



TOWN OF CALEDON
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October 17th, 2025

Tribal Partners (Canada) Inc.
and its management arm TDMSI

TRANSPORTATION IMPACT STUDY

Proposed Industrial Development

12506 and 12698 Heart Lake Road,
Town of Caledon

October 2025

26039



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October 15, 2025

Reference Number: 26039

Tribal Partners (Canada) Inc.
And its management arm TDMSI

Carleigh Oude-Reimerink
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Dear Carleigh Oude-Reimerink,

RE: Transportation Impact Study
Proposed Industrial Development
12506 and 12698 Heart Lake Road, Town of Caledon

LEA Consulting Ltd. (LEA) is pleased to present the findings of our Transportation Impact Study (TIS) for the proposed industrial development located at 12506 and 12698 Heart Lake Road in the Town of Caledon. This TIS has been prepared for Tribal Partners Canada Inc, and its management arm TDMSI ("Client") in support of the Official Plan Amendment (OPA) and Zoning By-law Amendment (ZBA) applications for the proposed development. This report concludes that the traffic associated with the proposed development maintains acceptable conditions for the road network in the surrounding area.

Please do not hesitate to contact the undersigned should you have any additional questions or concerns.

Yours truly,
LEA CONSULTING LTD.

Debang Chen, P.Eng., M.Eng.
Project Manager, Transportation

Harkarandeep Bains, EIT
Project Coordinator

Encl. Transportation Impact Study – 12506 and 12698 Heart Lake Road, Town of Caledon
(October 2025)

Disclaimer

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1 INTRODUCTION

LEA Consulting Ltd. (LEA) has been retained by Tribal Partners (Canada) Inc., and its management arm TDMSI to undertake a Transportation Impact Study (TIS) for the proposed industrial development located at 12506 and 12698 Heart Lake Road in the Town of Caledon (herein referred to as the “subject site”). This TIS has been prepared in support of the Official Plan Amendment (OPA) and Zoning By-Law Amendment (ZBA) applications for the subject site.

The subject site is located south of Old School Road, west of Heart Lake Road, north of Abbotside Way, and east of Bonnieglen Farm Boulevard as illustrated in Figure 1-1.

Figure 1-1: Subject Site Location



Source: Google Maps, September 2025

The purpose of this study is to review the existing transportation infrastructure in the surrounding network including the road network, transit network and active transportation network. This TIS assesses the existing conditions (year 2025) and a future horizon year of 2036 and 2041. Both the weekday AM and PM peak hours will be assessed, and the study will also identify any required mitigation measures.

In addition, this report will review the proposed parking supply against the by-law requirements and will also review the proposed loading supply and functionality of the subject site. Finally, this study will provide a Transportation Demand Management (TDM) Plan to support reduced single-occupant vehicle trips for the subject site.

The study scope is consistent with the Town of Caledon’s Transportation Impact Studies: Terms of Reference and Guidelines (March 2017), and the Region of Peel’s Traffic Impact Study Guidelines. The Terms of Reference (TOR) prepared for this study and the relevant correspondence is provided in Appendix A.

1.1 PROPOSED DEVELOPMENT

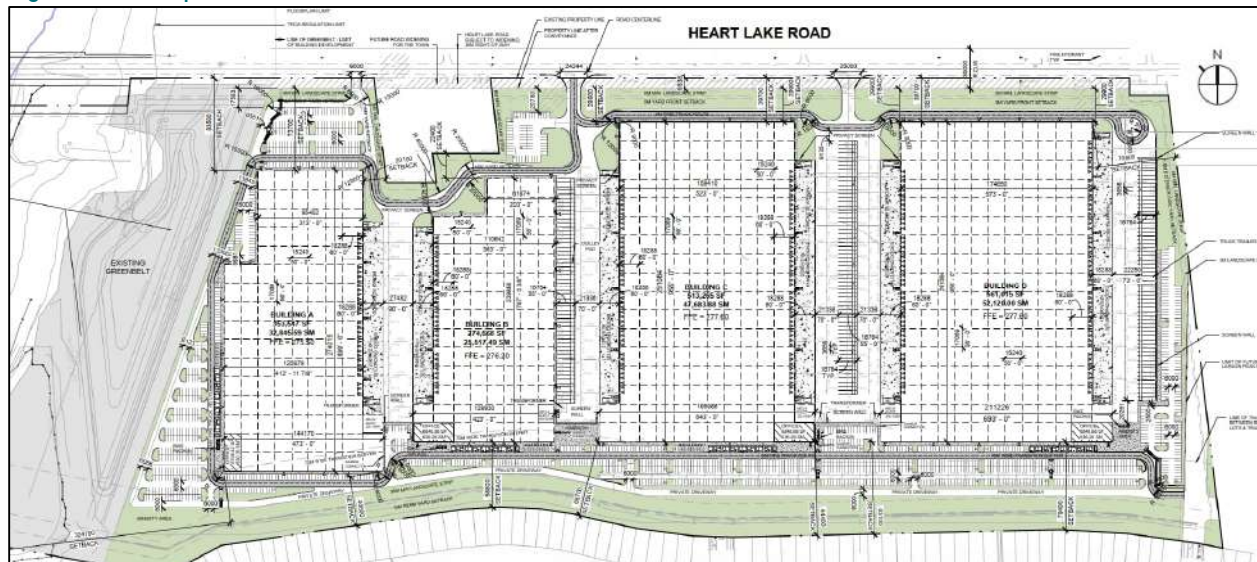
The development proposal will introduce four (4) industrial warehouse buildings with a total ground floor area (GFA) of 158,167m² (1,702,495 ft²) and 1,421 parking spaces. The proposed site statistics are presented in Table 1-1.

Table 1-1: Proposed Site Statistics

Building	Land Use	GFA (m ²)
Building A	Industrial Warehouse	32,846
Building B	Industrial Warehouse	25,517
Building C	Industrial Warehouse	47,684
Building D	Industrial Warehouse	52,120

The proposed development will be accessible via three (3) site accesses at Heart Lake Road and one (1) site access at Larson Peak Road. Site access for the development at Heart Lake Road and Larson Peak Road will all be unsignalized and T-shaped. The proposed site plan is shown in Figure 1-2.

Figure 1-2: Proposed Site Plan



Source: Powers Brown Architecture, October 2025

2 EXISTING TRANSPORTATION CONDITIONS

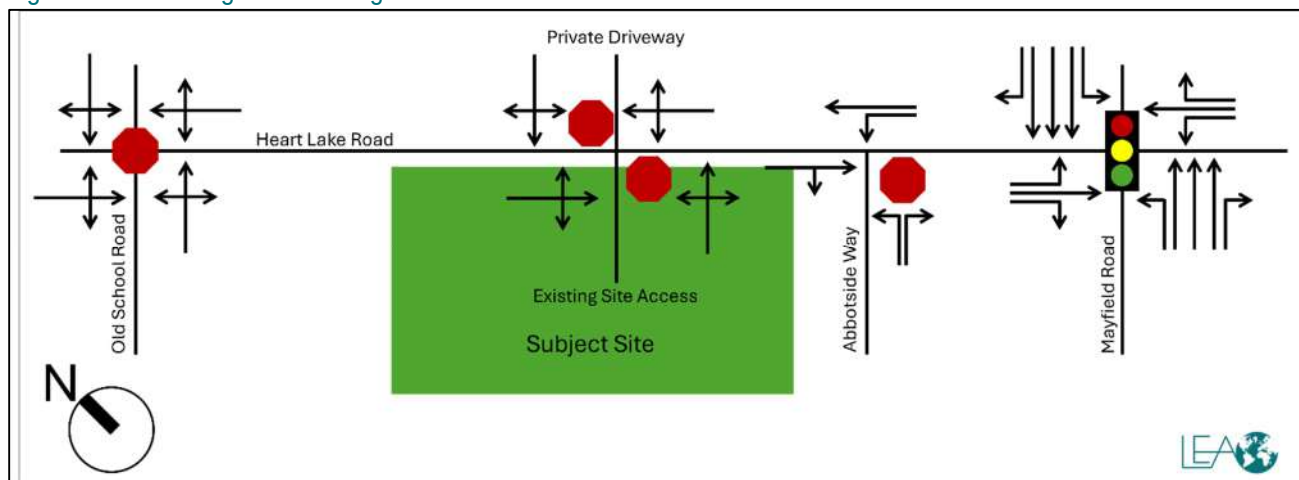
This section will identify and assess the existing transportation conditions present in the study area, including the road, transit, cyclist, and pedestrian networks. The study area was determined based on the size of the development, its anticipated transportation impact, as well as through discussions with Town and Region staff. The study area will include the following intersections:

- ▶ Heart Lake Rd at Old School Rd (Unsignalized);
- ▶ Heart Lake Rd at Existing Site Dwy / Private Dwy (Unsignalized);
- ▶ Heart Lake Rd at Abbotside Way (Unsignalized); and
- ▶ Heart Lake Rd at Mayfield Rd (Signalized).

2.1 EXISTING ROAD NETWORK

The following section provides a description and classification of the roadways within the study area, with Figure 2-1 illustrating the existing lane configuration.

Figure 2-1: Existing Lane Configuration



Abbotside Way is an east-west local road under the jurisdiction of the Town of Caledon. The roadway operates with a four (4) lane cross-section (two lanes per direction) and has a posted speed limit of 40 km/h within the study area. The roadway operates between Heart Lake Road and Kennedy Road North within the Town of Caledon.

Old School Road is an east-west collector road under the jurisdiction of the Town of Caledon. The roadway operates with a two-lane cross-section (one lane per direction) and has a posted speed limit of 70 km/h within the study area. The roadway operates between Winston Churchill Boulevard and Airport Road in the Town of Caledon.

Heart Lake Road is a north-south collector road under the jurisdiction of the Town of Caledon. The roadway has a posted speed limit of 80 km/h and operates with a two-lane cross-section (one lane per direction) within the study area. The Town of Caledon restricts heavy vehicle traffic on Heart Lake Road. The roadway operates between Bovaird Drive East in the Town of Brampton and Highway 9 in the Town of Orangeville.

Mayfield Road is an east-west arterial road within the study area, under the jurisdiction of the Region of Peel. The roadway has a posted speed limit of 80 km/h and operates with a six-lane cross-section (three lanes per direction) west of Dixie Road until approximately 275 m west of Heart Lake Road, and a five-lane cross-section (three lanes eastbound, 2 lanes westbound) between Dixie Road and Bramalea Road.

Dougall Avenue is an east-west local road under the jurisdiction of the Town of Caledon. A PARC meeting was held on July 17, 2025, with preliminary comments on the development concept being provided by Town staff. A comment from Engineering Services (Item 7) identified the need for two east-west collector road extensions (Dougall Avenue and Larson Peak Road).

The Town would like Dougall Avenue to be extended to Heart Lake Road to improve connectivity, and is being requested to be shown on the site plan for the OPA/ZBA application. The current concept plan incorporates the Larson Peak extension and will be aligned with the adjacent lands to the south (12304 Heart Lake Road), which currently has an active development application for an employment use.

Upon review, an extended Dougall Avenue through the site, and beyond, creates several conflicts. Primarily, we have concerns with the safety and compatibility of mixing the residential character of Dougall Avenue through an employment area. Introducing a direct connection through a future employment/industrial development to Heart Lake Road would generate mixed traffic types, including heavy trucks, that are incompatible with the residential nature of the street. In addition, the mixed residential and industrial traffic could raise safety concerns for local residents, which is inconsistent with transportation planning principles that emphasize the separation of incompatible traffic types wherever feasible.

Secondly, an extended Dougall Avenue would cause conflicts with the planned Highway 410 extension to the planned Highway 413. Any proposed alignment of Dougall Avenue at this time may result in future conflicts with the planning and design of the highway infrastructure or require a costly underpass or overpass design.

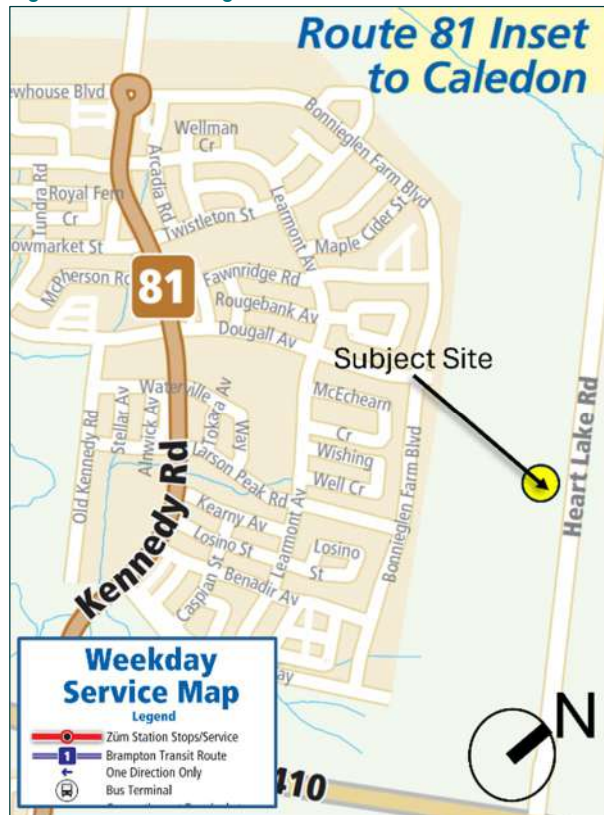
And finally, the proposed extension of Larson Peak Road is expected to accommodate anticipated traffic volumes and supports connectivity to the broader road network. From a road network planning perspective, requiring a second parallel collector of a Dougall Avenue extension which is only approximately 400 apart, would be redundant.

For these reasons, we do not support, and do not find benefit in extending Dougall Avenue through the site to Heart Lake Road, as such, we have not identified a Dougall Avenue extension.

2.2 EXISTING TRANSIT NETWORK

The subject site is in an area of Caledon that has limited access to the existing public transit network. The Town of Caledon currently does not operate public transit within this area of the municipality. West of the site, within a 4-minute drive there is an existing bus route operated by the City of Brampton's Transit which provides access to the broader Brampton transit network. Available transit services in the surrounding area are illustrated in Figure 2-2 with service details provided below.

Figure 2-2: Existing Transit Network



Source: City of Brampton Transit Map, August 2025

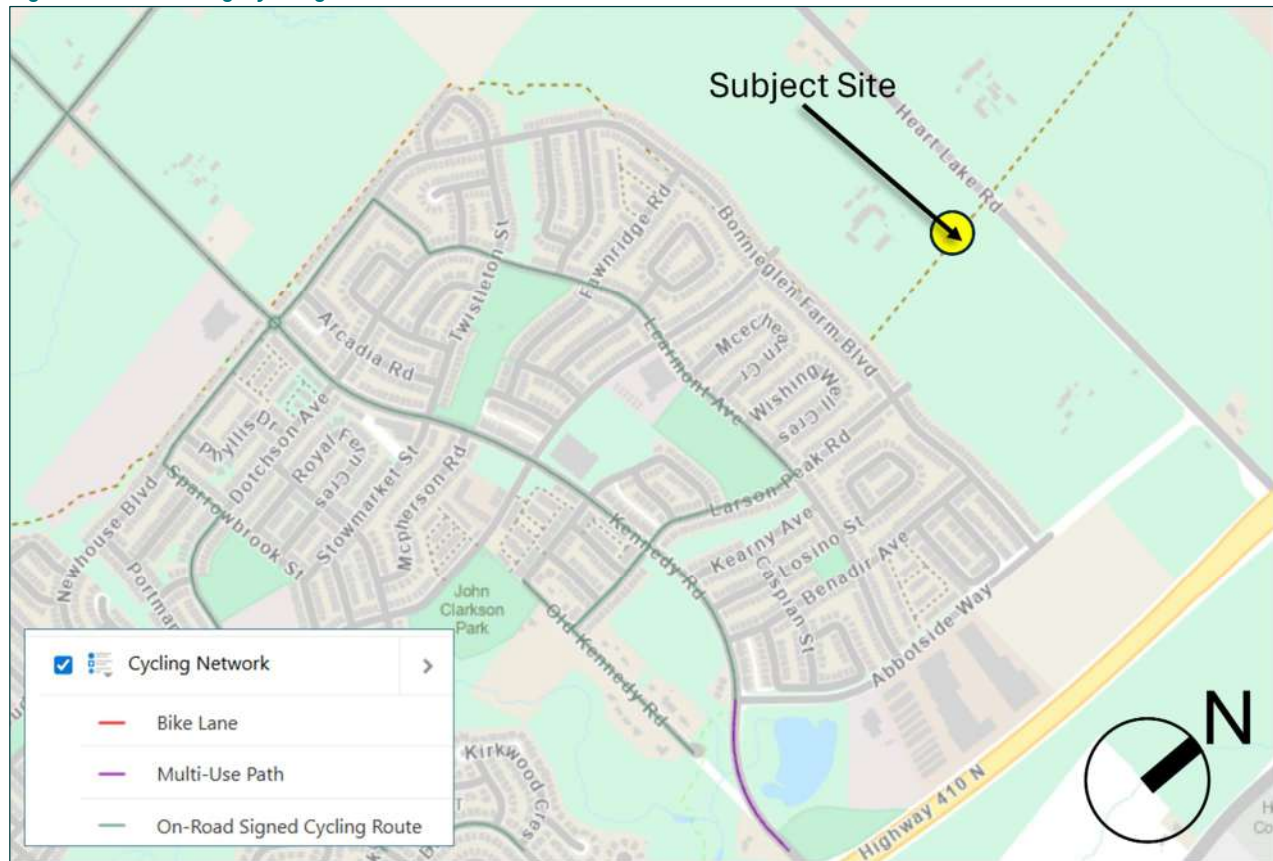
Brampton Transit Route 81 – Mayfield West is a bus route that generally operates in a north-south direction between the area of Newhouse Boulevard and Kennedy Road and Sandalwood Loop. The route operates regular all day, everyday service with 45-minutes or better headways during weekday peak periods.

Access Location: BTR 81 is accessible at the intersection of Kennedy Road & Abbotside Way, approximately 2.4 km west from the subject site.

2.3 EXISTING CYCLING NETWORK

The subject site is in an area within the Town of Caledon that has limited access to the existing cycling network. The nearest cycling facilities are located within the residential neighbourhood west of the site. These on-road signed cycling routes connect to other on-road signed cycling routes along Old School Road and Kennedy Road. The cycling network surrounding the subject site is illustrated in Figure 2-3.

Figure 2-3: Existing Cycling Network



Source: Trails and Cycling Routes – Town of Caledon Maps (2025)

2.4 EXISTING PEDESTRIAN NETWORK

As the area surrounding the subject site consists of mainly agriculture lands, there is minimal pedestrian infrastructure available. Despite the absence of sidewalks in the immediate surrounding area, there are crosswalks available at the signalized intersection of Mayfield Road & Heart Lake Road. It should be noted that sidewalks are provided along both sides of Mayfield Road to facilitate pedestrian travel.

2.5 TRAFFIC DATA COLLECTION

Turning movement counts (TMCs) were used as the source of traffic data in the intersection capacity analyses. The traffic counts for the intersections noted in Table 2-1 were collected by LEA on June 12 and June 26, 2025. Signal Timing Plans (STPs) and a Peak Hour Factor default value of 1.00 were provided by the Region of Peel. A summary of traffic data collected for this study is summarized in Table 2-1, with detailed TMCs provided in Appendix B.

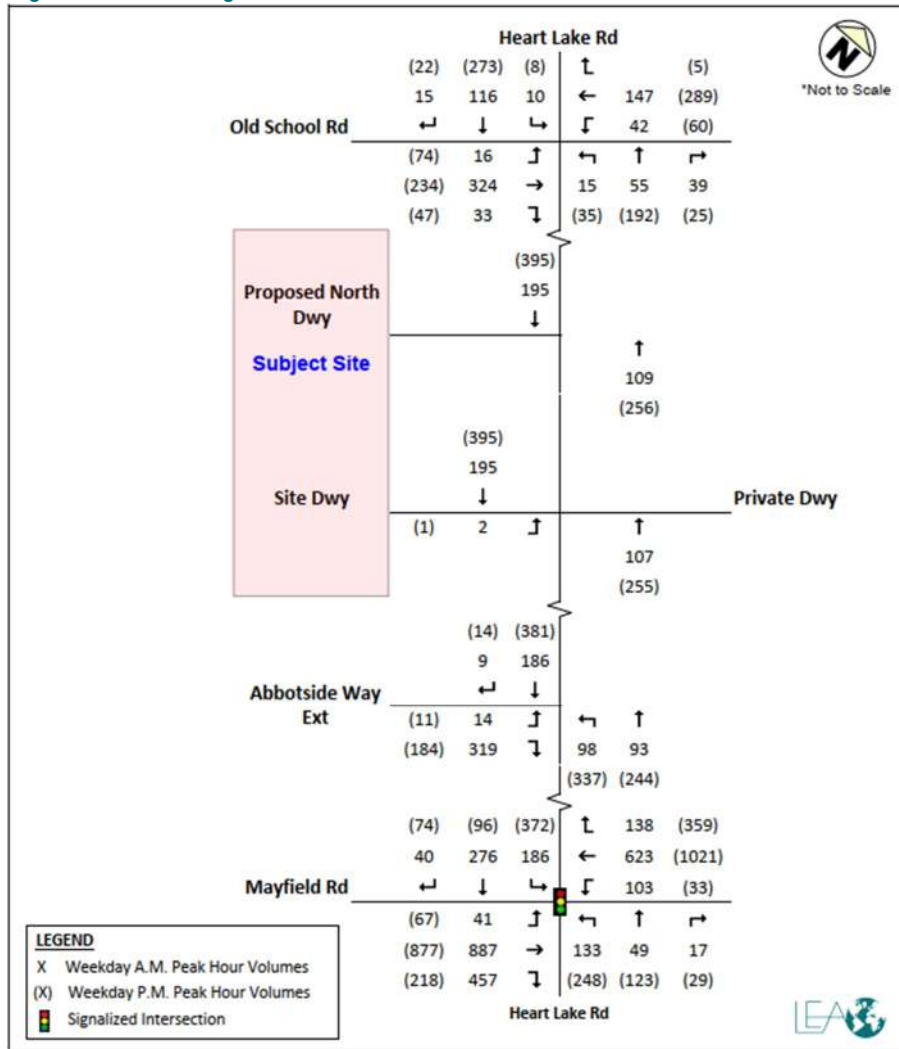
Table 2-1: Traffic Data Collection Summary

Intersection	TMC Date	Source
Heart Lake Rd at Mayfield Rd	Tues. June 12, 2025	LEA
Heart lake Rd & Old School Rd		
Heart Lake Rd & Existing site / Private driveway		
Heart Lake Rd & Abbotside Way	Thurs. June 26, 2025	

2.6 EXISTING TRAFFIC VOLUMES

Under existing conditions, one (1) unsignalized four-way site access driveway at Heart Lake Road is assumed with eastbound and westbound movements under stop control. The existing traffic volumes in the study area during the weekday peak hours are illustrated in Figure 2-4.

Figure 2-4: Existing Traffic Volumes



3 FUTURE BACKGROUND TRANSPORTATION CONDITIONS

For the analysis of the future background traffic conditions, this study considers a future horizon year of 2036 and 2041. Future background traffic includes the traffic added to the network from other future developments within the surrounding area, corridor growth, as well as all planned infrastructure improvements within the study area.

3.1 FUTURE ROAD IMPROVEMENTS

The following section summarizes the proposed road network improvements within the study area.

Larson Peak Road Extension

It is understood that Larson Peak Road is planned to be extended to the east of Heart Lake Road. At the time of this study, no known timeline for implementation is available. As such, no capacity analysis has been undertaken.

Heart Lake Road

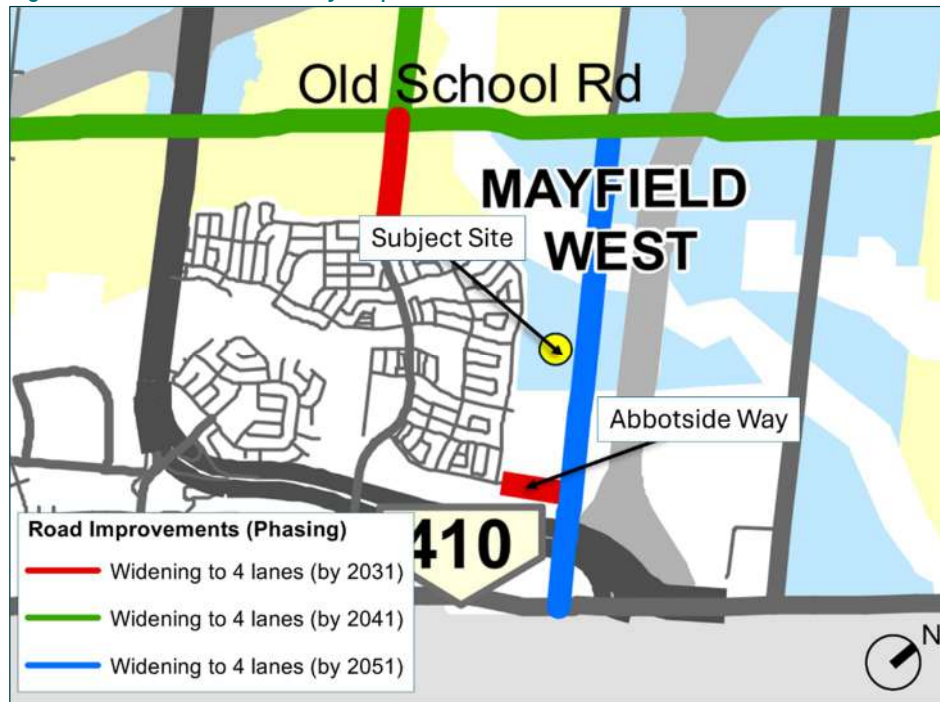
- ▶ Road widening of Heart Lake Road from two (2) to four (4) lanes from south of Mayfield Road up to Old School Road.
- ▶ Note, there is evidence suggested in the Peel Official Plan (2024 Consolidated) for widening Heart Lake Road to four (4) lanes up to Old School Road. While the Caledon Official Plan (2024 Consolidated) also suggests a widening of four (4) lanes along Heart Lake Road towards Highway 410, but two (2) lanes up to Highway 9.

To be conservative, this analysis assumes a road widening of four (4) lanes up to Old School Road.

Unsignalized Intersections along Heart Lake Road

Other roadway improvements proposed along Heart Lake Road include Left Through and Through Right lanes for unsignalized northbound and southbound lanes. As noted in Figure 3-1, Road widening is to take place along both Old School Road and Heart Lake Road.

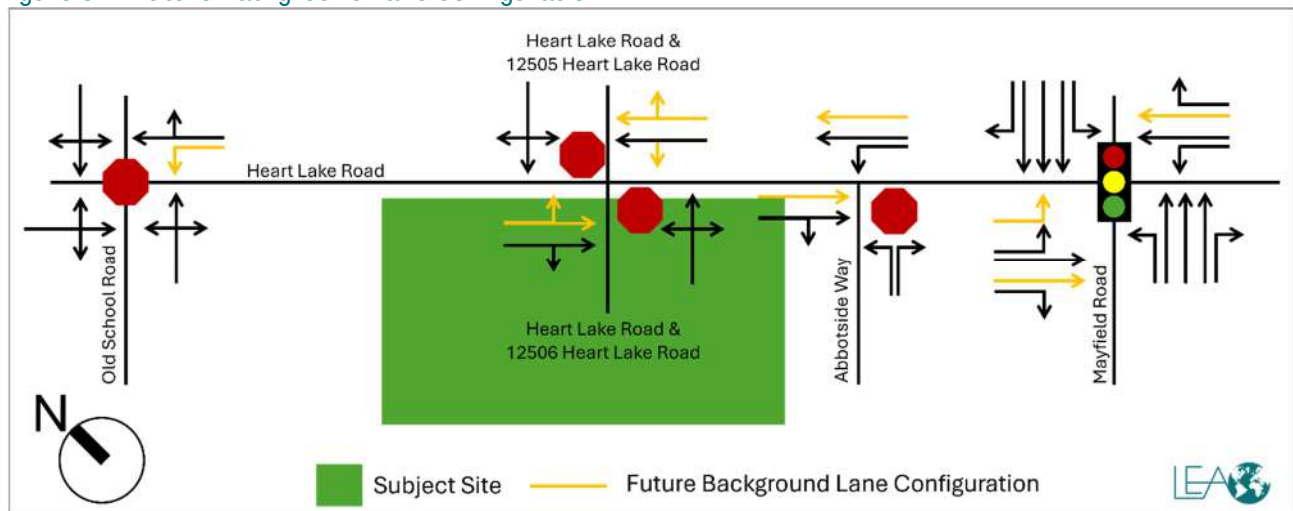
Figure 3-1: Future Roadway Improvements



Source: Town of Caledon Multi-Modal Transportation Master Plan, June 2024

Changes to the existing lane configuration under future background conditions are illustrated in Figure 3-2.

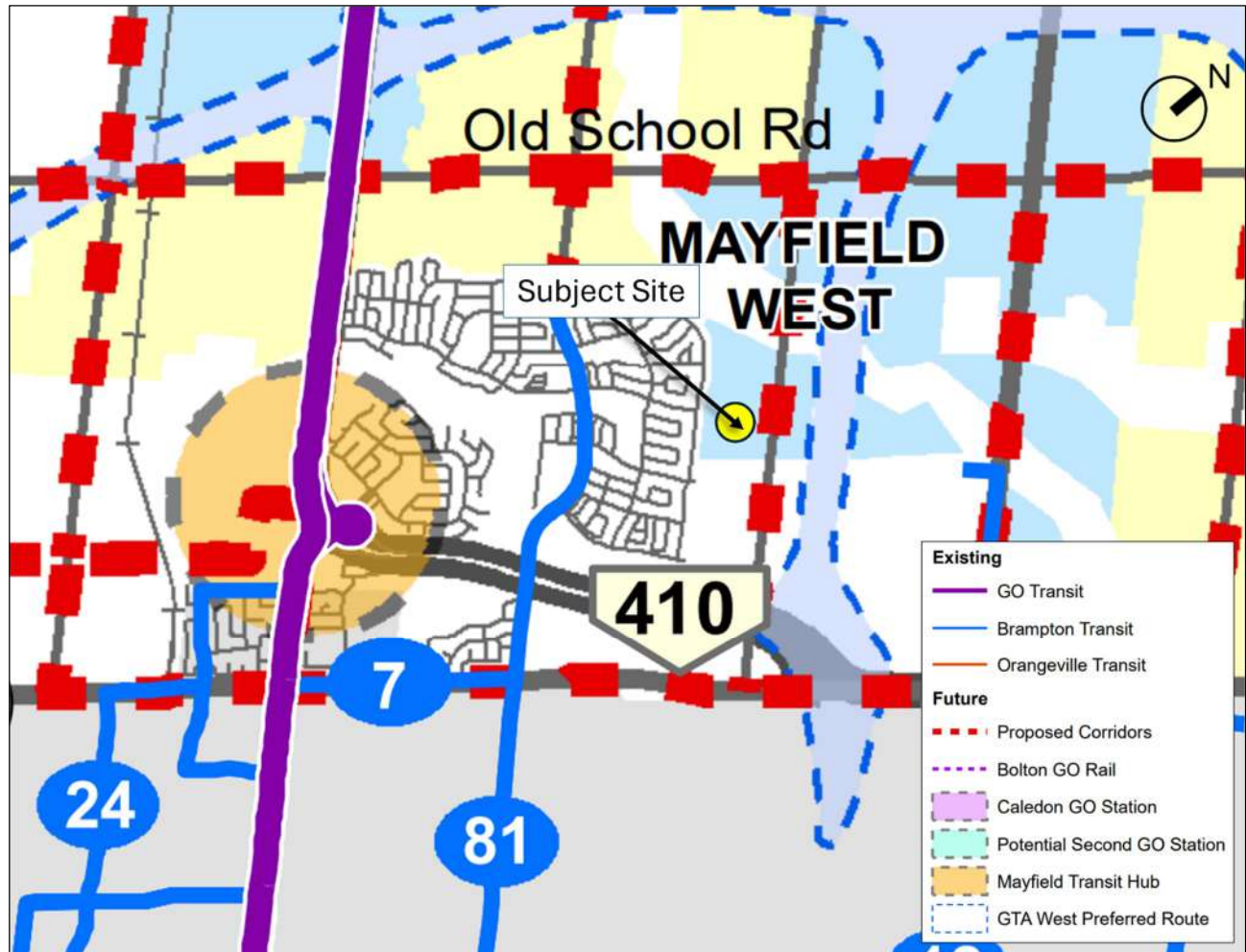
Figure 3-2: Future Background Lane Configuration



3.2 FUTURE TRANSIT NETWORK

The subject site is in an area where there are proposed improvements to the transit network as noted in the Town of Caledon's Multi-Modal Transportation Master Plan (MMTMP) June 2024. As noted in the MMTMP June 2024 report, there are transit corridors proposed along Heart Lake Road, Old School Road, and Mayfield Road that will provide future employees access to the proposed development. West of the site a transit hub is being proposed near the area of Highway 401 and Hurontario Street. This hub will allow people living further away from the development better access to the development via the proposed transit corridors. The proposed cycling facilities surrounding the subject site are illustrated in Figure 3-3.

Figure 3-3: Multi-Modal Transportation Master Plan Future – Future Transit Network

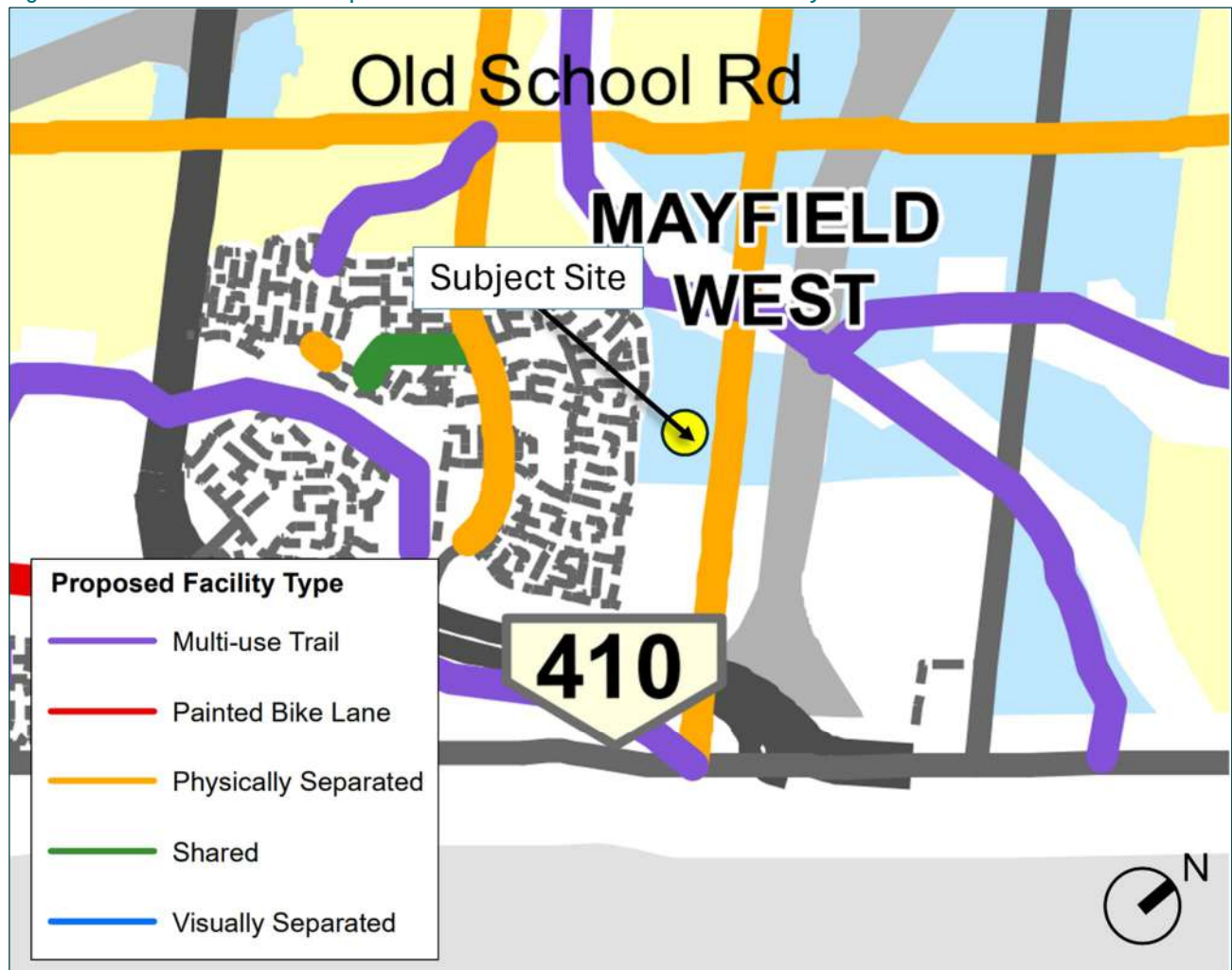


Source: Town of Caledon Multi-Modal Transportation Master Plan, June 2024

3.3 FUTURE CYCLING IMPROVEMENTS

The subject site is in an area where there are proposed improvements to the cycling network as noted in the Town of Caledon's Multi-Modal Transportation Master Plan (MMTMP) June 2024. As noted in the MMTMP June 2024 report, future physically separated cycling facilities are proposed along Old School Road and Heart Lake Road. There is also a proposed multi-use trail north of the site which connects to the proposed separate cycling facilities along both Old School Road and Heart Lake Road. The proposed cycling facilities surrounding the subject site are illustrated in Figure 3-4.

Figure 3-4: Multi-Modal Transportation Master Plan Future – Future Cycle Network



Source: Town of Caledon Multi-Modal Transportation Master Plan, June 2024

3.4 CORRIDOR GROWTH

Corridor growth rates for the study area were determined by comparing background growth rates from other TIS reports. A review of these growth rates for each corridor are provided below while full corridor details are provided in Appendix C.

- ▶ Heart Lake Road: 2%
- ▶ Mayfield Road: 2.5% (based on Peel and Caledon input for the 12304 Heart Lake Road TIS [Nov. 21, 2021, TIS] and 12505 Heart Lake Road [Aug 8, 2022, TIS] by IBI Group).
- ▶ Old School Rd: 2%

3.5 BACKGROUND DEVELOPMENTS

A summary of background developments is provided in Table 3-1 with their location in relation to the subject site are illustrated in Figure 3-5. Information regarding each background development can be found in Appendix D.

Table 3-1: Future Background Developments

#	Location	Proposed Development	Source of Traffic Volumes
1	Snell's Hollow	1,444 residential units Ground floor commercial (size unknown)	NexTrans TIS November 2024 Figures 12A and 12B
2	12304 Heart Lake Rd	844,812 ft ² Warehouse space	IBI group TIS April 25, 2022 Exhibit 8-4 and 8.5
3	Mayfield West – Phase 1 Stage 2	1,329 residential units	BA Group TIS September 2021 Figure 16 – With GTA West Hwy Figure 17 - Without GTA west Hwy
4	12505 Heart Lake Rd	1,085,991ft ² Warehouse space	IBI group TIS August 8, 2022 Exhibit 7-5

Figure 3-5: Future Background Development Location



Source: Google Earth Pro accessed September 2025

3.6 FUTURE BACKGROUND TRAFFIC VOLUMES

The future background traffic volumes were determined by incorporating future background traffic to the existing traffic volumes and future background development traffic volumes. The future background volumes are illustrated in Figure 3-6 and Figure 3-7.

Figure 3-6: Future Background Traffic Volumes - 2036 Horizon

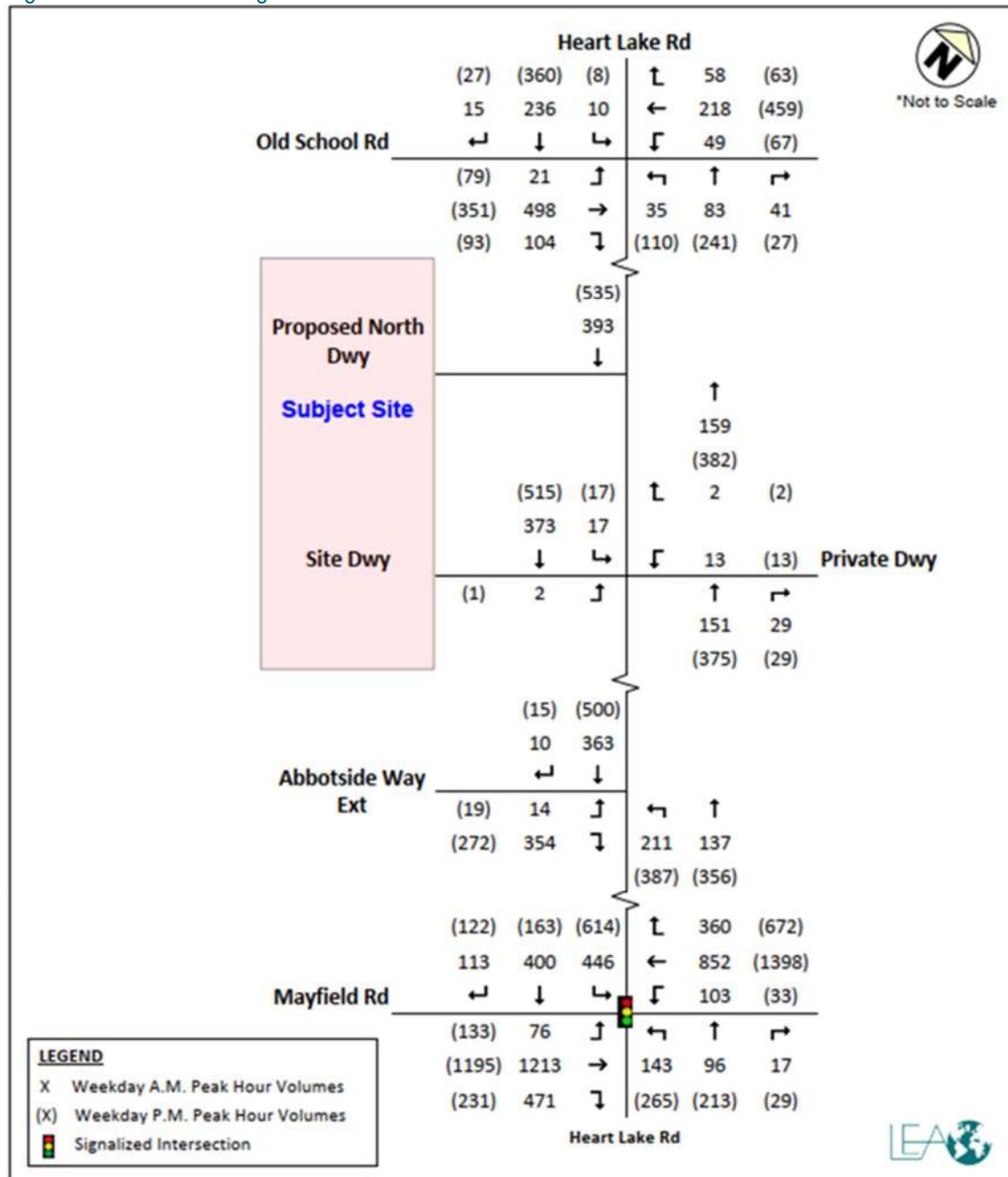
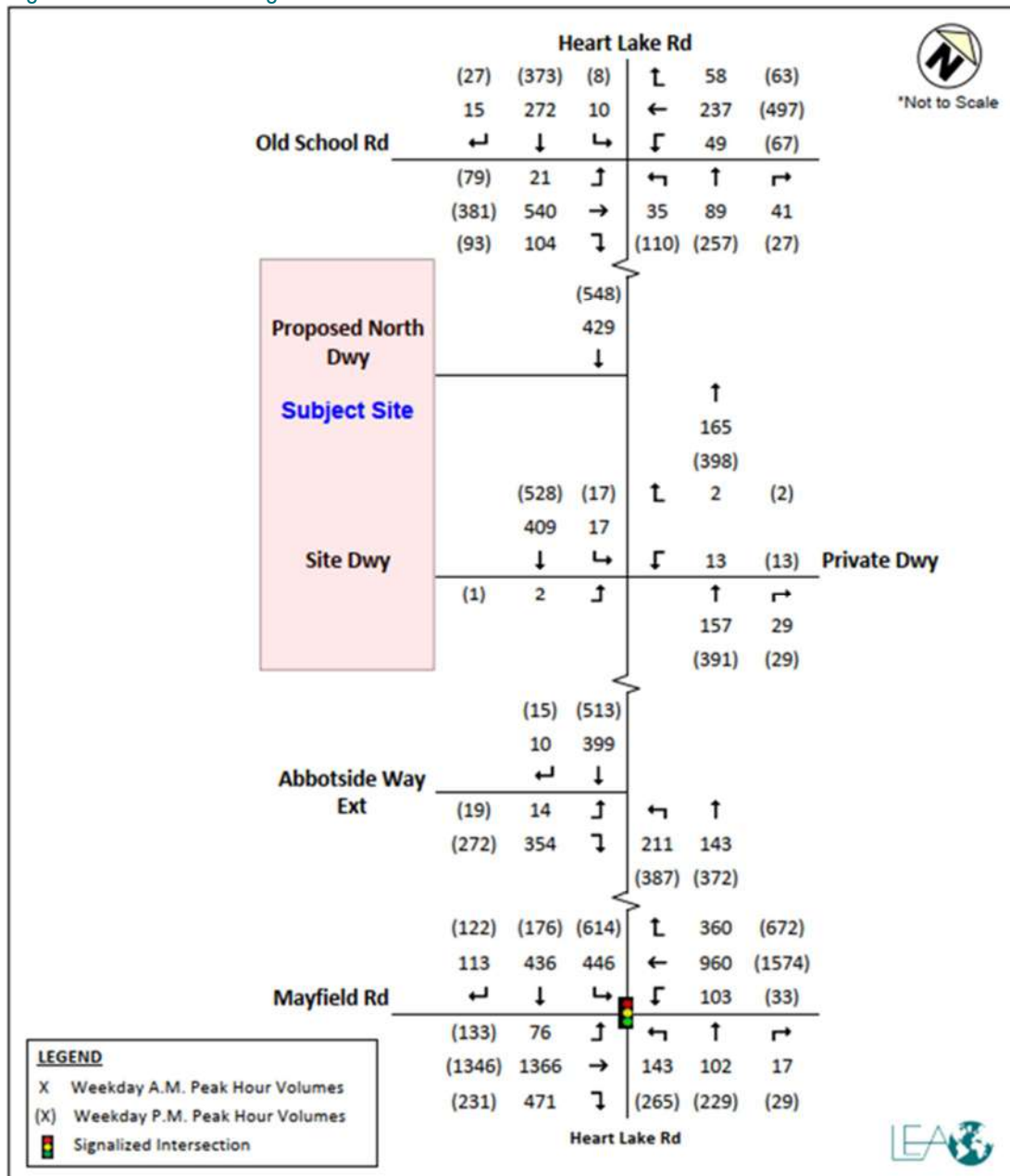


Figure 3-7: Future Background Traffic Volumes - 2041 Horizon



4 SITE GENERATED TRAFFIC

The development proposal will introduce four (4) industrial warehouse buildings with a total ground floor area (GFA) of 158,167m² (1,702,495 ft²). Trip generation associated with the proposed development was determined using the standard methodology provided by the ITE Trip Generation Manual 11th Edition.

4.1 MODAL SPLIT

The study area modal split was determined using 2022 Transportation Tomorrow Survey (TTS) for traffic analysis zones 4022, 4026, 4032, 4118, 4121, 4317, 4038, 4043, and 4039. The local modal split applied to the site during the weekday AM/PM peak periods are provided in Table 4-1. Detailed TTS calculations are provided in Appendix E.

Table 4-1: Local Modal Split

Travel Mode	Percentage
Auto Driver	92%
Auto Passenger	6%
Taxi/Rideshare	0%
Transit	2%
Walk	0%
Cycle	0%
Total	100%

4.2 TRIP GENERATION

Trip generation rates for the proposed development were calculated based on the ITE Trip Generation Manual 11th Edition using the following steps outlined below:

- ITE11: LUC150 Warehousing, General Urban-Suburban, vehicle trips, no site interaction reduction, Site trips for site overall and for trucks conducted separately. Auto trip is total of all site trips minus truck trips.

Table 4-2 summarizes the anticipated number of vehicle trips generated by the proposed development.

Table 4-2: Proposed Site Vehicle Trip Generation Rate

Land Use	Description	Weekday AM Peak Hour			Weekday PM Peak Hour		
		In	Out	Total	In	Out	Total
Total Vehicle Trips (LUC150 Warehousing) 1,702,495 ft ²	Total Vehicle Trip Rate (/1000 ft ²)	0.13	0.04	0.17	0.05	0.13	0.18
	Total Trips	223	66	289	86	220	306
	Person Trips	0	0	0	0	0	0
	External Vehicle Trips	223	66	289	86	220	306
	Total External Person PUDO Trips	15	4	19	6	15	21
	External Vehicle PUDO Trips	19	19	38	21	21	42
	External Vehicle Trips (A)	242	85	327	106	240	346
Trucks (LUC150 Warehousing) 1,702,495 ft ²	Auto Truck Rate (/1000 ft ²)	0.01	0.01	0.02	0.02	0.01	0.03
	Total Truck Trips	18	16	34	26	25	51
	Site Interaction	0	0	0	0	0	0
	Total External Trucks Trips (B)	18	16	34	26	25	51

Land Use	Description	Weekday AM Peak Hour			Weekday PM Peak Hour		
		In	Out	Total	In	Out	Total
	Total Site Generated Trips (A)	242	85	327	106	240	346
	Total External Truck Trips (B)	18	16	34	26	25	51
	Total External Auto Trips (A-B)	224	69	293	80	215	295
	Total Existing Site Trips (C)	0	0	2	0	0	1
	Net New Site Trips (A-C)	242	83	325	106	239	345

The proposed development is anticipated to generate a total of 325 two-way AM (242 inbound, 83 outbound) and 345 two-way PM (106 inbound, 239 outbound) net new site trips during the AM and PM weekday peak hours.

4.2.1 Multi-Modal Trip Generation

The multi-modal trip generation for the proposed development is provided in Table 4-3.

Table 4-3: Subject Site Multi-Modal Trip Generation

Land Use	Description	Weekday AM Peak Hour			Weekday PM Peak Hour		
		In	Out	Total	In	Out	Total
All	External Person Trips	235	71	305	90	233	323
	Auto Driver Trips	216	65	281	83	214	297
	Passenger Trips	14	4	18	5	14	19
	Taxi / Rideshare	0	0	0	0	0	0
	Transit Trips	5	1	6	2	5	7
	Pedestrian trips	0	0	0	0	0	0
	Cycling & E-Scooter Trips	0	0	0	0	0	0

4.3 TRIP DISTRIBUTION AND ASSIGNMENT

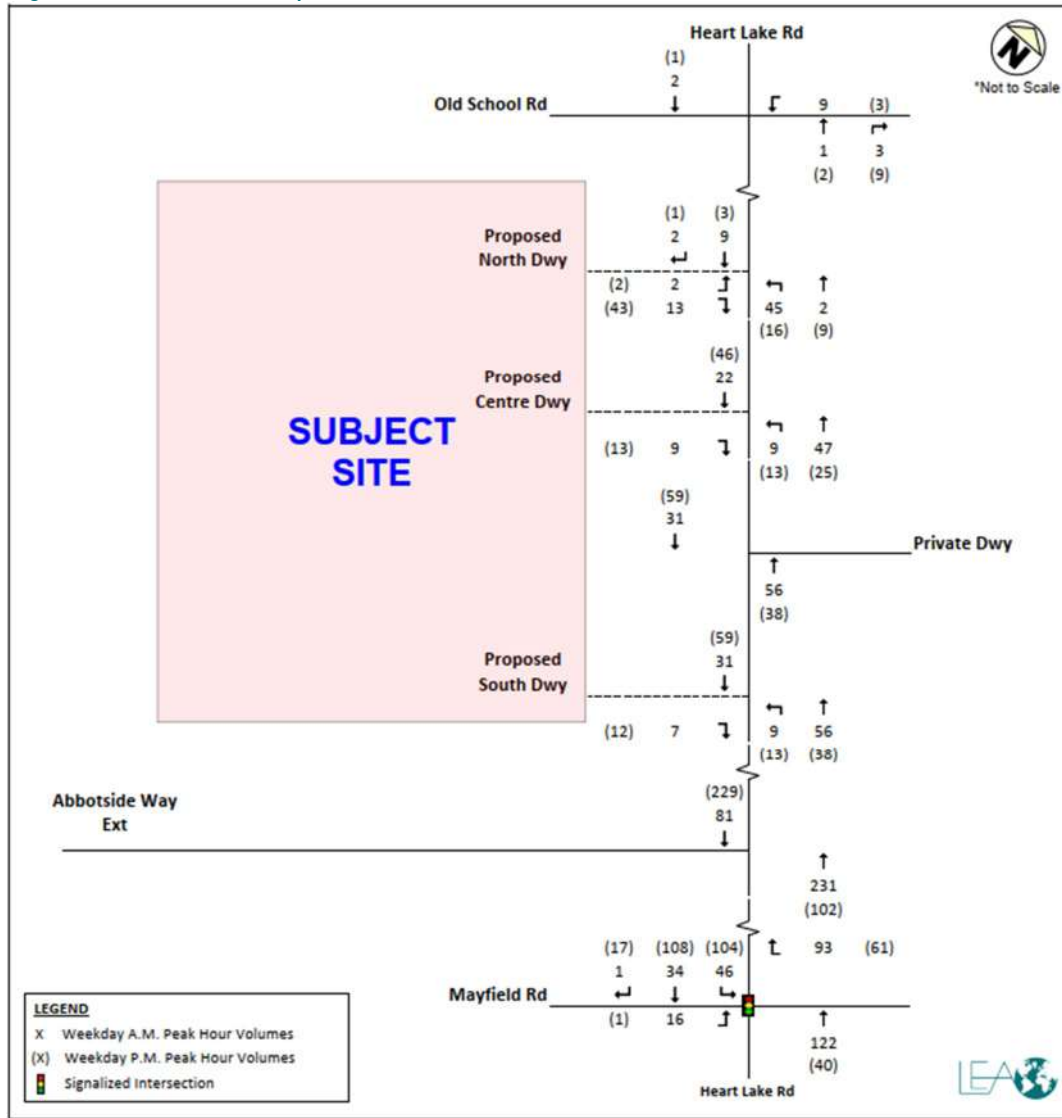
Trip distribution for the proposed development was estimated using Transportation Tomorrow Survey (TTS) 2022 data for traffic zones 4022, 4026, 4032, 4118, 4121, 4317, 4038, 4043, and 4039. Trip assignment was completed based on the local network, applicable turn restrictions, logical routing and access conditions. The majority of traffic is expected to enter via the Larson Peak and North Driveways, with an 80/20 usage split. Employee traffic will primarily access the site through Heart Lake Road, using either the North site driveway or the southwest driveway at the future Larson Peak Road (of note, intersection not shown on traffic volume figures or provided in analysis). For truck access, truck site traffic is assumed to utilize the centre and south driveways on Heart Lake Road to reach rear loading areas. Table 4 4 summarizes the trip distribution for this study. Detailed TTS calculations are available in Appendix E.

Table 4-4: Trip Distribution

Path (to/from)	AM		PM	
	In	Out	In	Out
Heart Lake Rd North	1%	1%	1%	1%
Heart Lake Rd South	9%	6%	6%	9%
Old School Rd West	0%	0%	0%	0%
Old School Rd East	4%	4%	4%	4%
Mayfield Rd West	7%	1%	1%	7%
Mayfield Rd East	79%	88%	88%	79%
Total	100%	100%	100%	100%

The total site generated traffic volumes for the weekday AM and PM peak hours are illustrated in Figure 4-1.

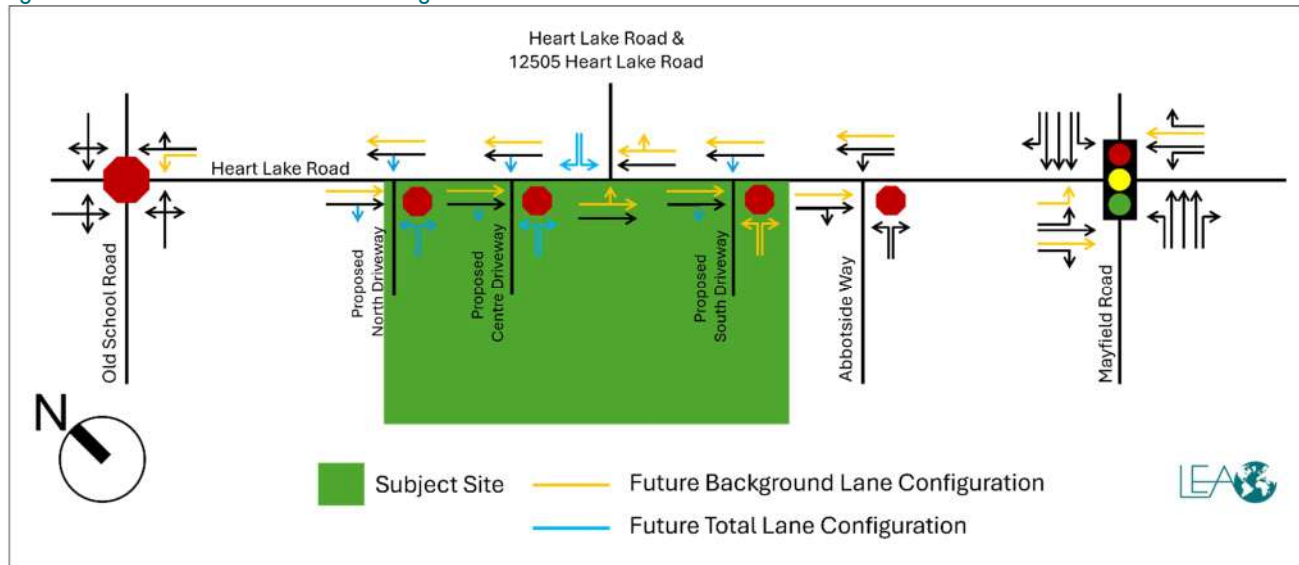
Figure 4-1: Total Development Site Traffic Volumes



5 FUTURE TOTAL TRAFFIC CONDITIONS

The following changes to the road network are to occur under future total conditions including the signal timing change at the intersection of Heart Lake Road & Mayfield Road as illustrated in Figure 5-1.

Figure 5-1: Future Total Lane Configuration



5.1 FUTURE TOTAL TRAFFIC VOLUMES

Future total traffic volumes showing the addition of the net site traffic volumes and the future background traffic volumes for the 2036 and 2041 horizon years are illustrated in Figure 5-2 and Figure 5-3.

Figure 5-2: Future Total Traffic Volumes - 2036 Horizon

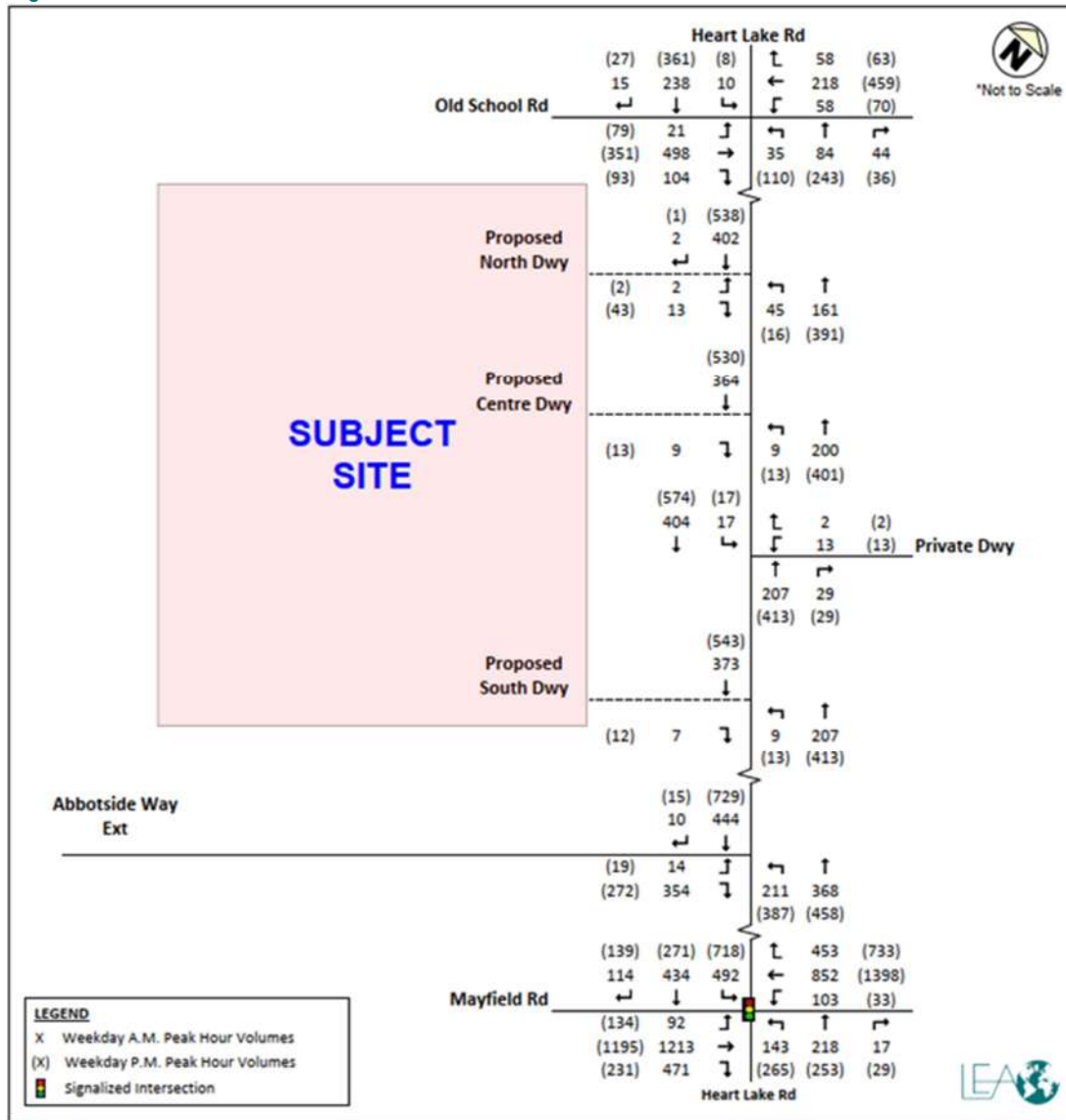
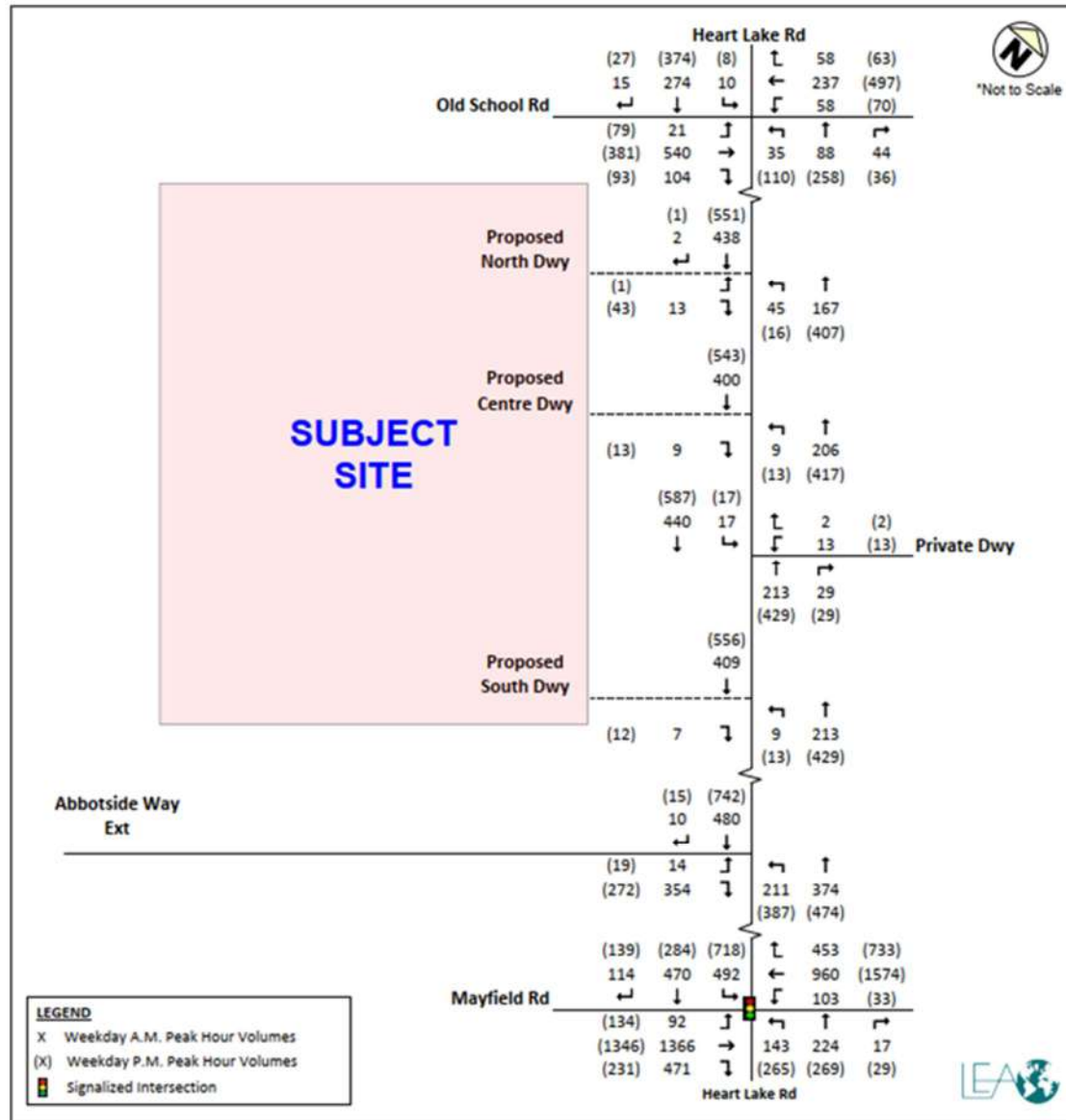


Figure 5-3: Future Total Traffic Volumes - 2041 Horizon



6 INTERSECTION CAPACITY ANALYSIS

The following sections provide an analysis of the intersection operations under existing, future background, and future total scenarios. The intersection capacity analysis for the study area was undertaken using Synchro version 11.0, which is based on the Highway Capacity Manual 2000 methodology. For signalized intersections critical movements of interest are those with a level-of-service (LOS) F or a volume-to-capacity (v/c) ratio of 0.90 or more (when 95th queues exceeds storage). For unsignalized intersections critical movements are those with a level-of-service (LOS) of E or worse (when queues exceeds storage).

The following sections outline a comparison of the capacity analysis results for existing, 2036 future, and 2041 future traffic conditions. Detailed capacity analysis results are provided in the following appendices:

- ▶ Appendix F: Existing Intersection Capacity Analysis
- ▶ Appendix G: 2036 Intersection Capacity Analysis
- ▶ Appendix H: 2041 Intersection Capacity Analysis

6.1 SYNCHRO MODEL INPUTS AND ASSUMPTIONS

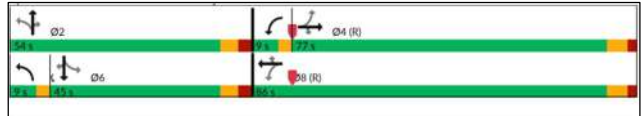
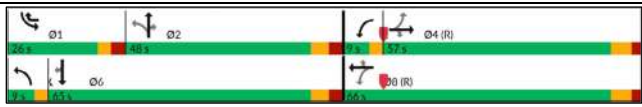
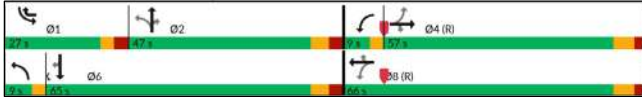
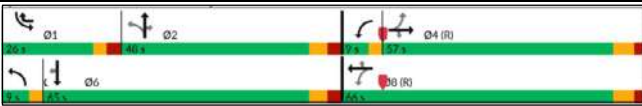
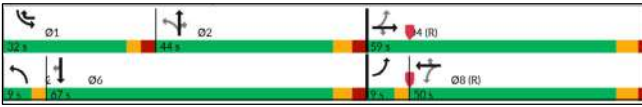
6.1.1 Road Network Assumptions

The road network assumptions within the study area provided in Section 3.1 of this study.

6.1.2 Signal Timing Modifications

The following signal optimizing provided in Table 6-1 is proposed to occur during the 2036 and the 2041 Horizon years.

Table 6-1: Signal Optimization - 2036 & 2041 Horizon Year

Intersection	Peak	Timing Plan	Year	Cycle Length	Splits
Heart Lake Rd & Mayfield Rd	AM	Original	2025	140	
		Proposed (Future Conditions)	2036		
			2041		
	PM	Original	2025	135	
		Proposed (Future Conditions)	2036		

			2041		
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6.1.3 Summary of Timing Plan Changes

The following summary of timing plan changes compared to existing conditions are provided in Table 6-2 below.

Table 6-2: Heart Lake Road & Mayfield Road Intersection (2036 & 2041 Horizon Year)

Timeframe	AM Peak Hour								PM Peak Hour							
	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Existing	0	77	9	86	9	54	0	45	0	72	9	81	9	54	0	45
2036	0	57	9	66	9	48	26	65	9	49	0	50	9	44	32	67
Net change	+0	-20	+0	-20	+0	-6	+26	+20	+9	-23	-9	-31	+0	-10	+32	+22
2041	0	57	9	66	9	47	27	65	9	58	0	49	9	44	33	68
Net change	+0	-20	+0	-20	+0	-7	+27	+20	+9	-14	-9	-32	+0	-10	+33	+23

6.2 SIGNALIZED INTERSECTION 2036 RESULTS

The results of the intersection capacity analysis for the signalized intersections are summarized in the following sections below.

6.2.1 Heart Lake Road & Mayfield Road Intersection

The intersection capacity analysis for the Heart Lake Road & Mayfield Road intersection is provided in Table 6-3.

Table 6-3: Heart Lake Rd & Mayfield Road intersection – Synchro Results – 2036 Horizon

Mvmt	Existing				Future Background 2036				Future Total 2036			
	Vol	V/C	LOS (Delay (s))	Queues (50/95)	Vol	V/C	LOS (Delay (s))	Queues (50/95)	Vol	V/C	LOS (Delay (s))	Queues (50/95)
AM Peak Hour												
Overall	-	-	C (26)	-/-	-	-	D (37)	-/-	-	-	D (50)	-/-
EBL	25	0.05	B (18)	4/9	76	0.28	C (26)	12/23	92	0.36	C (29)	15/28
EBT	922	0.36	C (22)	55/66	1213	0.48	C (23)	78/91	1213	0.48	C (23)	78/91
EBR	363	0.46	C (25)	0/16	471	0.59	C (28)	28/56	471	0.59	C (28)	32/61
WBL	120	0.41	B (18)	14/23	103	0.46	C (21)	12/20	103	0.46	C (21)	12/20
WBT	472	0.18	B (15)	22/28	852	0.31	B (16)	44/52	852	0.31	B (16)	44/52
WBR	93	0.11	B (14)	0/8	360	0.41	B (19)	0/13	453	0.53	C (21)	0/14
NBL	116	0.38	D (37)	22/36	143	0.49	D (41)	27/44	143	0.51	D (42)	27/44
NBT	73	0.12	C (33)	14/26	96	0.08	C (32)	10/16	218	0.18	C (33)	22/32
NBR	22	0.04	C (31)	0/1	17	0.03	C (31)	0/0	17	0.03	C (31)	0/0
SBL	209	0.51	D (49)	50/78	446	1.12	F (137)	158/223	492	1.39	F (247)	197/265
SBT	244	0.48	D (46)	57/83	400	0.41	D (43)	48/63	434	0.45	D (44)	53/69
SBR	52	0.12	D (39)	0/5	113	0.26	D (42)	7/22	114	0.27	D (42)	8/24
PM Peak Hour												
Overall	-	-	C (23)	-/-	-	-	E (68)	-/-	-	-	F (96)	-/-
EBL	38	0.16	C (25)	6/13	133	1.01	F (134)	34/77	134	1.06	F (148)	34/77
EBT	909	0.36	C (21)	55/65	1195	0.47	C (23)	77/89	1195	0.47	C (23)	77/89
EBR	190	0.24	C (20)	0/12	231	0.29	C (20)	0/13	231	0.29	C (20)	0/13
WBL	47	0.15	B (16)	5/11	33	0.14	B (17)	4/8	33	0.14	B (17)	4/8
WBT	1026	0.36	B (17)	54/64	1398	0.49	B (19)	81/93	1398	0.49	B (19)	81/93
WBR	318	0.36	B (18)	0/13	672	0.77	C (30)	24/60	733	0.86	D (37)	58/105
NBL	227	0.51	D (38)	43/64	265	0.65	D (43)	51/75	265	0.75	D (51)	51/75
NBT	99	0.15	C (31)	18/31	213	0.17	C (31)	21/30	253	0.20	C (31)	25/35
NBR	34	0.06	C (30)	0/4	29	0.05	C (29)	0/3	29	0.05	C (29)	0/3
SBL	190	0.47	D (45)	43/68	614	1.65	F (356)	252/323	718	2.02	F (520)	314/388
SBT	86	0.16	D (37)	17/31	163	0.16	D (37)	17/26	271	0.27	D (38)	30/42
SBR	53	0.12	D (37)	0/5	122	0.27	D (39)	9/24	139	0.31	D (40)	12/29

Existing Conditions: Under existing conditions, the intersection of Heart lake Road and Mayfield Road operates well during both weekday peak hours. All movements operate with residual capacity and acceptable delays. All existing 95th percentile queues can be accommodated by their available storage lanes. No critical movements have been identified.

