1860-1900 Appleby Line Burlington, ON Transportation Impact Study

Paradigm Transportation Solutions Limited

October 2021
210271

ptsl.com

Project Summary

1860-1900 Appleby Line
Burlington, ON
Transportation Impact Study

Project Number
210271

October 2021

Client
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Burlington ON L7L 0B7

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Executive Summary

Content

ICP Developers Inc. retained Paradigm Transportation Solutions Limited (Paradigm) to conduct this Transportation Impact Study (TIS), for a proposed mixed-use development located at 1860-1900 Appleby Line in the City of Burlington.

This study determines the impacts of the development traffic on the surrounding road network and identifies the recommended improvements to accommodate the site generated traffic.

Development Concept

The subject site is located on the southwest quadrant of the Appleby Line intersection with Ironstone Drive. The site is an existing commercial plaza. The existing land uses on the north side of the site will be replaced with a mixed-use development.

The development concept includes three high-rise residential buildings ranging in height from 16 to 18 storeys. Approximately 560 units are proposed with approximately 3,401 m^2 of ground floor retail/office space. Build-out is expected to occur in three phases with full build-out occurring by Year 2028.

Vehicle access is proposed by two private driveways to Ironstone Drive and a private driveway to Appleby Line. The site's Appleby Line driveway and the existing Ironstone Drive Driveway will be retained. The existing Appleby Line driveway operates as right-in/right-out. The existing Ironstone Drive Driveway is located directly opposite the driveway serving 1940-1960 Appleby Line.

Conclusions

Based on the investigations carried out, it is concluded that:

- **Study Area:** The study area intersections assessed include:
  - Appleby Line and Upper Middle Road (signalized);
  - Appleby Line and Ironstone Drive (signalized);
  - Appleby Line and Corporate Drive (signalized);
  - Ironstone Drive and Heron Way (unsignalized); and
  - The existing and proposed site driveways.

- **Existing Traffic Operations:** Capacity issues are identified at the following intersections:
  - Appleby Line and Upper Middle Road;
  - Appleby Line and Ironstone Drive; and
  - Appleby Line and Corporate Drive.
- **Estimated Site Generated Traffic:** Under full build-out, the subject site is estimated to generate approximately 231 AM peak hour trips and 266 PM peak hour trips.

  The replacement of the existing commercial buildings is forecast to increase traffic volumes by approximately 68 AM trips and 89 PM peak hour trips.
- **Background Traffic Operations:** The capacity constraints identified under existing conditions are expected to continue to occur with the forecast increases in non-site generated traffic. Capacity issues are identified at the following intersections:
  - Appleby Line and Upper Middle Road;
  - Appleby Line and Ironstone Drive;
  - Appleby Line and Corporate Drive;
  - Ironside Drive and Heron Way; and
  - Ironside Drive and Driveway A.
- **Total Traffic Operations:** Site generated traffic is not expected to result in new capacity deficiencies at the study area intersections.
- **Remedial Measures:** The following remedial measures have been identified to address forecast traffic volumes:
  - Appleby Line and Upper Middle Road
    - Planned widening of Appleby line to 6 Lanes;
    - Optimizing signal timings.
  - Appleby Line and Ironstone Drive
    - Planned widening of Appleby line to 6 Lanes;
    - Optimizing signal timings.
  - Appleby Line and Corporate Drive
    - Planned widening of Appleby line to 6 Lanes;
    - Optimizing signal timings;
    - Eastbound left-turn lane with 35 m of storage.

        - Westbound left-turn lane with 35 m of storage
    - Ironside Drive and Heron Way
        - No changes to the existing form of traffic control or lane geometry are recommended.
    - Ironside Drive and Driveway A
        - No changes to the existing form of traffic control or lane geometry are recommended.
    - Ironside Drive and Driveway C
        - No changes to the existing form of traffic control or lane geometry are recommended.
- **Driveway B Connection:** The existing Driveway B connection to Appleby Line be retaining to provide sufficient capacity to the existing and proposed developments along the west side of Appleby Line.

Recommendations

Based on the findings of this study, it is recommended that:

- The Halton Region monitor the signal timings along the Appleby Line corridor to ensure future signal timings reflect real world changes in traffic volumes;
- The Halton Region continue to plan for the widening of Appleby Line from four to six lanes.
- In addition to the planned widening of Appleby Line the following remedial measures be considered:
    - Eastbound left-turn lane on the Corporate Drive approach to Appleby Line with 35 metres of storage.
    - Westbound left-turn lane on the Corporate Drive approach to Appleby Line with 35 metres of storage.

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1 Introduction

1.1 Overview

ICP Developers Inc. retained Paradigm Transportation Solutions Limited (Paradigm) to conduct this Transportation Impact Study (TIS), for a proposed mixed-use development located at 1860-1900 Appleby Line in the City of Burlington. **Figure 1.1** illustrates the site location.

The scope of the study includes:

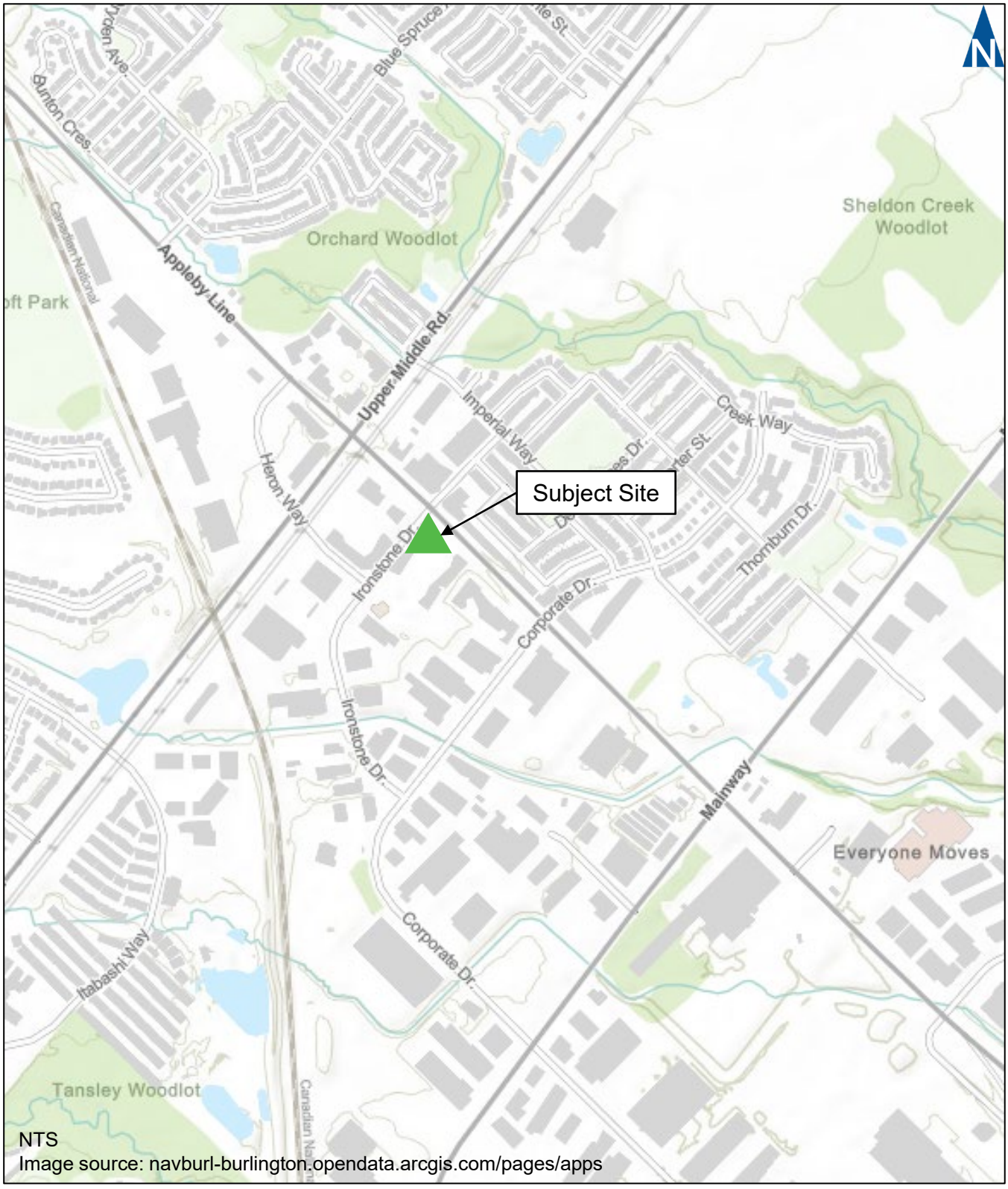
- Determine and assess the current study area traffic conditions;
- Forecast the additional traffic generated by the proposed development;
- Analyze the impacts of the additional traffic on the study area road network; and
- Recommend necessary remedial measures to mitigate any identified impacts.

Appendix A contains the pre-study consultation material and responses from the Halton Region and the City of Burlington. The study has been conducted in general accordance with the Halton Region Transportation Impact Study Guidelines[1].

The study area intersections assessed include:

- Appleby Line and Upper Middle Road (signalized);
- Appleby Line and Ironstone Drive (signalized);
- Appleby Line and Corporate Drive (signalized);
- Ironstone Drive and Heron Way (unsignalized);
- Ironstone Drive and existing Site Driveway (Driveway A) (unsignalized);
- Appleby Line and existing Site Driveway (Driveway B) (unsignalized); and
- The proposed site driveway to Ironstone Drive (Driveway C) (unsignalized).

[1] Transportation Impact Study Guidelines, Halton Region, January 2015



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Image source: navburl-burlington.opendata.arcgis.com/pages/apps

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Site Location

1860-1900 Appleby Line
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Figure 1.1

2 Existing Conditions

2.1 Neighbourhood Context

2.1.1 Existing Land Uses

The subject site is an existing commercial plaza. Buildings are positioned along the site's north and south property lines. At-grade parking is provided between the existing buildings. The existing commercial plaza has approximately 4,975 m^2 of typical retail/commercial land uses.

The proposed redevelopment will replace the existing buildings on the site's north side with three mixed use buildings. The two existing buildings on the site's south side will be retained. The south side buildings will remain compliant from a zoning perspective.

2.1.2 Surrounding Land Uses

The site is located with in the City of Burlington's Uptown Mixed Use Centre Zone. The city intends to develop the area as an "intensification area.[2]" Intensification Areas are intended to foster a more pedestrian and transit friendly urban environment through a mixture of dense residential, employment, and retail land uses. This type of area is also conducive to supporting Transportation Demand Management (TDM). As part of this vision, the City is updating their Zoning By-Law to contain provisions for lower parking standards for intensification areas. The new Zoning By-Law with respect to residential uses is under appeal.

The subject site is surrounded by commercial, residential and employment land uses.

Figure 2.1 illustrates the site's context.

[2] Burlington City-Wide Parking Standards Review, July 2017

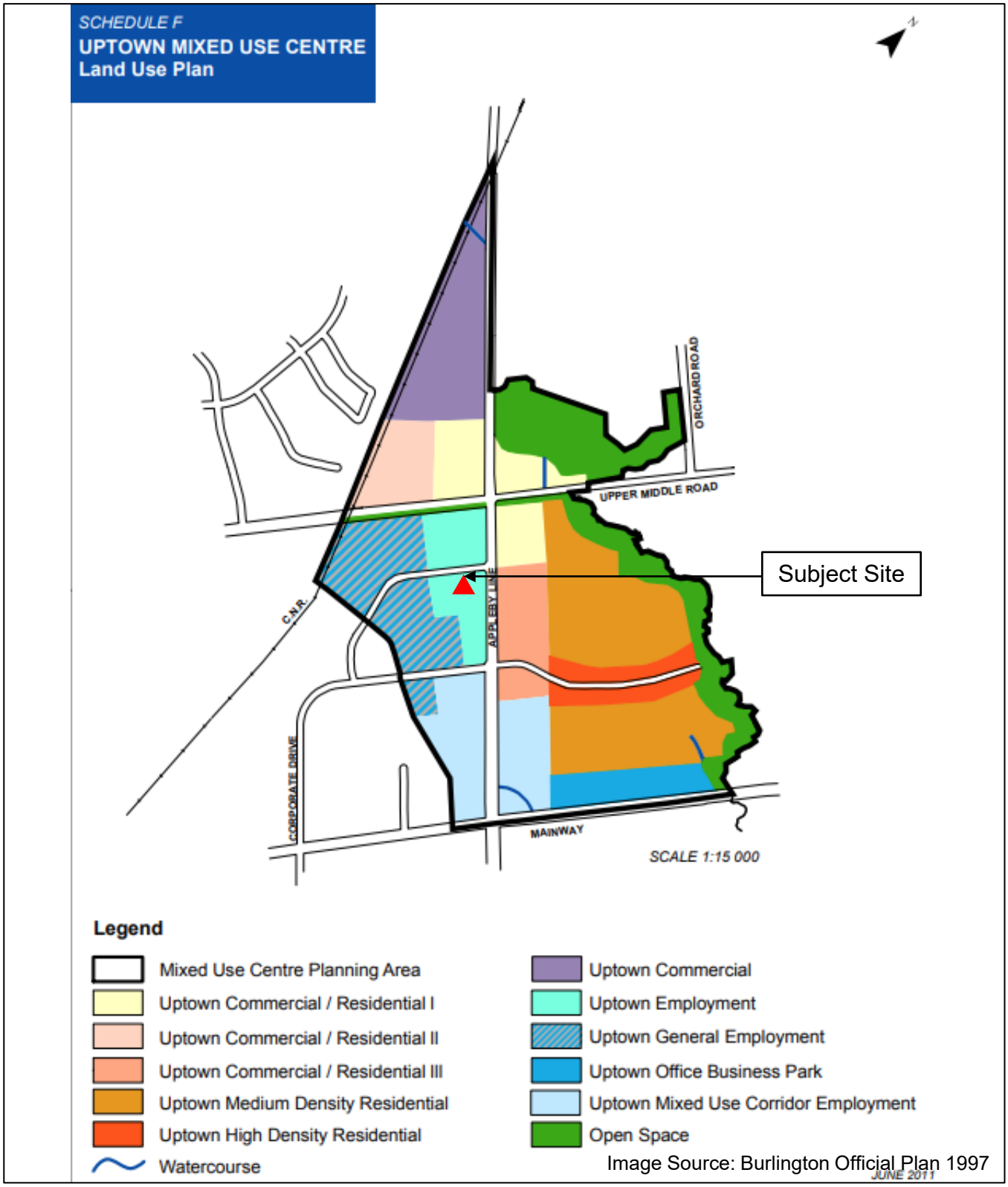


Image Source: Burlington Official Plan 1997

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Site Context

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Figure 2.1

2.2 Pedestrian Network

Sidewalks are provided on both sides of most roadways in the study area.

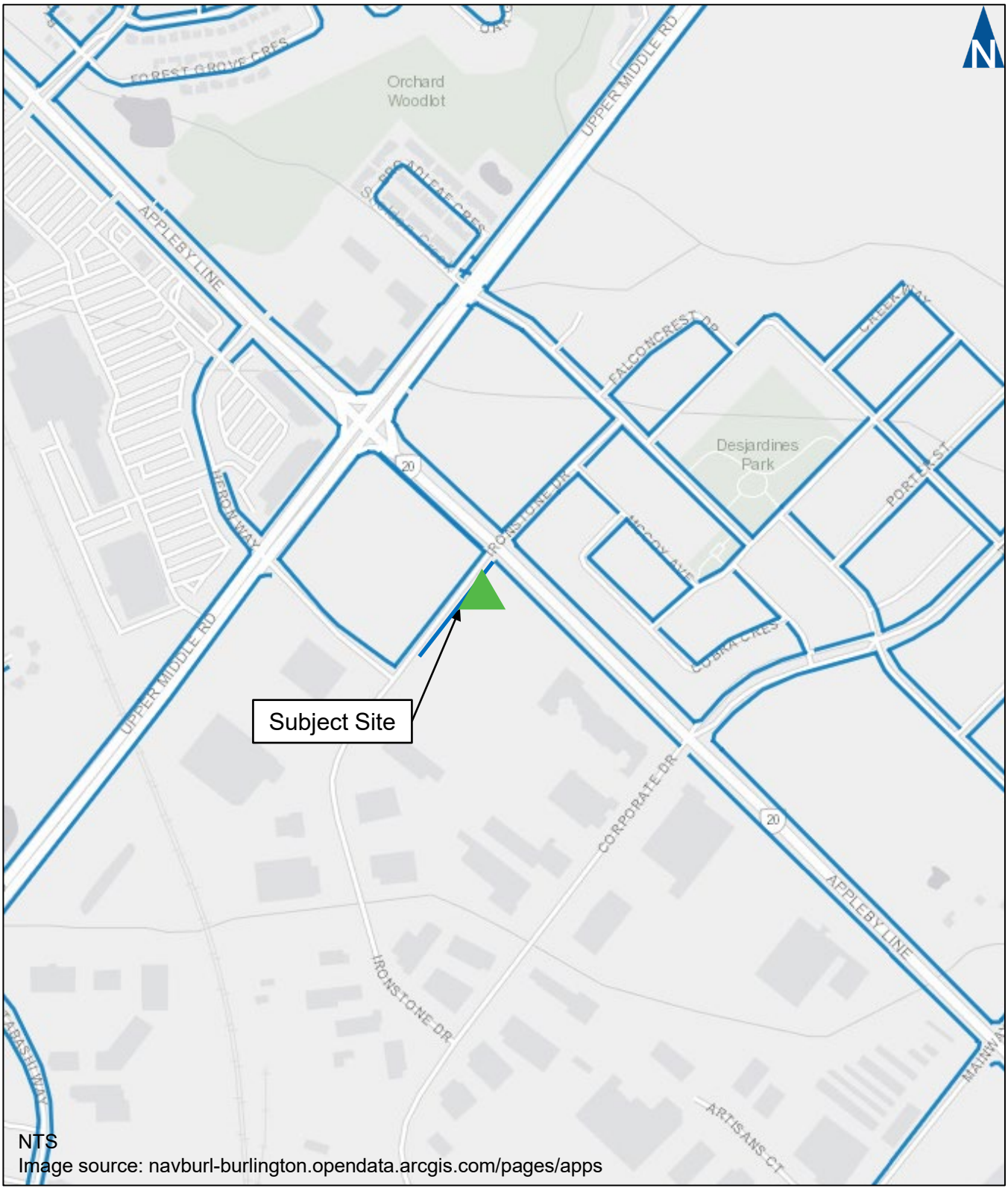
All signalized intersections in the study area provide crosswalks with pedestrian pushbuttons. The Upper Middle Road intersection with Appleby Line has pedestrian crossovers (PXO) on all channelized right-turn movements. A PXO is a type of road crossing where drivers and cyclists must stop for a pedestrian wanting to cross the road.

Figure 2.2 illustrates the existing sidewalks within the study area.

Walk Score[3] is an online tool that assigns a numerical walkability, transit, and cycling score between 0 and 100. Walk Score ranks communities nationwide based on the number of businesses, parks, theatres, schools, and other common destinations within walking distance of any given address.

1900 Appleby Line is noted to have a walk score of 67 and is considered a “Somewhat Walkable”, which means some errands can be accomplished on foot due to the availability of businesses and amenities in proximity to the subject site.

[3] www.walkscore.com/score/1900-appleby-line-burlington-on-canada



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Image source: navburl-burlington.opendata.arcgis.com/pages/apps

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Pedestrian Network

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Figure 2.2

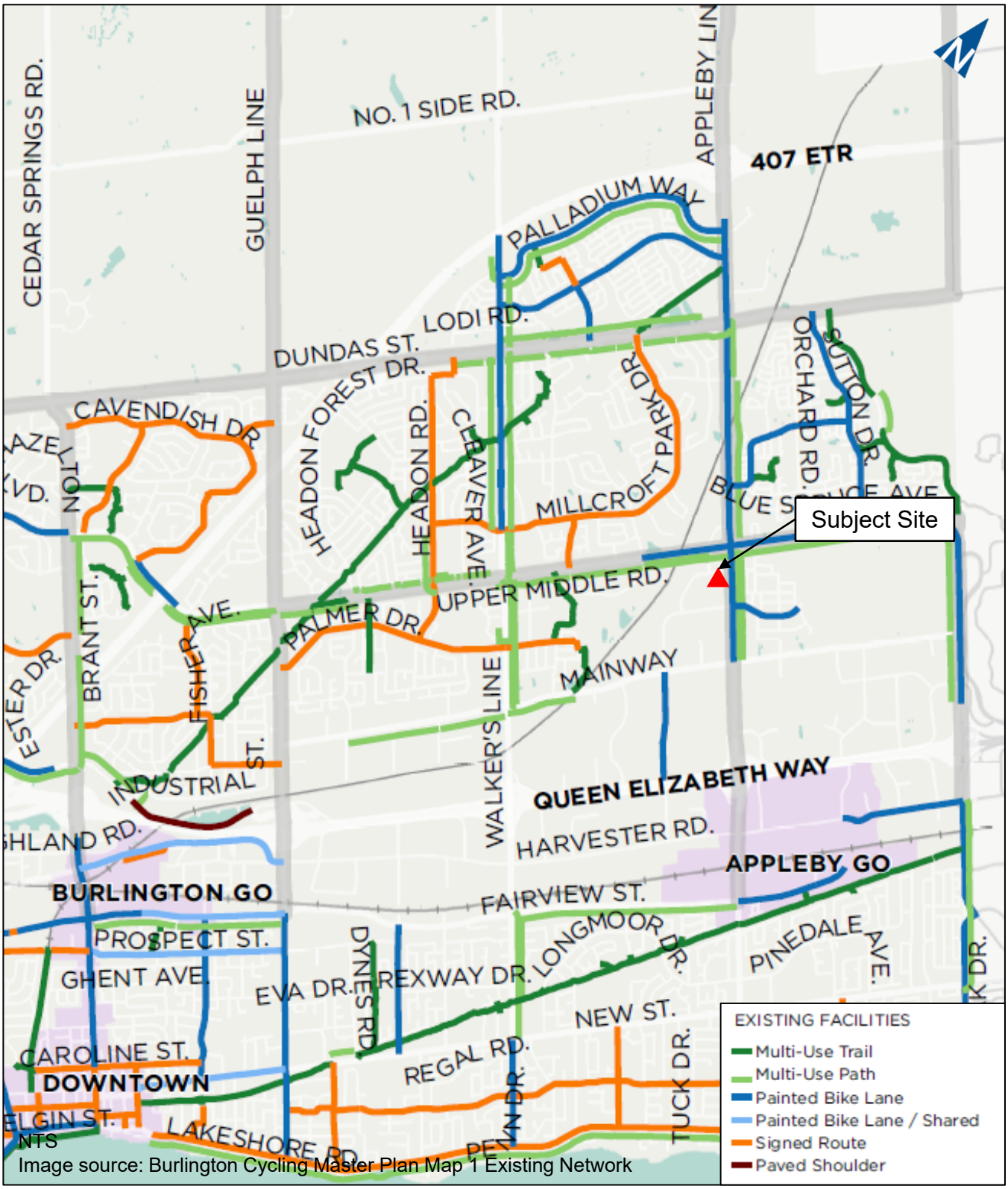
2.3 Cycling

The City of Burlington's bicycle network provides a variety of cycling facilities within the immediate area. **Figure 2.3** illustrates the existing cycling network. The following cycling infrastructure is noted:

- Appleby Line:
  - Painted on-street bicycle lanes are provided in both directions.
  - Multi-use bidirectional paths are provided in both sides of the roadway.
- Upper Middle Road:
  - Painted on-street bicycle lanes are provided in both directions.
  - Multi-use bidirectional path is provided in the south side of the roadway.
- Corporate Drive: Painted on-street bicycle lanes are provided in both directions east of Appleby Line.

In addition to the area being "Somewhat Walkable", the subject site registers a bike score of 81[4] and is considered "Very Bikeable" which means cycling as a form of transportation is classified as convenient for most trips.

[4] ibid



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Image source: Burlington Cycling Master Plan Map 1 Existing Network

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Existing Cycling Network

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Figure 2.3

2.4 Transit Service

Transit service in the area is provided by Burlington Transit. Two transit routes are in operation within the immediate area. These routes provide connective to the larger City-Wide transit network. Transit services is centralized around the three GO Transit stations in the city. The following routes operate along the adjacent roadways:

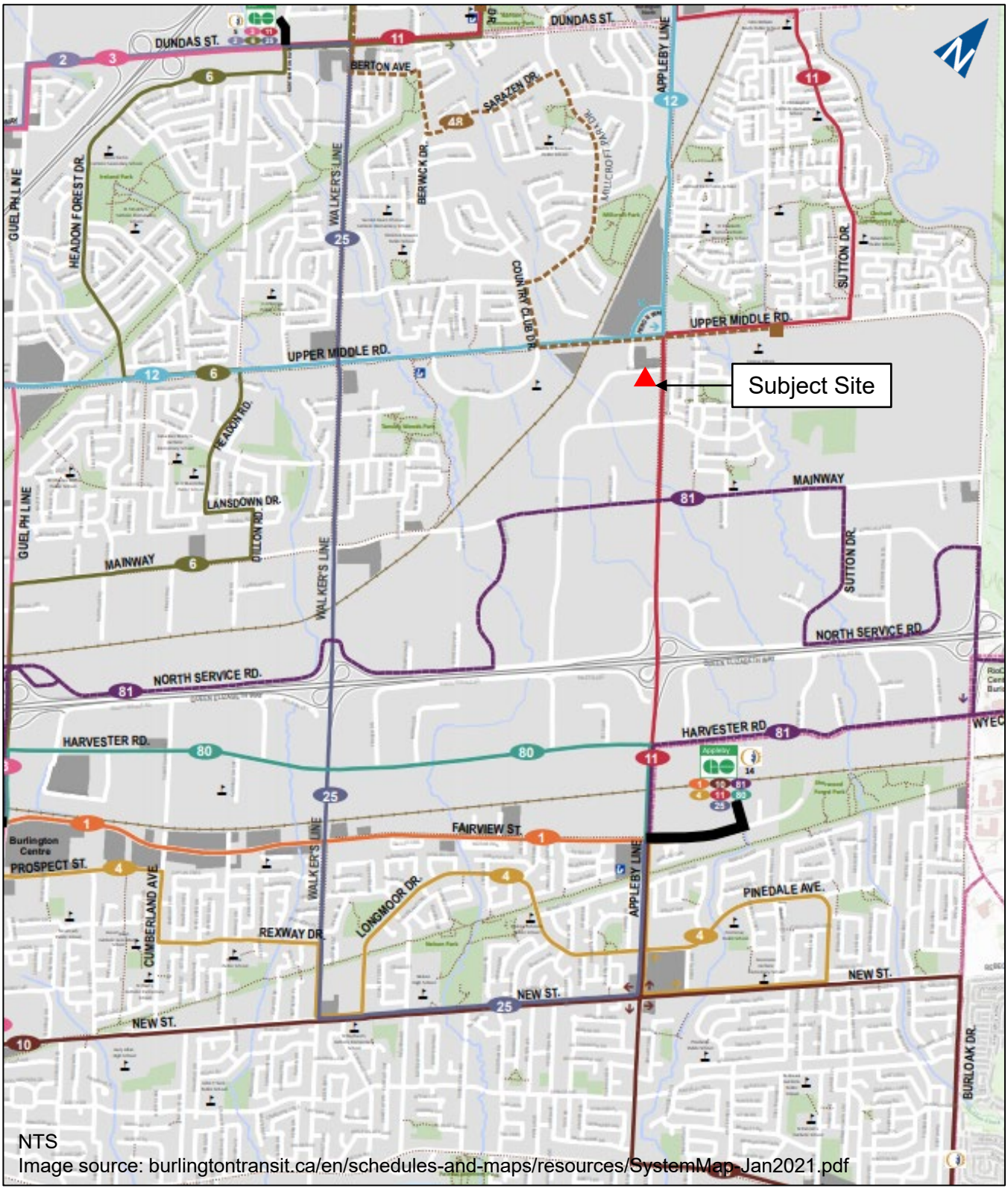
- **Route 11 (Sutton – Alton)** operates along Appleby Line and Upper Middle Road 7 days a week. Service is provided between the Appleby GO Station and the GO 407 Carpool Lot. Service headways are approximately 30 minutes.
- **Route 12 (Upper Middle)** operates along Upper Middle Road and Appleby Line 7 days a week. Service is provided between the Appleby GO Station and the GO 407 Carpool Lot. Weekday service headways are approximately 30 minutes. Weekend service headways are approximately 60 minutes.

Figure 2.4 illustrates the existing transit network. **Figure 2.5** illustrates the existing transit stops within 500 m of the subject site.

The closest southbound transit stop is located immediately adjacent to the site along its Appleby Line frontage. The walk time to the stop is less than two minutes. The closest northbound transit stop is located on the east side of Appleby Line just north of the Corporate Drive intersection. The walk time to the stop is about 3-4 minutes.

In addition to being a somewhat walkable and very bikeable area, the subject site has a Transit Score of 34[5] "Some Transit" which means there are few nearby public transportation options.

[5] Ibid.

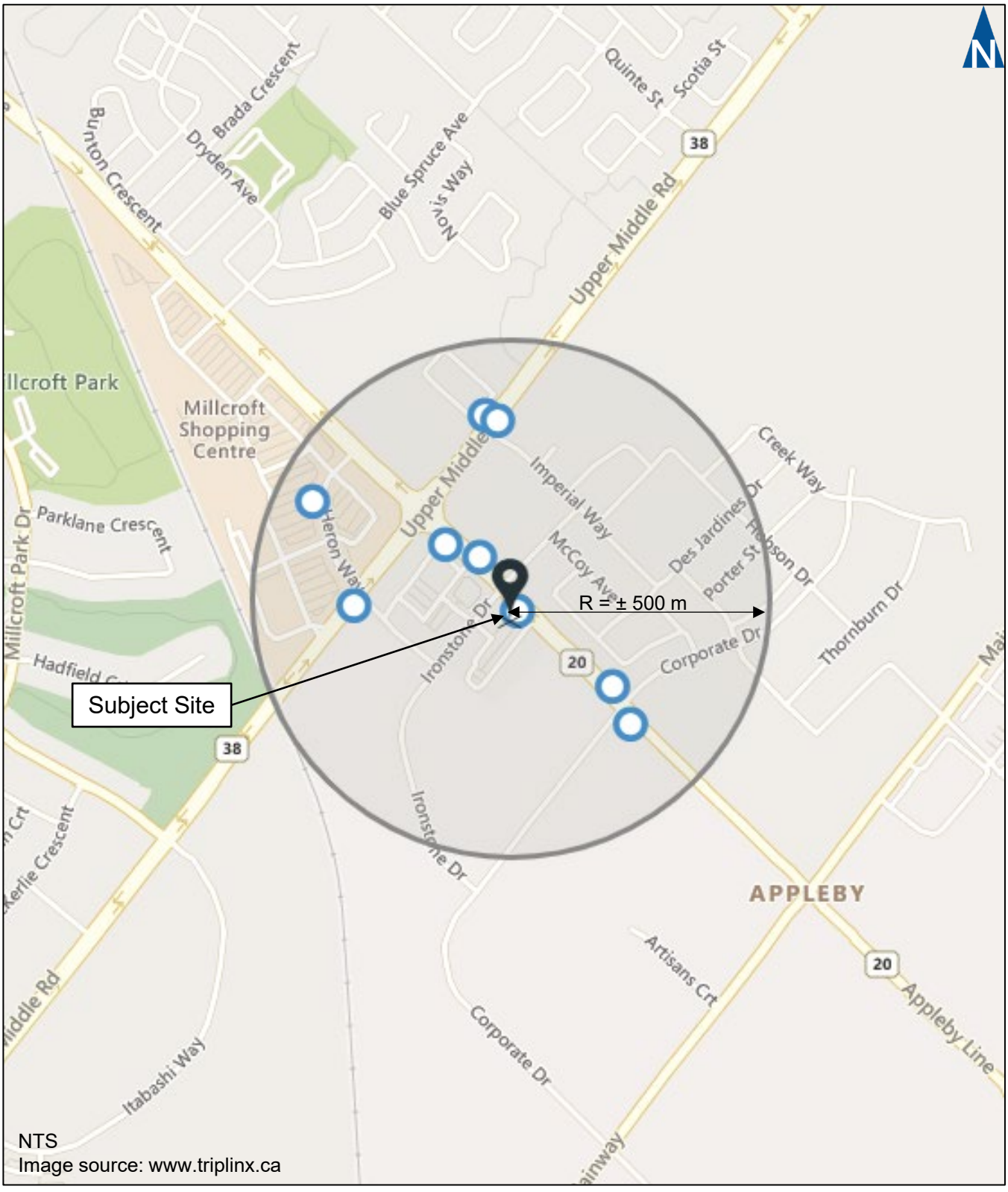


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Existing Transit Network

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Figure 2.4



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Existing Transit Stops

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Figure 2.5

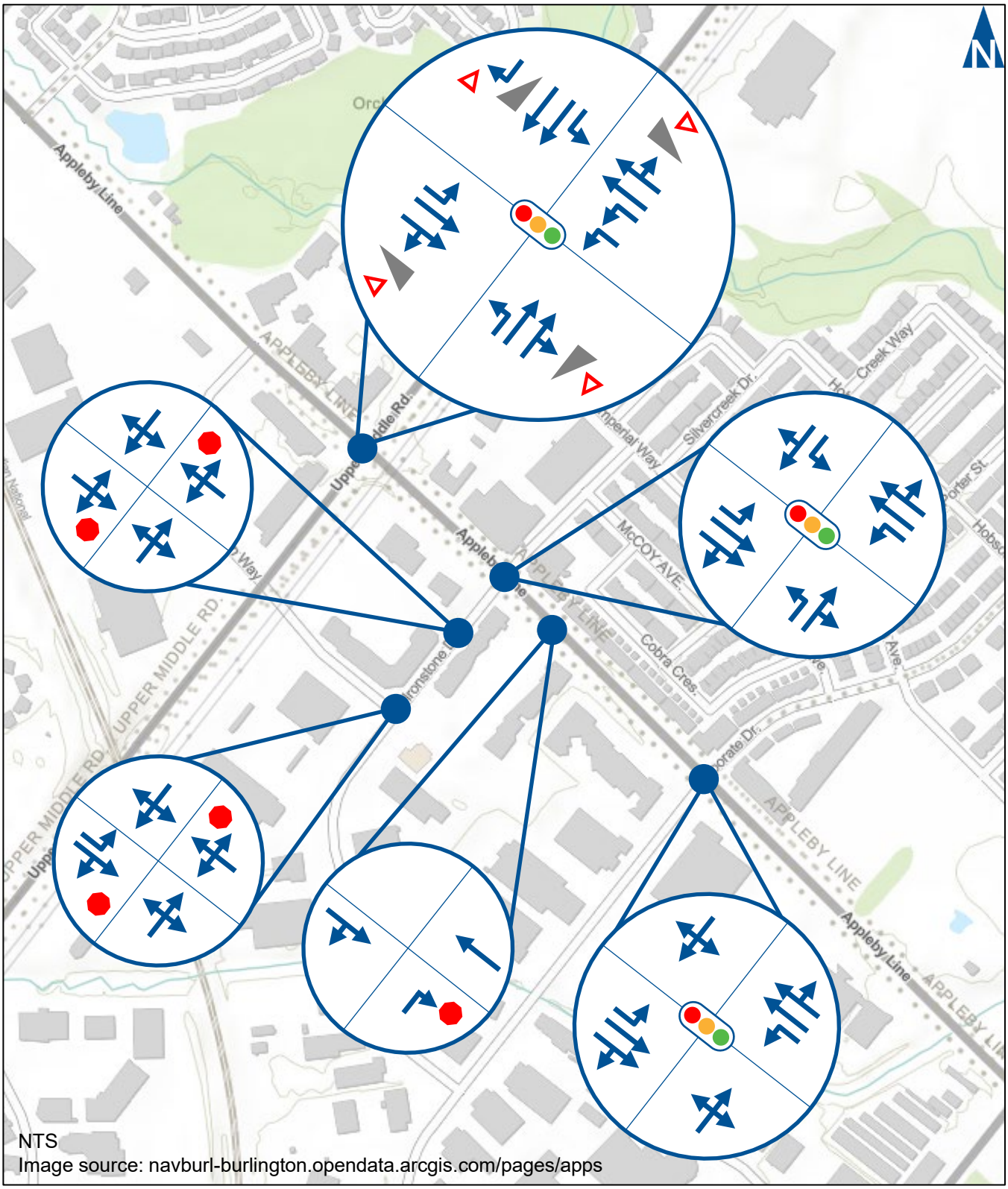
2.5 Roadway Network

The roadways of interest within the study area include:

- **Appleby Line** (Regional Road 20) is a north-south four-lane major arterial[6] roadway with a posted speed limit of 60 km/h. The intersections with Upper Middle Road, Ironstone Drive, and Corporate Drive are signalized. A multi-use pathway is provided on both sides of roadway. On-street bicycle lanes are also provided for both directions of travel.
- **Upper Middle Road (**Regional Road 38) is an east-west four-lane minor arterial[6] roadway with a posted speed limit of 60 km/h. A sidewalk is provided on the north side of this roadway and a multi-use pathway is provided on the south side of this roadway. On-street bicycle lanes are also provided for both directions of travel.
- **Ironstone Drive** is an east-west two-lane collector[6] roadway. The roadway has a posted speed limit of 40 km/h east of Appleby Line and a posted speed limit of 50 km/h west of Appleby Line. Sidewalks are provided on both sides of this roadway between Heron Way and Appleby Line. No identifiable cycling infrastructure is noted along this roadway.
- **Corporate Drive** is an east-west two-lane collector[6] roadway. The statutory 50 km/h speed limit is assumed. Sidewalks are provided on both sides of this roadway east of Appleby Line. On-street bicycle lanes are provided on Corporate Drive east of Appleby Line. The eastbound and westbound approaches of Corporate Drive to Appleby Line are marked as one lane. The existing pavement width appears to allow for the separation of left-turning vehicles.
- **Heron Way** is a north-south two-lane collector[6] roadway. The statutory 50 km/h speed limit is assumed. Sidewalks are provided on the east side of the roadway. The south leg of Heron Way is a private driveway to Fire Station 8 (1837 Ironstone Drive). Marked on-street parking spaces are present on the east side of this roadway.

Figure 2.6 illustrates the existing lane configuration and traffic control at the study area intersections.

[6] Burlington Official Plan Schedule J Classification of Transportation Facilities South of No.1 Side Road



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Image source: navburl-burlington.opendata.arcgis.com/pages/apps

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Existing Lane Configuration & Traffic Control

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Figure 2.6

2.6 Traffic Volumes

Table 2.1 summarizes the location and date of the existing turning movement count (TMC) data used in the analysis. The data was obtained from the Halton Region and City of Burlington. **Appendix B** contains the existing count data.

TABLE 2.1: EXISTING TMC DATA

Intersection	Date
Appleby Line & Upper Middle Road	29 October 2019
Appleby Line & Ironstone Drive	10 April 2018
Appleby Line & Corporate Drive	04 December 2019
Ironstone Drive & Heron Way	19 November 2013

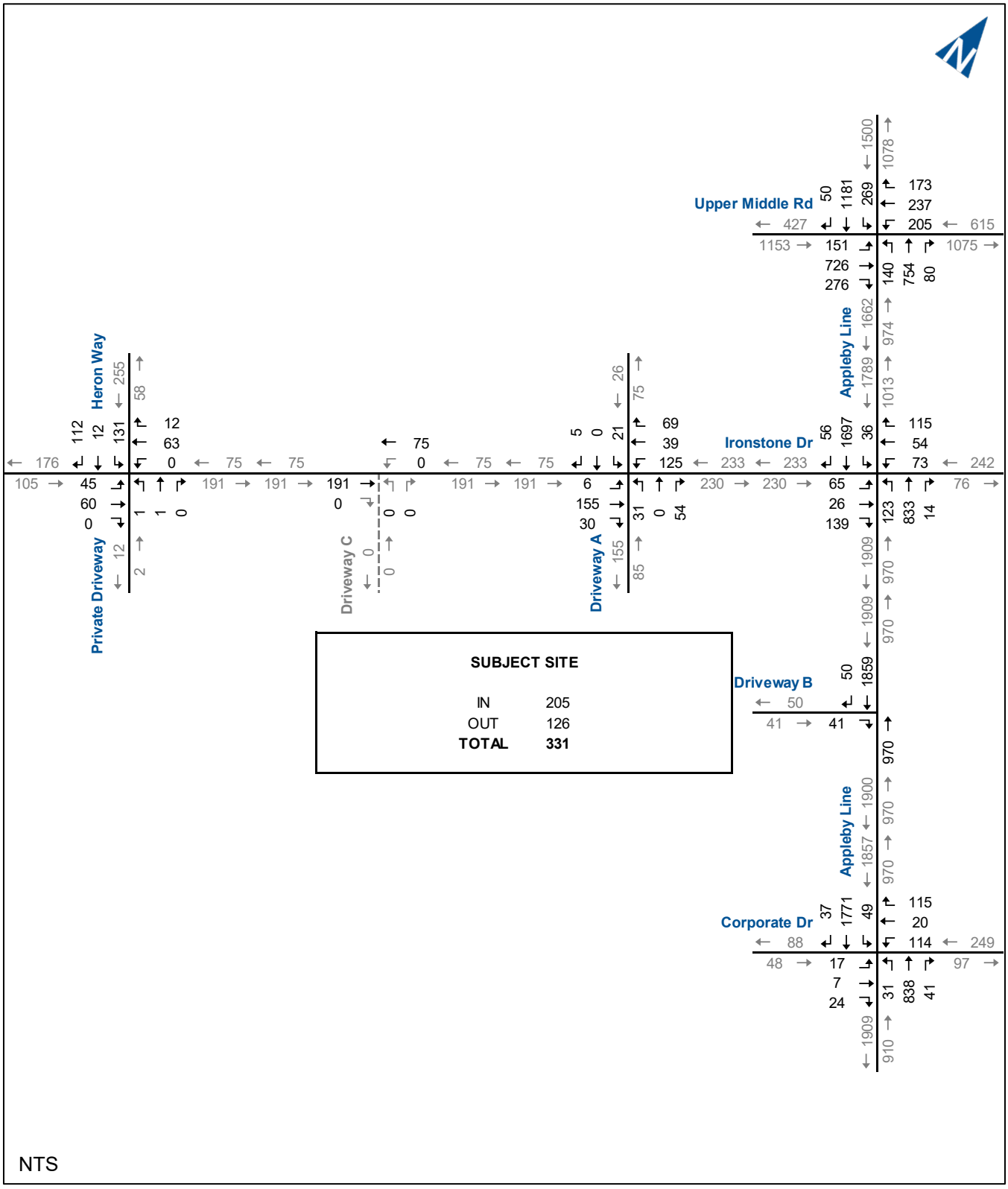
To derive base year traffic volumes (Year 2021), the TMC data was factored to Year 2021 by using a 2% growth rate. The growth rate was determined in consultation with the City of Burlington and Halton Region.

As new reliable count data could not be obtained at the existing site driveways due to on-going public health measures and travel advice related to the COVID-19 pandemic, the traffic volumes generated by existing land uses were forecast using Institute of Transportation Engineers (ITE) Trip Generation[7] Land Use Code (LUC) 820 – Shopping Centre. The estimated distribution is based on a review of the Transportation Tomorrow Survey[8] (TTS) patterns and distribution zones surrounding the subject site.

The forecast base year traffic volumes were circulated to the City of Burlington and Halton Region for approval for use in the study. **Appendix A** contains the detailed traffic forecast.

Figure 2.7A-B illustrate the base year weekday AM and PM peak hour traffic volumes.

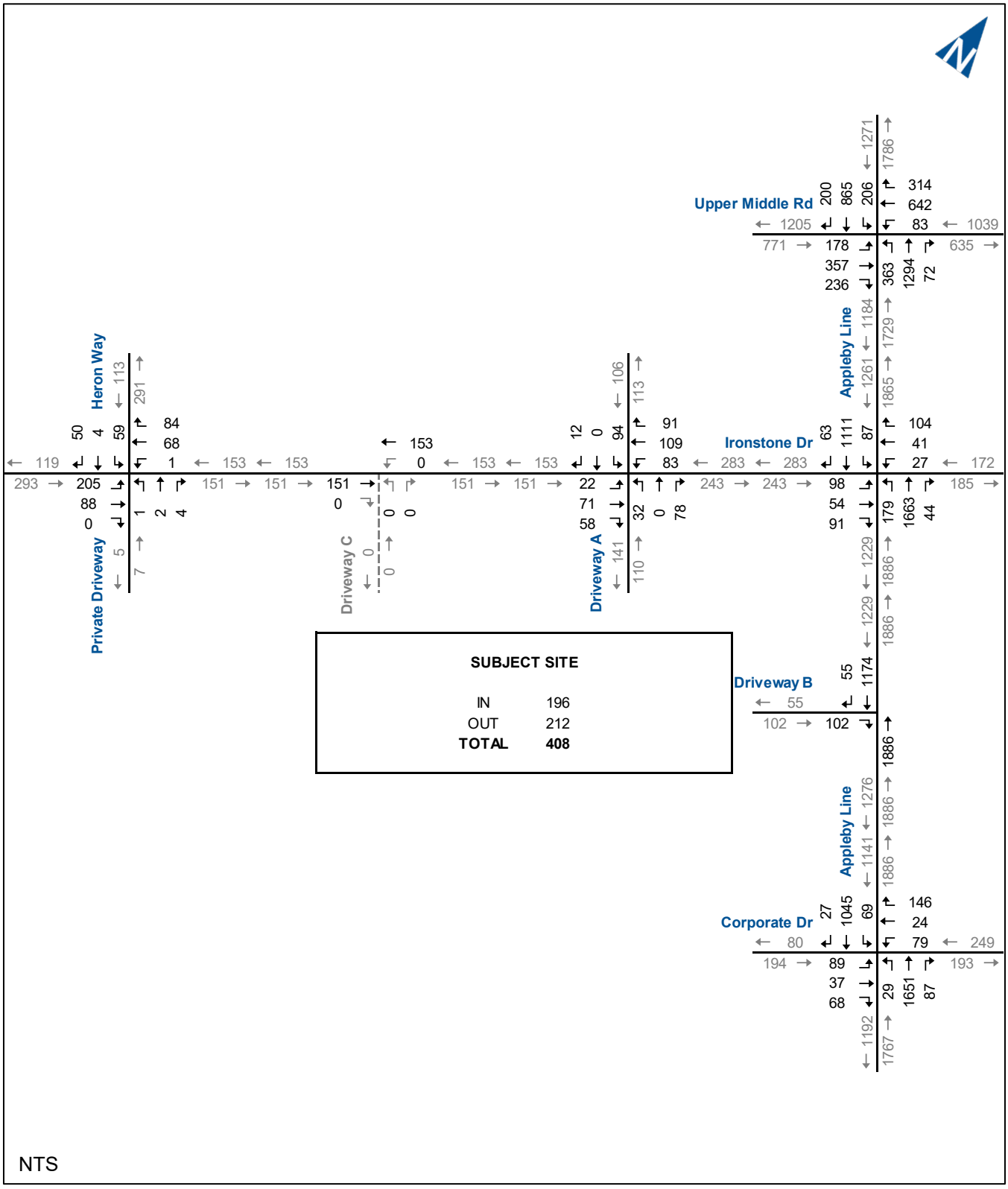
[7] Trip Generation Tenth Edition, Institute of Transportation Engineers, Washington D.C., 2017.
[8] Transportation Tomorrow Survey, Data Management Group, 2016



Base Year Traffic – AM Peak Hour

1860-1900 Appleby Line
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Figure 2.7A



Base Year Traffic – PM Peak Hour

1860-1900 Appleby Line
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Figure 2.7B

2.7 Traffic Operations

Intersection level of service (LOS) is a recognized method of quantifying the efficiency of traffic flow at intersections. It is based on the delay experienced by individual vehicles executing the various movements. The delay is related to the number of vehicles desiring to make a movement, compared to the estimated capacity for that movement. The capacity is based on several criteria related to the opposing traffic flows. The highest possible rating is LOS A, under which the average total delay is equal or less than 10.0 seconds per vehicle. When the average delay exceeds 80 seconds at signalized intersections (50 seconds at unsignalized), the movement is considered to have a LOS F and remedial measures are usually implemented if they are feasible.

The operations of the study area intersections were evaluated under existing traffic volumes using Synchro 10 and HCM 2000 procedures. The intersection analysis considered the following measures of performance:

- The LOS for each turning movement. LOS is based on the average control delay per vehicle;
- The volume to capacity ratio for each intersection; and
- 95th percentile queue length (m).

Under the Region's TIS Guidelines, the following criteria indicate critical conditions and signify that mitigation measures may need to be considered:

- At signalized intersections,
  - Overall intersection operations, through movements, or shared through/turning movements increased to 0.85 or above.
  - V/C ratios for exclusive movements increased to 0.95 or above; or
  - Queues for an individual movement are projected to exceed turning lane storage.
- At unsignalized intersections,
  - LOS, based on average delay per vehicle, on individual movements exceeds LOS "D"; or
  - The estimated 95th percentile length for an individual movement exceeds the available queue storage.

Table 2.2A-B summarizes the Existing traffic operation level of service conditions. The following critical movements are noted:

- Appleby Line and Upper Middle Road
  - Eastbound left-turn – PM peak hour, LOS F with a v/c ratio greater than 0.95 and a queue length exceeding the available storage.
  - Eastbound through/right-turn – AM peak hour, LOS F with a v/c ratio greater than 1.00.
  - Westbound through/right-turn – PM peak hour, LOS F with a v/c greater than 1.00.
  - Southbound left-turn – PM peak hour, LOS F with a v/c ratio approaching 0.95. A queue length exceeding the available storage in the AM and PM peak hour.
- Appleby Line and Ironstone Drive
  - Eastbound left-turn – AM and PM peak hour queue length exceeding the available storage.
  - Westbound left-turn – AM and PM peak hour queue length exceeding the available storage.
  - Northbound left-turn – AM and PM peak hour, LOS F with a v/c greater than 1.00.
- Appleby Line and Corporate Drive
  - Eastbound approach – AM and PM peak hour, LOS D-F with a maximum v/c ratio of less than 0.95.
  - Westbound approach – AM and PM peak hour, LOS D-E with a maximum v/c ratio of less than 0.85.

Appendix C contains the supporting detailed Synchro 10 reports.

TABLE 2.2A: BASE YEAR OPERATIONS – AM PEAK HOUR

Analysis Period	Intersection	Control Type	MOE	Direction / Movement / Approach																	
				Eastbound				Westbound				Northbound				Southbound				OVERALL
				Left	Through	Right	Approach	Left	Through	Right	Approach	Left	Through	Right	Approach	Left	Through	Right	Approach	
AM Peak Hour	Appleby Line and Upper Middle Road	TCS	LOS	C	F	>	**F**	E	D	>	**D**	C	D	>	**D**	D	D	>	**D**	**E**
			Delay	28	113	>	**102**	61	36	>	**44**	28	43	>	**41**	42	51	>	**49**	**61**
			V/C	0.42	1.12	>		0.89	0.35	>		0.43	0.80	>		0.83	0.95	>		**1.01**
			95th	40	52	>		80	45	>		15	130	>		81	208	>		
			Storage	45	-	>		120	-	>		80	-	>		40	-	>		
			Avail.	5	-	>		40	-	>		65	-	>		-41	-	>		
	Appleby Line and Ironstone Drive	TCS	LOS	D	D	>	**D**	D	D	>	**D**	F	A	>	**C**	A	A	>	**A**	**C**
			Delay	42	49	>	**47**	42	40	>	**41**	181	9	>	**31**	5	10	>	**10**	**21**
			V/C	0.49	0.68	>		0.50	0.40	>		1.23	0.40	>		0.10	0.72	>		**1.12**
			95th	27	15	>		29	37	>		56	70	>		6	159	>		
			Storage	15	-	>		15	-	>		115	-	>		30	-	>		
			Avail.	-12	-	>		-14	-	>		59	-	>		25	-	>		
	Appleby Line and Corporate Drive	TCS	LOS	<	D	>	**D**	<	D	>	**D**	C	B	>	**B**	A	B	>	**B**	**B**
			Delay	<	36	>	**36**	<	53	>	**53**	26	13	>	**13**	7	14	>	**14**	**17**
			V/C	<	0.14	>		<	0.78	>		0.40	0.44	>		0.14	0.78	>		**0.81**
			95th	<	83	>		<	74	>		20	89	>		9	215	>		
			Storage	<	-	>		<	-	>		30	-	>		110	-	>		
			Avail.	<	-	>		<	-	>		10	-	>		101	-	>		
	Ironside Drive and Heron Way	TWSC	LOS	<	A	>	**A**	<	A	>	**A**	<	B	>	**B**	A	B	>	**B**	**A**
			Delay	<	3.5	>	**4**	<	0	>	**0**	<	11.6	>	**12**	9.6	11.6	>	**11**	**7**
			V/C	<	0.04	>		<	0.00	>		<	0.00	>		0.15	0.21	>		
			95th	<	1	>		<	0	>		<	0	>		4	6	>		
			Storage	<	-	>		<	-	>		<	-	>		20	-	>		
			Avail.	<	-	>		<	-	>		<	-	>		16	-	>		
	Ironside Drive and Driveway A	TWSC	LOS	<	A	>	**A**	<	A	>	**A**	<	B	>	**B**	<	B	>	**B**	**A**
			Delay	<	0	>	**0**	<	5	>	**5**	<	12	>	**12**	<	15	>	**15**	**5**
			V/C	<	0.00	>		<	0.10	>		<	0.15	>		<	0.07	>		
			95th	<	0	>		<	3	>		<	4	>		<	2	>		
	Appleby Line and Driveway B	TWSC	LOS			B	**B**						A		**A**		A	>		**A**
			Delay			11	**11**						0		**0**		0	>		**0**
			V/C			0.07							0.21				0.79	>		
			95th			2							0				0	>		

MOE - Measure of Effectiveness
TCS - Traffic Control Signal
TWSC - Two-Way Stop Control
LOS - Level of Service

V/C - Volume to Capacity Ratio
95th - 95th Percentile Queue Length
Ex. - Existing Storage (m)
Avail. - Available Storage (m)

> - Shared Right-Turn Lane
< - Shared Left-Turn Lane

TABLE 2.2B: BASE YEAR OPERATIONS – PM PEAK HOUR

Analysis Period	Intersection	Control Type	MOE	Direction / Movement / Approach																	
				Eastbound				Westbound				Northbound				Southbound				OVERALL
				Left	Through	Right	Approach	Left	Through	Right	Approach	Left	Through	Right	Approach	Left	Through	Right	Approach	
PM Peak Hour	Appleby Line and Upper Middle Road	TCS	LOS	F	E	>	**E**	D	F	>	**F**	C	D	>	**D**	F	C	>	**D**	**F**
			Delay	93	56	>	**65**	42	234	>	**219**	23	40	>	**36**	85	34	>	**42**	**82**
			V/C	0.95	0.75	>		0.48	1.38	>		0.64	0.87	>		0.94	0.71	>		**1.04**
			95th	86	43	>		31	239	>		32	226	>		98	170	>		
			Storage	45	-	>		120	-	>		80	-	>		40	-	>		
			Avail.	-41	-	>		89	-	>		48	-	>		-58	-	>		
	Appleby Line and Ironstone Drive	TCS	LOS	E	D	>	**E**	D	D	>	**D**	C	B	>	**B**	B	A	>	**A**	**B**
			Delay	72	50	>	**59**	48	49	>	**48**	21	15	>	**16**	15	6	>	**6**	**17**
			V/C	0.76	0.45	>		0.21	0.33	>		0.63	0.74	>		0.44	0.45	>		**0.73**
			95th	45	91	>		16	35	>		68	206	>		16	78	>		
			Storage	15	-	>		15	-	>		115	-	>		30	-	>		
			Avail.	-30	-	>		-1	-	>		47	-	>		15	-	>		
	Appleby Line and Corporate Drive	TCS	LOS	<	F	>	**F**	<	E	>	**E**	B	C	>	**C**	C	A	>	**A**	**C**
			Delay	<	91	>	**91**	<	72	>	**72**	10	21	>	**21**	23	9	>	**10**	**25**
			V/C	<	0.90	>		<	0.83	>		0.11	0.80	>		0.51	0.45	>		**0.81**
			95th	<	161	>		<	93	>		9	255	>		17	88	>		
			Storage	<	-	>		<	-	>		30	-	>		110	-	>		
			Avail.	<	-	>		<	-	>		21	-	>		93	-	>		
	Ironside Drive and Heron Way	TWSC	LOS	<	A	>	**A**	<	A	>	**A**	<	B	>	**B**	A	C	>	**B**	**A**
			Delay	<	6	>	**6**	<	0.1	>	**0**	<	13.6	>	**14**	9.8	18.5	>	**14**	**6**
			V/C	<	0.15	>		<	0.00	>		<	0.02	>		0.07	0.19	>		
			95th	<	4	>		<	0	>		<	0	>		2	6	>		
			Storage	<	-	>		<	-	>		<	-	>		20	-	>		
			Avail.	<	-	>		<	-	>		<	-	>		18	-	>		
	Ironside Drive and Driveway A	TWSC	LOS	<	A	>	**A**	<	A	>	**A**	<	B	>	**B**	<	C	>	**C**	**A**
			Delay	<	1	>	**1**	<	3	>	**3**	<	11	>	**11**	<	18	>	**18**	**6**
			V/C	<	0.02	>		<	0.06	>		<	0.17	>		<	0.29	>		
			95th	<	0	>		<	2	>		<	5	>		<	10	>		
	Appleby Line and Driveway B	TWSC	LOS			B	**B**						A		**A**		A	>		**A**
			Delay			13	**13**						0		**0**		0	>		**0**
			V/C			0.19							0.40				0.50	>		
			95th			6							0				0	>		

MOE - Measure of Effectiveness
TCS - Traffic Control Signal
TWSC - Two-Way Stop Control
LOS - Level of Service
V/C - Volume to Capacity Ratio
95th - 95th Percentile Queue Length
Ex. - Existing Storage (m)
Avail. - Available Storage (m)
> - Shared Right-Turn Lane
< - Shared Left-Turn Lane

3 Development Concept

3.1 Development Description

The subject site is located on the southwest quadrant of the Appleby Line intersection with Ironstone Drive. The site is an existing commercial plaza. The existing land uses on the north side of the site will be replaced with a mixed-use development.

The development concept includes three high-rise residential buildings ranging in height from 16 to 18 storeys. Approximately 560 units are proposed with approximately 3,401 m^2 of ground floor retail/office space. Build-out is expected to occur in three phases with full build-out occurring by Year 2028. **Table 3.1** summarizes the site statistics for each phase of development.

TABLE 3.1: SITE STATISTICS

Statistic	Phase 1	Phase 2	Phase 3	Total
Build-Out Date	2024	2026	2028	**2028**
Storeys	18	16	16	**16-18**
Residential Units	170	201	189	**560**
Retail Space (m^2)	0	642	939	**1,581**
Office Space (m^2)	1,820	0	0	**1,820**
Parking Supply at Grade	16	37	30	**83**
Parking Supply Under Ground	163	256	270	**689**
Parking Supply Total	179	293	300	**772**

Vehicle access is proposed by two private driveways to Ironstone Drive and a private driveway to Appleby Line.

The site's Appleby Line driveway and the existing Ironstone Drive Driveway will be retained. The site's existing Ironstone Drive (Driveway A) is located approximately 90 metres (CL to CL) west of Appleby Line. Driveway A is located directly opposite the driveway serving 1940-1960 Appleby Line. The site's existing Appleby Line Driveway (Driveway B) is located approximately 90 metres (CL to CL) south of Ironstone Drive and operates as a right-in/right-out connection. Left-turns are restricted through use of a raised centre median on Appleby

Line. The general spacing guidelines for right in/out access is 115 metres to 140 metres between accesses[9].

A new driveway (Driveway C) is proposed to Ironstone Drive as part of the Phase 1 development and is proposed approximately 35 metres east of Heron Way.

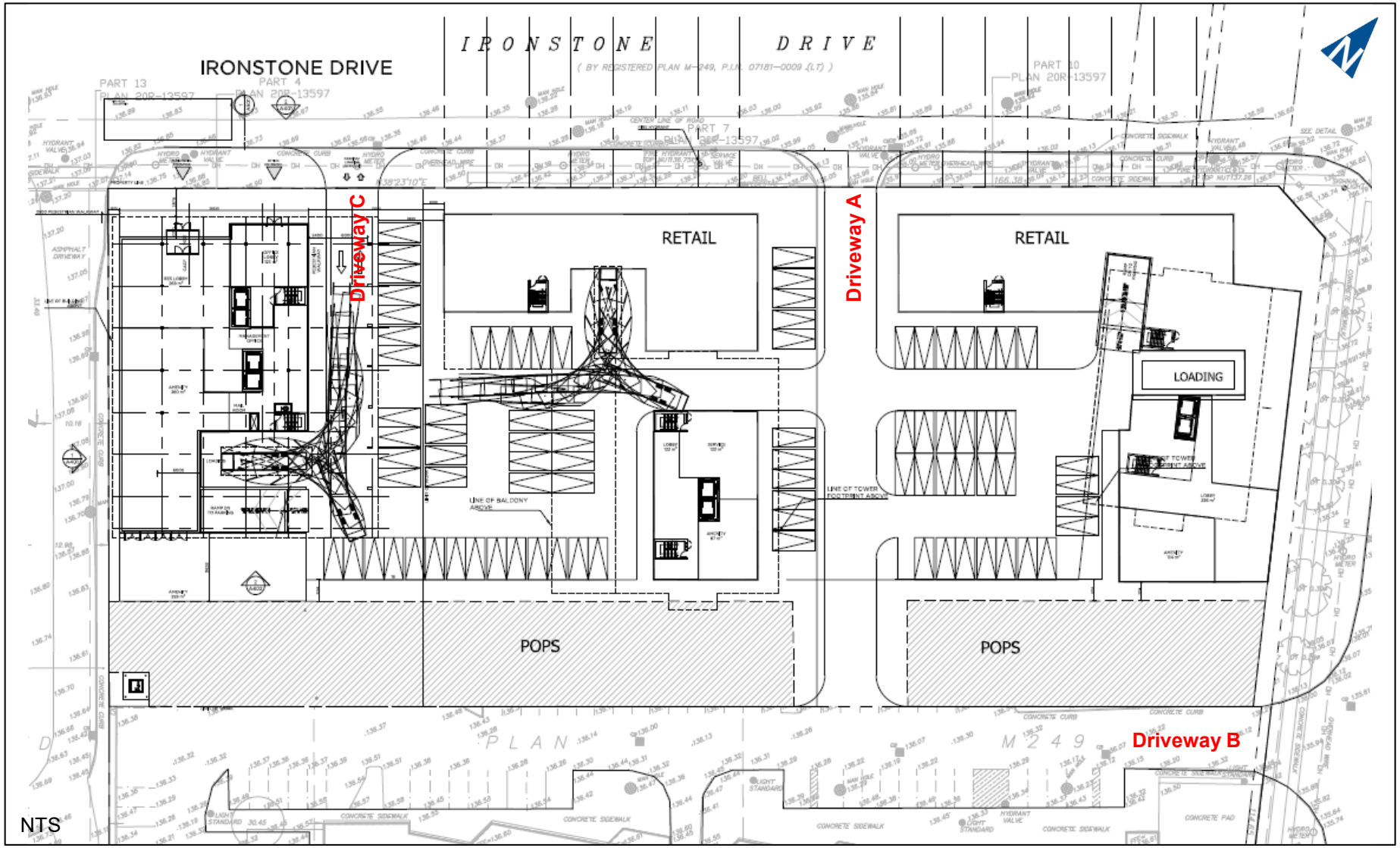
Vehicular connections between the subject site and the existing commercial plaza will be maintained following build-out.

Privately Owned Park (POP) spaces are proposed between the subject site and the existing commercial.

Figure 3.1A illustrates the site concept.

The south side buildings will remain compliant from a zoning perspective.

[9] Halton Region Access Management Guideline. January 2015 - Section 3.2



paradigm TRANSPORTATION SOLUTIONS LIMITED

Site Concept

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Figure 3.1

3.2 Site Generated Traffic

The Institute of Transportation Engineers (ITE) Trip Generation[10] methods predict the site trip generation. The following land use codes were used to estimate the site's trip generation:

- LUC 222 Multifamily Housing, High-Rise;
- LUC 710 General Office Building; and
- LUC 820 Shopping Center.

Table 3.2 summarizes the estimated trip generation.

The subject site is estimated to generate approximately 231 AM peak hour trips and 266 PM peak hour trips.

Pass-by trips were considered for the commercial components of the subject site. The pass-by trip rate was obtained from the ITE Trip Generation Handbook 3rd Edition[11]. Approximately, 22 PM peak hour pass-by trips are forecast.

To remain conservative, no reductions for mode choice or internal capture were applied to the site's trip generation estimate as the mode choice is inherent in the ITE trip generation data.

TABLE 3.2: ESTIMATED TRIP GENERATION

Land Use	AM Peak Hour			PM Peak Hour		
	In	Out	Sum	In	Out	Sum
Multifamily Housing (High-Rise) (222)	41	129	**170**	121	78	**199**
General Office Building (710)	39	6	**45**	4	20	**24**
Shopping Center (820)	10	6	**16**	31	34	**65**
Total	**90**	**141**	**231**	**156**	**132**	**288**
Pass-By Trips (LUC 820 - PM = 36%)	0	0	**0**	11	11	**22**
Net Generation	**90**	**141**	**231**	**145**	**121**	**266**

[10] Trip Generation Manual 10th Edition Institute of Transportation Engineers, Washington DC, September 2017
[11] Trip Generation Handbook 3rd Edition, Institute of Transportation Engineers, August 2014

Table 3.3 summarizes the estimated trip distribution. The estimated distribution is based on a review of the Transportation Tomorrow Survey[12] (TTS) patterns and distribution for the zones surrounding the subject site. **Appendix D** contains TTS data. **Figure 3.2A-B** illustrates the site generated traffic.

TABLE 3.3: ESTIMATED TRIP DISTRIBUTION

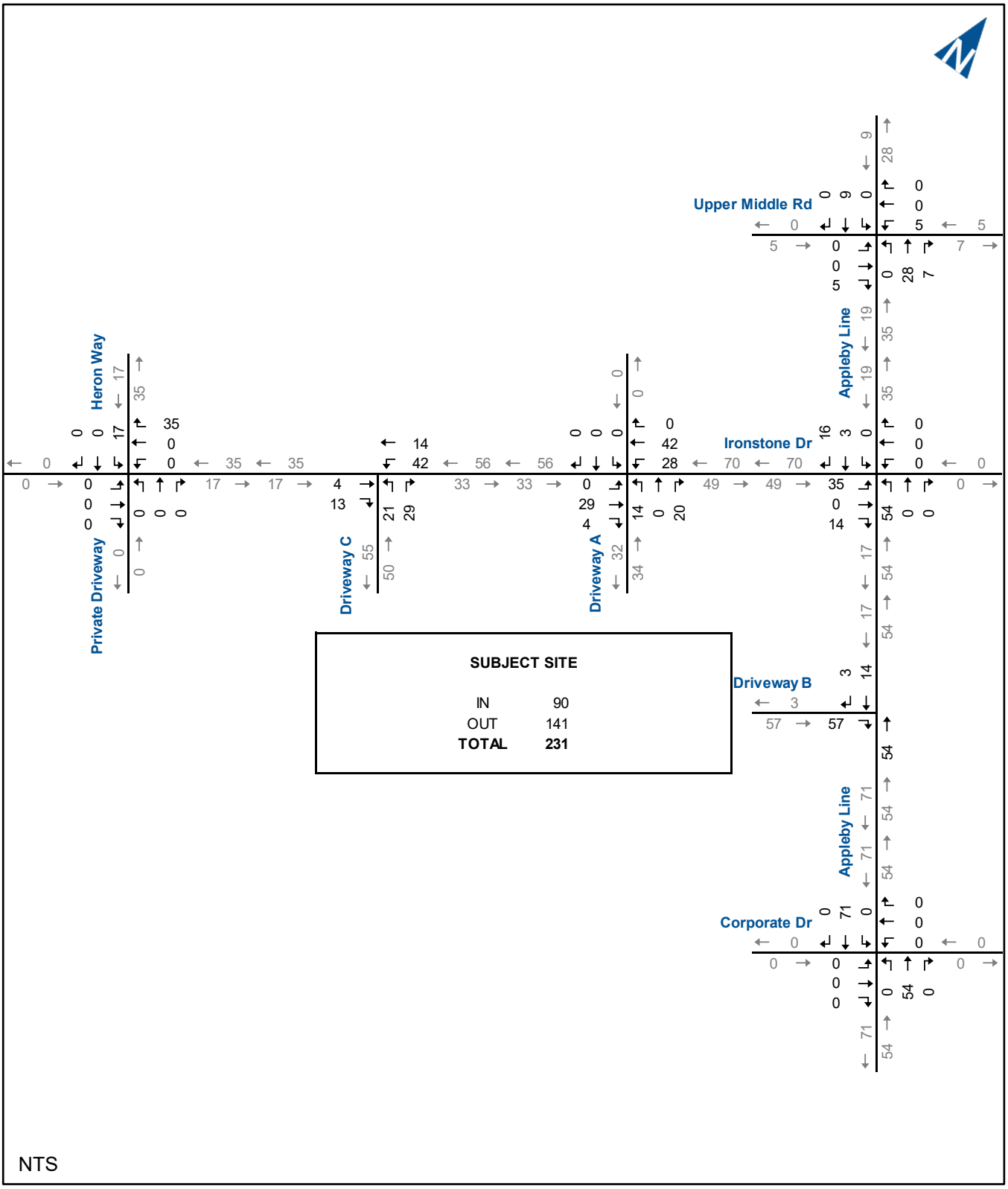
Origin/Destination	AM Peak Hour		PM Peak hour	
	In	Out	In	Out
North via Appleby Line	10%	20%	20%	10%
South via Appleby Line	60%	50%	50%	65%
East via Upper Middle Road	5%	5%	5%	5%
West via Upper Middle Road	25%	25%	25%	20%
Total	**30%**	**30%**	**30%**	**25%**

The replacement of the existing commercial buildings with the proposed mixed-use buildings is expected to increase traffic on the adjacent road network. **Table 3.4** compares the trip generation of the existing commercial buildings to the proposed mixed-use building. The site's trip generation is forecast to increase by approximately 68 AM trips and 89 PM peak hour trips.

TABLE 3.4: SITE TRIP GENERATION CHANGES

Land Use	AM Peak Hour			PM Peak Hour		
	In	Out	Sum	In	Out	Sum
Existing Land Uses (North Side Buildings)	101	62	163	85	92	177
Proposed Lane Uses	90	141	231	145	121	266
Change (vph)	**-11**	**79**	**68**	**60**	**29**	**89**

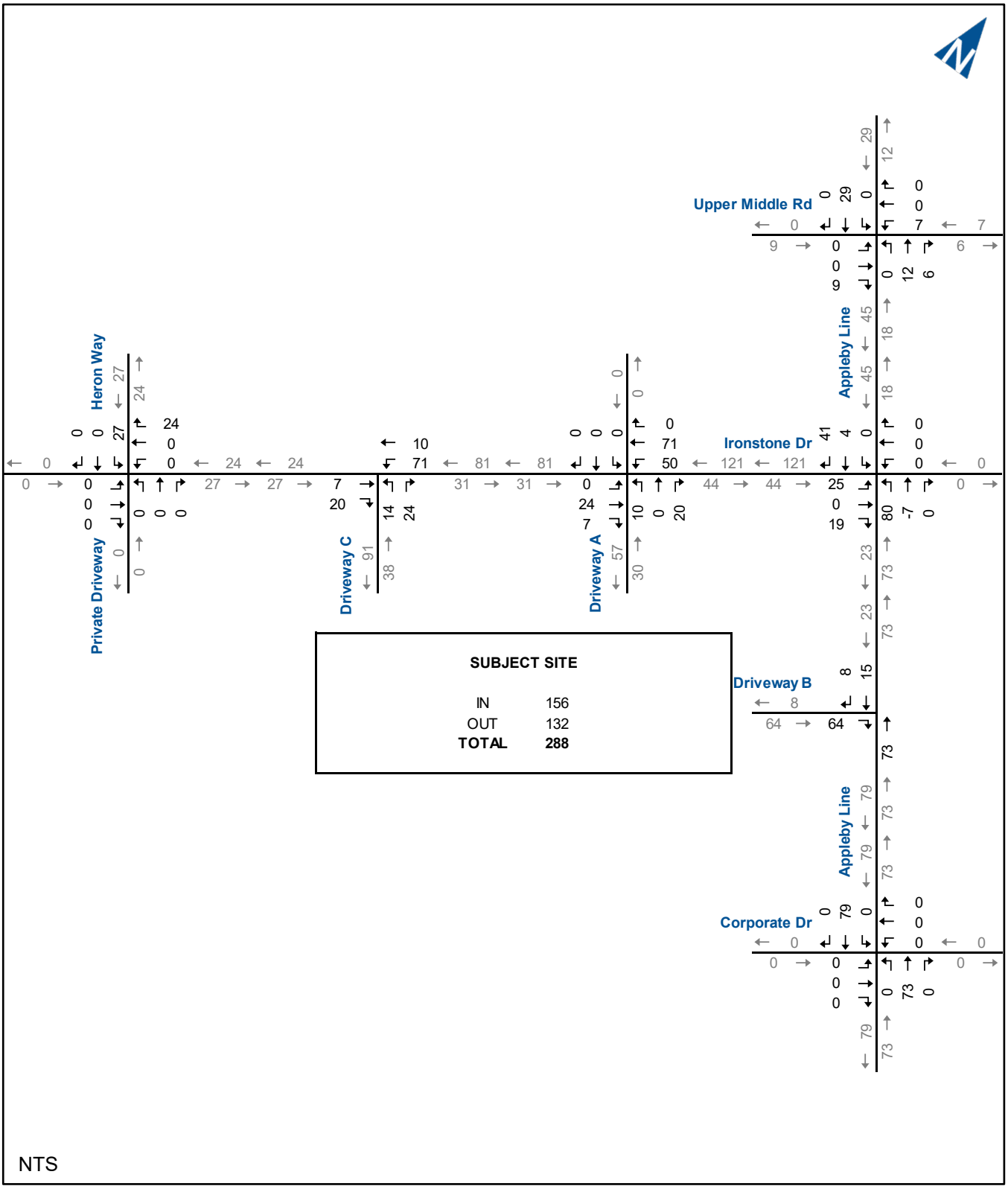
[12] Transportation Tomorrow Survey, Data Management Group, 2016



Site Generated Traffic – AM Peak Hour

1860-1900 Appleby Line
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Figure 3.2A



Site Generated Traffic – PM Peak Hour

1860-1900 Appleby Line
210271

Figure 3.2B

4 Future Traffic Conditions

The assessment of future conditions in this section includes the following components:

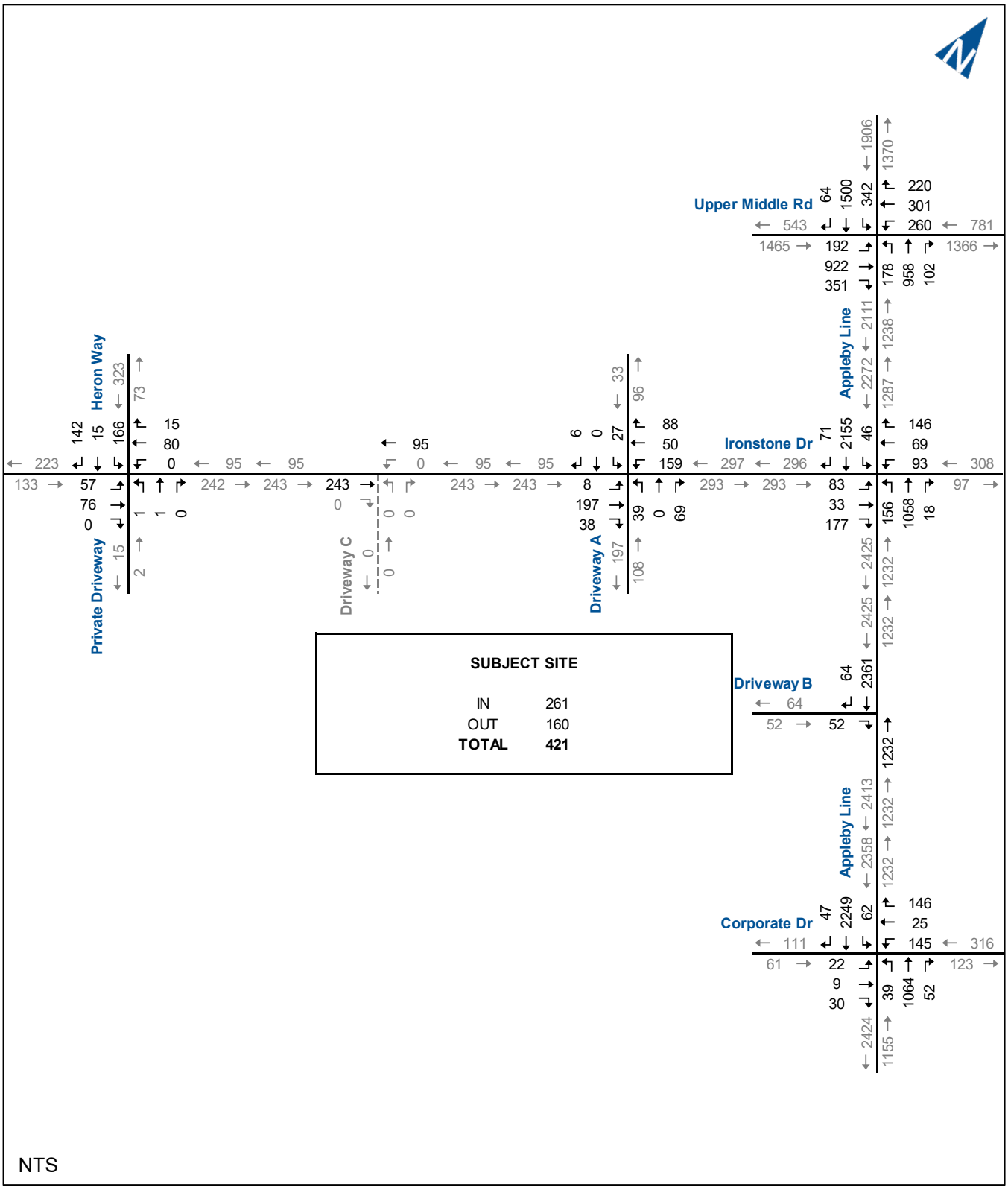
- Future background traffic estimates;
- Level of service analysis for background traffic (pre-development);
- Future total traffic estimates; and
- Level of service analysis for total traffic (post-development).

4.1 Traffic Volumes

A five-year horizon (Year 2033) following the expected build-out of the site (Year 2028) has been assessed. The likely future traffic volumes near the subject site are estimated to consist of increased non-site traffic (generalized background traffic growth). A growth rate of 2% per annum was identified by the City and Region during pre-study consultations.

Figure 4.1A-B illustrates the forecast background traffic volumes. The background traffic volumes include the existing site traffic.

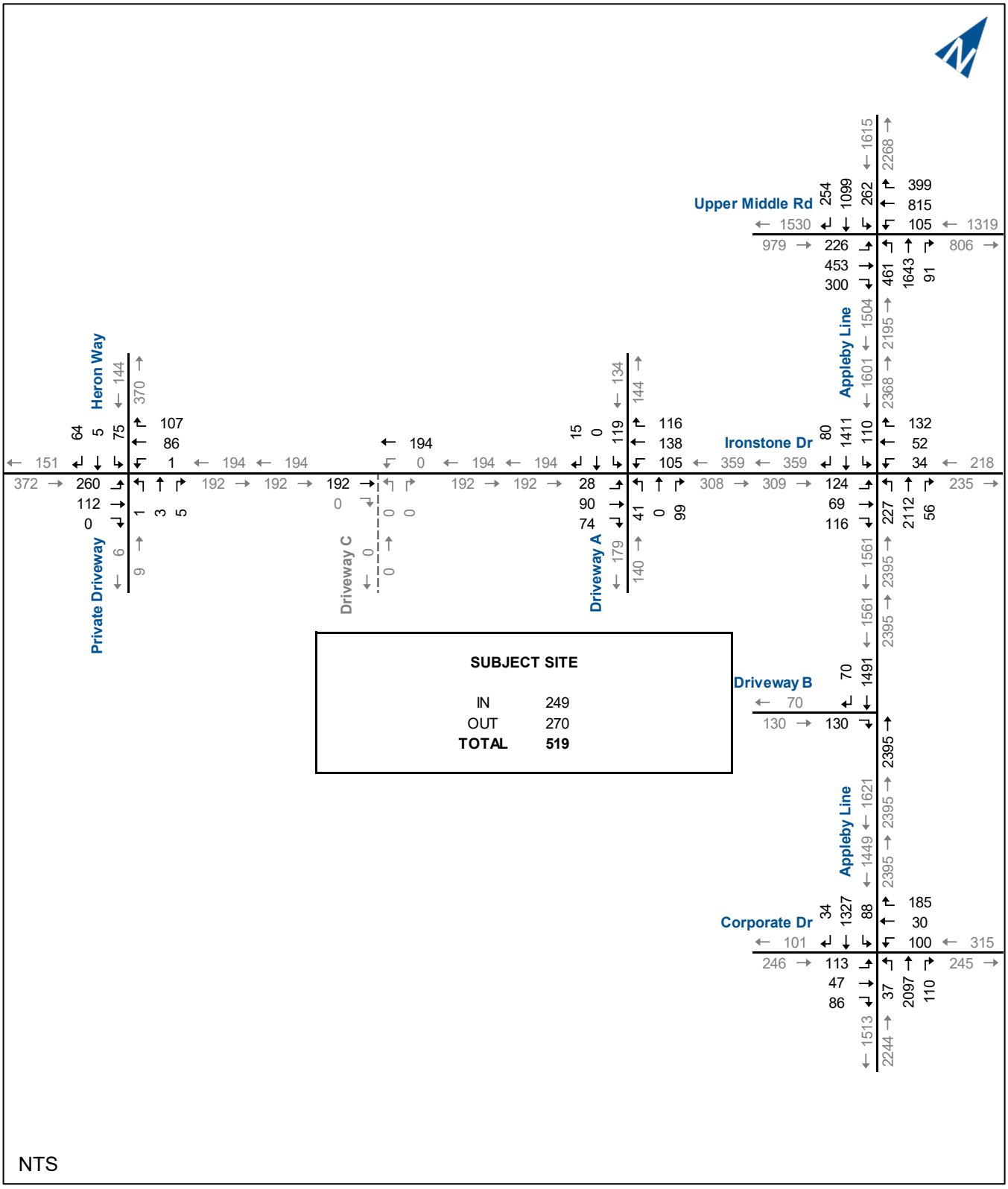
Figure 4.2A-B illustrates the forecast total traffic volumes. The total traffic volumes include the site generated traffic and removal of the existing site traffic (north buildings).



Background Traffic – AM Peak Hour

1860-1900 Appleby Line
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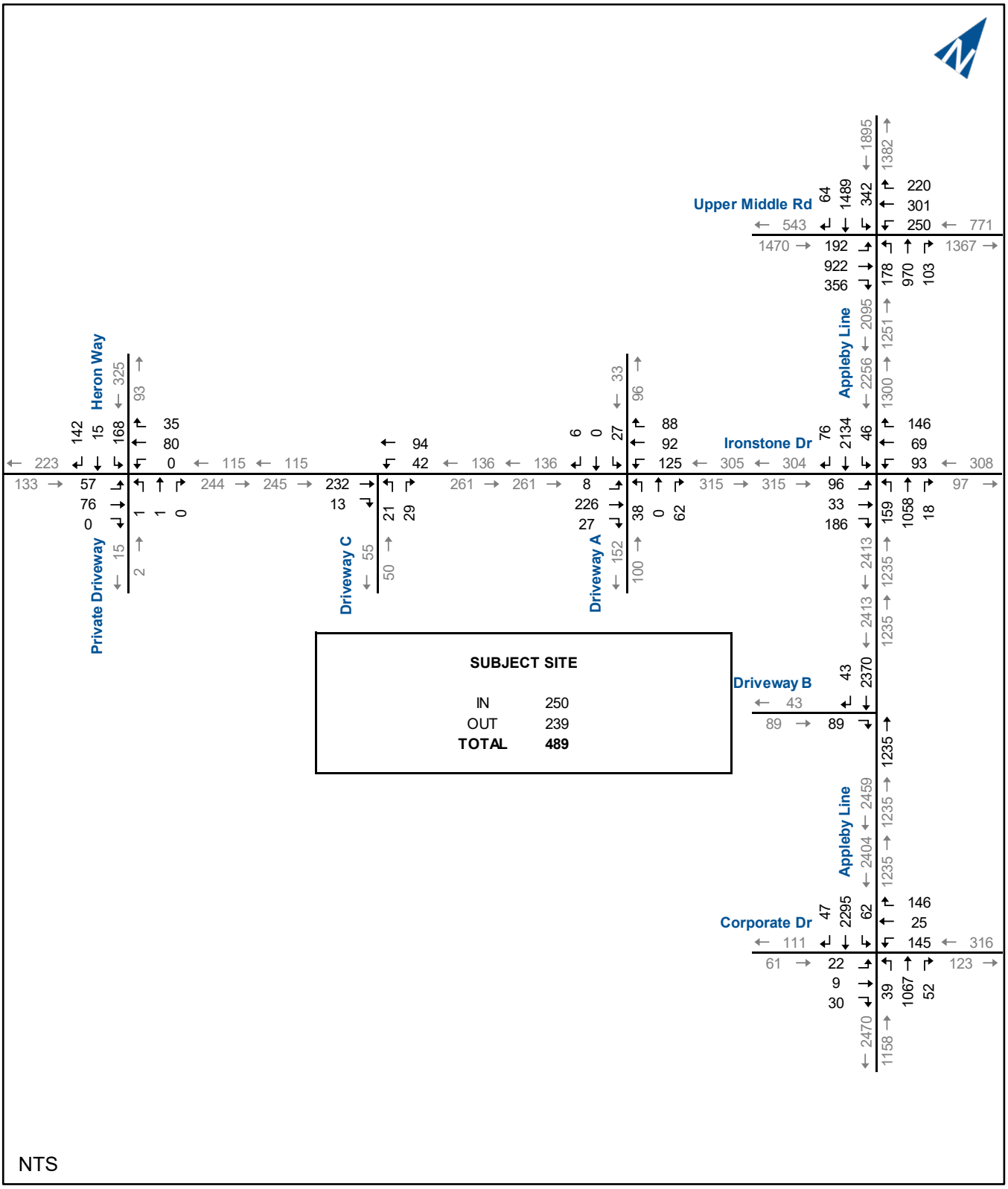
Figure 4.1A



Background Traffic – PM Peak Hour

1860-1900 Appleby Line
210271

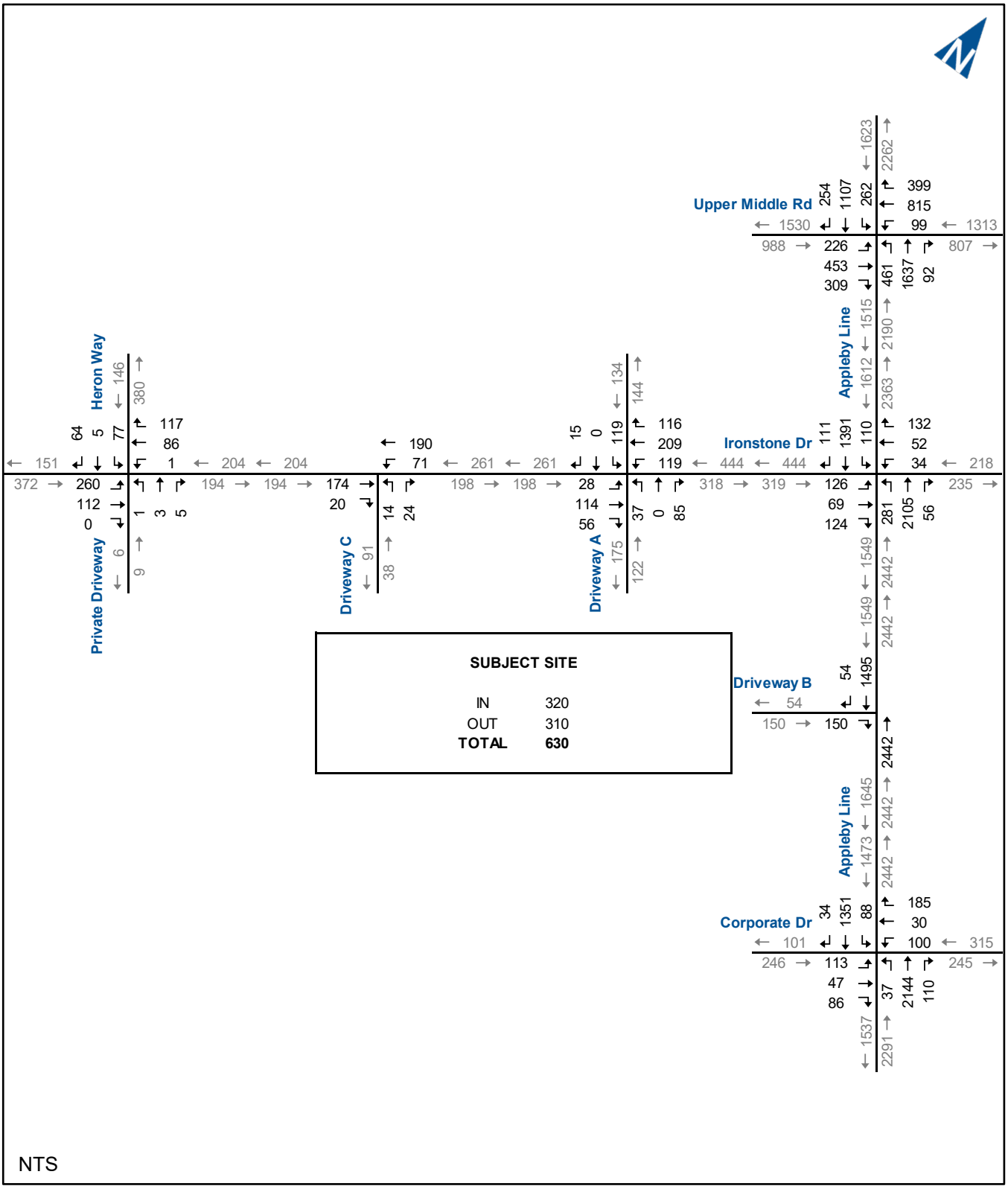
Figure 4.1B



Total Traffic – AM Peak Hour

1860-1900 Appleby Line
210271

Figure 4.2A



Total Traffic – PM Peak Hour

1860-1900 Appleby Line
210271

Figure 4.2B

4.2 Traffic Operations

The study area intersection operation analyse for the future background and future total traffic forecast followed the same methodology used for existing conditions including the existing signal timings.

