	180
				WBL	B	13.9	0.16	8.6	80
				WBT	B	19.9	0.60	110.7	-
				WBR	B	14.1	0.16	10.9	150
				NBL	E	58.4	0.84	101.0	110
				NBT	C	32.6	0.17	31.0	-
				NBR	C	30.6	0.01	-	44
				SBL	F	153.3	1.17	169.5	20
				SBT	D	38.5	0.24	38.3	-
				SBR	D	36.2	0.07	11.8	20
Mayfield Road and Highway 410 SB	A	6	0.51	EBT	A	3.9	0.25	18.2	-
				WBT	A	5.7	0.56	53.0	-
				SBL	C	24.5	0.24	9.5	-
				SBR	C	24.0	0.11	7.2	-
Highway 410 NB Off-Ramp and Mayfield Road	C	25.4	0.89	EBT	B	18.4	0.47	49.5	-
				WBT	C	30.7	0.92	129.1	-
				NBL	C	20.4	0.79	95.8	-
				NBR	C	30.4	0.86	138.1	-
Ace Drive and Mayfield Road	B	18.6	0.47	EBT	B	17.3	0.54	92.3	-
				EBR	B	12.5	0.10	8.9	65
				WBL	D	38.1	0.60	35.6	35
				WBT	B	18.6	0.61	111.2	-
				NBL	C	31.0	0.23	37.7	-
Dixie Road and Mayfield Road	D	36.4	1.01	EBL	F	82.2	1.01	136.9	140
				EBT	C	21.7	0.48	77.3	-
				EBR	B	17.5	0.12	12.4	70
				WBL	C	24.9	0.36	13.8	65
				WBT	D	36.7	0.76	113.9	-
				WBR	C	25.8	0.04	-	30
				NBL	E	70.4	0.93	114.9	75
				NBT	C	27.2	0.17	26.1	-
				NBR	C	25.8	0.02	-	60
				SBL	C	29.2	0.29	31.9	30
				SBT	C	28.9	0.31	44.4	-
				SBR	C	34.5	0.59	80.3	138
Dixie Road and Old School Road	B	13.8	0.54	EBL	B	16.1	0.06	4.4	35
				EBT	B	17.0	0.21	17.3	-
				WBL	B	17.6	0.25	15.5	45
				WBT	C	20.3	0.54	40.6	-
				NBL	A	7.2	0.04	5.0	40
				NBT	B	11.9	0.54	68.9	-
				SBL	A	7.0	0.02	2.1	35
				SBT	A	8.9	0.28	31.5	-

Note: Red font represents a critical movement.

- The southbound left-tun movement on Heart Lake Road and Mayfield operates above capacity levels. Likewise, the eastbound left-turn on Dixie Road and Mayfield Road operates above capacity levels.

- The v/c ratios for the turning movements on the ramp are above the threshold values; however, they are operating below capacity.

8.2 Unsignalized Intersections

The results of the 2024 future total conditions traffic operations analysis for unsignalized intersections are presented in **Exhibit 8-3**.

Exhibit 8-3: 2024 Future Total Traffic Conditions - Unsignalized Intersections Traffic Operations

Intersection	Intersection Delay (s)	Lane	Lane LOS	Lane Delay (s)	Lane v/c Ratio	Lane 95th Percentile Queue (m)	Lane Storage Capacity (m)
AM Peak Period							
Heart Lake Road & Old School Road	8.5	EBLTR	A	8.7	-	-	-
		WBLTR	A	8.5	-	-	-
		NBLTR	A	8.3	-	-	-
		SBLTR	A	8.5	-	-	-
Site Access #3	0.7	WBLR	B	12.0	0.03	0.7	-
		SBLT	A	1.6	0.02	0.4	-
Site Access #2	0.7	WBLR	B	11.8	0.03	0.7	-
		SBLT	A	1.5	0.01	0.3	-
Site Access #1	0.8	WBLR	B	11.6	0.03	0.7	-
		SBLT	A	1.4	0.01	0.3	-
Site Access #4	0.7	EBLR	B	13.4	0.07	1.6	-
		NBLT	A	9.3	0.06	1.6	-
PM Peak Period							
Heart Lake Road & Old School Road	8.8	EBLTR	A	8.3	-	-	-
		WBLTR	A	9.3	-	-	-
		NBLTR	A	8.5	-	-	-
		SBLTR	A	8.3	-	-	-
Site Access #3	1.2	WBLR	B	13.0	0.10	2.6	-
		SBLT	A	0.5	0.01	0.2	-
Site Access #2	1.2	WBLR	B	12.7	0.10	2.5	-
		SBLT	A	0.6	0.01	0.2	-
Site Access #1	1.2	WBLR	B	12.4	0.09	2.3	-
		SBLT	A	0.7	0.01	0.1	-
Site Access #4	1.2	EBLR	B	12.0	0.16	4.2	-
		NBLT	A	8.1	0.02	0.5	-

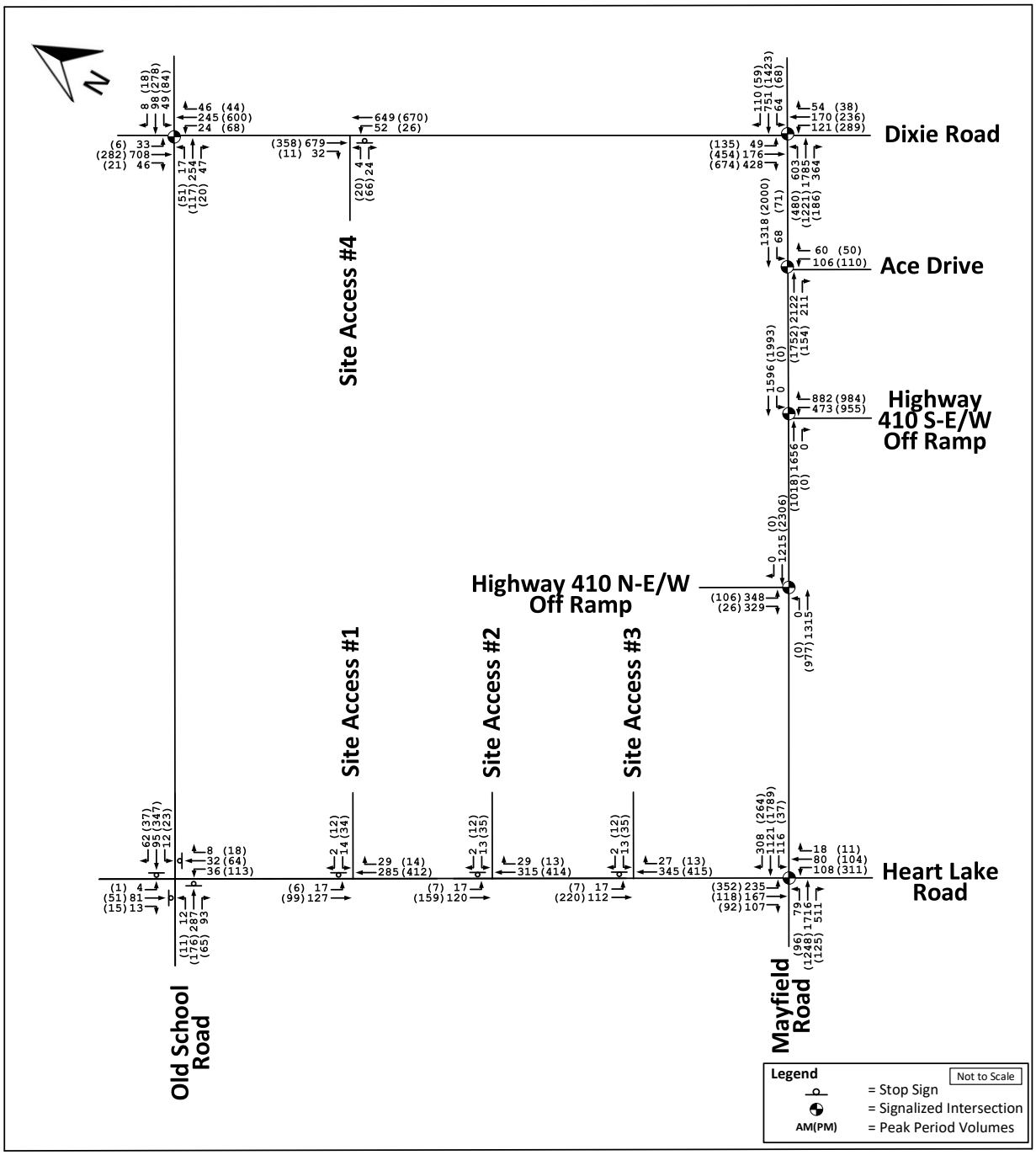
As shown in Exhibit 8-3, no capacity or queuing concerns were observed at the unsignalized intersections within the study area during weekday AM and PM peak hours.

9 2029 Future Total Traffic Conditions

New trips resulting from the proposed development were added to the 2029 Future Background conditions scenario, producing 2029 future total traffic volumes illustrated in **Exhibit 9-1.**

Traffic operations analysis was conducted using the 2029 future total traffic volumes to determine future intersection performance with the impact of the proposed development. The result of the traffic operations analysis is presented in the following subsections. The traffic analysis under the 2029 future total traffic conditions scenario is presented in **Appendix P.**

Exhibit 9-1: 2029 Future Total Traffic Volumes



The traffic analysis results under the 2029 future total traffic conditions are summarized in the following subsections. Synchro software based on the Highway Capacity Manual methodology was used to assess traffic operation conditions under the 2029 future total traffic conditions. The detailed Synchro HCM reports under the 2029 future total traffic conditions are presented in **Appendix P.**

9.1 Signalized Intersections

The traffic analysis results of the 2029 future total traffic conditions for signalized intersections are presented in **Exhibit 9-2.**

Exhibit 9-2: 2029 Future Total Traffic Conditions – Signalized Intersections Traffic Operations

Intersection	Intersection			Movement	LOS	Delay (s)	v/c Ratio	95th Percentile Queue (m)	Storage Length (m)
	LOS	Delay (s)	v/c Ratio						
AM Peak Hour									
Heart Lake Road and Mayfield Road	C	26.7	0.83	EBL	C	24.4	0.39	28.8	115
				EBT	C	26.4	0.73	156.8	-
				EBR	C	20.5	0.39	30.4	180
				WBL	E	55.0	0.83	37.4	80
				WBT	B	15.6	0.45	76.0	-
				WBR	B	13.5	0.22	11.9	150
				NBL	D	36.6	0.36	34.9	110
				NBT	C	34.2	0.15	28.0	-
				NBR	C	32.5	0.01	-	44
				SBL	E	69.0	0.83	92.3	20
				SBT	D	44.6	0.41	58.7	-
				SBR	D	40.3	0.11	17.6	20
Mayfield Road and Highway 410 SB	B	11.8	0.49	EBT	A	9.8	0.49	56.1	-
				WBT	A	9.1	0.42	48.3	-
				SBL	C	20.1	0.47	32.4	-
				SBR	C	21.2	0.48	37.5	-
Highway 410 NB Off-Ramp and Mayfield Road	C	21.7	0.81	EBT	C	20.4	0.77	99.7	-
				WBT	C	20.2	0.78	97.8	-
				NBL	C	22.6	0.78	75.3	-
				NBR	C	30.6	0.83	103.0	-
Ace Drive and Mayfield Road	B	10.4	0.78	EBT	A	8.6	0.59	97.2	-
				EBR	A	5.4	0.14	9.7	65
				WBL	E	73.6	0.84	24.4	35
				WBT	A	6.5	0.37	49.3	-
				NBL	D	43.9	0.57	48.1	-
Dixie Road and Mayfield Road	C	24.3	0.95	EBL	D	49.5	0.99	161.4	140
				EBT	B	13.6	0.62	114.2	-
				EBR	B	10.0	0.25	15.3	70
				WBL	B	18.1	0.38	9.2	65
				WBT	C	21.7	0.42	55.2	-
				WBR	B	18.7	0.09	11.5	30
				NBL	D	41.7	0.57	37.9	75
				NBT	C	34.5	0.29	23.4	-
				NBR	C	32.4	0.04	0.6	60
				SBL	D	35.7	0.28	18.0	30
				SBT	C	34.3	0.29	24.1	-
				SBR	D	36.7	0.40	34.7	138
Dixie Road and Old School Road	B	16.9	0.71	EBL	B	17.8	0.06	5.3	35
				EBT	C	23.5	0.60	49.5	-
				WBL	B	19.2	0.21	11.7	45
				WBT	B	18.7	0.21	19.0	-
				NBL	A	8.5	0.11	5.9	40
				NBT	A	9.2	0.31	36.6	-
				SBL	A	7.4	0.06	6.5	35
				SBT	B	17.6	0.77	148.3	-

Intersection	Intersection			Movement	LOS	Delay (s)	v/c Ratio	95th Percentile Queue (m)	Storage Length (m)
	LOS	Delay (s)	v/c Ratio						
PM Peak Hour									
Heart Lake Road and Mayfield Road	D	41.2	0.94	EBL	E	72.0	0.86	44.7	115
				EBT	C	28.8	0.62	107.5	-
				EBR	C	20.6	0.09	11.0	180
				WBL	C	20.2	0.22	9.8	80
				WBT	D	39.0	0.87	177.5	-
				WBR	C	22.7	0.16	14.5	150
				NBL	D	42.0	0.71	87.7	110
				NBT	C	28.3	0.16	31.4	-
				NBR	C	26.5	0.01	-	44
				SBL	F	116.8	1.07	162.7	20
				SBT	D	36.0	0.23	39.6	-
				SBR	C	33.8	0.07	11.4	20
Mayfield Road and Highway 410 SB	A	6.6	0.58	EBT	A	4.2	0.29	21.1	-
				WBT	A	6.6	0.64	66.2	-
				SBL	C	24.3	0.25	10.2	-
				SBR	C	23.9	0.12	7.4	-
Highway 410 NB Off-Ramp and Mayfield Road	D	38.8	0.96	EBT	C	23.2	0.53	69.8	-
				WBT	E	56.9	1.03	188.7	-
				NBL	C	24.3	0.82	127.7	-
				NBR	D	37.4	0.90	181.0	-
Ace Drive and Mayfield Road	C	20.7	0.63	EBT	B	18.5	0.61	110.1	-
				EBR	B	12.5	0.10	8.9	65
				WBL	F	81.3	0.84	43.7	35
				WBT	C	20.3	0.69	134.2	-
				NBL	C	31.5	0.27	42.9	-
Dixie Road and Mayfield Road	D	52.9	1.13	EBL	F	132.3	1.15	193.9	140
				EBT	C	26.6	0.56	98.1	-
				EBR	C	20.4	0.12	13.0	70
				WBL	C	32.3	0.42	14.9	65
				WBT	E	63.8	0.98	166.9	-
				WBR	C	32.8	0.04	2.4	30
				NBL	F	99.8	1.02	132.5	75
				NBT	C	28.8	0.18	31.2	-
				NBR	C	27.1	0.02	-	60
				SBL	C	31.9	0.36	43.1	30
				SBT	C	31.2	0.36	58.7	-
				SBR	D	42.5	0.74	124.4	138
Dixie Road and Old School Road	B	15.3	0.65	EBL	B	17.0	0.22	10.9	35
				EBT	B	16.6	0.23	19.4	-
				WBL	B	16.9	0.24	15.3	45
				WBT	C	20.0	0.56	44.4	-
				NBL	A	8.3	0.13	11.4	40
				NBT	B	15.8	0.70	117.5	-
				SBL	A	7.6	0.02	2.2	35
				SBT	A	9.9	0.34	40.0	-

As shown in Exhibit 9-2, three intersections at the study area signalized intersections operating above capacity levels during the weekday PM peak hours were noted:

- At the intersection of Mayfield Road and Heart Lake Road, the southbound left-turn movement has a (v/c of 1.07) during the PM peak
- The intersection of Highway 410 NB Off-Ramp and Mayfield Road is operating above capacity levels during the AM and PM peak hours:

- The northbound left-turn is operating above capacity levels (v/c of 0.78) in the AM peak hour and (v/c of 1.03) in the PM peak hour.
- The northbound right-turn is operating above capacity levels (v/c of 0.83) in the AM peak hour and (v/c of 0.90) in the PM peak hour.
- The westbound through operates above the capacity levels (v/c of 1.03) in the PM peak hour.

- Mayfield Road and Dixie Road intersection operate above capacity level during the weekday PM peak hour.
  - The northbound left-turn is operating above capacity (v/c of 1.02) during the weekday PM peak hour.
- The v/c ratios for the turning movements on the ramp are above the threshold values. However, they are operating below capacity.

9.2 Signalized Intersections – Mitigation Measures

In order to improve the capacity performance at the movements that exceed the critical threshold, the following mitigation measures outlined in **Exhibit 9-3** were applied to improve the intersection operations.

Exhibit 9-3: 2029 Future Total Traffic Conditions – Signalized Intersections - Mitigation Measures

INTERSECTION	MOVEMENT	PEAK Hour	IMPROVEMENT
Mayfield Road and Heart Lake Road	SBL	PM	Manually adjusted the total splits.
Highway 410 NB Off-Ramp and Mayfield Road	NBL	PM	Increasing the Cycle length doesn't improve the Intersection performance; therefore, no mitigation was made.
	NBR		
	WBT		
Mayfield Road and Dixie Road	NBL	PM	Manually adjusted the total splits.
	WBT		

The measures outlined above are implemented, resulting in **Exhibit 9-4.** Full Synchro results are available in **Appendix Q.**

Exhibit 9-4: 2029 Future Total Traffic Conditions – Signalized Intersections Traffic Operations with Improvements

Intersection	Intersection			Movement	LOS	Delay (s)	v/c Ratio	95th Percentile Queue (m)	Storage Length (m)
	LOS	Delay (s)	v/c Ratio						
PM Peak Hour									
Heart Lake Road and Mayfield Road	D	41.5	0.92	EBL	E	71.3	0.86	44.2	115
				EBT	C	31.6	0.66	113.9	-
				EBR	C	22.4	0.09	11.7	180
				WBL	C	22.2	0.23	10.5	80
				WBT	D	45.3	0.92	191.7	-
				WBR	C	24.6	0.16	15.3	150
				NBL	D	37.7	0.68	83.0	110
				NBT	C	26.0	0.15	29.8	-
Highway 410 NB Off-Ramp and Mayfield Road	D	38.8	0.96	EBT	C	23.2	0.53	69.8	-
				WBT	E	56.9	1.03	188.7	-
				NBL	C	24.3	0.82	127.7	-
				NBR	D	37.4	0.90	181.0	-

Intersection	Intersection			Movement	LOS	Delay (s)	v/c Ratio	95th Percentile Queue (m)	Storage Length (m)
	LOS	Delay (s)	v/c Ratio						
Dixie Road and Mayfield Road	D	51.7	1.16	EBL	F	132.3	1.15	193.9	140
				EBT	C	25.0	0.54	95.1	-
				EBR	B	19.3	0.12	12.6	70
				WBL	C	30.7	0.41	14.3	65
				WBT	D	54.1	0.93	159.6	-
				WBR	C	31.4	0.04	2.3	30
				NBL	F	120.2	1.08	136.9	75
				NBT	C	30.2	0.19	32.0	-
				NBR	C	28.4	0.02	-	60
				SBL	C	33.6	0.37	44.3	30
				SBT	C	32.7	0.38	60.2	-
				SBR	D	46.2	0.77	138.4	138

9.3 Unsignalized Intersections

The traffic analysis results under the 2029 future total traffic conditions for unsignalized intersections are presented in **Exhibit 9-5**

Exhibit 9-5: 2029 Future Total Traffic Conditions – Unsignalized Intersections Traffic

Intersection	Intersection Delay (s)	Lane	Lane LOS	Lane Delay (s)	Lane v/c Ratio	Lane 95th Percentile Queue (m)	Lane Storage Capacity (m)
AM Peak Hour							
Heart Lake Road and Old School Road	8.5	EBLTR	A	8.7	-	-	-
		WBLTR	A	8.5	-	-	-
		NBLTR	A	8.3	-	-	-
		SBLTR	A	8.5	-	-	-
Site Access #3	0.7	WBLR	B	12.0	0.03	0.7	-
		SBLT	A	1.6	0.02	0.4	-
Site Access #2	0.7	WBLR	B	11.8	0.03	0.7	-
		SBLT	A	1.5	0.01	0.3	-
Site Access #1	0.8	WBLR	B	11.6	0.03	0.7	-
		SBLT	A	1.4	0.01	0.3	-
Site Access #4	0.7	EBLR	B	13.4	0.07	1.6	-
		NBLT	A	9.3	0.06	1.6	-
PM Peak Hour							
Heart Lake Road and Old School Road	8.8	EBLTR	A	8.3	-	-	-
		WBLTR	A	9.3	-	-	-
		NBLTR	A	8.5	-	-	-
		SBLTR	A	8.3	-	-	-
Site Access #3	1.2	WBLR	B	13.0	0.10	2.6	-
		SBLT	A	0.5	0.01	0.2	-
Site Access #2	1.2	WBLR	B	12.7	0.10	2.5	-
		SBLT	A	0.6	0.01	0.2	-
Site Access #1	1.2	WBLR	B	12.4	0.09	2.3	-
		SBLT	A	0.7	0.01	0.1	-
Site Access #4	1.2	EBLR	B	12.0	0.16	4.2	-
		NBLT	A	8.1	0.02	0.5	-

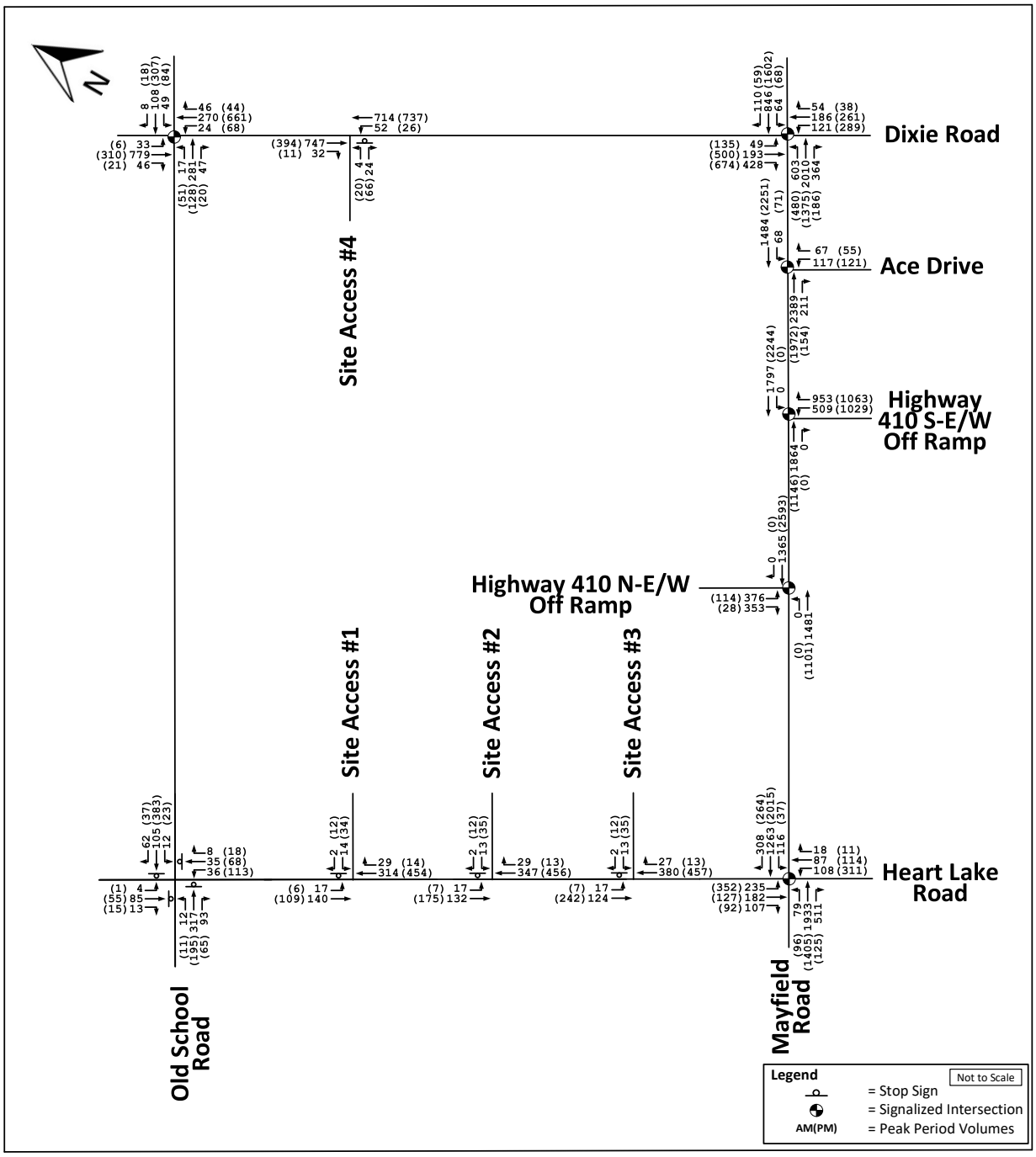
As shown in Exhibit 9-5, no capacity or queuing concerns were observed at the unsignalized intersections within the study area during weekday AM and PM peak hours.

10 2034 Future Total Traffic Conditions

New trips resulting from the proposed development were added to the 2034 future total traffic conditions scenario, producing 2034 future total traffic volumes illustrated in **Exhibit 10-1**

Traffic analysis was conducted using the 2034 future total traffic volumes to determine future intersection performance with the impact of the proposed development. The result of the traffic operations analysis is presented in the following subsections. The traffic analysis under the 2034 future total traffic conditions scenario is presented in **Appendix R.**

Exhibit 10-1: 2034 Future Total Traffic Volumes



The traffic analysis results under the 2034 future total traffic conditions are summarized in the following subsections. Synchro software based on the Highway Capacity Manual methodology assessed traffic operation conditions under the 2034 future total traffic conditions. Appendix R presents the detailed Synchro HCM reports under the 2034 future total traffic conditions**.**

10.1 Signalized Intersections

The traffic analysis results under the 2034 future total traffic conditions for signalized intersections are presented in **Exhibit 10-2.**

Exhibit 10-2: 2034 Future Total Traffic Conditions – Signalized Intersections Traffic Operations

Intersection	Intersection			Movement	LOS	Delay (s)	v/c Ratio	95th Percentile Queue (m)	Storage Length (m)
	LOS	Delay (s)	v/c Ratio						
AM Peak Hour									
Heart Lake Road and Mayfield Road	C	29.6	0.94	EBL	C	29.2	0.47	32.6	115
				EBT	C	30.1	0.83	190.5	-
				EBR	C	21.2	0.43	44.1	180
				WBL	F	109.8	0.98	59.1	80
				WBT	B	16.6	0.51	89.0	-
				WBR	B	13.6	0.22	11.9	150
				NBL	D	36.9	0.38	34.9	110
				NBT	C	34.4	0.17	29.9	-
				NBR	C	32.5	0.01	-	44
				SBL	E	69.0	0.83	93.3	20
				SBT	D	45.2	0.45	63.8	-
				SBR	D	40.2	0.11	17.6	20
Mayfield Road and Highway 410 SB	B	12.7	0.54	EBT	B	11.1	0.57	70.5	-
				WBT	B	10.2	0.48	60.1	-
				SBL	C	20.1	0.49	35.6	-
				SBR	C	21.3	0.51	41.5	-
Highway 410 NB Off-Ramp and Mayfield Road	C	30.4	0.88	EBT	C	32.3	0.94	152.9	-
				WBT	C	34.6	0.96	150.2	-
				NBL	C	20.7	0.77	78.7	-
				NBR	C	27.4	0.82	103.7	-
Ace Drive and Mayfield Road	B	12.1	0.87	EBT	B	10.4	0.68	126.1	-
				EBR	A	5.9	0.15	11.8	65
				WBL	F	105.5	0.94	28.5	35
				WBT	A	7.4	0.42	60.7	-
				NBL	D	44.0	0.61	53.5	-
Dixie Road and Mayfield Road	C	24.5	0.91	EBL	D	42.2	0.95	165.5	140
				EBT	B	15.0	0.69	131.6	-
				EBR	B	10.2	0.26	19.1	70
				WBL	C	22.2	0.41	9.2	65
				WBT	C	27.4	0.56	67.0	-
				WBR	C	22.6	0.10	12.4	30
				NBL	D	42.3	0.58	38.3	75
				NBT	C	34.7	0.32	25.3	-
				NBR	C	32.4	0.04	0.8	60
				SBL	D	35.7	0.29	18.0	30
				SBT	C	34.6	0.31	26.1	-
				SBR	D	35.2	0.30	25.5	138
Dixie Road and Old School Road	B	19.7	0.78	EBL	B	17.4	0.06	5.3	35
				EBT	C	24.0	0.63	54.5	-
				WBL	B	19.0	0.22	11.9	45
				WBT	B	18.5	0.23	20.6	-
				NBL	B	10.2	0.16	6.5	40
				NBT	A	9.8	0.34	40.3	-
				SBL	A	7.7	0.06	6.5	35
				SBT	C	22.7	0.85	170.6	-

Intersection	Intersection			Movement	LOS	Delay (s)	v/c Ratio	95th Percentile Queue (m)	Storage Length (m)
	LOS	Delay (s)	v/c Ratio						
PM Peak Hour									
Heart Lake Road and Mayfield Road	D	46.9	0.99	EBL	E	74.3	0.86	44.7	115
				EBT	C	30.9	0.70	126.5	-
				EBR	C	20.6	0.09	11.0	180
				WBL	C	21.5	0.26	9.8	80
				WBT	D	51.8	0.98	229.5	-
				WBR	C	22.7	0.16	14.5	150
				NBL	D	42.7	0.72	87.7	110
				NBT	C	28.6	0.18	34.1	-
				NBR	C	26.5	0.01	-	44
				SBL	F	120.1	1.08	163.5	20
				SBT	D	36.3	0.25	42.5	-
				SBR	C	33.8	0.07	11.4	20
Mayfield Road and Highway 410 SB	A	7.4	0.65	EBT	A	4.4	0.33	24.6	-
				WBT	A	7.7	0.73	83.7	-
				SBL	C	24.0	0.27	10.8	-
				SBR	C	23.6	0.13	8.0	-
Highway 410 NB Off-Ramp and Mayfield Road	F	88.3	1.05	EBT	C	30.6	0.67	96.0	-
				WBT	F	176.6	1.31	267.3	-
				NBL	C	21.7	0.80	137.7	-
				NBR	C	33.5	0.89	203.6	-
Ace Drive and Mayfield Road	C	25	0.63	EBT	C	28.3	0.79	161.5	-
				EBR	B	17.3	0.12	16.2	65
				WBL	C	23.7	0.52	15.6	35
				WBT	C	22.1	0.77	161.9	-
				NBL	C	32.7	0.30	46.3	-
Dixie Road and Mayfield Road	E	62.4	1.15	EBL	E	79.8	0.99	175.9	140
				EBT	C	23.3	0.57	104.0	-
				EBR	B	17.2	0.12	11.8	70
				WBL	C	32.5	0.46	13.1	65
				WBT	F	90.5	1.07	198.0	-
				WBR	C	32.1	0.04	2.4	30
				NBL	F	227.5	1.34	151.0	75
				NBT	C	33.3	0.23	36.8	-
				NBR	C	31.0	0.02	-	60
				SBL	D	37.4	0.42	46.9	30
				SBT	D	36.6	0.46	70.1	-
				SBR	D	47.3	0.74	121.3	138
Dixie Road and Old School Road	B	16.9	0.71	EBL	B	16.9	0.23	11.0	35
				EBT	B	16.4	0.25	21.0	-
				WBL	B	16.6	0.23	15.3	45
				WBT	C	20.5	0.59	49.2	-
				NBL	A	8.7	0.13	11.5	40
				NBT	B	19.1	0.78	135.4	-
				SBL	A	8.0	0.03	2.3	35
				SBT	B	10.7	0.38	44.3	-

As shown in Exhibit 10-2, Three signalized intersections operating above critical thresholds during the weekday PM peak hours were noted:

- At the intersection of Mayfield Road and Heart Lake Road, the southbound left-turn movement has a (v/c of 1.08) during the PM peak; and the westbound through has a (v/c of 0.98) during the PM peak hour.

- The intersection of Highway 410 NB Off-Ramp and Mayfield Road is operating above capacity levels during the AM and PM peak hours:
    - The northbound left-turn is operating above the critical threshold (v/c of 0.77) in the AM peak hour and (v/c of 0.80) in the PM peak hour.
    - The northbound right-turn is operating above the critical threshold (v/c of 0.82) in the AM peak hour and (v/c of 0.89) in the PM peak hour.
    - The westbound through operates above the capacity levels and has a (v/c of 0.96) in the AM peak hour and (v/c of 1.31) in the PM peak hour.
- Mayfield Road and Dixie Road intersection operate above capacity level during the weekday PM peak hour.
    - The northbound left-turn is operating above capacity (v/c of 1.02) during the weekday PM peak hour.

The v/c ratios for the turning movements on the ramp are above the threshold values. However, they are operating below capacity levels.

10.2 Signalized Intersections – Mitigation Measures

In order to improve the capacity performance at the movements that exceed the critical threshold, the following mitigation measures outlined in **Exhibit 10-3** were applied to improve the intersection operations.

Exhibit 10-3: 2034 Future Total Traffic Conditions – Signalized Intersections - Mitigation Measures

INTERSECTION	MOVEMENT	PEAK Hour	IMPROVEMENT
Mayfield Road and Heart Lake Road	SBL	PM	Manually adjusted the total splits.
Highway 410 NB Off-Ramp and Mayfield Road	NBL	AM	Increased the Cycle length from 85 s to 95 s and adjusted the total splits.
	NBR		
	WBT		
Highway 410 NB Off-Ramp and Mayfield Road	NBL	PM	IBI suggests monitoring future traffic operations and optimizing the total splits to cater to future traffic demand.
	NBR		
	WBT		
Mayfield Road and Dixie Road	NBL	PM	IBI suggests monitoring future traffic operations and optimizing the total splits to cater to future traffic demand.
	WBT		

The above measures are implemented, and the results are summarized below in **Exhibit 10-4.** Full Synchro results are available in **Appendix S**.

Exhibit 10-4: 2034 Future Total Traffic Conditions – Signalized Intersections Traffic Operations with improvements

Intersection	Intersection			Movement	LOS	Delay (s)	v/c Ratio	95th Percentile Queue (m)	Storage Length (m)
	LOS	Delay (s)	v/c Ratio						
AM Peak Hour									
Highway 410 NB Off-Ramp and Mayfield Road	C	28.9	0.87	EBT	C	30.0	0.91	166.9	-
				WBT	C	31.2	0.92	164.0	-
				NBL	C	22.5	0.77	85.6	-
				NBR	C	29.6	0.82	111.0	-
PM Peak Hour									
Heart Lake Road and Mayfield Road	D	45.9	0.99	EBL	E	75.8	0.87	43.6	115
				EBT	C	30.7	0.71	123.5	-
				EBR	C	20.4	0.09	11.0	180
				WBL	C	21.0	0.26	9.6	80
				WBT	D	53.3	0.99	223.2	-
				WBR	C	22.2	0.16	14.2	150
				NBL	D	41.8	0.73	85.0	110
				NBT	C	27.2	0.17	32.7	-
				NBR	C	25.3	0.01	-	44
				SBL	F	101.8	1.03	155.5	20
				SBT	C	33.4	0.24	40.5	-
				SBR	C	31.2	0.07	10.4	20
Mayfield Road and Highway 410 SB	A	6.5	0.64	EBT	A	2.2	0.32	10.3	-
				WBT	A	7.2	0.70	84.8	-
				SBL	C	26.7	0.28	12.4	-
				SBR	C	26.1	0.14	9.0	-
Highway 410 NB Off-Ramp and Mayfield Road	E	56.4	1.02	EBT	C	31.4	0.57	99.0	-
				WBT	F	86.8	1.12	272.0	-
				NBL	C	31.8	0.84	184.3	-
				NBR	D	50.0	0.94	251.3	-
Ace Drive and Mayfield Road	C	24	0.62	EBT	C	27.2	0.75	167.8	-
				EBR	B	16.9	0.12	17.1	65
				WBL	C	22.8	0.50	17.6	35
				WBT	C	20.6	0.73	161.2	-
				NBL	D	37.2	0.32	51.6	-
Dixie Road and Mayfield Road	E	62.7	1.2	EBL	F	160.7	1.22	200.3	140
				EBT	C	28.3	0.63	114.3	-
				EBR	C	20.6	0.12	13.0	70
				WBL	C	32.1	0.46	14.9	65
				WBT	F	85.7	1.06	194.3	-
				WBR	C	31.7	0.04	2.3	30
				NBL	F	124.5	1.09	138.3	75
				NBT	C	28.6	0.20	34.2	-
				NBR	C	26.7	0.02	-	60
				SBL	C	31.7	0.36	43.3	30
				SBT	C	31.3	0.40	65.1	-
				SBR	D	44.5	0.78	142.1	138

10.3 Unsignalized Intersections

The traffic analysis results under the 2034 future total traffic conditions for unsignalized intersections are presented in **Exhibit 10-5.**

Exhibit 10-5: 2034 Future Total - Unsignalized Intersection Capacity Analysis

Intersection	Intersection Delay (s)	Lane	Lane LOS	Lane Delay (s)	Lane v/c Ratio	Lane 95th Percentile Queue (m)	Lane Storage Capacity (m)
AM Peak Hour							
Heart Lake Road and Old School Road	8.5	EBLTR	A	8.7	-	-	-
		WBLTR	A	8.5	-	-	-
		NBLTR	A	8.3	-	-	-
		SBLTR	A	8.5	-	-	-
Site Access #3	0.7	WBLR	B	12.0	0.03	0.7	-
		SBLT	A	1.6	0.02	0.4	-
Site Access #2	0.7	WBLR	B	11.8	0.03	0.7	-
		SBLT	A	1.5	0.01	0.3	-
Site Access #1	0.8	WBLR	B	11.6	0.03	0.7	-
		SBLT	A	1.4	0.01	0.3	-
Site Access #4	0.7	EBLR	B	13.4	0.07	1.6	-
		NBLT	A	9.3	0.06	1.6	-
PM Peak Hour							
Heart Lake Road and Old School Road	8.8	EBLTR	A	8.3	-	-	-
		WBLTR	A	9.3	-	-	-
		NBLTR	A	8.5	-	-	-
		SBLTR	A	8.3	-	-	-
Site Access #3	1.2	WBLR	B	13.0	0.10	2.6	-
		SBLT	A	0.5	0.01	0.2	-
Site Access #2	1.2	WBLR	B	12.7	0.10	2.5	-
		SBLT	A	0.6	0.01	0.2	-
Site Access #1	1.2	WBLR	B	12.4	0.09	2.3	-
		SBLT	A	0.7	0.01	0.1	-
Site Access #4	1.2	EBLR	B	12.0	0.16	4.2	-
		NBLT	A	8.1	0.02	0.5	-

As seen in Exhibit 10-5, there are no capacity concerns on the 2034 future total conditions for the unsignalized intersections.

11 Traffic Analysis Summary

The comparison between the 2034 future background and the 2034 future total is presented below in **Exhibit 11-1**

Exhibit 11-1: Traffic Analysis Comparison

Intersection	Peak	Movement	2034 Future Background Conditions			2034 Future Total Traffic Conditions			Comparison		
			Delay (s)	v/c Ratio	95th Percentile Queue (m)	Delay (s)	v/c Ratio	95th Percentile Queue (m)	Delay (s)	v/c Ratio	95th Percentile Queue (m)
Heart Lake Road and Mayfield Road	AM	EBL	25.6	0.42	29	29.2	0.47	32.6	3.6	0.05	3.8
		EBT	28.3	0.81	191	30.1	0.83	190.5	1.8	0.02	0.0
		EBR	20.2	0.43	44	21.2	0.43	44.1	1.0	0.00	0.0
		WBL	103.2	0.97	59	109.8	0.98	59.1	6.6	0.01	0.0
		WBT	15.5	0.50	89	16.6	0.51	89.0	1.1	0.01	0.0
		WBR	12.8	0.22	12	13.6	0.22	11.9	0.8	0.00	0.0
		NBL	37.2	0.38	35	36.9	0.38	34.9	-0.3	0.00	0.0
		NBT	34.5	0.13	24	34.4	0.17	29.9	-0.1	0.04	5.8
		NBR	33.0	0.01	-	32.5	0.01	-	-0.5	0.00	-
		SBL	65.1	0.80	83	69.0	0.83	93.3	3.9	0.03	10.6
		SBT	45.3	0.43	58	45.2	0.45	63.8	-0.1	0.02	6.2
		SBR	40.8	0.10	17	40.2	0.11	17.6	-0.6	0.01	0.7
Heart Lake Road and Mayfield Road	PM	EBL	63.2	0.82	43	75.8	0.87	43.6	12.6	0.05	0.6
		EBT	29.0	0.68	127	30.7	0.71	123.5	1.7	0.03	-3.0
		EBR	19.5	0.09	11	20.4	0.09	11.0	0.9	0.00	0.0
		WBL	20.2	0.25	10	21.0	0.26	9.6	0.8	0.01	-0.2
		WBT	46.6	0.96	230	53.3	0.99	223.2	6.7	0.03	-6.3
		WBR	21.6	0.16	15	22.2	0.16	14.2	0.6	0.00	-0.3
		NBL	43.3	0.73	88	41.8	0.73	85.0	-1.5	0.00	-2.7
		NBT	29.1	0.18	33	27.2	0.17	32.7	-1.9	-0.01	-0.7
		NBR	27.1	0.01	-	25.3	0.01	-	-1.8	0.00	-
		SBL	79.3	0.93	124	101.8	1.03	155.5	22.5	0.10	31.5
		SBT	36.2	0.20	33	33.4	0.24	40.5	-2.8	0.04	7.4
		SBR	34.5	0.06	9	31.2	0.07	10.4	-3.3	0.01	1.2
Mayfield Road and Highway 410 SB	AM	EBT	10.7	0.56	67	11.1	0.57	70.5	0.4	0.01	3.4
		WBT	9.8	0.48	57	10.2	0.48	60.1	0.4	0.00	3.0
		SBL	20.1	0.48	34	20.1	0.49	35.6	0.0	0.01	1.5
		SBR	21.4	0.50	40	21.3	0.51	41.5	-0.1	0.01	1.4
Mayfield Road and Highway 410 SB	PM	EBT	4.4	0.33	25	2.2	0.32	10.3	-2.2	-0.01	-14.3
		WBT	7.7	0.73	84	7.2	0.70	84.8	-0.5	-0.03	1.1
		SBL	24.1	0.27	11	26.7	0.28	12.4	2.6	0.01	1.6
		SBR	23.6	0.13	8	26.1	0.14	9.0	2.5	0.01	1.2
Highway 410 NB Off-Ramp and Mayfield Road	AM	EBT	31.8	0.94	153	30.0	0.91	166.9	-1.8	-0.03	14.0
		WBT	34.1	0.96	150	31.2	0.92	164.0	-2.9	-0.04	13.8
		NBL	20.1	0.75	75	22.5	0.77	85.6	2.4	0.02	10.2
		NBR	27.7	0.82	103	29.6	0.82	111.0	1.9	0.00	7.9
Highway 410 NB Off-Ramp and Mayfield Road	PM	EBT	29.7	0.66	96	31.4	0.57	99.0	1.7	-0.09	3.0
		WBT	168.2	1.29	267	86.8	1.12	272.0	-81.4	-0.17	4.7
		NBL	21.8	0.79	134	31.8	0.84	184.3	10.0	0.05	50.4
		NBR	33.1	0.88	182	50.0	0.94	251.3	16.9	0.06	69.7
Ace Drive and Mayfield Road	AM	EBT	10.4	0.68	126	10.4	0.68	126.1	0.0	0.00	0.0
		EBR	5.9	0.15	12	5.9	0.15	11.8	0.0	0.00	0.0
		WBL	105.5	0.94	29	105.5	0.94	28.5	0.0	0.00	0.0
		WBT	7.4	0.42	61	7.4	0.42	60.7	0.0	0.00	0.0
		NBL	44.0	0.61	54	44.0	0.61	53.5	0.0	0.00	0.0

Intersection	Peak	Movement	2034 Future Background Conditions			2034 Future Total Traffic Conditions			Comparison		
			Delay (s)	v/c Ratio	95th Percentile Queue (m)	Delay (s)	v/c Ratio	95th Percentile Queue (m)	Delay (s)	v/c Ratio	95th Percentile Queue (m)
Ace Drive and Mayfield Road	PM	EBT	28.3	0.79	162	27.2	0.75	167.8	-1.1	-0.04	6.3
		EBR	17.3	0.12	16	16.9	0.12	17.1	-0.4	0.00	0.9
		WBL	23.7	0.52	16	22.8	0.50	17.6	-0.9	-0.02	2.0
		WBT	22.1	0.77	162	20.6	0.73	161.2	-1.5	-0.04	-0.7
		NBL	32.7	0.30	46	37.2	0.32	51.6	4.5	0.02	5.3
Dixie Road and Mayfield Road	AM	EBL	40.1	0.94	162	42.2	0.95	165.5	2.1	0.01	3.3
		EBT	14.7	0.69	130	15.0	0.69	131.6	0.3	0.00	1.5
		EBR	10.0	0.26	19	10.2	0.26	19.1	0.2	0.00	0.2
		WBL	22.0	0.41	9	22.2	0.41	9.2	0.2	0.00	0.3
		WBT	27.2	0.56	67	27.4	0.56	67.0	0.2	0.00	0.4
		WBR	22.1	0.06	5	22.6	0.10	12.4	0.5	0.04	7.6
		NBL	42.4	0.59	38	42.3	0.58	38.3	-0.1	-0.01	0.1
		NBT	34.6	0.30	24	34.7	0.32	25.3	0.1	0.02	1.4
		NBR	32.5	0.04	1	32.4	0.04	0.8	-0.1	0.00	0.0
		SBL	34.9	0.22	15	35.7	0.29	18.0	0.8	0.07	3.0
		SBT	34.6	0.30	25	34.6	0.31	26.1	0.0	0.01	1.3
		SBR	35.2	0.29	26	35.2	0.30	25.5	0.0	0.01	-0.3
Dixie Road and Mayfield Road	PM	EBL	78.5	0.99	174	160.7	1.22	200.3	82.2	0.23	26.1
		EBT	23.3	0.57	104	28.3	0.63	114.3	5.0	0.06	10.3
		EBR	17.2	0.12	12	20.6	0.12	13.0	3.4	0.00	1.2
		WBL	32.5	0.46	13	32.1	0.46	14.9	-0.4	0.00	1.8
		WBT	90.5	1.07	198	85.7	1.06	194.3	-4.8	-0.01	-3.7
		WBR	31.9	0.03	-	31.7	0.04	2.3	-0.2	0.01	-
		NBL	204.6	1.29	149	124.5	1.09	138.3	-80.1	-0.20	-10.4
		NBT	33.3	0.23	37	28.6	0.20	34.2	-4.7	-0.03	-2.6
		NBR	31.0	0.02	-	26.7	0.02	-	-4.3	0.00	-
		SBL	34.9	0.29	33	31.7	0.36	43.3	-3.2	0.07	10.6
		SBT	36.3	0.44	67	31.3	0.40	65.1	-5.0	-0.04	-2.2
		SBR	46.7	0.73	116	44.5	0.78	142.1	-2.2	0.05	26.5
Dixie Road and Old School Road	AM	EBL	17.4	0.06	5	17.4	0.06	5.3	0.0	0.00	0.0
		EBT	23.9	0.63	54	24.0	0.63	54.5	0.1	0.00	0.1
		WBL	18.8	0.20	11	19.0	0.22	11.9	0.2	0.02	0.8
		WBT	18.5	0.23	21	18.5	0.23	20.6	0.0	0.00	0.0
		NBL	9.6	0.14	6	10.2	0.16	6.5	0.6	0.02	0.3
		NBT	9.8	0.33	40	9.8	0.34	40.3	0.0	0.01	0.7
		SBL	7.7	0.06	7	7.7	0.06	6.5	0.0	0.00	0.0
		SBT	20.8	0.83	162	22.7	0.85	170.6	1.9	0.02	8.5
Dixie Road and Old School Road	PM	EBL	16.9	0.23	11	16.9	0.23	11.0	0.0	0.00	0.0
		EBT	16.4	0.25	21	16.4	0.25	21.0	0.0	0.00	0.0
		WBL	16.5	0.23	15	16.6	0.23	15.3	0.1	0.00	0.0
		WBT	20.5	0.59	49	20.5	0.59	49.2	0.0	0.00	0.0
		NBL	8.7	0.13	12	8.7	0.13	11.5	0.0	0.00	0.0
		NBT	18.1	0.76	130	19.1	0.78	135.4	1.0	0.02	5.8
		SBL	8.0	0.03	2	8.0	0.03	2.3	0.0	0.00	0.1
		SBT	10.6	0.37	43	10.7	0.38	44.3	0.1	0.01	1.6

Note: Red font represents a critical movement.

As a result of the comparison, the addition of the site traffic would have minimal impact on the roadway network.

12 Site Plan Review

This section examines the location and configuration of the proposed site access, including available sight distance, the need for dedicated turn lanes, and the need for a traffic control signal.

12.1 Proposed Access Width and Curb Radii

12.1.1 Proposed Site Accesses on Heart Lake Road

Table 8.9.1 from the ***Transportation Association of Canada Geometric Design Guide for Canadian Roads (June 2017) (the*** 'TAC Guide') indicates that for two-way driveways serving industrial lands, typical widths fall between 9.0 and 15.0 m. Moreover, the curb radii at the site must fall between 9.0 and 15.0 m.

12.1.2 Proposed Site Access on Dixie Road

Based on the ***Region of Peel Road Characterization Study (May 2013),*** Dixie Road is considered Suburban Connecter. The minimum width of access on a suburban connector is 9.0 m, and the corner radius's minimum corner radius is 9.0 m.

12.2 Sight Distance Analysis

The TAC Guide document was used to determine if sight distances departing from and approaching the site access to meet minimum standards. A design speed of 100 km/h was used (the municipal default speed limit of 80 km/h for Heart Lake Road and Dixie Road, plus 20 km/h to account for driver speed variances).

12.2.1 Stopping Sight Distance

Stopping sight distance refers to the distance necessary for a driver travelling on Heart Lake Road and Dixie Road to avoid a collision by coming to a complete stop in reaction to a vehicle departing from the proposed site access. For vehicles approaching the site, this distance is given by Equation 2.5.2 in TAC:

$$SSD = 0.278Vt + 0.039\frac{V^2}{a}$$

Where:

SSD = Stopping sight distance (m)
t = Brake reaction time (2.5 s)
V = Design speed (km/h)
a = Deceleration rate (3.4 m/s^2)

The resulting stopping sight distance requirements are illustrated in **Exhibit 12-1.**

Exhibit 12-1: Stopping Sight Distance Summary

	Scenario	Minimum TAC Required Stopping Sight Distance	Available Sight Distance
Proposed site accesses on Heart Lake Road	Approaching Site Access #1 from North	185 m	400 m
	Approaching Site Access #1 from South	185 m	400 m
	Approaching Site Access #2 from North	185 m	400 m
	Approaching Site Access #2 from South	185 m	400 m
	Approaching Site Access #3 from North	185 m	400 m
	Approaching Site Access #3 from South	185 m	400 m
Proposed site access on Dixie Road	Approaching Site Access #4 from North	185 m	400 m
	Approaching Site Access #4 from South	185 m	400 m

As shown in **Exhibit 12-1,** the observed stopping sight distance meets the minimum distances required by TAC guidelines for WB-20 approaching the access from the north and the south.

12.2.2 Departure Sight Distance

Departure sight distance (also known as Intersection Sight Distance) refers to the sight distance necessary for a driver to depart from a driveway and merge into traffic without causing a vehicle travelling along Heart Lake Road and Dixie Road to have to take evasive action (e.g., speed change, lane change).

The required departure sight distance for WB-20 trucks is given by Equation 9.9.1 in TAC:

$$ISD = 0.278\ (V_{major} \times t_g)$$

Where:

ISD	=	Intersection sight distance (m)
V_{major}	=	Design speed 100 km/h)
t_g	=	Time gap for turning movement from stop (11.5 s for left turns by truck, 10.5 s for right turns by truck)

This calculation produces intersection sight distance requirements, as illustrated in **Exhibit 12-2.**

Exhibit 12-2: Departure Sight Distance Summary

	Scenario	Minimum Departure Sight Distance	Available Sight Distance
Proposed site accesses on Heart Lake Road	Left turn from Site Access #1	320 m	400 m
	Right turn from Site Access #1	292 m	400 m
	Left turn from Site Access #2	320 m	400 m
	Right turn from Site Access #2	292 m	400 m
	Left turn from Site Access #3	320 m	400 m
	Right turn from Site Access #3	292 m	400 m
Proposed site access on Dixie Road	Left turn from Site Access #4	320 m	400 m
	Right turn from Site Access #4	292 m	400 m

As illustrated in **Exhibit 12-2**, the observed departure sight distances exceed the minimum distances required by the TAC guidelines for WB-20 trucks making left or right turns from the proposed site egress when looking north and south.

13 Parking Analysis

The purpose of the parking study is to determine if the proposed parking supply – 1090 vehicle parking spaces is an appropriate supply to accommodate anticipated demand from the proposed development. This section analyzes the zoning by-law requirements per ***Town of Caledon Zoning By-Law Section 5.***

13.1 Zoning By-law Requirements

The property is presently governed by the Town Zoning By-law Section 5.2.3 (ZBL) and would be classified as a Warehouse. The relevant vehicle parking requirements, as stipulated in the ZBL, are illustrated in **Exhibit 13-1**

Exhibit 13-1: ZBL Parking Requirements

Land Use	Proposed Units / GFA	Parking Rate Requirement	Required Spaces
Employee Parking Requirements			
BLDG 1	11,316 m^2	Up to 7,000 m2 – 1 parking space per 90 m2 net floor area. 7,000 to 20,000 m^2 – 78 parking spaces, plus 1 parking space per 145 m^2 of net floor area or portion thereof over 7000 m^2. Over 20,000 m^2 – 168 parking spaces, plus 1 parking space per 170 m^2 of net floor area or portion thereof over 20,000 m^2	108
BLDG 2	17,569 m^2		151
BLDG 3	12,252 m^2		115
BLDG 4	16,645 m^2		145
BLDG 5	19,841 m^2		167
BLDG 6	23,269 m^2		188
Total			
		Total Required	874
		Proposed Supply	1090
		Surplus/Deficiency	**216**

As shown in **Exhibit 13-1**, the proposed development would be required to provide 874 parking spaces under the Town of Caledon Zoning By-Law. With a proposed 1090 parking spaces, the proposed development meets the ZBL requirements.

14 Loading Analysis

The purpose of the loading is to determine if the proposed loading supply – 218 loading spaces is an appropriate supply to accommodate anticipated demand from the proposed development. This section analyzes the zoning by-law requirements per ***Town of Caledon Zoning By-Law Section 5.***

14.1 Zoning By-law Requirements

The property is presently governed by the Town Zoning By-law Section 5.2.3 (ZBL) and would be classified as a Warehouse. The relevant loading spaces required, as stipulated in the ZBL, are illustrated in **Exhibit 14-1**

Exhibit 14-1: ZBL Loading Requirements

Land Use	Proposed Units / GFA	Regulation	Required Spaces
Employee Parking Requirements			
BLDG 1	11,316 m^2	Loading Spaces (7,441 m^2 or greater) 3 loading spaces plus 1 additional loading space for each additional 9,300 m^2 or portion thereof in excess of 7,441 m^2	4
BLDG 2	17,569 m^2		5
BLDG 3	12,252 m^2		4
BLDG 4	16,645 m^2		4
BLDG 5	19,841 m^2		5
BLDG 6	23,269 m^2		5
Total			
		Total Required	27
		Proposed Supply	218
		Surplus/Deficiency	**191**

As shown in Exhibit 14-1, the proposed development would be required to provide 27 loading spaces under the Town of Caledon Zoning By-Law. With a proposed 218 parking spaces, the proposed development meets the ZBL requirements.

15 Transportation Demand Management

Transportation Demand Management (TDM) refers to various strategies to reduce traffic congestion, minimize the number of single-occupant vehicles, encourage non-auto modes of travel, and reduce vehicle dependency to create a sustainable transportation system. In summary, TDM works to change how, when, where and why people travel.

TDM strategies have multiple benefits, including the following:

- Reduced auto-related emissions to improve air quality.
- Decreased traffic congestion to reduce travel time.
- Increased travel options for residents and commuters.
- Reduced personal transportation costs and energy consumption; and,
- Support Provincial Smart Growth Objectives.

The above-combined benefits will assist in creating a more active and livable community.

15.1 TDM Strategies Identification

15.1.1 Walking and Cycling

The Town is a pedestrian and cycling supportive community that aims to increase walkable connections by encouraging both utilitarian and recreational travel by walking and cycling through a safe and desirable Town-wide network.

A proposed pedestrian and cycling network has been recommended to accommodate the growing popularity of cycling as a recreational activity and a mode of transportation for short-distance trips as part of the Region's Sustainable Transportation Strategy. This master plan was developed based on the Region's vision of encouraging residents to participate and engage in active transportation to improve and maintain a healthy lifestyle and minimize congestion to the roadway network.

A mobility plan is used to support the TDM plan to reduce auto site trips. It reviews the available walking and cycling opportunities within the study area. It further conceptualizes how the future pedestrian and cycle facilities within the new development will interact with the existing and future infrastructure through the pedestrian and cycling circulation plans.

The Town is a supportive pedestrian and cycling community that embraces the 'complete streets' concept by encouraging utilitarian and recreational travel by walking and cycling through a safe and desirable Town-wide network of on-road and off-road pedestrian and cycling facilities.

15.1.2 Public Transit and High Occupancy Vehicle (HOV) Opportunities

An increase in transit use is fundamental to reducing automobile use. In general, people associate aspects with each mode of transportation (such as safety, reliability, comfort, accessibility, speed, cost, travel time, etc.). Their modal choice is also based on the relative costs of one mode versus another mode. The two characteristics of travel modes most likely to influence modal choice are monetary cost and travel time.

One of the barriers to increased transit ridership is inconvenient transfers and questionable connections between municipal borders. The Move Ontario 2020 vision was a breakthrough in its promise to replace this fragmentation with an adequately integrated network, giving commuters seamless service across municipal boundaries and convenient connection points.

15.2 TDM Strategies Implementation

TDM programs nationally have experienced a wide range of implementation successes. This TDM plan will be site-focused to reduce dependency on single-occupant vehicles (SOV) from a holistic perspective.

15.2.1 Transit Incentive

An increase in transit use is fundamental to reducing automobile use. In general, people associate utilities with each mode of transportation (such as safety, reliability, comfort, accessibility, speed, cost, and travel time). Their mode choice is based on the relative costs of one versus another mode. The two characteristics most likely influence mode choice: monetary cost and travel time.

Transit productivity is a measure of return on investment in the transit system. It measures how many travellers use the transit service provided in a region. Local buses with few passengers suggest that transit systems are not providing transportation benefits consistent with their capital and operating costs. Having more passengers on each bus generates more revenue for transit agencies, resulting in better air quality and less congestion. Moreover, transit service levels (i.e., network coverage and frequency) strongly correlate with transit demand (i.e., ridership).

15.2.2 Marketing

It is recommended that the Region make an information package to inform new/prospective residents of alternative travelling options. It is recommended that the Owner consults with the Region to provide the following materials to promote active transportation:

- City of Brampton Transit Map;
- Town of Caledon Trails Map; and,
- Region of Peel Trails Map.

In addition to the above-noted materials, the information package will also include information on transit schedules (i.e., Brampton Transit) to assist residents in planning their trips (i.e., to/from work/school) utilizing the existing and growing transit network system. A location map will also be prepared to indicate the nearby facilities and points of interest (i.e., retail store, grocery store, school, community centre and library) within convenience and comfortable walking distance to discourage vehicle dependency further.

15.3 TDM Monitoring

A commuter survey typically gathers quantitative data (i.e., percentage use of the various modes of transportation) and qualitative data (i.e., respondents' perception of the alternative transportation programs). This survey will produce and collect essential information to understand the effectiveness of the proposed TDM strategies, which will provide valuable indications (if any) in determining adjustments to the TDM initiatives required to achieve or exceed the targeted outcomes. Moreover, the collected data can also be used to focus on the marketing initiatives and efforts of the Region.

The questionnaire is recommended to contain no more than five questions, as the length of the survey has a negative correlation with both respondent rate and accuracy. Keeping the survey short and simple to understand is the first principle in achieving substantial survey data. In general, the survey should gather the following information:

- **Trip Rate** – to obtain information on how many people travel during the morning and afternoon peak hours (sample question 1);

- **Modal Split** – what is the primary transportation modes when travelling during peak hours (sample question 2);
- **Trip Purpose** – this is to test whether the majority of trips are the journey-to-work trip or other trips, as the TDM strategies should be altered accordingly between work trips and non-work trips (sample question 3);
- **Traveller's preference** – to understand, aside from driving alone, which TDM measures have the most significant potential further to reduce vehicle dependency (sample question 4); and,
- **Comments** allow respondents to express comments that can improve the proposed/implemented TDM strategies (sample question 5).

The statistical reliability of a survey depends in part on the response rate, which is the number of correctly completed surveys compared to the total number of distributed surveys. Therefore, it is important to maximize the survey response rate. Some of the methods that can be used to maximize the response rate are listed as follows:

- Place a notice on a bulletin board and other high pedestrian locations, and attach a cover memorandum to the questionnaire describing the purpose of the survey and requesting cooperation;
- Inform recipients of the duration it takes to respond to the questionnaire, and note that their responses are strictly confidential;
- Offer prizes to respondents, and it is preferably based on a drawing to ensure unbiased;
- Offer a contact person and phone number to respond to any questions that survey recipients may have;
- Facilitate access to the survey questionnaire by posting it on a webpage. As an alternative, deliver the questionnaire and pick up responses of the different tenants;
- Providing the survey in different languages to assist in non-English speaking residents in understanding the survey; and,
- Send one or more reminders (e-mail and flyers) requesting to complete the survey by the due date.

As noted previously, allowing the completion of the survey online can help reduce the time and effort spent circulating and administrating the study.

It is recommended to conduct a baseline survey of residents before starting the TDM program. This can assist in evaluating the program's effectiveness (before and after comparative analysis). Besides, comparing the biennial survey results to previous years can evaluate the program's progress and potential modifications. It is possible to add survey questions to assess the new improvements. Furthermore, Brampton Transit and Go Transit can be consulted for ridership statistics. The Owner shall coordinate with the Town's staff to distribute travel surveys to all new residents and collect information for all blocks when closing unit sales. Monitoring a TDM program can be accomplished by conducting a biennial commuter survey to determine the success of the TDM measures (individually or as a combination). The first survey is recommended to be conducted (1) year after lease signing.

15.4 TDM Communication Strategy

To facilitate the implementation of TDM strategies, information and incentives must be passed from the Region to the public effectively.

The owner is to contact the Region, which will, in turn, provide information packages with site-specific information on nearby pedestrian, bicycle, and transit facilities. These information packages are to be provided by the Region and distributed by the Owner at the time of lease signing.

16 Conclusions

This section summarizes the key findings of this transportation impact study (TIS) based on the analysis year.

2022 Existing Conclusions

The collected peak hour volumes were adjusted to be representative of the existing conditions. The 2022 existing projected traffic volumes have been estimated by applying the growth rate to the through movements of the study intersections.

In general, the area has a couple of trails for cycling, walking, and hiking.

The town doesn't have its own transit service. It depends on Brampton Transit to service the south area of the Town.

Traffic analysis of signalized intersections concluded that:

- The northbound left-turn of Mayfield Road and Heart Lake Road is operating above capacity levels during the weekday PM peak hour, with a (v/c of 1.40);
- At the intersection of Mayfield Road and Dixie Road, the eastbound left-turn movement is operating above capacity (v/c ratio of 1.22) during the weekday PM peak hour; and
- The v/c ratios for the turning movements on the ramp are above the threshold values. However, they are operating below capacity.

Mitigation measures applied to signalized intersections under Existing Conditions are outlined in **Section 17.**

- Traffic analysis of unsignalized intersections concluded that no capacity or queuing concerns were observed at the unsignalized intersections within the study area during the AM and PM peak hours under existing traffic conditions.

2024 Future Background Traffic Conditions

- Study area appropriate traffic growth rates were determined in consultation with the Town. Note that growth rates were only applied eh through movements only.
- The widening of Dixie Road from Mayfield Road to 2 km north from 2 lanes to 4 lanes has been included in the analysis from this stage. Likewise, Mayfield Road from Dixie Road to Bramalea Road from 5 to 6 lanes is widening.
- Traffic analysis of signalized intersections concluded that:
    - Mayfield Road and Heart Lake Road intersection in the PM peak hour with (v/c of 1.19) on the eastbound left-turn movement.

  - The intersection of Highway 410 Northbound Off-Ramp and Mayfield Road during AM and PM peak hours;
    - Northbound right-turn has (v/c of 0.88) in the AM peak and (v/c of 0.99) in the PM peak hour.
    - Northbound left-turn has (v/c of 0.82) in the AM peak and (v/c of 0.95) in the PM peak hour.
- At the intersection of Mayfield Road and Dixie Road, the eastbound left-turn movement is operating above capacity (v/c ratio of 1.18) during the weekday PM peak hour.

Mitigation measures applied to signalized intersections under 2024 future background traffic conditions are outlined in **Section 17**.

Traffic analysis of unsignalized intersections concluded that no capacity or queuing concerns were observed at the unsignalized intersections within the study area during the AM and PM peak hours under 2024 future background traffic conditions.

2029 Future Background Traffic Conditions

Traffic analysis of signalized intersections concluded that:

- Mayfield Road and Heart Lake Road intersection in the PM peak hour with (v/c of 1.26) on the eastbound left-turn movement.
- The intersection of Highway 410 Northbound Off-Ramp and Mayfield Road during AM and PM peak hours;
  - Northbound right-turn has (v/c of 0.83) in the AM peak and (v/c of 0.90) in the PM peak hour.
  - Northbound left-turn has (v/c of 0.76) in the AM peak and (v/c of 0.82) in the PM peak hour.
  - Westbound through has (v/c of 1.08) in the PM peak hour.
- At the intersection of Mayfield Road and Dixie Road
  - The eastbound left-turn movement is operating above capacity (v/c ratio of 1.48) during the weekday AM peak hour and (v/c of 1.35) during the PM peak hour.
  - The northbound left turn operates above capacity levels and has a (v/c of 1.01) in the PM peak hour.

Mitigation measures applied to signalized intersections under 2029 future background traffic conditions are outlined in **Section 17**.

Traffic analysis of unsignalized intersections concluded that no capacity or queuing concerns were observed at the unsignalized intersections within the study area during the AM and PM peak hours under the 2029 future background traffic conditions.

2034 Future Background Traffic Conditions

Traffic analysis of signalized intersections concluded that:

- The intersection of Highway 410 Northbound Off-Ramp and Mayfield Road during the AM peak and PM peak hours:

  - Northbound right-turn has (v/c of 0.86) in the AM peak and (v/c of 0.93) in the PM peak;
  - Northbound left-turn has (v/c of 0.79) in the AM peak; and (v/c of 0.84) in the PM peak.; and
  - Westbound through has (v/c of 1.19) in the PM peak.
- The intersection of Ace Drive and Mayfield Road during the PM peak hour:
  - Westbound left-turn has (v/c of 1.16) in the AM peak.
- At the intersection of Mayfield Road and Dixie Road during the AM peak and PM peak hours:
  - Eastbound left-turn movement operates above capacity (v/c ratio of 1.04) during the weekday AM peak hour. And a (v/c of 1.14) during the PM peak hour;
  - Northbound left-turn has a (v/c of 1.07) during the PM peak hour; and
  - Westbound through has a (v/c of 1.10) during the PM peak hour.

Mitigation measures applied to signalized intersections under 2034 future background conditions are outlined in **Section 17**.

Traffic analysis of unsignalized intersections concluded that no capacity or queuing concerns were observed at the unsignalized intersections within the study area during the AM and PM peak hours under the 2034 future background traffic conditions.

Proposed Development and Trip Generation Summary

- The proponent is proposing to construct 6 warehouse buildings that have a total of 1,085,992 ft2. Four buildings would be on the west side of the GTA 410 Highway expansion, and the other two would be on the east side. The development would have three full moves accesses on Heart Lake Road and one direct connection to Dixie Road.
- Based on ITE Trip Generation Manual 11th Edition, the development is estimated to generate (219 inbound, 46 outbound) in the AM peak hour and (96 inbound, 226 outbound) in the PM peak hour.
- No trip reductions were considered for the proposed development trip generation due to a lack of quantitive data.

2024 Future Total Traffic Conditions

Traffic analysis of signalized intersections concluded that:

- The southbound left-tun movement on Heart Lake Road and Mayfield operates above capacity levels. Likewise, the eastbound left-turn on Dixie Road and Mayfield Road operates above capacity levels.

No mitigation measures were done at this stage of the analysis.

Traffic analysis of unsignalized intersections concluded that no capacity or queuing concerns were observed at the unsignalized intersections within the study area during the AM and PM peak hours under the 2024 future total traffic conditions.

2029 Future Total Traffic Conditions

Traffic analysis of signalized intersections concluded that:

- At the intersection of Mayfield Road and Heart Lake Road, the southbound left-turn movement has a (v/c of 1.07) during the PM peak.
- The intersection of Highway 410 NB Off-Ramp and Mayfield Road are operating above capacity levels during the AM and PM peak hours:
    - The northbound left-turn is operating above capacity levels (v/c of 0.78) in the AM peak hour and (v/c of 1.03) in the PM peak hour.
    - The northbound right-turn is operating above capacity levels (v/c of 0.83) in the AM peak hour and (v/c of 0.90) in the PM peak hour.
    - The westbound through operates above the capacity levels (v/c of 1.03) in the PM peak hour.
- The intersection of Mayfield Road and Dixie Road operates above capacity level during the weekday PM peak hour;
    - The northbound left-turn operates above capacity (v/c of 1.02) during the weekday PM peak hour;

Mitigation measures applied to signalized intersections under 2029 future total traffic conditions are outlined in **Section 17**.

Traffic analysis of unsignalized intersections concluded that no capacity or queuing concerns were observed at the unsignalized intersections within the study area during the AM and PM peak hours under the 2029 future total traffic conditions.

2034 Future Total Traffic Conditions

Traffic analysis of signalized intersections concluded that:

- At the intersection of Mayfield Road and Heart Lake Road, the southbound left-turn movement has a (v/c of 1.08) during the PM peak; and the westbound through has a (v/c of 0.98) during the PM peak hour.
- The intersection of Highway 410 NB Off-Ramp Off-Ramp and Mayfield Road operates above capacity level during the AM and PM peak hours:
    - The northbound left-turn operates above capacity level (v/c of 0.77) in the AM peak hour and (v/c of 0.80) in the PM peak hour.
    - The northbound right-turn operates above capacity level (v/c of 0.82) in the AM peak hour and (v/c of 0.89) in the PM peak hour.
    - The westbound through operates above the capacity level (v/c of 0.96) in the AM peak hour and (v/c of 1.31) in the PM peak hour.
- Mayfield Road and Dixie Road intersection operate above capacity level during the weekday PM peak hour.
    - The northbound left turn operates above capacity level (v/c of 1.02) during the weekday PM peak hour.

Mitigation measures applied to signalized intersections under 2034 future total traffic conditions are outlined in **Section 17**.

Traffic analysis of unsignalized intersections concluded that no capacity or queuing concerns were observed at the unsignalized intersections within the study area during the AM and PM peak hours under the 2034 future total traffic conditions.

Left-Turn Lane Warrant Analysis

The left turn lane warrant analysis was completed using the MTO Design Supplement and the warrant calculations. The analysis concluded with the following results:

- Site Access #1 on Heart Lake Road is not warranted on all three horizons years;
- Site Access #2 on Heart Lake Road is not warranted on all three horizons years;
- Site Access #3 on Heart Lake Road is not warranted on all three horizons years; and
- Site Access #4 on Dixie Road is warranted with a Storage of 25 m on all three horizon years.

Therefore, a left-turn lane is added to the lane configuration at site access #4 on Dixie Road starting from the future (2024) total traffic scenario.

Sightline Analysis

The sightline analysis at the proposed site accesses shows that the observed Stopping Sight Distance (SSD) and Intersection Sight Distance (ISD) meet the minimum distances required by TAC guidelines for WB-20 approaching the north and south access. Moreover, when looking north and south, the observed departure sight distances exceed the minimum distances required by TAC guidelines for WB-20 trucks making left or right turns egress from the proposed site access.

Parking and Loading Spaces Review

The proposed development would require 874 parking spaces based on the Town's Zoning By-Law. The proposed 1090 parking spaces on the proposed development exceed the ZBL parking spaces requirements.

The proposed development would require 27 loading spaces based on the Town's Zoning By-Law. The proposed 218 loading spaces on the proposed development exceed the ZBL loading spaces requirements.

17 Recommendations

Based on the key findings of the traffic analysis, the following are the recommendations:

Scenario	INTERSECTION	MOVEMENT	PEAK Hour	IMPROVEMENT
2022 Existing	Mayfield Road and Heart Lake Road	NBL	PM	Manually adjusted the total splits
	Mayfield Road and Dixie Road	EBL	PM	Manually adjusted the total splits
2024 Future Background	Mayfield Road and Heart Lake Road	EBL	PM	Manually Adjusted the Total Splits
	Highway 410 NB Off-Ramp and Mayfield Road	NBR	PM	Manually Adjusted the Total Splits
		NBL	PM	
	Mayfield Road and Dixie Road	EBL	PM	Manually Adjusted the Total Splits
2029 Future Background	Mayfield Road and Heart Lake Road	EBL	PM	The left turn phase is warranted and has been implemented
	Highway 410 NB Off-Ramp	NBR	PM	Increase the Cycle length from 80 s to 100 s and adjust the total splits
		NBL	PM	
		WBT	PM	
	Mayfield Road and Dixie Road	EBL	AM	Manually adjusted the total splits
		EBL	PM	Increasing the Cycle length from 120 s to 130 s and adjusting the total splits.
2034 Future Background	Mayfield Road and Heart Lake Road	EBL	AM	Manually Adjusted the Total Splits
	Highway 410 NB Off-Ramp	NBR	AM	Increase the Cycle Length from 80 s to 85 s
		NBL	AM	
		NBR	PM	Increase the Cycle Length from 100 s to 110 s
		NBL	PM	
		WBT	PM	
	Mayfield Road and Ace Drive	WBL	PM	The left turn phase is warranted and has been implemented
	Mayfield Road and Dixie Road	EBL	AM	Manually Adjusted the Total Splits
		EBL	PM	Manually Adjusted the Total Splits
		NBL	PM	
		WBT	PM	
2029 Future Total	Mayfield Road and Heart Lake Road	SBL	PM	Manually adjusted the total splits.
	Highway 410 NB Off-Ramp and Mayfield Road	NBL	PM	Increasing the Cycle length doesn't improve the Intersection performance; therefore, no mitigation was made.
		NBR	PM	
		WBT	PM	
	Mayfield Road and Dixie Road	NBL	PM	Manually adjusted the total splits.
2034 Future Total	Mayfield Road and Heart Lake Road	SBL	PM	Manually adjusted the total splits.
	Highway 410 NB Off-Ramp and Mayfield Road	NBL	AM	Increased the Cycle length from 85 s to 95 s and adjusted the total splits.
		NBR	AM	
		WBT	AM	
	Highway 410 NB Off-Ramp and Mayfield Road	NBL	PM	IBI suggests monitoring future traffic operations and optimizing the total splits to cater to future traffic demand.
		NBR	PM	
		WBT	PM	
	Mayfield Road and Dixie Road	NBL	PM	IBI suggests monitoring future traffic operations and optimizing the total splits to cater to future traffic demand.

Warrant Analysis

The left turn lane warrant analysis was completed using the MTO Design Supplement and the warrant calculations. The analysis concluded with the following results:

- Site Access #1 on Heart Lake Road is not warranted on all three horizons years;
- Site Access #2 on Heart Lake Road is not warranted on all three horizons years;
- Site Access #3 on Heart Lake Road is not warranted on all three horizons years; and
- Site Access #4 on Dixie Road is warranted with a Storage of 25 m on all three horizon years.

Therefore, a left-turn lane is added to the lane configuration at site access #4 on Dixie Road starting from the future (2024) total traffic scenario.

Appendix A

Summary of Consultation with Agencies

Adnan Alway

From: Jillian Britto <Jillian.Britto@caledon.ca>
Sent: Monday, May 2, 2022 7:37 AM
To: Rao Marthi
Cc: Arash Olia; Adnan Alway
Subject: RE: Terms of Reference - TIS for 12505 Heart Lake Road, Caledon, Peel Region
Attachments: ToC Historical Midblock Data-Page 2.PNG; ToC Historical Midblock Data-Page 1.PNG; 0 Abbotside Way SPA 21-02 - Traffic Impact Study - 01.21.2021_Excerpts.pdf; 0 Abbotside Way SPA 21-68 - Transportation Impact Study - 08.20.2021_Excerpts.pdf; Mayfield West Industrial Lands Transportation Impact Assessment_Sept2012_Excerpts.pdf

Follow Up Flag: Follow up
Flag Status: Flagged

Good morning Rao,

Hope you had a good weekend.

Thank you for your patience. Please see Town's Transportation Engineering's comments on the scope of work below:

- Please note that the Dixie Road and Old School Road intersection is under the Region's jurisdiction;
- Please note that the Town has only a 2016 TMC for the Heart Lake Road and Old School Road intersection. The Town will accept new traffic surveys with adequate balancing to reflect existing typical traffic volumes;
- Please reach out to the Region for signal timing plans;
- Please see attached Historical midblock counts (2 pages);
- Please see the attached TIS excerpts for the following background developments:
    4. 0 Abbotside Way
    5. 0 Abbotside Way (former place of worship)
    7. Part of Lots 18, 19, 20, Concession 3 EHS NW Quadrant of Mayfield Road and Dixie Road
    8. 0 & 12035 Dixie Road (https://www.caledon.ca/en/town-services/0-and-12035-dixie-road.aspx)

Please let me know if you have any questions or require any further information.

Regards,

Jillian Britto, P.Eng.
Transportation Engineer
Engineering Services Department

Office: 905.584.2272 x 4108
Email: Jillian.Britto@caledon.ca

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From: Rao Marthi <rao.marthi@ibigroup.com>
Sent: Friday, April 29, 2022 4:34 PM
To: Jillian Britto <Jillian.Britto@caledon.ca>
Cc: Arash Olia <Arash.Olia@caledon.ca>; Adnan Alway <adnan.alway@ibigroup.com>
Subject: RE: Terms of Reference - TIS for 12505 Heart Lake Road, Caledon, Peel Region

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Hello Jillian,

Sorry to be a pest, but I need to move this forward.

Could you please send the Traffic Impact Studies for Background Developments #7 and #8?

Regards,

Rao Marthi P.ENG., R.P.P.

Project Manager

IBI GROUP
2620 Bristol Circle, Suite 300
Oakville ON L6H 6Z7 Canada
tel +1 289 815 2975 ext 64326
cell 416 788 6488

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From: Jillian Britto <Jillian.Britto@caledon.ca>
Sent: Tuesday, April 26, 2022 9:53 AM
To: Rao Marthi <rao.marthi@ibigroup.com>
Cc: Arash Olia <Arash.Olia@caledon.ca>; Adnan Alway <adnan.alway@ibigroup.com>
Subject: RE: Terms of Reference - TIS for 12505 Heart Lake Road, Caledon, Peel Region

Good morning Rao,

Hope you are doing well.

My apologies in the delay in getting TOR comments and the background development information to you, our team has had a few priority projects come in over the past couple weeks. I will be able to provide a response to the TOR and any required documents/information by the end of the week.

Regards,

Jillian Britto, P.Eng.
Transportation Engineer
Engineering Services Department

Office: 905.584.2272 x 4108
Email: Jillian.Britto@caledon.ca

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From: Rao Marthi <rao.marthi@ibigroup.com>
Sent: Monday, April 25, 2022 3:37 PM
To: Jillian Britto <Jillian.Britto@caledon.ca>

Cc: Arash Olia <Arash.Olia@caledon.ca>; Adnan Alway <adnan.alway@ibigroup.com>
Subject: RE: Terms of Reference - TIS for 12505 Heart Lake Road, Caledon, Peel Region

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Good Afternoon Jillian,

Hope you had a good weekend.

Following up on Adnan's request, could you please send us the Traffic Impact Studies for Background Developments #7 and #8 mentioned in the map attached?

Thank you,

Rao Marthi P.ENG., R.P.P.

Project Manager

IBI GROUP
2620 Bristol Circle, Suite 300
Oakville ON L6H 6Z7 Canada
tel +1 289 815 2975 ext 64326
cell 416 788 6488

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From: Adnan Alway <adnan.alway@ibigroup.com>
Sent: Thursday, April 7, 2022 5:32 PM
To: Jillian Britto <Jillian.Britto@caledon.ca>
Cc: Rao Marthi <rao.marthi@ibigroup.com>; Arash Olia <Arash.Olia@caledon.ca>
Subject: RE: Terms of Reference - TIS for 12505 Heart Lake Road, Caledon, Peel Region

Hello Jillian,

Thank you for your response. Could you please send me the Traffic Impact Studies for Background Developments #7 and #8 mentioned in the map attached. It will be helpful for us to start working while the Town is reviewing the Terms of Reference.

Thank you,

Adnan Alway

Traffic Operations and Safety Analyst

Vacation alert: I will be on vacation starting April 18th to April 25th, both days inclusive.

IBI GROUP
Suite 200, East Wing-360 James Street North
Hamilton ON L8L 1H5 Canada
tel +1 905 546 1010 ext 63108

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From: Jillian Britto <Jillian.Britto@caledon.ca>
Sent: Wednesday, April 6, 2022 9:12 AM
To: Adnan Alway <adnan.alway@ibigroup.com>
Cc: Rao Marthi <rao.marthi@ibigroup.com>; Arash Olia <Arash.Olia@caledon.ca>
Subject: RE: Terms of Reference - TIS for 12505 Heart Lake Road, Caledon, Peel Region

Good morning Adnan,

Hope you are doing well.

The Town is meeting internally next week to discuss this application in conjunction with the surrounding development applications. Transportation Engineering will provide comments on the scope of work following the internal meeting, end of next week.

Regards,

Jillian Britto, P.Eng.
Transportation Engineer
Engineering Services Department

Office: 905.584.2272 x 4108
Email: Jillian.Britto@caledon.ca

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From: Adnan Alway <adnan.alway@ibigroup.com>
Sent: Monday, April 4, 2022 4:23 PM
To: Jillian Britto <Jillian.Britto@caledon.ca>
Cc: Rao Marthi <rao.marthi@ibigroup.com>
Subject: RE: Terms of Reference - TIS for 12505 Heart Lake Road, Caledon, Peel Region

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Hello Jillian,

Following up with the request below.

Thank you,

Adnan Alway
(he/him/his)

Traffic Operations and Safety Analyst

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Suite 200, East Wing-360 James Street North

Hamilton ON L8L 1H5 Canada
tel +1 905 546 1010 ext 63108

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From: Adnan Alway
Sent: Tuesday, March 29, 2022 2:46 PM
To: Jillian.Britto@caledon.ca
Cc: Rao Marthi (rao.marthi@ibigroup.com) <rao.marthi@ibigroup.com>
Subject: RE: Terms of Reference - TIS for 12505 Heart Lake Road, Caledon, Peel Region

Hello Jillian,

Further submission of ToR, skimmed through the background developments in the Town's web portal and developments in the vicinity of the proposed development 12505 Heart Lake Road are summarized in the attached Document.

Please review and provide your concurrence, and for development #7 in the list, please share the site-generated traffic figure.

Adnan Alway

Traffic Operations and Safety Analyst

IBI GROUP
Suite 200, East Wing-360 James Street North
Hamilton ON L8L 1H5 Canada
tel +1 905 546 1010 ext 63108

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From: Adnan Alway
Sent: Monday, March 28, 2022 12:54 PM
To: Jillian.Britto@caledon.ca; rosalie.shan@peelregion.ca; Mark.j.white@ontario.ca
Cc: Rao Marthi (rao.marthi@ibigroup.com) <rao.marthi@ibigroup.com>
Subject: Terms of Reference - TIS for 12505 Heart Lake Road, Caledon, Peel Region
Importance: High

Hello Engineering Staff at the Town of Caledon, Peel Region, and MTO,

IBI is pleased to provide this Terms of Reference for preparing a Traffic Impact Study (TIS) report in support of a new industrial development at 12505 Heart Lake Road, located on the east side of Heart Lake Road, just outside the Mayfield West Urban Boundary, in the Town of Caledon (the "Town"), within the Peel Region (the "Region). Attached the site plan of the proposed development for reference.

The conceptual site plan submitted in support of this request proposes a total of six (6) industrial buildings. As noted on the site plan, the site has been divided into two (2) areas (East and West) based on the proposed Highway 410 north-south extension which runs through the subject site. Area 1 (West) of the subject site, which fronts onto Heart Lake Road, consists of four industrial buildings with a combined GFA of 57,872 m^2 and will be discussed as part of Phase 1. Area 2 (East), on the eastern portion of the subject site, also contains two industrial buildings with a combined GFA of 43,110 m^2 and will be further discussed as part of Phase 2.

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- Identify and document any additional deficiencies or operational problems.

1. **We request the Town/Region/MTO to advise, whether it will be acceptable to conduct new traffic surveys to collect the traffic volume data that reflects existing typical traffic operations. Otherwise, IBI will check for the latest turning movement counts (TMC) data at the noted intersections in Town's/Region's/MTO's database for purchase.**

2. **We ask the Town/Region/MTO to kindly provide contact information of appropriate staff members for TMC and Signal Timing Plans (STP) data acquisition.**

Future Background conditions assessment includes the following tasks:

- Develop future background traffic volumes for development site opening year, five (5)-year, and (10)-year horizon using the traffic growth factors and additional traffic from planned/approved developments in the proximity of the proposed development;
- Calculate traffic growth rate from regression analysis of historic AADT / ATR / TMC counts, or calibrated travel demand forecasting, or other area transportation studies, whichever is available;
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Transportation Demand Management Plan:

- Prepare and submit Transportation Demand Management Plan based on the Town's 2017 Transportation Master Plan ("TMP") to identify sustainable travel choices, and travel modes, including alternative existing and future active transportation networks.

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Adnan Alway

From: Hosseini, Hossein (MTO) <Hossein.Hosseini@ontario.ca>
Sent: Wednesday, March 30, 2022 11:50 AM
To: Rao Marthi; Adnan Alway
Cc: Routledge, Graham (MTO); Beyer, Curtis (MTO); White, Mark J. (MTO); McGarry, Jonathan (MTO); Jillian.Britto@caledon.ca; rosalie.shan@peelregion.ca
Subject: RE: Terms of Reference - TIS for 12505 Heart Lake Road, Caledon, Peel Region

Hello Adnan,

The proposed development site at 12505 Heart Lake Road is overlapping the preferred route and the Focused Analysis Area (FAA 2020) land protection boundary for the Highway 413 project. The Highway 413 project team is unable to allow developments within the FAA limits at this time as the lands within the FAA may be directly impacted by the Highway 413 transportation corridor, ancillary uses, or if refinements are made to the route during the preliminary design stage.

Please let us know if you have any questions.

Thank you
Hossein

Hossein Hosseini, P.Eng., PMP
Senior Project Engineer

Major Planning Projects Section
Major Planning and Innovations Office
Asset Management Branch,Transportation Infrastructure Management Division
Direct: 437-771-5385
E-mail: hossein.hosseini@ontario.ca

From: Adnan Alway <adnan.alway@ibigroup.com>
Sent: March 28, 2022 12:54 PM
To: Jillian.Britto@caledon.ca; rosalie.shan@peelregion.ca; White, Mark J. (MTO) <Mark.J.White@ontario.ca>
Cc: Rao Marthi <rao.marthi@ibigroup.com>
Subject: Terms of Reference - TIS for 12505 Heart Lake Road, Caledon, Peel Region
Importance: High

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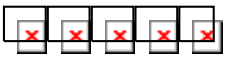
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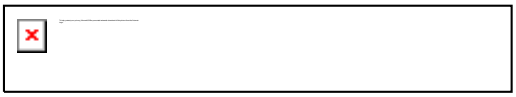
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Adnan Alway

Traffic Operations and Safety Analyst

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Adnan Alway

From: Jillian Britto <Jillian.Britto@caledon.ca>
Sent: Monday, May 2, 2022 10:42 AM
To: Adnan Alway
Cc: Rao Marthi; Arash Olia
Subject: RE: Terms of Reference - TIS for 12505 Heart Lake Road, Caledon, Peel Region

Hi Adnan,

My apologies for missing this. Yes, the proposed methodology for the existing traffic volumes at the Town intersection and growth along Town roads are acceptable.

Regards,

Jillian Britto, P.Eng.
Transportation Engineer
Engineering Services Department

Office: 905.584.2272 x 4108
Email: Jillian.Britto@caledon.ca

Town of Caledon | www.caledon.ca | www.visitcaledon.ca | Follow us @YourCaledon

---

From: Adnan Alway <adnan.alway@ibigroup.com>
Sent: Monday, May 2, 2022 10:32 AM
To: Jillian Britto <Jillian.Britto@caledon.ca>
Cc: Rao Marthi <rao.marthi@ibigroup.com>; Arash Olia <Arash.Olia@caledon.ca>
Subject: RE: Terms of Reference - TIS for 12505 Heart Lake Road, Caledon, Peel Region

CAUTION: This email originated from outside of the organization. Do not click links or open attachments unless you recognize the sender and know the contents to be safe.

Hello Jillian,

IBI sent an email earlier regarding the available Traffic Counts and Growth Rates, Could you please provide your comments and feedback.

Thank you,

From: Adnan Alway
Sent: Tuesday, March 29, 2022 3:14 PM
To: Jillian.Britto@caledon.ca; Mark.j.white@ontario.ca; rosalie.shan@peelregion.ca
Cc: Rao Marthi (rao.marthi@ibigroup.com) <rao.marthi@ibigroup.com>
Subject: RE: Terms of Reference - TIS for 12505 Heart Lake Road, Caledon, Peel Region

Hello Engineering Staff at the Town of Caledon, Peel Region, and MTO,

Further to submission of ToR for a proposed industrial development at 12505 Heart Lake Road, we found the latest traffic counts from various sources done prior to COVID in December 2019 and summarized in Table below:

Intersection	TMC Count Dates	Source
Heart Lake and Mayfield Road	November 29, 2016	Peel Region
Highway 410 SB Off-Ramp	May 26, 2016	MTO
Highway 410 NB Off-Ramp	May 26, 2016	MTO
Dixie Road and Mayfield Road	October 03, 2019	LEA Consulting
Dixie Road and Old School Road	October 03, 2019	LEA Consulting
Heart Lake Road and Old School Road	December 15, 2020	LEA Consulting

The traffic data will be projected to the year 2022 using the traffic growth rates, summarized below, for the study area roadways adopted from TIS reports done by IBI Group and LEA Consulting.

Intersection	Traffic Growth Rate	Source
Mayfield Road	4%	TIS report for proposed Industrial development at 12304 Heart Lake Road, IBI Group
Highway 410 SB Off-Ramp	1.5%	
Highway 410 NB Off-Ramp	1.5%	
Heart Lake Road	2.0%	
Dixie Road	2.0%	TIS report for proposed Industrial development at 12892 Dixie Road, LEA Consulting
Old School Road	2.0%	

Could you please review and provide your concurrence for the above said methodology?

Thank you,

Adnan Alway

Traffic Operations and Safety Analyst

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From: Adnan Alway
Sent: Tuesday, March 29, 2022 2:46 PM
To: Jillian.Britto@caledon.ca
Cc: Rao Marthi (rao.marthi@ibigroup.com) <rao.marthi@ibigroup.com>
Subject: RE: Terms of Reference - TIS for 12505 Heart Lake Road, Caledon, Peel Region

Hello Jillian,

Further submission of ToR, skimmed through the background developments in the Town's web portal and developments in the vicinity of the proposed development 12505 Heart Lake Road are summarized in the attached Document.

Please review and provide your concurrence, and for development #7 in the list, please share the site-generated traffic figure.

Adnan Alway

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- Check parking requirements of the proposed development using the Town's Zoning By-law.

Transportation Demand Management Plan:

- Prepare and submit Transportation Demand Management Plan based on the Town's 2017 Transportation Master Plan ("TMP") to identify sustainable travel choices, and travel modes, including alternative existing and future active transportation networks.

We trust this Terms of Reference is to your satisfaction and should you have any questions or comments, please do not hesitate to contact the undersigned. We thank you for your assistance.

Adnan Alway

Traffic Operations and Safety Analyst

IBI GROUP
Suite 200, East Wing-360 James Street North
Hamilton ON L8L 1H5 Canada
tel +1 905 546 1010 ext 63108

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Adnan Alway

From: Adnan Alway
Sent: Monday, May 2, 2022 10:59 AM
To: Shan, Rosalie
Cc: Rao Marthi
Subject: RE: Terms of Reference - TIS for 12505 Heart Lake Road, Caledon, Peel Region

Hello Rosalie,

The client is still in the process of the submission and we don't have any site plan file number at this point of time.

Thank you,

From: Shan, Rosalie <rosalie.shan@peelregion.ca>
Sent: Tuesday, April 5, 2022 5:57 PM
To: Adnan Alway <adnan.alway@ibigroup.com>
Cc: Rao Marthi <rao.marthi@ibigroup.com>
Subject: RE: Terms of Reference - TIS for 12505 Heart Lake Road, Caledon, Peel Region

Hi Adnan,

Thank you for the follow up and circulation.

May I know the site plan file number if you have one? I cannot locate the development information from our internal circulation.

In addition, since heart lake road is not Regional Road, Traffic Development does not have comments at this time. Please find the link here for the detailed Region of Peel TIS formatting and contact information for background traffic (growth rate, AADT, signal timing, etc.). Let me know if you have any questions or concerns.

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

Region of Peel
working with you

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From: Adnan Alway <adnan.alway@ibigroup.com>
Sent: April 4, 2022 4:22 PM
To: Shan, Rosalie <rosalie.shan@peelregion.ca>
Cc: Rao Marthi <rao.marthi@ibigroup.com>
Subject: RE: Terms of Reference - TIS for 12505 Heart Lake Road, Caledon, Peel Region

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Hello Rosalie

IBI sent the Terms of Reference last Monday, could you please review and provide us the requested information?

Thank you,

Adnan Alway
(he/him/his)

Traffic Operations and Safety Analyst

IBI GROUP
Suite 200, East Wing-360 James Street North
Hamilton ON L8L 1H5 Canada
tel +1 905 546 1010 ext 63108





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From: Adnan Alway
Sent: Monday, March 28, 2022 12:54 PM
To: Jillian.Britto@caledon.ca; rosalie.shan@peelregion.ca; Mark.j.white@ontario.ca
Cc: Rao Marthi (rao.marthi@ibigroup.com) <rao.marthi@ibigroup.com>
Subject: Terms of Reference - TIS for 12505 Heart Lake Road, Caledon, Peel Region
Importance: High

Hello Engineering Staff at the Town of Caledon, Peel Region, and MTO,

IBI is pleased to provide this Terms of Reference for preparing a Traffic Impact Study (TIS) report in support of a new industrial development at 12505 Heart Lake Road, located on the east side of Heart Lake Road, just outside the Mayfield West Urban Boundary, in the Town of Caledon (the "Town"), within the Peel Region (the "Region). Attached the site plan of the proposed development for reference.

The conceptual site plan submitted in support of this request proposes a total of six (6) industrial buildings. As noted on the site plan, the site has been divided into two (2) areas (East and West) based on the proposed Highway 410 north-south extension which runs through the subject site. Area 1 (West) of the subject site, which fronts onto Heart Lake Road, consists of four industrial buildings with a combined GFA of 57,872 m^2 and will be discussed as part of Phase 1. Area 2 (East), on the eastern portion of the subject site, also contains two industrial buildings with a combined GFA of 43,110 m^2 and will be further discussed as part of Phase 2.

The proposed four buildings on the west side of the proposed Highway 410 north-south extension will be connected to Heart Lake Road. While the proposed two buildings on the east side will be connected to Dixie Road through a proposed extension of the roadway. **Note that the attached site plan is conceptual, and site statistics are subject to change.**

The Client is seeking to redesignate the lands for employment and employment-related uses in advance of the Regional MCR process. It is IBI Group's understanding that this process will likely require an Official Plan Amendment and Site Plan Application.

We request the Town/Region/MTO to review the following information and provide feedback kindly. Otherwise, forward this request to the appropriate staff member for review. Kindly review the highlighted sections in detail as they are of the most importance.

The scope of the Transportation Impact Study (TIS) includes the following activities:

Existing conditions assessment includes the following tasks:

- IBI Proposes to include the following intersections in traffic analysis:
  - Heart Lake Road and Old School Road (unsignalized) – **Town**;
  - Dixie Road and Old School Road (signalized) – **Town**;
  - Heart Lake Road and Mayfield Road (signalized) – **Region**;
  - Mayfield Road and Ace Drive (signalized); - **Region**;
  - Mayfield Road and Dixie Road (signalized) – **Region**;
  - Mayfield Road and Highway 410 Southbound Off-Ramp (Signalized) - **Region/MTO**; and
  - Mayfield Road and Highway 410 Northbound Off-Ramp (signalized) - **Region/MTO**.
- Obtain/undertake weekday morning (7:00 AM – 9:00 AM) and afternoon (4:00 PM – 6:00 PM) peak hour traffic turning movements counts at the above intersections;
- Assess traffic operation and queuing analyses using Synchro 11.0 analysis package;
- Identify and document any additional deficiencies or operational problems.

1. **We request the Town/Region/MTO to advise, whether it will be acceptable to conduct new traffic surveys to collect the traffic volume data that reflects existing typical traffic operations. Otherwise, IBI will check for the latest turning movement counts (TMC) data at the noted intersections in Town's/Region's/MTO's database for purchase.**

2. **We ask the Town/Region/MTO to kindly provide contact information of appropriate staff members for TMC and Signal Timing Plans (STP) data acquisition.**

Future Background conditions assessment includes the following tasks:

- Develop future background traffic volumes for development site opening year, five (5)-year, and (10)-year horizon using the traffic growth factors and additional traffic from planned/approved developments in the proximity of the proposed development;
- Calculate traffic growth rate from regression analysis of historic AADT / ATR / TMC counts, or calibrated travel demand forecasting, or other area transportation studies, whichever is available;
- Complete queuing analysis using Synchro 11.0 software under future background traffic conditions;
- Identify and document any additional deficiencies or operational problems;

4. We request the Town/Region to provide appropriate staff member contact information to acquire historic AADT / ATR / TMC data, calibrated travel demand forecasting, or other area transportation studies that we can use for future background traffic growth projection.

5. We request the Town/Region/MTO to provide the background development information (Site Plans, Transportation Studies, Units, GFA/GLA, Planned Completion Year/Construction Phases etc.) that need to be accounted for in our study. Please review and provide feedback. Otherwise, forward this request to the appropriate staff member for review.

Site Traffic Generation, Distribution, and Assignment includes the following tasks:

- Determine site generated trips during the weekday morning and afternoon peak hours using data from the Trip Generation Manual, 10th Edition published by the Institute of Transportation Engineers (ITE), adjusted (reduced) by a transit mode split factor determined from the TTS analyses;
- Provide supporting documentation for the proposed modal split reductions for all horizon years based on The Town's Transportation Master Plan;
- Develop a site traffic distribution using the 2016 Transportation Tomorrow Survey (TTS) data and existing traffic patterns;
- Assign site traffic to the network based on logical travel routes and available traffic capacity.

Future Total conditions assessment includes the following tasks:

- Develop and plot the future total traffic volumes for development site opening year, five (5)-year, and 10-year horizon;
- Assess the future total traffic operations at the study area intersections with the addition of the Heart Lake Road and Abbotside Way future extension intersection, and the proposed site access driveways, IBI will identify and document the operational deficiencies;
- Complete queuing analysis using Synchro 11.0 software under future total traffic conditions;
- Identify and document any additional deficiencies or operational problems.

Design Vehicle Maneuverability Review includes the following tasks:

- Confirm that WB-20 (53' truck), waste collection vehicle, emergency response vehicle, and delivery vehicle using AutoTURN can enter/exit the site in a forward motion, and that access to the loading areas is functional;
- Confirm that access to critical parking areas by passenger vehicles are functional.

Site Access Review includes the following tasks:

- Check left-turn lane and right-turn lane warrant analysis will be conducted for the proposed site accesses, based on the Transportation Association of Canada (TAC) Geometric Design Guide for Canadian Roads (June 2017) and the MTO Design Supplement document;
- Compare the proposed subdivision road geometry, width, clear throat length, and curb radius with the Town's Development Standard Manual;
- Check compliance and variance with the standards and guidelines.

Site Access Sightline Assessment includes the following tasks:

- Complete a desktop review of the sightline assessment at the proposed site access driveways on Heart lake Road and Abbotside Way;
- Compare the available sightlines against the applicable standards, i.e., the 2017 Transportation Association of Canada (TAC) Geometric Design Guide for Canadian Roads (June 2017) Manual.

Parking Review includes the following tasks:

- Check parking requirements of the proposed development using the Town's Zoning By-law.

Transportation Demand Management Plan:

- Prepare and submit Transportation Demand Management Plan based on the Town's 2017 Transportation Master Plan ("TMP") to identify sustainable travel choices, and travel modes, including alternative existing and future active transportation networks.

We trust this Terms of Reference is to your satisfaction and should you have any questions or comments, please do not hesitate to contact the undersigned. We thank you for your assistance.

Adnan Alway

Traffic Operations and Safety Analyst

IBI GROUP
Suite 200, East Wing-360 James Street North
Hamilton ON L8L 1H5 Canada
tel +1 905 546 1010 ext 63108





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Adnan Alway

From: Yap, Michael <michael.yap@peelregion.ca>
Sent: Thursday, April 14, 2022 12:38 PM
To: Adnan Alway
Cc: Rao Marthi
Subject: RE: STP request - Mayfield Road and Ace Drive, Town of Caledon
Attachments: Signal Timing_Mayfield Rd @ Ace Dr_For Customer.pdf; Receipt_STP_20220406_Mayfield Rd @ Ace Dr.pdf

Hi Adnan,

Please see the attached.

1) Signal timing plan
2) Payment Receipt

Please let us know if you have any questions or concerns.

Kind Regards,

Michael Yap

Region of Peel working with you

Technical Analyst | Traffic Signal and Streetlighting | Traffic Engineering
10 Peel Centre Drive Suite B, 4th Floor, Brampton, ON, L6T 4B9
P: 905.791.7800 ext. 7857 | E: Michael.Yap@peelregion.ca

From: Adnan Alway <adnan.alway@ibigroup.com>
Sent: April 13, 2022 9:50 AM
To: Yap, Michael <michael.yap@peelregion.ca>
Cc: Rao Marthi <rao.marthi@ibigroup.com>
Subject: RE: STP request - Mayfield Road and Ace Drive, Town of Caledon

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Hello Michael,

We requested the Signal Timing Plan for Mayfield Road and Ace Drive last Wednesday and we paid the fee, do you have a timeline on when can we get it?

Thank you,

Adnan Alway

Vacation Alert: I'm going on vacation on the April 18th to April 25th both days inclusive

Traffic Operations and Safety Analyst

IBI GROUP
Suite 200, East Wing-360 James Street North
Hamilton ON L8L 1H5 Canada
tel +1 905 546 1010 ext 63108

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From: Yap, Michael <michael.yap@peelregion.ca>
Sent: Wednesday, April 6, 2022 1:16 PM
To: Adnan Alway <adnan.alway@ibigroup.com>
Cc: Rao Marthi <rao.marthi@ibigroup.com>
Subject: RE: STP request - Mayfield Road and Ace Drive, Town of Caledon

Hi Adnan,

Thanks for calling in.

Each signal timing is 56.30$
Link on prices: https://www.peelregion.ca/pw/transportation/business/traffic-data.asp

We will need the card number and expiration date over the phone. It has to be a Mastercard or a Visa.

It will take couple of days get the information.

Kind Regards,

Michael Yap
Region of Peel working with you
Technical Analyst | Traffic Signal and Streetlighting | Traffic Engineering
10 Peel Centre Drive Suite B, 4th Floor, Brampton, ON, L6T 4B9
P: 905.791.7800 ext. 7857 | E: Michael.Yap@peelregion.ca

From: Adnan Alway <adnan.alway@ibigroup.com>
Sent: April 5, 2022 2:40 PM
To: Yap, Michael <michael.yap@peelregion.ca>
Cc: Rao Marthi <rao.marthi@ibigroup.com>
Subject: STP request - Mayfield Road and Ace Drive, Town of Caledon

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

Hello Michael,

May I please have the latest Signal Timing Plan for Mayfield Road and Ace Drive in the Town of Caledon?

Thank you,

Adnan Alway

Traffic Operations and Safety Analyst

IBI GROUP
Suite 200, East Wing-360 James Street North
Hamilton ON L8L 1H5 Canada
tel +1 905 546 1010 ext 63108

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Region of Peel
Working for you

Printed on: Fri Mar 25 2022 10:00:49 GMT-0400 (Eastern Daylight Time)

Thank you for your Inquiry.

Thank you for your Inquiry to the Region of Peel.

Your comments are important to us.

- It is the Region of Peel's policy to respond within two working days to e-mail requests.
- If no response is received within this time period please call 905-791-7800.

Your Email was sent as follows:

To: Traffic Inquiries
From: Adnan Alway adnan.alway@ibigroup.com
Subject: AADT - 12505 Heart Lake Road, Town of Caledon

Hello Peel Region,

IBI is working on Transportation impact Study for 12505 Heart Lake Road located in the Town of Caledon for a proposed Warehouse development.

We are requesting historic AADT data for the following corridors:

Dixie Road from Mayfield to Old School Road.

The AADT will help us calculate the growth rate for the above corridors so we apply it in the future background conditions and the Future total conditions.

Please let me know if you have any questions.

Thank you,

Adnan,

Peel Region

Region of Peel
Working for you

Printed on: Thu Mar 24 2022 17:14:25 GMT-0400 (Eastern Daylight Time)

Thank you for your Inquiry.

Thank you for your Inquiry to the Region of Peel.

Your comments are important to us.

- It is the Region of Peel's policy to respond within two working days to e-mail requests.
- If no response is received within this time period please call 905-791-7800.

Your Email was sent as follows:

To: Traffic Inquiries
From: Adnan Alway adnan.alway@ibigroup.com
Subject: TMC request

Good afternoon,

IBI is working on Transportation Impact Study for a proposed industrial development located at 12505 Heart Lake Road, The study area for the proposed development includes the following intersections:

1. Heart Lake Road & Old School Road (unsignalized);
2. Dixie Road & Old School Road (signalized);
3. Heart lake Road & Mayfield Road (signalized);
4. Mayfield Road & Highway 410 Southbound Off-Ramp (signalized);
5. Mayfield Road & Highway 410 Northbound Off-Ramp (signalized);
6. Mayfield Road & Ace Drive (signalized); and
7. Mayfield Road & Dixie Road (signalized).

Could you please provide us with the latest available Turning Movements Counts for the above intersections.

Let me know if you have any questions,

Thank you,

Peel Region

TOWN OF CALEDON

Close this Window

Please enter your email address, subject and message, and click the "Send Email" button. If your request requires follow-up, please be sure to include your full name, day-time phone number and any relevant address information in the text of your email message.

Your email Address: *
adnan.alway@ibigroup.com

Your Name:
Adnan Abou Alway

Subject:
AADT - Town of Caledon

Your Message: *
1525 characters left

Good afternoon,
IBI is working on Transportation Impact Study for a proposed industrial development located at 12505 Heart Lake Road.

We are requesting historic AADT data for the following corridors:
Old School Road from Heart lake Road to Dixie Road.

The AADT will help us calculate the growth rate for the above corridors so we apply it in the future background conditions and the Future total conditions.
Please let me know if you have any questions.
Thank you,
Adnan,

Attachment:
(5 MB, 5 files)
Choose File No file chosen Remove

Add attachment

I'm not a robot
reCAPTCHA
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Send Email

Appendix B

Turning Movement Counts (TMC) Data

TOWN OF CALEDON
PLANNING
RECEIVED
Feb 26, 2021

Spectrum

Turning Movement Count
Location Name: DIXIE RD & OLD SCHOOL RD
Date: Thu, Oct 03, 2019 Deployment Lead: Patrick Filopoulos

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

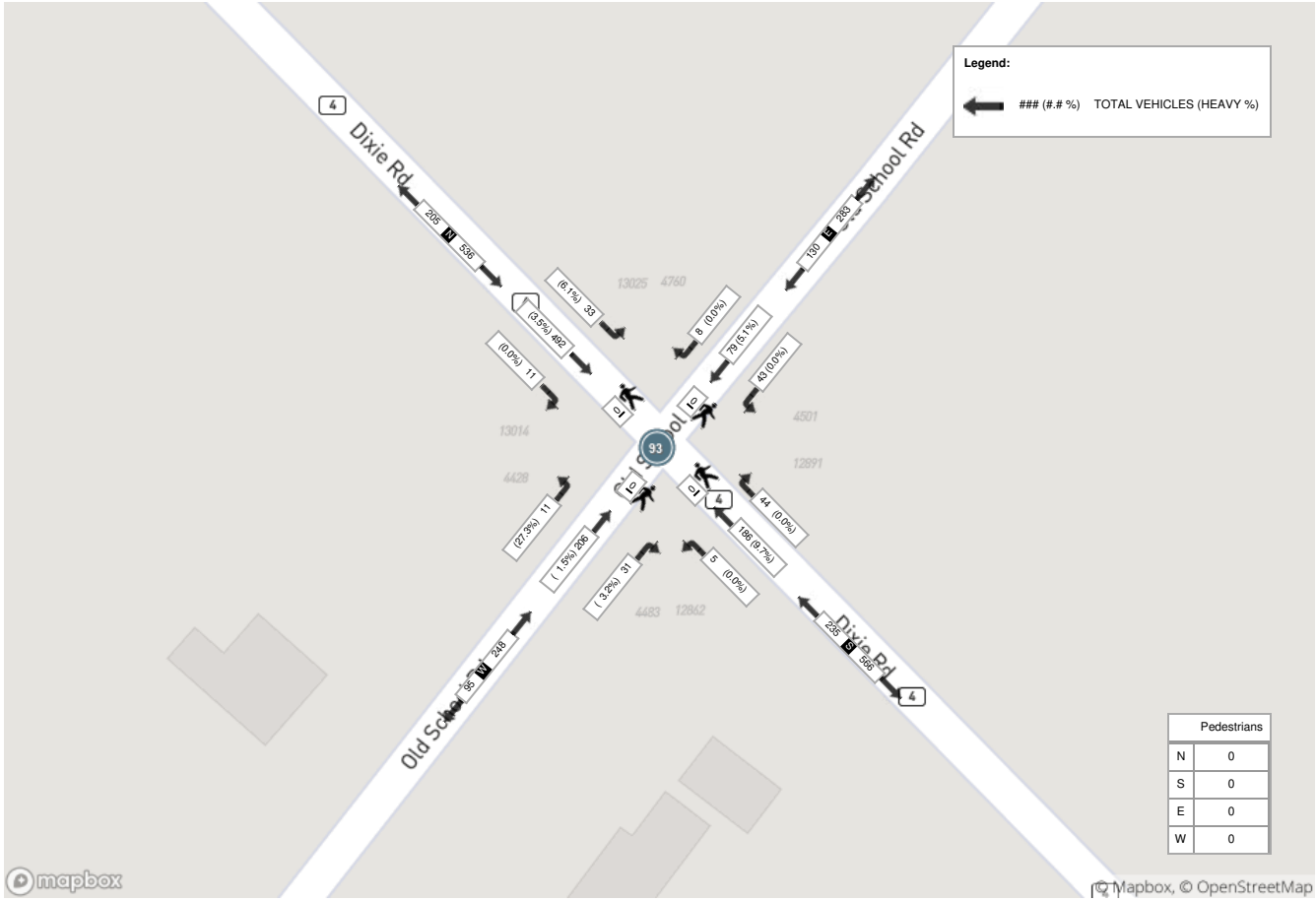
Start Time	N Approach DIXIE RD						E Approach OLD SCHOOL RD						S Approach DIXIE RD						W Approach OLD SCHOOL RD						Int. Total (15 min)
	Left	Thru	Right	UTurn	Peds	Approach Total	Left	Thru	Right	UTurn	Peds	Approach Total	Left	Thru	Right	UTurn	Peds	Approach Total	Left	Thru	Right	UTurn	Peds	Approach Total	
07:15:00	2	132	2	0	0	136	6	16	0	0	0	22	2	42	10	0	0	54	4	27	3	0	0	34	246
07:30:00	10	144	3	0	0	157	12	18	3	0	0	33	1	40	11	0	0	52	3	70	10	0	0	83	325
07:45:00	16	122	2	0	0	140	17	24	0	0	0	41	0	56	15	0	0	71	3	68	10	0	0	81	333
08:00:00	5	94	4	0	0	103	8	21	5	0	0	34	2	48	8	0	0	58	1	41	8	0	0	50	245
Grand Total	33	492	11	0	0	536	43	79	8	0	0	130	5	186	44	0	0	235	11	206	31	0	0	248	**1149**
Approach%	6.2%	91.8%	2.1%	0%		-	33.1%	60.8%	6.2%	0%		-	2.1%	79.1%	18.7%	0%		-	4.4%	83.1%	12.5%	0%		-	**-**
Totals %	2.9%	42.8%	1%	0%		46.6%	3.7%	6.9%	0.7%	0%		11.3%	0.4%	16.2%	3.8%	0%		20.5%	1%	17.9%	2.7%	0%		21.6%	**-**
PHF	0.52	0.85	0.69	0		0.85	0.63	0.82	0.4	0		0.79	0.63	0.83	0.73	0		0.83	0.69	0.74	0.78	0		0.75	**-**
Heavy	2	17	0	0		19	0	4	0	0		4	0	18	0	0		18	3	3	1	0		7	**-**
Heavy %	6.1%	3.5%	0%	0%		3.5%	0%	5.1%	0%	0%		3.1%	0%	9.7%	0%	0%		7.7%	27.3%	1.5%	3.2%	0%		2.8%	**-**
Lights	31	475	11	0		517	43	75	8	0		126	5	168	44	0		217	8	203	30	0		241	**-**
Lights %	93.9%	96.5%	100%	0%		96.5%	100%	94.9%	100%	0%		96.9%	100%	90.3%	100%	0%		92.3%	72.7%	98.5%	96.8%	0%		97.2%	**-**
Single-Unit Trucks	0	7	0	0		7	0	0	0	0		0	0	7	0	0		7	0	0	1	0		1	**-**
Single-Unit Trucks %	0%	1.4%	0%	0%		1.3%	0%	0%	0%	0%		0%	0%	3.8%	0%	0%		3%	0%	0%	3.2%	0%		0.4%	**-**
Buses	2	7	0	0		9	0	4	0	0		4	0	7	0	0		7	2	2	0	0		4	**-**
Buses %	6.1%	1.4%	0%	0%		1.7%	0%	5.1%	0%	0%		3.1%	0%	3.8%	0%	0%		3%	18.2%	1%	0%	0%		1.6%	**-**
Articulated Trucks	0	3	0	0		3	0	0	0	0		0	0	4	0	0		4	1	1	0	0		2	**-**
Articulated Trucks %	0%	0.6%	0%	0%		0.6%	0%	0%	0%	0%		0%	0%	2.2%	0%	0%		1.7%	9.1%	0.5%	0%	0%		0.8%	**-**
Pedestrians	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	**-**
Pedestrians%	-	-	-	-	0%		-	-	-	-	0%		-	-	-	-	0%		-	-	-	-	0%		**-**

TOWN OF CALEDON
PLANNING
RECEIVED
Feb 26, 2021

Spectrum

Turning Movement Count
Location Name: DIXIE RD & OLD SCHOOL RD
Date: Thu, Oct 03, 2019 Deployment Lead: Patrick Filopoulos

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



TOWN OF CALEDON
PLANNING
RECEIVED
Feb 26, 2021

Spectrum

Turning Movement Count
Location Name: DIXIE RD & OLD SCHOOL RD
Date: Thu, Oct 03, 2019 Deployment Lead: Patrick Filopoulos

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

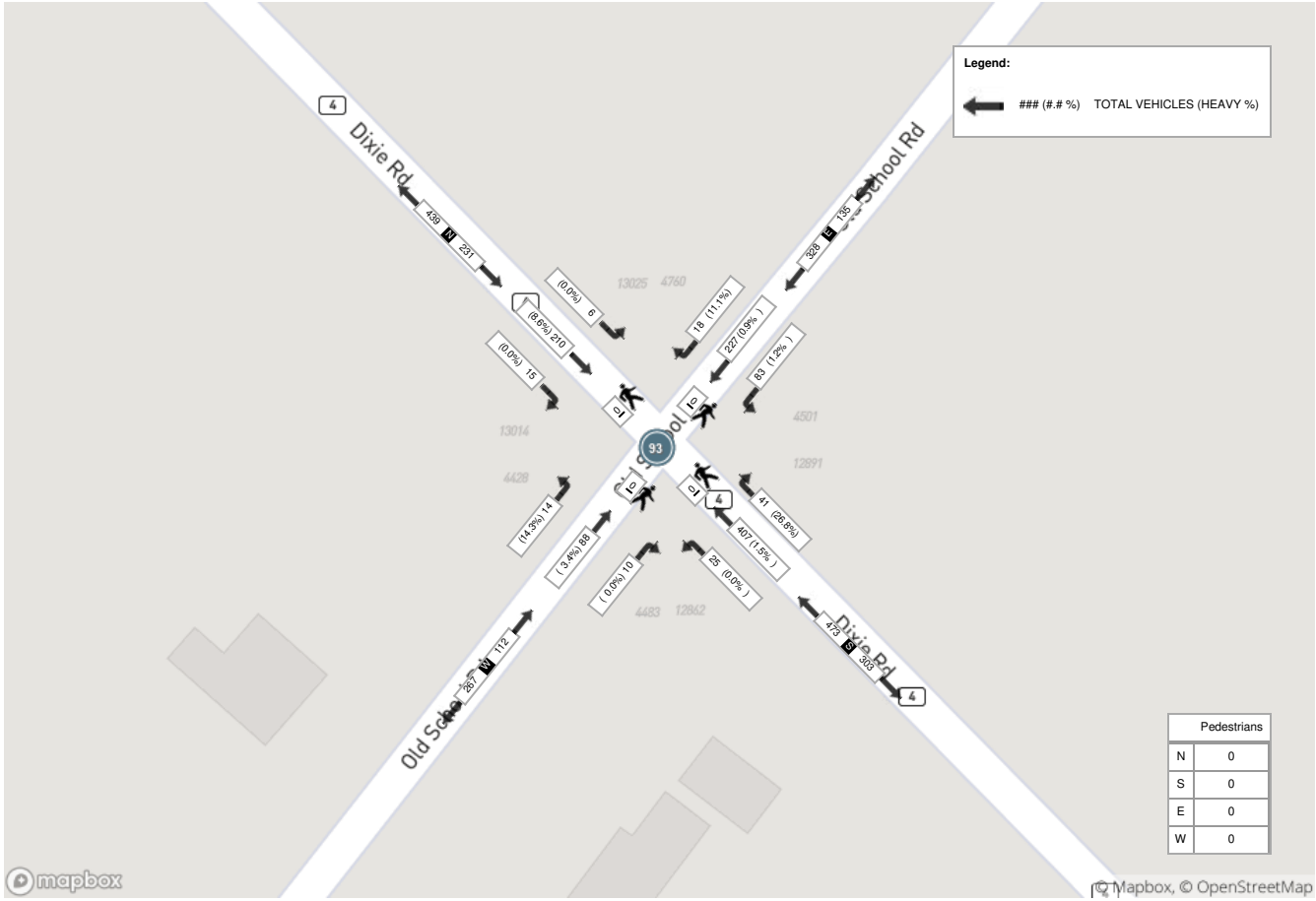
Start Time	N Approach DIXIE RD						E Approach OLD SCHOOL RD						S Approach DIXIE RD						W Approach OLD SCHOOL RD						Int. Total (15 min)
	Left	Thru	Right	UTurn	Peds	Approach Total	Left	Thru	Right	UTurn	Peds	Approach Total	Left	Thru	Right	UTurn	Peds	Approach Total	Left	Thru	Right	UTurn	Peds	Approach Total	
16:00:00	1	52	5	0	0	58	19	68	5	0	0	92	5	100	16	0	0	121	4	17	2	0	0	23	294
16:15:00	1	58	7	0	0	66	21	50	3	0	0	74	9	102	9	0	0	120	3	20	3	0	0	26	286
16:30:00	1	49	3	0	0	53	21	60	4	0	0	85	4	106	11	0	0	121	2	23	3	0	0	28	287
16:45:00	3	51	0	0	0	54	22	49	6	0	0	77	7	99	5	0	0	111	5	28	2	0	0	35	277
Grand Total	6	210	15	0	0	231	83	227	18	0	0	328	25	407	41	0	0	473	14	88	10	0	0	112	**1144**
Approach%	2.6%	90.9%	6.5%	0%		-	25.3%	69.2%	5.5%	0%		-	5.3%	86%	8.7%	0%		-	12.5%	78.6%	8.9%	0%		-	**-**
Totals %	0.5%	18.4%	1.3%	0%		20.2%	7.3%	19.8%	1.6%	0%		28.7%	2.2%	35.6%	3.6%	0%		41.3%	1.2%	7.7%	0.9%	0%		9.8%	**-**
PHF	0.5	0.91	0.54	0		0.88	0.94	0.83	0.75	0		0.89	0.69	0.96	0.64	0		0.98	0.7	0.79	0.83	0		0.8	**-**
Heavy	0	18	0	0		18	1	2	2	0		5	0	6	11	0		17	2	3	0	0		5	**-**
Heavy %	0%	8.6%	0%	0%		7.8%	1.2%	0.9%	11.1%	0%		1.5%	0%	1.5%	26.8%	0%		3.6%	14.3%	3.4%	0%	0%		4.5%	**-**
Lights	6	192	15	0		213	82	225	16	0		323	25	401	30	0		456	12	85	10	0		107	**-**
Lights %	100%	91.4%	100%	0%		92.2%	98.8%	99.1%	88.9%	0%		98.5%	100%	98.5%	73.2%	0%		96.4%	85.7%	96.6%	100%	0%		95.5%	**-**
Single-Unit Trucks	0	10	0	0		10	0	1	0	0		1	0	3	0	0		3	1	0	0	0		1	**-**
Single-Unit Trucks %	0%	4.8%	0%	0%		4.3%	0%	0.4%	0%	0%		0.3%	0%	0.7%	0%	0%		0.6%	7.1%	0%	0%	0%		0.9%	**-**
Buses	0	3	0	0		3	1	1	2	0		4	0	1	11	0		12	1	3	0	0		4	**-**
Buses %	0%	1.4%	0%	0%		1.3%	1.2%	0.4%	11.1%	0%		1.2%	0%	0.2%	26.8%	0%		2.5%	7.1%	3.4%	0%	0%		3.6%	**-**
Articulated Trucks	0	5	0	0		5	0	0	0	0		0	0	2	0	0		2	0	0	0	0		0	**-**
Articulated Trucks %	0%	2.4%	0%	0%		2.2%	0%	0%	0%	0%		0%	0%	0.5%	0%	0%		0.4%	0%	0%	0%	0%		0%	**-**
Pedestrians	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	**-**
Pedestrians%	-	-	-	-	0%		-	-	-	-	0%		-	-	-	-	0%		-	-	-	-	0%		**-**

TOWN OF CALEDON
PLANNING
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Feb 26, 2021

Spectrum

Turning Movement Count
Location Name: DIXIE RD & OLD SCHOOL RD
Date: Thu, Oct 03, 2019 Deployment Lead: Patrick Filopoulos

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



TOWN OF CALEDON
PLANNING
RECEIVED

Feb 26, 2021

LEA Consulting Ltd.
625 Cochrane Drive

Markam, Ontario, Canada L3R 9R9
905-470-0015 x240 Klo@LEA.ca

Count Name: 21211_Heart Lake Rd & Old School Rd-AM
Site Code: 21211
Start Date: 12/15/2020

Turning Movement Peak Hour Data (7:15 AM)

Start Time	Heart Lake Road Southbound					Old School Road Westbound					Heart Lake Road Northbound					Old School Road Eastbound					
	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Int. Total
7:15 AM	2	6	4	0	12	1	10	1	0	12	1	8	0	0	9	3	23	1	0	27	60
7:30 AM	1	5	6	0	12	0	11	1	0	12	2	5	2	0	9	4	31	4	1	39	72
7:45 AM	0	11	0	0	11	3	13	1	0	17	1	6	1	0	8	0	41	2	0	43	79
8:00 AM	1	9	3	0	13	1	11	1	0	13	2	4	3	0	9	0	23	0	0	23	58
Total	4	31	13	0	48	5	45	4	0	54	6	23	6	0	35	7	118	7	1	132	269
Approach %	8.3	64.6	27.1	-	-	9.3	83.3	7.4	-	-	17.1	65.7	17.1	-	-	5.3	89.4	5.3	-	-	-
Total %	1.5	11.5	4.8	-	17.8	1.9	16.7	1.5	-	20.1	2.2	8.6	2.2	-	13.0	2.6	43.9	2.6	-	49.1	-
PHF	0.500	0.705	0.542	-	0.923	0.417	0.865	1.000	-	0.794	0.750	0.719	0.500	-	0.972	0.438	0.720	0.438	-	0.767	0.851
Lights	4	30	12	-	46	5	41	3	-	49	6	18	6	-	30	6	114	7	-	127	252
% Lights	100.0	96.8	92.3	-	95.8	100.0	91.1	75.0	-	90.7	100.0	78.3	100.0	-	85.7	85.7	96.6	100.0	-	96.2	93.7
Buses	0	1	0	-	1	0	2	1	-	3	0	1	0	-	1	1	4	0	-	5	10
% Buses	0.0	3.2	0.0	-	2.1	0.0	4.4	25.0	-	5.6	0.0	4.3	0.0	-	2.9	14.3	3.4	0.0	-	3.8	3.7
Trucks	0	0	1	-	1	0	2	0	-	2	0	4	0	-	4	0	0	0	-	0	7
% Trucks	0.0	0.0	7.7	-	2.1	0.0	4.4	0.0	-	3.7	0.0	17.4	0.0	-	11.4	0.0	0.0	0.0	-	0.0	2.6
Bicycles on Crosswalk	-	-	-	0	-	-	-	-	0	-	-	-	-	0	-	-	-	-	0	-	-
% Bicycles on Crosswalk	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.0	-	-
Pedestrians	-	-	-	0	-	-	-	-	0	-	-	-	-	0	-	-	-	-	1	-	-
% Pedestrians	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	100.0	-	-

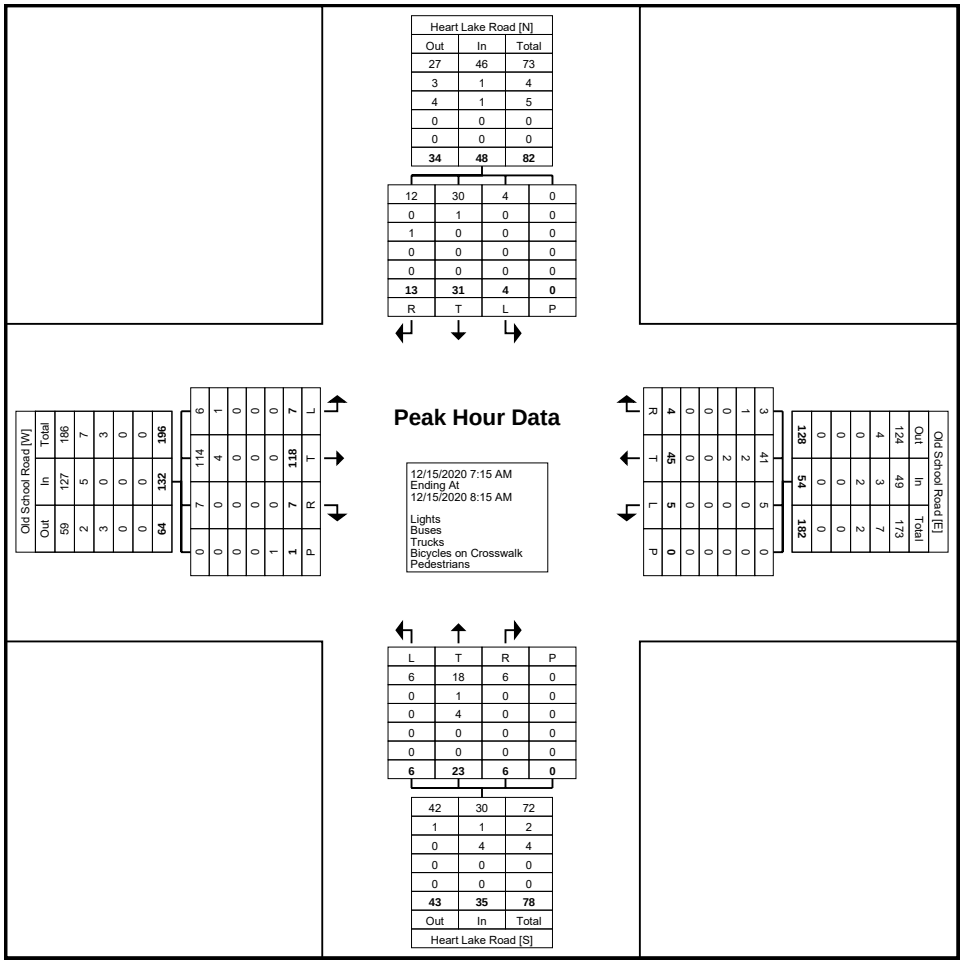
TOWN OF CALEDON
PLANNING
RECEIVED

Feb 26, 2021

LEA Consulting Ltd.
625 Cochrane Drive

Markam, Ontario, Canada L3R 9R9
905-470-0015 x240 Klo@LEA.ca

Count Name: 21211_Heart Lake Rd & Old School Rd-AM
Site Code: 21211
Start Date: 12/15/2020



Turning Movement Peak Hour Data Plot (7:15 AM)

TOWN OF CALEDON
PLANNING
RECEIVED

Feb 26, 2021

LEA Consulting Ltd.
625 Cochrane Drive

Markam, Ontario, Canada L3R 9R9
905-470-0015 x240 Klo@LEA.ca

Count Name: 21211_Heart Lake Rd & Old School Rd-PM
Site Code: 21211
Start Date: 12/15/2020

Turning Movement Peak Hour Data (4:45 PM)

Start Time	Heart Lake Road Southbound					Old School Road Westbound					Heart Lake Road Northbound					Old School Road Eastbound					
	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Int. Total
4:45 PM	0	11	2	0	13	4	40	0	0	44	4	5	1	1	10	2	21	2	0	25	92
5:00 PM	0	9	5	0	14	3	32	1	0	36	9	7	1	0	17	1	20	2	0	23	90
5:15 PM	1	2	1	0	4	8	38	1	0	47	4	9	6	0	19	2	25	3	0	30	100
5:30 PM	0	6	2	0	8	4	52	1	0	57	1	7	3	0	11	1	13	2	0	16	92
Total	1	28	10	0	39	19	162	3	0	184	18	28	11	1	57	6	79	9	0	94	374
Approach %	2.6	71.8	25.6	-	-	10.3	88.0	1.6	-	-	31.6	49.1	19.3	-	-	6.4	84.0	9.6	-	-	-
Total %	0.3	7.5	2.7	-	10.4	5.1	43.3	0.8	-	49.2	4.8	7.5	2.9	-	15.2	1.6	21.1	2.4	-	25.1	-
PHF	0.250	0.636	0.500	-	0.696	0.594	0.779	0.750	-	0.807	0.500	0.778	0.458	-	0.750	0.750	0.790	0.750	-	0.783	0.935
Lights	1	27	10	-	38	19	161	3	-	183	18	28	11	-	57	6	77	9	-	92	370
% Lights	100.0	96.4	100.0	-	97.4	100.0	99.4	100.0	-	99.5	100.0	100.0	100.0	-	100.0	100.0	97.5	100.0	-	97.9	98.9
Buses	0	0	0	-	0	0	0	0	-	0	0	0	0	-	0	0	0	0	-	0	0
% Buses	0.0	0.0	0.0	-	0.0	0.0	0.0	0.0	-	0.0	0.0	0.0	0.0	-	0.0	0.0	0.0	0.0	-	0.0	0.0
Trucks	0	1	0	-	1	0	1	0	-	1	0	0	0	-	0	0	2	0	-	2	4
% Trucks	0.0	3.6	0.0	-	2.6	0.0	0.6	0.0	-	0.5	0.0	0.0	0.0	-	0.0	0.0	2.5	0.0	-	2.1	1.1
Bicycles on Road	0	0	0	-	0	0	0	0	-	0	0	0	0	-	0	0	0	0	-	0	0
% Bicycles on Road	0.0	0.0	0.0	-	0.0	0.0	0.0	0.0	-	0.0	0.0	0.0	0.0	-	0.0	0.0	0.0	0.0	-	0.0	0.0
Bicycles on Crosswalk	-	-	-	0	-	-	-	-	0	-	-	-	-	0	-	-	-	-	0	-	-
% Bicycles on Crosswalk	-	-	-	-	-	-	-	-	-	-	-	-	-	0.0	-	-	-	-	-	-	-
Pedestrians	-	-	-	0	-	-	-	-	0	-	-	-	-	1	-	-	-	-	0	-	-
% Pedestrians	-	-	-	-	-	-	-	-	-	-	-	-	-	100.0	-	-	-	-	-	-	-

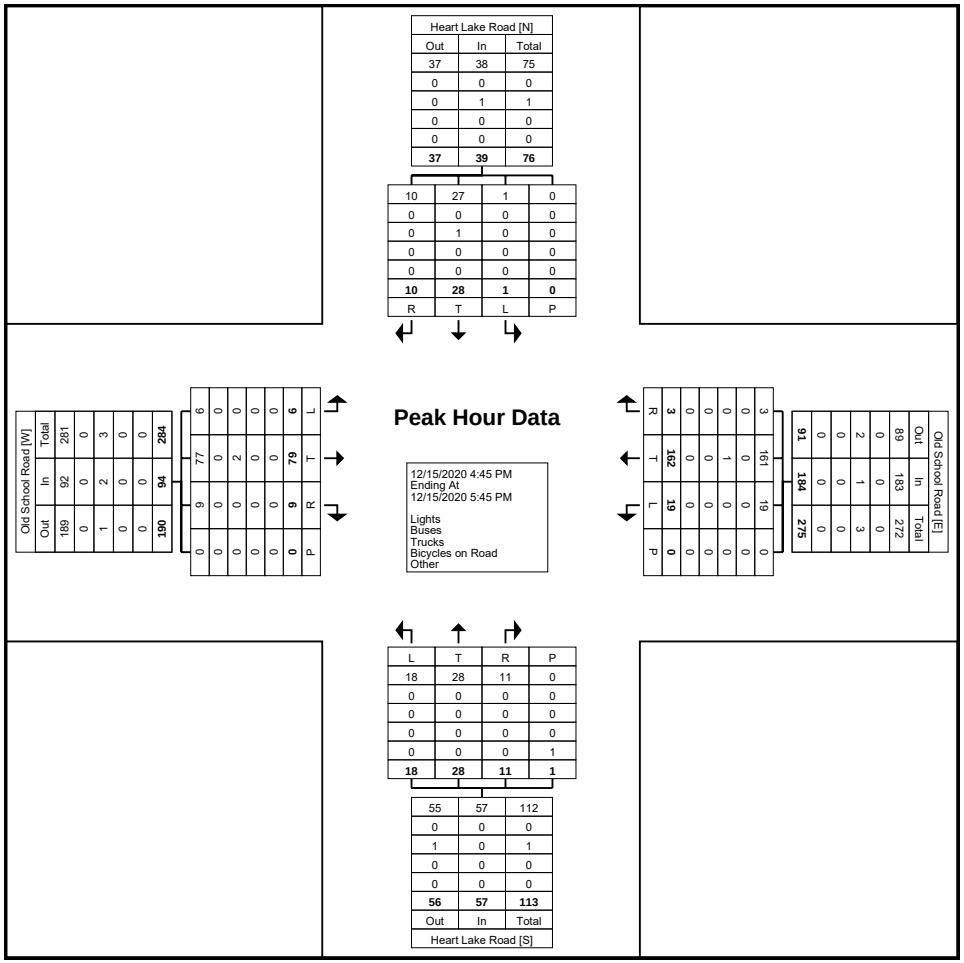
TOWN OF CALEDON
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Feb 26, 2021

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905-470-0015 x240 Klo@LEA.ca

Count Name: 21211_Heart Lake Rd & Old School Rd-PM
Site Code: 21211
Start Date: 12/15/2020



Turning Movement Peak Hour Data Plot (4:45 PM)

Ministry of Transportation
Ministère des Transports

Intersection Layout Sheet

Version: 1.0 Feb 1, 2016

Contract # 9015-E-0009
Work Order # 654

2016

Date: May 26, Day: Thu Hrs: 15 - 19 + 6 - 10 + - -

Location: HWY 410 @ Mayfield Rd 14 IC Ramps: ERT / 24

Reg/Mun: CR Town/City: Kleinburg Area:

File Name: 3490850000 Device: Gretch / Jamar Unit # 12 / Interval 1: AM / NN / (PM)

Observer: Brandon Woolfson Weather: Clear / Clear Road Condition: Good /

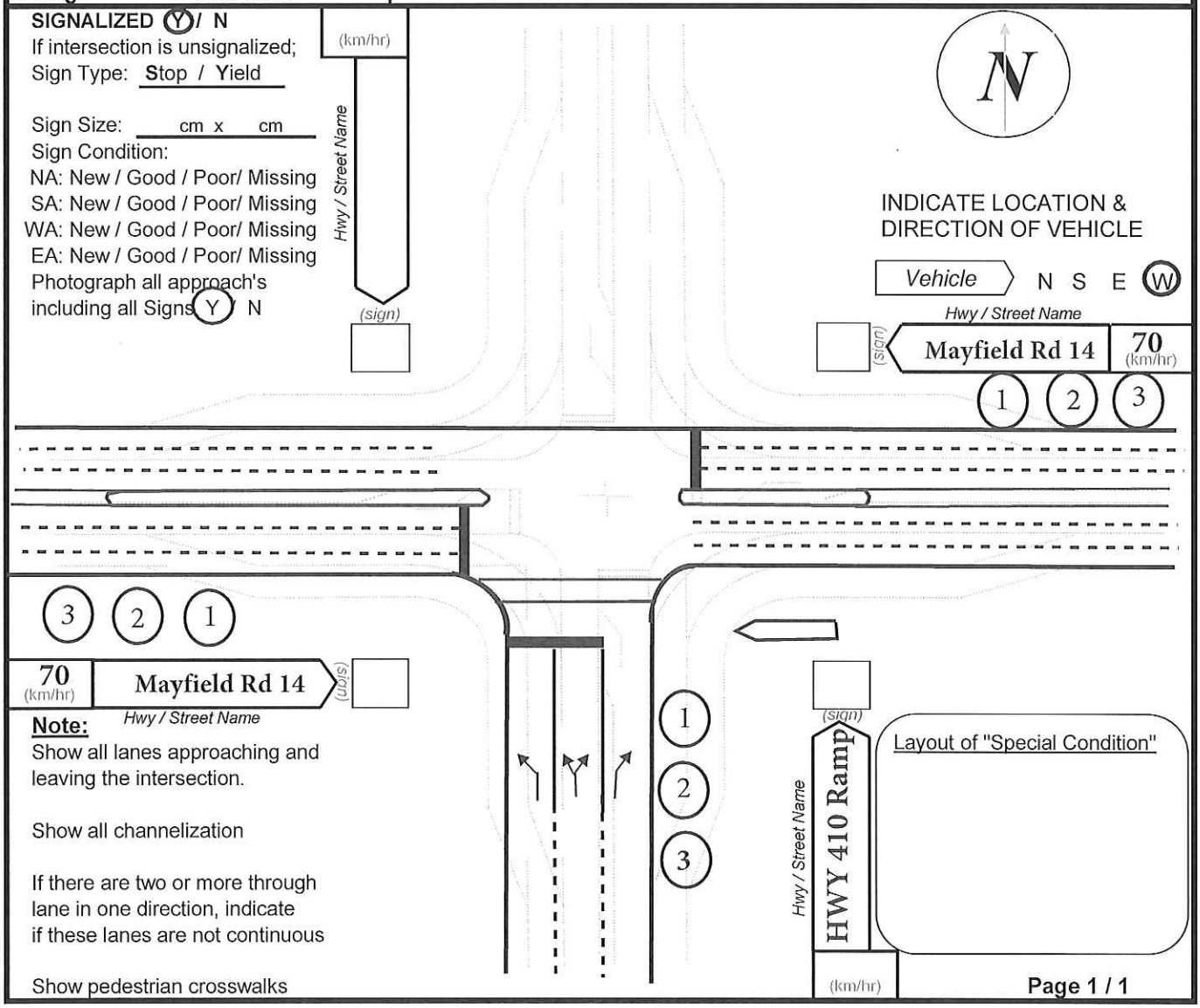
LHRS & O/S: 49085 0

GPS: G - Star IV
Datum: WGS 84 (Y) / N
Lat: 43.75820
Long: -79.79700

Comments:

SIGNALIZED (Y) / N
If intersection is unsignalized;
Sign Type: Stop / Yield

Sign Size: cm x cm
Sign Condition:
NA: New / Good / Poor/ Missing
SA: New / Good / Poor/ Missing
WA: New / Good / Poor/ Missing
EA: New / Good / Poor/ Missing
Photograph all approach's including all Signs (Y) / N



Note:
Show all lanes approaching and leaving the intersection.

Show all channelization

If there are two or more through lane in one direction, indicate if these lanes are not continuous

Show pedestrian crosswalks

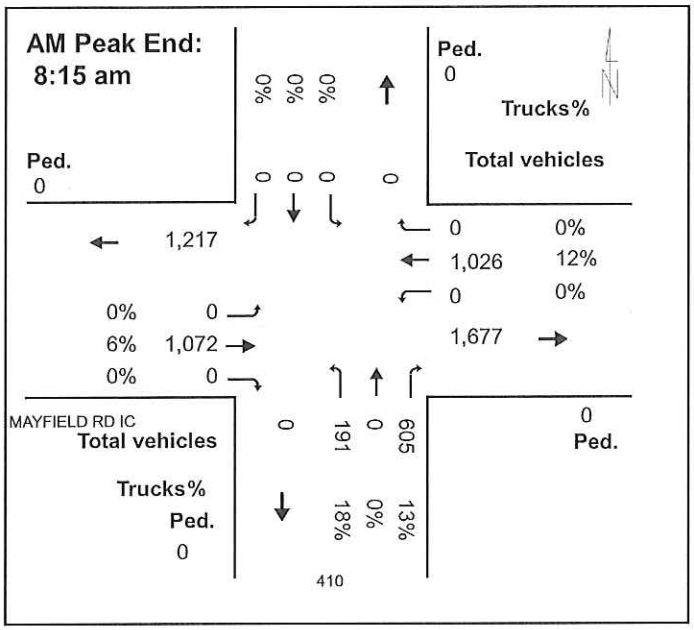
Layout of "Special Condition"

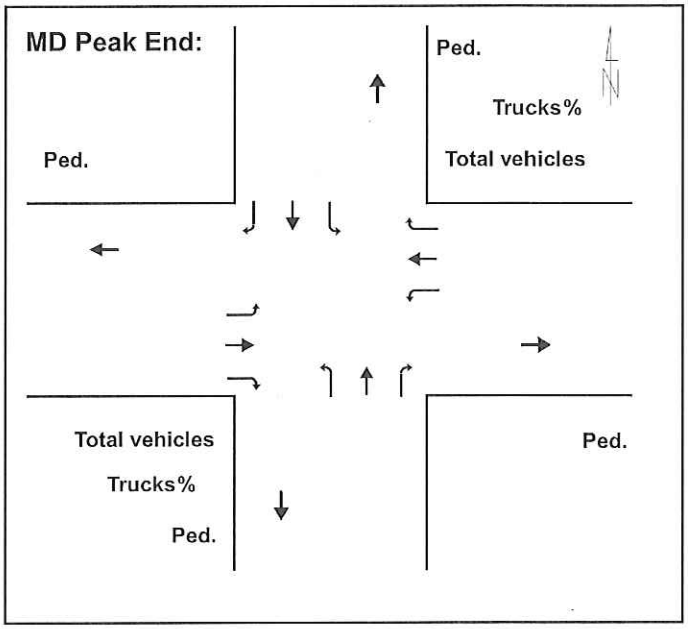
Ontario

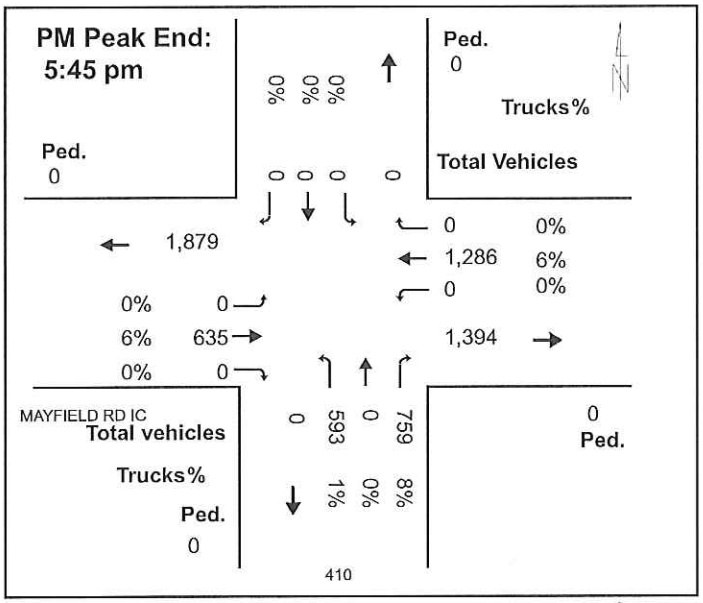
HWY 410 @ MAYFIELD RD IC

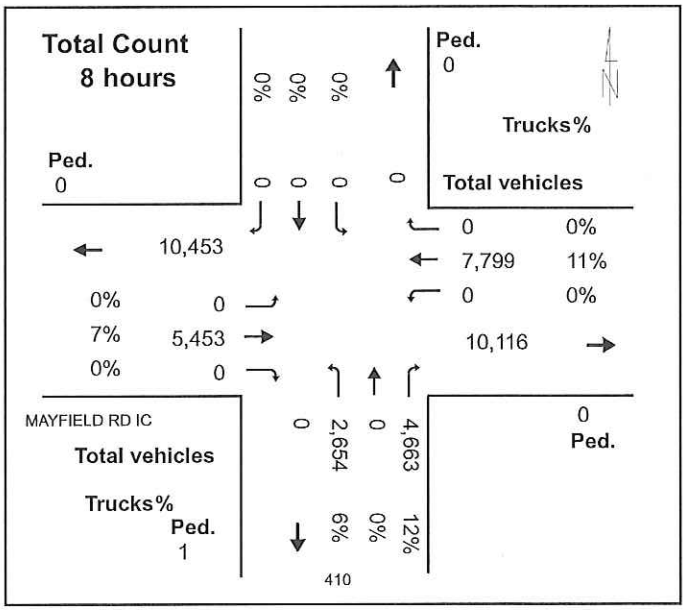
Central

Intersection ID:490850000(--E--) | Count Day: Thursday | Count Date: 26-May-2016









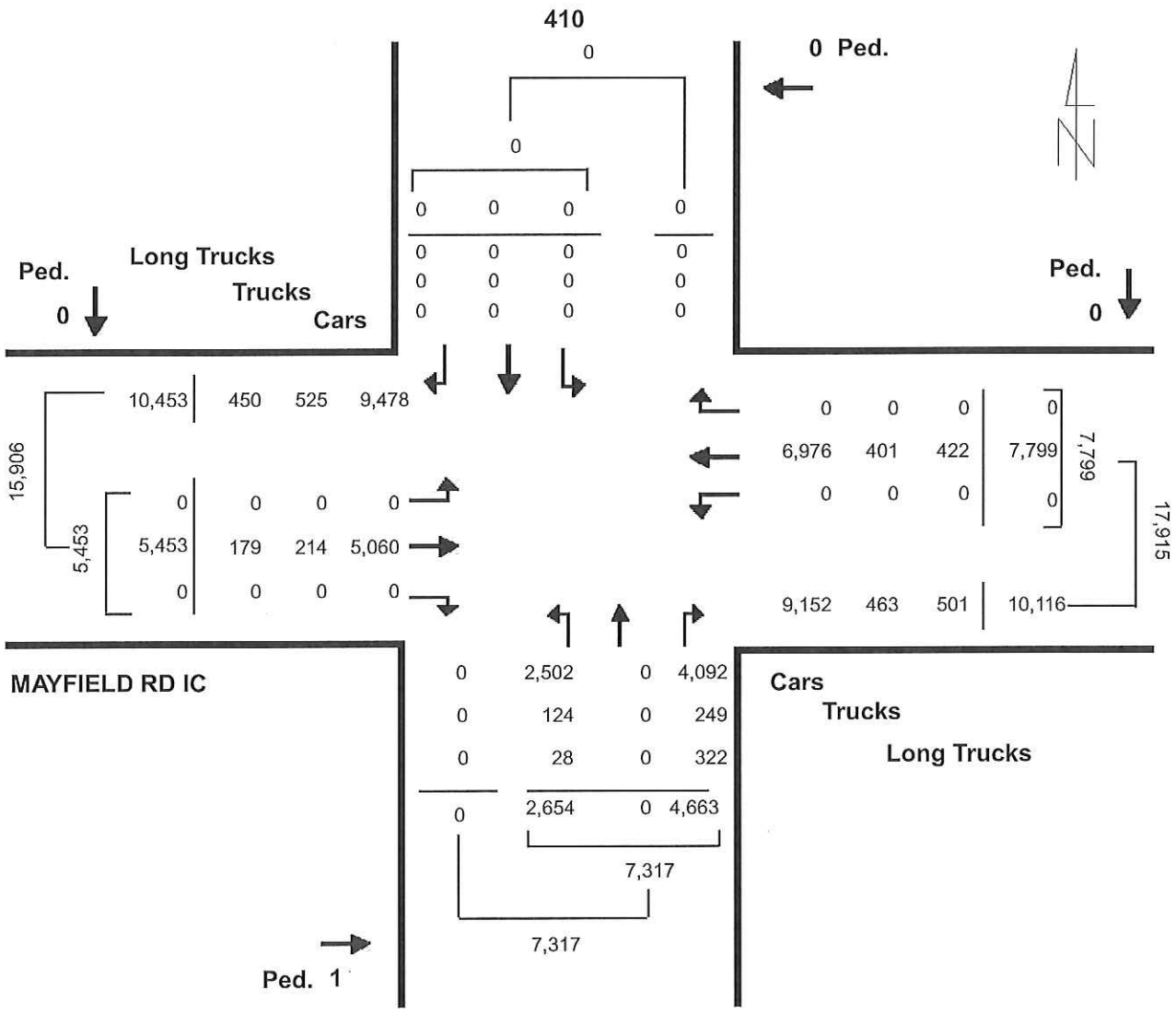
Traffic Engineering Software

COUNT TOTAL

HWY 410 @ MAYFIELD RD IC

Central

Intersection ID:490850000(--E--) **Date: 26-May-2016**



15 MIN REPORT

Intersection ID:490850000(--E--) **HWY 410 @ MAYFIELD RD IC** **Municipality: Central** **Date: 26-May-2016**

	NORTH APPROACH										EAST APPROACH										SOUTH APPROACH										WEST APPROACH										
Time	Cars			Trucks			Heavies			Ped	Cars			Trucks			Heavies			Ped	Cars			Trucks			Heavies			Ped	Cars			Trucks			Heavies			Ped	Total
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right		Left	Thru	Right	Left	Thru	Right	Left	Thru	Right		Left	Thru	Right	Left	Thru	Right	Left	Thru	Right		Left	Thru	Right	Left	Thru	Right	Left	Thru	Right		
Period1																																									
15:15	0	0	0	0	0	0	0	0	0	0	0	243	0	0	8	0	0	17	0	0	86	0	124	5	0	17	0	0	13	0	0	115	0	0	8	0	0	8	0	0	644
15:30	0	0	0	0	0	0	0	0	0	0	0	198	0	0	18	0	0	13	0	0	96	0	131	3	0	7	0	0	8	0	0	107	0	0	9	0	0	3	0	0	593
15:45	0	0	0	0	0	0	0	0	0	0	0	233	0	0	15	0	0	15	0	0	93	0	158	3	0	16	0	0	12	0	0	139	0	0	13	0	0	6	0	0	703
16:00	0	0	0	0	0	0	0	0	0	0	0	267	0	0	22	0	0	12	0	0	106	0	165	3	0	4	2	0	9	0	0	140	0	0	4	0	0	10	0	0	744
16:15	0	0	0	0	0	0	0	0	0	0	0	255	0	0	14	0	0	7	0	0	110	0	150	0	0	10	0	0	12	0	0	114	0	0	7	0	0	11	0	0	690
16:30	0	0	0	0	0	0	0	0	0	0	0	243	0	0	8	0	0	10	0	0	86	0	132	0	0	5	0	0	11	0	0	136	0	0	7	0	0	15	0	0	653
16:45	0	0	0	0	0	0	0	0	0	0	0	252	0	0	14	0	0	6	0	0	104	0	169	4	0	3	0	0	12	0	0	157	0	0	5	0	0	3	0	0	729
17:00	0	0	0	0	0	0	0	0	0	0	0	257	0	0	5	0	0	10	0	0	124	0	166	2	0	7	0	0	10	0	0	155	0	0	9	0	0	7	0	0	752
17:15	0	0	0	0	0	0	0	0	0	0	0	299	0	0	14	0	0	16	0	0	144	0	177	1	0	7	0	0	9	0	0	130	0	0	3	0	0	5	0	0	805
17:30	0	0	0	0	0	0	0	0	0	0	0	340	0	0	4	0	0	10	0	0	152	0	173	1	0	4	1	0	11	0	0	147	0	0	5	0	0	3	0	0	851
17:45	0	0	0	0	0	0	0	0	0	0	0	309	0	0	11	0	0	11	0	0	168	0	180	0	0	5	0	0	10	0	0	163	0	0	5	0	0	3	0	0	865
18:00	0	0	0	0	0	0	0	0	0	0	0	269	0	0	7	0	0	5	0	0	127	0	154	0	0	4	0	0	6	0	0	172	0	0	6	0	0	2	0	0	752
18:15	0	0	0	0	0	0	0	0	0	0	0	254	0	0	12	0	0	7	0	0	118	0	146	0	0	4	0	0	6	0	0	153	0	0	5	0	0	1	0	0	706
18:30	0	0	0	0	0	0	0	0	0	0	0	224	0	0	7	0	0	4	0	0	113	0	152	0	0	2	0	0	10	0	0	149	0	0	1	0	0	3	0	0	665
18:45	0	0	0	0	0	0	0	0	0	0	0	219	0	0	3	0	0	10	0	0	136	0	120	0	0	4	1	0	7	0	0	127	0	0	4	0	0	4	0	0	635
19:00	0	0	0	0	0	0	0	0	0	0	0	231	0	0	4	0	0	3	0	0	118	0	144	1	0	4	0	0	9	0	0	132	0	0	2	0	0	4	0	0	652
Period2																																									
6:15	0	0	0	0	0	0	0	0	0	0	0	117	0	0	12	0	0	9	0	0	20	0	82	1	0	6	2	0	12	0	0	129	0	0	3	0	0	2	0	0	395
6:30	0	0	0	0	0	0	0	0	0	0	0	157	0	0	22	0	0	11	0	0	31	0	116	3	0	6	0	0	6	0	0	137	0	0	8	0	0	6	0	0	503
6:45	0	0	0	0	0	0	0	0	0	0	0	163	0	0	12	0	0	8	0	0	53	0	137	6	0	11	1	0	12	0	0	158	0	0	6	0	0	4	0	0	571
7:00	0	0	0	0	0	0	0	0	0	0	0	157	0	0	12	0	0	13	0	0	60	0	146	9	0	8	2	0	8	0	0	159	0	0	6	0	0	3	0	0	583
7:15	0	0	0	0	0	0	0	0	0	0	0	190	0	0	14	0	0	24	0	0	44	0	90	7	0	11	1	0	13	0	0	217	0	0	11	0	0	1	0	0	623
7:30	0	0	0	0	0	0	0	0	0	0	0	219	0	0	14	0	0	24	0	0	45	0	112	9	0	10	6	0	12	0	0	212	0	0	10	0	0	5	0	0	678
7:45	0	0	0	0	0	0	0	0	0	0	0	200	0	0	13	0	0	22	0	0	44	0	144	4	0	8	1	0	10	0	0	259	0	0	4	0	0	18	0	0	727
8:00	0	0	0	0	0	0	0	0	0	0	0	221	0	0	14	0	0	15	0	0	30	0	155	4	0	7	1	0	11	0	0	289	0	0	9	0	0	3	0	0	759
8:15	0	0	0	0	0	0	0	0	0	0	0	258	0	0	13	0	0	13	0	0	38	0	118	9	0	10	0	0	8	0	0	253	0	0	7	0	0	3	0	0	730
8:30	0	0	0	0	0	0	0	0	0	0	0	202	0	0	16	0	0	24	0	0	49	0	76	7	0	8	2	0	8	0	0	199	0	0	10	0	0	3	0	0	604
8:45	0	0	0	0	0	0	0	0	0	0	0	163	0	0	13	0	0	15	0	0	32	0	90	15	0	11	0	0	12	0	0	187	0	0	14	0	0	8	0	0	560
9:00	0	0	0	0	0	0	0	0	0	0	0	159	0	0	19	0	0	17	0	0	45	0	105	8	0	6	0	0	9	0	0	156	0	0	7	0	0	9	0	0	540
9:15	0	0	0	0	0	0	0	0	0	0	0	181	0	0	16	0	0	17	0	0	29	0	88	4	0	17	2	0	12	0	0	115	0	0	5	0	0	7	0	0	493
9:30	0	0	0	0	0	0	0	0	0	0	0	162	0	0	18	0	0	17	0	0	35	0	77	5	0	8	1	0	8	0	0	151	0	0	7	0	0	13	0	0	502
9:45	0	0	0	0	0	0	0	0	0	0	0	176	0	0	18	0	0	18	0	0	39	0	63	6	0	11	3	0	13	1	0	108	0	0	6	0	0	5	0	0	467
10:00	0	0	0	0	0	0	0	0	0	0	0	158	0	0	9	0	0	19	0	0	27	0	52	4	0	8	2	0	13	0	0	95	0	0	8	0	0	1	0	0	396

Ministry of Transportation
Ministère des Transports

Intersection Layout Sheet

Version: 1.0 Feb 1, 2016

2016

Contract # 9015-E-0009
Work Order # 655

Date: May 26 Day: Thu Hrs: 15 19 + 6 -10 + -

Location: HWY 410 @ Mayfield Rd 14 Ramps: WRT / 34

Reg/Mun: CR Town/City: Kleinburg Area:

File Name: 4490850000 Device: Gretch / Jamar Unit # 8 / Interval 1: AM / NN / (PM)

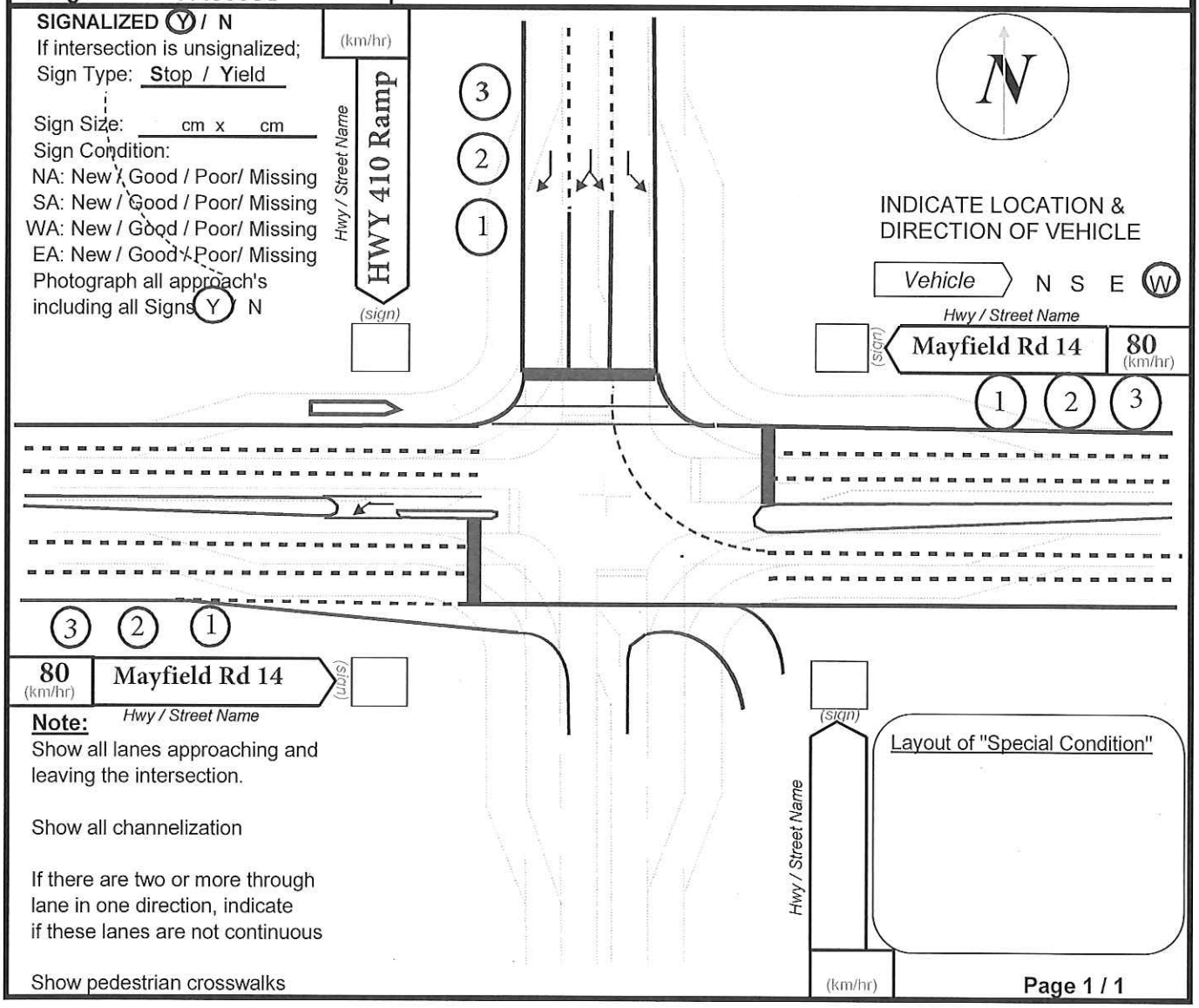
Observer: Brandon Woolfson Weather: Clear / Clear Road Condition: Good /

LHRS & O/S: 49085 0

GPS: G - Star IV
Datum: WGS 84 (Y) / N
Lat: 43.75527
Long: -79.80064

Comments:

SIGNALIZED (Y) / N
If intersection is unsignalized;
Sign Type: Stop / Yield
Sign Size: cm x cm
Sign Condition:
NA: New / Good / Poor / Missing
SA: New / Good / Poor / Missing
WA: New / Good / Poor / Missing
EA: New / Good / Poor / Missing
Photograph all approach's including all Signs (Y) N



Note:
Show all lanes approaching and leaving the intersection.