Future Background Conditions: Under future background conditions, the intersection is expected to generally operate similar to existing conditions. An exception occurs for the eastbound left movements for the PM peak hour and southbound left movements for both peak hours, which operate at practical capacity. The lack of an advanced green phase renders the phase using only the main and intergreen phases which is insufficient to process the high volumes. The southbound left queues exceed available storage space.

Future Total Conditions: Under future total conditions, similar conditions occurs as with future background conditions. The Eastbound Left movement exhibits a minimal increase in congestion from future background

conditions. The Southbound Left movement continues to operate at practical capacity and vehicle queues exceed the available storage and taper lengths.

With Timing Plan Change and Dual Southbound Left

Table 6-4: Heart Lake Rd & Mayfield Road intersection – Synchro Results – 2036 Horizon with Dual Southbound Left

Mvmt	Existing				Future Background 2036 (Optimized)				Future Total 2036 (Optimized)			
	Vol	V/C	LOS (Delay (s))	Queue (50/95)	Vol	V/C	LOS (Delay (s))	Queue (50/95)	Vol	V/C	LOS (Delay (s))	Queue (50/95)
AM Peak Hour												
Overall	-	-	C (26)	-/-	-	-	D (40)	-/-	-	-	D (42)	-/-
EBL	25	0.05	B (18)	4/9	76	0.40	D (47)	16/31	92	0.51	D (54)	19/37
EBT	922	0.36	C (22)	55/66	1213	0.67	D (40)	103/119	1213	0.67	D (40)	103/119
EBR	363	0.46	C (25)	0/16	471	0.83	D (54)	17/52	471	0.83	D (54)	24/60
WBL	120	0.41	B (18)	14/23	103	0.60	D (39)	16/32	103	0.60	D (39)	16/32
WBT	472	0.18	B (15)	22/28	852	0.41	C (29)	60/71	852	0.41	C (29)	60/71
WBR	93	0.11	B (14)	0/8	360	0.41	B (19)	0/12	453	0.52	C (20)	5/18
NBL	116	0.38	D (37)	22/36	143	0.36	C (35)	21/33	143	0.38	D (36)	21/33
NBT	73	0.12	C (33)	14/26	96	0.09	D (36)	10/17	218	0.22	D (39)	24/35
NBR	22	0.04	C (31)	0/1	17	0.04	D (36)	0/0	17	0.04	D (36)	0/0
SBL	209	0.51	D (49)	50/78	446	0.91	F (81)	64/95	492	0.98	F (94)	72/108
SBT	244	0.48	D (46)	57/83	400	0.27	C (27)	38/50	434	0.29	C (28)	42/54
SBR	52	0.12	D (39)	0/5	113	0.17	C (26)	2/14	114	0.17	C (26)	3/15
PM Peak Hour												
Overall	-	-	C (23)	-/-	-	-	D (45)	-/-	-	-	D (51)	-/-
EBL	38	0.16	C (25)	6/13	133	0.90	F (84)	22/60	134	0.93	F (92)	23/61
EBT	909	0.36	C (21)	55/65	1195	0.60	C (34)	92/108	1195	0.62	D (35)	94/109
EBR	190	0.24	C (20)	0/12	231	0.37	C (31)	0/16	231	0.38	C (32)	0/16
WBL	47	0.15	B (16)	5/11	33	0.25	D (52)	7/18	33	0.26	D (53)	7/18
WBT	1026	0.36	B (17)	54/64	1398	0.85	D (48)	127/146	1398	0.87	D (50)	128/147
WBR	318	0.36	B (18)	0/13	672	0.83	D (37)	53/92	733	0.92	D (48)	86/139
NBL	227	0.51	D (38)	43/64	265	0.61	D (41)	37/54	265	0.66	D (43)	36/53
NBT	99	0.15	C (31)	18/31	213	0.21	D (38)	23/34	253	0.26	D (39)	28/39
NBR	34	0.06	C (30)	0/4	29	0.07	D (36)	0/0	29	0.07	D (37)	0/0
SBL	190	0.47	D (45)	43/68	614	0.93	E (74)	84/119	718	1.06	F (107)	111/149
SBT	86	0.16	D (37)	17/31	163	0.10	C (22)	13/20	271	0.17	C (22)	22/31
SBR	53	0.12	D (37)	0/5	122	0.17	C (23)	0/11	139	0.19	C (23)	0/12

Future Background Conditions: Under future background conditions, all movements operate within capacity. No major constraints are noted.

Future Total Conditions: Under future total conditions, the addition of site traffic is expected to maintain good levels of service for all movements. The exception occurs for the southbound left movement which operates at capacity.

6.3 UNSIGNALIZED INTERSECTIONS/SITE ACCESSES 2030 RESULTS

The results of the intersection capacity analysis for the unsignalized intersections are summarized in the following sections below.

6.3.1 Heart Lake Road & Old School Road Intersection

The intersection capacity analysis for the Heart Lake Road & Old School Road intersection is provided in Table 6-5.

Table 6-5: Heart Lake Road & Old School Road Intersection – Synchro Results – 2036 Horizon

Mvmt	Existing Traffic				Future Background 2036				Future Total 2036			
	Vol	V/C	LOS Delay (s)	95th Queue (m)	Vol	V/C	LOS Delay (s)	95th Queue (m)	Vol	V/C	LOS Delay (s)	95th Queue (m)
AM Peak Hour												
Overall	-	-	B (11)	-/-	-	-	E (50)	-/-	-	-	F (52)	-/-
NBL	-				35	0.09	B (12)	35	0.09	B (12)	2	35
NBLTR	109	0.16	A (10)	4	124	0.28	B (14)	7	128	0.29	B (14)	7
EBLTR	373	0.51	B (13)	20	623	1.06	F (87)	122	623	1.08	F (92)	124
WBLTR	189	0.28	B (10)	7	325	0.62	C (20)	25	334	0.65	C (21)	27
SBLTR	141	0.22	A (10)	5	261	0.55	C (19)	20	263	0.56	C (19)	20
PM Peak Hour												
Overall	-	-	C (22)	-/-	-	-	F (157)	-/-	-	-	F (161)	-/-
NBL	-				110	0.37	C (20)	110	0.37	C (20)	8	110
NBLTR	252	0.52	C (18)	19	268	0.85	E (39)	34	279	0.89	E (42)	36
EBLTR	355	0.69	C (24)	34	523	1.49	F (191)	140	523	1.49	F (195)	141
WBLTR	354	0.68	C (24)	33	589	1.59	F (254)	184	592	1.61	F (262)	187
SBLTR	303	0.60	C (20)	25	395	1.22	F (86)	72	396	1.23	F (89)	72

Existing Conditions: Under existing conditions, the intersection of Heart Lake Road and Old School Road operates well during both weekday peak hours. All movements operate with residual capacity and acceptable delays. All existing 95th percentile queues can be accommodated by their available storage lanes. No critical movements have been identified.

Future Background Conditions: Under future background conditions, the eastbound left-through-right for both peak hours and westbound left-through-right and southbound left-through-right for PM peak hour is projected to operate at practical capacity. These are conditions are a function of background development site traffic. The road widening of Heart Lake Road only provides positive results for northbound movement while movements continue to be served by a single shared lane.

Future Total Conditions: Under future total conditions, similar results occur as with future background conditions. The proposed development adds at most 10 vehicles for any given movement and minimally impact intersection operations.

6.3.2 Heart Lake Road & Existing Site Dwy / Private Dwy Intersection

The intersection capacity analysis for the Heart Lake Road & Existing Site Dwy / Private Dwy intersection is provided in Table 6-6.

Table 6-6: Heart Lake Road & Existing Site Dwy / Private Dwy intersection – Synchro Results – 2036 Horizon

Mvmt	Existing Traffic				Future Background 2036				Future Total 2036			
	Vol	V/C	LOS Delay (s)	95th Queue (m)	Vol	V/C	LOS Delay (s)	95th Queue (m)	Vol	V/C	LOS Delay (s)	95th Queue (m)
AM Peak Hour												
Overall	-	-	- (0)	-/-	0	0.00	A (0)	0	-	-	- (1)	-/-
NBL	0	0.00	A (0)	0	151	0.00	(0)	0	-			
NBT	107	0.00	(0)	0	29	0.00	(0)	0	207	0.00	(0)	0
NBR	0	0.00	(0)	0	2	0.00	B (13)	0	29	0.00	(0)	0
EBLTR	2	0.00	B (11)	0	15	0.03	B (11)	1	-			
WBLTR	0	0.00	A (0)	0	0	0.00	A (0)	0	-			
WBLR	-				-				15	0.03	B (12)	1
SBL	0	0.00	A (0)	0	17	0.01	A (8)	0	17	0.01	A (8)	0
SBT	195	0.00	(0)	0	373	0.00	A (0)	0	404	0.00	A (0)	0
SBR	0	0.00	(0)	0	0	0.00	(0)	0	-			
PM Peak Hour												
Overall	-	-	- (0)	-/-	-	-	- (1)	-/-	-	-	- (0)	-/-
NBL	0	0.00	A (0)	0	0	0.00	A (0)	0	-			
NBT	255	0.00	(0)	0	375	0.00	(0)	0	413	0.00	(0)	0
NBR	0	0.00	(0)	0	29	0.00	(0)	0	29	0.00	(0)	0
EBLTR	1	0.00	B (14)	0	1	0.00	C (17)	0	-			
WBLTR	0	0.00	A (0)	0	15	0.04	C (15)	1	-			
WBLR	-				-				15	0.04	C (15)	1
SBL	0	0.00	A (0)	0	17	0.02	A (8)	0	17	0.02	A (8)	0
SBT	395	0.00	(0)	0	515	0.00	A (0)	0	574	0.00	A (0)	0
SBR	0	0.00	(0)	0	0	0.00	(0)	0	-			

Existing Conditions: Under existing conditions, the intersection of Heart Lake Road and Existing Site Dwy / Private Dwy operates well during both weekday peak hours. All movements operate with residual capacity and acceptable delays. All existing 95th percentile queues can be accommodated by their available storage lanes. No critical movements have been identified.

Future Background Conditions: Under future background conditions, the intersection is expected to continue to operate similar to existing conditions with acceptable increases in V/C ratios and delay. No major constraints are noted.

Future Total Conditions: Under future total conditions, the addition of site traffic is expected to have an acceptable impact on intersection operations, with all movements operating similar to future background conditions. No intersection modifications are recommended.

6.3.3 Heart Lake Road & Abbotside Way Intersection

The intersection capacity analysis for the Heart Lake Road & Abbotside Way intersection is provided in Table 6-7.

Table 6-7: Heart Lake Road & Abbotside Way Intersection – Synchro Results – 2036 Horizon

Mvmt	Existing Traffic				Future Background 2036				Future Total 2036			
	Vol	V/C	LOS Delay (s)	95th Queue (m)	Vol	V/C	LOS Delay (s)	95th Queue (m)	Vol	V/C	LOS Delay (s)	95th Queue (m)
AM Peak Hour												
Overall	-	-	- (7)	-/-	-	-	- (6)	-/-	-	-	- (5)	-/-
NBL	98	0.07	A (8)	1	211	0.19	A (9)	5	211	0.20	A (9)	5
NBT	93	0.00	(0)	0	137	0.00	(0)	0	368	0.00	(0)	0
EBL	14	0.03	B (13)	1	14	0.06	C (22)	1	14	0.08	D (28)	2
EBR	319	0.38	B (12)	12	354	0.44	B (13)	14	354	0.46	B (14)	16
SBT	186	0.00	(0)	0	363	0.00	(0)	0	444	0.00	(0)	0
SBR	9	0.00	(0)	0	10	0.00	(0)	0	10	0.00	(0)	0
PM Peak Hour												
Overall	-	-	- (6)	-/-	-	-	- (6)	-/-	-	-	- (6)	-/-
NBL	337	0.24	A (8)	6	387	0.38	B (11)	12	387	0.46	B (13)	16
NBT	118	0.00	(0)	0	356	0.00	(0)	0	458	0.00	(0)	0
EBL	11	0.05	C (22)	1	19	0.25	F (68)	6	19	0.44	F (143)	10
EBR	184	0.21	B (10)	5	272	0.37	B (13)	11	272	0.44	C (15)	14
SBT	145	0.00	(0)	0	500	0.00	(0)	0	729	0.00	(0)	0
SBR	14	0.00	(0)	0	15	0.00	(0)	0	15	0.00	(0)	0

Existing Conditions: Under existing conditions, the intersection of Heart lake Road and Abbotside Way operates well during both weekday peak hours. All movements operate with residual capacity and acceptable delays. All existing 95th percentile queues can be accommodated by their available storage lanes. No critical movements have been identified.

Future Background Conditions: Under future background conditions, the intersection is expected to generally operate similar to existing conditions with acceptable increases in V/C ratios and delay. No major constraints are noted.

Future Total Conditions: Under future total conditions, the addition of site traffic is expected to have an acceptable impact on intersection operations, with all movements operating similar to future background conditions. The eastbound left movement has a LOS of 'F' but the v/c ratio is well below 1.00, peaking at 0.46. No intersection modifications are recommended.

6.3.4 Heart Lake Road & Proposed North Site Driveway Intersection

The intersection capacity analysis for the Heart Lake Road & Proposed North Site Driveway intersection is provided in Table 6-8.

Table 6-8: Heart Lake Road & Proposed North Site Driveway Intersection – Synchro Results – 2036 Horizon

Mvmt	Existing Traffic				Future Background 2036				Future Total 2036			
	Vol	V/C	LOS Delay (s)	95th Queue (m)	Vol	V/C	LOS Delay (s)	95th Queue (m)	Vol	V/C	LOS Delay (s)	95th Queue (m)
AM Peak Hour												
Overall	-				-				-	-	- (1)	-/-
NBL									45	0.04	A (8)	1
NBT									161	0.00	A (0)	0
EBLR									15	0.02	B (10)	1
SBT									402	0.00	(0)	0
SBR									2	0.00	(0)	0
PM Peak Hour												
Overall	-				-				-	-	- (1)	-/-
NBL									16	0.02	A (9)	0
NBT									391	0.00	A (0)	0
EBLR									45	0.07	B (11)	0
SBT									538	0.00	(0)	0
SBR									1	0.00	(0)	0

Future Total Conditions: Under future total conditions, site traffic is expected to have an acceptable impact on intersection operations, with no movement constraints identified. The outbound movement delay time is projected around 10 seconds for any given peak hour.

6.3.5 Heart Lake Road & Proposed Midblock Site Driveway Intersection

The intersection capacity analysis for the Heart Lake Road & Proposed Midblock Site Driveway Intersection is provided in Table 6-9.

Table 6-9: Heart Lake Road & Proposed Midblock Site Driveway Intersection – Synchro Results – 2036 Horizon

AM	Existing Traffic				Future Background 2036				Future Total 2036			
Mvmt	Vol	V/C	LOS Delay (s)	95th Queue (m)	Vol	V/C	LOS Delay (s)	95th Queue (m)	Vol	V/C	LOS Delay (s)	95th Queue (m)
AM Peak Hour												
Overall	-				-				-	-	- (0)	-/-
NBL									9	0.01	B (10)	0
NBT									200	0.00	A (0)	0
EBLR									9	0.02	B (11)	0
SBT									364	0.00	(0)	0
SBR									0	0.00	(0)	0
PM Peak Hour												
Overall	-				-				-	-	- (0)	-/-
NBL									13	0.02	B (11)	1
NBT									401	0.00	A (0)	0
EBLR									13	0.03	B (12)	1
SBT									530	0.00	(0)	0
SBR									0	0.00	(0)	0

Future Total Conditions: Under future total conditions, site traffic is expected to have an acceptable impact on intersection operations, with no movement constraints identified. The outbound movement delay time is projected at most 12 seconds.

6.3.6 Heart Lake Road & Proposed South Site Driveway Intersection

The intersection capacity analysis for the Heart Lake Road & Proposed South Site Driveway Intersection is provided in Table 6-10.

Table 6-10: Heart Lake Road & Proposed South Site Driveway Intersection – Synchro Results – 2036 Horizon

AM	Existing Traffic				Future Background 2036				Future Total 2036			
Mvmt	Vol	V/C	LOS Delay (s)	95th Queue (m)	Vol	V/C	LOS Delay (s)	95th Queue (m)	Vol	V/C	LOS Delay (s)	95th Queue (m)
AM Peak Hour												
Overall	-				-				-	-	- (0)	-/-
NBL									9	0.01	B (10)	0
NBT									207	0.00	A (0)	0
EBLR									7	0.01	B (11)	0
SBT									373	0.00	(0)	0
SBR									0	0.00	(0)	0
PM Peak Hour												
Overall	-				-				-	-	- (0)	-/-
NBL									13	0.02	B (12)	1
NBT									413	0.00	A (0)	0
EBLR									12	0.02	B (12)	1
SBT									543	0.00	(0)	0
SBR									0	0.00	(0)	0

Future Total Conditions: Under future total conditions, site traffic is expected to have an acceptable impact on intersection operations, with no movement constraints identified. The outbound movement is projected to experience a delay time of 13 for either peak hour.

6.4 SIGNALIZED INTERSECTION 2041 RESULTS

The results of the intersection capacity analysis for the signalized intersections are summarized in the following sections below.

6.4.1 Heart Lake Road at Mayfield Road Intersection

The intersection capacity analysis for the Heart Lake Rd at Mayfield Road intersection is provided in Table 6-11.

Table 6-11: Heart Lake Rd & Mayfield Road intersection – Synchro Results – 2041 Horizon

Mvmt	Existing				Future Background 2041 (Optimized)				Future Total 2041 (Optimized)			
	Vol	V/C	Delay (s)	Queue (50/95)	Vol	V/C	Delay (s)	Queue (50/95)	Vol	V/C	Delay (s)	Queue (50/95)
AM Peak Hour												
Overall	-	-	C (26)	-/-	-	-	D (37)	-/-	-	-	D (44)	-/-
EBL	25	0.05	B (18)	4/9	76	0.31	C (28)	12/24	88	0.38	C (31)	14/28
EBT	922	0.36	C (22)	55/66	1366	0.54	C (24)	92/105	1366	0.54	C (25)	92/106
EBR	363	0.46	C (25)	0/16	471	0.59	C (28)	34/63	471	0.59	C (28)	37/66
WBL	120	0.41	B (18)	14/23	103	0.51	C (23)	12/20	103	0.51	C (24)	12/20
WBT	472	0.18	B (15)	22/28	960	0.34	B (17)	50/60	960	0.35	B (17)	51/60
WBR	93	0.11	B (14)	0/8	360	0.41	B (19)	0/13	409	0.46	B (20)	0/14
NBL	116	0.38	D (37)	22/36	143	0.52	D (42)	27/44	143	0.54	D (43)	27/44
NBT	73	0.12	C (33)	14/26	102	0.09	C (32)	10/17	223	0.19	C (33)	23/33
NBR	22	0.04	C (31)	0/1	17	0.03	C (31)	0/0	17	0.03	C (31)	0/0
SBL	209	0.51	D (49)	50/78	446	1.13	F (139)	158/224	474	1.30	F (208)	183/250
SBT	244	0.48	D (46)	57/83	436	0.45	D (44)	53/69	470	0.49	D (45)	58/75
SBR	52	0.12	D (39)	0/5	113	0.26	D (42)	8/23	113	0.28	D (42)	8/23
PM Peak Hour												
Overall	-	-	C (23)	-/-	-	-	E (68)	-/-	-	-	F (83)	-/-
EBL	38	0.16	C (25)	6/13	133	1.17	F (192)	44/86	133	1.19	F (202)	44/86
EBT	909	0.36	C (21)	55/65	1346	0.53	C (24)	90/104	1346	0.53	C (24)	90/104
EBR	190	0.24	C (20)	0/12	231	0.29	C (20)	0/13	231	0.29	C (20)	0/13
WBL	47	0.15	B (16)	5/11	33	0.16	B (18)	4/8	33	0.16	B (18)	4/8
WBT	1026	0.36	B (17)	54/64	1574	0.56	C (21)	95/109	1574	0.56	C (21)	95/109
WBR	318	0.36	B (18)	0/13	672	0.77	C (30)	31/67	714	0.81	C (33)	56/99
NBL	227	0.51	D (38)	43/64	265	0.66	D (44)	51/75	265	0.76	D (52)	51/75
NBT	99	0.15	C (31)	18/31	229	0.18	C (31)	22/32	268	0.21	C (31)	26/37
NBR	34	0.06	C (30)	0/4	29	0.05	C (29)	0/3	29	0.05	C (29)	0/3
SBL	190	0.47	D (45)	43/68	614	1.67	F (365)	253/324	677	1.89	F (461)	290/363
SBT	86	0.16	D (37)	17/31	176	0.17	D (37)	19/28	283	0.28	D (39)	31/43
SBR	53	0.12	D (37)	0/5	122	0.27	D (39)	9/24	138	0.31	D (40)	12/29

Existing Conditions: Under existing conditions, the intersection of Heart lake Road and Mayfield Road operates well during both weekday peak hours. All movements operate with residual capacity and acceptable delays. All existing 95th percentile queues can be accommodated by their available storage lanes. No critical movements have been identified.

Future Background Conditions: Under future background conditions, the intersection is expected to generally operate similar to existing conditions. An exception occurs for the eastbound left and southbound left movements which operate at practical capacity. The lack of an advanced green phase renders using main and intergreen phases which is insufficient to process the high volumes.

Future Total Conditions: Under future total conditions, similar conditions occurs as with future background conditions. The eastbound left movement exhibits a minimal increase in congestion from future background conditions. The southbound left movement continues to operate at practical capacity and vehicle queues exceed the available storage and taper lengths.

With Timing Plan Change and Dual Southbound Left

Table 6-12: Heart Lake Rd & Mayfield Road intersection – Synchro Results – 2041 Horizon with Dual Southbound Left

Mvmt	Existing				Future Background 2041 (Optimized)				Future Total 2041 (Optimized)			
	Vol	V/C	Delay (s)	Queue (50/95)	Vol	V/C	Delay (s)	Queue (50/95)	Vol	V/C	Delay (s)	Queue (50/95)
AM Peak Hour												
Overall	-	-	C (26)	-/-	-	-	D (41)	-/-	-	-	D (42)	-/-
EBL	25	0.05	B (18)	4/9	76	0.45	D (52)	16/33	92	0.57	E (61)	20/40
EBT	922	0.36	C (22)	55/66	1366	0.75	D (42)	121/139	1366	0.75	D (42)	121/139
EBR	363	0.46	C (25)	0/16	471	0.83	D (54)	26/62	471	0.83	D (54)	32/69
WBL	120	0.41	B (18)	14/23	103	0.66	D (46)	16/43	103	0.66	D (46)	16/43
WBT	472	0.18	B (15)	22/28	960	0.46	C (30)	69/81	960	0.46	C (30)	69/81
WBR	93	0.11	B (14)	0/8	360	0.41	B (18)	0/11	453	0.52	C (20)	6/19
NBL	116	0.38	D (37)	22/36	143	0.37	D (35)	21/33	143	0.39	D (36)	21/33
NBT	73	0.12	C (33)	14/26	102	0.10	D (36)	11/18	224	0.22	D (39)	25/36
NBR	22	0.04	C (31)	0/1	17	0.04	D (36)	0/0	17	0.04	D (36)	0/0
SBL	209	0.51	D (49)	50/78	446	0.89	E (78)	63/91	492	0.98	F (94)	72/108
SBT	244	0.48	D (46)	57/83	436	0.30	C (28)	42/55	470	0.32	C (28)	46/59
SBR	52	0.12	D (39)	0/5	113	0.17	C (26)	4/16	114	0.17	C (26)	4/16
PM Peak Hour												
Overall	-	-	C (23)	-/-	-	-	D (50)	-/-	-	-	E (55)	-/-
EBL	38	0.16	C (25)	6/13	133	0.98	F (110)	23/60	134	0.99	F (113)	23/61
EBT	909	0.36	C (21)	55/65	1346	0.69	D (37)	110/126	1346	0.69	D (37)	110/126
EBR	190	0.24	C (20)	0/12	231	0.38	C (32)	0/16	231	0.38	C (32)	0/16
WBL	47	0.15	B (16)	5/11	33	0.31	E (61)	7/22	33	0.31	E (61)	7/22
WBT	1026	0.36	B (17)	54/64	1574	0.98	E (63)	151/184	1574	0.98	E (63)	151/184
WBR	318	0.36	B (18)	0/13	672	0.84	D (38)	58/99	733	0.92	D (48)	91/145
NBL	227	0.51	D (38)	43/64	265	0.60	D (40)	36/53	265	0.66	D (43)	36/53
NBT	99	0.15	C (31)	18/31	229	0.23	D (38)	25/36	269	0.27	D (39)	30/42
NBR	34	0.06	C (30)	0/4	29	0.07	D (36)	0/0	29	0.07	D (37)	0/0
SBL	190	0.47	D (45)	43/68	614	0.92	E (71)	83/116	718	1.06	F (107)	111/149
SBT	86	0.16	D (37)	17/31	176	0.11	C (21)	14/21	284	0.18	C (22)	23/32
SBR	53	0.12	D (37)	0/5	122	0.17	C (22)	0/11	139	0.19	C (23)	0/12

Future Background Conditions: Under future background conditions, all movements operate within capacity. No major constraints are noted.

Future Total Conditions: Under future total conditions, the addition of site traffic is expected to maintain good levels of service for all movements. The exception occurs for the southbound left movement which operates at capacity.

6.5 UNSIGNALIZED INTERSECTIONS/SITE ACCESSES 2035 RESULTS

The results of the intersection capacity analysis for the unsignalized intersections are summarized in the following sections below.

6.5.1 Heart Lake Road & Old School Road Intersection

The intersection capacity analysis for the Heart Lake Road & Old School Road intersection is provided in Table 6-13.

Table 6-13: Heart Lake Road & Old School Road Intersection – Synchro Results – 2041 Horizon

Mvmt	Existing Traffic				Future Background 2041				Future Total 2041			
	Vol	V/C	LOS Delay (s)	95th Queue (m)	Vol	V/C	LOS Delay (s)	95th Queue (m)	Vol	V/C	LOS Delay (s)	95th Queue (m)
AM Peak Hour												
Overall	-	-	B (11)	-/-	-	-	F (72)	-/-	-	-	F (75)	-/-
NBL	-				35	0.09	B (13)	35	0.09	B (13)	2	35
NBLTR	109	0.16	A (10)	4	130	0.31	B (15)	8	132	0.32	C (15)	8
EBLTR	373	0.51	B (13)	20	665	1.21	F (134)	159	665	1.22	F (140)	163
WBLTR	189	0.28	B (10)	7	344	0.70	C (24)	31	353	0.73	D (25)	34
SBLTR	141	0.22	A (10)	5	297	0.65	C (23)	26	299	0.66	C (23)	27
PM Peak Hour												
Overall	-	-	C (22)	-/-	-	-	F (188)	-/-	-	-	F (191)	-/-
NBL	-				110	0.38	C (21)	110	0.38	C (21)	10	110
NBLTR	252	0.52	C (18)	19	284	0.93	E (44)	38	290	0.96	E (46)	39
EBLTR	355	0.69	C (24)	34	553	1.64	F (230)	157	553	1.67	F (232)	156
WBLTR	354	0.68	C (24)	33	627	1.76	F (304)	207	630	1.79	F (309)	209
SBLTR	303	0.60	C (20)	25	408	1.32	F (98)	75	409	1.33	F (103)	77

Existing Conditions: Under existing conditions, the intersection of Heart Lake Road and Old School Road operates well during both weekday peak hours. All movements operate with residual capacity and acceptable delays. All existing 95th percentile queues can be accommodated by their available storage lanes. No critical movements have been identified.

Future Background Conditions: Under future background conditions, the eastbound left through right for both peak hours and westbound left through right and southbound left through right for PM peak hour is projected to operate at practical capacity. These are conditions are function of background development site traffic. The road widening of Heart Lake Road only provides positive results for northbound movement while movements is continued to be served by a single shared lane.

Future Total Conditions: Under future total conditions, similar results occur as with future background conditions. The proposed development adds at most 10 vehicles for any given movement and minimally impact intersection operations.

6.5.2 Heart Lake Road & Existing Site Dwy / Private Dwy Intersection

The intersection capacity analysis for the Heart Lake Road & Existing Site Dwy / Private Dwy intersection is provided in Table 6-14.

Table 6-14: Heart Lake Road & Existing Site Dwy / Private Dwy intersection – Synchro Results – 2041 Horizon

Mvmt	Existing Traffic				Future Background 2041				Future Total 2041			
	Vol	V/C	LOS Delay (s)	95th Queue (m)	Vol	V/C	LOS Delay (s)	95th Queue (m)	Vol	V/C	LOS Delay (s)	95th Queue (m)
AM Peak Hour												
Overall	-	-	- (0)	-/-	-	-	- (1)	-/-	-	-	- (1)	-/-
NBL	0	0.00	A (0)	0	0	0.00	A (0)	0	-			
NBT	107	0.00	(0)	0	157	0.00	(0)	0	213	0.00	(0)	0
NBR	0	0.00	(0)	0	29	0.00	(0)	0	29	0.00	(0)	0
EBLTR	2	0.00	B (11)	0	2	0.01	B (13)	0	-			
WBLTR	0	0.00	A (0)	0	15	0.03	B (12)	1	-			
WBLR	-				-				15	0.03	B (12)	1
SBL	0	0.00	17	0.01	A (8)	0	A (8)	0	17	0.01	A (8)	0
SBT	195	0.00	440	0.00	A (0)	0	A (0)	0	440	0.00	A (0)	0
SBR	0	0.00	(0)	0	0	0.00	(0)	0	-			
PM Peak Hour												
Overall	-	-	- (0)	-/-	-	-	- (1)	-/-	-	-	- (0)	-/-
NBL	0	0.00	A (0)	0	0	0.00	A (0)	0	-			
NBT	255	0.00	(0)	0	391	0.00	(0)	0	425	0.00	(0)	0
NBR	0	0.00	(0)	0	29	0.00	(0)	0	29	0.00	(0)	0
EBLTR	1	0.00	B (14)	0	1	0.00	C (17)	0	-			
WBLTR	0	0.00	A (0)	0	15	0.04	C (16)	1	-			
WBLR	-				-				15	0.04	C (15)	1
SBL	0	0.00	17	0.02	A (8)	0	A (8)	0	17	0.02	A (8)	0
SBT	395	0.00	587	0.00	A (0)	0	A (0)	0	587	0.00	A (0)	0
SBR	0	0.00	(0)	0	0	0.00	(0)	0	-			

Existing Conditions: Under existing conditions, the intersection of Heart Lake Road and Existing Site Dwy / Private Dwy operates well during both weekday peak hours. All movements operate with residual capacity and acceptable delays. All existing 95th percentile queues can be accommodated by their available storage lanes. No critical movements have been identified.

Future Background Conditions: Under future background conditions, the intersection is expected to continue to operate similar to existing conditions with acceptable increases in V/C ratios and delay. No major constraints are noted.

Future Total Conditions: Under future total conditions, the addition of site traffic is expected to have an acceptable impact on intersection operations, with all movements operating similar to future background conditions. No intersection modifications are recommended.

6.5.3 Heart Lake Road & Abbotside Way Intersection

The intersection capacity analysis for the Heart Lake Road & Abbotside Way intersection is provided in Table 6-15.

Table 6-15: Heart Lake Road & Abbotside Way Intersection – Synchro Results – 2041 Horizon

AM	Existing Traffic				Future Background 2041				Future Total 2041			
Mvmt	Vol	V/C	LOS Delay (s)	95th Queue (m)	Vol	V/C	LOS Delay (s)	95th Queue (m)	Vol	V/C	LOS Delay (s)	95th Queue (m)
AM Peak Hour												
Overall	-	-	- (7)	-/-	-	-	- (6)	-/-	-	-	- (4)	-/-
NBL	98	0.07	A (8)	1	211	0.19	A (9)	5	98	0.09	A (9)	2
NBT	93	0.00	(0)	0	143	0.00	(0)	0	374	0.00	(0)	0
EBL	14	0.03	B (13)	1	14	0.07	C (23)	1	14	0.06	C (20)	1
EBR	319	0.38	B (12)	12	354	0.45	B (13)	15	319	0.42	B (13)	14
SBT	186	0.00	(0)	0	399	0.00	(0)	0	481	0.00	(0)	0
SBR	9	0.00	(0)	0	10	0.00	(0)	0	9	0.00	(0)	0
PM Peak Hour												
Overall	-	-	- (6)	-/-	-	-	- (6)	-/-	-	-	- (4)	-/-
NBL	337	0.24	A (8)	6	387	0.38	B (11)	12	337	0.39	B (12)	12
NBT	118	0.00	(0)	0	372	0.00	(0)	0	478	0.00	(0)	0
EBL	11	0.05	C (22)	1	19	0.26	F (71)	6	11	0.20	F (86)	5
EBR	184	0.21	B (10)	5	272	0.38	B (13)	11	184	0.30	B (13)	8
SBT	145	0.00	(0)	0	513	0.00	(0)	0	743	0.00	(0)	0
SBR	14	0.00	(0)	0	15	0.00	(0)	0	14	0.00	(0)	0

Existing Conditions: Under existing conditions, the intersection of Heart Lake Road and Abbotside Way operates well during both weekday peak hours. All movements operate with residual capacity and acceptable delays. All existing 95th percentile queues can be accommodated by their available storage lanes. No critical movements have been identified.

Future Background Conditions: Under future background conditions, the intersection is expected to generally operate similar to existing conditions with acceptable increases in V/C ratios and delay. No major constraints are noted.

Future Total Conditions: Under future total conditions, the addition of site traffic is expected to have an acceptable impact on intersection operations, with all movements operating similar to future background conditions. The Eastbound Left movement has an LOS of 'F' but the v/c ratio is well below 1.00, peaking at 0.42. No intersection modifications are recommended.

6.5.4 Heart Lake Road & Proposed North Site Driveway Intersection

The intersection capacity analysis for the Heart Lake Road & Proposed North Site Driveway intersection is provided in Table 6-16.

Table 6-16: Heart Lake Road & Proposed North Site Driveway Intersection – Synchro Results – 2036 Horizon

Mvmt	Existing Traffic				Future Background 2041				Future Total 2041			
	Vol	V/C	LOS Delay (s)	95th Queue (m)	Vol	V/C	LOS Delay (s)	95th Queue (m)	Vol	V/C	LOS Delay (s)	95th Queue (m)
AM Peak Hour												
Overall	-				-				-	-	-(1)	-/-
NBL									45	0.04	A (8)	1
NBT									167	0.00	A (0)	0
EBLR									13	0.02	A (10)	1
SBT									438	0.00	(0)	0
SBR									2	0.00	(0)	0
PM Peak Hour												
Overall	-				-				-	-	-(1)	-/-
NBL									16	0.02	A (9)	0
NBT									403	0.00	A (0)	0
EBLR									44	0.06	B (10)	0
SBT									551	0.00	(0)	0
SBR									1	0.00	(0)	0

Future Total Conditions: Under future total conditions, site traffic is expected to have an acceptable impact on intersection operations, with no movement constraints identified. The outbound movement delay time is projected around 10 seconds for any given peak hour.

6.5.5 Heart Lake Road & Proposed Midblock Site Driveway Intersection

The intersection capacity analysis for the Heart Lake Road & Proposed Midblock Site Driveway Intersection is provided in Table 6-17.

Table 6-17: Heart Lake Road & Proposed Midblock Site Driveway Intersection – Synchro Results – 2041 Horizon

Mvmt	Existing Traffic				Future Background 2041				Future Total 2041			
	Vol	V/C	LOS Delay (s)	95th Queue (m)	Vol	V/C	LOS Delay (s)	95th Queue (m)	Vol	V/C	LOS Delay (s)	95th Queue (m)
AM Peak Hour												
Overall	-				-				-	-	- (0)	-/-
NBL									9	0.01	A (8)	0
NBT									206	0.00	A (0)	0
EBLR									9	0.01	A (10)	0
SBT									400	0.00	(0)	0
SBR									0	0.00	(0)	0
PM Peak Hour												
Overall	-				-				-	-	- (0)	-/-
NBL									13	0.01	A (9)	0
NBT									413	0.00	A (0)	0
EBLR									13	0.02	B (10)	1
SBT									543	0.00	(0)	0
SBR									0	0.00	(0)	0

Future Total Conditions: Under future total conditions, site traffic is expected to have an acceptable impact on intersection operations, with no movement constraints identified. The outbound movement delay time is projected around 10 seconds for any given peak hour.

6.5.6 Heart Lake Road & Proposed South Site Driveway Intersection

The intersection capacity analysis for the Heart Lake Road & Proposed South Site Driveway intersection is provided in Table 6-18.

Table 6-18: Heart Lake Road & Proposed South Site Driveway Intersection – Synchro Results – 2041 Horizon

Mvmt	Existing Traffic				Future Background 2041				Future Total 2041			
	Vol	V/C	LOS Delay (s)	95th Queue (m)	Vol	V/C	LOS Delay (s)	95th Queue (m)	Vol	V/C	LOS Delay (s)	95th Queue (m)
AM Peak Hour												
Overall	-				-				-	-	- (0)	-/-
NBL									9	0.01	A (8)	0
NBT									213	0.00	A (0)	0
EBLR									7	0.01	A (10)	0
SBT									409	0.00	(0)	0
SBR									0	0.00	(0)	0
PM Peak Hour												
Overall	-				-				-	-	- (0)	-/-
NBL									13	0.01	A (9)	0
NBT									425	0.00	A (0)	0
EBLR									12	0.02	B (10)	1
SBT									556	0.00	(0)	0
SBR									0	0.00	(0)	0

Future Total Conditions: Under future total conditions, site traffic is expected to have an acceptable impact on intersection operations, with no movement constraints identified. The outbound movement is projected to experience a delay time of at most 10 seconds with each peak hour.

7 PARKING REVIEW

The following section will provide a review of the proposed and required parking supply for the proposed development.

7.1 BICYCLE PARKING REVIEW

Although there are no bicycle parking requirements in By-law 2006-50, in support of the Town's sustainable transportation efforts the development proposes 27 bicycle parking spaces.

7.2 VEHICLE PARKING REVIEW

The parking requirements for the development has been evaluated using the Town of Caledon's By-law 2006-50 parking rates. As noted in By-law 2006-50, if the associate office and retail land uses are 15% or less of the total net floor area (NFA) then those uses are subject to the applicable parking requirements noted Section 5.2.3 of the By-law. Parking calculations for the proposed development used GFA instead of NFA which indicates a conservative estimate. A summary of the required parking supply based on By-law 2006-50 have been provided in Table 7-1.

Table 7-1: Zoning By-law 2006-50 Parking Requirements

Building	Land Use	GFA (m ²)	Town of Caledon Zoning By-law 2006-50		Proposed Parking
			Parking Standard	Parking Required	
Building A	Industrial Warehouse	32,846	If over 20,000 m ² , 168 sp. + 1sp./170 of NFA	244	380
Building B	Industrial Warehouse	25,517		201	294
Building C	Industrial Warehouse	47,684		331	361
Building D	Industrial Warehouse	52,120		357	386
TOTAL				1,133	1,421

As detailed in Table 7-1 By-law 2006-50 requires a minimum vehicle parking supply of 1,133 vehicle parking spaces. The development will provide 1,317 parking spaces, therefore meeting the minimum by-law requirements. In support of the Town's sustainable transportation efforts the development proposes 24 parking spaces with EV charging capabilities.

7.3 ACCESSIBLE PARKING REVIEW

Similar to above, the accessible parking rates for the proposed development have been reviewed based on By-law 2006-50 requirements and By-law 2024-048 Schedule O and Accessibility for Ontarians with Disabilities ACT (AODA) requirements as shown in Table 7-2.

Table 7-2: Accessible Parking Requirements

Building	No. of Required Parking Spaces	No. of Designated Accessible Spaces	Required Parking			Proposed Supply
			Spaces	Type A	Type B	
Building A	244	2 accessible spaces plus 2%	7	3	4	16
Building B	201		7	3	4	16
Building C	331		9	4	5	16
Building D	357		10	5	5	16
TOTAL			33	15	18	64

The proposed development will supply a total of 64 accessible parking spaces, which meets the minimum requirements for accessible parking spaces outlined in By-law 2015-0580.

8 LOADING REVIEW

Loading spaces for the proposed development must adhere to the loading standards set out in the Town of Caledon's By-law 2006-50. The following loading standards are provided in Table 8-1.

Table 8-1: By-Law 2006-50 Loading Standard Requirements

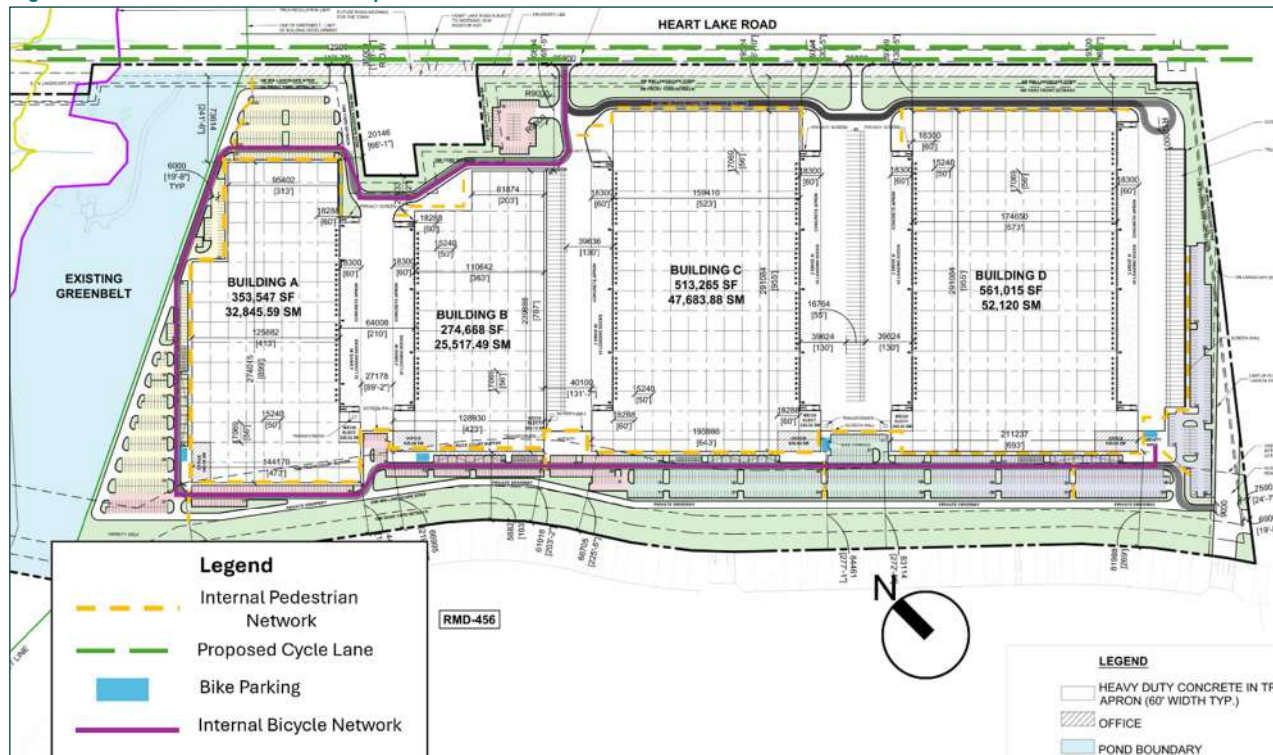
Building	GFA (m2)	Loading Space Requirements	Required Loading	Proposed Loading
Building A	32,846	3 plus 1 sp for each additional 9300m2 in excess of 7441m2	6	32
Building B	25,517		5	32
Building C	47,684		8	88
Building D	52,120		8	95
TOTAL			27	247

A total minimum of 27 loading spaces are required for the development. The development proposes a total of 247 loading spaces which exceeds minimum requirements. A detailed swept path diagrams part of the functional design review showing the safe functional movements of trucks within the internal road network is provided in Appendix I.

9 PEDESTRIAN AND CYCLIST CIRCULATION PLAN

The following internal site circulation map in Figure 9-1 shows the internal pedestrian network to ensure safe travel for employees and visitors to the site.

Figure 9-1: Site Circulation Map



10 TRANSPORTATION DEMAND MANAGEMENT PLAN

The purpose of Transportation Demand Management (TDM) strategies is to promote the use of sustainable modes of transportation whereby reducing reliance on private vehicles during weekday peak periods. This is done by using policies, programs, services, incentives, and small-scale infrastructure. TDM strategies are an important part of Peel Region's Sustainable Transportation Strategy (STS) which aims at increasing mode share use for transit, walking, cycling, carpooling, and telework by the year 2041 by 50%. Implementing TDM tools and techniques within the proposed development will ensure that individuals accessing the site are aware of the travel options available to them, understand how to use these options, and can help employers/employees maximize the use of new or existing sidewalks, trails, bike lanes, bus transit lines, and or commuter rail systems. The sections below will detail strategies that can be incorporated into the proposed development.

10.1 TRANSIT-BASED STRATEGIES

Addition of bus stops on-site to provide connection to transit network.

A future transit corridor has been proposed along Heart Lake Road according to the June 2024 MMTMP report. To accommodate an eventual transit route along Heart Lake Road a transit stop should be considered within the site to encourage employees to use transit as a car alternative. The proposed transit stops should be located near the vehicular access off Heart Lake Road, however, the exact bus stop locations and design will be determined in consultation with the Town of Caledon and Region of Peel, along with transit routing and schedules.

Transit Information Packages

It is recommended that information packages be distributed to employees of the proposed development to increase transit awareness and encourage multi-modal transport. Informing employees about the future transit options may encourage regular transit usage to and from the site. The information packages should contain public transit information such as route maps and timetables.

10.2 ACTIVE TRANSPORTATION STRATEGIES

Pedestrian Accessibility/Safety Measures

The construction of pedestrian facilities should adhere to the Access for Ontarians with Disabilities Act (AODA). The proposed development should provide curb ramps and adequate clear widths on sidewalks where necessary, and decrease barriers to increase walking to/from the proposed development.

Developments should be encouraged to provide by the following safety measures:

- Installing better lighting.
- Providing wayfinding within the internal sidewalk network.
- Reduce internal speed limits to enhance/promote walking activity within the site.
- Provide additional landscaping in the form of wider sidewalks, and having accessibility measures (e.g. curb ramps from sidewalks to roadways).

- Improve snow and ice removal on public sidewalks fronting onto the development and within the internal road network.

Connect with Public Transit

The pedestrian network should be easily accessible to public transit bus stops and or any available higher order transit routes.

10.3 TRAVEL AND PARKING MANAGEMENT STRATEGIES

Signed carpool spaces.

It is recommended that the proposed development include designated carpool spaces as a means to reduce single occupancy automobile usage. These carpool spaces should be clearly signed and be located conveniently close to the main entrances to provide a greater incentive for employees carpooling.

Smart Commute Membership.

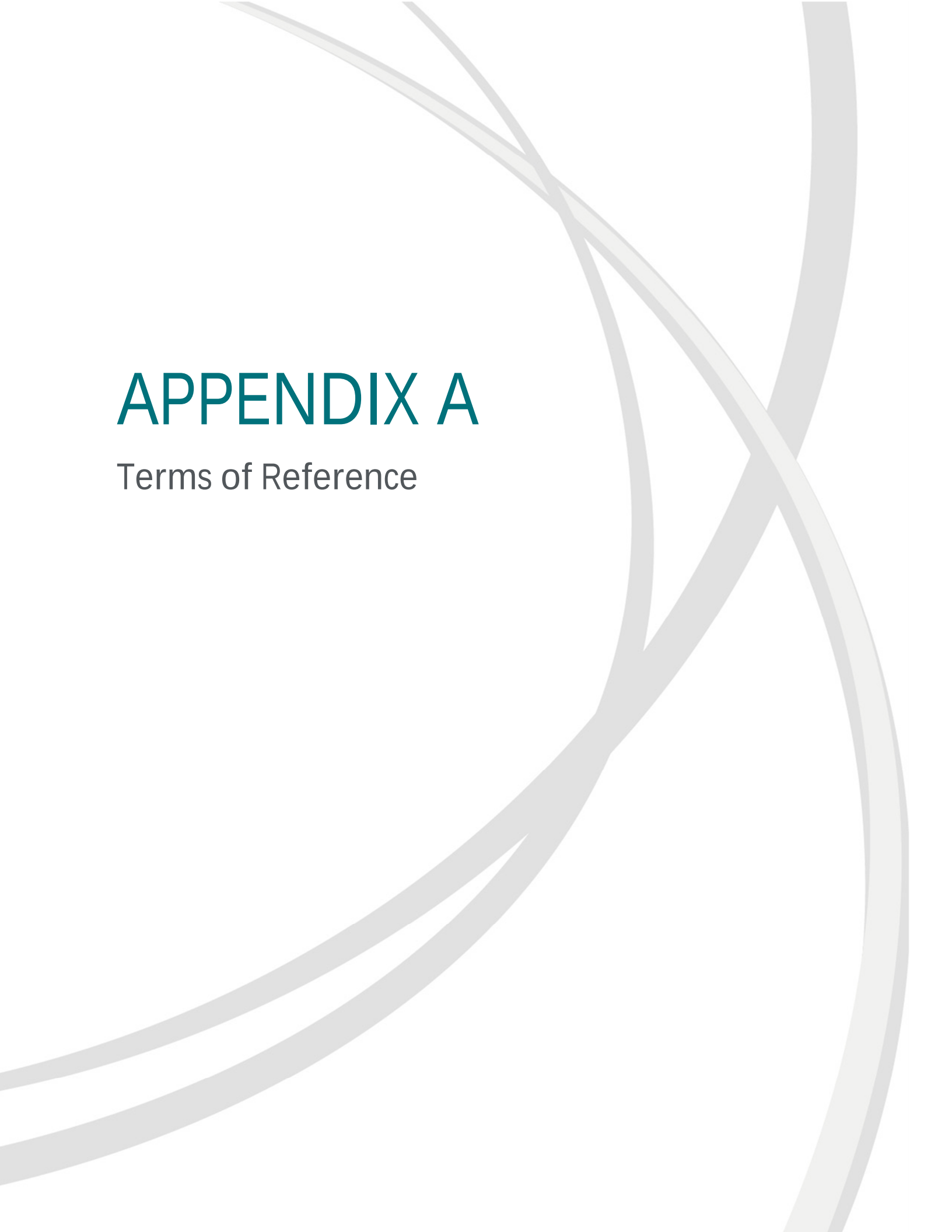
Once tenants are secured, it is recommended that future tenants/owners register with the Smart Commute program. Smart Commute provides the means for businesses to help provide an alternative option for their employees to get to and from work through ride matching. One benefit with Smart Commute is the Emergency Ride Home program that provides carpoolers with a sense of reassurance under urgent circumstances. The Owner could also help tenants in establishing an employer-based carpool program specifically for the employees that would be working on-site.

Communications Strategy.

The Owner should provide communications and distribute information to employees via information packages or through email regarding the different travel demand management measures and programs that are offered. Information on Smart Commute, Emergency Ride Home, or other incentives can be obtained from the Region, and be included as part of this material. The Region and/or Town should also be responsible for making Smart Commute information brochures, pedestrian/cycling maps, transit maps, and other general information available for distribution to the building occupant to help commuters become aware of the various travel alternatives.

11 CONCLUSIONS AND RECOMMENDATIONS

- ▶ The development proposal will introduce four (4) industrial warehouse buildings with a total ground floor area (GFA) of 158,167m² (1,702,495 ft²) and 1,421 parking spaces
- ▶ The subject site is in an area that has limited access to both public transit and active transportation as the surrounding area is predominantly rural. There are plans to extend the existing transit network along Heart Lake Road, Old School Road, and Mayfield Road. This will improve transport mobility near the site.
- ▶ The proposed development is projected to generate a total of 325 two-way AM (242 inbound, 83 outbound) and 345 two-way PM (106 inbound, 239 outbound) net new site trips during the AM and PM weekday peak hours, respectively.
- ▶ Under existing traffic conditions, all studied intersections operate within capacity with an overall LOS of 'C' or better during both peak periods.
- ▶ Under future background and total conditions, the studied intersections continue to operate within capacity during the weekday AM peak hour.
- ▶ By-law 2006-50 permits a minimum vehicle parking supply of 1,133 vehicle parking spaces. The development proposes 1,421 parking spaces, therefore meeting the minimum by-law requirements.
- ▶ The development proposes a total of 247 loading spaces which satisfies minimum requirements
- ▶ A robust set of TDM measures is recommended for the subject site to facilitate a change in travel behaviour sought for the area and reduce single-occupant vehicle trips generated by the proposed development. Recommended measures include bus transit stops, bicycle parking facilities, pedestrian connections, and the promotion of multi-modal travel alternatives.



APPENDIX A

Terms of Reference



Outlook

Traffic Impact Study TOR_12506 Heart Lake Road, Caledon_PRE 2025-0095

From Debang Chen <DChen@lea.ca>

Date Thu 8/7/2025 11:36 AM

To Emma.Howlett@caledon.ca <Emma.Howlett@caledon.ca>

Cc monika.dhungana@caledon.ca <monika.dhungana@caledon.ca>; Davin McCully <davin@armstrongplan.ca>

 1 attachment (283 KB)

Traffic Impact Study TOR_12506 Heart Lake Road, Caledon_PRE 2025-0095.pdf;

Hi Emma,

Please review the attached TOR for the Traffic Impact Study of the proposed development at 12506 Heart Lake Road, Caledon.

Let me know if you have any questions/comments. Thank you.

Regards,

Debang Chen, P.Eng., M.Eng.

Project Manager, Transportation Planning & Engineering

LEA Consulting Ltd.

40 University Avenue, Suite 503 | Toronto, ON | M5J 1T1

T: 647-963-8578 T: 905-470-0015 ext. 379 E: DChen@lea.ca W: www.LEA.ca





August 6, 2025

Reference Number: 26039.00.200

RE: Terms of Reference – Proposed Industrial Warehouse Development: 12506 Heart Lake Rd, Caledon

Dear Emma Howlett:

We wish to confirm the following work plan for preparing a Transportation Impact Study (TIS) for a proposed industrial warehouse development at 12506 Heart Lake Rd (herein referred to as subject site). The lands are situated on the west side of Heart Lake Road just south of the existing Greenbelt area and approximately 465 metres north of Abbotside Way at Heart Lake Rd. The site location is illustrated below in **Figure 1**.

Figure 1: Site Location



Based on the information provided to us, it is our understanding that four (4) buildings with an approximate total size of 153,330 m² (1,650,450 ft²) are proposed. The following work plan is informed by the requirements set out by the *Town of Caledon Transportation Impact Studies – Terms of Reference and Guidelines (March 2017)* and *Region of Peel Traffic Impact Study Guidelines*.

STUDY AREA & TRAFFIC DATA

LEA will review the existing conditions of the surrounding area, including the existing road network (lane configuration and turning restrictions), pedestrian and cycling network, and transit network.

The study will assess the weekday AM and PM peak hours. The proposed study area will include the analysis of the following intersections:



- ▶ Heart Lake Rd at Old School Rd (Unsignalized);
- ▶ Heart Lake Rd at Existing Site Dwy / Private Dwy (Unsignalized);
- ▶ Heart Lake Rd at Abbotside Way (Unsignalized); and
- ▶ Heart Lake Rd at Mayfield Rd (Signalized).

LEA will use the most recent turning movement count (TMC) data available for the study area intersections.

TRAFFIC ASSESSMENT & STUDY HORIZON YEAR

The study will analyze weekday AM and weekday PM peak hour traffic operations. Synchro version 12 will be used to assess intersection operations based on the HCM 6th edition methodology during the peak hours. The traffic analysis reviews 5-year and 10-year horizons.

BACKGROUND TRAFFIC

General Corridor Growth Rate: LEA will consult with the City on assumptions for general corridor growth rates and/or historical intersection TMC data will be reviewed of intersections in the study area to determine corridor growth rates.

Road Network Improvements: LEA will note any road network improvements identified within the study area and account for any traffic diversions associated with these improvements within our analysis.

Background Development Traffic: LEA will consult with the review agencies on background development to be considered within the study. Should no TIS be available, Trip generation will be based on ITE Trip Generation Manual 11th Edition will be applied to the proposed development. Trips from the proposed development will be assigned to the road network based on the local modal split and trip distribution based on observations of traffic patterns, and existing turn permissions/prohibitions.

The anticipated background development include:

- ▶ Snell's Hollow;
- ▶ 12304 Heart Lake Rd; and,
- ▶ Mayfield West Phase 1 – Stage 2.



TRIP GENERATION, DISTRIBUTION, & ASSIGNMENT

Trip generation will be estimated using proxy site trip generation and/or ITE Trip Generation Manual 11th Edition. The general trip distribution will be based on will a review of existing traffic patterns. Trip assignment will be completed accordingly to reflect the configuration of site accesses, turning restrictions, and logical routings.

FUTURE TRAFFIC SCENARIOS

Future background and future total analyses for the aforementioned intersections within the study area will be conducted reviews 5-year and 10-year horizons.

REMEDIAL MEASURES

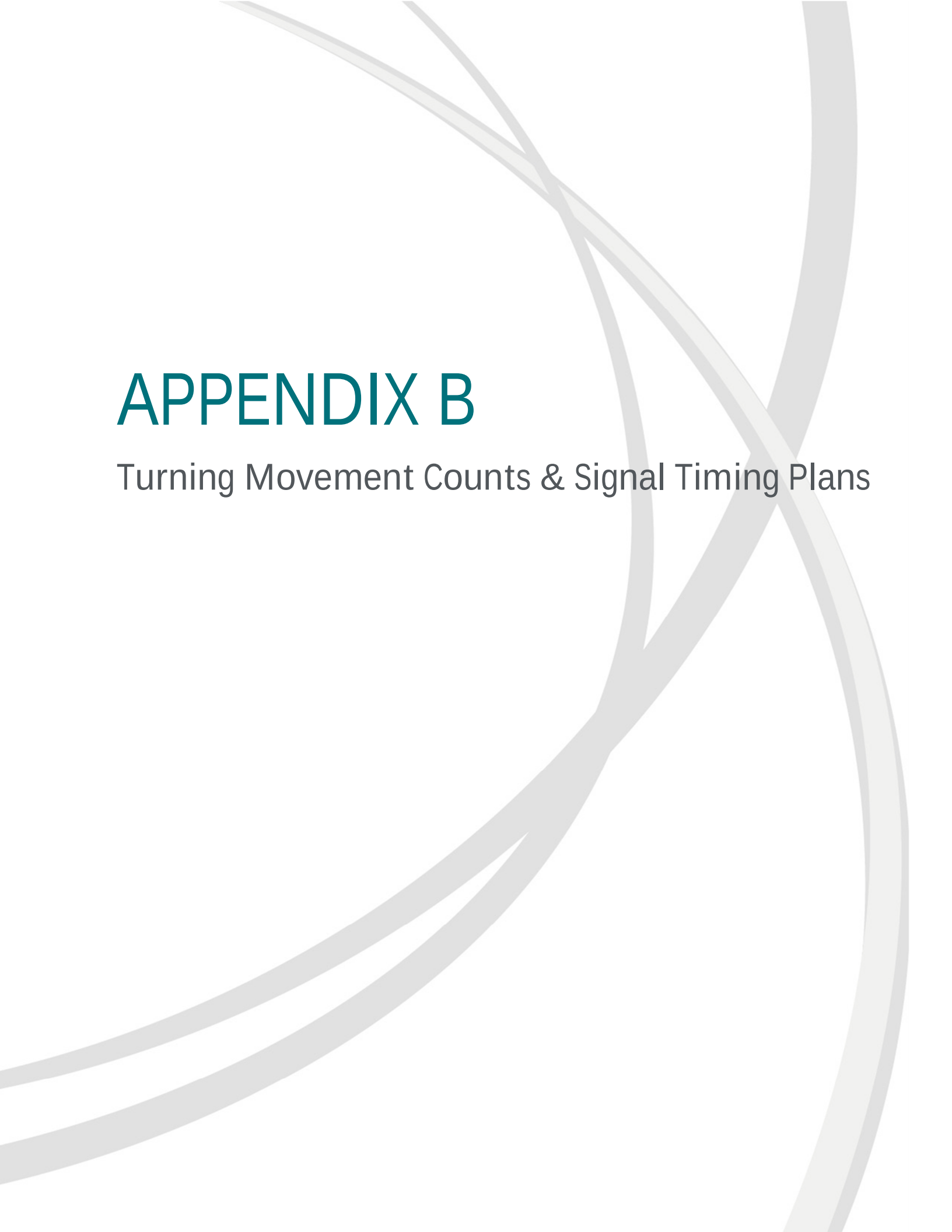
Any movements at the studied intersections that exceed a V/C ratio of 0.90 for through or shared through turning movements and exclusive movements that exceed a V/C ratio of 1.00 under future total conditions will be identified. 95th percentile queue lengths for individual movements and available lane storage will be identified. If remedial actions such as signal optimization are unsuccessful, this will also be identified. If remedial measures are to be employed, a scenario will be provided demonstrating the change in intersection operations.

Should you have any comments with our assumptions or have any concerns, please contact the undersigned.

Yours truly,

LEA CONSULTING LTD.

Debang Chen, P.Eng., M.Eng.
Project Manager, Transportation
:ak

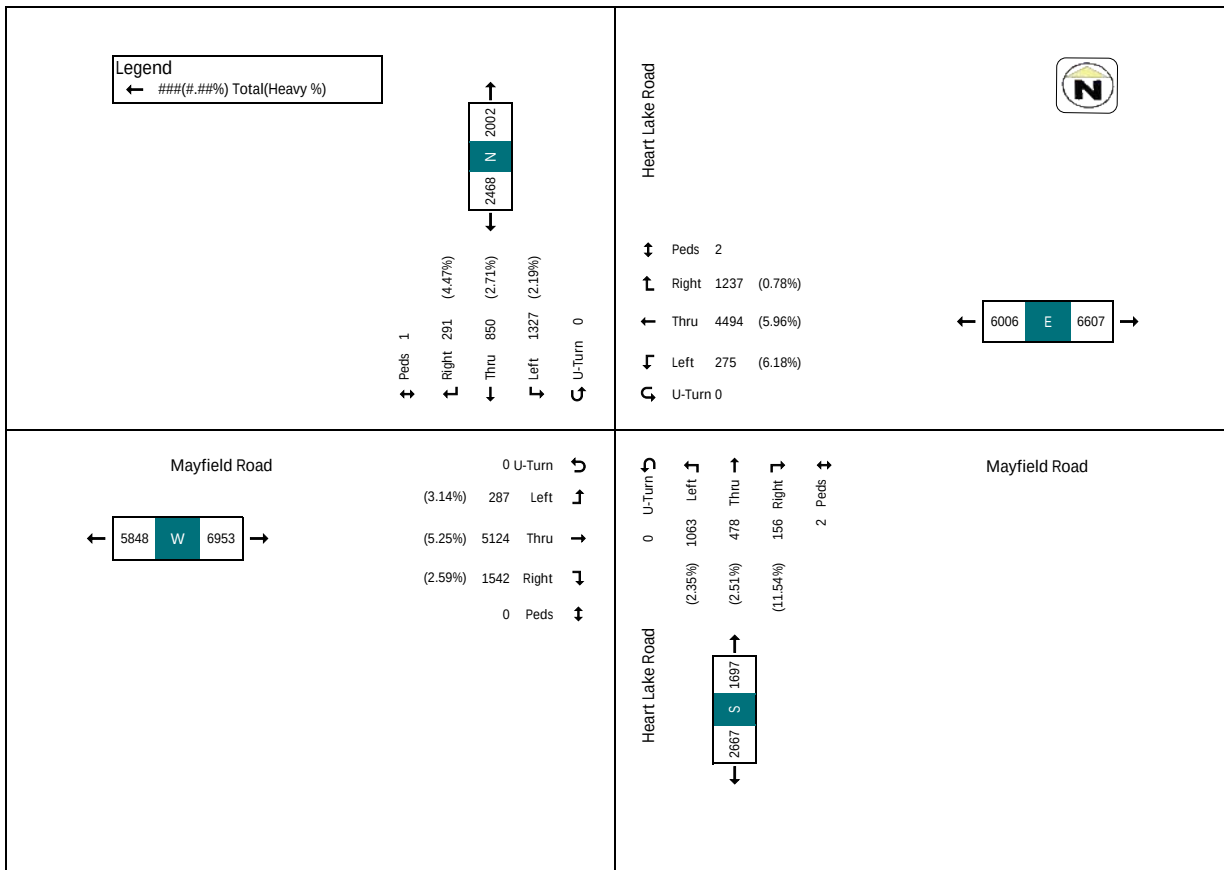


APPENDIX B

Turning Movement Counts & Signal Timing Plans

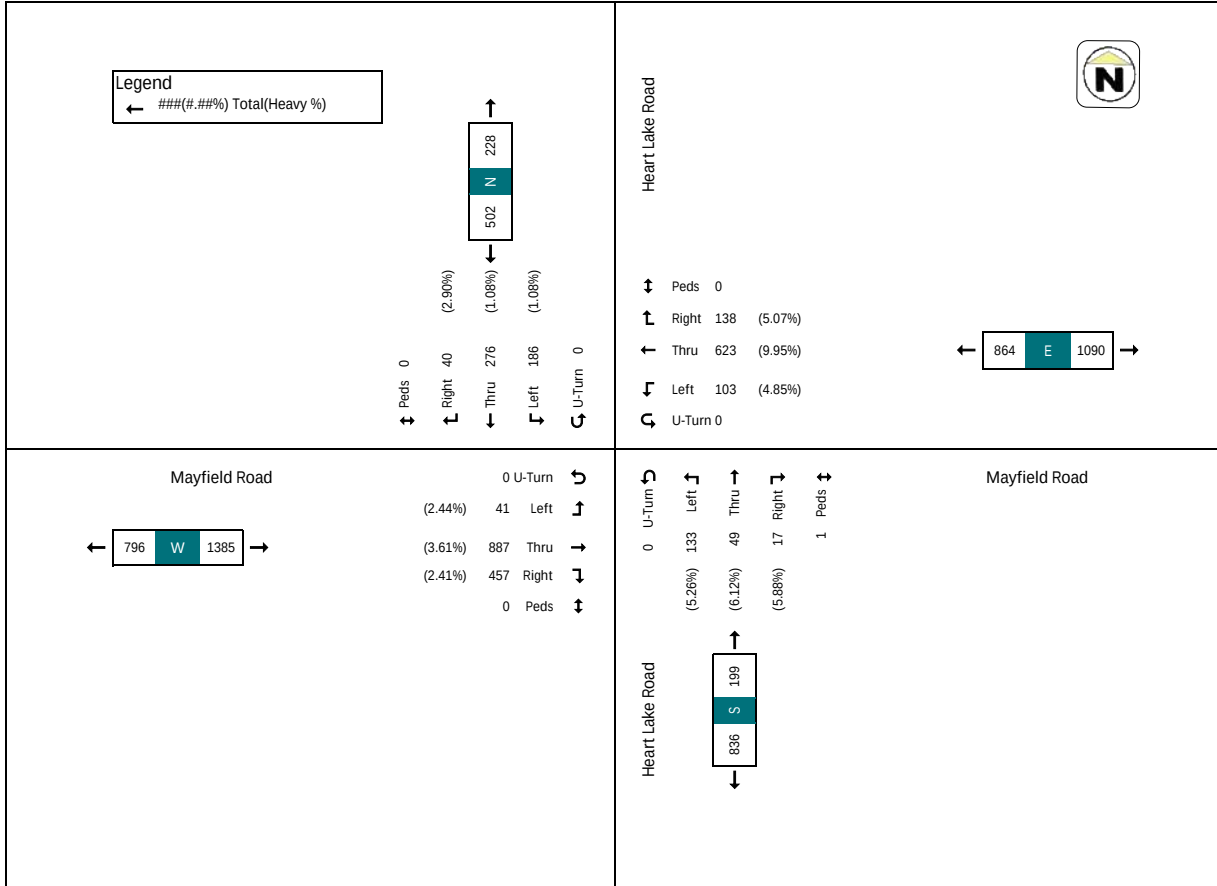
Turning Movement Count - Heart Lake Road & Mayfield Road

Start Time	Heart Lake Road Southbound					Mayfield Road Westbound					Heart Lake Road Northbound					Mayfield Road Eastbound					Grand Total					
	U-Turn	Left	Thru	Right	Peds	App. Total	U-Turn	Left	Thru	Right	Peds	App. Total	U-Turn	Left	Thru	Right	Peds	App. Total	U-Turn	Left		Thru	Right	Peds	App. Total	
6:30	0	45	26	3	0	74	0	3	112	14	0	129	0	19	3	3	0	25	0	8	234	27	0	269	497	
6:45	0	36	17	4	0	57	0	3	117	23	0	143	0	36	4	3	0	43	0	7	214	56	0	277	500	
Hourly Total	0	81	43	7	0	131	0	6	229	37	0	272	0	55	7	6	0	68	0	15	448	83	0	546	997	
7:00	0	47	46	4	0	97	0	2	97	16	0	115	0	14	4	1	0	19	0	3	179	52	0	234	465	
7:15	0	39	49	3	0	91	0	12	139	25	0	176	0	12	9	2	0	23	0	3	202	64	0	268	558	
7:30	0	44	49	12	0	105	0	16	123	24	0	165	0	14	3	3	0	24	0	10	242	96	0	338	632	
7:45	0	60	88	10	0	158	0	25	165	26	0	216	0	25	10	4	1	36	0	3	244	132	0	379	792	
Hourly Total	0	190	232	29	0	451	0	57	524	91	0	672	0	65	30	10	1	105	0	18	867	334	0	1219	2447	
8:00	0	42	78	9	0	129	0	31	143	32	0	206	0	39	12	6	0	57	0	13	225	130	0	368	760	
8:15	0	46	69	12	0	127	0	24	166	45	0	235	0	40	16	7	0	60	0	11	299	104	0	414	726	
8:30	0	36	41	7	0	84	0	23	100	46	0	207	0	32	10	5	0	49	0	14	219	83	0	304	667	
8:45	0	40	60	15	0	115	0	20	137	44	0	201	0	23	10	7	0	40	0	15	195	79	0	280	653	
Hourly Total	0	166	248	45	0	459	0	98	595	136	0	829	0	131	49	20	0	200	0	53	838	403	0	1294	2782	
9:00	0	32	33	9	0	74	0	7	133	31	0	171	0	29	6	6	0	41	0	9	220	77	0	306	592	
9:15	0	42	37	10	0	89	0	18	143	34	0	195	0	24	10	9	0	43	0	9	178	60	0	247	574	
Hourly Total	0	74	70	19	0	163	0	25	276	65	0	366	0	53	16	15	0	84	0	18	398	137	0	553	1166	
Peak																										
15:30	0	33	24	9	0	66	0	5	197	21	0	206	0	49	20	9	0	78	0	8	229	45	0	282	692	
15:45	0	50	20	14	0	84	0	12	207	39	0	276	0	74	27	9	0	110	0	20	222	46	0	288	738	
Hourly Total	0	83	44	23	0	150	0	17	404	121	0	542	0	123	47	18	0	188	0	28	451	91	0	570	1450	
16:00	0	53	18	20	0	91	0	5	204	54	0	263	0	59	41	8	0	108	0	10	241	53	0	304	766	
16:15	0	33	25	13	0	71	0	8	273	78	1	309	0	38	34	8	0	100	0	16	248	41	0	305	785	
16:30	0	35	22	14	0	71	0	11	200	66	0	268	0	42	28	13	0	123	0	13	200	46	0	262	731	
16:45	0	70	11	13	0	96	0	4	226	68	0	298	0	76	28	6	0	114	0	16	213	63	0	290	756	
Hourly Total	0	208	67	63	1	338	0	28	905	266	1	1199	0	257	132	32	0	421	0	60	880	193	0	1133	3091	
17:00	0	64	25	17	0	106	0	6	286	67	1	359	0	76	40	13	0	129	0	15	185	41	0	241	835	
17:15	0	39	23	16	0	78	0	10	265	113	0	364	0	58	28	7	0	93	0	13	200	42	0	253	839	
17:30	0	39	23	16	0	78	0	10	265	113	0	364	0	58	28	7	0	93	0	13	200	42	0	253	839	
17:45	0	77	18	22	0	117	0	9	264	68	0	301	0	86	23	6	0	95	0	19	237	61	0	317	885	
Hourly Total	0	329	94	76	0	499	0	26	1054	330	1	1410	0	276	141	38	1	455	0	63	803	190	0	1056	3420	
18:00	0	90	23	16	0	129	0	10	265	113	0	378	0	67	28	7	0	91	0	15	218	59	0	292	890	
18:15	0	106	29	13	0	148	0	8	242	84	0	338	0	87	10	0	0	105	0	17	221	52	0	290	881	
Hourly Total	0	196	52	29	0	277	0	18	507	191	0	716	0	123	56	17	0	196	0	32	439	111	0	582	1771	
Grand Total	0	1327	850	291	1	2468	0	275	4494	1237	2	6006	0	1063	478	156	2	1697	0	287	5124	1542	0	6953	17124	
Approach %	0.0%	53.8%	34.4%	11.8%			0.0%	4.6%	74.8%	20.6%			0.0%	62.6%	28.2%	9.2%			0.0%	4.1%	73.7%	22.2%				
Total %	0.0%	7.7%	5.0%	1.7%		14.4%	0.0%	1.6%	26.2%	7.2%		35.1%	0.0%	8.2%	2.8%	0.9%		5.9%	0.0%	1.7%	29.9%	9.0%		40.6%		
Lights	0	1298	827	278		2403	0	258	4228	1302		5686	0	1038	466	139		1643	0	278	4895	1552		6625	16566	
% Lights	0	97.8%	97.3%	95.5%		97.6%		93.8%	94.0%	97.2%		94.7%		97.2%	97.5%	88.5%		96.9%		94.8%	97.4%			95.4%	95.0%	
Buses	0	9	11	10		30		2	103	14		119		21	8	5		34		7	111	37		150	333	
% Buses	0	0.7%	1.3%	3.4%		1.2%		0.7%	2.3%	1.1%		2.0%		2.0%	1.7%	3.2%		2.4%		2.2%	2.1%			2.2%	1.9%	
Trucks	0	20	12	3		35		15	165	21		201		4	13			21		2	158	8		168	425	
% Trucks	1.5%	1.4%			1.4%	5.5%		5.5%	3.7%	1.7%		3.3%		0.4%	0.8%	8.3%		1.2%		0.7%	3.1%	0.5%		2.4%	2.5%	
Bicycles	0	0	0	0		0		0	0	0		0		0	0	0		0		0	0			0	4	
Pedestrians	-	-	-	-	1		-	-	-	-	2		-	-	-	-	2		-	-	-	-	0		-	5