4.2.1 Background Operations

Table 4.1A-B summarizes the level of service conditions. The following critical movements are noted:

- Appleby Line and Upper Middle Road
  - Eastbound left-turn – PM peak hour, LOS F with a v/c ratio greater than 1.00 and a queue length exceeding the available storage in the AM and PM peak hour.
  - Eastbound through/right-turn – AM and PM peak hour, LOS F with a v/c ratio greater than 1.00.
  - Westbound left-turn – AM peak hour, LOS F with a v/c greater than 1.00.
  - Westbound through/right-turn – PM peak hour, LOS F with a v/c greater than 1.00.
  - Northbound through/right-turn – AM and PM peak hour, LOS F with a v/c ratio greater than 1.00.
  - Southbound left-turn – AM and PM peak hour, LOS F with a v/c ratio greater than 1.00. A queue length exceeding the available storage.
  - Southbound through/right-turn – AM and PM peak hour, LOS E-F with a maximum v/c ratio greater than 1.00.
- Appleby Line and Ironstone Drive
  - Eastbound left-turn –PM peak hour, LOS F with a v/c ratio approaching 0.90 and a queue length exceeding the available storage in the AM and PM peak hour.
  - Westbound left-turn – AM and PM peak hour queue length exceeding the available storage.
  - Northbound left-turn – AM and PM peak hour, LOS F with a v/c greater than 1.00.
  - Northbound through/right-turn – PM peak hour, LOS D with a v/c approaching 1.00.

- Southbound through/right-turn – AM peak hour, LOS C with a v/c approaching 1.00.
- Southbound left-turn – PM peak hour queue length exceeding the available storage.

- Appleby Line and Corporate Drive
  - Eastbound approach – AM and PM peak hour, LOS C-F with a maximum v/c ratio greater than 1.00.
  - Westbound approach – AM and PM peak hour, LOS E-F with a maximum v/c ratio of less than 0.95.
  - Northbound left-turn – AM peak hour, LOS E with a v/c less than 0.70.
  - Northbound through/right-turn – PM peak hour, LOS F with a v/c greater than 1.00.
  - Southbound through/right-turn – AM peak hour, LOS D with a v/c greater than 1.00.
  - Southbound through/left-turn – PM peak hour, LOS D with a v/c less than 0.65.
- Ironside Drive and Heron Way
  - Southbound through/right-turn – PM peak hour, LOS D with a v/c less than 0.35.
- Ironside Drive and Driveway A
  - Southbound approach – PM peak hour, LOS D with a v/c less than 0.55.

Appendix E contains the detailed Synchro 10 reports.

TABLE 4.1A: BACKGROUND TRAFFIC OPERATIONS – AM PEAK HOUR

Analysis Period	Intersection	Control Type	MOE	Direction / Movement / Approach																	
				Eastbound				Westbound				Northbound				Southbound				OVERALL
				Left	Through	Right	Approach	Left	Through	Right	Approach	Left	Through	Right	Approach	Left	Through	Right	Approach	
AM Peak Hour	Appleby Line and Upper Middle Road	TCS	LOS	C	F	>	**F**	F	D	>	**E**	C	F	>	**F**	F	F	>	**F**	**F**
			Delay	32	248	>	**219**	132	38	>	**69**	32	91	>	**82**	101	136	>	**130**	**135**
			V/C	0.62	1.44	>		1.14	0.49	>		0.55	1.07	>		1.05	1.20	>		**1.29**
			95th	50	69	>		115	62	>		18	201	>		139	303	>		
			Storage	45	-	>		120	-	>		80	-	>		40	-	>		
			Avail.	-5	-	>		5	-	>		62	-	>		-99	-	>		
	Appleby Line and Ironstone Drive	TCS	LOS	D	D	>	**D**	D	D	>	**D**	F	B	>	**F**	A	C	>	**C**	**D**
			Delay	46	51	>	**49**	46	40	>	**42**	708	13	>	**102**	7	25	>	**24**	**51**
			V/C	0.60	0.75	>		0.61	0.49	>		2.43	0.54	>		0.16	0.95	>		**1.97**
			95th	34	22	>		37	50	>		96	112	>		8	350	>		
			Storage	15	-	>		15	-	>		115	-	>		30	-	>		
			Avail.	-19	-	>		-22	-	>		19	-	>		22	-	>		
	Appleby Line and Corporate Drive	TCS	LOS	<	C	>	**C**	<	E	>	**E**	E	B	>	**B**	B	D	>	**D**	**D**
			Delay	<	35	>	**35**	<	60	>	**60**	59	18	>	**19**	10	51	>	**49**	**41**
			V/C	<	0.21	>		<	0.86	>		0.65	0.60	>		0.26	1.04	>		**1.03**
			95th	<	106	>		<	100	>		30	133	>		12	399	>		
			Storage	<	-	>		<	-	>		30	-	>		110	-	>		
			Avail.	<	-	>		<	-	>		0	-	>		98	-	>		
	Ironside Drive and Heron Way	TWSC	LOS	<	A	>	**A**	<	A	>	**A**	<	B	>	**B**	A	B	>	**B**	**A**
			Delay	<	3.6	>	**4**	<	0	>	**0**	<	12.7	>	**13**	10	13.2	>	**12**	**8**
			V/C	<	0.05	>		<	0.00	>		<	0.00	>		0.20	0.30	>		
			95th	<	1	>		<	0	>		<	0	>		6	10	>		
			Storage	<	-	>		<	-	>		<	-	>		20	-	>		
			Avail.	<	-	>		<	-	>		<	-	>		14	-	>		
	Ironside Drive and Driveway A	TWSC	LOS	<	A	>	**A**	<	A	>	**A**	<	B	>	**B**	<	C	>	**C**	**A**
			Delay	<	0	>	**0**	<	5	>	**5**	<	14	>	**14**	<	19	>	**19**	**5**
			V/C	<	0.01	>		<	0.13	>		<	0.23	>		<	0.12	>		
			95th	<	0	>		<	4	>		<	7	>		<	3	>		
	Appleby Line and Driveway B	TWSC	LOS			C	**C**						A		**A**		A	>		**A**
			Delay			18	**18**						0		**0**		0	>		**0**
			V/C			0.17							0.26				1.01	>		
			95th			5							0				0	>		

MOE - Measure of Effectiveness
TCS - Traffic Control Signal
TWSC - Two-Way Stop Control
LOS - Level of Service

V/C - Volume to Capacity Ratio
95th - 95th Percentile Queue Length
Ex. - Existing Storage (m)
Avail. - Available Storage (m)

> - Shared Right-Turn Lane
< - Shared Left-Turn Lane

TABLE 4.1B: BACKGROUND TRAFFIC OPERATIONS – PM PEAK HOUR

Analysis Period	Intersection	Control Type	MOE	Direction / Movement / Approach																
				Eastbound				Westbound				Northbound				Southbound				OVERALL
				Left	Through	Right	Approach	Left	Through	Right	Approach	Left	Through	Right	Approach	Left	Through	Right	Approach	
PM Peak Hour	Appleby Line and Upper Middle Road	TCS	LOS	F	F	>	**F**	D	F	>	**F**	D	F	>	**F**	F	E	>	**E**	**F**
			Delay	177	88	>	**108**	51	409	>	**380**	51	94	>	**85**	161	59	>	**76**	**150**
			V/C	1.21	1.00	>		0.65	1.77	>		0.81	1.10	>		1.18	0.98	>		**1.30**
			95th	121	57	>		38	327	>		71	360	>		140	283	>		
			Storage	45	-	>		120	-	>		80	-	>		40	-	>		
			Avail.	-76	-	>		82	-	>		9	-	>		-100	-	>		
	Appleby Line and Ironstone Drive	TCS	LOS	F	D	>	**E**	D	D	>	**D**	F	D	>	**D**	D	A	>	**B**	**D**
			Delay	91	49	>	**66**	46	48	>	**48**	198	39	>	**54**	47	9	>	**12**	**40**
			V/C	0.88	0.51	>		0.24	0.42	>		1.31	0.99	>		0.66	0.60	>		**1.19**
			95th	57	131	>		19	48	>		100	419	>		44	146	>		
			Storage	15	-	>		15	-	>		115	-	>		30	-	>		
			Avail.	-42	-	>		-4	-	>		15	-	>		-14	-	>		
	Appleby Line and Corporate Drive	TCS	LOS	<	F	>	**F**	<	F	>	**F**	B	E	>	**E**	D	B	>	**B**	**E**
			Delay	<	116	>	**116**	<	90	>	**90**	17	77	>	**76**	45	13	>	**15**	**58**
			V/C	<	1.01	>		<	0.94	>		0.24	1.09	>		0.63	0.59	>		**1.04**
			95th	<	205	>		<	144	>		13	435	>		32	126	>		
			Storage	<	-	>		<	-	>		30	-	>		110	-	>		
			Avail.	<	-	>		<	-	>		17	-	>		78	-	>		
	Ironside Drive and Heron Way	TWSC	LOS	<	A	>	**A**	<	A	>	**A**	<	C	>	**C**	B	D	>	**C**	**A**
			Delay	<	6.4	>	**6**	<	0	>	**0**	<	16.6	>	**17**	10.5	27.4	>	**19**	**7**
			V/C	<	0.20	>		<	0.00	>		<	0.03	>		0.10	0.33	>		
			95th	<	6	>		<	0	>		<	1	>		3	11	>		
			Storage	<	-	>		<	-	>		<	-	>		20	-	>		
			Avail.	<	-	>		<	-	>		<	-	>		17	-	>		
	Ironside Drive and Driveway A	TWSC	LOS	<	A	>	**A**	<	A	>	**A**	<	B	>	**B**	<	D	>	**D**	**A**
			Delay	<	1	>	**1**	<	3	>	**3**	<	13	>	**13**	<	29	>	**29**	**8**
			V/C	<	0.02	>		<	0.08	>		<	0.25	>		<	0.50	>		
			95th	<	1	>		<	2	>		<	8	>		<	21	>		
	Appleby Line and Driveway B	TWSC	LOS			B	**B**						A		**A**		A	>		**A**
			Delay			13	**13**						0		**0**		0	>		**0**
			V/C			0.25							0.51				0.64	>		
			95th			8							0				0	>		

MOE - Measure of Effectiveness
TCS - Traffic Control Signal
TWSC - Two-Way Stop Control
LOS - Level of Service

V/C - Volume to Capacity Ratio
95th - 95th Percentile Queue Length
Ex. - Existing Storage (m)
Avail. - Available Storage (m)

> - Shared Right-Turn Lane
< - Shared Left-Turn Lane

4.2.2 Total Operations

Table 4.2A-B summarizes the level of service conditions. The following critical movements are noted:

- Appleby Line and Upper Middle Road
  - Eastbound left-turn – PM peak hour, LOS F with a v/c ratio greater than 1.00 and a queue length exceeding the available storage in the AM and PM peak hour.
  - Eastbound through/right-turn – AM and PM peak hour, LOS F with a v/c ratio greater than 1.00.
  - Westbound left-turn – AM peak hour, LOS F with a v/c greater than 1.00.
  - Westbound through/right-turn – PM peak hour, LOS F with a v/c greater than 1.00.
  - Northbound through/right-turn – AM and PM peak hour, LOS F with a v/c ratio greater than 1.00.
  - Southbound left-turn – AM and PM peak hour, LOS F with a v/c ratio greater than 1.00. A queue length exceeding the available storage.
  - Southbound through/right-turn – AM and PM peak hour, LOS E-F with a maximum v/c ratio greater than 1.00.
- Appleby Line and Ironstone Drive
  - Eastbound left-turn – PM peak hour, LOS F with a v/c ratio approaching 0.90 and a queue length exceeding the available storage in the AM and PM peak hour.
  - Westbound left-turn – AM and PM peak hour queue length exceeding the available storage.
  - Northbound left-turn – AM and PM peak hour, LOS F with a v/c greater than 1.00. PM peak hour queue length exceeding the available storage.
  - Northbound through/right-turn – PM peak hour, LOS D with a v/c approaching 1.00.
  - Southbound through/right-turn – AM peak hour, LOS C with a v/c approaching 1.00.
  - Southbound left-turn – PM peak hour queue length exceeding the available storage.
- Appleby Line and Corporate Drive

- Eastbound approach – AM and PM Peak hour, LOS C-F with a maximum v/c ratio greater than 1.00.
- Westbound approach – AM and PM Peak hour, LOS E-F with a maximum v/c ratio of less than 0.95.
- Northbound left-turn – AM Peak hour, LOS E with a v/c less than 0.70.
- Northbound through-right – PM peak hour, LOS F with a v/c greater than 1.00.
- Southbound through/right-turn – AM peak hour, LOS E with a v/c greater than 1.00.
- Southbound through/left-turn – PM peak hour, LOS D with a v/c less than 0.65.

- Ironside Drive and Heron Way
  - Southbound through/right-turn – PM peak hour, LOS D with a v/c less than 0.40.
- Ironside Drive and Driveway A
  - Southbound approach – PM peak hour, LOS E with a v/c less than 0.60.

Appendix F contains the detailed Synchro 10 reports.



TABLE 4.2A: TOTAL TRAFFIC OPERATIONS – AM PEAK HOUR

Analysis Period	Intersection	Control Type	MOE	Direction / Movement / Approach																
				Eastbound				Westbound				Northbound				Southbound				OVERALL
				Left	Through	Right	Approach	Left	Through	Right	Approach	Left	Through	Right	Approach	Left	Through	Right	Approach	
AM Peak Hour	Appleby Line and Upper Middle Road	TCS	LOS	C	F	>	F	F	D	>	E	C	F	>	F	F	F	>	F	F
			Delay	32	251	>	222	118	38	>	64	32	95	>	86	101	133	>	127	134
			V/C	0.62	1.44	>		1.09	0.49	>		0.55	1.08	>		1.05	1.20	>		1.28
			95th	50	72	>		109	62	>		18	205	>		139	300	>		
			Storage	45	-	>		120	-	>		80	-	>		40	-	>		
			Avail.	-5	-	>		11	-	>		62	-	>		-99	-	>		
	Appleby Line and Ironstone Drive	TCS	LOS	D	D	>	D	D	D	>	D	F	B	>	F	A	C	>	C	D
			Delay	50	51	>	51	46	39	>	41	729	14	>	106	7	25	>	25	52
			V/C	0.66	0.76	>		0.61	0.48	>		2.48	0.55	>		0.16	0.95	>		2.00
			95th	39	22	>		37	50	>		99	115	>		8	352	>		
			Storage	15	-	>		15	-	>		115	-	>		30	-	>		
			Avail.	-24	-	>		-22	-	>		16	-	>		22	-	>		
	Appleby Line and Corporate Drive	TCS	LOS	<	C	>	C	<	E	>	E	E	B	>	B	B	E	>	E	D
			Delay	<	35	>	35	<	60	>	60	59	18	>	19	11	58	>	57	46
			V/C	<	0.21	>		<	0.86	>		0.65	0.60	>		0.26	1.06	>		1.05
			95th	<	128	>		<	100	>		30	133	>		12	411	>		
			Storage	<	-	>		<	-	>		30	-	>		110	-	>		
			Avail.	<	-	>		<	-	>		0	-	>		98	-	>		
	Ironside Drive and Heron Way	TWSC	LOS	<	A	>	A	<	A	>	A	<	B	>	B	B	B	>	B	A
			Delay	<	3.6	>	4	<	0	>	0	<	12.9	>	13	10.1	13.5	>	12	8
			V/C	<	0.05	>		<	0.00	>		<	0.00	>		0.20	0.31	>		
			95th	<	1	>		<	0	>		<	0	>		6	10	>		
			Storage	<	-	>		<	-	>		<	-	>		20	-	>		
			Avail.	<	-	>		<	-	>		<	-	>		14	-	>		
	Ironside Drive and Driveway A	TWSC	LOS	<	A	>	A	<	A	>	A	<	B	>	B	<	C	>	C	A
			Delay	<	0	>	0	<	4	>	4	<	14	>	14	<	18	>	18	5
			V/C	<	0.01	>		<	0.11	>		<	0.21	>		<	0.12	>		
			95th	<	0	>		<	3	>		<	6	>		<	3	>		
	Appleby Line and Driveway B	TWSC	LOS			C	C						A		A		A	>		A
			Delay			19	19						0		0		0	>		1
			V/C			0.28							0.26				1.01	>		
			95th			9							0				0	>		
	Ironside Drive and Driveway C	TWSC	LOS	<	A	>	A	<	A	>	A	<	B	>	B					A
			Delay	<	0	>	0	<	3	>	3	<	11	>	11					2
			V/C	<	0.16	>		<	0.04	>		<	0.08	>						
			95th	<	0	>		<	1	>		<	2	>						

MOE - Measure of Effectiveness
TCS - Traffic Control Signal
TWSC - Two-Way Stop Control
LOS - Level of Service
V/C - Volume to Capacity Ratio
95th - 95th Percentile Queue Length
Ex. - Existing Storage (m)
Avail. - Available Storage (m)
> - Shared Right-Turn Lane
< - Shared Left-Turn Lane

TABLE 4.2B: TOTAL TRAFFIC OPERATIONS – PM PEAK HOUR

Analysis Period	Intersection	Control Type	MOE	Direction / Movement / Approach																	
				Eastbound				Westbound				Northbound				Southbound				OVERALL
				Left	Through	Right	Approach	Left	Through	Right	Approach	Left	Through	Right	Approach	Left	Through	Right	Approach	
PM Peak Hour	Appleby Line and Upper Middle Road	TCS	LOS	F	F	>	**F**	D	F	>	**F**	D	F	>	**F**	F	E	>	**E**	**F**
			Delay	177	88	>	**109**	49	409	>	**382**	52	93	>	**84**	161	61	>	**77**	**150**
			V/C	1.21	1.00	>		0.62	1.77	>		0.81	1.10	>		1.18	0.98	>		**1.30**
			95th	121	59	>		37	327	>		71	358	>		140	286	>		
			Storage	45	-	>		120	-	>		80	-	>		40	-	>		
			Avail.	-76	-	>		83	-	>		9	-	>		-100	-	>		
	Appleby Line and Ironstone Drive	TCS	LOS	F	D	>	**E**	D	D	>	**D**	F	D	>	**E**	D	A	>	**B**	**D**
			Delay	90	50	>	**66**	46	48	>	**48**	351	39	>	**75**	47	9	>	**12**	**51**
			V/C	0.87	0.53	>		0.25	0.42	>		1.68	0.99	>		0.66	0.60	>		**1.45**
			95th	58	131	>		19	48	>		140	418	>		44	149	>		
			Storage	15	-	>		15	-	>		115	-	>		30	-	>		
			Avail.	-43	-	>		-4	-	>		-25	-	>		-14	-	>		
	Appleby Line and Corporate Drive	TCS	LOS	<	F	>	**F**	<	F	>	**F**	B	F	>	**F**	D	B	>	**B**	**E**
			Delay	<	116	>	**116**	<	90	>	**90**	17	86	>	**84**	45	13	>	**15**	**63**
			V/C	<	1.01	>		<	0.94	>		0.25	1.11	>		0.63	0.60	>		**1.06**
			95th	<	215	>		<	144	>		13	450	>		32	130	>		
			Storage	<	-	>		<	-	>		30	-	>		110	-	>		
			Avail.	<	-	>		<	-	>		17	-	>		78	-	>		
	Ironside Drive and Heron Way	TWSC	LOS	<	A	>	**A**	<	A	>	**A**	<	C	>	**C**	B	D	>	**C**	**A**
			Delay	<	6.4	>	**6**	<	0	>	**0**	<	16.7	>	**17**	10.5	28	>	**20**	**7**
			V/C	<	0.21	>		<	0.00	>		<	0.03	>		0.10	0.34	>		
			95th	<	6	>		<	0	>		<	1	>		3	12	>		
			Storage	<	-	>		<	-	>		<	-	>		20	-	>		
			Avail.	<	-	>		<	-	>		<	-	>		17	-	>		
	Ironside Drive and Driveway A	TWSC	LOS	<	A	>	**A**	<	A	>	**A**	<	B	>	**B**	<	E	>	**E**	**A**
			Delay	<	1	>	**1**	<	3	>	**3**	<	14	>	**14**	<	38	>	**38**	**9**
			V/C	<	0.02	>		<	0.09	>		<	0.24	>		<	0.59	>		
			95th	<	1	>		<	3	>		<	8	>		<	27	>		
	Appleby Line and Driveway B	TWSC	LOS			B	**B**						A		**A**		A	>		**A**
			Delay			13	**13**						0		**0**		0	>		**1**
			V/C			0.28							0.52				0.64	>		
			95th			9							0				0	>		
	Ironside Drive and Driveway C	TWSC	LOS	<	A	>	**A**	<	A	>	**A**	<	B	>	**B**					**A**
			Delay	<	0	>	**0**	<	3	>	**3**	<	11	>	**11**					**2**
			V/C	<	0.12	>		<	0.06	>		<	0.06	>						
			95th	<	0	>		<	1	>		<	2	>						

MOE - Measure of Effectiveness
TCS - Traffic Control Signal
TWSC - Two-Way Stop Control
LOS - Level of Service

V/C - Volume to Capacity Ratio
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Avail. - Available Storage (m)

> - Shared Right-Turn Lane
< - Shared Left-Turn Lane

5 Remedial Measures

5.1 Appleby Line Capital Improvements

The Halton Region is planning the widening of Appleby Line[13] from four lanes to six lanes between Fairview Street to Taywood Drive. The timing for widening is tentative scheduled for Year 2029. Detailed plans for the widening are currently not available.

Table 5.1A-B summarises the total traffic operation for the study area intersections with Appleby Line widened to six lanes. Signal timings have been optimized.

Appendix G contains the detailed Synchro 10 reports.

It is anticipated that the planned widening will provide additional north-south capacity along Appleby Line. Select turning movements will remain critical. Overall reductions in delay and v/c ratios are forecast for the northbound and southbound approaches. Minor increases in delay and v/c are forecast for the eastbound and westbound approaches.

[13] Halton Region 2020 Budget and Business Plan Capital Report, 2020-2029 Transportation Forecast

TABLE 5.1A: TOTAL TRAFFIC OPERATION – CAPITAL WORKS AM PEAK HOUR

Analysis Period	Intersection	Control Type	MOE	Direction / Movement / Approach																	
				Eastbound				Westbound				Northbound				Southbound				OVERALL
				Left	Through	Right	Approach	Left	Through	Right	Approach	Left	Through	Right	Approach	Left	Through	Right	Approach	
AM Peak Hour	Appleby Line and Upper Middle Road	TCS	LOS	C	F	>	**F**	F	C	>	**F**	C	D	>	**D**	F	D	>	**E**	**E**
			Delay	22	109	>	**97**	189	32	>	**83**	32	46	>	**44**	159	53	>	**72**	**74**
			V/C	0.52	1.13	>		1.28	0.42	>		0.56	0.83	>		1.22	0.97	>		**1.27**
			95th	43	86	>		114	55	>		20	108	>		145	171	>		
			Storage	45	-	>		120	-	>		80	-	>		40	-	>		
			Avail.	2	-	>		6	-	>		60	-	>		-105	-	>		
	Appleby Line and Ironstone Drive	TCS	LOS	F	E	>	**E**	E	D	>	**E**	F	B	>	**F**	A	A	>	**A**	**D**
			Delay	81	65	>	**70**	71	51	>	**57**	802	11	>	**113**	6	10	>	**10**	**49**
			V/C	0.80	0.79	>		0.75	0.55	>		2.63	0.35	>		0.15	0.63	>		**2.14**
			95th	48	16	>		46	65	>		116	70	>		9	154	>		
			Storage	15	-	>		15	-	>		115	-	>		30	-	>		
			Avail.	-33	-	>		-31	-	>		-1	-	>		21	-	>		
	Appleby Line and Corporate Drive	TCS	LOS	<	C	>	**C**	<	C	>	**C**	C	B	>	**B**	A	B	>	**B**	**B**
			Delay	<	22	>	**22**	<	35	>	**35**	26	14	>	**15**	8	16	>	**16**	**17**
			V/C	<	0.20	>		<	0.76	>		0.42	0.50	>		0.27	0.83	>		**0.87**
			95th	<	128	>		<	62	>		21	71	>		11	180	>		
			Storage	<	-	>		<	-	>		30	-	>		110	-	>		
			Avail.	<	-	>		<	-	>		9	-	>		99	-	>		
	Ironside Drive and Heron Way	TWSC	LOS	<	A	>	**A**	<	A	>	**A**	<	B	>	**B**	B	B	>	**B**	**A**
			Delay	<	3.6	>	**4**	<	0	>	**0**	<	12.9	>	**13**	10.1	13.5	>	**12**	**8**
			V/C	<	0.05	>		<	0.00	>		<	0.00	>		0.20	0.31	>		
			95th	<	1	>		<	0	>		<	0	>		6	10	>		
			Storage	<	-	>		<	-	>		<	-	>		20	-	>		
			Avail.	<	-	>		<	-	>		<	-	>		14	-	>		
	Ironside Drive and Driveway A	TWSC	LOS	<	A	>	**A**	<	A	>	**A**	<	B	>	**B**	<	C	>	**C**	**A**
			Delay	<	0	>	**0**	<	4	>	**4**	<	14	>	**14**	<	18	>	**18**	**5**
			V/C	<	0.01	>		<	0.11	>		<	0.21	>		<	0.12	>		
			95th	<	0	>		<	3	>		<	6	>		<	3	>		
	Appleby Line and Driveway B	TWSC	LOS			A	**A**						A		**A**		A	>		**A**
			Delay			10	**10**						0		**0**		0	>		**0**
			V/C			0.12							0.20				0.61	>		
			95th			3							0				0	>		
	Ironside Drive and Driveway C	TWSC	LOS	<	A	>	**A**	<	A	>	**A**	<	B	>	**B**					**A**
			Delay	<	0	>	**0**	<	3	>	**3**	<	11	>	**11**					**2**
			V/C	<	0.16	>		<	0.04	>		<	0.08	>						
			95th	<	0	>		<	1	>		<	2	>						

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TCS - Traffic Control Signal
TWSC - Two-Way Stop Control
LOS - Level of Service
V/C - Volume to Capacity Ratio
95th - 95th Percentile Queue Length
Ex. - Existing Storage (m)
Avail. - Available Storage (m)
> - Shared Right-Turn Lane
< - Shared Left-Turn Lane

TABLE 5.1B: TOTAL TRAFFIC OPERATION – CAPITAL WORKS PM PEAK HOUR

Analysis Period	Intersection	Control Type	MOE	Direction / Movement / Approach																
				Eastbound				Westbound				Northbound				Southbound				OVERALL
				Left	Through	Right	Approach	Left	Through	Right	Approach	Left	Through	Right	Approach	Left	Through	Right	Approach	
PM Peak Hour	Appleby Line and Upper Middle Road	TCS	LOS	F	C	>	**E**	C	F	>	**F**	E	E	>	**E**	F	D	>	**E**	**E**
			Delay	173	35	>	**66**	24	115	>	**108**	75	64	>	**66**	200	42	>	**67**	**76**
			V/C	1.24	0.68	>		0.46	1.15	>		1.02	1.03	>		1.32	0.89	>		**1.24**
			95th	94	59	>		24	205	>		72	184	>		111	124	>		
			Storage	45	-	>		120	-	>		80	-	>		40	-	>		
			Avail.	-49	-	>		96	-	>		8	-	>		-71	-	>		
	Appleby Line and Ironstone Drive	TCS	LOS	F	D	>	**E**	D	D	>	**D**	F	B	>	**D**	D	A	>	**A**	**D**
			Delay	91	50	>	**66**	47	49	>	**48**	292	16	>	**47**	41	7	>	**9**	**35**
			V/C	0.87	0.52	>		0.25	0.42	>		1.54	0.68	>		0.72	0.42	>		**1.36**
			95th	59	65	>		19	49	>		134	184	>		49	82	>		
			Storage	15	-	>		15	-	>		115	-	>		30	-	>		
			Avail.	-44	-	>		-4	-	>		-19	-	>		-19	-	>		
	Appleby Line and Corporate Drive	TCS	LOS	<	D	>	**D**	<	D	>	**D**	B	C	>	**C**	B	A	>	**B**	**C**
			Delay	<	51	>	**51**	<	41	>	**41**	17	28	>	**28**	18	10	>	**10**	**24**
			V/C	<	0.84	>		<	0.78	>		0.27	0.93	>		0.47	0.47	>		**0.88**
			95th	<	215	>		<	71	>		14	220	>		17	75	>		
			Storage	<	-	>		<	-	>		30	-	>		110	-	>		
			Avail.	<	-	>		<	-	>		16	-	>		93	-	>		
	Ironside Drive and Heron Way	TWSC	LOS	<	A	>	**A**	<	A	>	**A**	<	C	>	**C**	B	D	>	**C**	**A**
			Delay	<	6.4	>	**6**	<	0	>	**0**	<	16.7	>	**17**	10.5	28	>	**20**	**7**
			V/C	<	0.21	>		<	0.00	>		<	0.03	>		0.10	0.34	>		
			95th	<	6	>		<	0	>		<	1	>		3	12	>		
			Storage	<	-	>		<	-	>		<	-	>		20	-	>		
			Avail.	<	-	>		<	-	>		<	-	>		17	-	>		
	Ironside Drive and Driveway A	TWSC	LOS	<	A	>	**A**	<	A	>	**A**	<	B	>	**B**	<	E	>	**E**	**A**
			Delay	<	1	>	**1**	<	3	>	**3**	<	14	>	**14**	<	38	>	**38**	**9**
			V/C	<	0.02	>		<	0.09	>		<	0.24	>		<	0.59	>		
			95th	<	1	>		<	3	>		<	8	>		<	27	>		
	Appleby Line and Driveway B	TWSC	LOS			C	**C**						A		**A**		A	>		**A**
			Delay			18	**18**						0		**0**		0	>		**1**
			V/C			0.37							0.64				0.35	>		
			95th			13							0				0	>		
	Ironside Drive and Driveway C	TWSC	LOS	<	A	>	**A**	<	A	>	**A**	<	B	>	**B**					**A**
			Delay	<	0	>	**0**	<	3	>	**3**	<	11	>	**11**					**2**
			V/C	<	0.12	>		<	0.06	>		<	0.06	>						
			95th	<	0	>		<	1	>		<	2	>						

MOE - Measure of Effectiveness
TCS - Traffic Control Signal
TWSC - Two-Way Stop Control
LOS - Level of Service

V/C - Volume to Capacity Ratio
95th - 95th Percentile Queue Length
Ex. - Existing Storage (m)
Avail. - Available Storage (m)

> - Shared Right-Turn Lane
< - Shared Left-Turn Lane

5.1.1 Appleby Line & Upper Middle Road

Signal optimization and the planned widening of Appleby Line provides additional capacity which helps improve intersection operations.

The road authority should monitor and adjust signal timings along the Appleby Line corridor as traffic volumes increase.

5.1.2 Appleby Line & Ironstone Drive

Signal optimization and the planned widening of Appleby Line provides additional capacity which helps improve intersection operations.

The road authority should monitor and adjust signal timings along the Appleby Line corridor as traffic volumes increase.

5.1.3 Appleby Line & Corporate Drive

Signal optimization and the planned widening of Appleby Line provides additional capacity which helps improve intersection operations.

The road authority should consider repainting the eastbound and westbound approaches to provide exclusive left-turn lanes. The turn lanes appear to fit within the existing cross-section. No widening is anticipated. It was further observed in the field that the two approaches function effective as two lanes. The need for the exclusive left-turn lanes is not driven by the development of the subject site.

The road authority should monitor and adjust signal timings along the Appleby Line corridors as traffic volumes increase.

Table 5.2 summarizes the traffic operations at the intersection of Appleby Line and Corporate Drive under total traffic conditions with the above improvements in place.

Appendix I contains the detailed Synchro 10 reports.

The overall delay and v/c ratio at the intersection of Appleby Line and Corporate Drive is forecast to improve with the implementation of the suggested improvements. The forecast queue length for the eastbound and westbound left-turn lanes is approximately 35 metres. The turn lanes should be designed to accommodate the forecast queue length.



TABLE 5.2: LEFT-TURN LANE IMPROVEMENTS TRAFFIC OPERATIONS

Analysis Period	Intersection	Control Type	MOE	Direction / Movement / Approach																
				Eastbound				Westbound				Northbound				Southbound				OVERALL
				Left	Through	Right	Approach	Left	Through	Right	Approach	Left	Through	Right	Approach	Left	Through	Right	Approach	
AM Peak Hour	Appleby Line and Corporate Drive	TCS	LOS	C	C	>	**C**	C	C	>	**C**	C	B	>	**B**	A	B	>	**B**	**B**
			Delay	24	24	>	**24**	24	24	>	**27**	21	11	>	**11**	6	10	>	**10**	**12**
			V/C	0.12	0.16	>		0.18	0.18	>		0.39	0.45	>		0.23	0.75	>		**0.77**
			95th	8	12	>		34	17	>		18	55	>		8	113	>		
			Storage	-	-	>		-	-	>		30	-	>		110	-	>		
			Avail.	-	-	>		-	-	>		12	-	>		102	-	>		
PM Peak hour	Appleby Line and Corporate Drive	TCS	LOS	D	C	>	**D**	C	C	>	**C**	B	B	>	**B**	B	A	>	**A**	**B**
			Delay	43	29	>	**36**	30	28	>	**29**	13	19	>	**19**	13	7	>	**7**	**16**
			V/C	0.71	0.38	>		0.46	0.30	>		0.24	0.85	>		0.43	0.43	>		**0.79**
			95th	34	30	>		29	26	>		12	179	>		13	55	>		
			Storage	-	-	>		-	-	>		30	-	>		110	-	>		
			Avail.	-	-	>		-	-	>		18	-	>		97	-	>		

MOE - Measure of Effectiveness
TCS - Traffic Control Signal
TWSC - Two-Way Stop Control
LOS - Level of Service

V/C - Volume to Capacity Ratio
95th - 95th Percentile Queue Length
Ex. - Existing Storage (m)
Avail. - Available Storage (m)

> - Shared Right-Turn Lane
< - Shared Left-Turn Lane

5.2 Ironstone Drive & Heron Way

No changes to the existing form of traffic control or lane geometry are required to accommodate the forecast traffic volumes.

5.3 Ironstone Drive & Driveway A

The need for left-turn lanes at the proposed site driveways were evaluated using the Ministry of Transportation's (MTO) Design Supplement for the Transportation Association of Canada Geometric Design Guide for Canadian Roads[14] (TAC Guide). The warrant nomographs determine if a left-turn lane is warranted based on the following criteria:

- Design speed of the road (10 km/h over the posted speed limit);
- Advancing volume;
- Opposing volume; and
- Percentage of advancing vehicles performing a left-turn movement.

Appendix H contains the left-turn lane warrant nomographs.

A westbound left-turn lane with 15 metres of storage is warranted under background traffic conditions. With the forecast increase in traffic (generalized growth and site traffic), no additional storage is warranted in the total traffic conditions.

An eastbound left-turn lane is not warranted for the 1940-1960 Appleby Line driveway.

The existing spacing between Driveway A and Appleby Line is approximately 65 metres. The forecast queue length for the eastbound left-turn movement from Ironstone Drive to Appleby Line is approximately 58 metres. The queuing of vehicles on Ironstone Drive is not forecast to block the Driveway A intersection. The driveway spacing does not allow for the development of back-to-back left-turn lanes between Appleby Line and Driveway A.

The operational conditions suggest low levels of delay, v/c ratios and queuing (LOS A, v/c 0.15, less than five metres) for the westbound approach with a shared travel lane.

[14] MTO Design Supplement for TAC Geometric Design Guide for Canadian Roads, June 2017 Appendix 9 for Chapter 9 Intersections

The no other turn lanes warranted along Ironstone Drive coupled with the good operations, no changes to the existing lane configurations are recommended at this time.

5.4 Appleby Line & Driveway B

No changes to the existing form of traffic control or lane geometry are required to accommodate the forecast traffic volumes.

5.4.1 Driveway B – Closure

During pre-consultation the Halton Region requested an assessment of the Total Traffic condition with the removal of the existing Driveway B connection to Appleby Line.

The potential closure of the driveway is forecast to increase traffic volumes along Ironstone Drive. During the AM peak hour approximately 132 vehicles are forecast to be diverted to the Ironstone Drive. During the PM peak hour approximately 204 vehicles are forecast to be diverted to the Ironstone Drive.

Table 5.2A-B summarizes the level of service conditions with the closure of Driveway B. The closure of the driveway is estimated to result in new capacity issues. The following is noted:

- Appleby Line and Ironstone Drive
  - Eastbound through/right-turn – AM and PM peak hour, LOS E with a v/c greater than 0.85.
  - Southbound through/right-turn – AM peak hour, LOS D with a v/c greater than 1.00.
  - Northbound through/right-turn – AM and PM peak hour, LOS E with a v/c greater than 0.85.
  - Northbound left-turn – AM and PM peak hour, LOS F with a v/c greater than 1.00. With a queue length exceeding the available storage in the PM peak hour.
- Ironside Drive and Driveway A
  - Southbound approach (1940-1960 Appleby Line Driveway) – AM and PM peak hour, LOS D-F with a maximum v/c greater than 1.00.

Appendix J contains the detailed Synchro 10 reports.

Retaining the existing driveway provides sufficient capacity to the existing and proposed developments along the west side of Appleby Line.

5.5 Ironstone Drive & Driveway C

The need for left-turn lanes at the proposed site driveways were evaluated using the MTO Design Supplement for the TAC Guide. **Appendix H** contains the left-turn lane warrant nomographs.

A westbound left-turn lane is not warranted.

No changes to the existing form of traffic control or lane geometry are required to accommodate the forecast traffic volumes.

TABLE 5.3A: TOTAL TRAFFIC OPERATIONS – DRIVEWAY B CLOSURE AM PEAK HOUR

Analysis Period	Intersection	Control Type	MOE	Direction / Movement / Approach																
				Eastbound				Westbound				Northbound				Southbound				OVERALL
				Left	Through	Right	Approach	Left	Through	Right	Approach	Left	Through	Right	Approach	Left	Through	Right	Approach	
AM Peak Hour	Appleby Line and Upper Middle Road	TCS	LOS	C	F	>	**F**	F	D	>	**E**	C	F	>	**F**	F	F	>	**F**	**F**
			Delay	32	251	>	**222**	118	38	>	**64**	32	95	>	**86**	101	133	>	**127**	**134**
			V/C	0.62	1.44	>		1.09	0.49	>		0.55	1.08	>		1.05	1.20	>		**1.28**
			95th	50	104	>		109	62	>		18	205	>		139	300	>		
			Storage	45	-	>		120	-	>		80	-	>		40	-	>		
			Avail.	-5	-	>		11	-	>		62	-	>		-99	-	>		
	Appleby Line and Ironstone Drive	TCS	LOS	D	E	>	**D**	D	D	>	**D**	F	B	>	**F**	A	D	>	**D**	**E**
			Delay	38	59	>	**54**	50	37	>	**41**	804	17	>	**119**	10	44	>	**44**	**66**
			V/C	0.48	0.86	>		0.67	0.39	>		2.63	0.58	>		0.18	1.02	>		**2.05**
			95th	37	22	>		40	49	>		104	129	>		9	385	>		
			Storage	15	-	>		15	-	>		115	-	>		30	-	>		
			Avail.	-22	-	>		-25	-	>		11	-	>		21	-	>		
	Appleby Line and Corporate Drive	TCS	LOS	<	C	>	**C**	<	E	>	**E**	E	B	>	**B**	B	E	>	**E**	**D**
			Delay	<	35	>	**35**	<	60	>	**60**	59	18	>	**19**	11	58	>	**57**	**46**
			V/C	<	0.21	>		<	0.86	>		0.65	0.60	>		0.26	1.06	>		**1.05**
			95th	<	128	>		<	100	>		30	133	>		12	411	>		
			Storage	<	-	>		<	-	>		30	-	>		110	-	>		
			Avail.	<	-	>		<	-	>		0	-	>		98	-	>		
	Ironside Drive and Heron Way	TWSC	LOS	<	A	>	**A**	<	A	>	**A**	<	B	>	**B**	B	B	>	**B**	**A**
			Delay	<	3.6	>	**4**	<	0	>	**0**	<	12.9	>	**13**	10.1	13.5	>	**12**	**8**
			V/C	<	0.05	>		<	0.00	>		<	0.00	>		0.20	0.31	>		
			95th	<	1	>		<	0	>		<	0	>		6	10	>		
			Storage	<	-	>		<	-	>		<	-	>		20	-	>		
			Avail.	<	-	>		<	-	>		<	-	>		14	-	>		
	Ironside Drive and Driveway A	TWSC	LOS	<	A	>	**A**	<	A	>	**A**	<	C	>	**C**	<	D	>	**D**	**A**
			Delay	<	0	>	**0**	<	5	>	**5**	<	15	>	**15**	<	27	>	**27**	**7**
			V/C	<	0.01	>		<	0.14	>		<	0.36	>		<	0.18	>		
			95th	<	0	>		<	4	>		<	13	>		<	5	>		
	Ironside Drive and Driveway C	TWSC	LOS	<	A	>	**A**	<	A	>	**A**	<	B	>	**B**					**A**
			Delay	<	0	>	**0**	<	3	>	**3**	<	11	>	**11**					**2**
			V/C	<	0.16	>		<	0.04	>		<	0.08	>						
			95th	<	0	>		<	1	>		<	2	>						

MOE - Measure of Effectiveness
TCS - Traffic Control Signal
TWSC - Two-Way Stop Control
LOS - Level of Service

V/C - Volume to Capacity Ratio
95th - 95th Percentile Queue Length
Ex. - Existing Storage (m)
Avail. - Available Storage (m)

> - Shared Right-Turn Lane
< - Shared Left-Turn Lane

TABLE 5.3B: TOTAL TRAFFIC OPERATIONS – DRIVEWAY B CLOSURE PM PEAK HOUR

Analysis Period	Intersection	Control Type	MOE	Direction / Movement / Approach																
				Eastbound				Westbound				Northbound				Southbound				OVERALL
				Left	Through	Right	Approach	Left	Through	Right	Approach	Left	Through	Right	Approach	Left	Through	Right	Approach	
PM Peak Hour	Appleby Line and Upper Middle Road	TCS	LOS	F	F	>	**F**	D	F	>	**F**	D	F	>	**F**	F	E	>	**E**	**F**
			Delay	177	88	>	**109**	49	409	>	**382**	52	93	>	**84**	161	61	>	**77**	**150**
			V/C	1.21	1.00	>		0.62	1.77	>		0.81	1.10	>		1.18	0.98	>		**1.30**
			95th	121	119	>		37	327	>		71	358	>		140	286	>		
			Storage	45	-	>		120	-	>		80	-	>		40	-	>		
			Avail.	-76	-	>		83	-	>		9	-	>		-100	-	>		
	Appleby Line and Ironstone Drive	TCS	LOS	D	E	>	**E**	D	D	>	**D**	F	E	>	**F**	D	B	>	**B**	**E**
			Delay	54	70	>	**66**	51	45	>	**46**	464	58	>	**105**	51	13	>	**15**	**68**
			V/C	0.64	0.86	>		0.48	0.34	>		1.92	1.04	>		0.70	0.64	>		**1.58**
			95th	57	131	>		21	48	>		151	431	>		46	159	>		
			Storage	15	-	>		15	-	>		115	-	>		30	-	>		
			Avail.	-42	-	>		-6	-	>		-36	-	>		-16	-	>		
	Appleby Line and Corporate Drive	TCS	LOS	<	F	>	**F**	<	F	>	**F**	B	F	>	**F**	D	B	>	**B**	**E**
			Delay	<	116	>	**116**	<	90	>	**90**	17	86	>	**84**	45	13	>	**15**	**63**
			V/C	<	1.01	>		<	0.94	>		0.25	1.11	>		0.63	0.60	>		**1.06**
			95th	<	215	>		<	144	>		13	450	>		32	130	>		
			Storage	<	-	>		<	-	>		30	-	>		110	-	>		
			Avail.	<	-	>		<	-	>		17	-	>		78	-	>		
	Ironside Drive and Heron Way	TWSC	LOS	<	A	>	**A**	<	A	>	**A**	<	C	>	**C**	B	D	>	**C**	**A**
			Delay	<	6.4	>	**6**	<	0	>	**0**	<	16.7	>	**17**	10.5	28	>	**20**	**7**
			V/C	<	0.21	>		<	0.00	>		<	0.03	>		0.10	0.34	>		
			95th	<	6	>		<	0	>		<	1	>		3	12	>		
			Storage	<	-	>		<	-	>		<	-	>		20	-	>		
			Avail.	<	-	>		<	-	>		<	-	>		17	-	>		
	Ironside Drive and Driveway A	TWSC	LOS	<	A	>	**A**	<	A	>	**A**	<	C	>	**C**	<	F	>	**F**	**D**
			Delay	<	1	>	**1**	<	4	>	**4**	<	16	>	**16**	<	215	>	**215**	**32**
			V/C	<	0.02	>		<	0.14	>		<	0.46	>		<	1.20	>		
			95th	<	1	>		<	4	>		<	20	>		<	72	>		
	Ironside Drive and Driveway C	TWSC	LOS	<	A	>	**A**	<	A	>	**A**	<	B	>	**B**					**A**
			Delay	<	0	>	**0**	<	3	>	**3**	<	11	>	**11**					**2**
			V/C	<	0.12	>		<	0.06	>		<	0.06	>						
			95th	<	0	>		<	1	>		<	2	>						

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TWSC - Two-Way Stop Control
LOS - Level of Service
V/C - Volume to Capacity Ratio
95th - 95th Percentile Queue Length
Ex. - Existing Storage (m)
Avail. - Available Storage (m)
> - Shared Right-Turn Lane
< - Shared Left-Turn Lane

6 Conclusions and Recommendations

6.1 Conclusions

Based on the investigations carried out, it is concluded that:

- **Study Area:** The study area intersections assessed include:
  - Appleby Line and Upper Middle Road (signalized);
  - Appleby Line and Ironstone Drive (signalized);
  - Appleby Line and Corporate Drive (signalized);
  - Ironstone Drive and Heron Way (unsignalized); and
  - The existing and proposed site driveways.
- **Existing Traffic Operations:** Capacity issues are identified at the following intersections:
  - Appleby Line and Upper Middle Road;
  - Appleby Line and Ironstone Drive; and
  - Appleby Line and Corporate Drive.
- **Estimated Site Generated Traffic:** Under full build-out, the subject site is estimated to generate approximately 231 AM peak hour trips and 266 PM peak hour trips.

  The replacement of the existing commercial buildings is forecast to increase traffic volumes by approximately 68 AM trips and 89 PM peak hour trips.
- **Background Traffic Operations:** The capacity constraints identified under existing conditions are expected to continue to occur with the forecast increases in non-site generated traffic. Capacity issues are identified at the following intersections:
  - Appleby Line and Upper Middle Road;
  - Appleby Line and Ironstone Drive;
  - Appleby Line and Corporate Drive;
  - Ironside Drive and Heron Way; and
  - Ironside Drive and Driveway A.
- **Total Traffic Operations:** Site generated traffic is not expected to result in new capacity deficiencies at the study area intersections.
- **Remedial Measures:** The following remedial measures have been identified to address forecast traffic volumes:

- Appleby Line and Upper Middle Road
  - Planned widening of Appleby line to 6 Lanes;
  - Optimizing signal timings.
- Appleby Line and Ironstone Drive
  - Planned widening of Appleby line to 6 Lanes;
  - Optimizing signal timings.
- Appleby Line and Corporate Drive
  - Planned widening of Appleby line to 6 Lanes;
  - Optimizing signal timings;
  - Eastbound left-turn lane with 35 m of storage.
  - Westbound left-turn lane with 35 m of storage
- Ironside Drive and Heron Way
  - No changes to the existing form of traffic control or lane geometry are recommended.
- Ironside Drive and Driveway A
  - No changes to the existing form of traffic control or lane geometry are recommended.
- Ironside Drive and Driveway C
  - No changes to the existing form of traffic control or lane geometry are recommended.

- **Driveway B Connection**: The existing Driveway B connection to Appleby Line be retaining to provide sufficient capacity to the existing and proposed developments along the west side of Appleby Line.

6.2 Recommendations

Based on the findings of this study, it is recommended that:

- The Halton Region monitor the signal timings along the Appleby Line corridor to ensure future signal timings reflect real world changes in traffic volumes;
- The Halton Region continue to plan for the widening of Appleby Line from four to six lanes.
- In addition to the planned widening of Appleby Line the following remedial measures be considered:
  - Eastbound left-turn lane on the Corporate Drive approach to Appleby Line with 35 metres of storage.



- Westbound left-turn lane on the Corporate Drive approach to Appleby Line with 35 metres of storage.

Appendix A

Pre-Study Consultation

Scott Catton

From: Lucas, Steve <Steve.Lucas@burlington.ca>
Sent: 10-Jun-21 11:20
To: Creighton Chartier; Huycke, Adam
Cc: Scott Catton
Subject: RE: Scope of Work - 1860-1900 Appleby Line Development

Categories: Comments

Hello Creighton,

I hope your summer is off to a good start! You can find our comments in Red, in the thread below:

Cheers,

-Steve

From: Creighton Chartier <cchartier@ptsl.com>
Sent: Wednesday, June 09, 2021 2:56 PM
To: Lucas, Steve <Steve.Lucas@burlington.ca>; Huycke, Adam <Adam.Huycke@halton.ca>
Cc: Scott Catton <scatton@ptsl.com>
Subject: RE: Scope of Work - 1860-1900 Appleby Line Development

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

Hi All,

I'm just following up on the status of this request.

Thank you,

Creighton Chartier, O.C.A.D.
Transportation Consultant

Paradigm Transportation Solutions Limited
p: 905.242.2420 x504
e: cchartier@ptsl.com
w: www.ptsl.com

From: Creighton Chartier
Sent: June 3, 2021 4:57 PM
To: Steve.Lucas@burlington.ca; Huycke, Adam <Adam.Huycke@halton.ca>
Cc: Scott Catton <scatton@ptsl.com>
Subject: Scope of Work - 1860-1900 Appleby Line Development

Hi All,

Paradigm Transportations Solutions Limited has been retained to complete a Transportation Impact Study for the proposed development of 1860-1900 Appleby Line, City of Burlington. The site is an existing commercial plaza containing a mix of commercial and office land uses.

Below is a brief description of the development and our proposed Terms of Reference – Transportation Impact Study. Can you please review the study's terms of reference and advise if there are any comments or concern?

Please note a Pre-Application meeting for this site is schedule for June 17th.

Development Description

The concept plan will result in the replacement of the existing commercial buildings along the site's Ironstone Drive frontage. The existing commercial and office land uses along the site's south side will remain unchanged. Based on the information we've been given; the south side will remain compliant with City's zoning requirements.

The concept plan includes approximately 514 apartment units, 2,106 m^2 of commercial space and 1,820 m^2 of office space. Development is expected to occur in three phases with build-out by Year 2028. A preliminary site concept plan is attached.

The site's parking supply is identified as 825 spaces. The identified supply appears to exceed the parking rates outlined in the City-Wide Parking Standards Review report.

Vehicle access is provided by two existing private driveways serving the site. The driveways will remain unchanged. The Appleby Line driveway is located approximately 285 m south of Upper Middle Road and functions as right-in/right-out. The site's Ironstone Drive is full moves and is located approximately 85 m west of Appleby Line.

Preliminary ITE trip generation estimates suggest the site will generate approximately 380 AM peak hour trips and 341 PM peak hour trips.

Trips generated by the existing land uses along the site's Ironstone Drive frontage will be factored out (or replaced) in developing the traffic forecast for this project.

Terms of Reference – Transportation Impact Study

Study Area:

- Appleby Line & Upper Middle Road (signalized);
- Appleby Line & Ironstone Drive (signalized);
- Appleby Line & Corporate Drive (signalized);
- Appleby Line & existing right-in/right-out driveway (unsignalized); and
- Ironstone Drive & existing driveway (unsignalized).
- Please include Ironstone Dr & Heron Way (unsignalized).

Horizon Year & Analysis Periods:

- Five Year Horizon post build-out Year 2033
- Weekday AM peak hours; and
- Weekday PM peak hours

Analysis:

- Synchro 10 with HCM 2000

Existing Data:

- Existing signal timing plans to be obtained from City/Region.
  - Please contact Mohammed Ansari for relevant signal timing plans at Mohammed.Ansari@burlington.ca
- Historical count data will be obtained from City/Region for the study area intersections.
  - Please contact Florin Patrau for TMC availability at Florin.Patrau@burlington.ca
- Historical count volumes to be factor to a baseline condition (Year 2021) using a generalized growth rate of 2% per annum.
  - Transportation planning has no concerns with this proposed factor.
- Traffic generated by the subject site under existing conditions will be estimated using ITE data. Collection of new representative TMC data at the site driveways is not possible due to COVID.
- Base Year traffic forecast will be provided to the City and Region for review and comment.

Background Traffic:

- Generalized background growth rate of 2% per annum.
  - Transportation planning has no concerns with this proposed factor.
- There are no active development applications within 500 m of the site (Per City's Development Application website).
  - Please advise if there are any other development application(s) we should consider.
  - No additional developments required

Site Traffic Estimates:

- ITE Trip Generation Data 10th Edition
  - Multifamily Housing (Low-Rise) (220)
- General Office Building (710)Shopping Center (220)No modal split reductions.
- ITE LUC 820 pass-by trip percentage
- Distribution - existing travel patterns and/or TTS data

Report:

- We will document the study methodologies, findings, and conclusions in a report with appendices containing the detailed analysis results and any data collected.

Please let us know your comments on the study.

Creighton Chartier, O.C.A.D.
Transportation Consultant

Paradigm Transportation Solutions Limited
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Scott Catton

From: Huycke, Adam <Adam.Huycke@halton.ca>
Sent: 10-Jun-21 13:04
To: Creighton Chartier; Steve.Lucas@burlington.ca
Cc: Scott Catton; Scattolon, Walter
Subject: RE: Scope of Work - 1860-1900 Appleby Line Development

Categories: Comments

Good Afternoon Crieghton,

Further to what the City has already provided as comments below, we offer the following additional comments from the Region:

Scenarios:
Please add an analysis scenario that shows the Existing un-signalized right-in/right-out driveway at Appleby Line deleted from the network (i.e. all access from Ironstone Drive only.)

Data Requests:
For the traffic volume counts and traffic signal timing, Region information can be requested directly from our Road Operations group at trafficdatarequests@halton.ca .

Considering the current times we are experiencing with COVID-19, older counts may be used with an acceptable growth rate of 2% for through and turning movements at any Regional intersection.

TIS Report Requirements:
Please note, for the most up to date TIS Guidelines for Halton Region, these can now be found at the following updated web link:
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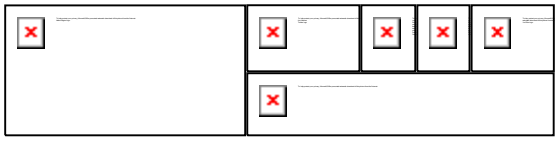
The TIS report shall include:

- Site Plan and Map,
- Size & Number of Development Phases,
- Existing Conditions (Study Area Intersections, Road Network, Pedestrian Routes, Cycling Routes, Transit Services),
- Existing Traffic Conditions (Site Operating Characteristics, Data Collection/Traffic Counts, Analysis Periods (5 years Ahead),
- Future Background Conditions (Horizon Years, Horizon Year Volumes)
- Background Traffic Demand (with TMC's < 2 years old),
- Background Traffic Demand Forecast (with acceptable growth rates)
- Site Generated Traffic (Transit Modal Split, Trip Generation/Distribution/Assignment)
- Future Total Traffic Demand,
- Capacity Analysis (by Intersection, with LOS, Avg. Delay, V/C ratios),
- Traffic Impacts (Tables – Total Traffic with/without Mitigation)
- Access Considerations – Existing, Proposed, Geometrics (turn lanes, sight lines),
- Recommendations - Identify required/recommended road improvements either as a result of the development impacts, or general non-development improvements.
- TDM recommendations (Transit, Pedestrian & Cycling Facilities Analysis)
- Conclusions

Please let us know if you require anything further in this regard.

Adam

Adam Huycke, MCIP, RPP, CPT
Senior Planner
Planning Services
Legislative & Planning Services
Halton Region
905-825-6000, ext. 7604 | 1-866-442-5866



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From: Creighton Chartier <cchartier@ptsl.com>
Sent: Wednesday, June 09, 2021 2:56 PM
To: Steve.Lucas@burlington.ca; Huycke, Adam <Adam.Huycke@halton.ca>
Cc: Scott Catton <scatton@ptsl.com>
Subject: RE: Scope of Work - 1860-1900 Appleby Line Development

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Hi All,

I'm just following up on the status of this request.

Thank you,

Creighton Chartier, O.C.A.D.
Transportation Consultant

Paradigm Transportation Solutions Limited
p: 905.242.2420 x504
e: cchartier@ptsl.com
w: www.ptsl.com

From: Creighton Chartier
Sent: June 3, 2021 4:57 PM
To: Steve.Lucas@burlington.ca; Huycke, Adam <Adam.Huycke@halton.ca>

Cc: Scott Catton <scatton@ptsl.com>
Subject: Scope of Work - 1860-1900 Appleby Line Development

Hi All,

Paradigm Transportations Solutions Limited has been retained to complete a Transportation Impact Study for the proposed development of 1860-1900 Appleby Line, City of Burlington. The site is an existing commercial plaza containing a mix of commercial and office land uses.

Below is a brief description of the development and our proposed Terms of Reference – Transportation Impact Study. Can you please review the study's terms of reference and advise if there are any comments or concern?

Please note a Pre-Application meeting for this site is schedule for June 17th.

Development Description

The concept plan will result in the replacement of the existing commercial buildings along the site's Ironstone Drive frontage. The existing commercial and office land uses along the site's south side will remain unchanged. Based on the information we've been given; the south side will remain compliant with City's zoning requirements.

The concept plan includes approximately 514 apartment units, 2,106 m^2 of commercial space and 1,820 m^2 of office space. Development is expected to occur in three phases with build-out by Year 2028. A preliminary site concept plan is attached.

The site's parking supply is identified as 825 spaces. The identified supply appears to exceed the parking rates outlined in the City-Wide Parking Standards Review report.

Vehicle access is provided by two existing private driveways serving the site. The driveways will remain unchanged. The Appleby Line driveway is located approximately 285 m south of Upper Middle Road and functions as right-in/right-out. The site's Ironstone Drive is full moves and is located approximately 85 m west of Appleby Line.

Preliminary ITE trip generation estimates suggest the site will generate approximately 380 AM peak hour trips and 341 PM peak hour trips.

Trips generated by the existing land uses along the site's Ironstone Drive frontage will be factored out (or replaced) in developing the traffic forecast for this project.

Terms of Reference – Transportation Impact Study

Study Area:

- Appleby Line & Upper Middle Road (signalized);
- Appleby Line & Ironstone Drive (signalized);
- Appleby Line & Corporate Drive (signalized);
- Appleby Line & existing right-in/right-out driveway (unsignalized); and
- Ironstone Drive & existing driveway (unsignalized).

Horizon Year & Analysis Periods:

- Five Year Horizon post build-out Year 2033

- Weekday AM peak hours; and
- Weekday PM peak hours

Analysis:
- Synchro 10 with HCM 2000

Existing Data:
- Existing signal timing plans to be obtained from City/Region.
- Historical count data will be obtained from City/Region for the study area intersections.
- Historical count volumes to be factor to a baseline condition (Year 2021) using a generalized growth rate of 2% per annum.
- Traffic generated by the subject site under existing conditions will be estimated using ITE data. Collection of new representative TMC data at the site driveways is not possible due to COVID.
- Base Year traffic forecast will be provided to the City and Region for review and comment.

Background Traffic:
- Generalized background growth rate of 2% per annum.
- There are no active development applications within 500 m of the site (Per City's Development Application website).
    - Please advise if there are any other development application(s) we should consider.

Site Traffic Estimates:
- ITE Trip Generation Data 10th Edition
    - Multifamily Housing (Low-Rise) (220)
- General Office Building (710)Shopping Center (220)No modal split reductions.
- ITE LUC 820 pass-by trip percentage
- Distribution - existing travel patterns and/or TTS data

Report:
- We will document the study methodologies, findings, and conclusions in a report with appendices containing the detailed analysis results and any data collected.

Please let us know your comments on the study.

Creighton Chartier, O.C.A.D.
Transportation Consultant

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Scott Catton

From: Lucas, Steve <Steve.Lucas@burlington.ca>
Sent: 24-Jun-21 09:48
To: Huycke, Adam; Scott Catton; Creighton Chartier
Cc: Scattolon, Walter; Krusto, Matt
Subject: RE: Scope of Work - 1860-1900 Appleby Line Development

Categories: Comments

Good Morning,

The City supports this approach as well.

Have a great day,

-Steve

From: Huycke, Adam <Adam.Huycke@halton.ca>
Sent: Wednesday, June 23, 2021 3:58 PM
To: 'Scott Catton' <scatton@ptsl.com>; Creighton Chartier <cchartier@ptsl.com>; Lucas, Steve <Steve.Lucas@burlington.ca>
Cc: Scattolon, Walter <Walter.Scattolon@halton.ca>; Krusto, Matt <Matt.Krusto@halton.ca>
Subject: RE: Scope of Work - 1860-1900 Appleby Line Development

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Scott:

The Region finds this approach acceptable.

Kind Regards,

Adam

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From: Scott Catton <scatton@ptsl.com>
Sent: Wednesday, June 23, 2021 11:18 AM
To: Huycke, Adam <Adam.Huycke@halton.ca>; Creighton Chartier <cchartier@ptsl.com>; Steve.Lucas@burlington.ca
Cc: Scattolon, Walter <Walter.Scattolon@halton.ca>
Subject: RE: Scope of Work - 1860-1900 Appleby Line Development

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Hi All

Regarding traffic volumes for use in the study. Obtaining new up to date TMC data would likely result in volumes being lower than expected due to on-going public health measures and travel advice related to COVID-19.

We have developed a base year (Year 2021) traffic forecast for the study area intersections. **Can you please review and advise if the forecast baseline volumes are appropriate for establishing existing conditions for use in this study?**

The forecast is developed by factoring the most recent count data on file for the study area intersection to a year 2021 horizon using a generalized growth rate of 2% per annum. **Table 1** summarizes the TMC data for the study area intersections.

TABLE 1: TMC DATA

Intersection	Date
Appleby Line & Upper Middle Road	October 29, 2019
Appleby Line & Ironstone Drive	April 10, 2018
Appleby Line & Corporate Drive	December 4, 2019
Ironstone Drive & Heron Way	November 19, 2013

The traffic volumes for the site driveways is estimated using ITE data. **Table 2** summarizes the ITE trip generation estimates for the subject site and the Upper Appleby Development (southwest corner of Appleby Line/Upper Middle Road). LUC 820 was used. Using ITE specific land use codes for individual uses within the two commercial plazas results in traffic volumes exceeding the observed (and factored) volumes on the eastbound approach to Ironstone Drive.

TABLE 2: EXISTING TRIP GENERATION ESTIMATE

ITE Land Use	Site	GFA 1,000 sq.ft.	AM			PM		
			In	Out	Sum	In	Out	Sum
820 (Shopping Centre) Fitted Curve Equation	1900 Appleby Line (North Side Buildings)	22.01	101	62	**163**	85	92	**177**
	1900 Appleby Line (South Side Buildings)	31.54	104	64	**168**	111	120	**231**
	1900 Appleby Line (TOTAL)	**53.55**	205	126	**331**	196	212	**408**
	Upper Appleby Development	89.07	122	74	**196**	240	259	**499**

forecast traffic volumes for the existing developments were assigned to the site driveways using the TTS 2016 trip distribution pattern for the zone containing the subject site. **Table 3** summarizes the estimated distribution. The existing site traffic is assumed to be captured in the TMC data at the municipal roadway intersections in the study area.

Table 3: Estimated Trip Distribution

Origin/Destination	AM		PM	
	In	Out	In	Out
East via Upper Middle Road	15%	10%	15%	5%
North via Appleby	20%	25%	25%	20%
South via Appleby	50%	40%	30%	60%
West via Upper Middle Road	15%	25%	30%	15%
Total	**100%**	**100%**	**100%**	**100%**

Volume balancing was completed between study area intersections to result in consistent traffic flows between intersection where no driveways are present. In all cases the volumes were increased to remain conservative. The forecast traffic volumes for the weekday AM and PM peak hours are attached.

If you have any questions or would like to discuss. Please let me know. I would be happy to set up a call.

Thanks very much.

Scott Catton, C.E.T.
Senior Project Manager

Paradigm Transportation Solutions Limited
5A-150 Pinebush Road, Cambridge, ON N1R 8J8
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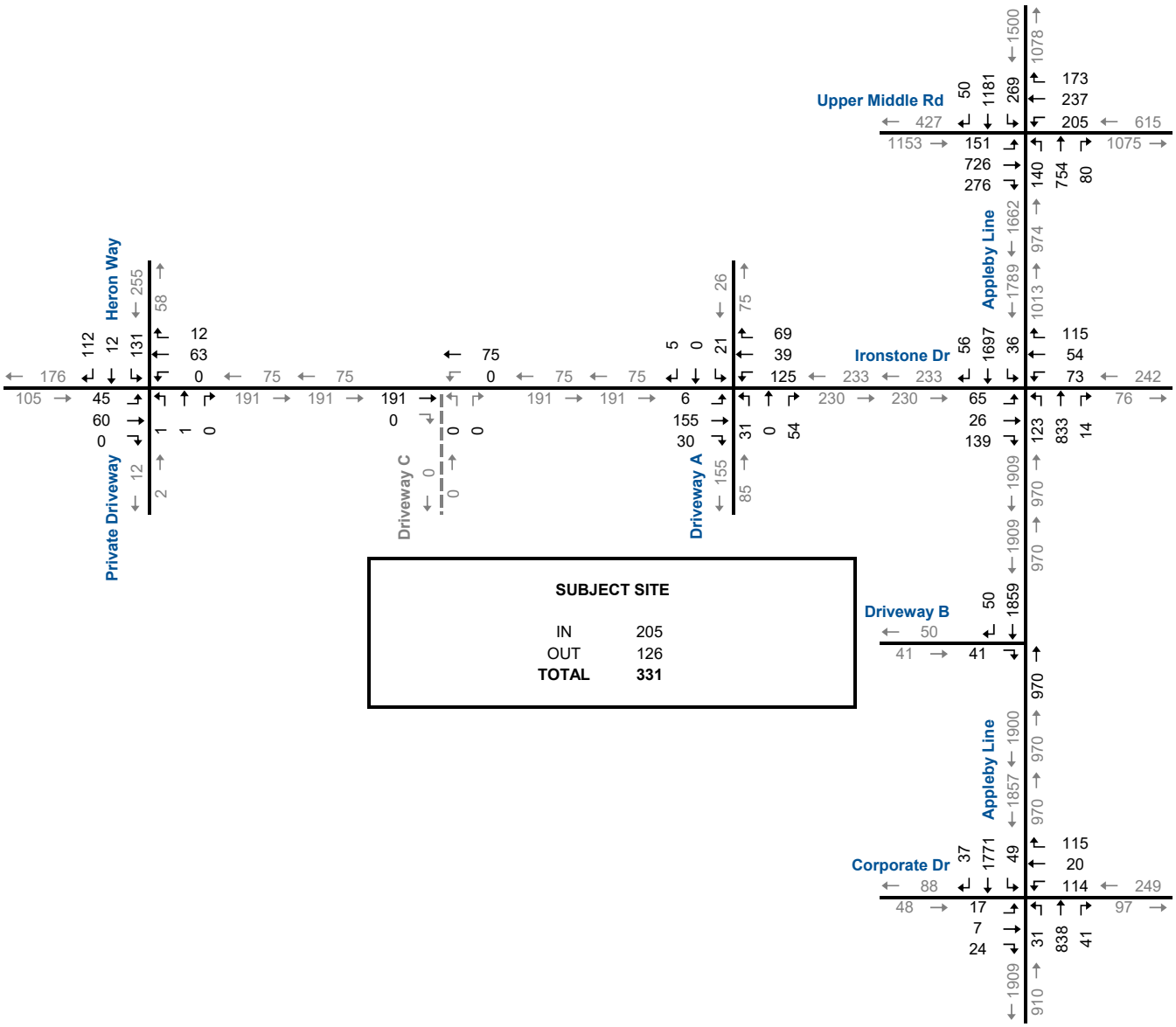
Adam

Adam Huycke, MCIP, RPP, CPT
Senior Planner
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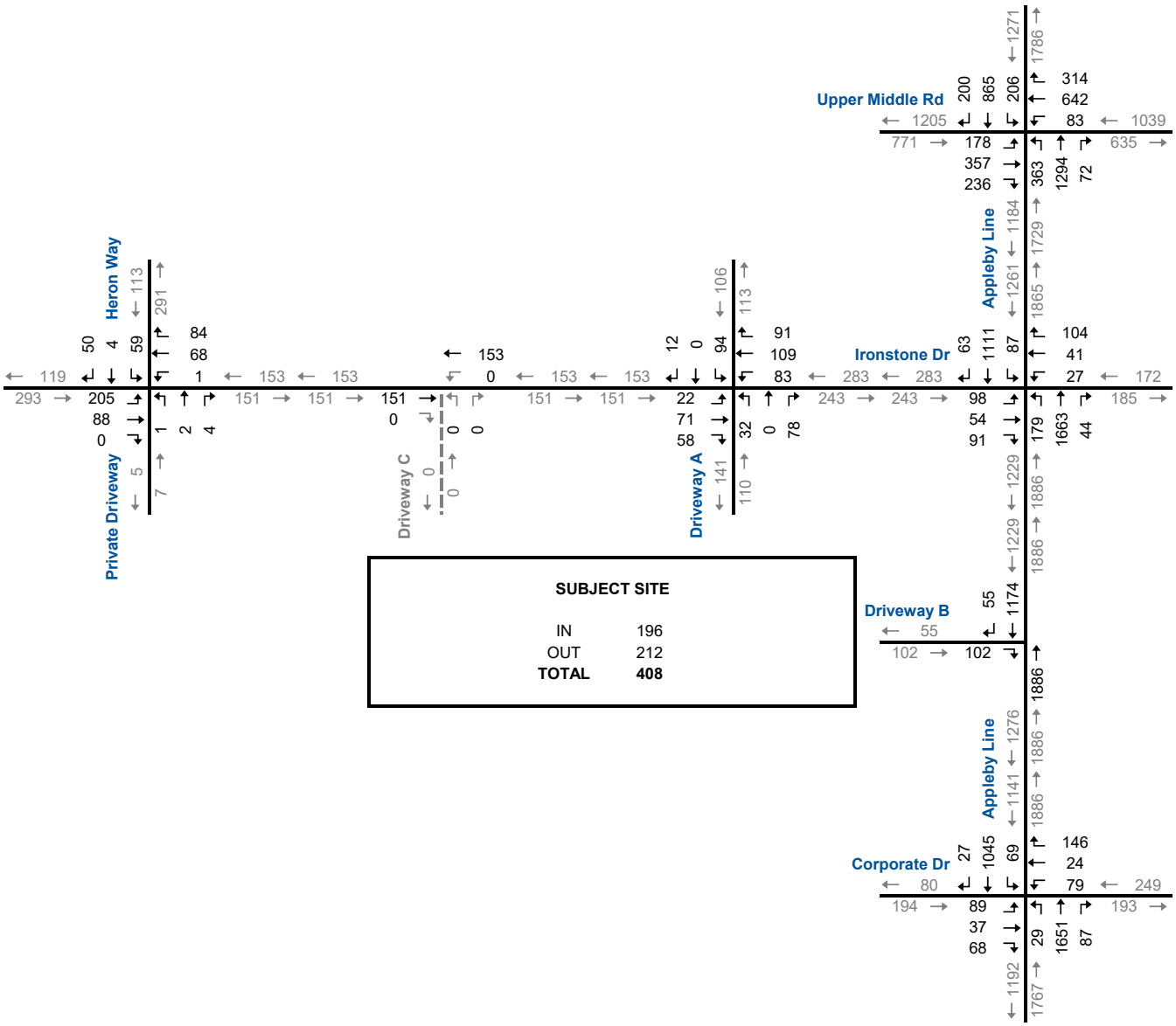
Base Year Volumes

AM Peak Hour



Base Year Volumes

PM Peak Hour



Appendix B

Traffic Data

Upper Middle Rd @ Appleby Line

Morning Peak Diagram

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

One Hour Peak
From: 7:45:00
To: 8:45:00

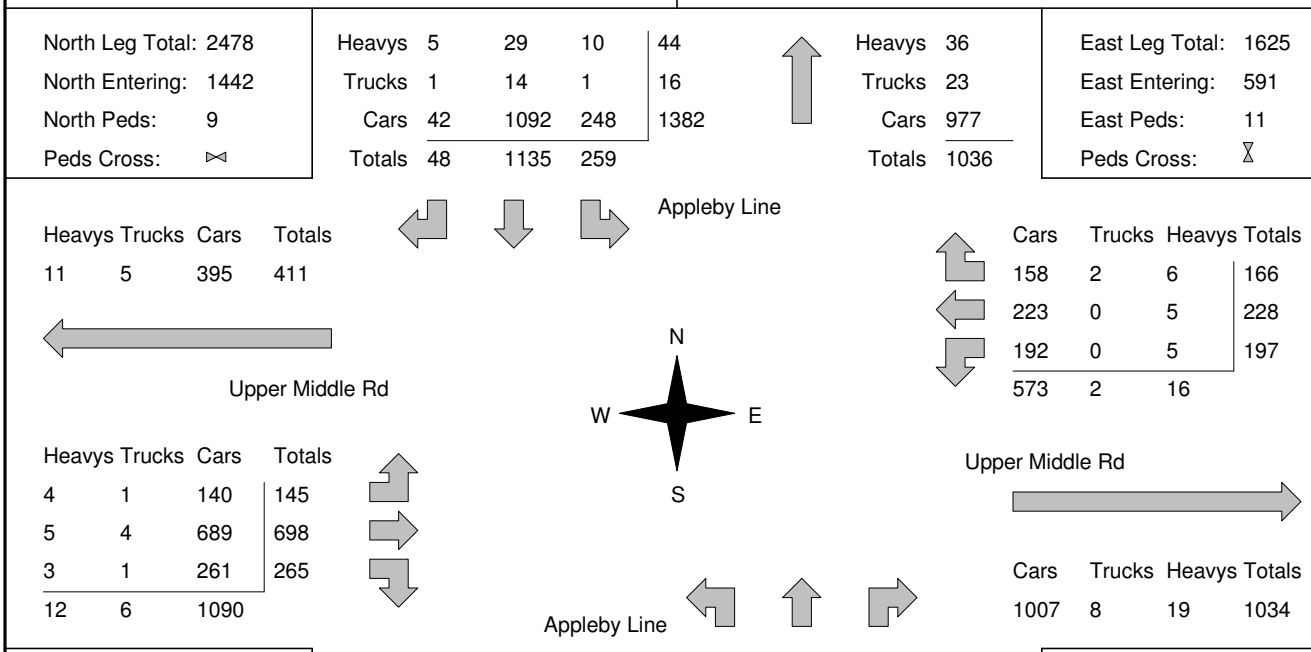
Municipality: Halton Region
Site #: 0000003287
Intersection: Appleby Line & Upper Middle Rd
TFR File #: 9
Count date: 29-Oct-2019

Weather conditions:
Cloudy/Dry

Person(s) who counted:
Cam

**** Signalized Intersection ****

Major Road: Appleby Line runs N/S



Comments

Upper Middle Rd @ Appleby Line

Mid-day Peak Diagram

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

One Hour Peak
From: 12:15:00
To: 13:15:00

Municipality: Halton Region
Site #: 0000003287
Intersection: Appleby Line & Upper Middle Rd
TFR File #: 9
Count date: 29-Oct-2019

Weather conditions:
Cloudy/Dry

Person(s) who counted:
Cam

**** Signalized Intersection ****

Major Road: Appleby Line runs N/S

North Leg Total:	2508			
North Entering:	1169			
North Peds:	12			
Peds Cross:	⋈			
Heavys	4	31	1	36
Trucks	2	9	4	15
Cars	125	822	171	1118
Totals	131	862	176	
Heavys	37			
Trucks	30			
Cars	1272			
Totals	1339			
East Leg Total:	898			
East Entering:	473			
East Peds:	15			
Peds Cross:	⧖			

Appleby Line

Heavys	Trucks	Cars	Totals
5	12	544	561

	Cars	Trucks	Heavys	Totals
	185	1	1	187
	182	4	1	187
	96	0	3	99
	463	5	5	

Upper Middle Rd

N
W E
S

Heavys	Trucks	Cars	Totals
6	5	132	143
0	2	178	180
1	5	194	200
7	12	504	

Upper Middle Rd

	Cars	Trucks	Heavys	Totals
	413	8	4	425

Appleby Line

Peds Cross:	⧖			
West Peds:	19			
West Entering:	523			
West Leg Total:	1084			
Cars	1112			
Trucks	14			
Heavys	35			
Totals	1161			
Cars	237	955	64	1256
Trucks	6	24	2	32
Heavys	0	30	3	33
Totals	243	1009	69	
Peds Cross:	⋈			
South Peds:	24			
South Entering:	1321			
South Leg Total:	2482			

Comments

Upper Middle Rd @ Appleby Line

Afternoon Peak Diagram

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

One Hour Peak
From: 17:00:00
To: 18:00:00

Municipality: Halton Region
Site #: 0000003287
Intersection: Appleby Line & Upper Middle Rd
TFR File #: 9
Count date: 29-Oct-2019

Weather conditions:
Cloudy/Dry

Person(s) who counted:
Cam

**** Signalized Intersection ****

Major Road: Appleby Line runs N/S

North Leg Total:	2938			
North Entering:	1221			
North Peds:	16			
Peds Cross:	⋈			
Heavys	1	15	0	16
Trucks	1	9	2	12
Cars	190	807	196	1193
Totals	192	831	198	
Heavys	15			
Trucks	16			
Cars	1686			
Totals	1717			
East Leg Total:	1609			
East Entering:	999			
East Peds:	29			
Peds Cross:	⧖			

Appleby Line

Heavys	Trucks	Cars	Totals
4	4	1150	1158

Upper Middle Rd

Cars	Trucks	Heavys	Totals
301	1	0	302
614	2	1	617
75	1	4	80
990	4	5	

N
W E
S

Heavys	Trucks	Cars	Totals
2	0	169	171
3	2	338	343
1	4	222	227
6	6	729	

Upper Middle Rd

Cars	Trucks	Heavys	Totals
597	5	8	610

Appleby Line

Peds Cross:	⧖			
West Peds:	14			
West Entering:	741			
West Leg Total:	1899			
Cars	1104			
Trucks	14			
Heavys	20			
Totals	1138			
Cars	346	1216	63	1625
Trucks	1	15	1	17
Heavys	2	13	5	20
Totals	349	1244	69	
Peds Cross:	⋈			
South Peds:	14			
South Entering:	1662			
South Leg Total:	2800			

Comments

Upper Middle Rd @ Appleby Line

Total Count Diagram

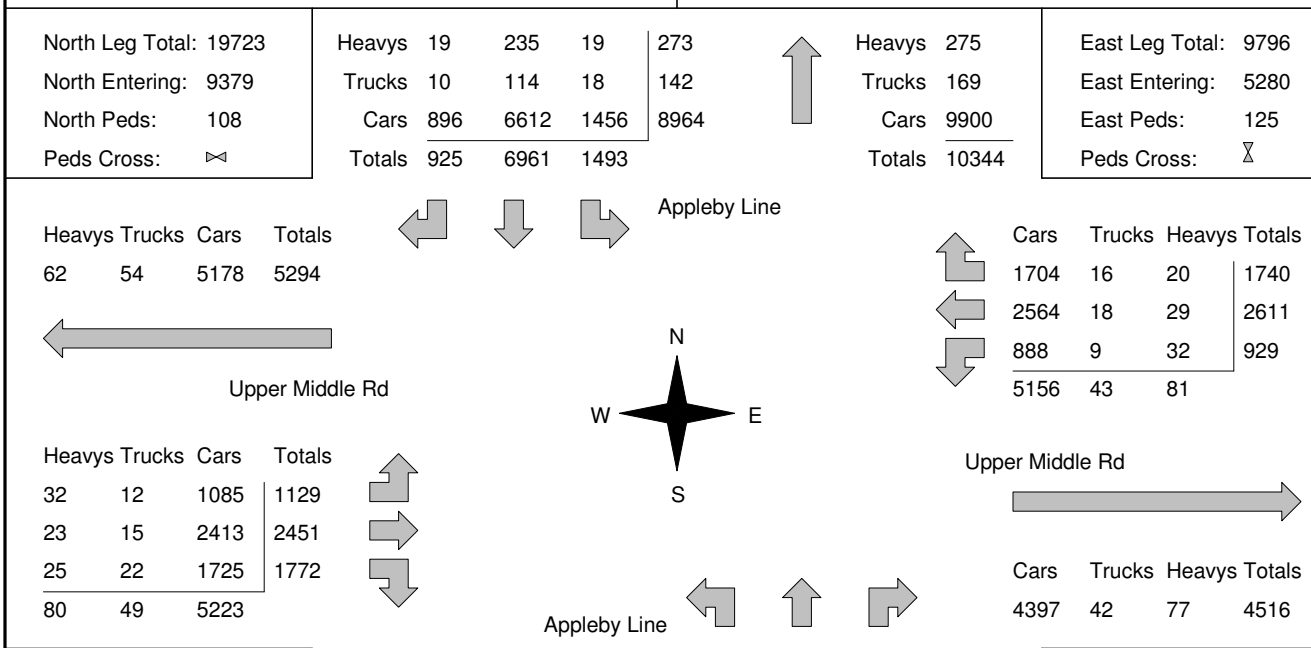
Municipality: Halton Region
Site #: 0000003287
Intersection: Appleby Line & Upper Middle Rd
TFR File #: 9
Count date: 29-Oct-2019

Weather conditions:
Cloudy/Dry

Person(s) who counted:
Cam

**** Signalized Intersection ****

Major Road: Appleby Line runs N/S



Comments

Appleby Line @ Ironstone Dr

Morning Peak Diagram

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

One Hour Peak
From: 7:45:00
To: 8:45:00

Municipality: Halton Region
Site #: 1024830100
Intersection: Appleby Line & Ironstone Dr
TFR File #: 27
Count date: 10-Apr-2018

Weather conditions:
Cloudy/Dry

Person(s) who counted:
Cam

**** Signalized Intersection ****

Major Road: Appleby Line runs N/S

North Leg Total:	2578			
North Entering:	1669			
North Peds:	2			
Peds Cross:	⋈			
Heavys	0	35	2	37
Trucks	0	17	1	18
Cars	36	1547	31	1614
Totals	36	1599	34	
Heavys	22			
Trucks	22			
Cars	865			
Totals	909			
East Leg Total:	275			
East Entering:	212			
East Peds:	10			
Peds Cross:	⧖			

Appleby Line

Heavys	Trucks	Cars	Totals
3	2	142	147

Ironstone Dr

Heavys	Trucks	Cars	Totals
0	3	37	40
1	0	15	16
4	2	79	85
5	5	131	

Cars	Trucks	Heavys	Totals
105	1	2	108
35	0	0	35
69	0	0	69
209	1	2	

N
W E
S

Ironstone Dr

Cars	Trucks	Heavys	Totals
57	1	5	63

Appleby Line

Peds Cross:	⧖			
West Peds:	2			
West Entering:	141			
West Leg Total:	288			
Cars	1695			
Trucks	19			
Heavys	39			
Totals	1753			
Cars	71	723	11	805
Trucks	2	18	0	20
Heavys	3	20	2	25
Totals	76	761	13	
Peds Cross:	⋈			
South Peds:	5			
South Entering:	850			
South Leg Total:	2603			

Comments

Appleby Line @ Ironstone Dr

Mid-day Peak Diagram

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

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

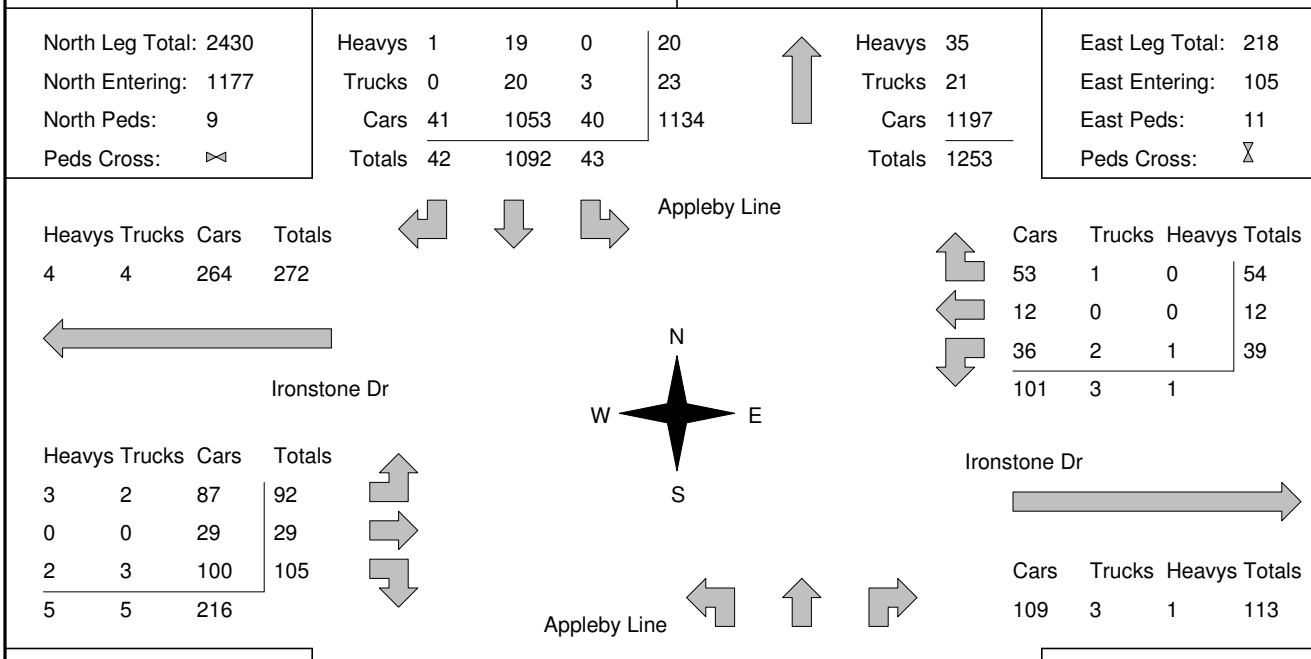
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Cloudy/Dry

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Cam

**** Signalized Intersection ****

Major Road: Appleby Line runs N/S



Comments

Appleby Line @ Ironstone Dr

Afternoon Peak Diagram

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

One Hour Peak
From: 16:45:00
To: 17:45:00

Municipality: Halton Region
Site #: 1024830100
Intersection: Appleby Line & Ironstone Dr
TFR File #: 27
Count date: 10-Apr-2018

Weather conditions:
Cloudy/Dry

Person(s) who counted:
Cam

**** Signalized Intersection ****

Major Road: Appleby Line runs N/S

North Leg Total:	2945			
North Entering:	1188			
North Peds:	8			
Peds Cross:	⋈			
Heavys	0	14	0	14
Trucks	0	10	0	10
Cars	59	1023	82	1164
Totals	59	1047	82	
Heavys	20			
Trucks	10			
Cars	1727			
Totals	1757			
East Leg Total:	326			
East Entering:	162			
East Peds:	14			
Peds Cross:	⧖			