Show all channelization

If there are two or more through lane in one direction, indicate if these lanes are not continuous

Show pedestrian crosswalks

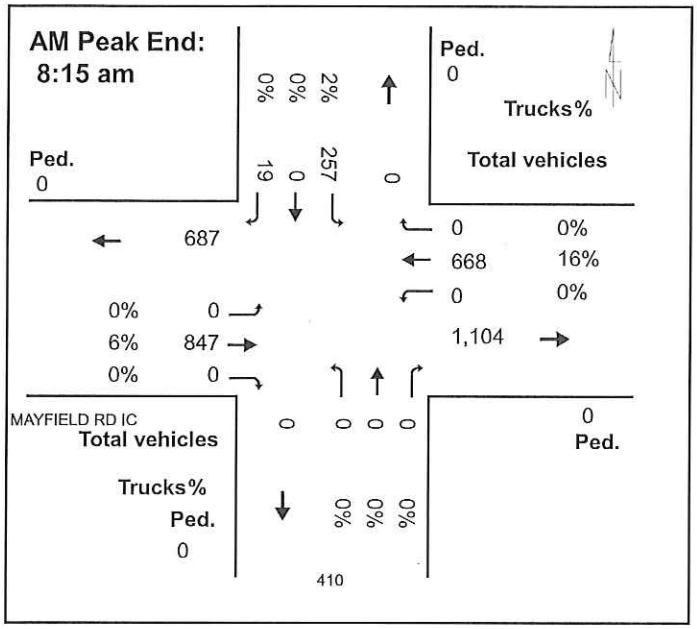
Layout of "Special Condition"

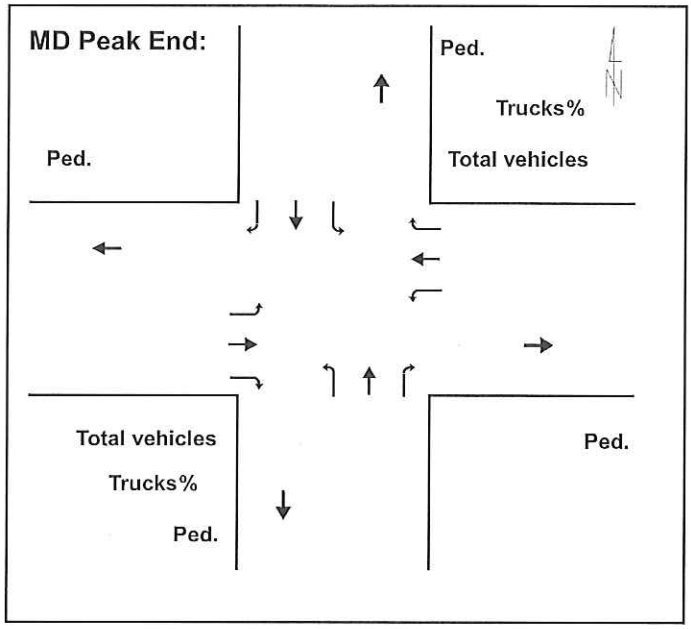
Ontario

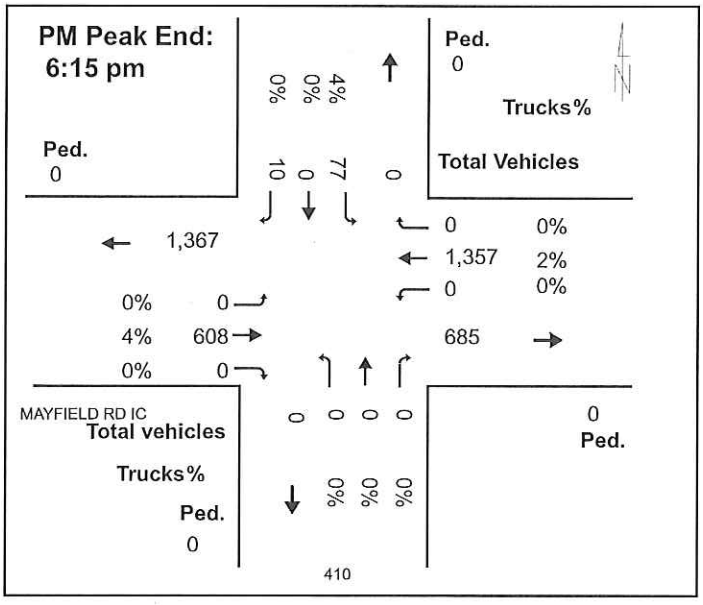
HWY 410 @ MAYFIELD RD IC

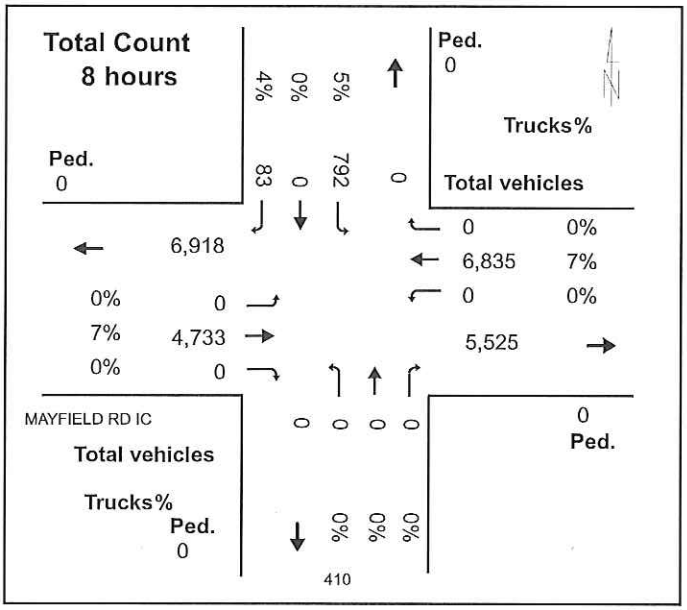
Central

Intersection ID:490850000(--W--) **Count Day: Thursday** **Count Date: 26-May-2016**









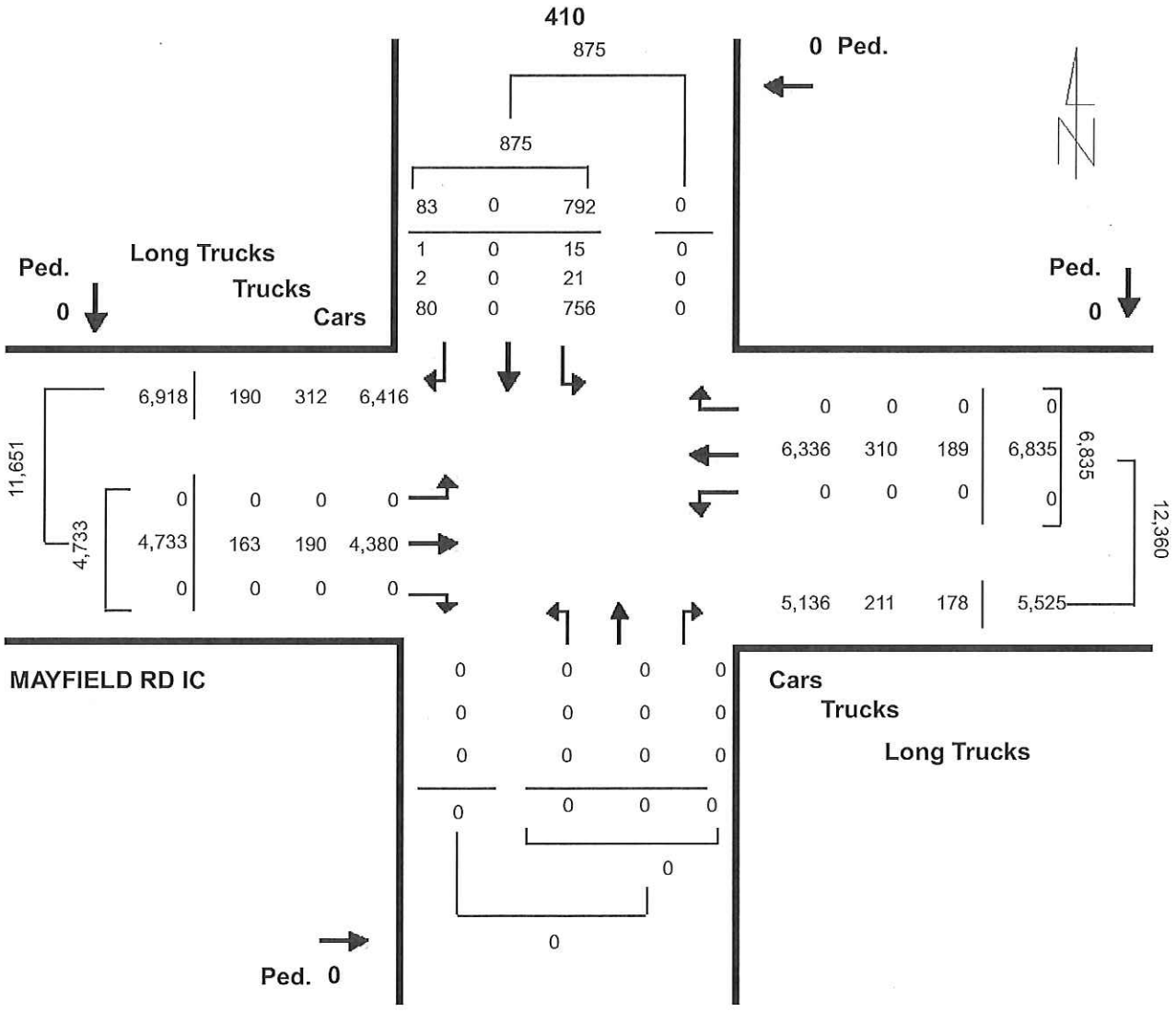
Traffic Engineering Software

COUNT TOTAL

HWY 410 @ MAYFIELD RD IC

Central

Intersection ID:490850000(--W--) **Date: 26-May-2016**



15 MIN REPORT

Intersection ID:490850000(--W--) HWY 410 @ MAYFIELD RD IC **Municipality: Central** **Date: 26-May-2016**

	NORTH APPROACH										EAST APPROACH										SOUTH APPROACH										WEST APPROACH										
Time	Cars			Trucks			Heavies			Ped	Cars			Trucks			Heavies			Ped	Cars			Trucks			Heavies			Ped	Cars			Trucks			Heavies			Ped	Total
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right		Left	Thru	Right	Left	Thru	Right	Left	Thru	Right		Left	Thru	Right	Left	Thru	Right	Left	Thru	Right		Left	Thru	Right	Left	Thru	Right	Left	Thru	Right		
Period1																																									
15:15	8	0	4	1	0	0	0	0	0	0	0	248	0	0	5	0	0	8	0	0	0	0	0	0	0	0	0	0	0	0	0	109	0	0	6	0	0	6	0	0	395
15:30	14	0	6	2	0	0	0	0	0	0	0	211	0	0	11	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	96	0	0	6	0	0	4	0	0	352
15:45	19	0	3	0	0	0	1	0	0	0	0	234	0	0	7	0	0	4	0	0	0	0	0	0	0	0	0	0	0	0	0	138	0	0	13	0	0	4	0	0	423
16:00	16	0	2	0	0	0	2	0	0	0	0	259	0	0	12	0	0	7	0	0	0	0	0	0	0	0	0	0	0	0	0	115	0	0	5	0	0	7	0	0	425
16:15	12	0	4	1	0	0	4	0	0	0	0	265	0	0	1	0	0	6	0	0	0	0	0	0	0	0	0	0	0	0	0	118	0	0	8	0	0	13	0	0	432
16:30	19	0	1	1	0	0	1	0	0	0	0	223	0	0	2	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	124	0	0	5	0	0	10	0	0	387
16:45	23	0	4	0	0	0	0	0	0	0	0	269	0	0	9	0	0	5	0	0	0	0	0	0	0	0	0	0	0	0	0	116	0	0	2	0	0	3	0	0	431
17:00	14	0	3	0	0	0	0	0	0	0	0	295	0	0	5	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	147	0	0	9	0	0	6	0	0	481
17:15	13	0	2	0	0	0	0	0	0	0	0	338	0	0	6	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	115	0	0	3	0	0	5	0	0	484
17:30	11	0	3	0	0	0	0	0	0	0	0	374	0	0	3	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	130	0	0	7	0	0	3	0	0	532
17:45	23	0	2	0	0	0	1	0	0	0	0	366	0	0	3	0	0	4	0	0	0	0	0	0	0	0	0	0	0	0	0	150	0	0	3	0	0	2	0	0	554
18:00	20	0	4	1	0	0	0	0	0	0	0	287	0	0	4	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	148	0	0	4	0	0	2	0	0	471
18:15	20	0	1	1	0	0	0	0	0	0	0	303	0	0	7	0	0	4	0	0	0	0	0	0	0	0	0	0	0	0	0	154	0	0	4	0	0	1	0	0	495
18:30	15	0	1	0	0	0	0	0	0	0	0	271	0	0	2	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	125	0	0	2	0	0	5	0	0	423
18:45	11	0	3	0	0	1	0	0	0	0	0	278	0	0	1	0	0	5	0	0	0	0	0	0	0	0	0	0	0	0	0	109	0	0	4	0	0	2	0	0	414
19:00	10	0	2	0	0	0	0	0	0	0	0	257	0	0	2	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	122	0	0	0	0	0	4	0	0	398
Period2																																									
6:15	18	0	0	0	0	0	0	0	0	0	0	53	0	0	7	0	0	4	0	0	0	0	0	0	0	0	0	0	0	0	0	108	0	0	2	0	0	2	0	0	194
6:30	20	0	0	1	0	0	1	0	0	0	0	86	0	0	10	0	0	3	0	0	0	0	0	0	0	0	0	0	0	0	0	139	0	0	7	0	0	5	0	0	272
6:45	18	0	0	2	0	0	0	0	1	0	0	131	0	0	13	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	143	0	0	3	0	0	4	0	0	317
7:00	23	0	1	1	0	0	1	0	0	0	0	133	0	0	18	0	0	7	0	0	0	0	0	0	0	0	0	0	0	0	0	145	0	0	4	0	0	4	0	0	337
7:15	37	0	1	2	0	0	0	0	0	0	0	144	0	0	13	0	0	16	0	0	0	0	0	0	0	0	0	0	0	0	0	169	0	0	10	0	0	1	0	0	393
7:30	53	0	1	2	0	0	1	0	0	0	0	139	0	0	22	0	0	13	0	0	0	0	0	0	0	0	0	0	0	0	0	186	0	0	5	0	0	6	0	0	428
7:45	75	0	4	0	0	0	0	0	0	0	0	113	0	0	11	0	0	12	0	0	0	0	0	0	0	0	0	0	0	0	0	186	0	0	4	0	0	16	0	0	421
8:00	70	0	9	1	0	0	0	0	0	0	0	128	0	0	12	0	0	14	0	0	0	0	0	0	0	0	0	0	0	0	0	224	0	0	9	0	0	3	0	0	470
8:15	54	0	5	0	0	0	1	0	0	0	0	180	0	0	19	0	0	5	0	0	0	0	0	0	0	0	0	0	0	0	0	200	0	0	5	0	0	3	0	0	472
8:30	24	0	3	1	0	0	0	0	0	0	0	137	0	0	18	0	0	11	0	0	0	0	0	0	0	0	0	0	0	0	0	182	0	0	12	0	0	2	0	0	390
8:45	27	0	3	1	0	1	0	0	0	0	0	117	0	0	18	0	0	8	0	0	0	0	0	0	0	0	0	0	0	0	0	146	0	0	11	0	0	7	0	0	339
9:00	30	0	2	1	0	0	0	0	0	0	0	124	0	0	19	0	0	9	0	0	0	0	0	0	0	0	0	0	0	0	0	125	0	0	9	0	0	10	0	0	329
9:15	13	0	1	0	0	0	0	0	0	0	0	93	0	0	15	0	0	4	0	0	0	0	0	0	0	0	0	0	0	0	0	102	0	0	3	0	0	10	0	0	241
9:30	18	0	2	1	0	0	1	0	0	0	0	90	0	0	13	0	0	7	0	0	0	0	0	0	0	0	0	0	0	0	0	140	0	0	7	0	0	8	0	0	287
9:45	16	0	2	1	0	0	1	0	0	0	0	101	0	0	13	0	0	9	0	0	0	0	0	0	0	0	0	0	0	0	0	92	0	0	7	0	0	4	0	0	246
10:00	12	0	1	0	0	0	0	0	0	0	0	89	0	0	9	0	0	10	0	0	0	0	0	0	0	0	0	0	0	0	0	77	0	0	11	0	0	1	0	0	210

Spectrum

Turning Movement Count
Location Name: MAYFIELD RD & ACE DR
Date: Wed, Sep 25, 2019 Deployment Lead: Patrick Filopoulos

Turning Movement Count (42 . MAYFIELD RD & ACE DR) CustID: 01412687 MioID:

Start Time	N Approach		E Approach MAYFIELD RD					S Approach ACE DR						W Approach MAYFIELD RD					Int. Total (15 min)	Int. Total (1 hr)
	UTurn N:N	Approach Total	Left E:S	Thru E:W	UTurn E:E	Peds E:	Approach Total	Left S:W	Thru S:N	Right S:E	UTurn S:S	Peds S:	Approach Total	Thru W:E	Right W:S	UTurn W:W	Peds W:	Approach Total		
07:00:00	0	0	10	196	0	0	206	17	0	7	0	0	24	328	48	0	0	376	606	
07:15:00	0	0	19	227	0	0	246	19	0	11	0	0	30	404	58	0	0	462	738	
07:30:00	0	0	15	241	0	0	256	18	0	15	0	0	33	517	49	0	0	566	855	
07:45:00	0	0	18	288	0	0	306	29	0	10	0	0	39	509	85	0	0	594	939	3138
08:00:00	0	0	16	324	0	0	340	20	0	13	0	0	33	421	59	0	0	480	853	3385
08:15:00	0	0	16	182	0	0	198	16	0	18	0	0	34	390	52	0	0	442	674	3321
08:30:00	0	0	19	200	0	0	219	32	0	9	0	0	41	349	43	0	0	392	652	3118
08:45:00	0	0	9	200	0	0	209	24	0	18	0	0	42	305	63	0	0	368	619	2798
BREAK																				
11:00:00	0	0	14	179	0	0	193	30	0	10	0	0	40	206	38	0	0	244	477	
11:15:00	0	0	17	134	0	0	151	30	0	10	0	0	40	197	34	0	0	231	422	
11:30:00	0	0	12	164	0	0	176	41	0	8	0	0	49	183	38	0	0	221	446	
11:45:00	0	0	9	189	2	0	200	20	0	7	0	1	27	177	38	0	0	215	442	1787
12:00:00	0	0	19	152	0	0	171	52	0	16	0	0	68	198	37	0	0	235	474	1784
12:15:00	0	0	15	171	0	0	186	31	0	19	0	0	50	216	29	0	0	245	481	1843
12:30:00	0	0	20	165	0	0	185	45	0	10	0	0	55	207	34	0	0	241	481	1878
12:45:00	0	0	16	186	0	1	202	43	0	12	0	0	55	206	42	0	0	248	505	1941
13:00:00	0	0	25	178	0	1	203	31	0	12	0	0	43	209	40	0	0	249	495	1962
13:15:00	0	0	7	165	0	0	172	32	0	10	0	0	42	218	37	1	0	256	470	1951
13:30:00	0	0	11	171	0	0	182	29	0	9	0	0	38	219	42	0	0	261	481	1951
13:45:00	0	0	9	159	0	0	168	34	0	11	0	0	45	232	28	0	0	260	473	1919
BREAK																				
15:00:00	0	0	9	245	0	0	254	40	0	8	0	0	48	306	45	0	0	351	653	
15:15:00	0	0	11	225	0	0	236	50	0	10	1	0	61	317	47	0	0	364	661	
15:30:00	0	0	19	260	1	0	280	52	0	11	0	0	63	345	24	0	0	369	712	
15:45:00	0	0	14	342	0	0	356	48	0	12	0	0	60	358	50	0	0	408	824	2850
16:00:00	0	0	15	350	0	0	365	51	0	11	0	0	62	355	45	0	0	400	827	3024
16:15:00	0	0	25	357	0	0	382	43	0	10	0	0	53	400	44	0	0	444	879	3242
16:30:00	0	0	16	383	0	0	399	50	0	11	0	0	61	374	43	0	0	417	877	3407
16:45:00	0	0	18	369	3	0	390	67	0	7	0	0	74	355	37	0	0	392	856	3439
17:00:00	0	0	12	387	2	0	401	61	0	12	0	0	73	326	30	0	0	356	830	3442
17:15:00	0	0	14	399	0	0	413	34	0	14	0	0	48	306	27	0	0	333	794	3357
17:30:00	0	0	14	421	0	0	435	41	0	7	0	0	48	333	37	0	0	370	853	3333
17:45:00	0	0	18	347	0	0	365	44	0	2	0	0	46	273	34	0	0	307	718	3195
Grand Total	0	0	481	7956	8	2	8445	1174	0	350	1	1	1525	9739	1357	1	0	11097	**21067**	-

Approach%	0%	-	5.7%	94.2%	0.1%	-	77%	0%	23%	0.1%	-	87.8%	12.2%	0%	-	-	-
Totals %	0%	0%	2.3%	37.8%	0%	40.1%	5.6%	0%	1.7%	0%	7.2%	46.2%	6.4%	0%	52.7%	-	-
Heavy	0	-	14	995	0	-	76	0	7	0	-	1210	62	0	-	-	-
Heavy %	0%	-	2.9%	12.5%	0%	-	6.5%	0%	2%	0%	-	12.4%	4.6%	0%	-	-	-
Bicycles	0	-	0	0	0	-	0	0	0	0	-	0	1	0	-	-	-
Bicycle %	0%	-	0%	0%	0%	-	0%	0%	0%	0%	-	0%	0.1%	0%	-	-	-

Spectrum

Turning Movement Count
Location Name: MAYFIELD RD & ACE DR
Date: Wed, Sep 25, 2019 Deployment Lead: Patrick Filopoulos

Peak Hour: 07:15 AM - 08:15 AM Weather: Mist (13.18 °C)

Start Time	N Approach		E Approach MAYFIELD RD					S Approach ACE DR						W Approach MAYFIELD RD					Int. Total (15 min)
	UTurn	Approach Total	Left	Thru	UTurn	Peds	Approach Total	Left	Thru	Right	UTurn	Peds	Approach Total	Thru	Right	UTurn	Peds	Approach Total	
07:15:00	0	0	19	227	0	0	246	19	0	11	0	0	30	404	58	0	0	462	738
07:30:00	0	0	15	241	0	0	256	18	0	15	0	0	33	517	49	0	0	566	855
07:45:00	0	0	18	288	0	0	306	29	0	10	0	0	39	509	85	0	0	594	939
08:00:00	0	0	16	324	0	0	340	20	0	13	0	0	33	421	59	0	0	480	853
Grand Total	0	0	68	1080	0	0	1148	86	0	49	0	0	135	1851	251	0	0	2102	**3385**
Approach%	0%	-	5.9%	94.1%	0%		-	63.7%	0%	36.3%	0%		-	88.1%	11.9%	0%		-	**-**
Totals %	0%	0%	2%	31.9%	0%		33.9%	2.5%	0%	1.4%	0%		4%	54.7%	7.4%	0%		62.1%	**-**
PHF	0	0	0.89	0.83	0		0.84	0.74	0	0.82	0		0.87	0.9	0.74	0		0.88	**-**
Heavy	0	0	2	171	0		173	8	0	1	0		9	147	2	0		149	**-**
Heavy %	0%	0%	2.9%	15.8%	0%		15.1%	9.3%	0%	2%	0%		6.7%	7.9%	0.8%	0%		7.1%	**-**
Lights	0	0	66	909	0		975	78	0	48	0		126	1704	249	0		1953	**-**
Lights %	0%	0%	97.1%	84.2%	0%		84.9%	90.7%	0%	98%	0%		93.3%	92.1%	99.2%	0%		92.9%	**-**
Single-Unit Trucks	0	0	2	75	0		77	5	0	1	0		6	59	0	0		59	**-**
Single-Unit Trucks %	0%	0%	2.9%	6.9%	0%		6.7%	5.8%	0%	2%	0%		4.4%	3.2%	0%	0%		2.8%	**-**
Buses	0	0	0	29	0		29	0	0	0	0		0	42	0	0		42	**-**
Buses %	0%	0%	0%	2.7%	0%		2.5%	0%	0%	0%	0%		0%	2.3%	0%	0%		2%	**-**
Articulated Trucks	0	0	0	67	0		67	3	0	0	0		3	46	2	0		48	**-**
Articulated Trucks %	0%	0%	0%	6.2%	0%		5.8%	3.5%	0%	0%	0%		2.2%	2.5%	0.8%	0%		2.3%	**-**
Pedestrians	-	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	0	-	**-**
Pedestrians%	-		-	-	-	0%		-	-	-	-	0%		-	-	-	0%		**-**
Bicycles on Road	0	-	0	0	0	0	-	0	0	0	0	0	-	0	1	0	0	-	**-**
Bicycles on Road%	-		-	-	-	0%		-	-	-	-	0%		-	-	-	0%		**-**

Spectrum

Turning Movement Count
Location Name: MAYFIELD RD & ACE DR
Date: Wed, Sep 25, 2019 Deployment Lead: Patrick Filopoulos

Peak Hour: 12:15 PM - 01:15 PM Weather: Broken Clouds (23.38 °C)

Start Time	N Approach		E Approach MAYFIELD RD					S Approach ACE DR						W Approach MAYFIELD RD					Int. Total (15 min)
	UTurn	Approach Total	Left	Thru	UTurn	Peds	Approach Total	Left	Thru	Right	UTurn	Peds	Approach Total	Thru	Right	UTurn	Peds	Approach Total	
12:15:00	0	0	15	171	0	0	186	31	0	19	0	0	50	216	29	0	0	245	481
12:30:00	0	0	20	165	0	0	185	45	0	10	0	0	55	207	34	0	0	241	481
12:45:00	0	0	16	186	0	1	202	43	0	12	0	0	55	206	42	0	0	248	505
13:00:00	0	0	25	178	0	1	203	31	0	12	0	0	43	209	40	0	0	249	495
Grand Total	0	0	76	700	0	2	776	150	0	53	0	0	203	838	145	0	0	983	**1962**
Approach%	0%	-	9.8%	90.2%	0%		-	73.9%	0%	26.1%	0%		-	85.2%	14.8%	0%		-	**-**
Totals %	0%	0%	3.9%	35.7%	0%		39.6%	7.6%	0%	2.7%	0%		10.3%	42.7%	7.4%	0%		50.1%	**-**
PHF	0	0	0.76	0.94	0		0.96	0.83	0	0.7	0		0.92	0.97	0.86	0		0.99	**-**
Heavy	0	0	3	129	0		132	14	0	1	0		15	148	12	0		160	**-**
Heavy %	0%	0%	3.9%	18.4%	0%		17%	9.3%	0%	1.9%	0%		7.4%	17.7%	8.3%	0%		16.3%	**-**
Lights	0	0	73	571	0		644	136	0	52	0		188	690	133	0		823	**-**
Lights %	0%	0%	96.1%	81.6%	0%		83%	90.7%	0%	98.1%	0%		92.6%	82.3%	91.7%	0%		83.7%	**-**
Single-Unit Trucks	0	0	3	65	0		68	14	0	1	0		15	67	9	0		76	**-**
Single-Unit Trucks %	0%	0%	3.9%	9.3%	0%		8.8%	9.3%	0%	1.9%	0%		7.4%	8%	6.2%	0%		7.7%	**-**
Buses	0	0	0	5	0		5	0	0	0	0		0	5	0	0		5	**-**
Buses %	0%	0%	0%	0.7%	0%		0.6%	0%	0%	0%	0%		0%	0.6%	0%	0%		0.5%	**-**
Articulated Trucks	0	0	0	59	0		59	0	0	0	0		0	76	3	0		79	**-**
Articulated Trucks %	0%	0%	0%	8.4%	0%		7.6%	0%	0%	0%	0%		0%	9.1%	2.1%	0%		8%	**-**
Pedestrians	-	-	-	-	-	2	-	-	-	-	-	0	-	-	-	-	0	-	**-**
Pedestrians%	-		-	-	-	100%		-	-	-	-	0%		-	-	-	0%		**-**
Bicycles on Road	0	-	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	-	**-**
Bicycles on Road%	-		-	-	-	0%		-	-	-	-	0%		-	-	-	0%		**-**

Spectrum

Turning Movement Count
Location Name: MAYFIELD RD & ACE DR
Date: Wed, Sep 25, 2019 Deployment Lead: Patrick Filopoulos

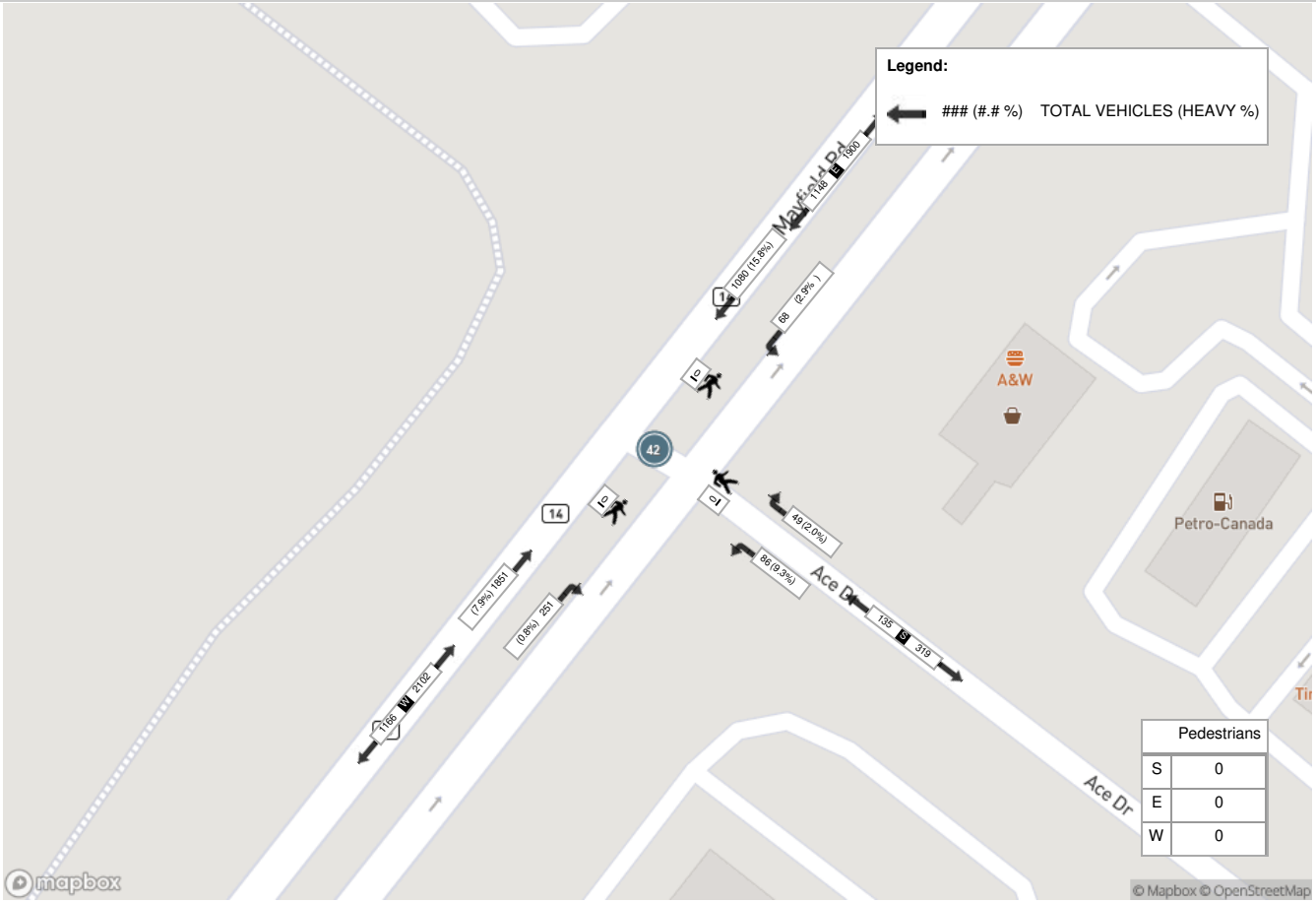
Peak Hour: 04:15 PM - 05:15 PM Weather: Broken Clouds (25.35 °C)

Start Time	N Approach		E Approach MAYFIELD RD					S Approach ACE DR						W Approach MAYFIELD RD					Int. Total (15 min)
	UTurn	Approach Total	Left	Thru	UTurn	Peds	Approach Total	Left	Thru	Right	UTurn	Peds	Approach Total	Thru	Right	UTurn	Peds	Approach Total	
16:15:00	0	0	25	357	0	0	382	43	0	10	0	0	53	400	44	0	0	444	879
16:30:00	0	0	16	383	0	0	399	50	0	11	0	0	61	374	43	0	0	417	877
16:45:00	0	0	18	369	3	0	390	67	0	7	0	0	74	355	37	0	0	392	856
17:00:00	0	0	12	387	2	0	401	61	0	12	0	0	73	326	30	0	0	356	830
Grand Total	0	0	71	1496	5	0	1572	221	0	40	0	0	261	1455	154	0	0	1609	**3442**
Approach%	0%	-	4.5%	95.2%	0.3%		-	84.7%	0%	15.3%	0%		-	90.4%	9.6%	0%		-	**-**
Totals %	0%	0%	2.1%	43.5%	0.1%		45.7%	6.4%	0%	1.2%	0%		7.6%	42.3%	4.5%	0%		46.7%	**-**
PHF	0	0	0.71	0.97	0.42		0.98	0.82	0	0.83	0		0.88	0.91	0.88	0		0.91	**-**
Heavy	0	0	0	106	0		106	6	0	1	0		7	165	7	0		172	**-**
Heavy %	0%	0%	0%	7.1%	0%		6.7%	2.7%	0%	2.5%	0%		2.7%	11.3%	4.5%	0%		10.7%	**-**
Lights	0	0	71	1390	5		1466	215	0	39	0		254	1290	147	0		1437	**-**
Lights %	0%	0%	100%	92.9%	100%		93.3%	97.3%	0%	97.5%	0%		97.3%	88.7%	95.5%	0%		89.3%	**-**
Single-Unit Trucks	0	0	0	52	0		52	4	0	1	0		5	62	6	0		68	**-**
Single-Unit Trucks %	0%	0%	0%	3.5%	0%		3.3%	1.8%	0%	2.5%	0%		1.9%	4.3%	3.9%	0%		4.2%	**-**
Buses	0	0	0	13	0		13	0	0	0	0		0	15	1	0		16	**-**
Buses %	0%	0%	0%	0.9%	0%		0.8%	0%	0%	0%	0%		0%	1%	0.6%	0%		1%	**-**
Articulated Trucks	0	0	0	41	0		41	2	0	0	0		2	88	0	0		88	**-**
Articulated Trucks %	0%	0%	0%	2.7%	0%		2.6%	0.9%	0%	0%	0%		0.8%	6%	0%	0%		5.5%	**-**
Pedestrians	-	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	0	-	**-**
Pedestrians%	-		-	-	-	0%		-	-	-	-	0%		-	-	-	0%		**-**
Bicycles on Road	0	-	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	-	**-**
Bicycles on Road%	-		-	-	-	0%		-	-	-	-	0%		-	-	-	0%		**-**

Spectrum

Turning Movement Count
Location Name: MAYFIELD RD & ACE DR
Date: Wed, Sep 25, 2019 Deployment Lead: Patrick Filopoulos

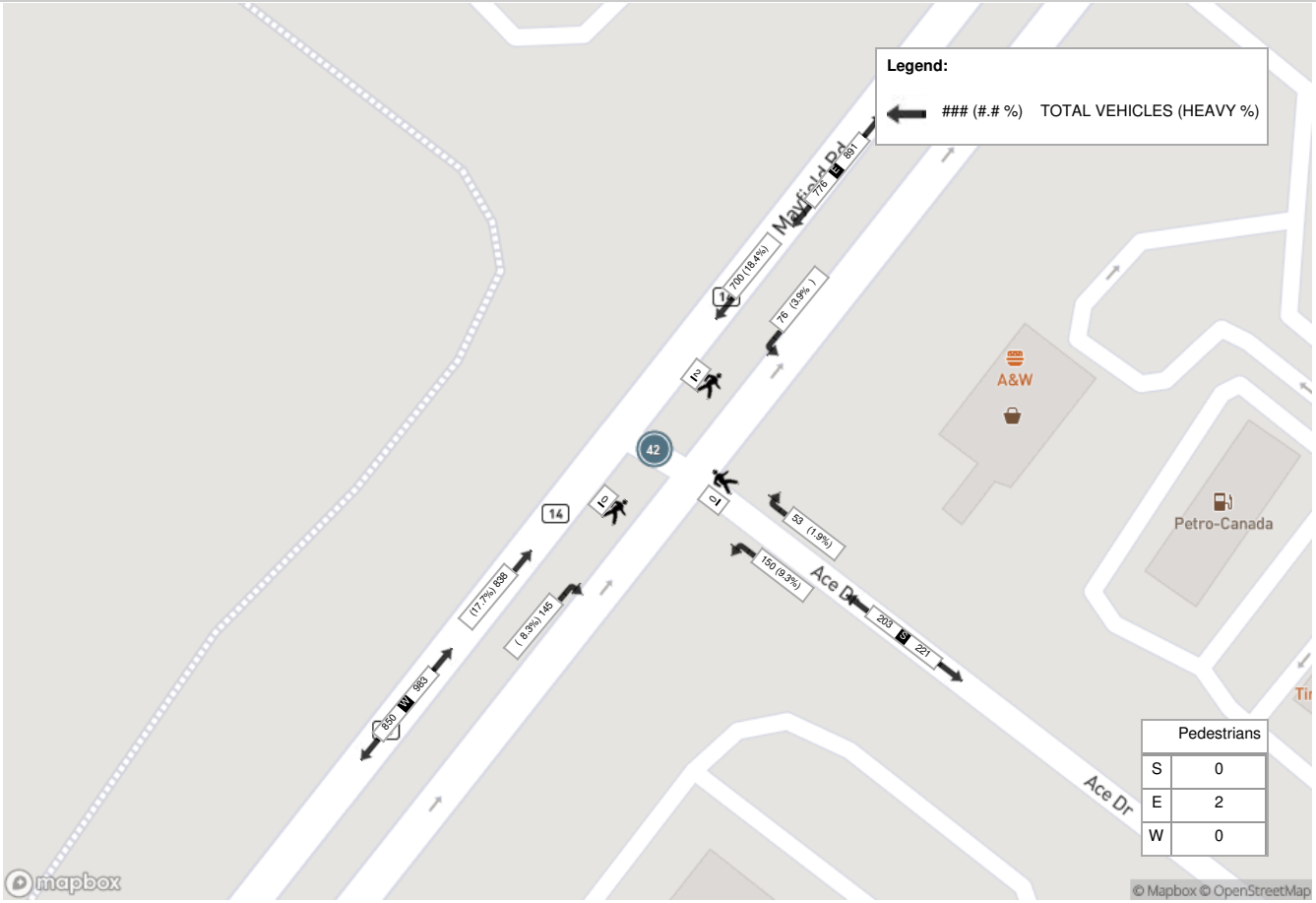
Peak Hour: 07:15 AM - 08:15 AM Weather: Mist (13.18 °C)



Spectrum

Turning Movement Count
Location Name: MAYFIELD RD & ACE DR
Date: Wed, Sep 25, 2019 Deployment Lead: Patrick Filopoulos

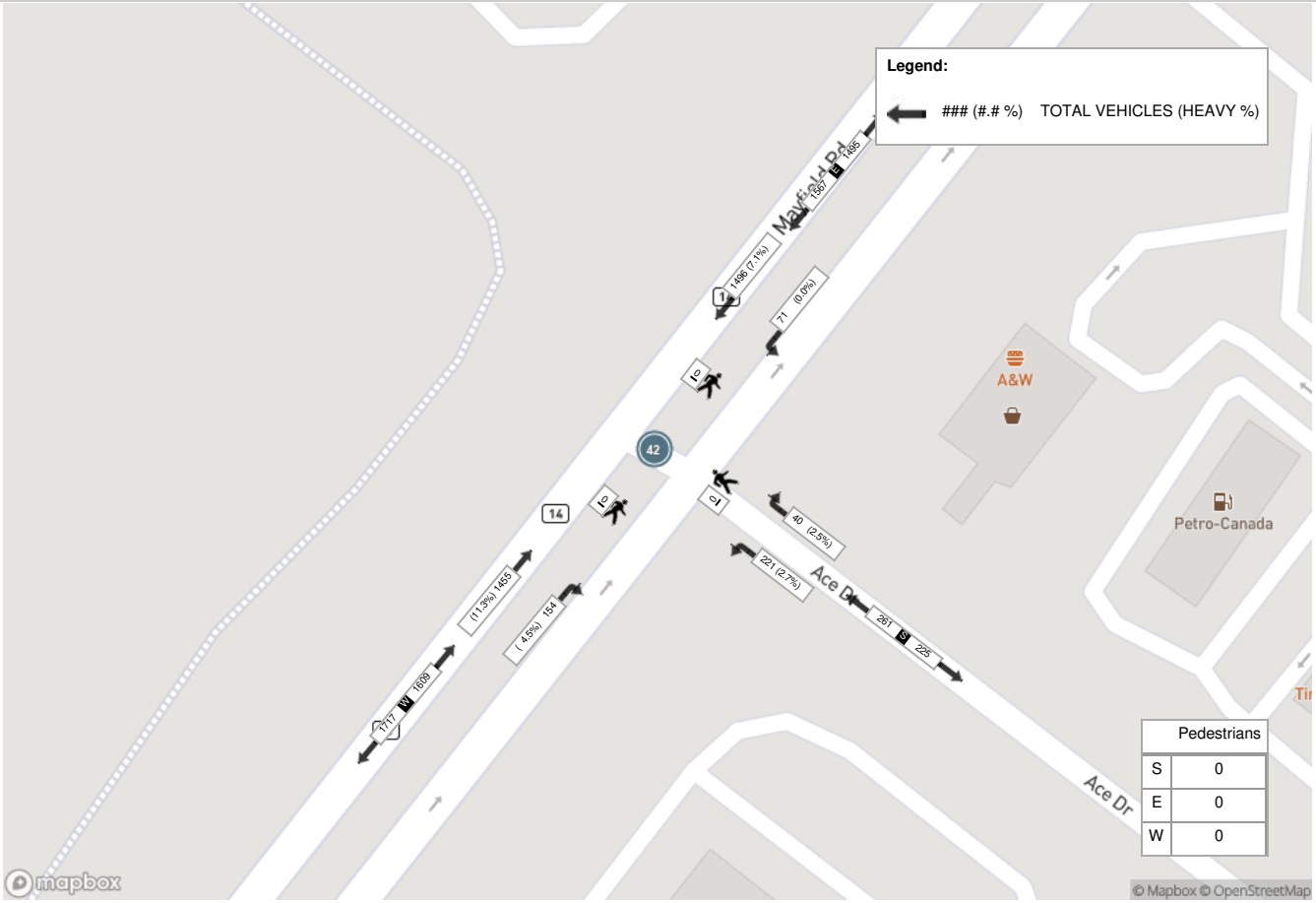
Peak Hour: 12:15 PM - 01:15 PM Weather: Broken Clouds (23.38 °C)



Spectrum

Turning Movement Count
Location Name: MAYFIELD RD & ACE DR
Date: Wed, Sep 25, 2019 Deployment Lead: Patrick Filopoulos

Peak Hour: 04:15 PM - 05:15 PM Weather: Broken Clouds (25.35 °C)



Spectrum

Turning Movement Count
Location Name: MAYFIELD RD & HEART LAKE RD
Date: Tue, Nov 29, 2016 Deployment Lead: Chris Koukaras

Peel Region
10 Peel Centre Drive
Suite B - 4th Floor
Brampton ON, Canada, L6T 4B9

Turning Movement Count (7 . MAYFIELD RD & HEART LAKE RD) CustID: 01413759 MioID: 369877

Start Time	Southbound HEART LAKE ROAD						Westbound MAYFIELD RD						Northbound HEART LAKE ROAD						Eastbound MAYFIELD RD						Int. Total (15 min)	Int. Total (1 hr)
	Left	Thru	Right	U-Turn	Peds	Approach Total	Left	Thru	Right	U-Turn	Peds	Approach Total	Left	Thru	Right	U-Turn	Peds	Approach Total	Left	Thru	Right	U-Turn	Peds	Approach Total		
07:00:00	15	13	3	0	0	31	2	150	1	0	0	153	14	4	1	0	0	19	2	279	74	0	0	355	558	
07:15:00	16	11	3	0	0	30	13	145	7	0	0	165	19	2	5	0	0	26	4	267	94	0	0	365	586	
07:30:00	8	23	8	0	0	39	24	179	4	0	0	207	22	4	6	0	0	32	8	302	131	0	0	441	719	
07:45:00	6	28	12	0	0	46	37	196	2	0	0	235	25	2	6	0	0	33	6	300	132	0	0	438	752	2615
08:00:00	12	16	7	0	0	35	42	186	1	0	0	229	25	4	2	0	0	31	4	276	144	0	0	424	719	2776
08:15:00	7	11	15	0	0	33	13	167	7	0	0	187	31	2	4	0	0	37	3	240	98	1	0	342	599	2789
08:30:00	5	13	8	0	0	26	9	153	3	0	0	165	40	3	4	0	0	47	2	270	71	0	0	343	581	2651
08:45:00	11	9	4	0	0	24	11	120	4	0	0	135	21	2	5	0	0	28	8	223	56	0	0	287	474	2373
BREAK																										
11:00:00	6	1	4	0	0	11	0	109	9	0	0	118	18	6	3	0	0	27	5	142	19	0	0	166	322	
11:15:00	5	3	3	0	0	11	1	117	2	0	0	120	8	2	1	0	0	11	1	129	18	0	0	148	290	
11:30:00	9	3	2	0	0	14	1	90	7	0	0	98	12	2	3	0	0	17	2	148	16	0	0	166	295	
11:45:00	3	4	6	0	0	13	5	128	3	0	0	136	13	2	2	0	0	17	4	157	16	0	0	177	343	1250
12:00:00	4	2	4	0	0	10	3	123	6	0	0	132	8	4	6	0	0	18	1	108	30	0	0	139	299	1227
12:15:00	4	0	2	0	0	6	2	109	6	0	0	117	20	3	1	0	0	24	3	149	11	0	0	163	310	1247
12:30:00	5	3	3	0	0	11	2	113	1	0	0	116	18	4	4	0	0	26	0	162	19	0	0	181	334	1286
12:45:00	11	1	2	0	0	14	4	135	6	0	0	145	18	2	5	0	0	25	6	141	18	0	0	165	349	1292
13:00:00	9	9	0	0	0	18	7	129	1	0	0	137	21	3	1	0	0	25	3	141	16	0	0	160	340	1333
13:15:00	5	4	4	0	0	13	3	111	4	0	0	118	16	3	4	0	0	23	0	145	13	0	0	158	312	1335
13:30:00	5	3	3	0	0	11	3	122	4	0	0	129	19	2	4	0	0	25	0	116	24	0	0	140	305	1306
13:45:00	7	3	2	0	0	12	5	139	4	0	0	148	14	8	7	0	0	29	2	140	15	0	0	157	346	1303
BREAK																										
15:00:00	7	2	7	0	0	16	5	234	10	0	0	249	47	5	7	0	0	59	7	168	37	0	0	212	536	
15:15:00	2	6	3	0	0	11	8	221	8	0	0	237	77	10	4	0	0	91	5	148	22	0	0	175	514	
15:30:00	7	8	3	0	0	18	4	271	9	0	0	284	64	3	6	0	0	73	10	168	36	0	0	214	589	
15:45:00	13	7	5	0	0	25	6	209	18	0	0	233	64	4	6	0	0	74	12	176	38	0	0	226	558	2197
16:00:00	6	8	6	0	0	20	7	291	10	0	0	308	62	8	3	0	0	73	10	212	25	0	0	247	648	2309
16:15:00	5	8	3	0	0	16	8	267	7	2	0	284	76	10	3	0	0	89	6	193	29	0	0	228	617	2412
16:30:00	9	4	5	0	0	18	13	306	13	0	0	332	84	10	2	0	0	96	7	173	24	0	0	204	650	2473
16:45:00	7	6	7	0	0	20	9	285	12	0	0	306	77	14	3	0	0	94	8	218	36	0	0	262	682	2597
17:00:00	7	2	4	0	0	13	6	138	2	0	0	146	42	8	4	0	0	54	1	226	31	0	0	258	471	2420
17:15:00	12	6	8	0	0	26	2	314	8	0	0	324	80	3	6	0	0	89	8	197	36	0	0	241	680	2483

Peel Region
10 Peel Centre Drive
Suite B - 4th Floor
Brampton ON, Canada, L6T 4B9

17:30:00	10	12	8	0	0	30	4	350	9	0	0	363	78	3	3	0	0	84	5	201	30	0	0	236	713	2546
17:45:00	5	3	8	0	0	16	4	317	16	0	0	337	74	1	4	0	0	79	3	157	34	0	0	194	626	2490
Grand Total	243	232	162	0	0	637	263	5924	204	2	0	6393	1207	143	125	0	0	1475	146	6072	1393	1	0	7612	**16117**	-
Approach%	38.1%	36.4%	25.4%	0%		-	4.1%	92.7%	3.2%	0%		-	81.8%	9.7%	8.5%	0%		-	1.9%	79.8%	18.3%	0%		-	**-**	-
Totals %	1.5%	1.4%	1%	0%		4%	1.6%	36.8%	1.3%	0%		39.7%	7.5%	0.9%	0.8%	0%		9.2%	0.9%	37.7%	8.6%	0%		47.2%	**-**	-
Heavy	14	4	10	0		-	8	475	12	0		-	28	3	6	0		-	8	431	31	0		-	**-**	-
Heavy %	5.8%	1.7%	6.2%	0%		-	3%	8%	5.9%	0%		-	2.3%	2.1%	4.8%	0%		-	5.5%	7.1%	2.2%	0%		-	**-**	-
Bicycles	0	0	0	0		-	0	0	0	0		-	1	0	1	0		-	0	0	1	0		-	**-**	-
Bicycle %	0%	0%	0%	0%		-	0%	0%	0%	0%		-	0.1%	0%	0.8%	0%		-	0%	0%	0.1%	0%		-	**-**	-

Peel Region
10 Peel Centre Drive
Suite B - 4th Floor
Brampton ON, Canada, L6T 4B9

Peak Hour: 07:30 AM - 08:30 AM Weather:

Start Time	Southbound HEART LAKE ROAD						Westbound MAYFIELD RD						Northbound HEART LAKE ROAD						Eastbound MAYFIELD RD						Int. Total (15 min)
	Left	Thru	Right	U-Turn	Peds	Approach Total	Left	Thru	Right	U-Turn	Peds	Approach Total	Left	Thru	Right	U-Turn	Peds	Approach Total	Left	Thru	Right	U-Turn	Peds	Approach Total	
07:30:00	8	23	8	0	0	39	24	179	4	0	0	207	22	4	6	0	0	32	8	302	131	0	0	441	719
07:45:00	6	28	12	0	0	46	37	196	2	0	0	235	25	2	6	0	0	33	6	300	132	0	0	438	752
08:00:00	12	16	7	0	0	35	42	186	1	0	0	229	25	4	2	0	0	31	4	276	144	0	0	424	719
08:15:00	7	11	15	0	0	33	13	167	7	0	0	187	31	2	4	0	0	37	3	240	98	1	0	342	599
Grand Total	33	78	42	0	0	153	116	728	14	0	0	858	103	12	18	0	0	133	21	1118	505	1	0	1645	**2789**
Approach%	21.6%	51%	27.5%	0%		-	13.5%	84.8%	1.6%	0%		-	77.4%	9%	13.5%	0%		-	1.3%	68%	30.7%	0.1%		-	**-**
Totals %	1.2%	2.8%	1.5%	0%		5.5%	4.2%	26.1%	0.5%	0%		30.8%	3.7%	0.4%	0.6%	0%		4.8%	0.8%	40.1%	18.1%	0%		59%	**-**
PHF	0.69	0.7	0.7	0		0.83	0.69	0.93	0.5	0		0.91	0.83	0.75	0.75	0		0.9	0.66	0.93	0.88	0.25		0.93	**-**
Heavy	0	1	0	0		1	3	87	4	0		94	5	0	0	0		5	1	63	11	0		75	**-**
Heavy %	0%	1.3%	0%	0%		0.7%	2.6%	12%	28.6%	0%		11%	4.9%	0%	0%	0%		3.8%	4.8%	5.6%	2.2%	0%		4.6%	**-**
Lights	33	77	42	0		152	113	641	10	0		764	98	12	18	0		128	20	1055	494	1		1570	**-**
Lights %	100%	98.7%	100%	0%		99.3%	97.4%	88%	71.4%	0%		89%	95.1%	100%	100%	0%		96.2%	95.2%	94.4%	97.8%	100%		95.4%	**-**
Single-Unit Trucks	0	0	0	0		0	0	51	3	0		54	0	0	0	0		0	0	32	1	0		33	**-**
Single-Unit Trucks %	0%	0%	0%	0%		0%	0%	7%	21.4%	0%		6.3%	0%	0%	0%	0%		0%	0%	2.9%	0.2%	0%		2%	**-**
Buses	0	0	0	0		0	2	21	1	0		24	5	0	0	0		5	1	27	10	0		38	**-**
Buses %	0%	0%	0%	0%		0%	1.7%	2.9%	7.1%	0%		2.8%	4.9%	0%	0%	0%		3.8%	4.8%	2.4%	2%	0%		2.3%	**-**
Articulated Trucks	0	1	0	0		1	1	15	0	0		16	0	0	0	0		0	0	4	0	0		4	**-**
Articulated Trucks %	0%	1.3%	0%	0%		0.7%	0.9%	2.1%	0%	0%		1.9%	0%	0%	0%	0%		0%	0%	0.4%	0%	0%		0.2%	**-**
Bicycles on Road	0	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	**-**
Bicycles on Road%	-	-	-	-	%		-	-	-	-	%		-	-	-	-	%		-	-	-	-	%		**-**

Peel Region
10 Peel Centre Drive
Suite B - 4th Floor
Brampton ON, Canada, L6T 4B9

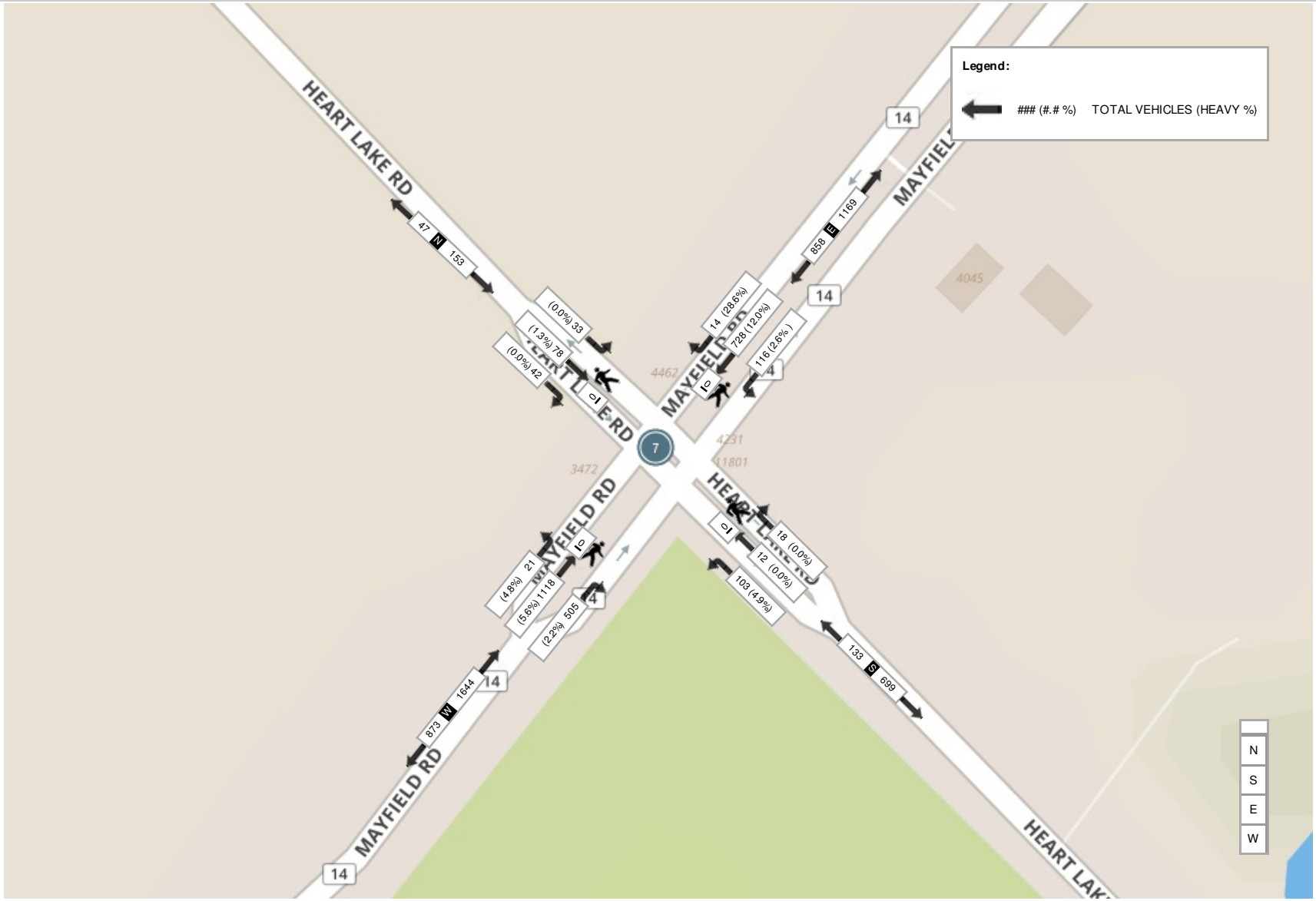
Peak Hour: 12:30 PM - 01:30 PM Weather:

Start Time	Southbound HEART LAKE ROAD						Westbound MAYFIELD RD						Northbound HEART LAKE ROAD						Eastbound MAYFIELD RD						Int. Total (15 min)
	Left	Thru	Right	U-Turn	Peds	Approach Total	Left	Thru	Right	U-Turn	Peds	Approach Total	Left	Thru	Right	U-Turn	Peds	Approach Total	Left	Thru	Right	U-Turn	Peds	Approach Total	
12:30:00	5	3	3	0	0	11	2	113	1	0	0	116	18	4	4	0	0	26	0	162	19	0	0	181	334
12:45:00	11	1	2	0	0	14	4	135	6	0	0	145	18	2	5	0	0	25	6	141	18	0	0	165	349
13:00:00	9	9	0	0	0	18	7	129	1	0	0	137	21	3	1	0	0	25	3	141	16	0	0	160	340
13:15:00	5	4	4	0	0	13	3	111	4	0	0	118	16	3	4	0	0	23	0	145	13	0	0	158	312
Grand Total	30	17	9	0	0	56	16	488	12	0	0	516	73	12	14	0	0	99	9	589	66	0	0	664	**1335**
Approach%	53.6%	30.4%	16.1%	0%		-	3.1%	94.6%	2.3%	0%		-	73.7%	12.1%	14.1%	0%		-	1.4%	88.7%	9.9%	0%		-	**-**
Totals %	2.2%	1.3%	0.7%	0%		4.2%	1.2%	36.6%	0.9%	0%		38.7%	5.5%	0.9%	1%	0%		7.4%	0.7%	44.1%	4.9%	0%		49.7%	**-**
PHF	0.68	0.47	0.56	0		0.78	0.57	0.9	0.5	0		0.89	0.87	0.75	0.7	0		0.95	0.38	0.91	0.87	0		0.92	**-**
Heavy	2	2	1	0		5	1	69	0	0		70	1	0	0	0		1	0	45	1	0		46	**-**
Heavy %	6.7%	11.8%	11.1%	0%		8.9%	6.3%	14.1%	0%	0%		13.6%	1.4%	0%	0%	0%		1%	0%	7.6%	1.5%	0%		6.9%	**-**
Lights	28	15	8	0		51	15	419	12	0		446	72	12	14	0		98	9	544	65	0		618	**-**
Lights %	93.3%	88.2%	88.9%	0%		91.1%	93.8%	85.9%	100%	0%		86.4%	98.6%	100%	100%	0%		99%	100%	92.4%	98.5%	0%		93.1%	**-**
Single-Unit Trucks	2	1	1	0		4	0	55	0	0		55	1	0	0	0		1	0	36	1	0		37	**-**
Single-Unit Trucks %	6.7%	5.9%	11.1%	0%		7.1%	0%	11.3%	0%	0%		10.7%	1.4%	0%	0%	0%		1%	0%	6.1%	1.5%	0%		5.6%	**-**
Buses	0	1	0	0		1	0	2	0	0		2	0	0	0	0		0	0	2	0	0		2	**-**
Buses %	0%	5.9%	0%	0%		1.8%	0%	0.4%	0%	0%		0.4%	0%	0%	0%	0%		0%	0%	0.3%	0%	0%		0.3%	**-**
Articulated Trucks	0	0	0	0		0	1	12	0	0		13	0	0	0	0		0	0	7	0	0		7	**-**
Articulated Trucks %	0%	0%	0%	0%		0%	6.3%	2.5%	0%	0%		2.5%	0%	0%	0%	0%		0%	0%	1.2%	0%	0%		1.1%	**-**
Bicycles on Road	0	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	**-**
Bicycles on Road%	-	-	-	-	%		-	-	-	-	%		-	-	-	-	%		-	-	-	-	%		**-**

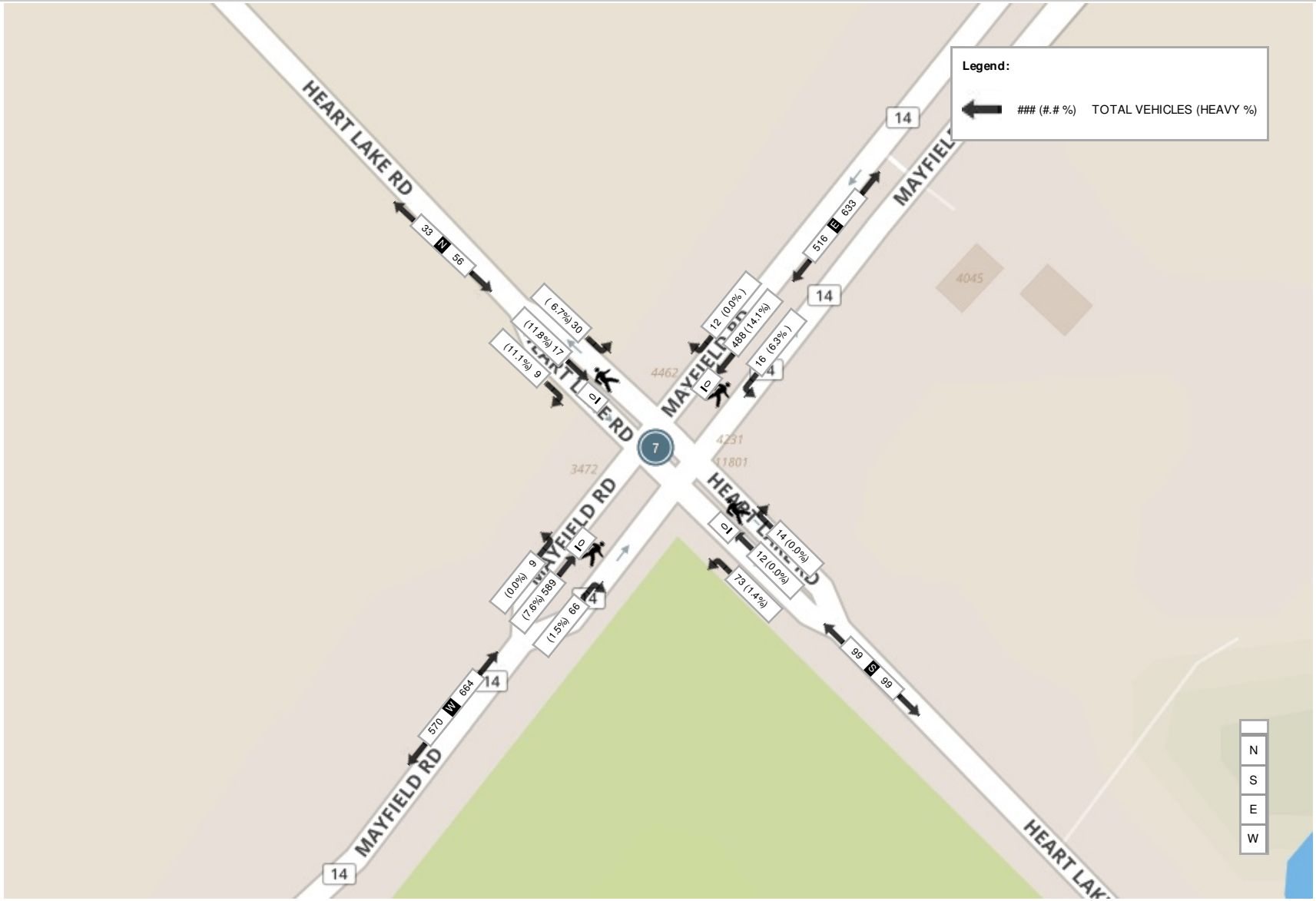
Peak Hour: 04:00 PM - 05:00 PM Weather:

Start Time	Southbound HEART LAKE ROAD						Westbound MAYFIELD RD						Northbound HEART LAKE ROAD						Eastbound MAYFIELD RD						Int. Total (15 min)
	Left	Thru	Right	U-Turn	Peds	Approach Total	Left	Thru	Right	U-Turn	Peds	Approach Total	Left	Thru	Right	U-Turn	Peds	Approach Total	Left	Thru	Right	U-Turn	Peds	Approach Total	
16:00:00	6	8	6	0	0	20	7	291	10	0	0	308	62	8	3	0	0	73	10	212	25	0	0	247	648
16:15:00	5	8	3	0	0	16	8	267	7	2	0	284	76	10	3	0	0	89	6	193	29	0	0	228	617
16:30:00	9	4	5	0	0	18	13	306	13	0	0	332	84	10	2	0	0	96	7	173	24	0	0	204	650
16:45:00	7	6	7	0	0	20	9	285	12	0	0	306	77	14	3	0	0	94	8	218	36	0	0	262	682
Grand Total	27	26	21	0	0	74	37	1149	42	2	0	1230	299	42	11	0	0	352	31	796	114	0	0	941	**2597**
Approach%	36.5%	35.1%	28.4%	0%		-	3%	93.4%	3.4%	0.2%		-	84.9%	11.9%	3.1%	0%		-	3.3%	84.6%	12.1%	0%		-	-
Totals %	1%	1%	0.8%	0%		2.8%	1.4%	44.2%	1.6%	0.1%		47.4%	11.5%	1.6%	0.4%	0%		13.6%	1.2%	30.7%	4.4%	0%		36.2%	-
PHF	0.75	0.81	0.75	0		0.93	0.71	0.94	0.81	0.25		0.93	0.89	0.75	0.92	0		0.92	0.78	0.91	0.79	0		0.9	-
Heavy	2	1	1	0		4	2	37	1	0		40	4	0	1	0		5	1	72	7	0		80	-
Heavy %	7.4%	3.8%	4.8%	0%		5.4%	5.4%	3.2%	2.4%	0%		3.3%	1.3%	0%	9.1%	0%		1.4%	3.2%	9%	6.1%	0%		8.5%	-
Lights	25	25	20	0		70	35	1112	41	2		1190	295	42	10	0		347	30	724	107	0		861	-
Lights %	92.6%	96.2%	95.2%	0%		94.6%	94.6%	96.8%	97.6%	100%		96.7%	98.7%	100%	90.9%	0%		98.6%	96.8%	91%	93.9%	0%		91.5%	-
Single-Unit Trucks	2	0	0	0		2	1	23	0	0		24	1	0	0	0		1	0	35	2	0		37	-
Single-Unit Trucks %	7.4%	0%	0%	0%		2.7%	2.7%	2%	0%	0%		2%	0.3%	0%	0%	0%		0.3%	0%	4.4%	1.8%	0%		3.9%	-
Buses	0	1	1	0		2	1	7	1	0		9	3	0	1	0		4	1	15	5	0		21	-
Buses %	0%	3.8%	4.8%	0%		2.7%	2.7%	0.6%	2.4%	0%		0.7%	1%	0%	9.1%	0%		1.1%	3.2%	1.9%	4.4%	0%		2.2%	-
Articulated Trucks	0	0	0	0		0	0	7	0	0		7	0	0	0	0		0	0	22	0	0		22	-
Articulated Trucks %	0%	0%	0%	0%		0%	0%	0.6%	0%	0%		0.6%	0%	0%	0%	0%		0%	0%	2.8%	0%	0%		2.3%	-
Bicycles on Road	0	0	0	0	0	-	0	0	0	0	0	-	0	0	1	0	0	-	0	0	0	0	0	-	-
Bicycles on Road%	-	-	-	-	%		-	-	-	-	%		-	-	-	-	%		-	-	-	-	%		-

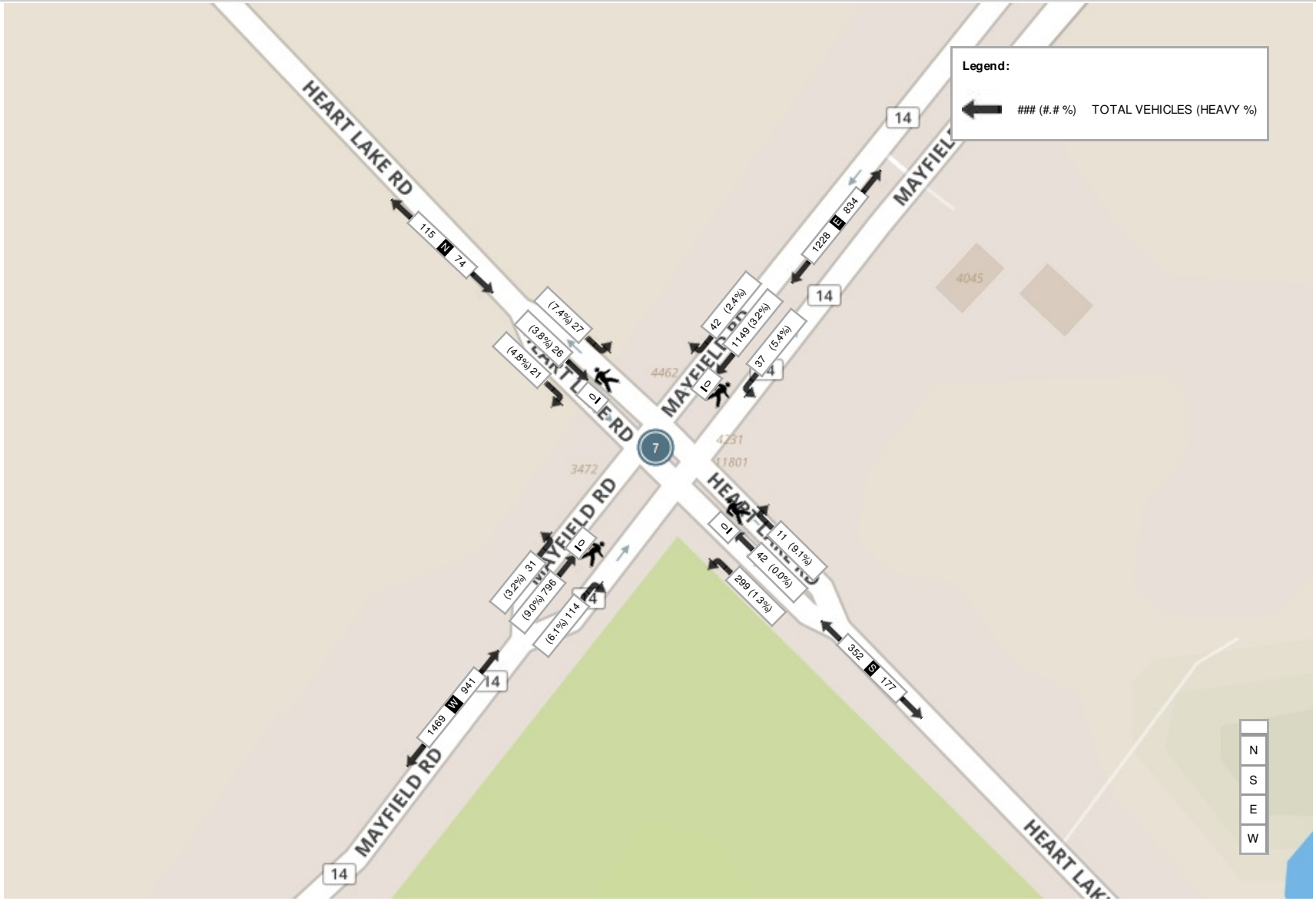
Peak Hour: 07:30 AM - 08:30 AM **Weather:**



Peak Hour: 12:30 PM - 01:30 PM **Weather:**



Peak Hour: 04:00 PM - 05:00 PM **Weather:**



TOWN OF CALEDON
PLANNING
RECEIVED
Feb 26, 2021

Spectrum

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

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

Start Time	N Approach DIXIE ROAD						E Approach MAYFIELD RD						S Approach DIXIE RD						W Approach MAYFIELD RD						Int. Total (15 min)
	Left	Thru	Right	UTurn	Peds	Approach Total	Left	Thru	Right	UTurn	Peds	Approach Total	Left	Thru	Right	UTurn	Peds	Approach Total	Left	Thru	Right	UTurn	Peds	Approach Total	
07:15:00	6	60	104	0	0	170	10	105	6	0	0	121	23	14	2	0	0	39	58	259	72	0	0	389	719
07:30:00	2	9	57	0	0	68	10	115	7	0	0	132	31	7	7	0	0	45	68	302	90	0	0	460	705
07:45:00	4	22	56	0	0	82	18	163	3	0	0	184	27	12	11	0	0	50	50	412	94	0	0	556	872
08:00:00	10	21	39	0	0	70	22	152	2	0	0	176	40	13	11	0	0	64	61	299	108	0	0	468	778
Grand Total	22	112	256	0	0	390	60	535	18	0	0	613	121	46	31	0	0	198	237	1272	364	0	0	1873	**3074**
Approach%	5.6%	28.7%	65.6%	0%		-	9.8%	87.3%	2.9%	0%		-	61.1%	23.2%	15.7%	0%		-	12.7%	67.9%	19.4%	0%		-	**-**
Totals %	0.7%	3.6%	8.3%	0%		12.7%	2%	17.4%	0.6%	0%		19.9%	3.9%	1.5%	1%	0%		6.4%	7.7%	41.4%	11.8%	0%		60.9%	**-**
PHF	0.55	0.47	0.62	0		0.57	0.68	0.82	0.64	0		0.83	0.76	0.82	0.7	0		0.77	0.87	0.77	0.84	0		0.84	**-**
Heavy	6	9	27	0		42	5	77	6	0		88	5	7	4	0		16	32	84	16	0		132	**-**
Heavy %	27.3%	8%	10.5%	0%		10.8%	8.3%	14.4%	33.3%	0%		14.4%	4.1%	15.2%	12.9%	0%		8.1%	13.5%	6.6%	4.4%	0%		7%	**-**
Lights	16	103	229	0		348	55	458	12	0		525	116	39	27	0		182	205	1188	348	0		1741	**-**
Lights %	72.7%	92%	89.5%	0%		89.2%	91.7%	85.6%	66.7%	0%		85.6%	95.9%	84.8%	87.1%	0%		91.9%	86.5%	93.4%	95.6%	0%		93%	**-**
Single-Unit Trucks	2	6	20	0		28	1	39	2	0		42	4	5	1	0		10	21	22	7	0		50	**-**
Single-Unit Trucks %	9.1%	5.4%	7.8%	0%		7.2%	1.7%	7.3%	11.1%	0%		6.9%	3.3%	10.9%	3.2%	0%		5.1%	8.9%	1.7%	1.9%	0%		2.7%	**-**
Buses	2	1	2	0		5	3	18	3	0		24	1	2	2	0		5	3	31	6	0		40	**-**
Buses %	9.1%	0.9%	0.8%	0%		1.3%	5%	3.4%	16.7%	0%		3.9%	0.8%	4.3%	6.5%	0%		2.5%	1.3%	2.4%	1.6%	0%		2.1%	**-**
Articulated Trucks	2	2	5	0		9	1	20	1	0		22	0	0	1	0		1	8	31	3	0		42	**-**
Articulated Trucks %	9.1%	1.8%	2%	0%		2.3%	1.7%	3.7%	5.6%	0%		3.6%	0%	0%	3.2%	0%		0.5%	3.4%	2.4%	0.8%	0%		2.2%	**-**
Pedestrians	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	**-**
Pedestrians%	-	-	-	-	0%		-	-	-	-	0%		-	-	-	-	0%		-	-	-	-	0%		**-**

TOWN OF CALEDON
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Feb 26, 2021

Spectrum

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

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



TOWN OF CALEDON
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Feb 26, 2021

Spectrum

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

Peak Hour: 04:15 PM - 05:15 PM Weather: Light Rain (10.54 °C)

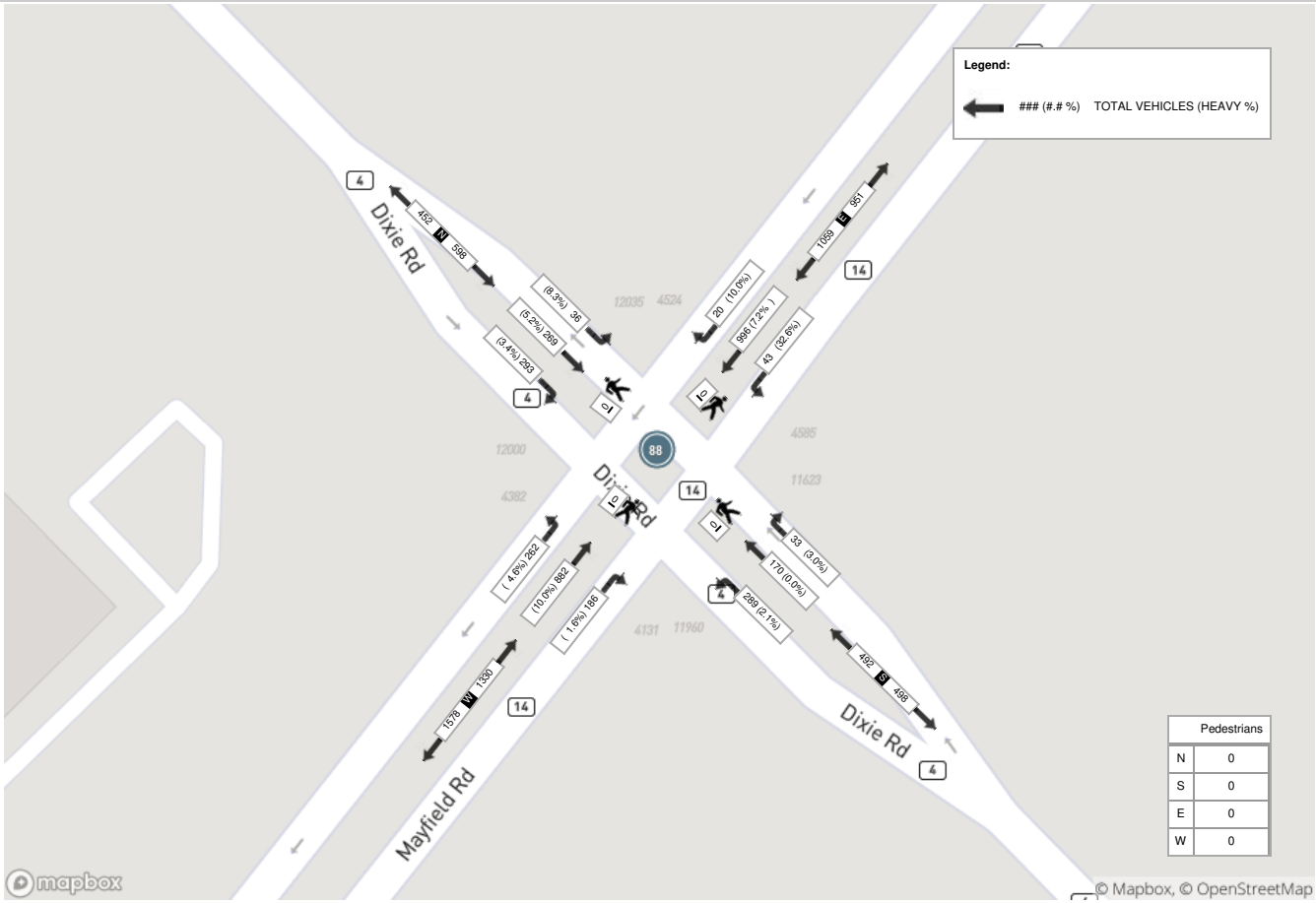
Start Time	N Approach DIXIE ROAD						E Approach MAYFIELD RD						S Approach DIXIE RD						W Approach MAYFIELD RD						Int. Total (15 min)
	Left	Thru	Right	UTurn	Peds	Approach Total	Left	Thru	Right	UTurn	Peds	Approach Total	Left	Thru	Right	UTurn	Peds	Approach Total	Left	Thru	Right	UTurn	Peds	Approach Total	
16:15:00	6	60	88	0	0	154	10	270	5	0	0	285	69	38	11	0	0	118	58	234	48	0	0	340	897
16:30:00	6	73	78	0	0	157	18	233	4	0	0	255	80	57	8	0	0	145	70	212	49	1	0	332	889
16:45:00	12	76	63	0	0	151	7	267	5	0	0	279	66	30	7	0	0	103	70	228	44	0	0	342	875
17:00:00	12	60	64	0	0	136	8	226	6	0	0	240	74	45	7	0	0	126	64	208	45	0	0	317	819
Grand Total	36	269	293	0	0	598	43	996	20	0	0	1059	289	170	33	0	0	492	262	882	186	1	0	1331	**3480**
Approach%	6%	45%	49%	0%		-	4.1%	94.1%	1.9%	0%		-	58.7%	34.6%	6.7%	0%		-	19.7%	66.3%	14%	0.1%		-	**-**
Totals %	1%	7.7%	8.4%	0%		17.2%	1.2%	28.6%	0.6%	0%		30.4%	8.3%	4.9%	0.9%	0%		14.1%	7.5%	25.3%	5.3%	0%		38.2%	**-**
PHF	0.75	0.88	0.83	0		0.95	0.6	0.92	0.83	0		0.93	0.9	0.75	0.75	0		0.85	0.94	0.94	0.95	0.25		0.97	**-**
Heavy	3	14	10	0		27	14	72	2	0		88	6	0	1	0		7	12	88	3	0		103	**-**
Heavy %	8.3%	5.2%	3.4%	0%		4.5%	32.6%	7.2%	10%	0%		8.3%	2.1%	0%	3%	0%		1.4%	4.6%	10%	1.6%	0%		7.7%	**-**
Lights	33	255	283	0		571	29	924	18	0		971	283	170	32	0		485	250	794	183	1		1228	**-**
Lights %	91.7%	94.8%	96.6%	0%		95.5%	67.4%	92.8%	90%	0%		91.7%	97.9%	100%	97%	0%		98.6%	95.4%	90%	98.4%	100%		92.3%	**-**
Single-Unit Trucks	2	10	10	0		22	12	31	1	0		44	1	0	1	0		2	8	27	0	0		35	**-**
Single-Unit Trucks %	5.6%	3.7%	3.4%	0%		3.7%	27.9%	3.1%	5%	0%		4.2%	0.3%	0%	3%	0%		0.4%	3.1%	3.1%	0%	0%		2.6%	**-**
Buses	1	3	0	0		4	0	7	0	0		7	4	0	0	0		4	0	18	3	0		21	**-**
Buses %	2.8%	1.1%	0%	0%		0.7%	0%	0.7%	0%	0%		0.7%	1.4%	0%	0%	0%		0.8%	0%	2%	1.6%	0%		1.6%	**-**
Articulated Trucks	0	1	0	0		1	2	34	1	0		37	1	0	0	0		1	4	43	0	0		47	**-**
Articulated Trucks %	0%	0.4%	0%	0%		0.2%	4.7%	3.4%	5%	0%		3.5%	0.3%	0%	0%	0%		0.2%	1.5%	4.9%	0%	0%		3.5%	**-**
Pedestrians	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	**-**
Pedestrians%	-	-	-	-	0%		-	-	-	-	0%		-	-	-	-	0%		-	-	-	-	0%		**-**

TOWN OF CALEDON
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Spectrum

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

Peak Hour: 04:15 PM - 05:15 PM **Weather: Light Rain (10.54 °C)**



Appendix C

Signal Timing Plans (STP)

TOWN OF CALEDON
PLANNING
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Feb 26, 2021

REGIONAL MUNICIPALITY OF PEEL

Traffic Signal Timing Parameters

Database Date	**January 8, 2018**		**Prepared Date**	**December 8, 2020**
Database Rev	**27**		**Completed By**	**JP**
Timing Card / Field rev			**Checked By**	**SJ**

Location — **Dixie Road at Mayfield Road**

Phase #	Street Name - Direction	Vehicle Minimum (s)	Pedestrian Minimum (s)		Amber (s)	All Red (s)	TIME PERIOD (s) (Green+Amber+All Red)		
			WALK	FDWALK			AM SPLITS	OFF MAX	PM SPLITS
1	Mayfield Road - WB P.P. LT	5	0	0	30	0	10	13	10
2	Mayfield Road - EB	8	8	30	46	23	60	16.9	60
3	Not in use	-	-	-	-	-	-	-	-
4	Dixie Road - NB	8	8	33	46	23	50	46.9	50
5	Mayfield Road - EB P.P. LT	5	0	0	30	0	10	13	10
6	Mayfield Road - WB	8	8	30	46	23	60	16.9	60
7	Not in use	-	-	-	-	-	-	-	-
8	Dixie Road - SB	8	8	33	46	23	50	46.9	50

System Control
No

Semi-Actuated Mode
Yes

TIME (M-F)	PEAK	CYCLE LENGTH (s)	OFFSET (s)
07:00 - 09:00	AM	120	44
FREE	OFF	0	0
15:00 - 18:00	PM	120	32

TOWN OF CALEDON
PLANNING
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Feb 26, 2021

Region of Peel
Working for you

OFFICE COPY

Intersection Name	Road Code	Int. #	Sys #	Rev.
Dixie Road at Old School Road	00430603	9963	963	1

Controller Make	Model	Firmware Rev. No.
Econolite	ASC/3	

Type of Operation 4 Phase Semi-Actuated

Revision

NO	Date Y	M	D	Description	Field Chg by	Checked by	Approved by
1	17			Installation of Traffic Signals			

*- Start From Main Menu

PHASE DESCRIPTION

Ph1		Ph5	
Ph2	Dixie Road - Southbound	PH6	Dixie Road - Northbound
Ph3		Ph7	
Ph4	Old School Road - Westbound	Ph8	Old School Road - Eastbound

CONFIGURATION SUBMENU - OPTIONS *- 1 - 8

Supervisor access code:	0000
Data change access code:	9400
Key Click Enable:	YES
Backlight Enable:	YES

CONFIGURATION SUBMENU - PORT 3 *- 1 - 6

Port Protocol……:	Terminal
Port 2 Enable……..……..:	X
Telemetry Address…..……:	1-6
System Detector address....:	0
Telem response delay……..:	8700
Duplex - Half or Full……..:	Full
Modem Data Rate (BPS)…..:	1200
Data, Parity, Stop…….……..:	8,0,1

CONFIGURATION SUBMENU - CONTROLLER SEQUENCE *- 1 - 1

	..1	..2	..3	..4	..5	..6
R1	1	2	3	4	9	10
R2	5	6	7	8	11	12

CONFIGURATIUON SUBMENU - PHASES IN USE *- 1 - 2

Phase:	1	2	3	4	5	6	7	8
Phase in use :	0	X	0	X	0	X	0	X
Exclusive Ped :	0	0	0	0	0	0	0	0

CONTROLLER SUBMENU - TIMING DATA * - 2 - 1

Phase:	1	2	3	4	5	6	7	8
Minimum Green…….. :	0	8	0	8	0	8	0	8
Walk…….. :	0	8	0	8	0	8	0	8
Pedestrian Clearance. :	0	9	0	11	0	9	0	11
Veh. Ext. :	0	5.0	0	5.0	0	5.0	0	5.0
Veh. Ext. 2 :								
Max. Ext. :								
Maximum No 1…… :	0	30	0	30	0	30	0	30
Maximum No 2…… :	0	30	0	30	0	30	0	30
Maximum No 3…… :	0	0	0	0	0	0	0	0
Yellow …. :	0	4.6	0	4.0	0	4.6	0	4.0
Red Clr….. :	0	2.0	0	2.4	0	2.0	0	2.4
Seconds/Actuation. :	0	0	0	0	0	0	0	0
Maximum Initial…… :	0	0	0	0	0	0	0	0
Time B4 Reduction…. :	0	0	0	0	0	0	0	0
Cars WT….. :	0	0	0	0	0	0	0	0
TTREDUC…….. :	0	0	0	0	0	0	0	0
MIN GAP….. :	0	0	0	0	0	0	0	0

CONTROLLER SUBMENU - RECALL DATA * - 2 - 4

Phase:	1	2	3	4	5	6	7	8
Locking Memory :	0	0	0	0	0	0	0	0
Vehicle Recall :	0	0	0	0	0	0	0	0
Ped Recall	0	X	0	0	0	X	0	0
Recall to Max	0	X	0	0	0	X	0	0
Soft Recall	0	0	0	0	0	0	0	0
Don't Rest Here	0	0	0	0	0	0	0	0
Ped Dark n/call	0	0	0	0	0	0	0	0

TOWN OF CALEDON
PLANNING
RECEIVED

Feb 26, 2021

Intersection Name		Road Code	Int. #	Sys #	Rev.
Dixie Road at Old School Road		00430603	9963	963	1
Controller Make	**Model**	**Firmware Rev. No.**			
Econolite	ASC/3				

CONTROLLER SUBMENU - START/FLASH DATA *** - 2 - 6**

Phase:	1	2	3	4	5	6	7	8
Power Start	0	X	0	0	0	X	0	0
External Start:	0	X	0	0	0	X	0	0
Power start All Red Time	0	X	0	0	0	X	0	0
Power Start Flash time	0	15	0	0	0	15	0	0
Out of Flash Yellow	0	0	0	0	0	0	0	0
Out of Flash All Red	0	0	0	0	0	0	0	0

CONTROLLER SUBMENU - OPTION DATA *** - 2 - 9**

Phase:	1	2	3	4	5	6	7	8
Guar Passage :	0	0	0	X	0	0	0	X
Nonactuated 1 :	0	X	0	0	0	X	0	0
Nonactuated 2	0	0	0	0	0	0	0	0
Dual Entry	0	X	0	0	0	X	0	0
Cond Service	0	0	0	0	0	0	0	0
Rest in Walk	0	X	0	0	0	X	0	0
Flashing Walk	0	0	0	0	0	0	0	0

Enable Programming Options

Dual Entry……..…….. X
Backup Protect. Group 1…….. X

COORDINATOR SUBMENU - OPTIONS *** - 3 - 1**

Split units……. sec
Offset Units…….. sec
Intercnt Fmt……. STD
Intercnt Src……. TLM
Resync count…..
Transition….. SMOOTH FLOAT FORCE OFF
Dwell period…… 0%

Act Crd Phase…….. X
Act Walk/Rest…….. X
Inhibit Max……..…. X
Max2 Select……. 0
Multisync…….. 0
Floating Force Off….. X

COORDINATOR SUBMENU - COORD PATTERN 1 *** - 3 - 4**

Cycle Length : 70 C/O/S - 701
Offset : 0
SPLITS

Phase								
	1) 0	2) 40	3) 0	4) 30				
	5) 0	6) 40	7) 0	8) 30				
	9) 0	10) 0	11) 0	12) 0				

Phase:	1	2	3	4	5	6	7	8
Coord Phases :	0	X	0	0	0	X	0	0
Vehicle Recall :	0	0	0	0	0	0	0	0
Veh Max Recall	0	X	0	0	0	X	0	0
Ped Recall	0	X	0	0	0	X	0	0
Phase Omit	0	0	0	0	0	0	0	0
Spare	0	0	0	0	0	0	0	0

COORDINATOR SUBMENU - COORD PATTERN 2 *** - 3 - 4**

Cycle Length : 65 C/O/S - 702
Offset : 0
SPLITS

Phase								
	1) 0	2) 38	3) 0	4) 27				
	5) 0	6) 38	7) 0	8) 27				
	9) 0	10) 0	11) 0	12) 0				

Phase:	1	2	3	4	5	6	7	8
Coord Phases :	0	X	0	0	0	X	0	0
Vehicle Recall :	0	0	0	0	0	0	0	0
Veh Max Recall	0	X	0	0	0	X	0	0
Ped Recall	0	X	0	0	0	X	0	0
Phase Omit	0	0	0	0	0	0	0	0
Spare	0	0	0	0	0	0	0	0

COORDINATOR SUBMENU - COORD PATTERN 3 *** - 3 - 4**

Cycle Length : 65 C/O/S - 703
Offset : 0
SPLITS

Phase								
	1) 0	2) 35	3) 0	4) 30				
	5) 0	6) 35	7) 0	8) 30				
	9) 0	10) 0	11) 0	12) 0				

Phase:	1	2	3	4	5	6	7	8
Coord Phases :	0	X	0	0	0	X	0	0
Vehicle Recall :	0	0	0	0	0	0	0	0
Veh Max Recall	0	X	0	0	0	X	0	0
Ped Recall	0	X	0	0	0	X	0	0
Phase Omit	0	0	0	0	0	0	0	0
Spare	0	0	0	0	0	0	0	0

TOWN OF CALEDON
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Feb 26, 2021

Intersection Name		Road Code	Int. #	Sys #	Rev.
Dixie Road at Old School Road		00430603	9963	963	1
Controller Make	**Model**	**Firmware Rev. No.**			
Econolite	ASC/3				

COORDINATOR SUBMENU - COORD PATTERN 4 * - 3 - 4

Cycle Length : 255 C/O/S - 704
Offset : 0
SPLITS
Phase

1) 0	2) 0	3) 0	4) 0				
5) 0	6) 0	7) 0	8) 0				
9) 0	10) 0	11) 0	12) 0				

Phase:	1	2	3	4	5	6	7	8
Coord Phases :	0	0	0	0	0	0	0	0
Vehicle Recall :	0	0	0	0	0	0	0	0
Veh Max Recall	0	0	0	0	0	0	0	0
Ped Recall	0	0	0	0	0	0	0	0
Phase Omit	0	0	X	0	0	0	0	0
Spare	0	0	0	0	0	0	0	0

COORDINATOR SUBMENU - COORD PATTERN 5 * - 3 - 4

Cycle Length : 255 C/O/S - 705
Offset : 0
SPLITS
Phase

1) 0	2) 0	3) 0	4) 0				
5) 0	6) 0	7) 0	8) 0				
9) 0	10) 0	11) 0	12) 0				

Phase:	1	2	3	4	5	6	7	8
Coord Phases :	0	X	0	0	0	X	0	0
Vehicle Recall :	0	0	0	0	0	0	0	0
Veh Max Recall	0	X	0	0	0	X	0	0
Ped Recall	0	X	0	0	0	X	0	0
Phase Omit	0	0	0	0	0	0	0	0
Spare	0	0	0	0	0	0	0	0

COORDINATOR SUBMENU - COORD PATTERN 6 * - 3 - 4

Cycle Length : 255 C/O/S - 706
Offset : 0
SPLITS
Phase

1) 0	2) 0	3) 0	4) 0				
5) 0	6) 0	7) 0	8) 0				
9) 0	10) 0	11) 0	12) 0				

Phase:	1	2	3	4	5	6	7	8
Coord Phases :	0	0	0	0	0	0	0	0
Vehicle Recall :	0	0	0	0	0	0	0	0
Veh Max Recall	0	0	0	0	0	0	0	0
Ped Recall	0	0	0	0	0	0	0	0
Phase Omit	X	0	X	0	X	0	0	0
Spare	0	0	0	0	0	0	0	0

NIC/TOD SUBMENU - CLOCK/CALENDAR * - 5 - 1

15 JAN 2001 MON WEEK 12 12:12:00 PM

DATE SET:
TIME SET:

ENTER DATE/TIME
THEN PRESS ENTER

MANUAL NIC PROGRAM STEP
MANUAL TOD PROGRAM STEP

NIC/TOD SUBMENU - WEEKLY PROGRAMS * - 5 - 1

	1	2	3	4	5	6	7	8	9	10
Sunday	2	1	1	1	1	1	1	1	1	1
Monday	1	1	1	1	1	1	1	1	1	1
Tuesday	1	1	1	1	1	1	1	1	1	1
Wednesday	1	1	1	1	1	1	1	1	1	1
Thursday	1	1	1	1	1	1	1	1	1	1
Friday	1	1	1	1	1	1	1	1	1	1
Saturday	2	1	1	1	1	1	1	1	1	1

NIC/TOD SUBMENU - YEARLY PROGRAMS * - 5 - 3

WEEK - OF - YEAR

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
WEEKLY PROG.	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1

	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37
WEEKLY PROG.	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1

	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53
WEEKLY PROG.	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1

TOWN OF CALEDON
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Feb 26, 2021

Intersection Name		Road Code	Int. #	Sys #	Rev.
Dixie Road at Old School Road		00430603	9963	963	1
Controller Make	**Model**	**Firmware Rev. No.**			
Econolite	ASC/3				

NIC/TOD SUBMENU - NIC PROGRAMS STEPS *** - 5 - 3**

STEP	PROGRAM	TIME	PATTERN
1	1	0600	701
2	1	0900	702
3	1	1500	703
4	1	1900	704
5	0	1100	705
6	0	1800	706
7	0	0000	0

Authorized Signature: _____ Date: _____

Region of Peel
Working for you

BRAMPTON SYSTEM DATABASE
OFFICE COPY

Intersection Name		Road Code	Sys N0.
Mayfield Rd. @ Hwy 410 N/B Off Ramp		MTO	697
Controller Make	**Model**	**Firmware Rev. No.**	
Eagle	3208 M34	3.32	

*- Start From Main Menu

Type of Operation Semi-Actuated

Revision

NO	Date Y	M	D	Description	Field Chg by	Checked by	Approved by
5	13	7	3	These timings were confirmed in the field as per MTO's request.	MF	AP	

*- Start From Main Menu

PHASE DESCRIPTION

Ph1		Ph5	
Ph2	Mayfield Rd. - E/B	PH6	Mayfield Rd. - W/B
Ph3		Ph7	
Ph4	Computer Phase	Ph8	Hwy. 410 N-B Off Ramp

UTILITIES - ACCESS *-2-1

Code..... : 9400 Codes: Four Digits (0000 - 9999)

UTILITIES - CONFIGURE PORTS *-2-8-3

Communications Setup For Port 3

Baud Rate..... : 5

PHASE DATA - VEHICLE TIMINGS *-3-1

Basic Timings Phase:	1	2	3	4	5	6	7	8
Minimum Green..... :	0	26	0	10	0	26	0	10
Passage Time /10.... :	0	50	0	40	0	50	0	40
Maximum No 1..... :	0	45	0	35	0	45	0	35
Maximum No 2..... :	0	45	0	35	0	45	0	35
Yellow Change /10.... :	0	40	0	40	0	40	0	40
Red Clearance /10..... :	0	20	0	20	0	20	0	20

PHASE DATA - DENSITY TIMINGS *-3-2 N/A

PHASE DATA - PEDESTRIAN TIMINGS & CONTROL *-3-3

Pedestrian Times Phase:	1	2	3	4	5	6	7	8
Walk..... :	0	20	0	0	0	20	0	10
Pedestrian Clearance. :	0	6	0	0	0	6	0	6
Act Rest In Walk..... :	0	0	0	0	0	0	0	0

Pedestrian Control Entry "1" = Yes & "0" = No

PHASE DATA - GENERAL CONTROL *-3-4

General Control Phase:	1	2	3	4	5	6	7	8
Initialization..... :	0	2	0	1	0	2	0	0
Non-Act Response..... :	0	1	0	0	0	1	0	0

PHASE DATA - VEHICLE AND PEDESTRIAN RECALLS *-3-5

Phase:	1	2	3	4	5	6	7	8
Vehicle Recall..... :	0	3	0	0	0	3	0	0
Pedestrian Recall..... :	0	2	0	1	0	2	0	1
Recall Delay (SEC).... :	0	0	0	0	0	0	0	0

Codes..... :	0	1	2	3	4
Initialization..... :	NONE	INACTIVE	RED	YELLOW	GREEN
Non-Act Response..... :	NONE	TO NA I	TO NA II	TO BOTH	---
Vehicle Recall..... :	NONE	1 CALL	MINIMUM	MAXIMUM	SOFT
Pedestrian Recall..... :	NONE	1 CALL	PED	NA	NA+

Intersection Name	Road Code	Sys N0.
Mayfield Rd. @ Hwy 410 N/B Off Ramp	MTO	697

Controller Make	Model	Firmware Rev. No.
Eagle	3208 M34	3.32

PHASE DATA - VEHICLE CONTROLS *-3-6

Vehicle Control Phase:	1	2	3	4	5	6	7	8
Non-Lock Memory..... :	0	0	0	1	0	0	0	0
Dual Entry..... :	0	1	0	1	0	1	0	1

Vehicle Control Entry: "1"=Yes & "0"=No

PHASE DATA - SEQUENCE CONTROL *-3-7

Phase:	1	2	3	4	5	6	7	8
Phase Omit..... :	2	0	4	0	6	0	8	0
Phase - Yellow..... :	0	0	0	0	0	0	0	0

PHASE DATA - VEHICLE DETECTOR CONTROL *-3-8 N/A

PHASE DATA - PED DETECTOR CONTROL N/A

PHASE DATA - SPECIAL DETECTOR CONTROL DATA *-3-8-0 N/A

UNIT DATA - START UP & MISC. *-4-1

Startup Time..... :	9.0	Time in Seconds
Startup State..... :	1	0-Flash 1-Red
Red Revert /10..... :	20	Time In Tenth Second
Auto Pedestrian Clear :	1	0-No 1-Yes
Stop Time Reset..... :	0	0-No 1-Yes
Alternate Sequence... :	0	00-15 Alt Sequence ##

UNIT DATA - AUTOMATIC FLASH N/A

UNIT DATA - OVERLAP *-4-3

Control Phase :	1	2	3	4	5	6	7	8
OL A Phase(s)..... :	0	0	0	0	0	0	0	0
OL B Phase(s)..... :	0	0	0	0	0	0	0	0
OL C Phase(s)..... :	0	0	0	0	0	0	0	0
OL D Phase(s)..... :	0	0	0	0	0	0	0	0

UNIT DATA - RING STRUCTURE N/A

UNIT DATA - ALTERNATE SEQUENCE N/A

COORD DATA - MODE *-5-1

Control		Codes:	0	1	2	3	4	5
Operation..... :	1		FRE	AUT	MAN	---	---	---
Mode..... :	1		PRM	YLD	PYL	POM	SOM	FAC
Maximum..... :	0		INH	MX1	MX2	---	---	---
Correction..... :	2		DW	MDW	SWY	SW+	---	---
Offset (?? Of Green).. :	0		BEGIN	END OF GREEN				
Force..... :	1		PLAN	CYCLE TIME				
Max Dwell Time..... :	0		Time In Seconds					
Yield Period..... :	0		Time In Seconds					
Manual Dial (dial/split/offset)	1/ 1/ 1							

COORD DATA - TIMING PLANS *-5-3

Control Timing Plan :	D1/S1	D1/S2	D1/S3	D1/S4	D2/S1	D2/S2	D2/S3	D2/S4
Cycle Length..... :								
Phase 01 Time/Mode :								
Phase 02 Time/Mode :								
Phase 03 Time/Mode :								
Phase 04 Time/Mode :								
Phase 05 Time/Mode :								
Phase 06 Time/Mode :								
Phase 07 Time/Mode :								
Phase 08 Time/Mode :								
Offset 1..... :								
Offset 1 Pattern Mode :								
Offset 2..... :								
Offset 2 Pattern Mode :								
Offset 3..... :								
Offset 3 Pattern Mode :								

Codes .....

Phase Mode..... :	0-Actuated	1-Coord Phase	2-Min Rec	3-Max Rec
	4-Ped Rec	5-Max+Ped Recall	6-Phase Omitted	7-Dual Coord Phase
Pattern Mode..... :	0-Normal/ 1-Perm/ 2-Yield/ 3-Perm Yield/ 4-Perm Omit/ 5-Seq Omit /6-Full Act			
Alternate Sequence	Values To Be Set To Zero "0"			
R# LAG	N/A			

Intersection Name		Road Code	Sys N0.
Mayfield Rd. @ Hwy 410 N/B Off Ramp		MTO	697
Controller Make	**Model**	**Firmware Rev. No.**	
Eagle	3208 M34	3.32	

TIME BASE DATA - MISCELLANEOUS

* - 6 - 2
* - 6 - 6

DST:BEGIN: MONTH 3 WEEK 2
DST:END : MONTH 11 WEEK 1

DST: Daylight Savings TIME
Month = 01 to 12 (begin < End)
Week = 1 to 5 (5=Last Week)

COORD CYCLE ZERO 24:00

EQUATED DAY: (DEFINED DAY = DAY)

02 = 03 04 05 06

CYCLE ZERO: Time (HH:MM) Sets Reference For Coord Sync
00:00 = Event Time / Other = That HH:MM

DAY EQUATES: Care Must be Used to insure days are not equated to undefined days or days that are equated to other days. Results will be a day without events to run

TIME BASE DATA - TRAFFIC EVENTS

* - 6 - 2

Refer to phase function mapping.

DAY PDAY	TIME HH:MM	PATTERN	PHASE FUNCTIONS 1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
01	00:00	0/0/4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
02	00:00	0/0/4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
02	07:00	0/0/4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
02	09:00	0/0/4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
02	15:00	0/0/4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
02	18:00	0/0/4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
07	00:00	0/0/4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	/	/ /	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	/	/ /	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	/	/ /	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	/	/ /	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	/	/ /	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	/	/ /	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

REFERENCE DATA:
PDAY - 01-99 Program Day
HH:MM -24 Hour Clock
A.123 - Auxiliary Output
D.123 - Detector
1 - Det Diag Value
2 - Enables Report
3 - Rep Multiplier
DIM - Dimming Enable
S.1> - Special Function Output
ALL - 0 - OFF / 1-ON
PATTERN: (D/S/O)
Flash - 5/5/0
Free - 0/0/4
Phase Functions: Call Free
Set Pattern to 0/0/0

TIME BASE DATA - AUXILIARY EVENTS

* - 6 - 4 N/A

TIME BASE DATA - TIME OF YEAR EVENTS

* - 6 - 5

DATE MM/DD/YY	SPECIAL DAY	WEEK	DATE MM/DD/YY	SPECIAL DAY	WEEK
New Year's Day	01				
Good Friday	01				
Victoria Day	01				
Canada Day	01				
Civic Day	01				
Labour Day	01				
Thanksgiving	01				
Christmas Day	01				
Boxing Day	01				

Reference Data:
Special Day -
Any Program Day 00-99
Special Week -
Week 0 = Program Day 01-07
Week 1 = Program Day 11-17
Week 2 = Program Day 21-27
Week 9 = Program Day 91-97

*Annual Holiday Schedule as per File: TRT 4.3.1 and K:\Public_Works\Programs\Roads\Traffic\TSS\System\Database\Brampton

TIME BASE DATA - PHASE FUNCTION MAPPING

* - 6 - 9

Refer To Traffic Events

Function Name	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
PHS 01 MAX #2..... :	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
PHS 02 MAX #2..... :	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
PHS 03 MAX #2..... :	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
PHS 04 MAX #2..... :	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
PHS 05 MAX #2..... :	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
PHS 06 MAX #2..... :	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
PHS 07 MAX #2..... :	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
PHS 08 MAX #2..... :	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

CODES: 0 - OFF / 1 - ON

Intersection Name	Road Code	Sys N0.
Mayfield Rd. @ Hwy 410 N/B Off Ramp	MTO	697

Controller Make	Model	Firmware Rev. No.
Eagle	3208 M34	3.32

TIME BASE DATA - PHASE FUNCTION MAPPING *-6-9

Function Name	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
	Refer To Traffic Events															
PHS 01 PHS OMIT.... :	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
PHS 02 PHS OMIT.... :	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
PHS 03 PHS OMIT.... :	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
PHS 04 PHS OMIT.... :	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
PHS 05 PHS OMIT.... :	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
PHS 06 PHS OMIT.... :	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
PHS 07 PHS OMIT.... :	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
PHS 08 PHS OMIT.... :	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

CODES: 0 - OFF / 1 - ON

TIME BASE DATA - SPECIAL FUNCTION MAPPING *-6-0 N/A

PREEMPT DATA - PREEMPT 1 *-7-2

CONTROL LINK PE# 1 0-6 Preempt *-7-2-1 *-7-2-6

Non - Lock..... :	0	0-No / 1-Yes	
Skip..... :	2	0-No / 1-Yes / 2-Semi / 3-Semi minus walk	
Delay..... :	0	0-999 Seconds	
Extend..... :	0	0-999 Seconds	- When no Dwell Phases are set, this routine is disabled
Duration..... :	0	0-999 Seconds	- Skip (YES) will allow phases to be skipped to service the Dwell Phases
Dwell..... :	0	0-999 Seconds	
Max Call..... :	0	0-999 Seconds	- Set max call = 0 to disable
Lock Out..... :	0	0-999 Seconds	- Lock out duration will be dependent on calls if = 0
			- call (YES) will place a ped call on exit from routine

Phase:	1	2	3	4	5	6	7	8
Dwell Phase(s)	0	1	0	0	0	1	0	0
Exit Call(s)	0	0	0	0	0	0	0	0

Dwell Phase(s) & Exit Call(s) Control Entry:"1" = Yes & "0" No

High Priority Routine (1-6) N/A

PREEMPT DATA - PREEMPT 2 *-7-3

CONTROL LINK PE# 2 0-6 Preempt *-7-3-1 *-7-3-6

Non - Lock..... :	0	0-No / 1-Yes	
Skip..... :	2	0-No / 1-Yes / 2-Semi / 3-Semi minus walk	
Delay..... :	0	0-999 Seconds	
Extend..... :	0	0-999 Seconds	- When no Dwell Phases are set, this routine is disabled
Duration..... :	0	0-999 Seconds	- Skip (YES) will allow phases to be skipped to service the Dwell Phases
Dwell..... :	0	0-999 Seconds	
Max Call..... :	0	0-999 Seconds	- Set max call = 0 to disable
Lock Out..... :	0	0-999 Seconds	- Lock out duration will be dependent on calls if = 0
			- call (YES) will place a ped call on exit from routine

Phase:	1	2	3	4	5	6	7	8
Dwell Phase(s)	0	1	0	0	0	1	0	0
Exit Call(s)	0	0	0	0	0	0	0	0

Dwell Phase(s) & Exit Call(s) Control Entry:"1" = Yes & "0" No

High Priority Routine (1-6) N/A

PREEMPT DATA - PREEMPT 3 *-7-4

CONTROL LINK PE# 0 0-6 Preempt *-7-4-1 *-7-4-6

Non - Lock..... :	0	0-No / 1-Yes	
Skip..... :	2	0-No / 1-Yes / 2-Semi / 3-Semi minus walk	
Delay..... :	0	0-999 Seconds	
Extend..... :	0	0-999 Seconds	- When no Dwell Phases are set, this routine is disabled
Duration..... :	0	0-999 Seconds	- Skip (YES) will allow phases to be skipped to service the Dwell Phases
Dwell..... :	0	0-999 Seconds	
Max Call..... :	0	0-999 Seconds	- Set max call = 0 to disable
Lock Out..... :	0	0-999 Seconds	- Lock out duration will be dependent on calls if = 0
			- call (YES) will place a ped call on exit from routine

Phase:	1	2	3	4	5	6	7	8
Dwell Phase(s)	0	0	0	1	0	0	0	1
Exit Call(s)	0	0	0	0	0	0	0	0

Dwell Phase(s) & Exit Call(s) Control Entry:"1" = Yes & "0" No

High Priority Routine (1-6) N/A

Intersection Name		Road Code	Sys N0.
Mayfield Rd. @ Hwy 410 N/B Off Ramp		MTO	697
Controller Make	Model	Firmware Rev. No.	
Eagle	3208 M34	3.32	

SYSTEM DATA - GENERAL *-8-1

Local Address	008	Three Digits (000-32)	*-8-1-1
Revert To Backup	005	Time In Minutes (000-255)	*-8-1-2

1) An address other than "000" Transfers local "D" connector I/O to it's system definition

2) On loss of communications, the local will revert to it's time base events after the revert to backup time

SYSTEM DATA - SYSTEM DETECTORS *-8-2 N/A

SYSTEM DATA - VEH DETECTOR DIAGNOSTICS *-8-3-1-1

VALUE 0

Detector :	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Max Presence..... :	0	0	0	0	0	0	0	255	0	0	0	0	0	0	0	0
No Activity..... :	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Erratic Counts..... :	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

VALUE 1

Detector :	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Max Presence..... :	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
No Activity..... :	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Erratic Counts..... :	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

SYSTEM DATA - PED DETECTOR DIAGNOSTICS *-8-3-1-9

VALUE 0

Ped Detector :	1	2	3	4	5	6	7	8
Max Presence..... :	0	0	0	0	0	0	0	255
No Activity..... :	0	0	0	0	0	0	0	0
Erratic Counts..... :	0	0	0	0	0	0	0	0

VALUE 1

Ped Detector	1	2	3	4	5	6	7	8
Max Presence..... :	0	0	0	0	0	0	0	0
No Activity..... :	0	0	0	0	0	0	0	0
Erratic Counts..... :	0	0	0	0	0	0	0	0

SYSTEM DATA - SPC DETECTOR DIAGNOSTICS *-8-3-1 0 N/A

NOTES:
1. For actuated loop failure, remove the detector amplifier's fuse.
2. For pedestrian button failures, switch recall to pedestrian.
3. With ped enhanced recall, true max. 1+ ped clearance settings.

comments: _____

_____

Authorized Signature: _____ Date: _____

Region of Peel
Working for you

BRAMPTON SYSTEM DATABASE
OFFICE COPY

Intersection Name		Road Code	Sys N0.
Mayfield Rd. @ Hwy 410 S/B Off Ramp		MTO	696
Controller Make	**Model**	**Firmware Rev. No.**	
Eagle	380 M52	3.33	

*- Start From Main Menu

Type of Operation Semi-Actuated

Revision

NO	Date Y	M	D	Description	Field Chg by	Checked by	Approved by
2	13	04	18	These timings were confirmed in the field as per MTO's request.	AP / NS	AP	

*- Start From Main Menu

PHASE DESCRIPTION

Ph1		Ph5	
Ph2	Mayfield Rd. - E/B	PH6	Mayfield Rd. - W/B
Ph3		Ph7	
Ph4	Hwy 410 S/B Off Ramp	Ph8	NIU

UTILITIES - ACCESS *-2-1

Code..... : 9400 Codes: Four Digits (0000 - 9999)

UTILITIES - CONFIGURE PORTS *-2-8-3

Communications Setup For Port 3

Baud Rate..... : 5

PHASE DATA - VEHICLE TIMINGS *-3-1

Basic Timings Phase:	1	2	3	4	5	6	7	8
Minimum Green..... :	0	16	0	8	0	16	0	0
Passage Time /10.... :	0	30	0	30	0	30	0	0
Maximum No 1..... :	0	40	0	35	0	40	0	0
Maximum No 2..... :	0	40	0	35	0	40	0	0
Yellow Change /10.... :	0	40	0	40	0	40	0	0
Red Clearance /10..... :	0	20	0	20	0	20	0	0

PHASE DATA - DENSITY TIMINGS *-3-2 N/A

PHASE DATA - PEDESTRIAN TIMINGS & CONTROL *-3-3

Pedestrian Times Phase:	1	2	3	4	5	6	7	8
Walk..... :	0	10	0	20	0	10	0	0
Pedestrian Clearance. :	0	6	0	6	0	6	0	0
Act Rest In Walk..... :	0	0	0	0	0	0	0	0

Pedestrian Control Entry "1" = Yes & "0" = No

PHASE DATA - GENERAL CONTROL *-3-4

General Control Phase:	1	2	3	4	5	6	7	8
Initialization..... :	0	3	0	1	0	3	0	0
Non-Act Response..... :	0	1	0	0	0	1	0	0

PHASE DATA - VEHICLE AND PEDESTRIAN RECALLS *-3-5

Phase:	1	2	3	4	5	6	7	8
Vehicle Recall..... :	0	3	0	0	0	3	0	0
Pedestrian Recall..... :	0	4	0	0	0	4	0	0
Recall Delay (SEC).... :	0	0	0	0	0	0	0	0

Codes..... :	0	1	2	3	4
Initialization..... :	NONE	INACTIVE	RED	YELLOW	GREEN
Non-Act Response..... :	NONE	TO NA I	TO NA II	TO BOTH	—
Vehicle Recall..... :	NONE	1 CALL	MINIMUM	MAXIMUM	SOFT
Pedestrian Recall..... :	NONE	1 CALL	PED	NA	NA+

Intersection Name	Road Code	Sys N0.
Mayfield Rd. @ Hwy 410 S/B Off Ramp	MTO	696

Controller Make	Model	Firmware Rev. No.
Eagle	380 M52	3.33

PHASE DATA - VEHICLE CONTROLS * - 3 - 6

Vehicle Control Phase:	1	2	3	4	5	6	7	8
Non-Lock Memory..... :	0	0	0	1	0	0	0	1
Dual Entry..... :	0	1	0	1	0	1	0	1

Vehicle Control Entry: "1"=Yes & "0"=No

PHASE DATA - SEQUENCE CONTROL * - 3 - 7

Phase:	1	2	3	4	5	6	7	8
Phase Omit..... :	2	0	4	0	6	0	8	0
Phase - Yellow..... :	0	0	0	0	0	0	0	0

PHASE DATA - VEHICLE DETECTOR CONTROL * - 3 - 8 N/A

PHASE DATA - PED DETECTOR CONTROL N/A

PHASE DATA - SPECIAL DETECTOR CONTROL DATA * - 3 -8 - 0 N/A

UNIT DATA - START UP & MISC. * - 4 - 1

Startup Time..... :	9.0	Time in Seconds
Startup State..... :	0	0-Flash 1-Red
Red Revert /10..... :	20	Time In Tenth Second
Auto Pedestrian Clear :	1	0-No 1-Yes
Stop Time Reset..... :	0	0-No 1-Yes
Alternate Sequence... :	0	00-15 Alt Sequence ##

UNIT DATA - AUTOMATIC FLASH N/A

UNIT DATA - OVERLAP * - 4 - 3

Control Phase :	1	2	3	4	5	6	7	8
OL A Phase(s)..... :	0	0	0	0	0	0	0	0
OL B Phase(s)..... :	0	0	0	0	0	0	0	0
OL C Phase(s)..... :	0	0	0	0	0	0	0	0
OL D Phase(s)..... :	0	0	0	0	0	0	0	0

UNIT DATA - RING STRUCTURE N/A

UNIT DATA - ALTERNATE SEQUENCE N/A

COORD DATA - MODE * - 5 - 1

Control		Codes: 0	1	2	3	4	5
Operation..... :	1	FRE	AUT	MAN	---	---	---
Mode..... :	1	PRM	YLD	PYL	POM	SOM	FAC
Maximum..... :	0	INH	MX1	MX2	---	---	---
Correction..... :	2	DW	MDW	SWY	SW+	---	---
Offset (?? Of Green).. :	0	BEGIN	END OF GREEN				
Force..... :	1	PLAN	CYCLE TIME				
Max Dwell Time..... :	0	Time In Seconds					
Yield Period..... :	0	Time In Seconds					
Manual Dial (dial/split/offset)	1/ 1/ 1						

COORD DATA - TIMING PLANS * - 5 - 3

Control Timing Plan :	D1/S1	D1/S2	D1/S3	D1/S4	D2/S1	D2/S2	D2/S3	D2/S4
Cycle Length..... :								
Phase 01 Time/Mode :								
Phase 02 Time/Mode :								
Phase 03 Time/Mode :								
Phase 04 Time/Mode :								
Phase 05 Time/Mode :								
Phase 06 Time/Mode :								
Phase 07 Time/Mode :								
Phase 08 Time/Mode :								
Offset 1..... :								
Offset 1 Pattern Mode :								
Offset 2..... :								
Offset 2 Pattern Mode :								
Offset 3..... :								
Offset 3 Pattern Mode :								

Codes .....

Phase Mode..... :	0-Actuated	1-Coord Phase	2-Min Rec	3-Max Rec
	4-Ped Rec	5-Max+Ped Recall	6-Phase Omitted	7-Dual Coord Phase
Pattern Mode..... :	0-Normal/ 1-Perm/ 2-Yield/ 3-Perm Yield/ 4-Perm Omit/ 5-Seq Omit /6-Full Act			
Alternate Sequence	Values To Be Set To Zero "0"			
R# LAG	N/A			

Intersection Name	Road Code	Sys N0.
Mayfield Rd. @ Hwy 410 S/B Off Ramp	MTO	696

Controller Make	Model	Firmware Rev. No.
Eagle	380 M52	3.33

TIME BASE DATA - MISCELLANEOUS

*-6-2
*-6-6

DST:BEGIN: MONTH 3 WEEK 2
DST:END : MONTH 11 WEEK 1

DST: Daylight Savings TIME
Month = 01 to 12 (begin < End)
Week = 1 to 5 (5=Last Week)

COORD CYCLE ZERO 24:00

EQUATED DAY: (DEFINED DAY = DAY)

02 = 03 04 05 06
___ =
___ =
___ =
___ =

CYCLE ZERO: Time (HH:MM) Sets Reference For Coord Sync
00:00 = Event Time / Other = That HH:MM

DAY EQUATES: Care Must be Used to insure days are not equated to undefined days or days that are equated to other days. Results will be a day without events to run

TIME BASE DATA - TRAFFIC EVENTS

*-6-2

Refer to phase function mapping.

DAY PDAY	TIME HH:MM	PATTERN	PHASE FUNCTIONS 1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
01	00:00	0/0/4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
02	00:00	0/0/4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
02	07:00	0/0/4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
02	09:00	0/0/4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
02	15:00	0/0/4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
02	18:00	0/0/4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
07	00:00	0/0/4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
___	__/__	__/__/__	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
___	__/__	__/__/__	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
___	__/__	__/__/__	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
___	__/__	__/__/__	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
___	__/__	__/__/__	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
___	__/__	__/__/__	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

REFERENCE DATA:
PDAY - 01-99 Program Day
HH:MM -24 Hour Clock
A.123 - Auxiliary Output
D.123 - Detector
1 - Det Diag Value
2 - Enables Report
3 - Rep Multiplier
DIM - Dimming Enable
S.1> - Special Function Output
ALL - 0 - OFF / 1-ON
PATTERN: (D/S/O)
Flash - 5/5/0
Free - 0/0/4
Phase Functions: Call Free
Set Pattern to 0/0/0

TIME BASE DATA - AUXILIARY EVENTS

*-6-4 N/A

TIME BASE DATA - TIME OF YEAR EVENTS

*-6-5

DATE MM/DD/YY	SPECIAL DAY	SPECIAL WEEK	DATE MM/DD/YY	SPECIAL DAY	SPECIAL WEEK
New Year's Day	01	___		___	___
Good Friday	01	___		___	___
Victoria Day	01	___		___	___
Canada Day	01	___		___	___
Civic Day	01	___		___	___
Labour Day	01	___		___	___
Thanksgiving	01	___		___	___
Christmas Day	01	___		___	___
Boxing Day	01	___		___	___
___	___	___		___	___

Reference Data:
Special Day -
Any Program Day 00-99
Special Week -
Week 0 = Program Day 01-07
Week 1 = Program Day 11-17
Week 2 = Program Day 21-27
Week 9 = Program Day 91-97

*Annual Holiday Schedule as per File: TRT 4.3.1 and K:\Public_Works\Programs\Roads\Traffic\TSS\System\Database\Brampton

TIME BASE DATA - PHASE FUNCTION MAPPING

*-6-9

Function Name

Refer To Traffic Events

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
PHS 01 MAX #2..... :	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
PHS 02 MAX #2..... :	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
PHS 03 MAX #2..... :	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
PHS 04 MAX #2..... :	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
PHS 05 MAX #2..... :	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
PHS 06 MAX #2..... :	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
PHS 07 MAX #2..... :	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
PHS 08 MAX #2..... :	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

CODES: 0 - OFF / 1 - ON

Intersection Name		Road Code	Sys N0.
Mayfield Rd. @ Hwy 410 S/B Off Ramp		MTO	696
Controller Make	Model	Firmware Rev. No.	
Eagle	380 M52	3.33	

TIME BASE DATA - PHASE FUNCTION MAPPING *-6-9

Function Name — Refer To Traffic Events

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
PHS 01 PHS OMIT.... :	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
PHS 02 PHS OMIT.... :	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
PHS 03 PHS OMIT.... :	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
PHS 04 PHS OMIT.... :	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
PHS 05 PHS OMIT.... :	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
PHS 06 PHS OMIT.... :	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
PHS 07 PHS OMIT.... :	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
PHS 08 PHS OMIT.... :	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

CODES: 0 - OFF / 1 - ON

TIME BASE DATA - SPECIAL FUNCTION MAPPING *-6-0 N/A

PREEMPT DATA - PREEMPT 1 *-7-2

CONTROL LINK PE# 1 — 0-6 Preempt — *-7-2-1 *-7-2-6

Non - Lock..... :	0	0-No / 1-Yes	
Skip..... :	2	0-No / 1-Yes / 2-Semi / 3-Semi minus walk	
Delay..... :	0	0-999 Seconds	
Extend..... :	0	0-999 Seconds	- When no Dwell Phases are set, this routine is disabled
Duration..... :	0	0-999 Seconds	- Skip (YES) will allow phases to be skipped to service the Dwell Phases
Dwell..... :	0	0-999 Seconds	
Max Call..... :	0	0-999 Seconds	- Set max call = 0 to disable
Lock Out..... :	0	0-999 Seconds	- Lock out duration will be dependent on calls if = 0
			- call (YES) will place a ped call on exit from routine

Phase:	1	2	3	4	5	6	7	8
Dwell Phase(s)	0	1	0	0	0	1	0	0
Exit Call(s)	0	0	0	0	0	0	0	0

Dwell Phase(s) & Exit Call(s) Control Entry:"1" = Yes & "0" No

High Priority Routine (1-6) N/A

PREEMPT DATA - PREEMPT 2 *-7-3

CONTROL LINK PE# 2 — 0-6 Preempt — *-7-3-1 *-7-3-6

Non - Lock..... :	0	0-No / 1-Yes	
Skip..... :	2	0-No / 1-Yes / 2-Semi / 3-Semi minus walk	
Delay..... :	0	0-999 Seconds	
Extend..... :	0	0-999 Seconds	- When no Dwell Phases are set, this routine is disabled
Duration..... :	0	0-999 Seconds	- Skip (YES) will allow phases to be skipped to service the Dwell Phases
Dwell..... :	0	0-999 Seconds	
Max Call..... :	0	0-999 Seconds	- Set max call = 0 to disable
Lock Out..... :	0	0-999 Seconds	- Lock out duration will be dependent on calls if = 0
			- call (YES) will place a ped call on exit from routine

Phase:	1	2	3	4	5	6	7	8
Dwell Phase(s)	0	1	0	0	0	1	0	0
Exit Call(s)	0	0	0	0	0	0	0	0

Dwell Phase(s) & Exit Call(s) Control Entry:"1" = Yes & "0" No

High Priority Routine (1-6) N/A

PREEMPT DATA - PREEMPT 3 *-7-4

CONTROL LINK PE# 0 — 0-6 Preempt — *-7-4-1 *-7-4-6

Non - Lock..... :	0	0-No / 1-Yes	
Skip..... :	2	0-No / 1-Yes / 2-Semi / 3-Semi minus walk	
Delay..... :	0	0-999 Seconds	
Extend..... :	0	0-999 Seconds	- When no Dwell Phases are set, this routine is disabled
Duration..... :	0	0-999 Seconds	- Skip (YES) will allow phases to be skipped to service the Dwell Phases
Dwell..... :	0	0-999 Seconds	
Max Call..... :	0	0-999 Seconds	- Set max call = 0 to disable
Lock Out..... :	0	0-999 Seconds	- Lock out duration will be dependent on calls if = 0
			- call (YES) will place a ped call on exit from routine

Phase:	1	2	3	4	5	6	7	8
Dwell Phase(s)	0	0	0	1	0	0	0	1
Exit Call(s)	0	0	0	0	0	0	0	0

Dwell Phase(s) & Exit Call(s) Control Entry:"1" = Yes & "0" No

High Priority Routine (1-6) N/A

Intersection Name		Road Code	Sys N0.
Mayfield Rd. @ Hwy 410 S/B Off Ramp		MTO	696
Controller Make	Model	Firmware Rev. No.	
Eagle	380 M52	3.33	

SYSTEM DATA - GENERAL *-8-1

Local Address	008	Three Digits (000-32)	*-8-1-1
Revert To Backup	005	Time In Minutes (000-255)	*-8-1-2

1) An address other than "000" Transfers local "D" connector I/O to it's system definition

2) On loss of communications, the local will revert to it's time base events after the revert to backup time

SYSTEM DATA - SYSTEM DETECTORS *-8-2 N/A

SYSTEM DATA - VEH DETECTOR DIAGNOSTICS *-8-3-1-1

VALUE 0

Detector :	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Max Presence..... :	0	0	0	255	0	0	0	0	0	0	0	0	0	0	0	0
No Activity..... :	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Erratic Counts..... :	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

VALUE 1

Detector :	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Max Presence..... :	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
No Activity..... :	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Erratic Counts..... :	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

SYSTEM DATA - PED DETECTOR DIAGNOSTICS *-8-3-1-9

VALUE 0

Ped Detector :	1	2	3	4	5	6	7	8
Max Presence..... :	0	0	0	255	0	0	0	0
No Activity..... :	0	0	0	0	0	0	0	0
Erratic Counts..... :	0	0	0	0	0	0	0	0

VALUE 1

Ped Detector	1	2	3	4	5	6	7	8
Max Presence..... :	0	0	0	0	0	0	0	255
No Activity..... :	0	0	0	0	0	0	0	0
Erratic Counts..... :	0	0	0	0	0	0	0	0

SYSTEM DATA - SPC DETECTOR DIAGNOSTICS *-8-3-1 0 N/A

NOTES:
1. For actuated loop failure, remove the detector amplifier's fuse.
2. For pedestrian button failures, switch recall to pedestrian.
3. With ped enhanced recall, true max. 1+ ped clearance settings.

comments: _____

_____

Authorized Signature: _____ Date: _____

REGIONAL MUNICIPALITY OF PEEL

Traffic Signal Timing Parameters

Database Date	**January 8, 2018**	**Prepared Date:**	**April 14, 2022**
Database Rev	**2**	**Completed By:**	**MY**
Timing Card / Field rev	**2**	**Checked By:**	
Location	**Mayfield Road @ Ace Drive**		

Phase #	Direction	Vehicle Minimum (sec.)	Pedestrian Minimum (sec.) WALK	Pedestrian Minimum (sec.) FDWALK	Amber (sec.)	All Red (sec.)	TIME PERIOD (sec.) *Peak Split= (Green+Amber+All Red) **Max = Green AM Peak Split	OFF Max 1	PM Peak Split
1	NIU	-	-	-	-	-	-	-	-
2	Mayfield Road - EB / WB	12.0	8.0	12.0	4.6	2.1	74.0	40.0	74.0
3	NIU	-	-	-	-	-	-	-	-
4	Ace Drive - NB	8.0	8.0	30.0	4.0	3.6	46.0	20.0	46.0
5	NIU	-	-	-	-	-	-	-	-
6	NIU	-	-	-	-	-	-	-	-
7	NIU	-	-	-	-	-	-	-	-
8	NIU	-	-	-	-	-	-	-	-

System Control	No
Local Control	Yes
Semi-Actuated Mode	Yes

TIME (M-F)	PEAK	CYCLE LENGTH (sec.)	OFFSET (sec.)
07:00 - 09:00	AM	120	68
09:00 - 15:00	OFF	-	-
15:00 - 18:00	PM	120	49

REGIONAL MUNICIPALITY OF PEEL

Traffic Signal Timing Parameters

Database Date	**October 6, 2021**	Region of Peel working with you	**Prepared Date**	**October 12, 2021**	
Database Rev	**MaxView**		**Completed By**	**BL**	
Timing Card / Field Rev	**-**		**Checked By**	**RC**	
Location	**Mayfield Road at Heart Lake Road**				

Phase #	Street Name - Direction	Vehicle Minimum (s)	Pedestrian Minimum (s)		Amber (s)	All Red (s)	TIME PERIOD (s) SPLITS = Green+Amber+All Red MAX = Green only		
			WALK	FDWALK			AM SPLITS	OFF SPLITS	PM SPLITS
1	WBLT - Mayfield Road	5	0	0	3	0	9	9	9
2	Mayfield Road - EB	12	12	21	4.6	2.1	77	67	72
3	Not in use	-	-	-	-	-	-	-	-
4	Heart Lake Road - NB	8	12	25	4	2.9	54	54	54
5	Not in use	-	-	-	-	-	-	-	-
6	Mayfield Road - WB	12	12	21	4.6	2.1	86	76	81
7	NBLT - Heart Lake Road	5	0	0	3	0	9	9	9
8	Heart Lake Road - SB	8	12	25	4	2.9	45	45	45

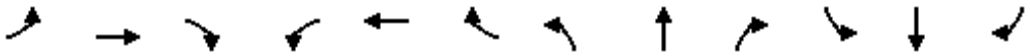
System Control
Yes

Semi-Actuated Mode
Yes

TIME (M-F)	PEAK	CYCLE LENGTH (s)	OFFSET (s)
06:00 - 09:30	AM	140	78
09:30 - 16:00 20:00 - 00:00	OFF	130	66
16:00 - 20:00	PM	135	26

Appendix D

2022 Existing Traffic Conditions – Synchro Analysis Results



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Stop			Stop	
Traffic Volume (vph)	7	123	7	5	47	4	6	24	6	4	33	13
Future Volume (vph)	7	123	7	5	47	4	6	24	6	4	33	13
Peak Hour Factor	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85
Hourly flow rate (vph)	8	145	8	6	55	5	7	28	7	5	39	15

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total (vph)	161	66	42	59
Volume Left (vph)	8	6	7	5
Volume Right (vph)	8	5	7	15
Hadj (s)	0.04	0.13	0.18	-0.07
Departure Headway (s)	4.3	4.4	4.7	4.4
Degree Utilization, x	0.19	0.08	0.05	0.07
Capacity (veh/h)	824	773	726	765
Control Delay (s)	8.2	7.8	7.9	7.7
Approach Delay (s)	8.2	7.8	7.9	7.7
Approach LOS	A	A	A	A

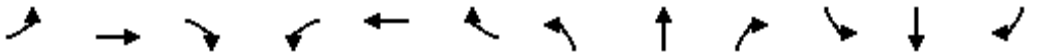
Intersection Summary				
Delay	8.0			
Level of Service	A			
Intersection Capacity Utilization	18.5%	ICU Level of Service	A	
Analysis Period (min)	15			

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	21	1420	505	116	925	14	103	14	18	33	89	42
Future Volume (vph)	21	1420	505	116	925	14	103	14	18	33	89	42
Lane Group Flow (vph)	21	1420	505	116	925	14	103	14	18	33	89	42
Turn Type	Perm	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm	Perm	NA	Perm
Protected Phases		2		1	6		7	4			8	
Permitted Phases	2		2	6		6	4		4	8		8
Detector Phase	2	2	2	1	6	6	7	4	4	8	8	8
Switch Phase												
Minimum Initial (s)	12.0	12.0	12.0	5.0	12.0	12.0	5.0	8.0	8.0	8.0	8.0	8.0
Minimum Split (s)	39.7	39.7	39.7	9.0	39.7	39.7	9.0	43.9	43.9	43.9	43.9	43.9
Total Split (s)	77.0	77.0	77.0	9.0	86.0	86.0	9.0	54.0	54.0	45.0	45.0	45.0
Total Split (%)	55.0%	55.0%	55.0%	6.4%	61.4%	61.4%	6.4%	38.6%	38.6%	32.1%	32.1%	32.1%
Yellow Time (s)	4.6	4.6	4.6	3.0	4.6	4.6	3.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	2.1	2.1	2.1	1.0	2.1	2.1	1.0	2.9	2.9	2.9	2.9	2.9
Lost Time Adjust (s)	0.0	0.0	0.0	-1.0	0.0	0.0	-1.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.7	6.7	6.7	3.0	6.7	6.7	3.0	6.9	6.9	6.9	6.9	6.9
Lead/Lag	Lag	Lag	Lag	Lead			Lead			Lag	Lag	Lag
Lead-Lag Optimize?												
Recall Mode	Max	Max	Max	None	Max	Max	None	None	None	None	None	None
v/c Ratio	0.07	0.52	0.48	0.49	0.32	0.02	0.43	0.04	0.06	0.23	0.45	0.17
Control Delay	10.8	13.9	2.6	12.4	7.7	0.1	42.8	37.6	0.3	49.8	55.1	1.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	10.8	13.9	2.6	12.4	7.7	0.1	42.8	37.6	0.3	49.8	55.1	1.5
Queue Length 50th (m)	1.8	62.5	0.0	6.9	27.2	0.0	19.4	2.6	0.0	6.9	19.0	0.0
Queue Length 95th (m)	5.8	82.0	13.3	14.1	38.3	0.0	34.9	8.1	0.0	16.6	35.0	0.0
Internal Link Dist (m)		179.2			166.2			202.0			680.1	
Turn Bay Length (m)	115.0		180.0	80.0		150.0	110.0		44.0	20.0		20.0
Base Capacity (vph)	291	2719	1057	237	2903	786	241	707	623	418	566	536
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.07	0.52	0.48	0.49	0.32	0.02	0.43	0.02	0.03	0.08	0.16	0.08

Intersection Summary
Cycle Length: 140
Actuated Cycle Length: 115.2
Natural Cycle: 105
Control Type: Semi Act-Uncoord

Splits and Phases: 2: Heart Lake Road & Mayfield Road





Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	21	1420	505	116	925	14	103	14	18	33	89	42
Future Volume (vph)	21	1420	505	116	925	14	103	14	18	33	89	42
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5
Total Lost time (s)	6.7	6.7	6.7	3.0	6.7	6.7	3.0	6.9	6.9	6.9	6.9	6.9
Lane Util. Factor	1.00	0.91	1.00	1.00	0.91	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1530	4453	1409	1560	4214	1114	1530	1729	1437	1606	1712	1437
Flt Permitted	0.30	1.00	1.00	0.14	1.00	1.00	0.58	1.00	1.00	0.75	1.00	1.00
Satd. Flow (perm)	478	4453	1409	233	4214	1114	930	1729	1437	1265	1712	1437
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	21	1420	505	116	925	14	103	14	18	33	89	42
RTOR Reduction (vph)	0	0	197	0	0	4	0	0	15	0	0	37
Lane Group Flow (vph)	21	1420	308	116	925	10	103	14	3	33	89	5
Heavy Vehicles (%)	5%	6%	2%	3%	12%	29%	5%	0%	0%	0%	1%	0%
Turn Type	Perm	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm	Perm	NA	Perm
Protected Phases		2		1	6		7	4			8	
Permitted Phases	2		2	6		6	4		4	8		8
Actuated Green, G (s)	70.3	70.3	70.3	79.3	79.3	79.3	22.2	22.2	22.2	13.2	13.2	13.2
Effective Green, g (s)	70.3	70.3	70.3	80.3	79.3	79.3	23.2	22.2	22.2	13.2	13.2	13.2
Actuated g/C Ratio	0.61	0.61	0.61	0.70	0.69	0.69	0.20	0.19	0.19	0.11	0.11	0.11
Clearance Time (s)	6.7	6.7	6.7	4.0	6.7	6.7	4.0	6.9	6.9	6.9	6.9	6.9
Vehicle Extension (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Lane Grp Cap (vph)	291	2719	860	231	2903	767	218	333	277	145	196	164
v/s Ratio Prot		0.32		c0.03	0.22		c0.02	0.01			0.05	
v/s Ratio Perm	0.04		0.22	c0.32		0.01	c0.07		0.00	0.03		0.00
v/c Ratio	0.07	0.52	0.36	0.50	0.32	0.01	0.47	0.04	0.01	0.23	0.45	0.03
Uniform Delay, d1	9.1	12.8	11.2	7.2	7.1	5.6	39.6	37.8	37.6	46.3	47.6	45.3
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	0.5	0.7	1.2	3.6	0.3	0.0	3.4	0.1	0.0	1.7	3.5	0.2
Delay (s)	9.6	13.5	12.3	10.8	7.4	5.6	43.0	37.9	37.6	48.0	51.0	45.4
Level of Service	A	B	B	B	A	A	D	D	D	D	D	D
Approach Delay (s)		13.2			7.8			41.8			49.0	
Approach LOS		B			A			D			D	

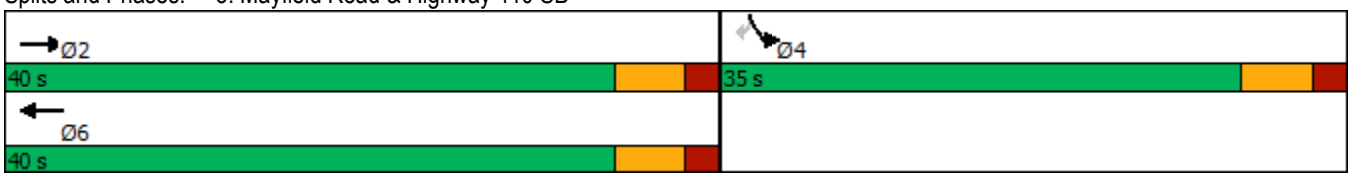
Intersection Summary			
HCM 2000 Control Delay	14.4	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.53		
Actuated Cycle Length (s)	115.1	Sum of lost time (s)	19.6
Intersection Capacity Utilization	65.3%	ICU Level of Service	C
Analysis Period (min)	15		

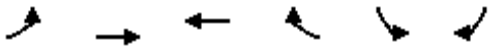
c Critical Lane Group

Lane Group	EBT	WBT	SBL	SBR
Lane Configurations				
Traffic Volume (vph)	1076	849	286	242
Future Volume (vph)	1076	849	286	242
Lane Group Flow (vph)	1076	849	363	165
Turn Type	NA	NA	Prot	Perm
Protected Phases	2	6	4	
Permitted Phases				4
Detector Phase	2	6	4	4
Switch Phase				
Minimum Initial (s)	16.0	16.0	8.0	8.0
Minimum Split (s)	22.0	22.0	32.0	32.0
Total Split (s)	40.0	40.0	35.0	35.0
Total Split (%)	53.3%	53.3%	46.7%	46.7%
Yellow Time (s)	4.0	4.0	4.0	4.0
All-Red Time (s)	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.0	6.0	6.0	6.0
Lead/Lag				
Lead-Lag Optimize?				
Recall Mode	Max	Max	None	None
v/c Ratio	0.38	0.28	0.44	0.41
Control Delay	7.9	7.2	18.2	12.8
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	7.9	7.2	18.2	12.8
Queue Length 50th (m)	20.5	15.1	14.7	7.2
Queue Length 95th (m)	34.3	25.8	24.3	21.5
Internal Link Dist (m)	123.5	116.2	492.2	
Turn Bay Length (m)				
Base Capacity (vph)	2832	3002	1715	772
Starvation Cap Reductn	0	0	0	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.38	0.28	0.21	0.21

Intersection Summary
Cycle Length: 75
Actuated Cycle Length: 59.6
Natural Cycle: 55
Control Type: Semi Act-Uncoord

Splits and Phases: 3: Mayfield Road & Highway 410 SB





Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	0	1076	849	0	286	242
Future Volume (vph)	0	1076	849	0	286	242
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)		6.0	6.0		6.0	6.0
Lane Util. Factor		0.91	0.91		0.97	0.91
Frt		1.00	1.00		0.97	0.85
Flt Protected		1.00	1.00		0.96	1.00
Satd. Flow (prot)		4948	5245		3458	1486
Flt Permitted		1.00	1.00		0.96	1.00
Satd. Flow (perm)		4948	5245		3458	1486
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	0	1076	849	0	286	242
RTOR Reduction (vph)	0	0	0	0	43	71
Lane Group Flow (vph)	0	1076	849	0	320	94
Heavy Vehicles (%)	0%	6%	0%	16%	0%	0%
Bus Blockages (#/hr)	0	0	0	0	2	0
Turn Type		NA	NA		Prot	Perm
Protected Phases		2	6		4	
Permitted Phases						4
Actuated Green, G (s)		34.1	34.1		13.4	13.4
Effective Green, g (s)		34.1	34.1		13.4	13.4
Actuated g/C Ratio		0.57	0.57		0.23	0.23
Clearance Time (s)		6.0	6.0		6.0	6.0
Vehicle Extension (s)		5.0	5.0		5.0	5.0
Lane Grp Cap (vph)		2835	3005		778	334
v/s Ratio Prot		c0.22	0.16		c0.09	
v/s Ratio Perm						0.06
v/c Ratio		0.38	0.28		0.41	0.28
Uniform Delay, d1		6.9	6.5		19.7	19.1
Progression Factor		1.00	1.00		1.00	1.00
Incremental Delay, d2		0.4	0.2		0.7	1.0
Delay (s)		7.3	6.7		20.4	20.0
Level of Service		A	A		C	C
Approach Delay (s)		7.3	6.7		20.3	
Approach LOS		A	A		C	

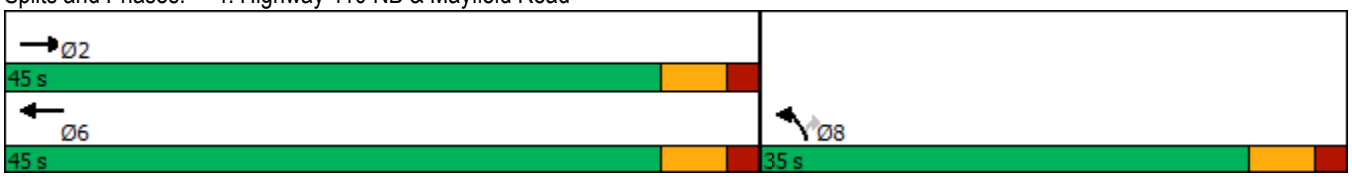
Intersection Summary			
HCM 2000 Control Delay	9.9	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.39		
Actuated Cycle Length (s)	59.5	Sum of lost time (s)	12.0
Intersection Capacity Utilization	41.5%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Lane Group	EBT	WBT	NBL	NBR
Lane Configurations				
Traffic Volume (vph)	1362	1304	209	660
Future Volume (vph)	1362	1304	209	660
Lane Group Flow (vph)	1362	1304	539	330
Turn Type	NA	NA	Prot	Perm
Protected Phases	2	6	8	
Permitted Phases				8
Detector Phase	2	6	8	8
Switch Phase				
Minimum Initial (s)	26.0	26.0	10.0	10.0
Minimum Split (s)	32.0	32.0	22.0	22.0
Total Split (s)	45.0	45.0	35.0	35.0
Total Split (%)	56.3%	56.3%	43.8%	43.8%
Yellow Time (s)	4.0	4.0	4.0	4.0
All-Red Time (s)	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.0	6.0	6.0	6.0
Lead/Lag				
Lead-Lag Optimize?				
Recall Mode	Max	None	None	None
v/c Ratio	0.51	0.52	0.61	0.80
Control Delay	12.8	12.9	23.6	37.0
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	12.8	12.9	23.6	37.0
Queue Length 50th (m)	42.0	40.5	30.7	41.9
Queue Length 95th (m)	63.5	61.6	44.7	73.6
Internal Link Dist (m)	104.0	63.2	627.1	
Turn Bay Length (m)				
Base Capacity (vph)	2649	2507	1164	538
Starvation Cap Reductn	0	0	0	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.51	0.52	0.46	0.61

Intersection Summary
Cycle Length: 80
Actuated Cycle Length: 73.4
Natural Cycle: 55
Control Type: Semi Act-Uncoord

Splits and Phases: 4: Highway 410 NB & Mayfield Road





Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	1362	0	0	1304	209	660
Future Volume (vph)	1362	0	0	1304	209	660
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0			6.0	6.0	6.0
Lane Util. Factor	0.91			0.91	0.97	0.91
Frt	1.00			1.00	0.91	0.85
Flt Protected	1.00			1.00	0.98	1.00
Satd. Flow (prot)	4948			4683	2889	1315
Flt Permitted	1.00			1.00	0.98	1.00
Satd. Flow (perm)	4948			4683	2889	1315
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	1362	0	0	1304	209	660
RTOR Reduction (vph)	0	0	0	0	17	17
Lane Group Flow (vph)	1362	0	0	1304	522	313
Heavy Vehicles (%)	6%	0%	0%	12%	18%	13%
Turn Type	NA			NA	Prot	Perm
Protected Phases	2			6	8	
Permitted Phases						8
Actuated Green, G (s)	39.3			39.3	22.0	22.0
Effective Green, g (s)	39.3			39.3	22.0	22.0
Actuated g/C Ratio	0.54			0.54	0.30	0.30
Clearance Time (s)	6.0			6.0	6.0	6.0
Vehicle Extension (s)	5.0			5.0	3.0	3.0
Lane Grp Cap (vph)	2652			2510	867	394
v/s Ratio Prot	0.28			c0.28	0.18	
v/s Ratio Perm						c0.24
v/c Ratio	0.51			0.52	0.60	0.79
Uniform Delay, d1	10.9			10.9	21.9	23.6
Progression Factor	1.00			1.00	1.00	1.00
Incremental Delay, d2	0.7			0.4	1.2	10.5
Delay (s)	11.6			11.3	23.1	34.0
Level of Service	B			B	C	C
Approach Delay (s)	11.6			11.3	27.3	
Approach LOS	B			B	C	

Intersection Summary			
HCM 2000 Control Delay	15.3	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.62		
Actuated Cycle Length (s)	73.3	Sum of lost time (s)	12.0
Intersection Capacity Utilization	63.6%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	EBT	EBR	WBL	WBT	NBL
Lane Configurations					
Traffic Volume (vph)	1780	211	68	1106	92
Future Volume (vph)	1780	211	68	1106	92
Lane Group Flow (vph)	1780	211	68	1106	144
Turn Type	NA	Perm	Perm	NA	Prot
Protected Phases	2			2	4
Permitted Phases		2	2		
Detector Phase	2	2	2	2	4
Switch Phase					
Minimum Initial (s)	12.0	12.0	12.0	12.0	8.0
Minimum Split (s)	26.7	26.7	26.7	26.7	45.6
Total Split (s)	74.0	74.0	74.0	74.0	46.0
Total Split (%)	61.7%	61.7%	61.7%	61.7%	38.3%
Yellow Time (s)	4.6	4.6	4.6	4.6	4.0
All-Red Time (s)	2.1	2.1	2.1	2.1	3.6
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.7	6.7	6.7	6.7	7.6
Lead/Lag					
Lead-Lag Optimize?					
Recall Mode	Max	Max	Max	Max	None
v/c Ratio	0.49	0.18	0.50	0.30	0.54
Control Delay	7.3	1.2	23.9	5.9	42.8
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	7.3	1.2	23.9	5.9	42.8
Queue Length 50th (m)	47.8	0.0	5.1	24.7	22.9
Queue Length 95th (m)	68.8	6.8	#28.7	36.8	40.8
Internal Link Dist (m)	203.7			76.6	88.2
Turn Bay Length (m)		65.0	35.0		
Base Capacity (vph)	3662	1176	136	3662	669
Starvation Cap Reductn	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.49	0.18	0.50	0.30	0.22

Intersection Summary

Cycle Length: 120
Actuated Cycle Length: 100.9
Natural Cycle: 90
Control Type: Actuated-Uncoordinated
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 5: Ace Drive & Mayfield Road





Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	1780	211	68	1106	92	52
Future Volume (vph)	1780	211	68	1106	92	52
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width	3.7	3.5	3.5	3.7	3.7	3.7
Total Lost time (s)	6.7	6.7	6.7	6.7	7.6	
Lane Util. Factor	0.91	1.00	1.00	0.91	1.00	
Frt	1.00	0.85	1.00	1.00	0.95	
Flt Protected	1.00	1.00	0.95	1.00	0.97	
Satd. Flow (prot)	5142	1566	1750	5142	1736	
Flt Permitted	1.00	1.00	0.10	1.00	0.97	
Satd. Flow (perm)	5142	1566	191	5142	1736	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	1780	211	68	1106	92	52
RTOR Reduction (vph)	0	61	0	0	12	0
Lane Group Flow (vph)	1780	150	68	1106	132	0
Turn Type	NA	Perm	Perm	NA	Prot	
Protected Phases	2			2	4	
Permitted Phases		2	2			
Actuated Green, G (s)	71.9	71.9	71.9	71.9	14.7	
Effective Green, g (s)	71.9	71.9	71.9	71.9	14.7	
Actuated g/C Ratio	0.71	0.71	0.71	0.71	0.15	
Clearance Time (s)	6.7	6.7	6.7	6.7	7.6	
Vehicle Extension (s)	5.0	5.0	5.0	5.0	5.0	
Lane Grp Cap (vph)	3664	1115	136	3664	252	
v/s Ratio Prot	0.35			0.22	c0.08	
v/s Ratio Perm		0.10	c0.36			
v/c Ratio	0.49	0.13	0.50	0.30	0.52	
Uniform Delay, d1	6.4	4.6	6.5	5.3	39.9	
Progression Factor	1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	0.5	0.3	12.5	0.2	3.7	
Delay (s)	6.8	4.9	19.0	5.5	43.6	
Level of Service	A	A	B	A	D	
Approach Delay (s)	6.6			6.3	43.6	
Approach LOS	A			A	D	

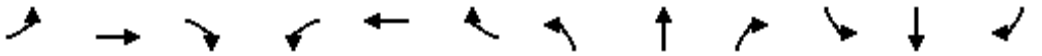
Intersection Summary			
HCM 2000 Control Delay	8.1	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.50		
Actuated Cycle Length (s)	100.9	Sum of lost time (s)	14.3
Intersection Capacity Utilization	70.2%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	237	1425	364	60	600	18	121	49	31	22	119	256
Future Volume (vph)	237	1425	364	60	600	18	121	49	31	22	119	256
Lane Group Flow (vph)	237	1425	364	60	600	18	121	49	31	22	119	256
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	Perm	NA	Perm	Perm	NA	Perm
Protected Phases	5	2		1	6			8			4	
Permitted Phases	2		2	6		6	8		8	4		4
Detector Phase	5	2	2	1	6	6	8	8	8	4	4	4
Switch Phase												
Minimum Initial (s)	5.0	8.0	8.0	5.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0
Minimum Split (s)	9.0	44.9	44.9	9.0	44.9	44.9	47.9	47.9	47.9	47.9	47.9	47.9
Total Split (s)	10.0	60.0	60.0	10.0	60.0	60.0	50.0	50.0	50.0	50.0	50.0	50.0
Total Split (%)	8.3%	50.0%	50.0%	8.3%	50.0%	50.0%	41.7%	41.7%	41.7%	41.7%	41.7%	41.7%
Yellow Time (s)	3.0	4.6	4.6	3.0	4.6	4.6	4.6	4.6	4.6	4.6	4.6	4.6
All-Red Time (s)	1.0	2.3	2.3	1.0	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.3
Lost Time Adjust (s)	-1.0	0.0	0.0	-1.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	3.0	6.9	6.9	3.0	6.9	6.9	6.9	6.9	6.9	6.9	6.9	6.9
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag						
Lead-Lag Optimize?												
Recall Mode	None	Max	Max	None	None	None	None	None	None	None	None	None
v/c Ratio	0.45	0.49	0.35	0.21	0.33	0.03	0.56	0.17	0.10	0.12	0.38	0.55
Control Delay	8.2	12.8	2.3	6.4	11.9	0.1	45.4	33.4	1.0	33.1	37.2	9.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	8.2	12.8	2.3	6.4	11.9	0.1	45.4	33.4	1.0	33.1	37.2	9.2
Queue Length 50th (m)	11.8	52.7	0.0	2.6	27.8	0.0	20.1	7.6	0.0	3.4	19.1	0.0
Queue Length 95th (m)	25.4	75.7	12.6	7.5	44.7	0.0	37.3	17.0	0.8	9.7	34.5	19.2
Internal Link Dist (m)		179.3			299.2			185.5			471.5	
Turn Bay Length (m)	140.0		70.0	65.0		30.0	75.0		60.0	30.0		138.0
Base Capacity (vph)	527	2879	1052	286	1880	735	586	796	711	511	848	826
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.45	0.49	0.35	0.21	0.32	0.02	0.21	0.06	0.04	0.04	0.14	0.31

Intersection Summary
Cycle Length: 120
Actuated Cycle Length: 91.1
Natural Cycle: 105
Control Type: Semi Act-Uncoord

Splits and Phases: 6: Dixie Road & Mayfield Road





Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	237	1425	364	60	600	18	121	49	31	22	119	256
Future Volume (vph)	237	1425	364	60	600	18	121	49	31	22	119	256
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5
Total Lost time (s)	3.0	6.9	6.9	3.0	6.9	6.9	6.9	6.9	6.9	6.9	6.9	6.9
Lane Util. Factor	1.00	0.91	1.00	1.00	0.95	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1566	4902	1536	1653	3202	1201	1716	1671	1413	1405	1779	1452
Flt Permitted	0.40	1.00	1.00	0.15	1.00	1.00	0.68	1.00	1.00	0.73	1.00	1.00
Satd. Flow (perm)	662	4902	1536	263	3202	1201	1229	1671	1413	1073	1779	1452
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	237	1425	364	60	600	18	121	49	31	22	119	256
RTOR Reduction (vph)	0	0	152	0	0	8	0	0	26	0	0	211
Lane Group Flow (vph)	237	1425	212	60	600	10	121	49	5	22	119	45
Heavy Vehicles (%)	14%	7%	4%	8%	14%	33%	4%	15%	13%	27%	8%	10%
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	Perm	NA	Perm	Perm	NA	Perm
Protected Phases	5	2		1	6			8			4	
Permitted Phases	2		2	6		6	8		8	4		4
Actuated Green, G (s)	59.5	53.5	53.5	56.7	52.1	52.1	16.0	16.0	16.0	16.0	16.0	16.0
Effective Green, g (s)	61.5	53.5	53.5	58.7	52.1	52.1	16.0	16.0	16.0	16.0	16.0	16.0
Actuated g/C Ratio	0.67	0.58	0.58	0.64	0.57	0.57	0.17	0.17	0.17	0.17	0.17	0.17
Clearance Time (s)	4.0	6.9	6.9	4.0	6.9	6.9	6.9	6.9	6.9	6.9	6.9	6.9
Vehicle Extension (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Lane Grp Cap (vph)	511	2853	894	252	1815	680	213	290	246	186	309	252
v/s Ratio Prot	c0.04	c0.29		0.01	0.19			0.03			0.07	
v/s Ratio Perm	0.27		0.14	0.14		0.01	c0.10		0.00	0.02		0.03
v/c Ratio	0.46	0.50	0.24	0.24	0.33	0.02	0.57	0.17	0.02	0.12	0.39	0.18
Uniform Delay, d1	6.0	11.3	9.3	6.6	10.6	8.7	34.8	32.3	31.5	32.0	33.6	32.3
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	1.4	0.6	0.6	1.0	0.2	0.0	5.6	0.6	0.1	0.6	1.7	0.7
Delay (s)	7.4	11.9	9.9	7.6	10.8	8.7	40.4	32.9	31.5	32.6	35.3	33.0
Level of Service	A	B	A	A	B	A	D	C	C	C	D	C
Approach Delay (s)		11.0			10.5			37.2			33.7	
Approach LOS		B			B			D			C	

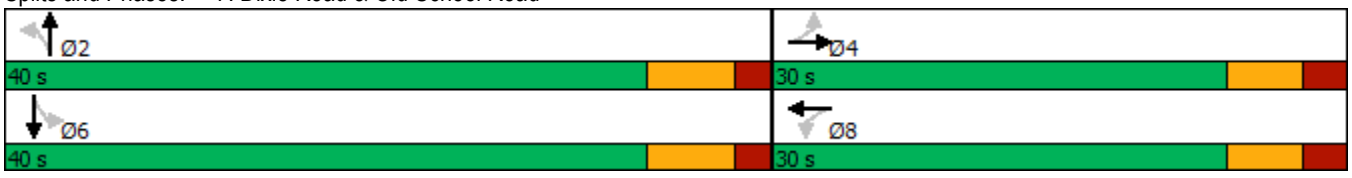
Intersection Summary			
HCM 2000 Control Delay	15.2	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.52		
Actuated Cycle Length (s)	91.9	Sum of lost time (s)	16.8
Intersection Capacity Utilization	59.9%	ICU Level of Service	B
Analysis Period (min)	15		