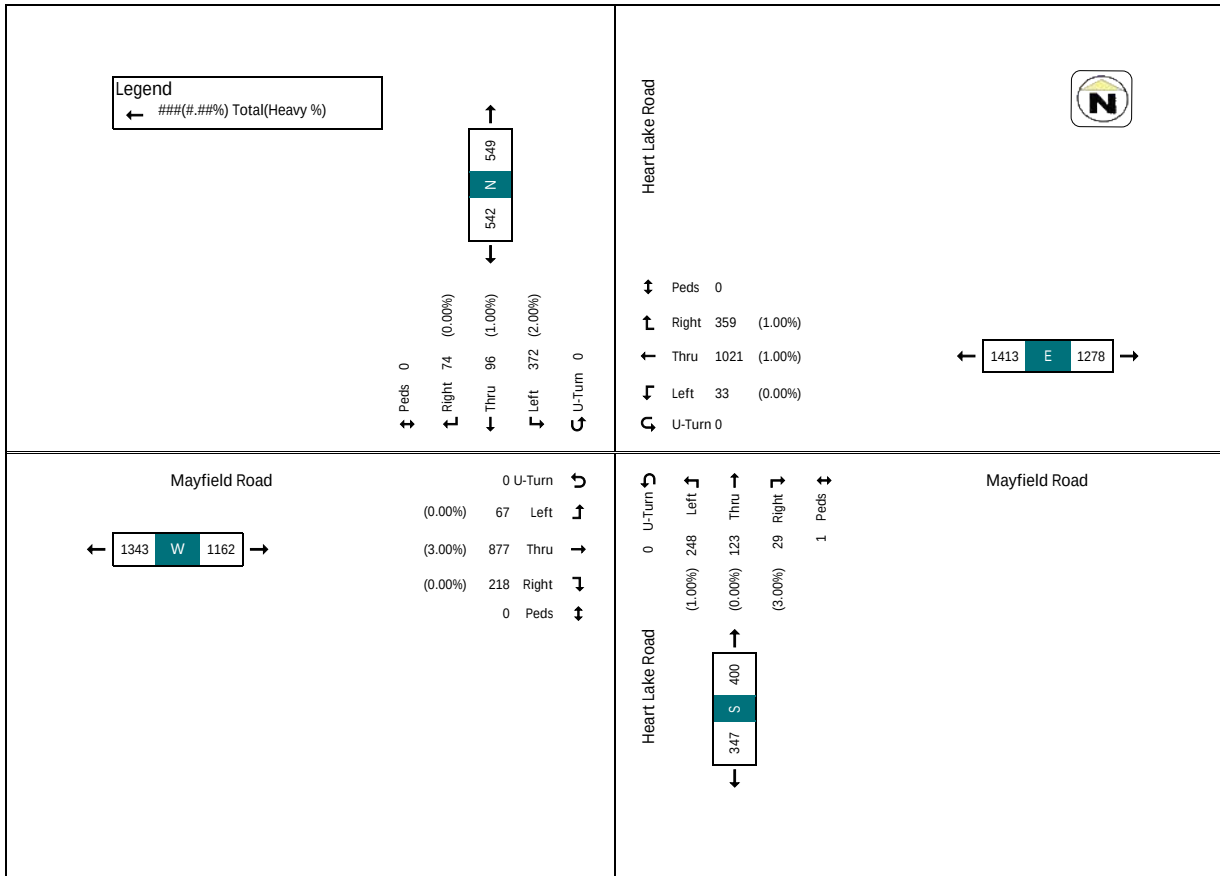
AM Peak Hour - Heart Lake Road & Mayfield Road

Start Time	Heart Lake Road Southbound						Mayfield Road Westbound						Heart Lake Road Northbound						Mayfield Road Eastbound						Grand Total
	U-Turn	Left	Thru	Right	Peds	App. Total	U-Turn	Left	Thru	Right	Peds	App. Total	U-Turn	Left	Thru	Right	Peds	App. Total	U-Turn	Left	Thru	Right	Peds	App. Total	
7:45	0	60	88	10	0	158	0	25	165	26	0	216	0	25	10	4	1	39	0	3	244	132	0	379	792
8:00	0	42	78	9	0	129	0	31	143	32	0	206	0	39	12	6	2	57	0	13	225	130	0	368	760
8:15	0	46	69	12	0	127	0	24	166	45	0	235	0	40	16	4	0	60	0	11	199	104	0	314	736
8:30	0	38	41	9	0	88	0	23	149	35	0	207	0	29	11	3	0	43	0	14	219	92	0	324	662
Hourly Total	0	186	276	40	0	502	0	103	623	138	0	864	0	133	49	17	1	199	0	41	887	457	0	1385	2950
Approach %	0.0%	37.1%	55.0%	8.0%			0.0%	11.9%	72.1%	16.0%		0.0%	66.8%	24.6%	8.5%		0.0%	3.0%	64.0%	33.0%					
Total %	0.0%	6.3%	9.4%	1.4%			0.0%	3.5%	22.1%	4.7%		0.0%	6.7%	2.5%	1.7%		0.0%	0.7%	30.1%	15.5%					
PHF	0	0.79	0.79	0.93		0.79	0	0.93	0.94	0.77		0.92	0	0.83	0.77		0.83	0	0.73	0.91	0.87				0.91
Lights	0	184	268	37		489	0	98	561	131		790	0	126	46	16		188	0	40	855	446			1341
% Lights		98.9%	97.1%	92.5%		97.4%		95.1%	90.0%	94.9%		91.4%		94.7%	93.9%	94.1%		94.5%		97.6%	96.4%	97.6%			96.8%
% Trucks		1.1%	1.8%	6.0%		1.8%		1.0%	3.2%	3.0%		1.0%		3.3%	4.1%	0.0%		4.5%		2.6%	0.9%	2.0%			2.1%
Trucks	0	3	1			4	0	4	42	2		48	0	0	1	0		2	0	24	2				26
% Trucks		0.0%	1.1%	2.5%		0.8%		3.9%	6.7%	1.4%		5.6%		0.0%	2.0%	5.9%		1.0%		0.0%	2.7%	0.4%			1.9%
Bicycles						0						0						0							0
Pedestrians						0						0						0							0



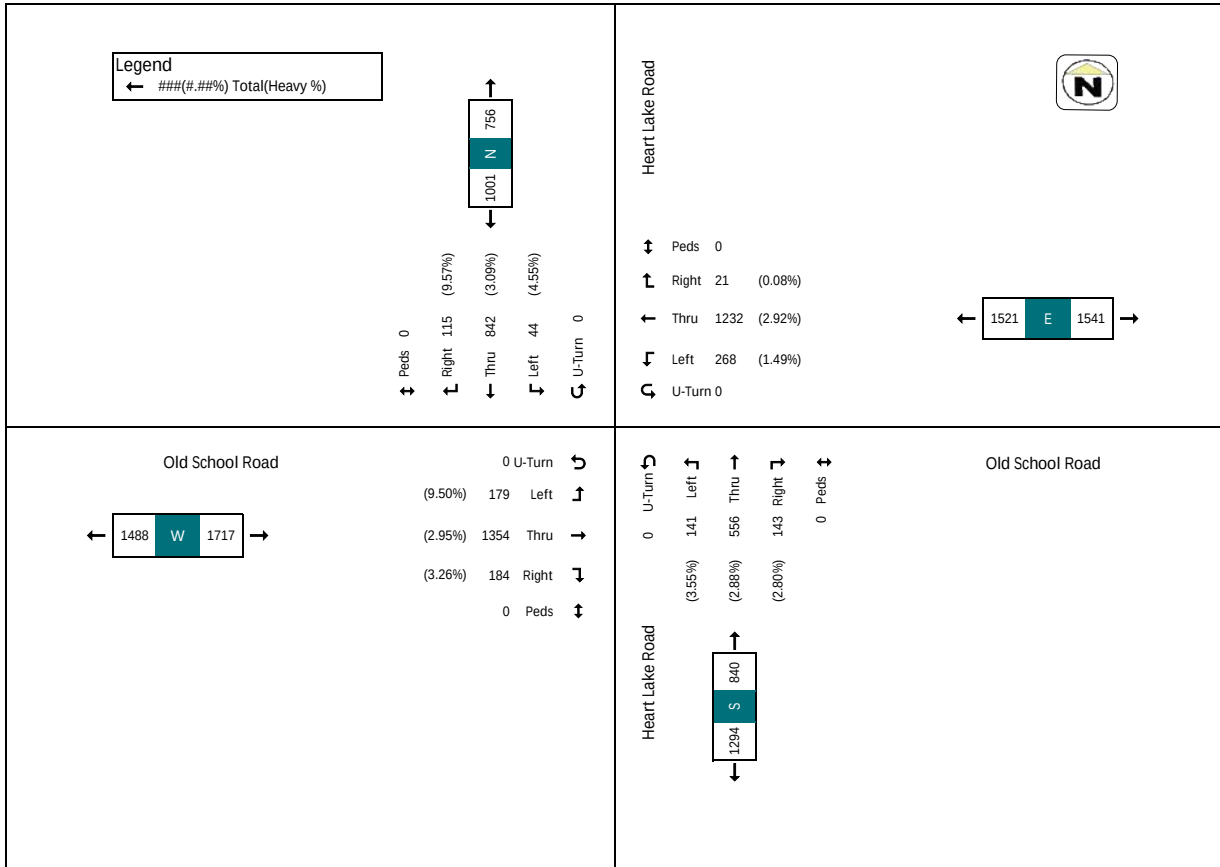
PM Peak Hour - Heart Lake Road & Mayfield Road

Start Time	Heart Lake Road Southbound					Mayfield Road Westbound					Heart Lake Road Northbound					Mayfield Road Eastbound					Grand Total				
	U-Turn	Left	Thru	Right	Peds	App. Total	U-Turn	Left	Thru	Right	Peds	App. Total	U-Turn	Left	Thru	Right	Peds	App. Total	U-Turn	Left		Thru	Right	Peds	App. Total
17:30	0	99	25	23	0	148	0	6	250	85	0	341	0	59	44	6	1	109	0	16	201	46	0	263	861
17:45	0	77	18	22	0	117	0	9	264	83	0	356	0	66	23	6	0	95	0	19	237	61	0	317	885
18:00	0	90	23	16	0	129	0	10	265	103	0	378	0	56	28	10	0	94	0	15	216	52	0	292	890
18:15	0	106	29	13	0	148	0	8	242	88	0	338	0	67	28	10	0	105	0	17	221	52	0	290	881
Hourly Total	0	372	96	74	0	542	0	33	1021	359	0	1413	0	246	123	29	1	400	0	67	877	218	0	1162	3517
Approach %	0.0%	68.6%	17.7%	13.7%	-	-	0.0%	2.3%	72.3%	25.4%	-	-	0.0%	62.0%	30.8%	7.3%	-	-	0.0%	5.8%	75.5%	18.8%	-	-	-
Total %	0.0%	10.6%	2.7%	2.1%	-	15.4%	0.0%	1.1%	34.6%	10.2%	-	40.2%	0.0%	6.4%	4.2%	1.0%	-	11.4%	0.0%	2.3%	29.7%	7.4%	-	33.0%	-
Peds	0	0.88	0.83	0.8	-	0.92	0	0.93	0.96	0.97	-	0.93	0	0.93	0.73	0.92	-	0.92	0	0.88	0.93	0.89	-	0.92	0.99
% Lights	88.1%	89.0%	100.0%	88.2%	-	88.2%	100.0%	98.8%	88.2%	88.2%	-	88.2%	100.0%	88.2%	88.2%	88.2%	-	88.2%	100.0%	88.2%	88.2%	88.2%	-	88.2%	88.2%
% Buses	0	5	0	0	-	5	0	0	0	0	-	0	0	1	0	0	-	1	0	0	1	0	-	1	7
% Trucks	7	7	1	0	-	8	0	0	12	3	-	15	0	1	0	1	-	2	0	0	27	0	-	27	52
% Bicycles	1.9%	1.0%	0.0%	0.0%	-	1.5%	0.0%	1.2%	0.8%	0.8%	-	1.1%	0.0%	0.4%	0.0%	0.4%	-	0.5%	0.0%	0.3%	0.0%	0.0%	-	0.3%	1.5%
Pedestrians	-	-	-	-	0	-	-	-	-	0	-	-	-	-	-	-	-	0	-	-	-	-	-	0	-



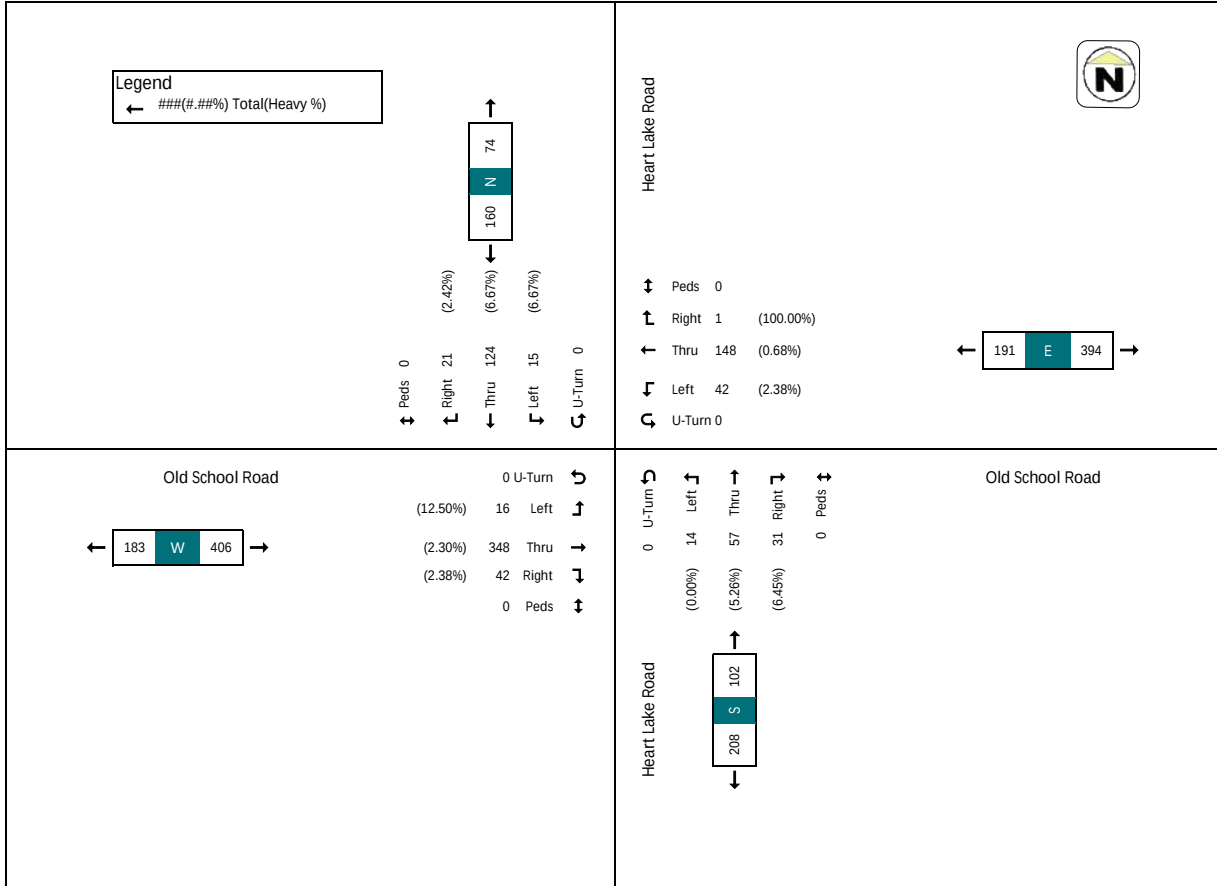
Turning Movement Count - Heart Lake Road & Old School Road

Start Time	Heart Lake Road Southbound					Old School Road Westbound					Heart Lake Road Northbound					Old School Road Eastbound					Grand Total					
	U-Turn	Left	Thru	Right	Peds	App. Total	U-Turn	Left	Thru	Right	Peds	App. Total	U-Turn	Left	Thru	Right	Peds	App. Total	U-Turn	Left		Thru	Right	Peds	App. Total	
6:30	0	0	12	1	0	13	0	3	7	0	0	10	0	0	14	7	0	21	0	1	56	1	0	58	102	
6:45	0	0	14	3	0	17	0	2	23	0	0	25	0	3	17	1	0	21	0	1	45	3	0	49	112	
Hourly Total	0	0	26	4	0	30	0	5	30	0	0	35	0	3	31	8	0	42	0	2	101	4	0	107	214	
7:00	0	0	22	3	2	27	0	1	23	0	0	24	0	1	8	3	0	12	0	2	50	6	0	60	113	
7:15	0	0	22	2	0	24	0	3	26	0	0	29	0	1	9	3	0	13	0	4	70	6	0	80	146	
7:30	0	0	27	10	0	37	0	9	29	1	0	39	0	2	15	3	0	20	0	4	96	13	0	113	215	
7:45	0	3	45	6	0	54	0	14	38	0	0	52	0	2	12	6	0	20	0	6	108	9	0	123	249	
Hourly Total	0	3	117	21	0	148	0	27	106	1	0	134	0	6	44	15	0	65	0	16	324	36	0	376	723	
8:00	0	5	32	1	0	38	0	8	39	0	0	47	0	3	15	9	0	27	0	2	85	11	0	98	210	
8:15	0	0	29	0	0	29	0	11	42	0	0	53	0	15	13	13	0	35	0	2	59	9	0	72	185	
8:30	0	0	19	0	0	19	0	8	26	0	0	34	0	13	11	11	0	35	0	2	47	10	0	60	148	
8:45	0	0	23	2	0	25	0	8	26	0	0	34	0	4	21	7	0	32	0	2	45	10	0	57	163	
Hourly Total	0	11	94	11	0	116	0	36	135	1	0	172	0	17	64	40	0	121	0	17	281	39	0	337	746	
9:00	0	1	23	4	0	28	0	9	19	0	0	28	0	2	13	6	0	21	0	5	61	3	0	69	146	
9:15	0	1	21	3	0	25	0	11	34	1	0	46	0	6	8	6	0	20	0	3	35	6	0	43	134	
Hourly Total	0	2	44	7	0	53	0	20	53	1	0	74	0	8	21	12	0	41	0	8	96	8	0	112	280	
* Break *																										
15:30	0	0	15	8	0	23	0	11	68	1	0	80	0	10	21	3	0	34	0	9	41	5	0	55	182	
15:45	0	1	30	5	0	36	0	9	79	3	0	91	0	8	29	3	0	40	0	5	37	6	0	48	215	
Hourly Total	0	1	45	13	0	59	0	20	147	4	0	171	0	18	50	6	0	74	0	14	78	11	0	103	407	
16:00	0	2	42	2	0	46	0	19	71	3	0	93	0	5	23	9	0	37	0	4	37	5	0	46	222	
16:15	0	1	23	8	0	32	0	12	76	2	0	90	0	8	26	7	0	41	0	4	38	6	0	48	211	
16:30	0	1	40	1	0	42	0	12	83	0	0	95	0	8	26	7	0	41	0	4	38	6	0	48	211	
16:45	0	3	31	5	0	41	0	12	83	0	0	95	0	8	26	7	0	41	0	4	38	6	0	48	211	
Hourly Total	0	8	138	20	0	166	0	57	315	6	0	378	0	33	100	29	0	162	0	15	149	24	0	188	894	
17:00	0	1	48	7	0	56	0	16	83	1	0	100	0	14	26	3	0	43	0	5	49	5	0	59	258	
17:15	0	3	57	10	0	70	0	27	103	0	0	130	0	22	74	12	0	60	0	28	42	10	0	80	313	
17:30	0	3	57	10	0	70	0	27	103	0	0	130	0	22	74	12	0	60	0	28	42	10	0	80	313	
17:45	0	3	52	7	0	62	0	15	73	0	0	88	0	10	53	6	0	69	0	10	57	20	0	87	306	
Hourly Total	0	9	243	28	0	280	0	79	308	7	0	394	0	38	157	23	0	218	0	72	206	38	0	316	1208	
18:00	0	3	66	7	0	76	0	13	63	0	0	77	0	8	51	6	0	66	0	14	58	14	0	87	306	
18:15	0	0	69	4	0	73	0	12	34	0	0	86	0	7	38	4	0	51	0	21	60	10	0	91	301	
Hourly Total	0	3	135	11	0	149	0	24	138	1	0	163	0	18	89	10	0	117	0	35	119	24	0	178	607	
Grand Total	0	44	842	115	0	1001	0	268	1232	21	0	1521	0	141	556	143	0	840	0	179	1354	184	0	1717	5079	
Approach %	0.0%	4.4%	84.1%	11.5%			0.0%	17.6%	81.0%	1.4%			0.0%	16.8%	66.2%	17.0%			0.0%	10.4%	78.9%	10.7%				
Total %	0.0%	0.9%	16.6%	2.3%			0.0%	5.3%	24.3%	0.4%			0.0%	2.8%	10.9%	2.8%			0.0%	3.5%	26.7%	3.6%			33.8%	
Lights	0	42	816	104		962	0	264	1199	73		1480	0	139	540	139			815	0	162	1314	178		1654	
% Lights	95.5%	96.9%	90.4%	96.1%		96.1%	98.5%	97.1%	95.2%			97.3%	96	96.5%	97.1%	97.2%			97.0%	90.5%	97.0%	96.7%			96.3%	
Buses	1	10	10	21		42	0	12	71	6		90	0	4	8	2			14	0	8	27	3		53	
% Buses	2.3%	1.2%	0.8%	2.1%		2.1%	0%	0.7%	1.7%	4.8%		1.6%	0%	2.8%	1.4%	1.4%			1.7%	0%	2.0%	1.6%			2.3%	
Trucks	1	16	1	18		36	0	2	15	0		17	0	1	8	2			11	0	13	3			24	
% Trucks	2.3%	1.9%	0.1%	1.8%		1.8%	0%	0.7%	1.2%	0.0%		1.1%	0%	0.7%	1.4%	1.4%			1.3%	0%	1.0%	1.6%			1.4%	
Bicycles	0	0	0	0		0	0	0	0	0		0	0	0	0	0			0	0	0	0			0	
Pedestrians	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-	0



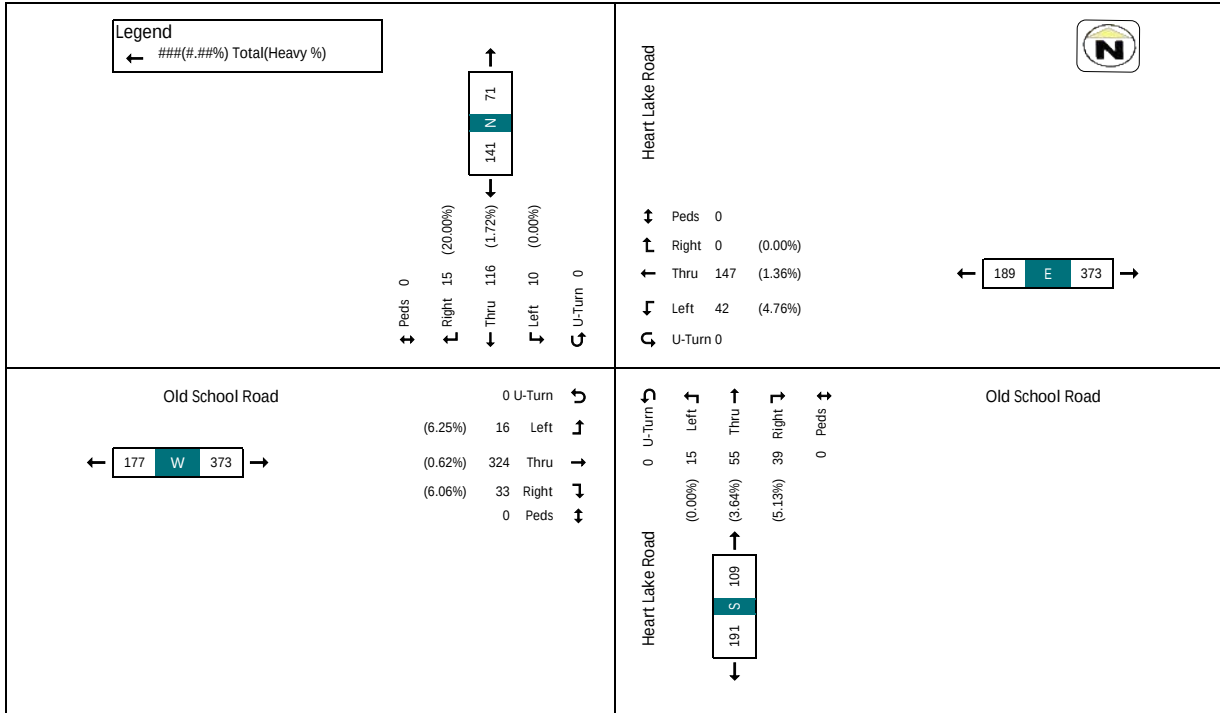
AM Peak Hour - Heart Lake Road & Old School Road

Start Time	Heart Lake Road						Old School Road						Heart Lake Road						Old School Road						Grand Total
	U-Turn	Left	Thru	Right	Peds	App. Total	U-Turn	Left	Thru	Right	Peds	App. Total	U-Turn	Left	Thru	Right	Peds	App. Total	U-Turn	Left	Thru	Right	Peds	App. Total	
7:30	0	6	27	10	0	43	0	9	29	0	0	39	0	2	15	3	0	20	0	4	96	13	0	113	215
7:45	0	3	45	8	0	56	0	14	38	0	0	52	0	7	17	6	0	20	0	6	108	9	0	123	249
8:00	0	5	32	4	0	39	0	9	39	0	0	47	0	2	15	6	0	23	0	2	85	11	0	98	219
8:15	0	1	20	4	0	25	0	11	42	0	0	53	0	7	15	13	0	35	0	4	59	9	0	72	185
Hourly Total	0	15	124	21	0	160	0	42	148	1	0	191	0	14	57	31	0	102	0	16	348	42	0	406	859
Approach %	0.0%	9.4%	77.5%	13.1%			0.0%	22.0%	77.5%	0.5%			0.0%	13.7%	55.9%	30.4%			0.0%	3.9%	85.7%	10.3%			
Total %	0.0%	1.7%	14.4%	2.4%			0.0%	4.9%	17.2%	0.1%			0.0%	0.5%	6.0%	3.0%			11.9%	0.0%	29.9%	40.5%	4.3%		47.3%
PHF	0	0.63	0.69	0.53			0	0.75	0.88	0.25			0	0.5	0.96	0.6			0.73	0	0.67	0.81	0.91		0.83
Lights	0	14	121	19		154	0	41	147	0		188	0	14	54	29		97	0	14	340	41		395	834
% Lights		93.3%	97.6%	90.5%		96.3%		97.6%	99.3%	0.0%		98.4%		100.0%	94.7%	93.5%				85.1%	97.5%	97.7%	97.6%		97.3%
% Trucks		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%
% Pedestrians		0%	0%	0%		0%		0%	0%	0%		0%		0%	0%	0%				0%	0%	0%	0%		0%



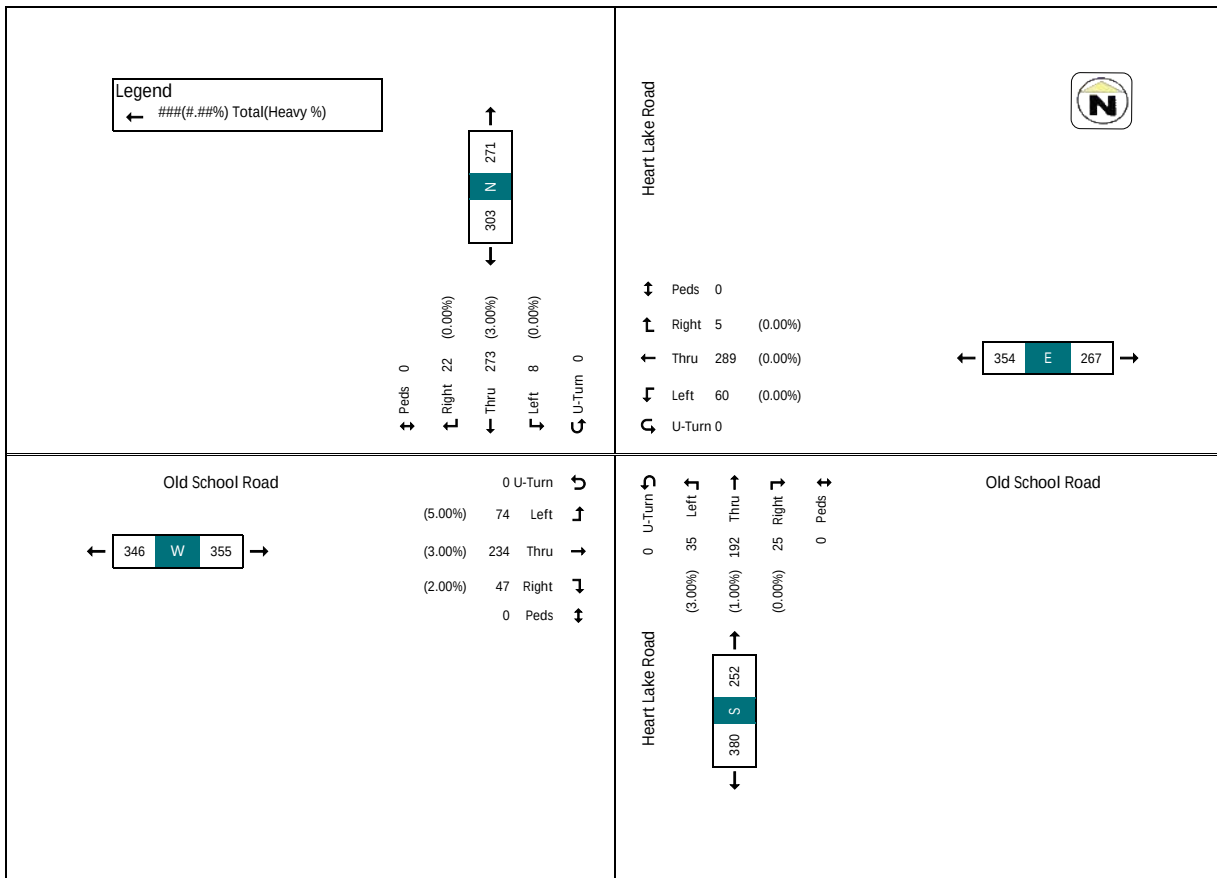
Common AM Peak Hour - Heart Lake Road & Old School Road

Start Time	Heart Lake Road Southbound					Old School Road Westbound					Heart Lake Road Northbound					Old School Road Eastbound					Grand Total				
	U-Turn	Left	Thru	Right	Peds	App. Total	U-Turn	Left	Thru	Right	Peds	App. Total	U-Turn	Left	Thru	Right	Peds	App. Total	U-Turn	Left		Thru	Right	Peds	App. Total
7:45	0	3	45	6	0	54	0	14	38	0	0	52	0	2	12	6	0	20	0	6	108	6	0	123	249
8:00	0	5	32	1	0	38	0	8	39	0	0	47	0	3	15	9	0	27	0	2	85	11	0	98	210
8:15	0	1	20	4	0	25	0	11	42	0	0	53	0	4	13	13	0	30	0	4	59	9	0	72	185
8:30	0	1	19	4	0	24	0	9	28	0	0	37	0	3	13	11	0	27	0	4	72	4	0	80	188
Hourly Total	0	10	116	15	0	141	0	42	147	0	0	189	0	15	53	38	0	109	0	16	324	33	0	373	832
Approach %	0.0%	7.1%	82.3%	10.6%	-	-	0.0%	22.2%	77.8%	0.0%	-	-	0.0%	13.8%	50.5%	35.8%	-	-	0.0%	4.3%	86.9%	8.8%	-	-	-
Total %	0.0%	1.2%	14.3%	1.8%	-	17.4%	0.0%	4.9%	17.1%	0.0%	-	23.3%	0.0%	1.7%	6.4%	4.9%	-	13.4%	0.0%	1.9%	37.7%	3.8%	-	55.9%	-
PHV	0	0	0.64	0.63	-	0.65	0	0.75	0.88	-	-	0.89	0	0.34	0.92	0.75	-	0.78	0	0.67	0.75	0.75	-	0.76	0.82
Lights	0	10	114	12	-	136	0	40	145	0	-	185	0	35	52	37	-	105	0	15	222	31	-	268	794
% Lights	0	100.0%	98.3%	80.0%	-	98.5%	0	95.2%	98.6%	-	-	97.9%	0	100.0%	96.4%	94.9%	-	96.3%	0	93.8%	99.4%	93.9%	-	96.7%	97.9%
Buses	0	0	3	0	-	3	1	2	0	-	-	3	0	1	2	2	-	5	1	2	2	4	-	12	-
% Buses	0.0%	0.0%	2.6%	0.0%	-	2.1%	2.4%	1.4%	0.0%	-	-	1.6%	0.0%	1.9%	2.6%	2.6%	-	4.6%	0.0%	6.3%	0.6%	1.2%	-	3.1%	1.5%
Trucks	0	0	0	0	-	0	0	0	0	-	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0
% Trucks	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%
Bicycles	0	0	0	0	-	0	0	0	0	-	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0
Pedestrians	0	0	0	0	-	0	0	0	0	-	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0



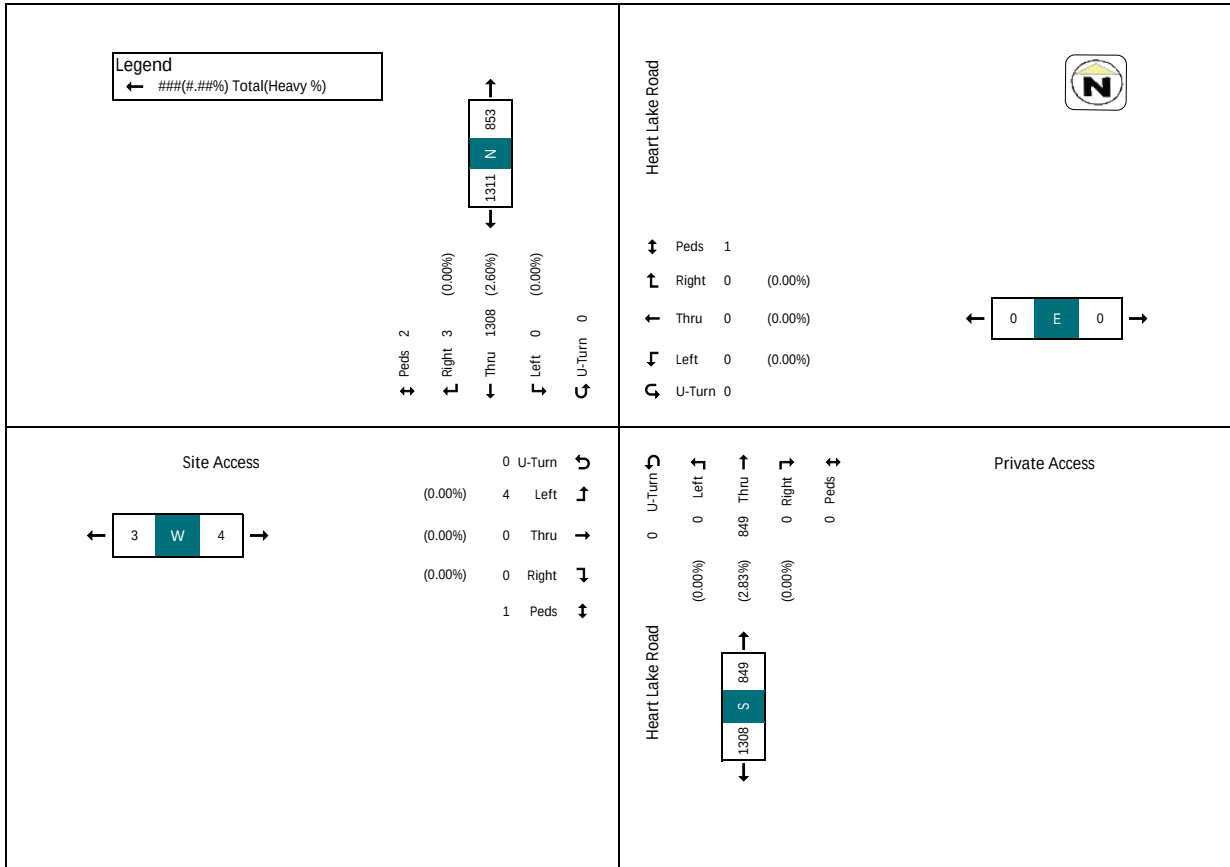
PM Peak Hour - Heart Lake Road & Old School Road

Start Time	Heart Lake Road Southbound						Old School Road Westbound						Heart Lake Road Northbound						Old School Road Eastbound						Grand Total	
	U-Turn	Left	Thru	Right	Peds	App. Total	U-Turn	Left	Thru	Right	Peds	App. Total	U-Turn	Left	Thru	Right	Peds	App. Total	U-Turn	Left	Thru	Right	Peds	App. Total		
17:30	0	2	86	4	0	92	0	21	78	4	0	103	0	7	50	9	0	66	0	29	58	3	0	90	351	
17:45	0	3	52	7	0	62	0	15	73	0	0	88	0	10	53	6	0	69	0	10	57	20	0	87	306	
18:00	0	3	66	7	0	76	0	13	63	0	0	77	0	9	51	6	0	66	0	14	59	14	0	87	305	
18:15	0	0	69	4	0	73	0	11	75	0	0	86	0	0	56	0	0	56	0	21	60	10	0	91	301	
Hourly Total	0	8	273	22	0	303	0	60	289	5	0	354	0	35	192	25	0	252	0	74	234	47	0	355	1264	
Approach %	0.0%	2.6%	90.1%	7.3%	-	-	0.0%	16.9%	81.6%	1.4%	-	-	0.0%	13.9%	76.2%	9.9%	-	-	0.0%	20.8%	65.9%	13.2%	-	-	-	
Total %	0.0%	0.9%	21.6%	1.7%	-	24.0%	0.0%	7.0%	33.6%	0.4%	-	26.0%	0.0%	4.1%	22.4%	2.9%	-	19.0%	0.0%	8.6%	27.2%	5.5%	-	26.1%	-	
Peds	0	0.57	0.79	0.78	-	0.82	0	0.73	0.83	0.31	-	0.88	0	0.88	0.91	0.69	-	0.91	0	0.84	0.98	0.59	-	0.98	0.9	
Light	-	-	205	22	-	226	-	60	289	0	-	353	-	34	191	25	-	250	-	70	227	47	-	343	1241	
Heavy	-	-	68	0	-	68	-	0	0	0	-	1	-	1	1	0	-	2	-	4	7	0	-	11	21	
% Light	100.0%	97.1%	100.0%	87.4%	-	87.4%	100.0%	99.7%	100.0%	100.0%	-	99.7%	100.0%	97.1%	99.5%	100.0%	-	99.5%	100.0%	98.6%	97.9%	97.9%	-	98.6%	88.2%	
% Heavy	0.0%	0.4%	0.0%	0.3%	-	0.3%	0.0%	0.0%	0.0%	0.0%	-	0.0%	0.0%	0.0%	0.0%	0.0%	-	0.0%	0.0%	0.4%	0.0%	0.0%	-	0.3%	0.2%	
Trucks	0	7	0	0	-	7	0	0	0	0	-	1	0	0	0	0	-	1	0	1	0	0	-	2	2	
% Trucks	0.0%	2.6%	0.0%	0.0%	-	2.3%	0.0%	0.3%	0.0%	0.0%	-	0.3%	0.0%	0.0%	0.0%	0.0%	-	0.4%	0.0%	2.6%	0.0%	0.0%	-	1.1%	1.7%	
Bicycles	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0	
Pedestrians	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	0	0



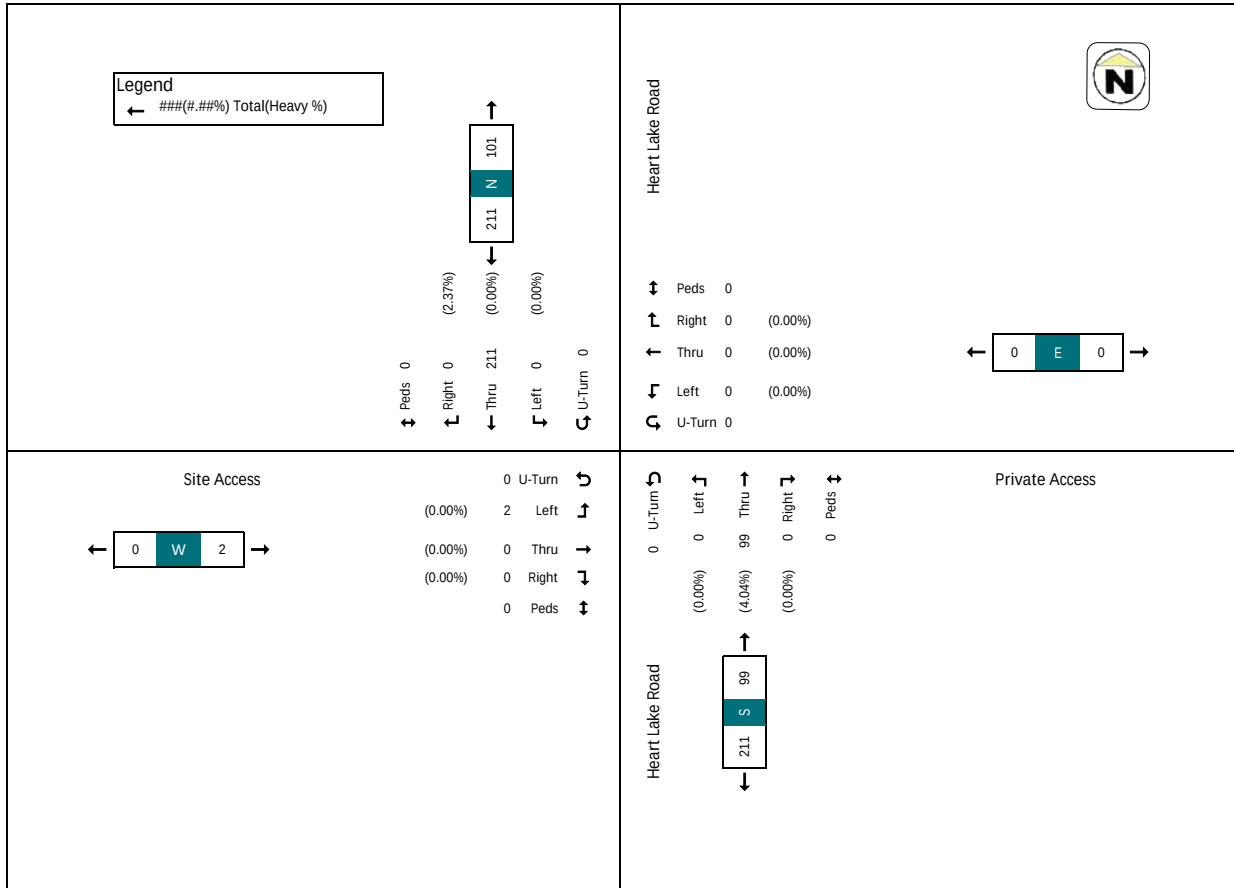
Turning Movement Count - Heart Lake Road & Site Access

Start Time	Heart Lake Road Southbound					Private Access Westbound					Heart Lake Road Northbound					Site Access Eastbound					Grand Total					
	U-Turn	Left	Thru	Right	Peds	App. Total	U-Turn	Left	Thru	Right	Peds	App. Total	U-Turn	Left	Thru	Right	Peds	App. Total	U-Turn	Left		Thru	Right	Peds	App. Total	
6:30	0	0	16	1	0	17	0	0	0	0	0	0	0	0	20	0	0	20	0	0	0	0	0	0	38	
6:45	0	0	16	0	0	16	0	0	0	0	0	0	0	0	20	0	0	20	0	0	0	0	0	0	36	
Hourly Total	0	0	32	1	0	33	0	0	0	0	0	0	0	0	41	0	0	41	0	0	0	0	0	0	74	
7:00	0	0	32	1	0	33	0	0	0	0	0	0	0	0	11	0	0	11	0	0	0	0	0	0	44	
7:15	0	0	33	0	0	33	0	0	0	0	0	0	0	0	11	0	0	11	0	0	0	0	0	0	50	
7:30	0	0	48	0	0	48	0	0	0	0	0	0	0	0	19	0	0	19	0	0	0	0	0	0	67	
7:45	0	0	64	0	0	64	0	0	0	0	0	0	0	0	16	0	0	16	0	2	0	0	0	2	82	
Hourly Total	0	0	177	1	0	178	0	0	0	0	0	0	0	0	63	0	0	63	0	2	0	0	0	2	243	
8:00	0	0	54	0	0	54	0	0	0	0	0	0	0	0	29	0	0	29	0	0	0	0	0	0	83	
8:15	0	0	48	0	0	48	0	0	0	0	0	0	0	0	35	0	0	35	0	0	0	0	0	0	80	
8:30	0	0	33	0	0	33	0	0	0	0	0	0	0	0	31	0	0	31	0	0	0	0	0	0	59	
8:45	0	0	50	0	0	50	0	0	0	0	0	0	0	0	37	0	0	37	0	0	0	0	0	0	87	
Hourly Total	0	0	181	0	2	181	0	0	0	0	0	0	0	0	128	0	0	128	0	0	0	0	0	0	309	
9:00	0	0	35	0	0	35	0	0	0	0	0	0	0	0	18	0	0	18	0	0	0	0	0	0	53	
9:15	0	0	38	0	0	38	0	0	0	0	0	0	0	0	19	0	0	19	0	0	0	0	0	0	57	
Hourly Total	0	0	73	0	0	73	0	0	0	0	0	0	0	0	37	0	0	37	0	0	0	0	0	0	110	
* Break *																										
15:30	0	0	27	0	0	27	0	0	0	0	0	0	0	0	38	0	0	38	0	0	0	0	0	0	65	
15:45	0	0	47	0	0	47	0	0	0	0	0	0	0	0	38	0	0	38	0	0	0	0	0	0	85	
Hourly Total	0	0	74	0	0	74	0	0	0	0	0	0	0	0	76	0	0	76	0	0	0	0	0	0	159	
16:00	0	0	60	0	0	60	0	0	0	0	0	0	0	0	30	0	0	30	0	0	0	0	0	0	90	
16:15	0	0	42	0	0	42	0	0	0	0	0	0	0	0	47	0	0	47	0	0	0	0	0	0	89	
16:30	0	0	59	0	0	59	0	0	0	0	0	0	0	0	43	0	0	43	0	0	0	0	0	0	107	
16:45	0	0	58	0	0	58	0	0	0	0	0	0	0	0	41	0	0	41	0	0	0	0	0	0	99	
Hourly Total	0	0	219	0	0	219	0	0	0	0	0	1	0	0	166	0	0	166	0	0	0	0	1	0	385	
17:00	0	0	67	1	0	68	0	0	0	0	0	0	0	0	38	0	0	38	0	0	0	0	0	0	106	
17:15	0	0	90	0	0	90	0	0	0	0	0	0	0	0	45	0	0	45	0	0	0	0	0	0	135	
17:30	0	0	112	0	0	112	0	0	0	0	0	0	0	0	71	0	0	71	0	0	0	0	0	0	183	
17:45	0	0	86	0	0	86	0	0	0	0	0	0	0	0	66	0	0	66	0	0	0	0	0	0	152	
Hourly Total	0	0	355	1	0	356	0	0	0	0	0	0	0	0	220	0	0	220	0	1	0	0	0	1	577	
18:00	0	0	101	0	0	101	0	0	0	0	0	0	0	0	54	0	0	54	0	0	0	0	0	0	155	
18:15	0	0	96	0	0	96	0	0	0	0	0	0	0	0	54	0	0	54	0	0	0	0	0	0	151	
Hourly Total	0	0	197	0	0	197	0	0	0	0	0	0	0	0	118	0	0	118	0	1	0	0	0	1	316	
Grand Total	0	0	1308	3	2	1311	0	0	0	0	0	1	0	0	0	849	0	0	849	0	4	0	0	1	4	2164
Approach	0.0%	0.0%	99.9%	0.2%	-	-	-	-	-	-	-	-	0.0%	0.0%	100.0%	0.0%	-	-	0.0%	100.0%	0.0%	0.0%	-	-	-	
Total	0.0%	0.0%	60.4%	0.1%	-	60.6%	0.0%	0.0%	0.0%	0.0%	-	0.0%	0.0%	0.0%	39.2%	0.0%	-	39.2%	0.0%	0.2%	0.0%	0.0%	-	0.2%	-	
Lights	0	0	1274	3	-	1277	0	0	0	0	-	0	0	0	925	0	-	925	0	0	0	0	-	1	2106	
% Lights	-	-	97.4%	100.0%	-	97.4%	-	-	-	-	-	-	-	-	97.2%	-	-	97.2%	-	100.0%	0	0	-	100.0%	97.3%	
Buses	0	0	18	0	-	18	-	-	0	0	-	0	-	-	14	0	-	14	-	0	0	0	-	0	20	
% Buses	-	-	1.2%	0.0%	-	1.2%	-	-	-	-	-	-	-	-	1.6%	-	-	1.6%	-	0.0%	-	-	-	0.0%	1.4%	
Trucks	0	0	18	0	-	18	-	-	0	0	-	0	-	-	10	0	-	10	-	0	0	0	-	0	28	
% Trucks	-	-	1.4%	-	-	1.4%	-	-	-	-	-	-	-	-	1.2%	-	-	1.2%	-	0.0%	-	-	-	0.0%	1.3%	
Bicycles	-	-	0	0	-	0	-	-	-	0	-	0	-	-	0	0	-	0	-	-	-	-	-	0	0	
Pedestrians	-	-	-	-	2	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	1	-	4	



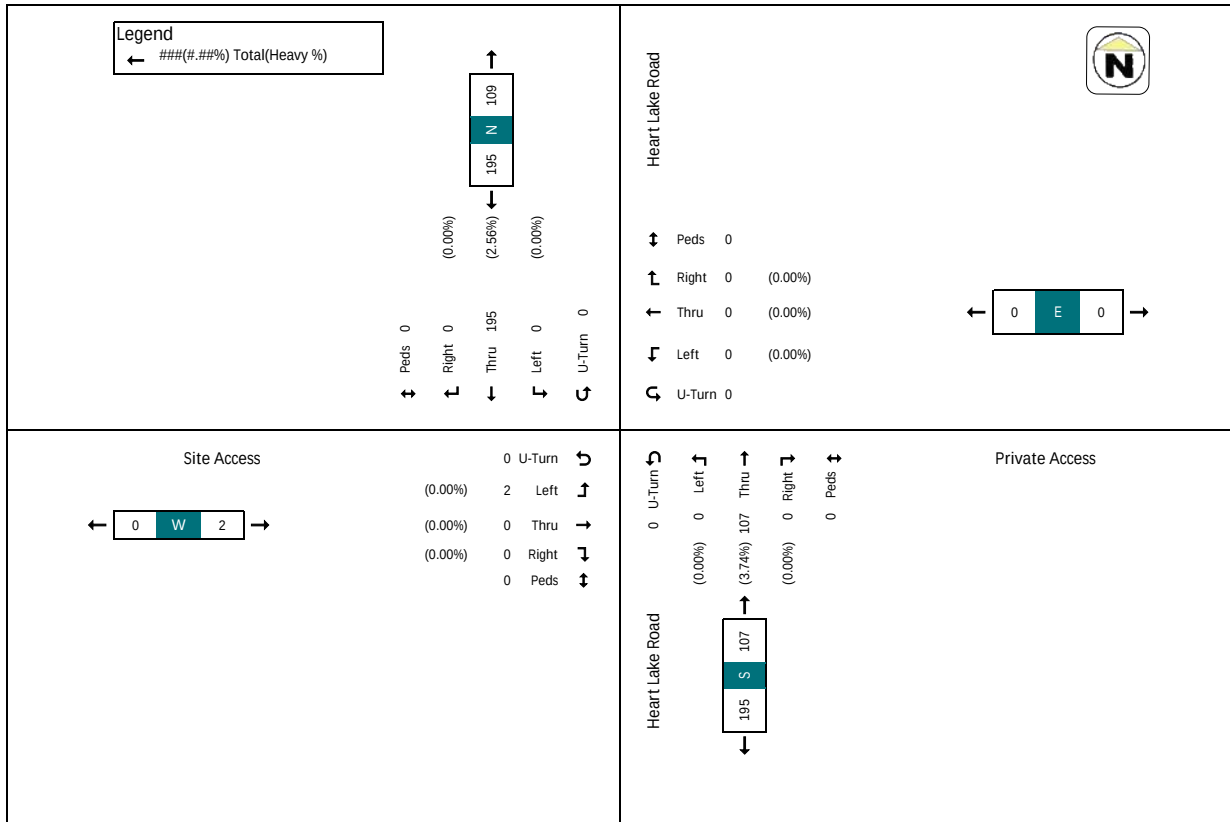
AM Peak Hour - Heart Lake Road & Site Access

Start Time	Heart Lake Road Southbound						Private Access Westbound						Heart Lake Road Northbound						Site Access Eastbound						Grand Total
	U-Turn	Left	Thru	Right	Peds	App. Total	U-Turn	Left	Thru	Right	Peds	App. Total	U-Turn	Left	Thru	Right	Peds	App. Total	U-Turn	Left	Thru	Right	Peds	App. Total	
7:30	0	0	48	0	0	48	0	0	0	0	0	0	0	0	19	0	0	0	0	0	0	0	0	0	67
7:45	0	0	54	0	0	54	0	0	0	0	0	0	0	0	19	0	0	0	0	0	0	0	0	0	82
8:00	0	0	54	0	0	54	0	0	0	0	0	0	0	0	25	0	0	0	0	0	0	0	0	0	83
8:15	0	0	45	0	0	45	0	0	0	0	0	0	0	0	35	0	0	0	0	0	0	0	0	0	80
Hourly Total	0	0	211	0	0	211	0	0	0	0	0	0	0	0	99	0	0	0	0	0	0	0	0	2	312
Approach %	0.0%	0.0%	100.0%	0.0%	-	-	-	-	-	-	-	-	0.0%	0.0%	100.0%	0.0%	-	-	0.0%	100.0%	0.0%	0.0%	-	-	-
Total %	0.0%	0.0%	67.5%	0.0%	-	67.5%	0.0%	0.0%	0.0%	0.0%	0.0%	-	0.0%	0.0%	31.7%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	-
Peds	0	0	0.0%	0	-	0.0%	0	0	0	0	0	-	0	0	0.1%	0	-	0.1%	0	0.25%	0	0	-	0.25%	0.94%
Lights	0	0	206	0	-	206	0	0	0	0	0	-	0	0	95	0	-	95	0	2	0	0	-	2	303
% Lights	-	-	97.6%	-	-	97.6%	-	-	-	-	-	-	-	-	96.0%	-	-	96.0%	-	100.0%	-	-	-	100.0%	97.1%
Right	0	0	0	0	-	0	0	0	0	0	0	-	0	0	2.0%	0	-	2.0%	0	0.0%	0	0	-	0	1.2%
% Trucks	-	-	1.4%	-	-	1.4%	-	-	-	-	-	-	-	-	2.0%	-	-	2.0%	-	0.0%	-	-	-	0.0%	1.6%
Bicycles	-	-	0	-	-	0	-	-	-	-	-	-	-	-	0	-	-	0	-	-	-	-	-	0	0
Pedestrians	-	-	0	-	-	0	-	-	-	-	-	-	-	-	0	-	-	0	-	-	-	-	-	0	0



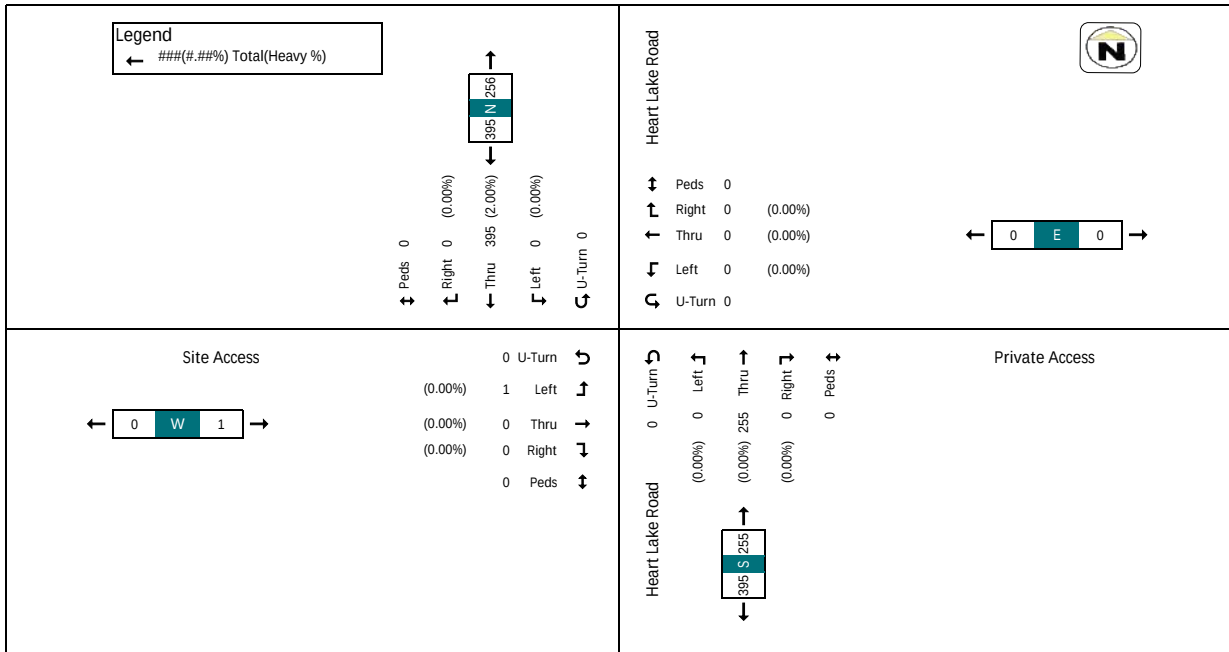
Common AM Peak Hour - Heart Lake Road & Site Access

Start Time	Heart Lake Road Southbound						Private Access Westbound						Heart Lake Road Northbound						Site Access Eastbound						Grand Total	
	U-Turn	Left	Thru	Right	Peds	App. Total	U-Turn	Left	Thru	Right	Peds	App. Total	U-Turn	Left	Thru	Right	Peds	App. Total	U-Turn	Left	Thru	Right	Peds	App. Total		
7:45	0	0	64	0	0	64	0	0	0	0	0	0	0	0	16	0	0	0	0	0	0	0	0	0	2	82
8:00	0	0	54	0	0	54	0	0	0	0	0	0	0	0	25	0	0	0	0	0	0	0	0	0	0	83
8:15	0	0	45	0	0	45	0	0	0	0	0	0	0	0	35	0	0	0	0	0	0	0	0	0	0	80
8:30	0	0	32	0	0	32	0	0	0	0	0	0	0	0	21	0	0	0	0	0	0	0	0	0	0	58
Hourly Total	0	0	195	0	0	195	0	0	0	0	0	0	0	0	107	0	0	0	0	0	0	0	0	0	0	304
Approach %	0.0%	0.0%	100.0%	0.0%	-	-	-	-	-	-	-	-	0.0%	0.0%	100.0%	0.0%	-	-	0.0%	100.0%	0.0%	-	-	-	-	-
Total %	0.0%	0.0%	64.1%	0.0%	64.1%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	34.3%	0.0%	35.2%	0.0%	100.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.7%	-
Peds	0	0	0.7%	0	0.7%	0	0	0	0	0	0	0	0	0	0.7%	0	0.7%	0	0.25	0	0.0%	0.25	0	0.25	0.92	295
Lights	0	0	100	0	100	0	0	0	0	0	0	0	0	0	100	0	100	0	0	0	0	0	0	0	0	5
% Lights	-	-	67.4%	-	67.4%	-	-	-	-	-	-	-	-	-	95.3%	-	95.3%	-	100.0%	-	0.0%	100.0%	-	100.0%	-	97.0%
Buses	0	2	0	0	0	2	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0	4
% Buses	-	1.0%	-	-	1.0%	-	-	-	-	-	-	-	-	-	1.9%	-	1.9%	-	0.0%	-	0.0%	0.0%	-	0.0%	-	1.3%
Trucks	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	-	0.0%	-	-	0.0%	-	-	-	-	-	-	-	-	-	0.0%	-	0.0%	-	0.0%	-	0.0%	0.0%	-	0.0%	-	0.0%
Bicycles	-	-	-	-	0	0	-	-	-	-	-	0	0	-	-	-	-	0	0	-	-	-	-	0	0	0
Pedestrians	-	-	-	-	0	0	-	-	-	-	-	0	0	-	-	-	-	0	0	-	-	-	-	0	0	0



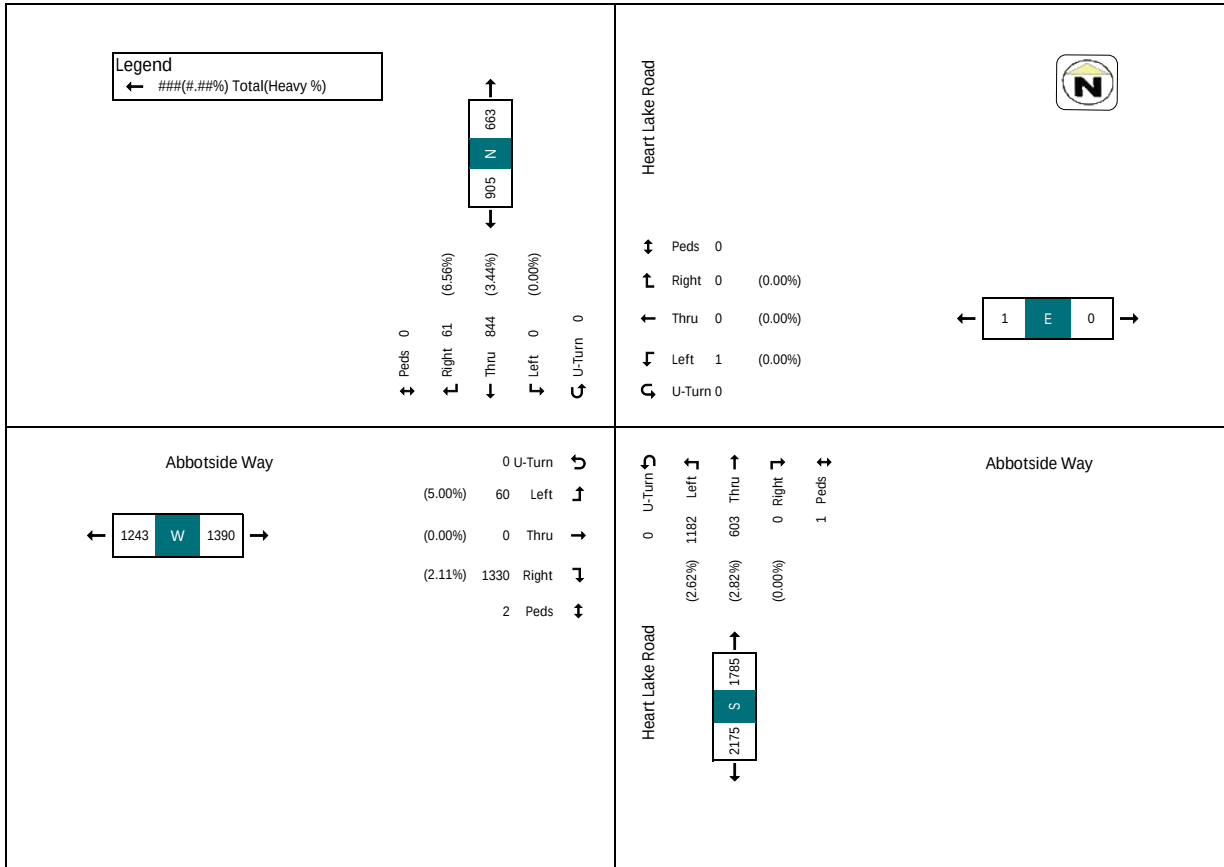
PM Peak Hour - Heart Lake Road & Site Access

Start Time	Heart Lake Road Southbound						Private Access Westbound						Heart Lake Road Northbound						Site Access Eastbound						Grand Total
	U-Turn	Left	Thru	Right	Peds	App. Total	U-Turn	Left	Thru	Right	Peds	App. Total	U-Turn	Left	Thru	Right	Peds	App. Total	U-Turn	Left	Thru	Right	Peds	App. Total	
17:30	0	0	112	0	0	112	0	0	0	0	0	0	0	0	71	0	0	71	0	0	0	0	0	0	183
17:45	0	0	86	0	0	86	0	0	0	0	0	0	0	0	68	0	0	68	0	0	0	0	0	0	152
18:00	0	0	101	0	0	101	0	0	0	0	0	0	0	0	64	0	0	64	0	0	0	0	0	0	165
18:15	0	0	96	0	0	96	0	0	0	0	0	0	0	0	54	0	0	54	0	1	0	0	0	1	151
Hourly Total	0	0	395	0	0	395	0	0	0	0	0	0	0	0	255	0	0	255	0	1	0	0	0	1	651
Approach %	0.0%	0.0%	100.0%	0.0%	-	-	-	-	-	-	-	-	0.0%	0.0%	100.0%	0.0%	-	-	0.0%	100.0%	0.0%	0.0%	-	-	-
Total %	0.0%	0.0%	60.7%	0.0%	-	60.7%	0.0%	0.0%	0.0%	0.0%	-	0.0%	0.0%	0.0%	81.7%	0.0%	-	39.2%	0.0%	0.3%	0.0%	0.0%	-	0.2%	-
Peds	0	0	0.88	0	-	0.88	0	0	0	0	-	0	0	0	0.9	0	-	0.9	0	0.25	0	0	-	0.25	0.89
Light	0	0	97.7%	0	-	97.7%	0	0	0	0	-	0	0	0	89.8%	0	-	89.8%	0	100.0%	0	0	-	100.0%	98.5%
U-Turn	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%
% Buses	0	2	0	0	-	2	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	2
% Trucks	0	0	0.5%	0	-	0.5%	0	0	0	0	-	0	0	0	0.0%	0.0%	-	0.0%	0	0	0	0	-	0	0.3%
% Bicycles	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0
Pedestrians	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	0



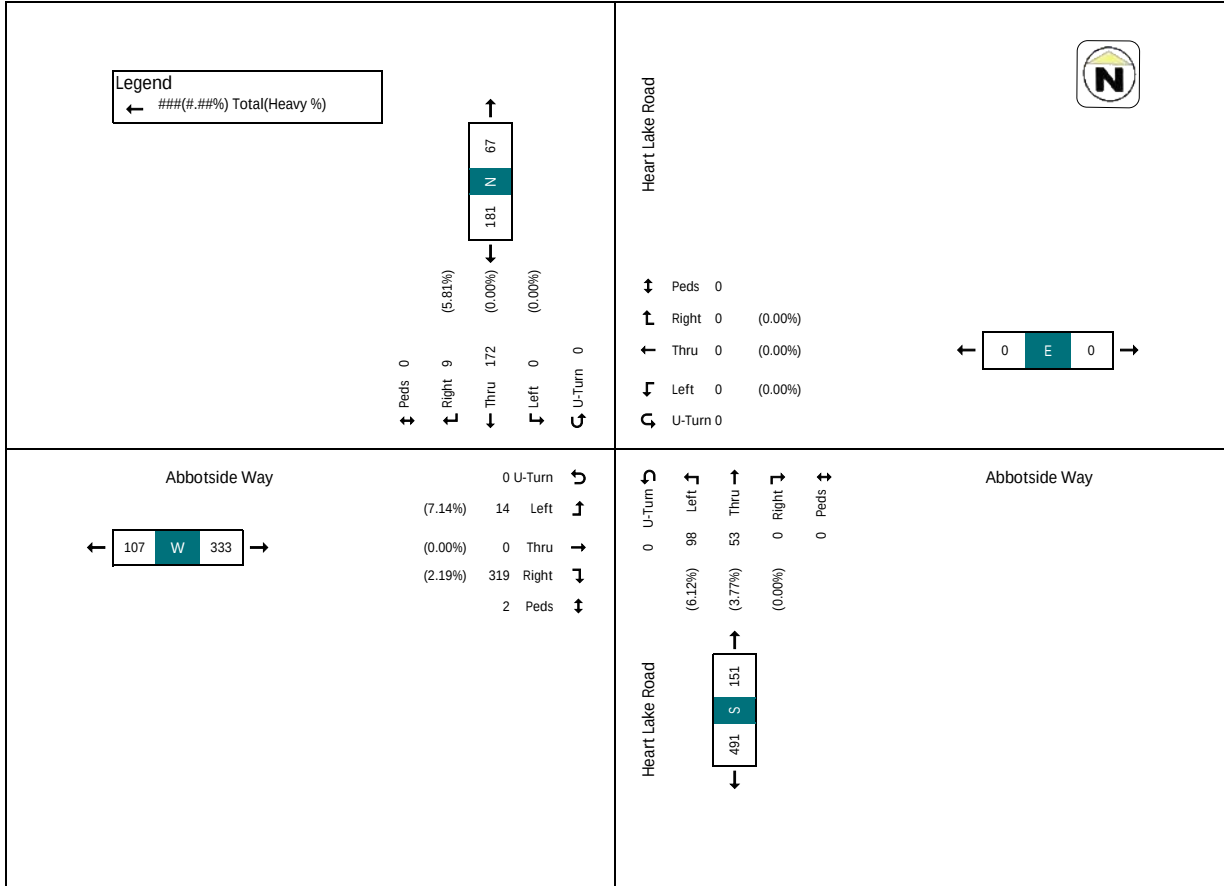
Turning Movement Count - Heart Lake Road & Abbotside Way