Appleby Line

Heavys	Trucks	Cars	Totals
0	3	264	267

Cars	Trucks	Heavys	Totals
97	1	0	98
39	0	0	39
25	0	0	25
161	1	0	

Ironstone Dr

N
W E
S

Heavys	Trucks	Cars	Totals
1	0	91	92
0	0	41	41
0	1	85	86
1	1	217	

Ironstone Dr

Cars	Trucks	Heavys	Totals
164	0	0	164

Appleby Line

Peds Cross:	⧖			
West Peds:	9			
West Entering:	219			
West Leg Total:	486			
Cars	1133			
Trucks	11			
Heavys	14			
Totals	1158			
Cars	166	1539	41	1746
Trucks	3	9	0	12
Heavys	0	19	0	19
Totals	169	1567	41	
Peds Cross:	⋈			
South Peds:	4			
South Entering:	1777			
South Leg Total:	2935			

Comments

Appleby Line @ Ironstone Dr

Total Count Diagram

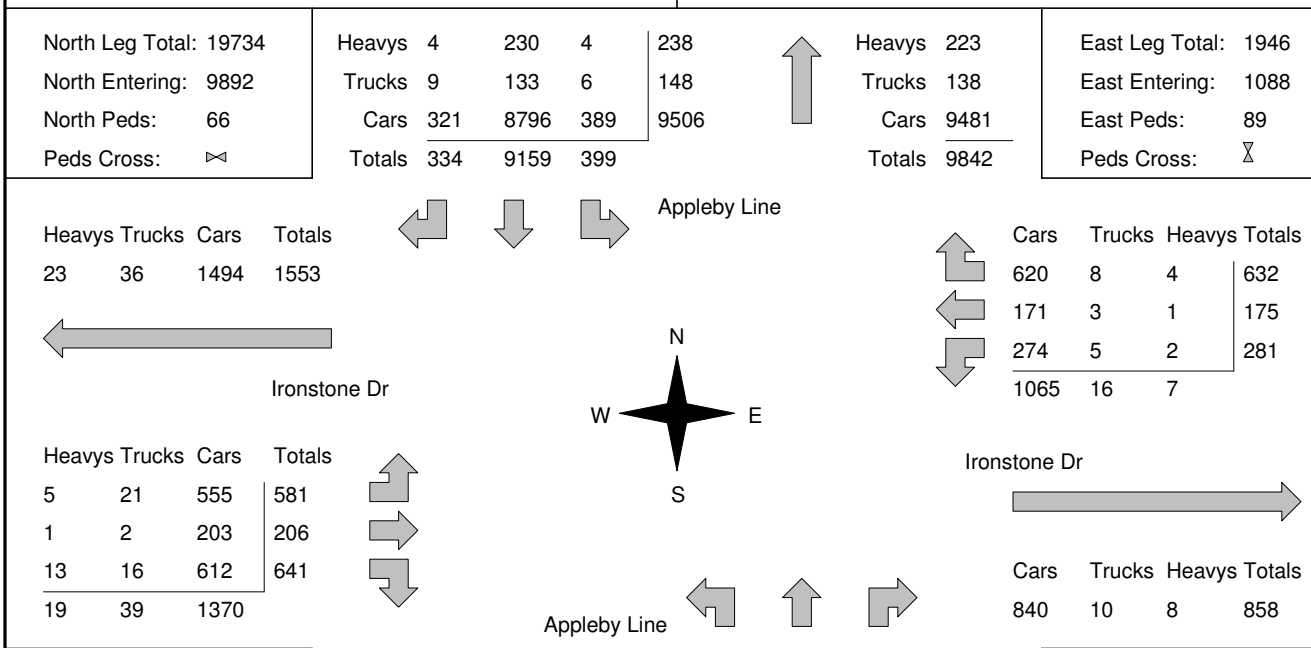
Municipality: Halton Region
Site #: 1024830100
Intersection: Appleby Line & Ironstone Dr
TFR File #: 27
Count date: 10-Apr-2018

Weather conditions:
Cloudy/Dry

Person(s) who counted:
Cam

**** Signalized Intersection ****

Major Road: Appleby Line runs N/S



Comments

Appleby Line @ Corporate Dr

Morning Peak Diagram

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

One Hour Peak
From: 8:00:00
To: 9:00:00

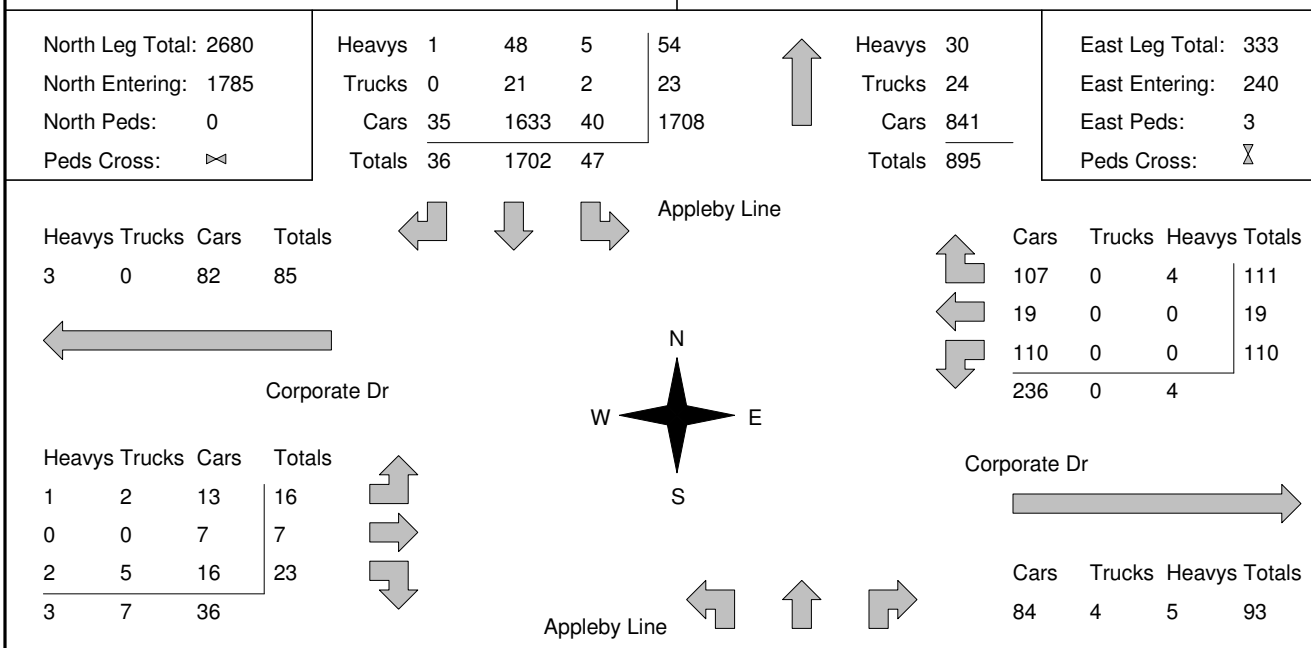
Municipality: Halton Region
Site #: 0000003320
Intersection: Appleby Line & Corporate Dr
TFR File #: 8
Count date: 4-Dec-2019

Weather conditions:
Overcast/Wet

Person(s) who counted:
Cam

**** Signalized Intersection ****

Major Road: Appleby Line runs N/S



Comments

Appleby Line @ Corporate Dr

Mid-day Peak Diagram

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

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

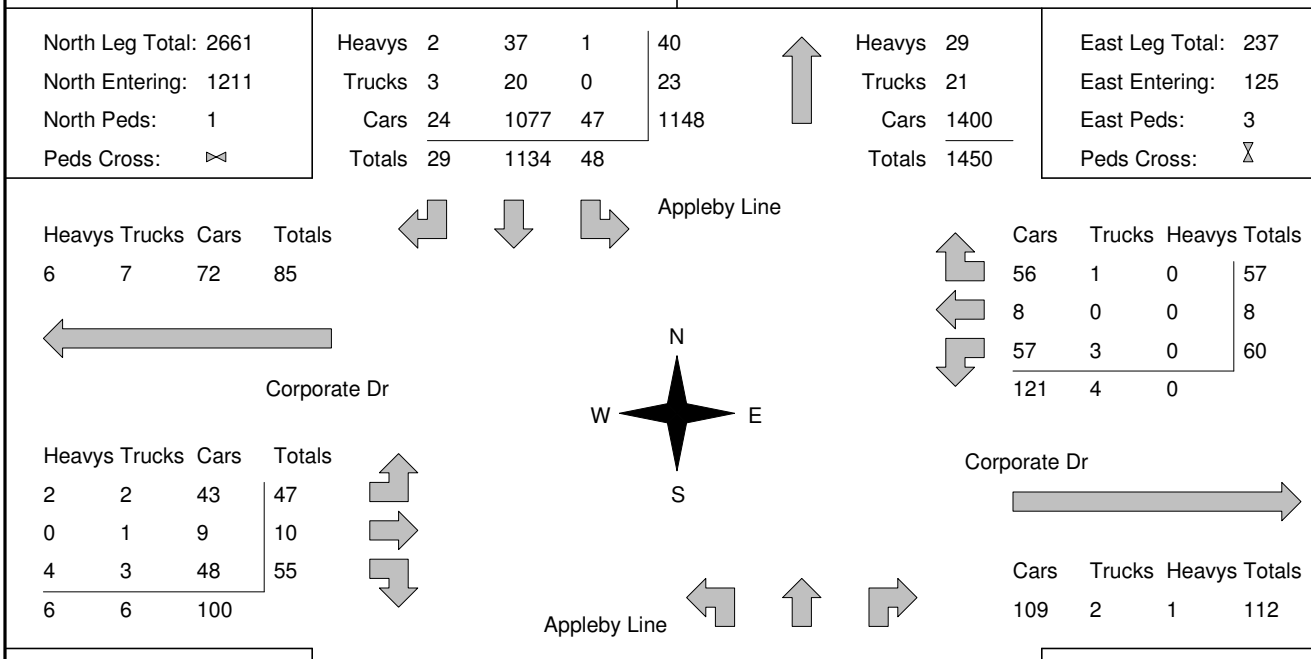
Municipality: Halton Region
Site #: 0000003320
Intersection: Appleby Line & Corporate Dr
TFR File #: 8
Count date: 4-Dec-2019

Weather conditions:
Overcast/Wet

Person(s) who counted:
Cam

**** Signalized Intersection ****

Major Road: Appleby Line runs N/S



Comments

Appleby Line @ Corporate Dr

Afternoon Peak Diagram

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

One Hour Peak
From: 16:15:00
To: 17:15:00

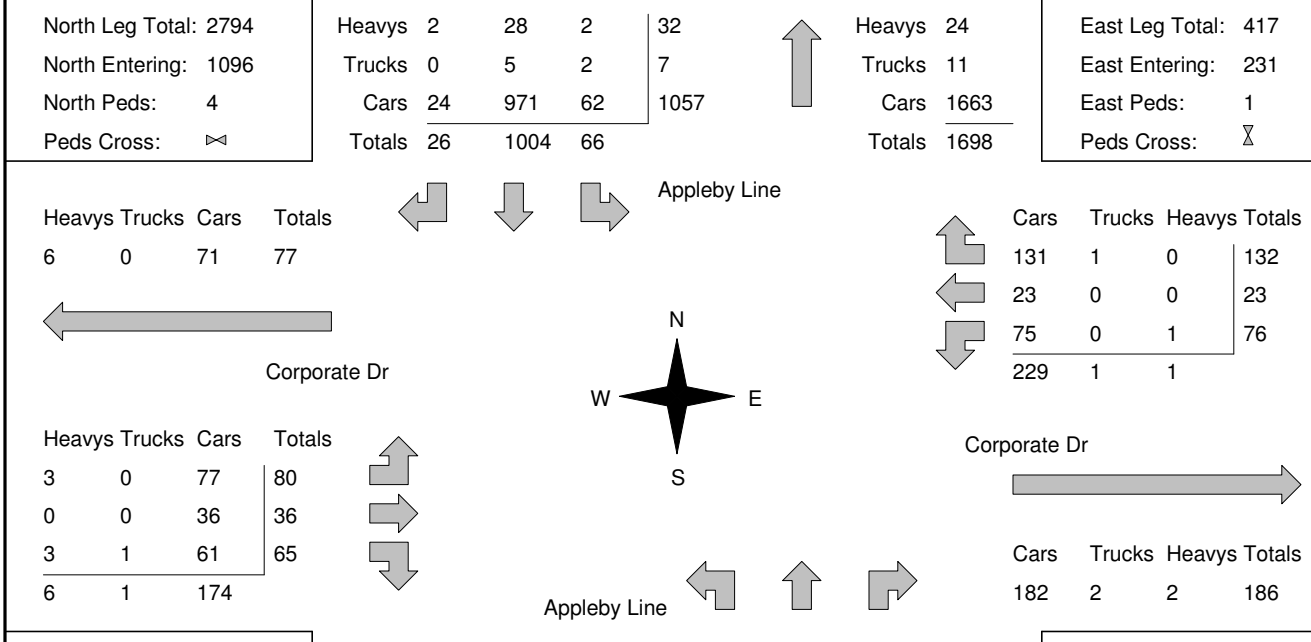
Municipality: Halton Region
Site #: 0000003320
Intersection: Appleby Line & Corporate Dr
TFR File #: 8
Count date: 4-Dec-2019

Weather conditions:
Overcast/Wet

Person(s) who counted:
Cam

**** Signalized Intersection ****

Major Road: Appleby Line runs N/S



Comments

Appleby Line @ Corporate Dr

Total Count Diagram

Municipality: Halton Region
Site #: 0000003320
Intersection: Appleby Line & Corporate Dr
TFR File #: 8
Count date: 4-Dec-2019

Weather conditions:
Overcast/Wet

Person(s) who counted:
Cam

**** Signalized Intersection ****

Major Road: Appleby Line runs N/S

North Leg Total:	20183			
North Entering:	10132			
North Peds:	17			
Peds Cross:	⋈			
Heavys	12	261	14	287
Trucks	9	129	7	145
Cars	195	9108	397	9700
Totals	216	9498	418	
Heavys	237			
Trucks	162			
Cars	9652			
Totals	10051			
East Leg Total:	2399			
East Entering:	1392			
East Peds:	33			
Peds Cross:	⧖			

Appleby Line

Heavys	Trucks	Cars	Totals
34	20	583	637

Cars	Trucks	Heavys	Totals
643	8	6	657
102	0	0	102
620	7	6	633
1365	15	12	

Corporate Dr

N

W E

S

Heavys	Trucks	Cars	Totals
14	8	265	287
0	1	113	114
29	17	293	339
43	26	671	

Corporate Dr

Cars	Trucks	Heavys	Totals
981	12	14	1007

Appleby Line

Peds Cross:	⧖			
West Peds:	22			
West Entering:	740			
West Leg Total:	1377			
Cars	10021			
Trucks	153			
Heavys	296			
Totals	10470			
Cars	286	8744	471	9501
Trucks	11	146	4	161
Heavys	22	217	0	239
Totals	319	9107	475	
Peds Cross:	⋈			
South Peds:	22			
South Entering:	9901			
South Leg Total:	20371			

Comments

Ironstone Dr @ Heron Way

Morning Peak Diagram

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

One Hour Peak
From: 7:45:00
To: 8:45:00

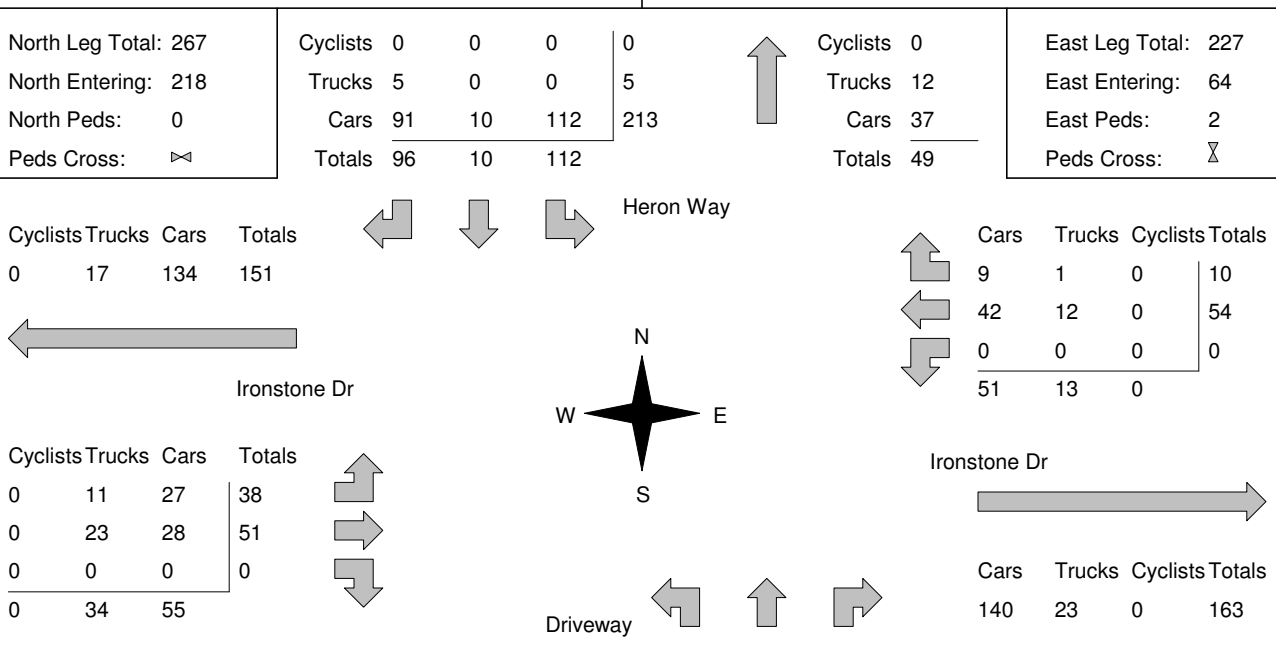
Municipality: Burlington
Site #: 0000203011
Intersection: Ironstone Dr & Heron Way
TFR File #: 2
Count date: 19-Nov-2013

Weather conditions:
Sunny/Dry

Person(s) who counted:
Dominik

**** Non-Signalized Intersection ****

Major Road: Ironstone Dr runs W/E



Comments

Ironstone Dr @ Heron Way

Mid-day Peak Diagram

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

One Hour Peak
From: 12:15:00
To: 13:15:00

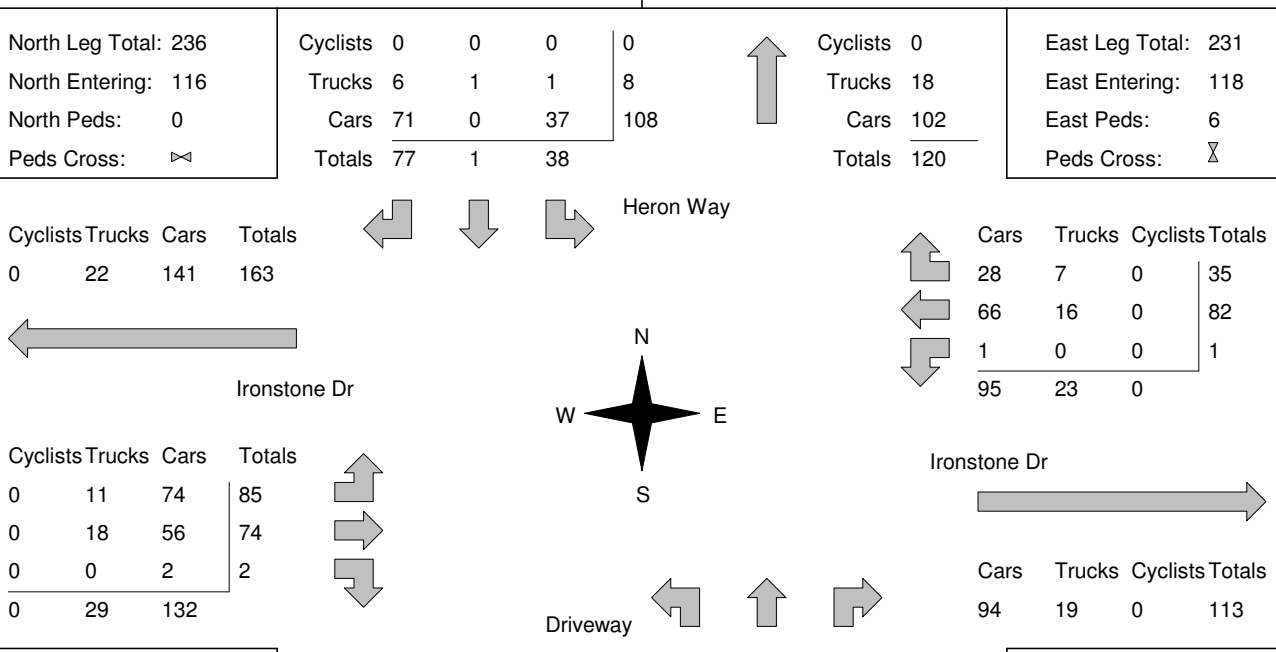
Municipality: Burlington
Site #: 0000203011
Intersection: Ironstone Dr & Heron Way
TFR File #: 2
Count date: 19-Nov-2013

Weather conditions:
Sunny/Dry

Person(s) who counted:
Dominik

**** Non-Signalized Intersection ****

Major Road: Ironstone Dr runs W/E



Comments

Ironstone Dr @ Heron Way

Afternoon Peak Diagram

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

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

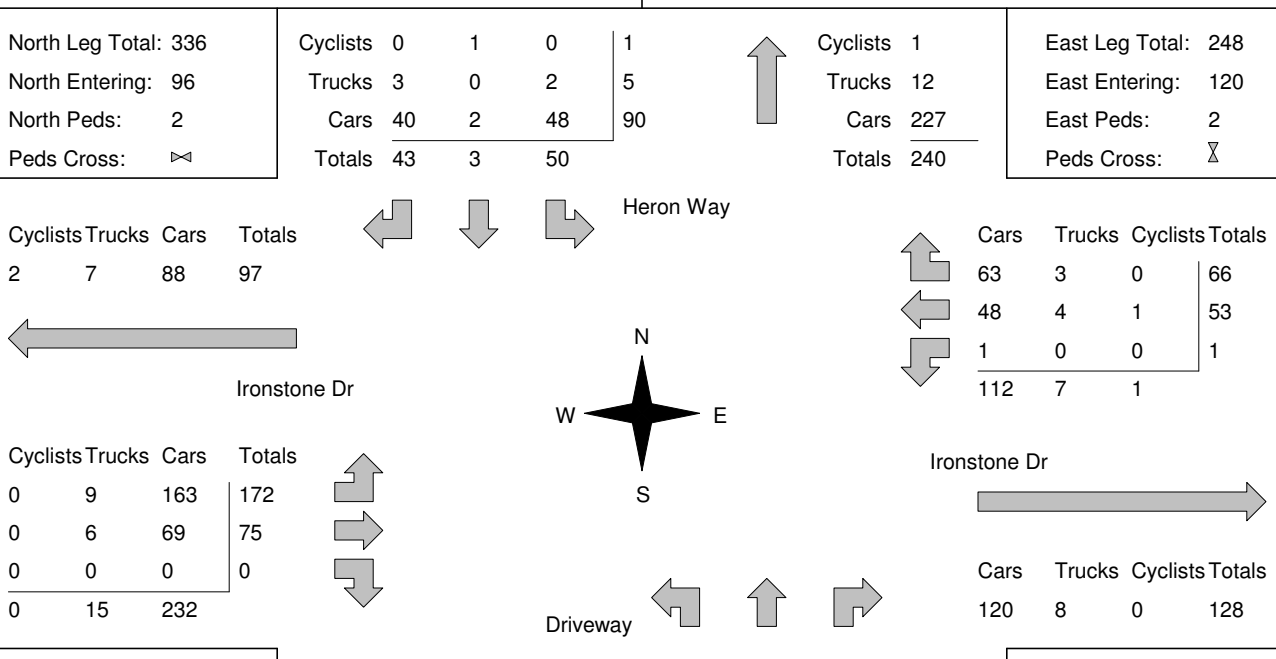
Municipality: Burlington
Site #: 0000203011
Intersection: Ironstone Dr & Heron Way
TFR File #: 2
Count date: 19-Nov-2013

Weather conditions:
Sunny/Dry

Person(s) who counted:
Dominik

**** Non-Signalized Intersection ****

Major Road: Ironstone Dr runs W/E



Comments

Ironstone Dr @ Heron Way

Total Count Diagram

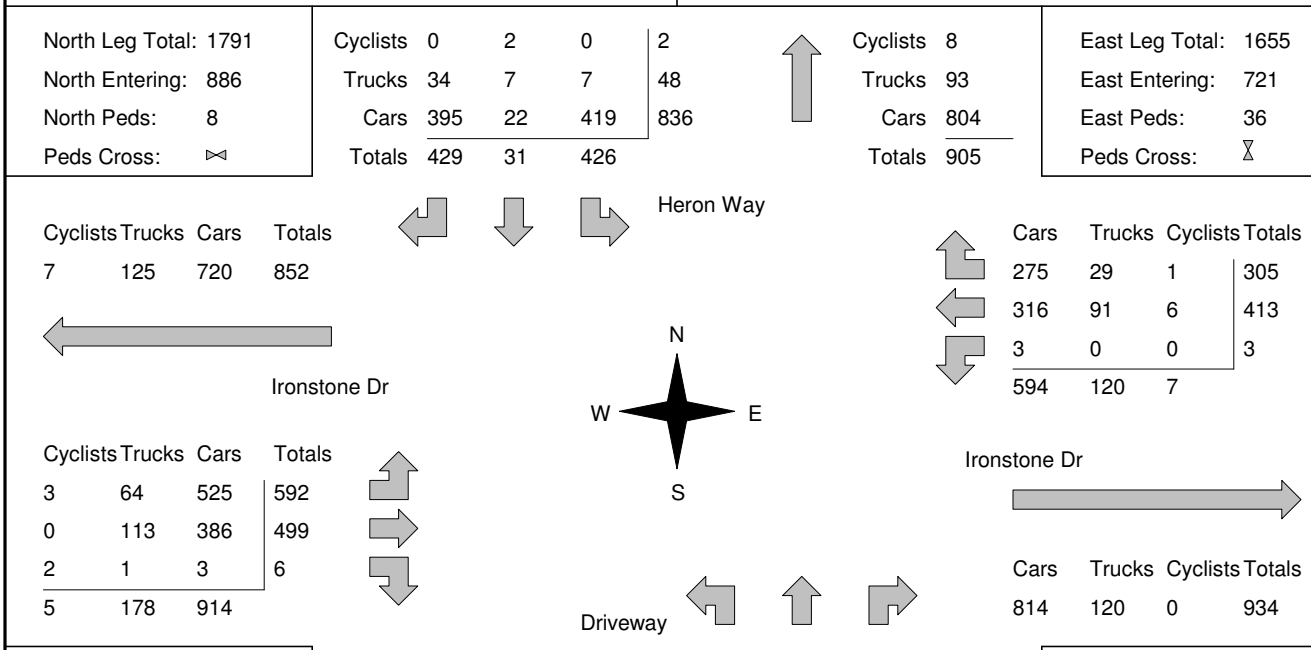
Municipality: Burlington
Site #: 0000203011
Intersection: Ironstone Dr & Heron Way
TFR File #: 2
Count date: 19-Nov-2013

Weather conditions:
Sunny/Dry

Person(s) who counted:
Dominik

**** Non-Signalized Intersection ****

Major Road: Ironstone Dr runs W/E



Comments

Ironstone Dr @ Heron Way

Annual Average Daily Traffic Diagram

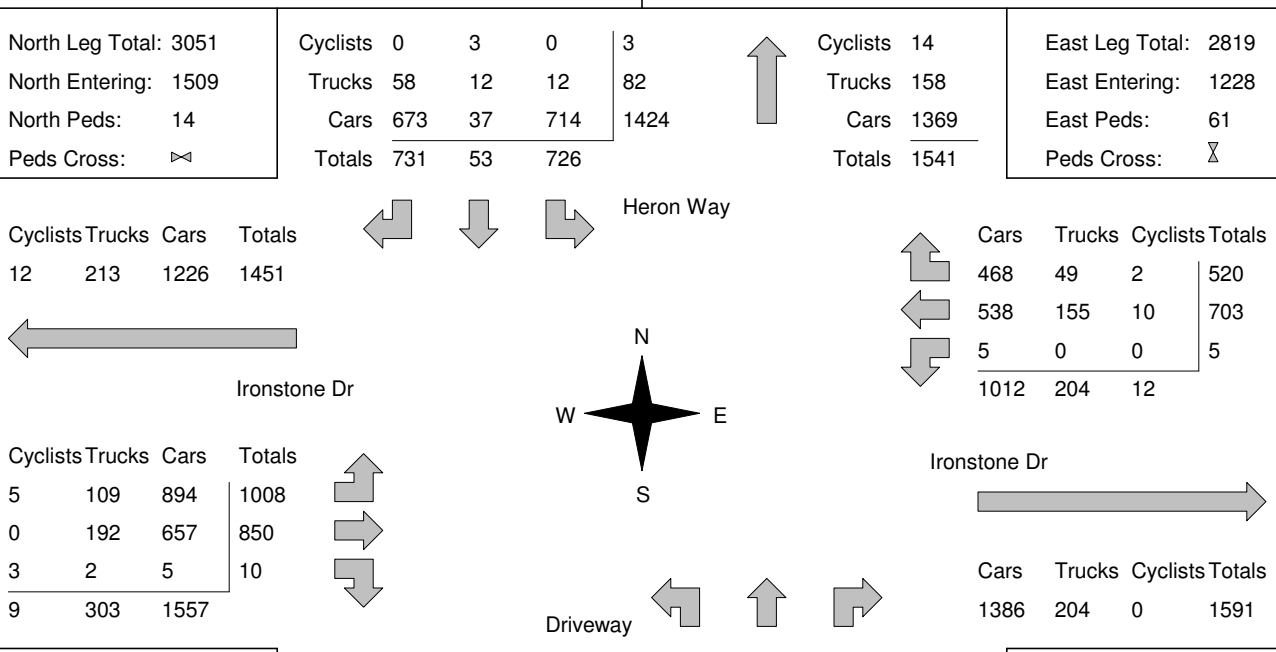
Total Factor = Monthly Factor(0.99) x Daily Factor(0.93) x 24 Hour Factor(1.85) = 1.703295

Municipality: Burlington
Site #: 0000203011
Intersection: Ironstone Dr & Heron Way
TFR File #: 2
Count date: 19-Nov-2013

Weather conditions: Sunny/Dry
Person(s) who counted: Dominik

**** Non-Signalized Intersection ****

Major Road: Ironstone Dr runs W/E



Comments

Intersection Name:	TS ID:	Line No:	Model:	IP address:	Controller Make:
Appleby Ln @ UMR	290	9	ACS/3	172.22.136.2	Econolite

Type of Operation: 8 Phase Semi-Actuated

*-Start from Main Menu

No	Date			Description	Prepared by
	Y	M	D		MA
1					
3	2017	2	3	Amber and All red Changed as per OTM12	

PHASE DESCRIPTION

Ph1	SBLT - Appleby Ln	Ph5	NBLT - Appleby Ln
Ph2	NB - Appleby Ln	Ph6	SB - Appleby Ln
Ph3	WBLT - UMR	Ph7	EBLT - UMR
Ph4	EB - UMR	Ph8	WB - UMR

CONFIGURATION (PHASE SEQ): PHASE IN USE/EXCLUSIVE PED (MM) *- 1 - 2

Phase:	1	2	3	4	5	6	7	8
Phase in Use	X	X	X	X	X	X	X	X
Exclusive PED								

CONTROLLER TIMING DATA - VEHICLE TIMING * - 2 - 1

Timing Plan: 1	Phase: 1	2	3	4	5	6	7	8
Minimum Green	7	8	7	8	7	8	7	8
Walk		7		7		7		7
Ped. Clearance		21		21		21		21
Pedestrian Carry Over								
Vehicle Extension	3	3	3	5	3	3	3	5
MAX 1	10	35	10	30	20	35	10	30
MAX 2	10	35	10	30	20	35	10	30
Yellow Change	3	3.7	3	3.7	3	3.7	3	3.7
Red Clearance	1	2.8	1	2.7	2	2.8	1	2.7
Phase Minimum:	5	35.5	5	35.4	6	35.5	5	35.4

PHASE DATA - VEHICLE AND PEDESTRIAN RECALLS * - 2 - 8

Phase:	1	2	3	4	5	6	7	8
Lock Detector								
Vehicle Recall								
Pedestrian Recall		X				X		
MAX Recall		X				X		
Min Recall								

COORDINATION: COORDINATOR PATTERN, SPLIT PATTERN *** - 3 - 2, - 3 - 3**

Coordinator	Cycle	Offset (sec)	Timing Plan	Split	Phases (sec)							
					1	2	3	4	5	6	7	8
1	120	0	1	1	23	43	16	38	13	53	16	38
2	110	0	1	2	12	51	12	35	19	44	12	35
3	140	0	1	3	18	72	14	36	30	60	15	35
10	0	0	1	10	0	0	0	0	0	0	0	0

TIME BASE: ACTION PLAN, DAY PLAN *** - 5 - 2, - 5 - 3, -5 - 4**

Day Plan	Sched. #	Action Plan	Time Period	Pattern	Timing Plan
1	1	1	06:00	1	1
1	1	2	09:00	2	1
1	1	3	15:00	3	1
1	1	2	19:00	2	1
1	1	10	22:00	254	1
2	2	2	06:00	2	1
2	2	10	21:30	254	1
3	3	2	06:00	2	1
3	3	10	21:30	254	1

Schedule 1 = Day Plan 1
Schedule 2 = Day Plan 2
Schedule 3 = Day Plan 3

Day Plan 1 (Weekday)
Day Plan 2 (Saturday)
Day Plan 3 (Sunday, Holidays)

Action Plan 10 = free (254)

Special Programming:

City of Burlington

ECONOLITE

MOVING TRAFFIC FORWARD

Appleby Ln @ Ironstone Dr - TS 286 - Econolite Type - ASC/3

Configuration Controller Sequence

Phase Ring Sequence and Assignment (MM) 1-1-1

Hardware Alternate Sequence Enable: No

Phase Ring Sequence.....(Note: Sequences identical to the prior one are not printed)

	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16
	B		B		B		B		B							
Sequence 1																
Ring 1	1	2	3	4	9	10	13	14	.	.	.	.	.	.	.	.
Ring 2	5	6	7	8	11	12	15	16	.	.	.	.	.	.	.	.
Sequence 2																
Ring 1	2	1	3	4	10	9	13	14	.	.	.	.	.	.	.	.
Ring 2	5	6	7	8	11	12	15	16	.	.	.	.	.	.	.	.
Sequence 3																
Ring 1	1	2	4	3	9	10	14	13	.	.	.	.	.	.	.	.
Ring 2	5	6	7	8	11	12	15	16	.	.	.	.	.	.	.	.
Sequence 4																
Ring 1	2	1	4	3	10	9	14	13	.	.	.	.	.	.	.	.
Ring 2	5	6	7	8	11	12	15	16	.	.	.	.	.	.	.	.
Sequence 5																
Ring 1	1	2	3	4	9	10	13	14	.	.	.	.	.	.	.	.
Ring 2	6	5	7	8	12	11	15	16	.	.	.	.	.	.	.	.
Sequence 6																
Ring 1	2	1	3	4	10	9	13	14	.	.	.	.	.	.	.	.
Ring 2	6	5	7	8	12	11	15	16	.	.	.	.	.	.	.	.
Sequence 7																
Ring 1	1	2	4	3	9	10	14	13	.	.	.	.	.	.	.	.
Ring 2	6	5	7	8	12	11	15	16	.	.	.	.	.	.	.	.
Sequence 8																
Ring 1	2	1	4	3	10	9	14	13	.	.	.	.	.	.	.	.
Ring 2	6	5	7	8	12	11	15	16	.	.	.	.	.	.	.	.
Sequence 9																
Ring 1	1	2	3	4	9	10	13	14	.	.	.	.	.	.	.	.
Ring 2	5	6	8	7	11	12	16	15	.	.	.	.	.	.	.	.
Sequence 10																
Ring 1	2	1	3	4	10	9	13	14	.	.	.	.	.	.	.	.
Ring 2	5	6	8	7	11	12	16	15	.	.	.	.	.	.	.	.
Sequence 11																
Ring 1	1	2	4	3	9	10	14	13	.	.	.	.	.	.	.	.
Ring 2	5	6	8	7	11	12	16	15	.	.	.	.	.	.	.	.
Sequence 12																
Ring 1	2	1	4	3	10	9	14	13	.	.	.	.	.	.	.	.
Ring 2	5	6	8	7	11	12	16	15	.	.	.	.	.	.	.	.
Sequence 13																
Ring 1	1	2	3	4	9	10	13	14	.	.	.	.	.	.	.	.
Ring 2	6	5	8	7	12	11	16	15	.	.	.	.	.	.	.	.
Sequence 14																
Ring 1	2	1	3	4	10	9	13	14	.	.	.	.	.	.	.	.
Ring 2	6	5	8	7	12	11	16	15	.	.	.	.	.	.	.	.
Sequence 15																
Ring 1	1	2	4	3	9	10	14	13	.	.	.	.	.	.	.	.
Ring 2	6	5	8	7	12	11	16	15	.	.	.	.	.	.	.	.
Sequence 16																
Ring 1	2	1	4	3	10	9	14	13	.	.	.	.	.	.	.	.
Ring 2	6	5	8	7	12	11	16	15	.	.	.	.	.	.	.	.

Phases In Use/Exclusive Ped (MM) 1-2

Phase	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Phases In Use	X	X		X		X		X								
Exclusive Ped																

Phase Compatibility (MM) 1-1-2

Phase	
n/a	Barrier Mode

Phase and Overlap Descriptions

Phase	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Description	SBLT	NB		EB		SB		WB								
Overlap	**A**	**B**	**C**	**D**	**E**	**F**	**G**	**H**	**I**	**J**	**K**	**L**	**M**	**N**	**O**	**P**
Description																

Administration (MM) 1-7-1

Enable Controller/Cabinet Interlock CRC	No
CRC (16 bit)	3897
Enable Automatic Backup to Datakey	No

Backup Prevent (MM) 1-1-3

	Phases	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Timing	**1**		.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
Phases	**2**	X		.	.	.	.	.	.	.	.	.	.	.	.	.	.
	3	.	.		.	.	.	.	.	.	.	.	.	.	.	.	.
	4	.	.	X		.	.	.	.	.	.	.	.	.	.	.	.
	5	.	.	.	.		.	.	.	.	.	.	.	.	.	.	.
	6	.	.	.	.	X		.	.	.	.	.	.	.	.	.	.
	7	.	.	.	.	.	.		.	.	.	.	.	.	.	.	.
	8	.	.	.	.	.	.	X		.	.	.	.	.	.	.	.
	9	.	.	.	.	.	.	.	.		.	.	.	.	.	.	.
	10	.	.	.	.	.	.	.	.	.		.	.	.	.	.	.
	11	.	.	.	.	.	.	.	.	.	.		.	.	.	.	.
	12	.	.	.	.	.	.	.	.	.	.	.		.	.	.	.
	13	.	.	.	.	.	.	.	.	.	.	.	.		.	.	.
	14	.	.	.	.	.	.	.	.	.	.	.	.	.		.	.
	15	.	.	.	.	.	.	.	.	.	.	.	.	.	.		.
	16	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	

Simultaneous Gap (MM) 1-1-4

	Phases	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
	1		.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
	2	.		.	.	.	.	.	.	.	.	.	.	.	.	.	.
	3	.	.		.	.	.	.	.	.	.	.	.	.	.	.	.
	4	.	.	.		.	.	.	.	.	.	.	.	.	.	.	.
	5	.	.	.	.		.	.	.	.	.	.	.	.	.	.	.
Phase	**6**	.	.	.	.	.		.	.	.	.	.	.	.	.	.	.
Must	**7**	.	.	.	.	.	.		.	.	.	.	.	.	.	.	.
Gap	**8**	.	.	.	.	.	.	.		.	.	.	.	.	.	.	.
With	**9**	.	.	.	.	.	.	.	.		.	.	.	.	.	.	.
Phase	**10**	.	.	.	.	.	.	.	.	.		.	.	.	.	.	.
	11	.	.	.	.	.	.	.	.	.	.		.	.	.	.	.
	12	.	.	.	.	.	.	.	.	.	.	.		.	.	.	.
	13	.	.	.	.	.	.	.	.	.	.	.	.		.	.	.
	14	.	.	.	.	.	.	.	.	.	.	.	.	.		.	.
	15	.	.	.	.	.	.	.	.	.	.	.	.	.	.		.
	16	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	
	Disable	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.

Load Switch Assignments (MM) 1-3

	Phase / Overlap	Type	Dimming				Power Up	Auto		Flash Together
			Red	Yellow	Green	Dark		Red	Yellow	
1	1	V				-	Auto	X		
2	2	V				-	Auto	X		X
3	3	V				-	Auto	X		
4	4	V				-	Auto	X		X
5	5	V				+	Auto	X		
6	6	V				+	Auto	X		X
7	7	V				+	Auto	X		
8	8	V				+	Auto	X		X
9	2	P				-	Auto			
10	4	P				-	Auto			
11	6	P				+	Auto			
12	8	P				+	Auto			
13	1	O				-	Auto	X		
14	2	O				+	Auto	X		X
15	3	O				-	Auto	X		
16	4	O				+	Auto	X		X

City of Burlington

ECONOLITE

MOVING TRAFFIC FORWARD

Appleby Ln @ Ironstone Dr - TS 286 - Econolite Type - ASC/3

Configuration Port 1 (SDLC)

Port 1 SDLC (MM) 1-4-1

BIU	1	2	3	4	5	6	7	8
Term & Facility	X	X						
Detector Rack	X	X						

Enable TS2/MMU Type Cabinet: No
Enable MMU Extended Status: Yes
Enable SDLC Stop Time: Yes
Enable 3 Critical RFE's Lockup: Yes

MMU Program (MM) 1-4-2

Channel Can Serve With Channel	
Channel 1	**Channel 2**
1	5
1	6
1	11
2	5
2	6
2	9
2	11
3	7
3	8
3	12
4	7
4	8
4	10
4	12
5	9
6	9
6	11
7	10
8	10
8	12
9	11
10	12

Color Check Enable (MM) 1-4-3

Enable Color Check: No

MMU/LS	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Green																
Yellow																
Red																

Secondary Stations/Tests (MM) 1-4-4

ID	1	2	3	4	5	6	7	8	MMU
Term & Facility									

ID	1	2	3	4	5	6	7	8	Diag
Detector Rack									

Enable SDLC Diagnostic Test: No

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MOVING TRAFFIC FORWARD

Appleby Ln @ Ironstone Dr - TS 286 - Econolite Type - ASC/3

Configuration Communications 1 (SDLC)

Ethernet Port Configuration (MM) 1-5-1

Controller IP:	172.22.135.2
Subnet Mask:	255.255.0.0
Default Gateway IP:	172.22.0.255
Server IP:	192.168.210.120

NTCIP (MM) 1-5-5

NTCIP Backup Time (Sec):	0
NTCIP UDP Port:	501
Ethernet Priority:	1
Port 2 Priority (Port C50S for 2070):	4
Port 3A Priority (Port C21S for 2070):	2
Port 3B Priority (Port C22S for 2070):	3

Port Configuration (MM) 1-5-2 to 1-5-4

Port	2 (C50S)	3A (C21S)	3B (C22S)
Protocol	NTCIP	NTCIP	ECPIP
Enable	No	No	Yes
Data Rate (BPS)	19.2K	19.2K	1200
Data, Parity, Stop	8 N 1	8 N 1	8 O 1
Address	0	0	0
Telemetry Response Delay	0.0	0.0	0.9
Duplex - Half or Full	Full	Full	Full
Flow Control	Yes	Yes	Yes
Group Address	0	0	0
Single Flag Enable	Yes	Yes	Yes
RTS to CTS Delay	n/a	n/a	3.0
RTS Turn Off Delay	n/a	n/a	2.0
Dropout Time	10	10	300
Early RTS	n/a	n/a	No
Telemetry Mode	n/a	n/a	FSK
ATCS Railroad	0	n/a	n/a
ATCS Railroad Line	0	n/a	n/a
ATCS Group	0	n/a	n/a
Wayside Device	0	n/a	n/a
ATC Device	0	n/a	n/a
Wayside Subnode	0	n/a	n/a
ATC Subnode	0	n/a	n/a

ECPIP (MM) 1-5-6

Controller Address:	0
Expanded System Detector Address:	0

System Detector Assignment

System Detector	Local Detector

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Appleby Ln @ Ironstone Dr - TS 286 - Econolite Type - ASC/3

Configuration Logging / Display

Event Logging (MM) 1-6-1

Critical RFE's (MMU/TF)	Yes	3 Critical Errors Within 24 Hours	No
MMU Flash Faults	Yes	Local Flash Fault	Yes
Non-Critical RFE's (Det/Test)	No	Detector Errors	No
Coordination Errors	Yes	Controller Download	Yes
Preemption Events	Yes	TSP Events	Yes
Power On/Off	Yes	Low Battery	Yes
Access	Yes	Data Change	Yes
Online / Offline	Yes		

Alarm Event	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Enable Logging	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X

Display Options (MM) 1-7-2

Key Click Enable:	No
Backlight Enable:	Yes
LED Mode:	Auto
Display Mode:	Basic
Screen Format:	Basic
Trans Mode Pop-Up Disable:	No

Sign On (MM) 8-5

Sign On Message Line 1: Solutions that Move the World
Sign On Message Line 2:

Software Modules (MM) 8-7

Application Version: 02.58.00
OS (Boot) Version: 01.14.03

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Appleby Ln @ Ironstone Dr - TS 286 - Econolite Type - ASC/3

Logic Processor Page 1

Logic Statement Control (MM) 1-8-1

Logic #	Statement Control

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Logic Processor Page 2

Logic Statements (MM) 1-8-2

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MOVING TRAFFIC FORWARD

Appleby Ln @ Ironstone Dr - TS 286 - Econolite Type - ASC/3

Controller Timing Plan (MM) 2-1

Plan 1

Phase	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Direction	SBLT	NB		EB		SB		WB								
Min Green	7	8	0	8	0	8	0	8	5	5	5	5	5	5	5	5
Bk Min Green	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CS Min Green	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Delay Green	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Walk	0	7	0	7	0	7	0	7	0	10	0	10	0	10	0	10
Walk2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Walk Max	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ped Clear	0	14	0	27	0	14	0	27	0	16	0	16	0	16	0	16
Ped Clear 2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ped Clear Max	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ped CO	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Vehicle Ext	3.0	3.0	0.0	3.0	0.0	3.0	0.0	3.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Vehicle Ext 2	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
Max1	10	35	0	20	0	35	0	20	35	35	35	35	35	35	35	35
Max2	10	35	0	20	0	35	0	20	40	40	40	40	40	40	40	40
Max3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
DYM Max	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Dym Step	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
Yellow	3.0	3.7	0.0	3.3	0.0	3.7	0.0	3.3	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Red Clear	1.0	2.1	0.0	3.2	0.0	2.1	0.0	3.3	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Red Max	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
Red Revert	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Act B4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Sec/Act	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
Max Int	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Time B4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cars Wt	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
STPTDuc	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
TTReduc	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Min Gap	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

Plan 2

Phase	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Direction	SBLT	NB		EB		SB		WB								
Min Green	7	8	0	8	0	8	0	8	5	5	5	5	5	5	5	5
Bk Min Green	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CS Min Green	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Delay Green	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Walk	0	7	0	7	0	7	0	7	0	10	0	10	0	10	0	10
Walk2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Walk Max	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ped Clear	0	14	0	27	0	14	0	27	0	16	0	16	0	16	0	16
Ped Clear 2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ped Clear Max	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ped CO	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Vehicle Ext	3.0	3.0	0.0	3.0	0.0	3.0	0.0	3.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Vehicle Ext 2	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
Max1	10	35	0	20	0	35	0	20	35	35	35	35	35	35	35	35
Max2	10	35	0	20	0	35	0	20	40	40	40	40	40	40	40	40
Max3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
DYM Max	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Dym Step	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
Yellow	3.0	3.7	0.0	3.3	0.0	3.7	0.0	3.3	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Red Clear	1.0	2.1	0.0	3.2	0.0	2.1	0.0	3.3	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Red Max	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
Red Revert	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Act B4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Sec/Act	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
Max Int	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Time B4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cars Wt	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
STPTDuc	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
TTReduc	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Min Gap	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

Plan 3

Phase	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Direction	SBLT	NB		EB		SB		WB								
Min Green	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5
Bk Min Green	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CS Min Green	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Delay Green	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Walk	0	10	0	10	0	10	0	10	0	10	0	10	0	10	0	10
Walk2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Walk Max	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ped Clear	0	16	0	16	0	16	0	16	0	16	0	16	0	16	0	16
Ped Clear 2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ped Clear Max	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ped CO	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Vehicle Ext	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Vehicle Ext 2	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
Max1	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35
Max2	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40
Max3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
DYM Max	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Dym Step	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
Yellow	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Red Clear	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Red Max	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
Red Revert	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Act B4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Sec/Act	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
Max Int	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Time B4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cars Wt	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
STPTDuc	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
TTReduc	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Min Gap	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

Plan 4

Phase	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Direction	SBLT	NB		EB		SB		WB								
Min Green	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5
Bk Min Green	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CS Min Green	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Delay Green	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Walk	0	10	0	10	0	10	0	10	0	10	0	10	0	10	0	10
Walk2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Walk Max	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ped Clear	0	16	0	16	0	16	0	16	0	16	0	16	0	16	0	16
Ped Clear 2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ped Clear Max	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ped CO	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Vehicle Ext	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Vehicle Ext 2	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
Max1	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35
Max2	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40
Max3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
DYM Max	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Dym Step	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
Yellow	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Red Clear	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Red Max	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
Red Revert	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Act B4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Sec/Act	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
Max Int	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Time B4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cars Wt	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
STPTDuc	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
TTReduc	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Min Gap	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

City of Burlington

ECONOLITE

MOVING TRAFFIC FORWARD

Appleby Ln @ Ironstone Dr - TS 286 - Econolite Type - ASC/3

Controller Overlaps

Vehicle Overlaps (MM) 2-2

Overlap	Type	Lag Green	Yellow	Red	Adv. Green

Phases

Overlap	Phase	Included	Protect	Ped Protect	Not Overlap	Modifier	Lag X Phases	Lag 2 Phases	Flash Green

PPLT FYA

Overlap	Protected Phase (Left Turn)	Permissive Phase (Opposing Thru)	Flashing Arrow Output	Flashing Arrow Output CH	Delay Start of FYA	Delay Start of Clearance	Action Plan SF Bit Disable	Ped Protected Enable

Guaranteed Minimum Time Data (MM) 2-4

Phase	Min Green	Walk	Ped Clear	Yellow	Red Clear	Overlap Green
A01	5	0	7	3.0	0.0	5
B02	5	0	7	3.0	0.0	5
C03	5	0	7	3.0	0.0	5
D04	5	0	7	3.0	0.0	5
E05	5	0	7	3.0	0.0	5
F06	5	0	7	3.0	0.0	5
G07	5	0	7	3.0	0.0	5
H08	5	0	7	3.0	0.0	5
I09	5	0	7	3.0	0.0	5
J10	5	0	7	3.0	0.0	5
K11	5	0	7	3.0	0.0	5
L12	5	0	7	3.0	0.0	5
M13	5	0	7	3.0	0.0	5
N14	5	0	7	3.0	0.0	5
O15	5	0	7	3.0	0.0	5
P16	5	0	7	3.0	0.0	5

City of Burlington

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MOVING TRAFFIC FORWARD

Appleby Ln @ Ironstone Dr - TS 286 - Econolite Type - ASC/3

Controller Pedestrian Overlaps
Vehicle / Pedestrian Overlaps (MM) 2-3

Included	Pedestrian Overlaps

City of Burlington

ECONOLITE

MOVING TRAFFIC FORWARD

Appleby Ln @ Ironstone Dr - TS 286 - Econolite Type - ASC/3

Controller Start / Flash Data (MM) 2-5

Start Up

Phase	Phase Setting
1	.
2	Y
3	.
4	.
5	.
6	Y
7	.
8	.
9	.
10	.
11	.
12	.
13	.
14	.
15	.
16	.

Overlap
A
B
C
D

Flash Thru Mon: No
Flash Time: 0
All Red: 0
Power Start Seq: 1
MUTCD Enabled: No
Y->G: n/a

Automatic Flash

Entry
2
6

Exit
2
6

Overlap Exit
A
B
C
D

Flash Thru Mon: No
Exit Flash: W
Minimum Flash: 8
Mimimum Recall: No
Cycle Through Phase: No

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MOVING TRAFFIC FORWARD

Appleby Ln @ Ironstone Dr - TS 286 - Econolite Type - ASC/3

Controller Options

Controller Options (MM) 2-6-1

Phase	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Flashing Grn Ph	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
Guar Passage																
Non-Act I		X				X										
Non-Act II				X				X								
Dual Entry		X		X		X		X								
Cond Service																
Cond Reservice																
Ped Re-Service																
Rest In Walk		X				X										
Flashing Walk																
Ped Clr-Yel																
Ped Clr-Red																
IGRN + Veh Ext																

Ped Clear Protect: Off Unit Red Revert: 2.0 MUTCD 3 Seconds Don't Walk: No

Pre-Timed Mode (MM) 2-7

Enable Pre-Timed Mode: No Free Input Disables Pre-Timed: No

Phase	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Pre-Timed																

Phase Recall Options (MM) 2-8

Plan # 1

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Lock Detector									X	X	X	X	X	X	X	X
Vehicle Recall																
Ped Recall		X				X										
Max Recall		X				X										
Soft Recall																
No Rest																
AI Calc																

Plan # 2

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Lock Detector									X	X	X	X	X	X	X	X
Vehicle Recall																
Ped Recall		X				X										
Max Recall		X				X										
Soft Recall																
No Rest																
AI Calc																

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Coordination Options

Options (MM) 3-1

Manual Pattern	Auto	ECPI Coord	Yes
System Source	SYS	System Format	PTN
Splits In	Seconds	Offsets In	Seconds
Transition	Smooth	Max Select	MAXINH
Dwell / Add Time	0		
Delay Coord Wk-LZ	No	Force Off	Float
Offset Reference	Lead	Use Ped Time	No
Ped Recall	No	Ped Reservice	No
Local Zero Override	No	FO Added Ini Green	No
Re-sync Count	0	Multisync	No

Auto Perm Minimum Green (Seconds) (MM) 3-4

Phase	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Minimum Green	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Split Demand (MM) 3-5

Phase	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Demand 1																
Demand 2																

Demand	1	2
Detector	0	0
Call Time (Sec)	0	0
Cycle Count	0	0

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Appleby Ln @ Ironstone Dr - TS 286 - Econolite Type - ASC/3

Coordination Pattern Data
Coordinator Pattern Data (MM) 3-2

Coordinator Pattern # 1

Split Pattern	1	TS2 (Pat-Off)	0-1	Splits In	Seconds
Cycle	120	Std (COS)	9	Offsets In	Seconds
Offset Value	118s	Dwell/Add Time	0		
Actuated Coord	No	Timing Plan	1		
Actuated Walk Rest	No	Sequence	0		
Phase Reservice	No	Action Plan	0		
Max Select	None	Force Off	None		

Split Preference Phases

Phase	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Description	SBLT	NB		EB		SB		WB								
Splits (Split Pat 1)	12	66	0	42	0	78	0	42	0	0	0	0	0	0	0	0
Pref 1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pref 2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Ring	1	2	3	4
Ring Split Ext	0	0	0	0
Ring Displacement	-	0	0	0
Split Sum	120s	120s	0s	0s

Misc. Data

Veh Perm 1	0	Veh Perm 2	0	Veh Perm 2 Disp	0
Split Demand Pat 1	0	Split Demand Pat 2	0	Crossing Arterial Pat	0

Split Pattern

Phase	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Coord Phase		X				X										
Vehicle Recall																
Pedestrian Recall		X				X										
Recall to Max. Time																
Omit Phase									X	X	X	X	X	X	X	X
Special Funciton Outputs																

Coordinator Pattern # 2

Split Pattern	2	TS2 (Pat-Off)	0-2	Splits In	Seconds
Cycle	110	Std (COS)	17	Offsets In	Seconds
Offset Value	92s	Dwell/Add Time	0		
Actuated Coord	No	Timing Plan	1		
Actuated Walk Rest	No	Sequence	0		
Phase Reservice	No	Action Plan	0		
Max Select	None	Force Off	None		

Split Preference Phases

Phase	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Description	SBLT	NB		EB		SB		WB								
Splits (Split Pat 2)	12	56	0	42	0	68	0	42	0	0	0	0	0	0	0	0
Pref 1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pref 2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Ring	1	2	3	4
Ring Split Ext	0	0	0	0
Ring Displacement	-	0	0	0
Split Sum	110s	110s	0s	0s

Misc. Data

Veh Perm 1	0	Veh Perm 2	0	Veh Perm 2 Disp	0
Split Demand Pat 1	0	Split Demand Pat 2	0	Crossing Arterial Pat	0

Split Pattern

Phase	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Coord Phase		X				X										
Vehicle Recall																
Pedestrian Recall		X				X										
Recall to Max. Time																
Omit Phase									X	X	X	X	X	X	X	X
Special Funciton Outputs																

Coordinator Pattern # 3

Split Pattern	3	TS2 (Pat-Off)	0-3	Splits In	Seconds
Cycle	140	Std (COS)	25	Offsets In	Seconds
Offset Value	126s	Dwell/Add Time	0		
Actuated Coord	No	Timing Plan	1		
Actuated Walk Rest	No	Sequence	0		
Phase Reservice	No	Action Plan	0		
Max Select	None	Force Off	None		

Split Preference Phases

Phase	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Description	SBLT	NB		EB		SB		WB								
Splits (Split Pat 3)	12	86	0	42	0	98	0	42	0	0	0	0	0	0	0	0
Pref 1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pref 2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Ring	1	2	3	4
Ring Split Ext	0	0	0	0
Ring Displacement	-	0	0	0
Split Sum	140s	140s	0s	0s

Misc. Data

Veh Perm 1	0	Veh Perm 2	0	Veh Perm 2 Disp	0
Split Demand Pat 1	0	Split Demand Pat 2	0	Crossing Arterial Pat	0

Split Pattern

Phase	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Coord Phase		X				X										
Vehicle Recall																
Pedestrian Recall		X				X										
Recall to Max. Time																
Omit Phase									X	X	X	X	X	X	X	X
Special Funciton Outputs																

Coordinator Pattern # 11

Split Pattern	11	TS2 (Pat-Off)	3-2	Splits In	Seconds
Cycle	120	Std (COS)	137	Offsets In	Seconds
Offset Value	118s	Dwell/Add Time	0		
Actuated Coord	No	Timing Plan	2		
Actuated Walk Rest	No	Sequence	0		
Phase Reservice	No	Action Plan	0		
Max Select	None	Force Off	None		

Split Preference Phases

Phase	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Description	SBLT	NB		EB		SB		WB								
Splits (Split Pat 11)	12	66	0	42	0	78	0	42	0	0	0	0	0	0	0	0
Pref 1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pref 2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Ring	1	2	3	4
Ring Split Ext	0	0	0	0
Ring Displacement	-	0	0	0
Split Sum	120s	120s	0s	0s

Misc. Data

Veh Perm 1	0	Veh Perm 2	0	Veh Perm 2 Disp	0
Split Demand Pat 1	0	Split Demand Pat 2	0	Crossing Arterial Pat	0

Split Pattern

Phase	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Coord Phase		X				X										
Vehicle Recall																
Pedestrian Recall		X				X										
Recall to Max. Time																
Omit Phase									X	X	X	X	X	X	X	X
Special Funciton Outputs																

Coordinator Pattern # 13

Split Pattern	13	TS2 (Pat-Off)	4-1	Splits In	Seconds
Cycle	140	Std (COS)	153	Offsets In	Seconds
Offset Value	126s	Dwell/Add Time	0		
Actuated Coord	No	Timing Plan	1		
Actuated Walk Rest	No	Sequence	0		
Phase Reservice	No	Action Plan	0		
Max Select	None	Force Off	None		

Split Preference Phases

Phase	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Description	SBLT	NB		EB		SB		WB								
Splits (Split Pat 13)	12	86	0	42	0	98	0	42	0	0	0	0	0	0	0	0
Pref 1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pref 2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Ring	1	2	3	4
Ring Split Ext	0	0	0	0
Ring Displacement	-	0	0	0
Split Sum	140s	140s	0s	0s

Misc. Data

Veh Perm 1	0	Veh Perm 2	0	Veh Perm 2 Disp	0
Split Demand Pat 1	0	Split Demand Pat 2	0	Crossing Arterial Pat	0

Split Pattern

Phase	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Coord Phase		X				X										
Vehicle Recall																
Pedestrian Recall		X				X										
Recall to Max. Time																
Omit Phase									X	X	X	X	X	X	X	X
Special Funciton Outputs																

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Appleby Ln @ Ironstone Dr - TS 286 - Econolite Type - ASC/3

Coordination Split Pattern
Split Pattern Data (MM) 3-3

Split Pattern # 1

Phase	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Description	SBLT	NB		EB		SB		WB								
Split (seconds)	12	66	0	42	0	78	0	42	0	0	0	0	0	0	0	0
Coord Phase		X				X										
Vehicle Recall																
Pedestrian Recall		X				X										
Recall to Max. Time																
Omit Phase									X	X	X	X	X	X	X	X

Ring	1	2	3	4
Split Sum	120s	120s	0s	0s

Split Pattern # 2

Phase	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Description	SBLT	NB		EB		SB		WB								
Split (seconds)	12	56	0	42	0	68	0	42	0	0	0	0	0	0	0	0
Coord Phase		X				X										
Vehicle Recall																
Pedestrian Recall		X				X										
Recall to Max. Time																
Omit Phase									X	X	X	X	X	X	X	X

Ring	1	2	3	4
Split Sum	110s	110s	0s	0s

Split Pattern # 3

Phase	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Description	SBLT	NB		EB		SB		WB								
Split (seconds)	12	86	0	42	0	98	0	42	0	0	0	0	0	0	0	0
Coord Phase		X				X										
Vehicle Recall																
Pedestrian Recall		X				X										
Recall to Max. Time																
Omit Phase									X	X	X	X	X	X	X	X

Ring	1	2	3	4
Split Sum	140s	140s	0s	0s

Split Pattern # 11

Phase	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Description	SBLT	NB		EB		SB		WB								
Split (seconds)	12	66	0	42	0	78	0	42	0	0	0	0	0	0	0	0
Coord Phase		X				X										
Vehicle Recall																
Pedestrian Recall		X				X										
Recall to Max. Time																
Omit Phase									X	X	X	X	X	X	X	X

Ring	1	2	3	4
Split Sum	120s	120s	0s	0s

Split Pattern # 13

Phase	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Description	SBLT	NB		EB		SB		WB								
Split (seconds)	12	86	0	42	0	98	0	42	0	0	0	0	0	0	0	0
Coord Phase		X				X										
Vehicle Recall																
Pedestrian Recall		X				X										
Recall to Max. Time																
Omit Phase									X	X	X	X	X	X	X	X

Ring	1	2	3	4
Split Sum	140s	140s	0s	0s

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MOVING TRAFFIC FORWARD

Appleby Ln @ Ironstone Dr - TS 286 - Econolite Type - ASC/3

Preempt Plan

Preempt Plan (MM) 4-1

Preempt Plan 1

Phase	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Overlap	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P
Trk Clr Veh	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
Trk Clr Overlap	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
Enable Trailing																
Dwell Veh	.	X	.	.	.	X	.	.	.	.	.	.	.	.	.	.
Dwell Ped																
Dwell Overlap	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
Cycling Veh	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
Cycling Ped																
Cycling Overlap	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
Exit Phases		X				X										
Exit Calls																
Special Function																

Enable	Yes	Preempt Override	Yes	Interlock Enable	No
Det Lock	Yes	Delay	0	Inhibit	0
Override Flash	Yes	Duration	5	CLR > GRN	No
Term Ovlp Asap	No	PC Through Yel	No	Terminate Phase	No
Ped Dark	No	Track Clear Rsrv	No	Dwell Flash	Off
Linked Pmt	0	FL Exit Color	Red	Exit Options	Off
Exit Timing Plan	0	Reservice	0	Fault Type	Hard

Ring	1	2	3	4
Free During Pmt	No	No	No	No

Timing	Walk	Ped Clr	Min Grn	Yellow	Red
Entrance	0	10	5	4.0	2.0
	Min Grn	Ext Grn	Max Grn	Yellow	Red
Track Clear	0	0	0	4.0	1.0
	Min Dwell	Pmt Ext	Max Time	Yellow	Red
Dwell / Cycle-Exit	8	0.0	45	4.0	2.0

Preemption Active Out	On	Preempt Act Dwell	No
Other - Priority Preempt	Off	Non-Priority Pmt	Off
Inhibit Extension Time	0.0	Ped Priority Return	Off
Veh Priority Return	Off	Queue Delay	Off
Conditional Delay	Off		

Phase	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Veh Pri Return %	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Preempt Plan 2

Phase	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Overlap	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P
Trk Clr Veh	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
Trk Clr Overlap	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
Enable Trailing																
Dwell Veh	.	.	.	X	.	.	.	X	.	.	.	.	.	.	.	.
Dwell Ped																
Dwell Overlap	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
Cycling Veh	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
Cycling Ped																

Cycling Overlap	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
Exit Phases				X				X								
Exit Calls																
Special Function																

Enable	Yes	Preempt Override	Yes	Interlock Enable	No
Det Lock	Yes	Delay	0	Inhibit	0
Override Flash	Yes	Duration	5	CLR > GRN	No
Term Ovlp Asap	No	PC Through Yel	No	Terminate Phase	No
Ped Dark	No	Track Clear Rsrv	No	Dwell Flash	Off
Linked Pmt	0	FL Exit Color	Grn	Exit Options	Off
Exit Timing Plan	0	Reservice	0	Fault Type	Hard

Ring	**1**	**2**	**3**	**4**
Free During Pmt	No	No	No	No

Timing	**Walk**	**Ped Clr**	**Min Grn**	**Yellow**	**Red**
Entrance	0	10	5	4.0	3.0
	Min Grn	**Ext Grn**	**Max Grn**	**Yellow**	**Red**
Track Clear	0	0	0	4.0	3.0
	Min Dwell	**Pmt Ext**	**Max Time**	**Yellow**	**Red**
Dwell / Cycle-Exit	8	0.0	45	4.0	1.0

Preemption Active Out	On	Preempt Act Dwell	No
Other - Priority Preempt	Off	Non-Priority Pmt	Off
Inhibit Extension Time	0.0	Ped Priority Return	Off
Veh Priority Return	Off	Queue Delay	Off
Conditional Delay	Off		

Phase	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	**13**	**14**	**15**	**16**
Veh Pri Return %	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

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Appleby Ln @ Ironstone Dr - TS 286 - Econolite Type - ASC/3

Preempt Preempt Filtering
Enable Preempt Filtering & TSP/SCP (MM) 4-2

Input	Solid	Pulsing
1	PREEMPTION 1	...BYPASSED...
2	PREEMPTION 2	...BYPASSED...
3	PREEMPTION 3	PREEMPTION 7
4	PREEMPTION 4	PREEMPTION 8
5	PREEMPTION 5	PREEMPTION 9
6	PREEMPTION 6	PREEMPTION 10
7	...BYPASSED...	...BYPASSED...
8	...BYPASSED...	...BYPASSED...
9	...BYPASSED...	...BYPASSED...
10	...BYPASSED...	...BYPASSED...

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Appleby Ln @ Ironstone Dr - TS 286 - Econolite Type - ASC/3

Preempt TSP/SCP Plan and Split

TSP / SCP Plan (MM) 4-3

TSP/SCP Plan	Enable Option	Signal Type	Det Lock	Delay Time	Max Presence	PMT Enables Reservice	No Delay in TSP	Action SF Inhibit	Reservice Cycles	Bus Heading
1	No	Solid	No	0	0	No	False	0	0	NB
2	No	Solid	No	0	0	No	False	0	0	SB
3	No	Solid	No	0	0	No	False	0	0	EB
4	No	Solid	No	0	0	No	False	0	0	WB
5	No	Solid	No	0	0	No	False	0	0	.
6	No	Solid	No	0	0	No	False	0	0	.

Mode: TSP
Free Default Pattern: 120
Headway Allowance: 0

TSP/SCP Plan	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
1	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
2	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
3	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
4	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
5	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
6	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.

TSP / SCP Split Pattern (MM) 4-4

TSP/SCP Split Pattern	Max Type	Phase															
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
4	Max Reduction	255	255	255	255	255	255	255	255	255	255	255	255	255	255	255	255

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Appleby Ln @ Ironstone Dr - TS 286 - Econolite Type - ASC/3

Time Base Clock/Calendar
Clock/Calendar Data (MM) 5-1

Manual Action Plan:	0
SYNC Reference Time:	00:00
SYNC Reference:	Reference Time
Day Light Savings:	No
Time Reset Input Set Time:	0:00:00
Standard Time From GMT:	0

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Appleby Ln @ Ironstone Dr - TS 286 - Econolite Type - ASC/3

Time Base Action Plan
Action Plan (MM) 5-2

Action Plan - 1

Pattern	1	Override Sys	No
Timing Plan	1	Sequence	0
Veh Detector Plan	0	Det Log	None
Flash	No	Red Rest	No
Veh Det Diag Plan	0	Ped Det Diag Plan	0
Dimming Enable	No	Pmt Veh Priority Ret	No
Pmt Ped Priority Ret	No	Pmt Queue Delay	No
Pmt Cond Delay	No		

Phase	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Ped Recall		X				X										
Walk 2																
Veh Ext 2																
Veh Recall																
Max Recall																
Max 2																
Max 3																
CS Inhibit																
Omit																
Spec Func (1-8)																
Aux Func (1-3)																

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
LP 1-15	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
LP 16-30	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
LP 31-45	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
LP 46-60	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
LP 61-75	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
LP 76-90	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
LP 91-100	.	.	.	.	.	.	.	.	.	.					

Action Plan - 2

Pattern	2	Override Sys	No
Timing Plan	1	Sequence	0
Veh Detector Plan	0	Det Log	None
Flash	No	Red Rest	No
Veh Det Diag Plan	0	Ped Det Diag Plan	0
Dimming Enable	No	Pmt Veh Priority Ret	No
Pmt Ped Priority Ret	No	Pmt Queue Delay	No
Pmt Cond Delay	No		

Phase	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Ped Recall		X				X										
Walk 2																
Veh Ext 2																
Veh Recall																
Max Recall																
Max 2																
Max 3																
CS Inhibit																
Omit																

Spec Func (1-8)								
Aux Func (1-3)								

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
LP 1-15	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
LP 16-30	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
LP 31-45	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
LP 46-60	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
LP 61-75	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
LP 76-90	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
LP 91-100	.	.	.	.	.	.	.	.	.	.					

Action Plan - 3

Pattern	3	Override Sys	No
Timing Plan	1	Sequence	0
Veh Detector Plan	0	Det Log	None
Flash	No	Red Rest	No
Veh Det Diag Plan	0	Ped Det Diag Plan	0
Dimming Enable	No	Pmt Veh Priority Ret	No
Pmt Ped Priority Ret	No	Pmt Queue Delay	No
Pmt Cond Delay	No		

Phase	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Ped Recall		X				X										
Walk 2																
Veh Ext 2																
Veh Recall																
Max Recall																
Max 2																
Max 3																
CS Inhibit																
Omit																

Spec Func (1-8)								
Aux Func (1-3)								

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
LP 1-15	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
LP 16-30	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
LP 31-45	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
LP 46-60	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
LP 61-75	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
LP 76-90	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
LP 91-100	.	.	.	.	.	.	.	.	.	.					

Action Plan - 9

Pattern	Free	Override Sys	No
Timing Plan	1	Sequence	0
Veh Detector Plan	0	Det Log	None
Flash	No	Red Rest	No
Veh Det Diag Plan	0	Ped Det Diag Plan	0
Dimming Enable	No	Pmt Veh Priority Ret	No
Pmt Ped Priority Ret	No	Pmt Queue Delay	No
Pmt Cond Delay	No		

Phase	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Ped Recall		X				X										
Walk 2																
Veh Ext 2																
Veh Recall																
Max Recall																
Max 2																
Max 3																
CS Inhibit																
Omit																

Spec Func (1-8)								
Aux Func (1-3)								

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
LP 1-15	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
LP 16-30	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
LP 31-45	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
LP 46-60	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
LP 61-75	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
LP 76-90	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
LP 91-100	.	.	.	.	.	.	.	.	.	.					

Action Plan - 10

Pattern	Free	Override Sys	No
Timing Plan	1	Sequence	0
Veh Detector Plan	0	Det Log	None
Flash	No	Red Rest	No
Veh Det Diag Plan	0	Ped Det Diag Plan	0
Dimming Enable	No	Pmt Veh Priority Ret	No
Pmt Ped Priority Ret	No	Pmt Queue Delay	No
Pmt Cond Delay	No		

Phase	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Ped Recall		X				X										
Walk 2																
Veh Ext 2																
Veh Recall																
Max Recall																
Max 2																
Max 3																
CS Inhibit																
Omit																

Spec Func (1-8)								
Aux Func (1-3)								

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
LP 1-15	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
LP 16-30	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
LP 31-45	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
LP 46-60	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
LP 61-75	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
LP 76-90	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
LP 91-100	.	.	.	.	.	.	.	.	.	.					

Action Plan - 11

Pattern	11	Override Sys	No
Timing Plan	1	Sequence	0
Veh Detector Plan	0	Det Log	None
Flash	No	Red Rest	No
Veh Det Diag Plan	0	Ped Det Diag Plan	0
Dimming Enable	No	Pmt Veh Priority Ret	No
Pmt Ped Priority Ret	No	Pmt Queue Delay	No
Pmt Cond Delay	No		

Phase	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Ped Recall		X				X										
Walk 2																
Veh Ext 2																
Veh Recall																
Max Recall																
Max 2																
Max 3																
CS Inhibit																
Omit																

Spec Func (1-8)								

Aux Func (1-3)			

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
LP 1-15	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
LP 16-30	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
LP 31-45	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
LP 46-60	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
LP 61-75	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
LP 76-90	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
LP 91-100	.	.	.	.	.	.	.	.	.	.					

Action Plan - 13

Pattern	13	Override Sys	No
Timing Plan	1	Sequence	0
Veh Detector Plan	0	Det Log	None
Flash	No	Red Rest	No
Veh Det Diag Plan	0	Ped Det Diag Plan	0
Dimming Enable	No	Pmt Veh Priority Ret	No
Pmt Ped Priority Ret	No	Pmt Queue Delay	No
Pmt Cond Delay	No		

Phase	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Ped Recall		X				X										
Walk 2																
Veh Ext 2																
Veh Recall																
Max Recall																
Max 2																
Max 3																
CS Inhibit																
Omit																

Spec Func (1-8)								

Aux Func (1-3)			

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
LP 1-15	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
LP 16-30	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
LP 31-45	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
LP 46-60	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
LP 61-75	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
LP 76-90	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
LP 91-100	.	.	.	.	.	.	.	.	.	.					

City of Burlington

ECONOLITE

MOVING TRAFFIC FORWARD

Appleby Ln @ Ironstone Dr - TS 286 - Econolite Type - ASC/3

Time Base Day Plan/Schedule
Day Plan (MM) 5-3

Day Plan #1

Event	Action Plan	Start Time
1	1	06:00
2	2	09:00
3	3	15:00
4	2	19:00
5	10	22:00
6	0	22:00

Day Plan #2

Event	Action Plan	Start Time
1	2	06:00
2	10	21:30

Day Plan #3

Event	Action Plan	Start Time
1	2	06:00
2	10	21:30

Schedule (MM) 5-4

Schedule Number - 1

Day Plan No.: 1

Month	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
	X	X	X	X	X	X	X	X	X	X	X	X

Day (DOW)	SUN	MON	TUE	WED	THU	FRI	SAT
		X	X	X	X	X	

Day (DOM)	1	2	3	4	5	6	7	8	9	10	11
	X	X	X	X	X	X	X	X	X	X	X
	12	13	14	15	16	17	18	19	20	21	22
	X	X	X	X	X	X	X	X	X	X	X
	23	24	25	26	27	28	29	30	31		
	X	X	X	X	X	X	X	X	X		

Schedule Number - 2

Day Plan No.: 2

Month	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
	X	X	X	X	X	X	X	X	X	X	X	X

Day (DOW)	SUN	MON	TUE	WED	THU	FRI	SAT
							X

Day (DOM)	1	2	3	4	5	6	7	8	9	10	11
	X	X	X	X	X	X	X	X	X	X	X
	12	13	14	15	16	17	18	19	20	21	22
	X	X	X	X	X	X	X	X	X	X	X
	23	24	25	26	27	28	29	30	31		
	X	X	X	X	X	X	X	X	X		

Schedule Number - 3

Day Plan No.: 3

Month	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
	X	X	X	X	X	X	X	X	X	X	X	X

Day (DOW)	SUN	MON	TUE	WED	THU	FRI	SAT
	X						

Day (DOM)	1	2	3	4	5	6	7	8	9	10	11
	X	X	X	X	X	X	X	X	X	X	X
	12	13	14	15	16	17	18	19	20	21	22
	X	X	X	X	X	X	X	X	X	X	X
	23	24	25	26	27	28	29	30	31		
	X	X	X	X	X	X	X	X	X		

City of Burlington

ECONOLITE

MOVING TRAFFIC FORWARD

Appleby Ln @ Ironstone Dr - TS 286 - Econolite Type - ASC/3

Time Base Exceptions
Exception Day Program (MM) 5-5

Excep Day	Float/Fixed	Mon/Mon	DOW/DOM	WOM/Year	Day Plan
1	FIXED	1	1	0	3
2	FLOAT	2	2	3	3
3	FIXED	4	19	0	3
4	FLOAT	5	2	3	3
5	FIXED	7	1	0	3
6	FLOAT	8	2	1	3
7	FLOAT	9	2	1	3
8	FLOAT	10	2	2	3
9	FIXED	12	25	0	3

City of Burlington

ECONOLITE

MOVING TRAFFIC FORWARD

Appleby Ln @ Ironstone Dr - TS 286 - Econolite Type - ASC/3

Detectors

Detectors - Pg 1

Veh Det Phase Assignment (MM) 6-1

Vehicle Detector Plan Number - 1

Veh Detector	Assigned Phase	Called Phase	Type
1	1		S
2	1		S
3	3		S
4	4		S
5	5		S
6	6		S
7	7		S
8	8		S
9	9		S
10	10		S
20	4		N
24	8		N

Vehicle Detector Plan Number - 2

Veh Detector	Assigned Phase	Called Phase	Type
1	1		S
2	2		S
3	3		S
4	4		S
5	5		S
6	6		S
7	7		S
8	8		S
9	9		S
10	10		S
11	11		S
12	12		S
13	13		S
14	14		S
15	15		S
16	16		S

Vehicle Detector Plan Number - 3

Veh Detector	Assigned Phase	Called Phase	Type
1	1		S
2	2		S
3	3		S
4	4		S
5	5		S
6	6		S
7	7		S
8	8		S
9	9		S
10	10		S
11	11		S
12	12		S
13	13		S
14	14		S
15	15		S
16	16		S

Vehicle Detector Plan Number - 4

Veh Detector	Assigned Phase	Called Phase	Type
1	1		S
2	2		S
3	3		S
4	4		S
5	5		S
6	6		S
7	7		S
8	8		S
9	9		S
10	10		S
11	11		S
12	12		S
13	13		S
14	14		S
15	15		S
16	16		S

Vehicle Detector Setup (MM) 6-2

Veh Detector	Type	TS2 Detector	Description
1	S-STANDARD	No	
2	S-STANDARD	No	
3	S-STANDARD	No	
4	S-STANDARD	No	
5	S-STANDARD	No	
6	S-STANDARD	No	
7	S-STANDARD	No	
8	S-STANDARD	No	
9	S-STANDARD	No	
10	S-STANDARD	No	
11	S-STANDARD	No	
12	S-STANDARD	No	
13	S-STANDARD	No	
14	S-STANDARD	No	
15	S-STANDARD	No	
16	S-STANDARD	No	
17	S-STANDARD	Yes	
18	S-STANDARD	Yes	
19	S-STANDARD	Yes	
20	N-NTCIP	Yes	
21	S-STANDARD	Yes	
22	S-STANDARD	Yes	
23	S-STANDARD	Yes	
24	N-NTCIP	Yes	
25	S-STANDARD	Yes	
26	S-STANDARD	Yes	
27	S-STANDARD	Yes	
28	S-STANDARD	Yes	
29	S-STANDARD	Yes	
30	S-STANDARD	Yes	
31	S-STANDARD	Yes	
32	S-STANDARD	Yes	
33	S-STANDARD	Yes	
34	S-STANDARD	Yes	
35	S-STANDARD	Yes	
36	S-STANDARD	Yes	
37	S-STANDARD	Yes	
38	S-STANDARD	Yes	
39	S-STANDARD	Yes	
40	S-STANDARD	Yes	
41	S-STANDARD	Yes	
42	S-STANDARD	Yes	
43	S-STANDARD	Yes	

44	S-STANDARD	Yes	
45	S-STANDARD	Yes	
46	S-STANDARD	Yes	
47	S-STANDARD	Yes	
48	S-STANDARD	Yes	
49	S-STANDARD	Yes	
50	S-STANDARD	Yes	
51	S-STANDARD	Yes	
52	S-STANDARD	Yes	
53	S-STANDARD	Yes	
54	S-STANDARD	Yes	
55	S-STANDARD	Yes	
56	S-STANDARD	Yes	
57	S-STANDARD	Yes	
58	S-STANDARD	Yes	
59	S-STANDARD	Yes	
60	S-STANDARD	Yes	
61	S-STANDARD	Yes	
62	S-STANDARD	Yes	
63	S-STANDARD	Yes	
64	S-STANDARD	Yes	

Vehicle Detector Plan Number - 1

Veh Detector	Phase	ECPI Log	Call Option	Delay Time	Ext Option	Extend Time / Passage Time	Queue Lim. / Discon. Time	Use Added Initial	Cross Switch Ph	Lock In	NTCIP Vol.	NTCIP Occ.	Pmt Queue Delay
1	1	No	Yes	5.0	Passage	0.0	0	No	0	None	No	No	No
2	1	No	Yes	0.0	Passage	0.0	0	No	0	None	No	No	No
3	3	No	Yes	0.0	Passage	0.0	0	No	0	None	No	No	No
4	4	No	Yes	0.0	Passage	0.0	0	No	0	None	No	No	No
5	5	No	Yes	0.0	Passage	0.0	0	No	0	None	No	No	No
6	6	No	Yes	0.0	Passage	0.0	0	No	0	None	No	No	No
7	7	No	Yes	0.0	Passage	0.0	0	No	0	None	No	No	No
8	8	No	Yes	0.0	Passage	0.0	0	No	0	None	No	No	No
9	9	No	Yes	0.0	Passage	0.0	0	No	0	None	No	No	No
10	10	No	Yes	0.0	Passage	0.0	0	No	0	None	No	No	No
11	0	No	Yes	0.0	Passage	0.0	0	No	0	None	No	No	No
12	0	No	Yes	0.0	Passage	0.0	0	No	0	None	No	No	No
13	0	No	Yes	0.0	Passage	0.0	0	No	0	None	No	No	No
14	0	No	Yes	0.0	Passage	0.0	0	No	0	None	No	No	No
15	0	No	Yes	0.0	Passage	0.0	0	No	0	None	No	No	No
16	0	No	Yes	0.0	Passage	0.0	0	No	0	None	No	No	No
17	0	No	Yes	0.0	Passage	0.0	0	No	0	None	No	No	No
18	0	No	Yes	0.0	Passage	0.0	0	No	0	None	No	No	No
19	0	No	Yes	0.0	Passage	0.0	0	No	0	None	No	No	No
20	4	No	Yes	0.0	Passage	0.0	0	No	0	None	No	No	No
21	0	No	Yes	0.0	Passage	0.0	0	No	0	None	No	No	No
22	0	No	Yes	0.0	Passage	0.0	0	No	0	None	No	No	No
23	0	No	Yes	0.0	Passage	0.0	0	No	0	None	No	No	No
24	8	No	Yes	0.0	Passage	0.0	0	No	0	None	No	No	No
25	0	No	Yes	0.0	Passage	0.0	0	No	0	None	No	No	No
26	0	No	Yes	0.0	Passage	0.0	0	No	0	None	No	No	No
27	0	No	Yes	0.0	Passage	0.0	0	No	0	None	No	No	No
28	0	No	Yes	0.0	Passage	0.0	0	No	0	None	No	No	No
29	0	No	Yes	0.0	Passage	0.0	0	No	0	None	No	No	No
30	0	No	Yes	0.0	Passage	0.0	0	No	0	None	No	No	No
31	0	No	Yes	0.0	Passage	0.0	0	No	0	None	No	No	No
32	0	No	Yes	0.0	Passage	0.0	0	No	0	None	No	No	No
33	0	No	Yes	0.0	Passage	0.0	0	No	0	None	No	No	No
34	0	No	Yes	0.0	Passage	0.0	0	No	0	None	No	No	No
35	0	No	Yes	0.0	Passage	0.0	0	No	0	None	No	No	No
36	0	No	Yes	0.0	Passage	0.0	0	No	0	None	No	No	No
37	0	No	Yes	0.0	Passage	0.0	0	No	0	None	No	No	No

38	0	No	Yes	0.0	Passage	0.0	0	No	0	None	No	No	No
39	0	No	Yes	0.0	Passage	0.0	0	No	0	None	No	No	No
40	0	No	Yes	0.0	Passage	0.0	0	No	0	None	No	No	No
41	0	No	Yes	0.0	Passage	0.0	0	No	0	None	No	No	No
42	0	No	Yes	0.0	Passage	0.0	0	No	0	None	No	No	No
43	0	No	Yes	0.0	Passage	0.0	0	No	0	None	No	No	No
44	0	No	Yes	0.0	Passage	0.0	0	No	0	None	No	No	No
45	0	No	Yes	0.0	Passage	0.0	0	No	0	None	No	No	No
46	0	No	Yes	0.0	Passage	0.0	0	No	0	None	No	No	No
47	0	No	Yes	0.0	Passage	0.0	0	No	0	None	No	No	No
48	0	No	Yes	0.0	Passage	0.0	0	No	0	None	No	No	No
49	0	No	Yes	0.0	Passage	0.0	0	No	0	None	No	No	No
50	0	No	Yes	0.0	Passage	0.0	0	No	0	None	No	No	No
51	0	No	Yes	0.0	Passage	0.0	0	No	0	None	No	No	No
52	0	No	Yes	0.0	Passage	0.0	0	No	0	None	No	No	No
53	0	No	Yes	0.0	Passage	0.0	0	No	0	None	No	No	No
54	0	No	Yes	0.0	Passage	0.0	0	No	0	None	No	No	No
55	0	No	Yes	0.0	Passage	0.0	0	No	0	None	No	No	No
56	0	No	Yes	0.0	Passage	0.0	0	No	0	None	No	No	No
57	0	No	Yes	0.0	Passage	0.0	0	No	0	None	No	No	No
58	0	No	Yes	0.0	Passage	0.0	0	No	0	None	No	No	No
59	0	No	Yes	0.0	Passage	0.0	0	No	0	None	No	No	No
60	0	No	Yes	0.0	Passage	0.0	0	No	0	None	No	No	No
61	0	No	Yes	0.0	Passage	0.0	0	No	0	None	No	No	No
62	0	No	Yes	0.0	Passage	0.0	0	No	0	None	No	No	No
63	0	No	Yes	0.0	Passage	0.0	0	No	0	None	No	No	No
64	0	No	Yes	0.0	Passage	0.0	0	No	0	None	No	No	No