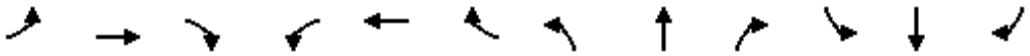
c Critical Lane Group

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations								
Traffic Volume (vph)	11	219	43	84	5	198	33	522
Future Volume (vph)	11	219	43	84	5	198	33	522
Lane Group Flow (vph)	11	250	43	92	5	242	33	533
Turn Type	Perm	NA	Perm	NA	Perm	NA	Perm	NA
Protected Phases		4		8		2		6
Permitted Phases	4		8		2		6	
Detector Phase	4	4	8	8	2	2	6	6
Switch Phase								
Minimum Initial (s)	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0
Minimum Split (s)	25.4	25.4	25.4	25.4	23.6	23.6	23.6	23.6
Total Split (s)	30.0	30.0	30.0	30.0	40.0	40.0	40.0	40.0
Total Split (%)	42.9%	42.9%	42.9%	42.9%	57.1%	57.1%	57.1%	57.1%
Yellow Time (s)	4.0	4.0	4.0	4.0	4.6	4.6	4.6	4.6
All-Red Time (s)	2.4	2.4	2.4	2.4	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.4	6.4	6.4	6.4	6.6	6.6	6.6	6.6
Lead/Lag								
Lead-Lag Optimize?								
Recall Mode	None	None	None	None	Max	Max	Max	Max
v/c Ratio	0.04	0.56	0.17	0.21	0.01	0.25	0.06	0.52
Control Delay	17.5	24.6	19.7	18.1	8.0	8.2	8.2	11.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	17.5	24.6	19.7	18.1	8.0	8.2	8.2	11.9
Queue Length 50th (m)	1.0	23.4	3.8	7.6	0.3	11.6	1.6	34.4
Queue Length 95th (m)	4.1	41.8	10.5	17.0	1.8	26.8	5.8	69.9
Internal Link Dist (m)		1372.4		151.6		1518.8		144.7
Turn Bay Length (m)	35.0		45.0		40.0		35.0	
Base Capacity (vph)	386	698	387	684	414	968	598	1023
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.03	0.36	0.11	0.13	0.01	0.25	0.06	0.52

Intersection Summary
Cycle Length: 70
Actuated Cycle Length: 63
Natural Cycle: 55
Control Type: Semi Act-Uncoord

Splits and Phases: 7: Dixie Road & Old School Road

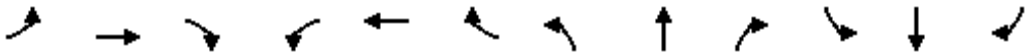




Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	11	219	31	43	84	8	5	198	44	33	522	11
Future Volume (vph)	11	219	31	43	84	8	5	198	44	33	522	11
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5
Total Lost time (s)	6.4	6.4		6.4	6.4		6.6	6.6		6.6	6.6	
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	0.97		1.00	1.00	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1405	1846		1785	1813		1785	1727		1684	1843	
Flt Permitted	0.70	1.00		0.55	1.00		0.40	1.00		0.61	1.00	
Satd. Flow (perm)	1032	1846		1033	1813		746	1727		1078	1843	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	11	219	31	43	84	8	5	198	44	33	522	11
RTOR Reduction (vph)	0	8	0	0	5	0	0	10	0	0	1	0
Lane Group Flow (vph)	11	242	0	43	87	0	5	232	0	33	532	0
Heavy Vehicles (%)	27%	2%	3%	0%	5%	0%	0%	10%	0%	6%	4%	0%
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)	15.0	15.0		15.0	15.0		35.0	35.0		35.0	35.0	
Effective Green, g (s)	15.0	15.0		15.0	15.0		35.0	35.0		35.0	35.0	
Actuated g/C Ratio	0.24	0.24		0.24	0.24		0.56	0.56		0.56	0.56	
Clearance Time (s)	6.4	6.4		6.4	6.4		6.6	6.6		6.6	6.6	
Vehicle Extension (s)	5.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0	
Lane Grp Cap (vph)	245	439		245	431		414	959		598	1023	
v/s Ratio Prot		c0.13			0.05			0.13			c0.29	
v/s Ratio Perm	0.01			0.04			0.01			0.03		
v/c Ratio	0.04	0.55		0.18	0.20		0.01	0.24		0.06	0.52	
Uniform Delay, d1	18.5	21.0		19.1	19.2		6.3	7.2		6.4	8.8	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.2	2.5		0.7	0.5		0.1	0.6		0.2	1.9	
Delay (s)	18.6	23.6		19.8	19.7		6.3	7.8		6.6	10.6	
Level of Service	B	C		B	B		A	A		A	B	
Approach Delay (s)		23.4			19.7			7.8			10.4	
Approach LOS		C			B			A			B	

Intersection Summary			
HCM 2000 Control Delay	13.7	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.53		
Actuated Cycle Length (s)	63.0	Sum of lost time (s)	13.0
Intersection Capacity Utilization	64.4%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Stop			Stop	
Traffic Volume (vph)	6	83	9	19	169	3	18	30	11	1	30	10
Future Volume (vph)	6	83	9	19	169	3	18	30	11	1	30	10
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Hourly flow rate (vph)	6	88	10	20	180	3	19	32	12	1	32	11

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total (vph)	104	203	63	44
Volume Left (vph)	6	20	19	1
Volume Right (vph)	10	3	12	11
Hadj (s)	-0.02	0.03	-0.05	-0.10
Departure Headway (s)	4.4	4.3	4.6	4.6
Degree Utilization, x	0.13	0.24	0.08	0.06
Capacity (veh/h)	795	806	729	724
Control Delay (s)	8.0	8.7	8.0	7.8
Approach Delay (s)	8.0	8.7	8.0	7.8
Approach LOS	A	A	A	A

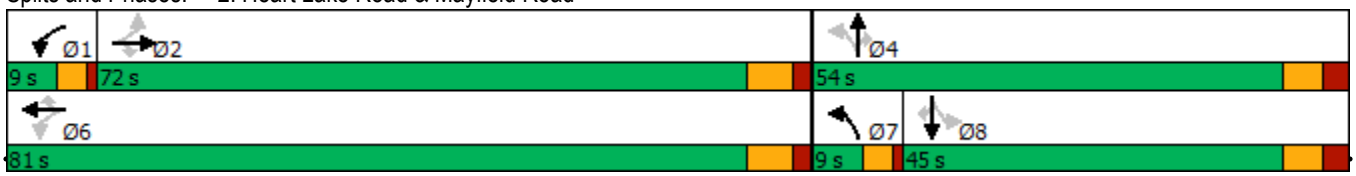
Intersection Summary				
Delay	8.3			
Level of Service	A			
Intersection Capacity Utilization	31.6%	ICU Level of Service	A	
Analysis Period (min)	15			

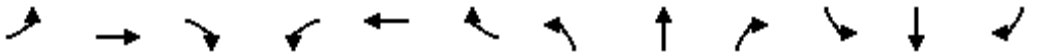
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	31	1011	114	37	1460	42	299	48	11	27	30	21
Future Volume (vph)	31	1011	114	37	1460	42	299	48	11	27	30	21
Lane Group Flow (vph)	31	1011	114	37	1460	42	299	48	11	27	30	21
Turn Type	Perm	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm	Perm	NA	Perm
Protected Phases		2		1	6		7	4			8	
Permitted Phases	2		2	6		6	4		4	8		8
Detector Phase	2	2	2	1	6	6	7	4	4	8	8	8
Switch Phase												
Minimum Initial (s)	12.0	12.0	12.0	5.0	12.0	12.0	5.0	8.0	8.0	8.0	8.0	8.0
Minimum Split (s)	39.7	39.7	39.7	9.0	39.7	39.7	9.0	43.9	43.9	43.9	43.9	43.9
Total Split (s)	72.0	72.0	72.0	9.0	81.0	81.0	9.0	54.0	54.0	45.0	45.0	45.0
Total Split (%)	53.3%	53.3%	53.3%	6.7%	60.0%	60.0%	6.7%	40.0%	40.0%	33.3%	33.3%	33.3%
Yellow Time (s)	4.6	4.6	4.6	3.0	4.6	4.6	3.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	2.1	2.1	2.1	1.0	2.1	2.1	1.0	2.9	2.9	2.9	2.9	2.9
Lost Time Adjust (s)	0.0	0.0	0.0	-1.0	0.0	0.0	-1.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.7	6.7	6.7	3.0	6.7	6.7	3.0	6.9	6.9	6.9	6.9	6.9
Lead/Lag	Lag	Lag	Lag	Lead			Lead			Lag	Lag	Lag
Lead-Lag Optimize?												
Recall Mode	Max	Max	Max	None	Max	Max	None	None	None	None	None	None
v/c Ratio	0.17	0.35	0.12	0.10	0.45	0.04	1.29	0.17	0.04	0.25	0.19	0.10
Control Delay	12.5	9.6	2.1	5.0	7.6	0.8	194.4	38.6	0.3	50.5	47.3	0.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	12.5	9.6	2.1	5.0	7.6	0.8	194.4	38.6	0.3	50.5	47.3	0.9
Queue Length 50th (m)	2.6	36.1	0.0	1.8	43.7	0.0	~78.6	8.5	0.0	5.3	5.9	0.0
Queue Length 95th (m)	8.4	48.3	6.9	4.9	58.4	1.9	#128.8	18.8	0.0	13.9	14.9	0.0
Internal Link Dist (m)		179.2			166.2			202.0			680.1	
Turn Bay Length (m)	115.0		180.0	80.0		150.0	110.0		44.0	20.0		20.0
Base Capacity (vph)	182	2848	931	360	3244	1016	232	776	626	416	603	557
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.17	0.35	0.12	0.10	0.45	0.04	1.29	0.06	0.02	0.06	0.05	0.04

Intersection Summary

Cycle Length: 135
Actuated Cycle Length: 105.2
Natural Cycle: 105
Control Type: Semi Act-Uncoord
~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 2: Heart Lake Road & Mayfield Road





Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	31	1011	114	37	1460	42	299	48	11	27	30	21
Future Volume (vph)	31	1011	114	37	1460	42	299	48	11	27	30	21
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5
Total Lost time (s)	6.7	6.7	6.7	3.0	6.7	6.7	3.0	6.9	6.9	6.9	6.9	6.9
Lane Util. Factor	1.00	0.91	1.00	1.00	0.91	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1560	4330	1356	1530	4583	1409	1591	1729	1319	1501	1662	1369
Flt Permitted	0.17	1.00	1.00	0.25	1.00	1.00	0.56	1.00	1.00	0.73	1.00	1.00
Satd. Flow (perm)	278	4330	1356	398	4583	1409	934	1729	1319	1147	1662	1369
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	31	1011	114	37	1460	42	299	48	11	27	30	21
RTOR Reduction (vph)	0	0	41	0	0	12	0	0	9	0	0	19
Lane Group Flow (vph)	31	1011	73	37	1460	30	299	48	2	27	30	2
Heavy Vehicles (%)	3%	9%	6%	5%	3%	2%	1%	0%	9%	7%	4%	5%
Turn Type	Perm	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm	Perm	NA	Perm
Protected Phases		2		1	6		7	4			8	
Permitted Phases	2		2	6		6	4		4	8		8
Actuated Green, G (s)	69.2	69.2	69.2	76.1	76.1	76.1	18.6	18.6	18.6	8.3	8.3	8.3
Effective Green, g (s)	69.2	69.2	69.2	77.1	76.1	76.1	19.6	18.6	18.6	8.3	8.3	8.3
Actuated g/C Ratio	0.64	0.64	0.64	0.71	0.70	0.70	0.18	0.17	0.17	0.08	0.08	0.08
Clearance Time (s)	6.7	6.7	6.7	4.0	6.7	6.7	4.0	6.9	6.9	6.9	6.9	6.9
Vehicle Extension (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Lane Grp Cap (vph)	177	2766	866	324	3220	990	213	296	226	87	127	104
v/s Ratio Prot		0.23		0.00	c0.32		c0.09	0.03			0.02	
v/s Ratio Perm	0.11		0.05	0.08		0.02	c0.16		0.00	0.02		0.00
v/c Ratio	0.18	0.37	0.08	0.11	0.45	0.03	1.40	0.16	0.01	0.31	0.24	0.02
Uniform Delay, d1	7.9	9.2	7.5	4.8	7.0	4.9	43.8	38.2	37.2	47.3	47.0	46.2
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	2.1	0.4	0.2	0.3	0.5	0.1	207.4	0.5	0.0	4.2	2.0	0.1
Delay (s)	10.1	9.6	7.6	5.1	7.5	4.9	251.2	38.8	37.2	51.5	49.0	46.3
Level of Service	B	A	A	A	A	A	F	D	D	D	D	D
Approach Delay (s)		9.4			7.4			216.2			49.2	
Approach LOS		A			A			F			D	

Intersection Summary			
HCM 2000 Control Delay	33.0	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.70		
Actuated Cycle Length (s)	108.3	Sum of lost time (s)	19.6
Intersection Capacity Utilization	71.1%	ICU Level of Service	C
Analysis Period (min)	15		

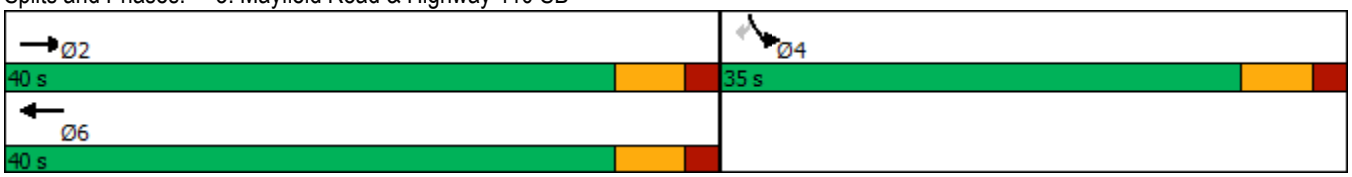
c Critical Lane Group

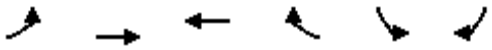
Lane Group	EBT	WBT	SBL	SBR
Lane Configurations				
Traffic Volume (vph)	773	1724	84	11
Future Volume (vph)	773	1724	84	11
Lane Group Flow (vph)	773	1724	85	10
Turn Type	NA	NA	Prot	Perm
Protected Phases	2	6	4	
Permitted Phases				4
Detector Phase	2	6	4	4
Switch Phase				
Minimum Initial (s)	16.0	16.0	8.0	8.0
Minimum Split (s)	22.0	22.0	32.0	32.0
Total Split (s)	40.0	40.0	35.0	35.0
Total Split (%)	53.3%	53.3%	46.7%	46.7%
Yellow Time (s)	4.0	4.0	4.0	4.0
All-Red Time (s)	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.0	6.0	6.0	6.0
Lead/Lag				
Lead-Lag Optimize?				
Recall Mode	Max	Max	None	None
v/c Ratio	0.20	0.42	0.16	0.04
Control Delay	3.5	4.5	21.5	15.5
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	3.5	4.5	21.5	15.5
Queue Length 50th (m)	10.5	29.6	4.6	0.4
Queue Length 95th (m)	15.8	41.2	8.5	3.9
Internal Link Dist (m)	123.5	116.2	492.2	
Turn Bay Length (m)				
Base Capacity (vph)	3941	4099	1724	757
Starvation Cap Reductn	0	0	0	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.20	0.42	0.05	0.01

Intersection Summary

Cycle Length: 75
Actuated Cycle Length: 57.3
Natural Cycle: 60
Control Type: Semi Act-Uncoord

Splits and Phases: 3: Mayfield Road & Highway 410 SB





Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	0	773	1724	0	84	11
Future Volume (vph)	0	773	1724	0	84	11
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)		6.0	6.0		6.0	6.0
Lane Util. Factor		0.91	0.91		0.97	0.91
Frt		1.00	1.00		1.00	0.85
Flt Protected		1.00	1.00		0.95	1.00
Satd. Flow (prot)		5043	5245		3397	1486
Flt Permitted		1.00	1.00		0.95	1.00
Satd. Flow (perm)		5043	5245		3397	1486
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	0	773	1724	0	84	11
RTOR Reduction (vph)	0	0	0	0	1	5
Lane Group Flow (vph)	0	773	1724	0	84	5
Heavy Vehicles (%)	0%	4%	0%	2%	4%	0%
Bus Blockages (#/hr)	0	0	0	0	2	0
Turn Type		NA	NA		Prot	Perm
Protected Phases		2	6		4	
Permitted Phases						4
Actuated Green, G (s)		42.3	42.3		5.5	5.5
Effective Green, g (s)		42.3	42.3		5.5	5.5
Actuated g/C Ratio		0.71	0.71		0.09	0.09
Clearance Time (s)		6.0	6.0		6.0	6.0
Vehicle Extension (s)		5.0	5.0		5.0	5.0
Lane Grp Cap (vph)		3567	3710		312	136
v/s Ratio Prot		0.15	c0.33		c0.02	
v/s Ratio Perm						0.00
v/c Ratio		0.22	0.46		0.27	0.03
Uniform Delay, d1		3.0	3.8		25.3	24.7
Progression Factor		1.00	1.00		1.00	1.00
Incremental Delay, d2		0.1	0.4		1.0	0.2
Delay (s)		3.2	4.2		26.3	24.9
Level of Service		A	A		C	C
Approach Delay (s)		3.2	4.2		26.1	
Approach LOS		A	A		C	

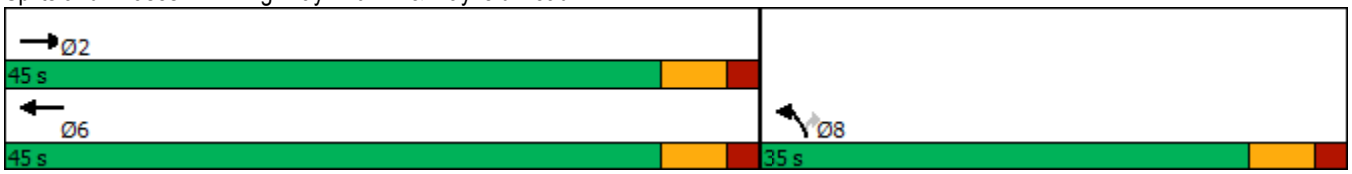
Intersection Summary			
HCM 2000 Control Delay	4.7	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.44		
Actuated Cycle Length (s)	59.8	Sum of lost time (s)	12.0
Intersection Capacity Utilization	50.0%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Lane Group	EBT	WBT	NBL	NBR
Lane Configurations				
Traffic Volume (vph)	807	1634	647	828
Future Volume (vph)	807	1634	647	828
Lane Group Flow (vph)	807	1634	1003	472
Turn Type	NA	NA	Prot	Perm
Protected Phases	2	6	8	
Permitted Phases	2	6		8
Detector Phase	2	6	8	8
Switch Phase				
Minimum Initial (s)	26.0	26.0	10.0	10.0
Minimum Split (s)	32.0	32.0	22.0	22.0
Total Split (s)	45.0	45.0	35.0	35.0
Total Split (%)	56.3%	56.3%	43.8%	43.8%
Yellow Time (s)	4.0	4.0	4.0	4.0
All-Red Time (s)	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.0	6.0	6.0	6.0
Lead/Lag				
Lead-Lag Optimize?				
Recall Mode	Max	None	None	None
v/c Ratio	0.32	0.66	0.83	0.86
Control Delay	12.2	16.2	27.3	34.6
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	12.2	16.2	27.3	34.6
Queue Length 50th (m)	26.1	66.1	60.6	52.8
Queue Length 95th (m)	34.2	81.5	83.7	#110.3
Internal Link Dist (m)	104.0	63.2	627.1	
Turn Bay Length (m)				
Base Capacity (vph)	2494	2494	1315	592
Starvation Cap Reductn	0	0	0	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.32	0.66	0.76	0.80

Intersection Summary
Cycle Length: 80
Actuated Cycle Length: 77.5
Natural Cycle: 60
Control Type: Semi Act-Uncoord
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 4: Highway 410 NB & Mayfield Road





Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	807	0	0	1634	647	828
Future Volume (vph)	807	0	0	1634	647	828
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0			6.0	6.0	6.0
Lane Util. Factor	0.91			0.91	0.97	0.91
Frt	1.00			1.00	0.95	0.85
Flt Protected	1.00			1.00	0.97	1.00
Satd. Flow (prot)	4948			4948	3303	1376
Flt Permitted	1.00			1.00	0.97	1.00
Satd. Flow (perm)	4948			4948	3303	1376
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	807	0	0	1634	647	828
RTOR Reduction (vph)	0	0	0	0	81	81
Lane Group Flow (vph)	807	0	0	1634	922	391
Heavy Vehicles (%)	6%	0%	0%	6%	1%	8%
Turn Type	NA			NA	Prot	Perm
Protected Phases	2			6	8	
Permitted Phases	2			6		8
Actuated Green, G (s)	39.1			39.1	26.4	26.4
Effective Green, g (s)	39.1			39.1	26.4	26.4
Actuated g/C Ratio	0.50			0.50	0.34	0.34
Clearance Time (s)	6.0			6.0	6.0	6.0
Vehicle Extension (s)	5.0			5.0	3.0	3.0
Lane Grp Cap (vph)	2496			2496	1125	468
v/s Ratio Prot	0.16			c0.33	0.28	
v/s Ratio Perm						c0.28
v/c Ratio	0.32			0.65	0.82	0.84
Uniform Delay, d1	11.4			14.2	23.4	23.5
Progression Factor	1.00			1.00	1.00	1.00
Incremental Delay, d2	0.3			0.8	4.8	12.2
Delay (s)	11.7			15.0	28.1	35.7
Level of Service	B			B	C	D
Approach Delay (s)	11.7			15.0	30.6	
Approach LOS	B			B	C	

Intersection Summary			
HCM 2000 Control Delay	20.2	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.73		
Actuated Cycle Length (s)	77.5	Sum of lost time (s)	12.0
Intersection Capacity Utilization	68.7%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	EBT	EBR	WBL	WBT	NBL
Lane Configurations					
Traffic Volume (vph)	1470	154	71	1676	95
Future Volume (vph)	1470	154	71	1676	95
Lane Group Flow (vph)	1470	154	71	1676	138
Turn Type	NA	Perm	Perm	NA	Prot
Protected Phases	2			2	4
Permitted Phases		2	2		
Detector Phase	2	2	2	2	4
Switch Phase					
Minimum Initial (s)	12.0	12.0	12.0	12.0	8.0
Minimum Split (s)	26.7	26.7	26.7	26.7	45.6
Total Split (s)	74.0	74.0	74.0	74.0	46.0
Total Split (%)	61.7%	61.7%	61.7%	61.7%	38.3%
Yellow Time (s)	4.6	4.6	4.6	4.6	4.0
All-Red Time (s)	2.1	2.1	2.1	2.1	3.6
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.7	6.7	6.7	6.7	7.6
Lead/Lag					
Lead-Lag Optimize?					
Recall Mode	Max	Max	Max	Max	Max
v/c Ratio	0.51	0.16	0.54	0.58	0.24
Control Delay	17.0	2.3	35.1	18.2	26.9
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	17.0	2.3	35.1	18.2	26.9
Queue Length 50th (m)	74.2	0.0	10.0	89.7	20.2
Queue Length 95th (m)	86.4	8.9	29.6	103.5	36.3
Internal Link Dist (m)	203.7			76.6	88.2
Turn Bay Length (m)		65.0	35.0		
Base Capacity (vph)	2883	945	132	2883	572
Starvation Cap Reductn	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.51	0.16	0.54	0.58	0.24

Intersection Summary
Cycle Length: 120
Actuated Cycle Length: 120
Natural Cycle: 90
Control Type: Semi Act-Uncoord

Splits and Phases: 5: Ace Drive & Mayfield Road





Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	1470	154	71	1676	95	43
Future Volume (vph)	1470	154	71	1676	95	43
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width	3.7	3.5	3.5	3.7	3.7	3.7
Total Lost time (s)	6.7	6.7	6.7	6.7	7.6	
Lane Util. Factor	0.91	1.00	1.00	0.91	1.00	
Frt	1.00	0.85	1.00	1.00	0.96	
Flt Protected	1.00	1.00	0.95	1.00	0.97	
Satd. Flow (prot)	5142	1566	1750	5142	1744	
Flt Permitted	1.00	1.00	0.13	1.00	0.97	
Satd. Flow (perm)	5142	1566	236	5142	1744	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	1470	154	71	1676	95	43
RTOR Reduction (vph)	0	68	0	0	14	0
Lane Group Flow (vph)	1470	86	71	1676	124	0
Turn Type	NA	Perm	Perm	NA	Prot	
Protected Phases	2			2	4	
Permitted Phases		2	2			
Actuated Green, G (s)	67.3	67.3	67.3	67.3	38.4	
Effective Green, g (s)	67.3	67.3	67.3	67.3	38.4	
Actuated g/C Ratio	0.56	0.56	0.56	0.56	0.32	
Clearance Time (s)	6.7	6.7	6.7	6.7	7.6	
Vehicle Extension (s)	5.0	5.0	5.0	5.0	5.0	
Lane Grp Cap (vph)	2883	878	132	2883	558	
v/s Ratio Prot	0.29			c0.33	c0.07	
v/s Ratio Perm		0.06	0.30			
v/c Ratio	0.51	0.10	0.54	0.58	0.22	
Uniform Delay, d1	16.2	12.2	16.6	17.2	29.9	
Progression Factor	1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	0.6	0.2	14.8	0.9	0.9	
Delay (s)	16.9	12.5	31.4	18.0	30.8	
Level of Service	B	B	C	B	C	
Approach Delay (s)	16.4			18.6	30.8	
Approach LOS	B			B	C	

Intersection Summary			
HCM 2000 Control Delay	18.1	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.45		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	14.3
Intersection Capacity Utilization	63.8%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

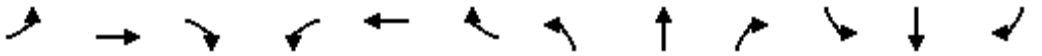
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	262	988	186	43	1116	20	289	181	33	36	286	293
Future Volume (vph)	262	988	186	43	1116	20	289	181	33	36	286	293
Lane Group Flow (vph)	262	988	186	43	1116	20	289	181	33	36	286	293
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	Perm	NA	Perm	Perm	NA	Perm
Protected Phases	5	2		1	6			4			8	
Permitted Phases	2		2	6		6	4		4	8		8
Detector Phase	5	2	2	1	6	6	4	4	4	8	8	8
Switch Phase												
Minimum Initial (s)	5.0	8.0	8.0	5.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0
Minimum Split (s)	10.0	44.9	44.9	10.0	44.9	44.9	47.9	47.9	47.9	47.9	47.9	47.9
Total Split (s)	10.0	60.0	60.0	10.0	60.0	60.0	50.0	50.0	50.0	50.0	50.0	50.0
Total Split (%)	8.3%	50.0%	50.0%	8.3%	50.0%	50.0%	41.7%	41.7%	41.7%	41.7%	41.7%	41.7%
Yellow Time (s)	3.0	4.6	4.6	3.0	4.6	4.6	4.6	4.6	4.6	4.6	4.6	4.6
All-Red Time (s)	1.0	2.3	2.3	1.0	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.3
Lost Time Adjust (s)	-1.0	0.0	0.0	-1.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	3.0	6.9	6.9	3.0	6.9	6.9	6.9	6.9	6.9	6.9	6.9	6.9
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag						
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes						
Recall Mode	None	Max	Max	None	None	None	None	None	None	None	None	None
v/c Ratio	1.19	0.45	0.23	0.18	0.74	0.03	0.94	0.27	0.06	0.10	0.45	0.46
Control Delay	142.6	22.8	3.5	14.0	30.7	0.1	76.1	28.4	0.3	26.5	31.8	17.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	142.6	22.8	3.5	14.0	30.7	0.1	76.1	28.4	0.3	26.5	31.8	17.0
Queue Length 50th (m)	~43.5	58.7	0.0	4.4	112.2	0.0	64.5	29.9	0.0	5.6	50.8	25.4
Queue Length 95th (m)	#90.3	70.9	12.6	9.8	137.9	0.0	#117.7	47.4	0.8	13.1	75.2	49.9
Internal Link Dist (m)		179.3			299.2			185.5			471.5	
Turn Bay Length (m)	140.0		70.0	65.0		30.0	75.0		60.0	30.0		138.0
Base Capacity (vph)	220	2206	824	241	1578	710	330	721	627	404	687	671
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	1.19	0.45	0.23	0.18	0.71	0.03	0.88	0.25	0.05	0.09	0.42	0.44

Intersection Summary

Cycle Length: 120
Actuated Cycle Length: 115.5
Natural Cycle: 105
Control Type: Semi Act-Uncoord
~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 6: Dixie Road & Mayfield Road





Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	262	988	186	43	1116	20	289	181	33	36	286	293
Future Volume (vph)	262	988	186	43	1116	20	289	181	33	36	286	293
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5
Total Lost time (s)	3.0	6.9	6.9	3.0	6.9	6.9	6.9	6.9	6.9	6.9	6.9	6.9
Lane Util. Factor	1.00	0.91	1.00	1.00	0.95	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1700	4768	1566	1342	3411	1452	1750	1921	1551	1653	1830	1551
Flt Permitted	0.14	1.00	1.00	0.24	1.00	1.00	0.48	1.00	1.00	0.62	1.00	1.00
Satd. Flow (perm)	242	4768	1566	337	3411	1452	879	1921	1551	1075	1830	1551
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	262	988	186	43	1116	20	289	181	33	36	286	293
RTOR Reduction (vph)	0	0	101	0	0	11	0	0	22	0	0	93
Lane Group Flow (vph)	262	988	85	43	1116	9	289	181	11	36	286	200
Heavy Vehicles (%)	5%	10%	2%	33%	7%	10%	2%	0%	3%	8%	5%	3%
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	Perm	NA	Perm	Perm	NA	Perm
Protected Phases	5	2		1	6			4			8	
Permitted Phases	2		2	6		6	4		4	8		8
Actuated Green, G (s)	59.5	53.5	53.5	56.7	52.1	52.1	40.5	40.5	40.5	40.5	40.5	40.5
Effective Green, g (s)	61.5	53.5	53.5	58.7	52.1	52.1	40.5	40.5	40.5	40.5	40.5	40.5
Actuated g/C Ratio	0.53	0.46	0.46	0.50	0.45	0.45	0.35	0.35	0.35	0.35	0.35	0.35
Clearance Time (s)	4.0	6.9	6.9	4.0	6.9	6.9	6.9	6.9	6.9	6.9	6.9	6.9
Vehicle Extension (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Lane Grp Cap (vph)	215	2191	719	218	1526	649	305	668	539	374	636	539
v/s Ratio Prot	c0.07	0.21		0.01	0.33			0.09			0.16	
v/s Ratio Perm	c0.57		0.05	0.09		0.01	c0.33		0.01	0.03		0.13
v/c Ratio	1.22	0.45	0.12	0.20	0.73	0.01	0.95	0.27	0.02	0.10	0.45	0.37
Uniform Delay, d1	23.0	21.4	18.0	15.0	26.4	17.9	36.9	27.3	24.9	25.6	29.3	28.4
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	132.9	0.7	0.3	0.9	2.2	0.0	38.2	0.5	0.0	0.2	1.1	0.9
Delay (s)	155.9	22.1	18.3	16.0	28.6	17.9	75.2	27.8	25.0	25.8	30.4	29.3
Level of Service	F	C	B	B	C	B	E	C	C	C	C	C
Approach Delay (s)		46.0			28.0			54.8			29.6	
Approach LOS		D			C			D			C	

Intersection Summary			
HCM 2000 Control Delay	38.8	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	1.13		
Actuated Cycle Length (s)	116.4	Sum of lost time (s)	16.8
Intersection Capacity Utilization	97.0%	ICU Level of Service	F
Analysis Period (min)	15		

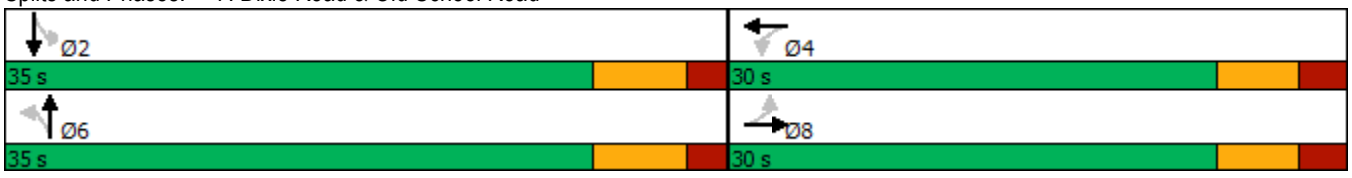
c Critical Lane Group

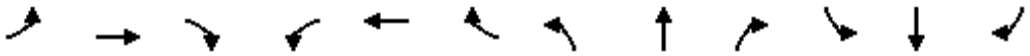
Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations								
Traffic Volume (vph)	14	94	83	241	25	432	6	223
Future Volume (vph)	14	94	83	241	25	432	6	223
Lane Group Flow (vph)	14	104	83	259	25	473	6	238
Turn Type	Perm	NA	Perm	NA	Perm	NA	Perm	NA
Protected Phases		8		4		6		2
Permitted Phases	8		4		6		2	
Detector Phase	8	8	4	4	6	6	2	2
Switch Phase								
Minimum Initial (s)	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0
Minimum Split (s)	25.4	25.4	25.4	25.4	23.6	23.6	23.6	23.6
Total Split (s)	30.0	30.0	30.0	30.0	35.0	35.0	35.0	35.0
Total Split (%)	46.2%	46.2%	46.2%	46.2%	53.8%	53.8%	53.8%	53.8%
Yellow Time (s)	4.0	4.0	4.0	4.0	4.6	4.6	4.6	4.6
All-Red Time (s)	2.4	2.4	2.4	2.4	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.4	6.4	6.4	6.4	6.6	6.6	6.6	6.6
Lead/Lag								
Lead-Lag Optimize?								
Recall Mode	None	None	None	None	Max	Max	Max	Max
v/c Ratio	0.06	0.22	0.25	0.54	0.04	0.50	0.01	0.26
Control Delay	15.4	15.7	18.1	21.8	8.7	12.1	8.7	9.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	15.4	15.7	18.1	21.8	8.7	12.1	8.7	9.4
Queue Length 50th (m)	1.1	7.5	6.6	21.9	1.2	28.1	0.3	12.0
Queue Length 95th (m)	4.4	16.8	15.4	39.2	5.0	61.2	2.0	28.5
Internal Link Dist (m)		1372.4		151.6		1518.8		144.7
Turn Bay Length (m)	35.0		45.0		40.0		35.0	
Base Capacity (vph)	382	761	526	770	595	947	426	913
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.04	0.14	0.16	0.34	0.04	0.50	0.01	0.26

Intersection Summary

Cycle Length: 65
Actuated Cycle Length: 57.7
Natural Cycle: 55
Control Type: Semi Act-Uncoord

Splits and Phases: 7: Dixie Road & Old School Road





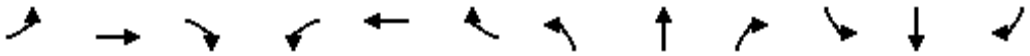
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	14	94	10	83	241	18	25	432	41	6	223	15
Future Volume (vph)	14	94	10	83	241	18	25	432	41	6	223	15
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5
Total Lost time (s)	6.4	6.4		6.4	6.4		6.6	6.6		6.6	6.6	
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	0.99		1.00	0.99		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)	1566	1843		1767	1869		1785	1820		1785	1755	
Flt Permitted	0.57	1.00		0.69	1.00		0.61	1.00		0.44	1.00	
Satd. Flow (perm)	933	1843		1283	1869		1147	1820		823	1755	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	14	94	10	83	241	18	25	432	41	6	223	15
RTOR Reduction (vph)	0	7	0	0	4	0	0	4	0	0	3	0
Lane Group Flow (vph)	14	97	0	83	255	0	25	469	0	6	235	0
Heavy Vehicles (%)	14%	3%	0%	1%	1%	11%	0%	2%	27%	0%	9%	0%
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)	14.8	14.8		14.8	14.8		29.9	29.9		29.9	29.9	
Effective Green, g (s)	14.8	14.8		14.8	14.8		29.9	29.9		29.9	29.9	
Actuated g/C Ratio	0.26	0.26		0.26	0.26		0.52	0.52		0.52	0.52	
Clearance Time (s)	6.4	6.4		6.4	6.4		6.6	6.6		6.6	6.6	
Vehicle Extension (s)	5.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0	
Lane Grp Cap (vph)	239	472		329	479		594	943		426	909	
v/s Ratio Prot		0.05			c0.14			c0.26			0.13	
v/s Ratio Perm	0.02			0.06			0.02			0.01		
v/c Ratio	0.06	0.21		0.25	0.53		0.04	0.50		0.01	0.26	
Uniform Delay, d1	16.2	16.8		17.1	18.5		6.8	9.0		6.7	7.7	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.2	0.5		0.8	2.1		0.1	1.9		0.1	0.7	
Delay (s)	16.4	17.3		17.9	20.5		7.0	10.9		6.8	8.4	
Level of Service	B	B		B	C		A	B		A	A	
Approach Delay (s)		17.2			19.9			10.7			8.4	
Approach LOS		B			B			B			A	

Intersection Summary			
HCM 2000 Control Delay	13.5	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.51		
Actuated Cycle Length (s)	57.7	Sum of lost time (s)	13.0
Intersection Capacity Utilization	49.8%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Appendix E

2021 Existing Conditions With Improvements – Synchro Analysis Results



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Stop			Stop	
Traffic Volume (vph)	7	123	7	5	47	4	6	24	6	4	33	13
Future Volume (vph)	7	123	7	5	47	4	6	24	6	4	33	13
Peak Hour Factor	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85
Hourly flow rate (vph)	8	145	8	6	55	5	7	28	7	5	39	15

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total (vph)	161	66	42	59
Volume Left (vph)	8	6	7	5
Volume Right (vph)	8	5	7	15
Hadj (s)	0.04	0.13	0.18	-0.07
Departure Headway (s)	4.3	4.4	4.7	4.4
Degree Utilization, x	0.19	0.08	0.05	0.07
Capacity (veh/h)	824	773	726	765
Control Delay (s)	8.2	7.8	7.9	7.7
Approach Delay (s)	8.2	7.8	7.9	7.7
Approach LOS	A	A	A	A

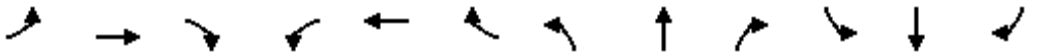
Intersection Summary				
Delay	8.0			
Level of Service	A			
Intersection Capacity Utilization	18.5%	ICU Level of Service	A	
Analysis Period (min)	15			

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	21	1420	505	116	925	14	103	14	18	33	89	42
Future Volume (vph)	21	1420	505	116	925	14	103	14	18	33	89	42
Lane Group Flow (vph)	21	1420	505	116	925	14	103	14	18	33	89	42
Turn Type	Perm	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm	Perm	NA	Perm
Protected Phases		2		1	6		7	4			8	
Permitted Phases	2		2	6		6	4		4	8		8
Detector Phase	2	2	2	1	6	6	7	4	4	8	8	8
Switch Phase												
Minimum Initial (s)	12.0	12.0	12.0	5.0	12.0	12.0	5.0	8.0	8.0	8.0	8.0	8.0
Minimum Split (s)	39.7	39.7	39.7	9.0	39.7	39.7	9.0	43.9	43.9	43.9	43.9	43.9
Total Split (s)	77.0	77.0	77.0	9.0	86.0	86.0	9.0	54.0	54.0	45.0	45.0	45.0
Total Split (%)	55.0%	55.0%	55.0%	6.4%	61.4%	61.4%	6.4%	38.6%	38.6%	32.1%	32.1%	32.1%
Yellow Time (s)	4.6	4.6	4.6	3.0	4.6	4.6	3.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	2.1	2.1	2.1	1.0	2.1	2.1	1.0	2.9	2.9	2.9	2.9	2.9
Lost Time Adjust (s)	0.0	0.0	0.0	-1.0	0.0	0.0	-1.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.7	6.7	6.7	3.0	6.7	6.7	3.0	6.9	6.9	6.9	6.9	6.9
Lead/Lag	Lag	Lag	Lag	Lead			Lead			Lag	Lag	Lag
Lead-Lag Optimize?												
Recall Mode	Max	Max	Max	None	Max	Max	None	None	None	None	None	None
v/c Ratio	0.07	0.52	0.48	0.49	0.32	0.02	0.43	0.04	0.06	0.23	0.45	0.17
Control Delay	10.8	13.9	2.6	12.4	7.7	0.1	42.8	37.6	0.3	49.8	55.1	1.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	10.8	13.9	2.6	12.4	7.7	0.1	42.8	37.6	0.3	49.8	55.1	1.5
Queue Length 50th (m)	1.8	62.5	0.0	6.9	27.2	0.0	19.4	2.6	0.0	6.9	19.0	0.0
Queue Length 95th (m)	5.8	82.0	13.3	14.1	38.3	0.0	34.9	8.1	0.0	16.6	35.0	0.0
Internal Link Dist (m)		179.2			166.2			202.0			680.1	
Turn Bay Length (m)	115.0		180.0	80.0		150.0	110.0		44.0	20.0		20.0
Base Capacity (vph)	291	2719	1057	237	2903	786	241	707	623	418	566	536
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.07	0.52	0.48	0.49	0.32	0.02	0.43	0.02	0.03	0.08	0.16	0.08

Intersection Summary
Cycle Length: 140
Actuated Cycle Length: 115.2
Natural Cycle: 105
Control Type: Semi Act-Uncoord

Splits and Phases: 2: Heart Lake Road & Mayfield Road





Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	21	1420	505	116	925	14	103	14	18	33	89	42
Future Volume (vph)	21	1420	505	116	925	14	103	14	18	33	89	42
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5
Total Lost time (s)	6.7	6.7	6.7	3.0	6.7	6.7	3.0	6.9	6.9	6.9	6.9	6.9
Lane Util. Factor	1.00	0.91	1.00	1.00	0.91	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1530	4453	1409	1560	4214	1114	1530	1729	1437	1606	1712	1437
Flt Permitted	0.30	1.00	1.00	0.14	1.00	1.00	0.58	1.00	1.00	0.75	1.00	1.00
Satd. Flow (perm)	478	4453	1409	233	4214	1114	930	1729	1437	1265	1712	1437
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	21	1420	505	116	925	14	103	14	18	33	89	42
RTOR Reduction (vph)	0	0	197	0	0	4	0	0	15	0	0	37
Lane Group Flow (vph)	21	1420	308	116	925	10	103	14	3	33	89	5
Heavy Vehicles (%)	5%	6%	2%	3%	12%	29%	5%	0%	0%	0%	1%	0%
Turn Type	Perm	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm	Perm	NA	Perm
Protected Phases		2		1	6		7	4			8	
Permitted Phases	2		2	6		6	4		4	8		8
Actuated Green, G (s)	70.3	70.3	70.3	79.3	79.3	79.3	22.2	22.2	22.2	13.2	13.2	13.2
Effective Green, g (s)	70.3	70.3	70.3	80.3	79.3	79.3	23.2	22.2	22.2	13.2	13.2	13.2
Actuated g/C Ratio	0.61	0.61	0.61	0.70	0.69	0.69	0.20	0.19	0.19	0.11	0.11	0.11
Clearance Time (s)	6.7	6.7	6.7	4.0	6.7	6.7	4.0	6.9	6.9	6.9	6.9	6.9
Vehicle Extension (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Lane Grp Cap (vph)	291	2719	860	231	2903	767	218	333	277	145	196	164
v/s Ratio Prot		0.32		c0.03	0.22		c0.02	0.01			0.05	
v/s Ratio Perm	0.04		0.22	c0.32		0.01	c0.07		0.00	0.03		0.00
v/c Ratio	0.07	0.52	0.36	0.50	0.32	0.01	0.47	0.04	0.01	0.23	0.45	0.03
Uniform Delay, d1	9.1	12.8	11.2	7.2	7.1	5.6	39.6	37.8	37.6	46.3	47.6	45.3
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	0.5	0.7	1.2	3.6	0.3	0.0	3.4	0.1	0.0	1.7	3.5	0.2
Delay (s)	9.6	13.5	12.3	10.8	7.4	5.6	43.0	37.9	37.6	48.0	51.0	45.4
Level of Service	A	B	B	B	A	A	D	D	D	D	D	D
Approach Delay (s)		13.2			7.8			41.8			49.0	
Approach LOS		B			A			D			D	

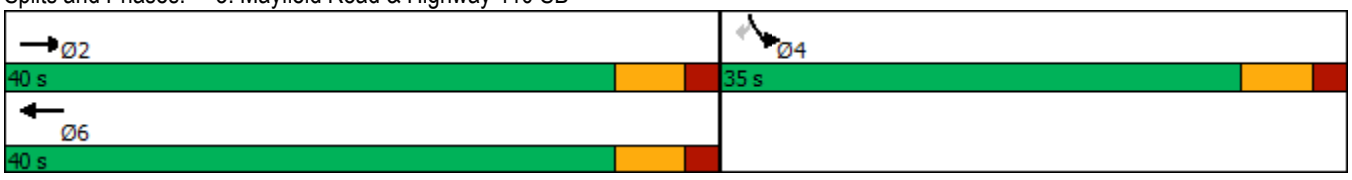
Intersection Summary			
HCM 2000 Control Delay	14.4	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.53		
Actuated Cycle Length (s)	115.1	Sum of lost time (s)	19.6
Intersection Capacity Utilization	65.3%	ICU Level of Service	C
Analysis Period (min)	15		

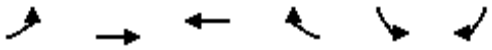
c Critical Lane Group

Lane Group	EBT	WBT	SBL	SBR
Lane Configurations				
Traffic Volume (vph)	1076	849	286	242
Future Volume (vph)	1076	849	286	242
Lane Group Flow (vph)	1076	849	363	165
Turn Type	NA	NA	Prot	Perm
Protected Phases	2	6	4	
Permitted Phases				4
Detector Phase	2	6	4	4
Switch Phase				
Minimum Initial (s)	16.0	16.0	8.0	8.0
Minimum Split (s)	22.0	22.0	32.0	32.0
Total Split (s)	40.0	40.0	35.0	35.0
Total Split (%)	53.3%	53.3%	46.7%	46.7%
Yellow Time (s)	4.0	4.0	4.0	4.0
All-Red Time (s)	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.0	6.0	6.0	6.0
Lead/Lag				
Lead-Lag Optimize?				
Recall Mode	Max	Max	None	None
v/c Ratio	0.38	0.28	0.44	0.41
Control Delay	7.9	7.2	18.2	12.8
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	7.9	7.2	18.2	12.8
Queue Length 50th (m)	20.5	15.1	14.7	7.2
Queue Length 95th (m)	34.3	25.8	24.3	21.5
Internal Link Dist (m)	123.5	116.2	492.2	
Turn Bay Length (m)				
Base Capacity (vph)	2832	3002	1715	772
Starvation Cap Reductn	0	0	0	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.38	0.28	0.21	0.21

Intersection Summary
Cycle Length: 75
Actuated Cycle Length: 59.6
Natural Cycle: 55
Control Type: Semi Act-Uncoord

Splits and Phases: 3: Mayfield Road & Highway 410 SB





Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑↑↑	↑↑↑		↰↰	↱
Traffic Volume (vph)	0	1076	849	0	286	242
Future Volume (vph)	0	1076	849	0	286	242
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)		6.0	6.0		6.0	6.0
Lane Util. Factor		0.91	0.91		0.97	0.91
Frt		1.00	1.00		0.97	0.85
Flt Protected		1.00	1.00		0.96	1.00
Satd. Flow (prot)		4948	5245		3458	1486
Flt Permitted		1.00	1.00		0.96	1.00
Satd. Flow (perm)		4948	5245		3458	1486
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	0	1076	849	0	286	242
RTOR Reduction (vph)	0	0	0	0	43	71
Lane Group Flow (vph)	0	1076	849	0	320	94
Heavy Vehicles (%)	0%	6%	0%	16%	0%	0%
Bus Blockages (#/hr)	0	0	0	0	2	0
Turn Type		NA	NA		Prot	Perm
Protected Phases		2	6		4	
Permitted Phases						4
Actuated Green, G (s)		34.1	34.1		13.4	13.4
Effective Green, g (s)		34.1	34.1		13.4	13.4
Actuated g/C Ratio		0.57	0.57		0.23	0.23
Clearance Time (s)		6.0	6.0		6.0	6.0
Vehicle Extension (s)		5.0	5.0		5.0	5.0
Lane Grp Cap (vph)		2835	3005		778	334
v/s Ratio Prot		c0.22	0.16		c0.09	
v/s Ratio Perm						0.06
v/c Ratio		0.38	0.28		0.41	0.28
Uniform Delay, d1		6.9	6.5		19.7	19.1
Progression Factor		1.00	1.00		1.00	1.00
Incremental Delay, d2		0.4	0.2		0.7	1.0
Delay (s)		7.3	6.7		20.4	20.0
Level of Service		A	A		C	C
Approach Delay (s)		7.3	6.7		20.3	
Approach LOS		A	A		C	

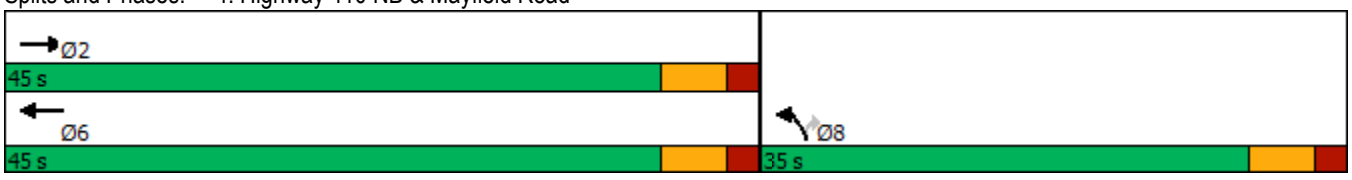
Intersection Summary			
HCM 2000 Control Delay	9.9	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.39		
Actuated Cycle Length (s)	59.5	Sum of lost time (s)	12.0
Intersection Capacity Utilization	41.5%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Lane Group	EBT	WBT	NBL	NBR
Lane Configurations				
Traffic Volume (vph)	1362	1304	209	660
Future Volume (vph)	1362	1304	209	660
Lane Group Flow (vph)	1362	1304	539	330
Turn Type	NA	NA	Prot	Perm
Protected Phases	2	6	8	
Permitted Phases				8
Detector Phase	2	6	8	8
Switch Phase				
Minimum Initial (s)	26.0	26.0	10.0	10.0
Minimum Split (s)	32.0	32.0	22.0	22.0
Total Split (s)	45.0	45.0	35.0	35.0
Total Split (%)	56.3%	56.3%	43.8%	43.8%
Yellow Time (s)	4.0	4.0	4.0	4.0
All-Red Time (s)	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.0	6.0	6.0	6.0
Lead/Lag				
Lead-Lag Optimize?				
Recall Mode	Max	None	None	None
v/c Ratio	0.51	0.52	0.61	0.80
Control Delay	12.8	12.9	23.6	37.0
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	12.8	12.9	23.6	37.0
Queue Length 50th (m)	42.0	40.5	30.7	41.9
Queue Length 95th (m)	63.5	61.6	44.7	73.6
Internal Link Dist (m)	104.0	63.2	627.1	
Turn Bay Length (m)				
Base Capacity (vph)	2649	2507	1164	538
Starvation Cap Reductn	0	0	0	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.51	0.52	0.46	0.61

Intersection Summary
Cycle Length: 80
Actuated Cycle Length: 73.4
Natural Cycle: 55
Control Type: Semi Act-Uncoord

Splits and Phases: 4: Highway 410 NB & Mayfield Road





Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	1362	0	0	1304	209	660
Future Volume (vph)	1362	0	0	1304	209	660
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0			6.0	6.0	6.0
Lane Util. Factor	0.91			0.91	0.97	0.91
Frt	1.00			1.00	0.91	0.85
Flt Protected	1.00			1.00	0.98	1.00
Satd. Flow (prot)	4948			4683	2889	1315
Flt Permitted	1.00			1.00	0.98	1.00
Satd. Flow (perm)	4948			4683	2889	1315
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	1362	0	0	1304	209	660
RTOR Reduction (vph)	0	0	0	0	17	17
Lane Group Flow (vph)	1362	0	0	1304	522	313
Heavy Vehicles (%)	6%	0%	0%	12%	18%	13%
Turn Type	NA			NA	Prot	Perm
Protected Phases	2			6	8	
Permitted Phases						8
Actuated Green, G (s)	39.3			39.3	22.0	22.0
Effective Green, g (s)	39.3			39.3	22.0	22.0
Actuated g/C Ratio	0.54			0.54	0.30	0.30
Clearance Time (s)	6.0			6.0	6.0	6.0
Vehicle Extension (s)	5.0			5.0	3.0	3.0
Lane Grp Cap (vph)	2652			2510	867	394
v/s Ratio Prot	0.28			c0.28	0.18	
v/s Ratio Perm						c0.24
v/c Ratio	0.51			0.52	0.60	0.79
Uniform Delay, d1	10.9			10.9	21.9	23.6
Progression Factor	1.00			1.00	1.00	1.00
Incremental Delay, d2	0.7			0.4	1.2	10.5
Delay (s)	11.6			11.3	23.1	34.0
Level of Service	B			B	C	C
Approach Delay (s)	11.6			11.3	27.3	
Approach LOS	B			B	C	

Intersection Summary			
HCM 2000 Control Delay	15.3	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.62		
Actuated Cycle Length (s)	73.3	Sum of lost time (s)	12.0
Intersection Capacity Utilization	63.6%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	EBT	EBR	WBL	WBT	NBL
Lane Configurations					
Traffic Volume (vph)	1780	211	68	1106	92
Future Volume (vph)	1780	211	68	1106	92
Lane Group Flow (vph)	1780	211	68	1106	144
Turn Type	NA	Perm	Perm	NA	Prot
Protected Phases	2			2	4
Permitted Phases		2	2		
Detector Phase	2	2	2	2	4
Switch Phase					
Minimum Initial (s)	12.0	12.0	12.0	12.0	8.0
Minimum Split (s)	26.7	26.7	26.7	26.7	45.6
Total Split (s)	74.0	74.0	74.0	74.0	46.0
Total Split (%)	61.7%	61.7%	61.7%	61.7%	38.3%
Yellow Time (s)	4.6	4.6	4.6	4.6	4.0
All-Red Time (s)	2.1	2.1	2.1	2.1	3.6
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.7	6.7	6.7	6.7	7.6
Lead/Lag					
Lead-Lag Optimize?					
Recall Mode	Max	Max	Max	Max	None
v/c Ratio	0.49	0.18	0.50	0.30	0.54
Control Delay	7.3	1.2	23.9	5.9	42.8
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	7.3	1.2	23.9	5.9	42.8
Queue Length 50th (m)	47.8	0.0	5.1	24.7	22.9
Queue Length 95th (m)	68.8	6.8	#28.7	36.8	40.8
Internal Link Dist (m)	203.7			76.6	88.2
Turn Bay Length (m)		65.0	35.0		
Base Capacity (vph)	3662	1176	136	3662	669
Starvation Cap Reductn	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.49	0.18	0.50	0.30	0.22

Intersection Summary

Cycle Length: 120
Actuated Cycle Length: 100.9
Natural Cycle: 90
Control Type: Actuated-Uncoordinated
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 5: Ace Drive & Mayfield Road





Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	1780	211	68	1106	92	52
Future Volume (vph)	1780	211	68	1106	92	52
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width	3.7	3.5	3.5	3.7	3.7	3.7
Total Lost time (s)	6.7	6.7	6.7	6.7	7.6	
Lane Util. Factor	0.91	1.00	1.00	0.91	1.00	
Frt	1.00	0.85	1.00	1.00	0.95	
Flt Protected	1.00	1.00	0.95	1.00	0.97	
Satd. Flow (prot)	5142	1566	1750	5142	1736	
Flt Permitted	1.00	1.00	0.10	1.00	0.97	
Satd. Flow (perm)	5142	1566	191	5142	1736	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	1780	211	68	1106	92	52
RTOR Reduction (vph)	0	61	0	0	12	0
Lane Group Flow (vph)	1780	150	68	1106	132	0
Turn Type	NA	Perm	Perm	NA	Prot	
Protected Phases	2			2	4	
Permitted Phases		2	2			
Actuated Green, G (s)	71.9	71.9	71.9	71.9	14.7	
Effective Green, g (s)	71.9	71.9	71.9	71.9	14.7	
Actuated g/C Ratio	0.71	0.71	0.71	0.71	0.15	
Clearance Time (s)	6.7	6.7	6.7	6.7	7.6	
Vehicle Extension (s)	5.0	5.0	5.0	5.0	5.0	
Lane Grp Cap (vph)	3664	1115	136	3664	252	
v/s Ratio Prot	0.35			0.22	c0.08	
v/s Ratio Perm		0.10	c0.36			
v/c Ratio	0.49	0.13	0.50	0.30	0.52	
Uniform Delay, d1	6.4	4.6	6.5	5.3	39.9	
Progression Factor	1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	0.5	0.3	12.5	0.2	3.7	
Delay (s)	6.8	4.9	19.0	5.5	43.6	
Level of Service	A	A	B	A	D	
Approach Delay (s)	6.6			6.3	43.6	
Approach LOS	A			A	D	

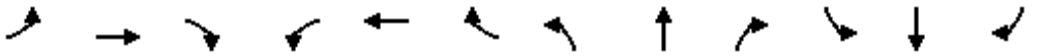
Intersection Summary			
HCM 2000 Control Delay	8.1	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.50		
Actuated Cycle Length (s)	100.9	Sum of lost time (s)	14.3
Intersection Capacity Utilization	70.2%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	237	1425	364	60	600	18	121	49	31	22	119	256
Future Volume (vph)	237	1425	364	60	600	18	121	49	31	22	119	256
Lane Group Flow (vph)	237	1425	364	60	600	18	121	49	31	22	119	256
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	Perm	NA	Perm	Perm	NA	Perm
Protected Phases	5	2		1	6			8			4	
Permitted Phases	2		2	6		6	8		8	4		4
Detector Phase	5	2	2	1	6	6	8	8	8	4	4	4
Switch Phase												
Minimum Initial (s)	5.0	8.0	8.0	5.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0
Minimum Split (s)	9.0	44.9	44.9	9.0	44.9	44.9	47.9	47.9	47.9	47.9	47.9	47.9
Total Split (s)	10.0	60.0	60.0	10.0	60.0	60.0	50.0	50.0	50.0	50.0	50.0	50.0
Total Split (%)	8.3%	50.0%	50.0%	8.3%	50.0%	50.0%	41.7%	41.7%	41.7%	41.7%	41.7%	41.7%
Yellow Time (s)	3.0	4.6	4.6	3.0	4.6	4.6	4.6	4.6	4.6	4.6	4.6	4.6
All-Red Time (s)	1.0	2.3	2.3	1.0	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.3
Lost Time Adjust (s)	-1.0	0.0	0.0	-1.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	3.0	6.9	6.9	3.0	6.9	6.9	6.9	6.9	6.9	6.9	6.9	6.9
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag						
Lead-Lag Optimize?												
Recall Mode	None	Max	Max	None	None	None	None	None	None	None	None	None
v/c Ratio	0.45	0.49	0.35	0.21	0.33	0.03	0.56	0.17	0.10	0.12	0.38	0.55
Control Delay	8.2	12.8	2.3	6.4	11.9	0.1	45.4	33.4	1.0	33.1	37.2	9.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	8.2	12.8	2.3	6.4	11.9	0.1	45.4	33.4	1.0	33.1	37.2	9.2
Queue Length 50th (m)	11.8	52.7	0.0	2.6	27.8	0.0	20.1	7.6	0.0	3.4	19.1	0.0
Queue Length 95th (m)	25.4	75.7	12.6	7.5	44.7	0.0	37.3	17.0	0.8	9.7	34.5	19.2
Internal Link Dist (m)		179.3			299.2			185.5			471.5	
Turn Bay Length (m)	140.0		70.0	65.0		30.0	75.0		60.0	30.0		138.0
Base Capacity (vph)	527	2879	1052	286	1880	735	586	796	711	511	848	826
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.45	0.49	0.35	0.21	0.32	0.02	0.21	0.06	0.04	0.04	0.14	0.31

Intersection Summary
Cycle Length: 120
Actuated Cycle Length: 91.1
Natural Cycle: 105
Control Type: Semi Act-Uncoord

Splits and Phases: 6: Dixie Road & Mayfield Road





Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	237	1425	364	60	600	18	121	49	31	22	119	256
Future Volume (vph)	237	1425	364	60	600	18	121	49	31	22	119	256
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5
Total Lost time (s)	3.0	6.9	6.9	3.0	6.9	6.9	6.9	6.9	6.9	6.9	6.9	6.9
Lane Util. Factor	1.00	0.91	1.00	1.00	0.95	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1566	4902	1536	1653	3202	1201	1716	1671	1413	1405	1779	1452
Flt Permitted	0.40	1.00	1.00	0.15	1.00	1.00	0.68	1.00	1.00	0.73	1.00	1.00
Satd. Flow (perm)	662	4902	1536	263	3202	1201	1229	1671	1413	1073	1779	1452
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	237	1425	364	60	600	18	121	49	31	22	119	256
RTOR Reduction (vph)	0	0	152	0	0	8	0	0	26	0	0	211
Lane Group Flow (vph)	237	1425	212	60	600	10	121	49	5	22	119	45
Heavy Vehicles (%)	14%	7%	4%	8%	14%	33%	4%	15%	13%	27%	8%	10%
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	Perm	NA	Perm	Perm	NA	Perm
Protected Phases	5	2		1	6			8			4	
Permitted Phases	2		2	6		6	8		8	4		4
Actuated Green, G (s)	59.5	53.5	53.5	56.7	52.1	52.1	16.0	16.0	16.0	16.0	16.0	16.0
Effective Green, g (s)	61.5	53.5	53.5	58.7	52.1	52.1	16.0	16.0	16.0	16.0	16.0	16.0
Actuated g/C Ratio	0.67	0.58	0.58	0.64	0.57	0.57	0.17	0.17	0.17	0.17	0.17	0.17
Clearance Time (s)	4.0	6.9	6.9	4.0	6.9	6.9	6.9	6.9	6.9	6.9	6.9	6.9
Vehicle Extension (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Lane Grp Cap (vph)	511	2853	894	252	1815	680	213	290	246	186	309	252
v/s Ratio Prot	c0.04	c0.29		0.01	0.19			0.03			0.07	
v/s Ratio Perm	0.27		0.14	0.14		0.01	c0.10		0.00	0.02		0.03
v/c Ratio	0.46	0.50	0.24	0.24	0.33	0.02	0.57	0.17	0.02	0.12	0.39	0.18
Uniform Delay, d1	6.0	11.3	9.3	6.6	10.6	8.7	34.8	32.3	31.5	32.0	33.6	32.3
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	1.4	0.6	0.6	1.0	0.2	0.0	5.6	0.6	0.1	0.6	1.7	0.7
Delay (s)	7.4	11.9	9.9	7.6	10.8	8.7	40.4	32.9	31.5	32.6	35.3	33.0
Level of Service	A	B	A	A	B	A	D	C	C	C	D	C
Approach Delay (s)		11.0			10.5			37.2			33.7	
Approach LOS		B			B			D			C	

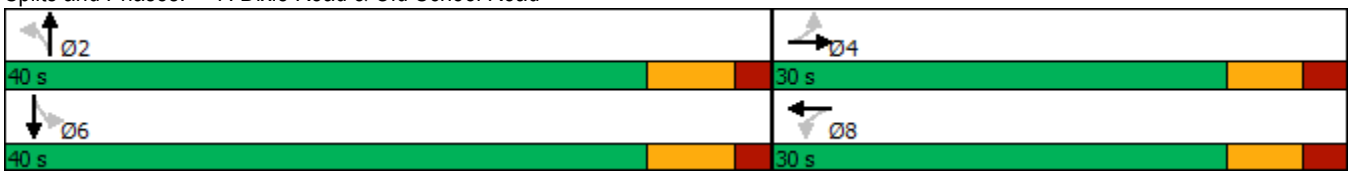
Intersection Summary			
HCM 2000 Control Delay	15.2	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.52		
Actuated Cycle Length (s)	91.9	Sum of lost time (s)	16.8
Intersection Capacity Utilization	59.9%	ICU Level of Service	B
Analysis Period (min)	15		

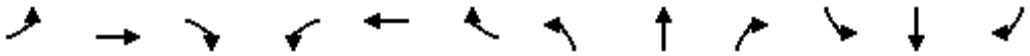
c Critical Lane Group

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations								
Traffic Volume (vph)	11	219	43	84	5	198	33	522
Future Volume (vph)	11	219	43	84	5	198	33	522
Lane Group Flow (vph)	11	250	43	92	5	242	33	533
Turn Type	Perm	NA	Perm	NA	Perm	NA	Perm	NA
Protected Phases		4		8		2		6
Permitted Phases	4		8		2		6	
Detector Phase	4	4	8	8	2	2	6	6
Switch Phase								
Minimum Initial (s)	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0
Minimum Split (s)	25.4	25.4	25.4	25.4	23.6	23.6	23.6	23.6
Total Split (s)	30.0	30.0	30.0	30.0	40.0	40.0	40.0	40.0
Total Split (%)	42.9%	42.9%	42.9%	42.9%	57.1%	57.1%	57.1%	57.1%
Yellow Time (s)	4.0	4.0	4.0	4.0	4.6	4.6	4.6	4.6
All-Red Time (s)	2.4	2.4	2.4	2.4	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.4	6.4	6.4	6.4	6.6	6.6	6.6	6.6
Lead/Lag								
Lead-Lag Optimize?								
Recall Mode	None	None	None	None	Max	Max	Max	Max
v/c Ratio	0.04	0.56	0.17	0.21	0.01	0.25	0.06	0.52
Control Delay	17.5	24.6	19.7	18.1	8.0	8.2	8.2	11.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	17.5	24.6	19.7	18.1	8.0	8.2	8.2	11.9
Queue Length 50th (m)	1.0	23.4	3.8	7.6	0.3	11.6	1.6	34.4
Queue Length 95th (m)	4.1	41.8	10.5	17.0	1.8	26.8	5.8	69.9
Internal Link Dist (m)		1372.4		151.6		1518.8		144.7
Turn Bay Length (m)	35.0		45.0		40.0		35.0	
Base Capacity (vph)	386	698	387	684	414	968	598	1023
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.03	0.36	0.11	0.13	0.01	0.25	0.06	0.52

Intersection Summary
Cycle Length: 70
Actuated Cycle Length: 63
Natural Cycle: 55
Control Type: Semi Act-Uncoord

Splits and Phases: 7: Dixie Road & Old School Road

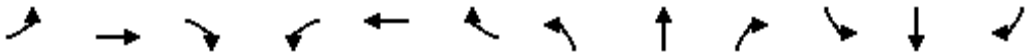




Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	11	219	31	43	84	8	5	198	44	33	522	11
Future Volume (vph)	11	219	31	43	84	8	5	198	44	33	522	11
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5
Total Lost time (s)	6.4	6.4		6.4	6.4		6.6	6.6		6.6	6.6	
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	0.97		1.00	1.00	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1405	1846		1785	1813		1785	1727		1684	1843	
Flt Permitted	0.70	1.00		0.55	1.00		0.40	1.00		0.61	1.00	
Satd. Flow (perm)	1032	1846		1033	1813		746	1727		1078	1843	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	11	219	31	43	84	8	5	198	44	33	522	11
RTOR Reduction (vph)	0	8	0	0	5	0	0	10	0	0	1	0
Lane Group Flow (vph)	11	242	0	43	87	0	5	232	0	33	532	0
Heavy Vehicles (%)	27%	2%	3%	0%	5%	0%	0%	10%	0%	6%	4%	0%
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)	15.0	15.0		15.0	15.0		35.0	35.0		35.0	35.0	
Effective Green, g (s)	15.0	15.0		15.0	15.0		35.0	35.0		35.0	35.0	
Actuated g/C Ratio	0.24	0.24		0.24	0.24		0.56	0.56		0.56	0.56	
Clearance Time (s)	6.4	6.4		6.4	6.4		6.6	6.6		6.6	6.6	
Vehicle Extension (s)	5.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0	
Lane Grp Cap (vph)	245	439		245	431		414	959		598	1023	
v/s Ratio Prot		c0.13			0.05			0.13			c0.29	
v/s Ratio Perm	0.01			0.04			0.01			0.03		
v/c Ratio	0.04	0.55		0.18	0.20		0.01	0.24		0.06	0.52	
Uniform Delay, d1	18.5	21.0		19.1	19.2		6.3	7.2		6.4	8.8	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.2	2.5		0.7	0.5		0.1	0.6		0.2	1.9	
Delay (s)	18.6	23.6		19.8	19.7		6.3	7.8		6.6	10.6	
Level of Service	B	C		B	B		A	A		A	B	
Approach Delay (s)		23.4			19.7			7.8			10.4	
Approach LOS		C			B			A			B	

Intersection Summary			
HCM 2000 Control Delay	13.7	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.53		
Actuated Cycle Length (s)	63.0	Sum of lost time (s)	13.0
Intersection Capacity Utilization	64.4%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Stop			Stop	
Traffic Volume (vph)	6	83	9	19	169	3	18	30	11	1	30	10
Future Volume (vph)	6	83	9	19	169	3	18	30	11	1	30	10
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Hourly flow rate (vph)	6	88	10	20	180	3	19	32	12	1	32	11

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total (vph)	104	203	63	44
Volume Left (vph)	6	20	19	1
Volume Right (vph)	10	3	12	11
Hadj (s)	-0.02	0.03	-0.05	-0.10
Departure Headway (s)	4.4	4.3	4.6	4.6
Degree Utilization, x	0.13	0.24	0.08	0.06
Capacity (veh/h)	795	806	729	724
Control Delay (s)	8.0	8.7	8.0	7.8
Approach Delay (s)	8.0	8.7	8.0	7.8
Approach LOS	A	A	A	A

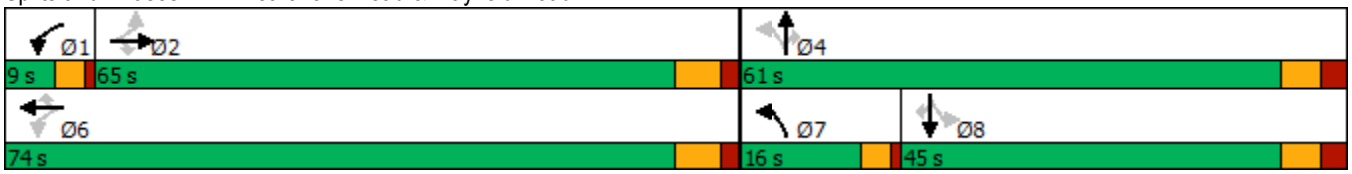
Intersection Summary				
Delay	8.3			
Level of Service	A			
Intersection Capacity Utilization	31.6%	ICU Level of Service	A	
Analysis Period (min)	15			

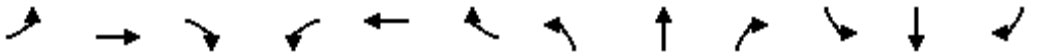
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	31	1011	114	37	1460	42	299	48	11	27	30	21
Future Volume (vph)	31	1011	114	37	1460	42	299	48	11	27	30	21
Lane Group Flow (vph)	31	1011	114	37	1460	42	299	48	11	27	30	21
Turn Type	Perm	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm	Perm	NA	Perm
Protected Phases		2		1	6		7	4			8	
Permitted Phases	2		2	6		6	4		4	8		8
Detector Phase	2	2	2	1	6	6	7	4	4	8	8	8
Switch Phase												
Minimum Initial (s)	12.0	12.0	12.0	5.0	12.0	12.0	5.0	8.0	8.0	8.0	8.0	8.0
Minimum Split (s)	39.7	39.7	39.7	9.0	39.7	39.7	9.0	43.9	43.9	43.9	43.9	43.9
Total Split (s)	65.0	65.0	65.0	9.0	74.0	74.0	16.0	61.0	61.0	45.0	45.0	45.0
Total Split (%)	48.1%	48.1%	48.1%	6.7%	54.8%	54.8%	11.9%	45.2%	45.2%	33.3%	33.3%	33.3%
Yellow Time (s)	4.6	4.6	4.6	3.0	4.6	4.6	3.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	2.1	2.1	2.1	1.0	2.1	2.1	1.0	2.9	2.9	2.9	2.9	2.9
Lost Time Adjust (s)	0.0	0.0	0.0	-1.0	0.0	0.0	-1.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.7	6.7	6.7	3.0	6.7	6.7	3.0	6.9	6.9	6.9	6.9	6.9
Lead/Lag	Lag	Lag	Lag	Lead			Lead			Lag	Lag	Lag
Lead-Lag Optimize?												
Recall Mode	Max	Max	Max	None	Max	Max	None	None	None	None	None	None
v/c Ratio	0.19	0.39	0.13	0.11	0.49	0.04	0.93	0.13	0.03	0.25	0.19	0.10
Control Delay	16.9	13.0	2.8	7.4	10.8	1.1	72.5	32.2	0.2	50.4	47.3	0.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	16.9	13.0	2.8	7.4	10.8	1.1	72.5	32.2	0.2	50.4	47.3	0.9
Queue Length 50th (m)	3.2	43.2	0.0	2.4	55.3	0.0	55.2	7.8	0.0	5.3	5.9	0.0
Queue Length 95th (m)	10.0	57.2	8.2	6.3	72.1	2.3	#101.7	17.1	0.0	13.9	14.9	0.0
Internal Link Dist (m)		179.2			166.2			202.0			680.1	
Turn Bay Length (m)	115.0		180.0	80.0		150.0	110.0		44.0	20.0		20.0
Base Capacity (vph)	160	2599	859	330	2980	938	320	904	719	422	612	564
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.19	0.39	0.13	0.11	0.49	0.04	0.93	0.05	0.02	0.06	0.05	0.04

Intersection Summary

Cycle Length: 135
Actuated Cycle Length: 104
Natural Cycle: 105
Control Type: Semi Act-Uncoord
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 2: Heart Lake Road & Mayfield Road





Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	31	1011	114	37	1460	42	299	48	11	27	30	21
Future Volume (vph)	31	1011	114	37	1460	42	299	48	11	27	30	21
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5
Total Lost time (s)	6.7	6.7	6.7	3.0	6.7	6.7	3.0	6.9	6.9	6.9	6.9	6.9
Lane Util. Factor	1.00	0.91	1.00	1.00	0.91	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1560	4330	1356	1530	4583	1409	1591	1729	1319	1501	1662	1369
Flt Permitted	0.16	1.00	1.00	0.24	1.00	1.00	0.56	1.00	1.00	0.73	1.00	1.00
Satd. Flow (perm)	267	4330	1356	385	4583	1409	931	1729	1319	1147	1662	1369
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	31	1011	114	37	1460	42	299	48	11	27	30	21
RTOR Reduction (vph)	0	0	48	0	0	15	0	0	9	0	0	19
Lane Group Flow (vph)	31	1011	66	37	1460	27	299	48	2	27	30	2
Heavy Vehicles (%)	3%	9%	6%	5%	3%	2%	1%	0%	9%	7%	4%	5%
Turn Type	Perm	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm	Perm	NA	Perm
Protected Phases		2		1	6		7	4			8	
Permitted Phases	2		2	6		6	4		4	8		8
Actuated Green, G (s)	62.5	62.5	62.5	69.4	69.4	69.4	24.3	24.3	24.3	8.2	8.2	8.2
Effective Green, g (s)	62.5	62.5	62.5	70.4	69.4	69.4	25.3	24.3	24.3	8.2	8.2	8.2
Actuated g/C Ratio	0.58	0.58	0.58	0.66	0.65	0.65	0.24	0.23	0.23	0.08	0.08	0.08
Clearance Time (s)	6.7	6.7	6.7	4.0	6.7	6.7	4.0	6.9	6.9	6.9	6.9	6.9
Vehicle Extension (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Lane Grp Cap (vph)	155	2522	789	294	2964	911	300	391	298	87	127	104
v/s Ratio Prot		0.23		0.00	c0.32		c0.12	0.03			0.02	
v/s Ratio Perm	0.12		0.05	0.08		0.02	c0.11		0.00	0.02		0.00
v/c Ratio	0.20	0.40	0.08	0.13	0.49	0.03	1.00	0.12	0.01	0.31	0.24	0.02
Uniform Delay, d1	10.6	12.2	9.8	6.8	9.8	6.8	39.8	33.0	32.2	46.9	46.6	45.8
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	2.9	0.5	0.2	0.4	0.6	0.1	50.9	0.3	0.0	4.2	2.0	0.1
Delay (s)	13.5	12.7	10.0	7.2	10.4	6.9	90.7	33.3	32.2	51.1	48.6	45.9
Level of Service	B	B	B	A	B	A	F	C	C	D	D	D
Approach Delay (s)		12.4			10.2			81.2			48.8	
Approach LOS		B			B			F			D	

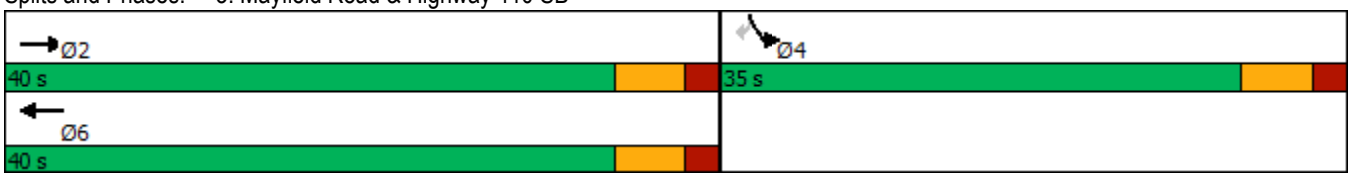
Intersection Summary			
HCM 2000 Control Delay	20.1	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.67		
Actuated Cycle Length (s)	107.3	Sum of lost time (s)	19.6
Intersection Capacity Utilization	71.1%	ICU Level of Service	C
Analysis Period (min)	15		

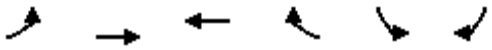
c Critical Lane Group

Lane Group	EBT	WBT	SBL	SBR
Lane Configurations				
Traffic Volume (vph)	773	1724	84	11
Future Volume (vph)	773	1724	84	11
Lane Group Flow (vph)	773	1724	85	10
Turn Type	NA	NA	Prot	Perm
Protected Phases	2	6	4	
Permitted Phases				4
Detector Phase	2	6	4	4
Switch Phase				
Minimum Initial (s)	16.0	16.0	8.0	8.0
Minimum Split (s)	22.0	22.0	32.0	32.0
Total Split (s)	40.0	40.0	35.0	35.0
Total Split (%)	53.3%	53.3%	46.7%	46.7%
Yellow Time (s)	4.0	4.0	4.0	4.0
All-Red Time (s)	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.0	6.0	6.0	6.0
Lead/Lag				
Lead-Lag Optimize?				
Recall Mode	Max	Max	None	None
v/c Ratio	0.20	0.42	0.16	0.04
Control Delay	3.5	4.5	21.5	15.5
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	3.5	4.5	21.5	15.5
Queue Length 50th (m)	10.5	29.6	4.6	0.4
Queue Length 95th (m)	15.8	41.2	8.5	3.9
Internal Link Dist (m)	123.5	116.2	492.2	
Turn Bay Length (m)				
Base Capacity (vph)	3941	4099	1724	757
Starvation Cap Reductn	0	0	0	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.20	0.42	0.05	0.01

Intersection Summary
Cycle Length: 75
Actuated Cycle Length: 57.3
Natural Cycle: 60
Control Type: Semi Act-Uncoord

Splits and Phases: 3: Mayfield Road & Highway 410 SB





Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	0	773	1724	0	84	11
Future Volume (vph)	0	773	1724	0	84	11
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)		6.0	6.0		6.0	6.0
Lane Util. Factor		0.91	0.91		0.97	0.91
Frt		1.00	1.00		1.00	0.85
Flt Protected		1.00	1.00		0.95	1.00
Satd. Flow (prot)		5043	5245		3397	1486
Flt Permitted		1.00	1.00		0.95	1.00
Satd. Flow (perm)		5043	5245		3397	1486
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	0	773	1724	0	84	11
RTOR Reduction (vph)	0	0	0	0	1	5
Lane Group Flow (vph)	0	773	1724	0	84	5
Heavy Vehicles (%)	0%	4%	0%	2%	4%	0%
Bus Blockages (#/hr)	0	0	0	0	2	0
Turn Type		NA	NA		Prot	Perm
Protected Phases		2	6		4	
Permitted Phases						4
Actuated Green, G (s)		42.3	42.3		5.5	5.5
Effective Green, g (s)		42.3	42.3		5.5	5.5
Actuated g/C Ratio		0.71	0.71		0.09	0.09
Clearance Time (s)		6.0	6.0		6.0	6.0
Vehicle Extension (s)		5.0	5.0		5.0	5.0
Lane Grp Cap (vph)		3567	3710		312	136
v/s Ratio Prot		0.15	c0.33		c0.02	
v/s Ratio Perm						0.00
v/c Ratio		0.22	0.46		0.27	0.03
Uniform Delay, d1		3.0	3.8		25.3	24.7
Progression Factor		1.00	1.00		1.00	1.00
Incremental Delay, d2		0.1	0.4		1.0	0.2
Delay (s)		3.2	4.2		26.3	24.9
Level of Service		A	A		C	C
Approach Delay (s)		3.2	4.2		26.1	
Approach LOS		A	A		C	

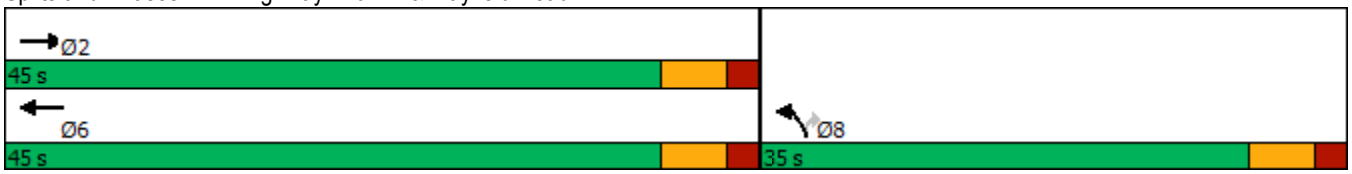
Intersection Summary			
HCM 2000 Control Delay	4.7	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.44		
Actuated Cycle Length (s)	59.8	Sum of lost time (s)	12.0
Intersection Capacity Utilization	50.0%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Lane Group	EBT	WBT	NBL	NBR
Lane Configurations				
Traffic Volume (vph)	807	1634	647	828
Future Volume (vph)	807	1634	647	828
Lane Group Flow (vph)	807	1634	1003	472
Turn Type	NA	NA	Prot	Perm
Protected Phases	2	6	8	
Permitted Phases	2	6		8
Detector Phase	2	6	8	8
Switch Phase				
Minimum Initial (s)	26.0	26.0	10.0	10.0
Minimum Split (s)	32.0	32.0	22.0	22.0
Total Split (s)	45.0	45.0	35.0	35.0
Total Split (%)	56.3%	56.3%	43.8%	43.8%
Yellow Time (s)	4.0	4.0	4.0	4.0
All-Red Time (s)	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.0	6.0	6.0	6.0
Lead/Lag				
Lead-Lag Optimize?				
Recall Mode	Max	None	None	None
v/c Ratio	0.32	0.66	0.83	0.86
Control Delay	12.2	16.2	27.3	34.6
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	12.2	16.2	27.3	34.6
Queue Length 50th (m)	26.1	66.1	60.6	52.8
Queue Length 95th (m)	34.2	81.5	83.7	#110.3
Internal Link Dist (m)	104.0	63.2	627.1	
Turn Bay Length (m)				
Base Capacity (vph)	2494	2494	1315	592
Starvation Cap Reductn	0	0	0	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.32	0.66	0.76	0.80

Intersection Summary
Cycle Length: 80
Actuated Cycle Length: 77.5
Natural Cycle: 60
Control Type: Semi Act-Uncoord
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 4: Highway 410 NB & Mayfield Road





Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	807	0	0	1634	647	828
Future Volume (vph)	807	0	0	1634	647	828
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0			6.0	6.0	6.0
Lane Util. Factor	0.91			0.91	0.97	0.91
Frt	1.00			1.00	0.95	0.85
Flt Protected	1.00			1.00	0.97	1.00
Satd. Flow (prot)	4948			4948	3303	1376
Flt Permitted	1.00			1.00	0.97	1.00
Satd. Flow (perm)	4948			4948	3303	1376
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	807	0	0	1634	647	828
RTOR Reduction (vph)	0	0	0	0	81	81
Lane Group Flow (vph)	807	0	0	1634	922	391
Heavy Vehicles (%)	6%	0%	0%	6%	1%	8%
Turn Type	NA			NA	Prot	Perm
Protected Phases	2			6	8	
Permitted Phases	2			6		8
Actuated Green, G (s)	39.1			39.1	26.4	26.4
Effective Green, g (s)	39.1			39.1	26.4	26.4
Actuated g/C Ratio	0.50			0.50	0.34	0.34
Clearance Time (s)	6.0			6.0	6.0	6.0
Vehicle Extension (s)	5.0			5.0	3.0	3.0
Lane Grp Cap (vph)	2496			2496	1125	468
v/s Ratio Prot	0.16			c0.33	0.28	
v/s Ratio Perm						c0.28
v/c Ratio	0.32			0.65	0.82	0.84
Uniform Delay, d1	11.4			14.2	23.4	23.5
Progression Factor	1.00			1.00	1.00	1.00
Incremental Delay, d2	0.3			0.8	4.8	12.2
Delay (s)	11.7			15.0	28.1	35.7
Level of Service	B			B	C	D
Approach Delay (s)	11.7			15.0	30.6	
Approach LOS	B			B	C	

Intersection Summary			
HCM 2000 Control Delay	20.2	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.73		
Actuated Cycle Length (s)	77.5	Sum of lost time (s)	12.0
Intersection Capacity Utilization	68.7%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	EBT	EBR	WBL	WBT	NBL
Lane Configurations					
Traffic Volume (vph)	1470	154	71	1676	95
Future Volume (vph)	1470	154	71	1676	95
Lane Group Flow (vph)	1470	154	71	1676	138
Turn Type	NA	Perm	Perm	NA	Prot
Protected Phases	2			2	4
Permitted Phases		2	2		
Detector Phase	2	2	2	2	4
Switch Phase					
Minimum Initial (s)	12.0	12.0	12.0	12.0	8.0
Minimum Split (s)	26.7	26.7	26.7	26.7	45.6
Total Split (s)	74.0	74.0	74.0	74.0	46.0
Total Split (%)	61.7%	61.7%	61.7%	61.7%	38.3%
Yellow Time (s)	4.6	4.6	4.6	4.6	4.0
All-Red Time (s)	2.1	2.1	2.1	2.1	3.6
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.7	6.7	6.7	6.7	7.6
Lead/Lag					
Lead-Lag Optimize?					
Recall Mode	Max	Max	Max	Max	Max
v/c Ratio	0.51	0.16	0.54	0.58	0.24
Control Delay	17.0	2.3	35.1	18.2	26.9
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	17.0	2.3	35.1	18.2	26.9
Queue Length 50th (m)	74.2	0.0	10.0	89.7	20.2
Queue Length 95th (m)	86.4	8.9	29.6	103.5	36.3
Internal Link Dist (m)	203.7			76.6	88.2
Turn Bay Length (m)		65.0	35.0		
Base Capacity (vph)	2883	945	132	2883	572
Starvation Cap Reductn	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.51	0.16	0.54	0.58	0.24

Intersection Summary
Cycle Length: 120
Actuated Cycle Length: 120
Natural Cycle: 90
Control Type: Semi Act-Uncoord

Splits and Phases: 5: Ace Drive & Mayfield Road





Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	1470	154	71	1676	95	43
Future Volume (vph)	1470	154	71	1676	95	43
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width	3.7	3.5	3.5	3.7	3.7	3.7
Total Lost time (s)	6.7	6.7	6.7	6.7	7.6	
Lane Util. Factor	0.91	1.00	1.00	0.91	1.00	
Frt	1.00	0.85	1.00	1.00	0.96	
Flt Protected	1.00	1.00	0.95	1.00	0.97	
Satd. Flow (prot)	5142	1566	1750	5142	1744	
Flt Permitted	1.00	1.00	0.13	1.00	0.97	
Satd. Flow (perm)	5142	1566	236	5142	1744	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	1470	154	71	1676	95	43
RTOR Reduction (vph)	0	68	0	0	14	0
Lane Group Flow (vph)	1470	86	71	1676	124	0
Turn Type	NA	Perm	Perm	NA	Prot	
Protected Phases	2			2	4	
Permitted Phases		2	2			
Actuated Green, G (s)	67.3	67.3	67.3	67.3	38.4	
Effective Green, g (s)	67.3	67.3	67.3	67.3	38.4	
Actuated g/C Ratio	0.56	0.56	0.56	0.56	0.32	
Clearance Time (s)	6.7	6.7	6.7	6.7	7.6	
Vehicle Extension (s)	5.0	5.0	5.0	5.0	5.0	
Lane Grp Cap (vph)	2883	878	132	2883	558	
v/s Ratio Prot	0.29			c0.33	c0.07	
v/s Ratio Perm		0.06	0.30			
v/c Ratio	0.51	0.10	0.54	0.58	0.22	
Uniform Delay, d1	16.2	12.2	16.6	17.2	29.9	
Progression Factor	1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	0.6	0.2	14.8	0.9	0.9	
Delay (s)	16.9	12.5	31.4	18.0	30.8	
Level of Service	B	B	C	B	C	
Approach Delay (s)	16.4			18.6	30.8	
Approach LOS	B			B	C	

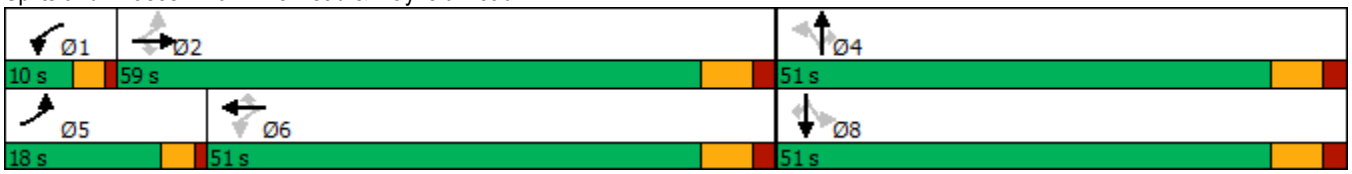
Intersection Summary			
HCM 2000 Control Delay	18.1	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.45		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	14.3
Intersection Capacity Utilization	63.8%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

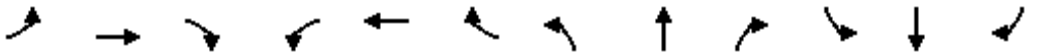
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	262	988	186	43	1116	20	289	181	33	36	286	293
Future Volume (vph)	262	988	186	43	1116	20	289	181	33	36	286	293
Lane Group Flow (vph)	262	988	186	43	1116	20	289	181	33	36	286	293
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	Perm	NA	Perm	Perm	NA	Perm
Protected Phases	5	2		1	6			4			8	
Permitted Phases	2		2	6		6	4		4	8		8
Detector Phase	5	2	2	1	6	6	4	4	4	8	8	8
Switch Phase												
Minimum Initial (s)	5.0	8.0	8.0	5.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0
Minimum Split (s)	10.0	44.9	44.9	10.0	44.9	44.9	47.9	47.9	47.9	47.9	47.9	47.9
Total Split (s)	18.0	59.0	59.0	10.0	51.0	51.0	51.0	51.0	51.0	51.0	51.0	51.0
Total Split (%)	15.0%	49.2%	49.2%	8.3%	42.5%	42.5%	42.5%	42.5%	42.5%	42.5%	42.5%	42.5%
Yellow Time (s)	3.0	4.6	4.6	3.0	4.6	4.6	4.6	4.6	4.6	4.6	4.6	4.6
All-Red Time (s)	1.0	2.3	2.3	1.0	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.3
Lost Time Adjust (s)	-1.0	0.0	0.0	-1.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	3.0	6.9	6.9	3.0	6.9	6.9	6.9	6.9	6.9	6.9	6.9	6.9
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag						
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes						
Recall Mode	None	Max	Max	None	None	None	None	None	None	None	None	None
v/c Ratio	0.90	0.45	0.23	0.18	0.89	0.03	0.93	0.27	0.05	0.09	0.44	0.43
Control Delay	63.5	23.2	3.6	14.9	44.5	0.1	73.0	27.9	0.2	25.9	31.1	9.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	63.5	23.2	3.6	14.9	44.5	0.1	73.0	27.9	0.2	25.9	31.1	9.9
Queue Length 50th (m)	44.9	59.7	0.0	4.5	128.8	0.0	63.4	29.5	0.0	5.5	50.0	12.0
Queue Length 95th (m)	#95.5	72.0	12.8	10.0	#162.5	0.0	#115.6	46.8	0.0	12.9	74.2	33.3
Internal Link Dist (m)		179.3			299.2			185.5			471.5	
Turn Bay Length (m)	140.0		70.0	65.0		30.0	75.0		60.0	30.0		138.0
Base Capacity (vph)	290	2189	819	240	1318	627	341	742	665	416	707	731
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.90	0.45	0.23	0.18	0.85	0.03	0.85	0.24	0.05	0.09	0.40	0.40

Intersection Summary

Cycle Length: 120
Actuated Cycle Length: 114.9
Natural Cycle: 105
Control Type: Semi Act-Uncoord
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 6: Dixie Road & Mayfield Road





Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	262	988	186	43	1116	20	289	181	33	36	286	293
Future Volume (vph)	262	988	186	43	1116	20	289	181	33	36	286	293
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5
Total Lost time (s)	3.0	6.9	6.9	3.0	6.9	6.9	6.9	6.9	6.9	6.9	6.9	6.9
Lane Util. Factor	1.00	0.91	1.00	1.00	0.95	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1700	4768	1566	1342	3411	1452	1750	1921	1551	1653	1830	1551
Flt Permitted	0.09	1.00	1.00	0.28	1.00	1.00	0.48	1.00	1.00	0.62	1.00	1.00
Satd. Flow (perm)	155	4768	1566	392	3411	1452	883	1921	1551	1077	1830	1551
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	262	988	186	43	1116	20	289	181	33	36	286	293
RTOR Reduction (vph)	0	0	101	0	0	13	0	0	21	0	0	140
Lane Group Flow (vph)	262	988	85	43	1116	7	289	181	12	36	286	153
Heavy Vehicles (%)	5%	10%	2%	33%	7%	10%	2%	0%	3%	8%	5%	3%
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	Perm	NA	Perm	Perm	NA	Perm
Protected Phases	5	2		1	6			4			8	
Permitted Phases	2		2	6		6	4		4	8		8
Actuated Green, G (s)	61.4	52.8	52.8	47.9	43.3	43.3	40.6	40.6	40.6	40.6	40.6	40.6
Effective Green, g (s)	62.4	52.8	52.8	49.9	43.3	43.3	40.6	40.6	40.6	40.6	40.6	40.6
Actuated g/C Ratio	0.54	0.46	0.46	0.43	0.37	0.37	0.35	0.35	0.35	0.35	0.35	0.35
Clearance Time (s)	4.0	6.9	6.9	4.0	6.9	6.9	6.9	6.9	6.9	6.9	6.9	6.9
Vehicle Extension (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Lane Grp Cap (vph)	284	2174	714	214	1275	542	309	673	543	377	641	543
v/s Ratio Prot	c0.12	0.21		0.01	0.33			0.09			0.16	
v/s Ratio Perm	c0.37		0.05	0.08		0.01	c0.33		0.01	0.03		0.10
v/c Ratio	0.92	0.45	0.12	0.20	0.88	0.01	0.94	0.27	0.02	0.10	0.45	0.28
Uniform Delay, d1	33.1	21.6	18.1	19.4	33.7	22.8	36.3	27.0	24.6	25.3	28.9	27.1
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	34.8	0.7	0.3	1.0	7.5	0.0	35.4	0.5	0.0	0.2	1.0	0.6
Delay (s)	67.8	22.3	18.5	20.3	41.3	22.8	71.7	27.4	24.6	25.5	30.0	27.7
Level of Service	E	C	B	C	D	C	E	C	C	C	C	C
Approach Delay (s)		30.1			40.2			52.7			28.6	
Approach LOS		C			D			D			C	

Intersection Summary			
HCM 2000 Control Delay	36.1	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.96		
Actuated Cycle Length (s)	115.8	Sum of lost time (s)	16.8
Intersection Capacity Utilization	97.0%	ICU Level of Service	F
Analysis Period (min)	15		

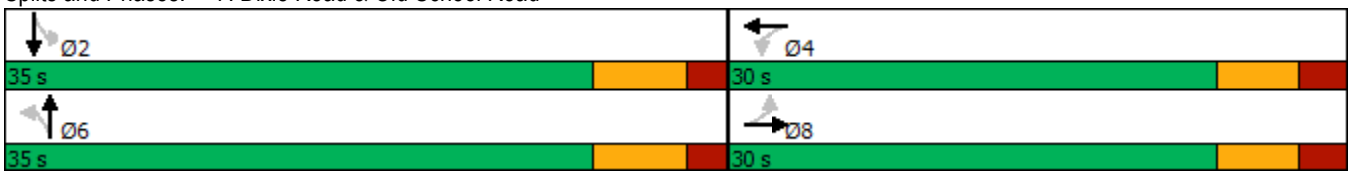
c Critical Lane Group

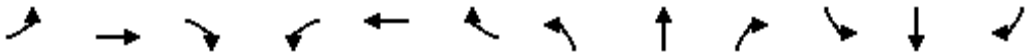
Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations								
Traffic Volume (vph)	14	94	83	241	25	432	6	223
Future Volume (vph)	14	94	83	241	25	432	6	223
Lane Group Flow (vph)	14	104	83	259	25	473	6	238
Turn Type	Perm	NA	Perm	NA	Perm	NA	Perm	NA
Protected Phases		8		4		6		2
Permitted Phases	8		4		6		2	
Detector Phase	8	8	4	4	6	6	2	2
Switch Phase								
Minimum Initial (s)	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0
Minimum Split (s)	25.4	25.4	25.4	25.4	23.6	23.6	23.6	23.6
Total Split (s)	30.0	30.0	30.0	30.0	35.0	35.0	35.0	35.0
Total Split (%)	46.2%	46.2%	46.2%	46.2%	53.8%	53.8%	53.8%	53.8%
Yellow Time (s)	4.0	4.0	4.0	4.0	4.6	4.6	4.6	4.6
All-Red Time (s)	2.4	2.4	2.4	2.4	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.4	6.4	6.4	6.4	6.6	6.6	6.6	6.6
Lead/Lag								
Lead-Lag Optimize?								
Recall Mode	None	None	None	None	Max	Max	Max	Max
v/c Ratio	0.06	0.22	0.25	0.54	0.04	0.50	0.01	0.26
Control Delay	15.4	15.7	18.1	21.8	8.7	12.1	8.7	9.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	15.4	15.7	18.1	21.8	8.7	12.1	8.7	9.4
Queue Length 50th (m)	1.1	7.5	6.6	21.9	1.2	28.1	0.3	12.0
Queue Length 95th (m)	4.4	16.8	15.4	39.2	5.0	61.2	2.0	28.5
Internal Link Dist (m)		1372.4		151.6		1518.8		144.7
Turn Bay Length (m)	35.0		45.0		40.0		35.0	
Base Capacity (vph)	382	761	526	770	595	947	426	913
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.04	0.14	0.16	0.34	0.04	0.50	0.01	0.26

Intersection Summary

Cycle Length: 65
Actuated Cycle Length: 57.7
Natural Cycle: 55
Control Type: Semi Act-Uncoord

Splits and Phases: 7: Dixie Road & Old School Road





Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	14	94	10	83	241	18	25	432	41	6	223	15
Future Volume (vph)	14	94	10	83	241	18	25	432	41	6	223	15
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5
Total Lost time (s)	6.4	6.4		6.4	6.4		6.6	6.6		6.6	6.6	
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	0.99		1.00	0.99		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)	1566	1843		1767	1869		1785	1820		1785	1755	
Flt Permitted	0.57	1.00		0.69	1.00		0.61	1.00		0.44	1.00	
Satd. Flow (perm)	933	1843		1283	1869		1147	1820		823	1755	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	14	94	10	83	241	18	25	432	41	6	223	15
RTOR Reduction (vph)	0	7	0	0	4	0	0	4	0	0	3	0
Lane Group Flow (vph)	14	97	0	83	255	0	25	469	0	6	235	0
Heavy Vehicles (%)	14%	3%	0%	1%	1%	11%	0%	2%	27%	0%	9%	0%
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)	14.8	14.8		14.8	14.8		29.9	29.9		29.9	29.9	
Effective Green, g (s)	14.8	14.8		14.8	14.8		29.9	29.9		29.9	29.9	
Actuated g/C Ratio	0.26	0.26		0.26	0.26		0.52	0.52		0.52	0.52	
Clearance Time (s)	6.4	6.4		6.4	6.4		6.6	6.6		6.6	6.6	
Vehicle Extension (s)	5.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0	
Lane Grp Cap (vph)	239	472		329	479		594	943		426	909	
v/s Ratio Prot		0.05			c0.14			c0.26			0.13	
v/s Ratio Perm	0.02			0.06			0.02			0.01		
v/c Ratio	0.06	0.21		0.25	0.53		0.04	0.50		0.01	0.26	
Uniform Delay, d1	16.2	16.8		17.1	18.5		6.8	9.0		6.7	7.7	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.2	0.5		0.8	2.1		0.1	1.9		0.1	0.7	
Delay (s)	16.4	17.3		17.9	20.5		7.0	10.9		6.8	8.4	
Level of Service	B	B		B	C		A	B		A	A	
Approach Delay (s)		17.2			19.9			10.7			8.4	
Approach LOS		B			B			B			A	

Intersection Summary			
HCM 2000 Control Delay	13.5	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.51		
Actuated Cycle Length (s)	57.7	Sum of lost time (s)	13.0
Intersection Capacity Utilization	49.8%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Appendix F

Background Development Data

5.3 SITE TRAFFIC FORECASTS

5.3.1 Residential Trip Generation

Residential vehicle trip generation rates were adopted based on the Institute for Transportation Engineers (ITE) 10th Edition Trip Generation Manual, as outlined in **Table 4**.

TABLE 4 BASE RESIDENTIAL VEHICLE TRIP GENERATION RATES (ITE 10TH EDITION)

Land Use	Land Use Code (ITE 10th Edition)	Vehicle Trip Generation Rate *(vehicle trips per dwelling)*					
		AM Peak Hour			PM Peak Hour		
		In	Out	2-Way	In	Out	2-Way
Single Detached Dwelling	210 – Single-Family Detached Housing	0.19	0.55	0.74	0.62	0.37	0.99
Townhouse	220 – Multifamily Housing (Low-Rise)	0.11	0.35	0.46	0.35	0.21	0.56
Mid-Rise Residential	221 – Multifamily Housing (Mid-Rise)	0.09	0.27	0.36	0.27	0.17	0.44

The ITE rates summarized above, trip generation was carried out for each of the four traffic zones (referred to as parcels and identified in Appendix B) according to the uses present within each. Trips generated for each parcel are summarized in **Table 5**.

TABLE 5 SITE RESIDENTIAL VEHICLE TRIP GENERATION

Land Use	Dwelling Count	AM Peak Hour			PM Peak Hour		
		In	Out	2-Way	In	Out	2-Way
Parcel 1							
Single Detached Dwelling	135	*0.19*	*0.55*	*0.74*	*0.62*	*0.37*	*0.99*
		25	75	100	85	50	135
Townhouse	108	*0.11*	*0.35*	*0.46*	*0.35*	*0.21*	*0.56*
		10	40	50	40	20	60
Mid-Rise Residential	194	*0.09*	*0.27*	*0.36*	*0.27*	*0.17*	*0.44*
		20	50	70	50	35	85
Total		**55**	**165**	**220**	**175**	**105**	**280**
Parcel 2							
Single Detached Dwelling	181	*0.19*	*0.55*	*0.74*	*0.62*	*0.37*	*0.99*
		35	100	135	115	65	180
Total		**35**	**100**	**135**	**115**	**65**	**180**
Parcel 3							
Single Detached Dwelling	196	*0.19*	*0.55*	*0.74*	*0.62*	*0.37*	*0.99*
		35	110	145	125	70	195
Townhouse	45	*0.11*	*0.35*	*0.46*	*0.35*	*0.21*	*0.56*
		5	15	20	15	10	25
Total		**40**	**125**	**165**	**140**	**80**	**220**
Parcel 4							
Single Detached Dwelling	335	*0.19*	*0.55*	*0.74*	*0.62*	*0.37*	*0.99*
		60	185	245	210	120	330
Townhouse	135	*0.11*	*0.35*	*0.46*	*0.35*	*0.21*	*0.56*
		15	50	65	45	30	75
Total		**75**	**235**	**310**	**255**	**150**	**405**
Total Site Vehicle Trips							
Total		**205**	**625**	**830**	**685**	**400**	**1085**

5.3.2 Trip Distribution and Assignment

The residential trip distribution for the site is developed based on a review of 2016 Transportation Tomorrow Survey (TTS). Site traffic is assigned to the area network according to the distribution provided in **Table 6**, site driveway locations, and local road characteristics (i.e. turning movement restrictions).

In the +5 year post-buildout scenario (2033), site traffic is shown distributed differently depending on whether the GTA West Highway is constructed. The assignment of site traffic to the network with and without the GTA West Highway is illustrated in **Figure 16** and **Figure 17**, respectively.

Detailed TTS queries for travel characteristics are attached in **Appendix F**.

TABLE 6 TRIP DISTRIBUTION PATTERN

Direction	Inbound	Outbound
Without GTA West Highway		
North	2%	3%
South	71%	68%
East	19%	22%
West	8%	7%
Total	**100%**	**100%**
With GTA West Highway		
North	21%	20%
South	57%	55%
East	17%	21%
West	5%	4%
Total	**100%**	**100%**

Notes:
1. Based on 2016 TTS data for home-based trips to / from 2006 TTS Zones 169 and 173 during the weekday morning and afternoon peak periods.



Date Plotted: September 13, 2021 Filename: P:\75\97\04\Graphics\CAD\Fig16-01-ST-wGTA.dwg

FIGURE 16 SITE TRAFFIC VOLUMES WITH THE GTA WEST HIGHWAY



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FIGURE 17 SITE TRAFFIC VOLUMES WITHOUT THE GTA WEST HIGHWAY

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4 SITE-GENERATED TRAFFIC

4.1 TRIP GENERATION

The proposed buildings are expected to operate similarly to a typical warehouse/distribution centre. To determine the trip generation for the proposed development, the average rate in the Institute of Transportation Engineers (ITE) Trip Generation Manual 10th Edition for Warehousing (Land Use Code 150) was applied to the proposed uses. The heavy vehicle trip generation rates are derived from the ITE Trip Generation 10th Edition Online Supplement for LUC 150. The heavy vehicle percentages have been calculated by dividing the heavy vehicle trip generation rate by the total vehicle trip generation rate. The vehicle and truck trip rates utilized in the trip generation calculations are shown in **Table 4-1**, and the trip generation breakdown by building is summarized in **Table 4-2**.

Table 4-1: Vehicle and Truck Warehousing Trip Rates

Trip Generation	AM Peak Hour			PM Peak Hour		
	In	Out	Total	In	Out	Total
All Vehicle Directional Distribution	77%	23%	100%	27%	73%	100%
All Vehicles Trip Rate (Per 1,000ft^2)	0.13	0.04	0.17	0.05	0.14	0.19
Heavy Vehicle Directional Distribution	52%	48%	100%	52%	48%	100%
Heavy Vehicle Trip Rate (Per 1,000ft^2)	0.01	0.01	0.02	0.02	0.01	0.03
Heavy Vehicle Percentage	8%	26%	12%	39%	7%	16%

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Table 4-2: Trip Generation Summary

Building	Trip Generation	AM Peak Hour (Trips)			PM Peak Hour (Trips)		
		In	Out	Total	In	Out	Total
Building A (811,866 ft²)	**Total Building A Traffic**	**115**	**35**	**150**	**45**	**123**	**168**
	Employee Traffic	106	26	132	27	114	141
	Truck Traffic	9	9	18	18	9	27
Building B (988,852 ft²)	**Total Building B Traffic**	**129**	**39**	**168**	**51**	**137**	**188**
	Employee Traffic	119	29	148	31	127	158
	Truck Traffic	10	10	20	20	10	30
Building C (520,151.58 ft²)	**Total Building C Traffic**	**68**	**20**	**88**	**27**	**72**	**99**
	Employee Traffic	63	15	78	16	67	83
	Truck Traffic	5	5	10	11	5	16
Building D (270,399.00 ft²)	**Total Building D Traffic**	**35**	**11**	**46**	**14**	**37**	**51**
	Employee Traffic	32	8	41	9	34	43
	Truck Traffic	3	3	5	5	3	8
Total Site	**Total Site Traffic**	**347**	**105**	**452**	**137**	**369**	**506**
	Employee Traffic	320	78	399	83	342	425
	Truck Traffic	27	27	53	54	27	81

The proposed development is projected to generate a total of 452 new trips (347 inbound, 105 outbound) and 506 new trips (137 inbound, 369 outbound) during the AM and PM peak hour periods, respectively.

4.2 TRIP DISTRIBUTION AND ASSIGNMENT

The trip distribution of employee vehicle traffic was estimated using Transportation Tomorrow Survey (TTS) 2016 data. The TTS data was filtered for auto home-based work trips during the weekday AM peak period. It is assumed that the PM peak period trip distribution is the reverse of the AM peak period since employees entering the subject site in the morning will be utilizing the same routing in the afternoon to exit, and vice versa. **Table 4-3** summarizes the trip distribution for this study. Detailed TTS calculations are available in **Appendix E.**

Table 4-3: Vehicle Trip Distribution

Direction	Roadway	AM		PM	
		Inbound	Outbound	Inbound	Outbound
North	Dixie Road	33%	23%	23%	33%
South	Dixie Road	15%	11%	11%	15%
East	Mayfield Road	9%	6%	6%	9%
	Old School Road	1%	-	-	1%
West	Mayfield Road	38%	60%	60%	38%
	Old School Road	5%	-	-	5%
	TOTAL	**100%**	**100%**	**100%**	**100%**

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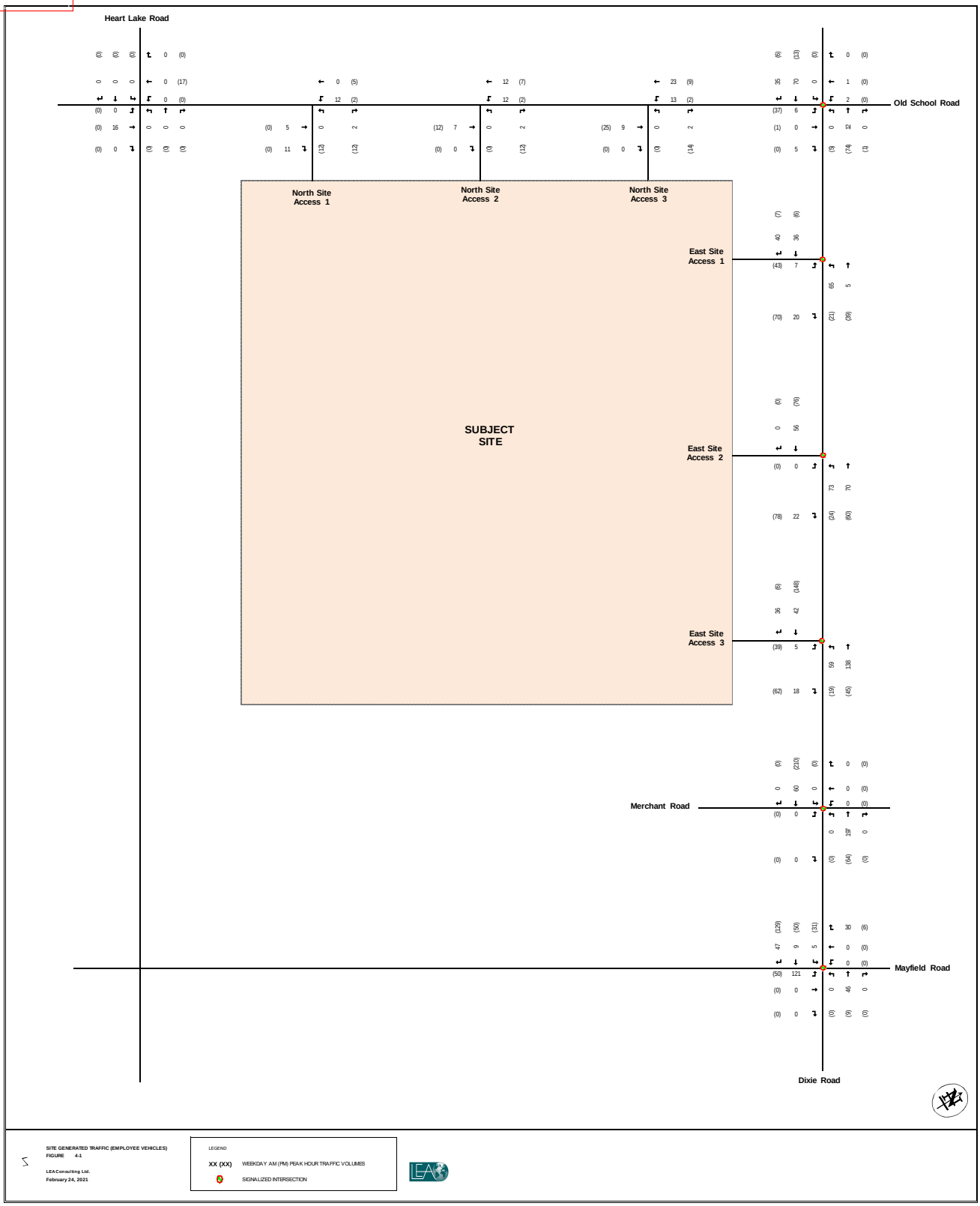
The majority of site traffic is expected to use Highway 410 to/from the proposed development which is located west of the subject site. The employee trip assignment was subsequently determined based on the trip origin and destination, site accesses, and the most logical routing. **Figure 4-1** illustrates the trip assignment of employee traffic on the study road network.

As for heavy vehicle site traffic, it is assumed that most trucks will utilize the highway network for longer distance travel. Given the subject site's close proximity to Highway 410, heavy vehicle site traffic was assigned to utilize this highway to travel to/from the site, as shown in **Figure 4-2**.

The total site generated traffic volumes for the weekday AM and PM peak hours are illustrated in **Figure 4-3**.

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SITE GENERATED TRAFFIC (EMPLOYEE VEHICLES)
FIGURE 4-1

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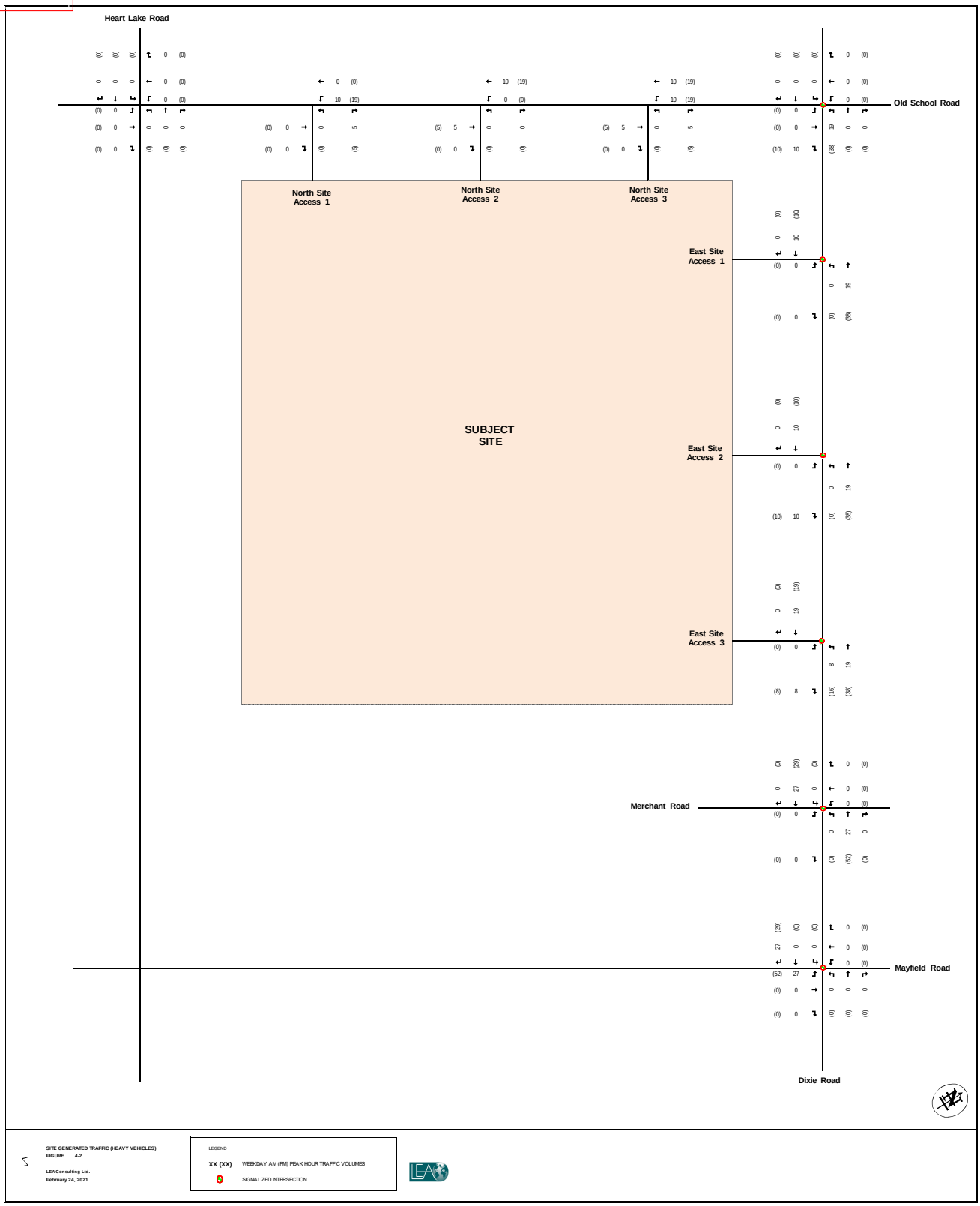
LEGEND

XX (XX) WEEKDAY AM (PM) PEAK HOUR TRAFFIC VOLUMES

SIGNALIZED INTERSECTION

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SITE GENERATED TRAFFIC (HEAVY VEHICLES)
FIGURE 4-2

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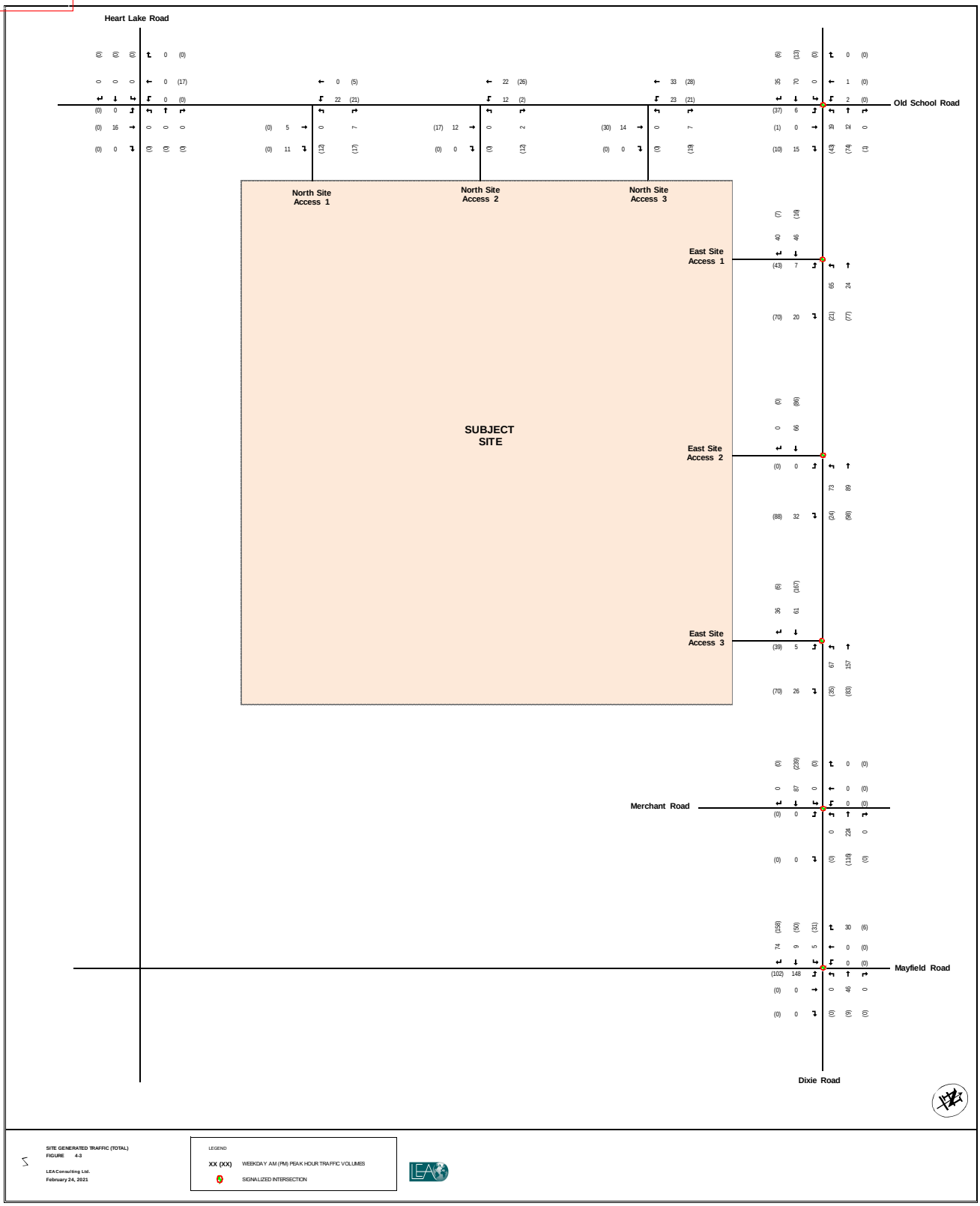
LEGEND

XX (XX) WEEKDAY AM (PM) PEAK HOUR TRAFFIC VOLUMES

SIGNALIZED INTERSECTION

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SITE GENERATED TRAFFIC (TOTAL)
FIGURE 4-3

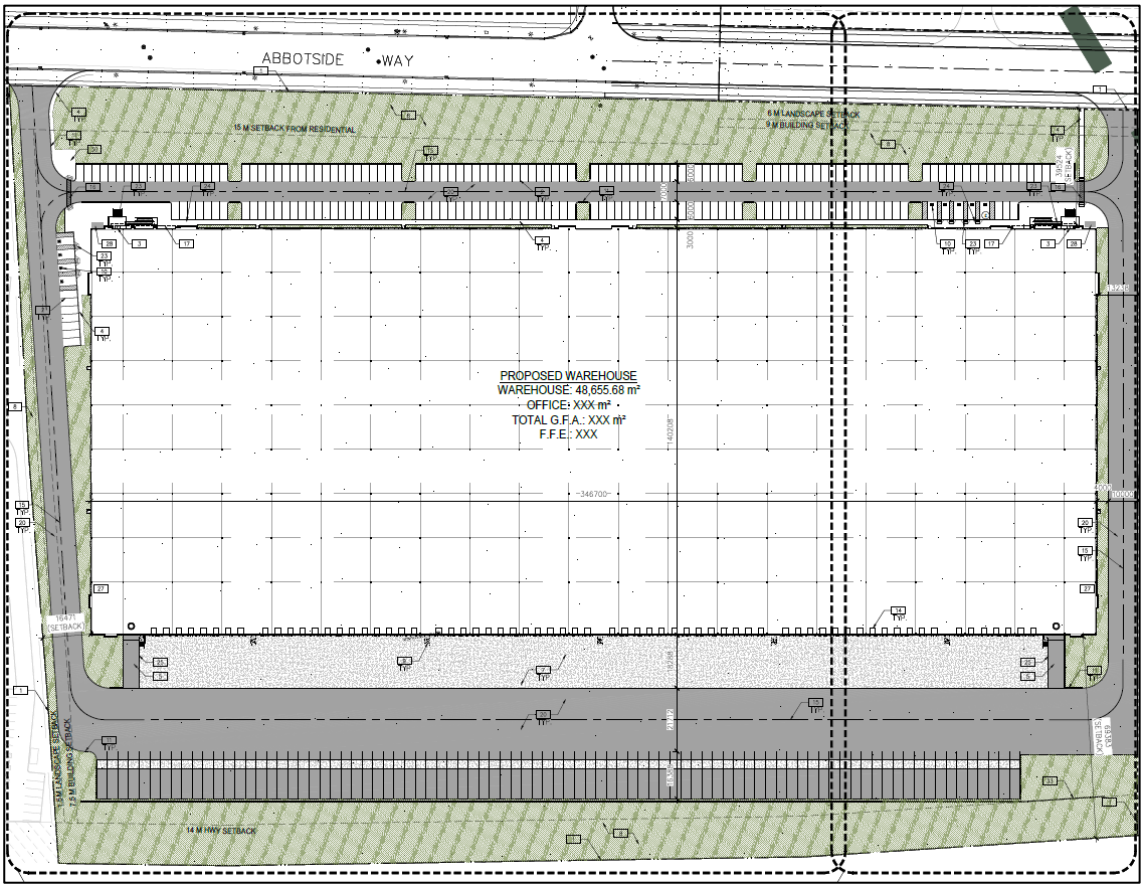
LEA Consulting Ltd.
February 24, 2021

LEGEND

XX (XX) WEEKDAY AM (PM) PEAK HOUR TRAFFIC VOLUMES

SIGNALIZED INTERSECTION

Exhibit 8-1: Proposed Development Site



8.1 Future Site Accesses

As discussed in Section 8, direct vehicular accesses will be provided to Abbotside Way road via two full move accesses.

8.2 Trip Generation

The gross trips expected to be generated by the proposed development are examined in this section. The net trips generated are then assigned and distributed to the study area road network.

8.2.1 Gross Trip Generation

The trip generation rates from the ***Trip Generation Manual, 10th Edition*** (Institute of Transportation Engineers, September 2017) were used to estimate future automobile trips associated with the proposed development. Based on the nature of the development, location context, and the data quality, Land Use Code 150 fitted curve equation for vehicle trips was used. The estimated net new inbound and outbound vehicular trips (auto and truck trips) for the proposed development are presented in **Exhibit 8-2.**

Exhibit 8-2: Proposed Development Trip Generation

12304 Heart Lake Road					
LUC 150 Warehouse — 523,725.38 (1,000 sq.ft. GFA) – Auto Trips					
Term	**Unit**	**Weekday AM Peak Hour**		**Weekday PM Peak Hour**	
Trip Generation Equation	vehicle trips / 1,000 sq.ft. GFA	T = 0.12(X) + 25.32		T = 0.12(X) + 27.82	
Trip Generation Rate	vehicle trips / 1,000 sq.ft. GFA	0.170		0.173	
Total Trips	vehicles / hour	**88**		**91**	
New Inbound Trips	vehicles / hour	67	77%	25	27%
New Outbound Trips	vehicles / hour	21	23%	66	73%
LUC 150 Warehouse — 523.234 (1,000 sq.ft. GFA) – Trucks					
Term	**Unit**	**Weekday AM Peak Hour**		**Weekday PM Peak Hour**	
Trip Generation Rate	vehicle trips / 1,000 sq.ft. GFA	0.02		0.03	
Total Trips	vehicles / hour	**10**		**16**	
New Inbound Trips	vehicles / hour	5	52%	8	52%
New Outbound Trips	vehicles / hour	5	48%	8	48%
Development Total (Auto and Truck) Trips					
Term	**Unit**	**Weekday AM Peak Hour**		**Weekday PM Peak Hour**	
Total New Trips	vehicles / hour	**98**		**107**	
New Inbound Trips	vehicles / hour	72		33	
New Outbound Trips	vehicles / hour	26		74	

The proposed development is expected to generate 98 two-way (72 inbound and 26 outbound) trips during the weekday AM peak hour, and 107 two-way (33 inbound and 74 outbound) trips during the weekday PM peak hour. Of the total trips, ten trips in the AM peak hour and 16 trips in the PM peak hours are truck trips.

8.2.2 Trip Reductions

The 2016 Transportation Tomorrow Survey (2016 TTS) data review has shown that the employment lands use automobile mode for commuting to and from work. The existing area transit network provides connectivity between Mayfield West Community and the City of Brampton.

For the purposes of this study, providing a more conservative estimate, no trip reductions were considered for proposed development trip generation due to a lack of quantitative data.

8.2.3 Trip Distribution and Assignment

The trip distribution for site trips was determined using the 2016 TTS data. The trip distribution used is presented in **Exhibit** 8-3. The detailed 2016 TTS data analysis is presented in **Appendix P**.

Exhibit 8-3: Development Site Trip Distribution

To / From		AM Peak Hour		PM Peak Hour	
		Inbound Trips	Outbound Trips	Inbound Trips	Outbound Trips
North	Kennedy Road	1.0%	6.0%	1.0%	6.0%
	Heart Lake Road	1.0%	6.0%	1.0%	6.0%
South	Kennedy Road	3.0%	3.0%	3.0%	3.0%
	Heart Lake Road	3.0%	3.0%	3.0%	3.0%
	Highway 410	5.0%	5.0%	5.0%	5.0%
West	Kennedy Road	7.0%	3.0%	7.0%	3.0%
	Mayfield	7.0%	3.0%	7.0%	3.0%
	Highway 410	10.0%	6.0%	10.0%	6.0%
East	Mayfield	23.0%	25.0%	23.0%	25.0%
	Highway 410	40.0%	40.0%	40%	40.0%
Total		**100.0%**	**100.0%**	**100.0%**	**100.0%**

The site-generated trips were assigned to study area roadways-based trip distributions presented in Exhibit 8-3. As requested by Town, Region, and MTO staff, automobile site trips are presented in **Exhibit 8-4**, and truck site trips are presented in **Exhibit 8-5**.

Exhibit 8-4: New Site Traffic Volumes – Automobiles Only

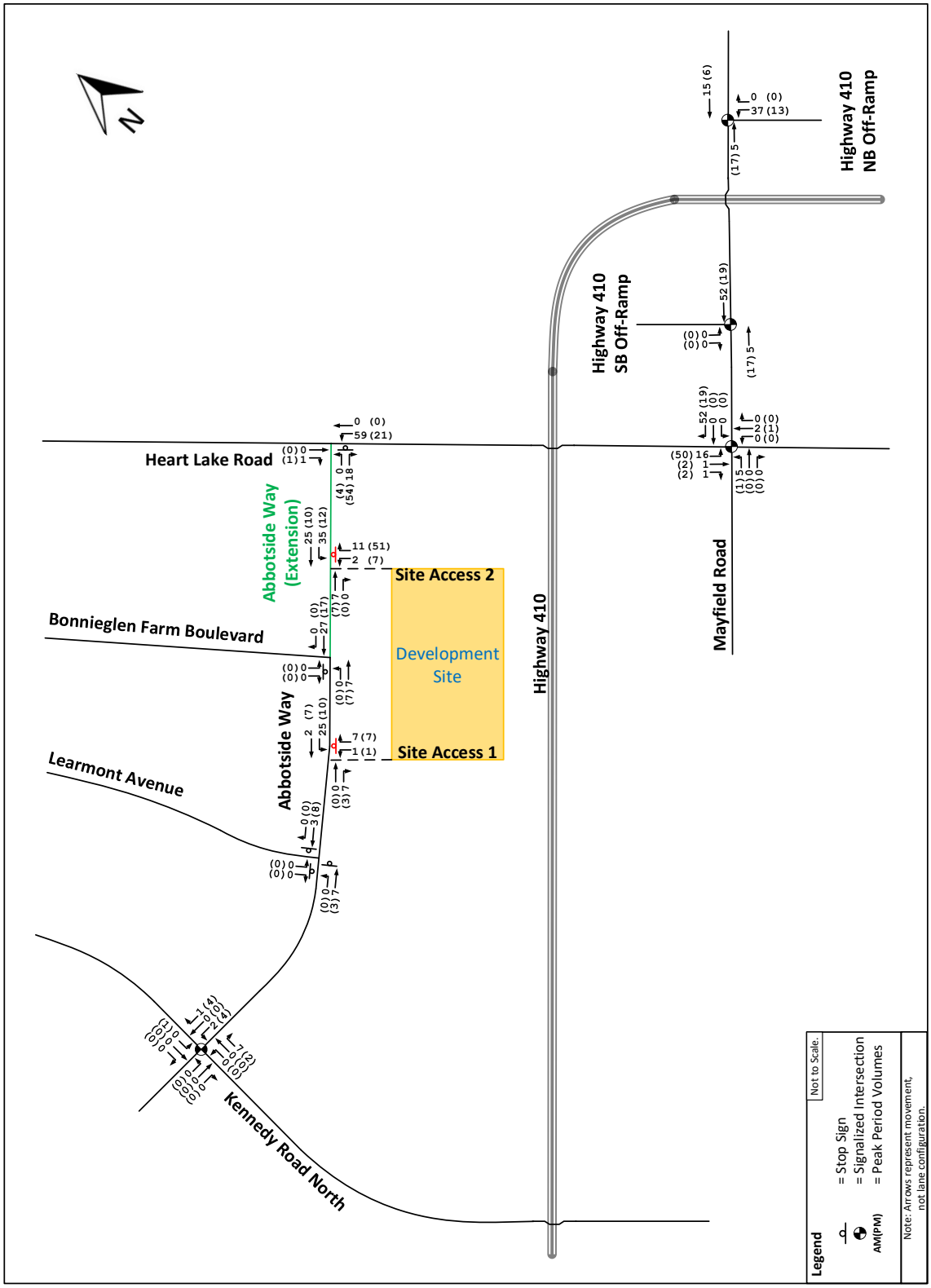
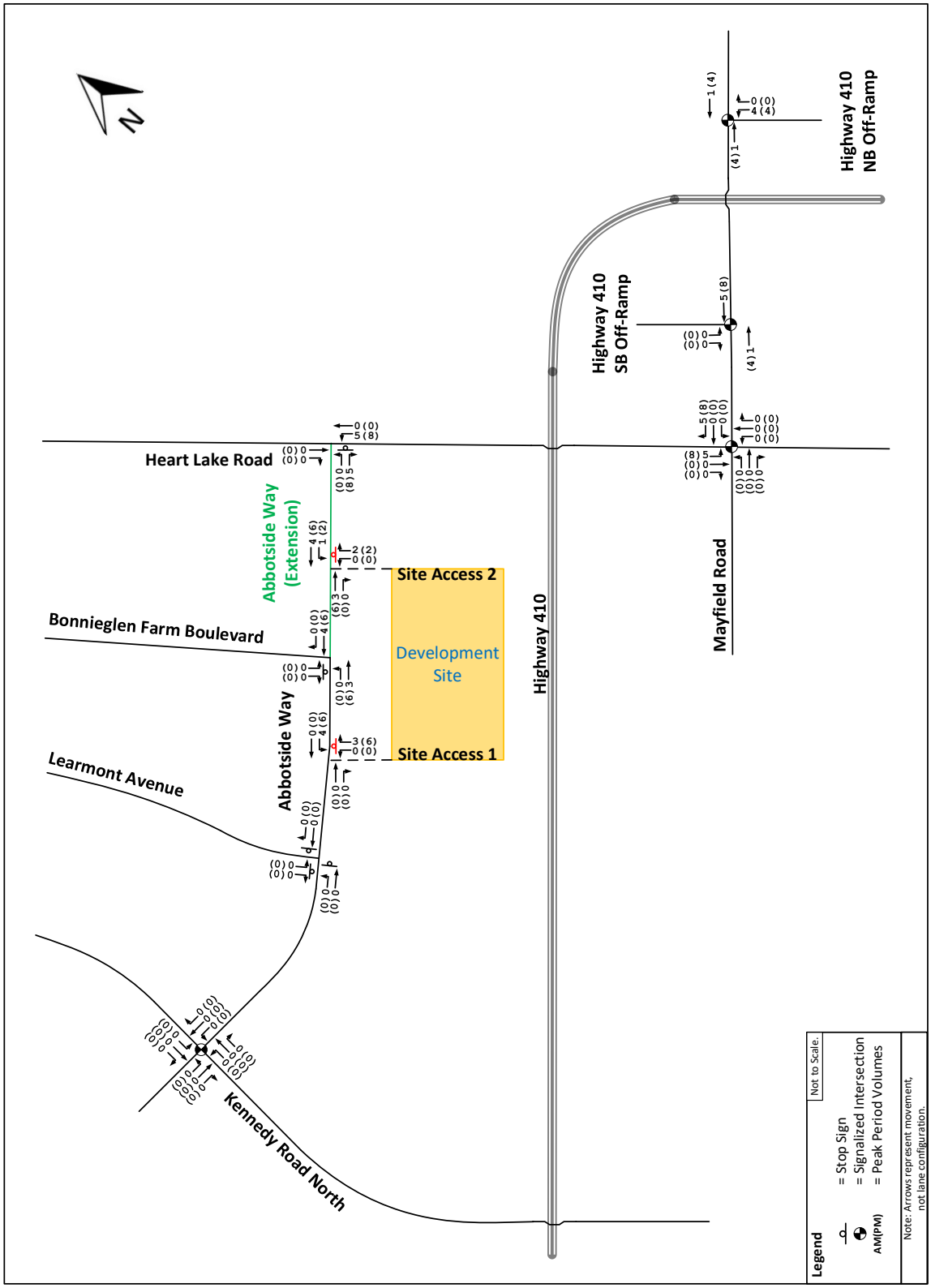


Exhibit 8-5: New Site Traffic Volumes – Trucks Only



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Dream Industrial LP

TRANSPORTATION IMPACT STUDY

Proposed Industrial Development
Abbotside Way, Town of Caledon

August 2021

21320

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1 INTRODUCTION

LEA Consulting Ltd. (LEA) has been retained by Dream Industrial LP to undertake a Transportation Impact Study (TIS) for the proposed industrial development located on the southeast corner of Abbotside Way and Learmont Avenue (hereinafter referred to as the "subject site") in the Town of Caledon. Currently, the subject site is vacant. The site location is illustrated in **Figure 1-1**.

Figure 1-1: Site Location



Source: Google Maps, 2021

The development proposal consists of one single storey industrial/warehouse facility with an approximate GFA of 14,290 m^2 (154,000 ft^2). A total of 131 parking spaces are provided in one (1) surface lot. **Figure 1-2** illustrates the proposed site plan.

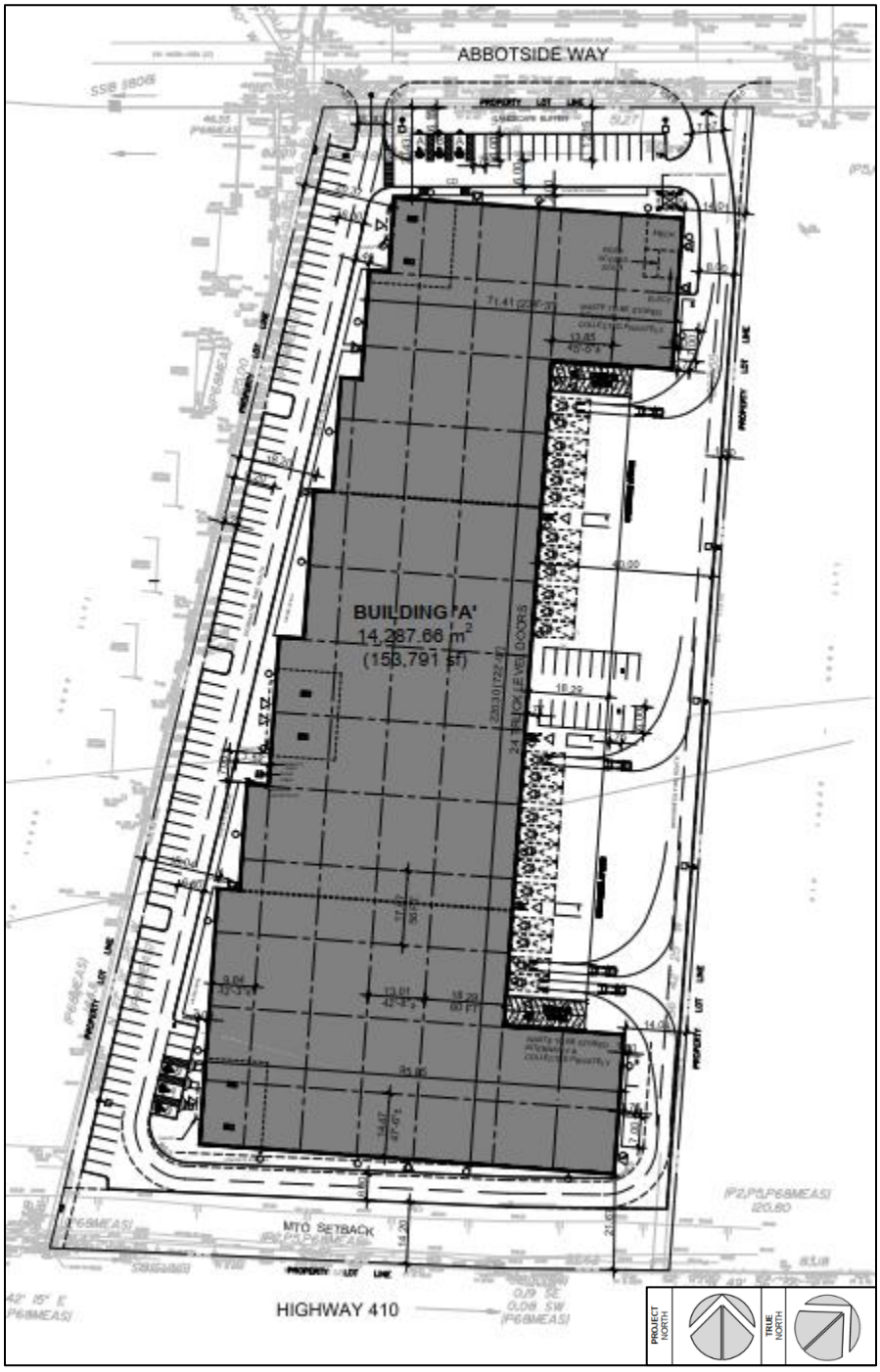
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Figure 1-2: Proposed Site Plan



Source: Baldassarra Architects Inc., August 2021

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3 FUTURE BACKGROUND CONDITIONS

For the analysis of future background conditions, the study considered a five-year horizon to the year 2026.

3.1 BACKGROUND DEVELOPMENTS

Two (2) background developments were identified within the immediate study area. The background development traffic volumes were extracted from their studies and subsequently assigned to the study area road network. The site statistics of the background developments are summarized in **Table 3-1**. Detailed excerpts from the studies are provided in **Appendix C.**

Table 3-1: Background Development

Location	Site Statistics	Source
Buttermill Developments	175 Residential Units, 1,389 m^2 Retail GFA	WSP (October 2019)
Abbotside Way Warehouse Development (Previously proposed as Sikh Place of Worship in 2017)	12,913 m^2 Warehouse GFA	GHD (December 2020)

3.2 CORRIDOR GROWTH

LEA assumed a growth rate of 2% annual growth rate for the north-south through traffic on Kennedy Road during both peak hours for a five-year horizon to the year 2026. This aligns with the GHD Traffic Report dated May 2017 for the adjacent Sikh Place of Worship, which was confirmed with the Town.

3.3 INTERSECTION CAPACITY ANALYSIS

Future background traffic conditions were determined by incorporating background development traffic, corridor growth and existing traffic volumes. It is noted that the study area intersection lane configurations remain unchanged from existing conditions. The future traffic volumes for the weekday AM and PM peak hours are illustrated in **Figure 3-1**.

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4 SITE GENERATED TRAFFIC

The proposed development consists of one industrial/warehouse facility with an approximate GFA of 14,290 m^2. The sections below discuss the calculation, distribution, and assignment of site generated vehicles trips.

4.1 TRIP GENERATION

Trip generation for the proposed development was estimated based on the ITE Trip Generation Manual 10th Edition for Warehousing (LUC 150) land use. The average trip rates were applied to estimate car and truck trips. The trip calculations are summarized in **Table 4-1**. The proposed development is forecasted to generate less than 40 trips during both peak hours.

Table 4-1: Trip Generation Summary

Land Use			Weekday AM Peak Hour			Weekday PM Peak Hour		
			In	Out	Total	In	Out	Total
Warehousing ITE LUC 150 (Car)	14,290 m^2 (154,000 ft^2)	Directional Distribution	77%	23%	100%	27%	73%	100%
		Trip Rate (Average)	0.13	0.04	0.17	0.05	0.13	0.18
		ITE Vehicle (Car) Trips	20	6	26	8	21	29
Warehousing ITE LUC 150 (Truck)	14,290 m^2 (154,000 ft^2)	Directional Distribution	52%	48%	100%	52%	48%	100%
		Trip Rate (Average)	0.01	0.01	0.02	0.02	0.01	0.03
		ITE Vehicle (Truck) Trips	2	1	3	3	2	5
		Total ITE Vehicle Trips	**22**	**7**	**29**	**11**	**23**	**34**

4.2 TRIP DISTRIBUTION AND ASSIGNMENT

Directional trip distribution of the site traffic was derived using Transportation Tomorrow Survey (TTS) 2016 data. The site traffic was assigned to the road network based on trip patterns in the study area, location and configuration of the site accesses. TTS data was filtered for home-based auto trips during the AM and PM peak periods. **Table 4-2** below outlines the trip distribution for this study. Detailed TTS calculations are provided in **Appendix E**.

Table 4-2: General Trip Distribution

Direction	AM Peak Hour		PM Peak Hour	
	Inbound	Outbound	Inbound	Outbound
North	2%	3%	2%	0%
South	95%	97%	98%	100%
East	3%	0%	0%	0%
Total	**100%**	**100%**	**100%**	**100%**

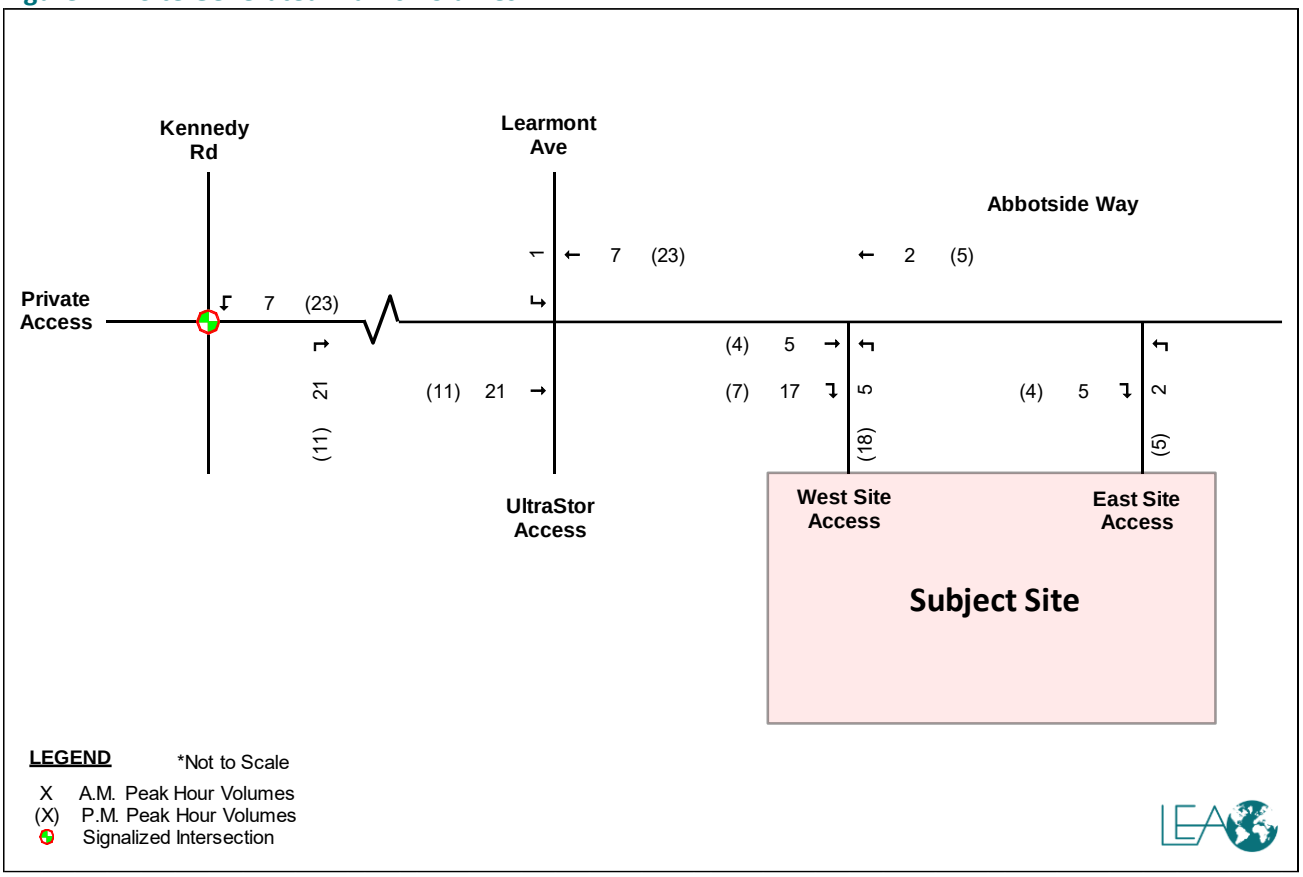
Figure 4-1 illustrates the site generated traffic volume for the weekday AM and PM peak hours.

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Figure 4-1: Site Generated Traffic Volumes



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BD3- 0 Abbotside Way SPA 21-02 - Traffic Impact Study - 01.21.2021_Excerpts



Traffic Impact Study

Abbotside Way Warehouse Development

GHD | 6705 Millcreek Drive Unit 1 Mississauga Ontario L5N 5M4 Canada

11222643 | 800 | Report No 1 | December 21, 2020

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BD3- 0 Abbotside Way SPA 21-02 - Traffic Impact Study - 01.21.2021_Excerpts



Figure 1 Site Location

2. Site Characteristics

2.1 Site Environment

The subject site is generally located on the south side of Abbotside Way east of Learmont Avenue. The site is bounded by Abbotside Way to the north, Highway 410 to the south and vacant lands to the east and west.

2.2 Study Area

The study area intersections include the following:

- Kennedy Road North and Abbotside Way
- Abbotside Way and Sie Driveway A
- Abbotside Way and Site Driveway B

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Table 1 Site Trip Generation

Land Use Code	Units/GFA (ft^2)	Parameters	Peak Hour Trip Generation					
			Weekday AM			Weekday PM		
			In	Out	Total	In	Out	Total
Warehousing (LUC 150)	139,000 GFA (ft^2)	Trip Rate	0.231	0.073	0.304	0.087	0.231	0.318
		Trip Ratio	77%	23%	-	27%	73%	-
		Total New Trips	32	10	42	12	32	44

The proposed warehouse development is expected to generate a total of 42 two way vehicle trips during the a.m. peak hour consisting of 32 inbound and 10 outbound trips. During the p.m. peak hour it is expected to generate 44 new two way vehicle trips consisting of 12 inbound and 32 outbound trips.

In order to calculate the future number of trucks generated by the proposed site, GHD adopted the following truck percentages (**Table 2**) based on engineering judgment and experience with similar sites.

Table 2 summarizes the estimated truck percentage calculations.

Table 2 Site trips - Breakdown

Parameters	Peak Hour Trip Generation					
	Weekday AM			Weekday PM		
	In	Out	Total	In	Out	Total
% of Trucks	40%	11%		50%	30%	
Total New trips (veh)	20	9	39	6	22	28
Total New trips (trucks)	12	1	13	6	10	16
Total New trips	32	10	42	12	32	44

5.4 Site Trip Distribution and Assignment

Site-generated trips were assigned to the future surrounding road network based existing traffic conditions and engineering judgment. Based on a review of the existing traffic patterns in the area and the location of the subject site with respect to the surrounding areas, it was determined that the majority of the site trips will originate and be destined to the south via Kennedy Road.

Therefore, most of the passenger car and all of the truck inbound site trips were added to the northbound right turn movement from Kennedy Road to Abbotside Way and conversely, most of the outbound passenger vehicle and all of the truck trips were added to the westbound left turn movement from Abbotside Way to Kennedy Road.

Conservatively, all site trips were assumed to make a right turn to enter the site via one of the two proposed driveways and exit the site by making a left turn onto Abbotside Way from one of the two site driveways.

A breakdown of the site trip distribution for both peak hours can be seen in **Table 2-1.**

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Table 2-1 Site Distribution

Direction	Passenger Car		Heavy Vehicles	
	a.m. peak hour Inbound (Outbound)	p.m. peak hour Inbound (Outbound)	a.m. peak hour Inbound (Outbound)	p.m. peak hour Inbound (Outbound)
To/From west on Abbotside Way	100%	100%	100%	100%
To/From the North on Kennedy Road North	5%	5%	0%	0%
To/From the South on Kennedy Road North	95%	95%	100%	100%

The resulting site trips are shown in **Figure 6**. Truck trips have been converted to passenger car equivalents using a conversion factor of 2.0 vehicles representing each truck.

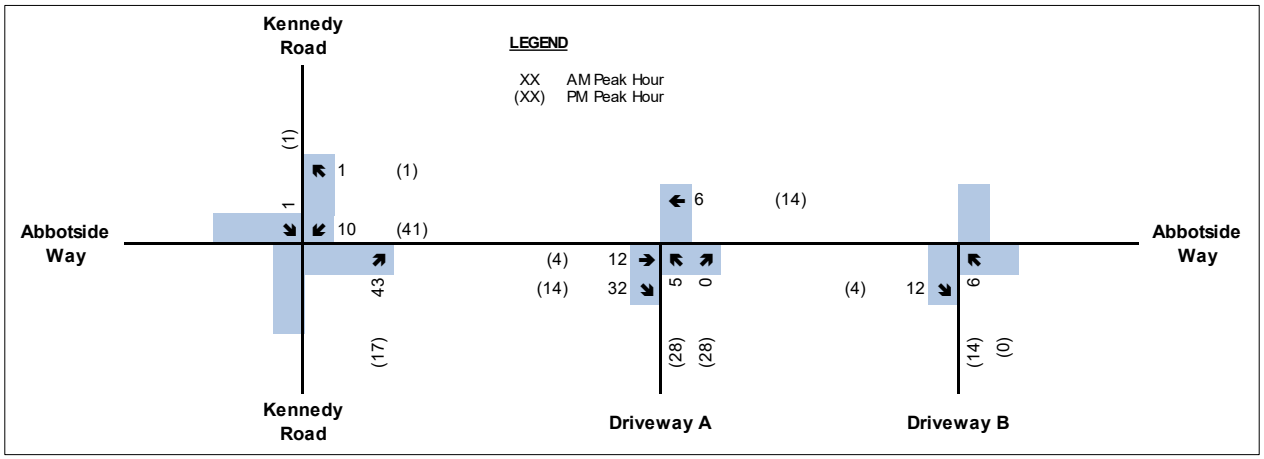


Figure 6 Estimated Site Trips (Passenger Car Equivalents)

6. Future Total Traffic

6.1 Future Total Traffic

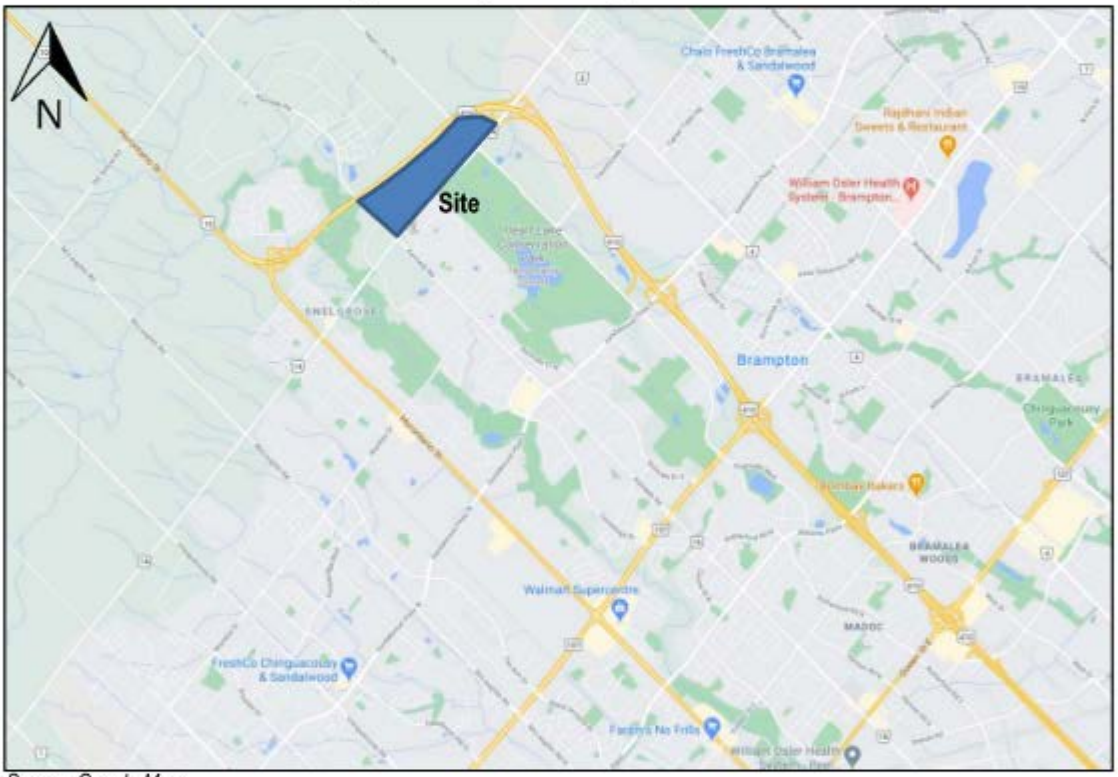
The future total traffic conditions in the weekday a.m. and p.m. peak study hours for the 2025 planning horizon was derived by combining the future background traffic volumes with the corresponding estimates of site trips generated by the subject site. The 2025 future total traffic volumes at the study area intersections are summarized in **Figure 7**.

1.0 INTRODUCTION

Nextrans Consulting Engineers (A Division of NextEng Consulting Group Inc.) was retained by Snell's Hollow Developers Group (the 'Client') to undertake a Transportation Impact Study in support of an Official Plan Amendment application for a proposed residential subdivision and a neighbourhood commercial. The subject lands are bounded by Highway 410 to the north, Highway 410 southbound off-ramp to the east, Kennedy Road to the west and Mayfield Road to the south, in the Town of Caledon.

The location of the proposed development is illustrated in **Figure 1**.

Figure 1 – Proposed Development Location



Source: Google Map

Currently the subject site is mostly vacant, with two existing single-detached residential units and two farm houses (one on Kennedy Road and one on Heart Lake Road). The proposed development consists of approximately 1,087 residential dwelling units of mixed types and approximately 1.47 ha of commercial development area.

The following access arrangement will be provided to accommodate each block of the proposed development and the recommended lane configurations and traffic control types based on the findings of this Study:

- One full moves intersection onto Kennedy Road, opposite the existing Snellview Boulevard. This proposed intersection is located approximately 285 m from centreline of the Mayfield Road/Kennedy Road intersection;
- One full moves intersection onto Heart Lake Road is located approximately 215 m from the centreline of Mayfield Road/Heart Lake Road intersection;

- Medium density (townhouses) – 345 dwelling units
- Medium-high density (townhouses and apartments) – 378 dwelling units
- Commercial (63 jobs/ha) – 93 jobs

The 2016 Transportation Tomorrow Survey (TTS), the *Trip Generation Manual, 10th Edition* published by the Institute of Transportation Engineers (ITE) and information was reviewed to estimate the modal split, trip distribution and trip generation for the proposed development.

5.2. Modes of Travel Assessment in the Area

Table 7 summarizes the travel mode split information based on the review of the 2016 Transportation Tomorrow Survey data for Traffic Zones 3007, 3008, 3009 and 3010. The 2016 TTS data extraction is included in **Appendix G**.

Table 7 – Modal Split based on 2016 TTS Data for Traffic Zones

Time	Trips Made by Traffic Zones				
	Auto Driver	Auto Passenger	Transit	Cycle	Walk
AM Peak Period (6:00Am – 9:00AM)	81%	12%	5%	0%	2%
PM Peak Period (4:00PM – 7:00PM)	81%	15%	4%	0%	0%

Based on the information above, as expected, the predominant mode of travel in the area is auto trips, which accounts for 81% during the morning and afternoon peak periods, respectively. The non single-occupant-vehicle mode accounts for approximately 19% during the morning and afternoon peak periods, respectively. Although this is a great trend for a new area, however, the auto driver mode is still very high, which is not sustainable and does not meet the sustainable objective of the Town and the Region's Official Plan policies and directions. In addition, there is none or very little bicycle trips, despite there are existing cycling facilities.

For the purposes of this assessment, a moderate 5% modal split (all non-auto modes) will be utilized for the proposed development. This assessment is reasonable given that the analysis horizon years will be 2028 and 2033.