Start Time	Heart Lake Road Southbound					Abbotside Way Westbound					Heart Lake Road Northbound					Abbotside Way Eastbound					Grand Total				
	U-Turn	Left	Thru	Right	Peds	App. Total	U-Turn	Left	Thru	Right	Peds	App. Total	U-Turn	Left	Thru	Right	Peds	App. Total							
6:30	0	0	13	0	0	13	0	0	0	0	0	0	0	13	13	0	0	26	0	3	0	54	0	57	96
6:45	0	0	18	1	0	19	0	0	0	0	0	0	0	12	17	0	1	29	0	2	0	67	0	69	117
Hourly Total	0	0	31	1	0	32	0	0	0	0	0	0	0	25	30	0	1	56	0	5	0	121	0	126	213
7:00	0	0	20	1	0	21	0	0	0	0	0	0	0	10	18	0	0	28	0	1	0	78	0	79	129
7:15	0	0	29	1	0	30	0	0	0	0	0	0	0	18	26	0	1	45	0	1	0	77	0	82	135
7:30	0	0	30	1	0	31	0	0	0	0	0	0	0	17	16	0	0	33	0	2	0	76	0	78	142
7:45	0	0	45	5	0	51	0	0	0	0	0	0	0	27	8	0	0	35	0	1	0	74	0	75	161
Hourly Total	0	0	114	9	0	123	0	0	0	0	0	0	0	67	62	0	2	129	0	9	0	305	0	314	567
8:00	0	0	50	1	0	51	0	0	0	0	0	0	0	32	6	0	0	38	0	4	0	78	2	82	171
8:15	0	0	44	2	0	46	0	0	0	0	0	0	0	19	21	0	0	41	0	4	0	68	0	69	115
8:30	0	0	31	1	0	32	0	0	0	0	0	0	0	15	16	0	0	31	0	2	0	58	0	60	115
8:45	0	0	33	1	0	34	0	0	0	0	0	0	0	18	31	0	0	49	0	2	0	58	0	60	151
Hourly Total	0	0	166	6	0	172	0	0	0	0	0	0	0	89	76	0	0	165	0	15	0	303	2	318	655
9:00	0	0	36	4	0	40	0	0	0	0	0	0	0	23	18	0	0	41	0	1	0	54	0	55	136
9:15	0	0	48	1	0	49	0	0	0	0	0	0	0	16	31	0	0	47	0	0	0	41	0	41	173
Hourly Total	0	0	84	5	0	89	0	0	0	0	0	0	0	39	49	0	0	88	0	1	0	95	0	96	273
* Break *																									
15:30	0	0	41	2	0	43	0	0	0	0	0	0	0	77	35	0	0	112	0	2	0	59	0	52	207
15:45	0	0	36	2	0	38	0	0	0	0	0	0	0	75	31	0	0	106	0	0	0	34	0	34	178
Hourly Total	0	0	77	4	0	81	0	0	0	0	0	0	0	152	66	0	0	218	0	2	0	84	0	86	385
16:00	0	0	30	2	0	32	0	0	0	0	0	0	0	76	44	0	0	120	0	2	0	28	0	30	162
16:15	0	0	39	2	0	41	0	0	0	0	0	0	0	71	38	0	0	109	0	1	0	42	0	43	193
16:30	0	0	42	1	0	43	0	0	0	0	0	0	0	62	32	0	0	114	0	1	0	35	0	36	191
16:45	0	0	38	1	0	39	0	0	0	0	0	0	0	85	29	0	0	114	0	3	0	35	0	38	179
Hourly Total	0	0	139	13	0	152	0	0	0	0	0	0	0	304	144	0	0	448	0	10	0	135	0	145	745
17:00	0	0	45	3	0	48	0	0	0	0	0	0	0	86	35	0	0	121	0	5	0	47	0	52	221
17:15	0	0	42	1	0	43	0	0	0	0	0	0	0	62	21	0	0	114	0	2	0	45	0	47	211
17:30	0	0	38	1	0	39	0	0	0	0	0	0	0	62	21	0	0	114	0	2	0	45	0	47	211
17:45	0	0	43	1	0	44	0	0	0	0	0	0	0	85	27	0	0	111	0	1	0	49	0	50	215
Hourly Total	0	0	156	15	0	171	0	0	0	0	0	0	0	327	120	0	0	447	0	12	0	177	0	189	807
18:00	0	0	43	3	0	46	0	0	0	0	0	0	0	74	25	0	0	99	0	1	0	50	0	51	204
18:15	0	0	34	5	0	39	0	0	0	0	0	0	0	105	31	0	0	136	0	0	0	51	0	56	231
Hourly Total	0	0	77	8	0	85	0	0	0	0	0	0	0	179	56	0	0	235	0	6	0	110	0	116	436
Grand Total	0	0	844	61	0	905	0	1	0	0	0	1	0	1182	603	0	1	1785	0	60	0	1330	2	1390	4081
Approach %	0.0%	0.0%	93.3%	6.7%			0.0%	100.0%	0.0%	0.0%			0.0%	66.2%	33.8%	0.0%		0.0%	4.3%	0.0%	95.7%				
Total %	0.0%	0.0%	20.7%	1.5%		22.2%	0.0%	0.0%	0.0%	0.0%		0.0%	0.0%	29.0%	14.8%	0.0%		43.7%	0.0%	1.5%	0.0%	32.6%		34.1%	
Lights	0	0	815	57		872	0	1	0	0		0	0	1151	698	0		1757	0	57	0	1302		1359	3959
% Lights	0	0	96.6%	6.8%		96.6%	0	100.0%	0	0		100.0%	0	97.4%	97.2%	0		97.3%	0	95.0%	0	97.9%		97.8%	97.3%
Buses	0	0	13	2		15	0	0	0	0		0	0	1	10	0		11	0	2	0	29		31	49
% Buses	0	0	1.5%	3.3%		1.7%	0.0%	0.0%	0.0%	0.0%		0.0%	0	1.1%	1.7%	0		1.3%	0	3.3%	0	0.7%		0.8%	1.2%
Trucks	0	0	16	2		18	0	0	0	0		0	0	18	7	0		25	0	1	0	19		20	63
% Trucks	0	0	1.9%			2.0%	0.0%	0.0%	0.0%	0.0%		0.0%	0	1.5%	1.2%	0		1.4%	0	1.7%		1.4%		1.4%	1.5%
Bicycles	0	0	0	0		0	0	0	0	0		0	0	0	0	0		0	0	0	0	2		2	3
Pedestrians	0	0	0	0		0	0	0	0	0		0	0	0	0	0		0	0	0	0	2		2	3



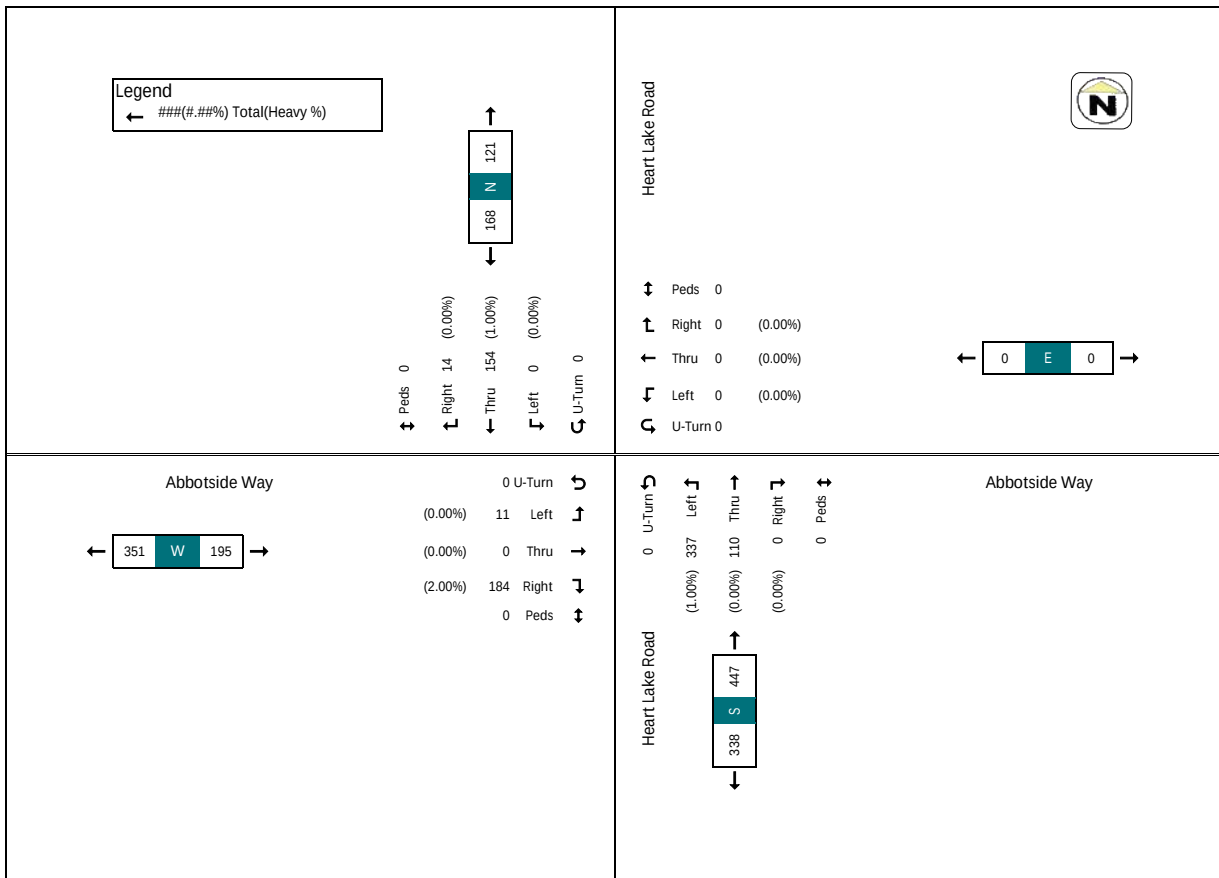
AM Peak Hour - Heart Lake Road & Abbotside Way

Start Time	Heart Lake Road Southbound						Abbotside Way Westbound						Heart Lake Road Northbound						Abbotside Way Eastbound						Grand Total	
	U-Turn	Left	Thru	Right	Peds	App. Total	U-Turn	Left	Thru	Right	Peds	App. Total	U-Turn	Left	Thru	Right	Peds	App. Total	U-Turn	Left	Thru	Right	Peds	App. Total		
7:45	0	0	45	6	0	51	0	0	0	0	0	0	0	0	27	8	0	0	35	0	1	0	74	0	75	161
8:00	0	0	50	1	0	51	0	0	0	0	0	0	0	0	32	6	0	0	38	0	4	0	78	2	82	171
8:15	0	0	44	2	0	46	0	0	0	0	0	0	0	0	18	23	0	0	41	0	4	0	94	0	98	175
8:30	0	0	33	0	0	33	0	0	0	0	0	0	0	0	21	16	0	0	37	0	5	0	83	0	88	158
Hourly Total	0	0	172	9	0	181	0	0	0	0	0	0	0	0	98	53	0	0	151	0	14	0	319	2	333	665
Approach %	0.0%	0.0%	95.0%	5.0%		27.2%	0.0%	0.0%	0.0%	0.0%		0.0%	64.9%	35.1%	0.0%			0.0%	4.2%	0.0%	95.8%					
Total %	0.0%	0.0%	25.9%	1.4%		0.9%	0.0%	0.0%	0.0%	0.0%		0.0%	0.0%	0.0%	22.7%	8.0%	0.0%		22.7%	0.0%	2.1%	0.0%	48.0%		50.1%	
Peds	0	0	0.9%	0.3%		0.9%	0	0	0	0		0	0	0	0.7%	0.5%			0.9%	0	0.7%	0	0.9%		0.9%	
Lights	0	0	162	9		171	0	0	0	0		0	0	0	92	51			143	0	13	0	312		325	
% Lights			94.2%	100.0%		94.5%									93.9%	96.2%			94.7%		92.9%		97.8%		97.6%	
% Right			2.9%	0.0%		2.8%									1.9%	1.9%			3.5%		7.1%		1.6%		1.6%	
% Trucks			2.9%	0.0%		2.8%									2.0%	1.9%			2.0%		0.0%		0.6%		0.6%	
Bicycles			0	0		0						0	0		0	0			0		0		0		0	
Pedestrians			0	0		0						0	0		0	0			0		2		0		2	



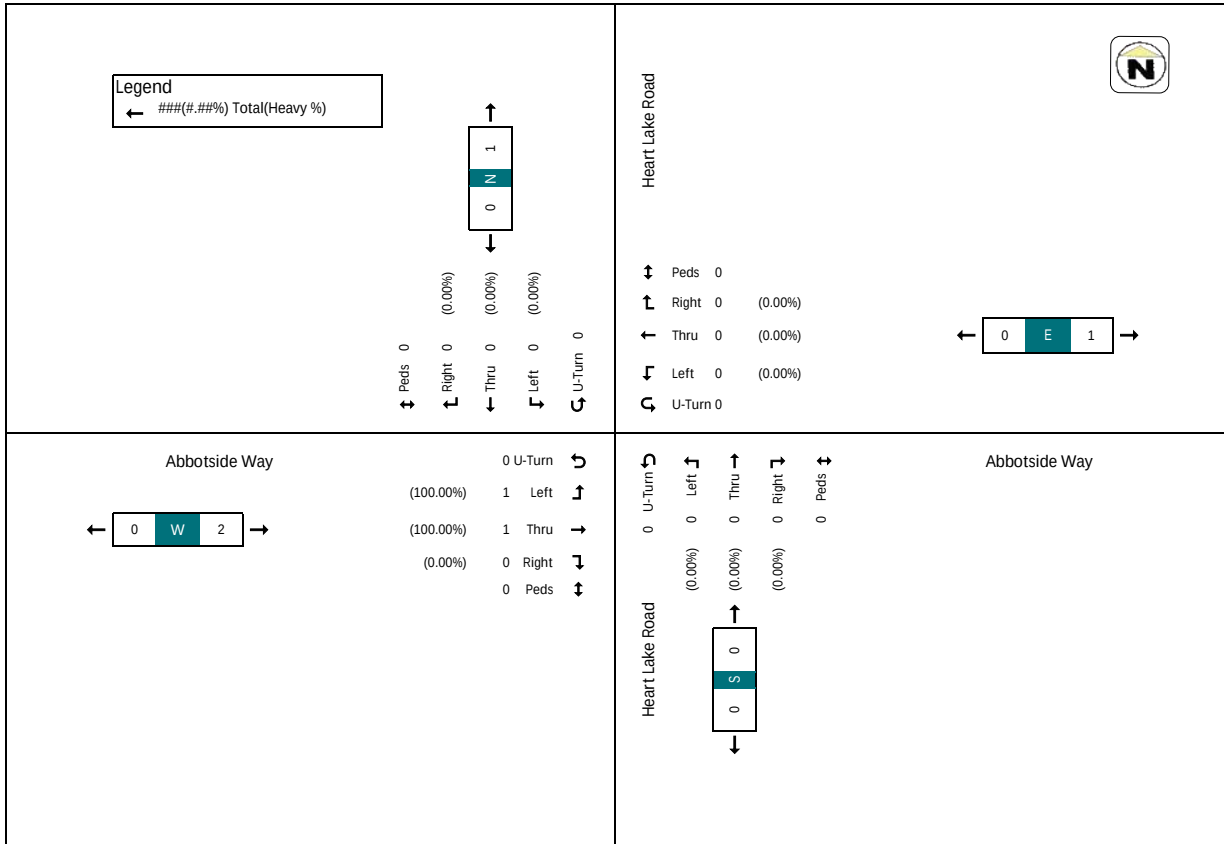
PM Peak Hour - Heart Lake Road & Abbotside Way

Start Time	Heart Lake Road Southbound						Abbotside Way Westbound						Heart Lake Road Northbound						Abbotside Way Eastbound						Grand Total
	U-Turn	Left	Thru	Right	Peds	App. Total	U-Turn	Left	Thru	Right	Peds	App. Total	U-Turn	Left	Thru	Right	Peds	App. Total	U-Turn	Left	Thru	Right	Peds	App. Total	
17:30	0	0	28	2	0	30	0	0	0	0	0	0	0	0	27	0	0	100	0	4	0	25	0	30	160
17:45	0	0	49	4	0	53	0	0	0	0	0	0	0	85	27	0	0	112	0	1	0	49	0	50	215
18:00	0	0	43	3	0	46	0	0	0	0	0	0	0	74	25	0	0	99	0	1	0	58	0	59	204
18:15	0	0	54	5	0	59	0	0	0	0	0	0	0	105	31	0	0	136	0	5	0	51	0	56	231
Hourly Total	0	0	154	14	0	168	0	0	0	0	0	0	0	337	110	0	0	447	0	11	0	154	0	195	820
Approach %	0.0%	0.0%	91.7%	8.3%	-	-	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	75.4%	24.6%	0.0%	-	-	0.0%	5.6%	0.0%	94.4%	-	-	-
Total %	0.0%	0.0%	19.0%	1.7%	-	20.7%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	50.7%	16.5%	0.0%	-	55.2%	0.0%	1.7%	0.0%	27.7%	-	24.1%	-
Peds	0	0	0.7%	0.7	-	0.9	0	0	0	0	0	0	0	0.8	0.89	-	-	0.82	0	0.55	0	0.9	-	0.83	0.88
Light	0	0	152	14	-	166	0	0	0	0	0	0	0	334	110	-	-	444	0	11	0	153	-	192	817
Trucks	0	0	0	0	-	0	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
% Trucks	0	0	0	0	-	0	0	0	0	0	0	0	0	0	0	0	-	0	0	0	0	0	-	0	0
% Bicycles	0	0	0	0	-	0	0	0	0	0	0	0	0	0	0	0	-	0	0	0	0	0	-	0	0
Pedestrians	0	0	0	0	-	0	0	0	0	0	0	0	0	0	0	0	-	0	0	0	0	0	-	0	0



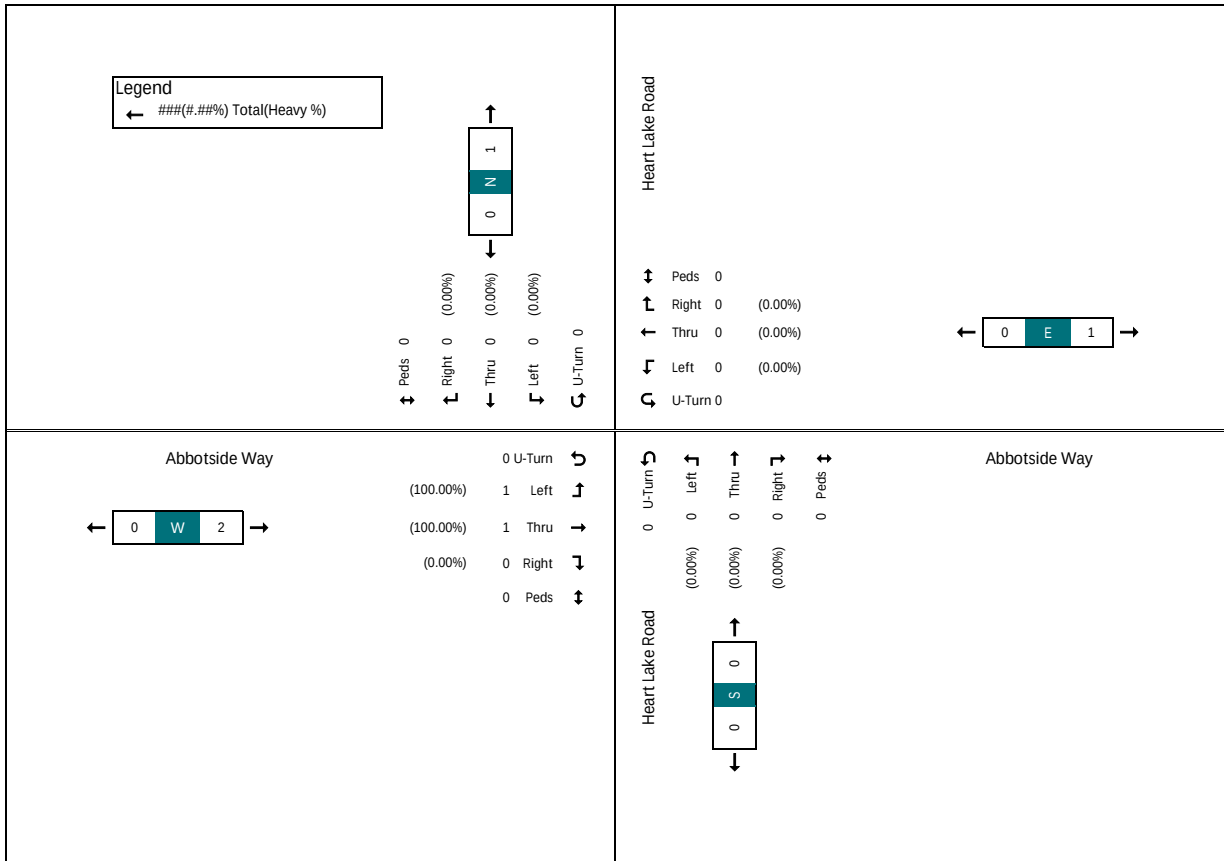
Turning Movement Count - Heart Lake Road & Abbotside Way

Start Time	Heart Lake Road Southbound						Abbotside Way Westbound						Heart Lake Road Northbound						Abbotside Way Eastbound						Grand Total
	U-Turn	Left	Thru	Right	Peds	App. Total	U-Turn	Left	Thru	Right	Peds	App. Total	U-Turn	Left	Thru	Right	Peds	App. Total	U-Turn	Left	Thru	Right	Peds	App. Total	
10:00	0	0				0	0	0				0	0	0				0	0	0	0			0	0
10:15	0	0				0	0	0				0	0	0				0	0	0	0			0	0
10:30	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
10:45	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
Hourly Total	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
11:00	0	0				0	0	0				0	0	0				0	0	0	0			0	0
11:15	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
11:30	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
11:45	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
Hourly Total	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
12:00	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
12:15	0	0				0	0	0				0	0	0				0	0	0	0			0	0
12:30	0	0				0	0	0				0	0	0				0	0	0	0			0	0
12:45	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
Hourly Total	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
13:00	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
13:15	0	0				0	0	0				0	0	0				0	0	0	0			0	0
13:30	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
13:45	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
Hourly Total	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
14:00	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
14:15	0	0				0	0	0				0	0	0				0	0	0	0			0	0
14:30	0	0				0	0	0				0	0	0				0	0	0	0			0	0
14:45	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
Hourly Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0	0	2
Grand Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0	0	2
Approach %																									
Total %	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%	50.0%	50.0%	0.0%					
Lights	0	0	0	0		0	0	0	0		0	0	0	0		0	0	0	0	0	0	0	0	0	0
% Lights																		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
% Buses																		0.0%	0.0%	0					
Trucks	0	0	0	0		0	0	0	0		0	0	0	0		0	0	0	0	0	0	0	0	0	0
% Trucks																		100.0%	100.0%						
Bicycles					0						0							0						0	0
Pedestrians					0						0							0						0	0



SAT Peak Hour - Heart Lake Road & Abbotside Way

Start Time	Heart Lake Road Southbound						Abbotside Way Westbound						Heart Lake Road Northbound						Abbotside Way Eastbound						Grand Total	
	U-Turn	Left	Thru	Right	Peds	App. Total	U-Turn	Left	Thru	Right	Peds	App. Total	U-Turn	Left	Thru	Right	Peds	App. Total	U-Turn	Left	Thru	Right	Peds	App. Total		
14:00	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	
14:15	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	
14:30	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	
14:45	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	
Hourly Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0	0	2	2
Approach %																				50.0%	50.0%	0.0%				
Total %	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%	-	100.0%	100.0%	0.0%	-	-	100.0%	
Left %	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.0%	0.2%	0.2%	0.0%	-	100.0%	
Thru %	0	0	0	0	-	0	0	0	0	0	0	0	0	0	0	0	0	0	-	0	0.2%	0.2%	0.0%	-	100.0%	
Right %	0	0	0	0	-	0	0	0	0	0	0	0	0	0	0	0	0	0	-	0	0	0	0	-	0.2%	
% Lights	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	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	
% Trucks	0	0	0	0	-	0	0	0	0	0	0	0	0	0	0	0	0	0	-	0	0	0	0	-	0	
% Bicycles	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	100.0%	100.0%	100.0%	-	-	100.0%	
% Pedestrians	-	-	-	-	0	0	-	-	-	-	0	0	-	-	-	-	0	0	-	-	-	-	0	-	0	



REGIONAL MUNICIPALITY OF PEEL

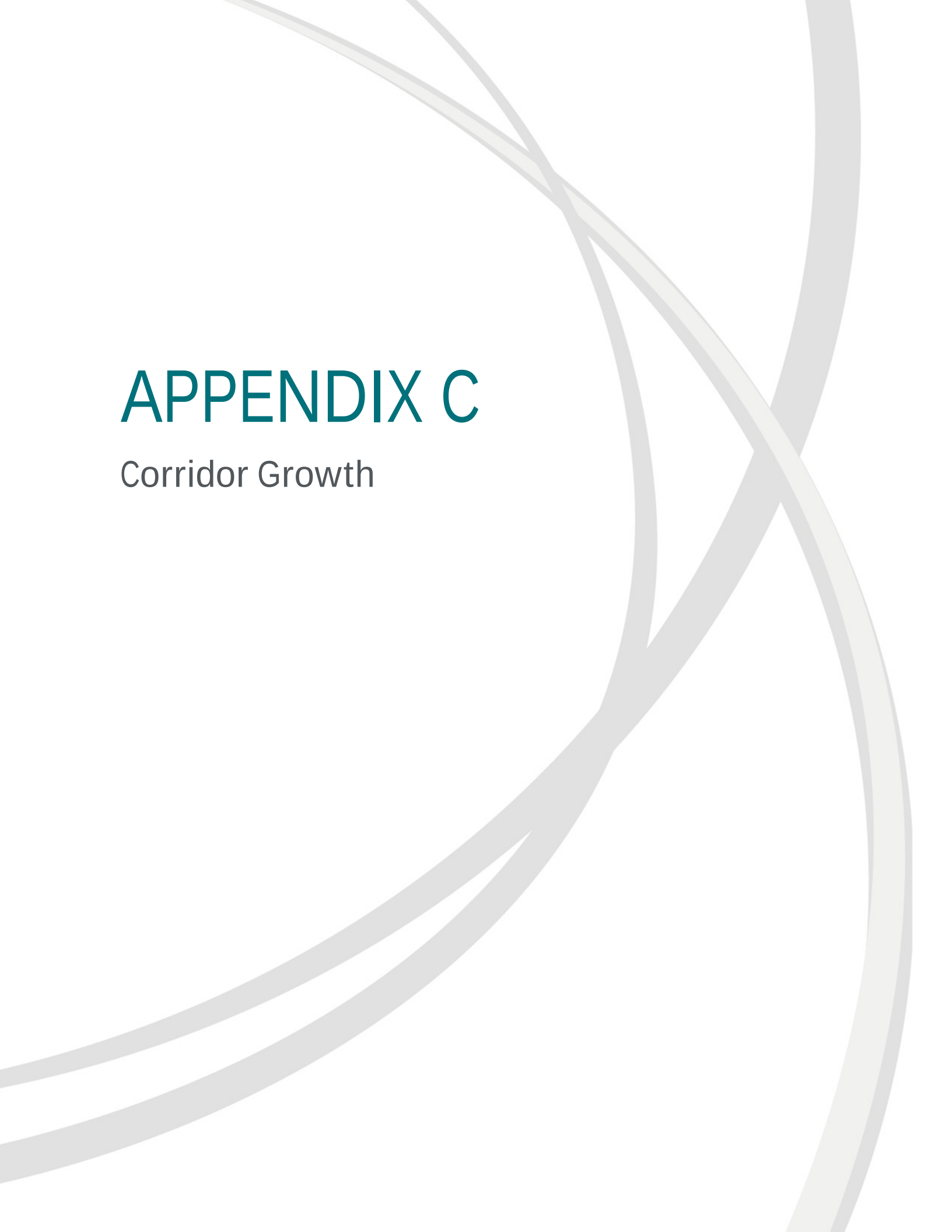
Traffic Signal Timing Parameters

Database Date	June 4, 2025		Prepared Date	June 19, 2025
Database Rev	MaxView		Completed By	NM
Timing Card / Field rev	-		Checked By	NST

Location	Mayfield Rd at Heart Lake Rd								
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Phase #	Street Name - Direction	Vehicle Minimum (s)	Pedestrian Minimum (s)		Amber (s)	All Red (s)	TIME PERIOD (s) (Green+Amber+All Red)		
			WALK	FDWALK			AM SPLITS	OFF SPLITS	PM SPLITS
1	Mayfield Rd - WBLT Prot Perm	5	0	0	3	0	9	9	9
2	Mayfield Rd - EB	12	12	21	4.6	2.1	77	67	72
3	Not in use	-	-	-	-	-	-	-	-
4	Heart Lake Rd - 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	Heart Lake Rd - NBLT Prot Perm	5	0	0	3	0	9	9	9
8	Heart Lake Rd - 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)
	6:00-9:30		AM	140	78
	9:30-16:00 20:00-22:00		OFF	130	66
	16:00-20:00		PM	135	26

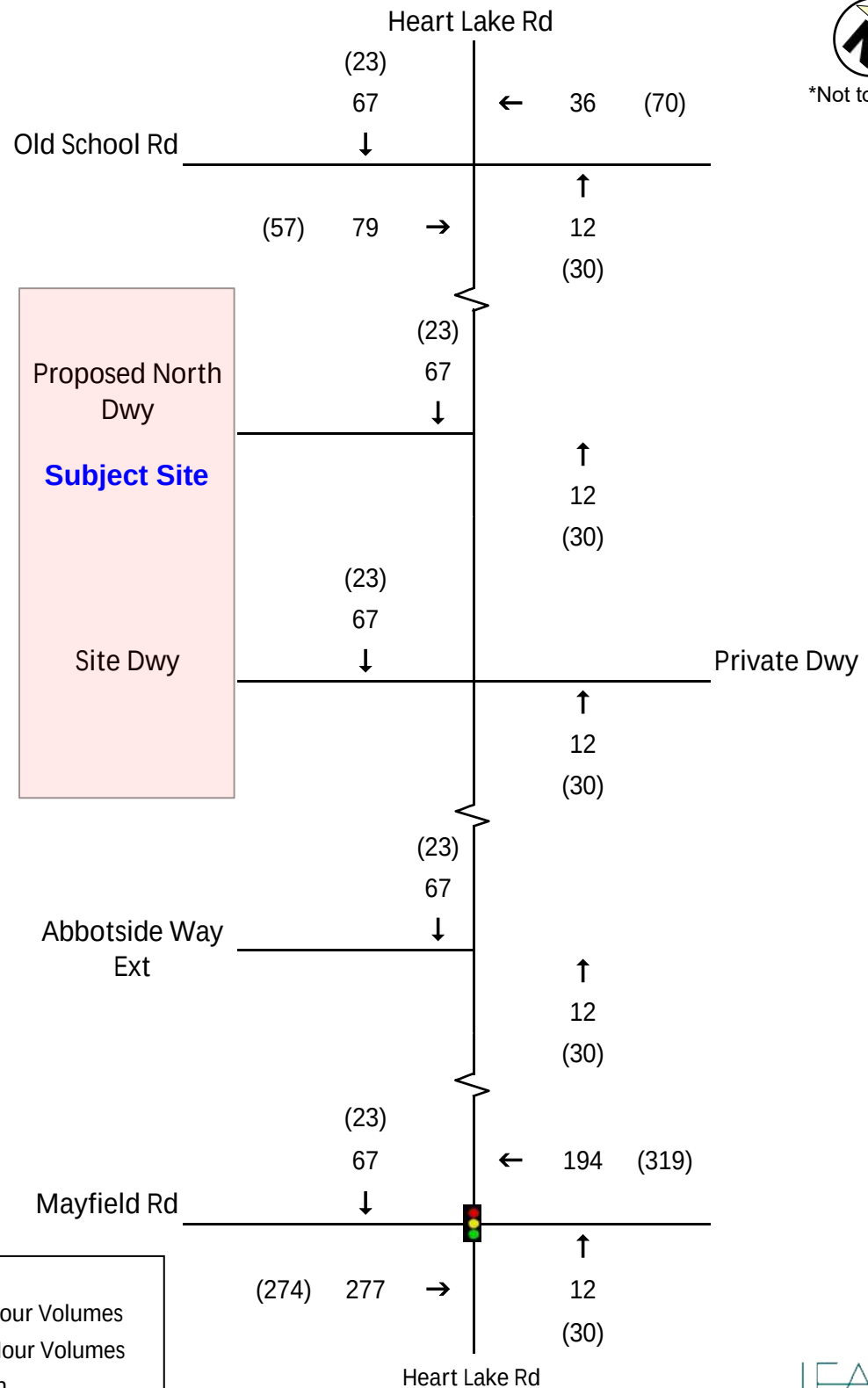


APPENDIX C

Corridor Growth



*Not to Scale



LEGEND

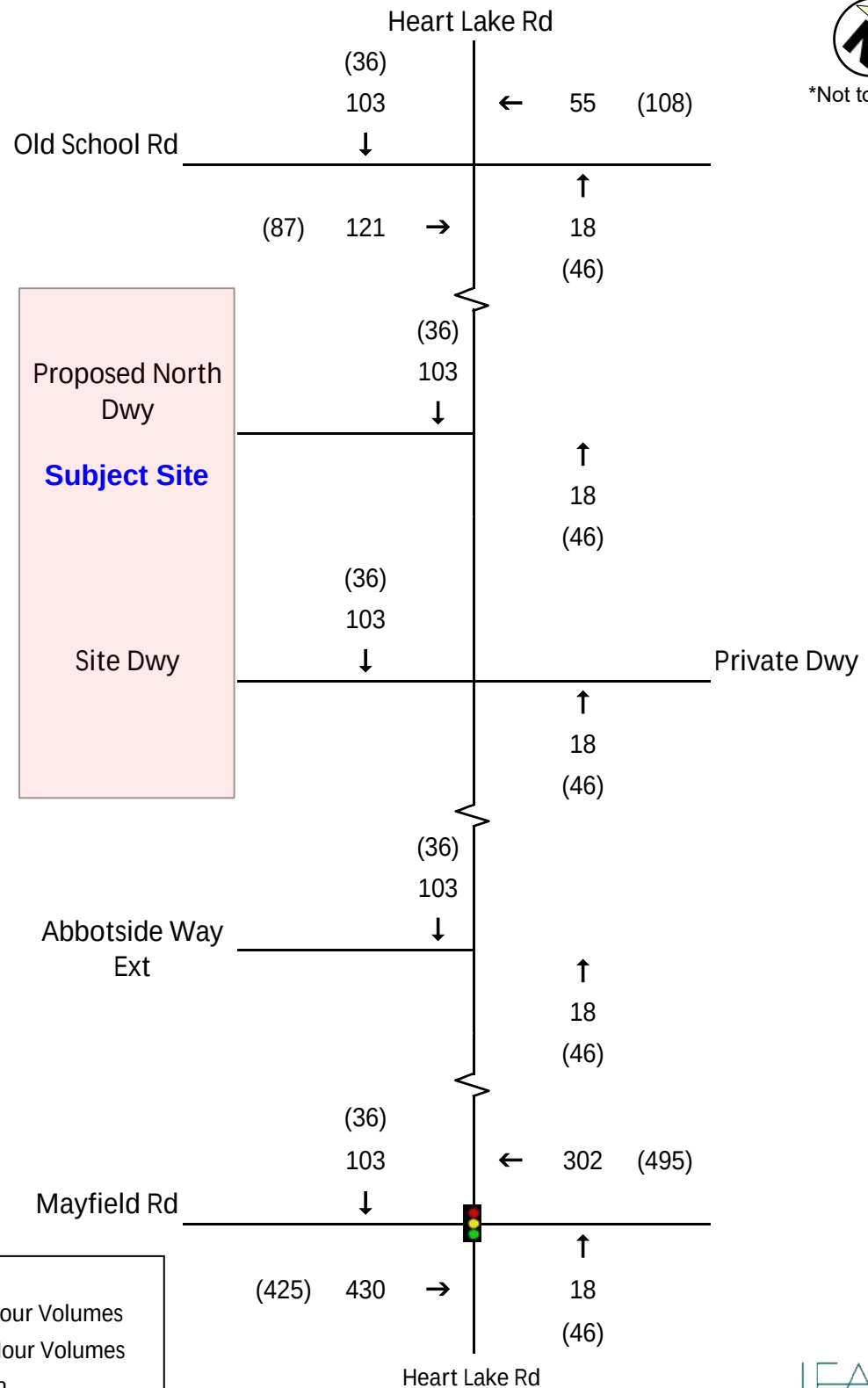
- X Weekday A.M. Peak Hour Volumes
- (X) Weekday P.M. Peak Hour Volumes
-  Signalized Intersection



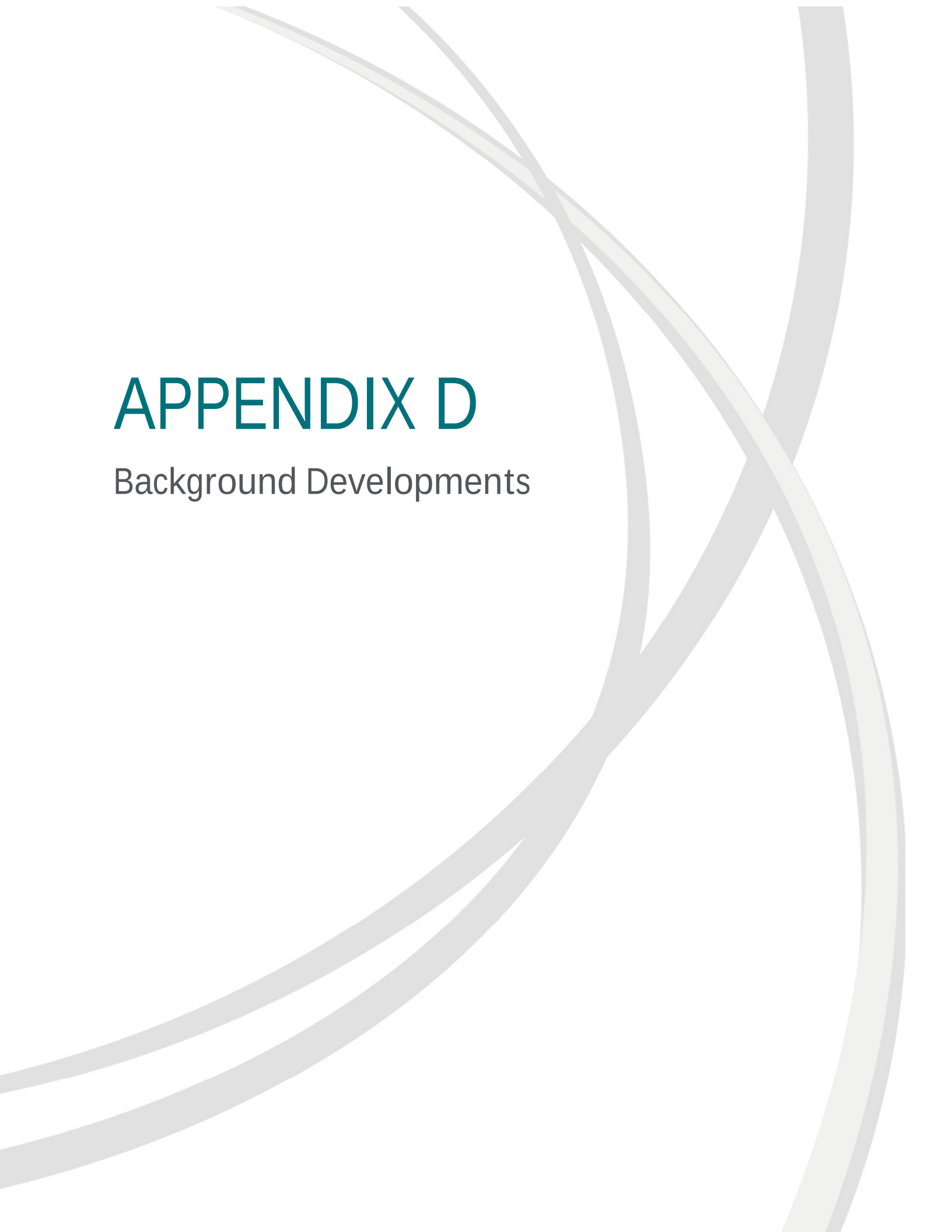
CORRIDOR GROWTH 2036
Proposed Warehouse Development
12506 Heart Lake Rd (Caledon)



*Not to Scale



CORRIDOR GROWTH 2041
Proposed Warehouse Development
12506 Heart Lake Rd (Caledon)



APPENDIX D

Background Developments

June 14, 2022

B R O C C O L I N I

Final Report

Traffic Impact Study (TIS) Proposed Warehouse, Logistics and Distribution Centre, 12304 Heart Lake Road, Town of Caledon



Prepared for Broccolini c/o Real Estate Development
by IBI Group
April 25, 2022

Exhibit 8-2: Proposed Development Trip Generation

12304 Heart Lake Road					
BLDG 1 – LUC 150 Warehouse – 523,725 (1,000 sq. ft. GFA) – Employee 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%
BLDG 1 – LUC 150 Warehouse – 523.725 (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%
BLDG 2 – LUC 150 Warehouse – 321,087 (1,000 sq. ft. GFA) – Employee 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	64		66	
New Inbound Trips	vehicles / hour	49	77%	18	27%
New Outbound Trips	vehicles / hour	15	23%	48	73%
BLDG 2 – LUC 150 Warehouse – 321,087 (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	6		10	
New Inbound Trips	vehicles / hour	3	52%	5	52%
New Outbound Trips	vehicles / hour	3	48%	5	48%
Development Total (Auto and Truck) Trips					
Term	Unit	Weekday AM Peak Hour		Weekday PM Peak Hour	
Total New Trips	vehicles / hour	168		183	
New Inbound Trips	vehicles / hour	124		56	
New Outbound Trips	vehicles / hour	44		127	

The proposed development is expected to generate a total of 168 two-way (124 inbound and 44 outbound) trips during the weekday AM peak hour and 183 two-way (56 inbound and 127 outbound) trips during the weekday PM peak hour. Of the total trips, 16 trips in the AM peak hour and 26 trips in the PM peak hours are truck trips.

Exhibit 8-4: New Site Traffic Volumes – Automobiles Only

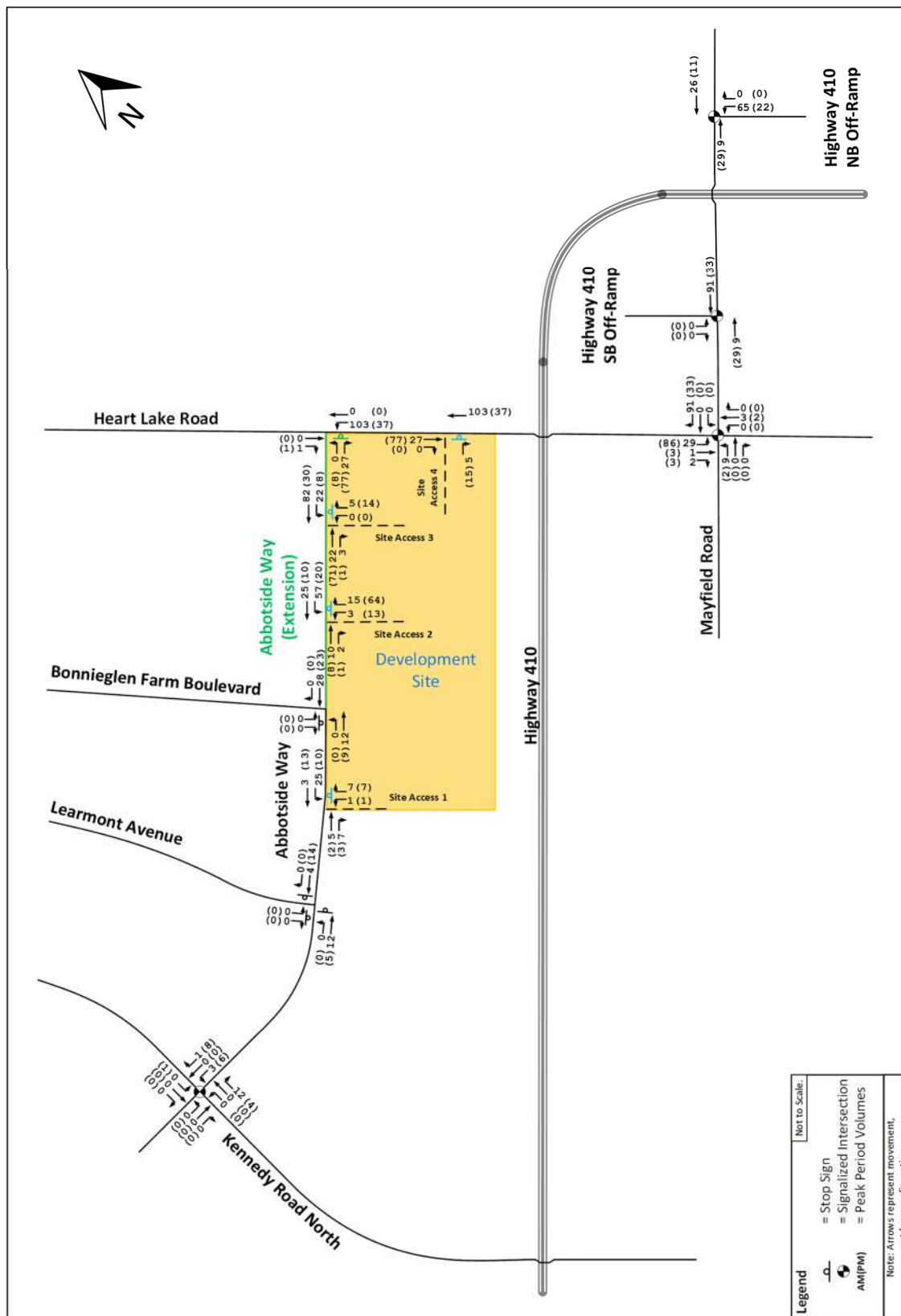
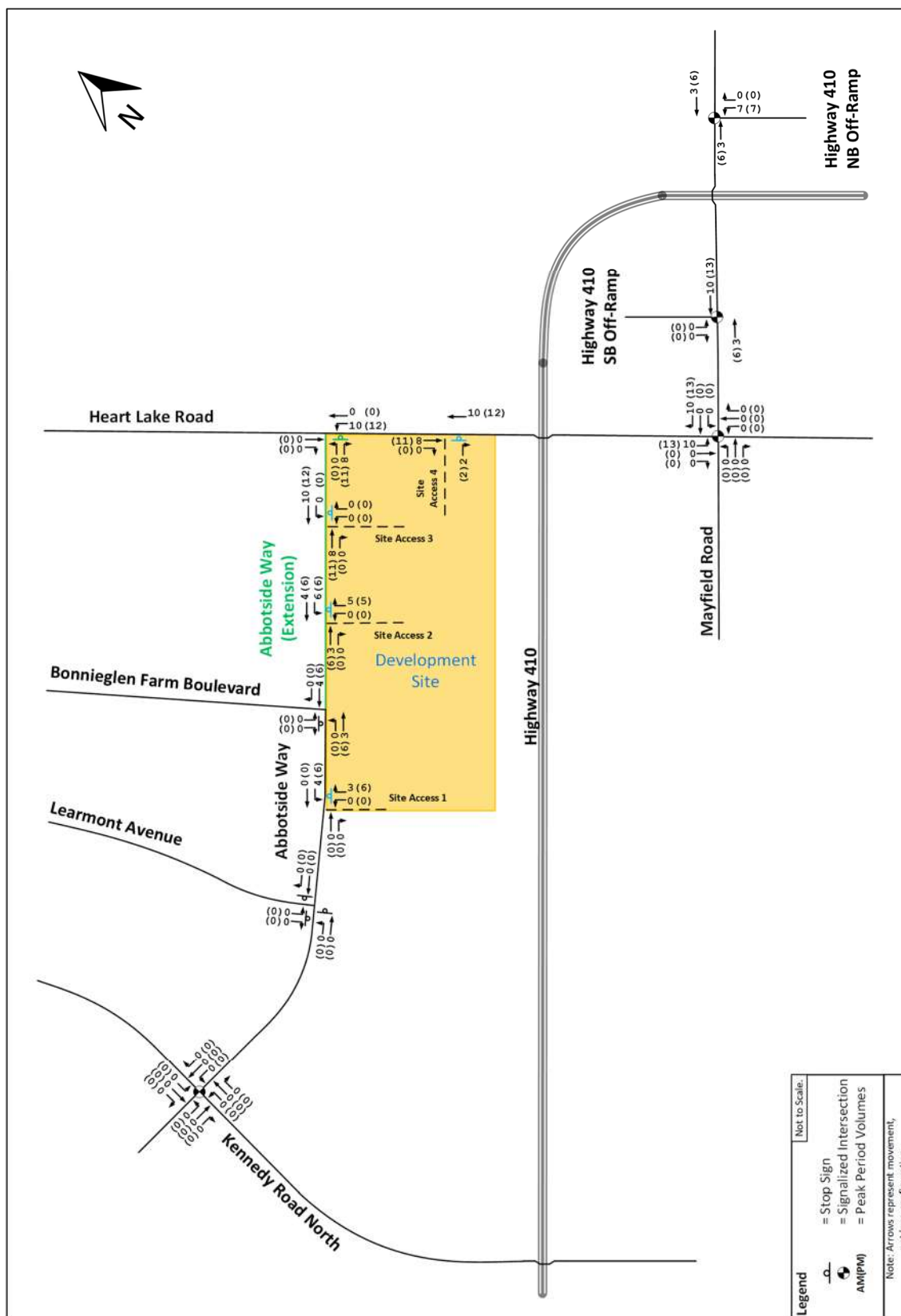


Exhibit 8-5: New Site Traffic Volumes – Trucks Only



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



MAYFIELD WEST PHASE 1 - STAGE 2 LOCAL OFFICIAL PLAN AMENDMENT

Urban Transportation Considerations
Town of Caledon

Prepared For: Argo Kennedy Limited

September 2021



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 10 th 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.



FIGURE 16 SITE TRAFFIC VOLUMES WITH THE GTA WEST HIGHWAY



FIGURE 17 SITE TRAFFIC VOLUMES WITHOUT THE GTA WEST HIGHWAY

Transportation Impact Study Update 2

PROPOSED MIXED-USE COMMUNITY

Snell's Hollow (Heart Lake Rd & Mayfield Rd),
TOWN OF CALEDON, ONTARIO

November 2024
Project No: NT-20-018

Table 6 – Site Trip Generation for the Proposed Development

ITE Land Use	Magnitude (units)	Parameters	Morning Peak Hour			Afternoon Peak Hour		
			In	Out	Total	In	Out	Total
Development Area 1 Trip Generation								
Single-Family Detached Housing LUC 210 General Urban/Suburban	158	Trip Rates AM - $\text{Ln}(T) = 0.91 \cdot \text{Ln}(X) + 0.12$ PM - $\text{Ln}(T) = 0.94 \cdot \text{Ln}(X) + 0.27$	0.19	0.53	0.72	0.61	0.36	0.97
		Total Auto Trips	29	84	113	96	57	153
Multifamily Housing (Low-Rise) LUC 220 General Urban/Suburban	68	Trip Rates AM - $T = 0.31 \cdot (X) + 22.85$ PM - $T = 0.43 \cdot (X) + 20.55$	0.16	0.49	0.65	0.47	0.27	0.74
		Total Auto Trips	11	33	44	32	18	50
Multifamily Housing (Mid-Rise) LUC 221 General Urban/Suburban	115	Trip Rates AM - $T = 0.44 \cdot (X) - 11.61$ PM - $T = 0.39 \cdot (X) + 0.34$	0.08	0.26	0.34	0.24	0.15	0.39
		Total Auto Trips	9	30	39	27	18	45
Development Area 1 Sub-Total			49	147	196	155	93	248
5% Modal Split			2	7	9	8	5	13
Development Area 1 Total New Auto Trips			47	140	187	147	88	235
Development Area 2 Trip Generation								
Single-Family Detached Housing LUC 210 General Urban/Suburban	158	Trip Rates AM - $\text{Ln}(T) = 0.91 \cdot \text{Ln}(X) + 0.12$ PM - $\text{Ln}(T) = 0.94 \cdot \text{Ln}(X) + 0.27$	0.19	0.53	0.72	0.61	0.36	0.97
		Total Auto Trips	29	84	113	96	57	153
Multifamily Housing (Low-Rise) LUC 220 General Urban/Suburban	68	Trip Rates AM - $T = 0.31 \cdot (X) + 22.85$ PM - $T = 0.43 \cdot (X) + 20.55$	0.16	0.49	0.65	0.47	0.27	0.74
		Total Auto Trips	11	33	44	32	18	50
Development Area 2 - Sub-Total			40	117	157	128	75	203
5% Modal Split			2	6	8	6	4	10
Development Area 2 Total New Auto Trips			38	111	149	122	71	193
Development Area 3 Trip Generation								
Multifamily Housing (Low-Rise) LUC 220 General Urban/Suburban	180	Trip Rates AM - $T = 0.31 \cdot (X) + 22.85$ PM - $T = 0.43 \cdot (X) + 20.55$	0.11	0.33	0.44	0.34	0.20	0.54
		Total Auto Trips	19	60	79	62	36	98
Multifamily Housing (Mid-Rise) LUC 221 General Urban/Suburban	237	Trip Rates AM - $T = 0.44 \cdot (X) - 11.61$ PM - $T = 0.39 \cdot (X) + 0.34$	0.09	0.30	0.39	0.24	0.15	0.39
		Total Auto Trips	21	72	93	57	36	93
Development Area 3 Sub-Total			40	132	172	119	72	191
5% Modal Split			2	7	9	6	4	10
Development Area 3 Total New Auto Trips			38	125	163	113	68	181
Development Area 4 Trip Generation								
Mid-rise Residential with Ground-Floor Commercial GFA (25-65k) LUC 231 General Urban/Suburban	460	Trip Rate (Average rates)	0.23	0.32	0.55	0.38	0.29	0.67
		Total Auto Trips	106	147	253	175	133	308
Development Area 4 - Total			106	147	253	175	133	308
5% Modal Split			5	7	12	9	7	16
Development Area 3 Total New Auto Trips			101	140	241	166	126	292
Total Development New Auto Trips			224	516	740	548	353	901
Total Development Non-Auto Mode Trips			11	27	38	29	20	49

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 8 summarizes the planning district/traffic zones distribution based on the 2016 TTS data, with Table 9 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 7 – Site Trip Distribution

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 8 – Site Trip Assignment

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 12B and 12C illustrate the proposed development generated traffic volumes, with Figures 13A through 13D illustrating the separated inbound and outbound site traffic volumes, as requested by the Town staff, for the morning and afternoon peak hours, respectively.

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, as well as the Town staff comments.

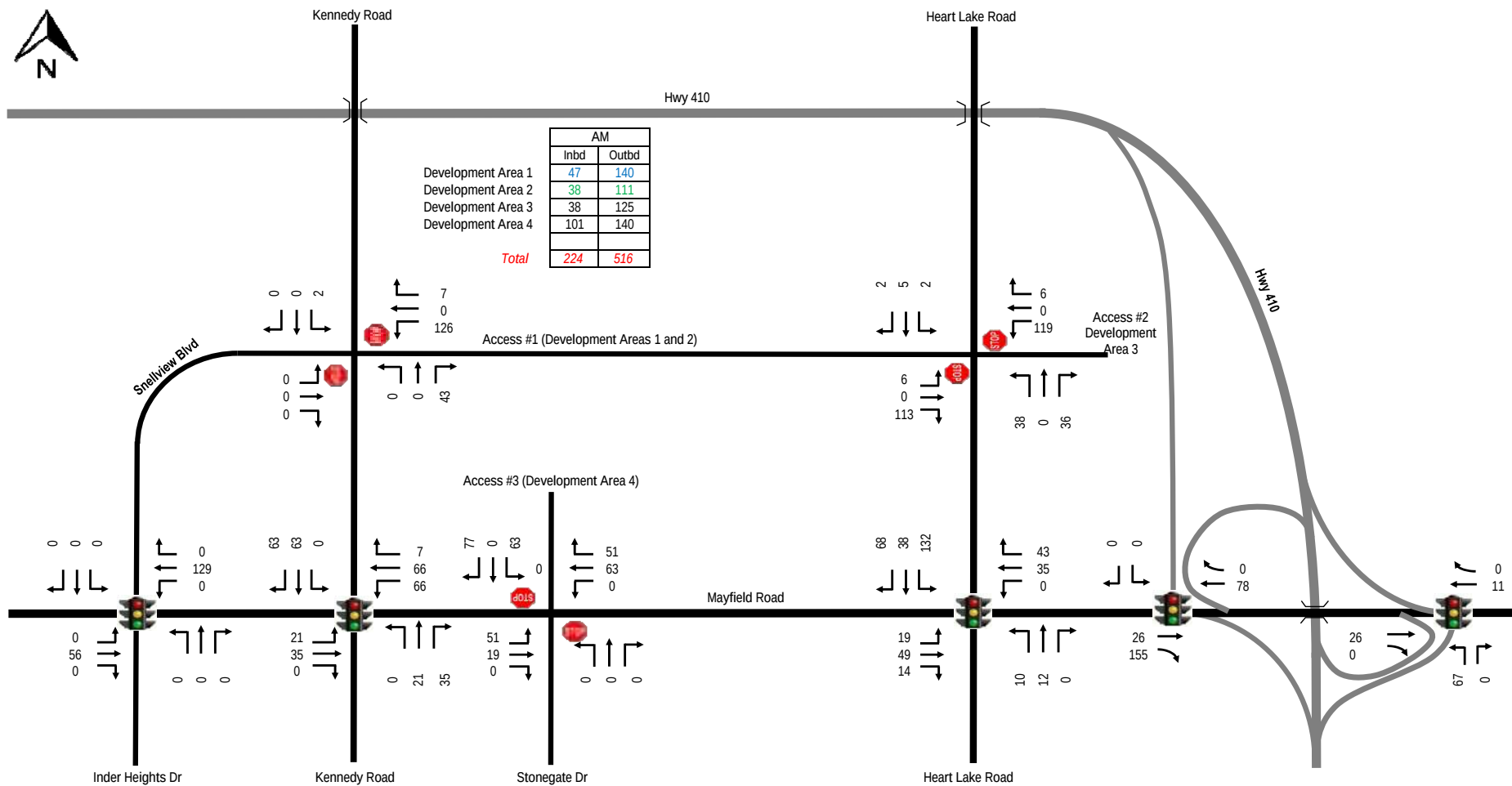
6.0 FUTURE TOTAL TRAFFIC CONDITIONS

6.1. Future Total Traffic Assessment for Auto Mode

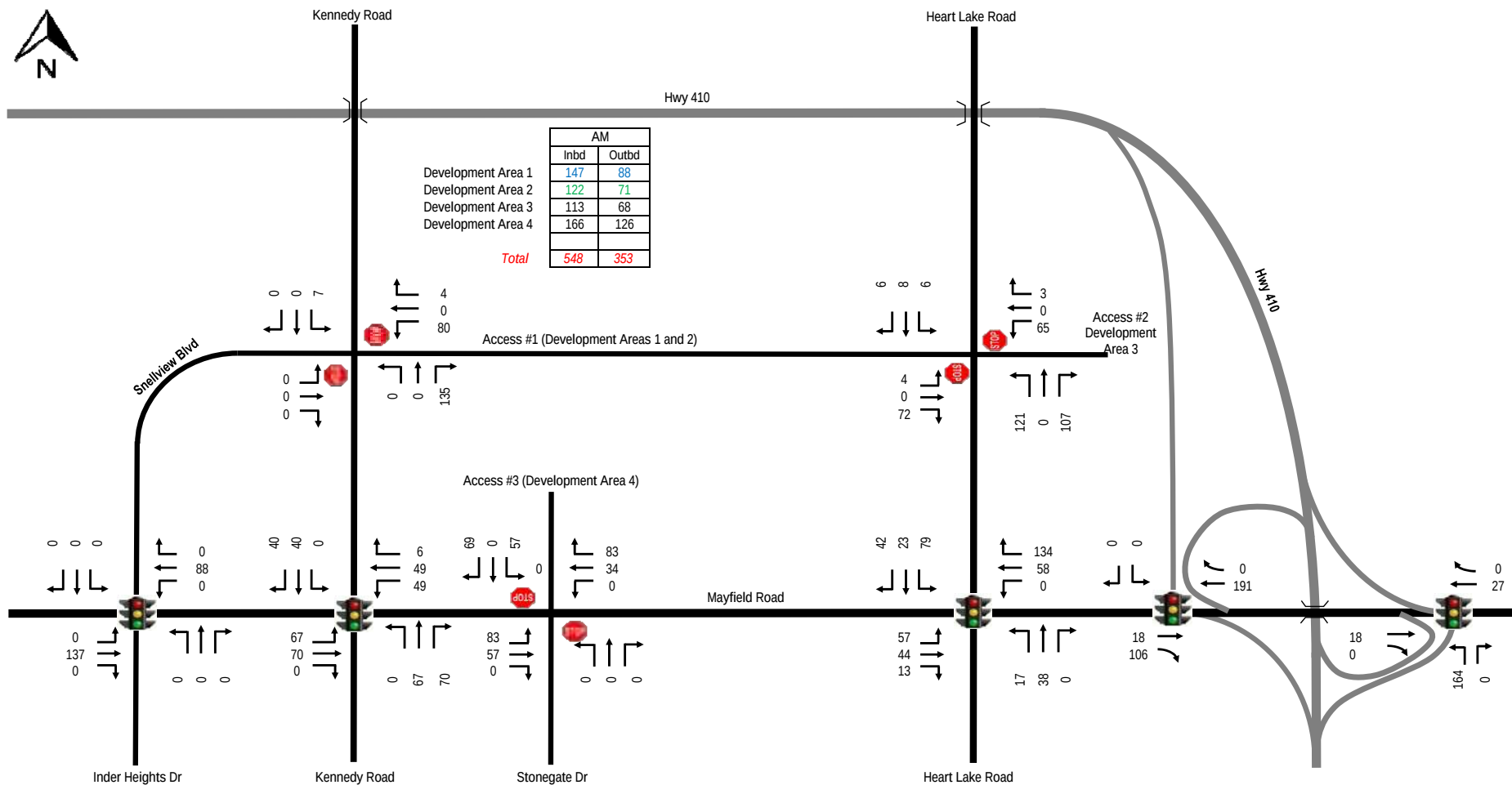
The future total traffic volumes for 2028 and 2033 horizons are provided in Figures 14A, 14B, 15A and 15B. These traffic volumes were analyzed using Synchro Version 10 software. The detailed calculations are provided in Appendix H and summarized in Tables 9 and 10.

Table 9 – 2028 Future Total Levels of Service

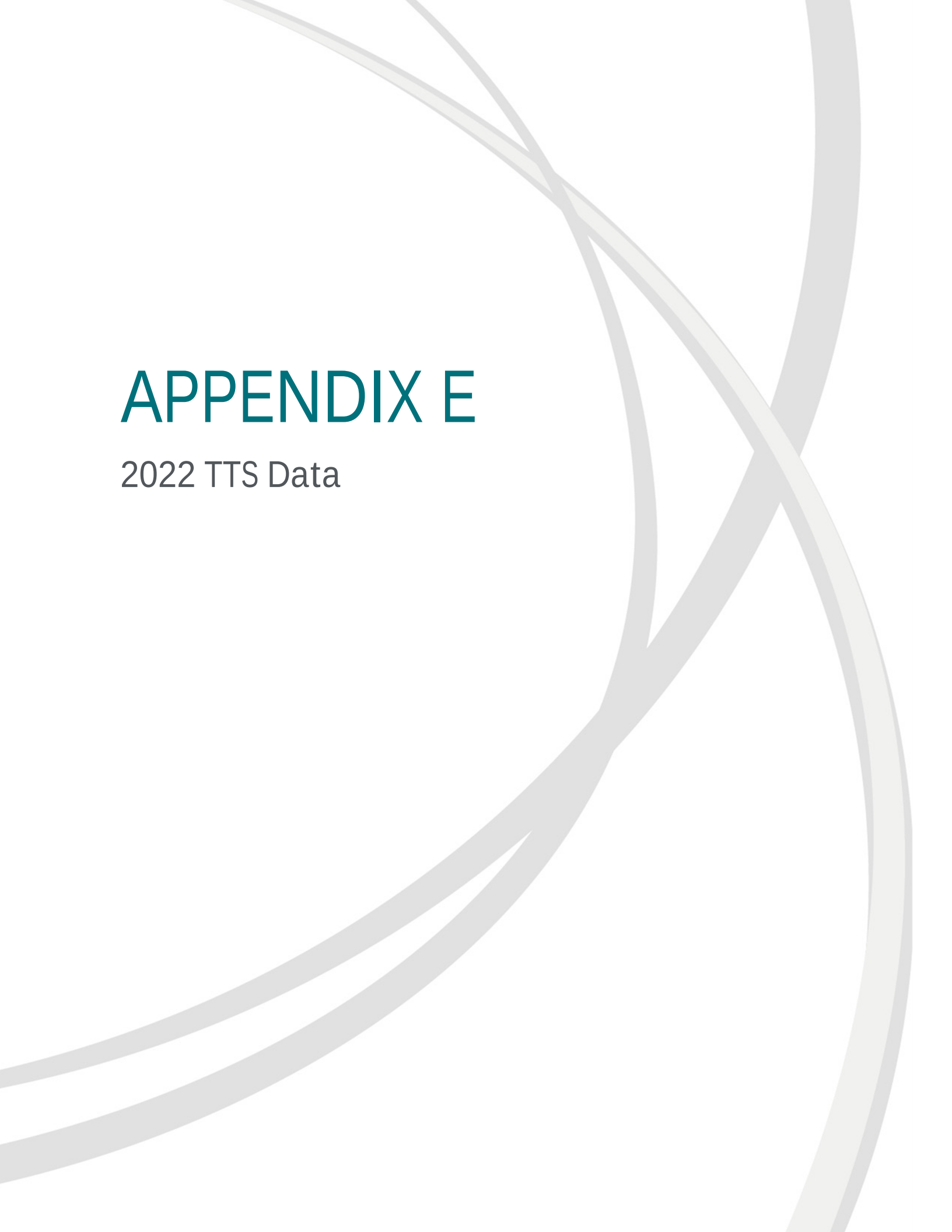
Intersection	Key Movement	Weekday AM Peak Hour			Weekday PM Peak Hour			Available Storage Length
		LOS (v/c)	Delay (s)	SimTraffic Queue 95 th	LOS (v/c)	Delay (s)	SimTraffic Queue 95 th	
Mayfield Road/ Kennedy Road (Signalized)	Overall	D (0.98)	45		D (0.98)	42		
	EB – L	C (0.58)	31	65	F (0.98)	92	53	~45
	EB – TR	E (0.97)	62	462	D (0.62)	35	491	~390
	WB – L	D (0.57)	52	64	C (0.76)	31	110	~85
	WB – T	D (0.67)	39	77	D (0.72)	38	581	~520
	WB – R	A (0.64)	10	56	D (0.95)	40	48	~60
	NB – L	C (0.41)	32	35	D (0.48)	54	61	~45
	NB – TR	D (0.79)	47	80	D (0.74)	51	102	~515
	SB – L	E (0.98)	62	184	E (0.93)	59	163	~150
	SB – T	D (0.77)	43	303	C (0.32)	24	303	~250
	SB – R	A (0.49)	10	227	A (0.34)	5	321	~250



Not to Scale



Not to Scale



APPENDIX E

2022 TTS Data

MODAL SPLIT CALCULATIONS

Subject Site is in TTS2022 Zone 4026

EMPLOYMENT

Mon Jun 16 2025 13:49:30 GMT-0400 (Eastern Daylight Time) - Run Time: 3888ms

Cross Tabulation Query Form - Trip - 2022

Row: 2022 TTS zone of destination - tts22_dest

Column: Primary travel mode of trip - mode_prime

Filters:

(2022 TTS zone of destination - tts22_dest In 4015-4016, 4019, 4021-4022, 4025-4026, 4115, 4118, 4121, 4317, 4322, 4031-4032, and

Start time of trip - start_time In 600-900, and

Primary travel mode of trip - mode_prime In B,C,D,E,G,J,M,P,S,T,U,W, and

Trip Purpose of Destination - purp_dest In W,R)

Trip 2022

ROW : tts22_dest

COLUMN : mode_prime

tts22_dest mode_prime total

4015 D 53
4021 D 124
4022 D 41
4025 D 145
4025 P 59
4026 D 14
4031 D 4
4115 B 20
4118 D 66
4121 D 22
4317 D 313
4322 D 158

Raw Data

Zone of Origin	Mode	Total
4015	D	53
4021	D	124
4022	D	41
4025	D	145
4025	P	59
4026	D	14
4031	D	4
4115	B	20
4118	D	66
4121	D	22
4317	D	313
4322	D	158
Total		1,019

Sorted

Zone of Origin	Mode	Total
4115	B	20
4015	D	53
4021	D	124
4022	D	41
4025	D	145
4026	D	14
4031	D	4
4118	D	66
4121	D	22
4317	D	313
4322	D	158
4025	P	59
Total		1,019

Summary

Travel Mode	TTS Code	Value	Percent
Auto Driver	D+M	940	92%
Auto Passenger	P	59	6%
Taxi / Rideshare	T+U	0	0%
Transit	B+G+J+S	20	2%
Walk	W	0	0%
Cycle+E-Scooter	C+E	0	0%
Other	O	0	0%
Total		1,019	100%



EMPLOYMENT DISTRIBUTION

AMT TO INCREASE

Subject data from FY2022 June 30th

Mon Jun 18 2025 10:45:07 GMT-0400 (Eastern Daylight Time) - Run Time: 3600Secs

Class: Tabulation Query Forms - Trip - 2022

Row: 2022 TTS zone of origin - rts22_why

Column: 2022 TTS zone of destination - rts22_what

Filter(s):

2022 TTS zone of origin - rts22_why is 27000 and

Start time of trip - rts22_what is 000-000, and

Primary mode of origin of trip - rts22_what is 0, 1, and

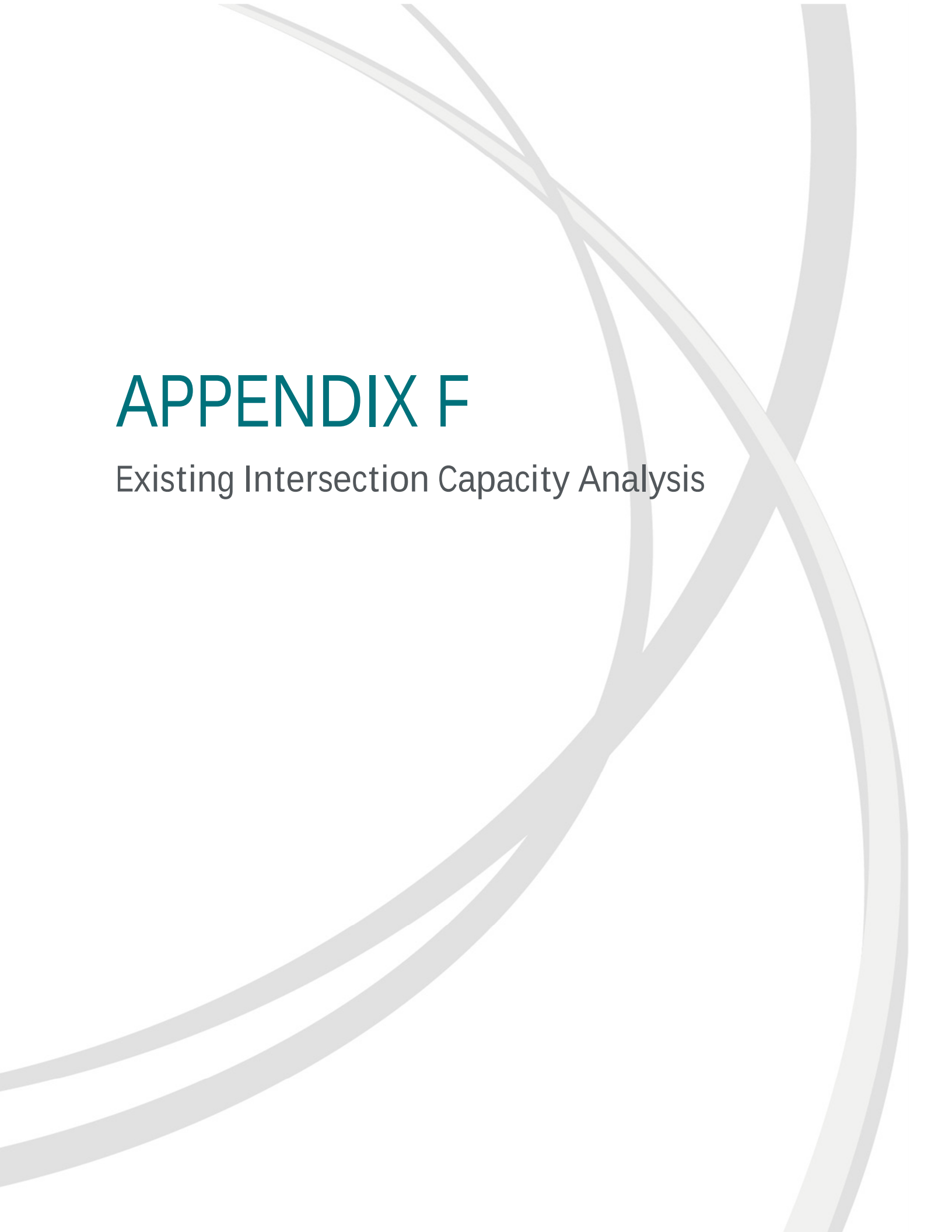
Top Purpose of Destination - purg_what is 00, 01, and