Vehicle Detector Plan Number - 2

Veh Detector	Phase	ECPI Log	Call Option	Delay Time	Ext Option	Extend Time / Passage Time	Queue Lim. / Discon. Time	Use Added Initial	Cross Switch Ph	Lock In	NTCIP Vol.	NTCIP Occ.	Pmt Queue Delay
1	1	No	Yes	0.0	Passage	0.0	0	No	0	None	No	No	No
2	2	No	Yes	0.0	Passage	0.0	0	No	0	None	No	No	No
3	3	No	Yes	0.0	Passage	0.0	0	No	0	None	No	No	No
4	4	No	Yes	0.0	Passage	0.0	0	No	0	None	No	No	No
5	5	No	Yes	0.0	Passage	0.0	0	No	0	None	No	No	No
6	6	No	Yes	0.0	Passage	0.0	0	No	0	None	No	No	No
7	7	No	Yes	0.0	Passage	0.0	0	No	0	None	No	No	No
8	8	No	Yes	0.0	Passage	0.0	0	No	0	None	No	No	No
9	9	No	Yes	0.0	Passage	0.0	0	No	0	None	No	No	No
10	10	No	Yes	0.0	Passage	0.0	0	No	0	None	No	No	No
11	11	No	Yes	0.0	Passage	0.0	0	No	0	None	No	No	No
12	12	No	Yes	0.0	Passage	0.0	0	No	0	None	No	No	No
13	13	No	Yes	0.0	Passage	0.0	0	No	0	None	No	No	No
14	14	No	Yes	0.0	Passage	0.0	0	No	0	None	No	No	No
15	15	No	Yes	0.0	Passage	0.0	0	No	0	None	No	No	No
16	16	No	Yes	0.0	Passage	0.0	0	No	0	None	No	No	No
17	0	No	Yes	0.0	Passage	0.0	0	No	0	None	No	No	No
18	0	No	Yes	0.0	Passage	0.0	0	No	0	None	No	No	No
19	0	No	Yes	0.0	Passage	0.0	0	No	0	None	No	No	No
20	0	No	Yes	0.0	Passage	0.0	0	No	0	None	No	No	No
21	0	No	Yes	0.0	Passage	0.0	0	No	0	None	No	No	No
22	0	No	Yes	0.0	Passage	0.0	0	No	0	None	No	No	No
23	0	No	Yes	0.0	Passage	0.0	0	No	0	None	No	No	No
24	0	No	Yes	0.0	Passage	0.0	0	No	0	None	No	No	No
25	0	No	Yes	0.0	Passage	0.0	0	No	0	None	No	No	No
26	0	No	Yes	0.0	Passage	0.0	0	No	0	None	No	No	No
27	0	No	Yes	0.0	Passage	0.0	0	No	0	None	No	No	No
28	0	No	Yes	0.0	Passage	0.0	0	No	0	None	No	No	No
29	0	No	Yes	0.0	Passage	0.0	0	No	0	None	No	No	No
30	0	No	Yes	0.0	Passage	0.0	0	No	0	None	No	No	No
31	0	No	Yes	0.0	Passage	0.0	0	No	0	None	No	No	No
32	0	No	Yes	0.0	Passage	0.0	0	No	0	None	No	No	No

33	0	No	Yes	0.0	Passage	0.0	0	No	0	None	No	No	No
34	0	No	Yes	0.0	Passage	0.0	0	No	0	None	No	No	No
35	0	No	Yes	0.0	Passage	0.0	0	No	0	None	No	No	No
36	0	No	Yes	0.0	Passage	0.0	0	No	0	None	No	No	No
37	0	No	Yes	0.0	Passage	0.0	0	No	0	None	No	No	No
38	0	No	Yes	0.0	Passage	0.0	0	No	0	None	No	No	No
39	0	No	Yes	0.0	Passage	0.0	0	No	0	None	No	No	No
40	0	No	Yes	0.0	Passage	0.0	0	No	0	None	No	No	No
41	0	No	Yes	0.0	Passage	0.0	0	No	0	None	No	No	No
42	0	No	Yes	0.0	Passage	0.0	0	No	0	None	No	No	No
43	0	No	Yes	0.0	Passage	0.0	0	No	0	None	No	No	No
44	0	No	Yes	0.0	Passage	0.0	0	No	0	None	No	No	No
45	0	No	Yes	0.0	Passage	0.0	0	No	0	None	No	No	No
46	0	No	Yes	0.0	Passage	0.0	0	No	0	None	No	No	No
47	0	No	Yes	0.0	Passage	0.0	0	No	0	None	No	No	No
48	0	No	Yes	0.0	Passage	0.0	0	No	0	None	No	No	No
49	0	No	Yes	0.0	Passage	0.0	0	No	0	None	No	No	No
50	0	No	Yes	0.0	Passage	0.0	0	No	0	None	No	No	No
51	0	No	Yes	0.0	Passage	0.0	0	No	0	None	No	No	No
52	0	No	Yes	0.0	Passage	0.0	0	No	0	None	No	No	No
53	0	No	Yes	0.0	Passage	0.0	0	No	0	None	No	No	No
54	0	No	Yes	0.0	Passage	0.0	0	No	0	None	No	No	No
55	0	No	Yes	0.0	Passage	0.0	0	No	0	None	No	No	No
56	0	No	Yes	0.0	Passage	0.0	0	No	0	None	No	No	No
57	0	No	Yes	0.0	Passage	0.0	0	No	0	None	No	No	No
58	0	No	Yes	0.0	Passage	0.0	0	No	0	None	No	No	No
59	0	No	Yes	0.0	Passage	0.0	0	No	0	None	No	No	No
60	0	No	Yes	0.0	Passage	0.0	0	No	0	None	No	No	No
61	0	No	Yes	0.0	Passage	0.0	0	No	0	None	No	No	No
62	0	No	Yes	0.0	Passage	0.0	0	No	0	None	No	No	No
63	0	No	Yes	0.0	Passage	0.0	0	No	0	None	No	No	No
64	0	No	Yes	0.0	Passage	0.0	0	No	0	None	No	No	No

Vehicle Detector Plan Number - 3

Veh Detector	Phase	ECPI Log	Call Option	Delay Time	Ext Option	Extend Time / Passage Time	Queue Lim. / Discon. Time	Use Added Initial	Cross Switch Ph	Lock In	NTCIP Vol.	NTCIP Occ.	Pmt Queue Delay
1	1	No	Yes	0.0	Passage	0.0	0	No	0	None	No	No	No
2	2	No	Yes	0.0	Passage	0.0	0	No	0	None	No	No	No
3	3	No	Yes	0.0	Passage	0.0	0	No	0	None	No	No	No
4	4	No	Yes	0.0	Passage	0.0	0	No	0	None	No	No	No
5	5	No	Yes	0.0	Passage	0.0	0	No	0	None	No	No	No
6	6	No	Yes	0.0	Passage	0.0	0	No	0	None	No	No	No
7	7	No	Yes	0.0	Passage	0.0	0	No	0	None	No	No	No
8	8	No	Yes	0.0	Passage	0.0	0	No	0	None	No	No	No
9	9	No	Yes	0.0	Passage	0.0	0	No	0	None	No	No	No
10	10	No	Yes	0.0	Passage	0.0	0	No	0	None	No	No	No
11	11	No	Yes	0.0	Passage	0.0	0	No	0	None	No	No	No
12	12	No	Yes	0.0	Passage	0.0	0	No	0	None	No	No	No
13	13	No	Yes	0.0	Passage	0.0	0	No	0	None	No	No	No
14	14	No	Yes	0.0	Passage	0.0	0	No	0	None	No	No	No
15	15	No	Yes	0.0	Passage	0.0	0	No	0	None	No	No	No
16	16	No	Yes	0.0	Passage	0.0	0	No	0	None	No	No	No
17	0	No	Yes	0.0	Passage	0.0	0	No	0	None	No	No	No
18	0	No	Yes	0.0	Passage	0.0	0	No	0	None	No	No	No
19	0	No	Yes	0.0	Passage	0.0	0	No	0	None	No	No	No
20	0	No	Yes	0.0	Passage	0.0	0	No	0	None	No	No	No
21	0	No	Yes	0.0	Passage	0.0	0	No	0	None	No	No	No
22	0	No	Yes	0.0	Passage	0.0	0	No	0	None	No	No	No
23	0	No	Yes	0.0	Passage	0.0	0	No	0	None	No	No	No
24	0	No	Yes	0.0	Passage	0.0	0	No	0	None	No	No	No
25	0	No	Yes	0.0	Passage	0.0	0	No	0	None	No	No	No
26	0	No	Yes	0.0	Passage	0.0	0	No	0	None	No	No	No
27	0	No	Yes	0.0	Passage	0.0	0	No	0	None	No	No	No

28	0	No	Yes	0.0	Passage	0.0	0	No	0	None	No	No	No
29	0	No	Yes	0.0	Passage	0.0	0	No	0	None	No	No	No
30	0	No	Yes	0.0	Passage	0.0	0	No	0	None	No	No	No
31	0	No	Yes	0.0	Passage	0.0	0	No	0	None	No	No	No
32	0	No	Yes	0.0	Passage	0.0	0	No	0	None	No	No	No
33	0	No	Yes	0.0	Passage	0.0	0	No	0	None	No	No	No
34	0	No	Yes	0.0	Passage	0.0	0	No	0	None	No	No	No
35	0	No	Yes	0.0	Passage	0.0	0	No	0	None	No	No	No
36	0	No	Yes	0.0	Passage	0.0	0	No	0	None	No	No	No
37	0	No	Yes	0.0	Passage	0.0	0	No	0	None	No	No	No
38	0	No	Yes	0.0	Passage	0.0	0	No	0	None	No	No	No
39	0	No	Yes	0.0	Passage	0.0	0	No	0	None	No	No	No
40	0	No	Yes	0.0	Passage	0.0	0	No	0	None	No	No	No
41	0	No	Yes	0.0	Passage	0.0	0	No	0	None	No	No	No
42	0	No	Yes	0.0	Passage	0.0	0	No	0	None	No	No	No
43	0	No	Yes	0.0	Passage	0.0	0	No	0	None	No	No	No
44	0	No	Yes	0.0	Passage	0.0	0	No	0	None	No	No	No
45	0	No	Yes	0.0	Passage	0.0	0	No	0	None	No	No	No
46	0	No	Yes	0.0	Passage	0.0	0	No	0	None	No	No	No
47	0	No	Yes	0.0	Passage	0.0	0	No	0	None	No	No	No
48	0	No	Yes	0.0	Passage	0.0	0	No	0	None	No	No	No
49	0	No	Yes	0.0	Passage	0.0	0	No	0	None	No	No	No
50	0	No	Yes	0.0	Passage	0.0	0	No	0	None	No	No	No
51	0	No	Yes	0.0	Passage	0.0	0	No	0	None	No	No	No
52	0	No	Yes	0.0	Passage	0.0	0	No	0	None	No	No	No
53	0	No	Yes	0.0	Passage	0.0	0	No	0	None	No	No	No
54	0	No	Yes	0.0	Passage	0.0	0	No	0	None	No	No	No
55	0	No	Yes	0.0	Passage	0.0	0	No	0	None	No	No	No
56	0	No	Yes	0.0	Passage	0.0	0	No	0	None	No	No	No
57	0	No	Yes	0.0	Passage	0.0	0	No	0	None	No	No	No
58	0	No	Yes	0.0	Passage	0.0	0	No	0	None	No	No	No
59	0	No	Yes	0.0	Passage	0.0	0	No	0	None	No	No	No
60	0	No	Yes	0.0	Passage	0.0	0	No	0	None	No	No	No
61	0	No	Yes	0.0	Passage	0.0	0	No	0	None	No	No	No
62	0	No	Yes	0.0	Passage	0.0	0	No	0	None	No	No	No
63	0	No	Yes	0.0	Passage	0.0	0	No	0	None	No	No	No
64	0	No	Yes	0.0	Passage	0.0	0	No	0	None	No	No	No

Vehicle Detector Plan Number - 4

Veh Detector	Phase	ECPI Log	Call Option	Delay Time	Ext Option	Extend Time / Passage Time	Queue Lim. / Discon. Time	Use Added Initial	Cross Switch Ph	Lock In	NTCIP Vol.	NTCIP Occ.	Pmt Queue Delay
1	1	No	Yes	0.0	Passage	0.0	0	No	0	None	No	No	No
2	2	No	Yes	0.0	Passage	0.0	0	No	0	None	No	No	No
3	3	No	Yes	0.0	Passage	0.0	0	No	0	None	No	No	No
4	4	No	Yes	0.0	Passage	0.0	0	No	0	None	No	No	No
5	5	No	Yes	0.0	Passage	0.0	0	No	0	None	No	No	No
6	6	No	Yes	0.0	Passage	0.0	0	No	0	None	No	No	No
7	7	No	Yes	0.0	Passage	0.0	0	No	0	None	No	No	No
8	8	No	Yes	0.0	Passage	0.0	0	No	0	None	No	No	No
9	9	No	Yes	0.0	Passage	0.0	0	No	0	None	No	No	No
10	10	No	Yes	0.0	Passage	0.0	0	No	0	None	No	No	No
11	11	No	Yes	0.0	Passage	0.0	0	No	0	None	No	No	No
12	12	No	Yes	0.0	Passage	0.0	0	No	0	None	No	No	No
13	13	No	Yes	0.0	Passage	0.0	0	No	0	None	No	No	No
14	14	No	Yes	0.0	Passage	0.0	0	No	0	None	No	No	No
15	15	No	Yes	0.0	Passage	0.0	0	No	0	None	No	No	No
16	16	No	Yes	0.0	Passage	0.0	0	No	0	None	No	No	No
17	0	No	Yes	0.0	Passage	0.0	0	No	0	None	No	No	No
18	0	No	Yes	0.0	Passage	0.0	0	No	0	None	No	No	No
19	0	No	Yes	0.0	Passage	0.0	0	No	0	None	No	No	No
20	0	No	Yes	0.0	Passage	0.0	0	No	0	None	No	No	No
21	0	No	Yes	0.0	Passage	0.0	0	No	0	None	No	No	No
22	0	No	Yes	0.0	Passage	0.0	0	No	0	None	No	No	No

23	0	No	Yes	0.0	Passage	0.0	0	No	0	None	No	No	No
24	0	No	Yes	0.0	Passage	0.0	0	No	0	None	No	No	No
25	0	No	Yes	0.0	Passage	0.0	0	No	0	None	No	No	No
26	0	No	Yes	0.0	Passage	0.0	0	No	0	None	No	No	No
27	0	No	Yes	0.0	Passage	0.0	0	No	0	None	No	No	No
28	0	No	Yes	0.0	Passage	0.0	0	No	0	None	No	No	No
29	0	No	Yes	0.0	Passage	0.0	0	No	0	None	No	No	No
30	0	No	Yes	0.0	Passage	0.0	0	No	0	None	No	No	No
31	0	No	Yes	0.0	Passage	0.0	0	No	0	None	No	No	No
32	0	No	Yes	0.0	Passage	0.0	0	No	0	None	No	No	No
33	0	No	Yes	0.0	Passage	0.0	0	No	0	None	No	No	No
34	0	No	Yes	0.0	Passage	0.0	0	No	0	None	No	No	No
35	0	No	Yes	0.0	Passage	0.0	0	No	0	None	No	No	No
36	0	No	Yes	0.0	Passage	0.0	0	No	0	None	No	No	No
37	0	No	Yes	0.0	Passage	0.0	0	No	0	None	No	No	No
38	0	No	Yes	0.0	Passage	0.0	0	No	0	None	No	No	No
39	0	No	Yes	0.0	Passage	0.0	0	No	0	None	No	No	No
40	0	No	Yes	0.0	Passage	0.0	0	No	0	None	No	No	No
41	0	No	Yes	0.0	Passage	0.0	0	No	0	None	No	No	No
42	0	No	Yes	0.0	Passage	0.0	0	No	0	None	No	No	No
43	0	No	Yes	0.0	Passage	0.0	0	No	0	None	No	No	No
44	0	No	Yes	0.0	Passage	0.0	0	No	0	None	No	No	No
45	0	No	Yes	0.0	Passage	0.0	0	No	0	None	No	No	No
46	0	No	Yes	0.0	Passage	0.0	0	No	0	None	No	No	No
47	0	No	Yes	0.0	Passage	0.0	0	No	0	None	No	No	No
48	0	No	Yes	0.0	Passage	0.0	0	No	0	None	No	No	No
49	0	No	Yes	0.0	Passage	0.0	0	No	0	None	No	No	No
50	0	No	Yes	0.0	Passage	0.0	0	No	0	None	No	No	No
51	0	No	Yes	0.0	Passage	0.0	0	No	0	None	No	No	No
52	0	No	Yes	0.0	Passage	0.0	0	No	0	None	No	No	No
53	0	No	Yes	0.0	Passage	0.0	0	No	0	None	No	No	No
54	0	No	Yes	0.0	Passage	0.0	0	No	0	None	No	No	No
55	0	No	Yes	0.0	Passage	0.0	0	No	0	None	No	No	No
56	0	No	Yes	0.0	Passage	0.0	0	No	0	None	No	No	No
57	0	No	Yes	0.0	Passage	0.0	0	No	0	None	No	No	No
58	0	No	Yes	0.0	Passage	0.0	0	No	0	None	No	No	No
59	0	No	Yes	0.0	Passage	0.0	0	No	0	None	No	No	No
60	0	No	Yes	0.0	Passage	0.0	0	No	0	None	No	No	No
61	0	No	Yes	0.0	Passage	0.0	0	No	0	None	No	No	No
62	0	No	Yes	0.0	Passage	0.0	0	No	0	None	No	No	No
63	0	No	Yes	0.0	Passage	0.0	0	No	0	None	No	No	No
64	0	No	Yes	0.0	Passage	0.0	0	No	0	None	No	No	No

Ped Detector Phase Assignment (MM) 6-3

Mode: NTCIP

Called Phase	Detector
1	1
2	2
3	3
4	4
5	5
6	6
7	7
8	8
9	9
10	10
11	11
12	12
13	13
14	14
15	15
16	16

City of Burlington

ECONOLITE

MOVING TRAFFIC FORWARD

Appleby Ln @ Ironstone Dr - TS 286 - Econolite Type - ASC/3

Detectors

Detectors - Pg 2

Log - Speed Detector Setup (MM) 6-4

NTCIP Log Period: 60 ECPI Log Period: 0 Length Unit: Inches

Speed Detector	Local Detector	One/Two Detector	Vehicle Length	Trap length	Enable Log
1	0	1	0	0	No
2	0	1	0	0	No
3	0	1	0	0	No
4	0	1	0	0	No
5	0	1	0	0	No
6	0	1	0	0	No
7	0	1	0	0	No
8	0	1	0	0	No
9	0	1	0	0	No
10	0	1	0	0	No
11	0	1	0	0	No
12	0	1	0	0	No
13	0	1	0	0	No
14	0	1	0	0	No
15	0	1	0	0	No
16	0	1	0	0	No

Vehicle Detector Diagnostics (MM) 6-5

Veh Diagnostic Plan Number - 1

Det	Counts	Act	Pres	Multiplier	Failed Time	Failed Call Delay

Veh Diagnostic Plan Number - 2

Det	Counts	Act	Pres	Multiplier	Failed Time	Failed Call Delay

Veh Diagnostic Plan Number - 3

Det	Counts	Act	Pres	Multiplier	Failed Time	Failed Call Delay

Veh Diagnostic Plan Number - 4

Det	Counts	Act	Pres	Multiplier	Failed Time	Failed Call Delay

Pedestrian Detector Diagnostics (MM) 6-6

Ped Diagnostic Plan Number - 1

Det	Counts	Act	Pres	Multiplier

Ped Diagnostic Plan Number - 2

Det	Counts	Act	Pres	Multiplier

Ped Diagnostic Plan Number - 3

Det	Counts	Act	Pres	Multiplier

Ped Diagnostic Plan Number - 4

Det	Counts	Act	Pres	Multiplier

Intersection Name:	TS ID:	Line No:	Model:	IP address:	Controller Make:
Appleby Ln @ Corporate Dr	285	9	ACS/3	172.22.134.2	Econolite

Type of Operation: 8 Phase Semi-Actuated

*-Start from Main Menu

No	Date			Description	Prepared by
	Y	M	D		MA
1					
6	2018	8	2	Added SBLT	

PHASE DESCRIPTION

Ph1	SBLT- Appleby Ln	Ph5	
Ph2	NB - Appleby Ln	Ph6	SB - Appleby Ln
Ph3		Ph7	
Ph4	EB - Corporate Dr	Ph8	WB - Corporate Dr

CONFIGURATION (PHASE SEQ): PHASE IN USE/EXCLUSIVE PED (MM) *- 1 - 2

Phase:	1	2	3	4	5	6	7	8
Phase in Use	X	X		X		X		X
Exclusive PED								

CONTROLLER TIMING DATA - VEHICLE TIMING * - 2 - 1

Timing Plan: 1	Phase: 1	2	3	4	5	6	7	8
Minimum Green	7	8		8		8		8
Walk		7		7		7		7
Ped. Clearance		21		25		21		25
Pedestrian Carry Over								
Vehicle Extension	3	3		3		3		3
MAX 1	15	35		20		35		20
MAX 2	15	35		20		35		20
Yellow Change	3	3.7		3.3		3.7		3.3
Red Clearance	1	2.3		3.2		2.3		3.2
Phase Minimum:	12	35	1	39.5	1	35	1	39.5

PHASE DATA - VEHICLE AND PEDESTRIAN RECALLS * - 2 - 8

Phase:	1	2	3	4	5	6	7	8
Lock Detector								
Vehicle Recall								
Pedestrian Recall		X				X		
MAX Recall		X				X		

Min Recall								

COORDINATION: COORDINATOR PATTERN, SPLIT PATTERN *** - 3 - 2, - 3 - 3**

Coordinator Pattern (CP)	Cycle Length	Offset (sec)	Timing Plan	Split Pattern	Phases (sec)							
					1	2	3	4	5	6	7	8
1	120	5	1	1	12	66		42		78		42
2	110	61	1	2	12	59		39		71		39
3	140	106	1	3	12	89		39		101		39
4	90	0	1	4	12	39		39		51		39
10	0	0	1	10	0	0		0		0		0

TIME BASE: ACTION PLAN, DAY PLAN *** - 5 - 2, - 5 - 3, -5 - 4**

Day Plan	Sched. #	Action Plan	Time Period	Pattern	Timing Plan
1	1	1	06:00	1	1
1	1	2	09:00	2	1
1	1	3	15:00	3	1
1	1	2	19:00	2	1
1	1	10	22:00	254	1
2	2	2	06:00	2	1
2	2	10	21:30	254	1
3	3	2	06:00	2	1
3	3	10	21:30	254	1

Schedule 1 = Day Plan 1
Schedule 2 = Day Plan 2
Schedule 3 = Day Plan 3

Day Plan 1 (Weekday)
Day Plan 2 (Saturday)
Day Plan 3 (Sunday, Holidays)

Action Plan 10 = free (254)

Special Programming:

TIME BASE DATA - TIME OF YEAR EVENTS *** - 5 - 5**

Events	Exception Day		MON/ MON	DOW/ DOW	WOM/ Year	Day Plan
New Year's Day	1	Fixed	1	1	0	3
Family Day	2	Float	2	2	3	3
Good Friday	3	Float	4	6	1	3
Victoria Day	4	Float	5	2	3	3
Canada Day	5	Fixed	7	1	0	3
Civic Day	6	Float	8	2	1	3
Labour Day	7	Float	9	2	1	3
Thanksgiving	8	Float	10	2	2	3
Christmas Day	9	Fixed	12	25	0	3

Sum of		Sum of		Calculated	
				Total 1-4	Total 5-8
				Actual	Actual
1&2	5&6	3&4	7&8		
78	78	42	42	0	0
71	71	39	39	0	0
101	101	39	39	0	0
51	51	39	39	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

Appendix C

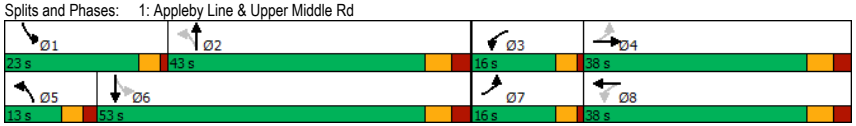
Base Year Operations

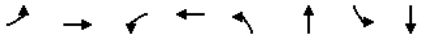
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	151	726	276	204	237	173	140	754	80	269	1181	50
Future Volume (vph)	151	726	276	204	237	173	140	754	80	269	1181	50
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	45.0		0.0	120.0		0.0	80.0		0.0	40.0		0.0
Storage Lanes	1		0	1		0	2		0	1		0
Taper Length (m)	30.0			20.0			40.0			35.0		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	0.95	0.97	0.95	0.95	1.00	0.95	0.95
Ped Bike Factor	0.99	0.99			0.99		1.00	1.00		1.00	1.00	
Frt		0.959			0.937			0.986			0.994	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1752	3382	0	1752	3243	0	3367	3341	0	1736	3435	0
Flt Permitted	0.428			0.123			0.104			0.136		
Satd. Flow (perm)	785	3382	0	227	3243	0	368	3341	0	248	3435	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		45			151			10			4	
Link Speed (k/h)		60			60			60			60	
Link Distance (m)		184.7			208.3			210.6			231.6	
Travel Time (s)		11.1			12.5			12.6			13.9	
Confl. Peds. (#/hr)	9		21	21		9	10		11	11		10
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Heavy Vehicles (%)	3%	1%	2%	3%	2%	5%	4%	6%	9%	4%	4%	13%
Adj. Flow (vph)	156	748	285	210	244	178	144	777	82	277	1218	52
Shared Lane Traffic (%)												
Lane Group Flow (vph)	156	1033	0	210	422	0	144	859	0	277	1270	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.6			3.6			7.2			7.2	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway 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
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2		1	2		1	2		1	2	
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	
Leading Detector (m)	2.0	10.0		2.0	10.0		2.0	10.0		2.0	10.0	
Trailing Detector (m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Position(m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Size(m)	2.0	0.6		2.0	0.6		2.0	0.6		2.0	0.6	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Type	pm+pt	NA		pm+pt	NA		pm+pt	NA		pm+pt	NA	
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4			8			2			6		
Detector Phase	7	4		3	8		5	2		1	6	
Switch Phase												
Minimum Initial (s)	7.0	8.0		7.0	8.0		7.0	8.0		7.0	8.0	
Minimum Split (s)	11.0	34.4		11.0	34.4		12.0	34.5		11.0	34.5	
Total Split (s)	16.0	38.0		16.0	38.0		13.0	43.0		23.0	53.0	
Total Split (%)	13.3%	31.7%		13.3%	31.7%		10.8%	35.8%		19.2%	44.2%	
Maximum Green (s)	12.0	31.6		12.0	31.6		8.0	36.5		19.0	46.5	
Yellow Time (s)	3.0	3.7		3.0	3.7		3.0	3.7		3.0	3.7	
All-Red Time (s)	1.0	2.7		1.0	2.7		2.0	2.8		1.0	2.8	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)	4.0	6.4		4.0	6.4		5.0	6.5		4.0	6.5	
Lead/Lag	Lead	Lag		Lead	Lag		Lead	Lag		Lead	Lag	
Lead-Lag Optimize?	Yes	Yes		Yes	Yes		Yes	Yes		Yes	Yes	
Vehicle Extension (s)	3.0	5.0		3.0	5.0		3.0	3.0		3.0	3.0	
Recall Mode	None	None		None	None		None	Max		None	Max	
Walk Time (s)		7.0			7.0			7.0			7.0	
Flash Dont Walk (s)		21.0			21.0			21.0			21.0	
Pedestrian Calls (#/hr)		0			0			0			0	
Act Effct Green (s)	45.0	31.6		47.0	32.6		47.5	38.3		61.7	46.5	
Actuated g/C Ratio	0.38	0.26		0.39	0.27		0.40	0.32		0.52	0.39	
v/c Ratio	0.41	1.12		0.87	0.42		0.42	0.80		0.82	0.95	
Control Delay	26.0	106.2		60.9	24.2		20.8	43.8		43.0	51.1	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	26.0	106.2		60.9	24.2		20.8	43.8		43.0	51.1	
LOS	C	F		E	C		C	D		D	D	
Approach Delay		95.7			36.4			40.5			49.7	
Approach LOS		F			D			D			D	

Intersection Summary			
Area Type:	Other		
Cycle Length: 120			
Actuated Cycle Length: 119.7			
Natural Cycle: 115			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 1.12			
Intersection Signal Delay: 58.2		Intersection LOS: E	
Intersection Capacity Utilization 99.1%		ICU Level of Service F	
Analysis Period (min) 15			

Splits and Phases: 1: Appleby Line & Upper Middle Rd



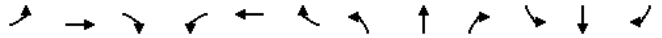


Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	156	1033	210	422	144	859	277	1270
v/c Ratio	0.41	1.12	0.87	0.42	0.42	0.80	0.82	0.95
Control Delay	26.0	106.2	60.9	24.2	20.8	43.8	43.0	51.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	26.0	106.2	60.9	24.2	20.8	43.8	43.0	51.1
Queue Length 50th (m)	24.4	~150.8	34.6	28.7	9.1	103.5	41.4	158.5
Queue Length 95th (m)	40.0	#194.5	#80.0	44.5	14.7	130.0	#80.8	#207.8
Internal Link Dist (m)		160.7		184.3		186.6		207.6
Turn Bay Length (m)	45.0		120.0		80.0		40.0	
Base Capacity (vph)	398	925	242	994	347	1076	363	1336
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.39	1.12	0.87	0.42	0.41	0.80	0.76	0.95

Intersection Summary

~ 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.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	151	726	276	204	237	173	140	754	80	269	1181	50
Future Volume (vph)	151	726	276	204	237	173	140	754	80	269	1181	50
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	6.4		4.0	6.4		5.0	6.5		4.0	6.5	
Lane Util. Factor	1.00	0.95		1.00	0.95		0.97	0.95		1.00	0.95	
Frpb, ped/bikes	1.00	0.99		1.00	0.99		1.00	1.00		1.00	1.00	
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Frt	1.00	0.96		1.00	0.94		1.00	0.99		1.00	0.99	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1748	3381		1752	3242		3367	3340		1735	3434	
Flt Permitted	0.43	1.00		0.12	1.00		0.10	1.00		0.14	1.00	
Satd. Flow (perm)	787	3381		226	3242		370	3340		249	3434	
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	156	748	285	210	244	178	144	777	82	277	1218	52
RTOR Reduction (vph)	0	33	0	0	110	0	0	7	0	0	2	0
Lane Group Flow (vph)	156	1000	0	210	312	0	144	852	0	277	1268	0
Confl. Peds. (#/hr)	9		21	21		9	10		11	11		10
Heavy Vehicles (%)	3%	1%	2%	3%	2%	5%	4%	6%	9%	4%	4%	13%
Turn Type	pm+pt	NA		pm+pt	NA		pm+pt	NA		pm+pt	NA	
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)	42.6	31.6		44.6	32.6		46.0	38.3		59.2	46.5	
Effective Green, g (s)	42.6	31.6		44.6	32.6		46.0	38.3		59.2	46.5	
Actuated g/C Ratio	0.36	0.26		0.37	0.27		0.38	0.32		0.49	0.39	
Clearance Time (s)	4.0	6.4		4.0	6.4		5.0	6.5		4.0	6.5	
Vehicle Extension (s)	3.0	5.0		3.0	5.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	368	892		237	882		334	1068		332	1334	
v/s Ratio Prot	0.04	c0.30		c0.09	0.10		0.03	0.26		c0.12	c0.37	
v/s Ratio Perm	0.11			0.24			0.14			0.29		
v/c Ratio	0.42	1.12		0.89	0.35		0.43	0.80		0.83	0.95	
Uniform Delay, d1	27.4	44.0		30.6	35.1		27.5	37.2		25.5	35.5	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.8	69.1		30.1	0.5		0.9	6.2		16.3	15.3	
Delay (s)	28.2	113.2		60.7	35.6		28.4	43.4		41.8	50.8	
Level of Service	C	F		E	D		C	D		D	D	
Approach Delay (s)		102.0			43.9			41.2			49.2	
Approach LOS		F			D			D			D	

Intersection Summary					
HCM 2000 Control Delay	61.0	HCM 2000 Level of Service		E	
HCM 2000 Volume to Capacity ratio	1.01				
Actuated Cycle Length (s)	119.7	Sum of lost time (s)		21.9	
Intersection Capacity Utilization	99.1%	ICU Level of Service		F	
Analysis Period (min)	15				

c Critical Lane Group

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	65	26	139	73	54	115	123	833	14	36	1697	56
Future Volume (vph)	65	26	139	73	54	115	123	833	14	36	1697	56
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	15.0		0.0	15.0		0.0	0.0		0.0	30.0		0.0
Storage Lanes	1		0	1		0	1		0	1		0
Taper Length (m)	15.0			15.0			7.5			25.0		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	1.00	0.95	0.95
Ped Bike Factor	1.00	0.99		1.00	0.99			1.00		1.00	1.00	
Frt		0.874			0.898			0.997			0.995	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1671	1532	0	1805	1656	0	1687	3419	0	1656	3485	0
Flt Permitted	0.529			0.537			0.091			0.273		
Satd. Flow (perm)	929	1532	0	1016	1656	0	162	3419	0	475	3485	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		19			91			2			5	
Link Speed (k/h)		50			40			60			60	
Link Distance (m)		92.7			93.5			93.1			210.6	
Travel Time (s)		6.7			8.4			5.6			12.6	
Confl. Peds. (#/hr)	2		5	5		2	2		10	2		10
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Heavy Vehicles (%)	8%	6%	7%	0%	0%	3%	7%	5%	15%	9%	3%	0%
Adj. Flow (vph)	68	27	145	76	56	120	128	868	15	38	1768	58
Shared Lane Traffic (%)												
Lane Group Flow (vph)	68	172	0	76	176	0	128	883	0	38	1826	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.6			3.6			7.2			7.2	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway 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
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2		1	2		1	2		1	2	
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	
Leading Detector (m)	2.0	10.0		2.0	10.0		2.0	10.0		2.0	10.0	
Trailing Detector (m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Position(m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Size(m)	2.0	0.6		2.0	0.6		2.0	0.6		2.0	0.6	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Type	Perm	NA		Perm	NA		Perm	NA		pm+pt	NA	
Protected Phases		4			8			2		1	6	
Permitted Phases	4			8			2			6		
Detector Phase	4	4		8	8		2	2		1	6	
Switch Phase												
Minimum Initial (s)	8.0	8.0		8.0	8.0		8.0	8.0		7.0	8.0	
Minimum Split (s)	40.5	40.5		40.6	40.6		26.8	26.8		11.0	26.8	
Total Split (s)	42.0	42.0		42.0	42.0		66.0	66.0		12.0	78.0	
Total Split (%)	35.0%	35.0%		35.0%	35.0%		55.0%	55.0%		10.0%	65.0%	
Maximum Green (s)	35.5	35.5		35.4	35.4		60.2	60.2		8.0	72.2	
Yellow Time (s)	3.3	3.3		3.3	3.3		3.7	3.7		3.0	3.7	
All-Red Time (s)	3.2	3.2		3.3	3.3		2.1	2.1		1.0	2.1	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)	6.5	6.5		6.6	6.6		5.8	5.8		4.0	5.8	
Lead/Lag							Lag	Lag		Lead		
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	None	None		None	None		Max	Max		None	Max	
Walk Time (s)	7.0	7.0		7.0	7.0		7.0	7.0			7.0	
Flash Dont Walk (s)	27.0	27.0		27.0	27.0		14.0	14.0			14.0	
Pedestrian Calls (#/hr)	0	0		0	0		0	0			0	
Act Effct Green (s)	15.3	15.3		15.2	15.2		65.9	65.9		74.1	72.3	
Actuated g/C Ratio	0.15	0.15		0.15	0.15		0.66	0.66		0.74	0.72	
v/c Ratio	0.48	0.69		0.49	0.54		1.21	0.39		0.09	0.72	
Control Delay	50.0	49.9		49.8	25.2		178.4	9.9		4.8	10.9	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.8	
Total Delay	50.0	49.9		49.8	25.2		178.4	9.9		4.8	11.7	
LOS	D	D		D	C		F	A		A	B	
Approach Delay		49.9			32.6			31.2			11.6	
Approach LOS		D			C			C			B	

Intersection Summary			
Area Type:	Other		
Cycle Length: 120			
Actuated Cycle Length: 99.9			
Natural Cycle: 150			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 1.21			
Intersection Signal Delay: 21.8		Intersection LOS: C	
Intersection Capacity Utilization 95.9%		ICU Level of Service F	
Analysis Period (min) 15			

Splits and Phases: 2: Appleby Line & Ironstone Dr



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	68	172	76	176	128	883	38	1826
v/c Ratio	0.48	0.69	0.49	0.54	1.21	0.39	0.09	0.72
Control Delay	50.0	49.9	49.8	25.2	178.4	9.9	4.8	10.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.8
Total Delay	50.0	49.9	49.8	25.2	178.4	9.9	4.8	11.7
Queue Length 50th (m)	12.8	29.8	14.3	15.7	~33.3	45.1	1.7	96.2
Queue Length 95th (m)	26.8	52.1	29.1	36.6	#56.2	70.3	5.5	158.6
Internal Link Dist (m)		68.7		69.5		69.1		186.6
Turn Bay Length (m)	15.0		15.0				30.0	
Base Capacity (vph)	330	557	360	646	106	2255	447	2524
Starvation Cap Reductn	0	0	0	0	0	0	0	377
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.21	0.31	0.21	0.27	1.21	0.39	0.09	0.85

Intersection Summary

~ 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.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	65	26	139	73	54	115	123	833	14	36	1697	56
Future Volume (vph)	65	26	139	73	54	115	123	833	14	36	1697	56
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.5	6.5		6.6	6.6		5.8	5.8		4.0	5.8	
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	0.95		1.00	0.95	
Frpb, ped/bikes	1.00	0.99		1.00	0.99		1.00	1.00		1.00	1.00	
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Frt	1.00	0.87		1.00	0.90		1.00	1.00		1.00	1.00	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1669	1532		1799	1656		1687	3421		1656	3487	
Flt Permitted	0.53	1.00		0.54	1.00		0.09	1.00		0.27	1.00	
Satd. Flow (perm)	930	1532		1017	1656		161	3421		476	3487	
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	68	27	145	76	56	120	128	868	15	38	1768	58
RTOR Reduction (vph)	0	16	0	0	77	0	0	1	0	0	1	0
Lane Group Flow (vph)	68	156	0	76	99	0	128	882	0	38	1825	0
Confl. Peds. (#/hr)	2		5	5		2	2		10	2		10
Heavy Vehicles (%)	8%	6%	7%	0%	0%	3%	7%	5%	15%	9%	3%	0%
Turn Type	Perm	NA		Perm	NA		Perm	NA		pm+pt	NA	
Protected Phases		4			8			2		1	6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)	15.3	15.3		15.2	15.2		65.9	65.9		74.0	74.0	
Effective Green, g (s)	15.3	15.3		15.2	15.2		65.9	65.9		74.0	74.0	
Actuated g/C Ratio	0.15	0.15		0.15	0.15		0.65	0.65		0.73	0.73	
Clearance Time (s)	6.5	6.5		6.6	6.6		5.8	5.8		4.0	5.8	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	140	230		152	247		104	2218		394	2539	
v/s Ratio Prot		c0.10			0.06			0.26		0.00	c0.52	
v/s Ratio Perm	0.07			0.07			c0.79			0.07		
v/c Ratio	0.49	0.68		0.50	0.40		1.23	0.40		0.10	0.72	
Uniform Delay, d1	39.5	40.8		39.7	39.1		17.8	8.5		4.4	7.9	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	2.6	7.7		2.6	1.1		162.7	0.5		0.1	1.8	
Delay (s)	42.2	48.5		42.3	40.1		180.6	9.0		4.5	9.7	
Level of Service	D	D		D	D		F	A		A	A	
Approach Delay (s)		46.7			40.8			30.7			9.5	
Approach LOS		D			D			C			A	

Intersection Summary

HCM 2000 Control Delay	20.9	HCM 2000 Level of Service		C	
HCM 2000 Volume to Capacity ratio	1.12				
Actuated Cycle Length (s)	101.6	Sum of lost time (s)		16.4	
Intersection Capacity Utilization	95.9%	ICU Level of Service		F	
Analysis Period (min)	15				

c Critical Lane Group

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	17	7	24	114	20	115	31	838	40	48	1770	37
Future Volume (vph)	17	7	24	114	20	115	31	838	40	48	1770	37
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	0.0		0.0	0.0		0.0	30.0		0.0	110.0		0.0
Storage Lanes	0		0	0		0	1		0	1		0
Taper Length (m)	7.5			7.5			40.0			25.0		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	1.00	0.95	0.95
Ped Bike Factor		0.99			1.00			1.00		1.00	1.00	
Frt		0.932			0.938			0.993			0.997	
Flt Protected		0.983			0.978		0.950			0.950		
Satd. Flow (prot)	0	1420	0	0	1711	0	1687	3380	0	1570	3460	0
Flt Permitted		0.836			0.830		0.077			0.255		
Satd. Flow (perm)	0	1207	0	0	1451	0	137	3380	0	421	3460	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		18			37			6			3	
Link Speed (k/h)		50			50			60			60	
Link Distance (m)		173.6			79.2			281.3			198.1	
Travel Time (s)		12.5			5.7			16.9			11.9	
Confl. Peds. (#/hr)			2	2			1		2	2		1
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Heavy Vehicles (%)	19%	0%	30%	0%	0%	4%	7%	6%	5%	15%	4%	3%
Adj. Flow (vph)	17	7	24	116	20	117	32	855	41	49	1806	38
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	48	0	0	253	0	32	896	0	49	1844	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		0.0			0.0			3.6			3.6	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway 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
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2		1	2		1	2		1	2	
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	
Leading Detector (m)	2.0	10.0		2.0	10.0		2.0	10.0		2.0	10.0	
Trailing Detector (m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Position(m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Size(m)	2.0	0.6		2.0	0.6		2.0	0.6		2.0	0.6	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Type	Perm	NA		Perm	NA		Perm	NA		pm+pt	NA	
Protected Phases		4			8			2		1	6	
Permitted Phases	4			8			2			6		
Detector Phase	4	4		8	8		2	2		1	6	
Switch Phase												
Minimum Initial (s)	8.0	8.0		8.0	8.0		8.0	8.0		7.0	8.0	
Minimum Split (s)	38.5	38.5		38.5	38.5		34.0	34.0		11.0	34.0	
Total Split (s)	42.0	42.0		42.0	42.0		66.0	66.0		12.0	78.0	
Total Split (%)	35.0%	35.0%		35.0%	35.0%		55.0%	55.0%		10.0%	65.0%	
Maximum Green (s)	35.5	35.5		35.5	35.5		60.0	60.0		8.0	72.0	
Yellow Time (s)	3.3	3.3		3.3	3.3		3.7	3.7		3.0	3.7	
All-Red Time (s)	3.2	3.2		3.2	3.2		2.3	2.3		1.0	2.3	
Lost Time Adjust (s)		0.0			0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)		6.5			6.5		6.0	6.0		4.0	6.0	
Lead/Lag							Lag	Lag		Lead		
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	None	None		None	None		Max	Max		None	Max	
Walk Time (s)	7.0	7.0		7.0	7.0		7.0	7.0			7.0	
Flash Dont Walk (s)	25.0	25.0		25.0	25.0		21.0	21.0			21.0	
Pedestrian Calls (#/hr)	0	0		0	0		0	0			0	
Act Effct Green (s)		21.3			21.3		64.1	64.1		75.0	73.0	
Actuated g/C Ratio		0.20			0.20		0.60	0.60		0.70	0.68	
v/c Ratio		0.19			0.79		0.39	0.44		0.13	0.78	
Control Delay		25.2			52.4		33.9	14.1		7.2	15.8	
Queue Delay		0.0			0.0		0.0	0.0		0.0	0.0	
Total Delay		25.2			52.4		33.9	14.1		7.2	15.8	
LOS		C			D		C	B		A	B	
Approach Delay		25.2			52.4			14.8			15.6	
Approach LOS		C			D			B			B	

Intersection Summary			
Area Type:	Other		
Cycle Length: 120			
Actuated Cycle Length: 106.8			
Natural Cycle: 95			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 0.79			
Intersection Signal Delay: 18.5		Intersection LOS: B	
Intersection Capacity Utilization 81.5%		ICU Level of Service D	
Analysis Period (min) 15			

Splits and Phases: 3: Appleby Line & Corporate Dr



Lane Group	EBT	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	48	253	32	896	49	1844
v/c Ratio	0.19	0.79	0.39	0.44	0.13	0.78
Control Delay	25.2	52.4	33.9	14.1	7.2	15.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	25.2	52.4	33.9	14.1	7.2	15.8
Queue Length 50th (m)	5.4	45.1	3.6	54.6	2.9	127.2
Queue Length 95th (m)	15.4	74.0	#20.3	89.2	8.8	214.6
Internal Link Dist (m)	149.6	55.2		257.3		174.1
Turn Bay Length (m)			30.0		110.0	
Base Capacity (vph)	414	508	82	2029	381	2364
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.12	0.50	0.39	0.44	0.13	0.78

Intersection Summary

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

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	17	7	24	114	20	115	31	838	40	48	1770	37
Future Volume (vph)	17	7	24	114	20	115	31	838	40	48	1770	37
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		6.5			6.5		6.0	6.0		4.0	6.0	
Lane Util. Factor		1.00			1.00		1.00	0.95		1.00	0.95	
Frpb, ped/bikes		0.99			1.00		1.00	1.00		1.00	1.00	
Flpb, ped/bikes		1.00			1.00		1.00	1.00		1.00	1.00	
Frt		0.93			0.94		1.00	0.99		1.00	1.00	
Flt Protected		0.98			0.98		0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1420			1708		1687	3380		1569	3460	
Flt Permitted		0.84			0.83		0.08	1.00		0.25	1.00	
Satd. Flow (perm)		1208			1450		136	3380		421	3460	
Peak-hour factor, PHF	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Adj. Flow (vph)	17	7	24	116	20	117	32	855	41	49	1806	38
RTOR Reduction (vph)	0	14	0	0	30	0	0	2	0	0	1	0
Lane Group Flow (vph)	0	34	0	0	223	0	32	894	0	49	1843	0
Confl. Peds. (#/hr)			2	2			1		2	2		1
Heavy Vehicles (%)	19%	0%	30%	0%	0%	4%	7%	6%	5%	15%	4%	3%
Turn Type	Perm	NA		Perm	NA		Perm	NA		pm+pt	NA	
Protected Phases		4			8			2		1	6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)		21.3			21.3		64.0	64.0		73.7	73.7	
Effective Green, g (s)		21.3			21.3		64.0	64.0		73.7	73.7	
Actuated g/C Ratio		0.20			0.20		0.60	0.60		0.69	0.69	
Clearance Time (s)		6.5			6.5		6.0	6.0		4.0	6.0	
Vehicle Extension (s)		3.0			3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)		239			287		80	2012		349	2372	
v/s Ratio Prot								0.26		0.01	c0.53	
v/s Ratio Perm		0.03			c0.15		0.24			0.09		
v/c Ratio		0.14			0.78		0.40	0.44		0.14	0.78	
Uniform Delay, d1		35.5			40.9		11.6	12.0		6.4	11.4	
Progression Factor		1.00			1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2		0.3			12.5		14.2	0.7		0.2	2.6	
Delay (s)		35.8			53.3		25.8	12.7		6.6	13.9	
Level of Service		D			D		C	B		A	B	
Approach Delay (s)		35.8			53.3			13.1			13.8	
Approach LOS		D			D			B			B	

Intersection Summary

HCM 2000 Control Delay	17.1	HCM 2000 Level of Service		B	
HCM 2000 Volume to Capacity ratio	0.81				
Actuated Cycle Length (s)	107.5	Sum of lost time (s)		16.5	
Intersection Capacity Utilization	81.5%	ICU Level of Service		D	
Analysis Period (min)	15				

c Critical Lane Group

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	45	60	0	0	63	12	1	1	0	131	12	112
Future Volume (vph)	45	60	0	0	63	12	1	1	0	131	12	112
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	0.0		0.0	0.0		0.0	0.0		0.0	20.0		0.0
Storage Lanes	0		0	0		0	0		0	1		0
Taper Length (m)	7.5			7.5			7.5			20.0		
Lane Util. 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
Ped Bike Factor												
Frt					0.979						0.864	
Flt Protected		0.979						0.976		0.950		
Satd. Flow (prot)	0	1346	0	0	1549	0	0	1854	0	1805	1571	0
Flt Permitted		0.979						0.976		0.950		
Satd. Flow (perm)	0	1346	0	0	1549	0	0	1854	0	1805	1571	0
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		83.4			35.5			72.0			78.5	
Travel Time (s)		6.0			2.6			5.2			5.7	
Confl. Peds. (#/hr)							1		2	2		1
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	29%	45%	0%	0%	22%	10%	0%	0%	0%	0%	0%	5%
Adj. Flow (vph)	50	67	0	0	70	13	1	1	0	146	13	124
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	117	0	0	83	0	0	2	0	146	137	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		0.0			0.0			0.0			3.6	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway 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
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Sign Control		Free			Free			Stop			Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	31.8%	ICU Level of Service A	
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	45	60	0	0	63	12	1	1	0	131	12	112
Future Volume (Veh/h)	45	60	0	0	63	12	1	1	0	131	12	112
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	50	67	0	0	70	13	1	1	0	146	13	124
Pedestrians		1			2							
Lane Width (m)		3.6			3.6							
Walking Speed (m/s)		1.2			1.2							
Percent Blockage		0			0							
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (m)					203							
pX, platoon unblocked												
vC, conflicting volume	83			67			375	250	69	246	244	78
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	83			67			375	250	69	246	244	78
tC, single (s)	4.4			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.5			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	96			100			100	100	100	79	98	87
cM capacity (veh/h)	1360			1547			489	632	998	690	637	974

Direction, Lane #	EB 1	WB 1	NB 1	SB 1	SB 2
Volume Total	117	83	2	146	137
Volume Left	50	0	1	146	0
Volume Right	0	13	0	0	124
cSH	1360	1547	551	690	928
Volume to Capacity	0.04	0.00	0.00	0.21	0.15
Queue Length 95th (m)	0.9	0.0	0.1	6.4	4.1
Control Delay (s)	3.5	0.0	11.6	11.6	9.6
Lane LOS	A		B	B	A
Approach Delay (s)	3.5	0.0	11.6	10.6	
Approach LOS			B	B	

Intersection Summary			
Average Delay	7.1		
Intersection Capacity Utilization	31.8%	ICU Level of Service	A
Analysis Period (min)	15		

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	6	155	30	125	39	69	31	0	54	21	0	5
Future Volume (vph)	6	155	30	125	39	69	31	0	54	21	0	5
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Util. 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
Frt		0.979			0.960			0.914			0.976	
Flt Protected		0.998			0.974			0.982			0.961	
Satd. Flow (prot)	0	1820	0	0	1742	0	0	1672	0	0	1747	0
Flt Permitted		0.998			0.974			0.982			0.961	
Satd. Flow (perm)	0	1820	0	0	1742	0	0	1672	0	0	1747	0
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		75.0			92.7			42.4			48.0	
Travel Time (s)		5.4			6.7			3.1			3.5	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	7	168	33	136	42	75	34	0	59	23	0	5
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	208	0	0	253	0	0	93	0	0	28	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		0.0			3.6			0.0			0.0	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway 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
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Sign Control		Free			Free			Stop			Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	38.3%	ICU Level of Service A	
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	6	155	30	125	39	69	31	0	54	21	0	5
Future Volume (Veh/h)	6	155	30	125	39	69	31	0	54	21	0	5
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	7	168	33	136	42	75	34	0	59	23	0	5
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (m)					93							
pX, platoon unblocked	0.99						0.99	0.99		0.99	0.99	0.99
vC, conflicting volume	117			201			555	588	184	609	566	80
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	99			201			543	576	184	598	555	61
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			90			92	100	93	93	100	99
cM capacity (veh/h)	1475			1371			408	379	858	351	390	991

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	208	253	93	28
Volume Left	7	136	34	23
Volume Right	33	75	59	5
cSH	1475	1371	611	397
Volume to Capacity	0.00	0.10	0.15	0.07
Queue Length 95th (m)	0.1	2.6	4.3	1.8
Control Delay (s)	0.3	4.6	11.9	14.8
Lane LOS	A	A	B	B
Approach Delay (s)	0.3	4.6	11.9	14.8
Approach LOS			B	B

Intersection Summary				
Average Delay	4.7			
Intersection Capacity Utilization	38.3%	ICU Level of Service	A	
Analysis Period (min)	15			

Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	0	41	0	970	1859	50
Future Volume (vph)	0	41	0	970	1859	50
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	0.91	0.95	0.95
Frt		0.865			0.996	
Flt Protected						
Satd. Flow (prot)	0	1611	0	5085	3525	0
Flt Permitted						
Satd. Flow (perm)	0	1611	0	5085	3525	0
Link Speed (k/h)	50			60	60	
Link Distance (m)	60.4			36.6	93.1	
Travel Time (s)	4.3			2.2	5.6	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	45	0	1054	2021	54
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	45	0	1054	2075	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	0.0			3.6	3.6	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	4.8			4.8	4.8	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)	25	15	25			15
Sign Control	Stop			Free	Free	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	63.0%	ICU Level of Service	B
Analysis Period (min)	15		

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	0	41	0	970	1859	50
Future Volume (Veh/h)	0	41	0	970	1859	50
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	45	0	1054	2021	54
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	None	
Median storage veh)						
Upstream signal (m)				235	93	
pX, platoon unblocked	0.70	0.68	0.68			
vC, conflicting volume	2399	1038	2075			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1754	120	1643			
tC, single (s)	6.8	6.9	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	100	93	100			
cM capacity (veh/h)	54	619	266			

Direction, Lane #	EB 1	NB 1	NB 2	NB 3	SB 1	SB 2
Volume Total	45	351	351	351	1347	728
Volume Left	0	0	0	0	0	0
Volume Right	45	0	0	0	0	54
cSH	619	1700	1700	1700	1700	1700
Volume to Capacity	0.07	0.21	0.21	0.21	0.79	0.43
Queue Length 95th (m)	1.9	0.0	0.0	0.0	0.0	0.0
Control Delay (s)	11.3	0.0	0.0	0.0	0.0	0.0
Lane LOS	B					
Approach Delay (s)	11.3	0.0			0.0	
Approach LOS	B					

Intersection Summary					
Average Delay		0.2			
Intersection Capacity Utilization		63.0%	ICU Level of Service		B
Analysis Period (min)		15			

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	178	357	236	83	642	314	363	1294	72	206	865	200
Future Volume (vph)	178	357	236	83	642	314	363	1294	72	206	865	200
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	45.0		0.0	120.0		0.0	80.0		0.0	40.0		0.0
Storage Lanes	1		0	1		0	2		0	1		0
Taper Length (m)	30.0			20.0			40.0			35.0		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	0.95	0.97	0.95	0.95	1.00	0.95	0.95
Ped Bike Factor		0.99		0.99	0.99			1.00			0.99	
Frt		0.940			0.951			0.992			0.972	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1787	3303	0	1703	3382	0	3467	3488	0	1787	3398	0
Flt Permitted	0.132			0.185			0.131			0.063		
Satd. Flow (perm)	248	3303	0	330	3382	0	478	3488	0	119	3398	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		102			54			5			23	
Link Speed (k/h)		60			60			60			60	
Link Distance (m)		184.7			208.3			210.6			231.6	
Travel Time (s)		11.1			12.5			12.6			13.9	
Confl. Peds. (#/hr)	16		14	14		16	14		29	29		14
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Heavy Vehicles (%)	1%	1%	2%	6%	0%	1%	1%	2%	9%	1%	3%	1%
Adj. Flow (vph)	185	372	246	86	669	327	378	1348	75	215	901	208
Shared Lane Traffic (%)												
Lane Group Flow (vph)	185	618	0	86	996	0	378	1423	0	215	1109	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.6			3.6			7.2			7.2	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway 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
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2		1	2		1	2		1	2	
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	
Leading Detector (m)	2.0	10.0		2.0	10.0		2.0	10.0		2.0	10.0	
Trailing Detector (m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Position(m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Size(m)	2.0	0.6		2.0	0.6		2.0	0.6		2.0	0.6	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Type	pm+pt	NA		pm+pt	NA		pm+pt	NA		pm+pt	NA	
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4			8			2			6		
Detector Phase	7	4		3	8		5	2		1	6	
Switch Phase												
Minimum Initial (s)	7.0	8.0		7.0	8.0		7.0	8.0		7.0	8.0	
Minimum Split (s)	11.0	34.4		11.0	34.4		12.0	34.5		11.0	34.5	
Total Split (s)	15.0	36.0		14.0	35.0		30.0	72.0		18.0	60.0	
Total Split (%)	10.7%	25.7%		10.0%	25.0%		21.4%	51.4%		12.9%	42.9%	
Maximum Green (s)	11.0	29.6		10.0	28.6		25.0	65.5		14.0	53.5	
Yellow Time (s)	3.0	3.7		3.0	3.7		3.0	3.7		3.0	3.7	
All-Red Time (s)	1.0	2.7		1.0	2.7		2.0	2.8		1.0	2.8	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)	4.0	6.4		4.0	6.4		5.0	6.5		4.0	6.5	
Lead/Lag	Lead	Lag		Lead	Lag		Lead	Lag		Lead	Lag	
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	5.0		3.0	5.0		3.0	3.0		3.0	3.0	
Recall Mode	None	None		None	None		None	Max		None	Max	
Walk Time (s)		7.0			7.0			7.0			7.0	
Flash Dont Walk (s)		21.0			21.0			21.0			21.0	
Pedestrian Calls (#/hr)		0			0			0			0	
Act Effct Green (s)	43.8	30.4		40.2	28.6		81.4	65.5		79.6	63.4	
Actuated g/C Ratio	0.31	0.22		0.29	0.20		0.58	0.47		0.57	0.45	
v/c Ratio	0.93	0.77		0.46	1.36		0.64	0.87		0.93	0.71	
Control Delay	86.0	50.4		42.0	208.6		18.1	40.2		81.8	33.8	
Queue Delay	0.0	0.0		0.0	0.0		0.0	19.3		0.0	0.0	
Total Delay	86.0	50.4		42.0	208.6		18.1	59.5		81.8	33.8	
LOS	F	D		D	F		B	E		F	C	
Approach Delay		58.6			195.3			50.8			41.6	
Approach LOS		E			F			D			D	

Intersection Summary			
Area Type:	Other		
Cycle Length: 140			
Actuated Cycle Length: 139.7			
Natural Cycle: 115			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 1.36			
Intersection Signal Delay: 80.9		Intersection LOS: F	
Intersection Capacity Utilization 105.2%		ICU Level of Service G	
Analysis Period (min) 15			

Splits and Phases: 1: Appleby Line & Upper Middle Rd



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	185	618	86	996	378	1423	215	1109
v/c Ratio	0.93	0.77	0.46	1.36	0.64	0.87	0.93	0.71
Control Delay	86.0	50.4	42.0	208.6	18.1	40.2	81.8	33.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	19.3	0.0	0.0
Total Delay	86.0	50.4	42.0	208.6	18.1	59.5	81.8	33.8
Queue Length 50th (m)	40.4	76.6	17.7	~194.3	23.8	191.8	45.3	132.2
Queue Length 95th (m)	#85.5	100.1	31.4	#238.6	32.4	226.4	#97.9	170.1
Internal Link Dist (m)		160.7		184.3		186.6		207.6
Turn Bay Length (m)	45.0		120.0		80.0		40.0	
Base Capacity (vph)	199	798	194	735	824	1638	235	1555
Starvation Cap Reductn	0	0	0	0	0	255	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.93	0.77	0.44	1.36	0.46	1.03	0.91	0.71

Intersection Summary

~ 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.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	178	357	236	83	642	314	363	1294	72	206	865	200
Future Volume (vph)	178	357	236	83	642	314	363	1294	72	206	865	200
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	6.4		4.0	6.4		5.0	6.5		4.0	6.5	
Lane Util. Factor	1.00	0.95		1.00	0.95		0.97	0.95		1.00	0.95	
Frpb, ped/bikes	1.00	0.99		1.00	0.99		1.00	1.00		1.00	0.99	
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Frt	1.00	0.94		1.00	0.95		1.00	0.99		1.00	0.97	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1787	3304		1701	3381		3467	3489		1787	3398	
Flt Permitted	0.13	1.00		0.19	1.00		0.13	1.00		0.06	1.00	
Satd. Flow (perm)	248	3304		332	3381		479	3489		119	3398	
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	185	372	246	86	669	327	378	1348	75	215	901	208
RTOR Reduction (vph)	0	80	0	0	43	0	0	3	0	0	13	0
Lane Group Flow (vph)	185	538	0	86	953	0	378	1420	0	215	1096	0
Confl. Peds. (#/hr)	16		14	14		16	14		29	29		14
Heavy Vehicles (%)	1%	1%	2%	6%	0%	1%	1%	2%	9%	1%	3%	1%
Turn Type	pm+pt	NA		pm+pt	NA		pm+pt	NA		pm+pt	NA	
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)	41.4	30.4		37.8	28.6		80.2	65.5		77.2	63.5	
Effective Green, g (s)	41.4	30.4		37.8	28.6		80.2	65.5		77.2	63.5	
Actuated g/C Ratio	0.30	0.22		0.27	0.20		0.57	0.47		0.55	0.45	
Clearance Time (s)	4.0	6.4		4.0	6.4		5.0	6.5		4.0	6.5	
Vehicle Extension (s)	3.0	5.0		3.0	5.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	194	718		179	692		589	1635		229	1544	
v/s Ratio Prot	c0.07	0.16		0.03	c0.28		0.07	0.41		c0.09	0.32	
v/s Ratio Perm	0.21			0.10			0.30			c0.43		
v/c Ratio	0.95	0.75		0.48	1.38		0.64	0.87		0.94	0.71	
Uniform Delay, d1	42.0	51.1		40.2	55.5		20.4	33.2		42.8	30.7	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	51.0	5.2		2.0	178.8		2.4	6.6		42.3	2.8	
Delay (s)	93.0	56.3		42.2	234.3		22.8	39.8		85.1	33.5	
Level of Service	F	E		D	F		C	D		F	C	
Approach Delay (s)		64.7			219.1			36.2			41.9	
Approach LOS		E			F			D			D	

Intersection Summary

HCM 2000 Control Delay	81.8	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	1.04		
Actuated Cycle Length (s)	139.7	Sum of lost time (s)	21.9
Intersection Capacity Utilization	105.2%	ICU Level of Service	G
Analysis Period (min)	15		

c Critical Lane Group

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	98	54	91	27	41	104	179	1663	44	87	1111	63
Future Volume (vph)	98	54	91	27	41	104	179	1663	44	87	1111	63
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	15.0		0.0	15.0		0.0	0.0		0.0	30.0		0.0
Storage Lanes	1		0	1		0	1		0	1		0
Taper Length (m)	15.0			15.0			7.5			25.0		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	1.00	0.95	0.95
Ped Bike Factor	0.99	0.99		1.00	0.98		1.00	1.00			1.00	
Frt		0.906			0.892			0.996			0.992	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1787	1693	0	1805	1657	0	1805	3521	0	1805	3506	0
Flt Permitted	0.543			0.535			0.232			0.070		
Satd. Flow (perm)	1014	1693	0	1013	1657	0	439	3521	0	133	3506	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		58			88			3			9	
Link Speed (k/h)		50			40			60			60	
Link Distance (m)		92.7			93.5			93.1			210.6	
Travel Time (s)		6.7			8.4			5.6			12.6	
Confl. Peds. (#/hr)	8		4	4		8	8		14	14		8
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Heavy Vehicles (%)	1%	0%	1%	0%	0%	1%	0%	2%	0%	0%	2%	0%
Adj. Flow (vph)	101	56	94	28	42	107	185	1714	45	90	1145	65
Shared Lane Traffic (%)												
Lane Group Flow (vph)	101	150	0	28	149	0	185	1759	0	90	1210	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.6			3.6			7.2			7.2	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway 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
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2		1	2		1	2		1	2	
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	
Leading Detector (m)	2.0	10.0		2.0	10.0		2.0	10.0		2.0	10.0	
Trailing Detector (m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Position(m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Size(m)	2.0	0.6		2.0	0.6		2.0	0.6		2.0	0.6	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Type	Perm	NA		Perm	NA		Perm	NA		pm+pt	NA	
Protected Phases		4			8			2		1	6	
Permitted Phases	4			8			2			6		
Detector Phase	4	4		8	8		2	2		1	6	
Switch Phase												
Minimum Initial (s)	8.0	8.0		8.0	8.0		8.0	8.0		7.0	8.0	
Minimum Split (s)	40.5	40.5		40.6	40.6		26.8	26.8		11.0	26.8	
Total Split (s)	42.0	42.0		42.0	42.0		86.0	86.0		12.0	98.0	
Total Split (%)	30.0%	30.0%		30.0%	30.0%		61.4%	61.4%		8.6%	70.0%	
Maximum Green (s)	35.5	35.5		35.4	35.4		80.2	80.2		8.0	92.2	
Yellow Time (s)	3.3	3.3		3.3	3.3		3.7	3.7		3.0	3.7	
All-Red Time (s)	3.2	3.2		3.3	3.3		2.1	2.1		1.0	2.1	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)	6.5	6.5		6.6	6.6		5.8	5.8		4.0	5.8	
Lead/Lag							Lag	Lag		Lead		
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	None	None		None	None		Max	Max		None	Max	
Walk Time (s)	7.0	7.0		7.0	7.0		7.0	7.0			7.0	
Flash Dont Walk (s)	27.0	27.0		27.0	27.0		14.0	14.0			14.0	
Pedestrian Calls (#/hr)	0	0		0	0		0	0			0	
Act Effct Green (s)	15.9	15.9		15.8	15.8		81.0	81.0		94.2	92.4	
Actuated g/C Ratio	0.13	0.13		0.13	0.13		0.67	0.67		0.78	0.77	
v/c Ratio	0.76	0.55		0.21	0.51		0.63	0.74		0.44	0.45	
Control Delay	83.2	37.0		49.7	27.0		25.0	16.4		12.9	6.1	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.1		0.0	0.4	
Total Delay	83.2	37.0		49.7	27.0		25.0	16.5		12.9	6.5	
LOS	F	D		D	C		C	B		B	A	
Approach Delay		55.6			30.6			17.3			6.9	
Approach LOS		E			C			B			A	

Intersection Summary			
Area Type:	Other		
Cycle Length: 140			
Actuated Cycle Length: 120.6			
Natural Cycle: 110			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 0.76			
Intersection Signal Delay: 16.9		Intersection LOS: B	
Intersection Capacity Utilization 92.6%		ICU Level of Service F	
Analysis Period (min) 15			

Splits and Phases: 2: Appleby Line & Ironstone Dr



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	101	150	28	149	185	1759	90	1210
v/c Ratio	0.76	0.55	0.21	0.51	0.63	0.74	0.44	0.45
Control Delay	83.2	37.0	49.7	27.0	25.0	16.4	12.9	6.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.4
Total Delay	83.2	37.0	49.7	27.0	25.0	16.5	12.9	6.5
Queue Length 50th (m)	24.5	21.3	6.3	13.9	23.6	136.1	4.3	47.6
Queue Length 95th (m)	44.7	43.0	15.7	34.8	68.2	205.7	15.5	77.6
Internal Link Dist (m)		68.7		69.5		69.1		186.6
Turn Bay Length (m)	15.0		15.0				30.0	
Base Capacity (vph)	298	540	297	549	294	2365	214	2687
Starvation Cap Reductn	0	0	0	0	0	70	0	813
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.34	0.28	0.09	0.27	0.63	0.77	0.42	0.65

Intersection Summary

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	98	54	91	27	41	104	179	1663	44	87	1111	63
Future Volume (vph)	98	54	91	27	41	104	179	1663	44	87	1111	63
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.5	6.5		6.6	6.6		5.8	5.8		4.0	5.8	
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	0.95		1.00	0.95	
Frpb, ped/bikes	1.00	0.99		1.00	0.99		1.00	1.00		1.00	1.00	
Flpb, ped/bikes	0.99	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Frt	1.00	0.91		1.00	0.89		1.00	1.00		1.00	0.99	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1775	1693		1799	1659		1797	3522		1805	3506	
Flt Permitted	0.54	1.00		0.54	1.00		0.23	1.00		0.07	1.00	
Satd. Flow (perm)	1015	1693		1014	1659		440	3522		133	3506	
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	101	56	94	28	42	107	185	1714	45	90	1145	65
RTOR Reduction (vph)	0	50	0	0	76	0	0	1	0	0	2	0
Lane Group Flow (vph)	101	100	0	28	73	0	185	1758	0	90	1208	0
Confl. Peds. (#/hr)	8		4	4		8	8		14	14		8
Heavy Vehicles (%)	1%	0%	1%	0%	0%	1%	0%	2%	0%	0%	2%	0%
Turn Type	Perm	NA		Perm	NA		Perm	NA		pm+pt	NA	
Protected Phases		4			8			2		1	6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)	15.9	15.9		15.8	15.8		81.0	81.0		92.4	92.4	
Effective Green, g (s)	15.9	15.9		15.8	15.8		81.0	81.0		92.4	92.4	
Actuated g/C Ratio	0.13	0.13		0.13	0.13		0.67	0.67		0.77	0.77	
Clearance Time (s)	6.5	6.5		6.6	6.6		5.8	5.8		4.0	5.8	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	133	223		132	217		295	2365		204	2686	
v/s Ratio Prot		0.06			0.04			c0.50		0.03	c0.34	
v/s Ratio Perm	c0.10			0.03			0.42			0.31		
v/c Ratio	0.76	0.45		0.21	0.33		0.63	0.74		0.44	0.45	
Uniform Delay, d1	50.5	48.3		46.8	47.6		11.2	13.0		13.8	5.0	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	21.7	1.4		0.8	0.9		9.7	2.2		1.5	0.5	
Delay (s)	72.2	49.7		47.6	48.5		20.9	15.1		15.4	5.6	
Level of Service	E	D		D	D		C	B		B	A	
Approach Delay (s)		58.8			48.4			15.7			6.3	
Approach LOS		E			D			B			A	

Intersection Summary					
HCM 2000 Control Delay	16.9	HCM 2000 Level of Service		B	
HCM 2000 Volume to Capacity ratio	0.73				
Actuated Cycle Length (s)	120.6	Sum of lost time (s)		16.4	
Intersection Capacity Utilization	92.6%	ICU Level of Service		F	
Analysis Period (min)	15				

c Critical Lane Group

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	89	37	68	79	24	146	29	1651	87	69	1045	27
Future Volume (vph)	89	37	68	79	24	146	29	1651	87	69	1045	27
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	0.0		0.0	0.0		0.0	30.0		0.0	110.0		0.0
Storage Lanes	0		0	0		0	1		0	1		0
Taper Length (m)	7.5			7.5			40.0			25.0		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	1.00	0.95	0.95
Ped Bike Factor		0.99			0.99		1.00	1.00			1.00	
Frt		0.953			0.921			0.992			0.996	
Flt Protected		0.978			0.984		0.950			0.950		
Satd. Flow (prot)	0	1696	0	0	1689	0	1583	3510	0	1703	3484	0
Flt Permitted		0.607			0.784		0.250			0.055		
Satd. Flow (perm)	0	1051	0	0	1346	0	416	3510	0	99	3484	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		18			48			7			4	
Link Speed (k/h)		50			50			60			60	
Link Distance (m)		173.6			79.2			281.3			198.1	
Travel Time (s)		12.5			5.7			16.9			11.9	
Confl. Peds. (#/hr)	4		1	1		4	5		1	1		5
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Heavy Vehicles (%)	4%	0%	6%	1%	0%	1%	14%	2%	0%	6%	3%	8%
Adj. Flow (vph)	92	38	70	81	25	151	30	1702	90	71	1077	28
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	200	0	0	257	0	30	1792	0	71	1105	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		0.0			0.0			3.6			3.6	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway 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
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2		1	2		1	2		1	2	
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	
Leading Detector (m)	2.0	10.0		2.0	10.0		2.0	10.0		2.0	10.0	
Trailing Detector (m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Position(m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Size(m)	2.0	0.6		2.0	0.6		2.0	0.6		2.0	0.6	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Type	Perm	NA		Perm	NA		Perm	NA		pm+pt	NA	
Protected Phases		4			8			2		1	6	
Permitted Phases	4			8			2			6		
Detector Phase	4	4		8	8		2	2		1	6	
Switch Phase												
Minimum Initial (s)	8.0	8.0		8.0	8.0		8.0	8.0		7.0	8.0	
Minimum Split (s)	38.5	38.5		38.5	38.5		34.0	34.0		11.0	34.0	
Total Split (s)	39.0	39.0		39.0	39.0		89.0	89.0		12.0	101.0	
Total Split (%)	27.9%	27.9%		27.9%	27.9%		63.6%	63.6%		8.6%	72.1%	
Maximum Green (s)	32.5	32.5		32.5	32.5		83.0	83.0		8.0	95.0	
Yellow Time (s)	3.3	3.3		3.3	3.3		3.7	3.7		3.0	3.7	
All-Red Time (s)	3.2	3.2		3.2	3.2		2.3	2.3		1.0	2.3	
Lost Time Adjust (s)		0.0			0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)		6.5			6.5		6.0	6.0		4.0	6.0	
Lead/Lag							Lag	Lag		Lead		
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	None	None		None	None		Max	Max		None	Max	
Walk Time (s)	7.0	7.0		7.0	7.0		7.0	7.0			7.0	
Flash Dont Walk (s)	25.0	25.0		25.0	25.0		21.0	21.0			21.0	
Pedestrian Calls (#/hr)	0	0		0	0		0	0			0	
Act Effct Green (s)		26.4			26.4		86.2	86.2		97.2	95.2	
Actuated g/C Ratio		0.20			0.20		0.64	0.64		0.72	0.71	
v/c Ratio		0.90			0.85		0.11	0.79		0.44	0.45	
Control Delay		87.8			66.4		13.3	22.9		19.4	9.5	
Queue Delay		0.0			0.0		0.0	0.0		0.0	0.0	
Total Delay		87.8			66.4		13.3	22.9		19.4	9.5	
LOS		F			E		B	C		B	A	
Approach Delay		87.8			66.4			22.8			10.1	
Approach LOS		F			E			C			B	

Intersection Summary			
Area Type:	Other		
Cycle Length: 140			
Actuated Cycle Length: 134.2			
Natural Cycle: 105			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 0.90			
Intersection Signal Delay: 25.5		Intersection LOS: C	
Intersection Capacity Utilization 85.9%		ICU Level of Service E	
Analysis Period (min) 15			

Splits and Phases: 3: Appleby Line & Corporate Dr



Lane Group	EBT	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	200	257	30	1792	71	1105
v/c Ratio	0.90	0.85	0.11	0.79	0.44	0.45
Control Delay	87.8	66.4	13.3	22.9	19.4	9.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	87.8	66.4	13.3	22.9	19.4	9.5
Queue Length 50th (m)	50.4	57.5	3.3	197.9	5.5	66.4
Queue Length 95th (m)	#91.0	#93.2	9.2	255.3	17.3	88.0
Internal Link Dist (m)	149.6	55.2		257.3		174.1
Turn Bay Length (m)			30.0		110.0	
Base Capacity (vph)	268	363	267	2256	167	2473
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.75	0.71	0.11	0.79	0.43	0.45

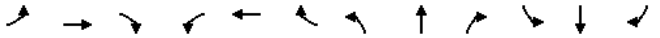
Intersection Summary

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

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	89	37	68	79	24	146	29	1651	87	69	1045	27
Future Volume (vph)	89	37	68	79	24	146	29	1651	87	69	1045	27
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		6.5			6.5		6.0	6.0		4.0	6.0	
Lane Util. Factor		1.00			1.00		1.00	0.95		1.00	0.95	
Frpb, ped/bikes		1.00			0.99		1.00	1.00		1.00	1.00	
Flpb, ped/bikes		1.00			1.00		1.00	1.00		1.00	1.00	
Frt		0.95			0.92		1.00	0.99		1.00	1.00	
Flt Protected		0.98			0.98		0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1692			1689		1579	3512		1703	3484	
Flt Permitted		0.61			0.78		0.25	1.00		0.05	1.00	
Satd. Flow (perm)		1051			1346		416	3512		98	3484	
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	92	38	70	81	25	151	30	1702	90	71	1077	28
RTOR Reduction (vph)	0	14	0	0	39	0	0	3	0	0	1	0
Lane Group Flow (vph)	0	186	0	0	218	0	30	1789	0	71	1104	0
Confl. Peds. (#/hr)	4		1	1		4	5		1	1		5
Heavy Vehicles (%)	4%	0%	6%	1%	0%	1%	14%	2%	0%	6%	3%	8%
Turn Type	Perm	NA		Perm	NA		Perm	NA		pm+pt	NA	
Protected Phases		4			8			2		1	6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)		26.4			26.4		86.1	86.1		96.0	96.0	
Effective Green, g (s)		26.4			26.4		86.1	86.1		96.0	96.0	
Actuated g/C Ratio		0.20			0.20		0.64	0.64		0.71	0.71	
Clearance Time (s)		6.5			6.5		6.0	6.0		4.0	6.0	
Vehicle Extension (s)		3.0			3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)		205			263		265	2241		139	2479	
v/s Ratio Prot								c0.51		0.02	c0.32	
v/s Ratio Perm		c0.18			0.16		0.07			0.34		
v/c Ratio		0.90			0.83		0.11	0.80		0.51	0.45	
Uniform Delay, d1		53.0			52.1		9.5	18.0		20.2	8.2	
Progression Factor		1.00			1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2		37.4			19.4		0.9	3.1		3.1	0.6	
Delay (s)		90.5			71.5		10.4	21.1		23.3	8.8	
Level of Service		F			E		B	C		C	A	
Approach Delay (s)		90.5			71.5			20.9			9.7	
Approach LOS		F			E			C			A	

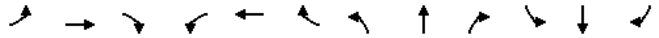
Intersection Summary					
HCM 2000 Control Delay	24.9	HCM 2000 Level of Service		C	
HCM 2000 Volume to Capacity ratio	0.81				
Actuated Cycle Length (s)	134.9	Sum of lost time (s)		16.5	
Intersection Capacity Utilization	85.9%	ICU Level of Service		E	
Analysis Period (min)	15				

c Critical Lane Group



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	205	88	0	1	68	84	1	2	4	59	4	50
Future Volume (vph)	205	88	0	1	68	84	1	2	4	59	4	50
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	0.0		0.0	0.0		0.0	0.0		0.0	20.0		0.0
Storage Lanes	0		0	0		0	0		0	1		0
Taper Length (m)	7.5			7.5			7.5			20.0		
Lane Util. 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
Ped Bike Factor												
Frt					0.926			0.923			0.861	
Flt Protected		0.966						0.993		0.950		
Satd. Flow (prot)	0	1733	0	0	1648	0	0	1354	0	1736	1503	0
Flt Permitted		0.966						0.993		0.950		
Satd. Flow (perm)	0	1733	0	0	1648	0	0	1354	0	1736	1503	0
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		83.4			110.5			72.0			78.5	
Travel Time (s)		6.0			8.0			5.2			5.7	
Confl. Peds. (#/hr)	2					2			2	2		
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Heavy Vehicles (%)	5%	8%	0%	0%	9%	5%	100%	50%	0%	4%	33%	7%
Adj. Flow (vph)	216	93	0	1	72	88	1	2	4	62	4	53
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	309	0	0	161	0	0	7	0	62	57	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		0.0			0.0			0.0			3.6	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway 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
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Sign Control		Free			Free			Stop			Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	45.1%	ICU Level of Service A	
Analysis Period (min)	15		



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	205	88	0	1	68	84	1	2	4	59	4	50
Future Volume (Veh/h)	205	88	0	1	68	84	1	2	4	59	4	50
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	216	93	0	1	72	88	1	2	4	62	4	53
Pedestrians					2						2	
Lane Width (m)					3.6						3.6	
Walking Speed (m/s)					1.2						1.2	
Percent Blockage					0						0	
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (m)					203							
pX, platoon unblocked												
vC, conflicting volume	162			93			698	689	95	652	645	118
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	162			93			698	689	95	652	645	118
tC, single (s)	4.1			4.1			8.1	7.0	6.2	7.1	6.8	6.3
tC, 2 stage (s)												
tF (s)	2.2			2.2			4.4	4.5	3.3	3.5	4.3	3.4
p0 queue free %	85			100			100	99	100	81	99	94
cM capacity (veh/h)	1396			1514			208	265	966	328	298	919

Direction, Lane #	EB 1	WB 1	NB 1	SB 1	SB 2
Volume Total	309	161	7	62	57
Volume Left	216	1	1	62	0
Volume Right	0	88	4	0	53
cSH	1396	1514	424	328	802
Volume to Capacity	0.15	0.00	0.02	0.19	0.07
Queue Length 95th (m)	4.4	0.0	0.4	5.5	1.8
Control Delay (s)	6.0	0.1	13.6	18.5	9.8
Lane LOS	A	A	B	C	A
Approach Delay (s)	6.0	0.1	13.6	14.3	
Approach LOS			B	B	

Intersection Summary					
Average Delay	6.2				
Intersection Capacity Utilization	45.1%	ICU Level of Service	A		
Analysis Period (min)	15				

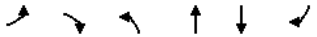
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	22	71	58	83	109	91	32	0	78	94	0	12
Future Volume (vph)	22	71	58	83	109	91	32	0	78	94	0	12
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.948			0.956			0.904			0.985	
Flt Protected		0.993			0.986			0.986			0.958	
Satd. Flow (prot)	0	1754	0	0	1756	0	0	1660	0	0	1758	0
Flt Permitted		0.993			0.986			0.986			0.958	
Satd. Flow (perm)	0	1754	0	0	1756	0	0	1660	0	0	1758	0
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		110.5			92.7			42.4			48.0	
Travel Time (s)		8.0			6.7			3.1			3.5	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	24	77	63	90	118	99	35	0	85	102	0	13
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	164	0	0	307	0	0	120	0	0	115	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		0.0			3.6			0.0			0.0	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway 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
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Sign Control		Free			Free			Stop			Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	47.0%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	22	71	58	83	109	91	32	0	78	94	0	12
Future Volume (Veh/h)	22	71	58	83	109	91	32	0	78	94	0	12
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	24	77	63	90	118	99	35	0	85	102	0	13
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (m)					93							
pX, platoon unblocked	0.97						0.97	0.97		0.97	0.97	0.97
vC, conflicting volume	217			140			517	554	108	589	536	168
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	175			140			485	523	108	559	504	124
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	98			94			92	100	91	72	100	99
cM capacity (veh/h)	1357			1443			442	409	945	364	419	897

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	164	307	120	115
Volume Left	24	90	35	102
Volume Right	63	99	85	13
cSH	1357	1443	709	390
Volume to Capacity	0.02	0.06	0.17	0.29
Queue Length 95th (m)	0.4	1.6	4.8	9.7
Control Delay (s)	1.3	2.6	11.1	18.0
Lane LOS	A	A	B	C
Approach Delay (s)	1.3	2.6	11.1	18.0
Approach LOS			B	C

Intersection Summary				
Average Delay	6.3			
Intersection Capacity Utilization	47.0%	ICU Level of Service		A
Analysis Period (min)	15			



Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	0	102	0	1886	1174	55
Future Volume (vph)	0	102	0	1886	1174	55
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	0.91	0.95	0.95
Frt		0.865			0.993	
Flt Protected						
Satd. Flow (prot)	0	1611	0	5085	3514	0
Flt Permitted						
Satd. Flow (perm)	0	1611	0	5085	3514	0
Link Speed (k/h)	50			60	60	
Link Distance (m)	60.4			36.6	93.1	
Travel Time (s)	4.3			2.2	5.6	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	111	0	2050	1276	60
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	111	0	2050	1336	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	0.0			3.6	3.6	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	4.8			4.8	4.8	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)	25	15	25			15
Sign Control	Stop			Free	Free	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	47.2%	ICU Level of Service	A
Analysis Period (min)	15		



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	0	102	0	1886	1174	55
Future Volume (Veh/h)	0	102	0	1886	1174	55
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	111	0	2050	1276	60
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	None	
Median storage veh)						
Upstream signal (m)				235	93	
pX, platoon unblocked	0.75	0.88	0.88			
vC, conflicting volume	1989	668	1336			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	277	340	1102			
tC, single (s)	6.8	6.9	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	100	81	100			
cM capacity (veh/h)	516	575	552			

Direction, Lane #	EB 1	NB 1	NB 2	NB 3	SB 1	SB 2
Volume Total	111	683	683	683	851	485
Volume Left	0	0	0	0	0	0
Volume Right	111	0	0	0	0	60
cSH	575	1700	1700	1700	1700	1700
Volume to Capacity	0.19	0.40	0.40	0.40	0.50	0.29
Queue Length 95th (m)	5.7	0.0	0.0	0.0	0.0	0.0
Control Delay (s)	12.8	0.0	0.0	0.0	0.0	0.0
Lane LOS	B					
Approach Delay (s)	12.8	0.0			0.0	
Approach LOS	B					

Intersection Summary					
Average Delay		0.4			
Intersection Capacity Utilization		47.2%	ICU Level of Service		A
Analysis Period (min)		15			

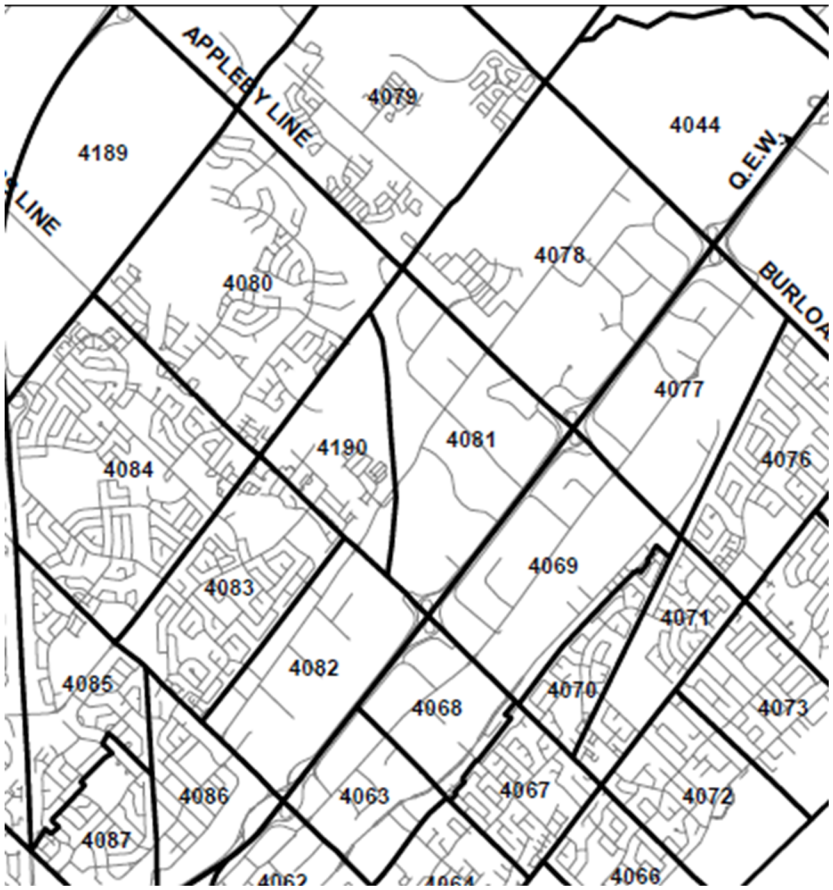
Appendix D

Transportation Tomorrow Study Data

TTS

Zone of subject site = 4081

Neighboring zones with residential land uses (4080,4079,4078,4081,4190)



AM Out

Fri Jun 18 2021 14:11:45 GMT-0400 (Eastern Daylight Time) - Run Time: 3262ms

Cross Tabulation Query Form - Trip - 2016 v1.1

Row: 2006 GTA zone of destination - gta06_dest
Column: 2006 GTA zone of origin - gta06_orig
Table: No. of trips made by household - n_hhld_trip

RowG:
ColG:(4080,4079,4078,4081,4190)
TblG:(0-99)

Filters:
Start time of trip - start_time In 700-900

Trip 2016
Table: 1

,1
35,16
89,38
290,15
332,28
350,18
2140,11
2253,9
2609,17
3605,20
3612,32
3613,11
3633,9
3724,46
3816,45
3854,20
3862,17
4005,27
4008,11
4024,28
4027,23
4030,19
4041,12
4051,8
4053,26
4057,45
4058,16
4059,10
4060,29
4063,55
4065,9
4068,18
4069,24
4074,4
4077,38
4078,190
4079,61
4080,83
4081,42
4082,20
4083,152
4084,156
4085,20
4087,21
4088,84
4089,58
4091,27
4110,22
4119,24
4120,9
4124,22
4125,28
4186,19
4188,21
4189,40
4190,101
5135,27
5142,13
5161,69
5193,12
5198,16
6090,48
6174,35
6362,38
8915,17

PM out

Fri Jun 18 2021 14:12:40 GMT-0400 (Eastern Daylight Time) - Run Time: 3147ms

Cross Tabulation Query Form - Trip - 2016 v1.1

Row: 2006 GTA zone of destination - gta06_dest
Column: 2006 GTA zone of origin - gta06_orig
Table: No. of trips made by household - n_hhld_trip

RowG:
ColG:(4080,4079,4078,4081,4190)
TblG:(0-99)