5.3. Site Trip Generation

The trip generation forecasts were undertaken using the information contained in the *Trip Generation Manual, 10th Edition* published by the Institute of Transportation Engineers (ITE). For the purposes of this assessment, the following ITE Land Use Codes (LUC) will be utilized in this Study:

- LUC 221 "Multifamily Housing Mid-Rise General Urban/Suburban"
- LUC 210 "Single-Family Detached Housing General Urban/Suburban"
- LUC 220 "Multifamily Housing Low-Rise General Urban/Suburban"
- LUC 820 "Shopping Center General Urban/Suburban"

Fitted curve equations or average rates, where appropriate, will be utilized for the respective land use.

Figure 11A below illustrates the estimated the numbers of proposed units, for the purposes of trip generation, trip distribution and assignment.

Figure 61A – Estimated Numbers of Units (Trip Generation, Trip Distribution and Assignment Only)



Block 1:

- Detached/Semi-Detached/Town: ~180 units
- Back-to-back townhouses: ~50 units
- Dual Frontage Town: ~24 units

Block 2:

- Detached/Semi-Detached/Town: ~180 units
- Back-to-back townhouses: ~75 units
- Dual Frontage Town: ~48 units

Block 3:

- Detached/Semi-Detached/Town: ~4 units
- Back-to-back townhouses: ~100 units
- Dual Frontage Town: ~48 units
- Medium-high density: ~189 units

Block 4:

- Number of job: ~ 93

Block 5:

- Medium-high density: ~ 189 units

The site trip generation is summarized in **Tables 8, 9, 10, 11** and **12** for each block, respectively.

Table 8 – Site Trip Generation for Block 1

ITE Land Use	Magnitude (units)	Parameters			Morning Peak Hour			Afternoon Peak Hour		
					In	Out	Total	In	Out	Total
Multifamily Housing (Low-Rise) LUC 220 General Urban/Suburban	254 units	Trip Rates AM - Ln(T) = 0.95Ln(X) - 0.51 PM - Ln(T) = 0.89Ln(X) - 0.02			0.11	0.35	0.46	0.33	0.2	0.53
		Total Trips			27	89	116	85	50	135
		Mode	AM	PM						
		Transit	5%	5%	1	4	5	4	3	7
		New Auto Trips			**26**	**85**	**111**	**81**	**47**	**128**

Table 9 – Site Trip Generation for Block 2

ITE Land Use	Magnitude (units)	Parameters			Morning Peak Hour			Afternoon Peak Hour		
					In	Out	Total	In	Out	Total
Multifamily Housing (Low-Rise) LUC 220 General Urban/Suburban	303 units	Trip Rates AM - Ln(T) = 0.95Ln(X) - 0.51 PM - Ln(T) = 0.89Ln(X) - 0.02			0.1	0.35	0.45	0.33	0.19	0.52
		Total Trips			32	105	137	100	58	158
		Mode	AM	PM						
		Transit	5%	5%	2	5	7	5	3	8
		New Auto Trips			**30**	**100**	**130**	**95**	**55**	**150**

Table 10 – Site Trip Generation for Block 3

ITE Land Use	Magnitude (units)	Parameters			Morning Peak Hour			Afternoon Peak Hour		
					In	Out	Total	In	Out	Total
Multifamily Housing (Mid-Rise) LUC 221 General Urban/Suburban	189	Trip Rates AM - Ln(T) = 0.98Ln(X) - 0.98 PM - Ln(T) = 0.96Ln(X) - 0.63			0.09	0.25	0.34	0.26	0.17	0.43
		Total Trips			17	47	64	50	32	82
		Mode	AM	PM						
		Transit	5%	5%	1	2	3	3	2	5
		New Auto Trips			**16**	**45**	**61**	**47**	**30**	**77**
Multifamily Housing (Low-Rise) LUC 220 General Urban/Suburban	152 units	Trip Rates AM - Ln(T) = 0.95Ln(X) - 0.51 PM - Ln(T) = 0.89Ln(X) - 0.02			0.11	0.36	0.47	0.36	0.21	0.57
		Total Trips			16	55	71	54	32	86
		Mode	AM	PM						
		Transit	5%	5%	1	3	4	3	2	5
		New Auto Trips			**15**	**52**	**67**	**51**	**30**	**81**
Total Trips					***33***	***102***	***135***	***104***	***64***	***168***
Transit Modal Split (10%)					**2**	**5**	**7**	**6**	**4**	**10**
Total New Auto Trips					**31**	**97**	**128**	**98**	**60**	**158**

Table 11 – Site Trip Generation for Block 4

ITE Land Use	Magnitude (employees)	Parameters	Morning Peak Hour			Afternoon Peak Hour		
			In	Out	Total	In	Out	Total
Shopping Centre LUC (820) General Urban/Suburban	93	Trip Rates (Average)	0.35	0.20	0.55	0.81	0.81	1.62
		Total New Auto Trips	**33**	**18**	**51**	**75**	**76**	**151**

Table 12 – Site Trip Generation for Block 5

ITE Land Use	Magnitude (units)	Parameters			Morning Peak Hour			Afternoon Peak Hour		
					In	Out	Total	In	Out	Total
Multifamily Housing (Mid-Rise) LUC 221 General Urban/Suburban	189 units	Trip Rates AM - Ln(T) = 0.98Ln(X) - 0.98 PM - Ln(T) = 0.96Ln(X) - 0.63			0.09	0.25	0.34	0.26	0.17	0.43
		Total Trips			17	47	64	50	32	82
		Mode	AM	PM						
		Transit	5%	5%	1	2	3	3	2	5
		New Auto Trips			16	45	61	47	30	77

Based on the analysis noted above, the proposed development is expected to generate:

- 387 total two-way trips (115 inbound and 272 outbound) and 559 total two-way trips (329 inbound and 230 outbound) during the AM and PM peak hours, respectively;
- 370 two-way auto trips (110 inbound and 260 outbound) and 536 two-way auto trips (315 inbound and 221 outbound) during the AM and PM peak hours, respectively; and
- 17 two-way transit trips (5 inbound and 12 outbound) and 23 two-way transit trips (14 inbound and 9 outbound) during the AM and PM peak hours, respectively.

5.4. Site Trip Distribution and Assignment

The 2016 Transportation Tomorrow Survey (TTS) data was reviewed for Traffic Zones 3007, 3008, 3009 and 3010 in order to estimate the general trip distribution for the proposed development. **Table 13** summarizes the planning district/traffic zones distribution based on the 2016 TTS data, with **Table 14** summarizing the site trip assignment based on the 2016 TTS data and the existing traffic turning movement counts for the existing intersections in the area.

Table 13 – Trip Distribution for Residential Component

Mode	Caledon	Brampton	Mississauga	Toronto	York Region	Halton	Waterloo	Hamilton
Auto	16%	40%	18%	16%	6%	2%	1%	3%
Transit	33%	19%	0%	48%	0%	0%	0%	0%

Table 14 – Site Trip Distribution

General Direction (To/From)	Auto		General Direction (To/From)	Transit	
	Inbound	Outbound		Inbound	Outbound
East (via Mayfield Road)	5%	5%	NA	NA	NA
West (via Mayfield Road)	30%	30%	NA	NA	NA
North (via Hwy 410/Kennedy Road/Heart Lake Road/Hurontario Street)	5%	5%	North (via Hurontario Street/Kennedy Road)	0%	0%
South (via Hwy 410/Kennedy Road/Heart Lake Road/Hurontario Street)	60%	60%	South (via Hurontario Street/Kennedy Road)	100%	100%

Figures 11B and **11C** illustrate the proposed development generated traffic volumes. It should be noted that the auto site trip distribution and assignment have been taken into consideration the 2016 TTS information, existing turning movement and intersection operations.

10.0 CONCLUSIONS / FINDINGS

10.1. Study Conclusions

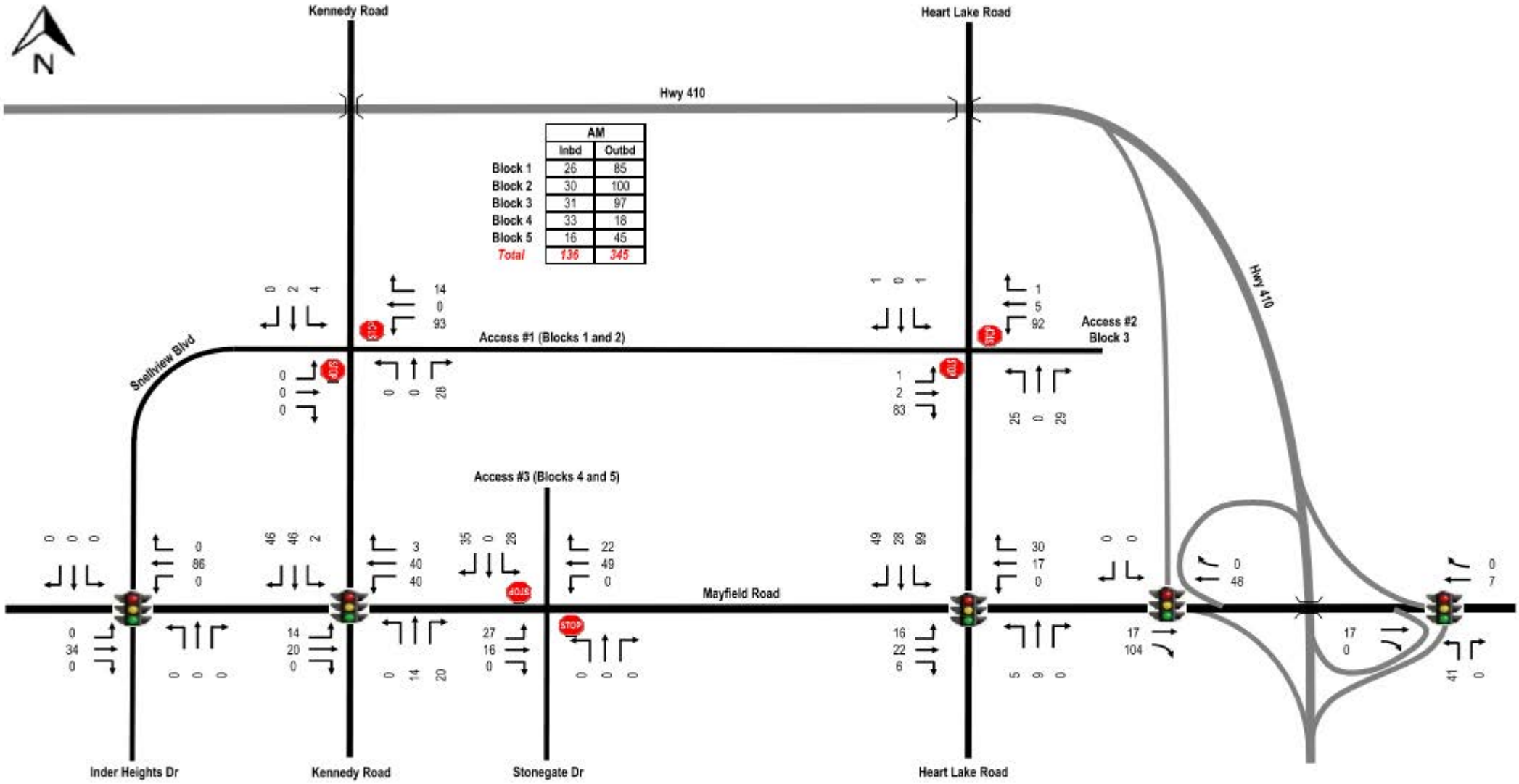
The findings and conclusions of the analysis are as follows:

- The proposed development is expected to generate:
  - 387 total two-way trips (115 inbound and 272 outbound) and 559 total two-way trips (329 inbound and 230 outbound) during the AM and PM peak hours, respectively;
  - 370 two-way auto trips (110 inbound and 260 outbound) and 536 two-way auto trips (315 inbound and 221 outbound) during the AM and PM peak hours, respectively; and
  - 17 two-way transit trips (5 inbound and 12 outbound) and 23 two-way transit trips (14 inbound and 9 outbound) during the AM and PM peak hours, respectively.
- The intersection capacity analysis indicates that under the existing 2021 conditions, all intersections are currently operating at acceptable levels of service, no improvements are required at this time.
- Under the future background conditions with the planned widening of Mayfield Road from its existing 4-lane cross-section west of Heart Lake Road to a 6-lane cross-section, all intersections are expected to operate at acceptable levels of service. However, for the Mayfield Road/Kennedy Road intersection, a westbound exclusive right turn lane and southbound double left turn lanes are required by 2028. It is recommended that these improvements to be included as part of the Mayfield Road improvements.
- Under the future total conditions with the planned widening of Mayfield Road from its existing 4-lane cross-section west of Heart Lake Road to a 6-lane cross-section, the majority of the intersections are expected to operate at acceptable levels of service. However, for the Mayfield Road/Kennedy Road intersection, a westbound exclusive right turn lane and southbound double left turn lanes are required by 2028. For the Mayfield Road/Stonegate Drive/Site Access #3, a traffic signal will be required by 2023 to improve operation and help facilitate pedestrian and cyclist crossing from the south side to the north side of Mayfield Road, although traffic signals are not numerically warranted. It is recommended that all of these improvements to be included as part of the Mayfield Road improvements.
- The analysis indicates that the transit passenger demands generated by the proposed development per transit vehicle is very low due to limited transit opportunities in the area under the existing conditions. However, it is suggested that the Town of Caledon should work with Brampton Transit to extend the existing Kennedy Bus Route 7/7A to service this future area.
- Based the applicable Zoning By-law requirement, the proposed development will require to provide approximately 1,710 vehicle parking spaces are required for the residential components, however, the commercial component parking requirements will be determined at the subsequent stage of the development. It is Nextrans understanding that the proposed development will meet this requirement.
- The Town of Caledon currently does not have bicycle requirements in the current Zoning By-law. In order to support and encourage active transportation use, Nextrans recommends that the proposed development provides at least 10 short-term bicycle parking spaces and 40 long-term bicycle parking spaces (about 10% of the total numbers of units) for the medium-high density component of the proposed development. This provision will encourage the future residents to take sustainable mode of transportation instead of driving single-occupant-vehicles.
- The vehicle turning movement templates will be provided at the subsequent development stages.

10.2. Study Recommendations

Based on the findings of this Study, the following recommendations are provided:

- Intersection improvements:
  - Provide traffic signals at the Kennedy Road/Snellview Boulevard/Site Access #1 intersection by 2033 or the completion of the proposed development. The proposed lane configurations include:
    - One exclusive northbound and southbound left turn lanes with minimum of 30 m storage length
    - One exclusive westbound left turn lane with 15 m storage, a shared through/right and one inbound lane
    - Convert the existing eastbound exclusive right turn lane on Snellview Boulevard to a shared through/right lane
  - Provide a full moves intersection at the Heart Lake Road/Site Access #2 Provide a full moves intersection at the Heart Lake Road/Site Access #2 with stop signs on the east-west direction. The lane configurations include:
    - One southbound and one northbound left turn lane with minimum of 30 m storage length and a shared northbound and southbound through/right lane
    - One westbound and one eastbound exclusive left turn lanes with minimum of 15 m storage and a shared westbound and eastbound through/right lane
  - Provide traffic signals the Mayfield Road/Stonegate Drive/Site Access #3 intersection by 2023 or the completion of the proposed commercial/medium-high density residential blocks. The proposed lane configurations include:
    - One exclusive westbound left turn with minimum of 60 m storage length and one exclusive eastbound left turn with minimum of 30 m storage
    - One exclusive southbound left turn with 15 m storage and a shared through/right, as well as one inbound lane be provided for the proposed Site Access #3
  - Provide westbound exclusive right turn and southbound double left turn lanes at the Mayfield Road/Kennedy Road intersection as part of the Mayfield Road widening project (2026).
- The proposed development implements the TDM measures and incentives identified in this report to support active transportation and transit and to reduce the numbers of single-occupant-vehicle trips to and from the proposed development;
- The proposed development provides at least 10 short-term bicycle parking spaces and 40 long-term bicycle parking spaces (about 10% of the total numbers of units) for the medium-high density component of the proposed development.
- The Town and the Region should provide 3.0 multi-use path on the north side of Mayfield Road from Kennedy Road to Heart Lake Road. This should be included in the detailed design and construction of Mayfield Road.
- The proposed development provides direct shared pedestrian and cycling connections to Mayfield Road and Heart Lake Road for the medium-high density components



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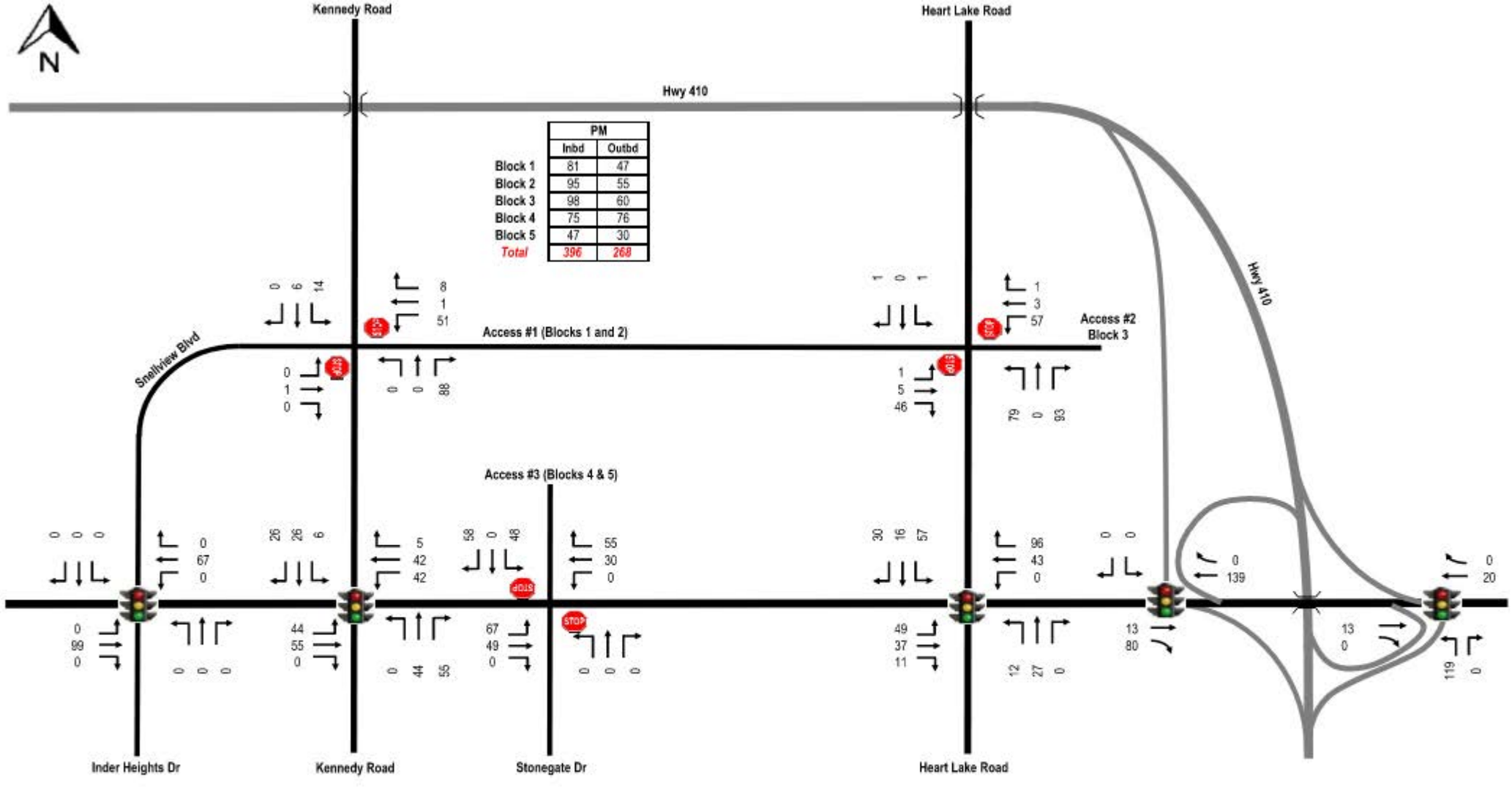
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Legend: XX Peak Hour Traffic Volumes

Stop Sign

Signalized Intersection

Figure 11B - Site Traffic Volumes
AM Peak Hour



	PM	
	Inbd	Outbd
Block 1	81	47
Block 2	95	55
Block 3	98	60
Block 4	75	76
Block 5	47	30
Total	*396*	*268*

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Legend: XX Peak Hour Traffic Volumes

Stop Sign

Signalized Intersection

Figure 11C - Site Traffic Volumes
PM Peak Hour

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ProLogis Canada LLC
Heart Lake Road Portfolio Inc.
Mayfield Road Portfolio Inc.

MAYFIELD WEST INDUSTRIAL LANDS TRANSPORTATION IMPACT ASSESSMENT
TOWN OF CALEDON, REGION OF PEEL



FINAL REPORT

SEPTEMBER 2012

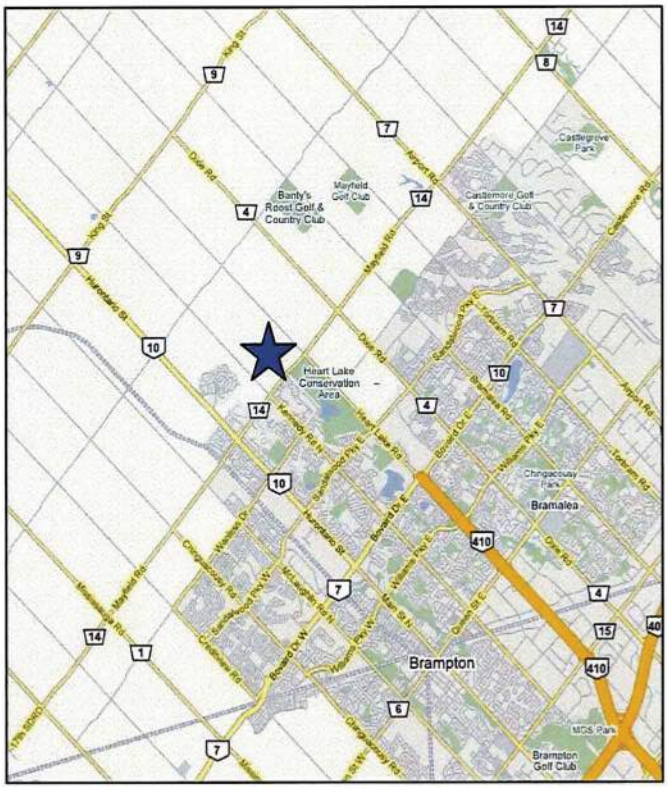
IBI GROUP

1. INTRODUCTION

1.1 Background

IBI Group was retained by ProLogis Canada LLC, Heart Lake Road Portfolio Inc., and Mayfield Road Portfolio Inc. to conduct a transportation impact assessment for the Mayfield West Employment Lands bounded by Dixie Road to the east, Heart Lake Road to the west, and Mayfield Road to the south. (Refer to **Figure 1-1**).

Figure 1-1: Site Location



The Mayfield West Employment Lands encompass approximately 354 acres of gross developable area. The overall Mayfield West Community Plan dedicates approximately 4,400,000 sq. ft of employment land uses along the newly extended Highway 410 corridor at full build-out. The plan calls for 2,850 residential dwelling units, and approximately 100,000 sq. ft of commercial uses are planned for the village centre west of the employment lands. Full build-out is expected by 2021. Details of the general land use allocations for the Mayfield West Community Plan are found in **Appendix A**.

1.2 Potential Development Area

The primary study area encompasses approximately 354 acres. Preliminary concepts of logistics, distribution centre and warehousing uses have demonstrated a net developable land area of

approximately 264 acres; however, these assumptions will be refined as the development approvals process proceeds and more definitive land uses are known. Details of the land use breakdown are shown in **Figure 1-2.**

Figure 1-2: Anticipated Land Use Coverage

Land Use	Land Coverage (Acres)
Total Gross Coverage	354
Undevelopable Land (Acres)	
Wood Lot	46
Wetlands	12
Creeks	5
Stormwater Management Ponds	18
Roads	9
Net Developable Land	**264**

At this time, it is understood that the Mayfield West Employment Lands are likely to consist of wholly or in combination:

- Distribution centre or logistics facilities;
- Warehousing facilities; and/or
- General light industrial park.

The transportation analysis methodology that follows has been structured to provide an assessment of the residual capacity in the 2011 and 2021 horizons, which then can be used to estimate coverage for specific combinations of uses.

1.3 Study Scope

The scope of this transportation impact assessment is to review the impacts of the potential development on the area traffic network, and identify and address any operational issues that result from the travel demands of the site. The road network analysis includes all major signalized intersections within close proximity of the primary study area and all projected road network improvements within the forecasted horizon years.

As noted in the previous section, there are a number of land uses that are possible on some of the subject employment lands, and definitive uses/occupants for the majority of the lands are not known at this time. Based on a preliminary trip generation assessment, a realistic lower range trip generation of 750 two-way peak hour trips was estimated based on distribution centre/logistic land uses at 20% coverage. Recognizing that 20% coverage is conservative and that other uses with a higher trip generation potential would be permitted on the employment lands, IBI Group completed sensitivity testing of 1,500 and 2,000 two-way peak hour trips. In all cases 2011 (opening day) and 2021 analysis horizons (10 year horizon) were assessed.

These trip generation levels are then equated to various employment land development scenarios and are discussed in **Section 6.7**.

5. SITE DEVELOPMENT

5.1 Preliminary Internal Road Network and Site Access

Along Dixie Road, four driveways are proposed to service properties in the northeast quadrant of the Mayfield West Employment Lands, which belong to ProLogis Canada LLC. A master plan dated June 1, 2012 has been included in **Appendix E**. As of this time, the Region of Peel is in support of the proposed driveway locations, as well as the assumptions and methodologies contained in this study. Movement restrictions for the driveways are indicated on the master plan. Their auxiliary lane requirements and appropriate storage lengths have been assumed in accordance with the Region of Peel Controlled Access Bylaw 59-77 and were analyzed as follows:

- Driveway 1: Full-movement access located at northern boundary of site.[1] It should be noted that this driveway will also service a proposed development to the north, with similar land uses to Mayfield West Employment Lands. More detail will be discussed later in this report;
- Driveway 2: Right-in/Right-out access located approximately 215 m south of Driveway 1;
- Driveway 3: Full-movement access located approximately 230 m south of Driveway 2; and
- Driveway 4: Right-in/Right-out access approximately located 235 m south of Driveway 3.

The Salisbury Garden Supplies driveway will remain at its existing location and operate under side-street stop control.

Schematic plans for the Mayfield West Land Use Plan and subsequent reporting have shown a continuous east-west collector roadway from the realigned Kennedy Road to Dixie Road (Refer to Schedule B of the Mayfield West Land Use Plan in **Appendix A**). The preliminary site concept for the subject development maintains this element of the Mayfield West Plan. An east-west collector road is proposed from Kennedy Road to the west and Heart Lake Road to the east. It is approximately 600 m north of Mayfield Road and 2.5 km south of Old School Road, the nearest roadway north of Mayfield Road. The roadway is expected to service the land uses south of the roadway, and a secondary access further north on Heart Lake Road is proposed for the land uses in the north-west quadrant of the site plan. The east-west collector roadway is not anticipated to be extended to Hurontario Street within the forecasted horizon years. The current schematic reveal the east-west Collector Road intersecting with Dixie Road as a signalized intersection, which would require the satisfaction of warrant criteria. As a result, IBI Group conducted a traffic signal warrant justification for the east-west Collector Road.

Traffic signal warrant justifications are conducted in **Section 5.2** for full movement driveways along Dixie Road, to determine if and when traffic signals are warranted.

[1] The master plan indicates this driveway as full movement. While some employee traffic can be expected to access northbound Dixie Road via this driveway, no truck traffic is expected to use this driveway to travel to the north. As a result, this driveway was modeled as described in the bullet point.

5.3 Development Potential and Analysis Approach

When assessing the development potential and associated trip generation of the subject lands, previous studies, including the Mayfield West Traffic Management Plan and the Kennedy Road Environmental Assessment, assumed a generic trip generation rate for the subject lands based on the industrial park designation in the manual *Trip Generation, 7th Edition* (Institute of Transportation Engineers, 2003). While the lands could develop as an industrial park, the rezoning process may provide for a full range of employment lands, wholly or in combination:

- Distribution centre or logistics facilities;
- Warehousing facilities; and/or
- General light industrial park.

Given that no specific plans have been finalized at this time, with only concept plans developed for the northeast quadrant, and also given the wide variety of development that the lands could support, IBI Group approached the trip generation, distribution and assignment, and capacity analysis from a residual capacity approach, i.e.:

- Starting with a particular number of trips, how many trips can the development lands support before additional roadway improvements are necessary above and beyond what is already planned or underway? and
- What types and intensity of development are associated with those trips?

What follows in **Section 5.4** to **Section 6.5** is the result of an iterative process whereby the impacts of different trip generation scenarios were assessed until roadway capacity was reached.

5.4 Trip Generation Potential

5.4.1 MAYFIELD WEST EMPLOYMENT LANDS

IBI Group completed a cursory review of trip generation potential for the subject site area, to establish a "base case" for the residual capacity analysis described in the previous section. The first conceptual plans prepared for the study area showed development occurring in the form of logistics/distribution centres totalling approximately 2.5 million square feet (230,000 m²). While IBI Group understands that this was a purely conceptual plan, and may no longer reflect proposed or anticipated development levels, it provided a starting point for determining the trip generation potential of the site. **Figure 5-5** details the potential site traffic generated from the concept plan, applying ITE Trip Generation Manual rates for Industrial Park land uses.

Figure 5-5: Trip Generation Based on Generic ITE Trip Rates

Land Use	Ind. Variable	Total Site per 1000 sq. ft	Trip Generation Rate	AM			Trip Generation Rate	PM		
				Total Trips	Enter	Exit		Total Trips	Enter	Exit
Industrial Park	Sq. ft.	2,539.5	0.69	1752	1507	245	0.75	1913	402	1512

As an alternative and more local source of information, a 2007 traffic impact study prepared by Dillon Consulting Ltd. for an industrial development on Airport Road in Brampton documented trip generation potential for logistics and distribution centre uses. The Dillon study recorded the AM and PM peak hour trips into and out of three existing warehouse/distribution centre operations on Airport Road and calculated a trip generation rate per 1,000 square feet GFA. The findings of the Dillon study are summarized in **Figure 5-6**.

Figure 5-6: Trip Generation Rates for Similar Warehouse/Distribution Developments

	AM Peak Hour			PM Peak Hour		
Bentall Site	**Enter**	**Exit**	**Total**	**Enter**	**Exit**	**PM Total**
Trips Generated	139	48	187	48	128	176
GFA (x 1000 sq ft)	940	940	940	940	940	940
Observed Trip Generation	0.148	0.051	0.199	0.051	0.136	0.187
Canadian Tire Site	**Enter**	**Exit**	**Total**	**Enter**	**Exit**	**PM Total**
Trips Generated	207	38	245	75	236	311
GFA (x 1000 sq ft)	1,160	1,160	1,160	1,160	1,160	1160
Observed Trip Generation	0.178	0.033	0.211	0.065	0.203	0.268
Hopewell Site	**Enter**	**Exit**	**Total**	**Enter**	**Exit**	**PM Total**
Trips Generated	133	96	229	84	141	225
GFA (x 1000 sq ft)	1,736	1,736	1,736	1,736	1,736	1,736
Observed Trip Generation	0.077	0.055	0.132	0.048	0.081	0.130
Survey Total / Average	**Enter**	**Exit**	**Total**	**Enter**	**Exit**	**PM Total**
Trips Generated	479	182	661	207	505	712
GFA (x 1000 sq ft)	3,836	3,836	3,836	3,836	3,836	3,836
Observed Trip Generation	0.125	0.047	0.172	0.054	0.132	0.186

The data presented in **Figure 5-6** indicates that these employment uses generate substantially less peak hour traffic than those summarized in the ITE Trip Generation Manual.

Based on the above studies, a lower trip generation potential of 750 peak hour two-way trips was assumed as the base case for the analysis. This reflects a trip generation rate in the order of 0.3 trips per 1,000 sq. ft. for both the AM and PM peak hour analysis, a conservative rate compared to the actual observed rates in the Dillon study. **Figure 5-7** summarizes the new site trips for the subject development. Based on the Dillon rates, no adjustments have been made for transit modal splits or synergy with adjacent residential land uses, i.e., employees living and working in the Mayfield West area.

Figure 5-7: Trip Generation Summary

Trip Component	AM Peak Hour	PM Peak Hour
Total New Trips 2,500,000 @ 0.3 Trips Per 1,000 ft^2	750	750
Inbound Trips (AM = 70%, PM = 30%)	525	225
Outbound Trips (AM = 30%, PM = 70%)	225	525

The trips shown in **Figure 5-7** served as the base case trip generation scenario for the development. The analysis of this scenario is provided in **Section 6.4.1**. The analysis that follows in **Sections 6.4.2** and **Section 6.4.3** also test the ability of the 2011 and 2021 road networks to accommodate 1,500 and 2,000 new vehicle trips from the subject site, respectively.

5.4.2 NORTH DEVELOPMENT

The Region of Peel has notified IBI Group that a proposed development similar in land uses to Mayfield West Employment Lands is planned directly to the north and will have joint access with the proposed development, specifically with Driveway 1. The development will occupy approximately 40 acres of land, based on high-level estimates using the *Mayfield West Two Secondary Plan Draft Preferred Scenario*, and will be of similar land use (i.e. distribution/logistics/warehousing). However, since no additional information was provided regarding specific building area coverage or expected number of trips, information from the Master Park Plan for the Mayfield West Employment Lands was applied to the development to the north to generate the expected number of trips. **Figure 5-8** presents the approximated land coverage as well as the expected number of trips to be generated by the site.

Figure 5-8: North Development – Estimated Trip Generation

	Mayfield West Employment Lands	North Development
Developable Land [acres]	86.69	40
Developable Land [sq. ft.]	3,775,000	1,742,000
Building Coverage [sq. ft.]	1,775,000	820,000
Building Coverage [%]	47%	47%
Trip Generation Rate [per 1000 sq. ft.]	0.3	0.3
Total Expected Trips	-	**245**

Based on the above information, the development north of the Mayfield West Employment Lands is expected to generate approximately 245 trips during the AM and PM peak periods. The trip distribution and trip assignment for this development is discussed below.

5.5 Trip Distribution and Assignment

5.5.1 MAYFIELD WEST EMPLOYMENT LANDS

The trip distribution for the subject development was based on engineering judgement and reflects the location of the site in relation to residential areas where employees would live and site-related heavy vehicle trips would begin and end. This distribution was generally to/from the south on Highway 410; however, some provisions were made for travel to/from communities to the north, and east-west travel to/from more local origins/destinations. **Figure 5-9** and **Figure 5-10** show the resultant trip distribution for inbound and outbound traffic, respectively.

The same trip distribution was applied to both peak hours for all three sensitivity scenarios, as it is assumed that employee and goods movement will follow the same patterns regardless of development intensity. The resultant site traffic can be determined for any movement by multiplying the distribution percentage of the movement by the total inbound or outbound traffic associated with the scenario.

The Transportation Tomorrow Survey (TTS) was consulted to confirm the assumed trip distributions. Some complexities arise as the location of the proposed development is in the Town of Caledon, but is bordering the City of Brampton. As a result, the distribution of vehicles arriving from Town of Caledon versus arriving from City of Brampton will likely favour the City of Brampton due to the higher population-density. Outside of the Region of Peel, a trivial amount of trips are directed towards the Town of Caledon. The majority of trips are found arriving from within the town (60 percent), while approximately 18 percent arrive from the City of Brampton. All other logical arrival points either arrive from the south or from the east based on the TTS survey. Based on the survey results, the general trip distributions assumed for this study are applicable; however, it should be noted that TTS did not include or forecast the extension of the Highway 410 into the Town of Caledon, which would further demonstrate more vehicles arriving from the south.

Figure 5-9: Inbound Trip Distribution

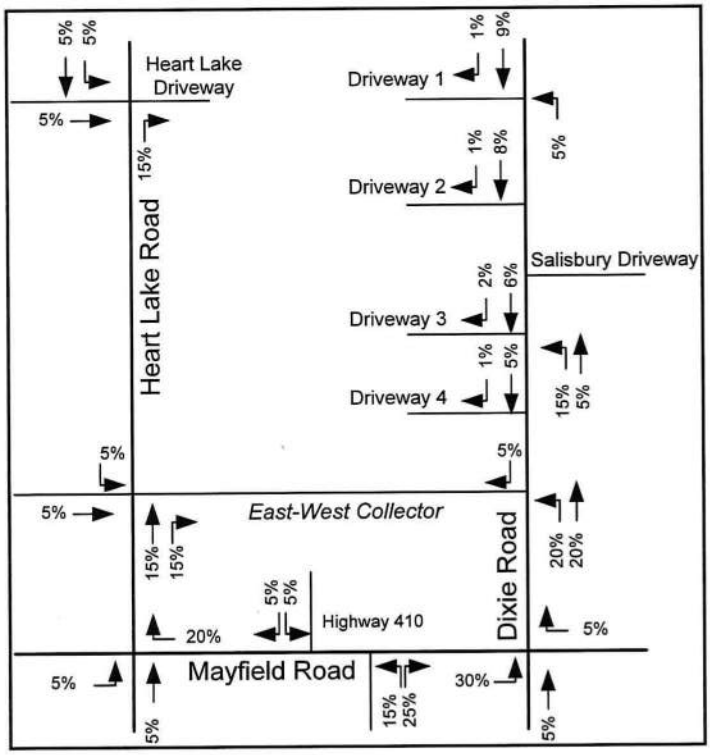
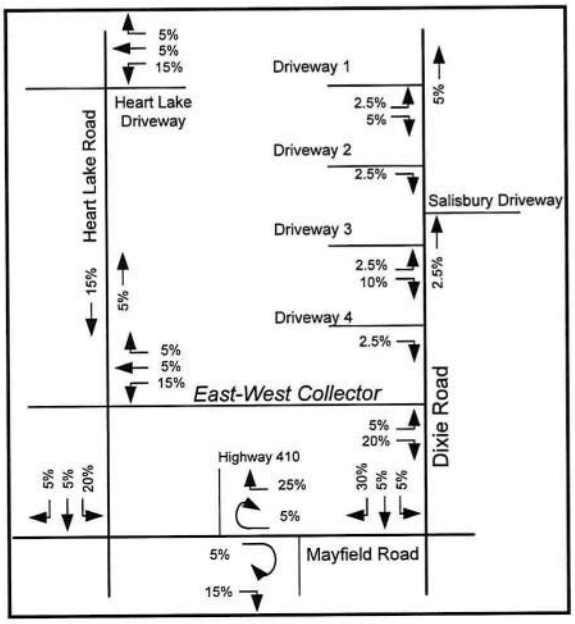


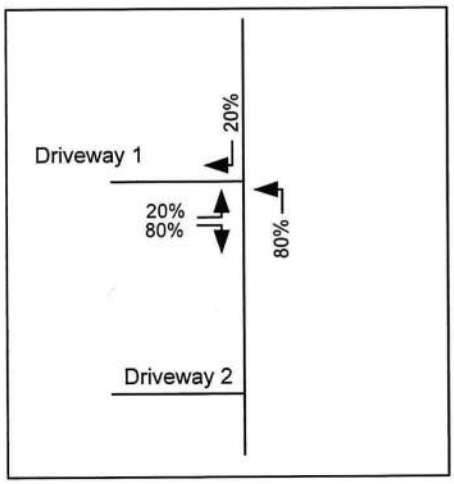
Figure 5-10: Outbound Trip Distribution



5.5.2 NORTH DEVELOPMENT

The trip distribution for the development north of the Mayfield West Employment Lands is presented in **Figure 5-11**. The only access to the site is Driveway 1, which is shared with the Mayfield West Employment Lands. All movement into and out of the north development will occur from this access and the trips generated from the development are exclusive of the 750, 1,500 and 2,000 trip generation volumes (i.e. an additional 245 trips are added to the future total scenarios for each sensitivity analyses).

Figure 5-11: North Development – Trip Distribution



The trip distribution presented above is applied to the 2011 and 2021 future total scenarios based on the trip generation shown in **Figure 5-7** and **Figure 5-8**.

6. FUTURE TOTAL CONDITIONS

6.1 Signal Timing Modifications

The addition of 750, 1,500 and 2,000 trips to the future background scenarios will require further modifications to the background timing changes discussed in **section 4.4**. Aside from minor changes to signal timings and offset values, the following is a list of the major changes from the 2011 and 2021 future background scenarios to the 2011 and 2021 future total scenarios, as well as a brief discussion of the signalized driveway accesses to the proposed development:

- During the AM peak, a protected-permitted eastbound left turn phase was introduced at Mayfield Road and Dixie Road for the future total scenarios;
- The E-W Collector Road was signalized at Heart Lake Road and operates under a 120 second cycle length;
- The driveway further north along Heart Lake Road was also signalized and operates under a 120 second cycle length;
- All other proposed driveways into the site are side-street stop-controlled, unless otherwise indicated in the traffic signal warrant section discussed in **Section 6.3**.

It is understood that all intersections proposed or recommended for signalization must either satisfy established signalization warrants or be permitted under direction of Region Council.

6.2 Future Total Volumes

6.2.1 FUTURE TOTAL VOLUMES – 750 TRIPS

The site traffic distributions shown in **Figure 5-9, Figure 5-10, and Figure 5-11** were applied to the trip generation associated with the 750-trip scenario and North Development and added to the 2011 and 2021 future background volumes shown in **Figure 4-5** and **Figure 4-6** to establish 2011 and 2021 future total traffic volumes. The resultant 2011 and 2021 future total volumes are presented in **Figure 6-1** and **Figure 6-2**, respectively.

Figure 6-17: Mayfield Road and Highway 410 S-E/W Ramp – Queue Analysis

Scenario	Peak Hour	Intersection	Movement	Storage Length (m)	95th % Queue (m)
2021 Future Total (1,500 Trips)	AM	Mayfield Road and Hwy 410 S-E/W Ramp	NBR	100	96
2021 Future Total (2,000 Trips)		Mayfield Road and Hwy 410 S-E/W Ramp	NBR	100	97

The results from the intersection operations and queue analysis revealed that the adjustments in signal timings would reduce the predicted northbound right turn queue to below the available storage capacity at the Mayfield Road and Highway 410 S-E/W Ramp, without significantly affecting traffic operations. The results from the traffic operations analysis also reveal that the east-west through movements would still be operating below capacity, introducing the possibility of reallocating more time from the east-west phase to the northbound phase to even further reduce the northbound right turn queues, if necessary.

6.8 Development Potential

Gross land coverage of the subject site is approximately 354 acres, and high-level, preliminary conceptual plans indicate approximately 264 acres of net developable land. However, since definite land uses and occupants are not known at this time, development potential in the area is likely to consist wholly or as a combination of:

- Distribution centre or logistics facilities;
- Warehousing facilities; and/or
- General light industrial park.

Starting with the 750, 1,500 and 2,000-new trip scenarios discussed above, IBI Group used the ITE Trip Generation manual to calculate the estimated potential development for a variety of land uses that could be developed under each scenario. **Figure 6-18** shows the development potential for the 750, 1,500 and 2,000 new trip scenarios based on these land uses. It should be noted that the distribution centre/logistics land coverage was calculated based on the trip generation rate of similar land uses based on the Dillon Study (2007) referenced throughout this document. All land uses above assume some degree of administration and office support uses. The trips associated with these functions are inherent to the gross trip rates stated.

Figure 6-18: Development Potential Based on Trip Generation Rates

		Approximate Development Potential (GFA x 1000 sq. ft.)		
Land Use	**ITE Trip Generation Code**	**750 New Trips**	**1,500 New Trips**	**2,000 New Trips**
General Light Industrial	110	620	1,150	1,500
Industrial Park	130	950	1,970	2,660
Warehouse	150	1,520	3,150	4,230
Logistics/Distribution	Dillon Study (2007)	2,500	5,000	6,660

It can be seen that these seemingly similar land uses vary considerably in terms of GFA for a given trip generation scenario. For example, the logistics/distribution land uses, based on a 0.3 trip generation rate supported by the Dillon study, provide the most development potential for all trip scenarios. Warehousing facilities, based on ITE rates, provide the next most development potential with approximately 1.5 million square feet (140,000 m²) of potential development under the 750-new trip scenario and a peak potential of 4.2 million square feet (390,000 m²) under the 2,000-new trip scenario.

6.9 Recommended Improvements

The 2011 and 2021 analysis summarized above assumes that Mayfield Road will be widened to four basic lanes west of Heart Lake Road and six basic lanes from Heart Lake Road to Dixie Road. In conjunction with these upgrades, we have assumed that the north-south approaches will be upgraded to their ultimate capacity within the functional area of the intersection. Storage and parallel lengths shown in the Mayfield Road EA were carried forward into this analysis.

In addition to the above planned improvements, the following is recommended:

- Projected volumes on the east-west collector road indicate the need for a three-lane cross-section, with the centre-lane acting as a shared left turning lane. The collector will service the site and intersect Heart Lake Road and Dixie Road;
- Northbound and southbound auxiliary lanes are to be provided at all proposed accesses along Heart Lake Road and Dixie Road in accordance with the Region of Peel Controlled Access Bylaw 59-77;
- Where feasible, major site employee parking areas and loading areas should have good internal access to the east-west collector road; and

Changes will be required to traffic signal timings and phasing throughout the corridor. The analysis described above incorporated optimized signal timings and protected left turn phases where necessary.

6.10 Pedestrian Facilities

Sidewalks are being provided along all new public roadways under construction in the study area. Through the development process, sidewalk facilities should be provided along the east-west collector roadway, with connections to future pedestrian facilities on Heart Lake Road and Dixie Road, as well as to internal pedestrian facilities with each site.

6.11 Truck Traffic and Constraints

Currently, truck restrictions are present on Heart Lake Road and Dixie Road north of Mayfield Road. It is our understanding that the restrictions were put into place to address resident complaints, which may have stemmed from the rural nature of the roadways and their use by through traffic in the absence of the Highway 410 extension. According to the Mayfield West Community Plan, the land use developments expected in the employments lands north of Mayfield Road and bounded by Heart Lake Road to the west and Dixie Road to the east are warehousing, logistics and distribution centre land uses which will generate heavy vehicle. Therefore, it is expected that heavy vehicles will

be allowed on Heart Lake Road and Dixie Road to the northern boundary of the site. It has also been assumed that all site traffic assigned to/from the north is employee traffic that will not violate the truck restrictions north of the proposed development along Dixie Road.

Given the heavy vehicle traffic expected on Heart Lake Road and Dixie Road with the planned development, the suitability of the pavement structure to accommodate these vehicles will need to be reviewed outside the scope of this study.

6.12 Traffic Infiltration Potential

IBI Group has reviewed the traffic infiltration potential that may result from the development of the subject site. In some cases, peak trip generation associated with shift changes from industrial areas creates short-term capacity conditions where some employees choose to use the local road network to circumvent a congested movement at an intersection. Given the intended operations of the sites, we do not see heavy shift change traffic demands.

In addition, the majority of the traffic will be destined to/from the south, with a primary destination and origin being Highway 410. As such, there is little or no opportunity to use the local road network.

The proposed connection of the east-west collector roadway across Heart Lake Road presents an opportunity for through traffic; however, the future intersection operations at the Mayfield Road/Heart Lake Road intersection do not suggest that motorist will choose this route unless destined or originating within the this area west of Heart Lake Road.

7. PARKING ANALYSIS

The Town of Caledon parking bylaw requires the following number of spaces for a "warehouse" development:

- "If the office component is 15% or less of the total net floor area and the facility is over 20,000 m^2 or greater, 168 parking spaces are required + 1 parking space per 170 m^2 of net floor area or portion thereof that is over 20,000 square metres;" or
- "If the associated office is more than 15% then, in addition to the warehouse requirements, that portion of the business office is subject to a parking requirement of 1 parking space per 30 m^2 of net floor area or portion thereof."

Given that no specific plans have been prepared for the subject development lands, IBI Group tested the Town of Caledon parking requirements against various GFA, ranging from 500,000 square feet to 3,000,000 square feet (Refer to **Figure 7-1**).

Figure 7-1: Town of Caledon Bylaw Parking Requirements – "Warehouse" Developments

Square Feet	Square Meters	Required Spaces	Rate per 100 m^2
500,000	46,452	324	0.698
750,000	69,677	461	0.662
1,000,000	92,903	597	0.643
1,250,000	116,129	734	0.632
1,500,000	139,355	871	0.625

BD2- 0 & 12305 Dixie Rd - Traffic-11-03-21_Excerpts

Tribal Partners Canada Inc.

TRANSPORTATION IMPACT STUDY

12035 Dixie Road, Town of Caledon
Proposed Industrial/Employment Development

March 2021
21185

TOWN OF CALEDON
PLANNING
RECEIVED

March, 17, 2021

BD2- 0 & 12305 Dixie Rd - Traffic-11-03-21_Excerpts

1 INTRODUCTION

LEA Consulting Ltd. (LEA) has been retained by Tribal Partners Canada Inc. to conduct a Transportation Impact Study (TIS) for a proposed warehouse/employment development located at 12035 Dixie Road in the Town of Caledon (herein referred to as the "subject site"). The subject site is currently agricultural land at the northeast quadrant of Dixie Road & Mayfield Road, as illustrated in Figure 1-1.

Figure 1-1: Subject Site Location



1.1 PROPOSED DEVELOPMENT

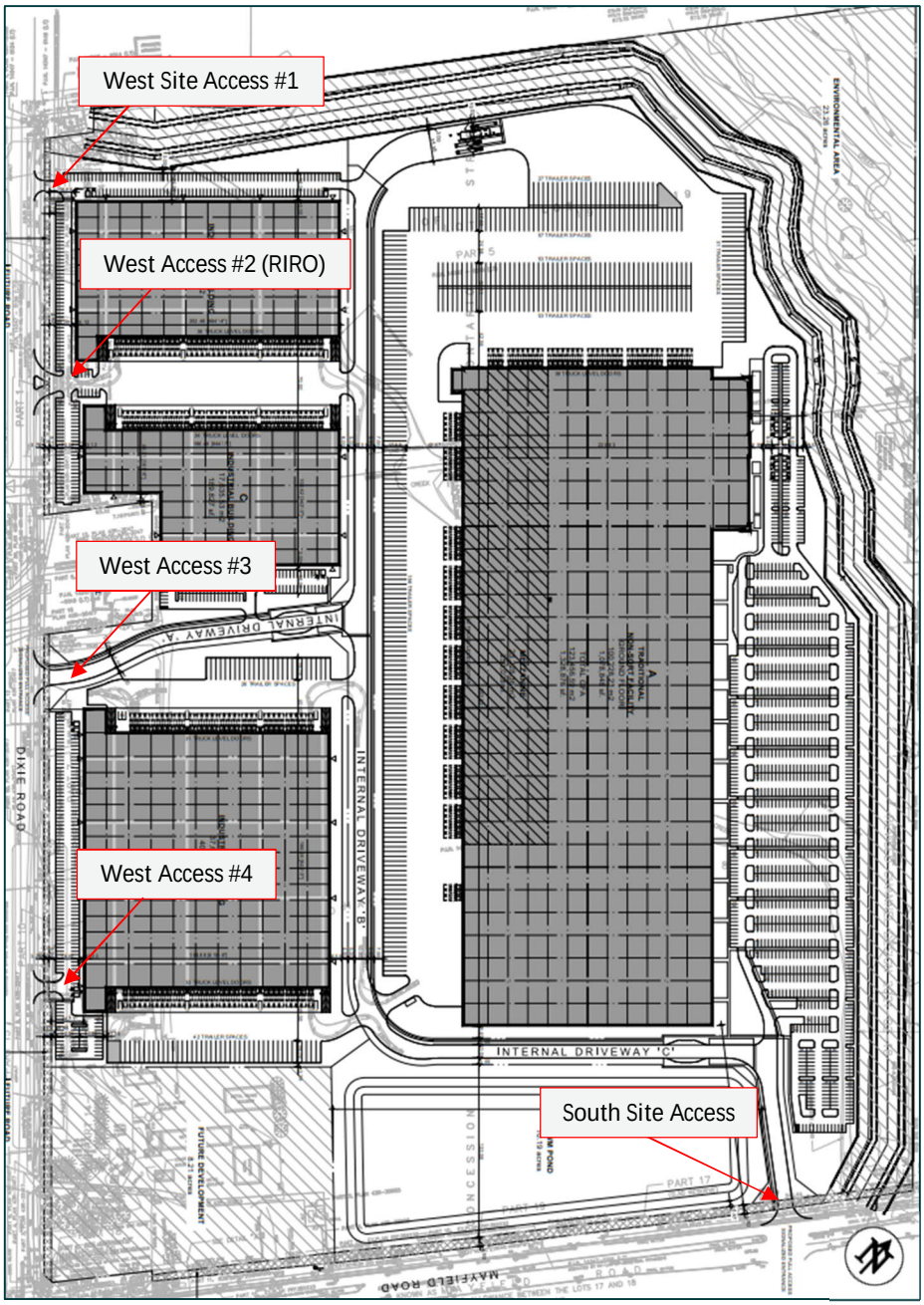
The development proposal will introduce four (4) warehouse/distribution buildings with a combined ground floor area (GFA) of approximately 200,292m^2. A total of 2,111 surface parking spaces are proposed for the subject site. The proposed site statistics are presented in Table 1-1, and the proposed site plan is shown in Figure 1-2.

BD2- 0 & 12305 Dixie Rd - Traffic-11-03-21_Excerpts

Table 1-1: Proposed Site Statistics

Land Use	Building	GFA (m^2)	GFA (ft^2)
Warehouse/ Distribution Centre	A	123,457	1,328,874
	B	37,691	405,705
	C	17,636	189,827
	D	21,509	231,519
	Total	200,292	2,155,926

Figure 1-2: Proposed Site Plan



Source: Baldassarra Architects Inc. (March 8th, 2021)

1.2 ACCESS ARRANGEMENT

The proposed development will be accessible via three (3) all-moves accesses and one (1) right-in/right-out (RIRO) access along Dixie Road, as well as one (1) all-moves access along Mayfield Road. The Mayfield Road

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4 SITE-GENERATED TRAFFIC

4.1 TRIP GENERATION

The proposed buildings are expected to operate similarly to a typical warehouse/distribution centre. To determine the trip generation for the proposed development, the average rate in the Institute of Transportation Engineers (ITE) Trip Generation Manual 10th Edition for Warehousing (Land Use Code 150) was applied to the proposed uses. The heavy vehicle trip generation rates are derived from the ITE Trip Generation 10th Edition Online Supplement for LUC 150. The heavy vehicle percentages have been calculated by dividing the heavy vehicle trip generation rate by the total vehicle trip generation rate. The vehicle and truck trip rates utilized in the trip generation calculations are shown in Table 4-1, and the trip generation breakdown by building is summarized in Table 4-2.

Table 4-1: Vehicle and Truck Warehousing Trip Rates

Trip Generation	AM Peak Hour			PM Peak Hour		
	In	Out	Total	In	Out	Total
All Vehicle Directional Distribution	77%	23%	100%	27%	73%	100%
All Vehicles Trip Rate (Per 1,000ft^2)	0.13	0.04	0.17	0.05	0.14	0.19
Heavy Vehicle Directional Distribution	52%	48%	100%	52%	48%	100%
Heavy Vehicle Trip Rate (Per 1,000ft^2)	0.01	0.01	0.02	0.02	0.01	0.03
Heavy Vehicle Percentage	8%	26%	12%	39%	7%	16%

Table 4-2: Trip Generation Summary

Building	Trip Generation	AM Peak Hour (Trips)			PM Peak Hour (Trips)		
		In	Out	Total	In	Out	Total
Building A (1,328,874 ft^2)	Total Building A Traffic	174	52	226	68	184	252
	Employee Traffic	161	39	199	41	172	212
	Truck Traffic	13	13	27	27	13	40
Building B (405,705 ft^2)	Total Building B Traffic	53	16	69	21	56	77
	Employee Traffic	49	12	61	13	52	64
	Truck Traffic	4	4	8	8	4	12
Building C (189,827 ft^2)	Total Building C Traffic	25	7	32	10	26	36
	Employee Traffic	23	5	28	6	24	30
	Truck Traffic	2	2	4	4	2	6
Building D (231,519 ft^2)	Total Building D Traffic	30	9	39	12	32	44
	Employee Traffic	28	7	34	7	30	37
	Truck Traffic	2	2	5	5	2	7
Total Site	Total Site Traffic	282	84	366	111	298	409
	Employee Traffic	261	63	322	67	277	344
	Truck Traffic	21	21	44	44	21	65

BD2- 0 & 12305 Dixie Rd - Traffic-11-03-21_Excerpts

The proposed development is projected to generate a total of 366 new trips (282 inbound, 84 outbound) and 409 new trips (111 inbound, 298 outbound) during the AM and PM peak hour periods, respectively.

4.2 TRIP DISTRIBUTION AND ASSIGNMENT

The trip distribution of employee vehicle traffic was estimated using Transportation Tomorrow Survey (TTS) 2016 data. The TTS data was filtered for auto home-based work trips during the weekday AM peak period. It is assumed that the PM peak period trip distribution is the reverse of the AM peak period since employees entering the subject site in the morning will be utilizing the same routing in the afternoon to exit, and vice versa. Table 4-3 summarizes the trip distribution for this study. Detailed TTS calculations are available in Appendix E.

Table 4-3: Vehicle Trip Distribution

Direction	Roadway	AM		PM	
		Inbound	Outbound	Inbound	Outbound
North	Dixie Road	33%	23%	23%	33%
South	Dixie Road	15%	11%	11%	15%
East	Mayfield Road	10%	6%	6%	10%
West	Mayfield Road	42%	60%	60%	42%
	TOTAL	100%	100%	100%	100%

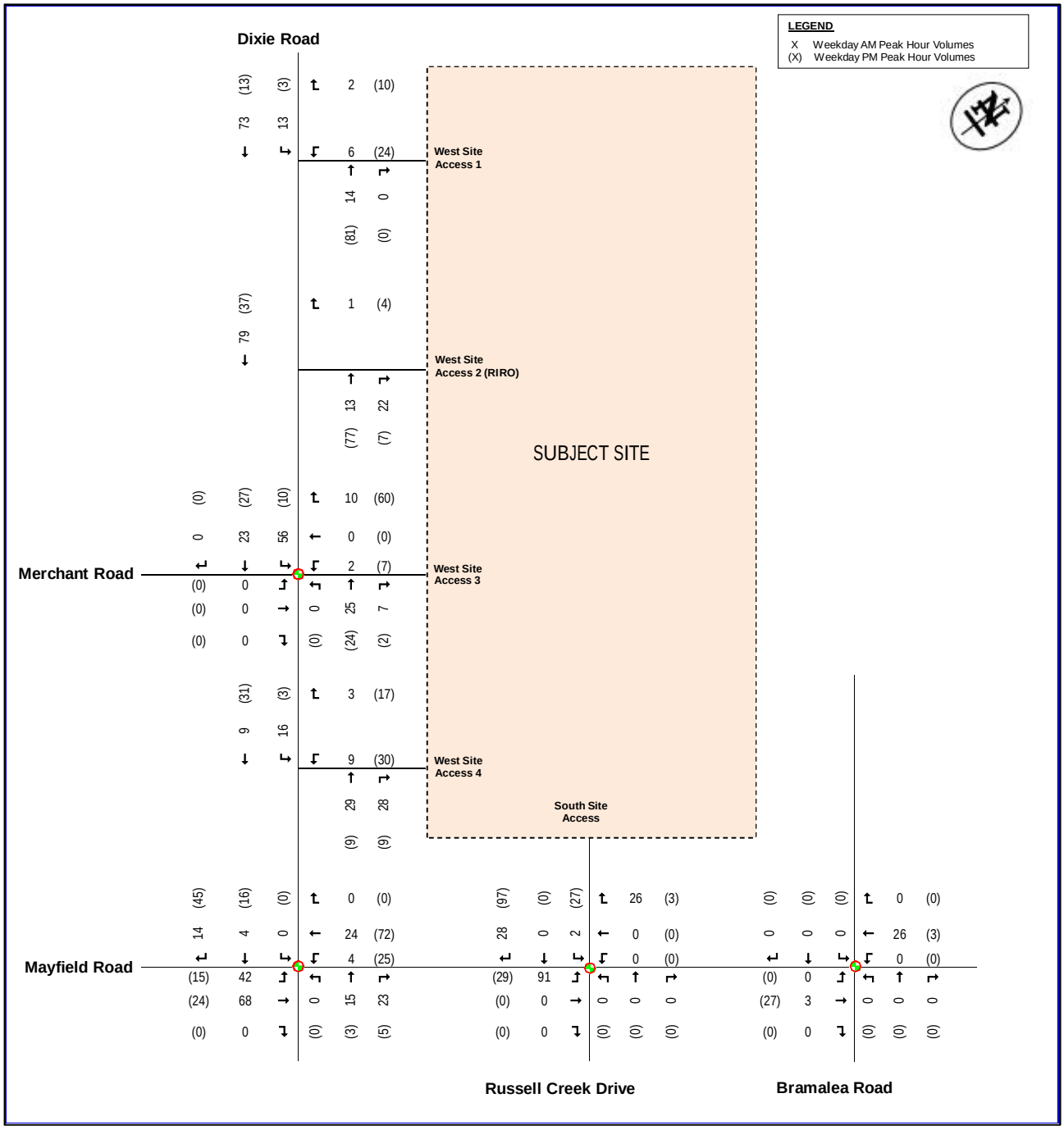
The majority of site traffic is expected to use Highway 410 to/from the proposed development which is located west of the subject site. The employee trip assignment was subsequently determined based on the trip origin and destination, site accesses, and the most logical routing. Figure 4-1 illustrates the trip assignment of employee traffic on the study road network.

As for heavy vehicle site traffic, it is assumed that most trucks will utilize the highway network for longer distance travel. Given the subject site's close proximity to Highway 410, heavy vehicle site traffic was assigned to utilize this highway to travel to/from the site, as shown in Figure 4-2.

The total site generated traffic volumes for the weekday AM and PM peak hours are illustrated in Figure 4-3.

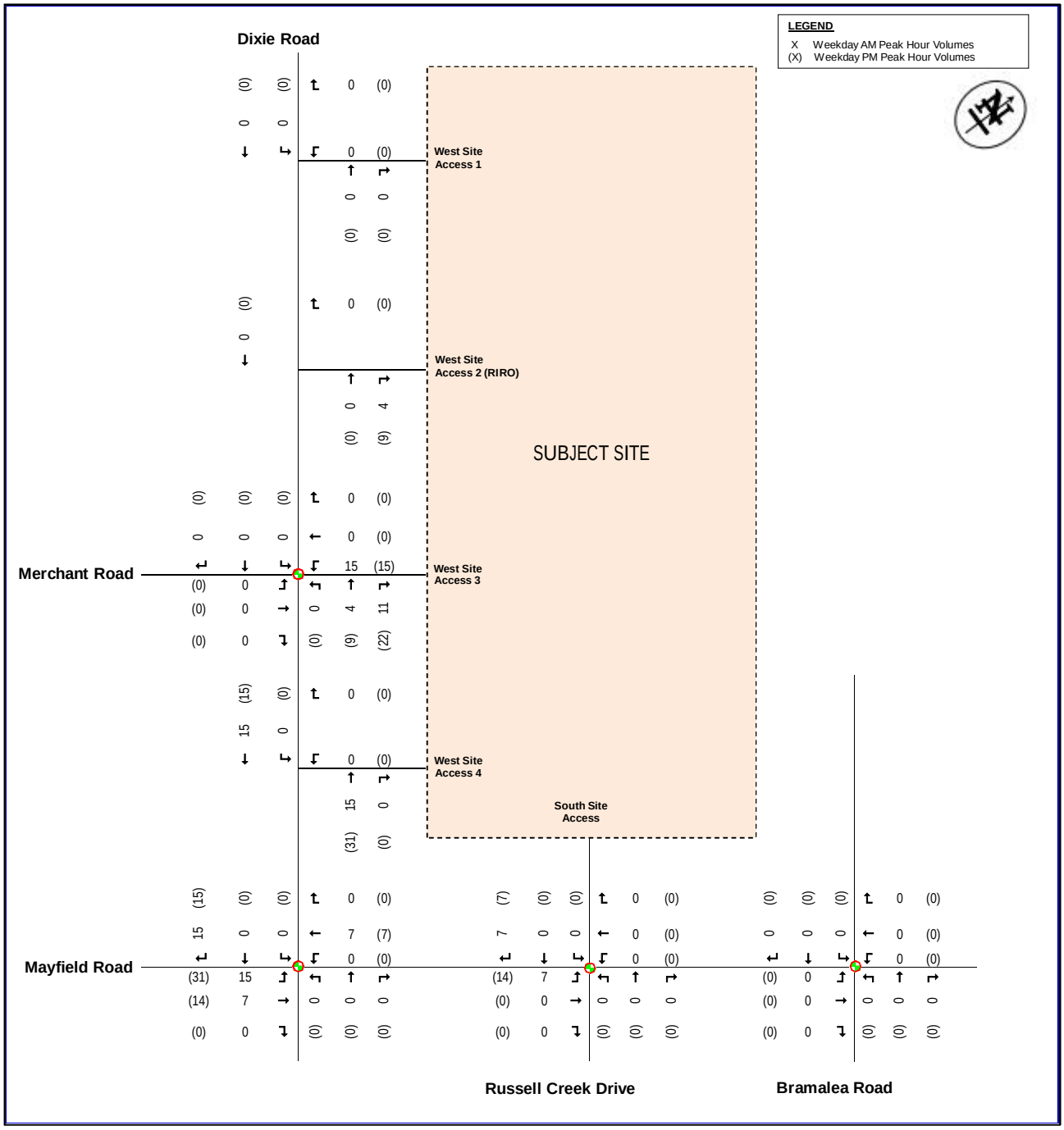
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Figure 4-1: Employee Vehicle Site Generated Peak Hour Traffic Volumes



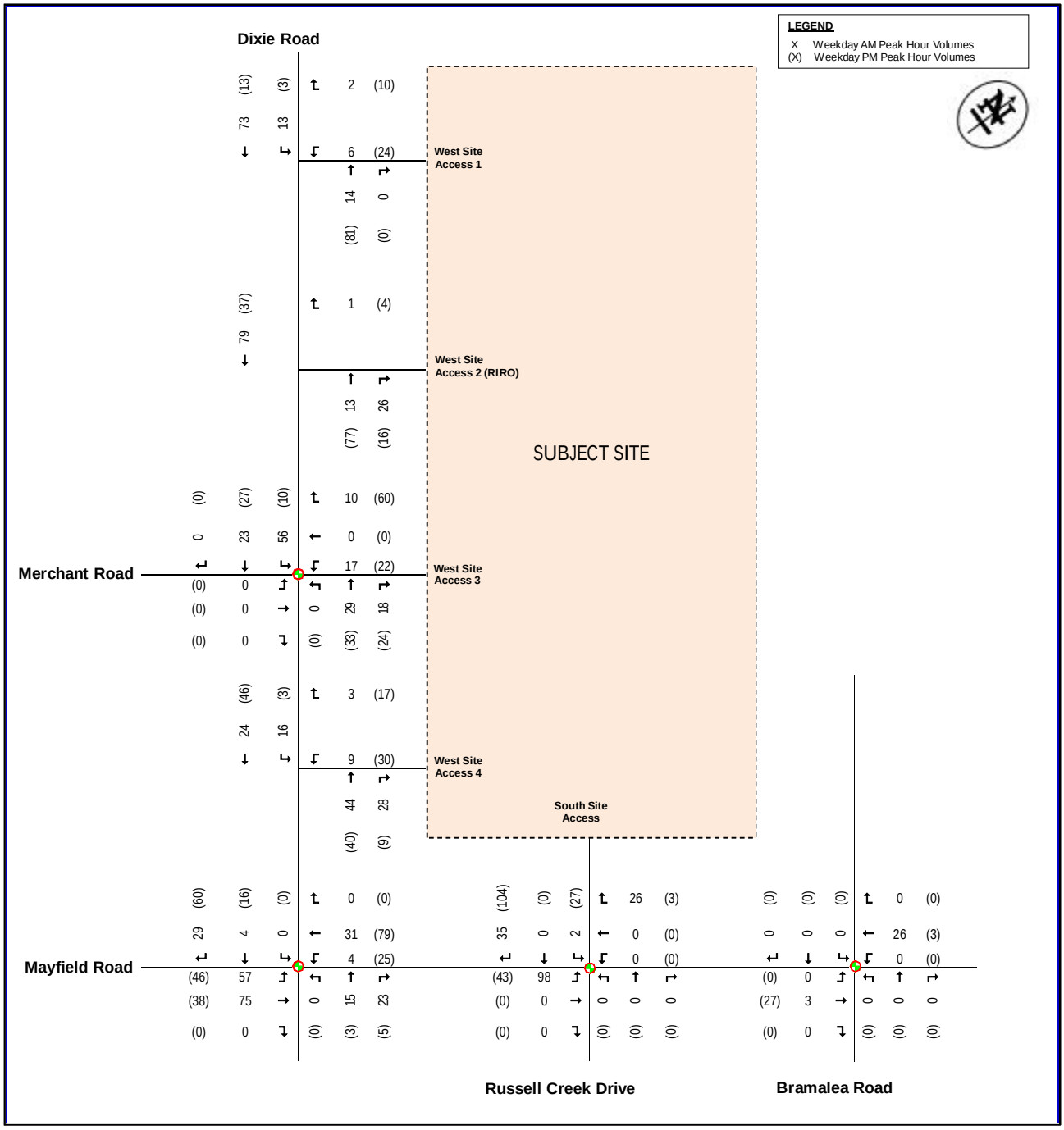
BD2- 0 & 12305 Dixie Rd - Traffic-11-03-21_Excerpts

Figure 4-2: Heavy Vehicle Site Generated Peak Hour Traffic Volumes



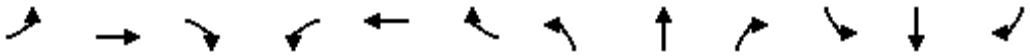
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Figure 4-3: Total Site Generated Peak Hour Traffic Volumes



Appendix G

2024 Future Background Conditions – Synchro Analysis Results



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Stop			Stop	
Traffic Volume (vph)	7	128	7	5	49	4	6	25	6	4	35	13
Future Volume (vph)	7	128	7	5	49	4	6	25	6	4	35	13
Peak Hour Factor	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85
Hourly flow rate (vph)	8	151	8	6	58	5	7	29	7	5	41	15

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total (vph)	167	69	43	61
Volume Left (vph)	8	6	7	5
Volume Right (vph)	8	5	7	15
Hadj (s)	0.04	0.13	0.19	-0.06
Departure Headway (s)	4.3	4.5	4.7	4.4
Degree Utilization, x	0.20	0.09	0.06	0.08
Capacity (veh/h)	821	770	721	759
Control Delay (s)	8.3	7.9	8.0	7.8
Approach Delay (s)	8.3	7.9	8.0	7.8
Approach LOS	A	A	A	A

Intersection Summary				
Delay	8.1			
Level of Service	A			
Intersection Capacity Utilization	18.9%	ICU Level of Service	A	
Analysis Period (min)	15			

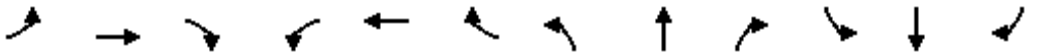
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	72	1515	511	116	990	250	108	55	18	216	135	104
Future Volume (vph)	72	1515	511	116	990	250	108	55	18	216	135	104
Lane Group Flow (vph)	72	1515	511	116	990	250	108	55	18	216	135	104
Turn Type	Perm	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm	Perm	NA	Perm
Protected Phases		2		1	6		7	4			8	
Permitted Phases	2		2	6		6	4		4	8		8
Detector Phase	2	2	2	1	6	6	7	4	4	8	8	8
Switch Phase												
Minimum Initial (s)	12.0	12.0	12.0	5.0	12.0	12.0	5.0	8.0	8.0	8.0	8.0	8.0
Minimum Split (s)	39.7	39.7	39.7	9.0	39.7	39.7	9.0	43.9	43.9	43.9	43.9	43.9
Total Split (s)	77.0	77.0	77.0	9.0	86.0	86.0	9.0	54.0	54.0	45.0	45.0	45.0
Total Split (%)	55.0%	55.0%	55.0%	6.4%	61.4%	61.4%	6.4%	38.6%	38.6%	32.1%	32.1%	32.1%
Yellow Time (s)	4.6	4.6	4.6	3.0	4.6	4.6	3.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	2.1	2.1	2.1	1.0	2.1	2.1	1.0	2.9	2.9	2.9	2.9	2.9
Lost Time Adjust (s)	0.0	0.0	0.0	-1.0	0.0	0.0	-1.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.7	6.7	6.7	3.0	6.7	6.7	3.0	6.9	6.9	6.9	6.9	6.9
Lead/Lag	Lag	Lag	Lag	Lead			Lead			Lag	Lag	Lag
Lead-Lag Optimize?												
Recall Mode	Max	Max	Max	None	Max	Max	None	None	None	None	None	None
v/c Ratio	0.30	0.64	0.52	0.66	0.39	0.32	0.33	0.11	0.04	0.79	0.35	0.26
Control Delay	23.4	24.0	3.5	30.9	14.8	2.8	35.0	33.6	0.2	68.9	45.0	9.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	23.4	24.0	3.5	30.9	14.8	2.8	35.0	33.6	0.2	68.9	45.0	9.8
Queue Length 50th (m)	10.3	100.3	0.0	11.6	47.5	0.0	20.4	10.4	0.0	53.2	29.7	1.0
Queue Length 95th (m)	24.4	129.9	17.5	#28.5	65.0	11.9	34.9	20.5	0.0	82.4	48.2	15.1
Internal Link Dist (m)		179.2			166.2			202.0			680.1	
Turn Bay Length (m)	115.0		180.0	80.0		150.0	110.0		44.0	20.0		20.0
Base Capacity (vph)	238	2383	991	176	2544	771	329	620	553	353	496	487
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.30	0.64	0.52	0.66	0.39	0.32	0.33	0.09	0.03	0.61	0.27	0.21

Intersection Summary

Cycle Length: 140
Actuated Cycle Length: 131.7
Natural Cycle: 105
Control Type: Semi Act-Uncoord
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 2: Heart Lake Road & Mayfield Road





Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	72	1515	511	116	990	250	108	55	18	216	135	104
Future Volume (vph)	72	1515	511	116	990	250	108	55	18	216	135	104
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5
Total Lost time (s)	6.7	6.7	6.7	3.0	6.7	6.7	3.0	6.9	6.9	6.9	6.9	6.9
Lane Util. Factor	1.00	0.91	1.00	1.00	0.91	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1530	4453	1409	1560	4214	1114	1530	1729	1437	1606	1712	1437
Flt Permitted	0.28	1.00	1.00	0.11	1.00	1.00	0.58	1.00	1.00	0.72	1.00	1.00
Satd. Flow (perm)	446	4453	1409	179	4214	1114	939	1729	1437	1219	1712	1437
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	72	1515	511	116	990	250	108	55	18	216	135	104
RTOR Reduction (vph)	0	0	237	0	0	99	0	0	13	0	0	77
Lane Group Flow (vph)	72	1515	274	116	990	151	108	55	5	216	135	27
Heavy Vehicles (%)	5%	6%	2%	3%	12%	29%	5%	0%	0%	0%	1%	0%
Turn Type	Perm	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm	Perm	NA	Perm
Protected Phases		2		1	6		7	4			8	
Permitted Phases	2		2	6		6	4		4	8		8
Actuated Green, G (s)	70.5	70.5	70.5	79.5	79.5	79.5	38.5	38.5	38.5	29.5	29.5	29.5
Effective Green, g (s)	70.5	70.5	70.5	80.5	79.5	79.5	39.5	38.5	38.5	29.5	29.5	29.5
Actuated g/C Ratio	0.54	0.54	0.54	0.61	0.60	0.60	0.30	0.29	0.29	0.22	0.22	0.22
Clearance Time (s)	6.7	6.7	6.7	4.0	6.7	6.7	4.0	6.9	6.9	6.9	6.9	6.9
Vehicle Extension (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Lane Grp Cap (vph)	238	2385	754	172	2545	672	308	505	420	273	383	322
v/s Ratio Prot		0.34		c0.03	0.23		c0.02	0.03			0.08	
v/s Ratio Perm	0.16		0.19	c0.38		0.14	0.09		0.00	c0.18		0.02
v/c Ratio	0.30	0.64	0.36	0.67	0.39	0.22	0.35	0.11	0.01	0.79	0.35	0.08
Uniform Delay, d1	16.9	21.5	17.6	14.5	13.5	11.9	35.3	34.0	33.1	48.1	43.0	40.4
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	3.2	1.3	1.4	12.8	0.4	0.8	1.4	0.2	0.0	16.4	1.2	0.2
Delay (s)	20.2	22.8	19.0	27.3	13.9	12.7	36.7	34.2	33.1	64.5	44.2	40.6
Level of Service	C	C	B	C	B	B	D	C	C	E	D	D
Approach Delay (s)		21.8			14.9			35.6			53.0	
Approach LOS		C			B			D			D	

Intersection Summary			
HCM 2000 Control Delay	23.6	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.71		
Actuated Cycle Length (s)	131.6	Sum of lost time (s)	19.6
Intersection Capacity Utilization	80.0%	ICU Level of Service	D
Analysis Period (min)	15		

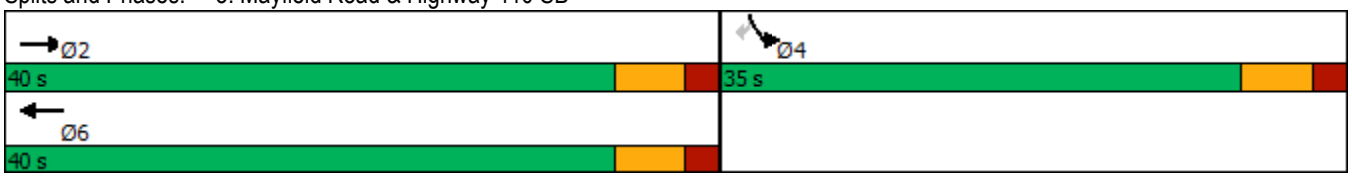
c Critical Lane Group

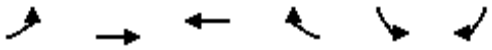
Lane Group	EBT	WBT	SBL	SBR
Lane Configurations				
Traffic Volume (vph)	1161	1048	322	277
Future Volume (vph)	1161	1048	322	277
Lane Group Flow (vph)	1161	1048	411	188
Turn Type	NA	NA	Prot	Perm
Protected Phases	2	6	4	
Permitted Phases				4
Detector Phase	2	6	4	4
Switch Phase				
Minimum Initial (s)	16.0	16.0	8.0	8.0
Minimum Split (s)	22.0	22.0	32.0	32.0
Total Split (s)	40.0	40.0	35.0	35.0
Total Split (%)	53.3%	53.3%	46.7%	46.7%
Yellow Time (s)	4.0	4.0	4.0	4.0
All-Red Time (s)	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.0	6.0	6.0	6.0
Lead/Lag				
Lead-Lag Optimize?				
Recall Mode	Max	Max	None	None
v/c Ratio	0.42	0.36	0.46	0.47
Control Delay	9.0	8.5	18.6	18.1
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	9.0	8.5	18.6	18.1
Queue Length 50th (m)	23.7	20.4	17.5	14.2
Queue Length 95th (m)	43.1	37.4	27.9	30.7
Internal Link Dist (m)	123.5	116.2	492.2	
Turn Bay Length (m)				
Base Capacity (vph)	2757	2923	1669	732
Starvation Cap Reductn	0	0	0	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.42	0.36	0.25	0.26

Intersection Summary

Cycle Length: 75
Actuated Cycle Length: 61.3
Natural Cycle: 55
Control Type: Semi Act-Uncoord

Splits and Phases: 3: Mayfield Road & Highway 410 SB





Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑↑↑	↑↑↑		↰↰	↱
Traffic Volume (vph)	0	1161	1048	0	322	277
Future Volume (vph)	0	1161	1048	0	322	277
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)		6.0	6.0		6.0	6.0
Lane Util. Factor		0.91	0.91		0.97	0.91
Frt		1.00	1.00		0.97	0.85
Flt Protected		1.00	1.00		0.96	1.00
Satd. Flow (prot)		4948	5245		3456	1486
Flt Permitted		1.00	1.00		0.96	1.00
Satd. Flow (perm)		4948	5245		3456	1486
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	0	1161	1048	0	322	277
RTOR Reduction (vph)	0	0	0	0	37	37
Lane Group Flow (vph)	0	1161	1048	0	374	151
Heavy Vehicles (%)	0%	6%	0%	16%	0%	0%
Bus Blockages (#/hr)	0	0	0	0	2	0
Turn Type		NA	NA		Prot	Perm
Protected Phases		2	6		4	
Permitted Phases						4
Actuated Green, G (s)		34.1	34.1		15.1	15.1
Effective Green, g (s)		34.1	34.1		15.1	15.1
Actuated g/C Ratio		0.56	0.56		0.25	0.25
Clearance Time (s)		6.0	6.0		6.0	6.0
Vehicle Extension (s)		5.0	5.0		5.0	5.0
Lane Grp Cap (vph)		2756	2922		852	366
v/s Ratio Prot		c0.23	0.20		c0.11	
v/s Ratio Perm						0.10
v/c Ratio		0.42	0.36		0.44	0.41
Uniform Delay, d1		7.8	7.5		19.5	19.3
Progression Factor		1.00	1.00		1.00	1.00
Incremental Delay, d2		0.5	0.3		0.8	1.6
Delay (s)		8.3	7.8		20.2	20.9
Level of Service		A	A		C	C
Approach Delay (s)		8.3	7.8		20.4	
Approach LOS		A	A		C	

Intersection Summary			
HCM 2000 Control Delay	10.7	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.43		
Actuated Cycle Length (s)	61.2	Sum of lost time (s)	12.0
Intersection Capacity Utilization	44.5%	ICU Level of Service	A
Analysis Period (min)	15		

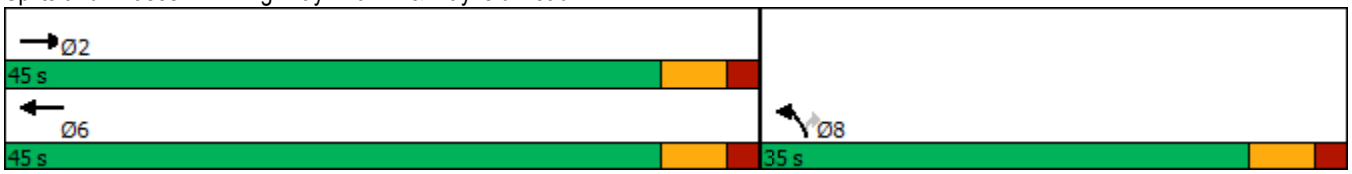
c Critical Lane Group

Lane Group	EBT	WBT	NBL	NBR
Lane Configurations				
Traffic Volume (vph)	1461	1407	414	815
Future Volume (vph)	1461	1407	414	815
Lane Group Flow (vph)	1461	1407	822	407
Turn Type	NA	NA	Prot	Perm
Protected Phases	2	6	8	
Permitted Phases				8
Detector Phase	2	6	8	8
Switch Phase				
Minimum Initial (s)	26.0	26.0	10.0	10.0
Minimum Split (s)	32.0	32.0	22.0	22.0
Total Split (s)	45.0	45.0	35.0	35.0
Total Split (%)	56.3%	56.3%	43.8%	43.8%
Yellow Time (s)	4.0	4.0	4.0	4.0
All-Red Time (s)	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.0	6.0	6.0	6.0
Lead/Lag				
Lead-Lag Optimize?				
Recall Mode	Max	None	None	None
v/c Ratio	0.59	0.60	0.82	0.88
Control Delay	15.2	15.5	30.3	45.6
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	15.2	15.5	30.3	45.6
Queue Length 50th (m)	56.0	54.4	54.7	58.4
Queue Length 95th (m)	69.8	68.2	75.8	#112.5
Internal Link Dist (m)	104.0	63.2	627.1	
Turn Bay Length (m)				
Base Capacity (vph)	2491	2357	1101	503
Starvation Cap Reductn	0	0	0	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.59	0.60	0.75	0.81

Intersection Summary

Cycle Length: 80
Actuated Cycle Length: 77.7
Natural Cycle: 60
Control Type: Semi Act-Uncoord
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 4: Highway 410 NB & Mayfield Road





Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	1461	0	0	1407	414	815
Future Volume (vph)	1461	0	0	1407	414	815
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0			6.0	6.0	6.0
Lane Util. Factor	0.91			0.91	0.97	0.91
Frt	1.00			1.00	0.93	0.85
Flt Protected	1.00			1.00	0.98	1.00
Satd. Flow (prot)	4948			4683	2913	1315
Flt Permitted	1.00			1.00	0.98	1.00
Satd. Flow (perm)	4948			4683	2913	1315
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	1461	0	0	1407	414	815
RTOR Reduction (vph)	0	0	0	0	12	12
Lane Group Flow (vph)	1461	0	0	1407	810	395
Heavy Vehicles (%)	6%	0%	0%	12%	18%	13%
Turn Type	NA			NA	Prot	Perm
Protected Phases	2			6	8	
Permitted Phases						8
Actuated Green, G (s)	39.1			39.1	26.5	26.5
Effective Green, g (s)	39.1			39.1	26.5	26.5
Actuated g/C Ratio	0.50			0.50	0.34	0.34
Clearance Time (s)	6.0			6.0	6.0	6.0
Vehicle Extension (s)	5.0			5.0	3.0	3.0
Lane Grp Cap (vph)	2493			2359	994	449
v/s Ratio Prot	0.30			c0.30	0.28	
v/s Ratio Perm						c0.30
v/c Ratio	0.59			0.60	0.82	0.88
Uniform Delay, d1	13.6			13.7	23.3	24.1
Progression Factor	1.00			1.00	1.00	1.00
Incremental Delay, d2	1.0			0.6	5.2	17.9
Delay (s)	14.6			14.3	28.5	41.9
Level of Service	B			B	C	D
Approach Delay (s)	14.6			14.3	33.0	
Approach LOS	B			B	C	

Intersection Summary			
HCM 2000 Control Delay	20.0	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.71		
Actuated Cycle Length (s)	77.6	Sum of lost time (s)	12.0
Intersection Capacity Utilization	71.9%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	EBT	EBR	WBL	WBT	NBL
Lane Configurations					
Traffic Volume (vph)	1869	211	68	1162	96
Future Volume (vph)	1869	211	68	1162	96
Lane Group Flow (vph)	1869	211	68	1162	151
Turn Type	NA	Perm	Perm	NA	Prot
Protected Phases	2			2	4
Permitted Phases		2	2		
Detector Phase	2	2	2	2	4
Switch Phase					
Minimum Initial (s)	12.0	12.0	12.0	12.0	8.0
Minimum Split (s)	26.7	26.7	26.7	26.7	45.6
Total Split (s)	74.0	74.0	74.0	74.0	46.0
Total Split (%)	61.7%	61.7%	61.7%	61.7%	38.3%
Yellow Time (s)	4.6	4.6	4.6	4.6	4.0
All-Red Time (s)	2.1	2.1	2.1	2.1	3.6
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.7	6.7	6.7	6.7	7.6
Lead/Lag					
Lead-Lag Optimize?					
Recall Mode	Max	Max	Max	Max	None
v/c Ratio	0.51	0.18	0.57	0.32	0.56
Control Delay	7.8	1.4	32.6	6.2	43.9
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	7.8	1.4	32.6	6.2	43.9
Queue Length 50th (m)	52.6	0.5	5.6	26.9	24.5
Queue Length 95th (m)	75.7	7.6	#32.2	40.0	43.1
Internal Link Dist (m)	203.7			76.6	88.2
Turn Bay Length (m)		65.0	35.0		
Base Capacity (vph)	3636	1166	119	3636	667
Starvation Cap Reductn	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.51	0.18	0.57	0.32	0.23

Intersection Summary

Cycle Length: 120
Actuated Cycle Length: 101
Natural Cycle: 90
Control Type: Actuated-Uncoordinated
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 5: Ace Drive & Mayfield Road





Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	1869	211	68	1162	96	55
Future Volume (vph)	1869	211	68	1162	96	55
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width	3.7	3.5	3.5	3.7	3.7	3.7
Total Lost time (s)	6.7	6.7	6.7	6.7	7.6	
Lane Util. Factor	0.91	1.00	1.00	0.91	1.00	
Frt	1.00	0.85	1.00	1.00	0.95	
Flt Protected	1.00	1.00	0.95	1.00	0.97	
Satd. Flow (prot)	5142	1566	1750	5142	1736	
Flt Permitted	1.00	1.00	0.09	1.00	0.97	
Satd. Flow (perm)	5142	1566	169	5142	1736	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	1869	211	68	1162	96	55
RTOR Reduction (vph)	0	59	0	0	9	0
Lane Group Flow (vph)	1869	152	68	1162	142	0
Turn Type	NA	Perm	Perm	NA	Prot	
Protected Phases	2			2	4	
Permitted Phases		2	2			
Actuated Green, G (s)	71.5	71.5	71.5	71.5	15.2	
Effective Green, g (s)	71.5	71.5	71.5	71.5	15.2	
Actuated g/C Ratio	0.71	0.71	0.71	0.71	0.15	
Clearance Time (s)	6.7	6.7	6.7	6.7	7.6	
Vehicle Extension (s)	5.0	5.0	5.0	5.0	5.0	
Lane Grp Cap (vph)	3640	1108	119	3640	261	
v/s Ratio Prot	0.36			0.23	c0.08	
v/s Ratio Perm		0.10	c0.40			
v/c Ratio	0.51	0.14	0.57	0.32	0.54	
Uniform Delay, d1	6.8	4.8	7.2	5.6	39.7	
Progression Factor	1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	0.5	0.3	18.4	0.2	4.0	
Delay (s)	7.3	5.0	25.6	5.8	43.7	
Level of Service	A	A	C	A	D	
Approach Delay (s)	7.1			6.9	43.7	
Approach LOS	A			A	D	

Intersection Summary			
HCM 2000 Control Delay	8.6	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.56		
Actuated Cycle Length (s)	101.0	Sum of lost time (s)	14.3
Intersection Capacity Utilization	72.3%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

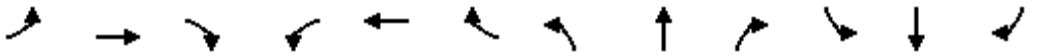
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	452	1575	364	64	663	44	121	94	54	33	140	353
Future Volume (vph)	452	1575	364	64	663	44	121	94	54	33	140	353
Lane Group Flow (vph)	452	1575	364	64	663	44	121	94	54	33	140	353
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	Perm	NA	Perm	Perm	NA	Perm
Protected Phases	5	2		1	6			8			4	
Permitted Phases	2		2	6		6	8		8	4		4
Detector Phase	5	2	2	1	6	6	8	8	8	4	4	4
Switch Phase												
Minimum Initial (s)	5.0	8.0	8.0	5.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0
Minimum Split (s)	9.0	44.9	44.9	9.0	44.9	44.9	47.9	47.9	47.9	47.9	47.9	47.9
Total Split (s)	10.0	60.0	60.0	10.0	60.0	60.0	50.0	50.0	50.0	50.0	50.0	50.0
Total Split (%)	8.3%	50.0%	50.0%	8.3%	50.0%	50.0%	41.7%	41.7%	41.7%	41.7%	41.7%	41.7%
Yellow Time (s)	3.0	4.6	4.6	3.0	4.6	4.6	4.6	4.6	4.6	4.6	4.6	4.6
All-Red Time (s)	1.0	2.3	2.3	1.0	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.3
Lost Time Adjust (s)	-1.0	0.0	0.0	-1.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	3.0	6.9	6.9	3.0	6.9	6.9	6.9	6.9	6.9	6.9	6.9	6.9
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag						
Lead-Lag Optimize?												
Recall Mode	None	Max	Max	None	None	None	None	None	None	None	None	None
v/c Ratio	0.92	0.56	0.35	0.26	0.26	0.06	0.53	0.15	0.16	0.17	0.22	0.74
Control Delay	39.2	14.9	2.5	8.4	12.1	1.5	42.5	31.5	5.5	33.0	32.2	21.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	39.2	14.9	2.5	8.4	12.1	1.5	42.5	31.5	5.5	33.0	32.2	21.0
Queue Length 50th (m)	27.4	61.4	0.0	2.9	20.4	0.0	20.1	7.6	0.0	5.1	11.5	17.1
Queue Length 95th (m)	#115.7	101.5	14.0	9.8	36.7	2.5	36.6	14.0	6.2	12.8	19.2	47.2
Internal Link Dist (m)		179.3			299.2			185.5			471.5	
Turn Bay Length (m)	140.0		70.0	65.0		30.0	75.0		60.0	30.0		138.0
Base Capacity (vph)	492	2823	1039	249	2650	722	560	1483	698	479	1580	810
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.92	0.56	0.35	0.26	0.25	0.06	0.22	0.06	0.08	0.07	0.09	0.44

Intersection Summary

Cycle Length: 120
Actuated Cycle Length: 93.3
Natural Cycle: 105
Control Type: Semi Act-Uncoord
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 6: Dixie Road & Mayfield Road





Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	452	1575	364	64	663	44	121	94	54	33	140	353
Future Volume (vph)	452	1575	364	64	663	44	121	94	54	33	140	353
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5
Total Lost time (s)	3.0	6.9	6.9	3.0	6.9	6.9	6.9	6.9	6.9	6.9	6.9	6.9
Lane Util. Factor	1.00	0.91	1.00	1.00	0.91	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1566	4902	1536	1653	4601	1201	1716	3174	1413	1405	3380	1452
Flt Permitted	0.38	1.00	1.00	0.12	1.00	1.00	0.66	1.00	1.00	0.69	1.00	1.00
Satd. Flow (perm)	623	4902	1536	208	4601	1201	1198	3174	1413	1025	3380	1452
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	452	1575	364	64	663	44	121	94	54	33	140	353
RTOR Reduction (vph)	0	0	156	0	0	20	0	0	44	0	0	200
Lane Group Flow (vph)	452	1575	208	64	663	24	121	94	10	33	140	153
Heavy Vehicles (%)	14%	7%	4%	8%	14%	33%	4%	15%	13%	27%	8%	10%
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	Perm	NA	Perm	Perm	NA	Perm
Protected Phases	5	2		1	6			8			4	
Permitted Phases	2		2	6		6	8		8	4		4
Actuated Green, G (s)	59.8	53.7	53.7	56.8	52.2	52.2	17.9	17.9	17.9	17.9	17.9	17.9
Effective Green, g (s)	61.8	53.7	53.7	58.8	52.2	52.2	17.9	17.9	17.9	17.9	17.9	17.9
Actuated g/C Ratio	0.66	0.57	0.57	0.63	0.56	0.56	0.19	0.19	0.19	0.19	0.19	0.19
Clearance Time (s)	4.0	6.9	6.9	4.0	6.9	6.9	6.9	6.9	6.9	6.9	6.9	6.9
Vehicle Extension (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Lane Grp Cap (vph)	480	2800	877	216	2555	666	228	604	269	195	643	276
v/s Ratio Prot	c0.07	0.32		0.02	0.14			0.03			0.04	
v/s Ratio Perm	c0.55		0.14	0.17		0.02	0.10		0.01	0.03		c0.11
v/c Ratio	0.94	0.56	0.24	0.30	0.26	0.04	0.53	0.16	0.04	0.17	0.22	0.55
Uniform Delay, d1	10.9	12.7	10.0	7.6	10.9	9.5	34.3	31.7	31.0	31.8	32.1	34.4
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	27.7	0.8	0.6	1.6	0.1	0.0	4.3	0.3	0.1	0.9	0.4	4.1
Delay (s)	38.6	13.6	10.6	9.3	11.0	9.5	38.6	32.0	31.2	32.7	32.5	38.5
Level of Service	D	B	B	A	B	A	D	C	C	C	C	D
Approach Delay (s)		17.8			10.7			34.8			36.5	
Approach LOS		B			B			C			D	

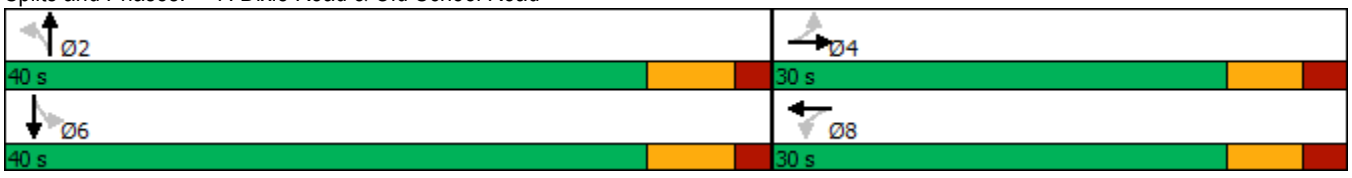
Intersection Summary			
HCM 2000 Control Delay	20.1	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.88		
Actuated Cycle Length (s)	94.0	Sum of lost time (s)	16.8
Intersection Capacity Utilization	71.8%	ICU Level of Service	C
Analysis Period (min)	15		

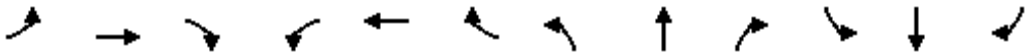
c Critical Lane Group

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations								
Traffic Volume (vph)	11	228	43	88	5	206	33	543
Future Volume (vph)	11	228	43	88	5	206	33	543
Lane Group Flow (vph)	11	259	43	96	5	250	33	554
Turn Type	Perm	NA	Perm	NA	Perm	NA	Perm	NA
Protected Phases		4		8		2		6
Permitted Phases	4		8		2		6	
Detector Phase	4	4	8	8	2	2	6	6
Switch Phase								
Minimum Initial (s)	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0
Minimum Split (s)	25.4	25.4	25.4	25.4	23.6	23.6	23.6	23.6
Total Split (s)	30.0	30.0	30.0	30.0	40.0	40.0	40.0	40.0
Total Split (%)	42.9%	42.9%	42.9%	42.9%	57.1%	57.1%	57.1%	57.1%
Yellow Time (s)	4.0	4.0	4.0	4.0	4.6	4.6	4.6	4.6
All-Red Time (s)	2.4	2.4	2.4	2.4	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.4	6.4	6.4	6.4	6.6	6.6	6.6	6.6
Lead/Lag								
Lead-Lag Optimize?								
Recall Mode	None	None	None	None	Max	Max	Max	Max
v/c Ratio	0.04	0.57	0.18	0.22	0.01	0.26	0.06	0.55
Control Delay	17.4	24.7	19.6	18.1	8.2	8.5	8.3	12.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	17.4	24.7	19.6	18.1	8.2	8.5	8.3	12.5
Queue Length 50th (m)	1.0	24.4	3.8	8.0	0.3	12.3	1.6	36.9
Queue Length 95th (m)	4.1	43.3	10.5	17.7	1.8	28.3	5.9	74.8
Internal Link Dist (m)		1372.4		151.6		1518.8		144.7
Turn Bay Length (m)	35.0		45.0		40.0		35.0	
Base Capacity (vph)	385	699	377	684	391	961	589	1015
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.03	0.37	0.11	0.14	0.01	0.26	0.06	0.55

Intersection Summary
Cycle Length: 70
Actuated Cycle Length: 63
Natural Cycle: 60
Control Type: Semi Act-Uncoord

Splits and Phases: 7: Dixie Road & Old School Road

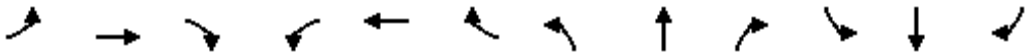




Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	11	228	31	43	88	8	5	206	44	33	543	11
Future Volume (vph)	11	228	31	43	88	8	5	206	44	33	543	11
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5
Total Lost time (s)	6.4	6.4		6.4	6.4		6.6	6.6		6.6	6.6	
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	0.97		1.00	1.00	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1405	1847		1785	1814		1785	1728		1684	1843	
Flt Permitted	0.69	1.00		0.54	1.00		0.38	1.00		0.60	1.00	
Satd. Flow (perm)	1028	1847		1007	1814		710	1728		1071	1843	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	11	228	31	43	88	8	5	206	44	33	543	11
RTOR Reduction (vph)	0	8	0	0	5	0	0	9	0	0	1	0
Lane Group Flow (vph)	11	251	0	43	91	0	5	241	0	33	553	0
Heavy Vehicles (%)	27%	2%	3%	0%	5%	0%	0%	10%	0%	6%	4%	0%
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)	15.3	15.3		15.3	15.3		34.7	34.7		34.7	34.7	
Effective Green, g (s)	15.3	15.3		15.3	15.3		34.7	34.7		34.7	34.7	
Actuated g/C Ratio	0.24	0.24		0.24	0.24		0.55	0.55		0.55	0.55	
Clearance Time (s)	6.4	6.4		6.4	6.4		6.6	6.6		6.6	6.6	
Vehicle Extension (s)	5.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0	
Lane Grp Cap (vph)	249	448		244	440		391	951		589	1015	
v/s Ratio Prot		c0.14			0.05			0.14			c0.30	
v/s Ratio Perm	0.01			0.04			0.01			0.03		
v/c Ratio	0.04	0.56		0.18	0.21		0.01	0.25		0.06	0.54	
Uniform Delay, d1	18.3	20.9		18.9	19.0		6.4	7.4		6.6	9.1	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.2	2.6		0.7	0.5		0.1	0.6		0.2	2.1	
Delay (s)	18.4	23.5		19.6	19.5		6.5	8.0		6.7	11.2	
Level of Service	B	C		B	B		A	A		A	B	
Approach Delay (s)		23.3			19.5			8.0			10.9	
Approach LOS		C			B			A			B	

Intersection Summary			
HCM 2000 Control Delay	14.0	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.55		
Actuated Cycle Length (s)	63.0	Sum of lost time (s)	13.0
Intersection Capacity Utilization	66.0%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Stop			Stop	
Traffic Volume (vph)	6	87	9	19	176	3	18	32	11	1	32	10
Future Volume (vph)	6	87	9	19	176	3	18	32	11	1	32	10
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Hourly flow rate (vph)	6	93	10	20	187	3	19	34	12	1	34	11

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total (vph)	109	210	65	46
Volume Left (vph)	6	20	19	1
Volume Right (vph)	10	3	12	11
Hadj (s)	-0.02	0.03	-0.05	-0.09
Departure Headway (s)	4.4	4.3	4.6	4.6
Degree Utilization, x	0.13	0.25	0.08	0.06
Capacity (veh/h)	791	802	722	716
Control Delay (s)	8.0	8.8	8.0	7.9
Approach Delay (s)	8.0	8.8	8.0	7.9
Approach LOS	A	A	A	A

Intersection Summary				
Delay	8.4			
Level of Service	A			
Intersection Capacity Utilization	32.2%	ICU Level of Service	A	
Analysis Period (min)	15			

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	93	1101	125	37	1579	229	311	92	11	288	78	82
Future Volume (vph)	93	1101	125	37	1579	229	311	92	11	288	78	82
Lane Group Flow (vph)	93	1101	125	37	1579	229	311	92	11	288	78	82
Turn Type	Perm	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm	Perm	NA	Perm
Protected Phases		2		1	6		7	4			8	
Permitted Phases	2		2	6		6	4		4	8		8
Detector Phase	2	2	2	1	6	6	7	4	4	8	8	8
Switch Phase												
Minimum Initial (s)	12.0	12.0	12.0	5.0	12.0	12.0	5.0	8.0	8.0	8.0	8.0	8.0
Minimum Split (s)	39.7	39.7	39.7	9.0	39.7	39.7	9.0	43.9	43.9	43.9	43.9	43.9
Total Split (s)	65.0	65.0	65.0	9.0	74.0	74.0	16.0	61.0	61.0	45.0	45.0	45.0
Total Split (%)	48.1%	48.1%	48.1%	6.7%	54.8%	54.8%	11.9%	45.2%	45.2%	33.3%	33.3%	33.3%
Yellow Time (s)	4.6	4.6	4.6	3.0	4.6	4.6	3.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	2.1	2.1	2.1	1.0	2.1	2.1	1.0	2.9	2.9	2.9	2.9	2.9
Lost Time Adjust (s)	0.0	0.0	0.0	-1.0	0.0	0.0	-1.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.7	6.7	6.7	3.0	6.7	6.7	3.0	6.9	6.9	6.9	6.9	6.9
Lead/Lag	Lag	Lag	Lag	Lead			Lead			Lag	Lag	Lag
Lead-Lag Optimize?												
Recall Mode	Max	Max	Max	None	Max	Max	None	None	None	None	None	None
v/c Ratio	1.18	0.57	0.18	0.18	0.69	0.28	0.61	0.13	0.02	0.95	0.17	0.18
Control Delay	193.5	29.3	4.4	17.6	27.4	3.1	33.9	26.4	0.1	87.2	37.8	6.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	193.5	29.3	4.4	17.6	27.4	3.1	33.9	26.4	0.1	87.2	37.8	6.1
Queue Length 50th (m)	~30.4	80.7	0.0	4.7	114.9	0.0	58.0	15.4	0.0	74.8	15.7	0.0
Queue Length 95th (m)	#66.4	95.5	11.5	10.3	131.9	13.0	84.2	27.1	0.0	#129.2	28.9	9.5
Internal Link Dist (m)		179.2			166.2			202.0			680.1	
Turn Bay Length (m)	115.0		180.0	80.0		150.0	110.0		44.0	20.0		20.0
Base Capacity (vph)	79	1944	677	208	2303	822	513	698	569	313	473	457
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	1.18	0.57	0.18	0.18	0.69	0.28	0.61	0.13	0.02	0.92	0.16	0.18

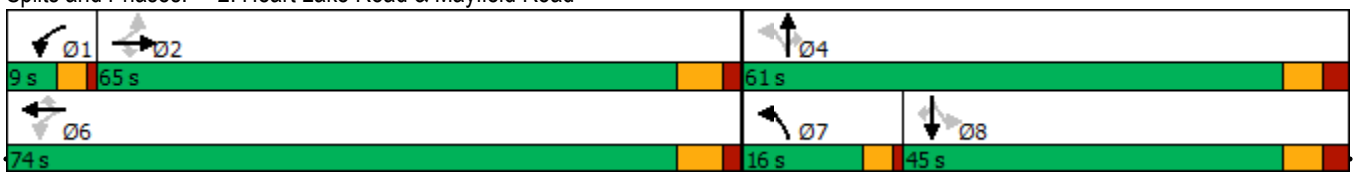
Intersection Summary

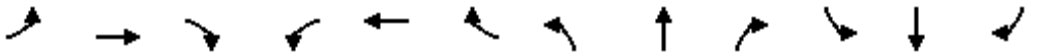
Cycle Length: 135
Actuated Cycle Length: 133.9
Natural Cycle: 125
Control Type: Semi Act-Uncoord

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

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

Splits and Phases: 2: Heart Lake Road & Mayfield Road





Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	93	1101	125	37	1579	229	311	92	11	288	78	82
Future Volume (vph)	93	1101	125	37	1579	229	311	92	11	288	78	82
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5
Total Lost time (s)	6.7	6.7	6.7	3.0	6.7	6.7	3.0	6.9	6.9	6.9	6.9	6.9
Lane Util. Factor	1.00	0.91	1.00	1.00	0.91	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1560	4330	1356	1530	4583	1409	1591	1729	1319	1501	1662	1369
Flt Permitted	0.11	1.00	1.00	0.18	1.00	1.00	0.65	1.00	1.00	0.70	1.00	1.00
Satd. Flow (perm)	176	4330	1356	287	4583	1409	1096	1729	1319	1102	1662	1369
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	93	1101	125	37	1579	229	311	92	11	288	78	82
RTOR Reduction (vph)	0	0	69	0	0	113	0	0	7	0	0	59
Lane Group Flow (vph)	93	1101	56	37	1579	116	311	92	4	288	78	23
Heavy Vehicles (%)	3%	9%	6%	5%	3%	2%	1%	0%	9%	7%	4%	5%
Turn Type	Perm	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm	Perm	NA	Perm
Protected Phases		2		1	6		7	4			8	
Permitted Phases	2		2	6		6	4		4	8		8
Actuated Green, G (s)	60.2	60.2	60.2	68.2	68.2	68.2	53.0	53.0	53.0	37.0	37.0	37.0
Effective Green, g (s)	60.2	60.2	60.2	69.2	68.2	68.2	54.0	53.0	53.0	37.0	37.0	37.0
Actuated g/C Ratio	0.45	0.45	0.45	0.51	0.51	0.51	0.40	0.39	0.39	0.27	0.27	0.27
Clearance Time (s)	6.7	6.7	6.7	4.0	6.7	6.7	4.0	6.9	6.9	6.9	6.9	6.9
Vehicle Extension (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Lane Grp Cap (vph)	78	1933	605	193	2318	712	486	679	518	302	456	375
v/s Ratio Prot		0.25		0.01	c0.34		c0.06	0.05			0.05	
v/s Ratio Perm	c0.53		0.04	0.09		0.08	0.19		0.00	c0.26		0.02
v/c Ratio	1.19	0.57	0.09	0.19	0.68	0.16	0.64	0.14	0.01	0.95	0.17	0.06
Uniform Delay, d1	37.3	27.7	21.5	17.7	25.1	17.9	31.3	26.2	24.9	48.1	37.2	36.1
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	162.7	1.2	0.3	1.0	1.6	0.5	3.8	0.2	0.0	40.0	0.4	0.1
Delay (s)	200.0	28.9	21.8	18.7	26.7	18.4	35.1	26.4	24.9	88.0	37.6	36.2
Level of Service	F	C	C	B	C	B	D	C	C	F	D	D
Approach Delay (s)		40.3			25.5			32.9			69.8	
Approach LOS		D			C			C			E	

Intersection Summary			
HCM 2000 Control Delay	36.1	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	1.03		
Actuated Cycle Length (s)	134.8	Sum of lost time (s)	19.6
Intersection Capacity Utilization	86.6%	ICU Level of Service	E
Analysis Period (min)	15		

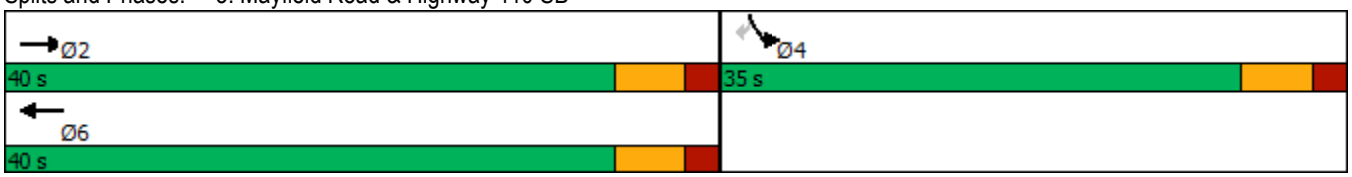
c Critical Lane Group

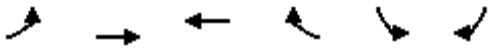
Lane Group	EBT	WBT	SBL	SBR
Lane Configurations				
Traffic Volume (vph)	863	2005	98	23
Future Volume (vph)	863	2005	98	23
Lane Group Flow (vph)	863	2005	100	21
Turn Type	NA	NA	Prot	Perm
Protected Phases	2	6	4	
Permitted Phases				4
Detector Phase	2	6	4	4
Switch Phase				
Minimum Initial (s)	16.0	16.0	8.0	8.0
Minimum Split (s)	22.0	22.0	32.0	32.0
Total Split (s)	40.0	40.0	35.0	35.0
Total Split (%)	53.3%	53.3%	46.7%	46.7%
Yellow Time (s)	4.0	4.0	4.0	4.0
All-Red Time (s)	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.0	6.0	6.0	6.0
Lead/Lag				
Lead-Lag Optimize?				
Recall Mode	Max	Max	None	None
v/c Ratio	0.24	0.54	0.19	0.09
Control Delay	4.4	6.2	21.6	19.6
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	4.4	6.2	21.6	19.6
Queue Length 50th (m)	12.1	37.7	4.8	1.9
Queue Length 95th (m)	18.2	53.0	9.5	6.9
Internal Link Dist (m)	123.5	116.2	492.2	
Turn Bay Length (m)				
Base Capacity (vph)	3596	3740	1680	736
Starvation Cap Reductn	0	0	0	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.24	0.54	0.06	0.03

Intersection Summary

Cycle Length: 75
Actuated Cycle Length: 59.1
Natural Cycle: 60
Control Type: Semi Act-Uncoord

Splits and Phases: 3: Mayfield Road & Highway 410 SB





Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	0	863	2005	0	98	23
Future Volume (vph)	0	863	2005	0	98	23
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)		6.0	6.0		6.0	6.0
Lane Util. Factor		0.91	0.91		0.97	0.91
Frt		1.00	1.00		1.00	0.85
Flt Protected		1.00	1.00		0.95	1.00
Satd. Flow (prot)		5043	5245		3395	1486
Flt Permitted		1.00	1.00		0.95	1.00
Satd. Flow (perm)		5043	5245		3395	1486
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	0	863	2005	0	98	23
RTOR Reduction (vph)	0	0	0	0	2	2
Lane Group Flow (vph)	0	863	2005	0	98	19
Heavy Vehicles (%)	0%	4%	0%	2%	4%	0%
Bus Blockages (#/hr)	0	0	0	0	2	0
Turn Type		NA	NA		Prot	Perm
Protected Phases		2	6		4	
Permitted Phases						4
Actuated Green, G (s)		40.8	40.8		7.4	7.4
Effective Green, g (s)		40.8	40.8		7.4	7.4
Actuated g/C Ratio		0.68	0.68		0.12	0.12
Clearance Time (s)		6.0	6.0		6.0	6.0
Vehicle Extension (s)		5.0	5.0		5.0	5.0
Lane Grp Cap (vph)		3417	3554		417	182
v/s Ratio Prot		0.17	c0.38		c0.03	
v/s Ratio Perm						0.01
v/c Ratio		0.25	0.56		0.24	0.11
Uniform Delay, d1		3.8	5.1		23.8	23.5
Progression Factor		1.00	1.00		1.00	1.00
Incremental Delay, d2		0.2	0.7		0.6	0.5
Delay (s)		3.9	5.7		24.5	24.0
Level of Service		A	A		C	C
Approach Delay (s)		3.9	5.7		24.4	
Approach LOS		A	A		C	

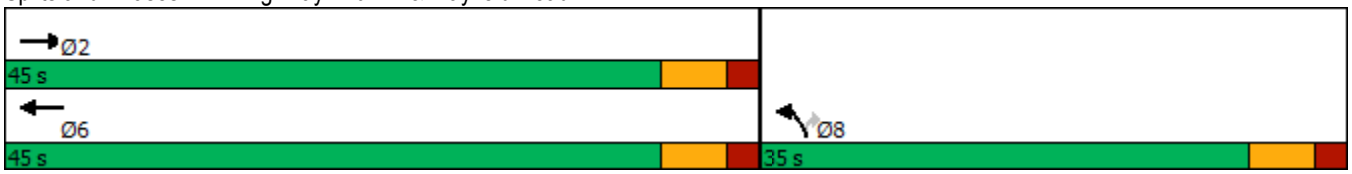
Intersection Summary			
HCM 2000 Control Delay	6.0	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.51		
Actuated Cycle Length (s)	60.2	Sum of lost time (s)	12.0
Intersection Capacity Utilization	55.4%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

Lane Group	EBT	WBT	NBL	NBR
Lane Configurations				
Traffic Volume (vph)	898	1755	854	911
Future Volume (vph)	898	1755	854	911
Lane Group Flow (vph)	898	1755	1209	556
Turn Type	NA	NA	Prot	Perm
Protected Phases	2	6	8	
Permitted Phases	2	6		8
Detector Phase	2	6	8	8
Switch Phase				
Minimum Initial (s)	26.0	26.0	10.0	10.0
Minimum Split (s)	32.0	32.0	22.0	22.0
Total Split (s)	45.0	45.0	35.0	35.0
Total Split (%)	56.3%	56.3%	43.8%	43.8%
Yellow Time (s)	4.0	4.0	4.0	4.0
All-Red Time (s)	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.0	6.0	6.0	6.0
Lead/Lag				
Lead-Lag Optimize?				
Recall Mode	Max	None	None	None
v/c Ratio	0.37	0.73	0.95	0.99
Control Delay	13.4	18.5	40.3	60.5
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	13.4	18.5	40.3	60.5
Queue Length 50th (m)	29.6	73.6	84.6	78.5
Queue Length 95th (m)	38.6	90.4	#127.6	#150.6
Internal Link Dist (m)	104.0	63.2	627.1	
Turn Bay Length (m)				
Base Capacity (vph)	2412	2412	1270	559
Starvation Cap Reductn	0	0	0	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.37	0.73	0.95	0.99

Intersection Summary
Cycle Length: 80
Actuated Cycle Length: 80
Natural Cycle: 65
Control Type: Semi Act-Uncoord
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 4: Highway 410 NB & Mayfield Road





Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	898	0	0	1755	854	911
Future Volume (vph)	898	0	0	1755	854	911
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0			6.0	6.0	6.0
Lane Util. Factor	0.91			0.91	0.97	0.91
Frt	1.00			1.00	0.96	0.85
Flt Protected	1.00			1.00	0.97	1.00
Satd. Flow (prot)	4948			4948	3339	1376
Flt Permitted	1.00			1.00	0.97	1.00
Satd. Flow (perm)	4948			4948	3339	1376
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	898	0	0	1755	854	911
RTOR Reduction (vph)	0	0	0	0	60	61
Lane Group Flow (vph)	898	0	0	1755	1149	495
Heavy Vehicles (%)	6%	0%	0%	6%	1%	8%
Turn Type	NA			NA	Prot	Perm
Protected Phases	2			6	8	
Permitted Phases	2			6		8
Actuated Green, G (s)	39.0			39.0	29.0	29.0
Effective Green, g (s)	39.0			39.0	29.0	29.0
Actuated g/C Ratio	0.49			0.49	0.36	0.36
Clearance Time (s)	6.0			6.0	6.0	6.0
Vehicle Extension (s)	5.0			5.0	3.0	3.0
Lane Grp Cap (vph)	2412			2412	1210	498
v/s Ratio Prot	0.18			c0.35	0.34	
v/s Ratio Perm						c0.36
v/c Ratio	0.37			0.73	0.95	0.99
Uniform Delay, d1	12.8			16.3	24.8	25.4
Progression Factor	1.00			1.00	1.00	1.00
Incremental Delay, d2	0.4			1.4	15.2	38.8
Delay (s)	13.3			17.7	40.0	64.2
Level of Service	B			B	D	E
Approach Delay (s)	13.3			17.7	47.6	
Approach LOS	B			B	D	

Intersection Summary			
HCM 2000 Control Delay	28.7	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.84		
Actuated Cycle Length (s)	80.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	77.8%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	EBT	EBR	WBL	WBT	NBL
Lane Configurations					
Traffic Volume (vph)	1544	154	71	1760	99
Future Volume (vph)	1544	154	71	1760	99
Lane Group Flow (vph)	1544	154	71	1760	144
Turn Type	NA	Perm	Perm	NA	Prot
Protected Phases	2			2	4
Permitted Phases		2	2		
Detector Phase	2	2	2	2	4
Switch Phase					
Minimum Initial (s)	12.0	12.0	12.0	12.0	8.0
Minimum Split (s)	26.7	26.7	26.7	26.7	45.6
Total Split (s)	74.0	74.0	74.0	74.0	46.0
Total Split (%)	61.7%	61.7%	61.7%	61.7%	38.3%
Yellow Time (s)	4.6	4.6	4.6	4.6	4.0
All-Red Time (s)	2.1	2.1	2.1	2.1	3.6
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.7	6.7	6.7	6.7	7.6
Lead/Lag					
Lead-Lag Optimize?					
Recall Mode	Max	Max	Max	Max	Max
v/c Ratio	0.54	0.16	0.60	0.61	0.25
Control Delay	17.4	2.3	42.8	18.7	27.2
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	17.4	2.3	42.8	18.7	27.2
Queue Length 50th (m)	79.7	0.0	10.5	96.7	21.3
Queue Length 95th (m)	92.3	8.9	#35.6	111.2	37.7
Internal Link Dist (m)	203.7			76.6	88.2
Turn Bay Length (m)		65.0	35.0		
Base Capacity (vph)	2883	945	118	2883	572
Starvation Cap Reductn	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.54	0.16	0.60	0.61	0.25

Intersection Summary

Cycle Length: 120
Actuated Cycle Length: 120
Natural Cycle: 90
Control Type: Semi Act-Uncoord
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 5: Ace Drive & Mayfield Road





Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	1544	154	71	1760	99	45
Future Volume (vph)	1544	154	71	1760	99	45
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width	3.7	3.5	3.5	3.7	3.7	3.7
Total Lost time (s)	6.7	6.7	6.7	6.7	7.6	
Lane Util. Factor	0.91	1.00	1.00	0.91	1.00	
Frt	1.00	0.85	1.00	1.00	0.96	
Flt Protected	1.00	1.00	0.95	1.00	0.97	
Satd. Flow (prot)	5142	1566	1750	5142	1744	
Flt Permitted	1.00	1.00	0.11	1.00	0.97	
Satd. Flow (perm)	5142	1566	211	5142	1744	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	1544	154	71	1760	99	45
RTOR Reduction (vph)	0	68	0	0	14	0
Lane Group Flow (vph)	1544	86	71	1760	130	0
Turn Type	NA	Perm	Perm	NA	Prot	
Protected Phases	2			2	4	
Permitted Phases		2	2			
Actuated Green, G (s)	67.3	67.3	67.3	67.3	38.4	
Effective Green, g (s)	67.3	67.3	67.3	67.3	38.4	
Actuated g/C Ratio	0.56	0.56	0.56	0.56	0.32	
Clearance Time (s)	6.7	6.7	6.7	6.7	7.6	
Vehicle Extension (s)	5.0	5.0	5.0	5.0	5.0	
Lane Grp Cap (vph)	2883	878	118	2883	558	
v/s Ratio Prot	0.30			c0.34	c0.07	
v/s Ratio Perm		0.06	0.34			
v/c Ratio	0.54	0.10	0.60	0.61	0.23	
Uniform Delay, d1	16.5	12.2	17.5	17.6	30.0	
Progression Factor	1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	0.7	0.2	20.7	1.0	1.0	
Delay (s)	17.3	12.5	38.1	18.6	31.0	
Level of Service	B	B	D	B	C	
Approach Delay (s)	16.8			19.3	31.0	
Approach LOS	B			B	C	

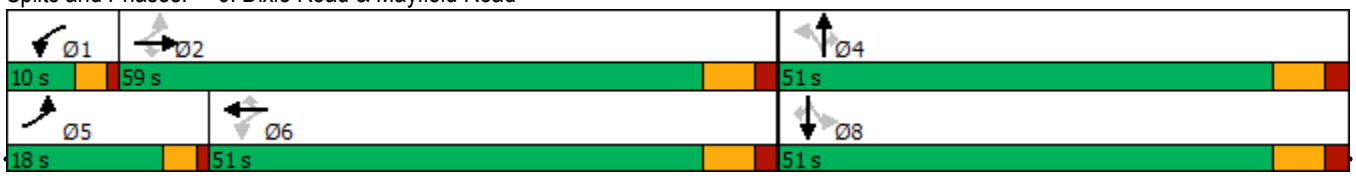
Intersection Summary			
HCM 2000 Control Delay	18.6	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.47		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	14.3
Intersection Capacity Utilization	65.6%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

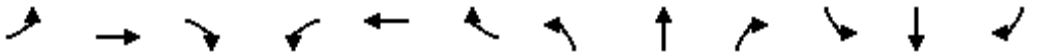
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	376	1078	186	68	1255	31	289	203	38	62	342	511
Future Volume (vph)	376	1078	186	68	1255	31	289	203	38	62	342	511
Lane Group Flow (vph)	376	1078	186	68	1255	31	289	203	38	62	342	511
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	Perm	NA	Perm	Perm	NA	Perm
Protected Phases	5	2		1	6			4			8	
Permitted Phases	2		2	6		6	4		4	8		8
Detector Phase	5	2	2	1	6	6	4	4	4	8	8	8
Switch Phase												
Minimum Initial (s)	5.0	8.0	8.0	5.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0
Minimum Split (s)	10.0	44.9	44.9	10.0	44.9	44.9	47.9	47.9	47.9	47.9	47.9	47.9
Total Split (s)	18.0	59.0	59.0	10.0	51.0	51.0	51.0	51.0	51.0	51.0	51.0	51.0
Total Split (%)	15.0%	49.2%	49.2%	8.3%	42.5%	42.5%	42.5%	42.5%	42.5%	42.5%	42.5%	42.5%
Yellow Time (s)	3.0	4.6	4.6	3.0	4.6	4.6	4.6	4.6	4.6	4.6	4.6	4.6
All-Red Time (s)	1.0	2.3	2.3	1.0	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.3
Lost Time Adjust (s)	-1.0	0.0	0.0	-1.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	3.0	6.9	6.9	3.0	6.9	6.9	6.9	6.9	6.9	6.9	6.9	6.9
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag						
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes						
Recall Mode	None	Max	Max	None	None	None	None	None	None	None	None	None
v/c Ratio	1.16	0.48	0.22	0.30	0.68	0.05	0.89	0.17	0.06	0.17	0.29	0.77
Control Delay	126.8	22.8	3.6	16.6	32.3	0.2	64.3	26.2	0.2	27.3	27.8	27.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	126.8	22.8	3.6	16.6	32.3	0.2	64.3	26.2	0.2	27.3	27.8	27.8
Queue Length 50th (m)	~86.7	66.6	0.0	7.3	91.0	0.0	60.9	16.7	0.0	9.7	29.4	62.3
Queue Length 95th (m)	#146.6	79.9	12.8	14.4	107.7	0.0	#107.9	25.2	0.0	19.9	41.0	105.0
Internal Link Dist (m)		179.3			299.2			185.5			471.5	
Turn Bay Length (m)	140.0		70.0	65.0		30.0	75.0		60.0	30.0		138.0
Base Capacity (vph)	325	2242	835	230	1951	643	384	1453	682	432	1383	743
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	1.16	0.48	0.22	0.30	0.64	0.05	0.75	0.14	0.06	0.14	0.25	0.69

Intersection Summary

Cycle Length: 120
Actuated Cycle Length: 112.2
Natural Cycle: 115
Control Type: Semi Act-Uncoord
~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 6: Dixie Road & Mayfield Road





Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	376	1078	186	68	1255	31	289	203	38	62	342	511
Future Volume (vph)	376	1078	186	68	1255	31	289	203	38	62	342	511
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5
Total Lost time (s)	3.0	6.9	6.9	3.0	6.9	6.9	6.9	6.9	6.9	6.9	6.9	6.9
Lane Util. Factor	1.00	0.91	1.00	1.00	0.91	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1700	4768	1566	1342	4902	1452	1750	3650	1551	1653	3476	1551
Flt Permitted	0.12	1.00	1.00	0.25	1.00	1.00	0.53	1.00	1.00	0.62	1.00	1.00
Satd. Flow (perm)	216	4768	1566	354	4902	1452	967	3650	1551	1086	3476	1551
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	376	1078	186	68	1255	31	289	203	38	62	342	511
RTOR Reduction (vph)	0	0	99	0	0	19	0	0	25	0	0	140
Lane Group Flow (vph)	376	1078	87	68	1255	12	289	203	13	62	342	371
Heavy Vehicles (%)	5%	10%	2%	33%	7%	10%	2%	0%	3%	8%	5%	3%
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	Perm	NA	Perm	Perm	NA	Perm
Protected Phases	5	2		1	6			4			8	
Permitted Phases	2		2	6		6	4		4	8		8
Actuated Green, G (s)	61.4	52.8	52.8	47.8	43.2	43.2	37.8	37.8	37.8	37.8	37.8	37.8
Effective Green, g (s)	62.4	52.8	52.8	49.8	43.2	43.2	37.8	37.8	37.8	37.8	37.8	37.8
Actuated g/C Ratio	0.55	0.47	0.47	0.44	0.38	0.38	0.33	0.33	0.33	0.33	0.33	0.33
Clearance Time (s)	4.0	6.9	6.9	4.0	6.9	6.9	6.9	6.9	6.9	6.9	6.9	6.9
Vehicle Extension (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Lane Grp Cap (vph)	318	2227	731	204	1874	555	323	1220	518	363	1162	518
v/s Ratio Prot	c0.16	0.23		0.02	0.26			0.06			0.10	
v/s Ratio Perm	c0.49		0.06	0.13		0.01	c0.30		0.01	0.06		0.24
v/c Ratio	1.18	0.48	0.12	0.33	0.67	0.02	0.89	0.17	0.02	0.17	0.29	0.72
Uniform Delay, d1	28.5	20.7	17.0	18.6	29.0	21.7	35.7	26.5	25.2	26.5	27.8	32.9
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	109.6	0.8	0.3	2.0	1.2	0.0	26.8	0.1	0.0	0.5	0.3	5.8
Delay (s)	138.0	21.5	17.3	20.6	30.2	21.8	62.6	26.6	25.3	27.0	28.1	38.7
Level of Service	F	C	B	C	C	C	E	C	C	C	C	D
Approach Delay (s)		47.7			29.5			46.1			33.9	
Approach LOS		D			C			D			C	

Intersection Summary			
HCM 2000 Control Delay	39.1	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	1.11		
Actuated Cycle Length (s)	113.0	Sum of lost time (s)	16.8
Intersection Capacity Utilization	91.1%	ICU Level of Service	F
Analysis Period (min)	15		

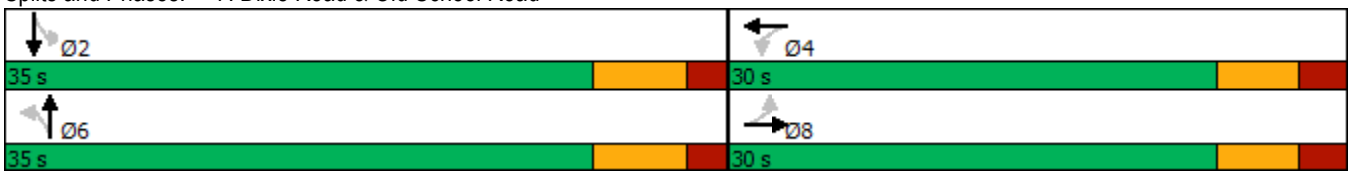
c Critical Lane Group

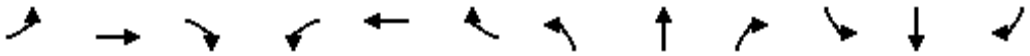
Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations								
Traffic Volume (vph)	14	98	83	251	25	450	6	232
Future Volume (vph)	14	98	83	251	25	450	6	232
Lane Group Flow (vph)	14	108	83	269	25	491	6	247
Turn Type	Perm	NA	Perm	NA	Perm	NA	Perm	NA
Protected Phases		8		4		6		2
Permitted Phases	8		4		6		2	
Detector Phase	8	8	4	4	6	6	2	2
Switch Phase								
Minimum Initial (s)	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0
Minimum Split (s)	25.4	25.4	25.4	25.4	23.6	23.6	23.6	23.6
Total Split (s)	30.0	30.0	30.0	30.0	35.0	35.0	35.0	35.0
Total Split (%)	46.2%	46.2%	46.2%	46.2%	53.8%	53.8%	53.8%	53.8%
Yellow Time (s)	4.0	4.0	4.0	4.0	4.6	4.6	4.6	4.6
All-Red Time (s)	2.4	2.4	2.4	2.4	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.4	6.4	6.4	6.4	6.6	6.6	6.6	6.6
Lead/Lag								
Lead-Lag Optimize?								
Recall Mode	None	None	None	None	Max	Max	Max	Max
v/c Ratio	0.06	0.22	0.25	0.54	0.04	0.53	0.01	0.27
Control Delay	15.2	15.6	17.7	21.6	9.0	12.8	9.0	9.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	15.2	15.6	17.7	21.6	9.0	12.8	9.0	9.9
Queue Length 50th (m)	1.1	7.8	6.6	22.9	1.2	30.1	0.3	12.8
Queue Length 95th (m)	4.4	17.3	15.4	40.6	5.0	65.1	2.1	30.3
Internal Link Dist (m)		1372.4		151.6		1518.8		144.7
Turn Bay Length (m)	35.0		45.0		40.0		35.0	
Base Capacity (vph)	371	759	522	768	581	935	401	899
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.04	0.14	0.16	0.35	0.04	0.53	0.01	0.27

Intersection Summary

Cycle Length: 65
Actuated Cycle Length: 57.9
Natural Cycle: 55
Control Type: Semi Act-Uncoord

Splits and Phases: 7: Dixie Road & Old School Road





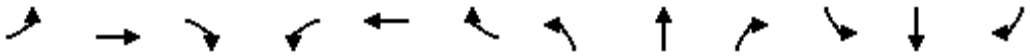
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	14	98	10	83	251	18	25	450	41	6	232	15
Future Volume (vph)	14	98	10	83	251	18	25	450	41	6	232	15
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5
Total Lost time (s)	6.4	6.4		6.4	6.4		6.6	6.6		6.6	6.6	
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	0.99		1.00	0.99		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)	1566	1844		1767	1871		1785	1823		1785	1755	
Flt Permitted	0.55	1.00		0.69	1.00		0.61	1.00		0.42	1.00	
Satd. Flow (perm)	909	1844		1279	1871		1138	1823		786	1755	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	14	98	10	83	251	18	25	450	41	6	232	15
RTOR Reduction (vph)	0	7	0	0	4	0	0	4	0	0	3	0
Lane Group Flow (vph)	14	101	0	83	265	0	25	487	0	6	244	0
Heavy Vehicles (%)	14%	3%	0%	1%	1%	11%	0%	2%	27%	0%	9%	0%
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		8			4			6			2	
Permitted Phases	8			4			6			2		
Actuated Green, G (s)	15.3	15.3		15.3	15.3		29.6	29.6		29.6	29.6	
Effective Green, g (s)	15.3	15.3		15.3	15.3		29.6	29.6		29.6	29.6	
Actuated g/C Ratio	0.26	0.26		0.26	0.26		0.51	0.51		0.51	0.51	
Clearance Time (s)	6.4	6.4		6.4	6.4		6.6	6.6		6.6	6.6	
Vehicle Extension (s)	5.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0	
Lane Grp Cap (vph)	240	487		337	494		581	931		401	897	
v/s Ratio Prot		0.05			c0.14			c0.27			0.14	
v/s Ratio Perm	0.02			0.06			0.02			0.01		
v/c Ratio	0.06	0.21		0.25	0.54		0.04	0.52		0.01	0.27	
Uniform Delay, d1	15.9	16.6		16.8	18.3		7.1	9.4		7.0	8.0	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.2	0.4		0.8	2.0		0.1	2.1		0.1	0.7	
Delay (s)	16.1	17.0		17.6	20.3		7.2	11.5		7.0	8.8	
Level of Service	B	B		B	C		A	B		A	A	
Approach Delay (s)		16.9			19.7			11.3			8.7	
Approach LOS		B			B			B			A	

Intersection Summary			
HCM 2000 Control Delay	13.7	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.53		
Actuated Cycle Length (s)	57.9	Sum of lost time (s)	13.0
Intersection Capacity Utilization	51.3%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Appendix H

2024 Future Background Conditions With Improvements – Synchro Analysis Results



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Stop			Stop	
Traffic Volume (vph)	7	128	7	5	49	4	6	25	6	4	35	13
Future Volume (vph)	7	128	7	5	49	4	6	25	6	4	35	13
Peak Hour Factor	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85
Hourly flow rate (vph)	8	151	8	6	58	5	7	29	7	5	41	15

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total (vph)	167	69	43	61
Volume Left (vph)	8	6	7	5
Volume Right (vph)	8	5	7	15
Hadj (s)	0.04	0.13	0.19	-0.06
Departure Headway (s)	4.3	4.5	4.7	4.4
Degree Utilization, x	0.20	0.09	0.06	0.08
Capacity (veh/h)	821	770	721	759
Control Delay (s)	8.3	7.9	8.0	7.8
Approach Delay (s)	8.3	7.9	8.0	7.8
Approach LOS	A	A	A	A

Intersection Summary				
Delay		8.1		
Level of Service		A		
Intersection Capacity Utilization		18.9%	ICU Level of Service	A
Analysis Period (min)		15		

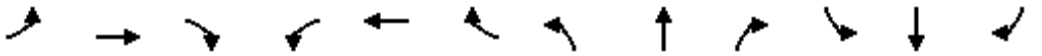
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	72	1515	511	116	990	250	108	55	18	216	135	104
Future Volume (vph)	72	1515	511	116	990	250	108	55	18	216	135	104
Lane Group Flow (vph)	72	1515	511	116	990	250	108	55	18	216	135	104
Turn Type	Perm	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm	Perm	NA	Perm
Protected Phases		2		1	6		7	4			8	
Permitted Phases	2		2	6		6	4		4	8		8
Detector Phase	2	2	2	1	6	6	7	4	4	8	8	8
Switch Phase												
Minimum Initial (s)	12.0	12.0	12.0	5.0	12.0	12.0	5.0	8.0	8.0	8.0	8.0	8.0
Minimum Split (s)	39.7	39.7	39.7	9.0	39.7	39.7	9.0	43.9	43.9	43.9	43.9	43.9
Total Split (s)	77.0	77.0	77.0	9.0	86.0	86.0	9.0	54.0	54.0	45.0	45.0	45.0
Total Split (%)	55.0%	55.0%	55.0%	6.4%	61.4%	61.4%	6.4%	38.6%	38.6%	32.1%	32.1%	32.1%
Yellow Time (s)	4.6	4.6	4.6	3.0	4.6	4.6	3.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	2.1	2.1	2.1	1.0	2.1	2.1	1.0	2.9	2.9	2.9	2.9	2.9
Lost Time Adjust (s)	0.0	0.0	0.0	-1.0	0.0	0.0	-1.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.7	6.7	6.7	3.0	6.7	6.7	3.0	6.9	6.9	6.9	6.9	6.9
Lead/Lag	Lag	Lag	Lag	Lead			Lead			Lag	Lag	Lag
Lead-Lag Optimize?												
Recall Mode	Max	Max	Max	None	Max	Max	None	None	None	None	None	None
v/c Ratio	0.30	0.64	0.52	0.66	0.39	0.32	0.33	0.11	0.04	0.79	0.35	0.26
Control Delay	23.4	24.0	3.5	30.9	14.8	2.8	35.0	33.6	0.2	68.9	45.0	9.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	23.4	24.0	3.5	30.9	14.8	2.8	35.0	33.6	0.2	68.9	45.0	9.8
Queue Length 50th (m)	10.3	100.3	0.0	11.6	47.5	0.0	20.4	10.4	0.0	53.2	29.7	1.0
Queue Length 95th (m)	24.4	129.9	17.5	#28.5	65.0	11.9	34.9	20.5	0.0	82.4	48.2	15.1
Internal Link Dist (m)		179.2			166.2			202.0			680.1	
Turn Bay Length (m)	115.0		180.0	80.0		150.0	110.0		44.0	20.0		20.0
Base Capacity (vph)	238	2383	991	176	2544	771	329	620	553	353	496	487
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.30	0.64	0.52	0.66	0.39	0.32	0.33	0.09	0.03	0.61	0.27	0.21

Intersection Summary

Cycle Length: 140
Actuated Cycle Length: 131.7
Natural Cycle: 105
Control Type: Semi Act-Uncoord
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 2: Heart Lake Road & Mayfield Road





Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	72	1515	511	116	990	250	108	55	18	216	135	104
Future Volume (vph)	72	1515	511	116	990	250	108	55	18	216	135	104
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5
Total Lost time (s)	6.7	6.7	6.7	3.0	6.7	6.7	3.0	6.9	6.9	6.9	6.9	6.9
Lane Util. Factor	1.00	0.91	1.00	1.00	0.91	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1530	4453	1409	1560	4214	1114	1530	1729	1437	1606	1712	1437
Flt Permitted	0.28	1.00	1.00	0.11	1.00	1.00	0.58	1.00	1.00	0.72	1.00	1.00
Satd. Flow (perm)	446	4453	1409	179	4214	1114	939	1729	1437	1219	1712	1437
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	72	1515	511	116	990	250	108	55	18	216	135	104
RTOR Reduction (vph)	0	0	237	0	0	99	0	0	13	0	0	77
Lane Group Flow (vph)	72	1515	274	116	990	151	108	55	5	216	135	27
Heavy Vehicles (%)	5%	6%	2%	3%	12%	29%	5%	0%	0%	0%	1%	0%
Turn Type	Perm	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm	Perm	NA	Perm
Protected Phases		2		1	6		7	4			8	
Permitted Phases	2		2	6		6	4		4	8		8
Actuated Green, G (s)	70.5	70.5	70.5	79.5	79.5	79.5	38.5	38.5	38.5	29.5	29.5	29.5
Effective Green, g (s)	70.5	70.5	70.5	80.5	79.5	79.5	39.5	38.5	38.5	29.5	29.5	29.5
Actuated g/C Ratio	0.54	0.54	0.54	0.61	0.60	0.60	0.30	0.29	0.29	0.22	0.22	0.22
Clearance Time (s)	6.7	6.7	6.7	4.0	6.7	6.7	4.0	6.9	6.9	6.9	6.9	6.9
Vehicle Extension (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Lane Grp Cap (vph)	238	2385	754	172	2545	672	308	505	420	273	383	322
v/s Ratio Prot		0.34		c0.03	0.23		c0.02	0.03			0.08	
v/s Ratio Perm	0.16		0.19	c0.38		0.14	0.09		0.00	c0.18		0.02
v/c Ratio	0.30	0.64	0.36	0.67	0.39	0.22	0.35	0.11	0.01	0.79	0.35	0.08
Uniform Delay, d1	16.9	21.5	17.6	14.5	13.5	11.9	35.3	34.0	33.1	48.1	43.0	40.4
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	3.2	1.3	1.4	12.8	0.4	0.8	1.4	0.2	0.0	16.4	1.2	0.2
Delay (s)	20.2	22.8	19.0	27.3	13.9	12.7	36.7	34.2	33.1	64.5	44.2	40.6
Level of Service	C	C	B	C	B	B	D	C	C	E	D	D
Approach Delay (s)		21.8			14.9			35.6			53.0	
Approach LOS		C			B			D			D	

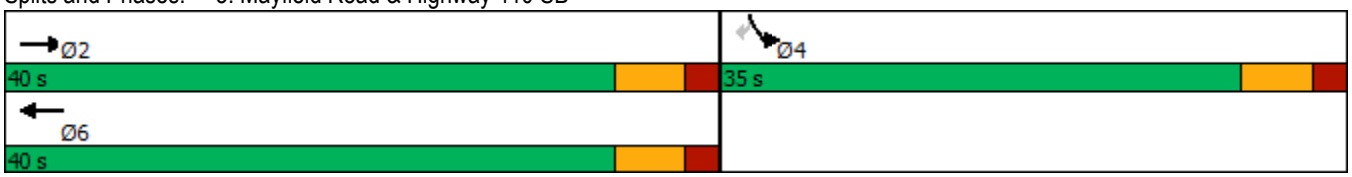
Intersection Summary			
HCM 2000 Control Delay	23.6	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.71		
Actuated Cycle Length (s)	131.6	Sum of lost time (s)	19.6
Intersection Capacity Utilization	80.0%	ICU Level of Service	D
Analysis Period (min)	15		

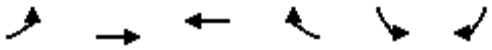
c Critical Lane Group

Lane Group	EBT	WBT	SBL	SBR
Lane Configurations				
Traffic Volume (vph)	1161	1048	322	277
Future Volume (vph)	1161	1048	322	277
Lane Group Flow (vph)	1161	1048	411	188
Turn Type	NA	NA	Prot	Perm
Protected Phases	2	6	4	
Permitted Phases				4
Detector Phase	2	6	4	4
Switch Phase				
Minimum Initial (s)	16.0	16.0	8.0	8.0
Minimum Split (s)	22.0	22.0	32.0	32.0
Total Split (s)	40.0	40.0	35.0	35.0
Total Split (%)	53.3%	53.3%	46.7%	46.7%
Yellow Time (s)	4.0	4.0	4.0	4.0
All-Red Time (s)	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.0	6.0	6.0	6.0
Lead/Lag				
Lead-Lag Optimize?				
Recall Mode	Max	Max	None	None
v/c Ratio	0.42	0.36	0.46	0.47
Control Delay	9.0	8.5	18.6	18.1
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	9.0	8.5	18.6	18.1
Queue Length 50th (m)	23.7	20.4	17.5	14.2
Queue Length 95th (m)	43.1	37.4	27.9	30.7
Internal Link Dist (m)	123.5	116.2	492.2	
Turn Bay Length (m)				
Base Capacity (vph)	2757	2923	1669	732
Starvation Cap Reductn	0	0	0	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.42	0.36	0.25	0.26

Intersection Summary
Cycle Length: 75
Actuated Cycle Length: 61.3
Natural Cycle: 55
Control Type: Semi Act-Uncoord

Splits and Phases: 3: Mayfield Road & Highway 410 SB





Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑↑↑	↑↑↑		↰↰	↱
Traffic Volume (vph)	0	1161	1048	0	322	277
Future Volume (vph)	0	1161	1048	0	322	277
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)		6.0	6.0		6.0	6.0
Lane Util. Factor		0.91	0.91		0.97	0.91
Frt		1.00	1.00		0.97	0.85
Flt Protected		1.00	1.00		0.96	1.00
Satd. Flow (prot)		4948	5245		3456	1486
Flt Permitted		1.00	1.00		0.96	1.00
Satd. Flow (perm)		4948	5245		3456	1486
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	0	1161	1048	0	322	277
RTOR Reduction (vph)	0	0	0	0	37	37
Lane Group Flow (vph)	0	1161	1048	0	374	151
Heavy Vehicles (%)	0%	6%	0%	16%	0%	0%
Bus Blockages (#/hr)	0	0	0	0	2	0
Turn Type		NA	NA		Prot	Perm
Protected Phases		2	6		4	
Permitted Phases						4
Actuated Green, G (s)		34.1	34.1		15.1	15.1
Effective Green, g (s)		34.1	34.1		15.1	15.1
Actuated g/C Ratio		0.56	0.56		0.25	0.25
Clearance Time (s)		6.0	6.0		6.0	6.0
Vehicle Extension (s)		5.0	5.0		5.0	5.0
Lane Grp Cap (vph)		2756	2922		852	366
v/s Ratio Prot		c0.23	0.20		c0.11	
v/s Ratio Perm						0.10
v/c Ratio		0.42	0.36		0.44	0.41
Uniform Delay, d1		7.8	7.5		19.5	19.3
Progression Factor		1.00	1.00		1.00	1.00
Incremental Delay, d2		0.5	0.3		0.8	1.6
Delay (s)		8.3	7.8		20.2	20.9
Level of Service		A	A		C	C
Approach Delay (s)		8.3	7.8		20.4	
Approach LOS		A	A		C	

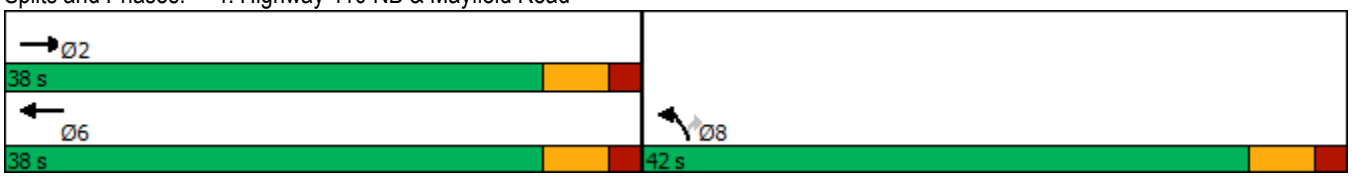
Intersection Summary			
HCM 2000 Control Delay	10.7	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.43		
Actuated Cycle Length (s)	61.2	Sum of lost time (s)	12.0
Intersection Capacity Utilization	44.5%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Lane Group	EBT	WBT	NBL	NBR
Lane Configurations				
Traffic Volume (vph)	1461	1407	414	815
Future Volume (vph)	1461	1407	414	815
Lane Group Flow (vph)	1461	1407	822	407
Turn Type	NA	NA	Prot	Perm
Protected Phases	2	6	8	
Permitted Phases				8
Detector Phase	2	6	8	8
Switch Phase				
Minimum Initial (s)	26.0	26.0	10.0	10.0
Minimum Split (s)	32.0	32.0	22.0	22.0
Total Split (s)	38.0	38.0	42.0	42.0
Total Split (%)	47.5%	47.5%	52.5%	52.5%
Yellow Time (s)	4.0	4.0	4.0	4.0
All-Red Time (s)	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.0	6.0	6.0	6.0
Lead/Lag				
Lead-Lag Optimize?				
Recall Mode	Max	None	None	None
v/c Ratio	0.66	0.67	0.73	0.80
Control Delay	18.7	19.0	22.7	31.7
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	18.7	19.0	22.7	31.7
Queue Length 50th (m)	55.9	54.2	46.9	50.8
Queue Length 95th (m)	83.8	81.9	64.7	86.7
Internal Link Dist (m)	104.0	63.2	627.1	
Turn Bay Length (m)				
Base Capacity (vph)	2213	2094	1469	665
Starvation Cap Reductn	0	0	0	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.66	0.67	0.56	0.61

Intersection Summary
Cycle Length: 80
Actuated Cycle Length: 72.3
Natural Cycle: 60
Control Type: Semi Act-Uncoord

Splits and Phases: 4: Highway 410 NB & Mayfield Road





Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	1461	0	0	1407	414	815
Future Volume (vph)	1461	0	0	1407	414	815
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0			6.0	6.0	6.0
Lane Util. Factor	0.91			0.91	0.97	0.91
Frt	1.00			1.00	0.93	0.85
Flt Protected	1.00			1.00	0.98	1.00
Satd. Flow (prot)	4948			4683	2913	1315
Flt Permitted	1.00			1.00	0.98	1.00
Satd. Flow (perm)	4948			4683	2913	1315
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	1461	0	0	1407	414	815
RTOR Reduction (vph)	0	0	0	0	4	4
Lane Group Flow (vph)	1461	0	0	1407	818	403
Heavy Vehicles (%)	6%	0%	0%	12%	18%	13%
Turn Type	NA			NA	Prot	Perm
Protected Phases	2			6	8	
Permitted Phases						8
Actuated Green, G (s)	32.3			32.3	27.8	27.8
Effective Green, g (s)	32.3			32.3	27.8	27.8
Actuated g/C Ratio	0.45			0.45	0.39	0.39
Clearance Time (s)	6.0			6.0	6.0	6.0
Vehicle Extension (s)	5.0			5.0	3.0	3.0
Lane Grp Cap (vph)	2216			2097	1123	507
v/s Ratio Prot	0.30			c0.30	0.28	
v/s Ratio Perm						c0.31
v/c Ratio	0.66			0.67	0.73	0.79
Uniform Delay, d1	15.6			15.7	18.9	19.6
Progression Factor	1.00			1.00	1.00	1.00
Incremental Delay, d2	1.6			1.1	2.4	8.4
Delay (s)	17.1			16.8	21.3	28.0
Level of Service	B			B	C	C
Approach Delay (s)	17.1			16.8	23.5	
Approach LOS	B			B	C	

Intersection Summary			
HCM 2000 Control Delay	18.9	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.73		
Actuated Cycle Length (s)	72.1	Sum of lost time (s)	12.0
Intersection Capacity Utilization	71.9%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	EBT	EBR	WBL	WBT	NBL
Lane Configurations					
Traffic Volume (vph)	1869	211	68	1162	96
Future Volume (vph)	1869	211	68	1162	96
Lane Group Flow (vph)	1869	211	68	1162	151
Turn Type	NA	Perm	Perm	NA	Prot
Protected Phases	2			2	4
Permitted Phases		2	2		
Detector Phase	2	2	2	2	4
Switch Phase					
Minimum Initial (s)	12.0	12.0	12.0	12.0	8.0
Minimum Split (s)	26.7	26.7	26.7	26.7	45.6
Total Split (s)	74.0	74.0	74.0	74.0	46.0
Total Split (%)	61.7%	61.7%	61.7%	61.7%	38.3%
Yellow Time (s)	4.6	4.6	4.6	4.6	4.0
All-Red Time (s)	2.1	2.1	2.1	2.1	3.6
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.7	6.7	6.7	6.7	7.6
Lead/Lag					
Lead-Lag Optimize?					
Recall Mode	Max	Max	Max	Max	None
v/c Ratio	0.51	0.18	0.57	0.32	0.56
Control Delay	7.8	1.4	32.6	6.2	43.9
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	7.8	1.4	32.6	6.2	43.9
Queue Length 50th (m)	52.6	0.5	5.6	26.9	24.5
Queue Length 95th (m)	75.7	7.6	#32.2	40.0	43.1
Internal Link Dist (m)	203.7			76.6	88.2
Turn Bay Length (m)		65.0	35.0		
Base Capacity (vph)	3636	1166	119	3636	667
Starvation Cap Reductn	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.51	0.18	0.57	0.32	0.23

Intersection Summary

Cycle Length: 120
Actuated Cycle Length: 101
Natural Cycle: 90
Control Type: Actuated-Uncoordinated
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 5: Ace Drive & Mayfield Road





Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	1869	211	68	1162	96	55
Future Volume (vph)	1869	211	68	1162	96	55
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width	3.7	3.5	3.5	3.7	3.7	3.7
Total Lost time (s)	6.7	6.7	6.7	6.7	7.6	
Lane Util. Factor	0.91	1.00	1.00	0.91	1.00	
Frt	1.00	0.85	1.00	1.00	0.95	
Flt Protected	1.00	1.00	0.95	1.00	0.97	
Satd. Flow (prot)	5142	1566	1750	5142	1736	
Flt Permitted	1.00	1.00	0.09	1.00	0.97	
Satd. Flow (perm)	5142	1566	169	5142	1736	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	1869	211	68	1162	96	55
RTOR Reduction (vph)	0	59	0	0	9	0
Lane Group Flow (vph)	1869	152	68	1162	142	0
Turn Type	NA	Perm	Perm	NA	Prot	
Protected Phases	2			2	4	
Permitted Phases		2	2			
Actuated Green, G (s)	71.5	71.5	71.5	71.5	15.2	
Effective Green, g (s)	71.5	71.5	71.5	71.5	15.2	
Actuated g/C Ratio	0.71	0.71	0.71	0.71	0.15	
Clearance Time (s)	6.7	6.7	6.7	6.7	7.6	
Vehicle Extension (s)	5.0	5.0	5.0	5.0	5.0	
Lane Grp Cap (vph)	3640	1108	119	3640	261	
v/s Ratio Prot	0.36			0.23	c0.08	
v/s Ratio Perm		0.10	c0.40			
v/c Ratio	0.51	0.14	0.57	0.32	0.54	
Uniform Delay, d1	6.8	4.8	7.2	5.6	39.7	
Progression Factor	1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	0.5	0.3	18.4	0.2	4.0	
Delay (s)	7.3	5.0	25.6	5.8	43.7	
Level of Service	A	A	C	A	D	
Approach Delay (s)	7.1			6.9	43.7	
Approach LOS	A			A	D	

Intersection Summary			
HCM 2000 Control Delay	8.6	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.56		
Actuated Cycle Length (s)	101.0	Sum of lost time (s)	14.3
Intersection Capacity Utilization	72.3%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

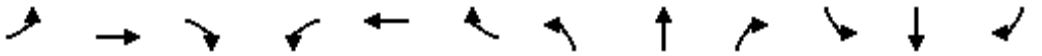
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	452	1575	364	64	663	44	121	94	54	33	140	353
Future Volume (vph)	452	1575	364	64	663	44	121	94	54	33	140	353
Lane Group Flow (vph)	452	1575	364	64	663	44	121	94	54	33	140	353
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	Perm	NA	Perm	Perm	NA	Perm
Protected Phases	5	2		1	6			8			4	
Permitted Phases	2		2	6		6	8		8	4		4
Detector Phase	5	2	2	1	6	6	8	8	8	4	4	4
Switch Phase												
Minimum Initial (s)	5.0	8.0	8.0	5.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0
Minimum Split (s)	9.0	44.9	44.9	9.0	44.9	44.9	47.9	47.9	47.9	47.9	47.9	47.9
Total Split (s)	10.0	60.0	60.0	10.0	60.0	60.0	50.0	50.0	50.0	50.0	50.0	50.0
Total Split (%)	8.3%	50.0%	50.0%	8.3%	50.0%	50.0%	41.7%	41.7%	41.7%	41.7%	41.7%	41.7%
Yellow Time (s)	3.0	4.6	4.6	3.0	4.6	4.6	4.6	4.6	4.6	4.6	4.6	4.6
All-Red Time (s)	1.0	2.3	2.3	1.0	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.3
Lost Time Adjust (s)	-1.0	0.0	0.0	-1.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	3.0	6.9	6.9	3.0	6.9	6.9	6.9	6.9	6.9	6.9	6.9	6.9
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag						
Lead-Lag Optimize?												
Recall Mode	None	Max	Max	None	None	None	None	None	None	None	None	None
v/c Ratio	0.92	0.56	0.35	0.26	0.26	0.06	0.53	0.15	0.16	0.17	0.22	0.74
Control Delay	39.2	14.9	2.5	8.4	12.1	1.5	42.5	31.5	5.5	33.0	32.2	21.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	39.2	14.9	2.5	8.4	12.1	1.5	42.5	31.5	5.5	33.0	32.2	21.0
Queue Length 50th (m)	27.4	61.4	0.0	2.9	20.4	0.0	20.1	7.6	0.0	5.1	11.5	17.1
Queue Length 95th (m)	#115.7	101.5	14.0	9.8	36.7	2.5	36.6	14.0	6.2	12.8	19.2	47.2
Internal Link Dist (m)		179.3			299.2			185.5			471.5	
Turn Bay Length (m)	140.0		70.0	65.0		30.0	75.0		60.0	30.0		138.0
Base Capacity (vph)	492	2823	1039	249	2650	722	560	1483	698	479	1580	810
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.92	0.56	0.35	0.26	0.25	0.06	0.22	0.06	0.08	0.07	0.09	0.44

Intersection Summary

Cycle Length: 120
Actuated Cycle Length: 93.3
Natural Cycle: 105
Control Type: Semi Act-Uncoord
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 6: Dixie Road & Mayfield Road





Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	452	1575	364	64	663	44	121	94	54	33	140	353
Future Volume (vph)	452	1575	364	64	663	44	121	94	54	33	140	353
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5
Total Lost time (s)	3.0	6.9	6.9	3.0	6.9	6.9	6.9	6.9	6.9	6.9	6.9	6.9
Lane Util. Factor	1.00	0.91	1.00	1.00	0.91	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1566	4902	1536	1653	4601	1201	1716	3174	1413	1405	3380	1452
Flt Permitted	0.38	1.00	1.00	0.12	1.00	1.00	0.66	1.00	1.00	0.69	1.00	1.00
Satd. Flow (perm)	623	4902	1536	208	4601	1201	1198	3174	1413	1025	3380	1452
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	452	1575	364	64	663	44	121	94	54	33	140	353
RTOR Reduction (vph)	0	0	156	0	0	20	0	0	44	0	0	200
Lane Group Flow (vph)	452	1575	208	64	663	24	121	94	10	33	140	153
Heavy Vehicles (%)	14%	7%	4%	8%	14%	33%	4%	15%	13%	27%	8%	10%
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	Perm	NA	Perm	Perm	NA	Perm
Protected Phases	5	2		1	6			8			4	
Permitted Phases	2		2	6		6	8		8	4		4
Actuated Green, G (s)	59.8	53.7	53.7	56.8	52.2	52.2	17.9	17.9	17.9	17.9	17.9	17.9
Effective Green, g (s)	61.8	53.7	53.7	58.8	52.2	52.2	17.9	17.9	17.9	17.9	17.9	17.9
Actuated g/C Ratio	0.66	0.57	0.57	0.63	0.56	0.56	0.19	0.19	0.19	0.19	0.19	0.19
Clearance Time (s)	4.0	6.9	6.9	4.0	6.9	6.9	6.9	6.9	6.9	6.9	6.9	6.9
Vehicle Extension (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Lane Grp Cap (vph)	480	2800	877	216	2555	666	228	604	269	195	643	276
v/s Ratio Prot	c0.07	0.32		0.02	0.14			0.03			0.04	
v/s Ratio Perm	c0.55		0.14	0.17		0.02	0.10		0.01	0.03		c0.11
v/c Ratio	0.94	0.56	0.24	0.30	0.26	0.04	0.53	0.16	0.04	0.17	0.22	0.55
Uniform Delay, d1	10.9	12.7	10.0	7.6	10.9	9.5	34.3	31.7	31.0	31.8	32.1	34.4
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	27.7	0.8	0.6	1.6	0.1	0.0	4.3	0.3	0.1	0.9	0.4	4.1
Delay (s)	38.6	13.6	10.6	9.3	11.0	9.5	38.6	32.0	31.2	32.7	32.5	38.5
Level of Service	D	B	B	A	B	A	D	C	C	C	C	D
Approach Delay (s)		17.8			10.7			34.8			36.5	
Approach LOS		B			B			C			D	

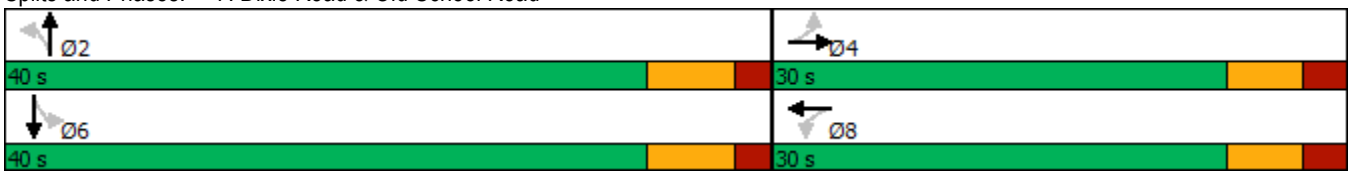
Intersection Summary			
HCM 2000 Control Delay	20.1	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.88		
Actuated Cycle Length (s)	94.0	Sum of lost time (s)	16.8
Intersection Capacity Utilization	71.8%	ICU Level of Service	C
Analysis Period (min)	15		