2022 TTS zone of destination - rts22_what is 000, 400, 402, 403, 404, 405, 406, 407, 408, 409, 410, 411, 412, 413, 414, 415, 416, 417, 418, 419, 420, 421, 422, 423, 424, 425, 426, 427, 428, 429, 430, 431, 432, 433, 434, 435, 436, 437, 438, 439, 440, 441, 442, 443, 444, 445, 446, 447, 448, 449, 450, 451, 452, 453, 454, 455, 456, 457, 458, 459, 460, 461, 462, 463, 464, 465, 466, 467, 468, 469, 470, 471, 472, 473, 474, 475, 476, 477, 478, 479, 480, 481, 482, 483, 484, 485, 486, 487, 488, 489, 490, 491, 492, 493, 494, 495, 496, 497, 498, 499, 500, 501, 502, 503, 504, 505, 506, 507, 508, 509, 510, 511, 512, 513, 514, 515, 516, 517, 518, 519, 520, 521, 522, 523, 524, 525, 526, 527, 528, 529, 530, 531, 532, 533, 534, 535, 536, 537, 538, 539, 540, 541, 542, 543, 544, 545, 546, 547, 548, 549, 550, 551, 552, 553, 554, 555, 556, 557, 558, 559, 560, 561, 562, 563, 564, 565, 566, 567, 568, 569, 570, 571, 572, 573, 574, 575, 576, 577, 578, 579, 580, 581, 582, 583, 584, 585, 586, 587, 588, 589, 590, 591, 592, 593, 594, 595, 596, 597, 598, 599, 600, 601, 602, 603, 604, 605, 606, 607, 608, 609, 610, 611, 612, 613, 614, 615, 616, 617, 618, 619, 620, 621, 622, 623, 624, 625, 626, 627, 628, 629, 630, 631, 632, 633, 634, 635, 636, 637, 638, 639, 640, 641, 642, 643, 644, 645, 646, 647, 648, 649, 650, 651, 652, 653, 654, 655, 656, 657, 658, 659, 660, 661, 662, 663, 664, 665, 666, 667, 668, 669, 670, 671, 672, 673, 674, 675, 676, 677, 678, 679, 680, 681, 682, 683, 684, 685, 686, 687, 688, 689, 690, 691, 692, 693, 694, 695, 696, 697, 698, 699, 700, 701, 702, 703, 704, 705, 706, 707, 708, 709, 710, 711, 712, 713, 714, 715, 716, 717, 718, 719, 720, 721, 722, 723, 724, 725, 726, 727, 728, 729, 730, 731, 732, 733, 734, 735, 736, 737, 738, 739, 740, 741, 742, 743, 744, 745, 746, 747, 748, 749, 750, 751, 752, 753, 754, 755, 756, 757, 758, 759, 760, 761, 762, 763, 764, 765, 766, 767, 768, 769, 770, 771, 772, 773, 774, 775, 776, 777, 778, 779, 780, 781, 782, 783, 784, 785, 786, 787, 788, 789, 790, 791, 792, 793, 794, 795, 796, 797, 798, 799, 800, 801, 802, 803, 804, 805, 806, 807, 808, 809, 810, 811, 812, 813, 814, 815, 816, 817, 818, 819, 820, 821, 822, 823, 824, 825, 826, 827, 828, 829, 830, 831, 832, 833, 834, 835, 836, 837, 838, 839, 840, 841, 842, 843, 844, 845, 846, 847, 848, 849, 850, 851, 852, 853, 854, 855, 856, 857, 858, 859, 860, 861, 862, 863, 864, 865, 866, 867, 868, 869, 870, 871, 872, 873, 874, 875, 876, 877, 878, 879, 880, 881, 882, 883, 884, 885, 886, 887, 888, 889, 890, 891, 892, 893, 894, 895, 896, 897, 898, 899, 900, 901, 902, 903, 904, 905, 906, 907, 908, 909, 910, 911, 912, 913, 914, 915, 916, 917, 918, 919, 920, 921, 922, 923, 924, 925, 926, 927, 928, 929, 930, 931, 932, 933, 934, 935, 936, 937, 938, 939, 940, 941, 942, 943, 944, 945, 946, 947, 948, 949, 950, 951, 952, 953, 954, 955, 956, 957, 958, 959, 960, 961, 962, 963, 964, 965, 966, 967, 968, 969, 970, 971, 972, 973, 974, 975, 976, 977, 978, 979, 980, 981, 982, 983, 984, 985, 986, 987, 988, 989, 990, 991, 992, 993, 994, 995, 996, 997, 998, 999, 1000

Trip: 2022

Filter: rts22_why

Zone		Value		General description		Water use H2		Chl Chlorophyll		Algal density		Water use H2		Chl Chlorophyll		Algal density			
Year	Month	Value	Unit	General description	Value	Unit	Water use H2	Chl Chlorophyll	Algal density	Water use H2	Chl Chlorophyll	Algal density	Water use H2	Chl Chlorophyll	Algal density	Water use H2	Chl Chlorophyll	Algal density	
1999	January	1.0	mm	1.0	mm	1.0	mm	1.0	mm	1.0	mm	1.0	mm	1.0	mm	1.0	mm	1.0	mm
1999	February	1.0	mm	1.0	mm	1.0	mm	1.0	mm	1.0	mm	1.0	mm	1.0	mm	1.0	mm	1.0	mm
1999	March	1.0	mm	1.0	mm	1.0	mm	1.0	mm	1.0	mm	1.0	mm	1.0	mm	1.0	mm	1.0	mm
1999	April	1.0	mm	1.0	mm	1.0	mm	1.0	mm	1.0	mm	1.0	mm	1.0	mm	1.0	mm	1.0	mm
1999	May	1.0	mm	1.0	mm	1.0	mm	1.0	mm	1.0	mm	1.0	mm	1.0	mm	1.0	mm	1.0	mm
1999	June	1.0	mm	1.0	mm	1.0	mm	1.0	mm	1.0	mm	1.0	mm	1.0	mm	1.0	mm	1.0	mm
1999	July	1.0	mm	1.0	mm	1.0	mm	1.0	mm	1.0	mm	1.0	mm	1.0	mm	1.0	mm	1.0	mm
1999	August	1.0	mm	1.0	mm	1.0	mm	1.0	mm	1.0	mm	1.0	mm	1.0	mm	1.0	mm	1.0	mm
1999	September	1.0	mm	1.0	mm	1.0	mm	1.0	mm	1.0	mm	1.0	mm	1.0	mm	1.0	mm	1.0	mm
1999	October	1.0	mm	1.0	mm	1.0	mm	1.0	mm	1.0	mm	1.0	mm	1.0	mm	1.0	mm	1.0	mm
1999	November	1.0	mm	1.0	mm	1.0	mm	1.0	mm	1.0	mm	1.0	mm	1.0	mm	1.0	mm	1.0	mm
1999	December	1.0	mm	1.0	mm	1.0	mm	1.0	mm	1.0	mm	1.0	mm	1.0	mm	1.0	mm	1.0	mm
2000	January	1.0	mm	1.0	mm	1.0	mm	1.0	mm	1.0	mm	1.0	mm	1.0	mm	1.0	mm	1.0	mm
2000	February	1.0	mm	1.0	mm	1.0	mm	1.0	mm	1.0	mm	1.0	mm	1.0	mm	1.0	mm	1.0	mm
2000	March	1.0	mm	1.0	mm	1.0	mm	1.0	mm	1.0	mm	1.0	mm	1.0	mm	1.0	mm	1.0	mm
2000	April	1.0	mm	1.0	mm	1.0	mm	1.0	mm	1.0	mm	1.0	mm	1.0	mm	1.0	mm	1.0	mm
2000	May	1.0	mm	1.0	mm	1.0	mm	1.0	mm	1.0	mm	1.0	mm	1.0	mm	1.0	mm	1.0	mm
2000	June	1.0	mm	1.0	mm	1.0	mm	1.0	mm	1.0	mm	1.0	mm	1.0	mm	1.0	mm	1.0	mm
2000	July	1.0	mm	1.0	mm	1.0	mm	1.0	mm	1.0	mm	1.0	mm	1.0	mm	1.0	mm	1.0	mm
2000	August	1.0	mm	1.0	mm	1.0	mm	1.0	mm	1.0	mm	1.0	mm	1.0	mm	1.0	mm	1.0	mm
2000	September	1.0	mm	1.0	mm	1.0	mm	1.0	mm	1.0	mm	1.0	mm	1.0	mm	1.0	mm	1.0	mm
2000	October	1.0	mm	1.0	mm	1.0	mm	1.0	mm	1.0	mm	1.0	mm	1.0	mm	1.0	mm	1.0	mm
2000	November	1.0	mm	1.0	mm	1.0	mm	1.0	mm	1.0	mm	1.0	mm	1.0	mm	1.0	mm	1.0	mm
2000	December	1.0	mm	1.0	mm	1.0	mm	1.0	mm	1.0	mm	1.0	mm	1.0	mm	1.0	mm	1.0	mm
2001	January	1.0	mm	1.0	mm	1.0	mm	1.0	mm	1.0	mm	1.0	mm	1.0	mm	1.0	mm	1.0	mm
2001	February	1.0	mm	1.0	mm	1.0	mm	1.0	mm	1.0	mm	1.0	mm	1.0	mm	1.0	mm	1.0	mm
2001	March	1.0	mm	1.0	mm	1.0	mm	1.0	mm	1.0	mm	1.0	mm	1.0	mm	1.0	mm	1.0	mm
2001	April	1.0	mm	1.0	mm	1.0	mm	1.0	mm	1.0	mm	1.0	mm	1.0	mm	1.0	mm	1.0	mm
2001	May	1.0	mm	1.0	mm	1.0	mm	1.0	mm	1.0	mm	1.0	mm	1.0	mm	1.0	mm	1.0	mm
2001	June	1.0	mm	1.0	mm	1.0	mm	1.0	mm	1.0	mm	1.0	mm	1.0	mm	1.0	mm	1.0	mm
2001	July	1.0	mm	1.0	mm	1.0	mm	1.0	mm	1.0	mm	1.0	mm	1.0	mm	1.0	mm	1.0	mm
2001	August	1.0	mm	1.0	mm	1.0	mm	1.0	mm	1.0	mm	1.0	mm	1.0	mm	1.0	mm	1.0	mm
2001	September	1.0	mm	1.0	mm	1.0	mm	1.0	mm	1.0	mm	1.0	mm	1.0	mm	1.0	mm	1.0	mm
2001	October	1.0	mm	1.0	mm	1.0	mm	1.0	mm	1.0	mm	1.0	mm	1.0	mm	1.0	mm	1.0	mm
2001	November	1.0	mm	1.0	mm	1.0	mm	1.0	mm	1.0	mm	1.0	mm	1.0	mm	1.0	mm	1.0	mm
2001	December	1.0	mm	1.0	mm	1.0	mm	1.0	mm	1.0	mm	1.0	mm	1.0	mm	1.0	mm	1.0	mm
2002	January	1.0	mm	1.0	mm	1.0	mm	1.0	mm	1.0	mm	1.0	mm	1.0	mm	1.0	mm	1.0	mm
2002	February	1.0	mm	1.0	mm	1.0	mm	1.0	mm	1.0	mm	1.0	mm	1.0	mm	1.0	mm	1.0	mm
2002	March	1.0	mm	1.0	mm	1.0	mm	1.0	mm	1.0	mm	1.0	mm	1.0	mm	1.0	mm	1.0	mm
2002	April	1.0	mm	1.0	mm	1.0	mm	1.0	mm	1.0	mm	1.0	mm	1.0	mm	1.0	mm	1.0	mm
2002	May	1.0	mm	1.0	mm	1.0	mm	1.0	mm	1.0	mm	1.0	mm	1.0	mm	1.0	mm	1.0	mm
2002	June	1.0	mm	1.0	mm	1.0	mm	1.0	mm	1.0	mm	1.0	mm	1.0	mm	1.0	mm	1.0	mm
2002	July	1.0	mm	1.0	mm	1.0	mm	1.0	mm	1.0	mm	1.0	mm	1.0	mm	1.0	mm	1.0	mm
2002	August	1.0	mm	1.0	mm	1.0	mm	1.0	mm	1.0	mm	1.0	mm	1.0	mm	1.0	mm	1.0	mm
2002	September	1.0	mm	1.0	mm	1.0	mm	1.0	mm	1.0	mm	1.0	mm	1.0	mm	1.0	mm	1.0	mm
2002	October	1.0	mm	1.0	mm	1.0	mm	1.0	mm	1.0	mm	1.0	mm	1.0	mm	1.0	mm	1.0	mm
2002	November	1.0	mm	1.0	mm	1.0	mm	1.0	mm	1.0	mm	1.0	mm	1.0	mm	1.0	mm	1.0	mm
2002	December	1.0	mm	1.0	mm	1.0	mm	1.0	mm	1.0	mm	1.0	mm	1.0	mm	1.0	mm	1.0	mm
2003	January	1.0	mm	1.0	mm	1.0	mm	1.0	mm	1.0	mm	1.0	mm	1.0	mm	1.0	mm	1.0	mm
2003	February	1.0	mm	1.0	mm	1.0	mm	1.0	mm	1.0	mm	1.0	mm	1.0	mm	1.0	mm	1.0	mm
2003	March	1.0	mm	1.0	mm	1.0	mm	1.0	mm	1.0	mm	1.0	mm	1.0	mm	1.0	mm	1.0	mm
2003	April	1.0	mm	1.0	mm	1.0	mm	1.0	mm	1.0	mm	1.0	mm	1.0	mm	1.0	mm	1.0	mm
2003	May	1.0	mm	1.0	mm	1.0	mm	1.0	mm	1.0	mm	1.0	mm	1.0	mm	1.0	mm	1.0	mm
2003	June	1.0	mm	1.0	mm	1.0	mm	1.0	mm	1.0	mm	1.0	mm	1.0	mm	1.0	mm	1.0	mm
2003	July	1.0	mm	1.0	mm	1.0	mm	1.0	mm	1.0	mm	1.0	mm	1.0	mm	1.0	mm	1.0	mm
2003	August	1.0	mm	1.0	mm	1.0	mm	1.0	mm	1.0	mm	1.0	mm	1.0	mm	1.0	mm	1.0	mm
2003	September	1.0	mm	1.0	mm	1.0	mm	1.0	mm	1.0	mm	1.0	mm	1.0	mm	1.0	mm	1.0	mm
2003	October	1.0	mm	1.0	mm	1.0	mm	1.0	mm	1.0	mm	1.0	mm	1.0	mm	1.0	mm	1.0	mm
2003	November	1.0	mm	1.0	mm	1.0	mm	1.0	mm	1.0	mm	1.0	mm	1.0	mm	1.0	mm	1.0	mm
2003	December	1.0	mm	1.0	mm	1.0	mm	1.0	mm	1.0	mm	1.0	mm	1.0	mm	1.0	mm	1.0	mm
2004	January	1.0	mm	1.0	mm	1.0	mm	1.0	mm	1.0	mm	1.0	mm	1.0	mm	1.0	mm	1.0	mm
2004	February	1.0	mm	1.0	mm	1.0	mm	1.0	mm	1.0	mm	1.0	mm	1.0	mm	1.0	mm	1.0	mm
2004	March	1.0	mm	1.0	mm	1.0	mm	1.0	mm	1.0	mm	1.0	mm	1.0	mm	1.0	mm	1.0	mm
2004	April	1.0	mm	1.0	mm	1.0	mm	1.0	mm	1.0	mm	1.0	mm	1.0	mm	1.0	mm	1.0	mm
2004	May	1.0	mm	1.0	mm	1.0	mm	1.0	mm	1.0	mm	1.0	mm	1.0	mm	1.0	mm	1.0	mm
2004	June	1.0	mm	1.0	mm	1.0	mm	1.0	mm	1.0	mm	1.0	mm	1.0	mm	1.0	mm	1.0	mm
2004	July	1.0	mm	1.0	mm	1.0	mm	1.0	mm	1.0	mm	1.0	mm	1.0	mm	1.0	mm	1.0	mm
2004	August	1.0	mm	1.0	mm	1.0	mm	1.0	mm	1.0	mm	1.0	mm	1.0	mm	1.0	mm	1.0	mm
2004	September	1.0	mm	1.0	mm	1.0	mm	1.0	mm	1.0	mm	1.0	mm	1.0	mm	1.0	mm	1.0	mm
2004	October	1.0	mm	1.0	mm	1.0	mm	1.0	mm	1.0	mm	1.0	mm	1.0	mm	1.0	mm	1.0	mm
2004	November	1.0	mm	1.0	mm	1.0	mm	1.0	mm	1.0	mm	1.0	mm	1.0	mm	1.0	mm	1.0	mm
2004	December	1.0	mm	1.0	mm	1.0	mm	1.0	mm	1.0	mm	1.0	mm	1.0	mm	1.0	mm	1.0	mm
2005	January	1.0	mm	1.0	mm	1.0	mm	1.0	mm	1.0	mm	1.0	mm	1.0	mm	1.0	mm	1.0	mm
2005	February	1.0	mm	1.0	mm	1.0	mm	1.0	mm	1.0	mm	1.0	mm	1.0	mm	1.0	mm	1.0	mm
2005	March	1.0	mm	1.0	mm	1.0	mm	1.0	mm	1.0	mm	1.0	mm	1.0	mm	1.0	mm	1.0	mm
2005	April	1.0	mm	1.0	mm	1.0	mm	1.0	mm	1.0	mm	1.0	mm	1.0	mm	1.0	mm	1.0	mm
2005	May	1.0	mm	1.0	mm	1.0	mm	1.0	mm	1.0	mm	1.0	mm	1.0	mm	1.0	mm	1.0	mm
2005	June	1.0	mm	1.0	mm	1.0	mm	1.0	mm	1.0	mm	1.0	mm	1.0	mm	1.0	mm	1.0	mm
2005	July	1.0	mm	1.0	mm	1.0	mm	1.0	mm	1.0	mm	1.0	mm	1.0	mm	1.0	mm	1.0	mm
2005	August	1.0	mm	1.0	mm	1.0	mm	1.0	mm	1.0	mm	1.0	mm	1.0	mm	1.0	mm	1.0	mm
2005	September	1.0	mm	1.0	mm	1.0	mm	1.0	mm	1.0	mm	1.0	mm	1.0	mm	1.0	mm	1.0	mm
2005	October	1.0	mm	1.0	mm	1.0	mm	1.0	mm	1.0	mm	1.0	mm	1.0	mm	1.0	mm	1.0	mm
2005	November	1.0	mm	1.0	mm	1.0	mm	1.0	mm	1.0	mm	1.0	mm	1.0	mm	1.0	mm	1.0	mm
2005	December	1.0	mm	1.0	mm	1.0	mm	1.0	mm	1.0	mm								



APPENDIX F

Existing Intersection Capacity Analysis

Queues

1: Heart Lake Rd & Mayfield Rd

Existing Traffic

Weekday PM Peak

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	38	909	190	47	1026	318	227	99	34	190	86	53
Future Volume (vph)	38	909	190	47	1026	318	227	99	34	190	86	53
Lane Group Flow (vph)	38	909	190	47	1026	318	227	99	34	190	86	53
Turn Type	Perm	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm	Perm	NA	Perm
Protected Phases		4		3	8		5	2			6	
Permitted Phases	4		4	8		8	2		2	6		6
Detector Phase	4	4	4	3	8	8	5	2	2	6	6	6
Switch Phase												
Minimum Initial (s)	5.0	5.0	5.0	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	8.0	39.7	39.7	8.0	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	0.0	2.1	2.1	0.0	2.9	2.9	2.9	2.9	2.9
Lost Time Adjust (s)	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 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?	Yes	Yes	Yes	Yes			Yes			Yes	Yes	Yes
Recall Mode	C-Max	C-Max	C-Max	None	C-Max	C-Max	None	Max	Max	Max	Max	Max
v/c Ratio	0.16	0.36	0.22	0.14	0.36	0.31	0.47	0.15	0.06	0.54	0.16	0.11
Control Delay (s/veh)	21.8	21.6	3.1	13.4	17.5	2.4	34.6	31.0	3.4	47.7	37.5	3.5
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 (s/veh)	21.8	21.6	3.1	13.4	17.5	2.4	34.6	31.0	3.4	47.7	37.5	3.5
Queue Length 50th (m)	5.5	54.5	0.0	5.2	54.0	0.0	42.9	18.1	0.0	43.0	17.3	0.0
Queue Length 95th (m)	13.1	65.0	12.3	10.8	63.8	12.9	64.3	31.4	3.9	68.0	31.0	5.1
Internal Link Dist (m)		810.0			310.8			1249.9			682.4	
Turn Bay Length (m)	115.0		180.0	80.0		70.0	110.0		15.0	30.0		25.0
Base Capacity (vph)	243	2531	871	330	2858	1013	481	670	576	353	536	501
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	0.16	0.36	0.22	0.14	0.36	0.31	0.47	0.15	0.06	0.54	0.16	0.11

Intersection Summary

Cycle Length: 135

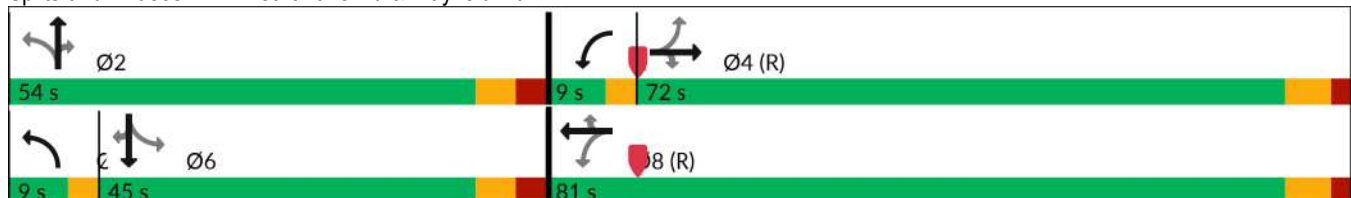
Actuated Cycle Length: 135

Offset: 26 (19%), Referenced to phase 4:EBTL and 8:WBTL, Start of Green

Natural Cycle: 100

Control Type: Actuated-Coordinated

Splits and Phases: 1: Heart Lake Rd & Mayfield Rd



HCM 6th Signalized Intersection Summary
1: Heart Lake Rd & Mayfield Rd

Existing Traffic
Weekday PM Peak

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		  			  						 	
Traffic Volume (veh/h)	38	909	190	47	1026	318	227	99	34	190	86	53
Future Volume (veh/h)	38	909	190	47	1026	318	227	99	34	190	86	53
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		0.99
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1900	1856	1900	1900	1885	1885	1885	1900	1856	1841	1885	1900
Adj Flow Rate, veh/h	38	909	190	47	1026	318	227	99	34	190	86	53
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Percent Heavy Veh, %	0	3	0	0	1	1	1	0	3	4	1	0
Cap, veh/h	234	2520	800	311	2833	878	445	663	549	402	532	449
Arrive On Green	0.50	0.50	0.50	0.03	0.55	0.55	0.04	0.35	0.35	0.28	0.28	0.28
Sat Flow, veh/h	413	5066	1609	1810	5147	1596	1795	1900	1572	1237	1885	1590
Grp Volume(v), veh/h	38	909	190	47	1026	318	227	99	34	190	86	53
Grp Sat Flow(s),veh/h/ln	413	1689	1609	1810	1716	1596	1795	1900	1572	1237	1885	1590
Q Serve(g_s), s	7.7	14.8	9.1	1.6	15.1	15.1	6.0	4.8	1.9	17.6	4.6	3.3
Cycle Q Clear(g_c), s	15.7	14.8	9.1	1.6	15.1	15.1	6.0	4.8	1.9	17.6	4.6	3.3
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	234	2520	800	311	2833	878	445	663	549	402	532	449
V/C Ratio(X)	0.16	0.36	0.24	0.15	0.36	0.36	0.51	0.15	0.06	0.47	0.16	0.12
Avail Cap(c_a), veh/h	234	2520	800	336	2833	878	445	663	549	402	532	449
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	23.4	20.8	19.3	15.6	17.0	17.0	37.2	30.2	29.2	41.1	36.4	36.0
Incr Delay (d2), s/veh	1.5	0.4	0.7	0.2	0.4	1.2	1.0	0.5	0.2	3.9	0.7	0.5
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.6	3.9	2.4	0.4	3.6	3.5	4.9	1.7	0.6	4.5	1.7	1.1
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	24.9	21.2	20.0	15.9	17.4	18.2	38.1	30.7	29.5	45.0	37.1	36.5
LnGrp LOS	C	C	C	B	B	B	D	C	C	D	D	D
Approach Vol, veh/h		1137			1391			360			329	
Approach Delay, s/veh		21.1			17.5			35.3			41.6	
Approach LOS		C			B			D			D	
Timer - Assigned Phs		2	3	4	5	6		8				
Phs Duration (G+Y+Rc), s		54.0	7.1	73.9	9.0	45.0		81.0				
Change Period (Y+Rc), s		6.9	3.0	6.7	3.0	6.9		6.7				
Max Green Setting (Gmax), s		47.1	6.0	65.3	6.0	38.1		74.3				
Max Q Clear Time (g_c+I1), s		6.8	3.6	17.7	8.0	19.6		17.1				
Green Ext Time (p_c), s		1.7	0.0	24.9	0.0	2.4		31.4				
Intersection Summary												
HCM 6th Ctrl Delay, s/veh			23.2									
HCM 6th LOS			C									

Intersection												
Intersection Delay, s/veh21.8												
Intersection LOS C												

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	74	234	47	60	289	5	35	192	25	8	273	22
Future Vol, veh/h	74	234	47	60	289	5	35	192	25	8	273	22
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles, %	5	3	2	0	0	20	3	1	0	0	3	0
Mvmt Flow	74	234	47	60	289	5	35	192	25	8	273	22
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	0
Approach	EB		WB		NB		SB					
Opposing Approach	WB		EB		SB		NB					
Opposing Lanes	1		1		1		1					
Conflicting Approach Left SB			NB		EB		WB					
Conflicting Lanes Left	1		1		1		1					
Conflicting Approach Right NB			SB		WB		EB					
Conflicting Lanes Right	1		1		1		1					
HCM Control Delay, s/veh 24			23.7		17.9		20.3					
HCM LOS	C		C		C		C					

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	14%	21%	17%	3%
Vol Thru, %	76%	66%	82%	90%
Vol Right, %	10%	13%	1%	7%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	252	355	354	303
LT Vol	35	74	60	8
Through Vol	192	234	289	273
RT Vol	25	47	5	22
Lane Flow Rate	252	355	354	303
Geometry Grp	1	1	1	1
Degree of Util (X)	0.513	0.686	0.682	0.599
Departure Headway (Hd)	7.331	6.952	6.936	7.116
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	489	518	520	506
Service Time	5.403	5.016	5	5.182
HCM Lane V/C Ratio	0.515	0.685	0.681	0.599
HCM Control Delay, s/veh	17.9	24	23.7	20.3
HCM Lane LOS	C	C	C	C
HCM 95th-tile Q	2.9	5.2	5.1	3.9

Intersection												
Int Delay, s/veh	0											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	1	0	0	0	0	0	0	255	0	0	395	0
Future Vol, veh/h	1	0	0	0	0	0	0	255	0	0	395	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	100	100	100	100	100	100	100	100	100	100	100	100
Heavy Vehicles, %	0	0	0	0	0	0	0	0	0	0	2	0
Mvmt Flow	1	0	0	0	0	0	0	255	0	0	395	0
Major/Minor	Minor2		Minor1		Major1		Major2					
Conflicting Flow All	650	650	395	650	650	255	395	0	0	255	0	0
Stage 1	395	395	-	255	255	-	-	-	-	-	-	-
Stage 2	255	255	-	395	395	-	-	-	-	-	-	-
Critical Hdwy	7.1	6.5	6.2	7.1	6.5	6.2	4.1	-	-	4.1	-	-
Critical Hdwy Stg 1	6.1	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.1	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4	3.3	3.5	4	3.3	2.2	-	-	2.2	-	-
Pot Cap-1 Maneuver	385	391	659	385	391	789	1175	-	-	1322	-	-
Stage 1	634	608	-	754	700	-	-	-	-	-	-	-
Stage 2	754	700	-	634	608	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	385	391	659	385	391	789	1175	-	-	1322	-	-
Mov Cap-2 Maneuver	385	391	-	385	391	-	-	-	-	-	-	-
Stage 1	634	608	-	754	700	-	-	-	-	-	-	-
Stage 2	754	700	-	634	608	-	-	-	-	-	-	-
Approach	EB		WB		NB		SB					
HCM Ctrl Dly, s/v	14.4		0		0		0					
HCM LOS	B		A									
Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1WBLn1	SBL	SBT	SBR					
Capacity (veh/h)	1175	-	-	385	-	1322	-	-				
HCM Lane V/C Ratio	-	-	-	0.003	-	-	-	-				
HCM Ctrl Dly (s/v)	0	-	-	14.4	0	0	-	-				
HCM Lane LOS	A	-	-	B	A	A	-	-				
HCM 95th %tile Q (veh)	0	-	-	0	-	0	-	-				

Intersection						
Int Delay, s/veh	6					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	11	184	337	118	145	14
Future Vol, veh/h	11	184	337	118	145	14
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	0	60	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	100	100	100	100	100	100
Heavy Vehicles, %	0	2	1	0	1	0
Mvmt Flow	11	184	337	118	145	14
Major/Minor	Minor2	Major1		Major2		
Conflicting Flow All	944	152	159	0	-	0
Stage 1	152	-	-	-	-	-
Stage 2	792	-	-	-	-	-
Critical Hdwy	6.4	6.22	4.11	-	-	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.318	2.209	-	-	-
Pot Cap-1 Maneuver	293	894	1427	-	-	-
Stage 1	881	-	-	-	-	-
Stage 2	450	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	224	894	1427	-	-	-
Mov Cap-2 Maneuver	224	-	-	-	-	-
Stage 1	673	-	-	-	-	-
Stage 2	450	-	-	-	-	-
Approach	EB	NB		SB		
HCM Ctrl Dly, s/v	10.8	6.1		0		
HCM LOS	B					
Minor Lane/Major Mvmt	NBL	NBT	EBLn1	EBLn2	SBT	SBR
Capacity (veh/h)	1427	-	224	894	-	-
HCM Lane V/C Ratio	0.236	-	0.049	0.206	-	-
HCM Ctrl Dly (s/v)	8.3	-	21.9	10.1	-	-
HCM Lane LOS	A	-	C	B	-	-
HCM 95th %tile Q (veh)	0.9	-	0.2	0.8	-	-

Queues

1: Heart Lake Rd & Mayfield Rd

Existing Traffic

Weekday AM Peak

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	25	922	363	120	472	93	116	73	22	209	244	52
Future Volume (vph)	25	922	363	120	472	93	116	73	22	209	244	52
Lane Group Flow (vph)	25	922	363	120	472	93	116	73	22	209	244	52
Turn Type	Perm	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm	Perm	NA	Perm
Protected Phases		4		3	8		5	2			6	
Permitted Phases	4		4	8		8	2		2	6		6
Detector Phase	4	4	4	3	8	8	5	2	2	6	6	6
Switch Phase												
Minimum Initial (s)	5.0	5.0	5.0	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	8.0	39.7	39.7	8.0	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	0.0	2.1	2.1	0.0	2.9	2.9	2.9	2.9	2.9
Lost Time Adjust (s)	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 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?	Yes	Yes	Yes	Yes			Yes			Yes	Yes	Yes
Recall Mode	C-Max	C-Max	C-Max	None	C-Max	C-Max	None	Max	Max	Max	Max	Max
v/c Ratio	0.06	0.36	0.39	0.38	0.18	0.11	0.35	0.12	0.04	0.58	0.48	0.11
Control Delay (s/veh)	18.5	21.7	3.0	16.1	14.9	2.9	33.8	33.0	0.1	51.8	46.5	3.8
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 (s/veh)	18.5	21.7	3.0	16.1	14.9	2.9	33.8	33.0	0.1	51.8	46.5	3.8
Queue Length 50th (m)	3.5	55.4	0.0	13.9	22.2	0.0	21.8	14.0	0.0	50.3	56.8	0.0
Queue Length 95th (m)	8.7	65.8	15.5	23.0	28.4	7.6	36.1	25.8	0.6	77.7	83.3	5.2
Internal Link Dist (m)		810.0			310.8			1249.9			682.4	
Turn Bay Length (m)	115.0		180.0	80.0		70.0	110.0		15.0	30.0		25.0
Base Capacity (vph)	428	2556	941	318	2628	878	335	592	546	358	507	465
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	0.06	0.36	0.39	0.38	0.18	0.11	0.35	0.12	0.04	0.58	0.48	0.11

Intersection Summary

Cycle Length: 140

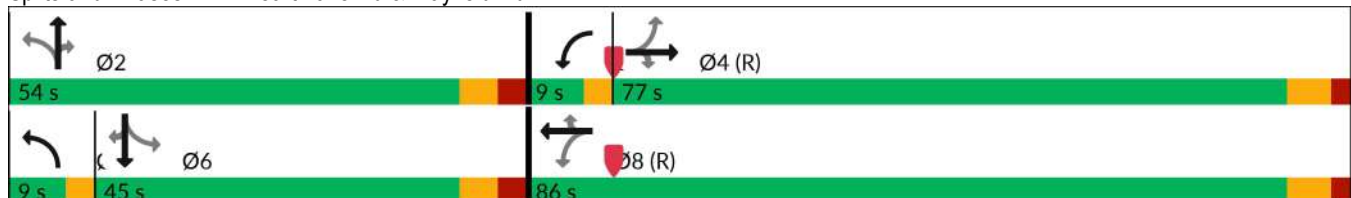
Actuated Cycle Length: 140

Offset: 78 (56%), Referenced to phase 4:EBTL and 8:WBTL, Start of Green

Natural Cycle: 100

Control Type: Actuated-Coordinated

Splits and Phases: 1: Heart Lake Rd & Mayfield Rd



HCM 6th Signalized Intersection Summary
1: Heart Lake Rd & Mayfield Rd

Existing Traffic
Weekday AM Peak

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		  			  						 	
Traffic Volume (veh/h)	25	922	363	120	472	93	116	73	22	209	244	52
Future Volume (veh/h)	25	922	363	120	472	93	116	73	22	209	244	52
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No			No			No		
Adj Sat Flow, veh/h/ln	1841	1856	1856	1841	1707	1781	1900	1767	1826	1885	1856	1811
Adj Flow Rate, veh/h	25	922	363	120	472	93	116	73	22	209	244	52
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Percent Heavy Veh, %	4	3	3	4	13	8	0	9	5	1	3	6
Cap, veh/h	469	2544	789	292	2640	854	307	594	521	408	505	418
Arrive On Green	0.50	0.50	0.50	0.04	0.57	0.57	0.04	0.34	0.34	0.27	0.27	0.27
Sat Flow, veh/h	832	5066	1571	1753	4661	1508	1810	1767	1547	1311	1856	1535
Grp Volume(v), veh/h	25	922	363	120	472	93	116	73	22	209	244	52
Grp Sat Flow(s),veh/h/ln	832	1689	1571	1753	1554	1508	1810	1767	1547	1311	1856	1535
Q Serve(g_s), s	2.2	15.5	20.9	4.5	6.8	4.0	6.0	4.0	1.3	19.3	15.4	3.6
Cycle Q Clear(g_c), s	2.2	15.5	20.9	4.5	6.8	4.0	6.0	4.0	1.3	19.3	15.4	3.6
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	469	2544	789	292	2640	854	307	594	521	408	505	418
V/C Ratio(X)	0.05	0.36	0.46	0.41	0.18	0.11	0.38	0.12	0.04	0.51	0.48	0.12
Avail Cap(c_a), veh/h	469	2544	789	292	2640	854	307	594	521	408	505	418
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	17.9	21.2	22.6	16.1	14.6	14.0	35.7	32.2	31.3	44.1	42.7	38.4
Incr Delay (d2), s/veh	0.2	0.4	1.9	2.0	0.1	0.3	1.6	0.4	0.2	4.5	3.3	0.6
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.2	3.1	4.2	0.9	1.0	0.6	2.0	1.2	0.3	4.7	5.2	1.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	18.1	21.6	24.5	18.1	14.8	14.3	37.4	32.6	31.4	48.6	46.0	39.0
LnGrp LOS	B	C	C	B	B	B	D	C	C	D	D	D
Approach Vol, veh/h	1310			685			211			505		
Approach Delay, s/veh	22.3			15.3			35.1			46.4		
Approach LOS	C			B			D			D		
Timer - Assigned Phs	2		3	4	5	6	8					
Phs Duration (G+Y+Rc), s	54.0		9.0	77.0	9.0	45.0	86.0					
Change Period (Y+Rc), s	6.9		3.0	6.7	3.0	6.9	6.7					
Max Green Setting (Gmax), s	47.1		6.0	70.3	6.0	38.1	79.3					
Max Q Clear Time (g_c+l1), s	6.0		6.5	22.9	8.0	21.3	8.8					
Green Ext Time (p_c), s	1.9		0.0	35.8	0.0	6.6	18.1					
Intersection Summary												
HCM 6th Ctrl Delay, s/veh	26.0											
HCM 6th LOS	C											

Intersection

Intersection Delay, s/veh 11.4

Intersection LOS B

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔			↔			↔			↔	
Traffic Vol, veh/h	16	324	33	42	147	0	15	55	39	10	116	15
Future Vol, veh/h	16	324	33	42	147	0	15	55	39	10	116	15
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles, %	6	1	6	5	1	0	0	4	5	0	2	20
Mvmt Flow	16	324	33	42	147	0	15	55	39	10	116	15
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	1
Conflicting Approach Left SB		NB	EB	WB
Conflicting Lanes Left	1	1	1	1
Conflicting Approach Right NB		SB	WB	EB
Conflicting Lanes Right	1	1	1	1
HCM Control Delay, s/veh 3.1		10.3	9.5	10
HCM LOS	B	B	A	A

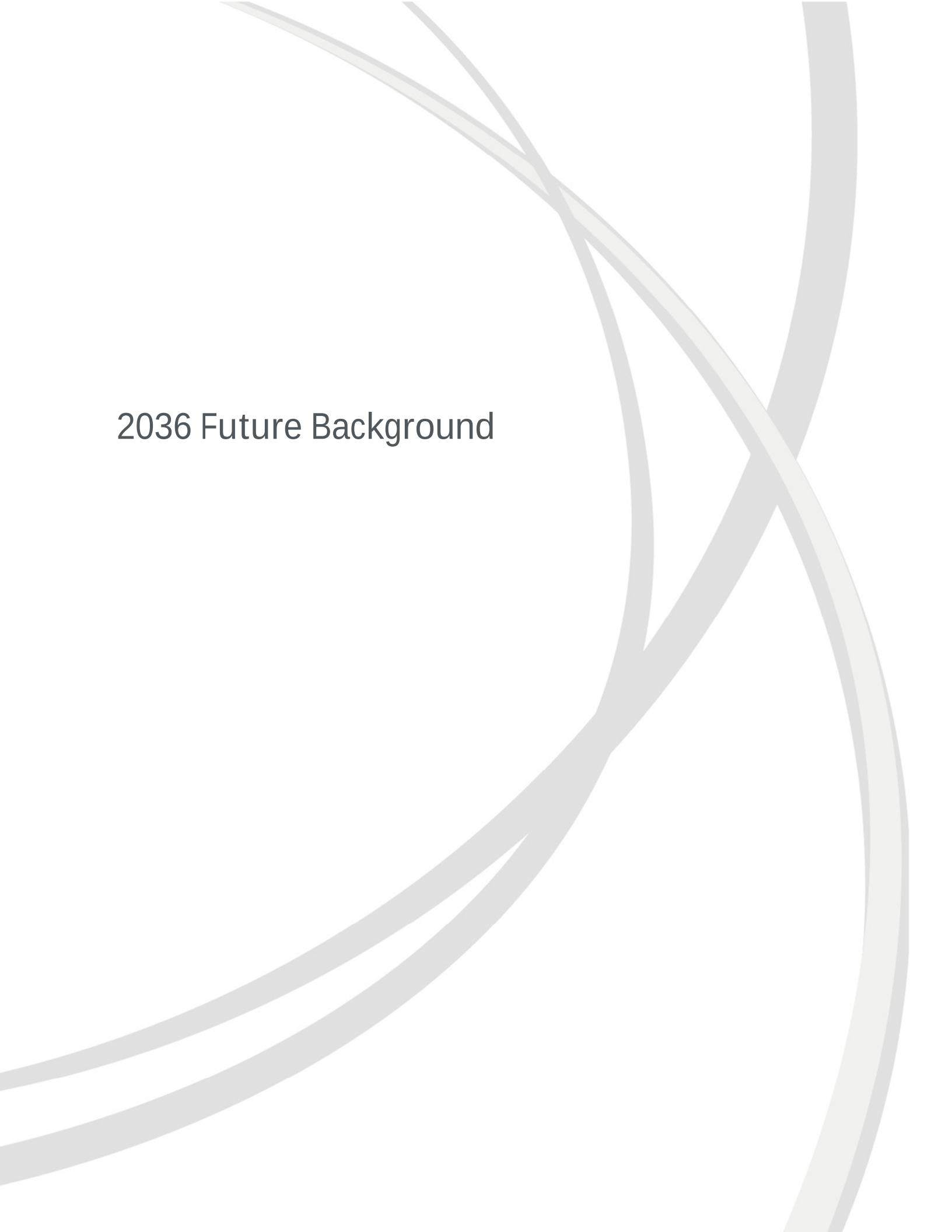
Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	14%	4%	22%	7%
Vol Thru, %	50%	87%	78%	82%
Vol Right, %	36%	9%	0%	11%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	109	373	189	141
LT Vol	15	16	42	10
Through Vol	55	324	147	116
RT Vol	39	33	0	15
Lane Flow Rate	109	373	189	141
Geometry Grp	1	1	1	1
Degree of Util (X)	0.164	0.514	0.276	0.215
Departure Headway (Hd)	5.404	4.961	5.249	5.479
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	663	731	684	654
Service Time	3.443	2.961	3.28	3.515
HCM Lane V/C Ratio	0.164	0.51	0.276	0.216
HCM Control Delay, s/veh	9.5	13.1	10.3	10
HCM Lane LOS	A	B	B	A
HCM 95th-tile Q	0.6	3	1.1	0.8

HCM 6th TWSC
4: Heart Lake Rd & 12506 Heart Lake Rd Dwy/12505 Heart Lake Dwy

Existing Traffic
Weekday AM Peak

Intersection												
Int Delay, s/veh	0.1											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	2	0	0	0	0	0	0	107	0	0	195	0
Future Vol, veh/h	2	0	0	0	0	0	0	107	0	0	195	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	100	100	100	100	100	100	100	100	100	100	100	100
Heavy Vehicles, %	0	0	0	0	0	0	0	4	0	0	3	0
Mvmt Flow	2	0	0	0	0	0	0	107	0	0	195	0
Major/Minor	Minor2		Minor1		Major1		Major2					
Conflicting Flow All	302	302	195	302	302	107	195	0	0	107	0	0
Stage 1	195	195	-	107	107	-	-	-	-	-	-	-
Stage 2	107	107	-	195	195	-	-	-	-	-	-	-
Critical Hdwy	7.1	6.5	6.2	7.1	6.5	6.2	4.1	-	-	4.1	-	-
Critical Hdwy Stg 1	6.1	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.1	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4	3.3	3.5	4	3.3	2.2	-	-	2.2	-	-
Pot Cap-1 Maneuver	654	614	851	654	614	953	1390	-	-	1497	-	-
Stage 1	811	743	-	903	811	-	-	-	-	-	-	-
Stage 2	903	811	-	811	743	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	654	614	851	654	614	953	1390	-	-	1497	-	-
Mov Cap-2 Maneuver	654	614	-	654	614	-	-	-	-	-	-	-
Stage 1	811	743	-	903	811	-	-	-	-	-	-	-
Stage 2	903	811	-	811	743	-	-	-	-	-	-	-
Approach	EB		WB		NB		SB					
HCM Ctrl Dly, s/v	10.5		0		0		0					
HCM LOS	B		A									
Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR				
Capacity (veh/h)	1390	-	-	654	-	1497	-	-				
HCM Lane V/C Ratio	-	-	-	0.003	-	-	-	-				
HCM Ctrl Dly (s/v)	0	-	-	10.5	0	0	-	-				
HCM Lane LOS	A	-	-	B	A	A	-	-				
HCM 95th %tile Q (veh)	0	-	-	0	-	0	-	-				

Intersection						
Int Delay, s/veh	6.5					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	14	319	98	93	186	9
Future Vol, veh/h	14	319	98	93	186	9
Conflicting Peds, #/hr	2	0	2	0	0	2
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	0	60	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	100	100	100	100	100	100
Heavy Vehicles, %	7	2	6	2	6	0
Mvmt Flow	14	319	98	93	186	9
Major/Minor	Minor2	Major1		Major2		
Conflicting Flow All	484	193	197	0	-	0
Stage 1	193	-	-	-	-	-
Stage 2	291	-	-	-	-	-
Critical Hdwy	6.47	6.22	4.16	-	-	-
Critical Hdwy Stg 1	5.47	-	-	-	-	-
Critical Hdwy Stg 2	5.47	-	-	-	-	-
Follow-up Hdwy	3.563	3.318	2.254	-	-	-
Pot Cap-1 Maneuver	533	849	1352	-	-	-
Stage 1	828	-	-	-	-	-
Stage 2	747	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	492	847	1350	-	-	-
Mov Cap-2 Maneuver	492	-	-	-	-	-
Stage 1	766	-	-	-	-	-
Stage 2	746	-	-	-	-	-
Approach	EB	NB		SB		
HCM Ctrl Dly, s/v	11.8	4		0		
HCM LOS	B					
Minor Lane/Major Mvmt	NBL	NBT	EBLn1	EBLn2	SBT	SBR
Capacity (veh/h)	1350	-	492	847	-	-
HCM Lane V/C Ratio	0.073	-	0.028	0.377	-	-
HCM Ctrl Dly (s/v)	7.9	-	12.5	11.8	-	-
HCM Lane LOS	A	-	B	B	-	-
HCM 95th %tile Q (veh)	0.2	-	0.1	1.8	-	-



2036 Future Background

Queues

Future Background Traffic 2036

1: Heart Lake Rd & Mayfield Rd

Weekday AM Peak

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		  			  			 			 	
Traffic Volume (vph)	76	1213	471	103	852	360	143	96	17	446	400	113
Future Volume (vph)	76	1213	471	103	852	360	143	96	17	446	400	113
Lane Group Flow (vph)	76	1213	471	103	852	360	143	96	17	446	400	113
Turn Type	Perm	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm	Perm	NA	Perm
Protected Phases		4		3	8		5	2			6	
Permitted Phases	4		4	8		8	2		2	6		6
Detector Phase	4	4	4	3	8	8	5	2	2	6	6	6
Switch Phase												
Minimum Initial (s)	5.0	5.0	5.0	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	8.0	39.7	39.7	8.0	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	0.0	2.1	2.1	0.0	2.9	2.9	2.9	2.9	2.9
Lost Time Adjust (s)	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 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?	Yes	Yes	Yes	Yes			Yes			Yes	Yes	Yes
Recall Mode	C-Max	C-Max	C-Max	None	C-Max	C-Max	None	Max	Max	Max	Max	Max
v/c Ratio	0.26	0.47	0.51	0.44	0.31	0.35	0.45	0.08	0.03	1.30	0.41	0.23
Control Delay (s/veh)	22.8	23.5	9.7	18.6	16.3	2.4	36.7	32.0	0.1	195.6	43.3	14.8
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 (s/veh)	22.8	23.5	9.7	18.6	16.3	2.4	36.7	32.0	0.1	195.6	43.3	14.8
Queue Length 50th (m)	11.7	78.4	27.6	11.8	43.6	0.0	27.3	9.5	0.0	~157.6	48.0	6.6
Queue Length 95th (m)	23.3	90.8	56.2	20.2	52.1	13.2	43.8	16.1	0.0	#223.1	63.3	22.0
Internal Link Dist (m)		810.0			310.8			1249.9			682.4	
Turn Bay Length (m)	115.0		180.0	80.0		70.0	110.0		15.0	30.0		25.0
Base Capacity (vph)	298	2556	925	232	2776	1017	315	1192	541	343	973	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	0.26	0.47	0.51	0.44	0.31	0.35	0.45	0.08	0.03	1.30	0.41	0.23

Intersection Summary

Cycle Length: 140

Actuated Cycle Length: 140

Offset: 78 (56%), Referenced to phase 4:EBTL and 8:WBTL, Start of Green

Natural Cycle: 100

Control Type: Actuated-Coordinated

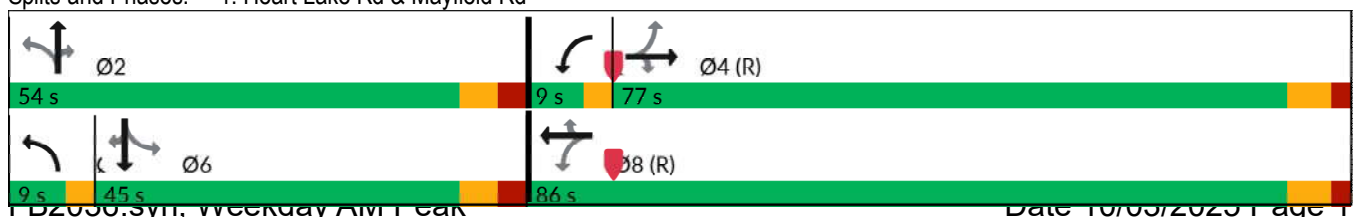
~ Volume exceeds capacity, queue is theoretically infinite.

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: 1: Heart Lake Rd & Mayfield Rd



B2036 Syn, Weekday AM Peak

Date 10/05/2025 Page 1

HCM 6th Signalized Intersection Summary

1: Heart Lake Rd & Mayfield Rd

Future Background Traffic 2036
Weekday AM Peak

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		  			  			 			 	
Traffic Volume (veh/h)	76	1213	471	103	852	360	143	96	17	446	400	113
Future Volume (veh/h)	76	1213	471	103	852	360	143	96	17	446	400	113
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1885	1856	1870	1826	1796	1826	1900	1856	1811	1856	1870	1856
Adj Flow Rate, veh/h	76	1213	471	103	852	360	143	96	17	446	400	113
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Percent Heavy Veh, %	1	3	2	5	7	5	0	3	6	3	2	3
Cap, veh/h	272	2551	798	223	2778	876	291	1186	516	397	967	428
Arrive On Green	0.50	0.50	0.50	0.04	0.57	0.57	0.04	0.34	0.34	0.27	0.27	0.27
Sat Flow, veh/h	464	5066	1584	1739	4904	1547	1810	3526	1535	1270	3554	1572
Grp Volume(v), veh/h	76	1213	471	103	852	360	143	96	17	446	400	113
Grp Sat Flow(s),veh/h/ln	464	1689	1584	1739	1635	1547	1810	1763	1535	1270	1777	1572
Q Serve(g_s), s	14.4	21.9	29.4	3.9	12.8	18.4	6.0	2.6	1.0	38.1	12.9	7.9
Cycle Q Clear(g_c), s	18.4	21.9	29.4	3.9	12.8	18.4	6.0	2.6	1.0	38.1	12.9	7.9
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	272	2551	798	223	2778	876	291	1186	516	397	967	428
V/C Ratio(X)	0.28	0.48	0.59	0.46	0.31	0.41	0.49	0.08	0.03	1.12	0.41	0.26
Avail Cap(c_a), veh/h	272	2551	798	225	2778	876	291	1186	516	397	967	428
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	23.0	22.7	24.5	17.6	15.9	17.2	38.4	31.7	31.2	53.4	41.8	40.0
Incr Delay (d2), s/veh	2.5	0.6	3.2	3.2	0.3	1.4	2.7	0.1	0.1	83.2	1.3	1.5
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.0	4.4	6.1	0.8	2.0	3.0	2.5	0.7	0.3	19.0	4.0	2.2
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	25.6	23.3	27.7	20.8	16.2	18.6	41.1	31.8	31.3	136.6	43.1	41.5
LnGrp LOS	C	C	C	C	B	B	D	C	C	F	D	D
Approach Vol, veh/h		1760			1315			256			959	
Approach Delay, s/veh		24.6			17.2			37.0			86.4	
Approach LOS		C			B			D			F	
Timer - Assigned Phs		2	3	4	5	6		8				
Phs Duration (G+Y+Rc), s		54.0	8.8	77.2	9.0	45.0		86.0				
Change Period (Y+Rc), s		6.9	3.0	6.7	3.0	6.9		6.7				
Max Green Setting (Gmax), s		47.1	6.0	70.3	6.0	38.1		79.3				
Max Q Clear Time (g_c+I1), s		4.6	5.9	31.4	8.0	40.1		20.4				
Green Ext Time (p_c), s		2.6	0.0	35.9	0.0	0.0		39.1				
Intersection Summary												
HCM 6th Ctrl Delay, s/veh			36.9									
HCM 6th LOS			D									

Intersection

Intersection Delay, s/veh49.6

Intersection LOS E

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		+			+		+	+			+	
Traffic Vol, veh/h	21	498	104	49	218	58	35	83	41	10	236	15
Future Vol, veh/h	21	498	104	49	218	58	35	83	41	10	236	15
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles, %	5	1	2	4	1	0	0	3	5	0	1	20
Mvmt Flow	21	498	104	49	218	58	35	83	41	10	236	15
Number of Lanes	0	1	0	0	1	0	1	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	2
Conflicting Approach Left SB		NB	EB	WB
Conflicting Lanes Left	1	2	1	1
Conflicting Approach RightNB		SB	WB	EB
Conflicting Lanes Right	2	1	1	1
HCM Control Delay, s/veh	7.3	19.9	13.6	18.7
HCM LOS	F	C	B	C

Lane	NBLn1	NBLn2	EBLn1	WBLn1	SBLn1
Vol Left, %	100%	0%	3%	15%	4%
Vol Thru, %	0%	67%	80%	67%	90%
Vol Right, %	0%	33%	17%	18%	6%
Sign Control	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	35	124	623	325	261
LT Vol	35	0	21	49	10
Through Vol	0	83	498	218	236
RT Vol	0	41	104	58	15
Lane Flow Rate	35	124	623	325	261
Geometry Grp	5	5	2	2	4a
Degree of Util (X)	0.083	0.27	1.086	0.602	0.527
Departure Headway (Hd)	8.886	8.181	6.274	6.945	7.579
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes
Cap	406	441	586	523	478
Service Time	6.586	5.881	4.274	4.945	5.579
HCM Lane V/C Ratio	0.086	0.281	1.063	0.621	0.546
HCM Control Delay, s/veh	12.4	13.9	87.3	19.9	18.7
HCM Lane LOS	B	B	F	C	C
HCM 95th-tile Q	0.3	1.1	18.7	3.9	3

Intersection												
Int Delay, s/veh	0.6											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		⬆⬆			⬆⬆			⬆⬆			⬆⬆	
Traffic Vol, veh/h	2	0	0	13	0	2	0	151	29	17	373	0
Future Vol, veh/h	2	0	0	13	0	2	0	151	29	17	373	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	100	100	100	100	100	100	100	100	100	100	100	100
Heavy Vehicles, %	0	0	0	0	0	0	0	3	0	0	2	0
Mvmt Flow	2	0	0	13	0	2	0	151	29	17	373	0
Major/Minor	Minor2		Minor1		Major1		Major2					
Conflicting Flow All	483	587	187	387	573	90	373	0	0	180	0	0
Stage 1	407	407	-	166	166	-	-	-	-	-	-	-
Stage 2	76	180	-	221	407	-	-	-	-	-	-	-
Critical Hdwy	7.5	6.5	6.9	7.5	6.5	6.9	4.1	-	-	4.1	-	-
Critical Hdwy Stg 1	6.5	5.5	-	6.5	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.5	5.5	-	6.5	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4	3.3	3.5	4	3.3	2.2	-	-	2.2	-	-
Pot Cap-1 Maneuver	471	425	830	551	432	956	1197	-	-	1408	-	-
Stage 1	597	601	-	825	765	-	-	-	-	-	-	-
Stage 2	930	754	-	767	601	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	464	419	830	545	426	956	1197	-	-	1408	-	-
Mov Cap-2 Maneuver	464	419	-	545	426	-	-	-	-	-	-	-
Stage 1	597	592	-	825	765	-	-	-	-	-	-	-
Stage 2	928	754	-	755	592	-	-	-	-	-	-	-
Approach	EB		WB		NB		SB					
HCM Ctrl Dly, s/v	12.8		11.4		0		0.4					
HCM LOS	B		B									
Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR				
Capacity (veh/h)	1197	-	-	464	578	1408	-	-				
HCM Lane V/C Ratio	-	-	-	0.004	0.026	0.012	-	-				
HCM Ctrl Dly (s/v)	0	-	-	12.8	11.4	7.6	0.1	-				
HCM Lane LOS	A	-	-	B	B	A	A	-				
HCM 95th %tile Q (veh)	0	-	-	0	0.1	0	-	-				

Intersection						
Int Delay, s/veh	6.2					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	14	354	211	137	363	10
Future Vol, veh/h	14	354	211	137	363	10
Conflicting Peds, #/hr	2	0	2	0	0	2
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	0	60	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	100	100	100	100	100	100
Heavy Vehicles, %	7	4	8	1	3	0
Mvmt Flow	14	354	211	137	363	10

Major/Minor	Minor2	Major1	Major2			
Conflicting Flow All	863	189	375	0	-	0
Stage 1	370	-	-	-	-	-
Stage 2	493	-	-	-	-	-
Critical Hdwy	6.94	6.98	4.26	-	-	-
Critical Hdwy Stg 1	5.94	-	-	-	-	-
Critical Hdwy Stg 2	5.94	-	-	-	-	-
Follow-up Hdwy	3.57	3.34	2.28	-	-	-
Pot Cap-1 Maneuver	284	815	1138	-	-	-
Stage 1	654	-	-	-	-	-
Stage 2	565	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	230	814	1136	-	-	-
Mov Cap-2 Maneuver	230	-	-	-	-	-
Stage 1	531	-	-	-	-	-
Stage 2	564	-	-	-	-	-

Approach	EB	NB	SB
HCM Ctrl Dly, s/v	13.1	5.4	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	EBLn2	SBT	SBR
Capacity (veh/h)	1136	-	230	814	-	-
HCM Lane V/C Ratio	0.186	-	0.061	0.435	-	-
HCM Ctrl Dly (s/v)	8.9	-	21.7	12.8	-	-
HCM Lane LOS	A	-	C	B	-	-
HCM 95th %tile Q (veh)	0.7	-	0.2	2.2	-	-

Queues

Future Background Traffic 2036

1: Heart Lake Rd & Mayfield Rd

Weekday PM Peak

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		  			  			 			 	
Traffic Volume (vph)	133	1195	231	33	1398	672	265	213	29	614	163	122
Future Volume (vph)	133	1195	231	33	1398	672	265	213	29	614	163	122
Lane Group Flow (vph)	133	1195	231	33	1398	672	265	213	29	614	163	122
Turn Type	Perm	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm	Perm	NA	Perm
Protected Phases		4		3	8		5	2			6	
Permitted Phases	4		4	8		8	2		2	6		6
Detector Phase	4	4	4	3	8	8	5	2	2	6	6	6
Switch Phase												
Minimum Initial (s)	5.0	5.0	5.0	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	8.0	39.7	39.7	8.0	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	0.0	2.1	2.1	0.0	2.9	2.9	2.9	2.9	2.9
Lost Time Adjust (s)	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 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?	Yes	Yes	Yes	Yes			Yes			Yes	Yes	Yes
Recall Mode	C-Max	C-Max	C-Max	None	C-Max	C-Max	None	Max	Max	Max	Max	Max
v/c Ratio	0.91	0.46	0.25	0.13	0.49	0.62	0.59	0.17	0.05	1.93	0.16	0.24
Control Delay (s/veh)	89.0	22.3	3.0	13.5	19.4	7.4	38.5	30.8	2.2	458.3	37.0	16.2
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 (s/veh)	89.0	22.3	3.0	13.5	19.4	7.4	38.5	30.8	2.2	458.3	37.0	16.2
Queue Length 50th (m)	33.5	76.7	0.0	3.6	80.9	24.3	51.4	20.5	0.0	~251.8	17.2	8.7
Queue Length 95th (m)	#76.8	89.2	13.3	8.3	92.9	59.7	75.3	30.1	2.5	#322.6	26.4	24.3
Internal Link Dist (m)		810.0			310.8			1249.9			682.4	
Turn Bay Length (m)	115.0		180.0	80.0		70.0	110.0		15.0	30.0		25.0
Base Capacity (vph)	146	2624	917	246	2858	1085	451	1273	576	318	1019	501
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	0.91	0.46	0.25	0.13	0.49	0.62	0.59	0.17	0.05	1.93	0.16	0.24

Intersection Summary

Cycle Length: 135

Actuated Cycle Length: 135

Offset: 26 (19%), Referenced to phase 4:EBTL and 8:WBTL, Start of Green

Natural Cycle: 150

Control Type: Actuated-Coordinated

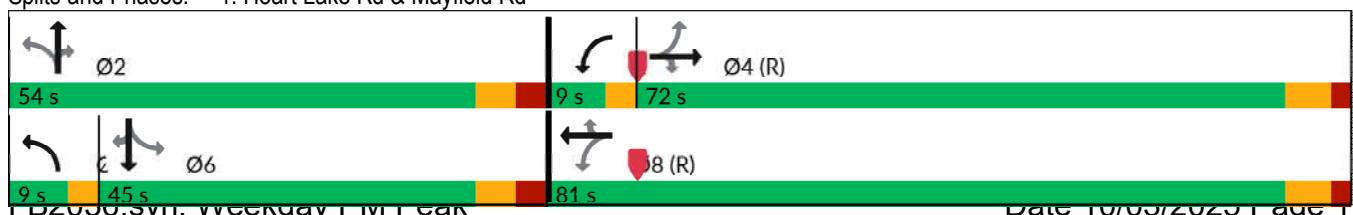
~ Volume exceeds capacity, queue is theoretically infinite.

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: 1: Heart Lake Rd & Mayfield Rd



1: Heart Lake Rd & Mayfield Rd

Date: 10/05/2025 Page 1

HCM 6th Signalized Intersection Summary
1: Heart Lake Rd & Mayfield Rd

Future Background Traffic 2036
Weekday PM Peak

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	133	1195	231	33	1398	672	265	213	29	614	163	122
Future Volume (veh/h)	133	1195	231	33	1398	672	265	213	29	614	163	122
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		0.99
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1900	1870	1900	1900	1885	1870	1885	1900	1856	1856	1885	1900
Adj Flow Rate, veh/h	133	1195	231	33	1398	672	265	213	29	614	163	122
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Percent Heavy Veh, %	0	2	0	0	1	2	1	0	3	3	1	0
Cap, veh/h	131	2563	808	234	2833	872	407	1259	549	372	1011	449
Arrive On Green	0.50	0.50	0.50	0.03	0.55	0.55	0.04	0.35	0.35	0.28	0.28	0.28
Sat Flow, veh/h	204	5106	1609	1810	5147	1584	1795	3610	1572	1129	3582	1590
Grp Volume(v), veh/h	133	1195	231	33	1398	672	265	213	29	614	163	122
Grp Sat Flow(s),veh/h/ln	204	1702	1609	1810	1716	1584	1795	1805	1572	1129	1791	1590
Q Serve(g_s), s	51.7	20.5	11.3	1.1	22.6	44.7	6.0	5.5	1.7	38.1	4.6	8.1
Cycle Q Clear(g_c), s	67.8	20.5	11.3	1.1	22.6	44.7	6.0	5.5	1.7	38.1	4.6	8.1
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	131	2563	808	234	2833	872	407	1259	549	372	1011	449
V/C Ratio(X)	1.01	0.47	0.29	0.14	0.49	0.77	0.65	0.17	0.05	1.65	0.16	0.27
Avail Cap(c_a), veh/h	131	2563	808	267	2833	872	407	1259	549	372	1011	449
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	52.1	21.9	19.6	16.4	18.7	23.7	39.6	30.4	29.2	51.2	36.4	37.7
Incr Delay (d2), s/veh	81.6	0.6	0.9	0.3	0.6	6.5	3.7	0.3	0.2	304.6	0.3	1.5
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	6.8	5.4	2.9	0.3	5.4	11.2	3.3	1.8	0.5	41.6	1.6	2.6
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	133.8	22.5	20.4	16.7	19.4	30.2	43.3	30.7	29.3	355.8	36.8	39.2
LnGrp LOS	F	C	C	B	B	C	D	C	C	F	D	D
Approach Vol, veh/h		1559			2103			507			899	
Approach Delay, s/veh		31.7			22.8			37.2			255.0	
Approach LOS		C			C			D			F	
Timer - Assigned Phs		2	3	4	5	6		8				
Phs Duration (G+Y+Rc), s		54.0	6.5	74.5	9.0	45.0		81.0				
Change Period (Y+Rc), s		6.9	3.0	6.7	3.0	6.9		6.7				
Max Green Setting (Gmax), s		47.1	6.0	65.3	6.0	38.1		74.3				
Max Q Clear Time (g_c+I1), s		7.5	3.1	69.8	8.0	40.1		46.7				
Green Ext Time (p_c), s		4.0	0.0	0.0	0.0	0.0		24.9				
Intersection Summary												
HCM 6th Ctrl Delay, s/veh			68.2									
HCM 6th LOS			E									

Intersection

Intersection Delay, s/veh 156.8

Intersection LOS F

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		+			+		+	+			+	
Traffic Vol, veh/h	79	351	93	67	459	63	110	241	27	8	360	27
Future Vol, veh/h	79	351	93	67	459	63	110	241	27	8	360	27
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles, %	5	2	1	0	0	2	1	1	0	0	2	0
Mvmt Flow	79	351	93	67	459	63	110	241	27	8	360	27
Number of Lanes	0	1	0	0	1	0	1	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	2
Conflicting Approach Left SB		NB	EB	WB
Conflicting Lanes Left	1	2	1	1
Conflicting Approach Right NB		SB	WB	EB
Conflicting Lanes Right	2	1	1	1
HCM Control Delay, s/veh 100.5		253.8	33.2	85.8
HCM LOS	F	F	D	F

Lane	NBLn1	NBLn2	EBLn1	WBLn1	SBLn1
Vol Left, %	100%	0%	15%	11%	2%
Vol Thru, %	0%	90%	67%	78%	91%
Vol Right, %	0%	10%	18%	11%	7%
Sign Control	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	110	268	523	589	395
LT Vol	110	0	79	67	8
Through Vol	0	241	351	459	360
RT Vol	0	27	93	63	27
Lane Flow Rate	110	268	523	589	395
Geometry Grp	5	5	2	2	4a
Degree of Util (X)	0.311	0.716	1.316	1.474	1.001
Departure Headway (Hd)	12.1	11.497	10.433	10	11.281
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes
Cap	299	316	350	371	324
Service Time	9.8	9.197	8.433	8	9.281
HCM Lane V/C Ratio	0.368	0.848	1.494	1.588	1.219
HCM Control Delay, s/veh	20.2	38.5	190.5	253.8	85.8
HCM Lane LOS	C	E	F	F	F
HCM 95th-tile Q	1.3	5.2	21.5	28.3	11

Intersection												
Int Delay, s/veh	0.5											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔			↔			↔			↔	
Traffic Vol, veh/h	1	0	0	13	0	2	0	375	29	17	515	0
Future Vol, veh/h	1	0	0	13	0	2	0	375	29	17	515	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	100	100	100	100	100	100	100	100	100	100	100	100
Heavy Vehicles, %	0	0	0	0	0	0	0	0	0	0	2	0
Mvmt Flow	1	0	0	13	0	2	0	375	29	17	515	0

Major/Minor	Minor2		Minor1		Major1		Major2					
Conflicting Flow All	737	953	258	682	939	202	515	0	0	404	0	0
Stage 1	549	549	-	390	390	-	-	-	-	-	-	-
Stage 2	188	404	-	292	549	-	-	-	-	-	-	-
Critical Hdwy	7.5	6.5	6.9	7.5	6.5	6.9	4.1	-	-	4.1	-	-
Critical Hdwy Stg 1	6.5	5.5	-	6.5	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.5	5.5	-	6.5	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4	3.3	3.5	4	3.3	2.2	-	-	2.2	-	-
Pot Cap-1 Maneuver	310	261	747	340	266	811	1061	-	-	1166	-	-
Stage 1	493	520	-	611	611	-	-	-	-	-	-	-
Stage 2	801	603	-	697	520	-	-	-	-	-	-	-
Platoon blocked, %								-	-	-	-	-
Mov Cap-1 Maneuver	304	256	747	335	261	811	1061	-	-	1166	-	-
Mov Cap-2 Maneuver	304	256	-	335	261	-	-	-	-	-	-	-
Stage 1	493	510	-	611	611	-	-	-	-	-	-	-
Stage 2	799	603	-	683	510	-	-	-	-	-	-	-

Approach	EB		WB		NB		SB	
HCM Ctrl Dly, s/v	16.9		15.3		0		0.4	
HCM LOS	C		C					

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1061	-	-	304	363	1166	-	-
HCM Lane V/C Ratio	-	-	-	0.003	0.041	0.015	-	-
HCM Ctrl Dly (s/v)	0	-	-	16.9	15.3	8.1	0.1	-
HCM Lane LOS	A	-	-	C	C	A	A	-
HCM 95th %tile Q (veh)	0	-	-	0	0.1	0	-	-

Intersection						
Int Delay, s/veh	5.7					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	19	272	387	356	500	15
Future Vol, veh/h	19	272	387	356	500	15
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	0	60	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	100	100	100	100	100	100
Heavy Vehicles, %	0	5	4	0	1	0
Mvmt Flow	19	272	387	356	500	15
Major/Minor	Minor2	Major1		Major2		
Conflicting Flow All	1460	258	515	0	-	0
Stage 1	508	-	-	-	-	-
Stage 2	952	-	-	-	-	-
Critical Hdwy	6.8	7	4.18	-	-	-
Critical Hdwy Stg 1	5.8	-	-	-	-	-
Critical Hdwy Stg 2	5.8	-	-	-	-	-
Follow-up Hdwy	3.5	3.35	2.24	-	-	-
Pot Cap-1 Maneuver	122	732	1033	-	-	-
Stage 1	575	-	-	-	-	-
Stage 2	340	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	76	732	1033	-	-	-
Mov Cap-2 Maneuver	76	-	-	-	-	-
Stage 1	359	-	-	-	-	-
Stage 2	340	-	-	-	-	-
Approach	EB	NB		SB		
HCM Ctrl Dly, s/v	16.4	5.5		0		
HCM LOS	C					
Minor Lane/Major Mvmt	NBL	NBT	EBLn1	EBLn2	SBT	SBR
Capacity (veh/h)	1033	-	76	732	-	-
HCM Lane V/C Ratio	0.375	-	0.25	0.372	-	-
HCM Ctrl Dly (s/v)	10.6	-	67.5	12.8	-	-
HCM Lane LOS	B	-	F	B	-	-
HCM 95th %tile Q (veh)	1.8	-	0.9	1.7	-	-

Queues

Future Background Traffic (2036 w STP change)

1: Heart Lake Rd & Mayfield Rd

Weekday AM Peak

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		  			  			 		 	 	
Traffic Volume (vph)	76	1213	471	103	852	360	143	96	17	446	400	113
Future Volume (vph)	76	1213	471	103	852	360	143	96	17	446	400	113
Lane Group Flow (vph)	76	1213	471	103	852	360	143	96	17	446	400	113
Turn Type	Perm	NA	Perm	pm+pt	NA	pm+ov	pm+pt	NA	Perm	Prot	NA	Perm
Protected Phases		4		3	8	1	5	2		1	6	
Permitted Phases	4		4	8		8	2		2			6
Detector Phase	4	4	4	3	8	1	5	2	2	1	6	6
Switch Phase												
Minimum Initial (s)	5.0	5.0	5.0	5.0	12.0	5.0	5.0	8.0	8.0	5.0	8.0	8.0
Minimum Split (s)	39.7	39.7	39.7	8.0	39.7	11.5	8.0	43.9	43.9	11.5	43.9	43.9
Total Split (s)	57.0	57.0	57.0	9.0	66.0	26.0	9.0	48.0	48.0	26.0	65.0	65.0
Total Split (%)	40.7%	40.7%	40.7%	6.4%	47.1%	18.6%	6.4%	34.3%	34.3%	18.6%	46.4%	46.4%
Yellow Time (s)	4.6	4.6	4.6	3.0	4.6	3.0	3.0	4.0	4.0	3.0	4.0	4.0
All-Red Time (s)	2.1	2.1	2.1	0.0	2.1	3.0	0.0	2.9	2.9	3.0	2.9	2.9
Lost Time Adjust (s)	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 Lost Time (s)	6.7	6.7	6.7	3.0	6.7	6.0	3.0	6.9	6.9	6.0	6.9	6.9
Lead/Lag	Lag	Lag	Lag	Lead		Lead	Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes		Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	C-Max	C-Max	C-Max	None	C-Max	None	None	Max	Max	None	Max	Max
v/c Ratio	0.37	0.66	0.59	0.66	0.41	0.34	0.37	0.09	0.03	0.93	0.27	0.16
Control Delay (s/veh)	39.5	39.9	10.5	45.0	28.9	1.9	25.4	36.3	0.1	85.8	27.6	6.4
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 (s/veh)	39.5	39.9	10.5	45.0	28.9	1.9	25.4	36.3	0.1	85.8	27.6	6.4
Queue Length 50th (m)	15.5	103.0	17.3	16.4	59.5	0.0	20.7	10.1	0.0	63.8	38.0	1.9
Queue Length 95th (m)	30.8	119.3	51.6	#32.1	71.3	11.6	33.2	17.2	0.0	#94.7	50.1	13.7
Internal Link Dist (m)		810.0			310.8			1249.9			682.4	
Turn Bay Length (m)	115.0		180.0	80.0		70.0	110.0		15.0	100.0		25.0
Base Capacity (vph)	208	1829	797	155	2076	1073	388	1040	528	480	1485	702
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	0.37	0.66	0.59	0.66	0.41	0.34	0.37	0.09	0.03	0.93	0.27	0.16