Filters:
Start time of trip - start_time In 1500-1800

Trip 2016
Table: 1

,1
77,63
122,28
177,25
290,6
295,11
307,14
374,14
3192,20
3337,15
3367,112
3499,10
3610,24
3615,14
3634,10
3678,18
3683,10
3714,33
3719,12
3864,71
4001,64
4004,14
4005,18
4007,23
4012,18
4039,72
4041,10
4042,49
4045,16
4050,13
4052,12
4053,71
4055,111
4057,120
4059,57
4060,24
4062,67
4064,32
4066,14
4067,32
4068,25
4070,46
4071,79
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4074,77
4075,22
4076,188
4077,91
4078,89
4079,347
4080,75
4081,13
4083,225
4084,276
4085,40
4087,85
4088,80
4089,206
4091,22
4093,19
4108,30
4110,34
4119,20
4120,14
4124,11
4186,33
4189,132
4190,9
4191,19
5030,14
5045,52
5061,17
5065,45
5066,65
5069,56
5072,16
5084,66
5089,67
5094,43
5140,21
5142,42
5144,46
5148,24
5149,15
5150,7

5151,35
5154,18
5158,36
5163,43
5180,38
5183,38
5194,13
5200,34
5203,15
5212,26
5219,15
5230,27
5232,156
5237,15
5241,42
5244,69
5249,26
5250,43
6031,12
6071,30
6198,3
7262,18
7339,24
7361,75
7442,11
7458,31
8653,12
8950,42
9068,11

PM in

Fri Jun 18 2021 14:13:35 GMT-0400 (Eastern Daylight Time) - Run Time: 3794ms

Cross Tabulation Query Form - Trip - 2016 v1.1

Row: 2006 GTA zone of origin - gta06_orig
Column: 2006 GTA zone of destination - gta06_dest
Table: No. of trips made by household - n_hhld_trip

RowG:
ColG:(4080,4079,4078,4081,4190)
TblG:(0-99)

Filters:

Start time of trip - start_time In 1500-1800

Trip 2016
Table: 1

,1
16,19
42,15
53,64
89,38
204,19
350,18
371,11
603,12
2096,38
2111,15
3428,11
3605,20
3612,32
3613,11
3615,12
3627,29
3633,9
3634,10
3699,18
3711,44
3816,45
3835,34
3854,20
4001,43
4005,18
4012,44
4024,11
4027,14
4030,19
4036,18
4041,12
4042,40
4044,14
4045,23
4053,55
4057,99
4058,16
4059,39
4060,13
4063,67
4065,50
4066,46
4067,19
4069,32
4070,22

4071,10
4072,53
4077,14
4078,231
4079,204
4080,205
4081,9
4082,60
4083,182
4084,277
4085,88
4088,81
4089,86
4090,19
4094,10
4110,22
4120,9
4125,28
4126,19
4147,9
4186,62
4189,74
4190,13
5008,19
5075,52
5108,12
5119,12
5168,30
5193,12
5194,13
5197,28
5198,27
5200,27
6312,38
7353,24
8915,17

Am in

Fri Jun 18 2021 14:14:21 GMT-0400 (Eastern Daylight Time) - Run Time: 3004ms

Cross Tabulation Query Form - Trip - 2016 v1.1

Row: 2006 GTA zone of origin - gta06_orig
Column: 2006 GTA zone of destination - gta06_dest

Table: No. of trips made by household - n_hhld_trip

RowG:
ColG:(4080,4079,4078,4081,4190)
TblG:(0-99)

Filters:
Start time of trip - start_time In 700-900

Trip 2016
Table: 1

,1
175,30
307,14
344,11
3192,20
3602,33
3610,24
3645,71
3678,18
3683,10
3719,12
3854,9
4001,49
4004,60
4007,23
4008,11
4039,31
4041,53
4045,16
4052,12
4055,115
4057,79
4059,46
4060,68
4062,103
4064,62
4069,32
4070,23
4071,64
4072,54
4074,4
4075,28
4076,119
4077,54
4078,211
4079,183
4080,95
4082,14

4083,295
4084,189
4085,80
4086,20
4088,58
4089,76
4091,13
4097,8
4103,31
4108,30
4110,24
4119,20
4120,14
4186,33
4189,71
4190,142
4191,19
5045,26
5089,59
5098,101
5105,45
5109,22
5111,46
5115,29
5154,18
5158,36
5163,43
5183,38
5207,22
5212,26
5223,18
5230,15
5232,89
5233,69
5238,28
5248,30
5249,26
6351,18
7458,31
8315,44
8817,37

Zone	Trips	Peak/Dir	Region	Route
8950	42	PM out	Brant	South via Appleby Line
8915	17	PM in	Brantford	South via Appleby Line
8915	17	AM Out	Brantford	South via Appleby Line
4001	49	Am in	Halton	East via Upper Middle
4001	64	PM out	Halton	East via Upper Middle
4001	43	PM in	Halton	East via Upper Middle
4004	60	Am in	Halton	East via Upper Middle
4004	14	PM out	Halton	East via Upper Middle
4005	18	PM out	Halton	East via Upper Middle
4005	18	PM in	Halton	East via Upper Middle
4005	27	AM Out	Halton	East via Upper Middle
4007	23	Am in	Halton	South via Appleby Line
4007	23	PM out	Halton	South via Appleby Line
4008	11	Am in	Halton	South via Appleby Line
4008	11	AM Out	Halton	South via Appleby Line
4012	18	PM out	Halton	South via Appleby Line
4012	44	PM in	Halton	South via Appleby Line
4024	11	PM in	Halton	North via Appleby Line
4024	28	AM Out	Halton	North via Appleby Line
4027	14	PM in	Halton	North via Appleby Line
4027	23	AM Out	Halton	North via Appleby Line
4030	19	PM in	Halton	South via Appleby Line
4030	19	AM Out	Halton	South via Appleby Line
4036	18	PM in	Halton	North via Appleby Line
4039	31	Am in	Halton	North via Appleby Line
4039	72	PM out	Halton	North via Appleby Line
4041	53	Am in	Halton	South via Appleby Line
4041	10	PM out	Halton	South via Appleby Line
4041	12	PM in	Halton	South via Appleby Line
4041	12	AM Out	Halton	South via Appleby Line
4042	49	PM out	Halton	South via Appleby Line
4042	40	PM in	Halton	South via Appleby Line
4044	14	PM in	Halton	East via Upper Middle
4045	16	Am in	Halton	North via Appleby Line
4045	16	PM out	Halton	North via Appleby Line
4045	23	PM in	Halton	North via Appleby Line
4050	13	PM out	Halton	South via Appleby Line
4051	8	AM Out	Halton	South via Appleby Line
4052	12	Am in	Halton	South via Appleby Line
4052	12	PM out	Halton	South via Appleby Line
4053	71	PM out	Halton	South via Appleby Line
4053	55	PM in	Halton	South via Appleby Line
4053	26	AM Out	Halton	South via Appleby Line
4055	115	Am in	Halton	South via Appleby Line
4055	111	PM out	Halton	South via Appleby Line
4057	79	Am in	Halton	South via Appleby Line
4057	120	PM out	Halton	West via UMR
4057	99	PM in	Halton	West via UMR
4057	45	AM Out	Halton	West via UMR

4058	16	PM in	Halton	West via UMR
4058	16	AM Out	Halton	West via UMR
4059	46	Am in	Halton	West via UMR
4059	57	PM out	Halton	West via UMR
4059	39	PM in	Halton	South via Appleby Line
4059	10	AM Out	Halton	South via Appleby Line
4060	68	Am in	Halton	South via Appleby Line
4060	24	PM out	Halton	South via Appleby Line
4060	13	PM in	Halton	South via Appleby Line
4060	29	AM Out	Halton	South via Appleby Line
4062	103	Am in	Halton	South via Appleby Line
4062	67	PM out	Halton	South via Appleby Line
4063	67	PM in	Halton	South via Appleby Line
4063	55	AM Out	Halton	South via Appleby Line
4064	62	Am in	Halton	South via Appleby Line
4064	32	PM out	Halton	South via Appleby Line
4065	50	PM in	Halton	South via Appleby Line
4065	9	AM Out	Halton	South via Appleby Line
4066	14	PM out	Halton	South via Appleby Line
4066	46	PM in	Halton	South via Appleby Line
4067	32	PM out	Halton	South via Appleby Line
4067	19	PM in	Halton	South via Appleby Line
4068	25	PM out	Halton	South via Appleby Line
4068	18	AM Out	Halton	South via Appleby Line
4069	32	Am in	Halton	South via Appleby Line
4069	32	PM in	Halton	South via Appleby Line
4069	24	AM Out	Halton	South via Appleby Line
4070	23	Am in	Halton	South via Appleby Line
4070	46	PM out	Halton	South via Appleby Line
4070	22	PM in	Halton	South via Appleby Line
4071	64	Am in	Halton	South via Appleby Line
4071	79	PM out	Halton	South via Appleby Line
4071	10	PM in	Halton	South via Appleby Line
4072	54	Am in	Halton	South via Appleby Line
4072	79	PM out	Halton	South via Appleby Line
4072	53	PM in	Halton	South via Appleby Line
4074	4	Am in	Halton	South via Appleby Line
4074	77	PM out	Halton	South via Appleby Line
4074	4	AM Out	Halton	South via Appleby Line
4075	28	Am in	Halton	South via Appleby Line
4075	22	PM out	Halton	South via Appleby Line
4076	119	Am in	Halton	South via Appleby Line
4076	188	PM out	Halton	South via Appleby Line
4077	54	Am in	Halton	South via Appleby Line
4077	91	PM out	Halton	South via Appleby Line
4077	14	PM in	Halton	South via Appleby Line
4077	38	AM Out	Halton	South via Appleby Line
4078	211	Am in	Halton	South via Appleby Line
4078	89	PM out	Halton	South via Appleby Line
4078	231	PM in	Halton	South via Appleby Line

4078	190	AM Out	Halton	South via Appleby Line
4079	183	Am in	Halton	South via Appleby Line
4079	347	PM out	Halton	South via Appleby Line
4079	204	PM in	Halton	South via Appleby Line
4079	61	AM Out	Halton	South via Appleby Line
4080	95	Am in	Halton	South via Appleby Line
4080	75	PM out	Halton	South via Appleby Line
4080	205	PM in	Halton	South via Appleby Line
4080	83	AM Out	Halton	South via Appleby Line
4081	13	PM out	Halton	South via Appleby Line
4081	9	PM in	Halton	South via Appleby Line
4081	42	AM Out	Halton	South via Appleby Line
4082	14	Am in	Halton	South via Appleby Line
4082	60	PM in	Halton	South via Appleby Line
4082	20	AM Out	Halton	South via Appleby Line
4083	295	Am in	Halton	West via UMR
4083	225	PM out	Halton	West via UMR
4083	182	PM in	Halton	West via UMR
4083	152	AM Out	Halton	West via UMR
4084	189	Am in	Halton	West via UMR
4084	276	PM out	Halton	West via UMR
4084	277	PM in	Halton	West via UMR
4084	156	AM Out	Halton	West via UMR
4085	80	Am in	Halton	West via UMR
4085	40	PM out	Halton	West via UMR
4085	88	PM in	Halton	West via UMR
4085	20	AM Out	Halton	West via UMR
4086	20	Am in	Halton	West via UMR
4087	85	PM out	Halton	West via UMR
4087	21	AM Out	Halton	West via UMR
4088	58	Am in	Halton	West via UMR
4088	80	PM out	Halton	West via UMR
4088	81	PM in	Halton	West via UMR
4088	84	AM Out	Halton	West via UMR
4089	76	Am in	Halton	West via UMR
4089	206	PM out	Halton	West via UMR
4089	86	PM in	Halton	West via UMR
4089	58	AM Out	Halton	West via UMR
4090	19	PM in	Halton	West via UMR
4091	13	Am in	Halton	West via UMR
4091	22	PM out	Halton	West via UMR
4091	27	AM Out	Halton	West via UMR
4093	19	PM out	Halton	West via UMR
4094	10	PM in	Halton	West via UMR
4097	8	Am in	Halton	West via UMR
4103	31	Am in	Halton	West via UMR
4108	30	Am in	Halton	West via UMR
4108	30	PM out	Halton	West via UMR
4110	24	Am in	Halton	West via UMR
4110	34	PM out	Halton	West via UMR

4110	22	PM in	Halton	West via UMR
4110	22	AM Out	Halton	South via Appleby Line
4119	20	Am in	Halton	South via Appleby Line
4119	20	PM out	Halton	South via Appleby Line
4119	24	AM Out	Halton	South via Appleby Line
4120	14	Am in	Halton	South via Appleby Line
4120	14	PM out	Halton	South via Appleby Line
4120	9	PM in	Halton	South via Appleby Line
4120	9	AM Out	Halton	South via Appleby Line
4124	11	PM out	Halton	South via Appleby Line
4124	22	AM Out	Halton	South via Appleby Line
4125	28	PM in	Halton	South via Appleby Line
4125	28	AM Out	Halton	South via Appleby Line
4126	19	PM in	Halton	South via Appleby Line
4147	9	PM in	Halton	South via Appleby Line
4186	33	Am in	Halton	South via Appleby Line
4186	33	PM out	Halton	South via Appleby Line
4186	62	PM in	Halton	South via Appleby Line
4186	19	AM Out	Halton	South via Appleby Line
4188	21	AM Out	Halton	South via Appleby Line
4189	71	Am in	Halton	South via Appleby Line
4189	132	PM out	Halton	South via Appleby Line
4189	74	PM in	Halton	South via Appleby Line
4189	40	AM Out	Halton	South via Appleby Line
4190	142	Am in	Halton	South via Appleby Line
4190	9	PM out	Halton	South via Appleby Line
4190	13	PM in	Halton	South via Appleby Line
4190	101	AM Out	Halton	South via Appleby Line
4191	19	Am in	Halton	South via Appleby Line
4191	19	PM out	Halton	South via Appleby Line
5045	26	Am in	Hamilton	South via Appleby Line
5089	59	Am in	Hamilton	South via Appleby Line
5,098	101	Am in	Hamilton	South via Appleby Line
5105	45	Am in	Hamilton	South via Appleby Line
5109	22	Am in	Hamilton	South via Appleby Line
5111	46	Am in	Hamilton	South via Appleby Line
5115	29	Am in	Hamilton	South via Appleby Line
5154	18	Am in	Hamilton	South via Appleby Line
5158	36	Am in	Hamilton	South via Appleby Line
5163	43	Am in	Hamilton	South via Appleby Line
5183	38	Am in	Hamilton	South via Appleby Line
5207	22	Am in	Hamilton	South via Appleby Line
5212	26	Am in	Hamilton	South via Appleby Line
5223	18	Am in	Hamilton	South via Appleby Line
5230	15	Am in	Hamilton	South via Appleby Line
5232	89	Am in	Hamilton	South via Appleby Line
5233	69	Am in	Hamilton	South via Appleby Line
5238	28	Am in	Hamilton	South via Appleby Line
5248	30	Am in	Hamilton	South via Appleby Line
5249	26	Am in	Hamilton	South via Appleby Line

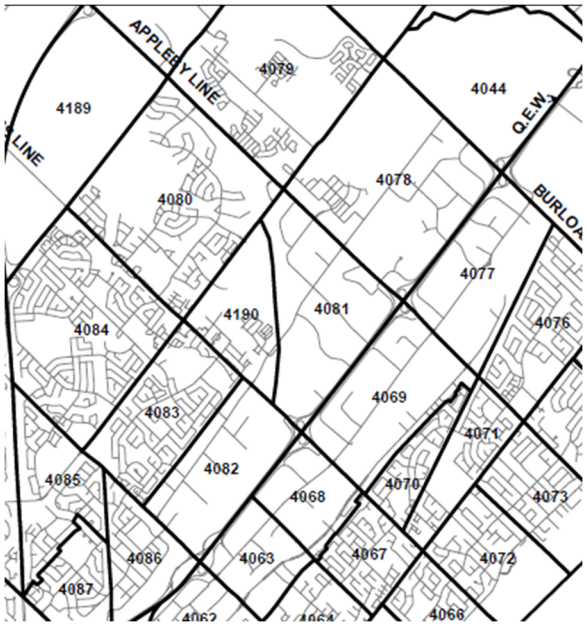
5030	14	PM out	Hamilton	South via Appleby Line
5045	52	PM out	Hamilton	South via Appleby Line
5061	17	PM out	Hamilton	South via Appleby Line
5065	45	PM out	Hamilton	South via Appleby Line
5066	65	PM out	Hamilton	South via Appleby Line
5069	56	PM out	Hamilton	South via Appleby Line
5072	16	PM out	Hamilton	South via Appleby Line
5084	66	PM out	Hamilton	South via Appleby Line
5089	67	PM out	Hamilton	South via Appleby Line
5094	43	PM out	Hamilton	South via Appleby Line
5140	21	PM out	Hamilton	South via Appleby Line
5142	42	PM out	Hamilton	South via Appleby Line
5144	46	PM out	Hamilton	South via Appleby Line
5148	24	PM out	Hamilton	South via Appleby Line
5149	15	PM out	Hamilton	South via Appleby Line
5150	7	PM out	Hamilton	South via Appleby Line
5151	35	PM out	Hamilton	South via Appleby Line
5154	18	PM out	Hamilton	South via Appleby Line
5158	36	PM out	Hamilton	South via Appleby Line
5163	43	PM out	Hamilton	South via Appleby Line
5180	38	PM out	Hamilton	South via Appleby Line
5183	38	PM out	Hamilton	South via Appleby Line
5194	13	PM out	Hamilton	South via Appleby Line
5200	34	PM out	Hamilton	South via Appleby Line
5203	15	PM out	Hamilton	South via Appleby Line
5212	26	PM out	Hamilton	South via Appleby Line
5219	15	PM out	Hamilton	South via Appleby Line
5230	27	PM out	Hamilton	South via Appleby Line
5,232	156	PM out	Hamilton	South via Appleby Line
5237	15	PM out	Hamilton	South via Appleby Line
5241	42	PM out	Hamilton	South via Appleby Line
5244	69	PM out	Hamilton	South via Appleby Line
5249	26	PM out	Hamilton	South via Appleby Line
5250	43	PM out	Hamilton	South via Appleby Line
5008	19	PM in	Hamilton	South via Appleby Line
5075	52	PM in	Hamilton	South via Appleby Line
5108	12	PM in	Hamilton	South via Appleby Line
5119	12	PM in	Hamilton	South via Appleby Line
5168	30	PM in	Hamilton	South via Appleby Line
5193	12	PM in	Hamilton	South via Appleby Line
5194	13	PM in	Hamilton	South via Appleby Line
5197	28	PM in	Hamilton	South via Appleby Line
5198	27	PM in	Hamilton	South via Appleby Line
5200	27	PM in	Hamilton	South via Appleby Line
5135	27	AM Out	Hamilton	South via Appleby Line
5142	13	AM Out	Hamilton	South via Appleby Line
5161	69	AM Out	Hamilton	South via Appleby Line
5193	12	AM Out	Hamilton	South via Appleby Line
5198	16	AM Out	Hamilton	South via Appleby Line
6351	18	Am in	Niagara	South via Appleby Line

6031	12	PM out	Niagara	South via Appleby Line
6071	30	PM out	Niagara	South via Appleby Line
6198	3	PM out	Niagara	South via Appleby Line
6312	38	PM in	Niagara	South via Appleby Line
6090	48	AM Out	Niagara	South via Appleby Line
6174	35	AM Out	Niagara	South via Appleby Line
6362	38	AM Out	Niagara	South via Appleby Line
3192	20	Am in	Peel	North via Appleby Line
3602	33	Am in	Peel	North via Appleby Line
3610	24	Am in	Peel	North via Appleby Line
3645	71	Am in	Peel	North via Appleby Line
3678	18	Am in	Peel	North via Appleby Line
3683	10	Am in	Peel	North via Appleby Line
3719	12	Am in	Peel	North via Appleby Line
3854	9	Am in	Peel	North via Appleby Line
3192	20	PM out	Peel	North via Appleby Line
3337	15	PM out	Peel	North via Appleby Line
3,367	112	PM out	Peel	North via Appleby Line
3499	10	PM out	Peel	North via Appleby Line
3610	24	PM out	Peel	North via Appleby Line
3615	14	PM out	Peel	North via Appleby Line
3634	10	PM out	Peel	North via Appleby Line
3678	18	PM out	Peel	North via Appleby Line
3683	10	PM out	Peel	North via Appleby Line
3714	33	PM out	Peel	North via Appleby Line
3719	12	PM out	Peel	North via Appleby Line
3864	71	PM out	Peel	North via Appleby Line
3428	11	PM in	Peel	North via Appleby Line
3605	20	PM in	Peel	North via Appleby Line
3612	32	PM in	Peel	North via Appleby Line
3613	11	PM in	Peel	North via Appleby Line
3615	12	PM in	Peel	North via Appleby Line
3627	29	PM in	Peel	North via Appleby Line
3633	9	PM in	Peel	North via Appleby Line
3634	10	PM in	Peel	North via Appleby Line
3699	18	PM in	Peel	North via Appleby Line
3711	44	PM in	Peel	North via Appleby Line
3816	45	PM in	Peel	North via Appleby Line
3835	34	PM in	Peel	North via Appleby Line
3854	20	PM in	Peel	North via Appleby Line
3605	20	AM Out	Peel	North via Appleby Line
3612	32	AM Out	Peel	North via Appleby Line
3613	11	AM Out	Peel	North via Appleby Line
3633	9	AM Out	Peel	North via Appleby Line
3724	46	AM Out	Peel	North via Appleby Line
3816	45	AM Out	Peel	North via Appleby Line
3854	20	AM Out	Peel	North via Appleby Line
3862	17	AM Out	Peel	North via Appleby Line
8653	12	PM out	Simcoe	North via Appleby Line
175	30	Am in	Toronto	South via Appleby Line

307	14	Am in	Toronto	South via Appleby Line
344	11	Am in	Toronto	South via Appleby Line
77	63	PM out	Toronto	South via Appleby Line
122	28	PM out	Toronto	South via Appleby Line
177	25	PM out	Toronto	South via Appleby Line
290	6	PM out	Toronto	South via Appleby Line
295	11	PM out	Toronto	South via Appleby Line
307	14	PM out	Toronto	South via Appleby Line
374	14	PM out	Toronto	South via Appleby Line
16	19	PM in	Toronto	North via Appleby Line
42	15	PM in	Toronto	North via Appleby Line
53	64	PM in	Toronto	North via Appleby Line
89	38	PM in	Toronto	North via Appleby Line
204	19	PM in	Toronto	North via Appleby Line
350	18	PM in	Toronto	North via Appleby Line
371	11	PM in	Toronto	North via Appleby Line
603	12	PM in	Toronto	North via Appleby Line
35	16	AM Out	Toronto	North via Appleby Line
89	38	AM Out	Toronto	North via Appleby Line
290	15	AM Out	Toronto	North via Appleby Line
332	28	AM Out	Toronto	North via Appleby Line
350	18	AM Out	Toronto	North via Appleby Line
7458	31	Am in	Waterloo	North via Appleby Line
7262	18	PM out	Waterloo	North via Appleby Line
7339	24	PM out	Waterloo	North via Appleby Line
7361	75	PM out	Waterloo	North via Appleby Line
7442	11	PM out	Waterloo	North via Appleby Line
7458	31	PM out	Waterloo	North via Appleby Line
7353	24	PM in	Waterloo	North via Appleby Line
8315	44	Am in	Wellington	North via Appleby Line
2096	38	PM in	York	North via Appleby Line
2111	15	PM in	York	North via Appleby Line
2140	11	AM Out	York	North via Appleby Line
2253	9	AM Out	York	North via Appleby Line
2609	17	AM Out	York	North via Appleby Line

TTS

Zone of subject site = 4081



AM Inbound

Mon Jun 21 2021 14:41:19 GMT-0400 (Eastern Daylight Time) - Run Time: 3002ms

Cross Tabulation Query Form - Trip - 2016 v1.1

Row: 2006 GTA zone of origin - gta06_orig
Column: 2006 GTA zone of destination - gta06_dest
Table: No. of trips made by person - n_pers_trip

RowG:
ColG:(4081)
TblG:(0-99)

Filters:
Start time of trip - start_time In 700-900

Trip 2016
Table: 1

,1
175,30
307,14
3192,20
3602,33
3610,24
3645,71
3678,18
3683,10
3719,12
3854,9
4041,53
4045,16
4055,63
4057,34
4059,34
4060,24
4062,42
4064,32
4069,32
4070,23
4071,64
4072,54
4074,4
4075,16
4076,92
4077,47
4078,95
4079,40
4080,25
4083,162
4084,110
4085,40
4086,20
4089,44
4091,13
4103,31
4108,30
4119,20
4120,7
4189,54
4190,42
4191,19
5045,26
5089,59
5098,101
5105,45
5109,22
5111,46
5115,29
5154,18
5158,36
5163,43
5183,38
5207,22

5212,26
5223,18
5230,15
5232,89
5238,28
5248,30
5249,26
6351,18
7458,31
8315,44
8817,37

PM Inbound

Mon Jun 21 2021 14:41:55 GMT-0400 (Eastern Daylight Time) - Run Time: 3197ms

Cross Tabulation Query Form - Trip - 2016 v1.1

Row: 2006 GTA zone of origin - gta06_orig
Column: 2006 GTA zone of destination - gta06_dest
Table: No. of trips made by person - n_pers_trip

RowG:
ColG:(4081)
TblG:(0-99)

Filters:
Start time of trip - start_time In 1500-1800

Trip 2016
Table: 1

,1
371,11
3612,20
3699,18
3835,34
4001,43
4027,14
4036,18
4057,33
4065,41
4066,46
4070,22
4072,31
4078,73
4079,55
4084,224
4085,20
4088,11
4089,14
4189,13
4190,13
5008,19
5075,52
5200,27

AM Out

Mon Jun 21 2021 14:42:17 GMT-0400 (Eastern Daylight Time) - Run Time: 3300ms

Cross Tabulation Query Form - Trip - 2016 v1.1

Row: 2006 GTA zone of destination - gta06_dest
Column: 2006 GTA zone of origin - gta06_orig
Table: No. of trips made by person - n_pers_trip

RowG:
ColG:(4081)
TblG:(0-99)

Filters:
Start time of trip - start_time In 700-900

Trip 2016
Table: 1

,1
3612,20
3724,46
4027,11
4068,18
4074,4
4078,18
4084,57
4085,20
4089,18
4124,22
5161,69

6090,48
6174,35

PM out

Mon Jun 21 2021 14:42:44 GMT-0400 (Eastern Daylight Time) - Run Time: 3207ms

Cross Tabulation Query Form - Trip - 2016 v1.1

Row: 2006 GTA zone of destination - gta06_dest
Column: 2006 GTA zone of origin - gta06_orig
Table: No. of trips made by person - n_pers_trip

RowG:
ColG:(4081)
TblG:(0-99)

Filters:
Start time of trip - start_time In 1500-1800

Trip 2016
Table: 1

,1
77,63
122,28
290,6
307,14
374,14
3192,20
3367,112
3499,10
3610,24
3615,14
3678,18
3683,10
3714,33
3719,12
3864,71
4001,15
4039,41
4041,10
4042,49
4045,16
4053,12
4055,67
4057,76
4059,46
4060,24
4064,32
4067,14
4070,46
4071,42
4072,79
4075,22
4076,112
4077,61
4078,37
4079,173
4080,35
4083,13
4084,157
4085,40
4087,75
4088,11
4089,116
4091,22
4093,19
4108,30
4119,20
4120,7
4124,11
4189,70
4190,9
4191,19
5030,14
5045,52
5065,45
5066,65
5069,56
5084,66
5089,67
5140,21
5142,42
5144,46
5148,24
5150,7
5151,35
5154,18
5158,36
5163,43
5183,38
5194,13
5200,34
5212,26

5219,15
5230,27
5232,122
5237,15
5241,42
5244,69
5249,26
5250,43
6031,12
6071,30
6198,3
7262,18
7339,24
7361,75
7442,11
7458,31
8653,12
8950,9

Zone	Trip	Direciton	Region	Route
4001	43	PM IN	Halton	East via Upper Middle Road
4001	15	PM OUT	Halton	East via Upper Middle Road
4076	92	AM IN	Halton	East via Upper Middle Road
4077	47	AM IN	Halton	East via Upper Middle Road
4077	61	PM OUT	Halton	East via Upper Middle Road
4078	95	AM IN	Halton	East via Upper Middle Road
4078	73	PM IN	Halton	East via Upper Middle Road
4078	18	AM OUT	Halton	East via Upper Middle Road
4078	37	PM OUT	Halton	East via Upper Middle Road
4079	40	AM IN	Halton	East via Upper Middle Road
4079	55	PM IN	Halton	North via Appleby
4080	25	AM IN	Halton	North via Appleby
4080	35	PM OUT	Halton	North via Appleby
4103	31	AM IN	Halton	North via Appleby
4108	30	AM IN	Halton	North via Appleby
4108	30	PM OUT	Halton	North via Appleby
4119	20	AM IN	Halton	North via Appleby
4119	20	PM OUT	Halton	North via Appleby
4120	7	AM IN	Halton	North via Appleby
4120	7	PM OUT	Halton	North via Appleby
4124	22	AM OUT	Halton	North via Appleby
4124	11	PM OUT	Halton	North via Appleby
4189	54	AM IN	Halton	North via Appleby
4189	13	PM IN	Halton	North via Appleby
4189	70	PM OUT	Halton	North via Appleby
4190	42	AM IN	Halton	North via Appleby
4190	13	PM IN	Halton	North via Appleby
4190	9	PM OUT	Halton	North via Appleby
4191	19	AM IN	Halton	North via Appleby
4191	19	PM OUT	Halton	North via Appleby
3192	20	AM IN	Peel	North via Appleby
3192	20	PM OUT	Peel	North via Appleby
3367	112	PM OUT	Peel	North via Appleby
3499	10	PM OUT	Peel	North via Appleby
3602	33	AM IN	Peel	North via Appleby
3610	24	AM IN	Peel	North via Appleby
3610	24	PM OUT	Peel	North via Appleby
3612	20	PM IN	Peel	North via Appleby
3612	20	AM OUT	Peel	North via Appleby
3615	14	PM OUT	Peel	North via Appleby
3645	71	AM IN	Peel	North via Appleby
3678	18	AM IN	Peel	North via Appleby
3678	18	PM OUT	Peel	North via Appleby
3683	10	AM IN	Peel	North via Appleby
3683	10	PM OUT	Peel	North via Appleby
3699	18	PM IN	Peel	North via Appleby
3714	33	PM OUT	Peel	North via Appleby

3719	12	AM IN	Peel	North via Appleby
3719	12	PM OUT	Peel	North via Appleby
3724	46	AM OUT	Peel	North via Appleby
3835	34	PM IN	Peel	North via Appleby
3854	9	AM IN	Peel	North via Appleby
3864	71	PM OUT	Peel	North via Appleby
8653	12	PM OUT	Simcoe	North via Appleby
77	63	PM OUT	Toronto	North via Appleby
122	28	PM OUT	Toronto	North via Appleby
175	30	AM IN	Toronto	North via Appleby
290	6	PM OUT	Toronto	North via Appleby
307	14	AM IN	Toronto	North via Appleby
307	14	PM OUT	Toronto	North via Appleby
371	11	PM IN	Toronto	North via Appleby
374	14	PM OUT	Toronto	North via Appleby
4076	112	PM OUT	Halton	South via Appleby
4079	173	PM OUT	Halton	South via Appleby
4083	162	AM IN	Halton	West via UMR
4084	110	AM IN	Halton	West via UMR
4084	224	PM IN	Halton	West via UMR
4084	157	PM OUT	Halton	West via UMR
4089	116	PM OUT	Halton	West via UMR
4027	14	PM IN	Halton	East via Upper Middle Road
4027	11	AM OUT	Halton	East via Upper Middle Road
4036	18	PM IN	Halton	North via Appleby
4039	41	PM OUT	Halton	North via Appleby
4041	53	AM IN	Halton	South via Appleby
4041	10	PM OUT	Halton	South via Appleby
4042	49	PM OUT	Halton	South via Appleby
4045	16	AM IN	Halton	South via Appleby
4045	16	PM OUT	Halton	South via Appleby
4053	12	PM OUT	Halton	South via Appleby
4055	63	AM IN	Halton	South via Appleby
4055	67	PM OUT	Halton	South via Appleby
4057	34	AM IN	Halton	South via Appleby
4057	33	PM IN	Halton	South via Appleby
4057	76	PM OUT	Halton	South via Appleby
4059	34	AM IN	Halton	South via Appleby
4059	46	PM OUT	Halton	South via Appleby
4060	24	AM IN	Halton	South via Appleby
4060	24	PM OUT	Halton	South via Appleby
4062	42	AM IN	Halton	South via Appleby
4064	32	AM IN	Halton	South via Appleby
4064	32	PM OUT	Halton	South via Appleby
4065	41	PM IN	Halton	South via Appleby
4066	46	PM IN	Halton	South via Appleby
4067	14	PM OUT	Halton	South via Appleby
4068	18	AM OUT	Halton	South via Appleby
4069	32	AM IN	Halton	South via Appleby

4070	23	AM IN	Halton	South via Appleby
4070	22	PM IN	Halton	South via Appleby
4070	46	PM OUT	Halton	South via Appleby
4071	64	AM IN	Halton	South via Appleby
4071	42	PM OUT	Halton	South via Appleby
4072	54	AM IN	Halton	South via Appleby
4072	31	PM IN	Halton	South via Appleby
4072	79	PM OUT	Halton	South via Appleby
4074	4	AM IN	Halton	South via Appleby
4074	4	AM OUT	Halton	South via Appleby
4075	16	AM IN	Halton	South via Appleby
4075	22	PM OUT	Halton	South via Appleby
4088	11	PM IN	Halton	West via UMR
4088	11	PM OUT	Halton	West via UMR
4089	44	AM IN	Halton	West via UMR
4089	14	PM IN	Halton	West via UMR
4089	18	AM OUT	Halton	West via UMR
4091	13	AM IN	Halton	West via UMR
4091	22	PM OUT	Halton	West via UMR
4093	19	PM OUT	Halton	South via Appleby
8950	9	PM OUT	Brant	South via Appleby
8817	37	AM IN	City of Pet	North via Appleby
5232	122	PM OUT	Hamilton	South via Appleby
5008	19	PM IN	Hamilton	South via Appleby
5030	14	PM OUT	Hamilton	South via Appleby
5045	26	AM IN	Hamilton	South via Appleby
5045	52	PM OUT	Hamilton	South via Appleby
5065	45	PM OUT	Hamilton	South via Appleby
5066	65	PM OUT	Hamilton	South via Appleby
5069	56	PM OUT	Hamilton	South via Appleby
5075	52	PM IN	Hamilton	South via Appleby
5084	66	PM OUT	Hamilton	South via Appleby
5089	59	AM IN	Hamilton	South via Appleby
5089	67	PM OUT	Hamilton	South via Appleby
5098	101	AM IN	Hamilton	South via Appleby
5105	45	AM IN	Hamilton	South via Appleby
5109	22	AM IN	Hamilton	South via Appleby
5111	46	AM IN	Hamilton	South via Appleby
5115	29	AM IN	Hamilton	South via Appleby
5140	21	PM OUT	Hamilton	South via Appleby
5142	42	PM OUT	Hamilton	South via Appleby
5144	46	PM OUT	Hamilton	South via Appleby
5148	24	PM OUT	Hamilton	South via Appleby
5150	7	PM OUT	Hamilton	South via Appleby
5151	35	PM OUT	Hamilton	South via Appleby
5154	18	AM IN	Hamilton	South via Appleby
5154	18	PM OUT	Hamilton	South via Appleby
5158	36	AM IN	Hamilton	South via Appleby
5158	36	PM OUT	Hamilton	South via Appleby

5161	69	AM OUT	Hamilton	South via Appleby
5163	43	AM IN	Hamilton	South via Appleby
5163	43	PM OUT	Hamilton	South via Appleby
5183	38	AM IN	Hamilton	South via Appleby
5183	38	PM OUT	Hamilton	South via Appleby
5194	13	PM OUT	Hamilton	South via Appleby
5200	27	PM IN	Hamilton	South via Appleby
5200	34	PM OUT	Hamilton	South via Appleby
5207	22	AM IN	Hamilton	South via Appleby
5212	26	AM IN	Hamilton	South via Appleby
5212	26	PM OUT	Hamilton	South via Appleby
5219	15	PM OUT	Hamilton	South via Appleby
5223	18	AM IN	Hamilton	South via Appleby
5230	15	AM IN	Hamilton	South via Appleby
5230	27	PM OUT	Hamilton	South via Appleby
5232	89	AM IN	Hamilton	South via Appleby
5237	15	PM OUT	Hamilton	South via Appleby
5238	28	AM IN	Hamilton	South via Appleby
5241	42	PM OUT	Hamilton	South via Appleby
5244	69	PM OUT	Hamilton	South via Appleby
5248	30	AM IN	Hamilton	South via Appleby
5249	26	AM IN	Hamilton	South via Appleby
5249	26	PM OUT	Hamilton	South via Appleby
5250	43	PM OUT	Hamilton	South via Appleby
6031	12	PM OUT	Niagara	South via Appleby
6071	30	PM OUT	Niagara	South via Appleby
6090	48	AM OUT	Niagara	South via Appleby
6174	35	AM OUT	Niagara	South via Appleby
6198	3	PM OUT	Niagara	South via Appleby
6351	18	AM IN	Niagara	South via Appleby
7262	18	PM OUT	Waterloo	South via Appleby
7339	24	PM OUT	Waterloo	South via Appleby
7361	75	PM OUT	Waterloo	South via Appleby
7442	11	PM OUT	Waterloo	South via Appleby
7458	31	AM IN	Waterloo	South via Appleby
7458	31	PM OUT	Waterloo	South via Appleby
8315	44	AM IN	Wellingtor	South via Appleby
4083	13	PM OUT	Halton	West via UMR
4084	57	AM OUT	Halton	West via UMR
4085	40	AM IN	Halton	West via UMR
4085	20	PM IN	Halton	West via UMR
4085	20	AM OUT	Halton	West via UMR
4085	40	PM OUT	Halton	West via UMR
4086	20	AM IN	Halton	West via UMR
4087	75	PM OUT	Halton	West via UMR

Sum of Trip	Column Labels		
Row Labels	**AM IN**	**AM OUT**	**PM IN**
East via Upper Middle Road	11%	8%	15%
North via Appleby	20%	23%	21%
South via Appleby	53%	45%	32%
West via UMR	16%	25%	32%
Grand Total	**100%**	**100%**	**100%**

East via Upper Middle Road	15%	10%	15%
North via Appleby	20%	25%	25%
South via Appleby	50%	40%	30%
West via UMR	15%	25%	30%
	100%	100%	100%

PM OUT	
3%	
21%	
63%	
13%	
100%	

	4082 West via UMR
5%	4083 West via UMR
20%	4085 West via UMR
60%	4086 West via UMR
15%	4087 West via UMR
100%	4089 West via UMR

Appendix E

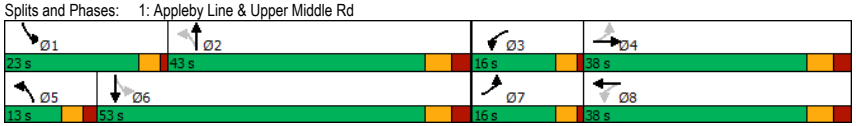
Background Traffic Operations

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	192	922	351	260	301	220	178	958	102	342	1500	64
Future Volume (vph)	192	922	351	260	301	220	178	958	102	342	1500	64
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	45.0		0.0	120.0		0.0	80.0		0.0	40.0		0.0
Storage Lanes	1		0	1		0	2		0	1		0
Taper Length (m)	30.0			20.0			40.0			35.0		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	0.95	0.97	0.95	0.95	1.00	0.95	0.95
Ped Bike Factor	1.00	0.99			0.99			1.00			1.00	
Frt		0.959			0.937			0.986			0.994	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1752	3382	0	1752	3243	0	3367	3341	0	1736	3435	0
Flt Permitted	0.317			0.125			0.110			0.099		
Satd. Flow (perm)	582	3382	0	231	3243	0	390	3341	0	181	3435	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		45			149			10			4	
Link Speed (k/h)		60			60			60			60	
Link Distance (m)		184.7			208.3			210.6			231.6	
Travel Time (s)		11.1			12.5			12.6			13.9	
Confl. Peds. (#/hr)	9		21	21		9	10		11	11		10
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Heavy Vehicles (%)	3%	1%	2%	3%	2%	5%	4%	6%	9%	4%	4%	13%
Adj. Flow (vph)	198	951	362	268	310	227	184	988	105	353	1546	66
Shared Lane Traffic (%)												
Lane Group Flow (vph)	198	1313	0	268	537	0	184	1093	0	353	1612	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.6			3.6			7.2			7.2	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway 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
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2		1	2		1	2		1	2	
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	
Leading Detector (m)	2.0	10.0		2.0	10.0		2.0	10.0		2.0	10.0	
Trailing Detector (m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Position(m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Size(m)	2.0	0.6		2.0	0.6		2.0	0.6		2.0	0.6	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Type	pm+pt	NA		pm+pt	NA		pm+pt	NA		pm+pt	NA	
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4			8			2			6		
Detector Phase	7	4		3	8		5	2		1	6	
Switch Phase												
Minimum Initial (s)	7.0	8.0		7.0	8.0		7.0	8.0		7.0	8.0	
Minimum Split (s)	11.0	34.4		11.0	34.4		12.0	34.5		11.0	34.5	
Total Split (s)	16.0	38.0		16.0	38.0		13.0	43.0		23.0	53.0	
Total Split (%)	13.3%	31.7%		13.3%	31.7%		10.8%	35.8%		19.2%	44.2%	
Maximum Green (s)	12.0	31.6		12.0	31.6		8.0	36.5		19.0	46.5	
Yellow Time (s)	3.0	3.7		3.0	3.7		3.0	3.7		3.0	3.7	
All-Red Time (s)	1.0	2.7		1.0	2.7		2.0	2.8		1.0	2.8	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)	4.0	6.4		4.0	6.4		5.0	6.5		4.0	6.5	
Lead/Lag	Lead	Lag		Lead	Lag		Lead	Lag		Lead	Lag	
Lead-Lag Optimize?	Yes	Yes		Yes	Yes		Yes	Yes		Yes	Yes	
Vehicle Extension (s)	3.0	5.0		3.0	5.0		3.0	3.0		3.0	3.0	
Recall Mode	None	None		None	None		None	Max		None	Max	
Walk Time (s)		7.0			7.0			7.0			7.0	
Flash Dont Walk (s)		21.0			21.0			21.0			21.0	
Pedestrian Calls (#/hr)		0			0			0			0	
Act Effct Green (s)	45.5	31.6		46.5	32.1		45.8	36.5		62.0	46.7	
Actuated g/C Ratio	0.38	0.26		0.39	0.27		0.38	0.30		0.52	0.39	
v/c Ratio	0.59	1.42		1.11	0.55		0.54	1.07		1.04	1.20	
Control Delay	31.5	229.8		121.2	29.3		23.7	88.2		93.5	133.0	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	31.5	229.8		121.2	29.3		23.7	88.2		93.5	133.0	
LOS	C	F		F	C		C	F		F	F	
Approach Delay		203.8			59.9			78.9			125.9	
Approach LOS		F			E			E			F	

Intersection Summary			
Area Type:	Other		
Cycle Length: 120			
Actuated Cycle Length: 120			
Natural Cycle: 145			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 1.42			
Intersection Signal Delay: 126.7		Intersection LOS: F	
Intersection Capacity Utilization 119.3%		ICU Level of Service H	
Analysis Period (min) 15			

Splits and Phases: 1: Appleby Line & Upper Middle Rd



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	198	1313	268	537	184	1093	353	1612
v/c Ratio	0.59	1.42	1.11	0.55	0.54	1.07	1.04	1.20
Control Delay	31.5	229.8	121.2	29.3	23.7	88.2	93.5	133.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	31.5	229.8	121.2	29.3	23.7	88.2	93.5	133.0
Queue Length 50th (m)	31.8	~228.2	~59.0	43.5	11.8	~157.2	~77.3	~257.5
Queue Length 95th (m)	50.0	#272.9	#114.6	62.1	18.1	#201.1	#138.7	#303.1
Internal Link Dist (m)		160.7		184.3		186.6		207.6
Turn Bay Length (m)	45.0		120.0		80.0		40.0	
Base Capacity (vph)	340	923	241	975	347	1023	339	1338
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.58	1.42	1.11	0.55	0.53	1.07	1.04	1.20

Intersection Summary

~ 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.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	192	922	351	260	301	220	178	958	102	342	1500	64
Future Volume (vph)	192	922	351	260	301	220	178	958	102	342	1500	64
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	6.4		4.0	6.4		5.0	6.5		4.0	6.5	
Lane Util. Factor	1.00	0.95		1.00	0.95		0.97	0.95		1.00	0.95	
Frpb, ped/bikes	1.00	0.99		1.00	0.99		1.00	1.00		1.00	1.00	
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Frt	1.00	0.96		1.00	0.94		1.00	0.99		1.00	0.99	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1750	3381		1752	3242		3367	3339		1736	3434	
Flt Permitted	0.32	1.00		0.12	1.00		0.11	1.00		0.10	1.00	
Satd. Flow (perm)	583	3381		230	3242		388	3339		180	3434	
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	198	951	362	268	310	227	184	988	105	353	1546	66
RTOR Reduction (vph)	0	33	0	0	109	0	0	7	0	0	2	0
Lane Group Flow (vph)	198	1280	0	268	428	0	184	1086	0	353	1610	0
Confl. Peds. (#/hr)	9		21	21		9	10		11	11		10
Heavy Vehicles (%)	3%	1%	2%	3%	2%	5%	4%	6%	9%	4%	4%	13%
Turn Type	pm+pt	NA		pm+pt	NA		pm+pt	NA		pm+pt	NA	
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)	43.1	31.6		44.1	32.1		44.3	36.5		59.5	46.7	
Effective Green, g (s)	43.1	31.6		44.1	32.1		44.3	36.5		59.5	46.7	
Actuated g/C Ratio	0.36	0.26		0.37	0.27		0.37	0.30		0.50	0.39	
Clearance Time (s)	4.0	6.4		4.0	6.4		5.0	6.5		4.0	6.5	
Vehicle Extension (s)	3.0	5.0		3.0	5.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	321	890		236	867		336	1015		335	1336	
v/s Ratio Prot	0.06	c0.38		c0.11	0.13		0.04	0.33		c0.17	c0.47	
v/s Ratio Perm	0.16			0.30			0.17			0.35		
v/c Ratio	0.62	1.44		1.14	0.49		0.55	1.07		1.05	1.20	
Uniform Delay, d1	28.3	44.2		32.1	37.1		29.9	41.8		37.4	36.6	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	3.5	203.5		100.0	0.9		1.8	48.9		64.0	99.5	
Delay (s)	31.8	247.7		132.1	38.0		31.7	90.7		101.4	136.1	
Level of Service	C	F		F	D		C	F		F	F	
Approach Delay (s)		219.4			69.3			82.2			129.9	
Approach LOS		F			E			F			F	

Intersection Summary

HCM 2000 Control Delay	134.5	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	1.29		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	21.9
Intersection Capacity Utilization	119.3%	ICU Level of Service	H
Analysis Period (min)	15		

c Critical Lane Group

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	83	33	177	93	69	146	156	1058	18	46	2155	71
Future Volume (vph)	83	33	177	93	69	146	156	1058	18	46	2155	71
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	15.0		0.0	15.0		0.0	0.0		0.0	30.0		0.0
Storage Lanes	1		0	1		0	1		0	1		0
Taper Length (m)	15.0			15.0			7.5			25.0		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	1.00	0.95	0.95
Ped Bike Factor	1.00	0.99		1.00	0.99			1.00			1.00	
Frt		0.873			0.898			0.997			0.995	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1671	1530	0	1805	1656	0	1687	3419	0	1656	3485	0
Flt Permitted	0.442			0.453			0.063			0.185		
Satd. Flow (perm)	776	1530	0	858	1656	0	112	3419	0	322	3485	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		6			90			2			5	
Link Speed (k/h)		50			40			60			60	
Link Distance (m)		92.7			93.5			93.1			210.6	
Travel Time (s)		6.7			8.4			5.6			12.6	
Confl. Peds. (#/hr)	2		5	5		2	2		10	2		10
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Heavy Vehicles (%)	8%	6%	7%	0%	0%	3%	7%	5%	15%	9%	3%	0%
Adj. Flow (vph)	86	34	184	97	72	152	163	1102	19	48	2245	74
Shared Lane Traffic (%)												
Lane Group Flow (vph)	86	218	0	97	224	0	163	1121	0	48	2319	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.6			3.6			7.2			7.2	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway 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
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2		1	2		1	2		1	2	
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	
Leading Detector (m)	2.0	10.0		2.0	10.0		2.0	10.0		2.0	10.0	
Trailing Detector (m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Position(m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Size(m)	2.0	0.6		2.0	0.6		2.0	0.6		2.0	0.6	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Type	Perm	NA		Perm	NA		Perm	NA		pm+pt	NA	
Protected Phases		4			8			2		1	6	
Permitted Phases	4			8			2			6		
Detector Phase	4	4		8	8		2	2		1	6	
Switch Phase												
Minimum Initial (s)	8.0	8.0		8.0	8.0		8.0	8.0		7.0	8.0	
Minimum Split (s)	40.5	40.5		40.6	40.6		26.8	26.8		11.0	26.8	
Total Split (s)	42.0	42.0		42.0	42.0		66.0	66.0		12.0	78.0	
Total Split (%)	35.0%	35.0%		35.0%	35.0%		55.0%	55.0%		10.0%	65.0%	
Maximum Green (s)	35.5	35.5		35.4	35.4		60.2	60.2		8.0	72.2	
Yellow Time (s)	3.3	3.3		3.3	3.3		3.7	3.7		3.0	3.7	
All-Red Time (s)	3.2	3.2		3.3	3.3		2.1	2.1		1.0	2.1	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)	6.5	6.5		6.6	6.6		5.8	5.8		4.0	5.8	
Lead/Lag							Lag	Lag		Lead		
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	None	None		None	None		Max	Max		None	Max	
Walk Time (s)	7.0	7.0		7.0	7.0		7.0	7.0			7.0	
Flash Dont Walk (s)	27.0	27.0		27.0	27.0		14.0	14.0			14.0	
Pedestrian Calls (#/hr)	0	0		0	0		0	0			0	
Act Effct Green (s)	19.6	19.6		19.5	19.5		63.6	63.6		74.2	72.4	
Actuated g/C Ratio	0.19	0.19		0.19	0.19		0.61	0.61		0.71	0.69	
v/c Ratio	0.59	0.75		0.61	0.59		2.43	0.54		0.15	0.96	
Control Delay	55.3	54.8		55.0	28.8		699.1	14.6		6.7	27.3	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	29.0	
Total Delay	55.3	54.8		55.0	28.8		699.1	14.6		6.7	56.2	
LOS	E	D		D	C		F	B		A	E	
Approach Delay		55.0			36.7			101.5			55.2	
Approach LOS		D			D			F			E	

Intersection Summary

Area Type: Other
Cycle Length: 120
Actuated Cycle Length: 104.3
Natural Cycle: 150
Control Type: Semi Act-Uncoord
Maximum v/c Ratio: 2.43
Intersection Signal Delay: 67.7 — Intersection LOS: E
Intersection Capacity Utilization 113.2% — ICU Level of Service H
Analysis Period (min) 15

Splits and Phases: 2: Appleby Line & Ironstone Dr



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	86	218	97	224	163	1121	48	2319
v/c Ratio	0.59	0.75	0.61	0.59	2.43	0.54	0.15	0.96
Control Delay	55.3	54.8	55.0	28.8	699.1	14.6	6.7	27.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	29.0
Total Delay	55.3	54.8	55.0	28.8	699.1	14.6	6.7	56.2
Queue Length 50th (m)	16.9	43.0	19.1	25.7	~44.4	71.6	2.6	209.0
Queue Length 95th (m)	33.8	69.2	37.1	50.1	#96.0	112.1	7.8	#350.1
Internal Link Dist (m)		68.7		69.5		69.1		186.6
Turn Bay Length (m)	15.0		15.0				30.0	
Base Capacity (vph)	264	526	292	622	67	2084	331	2420
Starvation Cap Reductn	0	0	0	0	0	0	0	244
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.33	0.41	0.33	0.36	2.43	0.54	0.15	1.07

Intersection Summary

~ 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.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	83	33	177	93	69	146	156	1058	18	46	2155	71
Future Volume (vph)	83	33	177	93	69	146	156	1058	18	46	2155	71
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.5	6.5		6.6	6.6		5.8	5.8		4.0	5.8	
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	0.95		1.00	0.95	
Frpb, ped/bikes	1.00	0.99		1.00	0.99		1.00	1.00		1.00	1.00	
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Frt	1.00	0.87		1.00	0.90		1.00	1.00		1.00	1.00	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1669	1531		1799	1657		1687	3421		1656	3486	
Flt Permitted	0.44	1.00		0.45	1.00		0.06	1.00		0.18	1.00	
Satd. Flow (perm)	777	1531		858	1657		112	3421		322	3486	
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	86	34	184	97	72	152	162	1102	19	48	2245	74
RTOR Reduction (vph)	0	5	0	0	73	0	0	1	0	0	2	0
Lane Group Flow (vph)	86	213	0	97	151	0	163	1120	0	48	2317	0
Confl. Peds. (#/hr)	2		5	5		2	2		10	2		10
Heavy Vehicles (%)	8%	6%	7%	0%	0%	3%	7%	5%	15%	9%	3%	0%
Turn Type	Perm	NA		Perm	NA		Perm	NA		pm+pt	NA	
Protected Phases		4			8			2		1	6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)	19.6	19.6		19.5	19.5		63.6	63.6		73.3	73.3	
Effective Green, g (s)	19.6	19.6		19.5	19.5		63.6	63.6		73.3	73.3	
Actuated g/C Ratio	0.19	0.19		0.19	0.19		0.60	0.60		0.70	0.70	
Clearance Time (s)	6.5	6.5		6.6	6.6		5.8	5.8		4.0	5.8	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	144	285		159	307		67	2068		296	2428	
v/s Ratio Prot		c0.14			0.09			0.33		0.01	c0.66	
v/s Ratio Perm	0.11			0.11			c1.46			0.10		
v/c Ratio	0.60	0.75		0.61	0.49		2.43	0.54		0.16	0.95	
Uniform Delay, d1	39.2	40.5		39.4	38.4		20.8	12.2		6.8	14.4	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	6.5	10.2		6.8	1.2		687.6	1.0		0.3	10.3	
Delay (s)	45.7	50.7		46.1	39.6		708.4	13.3		7.1	24.8	
Level of Service	D	D		D	D		F	B		A	C	
Approach Delay (s)		49.3			41.6			101.5			24.4	
Approach LOS		D			D			F			C	

Intersection Summary

HCM 2000 Control Delay	50.6	HCM 2000 Level of Service		D	
HCM 2000 Volume to Capacity ratio	1.97				
Actuated Cycle Length (s)	105.2	Sum of lost time (s)		16.4	
Intersection Capacity Utilization	113.2%	ICU Level of Service		H	
Analysis Period (min)	15				

c Critical Lane Group

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	22	9	30	145	25	146	39	1064	52	62	2249	47
Future Volume (vph)	22	9	30	145	25	146	39	1064	52	62	2249	47
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	0.0		0.0	0.0		0.0	30.0		0.0	110.0		0.0
Storage Lanes	0		0	0		0	1		0	1		0
Taper Length (m)	7.5			7.5			40.0			25.0		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	1.00	0.95	0.95
Ped Bike Factor		0.99			1.00			1.00		1.00	1.00	
Frt		0.932			0.938			0.993			0.997	
Flt Protected		0.983			0.978		0.950			0.950		
Satd. Flow (prot)	0	1420	0	0	1711	0	1687	3379	0	1570	3460	0
Flt Permitted		0.815			0.823		0.063			0.166		
Satd. Flow (perm)	0	1177	0	0	1439	0	112	3379	0	274	3460	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		5			36			6			3	
Link Speed (k/h)		50			50			60			60	
Link Distance (m)		173.6			79.2			281.3			198.1	
Travel Time (s)		12.5			5.7			16.9			11.9	
Confl. Peds. (#/hr)			2	2			1		2	2		1
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Heavy Vehicles (%)	19%	0%	30%	0%	0%	4%	7%	6%	5%	15%	4%	3%
Adj. Flow (vph)	22	9	31	148	26	149	40	1086	53	63	2295	48
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	62	0	0	323	0	40	1139	0	63	2343	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		0.0			0.0			3.6			3.6	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway 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
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2		1	2		1	2		1	2	
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	
Leading Detector (m)	2.0	10.0		2.0	10.0		2.0	10.0		2.0	10.0	
Trailing Detector (m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Position(m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Size(m)	2.0	0.6		2.0	0.6		2.0	0.6		2.0	0.6	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Type	Perm	NA		Perm	NA		Perm	NA		pm+pt	NA	
Protected Phases		4			8			2		1	6	
Permitted Phases	4			8			2			6		
Detector Phase	4	4		8	8		2	2		1	6	
Switch Phase												
Minimum Initial (s)	8.0	8.0		8.0	8.0		8.0	8.0		7.0	8.0	
Minimum Split (s)	38.5	38.5		38.5	38.5		34.0	34.0		11.0	34.0	
Total Split (s)	42.0	42.0		42.0	42.0		66.0	66.0		12.0	78.0	
Total Split (%)	35.0%	35.0%		35.0%	35.0%		55.0%	55.0%		10.0%	65.0%	
Maximum Green (s)	35.5	35.5		35.5	35.5		60.0	60.0		8.0	72.0	
Yellow Time (s)	3.3	3.3		3.3	3.3		3.7	3.7		3.0	3.7	
All-Red Time (s)	3.2	3.2		3.2	3.2		2.3	2.3		1.0	2.3	
Lost Time Adjust (s)		0.0			0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)		6.5			6.5		6.0	6.0		4.0	6.0	
Lead/Lag							Lag	Lag		Lead		
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	None	None		None	None		Max	Max		None	Max	
Walk Time (s)	7.0	7.0		7.0	7.0		7.0	7.0			7.0	
Flash Dont Walk (s)	25.0	25.0		25.0	25.0		21.0	21.0			21.0	
Pedestrian Calls (#/hr)	0	0		0	0		0	0			0	
Act Effct Green (s)		26.9			26.9		63.2	63.2		74.3	72.2	
Actuated g/C Ratio		0.24			0.24		0.57	0.57		0.67	0.65	
v/c Ratio		0.22			0.86		0.63	0.59		0.24	1.05	
Control Delay		32.4			58.4		69.8	19.3		10.2	54.1	
Queue Delay		0.0			0.0		0.0	0.0		0.0	0.0	
Total Delay		32.4			58.4		69.8	19.3		10.2	54.1	
LOS		C			E		E	B		B	D	
Approach Delay		32.4			58.4			21.1			53.0	
Approach LOS		C			E			C			D	

Intersection Summary		
Area Type:	Other	
Cycle Length: 120		
Actuated Cycle Length: 111.7		
Natural Cycle: 135		
Control Type: Semi Act-Uncoord		
Maximum v/c Ratio: 1.05		
Intersection Signal Delay: 43.6		Intersection LOS: D
Intersection Capacity Utilization 99.0%		ICU Level of Service F
Analysis Period (min) 15		

Splits and Phases: 3: Appleby Line & Corporate Dr



Lane Group	EBT	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	62	323	40	1139	63	2343
v/c Ratio	0.22	0.86	0.63	0.59	0.24	1.05
Control Delay	32.4	58.4	69.8	19.3	10.2	54.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	32.4	58.4	69.8	19.3	10.2	54.1
Queue Length 50th (m)	10.5	64.0	6.3	90.6	4.7	~313.0
Queue Length 95th (m)	22.3	99.8	#30.4	132.5	11.8	#398.7
Internal Link Dist (m)	149.6	55.2		257.3		174.1
Turn Bay Length (m)			30.0		110.0	
Base Capacity (vph)	378	483	63	1915	275	2239
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.16	0.67	0.63	0.59	0.23	1.05

Intersection Summary

~ 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.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	22	9	30	145	25	146	39	1064	52	62	2249	47
Future Volume (vph)	22	9	30	145	25	146	39	1064	52	62	2249	47
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		6.5			6.5		6.0	6.0		4.0	6.0	
Lane Util. Factor		1.00			1.00		1.00	0.95		1.00	0.95	
Frpb, ped/bikes		0.99			1.00		1.00	1.00		1.00	1.00	
Flpb, ped/bikes		1.00			1.00		1.00	1.00		1.00	1.00	
Frt		0.93			0.94		1.00	0.99		1.00	1.00	
Flt Protected		0.98			0.98		0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1420			1709		1687	3380		1569	3460	
Flt Permitted		0.81			0.82		0.06	1.00		0.17	1.00	
Satd. Flow (perm)		1177			1438		112	3380		274	3460	
Peak-hour factor, PHF	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Adj. Flow (vph)	22	9	31	148	26	149	40	1086	53	63	2295	48
RTOR Reduction (vph)	0	4	0	0	27	0	0	3	0	0	1	0
Lane Group Flow (vph)	0	58	0	0	296	0	40	1136	0	63	2342	0
Confl. Peds. (#/hr)			2	2			1		2	2		1
Heavy Vehicles (%)	19%	0%	30%	0%	0%	4%	7%	6%	5%	15%	4%	3%
Turn Type	Perm	NA		Perm	NA		Perm	NA		pm+pt	NA	
Protected Phases		4			8			2		1	6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)		26.9			26.9		63.3	63.3		73.2	73.2	
Effective Green, g (s)		26.9			26.9		63.3	63.3		73.2	73.2	
Actuated g/C Ratio		0.24			0.24		0.56	0.56		0.65	0.65	
Clearance Time (s)		6.5			6.5		6.0	6.0		4.0	6.0	
Vehicle Extension (s)		3.0			3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)		281			343		62	1900		245	2249	
v/s Ratio Prot								0.34		0.01	c0.68	
v/s Ratio Perm		0.05			c0.21		0.36			0.15		
v/c Ratio		0.21			0.86		0.65	0.60		0.26	1.04	
Uniform Delay, d1		34.3			41.1		16.9	16.3		9.9	19.7	
Progression Factor		1.00			1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2		0.4			19.4		41.8	1.4		0.6	30.8	
Delay (s)		34.7			60.4		58.8	17.7		10.4	50.5	
Level of Service		C			E		E	B		B	D	
Approach Delay (s)		34.7			60.4			19.1			49.4	
Approach LOS		C			E			B			D	

Intersection Summary

HCM 2000 Control Delay	41.1	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	1.03		
Actuated Cycle Length (s)	112.6	Sum of lost time (s)	16.5
Intersection Capacity Utilization	99.0%	ICU Level of Service	F
Analysis Period (min)	15		

c Critical Lane Group

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	57	76	0	0	80	15	1	1	0	166	15	142
Future Volume (vph)	57	76	0	0	80	15	1	1	0	166	15	142
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	0.0		0.0	0.0		0.0	0.0		0.0	20.0		0.0
Storage Lanes	0		0	0		0	0		0	1		0
Taper Length (m)	7.5			7.5			7.5			20.0		
Lane Util. 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
Ped Bike Factor												
Frt					0.978						0.865	
Flt Protected		0.979						0.976		0.950		
Satd. Flow (prot)	0	1347	0	0	1548	0	0	1854	0	1805	1573	0
Flt Permitted		0.979						0.976		0.950		
Satd. Flow (perm)	0	1347	0	0	1548	0	0	1854	0	1805	1573	0
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		83.4			35.5			72.0			78.5	
Travel Time (s)		6.0			2.6			5.2			5.7	
Confl. Peds. (#/hr)							1		2	2		1
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	29%	45%	0%	0%	22%	10%	0%	0%	0%	0%	0%	5%
Adj. Flow (vph)	63	84	0	0	89	17	1	1	0	184	17	158
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	147	0	0	106	0	0	2	0	184	175	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		0.0			0.0			0.0			3.6	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway 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
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Sign Control		Free			Free			Stop			Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	36.3%	ICU Level of Service A	
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	57	76	0	0	80	15	1	1	0	166	15	142
Future Volume (Veh/h)	57	76	0	0	80	15	1	1	0	166	15	142
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	63	84	0	0	89	17	1	1	0	184	17	158
Pedestrians		1			2							
Lane Width (m)		3.6			3.6							
Walking Speed (m/s)		1.2			1.2							
Percent Blockage		0			0							
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (m)					203							
pX, platoon unblocked												
vC, conflicting volume	106			84			475	316	86	310	308	98
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	106			84			475	316	86	310	308	98
tC, single (s)	4.4			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.5			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	95			100			100	100	100	70	97	83
cM capacity (veh/h)	1333			1526			395	575	977	621	581	948

Direction, Lane #	EB 1	WB 1	NB 1	SB 1	SB 2
Volume Total	147	106	2	184	175
Volume Left	63	0	1	184	0
Volume Right	0	17	0	0	158
cSH	1333	1526	468	621	894
Volume to Capacity	0.05	0.00	0.00	0.30	0.20
Queue Length 95th (m)	1.2	0.0	0.1	9.9	5.8
Control Delay (s)	3.6	0.0	12.7	13.2	10.0
Lane LOS	A		B	B	B
Approach Delay (s)	3.6	0.0	12.7	11.7	
Approach LOS			B	B	

Intersection Summary			
Average Delay	7.7		
Intersection Capacity Utilization	36.3%	ICU Level of Service	A
Analysis Period (min)	15		

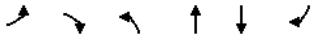
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	8	197	38	159	50	88	39	0	69	27	0	6
Future Volume (vph)	8	197	38	159	50	88	39	0	69	27	0	6
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.979			0.960			0.913			0.974	
Flt Protected		0.998			0.974			0.982			0.961	
Satd. Flow (prot)	0	1820	0	0	1742	0	0	1670	0	0	1744	0
Flt Permitted		0.998			0.974			0.982			0.961	
Satd. Flow (perm)	0	1820	0	0	1742	0	0	1670	0	0	1744	0
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		75.0			92.7			42.4			48.0	
Travel Time (s)		5.4			6.7			3.1			3.5	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	9	214	41	173	54	96	42	0	75	29	0	7
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	264	0	0	323	0	0	117	0	0	36	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		0.0			3.6			0.0			0.0	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway 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
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Sign Control		Free			Free			Stop			Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	46.0%	ICU Level of Service A	
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	8	197	38	159	50	88	39	0	69	27	0	6
Future Volume (Veh/h)	8	197	38	159	50	88	39	0	69	27	0	6
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	9	214	41	173	54	96	42	0	75	29	0	7
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (m)					93							
pX, platoon unblocked	0.97						0.97	0.97		0.97	0.97	0.97
vC, conflicting volume	150			255			708	748	234	776	721	102
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	106			255			682	724	234	752	696	57
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	99			87			87	100	91	89	100	99
cM capacity (veh/h)	1438			1310			313	294	805	257	305	978

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	264	323	117	36
Volume Left	9	173	42	29
Volume Right	41	96	75	7
cSH	1438	1310	515	300
Volume to Capacity	0.01	0.13	0.23	0.12
Queue Length 95th (m)	0.2	3.6	6.9	3.2
Control Delay (s)	0.3	4.9	14.0	18.7
Lane LOS	A	A	B	C
Approach Delay (s)	0.3	4.9	14.0	18.7
Approach LOS			B	C

Intersection Summary				
Average Delay	5.4			
Intersection Capacity Utilization	46.0%	ICU Level of Service	A	
Analysis Period (min)	15			



Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	0	52	0	1232	2361	64
Future Volume (vph)	0	52	0	1232	2361	64
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	0.91	0.95	0.95
Frt		0.865			0.996	
Flt Protected						
Satd. Flow (prot)	0	1611	0	5085	3525	0
Flt Permitted						
Satd. Flow (perm)	0	1611	0	5085	3525	0
Link Speed (k/h)	50			60	60	
Link Distance (m)	60.4			36.6	93.1	
Travel Time (s)	4.3			2.2	5.6	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	57	0	1339	2566	70
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	57	0	1339	2636	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	0.0			3.6	3.6	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	4.8			4.8	4.8	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)	25	15	25			15
Sign Control	Stop			Free	Free	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	77.3%	ICU Level of Service	D
Analysis Period (min)	15		



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	0	52	0	1232	2361	64
Future Volume (Veh/h)	0	52	0	1232	2361	64
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	57	0	1339	2566	70
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	None	
Median storage veh)						
Upstream signal (m)				235	93	
pX, platoon unblocked	0.38	0.32	0.32			
vC, conflicting volume	3047	1318	2636			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1107	0	1853			
tC, single (s)	6.8	6.9	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	100	83	100			
cM capacity (veh/h)	78	344	103			

Direction, Lane #	EB 1	NB 1	NB 2	NB 3	SB 1	SB 2
Volume Total	57	446	446	446	1711	925
Volume Left	0	0	0	0	0	0
Volume Right	57	0	0	0	0	70
cSH	344	1700	1700	1700	1700	1700
Volume to Capacity	0.17	0.26	0.26	0.26	1.01	0.54
Queue Length 95th (m)	4.7	0.0	0.0	0.0	0.0	0.0
Control Delay (s)	17.5	0.0	0.0	0.0	0.0	0.0
Lane LOS	C					
Approach Delay (s)	17.5	0.0			0.0	
Approach LOS	C					

Intersection Summary				
Average Delay	0.2			
Intersection Capacity Utilization	77.3%	ICU Level of Service	D	
Analysis Period (min)	15			

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	226	453	300	105	815	399	461	1643	91	262	1099	254
Future Volume (vph)	226	453	300	105	815	399	461	1643	91	262	1099	254
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	45.0		0.0	120.0		0.0	80.0		0.0	40.0		0.0
Storage Lanes	1		0	1		0	2		0	1		0
Taper Length (m)	30.0			20.0			40.0			35.0		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	0.95	0.97	0.95	0.95	1.00	0.95	0.95
Ped Bike Factor		0.99		1.00	0.99			1.00			0.99	
Frt		0.940			0.951			0.992			0.972	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1787	3303	0	1703	3382	0	3467	3488	0	1787	3398	0
Flt Permitted	0.133			0.140			0.063			0.068		
Satd. Flow (perm)	250	3303	0	250	3382	0	230	3488	0	128	3398	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		102			54			5			23	
Link Speed (k/h)		60			60			60			60	
Link Distance (m)		184.7			208.3			210.6			231.6	
Travel Time (s)		11.1			12.5			12.6			13.9	
Confl. Peds. (#/hr)	16		14	14		16	14		29	29		14
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Heavy Vehicles (%)	1%	1%	2%	6%	0%	1%	1%	2%	9%	1%	3%	1%
Adj. Flow (vph)	235	472	313	109	849	416	480	1711	95	273	1145	265
Shared Lane Traffic (%)												
Lane Group Flow (vph)	235	785	0	109	1265	0	480	1806	0	273	1410	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.6			3.6			7.2			7.2	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway 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
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2		1	2		1	2		1	2	
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	
Leading Detector (m)	2.0	10.0		2.0	10.0		2.0	10.0		2.0	10.0	
Trailing Detector (m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Position(m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Size(m)	2.0	0.6		2.0	0.6		2.0	0.6		2.0	0.6	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Type	pm+pt	NA		pm+pt	NA		pm+pt	NA		pm+pt	NA	
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4			8			2			6		
Detector Phase	7	4		3	8		5	2		1	6	
Switch Phase												
Minimum Initial (s)	7.0	8.0		7.0	8.0		7.0	8.0		7.0	8.0	
Minimum Split (s)	11.0	34.4		11.0	34.4		12.0	34.5		11.0	34.5	
Total Split (s)	15.0	36.0		14.0	35.0		30.0	72.0		18.0	60.0	
Total Split (%)	10.7%	25.7%		10.0%	25.0%		21.4%	51.4%		12.9%	42.9%	
Maximum Green (s)	11.0	29.6		10.0	28.6		25.0	65.5		14.0	53.5	
Yellow Time (s)	3.0	3.7		3.0	3.7		3.0	3.7		3.0	3.7	
All-Red Time (s)	1.0	2.7		1.0	2.7		2.0	2.8		1.0	2.8	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)	4.0	6.4		4.0	6.4		5.0	6.5		4.0	6.5	
Lead/Lag	Lead	Lag		Lead	Lag		Lead	Lag		Lead	Lag	
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	5.0		3.0	5.0		3.0	3.0		3.0	3.0	
Recall Mode	None	None		None	None		None	Max		None	Max	
Walk Time (s)		7.0			7.0			7.0			7.0	
Flash Dont Walk (s)		21.0			21.0			21.0			21.0	
Pedestrian Calls (#/hr)		0			0			0			0	
Act Effct Green (s)	43.4	30.0		40.6	28.6		84.1	65.5		75.3	58.8	
Actuated g/C Ratio	0.31	0.21		0.29	0.20		0.60	0.47		0.54	0.42	
v/c Ratio	1.19	1.00		0.63	1.73		0.81	1.11		1.17	0.98	
Control Delay	158.6	78.5		51.4	364.3		48.2	92.5		148.4	58.5	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.4		0.0	0.0	
Total Delay	158.6	78.5		51.4	364.3		48.2	92.9		148.4	58.5	
LOS	F	E		D	F		D	F		F	E	
Approach Delay		96.9			339.5			83.5			73.1	
Approach LOS		F			F			F			E	

Intersection Summary			
Area Type:	Other		
Cycle Length: 140			
Actuated Cycle Length: 140			
Natural Cycle: 145			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 1.73			
Intersection Signal Delay: 138.2		Intersection LOS: F	
Intersection Capacity Utilization 128.7%		ICU Level of Service H	
Analysis Period (min) 15			

Splits and Phases: 1: Appleby Line & Upper Middle Rd



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	235	785	109	1265	480	1806	273	1410
v/c Ratio	1.19	1.00	0.63	1.73	0.81	1.11	1.17	0.98
Control Delay	158.6	78.5	51.4	364.3	48.2	92.5	148.4	58.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.4	0.0	0.0
Total Delay	158.6	78.5	51.4	364.3	48.2	92.9	148.4	58.5
Queue Length 50th (m)	~64.5	~109.8	22.8	~281.2	52.9	~315.0	~77.0	208.3
Queue Length 95th (m)	#121.4	#155.3	38.4	#326.7	71.0	#359.5	#139.5	#283.4
Internal Link Dist (m)		160.7		184.3		186.6		207.6
Turn Bay Length (m)	45.0		120.0		80.0		40.0	
Base Capacity (vph)	198	788	177	733	717	1634	234	1441
Starvation Cap Reductn	0	0	0	0	0	205	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	1.19	1.00	0.62	1.73	0.67	1.26	1.17	0.98

Intersection Summary

~ 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.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	226	453	300	105	815	399	461	1643	91	262	1099	254
Future Volume (vph)	226	453	300	105	815	399	461	1643	91	262	1099	254
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	6.4		4.0	6.4		5.0	6.5		4.0	6.5	
Lane Util. Factor	1.00	0.95		1.00	0.95		0.97	0.95		1.00	0.95	
Frpb, ped/bikes	1.00	0.99		1.00	0.99		1.00	1.00		1.00	0.99	
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Frt	1.00	0.94		1.00	0.95		1.00	0.99		1.00	0.97	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1787	3304		1702	3381		3467	3489		1787	3398	
Flt Permitted	0.13	1.00		0.14	1.00		0.06	1.00		0.07	1.00	
Satd. Flow (perm)	251	3304		251	3381		229	3489		128	3398	
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	235	472	312	109	849	416	480	1711	95	273	1145	265
RTOR Reduction (vph)	0	80	0	0	43	0	0	3	0	0	13	0
Lane Group Flow (vph)	235	705	0	109	1222	0	480	1803	0	273	1397	0
Confl. Peds. (#/hr)	16		14	14		16	14		29	29		14
Heavy Vehicles (%)	1%	1%	2%	6%	0%	1%	1%	2%	9%	1%	3%	1%
Turn Type	pm+pt	NA		pm+pt	NA		pm+pt	NA		pm+pt	NA	
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)	41.0	30.0		38.2	28.6		83.5	65.5		72.8	58.8	
Effective Green, g (s)	41.0	30.0		38.2	28.6		83.5	65.5		72.8	58.8	
Actuated g/C Ratio	0.29	0.21		0.27	0.20		0.60	0.47		0.52	0.42	
Clearance Time (s)	4.0	6.4		4.0	6.4		5.0	6.5		4.0	6.5	
Vehicle Extension (s)	3.0	5.0		3.0	5.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	194	708		167	690		592	1632		232	1427	
v/s Ratio Prot	c0.10	0.21		0.04	c0.36		0.11	c0.52		c0.12	0.41	
v/s Ratio Perm	0.26			0.13			0.37			c0.49		
v/c Ratio	1.21	1.00		0.65	1.77		0.81	1.10		1.18	0.98	
Uniform Delay, d1	43.8	54.9		41.8	55.7		43.1	37.2		45.3	40.0	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	133.1	32.6		8.8	352.9		8.3	56.9		115.2	19.3	
Delay (s)	176.9	87.5		50.7	408.6		51.4	94.1		160.5	59.3	
Level of Service	F	F		D	F		D	F		F	E	
Approach Delay (s)		108.1			380.2			85.2			75.7	
Approach LOS		F			F			F			E	

Intersection Summary

HCM 2000 Control Delay	150.0	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	1.30		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	21.9
Intersection Capacity Utilization	128.7%	ICU Level of Service	H
Analysis Period (min)	15		

c Critical Lane Group

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	124	69	116	34	52	132	227	2112	56	110	1411	80
Future Volume (vph)	124	69	116	34	52	132	227	2112	56	110	1411	80
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	15.0		0.0	15.0		0.0	0.0		0.0	30.0		0.0
Storage Lanes	1		0	1		0	1		0	1		0
Taper Length (m)	15.0			15.0			7.5			25.0		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	1.00	0.95	0.95
Ped Bike Factor	0.99	0.99		1.00	0.98			1.00			1.00	
Frt		0.906			0.893			0.996			0.992	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1787	1693	0	1805	1658	0	1805	3521	0	1805	3506	0
Flt Permitted	0.465			0.459			0.146			0.047		
Satd. Flow (perm)	869	1693	0	869	1658	0	277	3521	0	89	3506	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		55			87			3			8	
Link Speed (k/h)		50			40			60			60	
Link Distance (m)		92.7			93.5			93.1			210.6	
Travel Time (s)		6.7			8.4			5.6			12.6	
Confl. Peds. (#/hr)	8		4	4		8	8		14	14		8
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Heavy Vehicles (%)	1%	0%	1%	0%	0%	1%	0%	2%	0%	0%	2%	0%
Adj. Flow (vph)	128	71	120	35	54	136	234	2177	58	113	1455	82
Shared Lane Traffic (%)												
Lane Group Flow (vph)	128	191	0	35	190	0	234	2235	0	113	1537	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.6			3.6			7.2			7.2	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway 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
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2		1	2		1	2		1	2	
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	
Leading Detector (m)	2.0	10.0		2.0	10.0		2.0	10.0		2.0	10.0	
Trailing Detector (m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Position(m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Size(m)	2.0	0.6		2.0	0.6		2.0	0.6		2.0	0.6	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Type	Perm	NA		Perm	NA		Perm	NA		pm+pt	NA	
Protected Phases		4			8			2		1	6	
Permitted Phases	4			8			2			6		
Detector Phase	4	4		8	8		2	2		1	6	
Switch Phase												
Minimum Initial (s)	8.0	8.0		8.0	8.0		8.0	8.0		7.0	8.0	
Minimum Split (s)	40.5	40.5		40.6	40.6		26.8	26.8		11.0	26.8	
Total Split (s)	42.0	42.0		42.0	42.0		86.0	86.0		12.0	98.0	
Total Split (%)	30.0%	30.0%		30.0%	30.0%		61.4%	61.4%		8.6%	70.0%	
Maximum Green (s)	35.5	35.5		35.4	35.4		80.2	80.2		8.0	92.2	
Yellow Time (s)	3.3	3.3		3.3	3.3		3.7	3.7		3.0	3.7	
All-Red Time (s)	3.2	3.2		3.3	3.3		2.1	2.1		1.0	2.1	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)	6.5	6.5		6.6	6.6		5.8	5.8		4.0	5.8	
Lead/Lag							Lag	Lag		Lead		
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	None	None		None	None		Max	Max		None	Max	
Walk Time (s)	7.0	7.0		7.0	7.0		7.0	7.0			7.0	
Flash Dont Walk (s)	27.0	27.0		27.0	27.0		14.0	14.0			14.0	
Pedestrian Calls (#/hr)	0	0		0	0		0	0			0	
Act Effct Green (s)	21.3	21.3		21.2	21.2		80.8	80.8		94.3	92.5	
Actuated g/C Ratio	0.17	0.17		0.17	0.17		0.64	0.64		0.75	0.73	
v/c Ratio	0.88	0.58		0.24	0.54		1.32	0.99		0.66	0.60	
Control Delay	98.5	40.5		48.4	30.7		203.7	40.2		41.0	10.1	
Queue Delay	0.0	0.0		0.0	0.0		0.0	4.3		0.0	0.8	
Total Delay	98.5	40.5		48.4	30.7		203.7	44.4		41.0	10.9	
LOS	F	D		D	C		F	D		D	B	
Approach Delay		63.7			33.5			59.5			12.9	
Approach LOS		E			C			E			B	

Intersection Summary			
Area Type:	Other		
Cycle Length: 140			
Actuated Cycle Length: 126.1			
Natural Cycle: 150			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 1.32			
Intersection Signal Delay: 42.1		Intersection LOS: D	
Intersection Capacity Utilization 107.7%		ICU Level of Service G	
Analysis Period (min) 15			

Splits and Phases: 2: Appleby Line & Ironstone Dr



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	128	191	35	190	234	2235	113	1537
v/c Ratio	0.88	0.58	0.24	0.54	1.32	0.99	0.66	0.60
Control Delay	98.5	40.5	48.4	30.7	203.7	40.2	41.0	10.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	4.3	0.0	0.8
Total Delay	98.5	40.5	48.4	30.7	203.7	44.4	41.0	10.9
Queue Length 50th (m)	32.9	32.8	8.0	24.2	~78.8	282.5	11.8	87.6
Queue Length 95th (m)	57.3	56.9	18.5	48.0	#100.1	#418.7	#43.8	146.0
Internal Link Dist (m)		68.7		69.5		69.1		186.6
Turn Bay Length (m)	15.0		15.0				30.0	
Base Capacity (vph)	245	517	244	529	177	2257	175	2573
Starvation Cap Reductn	0	0	0	0	0	41	0	657
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.52	0.37	0.14	0.36	1.32	1.01	0.65	0.80

Intersection Summary

~ 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.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	124	69	116	34	52	132	227	2112	56	110	1411	80
Future Volume (vph)	124	69	116	34	52	132	227	2112	56	110	1411	80
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.5	6.5		6.6	6.6		5.8	5.8		4.0	5.8	
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	0.95		1.00	0.95	
Frpb, ped/bikes	1.00	0.99		1.00	0.99		1.00	1.00		1.00	1.00	
Flpb, ped/bikes	0.99	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Frt	1.00	0.91		1.00	0.89		1.00	1.00		1.00	0.99	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1776	1693		1799	1659		1801	3522		1805	3506	
Flt Permitted	0.46	1.00		0.46	1.00		0.15	1.00		0.05	1.00	
Satd. Flow (perm)	869	1693		869	1659		278	3522		90	3506	
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	128	71	120	35	54	136	234	2177	58	113	1455	82
RTOR Reduction (vph)	0	46	0	0	72	0	0	1	0	0	2	0
Lane Group Flow (vph)	128	145	0	35	118	0	234	2234	0	113	1535	0
Confl. Peds. (#/hr)	8		4	4		8	8		14	14		8
Heavy Vehicles (%)	1%	0%	1%	0%	0%	1%	0%	2%	0%	0%	2%	0%
Turn Type	Perm	NA		Perm	NA		Perm	NA		pm+pt	NA	
Protected Phases		4			8			2		1	6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)	21.3	21.3		21.2	21.2		80.8	80.8		92.5	92.5	
Effective Green, g (s)	21.3	21.3		21.2	21.2		80.8	80.8		92.5	92.5	
Actuated g/C Ratio	0.17	0.17		0.17	0.17		0.64	0.64		0.73	0.73	
Clearance Time (s)	6.5	6.5		6.6	6.6		5.8	5.8		4.0	5.8	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	146	285		146	278		178	2256		170	2571	
v/s Ratio Prot		0.09			0.07			0.63		0.04	c0.44	
v/s Ratio Perm	c0.15			0.04			c0.84			0.45		
v/c Ratio	0.88	0.51		0.24	0.42		1.31	0.99		0.66	0.60	
Uniform Delay, d1	51.1	47.7		45.5	47.0		22.6	22.3		37.3	8.0	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	40.2	1.4		0.9	1.0		175.6	16.8		9.4	1.0	
Delay (s)	91.4	49.1		46.3	48.0		198.3	39.0		46.7	9.0	
Level of Service	F	D		D	D		F	D		D	A	
Approach Delay (s)		66.1			47.8			54.1			11.6	
Approach LOS		E			D			D			B	

Intersection Summary					
HCM 2000 Control Delay	39.6	HCM 2000 Level of Service		D	
HCM 2000 Volume to Capacity ratio	1.19				
Actuated Cycle Length (s)	126.1	Sum of lost time (s)		16.4	
Intersection Capacity Utilization	107.7%	ICU Level of Service		G	
Analysis Period (min)	15				

c Critical Lane Group

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	113	47	86	100	30	185	37	2097	110	88	1327	34
Future Volume (vph)	113	47	86	100	30	185	37	2097	110	88	1327	34
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	0.0		0.0	0.0		0.0	30.0		0.0	110.0		0.0
Storage Lanes	0		0	0		0	1		0	1		0
Taper Length (m)	7.5			7.5			40.0			25.0		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	1.00	0.95	0.95
Ped Bike Factor		0.99			0.99		1.00	1.00			1.00	
Frt		0.953			0.921			0.993			0.996	
Flt Protected		0.978			0.984		0.950			0.950		
Satd. Flow (prot)	0	1696	0	0	1689	0	1583	3514	0	1703	3484	0
Flt Permitted		0.589			0.768		0.160			0.046		
Satd. Flow (perm)	0	1020	0	0	1318	0	266	3514	0	82	3484	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		18			48			7			4	
Link Speed (k/h)		50			50			60			60	
Link Distance (m)		173.6			79.2			281.3			198.1	
Travel Time (s)		12.5			5.7			16.9			11.9	
Confl. Peds. (#/hr)	4		1	1		4	5		1	1		5
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Heavy Vehicles (%)	4%	0%	6%	1%	0%	1%	14%	2%	0%	6%	3%	8%
Adj. Flow (vph)	116	48	89	103	31	191	38	2162	113	91	1368	35
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	253	0	0	325	0	38	2275	0	91	1403	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		0.0			0.0			3.6			3.6	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway 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
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2		1	2		1	2		1	2	
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	
Leading Detector (m)	2.0	10.0		2.0	10.0		2.0	10.0		2.0	10.0	
Trailing Detector (m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Position(m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Size(m)	2.0	0.6		2.0	0.6		2.0	0.6		2.0	0.6	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Type	Perm	NA		Perm	NA		Perm	NA		pm+pt	NA	
Protected Phases		4			8			2		1	6	
Permitted Phases	4			8			2			6		
Detector Phase	4	4		8	8		2	2		1	6	
Switch Phase												
Minimum Initial (s)	8.0	8.0		8.0	8.0		8.0	8.0		7.0	8.0	
Minimum Split (s)	38.5	38.5		38.5	38.5		34.0	34.0		11.0	34.0	
Total Split (s)	39.0	39.0		39.0	39.0		89.0	89.0		12.0	101.0	
Total Split (%)	27.9%	27.9%		27.9%	27.9%		63.6%	63.6%		8.6%	72.1%	
Maximum Green (s)	32.5	32.5		32.5	32.5		83.0	83.0		8.0	95.0	
Yellow Time (s)	3.3	3.3		3.3	3.3		3.7	3.7		3.0	3.7	
All-Red Time (s)	3.2	3.2		3.2	3.2		2.3	2.3		1.0	2.3	
Lost Time Adjust (s)		0.0			0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)		6.5			6.5		6.0	6.0		4.0	6.0	
Lead/Lag							Lag	Lag		Lead		
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	None	None		None	None		Max	Max		None	Max	
Walk Time (s)	7.0	7.0		7.0	7.0		7.0	7.0			7.0	
Flash Dont Walk (s)	25.0	25.0		25.0	25.0		21.0	21.0			21.0	
Pedestrian Calls (#/hr)	0	0		0	0		0	0			0	
Act Effct Green (s)		32.5			32.5		83.3	83.3		97.0	95.0	
Actuated g/C Ratio		0.23			0.23		0.60	0.60		0.69	0.68	
v/c Ratio		1.01			0.95		0.24	1.09		0.63	0.59	
Control Delay		109.0			82.5		18.4	75.9		40.6	13.4	
Queue Delay		0.0			0.0		0.0	0.0		0.0	0.0	
Total Delay		109.0			82.5		18.4	75.9		40.6	13.4	
LOS		F			F		B	E		D	B	
Approach Delay		109.0			82.5			74.9			15.0	
Approach LOS		F			F			E			B	

Intersection Summary			
Area Type:	Other		
Cycle Length: 140			
Actuated Cycle Length: 140			
Natural Cycle: 145			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 1.09			
Intersection Signal Delay: 57.1		Intersection LOS: E	
Intersection Capacity Utilization 103.0%		ICU Level of Service G	
Analysis Period (min) 15			