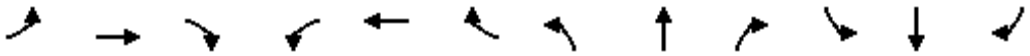
c Critical Lane Group

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations								
Traffic Volume (vph)	11	228	43	88	5	206	33	543
Future Volume (vph)	11	228	43	88	5	206	33	543
Lane Group Flow (vph)	11	259	43	96	5	250	33	554
Turn Type	Perm	NA	Perm	NA	Perm	NA	Perm	NA
Protected Phases		4		8		2		6
Permitted Phases	4		8		2		6	
Detector Phase	4	4	8	8	2	2	6	6
Switch Phase								
Minimum Initial (s)	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0
Minimum Split (s)	25.4	25.4	25.4	25.4	23.6	23.6	23.6	23.6
Total Split (s)	30.0	30.0	30.0	30.0	40.0	40.0	40.0	40.0
Total Split (%)	42.9%	42.9%	42.9%	42.9%	57.1%	57.1%	57.1%	57.1%
Yellow Time (s)	4.0	4.0	4.0	4.0	4.6	4.6	4.6	4.6
All-Red Time (s)	2.4	2.4	2.4	2.4	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.4	6.4	6.4	6.4	6.6	6.6	6.6	6.6
Lead/Lag								
Lead-Lag Optimize?								
Recall Mode	None	None	None	None	Max	Max	Max	Max
v/c Ratio	0.04	0.57	0.18	0.22	0.01	0.26	0.06	0.55
Control Delay	17.4	24.7	19.6	18.1	8.2	8.5	8.3	12.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	17.4	24.7	19.6	18.1	8.2	8.5	8.3	12.5
Queue Length 50th (m)	1.0	24.4	3.8	8.0	0.3	12.3	1.6	36.9
Queue Length 95th (m)	4.1	43.3	10.5	17.7	1.8	28.3	5.9	74.8
Internal Link Dist (m)		1372.4		151.6		1518.8		144.7
Turn Bay Length (m)	35.0		45.0		40.0		35.0	
Base Capacity (vph)	385	699	377	684	391	961	589	1015
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.03	0.37	0.11	0.14	0.01	0.26	0.06	0.55

Intersection Summary
Cycle Length: 70
Actuated Cycle Length: 63
Natural Cycle: 60
Control Type: Semi Act-Uncoord

Splits and Phases: 7: Dixie Road & Old School Road

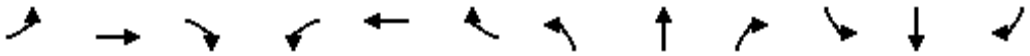




Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	11	228	31	43	88	8	5	206	44	33	543	11
Future Volume (vph)	11	228	31	43	88	8	5	206	44	33	543	11
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5
Total Lost time (s)	6.4	6.4		6.4	6.4		6.6	6.6		6.6	6.6	
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	0.97		1.00	1.00	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1405	1847		1785	1814		1785	1728		1684	1843	
Flt Permitted	0.69	1.00		0.54	1.00		0.38	1.00		0.60	1.00	
Satd. Flow (perm)	1028	1847		1007	1814		710	1728		1071	1843	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	11	228	31	43	88	8	5	206	44	33	543	11
RTOR Reduction (vph)	0	8	0	0	5	0	0	9	0	0	1	0
Lane Group Flow (vph)	11	251	0	43	91	0	5	241	0	33	553	0
Heavy Vehicles (%)	27%	2%	3%	0%	5%	0%	0%	10%	0%	6%	4%	0%
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)	15.3	15.3		15.3	15.3		34.7	34.7		34.7	34.7	
Effective Green, g (s)	15.3	15.3		15.3	15.3		34.7	34.7		34.7	34.7	
Actuated g/C Ratio	0.24	0.24		0.24	0.24		0.55	0.55		0.55	0.55	
Clearance Time (s)	6.4	6.4		6.4	6.4		6.6	6.6		6.6	6.6	
Vehicle Extension (s)	5.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0	
Lane Grp Cap (vph)	249	448		244	440		391	951		589	1015	
v/s Ratio Prot		c0.14			0.05			0.14			c0.30	
v/s Ratio Perm	0.01			0.04			0.01			0.03		
v/c Ratio	0.04	0.56		0.18	0.21		0.01	0.25		0.06	0.54	
Uniform Delay, d1	18.3	20.9		18.9	19.0		6.4	7.4		6.6	9.1	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.2	2.6		0.7	0.5		0.1	0.6		0.2	2.1	
Delay (s)	18.4	23.5		19.6	19.5		6.5	8.0		6.7	11.2	
Level of Service	B	C		B	B		A	A		A	B	
Approach Delay (s)		23.3			19.5			8.0			10.9	
Approach LOS		C			B			A			B	

Intersection Summary			
HCM 2000 Control Delay	14.0	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.55		
Actuated Cycle Length (s)	63.0	Sum of lost time (s)	13.0
Intersection Capacity Utilization	66.0%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Stop			Stop	
Traffic Volume (vph)	6	87	9	19	176	3	18	32	11	1	32	10
Future Volume (vph)	6	87	9	19	176	3	18	32	11	1	32	10
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Hourly flow rate (vph)	6	93	10	20	187	3	19	34	12	1	34	11

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total (vph)	109	210	65	46
Volume Left (vph)	6	20	19	1
Volume Right (vph)	10	3	12	11
Hadj (s)	-0.02	0.03	-0.05	-0.09
Departure Headway (s)	4.4	4.3	4.6	4.6
Degree Utilization, x	0.13	0.25	0.08	0.06
Capacity (veh/h)	791	802	722	716
Control Delay (s)	8.0	8.8	8.0	7.9
Approach Delay (s)	8.0	8.8	8.0	7.9
Approach LOS	A	A	A	A

Intersection Summary				
Delay	8.4			
Level of Service	A			
Intersection Capacity Utilization	32.2%	ICU Level of Service	A	
Analysis Period (min)	15			

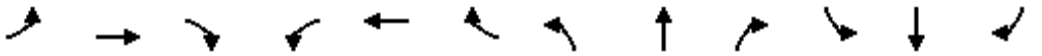
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	93	1101	125	37	1579	229	311	92	11	288	78	82
Future Volume (vph)	93	1101	125	37	1579	229	311	92	11	288	78	82
Lane Group Flow (vph)	93	1101	125	37	1579	229	311	92	11	288	78	82
Turn Type	Perm	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm	Perm	NA	Perm
Protected Phases		2		1	6		7	4			8	
Permitted Phases	2		2	6		6	4		4	8		8
Detector Phase	2	2	2	1	6	6	7	4	4	8	8	8
Switch Phase												
Minimum Initial (s)	12.0	12.0	12.0	5.0	12.0	12.0	1.0	8.0	8.0	8.0	8.0	8.0
Minimum Split (s)	39.7	39.7	39.7	9.0	39.7	39.7	5.0	43.9	43.9	43.9	43.9	43.9
Total Split (s)	74.0	74.0	74.0	9.0	83.0	83.0	7.0	52.0	52.0	44.0	44.0	44.0
Total Split (%)	54.8%	54.8%	54.8%	6.7%	61.5%	61.5%	5.2%	38.5%	38.5%	32.6%	32.6%	32.6%
Yellow Time (s)	4.6	4.6	4.6	3.0	4.6	4.6	3.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	2.1	2.1	2.1	1.0	2.1	2.1	1.0	2.9	2.9	2.9	2.9	2.9
Lost Time Adjust (s)	0.0	0.0	0.0	-1.0	0.0	0.0	-1.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.7	6.7	6.7	3.0	6.7	6.7	3.0	6.9	6.9	6.9	6.9	6.9
Lead/Lag	Lag	Lag	Lag	Lead			Lead			Lag	Lag	Lag
Lead-Lag Optimize?												
Recall Mode	Max	Max	Max	None	Max	Max	None	None	None	None	None	None
v/c Ratio	0.89	0.49	0.16	0.15	0.60	0.25	0.77	0.16	0.02	0.96	0.17	0.19
Control Delay	96.7	22.1	3.4	12.6	19.8	2.3	51.9	33.0	0.1	91.0	38.1	6.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	96.7	22.1	3.4	12.6	19.8	2.3	51.9	33.0	0.1	91.0	38.1	6.1
Queue Length 50th (m)	22.1	69.3	0.0	3.9	96.4	0.0	65.3	17.2	0.0	74.8	15.7	0.0
Queue Length 95th (m)	#58.9	82.1	9.9	8.6	110.7	10.9	#97.6	30.6	0.0	#130.4	28.9	9.5
Internal Link Dist (m)		179.2			166.2			202.0			680.1	
Turn Bay Length (m)	115.0		180.0	80.0		150.0	110.0		44.0	20.0		20.0
Base Capacity (vph)	104	2249	764	245	2626	905	402	585	488	315	475	459
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.89	0.49	0.16	0.15	0.60	0.25	0.77	0.16	0.02	0.91	0.16	0.18

Intersection Summary

Cycle Length: 135
Actuated Cycle Length: 133.1
Natural Cycle: 120
Control Type: Semi Act-Uncoord
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 2: Heart Lake Road & Mayfield Road





Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	93	1101	125	37	1579	229	311	92	11	288	78	82
Future Volume (vph)	93	1101	125	37	1579	229	311	92	11	288	78	82
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5
Total Lost time (s)	6.7	6.7	6.7	3.0	6.7	6.7	3.0	6.9	6.9	6.9	6.9	6.9
Lane Util. Factor	1.00	0.91	1.00	1.00	0.91	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1560	4330	1356	1530	4583	1409	1591	1729	1319	1501	1662	1369
Flt Permitted	0.12	1.00	1.00	0.20	1.00	1.00	0.65	1.00	1.00	0.70	1.00	1.00
Satd. Flow (perm)	202	4330	1356	316	4583	1409	1094	1729	1319	1102	1662	1369
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	93	1101	125	37	1579	229	311	92	11	288	78	82
RTOR Reduction (vph)	0	0	60	0	0	97	0	0	7	0	0	60
Lane Group Flow (vph)	93	1101	65	37	1579	132	311	92	4	288	78	22
Heavy Vehicles (%)	3%	9%	6%	5%	3%	2%	1%	0%	9%	7%	4%	5%
Turn Type	Perm	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm	Perm	NA	Perm
Protected Phases		2		1	6		7	4			8	
Permitted Phases	2		2	6		6	4		4	8		8
Actuated Green, G (s)	69.2	69.2	69.2	77.2	77.2	77.2	43.2	43.2	43.2	36.2	36.2	36.2
Effective Green, g (s)	69.2	69.2	69.2	78.2	77.2	77.2	44.2	43.2	43.2	36.2	36.2	36.2
Actuated g/C Ratio	0.52	0.52	0.52	0.58	0.58	0.58	0.33	0.32	0.32	0.27	0.27	0.27
Clearance Time (s)	6.7	6.7	6.7	4.0	6.7	6.7	4.0	6.9	6.9	6.9	6.9	6.9
Vehicle Extension (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Lane Grp Cap (vph)	104	2236	700	229	2640	811	375	557	425	297	448	369
v/s Ratio Prot		0.25		0.01	c0.34		c0.02	0.05			0.05	
v/s Ratio Perm	c0.46		0.05	0.09		0.09	0.25		0.00	c0.26		0.02
v/c Ratio	0.89	0.49	0.09	0.16	0.60	0.16	0.83	0.17	0.01	0.97	0.17	0.06
Uniform Delay, d1	29.1	21.0	16.5	12.8	18.4	13.3	42.0	32.5	30.8	48.4	37.5	36.3
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	63.0	0.8	0.3	0.7	1.0	0.4	15.6	0.3	0.0	44.0	0.4	0.1
Delay (s)	92.1	21.8	16.7	13.5	19.4	13.7	57.5	32.8	30.9	92.4	37.8	36.4
Level of Service	F	C	B	B	B	B	E	C	C	F	D	D
Approach Delay (s)		26.3			18.6			51.3			72.6	
Approach LOS		C			B			D			E	

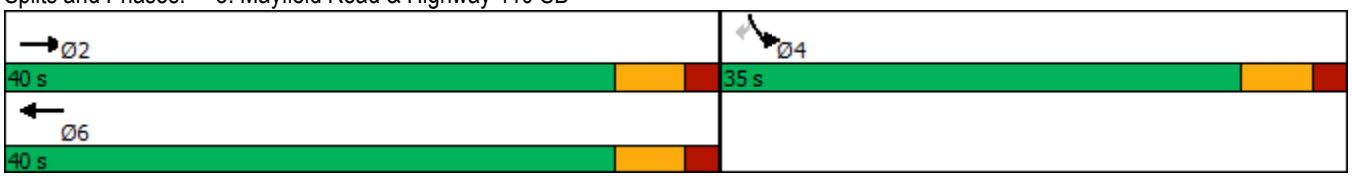
Intersection Summary			
HCM 2000 Control Delay	30.5	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.91		
Actuated Cycle Length (s)	134.0	Sum of lost time (s)	19.6
Intersection Capacity Utilization	86.6%	ICU Level of Service	E
Analysis Period (min)	15		

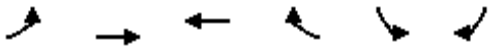
c Critical Lane Group

Lane Group	EBT	WBT	SBL	SBR
Lane Configurations				
Traffic Volume (vph)	863	2005	98	23
Future Volume (vph)	863	2005	98	23
Lane Group Flow (vph)	863	2005	100	21
Turn Type	NA	NA	Prot	Perm
Protected Phases	2	6	4	
Permitted Phases				4
Detector Phase	2	6	4	4
Switch Phase				
Minimum Initial (s)	16.0	16.0	8.0	8.0
Minimum Split (s)	22.0	22.0	32.0	32.0
Total Split (s)	40.0	40.0	35.0	35.0
Total Split (%)	53.3%	53.3%	46.7%	46.7%
Yellow Time (s)	4.0	4.0	4.0	4.0
All-Red Time (s)	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.0	6.0	6.0	6.0
Lead/Lag				
Lead-Lag Optimize?				
Recall Mode	Max	Max	None	None
v/c Ratio	0.24	0.54	0.19	0.09
Control Delay	4.4	6.2	21.6	19.6
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	4.4	6.2	21.6	19.6
Queue Length 50th (m)	12.1	37.7	4.8	1.9
Queue Length 95th (m)	18.2	53.0	9.5	6.9
Internal Link Dist (m)	123.5	116.2	492.2	
Turn Bay Length (m)				
Base Capacity (vph)	3596	3740	1680	736
Starvation Cap Reductn	0	0	0	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.24	0.54	0.06	0.03

Intersection Summary
Cycle Length: 75
Actuated Cycle Length: 59.1
Natural Cycle: 60
Control Type: Semi Act-Uncoord

Splits and Phases: 3: Mayfield Road & Highway 410 SB





Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑↑↑	↑↑↑		↰↰	↱
Traffic Volume (vph)	0	863	2005	0	98	23
Future Volume (vph)	0	863	2005	0	98	23
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)		6.0	6.0		6.0	6.0
Lane Util. Factor		0.91	0.91		0.97	0.91
Frt		1.00	1.00		1.00	0.85
Flt Protected		1.00	1.00		0.95	1.00
Satd. Flow (prot)		5043	5245		3395	1486
Flt Permitted		1.00	1.00		0.95	1.00
Satd. Flow (perm)		5043	5245		3395	1486
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	0	863	2005	0	98	23
RTOR Reduction (vph)	0	0	0	0	2	2
Lane Group Flow (vph)	0	863	2005	0	98	19
Heavy Vehicles (%)	0%	4%	0%	2%	4%	0%
Bus Blockages (#/hr)	0	0	0	0	2	0
Turn Type		NA	NA		Prot	Perm
Protected Phases		2	6		4	
Permitted Phases						4
Actuated Green, G (s)		40.8	40.8		7.4	7.4
Effective Green, g (s)		40.8	40.8		7.4	7.4
Actuated g/C Ratio		0.68	0.68		0.12	0.12
Clearance Time (s)		6.0	6.0		6.0	6.0
Vehicle Extension (s)		5.0	5.0		5.0	5.0
Lane Grp Cap (vph)		3417	3554		417	182
v/s Ratio Prot		0.17	c0.38		c0.03	
v/s Ratio Perm						0.01
v/c Ratio		0.25	0.56		0.24	0.11
Uniform Delay, d1		3.8	5.1		23.8	23.5
Progression Factor		1.00	1.00		1.00	1.00
Incremental Delay, d2		0.2	0.7		0.6	0.5
Delay (s)		3.9	5.7		24.5	24.0
Level of Service		A	A		C	C
Approach Delay (s)		3.9	5.7		24.4	
Approach LOS		A	A		C	

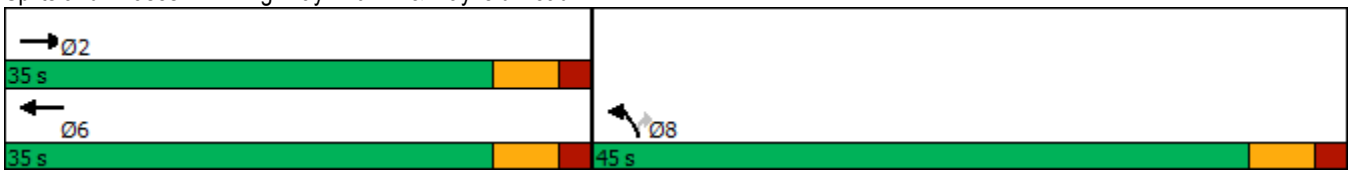
Intersection Summary			
HCM 2000 Control Delay	6.0	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.51		
Actuated Cycle Length (s)	60.2	Sum of lost time (s)	12.0
Intersection Capacity Utilization	55.4%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

Lane Group	EBT	WBT	NBL	NBR
Lane Configurations				
Traffic Volume (vph)	898	1755	854	911
Future Volume (vph)	898	1755	854	911
Lane Group Flow (vph)	898	1755	1209	556
Turn Type	NA	NA	Prot	Perm
Protected Phases	2	6	8	
Permitted Phases	2	6		8
Detector Phase	2	6	8	8
Switch Phase				
Minimum Initial (s)	26.0	26.0	10.0	10.0
Minimum Split (s)	32.0	32.0	22.0	22.0
Total Split (s)	35.0	35.0	45.0	45.0
Total Split (%)	43.8%	43.8%	56.3%	56.3%
Yellow Time (s)	4.0	4.0	4.0	4.0
All-Red Time (s)	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.0	6.0	6.0	6.0
Lead/Lag				
Lead-Lag Optimize?				
Recall Mode	Max	None	None	None
v/c Ratio	0.47	0.92	0.78	0.86
Control Delay	19.3	33.1	20.9	32.0
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	19.3	33.1	20.9	32.0
Queue Length 50th (m)	38.2	94.6	69.4	69.6
Queue Length 95th (m)	49.5	#129.1	92.8	#133.8
Internal Link Dist (m)	104.0	63.2	627.1	
Turn Bay Length (m)				
Base Capacity (vph)	1905	1905	1749	731
Starvation Cap Reductn	0	0	0	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.47	0.92	0.69	0.76

Intersection Summary
Cycle Length: 80
Actuated Cycle Length: 75.8
Natural Cycle: 65
Control Type: Semi Act-Uncoord
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 4: Highway 410 NB & Mayfield Road





Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	898	0	0	1755	854	911
Future Volume (vph)	898	0	0	1755	854	911
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0			6.0	6.0	6.0
Lane Util. Factor	0.91			0.91	0.97	0.91
Frt	1.00			1.00	0.96	0.85
Flt Protected	1.00			1.00	0.97	1.00
Satd. Flow (prot)	4948			4948	3339	1376
Flt Permitted	1.00			1.00	0.97	1.00
Satd. Flow (perm)	4948			4948	3339	1376
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	898	0	0	1755	854	911
RTOR Reduction (vph)	0	0	0	0	21	21
Lane Group Flow (vph)	898	0	0	1755	1188	535
Heavy Vehicles (%)	6%	0%	0%	6%	1%	8%
Turn Type	NA			NA	Prot	Perm
Protected Phases	2			6	8	
Permitted Phases	2			6		8
Actuated Green, G (s)	29.2			29.2	34.5	34.5
Effective Green, g (s)	29.2			29.2	34.5	34.5
Actuated g/C Ratio	0.39			0.39	0.46	0.46
Clearance Time (s)	6.0			6.0	6.0	6.0
Vehicle Extension (s)	5.0			5.0	3.0	3.0
Lane Grp Cap (vph)	1908			1908	1521	627
v/s Ratio Prot	0.18			c0.35	0.36	
v/s Ratio Perm						c0.39
v/c Ratio	0.47			0.92	0.78	0.85
Uniform Delay, d1	17.4			22.1	17.4	18.3
Progression Factor	1.00			1.00	1.00	1.00
Incremental Delay, d2	0.8			8.1	2.7	10.9
Delay (s)	18.3			30.2	20.1	29.2
Level of Service	B			C	C	C
Approach Delay (s)	18.3			30.2	23.0	
Approach LOS	B			C	C	

Intersection Summary			
HCM 2000 Control Delay	24.9	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.88		
Actuated Cycle Length (s)	75.7	Sum of lost time (s)	12.0
Intersection Capacity Utilization	77.8%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	EBT	EBR	WBL	WBT	NBL
Lane Configurations					
Traffic Volume (vph)	1544	154	71	1760	99
Future Volume (vph)	1544	154	71	1760	99
Lane Group Flow (vph)	1544	154	71	1760	144
Turn Type	NA	Perm	Perm	NA	Prot
Protected Phases	2			2	4
Permitted Phases		2	2		
Detector Phase	2	2	2	2	4
Switch Phase					
Minimum Initial (s)	12.0	12.0	12.0	12.0	8.0
Minimum Split (s)	26.7	26.7	26.7	26.7	45.6
Total Split (s)	74.0	74.0	74.0	74.0	46.0
Total Split (%)	61.7%	61.7%	61.7%	61.7%	38.3%
Yellow Time (s)	4.6	4.6	4.6	4.6	4.0
All-Red Time (s)	2.1	2.1	2.1	2.1	3.6
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.7	6.7	6.7	6.7	7.6
Lead/Lag					
Lead-Lag Optimize?					
Recall Mode	Max	Max	Max	Max	Max
v/c Ratio	0.54	0.16	0.60	0.61	0.25
Control Delay	17.4	2.3	42.8	18.7	27.2
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	17.4	2.3	42.8	18.7	27.2
Queue Length 50th (m)	79.7	0.0	10.5	96.7	21.3
Queue Length 95th (m)	92.3	8.9	#35.6	111.2	37.7
Internal Link Dist (m)	203.7			76.6	88.2
Turn Bay Length (m)		65.0	35.0		
Base Capacity (vph)	2883	945	118	2883	572
Starvation Cap Reductn	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.54	0.16	0.60	0.61	0.25

Intersection Summary

Cycle Length: 120
Actuated Cycle Length: 120
Natural Cycle: 90
Control Type: Semi Act-Uncoord
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 5: Ace Drive & Mayfield Road





Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	1544	154	71	1760	99	45
Future Volume (vph)	1544	154	71	1760	99	45
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width	3.7	3.5	3.5	3.7	3.7	3.7
Total Lost time (s)	6.7	6.7	6.7	6.7	7.6	
Lane Util. Factor	0.91	1.00	1.00	0.91	1.00	
Frt	1.00	0.85	1.00	1.00	0.96	
Flt Protected	1.00	1.00	0.95	1.00	0.97	
Satd. Flow (prot)	5142	1566	1750	5142	1744	
Flt Permitted	1.00	1.00	0.11	1.00	0.97	
Satd. Flow (perm)	5142	1566	211	5142	1744	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	1544	154	71	1760	99	45
RTOR Reduction (vph)	0	68	0	0	14	0
Lane Group Flow (vph)	1544	86	71	1760	130	0
Turn Type	NA	Perm	Perm	NA	Prot	
Protected Phases	2			2	4	
Permitted Phases		2	2			
Actuated Green, G (s)	67.3	67.3	67.3	67.3	38.4	
Effective Green, g (s)	67.3	67.3	67.3	67.3	38.4	
Actuated g/C Ratio	0.56	0.56	0.56	0.56	0.32	
Clearance Time (s)	6.7	6.7	6.7	6.7	7.6	
Vehicle Extension (s)	5.0	5.0	5.0	5.0	5.0	
Lane Grp Cap (vph)	2883	878	118	2883	558	
v/s Ratio Prot	0.30			c0.34	c0.07	
v/s Ratio Perm		0.06	0.34			
v/c Ratio	0.54	0.10	0.60	0.61	0.23	
Uniform Delay, d1	16.5	12.2	17.5	17.6	30.0	
Progression Factor	1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	0.7	0.2	20.7	1.0	1.0	
Delay (s)	17.3	12.5	38.1	18.6	31.0	
Level of Service	B	B	D	B	C	
Approach Delay (s)	16.8			19.3	31.0	
Approach LOS	B			B	C	

Intersection Summary			
HCM 2000 Control Delay	18.6	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.47		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	14.3
Intersection Capacity Utilization	65.6%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	376	1078	186	68	1255	31	289	203	38	62	342	511
Future Volume (vph)	376	1078	186	68	1255	31	289	203	38	62	342	511
Lane Group Flow (vph)	376	1078	186	68	1255	31	289	203	38	62	342	511
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	Perm	NA	Perm	Perm	NA	Perm
Protected Phases	5	2		1	6			4			8	
Permitted Phases	2		2	6		6	4		4	8		8
Detector Phase	5	2	2	1	6	6	4	4	4	8	8	8
Switch Phase												
Minimum Initial (s)	5.0	8.0	8.0	5.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0
Minimum Split (s)	9.0	44.9	44.9	9.0	44.9	44.9	47.9	47.9	47.9	47.9	47.9	47.9
Total Split (s)	24.0	61.0	61.0	10.0	47.0	47.0	49.0	49.0	49.0	49.0	49.0	49.0
Total Split (%)	20.0%	50.8%	50.8%	8.3%	39.2%	39.2%	40.8%	40.8%	40.8%	40.8%	40.8%	40.8%
Yellow Time (s)	3.0	4.6	4.6	3.0	4.6	4.6	4.6	4.6	4.6	4.6	4.6	4.6
All-Red Time (s)	1.0	2.3	2.3	1.0	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.3
Lost Time Adjust (s)	-1.0	0.0	0.0	-1.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	3.0	6.9	6.9	3.0	6.9	6.9	6.9	6.9	6.9	6.9	6.9	6.9
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag						
Lead-Lag Optimize?												
Recall Mode	None	Max	Max	None	None	None	None	None	None	None	None	None
v/c Ratio	0.97	0.47	0.22	0.32	0.77	0.06	0.90	0.17	0.06	0.17	0.30	0.70
Control Delay	71.6	22.2	3.4	17.4	38.2	0.2	68.6	27.3	0.2	28.6	29.0	17.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	71.6	22.2	3.4	17.4	38.2	0.2	68.6	27.3	0.2	28.6	29.0	17.9
Queue Length 50th (m)	~75.7	64.5	0.0	7.0	96.4	0.0	62.8	17.2	0.0	10.0	30.3	38.4
Queue Length 95th (m)	#135.5	77.3	12.4	13.8	113.9	0.0	#112.3	25.9	0.0	20.5	42.1	78.5
Internal Link Dist (m)		179.3			299.2			185.5			471.5	
Turn Bay Length (m)	140.0		70.0	65.0		30.0	75.0		60.0	30.0		138.0
Base Capacity (vph)	387	2279	845	214	1736	584	357	1357	644	404	1292	774
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.97	0.47	0.22	0.32	0.72	0.05	0.81	0.15	0.06	0.15	0.26	0.66

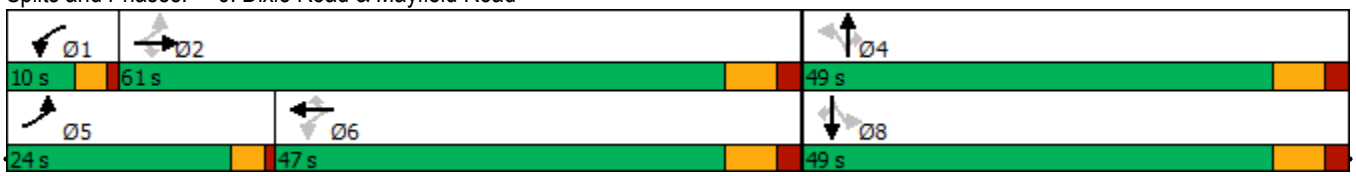
Intersection Summary

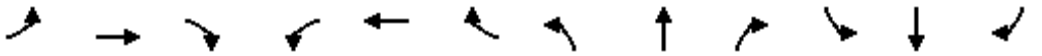
Cycle Length: 120
Actuated Cycle Length: 114.2
Natural Cycle: 115
Control Type: Semi Act-Uncoord

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

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

Splits and Phases: 6: Dixie Road & Mayfield Road





Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	376	1078	186	68	1255	31	289	203	38	62	342	511
Future Volume (vph)	376	1078	186	68	1255	31	289	203	38	62	342	511
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5
Total Lost time (s)	3.0	6.9	6.9	3.0	6.9	6.9	6.9	6.9	6.9	6.9	6.9	6.9
Lane Util. Factor	1.00	0.91	1.00	1.00	0.91	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1700	4768	1566	1342	4902	1452	1750	3650	1551	1653	3476	1551
Flt Permitted	0.10	1.00	1.00	0.25	1.00	1.00	0.52	1.00	1.00	0.62	1.00	1.00
Satd. Flow (perm)	182	4768	1566	357	4902	1452	962	3650	1551	1086	3476	1551
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	376	1078	186	68	1255	31	289	203	38	62	342	511
RTOR Reduction (vph)	0	0	98	0	0	20	0	0	25	0	0	211
Lane Group Flow (vph)	376	1078	88	68	1255	11	289	203	13	62	342	300
Heavy Vehicles (%)	5%	10%	2%	33%	7%	10%	2%	0%	3%	8%	5%	3%
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	Perm	NA	Perm	Perm	NA	Perm
Protected Phases	5	2		1	6			4			8	
Permitted Phases	2		2	6		6	4		4	8		8
Actuated Green, G (s)	63.2	54.6	54.6	43.6	39.0	39.0	38.0	38.0	38.0	38.0	38.0	38.0
Effective Green, g (s)	64.2	54.6	54.6	45.6	39.0	39.0	38.0	38.0	38.0	38.0	38.0	38.0
Actuated g/C Ratio	0.56	0.47	0.47	0.40	0.34	0.34	0.33	0.33	0.33	0.33	0.33	0.33
Clearance Time (s)	4.0	6.9	6.9	4.0	6.9	6.9	6.9	6.9	6.9	6.9	6.9	6.9
Vehicle Extension (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Lane Grp Cap (vph)	381	2263	743	189	1662	492	317	1206	512	358	1148	512
v/s Ratio Prot	c0.18	0.23		0.02	0.26			0.06			0.10	
v/s Ratio Perm	c0.37		0.06	0.12		0.01	c0.30		0.01	0.06		0.19
v/c Ratio	0.99	0.48	0.12	0.36	0.76	0.02	0.91	0.17	0.02	0.17	0.30	0.59
Uniform Delay, d1	33.7	20.5	16.8	22.1	33.8	25.3	36.9	27.3	26.0	27.3	28.6	32.0
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	42.5	0.7	0.3	2.4	2.4	0.0	30.3	0.1	0.0	0.5	0.3	2.7
Delay (s)	76.2	21.2	17.1	24.5	36.1	25.3	67.2	27.4	26.0	27.8	28.9	34.6
Level of Service	E	C	B	C	D	C	E	C	C	C	C	C
Approach Delay (s)		33.4			35.3			49.0			32.0	
Approach LOS		C			D			D			C	

Intersection Summary			
HCM 2000 Control Delay	35.5	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.99		
Actuated Cycle Length (s)	115.0	Sum of lost time (s)	16.8
Intersection Capacity Utilization	91.1%	ICU Level of Service	F
Analysis Period (min)	15		

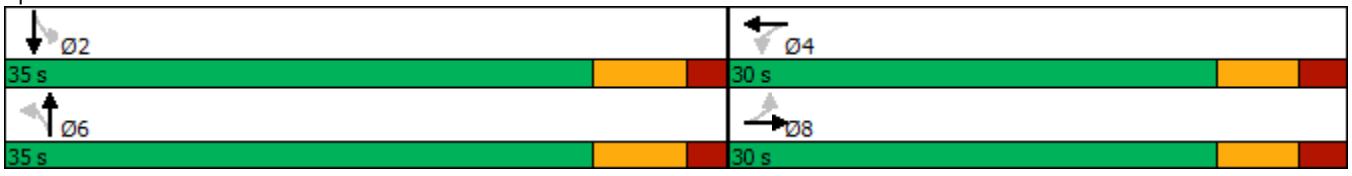
c Critical Lane Group

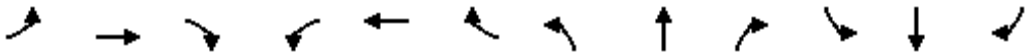
Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations								
Traffic Volume (vph)	14	98	83	251	25	450	6	232
Future Volume (vph)	14	98	83	251	25	450	6	232
Lane Group Flow (vph)	14	108	83	269	25	491	6	247
Turn Type	Perm	NA	Perm	NA	Perm	NA	Perm	NA
Protected Phases		8		4		6		2
Permitted Phases	8		4		6		2	
Detector Phase	8	8	4	4	6	6	2	2
Switch Phase								
Minimum Initial (s)	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0
Minimum Split (s)	25.4	25.4	25.4	25.4	23.6	23.6	23.6	23.6
Total Split (s)	30.0	30.0	30.0	30.0	35.0	35.0	35.0	35.0
Total Split (%)	46.2%	46.2%	46.2%	46.2%	53.8%	53.8%	53.8%	53.8%
Yellow Time (s)	4.0	4.0	4.0	4.0	4.6	4.6	4.6	4.6
All-Red Time (s)	2.4	2.4	2.4	2.4	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.4	6.4	6.4	6.4	6.6	6.6	6.6	6.6
Lead/Lag								
Lead-Lag Optimize?								
Recall Mode	None	None	None	None	Max	Max	Max	Max
v/c Ratio	0.06	0.22	0.25	0.54	0.04	0.53	0.01	0.27
Control Delay	15.2	15.6	17.7	21.6	9.0	12.8	9.0	9.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	15.2	15.6	17.7	21.6	9.0	12.8	9.0	9.9
Queue Length 50th (m)	1.1	7.8	6.6	22.9	1.2	30.1	0.3	12.8
Queue Length 95th (m)	4.4	17.3	15.4	40.6	5.0	65.1	2.1	30.3
Internal Link Dist (m)		1372.4		151.6		1518.8		144.7
Turn Bay Length (m)	35.0		45.0		40.0		35.0	
Base Capacity (vph)	371	759	522	768	581	935	401	899
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.04	0.14	0.16	0.35	0.04	0.53	0.01	0.27

Intersection Summary

Cycle Length: 65
Actuated Cycle Length: 57.9
Natural Cycle: 55
Control Type: Semi Act-Uncoord

Splits and Phases: 7: Dixie Road & Old School Road





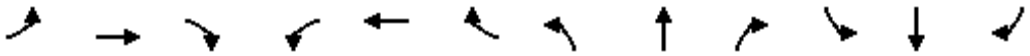
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	14	98	10	83	251	18	25	450	41	6	232	15
Future Volume (vph)	14	98	10	83	251	18	25	450	41	6	232	15
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5
Total Lost time (s)	6.4	6.4		6.4	6.4		6.6	6.6		6.6	6.6	
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	0.99		1.00	0.99		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)	1566	1844		1767	1871		1785	1823		1785	1755	
Flt Permitted	0.55	1.00		0.69	1.00		0.61	1.00		0.42	1.00	
Satd. Flow (perm)	909	1844		1279	1871		1138	1823		786	1755	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	14	98	10	83	251	18	25	450	41	6	232	15
RTOR Reduction (vph)	0	7	0	0	4	0	0	4	0	0	3	0
Lane Group Flow (vph)	14	101	0	83	265	0	25	487	0	6	244	0
Heavy Vehicles (%)	14%	3%	0%	1%	1%	11%	0%	2%	27%	0%	9%	0%
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		8			4			6			2	
Permitted Phases	8			4			6			2		
Actuated Green, G (s)	15.3	15.3		15.3	15.3		29.6	29.6		29.6	29.6	
Effective Green, g (s)	15.3	15.3		15.3	15.3		29.6	29.6		29.6	29.6	
Actuated g/C Ratio	0.26	0.26		0.26	0.26		0.51	0.51		0.51	0.51	
Clearance Time (s)	6.4	6.4		6.4	6.4		6.6	6.6		6.6	6.6	
Vehicle Extension (s)	5.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0	
Lane Grp Cap (vph)	240	487		337	494		581	931		401	897	
v/s Ratio Prot		0.05			c0.14			c0.27			0.14	
v/s Ratio Perm	0.02			0.06			0.02			0.01		
v/c Ratio	0.06	0.21		0.25	0.54		0.04	0.52		0.01	0.27	
Uniform Delay, d1	15.9	16.6		16.8	18.3		7.1	9.4		7.0	8.0	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.2	0.4		0.8	2.0		0.1	2.1		0.1	0.7	
Delay (s)	16.1	17.0		17.6	20.3		7.2	11.5		7.0	8.8	
Level of Service	B	B		B	C		A	B		A	A	
Approach Delay (s)		16.9			19.7			11.3			8.7	
Approach LOS		B			B			B			A	

Intersection Summary			
HCM 2000 Control Delay	13.7	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.53		
Actuated Cycle Length (s)	57.9	Sum of lost time (s)	13.0
Intersection Capacity Utilization	51.3%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Appendix I

2029 Future Background Conditions – Synchro Analysis Results



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Stop			Stop	
Traffic Volume (vph)	12	287	92	5	95	4	36	28	6	4	38	13
Future Volume (vph)	12	287	92	5	95	4	36	28	6	4	38	13
Peak Hour Factor	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85
Hourly flow rate (vph)	14	338	108	6	112	5	42	33	7	5	45	15

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total (vph)	460	123	82	65
Volume Left (vph)	14	6	42	5
Volume Right (vph)	108	5	7	15
Hadj (s)	-0.09	0.14	0.20	-0.06
Departure Headway (s)	4.4	5.0	5.6	5.3
Degree Utilization, x	0.56	0.17	0.13	0.10
Capacity (veh/h)	792	680	580	596
Control Delay (s)	12.8	9.0	9.4	8.9
Approach Delay (s)	12.8	9.0	9.4	8.9
Approach LOS	B	A	A	A

Intersection Summary				
Delay	11.4			
Level of Service	B			
Intersection Capacity Utilization	42.0%	ICU Level of Service	A	
Analysis Period (min)	15			

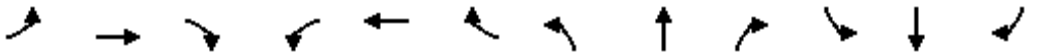
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	72	1716	511	116	1121	250	108	60	18	216	149	104
Future Volume (vph)	72	1716	511	116	1121	250	108	60	18	216	149	104
Lane Group Flow (vph)	72	1716	511	116	1121	250	108	60	18	216	149	104
Turn Type	Perm	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm	Perm	NA	Perm
Protected Phases		2		1	6		7	4			8	
Permitted Phases	2		2	6		6	4		4	8		8
Detector Phase	2	2	2	1	6	6	7	4	4	8	8	8
Switch Phase												
Minimum Initial (s)	12.0	12.0	12.0	5.0	12.0	12.0	5.0	8.0	8.0	8.0	8.0	8.0
Minimum Split (s)	39.7	39.7	39.7	9.0	39.7	39.7	9.0	43.9	43.9	43.9	43.9	43.9
Total Split (s)	77.0	77.0	77.0	9.0	86.0	86.0	9.0	54.0	54.0	45.0	45.0	45.0
Total Split (%)	55.0%	55.0%	55.0%	6.4%	61.4%	61.4%	6.4%	38.6%	38.6%	32.1%	32.1%	32.1%
Yellow Time (s)	4.6	4.6	4.6	3.0	4.6	4.6	3.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	2.1	2.1	2.1	1.0	2.1	2.1	1.0	2.9	2.9	2.9	2.9	2.9
Lost Time Adjust (s)	0.0	0.0	0.0	-1.0	0.0	0.0	-1.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.7	6.7	6.7	3.0	6.7	6.7	3.0	6.9	6.9	6.9	6.9	6.9
Lead/Lag	Lag	Lag	Lag	Lead			Lead			Lag	Lag	Lag
Lead-Lag Optimize?												
Recall Mode	Max	Max	Max	None	Max	Max	None	None	None	None	None	None
v/c Ratio	0.35	0.72	0.53	0.79	0.44	0.32	0.34	0.12	0.04	0.79	0.39	0.26
Control Delay	25.6	26.3	4.9	52.0	15.6	2.8	35.3	33.8	0.2	69.0	45.9	11.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	25.6	26.3	4.9	52.0	15.6	2.8	35.3	33.8	0.2	69.0	45.9	11.7
Queue Length 50th (m)	10.6	122.2	6.1	11.6	56.3	0.0	20.4	11.4	0.0	53.2	33.1	2.7
Queue Length 95th (m)	25.9	156.8	30.4	#37.0	76.0	11.9	34.9	22.2	0.0	82.5	52.7	16.9
Internal Link Dist (m)		179.2			166.2			202.0			680.1	
Turn Bay Length (m)	115.0		180.0	80.0		150.0	110.0		44.0	20.0		20.0
Base Capacity (vph)	208	2382	968	146	2542	771	318	619	553	351	496	481
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.35	0.72	0.53	0.79	0.44	0.32	0.34	0.10	0.03	0.62	0.30	0.22

Intersection Summary

Cycle Length: 140
Actuated Cycle Length: 131.8
Natural Cycle: 105
Control Type: Semi Act-Uncoord
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 2: Heart Lake Road & Mayfield Road





Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	72	1716	511	116	1121	250	108	60	18	216	149	104
Future Volume (vph)	72	1716	511	116	1121	250	108	60	18	216	149	104
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5
Total Lost time (s)	6.7	6.7	6.7	3.0	6.7	6.7	3.0	6.9	6.9	6.9	6.9	6.9
Lane Util. Factor	1.00	0.91	1.00	1.00	0.91	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1530	4453	1409	1560	4214	1114	1530	1729	1437	1606	1712	1437
Flt Permitted	0.24	1.00	1.00	0.08	1.00	1.00	0.56	1.00	1.00	0.72	1.00	1.00
Satd. Flow (perm)	389	4453	1409	129	4214	1114	898	1729	1437	1214	1712	1437
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	72	1716	511	116	1121	250	108	60	18	216	149	104
RTOR Reduction (vph)	0	0	215	0	0	99	0	0	13	0	0	71
Lane Group Flow (vph)	72	1716	296	116	1121	151	108	60	5	216	149	33
Heavy Vehicles (%)	5%	6%	2%	3%	12%	29%	5%	0%	0%	0%	1%	0%
Turn Type	Perm	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm	Perm	NA	Perm
Protected Phases		2		1	6		7	4			8	
Permitted Phases	2		2	6		6	4		4	8		8
Actuated Green, G (s)	70.5	70.5	70.5	79.5	79.5	79.5	38.6	38.6	38.6	29.6	29.6	29.6
Effective Green, g (s)	70.5	70.5	70.5	80.5	79.5	79.5	39.6	38.6	38.6	29.6	29.6	29.6
Actuated g/C Ratio	0.54	0.54	0.54	0.61	0.60	0.60	0.30	0.29	0.29	0.22	0.22	0.22
Clearance Time (s)	6.7	6.7	6.7	4.0	6.7	6.7	4.0	6.9	6.9	6.9	6.9	6.9
Vehicle Extension (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Lane Grp Cap (vph)	208	2383	754	144	2543	672	298	506	421	272	384	322
v/s Ratio Prot		0.39		c0.04	0.27		c0.02	0.03			0.09	
v/s Ratio Perm	0.18		0.21	c0.46		0.14	0.09		0.00	c0.18		0.02
v/c Ratio	0.35	0.72	0.39	0.81	0.44	0.22	0.36	0.12	0.01	0.79	0.39	0.10
Uniform Delay, d1	17.5	23.1	18.0	17.9	14.1	12.0	35.4	34.1	33.0	48.2	43.4	40.5
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	4.5	1.9	1.5	30.1	0.6	0.8	1.6	0.2	0.0	16.7	1.4	0.3
Delay (s)	22.0	25.1	19.5	48.0	14.7	12.7	37.0	34.3	33.1	64.8	44.7	40.8
Level of Service	C	C	B	D	B	B	D	C	C	E	D	D
Approach Delay (s)		23.7			16.9			35.7			53.1	
Approach LOS		C			B			D			D	

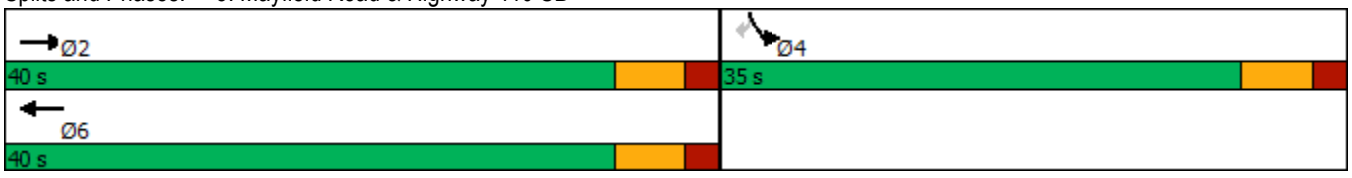
Intersection Summary			
HCM 2000 Control Delay	25.1	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.80		
Actuated Cycle Length (s)	131.7	Sum of lost time (s)	19.6
Intersection Capacity Utilization	84.4%	ICU Level of Service	E
Analysis Period (min)	15		

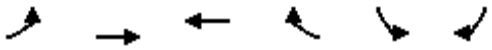
c Critical Lane Group

Lane Group	EBT	WBT	SBL	SBR
Lane Configurations				
Traffic Volume (vph)	1315	1188	347	298
Future Volume (vph)	1315	1188	347	298
Lane Group Flow (vph)	1315	1188	442	203
Turn Type	NA	NA	Prot	Perm
Protected Phases	2	6	4	
Permitted Phases				4
Detector Phase	2	6	4	4
Switch Phase				
Minimum Initial (s)	16.0	16.0	8.0	8.0
Minimum Split (s)	22.0	22.0	32.0	32.0
Total Split (s)	40.0	40.0	35.0	35.0
Total Split (%)	53.3%	53.3%	46.7%	46.7%
Yellow Time (s)	4.0	4.0	4.0	4.0
All-Red Time (s)	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.0	6.0	6.0	6.0
Lead/Lag				
Lead-Lag Optimize?				
Recall Mode	Max	Max	None	None
v/c Ratio	0.49	0.42	0.47	0.49
Control Delay	10.5	9.8	19.3	20.1
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	10.5	9.8	19.3	20.1
Queue Length 50th (m)	30.5	26.1	20.2	17.9
Queue Length 95th (m)	55.0	47.3	30.9	35.4
Internal Link Dist (m)	123.5	116.2	492.2	
Turn Bay Length (m)				
Base Capacity (vph)	2688	2850	1619	705
Starvation Cap Reductn	0	0	0	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.49	0.42	0.27	0.29

Intersection Summary
Cycle Length: 75
Actuated Cycle Length: 62.9
Natural Cycle: 55
Control Type: Semi Act-Uncoord

Splits and Phases: 3: Mayfield Road & Highway 410 SB





Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑↑↑	↑↑↑		↰↰	↱
Traffic Volume (vph)	0	1315	1188	0	347	298
Future Volume (vph)	0	1315	1188	0	347	298
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)		6.0	6.0		6.0	6.0
Lane Util. Factor		0.91	0.91		0.97	0.91
Frt		1.00	1.00		0.97	0.85
Flt Protected		1.00	1.00		0.96	1.00
Satd. Flow (prot)		4948	5245		3457	1486
Flt Permitted		1.00	1.00		0.96	1.00
Satd. Flow (perm)		4948	5245		3457	1486
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	0	1315	1188	0	347	298
RTOR Reduction (vph)	0	0	0	0	24	24
Lane Group Flow (vph)	0	1315	1188	0	418	179
Heavy Vehicles (%)	0%	6%	0%	16%	0%	0%
Bus Blockages (#/hr)	0	0	0	0	2	0
Turn Type		NA	NA		Prot	Perm
Protected Phases		2	6		4	
Permitted Phases						4
Actuated Green, G (s)		34.2	34.2		16.7	16.7
Effective Green, g (s)		34.2	34.2		16.7	16.7
Actuated g/C Ratio		0.54	0.54		0.27	0.27
Clearance Time (s)		6.0	6.0		6.0	6.0
Vehicle Extension (s)		5.0	5.0		5.0	5.0
Lane Grp Cap (vph)		2690	2851		917	394
v/s Ratio Prot		c0.27	0.23		c0.12	
v/s Ratio Perm						0.12
v/c Ratio		0.49	0.42		0.46	0.46
Uniform Delay, d1		8.9	8.5		19.3	19.3
Progression Factor		1.00	1.00		1.00	1.00
Incremental Delay, d2		0.6	0.5		0.8	1.7
Delay (s)		9.6	8.9		20.1	21.0
Level of Service		A	A		C	C
Approach Delay (s)		9.6	8.9		20.4	
Approach LOS		A	A		C	

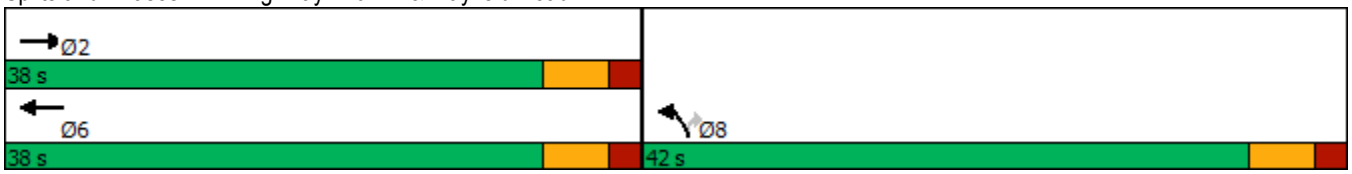
Intersection Summary			
HCM 2000 Control Delay	11.5	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.48		
Actuated Cycle Length (s)	62.9	Sum of lost time (s)	12.0
Intersection Capacity Utilization	48.4%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Lane Group	EBT	WBT	NBL	NBR
Lane Configurations				
Traffic Volume (vph)	1656	1595	446	879
Future Volume (vph)	1656	1595	446	879
Lane Group Flow (vph)	1656	1595	886	439
Turn Type	NA	NA	Prot	Perm
Protected Phases	2	6	8	
Permitted Phases				8
Detector Phase	2	6	8	8
Switch Phase				
Minimum Initial (s)	26.0	26.0	10.0	10.0
Minimum Split (s)	32.0	32.0	22.0	22.0
Total Split (s)	38.0	38.0	42.0	42.0
Total Split (%)	47.5%	47.5%	52.5%	52.5%
Yellow Time (s)	4.0	4.0	4.0	4.0
All-Red Time (s)	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.0	6.0	6.0	6.0
Lead/Lag				
Lead-Lag Optimize?				
Recall Mode	Max	None	None	None
v/c Ratio	0.77	0.78	0.76	0.83
Control Delay	21.7	22.4	23.6	34.8
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	21.7	22.4	23.6	34.8
Queue Length 50th (m)	73.5	71.4	52.4	57.5
Queue Length 95th (m)	99.7	97.8	72.1	#100.9
Internal Link Dist (m)	104.0	63.2	627.1	
Turn Bay Length (m)				
Base Capacity (vph)	2162	2047	1433	648
Starvation Cap Reductn	0	0	0	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.77	0.78	0.62	0.68

Intersection Summary
Cycle Length: 80
Actuated Cycle Length: 73.8
Natural Cycle: 60
Control Type: Semi Act-Uncoord
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 4: Highway 410 NB & Mayfield Road





Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	1656	0	0	1595	446	879
Future Volume (vph)	1656	0	0	1595	446	879
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0			6.0	6.0	6.0
Lane Util. Factor	0.91			0.91	0.97	0.91
Frt	1.00			1.00	0.93	0.85
Flt Protected	1.00			1.00	0.98	1.00
Satd. Flow (prot)	4948			4683	2913	1315
Flt Permitted	1.00			1.00	0.98	1.00
Satd. Flow (perm)	4948			4683	2913	1315
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	1656	0	0	1595	446	879
RTOR Reduction (vph)	0	0	0	0	2	2
Lane Group Flow (vph)	1656	0	0	1595	884	437
Heavy Vehicles (%)	6%	0%	0%	12%	18%	13%
Turn Type	NA			NA	Prot	Perm
Protected Phases	2			6	8	
Permitted Phases						8
Actuated Green, G (s)	32.3			32.3	29.5	29.5
Effective Green, g (s)	32.3			32.3	29.5	29.5
Actuated g/C Ratio	0.44			0.44	0.40	0.40
Clearance Time (s)	6.0			6.0	6.0	6.0
Vehicle Extension (s)	5.0			5.0	3.0	3.0
Lane Grp Cap (vph)	2165			2049	1164	525
v/s Ratio Prot	0.33			c0.34	0.30	
v/s Ratio Perm						c0.33
v/c Ratio	0.76			0.78	0.76	0.83
Uniform Delay, d1	17.5			17.7	19.1	19.9
Progression Factor	1.00			1.00	1.00	1.00
Incremental Delay, d2	2.6			2.3	2.9	10.9
Delay (s)	20.2			20.0	22.0	30.8
Level of Service	C			B	C	C
Approach Delay (s)	20.2			20.0	24.9	
Approach LOS	C			B	C	

Intersection Summary			
HCM 2000 Control Delay	21.5	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.80		
Actuated Cycle Length (s)	73.8	Sum of lost time (s)	12.0
Intersection Capacity Utilization	78.3%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	EBT	EBR	WBL	WBT	NBL
Lane Configurations					
Traffic Volume (vph)	2119	211	68	1317	106
Future Volume (vph)	2119	211	68	1317	106
Lane Group Flow (vph)	2119	211	68	1317	166
Turn Type	NA	Perm	Perm	NA	Prot
Protected Phases	2			2	4
Permitted Phases		2	2		
Detector Phase	2	2	2	2	4
Switch Phase					
Minimum Initial (s)	12.0	12.0	12.0	12.0	8.0
Minimum Split (s)	26.7	26.7	26.7	26.7	45.6
Total Split (s)	74.0	74.0	74.0	74.0	46.0
Total Split (%)	61.7%	61.7%	61.7%	61.7%	38.3%
Yellow Time (s)	4.6	4.6	4.6	4.6	4.0
All-Red Time (s)	2.1	2.1	2.1	2.1	3.6
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.7	6.7	6.7	6.7	7.6
Lead/Lag					
Lead-Lag Optimize?					
Recall Mode	Max	Max	Max	Max	None
v/c Ratio	0.59	0.18	0.83	0.37	0.58
Control Delay	9.2	1.9	83.2	6.9	45.6
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	9.2	1.9	83.2	6.9	45.6
Queue Length 50th (m)	67.7	1.8	8.3	33.2	28.2
Queue Length 95th (m)	97.2	9.7	#24.4	49.3	48.1
Internal Link Dist (m)	203.7			76.6	88.2
Turn Bay Length (m)		65.0	35.0		
Base Capacity (vph)	3588	1145	82	3588	660
Starvation Cap Reductn	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.59	0.18	0.83	0.37	0.25

Intersection Summary

Cycle Length: 120
Actuated Cycle Length: 101.6
Natural Cycle: 90
Control Type: Actuated-Uncoordinated
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 5: Ace Drive & Mayfield Road





Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	2119	211	68	1317	106	60
Future Volume (vph)	2119	211	68	1317	106	60
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width	3.7	3.5	3.5	3.7	3.7	3.7
Total Lost time (s)	6.7	6.7	6.7	6.7	7.6	
Lane Util. Factor	0.91	1.00	1.00	0.91	1.00	
Frt	1.00	0.85	1.00	1.00	0.95	
Flt Protected	1.00	1.00	0.95	1.00	0.97	
Satd. Flow (prot)	5142	1566	1750	5142	1736	
Flt Permitted	1.00	1.00	0.06	1.00	0.97	
Satd. Flow (perm)	5142	1566	117	5142	1736	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	2119	211	68	1317	106	60
RTOR Reduction (vph)	0	53	0	0	5	0
Lane Group Flow (vph)	2119	158	68	1317	161	0
Turn Type	NA	Perm	Perm	NA	Prot	
Protected Phases	2			2	4	
Permitted Phases		2	2			
Actuated Green, G (s)	70.9	70.9	70.9	70.9	16.4	
Effective Green, g (s)	70.9	70.9	70.9	70.9	16.4	
Actuated g/C Ratio	0.70	0.70	0.70	0.70	0.16	
Clearance Time (s)	6.7	6.7	6.7	6.7	7.6	
Vehicle Extension (s)	5.0	5.0	5.0	5.0	5.0	
Lane Grp Cap (vph)	3588	1092	81	3588	280	
v/s Ratio Prot	0.41			0.26	c0.09	
v/s Ratio Perm		0.10	c0.58			
v/c Ratio	0.59	0.14	0.84	0.37	0.57	
Uniform Delay, d1	7.9	5.2	11.2	6.2	39.4	
Progression Factor	1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	0.7	0.3	62.4	0.3	4.5	
Delay (s)	8.6	5.4	73.6	6.5	43.9	
Level of Service	A	A	E	A	D	
Approach Delay (s)	8.3			9.8	43.9	
Approach LOS	A			A	D	

Intersection Summary			
HCM 2000 Control Delay	10.4	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.78		
Actuated Cycle Length (s)	101.6	Sum of lost time (s)	14.3
Intersection Capacity Utilization	78.0%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

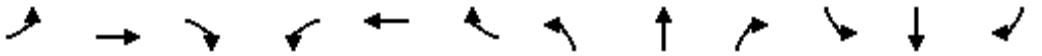
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	600	1785	364	64	751	74	121	157	54	38	165	427
Future Volume (vph)	600	1785	364	64	751	74	121	157	54	38	165	427
Lane Group Flow (vph)	600	1785	364	64	751	74	121	157	54	38	165	427
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	Perm	NA	Perm	Perm	NA	Perm
Protected Phases	5	2		1	6			8			4	
Permitted Phases	2		2	6		6	8		8	4		4
Detector Phase	5	2	2	1	6	6	8	8	8	4	4	4
Switch Phase												
Minimum Initial (s)	5.0	8.0	8.0	5.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0
Minimum Split (s)	9.0	44.9	44.9	9.0	44.9	44.9	47.9	47.9	47.9	47.9	47.9	47.9
Total Split (s)	10.0	60.0	60.0	10.0	60.0	60.0	50.0	50.0	50.0	50.0	50.0	50.0
Total Split (%)	8.3%	50.0%	50.0%	8.3%	50.0%	50.0%	41.7%	41.7%	41.7%	41.7%	41.7%	41.7%
Yellow Time (s)	3.0	4.6	4.6	3.0	4.6	4.6	4.6	4.6	4.6	4.6	4.6	4.6
All-Red Time (s)	1.0	2.3	2.3	1.0	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.3
Lost Time Adjust (s)	-1.0	0.0	0.0	-1.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	3.0	6.9	6.9	3.0	6.9	6.9	6.9	6.9	6.9	6.9	6.9	6.9
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag						
Lead-Lag Optimize?												
Recall Mode	None	Max	Max	None	None	None	None	None	None	None	None	None
v/c Ratio	1.45	0.68	0.37	0.34	0.32	0.11	0.41	0.20	0.13	0.16	0.19	0.81
Control Delay	235.6	21.7	4.2	14.2	16.5	5.1	35.2	29.4	4.3	29.8	29.4	29.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	235.6	21.7	4.2	14.2	16.5	5.1	35.2	29.4	4.3	29.8	29.4	29.6
Queue Length 50th (m)	~117.1	94.9	3.3	4.2	30.3	0.2	20.2	13.0	0.0	5.9	13.6	41.1
Queue Length 95th (m)	#276.1	152.4	22.7	13.1	52.6	8.8	35.7	20.7	5.5	14.0	21.5	77.0
Internal Link Dist (m)		179.3			299.2			185.5			471.5	
Turn Bay Length (m)	140.0		70.0	65.0		30.0	75.0		60.0	30.0		138.0
Base Capacity (vph)	414	2619	973	189	2458	675	507	1376	653	418	1465	751
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	1.45	0.68	0.37	0.34	0.31	0.11	0.24	0.11	0.08	0.09	0.11	0.57

Intersection Summary

Cycle Length: 120
Actuated Cycle Length: 101.5
Natural Cycle: 135
Control Type: Semi Act-Uncoord
~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 6: Dixie Road & Mayfield Road





Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	600	1785	364	64	751	74	121	157	54	38	165	427
Future Volume (vph)	600	1785	364	64	751	74	121	157	54	38	165	427
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5
Total Lost time (s)	3.0	6.9	6.9	3.0	6.9	6.9	6.9	6.9	6.9	6.9	6.9	6.9
Lane Util. Factor	1.00	0.91	1.00	1.00	0.91	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1566	4902	1536	1653	4601	1201	1716	3174	1413	1405	3380	1452
Flt Permitted	0.33	1.00	1.00	0.08	1.00	1.00	0.65	1.00	1.00	0.65	1.00	1.00
Satd. Flow (perm)	548	4902	1536	135	4601	1201	1170	3174	1413	965	3380	1452
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	600	1785	364	64	751	74	121	157	54	38	165	427
RTOR Reduction (vph)	0	0	154	0	0	35	0	0	41	0	0	161
Lane Group Flow (vph)	600	1785	210	64	751	39	121	157	13	38	165	266
Heavy Vehicles (%)	14%	7%	4%	8%	14%	33%	4%	15%	13%	27%	8%	10%
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	Perm	NA	Perm	Perm	NA	Perm
Protected Phases	5	2		1	6			8			4	
Permitted Phases	2		2	6		6	8		8	4		4
Actuated Green, G (s)	60.3	54.2	54.2	57.3	52.7	52.7	25.5	25.5	25.5	25.5	25.5	25.5
Effective Green, g (s)	62.3	54.2	54.2	59.3	52.7	52.7	25.5	25.5	25.5	25.5	25.5	25.5
Actuated g/C Ratio	0.61	0.53	0.53	0.58	0.52	0.52	0.25	0.25	0.25	0.25	0.25	0.25
Clearance Time (s)	4.0	6.9	6.9	4.0	6.9	6.9	6.9	6.9	6.9	6.9	6.9	6.9
Vehicle Extension (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Lane Grp Cap (vph)	405	2602	815	161	2374	619	292	792	352	241	844	362
v/s Ratio Prot	c0.10	0.36		0.02	0.16			0.05			0.05	
v/s Ratio Perm	c0.80		0.14	0.21		0.03	0.10		0.01	0.04		c0.18
v/c Ratio	1.48	0.69	0.26	0.40	0.32	0.06	0.41	0.20	0.04	0.16	0.20	0.73
Uniform Delay, d1	16.4	17.7	13.0	11.9	14.3	12.4	32.1	30.2	29.0	29.9	30.2	35.2
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	229.6	1.5	0.8	3.4	0.2	0.1	2.0	0.3	0.1	0.6	0.2	9.1
Delay (s)	245.9	19.2	13.8	15.2	14.4	12.4	34.0	30.5	29.1	30.6	30.4	44.2
Level of Service	F	B	B	B	B	B	C	C	C	C	C	D
Approach Delay (s)		67.9			14.3			31.6			39.8	
Approach LOS		E			B			C			D	

Intersection Summary			
HCM 2000 Control Delay	51.1	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	1.30		
Actuated Cycle Length (s)	102.1	Sum of lost time (s)	16.8
Intersection Capacity Utilization	81.7%	ICU Level of Service	D
Analysis Period (min)	15		

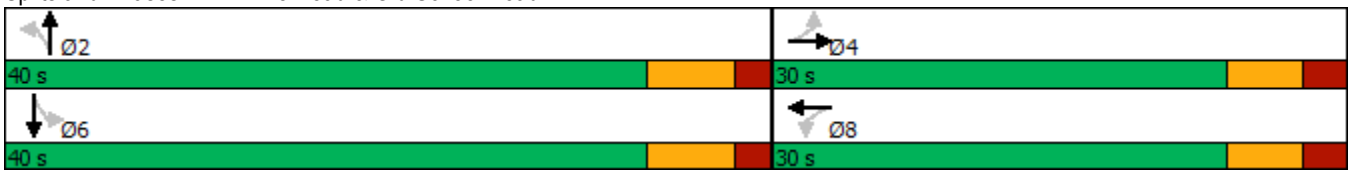
c Critical Lane Group

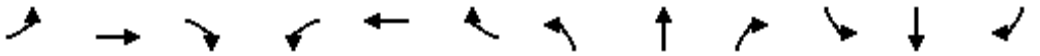
Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations								
Traffic Volume (vph)	17	252	45	98	24	242	33	681
Future Volume (vph)	17	252	45	98	24	242	33	681
Lane Group Flow (vph)	17	298	45	106	24	286	33	727
Turn Type	Perm	NA	Perm	NA	Perm	NA	Perm	NA
Protected Phases		4		8		2		6
Permitted Phases	4		8		2		6	
Detector Phase	4	4	8	8	2	2	6	6
Switch Phase								
Minimum Initial (s)	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0
Minimum Split (s)	25.4	25.4	25.4	25.4	23.6	23.6	23.6	23.6
Total Split (s)	30.0	30.0	30.0	30.0	40.0	40.0	40.0	40.0
Total Split (%)	42.9%	42.9%	42.9%	42.9%	57.1%	57.1%	57.1%	57.1%
Yellow Time (s)	4.0	4.0	4.0	4.0	4.6	4.6	4.6	4.6
All-Red Time (s)	2.4	2.4	2.4	2.4	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.4	6.4	6.4	6.4	6.6	6.6	6.6	6.6
Lead/Lag								
Lead-Lag Optimize?								
Recall Mode	None	None	None	None	Max	Max	Max	Max
v/c Ratio	0.06	0.61	0.19	0.22	0.10	0.31	0.06	0.74
Control Delay	17.1	24.8	19.5	17.8	10.5	9.8	9.2	19.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	17.1	24.8	19.5	17.8	10.5	9.8	9.2	19.0
Queue Length 50th (m)	1.5	28.7	4.0	9.0	1.3	15.8	1.7	59.0
Queue Length 95th (m)	5.3	49.4	10.9	19.0	5.8	35.9	6.5	#139.8
Internal Link Dist (m)		1372.4		151.6		1518.8		144.7
Turn Bay Length (m)	35.0		45.0		40.0		35.0	
Base Capacity (vph)	379	692	334	680	234	929	550	980
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.04	0.43	0.13	0.16	0.10	0.31	0.06	0.74

Intersection Summary

Cycle Length: 70
Actuated Cycle Length: 63.6
Natural Cycle: 60
Control Type: Semi Act-Uncoord
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 7: Dixie Road & Old School Road

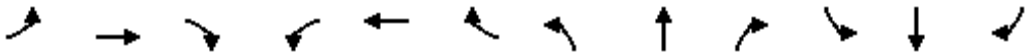




Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	17	252	46	45	98	8	24	242	44	33	681	46
Future Volume (vph)	17	252	46	45	98	8	24	242	44	33	681	46
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5
Total Lost time (s)	6.4	6.4		6.4	6.4		6.6	6.6		6.6	6.6	
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	0.98		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)	1405	1837		1785	1815		1785	1730		1684	1834	
Flt Permitted	0.69	1.00		0.48	1.00		0.23	1.00		0.58	1.00	
Satd. Flow (perm)	1019	1837		897	1815		439	1730		1036	1834	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	17	252	46	45	98	8	24	242	44	33	681	46
RTOR Reduction (vph)	0	10	0	0	4	0	0	8	0	0	3	0
Lane Group Flow (vph)	17	288	0	45	102	0	24	278	0	33	724	0
Heavy Vehicles (%)	27%	2%	3%	0%	5%	0%	0%	10%	0%	6%	4%	0%
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)	16.7	16.7		16.7	16.7		33.9	33.9		33.9	33.9	
Effective Green, g (s)	16.7	16.7		16.7	16.7		33.9	33.9		33.9	33.9	
Actuated g/C Ratio	0.26	0.26		0.26	0.26		0.53	0.53		0.53	0.53	
Clearance Time (s)	6.4	6.4		6.4	6.4		6.6	6.6		6.6	6.6	
Vehicle Extension (s)	5.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0	
Lane Grp Cap (vph)	267	482		235	476		233	922		552	977	
v/s Ratio Prot		c0.16			0.06			0.16			c0.39	
v/s Ratio Perm	0.02			0.05			0.05			0.03		
v/c Ratio	0.06	0.60		0.19	0.21		0.10	0.30		0.06	0.74	
Uniform Delay, d1	17.6	20.5		18.2	18.3		7.3	8.3		7.2	11.5	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.2	3.0		0.8	0.5		0.9	0.8		0.2	5.0	
Delay (s)	17.8	23.5		19.0	18.8		8.2	9.1		7.4	16.5	
Level of Service	B	C		B	B		A	A		A	B	
Approach Delay (s)		23.2			18.9			9.0			16.1	
Approach LOS		C			B			A			B	

Intersection Summary			
HCM 2000 Control Delay	16.4	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.69		
Actuated Cycle Length (s)	63.6	Sum of lost time (s)	13.0
Intersection Capacity Utilization	77.5%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Stop			Stop	
Traffic Volume (vph)	11	176	64	19	347	3	113	35	11	1	35	15
Future Volume (vph)	11	176	64	19	347	3	113	35	11	1	35	15
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Hourly flow rate (vph)	12	187	68	20	369	3	120	37	12	1	37	16

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total (vph)	267	392	169	54
Volume Left (vph)	12	20	120	1
Volume Right (vph)	68	3	12	16
Hadj (s)	-0.12	0.02	0.10	-0.13
Departure Headway (s)	5.0	5.0	5.7	5.8
Degree Utilization, x	0.37	0.54	0.27	0.09
Capacity (veh/h)	676	698	560	526
Control Delay (s)	10.9	13.6	10.9	9.3
Approach Delay (s)	10.9	13.6	10.9	9.3
Approach LOS	B	B	B	A

Intersection Summary				
Delay	12.0			
Level of Service	B			
Intersection Capacity Utilization	47.5%	ICU Level of Service	A	
Analysis Period (min)	15			

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	93	1248	125	37	1789	229	311	102	11	288	87	82
Future Volume (vph)	93	1248	125	37	1789	229	311	102	11	288	87	82
Lane Group Flow (vph)	93	1248	125	37	1789	229	311	102	11	288	87	82
Turn Type	Perm	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm	Perm	NA	Perm
Protected Phases		2		1	6		7	4			8	
Permitted Phases	2		2	6		6	4		4	8		8
Detector Phase	2	2	2	1	6	6	7	4	4	8	8	8
Switch Phase												
Minimum Initial (s)	12.0	12.0	12.0	5.0	12.0	12.0	1.0	8.0	8.0	8.0	8.0	8.0
Minimum Split (s)	39.7	39.7	39.7	9.0	39.7	39.7	5.0	43.9	43.9	43.9	43.9	43.9
Total Split (s)	74.0	74.0	74.0	9.0	83.0	83.0	7.0	52.0	52.0	44.0	44.0	44.0
Total Split (%)	54.8%	54.8%	54.8%	6.7%	61.5%	61.5%	5.2%	38.5%	38.5%	32.6%	32.6%	32.6%
Yellow Time (s)	4.6	4.6	4.6	3.0	4.6	4.6	3.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	2.1	2.1	2.1	1.0	2.1	2.1	1.0	2.9	2.9	2.9	2.9	2.9
Lost Time Adjust (s)	0.0	0.0	0.0	-1.0	0.0	0.0	-1.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.7	6.7	6.7	3.0	6.7	6.7	3.0	6.9	6.9	6.9	6.9	6.9
Lead/Lag	Lag	Lag	Lag	Lead			Lead			Lag	Lag	Lag
Lead-Lag Optimize?												
Recall Mode	Max	Max	Max	None	Max	Max	None	None	None	None	None	None
v/c Ratio	1.26	0.56	0.16	0.18	0.68	0.25	0.78	0.18	0.02	0.97	0.19	0.19
Control Delay	218.2	23.4	3.4	13.1	21.8	2.3	52.2	33.2	0.1	92.3	38.5	6.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	218.2	23.4	3.4	13.1	21.8	2.3	52.2	33.2	0.1	92.3	38.5	6.1
Queue Length 50th (m)	~31.2	82.3	0.0	3.9	117.3	0.0	65.3	19.2	0.0	75.1	17.6	0.0
Queue Length 95th (m)	#48.4	96.5	9.9	8.6	133.8	10.9	#98.6	33.2	0.0	#131.2	31.7	9.5
Internal Link Dist (m)		179.2			166.2			202.0			680.1	
Turn Bay Length (m)	115.0		180.0	80.0		150.0	110.0		44.0	20.0		20.0
Base Capacity (vph)	74	2245	763	209	2622	903	401	584	487	312	474	459
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	1.26	0.56	0.16	0.18	0.68	0.25	0.78	0.17	0.02	0.92	0.18	0.18

Intersection Summary

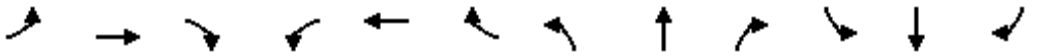
Cycle Length: 135
Actuated Cycle Length: 133.3
Natural Cycle: 130
Control Type: Semi Act-Uncoord

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

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

Splits and Phases: 2: Heart Lake Road & Mayfield Road





Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	93	1248	125	37	1789	229	311	102	11	288	87	82
Future Volume (vph)	93	1248	125	37	1789	229	311	102	11	288	87	82
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5
Total Lost time (s)	6.7	6.7	6.7	3.0	6.7	6.7	3.0	6.9	6.9	6.9	6.9	6.9
Lane Util. Factor	1.00	0.91	1.00	1.00	0.91	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1560	4330	1356	1530	4583	1409	1591	1729	1319	1501	1662	1369
Flt Permitted	0.09	1.00	1.00	0.16	1.00	1.00	0.65	1.00	1.00	0.69	1.00	1.00
Satd. Flow (perm)	145	4330	1356	255	4583	1409	1086	1729	1319	1092	1662	1369
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	93	1248	125	37	1789	229	311	102	11	288	87	82
RTOR Reduction (vph)	0	0	61	0	0	97	0	0	7	0	0	60
Lane Group Flow (vph)	93	1248	64	37	1789	132	311	102	4	288	87	22
Heavy Vehicles (%)	3%	9%	6%	5%	3%	2%	1%	0%	9%	7%	4%	5%
Turn Type	Perm	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm	Perm	NA	Perm
Protected Phases		2		1	6		7	4			8	
Permitted Phases	2		2	6		6	4		4	8		8
Actuated Green, G (s)	69.1	69.1	69.1	77.1	77.1	77.1	43.4	43.4	43.4	36.4	36.4	36.4
Effective Green, g (s)	69.1	69.1	69.1	78.1	77.1	77.1	44.4	43.4	43.4	36.4	36.4	36.4
Actuated g/C Ratio	0.52	0.52	0.52	0.58	0.57	0.57	0.33	0.32	0.32	0.27	0.27	0.27
Clearance Time (s)	6.7	6.7	6.7	4.0	6.7	6.7	4.0	6.9	6.9	6.9	6.9	6.9
Vehicle Extension (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Lane Grp Cap (vph)	74	2231	698	196	2634	810	374	559	426	296	451	371
v/s Ratio Prot		0.29		0.01	c0.39		c0.02	0.06			0.05	
v/s Ratio Perm	c0.64		0.05	0.10		0.09	0.25		0.00	c0.26		0.02
v/c Ratio	1.26	0.56	0.09	0.19	0.68	0.16	0.83	0.18	0.01	0.97	0.19	0.06
Uniform Delay, d1	32.5	22.1	16.5	13.4	19.9	13.4	41.9	32.6	30.8	48.4	37.6	36.2
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	188.5	1.0	0.3	1.0	1.4	0.4	16.0	0.3	0.0	45.1	0.4	0.1
Delay (s)	221.0	23.2	16.8	14.4	21.3	13.8	57.9	32.9	30.8	93.5	38.0	36.3
Level of Service	F	C	B	B	C	B	E	C	C	F	D	D
Approach Delay (s)		35.2			20.3			51.2			72.7	
Approach LOS		D			C			D			E	

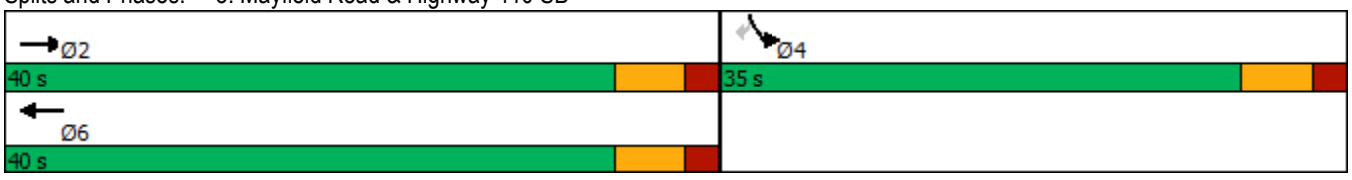
Intersection Summary			
HCM 2000 Control Delay	33.7	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	1.12		
Actuated Cycle Length (s)	134.1	Sum of lost time (s)	19.6
Intersection Capacity Utilization	91.1%	ICU Level of Service	F
Analysis Period (min)	15		

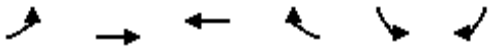
c Critical Lane Group

Lane Group	EBT	WBT	SBL	SBR
Lane Configurations				
Traffic Volume (vph)	977	2272	106	25
Future Volume (vph)	977	2272	106	25
Lane Group Flow (vph)	977	2272	109	22
Turn Type	NA	NA	Prot	Perm
Protected Phases	2	6	4	
Permitted Phases				4
Detector Phase	2	6	4	4
Switch Phase				
Minimum Initial (s)	16.0	16.0	8.0	8.0
Minimum Split (s)	22.0	22.0	32.0	32.0
Total Split (s)	40.0	40.0	35.0	35.0
Total Split (%)	53.3%	53.3%	46.7%	46.7%
Yellow Time (s)	4.0	4.0	4.0	4.0
All-Red Time (s)	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.0	6.0	6.0	6.0
Lead/Lag				
Lead-Lag Optimize?				
Recall Mode	Max	Max	None	None
v/c Ratio	0.27	0.61	0.20	0.09
Control Delay	4.6	7.1	21.7	20.1
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	4.6	7.1	21.7	20.1
Queue Length 50th (m)	14.1	46.9	5.1	2.0
Queue Length 95th (m)	21.1	66.2	10.2	7.3
Internal Link Dist (m)	123.5	116.2	492.2	
Turn Bay Length (m)				
Base Capacity (vph)	3578	3722	1685	738
Starvation Cap Reductn	0	0	0	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.27	0.61	0.06	0.03

Intersection Summary
Cycle Length: 75
Actuated Cycle Length: 58.9
Natural Cycle: 70
Control Type: Semi Act-Uncoord

Splits and Phases: 3: Mayfield Road & Highway 410 SB





Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	0	977	2272	0	106	25
Future Volume (vph)	0	977	2272	0	106	25
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)		6.0	6.0		6.0	6.0
Lane Util. Factor		0.91	0.91		0.97	0.91
Frt		1.00	1.00		1.00	0.85
Flt Protected		1.00	1.00		0.95	1.00
Satd. Flow (prot)		5043	5245		3393	1486
Flt Permitted		1.00	1.00		0.95	1.00
Satd. Flow (perm)		5043	5245		3393	1486
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	0	977	2272	0	106	25
RTOR Reduction (vph)	0	0	0	0	1	1
Lane Group Flow (vph)	0	977	2272	0	108	21
Heavy Vehicles (%)	0%	4%	0%	2%	4%	0%
Bus Blockages (#/hr)	0	0	0	0	2	0
Turn Type		NA	NA		Prot	Perm
Protected Phases		2	6		4	
Permitted Phases						4
Actuated Green, G (s)		40.5	40.5		7.6	7.6
Effective Green, g (s)		40.5	40.5		7.6	7.6
Actuated g/C Ratio		0.67	0.67		0.13	0.13
Clearance Time (s)		6.0	6.0		6.0	6.0
Vehicle Extension (s)		5.0	5.0		5.0	5.0
Lane Grp Cap (vph)		3398	3534		429	187
v/s Ratio Prot		0.19	c0.43		c0.03	
v/s Ratio Perm						0.01
v/c Ratio		0.29	0.64		0.25	0.11
Uniform Delay, d1		4.0	5.6		23.7	23.3
Progression Factor		1.00	1.00		1.00	1.00
Incremental Delay, d2		0.2	0.9		0.6	0.6
Delay (s)		4.2	6.6		24.3	23.8
Level of Service		A	A		C	C
Approach Delay (s)		4.2	6.6		24.2	
Approach LOS		A	A		C	

Intersection Summary			
HCM 2000 Control Delay	6.6	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.58		
Actuated Cycle Length (s)	60.1	Sum of lost time (s)	12.0
Intersection Capacity Utilization	60.6%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

Lane Group	EBT	WBT	NBL	NBR
Lane Configurations				
Traffic Volume (vph)	1018	1989	921	982
Future Volume (vph)	1018	1989	921	982
Lane Group Flow (vph)	1018	1989	1304	599
Turn Type	NA	NA	Prot	Perm
Protected Phases	2	6	8	
Permitted Phases	2	6		8
Detector Phase	2	6	8	8
Switch Phase				
Minimum Initial (s)	26.0	26.0	10.0	10.0
Minimum Split (s)	32.0	32.0	22.0	22.0
Total Split (s)	35.0	35.0	45.0	45.0
Total Split (%)	43.8%	43.8%	56.3%	56.3%
Yellow Time (s)	4.0	4.0	4.0	4.0
All-Red Time (s)	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.0	6.0	6.0	6.0
Lead/Lag				
Lead-Lag Optimize?				
Recall Mode	Max	None	None	None
v/c Ratio	0.55	1.08	0.82	0.90
Control Delay	21.2	71.9	22.4	37.7
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	21.2	71.9	22.4	37.7
Queue Length 50th (m)	44.6	~128.4	79.7	82.1
Queue Length 95th (m)	57.1	#157.1	105.8	#154.0
Internal Link Dist (m)	104.0	63.2	627.1	
Turn Bay Length (m)				
Base Capacity (vph)	1844	1844	1686	702
Starvation Cap Reductn	0	0	0	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.55	1.08	0.77	0.85

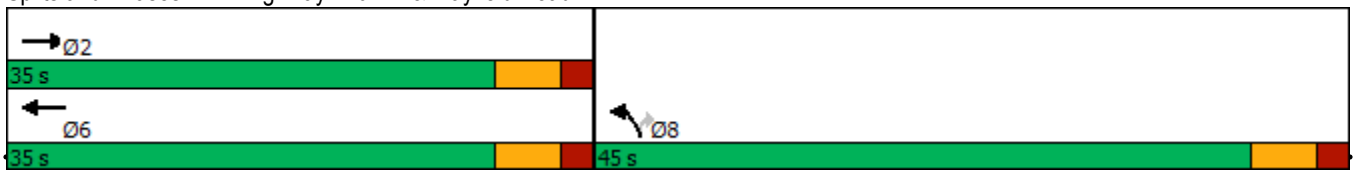
Intersection Summary

Cycle Length: 80
Actuated Cycle Length: 78
Natural Cycle: 90
Control Type: Semi Act-Uncoord

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

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

Splits and Phases: 4: Highway 410 NB & Mayfield Road





Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	1018	0	0	1989	921	982
Future Volume (vph)	1018	0	0	1989	921	982
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0			6.0	6.0	6.0
Lane Util. Factor	0.91			0.91	0.97	0.91
Frt	1.00			1.00	0.96	0.85
Flt Protected	1.00			1.00	0.97	1.00
Satd. Flow (prot)	4948			4948	3339	1376
Flt Permitted	1.00			1.00	0.97	1.00
Satd. Flow (perm)	4948			4948	3339	1376
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	1018	0	0	1989	921	982
RTOR Reduction (vph)	0	0	0	0	13	13
Lane Group Flow (vph)	1018	0	0	1989	1291	586
Heavy Vehicles (%)	6%	0%	0%	6%	1%	8%
Turn Type	NA			NA	Prot	Perm
Protected Phases	2			6	8	
Permitted Phases	2			6		8
Actuated Green, G (s)	29.1			29.1	36.9	36.9
Effective Green, g (s)	29.1			29.1	36.9	36.9
Actuated g/C Ratio	0.37			0.37	0.47	0.47
Clearance Time (s)	6.0			6.0	6.0	6.0
Vehicle Extension (s)	5.0			5.0	3.0	3.0
Lane Grp Cap (vph)	1845			1845	1579	650
v/s Ratio Prot	0.21			c0.40	0.39	
v/s Ratio Perm						c0.43
v/c Ratio	0.55			1.08	0.82	0.90
Uniform Delay, d1	19.3			24.4	17.7	18.9
Progression Factor	1.00			1.00	1.00	1.00
Incremental Delay, d2	1.2			45.5	3.4	15.8
Delay (s)	20.5			70.0	21.1	34.7
Level of Service	C			E	C	C
Approach Delay (s)	20.5			70.0	25.4	
Approach LOS	C			E	C	

Intersection Summary			
HCM 2000 Control Delay	42.4	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.98		
Actuated Cycle Length (s)	78.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	85.0%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	EBT	EBR	WBL	WBT	NBL
Lane Configurations					
Traffic Volume (vph)	1750	154	71	1995	110
Future Volume (vph)	1750	154	71	1995	110
Lane Group Flow (vph)	1750	154	71	1995	160
Turn Type	NA	Perm	Perm	NA	Prot
Protected Phases	2			2	4
Permitted Phases		2	2		
Detector Phase	2	2	2	2	4
Switch Phase					
Minimum Initial (s)	12.0	12.0	12.0	12.0	8.0
Minimum Split (s)	26.7	26.7	26.7	26.7	45.6
Total Split (s)	74.0	74.0	74.0	74.0	46.0
Total Split (%)	61.7%	61.7%	61.7%	61.7%	38.3%
Yellow Time (s)	4.6	4.6	4.6	4.6	4.0
All-Red Time (s)	2.1	2.1	2.1	2.1	3.6
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.7	6.7	6.7	6.7	7.6
Lead/Lag					
Lead-Lag Optimize?					
Recall Mode	Max	Max	Max	Max	Max
v/c Ratio	0.61	0.16	0.84	0.69	0.28
Control Delay	18.7	2.3	88.3	20.5	29.1
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	18.7	2.3	88.3	20.5	29.1
Queue Length 50th (m)	95.7	0.0	13.1	117.8	25.3
Queue Length 95th (m)	110.1	8.9	#43.7	134.2	42.9
Internal Link Dist (m)	203.7			76.6	88.2
Turn Bay Length (m)		65.0	35.0		
Base Capacity (vph)	2883	945	85	2883	568
Starvation Cap Reductn	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.61	0.16	0.84	0.69	0.28

Intersection Summary

Cycle Length: 120
Actuated Cycle Length: 120
Natural Cycle: 90
Control Type: Semi Act-Uncoord
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 5: Ace Drive & Mayfield Road





Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	1750	154	71	1995	110	50
Future Volume (vph)	1750	154	71	1995	110	50
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width	3.7	3.5	3.5	3.7	3.7	3.7
Total Lost time (s)	6.7	6.7	6.7	6.7	7.6	
Lane Util. Factor	0.91	1.00	1.00	0.91	1.00	
Frt	1.00	0.85	1.00	1.00	0.96	
Flt Protected	1.00	1.00	0.95	1.00	0.97	
Satd. Flow (prot)	5142	1566	1750	5142	1744	
Flt Permitted	1.00	1.00	0.08	1.00	0.97	
Satd. Flow (perm)	5142	1566	152	5142	1744	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	1750	154	71	1995	110	50
RTOR Reduction (vph)	0	68	0	0	10	0
Lane Group Flow (vph)	1750	86	71	1995	150	0
Turn Type	NA	Perm	Perm	NA	Prot	
Protected Phases	2			2	4	
Permitted Phases		2	2			
Actuated Green, G (s)	67.3	67.3	67.3	67.3	38.4	
Effective Green, g (s)	67.3	67.3	67.3	67.3	38.4	
Actuated g/C Ratio	0.56	0.56	0.56	0.56	0.32	
Clearance Time (s)	6.7	6.7	6.7	6.7	7.6	
Vehicle Extension (s)	5.0	5.0	5.0	5.0	5.0	
Lane Grp Cap (vph)	2883	878	85	2883	558	
v/s Ratio Prot	0.34			0.39	c0.09	
v/s Ratio Perm		0.06	c0.47			
v/c Ratio	0.61	0.10	0.84	0.69	0.27	
Uniform Delay, d1	17.5	12.2	21.8	18.9	30.4	
Progression Factor	1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	1.0	0.2	59.5	1.4	1.2	
Delay (s)	18.5	12.5	81.3	20.3	31.5	
Level of Service	B	B	F	C	C	
Approach Delay (s)	18.0			22.4	31.5	
Approach LOS	B			C	C	

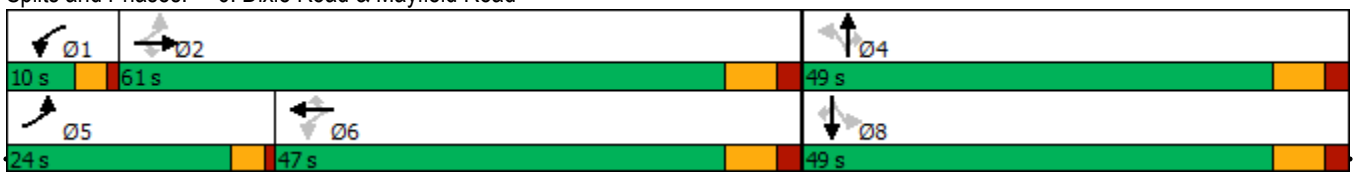
Intersection Summary			
HCM 2000 Control Delay	20.7	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.63		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	14.3
Intersection Capacity Utilization	70.5%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

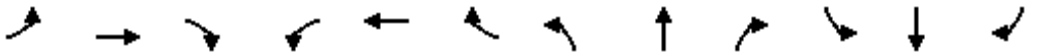
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	478	1221	186	68	1423	37	289	235	38	93	435	669
Future Volume (vph)	478	1221	186	68	1423	37	289	235	38	93	435	669
Lane Group Flow (vph)	478	1221	186	68	1423	37	289	235	38	93	435	669
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	Perm	NA	Perm	Perm	NA	Perm
Protected Phases	5	2		1	6			4			8	
Permitted Phases	2		2	6		6	4		4	8		8
Detector Phase	5	2	2	1	6	6	4	4	4	8	8	8
Switch Phase												
Minimum Initial (s)	5.0	8.0	8.0	5.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0
Minimum Split (s)	9.0	44.9	44.9	9.0	44.9	44.9	47.9	47.9	47.9	47.9	47.9	47.9
Total Split (s)	24.0	61.0	61.0	10.0	47.0	47.0	49.0	49.0	49.0	49.0	49.0	49.0
Total Split (%)	20.0%	50.8%	50.8%	8.3%	39.2%	39.2%	40.8%	40.8%	40.8%	40.8%	40.8%	40.8%
Yellow Time (s)	3.0	4.6	4.6	3.0	4.6	4.6	4.6	4.6	4.6	4.6	4.6	4.6
All-Red Time (s)	1.0	2.3	2.3	1.0	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.3
Lost Time Adjust (s)	-1.0	0.0	0.0	-1.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	3.0	6.9	6.9	3.0	6.9	6.9	6.9	6.9	6.9	6.9	6.9	6.9
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag						
Lead-Lag Optimize?												
Recall Mode	None	Max	Max	None	None	None	None	None	None	None	None	None
v/c Ratio	1.33	0.55	0.22	0.36	0.87	0.07	1.01	0.18	0.06	0.25	0.36	0.90
Control Delay	197.9	24.5	3.4	18.9	44.3	0.2	94.7	27.5	0.2	30.1	30.0	35.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	197.9	24.5	3.4	18.9	44.3	0.2	94.7	27.5	0.2	30.1	30.0	35.5
Queue Length 50th (m)	~131.3	76.0	0.0	7.0	114.6	0.0	~68.2	20.0	0.0	15.5	39.7	88.1
Queue Length 95th (m)	#196.1	90.1	12.4	13.8	134.0	0.0	#124.5	29.5	0.0	29.1	53.4	#163.9
Internal Link Dist (m)		179.3			299.2			185.5			471.5	
Turn Bay Length (m)	140.0		70.0	65.0		30.0	75.0		60.0	30.0		138.0
Base Capacity (vph)	359	2228	831	191	1638	557	287	1280	614	369	1219	747
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	1.33	0.55	0.22	0.36	0.87	0.07	1.01	0.18	0.06	0.25	0.36	0.90

Intersection Summary

Cycle Length: 120
Actuated Cycle Length: 120
Natural Cycle: 125
Control Type: Semi Act-Uncoord
~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 6: Dixie Road & Mayfield Road





Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	478	1221	186	68	1423	37	289	235	38	93	435	669
Future Volume (vph)	478	1221	186	68	1423	37	289	235	38	93	435	669
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5
Total Lost time (s)	3.0	6.9	6.9	3.0	6.9	6.9	6.9	6.9	6.9	6.9	6.9	6.9
Lane Util. Factor	1.00	0.91	1.00	1.00	0.91	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1700	4768	1566	1342	4902	1452	1750	3650	1551	1653	3476	1551
Flt Permitted	0.09	1.00	1.00	0.22	1.00	1.00	0.45	1.00	1.00	0.61	1.00	1.00
Satd. Flow (perm)	159	4768	1566	308	4902	1452	820	3650	1551	1053	3476	1551
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	478	1221	186	68	1423	37	289	235	38	93	435	669
RTOR Reduction (vph)	0	0	100	0	0	24	0	0	25	0	0	204
Lane Group Flow (vph)	478	1221	86	68	1423	13	289	235	13	93	435	465
Heavy Vehicles (%)	5%	10%	2%	33%	7%	10%	2%	0%	3%	8%	5%	3%
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	Perm	NA	Perm	Perm	NA	Perm
Protected Phases	5	2		1	6			4			8	
Permitted Phases	2		2	6		6	4		4	8		8
Actuated Green, G (s)	64.9	56.1	56.1	45.7	40.9	40.9	42.1	42.1	42.1	42.1	42.1	42.1
Effective Green, g (s)	65.9	56.1	56.1	47.7	40.9	40.9	42.1	42.1	42.1	42.1	42.1	42.1
Actuated g/C Ratio	0.55	0.46	0.46	0.39	0.34	0.34	0.35	0.35	0.35	0.35	0.35	0.35
Clearance Time (s)	4.0	6.9	6.9	4.0	6.9	6.9	6.9	6.9	6.9	6.9	6.9	6.9
Vehicle Extension (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Lane Grp Cap (vph)	354	2214	727	171	1659	491	285	1272	540	366	1211	540
v/s Ratio Prot	c0.23	0.26		0.02	0.29			0.06			0.13	
v/s Ratio Perm	c0.50		0.06	0.14		0.01	c0.35		0.01	0.09		0.30
v/c Ratio	1.35	0.55	0.12	0.40	0.86	0.03	1.01	0.18	0.02	0.25	0.36	0.86
Uniform Delay, d1	37.6	23.3	18.3	23.3	37.2	26.7	39.3	27.4	25.9	28.1	29.3	36.6
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	175.3	1.0	0.3	3.2	5.1	0.0	56.9	0.1	0.0	0.8	0.4	14.3
Delay (s)	212.8	24.3	18.7	26.5	42.3	26.7	96.3	27.5	25.9	28.9	29.7	51.0
Level of Service	F	C	B	C	D	C	F	C	C	C	C	D
Approach Delay (s)		71.5			41.2			62.8			41.5	
Approach LOS		E			D			E			D	

Intersection Summary			
HCM 2000 Control Delay	54.7	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	1.26		
Actuated Cycle Length (s)	120.8	Sum of lost time (s)	16.8
Intersection Capacity Utilization	102.6%	ICU Level of Service	G
Analysis Period (min)	15		

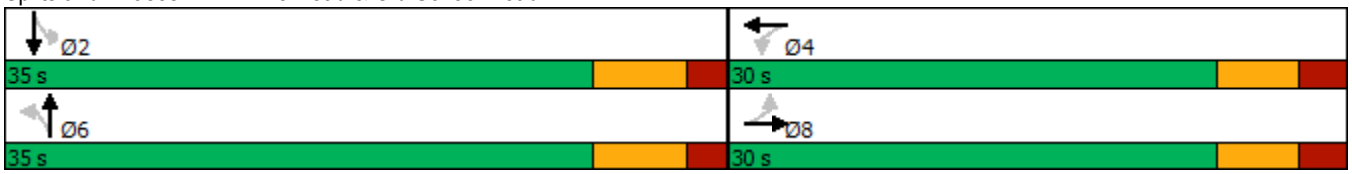
c Critical Lane Group

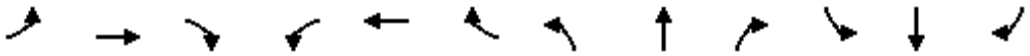
Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations								
Traffic Volume (vph)	51	110	83	278	68	582	6	272
Future Volume (vph)	51	110	83	278	68	582	6	272
Lane Group Flow (vph)	51	130	83	296	68	624	6	293
Turn Type	Perm	NA	Perm	NA	Perm	NA	Perm	NA
Protected Phases		8		4		6		2
Permitted Phases	8		4		6		2	
Detector Phase	8	8	4	4	6	6	2	2
Switch Phase								
Minimum Initial (s)	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0
Minimum Split (s)	25.4	25.4	25.4	25.4	23.6	23.6	23.6	23.6
Total Split (s)	30.0	30.0	30.0	30.0	35.0	35.0	35.0	35.0
Total Split (%)	46.2%	46.2%	46.2%	46.2%	53.8%	53.8%	53.8%	53.8%
Yellow Time (s)	4.0	4.0	4.0	4.0	4.6	4.6	4.6	4.6
All-Red Time (s)	2.4	2.4	2.4	2.4	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.4	6.4	6.4	6.4	6.6	6.6	6.6	6.6
Lead/Lag								
Lead-Lag Optimize?								
Recall Mode	None	None	None	None	Max	Max	Max	Max
v/c Ratio	0.22	0.25	0.24	0.56	0.13	0.68	0.02	0.34
Control Delay	17.7	14.9	17.3	21.6	10.2	17.5	9.8	11.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	17.7	14.9	17.3	21.6	10.2	17.5	9.8	11.0
Queue Length 50th (m)	4.1	9.1	6.7	25.7	3.4	44.4	0.3	16.2
Queue Length 95th (m)	10.9	19.4	15.3	44.4	11.4	#111.4	2.2	38.5
Internal Link Dist (m)		1372.4		151.6		1518.8		144.7
Turn Bay Length (m)	35.0		45.0		40.0		35.0	
Base Capacity (vph)	346	757	512	769	542	914	276	874
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.15	0.17	0.16	0.38	0.13	0.68	0.02	0.34

Intersection Summary

Cycle Length: 65
Actuated Cycle Length: 58
Natural Cycle: 60
Control Type: Semi Act-Uncoord
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 7: Dixie Road & Old School Road





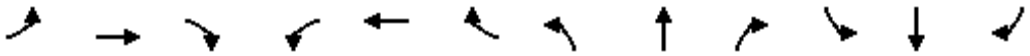
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	51	110	20	83	278	18	68	582	42	6	272	21
Future Volume (vph)	51	110	20	83	278	18	68	582	42	6	272	21
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5
Total Lost time (s)	6.4	6.4		6.4	6.4		6.6	6.6		6.6	6.6	
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	0.99		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)	1566	1830		1767	1873		1785	1834		1785	1754	
Flt Permitted	0.51	1.00		0.67	1.00		0.58	1.00		0.30	1.00	
Satd. Flow (perm)	847	1830		1253	1873		1091	1834		556	1754	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	51	110	20	83	278	18	68	582	42	6	272	21
RTOR Reduction (vph)	0	12	0	0	4	0	0	4	0	0	4	0
Lane Group Flow (vph)	51	118	0	83	292	0	68	620	0	6	289	0
Heavy Vehicles (%)	14%	3%	0%	1%	1%	11%	0%	2%	27%	0%	9%	0%
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)	16.2	16.2		16.2	16.2		28.8	28.8		28.8	28.8	
Effective Green, g (s)	16.2	16.2		16.2	16.2		28.8	28.8		28.8	28.8	
Actuated g/C Ratio	0.28	0.28		0.28	0.28		0.50	0.50		0.50	0.50	
Clearance Time (s)	6.4	6.4		6.4	6.4		6.6	6.6		6.6	6.6	
Vehicle Extension (s)	5.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0	
Lane Grp Cap (vph)	236	511		349	523		541	910		276	870	
v/s Ratio Prot		0.06			c0.16			c0.34			0.16	
v/s Ratio Perm	0.06			0.07			0.06			0.01		
v/c Ratio	0.22	0.23		0.24	0.56		0.13	0.68		0.02	0.33	
Uniform Delay, d1	16.0	16.1		16.1	17.8		7.8	11.1		7.4	8.8	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	1.0	0.5		0.7	2.2		0.5	4.1		0.1	1.0	
Delay (s)	17.0	16.6		16.9	20.0		8.3	15.2		7.6	9.8	
Level of Service	B	B		B	C		A	B		A	A	
Approach Delay (s)		16.7			19.3			14.6			9.8	
Approach LOS		B			B			B			A	

Intersection Summary			
HCM 2000 Control Delay	15.1	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.64		
Actuated Cycle Length (s)	58.0	Sum of lost time (s)	13.0
Intersection Capacity Utilization	83.9%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

Appendix J

2029 Future Background Conditions with Improvements – Synchro Analysis Results



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Stop			Stop	
Traffic Volume (vph)	12	287	92	5	95	4	36	28	6	4	38	13
Future Volume (vph)	12	287	92	5	95	4	36	28	6	4	38	13
Peak Hour Factor	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85
Hourly flow rate (vph)	14	338	108	6	112	5	42	33	7	5	45	15

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total (vph)	460	123	82	65
Volume Left (vph)	14	6	42	5
Volume Right (vph)	108	5	7	15
Hadj (s)	-0.09	0.14	0.20	-0.06
Departure Headway (s)	4.4	5.0	5.6	5.3
Degree Utilization, x	0.56	0.17	0.13	0.10
Capacity (veh/h)	792	680	580	596
Control Delay (s)	12.8	9.0	9.4	8.9
Approach Delay (s)	12.8	9.0	9.4	8.9
Approach LOS	B	A	A	A

Intersection Summary				
Delay	11.4			
Level of Service	B			
Intersection Capacity Utilization	42.0%	ICU Level of Service	A	
Analysis Period (min)	15			

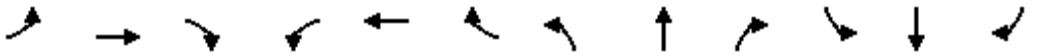
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	72	1716	511	116	1121	250	108	60	18	216	149	104
Future Volume (vph)	72	1716	511	116	1121	250	108	60	18	216	149	104
Lane Group Flow (vph)	72	1716	511	116	1121	250	108	60	18	216	149	104
Turn Type	Perm	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm	Perm	NA	Perm
Protected Phases		2		1	6		7	4			8	
Permitted Phases	2		2	6		6	4		4	8		8
Detector Phase	2	2	2	1	6	6	7	4	4	8	8	8
Switch Phase												
Minimum Initial (s)	12.0	12.0	12.0	5.0	12.0	12.0	5.0	8.0	8.0	8.0	8.0	8.0
Minimum Split (s)	39.7	39.7	39.7	9.0	39.7	39.7	9.0	43.9	43.9	43.9	43.9	43.9
Total Split (s)	77.0	77.0	77.0	9.0	86.0	86.0	9.0	54.0	54.0	45.0	45.0	45.0
Total Split (%)	55.0%	55.0%	55.0%	6.4%	61.4%	61.4%	6.4%	38.6%	38.6%	32.1%	32.1%	32.1%
Yellow Time (s)	4.6	4.6	4.6	3.0	4.6	4.6	3.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	2.1	2.1	2.1	1.0	2.1	2.1	1.0	2.9	2.9	2.9	2.9	2.9
Lost Time Adjust (s)	0.0	0.0	0.0	-1.0	0.0	0.0	-1.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.7	6.7	6.7	3.0	6.7	6.7	3.0	6.9	6.9	6.9	6.9	6.9
Lead/Lag	Lag	Lag	Lag	Lead			Lead			Lag	Lag	Lag
Lead-Lag Optimize?												
Recall Mode	Max	Max	Max	None	Max	Max	None	None	None	None	None	None
v/c Ratio	0.35	0.72	0.53	0.79	0.44	0.32	0.34	0.12	0.04	0.79	0.39	0.26
Control Delay	25.6	26.3	4.9	52.0	15.6	2.8	35.3	33.8	0.2	69.0	45.9	11.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	25.6	26.3	4.9	52.0	15.6	2.8	35.3	33.8	0.2	69.0	45.9	11.7
Queue Length 50th (m)	10.6	122.2	6.1	11.6	56.3	0.0	20.4	11.4	0.0	53.2	33.1	2.7
Queue Length 95th (m)	25.9	156.8	30.4	#37.0	76.0	11.9	34.9	22.2	0.0	82.5	52.7	16.9
Internal Link Dist (m)		179.2			166.2			202.0			680.1	
Turn Bay Length (m)	115.0		180.0	80.0		150.0	110.0		44.0	20.0		20.0
Base Capacity (vph)	208	2382	968	146	2542	771	318	619	553	351	496	481
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.35	0.72	0.53	0.79	0.44	0.32	0.34	0.10	0.03	0.62	0.30	0.22

Intersection Summary

Cycle Length: 140
Actuated Cycle Length: 131.8
Natural Cycle: 105
Control Type: Semi Act-Uncoord
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 2: Heart Lake Road & Mayfield Road





Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	72	1716	511	116	1121	250	108	60	18	216	149	104
Future Volume (vph)	72	1716	511	116	1121	250	108	60	18	216	149	104
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5
Total Lost time (s)	6.7	6.7	6.7	3.0	6.7	6.7	3.0	6.9	6.9	6.9	6.9	6.9
Lane Util. Factor	1.00	0.91	1.00	1.00	0.91	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1530	4453	1409	1560	4214	1114	1530	1729	1437	1606	1712	1437
Flt Permitted	0.24	1.00	1.00	0.08	1.00	1.00	0.56	1.00	1.00	0.72	1.00	1.00
Satd. Flow (perm)	389	4453	1409	129	4214	1114	898	1729	1437	1214	1712	1437
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	72	1716	511	116	1121	250	108	60	18	216	149	104
RTOR Reduction (vph)	0	0	215	0	0	99	0	0	13	0	0	71
Lane Group Flow (vph)	72	1716	296	116	1121	151	108	60	5	216	149	33
Heavy Vehicles (%)	5%	6%	2%	3%	12%	29%	5%	0%	0%	0%	1%	0%
Turn Type	Perm	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm	Perm	NA	Perm
Protected Phases		2		1	6		7	4			8	
Permitted Phases	2		2	6		6	4		4	8		8
Actuated Green, G (s)	70.5	70.5	70.5	79.5	79.5	79.5	38.6	38.6	38.6	29.6	29.6	29.6
Effective Green, g (s)	70.5	70.5	70.5	80.5	79.5	79.5	39.6	38.6	38.6	29.6	29.6	29.6
Actuated g/C Ratio	0.54	0.54	0.54	0.61	0.60	0.60	0.30	0.29	0.29	0.22	0.22	0.22
Clearance Time (s)	6.7	6.7	6.7	4.0	6.7	6.7	4.0	6.9	6.9	6.9	6.9	6.9
Vehicle Extension (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Lane Grp Cap (vph)	208	2383	754	144	2543	672	298	506	421	272	384	322
v/s Ratio Prot		0.39		c0.04	0.27		c0.02	0.03			0.09	
v/s Ratio Perm	0.18		0.21	c0.46		0.14	0.09		0.00	c0.18		0.02
v/c Ratio	0.35	0.72	0.39	0.81	0.44	0.22	0.36	0.12	0.01	0.79	0.39	0.10
Uniform Delay, d1	17.5	23.1	18.0	17.9	14.1	12.0	35.4	34.1	33.0	48.2	43.4	40.5
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	4.5	1.9	1.5	30.1	0.6	0.8	1.6	0.2	0.0	16.7	1.4	0.3
Delay (s)	22.0	25.1	19.5	48.0	14.7	12.7	37.0	34.3	33.1	64.8	44.7	40.8
Level of Service	C	C	B	D	B	B	D	C	C	E	D	D
Approach Delay (s)		23.7			16.9			35.7			53.1	
Approach LOS		C			B			D			D	

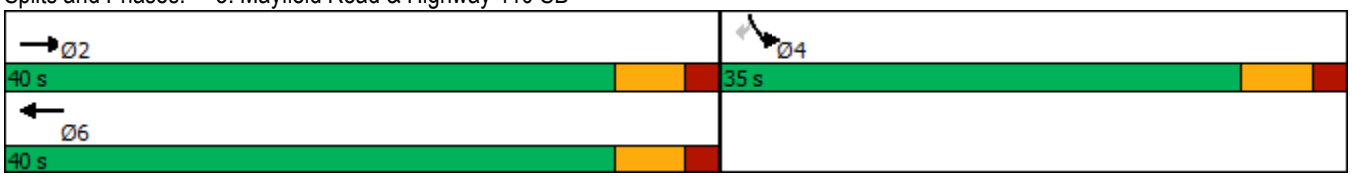
Intersection Summary			
HCM 2000 Control Delay	25.1	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.80		
Actuated Cycle Length (s)	131.7	Sum of lost time (s)	19.6
Intersection Capacity Utilization	84.4%	ICU Level of Service	E
Analysis Period (min)	15		

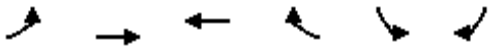
c Critical Lane Group

Lane Group	EBT	WBT	SBL	SBR
Lane Configurations				
Traffic Volume (vph)	1315	1188	347	298
Future Volume (vph)	1315	1188	347	298
Lane Group Flow (vph)	1315	1188	442	203
Turn Type	NA	NA	Prot	Perm
Protected Phases	2	6	4	
Permitted Phases				4
Detector Phase	2	6	4	4
Switch Phase				
Minimum Initial (s)	16.0	16.0	8.0	8.0
Minimum Split (s)	22.0	22.0	32.0	32.0
Total Split (s)	40.0	40.0	35.0	35.0
Total Split (%)	53.3%	53.3%	46.7%	46.7%
Yellow Time (s)	4.0	4.0	4.0	4.0
All-Red Time (s)	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.0	6.0	6.0	6.0
Lead/Lag				
Lead-Lag Optimize?				
Recall Mode	Max	Max	None	None
v/c Ratio	0.49	0.42	0.47	0.49
Control Delay	10.5	9.8	19.3	20.1
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	10.5	9.8	19.3	20.1
Queue Length 50th (m)	30.5	26.1	20.2	17.9
Queue Length 95th (m)	55.0	47.3	30.9	35.4
Internal Link Dist (m)	123.5	116.2	492.2	
Turn Bay Length (m)				
Base Capacity (vph)	2688	2850	1619	705
Starvation Cap Reductn	0	0	0	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.49	0.42	0.27	0.29

Intersection Summary
Cycle Length: 75
Actuated Cycle Length: 62.9
Natural Cycle: 55
Control Type: Semi Act-Uncoord

Splits and Phases: 3: Mayfield Road & Highway 410 SB





Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑↑↑	↑↑↑		↰↰	↱
Traffic Volume (vph)	0	1315	1188	0	347	298
Future Volume (vph)	0	1315	1188	0	347	298
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)		6.0	6.0		6.0	6.0
Lane Util. Factor		0.91	0.91		0.97	0.91
Frt		1.00	1.00		0.97	0.85
Flt Protected		1.00	1.00		0.96	1.00
Satd. Flow (prot)		4948	5245		3457	1486
Flt Permitted		1.00	1.00		0.96	1.00
Satd. Flow (perm)		4948	5245		3457	1486
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	0	1315	1188	0	347	298
RTOR Reduction (vph)	0	0	0	0	24	24
Lane Group Flow (vph)	0	1315	1188	0	418	179
Heavy Vehicles (%)	0%	6%	0%	16%	0%	0%
Bus Blockages (#/hr)	0	0	0	0	2	0
Turn Type		NA	NA		Prot	Perm
Protected Phases		2	6		4	
Permitted Phases						4
Actuated Green, G (s)		34.2	34.2		16.7	16.7
Effective Green, g (s)		34.2	34.2		16.7	16.7
Actuated g/C Ratio		0.54	0.54		0.27	0.27
Clearance Time (s)		6.0	6.0		6.0	6.0
Vehicle Extension (s)		5.0	5.0		5.0	5.0
Lane Grp Cap (vph)		2690	2851		917	394
v/s Ratio Prot		c0.27	0.23		c0.12	
v/s Ratio Perm						0.12
v/c Ratio		0.49	0.42		0.46	0.46
Uniform Delay, d1		8.9	8.5		19.3	19.3
Progression Factor		1.00	1.00		1.00	1.00
Incremental Delay, d2		0.6	0.5		0.8	1.7
Delay (s)		9.6	8.9		20.1	21.0
Level of Service		A	A		C	C
Approach Delay (s)		9.6	8.9		20.4	
Approach LOS		A	A		C	

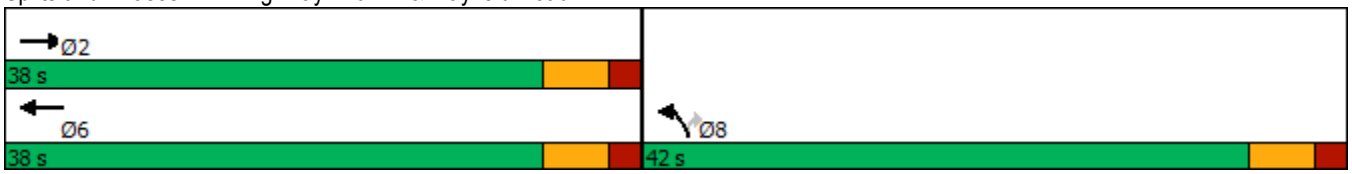
Intersection Summary			
HCM 2000 Control Delay	11.5	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.48		
Actuated Cycle Length (s)	62.9	Sum of lost time (s)	12.0
Intersection Capacity Utilization	48.4%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Lane Group	EBT	WBT	NBL	NBR
Lane Configurations				
Traffic Volume (vph)	1656	1595	446	879
Future Volume (vph)	1656	1595	446	879
Lane Group Flow (vph)	1656	1595	886	439
Turn Type	NA	NA	Prot	Perm
Protected Phases	2	6	8	
Permitted Phases				8
Detector Phase	2	6	8	8
Switch Phase				
Minimum Initial (s)	26.0	26.0	10.0	10.0
Minimum Split (s)	32.0	32.0	22.0	22.0
Total Split (s)	38.0	38.0	42.0	42.0
Total Split (%)	47.5%	47.5%	52.5%	52.5%
Yellow Time (s)	4.0	4.0	4.0	4.0
All-Red Time (s)	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.0	6.0	6.0	6.0
Lead/Lag				
Lead-Lag Optimize?				
Recall Mode	Max	None	None	None
v/c Ratio	0.77	0.78	0.76	0.83
Control Delay	21.7	22.4	23.6	34.8
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	21.7	22.4	23.6	34.8
Queue Length 50th (m)	73.5	71.4	52.4	57.5
Queue Length 95th (m)	99.7	97.8	72.1	#100.9
Internal Link Dist (m)	104.0	63.2	627.1	
Turn Bay Length (m)				
Base Capacity (vph)	2162	2047	1433	648
Starvation Cap Reductn	0	0	0	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.77	0.78	0.62	0.68

Intersection Summary
Cycle Length: 80
Actuated Cycle Length: 73.8
Natural Cycle: 60
Control Type: Semi Act-Uncoord
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 4: Highway 410 NB & Mayfield Road





Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	1656	0	0	1595	446	879
Future Volume (vph)	1656	0	0	1595	446	879
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0			6.0	6.0	6.0
Lane Util. Factor	0.91			0.91	0.97	0.91
Frt	1.00			1.00	0.93	0.85
Flt Protected	1.00			1.00	0.98	1.00
Satd. Flow (prot)	4948			4683	2913	1315
Flt Permitted	1.00			1.00	0.98	1.00
Satd. Flow (perm)	4948			4683	2913	1315
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	1656	0	0	1595	446	879
RTOR Reduction (vph)	0	0	0	0	2	2
Lane Group Flow (vph)	1656	0	0	1595	884	437
Heavy Vehicles (%)	6%	0%	0%	12%	18%	13%
Turn Type	NA			NA	Prot	Perm
Protected Phases	2			6	8	
Permitted Phases						8
Actuated Green, G (s)	32.3			32.3	29.5	29.5
Effective Green, g (s)	32.3			32.3	29.5	29.5
Actuated g/C Ratio	0.44			0.44	0.40	0.40
Clearance Time (s)	6.0			6.0	6.0	6.0
Vehicle Extension (s)	5.0			5.0	3.0	3.0
Lane Grp Cap (vph)	2165			2049	1164	525
v/s Ratio Prot	0.33			c0.34	0.30	
v/s Ratio Perm						c0.33
v/c Ratio	0.76			0.78	0.76	0.83
Uniform Delay, d1	17.5			17.7	19.1	19.9
Progression Factor	1.00			1.00	1.00	1.00
Incremental Delay, d2	2.6			2.3	2.9	10.9
Delay (s)	20.2			20.0	22.0	30.8
Level of Service	C			B	C	C
Approach Delay (s)	20.2			20.0	24.9	
Approach LOS	C			B	C	

Intersection Summary			
HCM 2000 Control Delay	21.5	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.80		
Actuated Cycle Length (s)	73.8	Sum of lost time (s)	12.0
Intersection Capacity Utilization	78.3%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	EBT	EBR	WBL	WBT	NBL
Lane Configurations					
Traffic Volume (vph)	2119	211	68	1317	106
Future Volume (vph)	2119	211	68	1317	106
Lane Group Flow (vph)	2119	211	68	1317	166
Turn Type	NA	Perm	Perm	NA	Prot
Protected Phases	2			2	4
Permitted Phases		2	2		
Detector Phase	2	2	2	2	4
Switch Phase					
Minimum Initial (s)	12.0	12.0	12.0	12.0	8.0
Minimum Split (s)	26.7	26.7	26.7	26.7	45.6
Total Split (s)	74.0	74.0	74.0	74.0	46.0
Total Split (%)	61.7%	61.7%	61.7%	61.7%	38.3%
Yellow Time (s)	4.6	4.6	4.6	4.6	4.0
All-Red Time (s)	2.1	2.1	2.1	2.1	3.6
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.7	6.7	6.7	6.7	7.6
Lead/Lag					
Lead-Lag Optimize?					
Recall Mode	Max	Max	Max	Max	None
v/c Ratio	0.59	0.18	0.83	0.37	0.58
Control Delay	9.2	1.9	83.2	6.9	45.6
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	9.2	1.9	83.2	6.9	45.6
Queue Length 50th (m)	67.7	1.8	8.3	33.2	28.2
Queue Length 95th (m)	97.2	9.7	#24.4	49.3	48.1
Internal Link Dist (m)	203.7			76.6	88.2
Turn Bay Length (m)		65.0	35.0		
Base Capacity (vph)	3588	1145	82	3588	660
Starvation Cap Reductn	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.59	0.18	0.83	0.37	0.25

Intersection Summary

Cycle Length: 120
Actuated Cycle Length: 101.6
Natural Cycle: 90
Control Type: Actuated-Uncoordinated
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 5: Ace Drive & Mayfield Road





Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	2119	211	68	1317	106	60
Future Volume (vph)	2119	211	68	1317	106	60
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width	3.7	3.5	3.5	3.7	3.7	3.7
Total Lost time (s)	6.7	6.7	6.7	6.7	7.6	
Lane Util. Factor	0.91	1.00	1.00	0.91	1.00	
Frt	1.00	0.85	1.00	1.00	0.95	
Flt Protected	1.00	1.00	0.95	1.00	0.97	
Satd. Flow (prot)	5142	1566	1750	5142	1736	
Flt Permitted	1.00	1.00	0.06	1.00	0.97	
Satd. Flow (perm)	5142	1566	117	5142	1736	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	2119	211	68	1317	106	60
RTOR Reduction (vph)	0	53	0	0	5	0
Lane Group Flow (vph)	2119	158	68	1317	161	0
Turn Type	NA	Perm	Perm	NA	Prot	
Protected Phases	2			2	4	
Permitted Phases		2	2			
Actuated Green, G (s)	70.9	70.9	70.9	70.9	16.4	
Effective Green, g (s)	70.9	70.9	70.9	70.9	16.4	
Actuated g/C Ratio	0.70	0.70	0.70	0.70	0.16	
Clearance Time (s)	6.7	6.7	6.7	6.7	7.6	
Vehicle Extension (s)	5.0	5.0	5.0	5.0	5.0	
Lane Grp Cap (vph)	3588	1092	81	3588	280	
v/s Ratio Prot	0.41			0.26	c0.09	
v/s Ratio Perm		0.10	c0.58			
v/c Ratio	0.59	0.14	0.84	0.37	0.57	
Uniform Delay, d1	7.9	5.2	11.2	6.2	39.4	
Progression Factor	1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	0.7	0.3	62.4	0.3	4.5	
Delay (s)	8.6	5.4	73.6	6.5	43.9	
Level of Service	A	A	E	A	D	
Approach Delay (s)	8.3			9.8	43.9	
Approach LOS	A			A	D	

Intersection Summary			
HCM 2000 Control Delay	10.4	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.78		
Actuated Cycle Length (s)	101.6	Sum of lost time (s)	14.3
Intersection Capacity Utilization	78.0%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

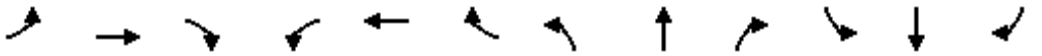
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	600	1785	364	64	751	74	121	157	54	38	165	427
Future Volume (vph)	600	1785	364	64	751	74	121	157	54	38	165	427
Lane Group Flow (vph)	600	1785	364	64	751	74	121	157	54	38	165	427
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	Perm	NA	Perm	Perm	NA	Perm
Protected Phases	5	2		1	6			8			4	
Permitted Phases	2		2	6		6	8		8	4		4
Detector Phase	5	2	2	1	6	6	8	8	8	4	4	4
Switch Phase												
Minimum Initial (s)	5.0	8.0	8.0	5.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0
Minimum Split (s)	9.0	44.9	44.9	9.0	44.9	44.9	47.9	47.9	47.9	47.9	47.9	47.9
Total Split (s)	27.0	63.1	63.1	9.0	45.1	45.1	47.9	47.9	47.9	47.9	47.9	47.9
Total Split (%)	22.5%	52.6%	52.6%	7.5%	37.6%	37.6%	39.9%	39.9%	39.9%	39.9%	39.9%	39.9%
Yellow Time (s)	3.0	4.6	4.6	3.0	4.6	4.6	4.6	4.6	4.6	4.6	4.6	4.6
All-Red Time (s)	1.0	2.3	2.3	1.0	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.3
Lost Time Adjust (s)	-1.0	0.0	0.0	-1.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	3.0	6.9	6.9	3.0	6.9	6.9	6.9	6.9	6.9	6.9	6.9	6.9
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag						
Lead-Lag Optimize?												
Recall Mode	None	Max	Max	None	None	None	None	None	None	None	None	None
v/c Ratio	0.96	0.61	0.35	0.33	0.43	0.14	0.57	0.27	0.16	0.21	0.27	0.73
Control Delay	43.5	14.7	2.7	14.0	23.1	2.5	46.1	34.3	1.1	35.8	34.1	13.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	43.5	14.7	2.7	14.0	23.1	2.5	46.1	34.3	1.1	35.8	34.1	13.1
Queue Length 50th (m)	59.3	72.9	1.4	2.9	35.8	0.0	20.8	13.4	0.0	6.1	14.0	5.4
Queue Length 95th (m)	#160.2	114.1	15.3	9.2	55.1	4.4	37.9	21.9	0.6	14.8	22.7	34.4
Internal Link Dist (m)		179.3			299.2			185.5			471.5	
Turn Bay Length (m)	140.0		70.0	65.0		30.0	75.0		60.0	30.0		138.0
Base Capacity (vph)	623	2925	1055	193	1866	551	509	1382	676	419	1471	853
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.96	0.61	0.35	0.33	0.40	0.13	0.24	0.11	0.08	0.09	0.11	0.50

Intersection Summary

Cycle Length: 120
Actuated Cycle Length: 95
Natural Cycle: 135
Control Type: Semi Act-Uncoord
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 6: Dixie Road & Mayfield Road





Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	600	1785	364	64	751	74	121	157	54	38	165	427
Future Volume (vph)	600	1785	364	64	751	74	121	157	54	38	165	427
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5
Total Lost time (s)	3.0	6.9	6.9	3.0	6.9	6.9	6.9	6.9	6.9	6.9	6.9	6.9
Lane Util. Factor	1.00	0.91	1.00	1.00	0.91	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1566	4902	1536	1653	4601	1201	1716	3174	1413	1405	3380	1452
Flt Permitted	0.30	1.00	1.00	0.12	1.00	1.00	0.65	1.00	1.00	0.65	1.00	1.00
Satd. Flow (perm)	491	4902	1536	208	4601	1201	1170	3174	1413	965	3380	1452
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	600	1785	364	64	751	74	121	157	54	38	165	427
RTOR Reduction (vph)	0	0	141	0	0	45	0	0	44	0	0	322
Lane Group Flow (vph)	600	1785	223	64	751	29	121	157	10	38	165	105
Heavy Vehicles (%)	14%	7%	4%	8%	14%	33%	4%	15%	13%	27%	8%	10%
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	Perm	NA	Perm	Perm	NA	Perm
Protected Phases	5	2		1	6			8			4	
Permitted Phases	2		2	6		6	8		8	4		4
Actuated Green, G (s)	64.6	56.7	56.7	41.3	37.4	37.4	17.4	17.4	17.4	17.4	17.4	17.4
Effective Green, g (s)	65.6	56.7	56.7	43.3	37.4	37.4	17.4	17.4	17.4	17.4	17.4	17.4
Actuated g/C Ratio	0.68	0.59	0.59	0.45	0.39	0.39	0.18	0.18	0.18	0.18	0.18	0.18
Clearance Time (s)	4.0	6.9	6.9	4.0	6.9	6.9	6.9	6.9	6.9	6.9	6.9	6.9
Vehicle Extension (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Lane Grp Cap (vph)	607	2901	909	167	1796	468	212	576	256	175	613	263
v/s Ratio Prot	c0.25	0.36		0.02	0.16			0.05			0.05	
v/s Ratio Perm	c0.43		0.15	0.15		0.02	c0.10		0.01	0.04		0.07
v/c Ratio	0.99	0.62	0.25	0.38	0.42	0.06	0.57	0.27	0.04	0.22	0.27	0.40
Uniform Delay, d1	14.5	12.5	9.3	15.0	21.3	18.2	35.8	33.8	32.3	33.4	33.7	34.6
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	33.5	1.0	0.6	3.0	0.3	0.1	5.8	0.5	0.1	1.3	0.5	2.1
Delay (s)	48.0	13.5	10.0	18.0	21.6	18.4	41.6	34.3	32.4	34.7	34.2	36.7
Level of Service	D	B	A	B	C	B	D	C	C	C	C	D
Approach Delay (s)		20.6			21.1			36.7			35.9	
Approach LOS		C			C			D			D	

Intersection Summary			
HCM 2000 Control Delay	23.9	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.94		
Actuated Cycle Length (s)	95.8	Sum of lost time (s)	16.8
Intersection Capacity Utilization	81.7%	ICU Level of Service	D
Analysis Period (min)	15		

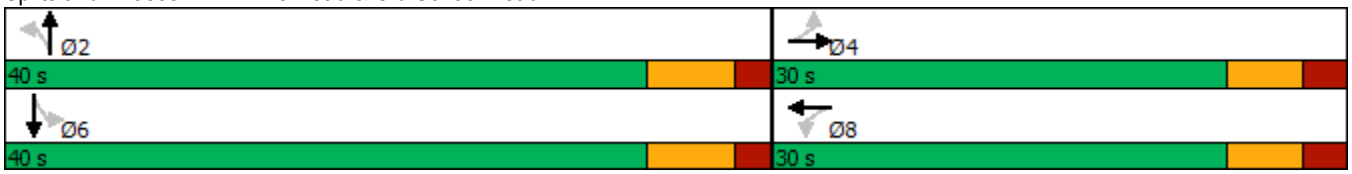
c Critical Lane Group

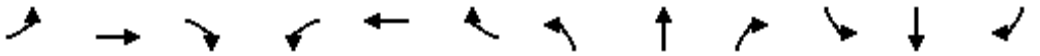
Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations								
Traffic Volume (vph)	17	252	45	98	24	242	33	681
Future Volume (vph)	17	252	45	98	24	242	33	681
Lane Group Flow (vph)	17	298	45	106	24	286	33	727
Turn Type	Perm	NA	Perm	NA	Perm	NA	Perm	NA
Protected Phases		4		8		2		6
Permitted Phases	4		8		2		6	
Detector Phase	4	4	8	8	2	2	6	6
Switch Phase								
Minimum Initial (s)	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0
Minimum Split (s)	25.4	25.4	25.4	25.4	23.6	23.6	23.6	23.6
Total Split (s)	30.0	30.0	30.0	30.0	40.0	40.0	40.0	40.0
Total Split (%)	42.9%	42.9%	42.9%	42.9%	57.1%	57.1%	57.1%	57.1%
Yellow Time (s)	4.0	4.0	4.0	4.0	4.6	4.6	4.6	4.6
All-Red Time (s)	2.4	2.4	2.4	2.4	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.4	6.4	6.4	6.4	6.6	6.6	6.6	6.6
Lead/Lag								
Lead-Lag Optimize?								
Recall Mode	None	None	None	None	Max	Max	Max	Max
v/c Ratio	0.06	0.61	0.19	0.22	0.10	0.31	0.06	0.74
Control Delay	17.1	24.8	19.5	17.8	10.5	9.8	9.2	19.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	17.1	24.8	19.5	17.8	10.5	9.8	9.2	19.0
Queue Length 50th (m)	1.5	28.7	4.0	9.0	1.3	15.8	1.7	59.0
Queue Length 95th (m)	5.3	49.4	10.9	19.0	5.8	35.9	6.5	#139.8
Internal Link Dist (m)		1372.4		151.6		1518.8		144.7
Turn Bay Length (m)	35.0		45.0		40.0		35.0	
Base Capacity (vph)	379	692	334	680	234	929	550	980
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.04	0.43	0.13	0.16	0.10	0.31	0.06	0.74

Intersection Summary

Cycle Length: 70
Actuated Cycle Length: 63.6
Natural Cycle: 60
Control Type: Semi Act-Uncoord
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 7: Dixie Road & Old School Road

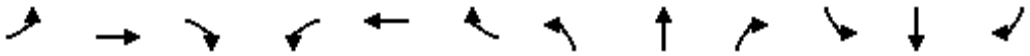




Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	17	252	46	45	98	8	24	242	44	33	681	46
Future Volume (vph)	17	252	46	45	98	8	24	242	44	33	681	46
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5
Total Lost time (s)	6.4	6.4		6.4	6.4		6.6	6.6		6.6	6.6	
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	0.98		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)	1405	1837		1785	1815		1785	1730		1684	1834	
Flt Permitted	0.69	1.00		0.48	1.00		0.23	1.00		0.58	1.00	
Satd. Flow (perm)	1019	1837		897	1815		439	1730		1036	1834	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	17	252	46	45	98	8	24	242	44	33	681	46
RTOR Reduction (vph)	0	10	0	0	4	0	0	8	0	0	3	0
Lane Group Flow (vph)	17	288	0	45	102	0	24	278	0	33	724	0
Heavy Vehicles (%)	27%	2%	3%	0%	5%	0%	0%	10%	0%	6%	4%	0%
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)	16.7	16.7		16.7	16.7		33.9	33.9		33.9	33.9	
Effective Green, g (s)	16.7	16.7		16.7	16.7		33.9	33.9		33.9	33.9	
Actuated g/C Ratio	0.26	0.26		0.26	0.26		0.53	0.53		0.53	0.53	
Clearance Time (s)	6.4	6.4		6.4	6.4		6.6	6.6		6.6	6.6	
Vehicle Extension (s)	5.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0	
Lane Grp Cap (vph)	267	482		235	476		233	922		552	977	
v/s Ratio Prot		c0.16			0.06			0.16			c0.39	
v/s Ratio Perm	0.02			0.05			0.05			0.03		
v/c Ratio	0.06	0.60		0.19	0.21		0.10	0.30		0.06	0.74	
Uniform Delay, d1	17.6	20.5		18.2	18.3		7.3	8.3		7.2	11.5	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.2	3.0		0.8	0.5		0.9	0.8		0.2	5.0	
Delay (s)	17.8	23.5		19.0	18.8		8.2	9.1		7.4	16.5	
Level of Service	B	C		B	B		A	A		A	B	
Approach Delay (s)		23.2			18.9			9.0			16.1	
Approach LOS		C			B			A			B	

Intersection Summary			
HCM 2000 Control Delay	16.4	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.69		
Actuated Cycle Length (s)	63.6	Sum of lost time (s)	13.0
Intersection Capacity Utilization	77.5%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Stop			Stop	
Traffic Volume (vph)	11	176	64	19	347	3	113	35	11	1	35	15
Future Volume (vph)	11	176	64	19	347	3	113	35	11	1	35	15
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Hourly flow rate (vph)	12	187	68	20	369	3	120	37	12	1	37	16

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total (vph)	267	392	169	54
Volume Left (vph)	12	20	120	1
Volume Right (vph)	68	3	12	16
Hadj (s)	-0.12	0.02	0.10	-0.13
Departure Headway (s)	5.0	5.0	5.7	5.8
Degree Utilization, x	0.37	0.54	0.27	0.09
Capacity (veh/h)	676	698	560	526
Control Delay (s)	10.9	13.6	10.9	9.3
Approach Delay (s)	10.9	13.6	10.9	9.3
Approach LOS	B	B	B	A

Intersection Summary				
Delay		12.0		
Level of Service		B		
Intersection Capacity Utilization		47.5%	ICU Level of Service	A
Analysis Period (min)		15		

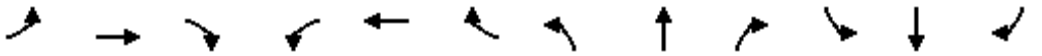
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	93	1248	125	37	1789	229	311	102	11	288	87	82
Future Volume (vph)	93	1248	125	37	1789	229	311	102	11	288	87	82
Lane Group Flow (vph)	93	1248	125	37	1789	229	311	102	11	288	87	82
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm	Perm	NA	Perm
Protected Phases	5	2		1	6		7	4			8	
Permitted Phases	2		2	6		6	4		4	8		8
Detector Phase	5	2	2	1	6	6	7	4	4	8	8	8
Switch Phase												
Minimum Initial (s)	5.0	12.0	12.0	5.0	12.0	12.0	1.0	8.0	8.0	8.0	8.0	8.0
Minimum Split (s)	9.5	39.7	39.7	9.0	39.7	39.7	5.0	43.9	43.9	43.9	43.9	43.9
Total Split (s)	10.0	68.0	68.0	9.0	67.0	67.0	10.0	58.0	58.0	48.0	48.0	48.0
Total Split (%)	7.4%	50.4%	50.4%	6.7%	49.6%	49.6%	7.4%	43.0%	43.0%	35.6%	35.6%	35.6%
Yellow Time (s)	3.5	4.6	4.6	3.0	4.6	4.6	3.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	1.0	2.1	2.1	1.0	2.1	2.1	1.0	2.9	2.9	2.9	2.9	2.9
Lost Time Adjust (s)	0.0	0.0	0.0	-1.0	0.0	0.0	-1.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.5	6.7	6.7	3.0	6.7	6.7	3.0	6.9	6.9	6.9	6.9	6.9
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead			Lag	Lag	Lag
Lead-Lag Optimize?	Yes				Yes	Yes						
Recall Mode	None	Max	Max	None	Max	Max	None	None	None	None	None	None
v/c Ratio	0.81	0.60	0.18	0.19	0.85	0.30	0.68	0.16	0.02	0.91	0.18	0.18
Control Delay	67.5	27.7	4.1	16.4	37.5	3.7	40.6	28.8	0.1	78.8	36.0	5.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	67.5	27.7	4.1	16.4	37.5	3.7	40.6	28.8	0.1	78.8	36.0	5.7
Queue Length 50th (m)	11.8	91.8	0.0	4.4	155.9	0.0	60.4	17.8	0.0	72.6	17.0	0.0
Queue Length 95th (m)	#43.0	107.5	11.0	9.8	177.5	14.5	87.7	30.8	0.0	#123.3	30.4	9.2
Internal Link Dist (m)		179.2			166.2			202.0			680.1	
Turn Bay Length (m)	115.0		180.0	80.0		150.0	110.0		44.0	20.0		20.0
Base Capacity (vph)	115	2074	714	194	2093	768	456	669	548	340	517	491
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.81	0.60	0.18	0.19	0.85	0.30	0.68	0.15	0.02	0.85	0.17	0.17

Intersection Summary

Cycle Length: 135
Actuated Cycle Length: 132.2
Natural Cycle: 100
Control Type: Semi Act-Uncoord
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 2: Heart Lake Road & Mayfield Road





Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	93	1248	125	37	1789	229	311	102	11	288	87	82
Future Volume (vph)	93	1248	125	37	1789	229	311	102	11	288	87	82
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5
Total Lost time (s)	4.5	6.7	6.7	3.0	6.7	6.7	3.0	6.9	6.9	6.9	6.9	6.9
Lane Util. Factor	1.00	0.91	1.00	1.00	0.91	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1560	4330	1356	1530	4583	1409	1591	1729	1319	1501	1662	1369
Flt Permitted	0.06	1.00	1.00	0.16	1.00	1.00	0.65	1.00	1.00	0.69	1.00	1.00
Satd. Flow (perm)	104	4330	1356	259	4583	1409	1090	1729	1319	1092	1662	1369
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	93	1248	125	37	1789	229	311	102	11	288	87	82
RTOR Reduction (vph)	0	0	66	0	0	124	0	0	7	0	0	58
Lane Group Flow (vph)	93	1248	59	37	1789	105	311	102	4	288	87	24
Heavy Vehicles (%)	3%	9%	6%	5%	3%	2%	1%	0%	9%	7%	4%	5%
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm	Perm	NA	Perm
Protected Phases	5	2		1	6		7	4			8	
Permitted Phases	2		2	6		6	4		4	8		8
Actuated Green, G (s)	68.8	63.3	63.3	65.1	61.2	61.2	48.2	48.2	48.2	38.2	38.2	38.2
Effective Green, g (s)	68.8	63.3	63.3	67.1	61.2	61.2	49.2	48.2	48.2	38.2	38.2	38.2
Actuated g/C Ratio	0.52	0.48	0.48	0.50	0.46	0.46	0.37	0.36	0.36	0.29	0.29	0.29
Clearance Time (s)	4.5	6.7	6.7	4.0	6.7	6.7	4.0	6.9	6.9	6.9	6.9	6.9
Vehicle Extension (s)	3.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Lane Grp Cap (vph)	114	2060	645	177	2108	648	429	626	478	313	477	393
v/s Ratio Prot	c0.03	0.29		0.01	c0.39		c0.04	0.06			0.05	
v/s Ratio Perm	0.39		0.04	0.10		0.07	0.23		0.00	c0.26		0.02
v/c Ratio	0.82	0.61	0.09	0.21	0.85	0.16	0.72	0.16	0.01	0.92	0.18	0.06
Uniform Delay, d1	24.6	25.7	19.1	17.7	31.8	20.9	35.9	28.7	27.1	45.9	35.7	34.4
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	34.4	1.3	0.3	1.2	4.5	0.5	7.3	0.3	0.0	32.2	0.4	0.1
Delay (s)	58.9	27.0	19.4	18.9	36.3	21.5	43.2	29.0	27.1	78.1	36.0	34.5
Level of Service	E	C	B	B	D	C	D	C	C	E	D	C
Approach Delay (s)		28.4			34.3			39.4			62.3	
Approach LOS		C			C			D			E	

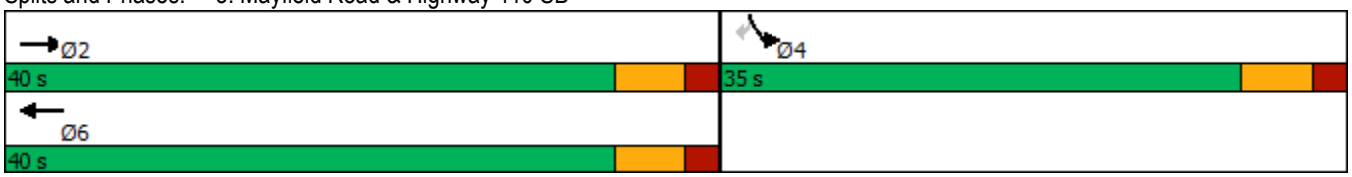
Intersection Summary			
HCM 2000 Control Delay	35.7	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.87		
Actuated Cycle Length (s)	133.0	Sum of lost time (s)	21.1
Intersection Capacity Utilization	85.0%	ICU Level of Service	E
Analysis Period (min)	15		

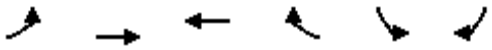
c Critical Lane Group

Lane Group	EBT	WBT	SBL	SBR
Lane Configurations				
Traffic Volume (vph)	977	2272	106	25
Future Volume (vph)	977	2272	106	25
Lane Group Flow (vph)	977	2272	109	22
Turn Type	NA	NA	Prot	Perm
Protected Phases	2	6	4	
Permitted Phases				4
Detector Phase	2	6	4	4
Switch Phase				
Minimum Initial (s)	16.0	16.0	8.0	8.0
Minimum Split (s)	22.0	22.0	32.0	32.0
Total Split (s)	40.0	40.0	35.0	35.0
Total Split (%)	53.3%	53.3%	46.7%	46.7%
Yellow Time (s)	4.0	4.0	4.0	4.0
All-Red Time (s)	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.0	6.0	6.0	6.0
Lead/Lag				
Lead-Lag Optimize?				
Recall Mode	Max	Max	None	None
v/c Ratio	0.27	0.61	0.20	0.09
Control Delay	4.6	7.1	21.7	20.1
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	4.6	7.1	21.7	20.1
Queue Length 50th (m)	14.1	46.9	5.1	2.0
Queue Length 95th (m)	21.1	66.2	10.2	7.3
Internal Link Dist (m)	123.5	116.2	492.2	
Turn Bay Length (m)				
Base Capacity (vph)	3578	3722	1685	738
Starvation Cap Reductn	0	0	0	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.27	0.61	0.06	0.03

Intersection Summary
Cycle Length: 75
Actuated Cycle Length: 58.9
Natural Cycle: 70
Control Type: Semi Act-Uncoord

Splits and Phases: 3: Mayfield Road & Highway 410 SB





Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑↑↑	↑↑↑		↰↰	↱
Traffic Volume (vph)	0	977	2272	0	106	25
Future Volume (vph)	0	977	2272	0	106	25
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)		6.0	6.0		6.0	6.0
Lane Util. Factor		0.91	0.91		0.97	0.91
Frt		1.00	1.00		1.00	0.85
Flt Protected		1.00	1.00		0.95	1.00
Satd. Flow (prot)		5043	5245		3393	1486
Flt Permitted		1.00	1.00		0.95	1.00
Satd. Flow (perm)		5043	5245		3393	1486
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	0	977	2272	0	106	25
RTOR Reduction (vph)	0	0	0	0	1	1
Lane Group Flow (vph)	0	977	2272	0	108	21
Heavy Vehicles (%)	0%	4%	0%	2%	4%	0%
Bus Blockages (#/hr)	0	0	0	0	2	0
Turn Type		NA	NA		Prot	Perm
Protected Phases		2	6		4	
Permitted Phases						4
Actuated Green, G (s)		40.5	40.5		7.6	7.6
Effective Green, g (s)		40.5	40.5		7.6	7.6
Actuated g/C Ratio		0.67	0.67		0.13	0.13
Clearance Time (s)		6.0	6.0		6.0	6.0
Vehicle Extension (s)		5.0	5.0		5.0	5.0
Lane Grp Cap (vph)		3398	3534		429	187
v/s Ratio Prot		0.19	c0.43		c0.03	
v/s Ratio Perm						0.01
v/c Ratio		0.29	0.64		0.25	0.11
Uniform Delay, d1		4.0	5.6		23.7	23.3
Progression Factor		1.00	1.00		1.00	1.00
Incremental Delay, d2		0.2	0.9		0.6	0.6
Delay (s)		4.2	6.6		24.3	23.8
Level of Service		A	A		C	C
Approach Delay (s)		4.2	6.6		24.2	
Approach LOS		A	A		C	

Intersection Summary			
HCM 2000 Control Delay	6.6	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.58		
Actuated Cycle Length (s)	60.1	Sum of lost time (s)	12.0
Intersection Capacity Utilization	60.6%	ICU Level of Service	B
Analysis Period (min)	15		

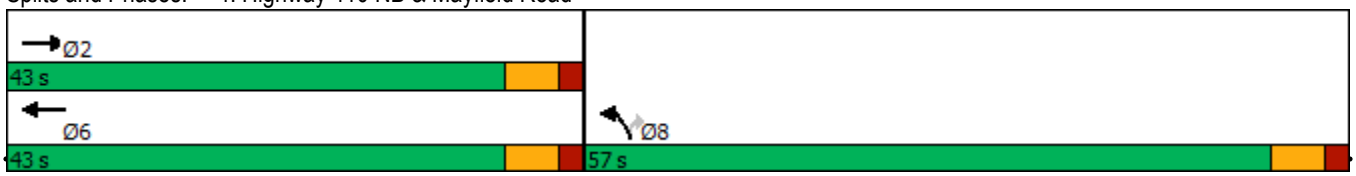
c Critical Lane Group

Lane Group	EBT	WBT	NBL	NBR
Lane Configurations				
Traffic Volume (vph)	1018	1989	921	982
Future Volume (vph)	1018	1989	921	982
Lane Group Flow (vph)	1018	1989	1304	599
Turn Type	NA	NA	Prot	Perm
Protected Phases	2	6	8	
Permitted Phases	2	6		8
Detector Phase	2	6	8	8
Switch Phase				
Minimum Initial (s)	26.0	26.0	10.0	10.0
Minimum Split (s)	32.0	32.0	22.0	22.0
Total Split (s)	43.0	43.0	57.0	57.0
Total Split (%)	43.0%	43.0%	57.0%	57.0%
Yellow Time (s)	4.0	4.0	4.0	4.0
All-Red Time (s)	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.0	6.0	6.0	6.0
Lead/Lag				
Lead-Lag Optimize?				
Recall Mode	Max	None	None	None
v/c Ratio	0.52	1.02	0.81	0.89
Control Delay	24.1	56.6	24.9	38.5
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	24.1	56.6	24.9	38.5
Queue Length 50th (m)	56.5	~159.4	97.8	100.6
Queue Length 95th (m)	69.8	#188.7	124.0	#175.6
Internal Link Dist (m)	104.0	63.2	627.1	
Turn Bay Length (m)				
Base Capacity (vph)	1946	1946	1823	758
Starvation Cap Reductn	0	0	0	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.52	1.02	0.72	0.79

Intersection Summary

Cycle Length: 100
Actuated Cycle Length: 94.7
Natural Cycle: 90
Control Type: Semi Act-Uncoord
~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 4: Highway 410 NB & Mayfield Road





Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	1018	0	0	1989	921	982
Future Volume (vph)	1018	0	0	1989	921	982
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0			6.0	6.0	6.0
Lane Util. Factor	0.91			0.91	0.97	0.91
Frt	1.00			1.00	0.96	0.85
Flt Protected	1.00			1.00	0.97	1.00
Satd. Flow (prot)	4948			4948	3339	1376
Flt Permitted	1.00			1.00	0.97	1.00
Satd. Flow (perm)	4948			4948	3339	1376
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	1018	0	0	1989	921	982
RTOR Reduction (vph)	0	0	0	0	14	14
Lane Group Flow (vph)	1018	0	0	1989	1290	585
Heavy Vehicles (%)	6%	0%	0%	6%	1%	8%
Turn Type	NA			NA	Prot	Perm
Protected Phases	2			6	8	
Permitted Phases	2			6		8
Actuated Green, G (s)	37.3			37.3	45.3	45.3
Effective Green, g (s)	37.3			37.3	45.3	45.3
Actuated g/C Ratio	0.39			0.39	0.48	0.48
Clearance Time (s)	6.0			6.0	6.0	6.0
Vehicle Extension (s)	5.0			5.0	3.0	3.0
Lane Grp Cap (vph)	1950			1950	1598	658
v/s Ratio Prot	0.21			c0.40	0.39	
v/s Ratio Perm						c0.43
v/c Ratio	0.52			1.02	0.81	0.89
Uniform Delay, d1	21.9			28.6	20.9	22.4
Progression Factor	1.00			1.00	1.00	1.00
Incremental Delay, d2	1.0			25.6	3.1	13.9
Delay (s)	22.9			54.2	24.0	36.3
Level of Service	C			D	C	D
Approach Delay (s)	22.9			54.2	27.9	
Approach LOS	C			D	C	

Intersection Summary			
HCM 2000 Control Delay	37.5	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.95		
Actuated Cycle Length (s)	94.6	Sum of lost time (s)	12.0
Intersection Capacity Utilization	85.0%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	EBT	EBR	WBL	WBT	NBL
Lane Configurations					
Traffic Volume (vph)	1750	154	71	1995	110
Future Volume (vph)	1750	154	71	1995	110
Lane Group Flow (vph)	1750	154	71	1995	160
Turn Type	NA	Perm	Perm	NA	Prot
Protected Phases	2			2	4
Permitted Phases		2	2		
Detector Phase	2	2	2	2	4
Switch Phase					
Minimum Initial (s)	12.0	12.0	12.0	12.0	8.0
Minimum Split (s)	26.7	26.7	26.7	26.7	45.6
Total Split (s)	74.0	74.0	74.0	74.0	46.0
Total Split (%)	61.7%	61.7%	61.7%	61.7%	38.3%
Yellow Time (s)	4.6	4.6	4.6	4.6	4.0
All-Red Time (s)	2.1	2.1	2.1	2.1	3.6
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.7	6.7	6.7	6.7	7.6
Lead/Lag					
Lead-Lag Optimize?					
Recall Mode	Max	Max	Max	Max	Max
v/c Ratio	0.61	0.16	0.84	0.69	0.28
Control Delay	18.7	2.3	88.3	20.5	29.1
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	18.7	2.3	88.3	20.5	29.1
Queue Length 50th (m)	95.7	0.0	13.1	117.8	25.3
Queue Length 95th (m)	110.1	8.9	#43.7	134.2	42.9
Internal Link Dist (m)	203.7			76.6	88.2
Turn Bay Length (m)		65.0	35.0		
Base Capacity (vph)	2883	945	85	2883	568
Starvation Cap Reductn	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.61	0.16	0.84	0.69	0.28

Intersection Summary

Cycle Length: 120
Actuated Cycle Length: 120
Natural Cycle: 90
Control Type: Semi Act-Uncoord
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 5: Ace Drive & Mayfield Road





Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	1750	154	71	1995	110	50
Future Volume (vph)	1750	154	71	1995	110	50
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width	3.7	3.5	3.5	3.7	3.7	3.7
Total Lost time (s)	6.7	6.7	6.7	6.7	7.6	
Lane Util. Factor	0.91	1.00	1.00	0.91	1.00	
Frt	1.00	0.85	1.00	1.00	0.96	
Flt Protected	1.00	1.00	0.95	1.00	0.97	
Satd. Flow (prot)	5142	1566	1750	5142	1744	
Flt Permitted	1.00	1.00	0.08	1.00	0.97	
Satd. Flow (perm)	5142	1566	152	5142	1744	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	1750	154	71	1995	110	50
RTOR Reduction (vph)	0	68	0	0	10	0
Lane Group Flow (vph)	1750	86	71	1995	150	0
Turn Type	NA	Perm	Perm	NA	Prot	
Protected Phases	2			2	4	
Permitted Phases		2	2			
Actuated Green, G (s)	67.3	67.3	67.3	67.3	38.4	
Effective Green, g (s)	67.3	67.3	67.3	67.3	38.4	
Actuated g/C Ratio	0.56	0.56	0.56	0.56	0.32	
Clearance Time (s)	6.7	6.7	6.7	6.7	7.6	
Vehicle Extension (s)	5.0	5.0	5.0	5.0	5.0	
Lane Grp Cap (vph)	2883	878	85	2883	558	
v/s Ratio Prot	0.34			0.39	c0.09	
v/s Ratio Perm		0.06	c0.47			
v/c Ratio	0.61	0.10	0.84	0.69	0.27	
Uniform Delay, d1	17.5	12.2	21.8	18.9	30.4	
Progression Factor	1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	1.0	0.2	59.5	1.4	1.2	
Delay (s)	18.5	12.5	81.3	20.3	31.5	
Level of Service	B	B	F	C	C	
Approach Delay (s)	18.0			22.4	31.5	
Approach LOS	B			C	C	

Intersection Summary			
HCM 2000 Control Delay	20.7	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.63		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	14.3
Intersection Capacity Utilization	70.5%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	478	1221	186	68	1423	37	289	235	38	93	435	669
Future Volume (vph)	478	1221	186	68	1423	37	289	235	38	93	435	669
Lane Group Flow (vph)	478	1221	186	68	1423	37	289	235	38	93	435	669
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	Perm	NA	Perm	Perm	NA	Perm
Protected Phases	5	2		1	6			4			8	
Permitted Phases	2		2	6		6	4		4	8		8
Detector Phase	5	2	2	1	6	6	4	4	4	8	8	8
Switch Phase												
Minimum Initial (s)	5.0	8.0	8.0	5.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0
Minimum Split (s)	9.0	44.9	44.9	9.0	44.9	44.9	47.9	47.9	47.9	47.9	47.9	47.9
Total Split (s)	31.0	65.0	65.0	11.0	45.0	45.0	54.0	54.0	54.0	54.0	54.0	54.0
Total Split (%)	23.8%	50.0%	50.0%	8.5%	34.6%	34.6%	41.5%	41.5%	41.5%	41.5%	41.5%	41.5%
Yellow Time (s)	3.0	4.6	4.6	3.0	4.6	4.6	4.6	4.6	4.6	4.6	4.6	4.6
All-Red Time (s)	1.0	2.3	2.3	1.0	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.3
Lost Time Adjust (s)	-1.0	0.0	0.0	-1.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	3.0	6.9	6.9	3.0	6.9	6.9	6.9	6.9	6.9	6.9	6.9	6.9
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag						
Lead-Lag Optimize?												
Recall Mode	None	Max	Max	None	None	None	None	None	None	None	None	None
v/c Ratio	1.13	0.55	0.23	0.37	0.99	0.07	0.98	0.18	0.06	0.24	0.35	0.81
Control Delay	120.3	26.8	3.6	22.1	67.4	0.3	89.1	28.7	0.2	31.2	31.2	22.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	120.3	26.8	3.6	22.1	67.4	0.3	89.1	28.7	0.2	31.2	31.2	22.8
Queue Length 50th (m)	~126.4	83.6	0.0	7.7	133.1	0.0	72.7	21.4	0.0	16.6	42.5	64.6
Queue Length 95th (m)	#192.3	98.1	13.0	14.9	#166.9	0.0	#130.0	31.1	0.0	30.2	56.3	122.0
Internal Link Dist (m)		179.3			299.2			185.5			471.5	
Turn Bay Length (m)	140.0		70.0	65.0		30.0	75.0		60.0	30.0		138.0
Base Capacity (vph)	423	2211	825	182	1436	496	295	1322	625	381	1259	824
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	1.13	0.55	0.23	0.37	0.99	0.07	0.98	0.18	0.06	0.24	0.35	0.81

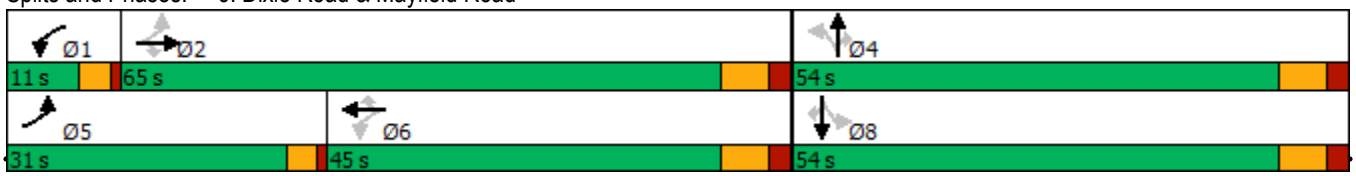
Intersection Summary

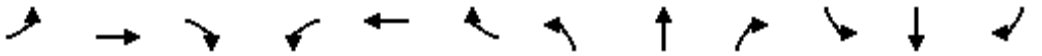
Cycle Length: 130
Actuated Cycle Length: 130
Natural Cycle: 125
Control Type: Semi Act-Uncoord

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

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

Splits and Phases: 6: Dixie Road & Mayfield Road





Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	478	1221	186	68	1423	37	289	235	38	93	435	669
Future Volume (vph)	478	1221	186	68	1423	37	289	235	38	93	435	669
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5
Total Lost time (s)	3.0	6.9	6.9	3.0	6.9	6.9	6.9	6.9	6.9	6.9	6.9	6.9
Lane Util. Factor	1.00	0.91	1.00	1.00	0.91	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1700	4768	1566	1342	4902	1452	1750	3650	1551	1653	3476	1551
Flt Permitted	0.09	1.00	1.00	0.22	1.00	1.00	0.44	1.00	1.00	0.61	1.00	1.00
Satd. Flow (perm)	167	4768	1566	308	4902	1452	816	3650	1551	1053	3476	1551
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	478	1221	186	68	1423	37	289	235	38	93	435	669
RTOR Reduction (vph)	0	0	100	0	0	26	0	0	24	0	0	263
Lane Group Flow (vph)	478	1221	86	68	1423	11	289	235	14	93	435	406
Heavy Vehicles (%)	5%	10%	2%	33%	7%	10%	2%	0%	3%	8%	5%	3%
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	Perm	NA	Perm	Perm	NA	Perm
Protected Phases	5	2		1	6			4			8	
Permitted Phases	2		2	6		6	4		4	8		8
Actuated Green, G (s)	69.9	60.3	60.3	44.5	38.9	38.9	47.1	47.1	47.1	47.1	47.1	47.1
Effective Green, g (s)	70.9	60.3	60.3	46.5	38.9	38.9	47.1	47.1	47.1	47.1	47.1	47.1
Actuated g/C Ratio	0.54	0.46	0.46	0.36	0.30	0.30	0.36	0.36	0.36	0.36	0.36	0.36
Clearance Time (s)	4.0	6.9	6.9	4.0	6.9	6.9	6.9	6.9	6.9	6.9	6.9	6.9
Vehicle Extension (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Lane Grp Cap (vph)	418	2198	721	161	1457	431	293	1314	558	379	1251	558
v/s Ratio Prot	c0.24	0.26		0.02	0.29			0.06			0.13	
v/s Ratio Perm	c0.37		0.05	0.13		0.01	c0.35		0.01	0.09		0.26
v/c Ratio	1.14	0.56	0.12	0.42	0.98	0.03	0.99	0.18	0.02	0.25	0.35	0.73
Uniform Delay, d1	41.1	25.5	20.1	28.6	45.5	32.5	41.5	28.6	27.0	29.4	30.6	36.3
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	89.4	1.0	0.3	3.7	18.3	0.1	48.7	0.1	0.0	0.7	0.4	5.8
Delay (s)	130.5	26.6	20.4	32.3	63.8	32.6	90.2	28.8	27.1	30.1	31.0	42.0
Level of Service	F	C	C	C	E	C	F	C	C	C	C	D
Approach Delay (s)		52.3			61.6			60.3			37.1	
Approach LOS		D			E			E			D	

Intersection Summary			
HCM 2000 Control Delay	52.4	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	1.11		
Actuated Cycle Length (s)	130.8	Sum of lost time (s)	16.8
Intersection Capacity Utilization	102.6%	ICU Level of Service	G
Analysis Period (min)	15		

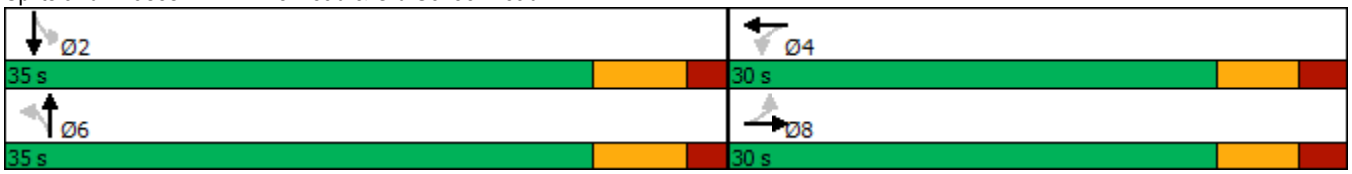
c Critical Lane Group

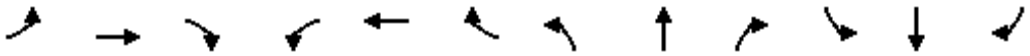
Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations								
Traffic Volume (vph)	51	110	83	278	68	582	6	272
Future Volume (vph)	51	110	83	278	68	582	6	272
Lane Group Flow (vph)	51	130	83	296	68	624	6	293
Turn Type	Perm	NA	Perm	NA	Perm	NA	Perm	NA
Protected Phases		8		4		6		2
Permitted Phases	8		4		6		2	
Detector Phase	8	8	4	4	6	6	2	2
Switch Phase								
Minimum Initial (s)	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0
Minimum Split (s)	25.4	25.4	25.4	25.4	23.6	23.6	23.6	23.6
Total Split (s)	30.0	30.0	30.0	30.0	35.0	35.0	35.0	35.0
Total Split (%)	46.2%	46.2%	46.2%	46.2%	53.8%	53.8%	53.8%	53.8%
Yellow Time (s)	4.0	4.0	4.0	4.0	4.6	4.6	4.6	4.6
All-Red Time (s)	2.4	2.4	2.4	2.4	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.4	6.4	6.4	6.4	6.6	6.6	6.6	6.6
Lead/Lag								
Lead-Lag Optimize?								
Recall Mode	None	None	None	None	Max	Max	Max	Max
v/c Ratio	0.22	0.25	0.24	0.56	0.13	0.68	0.02	0.34
Control Delay	17.7	14.9	17.3	21.6	10.2	17.5	9.8	11.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	17.7	14.9	17.3	21.6	10.2	17.5	9.8	11.0
Queue Length 50th (m)	4.1	9.1	6.7	25.7	3.4	44.4	0.3	16.2
Queue Length 95th (m)	10.9	19.4	15.3	44.4	11.4	#111.4	2.2	38.5
Internal Link Dist (m)		1372.4		151.6		1518.8		144.7
Turn Bay Length (m)	35.0		45.0		40.0		35.0	
Base Capacity (vph)	346	757	512	769	542	914	276	874
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.15	0.17	0.16	0.38	0.13	0.68	0.02	0.34