Intersection Summary

Cycle Length: 140

Actuated Cycle Length: 140

Offset: 78 (56%), Referenced to phase 4:EBTL and 8:WBTL, Start of Green

Natural Cycle: 105

Control Type: Actuated-Coordinated

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

Splits and Phases: 1: Heart Lake Rd & Mayfield Rd



HCM 6th Signalized Intersection Summary
1: Heart Lake Rd & Mayfield Rd

Future Background Traffic (2036 w STP change)
Weekday AM Peak

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	76	1213	471	103	852	360	143	96	17	446	400	113
Future Volume (veh/h)	76	1213	471	103	852	360	143	96	17	446	400	113
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1885	1856	1870	1826	1796	1826	1900	1856	1811	1856	1870	1856
Adj Flow Rate, veh/h	76	1213	471	103	852	360	143	96	17	446	400	113
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Percent Heavy Veh, %	1	3	2	5	7	5	0	3	6	3	2	3
Cap, veh/h	192	1820	569	171	2077	876	394	1036	451	489	1475	653
Arrive On Green	0.36	0.36	0.36	0.04	0.42	0.42	0.04	0.29	0.29	0.14	0.41	0.41
Sat Flow, veh/h	464	5066	1584	1739	4904	1546	1810	3526	1535	3428	3554	1572
Grp Volume(v), veh/h	76	1213	471	103	852	360	143	96	17	446	400	113
Grp Sat Flow(s),veh/h/ln	464	1689	1584	1739	1635	1546	1810	1763	1535	1714	1777	1572
Q Serve(g_s), s	19.1	28.2	38.0	5.1	17.0	18.4	6.0	2.8	1.1	17.9	10.4	6.3
Cycle Q Clear(g_c), s	27.1	28.2	38.0	5.1	17.0	18.4	6.0	2.8	1.1	17.9	10.4	6.3
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	192	1820	569	171	2077	876	394	1036	451	489	1475	653
V/C Ratio(X)	0.40	0.67	0.83	0.60	0.41	0.41	0.36	0.09	0.04	0.91	0.27	0.17
Avail Cap(c_a), veh/h	192	1820	569	171	2077	876	394	1036	451	490	1475	653
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	40.7	37.8	40.9	30.4	28.1	17.2	33.6	35.9	35.3	59.1	27.0	25.8
Incr Delay (d2), s/veh	6.0	2.0	13.0	8.7	0.6	1.4	1.2	0.2	0.2	22.1	0.5	0.6
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.8	7.6	11.2	1.7	3.9	3.0	2.4	0.8	0.3	7.2	2.7	1.5
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	46.8	39.7	53.9	39.1	28.8	18.6	34.8	36.1	35.5	81.3	27.4	26.4
LnGrp LOS	D	D	D	D	C	B	C	D	D	F	C	C
Approach Vol, veh/h		1760			1315			256			959	
Approach Delay, s/veh		43.8			26.8			35.3			52.3	
Approach LOS		D			C			D			D	
Timer - Assigned Phs	1	2	3	4	5	6		8				
Phs Duration (G+Y+Rc), s	26.0	48.0	9.0	57.0	9.0	65.0		66.0				
Change Period (Y+Rc), s	6.0	6.9	3.0	6.7	3.0	6.9		6.7				
Max Green Setting (Gmax), s	20.0	41.1	6.0	50.3	6.0	58.1		59.3				
Max Q Clear Time (g_c+I1), s	19.9	4.8	7.1	40.0	8.0	12.4		20.4				
Green Ext Time (p_c), s	0.0	2.4	0.0	10.0	0.0	13.6		28.9				
Intersection Summary												
HCM 6th Ctrl Delay, s/veh			40.0									
HCM 6th LOS			D									

HCM 6th AWSC
2: Heart Lake Rd & Old School Rd

Future Background Traffic (2036 w STP change)
Weekday AM Peak

Intersection

Intersection Delay, s/veh49.6

Intersection LOS E

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	21	498	104	49	218	58	35	83	41	10	236	15
Future Vol, veh/h	21	498	104	49	218	58	35	83	41	10	236	15
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles, %	5	1	2	4	1	0	0	3	5	0	1	20
Mvmt Flow	21	498	104	49	218	58	35	83	41	10	236	15
Number of Lanes	0	1	0	0	1	0	1	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	2
Conflicting Approach Left SB		NB	EB	WB
Conflicting Lanes Left	1	2	1	1
Conflicting Approach RightNB		SB	WB	EB
Conflicting Lanes Right	2	1	1	1
HCM Control Delay, s/veh	7.3	19.9	13.6	18.7
HCM LOS	F	C	B	C

Lane	NBLn1	NBLn2	EBLn1	WBLn1	SBLn1
Vol Left, %	100%	0%	3%	15%	4%
Vol Thru, %	0%	67%	80%	67%	90%
Vol Right, %	0%	33%	17%	18%	6%
Sign Control	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	35	124	623	325	261
LT Vol	35	0	21	49	10
Through Vol	0	83	498	218	236
RT Vol	0	41	104	58	15
Lane Flow Rate	35	124	623	325	261
Geometry Grp	5	5	2	2	4a
Degree of Util (X)	0.083	0.27	1.086	0.602	0.527
Departure Headway (Hd)	8.886	8.181	6.274	6.945	7.579
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes
Cap	406	441	586	523	478
Service Time	6.586	5.881	4.274	4.945	5.579
HCM Lane V/C Ratio	0.086	0.281	1.063	0.621	0.546
HCM Control Delay, s/veh	12.4	13.9	87.3	19.9	18.7
HCM Lane LOS	B	B	F	C	C
HCM 95th-tile Q	0.3	1.1	18.7	3.9	3

Intersection												
Int Delay, s/veh	0.6											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		⬆			⬆			⬆			⬆	
Traffic Vol, veh/h	2	0	0	13	0	2	0	151	29	17	373	0
Future Vol, veh/h	2	0	0	13	0	2	0	151	29	17	373	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	100	100	100	100	100	100	100	100	100	100	100	100
Heavy Vehicles, %	0	0	0	0	0	0	0	3	0	0	2	0
Mvmt Flow	2	0	0	13	0	2	0	151	29	17	373	0
Major/Minor	Minor2		Minor1		Major1		Major2					
Conflicting Flow All	483	587	187	387	573	90	373	0	0	180	0	0
Stage 1	407	407	-	166	166	-	-	-	-	-	-	-
Stage 2	76	180	-	221	407	-	-	-	-	-	-	-
Critical Hdwy	7.5	6.5	6.9	7.5	6.5	6.9	4.1	-	-	4.1	-	-
Critical Hdwy Stg 1	6.5	5.5	-	6.5	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.5	5.5	-	6.5	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4	3.3	3.5	4	3.3	2.2	-	-	2.2	-	-
Pot Cap-1 Maneuver	471	425	830	551	432	956	1197	-	-	1408	-	-
Stage 1	597	601	-	825	765	-	-	-	-	-	-	-
Stage 2	930	754	-	767	601	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	464	419	830	545	426	956	1197	-	-	1408	-	-
Mov Cap-2 Maneuver	464	419	-	545	426	-	-	-	-	-	-	-
Stage 1	597	592	-	825	765	-	-	-	-	-	-	-
Stage 2	928	754	-	755	592	-	-	-	-	-	-	-
Approach	EB		WB		NB		SB					
HCM Ctrl Dly, s/v	12.8		11.4		0		0.4					
HCM LOS	B		B									
Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR				
Capacity (veh/h)	1197	-	-	464	578	1408	-	-				
HCM Lane V/C Ratio	-	-	-	0.004	0.026	0.012	-	-				
HCM Ctrl Dly (s/v)	0	-	-	12.8	11.4	7.6	0.1	-				
HCM Lane LOS	A	-	-	B	B	A	A	-				
HCM 95th %tile Q (veh)	0	-	-	0	0.1	0	-	-				

HCM 6th TWSC
5: Heart Lake Rd & Abbotside Way Ext

Future Background Traffic (2036 w STP change)
Weekday AM Peak

Intersection						
Int Delay, s/veh	6.2					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	14	354	211	137	363	10
Future Vol, veh/h	14	354	211	137	363	10
Conflicting Peds, #/hr	2	0	2	0	0	2
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	0	60	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	100	100	100	100	100	100
Heavy Vehicles, %	7	4	8	1	3	0
Mvmt Flow	14	354	211	137	363	10
Major/Minor	Minor2	Major1		Major2		
Conflicting Flow All	863	189	375	0	-	0
Stage 1	370	-	-	-	-	-
Stage 2	493	-	-	-	-	-
Critical Hdwy	6.94	6.98	4.26	-	-	-
Critical Hdwy Stg 1	5.94	-	-	-	-	-
Critical Hdwy Stg 2	5.94	-	-	-	-	-
Follow-up Hdwy	3.57	3.34	2.28	-	-	-
Pot Cap-1 Maneuver	284	815	1138	-	-	-
Stage 1	654	-	-	-	-	-
Stage 2	565	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	230	814	1136	-	-	-
Mov Cap-2 Maneuver	230	-	-	-	-	-
Stage 1	531	-	-	-	-	-
Stage 2	564	-	-	-	-	-
Approach	EB	NB		SB		
HCM Ctrl Dly, s/v	13.1	5.4		0		
HCM LOS	B					
Minor Lane/Major Mvmt	NBL	NBT	EBLn1	EBLn2	SBT	SBR
Capacity (veh/h)	1136	-	230	814	-	-
HCM Lane V/C Ratio	0.186	-	0.061	0.435	-	-
HCM Ctrl Dly (s/v)	8.9	-	21.7	12.8	-	-
HCM Lane LOS	A	-	C	B	-	-
HCM 95th %tile Q (veh)	0.7	-	0.2	2.2	-	-

Queues

Future Background Traffic (2036 w STP change)

1: Heart Lake Rd & Mayfield Rd

Weekday PM Peak

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	133	1195	231	33	1398	672	265	213	29	614	163	122
Future Volume (vph)	133	1195	231	33	1398	672	265	213	29	614	163	122
Lane Group Flow (vph)	133	1195	231	33	1398	672	265	213	29	614	163	122
Turn Type	pm+pt	NA	Perm	Perm	NA	pm+ov	pm+pt	NA	Perm	Prot	NA	Perm
Protected Phases	7	4			8	1	5	2		1	6	
Permitted Phases	4		4	8		8	2		2			6
Detector Phase	7	4	4	8	8	1	5	2	2	1	6	6
Switch Phase												
Minimum Initial (s)	3.5	5.0	5.0	12.0	12.0	5.0	5.0	8.0	8.0	5.0	8.0	8.0
Minimum Split (s)	8.0	39.7	39.7	39.7	39.7	11.0	8.0	43.9	43.9	11.0	43.9	43.9
Total Split (s)	9.0	59.0	59.0	50.0	50.0	32.0	9.0	44.0	44.0	32.0	67.0	67.0
Total Split (%)	6.7%	43.7%	43.7%	37.0%	37.0%	23.7%	6.7%	32.6%	32.6%	23.7%	49.6%	49.6%
Yellow Time (s)	3.0	4.6	4.6	4.6	4.6	3.0	3.0	4.0	4.0	3.0	4.0	4.0
All-Red Time (s)	0.0	2.1	2.1	2.1	2.1	3.0	0.0	2.9	2.9	3.0	2.9	2.9
Lost Time Adjust (s)	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 Lost Time (s)	3.0	6.7	6.7	6.7	6.7	6.0	3.0	6.9	6.9	6.0	6.9	6.9
Lead/Lag	Lead			Lag	Lag	Lead	Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes			Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	C-Max	C-Max	C-Max	C-Max	None	None	Max	Max	None	Max	Max
v/c Ratio	0.96	0.60	0.31	0.33	0.84	0.65	0.60	0.21	0.06	0.95	0.10	0.16
Control Delay (s/veh)	96.1	34.6	4.4	45.8	48.2	11.7	33.9	38.4	0.2	78.6	22.0	4.1
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 (s/veh)	96.1	34.6	4.4	45.8	48.2	11.7	33.9	38.4	0.2	78.6	22.0	4.1
Queue Length 50th (m)	22.2	92.3	0.0	6.7	126.7	53.0	36.9	23.1	0.0	84.2	13.0	0.0
Queue Length 95th (m)	#60.0	107.5	16.0	17.5	145.7	92.1	54.1	33.7	0.0	#119.2	20.0	11.0
Internal Link Dist (m)		810.0			310.8			1249.9			682.4	
Turn Bay Length (m)	115.0		180.0	80.0		70.0	110.0		15.0	100.0		25.0
Base Capacity (vph)	139	1992	752	101	1665	1039	445	1003	518	647	1608	769
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	0.60	0.31	0.33	0.84	0.65	0.60	0.21	0.06	0.95	0.10	0.16

Intersection Summary

Cycle Length: 135

Actuated Cycle Length: 135

Offset: 26 (19%), Referenced to phase 4:EBTL and 8:WBTL, Start of Green

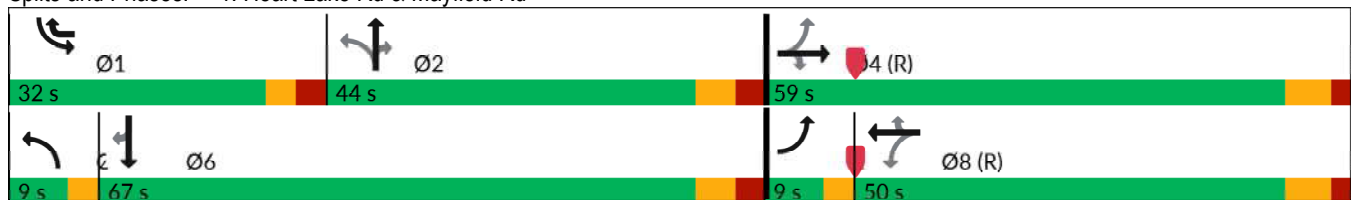
Natural Cycle: 115

Control Type: Actuated-Coordinated

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

Splits and Phases: 1: Heart Lake Rd & Mayfield Rd



HCM 6th Signalized Intersection Summary
1: Heart Lake Rd & Mayfield Rd

Future Background Traffic (2036 w STP change)
Weekday PM Peak

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	133	1195	231	33	1398	672	265	213	29	614	163	122
Future Volume (veh/h)	133	1195	231	33	1398	672	265	213	29	614	163	122
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		0.99
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1900	1870	1900	1900	1885	1870	1885	1900	1856	1856	1885	1900
Adj Flow Rate, veh/h	133	1195	231	33	1398	672	265	213	29	614	163	122
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Percent Heavy Veh, %	0	2	0	0	1	2	1	0	3	3	1	0
Cap, veh/h	148	1978	623	130	1651	812	437	995	433	657	1595	708
Arrive On Green	0.04	0.39	0.39	0.32	0.32	0.32	0.04	0.28	0.28	0.19	0.45	0.45
Sat Flow, veh/h	1810	5106	1609	382	5147	1584	1795	3610	1572	3428	3582	1590
Grp Volume(v), veh/h	133	1195	231	33	1398	672	265	213	29	614	163	122
Grp Sat Flow(s),veh/h/ln	1810	1702	1609	382	1716	1584	1795	1805	1572	1714	1791	1590
Q Serve(g_s), s	6.0	25.3	13.9	10.2	34.2	43.3	6.0	6.1	1.8	23.8	3.6	6.2
Cycle Q Clear(g_c), s	6.0	25.3	13.9	26.5	34.2	43.3	6.0	6.1	1.8	23.8	3.6	6.2
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	148	1978	623	130	1651	812	437	995	433	657	1595	708
V/C Ratio(X)	0.90	0.60	0.37	0.25	0.85	0.83	0.61	0.21	0.07	0.93	0.10	0.17
Avail Cap(c_a), veh/h	148	1978	623	130	1651	812	437	995	433	660	1595	708
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	37.8	33.1	29.6	47.3	42.8	27.9	38.3	37.6	36.1	53.7	21.8	22.5
Incr Delay (d2), s/veh	46.2	1.4	1.7	4.7	5.6	9.5	2.4	0.5	0.3	20.4	0.1	0.5
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	4.0	7.7	4.2	0.9	11.6	13.4	5.8	2.2	0.6	10.0	1.1	1.7
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	84.1	34.4	31.3	51.9	48.3	37.4	40.7	38.1	36.4	74.1	21.9	23.0
LnGrp LOS	F	C	C	D	D	D	D	D	D	E	C	C
Approach Vol, veh/h		1559			2103			507			899	
Approach Delay, s/veh		38.2			44.9			39.4			57.7	
Approach LOS		D			D			D			E	
Timer - Assigned Phs	1	2		4	5	6	7	8				
Phs Duration (G+Y+Rc), s	31.9	44.1		59.0	9.0	67.0	9.0	50.0				
Change Period (Y+Rc), s	6.0	6.9		6.7	3.0	6.9	3.0	6.7				
Max Green Setting (Gmax), s	26.0	37.1		52.3	6.0	60.1	6.0	43.3				
Max Q Clear Time (g_c+I1), s	25.8	8.1		27.3	8.0	8.2	8.0	45.3				
Green Ext Time (p_c), s	0.1	3.6		19.6	0.0	3.7	0.0	0.0				
Intersection Summary												
HCM 6th Ctrl Delay, s/veh			44.6									
HCM 6th LOS			D									

HCM 6th AWSC
2: Heart Lake Rd & Old School Rd

Future Background Traffic (2036 w STP change)
Weekday PM Peak

Intersection

Intersection Delay, s/veh 156.8

Intersection LOS F

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		+			+		+	+			+	
Traffic Vol, veh/h	79	351	93	67	459	63	110	241	27	8	360	27
Future Vol, veh/h	79	351	93	67	459	63	110	241	27	8	360	27
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles, %	5	2	1	0	0	2	1	1	0	0	2	0
Mvmt Flow	79	351	93	67	459	63	110	241	27	8	360	27
Number of Lanes	0	1	0	0	1	0	1	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	2
Conflicting Approach Left SB		NB	EB	WB
Conflicting Lanes Left	1	2	1	1
Conflicting Approach Right NB		SB	WB	EB
Conflicting Lanes Right	2	1	1	1
HCM Control Delay, s/veh 10.5		253.8	33.2	85.8
HCM LOS	F	F	D	F

Lane	NBLn1	NBLn2	EBLn1	WBLn1	SBLn1
Vol Left, %	100%	0%	15%	11%	2%
Vol Thru, %	0%	90%	67%	78%	91%
Vol Right, %	0%	10%	18%	11%	7%
Sign Control	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	110	268	523	589	395
LT Vol	110	0	79	67	8
Through Vol	0	241	351	459	360
RT Vol	0	27	93	63	27
Lane Flow Rate	110	268	523	589	395
Geometry Grp	5	5	2	2	4a
Degree of Util (X)	0.311	0.716	1.316	1.474	1.001
Departure Headway (Hd)	12.1	11.497	10.433	10	11.281
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes
Cap	299	316	350	371	324
Service Time	9.8	9.197	8.433	8	9.281
HCM Lane V/C Ratio	0.368	0.848	1.494	1.588	1.219
HCM Control Delay, s/veh	20.2	38.5	190.5	253.8	85.8
HCM Lane LOS	C	E	F	F	F
HCM 95th-tile Q	1.3	5.2	21.5	28.3	11

Intersection												
Int Delay, s/veh	0.5											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		⬆			⬆			⬆			⬆	
Traffic Vol, veh/h	1	0	0	13	0	2	0	375	29	17	515	0
Future Vol, veh/h	1	0	0	13	0	2	0	375	29	17	515	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	100	100	100	100	100	100	100	100	100	100	100	100
Heavy Vehicles, %	0	0	0	0	0	0	0	0	0	0	2	0
Mvmt Flow	1	0	0	13	0	2	0	375	29	17	515	0
Major/Minor	Minor2		Minor1			Major1			Major2			
Conflicting Flow All	737	953	258	682	939	202	515	0	0	404	0	0
Stage 1	549	549	-	390	390	-	-	-	-	-	-	-
Stage 2	188	404	-	292	549	-	-	-	-	-	-	-
Critical Hdwy	7.5	6.5	6.9	7.5	6.5	6.9	4.1	-	-	4.1	-	-
Critical Hdwy Stg 1	6.5	5.5	-	6.5	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.5	5.5	-	6.5	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4	3.3	3.5	4	3.3	2.2	-	-	2.2	-	-
Pot Cap-1 Maneuver	310	261	747	340	266	811	1061	-	-	1166	-	-
Stage 1	493	520	-	611	611	-	-	-	-	-	-	-
Stage 2	801	603	-	697	520	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	304	256	747	335	261	811	1061	-	-	1166	-	-
Mov Cap-2 Maneuver	304	256	-	335	261	-	-	-	-	-	-	-
Stage 1	493	510	-	611	611	-	-	-	-	-	-	-
Stage 2	799	603	-	683	510	-	-	-	-	-	-	-
Approach	EB		WB			NB			SB			
HCM Ctrl Dly, s/v	16.9		15.3			0			0.4			
HCM LOS	C		C									
Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR				
Capacity (veh/h)	1061	-	-	304	363	1166	-	-				
HCM Lane V/C Ratio	-	-	-	0.003	0.041	0.015	-	-				
HCM Ctrl Dly (s/v)	0	-	-	16.9	15.3	8.1	0.1	-				
HCM Lane LOS	A	-	-	C	C	A	A	-				
HCM 95th %tile Q (veh)	0	-	-	0	0.1	0	-	-				

HCM 6th TWSC
5: Heart Lake Rd & Abbotside Way Ext

Future Background Traffic (2036 w STP change)
Weekday PM Peak

Intersection						
Int Delay, s/veh	5.7					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	19	272	387	356	500	15
Future Vol, veh/h	19	272	387	356	500	15
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	0	60	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	100	100	100	100	100	100
Heavy Vehicles, %	0	5	4	0	1	0
Mvmt Flow	19	272	387	356	500	15
Major/Minor	Minor2	Major1		Major2		
Conflicting Flow All	1460	258	515	0	-	0
Stage 1	508	-	-	-	-	-
Stage 2	952	-	-	-	-	-
Critical Hdwy	6.8	7	4.18	-	-	-
Critical Hdwy Stg 1	5.8	-	-	-	-	-
Critical Hdwy Stg 2	5.8	-	-	-	-	-
Follow-up Hdwy	3.5	3.35	2.24	-	-	-
Pot Cap-1 Maneuver	122	732	1033	-	-	-
Stage 1	575	-	-	-	-	-
Stage 2	340	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	76	732	1033	-	-	-
Mov Cap-2 Maneuver	76	-	-	-	-	-
Stage 1	359	-	-	-	-	-
Stage 2	340	-	-	-	-	-
Approach	EB	NB		SB		
HCM Ctrl Dly, s/v	16.4	5.5		0		
HCM LOS	C					
Minor Lane/Major Mvmt	NBL	NBT	EBLn1	EBLn2	SBT	SBR
Capacity (veh/h)	1033	-	76	732	-	-
HCM Lane V/C Ratio	0.375	-	0.25	0.372	-	-
HCM Ctrl Dly (s/v)	10.6	-	67.5	12.8	-	-
HCM Lane LOS	B	-	F	B	-	-
HCM 95th %tile Q (veh)	1.8	-	0.9	1.7	-	-



2036 Future Total

Queues

Future Total Traffic (2036)

1: Heart Lake Rd & Mayfield Rd

Weekday AM Peak

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		  			  			 			 	
Traffic Volume (vph)	92	1213	471	103	852	453	143	218	17	492	434	114
Future Volume (vph)	92	1213	471	103	852	453	143	218	17	492	434	114
Lane Group Flow (vph)	92	1213	471	103	852	453	143	218	17	492	434	114
Turn Type	Perm	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm	Perm	NA	Perm
Protected Phases		4		3	8		5	2			6	
Permitted Phases	4		4	8		8	2		2	6		6
Detector Phase	4	4	4	3	8	8	5	2	2	6	6	6
Switch Phase												
Minimum Initial (s)	5.0	5.0	5.0	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	8.0	39.7	39.7	8.0	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	0.0	2.1	2.1	0.0	2.9	2.9	2.9	2.9	2.9
Lost Time Adjust (s)	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 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?	Yes	Yes	Yes	Yes			Yes			Yes	Yes	Yes
Recall Mode	C-Max	C-Max	C-Max	None	C-Max	C-Max	None	Max	Max	Max	Max	Max
v/c Ratio	0.31	0.47	0.51	0.44	0.31	0.43	0.48	0.18	0.03	1.66	0.45	0.24
Control Delay (s/veh)	24.1	23.5	10.7	18.6	16.3	2.6	37.7	33.4	0.1	345.3	44.0	16.4
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 (s/veh)	24.1	23.5	10.7	18.6	16.3	2.6	37.7	33.4	0.1	345.3	44.0	16.4
Queue Length 50th (m)	14.7	78.4	31.7	11.8	43.6	0.0	27.3	22.4	0.0	~197.4	52.6	7.9
Queue Length 95th (m)	28.2	90.8	60.6	20.2	52.1	14.4	43.8	32.4	0.0	#264.6	68.7	23.5
Internal Link Dist (m)		810.0			310.8			1249.9			682.4	
Turn Bay Length (m)	115.0		180.0	80.0		70.0	110.0		15.0	30.0		25.0
Base Capacity (vph)	298	2556	915	232	2776	1042	298	1192	541	296	973	477
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	0.31	0.47	0.51	0.44	0.31	0.43	0.48	0.18	0.03	1.66	0.45	0.24

Intersection Summary

Cycle Length: 140

Actuated Cycle Length: 140

Offset: 78 (56%), Referenced to phase 4:EBTL and 8:WBTL, Start of Green

Natural Cycle: 110

Control Type: Actuated-Coordinated

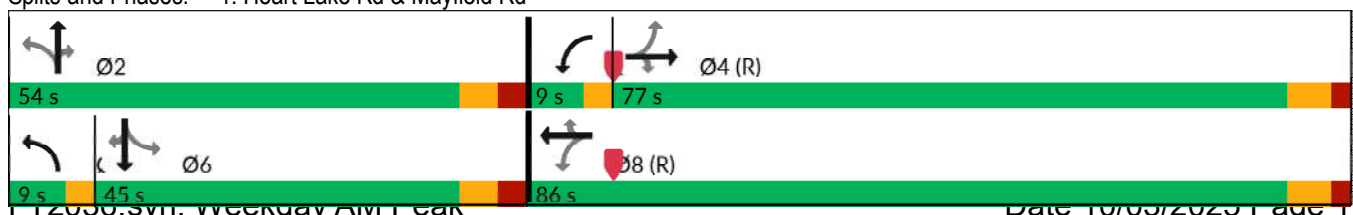
~ Volume exceeds capacity, queue is theoretically infinite.

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: 1: Heart Lake Rd & Mayfield Rd



1/20/2020, Syn, weekday AM Peak

Date 10/05/2020 Page 1

HCM 6th Signalized Intersection Summary

1: Heart Lake Rd & Mayfield Rd

Future Total Traffic (2036)
Weekday AM Peak

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		  			  			 			 	
Traffic Volume (veh/h)	92	1213	471	103	852	453	143	218	17	492	434	114
Future Volume (veh/h)	92	1213	471	103	852	453	143	218	17	492	434	114
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1885	1856	1870	1826	1796	1796	1900	1856	1811	1811	1870	1856
Adj Flow Rate, veh/h	92	1213	471	103	852	453	143	218	17	492	434	114
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Percent Heavy Veh, %	1	3	2	5	7	7	0	3	6	6	2	3
Cap, veh/h	253	2551	798	223	2778	862	278	1186	516	353	967	428
Arrive On Green	0.50	0.50	0.50	0.04	0.57	0.57	0.04	0.34	0.34	0.27	0.27	0.27
Sat Flow, veh/h	425	5066	1584	1739	4904	1521	1810	3526	1535	1109	3554	1572
Grp Volume(v), veh/h	92	1213	471	103	852	453	143	218	17	492	434	114
Grp Sat Flow(s),veh/h/ln	425	1689	1584	1739	1635	1521	1810	1763	1535	1109	1777	1572
Q Serve(g_s), s	20.3	21.9	29.4	3.9	12.8	25.7	6.0	6.1	1.0	38.1	14.2	8.0
Cycle Q Clear(g_c), s	24.3	21.9	29.4	3.9	12.8	25.7	6.0	6.1	1.0	38.1	14.2	8.0
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	253	2551	798	223	2778	862	278	1186	516	353	967	428
V/C Ratio(X)	0.36	0.48	0.59	0.46	0.31	0.53	0.51	0.18	0.03	1.39	0.45	0.27
Avail Cap(c_a), veh/h	253	2551	798	225	2778	862	278	1186	516	353	967	428
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	24.6	22.7	24.5	17.6	15.9	18.7	38.8	32.9	31.2	53.7	42.2	40.0
Incr Delay (d2), s/veh	4.0	0.6	3.2	3.2	0.3	2.3	3.2	0.3	0.1	193.3	1.5	1.5
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.4	4.4	6.1	0.8	2.0	4.1	2.5	1.7	0.3	27.8	4.4	2.3
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	28.6	23.3	27.7	20.8	16.2	21.0	42.1	33.2	31.3	247.0	43.7	41.5
LnGrp LOS	C	C	C	C	B	C	D	C	C	F	D	D
Approach Vol, veh/h		1776			1408			378			1040	
Approach Delay, s/veh		24.8			18.1			36.5			139.7	
Approach LOS		C			B			D			F	
Timer - Assigned Phs		2	3	4	5	6		8				
Phs Duration (G+Y+Rc), s		54.0	8.8	77.2	9.0	45.0		86.0				
Change Period (Y+Rc), s		6.9	3.0	6.7	3.0	6.9		6.7				
Max Green Setting (Gmax), s		47.1	6.0	70.3	6.0	38.1		79.3				
Max Q Clear Time (g_c+I1), s		8.1	5.9	31.4	8.0	40.1		27.7				
Green Ext Time (p_c), s		6.0	0.0	36.1	0.0	0.0		37.5				
Intersection Summary												
HCM 6th Ctrl Delay, s/veh			49.7									
HCM 6th LOS			D									

HCM 6th AWSC
2: Heart Lake Rd & Old School Rd

Future Total Traffic (2036)
Weekday AM Peak

Intersection

Intersection Delay, s/veh 51.6

Intersection LOS F

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		+			+		+	+			+	
Traffic Vol, veh/h	21	498	104	58	218	58	35	84	44	10	238	15
Future Vol, veh/h	21	498	104	58	218	58	35	84	44	10	238	15
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles, %	5	1	2	3	1	0	0	3	5	0	1	20
Mvmt Flow	21	498	104	58	218	58	35	84	44	10	238	15
Number of Lanes	0	1	0	0	1	0	1	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	2
Conflicting Approach Left SB		NB	EB	WB
Conflicting Lanes Left	1	2	1	1
Conflicting Approach Right NB		SB	WB	EB
Conflicting Lanes Right	2	1	1	1
HCM Control Delay, s/veh	1.6	20.8	13.8	19.2
HCM LOS	F	C	B	C

Lane	NBLn1	NBLn2	EBLn1	WBLn1	SBLn1
Vol Left, %	100%	0%	3%	17%	4%
Vol Thru, %	0%	66%	80%	65%	90%
Vol Right, %	0%	34%	17%	17%	6%
Sign Control	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	35	128	623	334	263
LT Vol	35	0	21	58	10
Through Vol	0	84	498	218	238
RT Vol	0	44	104	58	15
Lane Flow Rate	35	128	623	334	263
Geometry Grp	5	5	2	2	4a
Degree of Util (X)	0.084	0.281	1.098	0.622	0.536
Departure Headway (Hd)	8.961	8.246	6.345	7.004	7.66
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes
Cap	402	439	579	518	473
Service Time	6.661	5.946	4.345	5.004	5.66
HCM Lane V/C Ratio	0.087	0.292	1.076	0.645	0.556
HCM Control Delay, s/veh	12.5	14.1	91.6	20.8	19.2
HCM Lane LOS	B	B	F	C	C
HCM 95th-tile Q	0.3	1.1	19.1	4.2	3.1

HCM 6th TWSC
4: Heart Lake Rd & 12505 Heart Lake Dwy

Future Total Traffic (2036)
Weekday AM Peak

Intersection						
Int Delay, s/veh	0.5					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	W		T		T	T
Traffic Vol, veh/h	13	2	207	29	17	404
Future Vol, veh/h	13	2	207	29	17	404
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	100	100	100	100	100	100
Heavy Vehicles, %	0	0	7	0	0	4
Mvmt Flow	13	2	207	29	17	404

Major/Minor	Minor1	Major1	Major2
Conflicting Flow All	458	118	0
Stage 1	222	-	-
Stage 2	236	-	-
Critical Hdwy	6.8	6.9	-
Critical Hdwy Stg 1	5.8	-	-
Critical Hdwy Stg 2	5.8	-	-
Follow-up Hdwy	3.5	3.3	-
Pot Cap-1 Maneuver	537	918	-
Stage 1	800	-	-
Stage 2	787	-	-
Platoon blocked, %		-	-
Mov Cap-1 Maneuver	528	918	-
Mov Cap-2 Maneuver	528	-	-
Stage 1	800	-	-
Stage 2	774	-	-

Approach	WB	NB	SB
HCM Ctrl Dly, s/v	11.6	0	0.4
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	NBRWBLn1	SBL	SBT
Capacity (veh/h)	-	-	560	1343
HCM Lane V/C Ratio	-	-	0.027	0.013
HCM Ctrl Dly (s/v)	-	-	11.6	7.7
HCM Lane LOS	-	-	B	A
HCM 95th %tile Q (veh)	-	-	0.1	0

HCM 6th TWSC
5: Heart Lake Rd & Abbotside Way Ext

Future Total Traffic (2036)
Weekday AM Peak

Intersection						
Int Delay, s/veh	5.2					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	14	354	211	368	444	10
Future Vol, veh/h	14	354	211	368	444	10
Conflicting Peds, #/hr	2	0	2	0	0	2
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	0	60	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	100	100	100	100	100	100
Heavy Vehicles, %	7	4	8	5	6	0
Mvmt Flow	14	354	211	368	444	10
Major/Minor	Minor2	Major1		Major2		
Conflicting Flow All	1059	229	456	0	-	0
Stage 1	451	-	-	-	-	-
Stage 2	608	-	-	-	-	-
Critical Hdwy	6.94	6.98	4.26	-	-	-
Critical Hdwy Stg 1	5.94	-	-	-	-	-
Critical Hdwy Stg 2	5.94	-	-	-	-	-
Follow-up Hdwy	3.57	3.34	2.28	-	-	-
Pot Cap-1 Maneuver	211	767	1060	-	-	-
Stage 1	594	-	-	-	-	-
Stage 2	492	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	168	766	1058	-	-	-
Mov Cap-2 Maneuver	168	-	-	-	-	-
Stage 1	475	-	-	-	-	-
Stage 2	491	-	-	-	-	-
Approach	EB	NB		SB		
HCM Ctrl Dly, s/v	14.3	3.4		0		
HCM LOS	B					
Minor Lane/Major Mvmt	NBL	NBT	EBLn1	EBLn2	SBT	SBR
Capacity (veh/h)	1058	-	168	766	-	-
HCM Lane V/C Ratio	0.199	-	0.083	0.462	-	-
HCM Ctrl Dly (s/v)	9.2	-	28.4	13.7	-	-
HCM Lane LOS	A	-	D	B	-	-
HCM 95th %tile Q (veh)	0.7	-	0.3	2.5	-	-

HCM 6th TWSC
6: Heart Lake Rd & North Dwy

Future Total Traffic (2036)
Weekday AM Peak

Intersection						
Int Delay, s/veh	0.9					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	W			↑↑	↑↑	
Traffic Vol, veh/h	2	13	45	161	402	2
Future Vol, veh/h	2	13	45	161	402	2
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	100	100	100	100	100	100
Heavy Vehicles, %	0	0	0	3	1	0
Mvmt Flow	2	13	45	161	402	2

Major/Minor	Minor2	Major1		Major2		
Conflicting Flow All	574	202	404	0	-	0
Stage 1	403	-	-	-	-	-
Stage 2	171	-	-	-	-	-
Critical Hdwy	6.8	6.9	4.1	-	-	-
Critical Hdwy Stg 1	5.8	-	-	-	-	-
Critical Hdwy Stg 2	5.8	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	2.2	-	-	-
Pot Cap-1 Maneuver	454	811	1166	-	-	-
Stage 1	649	-	-	-	-	-
Stage 2	848	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	435	811	1166	-	-	-
Mov Cap-2 Maneuver	435	-	-	-	-	-
Stage 1	622	-	-	-	-	-
Stage 2	848	-	-	-	-	-

Approach	EB	NB	SB
HCM Ctrl Dly, s/v	10.1	1.9	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1166	-	727	-	-
HCM Lane V/C Ratio	0.039	-	0.021	-	-
HCM Ctrl Dly (s/v)	8.2	0.1	10.1	-	-
HCM Lane LOS	A	A	B	-	-
HCM 95th %tile Q (veh)	0.1	-	0.1	-	-

Intersection						
Int Delay, s/veh	0.4					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	0	9	9	200	364	0
Future Vol, veh/h	0	9	9	200	364	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	100	100	100	100	100	100
Heavy Vehicles, %	0	100	100	0	0	0
Mvmt Flow	0	9	9	200	364	0

Major/Minor	Minor2	Major1		Major2		
Conflicting Flow All	482	182	364	0	-	0
Stage 1	364	-	-	-	-	-
Stage 2	118	-	-	-	-	-
Critical Hdwy	6.8	8.9	6.1	-	-	-
Critical Hdwy Stg 1	5.8	-	-	-	-	-
Critical Hdwy Stg 2	5.8	-	-	-	-	-
Follow-up Hdwy	3.5	4.3	3.2	-	-	-
Pot Cap-1 Maneuver	518	594	711	-	-	-
Stage 1	679	-	-	-	-	-
Stage 2	900	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	511	594	711	-	-	-
Mov Cap-2 Maneuver	511	-	-	-	-	-
Stage 1	669	-	-	-	-	-
Stage 2	900	-	-	-	-	-

Approach	EB	NB	SB
HCM Ctrl Dly, s/v	11.2	0.5	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	711	-	594	-	-
HCM Lane V/C Ratio	0.013	-	0.015	-	-
HCM Ctrl Dly (s/v)	10.1	0.1	11.2	-	-
HCM Lane LOS	B	A	B	-	-
HCM 95th %tile Q (veh)	0	-	0	-	-

HCM 6th TWSC
8: Heart Lake Rd & South Dwy

Future Total Traffic (2036)
Weekday AM Peak

Intersection						
Int Delay, s/veh	0.3					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	0	7	9	207	373	0
Future Vol, veh/h	0	7	9	207	373	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	100	100	100	100	100	100
Heavy Vehicles, %	0	100	100	4	2	0
Mvmt Flow	0	7	9	207	373	0
Major/Minor	Minor2	Major1		Major2		
Conflicting Flow All	495	187	373	0	-	0
Stage 1	373	-	-	-	-	-
Stage 2	122	-	-	-	-	-
Critical Hdwy	6.8	8.9	6.1	-	-	-
Critical Hdwy Stg 1	5.8	-	-	-	-	-
Critical Hdwy Stg 2	5.8	-	-	-	-	-
Follow-up Hdwy	3.5	4.3	3.2	-	-	-
Pot Cap-1 Maneuver	509	588	703	-	-	-
Stage 1	672	-	-	-	-	-
Stage 2	896	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	502	588	703	-	-	-
Mov Cap-2 Maneuver	502	-	-	-	-	-
Stage 1	663	-	-	-	-	-
Stage 2	896	-	-	-	-	-
Approach	EB	NB		SB		
HCM Ctrl Dly, s/v	11.2	0.5		0		
HCM LOS	B					
Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR	
Capacity (veh/h)	703	-	588	-	-	
HCM Lane V/C Ratio	0.013	-	0.012	-	-	
HCM Ctrl Dly (s/v)	10.2	0.1	11.2	-	-	
HCM Lane LOS	B	A	B	-	-	
HCM 95th %tile Q (veh)	0	-	0	-	-	

Queues

1: Heart Lake Rd & Mayfield Rd

Future Total Traffic (2036)

Weekday PM Peak

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	134	1195	231	33	1398	733	265	253	29	718	271	139
Future Volume (vph)	134	1195	231	33	1398	733	265	253	29	718	271	139
Lane Group Flow (vph)	134	1195	231	33	1398	733	265	253	29	718	271	139
Turn Type	Perm	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm	Perm	NA	Perm
Protected Phases		4		3	8		5	2			6	
Permitted Phases	4		4	8		8	2		2	6		6
Detector Phase	4	4	4	3	8	8	5	2	2	6	6	6
Switch Phase												
Minimum Initial (s)	5.0	5.0	5.0	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	8.0	39.7	39.7	8.0	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	0.0	2.1	2.1	0.0	2.9	2.9	2.9	2.9	2.9
Lost Time Adjust (s)	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 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?	Yes	Yes	Yes	Yes			Yes			Yes	Yes	Yes
Recall Mode	C-Max	C-Max	C-Max	None	C-Max	C-Max	None	Max	Max	Max	Max	Max
v/c Ratio	0.92	0.46	0.25	0.13	0.49	0.71	0.66	0.20	0.05	2.39	0.27	0.28
Control Delay (s/veh)	90.6	22.3	3.0	13.5	19.4	12.8	42.1	31.3	2.2	660.2	38.5	18.7
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 (s/veh)	90.6	22.3	3.0	13.5	19.4	12.8	42.1	31.3	2.2	660.2	38.5	18.7
Queue Length 50th (m)	33.9	76.7	0.0	3.6	80.9	57.6	51.4	24.7	0.0	~314.1	29.6	12.2
Queue Length 95th (m)	#77.4	89.2	13.3	8.3	92.9	105.4	75.3	35.1	2.5	#387.7	41.6	29.4
Internal Link Dist (m)		810.0			310.8			1249.9			682.4	
Turn Bay Length (m)	115.0		180.0	80.0		70.0	110.0		15.0	30.0		25.0
Base Capacity (vph)	146	2624	917	246	2858	1029	402	1260	576	300	1010	496
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	0.46	0.25	0.13	0.49	0.71	0.66	0.20	0.05	2.39	0.27	0.28

Intersection Summary

Cycle Length: 135

Actuated Cycle Length: 135

Offset: 26 (19%), Referenced to phase 4:EBTL and 8:WBTL, Start of Green

Natural Cycle: 150

Control Type: Actuated-Coordinated

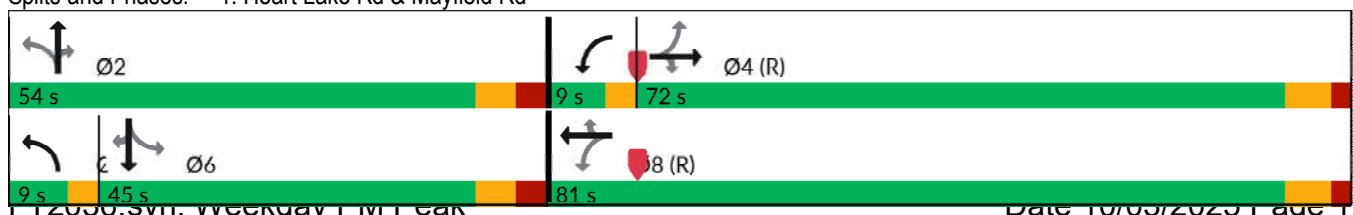
~ Volume exceeds capacity, queue is theoretically infinite.

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: 1: Heart Lake Rd & Mayfield Rd



1/20/2020, Syn, weekday PM Peak

Date 10/05/2020 Page 1

HCM 6th Signalized Intersection Summary
1: Heart Lake Rd & Mayfield Rd

Future Total Traffic (2036)
Weekday PM Peak

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		  			  			 			 	
Traffic Volume (veh/h)	134	1195	231	33	1398	733	265	253	29	718	271	139
Future Volume (veh/h)	134	1195	231	33	1398	733	265	253	29	718	271	139
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		0.99
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1900	1870	1900	1900	1885	1826	1885	1885	1856	1826	1870	1885
Adj Flow Rate, veh/h	134	1195	231	33	1398	733	265	253	29	718	271	139
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Percent Heavy Veh, %	0	2	0	0	1	5	1	1	3	5	2	1
Cap, veh/h	127	2563	808	234	2833	851	352	1250	549	356	1003	445
Arrive On Green	0.50	0.50	0.50	0.03	0.55	0.55	0.04	0.35	0.35	0.28	0.28	0.28
Sat Flow, veh/h	192	5106	1609	1810	5147	1547	1795	3582	1572	1071	3554	1577
Grp Volume(v), veh/h	134	1195	231	33	1398	733	265	253	29	718	271	139
Grp Sat Flow(s),veh/h/ln	192	1702	1609	1810	1716	1547	1795	1791	1572	1071	1777	1577
Q Serve(g_s), s	51.7	20.5	11.3	1.1	22.6	54.7	6.0	6.7	1.7	38.1	8.0	9.4
Cycle Q Clear(g_c), s	67.8	20.5	11.3	1.1	22.6	54.7	6.0	6.7	1.7	38.1	8.0	9.4
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	127	2563	808	234	2833	851	352	1250	549	356	1003	445
V/C Ratio(X)	1.06	0.47	0.29	0.14	0.49	0.86	0.75	0.20	0.05	2.02	0.27	0.31
Avail Cap(c_a), veh/h	127	2563	808	267	2833	851	352	1250	549	356	1003	445
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	52.5	21.9	19.6	16.4	18.7	25.9	42.5	30.8	29.2	51.3	37.6	38.1
Incr Delay (d2), s/veh	95.6	0.6	0.9	0.3	0.6	11.1	8.8	0.4	0.2	468.4	0.7	1.8
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	7.0	5.4	2.9	0.3	5.4	14.1	4.2	2.2	0.5	56.0	2.8	3.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	148.1	22.5	20.4	16.7	19.4	37.1	51.3	31.2	29.3	519.7	38.3	40.0
LnGrp LOS	F	C	C	B	B	D	D	C	C	F	D	D
Approach Vol, veh/h		1560			2164			547			1128	
Approach Delay, s/veh		33.0			25.3			40.8			344.9	
Approach LOS		C			C			D			F	
Timer - Assigned Phs		2	3	4	5	6		8				
Phs Duration (G+Y+Rc), s		54.0	6.5	74.5	9.0	45.0		81.0				
Change Period (Y+Rc), s		6.9	3.0	6.7	3.0	6.9		6.7				
Max Green Setting (Gmax), s		47.1	6.0	65.3	6.0	38.1		74.3				
Max Q Clear Time (g_c+I1), s		8.7	3.1	69.8	8.0	40.1		56.7				
Green Ext Time (p_c), s		4.8	0.0	0.0	0.0	0.0		16.5				
Intersection Summary												
HCM 6th Ctrl Delay, s/veh				95.9								
HCM 6th LOS				F								

Intersection

Intersection Delay, s/veh 161.2

Intersection LOS F

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		+			+		+	+			+	
Traffic Vol, veh/h	79	351	93	70	459	63	110	243	36	8	361	27
Future Vol, veh/h	79	351	93	70	459	63	110	243	36	8	361	27
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles, %	5	2	1	0	0	2	1	1	0	0	2	0
Mvmt Flow	79	351	93	70	459	63	110	243	36	8	361	27
Number of Lanes	0	1	0	0	1	0	1	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	2
Conflicting Approach Left SB		NB	EB	WB
Conflicting Lanes Left	1	2	1	1
Conflicting Approach Right NB		SB	WB	EB
Conflicting Lanes Right	2	1	1	1
HCM Control Delay, s/veh 161.2		262.2	35.5	88.5
HCM LOS	F	F	E	F

Lane	NBLn1	NBLn2	EBLn1	WBLn1	SBLn1
Vol Left, %	100%	0%	15%	12%	2%
Vol Thru, %	0%	87%	67%	78%	91%
Vol Right, %	0%	13%	18%	11%	7%
Sign Control	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	110	279	523	592	396
LT Vol	110	0	79	70	8
Through Vol	0	243	351	459	361
RT Vol	0	36	93	63	27
Lane Flow Rate	110	279	523	592	396
Geometry Grp	5	5	2	2	4a
Degree of Util (X)	0.312	0.745	1.327	1.493	1.009
Departure Headway (Hd)	12.183	11.559	10.573	10.115	11.435
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes
Cap	297	315	350	367	321
Service Time	9.883	9.259	8.573	8.115	9.435
HCM Lane V/C Ratio	0.37	0.886	1.494	1.613	1.234
HCM Control Delay, s/veh	20.3	41.5	195.4	262.2	88.5
HCM Lane LOS	C	E	F	F	F
HCM 95th-tile Q	1.3	5.6	21.7	28.8	11.1

HCM 6th TWSC
4: Heart Lake Rd & 12505 Heart Lake Dwy

Future Total Traffic (2036)
Weekday PM Peak

Intersection						
Int Delay, s/veh	0.4					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	W		↑↑			↑↑
Traffic Vol, veh/h	13	2	413	29	17	574
Future Vol, veh/h	13	2	413	29	17	574
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	100	100	100	100	100	100
Heavy Vehicles, %	0	0	3	0	0	4
Mvmt Flow	13	2	413	29	17	574

Major/Minor	Minor1	Major1	Major2		
Conflicting Flow All	749	221	0	0	442
Stage 1	428	-	-	-	-
Stage 2	321	-	-	-	-
Critical Hdwy	6.8	6.9	-	-	4.1
Critical Hdwy Stg 1	5.8	-	-	-	-
Critical Hdwy Stg 2	5.8	-	-	-	-
Follow-up Hdwy	3.5	3.3	-	-	2.2
Pot Cap-1 Maneuver	352	789	-	-	1129
Stage 1	631	-	-	-	-
Stage 2	714	-	-	-	-
Platoon blocked, %			-	-	-
Mov Cap-1 Maneuver	344	789	-	-	1129
Mov Cap-2 Maneuver	344	-	-	-	-
Stage 1	631	-	-	-	-
Stage 2	698	-	-	-	-

Approach	WB	NB	SB
HCM Ctrl Dly, s/v	15.1	0	0.3
HCM LOS	C		

Minor Lane/Major Mvmt	NBT	NBRWBLn1	SBL	SBT
Capacity (veh/h)	-	-	372	1129
HCM Lane V/C Ratio	-	-	0.04	0.015
HCM Ctrl Dly (s/v)	-	-	15.1	8.2
HCM Lane LOS	-	-	C	A
HCM 95th %tile Q (veh)	-	-	0.1	0

HCM 6th TWSC
5: Heart Lake Rd & Abbotside Way Ext

Future Total Traffic (2036)
Weekday PM Peak

Intersection						
Int Delay, s/veh	6.3					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	19	272	387	458	729	15
Future Vol, veh/h	19	272	387	458	729	15
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	0	60	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	100	100	100	100	100	100
Heavy Vehicles, %	0	5	4	6	4	0
Mvmt Flow	19	272	387	458	729	15
Major/Minor	Minor2	Major1		Major2		
Conflicting Flow All	1740	372	744	0	-	0
Stage 1	737	-	-	-	-	-
Stage 2	1003	-	-	-	-	-
Critical Hdwy	6.8	7	4.18	-	-	-
Critical Hdwy Stg 1	5.8	-	-	-	-	-
Critical Hdwy Stg 2	5.8	-	-	-	-	-
Follow-up Hdwy	3.5	3.35	2.24	-	-	-
Pot Cap-1 Maneuver	80	617	846	-	-	-
Stage 1	439	-	-	-	-	-
Stage 2	320	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	43	617	846	-	-	-
Mov Cap-2 Maneuver	43	-	-	-	-	-
Stage 1	238	-	-	-	-	-
Stage 2	320	-	-	-	-	-
Approach	EB	NB		SB		
HCM Ctrl Dly, s/v	23.7	5.9		0		
HCM LOS	C					
Minor Lane/Major Mvmt	NBL	NBT	EBLn1	EBLn2	SBT	SBR
Capacity (veh/h)	846	-	43	617	-	-
HCM Lane V/C Ratio	0.457	-	0.442	0.441	-	-
HCM Ctrl Dly (s/v)	12.8	-	143.2	15.4	-	-
HCM Lane LOS	B	-	F	C	-	-
HCM 95th %tile Q (veh)	2.4	-	1.6	2.2	-	-

HCM 6th TWSC
6: Heart Lake Rd & North Dwy

Future Total Traffic (2036)
Weekday PM Peak

Intersection						
Int Delay, s/veh	0.6					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	Y			↑↑	↑↑	
Traffic Vol, veh/h	2	43	16	391	538	1
Future Vol, veh/h	2	43	16	391	538	1
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	100	100	100	100	100	100
Heavy Vehicles, %	0	0	0	0	1	0
Mvmt Flow	2	43	16	391	538	1

Major/Minor	Minor2	Major1		Major2		
Conflicting Flow All	767	270	539	0	-	0
Stage 1	539	-	-	-	-	-
Stage 2	228	-	-	-	-	-
Critical Hdwy	6.8	6.9	4.1	-	-	-
Critical Hdwy Stg 1	5.8	-	-	-	-	-
Critical Hdwy Stg 2	5.8	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	2.2	-	-	-
Pot Cap-1 Maneuver	343	734	1040	-	-	-
Stage 1	555	-	-	-	-	-
Stage 2	794	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	336	734	1040	-	-	-
Mov Cap-2 Maneuver	336	-	-	-	-	-
Stage 1	544	-	-	-	-	-
Stage 2	794	-	-	-	-	-

Approach	EB	NB	SB
HCM Ctrl Dly, s/v	10.5	0.4	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1040	-	697	-	-
HCM Lane V/C Ratio	0.015	-	0.065	-	-
HCM Ctrl Dly (s/v)	8.5	0.1	10.5	-	-
HCM Lane LOS	A	A	B	-	-
HCM 95th %tile Q (veh)	0	-	0.2	-	-

Intersection						
Int Delay, s/veh	0.4					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	W			↑↑	↑↑	
Traffic Vol, veh/h	0	13	13	401	530	0
Future Vol, veh/h	0	13	13	401	530	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	100	100	100	100	100	100
Heavy Vehicles, %	0	100	100	0	0	0
Mvmt Flow	0	13	13	401	530	0
Major/Minor	Minor2	Major1		Major2		
Conflicting Flow All	757	265	530	0	-	0
Stage 1	530	-	-	-	-	-
Stage 2	227	-	-	-	-	-
Critical Hdwy	6.8	8.9	6.1	-	-	-
Critical Hdwy Stg 1	5.8	-	-	-	-	-
Critical Hdwy Stg 2	5.8	-	-	-	-	-
Follow-up Hdwy	3.5	4.3	3.2	-	-	-
Pot Cap-1 Maneuver	348	507	575	-	-	-
Stage 1	560	-	-	-	-	-
Stage 2	795	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	338	507	575	-	-	-
Mov Cap-2 Maneuver	338	-	-	-	-	-
Stage 1	544	-	-	-	-	-
Stage 2	795	-	-	-	-	-
Approach	EB	NB		SB		
HCM Ctrl Dly, s/v	12.3	0.6		0		
HCM LOS	B					
Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR	
Capacity (veh/h)	575	-	507	-	-	
HCM Lane V/C Ratio	0.023	-	0.026	-	-	
HCM Ctrl Dly (s/v)	11.4	0.2	12.3	-	-	
HCM Lane LOS	B	A	B	-	-	
HCM 95th %tile Q (veh)	0.1	-	0.1	-	-	

HCM 6th TWSC
8: Heart Lake Rd & South Dwy

Future Total Traffic (2036)
Weekday PM Peak

Intersection						
Int Delay, s/veh	0.4					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	W			↑↑	↑↑	
Traffic Vol, veh/h	0	12	13	413	543	0
Future Vol, veh/h	0	12	13	413	543	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	100	100	100	100	100	100
Heavy Vehicles, %	0	100	100	3	2	0
Mvmt Flow	0	12	13	413	543	0
Major/Minor	Minor2	Major1		Major2		
Conflicting Flow All	776	272	543	0	-	0
Stage 1	543	-	-	-	-	-
Stage 2	233	-	-	-	-	-
Critical Hdwy	6.8	8.9	6.1	-	-	-
Critical Hdwy Stg 1	5.8	-	-	-	-	-
Critical Hdwy Stg 2	5.8	-	-	-	-	-
Follow-up Hdwy	3.5	4.3	3.2	-	-	-
Pot Cap-1 Maneuver	338	501	565	-	-	-
Stage 1	552	-	-	-	-	-
Stage 2	790	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	328	501	565	-	-	-
Mov Cap-2 Maneuver	328	-	-	-	-	-
Stage 1	535	-	-	-	-	-
Stage 2	790	-	-	-	-	-
Approach	EB	NB		SB		
HCM Ctrl Dly, s/v	12.4	0.5		0		
HCM LOS	B					
Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR	
Capacity (veh/h)	565	-	501	-	-	
HCM Lane V/C Ratio	0.023	-	0.024	-	-	
HCM Ctrl Dly (s/v)	11.5	0.2	12.4	-	-	
HCM Lane LOS	B	A	B	-	-	
HCM 95th %tile Q (veh)	0.1	-	0.1	-	-	

Queues

Future Total Traffic (2036 w STP change)

1: Heart Lake Rd & Mayfield Rd

Weekday AM Peak

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		  			  			 		 	 	
Traffic Volume (vph)	92	1213	471	103	852	453	143	218	17	492	434	114
Future Volume (vph)	92	1213	471	103	852	453	143	218	17	492	434	114
Lane Group Flow (vph)	92	1213	471	103	852	453	143	218	17	492	434	114
Turn Type	Perm	NA	Perm	pm+pt	NA	pm+ov	pm+pt	NA	Perm	Prot	NA	Perm
Protected Phases		4		3	8	1	5	2		1	6	
Permitted Phases	4		4	8		8	2		2			6
Detector Phase	4	4	4	3	8	1	5	2	2	1	6	6
Switch Phase												
Minimum Initial (s)	5.0	5.0	5.0	3.5	12.0	5.0	5.0	8.0	8.0	5.0	8.0	8.0
Minimum Split (s)	39.7	39.7	39.7	8.0	39.7	11.0	8.0	43.9	43.9	11.0	43.9	43.9
Total Split (s)	57.0	57.0	57.0	9.0	66.0	27.0	9.0	47.0	47.0	27.0	65.0	65.0
Total Split (%)	40.7%	40.7%	40.7%	6.4%	47.1%	19.3%	6.4%	33.6%	33.6%	19.3%	46.4%	46.4%
Yellow Time (s)	4.6	4.6	4.6	3.0	4.6	3.0	3.0	4.0	4.0	3.0	4.0	4.0
All-Red Time (s)	2.1	2.1	2.1	0.0	2.1	3.0	0.0	2.9	2.9	3.0	2.9	2.9
Lost Time Adjust (s)	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 Lost Time (s)	6.7	6.7	6.7	3.0	6.7	6.0	3.0	6.9	6.9	6.0	6.9	6.9
Lead/Lag	Lag	Lag	Lag	Lead		Lead	Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes		Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	C-Max	C-Max	C-Max	None	C-Max	None	None	Max	Max	None	Max	Max
v/c Ratio	0.44	0.66	0.60	0.66	0.41	0.42	0.39	0.21	0.03	1.00	0.29	0.16
Control Delay (s/veh)	42.5	39.9	12.4	45.0	28.9	2.9	26.0	38.7	0.1	100.3	27.9	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 (s/veh)	42.5	39.9	12.4	45.0	28.9	2.9	26.0	38.7	0.1	100.3	27.9	7.4
Queue Length 50th (m)	19.4	103.0	23.6	16.4	59.5	4.5	20.7	24.2	0.0	~71.5	41.6	3.3
Queue Length 95th (m)	37.4	119.3	59.5	#32.1	71.3	17.7	33.2	35.0	0.0	#107.7	54.4	15.2
Internal Link Dist (m)		810.0			310.8			1249.9			682.4	
Turn Bay Length (m)	115.0		180.0	80.0		70.0	110.0		15.0	100.0		25.0
Base Capacity (vph)	208	1829	781	155	2076	1082	371	1015	518	490	1485	698
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	0.44	0.66	0.60	0.66	0.41	0.42	0.39	0.21	0.03	1.00	0.29	0.16

Intersection Summary

Cycle Length: 140

Actuated Cycle Length: 140

Offset: 78 (56%), Referenced to phase 4:EBTL and 8:WBTL, Start of Green

Natural Cycle: 115

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: 1: Heart Lake Rd & Mayfield Rd



1:2036 Opt CBLZ Syn, weekday AM Peak

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HCM 6th Signalized Intersection Summary
1: Heart Lake Rd & Mayfield Rd

Future Total Traffic (2036 w STP change)
Weekday AM Peak

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		  			  			 		 	 	
Traffic Volume (veh/h)	92	1213	471	103	852	453	143	218	17	492	434	114
Future Volume (veh/h)	92	1213	471	103	852	453	143	218	17	492	434	114
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1885	1856	1870	1826	1796	1796	1900	1856	1811	1811	1870	1856
Adj Flow Rate, veh/h	92	1213	471	103	852	453	143	218	17	492	434	114
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Percent Heavy Veh, %	1	3	2	5	7	7	0	3	6	6	2	3
Cap, veh/h	180	1820	569	171	2077	873	379	1010	440	502	1475	653
Arrive On Green	0.36	0.36	0.36	0.04	0.42	0.42	0.04	0.29	0.29	0.15	0.41	0.41
Sat Flow, veh/h	425	5066	1584	1739	4904	1521	1810	3526	1535	3346	3554	1572
Grp Volume(v), veh/h	92	1213	471	103	852	453	143	218	17	492	434	114
Grp Sat Flow(s),veh/h/ln	425	1689	1584	1739	1635	1521	1810	1763	1535	1673	1777	1572
Q Serve(g_s), s	27.0	28.2	38.0	5.1	17.0	25.3	6.0	6.6	1.1	20.5	11.4	6.4
Cycle Q Clear(g_c), s	34.9	28.2	38.0	5.1	17.0	25.3	6.0	6.6	1.1	20.5	11.4	6.4
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	180	1820	569	171	2077	873	379	1010	440	502	1475	653
V/C Ratio(X)	0.51	0.67	0.83	0.60	0.41	0.52	0.38	0.22	0.04	0.98	0.29	0.17
Avail Cap(c_a), veh/h	180	1820	569	171	2077	873	379	1010	440	502	1475	653
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	43.5	37.8	40.9	30.4	28.1	18.1	34.4	38.0	36.0	59.3	27.3	25.8
Incr Delay (d2), s/veh	10.0	2.0	13.0	8.7	0.6	2.2	1.3	0.5	0.2	35.1	0.5	0.6
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.4	7.6	11.2	1.7	3.9	4.0	2.4	2.0	0.3	8.7	2.9	1.5
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	53.5	39.7	53.9	39.1	28.8	20.3	35.7	38.5	36.2	94.4	27.8	26.4
LnGrp LOS	D	D	D	D	C	C	D	D	D	F	C	C
Approach Vol, veh/h		1776			1408			378			1040	
Approach Delay, s/veh		44.2			26.8			37.3			59.2	
Approach LOS		D			C			D			E	
Timer - Assigned Phs	1	2	3	4	5	6		8				
Phs Duration (G+Y+Rc), s	27.0	47.0	9.0	57.0	9.0	65.0		66.0				
Change Period (Y+Rc), s	6.0	6.9	3.0	6.7	3.0	6.9		6.7				
Max Green Setting (Gmax), s	21.0	40.1	6.0	50.3	6.0	58.1		59.3				
Max Q Clear Time (g_c+I1), s	22.5	8.6	7.1	40.0	8.0	13.4		27.3				
Green Ext Time (p_c), s	0.0	5.5	0.0	10.1	0.0	14.6		25.7				
Intersection Summary												
HCM 6th Ctrl Delay, s/veh			41.7									
HCM 6th LOS			D									

HCM 6th AWSC
2: Heart Lake Rd & Old School Rd

Future Total Traffic (2036 w STP change)
Weekday AM Peak

Intersection												
Intersection Delay, s/veh51.6												
Intersection LOS F												

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		+			+		+	+			+	
Traffic Vol, veh/h	21	498	104	58	218	58	35	84	44	10	238	15
Future Vol, veh/h	21	498	104	58	218	58	35	84	44	10	238	15
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles, %	5	1	2	3	1	0	0	3	5	0	1	20
Mvmt Flow	21	498	104	58	218	58	35	84	44	10	238	15
Number of Lanes	0	1	0	0	1	0	1	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	2
Conflicting Approach Left SB		NB	EB	WB
Conflicting Lanes Left	1	2	1	1
Conflicting Approach RightNB		SB	WB	EB
Conflicting Lanes Right	2	1	1	1
HCM Control Delay, s/veh1.6		20.8	13.8	19.2
HCM LOS	F	C	B	C

Lane	NBLn1	NBLn2	EBLn1	WBLn1	SBLn1
Vol Left, %	100%	0%	3%	17%	4%
Vol Thru, %	0%	66%	80%	65%	90%
Vol Right, %	0%	34%	17%	17%	6%
Sign Control	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	35	128	623	334	263
LT Vol	35	0	21	58	10
Through Vol	0	84	498	218	238
RT Vol	0	44	104	58	15
Lane Flow Rate	35	128	623	334	263
Geometry Grp	5	5	2	2	4a
Degree of Util (X)	0.084	0.281	1.098	0.622	0.536
Departure Headway (Hd)	8.961	8.246	6.345	7.004	7.66
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes
Cap	402	439	579	518	473
Service Time	6.661	5.946	4.345	5.004	5.66
HCM Lane V/C Ratio	0.087	0.292	1.076	0.645	0.556
HCM Control Delay, s/veh	12.5	14.1	91.6	20.8	19.2
HCM Lane LOS	B	B	F	C	C
HCM 95th-tile Q	0.3	1.1	19.1	4.2	3.1

HCM 6th TWSC
4: Heart Lake Rd & 12505 Heart Lake Dwy

Future Total Traffic (2036 w STP change)
Weekday AM Peak

Intersection						
Int Delay, s/veh	0.5					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	W		T			T
Traffic Vol, veh/h	13	2	207	29	17	404
Future Vol, veh/h	13	2	207	29	17	404
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	100	100	100	100	100	100
Heavy Vehicles, %	0	0	7	0	0	4
Mvmt Flow	13	2	207	29	17	404

Major/Minor	Minor1	Major1	Major2		
Conflicting Flow All	458	118	0	0	236
Stage 1	222	-	-	-	-
Stage 2	236	-	-	-	-
Critical Hdwy	6.8	6.9	-	-	4.1
Critical Hdwy Stg 1	5.8	-	-	-	-
Critical Hdwy Stg 2	5.8	-	-	-	-
Follow-up Hdwy	3.5	3.3	-	-	2.2
Pot Cap-1 Maneuver	537	918	-	-	1343
Stage 1	800	-	-	-	-
Stage 2	787	-	-	-	-
Platoon blocked, %			-	-	-
Mov Cap-1 Maneuver	528	918	-	-	1343
Mov Cap-2 Maneuver	528	-	-	-	-
Stage 1	800	-	-	-	-
Stage 2	774	-	-	-	-

Approach	WB	NB	SB
HCM Ctrl Dly, s/v	11.6	0	0.4
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	NBRWBLn1	SBL	SBT
Capacity (veh/h)	-	-	560	1343
HCM Lane V/C Ratio	-	-	0.027	0.013
HCM Ctrl Dly (s/v)	-	-	11.6	7.7
HCM Lane LOS	-	-	B	A
HCM 95th %tile Q (veh)	-	-	0.1	0

HCM 6th TWSC
5: Heart Lake Rd & Abbotside Way Ext

Future Total Traffic (2036 w STP change)
Weekday AM Peak

Intersection						
Int Delay, s/veh	5.2					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	14	354	211	368	444	10
Future Vol, veh/h	14	354	211	368	444	10
Conflicting Peds, #/hr	2	0	2	0	0	2
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	0	60	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	100	100	100	100	100	100
Heavy Vehicles, %	7	4	8	5	6	0
Mvmt Flow	14	354	211	368	444	10
Major/Minor	Minor2	Major1		Major2		
Conflicting Flow All	1059	229	456	0	-	0
Stage 1	451	-	-	-	-	-
Stage 2	608	-	-	-	-	-
Critical Hdwy	6.94	6.98	4.26	-	-	-
Critical Hdwy Stg 1	5.94	-	-	-	-	-
Critical Hdwy Stg 2	5.94	-	-	-	-	-
Follow-up Hdwy	3.57	3.34	2.28	-	-	-
Pot Cap-1 Maneuver	211	767	1060	-	-	-
Stage 1	594	-	-	-	-	-
Stage 2	492	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	168	766	1058	-	-	-
Mov Cap-2 Maneuver	168	-	-	-	-	-
Stage 1	475	-	-	-	-	-
Stage 2	491	-	-	-	-	-
Approach	EB	NB		SB		
HCM Ctrl Dly, s/v	14.3	3.4		0		
HCM LOS	B					
Minor Lane/Major Mvmt	NBL	NBT	EBLn1	EBLn2	SBT	SBR
Capacity (veh/h)	1058	-	168	766	-	-
HCM Lane V/C Ratio	0.199	-	0.083	0.462	-	-
HCM Ctrl Dly (s/v)	9.2	-	28.4	13.7	-	-
HCM Lane LOS	A	-	D	B	-	-
HCM 95th %tile Q (veh)	0.7	-	0.3	2.5	-	-

HCM 6th TWSC
6: Heart Lake Rd & North Dwy

Future Total Traffic (2036 w STP change)
Weekday AM Peak

Intersection						
Int Delay, s/veh	0.9					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	W			↑↑	↑↑	
Traffic Vol, veh/h	2	13	45	161	402	2
Future Vol, veh/h	2	13	45	161	402	2
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	100	100	100	100	100	100
Heavy Vehicles, %	0	0	0	3	1	0
Mvmt Flow	2	13	45	161	402	2

Major/Minor	Minor2	Major1		Major2		
Conflicting Flow All	574	202	404	0	-	0
Stage 1	403	-	-	-	-	-
Stage 2	171	-	-	-	-	-
Critical Hdwy	6.8	6.9	4.1	-	-	-
Critical Hdwy Stg 1	5.8	-	-	-	-	-
Critical Hdwy Stg 2	5.8	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	2.2	-	-	-
Pot Cap-1 Maneuver	454	811	1166	-	-	-
Stage 1	649	-	-	-	-	-
Stage 2	848	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	435	811	1166	-	-	-
Mov Cap-2 Maneuver	435	-	-	-	-	-
Stage 1	622	-	-	-	-	-
Stage 2	848	-	-	-	-	-

Approach	EB	NB	SB
HCM Ctrl Dly, s/v	10.1	1.9	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1166	-	727	-	-
HCM Lane V/C Ratio	0.039	-	0.021	-	-
HCM Ctrl Dly (s/v)	8.2	0.1	10.1	-	-
HCM Lane LOS	A	A	B	-	-
HCM 95th %tile Q (veh)	0.1	-	0.1	-	-

HCM 6th TWSC
7: Heart Lake Rd & Centre Dwy

Future Total Traffic (2036 w STP change)
Weekday AM Peak

Intersection						
Int Delay, s/veh	0.4					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	W			↑↑	↑↑	
Traffic Vol, veh/h	0	9	9	200	364	0
Future Vol, veh/h	0	9	9	200	364	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	100	100	100	100	100	100
Heavy Vehicles, %	0	100	100	0	0	0
Mvmt Flow	0	9	9	200	364	0
Major/Minor	Minor2	Major1		Major2		
Conflicting Flow All	482	182	364	0	-	0
Stage 1	364	-	-	-	-	-
Stage 2	118	-	-	-	-	-
Critical Hdwy	6.8	8.9	6.1	-	-	-
Critical Hdwy Stg 1	5.8	-	-	-	-	-
Critical Hdwy Stg 2	5.8	-	-	-	-	-
Follow-up Hdwy	3.5	4.3	3.2	-	-	-
Pot Cap-1 Maneuver	518	594	711	-	-	-
Stage 1	679	-	-	-	-	-
Stage 2	900	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	511	594	711	-	-	-
Mov Cap-2 Maneuver	511	-	-	-	-	-
Stage 1	669	-	-	-	-	-
Stage 2	900	-	-	-	-	-
Approach	EB	NB		SB		
HCM Ctrl Dly, s/v	11.2	0.5		0		
HCM LOS	B					
Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR	
Capacity (veh/h)	711	-	594	-	-	
HCM Lane V/C Ratio	0.013	-	0.015	-	-	
HCM Ctrl Dly (s/v)	10.1	0.1	11.2	-	-	
HCM Lane LOS	B	A	B	-	-	
HCM 95th %tile Q (veh)	0	-	0	-	-	

HCM 6th TWSC
8: Heart Lake Rd & South Dwy

Future Total Traffic (2036 w STP change)
Weekday AM Peak

Intersection						
Int Delay, s/veh	0.3					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	W			↑↑	↑↑	
Traffic Vol, veh/h	0	7	9	207	373	0
Future Vol, veh/h	0	7	9	207	373	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	100	100	100	100	100	100
Heavy Vehicles, %	0	100	100	4	2	0
Mvmt Flow	0	7	9	207	373	0

Major/Minor	Minor2	Major1		Major2		
Conflicting Flow All	495	187	373	0	-	0
Stage 1	373	-	-	-	-	-
Stage 2	122	-	-	-	-	-
Critical Hdwy	6.8	8.9	6.1	-	-	-
Critical Hdwy Stg 1	5.8	-	-	-	-	-
Critical Hdwy Stg 2	5.8	-	-	-	-	-
Follow-up Hdwy	3.5	4.3	3.2	-	-	-
Pot Cap-1 Maneuver	509	588	703	-	-	-
Stage 1	672	-	-	-	-	-
Stage 2	896	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	502	588	703	-	-	-
Mov Cap-2 Maneuver	502	-	-	-	-	-
Stage 1	663	-	-	-	-	-
Stage 2	896	-	-	-	-	-

Approach	EB	NB	SB
HCM Ctrl Dly, s/v	11.2	0.5	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	703	-	588	-	-
HCM Lane V/C Ratio	0.013	-	0.012	-	-
HCM Ctrl Dly (s/v)	10.2	0.1	11.2	-	-
HCM Lane LOS	B	A	B	-	-
HCM 95th %tile Q (veh)	0	-	0	-	-

Queues

Future Total Traffic (2036 w STP change)

1: Heart Lake Rd & Mayfield Rd

Weekday PM Peak

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		  			  			 		 	 	
Traffic Volume (vph)	134	1195	231	33	1398	733	265	253	29	718	271	139
Future Volume (vph)	134	1195	231	33	1398	733	265	253	29	718	271	139
Lane Group Flow (vph)	134	1195	231	33	1398	733	265	253	29	718	271	139
Turn Type	pm+pt	NA	Perm	Perm	NA	pm+ov	pm+pt	NA	Perm	Prot	NA	Perm
Protected Phases	7	4			8	1	5	2		1	6	
Permitted Phases	4		4	8		8	2		2			6
Detector Phase	7	4	4	8	8	1	5	2	2	1	6	6
Switch Phase												
Minimum Initial (s)	3.5	5.0	5.0	12.0	12.0	5.0	5.0	8.0	8.0	5.0	8.0	8.0
Minimum Split (s)	8.0	39.7	39.7	39.7	39.7	11.0	8.0	43.9	43.9	11.0	43.9	43.9
Total Split (s)	9.0	58.0	58.0	49.0	49.0	33.0	9.0	44.0	44.0	33.0	68.0	68.0
Total Split (%)	6.7%	43.0%	43.0%	36.3%	36.3%	24.4%	6.7%	32.6%	32.6%	24.4%	50.4%	50.4%
Yellow Time (s)	3.0	4.6	4.6	4.6	4.6	3.0	3.0	4.0	4.0	3.0	4.0	4.0
All-Red Time (s)	0.0	2.1	2.1	2.1	2.1	3.0	0.0	2.9	2.9	3.0	2.9	2.9
Lost Time Adjust (s)	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 Lost Time (s)	3.0	6.7	6.7	6.7	6.7	6.0	3.0	6.9	6.9	6.0	6.9	6.9
Lead/Lag	Lead			Lag	Lag	Lead	Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes			Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	C-Max	C-Max	C-Max	C-Max	None	None	Max	Max	None	Max	Max
v/c Ratio	0.96	0.61	0.31	0.34	0.86	0.74	0.65	0.25	0.06	1.09	0.17	0.18
Control Delay (s/veh)	98.6	35.5	4.5	47.7	50.0	17.7	36.3	39.0	0.2	111.7	22.2	3.8
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 (s/veh)	98.6	35.5	4.5	47.7	50.0	17.7	36.3	39.0	0.2	111.7	22.2	3.8
Queue Length 50th (m)	22.6	93.5	0.0	6.8	128.2	86.4	36.2	27.7	0.0	~110.7	22.1	0.0
Queue Length 95th (m)	#60.7	108.8	16.2	17.8	147.3	138.8	53.1	39.4	0.0	#148.6	31.1	11.5
Internal Link Dist (m)		810.0			310.8			1249.9			682.4	
Turn Bay Length (m)	115.0		180.0	80.0		70.0	110.0		15.0	100.0		25.0
Base Capacity (vph)	139	1953	742	97	1627	987	408	993	518	659	1619	782
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	0.31	0.34	0.86	0.74	0.65	0.25	0.06	1.09	0.17	0.18

Intersection Summary

Cycle Length: 135

Actuated Cycle Length: 135

Offset: 26 (19%), Referenced to phase 4:EBTL and 8:WBTL, Start of Green

Natural Cycle: 125

Control Type: Actuated-Coordinated

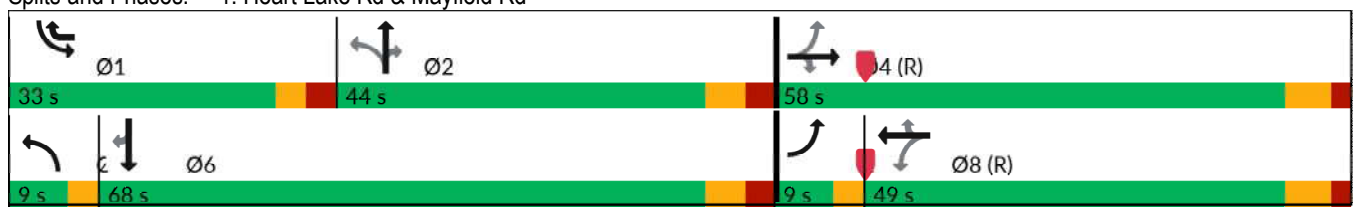
~ Volume exceeds capacity, queue is theoretically infinite.