Splits and Phases: 3: Appleby Line & Corporate Dr



Lane Group	EBT	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	253	325	38	2275	91	1403
v/c Ratio	1.01	0.95	0.24	1.09	0.63	0.59
Control Delay	109.0	82.5	18.4	75.9	40.6	13.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	109.0	82.5	18.4	75.9	40.6	13.4
Queue Length 50th (m)	~71.2	82.1	5.0	~392.4	9.8	106.8
Queue Length 95th (m)	#130.6	#144.4	13.0	#434.7	#31.8	126.3
Internal Link Dist (m)	149.6	55.2		257.3		174.1
Turn Bay Length (m)			30.0		110.0	
Base Capacity (vph)	250	342	158	2094	149	2365
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	1.01	0.95	0.24	1.09	0.61	0.59

Intersection Summary

~ 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.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	113	47	86	100	30	185	37	2097	110	88	1327	34
Future Volume (vph)	113	47	86	100	30	185	37	2097	110	88	1327	34
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		6.5			6.5		6.0	6.0		4.0	6.0	
Lane Util. Factor		1.00			1.00		1.00	0.95		1.00	0.95	
Frpb, ped/bikes		1.00			0.99		1.00	1.00		1.00	1.00	
Flpb, ped/bikes		1.00			1.00		1.00	1.00		1.00	1.00	
Frt		0.95			0.92		1.00	0.99		1.00	1.00	
Flt Protected		0.98			0.98		0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1692			1689		1581	3512		1703	3485	
Flt Permitted		0.59			0.77		0.16	1.00		0.05	1.00	
Satd. Flow (perm)		1020			1318		266	3512		82	3485	
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	116	48	89	103	31	191	38	2162	113	91	1368	35
RTOR Reduction (vph)	0	14	0	0	37	0	0	3	0	0	1	0
Lane Group Flow (vph)	0	239	0	0	288	0	38	2272	0	91	1402	0
Confl. Peds. (#/hr)	4		1	1		4	5		1	1		5
Heavy Vehicles (%)	4%	0%	6%	1%	0%	1%	14%	2%	0%	6%	3%	8%
Turn Type	Perm	NA		Perm	NA		Perm	NA		pm+pt	NA	
Protected Phases		4			8			2		1	6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)		32.5			32.5		83.3	83.3		95.0	95.0	
Effective Green, g (s)		32.5			32.5		83.3	83.3		95.0	95.0	
Actuated g/C Ratio		0.23			0.23		0.59	0.59		0.68	0.68	
Clearance Time (s)		6.5			6.5		6.0	6.0		4.0	6.0	
Vehicle Extension (s)		3.0			3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)		236			305		158	2089		144	2364	
v/s Ratio Prot								c0.65		0.03	c0.40	
v/s Ratio Perm		c0.23			0.22		0.14			0.39		
v/c Ratio		1.01			0.94		0.24	1.09		0.63	0.59	
Uniform Delay, d1		53.8			52.9		13.4	28.4		36.6	12.1	
Progression Factor		1.00			1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2		62.1			36.8		3.6	48.2		8.7	1.1	
Delay (s)		115.8			89.7		17.0	76.6		45.4	13.2	
Level of Service		F			F		B	E		D	B	
Approach Delay (s)		115.8			89.7			75.6			15.2	
Approach LOS		F			F			E			B	

Intersection Summary

HCM 2000 Control Delay	58.4	HCM 2000 Level of Service	E
HCM 2000 Volume to Capacity ratio	1.04		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	16.5
Intersection Capacity Utilization	103.0%	ICU Level of Service	G
Analysis Period (min)	15		

c Critical Lane Group

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	260	112	0	1	86	107	1	3	5	75	5	64
Future Volume (vph)	260	112	0	1	86	107	1	3	5	75	5	64
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	0.0		0.0	0.0		0.0	0.0		0.0	20.0		0.0
Storage Lanes	0		0	0		0	0		0	1		0
Taper Length (m)	7.5			7.5			7.5			20.0		
Lane Util. 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
Ped Bike Factor												
Frt					0.926			0.925			0.860	
Flt Protected		0.966						0.994		0.950		
Satd. Flow (prot)	0	1733	0	0	1648	0	0	1367	0	1736	1502	0
Flt Permitted		0.966						0.994		0.950		
Satd. Flow (perm)	0	1733	0	0	1648	0	0	1367	0	1736	1502	0
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		83.4			110.5			72.0			78.5	
Travel Time (s)		6.0			8.0			5.2			5.7	
Confl. Peds. (#/hr)	2					2			2	2		
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Heavy Vehicles (%)	5%	8%	0%	0%	9%	5%	100%	50%	0%	4%	33%	7%
Adj. Flow (vph)	274	118	0	1	91	113	1	3	5	79	5	67
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	392	0	0	205	0	0	9	0	79	72	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		0.0			0.0			0.0			3.6	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway 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
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Sign Control		Free			Free			Stop			Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	52.5%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	260	112	0	1	86	107	1	3	5	75	5	64
Future Volume (Veh/h)	260	112	0	1	86	107	1	3	5	75	5	64
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	274	118	0	1	91	113	1	3	5	79	5	67
Pedestrians					2						2	
Lane Width (m)					3.6						3.6	
Walking Speed (m/s)					1.2						1.2	
Percent Blockage					0						0	
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (m)					203							
pX, platoon unblocked												
vC, conflicting volume	206			118			885	874	120	826	818	150
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	206			118			885	874	120	826	818	150
tC, single (s)	4.1			4.1			8.1	7.0	6.2	7.1	6.8	6.3
tC, 2 stage (s)												
tF (s)	2.2			2.2			4.4	4.5	3.3	3.5	4.3	3.4
p0 queue free %	80			100			99	98	99	67	98	92
cM capacity (veh/h)	1345			1483			140	192	935	238	221	883

Direction, Lane #	EB 1	WB 1	NB 1	SB 1	SB 2
Volume Total	392	205	9	79	72
Volume Left	274	1	1	79	0
Volume Right	0	113	5	0	67
cSH	1345	1483	320	238	731
Volume to Capacity	0.20	0.00	0.03	0.33	0.10
Queue Length 95th (m)	6.1	0.0	0.7	11.1	2.6
Control Delay (s)	6.4	0.0	16.6	27.4	10.5
Lane LOS	A	A	C	D	B
Approach Delay (s)	6.4	0.0	16.6	19.3	
Approach LOS			C	C	

Intersection Summary					
Average Delay	7.4				
Intersection Capacity Utilization	52.5%	ICU Level of Service		A	
Analysis Period (min)	15				

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	28	90	74	105	138	116	41	0	99	119	0	15
Future Volume (vph)	28	90	74	105	138	116	41	0	99	119	0	15
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Util. 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
Frt		0.948			0.956			0.905			0.985	
Flt Protected		0.993			0.986			0.986			0.957	
Satd. Flow (prot)	0	1754	0	0	1756	0	0	1662	0	0	1756	0
Flt Permitted		0.993			0.986			0.986			0.957	
Satd. Flow (perm)	0	1754	0	0	1756	0	0	1662	0	0	1756	0
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		110.5			92.7			42.4			48.0	
Travel Time (s)		8.0			6.7			3.1			3.5	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	30	98	80	114	150	126	45	0	108	129	0	16
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	208	0	0	390	0	0	153	0	0	145	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		0.0			3.6			0.0			0.0	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway 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
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Sign Control		Free			Free			Stop			Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	55.1%	ICU Level of Service	B
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	28	90	74	105	138	116	41	0	99	119	0	15
Future Volume (Veh/h)	28	90	74	105	138	116	41	0	99	119	0	15
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	30	98	80	114	150	126	45	0	108	129	0	16
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (m)					93							
pX, platoon unblocked	0.95						0.95	0.95		0.95	0.95	0.95
vC, conflicting volume	276			178			655	702	138	747	679	213
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	211			178			610	660	138	707	635	145
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	98			92			87	100	88	52	100	98
cM capacity (veh/h)	1291			1398			349	327	910	270	337	857

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	208	390	153	145
Volume Left	30	114	45	129
Volume Right	80	126	108	16
cSH	1291	1398	618	292
Volume to Capacity	0.02	0.08	0.25	0.50
Queue Length 95th (m)	0.6	2.1	7.8	20.7
Control Delay (s)	1.3	2.8	12.7	28.9
Lane LOS	A	A	B	D
Approach Delay (s)	1.3	2.8	12.7	28.9
Approach LOS			B	D

Intersection Summary				
Average Delay	8.4			
Intersection Capacity Utilization	55.1%	ICU Level of Service		B
Analysis Period (min)	15			

Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	0	130	0	2395	1491	70
Future Volume (vph)	0	130	0	2395	1491	70
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	0.91	0.95	0.95
Frt		0.865			0.993	
Flt Protected						
Satd. Flow (prot)	0	1611	0	5085	3514	0
Flt Permitted						
Satd. Flow (perm)	0	1611	0	5085	3514	0
Link Speed (k/h)	50			60	60	
Link Distance (m)	60.4			36.6	93.1	
Travel Time (s)	4.3			2.2	5.6	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	141	0	2603	1621	76
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	141	0	2603	1697	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	0.0			3.6	3.6	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	4.8			4.8	4.8	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)	25	15	25			15
Sign Control	Stop			Free	Free	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 58.2%		ICU Level of Service B	
Analysis Period (min) 15			

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	0	130	0	2395	1491	70
Future Volume (Veh/h)	0	130	0	2395	1491	70
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	141	0	2603	1621	76
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	None	
Median storage veh)						
Upstream signal (m)				235	93	
pX, platoon unblocked	0.56	0.79	0.79			
vC, conflicting volume	2527	848	1697			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	0	267	1345			
tC, single (s)	6.8	6.9	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	100	75	100			
cM capacity (veh/h)	576	575	400			

Direction, Lane #	EB 1	NB 1	NB 2	NB 3	SB 1	SB 2
Volume Total	141	868	868	868	1081	616
Volume Left	0	0	0	0	0	0
Volume Right	141	0	0	0	0	76
cSH	575	1700	1700	1700	1700	1700
Volume to Capacity	0.25	0.51	0.51	0.51	0.64	0.36
Queue Length 95th (m)	7.7	0.0	0.0	0.0	0.0	0.0
Control Delay (s)	13.3	0.0	0.0	0.0	0.0	0.0
Lane LOS	B					
Approach Delay (s)	13.3	0.0			0.0	
Approach LOS	B					

Intersection Summary				
Average Delay	0.4			
Intersection Capacity Utilization	58.2%	ICU Level of Service		B
Analysis Period (min)	15			

Appendix F

Total Traffic Operations

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	226	453	309	99	815	399	461	1637	92	262	1107	254
Future Volume (vph)	226	453	309	99	815	399	461	1637	92	262	1107	254
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	45.0		0.0	120.0		0.0	80.0		0.0	40.0		0.0
Storage Lanes	1		0	1		0	2		0	1		0
Taper Length (m)	30.0			20.0			40.0			35.0		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	0.95	0.97	0.95	0.95	1.00	0.95	0.95
Ped Bike Factor		0.99		1.00	0.99			1.00			0.99	
Frt		0.939			0.951			0.992			0.972	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1787	3299	0	1703	3382	0	3467	3488	0	1787	3398	0
Flt Permitted	0.133			0.140			0.063			0.068		
Satd. Flow (perm)	250	3299	0	250	3382	0	230	3488	0	128	3398	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		109			54			5			23	
Link Speed (k/h)		60			60			60			60	
Link Distance (m)		184.7			208.3			210.6			231.6	
Travel Time (s)		11.1			12.5			12.6			13.9	
Confl. Peds. (#/hr)	16		14	14		16	14		29	29		14
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Heavy Vehicles (%)	1%	1%	2%	6%	0%	1%	1%	2%	9%	1%	3%	1%
Adj. Flow (vph)	235	472	322	103	849	416	480	1705	96	273	1153	265
Shared Lane Traffic (%)												
Lane Group Flow (vph)	235	794	0	103	1265	0	480	1801	0	273	1418	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.6			3.6			7.2			7.2	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway 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
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2		1	2		1	2		1	2	
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	
Leading Detector (m)	2.0	10.0		2.0	10.0		2.0	10.0		2.0	10.0	
Trailing Detector (m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Position(m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Size(m)	2.0	0.6		2.0	0.6		2.0	0.6		2.0	0.6	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Type	pm+pt	NA		pm+pt	NA		pm+pt	NA		pm+pt	NA	
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4			8			2			6		
Detector Phase	7	4		3	8		5	2		1	6	
Switch Phase												
Minimum Initial (s)	7.0	8.0		7.0	8.0		7.0	8.0		7.0	8.0	
Minimum Split (s)	11.0	34.4		11.0	34.4		12.0	34.5		11.0	34.5	
Total Split (s)	15.0	36.0		14.0	35.0		30.0	72.0		18.0	60.0	
Total Split (%)	10.7%	25.7%		10.0%	25.0%		21.4%	51.4%		12.9%	42.9%	
Maximum Green (s)	11.0	29.6		10.0	28.6		25.0	65.5		14.0	53.5	
Yellow Time (s)	3.0	3.7		3.0	3.7		3.0	3.7		3.0	3.7	
All-Red Time (s)	1.0	2.7		1.0	2.7		2.0	2.8		1.0	2.8	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)	4.0	6.4		4.0	6.4		5.0	6.5		4.0	6.5	
Lead/Lag	Lead	Lag		Lead	Lag		Lead	Lag		Lead	Lag	
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	5.0		3.0	5.0		3.0	3.0		3.0	3.0	
Recall Mode	None	None		None	None		None	Max		None	Max	
Walk Time (s)		7.0			7.0			7.0			7.0	
Flash Dont Walk (s)		21.0			21.0			21.0			21.0	
Pedestrian Calls (#/hr)		0			0			0			0	
Act Effct Green (s)	43.5	30.1		40.5	28.6		84.1	65.5		75.3	58.8	
Actuated g/C Ratio	0.31	0.22		0.29	0.20		0.60	0.47		0.54	0.42	
v/c Ratio	1.19	1.00		0.61	1.73		0.81	1.10		1.17	0.98	
Control Delay	158.2	78.5		49.3	364.3		48.2	91.3		148.4	59.7	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.4		0.0	0.0	
Total Delay	158.2	78.5		49.3	364.3		48.2	91.8		148.4	59.7	
LOS	F	E		D	F		D	F		F	E	
Approach Delay		96.7			340.6			82.6			74.0	
Approach LOS		F			F			F			E	

Intersection Summary			
Area Type:	Other		
Cycle Length: 140			
Actuated Cycle Length: 140			
Natural Cycle: 145			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 1.73			
Intersection Signal Delay: 138.0		Intersection LOS: F	
Intersection Capacity Utilization 128.6%		ICU Level of Service H	
Analysis Period (min) 15			

Splits and Phases: 1: Appleby Line & Upper Middle Rd



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	235	794	103	1265	480	1801	273	1418
v/c Ratio	1.19	1.00	0.61	1.73	0.81	1.10	1.17	0.98
Control Delay	158.2	78.5	49.3	364.3	48.2	91.3	148.4	59.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.4	0.0	0.0
Total Delay	158.2	78.5	49.3	364.3	48.2	91.8	148.4	59.7
Queue Length 50th (m)	~64.5	~111.4	21.4	~281.2	52.9	~313.4	~77.0	210.5
Queue Length 95th (m)	#121.4	#156.6	36.7	#326.7	71.0	#358.2	#139.5	#286.0
Internal Link Dist (m)		160.7		184.3		186.6		207.6
Turn Bay Length (m)	45.0		120.0		80.0		40.0	
Base Capacity (vph)	198	795	177	733	717	1634	234	1441
Starvation Cap Reductn	0	0	0	0	0	205	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	1.19	1.00	0.58	1.73	0.67	1.26	1.17	0.98

Intersection Summary

~ 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.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	226	453	309	99	815	399	461	1637	92	262	1107	254
Future Volume (vph)	226	453	309	99	815	399	461	1637	92	262	1107	254
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	6.4		4.0	6.4		5.0	6.5		4.0	6.5	
Lane Util. Factor	1.00	0.95		1.00	0.95		0.97	0.95		1.00	0.95	
Frpb, ped/bikes	1.00	0.99		1.00	0.99		1.00	1.00		1.00	0.99	
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Frt	1.00	0.94		1.00	0.95		1.00	0.99		1.00	0.97	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1787	3299		1702	3381		3467	3488		1787	3398	
Flt Permitted	0.13	1.00		0.14	1.00		0.06	1.00		0.07	1.00	
Satd. Flow (perm)	250	3299		251	3381		229	3488		128	3398	
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	235	472	322	103	849	416	480	1705	96	273	1153	265
RTOR Reduction (vph)	0	86	0	0	43	0	0	3	0	0	13	0
Lane Group Flow (vph)	235	708	0	103	1222	0	480	1798	0	273	1405	0
Confl. Peds. (#/hr)	16		14	14		16	14		29	29		14
Heavy Vehicles (%)	1%	1%	2%	6%	0%	1%	1%	2%	9%	1%	3%	1%
Turn Type	pm+pt	NA		pm+pt	NA		pm+pt	NA		pm+pt	NA	
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)	41.1	30.1		38.1	28.6		83.5	65.5		72.8	58.8	
Effective Green, g (s)	41.1	30.1		38.1	28.6		83.5	65.5		72.8	58.8	
Actuated g/C Ratio	0.29	0.22		0.27	0.20		0.60	0.47		0.52	0.42	
Clearance Time (s)	4.0	6.4		4.0	6.4		5.0	6.5		4.0	6.5	
Vehicle Extension (s)	3.0	5.0		3.0	5.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	194	709		166	690		592	1631		232	1427	
v/s Ratio Prot	c0.10	0.21		0.04	c0.36		0.11	c0.52		c0.12	0.41	
v/s Ratio Perm	0.26			0.13			0.37			c0.49		
v/c Ratio	1.21	1.00		0.62	1.77		0.81	1.10		1.18	0.98	
Uniform Delay, d1	43.7	54.9		41.8	55.7		43.2	37.2		45.3	40.1	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	133.1	33.4		7.0	352.9		8.3	56.0		115.2	20.4	
Delay (s)	176.8	88.4		48.8	408.6		51.5	93.2		160.5	60.5	
Level of Service	F	F		D	F		D	F		F	E	
Approach Delay (s)		108.6			381.5			84.4			76.7	
Approach LOS		F			F			F			E	

Intersection Summary

HCM 2000 Control Delay	150.1	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	1.30		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	21.9
Intersection Capacity Utilization	128.6%	ICU Level of Service	H
Analysis Period (min)	15		

c Critical Lane Group

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	126	69	124	34	52	132	281	2105	56	110	1391	111
Future Volume (vph)	126	69	124	34	52	132	281	2105	56	110	1391	111
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	15.0		0.0	15.0		0.0	0.0		0.0	30.0		0.0
Storage Lanes	1		0	1		0	1		0	1		0
Taper Length (m)	15.0			15.0			7.5			25.0		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	1.00	0.95	0.95
Ped Bike Factor	0.99	0.99		1.00	0.98			1.00			1.00	
Frt		0.904			0.893			0.996			0.989	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1787	1688	0	1805	1658	0	1805	3521	0	1805	3493	0
Flt Permitted	0.467			0.441			0.144			0.047		
Satd. Flow (perm)	872	1688	0	835	1658	0	274	3521	0	89	3493	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		57			87			3			12	
Link Speed (k/h)		50			40			60			60	
Link Distance (m)		92.7			93.5			93.1			210.6	
Travel Time (s)		6.7			8.4			5.6			12.6	
Confl. Peds. (#/hr)	8		4	4		8	8		14	14		8
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Heavy Vehicles (%)	1%	0%	1%	0%	0%	1%	0%	2%	0%	0%	2%	0%
Adj. Flow (vph)	130	71	128	35	54	136	290	2170	58	113	1434	114
Shared Lane Traffic (%)												
Lane Group Flow (vph)	130	199	0	35	190	0	290	2228	0	113	1548	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.6			3.6			7.2			7.2	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway 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
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2		1	2		1	2		1	2	
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	
Leading Detector (m)	2.0	10.0		2.0	10.0		2.0	10.0		2.0	10.0	
Trailing Detector (m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Position(m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Size(m)	2.0	0.6		2.0	0.6		2.0	0.6		2.0	0.6	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Type	Perm	NA		Perm	NA		Perm	NA		pm+pt	NA	
Protected Phases		4			8			2		1	6	
Permitted Phases	4			8			2			6		
Detector Phase	4	4		8	8		2	2		1	6	
Switch Phase												
Minimum Initial (s)	8.0	8.0		8.0	8.0		8.0	8.0		7.0	8.0	
Minimum Split (s)	40.5	40.5		40.6	40.6		26.8	26.8		11.0	26.8	
Total Split (s)	42.0	42.0		42.0	42.0		86.0	86.0		12.0	98.0	
Total Split (%)	30.0%	30.0%		30.0%	30.0%		61.4%	61.4%		8.6%	70.0%	
Maximum Green (s)	35.5	35.5		35.4	35.4		80.2	80.2		8.0	92.2	
Yellow Time (s)	3.3	3.3		3.3	3.3		3.7	3.7		3.0	3.7	
All-Red Time (s)	3.2	3.2		3.3	3.3		2.1	2.1		1.0	2.1	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)	6.5	6.5		6.6	6.6		5.8	5.8		4.0	5.8	
Lead/Lag							Lag	Lag		Lead		
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	None	None		None	None		Max	Max		None	Max	
Walk Time (s)	7.0	7.0		7.0	7.0		7.0	7.0			7.0	
Flash Dont Walk (s)	27.0	27.0		27.0	27.0		14.0	14.0			14.0	
Pedestrian Calls (#/hr)	0	0		0	0		0	0			0	
Act Effct Green (s)	21.6	21.6		21.5	21.5		80.8	80.8		94.3	92.5	
Actuated g/C Ratio	0.17	0.17		0.17	0.17		0.64	0.64		0.75	0.73	
v/c Ratio	0.88	0.59		0.25	0.54		1.66	0.99		0.66	0.60	
Control Delay	98.1	41.1		48.6	30.5		344.0	40.1		41.1	10.3	
Queue Delay	0.0	0.0		0.0	0.0		0.0	4.2		0.0	0.9	
Total Delay	98.1	41.1		48.6	30.5		344.0	44.3		41.1	11.1	
LOS	F	D		D	C		F	D		D	B	
Approach Delay		63.6			33.3			78.8			13.2	
Approach LOS		E			C			E			B	

Intersection Summary			
Area Type:	Other		
Cycle Length: 140			
Actuated Cycle Length: 126.4			
Natural Cycle: 150			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 1.66			
Intersection Signal Delay: 52.5		Intersection LOS: D	
Intersection Capacity Utilization 107.6%		ICU Level of Service G	
Analysis Period (min) 15			

Splits and Phases: 2: Appleby Line & Ironstone Dr



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	130	199	35	190	290	2228	113	1548
v/c Ratio	0.88	0.59	0.25	0.54	1.66	0.99	0.66	0.60
Control Delay	98.1	41.1	48.6	30.5	344.0	40.1	41.1	10.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	4.2	0.0	0.9
Total Delay	98.1	41.1	48.6	30.5	344.0	44.3	41.1	11.1
Queue Length 50th (m)	33.5	34.4	8.0	24.2	~64.6	282.4	11.9	89.5
Queue Length 95th (m)	58.0	59.4	18.6	48.0	#139.5	#417.8	#44.0	149.1
Internal Link Dist (m)		68.7		69.5		69.1		186.6
Turn Bay Length (m)	15.0		15.0				30.0	
Base Capacity (vph)	245	516	234	528	175	2252	175	2559
Starvation Cap Reductn	0	0	0	0	0	41	0	644
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.53	0.39	0.15	0.36	1.66	1.01	0.65	0.81

Intersection Summary

~ 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.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	126	69	124	34	52	132	281	2105	56	110	1391	111
Future Volume (vph)	126	69	124	34	52	132	281	2105	56	110	1391	111
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.5	6.5		6.6	6.6		5.8	5.8		4.0	5.8	
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	0.95		1.00	0.95	
Frpb, ped/bikes	1.00	0.99		1.00	0.99		1.00	1.00		1.00	1.00	
Flpb, ped/bikes	0.99	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Frt	1.00	0.90		1.00	0.89		1.00	1.00		1.00	0.99	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1776	1688		1799	1659		1801	3522		1805	3494	
Flt Permitted	0.47	1.00		0.44	1.00		0.14	1.00		0.05	1.00	
Satd. Flow (perm)	874	1688		835	1659		272	3522		90	3494	
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	130	71	128	35	54	136	290	2170	58	113	1434	114
RTOR Reduction (vph)	0	47	0	0	72	0	0	1	0	0	3	0
Lane Group Flow (vph)	130	152	0	35	118	0	290	2227	0	113	1545	0
Confl. Peds. (#/hr)	8		4	4		8	8		14	14		8
Heavy Vehicles (%)	1%	0%	1%	0%	0%	1%	0%	2%	0%	0%	2%	0%
Turn Type	Perm	NA		Perm	NA		Perm	NA		pm+pt	NA	
Protected Phases		4			8			2		1	6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)	21.6	21.6		21.5	21.5		80.8	80.8		92.5	92.5	
Effective Green, g (s)	21.6	21.6		21.5	21.5		80.8	80.8		92.5	92.5	
Actuated g/C Ratio	0.17	0.17		0.17	0.17		0.64	0.64		0.73	0.73	
Clearance Time (s)	6.5	6.5		6.6	6.6		5.8	5.8		4.0	5.8	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	149	288		142	282		173	2251		170	2556	
v/s Ratio Prot		0.09			0.07			0.63		0.04	c0.44	
v/s Ratio Perm	c0.15			0.04			c1.07			0.45		
v/c Ratio	0.87	0.53		0.25	0.42		1.68	0.99		0.66	0.60	
Uniform Delay, d1	51.1	47.7		45.4	46.9		22.8	22.4		37.3	8.2	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	39.0	1.7		0.9	1.0		328.2	16.6		9.4	1.1	
Delay (s)	90.0	49.5		46.3	47.9		351.0	39.0		46.7	9.2	
Level of Service	F	D		D	D		F	D		D	A	
Approach Delay (s)		65.5			47.6			74.9			11.8	
Approach LOS		E			D			E			B	

Intersection Summary

HCM 2000 Control Delay	50.8	HCM 2000 Level of Service		D		
HCM 2000 Volume to Capacity ratio	1.45					
Actuated Cycle Length (s)	126.4	Sum of lost time (s)		16.4		
Intersection Capacity Utilization	107.6%	ICU Level of Service		G		
Analysis Period (min)	15					

c Critical Lane Group

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	113	47	86	100	30	185	37	2144	110	88	1351	34
Future Volume (vph)	113	47	86	100	30	185	37	2144	110	88	1351	34
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	0.0		0.0	0.0		0.0	30.0		0.0	110.0		0.0
Storage Lanes	0		0	0		0	1		0	1		0
Taper Length (m)	7.5			7.5			40.0			25.0		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	1.00	0.95	0.95
Ped Bike Factor		0.99			0.99		1.00	1.00			1.00	
Frt		0.953			0.921			0.993			0.996	
Flt Protected		0.978			0.984		0.950			0.950		
Satd. Flow (prot)	0	1696	0	0	1689	0	1583	3514	0	1703	3484	0
Flt Permitted		0.589			0.768		0.154			0.046		
Satd. Flow (perm)	0	1020	0	0	1318	0	256	3514	0	82	3484	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		18			48			6			4	
Link Speed (k/h)		50			50			60			60	
Link Distance (m)		173.6			79.2			281.3			198.1	
Travel Time (s)		12.5			5.7			16.9			11.9	
Confl. Peds. (#/hr)	4		1	1		4	5		1	1		5
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Heavy Vehicles (%)	4%	0%	6%	1%	0%	1%	14%	2%	0%	6%	3%	8%
Adj. Flow (vph)	116	48	89	103	31	191	38	2210	113	91	1393	35
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	253	0	0	325	0	38	2323	0	91	1428	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		0.0			0.0			3.6			3.6	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway 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
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2		1	2		1	2		1	2	
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	
Leading Detector (m)	2.0	10.0		2.0	10.0		2.0	10.0		2.0	10.0	
Trailing Detector (m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Position(m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Size(m)	2.0	0.6		2.0	0.6		2.0	0.6		2.0	0.6	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Type	Perm	NA		Perm	NA		Perm	NA		pm+pt	NA	
Protected Phases		4			8			2		1	6	
Permitted Phases	4			8			2			6		
Detector Phase	4	4		8	8		2	2		1	6	
Switch Phase												
Minimum Initial (s)	8.0	8.0		8.0	8.0		8.0	8.0		7.0	8.0	
Minimum Split (s)	38.5	38.5		38.5	38.5		34.0	34.0		11.0	34.0	
Total Split (s)	39.0	39.0		39.0	39.0		89.0	89.0		12.0	101.0	
Total Split (%)	27.9%	27.9%		27.9%	27.9%		63.6%	63.6%		8.6%	72.1%	
Maximum Green (s)	32.5	32.5		32.5	32.5		83.0	83.0		8.0	95.0	
Yellow Time (s)	3.3	3.3		3.3	3.3		3.7	3.7		3.0	3.7	
All-Red Time (s)	3.2	3.2		3.2	3.2		2.3	2.3		1.0	2.3	
Lost Time Adjust (s)		0.0			0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)		6.5			6.5		6.0	6.0		4.0	6.0	
Lead/Lag							Lag	Lag		Lead		
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	None	None		None	None		Max	Max		None	Max	
Walk Time (s)	7.0	7.0		7.0	7.0		7.0	7.0			7.0	
Flash Dont Walk (s)	25.0	25.0		25.0	25.0		21.0	21.0			21.0	
Pedestrian Calls (#/hr)	0	0		0	0		0	0			0	
Act Effct Green (s)		32.5			32.5		83.3	83.3		97.0	95.0	
Actuated g/C Ratio		0.23			0.23		0.60	0.60		0.69	0.68	
v/c Ratio		1.01			0.95		0.25	1.11		0.63	0.60	
Control Delay		109.0			82.5		18.9	85.1		40.6	13.6	
Queue Delay		0.0			0.0		0.0	0.0		0.0	0.0	
Total Delay		109.0			82.5		18.9	85.1		40.6	13.6	
LOS		F			F		B	F		D	B	
Approach Delay		109.0			82.5			84.0			15.2	
Approach LOS		F			F			F			B	

Intersection Summary			
Area Type:	Other		
Cycle Length: 140			
Actuated Cycle Length: 140			
Natural Cycle: 145			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 1.11			
Intersection Signal Delay: 61.9		Intersection LOS: E	
Intersection Capacity Utilization 104.3%		ICU Level of Service G	
Analysis Period (min) 15			

Splits and Phases: 3: Appleby Line & Corporate Dr



Lane Group	EBT	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	253	325	38	2323	91	1428
v/c Ratio	1.01	0.95	0.25	1.11	0.63	0.60
Control Delay	109.0	82.5	18.9	85.1	40.6	13.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	109.0	82.5	18.9	85.1	40.6	13.6
Queue Length 50th (m)	~71.2	82.1	5.1	~408.1	9.8	110.1
Queue Length 95th (m)	#130.6	#144.4	13.2	#450.0	#31.8	129.7
Internal Link Dist (m)	149.6	55.2		257.3		174.1
Turn Bay Length (m)			30.0		110.0	
Base Capacity (vph)	250	342	152	2094	149	2365
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	1.01	0.95	0.25	1.11	0.61	0.60

Intersection Summary

~ 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.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	113	47	86	100	30	185	37	2144	110	88	1351	34
Future Volume (vph)	113	47	86	100	30	185	37	2144	110	88	1351	34
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		6.5			6.5		6.0	6.0		4.0	6.0	
Lane Util. Factor		1.00			1.00		1.00	0.95		1.00	0.95	
Frpb, ped/bikes		1.00			0.99		1.00	1.00		1.00	1.00	
Flpb, ped/bikes		1.00			1.00		1.00	1.00		1.00	1.00	
Frt		0.95			0.92		1.00	0.99		1.00	1.00	
Flt Protected		0.98			0.98		0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1692			1689		1581	3513		1703	3485	
Flt Permitted		0.59			0.77		0.15	1.00		0.05	1.00	
Satd. Flow (perm)		1020			1318		256	3513		82	3485	
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	116	48	89	103	31	191	38	2210	113	91	1393	35
RTOR Reduction (vph)	0	14	0	0	37	0	0	2	0	0	1	0
Lane Group Flow (vph)	0	239	0	0	288	0	38	2321	0	91	1427	0
Confl. Peds. (#/hr)	4		1	1		4	5		1	1		5
Heavy Vehicles (%)	4%	0%	6%	1%	0%	1%	14%	2%	0%	6%	3%	8%
Turn Type	Perm	NA		Perm	NA		Perm	NA		pm+pt	NA	
Protected Phases		4			8			2		1	6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)		32.5			32.5		83.3	83.3		95.0	95.0	
Effective Green, g (s)		32.5			32.5		83.3	83.3		95.0	95.0	
Actuated g/C Ratio		0.23			0.23		0.59	0.59		0.68	0.68	
Clearance Time (s)		6.5			6.5		6.0	6.0		4.0	6.0	
Vehicle Extension (s)		3.0			3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)		236			305		152	2090		144	2364	
v/s Ratio Prot								c0.66		0.03	c0.41	
v/s Ratio Perm		c0.23			0.22		0.15			0.39		
v/c Ratio		1.01			0.94		0.25	1.11		0.63	0.60	
Uniform Delay, d1		53.8			52.9		13.5	28.4		36.6	12.2	
Progression Factor		1.00			1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2		62.1			36.8		3.9	57.2		8.7	1.2	
Delay (s)		115.8			89.7		17.4	85.5		45.4	13.4	
Level of Service		F			F		B	F		D	B	
Approach Delay (s)		115.8			89.7			84.4			15.3	
Approach LOS		F			F			F			B	

Intersection Summary

HCM 2000 Control Delay	63.0	HCM 2000 Level of Service	E
HCM 2000 Volume to Capacity ratio	1.06		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	16.5
Intersection Capacity Utilization	104.3%	ICU Level of Service	G
Analysis Period (min)	15		

c Critical Lane Group

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	260	112	0	1	86	117	1	3	5	77	5	64
Future Volume (vph)	260	112	0	1	86	117	1	3	5	77	5	64
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	0.0		0.0	0.0		0.0	0.0		0.0	20.0		0.0
Storage Lanes	0		0	0		0	0		0	1		0
Taper Length (m)	7.5			7.5			7.5			20.0		
Lane Util. 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
Ped Bike Factor												
Frt					0.923			0.925			0.860	
Flt Protected		0.966						0.994		0.950		
Satd. Flow (prot)	0	1733	0	0	1644	0	0	1367	0	1736	1502	0
Flt Permitted		0.966						0.994		0.950		
Satd. Flow (perm)	0	1733	0	0	1644	0	0	1367	0	1736	1502	0
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		83.4			35.0			72.0			78.5	
Travel Time (s)		6.0			2.5			5.2			5.7	
Confl. Peds. (#/hr)	2					2			2	2		
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Heavy Vehicles (%)	5%	8%	0%	0%	9%	5%	100%	50%	0%	4%	33%	7%
Adj. Flow (vph)	274	118	0	1	91	123	1	3	5	81	5	67
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	392	0	0	215	0	0	9	0	81	72	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		0.0			0.0			0.0			3.6	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway 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
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Sign Control		Free			Free			Stop			Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	53.2%	ICU Level of Service A	
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	260	112	0	1	86	117	1	3	5	77	5	64
Future Volume (Veh/h)	260	112	0	1	86	117	1	3	5	77	5	64
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	274	118	0	1	91	123	1	3	5	81	5	67
Pedestrians					2						2	
Lane Width (m)					3.6						3.6	
Walking Speed (m/s)					1.2						1.2	
Percent Blockage					0						0	
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (m)					203							
pX, platoon unblocked												
vC, conflicting volume	216			118			890	884	120	831	822	154
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	216			118			890	884	120	831	822	154
tC, single (s)	4.1			4.1			8.1	7.0	6.2	7.1	6.8	6.3
tC, 2 stage (s)												
tF (s)	2.2			2.2			4.4	4.5	3.3	3.5	4.3	3.4
p0 queue free %	79			100			99	98	99	66	98	92
cM capacity (veh/h)	1334			1483			138	189	935	236	219	877

Direction, Lane #	EB 1	WB 1	NB 1	SB 1	SB 2
Volume Total	392	215	9	81	72
Volume Left	274	1	1	81	0
Volume Right	0	123	5	0	67
cSH	1334	1483	316	236	726
Volume to Capacity	0.21	0.00	0.03	0.34	0.10
Queue Length 95th (m)	6.2	0.0	0.7	11.7	2.6
Control Delay (s)	6.4	0.0	16.7	28.0	10.5
Lane LOS	A	A	C	D	B
Approach Delay (s)	6.4	0.0	16.7	19.8	
Approach LOS			C	C	

Intersection Summary					
Average Delay	7.4				
Intersection Capacity Utilization	53.2%	ICU Level of Service	A		
Analysis Period (min)	15				

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	28	114	56	119	209	116	37	0	85	119	0	15
Future Volume (vph)	28	114	56	119	209	116	37	0	85	119	0	15
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Util. 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
Frt		0.962			0.965			0.906			0.985	
Flt Protected		0.993			0.987			0.985			0.957	
Satd. Flow (prot)	0	1779	0	0	1774	0	0	1662	0	0	1756	0
Flt Permitted		0.993			0.987			0.985			0.957	
Satd. Flow (perm)	0	1779	0	0	1774	0	0	1662	0	0	1756	0
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		75.5			92.7			42.4			48.0	
Travel Time (s)		5.4			6.7			3.1			3.5	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	30	124	61	129	227	126	40	0	92	129	0	16
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	215	0	0	482	0	0	132	0	0	145	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		0.0			3.6			0.0			0.0	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway 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
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Sign Control		Free			Free			Stop			Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	59.8%	ICU Level of Service	B
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	28	114	56	119	209	116	37	0	85	119	0	15
Future Volume (Veh/h)	28	114	56	119	209	116	37	0	85	119	0	15
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	30	124	61	129	227	126	40	0	92	129	0	16
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (m)					93							
pX, platoon unblocked	0.93						0.93	0.93		0.93	0.93	0.93
vC, conflicting volume	353			185			778	826	154	854	793	290
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	270			185			726	777	154	808	742	202
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	98			91			86	100	90	43	100	98
cM capacity (veh/h)	1206			1390			283	271	891	228	284	782

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	215	482	132	145
Volume Left	30	129	40	129
Volume Right	61	126	92	16
cSH	1206	1390	540	248
Volume to Capacity	0.02	0.09	0.24	0.59
Queue Length 95th (m)	0.6	2.5	7.6	26.9
Control Delay (s)	1.3	2.8	13.8	38.2
Lane LOS	A	A	B	E
Approach Delay (s)	1.3	2.8	13.8	38.2
Approach LOS			B	E

Intersection Summary				
Average Delay		9.2		
Intersection Capacity Utilization		59.8%	ICU Level of Service	B
Analysis Period (min)		15		

Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	0	150	0	2442	1495	54
Future Volume (vph)	0	150	0	2442	1495	54
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	0.91	0.95	0.95
Frt		0.865			0.995	
Flt Protected						
Satd. Flow (prot)	0	1611	0	5085	3522	0
Flt Permitted						
Satd. Flow (perm)	0	1611	0	5085	3522	0
Link Speed (k/h)	50			60	60	
Link Distance (m)	60.4			36.6	93.1	
Travel Time (s)	4.3			2.2	5.6	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	163	0	2654	1625	59
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	163	0	2654	1684	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	0.0			3.6	3.6	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	4.8			4.8	4.8	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)	25	15	25			15
Sign Control	Stop			Free	Free	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	59.0%	ICU Level of Service	B
Analysis Period (min)	15		

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	0	150	0	2442	1495	54
Future Volume (Veh/h)	0	150	0	2442	1495	54
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	163	0	2654	1625	59
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	None	
Median storage veh)						
Upstream signal (m)				235	93	
pX, platoon unblocked	0.57	0.78	0.78			
vC, conflicting volume	2539	842	1684			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	0	246	1321			
tC, single (s)	6.8	6.9	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	100	72	100			
cM capacity (veh/h)	578	591	407			

Direction, Lane #	EB 1	NB 1	NB 2	NB 3	SB 1	SB 2
Volume Total	163	885	885	885	1083	601
Volume Left	0	0	0	0	0	0
Volume Right	163	0	0	0	0	59
cSH	591	1700	1700	1700	1700	1700
Volume to Capacity	0.28	0.52	0.52	0.52	0.64	0.35
Queue Length 95th (m)	9.0	0.0	0.0	0.0	0.0	0.0
Control Delay (s)	13.4	0.0	0.0	0.0	0.0	0.0
Lane LOS	B					
Approach Delay (s)	13.4	0.0			0.0	
Approach LOS	B					

Intersection Summary				
Average Delay	0.5			
Intersection Capacity Utilization	59.0%	ICU Level of Service		B
Analysis Period (min)	15			

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	174	20	71	190	14	24
Future Volume (vph)	174	20	71	190	14	24
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.986				0.914	
Flt Protected				0.987	0.982	
Satd. Flow (prot)	1837	0	0	1839	1672	0
Flt Permitted				0.987	0.982	
Satd. Flow (perm)	1837	0	0	1839	1672	0
Link Speed (k/h)	50			50	50	
Link Distance (m)	35.0			75.5	38.8	
Travel Time (s)	2.5			5.4	2.8	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	189	22	77	207	15	26
Shared Lane Traffic (%)						
Lane Group Flow (vph)	211	0	0	284	41	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	0.0			0.0	3.6	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	4.8			4.8	4.8	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)		15	25		25	15
Sign Control	Free			Free	Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 37.6%		ICU Level of Service A	
Analysis Period (min) 15			

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	174	20	71	190	14	24
Future Volume (Veh/h)	174	20	71	190	14	24
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	189	22	77	207	15	26
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (m)				168		
pX, platoon unblocked						
vC, conflicting volume			211		561	200
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			211		561	200
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			94		97	97
cM capacity (veh/h)			1360		461	841

Direction, Lane #	EB 1	WB 1	NB 1
Volume Total	211	284	41
Volume Left	0	77	15
Volume Right	22	0	26
cSH	1700	1360	646
Volume to Capacity	0.12	0.06	0.06
Queue Length 95th (m)	0.0	1.4	1.6
Control Delay (s)	0.0	2.5	10.9
Lane LOS		A	B
Approach Delay (s)	0.0	2.5	10.9
Approach LOS			B

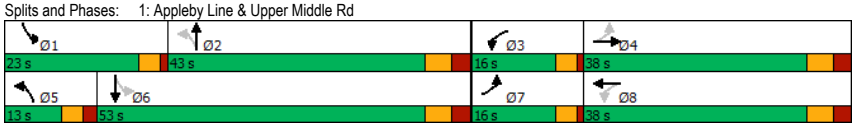
Intersection Summary			
Average Delay	2.2		
Intersection Capacity Utilization	37.6%	ICU Level of Service	A
Analysis Period (min)	15		

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	192	922	356	250	301	220	178	970	103	342	1489	64
Future Volume (vph)	192	922	356	250	301	220	178	970	103	342	1489	64
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	45.0		0.0	120.0		0.0	80.0		0.0	40.0		0.0
Storage Lanes	1		0	1		0	2		0	1		0
Taper Length (m)	30.0			20.0			40.0			35.0		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	0.95	0.97	0.95	0.95	1.00	0.95	0.95
Ped Bike Factor	1.00	0.99			0.99			1.00			1.00	
Frt		0.958			0.937			0.986			0.994	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1752	3378	0	1752	3243	0	3367	3341	0	1736	3435	0
Flt Permitted	0.317			0.125			0.110			0.099		
Satd. Flow (perm)	582	3378	0	231	3243	0	390	3341	0	181	3435	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		46			149			10			4	
Link Speed (k/h)		60			60			60			60	
Link Distance (m)		184.7			208.3			210.6			231.6	
Travel Time (s)		11.1			12.5			12.6			13.9	
Confl. Peds. (#/hr)	9		21	21		9	10		11	11		10
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Heavy Vehicles (%)	3%	1%	2%	3%	2%	5%	4%	6%	9%	4%	4%	13%
Adj. Flow (vph)	198	951	367	258	310	227	184	1000	106	353	1535	66
Shared Lane Traffic (%)												
Lane Group Flow (vph)	198	1318	0	258	537	0	184	1106	0	353	1601	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.6			3.6			7.2			7.2	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway 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
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2		1	2		1	2		1	2	
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	
Leading Detector (m)	2.0	10.0		2.0	10.0		2.0	10.0		2.0	10.0	
Trailing Detector (m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Position(m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Size(m)	2.0	0.6		2.0	0.6		2.0	0.6		2.0	0.6	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Type	pm+pt	NA		pm+pt	NA		pm+pt	NA		pm+pt	NA	
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4			8			2			6		
Detector Phase	7	4		3	8		5	2		1	6	
Switch Phase												
Minimum Initial (s)	7.0	8.0		7.0	8.0		7.0	8.0		7.0	8.0	
Minimum Split (s)	11.0	34.4		11.0	34.4		12.0	34.5		11.0	34.5	
Total Split (s)	16.0	38.0		16.0	38.0		13.0	43.0		23.0	53.0	
Total Split (%)	13.3%	31.7%		13.3%	31.7%		10.8%	35.8%		19.2%	44.2%	
Maximum Green (s)	12.0	31.6		12.0	31.6		8.0	36.5		19.0	46.5	
Yellow Time (s)	3.0	3.7		3.0	3.7		3.0	3.7		3.0	3.7	
All-Red Time (s)	1.0	2.7		1.0	2.7		2.0	2.8		1.0	2.8	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)	4.0	6.4		4.0	6.4		5.0	6.5		4.0	6.5	
Lead/Lag	Lead	Lag		Lead	Lag		Lead	Lag		Lead	Lag	
Lead-Lag Optimize?	Yes	Yes		Yes	Yes		Yes	Yes		Yes	Yes	
Vehicle Extension (s)	3.0	5.0		3.0	5.0		3.0	3.0		3.0	3.0	
Recall Mode	None	None		None	None		None	Max		None	Max	
Walk Time (s)		7.0			7.0			7.0			7.0	
Flash Dont Walk (s)		21.0			21.0			21.0			21.0	
Pedestrian Calls (#/hr)		0			0			0			0	
Act Effct Green (s)	45.5	31.6		46.5	32.1		45.8	36.5		62.0	46.7	
Actuated g/C Ratio	0.38	0.26		0.39	0.27		0.38	0.30		0.52	0.39	
v/c Ratio	0.59	1.43		1.07	0.55		0.54	1.08		1.04	1.20	
Control Delay	31.5	232.1		108.2	29.3		23.7	92.3		93.5	129.7	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	31.5	232.1		108.2	29.3		23.7	92.3		93.5	129.7	
LOS	C	F		F	C		C	F		F	F	
Approach Delay		205.9			54.9			82.5			123.1	
Approach LOS		F			D			F			F	

Intersection Summary			
Area Type:	Other		
Cycle Length: 120			
Actuated Cycle Length: 120			
Natural Cycle: 145			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 1.43			
Intersection Signal Delay: 126.5		Intersection LOS: F	
Intersection Capacity Utilization 118.6%		ICU Level of Service H	
Analysis Period (min) 15			

Splits and Phases: 1: Appleby Line & Upper Middle Rd



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	198	1318	258	537	184	1106	353	1601
v/c Ratio	0.59	1.43	1.07	0.55	0.54	1.08	1.04	1.20
Control Delay	31.5	232.1	108.2	29.3	23.7	92.3	93.5	129.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	31.5	232.1	108.2	29.3	23.7	92.3	93.5	129.7
Queue Length 50th (m)	31.8	~229.5	~53.7	43.5	11.8	~160.7	~77.3	~254.5
Queue Length 95th (m)	50.0	#274.5	#108.8	62.1	18.1	#204.6	#138.7	#300.0
Internal Link Dist (m)		160.7		184.3		186.6		207.6
Turn Bay Length (m)	45.0		120.0		80.0		40.0	
Base Capacity (vph)	340	923	241	975	347	1023	339	1338
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.58	1.43	1.07	0.55	0.53	1.08	1.04	1.20

Intersection Summary

~ 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.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	192	922	356	250	301	220	178	970	103	342	1489	64
Future Volume (vph)	192	922	356	250	301	220	178	970	103	342	1489	64
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	6.4		4.0	6.4		5.0	6.5		4.0	6.5	
Lane Util. Factor	1.00	0.95		1.00	0.95		0.97	0.95		1.00	0.95	
Frpb, ped/bikes	1.00	0.99		1.00	0.99		1.00	1.00		1.00	1.00	
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Frt	1.00	0.96		1.00	0.94		1.00	0.99		1.00	0.99	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1750	3379		1752	3242		3367	3339		1736	3434	
Flt Permitted	0.32	1.00		0.12	1.00		0.11	1.00		0.10	1.00	
Satd. Flow (perm)	583	3379		230	3242		388	3339		180	3434	
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	198	951	367	258	310	227	184	1000	106	353	1535	66
RTOR Reduction (vph)	0	34	0	0	109	0	0	7	0	0	2	0
Lane Group Flow (vph)	198	1284	0	258	428	0	184	1099	0	353	1599	0
Confl. Peds. (#/hr)	9		21	21		9	10		11	11		10
Heavy Vehicles (%)	3%	1%	2%	3%	2%	5%	4%	6%	9%	4%	4%	13%
Turn Type	pm+pt	NA		pm+pt	NA		pm+pt	NA		pm+pt	NA	
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)	43.1	31.6		44.1	32.1		44.3	36.5		59.5	46.7	
Effective Green, g (s)	43.1	31.6		44.1	32.1		44.3	36.5		59.5	46.7	
Actuated g/C Ratio	0.36	0.26		0.37	0.27		0.37	0.30		0.50	0.39	
Clearance Time (s)	4.0	6.4		4.0	6.4		5.0	6.5		4.0	6.5	
Vehicle Extension (s)	3.0	5.0		3.0	5.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	321	889		236	867		336	1015		335	1336	
v/s Ratio Prot	0.06	c0.38		c0.11	0.13		0.04	0.33		c0.17	c0.47	
v/s Ratio Perm	0.16			0.29			0.17			0.35		
v/c Ratio	0.62	1.44		1.09	0.49		0.55	1.08		1.05	1.20	
Uniform Delay, d1	28.3	44.2		32.1	37.1		29.9	41.8		37.4	36.6	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	3.5	206.4		85.7	0.9		1.8	53.4		64.0	96.0	
Delay (s)	31.8	250.6		117.8	38.0		31.7	95.2		101.4	132.6	
Level of Service	C	F		F	D		C	F		F	F	
Approach Delay (s)		222.0			63.9			86.1			127.0	
Approach LOS		F			E			F			F	

Intersection Summary					
HCM 2000 Control Delay	134.4	HCM 2000 Level of Service		F	
HCM 2000 Volume to Capacity ratio	1.28				
Actuated Cycle Length (s)	120.0	Sum of lost time (s)		21.9	
Intersection Capacity Utilization	118.6%	ICU Level of Service		H	
Analysis Period (min)	15				

c Critical Lane Group

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	96	33	186	93	69	146	159	1058	18	46	2134	76
Future Volume (vph)	96	33	186	93	69	146	159	1058	18	46	2134	76
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	15.0		0.0	15.0		0.0	0.0		0.0	30.0		0.0
Storage Lanes	1		0	1		0	1		0	1		0
Taper Length (m)	15.0			15.0			7.5			25.0		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	1.00	0.95	0.95
Ped Bike Factor	1.00	0.99		1.00	0.99			1.00			1.00	
Frt		0.872			0.898			0.997			0.995	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1671	1528	0	1805	1656	0	1687	3419	0	1656	3485	0
Flt Permitted	0.449			0.437			0.063			0.183		
Satd. Flow (perm)	789	1528	0	827	1656	0	112	3419	0	319	3485	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		6			90			2			5	
Link Speed (k/h)		50			40			60			60	
Link Distance (m)		92.7			93.5			93.1			210.6	
Travel Time (s)		6.7			8.4			5.6			12.6	
Confl. Peds. (#/hr)	2		5	5		2	2		10	2		10
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Heavy Vehicles (%)	8%	6%	7%	0%	0%	3%	7%	5%	15%	9%	3%	0%
Adj. Flow (vph)	100	34	194	97	72	152	166	1102	19	48	2223	79
Shared Lane Traffic (%)												
Lane Group Flow (vph)	100	228	0	97	224	0	166	1121	0	48	2302	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.6			3.6			7.2			7.2	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway 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
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2		1	2		1	2		1	2	
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	
Leading Detector (m)	2.0	10.0		2.0	10.0		2.0	10.0		2.0	10.0	
Trailing Detector (m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Position(m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Size(m)	2.0	0.6		2.0	0.6		2.0	0.6		2.0	0.6	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Type	Perm	NA		Perm	NA		Perm	NA		pm+pt	NA	
Protected Phases		4			8			2		1	6	
Permitted Phases	4			8			2			6		
Detector Phase	4	4		8	8		2	2		1	6	
Switch Phase												
Minimum Initial (s)	8.0	8.0		8.0	8.0		8.0	8.0		7.0	8.0	
Minimum Split (s)	40.5	40.5		40.6	40.6		26.8	26.8		11.0	26.8	
Total Split (s)	42.0	42.0		42.0	42.0		66.0	66.0		12.0	78.0	
Total Split (%)	35.0%	35.0%		35.0%	35.0%		55.0%	55.0%		10.0%	65.0%	
Maximum Green (s)	35.5	35.5		35.4	35.4		60.2	60.2		8.0	72.2	
Yellow Time (s)	3.3	3.3		3.3	3.3		3.7	3.7		3.0	3.7	
All-Red Time (s)	3.2	3.2		3.3	3.3		2.1	2.1		1.0	2.1	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)	6.5	6.5		6.6	6.6		5.8	5.8		4.0	5.8	
Lead/Lag							Lag	Lag		Lead		
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	None	None		None	None		Max	Max		None	Max	
Walk Time (s)	7.0	7.0		7.0	7.0		7.0	7.0			7.0	
Flash Dont Walk (s)	27.0	27.0		27.0	27.0		14.0	14.0			14.0	
Pedestrian Calls (#/hr)	0	0		0	0		0	0			0	
Act Effct Green (s)	20.4	20.4		20.3	20.3		63.6	63.6		74.2	72.4	
Actuated g/C Ratio	0.19	0.19		0.19	0.19		0.61	0.61		0.71	0.69	
v/c Ratio	0.66	0.76		0.61	0.57		2.48	0.54		0.15	0.96	
Control Delay	59.3	55.3		55.2	28.1		718.6	15.0		7.0	27.7	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	29.8	
Total Delay	59.3	55.3		55.2	28.1		718.6	15.0		7.0	57.5	
LOS	E	E		E	C		F	B		A	E	
Approach Delay		56.5			36.3			105.8			56.5	
Approach LOS		E			D			F			E	

Intersection Summary			
Area Type:	Other		
Cycle Length: 120			
Actuated Cycle Length: 105.1			
Natural Cycle: 150			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 2.48			
Intersection Signal Delay: 69.8		Intersection LOS: E	
Intersection Capacity Utilization 113.4%		ICU Level of Service H	
Analysis Period (min) 15			

Splits and Phases: 2: Appleby Line & Ironstone Dr



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	100	228	97	224	166	1121	48	2302
v/c Ratio	0.66	0.76	0.61	0.57	2.48	0.54	0.15	0.96
Control Delay	59.3	55.3	55.2	28.1	718.6	15.0	7.0	27.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	29.8
Total Delay	59.3	55.3	55.2	28.1	718.6	15.0	7.0	57.5
Queue Length 50th (m)	20.0	45.5	19.2	25.7	~46.4	73.2	2.7	210.7
Queue Length 95th (m)	39.0	72.3	37.1	49.9	#98.7	114.5	8.1	#351.5
Internal Link Dist (m)		68.7		69.5		69.1		186.6
Turn Bay Length (m)	15.0		15.0				30.0	
Base Capacity (vph)	267	521	279	618	67	2069	327	2402
Starvation Cap Reductn	0	0	0	0	0	0	0	246
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.37	0.44	0.35	0.36	2.48	0.54	0.15	1.07

Intersection Summary

~ 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.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	96	33	186	93	69	146	159	1058	18	46	2134	76
Future Volume (vph)	96	33	186	93	69	146	159	1058	18	46	2134	76
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.5	6.5		6.6	6.6		5.8	5.8		4.0	5.8	
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	0.95		1.00	0.95	
Frpb, ped/bikes	1.00	0.99		1.00	0.99		1.00	1.00		1.00	1.00	
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Frt	1.00	0.87		1.00	0.90		1.00	1.00		1.00	0.99	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1669	1529		1799	1657		1687	3421		1656	3485	
Flt Permitted	0.45	1.00		0.44	1.00		0.06	1.00		0.18	1.00	
Satd. Flow (perm)	789	1529		827	1657		112	3421		319	3485	
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	100	34	194	97	72	152	166	1102	19	48	2223	79
RTOR Reduction (vph)	0	5	0	0	73	0	0	1	0	0	2	0
Lane Group Flow (vph)	100	223	0	97	151	0	166	1120	0	48	2300	0
Confl. Peds. (#/hr)	2		5	5		2	2		10	2		10
Heavy Vehicles (%)	8%	6%	7%	0%	0%	3%	7%	5%	15%	9%	3%	0%
Turn Type	Perm	NA		Perm	NA		Perm	NA		pm+pt	NA	
Protected Phases		4			8			2		1	6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)	20.4	20.4		20.3	20.3		63.6	63.6		73.3	73.3	
Effective Green, g (s)	20.4	20.4		20.3	20.3		63.6	63.6		73.3	73.3	
Actuated g/C Ratio	0.19	0.19		0.19	0.19		0.60	0.60		0.69	0.69	
Clearance Time (s)	6.5	6.5		6.6	6.6		5.8	5.8		4.0	5.8	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	151	294		158	317		67	2052		292	2409	
v/s Ratio Prot		c0.15			0.09			0.33		0.01	c0.66	
v/s Ratio Perm	0.13			0.12			c1.49			0.10		
v/c Ratio	0.66	0.76		0.61	0.48		2.48	0.55		0.16	0.95	
Uniform Delay, d1	39.6	40.5		39.3	38.1		21.2	12.6		7.1	14.9	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	10.4	10.7		6.9	1.1		707.3	1.0		0.3	10.5	
Delay (s)	50.0	51.2		46.2	39.3		728.5	13.7		7.3	25.3	
Level of Service	D	D		D	D		F	B		A	C	
Approach Delay (s)		50.8			41.3			105.9			24.9	
Approach LOS		D			D			F			C	

Intersection Summary

HCM 2000 Control Delay	52.4	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	2.00		
Actuated Cycle Length (s)	106.0	Sum of lost time (s)	16.4
Intersection Capacity Utilization	113.4%	ICU Level of Service	H
Analysis Period (min)	15		

c Critical Lane Group

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	22	9	30	145	25	146	39	1067	52	62	2295	47
Future Volume (vph)	22	9	30	145	25	146	39	1067	52	62	2295	47
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	0.0		0.0	0.0		0.0	30.0		0.0	110.0		0.0
Storage Lanes	0		0	0		0	1		0	1		0
Taper Length (m)	7.5			7.5			40.0			25.0		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	1.00	0.95	0.95
Ped Bike Factor		0.99			1.00			1.00			1.00	
Frt		0.932			0.938			0.993			0.997	
Flt Protected		0.983			0.978		0.950			0.950		
Satd. Flow (prot)	0	1420	0	0	1711	0	1687	3380	0	1570	3460	0
Flt Permitted		0.815			0.823		0.063			0.165		
Satd. Flow (perm)	0	1177	0	0	1439	0	112	3380	0	273	3460	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		5			36			6			3	
Link Speed (k/h)		50			50			60			60	
Link Distance (m)		173.6			79.2			281.3			198.1	
Travel Time (s)		12.5			5.7			16.9			11.9	
Confl. Peds. (#/hr)			2	2			1		2	2		1
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Heavy Vehicles (%)	19%	0%	30%	0%	0%	4%	7%	6%	5%	15%	4%	3%
Adj. Flow (vph)	22	9	31	148	26	149	40	1089	53	63	2342	48
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	62	0	0	323	0	40	1142	0	63	2390	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		0.0			0.0			3.6			3.6	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway 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
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2		1	2		1	2		1	2	
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	
Leading Detector (m)	2.0	10.0		2.0	10.0		2.0	10.0		2.0	10.0	
Trailing Detector (m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Position(m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Size(m)	2.0	0.6		2.0	0.6		2.0	0.6		2.0	0.6	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Type	Perm	NA		Perm	NA		Perm	NA		pm+pt	NA	
Protected Phases		4			8			2		1	6	
Permitted Phases	4			8			2			6		
Detector Phase	4	4		8	8		2	2		1	6	
Switch Phase												
Minimum Initial (s)	8.0	8.0		8.0	8.0		8.0	8.0		7.0	8.0	
Minimum Split (s)	38.5	38.5		38.5	38.5		34.0	34.0		11.0	34.0	
Total Split (s)	42.0	42.0		42.0	42.0		66.0	66.0		12.0	78.0	
Total Split (%)	35.0%	35.0%		35.0%	35.0%		55.0%	55.0%		10.0%	65.0%	
Maximum Green (s)	35.5	35.5		35.5	35.5		60.0	60.0		8.0	72.0	
Yellow Time (s)	3.3	3.3		3.3	3.3		3.7	3.7		3.0	3.7	
All-Red Time (s)	3.2	3.2		3.2	3.2		2.3	2.3		1.0	2.3	
Lost Time Adjust (s)		0.0			0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)		6.5			6.5		6.0	6.0		4.0	6.0	
Lead/Lag							Lag	Lag		Lead		
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	None	None		None	None		Max	Max		None	Max	
Walk Time (s)	7.0	7.0		7.0	7.0		7.0	7.0			7.0	
Flash Dont Walk (s)	25.0	25.0		25.0	25.0		21.0	21.0			21.0	
Pedestrian Calls (#/hr)	0	0		0	0		0	0			0	
Act Effct Green (s)		26.9			26.9		63.2	63.2		74.3	72.2	
Actuated g/C Ratio		0.24			0.24		0.57	0.57		0.67	0.65	
v/c Ratio		0.22			0.86		0.63	0.60		0.24	1.07	
Control Delay		32.4			58.4		69.8	19.4		10.2	61.7	
Queue Delay		0.0			0.0		0.0	0.0		0.0	0.0	
Total Delay		32.4			58.4		69.8	19.4		10.2	61.7	
LOS		C			E		E	B		B	E	
Approach Delay		32.4			58.4			21.1			60.3	
Approach LOS		C			E			C			E	

Intersection Summary			
Area Type:	Other		
Cycle Length: 120			
Actuated Cycle Length: 111.7			
Natural Cycle: 135			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 1.07			
Intersection Signal Delay: 48.2		Intersection LOS: D	
Intersection Capacity Utilization 100.3%		ICU Level of Service G	
Analysis Period (min) 15			

Splits and Phases: 3: Appleby Line & Corporate Dr



Lane Group	EBT	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	62	323	40	1142	63	2390
v/c Ratio	0.22	0.86	0.63	0.60	0.24	1.07
Control Delay	32.4	58.4	69.8	19.4	10.2	61.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	32.4	58.4	69.8	19.4	10.2	61.7
Queue Length 50th (m)	10.5	64.0	6.3	91.0	4.7	~325.1
Queue Length 95th (m)	22.3	99.8	#30.4	132.9	11.8	#411.4
Internal Link Dist (m)	149.6	55.2		257.3		174.1
Turn Bay Length (m)			30.0		110.0	
Base Capacity (vph)	378	483	63	1916	274	2239
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.16	0.67	0.63	0.60	0.23	1.07

Intersection Summary

~ 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.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	22	9	30	145	25	146	39	1067	52	62	2295	47
Future Volume (vph)	22	9	30	145	25	146	39	1067	52	62	2295	47
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		6.5			6.5		6.0	6.0		4.0	6.0	
Lane Util. Factor		1.00			1.00		1.00	0.95		1.00	0.95	
Frpb, ped/bikes		0.99			1.00		1.00	1.00		1.00	1.00	
Flpb, ped/bikes		1.00			1.00		1.00	1.00		1.00	1.00	
Frt		0.93			0.94		1.00	0.99		1.00	1.00	
Flt Protected		0.98			0.98		0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1420			1709		1687	3380		1569	3460	
Flt Permitted		0.81			0.82		0.06	1.00		0.16	1.00	
Satd. Flow (perm)		1177			1438		112	3380		272	3460	
Peak-hour factor, PHF	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Adj. Flow (vph)	22	9	31	148	26	149	40	1089	53	63	2342	48
RTOR Reduction (vph)	0	4	0	0	27	0	0	3	0	0	1	0
Lane Group Flow (vph)	0	58	0	0	296	0	40	1139	0	63	2389	0
Confl. Peds. (#/hr)			2	2			1		2	2		1
Heavy Vehicles (%)	19%	0%	30%	0%	0%	4%	7%	6%	5%	15%	4%	3%
Turn Type	Perm	NA		Perm	NA		Perm	NA		pm+pt	NA	
Protected Phases		4			8			2		1	6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)		26.9			26.9		63.3	63.3		73.2	73.2	
Effective Green, g (s)		26.9			26.9		63.3	63.3		73.2	73.2	
Actuated g/C Ratio		0.24			0.24		0.56	0.56		0.65	0.65	
Clearance Time (s)		6.5			6.5		6.0	6.0		4.0	6.0	
Vehicle Extension (s)		3.0			3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)		281			343		62	1900		244	2249	
v/s Ratio Prot								0.34		0.01	c0.69	
v/s Ratio Perm		0.05			c0.21		0.36			0.15		
v/c Ratio		0.21			0.86		0.65	0.60		0.26	1.06	
Uniform Delay, d1		34.3			41.1		16.9	16.3		9.9	19.7	
Progression Factor		1.00			1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2		0.4			19.4		41.8	1.4		0.6	38.1	
Delay (s)		34.7			60.4		58.8	17.7		10.5	57.8	
Level of Service		C			E		E	B		B	E	
Approach Delay (s)		34.7			60.4			19.1			56.5	
Approach LOS		C			E			B			E	

Intersection Summary

HCM 2000 Control Delay	45.5	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	1.05		
Actuated Cycle Length (s)	112.6	Sum of lost time (s)	16.5
Intersection Capacity Utilization	100.3%	ICU Level of Service	G
Analysis Period (min)	15		

c Critical Lane Group

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	57	76	0	0	80	35	1	1	0	168	15	142
Future Volume (vph)	57	76	0	0	80	35	1	1	0	168	15	142
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	0.0		0.0	0.0		0.0	0.0		0.0	20.0		0.0
Storage Lanes	0		0	0		0	0		0	1		0
Taper Length (m)	7.5			7.5			7.5			20.0		
Lane Util. 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
Ped Bike Factor												
Frt					0.959						0.865	
Flt Protected		0.979						0.976		0.950		
Satd. Flow (prot)	0	1347	0	0	1540	0	0	1854	0	1805	1573	0
Flt Permitted		0.979						0.976		0.950		
Satd. Flow (perm)	0	1347	0	0	1540	0	0	1854	0	1805	1573	0
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		83.4			35.1			72.0			78.5	
Travel Time (s)		6.0			2.5			5.2			5.7	
Confl. Peds. (#/hr)							1		2	2		1
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	29%	45%	0%	0%	22%	10%	0%	0%	0%	0%	0%	5%
Adj. Flow (vph)	63	84	0	0	89	39	1	1	0	187	17	158
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	147	0	0	128	0	0	2	0	187	175	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		0.0			0.0			0.0			3.6	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway 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
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Sign Control		Free			Free			Stop			Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	36.5%	ICU Level of Service A	
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	57	76	0	0	80	35	1	1	0	168	15	142
Future Volume (Veh/h)	57	76	0	0	80	35	1	1	0	168	15	142
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	63	84	0	0	89	39	1	1	0	187	17	158
Pedestrians		1			2							
Lane Width (m)		3.6			3.6							
Walking Speed (m/s)		1.2			1.2							
Percent Blockage		0			0							
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (m)					203							
pX, platoon unblocked												
vC, conflicting volume	128			84			486	338	86	321	318	110
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	128			84			486	338	86	321	318	110
tC, single (s)	4.4			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.5			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	95			100			100	100	100	69	97	83
cM capacity (veh/h)	1307			1526			387	558	977	611	572	935

Direction, Lane #	EB 1	WB 1	NB 1	SB 1	SB 2
Volume Total	147	128	2	187	175
Volume Left	63	0	1	187	0
Volume Right	0	39	0	0	158
cSH	1307	1526	457	611	881
Volume to Capacity	0.05	0.00	0.00	0.31	0.20
Queue Length 95th (m)	1.2	0.0	0.1	10.3	5.9
Control Delay (s)	3.6	0.0	12.9	13.5	10.1
Lane LOS	A		B	B	B
Approach Delay (s)	3.6	0.0	12.9	11.8	
Approach LOS			B	B	

Intersection Summary				
Average Delay	7.6			
Intersection Capacity Utilization	36.5%	ICU Level of Service	A	
Analysis Period (min)	15			

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	8	226	27	125	92	88	38	0	62	27	0	6
Future Volume (vph)	8	226	27	125	92	88	38	0	62	27	0	6
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Util. 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
Frt		0.986			0.961			0.916			0.974	
Flt Protected		0.998			0.980			0.981			0.961	
Satd. Flow (prot)	0	1833	0	0	1754	0	0	1674	0	0	1744	0
Flt Permitted		0.998			0.980			0.981			0.961	
Satd. Flow (perm)	0	1833	0	0	1754	0	0	1674	0	0	1744	0
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		75.4			92.7			42.4			48.0	
Travel Time (s)		5.4			6.7			3.1			3.5	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	9	246	29	136	100	96	41	0	67	29	0	7
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	284	0	0	332	0	0	108	0	0	36	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		0.0			3.6			0.0			0.0	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway 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
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Sign Control		Free			Free			Stop			Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	46.8%	ICU Level of Service A	
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	8	226	27	125	92	88	38	0	62	27	0	6
Future Volume (Veh/h)	8	226	27	125	92	88	38	0	62	27	0	6
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	9	246	29	136	100	96	41	0	67	29	0	7
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (m)					93							
pX, platoon unblocked	0.97						0.97	0.97		0.97	0.97	0.97
vC, conflicting volume	196			275			706	746	260	766	713	148
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	151			275			678	721	260	740	686	102
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	99			89			87	100	91	89	100	99
cM capacity (veh/h)	1382			1288			321	304	778	269	318	922

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	284	332	108	36
Volume Left	9	136	41	29
Volume Right	29	96	67	7
cSH	1382	1288	505	312
Volume to Capacity	0.01	0.11	0.21	0.12
Queue Length 95th (m)	0.2	2.8	6.4	3.1
Control Delay (s)	0.3	3.9	14.1	18.1
Lane LOS	A	A	B	C
Approach Delay (s)	0.3	3.9	14.1	18.1
Approach LOS			B	C

Intersection Summary				
Average Delay	4.7			
Intersection Capacity Utilization	46.8%	ICU Level of Service	A	
Analysis Period (min)	15			



Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	0	89	0	1235	2370	43
Future Volume (vph)	0	89	0	1235	2370	43
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	0.91	0.95	0.95
Frt		0.865			0.997	
Flt Protected						
Satd. Flow (prot)	0	1611	0	5085	3529	0
Flt Permitted						
Satd. Flow (perm)	0	1611	0	5085	3529	0
Link Speed (k/h)	50			60	60	
Link Distance (m)	60.4			36.6	93.1	
Travel Time (s)	4.3			2.2	5.6	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	97	0	1342	2576	47
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	97	0	1342	2623	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	0.0			3.6	3.6	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	4.8			4.8	4.8	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)	25	15	25			15
Sign Control	Stop			Free	Free	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	79.1%	ICU Level of Service	D
Analysis Period (min)	15		



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	0	89	0	1235	2370	43
Future Volume (Veh/h)	0	89	0	1235	2370	43
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	97	0	1342	2576	47
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	None	
Median storage veh)						
Upstream signal (m)				235	93	
pX, platoon unblocked	0.39	0.32	0.32			
vC, conflicting volume	3047	1312	2623			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1119	0	1832			
tC, single (s)	6.8	6.9	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	100	72	100			
cM capacity (veh/h)	78	350	106			

Direction, Lane #	EB 1	NB 1	NB 2	NB 3	SB 1	SB 2
Volume Total	97	447	447	447	1717	906
Volume Left	0	0	0	0	0	0
Volume Right	97	0	0	0	0	47
cSH	350	1700	1700	1700	1700	1700
Volume to Capacity	0.28	0.26	0.26	0.26	1.01	0.53
Queue Length 95th (m)	8.9	0.0	0.0	0.0	0.0	0.0
Control Delay (s)	19.2	0.0	0.0	0.0	0.0	0.0
Lane LOS	C					
Approach Delay (s)	19.2	0.0			0.0	
Approach LOS	C					

Intersection Summary					
Average Delay		0.5			
Intersection Capacity Utilization		79.1%	ICU Level of Service		D
Analysis Period (min)		15			

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	232	13	42	94	21	29
Future Volume (vph)	232	13	42	94	21	29
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.993				0.921	
Flt Protected				0.985	0.980	
Satd. Flow (prot)	1850	0	0	1835	1681	0
Flt Permitted				0.985	0.980	
Satd. Flow (perm)	1850	0	0	1835	1681	0
Link Speed (k/h)	50			50	50	
Link Distance (m)	35.1			75.4	58.6	
Travel Time (s)	2.5			5.4	4.2	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	252	14	46	102	23	32
Shared Lane Traffic (%)						
Lane Group Flow (vph)	266	0	0	148	55	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	0.0			0.0	3.6	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	4.8			4.8	4.8	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)		15	25		25	15
Sign Control	Free			Free	Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	33.6%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	232	13	42	94	21	29
Future Volume (Veh/h)	232	13	42	94	21	29
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	252	14	46	102	23	32
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (m)				168		
pX, platoon unblocked						
vC, conflicting volume			266		453	259
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			266		453	259
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			96		96	96
cM capacity (veh/h)			1298		545	780

Direction, Lane #	EB 1	WB 1	NB 1
Volume Total	266	148	55
Volume Left	0	46	23
Volume Right	14	0	32
cSH	1700	1298	660
Volume to Capacity	0.16	0.04	0.08
Queue Length 95th (m)	0.0	0.9	2.2
Control Delay (s)	0.0	2.7	10.9
Lane LOS		A	B
Approach Delay (s)	0.0	2.7	10.9
Approach LOS			B

Intersection Summary				
Average Delay		2.1		
Intersection Capacity Utilization		33.6%	ICU Level of Service	A
Analysis Period (min)		15		

Appendix G

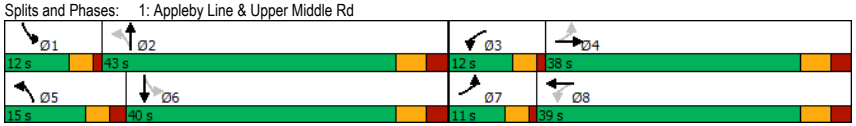
Total Traffic Operations – Appleby Line Widening

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	226	453	309	99	815	399	461	1637	92	262	1107	254
Future Volume (vph)	226	453	309	99	815	399	461	1637	92	262	1107	254
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	45.0		0.0	120.0		0.0	80.0		0.0	40.0		0.0
Storage Lanes	1		0	1		0	2		0	1		0
Taper Length (m)	30.0			20.0			40.0			35.0		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	0.95	0.97	0.91	0.91	1.00	0.91	0.91
Ped Bike Factor		0.99		1.00	0.99		1.00	1.00			0.99	
Frt		0.939			0.951			0.992			0.972	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1787	3306	0	1703	3389	0	3467	5014	0	1787	4888	0
Flt Permitted	0.126			0.173			0.110			0.119		
Satd. Flow (perm)	237	3306	0	309	3389	0	401	5014	0	224	4888	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		165			83			9			53	
Link Speed (k/h)		60			60			60			60	
Link Distance (m)		184.7			208.3			210.6			231.6	
Travel Time (s)		11.1			12.5			12.6			13.9	
Confl. Peds. (#/hr)	16		14	14		16	14		29	29		14
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Heavy Vehicles (%)	1%	1%	2%	6%	0%	1%	1%	2%	9%	1%	3%	1%
Adj. Flow (vph)	235	472	322	103	849	416	480	1705	96	273	1153	265
Shared Lane Traffic (%)												
Lane Group Flow (vph)	235	794	0	103	1265	0	480	1801	0	273	1418	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.6			3.6			7.2			7.2	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway 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
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2		1	2		1	2		1	2	
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	
Leading Detector (m)	2.0	10.0		2.0	10.0		2.0	10.0		2.0	10.0	
Trailing Detector (m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Position(m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Size(m)	2.0	0.6		2.0	0.6		2.0	0.6		2.0	0.6	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Type	pm+pt	NA		pm+pt	NA		pm+pt	NA		pm+pt	NA	
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4			8			2			6		
Detector Phase	7	4		3	8		5	2		1	6	
Switch Phase												
Minimum Initial (s)	7.0	8.0		7.0	8.0		7.0	8.0		7.0	8.0	
Minimum Split (s)	11.0	34.4		11.0	34.4		12.0	34.5		11.0	34.5	
Total Split (s)	11.0	38.0		12.0	39.0		15.0	43.0		12.0	40.0	
Total Split (%)	10.5%	36.2%		11.4%	37.1%		14.3%	41.0%		11.4%	38.1%	
Maximum Green (s)	7.0	31.6		8.0	32.6		10.0	36.5		8.0	33.5	
Yellow Time (s)	3.0	3.7		3.0	3.7		3.0	3.7		3.0	3.7	
All-Red Time (s)	1.0	2.7		1.0	2.7		2.0	2.8		1.0	2.8	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)	4.0	6.4		4.0	6.4		5.0	6.5		4.0	6.5	
Lead/Lag	Lead	Lag		Lead	Lag		Lead	Lag		Lead	Lag	
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	5.0		3.0	5.0		3.0	3.0		3.0	3.0	
Recall Mode	None	None		None	None		None	Max		None	Max	
Walk Time (s)		7.0			7.0			7.0			7.0	
Flash Dont Walk (s)		21.0			21.0			21.0			21.0	
Pedestrian Calls (#/hr)		0			0			0			0	
Act Effct Green (s)	41.2	31.8		42.8	32.6		48.0	36.5		44.0	33.5	
Actuated g/C Ratio	0.39	0.30		0.41	0.31		0.46	0.35		0.42	0.32	
v/c Ratio	1.20	0.71		0.45	1.14		1.01	1.03		1.29	0.89	
Control Delay	153.4	29.6		24.3	106.8		69.1	63.9		184.2	40.9	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	153.4	29.6		24.3	106.8		69.1	63.9		184.2	40.9	
LOS	F	C		C	F		E	E		F	D	
Approach Delay		57.9			100.6			65.0			64.0	
Approach LOS		E			F			E			E	

Intersection Summary		
Area Type:	Other	
Cycle Length: 105		
Actuated Cycle Length: 105		
Natural Cycle: 105		
Control Type: Semi Act-Uncoord		
Maximum v/c Ratio: 1.29		
Intersection Signal Delay: 71.2		Intersection LOS: E
Intersection Capacity Utilization 114.1%		ICU Level of Service H
Analysis Period (min) 15		

Splits and Phases: 1: Appleby Line & Upper Middle Rd



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	235	794	103	1265	480	1801	273	1418
v/c Ratio	1.20	0.71	0.45	1.14	1.01	1.03	1.29	0.89
Control Delay	153.4	29.6	24.3	106.8	69.1	63.9	184.2	40.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	153.4	29.6	24.3	106.8	69.1	63.9	184.2	40.9
Queue Length 50th (m)	~43.3	63.6	12.9	~161.5	~37.2	~152.0	~57.4	102.2
Queue Length 95th (m)	#94.4	86.6	23.9	#205.4	#72.2	#183.6	#110.5	#123.6
Internal Link Dist (m)		160.7		184.3		186.6		207.6
Turn Bay Length (m)	45.0		120.0		80.0		40.0	
Base Capacity (vph)	196	1116	232	1109	475	1748	212	1595
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	1.20	0.71	0.44	1.14	1.01	1.03	1.29	0.89

Intersection Summary

~ 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.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	226	453	309	99	815	399	461	1637	92	262	1107	254
Future Volume (vph)	226	453	309	99	815	399	461	1637	92	262	1107	254
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	6.4		4.0	6.4		5.0	6.5		4.0	6.5	
Lane Util. Factor	1.00	0.95		1.00	0.95		0.97	0.91		1.00	0.91	
Frpb, ped/bikes	1.00	0.99		1.00	0.99		1.00	1.00		1.00	0.99	
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Frt	1.00	0.94		1.00	0.95		1.00	0.99		1.00	0.97	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1787	3306		1702	3387		3467	5014		1787	4887	
Flt Permitted	0.13	1.00		0.17	1.00		0.11	1.00		0.12	1.00	
Satd. Flow (perm)	237	3306		310	3387		400	5014		225	4887	
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	235	472	322	103	849	416	480	1705	96	273	1153	265
RTOR Reduction (vph)	0	115	0	0	57	0	0	6	0	0	36	0
Lane Group Flow (vph)	235	679	0	103	1208	0	480	1795	0	273	1382	0
Confl. Peds. (#/hr)	16		14	14		16	14		29	29		14
Heavy Vehicles (%)	1%	1%	2%	6%	0%	1%	1%	2%	9%	1%	3%	1%
Turn Type	pm+pt	NA		pm+pt	NA		pm+pt	NA		pm+pt	NA	
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)	38.8	31.8		40.4	32.6		46.5	36.5		41.5	33.5	
Effective Green, g (s)	38.8	31.8		40.4	32.6		46.5	36.5		41.5	33.5	
Actuated g/C Ratio	0.37	0.30		0.38	0.31		0.44	0.35		0.40	0.32	
Clearance Time (s)	4.0	6.4		4.0	6.4		5.0	6.5		4.0	6.5	
Vehicle Extension (s)	3.0	5.0		3.0	5.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	190	1001		222	1051		469	1742		207	1559	
v/s Ratio Prot	c0.08	0.21		0.03	0.36		c0.10	0.36		c0.10	0.28	
v/s Ratio Perm	c0.37			0.14			0.36			c0.42		
v/c Ratio	1.24	0.68		0.46	1.15		1.02	1.03		1.32	0.89	
Uniform Delay, d1	29.6	32.1		22.7	36.2		27.0	34.2		27.1	33.9	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	143.4	2.4		1.5	78.4		47.6	29.8		173.3	7.8	
Delay (s)	173.0	34.5		24.2	114.6		74.7	64.1		200.4	41.8	
Level of Service	F	C		C	F		E	E		F	D	
Approach Delay (s)		66.1			107.8			66.3			67.4	
Approach LOS		E			F			E			E	

Intersection Summary

HCM 2000 Control Delay	75.5	HCM 2000 Level of Service		E	
HCM 2000 Volume to Capacity ratio	1.24				
Actuated Cycle Length (s)	105.0	Sum of lost time (s)		21.9	
Intersection Capacity Utilization	114.1%	ICU Level of Service		H	
Analysis Period (min)	15				

c Critical Lane Group

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	126	69	124	34	52	132	281	2105	56	110	1391	111
Future Volume (vph)	126	69	124	34	52	132	281	2105	56	110	1391	111
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	15.0		0.0	15.0		0.0	0.0		0.0	30.0		0.0
Storage Lanes	1		0	1		0	1		0	1		0
Taper Length (m)	15.0			15.0			7.5			25.0		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.91	0.91	1.00	0.91	0.91
Ped Bike Factor	0.99	0.99		1.00	0.98		1.00	1.00			1.00	
Frt		0.904			0.893			0.996			0.989	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1787	1688	0	1805	1658	0	1805	5059	0	1805	5020	0
Flt Permitted	0.466			0.439			0.154			0.046		
Satd. Flow (perm)	871	1688	0	831	1658	0	292	5059	0	87	5020	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		60			86			5			20	
Link Speed (k/h)		50			40			60			60	
Link Distance (m)		92.7			93.5			93.1			210.6	
Travel Time (s)		6.7			8.4			5.6			12.6	
Confl. Peds. (#/hr)	8		4	4		8	8		14	14		8
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Heavy Vehicles (%)	1%	0%	1%	0%	0%	1%	0%	2%	0%	0%	2%	0%
Adj. Flow (vph)	130	71	128	35	54	136	290	2170	58	113	1434	114
Shared Lane Traffic (%)												
Lane Group Flow (vph)	130	199	0	35	190	0	290	2228	0	113	1548	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.6			3.6			7.2			7.2	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway 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
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2		1	2		1	2		1	2	
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	
Leading Detector (m)	2.0	10.0		2.0	10.0		2.0	10.0		2.0	10.0	
Trailing Detector (m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Position(m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Size(m)	2.0	0.6		2.0	0.6		2.0	0.6		2.0	0.6	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Type	Perm	NA		Perm	NA		Perm	NA		pm+pt	NA	
Protected Phases		4			8			2		1	6	
Permitted Phases	4			8			2			6		
Detector Phase	4	4		8	8		2	2		1	6	
Switch Phase												
Minimum Initial (s)	8.0	8.0		8.0	8.0		8.0	8.0		7.0	8.0	
Minimum Split (s)	40.5	40.5		40.6	40.6		26.8	26.8		11.0	26.8	
Total Split (s)	40.6	40.6		40.6	40.6		88.4	88.4		11.0	99.4	
Total Split (%)	29.0%	29.0%		29.0%	29.0%		63.1%	63.1%		7.9%	71.0%	
Maximum Green (s)	34.1	34.1		34.0	34.0		82.6	82.6		7.0	93.6	
Yellow Time (s)	3.3	3.3		3.3	3.3		3.7	3.7		3.0	3.7	
All-Red Time (s)	3.2	3.2		3.3	3.3		2.1	2.1		1.0	2.1	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)	6.5	6.5		6.6	6.6		5.8	5.8		4.0	5.8	
Lead/Lag							Lag	Lag		Lead		
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	None	None		None	None		Max	Max		None	Max	
Walk Time (s)	7.0	7.0		7.0	7.0		7.0	7.0			7.0	
Flash Dont Walk (s)	27.0	27.0		27.0	27.0		14.0	14.0			14.0	
Pedestrian Calls (#/hr)	0	0		0	0		0	0			0	
Act Effct Green (s)	22.0	22.0		21.9	21.9		82.9	82.9		95.7	93.9	
Actuated g/C Ratio	0.17	0.17		0.17	0.17		0.65	0.65		0.75	0.73	
v/c Ratio	0.87	0.59		0.25	0.54		1.54	0.68		0.71	0.42	
Control Delay	97.7	40.4		49.1	31.0		291.5	16.7		47.1	7.7	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.2	
Total Delay	97.7	40.4		49.1	31.0		291.5	16.7		47.1	7.9	
LOS	F	D		D	C		F	B		D	A	
Approach Delay		63.0			33.8			48.3			10.5	
Approach LOS		E			C			D			B	

Intersection Summary			
Area Type:	Other		
Cycle Length: 140			
Actuated Cycle Length: 128.3			
Natural Cycle: 150			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 1.54			
Intersection Signal Delay: 35.4		Intersection LOS: D	
Intersection Capacity Utilization 89.5%		ICU Level of Service E	
Analysis Period (min) 15			

Splits and Phases: 2: Appleby Line & Ironstone Dr



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	130	199	35	190	290	2228	113	1548
v/c Ratio	0.87	0.59	0.25	0.54	1.54	0.68	0.71	0.42
Control Delay	97.7	40.4	49.1	31.0	291.5	16.7	47.1	7.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2
Total Delay	97.7	40.4	49.1	31.0	291.5	16.7	47.1	7.9
Queue Length 50th (m)	33.9	34.1	8.1	24.8	~107.7	126.6	12.5	50.6
Queue Length 95th (m)	58.8	59.1	18.6	49.0	#133.5	183.6	#49.2	81.9
Internal Link Dist (m)		68.7		69.5		69.1		186.6
Turn Bay Length (m)	15.0		15.0				30.0	
Base Capacity (vph)	232	494	221	504	188	3270	159	3680
Starvation Cap Reductn	0	0	0	0	0	0	0	1137
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.56	0.40	0.16	0.38	1.54	0.68	0.71	0.61