Intersection Summary

Cycle Length: 65
Actuated Cycle Length: 58
Natural Cycle: 60
Control Type: Semi Act-Uncoord
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 7: Dixie Road & Old School Road





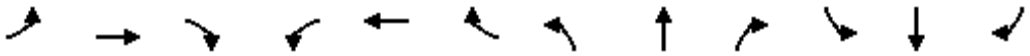
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	51	110	20	83	278	18	68	582	42	6	272	21
Future Volume (vph)	51	110	20	83	278	18	68	582	42	6	272	21
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5
Total Lost time (s)	6.4	6.4		6.4	6.4		6.6	6.6		6.6	6.6	
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	0.99		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)	1566	1830		1767	1873		1785	1834		1785	1754	
Flt Permitted	0.51	1.00		0.67	1.00		0.58	1.00		0.30	1.00	
Satd. Flow (perm)	847	1830		1253	1873		1091	1834		556	1754	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	51	110	20	83	278	18	68	582	42	6	272	21
RTOR Reduction (vph)	0	12	0	0	4	0	0	4	0	0	4	0
Lane Group Flow (vph)	51	118	0	83	292	0	68	620	0	6	289	0
Heavy Vehicles (%)	14%	3%	0%	1%	1%	11%	0%	2%	27%	0%	9%	0%
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)	16.2	16.2		16.2	16.2		28.8	28.8		28.8	28.8	
Effective Green, g (s)	16.2	16.2		16.2	16.2		28.8	28.8		28.8	28.8	
Actuated g/C Ratio	0.28	0.28		0.28	0.28		0.50	0.50		0.50	0.50	
Clearance Time (s)	6.4	6.4		6.4	6.4		6.6	6.6		6.6	6.6	
Vehicle Extension (s)	5.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0	
Lane Grp Cap (vph)	236	511		349	523		541	910		276	870	
v/s Ratio Prot		0.06			c0.16			c0.34			0.16	
v/s Ratio Perm	0.06			0.07			0.06			0.01		
v/c Ratio	0.22	0.23		0.24	0.56		0.13	0.68		0.02	0.33	
Uniform Delay, d1	16.0	16.1		16.1	17.8		7.8	11.1		7.4	8.8	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	1.0	0.5		0.7	2.2		0.5	4.1		0.1	1.0	
Delay (s)	17.0	16.6		16.9	20.0		8.3	15.2		7.6	9.8	
Level of Service	B	B		B	C		A	B		A	A	
Approach Delay (s)		16.7			19.3			14.6			9.8	
Approach LOS		B			B			B			A	

Intersection Summary			
HCM 2000 Control Delay	15.1	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.64		
Actuated Cycle Length (s)	58.0	Sum of lost time (s)	13.0
Intersection Capacity Utilization	83.9%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

Appendix K

2034 Future Background Conditions – Synchro Analysis Results



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Stop			Stop	
Traffic Volume (vph)	12	317	92	5	105	4	36	31	6	4	42	13
Future Volume (vph)	12	317	92	5	105	4	36	31	6	4	42	13
Peak Hour Factor	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85
Hourly flow rate (vph)	14	373	108	6	124	5	42	36	7	5	49	15

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total (vph)	495	135	85	69
Volume Left (vph)	14	6	42	5
Volume Right (vph)	108	5	7	15
Hadj (s)	-0.08	0.14	0.21	-0.05
Departure Headway (s)	4.4	5.1	5.7	5.5
Degree Utilization, x	0.61	0.19	0.13	0.11
Capacity (veh/h)	783	668	554	576
Control Delay (s)	14.2	9.2	9.6	9.1
Approach Delay (s)	14.2	9.2	9.6	9.1
Approach LOS	B	A	A	A

Intersection Summary				
Delay	12.4			
Level of Service	B			
Intersection Capacity Utilization	44.0%	ICU Level of Service	A	
Analysis Period (min)	15			

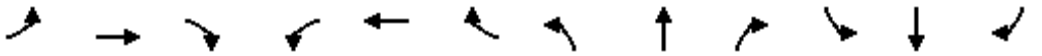
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	72	1933	511	116	1263	250	108	67	18	216	164	104
Future Volume (vph)	72	1933	511	116	1263	250	108	67	18	216	164	104
Lane Group Flow (vph)	72	1933	511	116	1263	250	108	67	18	216	164	104
Turn Type	Perm	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm	Perm	NA	Perm
Protected Phases		2		1	6		7	4			8	
Permitted Phases	2		2	6		6	4		4	8		8
Detector Phase	2	2	2	1	6	6	7	4	4	8	8	8
Switch Phase												
Minimum Initial (s)	12.0	12.0	12.0	5.0	12.0	12.0	5.0	8.0	8.0	8.0	8.0	8.0
Minimum Split (s)	39.7	39.7	39.7	9.0	39.7	39.7	9.0	43.9	43.9	43.9	43.9	43.9
Total Split (s)	77.0	77.0	77.0	9.0	86.0	86.0	9.0	54.0	54.0	45.0	45.0	45.0
Total Split (%)	55.0%	55.0%	55.0%	6.4%	61.4%	61.4%	6.4%	38.6%	38.6%	32.1%	32.1%	32.1%
Yellow Time (s)	4.6	4.6	4.6	3.0	4.6	4.6	3.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	2.1	2.1	2.1	1.0	2.1	2.1	1.0	2.9	2.9	2.9	2.9	2.9
Lost Time Adjust (s)	0.0	0.0	0.0	-1.0	0.0	0.0	-1.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.7	6.7	6.7	3.0	6.7	6.7	3.0	6.9	6.9	6.9	6.9	6.9
Lead/Lag	Lag	Lag	Lag	Lead			Lead			Lag	Lag	Lag
Lead-Lag Optimize?												
Recall Mode	Max	Max	Max	None	Max	Max	None	None	None	None	None	None
v/c Ratio	0.42	0.81	0.54	0.94	0.50	0.32	0.35	0.13	0.04	0.80	0.43	0.26
Control Delay	30.1	29.8	6.6	94.2	16.5	2.8	35.6	34.0	0.2	69.4	46.7	11.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	30.1	29.8	6.6	94.2	16.5	2.8	35.6	34.0	0.2	69.4	46.7	11.7
Queue Length 50th (m)	11.1	150.1	13.1	16.4	66.7	0.0	20.4	12.8	0.0	53.3	36.7	2.7
Queue Length 95th (m)	28.8	190.5	44.1	#59.1	89.0	11.9	34.9	24.1	0.0	82.7	57.6	16.9
Internal Link Dist (m)		179.2			166.2			202.0			680.1	
Turn Bay Length (m)	115.0		180.0	80.0		150.0	110.0		44.0	20.0		20.0
Base Capacity (vph)	173	2380	943	123	2540	770	306	618	553	349	495	480
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.42	0.81	0.54	0.94	0.50	0.32	0.35	0.11	0.03	0.62	0.33	0.22

Intersection Summary

Cycle Length: 140
Actuated Cycle Length: 131.9
Natural Cycle: 115
Control Type: Semi Act-Uncoord
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 2: Heart Lake Road & Mayfield Road





Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	72	1933	511	116	1263	250	108	67	18	216	164	104
Future Volume (vph)	72	1933	511	116	1263	250	108	67	18	216	164	104
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5
Total Lost time (s)	6.7	6.7	6.7	3.0	6.7	6.7	3.0	6.9	6.9	6.9	6.9	6.9
Lane Util. Factor	1.00	0.91	1.00	1.00	0.91	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1530	4453	1409	1560	4214	1114	1530	1729	1437	1606	1712	1437
Flt Permitted	0.20	1.00	1.00	0.05	1.00	1.00	0.53	1.00	1.00	0.71	1.00	1.00
Satd. Flow (perm)	324	4453	1409	88	4214	1114	854	1729	1437	1206	1712	1437
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	72	1933	511	116	1263	250	108	67	18	216	164	104
RTOR Reduction (vph)	0	0	191	0	0	99	0	0	13	0	0	70
Lane Group Flow (vph)	72	1933	320	116	1263	151	108	67	5	216	164	34
Heavy Vehicles (%)	5%	6%	2%	3%	12%	29%	5%	0%	0%	0%	1%	0%
Turn Type	Perm	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm	Perm	NA	Perm
Protected Phases		2		1	6		7	4			8	
Permitted Phases	2		2	6		6	4		4	8		8
Actuated Green, G (s)	70.5	70.5	70.5	79.5	79.5	79.5	38.7	38.7	38.7	29.7	29.7	29.7
Effective Green, g (s)	70.5	70.5	70.5	80.5	79.5	79.5	39.7	38.7	38.7	29.7	29.7	29.7
Actuated g/C Ratio	0.53	0.53	0.53	0.61	0.60	0.60	0.30	0.29	0.29	0.23	0.23	0.23
Clearance Time (s)	6.7	6.7	6.7	4.0	6.7	6.7	4.0	6.9	6.9	6.9	6.9	6.9
Vehicle Extension (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Lane Grp Cap (vph)	173	2381	753	120	2541	671	288	507	421	271	385	323
v/s Ratio Prot		0.43		c0.04	0.30		c0.02	0.04			0.10	
v/s Ratio Perm	0.22		0.23	c0.54		0.14	0.10		0.00	c0.18		0.02
v/c Ratio	0.42	0.81	0.43	0.97	0.50	0.22	0.38	0.13	0.01	0.80	0.43	0.10
Uniform Delay, d1	18.3	25.2	18.5	31.2	14.8	12.0	35.5	34.2	33.0	48.2	43.7	40.5
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	7.2	3.1	1.8	72.0	0.7	0.8	1.7	0.2	0.0	16.9	1.6	0.3
Delay (s)	25.6	28.3	20.2	103.2	15.5	12.8	37.2	34.5	33.0	65.1	45.3	40.8
Level of Service	C	C	C	F	B	B	D	C	C	E	D	D
Approach Delay (s)		26.6			21.3			35.9			53.2	
Approach LOS		C			C			D			D	

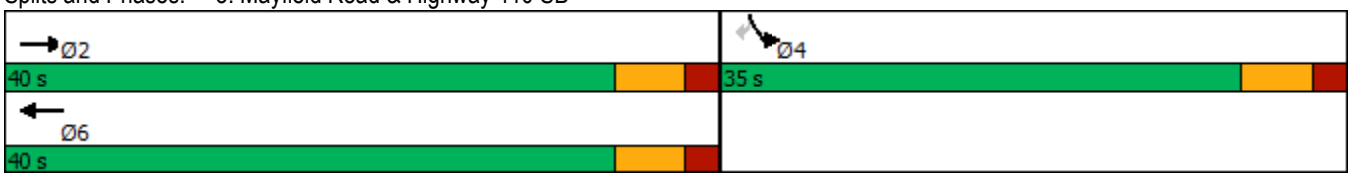
Intersection Summary			
HCM 2000 Control Delay	27.9	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.92		
Actuated Cycle Length (s)	131.8	Sum of lost time (s)	19.6
Intersection Capacity Utilization	89.0%	ICU Level of Service	E
Analysis Period (min)	15		

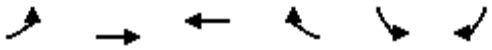
c Critical Lane Group

Lane Group	EBT	WBT	SBL	SBR
Lane Configurations				
Traffic Volume (vph)	1481	1338	375	322
Future Volume (vph)	1481	1338	375	322
Lane Group Flow (vph)	1481	1338	478	219
Turn Type	NA	NA	Prot	Perm
Protected Phases	2	6	4	
Permitted Phases				4
Detector Phase	2	6	4	4
Switch Phase				
Minimum Initial (s)	16.0	16.0	8.0	8.0
Minimum Split (s)	22.0	22.0	32.0	32.0
Total Split (s)	40.0	40.0	35.0	35.0
Total Split (%)	53.3%	53.3%	46.7%	46.7%
Yellow Time (s)	4.0	4.0	4.0	4.0
All-Red Time (s)	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.0	6.0	6.0	6.0
Lead/Lag				
Lead-Lag Optimize?				
Recall Mode	Max	Max	None	None
v/c Ratio	0.56	0.48	0.49	0.52
Control Delay	11.8	10.8	19.9	21.8
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	11.8	10.8	19.9	21.8
Queue Length 50th (m)	37.8	32.1	22.9	21.3
Queue Length 95th (m)	67.1	57.1	34.1	40.1
Internal Link Dist (m)	123.5	116.2	492.2	
Turn Bay Length (m)				
Base Capacity (vph)	2644	2803	1586	688
Starvation Cap Reductn	0	0	0	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.56	0.48	0.30	0.32

Intersection Summary
Cycle Length: 75
Actuated Cycle Length: 64
Natural Cycle: 60
Control Type: Semi Act-Uncoord

Splits and Phases: 3: Mayfield Road & Highway 410 SB





Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑↑↑	↑↑↑		↰↰	↱
Traffic Volume (vph)	0	1481	1338	0	375	322
Future Volume (vph)	0	1481	1338	0	375	322
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)		6.0	6.0		6.0	6.0
Lane Util. Factor		0.91	0.91		0.97	0.91
Frt		1.00	1.00		0.97	0.85
Flt Protected		1.00	1.00		0.96	1.00
Satd. Flow (prot)		4948	5245		3456	1486
Flt Permitted		1.00	1.00		0.96	1.00
Satd. Flow (perm)		4948	5245		3456	1486
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	0	1481	1338	0	375	322
RTOR Reduction (vph)	0	0	0	0	14	14
Lane Group Flow (vph)	0	1481	1338	0	464	205
Heavy Vehicles (%)	0%	6%	0%	16%	0%	0%
Bus Blockages (#/hr)	0	0	0	0	2	0
Turn Type		NA	NA		Prot	Perm
Protected Phases		2	6		4	
Permitted Phases						4
Actuated Green, G (s)		34.2	34.2		17.7	17.7
Effective Green, g (s)		34.2	34.2		17.7	17.7
Actuated g/C Ratio		0.54	0.54		0.28	0.28
Clearance Time (s)		6.0	6.0		6.0	6.0
Vehicle Extension (s)		5.0	5.0		5.0	5.0
Lane Grp Cap (vph)		2648	2807		957	411
v/s Ratio Prot		c0.30	0.26		0.13	
v/s Ratio Perm						c0.14
v/c Ratio		0.56	0.48		0.48	0.50
Uniform Delay, d1		9.9	9.3		19.3	19.4
Progression Factor		1.00	1.00		1.00	1.00
Incremental Delay, d2		0.9	0.6		0.8	2.0
Delay (s)		10.7	9.8		20.1	21.4
Level of Service		B	A		C	C
Approach Delay (s)		10.7	9.8		20.5	
Approach LOS		B	A		C	

Intersection Summary			
HCM 2000 Control Delay	12.3	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.54		
Actuated Cycle Length (s)	63.9	Sum of lost time (s)	12.0
Intersection Capacity Utilization	52.7%	ICU Level of Service	A
Analysis Period (min)	15		

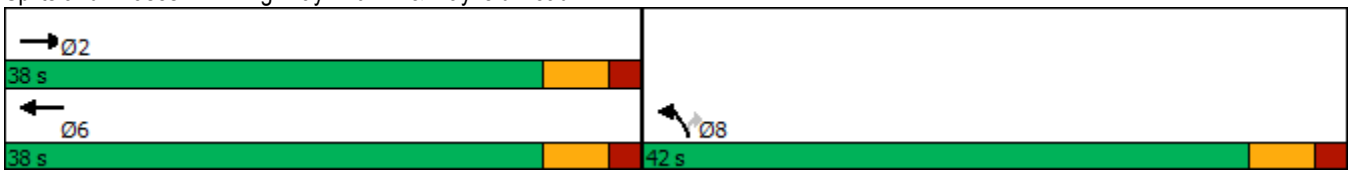
c Critical Lane Group

Lane Group	EBT	WBT	NBL	NBR
Lane Configurations				
Traffic Volume (vph)	1864	1796	482	950
Future Volume (vph)	1864	1796	482	950
Lane Group Flow (vph)	1864	1796	957	475
Turn Type	NA	NA	Prot	Perm
Protected Phases	2	6	8	
Permitted Phases				8
Detector Phase	2	6	8	8
Switch Phase				
Minimum Initial (s)	26.0	26.0	10.0	10.0
Minimum Split (s)	32.0	32.0	22.0	22.0
Total Split (s)	38.0	38.0	42.0	42.0
Total Split (%)	47.5%	47.5%	52.5%	52.5%
Yellow Time (s)	4.0	4.0	4.0	4.0
All-Red Time (s)	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.0	6.0	6.0	6.0
Lead/Lag				
Lead-Lag Optimize?				
Recall Mode	Max	None	None	None
v/c Ratio	0.89	0.91	0.79	0.86
Control Delay	28.2	29.9	24.3	37.6
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	28.2	29.9	24.3	37.6
Queue Length 50th (m)	97.2	94.6	58.8	65.2
Queue Length 95th (m)	#131.3	#129.5	80.5	#122.9
Internal Link Dist (m)	104.0	63.2	627.1	
Turn Bay Length (m)				
Base Capacity (vph)	2095	1983	1388	627
Starvation Cap Reductn	0	0	0	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.89	0.91	0.69	0.76

Intersection Summary

Cycle Length: 80
Actuated Cycle Length: 76
Natural Cycle: 65
Control Type: Semi Act-Uncoord
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 4: Highway 410 NB & Mayfield Road





Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	1864	0	0	1796	482	950
Future Volume (vph)	1864	0	0	1796	482	950
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0			6.0	6.0	6.0
Lane Util. Factor	0.91			0.91	0.97	0.91
Frt	1.00			1.00	0.93	0.85
Flt Protected	1.00			1.00	0.98	1.00
Satd. Flow (prot)	4948			4683	2913	1315
Flt Permitted	1.00			1.00	0.98	1.00
Satd. Flow (perm)	4948			4683	2913	1315
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	1864	0	0	1796	482	950
RTOR Reduction (vph)	0	0	0	0	1	1
Lane Group Flow (vph)	1864	0	0	1796	956	474
Heavy Vehicles (%)	6%	0%	0%	12%	18%	13%
Turn Type	NA			NA	Prot	Perm
Protected Phases	2			6	8	
Permitted Phases						8
Actuated Green, G (s)	32.2			32.2	31.7	31.7
Effective Green, g (s)	32.2			32.2	31.7	31.7
Actuated g/C Ratio	0.42			0.42	0.42	0.42
Clearance Time (s)	6.0			6.0	6.0	6.0
Vehicle Extension (s)	5.0			5.0	3.0	3.0
Lane Grp Cap (vph)	2099			1986	1216	549
v/s Ratio Prot	0.38			c0.38	0.33	
v/s Ratio Perm						c0.36
v/c Ratio	0.89			0.90	0.79	0.86
Uniform Delay, d1	20.2			20.4	19.2	20.1
Progression Factor	1.00			1.00	1.00	1.00
Incremental Delay, d2	6.1			6.7	3.4	13.2
Delay (s)	26.3			27.1	22.6	33.3
Level of Service	C			C	C	C
Approach Delay (s)	26.3			27.1	26.1	
Approach LOS	C			C	C	

Intersection Summary			
HCM 2000 Control Delay	26.5	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.88		
Actuated Cycle Length (s)	75.9	Sum of lost time (s)	12.0
Intersection Capacity Utilization	85.2%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	EBT	EBR	WBL	WBT	NBL
Lane Configurations					
Traffic Volume (vph)	2386	211	68	1483	117
Future Volume (vph)	2386	211	68	1483	117
Lane Group Flow (vph)	2386	211	68	1483	184
Turn Type	NA	Perm	Perm	NA	Prot
Protected Phases	2			2	4
Permitted Phases		2	2		
Detector Phase	2	2	2	2	4
Switch Phase					
Minimum Initial (s)	12.0	12.0	12.0	12.0	8.0
Minimum Split (s)	26.7	26.7	26.7	26.7	45.6
Total Split (s)	74.0	74.0	74.0	74.0	46.0
Total Split (%)	61.7%	61.7%	61.7%	61.7%	38.3%
Yellow Time (s)	4.6	4.6	4.6	4.6	4.0
All-Red Time (s)	2.1	2.1	2.1	2.1	3.6
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.7	6.7	6.7	6.7	7.6
Lead/Lag					
Lead-Lag Optimize?					
Recall Mode	Max	Max	Max	Max	None
v/c Ratio	0.68	0.19	0.94	0.42	0.61
Control Delay	11.1	2.4	119.4	7.9	46.5
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	11.1	2.4	119.4	7.9	46.5
Queue Length 50th (m)	88.2	3.0	10.5	41.3	32.3
Queue Length 95th (m)	126.1	11.8	#28.5	60.7	53.5
Internal Link Dist (m)	203.7			76.6	88.2
Turn Bay Length (m)		65.0	35.0		
Base Capacity (vph)	3531	1124	72	3531	656
Starvation Cap Reductn	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.68	0.19	0.94	0.42	0.28

Intersection Summary

Cycle Length: 120
Actuated Cycle Length: 101.9
Natural Cycle: 90
Control Type: Actuated-Uncoordinated
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 5: Ace Drive & Mayfield Road





Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	2386	211	68	1483	117	67
Future Volume (vph)	2386	211	68	1483	117	67
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width	3.7	3.5	3.5	3.7	3.7	3.7
Total Lost time (s)	6.7	6.7	6.7	6.7	7.6	
Lane Util. Factor	0.91	1.00	1.00	0.91	1.00	
Frt	1.00	0.85	1.00	1.00	0.95	
Flt Protected	1.00	1.00	0.95	1.00	0.97	
Satd. Flow (prot)	5142	1566	1750	5142	1736	
Flt Permitted	1.00	1.00	0.06	1.00	0.97	
Satd. Flow (perm)	5142	1566	105	5142	1736	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	2386	211	68	1483	117	67
RTOR Reduction (vph)	0	49	0	0	2	0
Lane Group Flow (vph)	2386	162	68	1483	182	0
Turn Type	NA	Perm	Perm	NA	Prot	
Protected Phases	2			2	4	
Permitted Phases		2	2			
Actuated Green, G (s)	70.0	70.0	70.0	70.0	17.6	
Effective Green, g (s)	70.0	70.0	70.0	70.0	17.6	
Actuated g/C Ratio	0.69	0.69	0.69	0.69	0.17	
Clearance Time (s)	6.7	6.7	6.7	6.7	7.6	
Vehicle Extension (s)	5.0	5.0	5.0	5.0	5.0	
Lane Grp Cap (vph)	3532	1075	72	3532	299	
v/s Ratio Prot	0.46			0.29	c0.10	
v/s Ratio Perm		0.10	c0.65			
v/c Ratio	0.68	0.15	0.94	0.42	0.61	
Uniform Delay, d1	9.3	5.6	14.2	7.0	39.0	
Progression Factor	1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	1.1	0.3	91.3	0.4	5.1	
Delay (s)	10.4	5.9	105.5	7.4	44.0	
Level of Service	B	A	F	A	D	
Approach Delay (s)	10.0			11.7	44.0	
Approach LOS	B			B	D	

Intersection Summary			
HCM 2000 Control Delay	12.1	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.87		
Actuated Cycle Length (s)	101.9	Sum of lost time (s)	14.3
Intersection Capacity Utilization	79.0%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

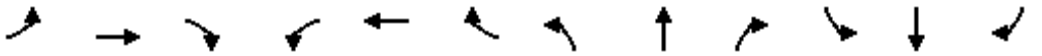
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	600	2010	364	64	846	74	121	173	54	38	182	427
Future Volume (vph)	600	2010	364	64	846	74	121	173	54	38	182	427
Lane Group Flow (vph)	600	2010	364	64	846	74	121	173	54	38	182	427
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	Perm	NA	Perm	Perm	NA	Perm
Protected Phases	5	2		1	6			8			4	
Permitted Phases	2		2	6		6	8		8	4		4
Detector Phase	5	2	2	1	6	6	8	8	8	4	4	4
Switch Phase												
Minimum Initial (s)	5.0	8.0	8.0	5.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0
Minimum Split (s)	9.0	44.9	44.9	9.0	44.9	44.9	47.9	47.9	47.9	47.9	47.9	47.9
Total Split (s)	27.0	63.1	63.1	9.0	45.1	45.1	47.9	47.9	47.9	47.9	47.9	47.9
Total Split (%)	22.5%	52.6%	52.6%	7.5%	37.6%	37.6%	39.9%	39.9%	39.9%	39.9%	39.9%	39.9%
Yellow Time (s)	3.0	4.6	4.6	3.0	4.6	4.6	4.6	4.6	4.6	4.6	4.6	4.6
All-Red Time (s)	1.0	2.3	2.3	1.0	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.3
Lost Time Adjust (s)	-1.0	0.0	0.0	-1.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	3.0	6.9	6.9	3.0	6.9	6.9	6.9	6.9	6.9	6.9	6.9	6.9
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag						
Lead-Lag Optimize?												
Recall Mode	None	Max	Max	None	None	None	None	None	None	None	None	None
v/c Ratio	1.02	0.69	0.35	0.35	0.48	0.14	0.57	0.29	0.15	0.22	0.29	0.74
Control Delay	59.6	16.4	3.5	15.8	24.0	2.5	46.2	34.4	0.9	35.7	34.3	14.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	59.6	16.4	3.5	15.8	24.0	2.5	46.2	34.4	0.9	35.7	34.3	14.0
Queue Length 50th (m)	~73.2	88.9	4.2	2.9	41.5	0.0	20.8	14.8	0.0	6.1	15.6	7.2
Queue Length 95th (m)	#175.7	140.4	20.5	10.1	63.8	4.4	38.0	23.7	0.6	14.8	24.6	37.1
Internal Link Dist (m)		179.3			299.2			185.5			471.5	
Turn Bay Length (m)	140.0		70.0	65.0		30.0	75.0		60.0	30.0		138.0
Base Capacity (vph)	591	2917	1038	181	1861	550	499	1378	674	413	1467	846
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	1.02	0.69	0.35	0.35	0.45	0.13	0.24	0.13	0.08	0.09	0.12	0.50

Intersection Summary

Cycle Length: 120
Actuated Cycle Length: 95.3
Natural Cycle: 135
Control Type: Semi Act-Uncoord
~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 6: Dixie Road & Mayfield Road





Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	600	2010	364	64	846	74	121	173	54	38	182	427
Future Volume (vph)	600	2010	364	64	846	74	121	173	54	38	182	427
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5
Total Lost time (s)	3.0	6.9	6.9	3.0	6.9	6.9	6.9	6.9	6.9	6.9	6.9	6.9
Lane Util. Factor	1.00	0.91	1.00	1.00	0.91	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1566	4902	1536	1653	4601	1201	1716	3174	1413	1405	3380	1452
Flt Permitted	0.26	1.00	1.00	0.10	1.00	1.00	0.64	1.00	1.00	0.64	1.00	1.00
Satd. Flow (perm)	424	4902	1536	181	4601	1201	1151	3174	1413	951	3380	1452
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	600	2010	364	64	846	74	121	173	54	38	182	427
RTOR Reduction (vph)	0	0	126	0	0	45	0	0	44	0	0	312
Lane Group Flow (vph)	600	2010	238	64	846	29	121	173	10	38	182	115
Heavy Vehicles (%)	14%	7%	4%	8%	14%	33%	4%	15%	13%	27%	8%	10%
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	Perm	NA	Perm	Perm	NA	Perm
Protected Phases	5	2		1	6			8			4	
Permitted Phases	2		2	6		6	8		8	4		4
Actuated Green, G (s)	64.6	56.7	56.7	41.3	37.4	37.4	17.7	17.7	17.7	17.7	17.7	17.7
Effective Green, g (s)	65.6	56.7	56.7	43.3	37.4	37.4	17.7	17.7	17.7	17.7	17.7	17.7
Actuated g/C Ratio	0.68	0.59	0.59	0.45	0.39	0.39	0.18	0.18	0.18	0.18	0.18	0.18
Clearance Time (s)	4.0	6.9	6.9	4.0	6.9	6.9	6.9	6.9	6.9	6.9	6.9	6.9
Vehicle Extension (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Lane Grp Cap (vph)	577	2892	906	156	1790	467	211	584	260	175	622	267
v/s Ratio Prot	c0.26	0.41		0.02	0.18			0.05			0.05	
v/s Ratio Perm	c0.45		0.16	0.16		0.02	c0.11		0.01	0.04		0.08
v/c Ratio	1.04	0.70	0.26	0.41	0.47	0.06	0.57	0.30	0.04	0.22	0.29	0.43
Uniform Delay, d1	17.2	13.7	9.6	15.1	22.0	18.4	35.8	33.8	32.2	33.3	33.8	34.7
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	48.2	1.4	0.7	3.6	0.4	0.1	5.9	0.6	0.1	1.3	0.5	2.3
Delay (s)	65.4	15.1	10.3	18.7	22.4	18.5	41.7	34.4	32.3	34.6	34.4	37.1
Level of Service	E	B	B	B	C	B	D	C	C	C	C	D
Approach Delay (s)		24.7			21.9			36.6			36.2	
Approach LOS		C			C			D			D	

Intersection Summary			
HCM 2000 Control Delay	26.4	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.98		
Actuated Cycle Length (s)	96.1	Sum of lost time (s)	16.8
Intersection Capacity Utilization	83.5%	ICU Level of Service	E
Analysis Period (min)	15		

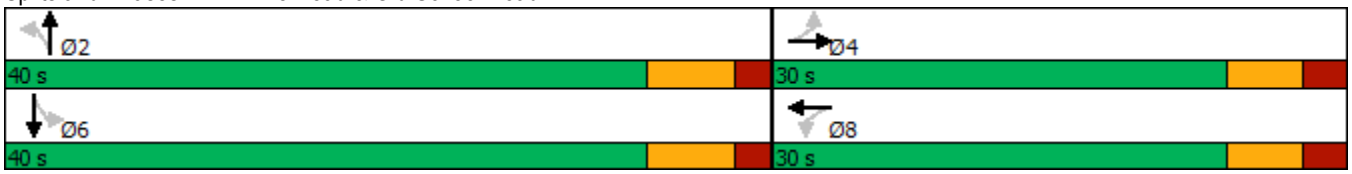
c Critical Lane Group

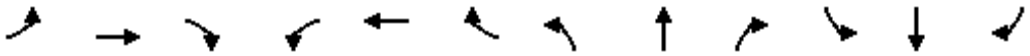
Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations								
Traffic Volume (vph)	17	279	45	108	24	267	33	752
Future Volume (vph)	17	279	45	108	24	267	33	752
Lane Group Flow (vph)	17	325	45	116	24	311	33	798
Turn Type	Perm	NA	Perm	NA	Perm	NA	Perm	NA
Protected Phases		4		8		2		6
Permitted Phases	4		8		2		6	
Detector Phase	4	4	8	8	2	2	6	6
Switch Phase								
Minimum Initial (s)	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0
Minimum Split (s)	25.4	25.4	25.4	25.4	23.6	23.6	23.6	23.6
Total Split (s)	30.0	30.0	30.0	30.0	40.0	40.0	40.0	40.0
Total Split (%)	42.9%	42.9%	42.9%	42.9%	57.1%	57.1%	57.1%	57.1%
Yellow Time (s)	4.0	4.0	4.0	4.0	4.6	4.6	4.6	4.6
All-Red Time (s)	2.4	2.4	2.4	2.4	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.4	6.4	6.4	6.4	6.6	6.6	6.6	6.6
Lead/Lag								
Lead-Lag Optimize?								
Recall Mode	None	None	None	None	Max	Max	Max	Max
v/c Ratio	0.06	0.64	0.20	0.23	0.14	0.34	0.06	0.83
Control Delay	16.9	25.6	19.7	17.8	12.2	10.6	9.4	23.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	16.9	25.6	19.7	17.8	12.2	10.6	9.4	23.8
Queue Length 50th (m)	1.5	32.1	4.1	10.0	1.3	18.4	1.8	72.3
Queue Length 95th (m)	5.3	54.4	11.1	20.6	6.2	39.6	6.5	#162.1
Internal Link Dist (m)		1372.4		151.6		1518.8		144.7
Turn Bay Length (m)	35.0		45.0		40.0		35.0	
Base Capacity (vph)	373	689	305	676	170	914	529	964
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.05	0.47	0.15	0.17	0.14	0.34	0.06	0.83

Intersection Summary

Cycle Length: 70
Actuated Cycle Length: 64
Natural Cycle: 65
Control Type: Semi Act-Uncoord
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 7: Dixie Road & Old School Road

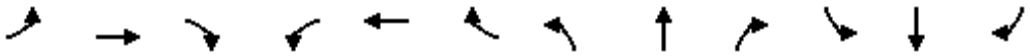




Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	17	279	46	45	108	8	24	267	44	33	752	46
Future Volume (vph)	17	279	46	45	108	8	24	267	44	33	752	46
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5
Total Lost time (s)	6.4	6.4		6.4	6.4		6.6	6.6		6.6	6.6	
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	0.98		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)	1405	1841		1785	1817		1785	1732		1684	1835	
Flt Permitted	0.68	1.00		0.44	1.00		0.17	1.00		0.57	1.00	
Satd. Flow (perm)	1010	1841		825	1817		324	1732		1013	1835	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	17	279	46	45	108	8	24	267	44	33	752	46
RTOR Reduction (vph)	0	9	0	0	4	0	0	8	0	0	3	0
Lane Group Flow (vph)	17	316	0	45	112	0	24	303	0	33	795	0
Heavy Vehicles (%)	27%	2%	3%	0%	5%	0%	0%	10%	0%	6%	4%	0%
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)	17.4	17.4		17.4	17.4		33.5	33.5		33.5	33.5	
Effective Green, g (s)	17.4	17.4		17.4	17.4		33.5	33.5		33.5	33.5	
Actuated g/C Ratio	0.27	0.27		0.27	0.27		0.52	0.52		0.52	0.52	
Clearance Time (s)	6.4	6.4		6.4	6.4		6.6	6.6		6.6	6.6	
Vehicle Extension (s)	5.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0	
Lane Grp Cap (vph)	275	501		224	494		169	908		531	962	
v/s Ratio Prot		c0.17			0.06			0.18			c0.43	
v/s Ratio Perm	0.02			0.05			0.07			0.03		
v/c Ratio	0.06	0.63		0.20	0.23		0.14	0.33		0.06	0.83	
Uniform Delay, d1	17.2	20.4		17.9	18.0		7.8	8.8		7.5	12.8	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.2	3.5		0.9	0.5		1.8	1.0		0.2	8.1	
Delay (s)	17.4	23.9		18.8	18.5		9.6	9.8		7.7	20.8	
Level of Service	B	C		B	B		A	A		A	C	
Approach Delay (s)		23.6			18.6			9.7			20.3	
Approach LOS		C			B			A			C	

Intersection Summary			
HCM 2000 Control Delay	18.7	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.76		
Actuated Cycle Length (s)	63.9	Sum of lost time (s)	13.0
Intersection Capacity Utilization	82.7%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Stop			Stop	
Traffic Volume (vph)	11	195	64	19	383	3	113	39	11	1	39	15
Future Volume (vph)	11	195	64	19	383	3	113	39	11	1	39	15
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Hourly flow rate (vph)	12	207	68	20	407	3	120	41	12	1	41	16

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total (vph)	287	430	173	58
Volume Left (vph)	12	20	120	1
Volume Right (vph)	68	3	12	16
Hadj (s)	-0.11	0.02	0.10	-0.11
Departure Headway (s)	5.1	5.1	5.9	6.0
Degree Utilization, x	0.41	0.60	0.29	0.10
Capacity (veh/h)	660	687	540	492
Control Delay (s)	11.6	15.4	11.3	9.6
Approach Delay (s)	11.6	15.4	11.3	9.6
Approach LOS	B	C	B	A

Intersection Summary				
Delay	13.2			
Level of Service	B			
Intersection Capacity Utilization	49.8%	ICU Level of Service	A	
Analysis Period (min)	15			

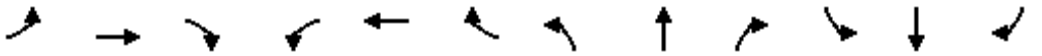
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	93	1405	125	37	2015	229	311	112	11	288	96	82
Future Volume (vph)	93	1405	125	37	2015	229	311	112	11	288	96	82
Lane Group Flow (vph)	93	1405	125	37	2015	229	311	112	11	288	96	82
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm	Perm	NA	Perm
Protected Phases	5	2		1	6		7	4			8	
Permitted Phases	2		2	6		6	4		4	8		8
Detector Phase	5	2	2	1	6	6	7	4	4	8	8	8
Switch Phase												
Minimum Initial (s)	5.0	12.0	12.0	5.0	12.0	12.0	1.0	8.0	8.0	8.0	8.0	8.0
Minimum Split (s)	9.5	39.7	39.7	9.0	39.7	39.7	5.0	43.9	43.9	43.9	43.9	43.9
Total Split (s)	10.0	68.0	68.0	9.0	67.0	67.0	10.0	58.0	58.0	48.0	48.0	48.0
Total Split (%)	7.4%	50.4%	50.4%	6.7%	49.6%	49.6%	7.4%	43.0%	43.0%	35.6%	35.6%	35.6%
Yellow Time (s)	3.5	4.6	4.6	3.0	4.6	4.6	3.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	1.0	2.1	2.1	1.0	2.1	2.1	1.0	2.9	2.9	2.9	2.9	2.9
Lost Time Adjust (s)	0.0	0.0	0.0	-1.0	0.0	0.0	-1.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.5	6.7	6.7	3.0	6.7	6.7	3.0	6.9	6.9	6.9	6.9	6.9
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead			Lag	Lag	Lag
Lead-Lag Optimize?	Yes				Yes	Yes						
Recall Mode	None	Max	Max	None	Max	Max	None	None	None	None	None	None
v/c Ratio	0.81	0.68	0.18	0.22	0.96	0.30	0.69	0.18	0.02	0.92	0.20	0.18
Control Delay	67.8	29.8	4.1	17.4	48.4	3.7	40.7	29.1	0.1	79.6	36.3	5.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	67.8	29.8	4.1	17.4	48.4	3.7	40.7	29.1	0.1	79.6	36.3	5.7
Queue Length 50th (m)	11.8	108.9	0.0	4.4	191.1	0.0	60.4	19.7	0.0	72.9	18.9	0.0
Queue Length 95th (m)	#43.0	126.5	11.0	9.8	#229.5	14.5	87.7	33.4	0.0	#124.0	33.1	9.2
Internal Link Dist (m)		179.2			166.2			202.0			680.1	
Turn Bay Length (m)	115.0		180.0	80.0		150.0	110.0		44.0	20.0		20.0
Base Capacity (vph)	115	2070	713	166	2089	767	454	668	547	336	516	490
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.81	0.68	0.18	0.22	0.96	0.30	0.69	0.17	0.02	0.86	0.19	0.17

Intersection Summary

Cycle Length: 135
Actuated Cycle Length: 132.4
Natural Cycle: 110
Control Type: Semi Act-Uncoord
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 2: Heart Lake Road & Mayfield Road





Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	93	1405	125	37	2015	229	311	112	11	288	96	82
Future Volume (vph)	93	1405	125	37	2015	229	311	112	11	288	96	82
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5
Total Lost time (s)	4.5	6.7	6.7	3.0	6.7	6.7	3.0	6.9	6.9	6.9	6.9	6.9
Lane Util. Factor	1.00	0.91	1.00	1.00	0.91	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1560	4330	1356	1530	4583	1409	1591	1729	1319	1501	1662	1369
Flt Permitted	0.06	1.00	1.00	0.12	1.00	1.00	0.65	1.00	1.00	0.68	1.00	1.00
Satd. Flow (perm)	104	4330	1356	200	4583	1409	1081	1729	1319	1082	1662	1369
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	93	1405	125	37	2015	229	311	112	11	288	96	82
RTOR Reduction (vph)	0	0	66	0	0	124	0	0	7	0	0	58
Lane Group Flow (vph)	93	1405	59	37	2015	105	311	112	4	288	96	24
Heavy Vehicles (%)	3%	9%	6%	5%	3%	2%	1%	0%	9%	7%	4%	5%
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm	Perm	NA	Perm
Protected Phases	5	2		1	6		7	4			8	
Permitted Phases	2		2	6		6	4		4	8		8
Actuated Green, G (s)	68.8	63.3	63.3	65.1	61.2	61.2	48.4	48.4	48.4	38.4	38.4	38.4
Effective Green, g (s)	68.8	63.3	63.3	67.1	61.2	61.2	49.4	48.4	48.4	38.4	38.4	38.4
Actuated g/C Ratio	0.52	0.48	0.48	0.50	0.46	0.46	0.37	0.36	0.36	0.29	0.29	0.29
Clearance Time (s)	4.5	6.7	6.7	4.0	6.7	6.7	4.0	6.9	6.9	6.9	6.9	6.9
Vehicle Extension (s)	3.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Lane Grp Cap (vph)	113	2057	644	149	2105	647	427	628	479	311	479	394
v/s Ratio Prot	c0.03	0.32		0.01	c0.44		c0.04	0.06			0.06	
v/s Ratio Perm	0.39		0.04	0.12		0.07	0.23		0.00	c0.27		0.02
v/c Ratio	0.82	0.68	0.09	0.25	0.96	0.16	0.73	0.18	0.01	0.93	0.20	0.06
Uniform Delay, d1	26.9	27.2	19.2	18.4	34.7	21.0	35.9	28.9	27.1	46.0	35.8	34.3
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	36.2	1.9	0.3	1.8	11.8	0.5	7.5	0.3	0.0	33.3	0.4	0.1
Delay (s)	63.2	29.0	19.5	20.2	46.6	21.6	43.3	29.1	27.1	79.3	36.2	34.5
Level of Service	E	C	B	C	D	C	D	C	C	E	D	C
Approach Delay (s)		30.2			43.6			39.3			62.6	
Approach LOS		C			D			D			E	

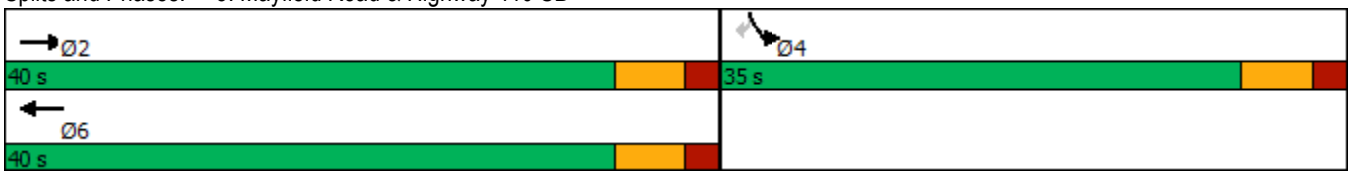
Intersection Summary			
HCM 2000 Control Delay	40.6	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.93		
Actuated Cycle Length (s)	133.2	Sum of lost time (s)	21.1
Intersection Capacity Utilization	89.9%	ICU Level of Service	E
Analysis Period (min)	15		

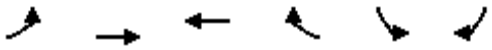
c Critical Lane Group

Lane Group	EBT	WBT	SBL	SBR
Lane Configurations				
Traffic Volume (vph)	1101	2559	114	27
Future Volume (vph)	1101	2559	114	27
Lane Group Flow (vph)	1101	2559	117	24
Turn Type	NA	NA	Prot	Perm
Protected Phases	2	6	4	
Permitted Phases				4
Detector Phase	2	6	4	4
Switch Phase				
Minimum Initial (s)	16.0	16.0	8.0	8.0
Minimum Split (s)	22.0	22.0	32.0	32.0
Total Split (s)	40.0	40.0	35.0	35.0
Total Split (%)	53.3%	53.3%	46.7%	46.7%
Yellow Time (s)	4.0	4.0	4.0	4.0
All-Red Time (s)	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.0	6.0	6.0	6.0
Lead/Lag				
Lead-Lag Optimize?				
Recall Mode	Max	Max	None	None
v/c Ratio	0.31	0.69	0.21	0.10
Control Delay	4.9	8.3	21.7	20.7
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	4.9	8.3	21.7	20.7
Queue Length 50th (m)	16.5	58.8	5.4	2.3
Queue Length 95th (m)	24.6	83.7	10.8	7.8
Internal Link Dist (m)	123.5	116.2	492.2	
Turn Bay Length (m)				
Base Capacity (vph)	3555	3697	1698	743
Starvation Cap Reductn	0	0	0	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.31	0.69	0.07	0.03

Intersection Summary
Cycle Length: 75
Actuated Cycle Length: 58.3
Natural Cycle: 75
Control Type: Semi Act-Uncoord

Splits and Phases: 3: Mayfield Road & Highway 410 SB





Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑↑↑	↑↑↑		↰↰	↱
Traffic Volume (vph)	0	1101	2559	0	114	27
Future Volume (vph)	0	1101	2559	0	114	27
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)		6.0	6.0		6.0	6.0
Lane Util. Factor		0.91	0.91		0.97	0.91
Frt		1.00	1.00		1.00	0.85
Flt Protected		1.00	1.00		0.95	1.00
Satd. Flow (prot)		5043	5245		3394	1486
Flt Permitted		1.00	1.00		0.95	1.00
Satd. Flow (perm)		5043	5245		3394	1486
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	0	1101	2559	0	114	27
RTOR Reduction (vph)	0	0	0	0	0	0
Lane Group Flow (vph)	0	1101	2559	0	117	24
Heavy Vehicles (%)	0%	4%	0%	2%	4%	0%
Bus Blockages (#/hr)	0	0	0	0	2	0
Turn Type		NA	NA		Prot	Perm
Protected Phases		2	6		4	
Permitted Phases						4
Actuated Green, G (s)		39.9	39.9		7.7	7.7
Effective Green, g (s)		39.9	39.9		7.7	7.7
Actuated g/C Ratio		0.67	0.67		0.13	0.13
Clearance Time (s)		6.0	6.0		6.0	6.0
Vehicle Extension (s)		5.0	5.0		5.0	5.0
Lane Grp Cap (vph)		3376	3511		438	191
v/s Ratio Prot		0.22	c0.49		c0.03	
v/s Ratio Perm						0.02
v/c Ratio		0.33	0.73		0.27	0.13
Uniform Delay, d1		4.2	6.4		23.4	23.0
Progression Factor		1.00	1.00		1.00	1.00
Incremental Delay, d2		0.3	1.4		0.7	0.6
Delay (s)		4.4	7.7		24.1	23.6
Level of Service		A	A		C	C
Approach Delay (s)		4.4	7.7		24.0	
Approach LOS		A	A		C	

Intersection Summary			
HCM 2000 Control Delay	7.4	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.65		
Actuated Cycle Length (s)	59.6	Sum of lost time (s)	12.0
Intersection Capacity Utilization	66.1%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

Lane Group	EBT	WBT	NBL	NBR
Lane Configurations				
Traffic Volume (vph)	1146	2240	995	1061
Future Volume (vph)	1146	2240	995	1061
Lane Group Flow (vph)	1146	2240	1409	647
Turn Type	NA	NA	Prot	Perm
Protected Phases	2	6	8	
Permitted Phases	2	6		8
Detector Phase	2	6	8	8
Switch Phase				
Minimum Initial (s)	26.0	26.0	10.0	10.0
Minimum Split (s)	32.0	32.0	22.0	22.0
Total Split (s)	43.0	43.0	57.0	57.0
Total Split (%)	43.0%	43.0%	57.0%	57.0%
Yellow Time (s)	4.0	4.0	4.0	4.0
All-Red Time (s)	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.0	6.0	6.0	6.0
Lead/Lag				
Lead-Lag Optimize?				
Recall Mode	Max	None	None	None
v/c Ratio	0.61	1.19	0.84	0.93
Control Delay	26.7	122.8	26.6	45.1
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	26.7	122.8	26.6	45.1
Queue Length 50th (m)	65.7	~196.7	112.6	118.4
Queue Length 95th (m)	80.4	#225.8	142.4	#201.0
Internal Link Dist (m)	104.0	63.2	627.1	
Turn Bay Length (m)				
Base Capacity (vph)	1875	1875	1752	726
Starvation Cap Reductn	0	0	0	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.61	1.19	0.80	0.89

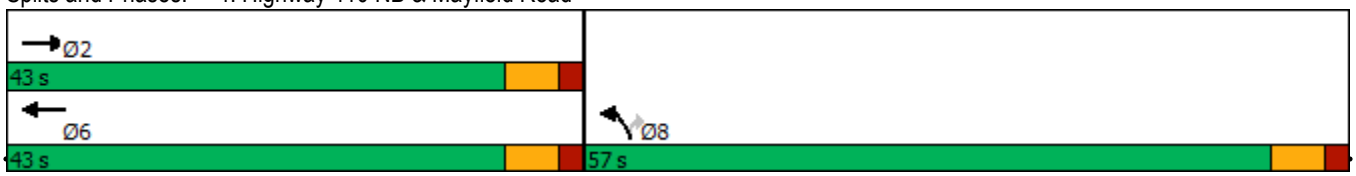
Intersection Summary

Cycle Length: 100
Actuated Cycle Length: 97.8
Natural Cycle: 100
Control Type: Semi Act-Uncoord

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

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

Splits and Phases: 4: Highway 410 NB & Mayfield Road





Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	1146	0	0	2240	995	1061
Future Volume (vph)	1146	0	0	2240	995	1061
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0			6.0	6.0	6.0
Lane Util. Factor	0.91			0.91	0.97	0.91
Frt	1.00			1.00	0.96	0.85
Flt Protected	1.00			1.00	0.97	1.00
Satd. Flow (prot)	4948			4948	3339	1376
Flt Permitted	1.00			1.00	0.97	1.00
Satd. Flow (perm)	4948			4948	3339	1376
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	1146	0	0	2240	995	1061
RTOR Reduction (vph)	0	0	0	0	8	8
Lane Group Flow (vph)	1146	0	0	2240	1401	639
Heavy Vehicles (%)	6%	0%	0%	6%	1%	8%
Turn Type	NA			NA	Prot	Perm
Protected Phases	2			6	8	
Permitted Phases	2			6		8
Actuated Green, G (s)	37.1			37.1	48.7	48.7
Effective Green, g (s)	37.1			37.1	48.7	48.7
Actuated g/C Ratio	0.38			0.38	0.50	0.50
Clearance Time (s)	6.0			6.0	6.0	6.0
Vehicle Extension (s)	5.0			5.0	3.0	3.0
Lane Grp Cap (vph)	1877			1877	1662	685
v/s Ratio Prot	0.23			c0.45	0.42	
v/s Ratio Perm						c0.46
v/c Ratio	0.61			1.19	0.84	0.93
Uniform Delay, d1	24.5			30.3	21.2	23.0
Progression Factor	1.00			1.00	1.00	1.00
Incremental Delay, d2	1.5			92.6	4.1	19.6
Delay (s)	26.0			122.9	25.3	42.7
Level of Service	C			F	C	D
Approach Delay (s)	26.0			122.9	30.8	
Approach LOS	C			F	C	

Intersection Summary			
HCM 2000 Control Delay	67.7	HCM 2000 Level of Service	E
HCM 2000 Volume to Capacity ratio	1.05		
Actuated Cycle Length (s)	97.8	Sum of lost time (s)	12.0
Intersection Capacity Utilization	92.8%	ICU Level of Service	F
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	EBT	EBR	WBL	WBT	NBL
Lane Configurations					
Traffic Volume (vph)	1970	154	71	2246	121
Future Volume (vph)	1970	154	71	2246	121
Lane Group Flow (vph)	1970	154	71	2246	176
Turn Type	NA	Perm	Perm	NA	Prot
Protected Phases	2			2	4
Permitted Phases		2	2		
Detector Phase	2	2	2	2	4
Switch Phase					
Minimum Initial (s)	12.0	12.0	12.0	12.0	8.0
Minimum Split (s)	26.7	26.7	26.7	26.7	45.6
Total Split (s)	74.0	74.0	74.0	74.0	46.0
Total Split (%)	61.7%	61.7%	61.7%	61.7%	38.3%
Yellow Time (s)	4.6	4.6	4.6	4.6	4.0
All-Red Time (s)	2.1	2.1	2.1	2.1	3.6
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.7	6.7	6.7	6.7	7.6
Lead/Lag					
Lead-Lag Optimize?					
Recall Mode	Max	Max	Max	Max	Max
v/c Ratio	0.68	0.16	1.16	0.78	0.31
Control Delay	20.3	3.0	197.3	23.0	31.1
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	20.3	3.0	197.3	23.0	31.1
Queue Length 50th (m)	115.3	1.5	~19.8	144.0	29.5
Queue Length 95th (m)	131.7	10.5	#35.7	163.4	48.2
Internal Link Dist (m)	203.7			76.6	88.2
Turn Bay Length (m)		65.0	35.0		
Base Capacity (vph)	2883	939	61	2883	564
Starvation Cap Reductn	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.68	0.16	1.16	0.78	0.31

Intersection Summary

Cycle Length: 120
Actuated Cycle Length: 120
Natural Cycle: 90
Control Type: Semi Act-Uncoord
~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 5: Ace Drive & Mayfield Road





Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	1970	154	71	2246	121	55
Future Volume (vph)	1970	154	71	2246	121	55
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width	3.7	3.5	3.5	3.7	3.7	3.7
Total Lost time (s)	6.7	6.7	6.7	6.7	7.6	
Lane Util. Factor	0.91	1.00	1.00	0.91	1.00	
Frt	1.00	0.85	1.00	1.00	0.96	
Flt Protected	1.00	1.00	0.95	1.00	0.97	
Satd. Flow (prot)	5142	1566	1750	5142	1744	
Flt Permitted	1.00	1.00	0.06	1.00	0.97	
Satd. Flow (perm)	5142	1566	109	5142	1744	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	1970	154	71	2246	121	55
RTOR Reduction (vph)	0	61	0	0	6	0
Lane Group Flow (vph)	1970	93	71	2246	170	0
Turn Type	NA	Perm	Perm	NA	Prot	
Protected Phases	2			2	4	
Permitted Phases		2	2			
Actuated Green, G (s)	67.3	67.3	67.3	67.3	38.4	
Effective Green, g (s)	67.3	67.3	67.3	67.3	38.4	
Actuated g/C Ratio	0.56	0.56	0.56	0.56	0.32	
Clearance Time (s)	6.7	6.7	6.7	6.7	7.6	
Vehicle Extension (s)	5.0	5.0	5.0	5.0	5.0	
Lane Grp Cap (vph)	2883	878	61	2883	558	
v/s Ratio Prot	0.38			0.44	c0.10	
v/s Ratio Perm		0.06	c0.65			
v/c Ratio	0.68	0.11	1.16	0.78	0.30	
Uniform Delay, d1	18.8	12.3	26.4	20.6	30.7	
Progression Factor	1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	1.3	0.2	166.6	2.2	1.4	
Delay (s)	20.1	12.5	192.9	22.7	32.1	
Level of Service	C	B	F	C	C	
Approach Delay (s)	19.5			27.9	32.1	
Approach LOS	B			C	C	

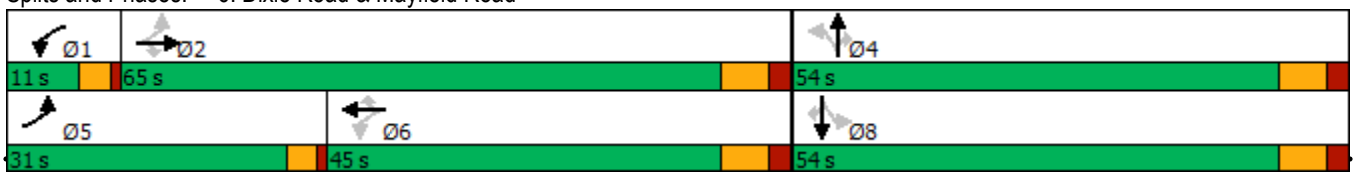
Intersection Summary			
HCM 2000 Control Delay	24.2	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.85		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	14.3
Intersection Capacity Utilization	75.6%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

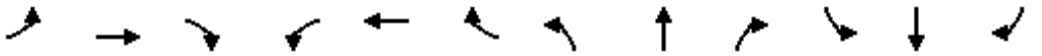
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	478	1375	186	68	1602	37	289	260	38	93	481	669
Future Volume (vph)	478	1375	186	68	1602	37	289	260	38	93	481	669
Lane Group Flow (vph)	478	1375	186	68	1602	37	289	260	38	93	481	669
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	Perm	NA	Perm	Perm	NA	Perm
Protected Phases	5	2		1	6			4			8	
Permitted Phases	2		2	6		6	4		4	8		8
Detector Phase	5	2	2	1	6	6	4	4	4	8	8	8
Switch Phase												
Minimum Initial (s)	5.0	8.0	8.0	5.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0
Minimum Split (s)	9.0	44.9	44.9	9.0	44.9	44.9	47.9	47.9	47.9	47.9	47.9	47.9
Total Split (s)	31.0	65.0	65.0	11.0	45.0	45.0	54.0	54.0	54.0	54.0	54.0	54.0
Total Split (%)	23.8%	50.0%	50.0%	8.5%	34.6%	34.6%	41.5%	41.5%	41.5%	41.5%	41.5%	41.5%
Yellow Time (s)	3.0	4.6	4.6	3.0	4.6	4.6	4.6	4.6	4.6	4.6	4.6	4.6
All-Red Time (s)	1.0	2.3	2.3	1.0	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.3
Lost Time Adjust (s)	-1.0	0.0	0.0	-1.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	3.0	6.9	6.9	3.0	6.9	6.9	6.9	6.9	6.9	6.9	6.9	6.9
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag						
Lead-Lag Optimize?												
Recall Mode	None	Max	Max	None	None	None	None	None	None	None	None	None
v/c Ratio	1.13	0.62	0.23	0.41	1.12	0.07	1.06	0.20	0.06	0.25	0.38	0.81
Control Delay	120.3	28.3	3.6	23.9	104.6	0.3	112.4	29.0	0.2	31.4	31.8	22.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	120.3	28.3	3.6	23.9	104.6	0.3	112.4	29.0	0.2	31.4	31.8	22.8
Queue Length 50th (m)	~126.4	98.4	0.0	7.7	~172.2	0.0	~81.3	23.8	0.0	16.6	47.7	64.6
Queue Length 95th (m)	#192.3	114.3	13.0	14.9	#201.7	0.0	#136.1	34.1	0.0	30.3	62.5	122.0
Internal Link Dist (m)		179.3			299.2			185.5			471.5	
Turn Bay Length (m)	140.0		70.0	65.0		30.0	75.0		60.0	30.0		138.0
Base Capacity (vph)	423	2211	825	166	1436	496	272	1322	625	372	1259	824
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	1.13	0.62	0.23	0.41	1.12	0.07	1.06	0.20	0.06	0.25	0.38	0.81

Intersection Summary

Cycle Length: 130
Actuated Cycle Length: 130
Natural Cycle: 125
Control Type: Semi Act-Uncoord
~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 6: Dixie Road & Mayfield Road





Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	478	1375	186	68	1602	37	289	260	38	93	481	669
Future Volume (vph)	478	1375	186	68	1602	37	289	260	38	93	481	669
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5
Total Lost time (s)	3.0	6.9	6.9	3.0	6.9	6.9	6.9	6.9	6.9	6.9	6.9	6.9
Lane Util. Factor	1.00	0.91	1.00	1.00	0.91	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1700	4768	1566	1342	4902	1452	1750	3650	1551	1653	3476	1551
Flt Permitted	0.09	1.00	1.00	0.19	1.00	1.00	0.41	1.00	1.00	0.59	1.00	1.00
Satd. Flow (perm)	167	4768	1566	262	4902	1452	752	3650	1551	1028	3476	1551
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	478	1375	186	68	1602	37	289	260	38	93	481	669
RTOR Reduction (vph)	0	0	100	0	0	26	0	0	24	0	0	263
Lane Group Flow (vph)	478	1375	86	68	1602	11	289	260	14	93	481	406
Heavy Vehicles (%)	5%	10%	2%	33%	7%	10%	2%	0%	3%	8%	5%	3%
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	Perm	NA	Perm	Perm	NA	Perm
Protected Phases	5	2		1	6			4			8	
Permitted Phases	2		2	6		6	4		4	8		8
Actuated Green, G (s)	69.9	60.3	60.3	44.5	38.9	38.9	47.1	47.1	47.1	47.1	47.1	47.1
Effective Green, g (s)	70.9	60.3	60.3	46.5	38.9	38.9	47.1	47.1	47.1	47.1	47.1	47.1
Actuated g/C Ratio	0.54	0.46	0.46	0.36	0.30	0.30	0.36	0.36	0.36	0.36	0.36	0.36
Clearance Time (s)	4.0	6.9	6.9	4.0	6.9	6.9	6.9	6.9	6.9	6.9	6.9	6.9
Vehicle Extension (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Lane Grp Cap (vph)	418	2198	721	147	1457	431	270	1314	558	370	1251	558
v/s Ratio Prot	c0.24	0.29		0.02	0.33			0.07			0.14	
v/s Ratio Perm	c0.37		0.05	0.14		0.01	c0.38		0.01	0.09		0.26
v/c Ratio	1.14	0.63	0.12	0.46	1.10	0.03	1.07	0.20	0.02	0.25	0.38	0.73
Uniform Delay, d1	41.4	26.7	20.1	28.6	46.0	32.5	41.9	28.8	27.0	29.4	31.1	36.3
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	89.4	1.4	0.3	4.8	55.7	0.1	74.7	0.2	0.0	0.7	0.4	5.8
Delay (s)	130.8	28.1	20.4	33.4	101.7	32.6	116.5	29.0	27.1	30.2	31.5	42.0
Level of Service	F	C	C	C	F	C	F	C	C	C	C	D
Approach Delay (s)		51.5			97.5			72.0			37.1	
Approach LOS		D			F			E			D	

Intersection Summary			
HCM 2000 Control Delay	64.5	HCM 2000 Level of Service	E
HCM 2000 Volume to Capacity ratio	1.15		
Actuated Cycle Length (s)	130.8	Sum of lost time (s)	16.8
Intersection Capacity Utilization	107.3%	ICU Level of Service	G
Analysis Period (min)	15		

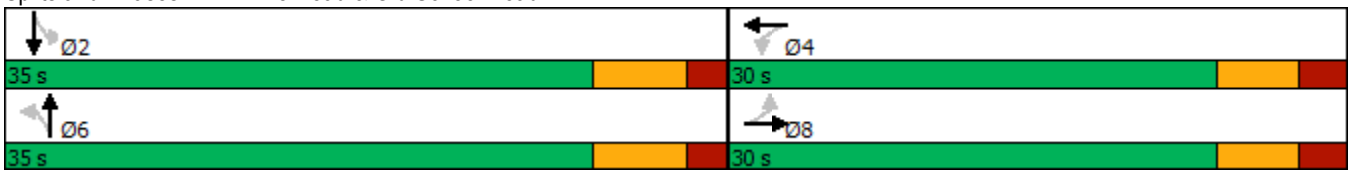
c Critical Lane Group

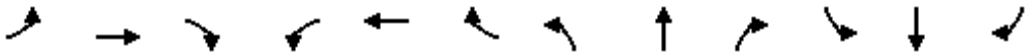
Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations								
Traffic Volume (vph)	51	121	83	307	68	643	6	300
Future Volume (vph)	51	121	83	307	68	643	6	300
Lane Group Flow (vph)	51	141	83	325	68	685	6	321
Turn Type	Perm	NA	Perm	NA	Perm	NA	Perm	NA
Protected Phases		8		4		6		2
Permitted Phases	8		4		6		2	
Detector Phase	8	8	4	4	6	6	2	2
Switch Phase								
Minimum Initial (s)	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0
Minimum Split (s)	25.4	25.4	25.4	25.4	23.6	23.6	23.6	23.6
Total Split (s)	30.0	30.0	30.0	30.0	35.0	35.0	35.0	35.0
Total Split (%)	46.2%	46.2%	46.2%	46.2%	53.8%	53.8%	53.8%	53.8%
Yellow Time (s)	4.0	4.0	4.0	4.0	4.6	4.6	4.6	4.6
All-Red Time (s)	2.4	2.4	2.4	2.4	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.4	6.4	6.4	6.4	6.6	6.6	6.6	6.6
Lead/Lag								
Lead-Lag Optimize?								
Recall Mode	None	None	None	None	Max	Max	Max	Max
v/c Ratio	0.23	0.26	0.23	0.60	0.13	0.76	0.03	0.37
Control Delay	18.0	15.1	17.0	22.2	10.6	21.0	10.3	11.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	18.0	15.1	17.0	22.2	10.6	21.0	10.3	11.8
Queue Length 50th (m)	4.1	10.2	6.7	28.9	3.6	53.6	0.3	19.0
Queue Length 95th (m)	11.0	21.0	15.3	49.2	11.5	#129.6	2.2	42.7
Internal Link Dist (m)		1372.4		151.6		1518.8		144.7
Turn Bay Length (m)	35.0		45.0		40.0		35.0	
Base Capacity (vph)	315	752	503	764	518	900	218	859
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.16	0.19	0.17	0.43	0.13	0.76	0.03	0.37

Intersection Summary

Cycle Length: 65
Actuated Cycle Length: 58.5
Natural Cycle: 60
Control Type: Semi Act-Uncoord
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 7: Dixie Road & Old School Road





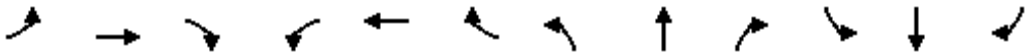
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	51	121	20	83	307	18	68	643	42	6	300	21
Future Volume (vph)	51	121	20	83	307	18	68	643	42	6	300	21
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5
Total Lost time (s)	6.4	6.4		6.4	6.4		6.6	6.6		6.6	6.6	
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	0.99		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)	1566	1833		1767	1876		1785	1838		1785	1755	
Flt Permitted	0.47	1.00		0.67	1.00		0.57	1.00		0.24	1.00	
Satd. Flow (perm)	777	1833		1241	1876		1064	1838		447	1755	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	51	121	20	83	307	18	68	643	42	6	300	21
RTOR Reduction (vph)	0	10	0	0	4	0	0	3	0	0	4	0
Lane Group Flow (vph)	51	131	0	83	321	0	68	682	0	6	317	0
Heavy Vehicles (%)	14%	3%	0%	1%	1%	11%	0%	2%	27%	0%	9%	0%
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)	16.9	16.9		16.9	16.9		28.6	28.6		28.6	28.6	
Effective Green, g (s)	16.9	16.9		16.9	16.9		28.6	28.6		28.6	28.6	
Actuated g/C Ratio	0.29	0.29		0.29	0.29		0.49	0.49		0.49	0.49	
Clearance Time (s)	6.4	6.4		6.4	6.4		6.6	6.6		6.6	6.6	
Vehicle Extension (s)	5.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0	
Lane Grp Cap (vph)	224	529		358	541		520	898		218	858	
v/s Ratio Prot		0.07			c0.17			c0.37			0.18	
v/s Ratio Perm	0.07			0.07			0.06			0.01		
v/c Ratio	0.23	0.25		0.23	0.59		0.13	0.76		0.03	0.37	
Uniform Delay, d1	15.8	15.9		15.9	17.9		8.2	12.2		7.7	9.3	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	1.1	0.5		0.7	2.6		0.5	6.0		0.2	1.2	
Delay (s)	16.9	16.4		16.5	20.5		8.7	18.1		8.0	10.6	
Level of Service	B	B		B	C		A	B		A	B	
Approach Delay (s)		16.6			19.7			17.3			10.5	
Approach LOS		B			B			B			B	

Intersection Summary			
HCM 2000 Control Delay	16.5	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.70		
Actuated Cycle Length (s)	58.5	Sum of lost time (s)	13.0
Intersection Capacity Utilization	88.6%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

Appendix L

2034 Future Background Conditions with Improvements – Synchro Analysis Results



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Stop			Stop	
Traffic Volume (vph)	12	317	92	5	105	4	36	31	6	4	42	13
Future Volume (vph)	12	317	92	5	105	4	36	31	6	4	42	13
Peak Hour Factor	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85
Hourly flow rate (vph)	14	373	108	6	124	5	42	36	7	5	49	15

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total (vph)	495	135	85	69
Volume Left (vph)	14	6	42	5
Volume Right (vph)	108	5	7	15
Hadj (s)	-0.08	0.14	0.21	-0.05
Departure Headway (s)	4.4	5.1	5.7	5.5
Degree Utilization, x	0.61	0.19	0.13	0.11
Capacity (veh/h)	783	668	554	576
Control Delay (s)	14.2	9.2	9.6	9.1
Approach Delay (s)	14.2	9.2	9.6	9.1
Approach LOS	B	A	A	A

Intersection Summary				
Delay	12.4			
Level of Service	B			
Intersection Capacity Utilization	44.0%	ICU Level of Service	A	
Analysis Period (min)	15			

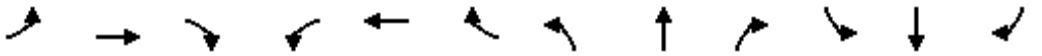
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	72	1933	511	116	1263	250	108	67	18	216	164	104
Future Volume (vph)	72	1933	511	116	1263	250	108	67	18	216	164	104
Lane Group Flow (vph)	72	1933	511	116	1263	250	108	67	18	216	164	104
Turn Type	Perm	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm	Perm	NA	Perm
Protected Phases		2		1	6		7	4			8	
Permitted Phases	2		2	6		6	4		4	8		8
Detector Phase	2	2	2	1	6	6	7	4	4	8	8	8
Switch Phase												
Minimum Initial (s)	12.0	12.0	12.0	5.0	12.0	12.0	5.0	8.0	8.0	8.0	8.0	8.0
Minimum Split (s)	39.7	39.7	39.7	9.0	39.7	39.7	9.0	43.9	43.9	43.9	43.9	43.9
Total Split (s)	77.0	77.0	77.0	9.0	86.0	86.0	9.0	54.0	54.0	45.0	45.0	45.0
Total Split (%)	55.0%	55.0%	55.0%	6.4%	61.4%	61.4%	6.4%	38.6%	38.6%	32.1%	32.1%	32.1%
Yellow Time (s)	4.6	4.6	4.6	3.0	4.6	4.6	3.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	2.1	2.1	2.1	1.0	2.1	2.1	1.0	2.9	2.9	2.9	2.9	2.9
Lost Time Adjust (s)	0.0	0.0	0.0	-1.0	0.0	0.0	-1.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.7	6.7	6.7	3.0	6.7	6.7	3.0	6.9	6.9	6.9	6.9	6.9
Lead/Lag	Lag	Lag	Lag	Lead			Lead			Lag	Lag	Lag
Lead-Lag Optimize?												
Recall Mode	Max	Max	Max	None	Max	Max	None	None	None	None	None	None
v/c Ratio	0.42	0.81	0.54	0.94	0.50	0.32	0.35	0.13	0.04	0.80	0.43	0.26
Control Delay	30.1	29.8	6.6	94.2	16.5	2.8	35.6	34.0	0.2	69.4	46.7	11.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	30.1	29.8	6.6	94.2	16.5	2.8	35.6	34.0	0.2	69.4	46.7	11.7
Queue Length 50th (m)	11.1	150.1	13.1	16.4	66.7	0.0	20.4	12.8	0.0	53.3	36.7	2.7
Queue Length 95th (m)	28.8	190.5	44.1	#59.1	89.0	11.9	34.9	24.1	0.0	82.7	57.6	16.9
Internal Link Dist (m)		179.2			166.2			202.0			680.1	
Turn Bay Length (m)	115.0		180.0	80.0		150.0	110.0		44.0	20.0		20.0
Base Capacity (vph)	173	2380	943	123	2540	770	306	618	553	349	495	480
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.42	0.81	0.54	0.94	0.50	0.32	0.35	0.11	0.03	0.62	0.33	0.22

Intersection Summary

Cycle Length: 140
Actuated Cycle Length: 131.9
Natural Cycle: 115
Control Type: Semi Act-Uncoord
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 2: Heart Lake Road & Mayfield Road





Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	72	1933	511	116	1263	250	108	67	18	216	164	104
Future Volume (vph)	72	1933	511	116	1263	250	108	67	18	216	164	104
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5
Total Lost time (s)	6.7	6.7	6.7	3.0	6.7	6.7	3.0	6.9	6.9	6.9	6.9	6.9
Lane Util. Factor	1.00	0.91	1.00	1.00	0.91	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1530	4453	1409	1560	4214	1114	1530	1729	1437	1606	1712	1437
Flt Permitted	0.20	1.00	1.00	0.05	1.00	1.00	0.53	1.00	1.00	0.71	1.00	1.00
Satd. Flow (perm)	324	4453	1409	88	4214	1114	854	1729	1437	1206	1712	1437
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	72	1933	511	116	1263	250	108	67	18	216	164	104
RTOR Reduction (vph)	0	0	191	0	0	99	0	0	13	0	0	70
Lane Group Flow (vph)	72	1933	320	116	1263	151	108	67	5	216	164	34
Heavy Vehicles (%)	5%	6%	2%	3%	12%	29%	5%	0%	0%	0%	1%	0%
Turn Type	Perm	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm	Perm	NA	Perm
Protected Phases		2		1	6		7	4			8	
Permitted Phases	2		2	6		6	4		4	8		8
Actuated Green, G (s)	70.5	70.5	70.5	79.5	79.5	79.5	38.7	38.7	38.7	29.7	29.7	29.7
Effective Green, g (s)	70.5	70.5	70.5	80.5	79.5	79.5	39.7	38.7	38.7	29.7	29.7	29.7
Actuated g/C Ratio	0.53	0.53	0.53	0.61	0.60	0.60	0.30	0.29	0.29	0.23	0.23	0.23
Clearance Time (s)	6.7	6.7	6.7	4.0	6.7	6.7	4.0	6.9	6.9	6.9	6.9	6.9
Vehicle Extension (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Lane Grp Cap (vph)	173	2381	753	120	2541	671	288	507	421	271	385	323
v/s Ratio Prot		0.43		c0.04	0.30		c0.02	0.04			0.10	
v/s Ratio Perm	0.22		0.23	c0.54		0.14	0.10		0.00	c0.18		0.02
v/c Ratio	0.42	0.81	0.43	0.97	0.50	0.22	0.38	0.13	0.01	0.80	0.43	0.10
Uniform Delay, d1	18.3	25.2	18.5	31.2	14.8	12.0	35.5	34.2	33.0	48.2	43.7	40.5
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	7.2	3.1	1.8	72.0	0.7	0.8	1.7	0.2	0.0	16.9	1.6	0.3
Delay (s)	25.6	28.3	20.2	103.2	15.5	12.8	37.2	34.5	33.0	65.1	45.3	40.8
Level of Service	C	C	C	F	B	B	D	C	C	E	D	D
Approach Delay (s)		26.6			21.3			35.9			53.2	
Approach LOS		C			C			D			D	

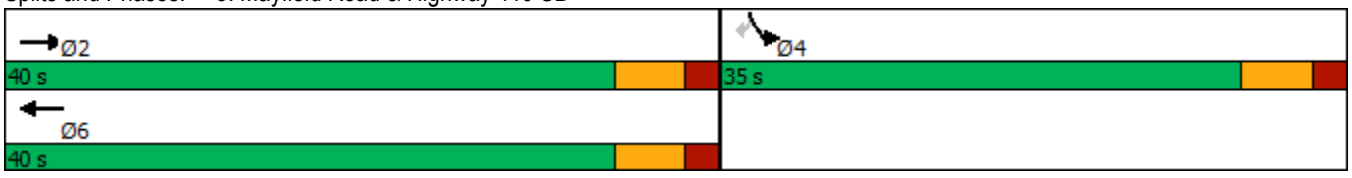
Intersection Summary			
HCM 2000 Control Delay	27.9	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.92		
Actuated Cycle Length (s)	131.8	Sum of lost time (s)	19.6
Intersection Capacity Utilization	89.0%	ICU Level of Service	E
Analysis Period (min)	15		

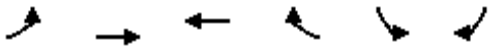
c Critical Lane Group

Lane Group	EBT	WBT	SBL	SBR
Lane Configurations				
Traffic Volume (vph)	1481	1338	375	322
Future Volume (vph)	1481	1338	375	322
Lane Group Flow (vph)	1481	1338	478	219
Turn Type	NA	NA	Prot	Perm
Protected Phases	2	6	4	
Permitted Phases				4
Detector Phase	2	6	4	4
Switch Phase				
Minimum Initial (s)	16.0	16.0	8.0	8.0
Minimum Split (s)	22.0	22.0	32.0	32.0
Total Split (s)	40.0	40.0	35.0	35.0
Total Split (%)	53.3%	53.3%	46.7%	46.7%
Yellow Time (s)	4.0	4.0	4.0	4.0
All-Red Time (s)	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.0	6.0	6.0	6.0
Lead/Lag				
Lead-Lag Optimize?				
Recall Mode	Max	Max	None	None
v/c Ratio	0.56	0.48	0.49	0.52
Control Delay	11.8	10.8	19.9	21.8
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	11.8	10.8	19.9	21.8
Queue Length 50th (m)	37.8	32.1	22.9	21.3
Queue Length 95th (m)	67.1	57.1	34.1	40.1
Internal Link Dist (m)	123.5	116.2	492.2	
Turn Bay Length (m)				
Base Capacity (vph)	2644	2803	1586	688
Starvation Cap Reductn	0	0	0	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.56	0.48	0.30	0.32

Intersection Summary
Cycle Length: 75
Actuated Cycle Length: 64
Natural Cycle: 60
Control Type: Semi Act-Uncoord

Splits and Phases: 3: Mayfield Road & Highway 410 SB





Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑↑↑	↑↑↑		↰↰	↱
Traffic Volume (vph)	0	1481	1338	0	375	322
Future Volume (vph)	0	1481	1338	0	375	322
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)		6.0	6.0		6.0	6.0
Lane Util. Factor		0.91	0.91		0.97	0.91
Frt		1.00	1.00		0.97	0.85
Flt Protected		1.00	1.00		0.96	1.00
Satd. Flow (prot)		4948	5245		3456	1486
Flt Permitted		1.00	1.00		0.96	1.00
Satd. Flow (perm)		4948	5245		3456	1486
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	0	1481	1338	0	375	322
RTOR Reduction (vph)	0	0	0	0	14	14
Lane Group Flow (vph)	0	1481	1338	0	464	205
Heavy Vehicles (%)	0%	6%	0%	16%	0%	0%
Bus Blockages (#/hr)	0	0	0	0	2	0
Turn Type		NA	NA		Prot	Perm
Protected Phases		2	6		4	
Permitted Phases						4
Actuated Green, G (s)		34.2	34.2		17.7	17.7
Effective Green, g (s)		34.2	34.2		17.7	17.7
Actuated g/C Ratio		0.54	0.54		0.28	0.28
Clearance Time (s)		6.0	6.0		6.0	6.0
Vehicle Extension (s)		5.0	5.0		5.0	5.0
Lane Grp Cap (vph)		2648	2807		957	411
v/s Ratio Prot		c0.30	0.26		0.13	
v/s Ratio Perm						c0.14
v/c Ratio		0.56	0.48		0.48	0.50
Uniform Delay, d1		9.9	9.3		19.3	19.4
Progression Factor		1.00	1.00		1.00	1.00
Incremental Delay, d2		0.9	0.6		0.8	2.0
Delay (s)		10.7	9.8		20.1	21.4
Level of Service		B	A		C	C
Approach Delay (s)		10.7	9.8		20.5	
Approach LOS		B	A		C	

Intersection Summary			
HCM 2000 Control Delay	12.3	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.54		
Actuated Cycle Length (s)	63.9	Sum of lost time (s)	12.0
Intersection Capacity Utilization	52.7%	ICU Level of Service	A
Analysis Period (min)	15		

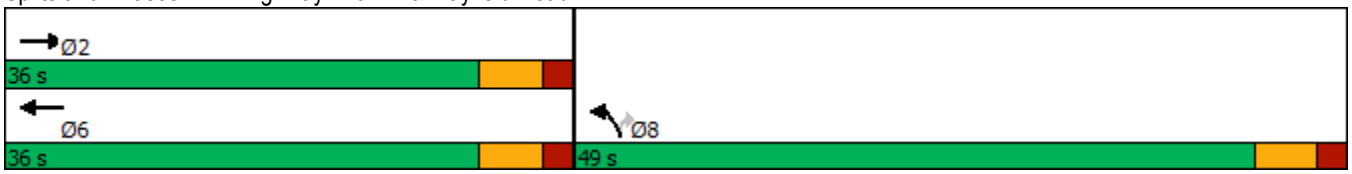
c Critical Lane Group

Lane Group	EBT	WBT	NBL	NBR
Lane Configurations				
Traffic Volume (vph)	1864	1796	482	950
Future Volume (vph)	1864	1796	482	950
Lane Group Flow (vph)	1864	1796	957	475
Turn Type	NA	NA	Prot	Perm
Protected Phases	2	6	8	
Permitted Phases				8
Detector Phase	2	6	8	8
Switch Phase				
Minimum Initial (s)	26.0	26.0	10.0	10.0
Minimum Split (s)	32.0	32.0	22.0	22.0
Total Split (s)	36.0	36.0	49.0	49.0
Total Split (%)	42.4%	42.4%	57.6%	57.6%
Yellow Time (s)	4.0	4.0	4.0	4.0
All-Red Time (s)	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.0	6.0	6.0	6.0
Lead/Lag				
Lead-Lag Optimize?				
Recall Mode	Max	None	None	None
v/c Ratio	0.94	0.96	0.75	0.82
Control Delay	35.2	38.2	21.4	31.1
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	35.2	38.2	21.4	31.1
Queue Length 50th (m)	93.9	91.4	55.8	62.0
Queue Length 95th (m)	#152.9	#150.2	75.4	103.1
Internal Link Dist (m)	104.0	63.2	627.1	
Turn Bay Length (m)				
Base Capacity (vph)	1981	1875	1672	755
Starvation Cap Reductn	0	0	0	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.94	0.96	0.57	0.63

Intersection Summary

Cycle Length: 85
Actuated Cycle Length: 75.9
Natural Cycle: 65
Control Type: Semi Act-Uncoord
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 4: Highway 410 NB & Mayfield Road





Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	1864	0	0	1796	482	950
Future Volume (vph)	1864	0	0	1796	482	950
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0			6.0	6.0	6.0
Lane Util. Factor	0.91			0.91	0.97	0.91
Frt	1.00			1.00	0.93	0.85
Flt Protected	1.00			1.00	0.98	1.00
Satd. Flow (prot)	4948			4683	2913	1315
Flt Permitted	1.00			1.00	0.98	1.00
Satd. Flow (perm)	4948			4683	2913	1315
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	1864	0	0	1796	482	950
RTOR Reduction (vph)	0	0	0	0	1	1
Lane Group Flow (vph)	1864	0	0	1796	956	474
Heavy Vehicles (%)	6%	0%	0%	12%	18%	13%
Turn Type	NA			NA	Prot	Perm
Protected Phases	2			6	8	
Permitted Phases						8
Actuated Green, G (s)	30.4			30.4	33.3	33.3
Effective Green, g (s)	30.4			30.4	33.3	33.3
Actuated g/C Ratio	0.40			0.40	0.44	0.44
Clearance Time (s)	6.0			6.0	6.0	6.0
Vehicle Extension (s)	5.0			5.0	3.0	3.0
Lane Grp Cap (vph)	1987			1880	1281	578
v/s Ratio Prot	0.38			c0.38	0.33	
v/s Ratio Perm						c0.36
v/c Ratio	0.94			0.96	0.75	0.82
Uniform Delay, d1	21.7			22.0	17.7	18.6
Progression Factor	1.00			1.00	1.00	1.00
Incremental Delay, d2	10.1			12.1	2.4	9.1
Delay (s)	31.8			34.1	20.1	27.7
Level of Service	C			C	C	C
Approach Delay (s)	31.8			34.1	22.6	
Approach LOS	C			C	C	

Intersection Summary			
HCM 2000 Control Delay	30.0	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.88		
Actuated Cycle Length (s)	75.7	Sum of lost time (s)	12.0
Intersection Capacity Utilization	85.2%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	EBT	EBR	WBL	WBT	NBL
Lane Configurations					
Traffic Volume (vph)	2386	211	68	1483	117
Future Volume (vph)	2386	211	68	1483	117
Lane Group Flow (vph)	2386	211	68	1483	184
Turn Type	NA	Perm	Perm	NA	Prot
Protected Phases	2			2	4
Permitted Phases		2	2		
Detector Phase	2	2	2	2	4
Switch Phase					
Minimum Initial (s)	12.0	12.0	12.0	12.0	8.0
Minimum Split (s)	26.7	26.7	26.7	26.7	45.6
Total Split (s)	74.0	74.0	74.0	74.0	46.0
Total Split (%)	61.7%	61.7%	61.7%	61.7%	38.3%
Yellow Time (s)	4.6	4.6	4.6	4.6	4.0
All-Red Time (s)	2.1	2.1	2.1	2.1	3.6
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.7	6.7	6.7	6.7	7.6
Lead/Lag					
Lead-Lag Optimize?					
Recall Mode	Max	Max	Max	Max	None
v/c Ratio	0.68	0.19	0.94	0.42	0.61
Control Delay	11.1	2.4	119.4	7.9	46.5
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	11.1	2.4	119.4	7.9	46.5
Queue Length 50th (m)	88.2	3.0	10.5	41.3	32.3
Queue Length 95th (m)	126.1	11.8	#28.5	60.7	53.5
Internal Link Dist (m)	203.7			76.6	88.2
Turn Bay Length (m)		65.0	35.0		
Base Capacity (vph)	3531	1124	72	3531	656
Starvation Cap Reductn	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.68	0.19	0.94	0.42	0.28

Intersection Summary

Cycle Length: 120
Actuated Cycle Length: 101.9
Natural Cycle: 90
Control Type: Actuated-Uncoordinated
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 5: Ace Drive & Mayfield Road





Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	2386	211	68	1483	117	67
Future Volume (vph)	2386	211	68	1483	117	67
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width	3.7	3.5	3.5	3.7	3.7	3.7
Total Lost time (s)	6.7	6.7	6.7	6.7	7.6	
Lane Util. Factor	0.91	1.00	1.00	0.91	1.00	
Frt	1.00	0.85	1.00	1.00	0.95	
Flt Protected	1.00	1.00	0.95	1.00	0.97	
Satd. Flow (prot)	5142	1566	1750	5142	1736	
Flt Permitted	1.00	1.00	0.06	1.00	0.97	
Satd. Flow (perm)	5142	1566	105	5142	1736	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	2386	211	68	1483	117	67
RTOR Reduction (vph)	0	49	0	0	2	0
Lane Group Flow (vph)	2386	162	68	1483	182	0
Turn Type	NA	Perm	Perm	NA	Prot	
Protected Phases	2			2	4	
Permitted Phases		2	2			
Actuated Green, G (s)	70.0	70.0	70.0	70.0	17.6	
Effective Green, g (s)	70.0	70.0	70.0	70.0	17.6	
Actuated g/C Ratio	0.69	0.69	0.69	0.69	0.17	
Clearance Time (s)	6.7	6.7	6.7	6.7	7.6	
Vehicle Extension (s)	5.0	5.0	5.0	5.0	5.0	
Lane Grp Cap (vph)	3532	1075	72	3532	299	
v/s Ratio Prot	0.46			0.29	c0.10	
v/s Ratio Perm		0.10	c0.65			
v/c Ratio	0.68	0.15	0.94	0.42	0.61	
Uniform Delay, d1	9.3	5.6	14.2	7.0	39.0	
Progression Factor	1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	1.1	0.3	91.3	0.4	5.1	
Delay (s)	10.4	5.9	105.5	7.4	44.0	
Level of Service	B	A	F	A	D	
Approach Delay (s)	10.0			11.7	44.0	
Approach LOS	B			B	D	

Intersection Summary			
HCM 2000 Control Delay	12.1	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.87		
Actuated Cycle Length (s)	101.9	Sum of lost time (s)	14.3
Intersection Capacity Utilization	79.0%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

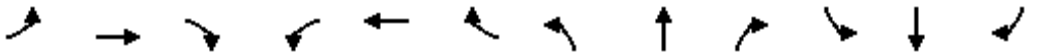
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	600	2010	364	64	846	74	121	173	54	38	182	427
Future Volume (vph)	600	2010	364	64	846	74	121	173	54	38	182	427
Lane Group Flow (vph)	600	2010	364	64	846	74	121	173	54	38	182	427
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	Perm	NA	Perm	Perm	NA	Perm
Protected Phases	5	2		1	6			8			4	
Permitted Phases	2		2	6		6	8		8	4		4
Detector Phase	5	2	2	1	6	6	8	8	8	4	4	4
Switch Phase												
Minimum Initial (s)	5.0	8.0	8.0	5.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0
Minimum Split (s)	9.0	44.9	44.9	9.0	44.9	44.9	47.9	47.9	47.9	47.9	47.9	47.9
Total Split (s)	33.0	63.1	63.1	9.0	39.1	39.1	47.9	47.9	47.9	47.9	47.9	47.9
Total Split (%)	27.5%	52.6%	52.6%	7.5%	32.6%	32.6%	39.9%	39.9%	39.9%	39.9%	39.9%	39.9%
Yellow Time (s)	3.0	4.6	4.6	3.0	4.6	4.6	4.6	4.6	4.6	4.6	4.6	4.6
All-Red Time (s)	1.0	2.3	2.3	1.0	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.3
Lost Time Adjust (s)	-1.0	0.0	0.0	-1.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	3.0	6.9	6.9	3.0	6.9	6.9	6.9	6.9	6.9	6.9	6.9	6.9
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag						
Lead-Lag Optimize?												
Recall Mode	None	Max	Max	None	None	None	None	None	None	None	None	None
v/c Ratio	0.92	0.69	0.35	0.35	0.57	0.16	0.58	0.30	0.16	0.22	0.30	0.70
Control Delay	38.4	15.8	3.3	16.9	29.0	3.0	47.5	34.9	1.1	36.3	34.7	10.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	38.4	15.8	3.3	16.9	29.0	3.0	47.5	34.9	1.1	36.3	34.7	10.1
Queue Length 50th (m)	71.2	88.9	4.2	3.0	46.3	0.0	20.8	14.8	0.0	6.1	15.6	0.0
Queue Length 95th (m)	#162.2	130.1	18.9	8.9	66.6	4.8	38.2	23.9	0.8	15.0	24.8	25.8
Internal Link Dist (m)		179.3			299.2			185.5			471.5	
Turn Bay Length (m)	140.0		70.0	65.0		30.0	75.0		60.0	30.0		138.0
Base Capacity (vph)	653	2934	1042	183	1578	482	502	1386	678	415	1476	874
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.92	0.69	0.35	0.35	0.54	0.15	0.24	0.12	0.08	0.09	0.12	0.49

Intersection Summary

Cycle Length: 120
Actuated Cycle Length: 94.6
Natural Cycle: 135
Control Type: Semi Act-Uncoord
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 6: Dixie Road & Mayfield Road





Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	600	2010	364	64	846	74	121	173	54	38	182	427
Future Volume (vph)	600	2010	364	64	846	74	121	173	54	38	182	427
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5
Total Lost time (s)	3.0	6.9	6.9	3.0	6.9	6.9	6.9	6.9	6.9	6.9	6.9	6.9
Lane Util. Factor	1.00	0.91	1.00	1.00	0.91	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1566	4902	1536	1653	4601	1201	1716	3174	1413	1405	3380	1452
Flt Permitted	0.24	1.00	1.00	0.12	1.00	1.00	0.64	1.00	1.00	0.64	1.00	1.00
Satd. Flow (perm)	389	4902	1536	215	4601	1201	1151	3174	1413	951	3380	1452
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	600	2010	364	64	846	74	121	173	54	38	182	427
RTOR Reduction (vph)	0	0	125	0	0	50	0	0	44	0	0	350
Lane Group Flow (vph)	600	2010	239	64	846	24	121	173	10	38	182	77
Heavy Vehicles (%)	14%	7%	4%	8%	14%	33%	4%	15%	13%	27%	8%	10%
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	Perm	NA	Perm	Perm	NA	Perm
Protected Phases	5	2		1	6			8			4	
Permitted Phases	2		2	6		6	8		8	4		4
Actuated Green, G (s)	64.5	56.6	56.6	35.2	31.3	31.3	17.1	17.1	17.1	17.1	17.1	17.1
Effective Green, g (s)	65.5	56.6	56.6	37.2	31.3	31.3	17.1	17.1	17.1	17.1	17.1	17.1
Actuated g/C Ratio	0.69	0.59	0.59	0.39	0.33	0.33	0.18	0.18	0.18	0.18	0.18	0.18
Clearance Time (s)	4.0	6.9	6.9	4.0	6.9	6.9	6.9	6.9	6.9	6.9	6.9	6.9
Vehicle Extension (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Lane Grp Cap (vph)	639	2908	911	157	1509	394	206	568	253	170	605	260
v/s Ratio Prot	c0.30	0.41		0.02	0.18			0.05			0.05	
v/s Ratio Perm	c0.35		0.16	0.14		0.02	c0.11		0.01	0.04		0.05
v/c Ratio	0.94	0.69	0.26	0.41	0.56	0.06	0.59	0.30	0.04	0.22	0.30	0.29
Uniform Delay, d1	17.8	13.4	9.3	18.5	26.4	22.0	35.9	34.0	32.4	33.5	34.0	33.9
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	22.3	1.4	0.7	3.6	0.8	0.1	6.5	0.6	0.1	1.4	0.6	1.3
Delay (s)	40.1	14.7	10.0	22.0	27.2	22.1	42.4	34.6	32.5	34.9	34.6	35.2
Level of Service	D	B	B	C	C	C	D	C	C	C	C	D
Approach Delay (s)		19.3			26.5			37.0			35.0	
Approach LOS		B			C			D			D	

Intersection Summary			
HCM 2000 Control Delay	24.0	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.90		
Actuated Cycle Length (s)	95.4	Sum of lost time (s)	16.8
Intersection Capacity Utilization	83.5%	ICU Level of Service	E
Analysis Period (min)	15		

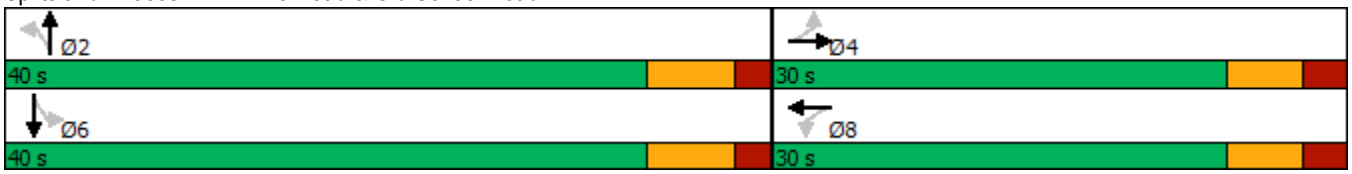
c Critical Lane Group

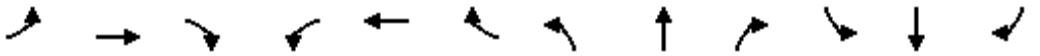
Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations								
Traffic Volume (vph)	17	279	45	108	24	267	33	752
Future Volume (vph)	17	279	45	108	24	267	33	752
Lane Group Flow (vph)	17	325	45	116	24	311	33	798
Turn Type	Perm	NA	Perm	NA	Perm	NA	Perm	NA
Protected Phases		4		8		2		6
Permitted Phases	4		8		2		6	
Detector Phase	4	4	8	8	2	2	6	6
Switch Phase								
Minimum Initial (s)	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0
Minimum Split (s)	25.4	25.4	25.4	25.4	23.6	23.6	23.6	23.6
Total Split (s)	30.0	30.0	30.0	30.0	40.0	40.0	40.0	40.0
Total Split (%)	42.9%	42.9%	42.9%	42.9%	57.1%	57.1%	57.1%	57.1%
Yellow Time (s)	4.0	4.0	4.0	4.0	4.6	4.6	4.6	4.6
All-Red Time (s)	2.4	2.4	2.4	2.4	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.4	6.4	6.4	6.4	6.6	6.6	6.6	6.6
Lead/Lag								
Lead-Lag Optimize?								
Recall Mode	None	None	None	None	Max	Max	Max	Max
v/c Ratio	0.06	0.64	0.20	0.23	0.14	0.34	0.06	0.83
Control Delay	16.9	25.6	19.7	17.8	12.2	10.6	9.4	23.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	16.9	25.6	19.7	17.8	12.2	10.6	9.4	23.8
Queue Length 50th (m)	1.5	32.1	4.1	10.0	1.3	18.4	1.8	72.3
Queue Length 95th (m)	5.3	54.4	11.1	20.6	6.2	39.6	6.5	#162.1
Internal Link Dist (m)		1372.4		151.6		1518.8		144.7
Turn Bay Length (m)	35.0		45.0		40.0		35.0	
Base Capacity (vph)	373	689	305	676	170	914	529	964
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.05	0.47	0.15	0.17	0.14	0.34	0.06	0.83

Intersection Summary

Cycle Length: 70
Actuated Cycle Length: 64
Natural Cycle: 65
Control Type: Semi Act-Uncoord
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 7: Dixie Road & Old School Road

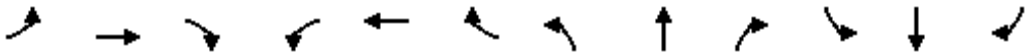




Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	17	279	46	45	108	8	24	267	44	33	752	46
Future Volume (vph)	17	279	46	45	108	8	24	267	44	33	752	46
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5
Total Lost time (s)	6.4	6.4		6.4	6.4		6.6	6.6		6.6	6.6	
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	0.98		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)	1405	1841		1785	1817		1785	1732		1684	1835	
Flt Permitted	0.68	1.00		0.44	1.00		0.17	1.00		0.57	1.00	
Satd. Flow (perm)	1010	1841		825	1817		324	1732		1013	1835	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	17	279	46	45	108	8	24	267	44	33	752	46
RTOR Reduction (vph)	0	9	0	0	4	0	0	8	0	0	3	0
Lane Group Flow (vph)	17	316	0	45	112	0	24	303	0	33	795	0
Heavy Vehicles (%)	27%	2%	3%	0%	5%	0%	0%	10%	0%	6%	4%	0%
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)	17.4	17.4		17.4	17.4		33.5	33.5		33.5	33.5	
Effective Green, g (s)	17.4	17.4		17.4	17.4		33.5	33.5		33.5	33.5	
Actuated g/C Ratio	0.27	0.27		0.27	0.27		0.52	0.52		0.52	0.52	
Clearance Time (s)	6.4	6.4		6.4	6.4		6.6	6.6		6.6	6.6	
Vehicle Extension (s)	5.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0	
Lane Grp Cap (vph)	275	501		224	494		169	908		531	962	
v/s Ratio Prot		c0.17			0.06			0.18			c0.43	
v/s Ratio Perm	0.02			0.05			0.07			0.03		
v/c Ratio	0.06	0.63		0.20	0.23		0.14	0.33		0.06	0.83	
Uniform Delay, d1	17.2	20.4		17.9	18.0		7.8	8.8		7.5	12.8	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.2	3.5		0.9	0.5		1.8	1.0		0.2	8.1	
Delay (s)	17.4	23.9		18.8	18.5		9.6	9.8		7.7	20.8	
Level of Service	B	C		B	B		A	A		A	C	
Approach Delay (s)		23.6			18.6			9.7			20.3	
Approach LOS		C			B			A			C	

Intersection Summary			
HCM 2000 Control Delay	18.7	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.76		
Actuated Cycle Length (s)	63.9	Sum of lost time (s)	13.0
Intersection Capacity Utilization	82.7%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Stop			Stop	
Traffic Volume (vph)	11	195	64	19	383	3	113	39	11	1	39	15
Future Volume (vph)	11	195	64	19	383	3	113	39	11	1	39	15
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Hourly flow rate (vph)	12	207	68	20	407	3	120	41	12	1	41	16

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total (vph)	287	430	173	58
Volume Left (vph)	12	20	120	1
Volume Right (vph)	68	3	12	16
Hadj (s)	-0.11	0.02	0.10	-0.11
Departure Headway (s)	5.1	5.1	5.9	6.0
Degree Utilization, x	0.41	0.60	0.29	0.10
Capacity (veh/h)	660	687	540	492
Control Delay (s)	11.6	15.4	11.3	9.6
Approach Delay (s)	11.6	15.4	11.3	9.6
Approach LOS	B	C	B	A

Intersection Summary				
Delay	13.2			
Level of Service	B			
Intersection Capacity Utilization	49.8%	ICU Level of Service	A	
Analysis Period (min)	15			

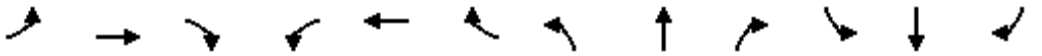
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	93	1405	125	37	2015	229	311	112	11	288	96	82
Future Volume (vph)	93	1405	125	37	2015	229	311	112	11	288	96	82
Lane Group Flow (vph)	93	1405	125	37	2015	229	311	112	11	288	96	82
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm	Perm	NA	Perm
Protected Phases	5	2		1	6		7	4			8	
Permitted Phases	2		2	6		6	4		4	8		8
Detector Phase	5	2	2	1	6	6	7	4	4	8	8	8
Switch Phase												
Minimum Initial (s)	5.0	12.0	12.0	5.0	12.0	12.0	1.0	8.0	8.0	8.0	8.0	8.0
Minimum Split (s)	9.5	39.7	39.7	9.0	39.7	39.7	5.0	43.9	43.9	43.9	43.9	43.9
Total Split (s)	10.0	68.0	68.0	9.0	67.0	67.0	10.0	58.0	58.0	48.0	48.0	48.0
Total Split (%)	7.4%	50.4%	50.4%	6.7%	49.6%	49.6%	7.4%	43.0%	43.0%	35.6%	35.6%	35.6%
Yellow Time (s)	3.5	4.6	4.6	3.0	4.6	4.6	3.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	1.0	2.1	2.1	1.0	2.1	2.1	1.0	2.9	2.9	2.9	2.9	2.9
Lost Time Adjust (s)	0.0	0.0	0.0	-1.0	0.0	0.0	-1.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.5	6.7	6.7	3.0	6.7	6.7	3.0	6.9	6.9	6.9	6.9	6.9
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead			Lag	Lag	Lag
Lead-Lag Optimize?	Yes				Yes	Yes						
Recall Mode	None	Max	Max	None	Max	Max	None	None	None	None	None	None
v/c Ratio	0.81	0.68	0.18	0.22	0.96	0.30	0.69	0.18	0.02	0.92	0.20	0.18
Control Delay	67.8	29.8	4.1	17.4	48.4	3.7	40.7	29.1	0.1	79.6	36.3	5.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	67.8	29.8	4.1	17.4	48.4	3.7	40.7	29.1	0.1	79.6	36.3	5.7
Queue Length 50th (m)	11.8	108.9	0.0	4.4	191.1	0.0	60.4	19.7	0.0	72.9	18.9	0.0
Queue Length 95th (m)	#43.0	126.5	11.0	9.8	#229.5	14.5	87.7	33.4	0.0	#124.0	33.1	9.2
Internal Link Dist (m)		179.2			166.2			202.0			680.1	
Turn Bay Length (m)	115.0		180.0	80.0		150.0	110.0		44.0	20.0		20.0
Base Capacity (vph)	115	2070	713	166	2089	767	454	668	547	336	516	490
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.81	0.68	0.18	0.22	0.96	0.30	0.69	0.17	0.02	0.86	0.19	0.17

Intersection Summary

Cycle Length: 135
Actuated Cycle Length: 132.4
Natural Cycle: 110
Control Type: Semi Act-Uncoord
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 2: Heart Lake Road & Mayfield Road





Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	93	1405	125	37	2015	229	311	112	11	288	96	82
Future Volume (vph)	93	1405	125	37	2015	229	311	112	11	288	96	82
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5
Total Lost time (s)	4.5	6.7	6.7	3.0	6.7	6.7	3.0	6.9	6.9	6.9	6.9	6.9
Lane Util. Factor	1.00	0.91	1.00	1.00	0.91	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1560	4330	1356	1530	4583	1409	1591	1729	1319	1501	1662	1369
Flt Permitted	0.06	1.00	1.00	0.12	1.00	1.00	0.65	1.00	1.00	0.68	1.00	1.00
Satd. Flow (perm)	104	4330	1356	200	4583	1409	1081	1729	1319	1082	1662	1369
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	93	1405	125	37	2015	229	311	112	11	288	96	82
RTOR Reduction (vph)	0	0	66	0	0	124	0	0	7	0	0	58
Lane Group Flow (vph)	93	1405	59	37	2015	105	311	112	4	288	96	24
Heavy Vehicles (%)	3%	9%	6%	5%	3%	2%	1%	0%	9%	7%	4%	5%
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm	Perm	NA	Perm
Protected Phases	5	2		1	6		7	4			8	
Permitted Phases	2		2	6		6	4		4	8		8
Actuated Green, G (s)	68.8	63.3	63.3	65.1	61.2	61.2	48.4	48.4	48.4	38.4	38.4	38.4
Effective Green, g (s)	68.8	63.3	63.3	67.1	61.2	61.2	49.4	48.4	48.4	38.4	38.4	38.4
Actuated g/C Ratio	0.52	0.48	0.48	0.50	0.46	0.46	0.37	0.36	0.36	0.29	0.29	0.29
Clearance Time (s)	4.5	6.7	6.7	4.0	6.7	6.7	4.0	6.9	6.9	6.9	6.9	6.9
Vehicle Extension (s)	3.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Lane Grp Cap (vph)	113	2057	644	149	2105	647	427	628	479	311	479	394
v/s Ratio Prot	c0.03	0.32		0.01	c0.44		c0.04	0.06			0.06	
v/s Ratio Perm	0.39		0.04	0.12		0.07	0.23		0.00	c0.27		0.02
v/c Ratio	0.82	0.68	0.09	0.25	0.96	0.16	0.73	0.18	0.01	0.93	0.20	0.06
Uniform Delay, d1	26.9	27.2	19.2	18.4	34.7	21.0	35.9	28.9	27.1	46.0	35.8	34.3
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	36.2	1.9	0.3	1.8	11.8	0.5	7.5	0.3	0.0	33.3	0.4	0.1
Delay (s)	63.2	29.0	19.5	20.2	46.6	21.6	43.3	29.1	27.1	79.3	36.2	34.5
Level of Service	E	C	B	C	D	C	D	C	C	E	D	C
Approach Delay (s)		30.2			43.6			39.3			62.6	
Approach LOS		C			D			D			E	

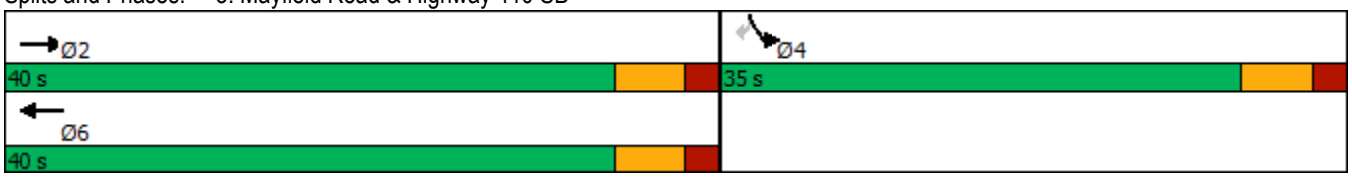
Intersection Summary			
HCM 2000 Control Delay	40.6	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.93		
Actuated Cycle Length (s)	133.2	Sum of lost time (s)	21.1
Intersection Capacity Utilization	89.9%	ICU Level of Service	E
Analysis Period (min)	15		

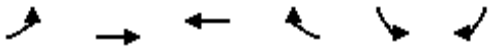
c Critical Lane Group

Lane Group	EBT	WBT	SBL	SBR
Lane Configurations				
Traffic Volume (vph)	1101	2559	114	27
Future Volume (vph)	1101	2559	114	27
Lane Group Flow (vph)	1101	2559	117	24
Turn Type	NA	NA	Prot	Perm
Protected Phases	2	6	4	
Permitted Phases				4
Detector Phase	2	6	4	4
Switch Phase				
Minimum Initial (s)	16.0	16.0	8.0	8.0
Minimum Split (s)	22.0	22.0	32.0	32.0
Total Split (s)	40.0	40.0	35.0	35.0
Total Split (%)	53.3%	53.3%	46.7%	46.7%
Yellow Time (s)	4.0	4.0	4.0	4.0
All-Red Time (s)	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.0	6.0	6.0	6.0
Lead/Lag				
Lead-Lag Optimize?				
Recall Mode	Max	Max	None	None
v/c Ratio	0.31	0.69	0.21	0.10
Control Delay	4.9	8.3	21.7	20.7
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	4.9	8.3	21.7	20.7
Queue Length 50th (m)	16.5	58.8	5.4	2.3
Queue Length 95th (m)	24.6	83.7	10.8	7.8
Internal Link Dist (m)	123.5	116.2	492.2	
Turn Bay Length (m)				
Base Capacity (vph)	3555	3697	1698	743
Starvation Cap Reductn	0	0	0	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.31	0.69	0.07	0.03

Intersection Summary
Cycle Length: 75
Actuated Cycle Length: 58.3
Natural Cycle: 75
Control Type: Semi Act-Uncoord

Splits and Phases: 3: Mayfield Road & Highway 410 SB





Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑↑↑	↑↑↑		↰↰	↱
Traffic Volume (vph)	0	1101	2559	0	114	27
Future Volume (vph)	0	1101	2559	0	114	27
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)		6.0	6.0		6.0	6.0
Lane Util. Factor		0.91	0.91		0.97	0.91
Frt		1.00	1.00		1.00	0.85
Flt Protected		1.00	1.00		0.95	1.00
Satd. Flow (prot)		5043	5245		3394	1486
Flt Permitted		1.00	1.00		0.95	1.00
Satd. Flow (perm)		5043	5245		3394	1486
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	0	1101	2559	0	114	27
RTOR Reduction (vph)	0	0	0	0	0	0
Lane Group Flow (vph)	0	1101	2559	0	117	24
Heavy Vehicles (%)	0%	4%	0%	2%	4%	0%
Bus Blockages (#/hr)	0	0	0	0	2	0
Turn Type		NA	NA		Prot	Perm
Protected Phases		2	6		4	
Permitted Phases						4
Actuated Green, G (s)		39.9	39.9		7.7	7.7
Effective Green, g (s)		39.9	39.9		7.7	7.7
Actuated g/C Ratio		0.67	0.67		0.13	0.13
Clearance Time (s)		6.0	6.0		6.0	6.0
Vehicle Extension (s)		5.0	5.0		5.0	5.0
Lane Grp Cap (vph)		3376	3511		438	191
v/s Ratio Prot		0.22	c0.49		c0.03	
v/s Ratio Perm						0.02
v/c Ratio		0.33	0.73		0.27	0.13
Uniform Delay, d1		4.2	6.4		23.4	23.0
Progression Factor		1.00	1.00		1.00	1.00
Incremental Delay, d2		0.3	1.4		0.7	0.6
Delay (s)		4.4	7.7		24.1	23.6
Level of Service		A	A		C	C
Approach Delay (s)		4.4	7.7		24.0	
Approach LOS		A	A		C	

Intersection Summary			
HCM 2000 Control Delay	7.4	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.65		
Actuated Cycle Length (s)	59.6	Sum of lost time (s)	12.0
Intersection Capacity Utilization	66.1%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

Lane Group	EBT	WBT	NBL	NBR
Lane Configurations				
Traffic Volume (vph)	1146	2240	995	1061
Future Volume (vph)	1146	2240	995	1061
Lane Group Flow (vph)	1146	2240	1409	647
Turn Type	NA	NA	Prot	Perm
Protected Phases	2	6	8	
Permitted Phases	2	6		8
Detector Phase	2	6	8	8
Switch Phase				
Minimum Initial (s)	26.0	26.0	10.0	10.0
Minimum Split (s)	32.0	32.0	22.0	22.0
Total Split (s)	41.0	41.0	69.0	69.0
Total Split (%)	37.3%	37.3%	62.7%	62.7%
Yellow Time (s)	4.0	4.0	4.0	4.0
All-Red Time (s)	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.0	6.0	6.0	6.0
Lead/Lag				
Lead-Lag Optimize?				
Recall Mode	Max	None	None	None
v/c Ratio	0.66	1.29	0.80	0.88
Control Delay	31.5	166.1	22.7	35.7
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	31.5	166.1	22.7	35.7
Queue Length 50th (m)	75.5	~226.3	108.0	114.5
Queue Length 95th (m)	96.0	#267.3	133.9	#181.6
Internal Link Dist (m)	104.0	63.2	627.1	
Turn Bay Length (m)				
Base Capacity (vph)	1734	1734	2110	870
Starvation Cap Reductn	0	0	0	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.66	1.29	0.67	0.74

Intersection Summary

Cycle Length: 110
Actuated Cycle Length: 101
Natural Cycle: 100
Control Type: Semi Act-Uncoord

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

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

Splits and Phases: 4: Highway 410 NB & Mayfield Road





Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	1146	0	0	2240	995	1061
Future Volume (vph)	1146	0	0	2240	995	1061
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0			6.0	6.0	6.0
Lane Util. Factor	0.91			0.91	0.97	0.91
Frt	1.00			1.00	0.96	0.85
Flt Protected	1.00			1.00	0.97	1.00
Satd. Flow (prot)	4948			4948	3339	1376
Flt Permitted	1.00			1.00	0.97	1.00
Satd. Flow (perm)	4948			4948	3339	1376
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	1146	0	0	2240	995	1061
RTOR Reduction (vph)	0	0	0	0	4	4
Lane Group Flow (vph)	1146	0	0	2240	1405	643
Heavy Vehicles (%)	6%	0%	0%	6%	1%	8%
Turn Type	NA			NA	Prot	Perm
Protected Phases	2			6	8	
Permitted Phases	2			6		8
Actuated Green, G (s)	35.4			35.4	53.5	53.5
Effective Green, g (s)	35.4			35.4	53.5	53.5
Actuated g/C Ratio	0.35			0.35	0.53	0.53
Clearance Time (s)	6.0			6.0	6.0	6.0
Vehicle Extension (s)	5.0			5.0	3.0	3.0
Lane Grp Cap (vph)	1735			1735	1770	729
v/s Ratio Prot	0.23			c0.45	0.42	
v/s Ratio Perm						c0.47
v/c Ratio	0.66			1.29	0.79	0.88
Uniform Delay, d1	27.7			32.8	19.2	20.9
Progression Factor	1.00			1.00	1.00	1.00
Incremental Delay, d2	2.0			135.4	2.5	12.2
Delay (s)	29.7			168.2	21.8	33.1
Level of Service	C			F	C	C
Approach Delay (s)	29.7			168.2	25.3	
Approach LOS	C			F	C	

Intersection Summary			
HCM 2000 Control Delay	85.0	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	1.04		
Actuated Cycle Length (s)	100.9	Sum of lost time (s)	12.0
Intersection Capacity Utilization	92.8%	ICU Level of Service	F
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	EBT	EBR	WBL	WBT	NBL
Lane Configurations					
Traffic Volume (vph)	1970	154	71	2246	121
Future Volume (vph)	1970	154	71	2246	121
Lane Group Flow (vph)	1970	154	71	2246	176
Turn Type	NA	Perm	pm+pt	NA	Prot
Protected Phases	2		1	6	4
Permitted Phases		2	6		
Detector Phase	2	2	1	6	4
Switch Phase					
Minimum Initial (s)	12.0	12.0	5.0	12.0	8.0
Minimum Split (s)	26.7	26.7	9.5	26.7	45.6
Total Split (s)	63.4	63.4	11.0	74.4	45.6
Total Split (%)	52.8%	52.8%	9.2%	62.0%	38.0%
Yellow Time (s)	4.6	4.6	3.5	4.6	4.0
All-Red Time (s)	2.1	2.1	1.0	2.1	3.6
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.7	6.7	4.5	6.7	7.6
Lead/Lag	Lag	Lag	Lead		
Lead-Lag Optimize?	Yes	Yes	Yes		
Recall Mode	Max	Max	None	Max	Max
v/c Ratio	0.78	0.19	0.46	0.77	0.31
Control Delay	28.5	6.0	22.5	22.6	29.2
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	28.5	6.0	22.5	22.6	29.2
Queue Length 50th (m)	141.6	4.7	6.9	142.8	27.6
Queue Length 95th (m)	161.5	16.2	15.6	161.9	46.3
Internal Link Dist (m)	203.7			76.6	88.2
Turn Bay Length (m)		65.0	35.0		
Base Capacity (vph)	2523	828	156	2900	566
Starvation Cap Reductn	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.78	0.19	0.46	0.77	0.31

Intersection Summary
Cycle Length: 120
Actuated Cycle Length: 120
Natural Cycle: 95
Control Type: Semi Act-Uncoord

Splits and Phases: 5: Ace Drive & Mayfield Road





Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	1970	154	71	2246	121	55
Future Volume (vph)	1970	154	71	2246	121	55
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width	3.7	3.5	3.5	3.7	3.7	3.7
Total Lost time (s)	6.7	6.7	4.5	6.7	7.6	
Lane Util. Factor	0.91	1.00	1.00	0.91	1.00	
Frt	1.00	0.85	1.00	1.00	0.96	
Flt Protected	1.00	1.00	0.95	1.00	0.97	
Satd. Flow (prot)	5142	1566	1750	5142	1744	
Flt Permitted	1.00	1.00	0.06	1.00	0.97	
Satd. Flow (perm)	5142	1566	116	5142	1744	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	1970	154	71	2246	121	55
RTOR Reduction (vph)	0	59	0	0	14	0
Lane Group Flow (vph)	1970	95	71	2246	162	0
Turn Type	NA	Perm	pm+pt	NA	Prot	
Protected Phases	2		1	6	4	
Permitted Phases		2	6			
Actuated Green, G (s)	58.9	58.9	68.6	68.6	38.0	
Effective Green, g (s)	58.9	58.9	68.6	68.6	38.0	
Actuated g/C Ratio	0.49	0.49	0.57	0.57	0.31	
Clearance Time (s)	6.7	6.7	4.5	6.7	7.6	
Vehicle Extension (s)	5.0	5.0	3.0	5.0	5.0	
Lane Grp Cap (vph)	2505	762	136	2917	548	
v/s Ratio Prot	0.38		0.02	c0.44	c0.09	
v/s Ratio Perm		0.06	0.27			
v/c Ratio	0.79	0.12	0.52	0.77	0.30	
Uniform Delay, d1	25.8	16.9	20.1	20.1	31.3	
Progression Factor	1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	2.6	0.3	3.6	2.0	1.4	
Delay (s)	28.3	17.3	23.7	22.1	32.7	
Level of Service	C	B	C	C	C	
Approach Delay (s)	27.5			22.2	32.7	
Approach LOS	C			C	C	

Intersection Summary			
HCM 2000 Control Delay	25.0	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.63		
Actuated Cycle Length (s)	120.9	Sum of lost time (s)	18.8
Intersection Capacity Utilization	68.0%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

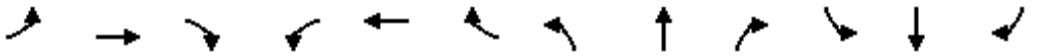
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	478	1375	186	68	1602	37	289	260	38	93	481	669
Future Volume (vph)	478	1375	186	68	1602	37	289	260	38	93	481	669
Lane Group Flow (vph)	478	1375	186	68	1602	37	289	260	38	93	481	669
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	Perm	NA	Perm	Perm	NA	Perm
Protected Phases	5	2		1	6			4			8	
Permitted Phases	2		2	6		6	4		4	8		8
Detector Phase	5	2	2	1	6	6	4	4	4	8	8	8
Switch Phase												
Minimum Initial (s)	5.0	8.0	8.0	5.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0
Minimum Split (s)	9.0	44.9	44.9	9.0	44.9	44.9	47.9	47.9	47.9	47.9	47.9	47.9
Total Split (s)	36.0	71.0	71.0	11.0	46.0	46.0	48.0	48.0	48.0	48.0	48.0	48.0
Total Split (%)	27.7%	54.6%	54.6%	8.5%	35.4%	35.4%	36.9%	36.9%	36.9%	36.9%	36.9%	36.9%
Yellow Time (s)	3.0	4.6	4.6	3.0	4.6	4.6	4.6	4.6	4.6	4.6	4.6	4.6
All-Red Time (s)	1.0	2.3	2.3	1.0	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.3
Lost Time Adjust (s)	-1.0	0.0	0.0	-1.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	3.0	6.9	6.9	3.0	6.9	6.9	6.9	6.9	6.9	6.9	6.9	6.9
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag						
Lead-Lag Optimize?												
Recall Mode	None	Max	Max	None	None	None	None	None	None	None	None	None
v/c Ratio	0.98	0.57	0.21	0.40	1.09	0.07	1.28	0.23	0.07	0.29	0.44	0.83
Control Delay	72.9	23.5	3.0	22.5	93.7	0.3	194.7	33.4	0.2	36.6	36.8	23.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	72.9	23.5	3.0	22.5	93.7	0.3	194.7	33.4	0.2	36.6	36.8	23.0
Queue Length 50th (m)	105.8	89.5	0.0	6.8	~168.6	0.0	~93.8	25.7	0.0	17.9	51.4	55.4
Queue Length 95th (m)	#174.2	104.0	11.8	13.1	#198.0	0.0	#148.7	36.8	0.0	32.7	67.3	#115.6
Internal Link Dist (m)		179.3			299.2			185.5			471.5	
Turn Bay Length (m)	140.0		70.0	65.0		30.0	75.0		60.0	30.0		138.0
Base Capacity (vph)	489	2431	889	168	1474	506	225	1153	558	321	1098	802
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.98	0.57	0.21	0.40	1.09	0.07	1.28	0.23	0.07	0.29	0.44	0.83

Intersection Summary

Cycle Length: 130
Actuated Cycle Length: 130
Natural Cycle: 125
Control Type: Semi Act-Uncoord
~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 6: Dixie Road & Mayfield Road





Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	478	1375	186	68	1602	37	289	260	38	93	481	669
Future Volume (vph)	478	1375	186	68	1602	37	289	260	38	93	481	669
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5
Total Lost time (s)	3.0	6.9	6.9	3.0	6.9	6.9	6.9	6.9	6.9	6.9	6.9	6.9
Lane Util. Factor	1.00	0.91	1.00	1.00	0.91	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1700	4768	1566	1342	4902	1452	1750	3650	1551	1653	3476	1551
Flt Permitted	0.09	1.00	1.00	0.19	1.00	1.00	0.39	1.00	1.00	0.58	1.00	1.00
Satd. Flow (perm)	163	4768	1566	262	4902	1452	713	3650	1551	1016	3476	1551
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	478	1375	186	68	1602	37	289	260	38	93	481	669
RTOR Reduction (vph)	0	0	92	0	0	26	0	0	26	0	0	313
Lane Group Flow (vph)	478	1375	94	68	1602	11	289	260	12	93	481	356
Heavy Vehicles (%)	5%	10%	2%	33%	7%	10%	2%	0%	3%	8%	5%	3%
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	Perm	NA	Perm	Perm	NA	Perm
Protected Phases	5	2		1	6			4			8	
Permitted Phases	2		2	6		6	4		4	8		8
Actuated Green, G (s)	75.9	66.3	66.3	45.5	39.9	39.9	41.1	41.1	41.1	41.1	41.1	41.1
Effective Green, g (s)	76.9	66.3	66.3	47.5	39.9	39.9	41.1	41.1	41.1	41.1	41.1	41.1
Actuated g/C Ratio	0.59	0.51	0.51	0.36	0.31	0.31	0.31	0.31	0.31	0.31	0.31	0.31
Clearance Time (s)	4.0	6.9	6.9	4.0	6.9	6.9	6.9	6.9	6.9	6.9	6.9	6.9
Vehicle Extension (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Lane Grp Cap (vph)	483	2416	793	149	1495	442	224	1146	487	319	1092	487
v/s Ratio Prot	c0.25	0.29		0.02	0.33			0.07			0.14	
v/s Ratio Perm	c0.33		0.06	0.14		0.01	c0.41		0.01	0.09		0.23
v/c Ratio	0.99	0.57	0.12	0.46	1.07	0.03	1.29	0.23	0.02	0.29	0.44	0.73
Uniform Delay, d1	40.4	22.4	16.9	27.9	45.5	31.8	44.9	33.1	31.0	33.9	35.7	39.9
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	38.1	1.0	0.3	4.6	45.1	0.0	159.8	0.2	0.0	1.1	0.6	6.8
Delay (s)	78.5	23.3	17.2	32.5	90.5	31.9	204.6	33.3	31.0	34.9	36.3	46.7
Level of Service	E	C	B	C	F	C	F	C	C	C	D	D
Approach Delay (s)		35.7			87.0			117.5			41.8	
Approach LOS		D			F			F			D	

Intersection Summary			
HCM 2000 Control Delay	61.4	HCM 2000 Level of Service	E
HCM 2000 Volume to Capacity ratio	1.13		
Actuated Cycle Length (s)	130.8	Sum of lost time (s)	16.8
Intersection Capacity Utilization	107.3%	ICU Level of Service	G
Analysis Period (min)	15		

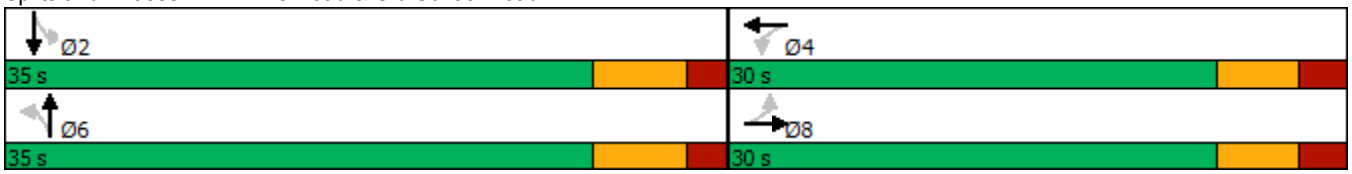
c Critical Lane Group

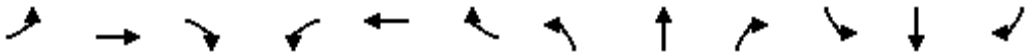
Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations								
Traffic Volume (vph)	51	121	83	307	68	643	6	300
Future Volume (vph)	51	121	83	307	68	643	6	300
Lane Group Flow (vph)	51	141	83	325	68	685	6	321
Turn Type	Perm	NA	Perm	NA	Perm	NA	Perm	NA
Protected Phases		8		4		6		2
Permitted Phases	8		4		6		2	
Detector Phase	8	8	4	4	6	6	2	2
Switch Phase								
Minimum Initial (s)	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0
Minimum Split (s)	25.4	25.4	25.4	25.4	23.6	23.6	23.6	23.6
Total Split (s)	30.0	30.0	30.0	30.0	35.0	35.0	35.0	35.0
Total Split (%)	46.2%	46.2%	46.2%	46.2%	53.8%	53.8%	53.8%	53.8%
Yellow Time (s)	4.0	4.0	4.0	4.0	4.6	4.6	4.6	4.6
All-Red Time (s)	2.4	2.4	2.4	2.4	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.4	6.4	6.4	6.4	6.6	6.6	6.6	6.6
Lead/Lag								
Lead-Lag Optimize?								
Recall Mode	None	None	None	None	Max	Max	Max	Max
v/c Ratio	0.23	0.26	0.23	0.60	0.13	0.76	0.03	0.37
Control Delay	18.0	15.1	17.0	22.2	10.6	21.0	10.3	11.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	18.0	15.1	17.0	22.2	10.6	21.0	10.3	11.8
Queue Length 50th (m)	4.1	10.2	6.7	28.9	3.6	53.6	0.3	19.0
Queue Length 95th (m)	11.0	21.0	15.3	49.2	11.5	#129.6	2.2	42.7
Internal Link Dist (m)		1372.4		151.6		1518.8		144.7
Turn Bay Length (m)	35.0		45.0		40.0		35.0	
Base Capacity (vph)	315	752	503	764	518	900	218	859
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.16	0.19	0.17	0.43	0.13	0.76	0.03	0.37

Intersection Summary

Cycle Length: 65
Actuated Cycle Length: 58.5
Natural Cycle: 60
Control Type: Semi Act-Uncoord
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 7: Dixie Road & Old School Road





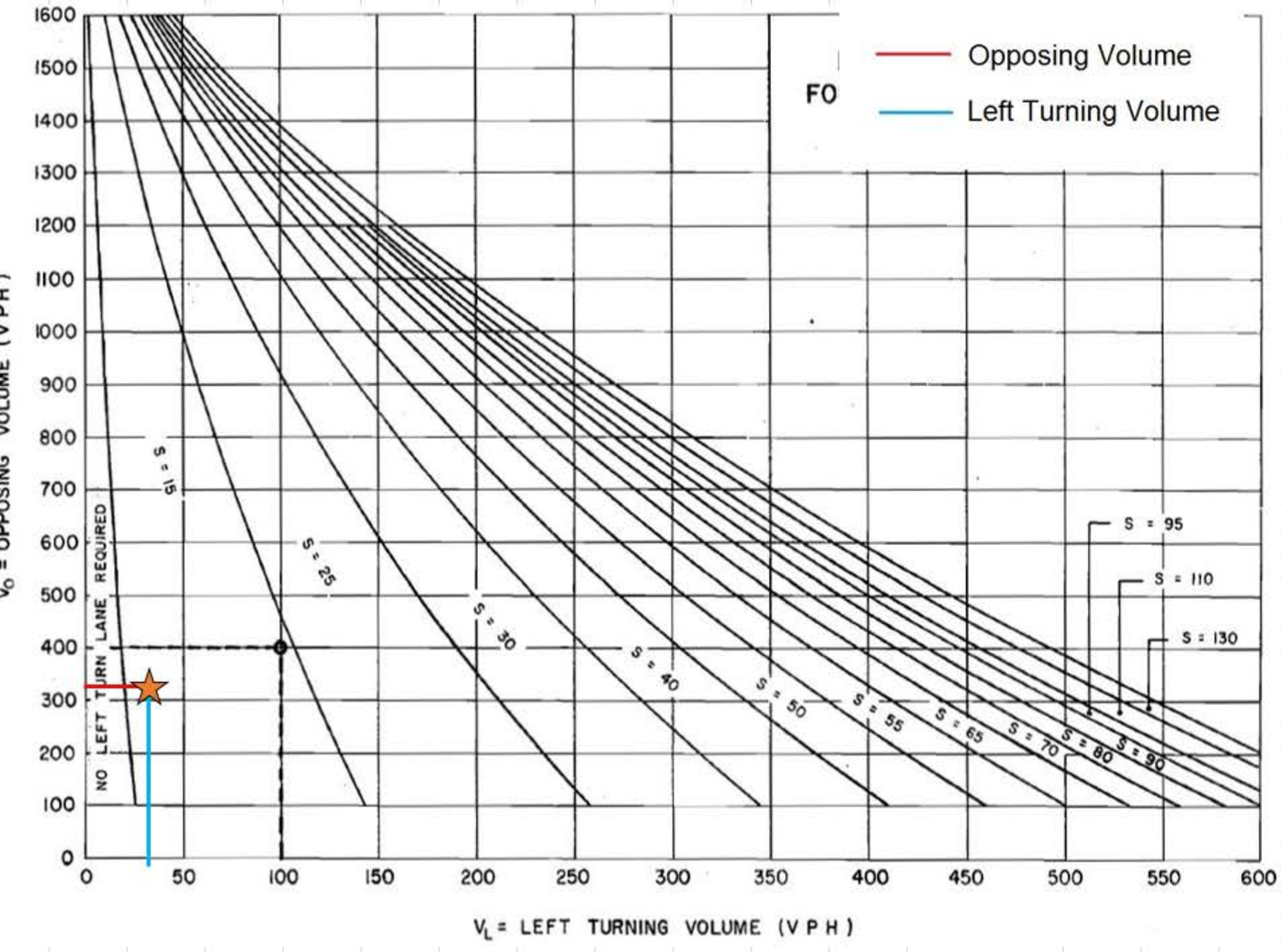
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	51	121	20	83	307	18	68	643	42	6	300	21
Future Volume (vph)	51	121	20	83	307	18	68	643	42	6	300	21
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5
Total Lost time (s)	6.4	6.4		6.4	6.4		6.6	6.6		6.6	6.6	
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	0.99		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)	1566	1833		1767	1876		1785	1838		1785	1755	
Flt Permitted	0.47	1.00		0.67	1.00		0.57	1.00		0.24	1.00	
Satd. Flow (perm)	777	1833		1241	1876		1064	1838		447	1755	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	51	121	20	83	307	18	68	643	42	6	300	21
RTOR Reduction (vph)	0	10	0	0	4	0	0	3	0	0	4	0
Lane Group Flow (vph)	51	131	0	83	321	0	68	682	0	6	317	0
Heavy Vehicles (%)	14%	3%	0%	1%	1%	11%	0%	2%	27%	0%	9%	0%
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)	16.9	16.9		16.9	16.9		28.6	28.6		28.6	28.6	
Effective Green, g (s)	16.9	16.9		16.9	16.9		28.6	28.6		28.6	28.6	
Actuated g/C Ratio	0.29	0.29		0.29	0.29		0.49	0.49		0.49	0.49	
Clearance Time (s)	6.4	6.4		6.4	6.4		6.6	6.6		6.6	6.6	
Vehicle Extension (s)	5.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0	
Lane Grp Cap (vph)	224	529		358	541		520	898		218	858	
v/s Ratio Prot		0.07			c0.17			c0.37			0.18	
v/s Ratio Perm	0.07			0.07			0.06			0.01		
v/c Ratio	0.23	0.25		0.23	0.59		0.13	0.76		0.03	0.37	
Uniform Delay, d1	15.8	15.9		15.9	17.9		8.2	12.2		7.7	9.3	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	1.1	0.5		0.7	2.6		0.5	6.0		0.2	1.2	
Delay (s)	16.9	16.4		16.5	20.5		8.7	18.1		8.0	10.6	
Level of Service	B	B		B	C		A	B		A	B	
Approach Delay (s)		16.6			19.7			17.3			10.5	
Approach LOS		B			B			B			B	

Intersection Summary			
HCM 2000 Control Delay	16.5	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.70		
Actuated Cycle Length (s)	58.5	Sum of lost time (s)	13.0
Intersection Capacity Utilization	88.6%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

Appendix M

Warrant Analysis



Site Acces #4 on Dixie Road	
Number of Lanes	4-Lane Undivided
Design Speed Limit	100
Advancing Traffic Volume	702
Opposing Traffic Volume	372
Left Turn Traffic Volume	32

Exhibits 9A-1

ADDITIONAL STORAGE LANE LENGTH FOR COMMERCIAL VEHICLES

"S" Storage Lengths from Warrant Graphs~~;~~ ~~Appendix 9A~~	Percentage of Commercial Vehicles in Left Turning Volume, V_L						
	10%	15%	20%	25%	30%	40%	50%
	Additional Storage Lane Lengths in Meters						
15	10	10	10	10	10	15	15
25	10	10	10	10	10	15	15
30	10		10	10	15	15	15
40	10	10	10	15	15	15	25
50	10	10	15	15	15	25	25
55	10	15	15	15	25	25	30
65	10	15	15	15	25	30	30
70	10	15	15	25	25	30	40
80	10	15	15	25	25	30	40
90	15	15	25	25	30	40	50
95	15	15	25	25	30	40	50
105	15	15	25	30	30	50	50
110	15	25	25	30	40	50	50
120	15	25	25	30	40	50	50
130	15	25	30	30	40	50	50

New Development			
	Low Impact	Medium Impact	High Impact
	less than 60 veh/hr peak hour	60-100 veh/hr peak hour	over 100 veh/hr peak hour
Physical Access Restriction	N/A	N/A	Yes
Auxillary Lane(s) Requirement	N/A	Yes, if supported by Regional staff and TIA	Yes
Access Restriction on Title	N/A*	Yes	Yes
Auxillary Lane(s) Requirements on Title	N/A	Yes	Yes
Re-Development/Intensification			
	Low Impact	Medium Impact	High Impact
	less than 60 veh/hr peak hour	60-100 veh/hr peak hour	over 100 veh/hr peak hour
Physical Access Restriction	N/A	N/A	Yes
Auxillary Lane(s) Requirement	N/A	N/A	Yes
Access Restriction on Title	N/A*	Yes	Yes
Auxillary Lane(s) Requirements on Title	N/A	Yes	Yes

Table 5: Volume Thresholds for Access Control

* Not Applicable in Rural Road conditions.

Source: All Tables were developed in consultation with the Region of Peel and are based on governing documents and professional judgment.

Appendix N

ITE Trip Distribution

Sun May 08 2022 22:19:17 GMT-0400 (Eastern Daylight Time) - Run Time: 3172ms

Cross Tabulation Query Form - Trip - 2016 v1.1

Row: 2006 GTA zone of destination - gta06_dest
Column: 2006 GTA zone of origin - gta06_orig

Filters:
(2006 GTA zone of destination - gta06_dest In 3012,3012,3191
and
Start time of trip - start_time In 700-900
and
Primary travel mode of trip - mode_prime In D, P,)

Trip 2016
ROW : gta06_dest
COLUMN : gta06_orig

Subject Site Municipal Address

12505 Heart Lake Road, Caledon, Peel Region

Subject Site Latitude: 43.8158

Subject Site Longitude: -79.8158

Roadway Hierarchy Sensitivity Threshold

10 km

Is the Subject Site located within 10 km of a major expressway or freeway? (Y/N)

Y

2006 TTS Zone Numbers for Study Area:

3191	3013	3012

Subject Site - 2006 TTS Zone(s)

Peel	Region

Inbound

AM Peak

			32%						
			1404						
			N						
5%	193	**W**	4320	**E**	2083	**48%**			
			S						
			640						
			15%						
									GOOD

Target Traffic Zones (with interaction to Subject Site)								
2006 TTS Zone #	Zone Region	Internal / External	Direction	North	East	South	West	
				N	E	S	W	
				1404	2083	640	193	
Zone #	3191	3013	3012					
	3288	0	1032					
376	Toronto City	Ext	**W**					8
414	Toronto City	Ext	**E**		18			
3010	Peel Region	Int	**N**	137				
3012	Peel Region	Int	**N**	38				
3102	Peel Region	Int	**W**					26
3106	Peel Region	Int	**W**					45
3151	Peel Region	Int	**W**					23
3195	Peel Region	Int	**S**			76		

Sun May 08 2022 22:23:33 GMT-0400 (Eastern Daylight Time) - Run Time: 2686ms

Cross Tabulation Query Form - Trip - 2016 v1.1

Row: 2006 GTA zone of origin - gta06_orig
Column: 2006 GTA zone of destination - gta06_dest

Filters:
(2006 GTA zone of origin - gta06_orig In 3012,3012,3191
and
Start time of trip - start_time In 700-900
and
Primary travel mode of trip - mode_prime In D, P,)

Trip 2016
ROW : gta06_orig
COLUMN : gta06_dest

Subject Site Municipal Address

12505 Heart Lake Road, Caledon, Peel Region

Subject Site Latitude	Subject Site Longitude
43.8158	-79.8158

Roadway Hierarchy Sensitivity Threshold

10 km

Is the Subject Site located within 10 km of a major expressway or freeway? (Y/N)

Y

2006 TTS Zone Numbers for Study Area:

3191	3013	3012

Subject Site - 2006 TTS Zone(s)

Peel	Region
Outbound	

AM Peak

			9%					
			65					
			N					
4%	26	W	707	E	335	47%		
			S					
			281					
			40%					

GOOD

Target Traffic Zones (with interaction to Subject Site)		Internal / External	Direction	North	East	South	West
2006 TTS Zone #	Zone Region			N	E	S	W
				65	335	281	26
51	Toronto City	Ext	W				26
378	Toronto City	Ext	E		18		
2112	York Region	Ext	E		21		
3005	Peel Region	Int	S			19	
3012	Peel Region	Int	S			38	
3339	Peel Region	Int	E		26		
3348	Peel Region	Int	S			38	
3361	Peel Region	Int	S			7	

Zone #	3191	3013	3012
	249	0	485

Sun May 08 2022 22:24:49 GMT-0400 (Eastern Daylight Time) - Run Time: 2323ms

Cross Tabulation Query Form - Trip - 2016 v1.1

Row: 2006 GTA zone of destination - gta06_dest
Column: 2006 GTA zone of origin - gta06_orig

Filters:
(2006 GTA zone of destination - gta06_dest In 3012,3012,3191
and
Start time of trip - start_time In 1600-1800
and
Primary travel mode of trip - mode_prime In D, P,)

Trip 2016
ROW : gta06_dest
COLUMN : gta06_orig

Subject Site Municipal Address

12505 Heart Lake Road, Caledon, Peel Region

Subject Site Latitude: 43.8158

Subject Site Longitude: -79.8158

Roadway Hierarchy Sensitivity Threshold

10 km

Is the Subject Site located within 10 km of a major expressway or freeway? (Y/N)

Y

2006 TTS Zone Numbers for Study Area:

3191	3013	3012

Peel

Peel	Region
Inbound	

PM Peak

				27%				
				125				
				N				
5%	19	W		447	E	286	64%	
				S				
				17				
				4%				

GOOD

Target Traffic Zones (with interaction to Subject Site)			Direction	North	East	South	West
2006 TTS Zone #	Zone Region	Internal / External		N	E	S	W
				125	286	17	19

Zone #	3191	3013	3012
	351	0	111

3005	Peel	Region	Int	W				19
3014	Peel	Region	Int	E		20		
3146	Peel	Region	Int	N	7			
3348	Peel	Region	Int	N	38			
3448	Peel	Region	Int	E		16		
3704	Peel	Region	Int	E		11		
309	Toronto	City	Ext	E		12		
394	Toronto	City	Ext	E		11		

Sun May 08 2022 22:26:00 GMT-0400 (Eastern Daylight Time) - Run Time: 2381ms

Cross Tabulation Query Form - Trip - 2016 v1.1

Row: 2006 GTA zone of origin - gta06_orig
Column: 2006 GTA zone of destination - gta06_dest

Filters:
(2006 GTA zone of origin - gta06_orig In 3012,3012,3191
and
Start time of trip - start_time In 1600-1800
and
Primary travel mode of trip - mode_prime In D, P,)

Trip 2016
ROW : gta06_orig
COLUMN : gta06_dest

Subject Site Municipal Address

12505 Heart Lake Road, Caledon, Peel Region

Subject Site Latitude: 43.8158

Subject Site Longitude: -79.8158

Roadway Hierarchy Sensitivity Threshold

10 km

Is the Subject Site located within 10 km of a major expressway or freeway? (Y/N)

Y

2006 TTS Zone Numbers for Study Area:

3191	3013	3012

Subject Site - 2006 TTS Zone(s)

Peel	Region
Outbound	

PM Peak

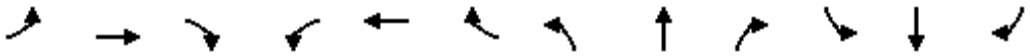
				21%				
				946				
				N				
6%	258	W		4366	E	2220	51%	
				S				
				942				
				22%				
								GOOD

Target Traffic Zones (with interaction to Subject Site)		Internal / External	Direction	North	East	South	West
2006 TTS Zone #	Zone Region			N	E	S	W
				946	2220	942	258
113	Toronto City	Ext	W				7
3008	Peel Region	Int	S			19	
3102	Peel Region	Int	W				26
3195	Peel Region	Int	N	76			
3196	Peel Region	Int	W				14
3357	Peel Region	Int	S			20	
3381	Peel Region	Int	S			22	
3440	Peel Region	Int	E		39		

Zone #	3191	3013	3012
	4112	0	254

Appendix O

2024 Future Total Conditions



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Stop			Stop	
Traffic Volume (vph)	7	128	8	12	49	62	6	29	8	4	78	13
Future Volume (vph)	7	128	8	12	49	62	6	29	8	4	78	13
Peak Hour Factor	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85
Hourly flow rate (vph)	8	151	9	14	58	73	7	34	9	5	92	15

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total (vph)	168	145	50	112
Volume Left (vph)	8	14	7	5
Volume Right (vph)	9	73	9	15
Hadj (s)	0.03	-0.01	0.17	-0.01
Departure Headway (s)	4.5	4.5	5.0	4.7
Degree Utilization, x	0.21	0.18	0.07	0.15
Capacity (veh/h)	766	759	672	712
Control Delay (s)	8.7	8.5	8.3	8.5
Approach Delay (s)	8.7	8.5	8.3	8.5
Approach LOS	A	A	A	A

Intersection Summary				
Delay	8.5			
Level of Service	A			
Intersection Capacity Utilization	23.2%	ICU Level of Service	A	
Analysis Period (min)	15			

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	79	1515	511	116	990	250	108	75	18	235	153	106
Future Volume (vph)	79	1515	511	116	990	250	108	75	18	235	153	106
Lane Group Flow (vph)	79	1515	511	116	990	250	108	75	18	235	153	106
Turn Type	Perm	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm	Perm	NA	Perm
Protected Phases		2		1	6		7	4			8	
Permitted Phases	2		2	6		6	4		4	8		8
Detector Phase	2	2	2	1	6	6	7	4	4	8	8	8
Switch Phase												
Minimum Initial (s)	12.0	12.0	12.0	5.0	12.0	12.0	5.0	8.0	8.0	8.0	8.0	8.0
Minimum Split (s)	39.7	39.7	39.7	9.0	39.7	39.7	9.0	43.9	43.9	43.9	43.9	43.9
Total Split (s)	77.0	77.0	77.0	9.0	86.0	86.0	9.0	54.0	54.0	45.0	45.0	45.0
Total Split (%)	55.0%	55.0%	55.0%	6.4%	61.4%	61.4%	6.4%	38.6%	38.6%	32.1%	32.1%	32.1%
Yellow Time (s)	4.6	4.6	4.6	3.0	4.6	4.6	3.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	2.1	2.1	2.1	1.0	2.1	2.1	1.0	2.9	2.9	2.9	2.9	2.9
Lost Time Adjust (s)	0.0	0.0	0.0	-1.0	0.0	0.0	-1.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.7	6.7	6.7	3.0	6.7	6.7	3.0	6.9	6.9	6.9	6.9	6.9
Lead/Lag	Lag	Lag	Lag	Lead			Lead			Lag	Lag	Lag
Lead-Lag Optimize?												
Recall Mode	Max	Max	Max	None	Max	Max	None	None	None	None	None	None
v/c Ratio	0.34	0.65	0.52	0.68	0.40	0.33	0.33	0.14	0.04	0.83	0.38	0.26
Control Delay	25.2	25.1	3.6	33.3	15.7	2.9	34.7	33.9	0.2	72.5	45.2	11.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	25.2	25.1	3.6	33.3	15.7	2.9	34.7	33.9	0.2	72.5	45.2	11.9
Queue Length 50th (m)	12.1	106.4	0.0	12.5	50.9	0.0	20.4	14.4	0.0	59.2	34.0	3.1
Queue Length 95th (m)	26.9	129.9	17.5	#29.0	65.0	11.9	34.9	26.2	0.0	#91.6	53.8	17.6
Internal Link Dist (m)		179.2			166.2			202.0			680.1	
Turn Bay Length (m)	115.0		180.0	80.0		150.0	110.0		44.0	20.0		20.0
Base Capacity (vph)	234	2345	983	171	2503	763	327	609	546	341	488	475
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.34	0.65	0.52	0.68	0.40	0.33	0.33	0.12	0.03	0.69	0.31	0.22

Intersection Summary

Cycle Length: 140
Actuated Cycle Length: 133.8
Natural Cycle: 105
Control Type: Semi Act-Uncoord
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 2: Heart Lake Road & Mayfield Road



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	79	1515	511	116	990	250	108	75	18	235	153	106
Future Volume (vph)	79	1515	511	116	990	250	108	75	18	235	153	106
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5
Total Lost time (s)	6.7	6.7	6.7	3.0	6.7	6.7	3.0	6.9	6.9	6.9	6.9	6.9
Lane Util. Factor	1.00	0.91	1.00	1.00	0.91	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1530	4453	1409	1560	4214	1114	1530	1729	1437	1606	1712	1437
Flt Permitted	0.28	1.00	1.00	0.11	1.00	1.00	0.56	1.00	1.00	0.71	1.00	1.00
Satd. Flow (perm)	446	4453	1409	176	4214	1114	896	1729	1437	1198	1712	1437
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	79	1515	511	116	990	250	108	75	18	235	153	106
RTOR Reduction (vph)	0	0	242	0	0	101	0	0	13	0	0	69
Lane Group Flow (vph)	79	1515	269	116	990	149	108	75	5	235	153	37
Heavy Vehicles (%)	5%	6%	2%	3%	12%	29%	5%	0%	0%	0%	1%	0%
Turn Type	Perm	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm	Perm	NA	Perm
Protected Phases		2		1	6		7	4			8	
Permitted Phases	2		2	6		6	4		4	8		8
Actuated Green, G (s)	70.5	70.5	70.5	79.5	79.5	79.5	40.7	40.7	40.7	31.7	31.7	31.7
Effective Green, g (s)	70.5	70.5	70.5	80.5	79.5	79.5	41.7	40.7	40.7	31.7	31.7	31.7
Actuated g/C Ratio	0.53	0.53	0.53	0.60	0.59	0.59	0.31	0.30	0.30	0.24	0.24	0.24
Clearance Time (s)	6.7	6.7	6.7	4.0	6.7	6.7	4.0	6.9	6.9	6.9	6.9	6.9
Vehicle Extension (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Lane Grp Cap (vph)	235	2346	742	167	2503	661	307	525	437	283	405	340
v/s Ratio Prot		0.34		c0.03	0.23		c0.02	0.04			0.09	
v/s Ratio Perm	0.18		0.19	c0.39		0.13	0.09		0.00	c0.20		0.03
v/c Ratio	0.34	0.65	0.36	0.69	0.40	0.22	0.35	0.14	0.01	0.83	0.38	0.11
Uniform Delay, d1	18.2	22.7	18.5	15.5	14.4	12.7	34.9	33.9	32.5	48.5	42.8	40.0
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	3.8	1.4	1.4	14.8	0.5	0.8	1.5	0.3	0.0	20.1	1.2	0.3
Delay (s)	22.0	24.1	19.9	30.3	14.9	13.5	36.3	34.1	32.5	68.6	44.0	40.3
Level of Service	C	C	B	C	B	B	D	C	C	E	D	D
Approach Delay (s)		23.0			15.9			35.2			54.9	
Approach LOS		C			B			D			D	

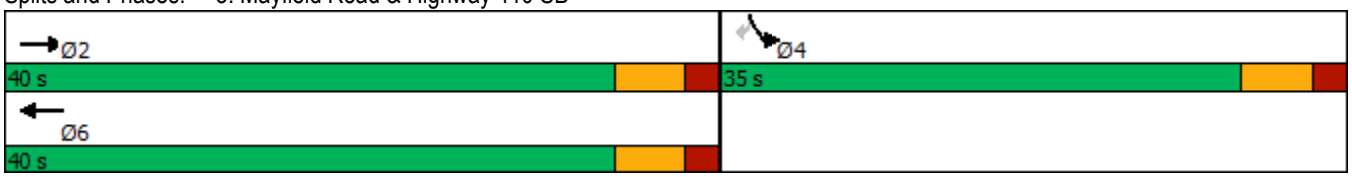
Intersection Summary			
HCM 2000 Control Delay	25.1	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.73		
Actuated Cycle Length (s)	133.8	Sum of lost time (s)	19.6
Intersection Capacity Utilization	81.2%	ICU Level of Service	D
Analysis Period (min)	15		

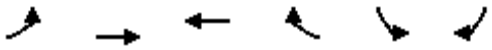
c Critical Lane Group

Lane Group	EBT	WBT	SBL	SBR
Lane Configurations				
Traffic Volume (vph)	1161	1048	323	308
Future Volume (vph)	1161	1048	323	308
Lane Group Flow (vph)	1161	1048	431	200
Turn Type	NA	NA	Prot	Perm
Protected Phases	2	6	4	
Permitted Phases				4
Detector Phase	2	6	4	4
Switch Phase				
Minimum Initial (s)	16.0	16.0	8.0	8.0
Minimum Split (s)	22.0	22.0	32.0	32.0
Total Split (s)	40.0	40.0	35.0	35.0
Total Split (%)	53.3%	53.3%	46.7%	46.7%
Yellow Time (s)	4.0	4.0	4.0	4.0
All-Red Time (s)	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.0	6.0	6.0	6.0
Lead/Lag				
Lead-Lag Optimize?				
Recall Mode	Max	Max	None	None
v/c Ratio	0.43	0.36	0.47	0.48
Control Delay	9.5	8.9	18.6	18.3
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	9.5	8.9	18.6	18.3
Queue Length 50th (m)	25.3	21.8	18.7	15.6
Queue Length 95th (m)	44.1	38.4	29.3	32.8
Internal Link Dist (m)	123.5	116.2	492.2	
Turn Bay Length (m)				
Base Capacity (vph)	2719	2882	1639	722
Starvation Cap Reductn	0	0	0	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.43	0.36	0.26	0.28

Intersection Summary
Cycle Length: 75
Actuated Cycle Length: 62.2
Natural Cycle: 55
Control Type: Semi Act-Uncoord

Splits and Phases: 3: Mayfield Road & Highway 410 SB





Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑↑↑	↑↑↑		↰↰	↱
Traffic Volume (vph)	0	1161	1048	0	323	308
Future Volume (vph)	0	1161	1048	0	323	308
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)		6.0	6.0		6.0	6.0
Lane Util. Factor		0.91	0.91		0.97	0.91
Frt		1.00	1.00		0.96	0.85
Flt Protected		1.00	1.00		0.96	1.00
Satd. Flow (prot)		4948	5245		3443	1486
Flt Permitted		1.00	1.00		0.96	1.00
Satd. Flow (perm)		4948	5245		3443	1486
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	0	1161	1048	0	323	308
RTOR Reduction (vph)	0	0	0	0	36	36
Lane Group Flow (vph)	0	1161	1048	0	395	164
Heavy Vehicles (%)	0%	6%	0%	16%	0%	0%
Bus Blockages (#/hr)	0	0	0	0	2	0
Turn Type		NA	NA		Prot	Perm
Protected Phases		2	6		4	
Permitted Phases						4
Actuated Green, G (s)		34.2	34.2		15.9	15.9
Effective Green, g (s)		34.2	34.2		15.9	15.9
Actuated g/C Ratio		0.55	0.55		0.26	0.26
Clearance Time (s)		6.0	6.0		6.0	6.0
Vehicle Extension (s)		5.0	5.0		5.0	5.0
Lane Grp Cap (vph)		2724	2888		881	380
v/s Ratio Prot		c0.23	0.20		c0.11	
v/s Ratio Perm						0.11
v/c Ratio		0.43	0.36		0.45	0.43
Uniform Delay, d1		8.2	7.8		19.4	19.3
Progression Factor		1.00	1.00		1.00	1.00
Incremental Delay, d2		0.5	0.4		0.8	1.6
Delay (s)		8.7	8.2		20.2	20.9
Level of Service		A	A		C	C
Approach Delay (s)		8.7	8.2		20.4	
Approach LOS		A	A		C	

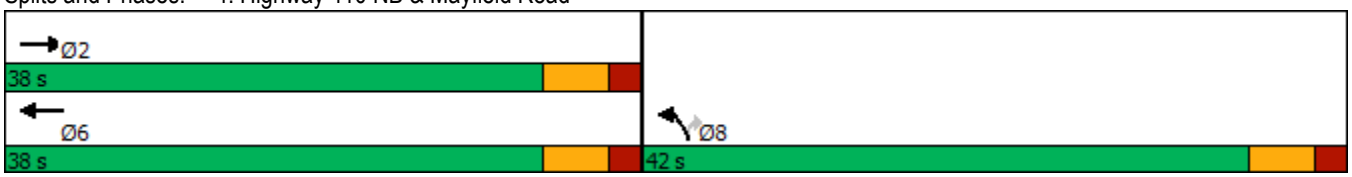
Intersection Summary			
HCM 2000 Control Delay	11.1	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.43		
Actuated Cycle Length (s)	62.1	Sum of lost time (s)	12.0
Intersection Capacity Utilization	44.9%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Lane Group	EBT	WBT	NBL	NBR
Lane Configurations				
Traffic Volume (vph)	1461	1407	441	818
Future Volume (vph)	1461	1407	441	818
Lane Group Flow (vph)	1461	1407	850	409
Turn Type	NA	NA	Prot	Perm
Protected Phases	2	6	8	
Permitted Phases				8
Detector Phase	2	6	8	8
Switch Phase				
Minimum Initial (s)	26.0	26.0	10.0	10.0
Minimum Split (s)	32.0	32.0	22.0	22.0
Total Split (s)	38.0	38.0	42.0	42.0
Total Split (%)	47.5%	47.5%	52.5%	52.5%
Yellow Time (s)	4.0	4.0	4.0	4.0
All-Red Time (s)	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.0	6.0	6.0	6.0
Lead/Lag				
Lead-Lag Optimize?				
Recall Mode	Max	None	None	None
v/c Ratio	0.66	0.67	0.75	0.80
Control Delay	18.8	19.1	23.3	31.6
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	18.8	19.1	23.3	31.6
Queue Length 50th (m)	56.3	54.5	49.2	51.3
Queue Length 95th (m)	83.8	81.9	67.7	87.1
Internal Link Dist (m)	104.0	63.2	627.1	
Turn Bay Length (m)				
Base Capacity (vph)	2204	2086	1465	662
Starvation Cap Reductn	0	0	0	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.66	0.67	0.58	0.62

Intersection Summary
Cycle Length: 80
Actuated Cycle Length: 72.5
Natural Cycle: 60
Control Type: Semi Act-Uncoord

Splits and Phases: 4: Highway 410 NB & Mayfield Road





Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	1461	0	0	1407	441	818
Future Volume (vph)	1461	0	0	1407	441	818
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0			6.0	6.0	6.0
Lane Util. Factor	0.91			0.91	0.97	0.91
Frt	1.00			1.00	0.93	0.85
Flt Protected	1.00			1.00	0.97	1.00
Satd. Flow (prot)	4948			4683	2916	1315
Flt Permitted	1.00			1.00	0.97	1.00
Satd. Flow (perm)	4948			4683	2916	1315
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	1461	0	0	1407	441	818
RTOR Reduction (vph)	0	0	0	0	4	4
Lane Group Flow (vph)	1461	0	0	1407	846	405
Heavy Vehicles (%)	6%	0%	0%	12%	18%	13%
Turn Type	NA			NA	Prot	Perm
Protected Phases	2			6	8	
Permitted Phases						8
Actuated Green, G (s)	32.3			32.3	28.1	28.1
Effective Green, g (s)	32.3			32.3	28.1	28.1
Actuated g/C Ratio	0.45			0.45	0.39	0.39
Clearance Time (s)	6.0			6.0	6.0	6.0
Vehicle Extension (s)	5.0			5.0	3.0	3.0
Lane Grp Cap (vph)	2207			2089	1131	510
v/s Ratio Prot	0.30			c0.30	0.29	
v/s Ratio Perm						c0.31
v/c Ratio	0.66			0.67	0.75	0.79
Uniform Delay, d1	15.8			15.9	19.1	19.6
Progression Factor	1.00			1.00	1.00	1.00
Incremental Delay, d2	1.6			1.1	2.7	8.3
Delay (s)	17.3			17.0	21.8	27.9
Level of Service	B			B	C	C
Approach Delay (s)	17.3			17.0	23.8	
Approach LOS	B			B	C	

Intersection Summary			
HCM 2000 Control Delay	19.2	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.73		
Actuated Cycle Length (s)	72.4	Sum of lost time (s)	12.0
Intersection Capacity Utilization	72.0%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	EBT	EBR	WBL	WBT	NBL
Lane Configurations					
Traffic Volume (vph)	1869	211	68	1162	96
Future Volume (vph)	1869	211	68	1162	96
Lane Group Flow (vph)	1869	211	68	1162	151
Turn Type	NA	Perm	Perm	NA	Prot
Protected Phases	2			2	4
Permitted Phases		2	2		
Detector Phase	2	2	2	2	4
Switch Phase					
Minimum Initial (s)	12.0	12.0	12.0	12.0	8.0
Minimum Split (s)	26.7	26.7	26.7	26.7	45.6
Total Split (s)	74.0	74.0	74.0	74.0	46.0
Total Split (%)	61.7%	61.7%	61.7%	61.7%	38.3%
Yellow Time (s)	4.6	4.6	4.6	4.6	4.0
All-Red Time (s)	2.1	2.1	2.1	2.1	3.6
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.7	6.7	6.7	6.7	7.6
Lead/Lag					
Lead-Lag Optimize?					
Recall Mode	Max	Max	Max	Max	None
v/c Ratio	0.51	0.18	0.57	0.32	0.56
Control Delay	7.8	1.4	32.6	6.2	43.9
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	7.8	1.4	32.6	6.2	43.9
Queue Length 50th (m)	52.6	0.5	5.6	26.9	24.5
Queue Length 95th (m)	75.7	7.6	#32.2	40.0	43.1
Internal Link Dist (m)	203.7			76.6	88.2
Turn Bay Length (m)		65.0	35.0		
Base Capacity (vph)	3636	1166	119	3636	667
Starvation Cap Reductn	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.51	0.18	0.57	0.32	0.23

Intersection Summary

Cycle Length: 120
Actuated Cycle Length: 101
Natural Cycle: 90
Control Type: Actuated-Uncoordinated
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 5: Ace Drive & Mayfield Road





Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	1869	211	68	1162	96	55
Future Volume (vph)	1869	211	68	1162	96	55
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width	3.7	3.5	3.5	3.7	3.7	3.7
Total Lost time (s)	6.7	6.7	6.7	6.7	7.6	
Lane Util. Factor	0.91	1.00	1.00	0.91	1.00	
Frt	1.00	0.85	1.00	1.00	0.95	
Flt Protected	1.00	1.00	0.95	1.00	0.97	
Satd. Flow (prot)	5142	1566	1750	5142	1736	
Flt Permitted	1.00	1.00	0.09	1.00	0.97	
Satd. Flow (perm)	5142	1566	169	5142	1736	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	1869	211	68	1162	96	55
RTOR Reduction (vph)	0	59	0	0	9	0
Lane Group Flow (vph)	1869	152	68	1162	142	0
Turn Type	NA	Perm	Perm	NA	Prot	
Protected Phases	2			2	4	
Permitted Phases		2	2			
Actuated Green, G (s)	71.5	71.5	71.5	71.5	15.2	
Effective Green, g (s)	71.5	71.5	71.5	71.5	15.2	
Actuated g/C Ratio	0.71	0.71	0.71	0.71	0.15	
Clearance Time (s)	6.7	6.7	6.7	6.7	7.6	
Vehicle Extension (s)	5.0	5.0	5.0	5.0	5.0	
Lane Grp Cap (vph)	3640	1108	119	3640	261	
v/s Ratio Prot	0.36			0.23	c0.08	
v/s Ratio Perm		0.10	c0.40			
v/c Ratio	0.51	0.14	0.57	0.32	0.54	
Uniform Delay, d1	6.8	4.8	7.2	5.6	39.7	
Progression Factor	1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	0.5	0.3	18.4	0.2	4.0	
Delay (s)	7.3	5.0	25.6	5.8	43.7	
Level of Service	A	A	C	A	D	
Approach Delay (s)	7.1			6.9	43.7	
Approach LOS	A			A	D	

Intersection Summary			
HCM 2000 Control Delay	8.6	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.56		
Actuated Cycle Length (s)	101.0	Sum of lost time (s)	14.3
Intersection Capacity Utilization	72.3%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	455	1575	364	64	663	80	121	107	54	44	151	354
Future Volume (vph)	455	1575	364	64	663	80	121	107	54	44	151	354
Lane Group Flow (vph)	455	1575	364	64	663	80	121	107	54	44	151	354
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	Perm	NA	Perm	Perm	NA	Perm
Protected Phases	5	2		1	6			8			4	
Permitted Phases	2		2	6		6	8		8	4		4
Detector Phase	5	2	2	1	6	6	8	8	8	4	4	4
Switch Phase												
Minimum Initial (s)	5.0	8.0	8.0	5.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0
Minimum Split (s)	9.0	44.9	44.9	9.0	44.9	44.9	47.9	47.9	47.9	47.9	47.9	47.9
Total Split (s)	10.0	60.0	60.0	10.0	60.0	60.0	50.0	50.0	50.0	50.0	50.0	50.0
Total Split (%)	8.3%	50.0%	50.0%	8.3%	50.0%	50.0%	41.7%	41.7%	41.7%	41.7%	41.7%	41.7%
Yellow Time (s)	3.0	4.6	4.6	3.0	4.6	4.6	4.6	4.6	4.6	4.6	4.6	4.6
All-Red Time (s)	1.0	2.3	2.3	1.0	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.3
Lost Time Adjust (s)	-1.0	0.0	0.0	-1.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	3.0	6.9	6.9	3.0	6.9	6.9	6.9	6.9	6.9	6.9	6.9	6.9
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag						
Lead-Lag Optimize?												
Recall Mode	None	Max	Max	None	None	None	None	None	None	None	None	None
v/c Ratio	0.92	0.56	0.35	0.26	0.26	0.11	0.53	0.18	0.16	0.23	0.23	0.74
Control Delay	40.4	14.9	2.5	8.4	12.2	3.6	42.7	31.8	5.5	34.4	32.3	21.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	40.4	14.9	2.5	8.4	12.2	3.6	42.7	31.8	5.5	34.4	32.3	21.1
Queue Length 50th (m)	27.7	61.5	0.0	2.9	20.5	0.0	20.2	8.7	0.0	6.9	12.4	17.3
Queue Length 95th (m)	#117.6	101.6	14.0	9.8	36.8	7.4	36.7	15.4	6.2	15.9	20.4	47.7
Internal Link Dist (m)		179.3			299.2			185.5			471.5	
Turn Bay Length (m)	140.0		70.0	65.0		30.0	75.0		60.0	30.0		138.0
Base Capacity (vph)	492	2821	1038	249	2647	725	553	1482	698	472	1578	809
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.92	0.56	0.35	0.26	0.25	0.11	0.22	0.07	0.08	0.09	0.10	0.44

Intersection Summary

Cycle Length: 120
Actuated Cycle Length: 93.4
Natural Cycle: 105
Control Type: Semi Act-Uncoord
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 6: Dixie Road & Mayfield Road



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	455	1575	364	64	663	80	121	107	54	44	151	354
Future Volume (vph)	455	1575	364	64	663	80	121	107	54	44	151	354
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5
Total Lost time (s)	3.0	6.9	6.9	3.0	6.9	6.9	6.9	6.9	6.9	6.9	6.9	6.9
Lane Util. Factor	1.00	0.91	1.00	1.00	0.91	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1566	4902	1536	1653	4601	1201	1716	3174	1413	1405	3380	1452
Flt Permitted	0.38	1.00	1.00	0.12	1.00	1.00	0.66	1.00	1.00	0.68	1.00	1.00
Satd. Flow (perm)	623	4902	1536	208	4601	1201	1186	3174	1413	1013	3380	1452
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	455	1575	364	64	663	80	121	107	54	44	151	354
RTOR Reduction (vph)	0	0	156	0	0	36	0	0	44	0	0	200
Lane Group Flow (vph)	455	1575	208	64	663	44	121	107	10	44	151	154
Heavy Vehicles (%)	14%	7%	4%	8%	14%	33%	4%	15%	13%	27%	8%	10%
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	Perm	NA	Perm	Perm	NA	Perm
Protected Phases	5	2		1	6			8			4	
Permitted Phases	2		2	6		6	8		8	4		4
Actuated Green, G (s)	59.8	53.7	53.7	56.8	52.2	52.2	18.0	18.0	18.0	18.0	18.0	18.0
Effective Green, g (s)	61.8	53.7	53.7	58.8	52.2	52.2	18.0	18.0	18.0	18.0	18.0	18.0
Actuated g/C Ratio	0.66	0.57	0.57	0.62	0.55	0.55	0.19	0.19	0.19	0.19	0.19	0.19
Clearance Time (s)	4.0	6.9	6.9	4.0	6.9	6.9	6.9	6.9	6.9	6.9	6.9	6.9
Vehicle Extension (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Lane Grp Cap (vph)	480	2797	876	215	2552	666	226	607	270	193	646	277
v/s Ratio Prot	c0.07	0.32		0.02	0.14			0.03			0.04	
v/s Ratio Perm	c0.55		0.14	0.17		0.04	0.10		0.01	0.04		c0.11
v/c Ratio	0.95	0.56	0.24	0.30	0.26	0.07	0.54	0.18	0.04	0.23	0.23	0.56
Uniform Delay, d1	11.1	12.8	10.0	7.7	10.9	9.7	34.3	31.8	31.0	32.2	32.2	34.4
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	28.8	0.8	0.6	1.6	0.1	0.1	4.4	0.3	0.1	1.3	0.4	4.1
Delay (s)	39.9	13.6	10.7	9.3	11.0	9.8	38.7	32.1	31.1	33.4	32.6	38.5
Level of Service	D	B	B	A	B	A	D	C	C	C	C	D
Approach Delay (s)		18.2			10.8			34.8			36.5	
Approach LOS		B			B			C			D	

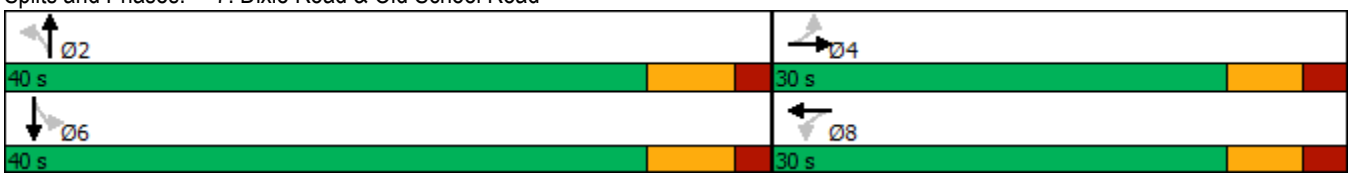
Intersection Summary			
HCM 2000 Control Delay	20.3	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.89		
Actuated Cycle Length (s)	94.1	Sum of lost time (s)	16.8
Intersection Capacity Utilization	72.0%	ICU Level of Service	C
Analysis Period (min)	15		

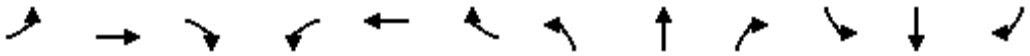
c Critical Lane Group

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations								
Traffic Volume (vph)	11	228	47	88	5	209	33	570
Future Volume (vph)	11	228	47	88	5	209	33	570
Lane Group Flow (vph)	11	260	47	96	5	255	33	581
Turn Type	Perm	NA	Perm	NA	Perm	NA	Perm	NA
Protected Phases		4		8		2		6
Permitted Phases	4		8		2		6	
Detector Phase	4	4	8	8	2	2	6	6
Switch Phase								
Minimum Initial (s)	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0
Minimum Split (s)	25.4	25.4	25.4	25.4	23.6	23.6	23.6	23.6
Total Split (s)	30.0	30.0	30.0	30.0	40.0	40.0	40.0	40.0
Total Split (%)	42.9%	42.9%	42.9%	42.9%	57.1%	57.1%	57.1%	57.1%
Yellow Time (s)	4.0	4.0	4.0	4.0	4.6	4.6	4.6	4.6
All-Red Time (s)	2.4	2.4	2.4	2.4	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.4	6.4	6.4	6.4	6.6	6.6	6.6	6.6
Lead/Lag								
Lead-Lag Optimize?								
Recall Mode	None	None	None	None	Max	Max	Max	Max
v/c Ratio	0.04	0.57	0.19	0.22	0.01	0.27	0.06	0.57
Control Delay	17.4	24.7	19.9	18.1	8.2	8.5	8.3	13.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	17.4	24.7	19.9	18.1	8.2	8.5	8.3	13.0
Queue Length 50th (m)	1.0	24.5	4.2	8.0	0.3	12.6	1.6	39.4
Queue Length 95th (m)	4.1	43.5	11.2	17.7	1.8	28.9	5.9	80.2
Internal Link Dist (m)		1372.4		151.6		1413.7		144.7
Turn Bay Length (m)	35.0		45.0		40.0		35.0	
Base Capacity (vph)	385	699	376	684	369	960	585	1014
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.03	0.37	0.13	0.14	0.01	0.27	0.06	0.57

Intersection Summary
Cycle Length: 70
Actuated Cycle Length: 63
Natural Cycle: 60
Control Type: Semi Act-Uncoord

Splits and Phases: 7: Dixie Road & Old School Road

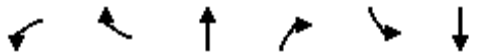




Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	11	228	32	47	88	8	5	209	46	33	570	11
Future Volume (vph)	11	228	32	47	88	8	5	209	46	33	570	11
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5
Total Lost time (s)	6.4	6.4		6.4	6.4		6.6	6.6		6.6	6.6	
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	0.97		1.00	1.00	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1405	1846		1785	1814		1785	1728		1684	1843	
Flt Permitted	0.69	1.00		0.53	1.00		0.36	1.00		0.60	1.00	
Satd. Flow (perm)	1028	1846		1003	1814		671	1728		1066	1843	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	11	228	32	47	88	8	5	209	46	33	570	11
RTOR Reduction (vph)	0	8	0	0	5	0	0	10	0	0	1	0
Lane Group Flow (vph)	11	252	0	47	91	0	5	245	0	33	580	0
Heavy Vehicles (%)	27%	2%	3%	0%	5%	0%	0%	10%	0%	6%	4%	0%
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)	15.3	15.3		15.3	15.3		34.7	34.7		34.7	34.7	
Effective Green, g (s)	15.3	15.3		15.3	15.3		34.7	34.7		34.7	34.7	
Actuated g/C Ratio	0.24	0.24		0.24	0.24		0.55	0.55		0.55	0.55	
Clearance Time (s)	6.4	6.4		6.4	6.4		6.6	6.6		6.6	6.6	
Vehicle Extension (s)	5.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0	
Lane Grp Cap (vph)	249	448		243	440		369	951		587	1015	
v/s Ratio Prot		c0.14			0.05			0.14			c0.31	
v/s Ratio Perm	0.01			0.05			0.01			0.03		
v/c Ratio	0.04	0.56		0.19	0.21		0.01	0.26		0.06	0.57	
Uniform Delay, d1	18.3	20.9		18.9	19.0		6.4	7.4		6.6	9.3	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.2	2.6		0.8	0.5		0.1	0.7		0.2	2.3	
Delay (s)	18.4	23.6		19.8	19.5		6.5	8.1		6.7	11.6	
Level of Service	B	C		B	B		A	A		A	B	
Approach Delay (s)		23.3			19.6			8.0			11.4	
Approach LOS		C			B			A			B	

Intersection Summary			
HCM 2000 Control Delay	14.1	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.57		
Actuated Cycle Length (s)	63.0	Sum of lost time (s)	13.0
Intersection Capacity Utilization	67.4%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	13	2	313	27	17	74
Future Volume (Veh/h)	13	2	313	27	17	74
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	14	2	340	29	18	80
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	470	354			369	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	470	354			369	
tC, single (s)	6.6	6.4			4.1	
tC, 2 stage (s)						
tF (s)	3.7	3.5			2.2	
p0 queue free %	97	100			98	
cM capacity (veh/h)	516	655			1190	

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	16	369	98
Volume Left	14	0	18
Volume Right	2	29	0
cSH	530	1700	1190
Volume to Capacity	0.03	0.22	0.02
Queue Length 95th (m)	0.7	0.0	0.4
Control Delay (s)	12.0	0.0	1.6
Lane LOS	B		A
Approach Delay (s)	12.0	0.0	1.6
Approach LOS	B		

Intersection Summary			
Average Delay	0.7		
Intersection Capacity Utilization	28.5%	ICU Level of Service	A
Analysis Period (min)	15		



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	13	2	286	29	17	78
Future Volume (Veh/h)	13	2	286	29	17	78
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	14	2	311	32	18	85
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	448	327			343	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	448	327			343	
tC, single (s)	6.6	6.4			4.1	
tC, 2 stage (s)						
tF (s)	3.7	3.5			2.2	
p0 queue free %	97	100			99	
cM capacity (veh/h)	532	679			1216	

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	16	343	103
Volume Left	14	0	18
Volume Right	2	32	0
cSH	547	1700	1216
Volume to Capacity	0.03	0.20	0.01
Queue Length 95th (m)	0.7	0.0	0.3
Control Delay (s)	11.8	0.0	1.5
Lane LOS	B		A
Approach Delay (s)	11.8	0.0	1.5
Approach LOS	B		

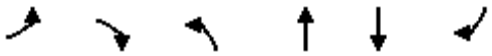
Intersection Summary			
Average Delay	0.7		
Intersection Capacity Utilization	28.7%	ICU Level of Service	A
Analysis Period (min)	15		



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	14	2	259	29	17	81
Future Volume (Veh/h)	14	2	259	29	17	81
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)	15	2	282	32	18	88
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	422	298			314	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	422	298			314	
tC, single (s)	6.6	6.4			4.1	
tC, 2 stage (s)						
tF (s)	3.7	3.5			2.2	
p0 queue free %	97	100			99	
cM capacity (veh/h)	551	705			1246	

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	17	314	106
Volume Left	15	0	18
Volume Right	2	32	0
cSH	566	1700	1246
Volume to Capacity	0.03	0.18	0.01
Queue Length 95th (m)	0.7	0.0	0.3
Control Delay (s)	11.6	0.0	1.4
Lane LOS	B		A
Approach Delay (s)	11.6	0.0	1.4
Approach LOS	B		

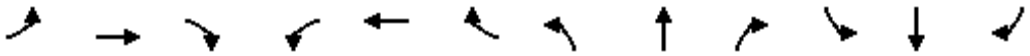
Intersection Summary			
Average Delay	0.8		
Intersection Capacity Utilization	28.8%	ICU Level of Service	A
Analysis Period (min)	15		



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	4	24	52	590	617	32
Future Volume (Veh/h)	4	24	52	590	617	32
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)	4	26	57	641	671	35
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	1106	336	706			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1106	336	706			
tC, single (s)	7.1	7.2	4.1			
tC, 2 stage (s)						
tF (s)	3.7	3.5	2.2			
p0 queue free %	98	96	94			
cM capacity (veh/h)	171	618	888			

Direction, Lane #	EB 1	NB 1	NB 2	NB 3	SB 1	SB 2	SB 3
Volume Total	30	57	320	320	336	336	35
Volume Left	4	57	0	0	0	0	0
Volume Right	26	0	0	0	0	0	35
cSH	458	888	1700	1700	1700	1700	1700
Volume to Capacity	0.07	0.06	0.19	0.19	0.20	0.20	0.02
Queue Length 95th (m)	1.6	1.6	0.0	0.0	0.0	0.0	0.0
Control Delay (s)	13.4	9.3	0.0	0.0	0.0	0.0	0.0
Lane LOS	B	A					
Approach Delay (s)	13.4	0.8			0.0		
Approach LOS	B						

Intersection Summary			
Average Delay	0.7		
Intersection Capacity Utilization	33.7%	ICU Level of Service	A
Analysis Period (min)	15		



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Stop			Stop	
Traffic Volume (vph)	6	87	10	23	176	37	18	61	18	1	48	10
Future Volume (vph)	6	87	10	23	176	37	18	61	18	1	48	10
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Hourly flow rate (vph)	6	93	11	24	187	39	19	65	19	1	51	11

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total (vph)	110	250	103	63
Volume Left (vph)	6	24	19	1
Volume Right (vph)	11	39	19	11
Hadj (s)	-0.02	-0.06	-0.07	-0.05
Departure Headway (s)	4.6	4.4	4.7	4.8
Degree Utilization, x	0.14	0.30	0.14	0.08
Capacity (veh/h)	747	784	702	681
Control Delay (s)	8.3	9.3	8.5	8.3
Approach Delay (s)	8.3	9.3	8.5	8.3
Approach LOS	A	A	A	A

Intersection Summary				
Delay	8.8			
Level of Service	A			
Intersection Capacity Utilization	37.7%	ICU Level of Service	A	
Analysis Period (min)	15			

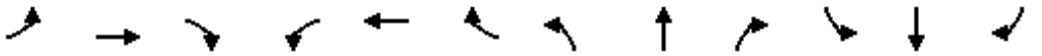
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	96	1101	125	37	1579	229	311	94	11	352	109	90
Future Volume (vph)	96	1101	125	37	1579	229	311	94	11	352	109	90
Lane Group Flow (vph)	96	1101	125	37	1579	229	311	94	11	352	109	90
Turn Type	Perm	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm	Perm	NA	Perm
Protected Phases		2		1	6		7	4			8	
Permitted Phases	2		2	6		6	4		4	8		8
Detector Phase	2	2	2	1	6	6	7	4	4	8	8	8
Switch Phase												
Minimum Initial (s)	12.0	12.0	12.0	5.0	12.0	12.0	1.0	8.0	8.0	8.0	8.0	8.0
Minimum Split (s)	39.7	39.7	39.7	9.0	39.7	39.7	5.0	43.9	43.9	43.9	43.9	43.9
Total Split (s)	74.0	74.0	74.0	9.0	83.0	83.0	7.0	52.0	52.0	44.0	44.0	44.0
Total Split (%)	54.8%	54.8%	54.8%	6.7%	61.5%	61.5%	5.2%	38.5%	38.5%	32.6%	32.6%	32.6%
Yellow Time (s)	4.6	4.6	4.6	3.0	4.6	4.6	3.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	2.1	2.1	2.1	1.0	2.1	2.1	1.0	2.9	2.9	2.9	2.9	2.9
Lost Time Adjust (s)	0.0	0.0	0.0	-1.0	0.0	0.0	-1.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.7	6.7	6.7	3.0	6.7	6.7	3.0	6.9	6.9	6.9	6.9	6.9
Lead/Lag	Lag	Lag	Lag	Lead			Lead			Lag	Lag	Lag
Lead-Lag Optimize?												
Recall Mode	Max	Max	Max	None	Max	Max	None	None	None	None	None	None
v/c Ratio	0.93	0.49	0.16	0.15	0.61	0.25	0.78	0.17	0.02	1.16	0.24	0.20
Control Delay	108.0	22.4	3.4	12.6	20.2	2.3	52.9	32.9	0.1	144.6	39.2	7.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	108.0	22.4	3.4	12.6	20.2	2.3	52.9	32.9	0.1	144.6	39.2	7.4
Queue Length 50th (m)	23.7	69.3	0.0	3.9	96.4	0.0	65.3	17.6	0.0	~109.7	22.4	0.0
Queue Length 95th (m)	#61.4	82.1	9.9	8.6	110.7	10.9	#101.0	31.0	0.0	#169.5	38.3	11.8
Internal Link Dist (m)		179.2			166.2			202.0			680.1	
Turn Bay Length (m)	115.0		180.0	80.0		150.0	110.0		44.0	20.0		20.0
Base Capacity (vph)	103	2232	759	241	2609	900	397	581	485	312	472	457
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.93	0.49	0.16	0.15	0.61	0.25	0.78	0.16	0.02	1.13	0.23	0.20

Intersection Summary

Cycle Length: 135
Actuated Cycle Length: 134
Natural Cycle: 110
Control Type: Semi Act-Uncoord
~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 2: Heart Lake Road & Mayfield Road





Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	96	1101	125	37	1579	229	311	94	11	352	109	90
Future Volume (vph)	96	1101	125	37	1579	229	311	94	11	352	109	90
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5
Total Lost time (s)	6.7	6.7	6.7	3.0	6.7	6.7	3.0	6.9	6.9	6.9	6.9	6.9
Lane Util. Factor	1.00	0.91	1.00	1.00	0.91	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1560	4330	1356	1530	4583	1409	1591	1729	1319	1501	1662	1369
Flt Permitted	0.12	1.00	1.00	0.20	1.00	1.00	0.64	1.00	1.00	0.70	1.00	1.00
Satd. Flow (perm)	200	4330	1356	315	4583	1409	1066	1729	1319	1100	1662	1369
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	96	1101	125	37	1579	229	311	94	11	352	109	90
RTOR Reduction (vph)	0	0	61	0	0	98	0	0	7	0	0	65
Lane Group Flow (vph)	96	1101	64	37	1579	131	311	94	4	352	109	25
Heavy Vehicles (%)	3%	9%	6%	5%	3%	2%	1%	0%	9%	7%	4%	5%
Turn Type	Perm	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm	Perm	NA	Perm
Protected Phases		2		1	6		7	4			8	
Permitted Phases	2		2	6		6	4		4	8		8
Actuated Green, G (s)	69.1	69.1	69.1	77.1	77.1	77.1	44.1	44.1	44.1	37.1	37.1	37.1
Effective Green, g (s)	69.1	69.1	69.1	78.1	77.1	77.1	45.1	44.1	44.1	37.1	37.1	37.1
Actuated g/C Ratio	0.51	0.51	0.51	0.58	0.57	0.57	0.33	0.33	0.33	0.28	0.28	0.28
Clearance Time (s)	6.7	6.7	6.7	4.0	6.7	6.7	4.0	6.9	6.9	6.9	6.9	6.9
Vehicle Extension (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Lane Grp Cap (vph)	102	2219	695	227	2621	805	372	565	431	302	457	376
v/s Ratio Prot		0.25		0.01	c0.34		c0.02	0.05			0.07	
v/s Ratio Perm	c0.48		0.05	0.09		0.09	0.25		0.00	c0.32		0.02
v/c Ratio	0.94	0.50	0.09	0.16	0.60	0.16	0.84	0.17	0.01	1.17	0.24	0.07
Uniform Delay, d1	30.9	21.5	16.8	13.2	18.8	13.6	41.9	32.3	30.6	48.9	37.9	36.1
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	74.2	0.8	0.3	0.7	1.0	0.4	16.5	0.3	0.0	104.4	0.6	0.2
Delay (s)	105.2	22.3	17.1	13.9	19.9	14.1	58.4	32.6	30.6	153.3	38.5	36.2
Level of Service	F	C	B	B	B	B	E	C	C	F	D	D
Approach Delay (s)		27.8			19.0			51.8			111.4	
Approach LOS		C			B			D			F	

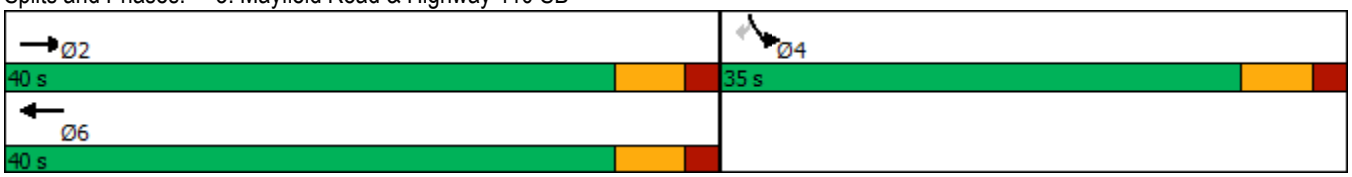
Intersection Summary			
HCM 2000 Control Delay	37.5	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	1.00		
Actuated Cycle Length (s)	134.8	Sum of lost time (s)	19.6
Intersection Capacity Utilization	89.1%	ICU Level of Service	E
Analysis Period (min)	15		

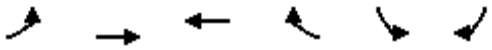
c Critical Lane Group

Lane Group	EBT	WBT	SBL	SBR
Lane Configurations				
Traffic Volume (vph)	863	2005	98	24
Future Volume (vph)	863	2005	98	24
Lane Group Flow (vph)	863	2005	100	22
Turn Type	NA	NA	Prot	Perm
Protected Phases	2	6	4	
Permitted Phases				4
Detector Phase	2	6	4	4
Switch Phase				
Minimum Initial (s)	16.0	16.0	8.0	8.0
Minimum Split (s)	22.0	22.0	32.0	32.0
Total Split (s)	40.0	40.0	35.0	35.0
Total Split (%)	53.3%	53.3%	46.7%	46.7%
Yellow Time (s)	4.0	4.0	4.0	4.0
All-Red Time (s)	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.0	6.0	6.0	6.0
Lead/Lag				
Lead-Lag Optimize?				
Recall Mode	Max	Max	None	None
v/c Ratio	0.24	0.54	0.19	0.10
Control Delay	4.4	6.2	21.6	19.7
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	4.4	6.2	21.6	19.7
Queue Length 50th (m)	12.1	37.7	4.7	2.0
Queue Length 95th (m)	18.2	53.0	9.5	7.2
Internal Link Dist (m)	123.5	116.2	492.2	
Turn Bay Length (m)				
Base Capacity (vph)	3595	3739	1681	736
Starvation Cap Reductn	0	0	0	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.24	0.54	0.06	0.03

Intersection Summary
Cycle Length: 75
Actuated Cycle Length: 59
Natural Cycle: 60
Control Type: Semi Act-Uncoord

Splits and Phases: 3: Mayfield Road & Highway 410 SB





Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑↑↑	↑↑↑		↰↰	↱
Traffic Volume (vph)	0	863	2005	0	98	24
Future Volume (vph)	0	863	2005	0	98	24
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)		6.0	6.0		6.0	6.0
Lane Util. Factor		0.91	0.91		0.97	0.91
Frt		1.00	1.00		1.00	0.85
Flt Protected		1.00	1.00		0.95	1.00
Satd. Flow (prot)		5043	5245		3395	1486
Flt Permitted		1.00	1.00		0.95	1.00
Satd. Flow (perm)		5043	5245		3395	1486
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	0	863	2005	0	98	24
RTOR Reduction (vph)	0	0	0	0	2	2
Lane Group Flow (vph)	0	863	2005	0	98	20
Heavy Vehicles (%)	0%	4%	0%	2%	4%	0%
Bus Blockages (#/hr)	0	0	0	0	2	0
Turn Type		NA	NA		Prot	Perm
Protected Phases		2	6		4	
Permitted Phases						4
Actuated Green, G (s)		40.8	40.8		7.4	7.4
Effective Green, g (s)		40.8	40.8		7.4	7.4
Actuated g/C Ratio		0.68	0.68		0.12	0.12
Clearance Time (s)		6.0	6.0		6.0	6.0
Vehicle Extension (s)		5.0	5.0		5.0	5.0
Lane Grp Cap (vph)		3417	3554		417	182
v/s Ratio Prot		0.17	c0.38		c0.03	
v/s Ratio Perm						0.01
v/c Ratio		0.25	0.56		0.24	0.11
Uniform Delay, d1		3.8	5.1		23.8	23.5
Progression Factor		1.00	1.00		1.00	1.00
Incremental Delay, d2		0.2	0.7		0.6	0.6
Delay (s)		3.9	5.7		24.5	24.0
Level of Service		A	A		C	C
Approach Delay (s)		3.9	5.7		24.4	
Approach LOS		A	A		C	

Intersection Summary			
HCM 2000 Control Delay	6.0	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.51		
Actuated Cycle Length (s)	60.2	Sum of lost time (s)	12.0
Intersection Capacity Utilization	55.4%	ICU Level of Service	B
Analysis Period (min)	15		

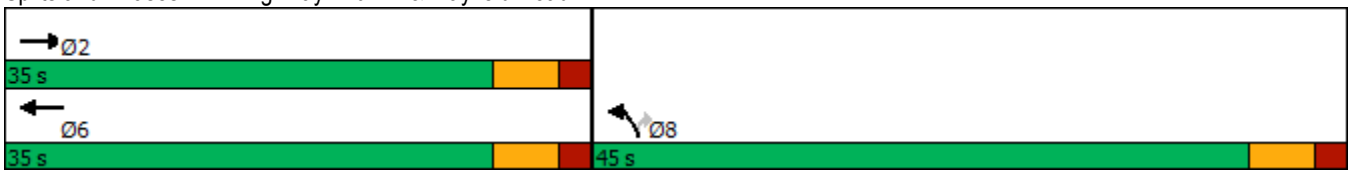
c Critical Lane Group

Lane Group	EBT	WBT	NBL	NBR
Lane Configurations				
Traffic Volume (vph)	898	1755	888	913
Future Volume (vph)	898	1755	888	913
Lane Group Flow (vph)	898	1755	1235	566
Turn Type	NA	NA	Prot	Perm
Protected Phases	2	6	8	
Permitted Phases	2	6		8
Detector Phase	2	6	8	8
Switch Phase				
Minimum Initial (s)	26.0	26.0	10.0	10.0
Minimum Split (s)	32.0	32.0	22.0	22.0
Total Split (s)	35.0	35.0	45.0	45.0
Total Split (%)	43.8%	43.8%	56.3%	56.3%
Yellow Time (s)	4.0	4.0	4.0	4.0
All-Red Time (s)	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.0	6.0	6.0	6.0
Lead/Lag				
Lead-Lag Optimize?				
Recall Mode	Max	None	None	None
v/c Ratio	0.47	0.93	0.80	0.87
Control Delay	19.5	33.7	21.3	33.1
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	19.5	33.7	21.3	33.1
Queue Length 50th (m)	38.2	94.6	71.8	71.8
Queue Length 95th (m)	49.5	#129.1	95.8	#138.1
Internal Link Dist (m)	104.0	63.2	627.1	
Turn Bay Length (m)				
Base Capacity (vph)	1897	1897	1744	728
Starvation Cap Reductn	0	0	0	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.47	0.93	0.71	0.78

Intersection Summary

Cycle Length: 80
Actuated Cycle Length: 76.1
Natural Cycle: 70
Control Type: Semi Act-Uncoord
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 4: Highway 410 NB & Mayfield Road





Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	898	0	0	1755	888	913
Future Volume (vph)	898	0	0	1755	888	913
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0			6.0	6.0	6.0
Lane Util. Factor	0.91			0.91	0.97	0.91
Frt	1.00			1.00	0.96	0.85
Flt Protected	1.00			1.00	0.97	1.00
Satd. Flow (prot)	4948			4948	3347	1376
Flt Permitted	1.00			1.00	0.97	1.00
Satd. Flow (perm)	4948			4948	3347	1376
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	898	0	0	1755	888	913
RTOR Reduction (vph)	0	0	0	0	21	21
Lane Group Flow (vph)	898	0	0	1755	1214	545
Heavy Vehicles (%)	6%	0%	0%	6%	1%	8%
Turn Type	NA			NA	Prot	Perm
Protected Phases	2			6	8	
Permitted Phases	2			6		8
Actuated Green, G (s)	29.2			29.2	34.8	34.8
Effective Green, g (s)	29.2			29.2	34.8	34.8
Actuated g/C Ratio	0.38			0.38	0.46	0.46
Clearance Time (s)	6.0			6.0	6.0	6.0
Vehicle Extension (s)	5.0			5.0	3.0	3.0
Lane Grp Cap (vph)	1901			1901	1532	630
v/s Ratio Prot	0.18			c0.35	0.36	
v/s Ratio Perm						c0.40
v/c Ratio	0.47			0.92	0.79	0.86
Uniform Delay, d1	17.6			22.3	17.5	18.5
Progression Factor	1.00			1.00	1.00	1.00
Incremental Delay, d2	0.8			8.4	2.9	11.9
Delay (s)	18.4			30.7	20.4	30.4
Level of Service	B			C	C	C
Approach Delay (s)	18.4			30.7	23.5	
Approach LOS	B			C	C	

Intersection Summary			
HCM 2000 Control Delay	25.4	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.89		
Actuated Cycle Length (s)	76.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	78.8%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	EBT	EBR	WBL	WBT	NBL
Lane Configurations					
Traffic Volume (vph)	1544	154	71	1760	99
Future Volume (vph)	1544	154	71	1760	99
Lane Group Flow (vph)	1544	154	71	1760	144
Turn Type	NA	Perm	Perm	NA	Prot
Protected Phases	2			2	4
Permitted Phases		2	2		
Detector Phase	2	2	2	2	4
Switch Phase					
Minimum Initial (s)	12.0	12.0	12.0	12.0	8.0
Minimum Split (s)	26.7	26.7	26.7	26.7	45.6
Total Split (s)	74.0	74.0	74.0	74.0	46.0
Total Split (%)	61.7%	61.7%	61.7%	61.7%	38.3%
Yellow Time (s)	4.6	4.6	4.6	4.6	4.0
All-Red Time (s)	2.1	2.1	2.1	2.1	3.6
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.7	6.7	6.7	6.7	7.6
Lead/Lag					
Lead-Lag Optimize?					
Recall Mode	Max	Max	Max	Max	Max
v/c Ratio	0.54	0.16	0.60	0.61	0.25
Control Delay	17.4	2.3	42.8	18.7	27.2
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	17.4	2.3	42.8	18.7	27.2
Queue Length 50th (m)	79.7	0.0	10.5	96.7	21.3
Queue Length 95th (m)	92.3	8.9	#35.6	111.2	37.7
Internal Link Dist (m)	203.7			76.6	88.2
Turn Bay Length (m)		65.0	35.0		
Base Capacity (vph)	2883	945	118	2883	572
Starvation Cap Reductn	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.54	0.16	0.60	0.61	0.25

Intersection Summary

Cycle Length: 120
Actuated Cycle Length: 120
Natural Cycle: 90
Control Type: Semi Act-Uncoord
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 5: Ace Drive & Mayfield Road





Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	1544	154	71	1760	99	45
Future Volume (vph)	1544	154	71	1760	99	45
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width	3.7	3.5	3.5	3.7	3.7	3.7
Total Lost time (s)	6.7	6.7	6.7	6.7	7.6	
Lane Util. Factor	0.91	1.00	1.00	0.91	1.00	
Frt	1.00	0.85	1.00	1.00	0.96	
Flt Protected	1.00	1.00	0.95	1.00	0.97	
Satd. Flow (prot)	5142	1566	1750	5142	1744	
Flt Permitted	1.00	1.00	0.11	1.00	0.97	
Satd. Flow (perm)	5142	1566	211	5142	1744	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	1544	154	71	1760	99	45
RTOR Reduction (vph)	0	68	0	0	14	0
Lane Group Flow (vph)	1544	86	71	1760	130	0
Turn Type	NA	Perm	Perm	NA	Prot	
Protected Phases	2			2	4	
Permitted Phases		2	2			
Actuated Green, G (s)	67.3	67.3	67.3	67.3	38.4	
Effective Green, g (s)	67.3	67.3	67.3	67.3	38.4	
Actuated g/C Ratio	0.56	0.56	0.56	0.56	0.32	
Clearance Time (s)	6.7	6.7	6.7	6.7	7.6	
Vehicle Extension (s)	5.0	5.0	5.0	5.0	5.0	
Lane Grp Cap (vph)	2883	878	118	2883	558	
v/s Ratio Prot	0.30			c0.34	c0.07	
v/s Ratio Perm		0.06	0.34			
v/c Ratio	0.54	0.10	0.60	0.61	0.23	
Uniform Delay, d1	16.5	12.2	17.5	17.6	30.0	
Progression Factor	1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	0.7	0.2	20.7	1.0	1.0	
Delay (s)	17.3	12.5	38.1	18.6	31.0	
Level of Service	B	B	D	B	C	
Approach Delay (s)	16.8			19.3	31.0	
Approach LOS	B			B	C	

Intersection Summary			
HCM 2000 Control Delay	18.6	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.47		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	14.3
Intersection Capacity Utilization	65.6%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	378	1078	186	68	1255	53	289	204	38	104	361	516
Future Volume (vph)	378	1078	186	68	1255	53	289	204	38	104	361	516
Lane Group Flow (vph)	378	1078	186	68	1255	53	289	204	38	104	361	516
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	Perm	NA	Perm	Perm	NA	Perm
Protected Phases	5	2		1	6			4			8	
Permitted Phases	2		2	6		6	4		4	8		8
Detector Phase	5	2	2	1	6	6	4	4	4	8	8	8
Switch Phase												
Minimum Initial (s)	5.0	8.0	8.0	5.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0
Minimum Split (s)	9.0	44.9	44.9	9.0	44.9	44.9	47.9	47.9	47.9	47.9	47.9	47.9
Total Split (s)	24.0	61.0	61.0	10.0	47.0	47.0	49.0	49.0	49.0	49.0	49.0	49.0
Total Split (%)	20.0%	50.8%	50.8%	8.3%	39.2%	39.2%	40.8%	40.8%	40.8%	40.8%	40.8%	40.8%
Yellow Time (s)	3.0	4.6	4.6	3.0	4.6	4.6	4.6	4.6	4.6	4.6	4.6	4.6
All-Red Time (s)	1.0	2.3	2.3	1.0	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.3
Lost Time Adjust (s)	-1.0	0.0	0.0	-1.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	3.0	6.9	6.9	3.0	6.9	6.9	6.9	6.9	6.9	6.9	6.9	6.9
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag						
Lead-Lag Optimize?												
Recall Mode	None	Max	Max	None	None	None	None	None	None	None	None	None
v/c Ratio	0.99	0.48	0.22	0.32	0.77	0.10	0.92	0.17	0.06	0.28	0.31	0.70
Control Delay	76.1	22.5	3.4	17.6	38.7	0.3	71.8	27.2	0.2	30.6	29.0	18.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	76.1	22.5	3.4	17.6	38.7	0.3	71.8	27.2	0.2	30.6	29.0	18.1
Queue Length 50th (m)	~77.1	64.5	0.0	7.0	96.4	0.0	63.6	17.2	0.0	17.5	32.2	39.8
Queue Length 95th (m)	#136.9	77.3	12.4	13.8	113.9	0.0	#114.9	26.1	0.0	31.9	44.4	80.3
Internal Link Dist (m)		179.3			299.2			185.5			471.5	
Turn Bay Length (m)	140.0		70.0	65.0		30.0	75.0		60.0	30.0		138.0
Base Capacity (vph)	383	2261	840	212	1719	579	342	1343	639	400	1279	770
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.99	0.48	0.22	0.32	0.73	0.09	0.85	0.15	0.06	0.26	0.28	0.67

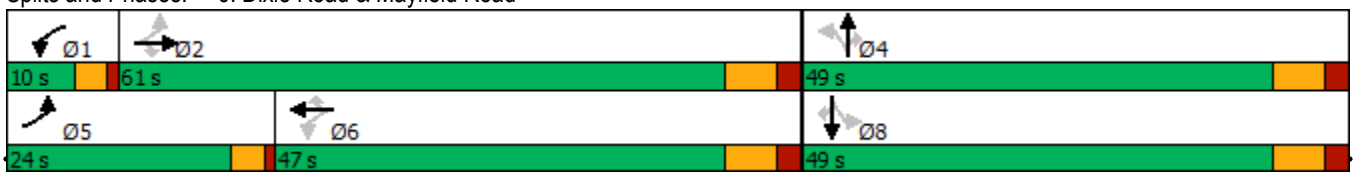
Intersection Summary

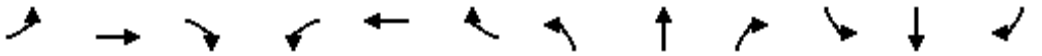
Cycle Length: 120
Actuated Cycle Length: 115.1
Natural Cycle: 115
Control Type: Semi Act-Uncoord

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

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

Splits and Phases: 6: Dixie Road & Mayfield Road





Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	378	1078	186	68	1255	53	289	204	38	104	361	516
Future Volume (vph)	378	1078	186	68	1255	53	289	204	38	104	361	516
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5
Total Lost time (s)	3.0	6.9	6.9	3.0	6.9	6.9	6.9	6.9	6.9	6.9	6.9	6.9
Lane Util. Factor	1.00	0.91	1.00	1.00	0.91	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1700	4768	1566	1342	4902	1452	1750	3650	1551	1653	3476	1551
Flt Permitted	0.10	1.00	1.00	0.25	1.00	1.00	0.51	1.00	1.00	0.62	1.00	1.00
Satd. Flow (perm)	180	4768	1566	357	4902	1452	932	3650	1551	1085	3476	1551
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	378	1078	186	68	1255	53	289	204	38	104	361	516
RTOR Reduction (vph)	0	0	98	0	0	35	0	0	25	0	0	209
Lane Group Flow (vph)	378	1078	88	68	1255	18	289	204	13	104	361	307
Heavy Vehicles (%)	5%	10%	2%	33%	7%	10%	2%	0%	3%	8%	5%	3%
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	Perm	NA	Perm	Perm	NA	Perm
Protected Phases	5	2		1	6			4			8	
Permitted Phases	2		2	6		6	4		4	8		8
Actuated Green, G (s)	63.2	54.6	54.6	43.7	39.1	39.1	38.9	38.9	38.9	38.9	38.9	38.9
Effective Green, g (s)	64.2	54.6	54.6	45.7	39.1	39.1	38.9	38.9	38.9	38.9	38.9	38.9
Actuated g/C Ratio	0.55	0.47	0.47	0.39	0.34	0.34	0.34	0.34	0.34	0.34	0.34	0.34
Clearance Time (s)	4.0	6.9	6.9	4.0	6.9	6.9	6.9	6.9	6.9	6.9	6.9	6.9
Vehicle Extension (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Lane Grp Cap (vph)	376	2246	737	188	1653	489	312	1225	520	364	1166	520
v/s Ratio Prot	c0.18	0.23		0.02	0.26			0.06			0.10	
v/s Ratio Perm	c0.37		0.06	0.12		0.01	c0.31		0.01	0.10		0.20
v/c Ratio	1.01	0.48	0.12	0.36	0.76	0.04	0.93	0.17	0.02	0.29	0.31	0.59
Uniform Delay, d1	34.5	20.9	17.2	22.4	34.2	25.8	37.1	27.1	25.8	28.3	28.5	31.9
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	47.7	0.7	0.3	2.5	2.5	0.1	33.3	0.1	0.0	0.9	0.3	2.7
Delay (s)	82.2	21.7	17.5	24.9	36.7	25.8	70.4	27.2	25.8	29.2	28.9	34.5
Level of Service	F	C	B	C	D	C	E	C	C	C	C	C
Approach Delay (s)		35.1			35.7			50.6			31.9	
Approach LOS		D			D			D			C	

Intersection Summary			
HCM 2000 Control Delay	36.4	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	1.01		
Actuated Cycle Length (s)	115.9	Sum of lost time (s)	16.8
Intersection Capacity Utilization	91.8%	ICU Level of Service	F
Analysis Period (min)	15		

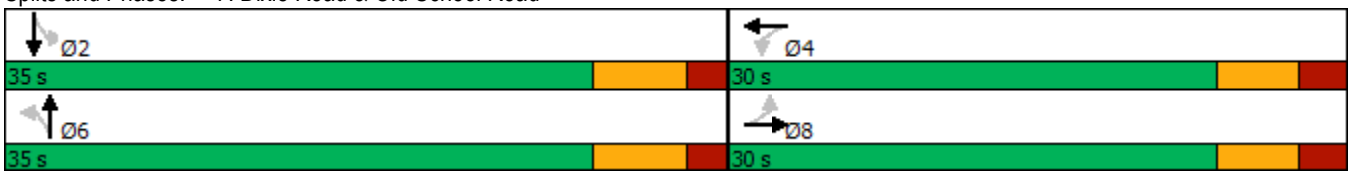
c Critical Lane Group

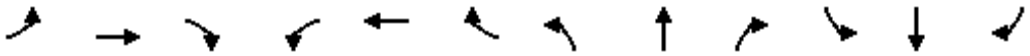
Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations								
Traffic Volume (vph)	14	98	84	251	25	468	6	242
Future Volume (vph)	14	98	84	251	25	468	6	242
Lane Group Flow (vph)	14	108	84	269	25	511	6	257
Turn Type	Perm	NA	Perm	NA	Perm	NA	Perm	NA
Protected Phases		8		4		6		2
Permitted Phases	8		4		6		2	
Detector Phase	8	8	4	4	6	6	2	2
Switch Phase								
Minimum Initial (s)	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0
Minimum Split (s)	25.4	25.4	25.4	25.4	23.6	23.6	23.6	23.6
Total Split (s)	30.0	30.0	30.0	30.0	35.0	35.0	35.0	35.0
Total Split (%)	46.2%	46.2%	46.2%	46.2%	53.8%	53.8%	53.8%	53.8%
Yellow Time (s)	4.0	4.0	4.0	4.0	4.6	4.6	4.6	4.6
All-Red Time (s)	2.4	2.4	2.4	2.4	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.4	6.4	6.4	6.4	6.6	6.6	6.6	6.6
Lead/Lag								
Lead-Lag Optimize?								
Recall Mode	None	None	None	None	Max	Max	Max	Max
v/c Ratio	0.06	0.22	0.25	0.54	0.04	0.55	0.02	0.29
Control Delay	15.2	15.6	17.8	21.6	9.0	13.2	9.0	10.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	15.2	15.6	17.8	21.6	9.0	13.2	9.0	10.0
Queue Length 50th (m)	1.1	7.8	6.7	22.9	1.2	31.9	0.3	13.4
Queue Length 95th (m)	4.4	17.3	15.5	40.6	5.0	68.9	2.1	31.5
Internal Link Dist (m)		1372.4		151.6		1413.7		144.7
Turn Bay Length (m)	35.0		45.0		40.0		35.0	
Base Capacity (vph)	371	759	522	768	575	934	384	899
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.04	0.14	0.16	0.35	0.04	0.55	0.02	0.29

Intersection Summary

Cycle Length: 65
Actuated Cycle Length: 57.9
Natural Cycle: 55
Control Type: Semi Act-Uncoord

Splits and Phases: 7: Dixie Road & Old School Road





Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	14	98	10	84	251	18	25	468	43	6	242	15
Future Volume (vph)	14	98	10	84	251	18	25	468	43	6	242	15
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5
Total Lost time (s)	6.4	6.4		6.4	6.4		6.6	6.6		6.6	6.6	
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	0.99		1.00	0.99		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)	1566	1844		1767	1871		1785	1822		1785	1756	
Flt Permitted	0.55	1.00		0.69	1.00		0.60	1.00		0.40	1.00	
Satd. Flow (perm)	909	1844		1279	1871		1128	1822		754	1756	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	14	98	10	84	251	18	25	468	43	6	242	15
RTOR Reduction (vph)	0	7	0	0	4	0	0	4	0	0	3	0
Lane Group Flow (vph)	14	101	0	84	265	0	25	507	0	6	254	0
Heavy Vehicles (%)	14%	3%	0%	1%	1%	11%	0%	2%	27%	0%	9%	0%
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		8			4			6			2	
Permitted Phases	8			4			6			2		
Actuated Green, G (s)	15.3	15.3		15.3	15.3		29.6	29.6		29.6	29.6	
Effective Green, g (s)	15.3	15.3		15.3	15.3		29.6	29.6		29.6	29.6	
Actuated g/C Ratio	0.26	0.26		0.26	0.26		0.51	0.51		0.51	0.51	
Clearance Time (s)	6.4	6.4		6.4	6.4		6.6	6.6		6.6	6.6	
Vehicle Extension (s)	5.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0	
Lane Grp Cap (vph)	240	487		337	494		576	931		385	897	
v/s Ratio Prot		0.05			c0.14			c0.28			0.14	
v/s Ratio Perm	0.02			0.07			0.02			0.01		
v/c Ratio	0.06	0.21		0.25	0.54		0.04	0.54		0.02	0.28	
Uniform Delay, d1	15.9	16.6		16.8	18.3		7.1	9.6		7.0	8.1	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.2	0.4		0.8	2.0		0.1	2.3		0.1	0.8	
Delay (s)	16.1	17.0		17.6	20.3		7.2	11.9		7.0	8.9	
Level of Service	B	B		B	C		A	B		A	A	
Approach Delay (s)		16.9			19.7			11.6			8.8	
Approach LOS		B			B			B			A	

Intersection Summary			
HCM 2000 Control Delay	13.8	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.54		
Actuated Cycle Length (s)	57.9	Sum of lost time (s)	13.0
Intersection Capacity Utilization	52.4%	ICU Level of Service	A
Analysis Period (min)	15		

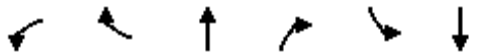
c Critical Lane Group



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	35	12	377	13	7	130
Future Volume (Veh/h)	35	12	377	13	7	130
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)	38	13	410	14	8	141
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	574	417			424	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	574	417			424	
tC, single (s)	6.5	6.3			4.1	
tC, 2 stage (s)						
tF (s)	3.6	3.4			2.2	
p0 queue free %	92	98			99	
cM capacity (veh/h)	467	623			1135	

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	51	424	149
Volume Left	38	0	8
Volume Right	13	14	0
cSH	499	1700	1135
Volume to Capacity	0.10	0.25	0.01
Queue Length 95th (m)	2.6	0.0	0.2
Control Delay (s)	13.0	0.0	0.5
Lane LOS	B		A
Approach Delay (s)	13.0	0.0	0.5
Approach LOS	B		

Intersection Summary			
Average Delay	1.2		
Intersection Capacity Utilization	30.6%	ICU Level of Service	A
Analysis Period (min)	15		



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	35	12	376	13	7	102
Future Volume (Veh/h)	35	12	376	13	7	102
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)	38	13	409	14	8	111
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	543	416			423	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	543	416			423	
tC, single (s)	6.5	6.3			4.1	
tC, 2 stage (s)						
tF (s)	3.6	3.4			2.2	
p0 queue free %	92	98			99	
cM capacity (veh/h)	487	624			1136	

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	51	423	119
Volume Left	38	0	8
Volume Right	13	14	0
cSH	516	1700	1136
Volume to Capacity	0.10	0.25	0.01
Queue Length 95th (m)	2.5	0.0	0.2
Control Delay (s)	12.7	0.0	0.6
Lane LOS	B		A
Approach Delay (s)	12.7	0.0	0.6
Approach LOS	B		

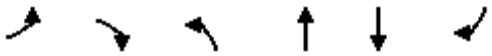
Intersection Summary			
Average Delay	1.2		
Intersection Capacity Utilization	30.6%	ICU Level of Service	A
Analysis Period (min)	15		



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	34	12	374	14	6	75
Future Volume (Veh/h)	34	12	374	14	6	75
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)	37	13	407	15	7	82
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	510	414			422	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	510	414			422	
tC, single (s)	6.5	6.3			4.1	
tC, 2 stage (s)						
tF (s)	3.6	3.4			2.2	
p0 queue free %	93	98			99	
cM capacity (veh/h)	509	625			1137	

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	50	422	89
Volume Left	37	0	7
Volume Right	13	15	0
cSH	535	1700	1137
Volume to Capacity	0.09	0.25	0.01
Queue Length 95th (m)	2.3	0.0	0.1
Control Delay (s)	12.4	0.0	0.7
Lane LOS	B		A
Approach Delay (s)	12.4	0.0	0.7
Approach LOS	B		

Intersection Summary			
Average Delay	1.2		
Intersection Capacity Utilization	30.5%	ICU Level of Service	A
Analysis Period (min)	15		



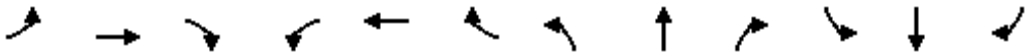
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	20	66	26	609	325	11
Future Volume (Veh/h)	20	66	26	609	325	11
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	22	72	28	662	353	12
Pedestrians						
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	740	176	365			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	740	176	365			
tC, single (s)	7.0	7.1	4.1			
tC, 2 stage (s)						
tF (s)	3.6	3.4	2.2			
p0 queue free %	93	91	98			
cM capacity (veh/h)	330	815	1190			

Direction, Lane #	EB 1	NB 1	NB 2	NB 3	SB 1	SB 2	SB 3
Volume Total	94	28	331	331	176	176	12
Volume Left	22	28	0	0	0	0	0
Volume Right	72	0	0	0	0	0	12
cSH	606	1190	1700	1700	1700	1700	1700
Volume to Capacity	0.16	0.02	0.19	0.19	0.10	0.10	0.01
Queue Length 95th (m)	4.2	0.5	0.0	0.0	0.0	0.0	0.0
Control Delay (s)	12.0	8.1	0.0	0.0	0.0	0.0	0.0
Lane LOS	B	A					
Approach Delay (s)	12.0	0.3			0.0		
Approach LOS	B						

Intersection Summary			
Average Delay	1.2		
Intersection Capacity Utilization	28.7%	ICU Level of Service	A
Analysis Period (min)	15		

Appendix P

2029 Future Total Conditions



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Stop			Stop	
Traffic Volume (vph)	12	287	93	12	95	62	36	32	8	4	81	13
Future Volume (vph)	12	287	93	12	95	62	36	32	8	4	81	13
Peak Hour Factor	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85
Hourly flow rate (vph)	14	338	109	14	112	73	42	38	9	5	95	15

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total (vph)	461	199	89	115
Volume Left (vph)	14	14	42	5
Volume Right (vph)	109	73	9	15
Hadj (s)	-0.09	0.04	0.19	-0.01
Departure Headway (s)	4.7	5.2	5.9	5.7
Degree Utilization, x	0.60	0.28	0.15	0.18
Capacity (veh/h)	737	655	525	557
Control Delay (s)	14.6	10.2	10.0	10.0
Approach Delay (s)	14.6	10.2	10.0	10.0
Approach LOS	B	B	A	A

Intersection Summary				
Delay	12.5			
Level of Service	B			
Intersection Capacity Utilization	41.5%	ICU Level of Service	A	
Analysis Period (min)	15			

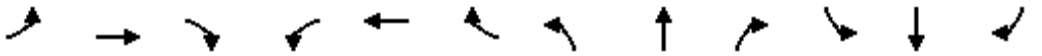
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	79	1716	511	116	1121	250	108	80	18	235	167	106
Future Volume (vph)	79	1716	511	116	1121	250	108	80	18	235	167	106
Lane Group Flow (vph)	79	1716	511	116	1121	250	108	80	18	235	167	106
Turn Type	Perm	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm	Perm	NA	Perm
Protected Phases		2		1	6		7	4			8	
Permitted Phases	2		2	6		6	4		4	8		8
Detector Phase	2	2	2	1	6	6	7	4	4	8	8	8
Switch Phase												
Minimum Initial (s)	12.0	12.0	12.0	5.0	12.0	12.0	5.0	8.0	8.0	8.0	8.0	8.0
Minimum Split (s)	39.7	39.7	39.7	9.0	39.7	39.7	9.0	43.9	43.9	43.9	43.9	43.9
Total Split (s)	77.0	77.0	77.0	9.0	86.0	86.0	9.0	54.0	54.0	45.0	45.0	45.0
Total Split (%)	55.0%	55.0%	55.0%	6.4%	61.4%	61.4%	6.4%	38.6%	38.6%	32.1%	32.1%	32.1%
Yellow Time (s)	4.6	4.6	4.6	3.0	4.6	4.6	3.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	2.1	2.1	2.1	1.0	2.1	2.1	1.0	2.9	2.9	2.9	2.9	2.9
Lost Time Adjust (s)	0.0	0.0	0.0	-1.0	0.0	0.0	-1.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.7	6.7	6.7	3.0	6.7	6.7	3.0	6.9	6.9	6.9	6.9	6.9
Lead/Lag	Lag	Lag	Lag	Lead			Lead			Lag	Lag	Lag
Lead-Lag Optimize?												
Recall Mode	Max	Max	Max	None	Max	Max	None	None	None	None	None	None
v/c Ratio	0.39	0.73	0.53	0.82	0.45	0.33	0.34	0.15	0.04	0.83	0.41	0.26
Control Delay	27.9	27.6	5.0	57.1	16.4	2.9	34.9	34.0	0.2	72.9	46.0	11.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	27.9	27.6	5.0	57.1	16.4	2.9	34.9	34.0	0.2	72.9	46.0	11.9
Queue Length 50th (m)	12.6	129.8	6.5	12.5	60.3	0.0	20.4	15.4	0.0	59.3	37.5	3.1
Queue Length 95th (m)	28.8	156.8	30.4	#37.4	76.0	11.9	34.9	28.0	0.0	#92.3	58.7	17.6
Internal Link Dist (m)		179.2			166.2			202.0			680.1	
Turn Bay Length (m)	115.0		180.0	80.0		150.0	110.0		44.0	20.0		20.0
Base Capacity (vph)	203	2344	960	142	2501	763	316	609	545	340	488	474
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.39	0.73	0.53	0.82	0.45	0.33	0.34	0.13	0.03	0.69	0.34	0.22

Intersection Summary

Cycle Length: 140
Actuated Cycle Length: 133.9
Natural Cycle: 105
Control Type: Semi Act-Uncoord
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 2: Heart Lake Road & Mayfield Road





Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	79	1716	511	116	1121	250	108	80	18	235	167	106
Future Volume (vph)	79	1716	511	116	1121	250	108	80	18	235	167	106
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5
Total Lost time (s)	6.7	6.7	6.7	3.0	6.7	6.7	3.0	6.9	6.9	6.9	6.9	6.9
Lane Util. Factor	1.00	0.91	1.00	1.00	0.91	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1530	4453	1409	1560	4214	1114	1530	1729	1437	1606	1712	1437
Flt Permitted	0.24	1.00	1.00	0.08	1.00	1.00	0.53	1.00	1.00	0.70	1.00	1.00
Satd. Flow (perm)	387	4453	1409	125	4214	1114	857	1729	1437	1192	1712	1437
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	79	1716	511	116	1121	250	108	80	18	235	167	106
RTOR Reduction (vph)	0	0	219	0	0	101	0	0	13	0	0	69
Lane Group Flow (vph)	79	1716	292	116	1121	149	108	80	5	235	167	37
Heavy Vehicles (%)	5%	6%	2%	3%	12%	29%	5%	0%	0%	0%	1%	0%
Turn Type	Perm	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm	Perm	NA	Perm
Protected Phases		2		1	6		7	4			8	
Permitted Phases	2		2	6		6	4		4	8		8
Actuated Green, G (s)	70.5	70.5	70.5	79.5	79.5	79.5	40.7	40.7	40.7	31.7	31.7	31.7
Effective Green, g (s)	70.5	70.5	70.5	80.5	79.5	79.5	41.7	40.7	40.7	31.7	31.7	31.7
Actuated g/C Ratio	0.53	0.53	0.53	0.60	0.59	0.59	0.31	0.30	0.30	0.24	0.24	0.24
Clearance Time (s)	6.7	6.7	6.7	4.0	6.7	6.7	4.0	6.9	6.9	6.9	6.9	6.9
Vehicle Extension (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Lane Grp Cap (vph)	203	2346	742	139	2503	661	297	525	437	282	405	340
v/s Ratio Prot		0.39		c0.04	0.27		c0.02	0.05			0.10	
v/s Ratio Perm	0.20		0.21	c0.46		0.13	0.10		0.00	c0.20		0.03
v/c Ratio	0.39	0.73	0.39	0.83	0.45	0.22	0.36	0.15	0.01	0.83	0.41	0.11
Uniform Delay, d1	18.8	24.4	18.9	19.1	15.0	12.7	35.0	34.0	32.5	48.5	43.2	40.0
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	5.5	2.1	1.6	35.9	0.6	0.8	1.6	0.3	0.0	20.5	1.4	0.3
Delay (s)	24.4	26.4	20.5	55.0	15.6	13.5	36.6	34.2	32.5	69.0	44.6	40.3
Level of Service	C	C	C	E	B	B	D	C	C	E	D	D
Approach Delay (s)		25.0			18.3			35.3			55.0	
Approach LOS		C			B			D			D	

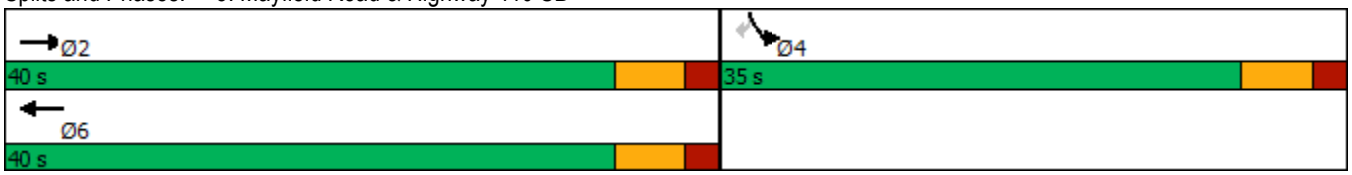
Intersection Summary			
HCM 2000 Control Delay	26.7	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.83		
Actuated Cycle Length (s)	133.8	Sum of lost time (s)	19.6
Intersection Capacity Utilization	85.5%	ICU Level of Service	E
Analysis Period (min)	15		

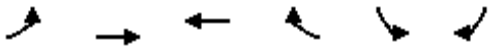
c Critical Lane Group

Lane Group	EBT	WBT	SBL	SBR
Lane Configurations				
Traffic Volume (vph)	1315	1188	348	329
Future Volume (vph)	1315	1188	348	329
Lane Group Flow (vph)	1315	1188	463	214
Turn Type	NA	NA	Prot	Perm
Protected Phases	2	6	4	
Permitted Phases				4
Detector Phase	2	6	4	4
Switch Phase				
Minimum Initial (s)	16.0	16.0	8.0	8.0
Minimum Split (s)	22.0	22.0	32.0	32.0
Total Split (s)	40.0	40.0	35.0	35.0
Total Split (%)	53.3%	53.3%	46.7%	46.7%
Yellow Time (s)	4.0	4.0	4.0	4.0
All-Red Time (s)	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.0	6.0	6.0	6.0
Lead/Lag				
Lead-Lag Optimize?				
Recall Mode	Max	Max	None	None
v/c Ratio	0.49	0.42	0.49	0.50
Control Delay	10.7	10.0	19.4	20.4
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	10.7	10.0	19.4	20.4
Queue Length 50th (m)	31.2	26.7	21.4	19.2
Queue Length 95th (m)	56.1	48.3	32.4	37.5
Internal Link Dist (m)	123.5	116.2	492.2	
Turn Bay Length (m)				
Base Capacity (vph)	2668	2829	1602	700
Starvation Cap Reductn	0	0	0	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.49	0.42	0.29	0.31

Intersection Summary
Cycle Length: 75
Actuated Cycle Length: 63.4
Natural Cycle: 55
Control Type: Semi Act-Uncoord

Splits and Phases: 3: Mayfield Road & Highway 410 SB





Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑↑↑	↑↑↑		↰↰	↱
Traffic Volume (vph)	0	1315	1188	0	348	329
Future Volume (vph)	0	1315	1188	0	348	329
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)		6.0	6.0		6.0	6.0
Lane Util. Factor		0.91	0.91		0.97	0.91
Frt		1.00	1.00		0.96	0.85
Flt Protected		1.00	1.00		0.96	1.00
Satd. Flow (prot)		4948	5245		3444	1486
Flt Permitted		1.00	1.00		0.96	1.00
Satd. Flow (perm)		4948	5245		3444	1486
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	0	1315	1188	0	348	329
RTOR Reduction (vph)	0	0	0	0	23	23
Lane Group Flow (vph)	0	1315	1188	0	440	191
Heavy Vehicles (%)	0%	6%	0%	16%	0%	0%
Bus Blockages (#/hr)	0	0	0	0	2	0
Turn Type		NA	NA		Prot	Perm
Protected Phases		2	6		4	
Permitted Phases						4
Actuated Green, G (s)		34.2	34.2		17.1	17.1
Effective Green, g (s)		34.2	34.2		17.1	17.1
Actuated g/C Ratio		0.54	0.54		0.27	0.27
Clearance Time (s)		6.0	6.0		6.0	6.0
Vehicle Extension (s)		5.0	5.0		5.0	5.0
Lane Grp Cap (vph)		2673	2833		930	401
v/s Ratio Prot		c0.27	0.23		0.13	
v/s Ratio Perm						c0.13
v/c Ratio		0.49	0.42		0.47	0.48
Uniform Delay, d1		9.1	8.6		19.3	19.3
Progression Factor		1.00	1.00		1.00	1.00
Incremental Delay, d2		0.7	0.5		0.8	1.9
Delay (s)		9.8	9.1		20.1	21.2
Level of Service		A	A		C	C
Approach Delay (s)		9.8	9.1		20.5	
Approach LOS		A	A		C	

Intersection Summary			
HCM 2000 Control Delay	11.8	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.49		
Actuated Cycle Length (s)	63.3	Sum of lost time (s)	12.0
Intersection Capacity Utilization	48.8%	ICU Level of Service	A
Analysis Period (min)	15		

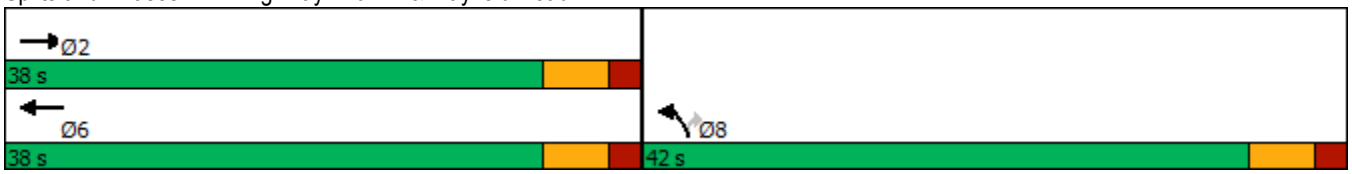
c Critical Lane Group

Lane Group	EBT	WBT	NBL	NBR
Lane Configurations				
Traffic Volume (vph)	1656	1595	473	882
Future Volume (vph)	1656	1595	473	882
Lane Group Flow (vph)	1656	1595	914	441
Turn Type	NA	NA	Prot	Perm
Protected Phases	2	6	8	
Permitted Phases				8
Detector Phase	2	6	8	8
Switch Phase				
Minimum Initial (s)	26.0	26.0	10.0	10.0
Minimum Split (s)	32.0	32.0	22.0	22.0
Total Split (s)	38.0	38.0	42.0	42.0
Total Split (%)	47.5%	47.5%	52.5%	52.5%
Yellow Time (s)	4.0	4.0	4.0	4.0
All-Red Time (s)	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.0	6.0	6.0	6.0
Lead/Lag				
Lead-Lag Optimize?				
Recall Mode	Max	None	None	None
v/c Ratio	0.77	0.78	0.78	0.83
Control Delay	21.8	22.5	24.3	34.7
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	21.8	22.5	24.3	34.7
Queue Length 50th (m)	73.9	71.8	54.8	58.0
Queue Length 95th (m)	99.7	97.8	75.3	#103.0
Internal Link Dist (m)	104.0	63.2	627.1	
Turn Bay Length (m)				
Base Capacity (vph)	2155	2040	1431	646
Starvation Cap Reductn	0	0	0	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.77	0.78	0.64	0.68

Intersection Summary

Cycle Length: 80
Actuated Cycle Length: 74
Natural Cycle: 60
Control Type: Semi Act-Uncoord
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 4: Highway 410 NB & Mayfield Road





Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	1656	0	0	1595	473	882
Future Volume (vph)	1656	0	0	1595	473	882
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0			6.0	6.0	6.0
Lane Util. Factor	0.91			0.91	0.97	0.91
Frt	1.00			1.00	0.93	0.85
Flt Protected	1.00			1.00	0.97	1.00
Satd. Flow (prot)	4948			4683	2916	1315
Flt Permitted	1.00			1.00	0.97	1.00
Satd. Flow (perm)	4948			4683	2916	1315
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	1656	0	0	1595	473	882
RTOR Reduction (vph)	0	0	0	0	2	2
Lane Group Flow (vph)	1656	0	0	1595	912	439
Heavy Vehicles (%)	6%	0%	0%	12%	18%	13%
Turn Type	NA			NA	Prot	Perm
Protected Phases	2			6	8	
Permitted Phases						8
Actuated Green, G (s)	32.2			32.2	29.7	29.7
Effective Green, g (s)	32.2			32.2	29.7	29.7
Actuated g/C Ratio	0.44			0.44	0.40	0.40
Clearance Time (s)	6.0			6.0	6.0	6.0
Vehicle Extension (s)	5.0			5.0	3.0	3.0
Lane Grp Cap (vph)	2155			2040	1171	528
v/s Ratio Prot	0.33			c0.34	0.31	
v/s Ratio Perm						c0.33
v/c Ratio	0.77			0.78	0.78	0.83
Uniform Delay, d1	17.7			17.8	19.2	19.9
Progression Factor	1.00			1.00	1.00	1.00
Incremental Delay, d2	2.7			2.3	3.3	10.7
Delay (s)	20.4			20.2	22.6	30.6
Level of Service	C			C	C	C
Approach Delay (s)	20.4			20.2	25.2	
Approach LOS	C			C	C	

Intersection Summary			
HCM 2000 Control Delay	21.7	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.81		
Actuated Cycle Length (s)	73.9	Sum of lost time (s)	12.0
Intersection Capacity Utilization	78.4%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	EBT	EBR	WBL	WBT	NBL
Lane Configurations					
Traffic Volume (vph)	2119	211	68	1317	106
Future Volume (vph)	2119	211	68	1317	106
Lane Group Flow (vph)	2119	211	68	1317	166
Turn Type	NA	Perm	Perm	NA	Prot
Protected Phases	2			2	4
Permitted Phases		2	2		
Detector Phase	2	2	2	2	4
Switch Phase					
Minimum Initial (s)	12.0	12.0	12.0	12.0	8.0
Minimum Split (s)	26.7	26.7	26.7	26.7	45.6
Total Split (s)	74.0	74.0	74.0	74.0	46.0
Total Split (%)	61.7%	61.7%	61.7%	61.7%	38.3%
Yellow Time (s)	4.6	4.6	4.6	4.6	4.0
All-Red Time (s)	2.1	2.1	2.1	2.1	3.6
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.7	6.7	6.7	6.7	7.6
Lead/Lag					
Lead-Lag Optimize?					
Recall Mode	Max	Max	Max	Max	None
v/c Ratio	0.59	0.18	0.83	0.37	0.58
Control Delay	9.2	1.9	83.2	6.9	45.6
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	9.2	1.9	83.2	6.9	45.6
Queue Length 50th (m)	67.7	1.8	8.3	33.2	28.2
Queue Length 95th (m)	97.2	9.7	#24.4	49.3	48.1
Internal Link Dist (m)	203.7			76.6	88.2
Turn Bay Length (m)		65.0	35.0		
Base Capacity (vph)	3588	1145	82	3588	660
Starvation Cap Reductn	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.59	0.18	0.83	0.37	0.25

Intersection Summary

Cycle Length: 120
Actuated Cycle Length: 101.6
Natural Cycle: 90
Control Type: Actuated-Uncoordinated
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 5: Ace Drive & Mayfield Road





Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	2119	211	68	1317	106	60
Future Volume (vph)	2119	211	68	1317	106	60
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width	3.7	3.5	3.5	3.7	3.7	3.7
Total Lost time (s)	6.7	6.7	6.7	6.7	7.6	
Lane Util. Factor	0.91	1.00	1.00	0.91	1.00	
Frt	1.00	0.85	1.00	1.00	0.95	
Flt Protected	1.00	1.00	0.95	1.00	0.97	
Satd. Flow (prot)	5142	1566	1750	5142	1736	
Flt Permitted	1.00	1.00	0.06	1.00	0.97	
Satd. Flow (perm)	5142	1566	117	5142	1736	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	2119	211	68	1317	106	60
RTOR Reduction (vph)	0	53	0	0	5	0
Lane Group Flow (vph)	2119	158	68	1317	161	0
Turn Type	NA	Perm	Perm	NA	Prot	
Protected Phases	2			2	4	
Permitted Phases		2	2			
Actuated Green, G (s)	70.9	70.9	70.9	70.9	16.4	
Effective Green, g (s)	70.9	70.9	70.9	70.9	16.4	
Actuated g/C Ratio	0.70	0.70	0.70	0.70	0.16	
Clearance Time (s)	6.7	6.7	6.7	6.7	7.6	
Vehicle Extension (s)	5.0	5.0	5.0	5.0	5.0	
Lane Grp Cap (vph)	3588	1092	81	3588	280	
v/s Ratio Prot	0.41			0.26	c0.09	
v/s Ratio Perm		0.10	c0.58			
v/c Ratio	0.59	0.14	0.84	0.37	0.57	
Uniform Delay, d1	7.9	5.2	11.2	6.2	39.4	
Progression Factor	1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	0.7	0.3	62.4	0.3	4.5	
Delay (s)	8.6	5.4	73.6	6.5	43.9	
Level of Service	A	A	E	A	D	
Approach Delay (s)	8.3			9.8	43.9	
Approach LOS	A			A	D	

Intersection Summary			
HCM 2000 Control Delay	10.4	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.78		
Actuated Cycle Length (s)	101.6	Sum of lost time (s)	14.3
Intersection Capacity Utilization	78.0%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

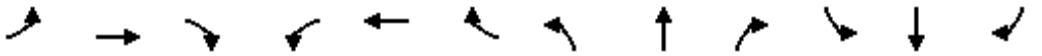
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	603	1785	364	64	751	110	121	170	54	49	176	428
Future Volume (vph)	603	1785	364	64	751	110	121	170	54	49	176	428
Lane Group Flow (vph)	603	1785	364	64	751	110	121	170	54	49	176	428
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	Perm	NA	Perm	Perm	NA	Perm
Protected Phases	5	2		1	6			8			4	
Permitted Phases	2		2	6		6	8		8	4		4
Detector Phase	5	2	2	1	6	6	8	8	8	4	4	4
Switch Phase												
Minimum Initial (s)	5.0	8.0	8.0	5.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0
Minimum Split (s)	9.0	44.9	44.9	9.0	44.9	44.9	47.9	47.9	47.9	47.9	47.9	47.9
Total Split (s)	27.0	63.1	63.1	9.0	45.1	45.1	47.9	47.9	47.9	47.9	47.9	47.9
Total Split (%)	22.5%	52.6%	52.6%	7.5%	37.6%	37.6%	39.9%	39.9%	39.9%	39.9%	39.9%	39.9%
Yellow Time (s)	3.0	4.6	4.6	3.0	4.6	4.6	4.6	4.6	4.6	4.6	4.6	4.6
All-Red Time (s)	1.0	2.3	2.3	1.0	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.3
Lost Time Adjust (s)	-1.0	0.0	0.0	-1.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	3.0	6.9	6.9	3.0	6.9	6.9	6.9	6.9	6.9	6.9	6.9	6.9
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag						
Lead-Lag Optimize?												
Recall Mode	None	Max	Max	None	None	None	None	None	None	None	None	None
v/c Ratio	0.97	0.61	0.35	0.33	0.43	0.21	0.57	0.29	0.16	0.28	0.28	0.73
Control Delay	45.0	14.7	2.7	14.0	23.2	5.8	46.3	34.5	1.1	37.5	34.3	13.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	45.0	14.7	2.7	14.0	23.2	5.8	46.3	34.5	1.1	37.5	34.3	13.1
Queue Length 50th (m)	60.6	73.3	1.4	2.9	35.9	0.2	20.8	14.5	0.0	8.0	15.0	5.5
Queue Length 95th (m)	#161.4	114.2	15.3	9.2	55.2	11.5	37.9	23.4	0.6	18.0	24.1	34.7
Internal Link Dist (m)		179.3			299.2			185.5			471.5	
Turn Bay Length (m)	140.0		70.0	65.0		30.0	75.0		60.0	30.0		138.0
Base Capacity (vph)	622	2922	1055	193	1864	550	503	1380	675	414	1470	853
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.97	0.61	0.35	0.33	0.40	0.20	0.24	0.12	0.08	0.12	0.12	0.50

Intersection Summary

Cycle Length: 120
Actuated Cycle Length: 95.1
Natural Cycle: 135
Control Type: Semi Act-Uncoord
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 6: Dixie Road & Mayfield Road





Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	603	1785	364	64	751	110	121	170	54	49	176	428
Future Volume (vph)	603	1785	364	64	751	110	121	170	54	49	176	428
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5
Total Lost time (s)	3.0	6.9	6.9	3.0	6.9	6.9	6.9	6.9	6.9	6.9	6.9	6.9
Lane Util. Factor	1.00	0.91	1.00	1.00	0.91	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1566	4902	1536	1653	4601	1201	1716	3174	1413	1405	3380	1452
Flt Permitted	0.30	1.00	1.00	0.12	1.00	1.00	0.64	1.00	1.00	0.64	1.00	1.00
Satd. Flow (perm)	491	4902	1536	208	4601	1201	1158	3174	1413	953	3380	1452
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	603	1785	364	64	751	110	121	170	54	49	176	428
RTOR Reduction (vph)	0	0	141	0	0	66	0	0	44	0	0	321
Lane Group Flow (vph)	603	1785	223	64	751	44	121	170	10	49	176	107
Heavy Vehicles (%)	14%	7%	4%	8%	14%	33%	4%	15%	13%	27%	8%	10%
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	Perm	NA	Perm	Perm	NA	Perm
Protected Phases	5	2		1	6			8			4	
Permitted Phases	2		2	6		6	8		8	4		4
Actuated Green, G (s)	64.6	56.7	56.7	41.3	37.4	37.4	17.5	17.5	17.5	17.5	17.5	17.5
Effective Green, g (s)	65.6	56.7	56.7	43.3	37.4	37.4	17.5	17.5	17.5	17.5	17.5	17.5
Actuated g/C Ratio	0.68	0.59	0.59	0.45	0.39	0.39	0.18	0.18	0.18	0.18	0.18	0.18
Clearance Time (s)	4.0	6.9	6.9	4.0	6.9	6.9	6.9	6.9	6.9	6.9	6.9	6.9
Vehicle Extension (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Lane Grp Cap (vph)	607	2898	908	167	1794	468	211	579	257	173	616	264
v/s Ratio Prot	c0.25	0.36		0.02	0.16			0.05			0.05	
v/s Ratio Perm	c0.43		0.15	0.15		0.04	c0.10		0.01	0.05		0.07
v/c Ratio	0.99	0.62	0.25	0.38	0.42	0.09	0.57	0.29	0.04	0.28	0.29	0.40
Uniform Delay, d1	14.8	12.6	9.4	15.0	21.3	18.5	35.8	33.9	32.3	33.8	33.8	34.6
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	34.8	1.0	0.6	3.0	0.3	0.2	5.9	0.6	0.1	1.9	0.5	2.1
Delay (s)	49.5	13.6	10.0	18.1	21.7	18.7	41.7	34.5	32.4	35.7	34.3	36.7
Level of Service	D	B	B	B	C	B	D	C	C	D	C	D
Approach Delay (s)		21.0			21.1			36.7			36.0	
Approach LOS		C			C			D			D	

Intersection Summary			
HCM 2000 Control Delay	24.3	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.95		
Actuated Cycle Length (s)	95.9	Sum of lost time (s)	16.8
Intersection Capacity Utilization	81.9%	ICU Level of Service	D
Analysis Period (min)	15		

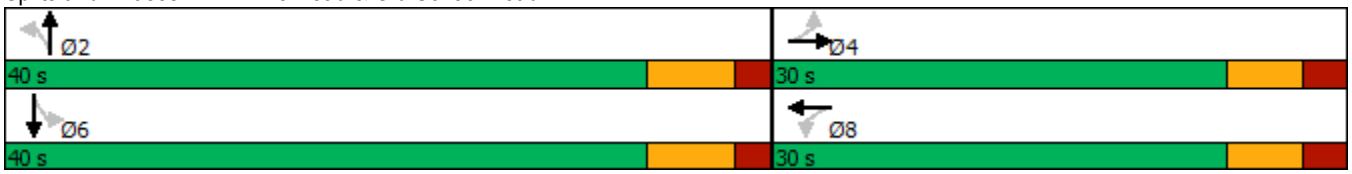
c Critical Lane Group

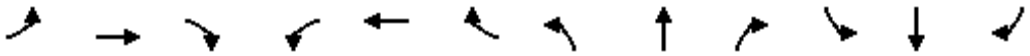
Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations								
Traffic Volume (vph)	17	252	49	98	24	245	33	708
Future Volume (vph)	17	252	49	98	24	245	33	708
Lane Group Flow (vph)	17	299	49	106	24	291	33	754
Turn Type	Perm	NA	Perm	NA	Perm	NA	Perm	NA
Protected Phases		4		8		2		6
Permitted Phases	4		8		2		6	
Detector Phase	4	4	8	8	2	2	6	6
Switch Phase								
Minimum Initial (s)	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0
Minimum Split (s)	25.4	25.4	25.4	25.4	23.6	23.6	23.6	23.6
Total Split (s)	30.0	30.0	30.0	30.0	40.0	40.0	40.0	40.0
Total Split (%)	42.9%	42.9%	42.9%	42.9%	57.1%	57.1%	57.1%	57.1%
Yellow Time (s)	4.0	4.0	4.0	4.0	4.6	4.6	4.6	4.6
All-Red Time (s)	2.4	2.4	2.4	2.4	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.4	6.4	6.4	6.4	6.6	6.6	6.6	6.6
Lead/Lag								
Lead-Lag Optimize?								
Recall Mode	None	None	None	None	Max	Max	Max	Max
v/c Ratio	0.06	0.61	0.21	0.22	0.11	0.31	0.06	0.77
Control Delay	17.1	24.8	19.9	17.8	10.9	9.9	9.2	20.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	17.1	24.8	19.9	17.8	10.9	9.9	9.2	20.3
Queue Length 50th (m)	1.5	28.9	4.4	9.0	1.3	16.1	1.7	63.1
Queue Length 95th (m)	5.3	49.5	11.7	19.0	5.9	36.6	6.5	#148.3
Internal Link Dist (m)		1372.4		151.6		1413.7		144.7
Turn Bay Length (m)	35.0		45.0		40.0		35.0	
Base Capacity (vph)	379	692	332	679	212	928	548	979
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.04	0.43	0.15	0.16	0.11	0.31	0.06	0.77

Intersection Summary

Cycle Length: 70
Actuated Cycle Length: 63.6
Natural Cycle: 60
Control Type: Semi Act-Uncoord
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 7: Dixie Road & Old School Road





Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	17	252	47	49	98	8	24	245	46	33	708	46
Future Volume (vph)	17	252	47	49	98	8	24	245	46	33	708	46
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5
Total Lost time (s)	6.4	6.4		6.4	6.4		6.6	6.6		6.6	6.6	
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	0.98		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)	1405	1836		1785	1815		1785	1730		1684	1835	
Flt Permitted	0.69	1.00		0.48	1.00		0.21	1.00		0.58	1.00	
Satd. Flow (perm)	1019	1836		895	1815		400	1730		1031	1835	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	17	252	47	49	98	8	24	245	46	33	708	46
RTOR Reduction (vph)	0	10	0	0	4	0	0	8	0	0	3	0
Lane Group Flow (vph)	17	289	0	49	102	0	24	283	0	33	751	0
Heavy Vehicles (%)	27%	2%	3%	0%	5%	0%	0%	10%	0%	6%	4%	0%
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)	16.7	16.7		16.7	16.7		33.8	33.8		33.8	33.8	
Effective Green, g (s)	16.7	16.7		16.7	16.7		33.8	33.8		33.8	33.8	
Actuated g/C Ratio	0.26	0.26		0.26	0.26		0.53	0.53		0.53	0.53	
Clearance Time (s)	6.4	6.4		6.4	6.4		6.6	6.6		6.6	6.6	
Vehicle Extension (s)	5.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0	
Lane Grp Cap (vph)	267	482		235	477		212	920		548	976	
v/s Ratio Prot		c0.16			0.06			0.16			c0.41	
v/s Ratio Perm	0.02			0.05			0.06			0.03		
v/c Ratio	0.06	0.60		0.21	0.21		0.11	0.31		0.06	0.77	
Uniform Delay, d1	17.5	20.5		18.2	18.3		7.4	8.3		7.2	11.8	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.2	3.0		0.9	0.5		1.1	0.9		0.2	5.8	
Delay (s)	17.8	23.5		19.2	18.7		8.5	9.2		7.4	17.6	
Level of Service	B	C		B	B		A	A		A	B	
Approach Delay (s)		23.2			18.9			9.1			17.2	
Approach LOS		C			B			A			B	

Intersection Summary			
HCM 2000 Control Delay	16.9	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.71		
Actuated Cycle Length (s)	63.5	Sum of lost time (s)	13.0
Intersection Capacity Utilization	79.0%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	13	2	345	27	17	82
Future Volume (Veh/h)	13	2	345	27	17	82
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	14	2	375	29	18	89
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	514	390			404	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	514	390			404	
tC, single (s)	6.6	6.4			4.1	
tC, 2 stage (s)						
tF (s)	3.7	3.5			2.2	
p0 queue free %	97	100			98	
cM capacity (veh/h)	485	625			1155	

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	16	404	107
Volume Left	14	0	18
Volume Right	2	29	0
cSH	499	1700	1155
Volume to Capacity	0.03	0.24	0.02
Queue Length 95th (m)	0.8	0.0	0.4
Control Delay (s)	12.4	0.0	1.5
Lane LOS	B		A
Approach Delay (s)	12.4	0.0	1.5
Approach LOS	B		

Intersection Summary			
Average Delay	0.7		
Intersection Capacity Utilization	29.8%	ICU Level of Service	A
Analysis Period (min)	15		



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	13	2	315	29	17	86
Future Volume (Veh/h)	13	2	315	29	17	86
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	14	2	342	32	18	93
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	487	358			374	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	487	358			374	
tC, single (s)	6.6	6.4			4.1	
tC, 2 stage (s)						
tF (s)	3.7	3.5			2.2	
p0 queue free %	97	100			98	
cM capacity (veh/h)	504	652			1184	

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	16	374	111
Volume Left	14	0	18
Volume Right	2	32	0
cSH	519	1700	1184
Volume to Capacity	0.03	0.22	0.02
Queue Length 95th (m)	0.7	0.0	0.4
Control Delay (s)	12.2	0.0	1.4
Lane LOS	B		A
Approach Delay (s)	12.2	0.0	1.4
Approach LOS	B		

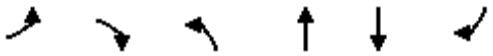
Intersection Summary			
Average Delay	0.7		
Intersection Capacity Utilization	29.1%	ICU Level of Service	A
Analysis Period (min)	15		



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	14	2	285	29	17	90
Future Volume (Veh/h)	14	2	285	29	17	90
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)	15	2	310	32	18	98
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	460	326			342	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	460	326			342	
tC, single (s)	6.6	6.4			4.1	
tC, 2 stage (s)						
tF (s)	3.7	3.5			2.2	
p0 queue free %	97	100			99	
cM capacity (veh/h)	523	680			1217	

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	17	342	116
Volume Left	15	0	18
Volume Right	2	32	0
cSH	538	1700	1217
Volume to Capacity	0.03	0.20	0.01
Queue Length 95th (m)	0.7	0.0	0.3
Control Delay (s)	11.9	0.0	1.3
Lane LOS	B		A
Approach Delay (s)	11.9	0.0	1.3
Approach LOS	B		

Intersection Summary			
Average Delay		0.8	
Intersection Capacity Utilization		29.2%	ICU Level of Service A
Analysis Period (min)		15	



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	4	24	52	649	679	32
Future Volume (Veh/h)	4	24	52	649	679	32
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)	4	26	57	705	738	35
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	1204	369	773			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1204	369	773			
tC, single (s)	7.1	7.2	4.1			
tC, 2 stage (s)						
tF (s)	3.7	3.5	2.2			
p0 queue free %	97	96	93			
cM capacity (veh/h)	146	587	838			

Direction, Lane #	EB 1	NB 1	NB 2	NB 3	SB 1	SB 2	SB 3
Volume Total	30	57	352	352	369	369	35
Volume Left	4	57	0	0	0	0	0
Volume Right	26	0	0	0	0	0	35
cSH	418	838	1700	1700	1700	1700	1700
Volume to Capacity	0.07	0.07	0.21	0.21	0.22	0.22	0.02
Queue Length 95th (m)	1.8	1.7	0.0	0.0	0.0	0.0	0.0
Control Delay (s)	14.3	9.6	0.0	0.0	0.0	0.0	0.0
Lane LOS	B	A					
Approach Delay (s)	14.3	0.7			0.0		
Approach LOS	B						

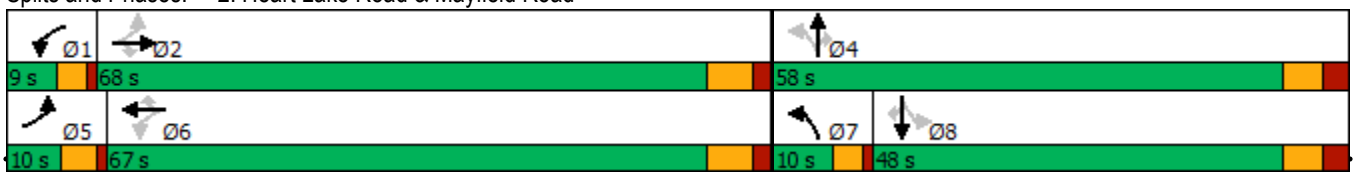
Intersection Summary			
Average Delay	0.6		
Intersection Capacity Utilization	35.4%	ICU Level of Service	A
Analysis Period (min)	15		

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	96	1248	125	37	1789	229	311	104	11	352	118	90
Future Volume (vph)	96	1248	125	37	1789	229	311	104	11	352	118	90
Lane Group Flow (vph)	96	1248	125	37	1789	229	311	104	11	352	118	90
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm	Perm	NA	Perm
Protected Phases	5	2		1	6		7	4			8	
Permitted Phases	2		2	6		6	4		4	8		8
Detector Phase	5	2	2	1	6	6	7	4	4	8	8	8
Switch Phase												
Minimum Initial (s)	5.0	12.0	12.0	5.0	12.0	12.0	1.0	8.0	8.0	8.0	8.0	8.0
Minimum Split (s)	9.5	39.7	39.7	9.0	39.7	39.7	5.0	43.9	43.9	43.9	43.9	43.9
Total Split (s)	10.0	68.0	68.0	9.0	67.0	67.0	10.0	58.0	58.0	48.0	48.0	48.0
Total Split (%)	7.4%	50.4%	50.4%	6.7%	49.6%	49.6%	7.4%	43.0%	43.0%	35.6%	35.6%	35.6%
Yellow Time (s)	3.5	4.6	4.6	3.0	4.6	4.6	3.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	1.0	2.1	2.1	1.0	2.1	2.1	1.0	2.9	2.9	2.9	2.9	2.9
Lost Time Adjust (s)	0.0	0.0	0.0	-1.0	0.0	0.0	-1.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.5	6.7	6.7	3.0	6.7	6.7	3.0	6.9	6.9	6.9	6.9	6.9
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead			Lag	Lag	Lag
Lead-Lag Optimize?	Yes				Yes	Yes						
Recall Mode	None	Max	Max	None	Max	Max	None	None	None	None	None	None
v/c Ratio	0.86	0.62	0.18	0.20	0.87	0.30	0.67	0.16	0.02	1.06	0.23	0.19
Control Delay	76.7	29.0	4.1	16.7	39.8	3.8	40.0	28.6	0.1	112.0	36.7	6.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	76.7	29.0	4.1	16.7	39.8	3.8	40.0	28.6	0.1	112.0	36.7	6.8
Queue Length 50th (m)	12.2	91.8	0.0	4.4	155.9	0.0	60.4	18.2	0.0	~103.0	23.6	0.0
Queue Length 95th (m)	#44.7	107.5	11.0	9.8	177.5	14.5	87.7	31.4	0.0	#162.7	39.6	11.4
Internal Link Dist (m)		179.2			166.2			202.0			680.1	
Turn Bay Length (m)	115.0		180.0	80.0		150.0	110.0		44.0	20.0		20.0
Base Capacity (vph)	112	2024	700	187	2047	756	461	654	537	331	505	482
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.86	0.62	0.18	0.20	0.87	0.30	0.67	0.16	0.02	1.06	0.23	0.19

Intersection Summary

Cycle Length: 135
Actuated Cycle Length: 135
Natural Cycle: 100
Control Type: Semi Act-Uncoord
~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

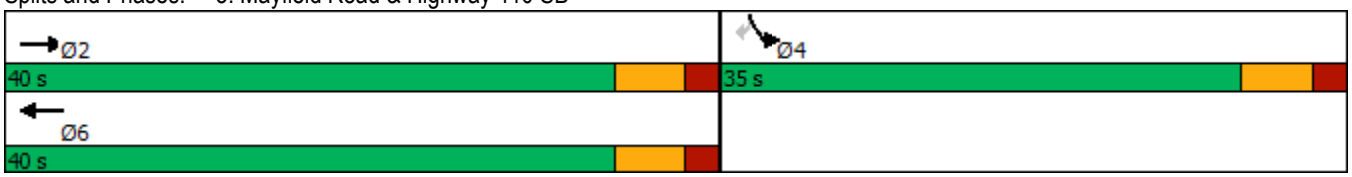
Splits and Phases: 2: Heart Lake Road & Mayfield Road



Lane Group	EBT	WBT	SBL	SBR
Lane Configurations				
Traffic Volume (vph)	977	2272	106	26
Future Volume (vph)	977	2272	106	26
Lane Group Flow (vph)	977	2272	109	23
Turn Type	NA	NA	Prot	Perm
Protected Phases	2	6	4	
Permitted Phases				4
Detector Phase	2	6	4	4
Switch Phase				
Minimum Initial (s)	16.0	16.0	8.0	8.0
Minimum Split (s)	22.0	22.0	32.0	32.0
Total Split (s)	40.0	40.0	35.0	35.0
Total Split (%)	53.3%	53.3%	46.7%	46.7%
Yellow Time (s)	4.0	4.0	4.0	4.0
All-Red Time (s)	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.0	6.0	6.0	6.0
Lead/Lag				
Lead-Lag Optimize?				
Recall Mode	Max	Max	None	None
v/c Ratio	0.27	0.61	0.20	0.10
Control Delay	4.6	7.1	21.7	20.3
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	4.6	7.1	21.7	20.3
Queue Length 50th (m)	14.1	46.9	5.1	2.1
Queue Length 95th (m)	21.1	66.2	10.2	7.4
Internal Link Dist (m)	123.5	116.2	492.2	
Turn Bay Length (m)				
Base Capacity (vph)	3578	3721	1686	738
Starvation Cap Reductn	0	0	0	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.27	0.61	0.06	0.03

Intersection Summary
Cycle Length: 75
Actuated Cycle Length: 58.9
Natural Cycle: 70
Control Type: Semi Act-Uncoord

Splits and Phases: 3: Mayfield Road & Highway 410 SB

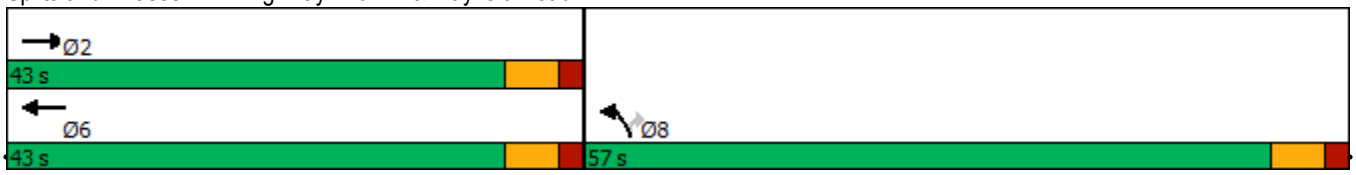


Lane Group	EBT	WBT	NBL	NBR
Lane Configurations				
Traffic Volume (vph)	1018	1989	955	984
Future Volume (vph)	1018	1989	955	984
Lane Group Flow (vph)	1018	1989	1329	610
Turn Type	NA	NA	Prot	Perm
Protected Phases	2	6	8	
Permitted Phases	2	6		8
Detector Phase	2	6	8	8
Switch Phase				
Minimum Initial (s)	26.0	26.0	10.0	10.0
Minimum Split (s)	32.0	32.0	22.0	22.0
Total Split (s)	43.0	43.0	57.0	57.0
Total Split (%)	43.0%	43.0%	57.0%	57.0%
Yellow Time (s)	4.0	4.0	4.0	4.0
All-Red Time (s)	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.0	6.0	6.0	6.0
Lead/Lag				
Lead-Lag Optimize?				
Recall Mode	Max	None	None	None
v/c Ratio	0.53	1.03	0.82	0.90
Control Delay	24.3	58.5	25.3	39.9
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	24.3	58.5	25.3	39.9
Queue Length 50th (m)	56.5	~159.4	100.9	104.0
Queue Length 95th (m)	69.8	#188.7	127.7	#181.0
Internal Link Dist (m)	104.0	63.2	627.1	
Turn Bay Length (m)				
Base Capacity (vph)	1935	1935	1816	753
Starvation Cap Reductn	0	0	0	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.53	1.03	0.73	0.81

Intersection Summary

Cycle Length: 100
Actuated Cycle Length: 95.2
Natural Cycle: 90
Control Type: Semi Act-Uncoord
~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 4: Highway 410 NB & Mayfield Road



Lane Group	EBT	EBR	WBL	WBT	NBL
Lane Configurations					
Traffic Volume (vph)	1750	154	71	1995	110
Future Volume (vph)	1750	154	71	1995	110
Lane Group Flow (vph)	1750	154	71	1995	160
Turn Type	NA	Perm	Perm	NA	Prot
Protected Phases	2			2	4
Permitted Phases		2	2		
Detector Phase	2	2	2	2	4
Switch Phase					
Minimum Initial (s)	12.0	12.0	12.0	12.0	8.0
Minimum Split (s)	26.7	26.7	26.7	26.7	45.6
Total Split (s)	74.0	74.0	74.0	74.0	46.0
Total Split (%)	61.7%	61.7%	61.7%	61.7%	38.3%
Yellow Time (s)	4.6	4.6	4.6	4.6	4.0
All-Red Time (s)	2.1	2.1	2.1	2.1	3.6
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.7	6.7	6.7	6.7	7.6
Lead/Lag					
Lead-Lag Optimize?					
Recall Mode	Max	Max	Max	Max	Max
v/c Ratio	0.61	0.16	0.84	0.69	0.28
Control Delay	18.7	2.3	88.3	20.5	29.1
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	18.7	2.3	88.3	20.5	29.1
Queue Length 50th (m)	95.7	0.0	13.1	117.8	25.3
Queue Length 95th (m)	110.1	8.9	#43.7	134.2	42.9
Internal Link Dist (m)	203.7			76.6	88.2
Turn Bay Length (m)		65.0	35.0		
Base Capacity (vph)	2883	945	85	2883	568
Starvation Cap Reductn	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.61	0.16	0.84	0.69	0.28

Intersection Summary

Cycle Length: 120
Actuated Cycle Length: 120
Natural Cycle: 90
Control Type: Semi Act-Uncoord
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 5: Ace Drive & Mayfield Road

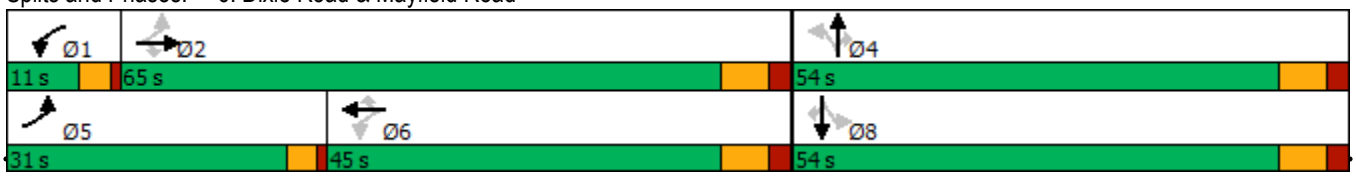


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	480	1221	186	68	1423	59	289	236	38	135	454	674
Future Volume (vph)	480	1221	186	68	1423	59	289	236	38	135	454	674
Lane Group Flow (vph)	480	1221	186	68	1423	59	289	236	38	135	454	674
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	Perm	NA	Perm	Perm	NA	Perm
Protected Phases	5	2		1	6			4			8	
Permitted Phases	2		2	6		6	4		4	8		8
Detector Phase	5	2	2	1	6	6	4	4	4	8	8	8
Switch Phase												
Minimum Initial (s)	5.0	8.0	8.0	5.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0
Minimum Split (s)	9.0	44.9	44.9	9.0	44.9	44.9	47.9	47.9	47.9	47.9	47.9	47.9
Total Split (s)	31.0	65.0	65.0	11.0	45.0	45.0	54.0	54.0	54.0	54.0	54.0	54.0
Total Split (%)	23.8%	50.0%	50.0%	8.5%	34.6%	34.6%	41.5%	41.5%	41.5%	41.5%	41.5%	41.5%
Yellow Time (s)	3.0	4.6	4.6	3.0	4.6	4.6	4.6	4.6	4.6	4.6	4.6	4.6
All-Red Time (s)	1.0	2.3	2.3	1.0	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.3
Lost Time Adjust (s)	-1.0	0.0	0.0	-1.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	3.0	6.9	6.9	3.0	6.9	6.9	6.9	6.9	6.9	6.9	6.9	6.9
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag						
Lead-Lag Optimize?												
Recall Mode	None	Max	Max	None	None	None	None	None	None	None	None	None
v/c Ratio	1.13	0.55	0.23	0.37	0.99	0.12	1.01	0.18	0.06	0.35	0.36	0.82
Control Delay	121.9	26.8	3.6	22.1	67.4	1.7	97.6	28.7	0.2	33.7	31.4	23.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	121.9	26.8	3.6	22.1	67.4	1.7	97.6	28.7	0.2	33.7	31.4	23.3
Queue Length 50th (m)	~127.4	83.6	0.0	7.7	133.1	0.0	~75.2	21.5	0.0	25.1	44.6	66.5
Queue Length 95th (m)	#193.9	98.1	13.0	14.9	#166.9	2.4	#132.5	31.2	0.0	43.1	58.7	124.4
Internal Link Dist (m)		179.3			299.2			185.5			471.5	
Turn Bay Length (m)	140.0		70.0	65.0		30.0	75.0		60.0	30.0		138.0
Base Capacity (vph)	423	2211	825	182	1436	496	286	1322	625	381	1259	824
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	1.13	0.55	0.23	0.37	0.99	0.12	1.01	0.18	0.06	0.35	0.36	0.82

Intersection Summary

Cycle Length: 130
Actuated Cycle Length: 130
Natural Cycle: 125
Control Type: Semi Act-Uncoord
~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 6: Dixie Road & Mayfield Road

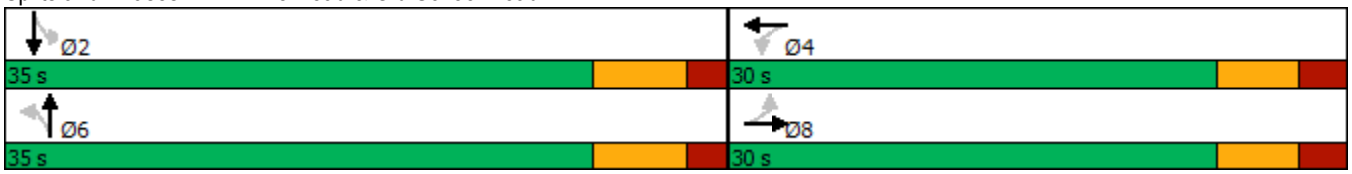


Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations								
Traffic Volume (vph)	51	110	84	278	68	600	6	282
Future Volume (vph)	51	110	84	278	68	600	6	282
Lane Group Flow (vph)	51	130	84	296	68	644	6	303
Turn Type	Perm	NA	Perm	NA	Perm	NA	Perm	NA
Protected Phases		8		4		6		2
Permitted Phases	8		4		6		2	
Detector Phase	8	8	4	4	6	6	2	2
Switch Phase								
Minimum Initial (s)	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0
Minimum Split (s)	25.4	25.4	25.4	25.4	23.6	23.6	23.6	23.6
Total Split (s)	30.0	30.0	30.0	30.0	35.0	35.0	35.0	35.0
Total Split (%)	46.2%	46.2%	46.2%	46.2%	53.8%	53.8%	53.8%	53.8%
Yellow Time (s)	4.0	4.0	4.0	4.0	4.6	4.6	4.6	4.6
All-Red Time (s)	2.4	2.4	2.4	2.4	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.4	6.4	6.4	6.4	6.6	6.6	6.6	6.6
Lead/Lag								
Lead-Lag Optimize?								
Recall Mode	None	None	None	None	Max	Max	Max	Max
v/c Ratio	0.22	0.25	0.24	0.56	0.13	0.70	0.02	0.35
Control Delay	17.7	14.9	17.3	21.6	10.3	18.3	9.8	11.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	17.7	14.9	17.3	21.6	10.3	18.3	9.8	11.2
Queue Length 50th (m)	4.1	9.1	6.7	25.7	3.5	46.6	0.3	17.0
Queue Length 95th (m)	10.9	19.4	15.3	44.4	11.4	#117.5	2.2	40.0
Internal Link Dist (m)		1372.4		151.6		1413.7		144.7
Turn Bay Length (m)	35.0		45.0		40.0		35.0	
Base Capacity (vph)	346	757	512	769	536	914	260	874
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.15	0.17	0.16	0.38	0.13	0.70	0.02	0.35

Intersection Summary

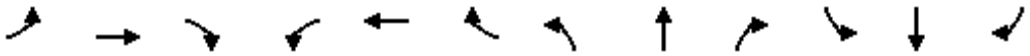
Cycle Length: 65
Actuated Cycle Length: 58
Natural Cycle: 60
Control Type: Semi Act-Uncoord
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 7: Dixie Road & Old School Road



Appendix Q

2029 Future Total Conditions With Improvements – Synchro Analysis Results



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Stop			Stop	
Traffic Volume (vph)	12	287	93	12	95	62	36	32	8	4	81	13
Future Volume (vph)	12	287	93	12	95	62	36	32	8	4	81	13
Peak Hour Factor	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85
Hourly flow rate (vph)	14	338	109	14	112	73	42	38	9	5	95	15

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total (vph)	461	199	89	115
Volume Left (vph)	14	14	42	5
Volume Right (vph)	109	73	9	15
Hadj (s)	-0.09	0.04	0.19	-0.01
Departure Headway (s)	4.7	5.2	5.9	5.7
Degree Utilization, x	0.60	0.28	0.15	0.18
Capacity (veh/h)	737	655	525	557
Control Delay (s)	14.6	10.2	10.0	10.0
Approach Delay (s)	14.6	10.2	10.0	10.0
Approach LOS	B	B	A	A

Intersection Summary				
Delay	12.5			
Level of Service	B			
Intersection Capacity Utilization	41.5%	ICU Level of Service	A	
Analysis Period (min)	15			

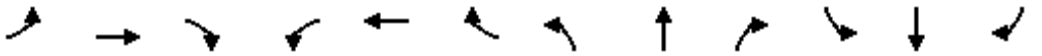
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	79	1716	511	116	1121	250	108	80	18	235	167	106
Future Volume (vph)	79	1716	511	116	1121	250	108	80	18	235	167	106
Lane Group Flow (vph)	79	1716	511	116	1121	250	108	80	18	235	167	106
Turn Type	Perm	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm	Perm	NA	Perm
Protected Phases		2		1	6		7	4			8	
Permitted Phases	2		2	6		6	4		4	8		8
Detector Phase	2	2	2	1	6	6	7	4	4	8	8	8
Switch Phase												
Minimum Initial (s)	12.0	12.0	12.0	5.0	12.0	12.0	5.0	8.0	8.0	8.0	8.0	8.0
Minimum Split (s)	39.7	39.7	39.7	9.0	39.7	39.7	9.0	43.9	43.9	43.9	43.9	43.9
Total Split (s)	77.0	77.0	77.0	9.0	86.0	86.0	9.0	54.0	54.0	45.0	45.0	45.0
Total Split (%)	55.0%	55.0%	55.0%	6.4%	61.4%	61.4%	6.4%	38.6%	38.6%	32.1%	32.1%	32.1%
Yellow Time (s)	4.6	4.6	4.6	3.0	4.6	4.6	3.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	2.1	2.1	2.1	1.0	2.1	2.1	1.0	2.9	2.9	2.9	2.9	2.9
Lost Time Adjust (s)	0.0	0.0	0.0	-1.0	0.0	0.0	-1.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.7	6.7	6.7	3.0	6.7	6.7	3.0	6.9	6.9	6.9	6.9	6.9
Lead/Lag	Lag	Lag	Lag	Lead			Lead			Lag	Lag	Lag
Lead-Lag Optimize?												
Recall Mode	Max	Max	Max	None	Max	Max	None	None	None	None	None	None
v/c Ratio	0.39	0.73	0.53	0.82	0.45	0.33	0.34	0.15	0.04	0.83	0.41	0.26
Control Delay	27.9	27.6	5.0	57.1	16.4	2.9	34.9	34.0	0.2	72.9	46.0	11.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	27.9	27.6	5.0	57.1	16.4	2.9	34.9	34.0	0.2	72.9	46.0	11.9
Queue Length 50th (m)	12.6	129.8	6.5	12.5	60.3	0.0	20.4	15.4	0.0	59.3	37.5	3.1
Queue Length 95th (m)	28.8	156.8	30.4	#37.4	76.0	11.9	34.9	28.0	0.0	#92.3	58.7	17.6
Internal Link Dist (m)		179.2			166.2			202.0			680.1	
Turn Bay Length (m)	115.0		180.0	80.0		150.0	110.0		44.0	20.0		20.0
Base Capacity (vph)	203	2344	960	142	2501	763	316	609	545	340	488	474
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.39	0.73	0.53	0.82	0.45	0.33	0.34	0.13	0.03	0.69	0.34	0.22

Intersection Summary

Cycle Length: 140
Actuated Cycle Length: 133.9
Natural Cycle: 105
Control Type: Semi Act-Uncoord
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 2: Heart Lake Road & Mayfield Road





Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	79	1716	511	116	1121	250	108	80	18	235	167	106
Future Volume (vph)	79	1716	511	116	1121	250	108	80	18	235	167	106
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5
Total Lost time (s)	6.7	6.7	6.7	3.0	6.7	6.7	3.0	6.9	6.9	6.9	6.9	6.9
Lane Util. Factor	1.00	0.91	1.00	1.00	0.91	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1530	4453	1409	1560	4214	1114	1530	1729	1437	1606	1712	1437
Flt Permitted	0.24	1.00	1.00	0.08	1.00	1.00	0.53	1.00	1.00	0.70	1.00	1.00
Satd. Flow (perm)	387	4453	1409	125	4214	1114	857	1729	1437	1192	1712	1437
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	79	1716	511	116	1121	250	108	80	18	235	167	106
RTOR Reduction (vph)	0	0	219	0	0	101	0	0	13	0	0	69
Lane Group Flow (vph)	79	1716	292	116	1121	149	108	80	5	235	167	37
Heavy Vehicles (%)	5%	6%	2%	3%	12%	29%	5%	0%	0%	0%	1%	0%
Turn Type	Perm	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm	Perm	NA	Perm
Protected Phases		2		1	6		7	4			8	
Permitted Phases	2		2	6		6	4		4	8		8
Actuated Green, G (s)	70.5	70.5	70.5	79.5	79.5	79.5	40.7	40.7	40.7	31.7	31.7	31.7
Effective Green, g (s)	70.5	70.5	70.5	80.5	79.5	79.5	41.7	40.7	40.7	31.7	31.7	31.7
Actuated g/C Ratio	0.53	0.53	0.53	0.60	0.59	0.59	0.31	0.30	0.30	0.24	0.24	0.24
Clearance Time (s)	6.7	6.7	6.7	4.0	6.7	6.7	4.0	6.9	6.9	6.9	6.9	6.9
Vehicle Extension (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Lane Grp Cap (vph)	203	2346	742	139	2503	661	297	525	437	282	405	340
v/s Ratio Prot		0.39		c0.04	0.27		c0.02	0.05			0.10	
v/s Ratio Perm	0.20		0.21	c0.46		0.13	0.10		0.00	c0.20		0.03
v/c Ratio	0.39	0.73	0.39	0.83	0.45	0.22	0.36	0.15	0.01	0.83	0.41	0.11
Uniform Delay, d1	18.8	24.4	18.9	19.1	15.0	12.7	35.0	34.0	32.5	48.5	43.2	40.0
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	5.5	2.1	1.6	35.9	0.6	0.8	1.6	0.3	0.0	20.5	1.4	0.3
Delay (s)	24.4	26.4	20.5	55.0	15.6	13.5	36.6	34.2	32.5	69.0	44.6	40.3
Level of Service	C	C	C	E	B	B	D	C	C	E	D	D
Approach Delay (s)		25.0			18.3			35.3			55.0	
Approach LOS		C			B			D			D	

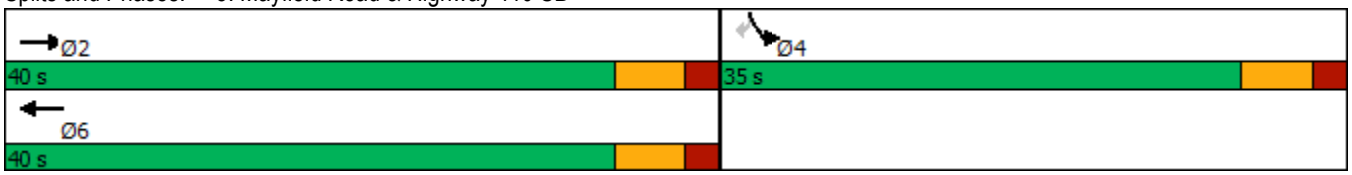
Intersection Summary			
HCM 2000 Control Delay	26.7	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.83		
Actuated Cycle Length (s)	133.8	Sum of lost time (s)	19.6
Intersection Capacity Utilization	85.5%	ICU Level of Service	E
Analysis Period (min)	15		

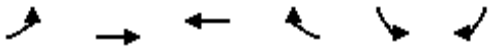
c Critical Lane Group

Lane Group	EBT	WBT	SBL	SBR
Lane Configurations				
Traffic Volume (vph)	1315	1188	348	329
Future Volume (vph)	1315	1188	348	329
Lane Group Flow (vph)	1315	1188	463	214
Turn Type	NA	NA	Prot	Perm
Protected Phases	2	6	4	
Permitted Phases				4
Detector Phase	2	6	4	4
Switch Phase				
Minimum Initial (s)	16.0	16.0	8.0	8.0
Minimum Split (s)	22.0	22.0	32.0	32.0
Total Split (s)	40.0	40.0	35.0	35.0
Total Split (%)	53.3%	53.3%	46.7%	46.7%
Yellow Time (s)	4.0	4.0	4.0	4.0
All-Red Time (s)	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.0	6.0	6.0	6.0
Lead/Lag				
Lead-Lag Optimize?				
Recall Mode	Max	Max	None	None
v/c Ratio	0.49	0.42	0.49	0.50
Control Delay	10.7	10.0	19.4	20.4
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	10.7	10.0	19.4	20.4
Queue Length 50th (m)	31.2	26.7	21.4	19.2
Queue Length 95th (m)	56.1	48.3	32.4	37.5
Internal Link Dist (m)	123.5	116.2	492.2	
Turn Bay Length (m)				
Base Capacity (vph)	2668	2829	1602	700
Starvation Cap Reductn	0	0	0	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.49	0.42	0.29	0.31

Intersection Summary
Cycle Length: 75
Actuated Cycle Length: 63.4
Natural Cycle: 55
Control Type: Semi Act-Uncoord

Splits and Phases: 3: Mayfield Road & Highway 410 SB





Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑↑↑	↑↑↑		↰↰	↱
Traffic Volume (vph)	0	1315	1188	0	348	329
Future Volume (vph)	0	1315	1188	0	348	329
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)		6.0	6.0		6.0	6.0
Lane Util. Factor		0.91	0.91		0.97	0.91
Frt		1.00	1.00		0.96	0.85
Flt Protected		1.00	1.00		0.96	1.00
Satd. Flow (prot)		4948	5245		3444	1486
Flt Permitted		1.00	1.00		0.96	1.00
Satd. Flow (perm)		4948	5245		3444	1486
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	0	1315	1188	0	348	329
RTOR Reduction (vph)	0	0	0	0	23	23
Lane Group Flow (vph)	0	1315	1188	0	440	191
Heavy Vehicles (%)	0%	6%	0%	16%	0%	0%
Bus Blockages (#/hr)	0	0	0	0	2	0
Turn Type		NA	NA		Prot	Perm
Protected Phases		2	6		4	
Permitted Phases						4
Actuated Green, G (s)		34.2	34.2		17.1	17.1
Effective Green, g (s)		34.2	34.2		17.1	17.1
Actuated g/C Ratio		0.54	0.54		0.27	0.27
Clearance Time (s)		6.0	6.0		6.0	6.0
Vehicle Extension (s)		5.0	5.0		5.0	5.0
Lane Grp Cap (vph)		2673	2833		930	401
v/s Ratio Prot		c0.27	0.23		0.13	
v/s Ratio Perm						c0.13
v/c Ratio		0.49	0.42		0.47	0.48
Uniform Delay, d1		9.1	8.6		19.3	19.3
Progression Factor		1.00	1.00		1.00	1.00
Incremental Delay, d2		0.7	0.5		0.8	1.9
Delay (s)		9.8	9.1		20.1	21.2
Level of Service		A	A		C	C
Approach Delay (s)		9.8	9.1		20.5	
Approach LOS		A	A		C	

Intersection Summary			
HCM 2000 Control Delay	11.8	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.49		
Actuated Cycle Length (s)	63.3	Sum of lost time (s)	12.0
Intersection Capacity Utilization	48.8%	ICU Level of Service	A
Analysis Period (min)	15		

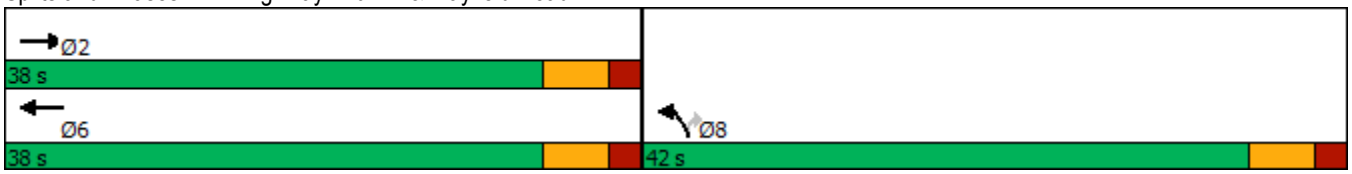
c Critical Lane Group

Lane Group	EBT	WBT	NBL	NBR
Lane Configurations				
Traffic Volume (vph)	1656	1595	473	882
Future Volume (vph)	1656	1595	473	882
Lane Group Flow (vph)	1656	1595	914	441
Turn Type	NA	NA	Prot	Perm
Protected Phases	2	6	8	
Permitted Phases				8
Detector Phase	2	6	8	8
Switch Phase				
Minimum Initial (s)	26.0	26.0	10.0	10.0
Minimum Split (s)	32.0	32.0	22.0	22.0
Total Split (s)	38.0	38.0	42.0	42.0
Total Split (%)	47.5%	47.5%	52.5%	52.5%
Yellow Time (s)	4.0	4.0	4.0	4.0
All-Red Time (s)	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.0	6.0	6.0	6.0
Lead/Lag				
Lead-Lag Optimize?				
Recall Mode	Max	None	None	None
v/c Ratio	0.77	0.78	0.78	0.83
Control Delay	21.8	22.5	24.3	34.7
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	21.8	22.5	24.3	34.7
Queue Length 50th (m)	73.9	71.8	54.8	58.0
Queue Length 95th (m)	99.7	97.8	75.3	#103.0
Internal Link Dist (m)	104.0	63.2	627.1	
Turn Bay Length (m)				
Base Capacity (vph)	2155	2040	1431	646
Starvation Cap Reductn	0	0	0	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.77	0.78	0.64	0.68

Intersection Summary

Cycle Length: 80
Actuated Cycle Length: 74
Natural Cycle: 60
Control Type: Semi Act-Uncoord
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 4: Highway 410 NB & Mayfield Road





Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	1656	0	0	1595	473	882
Future Volume (vph)	1656	0	0	1595	473	882
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0			6.0	6.0	6.0
Lane Util. Factor	0.91			0.91	0.97	0.91
Frt	1.00			1.00	0.93	0.85
Flt Protected	1.00			1.00	0.97	1.00
Satd. Flow (prot)	4948			4683	2916	1315
Flt Permitted	1.00			1.00	0.97	1.00
Satd. Flow (perm)	4948			4683	2916	1315
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	1656	0	0	1595	473	882
RTOR Reduction (vph)	0	0	0	0	2	2
Lane Group Flow (vph)	1656	0	0	1595	912	439
Heavy Vehicles (%)	6%	0%	0%	12%	18%	13%
Turn Type	NA			NA	Prot	Perm
Protected Phases	2			6	8	
Permitted Phases						8
Actuated Green, G (s)	32.2			32.2	29.7	29.7
Effective Green, g (s)	32.2			32.2	29.7	29.7
Actuated g/C Ratio	0.44			0.44	0.40	0.40
Clearance Time (s)	6.0			6.0	6.0	6.0
Vehicle Extension (s)	5.0			5.0	3.0	3.0
Lane Grp Cap (vph)	2155			2040	1171	528
v/s Ratio Prot	0.33			c0.34	0.31	
v/s Ratio Perm						c0.33
v/c Ratio	0.77			0.78	0.78	0.83
Uniform Delay, d1	17.7			17.8	19.2	19.9
Progression Factor	1.00			1.00	1.00	1.00
Incremental Delay, d2	2.7			2.3	3.3	10.7
Delay (s)	20.4			20.2	22.6	30.6
Level of Service	C			C	C	C
Approach Delay (s)	20.4			20.2	25.2	
Approach LOS	C			C	C	

Intersection Summary			
HCM 2000 Control Delay	21.7	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.81		
Actuated Cycle Length (s)	73.9	Sum of lost time (s)	12.0
Intersection Capacity Utilization	78.4%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	EBT	EBR	WBL	WBT	NBL
Lane Configurations					
Traffic Volume (vph)	2119	211	68	1317	106
Future Volume (vph)	2119	211	68	1317	106
Lane Group Flow (vph)	2119	211	68	1317	166
Turn Type	NA	Perm	Perm	NA	Prot
Protected Phases	2			2	4
Permitted Phases		2	2		
Detector Phase	2	2	2	2	4
Switch Phase					
Minimum Initial (s)	12.0	12.0	12.0	12.0	8.0
Minimum Split (s)	26.7	26.7	26.7	26.7	45.6
Total Split (s)	74.0	74.0	74.0	74.0	46.0
Total Split (%)	61.7%	61.7%	61.7%	61.7%	38.3%
Yellow Time (s)	4.6	4.6	4.6	4.6	4.0
All-Red Time (s)	2.1	2.1	2.1	2.1	3.6
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.7	6.7	6.7	6.7	7.6
Lead/Lag					
Lead-Lag Optimize?					
Recall Mode	Max	Max	Max	Max	None
v/c Ratio	0.59	0.18	0.83	0.37	0.58
Control Delay	9.2	1.9	83.2	6.9	45.6
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	9.2	1.9	83.2	6.9	45.6
Queue Length 50th (m)	67.7	1.8	8.3	33.2	28.2
Queue Length 95th (m)	97.2	9.7	#24.4	49.3	48.1
Internal Link Dist (m)	203.7			76.6	88.2
Turn Bay Length (m)		65.0	35.0		
Base Capacity (vph)	3588	1145	82	3588	660
Starvation Cap Reductn	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.59	0.18	0.83	0.37	0.25

Intersection Summary

Cycle Length: 120
Actuated Cycle Length: 101.6
Natural Cycle: 90
Control Type: Actuated-Uncoordinated
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 5: Ace Drive & Mayfield Road





Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	2119	211	68	1317	106	60
Future Volume (vph)	2119	211	68	1317	106	60
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width	3.7	3.5	3.5	3.7	3.7	3.7
Total Lost time (s)	6.7	6.7	6.7	6.7	7.6	
Lane Util. Factor	0.91	1.00	1.00	0.91	1.00	
Frt	1.00	0.85	1.00	1.00	0.95	
Flt Protected	1.00	1.00	0.95	1.00	0.97	
Satd. Flow (prot)	5142	1566	1750	5142	1736	
Flt Permitted	1.00	1.00	0.06	1.00	0.97	
Satd. Flow (perm)	5142	1566	117	5142	1736	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	2119	211	68	1317	106	60
RTOR Reduction (vph)	0	53	0	0	5	0
Lane Group Flow (vph)	2119	158	68	1317	161	0
Turn Type	NA	Perm	Perm	NA	Prot	
Protected Phases	2			2	4	
Permitted Phases		2	2			
Actuated Green, G (s)	70.9	70.9	70.9	70.9	16.4	
Effective Green, g (s)	70.9	70.9	70.9	70.9	16.4	
Actuated g/C Ratio	0.70	0.70	0.70	0.70	0.16	
Clearance Time (s)	6.7	6.7	6.7	6.7	7.6	
Vehicle Extension (s)	5.0	5.0	5.0	5.0	5.0	
Lane Grp Cap (vph)	3588	1092	81	3588	280	
v/s Ratio Prot	0.41			0.26	c0.09	
v/s Ratio Perm		0.10	c0.58			
v/c Ratio	0.59	0.14	0.84	0.37	0.57	
Uniform Delay, d1	7.9	5.2	11.2	6.2	39.4	
Progression Factor	1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	0.7	0.3	62.4	0.3	4.5	
Delay (s)	8.6	5.4	73.6	6.5	43.9	
Level of Service	A	A	E	A	D	
Approach Delay (s)	8.3			9.8	43.9	
Approach LOS	A			A	D	

Intersection Summary			
HCM 2000 Control Delay	10.4	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.78		
Actuated Cycle Length (s)	101.6	Sum of lost time (s)	14.3
Intersection Capacity Utilization	78.0%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

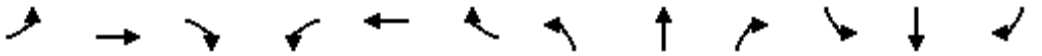
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	603	1785	364	64	751	110	121	170	54	49	176	428
Future Volume (vph)	603	1785	364	64	751	110	121	170	54	49	176	428
Lane Group Flow (vph)	603	1785	364	64	751	110	121	170	54	49	176	428
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	Perm	NA	Perm	Perm	NA	Perm
Protected Phases	5	2		1	6			8			4	
Permitted Phases	2		2	6		6	8		8	4		4
Detector Phase	5	2	2	1	6	6	8	8	8	4	4	4
Switch Phase												
Minimum Initial (s)	5.0	8.0	8.0	5.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0
Minimum Split (s)	9.0	44.9	44.9	9.0	44.9	44.9	47.9	47.9	47.9	47.9	47.9	47.9
Total Split (s)	27.0	63.1	63.1	9.0	45.1	45.1	47.9	47.9	47.9	47.9	47.9	47.9
Total Split (%)	22.5%	52.6%	52.6%	7.5%	37.6%	37.6%	39.9%	39.9%	39.9%	39.9%	39.9%	39.9%
Yellow Time (s)	3.0	4.6	4.6	3.0	4.6	4.6	4.6	4.6	4.6	4.6	4.6	4.6
All-Red Time (s)	1.0	2.3	2.3	1.0	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.3
Lost Time Adjust (s)	-1.0	0.0	0.0	-1.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	3.0	6.9	6.9	3.0	6.9	6.9	6.9	6.9	6.9	6.9	6.9	6.9
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag						
Lead-Lag Optimize?												
Recall Mode	None	Max	Max	None	None	None	None	None	None	None	None	None
v/c Ratio	0.97	0.61	0.35	0.33	0.43	0.21	0.57	0.29	0.16	0.28	0.28	0.73
Control Delay	45.0	14.7	2.7	14.0	23.2	5.8	46.3	34.5	1.1	37.5	34.3	13.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	45.0	14.7	2.7	14.0	23.2	5.8	46.3	34.5	1.1	37.5	34.3	13.1
Queue Length 50th (m)	60.6	73.3	1.4	2.9	35.9	0.2	20.8	14.5	0.0	8.0	15.0	5.5
Queue Length 95th (m)	#161.4	114.2	15.3	9.2	55.2	11.5	37.9	23.4	0.6	18.0	24.1	34.7
Internal Link Dist (m)		179.3			299.2			185.5			471.5	
Turn Bay Length (m)	140.0		70.0	65.0		30.0	75.0		60.0	30.0		138.0
Base Capacity (vph)	622	2922	1055	193	1864	550	503	1380	675	414	1470	853
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.97	0.61	0.35	0.33	0.40	0.20	0.24	0.12	0.08	0.12	0.12	0.50

Intersection Summary

Cycle Length: 120
Actuated Cycle Length: 95.1
Natural Cycle: 135
Control Type: Semi Act-Uncoord
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 6: Dixie Road & Mayfield Road





Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	603	1785	364	64	751	110	121	170	54	49	176	428
Future Volume (vph)	603	1785	364	64	751	110	121	170	54	49	176	428
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5
Total Lost time (s)	3.0	6.9	6.9	3.0	6.9	6.9	6.9	6.9	6.9	6.9	6.9	6.9
Lane Util. Factor	1.00	0.91	1.00	1.00	0.91	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1566	4902	1536	1653	4601	1201	1716	3174	1413	1405	3380	1452
Flt Permitted	0.30	1.00	1.00	0.12	1.00	1.00	0.64	1.00	1.00	0.64	1.00	1.00
Satd. Flow (perm)	491	4902	1536	208	4601	1201	1158	3174	1413	953	3380	1452
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	603	1785	364	64	751	110	121	170	54	49	176	428
RTOR Reduction (vph)	0	0	141	0	0	66	0	0	44	0	0	321
Lane Group Flow (vph)	603	1785	223	64	751	44	121	170	10	49	176	107
Heavy Vehicles (%)	14%	7%	4%	8%	14%	33%	4%	15%	13%	27%	8%	10%
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	Perm	NA	Perm	Perm	NA	Perm
Protected Phases	5	2		1	6			8			4	
Permitted Phases	2		2	6		6	8		8	4		4
Actuated Green, G (s)	64.6	56.7	56.7	41.3	37.4	37.4	17.5	17.5	17.5	17.5	17.5	17.5
Effective Green, g (s)	65.6	56.7	56.7	43.3	37.4	37.4	17.5	17.5	17.5	17.5	17.5	17.5
Actuated g/C Ratio	0.68	0.59	0.59	0.45	0.39	0.39	0.18	0.18	0.18	0.18	0.18	0.18
Clearance Time (s)	4.0	6.9	6.9	4.0	6.9	6.9	6.9	6.9	6.9	6.9	6.9	6.9
Vehicle Extension (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Lane Grp Cap (vph)	607	2898	908	167	1794	468	211	579	257	173	616	264
v/s Ratio Prot	c0.25	0.36		0.02	0.16			0.05			0.05	
v/s Ratio Perm	c0.43		0.15	0.15		0.04	c0.10		0.01	0.05		0.07
v/c Ratio	0.99	0.62	0.25	0.38	0.42	0.09	0.57	0.29	0.04	0.28	0.29	0.40
Uniform Delay, d1	14.8	12.6	9.4	15.0	21.3	18.5	35.8	33.9	32.3	33.8	33.8	34.6
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	34.8	1.0	0.6	3.0	0.3	0.2	5.9	0.6	0.1	1.9	0.5	2.1
Delay (s)	49.5	13.6	10.0	18.1	21.7	18.7	41.7	34.5	32.4	35.7	34.3	36.7
Level of Service	D	B	B	B	C	B	D	C	C	D	C	D
Approach Delay (s)		21.0			21.1			36.7			36.0	
Approach LOS		C			C			D			D	

Intersection Summary			
HCM 2000 Control Delay	24.3	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.95		
Actuated Cycle Length (s)	95.9	Sum of lost time (s)	16.8
Intersection Capacity Utilization	81.9%	ICU Level of Service	D
Analysis Period (min)	15		

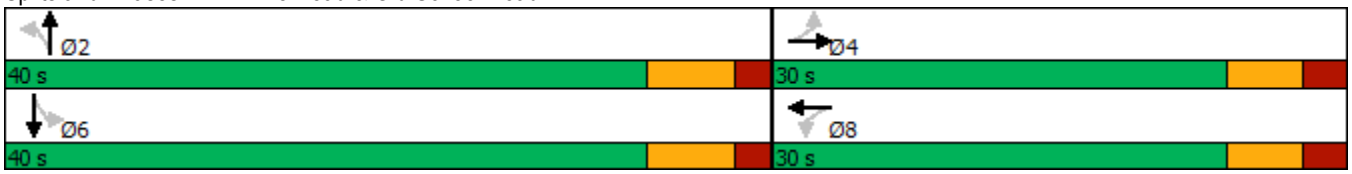
c Critical Lane Group

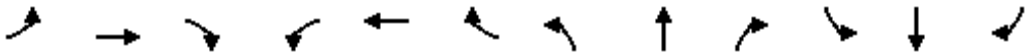
Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations								
Traffic Volume (vph)	17	252	49	98	24	245	33	708
Future Volume (vph)	17	252	49	98	24	245	33	708
Lane Group Flow (vph)	17	299	49	106	24	291	33	754
Turn Type	Perm	NA	Perm	NA	Perm	NA	Perm	NA
Protected Phases		4		8		2		6
Permitted Phases	4		8		2		6	
Detector Phase	4	4	8	8	2	2	6	6
Switch Phase								
Minimum Initial (s)	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0
Minimum Split (s)	25.4	25.4	25.4	25.4	23.6	23.6	23.6	23.6
Total Split (s)	30.0	30.0	30.0	30.0	40.0	40.0	40.0	40.0
Total Split (%)	42.9%	42.9%	42.9%	42.9%	57.1%	57.1%	57.1%	57.1%
Yellow Time (s)	4.0	4.0	4.0	4.0	4.6	4.6	4.6	4.6
All-Red Time (s)	2.4	2.4	2.4	2.4	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.4	6.4	6.4	6.4	6.6	6.6	6.6	6.6
Lead/Lag								
Lead-Lag Optimize?								
Recall Mode	None	None	None	None	Max	Max	Max	Max
v/c Ratio	0.06	0.61	0.21	0.22	0.11	0.31	0.06	0.77
Control Delay	17.1	24.8	19.9	17.8	10.9	9.9	9.2	20.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	17.1	24.8	19.9	17.8	10.9	9.9	9.2	20.3
Queue Length 50th (m)	1.5	28.9	4.4	9.0	1.3	16.1	1.7	63.1
Queue Length 95th (m)	5.3	49.5	11.7	19.0	5.9	36.6	6.5	#148.3
Internal Link Dist (m)		1372.4		151.6		1413.7		144.7
Turn Bay Length (m)	35.0		45.0		40.0		35.0	
Base Capacity (vph)	379	692	332	679	212	928	548	979
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.04	0.43	0.15	0.16	0.11	0.31	0.06	0.77

Intersection Summary

Cycle Length: 70
Actuated Cycle Length: 63.6
Natural Cycle: 60
Control Type: Semi Act-Uncoord
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 7: Dixie Road & Old School Road





Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	17	252	47	49	98	8	24	245	46	33	708	46
Future Volume (vph)	17	252	47	49	98	8	24	245	46	33	708	46
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5
Total Lost time (s)	6.4	6.4		6.4	6.4		6.6	6.6		6.6	6.6	
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	0.98		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)	1405	1836		1785	1815		1785	1730		1684	1835	
Flt Permitted	0.69	1.00		0.48	1.00		0.21	1.00		0.58	1.00	
Satd. Flow (perm)	1019	1836		895	1815		400	1730		1031	1835	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	17	252	47	49	98	8	24	245	46	33	708	46
RTOR Reduction (vph)	0	10	0	0	4	0	0	8	0	0	3	0
Lane Group Flow (vph)	17	289	0	49	102	0	24	283	0	33	751	0
Heavy Vehicles (%)	27%	2%	3%	0%	5%	0%	0%	10%	0%	6%	4%	0%
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)	16.7	16.7		16.7	16.7		33.8	33.8		33.8	33.8	
Effective Green, g (s)	16.7	16.7		16.7	16.7		33.8	33.8		33.8	33.8	
Actuated g/C Ratio	0.26	0.26		0.26	0.26		0.53	0.53		0.53	0.53	
Clearance Time (s)	6.4	6.4		6.4	6.4		6.6	6.6		6.6	6.6	
Vehicle Extension (s)	5.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0	
Lane Grp Cap (vph)	267	482		235	477		212	920		548	976	
v/s Ratio Prot		c0.16			0.06			0.16			c0.41	
v/s Ratio Perm	0.02			0.05			0.06			0.03		
v/c Ratio	0.06	0.60		0.21	0.21		0.11	0.31		0.06	0.77	
Uniform Delay, d1	17.5	20.5		18.2	18.3		7.4	8.3		7.2	11.8	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.2	3.0		0.9	0.5		1.1	0.9		0.2	5.8	
Delay (s)	17.8	23.5		19.2	18.7		8.5	9.2		7.4	17.6	
Level of Service	B	C		B	B		A	A		A	B	
Approach Delay (s)		23.2			18.9			9.1			17.2	
Approach LOS		C			B			A			B	

Intersection Summary			
HCM 2000 Control Delay	16.9	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.71		
Actuated Cycle Length (s)	63.5	Sum of lost time (s)	13.0
Intersection Capacity Utilization	79.0%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	13	2	345	27	17	82
Future Volume (Veh/h)	13	2	345	27	17	82
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	14	2	375	29	18	89
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	514	390			404	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	514	390			404	
tC, single (s)	6.6	6.4			4.1	
tC, 2 stage (s)						
tF (s)	3.7	3.5			2.2	
p0 queue free %	97	100			98	
cM capacity (veh/h)	485	625			1155	

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	16	404	107
Volume Left	14	0	18
Volume Right	2	29	0
cSH	499	1700	1155
Volume to Capacity	0.03	0.24	0.02
Queue Length 95th (m)	0.8	0.0	0.4
Control Delay (s)	12.4	0.0	1.5
Lane LOS	B		A
Approach Delay (s)	12.4	0.0	1.5
Approach LOS	B		

Intersection Summary			
Average Delay	0.7		
Intersection Capacity Utilization	29.8%	ICU Level of Service	A
Analysis Period (min)	15		



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	13	2	315	29	17	86
Future Volume (Veh/h)	13	2	315	29	17	86
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	14	2	342	32	18	93
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	487	358			374	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	487	358			374	
tC, single (s)	6.6	6.4			4.1	
tC, 2 stage (s)						
tF (s)	3.7	3.5			2.2	
p0 queue free %	97	100			98	
cM capacity (veh/h)	504	652			1184	

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	16	374	111
Volume Left	14	0	18
Volume Right	2	32	0
cSH	519	1700	1184
Volume to Capacity	0.03	0.22	0.02
Queue Length 95th (m)	0.7	0.0	0.4
Control Delay (s)	12.2	0.0	1.4
Lane LOS	B		A
Approach Delay (s)	12.2	0.0	1.4
Approach LOS	B		

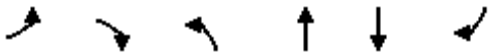
Intersection Summary			
Average Delay	0.7		
Intersection Capacity Utilization	29.1%	ICU Level of Service	A
Analysis Period (min)	15		



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	14	2	285	29	17	90
Future Volume (Veh/h)	14	2	285	29	17	90
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)	15	2	310	32	18	98
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	460	326			342	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	460	326			342	
tC, single (s)	6.6	6.4			4.1	
tC, 2 stage (s)						
tF (s)	3.7	3.5			2.2	
p0 queue free %	97	100			99	
cM capacity (veh/h)	523	680			1217	

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	17	342	116
Volume Left	15	0	18
Volume Right	2	32	0
cSH	538	1700	1217
Volume to Capacity	0.03	0.20	0.01
Queue Length 95th (m)	0.7	0.0	0.3
Control Delay (s)	11.9	0.0	1.3
Lane LOS	B		A
Approach Delay (s)	11.9	0.0	1.3
Approach LOS	B		

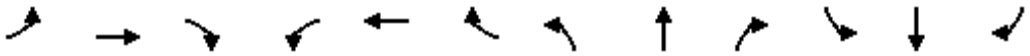
Intersection Summary			
Average Delay		0.8	
Intersection Capacity Utilization		29.2%	ICU Level of Service A
Analysis Period (min)		15	



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	4	24	52	649	679	32
Future Volume (Veh/h)	4	24	52	649	679	32
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)	4	26	57	705	738	35
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	1204	369	773			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1204	369	773			
tC, single (s)	7.1	7.2	4.1			
tC, 2 stage (s)						
tF (s)	3.7	3.5	2.2			
p0 queue free %	97	96	93			
cM capacity (veh/h)	146	587	838			

Direction, Lane #	EB 1	NB 1	NB 2	NB 3	SB 1	SB 2	SB 3
Volume Total	30	57	352	352	369	369	35
Volume Left	4	57	0	0	0	0	0
Volume Right	26	0	0	0	0	0	35
cSH	418	838	1700	1700	1700	1700	1700
Volume to Capacity	0.07	0.07	0.21	0.21	0.22	0.22	0.02
Queue Length 95th (m)	1.8	1.7	0.0	0.0	0.0	0.0	0.0
Control Delay (s)	14.3	9.6	0.0	0.0	0.0	0.0	0.0
Lane LOS	B	A					
Approach Delay (s)	14.3	0.7			0.0		
Approach LOS	B						

Intersection Summary			
Average Delay	0.6		
Intersection Capacity Utilization	35.4%	ICU Level of Service	A
Analysis Period (min)	15		



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Stop			Stop	
Traffic Volume (vph)	11	176	65	23	347	37	113	64	18	1	51	15
Future Volume (vph)	11	176	65	23	347	37	113	64	18	1	51	15
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Hourly flow rate (vph)	12	187	69	24	369	39	120	68	19	1	54	16

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total (vph)	268	432	207	71
Volume Left (vph)	12	24	120	1
Volume Right (vph)	69	39	19	16
Hadj (s)	-0.12	-0.03	0.06	-0.08
Departure Headway (s)	5.3	5.1	5.9	6.1
Degree Utilization, x	0.39	0.62	0.34	0.12
Capacity (veh/h)	633	672	544	484
Control Delay (s)	11.7	16.1	12.0	10.0
Approach Delay (s)	11.7	16.1	12.0	10.0
Approach LOS	B	C	B	A

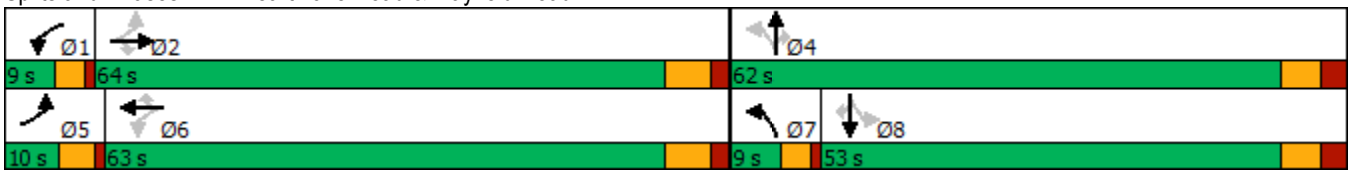
Intersection Summary				
Delay	13.6			
Level of Service	B			
Intersection Capacity Utilization	53.1%	ICU Level of Service	A	
Analysis Period (min)	15			

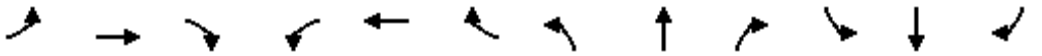
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	96	1248	125	37	1789	229	311	104	11	352	118	90
Future Volume (vph)	96	1248	125	37	1789	229	311	104	11	352	118	90
Lane Group Flow (vph)	96	1248	125	37	1789	229	311	104	11	352	118	90
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm	Perm	NA	Perm
Protected Phases	5	2		1	6		7	4			8	
Permitted Phases	2		2	6		6	4		4	8		8
Detector Phase	5	2	2	1	6	6	7	4	4	8	8	8
Switch Phase												
Minimum Initial (s)	5.0	12.0	12.0	5.0	12.0	12.0	1.0	8.0	8.0	8.0	8.0	8.0
Minimum Split (s)	9.5	39.7	39.7	9.0	39.7	39.7	5.0	43.9	43.9	43.9	43.9	43.9
Total Split (s)	10.0	64.0	64.0	9.0	63.0	63.0	9.0	62.0	62.0	53.0	53.0	53.0
Total Split (%)	7.4%	47.4%	47.4%	6.7%	46.7%	46.7%	6.7%	45.9%	45.9%	39.3%	39.3%	39.3%
Yellow Time (s)	3.5	4.6	4.6	3.0	4.6	4.6	3.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	1.0	2.1	2.1	1.0	2.1	2.1	1.0	2.9	2.9	2.9	2.9	2.9
Lost Time Adjust (s)	0.0	0.0	0.0	-1.0	0.0	0.0	-1.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.5	6.7	6.7	3.0	6.7	6.7	3.0	6.9	6.9	6.9	6.9	6.9
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead			Lag	Lag	Lag
Lead-Lag Optimize?	Yes				Yes	Yes						
Recall Mode	None	Max	Max	None	Max	Max	None	None	None	None	None	None
v/c Ratio	0.84	0.65	0.19	0.21	0.93	0.32	0.64	0.15	0.02	0.96	0.21	0.17
Control Delay	74.6	32.0	4.5	19.0	46.7	4.2	35.8	26.0	0.1	82.4	32.9	6.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	74.6	32.0	4.5	19.0	46.7	4.2	35.8	26.0	0.1	82.4	32.9	6.1
Queue Length 50th (m)	13.1	97.2	0.0	4.7	164.9	0.0	57.2	17.3	0.0	91.1	22.3	0.0
Queue Length 95th (m)	#44.2	113.9	11.7	10.5	#191.7	15.3	83.0	29.8	0.0	#151.6	37.3	10.8
Internal Link Dist (m)		179.2			166.2			202.0			680.1	
Turn Bay Length (m)	115.0		180.0	80.0		150.0	110.0		44.0	20.0		20.0
Base Capacity (vph)	114	1913	669	177	1927	725	485	711	579	375	572	534
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.84	0.65	0.19	0.21	0.93	0.32	0.64	0.15	0.02	0.94	0.21	0.17

Intersection Summary

Cycle Length: 135
Actuated Cycle Length: 133.9
Natural Cycle: 100
Control Type: Semi Act-Uncoord
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 2: Heart Lake Road & Mayfield Road





Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	96	1248	125	37	1789	229	311	104	11	352	118	90
Future Volume (vph)	96	1248	125	37	1789	229	311	104	11	352	118	90
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5
Total Lost time (s)	4.5	6.7	6.7	3.0	6.7	6.7	3.0	6.9	6.9	6.9	6.9	6.9
Lane Util. Factor	1.00	0.91	1.00	1.00	0.91	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1560	4330	1356	1530	4583	1409	1591	1729	1319	1501	1662	1369
Flt Permitted	0.07	1.00	1.00	0.15	1.00	1.00	0.64	1.00	1.00	0.69	1.00	1.00
Satd. Flow (perm)	111	4330	1356	241	4583	1409	1071	1729	1319	1090	1662	1369
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	96	1248	125	37	1789	229	311	104	11	352	118	90
RTOR Reduction (vph)	0	0	70	0	0	132	0	0	7	0	0	60
Lane Group Flow (vph)	96	1248	55	37	1789	97	311	104	4	352	118	30
Heavy Vehicles (%)	3%	9%	6%	5%	3%	2%	1%	0%	9%	7%	4%	5%
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm	Perm	NA	Perm
Protected Phases	5	2		1	6		7	4			8	
Permitted Phases	2		2	6		6	4		4	8		8
Actuated Green, G (s)	64.7	59.2	59.2	61.2	57.2	57.2	54.0	54.0	54.0	45.0	45.0	45.0
Effective Green, g (s)	64.7	59.2	59.2	63.2	57.2	57.2	55.0	54.0	54.0	45.0	45.0	45.0
Actuated g/C Ratio	0.48	0.44	0.44	0.47	0.42	0.42	0.41	0.40	0.40	0.33	0.33	0.33
Clearance Time (s)	4.5	6.7	6.7	4.0	6.7	6.7	4.0	6.9	6.9	6.9	6.9	6.9
Vehicle Extension (s)	3.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Lane Grp Cap (vph)	112	1901	595	160	1944	597	460	692	528	363	554	457
v/s Ratio Prot	c0.03	0.29		0.01	c0.39		c0.03	0.06			0.07	
v/s Ratio Perm	0.38		0.04	0.10		0.07	0.25		0.00	c0.32		0.02
v/c Ratio	0.86	0.66	0.09	0.23	0.92	0.16	0.68	0.15	0.01	0.97	0.21	0.07
Uniform Delay, d1	27.6	29.8	22.1	20.7	36.6	24.0	32.6	25.8	24.3	44.2	32.2	30.6
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	43.6	1.8	0.3	1.5	8.6	0.6	5.1	0.2	0.0	39.3	0.4	0.1
Delay (s)	71.3	31.6	22.4	22.2	45.3	24.6	37.7	26.0	24.3	83.5	32.6	30.7
Level of Service	E	C	C	C	D	C	D	C	C	F	C	C
Approach Delay (s)		33.4			42.5			34.5			64.3	
Approach LOS		C			D			C			E	

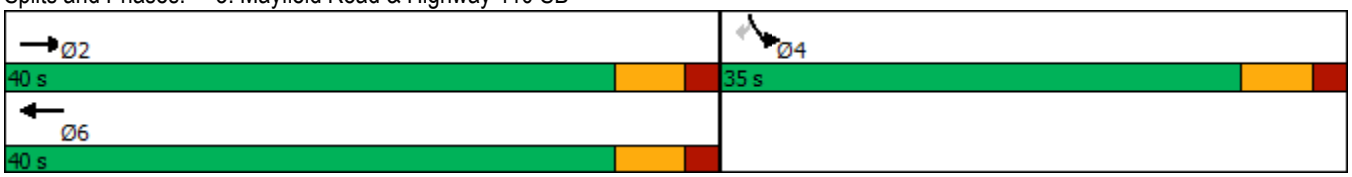
Intersection Summary			
HCM 2000 Control Delay	41.5	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.92		
Actuated Cycle Length (s)	134.8	Sum of lost time (s)	21.1
Intersection Capacity Utilization	87.7%	ICU Level of Service	E
Analysis Period (min)	15		

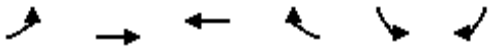
c Critical Lane Group

Lane Group	EBT	WBT	SBL	SBR
Lane Configurations				
Traffic Volume (vph)	977	2272	106	26
Future Volume (vph)	977	2272	106	26
Lane Group Flow (vph)	977	2272	109	23
Turn Type	NA	NA	Prot	Perm
Protected Phases	2	6	4	
Permitted Phases				4
Detector Phase	2	6	4	4
Switch Phase				
Minimum Initial (s)	16.0	16.0	8.0	8.0
Minimum Split (s)	22.0	22.0	32.0	32.0
Total Split (s)	40.0	40.0	35.0	35.0
Total Split (%)	53.3%	53.3%	46.7%	46.7%
Yellow Time (s)	4.0	4.0	4.0	4.0
All-Red Time (s)	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.0	6.0	6.0	6.0
Lead/Lag				
Lead-Lag Optimize?				
Recall Mode	Max	Max	None	None
v/c Ratio	0.27	0.61	0.20	0.10
Control Delay	4.6	7.1	21.7	20.3
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	4.6	7.1	21.7	20.3
Queue Length 50th (m)	14.1	46.9	5.1	2.1
Queue Length 95th (m)	21.1	66.2	10.2	7.4
Internal Link Dist (m)	123.5	116.2	492.2	
Turn Bay Length (m)				
Base Capacity (vph)	3578	3721	1686	738
Starvation Cap Reductn	0	0	0	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.27	0.61	0.06	0.03

Intersection Summary
Cycle Length: 75
Actuated Cycle Length: 58.9
Natural Cycle: 70
Control Type: Semi Act-Uncoord

Splits and Phases: 3: Mayfield Road & Highway 410 SB





Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑↑↑	↑↑↑		↰↰	↱
Traffic Volume (vph)	0	977	2272	0	106	26
Future Volume (vph)	0	977	2272	0	106	26
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)		6.0	6.0		6.0	6.0
Lane Util. Factor		0.91	0.91		0.97	0.91
Frt		1.00	1.00		1.00	0.85
Flt Protected		1.00	1.00		0.95	1.00
Satd. Flow (prot)		5043	5245		3393	1486
Flt Permitted		1.00	1.00		0.95	1.00
Satd. Flow (perm)		5043	5245		3393	1486
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	0	977	2272	0	106	26
RTOR Reduction (vph)	0	0	0	0	1	1
Lane Group Flow (vph)	0	977	2272	0	108	22
Heavy Vehicles (%)	0%	4%	0%	2%	4%	0%
Bus Blockages (#/hr)	0	0	0	0	2	0
Turn Type		NA	NA		Prot	Perm
Protected Phases		2	6		4	
Permitted Phases						4
Actuated Green, G (s)		40.5	40.5		7.6	7.6
Effective Green, g (s)		40.5	40.5		7.6	7.6
Actuated g/C Ratio		0.67	0.67		0.13	0.13
Clearance Time (s)		6.0	6.0		6.0	6.0
Vehicle Extension (s)		5.0	5.0		5.0	5.0
Lane Grp Cap (vph)		3398	3534		429	187
v/s Ratio Prot		0.19	c0.43		c0.03	
v/s Ratio Perm						0.01
v/c Ratio		0.29	0.64		0.25	0.12
Uniform Delay, d1		4.0	5.6		23.7	23.3
Progression Factor		1.00	1.00		1.00	1.00
Incremental Delay, d2		0.2	0.9		0.6	0.6
Delay (s)		4.2	6.6		24.3	23.9
Level of Service		A	A		C	C
Approach Delay (s)		4.2	6.6		24.3	
Approach LOS		A	A		C	

Intersection Summary			
HCM 2000 Control Delay	6.6	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.58		
Actuated Cycle Length (s)	60.1	Sum of lost time (s)	12.0
Intersection Capacity Utilization	60.6%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

Lane Group	EBT	WBT	NBL	NBR
Lane Configurations				
Traffic Volume (vph)	1018	1989	955	984
Future Volume (vph)	1018	1989	955	984
Lane Group Flow (vph)	1018	1989	1329	610
Turn Type	NA	NA	Prot	Perm
Protected Phases	2	6	8	
Permitted Phases	2	6		8
Detector Phase	2	6	8	8
Switch Phase				
Minimum Initial (s)	26.0	26.0	10.0	10.0
Minimum Split (s)	32.0	32.0	22.0	22.0
Total Split (s)	43.0	43.0	57.0	57.0
Total Split (%)	43.0%	43.0%	57.0%	57.0%
Yellow Time (s)	4.0	4.0	4.0	4.0
All-Red Time (s)	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.0	6.0	6.0	6.0
Lead/Lag				
Lead-Lag Optimize?				
Recall Mode	Max	None	None	None
v/c Ratio	0.53	1.03	0.82	0.90
Control Delay	24.3	58.5	25.3	39.9
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	24.3	58.5	25.3	39.9
Queue Length 50th (m)	56.5	~159.4	100.9	104.0
Queue Length 95th (m)	69.8	#188.7	127.7	#181.0
Internal Link Dist (m)	104.0	63.2	627.1	
Turn Bay Length (m)				
Base Capacity (vph)	1935	1935	1816	753
Starvation Cap Reductn	0	0	0	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.53	1.03	0.73	0.81

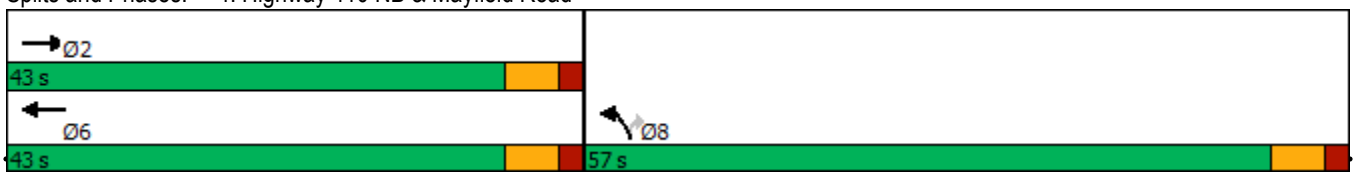
Intersection Summary

Cycle Length: 100
Actuated Cycle Length: 95.2
Natural Cycle: 90
Control Type: Semi Act-Uncoord

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

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

Splits and Phases: 4: Highway 410 NB & Mayfield Road





Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	1018	0	0	1989	955	984
Future Volume (vph)	1018	0	0	1989	955	984
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0			6.0	6.0	6.0
Lane Util. Factor	0.91			0.91	0.97	0.91
Frt	1.00			1.00	0.96	0.85
Flt Protected	1.00			1.00	0.97	1.00
Satd. Flow (prot)	4948			4948	3346	1376
Flt Permitted	1.00			1.00	0.97	1.00
Satd. Flow (perm)	4948			4948	3346	1376
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	1018	0	0	1989	955	984
RTOR Reduction (vph)	0	0	0	0	13	13
Lane Group Flow (vph)	1018	0	0	1989	1316	597
Heavy Vehicles (%)	6%	0%	0%	6%	1%	8%
Turn Type	NA			NA	Prot	Perm
Protected Phases	2			6	8	
Permitted Phases	2			6		8
Actuated Green, G (s)	37.2			37.2	45.9	45.9
Effective Green, g (s)	37.2			37.2	45.9	45.9
Actuated g/C Ratio	0.39			0.39	0.48	0.48
Clearance Time (s)	6.0			6.0	6.0	6.0
Vehicle Extension (s)	5.0			5.0	3.0	3.0
Lane Grp Cap (vph)	1935			1935	1614	664
v/s Ratio Prot	0.21			c0.40	0.39	
v/s Ratio Perm						c0.43
v/c Ratio	0.53			1.03	0.82	0.90
Uniform Delay, d1	22.2			28.9	21.0	22.5
Progression Factor	1.00			1.00	1.00	1.00
Incremental Delay, d2	1.0			28.0	3.3	14.9
Delay (s)	23.2			56.9	24.3	37.4
Level of Service	C			E	C	D
Approach Delay (s)	23.2			56.9	28.4	
Approach LOS	C			E	C	

Intersection Summary			
HCM 2000 Control Delay	38.8	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.96		
Actuated Cycle Length (s)	95.1	Sum of lost time (s)	12.0
Intersection Capacity Utilization	86.0%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	EBT	EBR	WBL	WBT	NBL
Lane Configurations					
Traffic Volume (vph)	1750	154	71	1995	110
Future Volume (vph)	1750	154	71	1995	110
Lane Group Flow (vph)	1750	154	71	1995	160
Turn Type	NA	Perm	Perm	NA	Prot
Protected Phases	2			2	4
Permitted Phases		2	2		
Detector Phase	2	2	2	2	4
Switch Phase					
Minimum Initial (s)	12.0	12.0	12.0	12.0	8.0
Minimum Split (s)	26.7	26.7	26.7	26.7	45.6
Total Split (s)	74.0	74.0	74.0	74.0	46.0
Total Split (%)	61.7%	61.7%	61.7%	61.7%	38.3%
Yellow Time (s)	4.6	4.6	4.6	4.6	4.0
All-Red Time (s)	2.1	2.1	2.1	2.1	3.6
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.7	6.7	6.7	6.7	7.6
Lead/Lag					
Lead-Lag Optimize?					
Recall Mode	Max	Max	Max	Max	Max
v/c Ratio	0.61	0.16	0.84	0.69	0.28
Control Delay	18.7	2.3	88.3	20.5	29.1
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	18.7	2.3	88.3	20.5	29.1
Queue Length 50th (m)	95.7	0.0	13.1	117.8	25.3
Queue Length 95th (m)	110.1	8.9	#43.7	134.2	42.9
Internal Link Dist (m)	203.7			76.6	88.2
Turn Bay Length (m)		65.0	35.0		
Base Capacity (vph)	2883	945	85	2883	568
Starvation Cap Reductn	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.61	0.16	0.84	0.69	0.28

Intersection Summary

Cycle Length: 120
Actuated Cycle Length: 120
Natural Cycle: 90
Control Type: Semi Act-Uncoord
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 5: Ace Drive & Mayfield Road





Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	1750	154	71	1995	110	50
Future Volume (vph)	1750	154	71	1995	110	50
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width	3.7	3.5	3.5	3.7	3.7	3.7
Total Lost time (s)	6.7	6.7	6.7	6.7	7.6	
Lane Util. Factor	0.91	1.00	1.00	0.91	1.00	
Frt	1.00	0.85	1.00	1.00	0.96	
Flt Protected	1.00	1.00	0.95	1.00	0.97	
Satd. Flow (prot)	5142	1566	1750	5142	1744	
Flt Permitted	1.00	1.00	0.08	1.00	0.97	
Satd. Flow (perm)	5142	1566	152	5142	1744	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	1750	154	71	1995	110	50
RTOR Reduction (vph)	0	68	0	0	10	0
Lane Group Flow (vph)	1750	86	71	1995	150	0
Turn Type	NA	Perm	Perm	NA	Prot	
Protected Phases	2			2	4	
Permitted Phases		2	2			
Actuated Green, G (s)	67.3	67.3	67.3	67.3	38.4	
Effective Green, g (s)	67.3	67.3	67.3	67.3	38.4	
Actuated g/C Ratio	0.56	0.56	0.56	0.56	0.32	
Clearance Time (s)	6.7	6.7	6.7	6.7	7.6	
Vehicle Extension (s)	5.0	5.0	5.0	5.0	5.0	
Lane Grp Cap (vph)	2883	878	85	2883	558	
v/s Ratio Prot	0.34			0.39	c0.09	
v/s Ratio Perm		0.06	c0.47			
v/c Ratio	0.61	0.10	0.84	0.69	0.27	
Uniform Delay, d1	17.5	12.2	21.8	18.9	30.4	
Progression Factor	1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	1.0	0.2	59.5	1.4	1.2	
Delay (s)	18.5	12.5	81.3	20.3	31.5	
Level of Service	B	B	F	C	C	
Approach Delay (s)	18.0			22.4	31.5	
Approach LOS	B			C	C	

Intersection Summary			
HCM 2000 Control Delay	20.7	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.63		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	14.3
Intersection Capacity Utilization	70.5%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

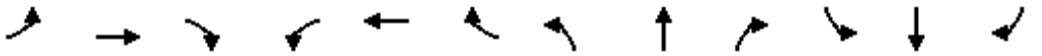
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	480	1221	186	68	1423	59	289	236	38	135	454	674
Future Volume (vph)	480	1221	186	68	1423	59	289	236	38	135	454	674
Lane Group Flow (vph)	480	1221	186	68	1423	59	289	236	38	135	454	674
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	Perm	NA	Perm	Perm	NA	Perm
Protected Phases	5	2		1	6			4			8	
Permitted Phases	2		2	6		6	4		4	8		8
Detector Phase	5	2	2	1	6	6	4	4	4	8	8	8
Switch Phase												
Minimum Initial (s)	5.0	8.0	8.0	5.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0
Minimum Split (s)	9.0	44.9	44.9	9.0	44.9	44.9	47.9	47.9	47.9	47.9	47.9	47.9
Total Split (s)	31.0	67.0	67.0	11.0	47.0	47.0	52.0	52.0	52.0	52.0	52.0	52.0
Total Split (%)	23.8%	51.5%	51.5%	8.5%	36.2%	36.2%	40.0%	40.0%	40.0%	40.0%	40.0%	40.0%
Yellow Time (s)	3.0	4.6	4.6	3.0	4.6	4.6	4.6	4.6	4.6	4.6	4.6	4.6
All-Red Time (s)	1.0	2.3	2.3	1.0	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.3
Lost Time Adjust (s)	-1.0	0.0	0.0	-1.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	3.0	6.9	6.9	3.0	6.9	6.9	6.9	6.9	6.9	6.9	6.9	6.9
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag						
Lead-Lag Optimize?												
Recall Mode	None	Max	Max	None	None	None	None	None	None	None	None	None
v/c Ratio	1.13	0.53	0.22	0.37	0.94	0.11	1.07	0.19	0.06	0.37	0.38	0.84
Control Delay	122.0	25.2	3.4	20.9	56.8	1.6	116.9	30.1	0.2	35.5	33.0	26.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	122.0	25.2	3.4	20.9	56.8	1.6	116.9	30.1	0.2	35.5	33.0	26.5
Queue Length 50th (m)	~127.4	81.0	0.0	7.4	130.1	0.0	~82.1	22.1	0.0	25.8	45.7	72.3
Queue Length 95th (m)	#193.9	95.1	12.6	14.3	#159.6	2.3	#136.9	32.0	0.0	44.3	60.2	#138.4
Internal Link Dist (m)		179.3			299.2			185.5			471.5	
Turn Bay Length (m)	140.0		70.0	65.0		30.0	75.0		60.0	30.0		138.0
Base Capacity (vph)	423	2285	846	186	1512	517	269	1266	603	365	1205	798
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	1.13	0.53	0.22	0.37	0.94	0.11	1.07	0.19	0.06	0.37	0.38	0.84

Intersection Summary

Cycle Length: 130
Actuated Cycle Length: 130
Natural Cycle: 125
Control Type: Semi Act-Uncoord
~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 6: Dixie Road & Mayfield Road





Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	480	1221	186	68	1423	59	289	236	38	135	454	674
Future Volume (vph)	480	1221	186	68	1423	59	289	236	38	135	454	674
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5
Total Lost time (s)	3.0	6.9	6.9	3.0	6.9	6.9	6.9	6.9	6.9	6.9	6.9	6.9
Lane Util. Factor	1.00	0.91	1.00	1.00	0.91	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1700	4768	1566	1342	4902	1452	1750	3650	1551	1653	3476	1551
Flt Permitted	0.09	1.00	1.00	0.22	1.00	1.00	0.42	1.00	1.00	0.60	1.00	1.00
Satd. Flow (perm)	159	4768	1566	308	4902	1452	778	3650	1551	1052	3476	1551
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	480	1221	186	68	1423	59	289	236	38	135	454	674
RTOR Reduction (vph)	0	0	97	0	0	41	0	0	25	0	0	261
Lane Group Flow (vph)	480	1221	89	68	1423	18	289	236	13	135	454	413
Heavy Vehicles (%)	5%	10%	2%	33%	7%	10%	2%	0%	3%	8%	5%	3%
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	Perm	NA	Perm	Perm	NA	Perm
Protected Phases	5	2		1	6			4			8	
Permitted Phases	2		2	6		6	4		4	8		8
Actuated Green, G (s)	71.9	62.3	62.3	46.5	40.9	40.9	45.1	45.1	45.1	45.1	45.1	45.1
Effective Green, g (s)	72.9	62.3	62.3	48.5	40.9	40.9	45.1	45.1	45.1	45.1	45.1	45.1
Actuated g/C Ratio	0.56	0.48	0.48	0.37	0.31	0.31	0.34	0.34	0.34	0.34	0.34	0.34
Clearance Time (s)	4.0	6.9	6.9	4.0	6.9	6.9	6.9	6.9	6.9	6.9	6.9	6.9
Vehicle Extension (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Lane Grp Cap (vph)	418	2270	745	166	1532	454	268	1258	534	362	1198	534
v/s Ratio Prot	c0.25	0.26		0.02	0.29			0.06			0.13	
v/s Ratio Perm	c0.39		0.06	0.13		0.01	c0.37		0.01	0.13		0.27
v/c Ratio	1.15	0.54	0.12	0.41	0.93	0.04	1.08	0.19	0.02	0.37	0.38	0.77
Uniform Delay, d1	41.2	24.1	19.0	27.3	43.5	31.3	42.9	30.0	28.3	32.2	32.3	38.3
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	91.2	0.9	0.3	3.4	10.6	0.1	77.4	0.2	0.0	1.4	0.4	8.0
Delay (s)	132.3	25.0	19.3	30.7	54.1	31.4	120.2	30.2	28.4	33.6	32.7	46.2
Level of Service	F	C	B	C	D	C	F	C	C	C	C	D
Approach Delay (s)		51.8			52.2			76.3			40.0	
Approach LOS		D			D			E			D	

Intersection Summary			
HCM 2000 Control Delay	51.7	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	1.16		
Actuated Cycle Length (s)	130.8	Sum of lost time (s)	16.8
Intersection Capacity Utilization	103.2%	ICU Level of Service	G
Analysis Period (min)	15		

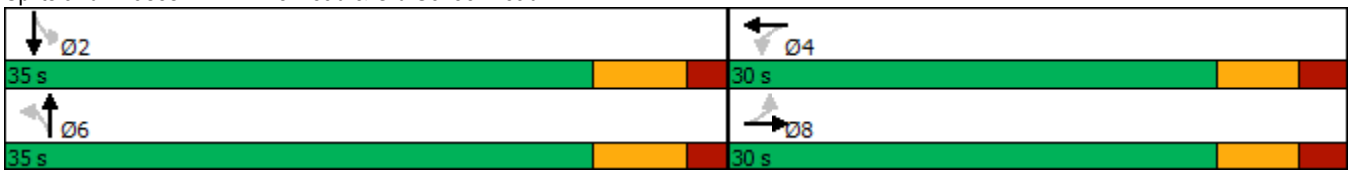
c Critical Lane Group

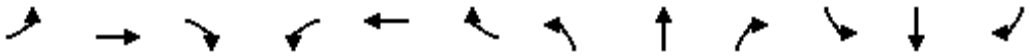
Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations								
Traffic Volume (vph)	51	110	84	278	68	600	6	282
Future Volume (vph)	51	110	84	278	68	600	6	282
Lane Group Flow (vph)	51	130	84	296	68	644	6	303
Turn Type	Perm	NA	Perm	NA	Perm	NA	Perm	NA
Protected Phases		8		4		6		2
Permitted Phases	8		4		6		2	
Detector Phase	8	8	4	4	6	6	2	2
Switch Phase								
Minimum Initial (s)	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0
Minimum Split (s)	25.4	25.4	25.4	25.4	23.6	23.6	23.6	23.6
Total Split (s)	30.0	30.0	30.0	30.0	35.0	35.0	35.0	35.0
Total Split (%)	46.2%	46.2%	46.2%	46.2%	53.8%	53.8%	53.8%	53.8%
Yellow Time (s)	4.0	4.0	4.0	4.0	4.6	4.6	4.6	4.6
All-Red Time (s)	2.4	2.4	2.4	2.4	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.4	6.4	6.4	6.4	6.6	6.6	6.6	6.6
Lead/Lag								
Lead-Lag Optimize?								
Recall Mode	None	None	None	None	Max	Max	Max	Max
v/c Ratio	0.22	0.25	0.24	0.56	0.13	0.70	0.02	0.35
Control Delay	17.7	14.9	17.3	21.6	10.3	18.3	9.8	11.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	17.7	14.9	17.3	21.6	10.3	18.3	9.8	11.2
Queue Length 50th (m)	4.1	9.1	6.7	25.7	3.5	46.6	0.3	17.0
Queue Length 95th (m)	10.9	19.4	15.3	44.4	11.4	#117.5	2.2	40.0
Internal Link Dist (m)		1372.4		151.6		1413.7		144.7
Turn Bay Length (m)	35.0		45.0		40.0		35.0	
Base Capacity (vph)	346	757	512	769	536	914	260	874
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.15	0.17	0.16	0.38	0.13	0.70	0.02	0.35

Intersection Summary

Cycle Length: 65
Actuated Cycle Length: 58
Natural Cycle: 60
Control Type: Semi Act-Uncoord
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 7: Dixie Road & Old School Road





Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	51	110	20	84	278	18	68	600	44	6	282	21
Future Volume (vph)	51	110	20	84	278	18	68	600	44	6	282	21
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5
Total Lost time (s)	6.4	6.4		6.4	6.4		6.6	6.6		6.6	6.6	
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	0.99		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)	1566	1830		1767	1873		1785	1833		1785	1754	
Flt Permitted	0.51	1.00		0.67	1.00		0.58	1.00		0.28	1.00	
Satd. Flow (perm)	847	1830		1253	1873		1081	1833		525	1754	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	51	110	20	84	278	18	68	600	44	6	282	21
RTOR Reduction (vph)	0	12	0	0	4	0	0	4	0	0	4	0
Lane Group Flow (vph)	51	118	0	84	292	0	68	640	0	6	299	0
Heavy Vehicles (%)	14%	3%	0%	1%	1%	11%	0%	2%	27%	0%	9%	0%
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)	16.2	16.2		16.2	16.2		28.8	28.8		28.8	28.8	
Effective Green, g (s)	16.2	16.2		16.2	16.2		28.8	28.8		28.8	28.8	
Actuated g/C Ratio	0.28	0.28		0.28	0.28		0.50	0.50		0.50	0.50	
Clearance Time (s)	6.4	6.4		6.4	6.4		6.6	6.6		6.6	6.6	
Vehicle Extension (s)	5.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0	
Lane Grp Cap (vph)	236	511		349	523		536	910		260	870	
v/s Ratio Prot		0.06			c0.16			c0.35			0.17	
v/s Ratio Perm	0.06			0.07			0.06			0.01		
v/c Ratio	0.22	0.23		0.24	0.56		0.13	0.70		0.02	0.34	
Uniform Delay, d1	16.0	16.1		16.1	17.8		7.8	11.3		7.4	8.9	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	1.0	0.5		0.8	2.2		0.5	4.5		0.2	1.1	
Delay (s)	17.0	16.6		16.9	20.0		8.3	15.8		7.6	9.9	
Level of Service	B	B		B	C		A	B		A	A	
Approach Delay (s)		16.7			19.3			15.1			9.9	
Approach LOS		B			B			B			A	

Intersection Summary			
HCM 2000 Control Delay	15.3	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.65		
Actuated Cycle Length (s)	58.0	Sum of lost time (s)	13.0
Intersection Capacity Utilization	85.0%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	35	12	415	13	7	143
Future Volume (Veh/h)	35	12	415	13	7	143
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)	38	13	451	14	8	155
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	629	458			465	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	629	458			465	
tC, single (s)	6.5	6.3			4.1	
tC, 2 stage (s)						
tF (s)	3.6	3.4			2.2	
p0 queue free %	91	98			99	
cM capacity (veh/h)	434	591			1096	

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	51	465	163
Volume Left	38	0	8
Volume Right	13	14	0
cSH	465	1700	1096
Volume to Capacity	0.11	0.27	0.01
Queue Length 95th (m)	2.8	0.0	0.2
Control Delay (s)	13.7	0.0	0.5
Lane LOS	B		A
Approach Delay (s)	13.7	0.0	0.5
Approach LOS	B		

Intersection Summary			
Average Delay	1.1		
Intersection Capacity Utilization	32.6%	ICU Level of Service	A
Analysis Period (min)	15		



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	35	12	414	13	7	113
Future Volume (Veh/h)	35	12	414	13	7	113
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)	38	13	450	14	8	123
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	596	457			464	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	596	457			464	
tC, single (s)	6.5	6.3			4.1	
tC, 2 stage (s)						
tF (s)	3.6	3.4			2.2	
p0 queue free %	92	98			99	
cM capacity (veh/h)	453	591			1097	

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	51	464	131
Volume Left	38	0	8
Volume Right	13	14	0
cSH	482	1700	1097
Volume to Capacity	0.11	0.27	0.01
Queue Length 95th (m)	2.7	0.0	0.2
Control Delay (s)	13.4	0.0	0.6
Lane LOS	B		A
Approach Delay (s)	13.4	0.0	0.6
Approach LOS	B		

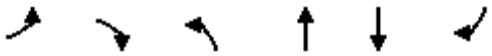
Intersection Summary			
Average Delay	1.2		
Intersection Capacity Utilization	32.6%	ICU Level of Service	A
Analysis Period (min)	15		



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	34	12	412	14	6	83
Future Volume (Veh/h)	34	12	412	14	6	83
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)	37	13	448	15	7	90
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	560	456			463	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	560	456			463	
tC, single (s)	6.5	6.3			4.1	
tC, 2 stage (s)						
tF (s)	3.6	3.4			2.2	
p0 queue free %	92	98			99	
cM capacity (veh/h)	477	592			1098	

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	50	463	97
Volume Left	37	0	7
Volume Right	13	15	0
cSH	502	1700	1098
Volume to Capacity	0.10	0.27	0.01
Queue Length 95th (m)	2.5	0.0	0.1
Control Delay (s)	13.0	0.0	0.7
Lane LOS	B		A
Approach Delay (s)	13.0	0.0	0.7
Approach LOS	B		

Intersection Summary			
Average Delay	1.2		
Intersection Capacity Utilization	32.5%	ICU Level of Service	A
Analysis Period (min)	15		



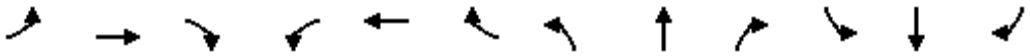
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	20	66	26	670	358	11
Future Volume (Veh/h)	20	66	26	670	358	11
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	22	72	28	728	389	12
Pedestrians						
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	809	194	401			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	809	194	401			
tC, single (s)	7.0	7.1	4.1			
tC, 2 stage (s)						
tF (s)	3.6	3.4	2.2			
p0 queue free %	93	91	98			
cM capacity (veh/h)	297	793	1154			

Direction, Lane #	EB 1	NB 1	NB 2	NB 3	SB 1	SB 2	SB 3
Volume Total	94	28	364	364	194	194	12
Volume Left	22	28	0	0	0	0	0
Volume Right	72	0	0	0	0	0	12
cSH	570	1154	1700	1700	1700	1700	1700
Volume to Capacity	0.16	0.02	0.21	0.21	0.11	0.11	0.01
Queue Length 95th (m)	4.5	0.6	0.0	0.0	0.0	0.0	0.0
Control Delay (s)	12.6	8.2	0.0	0.0	0.0	0.0	0.0
Lane LOS	B	A					
Approach Delay (s)	12.6	0.3			0.0		
Approach LOS	B						

Intersection Summary			
Average Delay	1.1		
Intersection Capacity Utilization	30.4%	ICU Level of Service	A
Analysis Period (min)	15		

Appendix R

2034 Future Total Conditions – Synchro Analysis Results



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Stop			Stop	
Traffic Volume (vph)	12	317	93	12	105	62	36	35	8	4	85	13
Future Volume (vph)	12	317	93	12	105	62	36	35	8	4	85	13
Peak Hour Factor	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85
Hourly flow rate (vph)	14	373	109	14	124	73	42	41	9	5	100	15

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total (vph)	496	211	92	120
Volume Left (vph)	14	14	42	5
Volume Right (vph)	109	73	9	15
Hadj (s)	-0.08	0.04	0.20	-0.01
Departure Headway (s)	4.8	5.3	6.1	5.9
Degree Utilization, x	0.66	0.31	0.16	0.20
Capacity (veh/h)	728	641	508	540
Control Delay (s)	16.5	10.6	10.2	10.3
Approach Delay (s)	16.5	10.6	10.2	10.3
Approach LOS	C	B	B	B

Intersection Summary				
Delay	13.7			
Level of Service	B			
Intersection Capacity Utilization	43.4%	ICU Level of Service	A	
Analysis Period (min)	15			

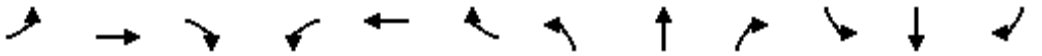
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	79	1933	511	116	1263	250	108	87	18	235	182	106
Future Volume (vph)	79	1933	511	116	1263	250	108	87	18	235	182	106
Lane Group Flow (vph)	79	1933	511	116	1263	250	108	87	18	235	182	106
Turn Type	Perm	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm	Perm	NA	Perm
Protected Phases		2		1	6		7	4			8	
Permitted Phases	2		2	6		6	4		4	8		8
Detector Phase	2	2	2	1	6	6	7	4	4	8	8	8
Switch Phase												
Minimum Initial (s)	12.0	12.0	12.0	5.0	12.0	12.0	5.0	8.0	8.0	8.0	8.0	8.0
Minimum Split (s)	39.7	39.7	39.7	9.0	39.7	39.7	9.0	43.9	43.9	43.9	43.9	43.9
Total Split (s)	77.0	77.0	77.0	9.0	86.0	86.0	9.0	54.0	54.0	45.0	45.0	45.0
Total Split (%)	55.0%	55.0%	55.0%	6.4%	61.4%	61.4%	6.4%	38.6%	38.6%	32.1%	32.1%	32.1%
Yellow Time (s)	4.6	4.6	4.6	3.0	4.6	4.6	3.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	2.1	2.1	2.1	1.0	2.1	2.1	1.0	2.9	2.9	2.9	2.9	2.9
Lost Time Adjust (s)	0.0	0.0	0.0	-1.0	0.0	0.0	-1.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.7	6.7	6.7	3.0	6.7	6.7	3.0	6.9	6.9	6.9	6.9	6.9
Lead/Lag	Lag	Lag	Lag	Lead			Lead			Lag	Lag	Lag
Lead-Lag Optimize?												
Recall Mode	Max	Max	Max	None	Max	Max	None	None	None	None	None	None
v/c Ratio	0.47	0.83	0.55	0.96	0.51	0.33	0.35	0.17	0.04	0.84	0.45	0.26
Control Delay	33.8	31.4	6.8	99.6	17.4	2.9	35.2	34.3	0.2	73.2	46.8	11.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	33.8	31.4	6.8	99.6	17.4	2.9	35.2	34.3	0.2	73.2	46.8	11.8
Queue Length 50th (m)	13.4	159.7	13.9	17.4	71.7	0.0	20.4	16.8	0.0	59.4	41.2	3.1
Queue Length 95th (m)	32.6	190.5	44.1	#59.1	89.0	11.9	34.9	29.9	0.0	#93.3	63.8	17.6
Internal Link Dist (m)		179.2			166.2			202.0			680.1	
Turn Bay Length (m)	115.0		180.0	80.0		150.0	110.0		44.0	20.0		20.0
Base Capacity (vph)	168	2341	935	121	2499	762	305	609	545	337	487	474
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.47	0.83	0.55	0.96	0.51	0.33	0.35	0.14	0.03	0.70	0.37	0.22

Intersection Summary

Cycle Length: 140
Actuated Cycle Length: 134
Natural Cycle: 115
Control Type: Semi Act-Uncoord
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 2: Heart Lake Road & Mayfield Road





Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	79	1933	511	116	1263	250	108	87	18	235	182	106
Future Volume (vph)	79	1933	511	116	1263	250	108	87	18	235	182	106
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5
Total Lost time (s)	6.7	6.7	6.7	3.0	6.7	6.7	3.0	6.9	6.9	6.9	6.9	6.9
Lane Util. Factor	1.00	0.91	1.00	1.00	0.91	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1530	4453	1409	1560	4214	1114	1530	1729	1437	1606	1712	1437
Flt Permitted	0.20	1.00	1.00	0.05	1.00	1.00	0.51	1.00	1.00	0.70	1.00	1.00
Satd. Flow (perm)	321	4453	1409	88	4214	1114	816	1729	1437	1185	1712	1437
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	79	1933	511	116	1263	250	108	87	18	235	182	106
RTOR Reduction (vph)	0	0	194	0	0	102	0	0	13	0	0	69
Lane Group Flow (vph)	79	1933	317	116	1263	148	108	87	5	235	182	37
Heavy Vehicles (%)	5%	6%	2%	3%	12%	29%	5%	0%	0%	0%	1%	0%
Turn Type	Perm	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm	Perm	NA	Perm
Protected Phases		2		1	6		7	4			8	
Permitted Phases	2		2	6		6	4		4	8		8
Actuated Green, G (s)	70.5	70.5	70.5	79.5	79.5	79.5	40.9	40.9	40.9	31.9	31.9	31.9
Effective Green, g (s)	70.5	70.5	70.5	80.5	79.5	79.5	41.9	40.9	40.9	31.9	31.9	31.9
Actuated g/C Ratio	0.53	0.53	0.53	0.60	0.59	0.59	0.31	0.31	0.31	0.24	0.24	0.24
Clearance Time (s)	6.7	6.7	6.7	4.0	6.7	6.7	4.0	6.9	6.9	6.9	6.9	6.9
Vehicle Extension (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Lane Grp Cap (vph)	168	2342	741	118	2500	660	287	527	438	282	407	342
v/s Ratio Prot		0.43		c0.04	0.30		c0.02	0.05			0.11	
v/s Ratio Perm	0.25		0.22	c0.54		0.13	0.10		0.00	c0.20		0.03
v/c Ratio	0.47	0.83	0.43	0.98	0.51	0.22	0.38	0.17	0.01	0.83	0.45	0.11
Uniform Delay, d1	20.0	26.6	19.4	32.2	15.8	12.8	35.1	34.1	32.5	48.5	43.5	39.9
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	9.2	3.5	1.8	77.6	0.7	0.8	1.7	0.3	0.0	20.5	1.6	0.3
Delay (s)	29.2	30.1	21.2	109.8	16.6	13.6	36.9	34.4	32.5	69.0	45.2	40.2
Level of Service	C	C	C	F	B	B	D	C	C	E	D	D
Approach Delay (s)		28.2			22.7			35.5			54.9	
Approach LOS		C			C			D			D	

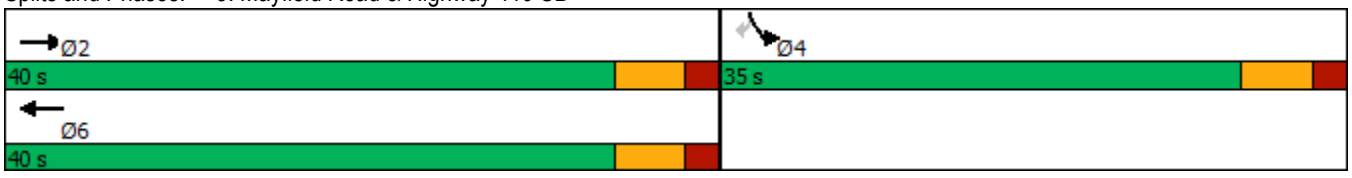
Intersection Summary			
HCM 2000 Control Delay	29.6	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.94		
Actuated Cycle Length (s)	134.0	Sum of lost time (s)	19.6
Intersection Capacity Utilization	90.2%	ICU Level of Service	E
Analysis Period (min)	15		

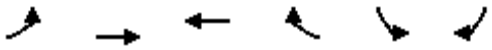
c Critical Lane Group

Lane Group	EBT	WBT	SBL	SBR
Lane Configurations				
Traffic Volume (vph)	1481	1338	376	353
Future Volume (vph)	1481	1338	376	353
Lane Group Flow (vph)	1481	1338	500	229
Turn Type	NA	NA	Prot	Perm
Protected Phases	2	6	4	
Permitted Phases				4
Detector Phase	2	6	4	4
Switch Phase				
Minimum Initial (s)	16.0	16.0	8.0	8.0
Minimum Split (s)	22.0	22.0	32.0	32.0
Total Split (s)	40.0	40.0	35.0	35.0
Total Split (%)	53.3%	53.3%	46.7%	46.7%
Yellow Time (s)	4.0	4.0	4.0	4.0
All-Red Time (s)	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.0	6.0	6.0	6.0
Lead/Lag				
Lead-Lag Optimize?				
Recall Mode	Max	Max	None	None
v/c Ratio	0.57	0.48	0.50	0.52
Control Delay	12.4	11.4	19.8	21.7
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	12.4	11.4	19.8	21.7
Queue Length 50th (m)	38.5	32.7	24.2	22.6
Queue Length 95th (m)	70.5	60.1	35.6	41.5
Internal Link Dist (m)	123.5	116.2	492.2	
Turn Bay Length (m)				
Base Capacity (vph)	2612	2769	1562	680
Starvation Cap Reductn	0	0	0	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.57	0.48	0.32	0.34

Intersection Summary
Cycle Length: 75
Actuated Cycle Length: 64.9
Natural Cycle: 60
Control Type: Semi Act-Uncoord

Splits and Phases: 3: Mayfield Road & Highway 410 SB





Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑↑↑	↑↑↑		↰↰	↱
Traffic Volume (vph)	0	1481	1338	0	376	353
Future Volume (vph)	0	1481	1338	0	376	353
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)		6.0	6.0		6.0	6.0
Lane Util. Factor		0.91	0.91		0.97	0.91
Frt		1.00	1.00		0.96	0.85
Flt Protected		1.00	1.00		0.96	1.00
Satd. Flow (prot)		4948	5245		3444	1486
Flt Permitted		1.00	1.00		0.96	1.00
Satd. Flow (perm)		4948	5245		3444	1486
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	0	1481	1338	0	376	353
RTOR Reduction (vph)	0	0	0	0	14	14
Lane Group Flow (vph)	0	1481	1338	0	486	215
Heavy Vehicles (%)	0%	6%	0%	16%	0%	0%
Bus Blockages (#/hr)	0	0	0	0	2	0
Turn Type		NA	NA		Prot	Perm
Protected Phases		2	6		4	
Permitted Phases						4
Actuated Green, G (s)		34.3	34.3		18.5	18.5
Effective Green, g (s)		34.3	34.3		18.5	18.5
Actuated g/C Ratio		0.53	0.53		0.29	0.29
Clearance Time (s)		6.0	6.0		6.0	6.0
Vehicle Extension (s)		5.0	5.0		5.0	5.0
Lane Grp Cap (vph)		2619	2776		983	424
v/s Ratio Prot		c0.30	0.26		0.14	
v/s Ratio Perm						c0.14
v/c Ratio		0.57	0.48		0.49	0.51
Uniform Delay, d1		10.2	9.6		19.3	19.3
Progression Factor		1.00	1.00		1.00	1.00
Incremental Delay, d2		0.9	0.6		0.8	2.0
Delay (s)		11.1	10.2		20.1	21.3
Level of Service		B	B		C	C
Approach Delay (s)		11.1	10.2		20.5	
Approach LOS		B	B		C	

Intersection Summary			
HCM 2000 Control Delay	12.7	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.54		
Actuated Cycle Length (s)	64.8	Sum of lost time (s)	12.0
Intersection Capacity Utilization	53.0%	ICU Level of Service	A
Analysis Period (min)	15		

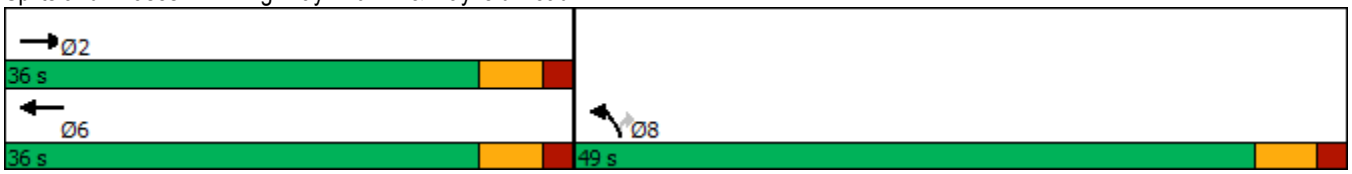
c Critical Lane Group

Lane Group	EBT	WBT	NBL	NBR
Lane Configurations				
Traffic Volume (vph)	1864	1796	509	953
Future Volume (vph)	1864	1796	509	953
Lane Group Flow (vph)	1864	1796	986	476
Turn Type	NA	NA	Prot	Perm
Protected Phases	2	6	8	
Permitted Phases				8
Detector Phase	2	6	8	8
Switch Phase				
Minimum Initial (s)	26.0	26.0	10.0	10.0
Minimum Split (s)	32.0	32.0	22.0	22.0
Total Split (s)	36.0	36.0	49.0	49.0
Total Split (%)	42.4%	42.4%	57.6%	57.6%
Yellow Time (s)	4.0	4.0	4.0	4.0
All-Red Time (s)	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.0	6.0	6.0	6.0
Lead/Lag				
Lead-Lag Optimize?				
Recall Mode	Max	None	None	None
v/c Ratio	0.94	0.96	0.77	0.82
Control Delay	35.6	38.6	22.0	31.0
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	35.6	38.6	22.0	31.0
Queue Length 50th (m)	93.9	91.4	58.4	62.0
Queue Length 95th (m)	#152.9	#150.2	78.7	103.7
Internal Link Dist (m)	104.0	63.2	627.1	
Turn Bay Length (m)				
Base Capacity (vph)	1975	1870	1668	753
Starvation Cap Reductn	0	0	0	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.94	0.96	0.59	0.63

Intersection Summary

Cycle Length: 85
Actuated Cycle Length: 76
Natural Cycle: 65
Control Type: Semi Act-Uncoord
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 4: Highway 410 NB & Mayfield Road





Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	1864	0	0	1796	509	953
Future Volume (vph)	1864	0	0	1796	509	953
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0			6.0	6.0	6.0
Lane Util. Factor	0.91			0.91	0.97	0.91
Frt	1.00			1.00	0.93	0.85
Flt Protected	1.00			1.00	0.97	1.00
Satd. Flow (prot)	4948			4683	2915	1315
Flt Permitted	1.00			1.00	0.97	1.00
Satd. Flow (perm)	4948			4683	2915	1315
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	1864	0	0	1796	509	953
RTOR Reduction (vph)	0	0	0	0	1	1
Lane Group Flow (vph)	1864	0	0	1796	985	475
Heavy Vehicles (%)	6%	0%	0%	12%	18%	13%
Turn Type	NA			NA	Prot	Perm
Protected Phases	2			6	8	
Permitted Phases						8
Actuated Green, G (s)	30.4			30.4	33.5	33.5
Effective Green, g (s)	30.4			30.4	33.5	33.5
Actuated g/C Ratio	0.40			0.40	0.44	0.44
Clearance Time (s)	6.0			6.0	6.0	6.0
Vehicle Extension (s)	5.0			5.0	3.0	3.0
Lane Grp Cap (vph)	1981			1875	1286	580
v/s Ratio Prot	0.38			c0.38	0.34	
v/s Ratio Perm						c0.36
v/c Ratio	0.94			0.96	0.77	0.82
Uniform Delay, d1	21.9			22.1	17.9	18.6
Progression Factor	1.00			1.00	1.00	1.00
Incremental Delay, d2	10.4			12.5	2.8	8.9
Delay (s)	32.3			34.6	20.7	27.4
Level of Service	C			C	C	C
Approach Delay (s)	32.3			34.6	22.9	
Approach LOS	C			C	C	

Intersection Summary			
HCM 2000 Control Delay	30.4	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.88		
Actuated Cycle Length (s)	75.9	Sum of lost time (s)	12.0
Intersection Capacity Utilization	85.4%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	EBT	EBR	WBL	WBT	NBL
Lane Configurations					
Traffic Volume (vph)	2386	211	68	1483	117
Future Volume (vph)	2386	211	68	1483	117
Lane Group Flow (vph)	2386	211	68	1483	184
Turn Type	NA	Perm	Perm	NA	Prot
Protected Phases	2			2	4
Permitted Phases		2	2		
Detector Phase	2	2	2	2	4
Switch Phase					
Minimum Initial (s)	12.0	12.0	12.0	12.0	8.0
Minimum Split (s)	26.7	26.7	26.7	26.7	45.6
Total Split (s)	74.0	74.0	74.0	74.0	46.0
Total Split (%)	61.7%	61.7%	61.7%	61.7%	38.3%
Yellow Time (s)	4.6	4.6	4.6	4.6	4.0
All-Red Time (s)	2.1	2.1	2.1	2.1	3.6
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.7	6.7	6.7	6.7	7.6
Lead/Lag					
Lead-Lag Optimize?					
Recall Mode	Max	Max	Max	Max	None
v/c Ratio	0.68	0.19	0.94	0.42	0.61
Control Delay	11.1	2.4	119.4	7.9	46.5
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	11.1	2.4	119.4	7.9	46.5
Queue Length 50th (m)	88.2	3.0	10.5	41.3	32.3
Queue Length 95th (m)	126.1	11.8	#28.5	60.7	53.5
Internal Link Dist (m)	203.7			76.6	88.2
Turn Bay Length (m)		65.0	35.0		
Base Capacity (vph)	3531	1124	72	3531	656
Starvation Cap Reductn	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.68	0.19	0.94	0.42	0.28

Intersection Summary

Cycle Length: 120
Actuated Cycle Length: 101.9
Natural Cycle: 90
Control Type: Actuated-Uncoordinated
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 5: Ace Drive & Mayfield Road





Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	2386	211	68	1483	117	67
Future Volume (vph)	2386	211	68	1483	117	67
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width	3.7	3.5	3.5	3.7	3.7	3.7
Total Lost time (s)	6.7	6.7	6.7	6.7	7.6	
Lane Util. Factor	0.91	1.00	1.00	0.91	1.00	
Frt	1.00	0.85	1.00	1.00	0.95	
Flt Protected	1.00	1.00	0.95	1.00	0.97	
Satd. Flow (prot)	5142	1566	1750	5142	1736	
Flt Permitted	1.00	1.00	0.06	1.00	0.97	
Satd. Flow (perm)	5142	1566	105	5142	1736	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	2386	211	68	1483	117	67
RTOR Reduction (vph)	0	49	0	0	2	0
Lane Group Flow (vph)	2386	162	68	1483	182	0
Turn Type	NA	Perm	Perm	NA	Prot	
Protected Phases	2			2	4	
Permitted Phases		2	2			
Actuated Green, G (s)	70.0	70.0	70.0	70.0	17.6	
Effective Green, g (s)	70.0	70.0	70.0	70.0	17.6	
Actuated g/C Ratio	0.69	0.69	0.69	0.69	0.17	
Clearance Time (s)	6.7	6.7	6.7	6.7	7.6	
Vehicle Extension (s)	5.0	5.0	5.0	5.0	5.0	
Lane Grp Cap (vph)	3532	1075	72	3532	299	
v/s Ratio Prot	0.46			0.29	c0.10	
v/s Ratio Perm		0.10	c0.65			
v/c Ratio	0.68	0.15	0.94	0.42	0.61	
Uniform Delay, d1	9.3	5.6	14.2	7.0	39.0	
Progression Factor	1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	1.1	0.3	91.3	0.4	5.1	
Delay (s)	10.4	5.9	105.5	7.4	44.0	
Level of Service	B	A	F	A	D	
Approach Delay (s)	10.0			11.7	44.0	
Approach LOS	B			B	D	

Intersection Summary			
HCM 2000 Control Delay	12.1	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.87		
Actuated Cycle Length (s)	101.9	Sum of lost time (s)	14.3
Intersection Capacity Utilization	79.0%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

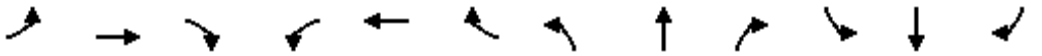
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	603	2010	364	64	846	110	121	186	54	49	193	428
Future Volume (vph)	603	2010	364	64	846	110	121	186	54	49	193	428
Lane Group Flow (vph)	603	2010	364	64	846	110	121	186	54	49	193	428
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	Perm	NA	Perm	Perm	NA	Perm
Protected Phases	5	2		1	6			8			4	
Permitted Phases	2		2	6		6	8		8	4		4
Detector Phase	5	2	2	1	6	6	8	8	8	4	4	4
Switch Phase												
Minimum Initial (s)	5.0	8.0	8.0	5.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0
Minimum Split (s)	9.0	44.9	44.9	9.0	44.9	44.9	47.9	47.9	47.9	47.9	47.9	47.9
Total Split (s)	33.0	63.1	63.1	9.0	39.1	39.1	47.9	47.9	47.9	47.9	47.9	47.9
Total Split (%)	27.5%	52.6%	52.6%	7.5%	32.6%	32.6%	39.9%	39.9%	39.9%	39.9%	39.9%	39.9%
Yellow Time (s)	3.0	4.6	4.6	3.0	4.6	4.6	4.6	4.6	4.6	4.6	4.6	4.6
All-Red Time (s)	1.0	2.3	2.3	1.0	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.3
Lost Time Adjust (s)	-1.0	0.0	0.0	-1.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	3.0	6.9	6.9	3.0	6.9	6.9	6.9	6.9	6.9	6.9	6.9	6.9
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag						
Lead-Lag Optimize?												
Recall Mode	None	Max	Max	None	None	None	None	None	None	None	None	None
v/c Ratio	0.93	0.69	0.35	0.35	0.58	0.24	0.58	0.32	0.16	0.28	0.31	0.69
Control Delay	40.1	16.1	3.4	17.3	29.3	7.0	47.2	34.9	1.1	37.9	34.7	10.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	40.1	16.1	3.4	17.3	29.3	7.0	47.2	34.9	1.1	37.9	34.7	10.0
Queue Length 50th (m)	72.5	89.3	4.3	3.0	46.4	0.2	20.9	16.0	0.0	8.0	16.5	0.0
Queue Length 95th (m)	#165.5	131.6	19.1	9.2	67.0	12.4	38.3	25.3	0.8	18.0	26.1	25.5
Internal Link Dist (m)		179.3			299.2			185.5			471.5	
Turn Bay Length (m)	140.0		70.0	65.0		30.0	75.0		60.0	30.0		138.0
Base Capacity (vph)	650	2924	1040	182	1572	481	495	1381	675	408	1471	873
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.93	0.69	0.35	0.35	0.54	0.23	0.24	0.13	0.08	0.12	0.13	0.49

Intersection Summary

Cycle Length: 120
Actuated Cycle Length: 95
Natural Cycle: 135
Control Type: Semi Act-Uncoord
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 6: Dixie Road & Mayfield Road





Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	603	2010	364	64	846	110	121	186	54	49	193	428
Future Volume (vph)	603	2010	364	64	846	110	121	186	54	49	193	428
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5
Total Lost time (s)	3.0	6.9	6.9	3.0	6.9	6.9	6.9	6.9	6.9	6.9	6.9	6.9
Lane Util. Factor	1.00	0.91	1.00	1.00	0.91	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1566	4902	1536	1653	4601	1201	1716	3174	1413	1405	3380	1452
Flt Permitted	0.24	1.00	1.00	0.12	1.00	1.00	0.63	1.00	1.00	0.63	1.00	1.00
Satd. Flow (perm)	388	4902	1536	215	4601	1201	1139	3174	1413	939	3380	1452
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	603	2010	364	64	846	110	121	186	54	49	193	428
RTOR Reduction (vph)	0	0	125	0	0	73	0	0	44	0	0	350
Lane Group Flow (vph)	603	2010	239	64	846	37	121	186	10	49	193	78
Heavy Vehicles (%)	14%	7%	4%	8%	14%	33%	4%	15%	13%	27%	8%	10%
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	Perm	NA	Perm	Perm	NA	Perm
Protected Phases	5	2		1	6			8			4	
Permitted Phases	2		2	6		6	8		8	4		4
Actuated Green, G (s)	64.6	56.7	56.7	35.3	31.4	31.4	17.5	17.5	17.5	17.5	17.5	17.5
Effective Green, g (s)	65.6	56.7	56.7	37.3	31.4	31.4	17.5	17.5	17.5	17.5	17.5	17.5
Actuated g/C Ratio	0.68	0.59	0.59	0.39	0.33	0.33	0.18	0.18	0.18	0.18	0.18	0.18
Clearance Time (s)	4.0	6.9	6.9	4.0	6.9	6.9	6.9	6.9	6.9	6.9	6.9	6.9
Vehicle Extension (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Lane Grp Cap (vph)	636	2898	908	157	1506	393	207	579	257	171	616	264
v/s Ratio Prot	c0.30	0.41		0.02	0.18			0.06			0.06	
v/s Ratio Perm	c0.35		0.16	0.14		0.03	c0.11		0.01	0.05		0.05
v/c Ratio	0.95	0.69	0.26	0.41	0.56	0.10	0.58	0.32	0.04	0.29	0.31	0.30
Uniform Delay, d1	18.3	13.6	9.5	18.6	26.6	22.4	35.9	34.0	32.3	33.8	34.0	33.9
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	24.0	1.4	0.7	3.6	0.8	0.2	6.4	0.7	0.1	1.9	0.6	1.3
Delay (s)	42.2	15.0	10.2	22.2	27.4	22.6	42.3	34.7	32.4	35.7	34.6	35.2
Level of Service	D	B	B	C	C	C	D	C	C	D	C	D
Approach Delay (s)		19.9			26.5			36.9			35.1	
Approach LOS		B			C			D			D	

Intersection Summary			
HCM 2000 Control Delay	24.5	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.91		
Actuated Cycle Length (s)	95.9	Sum of lost time (s)	16.8
Intersection Capacity Utilization	83.7%	ICU Level of Service	E
Analysis Period (min)	15		

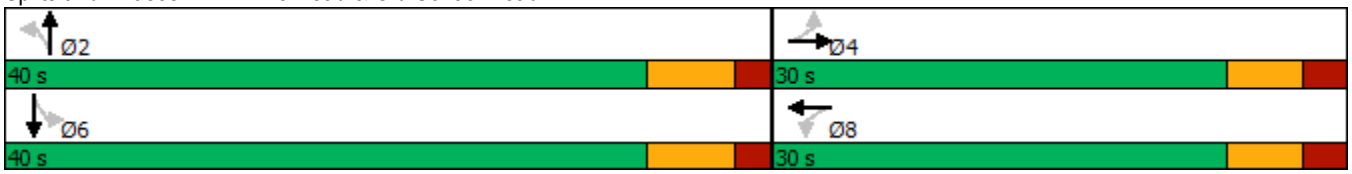
c Critical Lane Group

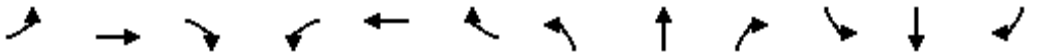
Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations								
Traffic Volume (vph)	17	279	49	108	24	270	33	779
Future Volume (vph)	17	279	49	108	24	270	33	779
Lane Group Flow (vph)	17	326	49	116	24	316	33	825
Turn Type	Perm	NA	Perm	NA	Perm	NA	Perm	NA
Protected Phases		4		8		2		6
Permitted Phases	4		8		2		6	
Detector Phase	4	4	8	8	2	2	6	6
Switch Phase								
Minimum Initial (s)	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0
Minimum Split (s)	25.4	25.4	25.4	25.4	23.6	23.6	23.6	23.6
Total Split (s)	30.0	30.0	30.0	30.0	40.0	40.0	40.0	40.0
Total Split (%)	42.9%	42.9%	42.9%	42.9%	57.1%	57.1%	57.1%	57.1%
Yellow Time (s)	4.0	4.0	4.0	4.0	4.6	4.6	4.6	4.6
All-Red Time (s)	2.4	2.4	2.4	2.4	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.4	6.4	6.4	6.4	6.6	6.6	6.6	6.6
Lead/Lag								
Lead-Lag Optimize?								
Recall Mode	None	None	None	None	Max	Max	Max	Max
v/c Ratio	0.06	0.64	0.22	0.23	0.16	0.35	0.06	0.86
Control Delay	16.9	25.6	20.1	17.8	13.0	10.6	9.4	25.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	16.9	25.6	20.1	17.8	13.0	10.6	9.4	25.9
Queue Length 50th (m)	1.5	32.2	4.4	10.0	1.4	18.8	1.8	77.2
Queue Length 95th (m)	5.3	54.5	11.9	20.6	6.5	40.3	6.5	#170.6
Internal Link Dist (m)		1372.4		151.6		1413.7		144.7
Turn Bay Length (m)	35.0		45.0		40.0		35.0	
Base Capacity (vph)	373	688	304	676	149	914	528	964
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.05	0.47	0.16	0.17	0.16	0.35	0.06	0.86

Intersection Summary

Cycle Length: 70
Actuated Cycle Length: 64
Natural Cycle: 65
Control Type: Semi Act-Uncoord
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 7: Dixie Road & Old School Road





Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	17	279	47	49	108	8	24	270	46	33	779	46
Future Volume (vph)	17	279	47	49	108	8	24	270	46	33	779	46
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5
Total Lost time (s)	6.4	6.4		6.4	6.4		6.6	6.6		6.6	6.6	
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	0.98		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)	1405	1840		1785	1817		1785	1731		1684	1836	
Flt Permitted	0.68	1.00		0.44	1.00		0.15	1.00		0.57	1.00	
Satd. Flow (perm)	1010	1840		822	1817		286	1731		1008	1836	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	17	279	47	49	108	8	24	270	46	33	779	46
RTOR Reduction (vph)	0	9	0	0	4	0	0	8	0	0	3	0
Lane Group Flow (vph)	17	317	0	49	112	0	24	308	0	33	822	0
Heavy Vehicles (%)	27%	2%	3%	0%	5%	0%	0%	10%	0%	6%	4%	0%
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)	17.4	17.4		17.4	17.4		33.5	33.5		33.5	33.5	
Effective Green, g (s)	17.4	17.4		17.4	17.4		33.5	33.5		33.5	33.5	
Actuated g/C Ratio	0.27	0.27		0.27	0.27		0.52	0.52		0.52	0.52	
Clearance Time (s)	6.4	6.4		6.4	6.4		6.6	6.6		6.6	6.6	
Vehicle Extension (s)	5.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0	
Lane Grp Cap (vph)	275	501		223	494		149	907		528	962	
v/s Ratio Prot		c0.17			0.06			0.18			c0.45	
v/s Ratio Perm	0.02			0.06			0.08			0.03		
v/c Ratio	0.06	0.63		0.22	0.23		0.16	0.34		0.06	0.85	
Uniform Delay, d1	17.2	20.4		18.0	18.0		7.9	8.8		7.5	13.1	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.2	3.6		1.0	0.5		2.3	1.0		0.2	9.6	
Delay (s)	17.4	24.0		19.0	18.5		10.2	9.8		7.7	22.7	
Level of Service	B	C		B	B		B	A		A	C	
Approach Delay (s)		23.7			18.7			9.8			22.1	
Approach LOS		C			B			A			C	

Intersection Summary			
HCM 2000 Control Delay	19.7	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.78		
Actuated Cycle Length (s)	63.9	Sum of lost time (s)	13.0
Intersection Capacity Utilization	84.2%	ICU Level of Service	E
Analysis Period (min)	15		

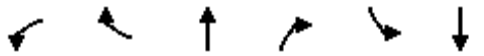
c Critical Lane Group



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Sign Control	Stop		Stop			Stop
Traffic Volume (vph)	13	2	380	27	17	91
Future Volume (vph)	13	2	380	27	17	91
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	14	2	413	29	18	99

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total (vph)	16	442	117
Volume Left (vph)	14	0	18
Volume Right (vph)	2	29	0
Hadj (s)	0.41	-0.01	0.06
Departure Headway (s)	5.5	4.1	4.4
Degree Utilization, x	0.02	0.50	0.14
Capacity (veh/h)	587	876	786
Control Delay (s)	8.6	11.0	8.2
Approach Delay (s)	8.6	11.0	8.2
Approach LOS	A	B	A

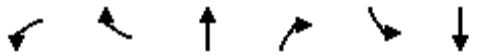
Intersection Summary			
Delay	10.4		
Level of Service	B		
Intersection Capacity Utilization	31.6%	ICU Level of Service	A
Analysis Period (min)	15		



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Sign Control	Stop		Stop			Stop
Traffic Volume (vph)	13	2	347	29	17	95
Future Volume (vph)	13	2	347	29	17	95
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	14	2	377	32	18	103

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total (vph)	16	409	121
Volume Left (vph)	14	0	18
Volume Right (vph)	2	32	0
Hadj (s)	0.41	-0.01	0.06
Departure Headway (s)	5.4	4.1	4.4
Degree Utilization, x	0.02	0.46	0.15
Capacity (veh/h)	597	876	793
Control Delay (s)	8.6	10.5	8.2
Approach Delay (s)	8.6	10.5	8.2
Approach LOS	A	B	A

Intersection Summary			
Delay	9.9		
Level of Service	A		
Intersection Capacity Utilization	30.0%	ICU Level of Service	A
Analysis Period (min)	15		



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Sign Control	Stop		Stop			Stop
Traffic Volume (vph)	14	2	314	29	17	99
Future Volume (vph)	14	2	314	29	17	99
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	15	2	341	32	18	108

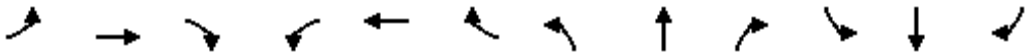
Direction, Lane #	WB 1	NB 1	SB 1
Volume Total (vph)	17	373	126
Volume Left (vph)	15	0	18
Volume Right (vph)	2	32	0
Hadj (s)	0.41	-0.02	0.06
Departure Headway (s)	5.4	4.1	4.4
Degree Utilization, x	0.03	0.42	0.15
Capacity (veh/h)	606	874	799
Control Delay (s)	8.5	10.0	8.1
Approach Delay (s)	8.5	10.0	8.1
Approach LOS	A	A	A

Intersection Summary			
Delay	9.5		
Level of Service	A		
Intersection Capacity Utilization	29.7%	ICU Level of Service	A
Analysis Period (min)	15		

Intersection has too many lanes per leg.

HCM All-Way analysis is limited to two lanes per leg.

Channelized right turn lanes are not counted.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Stop			Stop	
Traffic Volume (vph)	11	195	65	23	383	37	113	68	18	1	55	15
Future Volume (vph)	11	195	65	23	383	37	113	68	18	1	55	15
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Hourly flow rate (vph)	12	207	69	24	407	39	120	72	19	1	59	16

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total (vph)	288	470	211	76
Volume Left (vph)	12	24	120	1
Volume Right (vph)	69	39	19	16
Hadj (s)	-0.11	-0.02	0.06	-0.07
Departure Headway (s)	5.4	5.3	6.1	6.4
Degree Utilization, x	0.44	0.69	0.36	0.13
Capacity (veh/h)	616	661	524	461
Control Delay (s)	12.6	19.0	12.5	10.3
Approach Delay (s)	12.6	19.0	12.5	10.3
Approach LOS	B	C	B	B

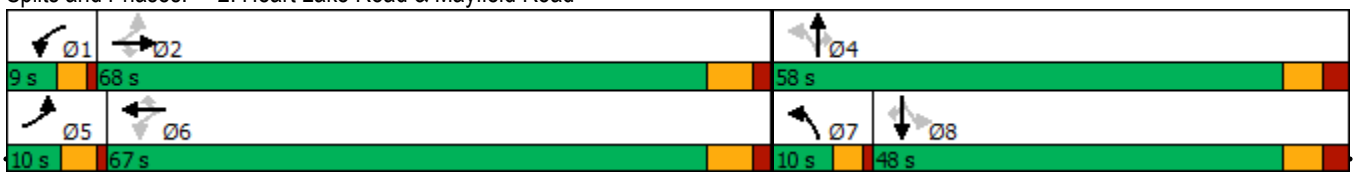
Intersection Summary				
Delay	15.3			
Level of Service	C			
Intersection Capacity Utilization	55.5%	ICU Level of Service	B	
Analysis Period (min)	15			

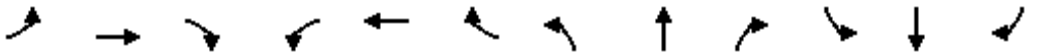
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	96	1405	125	37	2015	229	311	114	11	352	127	90
Future Volume (vph)	96	1405	125	37	2015	229	311	114	11	352	127	90
Lane Group Flow (vph)	96	1405	125	37	2015	229	311	114	11	352	127	90
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm	Perm	NA	Perm
Protected Phases	5	2		1	6		7	4			8	
Permitted Phases	2		2	6		6	4		4	8		8
Detector Phase	5	2	2	1	6	6	7	4	4	8	8	8
Switch Phase												
Minimum Initial (s)	5.0	12.0	12.0	5.0	12.0	12.0	1.0	8.0	8.0	8.0	8.0	8.0
Minimum Split (s)	9.5	39.7	39.7	9.0	39.7	39.7	5.0	43.9	43.9	43.9	43.9	43.9
Total Split (s)	10.0	68.0	68.0	9.0	67.0	67.0	10.0	58.0	58.0	48.0	48.0	48.0
Total Split (%)	7.4%	50.4%	50.4%	6.7%	49.6%	49.6%	7.4%	43.0%	43.0%	35.6%	35.6%	35.6%
Yellow Time (s)	3.5	4.6	4.6	3.0	4.6	4.6	3.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	1.0	2.1	2.1	1.0	2.1	2.1	1.0	2.9	2.9	2.9	2.9	2.9
Lost Time Adjust (s)	0.0	0.0	0.0	-1.0	0.0	0.0	-1.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.5	6.7	6.7	3.0	6.7	6.7	3.0	6.9	6.9	6.9	6.9	6.9
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead			Lag	Lag	Lag
Lead-Lag Optimize?	Yes				Yes	Yes						
Recall Mode	None	Max	Max	None	Max	Max	None	None	None	None	None	None
v/c Ratio	0.86	0.69	0.18	0.23	0.98	0.30	0.68	0.17	0.02	1.07	0.25	0.19
Control Delay	76.7	31.0	4.1	17.8	53.4	3.8	40.5	28.9	0.1	114.0	37.0	6.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	76.7	31.0	4.1	17.8	53.4	3.8	40.5	28.9	0.1	114.0	37.0	6.8
Queue Length 50th (m)	12.2	108.9	0.0	4.4	191.1	0.0	60.4	20.1	0.0	~103.7	25.5	0.0
Queue Length 95th (m)	#44.7	126.5	11.0	9.8	#229.5	14.5	87.7	34.1	0.0	#163.5	42.5	11.4
Internal Link Dist (m)		179.2			166.2			202.0			680.1	
Turn Bay Length (m)	115.0		180.0	80.0		150.0	110.0		44.0	20.0		20.0
Base Capacity (vph)	112	2024	700	159	2047	756	455	654	537	329	505	482
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.86	0.69	0.18	0.23	0.98	0.30	0.68	0.17	0.02	1.07	0.25	0.19

Intersection Summary

Cycle Length: 135
Actuated Cycle Length: 135
Natural Cycle: 130
Control Type: Semi Act-Uncoord
~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 2: Heart Lake Road & Mayfield Road





Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	96	1405	125	37	2015	229	311	114	11	352	127	90
Future Volume (vph)	96	1405	125	37	2015	229	311	114	11	352	127	90
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5
Total Lost time (s)	4.5	6.7	6.7	3.0	6.7	6.7	3.0	6.9	6.9	6.9	6.9	6.9
Lane Util. Factor	1.00	0.91	1.00	1.00	0.91	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1560	4330	1356	1530	4583	1409	1591	1729	1319	1501	1662	1369
Flt Permitted	0.06	1.00	1.00	0.12	1.00	1.00	0.63	1.00	1.00	0.68	1.00	1.00
Satd. Flow (perm)	104	4330	1356	194	4583	1409	1049	1729	1319	1080	1662	1369
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	96	1405	125	37	2015	229	311	114	11	352	127	90
RTOR Reduction (vph)	0	0	67	0	0	126	0	0	7	0	0	63
Lane Group Flow (vph)	96	1405	58	37	2015	103	311	114	4	352	127	27
Heavy Vehicles (%)	3%	9%	6%	5%	3%	2%	1%	0%	9%	7%	4%	5%
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm	Perm	NA	Perm
Protected Phases	5	2		1	6		7	4			8	
Permitted Phases	2		2	6		6	4		4	8		8
Actuated Green, G (s)	68.6	63.1	63.1	65.1	61.1	61.1	51.1	51.1	51.1	41.1	41.1	41.1
Effective Green, g (s)	68.6	63.1	63.1	67.1	61.1	61.1	52.1	51.1	51.1	41.1	41.1	41.1
Actuated g/C Ratio	0.51	0.46	0.46	0.49	0.45	0.45	0.38	0.38	0.38	0.30	0.30	0.30
Clearance Time (s)	4.5	6.7	6.7	4.0	6.7	6.7	4.0	6.9	6.9	6.9	6.9	6.9
Vehicle Extension (s)	3.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Lane Grp Cap (vph)	111	2011	630	145	2062	633	430	650	496	326	503	414
v/s Ratio Prot	c0.03	0.32		0.01	c0.44		c0.04	0.07			0.08	
v/s Ratio Perm	0.40		0.04	0.12		0.07	0.24		0.00	c0.33		0.02
v/c Ratio	0.86	0.70	0.09	0.26	0.98	0.16	0.72	0.18	0.01	1.08	0.25	0.07
Uniform Delay, d1	28.4	28.8	20.3	19.6	36.7	22.2	35.5	28.3	26.5	47.4	35.8	33.7
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	45.9	2.0	0.3	1.9	15.1	0.6	7.2	0.3	0.0	72.8	0.6	0.1
Delay (s)	74.3	30.9	20.6	21.5	51.8	22.7	42.7	28.6	26.5	120.1	36.3	33.8
Level of Service	E	C	C	C	D	C	D	C	C	F	D	C
Approach Delay (s)		32.6			48.4			38.6			87.8	
Approach LOS		C			D			D			F	

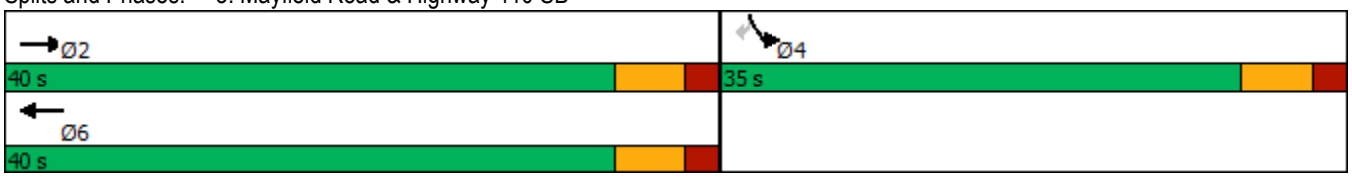
Intersection Summary			
HCM 2000 Control Delay	46.9	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.99		
Actuated Cycle Length (s)	135.8	Sum of lost time (s)	21.1
Intersection Capacity Utilization	98.3%	ICU Level of Service	F
Analysis Period (min)	15		

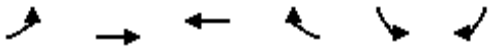
c Critical Lane Group

Lane Group	EBT	WBT	SBL	SBR
Lane Configurations				
Traffic Volume (vph)	1101	2559	114	28
Future Volume (vph)	1101	2559	114	28
Lane Group Flow (vph)	1101	2559	117	25
Turn Type	NA	NA	Prot	Perm
Protected Phases	2	6	4	
Permitted Phases				4
Detector Phase	2	6	4	4
Switch Phase				
Minimum Initial (s)	16.0	16.0	8.0	8.0
Minimum Split (s)	22.0	22.0	32.0	32.0
Total Split (s)	40.0	40.0	35.0	35.0
Total Split (%)	53.3%	53.3%	46.7%	46.7%
Yellow Time (s)	4.0	4.0	4.0	4.0
All-Red Time (s)	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.0	6.0	6.0	6.0
Lead/Lag				
Lead-Lag Optimize?				
Recall Mode	Max	Max	None	None
v/c Ratio	0.31	0.69	0.21	0.10
Control Delay	4.9	8.3	21.7	20.8
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	4.9	8.3	21.7	20.8
Queue Length 50th (m)	16.5	58.8	5.4	2.4
Queue Length 95th (m)	24.6	83.7	10.8	8.0
Internal Link Dist (m)	123.5	116.2	492.2	
Turn Bay Length (m)				
Base Capacity (vph)	3552	3694	1700	744
Starvation Cap Reductn	0	0	0	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.31	0.69	0.07	0.03

Intersection Summary
Cycle Length: 75
Actuated Cycle Length: 58.2
Natural Cycle: 75
Control Type: Semi Act-Uncoord

Splits and Phases: 3: Mayfield Road & Highway 410 SB





Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑↑↑	↑↑↑		↰↰	↱
Traffic Volume (vph)	0	1101	2559	0	114	28
Future Volume (vph)	0	1101	2559	0	114	28
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)		6.0	6.0		6.0	6.0
Lane Util. Factor		0.91	0.91		0.97	0.91
Frt		1.00	1.00		1.00	0.85
Flt Protected		1.00	1.00		0.95	1.00
Satd. Flow (prot)		5043	5245		3394	1486
Flt Permitted		1.00	1.00		0.95	1.00
Satd. Flow (perm)		5043	5245		3394	1486
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	0	1101	2559	0	114	28
RTOR Reduction (vph)	0	0	0	0	0	0
Lane Group Flow (vph)	0	1101	2559	0	117	25
Heavy Vehicles (%)	0%	4%	0%	2%	4%	0%
Bus Blockages (#/hr)	0	0	0	0	2	0
Turn Type		NA	NA		Prot	Perm
Protected Phases		2	6		4	
Permitted Phases						4
Actuated Green, G (s)		39.8	39.8		7.7	7.7
Effective Green, g (s)		39.8	39.8		7.7	7.7
Actuated g/C Ratio		0.67	0.67		0.13	0.13
Clearance Time (s)		6.0	6.0		6.0	6.0
Vehicle Extension (s)		5.0	5.0		5.0	5.0
Lane Grp Cap (vph)		3373	3508		439	192
v/s Ratio Prot		0.22	c0.49		c0.03	
v/s Ratio Perm						0.02
v/c Ratio		0.33	0.73		0.27	0.13
Uniform Delay, d1		4.2	6.4		23.4	22.9
Progression Factor		1.00	1.00		1.00	1.00
Incremental Delay, d2		0.3	1.4		0.7	0.6
Delay (s)		4.4	7.7		24.0	23.6
Level of Service		A	A		C	C
Approach Delay (s)		4.4	7.7		24.0	
Approach LOS		A	A		C	

Intersection Summary			
HCM 2000 Control Delay	7.4	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.65		
Actuated Cycle Length (s)	59.5	Sum of lost time (s)	12.0
Intersection Capacity Utilization	66.1%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

Lane Group	EBT	WBT	NBL	NBR
Lane Configurations				
Traffic Volume (vph)	1146	2240	1029	1063
Future Volume (vph)	1146	2240	1029	1063
Lane Group Flow (vph)	1146	2240	1433	659
Turn Type	NA	NA	Prot	Perm
Protected Phases	2	6	8	
Permitted Phases	2	6		8
Detector Phase	2	6	8	8
Switch Phase				
Minimum Initial (s)	26.0	26.0	10.0	10.0
Minimum Split (s)	32.0	32.0	22.0	22.0
Total Split (s)	41.0	41.0	69.0	69.0
Total Split (%)	37.3%	37.3%	62.7%	62.7%
Yellow Time (s)	4.0	4.0	4.0	4.0
All-Red Time (s)	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.0	6.0	6.0	6.0
Lead/Lag				
Lead-Lag Optimize?				
Recall Mode	Max	None	None	None
v/c Ratio	0.67	1.31	0.80	0.89
Control Delay	32.3	174.8	22.7	36.2
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	32.3	174.8	22.7	36.2
Queue Length 50th (m)	79.0	~236.5	111.3	118.7
Queue Length 95th (m)	96.0	#267.3	137.7	#203.6
Internal Link Dist (m)	104.0	63.2	627.1	
Turn Bay Length (m)				
Base Capacity (vph)	1708	1708	2082	858
Starvation Cap Reductn	0	0	0	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.67	1.31	0.69	0.77

Intersection Summary

Cycle Length: 110
Actuated Cycle Length: 102.4
Natural Cycle: 110
Control Type: Semi Act-Uncoord
~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 4: Highway 410 NB & Mayfield Road





Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	1146	0	0	2240	1029	1063
Future Volume (vph)	1146	0	0	2240	1029	1063
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0			6.0	6.0	6.0
Lane Util. Factor	0.91			0.91	0.97	0.91
Frt	1.00			1.00	0.96	0.85
Flt Protected	1.00			1.00	0.97	1.00
Satd. Flow (prot)	4948			4948	3346	1376
Flt Permitted	1.00			1.00	0.97	1.00
Satd. Flow (perm)	4948			4948	3346	1376
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	1146	0	0	2240	1029	1063
RTOR Reduction (vph)	0	0	0	0	4	4
Lane Group Flow (vph)	1146	0	0	2240	1429	655
Heavy Vehicles (%)	6%	0%	0%	6%	1%	8%
Turn Type	NA			NA	Prot	Perm
Protected Phases	2			6	8	
Permitted Phases	2			6		8
Actuated Green, G (s)	35.4			35.4	54.9	54.9
Effective Green, g (s)	35.4			35.4	54.9	54.9
Actuated g/C Ratio	0.35			0.35	0.54	0.54
Clearance Time (s)	6.0			6.0	6.0	6.0
Vehicle Extension (s)	5.0			5.0	3.0	3.0
Lane Grp Cap (vph)	1712			1712	1795	738
v/s Ratio Prot	0.23			c0.45	0.43	
v/s Ratio Perm						c0.48
v/c Ratio	0.67			1.31	0.80	0.89
Uniform Delay, d1	28.5			33.5	19.2	21.0
Progression Factor	1.00			1.00	1.00	1.00
Incremental Delay, d2	2.1			143.1	2.5	12.5
Delay (s)	30.6			176.6	21.7	33.5
Level of Service	C			F	C	C
Approach Delay (s)	30.6			176.6	25.4	
Approach LOS	C			F	C	

Intersection Summary			
HCM 2000 Control Delay	88.3	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	1.05		
Actuated Cycle Length (s)	102.3	Sum of lost time (s)	12.0
Intersection Capacity Utilization	103.8%	ICU Level of Service	G
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	EBT	EBR	WBL	WBT	NBL
Lane Configurations					
Traffic Volume (vph)	1970	154	71	2246	121
Future Volume (vph)	1970	154	71	2246	121
Lane Group Flow (vph)	1970	154	71	2246	176
Turn Type	NA	Perm	pm+pt	NA	Prot
Protected Phases	2		1	6	4
Permitted Phases		2	6		
Detector Phase	2	2	1	6	4
Switch Phase					
Minimum Initial (s)	12.0	12.0	5.0	12.0	8.0
Minimum Split (s)	26.7	26.7	9.5	26.7	45.6
Total Split (s)	63.4	63.4	11.0	74.4	45.6
Total Split (%)	52.8%	52.8%	9.2%	62.0%	38.0%
Yellow Time (s)	4.6	4.6	3.5	4.6	4.0
All-Red Time (s)	2.1	2.1	1.0	2.1	3.6
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.7	6.7	4.5	6.7	7.6
Lead/Lag	Lag	Lag	Lead		
Lead-Lag Optimize?	Yes	Yes	Yes		
Recall Mode	Max	Max	None	Max	Max
v/c Ratio	0.78	0.19	0.46	0.77	0.31
Control Delay	28.5	6.0	22.5	22.6	29.2
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	28.5	6.0	22.5	22.6	29.2
Queue Length 50th (m)	141.6	4.7	6.9	142.8	27.6
Queue Length 95th (m)	161.5	16.2	15.6	161.9	46.3
Internal Link Dist (m)	203.7			76.6	88.2
Turn Bay Length (m)		65.0	35.0		
Base Capacity (vph)	2523	828	156	2900	566
Starvation Cap Reductn	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.78	0.19	0.46	0.77	0.31

Intersection Summary
Cycle Length: 120
Actuated Cycle Length: 120
Natural Cycle: 95
Control Type: Semi Act-Uncoord

Splits and Phases: 5: Ace Drive & Mayfield Road





Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	1970	154	71	2246	121	55
Future Volume (vph)	1970	154	71	2246	121	55
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width	3.7	3.5	3.5	3.7	3.7	3.7
Total Lost time (s)	6.7	6.7	4.5	6.7	7.6	
Lane Util. Factor	0.91	1.00	1.00	0.91	1.00	
Frt	1.00	0.85	1.00	1.00	0.96	
Flt Protected	1.00	1.00	0.95	1.00	0.97	
Satd. Flow (prot)	5142	1566	1750	5142	1744	
Flt Permitted	1.00	1.00	0.06	1.00	0.97	
Satd. Flow (perm)	5142	1566	116	5142	1744	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	1970	154	71	2246	121	55
RTOR Reduction (vph)	0	59	0	0	14	0
Lane Group Flow (vph)	1970	95	71	2246	162	0
Turn Type	NA	Perm	pm+pt	NA	Prot	
Protected Phases	2		1	6	4	
Permitted Phases		2	6			
Actuated Green, G (s)	58.9	58.9	68.6	68.6	38.0	
Effective Green, g (s)	58.9	58.9	68.6	68.6	38.0	
Actuated g/C Ratio	0.49	0.49	0.57	0.57	0.31	
Clearance Time (s)	6.7	6.7	4.5	6.7	7.6	
Vehicle Extension (s)	5.0	5.0	3.0	5.0	5.0	
Lane Grp Cap (vph)	2505	762	136	2917	548	
v/s Ratio Prot	0.38		0.02	c0.44	c0.09	
v/s Ratio Perm		0.06	0.27			
v/c Ratio	0.79	0.12	0.52	0.77	0.30	
Uniform Delay, d1	25.8	16.9	20.1	20.1	31.3	
Progression Factor	1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	2.6	0.3	3.6	2.0	1.4	
Delay (s)	28.3	17.3	23.7	22.1	32.7	
Level of Service	C	B	C	C	C	
Approach Delay (s)	27.5			22.2	32.7	
Approach LOS	C			C	C	

Intersection Summary			
HCM 2000 Control Delay	25.0	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.63		
Actuated Cycle Length (s)	120.9	Sum of lost time (s)	18.8
Intersection Capacity Utilization	68.0%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

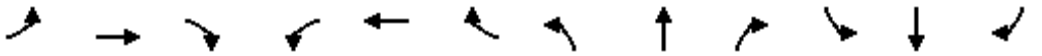
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	480	1375	186	68	1602	59	289	261	38	135	500	674
Future Volume (vph)	480	1375	186	68	1602	59	289	261	38	135	500	674
Lane Group Flow (vph)	480	1375	186	68	1602	59	289	261	38	135	500	674
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	Perm	NA	Perm	Perm	NA	Perm
Protected Phases	5	2		1	6			4			8	
Permitted Phases	2		2	6		6	4		4	8		8
Detector Phase	5	2	2	1	6	6	4	4	4	8	8	8
Switch Phase												
Minimum Initial (s)	5.0	8.0	8.0	5.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0
Minimum Split (s)	9.0	44.9	44.9	9.0	44.9	44.9	47.9	47.9	47.9	47.9	47.9	47.9
Total Split (s)	36.0	71.0	71.0	11.0	46.0	46.0	48.0	48.0	48.0	48.0	48.0	48.0
Total Split (%)	27.7%	54.6%	54.6%	8.5%	35.4%	35.4%	36.9%	36.9%	36.9%	36.9%	36.9%	36.9%
Yellow Time (s)	3.0	4.6	4.6	3.0	4.6	4.6	4.6	4.6	4.6	4.6	4.6	4.6
All-Red Time (s)	1.0	2.3	2.3	1.0	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.3
Lost Time Adjust (s)	-1.0	0.0	0.0	-1.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	3.0	6.9	6.9	3.0	6.9	6.9	6.9	6.9	6.9	6.9	6.9	6.9
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag						
Lead-Lag Optimize?												
Recall Mode	None	Max	Max	None	None	None	None	None	None	None	None	None
v/c Ratio	0.98	0.57	0.21	0.40	1.09	0.12	1.34	0.23	0.07	0.42	0.46	0.84
Control Delay	73.9	23.5	3.0	22.5	93.7	1.7	216.1	33.4	0.2	40.1	37.1	23.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	73.9	23.5	3.0	22.5	93.7	1.7	216.1	33.4	0.2	40.1	37.1	23.7
Queue Length 50th (m)	106.4	89.5	0.0	6.8	~168.6	0.0	~96.2	25.8	0.0	27.3	53.7	57.4
Queue Length 95th (m)	#175.9	104.0	11.8	13.1	#198.0	2.4	#151.0	36.8	0.0	46.9	70.1	#121.3
Internal Link Dist (m)		179.3			299.2			185.5			471.5	
Turn Bay Length (m)	140.0		70.0	65.0		30.0	75.0		60.0	30.0		138.0
Base Capacity (vph)	489	2431	889	168	1474	506	216	1153	558	320	1098	802
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.98	0.57	0.21	0.40	1.09	0.12	1.34	0.23	0.07	0.42	0.46	0.84

Intersection Summary

Cycle Length: 130
Actuated Cycle Length: 130
Natural Cycle: 125
Control Type: Semi Act-Uncoord
~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 6: Dixie Road & Mayfield Road





Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	480	1375	186	68	1602	59	289	261	38	135	500	674
Future Volume (vph)	480	1375	186	68	1602	59	289	261	38	135	500	674
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5
Total Lost time (s)	3.0	6.9	6.9	3.0	6.9	6.9	6.9	6.9	6.9	6.9	6.9	6.9
Lane Util. Factor	1.00	0.91	1.00	1.00	0.91	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1700	4768	1566	1342	4902	1452	1750	3650	1551	1653	3476	1551
Flt Permitted	0.09	1.00	1.00	0.19	1.00	1.00	0.37	1.00	1.00	0.58	1.00	1.00
Satd. Flow (perm)	163	4768	1566	262	4902	1452	686	3650	1551	1015	3476	1551
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	480	1375	186	68	1602	59	289	261	38	135	500	674
RTOR Reduction (vph)	0	0	92	0	0	41	0	0	26	0	0	313
Lane Group Flow (vph)	480	1375	94	68	1602	18	289	261	12	135	500	361
Heavy Vehicles (%)	5%	10%	2%	33%	7%	10%	2%	0%	3%	8%	5%	3%
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	Perm	NA	Perm	Perm	NA	Perm
Protected Phases	5	2		1	6			4			8	
Permitted Phases	2		2	6		6	4		4	8		8
Actuated Green, G (s)	75.9	66.3	66.3	45.5	39.9	39.9	41.1	41.1	41.1	41.1	41.1	41.1
Effective Green, g (s)	76.9	66.3	66.3	47.5	39.9	39.9	41.1	41.1	41.1	41.1	41.1	41.1
Actuated g/C Ratio	0.59	0.51	0.51	0.36	0.31	0.31	0.31	0.31	0.31	0.31	0.31	0.31
Clearance Time (s)	4.0	6.9	6.9	4.0	6.9	6.9	6.9	6.9	6.9	6.9	6.9	6.9
Vehicle Extension (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Lane Grp Cap (vph)	483	2416	793	149	1495	442	215	1146	487	318	1092	487
v/s Ratio Prot	c0.25	0.29		0.02	0.33			0.07			0.14	
v/s Ratio Perm	c0.33		0.06	0.14		0.01	c0.42		0.01	0.13		0.23
v/c Ratio	0.99	0.57	0.12	0.46	1.07	0.04	1.34	0.23	0.02	0.42	0.46	0.74
Uniform Delay, d1	40.5	22.4	16.9	27.9	45.5	32.0	44.9	33.1	31.0	35.5	35.9	40.1
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	39.2	1.0	0.3	4.6	45.1	0.1	182.6	0.2	0.0	1.9	0.6	7.2
Delay (s)	79.8	23.3	17.2	32.5	90.5	32.1	227.5	33.3	31.0	37.4	36.6	47.3
Level of Service	E	C	B	C	F	C	F	C	C	D	D	D
Approach Delay (s)		36.0			86.3			128.6			42.2	
Approach LOS		D			F			F			D	

Intersection Summary			
HCM 2000 Control Delay	62.4	HCM 2000 Level of Service	E
HCM 2000 Volume to Capacity ratio	1.15		
Actuated Cycle Length (s)	130.8	Sum of lost time (s)	16.8
Intersection Capacity Utilization	108.0%	ICU Level of Service	G
Analysis Period (min)	15		

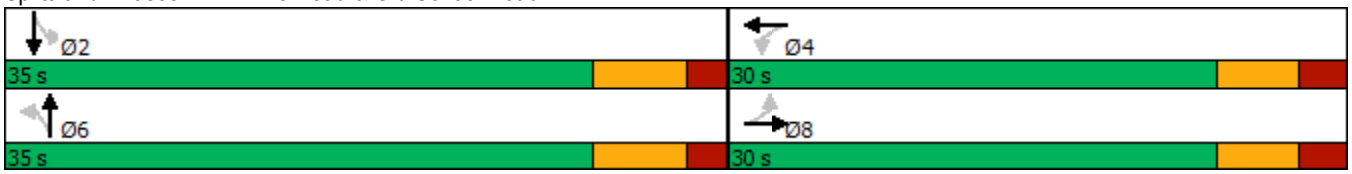
c Critical Lane Group

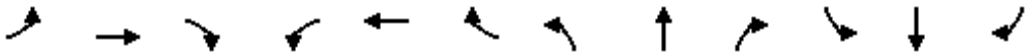
Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations								
Traffic Volume (vph)	51	121	84	307	68	661	6	310
Future Volume (vph)	51	121	84	307	68	661	6	310
Lane Group Flow (vph)	51	141	84	325	68	705	6	331
Turn Type	Perm	NA	Perm	NA	Perm	NA	Perm	NA
Protected Phases		8		4		6		2
Permitted Phases	8		4		6		2	
Detector Phase	8	8	4	4	6	6	2	2
Switch Phase								
Minimum Initial (s)	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0
Minimum Split (s)	25.4	25.4	25.4	25.4	23.6	23.6	23.6	23.6
Total Split (s)	30.0	30.0	30.0	30.0	35.0	35.0	35.0	35.0
Total Split (%)	46.2%	46.2%	46.2%	46.2%	53.8%	53.8%	53.8%	53.8%
Yellow Time (s)	4.0	4.0	4.0	4.0	4.6	4.6	4.6	4.6
All-Red Time (s)	2.4	2.4	2.4	2.4	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.4	6.4	6.4	6.4	6.6	6.6	6.6	6.6
Lead/Lag								
Lead-Lag Optimize?								
Recall Mode	None	None	None	None	Max	Max	Max	Max
v/c Ratio	0.23	0.26	0.24	0.60	0.13	0.78	0.03	0.39
Control Delay	18.0	15.1	17.1	22.2	10.6	22.1	10.3	12.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	18.0	15.1	17.1	22.2	10.6	22.1	10.3	12.0
Queue Length 50th (m)	4.1	10.2	6.8	28.9	3.6	56.1	0.3	19.7
Queue Length 95th (m)	11.0	21.0	15.3	49.2	11.5	#135.4	2.3	44.3
Internal Link Dist (m)		1372.4		151.6		1413.7		144.7
Turn Bay Length (m)	35.0		45.0		40.0		35.0	
Base Capacity (vph)	315	752	503	764	511	900	202	859
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.16	0.19	0.17	0.43	0.13	0.78	0.03	0.39

Intersection Summary

Cycle Length: 65
Actuated Cycle Length: 58.5
Natural Cycle: 60
Control Type: Semi Act-Uncoord
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 7: Dixie Road & Old School Road





Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	51	121	20	84	307	18	68	661	44	6	310	21
Future Volume (vph)	51	121	20	84	307	18	68	661	44	6	310	21
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5
Total Lost time (s)	6.4	6.4		6.4	6.4		6.6	6.6		6.6	6.6	
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	0.99		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)	1566	1833		1767	1876		1785	1838		1785	1755	
Flt Permitted	0.47	1.00		0.67	1.00		0.56	1.00		0.22	1.00	
Satd. Flow (perm)	777	1833		1241	1876		1049	1838		416	1755	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	51	121	20	84	307	18	68	661	44	6	310	21
RTOR Reduction (vph)	0	10	0	0	4	0	0	4	0	0	4	0
Lane Group Flow (vph)	51	131	0	84	321	0	68	701	0	6	327	0
Heavy Vehicles (%)	14%	3%	0%	1%	1%	11%	0%	2%	27%	0%	9%	0%
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)	16.9	16.9		16.9	16.9		28.6	28.6		28.6	28.6	
Effective Green, g (s)	16.9	16.9		16.9	16.9		28.6	28.6		28.6	28.6	
Actuated g/C Ratio	0.29	0.29		0.29	0.29		0.49	0.49		0.49	0.49	
Clearance Time (s)	6.4	6.4		6.4	6.4		6.6	6.6		6.6	6.6	
Vehicle Extension (s)	5.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0	
Lane Grp Cap (vph)	224	529		358	541		512	898		203	858	
v/s Ratio Prot		0.07			c0.17			c0.38			0.19	
v/s Ratio Perm	0.07			0.07			0.06			0.01		
v/c Ratio	0.23	0.25		0.23	0.59		0.13	0.78		0.03	0.38	
Uniform Delay, d1	15.8	15.9		15.9	17.9		8.2	12.4		7.8	9.4	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	1.1	0.5		0.7	2.6		0.5	6.7		0.3	1.3	
Delay (s)	16.9	16.4		16.6	20.5		8.7	19.1		8.0	10.7	
Level of Service	B	B		B	C		A	B		A	B	
Approach Delay (s)		16.6			19.7			18.1			10.6	
Approach LOS		B			B			B			B	

Intersection Summary			
HCM 2000 Control Delay	16.9	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.71		
Actuated Cycle Length (s)	58.5	Sum of lost time (s)	13.0
Intersection Capacity Utilization	89.7%	ICU Level of Service	E
Analysis Period (min)	15		

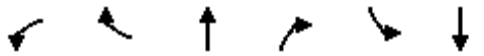
c Critical Lane Group



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	35	12	457	13	7	158
Future Volume (Veh/h)	35	12	457	13	7	158
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)	38	13	497	14	8	172
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	692	504			511	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	692	504			511	
tC, single (s)	6.5	6.3			4.1	
tC, 2 stage (s)						
tF (s)	3.6	3.4			2.2	
p0 queue free %	90	98			99	
cM capacity (veh/h)	398	556			1054	

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	51	511	180
Volume Left	38	0	8
Volume Right	13	14	0
cSH	429	1700	1054
Volume to Capacity	0.12	0.30	0.01
Queue Length 95th (m)	3.1	0.0	0.2
Control Delay (s)	14.5	0.0	0.4
Lane LOS	B		A
Approach Delay (s)	14.5	0.0	0.4
Approach LOS	B		

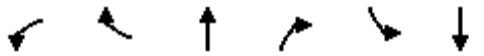
Intersection Summary			
Average Delay	1.1		
Intersection Capacity Utilization	34.8%	ICU Level of Service	A
Analysis Period (min)	15		



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	35	12	456	13	7	125
Future Volume (Veh/h)	35	12	456	13	7	125
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)	38	13	496	14	8	136
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	655	503			510	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	655	503			510	
tC, single (s)	6.5	6.3			4.1	
tC, 2 stage (s)						
tF (s)	3.6	3.4			2.2	
p0 queue free %	91	98			99	
cM capacity (veh/h)	418	557			1055	

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	51	510	144
Volume Left	38	0	8
Volume Right	13	14	0
cSH	447	1700	1055
Volume to Capacity	0.11	0.30	0.01
Queue Length 95th (m)	2.9	0.0	0.2
Control Delay (s)	14.1	0.0	0.5
Lane LOS	B		A
Approach Delay (s)	14.1	0.0	0.5
Approach LOS	B		

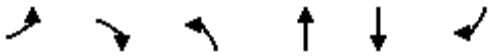
Intersection Summary			
Average Delay	1.1		
Intersection Capacity Utilization	34.8%	ICU Level of Service	A
Analysis Period (min)	15		



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	34	12	454	14	6	92
Future Volume (Veh/h)	34	12	454	14	6	92
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)	37	13	493	15	7	100
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	614	500			508	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	614	500			508	
tC, single (s)	6.5	6.3			4.1	
tC, 2 stage (s)						
tF (s)	3.6	3.4			2.2	
p0 queue free %	92	98			99	
cM capacity (veh/h)	442	559			1057	

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	50	508	107
Volume Left	37	0	7
Volume Right	13	15	0
cSH	468	1700	1057
Volume to Capacity	0.11	0.30	0.01
Queue Length 95th (m)	2.7	0.0	0.2
Control Delay (s)	13.6	0.0	0.6
Lane LOS	B		A
Approach Delay (s)	13.6	0.0	0.6
Approach LOS	B		

Intersection Summary			
Average Delay	1.1		
Intersection Capacity Utilization	34.7%	ICU Level of Service	A
Analysis Period (min)	15		



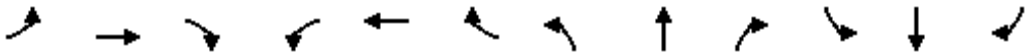
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	20	66	26	737	394	11
Future Volume (Veh/h)	20	66	26	737	394	11
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	22	72	28	801	428	12
Pedestrians						
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	884	214	440			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	884	214	440			
tC, single (s)	7.0	7.1	4.1			
tC, 2 stage (s)						
tF (s)	3.6	3.4	2.2			
p0 queue free %	92	91	97			
cM capacity (veh/h)	265	770	1116			

Direction, Lane #	EB 1	NB 1	NB 2	NB 3	SB 1	SB 2	SB 3
Volume Total	94	28	400	400	214	214	12
Volume Left	22	28	0	0	0	0	0
Volume Right	72	0	0	0	0	0	12
cSH	532	1116	1700	1700	1700	1700	1700
Volume to Capacity	0.18	0.03	0.24	0.24	0.13	0.13	0.01
Queue Length 95th (m)	4.8	0.6	0.0	0.0	0.0	0.0	0.0
Control Delay (s)	13.2	8.3	0.0	0.0	0.0	0.0	0.0
Lane LOS	B	A					
Approach Delay (s)	13.2	0.3			0.0		
Approach LOS	B						

Intersection Summary			
Average Delay	1.1		
Intersection Capacity Utilization	32.2%	ICU Level of Service	A
Analysis Period (min)	15		

Appendix S

2034 Future Total Conditions With Improvements – Synchro Analysis Results



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Stop			Stop	
Traffic Volume (vph)	12	317	93	12	105	62	36	35	8	4	85	13
Future Volume (vph)	12	317	93	12	105	62	36	35	8	4	85	13
Peak Hour Factor	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85
Hourly flow rate (vph)	14	373	109	14	124	73	42	41	9	5	100	15

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total (vph)	496	211	92	120
Volume Left (vph)	14	14	42	5
Volume Right (vph)	109	73	9	15
Hadj (s)	-0.08	0.04	0.20	-0.01
Departure Headway (s)	4.8	5.3	6.1	5.9
Degree Utilization, x	0.66	0.31	0.16	0.20
Capacity (veh/h)	728	641	508	540
Control Delay (s)	16.5	10.6	10.2	10.3
Approach Delay (s)	16.5	10.6	10.2	10.3
Approach LOS	C	B	B	B

Intersection Summary				
Delay	13.7			
Level of Service	B			
Intersection Capacity Utilization	43.4%	ICU Level of Service	A	
Analysis Period (min)	15			

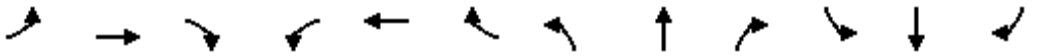
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	79	1933	511	116	1263	250	108	87	18	235	182	106
Future Volume (vph)	79	1933	511	116	1263	250	108	87	18	235	182	106
Lane Group Flow (vph)	79	1933	511	116	1263	250	108	87	18	235	182	106
Turn Type	Perm	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm	Perm	NA	Perm
Protected Phases		2		1	6		7	4			8	
Permitted Phases	2		2	6		6	4		4	8		8
Detector Phase	2	2	2	1	6	6	7	4	4	8	8	8
Switch Phase												
Minimum Initial (s)	12.0	12.0	12.0	5.0	12.0	12.0	5.0	8.0	8.0	8.0	8.0	8.0
Minimum Split (s)	39.7	39.7	39.7	9.0	39.7	39.7	9.0	43.9	43.9	43.9	43.9	43.9
Total Split (s)	77.0	77.0	77.0	9.0	86.0	86.0	9.0	54.0	54.0	45.0	45.0	45.0
Total Split (%)	55.0%	55.0%	55.0%	6.4%	61.4%	61.4%	6.4%	38.6%	38.6%	32.1%	32.1%	32.1%
Yellow Time (s)	4.6	4.6	4.6	3.0	4.6	4.6	3.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	2.1	2.1	2.1	1.0	2.1	2.1	1.0	2.9	2.9	2.9	2.9	2.9
Lost Time Adjust (s)	0.0	0.0	0.0	-1.0	0.0	0.0	-1.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.7	6.7	6.7	3.0	6.7	6.7	3.0	6.9	6.9	6.9	6.9	6.9
Lead/Lag	Lag	Lag	Lag	Lead			Lead			Lag	Lag	Lag
Lead-Lag Optimize?												
Recall Mode	Max	Max	Max	None	Max	Max	None	None	None	None	None	None
v/c Ratio	0.47	0.83	0.55	0.96	0.51	0.33	0.35	0.17	0.04	0.84	0.45	0.26
Control Delay	33.8	31.4	6.8	99.6	17.4	2.9	35.2	34.3	0.2	73.2	46.8	11.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	33.8	31.4	6.8	99.6	17.4	2.9	35.2	34.3	0.2	73.2	46.8	11.8
Queue Length 50th (m)	13.4	159.7	13.9	17.4	71.7	0.0	20.4	16.8	0.0	59.4	41.2	3.1
Queue Length 95th (m)	32.6	190.5	44.1	#59.1	89.0	11.9	34.9	29.9	0.0	#93.3	63.8	17.6
Internal Link Dist (m)		179.2			166.2			202.0			680.1	
Turn Bay Length (m)	115.0		180.0	80.0		150.0	110.0		44.0	20.0		20.0
Base Capacity (vph)	168	2341	935	121	2499	762	305	609	545	337	487	474
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.47	0.83	0.55	0.96	0.51	0.33	0.35	0.14	0.03	0.70	0.37	0.22

Intersection Summary

Cycle Length: 140
Actuated Cycle Length: 134
Natural Cycle: 115
Control Type: Semi Act-Uncoord
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 2: Heart Lake Road & Mayfield Road





Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	79	1933	511	116	1263	250	108	87	18	235	182	106
Future Volume (vph)	79	1933	511	116	1263	250	108	87	18	235	182	106
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5
Total Lost time (s)	6.7	6.7	6.7	3.0	6.7	6.7	3.0	6.9	6.9	6.9	6.9	6.9
Lane Util. Factor	1.00	0.91	1.00	1.00	0.91	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1530	4453	1409	1560	4214	1114	1530	1729	1437	1606	1712	1437
Flt Permitted	0.20	1.00	1.00	0.05	1.00	1.00	0.51	1.00	1.00	0.70	1.00	1.00
Satd. Flow (perm)	321	4453	1409	88	4214	1114	816	1729	1437	1185	1712	1437
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	79	1933	511	116	1263	250	108	87	18	235	182	106
RTOR Reduction (vph)	0	0	194	0	0	102	0	0	13	0	0	69
Lane Group Flow (vph)	79	1933	317	116	1263	148	108	87	5	235	182	37
Heavy Vehicles (%)	5%	6%	2%	3%	12%	29%	5%	0%	0%	0%	1%	0%
Turn Type	Perm	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm	Perm	NA	Perm
Protected Phases		2		1	6		7	4			8	
Permitted Phases	2		2	6		6	4		4	8		8
Actuated Green, G (s)	70.5	70.5	70.5	79.5	79.5	79.5	40.9	40.9	40.9	31.9	31.9	31.9
Effective Green, g (s)	70.5	70.5	70.5	80.5	79.5	79.5	41.9	40.9	40.9	31.9	31.9	31.9
Actuated g/C Ratio	0.53	0.53	0.53	0.60	0.59	0.59	0.31	0.31	0.31	0.24	0.24	0.24
Clearance Time (s)	6.7	6.7	6.7	4.0	6.7	6.7	4.0	6.9	6.9	6.9	6.9	6.9
Vehicle Extension (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Lane Grp Cap (vph)	168	2342	741	118	2500	660	287	527	438	282	407	342
v/s Ratio Prot		0.43		c0.04	0.30		c0.02	0.05			0.11	
v/s Ratio Perm	0.25		0.22	c0.54		0.13	0.10		0.00	c0.20		0.03
v/c Ratio	0.47	0.83	0.43	0.98	0.51	0.22	0.38	0.17	0.01	0.83	0.45	0.11
Uniform Delay, d1	20.0	26.6	19.4	32.2	15.8	12.8	35.1	34.1	32.5	48.5	43.5	39.9
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	9.2	3.5	1.8	77.6	0.7	0.8	1.7	0.3	0.0	20.5	1.6	0.3
Delay (s)	29.2	30.1	21.2	109.8	16.6	13.6	36.9	34.4	32.5	69.0	45.2	40.2
Level of Service	C	C	C	F	B	B	D	C	C	E	D	D
Approach Delay (s)		28.2			22.7			35.5			54.9	
Approach LOS		C			C			D			D	

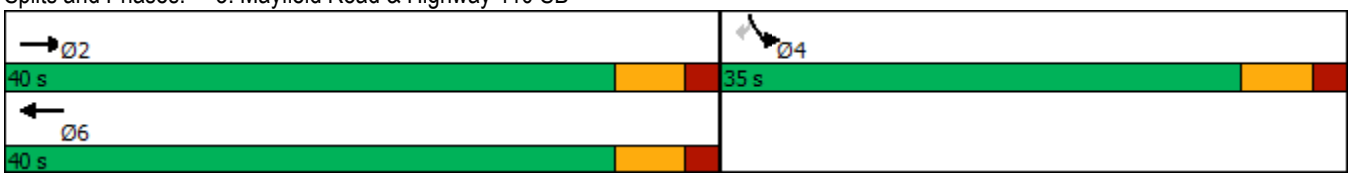
Intersection Summary			
HCM 2000 Control Delay	29.6	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.94		
Actuated Cycle Length (s)	134.0	Sum of lost time (s)	19.6
Intersection Capacity Utilization	90.2%	ICU Level of Service	E
Analysis Period (min)	15		

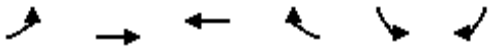
c Critical Lane Group

Lane Group	EBT	WBT	SBL	SBR
Lane Configurations				
Traffic Volume (vph)	1481	1338	376	353
Future Volume (vph)	1481	1338	376	353
Lane Group Flow (vph)	1481	1338	500	229
Turn Type	NA	NA	Prot	Perm
Protected Phases	2	6	4	
Permitted Phases				4
Detector Phase	2	6	4	4
Switch Phase				
Minimum Initial (s)	16.0	16.0	8.0	8.0
Minimum Split (s)	22.0	22.0	32.0	32.0
Total Split (s)	40.0	40.0	35.0	35.0
Total Split (%)	53.3%	53.3%	46.7%	46.7%
Yellow Time (s)	4.0	4.0	4.0	4.0
All-Red Time (s)	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.0	6.0	6.0	6.0
Lead/Lag				
Lead-Lag Optimize?				
Recall Mode	Max	Max	None	None
v/c Ratio	0.57	0.48	0.50	0.52
Control Delay	12.4	11.4	19.8	21.7
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	12.4	11.4	19.8	21.7
Queue Length 50th (m)	38.5	32.7	24.2	22.6
Queue Length 95th (m)	70.5	60.1	35.6	41.5
Internal Link Dist (m)	123.5	116.2	492.2	
Turn Bay Length (m)				
Base Capacity (vph)	2612	2769	1562	680
Starvation Cap Reductn	0	0	0	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.57	0.48	0.32	0.34

Intersection Summary
Cycle Length: 75
Actuated Cycle Length: 64.9
Natural Cycle: 60
Control Type: Semi Act-Uncoord

Splits and Phases: 3: Mayfield Road & Highway 410 SB





Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑↑↑	↑↑↑		↰↰	↱
Traffic Volume (vph)	0	1481	1338	0	376	353
Future Volume (vph)	0	1481	1338	0	376	353
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)		6.0	6.0		6.0	6.0
Lane Util. Factor		0.91	0.91		0.97	0.91
Frt		1.00	1.00		0.96	0.85
Flt Protected		1.00	1.00		0.96	1.00
Satd. Flow (prot)		4948	5245		3444	1486
Flt Permitted		1.00	1.00		0.96	1.00
Satd. Flow (perm)		4948	5245		3444	1486
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	0	1481	1338	0	376	353
RTOR Reduction (vph)	0	0	0	0	14	14
Lane Group Flow (vph)	0	1481	1338	0	486	215
Heavy Vehicles (%)	0%	6%	0%	16%	0%	0%
Bus Blockages (#/hr)	0	0	0	0	2	0
Turn Type		NA	NA		Prot	Perm
Protected Phases		2	6		4	
Permitted Phases						4
Actuated Green, G (s)		34.3	34.3		18.5	18.5
Effective Green, g (s)		34.3	34.3		18.5	18.5
Actuated g/C Ratio		0.53	0.53		0.29	0.29
Clearance Time (s)		6.0	6.0		6.0	6.0
Vehicle Extension (s)		5.0	5.0		5.0	5.0
Lane Grp Cap (vph)		2619	2776		983	424
v/s Ratio Prot		c0.30	0.26		0.14	
v/s Ratio Perm						c0.14
v/c Ratio		0.57	0.48		0.49	0.51
Uniform Delay, d1		10.2	9.6		19.3	19.3
Progression Factor		1.00	1.00		1.00	1.00
Incremental Delay, d2		0.9	0.6		0.8	2.0
Delay (s)		11.1	10.2		20.1	21.3
Level of Service		B	B		C	C
Approach Delay (s)		11.1	10.2		20.5	
Approach LOS		B	B		C	

Intersection Summary			
HCM 2000 Control Delay	12.7	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.54		
Actuated Cycle Length (s)	64.8	Sum of lost time (s)	12.0
Intersection Capacity Utilization	53.0%	ICU Level of Service	A
Analysis Period (min)	15		

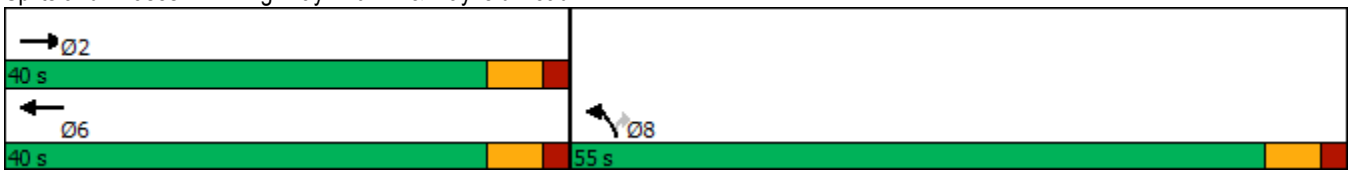
c Critical Lane Group

Lane Group	EBT	WBT	NBL	NBR
Lane Configurations				
Traffic Volume (vph)	1864	1796	509	953
Future Volume (vph)	1864	1796	509	953
Lane Group Flow (vph)	1864	1796	986	476
Turn Type	NA	NA	Prot	Perm
Protected Phases	2	6	8	
Permitted Phases				8
Detector Phase	2	6	8	8
Switch Phase				
Minimum Initial (s)	26.0	26.0	10.0	10.0
Minimum Split (s)	32.0	32.0	22.0	22.0
Total Split (s)	40.0	40.0	55.0	55.0
Total Split (%)	42.1%	42.1%	57.9%	57.9%
Yellow Time (s)	4.0	4.0	4.0	4.0
All-Red Time (s)	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.0	6.0	6.0	6.0
Lead/Lag				
Lead-Lag Optimize?				
Recall Mode	Max	None	None	None
v/c Ratio	0.91	0.92	0.77	0.83
Control Delay	32.7	34.6	23.9	33.1
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	32.7	34.6	23.9	33.1
Queue Length 50th (m)	99.2	96.7	64.9	69.1
Queue Length 95th (m)	#166.9	#164.0	85.6	111.0
Internal Link Dist (m)	104.0	63.2	627.1	
Turn Bay Length (m)				
Base Capacity (vph)	2054	1944	1744	787
Starvation Cap Reductn	0	0	0	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.91	0.92	0.57	0.60

Intersection Summary

Cycle Length: 95
Actuated Cycle Length: 82.9
Natural Cycle: 65
Control Type: Semi Act-Uncoord
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 4: Highway 410 NB & Mayfield Road





Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	1864	0	0	1796	509	953
Future Volume (vph)	1864	0	0	1796	509	953
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0			6.0	6.0	6.0
Lane Util. Factor	0.91			0.91	0.97	0.91
Frt	1.00			1.00	0.93	0.85
Flt Protected	1.00			1.00	0.97	1.00
Satd. Flow (prot)	4948			4683	2915	1315
Flt Permitted	1.00			1.00	0.97	1.00
Satd. Flow (perm)	4948			4683	2915	1315
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	1864	0	0	1796	509	953
RTOR Reduction (vph)	0	0	0	0	1	1
Lane Group Flow (vph)	1864	0	0	1796	985	475
Heavy Vehicles (%)	6%	0%	0%	12%	18%	13%
Turn Type	NA			NA	Prot	Perm
Protected Phases	2			6	8	
Permitted Phases						8
Actuated Green, G (s)	34.4			34.4	36.4	36.4
Effective Green, g (s)	34.4			34.4	36.4	36.4
Actuated g/C Ratio	0.42			0.42	0.44	0.44
Clearance Time (s)	6.0			6.0	6.0	6.0
Vehicle Extension (s)	5.0			5.0	3.0	3.0
Lane Grp Cap (vph)	2055			1945	1281	578
v/s Ratio Prot	0.38			c0.38	0.34	
v/s Ratio Perm						c0.36
v/c Ratio	0.91			0.92	0.77	0.82
Uniform Delay, d1	22.7			23.0	19.6	20.4
Progression Factor	1.00			1.00	1.00	1.00
Incremental Delay, d2	7.3			8.3	2.8	9.2
Delay (s)	30.0			31.2	22.5	29.6
Level of Service	C			C	C	C
Approach Delay (s)	30.0			31.2	24.8	
Approach LOS	C			C	C	

Intersection Summary			
HCM 2000 Control Delay	28.9	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.87		
Actuated Cycle Length (s)	82.8	Sum of lost time (s)	12.0
Intersection Capacity Utilization	85.4%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	EBT	EBR	WBL	WBT	NBL
Lane Configurations					
Traffic Volume (vph)	2386	211	68	1483	117
Future Volume (vph)	2386	211	68	1483	117
Lane Group Flow (vph)	2386	211	68	1483	184
Turn Type	NA	Perm	Perm	NA	Prot
Protected Phases	2			2	4
Permitted Phases		2	2		
Detector Phase	2	2	2	2	4
Switch Phase					
Minimum Initial (s)	12.0	12.0	12.0	12.0	8.0
Minimum Split (s)	26.7	26.7	26.7	26.7	45.6
Total Split (s)	74.0	74.0	74.0	74.0	46.0
Total Split (%)	61.7%	61.7%	61.7%	61.7%	38.3%
Yellow Time (s)	4.6	4.6	4.6	4.6	4.0
All-Red Time (s)	2.1	2.1	2.1	2.1	3.6
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.7	6.7	6.7	6.7	7.6
Lead/Lag					
Lead-Lag Optimize?					
Recall Mode	Max	Max	Max	Max	None
v/c Ratio	0.68	0.19	0.94	0.42	0.61
Control Delay	11.1	2.4	119.4	7.9	46.5
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	11.1	2.4	119.4	7.9	46.5
Queue Length 50th (m)	88.2	3.0	10.5	41.3	32.3
Queue Length 95th (m)	126.1	11.8	#28.5	60.7	53.5
Internal Link Dist (m)	203.7			76.6	88.2
Turn Bay Length (m)		65.0	35.0		
Base Capacity (vph)	3531	1124	72	3531	656
Starvation Cap Reductn	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.68	0.19	0.94	0.42	0.28

Intersection Summary

Cycle Length: 120
Actuated Cycle Length: 101.9
Natural Cycle: 90
Control Type: Actuated-Uncoordinated
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 5: Ace Drive & Mayfield Road





Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	2386	211	68	1483	117	67
Future Volume (vph)	2386	211	68	1483	117	67
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width	3.7	3.5	3.5	3.7	3.7	3.7
Total Lost time (s)	6.7	6.7	6.7	6.7	7.6	
Lane Util. Factor	0.91	1.00	1.00	0.91	1.00	
Frt	1.00	0.85	1.00	1.00	0.95	
Flt Protected	1.00	1.00	0.95	1.00	0.97	
Satd. Flow (prot)	5142	1566	1750	5142	1736	
Flt Permitted	1.00	1.00	0.06	1.00	0.97	
Satd. Flow (perm)	5142	1566	105	5142	1736	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	2386	211	68	1483	117	67
RTOR Reduction (vph)	0	49	0	0	2	0
Lane Group Flow (vph)	2386	162	68	1483	182	0
Turn Type	NA	Perm	Perm	NA	Prot	
Protected Phases	2			2	4	
Permitted Phases		2	2			
Actuated Green, G (s)	70.0	70.0	70.0	70.0	17.6	
Effective Green, g (s)	70.0	70.0	70.0	70.0	17.6	
Actuated g/C Ratio	0.69	0.69	0.69	0.69	0.17	
Clearance Time (s)	6.7	6.7	6.7	6.7	7.6	
Vehicle Extension (s)	5.0	5.0	5.0	5.0	5.0	
Lane Grp Cap (vph)	3532	1075	72	3532	299	
v/s Ratio Prot	0.46			0.29	c0.10	
v/s Ratio Perm		0.10	c0.65			
v/c Ratio	0.68	0.15	0.94	0.42	0.61	
Uniform Delay, d1	9.3	5.6	14.2	7.0	39.0	
Progression Factor	1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	1.1	0.3	91.3	0.4	5.1	
Delay (s)	10.4	5.9	105.5	7.4	44.0	
Level of Service	B	A	F	A	D	
Approach Delay (s)	10.0			11.7	44.0	
Approach LOS	B			B	D	

Intersection Summary			
HCM 2000 Control Delay	12.1	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.87		
Actuated Cycle Length (s)	101.9	Sum of lost time (s)	14.3
Intersection Capacity Utilization	79.0%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

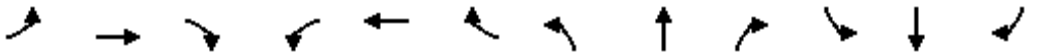
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	603	2010	364	64	846	110	121	186	54	49	193	428
Future Volume (vph)	603	2010	364	64	846	110	121	186	54	49	193	428
Lane Group Flow (vph)	603	2010	364	64	846	110	121	186	54	49	193	428
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	Perm	NA	Perm	Perm	NA	Perm
Protected Phases	5	2		1	6			8			4	
Permitted Phases	2		2	6		6	8		8	4		4
Detector Phase	5	2	2	1	6	6	8	8	8	4	4	4
Switch Phase												
Minimum Initial (s)	5.0	8.0	8.0	5.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0
Minimum Split (s)	9.0	44.9	44.9	9.0	44.9	44.9	47.9	47.9	47.9	47.9	47.9	47.9
Total Split (s)	33.0	63.1	63.1	9.0	39.1	39.1	47.9	47.9	47.9	47.9	47.9	47.9
Total Split (%)	27.5%	52.6%	52.6%	7.5%	32.6%	32.6%	39.9%	39.9%	39.9%	39.9%	39.9%	39.9%
Yellow Time (s)	3.0	4.6	4.6	3.0	4.6	4.6	4.6	4.6	4.6	4.6	4.6	4.6
All-Red Time (s)	1.0	2.3	2.3	1.0	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.3
Lost Time Adjust (s)	-1.0	0.0	0.0	-1.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	3.0	6.9	6.9	3.0	6.9	6.9	6.9	6.9	6.9	6.9	6.9	6.9
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag						
Lead-Lag Optimize?												
Recall Mode	None	Max	Max	None	None	None	None	None	None	None	None	None
v/c Ratio	0.93	0.69	0.35	0.35	0.58	0.24	0.58	0.32	0.16	0.28	0.31	0.69
Control Delay	40.1	16.1	3.4	17.3	29.3	7.0	47.2	34.9	1.1	37.9	34.7	10.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	40.1	16.1	3.4	17.3	29.3	7.0	47.2	34.9	1.1	37.9	34.7	10.0
Queue Length 50th (m)	72.5	89.3	4.3	3.0	46.4	0.2	20.9	16.0	0.0	8.0	16.5	0.0
Queue Length 95th (m)	#165.5	131.6	19.1	9.2	67.0	12.4	38.3	25.3	0.8	18.0	26.1	25.5
Internal Link Dist (m)		179.3			299.2			185.5			471.5	
Turn Bay Length (m)	140.0		70.0	65.0		30.0	75.0		60.0	30.0		138.0
Base Capacity (vph)	650	2924	1040	182	1572	481	495	1381	675	408	1471	873
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.93	0.69	0.35	0.35	0.54	0.23	0.24	0.13	0.08	0.12	0.13	0.49

Intersection Summary

Cycle Length: 120
Actuated Cycle Length: 95
Natural Cycle: 135
Control Type: Semi Act-Uncoord
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 6: Dixie Road & Mayfield Road





Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	603	2010	364	64	846	110	121	186	54	49	193	428
Future Volume (vph)	603	2010	364	64	846	110	121	186	54	49	193	428
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5
Total Lost time (s)	3.0	6.9	6.9	3.0	6.9	6.9	6.9	6.9	6.9	6.9	6.9	6.9
Lane Util. Factor	1.00	0.91	1.00	1.00	0.91	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1566	4902	1536	1653	4601	1201	1716	3174	1413	1405	3380	1452
Flt Permitted	0.24	1.00	1.00	0.12	1.00	1.00	0.63	1.00	1.00	0.63	1.00	1.00
Satd. Flow (perm)	388	4902	1536	215	4601	1201	1139	3174	1413	939	3380	1452
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	603	2010	364	64	846	110	121	186	54	49	193	428
RTOR Reduction (vph)	0	0	125	0	0	73	0	0	44	0	0	350
Lane Group Flow (vph)	603	2010	239	64	846	37	121	186	10	49	193	78
Heavy Vehicles (%)	14%	7%	4%	8%	14%	33%	4%	15%	13%	27%	8%	10%
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	Perm	NA	Perm	Perm	NA	Perm
Protected Phases	5	2		1	6			8			4	
Permitted Phases	2		2	6		6	8		8	4		4
Actuated Green, G (s)	64.6	56.7	56.7	35.3	31.4	31.4	17.5	17.5	17.5	17.5	17.5	17.5
Effective Green, g (s)	65.6	56.7	56.7	37.3	31.4	31.4	17.5	17.5	17.5	17.5	17.5	17.5
Actuated g/C Ratio	0.68	0.59	0.59	0.39	0.33	0.33	0.18	0.18	0.18	0.18	0.18	0.18
Clearance Time (s)	4.0	6.9	6.9	4.0	6.9	6.9	6.9	6.9	6.9	6.9	6.9	6.9
Vehicle Extension (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Lane Grp Cap (vph)	636	2898	908	157	1506	393	207	579	257	171	616	264
v/s Ratio Prot	c0.30	0.41		0.02	0.18			0.06			0.06	
v/s Ratio Perm	c0.35		0.16	0.14		0.03	c0.11		0.01	0.05		0.05
v/c Ratio	0.95	0.69	0.26	0.41	0.56	0.10	0.58	0.32	0.04	0.29	0.31	0.30
Uniform Delay, d1	18.3	13.6	9.5	18.6	26.6	22.4	35.9	34.0	32.3	33.8	34.0	33.9
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	24.0	1.4	0.7	3.6	0.8	0.2	6.4	0.7	0.1	1.9	0.6	1.3
Delay (s)	42.2	15.0	10.2	22.2	27.4	22.6	42.3	34.7	32.4	35.7	34.6	35.2
Level of Service	D	B	B	C	C	C	D	C	C	D	C	D
Approach Delay (s)		19.9			26.5			36.9			35.1	
Approach LOS		B			C			D			D	

Intersection Summary			
HCM 2000 Control Delay	24.5	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.91		
Actuated Cycle Length (s)	95.9	Sum of lost time (s)	16.8
Intersection Capacity Utilization	83.7%	ICU Level of Service	E
Analysis Period (min)	15		

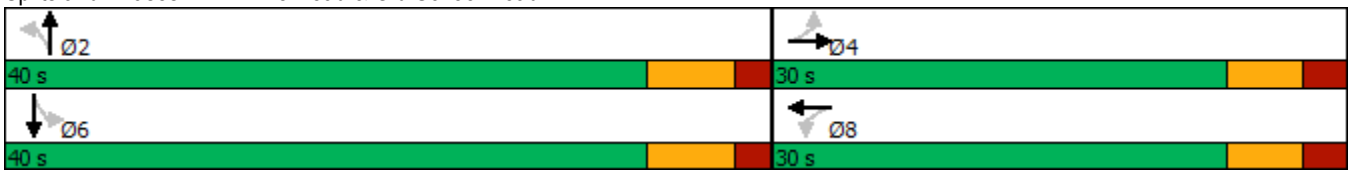
c Critical Lane Group

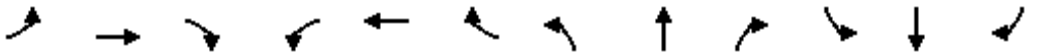
Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations								
Traffic Volume (vph)	17	279	49	108	24	270	33	779
Future Volume (vph)	17	279	49	108	24	270	33	779
Lane Group Flow (vph)	17	326	49	116	24	316	33	825
Turn Type	Perm	NA	Perm	NA	Perm	NA	Perm	NA
Protected Phases		4		8		2		6
Permitted Phases	4		8		2		6	
Detector Phase	4	4	8	8	2	2	6	6
Switch Phase								
Minimum Initial (s)	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0
Minimum Split (s)	25.4	25.4	25.4	25.4	23.6	23.6	23.6	23.6
Total Split (s)	30.0	30.0	30.0	30.0	40.0	40.0	40.0	40.0
Total Split (%)	42.9%	42.9%	42.9%	42.9%	57.1%	57.1%	57.1%	57.1%
Yellow Time (s)	4.0	4.0	4.0	4.0	4.6	4.6	4.6	4.6
All-Red Time (s)	2.4	2.4	2.4	2.4	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.4	6.4	6.4	6.4	6.6	6.6	6.6	6.6
Lead/Lag								
Lead-Lag Optimize?								
Recall Mode	None	None	None	None	Max	Max	Max	Max
v/c Ratio	0.06	0.64	0.22	0.23	0.16	0.35	0.06	0.86
Control Delay	16.9	25.6	20.1	17.8	13.0	10.6	9.4	25.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	16.9	25.6	20.1	17.8	13.0	10.6	9.4	25.9
Queue Length 50th (m)	1.5	32.2	4.4	10.0	1.4	18.8	1.8	77.2
Queue Length 95th (m)	5.3	54.5	11.9	20.6	6.5	40.3	6.5	#170.6
Internal Link Dist (m)		1372.4		151.6		1413.7		144.7
Turn Bay Length (m)	35.0		45.0		40.0		35.0	
Base Capacity (vph)	373	688	304	676	149	914	528	964
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.05	0.47	0.16	0.17	0.16	0.35	0.06	0.86

Intersection Summary

Cycle Length: 70
Actuated Cycle Length: 64
Natural Cycle: 65
Control Type: Semi Act-Uncoord
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 7: Dixie Road & Old School Road





Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	17	279	47	49	108	8	24	270	46	33	779	46
Future Volume (vph)	17	279	47	49	108	8	24	270	46	33	779	46
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5
Total Lost time (s)	6.4	6.4		6.4	6.4		6.6	6.6		6.6	6.6	
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	0.98		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)	1405	1840		1785	1817		1785	1731		1684	1836	
Flt Permitted	0.68	1.00		0.44	1.00		0.15	1.00		0.57	1.00	
Satd. Flow (perm)	1010	1840		822	1817		286	1731		1008	1836	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	17	279	47	49	108	8	24	270	46	33	779	46
RTOR Reduction (vph)	0	9	0	0	4	0	0	8	0	0	3	0
Lane Group Flow (vph)	17	317	0	49	112	0	24	308	0	33	822	0
Heavy Vehicles (%)	27%	2%	3%	0%	5%	0%	0%	10%	0%	6%	4%	0%
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)	17.4	17.4		17.4	17.4		33.5	33.5		33.5	33.5	
Effective Green, g (s)	17.4	17.4		17.4	17.4		33.5	33.5		33.5	33.5	
Actuated g/C Ratio	0.27	0.27		0.27	0.27		0.52	0.52		0.52	0.52	
Clearance Time (s)	6.4	6.4		6.4	6.4		6.6	6.6		6.6	6.6	
Vehicle Extension (s)	5.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0	
Lane Grp Cap (vph)	275	501		223	494		149	907		528	962	
v/s Ratio Prot		c0.17			0.06			0.18			c0.45	
v/s Ratio Perm	0.02			0.06			0.08			0.03		
v/c Ratio	0.06	0.63		0.22	0.23		0.16	0.34		0.06	0.85	
Uniform Delay, d1	17.2	20.4		18.0	18.0		7.9	8.8		7.5	13.1	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.2	3.6		1.0	0.5		2.3	1.0		0.2	9.6	
Delay (s)	17.4	24.0		19.0	18.5		10.2	9.8		7.7	22.7	
Level of Service	B	C		B	B		B	A		A	C	
Approach Delay (s)		23.7			18.7			9.8			22.1	
Approach LOS		C			B			A			C	

Intersection Summary			
HCM 2000 Control Delay	19.7	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.78		
Actuated Cycle Length (s)	63.9	Sum of lost time (s)	13.0
Intersection Capacity Utilization	84.2%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	13	2	380	27	17	91
Future Volume (Veh/h)	13	2	380	27	17	91
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	14	2	413	29	18	99
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	562	428			442	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	562	428			442	
tC, single (s)	6.6	6.4			4.1	
tC, 2 stage (s)						
tF (s)	3.7	3.5			2.2	
p0 queue free %	97	100			98	
cM capacity (veh/h)	454	595			1118	

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	16	442	117
Volume Left	14	0	18
Volume Right	2	29	0
cSH	468	1700	1118
Volume to Capacity	0.03	0.26	0.02
Queue Length 95th (m)	0.8	0.0	0.4
Control Delay (s)	13.0	0.0	1.4
Lane LOS	B		A
Approach Delay (s)	13.0	0.0	1.4
Approach LOS	B		

Intersection Summary			
Average Delay		0.6	
Intersection Capacity Utilization		31.6%	ICU Level of Service A
Analysis Period (min)		15	



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	13	2	347	29	17	95
Future Volume (Veh/h)	13	2	347	29	17	95
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	14	2	377	32	18	103
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	532	393			409	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	532	393			409	
tC, single (s)	6.6	6.4			4.1	
tC, 2 stage (s)						
tF (s)	3.7	3.5			2.2	
p0 queue free %	97	100			98	
cM capacity (veh/h)	474	622			1150	

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	16	409	121
Volume Left	14	0	18
Volume Right	2	32	0
cSH	488	1700	1150
Volume to Capacity	0.03	0.24	0.02
Queue Length 95th (m)	0.8	0.0	0.4
Control Delay (s)	12.6	0.0	1.3
Lane LOS	B		A
Approach Delay (s)	12.6	0.0	1.3
Approach LOS	B		

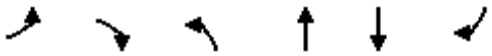
Intersection Summary			
Average Delay	0.7		
Intersection Capacity Utilization	30.0%	ICU Level of Service	A
Analysis Period (min)	15		



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	14	2	314	29	17	99
Future Volume (Veh/h)	14	2	314	29	17	99
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)	15	2	341	32	18	108
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	501	357			373	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	501	357			373	
tC, single (s)	6.6	6.4			4.1	
tC, 2 stage (s)						
tF (s)	3.7	3.5			2.2	
p0 queue free %	97	100			98	
cM capacity (veh/h)	495	653			1185	

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	17	373	126
Volume Left	15	0	18
Volume Right	2	32	0
cSH	509	1700	1185
Volume to Capacity	0.03	0.22	0.02
Queue Length 95th (m)	0.8	0.0	0.4
Control Delay (s)	12.3	0.0	1.3
Lane LOS	B		A
Approach Delay (s)	12.3	0.0	1.3
Approach LOS	B		

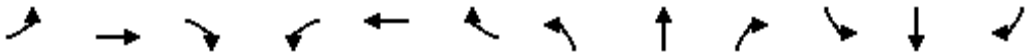
Intersection Summary			
Average Delay	0.7		
Intersection Capacity Utilization	29.7%	ICU Level of Service	A
Analysis Period (min)	15		



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	4	24	52	714	747	32
Future Volume (Veh/h)	4	24	52	714	747	32
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)	4	26	57	776	812	35
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	1314	406	847			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1314	406	847			
tC, single (s)	7.1	7.2	4.1			
tC, 2 stage (s)						
tF (s)	3.7	3.5	2.2			
p0 queue free %	97	95	93			
cM capacity (veh/h)	122	554	786			

Direction, Lane #	EB 1	NB 1	NB 2	NB 3	SB 1	SB 2	SB 3
Volume Total	30	57	388	388	406	406	35
Volume Left	4	57	0	0	0	0	0
Volume Right	26	0	0	0	0	0	35
cSH	376	786	1700	1700	1700	1700	1700
Volume to Capacity	0.08	0.07	0.23	0.23	0.24	0.24	0.02
Queue Length 95th (m)	2.0	1.8	0.0	0.0	0.0	0.0	0.0
Control Delay (s)	15.4	9.9	0.0	0.0	0.0	0.0	0.0
Lane LOS	C	A					
Approach Delay (s)	15.4	0.7			0.0		
Approach LOS	C						

Intersection Summary			
Average Delay	0.6		
Intersection Capacity Utilization	37.3%	ICU Level of Service	A
Analysis Period (min)	15		



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Stop			Stop	
Traffic Volume (vph)	11	195	65	23	383	37	113	68	18	1	55	15
Future Volume (vph)	11	195	65	23	383	37	113	68	18	1	55	15
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Hourly flow rate (vph)	12	207	69	24	407	39	120	72	19	1	59	16

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total (vph)	288	470	211	76
Volume Left (vph)	12	24	120	1
Volume Right (vph)	69	39	19	16
Hadj (s)	-0.11	-0.02	0.06	-0.07
Departure Headway (s)	5.4	5.3	6.1	6.4
Degree Utilization, x	0.44	0.69	0.36	0.13
Capacity (veh/h)	616	661	524	461
Control Delay (s)	12.6	19.0	12.5	10.3
Approach Delay (s)	12.6	19.0	12.5	10.3
Approach LOS	B	C	B	B

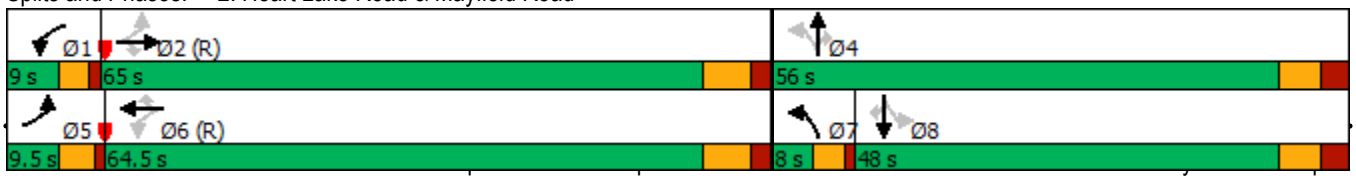
Intersection Summary				
Delay	15.3			
Level of Service	C			
Intersection Capacity Utilization	55.5%	ICU Level of Service	B	
Analysis Period (min)	15			

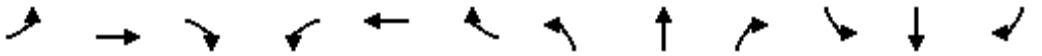
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	96	1405	125	37	2015	229	311	114	11	352	127	90
Future Volume (vph)	96	1405	125	37	2015	229	311	114	11	352	127	90
Lane Group Flow (vph)	96	1405	125	37	2015	229	311	114	11	352	127	90
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm	Perm	NA	Perm
Protected Phases	5	2		1	6		7	4			8	
Permitted Phases	2		2	6		6	4		4	8		8
Detector Phase	5	2	2	1	6	6	7	4	4	8	8	8
Switch Phase												
Minimum Initial (s)	5.0	12.0	12.0	5.0	12.0	12.0	1.0	8.0	8.0	8.0	8.0	8.0
Minimum Split (s)	9.5	39.7	39.7	9.0	39.7	39.7	5.0	43.9	43.9	43.9	43.9	43.9
Total Split (s)	9.5	65.0	65.0	9.0	64.5	64.5	8.0	56.0	56.0	48.0	48.0	48.0
Total Split (%)	7.3%	50.0%	50.0%	6.9%	49.6%	49.6%	6.2%	43.1%	43.1%	36.9%	36.9%	36.9%
Yellow Time (s)	3.5	4.6	4.6	3.0	4.6	4.6	3.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	1.0	2.1	2.1	1.0	2.1	2.1	1.0	2.9	2.9	2.9	2.9	2.9
Lost Time Adjust (s)	0.0	0.0	0.0	-1.0	0.0	0.0	-1.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.5	6.7	6.7	3.0	6.7	6.7	3.0	6.9	6.9	6.9	6.9	6.9
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead			Lag	Lag	Lag
Lead-Lag Optimize?	Yes				Yes	Yes						
Recall Mode	None	C-Max	C-Max	None	C-Max	C-Max	None	None	None	None	None	None
v/c Ratio	0.86	0.70	0.18	0.23	0.99	0.30	0.69	0.17	0.02	1.03	0.24	0.18
Control Delay	76.6	30.6	4.1	17.3	53.4	3.8	40.1	27.9	0.1	101.0	34.5	6.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	76.6	30.6	4.1	17.3	53.4	3.8	40.1	27.9	0.1	101.0	34.5	6.0
Queue Length 50th (m)	11.8	105.6	0.0	4.3	184.1	0.0	58.0	19.3	0.0	~96.4	24.1	0.0
Queue Length 95th (m)	#43.6	123.5	11.0	9.6	#223.2	14.2	85.0	32.7	0.0	#155.5	40.5	10.4
Internal Link Dist (m)		179.2			166.2			202.0			680.1	
Turn Bay Length (m)	115.0		180.0	80.0		150.0	110.0		44.0	20.0		20.0
Base Capacity (vph)	112	2001	694	160	2037	753	451	653	538	341	525	499
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.86	0.70	0.18	0.23	0.99	0.30	0.69	0.17	0.02	1.03	0.24	0.18

Intersection Summary

Cycle Length: 130
Actuated Cycle Length: 130
Offset: 0 (0%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green
Natural Cycle: 130
Control Type: Actuated-Coordinated
~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 2: Heart Lake Road & Mayfield Road





Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	96	1405	125	37	2015	229	311	114	11	352	127	90
Future Volume (vph)	96	1405	125	37	2015	229	311	114	11	352	127	90
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5
Total Lost time (s)	4.5	6.7	6.7	3.0	6.7	6.7	3.0	6.9	6.9	6.9	6.9	6.9
Lane Util. Factor	1.00	0.91	1.00	1.00	0.91	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1560	4330	1356	1530	4583	1409	1591	1729	1319	1501	1662	1369
Flt Permitted	0.07	1.00	1.00	0.12	1.00	1.00	0.63	1.00	1.00	0.68	1.00	1.00
Satd. Flow (perm)	111	4330	1356	190	4583	1409	1056	1729	1319	1080	1662	1369
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	96	1405	125	37	2015	229	311	114	11	352	127	90
RTOR Reduction (vph)	0	0	68	0	0	127	0	0	7	0	0	62
Lane Group Flow (vph)	96	1405	57	37	2015	102	311	114	4	352	127	28
Heavy Vehicles (%)	3%	9%	6%	5%	3%	2%	1%	0%	9%	7%	4%	5%
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm	Perm	NA	Perm
Protected Phases	5	2		1	6		7	4			8	
Permitted Phases	2		2	6		6	4		4	8		8
Actuated Green, G (s)	64.3	59.3	59.3	61.8	57.8	57.8	49.1	49.1	49.1	41.1	41.1	41.1
Effective Green, g (s)	64.3	59.3	59.3	63.8	57.8	57.8	50.1	49.1	49.1	41.1	41.1	41.1
Actuated g/C Ratio	0.49	0.46	0.46	0.49	0.44	0.44	0.39	0.38	0.38	0.32	0.32	0.32
Clearance Time (s)	4.5	6.7	6.7	4.0	6.7	6.7	4.0	6.9	6.9	6.9	6.9	6.9
Vehicle Extension (s)	3.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Lane Grp Cap (vph)	110	1975	618	144	2037	626	427	653	498	341	525	432
v/s Ratio Prot	c0.03	0.32		0.01	c0.44		c0.03	0.07			0.08	
v/s Ratio Perm	0.40		0.04	0.12		0.07	0.25		0.00	c0.33		0.02
v/c Ratio	0.87	0.71	0.09	0.26	0.99	0.16	0.73	0.17	0.01	1.03	0.24	0.07
Uniform Delay, d1	27.5	28.5	20.1	19.1	35.8	21.6	34.3	26.9	25.3	44.5	32.9	31.0
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	48.2	2.2	0.3	2.0	17.6	0.6	7.5	0.3	0.0	57.3	0.5	0.1
Delay (s)	75.8	30.7	20.4	21.0	53.3	22.2	41.8	27.2	25.3	101.8	33.4	31.2
Level of Service	E	C	C	C	D	C	D	C	C	F	C	C
Approach Delay (s)		32.5			49.7			37.5			75.3	
Approach LOS		C			D			D			E	

Intersection Summary			
HCM 2000 Control Delay	45.9	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.99		
Actuated Cycle Length (s)	130.0	Sum of lost time (s)	21.1
Intersection Capacity Utilization	98.3%	ICU Level of Service	F
Analysis Period (min)	15		

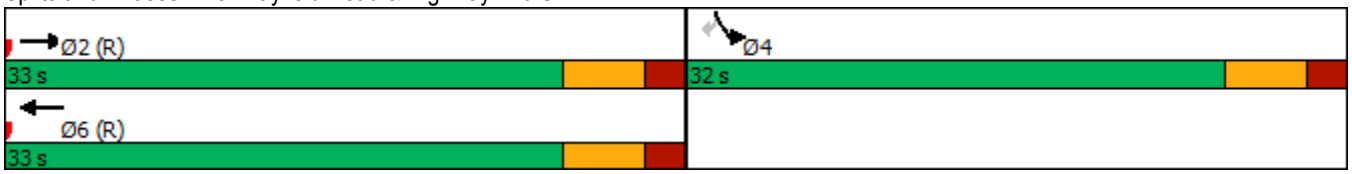
c Critical Lane Group

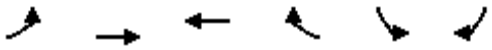
Lane Group	EBT	WBT	SBL	SBR
Lane Configurations				
Traffic Volume (vph)	1101	2559	114	28
Future Volume (vph)	1101	2559	114	28
Lane Group Flow (vph)	1101	2559	117	25
Turn Type	NA	NA	Prot	Perm
Protected Phases	2	6	4	
Permitted Phases				4
Detector Phase	2	6	4	4
Switch Phase				
Minimum Initial (s)	16.0	16.0	8.0	8.0
Minimum Split (s)	22.0	22.0	32.0	32.0
Total Split (s)	33.0	33.0	32.0	32.0
Total Split (%)	50.8%	50.8%	49.2%	49.2%
Yellow Time (s)	4.0	4.0	4.0	4.0
All-Red Time (s)	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.0	6.0	6.0	6.0
Lead/Lag				
Lead-Lag Optimize?				
Recall Mode	C-Max	C-Max	None	None
v/c Ratio	0.30	0.67	0.23	0.11
Control Delay	2.3	7.6	25.2	24.6
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	2.3	7.6	25.2	24.6
Queue Length 50th (m)	8.8	60.0	6.5	2.9
Queue Length 95th (m)	m10.3	84.8	12.4	9.0
Internal Link Dist (m)	123.5	116.2	492.2	
Turn Bay Length (m)				
Base Capacity (vph)	3677	3824	1358	594
Starvation Cap Reductn	0	0	0	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.30	0.67	0.09	0.04

Intersection Summary

Cycle Length: 65
Actuated Cycle Length: 65
Offset: 36 (55%), Referenced to phase 2:EBT and 6:WBT, Start of Green
Natural Cycle: 75
Control Type: Actuated-Coordinated
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 3: Mayfield Road & Highway 410 SB





Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑↑↑	↑↑↑		↰↰	↱
Traffic Volume (vph)	0	1101	2559	0	114	28
Future Volume (vph)	0	1101	2559	0	114	28
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)		6.0	6.0		6.0	6.0
Lane Util. Factor		0.91	0.91		0.97	0.91
Frt		1.00	1.00		1.00	0.85
Flt Protected		1.00	1.00		0.95	1.00
Satd. Flow (prot)		5043	5245		3394	1486
Flt Permitted		1.00	1.00		0.95	1.00
Satd. Flow (perm)		5043	5245		3394	1486
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	0	1101	2559	0	114	28
RTOR Reduction (vph)	0	0	0	0	0	0
Lane Group Flow (vph)	0	1101	2559	0	117	25
Heavy Vehicles (%)	0%	4%	0%	2%	4%	0%
Bus Blockages (#/hr)	0	0	0	0	2	0
Turn Type		NA	NA		Prot	Perm
Protected Phases		2	6		4	
Permitted Phases						4
Actuated Green, G (s)		45.0	45.0		8.0	8.0
Effective Green, g (s)		45.0	45.0		8.0	8.0
Actuated g/C Ratio		0.69	0.69		0.12	0.12
Clearance Time (s)		6.0	6.0		6.0	6.0
Vehicle Extension (s)		5.0	5.0		5.0	5.0
Lane Grp Cap (vph)		3491	3631		417	182
v/s Ratio Prot		0.22	c0.49		c0.03	
v/s Ratio Perm						0.02
v/c Ratio		0.32	0.70		0.28	0.14
Uniform Delay, d1		3.9	6.0		25.9	25.4
Progression Factor		0.50	1.00		1.00	1.00
Incremental Delay, d2		0.2	1.2		0.8	0.7
Delay (s)		2.2	7.2		26.7	26.1
Level of Service		A	A		C	C
Approach Delay (s)		2.2	7.2		26.6	
Approach LOS		A	A		C	

Intersection Summary			
HCM 2000 Control Delay	6.5	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.64		
Actuated Cycle Length (s)	65.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	66.1%	ICU Level of Service	C
Analysis Period (min)	15		

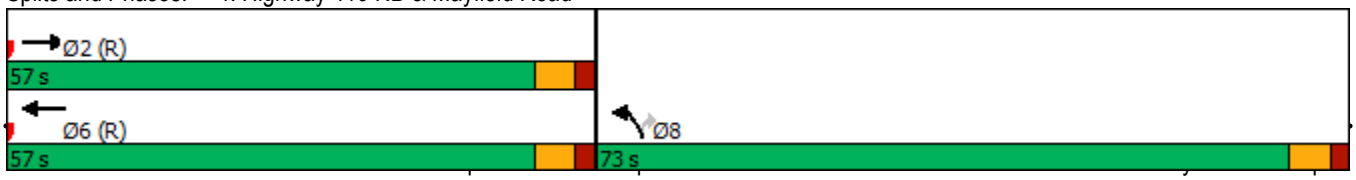
c Critical Lane Group

Lane Group	EBT	WBT	NBL	NBR
Lane Configurations				
Traffic Volume (vph)	1146	2240	1029	1063
Future Volume (vph)	1146	2240	1029	1063
Lane Group Flow (vph)	1146	2240	1433	659
Turn Type	NA	NA	Prot	Perm
Protected Phases	2	6	8	
Permitted Phases	2	6		8
Detector Phase	2	6	8	8
Switch Phase				
Minimum Initial (s)	26.0	26.0	10.0	10.0
Minimum Split (s)	32.0	32.0	22.0	22.0
Total Split (s)	57.0	57.0	73.0	73.0
Total Split (%)	43.8%	43.8%	56.2%	56.2%
Yellow Time (s)	4.0	4.0	4.0	4.0
All-Red Time (s)	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.0	6.0	6.0	6.0
Lead/Lag				
Lead-Lag Optimize?				
Recall Mode	C-Max	C-Max	None	None
v/c Ratio	0.57	1.12	0.84	0.94
Control Delay	31.8	87.4	32.9	51.5
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	31.8	87.4	32.9	51.5
Queue Length 50th (m)	84.2	~248.7	153.2	161.8
Queue Length 95th (m)	99.0	#272.0	184.3	#251.3
Internal Link Dist (m)	104.0	63.2	627.1	
Turn Bay Length (m)				
Base Capacity (vph)	1996	1996	1734	718
Starvation Cap Reductn	0	0	0	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.57	1.12	0.83	0.92

Intersection Summary

Cycle Length: 130
Actuated Cycle Length: 130
Offset: 0 (0%), Referenced to phase 2:EBT and 6:WBT, Start of Green
Natural Cycle: 110
Control Type: Actuated-Coordinated
~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 4: Highway 410 NB & Mayfield Road





Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	1146	0	0	2240	1029	1063
Future Volume (vph)	1146	0	0	2240	1029	1063
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0			6.0	6.0	6.0
Lane Util. Factor	0.91			0.91	0.97	0.91
Frt	1.00			1.00	0.96	0.85
Flt Protected	1.00			1.00	0.97	1.00
Satd. Flow (prot)	4948			4948	3346	1376
Flt Permitted	1.00			1.00	0.97	1.00
Satd. Flow (perm)	4948			4948	3346	1376
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	1146	0	0	2240	1029	1063
RTOR Reduction (vph)	0	0	0	0	10	10
Lane Group Flow (vph)	1146	0	0	2240	1423	649
Heavy Vehicles (%)	6%	0%	0%	6%	1%	8%
Turn Type	NA			NA	Prot	Perm
Protected Phases	2			6	8	
Permitted Phases	2			6		8
Actuated Green, G (s)	52.4			52.4	65.6	65.6
Effective Green, g (s)	52.4			52.4	65.6	65.6
Actuated g/C Ratio	0.40			0.40	0.50	0.50
Clearance Time (s)	6.0			6.0	6.0	6.0
Vehicle Extension (s)	5.0			5.0	3.0	3.0
Lane Grp Cap (vph)	1994			1994	1688	694
v/s Ratio Prot	0.23			c0.45	0.43	
v/s Ratio Perm						c0.47
v/c Ratio	0.57			1.12	0.84	0.94
Uniform Delay, d1	30.1			38.8	27.8	30.2
Progression Factor	1.00			0.65	1.00	1.00
Incremental Delay, d2	1.2			61.7	4.0	19.8
Delay (s)	31.4			86.8	31.8	50.0
Level of Service	C			F	C	D
Approach Delay (s)	31.4			86.8	37.5	
Approach LOS	C			F	D	

Intersection Summary			
HCM 2000 Control Delay	56.4	HCM 2000 Level of Service	E
HCM 2000 Volume to Capacity ratio	1.02		
Actuated Cycle Length (s)	130.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	103.8%	ICU Level of Service	G
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	EBT	EBR	WBL	WBT	NBL
Lane Configurations					
Traffic Volume (vph)	1970	154	71	2246	121
Future Volume (vph)	1970	154	71	2246	121
Lane Group Flow (vph)	1970	154	71	2246	176
Turn Type	NA	Perm	pm+pt	NA	Prot
Protected Phases	2		1	6	4
Permitted Phases		2	6		
Detector Phase	2	2	1	6	4
Switch Phase					
Minimum Initial (s)	12.0	12.0	5.0	12.0	8.0
Minimum Split (s)	26.7	26.7	9.5	26.7	45.6
Total Split (s)	70.5	70.5	13.5	84.0	46.0
Total Split (%)	54.2%	54.2%	10.4%	64.6%	35.4%
Yellow Time (s)	4.6	4.6	3.5	4.6	4.0
All-Red Time (s)	2.1	2.1	1.0	2.1	3.6
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.7	6.7	4.5	6.7	7.6
Lead/Lag	Lag	Lag	Lead		
Lead-Lag Optimize?					
Recall Mode	C-Max	C-Max	None	C-Max	Max
v/c Ratio	0.74	0.18	0.45	0.73	0.33
Control Delay	27.3	6.4	22.7	20.8	34.1
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	27.3	6.4	22.7	20.8	34.1
Queue Length 50th (m)	145.2	5.5	7.0	144.0	31.5
Queue Length 95th (m)	167.8	17.1	17.6	161.2	51.6
Internal Link Dist (m)	203.7			76.6	88.2
Turn Bay Length (m)		65.0	35.0		
Base Capacity (vph)	2663	864	177	3057	528
Starvation Cap Reductn	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.74	0.18	0.40	0.73	0.33

Intersection Summary

Cycle Length: 130
Actuated Cycle Length: 130
Offset: 128 (98%), Referenced to phase 2:EBT and 6:WBTL, Start of Green
Natural Cycle: 95
Control Type: Actuated-Coordinated

Splits and Phases: 5: Ace Drive & Mayfield Road





Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	1970	154	71	2246	121	55
Future Volume (vph)	1970	154	71	2246	121	55
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width	3.7	3.5	3.5	3.7	3.7	3.7
Total Lost time (s)	6.7	6.7	4.5	6.7	7.6	
Lane Util. Factor	0.91	1.00	1.00	0.91	1.00	
Frt	1.00	0.85	1.00	1.00	0.96	
Flt Protected	1.00	1.00	0.95	1.00	0.97	
Satd. Flow (prot)	5142	1566	1750	5142	1744	
Flt Permitted	1.00	1.00	0.06	1.00	0.97	
Satd. Flow (perm)	5142	1566	104	5142	1744	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	1970	154	71	2246	121	55
RTOR Reduction (vph)	0	54	0	0	13	0
Lane Group Flow (vph)	1970	100	71	2246	163	0
Turn Type	NA	Perm	pm+pt	NA	Prot	
Protected Phases	2		1	6	4	
Permitted Phases		2	6			
Actuated Green, G (s)	66.4	66.4	77.3	77.3	38.4	
Effective Green, g (s)	66.4	66.4	77.3	77.3	38.4	
Actuated g/C Ratio	0.51	0.51	0.59	0.59	0.30	
Clearance Time (s)	6.7	6.7	4.5	6.7	7.6	
Vehicle Extension (s)	5.0	5.0	3.0	5.0	5.0	
Lane Grp Cap (vph)	2626	799	142	3057	515	
v/s Ratio Prot	0.38		0.02	c0.44	c0.09	
v/s Ratio Perm		0.06	0.27			
v/c Ratio	0.75	0.12	0.50	0.73	0.32	
Uniform Delay, d1	25.2	16.6	20.0	19.0	35.6	
Progression Factor	1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	2.0	0.3	2.8	1.6	1.6	
Delay (s)	27.2	16.9	22.8	20.6	37.2	
Level of Service	C	B	C	C	D	
Approach Delay (s)	26.5			20.6	37.2	
Approach LOS	C			C	D	

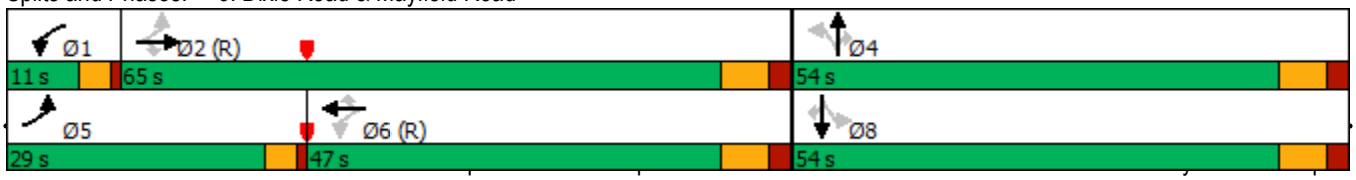
Intersection Summary			
HCM 2000 Control Delay	24.0	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.62		
Actuated Cycle Length (s)	130.0	Sum of lost time (s)	18.8
Intersection Capacity Utilization	68.0%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

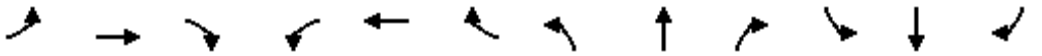
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	480	1375	186	68	1602	59	289	261	38	135	500	674
Future Volume (vph)	480	1375	186	68	1602	59	289	261	38	135	500	674
Lane Group Flow (vph)	480	1375	186	68	1602	59	289	261	38	135	500	674
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	Perm	NA	Perm	Perm	NA	Perm
Protected Phases	5	2		1	6			4			8	
Permitted Phases	2		2	6		6	4		4	8		8
Detector Phase	5	2	2	1	6	6	4	4	4	8	8	8
Switch Phase												
Minimum Initial (s)	5.0	8.0	8.0	5.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0
Minimum Split (s)	9.0	44.9	44.9	9.0	44.9	44.9	47.9	47.9	47.9	47.9	47.9	47.9
Total Split (s)	29.0	65.0	65.0	11.0	47.0	47.0	54.0	54.0	54.0	54.0	54.0	54.0
Total Split (%)	22.3%	50.0%	50.0%	8.5%	36.2%	36.2%	41.5%	41.5%	41.5%	41.5%	41.5%	41.5%
Yellow Time (s)	3.0	4.6	4.6	3.0	4.6	4.6	4.6	4.6	4.6	4.6	4.6	4.6
All-Red Time (s)	1.0	2.3	2.3	1.0	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.3
Lost Time Adjust (s)	-1.0	0.0	0.0	-1.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	3.0	6.9	6.9	3.0	6.9	6.9	6.9	6.9	6.9	6.9	6.9	6.9
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag						
Lead-Lag Optimize?												
Recall Mode	None	C-Max	C-Max	None	C-Max	C-Max	None	None	None	None	None	None
v/c Ratio	1.21	0.62	0.23	0.40	1.06	0.11	1.09	0.20	0.06	0.36	0.40	0.84
Control Delay	148.9	28.3	3.6	23.2	83.9	1.6	122.6	29.0	0.2	34.0	32.1	27.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	148.9	28.3	3.6	23.2	83.9	1.6	122.6	29.0	0.2	34.0	32.1	27.2
Queue Length 50th (m)	~133.8	98.4	0.0	7.7	~164.9	0.0	~83.5	24.0	0.0	25.2	49.9	77.6
Queue Length 95th (m)	#200.3	114.3	13.0	14.9	#194.3	2.3	#138.3	34.2	0.0	43.3	65.1	#142.1
Internal Link Dist (m)		179.3			299.2			185.5			471.5	
Turn Bay Length (m)	140.0		70.0	65.0		30.0	75.0		60.0	30.0		138.0
Base Capacity (vph)	398	2211	825	168	1512	517	264	1322	625	372	1259	801
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	1.21	0.62	0.23	0.40	1.06	0.11	1.09	0.20	0.06	0.36	0.40	0.84

Intersection Summary

Cycle Length: 130
Actuated Cycle Length: 130
Offset: 0 (0%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green
Natural Cycle: 125
Control Type: Actuated-Coordinated
~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 6: Dixie Road & Mayfield Road





Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	480	1375	186	68	1602	59	289	261	38	135	500	674
Future Volume (vph)	480	1375	186	68	1602	59	289	261	38	135	500	674
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5
Total Lost time (s)	3.0	6.9	6.9	3.0	6.9	6.9	6.9	6.9	6.9	6.9	6.9	6.9
Lane Util. Factor	1.00	0.91	1.00	1.00	0.91	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1700	4768	1566	1342	4902	1452	1750	3650	1551	1653	3476	1551
Flt Permitted	0.09	1.00	1.00	0.18	1.00	1.00	0.40	1.00	1.00	0.59	1.00	1.00
Satd. Flow (perm)	162	4768	1566	255	4902	1452	730	3650	1551	1027	3476	1551
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	480	1375	186	68	1602	59	289	261	38	135	500	674
RTOR Reduction (vph)	0	0	101	0	0	41	0	0	24	0	0	239
Lane Group Flow (vph)	480	1375	85	68	1602	18	289	261	14	135	500	435
Heavy Vehicles (%)	5%	10%	2%	33%	7%	10%	2%	0%	3%	8%	5%	3%
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	Perm	NA	Perm	Perm	NA	Perm
Protected Phases	5	2		1	6			4			8	
Permitted Phases	2		2	6		6	4		4	8		8
Actuated Green, G (s)	69.1	59.5	59.5	45.7	40.1	40.1	47.1	47.1	47.1	47.1	47.1	47.1
Effective Green, g (s)	70.1	59.5	59.5	47.7	40.1	40.1	47.1	47.1	47.1	47.1	47.1	47.1
Actuated g/C Ratio	0.54	0.46	0.46	0.37	0.31	0.31	0.36	0.36	0.36	0.36	0.36	0.36
Clearance Time (s)	4.0	6.9	6.9	4.0	6.9	6.9	6.9	6.9	6.9	6.9	6.9	6.9
Vehicle Extension (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Lane Grp Cap (vph)	394	2182	716	148	1512	447	264	1322	561	372	1259	561
v/s Ratio Prot	c0.24	0.29		0.02	0.33			0.07			0.14	
v/s Ratio Perm	c0.41		0.05	0.14		0.01	c0.40		0.01	0.13		0.28
v/c Ratio	1.22	0.63	0.12	0.46	1.06	0.04	1.09	0.20	0.02	0.36	0.40	0.78
Uniform Delay, d1	41.5	26.9	20.2	27.4	45.0	31.5	41.4	28.5	26.7	30.4	30.9	36.8
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	119.2	1.4	0.3	4.7	40.7	0.2	83.1	0.2	0.0	1.3	0.4	7.7
Delay (s)	160.7	28.3	20.6	32.1	85.7	31.7	124.5	28.6	26.7	31.7	31.3	44.5
Level of Service	F	C	C	C	F	C	F	C	C	C	C	D
Approach Delay (s)		58.7			81.7			75.6			38.1	
Approach LOS		E			F			E			D	

Intersection Summary			
HCM 2000 Control Delay	62.7	HCM 2000 Level of Service	E
HCM 2000 Volume to Capacity ratio	1.20		
Actuated Cycle Length (s)	130.0	Sum of lost time (s)	16.8
Intersection Capacity Utilization	108.0%	ICU Level of Service	G
Analysis Period (min)	15		

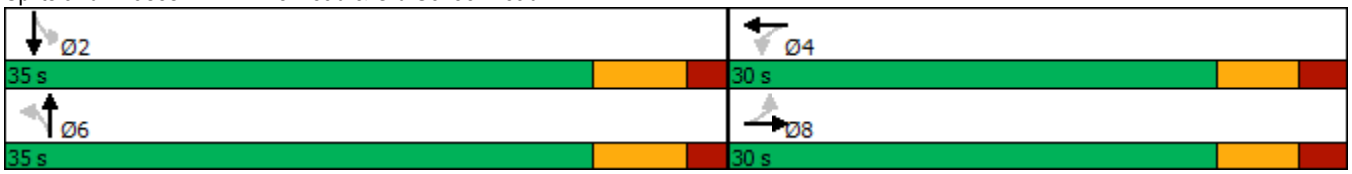
c Critical Lane Group

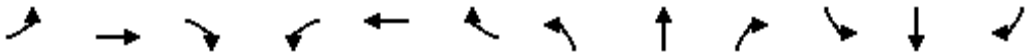
Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations								
Traffic Volume (vph)	51	121	84	307	68	661	6	310
Future Volume (vph)	51	121	84	307	68	661	6	310
Lane Group Flow (vph)	51	141	84	325	68	705	6	331
Turn Type	Perm	NA	Perm	NA	Perm	NA	Perm	NA
Protected Phases		8		4		6		2
Permitted Phases	8		4		6		2	
Detector Phase	8	8	4	4	6	6	2	2
Switch Phase								
Minimum Initial (s)	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0
Minimum Split (s)	25.4	25.4	25.4	25.4	23.6	23.6	23.6	23.6
Total Split (s)	30.0	30.0	30.0	30.0	35.0	35.0	35.0	35.0
Total Split (%)	46.2%	46.2%	46.2%	46.2%	53.8%	53.8%	53.8%	53.8%
Yellow Time (s)	4.0	4.0	4.0	4.0	4.6	4.6	4.6	4.6
All-Red Time (s)	2.4	2.4	2.4	2.4	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.4	6.4	6.4	6.4	6.6	6.6	6.6	6.6
Lead/Lag								
Lead-Lag Optimize?								
Recall Mode	None	None	None	None	Max	Max	Max	Max
v/c Ratio	0.23	0.26	0.24	0.60	0.13	0.78	0.03	0.39
Control Delay	18.0	15.1	17.1	22.2	10.6	22.1	10.3	12.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	18.0	15.1	17.1	22.2	10.6	22.1	10.3	12.0
Queue Length 50th (m)	4.1	10.2	6.8	28.9	3.6	56.1	0.3	19.7
Queue Length 95th (m)	11.0	21.0	15.3	49.2	11.5	#135.4	2.3	44.3
Internal Link Dist (m)		1372.4		151.6		1413.7		144.7
Turn Bay Length (m)	35.0		45.0		40.0		35.0	
Base Capacity (vph)	315	752	503	764	511	900	202	859
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.16	0.19	0.17	0.43	0.13	0.78	0.03	0.39

Intersection Summary

Cycle Length: 65
Actuated Cycle Length: 58.5
Natural Cycle: 60
Control Type: Semi Act-Uncoord
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 7: Dixie Road & Old School Road





Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	51	121	20	84	307	18	68	661	44	6	310	21
Future Volume (vph)	51	121	20	84	307	18	68	661	44	6	310	21
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5
Total Lost time (s)	6.4	6.4		6.4	6.4		6.6	6.6		6.6	6.6	
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	0.99		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)	1566	1833		1767	1876		1785	1838		1785	1755	
Flt Permitted	0.47	1.00		0.67	1.00		0.56	1.00		0.22	1.00	
Satd. Flow (perm)	777	1833		1241	1876		1049	1838		416	1755	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	51	121	20	84	307	18	68	661	44	6	310	21
RTOR Reduction (vph)	0	10	0	0	4	0	0	4	0	0	4	0
Lane Group Flow (vph)	51	131	0	84	321	0	68	701	0	6	327	0
Heavy Vehicles (%)	14%	3%	0%	1%	1%	11%	0%	2%	27%	0%	9%	0%
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)	16.9	16.9		16.9	16.9		28.6	28.6		28.6	28.6	
Effective Green, g (s)	16.9	16.9		16.9	16.9		28.6	28.6		28.6	28.6	
Actuated g/C Ratio	0.29	0.29		0.29	0.29		0.49	0.49		0.49	0.49	
Clearance Time (s)	6.4	6.4		6.4	6.4		6.6	6.6		6.6	6.6	
Vehicle Extension (s)	5.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0	
Lane Grp Cap (vph)	224	529		358	541		512	898		203	858	
v/s Ratio Prot		0.07			c0.17			c0.38			0.19	
v/s Ratio Perm	0.07			0.07			0.06			0.01		
v/c Ratio	0.23	0.25		0.23	0.59		0.13	0.78		0.03	0.38	
Uniform Delay, d1	15.8	15.9		15.9	17.9		8.2	12.4		7.8	9.4	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	1.1	0.5		0.7	2.6		0.5	6.7		0.3	1.3	
Delay (s)	16.9	16.4		16.6	20.5		8.7	19.1		8.0	10.7	
Level of Service	B	B		B	C		A	B		A	B	
Approach Delay (s)		16.6			19.7			18.1			10.6	
Approach LOS		B			B			B			B	

Intersection Summary			
HCM 2000 Control Delay	16.9	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.71		
Actuated Cycle Length (s)	58.5	Sum of lost time (s)	13.0
Intersection Capacity Utilization	89.7%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	35	12	457	13	7	158
Future Volume (Veh/h)	35	12	457	13	7	158
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)	38	13	497	14	8	172
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	692	504			511	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	692	504			511	
tC, single (s)	6.5	6.3			4.1	
tC, 2 stage (s)						
tF (s)	3.6	3.4			2.2	
p0 queue free %	90	98			99	
cM capacity (veh/h)	398	556			1054	

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	51	511	180
Volume Left	38	0	8
Volume Right	13	14	0
cSH	429	1700	1054
Volume to Capacity	0.12	0.30	0.01
Queue Length 95th (m)	3.1	0.0	0.2
Control Delay (s)	14.5	0.0	0.4
Lane LOS	B		A
Approach Delay (s)	14.5	0.0	0.4
Approach LOS	B		

Intersection Summary			
Average Delay	1.1		
Intersection Capacity Utilization	34.8%	ICU Level of Service	A
Analysis Period (min)	15		



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	35	12	456	13	7	125
Future Volume (Veh/h)	35	12	456	13	7	125
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)	38	13	496	14	8	136
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	655	503			510	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	655	503			510	
tC, single (s)	6.5	6.3			4.1	
tC, 2 stage (s)						
tF (s)	3.6	3.4			2.2	
p0 queue free %	91	98			99	
cM capacity (veh/h)	418	557			1055	

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	51	510	144
Volume Left	38	0	8
Volume Right	13	14	0
cSH	447	1700	1055
Volume to Capacity	0.11	0.30	0.01
Queue Length 95th (m)	2.9	0.0	0.2
Control Delay (s)	14.1	0.0	0.5
Lane LOS	B		A
Approach Delay (s)	14.1	0.0	0.5
Approach LOS	B		

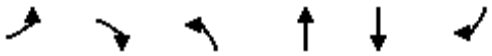
Intersection Summary			
Average Delay	1.1		
Intersection Capacity Utilization	34.8%	ICU Level of Service	A
Analysis Period (min)	15		



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	34	12	454	14	6	92
Future Volume (Veh/h)	34	12	454	14	6	92
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)	37	13	493	15	7	100
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	614	500			508	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	614	500			508	
tC, single (s)	6.5	6.3			4.1	
tC, 2 stage (s)						
tF (s)	3.6	3.4			2.2	
p0 queue free %	92	98			99	
cM capacity (veh/h)	442	559			1057	

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	50	508	107
Volume Left	37	0	7
Volume Right	13	15	0
cSH	468	1700	1057
Volume to Capacity	0.11	0.30	0.01
Queue Length 95th (m)	2.7	0.0	0.2
Control Delay (s)	13.6	0.0	0.6
Lane LOS	B		A
Approach Delay (s)	13.6	0.0	0.6
Approach LOS	B		

Intersection Summary			
Average Delay	1.1		
Intersection Capacity Utilization	34.7%	ICU Level of Service	A
Analysis Period (min)	15		



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	20	66	26	737	394	11
Future Volume (Veh/h)	20	66	26	737	394	11
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)	22	72	28	801	428	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	884	214	440			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	884	214	440			
tC, single (s)	7.0	7.1	4.1			
tC, 2 stage (s)						
tF (s)	3.6	3.4	2.2			
p0 queue free %	92	91	97			
cM capacity (veh/h)	265	770	1116			

Direction, Lane #	EB 1	NB 1	NB 2	NB 3	SB 1	SB 2	SB 3
Volume Total	94	28	400	400	214	214	12
Volume Left	22	28	0	0	0	0	0
Volume Right	72	0	0	0	0	0	12
cSH	532	1116	1700	1700	1700	1700	1700
Volume to Capacity	0.18	0.03	0.24	0.24	0.13	0.13	0.01
Queue Length 95th (m)	4.8	0.6	0.0	0.0	0.0	0.0	0.0
Control Delay (s)	13.2	8.3	0.0	0.0	0.0	0.0	0.0
Lane LOS	B	A					
Approach Delay (s)	13.2	0.3			0.0		
Approach LOS	B						

Intersection Summary			
Average Delay	1.1		
Intersection Capacity Utilization	32.2%	ICU Level of Service	A
Analysis Period (min)	15		