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: 1: Heart Lake Rd & Mayfield Rd



1:2036 Opt SBLZ Syn, weekday PM Peak

Date 10/05/2025 Page 1

HCM 6th Signalized Intersection Summary
1: Heart Lake Rd & Mayfield Rd

Future Total Traffic (2036 w STP change)
Weekday PM Peak

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	134	1195	231	33	1398	733	265	253	29	718	271	139
Future Volume (veh/h)	134	1195	231	33	1398	733	265	253	29	718	271	139
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		0.99
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1900	1870	1900	1900	1885	1826	1885	1885	1856	1826	1870	1885
Adj Flow Rate, veh/h	134	1195	231	33	1398	733	265	253	29	718	271	139
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Percent Heavy Veh, %	0	2	0	0	1	5	1	1	3	5	2	1
Cap, veh/h	145	1940	611	126	1613	794	403	984	432	675	1608	714
Arrive On Green	0.04	0.38	0.38	0.31	0.31	0.31	0.04	0.27	0.27	0.20	0.45	0.45
Sat Flow, veh/h	1810	5106	1609	382	5147	1546	1795	3582	1572	3374	3554	1578
Grp Volume(v), veh/h	134	1195	231	33	1398	733	265	253	29	718	271	139
Grp Sat Flow(s),veh/h/ln	1810	1702	1609	382	1716	1546	1795	1791	1572	1687	1777	1578
Q Serve(g_s), s	6.0	25.6	14.0	10.3	34.6	42.3	6.0	7.4	1.8	27.0	6.1	7.1
Cycle Q Clear(g_c), s	6.0	25.6	14.0	26.9	34.6	42.3	6.0	7.4	1.8	27.0	6.1	7.1
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	145	1940	611	126	1613	794	403	984	432	675	1608	714
V/C Ratio(X)	0.93	0.62	0.38	0.26	0.87	0.92	0.66	0.26	0.07	1.06	0.17	0.19
Avail Cap(c_a), veh/h	145	1940	611	126	1613	794	403	984	432	675	1608	714
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	38.8	33.9	30.3	48.4	43.7	30.4	39.1	38.2	36.2	54.0	21.9	22.2
Incr Delay (d2), s/veh	53.0	1.5	1.8	5.0	6.6	18.0	3.9	0.6	0.3	53.0	0.2	0.6
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	4.3	7.9	4.2	1.0	11.9	17.4	6.1	2.6	0.6	14.0	1.8	1.9
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	91.7	35.3	32.1	53.4	50.3	48.4	42.9	38.8	36.5	107.0	22.1	22.8
LnGrp LOS	F	D	C	D	D	D	D	D	D	F	C	C
Approach Vol, veh/h		1560			2164			547			1128	
Approach Delay, s/veh		39.7			49.7			40.7			76.2	
Approach LOS		D			D			D			E	
Timer - Assigned Phs	1	2		4	5	6	7	8				
Phs Duration (G+Y+Rc), s	33.0	44.0		58.0	9.0	68.0	9.0	49.0				
Change Period (Y+Rc), s	6.0	6.9		6.7	3.0	6.9	3.0	6.7				
Max Green Setting (Gmax), s	27.0	37.1		51.3	6.0	61.1	6.0	42.3				
Max Q Clear Time (g_c+I1), s	29.0	9.4		27.6	8.0	9.1	8.0	44.3				
Green Ext Time (p_c), s	0.0	4.3		18.7	0.0	6.2	0.0	0.0				
Intersection Summary												
HCM 6th Ctrl Delay, s/veh			51.4									
HCM 6th LOS			D									

HCM 6th AWSC
2: Heart Lake Rd & Old School Rd

Future Total Traffic (2036 w STP change)
Weekday PM Peak

Intersection												
Intersection Delay, s/veh 61.2												
Intersection LOS F												

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		+			+		+	+			+	
Traffic Vol, veh/h	79	351	93	70	459	63	110	243	36	8	361	27
Future Vol, veh/h	79	351	93	70	459	63	110	243	36	8	361	27
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles, %	5	2	1	0	0	2	1	1	0	0	2	0
Mvmt Flow	79	351	93	70	459	63	110	243	36	8	361	27
Number of Lanes	0	1	0	0	1	0	1	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	2
Conflicting Approach Left SB		NB	EB	WB
Conflicting Lanes Left	1	2	1	1
Conflicting Approach Right NB		SB	WB	EB
Conflicting Lanes Right	2	1	1	1
HCM Control Delay, s/veh 65.4		262.2	35.5	88.5
HCM LOS	F	F	E	F

Lane	NBLn1	NBLn2	EBLn1	WBLn1	SBLn1
Vol Left, %	100%	0%	15%	12%	2%
Vol Thru, %	0%	87%	67%	78%	91%
Vol Right, %	0%	13%	18%	11%	7%
Sign Control	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	110	279	523	592	396
LT Vol	110	0	79	70	8
Through Vol	0	243	351	459	361
RT Vol	0	36	93	63	27
Lane Flow Rate	110	279	523	592	396
Geometry Grp	5	5	2	2	4a
Degree of Util (X)	0.312	0.745	1.327	1.493	1.009
Departure Headway (Hd)	12.183	11.559	10.573	10.115	11.435
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes
Cap	297	315	350	367	321
Service Time	9.883	9.259	8.573	8.115	9.435
HCM Lane V/C Ratio	0.37	0.886	1.494	1.613	1.234
HCM Control Delay, s/veh	20.3	41.5	195.4	262.2	88.5
HCM Lane LOS	C	E	F	F	F
HCM 95th-tile Q	1.3	5.6	21.7	28.8	11.1

HCM 6th TWSC
4: Heart Lake Rd & 12505 Heart Lake Dwy

Future Total Traffic (2036 w STP change)
Weekday PM Peak

Intersection						
Int Delay, s/veh	0.4					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	W		↑↑			↑↑
Traffic Vol, veh/h	13	2	413	29	17	574
Future Vol, veh/h	13	2	413	29	17	574
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	100	100	100	100	100	100
Heavy Vehicles, %	0	0	3	0	0	4
Mvmt Flow	13	2	413	29	17	574

Major/Minor	Minor1	Major1	Major2		
Conflicting Flow All	749	221	0	0	442
Stage 1	428	-	-	-	-
Stage 2	321	-	-	-	-
Critical Hdwy	6.8	6.9	-	-	4.1
Critical Hdwy Stg 1	5.8	-	-	-	-
Critical Hdwy Stg 2	5.8	-	-	-	-
Follow-up Hdwy	3.5	3.3	-	-	2.2
Pot Cap-1 Maneuver	352	789	-	-	1129
Stage 1	631	-	-	-	-
Stage 2	714	-	-	-	-
Platoon blocked, %			-	-	-
Mov Cap-1 Maneuver	344	789	-	-	1129
Mov Cap-2 Maneuver	344	-	-	-	-
Stage 1	631	-	-	-	-
Stage 2	698	-	-	-	-

Approach	WB	NB	SB
HCM Ctrl Dly, s/v	15.1	0	0.3
HCM LOS	C		

Minor Lane/Major Mvmt	NBT	NBRWBLn1	SBL	SBT
Capacity (veh/h)	-	-	372	1129
HCM Lane V/C Ratio	-	-	0.04	0.015
HCM Ctrl Dly (s/v)	-	-	15.1	8.2
HCM Lane LOS	-	-	C	A
HCM 95th %tile Q (veh)	-	-	0.1	0

HCM 6th TWSC
5: Heart Lake Rd & Abbotside Way Ext

Future Total Traffic (2036 w STP change)
Weekday PM Peak

Intersection						
Int Delay, s/veh	6.3					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	19	272	387	458	729	15
Future Vol, veh/h	19	272	387	458	729	15
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	0	60	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	100	100	100	100	100	100
Heavy Vehicles, %	0	5	4	6	4	0
Mvmt Flow	19	272	387	458	729	15
Major/Minor	Minor2	Major1		Major2		
Conflicting Flow All	1740	372	744	0	-	0
Stage 1	737	-	-	-	-	-
Stage 2	1003	-	-	-	-	-
Critical Hdwy	6.8	7	4.18	-	-	-
Critical Hdwy Stg 1	5.8	-	-	-	-	-
Critical Hdwy Stg 2	5.8	-	-	-	-	-
Follow-up Hdwy	3.5	3.35	2.24	-	-	-
Pot Cap-1 Maneuver	80	617	846	-	-	-
Stage 1	439	-	-	-	-	-
Stage 2	320	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	43	617	846	-	-	-
Mov Cap-2 Maneuver	43	-	-	-	-	-
Stage 1	238	-	-	-	-	-
Stage 2	320	-	-	-	-	-
Approach	EB	NB		SB		
HCM Ctrl Dly, s/v	23.7	5.9		0		
HCM LOS	C					
Minor Lane/Major Mvmt	NBL	NBT	EBLn1	EBLn2	SBT	SBR
Capacity (veh/h)	846	-	43	617	-	-
HCM Lane V/C Ratio	0.457	-	0.442	0.441	-	-
HCM Ctrl Dly (s/v)	12.8	-	143.2	15.4	-	-
HCM Lane LOS	B	-	F	C	-	-
HCM 95th %tile Q (veh)	2.4	-	1.6	2.2	-	-

HCM 6th TWSC
6: Heart Lake Rd & North Dwy

Future Total Traffic (2036 w STP change)
Weekday PM Peak

Intersection						
Int Delay, s/veh	0.6					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	W			↑↑	↑↑	
Traffic Vol, veh/h	2	43	16	391	538	1
Future Vol, veh/h	2	43	16	391	538	1
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	100	100	100	100	100	100
Heavy Vehicles, %	0	0	0	0	1	0
Mvmt Flow	2	43	16	391	538	1

Major/Minor	Minor2	Major1		Major2		
Conflicting Flow All	767	270	539	0	-	0
Stage 1	539	-	-	-	-	-
Stage 2	228	-	-	-	-	-
Critical Hdwy	6.8	6.9	4.1	-	-	-
Critical Hdwy Stg 1	5.8	-	-	-	-	-
Critical Hdwy Stg 2	5.8	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	2.2	-	-	-
Pot Cap-1 Maneuver	343	734	1040	-	-	-
Stage 1	555	-	-	-	-	-
Stage 2	794	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	336	734	1040	-	-	-
Mov Cap-2 Maneuver	336	-	-	-	-	-
Stage 1	544	-	-	-	-	-
Stage 2	794	-	-	-	-	-

Approach	EB	NB	SB
HCM Ctrl Dly, s/v	10.5	0.4	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1040	-	697	-	-
HCM Lane V/C Ratio	0.015	-	0.065	-	-
HCM Ctrl Dly (s/v)	8.5	0.1	10.5	-	-
HCM Lane LOS	A	A	B	-	-
HCM 95th %tile Q (veh)	0	-	0.2	-	-

Intersection						
Int Delay, s/veh	0.4					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	W			↑↑	↑↑	
Traffic Vol, veh/h	0	13	13	401	530	0
Future Vol, veh/h	0	13	13	401	530	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	100	100	100	100	100	100
Heavy Vehicles, %	0	100	100	0	0	0
Mvmt Flow	0	13	13	401	530	0

Major/Minor	Minor2	Major1	Major2			
Conflicting Flow All	757	265	530	0	-	0
Stage 1	530	-	-	-	-	-
Stage 2	227	-	-	-	-	-
Critical Hdwy	6.8	8.9	6.1	-	-	-
Critical Hdwy Stg 1	5.8	-	-	-	-	-
Critical Hdwy Stg 2	5.8	-	-	-	-	-
Follow-up Hdwy	3.5	4.3	3.2	-	-	-
Pot Cap-1 Maneuver	348	507	575	-	-	-
Stage 1	560	-	-	-	-	-
Stage 2	795	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	338	507	575	-	-	-
Mov Cap-2 Maneuver	338	-	-	-	-	-
Stage 1	544	-	-	-	-	-
Stage 2	795	-	-	-	-	-

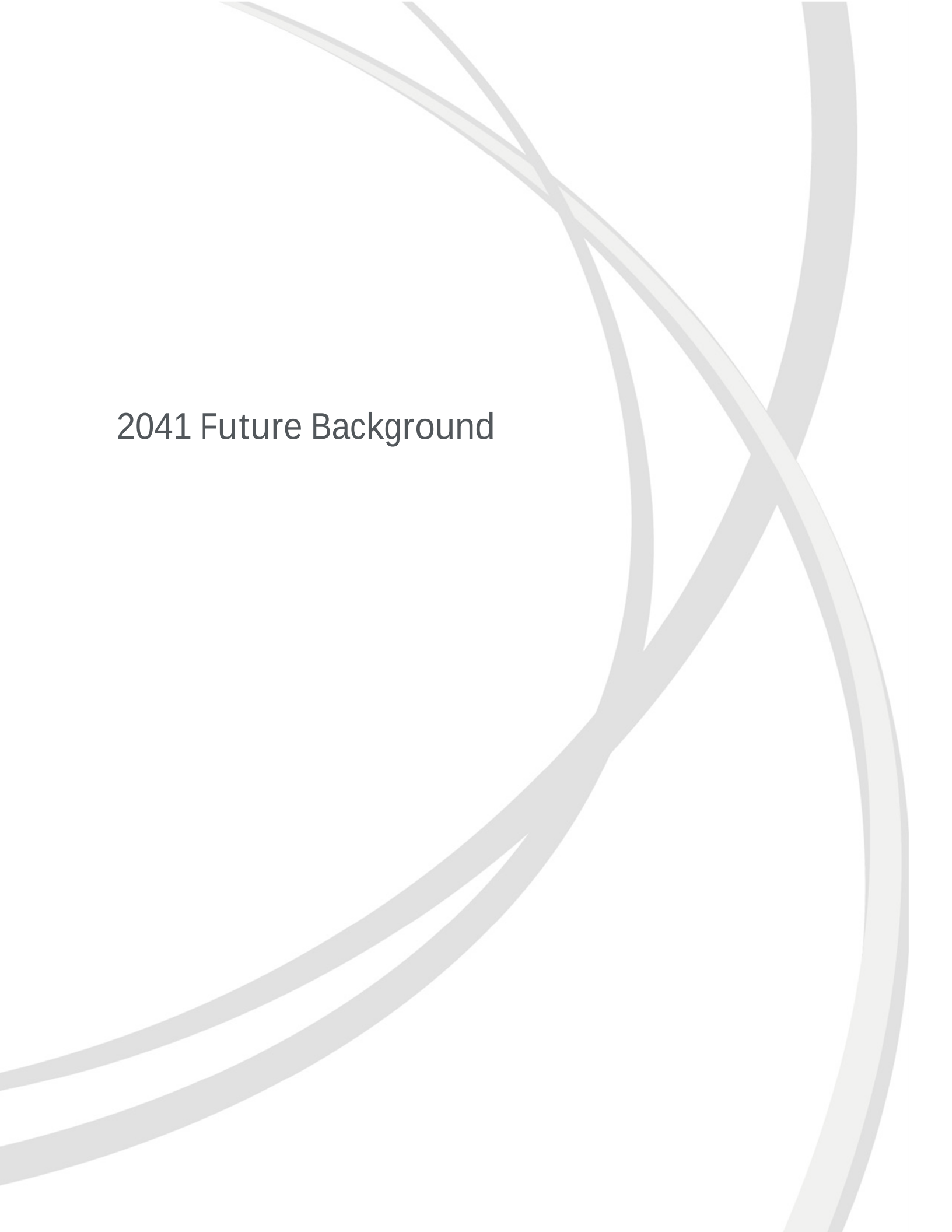
Approach	EB	NB	SB
HCM Ctrl Dly, s/v	12.3	0.6	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	575	-	507	-	-
HCM Lane V/C Ratio	0.023	-	0.026	-	-
HCM Ctrl Dly (s/v)	11.4	0.2	12.3	-	-
HCM Lane LOS	B	A	B	-	-
HCM 95th %tile Q (veh)	0.1	-	0.1	-	-

HCM 6th TWSC
8: Heart Lake Rd & South Dwy

Future Total Traffic (2036 w STP change)
Weekday PM Peak

Intersection						
Int Delay, s/veh	0.4					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	W			↑↑	↑↑	
Traffic Vol, veh/h	0	12	13	413	543	0
Future Vol, veh/h	0	12	13	413	543	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	100	100	100	100	100	100
Heavy Vehicles, %	0	100	100	3	2	0
Mvmt Flow	0	12	13	413	543	0
Major/Minor	Minor2	Major1		Major2		
Conflicting Flow All	776	272	543	0	-	0
Stage 1	543	-	-	-	-	-
Stage 2	233	-	-	-	-	-
Critical Hdwy	6.8	8.9	6.1	-	-	-
Critical Hdwy Stg 1	5.8	-	-	-	-	-
Critical Hdwy Stg 2	5.8	-	-	-	-	-
Follow-up Hdwy	3.5	4.3	3.2	-	-	-
Pot Cap-1 Maneuver	338	501	565	-	-	-
Stage 1	552	-	-	-	-	-
Stage 2	790	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	328	501	565	-	-	-
Mov Cap-2 Maneuver	328	-	-	-	-	-
Stage 1	535	-	-	-	-	-
Stage 2	790	-	-	-	-	-
Approach	EB	NB		SB		
HCM Ctrl Dly, s/v	12.4	0.5		0		
HCM LOS	B					
Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR	
Capacity (veh/h)	565	-	501	-	-	
HCM Lane V/C Ratio	0.023	-	0.024	-	-	
HCM Ctrl Dly (s/v)	11.5	0.2	12.4	-	-	
HCM Lane LOS	B	A	B	-	-	
HCM 95th %tile Q (veh)	0.1	-	0.1	-	-	



2041 Future Background

Queues

Future Background Traffic 2041

1: Heart Lake Rd & Mayfield Rd

Weekday AM Peak

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	76	1366	471	103	960	360	143	102	17	446	436	113
Future Volume (vph)	76	1366	471	103	960	360	143	102	17	446	436	113
Lane Group Flow (vph)	76	1366	471	103	960	360	143	102	17	446	436	113
Turn Type	Perm	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm	Perm	NA	Perm
Protected Phases		4		3	8		5	2			6	
Permitted Phases	4		4	8		8	2		2	6		6
Detector Phase	4	4	4	3	8	8	5	2	2	6	6	6
Switch Phase												
Minimum Initial (s)	5.0	5.0	5.0	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	8.0	39.7	39.7	8.0	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	0.0	2.1	2.1	0.0	2.9	2.9	2.9	2.9	2.9
Lost Time Adjust (s)	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 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?	Yes	Yes	Yes	Yes			Yes			Yes	Yes	Yes
Recall Mode	C-Max	C-Max	C-Max	None	C-Max	C-Max	None	Max	Max	Max	Max	Max
v/c Ratio	0.28	0.53	0.52	0.52	0.34	0.35	0.48	0.09	0.03	1.31	0.45	0.24
Control Delay (s/veh)	23.9	24.7	11.2	22.0	16.7	2.4	37.7	32.1	0.1	198.7	44.0	16.2
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 (s/veh)	23.9	24.7	11.2	22.0	16.7	2.4	37.7	32.1	0.1	198.7	44.0	16.2
Queue Length 50th (m)	11.9	91.9	33.6	11.8	50.4	0.0	27.3	10.1	0.0	~158.1	52.9	7.7
Queue Length 95th (m)	24.1	105.4	62.8	20.2	59.5	13.2	43.8	16.8	0.0	#223.6	69.1	23.2
Internal Link Dist (m)		810.0			310.8			1249.9			682.4	
Turn Bay Length (m)	115.0		180.0	80.0		70.0	110.0		15.0	30.0		25.0
Base Capacity (vph)	267	2556	911	198	2802	1017	297	1192	541	341	973	477
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	0.28	0.53	0.52	0.52	0.34	0.35	0.48	0.09	0.03	1.31	0.45	0.24

Intersection Summary

Cycle Length: 140

Actuated Cycle Length: 140

Offset: 78 (56%), Referenced to phase 4:EBTL and 8:WBTL, Start of Green

Natural Cycle: 100

Control Type: Actuated-Coordinated

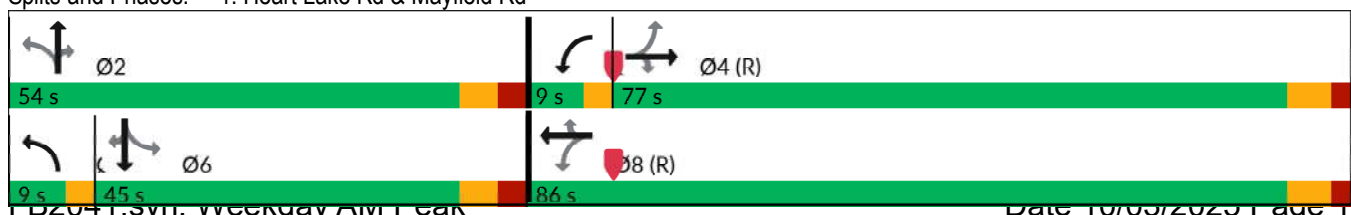
~ Volume exceeds capacity, queue is theoretically infinite.

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: 1: Heart Lake Rd & Mayfield Rd



Future Background Traffic 2041, Weekday AM Peak

Date: 10/05/2025 Page: 1

HCM 6th Signalized Intersection Summary
1: Heart Lake Rd & Mayfield Rd

Future Background Traffic 2041
Weekday AM Peak

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		  			  			 			 	
Traffic Volume (veh/h)	76	1366	471	103	960	360	143	102	17	446	436	113
Future Volume (veh/h)	76	1366	471	103	960	360	143	102	17	446	436	113
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1885	1856	1870	1826	1811	1826	1900	1856	1811	1856	1870	1856
Adj Flow Rate, veh/h	76	1366	471	103	960	360	143	102	17	446	436	113
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Percent Heavy Veh, %	1	3	2	5	6	5	0	3	6	3	2	3
Cap, veh/h	245	2551	798	202	2801	876	278	1186	516	395	967	428
Arrive On Green	0.50	0.50	0.50	0.04	0.57	0.57	0.04	0.34	0.34	0.27	0.27	0.27
Sat Flow, veh/h	419	5066	1584	1739	4944	1547	1810	3526	1535	1263	3554	1572
Grp Volume(v), veh/h	76	1366	471	103	960	360	143	102	17	446	436	113
Grp Sat Flow(s),veh/h/ln	419	1689	1584	1739	1648	1547	1810	1763	1535	1263	1777	1572
Q Serve(g_s), s	16.7	25.7	29.4	3.9	14.6	18.4	6.0	2.8	1.0	38.1	14.3	7.9
Cycle Q Clear(g_c), s	22.5	25.7	29.4	3.9	14.6	18.4	6.0	2.8	1.0	38.1	14.3	7.9
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	245	2551	798	202	2801	876	278	1186	516	395	967	428
V/C Ratio(X)	0.31	0.54	0.59	0.51	0.34	0.41	0.52	0.09	0.03	1.13	0.45	0.26
Avail Cap(c_a), veh/h	245	2551	798	205	2801	876	278	1186	516	395	967	428
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	24.8	23.6	24.5	19.1	16.3	17.2	38.9	31.7	31.2	53.4	42.3	40.0
Incr Delay (d2), s/veh	3.3	0.8	3.2	4.2	0.3	1.4	3.3	0.1	0.1	85.2	1.5	1.5
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.1	5.2	6.1	0.9	2.3	3.0	2.5	0.8	0.3	19.1	4.4	2.2
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	28.0	24.4	27.7	23.4	16.7	18.6	42.1	31.9	31.3	138.6	43.8	41.5
LnGrp LOS	C	C	C	C	B	B	D	C	C	F	D	D
Approach Vol, veh/h		1913			1423			262			995	
Approach Delay, s/veh		25.4			17.6			37.4			86.0	
Approach LOS		C			B			D			F	
Timer - Assigned Phs		2	3	4	5	6		8				
Phs Duration (G+Y+Rc), s		54.0	8.8	77.2	9.0	45.0		86.0				
Change Period (Y+Rc), s		6.9	3.0	6.7	3.0	6.9		6.7				
Max Green Setting (Gmax), s		47.1	6.0	70.3	6.0	38.1		79.3				
Max Q Clear Time (g_c+I1), s		4.8	5.9	31.4	8.0	40.1		20.4				
Green Ext Time (p_c), s		2.7	0.0	37.0	0.0	0.0		42.9				
Intersection Summary												
HCM 6th Ctrl Delay, s/veh			36.8									
HCM 6th LOS			D									

Intersection

Intersection Delay, s/veh72.4

Intersection LOS F

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		+			+		+	+			+	
Traffic Vol, veh/h	21	540	104	49	237	58	35	89	41	10	272	15
Future Vol, veh/h	21	540	104	49	237	58	35	89	41	10	272	15
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles, %	5	1	2	4	1	0	0	2	5	0	1	20
Mvmt Flow	21	540	104	49	237	58	35	89	41	10	272	15
Number of Lanes	0	1	0	0	1	0	1	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	2
Conflicting Approach Left SB		NB	EB	WB
Conflicting Lanes Left	1	2	1	1
Conflicting Approach RightNB		SB	WB	EB
Conflicting Lanes Right	2	1	1	1
HCM Control Delay, s/veh134		23.9	14.5	22.7
HCM LOS	F	C	B	C

Lane	NBLn1	NBLn2	EBLn1	WBLn1	SBLn1
Vol Left, %	100%	0%	3%	14%	3%
Vol Thru, %	0%	68%	81%	69%	92%
Vol Right, %	0%	32%	16%	17%	5%
Sign Control	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	35	130	665	344	297
LT Vol	35	0	21	49	10
Through Vol	0	89	540	237	272
RT Vol	0	41	104	58	15
Lane Flow Rate	35	130	665	344	297
Geometry Grp	5	5	2	2	4a
Degree of Util (X)	0.085	0.292	1.212	0.665	0.611
Departure Headway (Hd)	9.413	8.699	6.559	7.407	7.978
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes
Cap	383	416	552	492	454
Service Time	7.113	6.399	4.603	5.407	5.978
HCM Lane V/C Ratio	0.091	0.313	1.205	0.699	0.654
HCM Control Delay, s/veh	13	14.9	134	23.9	22.7
HCM Lane LOS	B	B	F	C	C
HCM 95th-tile Q	0.3	1.2	24.5	4.8	4

Intersection												
Int Delay, s/veh	0.6											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		⬆⬆			⬆⬆			⬆⬆			⬆⬆	
Traffic Vol, veh/h	2	0	0	13	0	2	0	157	29	17	409	0
Future Vol, veh/h	2	0	0	13	0	2	0	157	29	17	409	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	100	100	100	100	100	100	100	100	100	100	100	100
Heavy Vehicles, %	0	0	0	0	0	0	0	3	0	0	1	0
Mvmt Flow	2	0	0	13	0	2	0	157	29	17	409	0
Major/Minor	Minor2		Minor1			Major1			Major2			
Conflicting Flow All	522	629	205	411	615	93	409	0	0	186	0	0
Stage 1	443	443	-	172	172	-	-	-	-	-	-	-
Stage 2	79	186	-	239	443	-	-	-	-	-	-	-
Critical Hdwy	7.5	6.5	6.9	7.5	6.5	6.9	4.1	-	-	4.1	-	-
Critical Hdwy Stg 1	6.5	5.5	-	6.5	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.5	5.5	-	6.5	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4	3.3	3.5	4	3.3	2.2	-	-	2.2	-	-
Pot Cap-1 Maneuver	442	402	808	530	409	952	1161	-	-	1401	-	-
Stage 1	569	579	-	819	760	-	-	-	-	-	-	-
Stage 2	927	750	-	749	579	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	436	396	808	524	402	952	1161	-	-	1401	-	-
Mov Cap-2 Maneuver	436	396	-	524	402	-	-	-	-	-	-	-
Stage 1	569	570	-	819	760	-	-	-	-	-	-	-
Stage 2	925	750	-	737	570	-	-	-	-	-	-	-
Approach	EB		WB			NB			SB			
HCM Ctrl Dly, s/v	13.3		11.6			0			0.4			
HCM LOS	B		B									
Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR				
Capacity (veh/h)	1161	-	-	436	557	1401	-	-				
HCM Lane V/C Ratio	-	-	-	0.005	0.027	0.012	-	-				
HCM Ctrl Dly (s/v)	0	-	-	13.3	11.6	7.6	0.1	-				
HCM Lane LOS	A	-	-	B	B	A	A	-				
HCM 95th %tile Q (veh)	0	-	-	0	0.1	0	-	-				

HCM 6th TWSC
5: Heart Lake Rd & Abbotside Way Ext

Future Background Traffic 2041
Weekday AM Peak

Intersection						
Int Delay, s/veh	6.1					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	14	354	211	143	399	10
Future Vol, veh/h	14	354	211	143	399	10
Conflicting Peds, #/hr	2	0	2	0	0	2
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	0	60	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	100	100	100	100	100	100
Heavy Vehicles, %	7	4	8	1	3	0
Mvmt Flow	14	354	211	143	399	10
Major/Minor	Minor2	Major1		Major2		
Conflicting Flow All	902	207	411	0	-	0
Stage 1	406	-	-	-	-	-
Stage 2	496	-	-	-	-	-
Critical Hdwy	6.94	6.98	4.26	-	-	-
Critical Hdwy Stg 1	5.94	-	-	-	-	-
Critical Hdwy Stg 2	5.94	-	-	-	-	-
Follow-up Hdwy	3.57	3.34	2.28	-	-	-
Pot Cap-1 Maneuver	268	793	1103	-	-	-
Stage 1	627	-	-	-	-	-
Stage 2	563	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	216	792	1101	-	-	-
Mov Cap-2 Maneuver	216	-	-	-	-	-
Stage 1	505	-	-	-	-	-
Stage 2	562	-	-	-	-	-
Approach	EB	NB		SB		
HCM Ctrl Dly, s/v	13.6	5.4		0		
HCM LOS	B					
Minor Lane/Major Mvmt	NBL	NBT	EBLn1	EBLn2	SBT	SBR
Capacity (veh/h)	1101	-	216	792	-	-
HCM Lane V/C Ratio	0.192	-	0.065	0.447	-	-
HCM Ctrl Dly (s/v)	9	-	22.8	13.2	-	-
HCM Lane LOS	A	-	C	B	-	-
HCM 95th %tile Q (veh)	0.7	-	0.2	2.3	-	-

Queues

1: Heart Lake Rd & Mayfield Rd

Future Background Traffic 2041

Weekday PM Peak

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	133	1346	231	33	1574	672	265	229	29	614	176	122
Future Volume (vph)	133	1346	231	33	1574	672	265	229	29	614	176	122
Lane Group Flow (vph)	133	1346	231	33	1574	672	265	229	29	614	176	122
Turn Type	Perm	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm	Perm	NA	Perm
Protected Phases		4		3	8		5	2			6	
Permitted Phases	4		4	8		8	2		2	6		6
Detector Phase	4	4	4	3	8	8	5	2	2	6	6	6
Switch Phase												
Minimum Initial (s)	5.0	5.0	5.0	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	8.0	39.7	39.7	8.0	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	0.0	2.1	2.1	0.0	2.9	2.9	2.9	2.9	2.9
Lost Time Adjust (s)	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 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?	Yes	Yes	Yes	Yes			Yes			Yes	Yes	Yes
Recall Mode	C-Max	C-Max	C-Max	None	C-Max	C-Max	None	Max	Max	Max	Max	Max
v/c Ratio	1.20	0.51	0.25	0.16	0.55	0.63	0.59	0.18	0.05	1.96	0.17	0.24
Control Delay (s/veh)	182.5	23.3	3.0	14.0	20.5	8.3	38.8	31.0	2.2	471.8	37.1	16.2
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 (s/veh)	182.5	23.3	3.0	14.0	20.5	8.3	38.8	31.0	2.2	471.8	37.1	16.2
Queue Length 50th (m)	~44.4	89.8	0.0	3.6	95.4	30.9	51.4	22.2	0.0	~253.0	18.6	8.7
Queue Length 95th (m)	#85.9	103.5	13.3	8.3	108.8	67.3	75.3	32.1	2.5	#323.8	28.3	24.3
Internal Link Dist (m)		810.0			310.8			1249.9			682.4	
Turn Bay Length (m)	115.0		180.0	80.0		70.0	110.0		15.0	30.0		25.0
Base Capacity (vph)	111	2624	917	211	2858	1072	446	1273	576	313	1019	501
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	1.20	0.51	0.25	0.16	0.55	0.63	0.59	0.18	0.05	1.96	0.17	0.24

Intersection Summary

Cycle Length: 135

Actuated Cycle Length: 135

Offset: 26 (19%), Referenced to phase 4:EBTL and 8:WBTL, Start of Green

Natural Cycle: 100

Control Type: Actuated-Coordinated

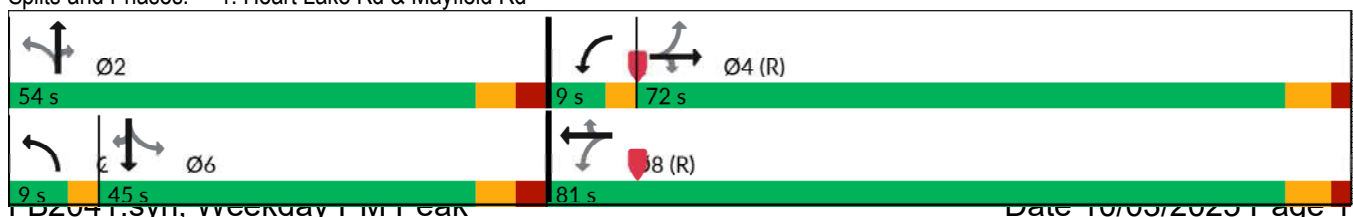
~ Volume exceeds capacity, queue is theoretically infinite.

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: 1: Heart Lake Rd & Mayfield Rd



1: Heart Lake Rd & Mayfield Rd

Date: 10/05/2020 Page: 1

HCM 6th Signalized Intersection Summary
1: Heart Lake Rd & Mayfield Rd

Future Background Traffic 2041
Weekday PM Peak

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		  			  			 			 	
Traffic Volume (veh/h)	133	1346	231	33	1574	672	265	229	29	614	176	122
Future Volume (veh/h)	133	1346	231	33	1574	672	265	229	29	614	176	122
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		0.99
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1900	1870	1900	1900	1885	1870	1885	1900	1856	1856	1885	1900
Adj Flow Rate, veh/h	133	1346	231	33	1574	672	265	229	29	614	176	122
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Percent Heavy Veh, %	0	2	0	0	1	2	1	0	3	3	1	0
Cap, veh/h	114	2563	808	208	2833	872	400	1259	549	367	1011	449
Arrive On Green	0.50	0.50	0.50	0.03	0.55	0.55	0.04	0.35	0.35	0.28	0.28	0.28
Sat Flow, veh/h	172	5106	1609	1810	5147	1584	1795	3610	1572	1113	3582	1590
Grp Volume(v), veh/h	133	1346	231	33	1574	672	265	229	29	614	176	122
Grp Sat Flow(s),veh/h/ln	172	1702	1609	1810	1716	1584	1795	1805	1572	1113	1791	1590
Q Serve(g_s), s	47.6	24.1	11.3	1.1	26.7	44.7	6.0	6.0	1.7	38.1	5.0	8.1
Cycle Q Clear(g_c), s	67.8	24.1	11.3	1.1	26.7	44.7	6.0	6.0	1.7	38.1	5.0	8.1
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	114	2563	808	208	2833	872	400	1259	549	367	1011	449
V/C Ratio(X)	1.17	0.53	0.29	0.16	0.56	0.77	0.66	0.18	0.05	1.67	0.17	0.27
Avail Cap(c_a), veh/h	114	2563	808	241	2833	872	400	1259	549	367	1011	449
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	54.9	22.7	19.6	17.2	19.7	23.7	39.9	30.6	29.2	51.2	36.6	37.7
Incr Delay (d2), s/veh	136.8	0.8	0.9	0.4	0.8	6.5	4.0	0.3	0.2	313.9	0.4	1.5
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	7.6	6.3	2.9	0.3	6.4	11.2	3.4	2.0	0.5	42.1	1.7	2.6
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	191.6	23.5	20.4	17.5	20.5	30.2	43.9	30.9	29.3	365.1	36.9	39.2
LnGrp LOS	F	C	C	B	C	C	D	C	C	F	D	D
Approach Vol, veh/h		1710			2279			523			912	
Approach Delay, s/veh		36.2			23.3			37.4			258.2	
Approach LOS		D			C			D			F	
Timer - Assigned Phs		2	3	4	5	6		8				
Phs Duration (G+Y+Rc), s		54.0	6.5	74.5	9.0	45.0		81.0				
Change Period (Y+Rc), s		6.9	3.0	6.7	3.0	6.9		6.7				
Max Green Setting (Gmax), s		47.1	6.0	65.3	6.0	38.1		74.3				
Max Q Clear Time (g_c+I1), s		8.0	3.1	69.8	8.0	40.1		46.7				
Green Ext Time (p_c), s		4.3	0.0	0.0	0.0	0.0		25.7				
Intersection Summary												
HCM 6th Ctrl Delay, s/veh			68.2									
HCM 6th LOS			E									

Intersection

Intersection Delay, s/veh 188

Intersection LOS F

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		+			+		+	+			+	
Traffic Vol, veh/h	79	381	93	67	497	63	110	257	27	8	373	27
Future Vol, veh/h	79	381	93	67	497	63	110	257	27	8	373	27
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles, %	5	2	1	0	0	2	1	1	0	0	2	0
Mvmt Flow	79	381	93	67	497	63	110	257	27	8	373	27
Number of Lanes	0	1	0	0	1	0	1	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	2
Conflicting Approach Left SB		NB	EB	WB
Conflicting Lanes Left	1	2	1	1
Conflicting Approach Right NB		SB	WB	EB
Conflicting Lanes Right	2	1	1	1
HCM Control Delay, s/veh	20.1	304.1	37.8	97.7
HCM LOS	F	F	E	F

Lane	NBLn1	NBLn2	EBLn1	WBLn1	SBLn1
Vol Left, %	100%	0%	14%	11%	2%
Vol Thru, %	0%	90%	69%	79%	91%
Vol Right, %	0%	10%	17%	10%	7%
Sign Control	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	110	284	553	627	408
LT Vol	110	0	79	67	8
Through Vol	0	257	381	497	373
RT Vol	0	27	93	63	27
Lane Flow Rate	110	284	553	627	408
Geometry Grp	5	5	2	2	4a
Degree of Util (X)	0.311	0.759	1.409	1.589	1.035
Departure Headway (Hd)	12.609	12.009	10.932	10.429	11.918
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes
Cap	287	304	337	357	310
Service Time	10.309	9.709	8.932	8.429	9.918
HCM Lane V/C Ratio	0.383	0.934	1.641	1.756	1.316
HCM Control Delay, s/veh	20.9	44.4	230.1	304.1	97.7
HCM Lane LOS	C	E	F	F	F
HCM 95th-tile Q	1.3	5.8	24.1	31.9	11.5

Intersection												
Int Delay, s/veh	0.5											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔			↔			↔			↔	
Traffic Vol, veh/h	1	0	0	13	0	2	0	391	29	17	528	0
Future Vol, veh/h	1	0	0	13	0	2	0	391	29	17	528	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	100	100	100	100	100	100	100	100	100	100	100	100
Heavy Vehicles, %	0	0	0	0	0	0	0	0	0	0	1	0
Mvmt Flow	1	0	0	13	0	2	0	391	29	17	528	0

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	758	982	264	704	968	210	528	0	0	420	0	0
Stage 1	562	562	-	406	406	-	-	-	-	-	-	-
Stage 2	196	420	-	298	562	-	-	-	-	-	-	-
Critical Hdwy	7.5	6.5	6.9	7.5	6.5	6.9	4.1	-	-	4.1	-	-
Critical Hdwy Stg 1	6.5	5.5	-	6.5	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.5	5.5	-	6.5	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4	3.3	3.5	4	3.3	2.2	-	-	2.2	-	-
Pot Cap-1 Maneuver	300	251	741	328	256	802	1049	-	-	1150	-	-
Stage 1	484	513	-	598	601	-	-	-	-	-	-	-
Stage 2	793	593	-	692	513	-	-	-	-	-	-	-
Platoon blocked, %								-	-	-	-	-
Mov Cap-1 Maneuver	295	246	741	323	251	802	1049	-	-	1150	-	-
Mov Cap-2 Maneuver	295	246	-	323	251	-	-	-	-	-	-	-
Stage 1	484	502	-	598	601	-	-	-	-	-	-	-
Stage 2	791	593	-	677	502	-	-	-	-	-	-	-

Approach	EB			WB			NB			SB		
HCM Ctrl Dly, s/v	17.2			15.7			0			0.4		
HCM LOS	C			C								

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1049	-	-	295	351	1150	-	-
HCM Lane V/C Ratio	-	-	-	0.003	0.043	0.015	-	-
HCM Ctrl Dly (s/v)	0	-	-	17.2	15.7	8.2	0.1	-
HCM Lane LOS	A	-	-	C	C	A	A	-
HCM 95th %tile Q (veh)	0	-	-	0	0.1	0	-	-

HCM 6th TWSC
5: Heart Lake Rd & Abbotside Way Ext

Future Background Traffic 2041
Weekday PM Peak

Intersection						
Int Delay, s/veh	5.7					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	19	272	387	372	513	15
Future Vol, veh/h	19	272	387	372	513	15
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	0	60	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	100	100	100	100	100	100
Heavy Vehicles, %	0	5	4	0	1	0
Mvmt Flow	19	272	387	372	513	15
Major/Minor	Minor2	Major1		Major2		
Conflicting Flow All	1481	264	528	0	-	0
Stage 1	521	-	-	-	-	-
Stage 2	960	-	-	-	-	-
Critical Hdwy	6.8	7	4.18	-	-	-
Critical Hdwy Stg 1	5.8	-	-	-	-	-
Critical Hdwy Stg 2	5.8	-	-	-	-	-
Follow-up Hdwy	3.5	3.35	2.24	-	-	-
Pot Cap-1 Maneuver	118	725	1021	-	-	-
Stage 1	566	-	-	-	-	-
Stage 2	337	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	73	725	1021	-	-	-
Mov Cap-2 Maneuver	73	-	-	-	-	-
Stage 1	351	-	-	-	-	-
Stage 2	337	-	-	-	-	-
Approach	EB	NB		SB		
HCM Ctrl Dly, s/v	16.7	5.4		0		
HCM LOS	C					
Minor Lane/Major Mvmt	NBL	NBT	EBLn1	EBLn2	SBT	SBR
Capacity (veh/h)	1021	-	73	725	-	-
HCM Lane V/C Ratio	0.379	-	0.26	0.375	-	-
HCM Ctrl Dly (s/v)	10.7	-	70.8	12.9	-	-
HCM Lane LOS	B	-	F	B	-	-
HCM 95th %tile Q (veh)	1.8	-	0.9	1.7	-	-

Queues

1: Heart Lake Rd & Mayfield Rd

Future Background Traffic (2041 w STP change)

Weekday AM Peak

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	76	1366	471	103	960	360	143	102	17	446	436	113
Future Volume (vph)	76	1366	471	103	960	360	143	102	17	446	436	113
Lane Group Flow (vph)	76	1366	471	103	960	360	143	102	17	446	436	113
Turn Type	Perm	NA	Perm	pm+pt	NA	pm+ov	pm+pt	NA	Perm	Prot	NA	Perm
Protected Phases		4		3	8	1	5	2		1	6	
Permitted Phases	4		4	8		8	2		2			6
Detector Phase	4	4	4	3	8	1	5	2	2	1	6	6
Switch Phase												
Minimum Initial (s)	5.0	5.0	5.0	5.0	12.0	5.0	5.0	8.0	8.0	5.0	8.0	8.0
Minimum Split (s)	39.7	39.7	39.7	8.0	39.7	11.5	8.0	43.9	43.9	11.5	43.9	43.9
Total Split (s)	57.0	57.0	57.0	9.0	66.0	27.0	9.0	47.0	47.0	27.0	65.0	65.0
Total Split (%)	40.7%	40.7%	40.7%	6.4%	47.1%	19.3%	6.4%	33.6%	33.6%	19.3%	46.4%	46.4%
Yellow Time (s)	4.6	4.6	4.6	3.0	4.6	3.0	3.0	4.0	4.0	3.0	4.0	4.0
All-Red Time (s)	2.1	2.1	2.1	0.0	2.1	3.0	0.0	2.9	2.9	3.0	2.9	2.9
Lost Time Adjust (s)	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 Lost Time (s)	6.7	6.7	6.7	3.0	6.7	6.0	3.0	6.9	6.9	6.0	6.9	6.9
Lead/Lag	Lag	Lag	Lag	Lead		Lead	Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes		Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	C-Max	C-Max	C-Max	None	C-Max	None	None	Max	Max	None	Max	Max
v/c Ratio	0.43	0.75	0.61	0.79	0.46	0.33	0.39	0.10	0.03	0.88	0.29	0.16
Control Delay (s/veh)	43.5	42.4	12.9	63.5	29.8	1.9	26.0	37.1	0.1	78.2	28.0	7.8
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 (s/veh)	43.5	42.4	12.9	63.5	29.8	1.9	26.0	37.1	0.1	78.2	28.0	7.8
Queue Length 50th (m)	15.9	120.8	25.5	16.4	68.8	0.0	20.7	10.9	0.0	63.2	41.8	3.6
Queue Length 95th (m)	32.6	138.6	61.6	#43.0	81.3	11.3	33.2	18.3	0.0	#91.1	54.6	15.5
Internal Link Dist (m)		810.0			310.8			1249.9			682.4	
Turn Bay Length (m)	115.0		180.0	80.0		70.0	110.0		15.0	100.0		25.0
Base Capacity (vph)	176	1829	776	130	2095	1081	371	1015	518	504	1485	696
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	0.43	0.75	0.61	0.79	0.46	0.33	0.39	0.10	0.03	0.88	0.29	0.16

Intersection Summary

Cycle Length: 140

Actuated Cycle Length: 140

Offset: 78 (56%), Referenced to phase 4:EBTL and 8:WBTL, Start of Green

Natural Cycle: 105

Control Type: Actuated-Coordinated

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

Splits and Phases: 1: Heart Lake Rd & Mayfield Rd



HCM 6th Signalized Intersection Summary
1: Heart Lake Rd & Mayfield Rd

Future Background Traffic (2041 w STP change)
Weekday AM Peak

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		  			  			 		 	 	
Traffic Volume (veh/h)	76	1366	471	103	960	360	143	102	17	446	436	113
Future Volume (veh/h)	76	1366	471	103	960	360	143	102	17	446	436	113
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1885	1856	1870	1826	1811	1826	1900	1856	1811	1856	1870	1856
Adj Flow Rate, veh/h	76	1366	471	103	960	360	143	102	17	446	436	113
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Percent Heavy Veh, %	1	3	2	5	6	5	0	3	6	3	2	3
Cap, veh/h	171	1820	569	156	2094	880	383	1026	447	499	1475	653
Arrive On Green	0.36	0.36	0.36	0.04	0.42	0.42	0.04	0.29	0.29	0.15	0.41	0.41
Sat Flow, veh/h	419	5066	1584	1739	4944	1546	1810	3526	1535	3428	3554	1572
Grp Volume(v), veh/h	76	1366	471	103	960	360	143	102	17	446	436	113
Grp Sat Flow(s),veh/h/ln	419	1689	1584	1739	1648	1546	1810	1763	1535	1714	1777	1572
Q Serve(g_s), s	22.2	33.1	38.0	5.1	19.4	18.3	6.0	3.0	1.1	17.9	11.5	6.3
Cycle Q Clear(g_c), s	32.6	33.1	38.0	5.1	19.4	18.3	6.0	3.0	1.1	17.9	11.5	6.3
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	171	1820	569	156	2094	880	383	1026	447	499	1475	653
V/C Ratio(X)	0.45	0.75	0.83	0.66	0.46	0.41	0.37	0.10	0.04	0.89	0.30	0.17
Avail Cap(c_a), veh/h	171	1820	569	156	2094	880	383	1026	447	514	1475	653
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	43.8	39.3	40.9	32.6	28.9	16.9	33.9	36.2	35.6	58.8	27.3	25.8
Incr Delay (d2), s/veh	8.2	2.9	13.0	13.0	0.7	1.4	1.3	0.2	0.2	18.8	0.5	0.6
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.9	9.0	11.2	1.8	4.6	2.9	2.4	0.9	0.3	6.9	2.9	1.5
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	51.9	42.2	53.9	45.6	29.6	18.4	35.2	36.4	35.7	77.6	27.8	26.4
LnGrp LOS	D	D	D	D	C	B	D	D	D	E	C	C
Approach Vol, veh/h		1913			1423			262			995	
Approach Delay, s/veh		45.5			27.9			35.7			49.9	
Approach LOS		D			C			D			D	
Timer - Assigned Phs	1	2	3	4	5	6		8				
Phs Duration (G+Y+Rc), s	26.4	47.6	9.0	57.0	9.0	65.0		66.0				
Change Period (Y+Rc), s	6.0	6.9	3.0	6.7	3.0	6.9		6.7				
Max Green Setting (Gmax), s	21.0	40.1	6.0	50.3	6.0	58.1		59.3				
Max Q Clear Time (g_c+I1), s	19.9	5.0	7.1	40.0	8.0	13.5		21.4				
Green Ext Time (p_c), s	0.5	2.5	0.0	10.1	0.0	14.7		30.3				
Intersection Summary												
HCM 6th Ctrl Delay, s/veh			40.5									
HCM 6th LOS			D									

HCM 6th AWSC
2: Heart Lake Rd & Old School Rd

Future Background Traffic (2041 w STP change)
Weekday AM Peak

Intersection

Intersection Delay, s/veh72.4

Intersection LOS F

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	21	540	104	49	237	58	35	89	41	10	272	15
Future Vol, veh/h	21	540	104	49	237	58	35	89	41	10	272	15
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles, %	5	1	2	4	1	0	0	2	5	0	1	20
Mvmt Flow	21	540	104	49	237	58	35	89	41	10	272	15
Number of Lanes	0	1	0	0	1	0	1	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	2
Conflicting Approach Left SB		NB	EB	WB
Conflicting Lanes Left	1	2	1	1
Conflicting Approach RightNB		SB	WB	EB
Conflicting Lanes Right	2	1	1	1
HCM Control Delay, s/veh134		23.9	14.5	22.7
HCM LOS	F	C	B	C

Lane	NBLn1	NBLn2	EBLn1	WBLn1	SBLn1
Vol Left, %	100%	0%	3%	14%	3%
Vol Thru, %	0%	68%	81%	69%	92%
Vol Right, %	0%	32%	16%	17%	5%
Sign Control	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	35	130	665	344	297
LT Vol	35	0	21	49	10
Through Vol	0	89	540	237	272
RT Vol	0	41	104	58	15
Lane Flow Rate	35	130	665	344	297
Geometry Grp	5	5	2	2	4a
Degree of Util (X)	0.085	0.292	1.212	0.665	0.611
Departure Headway (Hd)	9.413	8.699	6.559	7.407	7.978
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes
Cap	383	416	552	492	454
Service Time	7.113	6.399	4.603	5.407	5.978
HCM Lane V/C Ratio	0.091	0.313	1.205	0.699	0.654
HCM Control Delay, s/veh	13	14.9	134	23.9	22.7
HCM Lane LOS	B	B	F	C	C
HCM 95th-tile Q	0.3	1.2	24.5	4.8	4

Intersection												
Int Delay, s/veh	0.6											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		⬆			⬆			⬆			⬆	
Traffic Vol, veh/h	2	0	0	13	0	2	0	157	29	17	409	0
Future Vol, veh/h	2	0	0	13	0	2	0	157	29	17	409	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	100	100	100	100	100	100	100	100	100	100	100	100
Heavy Vehicles, %	0	0	0	0	0	0	0	3	0	0	1	0
Mvmt Flow	2	0	0	13	0	2	0	157	29	17	409	0
Major/Minor	Minor2		Minor1			Major1			Major2			
Conflicting Flow All	522	629	205	411	615	93	409	0	0	186	0	0
Stage 1	443	443	-	172	172	-	-	-	-	-	-	-
Stage 2	79	186	-	239	443	-	-	-	-	-	-	-
Critical Hdwy	7.5	6.5	6.9	7.5	6.5	6.9	4.1	-	-	4.1	-	-
Critical Hdwy Stg 1	6.5	5.5	-	6.5	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.5	5.5	-	6.5	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4	3.3	3.5	4	3.3	2.2	-	-	2.2	-	-
Pot Cap-1 Maneuver	442	402	808	530	409	952	1161	-	-	1401	-	-
Stage 1	569	579	-	819	760	-	-	-	-	-	-	-
Stage 2	927	750	-	749	579	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	436	396	808	524	402	952	1161	-	-	1401	-	-
Mov Cap-2 Maneuver	436	396	-	524	402	-	-	-	-	-	-	-
Stage 1	569	570	-	819	760	-	-	-	-	-	-	-
Stage 2	925	750	-	737	570	-	-	-	-	-	-	-
Approach	EB		WB			NB			SB			
HCM Ctrl Dly, s/v	13.3		11.6			0			0.4			
HCM LOS	B		B									
Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR				
Capacity (veh/h)	1161	-	-	436	557	1401	-	-				
HCM Lane V/C Ratio	-	-	-	0.005	0.027	0.012	-	-				
HCM Ctrl Dly (s/v)	0	-	-	13.3	11.6	7.6	0.1	-				
HCM Lane LOS	A	-	-	B	B	A	A	-				
HCM 95th %tile Q (veh)	0	-	-	0	0.1	0	-	-				

HCM 6th TWSC
5: Heart Lake Rd & Abbotside Way Ext

Future Background Traffic (2041 w STP change)
Weekday AM Peak

Intersection						
Int Delay, s/veh	6.1					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	14	354	211	143	399	10
Future Vol, veh/h	14	354	211	143	399	10
Conflicting Peds, #/hr	2	0	2	0	0	2
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	0	60	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	100	100	100	100	100	100
Heavy Vehicles, %	7	4	8	1	3	0
Mvmt Flow	14	354	211	143	399	10
Major/Minor	Minor2	Major1		Major2		
Conflicting Flow All	902	207	411	0	-	0
Stage 1	406	-	-	-	-	-
Stage 2	496	-	-	-	-	-
Critical Hdwy	6.94	6.98	4.26	-	-	-
Critical Hdwy Stg 1	5.94	-	-	-	-	-
Critical Hdwy Stg 2	5.94	-	-	-	-	-
Follow-up Hdwy	3.57	3.34	2.28	-	-	-
Pot Cap-1 Maneuver	268	793	1103	-	-	-
Stage 1	627	-	-	-	-	-
Stage 2	563	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	216	792	1101	-	-	-
Mov Cap-2 Maneuver	216	-	-	-	-	-
Stage 1	505	-	-	-	-	-
Stage 2	562	-	-	-	-	-
Approach	EB	NB		SB		
HCM Ctrl Dly, s/v	13.6	5.4		0		
HCM LOS	B					
Minor Lane/Major Mvmt	NBL	NBT	EBLn1	EBLn2	SBT	SBR
Capacity (veh/h)	1101	-	216	792	-	-
HCM Lane V/C Ratio	0.192	-	0.065	0.447	-	-
HCM Ctrl Dly (s/v)	9	-	22.8	13.2	-	-
HCM Lane LOS	A	-	C	B	-	-
HCM 95th %tile Q (veh)	0.7	-	0.2	2.3	-	-

Queues

1: Heart Lake Rd & Mayfield Rd

Future Background Traffic (2041 w STP change)

Weekday PM Peak

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	133	1346	231	33	1574	672	265	229	29	614	176	122
Future Volume (vph)	133	1346	231	33	1574	672	265	229	29	614	176	122
Lane Group Flow (vph)	133	1346	231	33	1574	672	265	229	29	614	176	122
Turn Type	pm+pt	NA	Perm	Perm	NA	pm+ov	pm+pt	NA	Perm	Prot	NA	Perm
Protected Phases	7	4			8	1	5	2		1	6	
Permitted Phases	4		4	8		8	2		2			6
Detector Phase	7	4	4	8	8	1	5	2	2	1	6	6
Switch Phase												
Minimum Initial (s)	3.5	5.0	5.0	12.0	12.0	5.0	5.0	8.0	8.0	5.0	8.0	8.0
Minimum Split (s)	8.0	39.7	39.7	39.7	39.7	11.0	8.0	43.9	43.9	11.0	43.9	43.9
Total Split (s)	9.0	58.0	58.0	49.0	49.0	33.0	9.0	44.0	44.0	33.0	68.0	68.0
Total Split (%)	6.7%	43.0%	43.0%	36.3%	36.3%	24.4%	6.7%	32.6%	32.6%	24.4%	50.4%	50.4%
Yellow Time (s)	3.0	4.6	4.6	4.6	4.6	3.0	3.0	4.0	4.0	3.0	4.0	4.0
All-Red Time (s)	0.0	2.1	2.1	2.1	2.1	3.0	0.0	2.9	2.9	3.0	2.9	2.9
Lost Time Adjust (s)	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 Lost Time (s)	3.0	6.7	6.7	6.7	6.7	6.0	3.0	6.9	6.9	6.0	6.9	6.9
Lead/Lag	Lead			Lag	Lag	Lead	Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes			Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	C-Max	C-Max	C-Max	C-Max	None	None	Max	Max	None	Max	Max
v/c Ratio	0.96	0.69	0.31	0.47	0.97	0.66	0.60	0.23	0.06	0.92	0.11	0.16
Control Delay (s/veh)	96.7	37.4	4.5	62.9	61.5	12.7	33.8	38.5	0.2	73.6	21.5	4.0
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 (s/veh)	96.7	37.4	4.5	62.9	61.5	12.7	33.8	38.5	0.2	73.6	21.5	4.0
Queue Length 50th (m)	22.5	109.5	0.0	7.1	151.4	58.4	36.2	24.9	0.0	83.4	13.9	0.0
Queue Length 95th (m)	#60.1	126.4	16.2	#21.5	#183.6	98.6	53.1	36.0	0.0	#115.7	21.1	10.8
Internal Link Dist (m)		810.0			310.8			1249.9			682.4	
Turn Bay Length (m)	115.0		180.0	80.0		70.0	110.0		15.0	100.0		25.0
Base Capacity (vph)	139	1953	742	70	1627	1028	442	1010	521	672	1635	780
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	0.69	0.31	0.47	0.97	0.65	0.60	0.23	0.06	0.91	0.11	0.16

Intersection Summary

Cycle Length: 135

Actuated Cycle Length: 135

Offset: 26 (19%), Referenced to phase 4:EBTL and 8:WBTL, Start of Green

Natural Cycle: 125

Control Type: Actuated-Coordinated

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

Splits and Phases: 1: Heart Lake Rd & Mayfield Rd



HCM 6th Signalized Intersection Summary 1: Heart Lake Rd & Mayfield Rd

Future Background Traffic (2041 w STP change)
Weekday PM Peak

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		  			  			 		 	 	
Traffic Volume (veh/h)	133	1346	231	33	1574	672	265	229	29	614	176	122
Future Volume (veh/h)	133	1346	231	33	1574	672	265	229	29	614	176	122
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		0.99
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1900	1870	1900	1900	1885	1870	1885	1900	1856	1856	1885	1900
Adj Flow Rate, veh/h	133	1346	231	33	1574	672	265	229	29	614	176	122
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Percent Heavy Veh, %	0	2	0	0	1	2	1	0	3	3	1	0
Cap, veh/h	136	1940	611	105	1613	804	439	1012	441	667	1621	720
Arrive On Green	0.04	0.38	0.38	0.31	0.31	0.31	0.04	0.28	0.28	0.19	0.45	0.45
Sat Flow, veh/h	1810	5106	1609	330	5147	1584	1795	3610	1572	3428	3582	1590
Grp Volume(v), veh/h	133	1346	231	33	1574	672	265	229	29	614	176	122
Grp Sat Flow(s),veh/h/ln	1810	1702	1609	330	1716	1584	1795	1805	1572	1714	1791	1590
Q Serve(g_s), s	6.0	30.0	14.0	12.6	40.8	42.3	6.0	6.6	1.8	23.7	3.8	6.1
Cycle Q Clear(g_c), s	6.0	30.0	14.0	33.6	40.8	42.3	6.0	6.6	1.8	23.7	3.8	6.1
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	136	1940	611	105	1613	804	439	1012	441	667	1621	720
V/C Ratio(X)	0.98	0.69	0.38	0.31	0.98	0.84	0.60	0.23	0.07	0.92	0.11	0.17
Avail Cap(c_a), veh/h	136	1940	611	105	1613	804	439	1012	441	686	1621	720
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	38.9	35.2	30.3	53.2	45.8	28.4	37.9	37.3	35.6	53.4	21.3	21.9
Incr Delay (d2), s/veh	71.2	2.1	1.8	7.6	17.4	10.0	2.3	0.5	0.3	17.6	0.1	0.5
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	4.8	9.3	4.2	1.1	15.5	13.7	5.7	2.3	0.6	9.7	1.1	1.7
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	110.1	37.3	32.1	60.7	63.3	38.4	40.2	37.8	35.9	71.0	21.4	22.4
LnGrp LOS	F	D	C	E	E	D	D	D	D	E	C	C
Approach Vol, veh/h		1710			2279			523			912	
Approach Delay, s/veh		42.3			55.9			38.9			54.9	
Approach LOS		D			E			D			D	
Timer - Assigned Phs	1	2		4	5	6	7	8				
Phs Duration (G+Y+Rc), s	32.2	44.8		58.0	9.0	68.0	9.0	49.0				
Change Period (Y+Rc), s	6.0	6.9		6.7	3.0	6.9	3.0	6.7				
Max Green Setting (Gmax), s	27.0	37.1		51.3	6.0	61.1	6.0	42.3				
Max Q Clear Time (g_c+I1), s	25.7	8.6		32.0	8.0	8.1	8.0	44.3				
Green Ext Time (p_c), s	0.5	3.9		16.7	0.0	4.0	0.0	0.0				
Intersection Summary												
HCM 6th Ctrl Delay, s/veh			49.8									
HCM 6th LOS			D									

HCM 6th AWSC
2: Heart Lake Rd & Old School Rd

Future Background Traffic (2041 w STP change)
Weekday PM Peak

Intersection

Intersection Delay, s/veh 188

Intersection LOS F

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕		↕	↕			↕	
Traffic Vol, veh/h	79	381	93	67	497	63	110	257	27	8	373	27
Future Vol, veh/h	79	381	93	67	497	63	110	257	27	8	373	27
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles, %	5	2	1	0	0	2	1	1	0	0	2	0
Mvmt Flow	79	381	93	67	497	63	110	257	27	8	373	27
Number of Lanes	0	1	0	0	1	0	1	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	2
Conflicting Approach Left SB		NB	EB	WB
Conflicting Lanes Left	1	2	1	1
Conflicting Approach Right NB		SB	WB	EB
Conflicting Lanes Right	2	1	1	1
HCM Control Delay, s/veh	20.1	304.1	37.8	97.7
HCM LOS	F	F	E	F

Lane	NBLn1	NBLn2	EBLn1	WBLn1	SBLn1
Vol Left, %	100%	0%	14%	11%	2%
Vol Thru, %	0%	90%	69%	79%	91%
Vol Right, %	0%	10%	17%	10%	7%
Sign Control	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	110	284	553	627	408
LT Vol	110	0	79	67	8
Through Vol	0	257	381	497	373
RT Vol	0	27	93	63	27
Lane Flow Rate	110	284	553	627	408
Geometry Grp	5	5	2	2	4a
Degree of Util (X)	0.311	0.759	1.409	1.589	1.035
Departure Headway (Hd)	12.609	12.009	10.932	10.429	11.918
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes
Cap	287	304	337	357	310
Service Time	10.309	9.709	8.932	8.429	9.918
HCM Lane V/C Ratio	0.383	0.934	1.641	1.756	1.316
HCM Control Delay, s/veh	20.9	44.4	230.1	304.1	97.7
HCM Lane LOS	C	E	F	F	F
HCM 95th-tile Q	1.3	5.8	24.1	31.9	11.5

Intersection												
Int Delay, s/veh	0.5											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		⬆⬆			⬆⬆			⬆⬆			⬆⬆	
Traffic Vol, veh/h	1	0	0	13	0	2	0	391	29	17	528	0
Future Vol, veh/h	1	0	0	13	0	2	0	391	29	17	528	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	100	100	100	100	100	100	100	100	100	100	100	100
Heavy Vehicles, %	0	0	0	0	0	0	0	0	0	0	1	0
Mvmt Flow	1	0	0	13	0	2	0	391	29	17	528	0
Major/Minor	Minor2		Minor1		Major1			Major2				
Conflicting Flow All	758	982	264	704	968	210	528	0	0	420	0	0
Stage 1	562	562	-	406	406	-	-	-	-	-	-	-
Stage 2	196	420	-	298	562	-	-	-	-	-	-	-
Critical Hdwy	7.5	6.5	6.9	7.5	6.5	6.9	4.1	-	-	4.1	-	-
Critical Hdwy Stg 1	6.5	5.5	-	6.5	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.5	5.5	-	6.5	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4	3.3	3.5	4	3.3	2.2	-	-	2.2	-	-
Pot Cap-1 Maneuver	300	251	741	328	256	802	1049	-	-	1150	-	-
Stage 1	484	513	-	598	601	-	-	-	-	-	-	-
Stage 2	793	593	-	692	513	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	295	246	741	323	251	802	1049	-	-	1150	-	-
Mov Cap-2 Maneuver	295	246	-	323	251	-	-	-	-	-	-	-
Stage 1	484	502	-	598	601	-	-	-	-	-	-	-
Stage 2	791	593	-	677	502	-	-	-	-	-	-	-
Approach	EB		WB		NB			SB				
HCM Ctrl Dly, s/v	17.2		15.7		0			0.4				
HCM LOS	C		C									
Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR				
Capacity (veh/h)	1049	-	-	295	351	1150	-	-				
HCM Lane V/C Ratio	-	-	-	0.003	0.043	0.015	-	-				
HCM Ctrl Dly (s/v)	0	-	-	17.2	15.7	8.2	0.1	-				
HCM Lane LOS	A	-	-	C	C	A	A	-				
HCM 95th %tile Q (veh)	0	-	-	0	0.1	0	-	-				

HCM 6th TWSC
5: Heart Lake Rd & Abbotside Way Ext

Future Background Traffic (2041 w STP change)
Weekday PM Peak

Intersection						
Int Delay, s/veh	5.7					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	19	272	387	372	513	15
Future Vol, veh/h	19	272	387	372	513	15
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	0	60	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	100	100	100	100	100	100
Heavy Vehicles, %	0	5	4	0	1	0
Mvmt Flow	19	272	387	372	513	15
Major/Minor	Minor2	Major1		Major2		
Conflicting Flow All	1481	264	528	0	-	0
Stage 1	521	-	-	-	-	-
Stage 2	960	-	-	-	-	-
Critical Hdwy	6.8	7	4.18	-	-	-
Critical Hdwy Stg 1	5.8	-	-	-	-	-
Critical Hdwy Stg 2	5.8	-	-	-	-	-
Follow-up Hdwy	3.5	3.35	2.24	-	-	-
Pot Cap-1 Maneuver	118	725	1021	-	-	-
Stage 1	566	-	-	-	-	-
Stage 2	337	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	73	725	1021	-	-	-
Mov Cap-2 Maneuver	73	-	-	-	-	-
Stage 1	351	-	-	-	-	-
Stage 2	337	-	-	-	-	-
Approach	EB	NB		SB		
HCM Ctrl Dly, s/v	16.7	5.4		0		
HCM LOS	C					
Minor Lane/Major Mvmt	NBL	NBT	EBLn1	EBLn2	SBT	SBR
Capacity (veh/h)	1021	-	73	725	-	-
HCM Lane V/C Ratio	0.379	-	0.26	0.375	-	-
HCM Ctrl Dly (s/v)	10.7	-	70.8	12.9	-	-
HCM Lane LOS	B	-	F	B	-	-
HCM 95th %tile Q (veh)	1.8	-	0.9	1.7	-	-



2041 Future Total

Queues

Future Total Traffic (2041)

1: Heart Lake Rd & Mayfield Rd

Weekday AM Peak

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	88	1366	471	103	960	409	143	223	17	474	470	113
Future Volume (vph)	88	1366	471	103	960	409	143	223	17	474	470	113
Lane Group Flow (vph)	88	1366	471	103	960	409	143	223	17	474	470	113
Turn Type	Perm	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm	Perm	NA	Perm
Protected Phases		4		3	8		5	2			6	
Permitted Phases	4		4	8		8	2		2	6		6
Detector Phase	4	4	4	3	8	8	5	2	2	6	6	6
Switch Phase												
Minimum Initial (s)	5.0	5.0	5.0	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	8.0	39.7	39.7	8.0	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	0.0	2.1	2.1	0.0	2.9	2.9	2.9	2.9	2.9
Lost Time Adjust (s)	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 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?	Yes	Yes	Yes	Yes			Yes			Yes	Yes	Yes
Recall Mode	C-Max	C-Max	C-Max	None	C-Max	C-Max	None	Max	Max	Max	Max	Max
v/c Ratio	0.33	0.54	0.52	0.52	0.36	0.39	0.51	0.19	0.03	1.53	0.49	0.25
Control Delay (s/veh)	25.3	24.8	12.1	22.0	16.9	2.4	38.9	33.4	0.1	291.2	44.8	16.4
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 (s/veh)	25.3	24.8	12.1	22.0	16.9	2.4	38.9	33.4	0.1	291.2	44.8	16.4
Queue Length 50th (m)	14.2	92.2	36.7	11.8	50.8	0.0	27.3	23.0	0.0	~183.3	57.7	7.7
Queue Length 95th (m)	28.0	106.0	66.4	20.2	60.2	13.8	43.8	33.1	0.0	#250.0	74.7	23.4
Internal Link Dist (m)		810.0			310.8			1249.9			682.4	
Turn Bay Length (m)	115.0		180.0	80.0		70.0	110.0		15.0	30.0		25.0
Base Capacity (vph)	264	2532	903	198	2700	1047	280	1192	541	309	964	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	0.33	0.54	0.52	0.52	0.36	0.39	0.51	0.19	0.03	1.53	0.49	0.25

Intersection Summary

Cycle Length: 140

Actuated Cycle Length: 140

Offset: 78 (56%), Referenced to phase 4:EBTL and 8:WBTL, Start of Green

Natural Cycle: 100

Control Type: Actuated-Coordinated

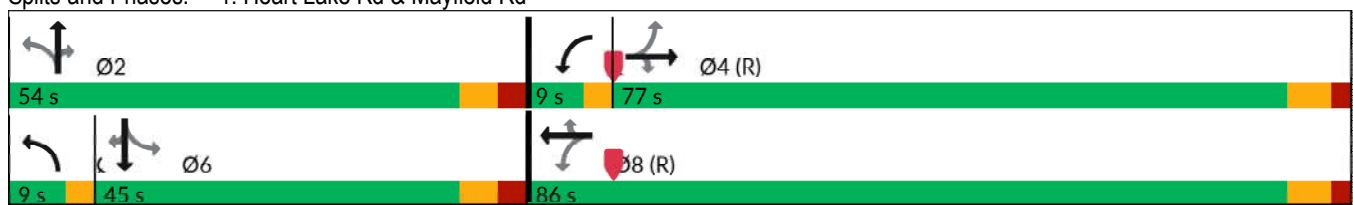
~ Volume exceeds capacity, queue is theoretically infinite.