Intersection Summary

~ 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.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	126	69	124	34	52	132	281	2105	56	110	1391	111
Future Volume (vph)	126	69	124	34	52	132	281	2105	56	110	1391	111
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.5	6.5		6.6	6.6		5.8	5.8		4.0	5.8	
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	0.91		1.00	0.91	
Frpb, ped/bikes	1.00	0.99		1.00	0.99		1.00	1.00		1.00	1.00	
Flpb, ped/bikes	0.99	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Frt	1.00	0.90		1.00	0.89		1.00	1.00		1.00	0.99	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1776	1688		1799	1659		1800	5060		1805	5020	
Flt Permitted	0.47	1.00		0.44	1.00		0.15	1.00		0.05	1.00	
Satd. Flow (perm)	870	1688		832	1659		292	5060		87	5020	
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	130	71	128	35	54	136	290	2170	58	113	1434	114
RTOR Reduction (vph)	0	50	0	0	71	0	0	2	0	0	5	0
Lane Group Flow (vph)	130	149	0	35	119	0	290	2226	0	113	1543	0
Confl. Peds. (#/hr)	8		4	4		8	8		14	14		8
Heavy Vehicles (%)	1%	0%	1%	0%	0%	1%	0%	2%	0%	0%	2%	0%
Turn Type	Perm	NA		Perm	NA		Perm	NA		pm+pt	NA	
Protected Phases		4			8			2		1	6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)	22.0	22.0		21.9	21.9		82.9	82.9		93.9	93.9	
Effective Green, g (s)	22.0	22.0		21.9	21.9		82.9	82.9		93.9	93.9	
Actuated g/C Ratio	0.17	0.17		0.17	0.17		0.65	0.65		0.73	0.73	
Clearance Time (s)	6.5	6.5		6.6	6.6		5.8	5.8		4.0	5.8	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	149	289		142	283		188	3272		157	3676	
v/s Ratio Prot		0.09			0.07			0.44		c0.04	0.31	
v/s Ratio Perm	c0.15			0.04			c0.99			0.48		
v/c Ratio	0.87	0.52		0.25	0.42		1.54	0.68		0.72	0.42	
Uniform Delay, d1	51.7	48.3		46.0	47.5		22.6	14.3		26.6	6.6	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	39.0	1.6		0.9	1.0		268.9	1.2		14.6	0.4	
Delay (s)	90.7	49.8		46.9	48.5		291.5	15.5		41.3	7.0	
Level of Service	F	D		D	D		F	B		D	A	
Approach Delay (s)		66.0			48.2			47.2			9.3	
Approach LOS		E			D			D			A	

Intersection Summary					
HCM 2000 Control Delay	35.3	HCM 2000 Level of Service		D	
HCM 2000 Volume to Capacity ratio	1.36				
Actuated Cycle Length (s)	128.2	Sum of lost time (s)		16.4	
Intersection Capacity Utilization	89.5%	ICU Level of Service		E	
Analysis Period (min)	15				

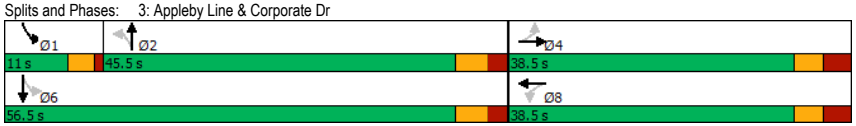
c Critical Lane Group

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	113	47	86	100	30	185	37	2144	110	88	1351	34
Future Volume (vph)	113	47	86	100	30	185	37	2144	110	88	1351	34
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	0.0		0.0	0.0		0.0	30.0		0.0	110.0		0.0
Storage Lanes	0		0	0		0	1		0	1		0
Taper Length (m)	7.5			7.5			40.0			25.0		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.91	0.91	1.00	0.91	0.91
Ped Bike Factor		0.99			0.99		1.00	1.00			1.00	
Frt		0.953			0.921			0.993			0.996	
Flt Protected		0.978			0.984		0.950			0.950		
Satd. Flow (prot)	0	1696	0	0	1691	0	1583	5049	0	1703	5006	0
Flt Permitted		0.627			0.786		0.175			0.086		
Satd. Flow (perm)	0	1086	0	0	1350	0	291	5049	0	154	5006	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		31			81			10			6	
Link Speed (k/h)		50			50			60			60	
Link Distance (m)		173.6			79.2			281.3			198.1	
Travel Time (s)		12.5			5.7			16.9			11.9	
Confl. Peds. (#/hr)	4		1	1		4	5		1	1		5
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Heavy Vehicles (%)	4%	0%	6%	1%	0%	1%	14%	2%	0%	6%	3%	8%
Adj. Flow (vph)	116	48	89	103	31	191	38	2210	113	91	1393	35
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	253	0	0	325	0	38	2323	0	91	1428	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		0.0			0.0			3.6			3.6	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway 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
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2		1	2		1	2		1	2	
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	
Leading Detector (m)	2.0	10.0		2.0	10.0		2.0	10.0		2.0	10.0	
Trailing Detector (m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Position(m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Size(m)	2.0	0.6		2.0	0.6		2.0	0.6		2.0	0.6	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Type	Perm	NA		Perm	NA		Perm	NA		pm+pt	NA	
Protected Phases		4			8			2		1	6	
Permitted Phases	4			8			2			6		
Detector Phase	4	4		8	8		2	2		1	6	
Switch Phase												
Minimum Initial (s)	8.0	8.0		8.0	8.0		8.0	8.0		7.0	8.0	
Minimum Split (s)	38.5	38.5		38.5	38.5		34.0	34.0		11.0	34.0	
Total Split (s)	38.5	38.5		38.5	38.5		45.5	45.5		11.0	56.5	
Total Split (%)	40.5%	40.5%		40.5%	40.5%		47.9%	47.9%		11.6%	59.5%	
Maximum Green (s)	32.0	32.0		32.0	32.0		39.5	39.5		7.0	50.5	
Yellow Time (s)	3.3	3.3		3.3	3.3		3.7	3.7		3.0	3.7	
All-Red Time (s)	3.2	3.2		3.2	3.2		2.3	2.3		1.0	2.3	
Lost Time Adjust (s)		0.0			0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)		6.5			6.5		6.0	6.0		4.0	6.0	
Lead/Lag							Lag	Lag		Lead		
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	None	None		None	None		Max	Max		None	Max	
Walk Time (s)	7.0	7.0		7.0	7.0		7.0	7.0			7.0	
Flash Dont Walk (s)	25.0	25.0		25.0	25.0		21.0	21.0			21.0	
Pedestrian Calls (#/hr)	0	0		0	0		0	0			0	
Act Effct Green (s)		21.5			21.5		42.3	42.3		52.9	50.8	
Actuated g/C Ratio		0.25			0.25		0.50	0.50		0.62	0.60	
v/c Ratio		0.85			0.81		0.26	0.92		0.41	0.48	
Control Delay		51.4			37.9		23.2	30.2		14.6	11.2	
Queue Delay		0.0			0.0		0.0	0.0		0.0	0.0	
Total Delay		51.4			37.9		23.2	30.2		14.6	11.2	
LOS		D			D		C	C		B	B	
Approach Delay		51.4			37.9			30.1			11.4	
Approach LOS		D			D			C			B	

Intersection Summary			
Area Type:	Other		
Cycle Length: 95			
Actuated Cycle Length: 84.9			
Natural Cycle: 95			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 0.92			
Intersection Signal Delay: 25.5		Intersection LOS: C	
Intersection Capacity Utilization 85.4%		ICU Level of Service E	
Analysis Period (min) 15			

Splits and Phases: 3: Appleby Line & Corporate Dr



Lane Group	EBT	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	253	325	38	2323	91	1428
v/c Ratio	0.85	0.81	0.26	0.92	0.41	0.48
Control Delay	51.4	37.9	23.2	30.2	14.6	11.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	51.4	37.9	23.2	30.2	14.6	11.2
Queue Length 50th (m)	36.1	39.3	3.8	136.9	5.6	45.8
Queue Length 95th (m)	65.4	70.5	14.4	#219.9	16.9	75.4
Internal Link Dist (m)	149.6	55.2		257.3		174.1
Turn Bay Length (m)			30.0		110.0	
Base Capacity (vph)	431	562	144	2519	224	3000
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.59	0.58	0.26	0.92	0.41	0.48

Intersection Summary

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

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	113	47	86	100	30	185	37	2144	110	88	1351	34
Future Volume (vph)	113	47	86	100	30	185	37	2144	110	88	1351	34
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		6.5			6.5		6.0	6.0		4.0	6.0	
Lane Util. Factor		1.00			1.00		1.00	0.91		1.00	0.91	
Frpb, ped/bikes		1.00			0.99		1.00	1.00		1.00	1.00	
Flpb, ped/bikes		1.00			1.00		1.00	1.00		1.00	1.00	
Frt		0.95			0.92		1.00	0.99		1.00	1.00	
Flt Protected		0.98			0.98		0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1693			1691		1582	5048		1703	5008	
Flt Permitted		0.63			0.79		0.18	1.00		0.09	1.00	
Satd. Flow (perm)		1086			1350		291	5048		155	5008	
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	116	48	89	103	31	191	38	2210	113	91	1393	35
RTOR Reduction (vph)	0	23	0	0	61	0	0	5	0	0	2	0
Lane Group Flow (vph)	0	230	0	0	264	0	38	2318	0	91	1426	0
Confl. Peds. (#/hr)	4		1	1		4	5		1	1		5
Heavy Vehicles (%)	4%	0%	6%	1%	0%	1%	14%	2%	0%	6%	3%	8%
Turn Type	Perm	NA		Perm	NA		Perm	NA		pm+pt	NA	
Protected Phases		4			8			2		1	6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)		21.5			21.5		42.3	42.3		51.8	51.8	
Effective Green, g (s)		21.5			21.5		42.3	42.3		51.8	51.8	
Actuated g/C Ratio		0.25			0.25		0.49	0.49		0.60	0.60	
Clearance Time (s)		6.5			6.5		6.0	6.0		4.0	6.0	
Vehicle Extension (s)		3.0			3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)		272			338		143	2488		192	3023	
v/s Ratio Prot								c0.46		0.03	c0.28	
v/s Ratio Perm		c0.21			0.20		0.13			0.25		
v/c Ratio		0.84			0.78		0.27	0.93		0.47	0.47	
Uniform Delay, d1		30.6			30.0		12.7	20.4		16.2	9.4	
Progression Factor		1.00			1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2		20.7			11.2		4.5	7.9		1.8	0.5	
Delay (s)		51.2			41.1		17.2	28.2		18.0	9.9	
Level of Service		D			D		B	C		B	A	
Approach Delay (s)		51.2			41.1			28.1			10.4	
Approach LOS		D			D			C			B	

Intersection Summary				
HCM 2000 Control Delay	24.3	HCM 2000 Level of Service	C	
HCM 2000 Volume to Capacity ratio	0.88			
Actuated Cycle Length (s)	85.8	Sum of lost time (s)	16.5	
Intersection Capacity Utilization	85.4%	ICU Level of Service	E	
Analysis Period (min)	15			

c Critical Lane Group

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	260	112	0	1	86	117	1	3	5	77	5	64
Future Volume (vph)	260	112	0	1	86	117	1	3	5	77	5	64
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	0.0		0.0	0.0		0.0	0.0		0.0	20.0		0.0
Storage Lanes	0		0	0		0	0		0	1		0
Taper Length (m)	7.5			7.5			7.5			20.0		
Lane Util. 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
Ped Bike Factor												
Frt					0.923			0.925			0.860	
Flt Protected		0.966						0.994		0.950		
Satd. Flow (prot)	0	1733	0	0	1644	0	0	1367	0	1736	1502	0
Flt Permitted		0.966						0.994		0.950		
Satd. Flow (perm)	0	1733	0	0	1644	0	0	1367	0	1736	1502	0
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		83.4			35.0			72.0			78.5	
Travel Time (s)		6.0			2.5			5.2			5.7	
Confl. Peds. (#/hr)	2					2			2	2		
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Heavy Vehicles (%)	5%	8%	0%	0%	9%	5%	100%	50%	0%	4%	33%	7%
Adj. Flow (vph)	274	118	0	1	91	123	1	3	5	81	5	67
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	392	0	0	215	0	0	9	0	81	72	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		0.0			0.0			0.0			3.6	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway 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
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Sign Control		Free			Free			Stop			Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	53.2%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	260	112	0	1	86	117	1	3	5	77	5	64
Future Volume (Veh/h)	260	112	0	1	86	117	1	3	5	77	5	64
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	274	118	0	1	91	123	1	3	5	81	5	67
Pedestrians					2						2	
Lane Width (m)					3.6						3.6	
Walking Speed (m/s)					1.2						1.2	
Percent Blockage					0						0	
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (m)					203							
pX, platoon unblocked												
vC, conflicting volume	216			118			890	884	120	831	822	154
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	216			118			890	884	120	831	822	154
tC, single (s)	4.1			4.1			8.1	7.0	6.2	7.1	6.8	6.3
tC, 2 stage (s)												
tF (s)	2.2			2.2			4.4	4.5	3.3	3.5	4.3	3.4
p0 queue free %	79			100			99	98	99	66	98	92
cM capacity (veh/h)	1334			1483			138	189	935	236	219	877

Direction, Lane #	EB 1	WB 1	NB 1	SB 1	SB 2
Volume Total	392	215	9	81	72
Volume Left	274	1	1	81	0
Volume Right	0	123	5	0	67
cSH	1334	1483	316	236	726
Volume to Capacity	0.21	0.00	0.03	0.34	0.10
Queue Length 95th (m)	6.2	0.0	0.7	11.7	2.6
Control Delay (s)	6.4	0.0	16.7	28.0	10.5
Lane LOS	A	A	C	D	B
Approach Delay (s)	6.4	0.0	16.7	19.8	
Approach LOS			C	C	

Intersection Summary					
Average Delay	7.4				
Intersection Capacity Utilization	53.2%	ICU Level of Service		A	
Analysis Period (min)	15				

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	28	114	56	119	209	116	37	0	85	119	0	15
Future Volume (vph)	28	114	56	119	209	116	37	0	85	119	0	15
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Util. 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
Frt		0.962			0.965			0.906			0.985	
Flt Protected		0.993			0.987			0.985			0.957	
Satd. Flow (prot)	0	1779	0	0	1774	0	0	1662	0	0	1756	0
Flt Permitted		0.993			0.987			0.985			0.957	
Satd. Flow (perm)	0	1779	0	0	1774	0	0	1662	0	0	1756	0
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		75.5			92.7			42.4			48.0	
Travel Time (s)		5.4			6.7			3.1			3.5	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	30	124	61	129	227	126	40	0	92	129	0	16
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	215	0	0	482	0	0	132	0	0	145	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		0.0			3.6			0.0			0.0	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway 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
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Sign Control		Free			Free			Stop			Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	59.8%	ICU Level of Service	B
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	28	114	56	119	209	116	37	0	85	119	0	15
Future Volume (Veh/h)	28	114	56	119	209	116	37	0	85	119	0	15
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	30	124	61	129	227	126	40	0	92	129	0	16
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (m)					93							
pX, platoon unblocked	0.93						0.93	0.93		0.93	0.93	0.93
vC, conflicting volume	353			185			778	826	154	854	793	290
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	272			185			727	778	154	809	743	204
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	98			91			86	100	90	43	100	98
cM capacity (veh/h)	1206			1390			283	271	891	228	284	781

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	215	482	132	145
Volume Left	30	129	40	129
Volume Right	61	126	92	16
cSH	1206	1390	540	248
Volume to Capacity	0.02	0.09	0.24	0.59
Queue Length 95th (m)	0.6	2.5	7.6	26.9
Control Delay (s)	1.3	2.8	13.8	38.2
Lane LOS	A	A	B	E
Approach Delay (s)	1.3	2.8	13.8	38.2
Approach LOS			B	E

Intersection Summary				
Average Delay		9.2		
Intersection Capacity Utilization		59.8%	ICU Level of Service	B
Analysis Period (min)		15		

Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	0	150	0	2442	1495	54
Future Volume (vph)	0	150	0	2442	1495	54
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	0.91	0.95	0.95
Frt		0.865			0.995	
Flt Protected						
Satd. Flow (prot)	0	1611	0	5085	3522	0
Flt Permitted						
Satd. Flow (perm)	0	1611	0	5085	3522	0
Link Speed (k/h)	50			60	60	
Link Distance (m)	60.4			36.6	93.1	
Travel Time (s)	4.3			2.2	5.6	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	163	0	2654	1625	59
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	163	0	2654	1684	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	0.0			3.6	3.6	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	4.8			4.8	4.8	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)	25	15	25			15
Sign Control	Stop			Free	Free	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	59.0%	ICU Level of Service	B
Analysis Period (min)	15		

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	0	150	0	2442	1495	54
Future Volume (Veh/h)	0	150	0	2442	1495	54
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	163	0	2654	1625	59
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	None	
Median storage veh)						
Upstream signal (m)				235	93	
pX, platoon unblocked	0.63	0.86	0.86			
vC, conflicting volume	2539	842	1684			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	223	500	1475			
tC, single (s)	6.8	6.9	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	100	63	100			
cM capacity (veh/h)	467	446	391			

Direction, Lane #	EB 1	NB 1	NB 2	NB 3	SB 1	SB 2
Volume Total	163	885	885	885	1083	601
Volume Left	0	0	0	0	0	0
Volume Right	163	0	0	0	0	59
cSH	446	1700	1700	1700	1700	1700
Volume to Capacity	0.37	0.52	0.52	0.52	0.64	0.35
Queue Length 95th (m)	13.2	0.0	0.0	0.0	0.0	0.0
Control Delay (s)	17.7	0.0	0.0	0.0	0.0	0.0
Lane LOS	C					
Approach Delay (s)	17.7	0.0			0.0	
Approach LOS	C					

Intersection Summary				
Average Delay	0.6			
Intersection Capacity Utilization	59.0%	ICU Level of Service	B	
Analysis Period (min)	15			

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	174	20	71	190	14	24
Future Volume (vph)	174	20	71	190	14	24
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.986				0.914	
Flt Protected				0.987	0.982	
Satd. Flow (prot)	1837	0	0	1839	1672	0
Flt Permitted				0.987	0.982	
Satd. Flow (perm)	1837	0	0	1839	1672	0
Link Speed (k/h)	50			50	50	
Link Distance (m)	35.0			75.5	38.8	
Travel Time (s)	2.5			5.4	2.8	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	189	22	77	207	15	26
Shared Lane Traffic (%)						
Lane Group Flow (vph)	211	0	0	284	41	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	0.0			0.0	3.6	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	4.8			4.8	4.8	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)		15	25		25	15
Sign Control	Free			Free	Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	37.6%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	174	20	71	190	14	24
Future Volume (Veh/h)	174	20	71	190	14	24
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	189	22	77	207	15	26
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (m)				168		
pX, platoon unblocked						
vC, conflicting volume			211		561	200
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			211		561	200
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			94		97	97
cM capacity (veh/h)			1360		461	841

Direction, Lane #	EB 1	WB 1	NB 1
Volume Total	211	284	41
Volume Left	0	77	15
Volume Right	22	0	26
cSH	1700	1360	646
Volume to Capacity	0.12	0.06	0.06
Queue Length 95th (m)	0.0	1.4	1.6
Control Delay (s)	0.0	2.5	10.9
Lane LOS		A	B
Approach Delay (s)	0.0	2.5	10.9
Approach LOS			B

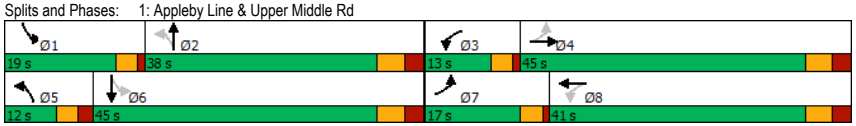
Intersection Summary				
Average Delay		2.2		
Intersection Capacity Utilization		37.6%	ICU Level of Service	A
Analysis Period (min)		15		

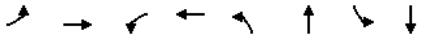
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	192	922	356	250	301	220	178	970	103	342	1489	64
Future Volume (vph)	192	922	356	250	301	220	178	970	103	342	1489	64
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	45.0		0.0	120.0		0.0	80.0		0.0	40.0		0.0
Storage Lanes	1		0	1		0	2		0	1		0
Taper Length (m)	30.0			20.0			40.0			35.0		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	0.95	0.97	0.91	0.91	1.00	0.91	0.91
Ped Bike Factor	1.00	0.99			0.99		1.00	1.00		1.00	1.00	
Frt		0.958			0.937			0.986			0.994	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1752	3379	0	1752	3244	0	3367	4800	0	1736	4935	0
Flt Permitted	0.320			0.112			0.127			0.113		
Satd. Flow (perm)	588	3379	0	207	3244	0	450	4800	0	206	4935	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		53			164			15			6	
Link Speed (k/h)		60			60			60			60	
Link Distance (m)		184.7			208.3			210.6			231.6	
Travel Time (s)		11.1			12.5			12.6			13.9	
Confl. Peds. (#/hr)	9		21	21		9	10		11	11		10
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Heavy Vehicles (%)	3%	1%	2%	3%	2%	5%	4%	6%	9%	4%	4%	13%
Adj. Flow (vph)	198	951	367	258	310	227	184	1000	106	353	1535	66
Shared Lane Traffic (%)												
Lane Group Flow (vph)	198	1318	0	258	537	0	184	1106	0	353	1601	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.6			3.6			7.2			7.2	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway 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
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2		1	2		1	2		1	2	
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	
Leading Detector (m)	2.0	10.0		2.0	10.0		2.0	10.0		2.0	10.0	
Trailing Detector (m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Position(m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Size(m)	2.0	0.6		2.0	0.6		2.0	0.6		2.0	0.6	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Type	pm+pt	NA		pm+pt	NA		pm+pt	NA		pm+pt	NA	
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4			8			2			6		
Detector Phase	7	4		3	8		5	2		1	6	
Switch Phase												
Minimum Initial (s)	7.0	8.0		7.0	8.0		7.0	8.0		7.0	8.0	
Minimum Split (s)	11.0	34.4		11.0	34.4		12.0	34.5		11.0	34.5	
Total Split (s)	17.0	45.0		13.0	41.0		12.0	38.0		19.0	45.0	
Total Split (%)	14.8%	39.1%		11.3%	35.7%		10.4%	33.0%		16.5%	39.1%	
Maximum Green (s)	13.0	38.6		9.0	34.6		7.0	31.5		15.0	38.5	
Yellow Time (s)	3.0	3.7		3.0	3.7		3.0	3.7		3.0	3.7	
All-Red Time (s)	1.0	2.7		1.0	2.7		2.0	2.8		1.0	2.8	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)	4.0	6.4		4.0	6.4		5.0	6.5		4.0	6.5	
Lead/Lag	Lead	Lag		Lead	Lag		Lead	Lag		Lead	Lag	
Lead-Lag Optimize?	Yes	Yes		Yes	Yes		Yes	Yes		Yes	Yes	
Vehicle Extension (s)	3.0	5.0		3.0	5.0		3.0	3.0		3.0	3.0	
Recall Mode	None	None		None	None		None	Max		None	Max	
Walk Time (s)		7.0			7.0			7.0			7.0	
Flash Dont Walk (s)		21.0			21.0			21.0			21.0	
Pedestrian Calls (#/hr)		0			0			0			0	
Act Effct Green (s)	52.9	38.6		47.1	35.7		40.0	31.5		53.0	38.5	
Actuated g/C Ratio	0.46	0.34		0.41	0.31		0.35	0.27		0.46	0.33	
v/c Ratio	0.51	1.13		1.26	0.48		0.55	0.83		1.20	0.97	
Control Delay	23.2	103.5		176.1	23.6		26.0	45.4		147.3	53.3	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	23.2	103.5		176.1	23.6		26.0	45.4		147.3	53.3	
LOS	C	F		F	C		C	D		F	D	
Approach Delay		93.0			73.1			42.6			70.3	
Approach LOS		F			E			D			E	

Intersection Summary		
Area Type:	Other	
Cycle Length: 115		
Actuated Cycle Length: 115		
Natural Cycle: 115		
Control Type: Semi Act-Uncoord		
Maximum v/c Ratio: 1.26		
Intersection Signal Delay: 70.5		Intersection LOS: E
Intersection Capacity Utilization 111.0%		ICU Level of Service H
Analysis Period (min) 15		

Splits and Phases: 1: Appleby Line & Upper Middle Rd



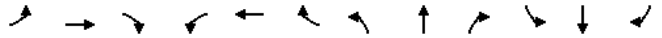


Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	198	1318	258	537	184	1106	353	1601
v/c Ratio	0.51	1.13	1.26	0.48	0.55	0.83	1.20	0.97
Control Delay	23.2	103.5	176.1	23.6	26.0	45.4	147.3	53.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	23.2	103.5	176.1	23.6	26.0	45.4	147.3	53.3
Queue Length 50th (m)	27.3	~186.4	~60.5	37.5	12.7	89.3	~84.7	135.4
Queue Length 95th (m)	43.4	#231.1	#114.3	54.7	19.7	107.7	#145.0	#170.6
Internal Link Dist (m)		160.7		184.3		186.6		207.6
Turn Bay Length (m)	45.0		120.0		80.0		40.0	
Base Capacity (vph)	407	1169	205	1119	334	1325	294	1656
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.49	1.13	1.26	0.48	0.55	0.83	1.20	0.97

Intersection Summary

~ 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.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	192	922	356	250	301	220	178	970	103	342	1489	64
Future Volume (vph)	192	922	356	250	301	220	178	970	103	342	1489	64
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	6.4		4.0	6.4		5.0	6.5		4.0	6.5	
Lane Util. Factor	1.00	0.95		1.00	0.95		0.97	0.91		1.00	0.91	
Frpb, ped/bikes	1.00	0.99		1.00	0.99		1.00	1.00		1.00	1.00	
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Frt	1.00	0.96		1.00	0.94		1.00	0.99		1.00	0.99	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1750	3380		1752	3242		3367	4798		1735	4934	
Flt Permitted	0.32	1.00		0.11	1.00		0.13	1.00		0.11	1.00	
Satd. Flow (perm)	590	3380		207	3242		450	4798		206	4934	
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	198	951	367	258	310	227	184	1000	106	353	1535	66
RTOR Reduction (vph)	0	35	0	0	113	0	0	11	0	0	4	0
Lane Group Flow (vph)	198	1283	0	258	424	0	184	1095	0	353	1597	0
Confl. Peds. (#/hr)	9		21	21		9	10		11	11		10
Heavy Vehicles (%)	3%	1%	2%	3%	2%	5%	4%	6%	9%	4%	4%	13%
Turn Type	pm+pt	NA		pm+pt	NA		pm+pt	NA		pm+pt	NA	
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)	50.5	38.6		44.7	35.7		38.5	31.5		50.5	38.5	
Effective Green, g (s)	50.5	38.6		44.7	35.7		38.5	31.5		50.5	38.5	
Actuated g/C Ratio	0.44	0.34		0.39	0.31		0.33	0.27		0.44	0.33	
Clearance Time (s)	4.0	6.4		4.0	6.4		5.0	6.5		4.0	6.5	
Vehicle Extension (s)	3.0	5.0		3.0	5.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	379	1134		201	1006		328	1314		289	1651	
v/s Ratio Prot	c0.05	0.38		c0.10	0.13		0.03	0.23		c0.16	0.32	
v/s Ratio Perm	0.18			c0.40			0.15			c0.38		
v/c Ratio	0.52	1.13		1.28	0.42		0.56	0.83		1.22	0.97	
Uniform Delay, d1	21.1	38.2		29.4	31.5		29.6	39.3		32.6	37.6	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	1.3	70.5		160.0	0.6		2.2	6.3		126.7	15.6	
Delay (s)	22.4	108.7		189.4	32.1		31.8	45.6		159.3	53.3	
Level of Service	C	F		F	C		C	D		F	D	
Approach Delay (s)		97.4			83.1			43.6			72.4	
Approach LOS		F			F			D			E	

Intersection Summary				
HCM 2000 Control Delay	74.1	HCM 2000 Level of Service	E	
HCM 2000 Volume to Capacity ratio	1.27			
Actuated Cycle Length (s)	115.0	Sum of lost time (s)	21.9	
Intersection Capacity Utilization	111.0%	ICU Level of Service	H	
Analysis Period (min)	15			

c Critical Lane Group

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	96	33	186	93	69	146	159	1058	18	46	2134	76
Future Volume (vph)	96	33	186	93	69	146	159	1058	18	46	2134	76
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	15.0		0.0	15.0		0.0	0.0		0.0	30.0		0.0
Storage Lanes	1		0	1		0	1		0	1		0
Taper Length (m)	15.0			15.0			7.5			25.0		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.91	0.91	1.00	0.91	0.91
Ped Bike Factor	1.00	0.98		1.00	0.99			1.00		1.00	1.00	
Frt		0.872			0.898			0.997			0.995	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1671	1527	0	1805	1656	0	1687	4913	0	1656	5007	0
Flt Permitted	0.393			0.381			0.055			0.210		
Satd. Flow (perm)	690	1527	0	721	1656	0	98	4913	0	366	5007	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		11			72			3			8	
Link Speed (k/h)		50			40			60			60	
Link Distance (m)		92.7			93.5			93.1			210.6	
Travel Time (s)		6.7			8.4			5.6			12.6	
Confl. Peds. (#/hr)	2		5	5		2	2		10	2		10
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Heavy Vehicles (%)	8%	6%	7%	0%	0%	3%	7%	5%	15%	9%	3%	0%
Adj. Flow (vph)	100	34	194	97	72	152	166	1102	19	48	2223	79
Shared Lane Traffic (%)												
Lane Group Flow (vph)	100	228	0	97	224	0	166	1121	0	48	2302	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.6			3.6			7.2			7.2	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway 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
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2		1	2		1	2		1	2	
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	
Leading Detector (m)	2.0	10.0		2.0	10.0		2.0	10.0		2.0	10.0	
Trailing Detector (m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Position(m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Size(m)	2.0	0.6		2.0	0.6		2.0	0.6		2.0	0.6	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Type	Perm	NA		Perm	NA		Perm	NA		pm+pt	NA	
Protected Phases		4			8			2		1	6	
Permitted Phases	4			8			2			6		
Detector Phase	4	4		8	8		2	2		1	6	
Switch Phase												
Minimum Initial (s)	8.0	8.0		8.0	8.0		8.0	8.0		7.0	8.0	
Minimum Split (s)	40.5	40.5		40.6	40.6		26.8	26.8		11.0	26.8	
Total Split (s)	40.6	40.6		40.6	40.6		88.4	88.4		11.0	99.4	
Total Split (%)	29.0%	29.0%		29.0%	29.0%		63.1%	63.1%		7.9%	71.0%	
Maximum Green (s)	34.1	34.1		34.0	34.0		82.6	82.6		7.0	93.6	
Yellow Time (s)	3.3	3.3		3.3	3.3		3.7	3.7		3.0	3.7	
All-Red Time (s)	3.2	3.2		3.3	3.3		2.1	2.1		1.0	2.1	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)	6.5	6.5		6.6	6.6		5.8	5.8		4.0	5.8	
Lead/Lag							Lag	Lag		Lead		
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	None	None		None	None		Max	Max		None	Max	
Walk Time (s)	7.0	7.0		7.0	7.0		7.0	7.0			7.0	
Flash Dont Walk (s)	27.0	27.0		27.0	27.0		14.0	14.0			14.0	
Pedestrian Calls (#/hr)	0	0		0	0		0	0			0	
Act Effct Green (s)	23.6	23.6		23.5	23.5		85.2	85.2		95.6	93.8	
Actuated g/C Ratio	0.18	0.18		0.18	0.18		0.66	0.66		0.74	0.72	
v/c Ratio	0.80	0.79		0.75	0.62		2.59	0.35		0.14	0.64	
Control Delay	90.9	68.1		82.3	40.3		781.4	11.4		6.8	11.0	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.7	
Total Delay	90.9	68.1		82.3	40.3		781.4	11.4		6.8	11.7	
LOS	F	E		F	D		F	B		A	B	
Approach Delay		75.1			53.0			110.7			11.6	
Approach LOS		E			D			F			B	

Intersection Summary			
Area Type:	Other		
Cycle Length: 140			
Actuated Cycle Length: 129.8			
Natural Cycle: 150			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 2.59			
Intersection Signal Delay: 49.3		Intersection LOS: D	
Intersection Capacity Utilization 94.9%		ICU Level of Service F	
Analysis Period (min) 15			

Splits and Phases: 2: Appleby Line & Ironstone Dr



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	100	228	97	224	166	1121	48	2302
v/c Ratio	0.80	0.79	0.75	0.62	2.59	0.35	0.14	0.64
Control Delay	90.9	68.1	82.3	40.3	781.4	11.4	6.8	11.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.7
Total Delay	90.9	68.1	82.3	40.3	781.4	11.4	6.8	11.7
Queue Length 50th (m)	26.0	56.5	24.9	38.0	~59.0	48.3	3.1	103.2
Queue Length 95th (m)	48.1	86.3	46.1	65.2	#116.2	70.4	8.6	154.4
Internal Link Dist (m)		68.7		69.5		69.1		186.6
Turn Bay Length (m)	15.0		15.0				30.0	
Base Capacity (vph)	181	410	189	487	64	3224	339	3621
Starvation Cap Reductn	0	0	0	0	0	0	0	863
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.55	0.56	0.51	0.46	2.59	0.35	0.14	0.83

Intersection Summary

~ 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.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	96	33	186	93	69	146	159	1058	18	46	2134	76
Future Volume (vph)	96	33	186	93	69	146	159	1058	18	46	2134	76
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.5	6.5		6.6	6.6		5.8	5.8		4.0	5.8	
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	0.91		1.00	0.91	
Frpb, ped/bikes	1.00	0.98		1.00	0.99		1.00	1.00		1.00	1.00	
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Frt	1.00	0.87		1.00	0.90		1.00	1.00		1.00	0.99	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1669	1528		1798	1656		1687	4915		1656	5006	
Flt Permitted	0.39	1.00		0.38	1.00		0.05	1.00		0.21	1.00	
Satd. Flow (perm)	691	1528		721	1656		98	4915		366	5006	
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	100	34	194	97	72	152	166	1102	19	48	2223	79
RTOR Reduction (vph)	0	9	0	0	59	0	0	1	0	0	2	0
Lane Group Flow (vph)	100	219	0	97	165	0	166	1120	0	48	2300	0
Confl. Peds. (#/hr)	2		5	5		2	2		10	2		10
Heavy Vehicles (%)	8%	6%	7%	0%	0%	3%	7%	5%	15%	9%	3%	0%
Turn Type	Perm	NA		Perm	NA		Perm	NA		pm+pt	NA	
Protected Phases		4			8			2		1	6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)	23.7	23.7		23.6	23.6		85.2	85.2		94.7	94.7	
Effective Green, g (s)	23.7	23.7		23.6	23.6		85.2	85.2		94.7	94.7	
Actuated g/C Ratio	0.18	0.18		0.18	0.18		0.65	0.65		0.72	0.72	
Clearance Time (s)	6.5	6.5		6.6	6.6		5.8	5.8		4.0	5.8	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	125	277		130	299		63	3203		319	3627	
v/s Ratio Prot		0.14			0.10			0.23		0.01	c0.46	
v/s Ratio Perm	c0.14			0.13			c1.70			0.10		
v/c Ratio	0.80	0.79		0.75	0.55		2.63	0.35		0.15	0.63	
Uniform Delay, d1	51.2	51.1		50.7	48.7		22.7	10.3		5.7	9.2	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	29.5	14.2		20.6	2.2		779.2	0.3		0.2	0.9	
Delay (s)	80.7	65.3		71.3	50.9		801.9	10.6		5.9	10.0	
Level of Service	F	E		E	D		F	B		A	B	
Approach Delay (s)		70.0			57.1			112.6			9.9	
Approach LOS		E			E			F			A	

Intersection Summary

HCM 2000 Control Delay	48.9	HCM 2000 Level of Service		D	
HCM 2000 Volume to Capacity ratio	2.14				
Actuated Cycle Length (s)	130.7	Sum of lost time (s)		16.4	
Intersection Capacity Utilization	94.9%	ICU Level of Service		F	
Analysis Period (min)	15				

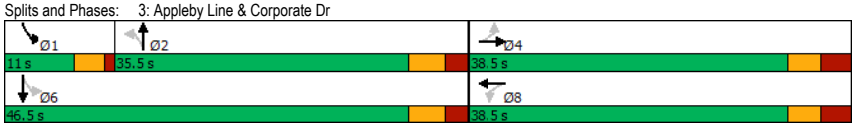
c Critical Lane Group

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	22	9	30	145	25	146	39	1067	52	62	2295	47
Future Volume (vph)	22	9	30	145	25	146	39	1067	52	62	2295	47
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	25.0		0.0	25.0		0.0	30.0		0.0	110.0		0.0
Storage Lanes	0		0	0		0	1		0	1		0
Taper Length (m)	7.5			7.5			40.0			25.0		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.91	0.91	1.00	0.91	0.91
Ped Bike Factor		0.99			1.00		1.00	1.00		1.00	1.00	
Frt		0.932			0.938			0.993			0.997	
Flt Protected		0.983			0.978		0.950			0.950		
Satd. Flow (prot)	0	1420	0	0	1711	0	1687	4856	0	1570	4971	0
Flt Permitted		0.831			0.823		0.116			0.176		
Satd. Flow (perm)	0	1201	0	0	1439	0	206	4856	0	291	4971	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		1			58			9			5	
Link Speed (k/h)		50			50			60			60	
Link Distance (m)		173.6			79.2			281.3			198.1	
Travel Time (s)		12.5			5.7			16.9			11.9	
Confl. Peds. (#/hr)			2	2			1		2	2		1
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Heavy Vehicles (%)	19%	0%	30%	0%	0%	4%	7%	6%	5%	15%	4%	3%
Adj. Flow (vph)	22	9	31	148	26	149	40	1089	53	63	2342	48
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	62	0	0	323	0	40	1142	0	63	2390	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		0.0			0.0			3.6			3.6	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway 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
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2		1	2		1	2		1	2	
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	
Leading Detector (m)	2.0	10.0		2.0	10.0		2.0	10.0		2.0	10.0	
Trailing Detector (m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Position(m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Size(m)	2.0	0.6		2.0	0.6		2.0	0.6		2.0	0.6	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Type	Perm	NA		Perm	NA		Perm	NA		pm+pt	NA	
Protected Phases		4			8			2		1	6	
Permitted Phases	4			8			2			6		
Detector Phase	4	4		8	8		2	2		1	6	
Switch Phase												
Minimum Initial (s)	8.0	8.0		8.0	8.0		8.0	8.0		7.0	8.0	
Minimum Split (s)	38.5	38.5		38.5	38.5		34.0	34.0		11.0	34.0	
Total Split (s)	38.5	38.5		38.5	38.5		35.5	35.5		11.0	46.5	
Total Split (%)	45.3%	45.3%		45.3%	45.3%		41.8%	41.8%		12.9%	54.7%	
Maximum Green (s)	32.0	32.0		32.0	32.0		29.5	29.5		7.0	40.5	
Yellow Time (s)	3.3	3.3		3.3	3.3		3.7	3.7		3.0	3.7	
All-Red Time (s)	3.2	3.2		3.2	3.2		2.3	2.3		1.0	2.3	
Lost Time Adjust (s)		0.0			0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)		6.5			6.5		6.0	6.0		4.0	6.0	
Lead/Lag							Lag	Lag		Lead		
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	None	None		None	None		Max	Max		None	Max	
Walk Time (s)	7.0	7.0		7.0	7.0		7.0	7.0			7.0	
Flash Dont Walk (s)	25.0	25.0		25.0	25.0		21.0	21.0			21.0	
Pedestrian Calls (#/hr)	0	0		0	0		0	0			0	
Act Effct Green (s)		18.8			18.8		34.6	34.6		42.8	40.8	
Actuated g/C Ratio		0.26			0.26		0.48	0.48		0.59	0.57	
v/c Ratio		0.20			0.77		0.41	0.49		0.21	0.85	
Control Delay		21.0			33.0		36.3	16.1		9.9	18.7	
Queue Delay		0.0			0.0		0.0	0.0		0.0	0.0	
Total Delay		21.0			33.0		36.3	16.1		9.9	18.7	
LOS		C			C		D	B		A	B	
Approach Delay		21.0			33.0			16.8			18.5	
Approach LOS		C			C			B			B	

Intersection Summary			
Area Type:	Other		
Cycle Length: 85			
Actuated Cycle Length: 72.2			
Natural Cycle: 85			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 0.85			
Intersection Signal Delay: 19.2		Intersection LOS: B	
Intersection Capacity Utilization 86.9%		ICU Level of Service E	
Analysis Period (min) 15			

Splits and Phases: 3: Appleby Line & Corporate Dr



Lane Group	EBT	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	62	323	40	1142	63	2390
v/c Ratio	0.20	0.77	0.41	0.49	0.21	0.85
Control Delay	21.0	33.0	36.3	16.1	9.9	18.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	21.0	33.0	36.3	16.1	9.9	18.7
Queue Length 50th (m)	6.7	34.7	4.0	43.5	3.4	93.9
Queue Length 95th (m)	15.5	62.2	#21.3	71.3	11.0	#179.7
Internal Link Dist (m)	149.6	55.2		257.3		174.1
Turn Bay Length (m)			30.0		110.0	
Base Capacity (vph)	536	674	98	2329	297	2812
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.12	0.48	0.41	0.49	0.21	0.85

Intersection Summary

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

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	22	9	30	145	25	146	39	1067	52	62	2295	47
Future Volume (vph)	22	9	30	145	25	146	39	1067	52	62	2295	47
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		6.5			6.5		6.0	6.0		4.0	6.0	
Lane Util. Factor		1.00			1.00		1.00	0.91		1.00	0.91	
Frpb, ped/bikes		0.99			1.00		1.00	1.00		1.00	1.00	
Flpb, ped/bikes		1.00			1.00		1.00	1.00		1.00	1.00	
Frt		0.93			0.94		1.00	0.99		1.00	1.00	
Flt Protected		0.98			0.98		0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1420			1709		1687	4856		1569	4971	
Flt Permitted		0.83			0.82		0.12	1.00		0.18	1.00	
Satd. Flow (perm)		1202			1439		205	4856		291	4971	
Peak-hour factor, PHF	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Adj. Flow (vph)	22	9	31	148	26	149	40	1089	53	63	2342	48
RTOR Reduction (vph)	0	1	0	0	43	0	0	5	0	0	2	0
Lane Group Flow (vph)	0	61	0	0	280	0	40	1137	0	63	2388	0
Confl. Peds. (#/hr)			2	2			1		2	2		1
Heavy Vehicles (%)	19%	0%	30%	0%	0%	4%	7%	6%	5%	15%	4%	3%
Turn Type	Perm	NA		Perm	NA		Perm	NA		pm+pt	NA	
Protected Phases		4			8			2		1	6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)		18.8			18.8		34.6	34.6		42.6	42.6	
Effective Green, g (s)		18.8			18.8		34.6	34.6		42.6	42.6	
Actuated g/C Ratio		0.25			0.25		0.47	0.47		0.58	0.58	
Clearance Time (s)		6.5			6.5		6.0	6.0		4.0	6.0	
Vehicle Extension (s)		3.0			3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)		305			366		95	2273		236	2865	
v/s Ratio Prot								0.23		0.01	c0.48	
v/s Ratio Perm		0.05			c0.19		0.19			0.14		
v/c Ratio		0.20			0.76		0.42	0.50		0.27	0.83	
Uniform Delay, d1		21.6			25.5		13.0	13.6		7.7	12.8	
Progression Factor		1.00			1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2		0.3			9.2		13.1	0.8		0.6	3.0	
Delay (s)		22.0			34.7		26.1	14.4		8.3	15.8	
Level of Service		C			C		C	B		A	B	
Approach Delay (s)		22.0			34.7			14.8			15.6	
Approach LOS		C			C			B			B	

Intersection Summary

HCM 2000 Control Delay	17.0	HCM 2000 Level of Service		B	
HCM 2000 Volume to Capacity ratio	0.87				
Actuated Cycle Length (s)	73.9	Sum of lost time (s)		16.5	
Intersection Capacity Utilization	86.9%	ICU Level of Service		E	
Analysis Period (min)	15				

c Critical Lane Group

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	57	76	0	0	80	35	1	1	0	168	15	142
Future Volume (vph)	57	76	0	0	80	35	1	1	0	168	15	142
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	0.0		0.0	0.0		0.0	0.0		0.0	20.0		0.0
Storage Lanes	0		0	0		0	0		0	1		0
Taper Length (m)	7.5			7.5			7.5			20.0		
Lane Util. 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
Ped Bike Factor												
Frt					0.959						0.865	
Flt Protected		0.979						0.976		0.950		
Satd. Flow (prot)	0	1347	0	0	1540	0	0	1854	0	1805	1573	0
Flt Permitted		0.979						0.976		0.950		
Satd. Flow (perm)	0	1347	0	0	1540	0	0	1854	0	1805	1573	0
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		83.4			35.1			72.0			78.5	
Travel Time (s)		6.0			2.5			5.2			5.7	
Confl. Peds. (#/hr)							1		2	2		1
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	29%	45%	0%	0%	22%	10%	0%	0%	0%	0%	0%	5%
Adj. Flow (vph)	63	84	0	0	89	39	1	1	0	187	17	158
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	147	0	0	128	0	0	2	0	187	175	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		0.0			0.0			0.0			3.6	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway 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
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Sign Control		Free			Free			Stop			Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	36.5%	ICU Level of Service A	
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	57	76	0	0	80	35	1	1	0	168	15	142
Future Volume (Veh/h)	57	76	0	0	80	35	1	1	0	168	15	142
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	63	84	0	0	89	39	1	1	0	187	17	158
Pedestrians		1			2							
Lane Width (m)		3.6			3.6							
Walking Speed (m/s)		1.2			1.2							
Percent Blockage		0			0							
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (m)					203							
pX, platoon unblocked												
vC, conflicting volume	128			84			486	338	86	321	318	110
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	128			84			486	338	86	321	318	110
tC, single (s)	4.4			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.5			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	95			100			100	100	100	69	97	83
cM capacity (veh/h)	1307			1526			387	558	977	611	572	935

Direction, Lane #	EB 1	WB 1	NB 1	SB 1	SB 2
Volume Total	147	128	2	187	175
Volume Left	63	0	1	187	0
Volume Right	0	39	0	0	158
cSH	1307	1526	457	611	881
Volume to Capacity	0.05	0.00	0.00	0.31	0.20
Queue Length 95th (m)	1.2	0.0	0.1	10.3	5.9
Control Delay (s)	3.6	0.0	12.9	13.5	10.1
Lane LOS	A		B	B	B
Approach Delay (s)	3.6	0.0	12.9	11.8	
Approach LOS			B	B	

Intersection Summary			
Average Delay	7.6		
Intersection Capacity Utilization	36.5%	ICU Level of Service	A
Analysis Period (min)	15		

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	8	226	27	125	92	88	38	0	62	27	0	6
Future Volume (vph)	8	226	27	125	92	88	38	0	62	27	0	6
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Util. 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
Frt		0.986			0.961			0.916			0.974	
Flt Protected		0.998			0.980			0.981			0.961	
Satd. Flow (prot)	0	1833	0	0	1754	0	0	1674	0	0	1744	0
Flt Permitted		0.998			0.980			0.981			0.961	
Satd. Flow (perm)	0	1833	0	0	1754	0	0	1674	0	0	1744	0
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		75.4			92.7			42.4			48.0	
Travel Time (s)		5.4			6.7			3.1			3.5	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	9	246	29	136	100	96	41	0	67	29	0	7
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	284	0	0	332	0	0	108	0	0	36	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		0.0			3.6			0.0			0.0	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway 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
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Sign Control		Free			Free			Stop			Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	46.8%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	8	226	27	125	92	88	38	0	62	27	0	6
Future Volume (Veh/h)	8	226	27	125	92	88	38	0	62	27	0	6
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	9	246	29	136	100	96	41	0	67	29	0	7
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (m)					93							
pX, platoon unblocked	0.97						0.97	0.97		0.97	0.97	0.97
vC, conflicting volume	196			275			706	746	260	766	713	148
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	156			275			681	723	260	743	689	106
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	99			89			87	100	91	89	100	99
cM capacity (veh/h)	1382			1288			321	304	778	269	318	920

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	284	332	108	36
Volume Left	9	136	41	29
Volume Right	29	96	67	7
cSH	1382	1288	505	311
Volume to Capacity	0.01	0.11	0.21	0.12
Queue Length 95th (m)	0.2	2.8	6.4	3.1
Control Delay (s)	0.3	3.9	14.1	18.1
Lane LOS	A	A	B	C
Approach Delay (s)	0.3	3.9	14.1	18.1
Approach LOS			B	C

Intersection Summary				
Average Delay	4.7			
Intersection Capacity Utilization	46.8%	ICU Level of Service		A
Analysis Period (min)	15			

Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	0	89	0	1235	2370	43
Future Volume (vph)	0	89	0	1235	2370	43
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	0.86	0.91	0.91
Frt		0.865			0.997	
Flt Protected						
Satd. Flow (prot)	0	1611	0	6408	5070	0
Flt Permitted						
Satd. Flow (perm)	0	1611	0	6408	5070	0
Link Speed (k/h)	50			60	60	
Link Distance (m)	60.4			36.6	93.1	
Travel Time (s)	4.3			2.2	5.6	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	97	0	1342	2576	47
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	97	0	1342	2623	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	0.0			3.6	3.6	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	4.8			4.8	4.8	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)	25	15	25			15
Sign Control	Stop			Free	Free	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	58.9%	ICU Level of Service	B
Analysis Period (min)	15		

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	0	89	0	1235	2370	43
Future Volume (Veh/h)	0	89	0	1235	2370	43
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	97	0	1342	2576	47
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	None	
Median storage veh)						
Upstream signal (m)				235	93	
pX, platoon unblocked	0.79	0.76	0.76			
vC, conflicting volume	2935	882	2623			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1909	0	2037			
tC, single (s)	6.8	6.9	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	100	88	100			
cM capacity (veh/h)	48	826	209			

Direction, Lane #	EB 1	NB 1	NB 2	NB 3	NB 4	SB 1	SB 2	SB 3
Volume Total	97	336	336	336	336	1030	1030	562
Volume Left	0	0	0	0	0	0	0	0
Volume Right	97	0	0	0	0	0	0	47
cSH	826	1700	1700	1700	1700	1700	1700	1700
Volume to Capacity	0.12	0.20	0.20	0.20	0.20	0.61	0.61	0.33
Queue Length 95th (m)	3.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Control Delay (s)	9.9	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Lane LOS	A							
Approach Delay (s)	9.9	0.0				0.0		
Approach LOS	A							

Intersection Summary				
Average Delay	0.2			
Intersection Capacity Utilization	58.9%	ICU Level of Service		B
Analysis Period (min)	15			

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	232	13	42	94	21	29
Future Volume (vph)	232	13	42	94	21	29
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.993				0.921	
Flt Protected				0.985	0.980	
Satd. Flow (prot)	1850	0	0	1835	1681	0
Flt Permitted				0.985	0.980	
Satd. Flow (perm)	1850	0	0	1835	1681	0
Link Speed (k/h)	50			50	50	
Link Distance (m)	35.1			75.4	58.6	
Travel Time (s)	2.5			5.4	4.2	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	252	14	46	102	23	32
Shared Lane Traffic (%)						
Lane Group Flow (vph)	266	0	0	148	55	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	0.0			0.0	3.6	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	4.8			4.8	4.8	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)		15	25		25	15
Sign Control	Free			Free	Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	33.6%	ICU Level of Service	A
Analysis Period (min)	15		

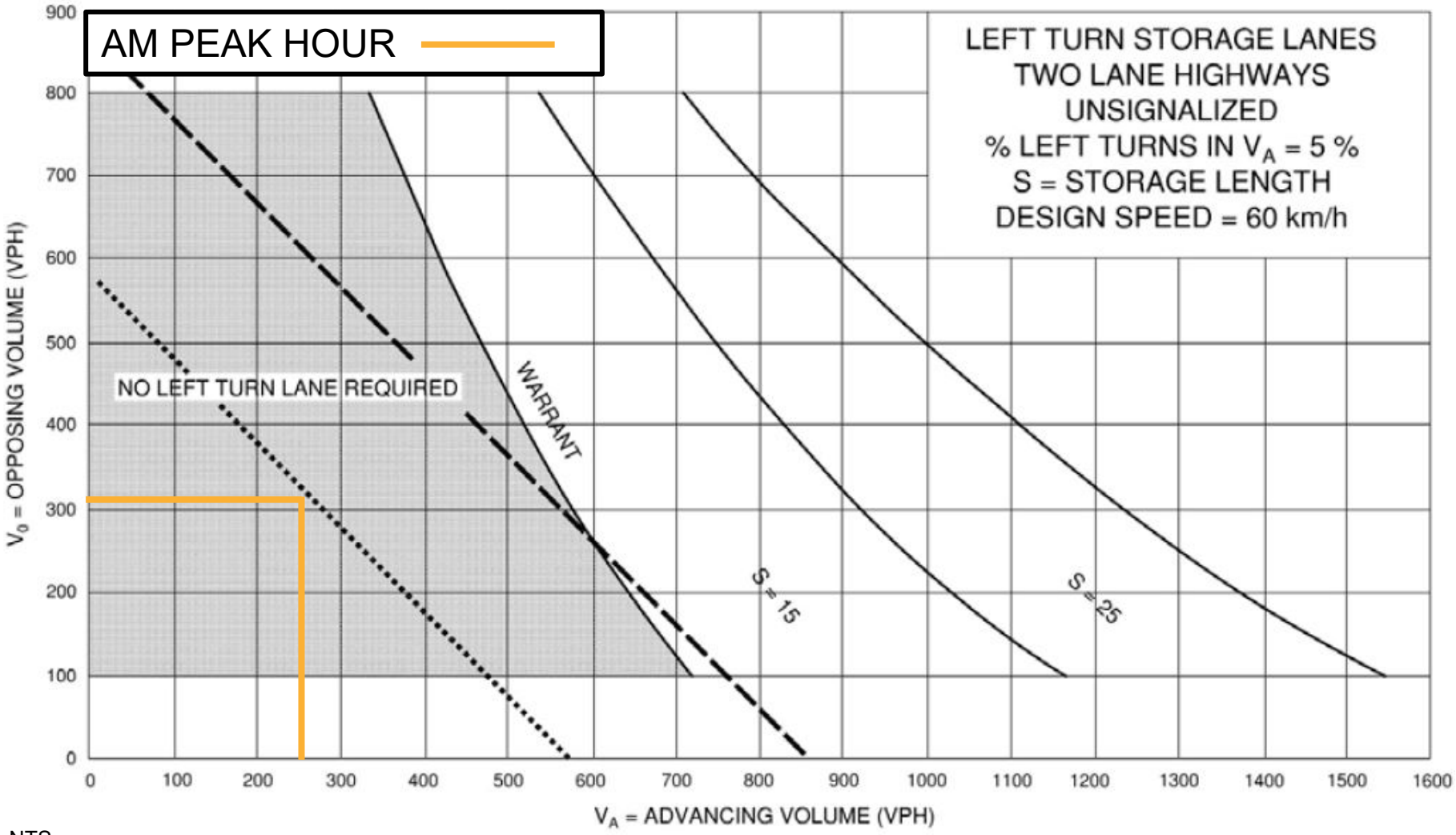
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	232	13	42	94	21	29
Future Volume (Veh/h)	232	13	42	94	21	29
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	252	14	46	102	23	32
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (m)				168		
pX, platoon unblocked						
vC, conflicting volume			266		453	259
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			266		453	259
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			96		96	96
cM capacity (veh/h)			1298		545	780

Direction, Lane #	EB 1	WB 1	NB 1
Volume Total	266	148	55
Volume Left	0	46	23
Volume Right	14	0	32
cSH	1700	1298	660
Volume to Capacity	0.16	0.04	0.08
Queue Length 95th (m)	0.0	0.9	2.2
Control Delay (s)	0.0	2.7	10.9
Lane LOS		A	B
Approach Delay (s)	0.0	2.7	10.9
Approach LOS			B

Intersection Summary			
Average Delay	2.1		
Intersection Capacity Utilization	33.6%	ICU Level of Service	A
Analysis Period (min)	15		

Appendix H

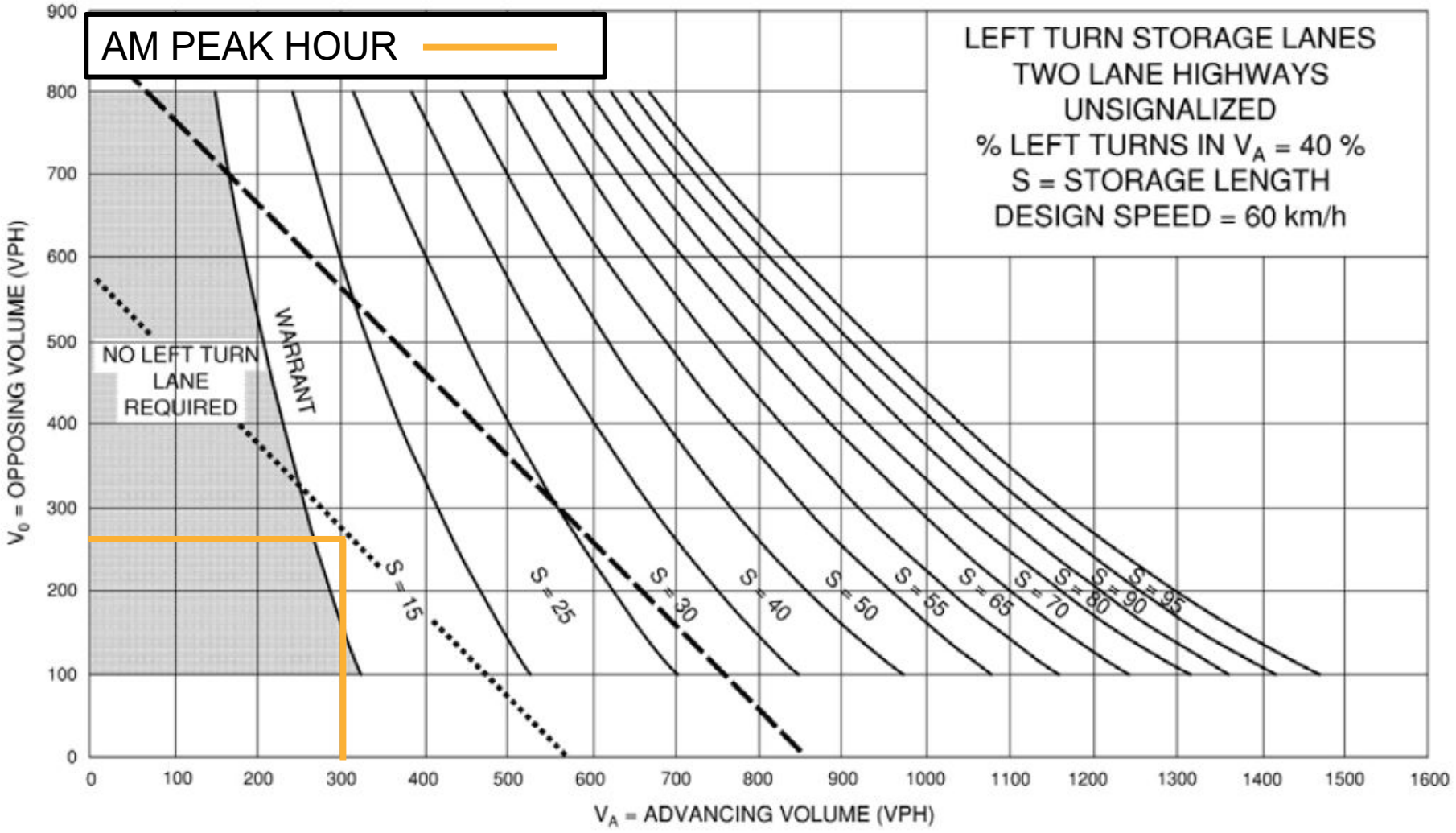
Left-Turn Lane Warrant Nomographs



NTS

Ironstone Drive & Driveway A
Eastbound Left-Turn
Total Traffic

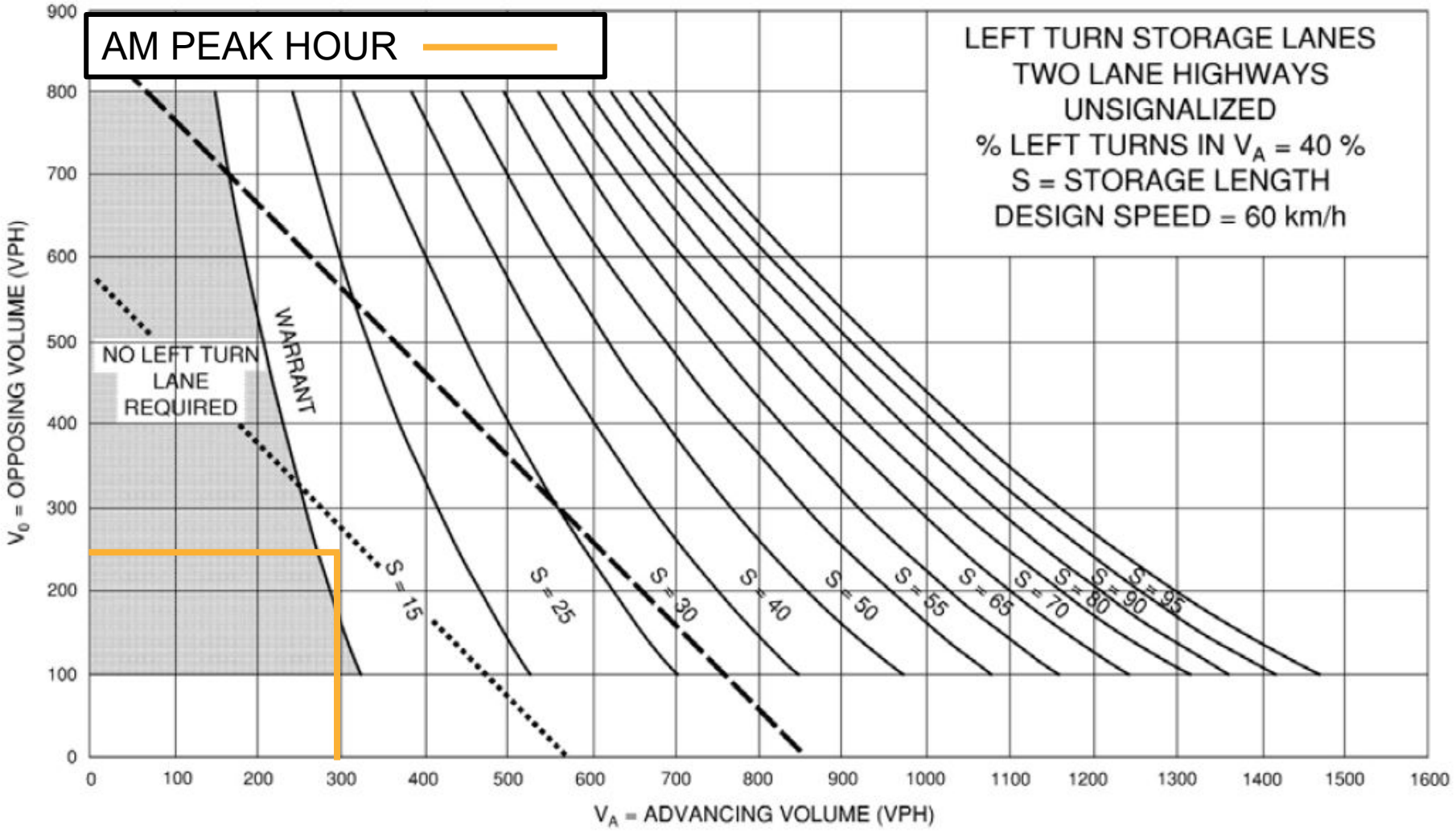
1860-1900 Appleby Line
210270



paradigm TRANSPORTATION SOLUTIONS LIMITED

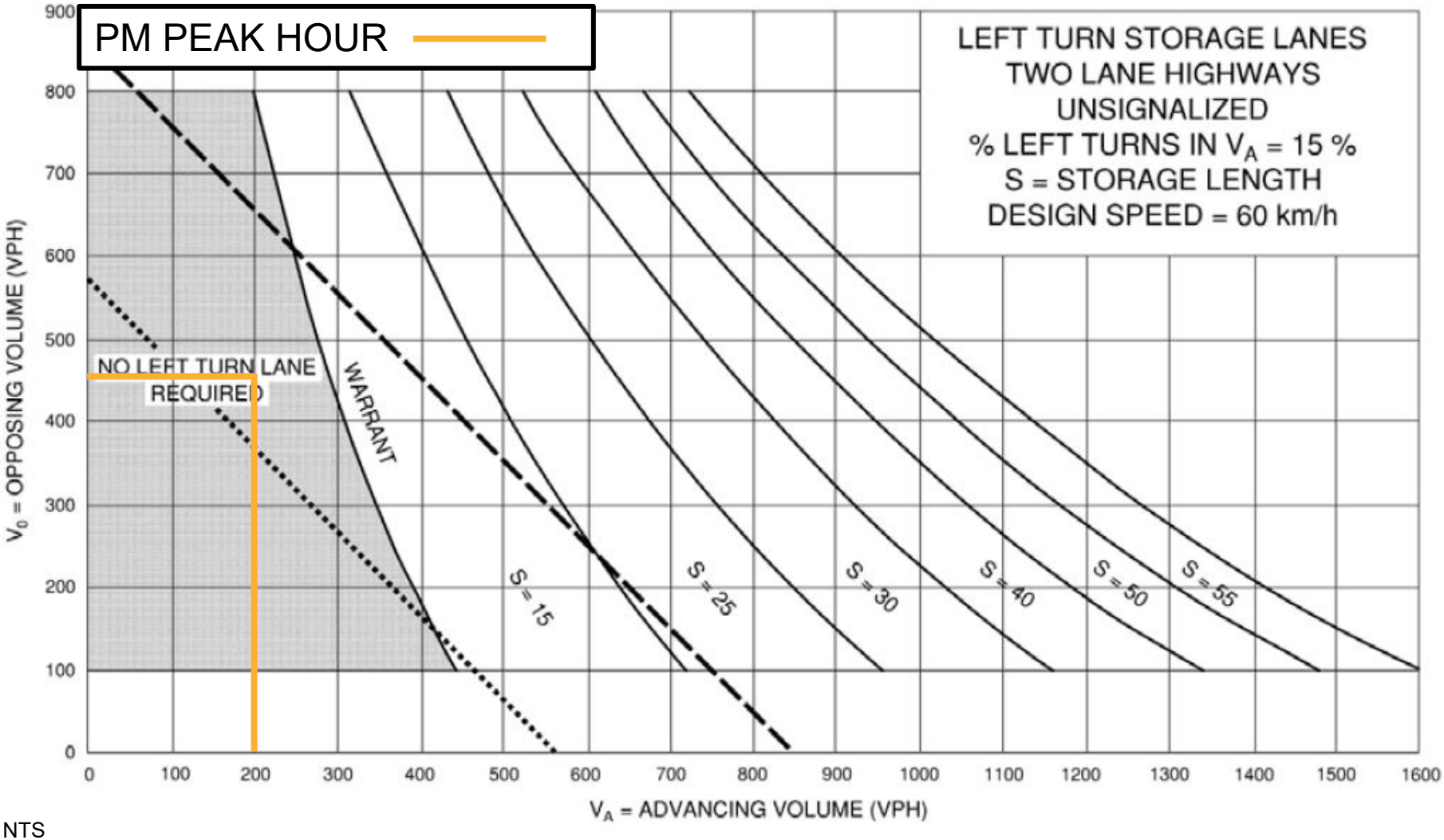
Ironstone Drive & Driveway A
Westbound Left-Turn
Total Traffic

1860-1900 Appleby Line
210270



Ironstone Drive & Driveway A
Westbound Left-Turn
Background Traffic

1860-1900 Appleby Line
210270

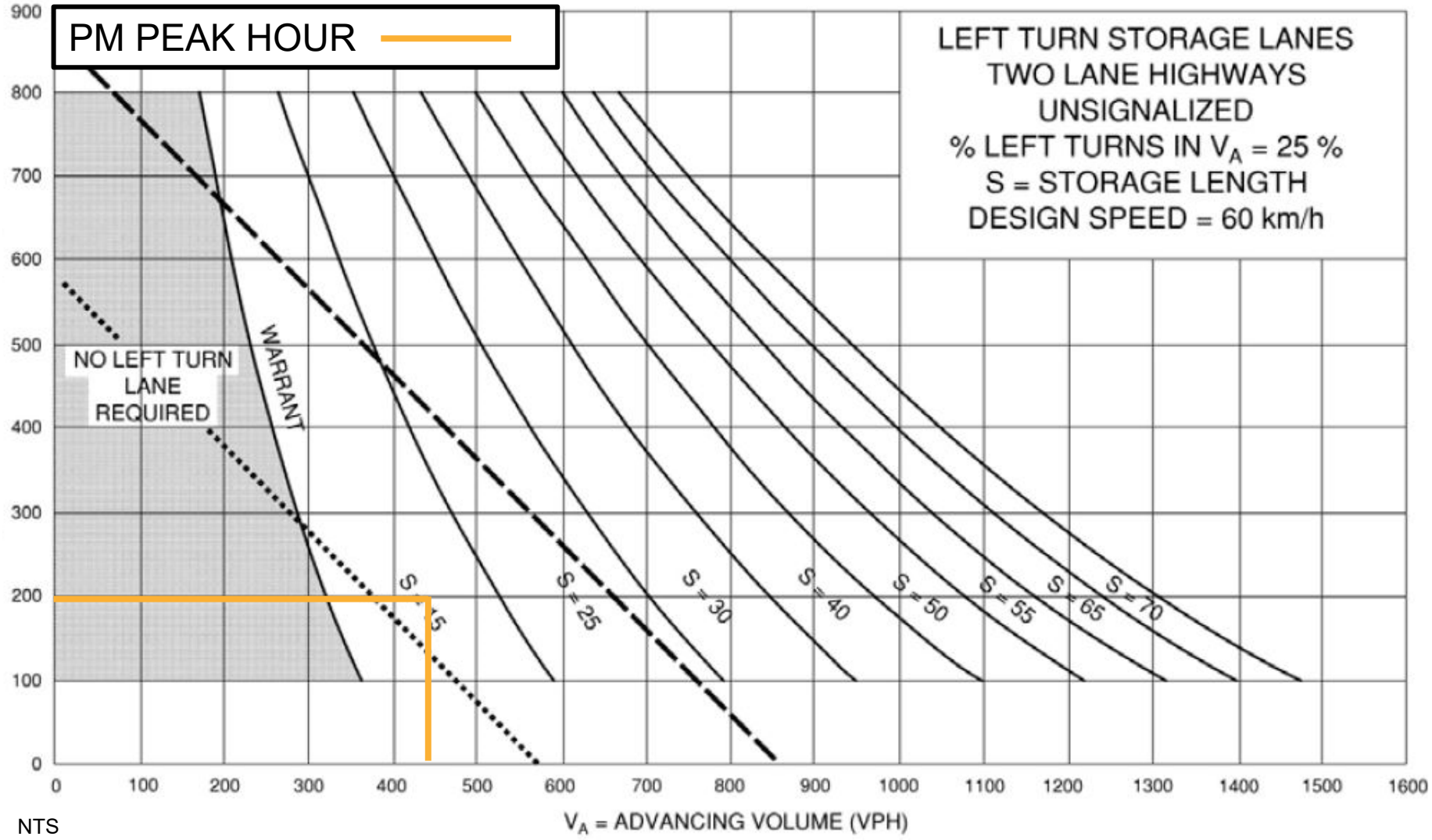


NTS

paradigm TRANSPORTATION SOLUTIONS LIMITED

Ironstone Drive & Driveway A
Eastbound Left-Turn
Total Traffic

1860-1900 Appleby Line
210270

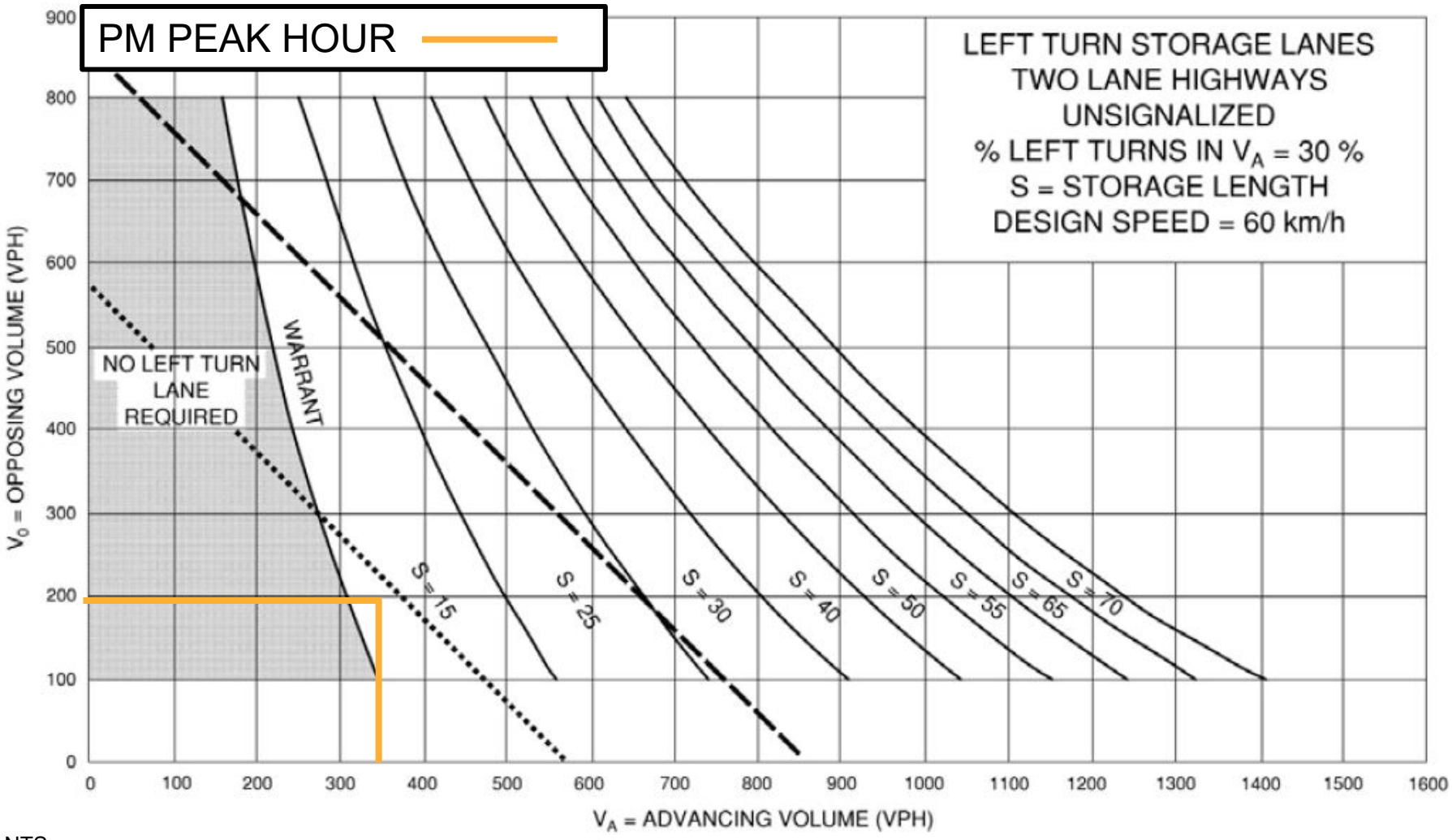


NTS

paradigm TRANSPORTATION SOLUTIONS LIMITED

Ironstone Drive & Driveway A
Westbound Left-Turn
Total Traffic

1860-1900 Appleby Line
210270

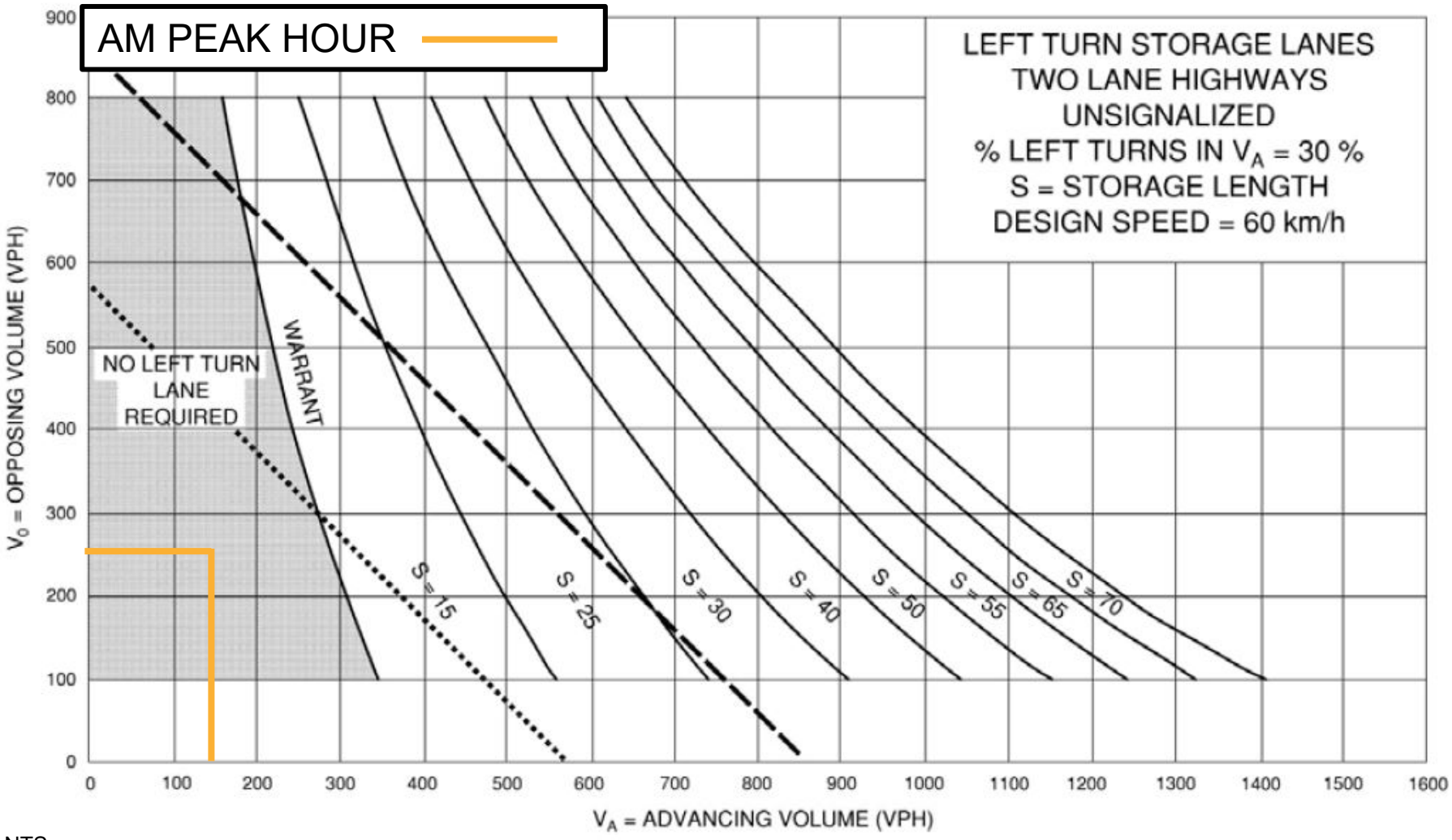


NTS

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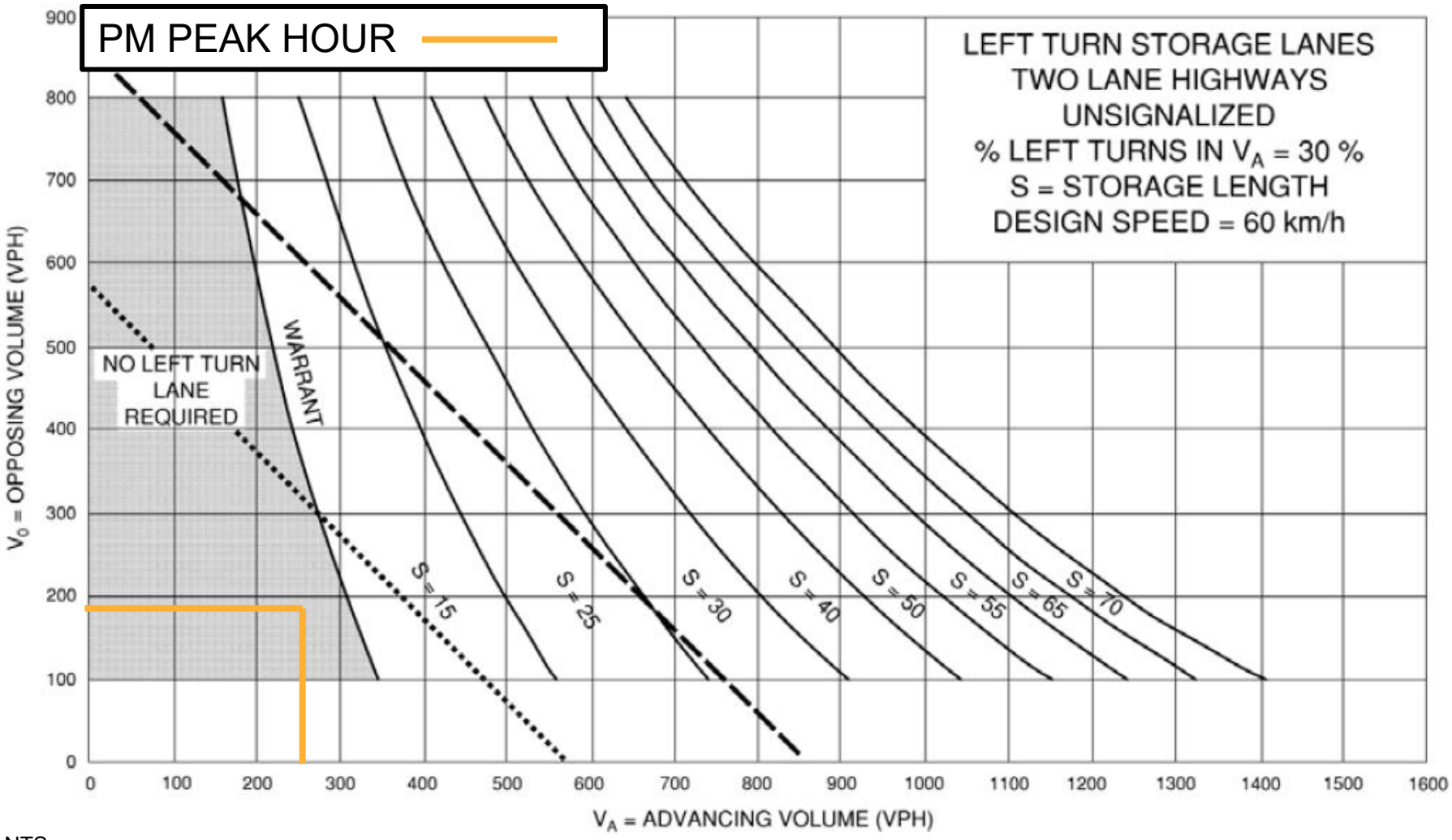
Ironstone Drive & Driveway A
Westbound Left-Turn
Background Traffic

1860-1900 Appleby Line
210270



NTS

Ironstone Drive & Driveway C
Westbound Left-Turn
Total Traffic



NTS

Ironstone Drive & Driveway C
Westbound Left-Turn
Total Traffic

Appendix I

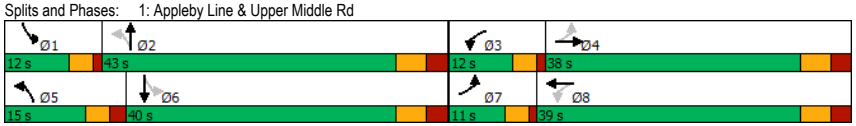
Total Traffic Operations – Left-Turn Lanes

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	226	453	309	99	815	399	461	1637	92	262	1107	254
Future Volume (vph)	226	453	309	99	815	399	461	1637	92	262	1107	254
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	45.0		0.0	120.0		0.0	80.0		0.0	40.0		0.0
Storage Lanes	1		0	1		0	2		0	1		0
Taper Length (m)	30.0			20.0			40.0			35.0		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	0.95	0.97	0.91	0.91	1.00	0.91	0.91
Ped Bike Factor		0.99		1.00	0.99		1.00	1.00			0.99	
Frt		0.939			0.951			0.992			0.972	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1787	3306	0	1703	3389	0	3467	5014	0	1787	4888	0
Flt Permitted	0.126			0.173			0.110			0.119		
Satd. Flow (perm)	237	3306	0	309	3389	0	401	5014	0	224	4888	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		165			83			9			53	
Link Speed (k/h)		60			60			60			60	
Link Distance (m)		184.7			208.3			210.6			231.6	
Travel Time (s)		11.1			12.5			12.6			13.9	
Confl. Peds. (#/hr)	16		14	14		16	14		29	29		14
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Heavy Vehicles (%)	1%	1%	2%	6%	0%	1%	1%	2%	9%	1%	3%	1%
Adj. Flow (vph)	235	472	322	103	849	416	480	1705	96	273	1153	265
Shared Lane Traffic (%)												
Lane Group Flow (vph)	235	794	0	103	1265	0	480	1801	0	273	1418	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.6			3.6			7.2			7.2	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway 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
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2		1	2		1	2		1	2	
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	
Leading Detector (m)	2.0	10.0		2.0	10.0		2.0	10.0		2.0	10.0	
Trailing Detector (m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Position(m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Size(m)	2.0	0.6		2.0	0.6		2.0	0.6		2.0	0.6	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Type	pm+pt	NA		pm+pt	NA		pm+pt	NA		pm+pt	NA	
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4			8			2			6		
Detector Phase	7	4		3	8		5	2		1	6	
Switch Phase												
Minimum Initial (s)	7.0	8.0		7.0	8.0		7.0	8.0		7.0	8.0	
Minimum Split (s)	11.0	34.4		11.0	34.4		12.0	34.5		11.0	34.5	
Total Split (s)	11.0	38.0		12.0	39.0		15.0	43.0		12.0	40.0	
Total Split (%)	10.5%	36.2%		11.4%	37.1%		14.3%	41.0%		11.4%	38.1%	
Maximum Green (s)	7.0	31.6		8.0	32.6		10.0	36.5		8.0	33.5	
Yellow Time (s)	3.0	3.7		3.0	3.7		3.0	3.7		3.0	3.7	
All-Red Time (s)	1.0	2.7		1.0	2.7		2.0	2.8		1.0	2.8	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)	4.0	6.4		4.0	6.4		5.0	6.5		4.0	6.5	
Lead/Lag	Lead	Lag		Lead	Lag		Lead	Lag		Lead	Lag	
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	5.0		3.0	5.0		3.0	3.0		3.0	3.0	
Recall Mode	None	None		None	None		None	Max		None	Max	
Walk Time (s)		7.0			7.0			7.0			7.0	
Flash Dont Walk (s)		21.0			21.0			21.0			21.0	
Pedestrian Calls (#/hr)		0			0			0			0	
Act Effct Green (s)	41.2	31.8		42.8	32.6		48.0	36.5		44.0	33.5	
Actuated g/C Ratio	0.39	0.30		0.41	0.31		0.46	0.35		0.42	0.32	
v/c Ratio	1.20	0.71		0.45	1.14		1.01	1.03		1.29	0.89	
Control Delay	153.4	29.6		24.3	106.8		69.1	63.9		184.2	40.9	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	153.4	29.6		24.3	106.8		69.1	63.9		184.2	40.9	
LOS	F	C		C	F		E	E		F	D	
Approach Delay		57.9			100.6			65.0			64.0	
Approach LOS		E			F			E			E	

Intersection Summary		
Area Type:	Other	
Cycle Length: 105		
Actuated Cycle Length: 105		
Natural Cycle: 105		
Control Type: Semi Act-Uncoord		
Maximum v/c Ratio: 1.29		
Intersection Signal Delay: 71.2		Intersection LOS: E
Intersection Capacity Utilization 114.1%		ICU Level of Service H
Analysis Period (min) 15		

Splits and Phases: 1: Appleby Line & Upper Middle Rd



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	235	794	103	1265	480	1801	273	1418
v/c Ratio	1.20	0.71	0.45	1.14	1.01	1.03	1.29	0.89
Control Delay	153.4	29.6	24.3	106.8	69.1	63.9	184.2	40.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	153.4	29.6	24.3	106.8	69.1	63.9	184.2	40.9
Queue Length 50th (m)	~43.3	63.6	12.9	~161.5	~37.2	~152.0	~57.4	102.2
Queue Length 95th (m)	#94.4	86.6	23.9	#205.4	#72.2	#183.6	#110.5	#123.6
Internal Link Dist (m)		160.7		184.3		186.6		207.6
Turn Bay Length (m)	45.0		120.0		80.0		40.0	
Base Capacity (vph)	196	1116	232	1109	475	1748	212	1595
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	1.20	0.71	0.44	1.14	1.01	1.03	1.29	0.89