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: 1: Heart Lake Rd & Mayfield Rd



1:2041 Syn, weekday AM Peak

Date 09/15/2025 Page 1

HCM 6th Signalized Intersection Summary
1: Heart Lake Rd & Mayfield Rd

Future Total Traffic (2041)
Weekday AM Peak

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		  			  			 			 	
Traffic Volume (veh/h)	88	1366	471	103	960	409	143	223	17	474	470	113
Future Volume (veh/h)	88	1366	471	103	960	409	143	223	17	474	470	113
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1841	1870	1826	1752	1841	1900	1856	1811	1885	1856	1781
Adj Flow Rate, veh/h	88	1366	471	103	960	409	143	223	17	474	470	113
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Percent Heavy Veh, %	2	4	2	5	10	4	0	3	6	1	3	8
Cap, veh/h	233	2531	798	202	2709	883	264	1186	516	364	959	411
Arrive On Green	0.50	0.50	0.50	0.04	0.57	0.57	0.04	0.34	0.34	0.27	0.27	0.27
Sat Flow, veh/h	397	5025	1584	1739	4782	1559	1810	3526	1535	1149	3526	1510
Grp Volume(v), veh/h	88	1366	471	103	960	409	143	223	17	474	470	113
Grp Sat Flow(s),veh/h/ln	397	1675	1584	1739	1594	1559	1810	1763	1535	1149	1763	1510
Q Serve(g_s), s	21.6	25.9	29.4	3.9	15.2	21.6	6.0	6.3	1.0	38.1	15.7	8.2
Cycle Q Clear(g_c), s	28.1	25.9	29.4	3.9	15.2	21.6	6.0	6.3	1.0	38.1	15.7	8.2
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	233	2531	798	202	2709	883	264	1186	516	364	959	411
V/C Ratio(X)	0.38	0.54	0.59	0.51	0.35	0.46	0.54	0.19	0.03	1.30	0.49	0.28
Avail Cap(c_a), veh/h	233	2531	798	204	2709	883	264	1186	516	364	959	411
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	26.5	23.7	24.5	19.2	16.5	17.8	39.4	32.9	31.2	53.6	42.8	40.1
Incr Delay (d2), s/veh	4.6	0.8	3.2	4.3	0.4	1.7	4.0	0.4	0.1	154.5	1.8	1.7
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.4	5.2	6.1	0.9	2.3	3.5	2.6	1.8	0.3	24.7	4.9	2.3
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	31.1	24.5	27.7	23.5	16.8	19.6	43.4	33.3	31.3	208.1	44.6	41.7
LnGrp LOS	C	C	C	C	B	B	D	C	C	F	D	D
Approach Vol, veh/h		1925			1472			383			1057	
Approach Delay, s/veh		25.6			18.1			37.0			117.6	
Approach LOS		C			B			D			F	
Timer - Assigned Phs		2	3	4	5	6		8				
Phs Duration (G+Y+Rc), s		54.0	8.8	77.2	9.0	45.0		86.0				
Change Period (Y+Rc), s		6.9	3.0	6.7	3.0	6.9		6.7				
Max Green Setting (Gmax), s		47.1	6.0	70.3	6.0	38.1		79.3				
Max Q Clear Time (g_c+I1), s		8.3	5.9	31.4	8.0	40.1		23.6				
Green Ext Time (p_c), s		6.1	0.0	37.1	0.0	0.0		42.2				
Intersection Summary												
HCM 6th Ctrl Delay, s/veh			44.3									
HCM 6th LOS			D									

Intersection

Intersection Delay, s/veh 75.2

Intersection LOS F

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		+			+		+	+			+	
Traffic Vol, veh/h	21	540	104	58	237	58	35	88	44	10	274	15
Future Vol, veh/h	21	540	104	58	237	58	35	88	44	10	274	15
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles, %	6	1	6	4	1	0	0	4	5	0	2	20
Mvmt Flow	21	540	104	58	237	58	35	88	44	10	274	15
Number of Lanes	0	1	0	0	1	0	1	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	2
Conflicting Approach Left SB		NB	EB	WB
Conflicting Lanes Left	1	2	1	1
Conflicting Approach Right NB		SB	WB	EB
Conflicting Lanes Right	2	1	1	1
HCM Control Delay, s/veh 40.1		25.3	14.8	23.3
HCM LOS	F	D	B	C

Lane	NBLn1	NBLn2	EBLn1	WBLn1	SBLn1
Vol Left, %	100%	0%	3%	16%	3%
Vol Thru, %	0%	67%	81%	67%	92%
Vol Right, %	0%	33%	16%	16%	5%
Sign Control	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	35	132	665	353	299
LT Vol	35	0	21	58	10
Through Vol	0	88	540	237	274
RT Vol	0	44	104	58	15
Lane Flow Rate	35	132	665	353	299
Geometry Grp	5	5	2	2	4a
Degree of Util (X)	0.086	0.299	1.227	0.686	0.619
Departure Headway (Hd)	9.496	8.803	6.641	7.478	8.06
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes
Cap	380	411	545	487	451
Service Time	7.196	6.503	4.685	5.478	6.06
HCM Lane V/C Ratio	0.092	0.321	1.22	0.725	0.663
HCM Control Delay, s/veh	13.1	15.2	140.1	25.3	23.3
HCM Lane LOS	B	C	F	D	C
HCM 95th-tile Q	0.3	1.2	25.1	5.2	4.1

HCM 6th TWSC
4: Heart Lake Rd & 12505 Heart Lake Dwy

Future Total Traffic (2041)
Weekday AM Peak

Intersection						
Int Delay, s/veh	0.5					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	W		T		T	T
Traffic Vol, veh/h	13	2	213	29	17	440
Future Vol, veh/h	13	2	213	29	17	440
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	100	100	100	100	100	100
Heavy Vehicles, %	0	0	3	0	0	3
Mvmt Flow	13	2	213	29	17	440

Major/Minor	Minor1	Major1	Major2		
Conflicting Flow All	482	121	0	0	242
Stage 1	228	-	-	-	-
Stage 2	254	-	-	-	-
Critical Hdwy	6.8	6.9	-	-	4.1
Critical Hdwy Stg 1	5.8	-	-	-	-
Critical Hdwy Stg 2	5.8	-	-	-	-
Follow-up Hdwy	3.5	3.3	-	-	2.2
Pot Cap-1 Maneuver	518	914	-	-	1336
Stage 1	794	-	-	-	-
Stage 2	771	-	-	-	-
Platoon blocked, %			-	-	-
Mov Cap-1 Maneuver	509	914	-	-	1336
Mov Cap-2 Maneuver	509	-	-	-	-
Stage 1	794	-	-	-	-
Stage 2	758	-	-	-	-

Approach	WB	NB	SB
HCM Ctrl Dly, s/v	11.8	0	0.4
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	NBRWBLn1	SBL	SBT
Capacity (veh/h)	-	-	541	1336
HCM Lane V/C Ratio	-	-	0.028	0.013
HCM Ctrl Dly (s/v)	-	-	11.8	7.7
HCM Lane LOS	-	-	B	A
HCM 95th %tile Q (veh)	-	-	0.1	0

HCM 6th TWSC
5: Heart Lake Rd & Abbotside Way Ext

Future Total Traffic (2041)
Weekday AM Peak

Intersection						
Int Delay, s/veh	4.2					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	14	319	98	374	481	9
Future Vol, veh/h	14	319	98	374	481	9
Conflicting Peds, #/hr	2	0	2	0	0	2
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	0	60	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	100	100	100	100	100	100
Heavy Vehicles, %	7	2	6	1	5	0
Mvmt Flow	14	319	98	374	481	9
Major/Minor	Minor2	Major1		Major2		
Conflicting Flow All	873	247	492	0	-	0
Stage 1	488	-	-	-	-	-
Stage 2	385	-	-	-	-	-
Critical Hdwy	6.94	6.94	4.22	-	-	-
Critical Hdwy Stg 1	5.94	-	-	-	-	-
Critical Hdwy Stg 2	5.94	-	-	-	-	-
Follow-up Hdwy	3.57	3.32	2.26	-	-	-
Pot Cap-1 Maneuver	280	753	1040	-	-	-
Stage 1	569	-	-	-	-	-
Stage 2	643	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	253	752	1038	-	-	-
Mov Cap-2 Maneuver	253	-	-	-	-	-
Stage 1	514	-	-	-	-	-
Stage 2	642	-	-	-	-	-
Approach	EB	NB		SB		
HCM Ctrl Dly, s/v	13.6	1.8		0		
HCM LOS	B					
Minor Lane/Major Mvmt	NBL	NBT	EBLn1	EBLn2	SBT	SBR
Capacity (veh/h)	1038	-	253	752	-	-
HCM Lane V/C Ratio	0.094	-	0.055	0.424	-	-
HCM Ctrl Dly (s/v)	8.8	-	20.1	13.3	-	-
HCM Lane LOS	A	-	C	B	-	-
HCM 95th %tile Q (veh)	0.3	-	0.2	2.1	-	-

HCM 6th TWSC
6: Heart Lake Rd & North Dwy

Future Total Traffic (2041)
Weekday AM Peak

Intersection						
Int Delay, s/veh	0.8					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	0	13	45	167	438	2
Future Vol, veh/h	0	13	45	167	438	2
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	100	100	100	100	100	100
Heavy Vehicles, %	0	0	0	4	3	0
Mvmt Flow	0	13	45	167	438	2

Major/Minor	Minor2	Major1		Major2		
Conflicting Flow All	613	220	440	0	-	0
Stage 1	439	-	-	-	-	-
Stage 2	174	-	-	-	-	-
Critical Hdwy	6.8	6.9	4.1	-	-	-
Critical Hdwy Stg 1	5.8	-	-	-	-	-
Critical Hdwy Stg 2	5.8	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	2.2	-	-	-
Pot Cap-1 Maneuver	429	790	1131	-	-	-
Stage 1	623	-	-	-	-	-
Stage 2	845	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	410	790	1131	-	-	-
Mov Cap-2 Maneuver	410	-	-	-	-	-
Stage 1	596	-	-	-	-	-
Stage 2	845	-	-	-	-	-

Approach	EB	NB	SB
HCM Ctrl Dly, s/v	9.6	1.8	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1131	-	790	-	-
HCM Lane V/C Ratio	0.04	-	0.016	-	-
HCM Ctrl Dly (s/v)	8.3	0.1	9.6	-	-
HCM Lane LOS	A	A	A	-	-
HCM 95th %tile Q (veh)	0.1	-	0.1	-	-

Intersection						
Int Delay, s/veh	0.2					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	0	9	9	206	400	0
Future Vol, veh/h	0	9	9	206	400	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	100	100	100	100	100	100
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	0	9	9	206	400	0

Major/Minor	Minor2	Major1		Major2		
Conflicting Flow All	521	200	400	0	-	0
Stage 1	400	-	-	-	-	-
Stage 2	121	-	-	-	-	-
Critical Hdwy	6.8	6.9	4.1	-	-	-
Critical Hdwy Stg 1	5.8	-	-	-	-	-
Critical Hdwy Stg 2	5.8	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	2.2	-	-	-
Pot Cap-1 Maneuver	490	814	1170	-	-	-
Stage 1	652	-	-	-	-	-
Stage 2	897	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	486	814	1170	-	-	-
Mov Cap-2 Maneuver	486	-	-	-	-	-
Stage 1	646	-	-	-	-	-
Stage 2	897	-	-	-	-	-

Approach	EB	NB	SB
HCM Ctrl Dly, s/v	9.5	0.3	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1170	-	814	-	-
HCM Lane V/C Ratio	0.008	-	0.011	-	-
HCM Ctrl Dly (s/v)	8.1	0	9.5	-	-
HCM Lane LOS	A	A	A	-	-
HCM 95th %tile Q (veh)	0	-	0	-	-

HCM 6th TWSC
8: Heart Lake Rd & South Dwy

Future Total Traffic (2041)
Weekday AM Peak

Intersection						
Int Delay, s/veh	0.2					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	W			↑↑	↑↑	
Traffic Vol, veh/h	0	7	9	213	409	0
Future Vol, veh/h	0	7	9	213	409	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	100	100	100	100	100	100
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	0	7	9	213	409	0

Major/Minor	Minor2	Major1		Major2		
Conflicting Flow All	534	205	409	0	-	0
Stage 1	409	-	-	-	-	-
Stage 2	125	-	-	-	-	-
Critical Hdwy	6.8	6.9	4.1	-	-	-
Critical Hdwy Stg 1	5.8	-	-	-	-	-
Critical Hdwy Stg 2	5.8	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	2.2	-	-	-
Pot Cap-1 Maneuver	481	808	1161	-	-	-
Stage 1	645	-	-	-	-	-
Stage 2	893	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	477	808	1161	-	-	-
Mov Cap-2 Maneuver	477	-	-	-	-	-
Stage 1	639	-	-	-	-	-
Stage 2	893	-	-	-	-	-

Approach	EB	NB	SB
HCM Ctrl Dly, s/v	9.5	0.3	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1161	-	808	-	-
HCM Lane V/C Ratio	0.008	-	0.009	-	-
HCM Ctrl Dly (s/v)	8.1	0	9.5	-	-
HCM Lane LOS	A	A	A	-	-
HCM 95th %tile Q (veh)	0	-	0	-	-

Queues

1: Heart Lake Rd & Mayfield Rd

Future Total Traffic (2041)

Weekday PM Peak

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	133	1346	231	33	1574	714	265	268	29	677	283	138
Future Volume (vph)	133	1346	231	33	1574	714	265	268	29	677	283	138
Lane Group Flow (vph)	133	1346	231	33	1574	714	265	268	29	677	283	138
Turn Type	Perm	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm	Perm	NA	Perm
Protected Phases		4		3	8		5	2			6	
Permitted Phases	4		4	8		8	2		2	6		6
Detector Phase	4	4	4	3	8	8	5	2	2	6	6	6
Switch Phase												
Minimum Initial (s)	5.0	5.0	5.0	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	8.0	39.7	39.7	8.0	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	0.0	2.1	2.1	0.0	2.9	2.9	2.9	2.9	2.9
Lost Time Adjust (s)	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 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?	Yes	Yes	Yes	Yes			Yes			Yes	Yes	Yes
Recall Mode	C-Max	C-Max	C-Max	None	C-Max	C-Max	None	Max	Max	Max	Max	Max
v/c Ratio	1.20	0.52	0.25	0.16	0.55	0.68	0.67	0.21	0.05	2.22	0.28	0.28
Control Delay (s/veh)	182.5	23.4	3.0	14.0	20.5	12.1	42.9	31.4	2.2	584.1	38.7	18.5
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 (s/veh)	182.5	23.4	3.0	14.0	20.5	12.1	42.9	31.4	2.2	584.1	38.7	18.5
Queue Length 50th (m)	~44.4	90.1	0.0	3.6	95.4	55.8	51.4	26.3	0.0	~290.2	31.0	12.0
Queue Length 95th (m)	#85.9	103.9	13.3	8.3	108.8	99.1	75.3	37.0	2.5	#362.7	43.2	29.1
Internal Link Dist (m)		810.0			310.8			1249.9			682.4	
Turn Bay Length (m)	115.0		180.0	80.0		70.0	110.0		15.0	30.0		25.0
Base Capacity (vph)	111	2599	917	211	2858	1052	394	1273	576	305	1019	501
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	1.20	0.52	0.25	0.16	0.55	0.68	0.67	0.21	0.05	2.22	0.28	0.28

Intersection Summary

Cycle Length: 135

Actuated Cycle Length: 135

Offset: 26 (19%), Referenced to phase 4:EBTL and 8:WBTL, Start of Green

Natural Cycle: 150

Control Type: Actuated-Coordinated

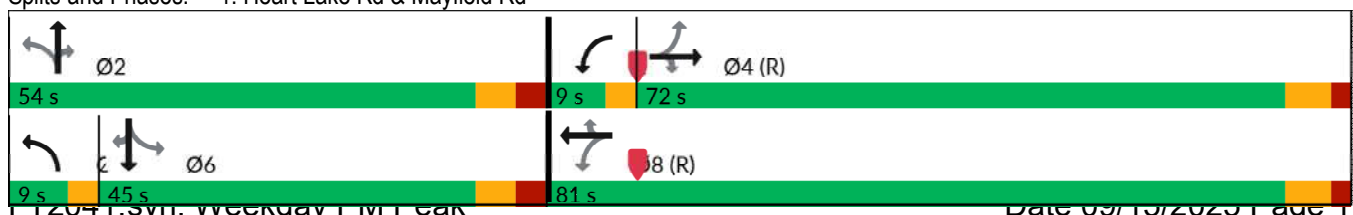
~ Volume exceeds capacity, queue is theoretically infinite.

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: 1: Heart Lake Rd & Mayfield Rd



1:2041 Syn, weekday PM Peak

Date 09/19/2025 Page 1

HCM 6th Signalized Intersection Summary
1: Heart Lake Rd & Mayfield Rd

Future Total Traffic (2041)
Weekday PM Peak

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	133	1346	231	33	1574	714	265	268	29	677	283	138
Future Volume (veh/h)	133	1346	231	33	1574	714	265	268	29	677	283	138
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		0.99
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1900	1856	1900	1900	1885	1885	1885	1900	1856	1870	1885	1900
Adj Flow Rate, veh/h	133	1346	231	33	1574	714	265	268	29	677	283	138
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Percent Heavy Veh, %	0	3	0	0	1	1	1	0	3	2	1	0
Cap, veh/h	111	2542	808	207	2833	879	348	1259	549	359	1011	449
Arrive On Green	0.50	0.50	0.50	0.03	0.55	0.55	0.04	0.35	0.35	0.28	0.28	0.28
Sat Flow, veh/h	165	5066	1609	1810	5147	1597	1795	3610	1572	1082	3582	1590
Grp Volume(v), veh/h	133	1346	231	33	1574	714	265	268	29	677	283	138
Grp Sat Flow(s),veh/h/ln	165	1689	1609	1810	1716	1597	1795	1805	1572	1082	1791	1590
Q Serve(g_s), s	47.6	24.3	11.3	1.1	26.7	49.1	6.0	7.0	1.7	38.1	8.3	9.2
Cycle Q Clear(g_c), s	67.8	24.3	11.3	1.1	26.7	49.1	6.0	7.0	1.7	38.1	8.3	9.2
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	111	2542	808	207	2833	879	348	1259	549	359	1011	449
V/C Ratio(X)	1.19	0.53	0.29	0.16	0.56	0.81	0.76	0.21	0.05	1.89	0.28	0.31
Avail Cap(c_a), veh/h	111	2542	808	240	2833	879	348	1259	549	359	1011	449
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	55.1	22.8	19.6	17.2	19.7	24.7	42.8	30.9	29.2	51.3	37.8	38.1
Incr Delay (d2), s/veh	146.8	0.8	0.9	0.4	0.8	8.1	9.5	0.4	0.2	409.6	0.7	1.8
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	7.7	6.3	2.9	0.3	6.4	12.6	4.3	2.3	0.5	50.6	2.9	3.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	201.9	23.6	20.4	17.6	20.5	32.8	52.3	31.3	29.3	460.9	38.5	39.9
LnGrp LOS	F	C	C	B	C	C	D	C	C	F	D	D
Approach Vol, veh/h		1710			2321			562			1098	
Approach Delay, s/veh		37.0			24.2			41.1			299.1	
Approach LOS		D			C			D			F	
Timer - Assigned Phs		2	3	4	5	6		8				
Phs Duration (G+Y+Rc), s		54.0	6.5	74.5	9.0	45.0		81.0				
Change Period (Y+Rc), s		6.9	3.0	6.7	3.0	6.9		6.7				
Max Green Setting (Gmax), s		47.1	6.0	65.3	6.0	38.1		74.3				
Max Q Clear Time (g_c+I1), s		9.0	3.1	69.8	8.0	40.1		51.1				
Green Ext Time (p_c), s		5.1	0.0	0.0	0.0	0.0		21.9				
Intersection Summary												
HCM 6th Ctrl Delay, s/veh			82.8									
HCM 6th LOS			F									

Intersection

Intersection Delay, s/veh 191

Intersection LOS F

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		+			+		+	+			+	
Traffic Vol, veh/h	79	381	93	70	497	63	110	254	36	8	374	27
Future Vol, veh/h	79	381	93	70	497	63	110	254	36	8	374	27
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles, %	5	3	2	0	0	20	3	1	0	0	3	0
Mvmt Flow	79	381	93	70	497	63	110	254	36	8	374	27
Number of Lanes	0	1	0	0	1	0	1	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	2
Conflicting Approach Left SB		NB	EB	WB
Conflicting Lanes Left	1	2	1	1
Conflicting Approach Right NB		SB	WB	EB
Conflicting Lanes Right	2	1	1	1
HCM Control Delay, s/veh	21.7	309.1	39.1	102.6
HCM LOS	F	F	E	F

Lane	NBLn1	NBLn2	EBLn1	WBLn1	SBLn1
Vol Left, %	100%	0%	14%	11%	2%
Vol Thru, %	0%	88%	69%	79%	91%
Vol Right, %	0%	12%	17%	10%	7%
Sign Control	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	110	290	553	630	409
LT Vol	110	0	79	70	8
Through Vol	0	254	381	497	374
RT Vol	0	36	93	63	27
Lane Flow Rate	110	290	553	630	409
Geometry Grp	5	5	2	2	4a
Degree of Util (X)	0.311	0.771	1.412	1.6	1.051
Departure Headway (Hd)	12.722	12.064	11.043	10.515	11.989
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes
Cap	285	302	332	353	307
Service Time	10.422	9.764	9.043	8.515	9.989
HCM Lane V/C Ratio	0.386	0.96	1.666	1.785	1.332
HCM Control Delay, s/veh	21.1	45.9	231.7	309.1	102.6
HCM Lane LOS	C	E	F	F	F
HCM 95th-tile Q	1.3	6	24	32.1	11.9

HCM 6th TWSC
4: Heart Lake Rd & 12505 Heart Lake Dwy

Future Total Traffic (2041)
Weekday PM Peak

Intersection						
Int Delay, s/veh	0.4					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	W		↑↑			↑↑
Traffic Vol, veh/h	13	2	425	29	17	587
Future Vol, veh/h	13	2	425	29	17	587
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	100	100	100	100	100	100
Heavy Vehicles, %	0	0	0	0	0	2
Mvmt Flow	13	2	425	29	17	587

Major/Minor	Minor1	Major1	Major2		
Conflicting Flow All	768	227	0	0	454
Stage 1	440	-	-	-	-
Stage 2	328	-	-	-	-
Critical Hdwy	6.8	6.9	-	-	4.1
Critical Hdwy Stg 1	5.8	-	-	-	-
Critical Hdwy Stg 2	5.8	-	-	-	-
Follow-up Hdwy	3.5	3.3	-	-	2.2
Pot Cap-1 Maneuver	342	782	-	-	1117
Stage 1	622	-	-	-	-
Stage 2	708	-	-	-	-
Platoon blocked, %			-	-	-
Mov Cap-1 Maneuver	334	782	-	-	1117
Mov Cap-2 Maneuver	334	-	-	-	-
Stage 1	622	-	-	-	-
Stage 2	692	-	-	-	-

Approach	WB	NB	SB
HCM Ctrl Dly, s/v	15.4	0	0.3
HCM LOS	C		

Minor Lane/Major Mvmt	NBT	NBRWBLn1	SBL	SBT
Capacity (veh/h)	-	-	362	1117
HCM Lane V/C Ratio	-	-	0.041	0.015
HCM Ctrl Dly (s/v)	-	-	15.4	8.3
HCM Lane LOS	-	-	C	A
HCM 95th %tile Q (veh)	-	-	0.1	0

HCM 6th TWSC
5: Heart Lake Rd & Abbotside Way Ext

Future Total Traffic (2041)
Weekday PM Peak

Intersection						
Int Delay, s/veh	4.2					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	11	184	337	478	743	14
Future Vol, veh/h	11	184	337	478	743	14
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	0	60	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	100	100	100	100	100	100
Heavy Vehicles, %	0	2	1	0	1	0
Mvmt Flow	11	184	337	478	743	14
Major/Minor	Minor2	Major1		Major2		
Conflicting Flow All	1663	379	757	0	-	0
Stage 1	750	-	-	-	-	-
Stage 2	913	-	-	-	-	-
Critical Hdwy	6.8	6.94	4.12	-	-	-
Critical Hdwy Stg 1	5.8	-	-	-	-	-
Critical Hdwy Stg 2	5.8	-	-	-	-	-
Follow-up Hdwy	3.5	3.32	2.21	-	-	-
Pot Cap-1 Maneuver	90	619	856	-	-	-
Stage 1	433	-	-	-	-	-
Stage 2	356	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	55	619	856	-	-	-
Mov Cap-2 Maneuver	55	-	-	-	-	-
Stage 1	262	-	-	-	-	-
Stage 2	356	-	-	-	-	-
Approach	EB	NB		SB		
HCM Ctrl Dly, s/v	17.4	4.9		0		
HCM LOS	C					
Minor Lane/Major Mvmt	NBL	NBT	EBLn1	EBLn2	SBT	SBR
Capacity (veh/h)	856	-	55	619	-	-
HCM Lane V/C Ratio	0.394	-	0.2	0.297	-	-
HCM Ctrl Dly (s/v)	11.9	-	86.1	13.3	-	-
HCM Lane LOS	B	-	F	B	-	-
HCM 95th %tile Q (veh)	1.9	-	0.7	1.2	-	-

HCM 6th TWSC
6: Heart Lake Rd & North Dwy

Future Total Traffic (2041)
Weekday PM Peak

Intersection						
Int Delay, s/veh	0.6					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	W			↑↑	↑↑	
Traffic Vol, veh/h	1	43	16	403	551	1
Future Vol, veh/h	1	43	16	403	551	1
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	100	100	100	100	100	100
Heavy Vehicles, %	0	0	0	0	2	0
Mvmt Flow	1	43	16	403	551	1

Major/Minor	Minor2	Major1		Major2		
Conflicting Flow All	786	276	552	0	-	0
Stage 1	552	-	-	-	-	-
Stage 2	234	-	-	-	-	-
Critical Hdwy	6.8	6.9	4.1	-	-	-
Critical Hdwy Stg 1	5.8	-	-	-	-	-
Critical Hdwy Stg 2	5.8	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	2.2	-	-	-
Pot Cap-1 Maneuver	333	727	1028	-	-	-
Stage 1	546	-	-	-	-	-
Stage 2	789	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	326	727	1028	-	-	-
Mov Cap-2 Maneuver	326	-	-	-	-	-
Stage 1	535	-	-	-	-	-
Stage 2	789	-	-	-	-	-

Approach	EB	NB	SB
HCM Ctrl Dly, s/v	10.4	0.4	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1028	-	707	-	-
HCM Lane V/C Ratio	0.016	-	0.062	-	-
HCM Ctrl Dly (s/v)	8.6	0.1	10.4	-	-
HCM Lane LOS	A	A	B	-	-
HCM 95th %tile Q (veh)	0	-	0.2	-	-

Intersection						
Int Delay, s/veh	0.3					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	W			↑↑	↑↑	
Traffic Vol, veh/h	0	13	13	413	543	0
Future Vol, veh/h	0	13	13	413	543	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	100	100	100	100	100	100
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	0	13	13	413	543	0

Major/Minor	Minor2	Major1		Major2		
Conflicting Flow All	776	272	543	0	-	0
Stage 1	543	-	-	-	-	-
Stage 2	233	-	-	-	-	-
Critical Hdwy	6.8	6.9	4.1	-	-	-
Critical Hdwy Stg 1	5.8	-	-	-	-	-
Critical Hdwy Stg 2	5.8	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	2.2	-	-	-
Pot Cap-1 Maneuver	338	732	1036	-	-	-
Stage 1	552	-	-	-	-	-
Stage 2	790	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	333	732	1036	-	-	-
Mov Cap-2 Maneuver	333	-	-	-	-	-
Stage 1	543	-	-	-	-	-
Stage 2	790	-	-	-	-	-

Approach	EB	NB	SB
HCM Ctrl Dly, s/v	10	0.4	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1036	-	732	-	-
HCM Lane V/C Ratio	0.013	-	0.018	-	-
HCM Ctrl Dly (s/v)	8.5	0.1	10	-	-
HCM Lane LOS	A	A	B	-	-
HCM 95th %tile Q (veh)	0	-	0.1	-	-

HCM 6th TWSC
8: Heart Lake Rd & South Dwy

Future Total Traffic (2041)
Weekday PM Peak

Intersection						
Int Delay, s/veh	0.3					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	W			↑↑	↑↑	
Traffic Vol, veh/h	0	12	13	425	556	0
Future Vol, veh/h	0	12	13	425	556	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	100	100	100	100	100	100
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	0	12	13	425	556	0

Major/Minor	Minor2	Major1		Major2		
Conflicting Flow All	795	278	556	0	-	0
Stage 1	556	-	-	-	-	-
Stage 2	239	-	-	-	-	-
Critical Hdwy	6.8	6.9	4.1	-	-	-
Critical Hdwy Stg 1	5.8	-	-	-	-	-
Critical Hdwy Stg 2	5.8	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	2.2	-	-	-
Pot Cap-1 Maneuver	329	725	1025	-	-	-
Stage 1	544	-	-	-	-	-
Stage 2	784	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	323	725	1025	-	-	-
Mov Cap-2 Maneuver	323	-	-	-	-	-
Stage 1	535	-	-	-	-	-
Stage 2	784	-	-	-	-	-

Approach	EB	NB	SB
HCM Ctrl Dly, s/v	10	0.4	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1025	-	725	-	-
HCM Lane V/C Ratio	0.013	-	0.017	-	-
HCM Ctrl Dly (s/v)	8.6	0.1	10	-	-
HCM Lane LOS	A	A	B	-	-
HCM 95th %tile Q (veh)	0	-	0.1	-	-

Queues

Future Total Traffic (2041 w STP change)

1: Heart Lake Rd & Mayfield Rd

Weekday AM Peak

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	92	1366	471	103	960	453	143	224	17	492	470	114
Future Volume (vph)	92	1366	471	103	960	453	143	224	17	492	470	114
Lane Group Flow (vph)	92	1366	471	103	960	453	143	224	17	492	470	114
Turn Type	Perm	NA	Perm	pm+pt	NA	pm+ov	pm+pt	NA	Perm	Prot	NA	Perm
Protected Phases		4		3	8	1	5	2		1	6	
Permitted Phases	4		4	8		8	2		2			6
Detector Phase	4	4	4	3	8	1	5	2	2	1	6	6
Switch Phase												
Minimum Initial (s)	5.0	5.0	5.0	3.5	12.0	5.0	5.0	8.0	8.0	5.0	8.0	8.0
Minimum Split (s)	39.7	39.7	39.7	8.0	39.7	11.0	8.0	43.9	43.9	11.0	43.9	43.9
Total Split (s)	57.0	57.0	57.0	9.0	66.0	27.0	9.0	47.0	47.0	27.0	65.0	65.0
Total Split (%)	40.7%	40.7%	40.7%	6.4%	47.1%	19.3%	6.4%	33.6%	33.6%	19.3%	46.4%	46.4%
Yellow Time (s)	4.6	4.6	4.6	3.0	4.6	3.0	3.0	4.0	4.0	3.0	4.0	4.0
All-Red Time (s)	2.1	2.1	2.1	0.0	2.1	3.0	0.0	2.9	2.9	3.0	2.9	2.9
Lost Time Adjust (s)	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 Lost Time (s)	6.7	6.7	6.7	3.0	6.7	6.0	3.0	6.9	6.9	6.0	6.9	6.9
Lead/Lag	Lag	Lag	Lag	Lead		Lead	Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes		Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	C-Max	C-Max	C-Max	None	C-Max	None	None	Max	Max	None	Max	Max
v/c Ratio	0.52	0.75	0.62	0.79	0.46	0.42	0.40	0.22	0.03	1.00	0.32	0.16
Control Delay (s/veh)	48.2	42.4	14.8	63.5	29.8	3.1	26.3	38.8	0.1	100.3	28.3	8.4
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 (s/veh)	48.2	42.4	14.8	63.5	29.8	3.1	26.3	38.8	0.1	100.3	28.3	8.4
Queue Length 50th (m)	20.0	120.8	32.1	16.4	68.8	5.8	20.7	24.9	0.0	~71.5	45.6	4.4
Queue Length 95th (m)	40.0	138.6	69.0	#43.0	81.3	19.3	33.2	35.9	0.0	#107.7	59.1	16.4
Internal Link Dist (m)		810.0			310.8			1249.9			682.4	
Turn Bay Length (m)	115.0		180.0	80.0		70.0	110.0		15.0	100.0		25.0
Base Capacity (vph)	176	1829	761	130	2095	1078	361	1015	518	490	1485	694
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	0.52	0.75	0.62	0.79	0.46	0.42	0.40	0.22	0.03	1.00	0.32	0.16

Intersection Summary

Cycle Length: 140

Actuated Cycle Length: 140

Offset: 78 (56%), Referenced to phase 4:EBTL and 8:WBTL, Start of Green

Natural Cycle: 115

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: 1: Heart Lake Rd & Mayfield Rd



1:2041 Opt SBLZ.syn, weekday AM Peak

Date: 10/05/2025 Page: 1

HCM 6th Signalized Intersection Summary
1: Heart Lake Rd & Mayfield Rd

Future Total Traffic (2041 w STP change)
Weekday AM Peak

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		  			  			 		 	 	
Traffic Volume (veh/h)	92	1366	471	103	960	453	143	224	17	492	470	114
Future Volume (veh/h)	92	1366	471	103	960	453	143	224	17	492	470	114
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1885	1856	1870	1826	1811	1796	1900	1856	1811	1811	1870	1856
Adj Flow Rate, veh/h	92	1366	471	103	960	453	143	224	17	492	470	114
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Percent Heavy Veh, %	1	3	2	5	6	7	0	3	6	6	2	3
Cap, veh/h	161	1820	569	156	2094	873	371	1010	440	502	1475	653
Arrive On Green	0.36	0.36	0.36	0.04	0.42	0.42	0.04	0.29	0.29	0.15	0.41	0.41
Sat Flow, veh/h	383	5066	1584	1739	4944	1521	1810	3526	1535	3346	3554	1572
Grp Volume(v), veh/h	92	1366	471	103	960	453	143	224	17	492	470	114
Grp Sat Flow(s),veh/h/ln	383	1689	1584	1739	1648	1521	1810	1763	1535	1673	1777	1572
Q Serve(g_s), s	31.6	33.1	38.0	5.1	19.4	25.3	6.0	6.8	1.1	20.5	12.5	6.4
Cycle Q Clear(g_c), s	42.1	33.1	38.0	5.1	19.4	25.3	6.0	6.8	1.1	20.5	12.5	6.4
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	161	1820	569	156	2094	873	371	1010	440	502	1475	653
V/C Ratio(X)	0.57	0.75	0.83	0.66	0.46	0.52	0.39	0.22	0.04	0.98	0.32	0.17
Avail Cap(c_a), veh/h	161	1820	569	156	2094	873	371	1010	440	502	1475	653
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	47.1	39.3	40.9	32.6	28.9	18.1	34.4	38.1	36.0	59.3	27.6	25.8
Incr Delay (d2), s/veh	14.0	2.9	13.0	13.0	0.7	2.2	1.4	0.5	0.2	35.1	0.6	0.6
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.6	9.0	11.2	1.8	4.6	4.0	2.4	2.0	0.3	8.7	3.2	1.5
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	61.1	42.2	53.9	45.6	29.6	20.3	35.8	38.6	36.2	94.4	28.2	26.4
LnGrp LOS	E	D	D	D	C	C	D	D	D	F	C	C
Approach Vol, veh/h		1929			1516			384			1076	
Approach Delay, s/veh		46.0			27.9			37.4			58.3	
Approach LOS		D			C			D			E	
Timer - Assigned Phs	1	2	3	4	5	6		8				
Phs Duration (G+Y+Rc), s	27.0	47.0	9.0	57.0	9.0	65.0		66.0				
Change Period (Y+Rc), s	6.0	6.9	3.0	6.7	3.0	6.9		6.7				
Max Green Setting (Gmax), s	21.0	40.1	6.0	50.3	6.0	58.1		59.3				
Max Q Clear Time (g_c+I1), s	22.5	8.8	7.1	44.1	8.0	14.5		27.3				
Green Ext Time (p_c), s	0.0	5.6	0.0	6.2	0.0	15.7		27.1				
Intersection Summary												
HCM 6th Ctrl Delay, s/veh			42.4									
HCM 6th LOS			D									

HCM 6th AWSC
2: Heart Lake Rd & Old School Rd

Future Total Traffic (2041 w STP change)
Weekday AM Peak

Intersection

Intersection Delay, s/veh 74.2

Intersection LOS F

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		+			+		+	+			+	
Traffic Vol, veh/h	21	540	104	58	237	58	35	88	44	10	274	15
Future Vol, veh/h	21	540	104	58	237	58	35	88	44	10	274	15
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles, %	5	1	2	3	1	0	0	2	5	0	1	20
Mvmt Flow	21	540	104	58	237	58	35	88	44	10	274	15
Number of Lanes	0	1	0	0	1	0	1	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	2
Conflicting Approach Left SB		NB	EB	WB
Conflicting Lanes Left	1	2	1	1
Conflicting Approach Right NB		SB	WB	EB
Conflicting Lanes Right	2	1	1	1
HCM Control Delay, s/veh	88.1	25	14.7	23.3
HCM LOS	F	C	B	C

Lane	NBLn1	NBLn2	EBLn1	WBLn1	SBLn1
Vol Left, %	100%	0%	3%	16%	3%
Vol Thru, %	0%	67%	81%	67%	92%
Vol Right, %	0%	33%	16%	16%	5%
Sign Control	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	35	132	665	353	299
LT Vol	35	0	21	58	10
Through Vol	0	88	540	237	274
RT Vol	0	44	104	58	15
Lane Flow Rate	35	132	665	353	299
Geometry Grp	5	5	2	2	4a
Degree of Util (X)	0.086	0.297	1.222	0.683	0.62
Departure Headway (Hd)	9.483	8.755	6.615	7.45	8.041
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes
Cap	380	413	552	487	451
Service Time	7.183	6.455	4.662	5.45	6.041
HCM Lane V/C Ratio	0.092	0.32	1.205	0.725	0.663
HCM Control Delay, s/veh	13.1	15.1	138.1	25	23.3
HCM Lane LOS	B	C	F	C	C
HCM 95th-tile Q	0.3	1.2	24.9	5.1	4.1

HCM 6th TWSC
4: Heart Lake Rd & 12505 Heart Lake Dwy

Future Total Traffic (2041 w STP change)
Weekday AM Peak

Intersection						
Int Delay, s/veh	0.5					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	W		T		T	T
Traffic Vol, veh/h	13	2	213	29	17	440
Future Vol, veh/h	13	2	213	29	17	440
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	100	100	100	100	100	100
Heavy Vehicles, %	0	0	6	0	0	3
Mvmt Flow	13	2	213	29	17	440
Major/Minor	Minor1	Major1	Major2			
Conflicting Flow All	482	121	0	0	242	0
Stage 1	228	-	-	-	-	-
Stage 2	254	-	-	-	-	-
Critical Hdwy	6.8	6.9	-	-	4.1	-
Critical Hdwy Stg 1	5.8	-	-	-	-	-
Critical Hdwy Stg 2	5.8	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	-	-	2.2	-
Pot Cap-1 Maneuver	518	914	-	-	1336	-
Stage 1	794	-	-	-	-	-
Stage 2	771	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	509	914	-	-	1336	-
Mov Cap-2 Maneuver	509	-	-	-	-	-
Stage 1	794	-	-	-	-	-
Stage 2	758	-	-	-	-	-
Approach	WB	NB	SB			
HCM Ctrl Dly, s/v	11.8	0	0.4			
HCM LOS	B					
Minor Lane/Major Mvmt	NBT	NBRWBLn1	SBL	SBT		
Capacity (veh/h)	-	-	541	1336	-	
HCM Lane V/C Ratio	-	-	0.028	0.013	-	
HCM Ctrl Dly (s/v)	-	-	11.8	7.7	0.1	
HCM Lane LOS	-	-	B	A	A	
HCM 95th %tile Q (veh)	-	-	0.1	0	-	

HCM 6th TWSC
5: Heart Lake Rd & Abbotside Way Ext

Future Total Traffic (2041 w STP change)
Weekday AM Peak

Intersection						
Int Delay, s/veh	5.1					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	14	354	211	374	480	10
Future Vol, veh/h	14	354	211	374	480	10
Conflicting Peds, #/hr	2	0	2	0	0	2
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	0	60	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	100	100	100	100	100	100
Heavy Vehicles, %	7	4	8	5	6	0
Mvmt Flow	14	354	211	374	480	10
Major/Minor	Minor2	Major1		Major2		
Conflicting Flow All	1098	247	492	0	-	0
Stage 1	487	-	-	-	-	-
Stage 2	611	-	-	-	-	-
Critical Hdwy	6.94	6.98	4.26	-	-	-
Critical Hdwy Stg 1	5.94	-	-	-	-	-
Critical Hdwy Stg 2	5.94	-	-	-	-	-
Follow-up Hdwy	3.57	3.34	2.28	-	-	-
Pot Cap-1 Maneuver	199	747	1027	-	-	-
Stage 1	569	-	-	-	-	-
Stage 2	491	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	157	746	1025	-	-	-
Mov Cap-2 Maneuver	157	-	-	-	-	-
Stage 1	451	-	-	-	-	-
Stage 2	490	-	-	-	-	-
Approach	EB	NB		SB		
HCM Ctrl Dly, s/v	14.7	3.4		0		
HCM LOS	B					
Minor Lane/Major Mvmt	NBL	NBT	EBLn1	EBLn2	SBT	SBR
Capacity (veh/h)	1025	-	157	746	-	-
HCM Lane V/C Ratio	0.206	-	0.089	0.475	-	-
HCM Ctrl Dly (s/v)	9.4	-	30.2	14.1	-	-
HCM Lane LOS	A	-	D	B	-	-
HCM 95th %tile Q (veh)	0.8	-	0.3	2.6	-	-

HCM 6th TWSC
6: Heart Lake Rd & North Dwy

Future Total Traffic (2041 w STP change)
Weekday AM Peak

Intersection						
Int Delay, s/veh	0.8					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	W			↑↑	↑↑	
Traffic Vol, veh/h	0	13	45	167	438	2
Future Vol, veh/h	0	13	45	167	438	2
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	100	100	100	100	100	100
Heavy Vehicles, %	0	0	0	3	1	0
Mvmt Flow	0	13	45	167	438	2

Major/Minor	Minor2	Major1		Major2		
Conflicting Flow All	613	220	440	0	-	0
Stage 1	439	-	-	-	-	-
Stage 2	174	-	-	-	-	-
Critical Hdwy	6.8	6.9	4.1	-	-	-
Critical Hdwy Stg 1	5.8	-	-	-	-	-
Critical Hdwy Stg 2	5.8	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	2.2	-	-	-
Pot Cap-1 Maneuver	429	790	1131	-	-	-
Stage 1	623	-	-	-	-	-
Stage 2	845	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	410	790	1131	-	-	-
Mov Cap-2 Maneuver	410	-	-	-	-	-
Stage 1	596	-	-	-	-	-
Stage 2	845	-	-	-	-	-

Approach	EB	NB	SB
HCM Ctrl Dly, s/v	9.6	1.8	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1131	-	790	-	-
HCM Lane V/C Ratio	0.04	-	0.016	-	-
HCM Ctrl Dly (s/v)	8.3	0.1	9.6	-	-
HCM Lane LOS	A	A	A	-	-
HCM 95th %tile Q (veh)	0.1	-	0.1	-	-

HCM 6th TWSC
7: Heart Lake Rd & Centre Dwy

Future Total Traffic (2041 w STP change)
Weekday AM Peak

Intersection						
Int Delay, s/veh	0.3					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	0	9	9	206	400	0
Future Vol, veh/h	0	9	9	206	400	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	100	100	100	100	100	100
Heavy Vehicles, %	0	100	100	0	0	0
Mvmt Flow	0	9	9	206	400	0
Major/Minor	Minor2	Major1		Major2		
Conflicting Flow All	521	200	400	0	-	0
Stage 1	400	-	-	-	-	-
Stage 2	121	-	-	-	-	-
Critical Hdwy	6.8	8.9	6.1	-	-	-
Critical Hdwy Stg 1	5.8	-	-	-	-	-
Critical Hdwy Stg 2	5.8	-	-	-	-	-
Follow-up Hdwy	3.5	4.3	3.2	-	-	-
Pot Cap-1 Maneuver	490	574	679	-	-	-
Stage 1	652	-	-	-	-	-
Stage 2	897	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	483	574	679	-	-	-
Mov Cap-2 Maneuver	483	-	-	-	-	-
Stage 1	642	-	-	-	-	-
Stage 2	897	-	-	-	-	-
Approach	EB	NB		SB		
HCM Ctrl Dly, s/v	11.4	0.5		0		
HCM LOS	B					
Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR	
Capacity (veh/h)	679	-	574	-	-	
HCM Lane V/C Ratio	0.013	-	0.016	-	-	
HCM Ctrl Dly (s/v)	10.4	0.1	11.4	-	-	
HCM Lane LOS	B	A	B	-	-	
HCM 95th %tile Q (veh)	0	-	0	-	-	

HCM 6th TWSC
8: Heart Lake Rd & South Dwy

Future Total Traffic (2041 w STP change)
Weekday AM Peak

Intersection						
Int Delay, s/veh	0.3					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	W			W	W	
Traffic Vol, veh/h	0	7	9	213	409	0
Future Vol, veh/h	0	7	9	213	409	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	100	100	100	100	100	100
Heavy Vehicles, %	0	100	100	4	2	0
Mvmt Flow	0	7	9	213	409	0

Major/Minor	Minor2	Major1		Major2		
Conflicting Flow All	534	205	409	0	-	0
Stage 1	409	-	-	-	-	-
Stage 2	125	-	-	-	-	-
Critical Hdwy	6.8	8.9	6.1	-	-	-
Critical Hdwy Stg 1	5.8	-	-	-	-	-
Critical Hdwy Stg 2	5.8	-	-	-	-	-
Follow-up Hdwy	3.5	4.3	3.2	-	-	-
Pot Cap-1 Maneuver	481	569	671	-	-	-
Stage 1	645	-	-	-	-	-
Stage 2	893	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	474	569	671	-	-	-
Mov Cap-2 Maneuver	474	-	-	-	-	-
Stage 1	635	-	-	-	-	-
Stage 2	893	-	-	-	-	-

Approach	EB	NB	SB
HCM Ctrl Dly, s/v	11.4	0.5	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	671	-	569	-	-
HCM Lane V/C Ratio	0.013	-	0.012	-	-
HCM Ctrl Dly (s/v)	10.4	0.1	11.4	-	-
HCM Lane LOS	B	A	B	-	-
HCM 95th %tile Q (veh)	0	-	0	-	-

Queues

Future Total Traffic (2041 w STP change)

1: Heart Lake Rd & Mayfield Rd

Weekday PM Peak

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		  			  			 		 	 	
Traffic Volume (vph)	134	1346	231	33	1574	733	265	269	29	718	284	139
Future Volume (vph)	134	1346	231	33	1574	733	265	269	29	718	284	139
Lane Group Flow (vph)	134	1346	231	33	1574	733	265	269	29	718	284	139
Turn Type	pm+pt	NA	Perm	Perm	NA	pm+ov	pm+pt	NA	Perm	Prot	NA	Perm
Protected Phases	7	4			8	1	5	2		1	6	
Permitted Phases	4		4	8		8	2		2			6
Detector Phase	7	4	4	8	8	1	5	2	2	1	6	6
Switch Phase												
Minimum Initial (s)	3.5	5.0	5.0	12.0	12.0	5.0	5.0	8.0	8.0	5.0	8.0	8.0
Minimum Split (s)	8.0	39.7	39.7	39.7	39.7	11.0	8.0	43.9	43.9	11.0	43.9	43.9
Total Split (s)	9.0	58.0	58.0	49.0	49.0	33.0	9.0	44.0	44.0	33.0	68.0	68.0
Total Split (%)	6.7%	43.0%	43.0%	36.3%	36.3%	24.4%	6.7%	32.6%	32.6%	24.4%	50.4%	50.4%
Yellow Time (s)	3.0	4.6	4.6	4.6	4.6	3.0	3.0	4.0	4.0	3.0	4.0	4.0
All-Red Time (s)	0.0	2.1	2.1	2.1	2.1	3.0	0.0	2.9	2.9	3.0	2.9	2.9
Lost Time Adjust (s)	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 Lost Time (s)	3.0	6.7	6.7	6.7	6.7	6.0	3.0	6.9	6.9	6.0	6.9	6.9
Lead/Lag	Lead			Lag	Lag	Lead	Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes			Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	C-Max	C-Max	C-Max	C-Max	None	None	Max	Max	None	Max	Max
v/c Ratio	0.96	0.69	0.31	0.47	0.97	0.75	0.65	0.27	0.06	1.09	0.18	0.18
Control Delay (s/veh)	98.6	37.4	4.5	62.9	61.5	18.7	36.6	39.3	0.2	111.7	22.3	3.8
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 (s/veh)	98.6	37.4	4.5	62.9	61.5	18.7	36.6	39.3	0.2	111.7	22.3	3.8
Queue Length 50th (m)	22.6	109.5	0.0	7.1	151.4	91.3	36.2	29.6	0.0	~110.7	23.2	0.0
Queue Length 95th (m)	#60.7	126.4	16.2	#21.5	#183.6	144.9	53.1	41.6	0.0	#148.6	32.4	11.5
Internal Link Dist (m)		810.0			310.8			1249.9			682.4	
Turn Bay Length (m)	115.0		180.0	80.0		70.0	110.0		15.0	100.0		25.0
Base Capacity (vph)	139	1953	742	70	1627	978	405	993	518	659	1619	782
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	0.69	0.31	0.47	0.97	0.75	0.65	0.27	0.06	1.09	0.18	0.18

Intersection Summary

Cycle Length: 135

Actuated Cycle Length: 135

Offset: 26 (19%), Referenced to phase 4:EBTL and 8:WBTL, Start of Green

Natural Cycle: 135

Control Type: Actuated-Coordinated

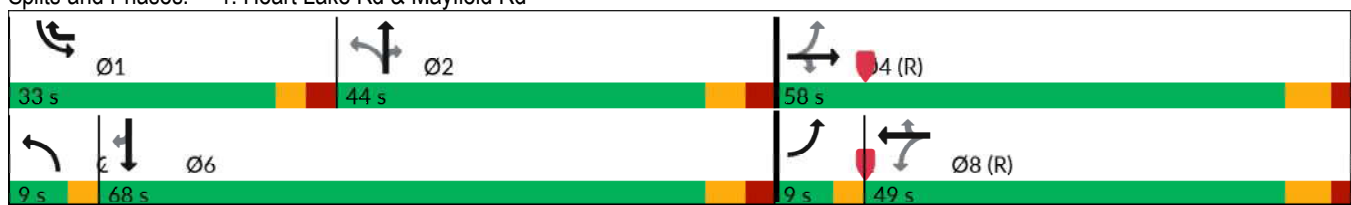
~ Volume exceeds capacity, queue is theoretically infinite.

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: 1: Heart Lake Rd & Mayfield Rd



1:2041 Opt DBL2 Syn, weekday PM Peak

Date 10/05/2025 Page 1

HCM 6th Signalized Intersection Summary
1: Heart Lake Rd & Mayfield Rd

Future Total Traffic (2041 w STP change)
Weekday PM Peak

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		  			  			 		 	 	
Traffic Volume (veh/h)	134	1346	231	33	1574	733	265	269	29	718	284	139
Future Volume (veh/h)	134	1346	231	33	1574	733	265	269	29	718	284	139
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		0.99
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1900	1870	1900	1900	1885	1826	1885	1885	1856	1826	1870	1885
Adj Flow Rate, veh/h	134	1346	231	33	1574	733	265	269	29	718	284	139
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Percent Heavy Veh, %	0	2	0	0	1	5	1	1	3	5	2	1
Cap, veh/h	136	1940	611	105	1613	794	400	984	432	675	1608	714
Arrive On Green	0.04	0.38	0.38	0.31	0.31	0.31	0.04	0.27	0.27	0.20	0.45	0.45
Sat Flow, veh/h	1810	5106	1609	330	5147	1546	1795	3582	1572	3374	3554	1578
Grp Volume(v), veh/h	134	1346	231	33	1574	733	265	269	29	718	284	139
Grp Sat Flow(s),veh/h/ln	1810	1702	1609	330	1716	1546	1795	1791	1572	1687	1777	1578
Q Serve(g_s), s	6.0	30.0	14.0	12.6	40.8	42.3	6.0	7.9	1.8	27.0	6.4	7.1
Cycle Q Clear(g_c), s	6.0	30.0	14.0	33.6	40.8	42.3	6.0	7.9	1.8	27.0	6.4	7.1
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	136	1940	611	105	1613	794	400	984	432	675	1608	714
V/C Ratio(X)	0.99	0.69	0.38	0.31	0.98	0.92	0.66	0.27	0.07	1.06	0.18	0.19
Avail Cap(c_a), veh/h	136	1940	611	105	1613	794	400	984	432	675	1608	714
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	39.1	35.2	30.3	53.2	45.8	30.4	39.1	38.4	36.2	54.0	22.0	22.2
Incr Delay (d2), s/veh	73.8	2.1	1.8	7.6	17.4	18.0	4.0	0.7	0.3	53.0	0.2	0.6
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	4.9	9.3	4.2	1.1	15.5	17.4	6.1	2.8	0.6	14.0	1.9	1.9
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	112.9	37.3	32.1	60.7	63.3	48.4	43.2	39.1	36.5	107.0	22.2	22.8
LnGrp LOS	F	D	C	E	E	D	D	D	D	F	C	C
Approach Vol, veh/h		1711			2340			563			1141	
Approach Delay, s/veh		42.5			58.6			40.9			75.6	
Approach LOS		D			E			D			E	
Timer - Assigned Phs	1	2		4	5	6	7	8				
Phs Duration (G+Y+Rc), s	33.0	44.0		58.0	9.0	68.0	9.0	49.0				
Change Period (Y+Rc), s	6.0	6.9		6.7	3.0	6.9	3.0	6.7				
Max Green Setting (Gmax), s	27.0	37.1		51.3	6.0	61.1	6.0	42.3				
Max Q Clear Time (g_c+I1), s	29.0	9.9		32.0	8.0	9.1	8.0	44.3				
Green Ext Time (p_c), s	0.0	4.5		16.7	0.0	6.4	0.0	0.0				
Intersection Summary												
HCM 6th Ctrl Delay, s/veh			55.4									
HCM 6th LOS			E									

HCM 6th AWSC
2: Heart Lake Rd & Old School Rd

Future Total Traffic (2041 w STP change)
Weekday PM Peak

Intersection

Intersection Delay, s/veh 192

Intersection LOS F

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕		↕	↕			↕	
Traffic Vol, veh/h	79	381	93	70	497	63	110	258	36	8	374	27
Future Vol, veh/h	79	381	93	70	497	63	110	258	36	8	374	27
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles, %	5	2	1	0	0	2	1	1	0	0	2	0
Mvmt Flow	79	381	93	70	497	63	110	258	36	8	374	27
Number of Lanes	0	1	0	0	1	0	1	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	2
Conflicting Approach Left SB		NB	EB	WB
Conflicting Lanes Left	1	2	1	1
Conflicting Approach Right NB		SB	WB	EB
Conflicting Lanes Right	2	1	1	1
HCM Control Delay, s/veh	23.1	311	40.1	103.4
HCM LOS	F	F	E	F

Lane	NBLn1	NBLn2	EBLn1	WBLn1	SBLn1
Vol Left, %	100%	0%	14%	11%	2%
Vol Thru, %	0%	88%	69%	79%	91%
Vol Right, %	0%	12%	17%	10%	7%
Sign Control	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	110	294	553	630	409
LT Vol	110	0	79	70	8
Through Vol	0	258	381	497	374
RT Vol	0	36	93	63	27
Lane Flow Rate	110	294	553	630	409
Geometry Grp	5	5	2	2	4a
Degree of Util (X)	0.31	0.782	1.415	1.604	1.053
Departure Headway (Hd)	12.706	12.085	11.086	10.553	12.038
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes
Cap	285	303	332	353	307
Service Time	10.406	9.785	9.086	8.553	10.038
HCM Lane V/C Ratio	0.386	0.97	1.666	1.785	1.332
HCM Control Delay, s/veh	21	47.3	233.1	311	103.4
HCM Lane LOS	C	E	F	F	F
HCM 95th-tile Q	1.3	6.1	24	32.1	11.9

HCM 6th TWSC
4: Heart Lake Rd & 12505 Heart Lake Dwy

Future Total Traffic (2041 w STP change)
Weekday PM Peak

Intersection						
Int Delay, s/veh	0.4					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	13	2	429	29	17	587
Future Vol, veh/h	13	2	429	29	17	587
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	100	100	100	100	100	100
Heavy Vehicles, %	0	0	3	0	0	3
Mvmt Flow	13	2	429	29	17	587
Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	772	229	0	0	458	0
Stage 1	444	-	-	-	-	-
Stage 2	328	-	-	-	-	-
Critical Hdwy	6.8	6.9	-	-	4.1	-
Critical Hdwy Stg 1	5.8	-	-	-	-	-
Critical Hdwy Stg 2	5.8	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	-	-	2.2	-
Pot Cap-1 Maneuver	340	780	-	-	1114	-
Stage 1	619	-	-	-	-	-
Stage 2	708	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	332	780	-	-	1114	-
Mov Cap-2 Maneuver	332	-	-	-	-	-
Stage 1	619	-	-	-	-	-
Stage 2	692	-	-	-	-	-
Approach	WB		NB		SB	
HCM Ctrl Dly, s/v	15.4		0		0.3	
HCM LOS	C					
Minor Lane/Major Mvmt			NBT	NBRWBLn1	SBL	SBT
Capacity (veh/h)			-	-	360	1114
HCM Lane V/C Ratio			-	-	0.042	0.015
HCM Ctrl Dly (s/v)			-	-	15.4	8.3
HCM Lane LOS			-	-	C	A
HCM 95th %tile Q (veh)			-	-	0.1	0

HCM 6th TWSC
5: Heart Lake Rd & Abbotside Way Ext

Future Total Traffic (2041 w STP change)
Weekday PM Peak

Intersection						
Int Delay, s/veh	6.4					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	19	272	387	474	742	15
Future Vol, veh/h	19	272	387	474	742	15
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	0	60	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	100	100	100	100	100	100
Heavy Vehicles, %	0	5	4	5	4	0
Mvmt Flow	19	272	387	474	742	15
Major/Minor	Minor2	Major1		Major2		
Conflicting Flow All	1761	379	757	0	-	0
Stage 1	750	-	-	-	-	-
Stage 2	1011	-	-	-	-	-
Critical Hdwy	6.8	7	4.18	-	-	-
Critical Hdwy Stg 1	5.8	-	-	-	-	-
Critical Hdwy Stg 2	5.8	-	-	-	-	-
Follow-up Hdwy	3.5	3.35	2.24	-	-	-
Pot Cap-1 Maneuver	77	610	837	-	-	-
Stage 1	433	-	-	-	-	-
Stage 2	317	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	41	610	837	-	-	-
Mov Cap-2 Maneuver	41	-	-	-	-	-
Stage 1	233	-	-	-	-	-
Stage 2	317	-	-	-	-	-
Approach	EB	NB		SB		
HCM Ctrl Dly, s/v	24.6	5.8		0		
HCM LOS	C					
Minor Lane/Major Mvmt	NBL	NBT	EBLn1	EBLn2	SBT	SBR
Capacity (veh/h)	837	-	41	610	-	-
HCM Lane V/C Ratio	0.462	-	0.463	0.446	-	-
HCM Ctrl Dly (s/v)	12.9	-	153.4	15.6	-	-
HCM Lane LOS	B	-	F	C	-	-
HCM 95th %tile Q (veh)	2.5	-	1.6	2.3	-	-

HCM 6th TWSC
6: Heart Lake Rd & North Dwy

Future Total Traffic (2041 w STP change)
Weekday PM Peak

Intersection						
Int Delay, s/veh	0.6					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	Y			↑↑	↑↑	
Traffic Vol, veh/h	1	43	16	407	551	1
Future Vol, veh/h	1	43	16	407	551	1
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	100	100	100	100	100	100
Heavy Vehicles, %	0	0	0	0	1	0
Mvmt Flow	1	43	16	407	551	1

Major/Minor	Minor2	Major1		Major2		
Conflicting Flow All	788	276	552	0	-	0
Stage 1	552	-	-	-	-	-
Stage 2	236	-	-	-	-	-
Critical Hdwy	6.8	6.9	4.1	-	-	-
Critical Hdwy Stg 1	5.8	-	-	-	-	-
Critical Hdwy Stg 2	5.8	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	2.2	-	-	-
Pot Cap-1 Maneuver	332	727	1028	-	-	-
Stage 1	546	-	-	-	-	-
Stage 2	787	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	325	727	1028	-	-	-
Mov Cap-2 Maneuver	325	-	-	-	-	-
Stage 1	535	-	-	-	-	-
Stage 2	787	-	-	-	-	-

Approach	EB	NB	SB
HCM Ctrl Dly, s/v	10.4	0.4	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1028	-	707	-	-
HCM Lane V/C Ratio	0.016	-	0.062	-	-
HCM Ctrl Dly (s/v)	8.6	0.1	10.4	-	-
HCM Lane LOS	A	A	B	-	-
HCM 95th %tile Q (veh)	0	-	0.2	-	-

HCM 6th TWSC
7: Heart Lake Rd & Centre Dwy

Future Total Traffic (2041 w STP change)
Weekday PM Peak

Intersection						
Int Delay, s/veh	0.4					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	W			↑↑	↑↑	
Traffic Vol, veh/h	0	13	13	417	543	0
Future Vol, veh/h	0	13	13	417	543	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	100	100	100	100	100	100
Heavy Vehicles, %	0	100	100	0	0	0
Mvmt Flow	0	13	13	417	543	0
Major/Minor	Minor2	Major1		Major2		
Conflicting Flow All	778	272	543	0	-	0
Stage 1	543	-	-	-	-	-
Stage 2	235	-	-	-	-	-
Critical Hdwy	6.8	8.9	6.1	-	-	-
Critical Hdwy Stg 1	5.8	-	-	-	-	-
Critical Hdwy Stg 2	5.8	-	-	-	-	-
Follow-up Hdwy	3.5	4.3	3.2	-	-	-
Pot Cap-1 Maneuver	337	501	565	-	-	-
Stage 1	552	-	-	-	-	-
Stage 2	788	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	327	501	565	-	-	-
Mov Cap-2 Maneuver	327	-	-	-	-	-
Stage 1	535	-	-	-	-	-
Stage 2	788	-	-	-	-	-
Approach	EB	NB		SB		
HCM Ctrl Dly, s/v	12.4	0.5		0		
HCM LOS	B					
Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR	
Capacity (veh/h)	565	-	501	-	-	
HCM Lane V/C Ratio	0.023	-	0.026	-	-	
HCM Ctrl Dly (s/v)	11.5	0.2	12.4	-	-	
HCM Lane LOS	B	A	B	-	-	
HCM 95th %tile Q (veh)	0.1	-	0.1	-	-	

HCM 6th TWSC
8: Heart Lake Rd & South Dwy

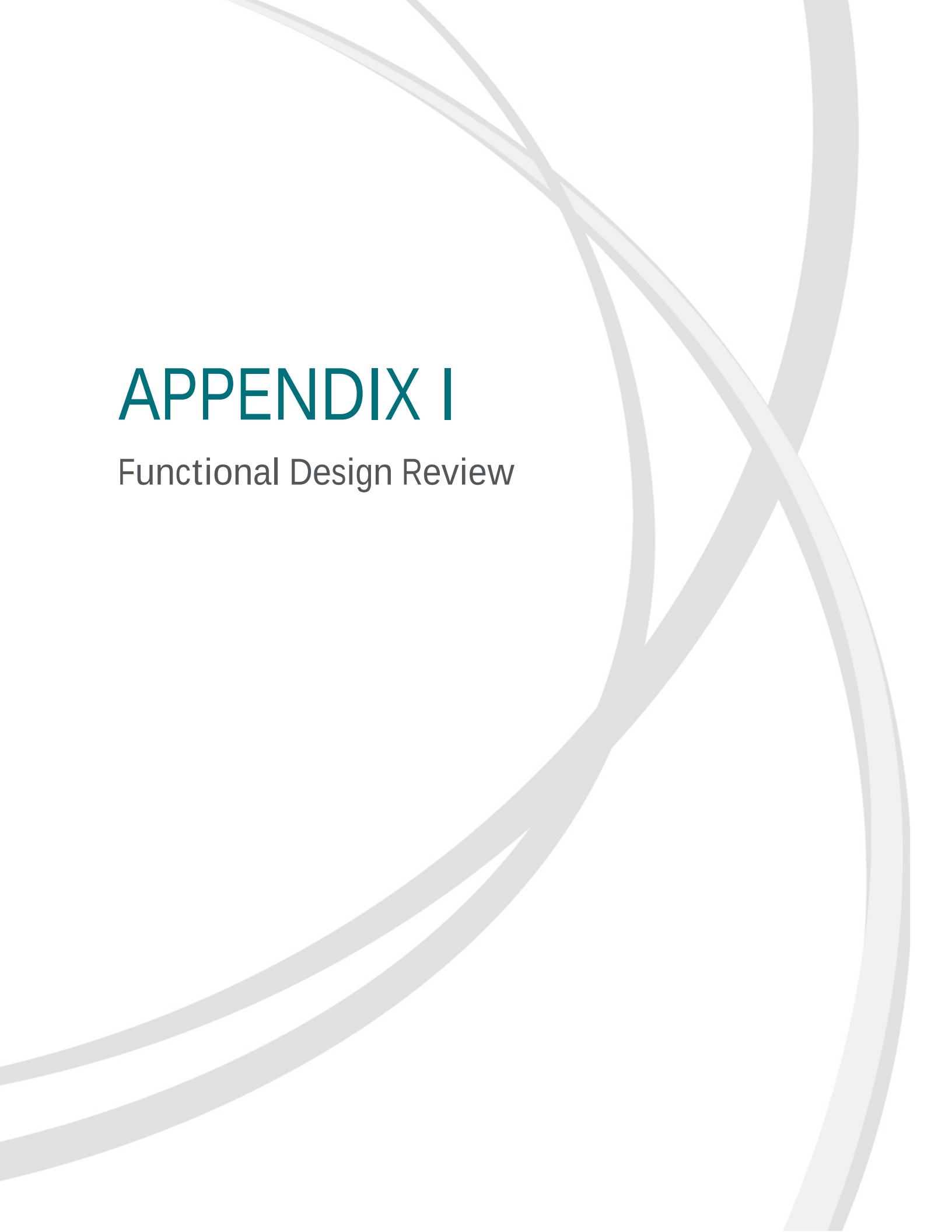
Future Total Traffic (2041 w STP change)
Weekday PM Peak

Intersection						
Int Delay, s/veh	0.4					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	W			↑↑	↑↑	
Traffic Vol, veh/h	0	12	13	429	556	0
Future Vol, veh/h	0	12	13	429	556	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	100	100	100	100	100	100
Heavy Vehicles, %	0	100	100	3	2	0
Mvmt Flow	0	12	13	429	556	0

Major/Minor	Minor2	Major1	Major2			
Conflicting Flow All	797	278	556	0	-	0
Stage 1	556	-	-	-	-	-
Stage 2	241	-	-	-	-	-
Critical Hdwy	6.8	8.9	6.1	-	-	-
Critical Hdwy Stg 1	5.8	-	-	-	-	-
Critical Hdwy Stg 2	5.8	-	-	-	-	-
Follow-up Hdwy	3.5	4.3	3.2	-	-	-
Pot Cap-1 Maneuver	328	495	556	-	-	-
Stage 1	544	-	-	-	-	-
Stage 2	783	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	318	495	556	-	-	-
Mov Cap-2 Maneuver	318	-	-	-	-	-
Stage 1	527	-	-	-	-	-
Stage 2	783	-	-	-	-	-

Approach	EB	NB	SB
HCM Ctrl Dly, s/v	12.5	0.5	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	556	-	495	-	-
HCM Lane V/C Ratio	0.023	-	0.024	-	-
HCM Ctrl Dly (s/v)	11.6	0.2	12.5	-	-
HCM Lane LOS	B	A	B	-	-
HCM 95th %tile Q (veh)	0.1	-	0.1	-	-



APPENDIX I

Functional Design Review