Intersection Summary

~ 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.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	226	453	309	99	815	399	461	1637	92	262	1107	254
Future Volume (vph)	226	453	309	99	815	399	461	1637	92	262	1107	254
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	6.4		4.0	6.4		5.0	6.5		4.0	6.5	
Lane Util. Factor	1.00	0.95		1.00	0.95		0.97	0.91		1.00	0.91	
Frpb, ped/bikes	1.00	0.99		1.00	0.99		1.00	1.00		1.00	0.99	
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Frt	1.00	0.94		1.00	0.95		1.00	0.99		1.00	0.97	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1787	3306		1702	3387		3467	5014		1787	4887	
Flt Permitted	0.13	1.00		0.17	1.00		0.11	1.00		0.12	1.00	
Satd. Flow (perm)	237	3306		310	3387		400	5014		225	4887	
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	235	472	322	103	849	416	480	1705	96	273	1153	265
RTOR Reduction (vph)	0	115	0	0	57	0	0	6	0	0	36	0
Lane Group Flow (vph)	235	679	0	103	1208	0	480	1795	0	273	1382	0
Confl. Peds. (#/hr)	16		14	14		16	14		29	29		14
Heavy Vehicles (%)	1%	1%	2%	6%	0%	1%	1%	2%	9%	1%	3%	1%
Turn Type	pm+pt	NA		pm+pt	NA		pm+pt	NA		pm+pt	NA	
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)	38.8	31.8		40.4	32.6		46.5	36.5		41.5	33.5	
Effective Green, g (s)	38.8	31.8		40.4	32.6		46.5	36.5		41.5	33.5	
Actuated g/C Ratio	0.37	0.30		0.38	0.31		0.44	0.35		0.40	0.32	
Clearance Time (s)	4.0	6.4		4.0	6.4		5.0	6.5		4.0	6.5	
Vehicle Extension (s)	3.0	5.0		3.0	5.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	190	1001		222	1051		469	1742		207	1559	
v/s Ratio Prot	c0.08	0.21		0.03	0.36		c0.10	0.36		c0.10	0.28	
v/s Ratio Perm	c0.37			0.14			0.36			c0.42		
v/c Ratio	1.24	0.68		0.46	1.15		1.02	1.03		1.32	0.89	
Uniform Delay, d1	29.6	32.1		22.7	36.2		27.0	34.2		27.1	33.9	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	143.4	2.4		1.5	78.4		47.6	29.8		173.3	7.8	
Delay (s)	173.0	34.5		24.2	114.6		74.7	64.1		200.4	41.8	
Level of Service	F	C		C	F		E	E		F	D	
Approach Delay (s)		66.1			107.8			66.3			67.4	
Approach LOS		E			F			E			E	

Intersection Summary

HCM 2000 Control Delay	75.5	HCM 2000 Level of Service		E		
HCM 2000 Volume to Capacity ratio	1.24					
Actuated Cycle Length (s)	105.0	Sum of lost time (s)		21.9		
Intersection Capacity Utilization	114.1%	ICU Level of Service		H		
Analysis Period (min)	15					

c Critical Lane Group

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	126	69	124	34	52	132	281	2105	56	110	1391	111
Future Volume (vph)	126	69	124	34	52	132	281	2105	56	110	1391	111
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	15.0		0.0	15.0		0.0	0.0		0.0	30.0		0.0
Storage Lanes	1		0	1		0	1		0	1		0
Taper Length (m)	15.0			15.0			7.5			25.0		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.91	0.91	1.00	0.91	0.91
Ped Bike Factor	0.99	0.99		1.00	0.98		1.00	1.00			1.00	
Frt		0.904			0.893			0.996			0.989	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1787	1688	0	1805	1658	0	1805	5059	0	1805	5020	0
Flt Permitted	0.466			0.439			0.154			0.046		
Satd. Flow (perm)	871	1688	0	831	1658	0	292	5059	0	87	5020	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		60			86			5			20	
Link Speed (k/h)		50			40			60			60	
Link Distance (m)		92.7			93.5			93.1			210.6	
Travel Time (s)		6.7			8.4			5.6			12.6	
Confl. Peds. (#/hr)	8		4	4		8	8		14	14		8
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Heavy Vehicles (%)	1%	0%	1%	0%	0%	1%	0%	2%	0%	0%	2%	0%
Adj. Flow (vph)	130	71	128	35	54	136	290	2170	58	113	1434	114
Shared Lane Traffic (%)												
Lane Group Flow (vph)	130	199	0	35	190	0	290	2228	0	113	1548	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.6			3.6			7.2			7.2	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway 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
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2		1	2		1	2		1	2	
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	
Leading Detector (m)	2.0	10.0		2.0	10.0		2.0	10.0		2.0	10.0	
Trailing Detector (m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Position(m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Size(m)	2.0	0.6		2.0	0.6		2.0	0.6		2.0	0.6	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Type	Perm	NA		Perm	NA		Perm	NA		pm+pt	NA	
Protected Phases		4			8			2		1	6	
Permitted Phases	4			8			2			6		
Detector Phase	4	4		8	8		2	2		1	6	
Switch Phase												
Minimum Initial (s)	8.0	8.0		8.0	8.0		8.0	8.0		7.0	8.0	
Minimum Split (s)	40.5	40.5		40.6	40.6		26.8	26.8		11.0	26.8	
Total Split (s)	40.6	40.6		40.6	40.6		88.4	88.4		11.0	99.4	
Total Split (%)	29.0%	29.0%		29.0%	29.0%		63.1%	63.1%		7.9%	71.0%	
Maximum Green (s)	34.1	34.1		34.0	34.0		82.6	82.6		7.0	93.6	
Yellow Time (s)	3.3	3.3		3.3	3.3		3.7	3.7		3.0	3.7	
All-Red Time (s)	3.2	3.2		3.3	3.3		2.1	2.1		1.0	2.1	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)	6.5	6.5		6.6	6.6		5.8	5.8		4.0	5.8	
Lead/Lag							Lag	Lag		Lead		
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	None	None		None	None		Max	Max		None	Max	
Walk Time (s)	7.0	7.0		7.0	7.0		7.0	7.0			7.0	
Flash Dont Walk (s)	27.0	27.0		27.0	27.0		14.0	14.0			14.0	
Pedestrian Calls (#/hr)	0	0		0	0		0	0			0	
Act Effct Green (s)	22.0	22.0		21.9	21.9		82.9	82.9		95.7	93.9	
Actuated g/C Ratio	0.17	0.17		0.17	0.17		0.65	0.65		0.75	0.73	
v/c Ratio	0.87	0.59		0.25	0.54		1.54	0.68		0.71	0.42	
Control Delay	97.7	40.4		49.1	31.0		291.5	16.7		47.1	7.7	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.2	
Total Delay	97.7	40.4		49.1	31.0		291.5	16.7		47.1	7.9	
LOS	F	D		D	C		F	B		D	A	
Approach Delay		63.0			33.8			48.3			10.5	
Approach LOS		E			C			D			B	

Intersection Summary			
Area Type:	Other		
Cycle Length: 140			
Actuated Cycle Length: 128.3			
Natural Cycle: 150			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 1.54			
Intersection Signal Delay: 35.4		Intersection LOS: D	
Intersection Capacity Utilization 89.5%		ICU Level of Service E	
Analysis Period (min) 15			

Splits and Phases: 2: Appleby Line & Ironstone Dr



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	130	199	35	190	290	2228	113	1548
v/c Ratio	0.87	0.59	0.25	0.54	1.54	0.68	0.71	0.42
Control Delay	97.7	40.4	49.1	31.0	291.5	16.7	47.1	7.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2
Total Delay	97.7	40.4	49.1	31.0	291.5	16.7	47.1	7.9
Queue Length 50th (m)	33.9	34.1	8.1	24.8	~107.7	126.6	12.5	50.6
Queue Length 95th (m)	58.8	59.1	18.6	49.0	#133.5	183.6	#49.2	81.9
Internal Link Dist (m)		68.7		69.5		69.1		186.6
Turn Bay Length (m)	15.0		15.0				30.0	
Base Capacity (vph)	232	494	221	504	188	3270	159	3680
Starvation Cap Reductn	0	0	0	0	0	0	0	1137
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.56	0.40	0.16	0.38	1.54	0.68	0.71	0.61

Intersection Summary

~ 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.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	126	69	124	34	52	132	281	2105	56	110	1391	111
Future Volume (vph)	126	69	124	34	52	132	281	2105	56	110	1391	111
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.5	6.5		6.6	6.6		5.8	5.8		4.0	5.8	
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	0.91		1.00	0.91	
Frpb, ped/bikes	1.00	0.99		1.00	0.99		1.00	1.00		1.00	1.00	
Flpb, ped/bikes	0.99	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Frt	1.00	0.90		1.00	0.89		1.00	1.00		1.00	0.99	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1776	1688		1799	1659		1800	5060		1805	5020	
Flt Permitted	0.47	1.00		0.44	1.00		0.15	1.00		0.05	1.00	
Satd. Flow (perm)	870	1688		832	1659		292	5060		87	5020	
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	130	71	128	35	54	136	290	2170	58	113	1434	114
RTOR Reduction (vph)	0	50	0	0	71	0	0	2	0	0	5	0
Lane Group Flow (vph)	130	149	0	35	119	0	290	2226	0	113	1543	0
Confl. Peds. (#/hr)	8		4	4		8	8		14	14		8
Heavy Vehicles (%)	1%	0%	1%	0%	0%	1%	0%	2%	0%	0%	2%	0%
Turn Type	Perm	NA		Perm	NA		Perm	NA		pm+pt	NA	
Protected Phases		4			8			2		1	6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)	22.0	22.0		21.9	21.9		82.9	82.9		93.9	93.9	
Effective Green, g (s)	22.0	22.0		21.9	21.9		82.9	82.9		93.9	93.9	
Actuated g/C Ratio	0.17	0.17		0.17	0.17		0.65	0.65		0.73	0.73	
Clearance Time (s)	6.5	6.5		6.6	6.6		5.8	5.8		4.0	5.8	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	149	289		142	283		188	3272		157	3676	
v/s Ratio Prot		0.09			0.07			0.44		c0.04	0.31	
v/s Ratio Perm	c0.15			0.04			c0.99			0.48		
v/c Ratio	0.87	0.52		0.25	0.42		1.54	0.68		0.72	0.42	
Uniform Delay, d1	51.7	48.3		46.0	47.5		22.6	14.3		26.6	6.6	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	39.0	1.6		0.9	1.0		268.9	1.2		14.6	0.4	
Delay (s)	90.7	49.8		46.9	48.5		291.5	15.5		41.3	7.0	
Level of Service	F	D		D	D		F	B		D	A	
Approach Delay (s)		66.0			48.2			47.2			9.3	
Approach LOS		E			D			D			A	

Intersection Summary

HCM 2000 Control Delay	35.3	HCM 2000 Level of Service		D		
HCM 2000 Volume to Capacity ratio	1.36					
Actuated Cycle Length (s)	128.2	Sum of lost time (s)		16.4		
Intersection Capacity Utilization	89.5%	ICU Level of Service		E		
Analysis Period (min)	15					

c Critical Lane Group

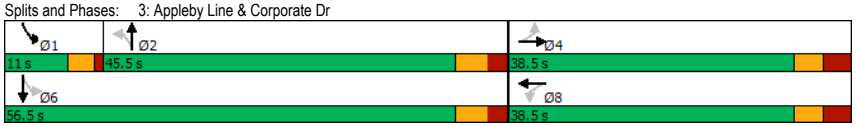
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	113	47	86	100	30	185	37	2144	110	88	1351	34
Future Volume (vph)	113	47	86	100	30	185	37	2144	110	88	1351	34
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	25.0		0.0	25.0		0.0	30.0		0.0	110.0		0.0
Storage Lanes	1		0	1		0	1		0	1		0
Taper Length (m)	7.5			7.5			40.0			25.0		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.91	0.91	1.00	0.91	0.91
Ped Bike Factor	1.00	0.99		1.00	0.99		1.00	1.00			1.00	
Frt		0.903			0.871			0.993			0.996	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1736	1638	0	1787	1619	0	1583	5049	0	1703	5006	0
Flt Permitted	0.507			0.669			0.175			0.087		
Satd. Flow (perm)	924	1638	0	1258	1619	0	291	5049	0	156	5006	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		31			165			10			6	
Link Speed (k/h)		50			50			60			60	
Link Distance (m)		173.6			79.2			281.3			198.1	
Travel Time (s)		12.5			5.7			16.9			11.9	
Confl. Peds. (#/hr)	4		1	1		4	5		1	1		5
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Heavy Vehicles (%)	4%	0%	6%	1%	0%	1%	14%	2%	0%	6%	3%	8%
Adj. Flow (vph)	116	48	89	103	31	191	38	2210	113	91	1393	35
Shared Lane Traffic (%)												
Lane Group Flow (vph)	116	137	0	103	222	0	38	2323	0	91	1428	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.6			3.6			3.6			3.6	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway 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
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2		1	2		1	2		1	2	
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	
Leading Detector (m)	2.0	10.0		2.0	10.0		2.0	10.0		2.0	10.0	
Trailing Detector (m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Position(m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Size(m)	2.0	0.6		2.0	0.6		2.0	0.6		2.0	0.6	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Type	Perm	NA		Perm	NA		Perm	NA		pm+pt	NA	
Protected Phases		4			8			2		1	6	
Permitted Phases	4			8			2			6		
Detector Phase	4	4		8	8		2	2		1	6	
Switch Phase												
Minimum Initial (s)	8.0	8.0		8.0	8.0		8.0	8.0		7.0	8.0	
Minimum Split (s)	38.5	38.5		38.5	38.5		34.0	34.0		11.0	34.0	
Total Split (s)	38.5	38.5		38.5	38.5		45.5	45.5		11.0	56.5	
Total Split (%)	40.5%	40.5%		40.5%	40.5%		47.9%	47.9%		11.6%	59.5%	
Maximum Green (s)	32.0	32.0		32.0	32.0		39.5	39.5		7.0	50.5	
Yellow Time (s)	3.3	3.3		3.3	3.3		3.7	3.7		3.0	3.7	
All-Red Time (s)	3.2	3.2		3.2	3.2		2.3	2.3		1.0	2.3	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)	6.5	6.5		6.5	6.5		6.0	6.0		4.0	6.0	
Lead/Lag							Lag	Lag		Lead		
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	None	None		None	None		Max	Max		None	Max	
Walk Time (s)	7.0	7.0		7.0	7.0		7.0	7.0			7.0	
Flash Dont Walk (s)	25.0	25.0		25.0	25.0		21.0	21.0			21.0	
Pedestrian Calls (#/hr)	0	0		0	0		0	0			0	
Act Effct Green (s)	13.8	13.8		13.8	13.8		42.0	42.0		52.7	50.7	
Actuated g/C Ratio	0.18	0.18		0.18	0.18		0.55	0.55		0.68	0.66	
v/c Ratio	0.70	0.43		0.46	0.52		0.24	0.84		0.37	0.43	
Control Delay	52.0	25.3		34.6	13.2		17.4	20.6		10.4	7.3	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	52.0	25.3		34.6	13.2		17.4	20.6		10.4	7.3	
LOS	D	C		C	B		B	C		B	A	
Approach Delay		37.5			20.0			20.5			7.5	
Approach LOS		D			B			C			A	

Intersection Summary

Area Type: Other
Cycle Length: 95
Actuated Cycle Length: 77
Natural Cycle: 95
Control Type: Semi Act-Uncoord
Maximum v/c Ratio: 0.84
Intersection Signal Delay: 17.0 — Intersection LOS: B
Intersection Capacity Utilization 90.6% — ICU Level of Service E
Analysis Period (min) 15

Splits and Phases: 3: Appleby Line & Corporate Dr



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	116	137	103	222	38	2323	91	1428
v/c Ratio	0.70	0.43	0.46	0.52	0.24	0.84	0.37	0.43
Control Delay	52.0	25.3	34.6	13.2	17.4	20.6	10.4	7.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	52.0	25.3	34.6	13.2	17.4	20.6	10.4	7.3
Queue Length 50th (m)	16.8	14.4	14.2	7.5	3.0	108.3	3.9	32.6
Queue Length 95th (m)	34.3	30.0	28.5	26.0	11.9	#178.5	13.2	55.0
Internal Link Dist (m)		149.6		55.2		257.3		174.1
Turn Bay Length (m)	25.0		25.0		30.0		110.0	
Base Capacity (vph)	385	701	524	771	158	2759	247	3296
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.30	0.20	0.20	0.29	0.24	0.84	0.37	0.43

Intersection Summary

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

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	113	47	86	100	30	185	37	2144	110	88	1351	34
Future Volume (vph)	113	47	86	100	30	185	37	2144	110	88	1351	34
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.5	6.5		6.5	6.5		6.0	6.0		4.0	6.0	
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	0.91		1.00	0.91	
Frpb, ped/bikes	1.00	0.99		1.00	0.99		1.00	1.00		1.00	1.00	
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Frt	1.00	0.90		1.00	0.87		1.00	0.99		1.00	1.00	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1732	1637		1786	1620		1582	5048		1703	5008	
Flt Permitted	0.51	1.00		0.67	1.00		0.18	1.00		0.09	1.00	
Satd. Flow (perm)	925	1637		1259	1620		291	5048		156	5008	
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	116	48	89	103	31	191	38	2210	113	91	1393	35
RTOR Reduction (vph)	0	26	0	0	136	0	0	5	0	0	2	0
Lane Group Flow (vph)	116	111	0	103	86	0	38	2318	0	91	1426	0
Confl. Peds. (#/hr)	4		1	1		4	5		1	1		5
Heavy Vehicles (%)	4%	0%	6%	1%	0%	1%	14%	2%	0%	6%	3%	8%
Turn Type	Perm	NA		Perm	NA		Perm	NA		pm+pt	NA	
Protected Phases		4			8			2		1	6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)	13.8	13.8		13.8	13.8		42.0	42.0		51.5	51.5	
Effective Green, g (s)	13.8	13.8		13.8	13.8		42.0	42.0		51.5	51.5	
Actuated g/C Ratio	0.18	0.18		0.18	0.18		0.54	0.54		0.66	0.66	
Clearance Time (s)	6.5	6.5		6.5	6.5		6.0	6.0		4.0	6.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	164	290		223	287		157	2725		212	3315	
v/s Ratio Prot		0.07			0.05			c0.46		0.03	c0.28	
v/s Ratio Perm	c0.13			0.08			0.13			0.25		
v/c Ratio	0.71	0.38		0.46	0.30		0.24	0.85		0.43	0.43	
Uniform Delay, d1	30.1	28.3		28.7	27.8		9.5	15.2		12.0	6.2	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	13.0	0.9		1.5	0.6		3.6	3.6		1.4	0.4	
Delay (s)	43.1	29.1		30.2	28.4		13.1	18.8		13.4	6.6	
Level of Service	D	C		C	C		B	B		B	A	
Approach Delay (s)		35.5			29.0			18.7			7.0	
Approach LOS		D			C			B			A	

Intersection Summary

HCM 2000 Control Delay	16.4	HCM 2000 Level of Service		B		
HCM 2000 Volume to Capacity ratio	0.79					
Actuated Cycle Length (s)	77.8	Sum of lost time (s)		16.5		
Intersection Capacity Utilization	90.6%	ICU Level of Service		E		
Analysis Period (min)	15					

c Critical Lane Group

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	260	112	0	1	86	117	1	3	5	77	5	64
Future Volume (vph)	260	112	0	1	86	117	1	3	5	77	5	64
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	0.0		0.0	0.0		0.0	0.0		0.0	20.0		0.0
Storage Lanes	0		0	0		0	0		0	1		0
Taper Length (m)	7.5			7.5			7.5			20.0		
Lane Util. 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
Ped Bike Factor												
Frt					0.923			0.925			0.860	
Flt Protected		0.966						0.994		0.950		
Satd. Flow (prot)	0	1733	0	0	1644	0	0	1367	0	1736	1502	0
Flt Permitted		0.966						0.994		0.950		
Satd. Flow (perm)	0	1733	0	0	1644	0	0	1367	0	1736	1502	0
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		83.4			35.0			72.0			78.5	
Travel Time (s)		6.0			2.5			5.2			5.7	
Confl. Peds. (#/hr)	2					2			2	2		
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Heavy Vehicles (%)	5%	8%	0%	0%	9%	5%	100%	50%	0%	4%	33%	7%
Adj. Flow (vph)	274	118	0	1	91	123	1	3	5	81	5	67
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	392	0	0	215	0	0	9	0	81	72	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		0.0			0.0			0.0			3.6	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway 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
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Sign Control		Free			Free			Stop			Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	53.2%	ICU Level of Service A	
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	260	112	0	1	86	117	1	3	5	77	5	64
Future Volume (Veh/h)	260	112	0	1	86	117	1	3	5	77	5	64
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	274	118	0	1	91	123	1	3	5	81	5	67
Pedestrians					2						2	
Lane Width (m)					3.6						3.6	
Walking Speed (m/s)					1.2						1.2	
Percent Blockage					0						0	
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (m)					203							
pX, platoon unblocked												
vC, conflicting volume	216			118			890	884	120	831	822	154
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	216			118			890	884	120	831	822	154
tC, single (s)	4.1			4.1			8.1	7.0	6.2	7.1	6.8	6.3
tC, 2 stage (s)												
tF (s)	2.2			2.2			4.4	4.5	3.3	3.5	4.3	3.4
p0 queue free %	79			100			99	98	99	66	98	92
cM capacity (veh/h)	1334			1483			138	189	935	236	219	877

Direction, Lane #	EB 1	WB 1	NB 1	SB 1	SB 2
Volume Total	392	215	9	81	72
Volume Left	274	1	1	81	0
Volume Right	0	123	5	0	67
cSH	1334	1483	316	236	726
Volume to Capacity	0.21	0.00	0.03	0.34	0.10
Queue Length 95th (m)	6.2	0.0	0.7	11.7	2.6
Control Delay (s)	6.4	0.0	16.7	28.0	10.5
Lane LOS	A	A	C	D	B
Approach Delay (s)	6.4	0.0	16.7	19.8	
Approach LOS			C	C	

Intersection Summary					
Average Delay	7.4				
Intersection Capacity Utilization	53.2%	ICU Level of Service	A		
Analysis Period (min)	15				

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	28	114	56	119	209	116	37	0	85	119	0	15
Future Volume (vph)	28	114	56	119	209	116	37	0	85	119	0	15
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Util. 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
Frt		0.962			0.965			0.906			0.985	
Flt Protected		0.993			0.987			0.985			0.957	
Satd. Flow (prot)	0	1779	0	0	1774	0	0	1662	0	0	1756	0
Flt Permitted		0.993			0.987			0.985			0.957	
Satd. Flow (perm)	0	1779	0	0	1774	0	0	1662	0	0	1756	0
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		75.5			92.7			42.4			48.0	
Travel Time (s)		5.4			6.7			3.1			3.5	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	30	124	61	129	227	126	40	0	92	129	0	16
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	215	0	0	482	0	0	132	0	0	145	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		0.0			3.6			0.0			0.0	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway 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
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Sign Control		Free			Free			Stop			Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	59.8%	ICU Level of Service B	
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	28	114	56	119	209	116	37	0	85	119	0	15
Future Volume (Veh/h)	28	114	56	119	209	116	37	0	85	119	0	15
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	30	124	61	129	227	126	40	0	92	129	0	16
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (m)					93							
pX, platoon unblocked	0.93						0.93	0.93		0.93	0.93	0.93
vC, conflicting volume	353			185			778	826	154	854	793	290
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	272			185			727	778	154	809	743	204
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	98			91			86	100	90	43	100	98
cM capacity (veh/h)	1206			1390			283	271	891	228	284	781

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	215	482	132	145
Volume Left	30	129	40	129
Volume Right	61	126	92	16
cSH	1206	1390	540	248
Volume to Capacity	0.02	0.09	0.24	0.59
Queue Length 95th (m)	0.6	2.5	7.6	26.9
Control Delay (s)	1.3	2.8	13.8	38.2
Lane LOS	A	A	B	E
Approach Delay (s)	1.3	2.8	13.8	38.2
Approach LOS			B	E

Intersection Summary				
Average Delay	9.2			
Intersection Capacity Utilization	59.8%	ICU Level of Service	B	
Analysis Period (min)	15			

Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	0	150	0	2442	1495	54
Future Volume (vph)	0	150	0	2442	1495	54
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	0.91	0.95	0.95
Frt		0.865			0.995	
Flt Protected						
Satd. Flow (prot)	0	1611	0	5085	3522	0
Flt Permitted						
Satd. Flow (perm)	0	1611	0	5085	3522	0
Link Speed (k/h)	50			60	60	
Link Distance (m)	60.4			36.6	93.1	
Travel Time (s)	4.3			2.2	5.6	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	163	0	2654	1625	59
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	163	0	2654	1684	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	0.0			3.6	3.6	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	4.8			4.8	4.8	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)	25	15	25			15
Sign Control	Stop			Free	Free	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	59.0%	ICU Level of Service	B
Analysis Period (min)	15		

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	0	150	0	2442	1495	54
Future Volume (Veh/h)	0	150	0	2442	1495	54
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	163	0	2654	1625	59
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	None	
Median storage veh)						
Upstream signal (m)				235	93	
pX, platoon unblocked	0.67	0.86	0.86			
vC, conflicting volume	2539	842	1684			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	473	500	1475			
tC, single (s)	6.8	6.9	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	100	63	100			
cM capacity (veh/h)	346	446	391			

Direction, Lane #	EB 1	NB 1	NB 2	NB 3	SB 1	SB 2
Volume Total	163	885	885	885	1083	601
Volume Left	0	0	0	0	0	0
Volume Right	163	0	0	0	0	59
cSH	446	1700	1700	1700	1700	1700
Volume to Capacity	0.37	0.52	0.52	0.52	0.64	0.35
Queue Length 95th (m)	13.2	0.0	0.0	0.0	0.0	0.0
Control Delay (s)	17.7	0.0	0.0	0.0	0.0	0.0
Lane LOS	C					
Approach Delay (s)	17.7	0.0			0.0	
Approach LOS	C					

Intersection Summary				
Average Delay	0.6			
Intersection Capacity Utilization	59.0%	ICU Level of Service	B	
Analysis Period (min)	15			

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	174	20	71	190	14	24
Future Volume (vph)	174	20	71	190	14	24
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.986				0.914	
Flt Protected				0.987	0.982	
Satd. Flow (prot)	1837	0	0	1839	1672	0
Flt Permitted				0.987	0.982	
Satd. Flow (perm)	1837	0	0	1839	1672	0
Link Speed (k/h)	50			50	50	
Link Distance (m)	35.0			75.5	38.8	
Travel Time (s)	2.5			5.4	2.8	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	189	22	77	207	15	26
Shared Lane Traffic (%)						
Lane Group Flow (vph)	211	0	0	284	41	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	0.0			0.0	3.6	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	4.8			4.8	4.8	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)		15	25		25	15
Sign Control	Free			Free	Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 37.6%		ICU Level of Service A	
Analysis Period (min) 15			

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	174	20	71	190	14	24
Future Volume (Veh/h)	174	20	71	190	14	24
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	189	22	77	207	15	26
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (m)				168		
pX, platoon unblocked						
vC, conflicting volume			211		561	200
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			211		561	200
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			94		97	97
cM capacity (veh/h)			1360		461	841

Direction, Lane #	EB 1	WB 1	NB 1
Volume Total	211	284	41
Volume Left	0	77	15
Volume Right	22	0	26
cSH	1700	1360	646
Volume to Capacity	0.12	0.06	0.06
Queue Length 95th (m)	0.0	1.4	1.6
Control Delay (s)	0.0	2.5	10.9
Lane LOS		A	B
Approach Delay (s)	0.0	2.5	10.9
Approach LOS			B

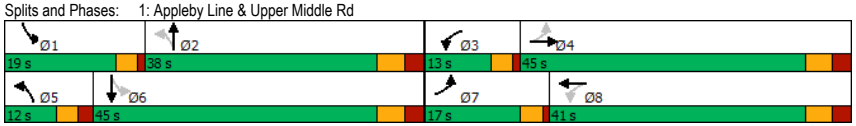
Intersection Summary			
Average Delay	2.2		
Intersection Capacity Utilization	37.6%	ICU Level of Service	A
Analysis Period (min)	15		

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	192	922	356	250	301	220	178	970	103	342	1489	64
Future Volume (vph)	192	922	356	250	301	220	178	970	103	342	1489	64
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	45.0		0.0	120.0		0.0	80.0		0.0	40.0		0.0
Storage Lanes	1		0	1		0	2		0	1		0
Taper Length (m)	30.0			20.0			40.0			35.0		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	0.95	0.97	0.91	0.91	1.00	0.91	0.91
Ped Bike Factor	1.00	0.99			0.99		1.00	1.00		1.00	1.00	
Frt		0.958			0.937			0.986			0.994	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1752	3379	0	1752	3244	0	3367	4800	0	1736	4935	0
Flt Permitted	0.320			0.112			0.127			0.113		
Satd. Flow (perm)	588	3379	0	207	3244	0	450	4800	0	206	4935	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		53			164			15			6	
Link Speed (k/h)		60			60			60			60	
Link Distance (m)		184.7			208.3			210.6			231.6	
Travel Time (s)		11.1			12.5			12.6			13.9	
Confl. Peds. (#/hr)	9		21	21		9	10		11	11		10
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Heavy Vehicles (%)	3%	1%	2%	3%	2%	5%	4%	6%	9%	4%	4%	13%
Adj. Flow (vph)	198	951	367	258	310	227	184	1000	106	353	1535	66
Shared Lane Traffic (%)												
Lane Group Flow (vph)	198	1318	0	258	537	0	184	1106	0	353	1601	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.6			3.6			7.2			7.2	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway 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
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2		1	2		1	2		1	2	
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	
Leading Detector (m)	2.0	10.0		2.0	10.0		2.0	10.0		2.0	10.0	
Trailing Detector (m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Position(m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Size(m)	2.0	0.6		2.0	0.6		2.0	0.6		2.0	0.6	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Type	pm+pt	NA		pm+pt	NA		pm+pt	NA		pm+pt	NA	
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4			8			2			6		
Detector Phase	7	4		3	8		5	2		1	6	
Switch Phase												
Minimum Initial (s)	7.0	8.0		7.0	8.0		7.0	8.0		7.0	8.0	
Minimum Split (s)	11.0	34.4		11.0	34.4		12.0	34.5		11.0	34.5	
Total Split (s)	17.0	45.0		13.0	41.0		12.0	38.0		19.0	45.0	
Total Split (%)	14.8%	39.1%		11.3%	35.7%		10.4%	33.0%		16.5%	39.1%	
Maximum Green (s)	13.0	38.6		9.0	34.6		7.0	31.5		15.0	38.5	
Yellow Time (s)	3.0	3.7		3.0	3.7		3.0	3.7		3.0	3.7	
All-Red Time (s)	1.0	2.7		1.0	2.7		2.0	2.8		1.0	2.8	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)	4.0	6.4		4.0	6.4		5.0	6.5		4.0	6.5	
Lead/Lag	Lead	Lag		Lead	Lag		Lead	Lag		Lead	Lag	
Lead-Lag Optimize?	Yes	Yes		Yes	Yes		Yes	Yes		Yes	Yes	
Vehicle Extension (s)	3.0	5.0		3.0	5.0		3.0	3.0		3.0	3.0	
Recall Mode	None	None		None	None		None	Max		None	Max	
Walk Time (s)		7.0			7.0			7.0			7.0	
Flash Dont Walk (s)		21.0			21.0			21.0			21.0	
Pedestrian Calls (#/hr)		0			0			0			0	
Act Effct Green (s)	52.9	38.6		47.1	35.7		40.0	31.5		53.0	38.5	
Actuated g/C Ratio	0.46	0.34		0.41	0.31		0.35	0.27		0.46	0.33	
v/c Ratio	0.51	1.13		1.26	0.48		0.55	0.83		1.20	0.97	
Control Delay	23.2	103.5		176.1	23.6		26.0	45.4		147.3	53.3	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	23.2	103.5		176.1	23.6		26.0	45.4		147.3	53.3	
LOS	C	F		F	C		C	D		F	D	
Approach Delay		93.0			73.1			42.6			70.3	
Approach LOS		F			E			D			E	

Intersection Summary			
Area Type:	Other		
Cycle Length: 115			
Actuated Cycle Length: 115			
Natural Cycle: 115			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 1.26			
Intersection Signal Delay: 70.5		Intersection LOS: E	
Intersection Capacity Utilization 111.0%		ICU Level of Service H	
Analysis Period (min) 15			

Splits and Phases: 1: Appleby Line & Upper Middle Rd



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	198	1318	258	537	184	1106	353	1601
v/c Ratio	0.51	1.13	1.26	0.48	0.55	0.83	1.20	0.97
Control Delay	23.2	103.5	176.1	23.6	26.0	45.4	147.3	53.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	23.2	103.5	176.1	23.6	26.0	45.4	147.3	53.3
Queue Length 50th (m)	27.3	~186.4	~60.5	37.5	12.7	89.3	~84.7	135.4
Queue Length 95th (m)	43.4	#231.1	#114.3	54.7	19.7	107.7	#145.0	#170.6
Internal Link Dist (m)		160.7		184.3		186.6		207.6
Turn Bay Length (m)	45.0		120.0		80.0		40.0	
Base Capacity (vph)	407	1169	205	1119	334	1325	294	1656
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.49	1.13	1.26	0.48	0.55	0.83	1.20	0.97

Intersection Summary

~ 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.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	192	922	356	250	301	220	178	970	103	342	1489	64
Future Volume (vph)	192	922	356	250	301	220	178	970	103	342	1489	64
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	6.4		4.0	6.4		5.0	6.5		4.0	6.5	
Lane Util. Factor	1.00	0.95		1.00	0.95		0.97	0.91		1.00	0.91	
Frpb, ped/bikes	1.00	0.99		1.00	0.99		1.00	1.00		1.00	1.00	
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Frt	1.00	0.96		1.00	0.94		1.00	0.99		1.00	0.99	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1750	3380		1752	3242		3367	4798		1735	4934	
Flt Permitted	0.32	1.00		0.11	1.00		0.13	1.00		0.11	1.00	
Satd. Flow (perm)	590	3380		207	3242		450	4798		206	4934	
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	198	951	367	258	310	227	184	1000	106	353	1535	66
RTOR Reduction (vph)	0	35	0	0	113	0	0	11	0	0	4	0
Lane Group Flow (vph)	198	1283	0	258	424	0	184	1095	0	353	1597	0
Confl. Peds. (#/hr)	9		21	21		9	10		11	11		10
Heavy Vehicles (%)	3%	1%	2%	3%	2%	5%	4%	6%	9%	4%	4%	13%
Turn Type	pm+pt	NA		pm+pt	NA		pm+pt	NA		pm+pt	NA	
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)	50.5	38.6		44.7	35.7		38.5	31.5		50.5	38.5	
Effective Green, g (s)	50.5	38.6		44.7	35.7		38.5	31.5		50.5	38.5	
Actuated g/C Ratio	0.44	0.34		0.39	0.31		0.33	0.27		0.44	0.33	
Clearance Time (s)	4.0	6.4		4.0	6.4		5.0	6.5		4.0	6.5	
Vehicle Extension (s)	3.0	5.0		3.0	5.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	379	1134		201	1006		328	1314		289	1651	
v/s Ratio Prot	c0.05	0.38		c0.10	0.13		0.03	0.23		c0.16	0.32	
v/s Ratio Perm	0.18			c0.40			0.15			c0.38		
v/c Ratio	0.52	1.13		1.28	0.42		0.56	0.83		1.22	0.97	
Uniform Delay, d1	21.1	38.2		29.4	31.5		29.6	39.3		32.6	37.6	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	1.3	70.5		160.0	0.6		2.2	6.3		126.7	15.6	
Delay (s)	22.4	108.7		189.4	32.1		31.8	45.6		159.3	53.3	
Level of Service	C	F		F	C		C	D		F	D	
Approach Delay (s)		97.4			83.1			43.6			72.4	
Approach LOS		F			F			D			E	

Intersection Summary				
HCM 2000 Control Delay	74.1	HCM 2000 Level of Service	E	
HCM 2000 Volume to Capacity ratio	1.27			
Actuated Cycle Length (s)	115.0	Sum of lost time (s)	21.9	
Intersection Capacity Utilization	111.0%	ICU Level of Service	H	
Analysis Period (min)	15			

c Critical Lane Group

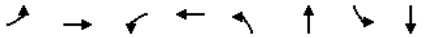
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	96	33	186	93	69	146	159	1058	18	46	2134	76
Future Volume (vph)	96	33	186	93	69	146	159	1058	18	46	2134	76
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	15.0		0.0	15.0		0.0	0.0		0.0	30.0		0.0
Storage Lanes	1		0	1		0	1		0	1		0
Taper Length (m)	15.0			15.0			7.5			25.0		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.91	0.91	1.00	0.91	0.91
Ped Bike Factor	1.00	0.98		1.00	0.99			1.00		1.00	1.00	
Frt		0.872			0.898			0.997			0.995	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1671	1527	0	1805	1656	0	1687	4913	0	1656	5007	0
Flt Permitted	0.393			0.381			0.055			0.210		
Satd. Flow (perm)	690	1527	0	721	1656	0	98	4913	0	366	5007	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		11			72			3			8	
Link Speed (k/h)		50			40			60			60	
Link Distance (m)		92.7			93.5			93.1			210.6	
Travel Time (s)		6.7			8.4			5.6			12.6	
Confl. Peds. (#/hr)	2		5	5		2	2		10	2		10
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Heavy Vehicles (%)	8%	6%	7%	0%	0%	3%	7%	5%	15%	9%	3%	0%
Adj. Flow (vph)	100	34	194	97	72	152	166	1102	19	48	2223	79
Shared Lane Traffic (%)												
Lane Group Flow (vph)	100	228	0	97	224	0	166	1121	0	48	2302	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.6			3.6			7.2			7.2	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway 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
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2		1	2		1	2		1	2	
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	
Leading Detector (m)	2.0	10.0		2.0	10.0		2.0	10.0		2.0	10.0	
Trailing Detector (m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Position(m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Size(m)	2.0	0.6		2.0	0.6		2.0	0.6		2.0	0.6	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Type	Perm	NA		Perm	NA		Perm	NA		pm+pt	NA	
Protected Phases		4			8			2		1	6	
Permitted Phases	4			8			2			6		
Detector Phase	4	4		8	8		2	2		1	6	
Switch Phase												
Minimum Initial (s)	8.0	8.0		8.0	8.0		8.0	8.0		7.0	8.0	
Minimum Split (s)	40.5	40.5		40.6	40.6		26.8	26.8		11.0	26.8	
Total Split (s)	40.6	40.6		40.6	40.6		88.4	88.4		11.0	99.4	
Total Split (%)	29.0%	29.0%		29.0%	29.0%		63.1%	63.1%		7.9%	71.0%	
Maximum Green (s)	34.1	34.1		34.0	34.0		82.6	82.6		7.0	93.6	
Yellow Time (s)	3.3	3.3		3.3	3.3		3.7	3.7		3.0	3.7	
All-Red Time (s)	3.2	3.2		3.3	3.3		2.1	2.1		1.0	2.1	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)	6.5	6.5		6.6	6.6		5.8	5.8		4.0	5.8	
Lead/Lag							Lag	Lag		Lead		
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	None	None		None	None		Max	Max		None	Max	
Walk Time (s)	7.0	7.0		7.0	7.0		7.0	7.0			7.0	
Flash Dont Walk (s)	27.0	27.0		27.0	27.0		14.0	14.0			14.0	
Pedestrian Calls (#/hr)	0	0		0	0		0	0			0	
Act Effct Green (s)	23.6	23.6		23.5	23.5		85.2	85.2		95.6	93.8	
Actuated g/C Ratio	0.18	0.18		0.18	0.18		0.66	0.66		0.74	0.72	
v/c Ratio	0.80	0.79		0.75	0.62		2.59	0.35		0.14	0.64	
Control Delay	90.9	68.1		82.3	40.3		781.4	11.4		6.8	11.0	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.7	
Total Delay	90.9	68.1		82.3	40.3		781.4	11.4		6.8	11.7	
LOS	F	E		F	D		F	B		A	B	
Approach Delay		75.1			53.0			110.7			11.6	
Approach LOS		E			D			F			B	

Intersection Summary			
Area Type:	Other		
Cycle Length: 140			
Actuated Cycle Length: 129.8			
Natural Cycle: 150			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 2.59			
Intersection Signal Delay: 49.3		Intersection LOS: D	
Intersection Capacity Utilization 94.9%		ICU Level of Service F	
Analysis Period (min) 15			

Splits and Phases: 2: Appleby Line & Ironstone Dr



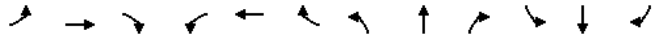


Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	100	228	97	224	166	1121	48	2302
v/c Ratio	0.80	0.79	0.75	0.62	2.59	0.35	0.14	0.64
Control Delay	90.9	68.1	82.3	40.3	781.4	11.4	6.8	11.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.7
Total Delay	90.9	68.1	82.3	40.3	781.4	11.4	6.8	11.7
Queue Length 50th (m)	26.0	56.5	24.9	38.0	~59.0	48.3	3.1	103.2
Queue Length 95th (m)	48.1	86.3	46.1	65.2	#116.2	70.4	8.6	154.4
Internal Link Dist (m)		68.7		69.5		69.1		186.6
Turn Bay Length (m)	15.0		15.0				30.0	
Base Capacity (vph)	181	410	189	487	64	3224	339	3621
Starvation Cap Reductn	0	0	0	0	0	0	0	863
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.55	0.56	0.51	0.46	2.59	0.35	0.14	0.83

Intersection Summary

~ 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.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	96	33	186	93	69	146	159	1058	18	46	2134	76
Future Volume (vph)	96	33	186	93	69	146	159	1058	18	46	2134	76
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.5	6.5		6.6	6.6		5.8	5.8		4.0	5.8	
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	0.91		1.00	0.91	
Frpb, ped/bikes	1.00	0.98		1.00	0.99		1.00	1.00		1.00	1.00	
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Frt	1.00	0.87		1.00	0.90		1.00	1.00		1.00	0.99	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1669	1528		1798	1656		1687	4915		1656	5006	
Flt Permitted	0.39	1.00		0.38	1.00		0.05	1.00		0.21	1.00	
Satd. Flow (perm)	691	1528		721	1656		98	4915		366	5006	
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	100	34	194	97	72	152	166	1102	19	48	2223	79
RTOR Reduction (vph)	0	9	0	0	59	0	0	1	0	0	2	0
Lane Group Flow (vph)	100	219	0	97	165	0	166	1120	0	48	2300	0
Confl. Peds. (#/hr)	2		5	5		2	2		10	2		10
Heavy Vehicles (%)	8%	6%	7%	0%	0%	3%	7%	5%	15%	9%	3%	0%
Turn Type	Perm	NA		Perm	NA		Perm	NA		pm+pt	NA	
Protected Phases		4			8			2		1	6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)	23.7	23.7		23.6	23.6		85.2	85.2		94.7	94.7	
Effective Green, g (s)	23.7	23.7		23.6	23.6		85.2	85.2		94.7	94.7	
Actuated g/C Ratio	0.18	0.18		0.18	0.18		0.65	0.65		0.72	0.72	
Clearance Time (s)	6.5	6.5		6.6	6.6		5.8	5.8		4.0	5.8	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	125	277		130	299		63	3203		319	3627	
v/s Ratio Prot		0.14			0.10			0.23		0.01	c0.46	
v/s Ratio Perm	c0.14			0.13			c1.70			0.10		
v/c Ratio	0.80	0.79		0.75	0.55		2.63	0.35		0.15	0.63	
Uniform Delay, d1	51.2	51.1		50.7	48.7		22.7	10.3		5.7	9.2	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	29.5	14.2		20.6	2.2		779.2	0.3		0.2	0.9	
Delay (s)	80.7	65.3		71.3	50.9		801.9	10.6		5.9	10.0	
Level of Service	F	E		E	D		F	B		A	B	
Approach Delay (s)		70.0			57.1			112.6			9.9	
Approach LOS		E			E			F			A	

Intersection Summary					
HCM 2000 Control Delay	48.9	HCM 2000 Level of Service		D	
HCM 2000 Volume to Capacity ratio	2.14				
Actuated Cycle Length (s)	130.7	Sum of lost time (s)		16.4	
Intersection Capacity Utilization	94.9%	ICU Level of Service		F	
Analysis Period (min)	15				

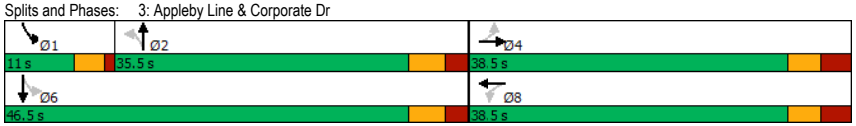
c Critical Lane Group

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	22	9	30	145	25	146	39	1067	52	62	2295	47
Future Volume (vph)	22	9	30	145	25	146	39	1067	52	62	2295	47
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	25.0		0.0	25.0		0.0	30.0		0.0	110.0		0.0
Storage Lanes	1		0	1		0	1		0	1		0
Taper Length (m)	7.5			7.5			40.0			25.0		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.91	0.91	1.00	0.91	0.91
Ped Bike Factor		0.99		1.00			1.00	1.00		1.00	1.00	
Frt		0.884			0.872			0.993			0.997	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1517	1348	0	1805	1602	0	1687	4856	0	1570	4971	0
Flt Permitted	0.647			0.731			0.112			0.189		
Satd. Flow (perm)	1033	1348	0	1387	1602	0	199	4856	0	312	4971	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		1			149			9			5	
Link Speed (k/h)		50			50			60			60	
Link Distance (m)		173.6			79.2			281.3			198.1	
Travel Time (s)		12.5			5.7			16.9			11.9	
Confl. Peds. (#/hr)			2	2			1		2	2		1
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Heavy Vehicles (%)	19%	0%	30%	0%	0%	4%	7%	6%	5%	15%	4%	3%
Adj. Flow (vph)	22	9	31	148	26	149	40	1089	53	63	2342	48
Shared Lane Traffic (%)												
Lane Group Flow (vph)	22	40	0	148	175	0	40	1142	0	63	2390	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.6			3.6			3.6			3.6	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway 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
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2		1	2		1	2		1	2	
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	
Leading Detector (m)	2.0	10.0		2.0	10.0		2.0	10.0		2.0	10.0	
Trailing Detector (m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Position(m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Size(m)	2.0	0.6		2.0	0.6		2.0	0.6		2.0	0.6	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Type	Perm	NA		Perm	NA		Perm	NA		pm+pt	NA	
Protected Phases		4			8			2		1	6	
Permitted Phases	4			8			2			6		
Detector Phase	4	4		8	8		2	2		1	6	
Switch Phase												
Minimum Initial (s)	8.0	8.0		8.0	8.0		8.0	8.0		7.0	8.0	
Minimum Split (s)	38.5	38.5		38.5	38.5		34.0	34.0		11.0	34.0	
Total Split (s)	38.5	38.5		38.5	38.5		35.5	35.5		11.0	46.5	
Total Split (%)	45.3%	45.3%		45.3%	45.3%		41.8%	41.8%		12.9%	54.7%	
Maximum Green (s)	32.0	32.0		32.0	32.0		29.5	29.5		7.0	40.5	
Yellow Time (s)	3.3	3.3		3.3	3.3		3.7	3.7		3.0	3.7	
All-Red Time (s)	3.2	3.2		3.2	3.2		2.3	2.3		1.0	2.3	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)	6.5	6.5		6.5	6.5		6.0	6.0		4.0	6.0	
Lead/Lag							Lag	Lag		Lead		
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	None	None		None	None		Max	Max		None	Max	
Walk Time (s)	7.0	7.0		7.0	7.0		7.0	7.0			7.0	
Flash Dont Walk (s)	25.0	25.0		25.0	25.0		21.0	21.0			21.0	
Pedestrian Calls (#/hr)	0	0		0	0		0	0			0	
Act Effct Green (s)	12.4	12.4		12.4	12.4		35.6	35.6		44.1	42.1	
Actuated g/C Ratio	0.19	0.19		0.19	0.19		0.53	0.53		0.66	0.63	
v/c Ratio	0.12	0.16		0.58	0.42		0.38	0.44		0.19	0.76	
Control Delay	22.8	22.7		33.7	9.4		29.2	12.0		6.3	11.7	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	22.8	22.7		33.7	9.4		29.2	12.0		6.3	11.7	
LOS	C	C		C	A		C	B		A	B	
Approach Delay		22.8			20.5			12.5			11.5	
Approach LOS		C			C			B			B	

Intersection Summary			
Area Type:	Other		
Cycle Length: 85			
Actuated Cycle Length: 67			
Natural Cycle: 85			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 0.76			
Intersection Signal Delay: 12.7		Intersection LOS: B	
Intersection Capacity Utilization 80.8%		ICU Level of Service D	
Analysis Period (min) 15			

Splits and Phases: 3: Appleby Line & Corporate Dr



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	22	40	148	175	40	1142	63	2390
v/c Ratio	0.12	0.16	0.58	0.42	0.38	0.44	0.19	0.76
Control Delay	22.8	22.7	33.7	9.4	29.2	12.0	6.3	11.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	22.8	22.7	33.7	9.4	29.2	12.0	6.3	11.7
Queue Length 50th (m)	2.4	4.2	17.3	2.8	3.3	35.6	2.4	69.6
Queue Length 95th (m)	7.7	11.5	33.8	17.1	#18.2	55.0	7.6	112.9
Internal Link Dist (m)		149.6		55.2		257.3		174.1
Turn Bay Length (m)	25.0		25.0		30.0		110.0	
Base Capacity (vph)	493	645	663	843	105	2583	336	3127
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.04	0.06	0.22	0.21	0.38	0.44	0.19	0.76

Intersection Summary

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

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	22	9	30	145	25	146	39	1067	52	62	2295	47
Future Volume (vph)	22	9	30	145	25	146	39	1067	52	62	2295	47
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.5	6.5		6.5	6.5		6.0	6.0		4.0	6.0	
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	0.91		1.00	0.91	
Frpb, ped/bikes	1.00	0.99		1.00	1.00		1.00	1.00		1.00	1.00	
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Frt	1.00	0.88		1.00	0.87		1.00	0.99		1.00	1.00	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1517	1348		1803	1603		1687	4856		1569	4971	
Flt Permitted	0.65	1.00		0.73	1.00		0.11	1.00		0.19	1.00	
Satd. Flow (perm)	1033	1348		1387	1603		200	4856		312	4971	
Peak-hour factor, PHF	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Adj. Flow (vph)	22	9	31	148	26	149	40	1089	53	63	2342	48
RTOR Reduction (vph)	0	1	0	0	122	0	0	4	0	0	2	0
Lane Group Flow (vph)	22	39	0	148	53	0	40	1138	0	63	2388	0
Confl. Peds. (#/hr)			2	2			1		2	2		1
Heavy Vehicles (%)	19%	0%	30%	0%	0%	4%	7%	6%	5%	15%	4%	3%
Turn Type	Perm	NA		Perm	NA		Perm	NA		pm+pt	NA	
Protected Phases		4			8			2		1	6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)	12.4	12.4		12.4	12.4		35.6	35.6		43.8	43.8	
Effective Green, g (s)	12.4	12.4		12.4	12.4		35.6	35.6		43.8	43.8	
Actuated g/C Ratio	0.18	0.18		0.18	0.18		0.52	0.52		0.64	0.64	
Clearance Time (s)	6.5	6.5		6.5	6.5		6.0	6.0		4.0	6.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	186	243		250	289		103	2516		275	3169	
v/s Ratio Prot		0.03			0.03			0.23		0.01	c0.48	
v/s Ratio Perm	0.02			c0.11			0.20			0.13		
v/c Ratio	0.12	0.16		0.59	0.18		0.39	0.45		0.23	0.75	
Uniform Delay, d1	23.6	23.8		25.8	23.9		10.0	10.4		5.3	8.7	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.3	0.3		3.7	0.3		10.7	0.6		0.4	1.7	
Delay (s)	23.9	24.1		29.6	24.2		20.7	11.0		5.7	10.4	
Level of Service	C	C		C	C		C	B		A	B	
Approach Delay (s)		24.0			26.6			11.3			10.3	
Approach LOS		C			C			B			B	

Intersection Summary

HCM 2000 Control Delay	12.1	HCM 2000 Level of Service		B	
HCM 2000 Volume to Capacity ratio	0.77				
Actuated Cycle Length (s)	68.7	Sum of lost time (s)		16.5	
Intersection Capacity Utilization	80.8%	ICU Level of Service		D	
Analysis Period (min)	15				

c Critical Lane Group

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	57	76	0	0	80	35	1	1	0	168	15	142
Future Volume (vph)	57	76	0	0	80	35	1	1	0	168	15	142
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	0.0		0.0	0.0		0.0	0.0		0.0	20.0		0.0
Storage Lanes	0		0	0		0	0		0	1		0
Taper Length (m)	7.5			7.5			7.5			20.0		
Lane Util. 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
Ped Bike Factor												
Frt					0.959						0.865	
Flt Protected		0.979						0.976		0.950		
Satd. Flow (prot)	0	1347	0	0	1540	0	0	1854	0	1805	1573	0
Flt Permitted		0.979						0.976		0.950		
Satd. Flow (perm)	0	1347	0	0	1540	0	0	1854	0	1805	1573	0
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		83.4			35.1			72.0			78.5	
Travel Time (s)		6.0			2.5			5.2			5.7	
Confl. Peds. (#/hr)							1		2	2		1
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	29%	45%	0%	0%	22%	10%	0%	0%	0%	0%	0%	5%
Adj. Flow (vph)	63	84	0	0	89	39	1	1	0	187	17	158
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	147	0	0	128	0	0	2	0	187	175	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		0.0			0.0			0.0			3.6	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway 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
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Sign Control		Free			Free			Stop			Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 36.5%		ICU Level of Service A	
Analysis Period (min) 15			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	57	76	0	0	80	35	1	1	0	168	15	142
Future Volume (Veh/h)	57	76	0	0	80	35	1	1	0	168	15	142
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	63	84	0	0	89	39	1	1	0	187	17	158
Pedestrians		1			2							
Lane Width (m)		3.6			3.6							
Walking Speed (m/s)		1.2			1.2							
Percent Blockage		0			0							
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (m)					203							
pX, platoon unblocked												
vC, conflicting volume	128			84			486	338	86	321	318	110
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	128			84			486	338	86	321	318	110
tC, single (s)	4.4			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.5			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	95			100			100	100	100	69	97	83
cM capacity (veh/h)	1307			1526			387	558	977	611	572	935

Direction, Lane #	EB 1	WB 1	NB 1	SB 1	SB 2
Volume Total	147	128	2	187	175
Volume Left	63	0	1	187	0
Volume Right	0	39	0	0	158
cSH	1307	1526	457	611	881
Volume to Capacity	0.05	0.00	0.00	0.31	0.20
Queue Length 95th (m)	1.2	0.0	0.1	10.3	5.9
Control Delay (s)	3.6	0.0	12.9	13.5	10.1
Lane LOS	A		B	B	B
Approach Delay (s)	3.6	0.0	12.9	11.8	
Approach LOS			B	B	

Intersection Summary				
Average Delay	7.6			
Intersection Capacity Utilization	36.5%	ICU Level of Service	A	
Analysis Period (min)	15			

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	8	226	27	125	92	88	38	0	62	27	0	6
Future Volume (vph)	8	226	27	125	92	88	38	0	62	27	0	6
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Util. 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
Frt		0.986			0.961			0.916			0.974	
Flt Protected		0.998			0.980			0.981			0.961	
Satd. Flow (prot)	0	1833	0	0	1754	0	0	1674	0	0	1744	0
Flt Permitted		0.998			0.980			0.981			0.961	
Satd. Flow (perm)	0	1833	0	0	1754	0	0	1674	0	0	1744	0
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		75.4			92.7			42.4			48.0	
Travel Time (s)		5.4			6.7			3.1			3.5	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	9	246	29	136	100	96	41	0	67	29	0	7
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	284	0	0	332	0	0	108	0	0	36	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		0.0			3.6			0.0			0.0	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway 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
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Sign Control		Free			Free			Stop			Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	46.8%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	8	226	27	125	92	88	38	0	62	27	0	6
Future Volume (Veh/h)	8	226	27	125	92	88	38	0	62	27	0	6
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	9	246	29	136	100	96	41	0	67	29	0	7
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (m)					93							
pX, platoon unblocked	0.97						0.97	0.97		0.97	0.97	0.97
vC, conflicting volume	196			275			706	746	260	766	713	148
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	156			275			681	723	260	743	689	106
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	99			89			87	100	91	89	100	99
cM capacity (veh/h)	1382			1288			321	304	778	269	318	920

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	284	332	108	36
Volume Left	9	136	41	29
Volume Right	29	96	67	7
cSH	1382	1288	505	311
Volume to Capacity	0.01	0.11	0.21	0.12
Queue Length 95th (m)	0.2	2.8	6.4	3.1
Control Delay (s)	0.3	3.9	14.1	18.1
Lane LOS	A	A	B	C
Approach Delay (s)	0.3	3.9	14.1	18.1
Approach LOS			B	C

Intersection Summary				
Average Delay	4.7			
Intersection Capacity Utilization	46.8%	ICU Level of Service		A
Analysis Period (min)	15			

Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	0	89	0	1235	2370	43
Future Volume (vph)	0	89	0	1235	2370	43
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	0.86	0.91	0.91
Frt		0.865			0.997	
Flt Protected						
Satd. Flow (prot)	0	1611	0	6408	5070	0
Flt Permitted						
Satd. Flow (perm)	0	1611	0	6408	5070	0
Link Speed (k/h)	50			60	60	
Link Distance (m)	60.4			36.6	93.1	
Travel Time (s)	4.3			2.2	5.6	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	97	0	1342	2576	47
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	97	0	1342	2623	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	0.0			3.6	3.6	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	4.8			4.8	4.8	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)	25	15	25			15
Sign Control	Stop			Free	Free	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	58.9%	ICU Level of Service	B
Analysis Period (min)	15		

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	0	89	0	1235	2370	43
Future Volume (Veh/h)	0	89	0	1235	2370	43
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	97	0	1342	2576	47
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	None	
Median storage veh)						
Upstream signal (m)				235	93	
pX, platoon unblocked	0.78	0.76	0.76			
vC, conflicting volume	2935	882	2623			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	2142	0	2037			
tC, single (s)	6.8	6.9	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	100	88	100			
cM capacity (veh/h)	32	826	209			

Direction, Lane #	EB 1	NB 1	NB 2	NB 3	NB 4	SB 1	SB 2	SB 3
Volume Total	97	336	336	336	336	1030	1030	562
Volume Left	0	0	0	0	0	0	0	0
Volume Right	97	0	0	0	0	0	0	47
cSH	826	1700	1700	1700	1700	1700	1700	1700
Volume to Capacity	0.12	0.20	0.20	0.20	0.20	0.61	0.61	0.33
Queue Length 95th (m)	3.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Control Delay (s)	9.9	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Lane LOS	A							
Approach Delay (s)	9.9	0.0				0.0		
Approach LOS	A							

Intersection Summary				
Average Delay	0.2			
Intersection Capacity Utilization	58.9%	ICU Level of Service		B
Analysis Period (min)	15			

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	232	13	42	94	21	29
Future Volume (vph)	232	13	42	94	21	29
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.993				0.921	
Flt Protected				0.985	0.980	
Satd. Flow (prot)	1850	0	0	1835	1681	0
Flt Permitted				0.985	0.980	
Satd. Flow (perm)	1850	0	0	1835	1681	0
Link Speed (k/h)	50			50	50	
Link Distance (m)	35.1			75.4	58.6	
Travel Time (s)	2.5			5.4	4.2	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	252	14	46	102	23	32
Shared Lane Traffic (%)						
Lane Group Flow (vph)	266	0	0	148	55	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	0.0			0.0	3.6	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	4.8			4.8	4.8	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)		15	25		25	15
Sign Control	Free			Free	Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	33.6%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	232	13	42	94	21	29
Future Volume (Veh/h)	232	13	42	94	21	29
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	252	14	46	102	23	32
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (m)				168		
pX, platoon unblocked						
vC, conflicting volume			266		453	259
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			266		453	259
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			96		96	96
cM capacity (veh/h)			1298		545	780

Direction, Lane #	EB 1	WB 1	NB 1
Volume Total	266	148	55
Volume Left	0	46	23
Volume Right	14	0	32
cSH	1700	1298	660
Volume to Capacity	0.16	0.04	0.08
Queue Length 95th (m)	0.0	0.9	2.2
Control Delay (s)	0.0	2.7	10.9
Lane LOS		A	B
Approach Delay (s)	0.0	2.7	10.9
Approach LOS			B

Intersection Summary			
Average Delay	2.1		
Intersection Capacity Utilization	33.6%	ICU Level of Service	A
Analysis Period (min)	15		

Appendix J

Total Traffic Operations – Driveway B Closure

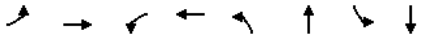
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	226	453	309	99	815	399	461	1637	92	262	1107	254
Future Volume (vph)	226	453	309	99	815	399	461	1637	92	262	1107	254
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	45.0		0.0	120.0		0.0	80.0		0.0	40.0		0.0
Storage Lanes	1		0	1		0	2		0	1		0
Taper Length (m)	30.0			20.0			40.0			35.0		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	0.95	0.97	0.95	0.95	1.00	0.95	0.95
Ped Bike Factor		0.99		1.00	0.99			1.00			0.99	
Frt		0.939			0.951			0.992			0.972	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1787	3299	0	1703	3382	0	3467	3488	0	1787	3398	0
Flt Permitted	0.133			0.140			0.063			0.068		
Satd. Flow (perm)	250	3299	0	250	3382	0	230	3488	0	128	3398	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		109			54			5			23	
Link Speed (k/h)		60			60			60			60	
Link Distance (m)		184.7			208.3			210.6			231.6	
Travel Time (s)		11.1			12.5			12.6			13.9	
Confl. Peds. (#/hr)	16		14	14		16	14		29	29		14
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Heavy Vehicles (%)	1%	1%	2%	6%	0%	1%	1%	2%	9%	1%	3%	1%
Adj. Flow (vph)	235	472	322	103	849	416	480	1705	96	273	1153	265
Shared Lane Traffic (%)												
Lane Group Flow (vph)	235	794	0	103	1265	0	480	1801	0	273	1418	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.6			3.6			7.2			7.2	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway 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
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2		1	2		1	2		1	2	
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	
Leading Detector (m)	2.0	10.0		2.0	10.0		2.0	10.0		2.0	10.0	
Trailing Detector (m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Position(m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Size(m)	2.0	0.6		2.0	0.6		2.0	0.6		2.0	0.6	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Type	pm+pt	NA		pm+pt	NA		pm+pt	NA		pm+pt	NA	
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4			8			2			6		
Detector Phase	7	4		3	8		5	2		1	6	
Switch Phase												
Minimum Initial (s)	7.0	8.0		7.0	8.0		7.0	8.0		7.0	8.0	
Minimum Split (s)	11.0	34.4		11.0	34.4		12.0	34.5		11.0	34.5	
Total Split (s)	15.0	36.0		14.0	35.0		30.0	72.0		18.0	60.0	
Total Split (%)	10.7%	25.7%		10.0%	25.0%		21.4%	51.4%		12.9%	42.9%	
Maximum Green (s)	11.0	29.6		10.0	28.6		25.0	65.5		14.0	53.5	
Yellow Time (s)	3.0	3.7		3.0	3.7		3.0	3.7		3.0	3.7	
All-Red Time (s)	1.0	2.7		1.0	2.7		2.0	2.8		1.0	2.8	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)	4.0	6.4		4.0	6.4		5.0	6.5		4.0	6.5	
Lead/Lag	Lead	Lag		Lead	Lag		Lead	Lag		Lead	Lag	
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	5.0		3.0	5.0		3.0	3.0		3.0	3.0	
Recall Mode	None	None		None	None		None	Max		None	Max	
Walk Time (s)		7.0			7.0			7.0			7.0	
Flash Dont Walk (s)		21.0			21.0			21.0			21.0	
Pedestrian Calls (#/hr)		0			0			0			0	
Act Effct Green (s)	43.5	30.1		40.5	28.6		84.1	65.5		75.3	58.8	
Actuated g/C Ratio	0.31	0.22		0.29	0.20		0.60	0.47		0.54	0.42	
v/c Ratio	1.19	1.00		0.61	1.73		0.81	1.10		1.17	0.98	
Control Delay	158.2	78.5		49.3	364.3		48.2	91.3		148.4	59.7	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.4		0.0	0.0	
Total Delay	158.2	78.5		49.3	364.3		48.2	91.8		148.4	59.7	
LOS	F	E		D	F		D	F		F	E	
Approach Delay		96.7			340.6			82.6			74.0	
Approach LOS		F			F			F			E	

Intersection Summary			
Area Type:	Other		
Cycle Length: 140			
Actuated Cycle Length: 140			
Natural Cycle: 145			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 1.73			
Intersection Signal Delay: 138.0		Intersection LOS: F	
Intersection Capacity Utilization 128.6%		ICU Level of Service H	
Analysis Period (min) 15			

Splits and Phases: 1: Appleby Line & Upper Middle Rd



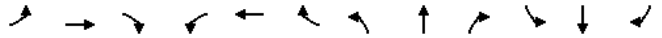


Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	235	794	103	1265	480	1801	273	1418
v/c Ratio	1.19	1.00	0.61	1.73	0.81	1.10	1.17	0.98
Control Delay	158.2	78.5	49.3	364.3	48.2	91.3	148.4	59.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.4	0.0	0.0
Total Delay	158.2	78.5	49.3	364.3	48.2	91.8	148.4	59.7
Queue Length 50th (m)	~64.5	~111.4	21.4	~281.2	52.9	~313.4	~77.0	210.5
Queue Length 95th (m)	#121.4	#156.6	36.7	#326.7	71.0	#358.2	#139.5	#286.0
Internal Link Dist (m)		160.7		184.3		186.6		207.6
Turn Bay Length (m)	45.0		120.0		80.0		40.0	
Base Capacity (vph)	198	795	177	733	717	1634	234	1441
Starvation Cap Reductn	0	0	0	0	0	205	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	1.19	1.00	0.58	1.73	0.67	1.26	1.17	0.98

Intersection Summary

~ 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.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	226	453	309	99	815	399	461	1637	92	262	1107	254
Future Volume (vph)	226	453	309	99	815	399	461	1637	92	262	1107	254
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	6.4		4.0	6.4		5.0	6.5		4.0	6.5	
Lane Util. Factor	1.00	0.95		1.00	0.95		0.97	0.95		1.00	0.95	
Frpb, ped/bikes	1.00	0.99		1.00	0.99		1.00	1.00		1.00	0.99	
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Frt	1.00	0.94		1.00	0.95		1.00	0.99		1.00	0.97	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1787	3299		1702	3381		3467	3488		1787	3398	
Flt Permitted	0.13	1.00		0.14	1.00		0.06	1.00		0.07	1.00	
Satd. Flow (perm)	250	3299		251	3381		229	3488		128	3398	
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	235	472	322	103	849	416	480	1705	96	273	1153	265
RTOR Reduction (vph)	0	86	0	0	43	0	0	3	0	0	13	0
Lane Group Flow (vph)	235	708	0	103	1222	0	480	1798	0	273	1405	0
Confl. Peds. (#/hr)	16		14	14		16	14		29	29		14
Heavy Vehicles (%)	1%	1%	2%	6%	0%	1%	1%	2%	9%	1%	3%	1%
Turn Type	pm+pt	NA		pm+pt	NA		pm+pt	NA		pm+pt	NA	
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)	41.1	30.1		38.1	28.6		83.5	65.5		72.8	58.8	
Effective Green, g (s)	41.1	30.1		38.1	28.6		83.5	65.5		72.8	58.8	
Actuated g/C Ratio	0.29	0.22		0.27	0.20		0.60	0.47		0.52	0.42	
Clearance Time (s)	4.0	6.4		4.0	6.4		5.0	6.5		4.0	6.5	
Vehicle Extension (s)	3.0	5.0		3.0	5.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	194	709		166	690		592	1631		232	1427	
v/s Ratio Prot	c0.10	0.21		0.04	c0.36		0.11	c0.52		c0.12	0.41	
v/s Ratio Perm	0.26			0.13			0.37			c0.49		
v/c Ratio	1.21	1.00		0.62	1.77		0.81	1.10		1.18	0.98	
Uniform Delay, d1	43.7	54.9		41.8	55.7		43.2	37.2		45.3	40.1	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	133.1	33.4		7.0	352.9		8.3	56.0		115.2	20.4	
Delay (s)	176.8	88.4		48.8	408.6		51.5	93.2		160.5	60.5	
Level of Service	F	F		D	F		D	F		F	E	
Approach Delay (s)		108.6			381.5			84.4			76.7	
Approach LOS		F			F			F			E	

Intersection Summary

HCM 2000 Control Delay	150.1	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	1.30		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	21.9
Intersection Capacity Utilization	128.6%	ICU Level of Service	H
Analysis Period (min)	15		

c Critical Lane Group

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	126	69	274	34	52	132	281	2105	56	110	1337	165
Future Volume (vph)	126	69	274	34	52	132	281	2105	56	110	1337	165
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	15.0		0.0	15.0		0.0	0.0		0.0	30.0		0.0
Storage Lanes	1		0	1		0	1		0	1		0
Taper Length (m)	15.0			15.0			7.5			25.0		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	1.00	0.95	0.95
Ped Bike Factor	0.99	0.99		1.00	0.98			1.00			0.99	
Frt		0.880			0.893			0.996			0.984	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1787	1636	0	1805	1658	0	1805	3521	0	1805	3472	0
Flt Permitted	0.509			0.181			0.132			0.047		
Satd. Flow (perm)	951	1636	0	343	1658	0	251	3521	0	89	3472	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		65			87			3			20	
Link Speed (k/h)		50			40			60			60	
Link Distance (m)		92.7			93.5			93.1			210.6	
Travel Time (s)		6.7			8.4			5.6			12.6	
Confl. Peds. (#/hr)	8		4	4		8	8		14	14		8
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Heavy Vehicles (%)	1%	0%	1%	0%	0%	1%	0%	2%	0%	0%	2%	0%
Adj. Flow (vph)	130	71	282	35	54	136	290	2170	58	113	1378	170
Shared Lane Traffic (%)												
Lane Group Flow (vph)	130	353	0	35	190	0	290	2228	0	113	1548	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.6			3.6			7.2			7.2	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway 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
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2		1	2		1	2		1	2	
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	
Leading Detector (m)	2.0	10.0		2.0	10.0		2.0	10.0		2.0	10.0	
Trailing Detector (m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Position(m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Size(m)	2.0	0.6		2.0	0.6		2.0	0.6		2.0	0.6	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Type	Perm	NA		Perm	NA		Perm	NA		pm+pt	NA	
Protected Phases		4			8			2		1	6	
Permitted Phases	4			8			2			6		
Detector Phase	4	4		8	8		2	2		1	6	
Switch Phase												
Minimum Initial (s)	8.0	8.0		8.0	8.0		8.0	8.0		7.0	8.0	
Minimum Split (s)	40.5	40.5		40.6	40.6		26.8	26.8		11.0	26.8	
Total Split (s)	42.0	42.0		42.0	42.0		86.0	86.0		12.0	98.0	
Total Split (%)	30.0%	30.0%		30.0%	30.0%		61.4%	61.4%		8.6%	70.0%	
Maximum Green (s)	35.5	35.5		35.4	35.4		80.2	80.2		8.0	92.2	
Yellow Time (s)	3.3	3.3		3.3	3.3		3.7	3.7		3.0	3.7	
All-Red Time (s)	3.2	3.2		3.3	3.3		2.1	2.1		1.0	2.1	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)	6.5	6.5		6.6	6.6		5.8	5.8		4.0	5.8	
Lead/Lag							Lag	Lag		Lead		
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	None	None		None	None		Max	Max		None	Max	
Walk Time (s)	7.0	7.0		7.0	7.0		7.0	7.0			7.0	
Flash Dont Walk (s)	27.0	27.0		27.0	27.0		14.0	14.0			14.0	
Pedestrian Calls (#/hr)	0	0		0	0		0	0			0	
Act Effct Green (s)	28.5	28.5		28.4	28.4		80.6	80.6		94.2	92.4	
Actuated g/C Ratio	0.21	0.21		0.21	0.21		0.61	0.61		0.71	0.69	
v/c Ratio	0.64	0.88		0.49	0.45		1.92	1.04		0.70	0.64	
Control Delay	62.3	64.4		68.5	27.1		457.5	59.3		46.3	13.4	
Queue Delay	0.0	0.0		0.0	0.0		0.0	8.0		0.0	1.3	
Total Delay	62.3	64.4		68.5	27.1		457.5	67.2		46.3	14.7	
LOS	E	E		E	C		F	E		D	B	
Approach Delay		63.8			33.5			112.2			16.9	
Approach LOS		E			C			F			B	

Intersection Summary			
Area Type:	Other		
Cycle Length: 140			
Actuated Cycle Length: 133.2			
Natural Cycle: 150			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 1.92			
Intersection Signal Delay: 71.4		Intersection LOS: E	
Intersection Capacity Utilization 113.6%		ICU Level of Service H	
Analysis Period (min) 15			

Splits and Phases: 2: Appleby Line & Ironstone Dr



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	130	353	35	190	290	2228	113	1548
v/c Ratio	0.64	0.88	0.49	0.45	1.92	1.04	0.70	0.64
Control Delay	62.3	64.4	68.5	27.1	457.5	59.3	46.3	13.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	8.0	0.0	1.3
Total Delay	62.3	64.4	68.5	27.1	457.5	67.2	46.3	14.7
Queue Length 50th (m)	33.0	79.3	8.5	24.2	~83.3	~359.0	14.1	116.2
Queue Length 95th (m)	56.5	118.7	21.4	48.0	#151.4	#431.2	#45.6	158.5
Internal Link Dist (m)		68.7		69.5		69.1		186.6
Turn Bay Length (m)	15.0		15.0				30.0	
Base Capacity (vph)	253	484	91	505	151	2133	166	2414
Starvation Cap Reductn	0	0	0	0	0	40	0	601
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.51	0.73	0.38	0.38	1.92	1.06	0.68	0.85

Intersection Summary

~ 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.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	126	69	274	34	52	132	281	2105	56	110	1337	165
Future Volume (vph)	126	69	274	34	52	132	281	2105	56	110	1337	165
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.5	6.5		6.6	6.6		5.8	5.8		4.0	5.8	
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	0.95		1.00	0.95	
Frpb, ped/bikes	1.00	0.99		1.00	0.98		1.00	1.00		1.00	1.00	
Flpb, ped/bikes	0.99	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Frt	1.00	0.88		1.00	0.89		1.00	1.00		1.00	0.98	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1775	1637		1801	1658		1802	3521		1805	3471	
Flt Permitted	0.51	1.00		0.18	1.00		0.13	1.00		0.05	1.00	
Satd. Flow (perm)	951	1637		343	1658		250	3521		90	3471	
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	130	71	282	35	54	136	290	2170	58	113	1378	170
RTOR Reduction (vph)	0	51	0	0	68	0	0	1	0	0	6	0
Lane Group Flow (vph)	130	302	0	35	122	0	290	2227	0	113	1542	0
Confl. Peds. (#/hr)	8		4	4		8	8		14	14		8
Heavy Vehicles (%)	1%	0%	1%	0%	0%	1%	0%	2%	0%	0%	2%	0%
Turn Type	Perm	NA		Perm	NA		Perm	NA		pm+pt	NA	
Protected Phases		4			8			2		1	6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)	28.5	28.5		28.4	28.4		80.7	80.7		92.4	92.4	
Effective Green, g (s)	28.5	28.5		28.4	28.4		80.7	80.7		92.4	92.4	
Actuated g/C Ratio	0.21	0.21		0.21	0.21		0.61	0.61		0.69	0.69	
Clearance Time (s)	6.5	6.5		6.6	6.6		5.8	5.8		4.0	5.8	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	203	350		73	353		151	2133		161	2407	
v/s Ratio Prot		c0.18			0.07			0.63		0.04	c0.44	
v/s Ratio Perm	0.14			0.10			c1.16			0.45		
v/c Ratio	0.64	0.86		0.48	0.34		1.92	1.04		0.70	0.64	
Uniform Delay, d1	47.7	50.5		45.9	44.5		26.2	26.2		38.4	11.2	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	6.7	19.1		4.9	0.6		437.8	32.1		13.0	1.3	
Delay (s)	54.4	69.6		50.8	45.1		464.0	58.4		51.3	12.6	
Level of Service	D	E		D	D		F	E		D	B	
Approach Delay (s)		65.5			46.0			105.1			15.2	
Approach LOS		E			D			F			B	

Intersection Summary

HCM 2000 Control Delay	67.9	HCM 2000 Level of Service	E
HCM 2000 Volume to Capacity ratio	1.58		
Actuated Cycle Length (s)	133.2	Sum of lost time (s)	16.4
Intersection Capacity Utilization	113.6%	ICU Level of Service	H
Analysis Period (min)	15		

c Critical Lane Group

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	113	47	86	100	30	185	37	2144	110	88	1351	34
Future Volume (vph)	113	47	86	100	30	185	37	2144	110	88	1351	34
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	0.0		0.0	0.0		0.0	30.0		0.0	110.0		0.0
Storage Lanes	0		0	0		0	1		0	1		0
Taper Length (m)	7.5			7.5			40.0			25.0		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	1.00	0.95	0.95
Ped Bike Factor		0.99			0.99		1.00	1.00			1.00	
Frt		0.953			0.921			0.993			0.996	
Flt Protected		0.978			0.984		0.950			0.950		
Satd. Flow (prot)	0	1696	0	0	1689	0	1583	3514	0	1703	3484	0
Flt Permitted		0.589			0.768		0.154			0.046		
Satd. Flow (perm)	0	1020	0	0	1318	0	256	3514	0	82	3484	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		18			48			6			4	
Link Speed (k/h)		50			50			60			60	
Link Distance (m)		173.6			79.2			281.3			198.1	
Travel Time (s)		12.5			5.7			16.9			11.9	
Confl. Peds. (#/hr)	4		1	1		4	5		1	1		5
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Heavy Vehicles (%)	4%	0%	6%	1%	0%	1%	14%	2%	0%	6%	3%	8%
Adj. Flow (vph)	116	48	89	103	31	191	38	2210	113	91	1393	35
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	253	0	0	325	0	38	2323	0	91	1428	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		0.0			0.0			3.6			3.6	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway 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
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2		1	2		1	2		1	2	
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	
Leading Detector (m)	2.0	10.0		2.0	10.0		2.0	10.0		2.0	10.0	
Trailing Detector (m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Position(m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Size(m)	2.0	0.6		2.0	0.6		2.0	0.6		2.0	0.6	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Type	Perm	NA		Perm	NA		Perm	NA		pm+pt	NA	
Protected Phases		4			8			2		1	6	
Permitted Phases	4			8			2			6		
Detector Phase	4	4		8	8		2	2		1	6	
Switch Phase												
Minimum Initial (s)	8.0	8.0		8.0	8.0		8.0	8.0		7.0	8.0	
Minimum Split (s)	38.5	38.5		38.5	38.5		34.0	34.0		11.0	34.0	
Total Split (s)	39.0	39.0		39.0	39.0		89.0	89.0		12.0	101.0	
Total Split (%)	27.9%	27.9%		27.9%	27.9%		63.6%	63.6%		8.6%	72.1%	
Maximum Green (s)	32.5	32.5		32.5	32.5		83.0	83.0		8.0	95.0	
Yellow Time (s)	3.3	3.3		3.3	3.3		3.7	3.7		3.0	3.7	
All-Red Time (s)	3.2	3.2		3.2	3.2		2.3	2.3		1.0	2.3	
Lost Time Adjust (s)		0.0			0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)		6.5			6.5		6.0	6.0		4.0	6.0	
Lead/Lag							Lag	Lag		Lead		
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	None	None		None	None		Max	Max		None	Max	
Walk Time (s)	7.0	7.0		7.0	7.0		7.0	7.0			7.0	
Flash Dont Walk (s)	25.0	25.0		25.0	25.0		21.0	21.0			21.0	
Pedestrian Calls (#/hr)	0	0		0	0		0	0			0	
Act Effct Green (s)		32.5			32.5		83.3	83.3		97.0	95.0	
Actuated g/C Ratio		0.23			0.23		0.60	0.60		0.69	0.68	
v/c Ratio		1.01			0.95		0.25	1.11		0.63	0.60	
Control Delay		109.0			82.5		18.9	85.1		40.6	13.6	
Queue Delay		0.0			0.0		0.0	0.0		0.0	0.0	
Total Delay		109.0			82.5		18.9	85.1		40.6	13.6	
LOS		F			F		B	F		D	B	
Approach Delay		109.0			82.5			84.0			15.2	
Approach LOS		F			F			F			B	

Intersection Summary			
Area Type:	Other		
Cycle Length: 140			
Actuated Cycle Length: 140			
Natural Cycle: 145			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 1.11			
Intersection Signal Delay: 61.9		Intersection LOS: E	
Intersection Capacity Utilization 104.3%		ICU Level of Service G	
Analysis Period (min) 15			

Splits and Phases: 3: Appleby Line & Corporate Dr



Lane Group	EBT	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	253	325	38	2323	91	1428
v/c Ratio	1.01	0.95	0.25	1.11	0.63	0.60
Control Delay	109.0	82.5	18.9	85.1	40.6	13.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	109.0	82.5	18.9	85.1	40.6	13.6
Queue Length 50th (m)	~71.2	82.1	5.1	~408.1	9.8	110.1
Queue Length 95th (m)	#130.6	#144.4	13.2	#450.0	#31.8	129.7
Internal Link Dist (m)	149.6	55.2		257.3		174.1
Turn Bay Length (m)			30.0		110.0	
Base Capacity (vph)	250	342	152	2094	149	2365
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	1.01	0.95	0.25	1.11	0.61	0.60

Intersection Summary

~ 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.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	113	47	86	100	30	185	37	2144	110	88	1351	34
Future Volume (vph)	113	47	86	100	30	185	37	2144	110	88	1351	34
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		6.5			6.5		6.0	6.0		4.0	6.0	
Lane Util. Factor		1.00			1.00		1.00	0.95		1.00	0.95	
Frpb, ped/bikes		1.00			0.99		1.00	1.00		1.00	1.00	
Flpb, ped/bikes		1.00			1.00		1.00	1.00		1.00	1.00	
Frt		0.95			0.92		1.00	0.99		1.00	1.00	
Flt Protected		0.98			0.98		0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1692			1689		1581	3513		1703	3485	
Flt Permitted		0.59			0.77		0.15	1.00		0.05	1.00	
Satd. Flow (perm)		1020			1318		256	3513		82	3485	
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	116	48	89	103	31	191	38	2210	113	91	1393	35
RTOR Reduction (vph)	0	14	0	0	37	0	0	2	0	0	1	0
Lane Group Flow (vph)	0	239	0	0	288	0	38	2321	0	91	1427	0
Confl. Peds. (#/hr)	4		1	1		4	5		1	1		5
Heavy Vehicles (%)	4%	0%	6%	1%	0%	1%	14%	2%	0%	6%	3%	8%
Turn Type	Perm	NA		Perm	NA		Perm	NA		pm+pt	NA	
Protected Phases		4			8			2		1	6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)		32.5			32.5		83.3	83.3		95.0	95.0	
Effective Green, g (s)		32.5			32.5		83.3	83.3		95.0	95.0	
Actuated g/C Ratio		0.23			0.23		0.59	0.59		0.68	0.68	
Clearance Time (s)		6.5			6.5		6.0	6.0		4.0	6.0	
Vehicle Extension (s)		3.0			3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)		236			305		152	2090		144	2364	
v/s Ratio Prot								c0.66		0.03	c0.41	
v/s Ratio Perm		c0.23			0.22		0.15			0.39		
v/c Ratio		1.01			0.94		0.25	1.11		0.63	0.60	
Uniform Delay, d1		53.8			52.9		13.5	28.4		36.6	12.2	
Progression Factor		1.00			1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2		62.1			36.8		3.9	57.2		8.7	1.2	
Delay (s)		115.8			89.7		17.4	85.5		45.4	13.4	
Level of Service		F			F		B	F		D	B	
Approach Delay (s)		115.8			89.7			84.4			15.3	
Approach LOS		F			F			F			B	

Intersection Summary

HCM 2000 Control Delay	63.0	HCM 2000 Level of Service	E
HCM 2000 Volume to Capacity ratio	1.06		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	16.5
Intersection Capacity Utilization	104.3%	ICU Level of Service	G
Analysis Period (min)	15		

c Critical Lane Group

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	260	112	0	1	86	117	1	3	5	77	5	64
Future Volume (vph)	260	112	0	1	86	117	1	3	5	77	5	64
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	0.0		0.0	0.0		0.0	0.0		0.0	20.0		0.0
Storage Lanes	0		0	0		0	0		0	1		0
Taper Length (m)	7.5			7.5			7.5			20.0		
Lane Util. 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
Ped Bike Factor												
Frt					0.923			0.925			0.860	
Flt Protected		0.966						0.994		0.950		
Satd. Flow (prot)	0	1733	0	0	1644	0	0	1367	0	1736	1502	0
Flt Permitted		0.966						0.994		0.950		
Satd. Flow (perm)	0	1733	0	0	1644	0	0	1367	0	1736	1502	0
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		83.4			35.0			72.0			78.5	
Travel Time (s)		6.0			2.5			5.2			5.7	
Confl. Peds. (#/hr)	2					2			2	2		
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Heavy Vehicles (%)	5%	8%	0%	0%	9%	5%	100%	50%	0%	4%	33%	7%
Adj. Flow (vph)	274	118	0	1	91	123	1	3	5	81	5	67
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	392	0	0	215	0	0	9	0	81	72	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		0.0			0.0			0.0			3.6	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway 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
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Sign Control		Free			Free			Stop			Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	53.2%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	260	112	0	1	86	117	1	3	5	77	5	64
Future Volume (Veh/h)	260	112	0	1	86	117	1	3	5	77	5	64
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	274	118	0	1	91	123	1	3	5	81	5	67
Pedestrians					2						2	
Lane Width (m)					3.6						3.6	
Walking Speed (m/s)					1.2						1.2	
Percent Blockage					0						0	
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (m)					203							
pX, platoon unblocked												
vC, conflicting volume	216			118			890	884	120	831	822	154
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	216			118			890	884	120	831	822	154
tC, single (s)	4.1			4.1			8.1	7.0	6.2	7.1	6.8	6.3
tC, 2 stage (s)												
tF (s)	2.2			2.2			4.4	4.5	3.3	3.5	4.3	3.4
p0 queue free %	79			100			99	98	99	66	98	92
cM capacity (veh/h)	1334			1483			138	189	935	236	219	877

Direction, Lane #	EB 1	WB 1	NB 1	SB 1	SB 2
Volume Total	392	215	9	81	72
Volume Left	274	1	1	81	0
Volume Right	0	123	5	0	67
cSH	1334	1483	316	236	726
Volume to Capacity	0.21	0.00	0.03	0.34	0.10
Queue Length 95th (m)	6.2	0.0	0.7	11.7	2.6
Control Delay (s)	6.4	0.0	16.7	28.0	10.5
Lane LOS	A	A	C	D	B
Approach Delay (s)	6.4	0.0	16.7	19.8	
Approach LOS			C	C	

Intersection Summary					
Average Delay	7.4				
Intersection Capacity Utilization	53.2%	ICU Level of Service		A	
Analysis Period (min)	15				

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	28	114	56	173	209	116	37	0	235	119	0	15
Future Volume (vph)	28	114	56	173	209	116	37	0	235	119	0	15
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Util. 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
Frt		0.962			0.969			0.883			0.985	
Flt Protected		0.993			0.983			0.993			0.957	
Satd. Flow (prot)	0	1779	0	0	1774	0	0	1633	0	0	1756	0
Flt Permitted		0.993			0.983			0.993			0.957	
Satd. Flow (perm)	0	1779	0	0	1774	0	0	1633	0	0	1756	0
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		75.5			92.7			42.4			48.0	
Travel Time (s)		5.4			6.7			3.1			3.5	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	30	124	61	188	227	126	40	0	255	129	0	16
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	215	0	0	541	0	0	295	0	0	145	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		0.0			3.6			0.0			0.0	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway 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
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Sign Control		Free			Free			Stop			Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 76.0%		ICU Level of Service D	
Analysis Period (min) 15			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	28	114	56	173	209	116	37	0	235	119	0	15
Future Volume (Veh/h)	28	114	56	173	209	116	37	0	235	119	0	15
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	30	124	61	188	227	126	40	0	255	129	0	16
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (m)					93							
pX, platoon unblocked	0.93						0.93	0.93		0.93	0.93	0.93
vC, conflicting volume	353			185			896	944	154	1136	911	290
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	261			185			848	899	154	1106	864	193
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	98			86			82	100	71	0	100	98
cM capacity (veh/h)	1207			1390			224	218	891	109	228	786

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	215	541	295	145
Volume Left	30	188	40	129
Volume Right	61	126	255	16
cSH	1207	1390	635	121
Volume to Capacity	0.02	0.14	0.46	1.20
Queue Length 95th (m)	0.6	3.7	19.7	72.4
Control Delay (s)	1.3	3.7	15.5	215.3
Lane LOS	A	A	C	F
Approach Delay (s)	1.3	3.7	15.5	215.3
Approach LOS			C	F

Intersection Summary				
Average Delay		31.8		
Intersection Capacity Utilization		76.0%	ICU Level of Service	D
Analysis Period (min)		15		

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	174	20	71	190	14	24
Future Volume (vph)	174	20	71	190	14	24
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.986				0.914	
Flt Protected				0.987	0.982	
Satd. Flow (prot)	1837	0	0	1839	1672	0
Flt Permitted				0.987	0.982	
Satd. Flow (perm)	1837	0	0	1839	1672	0
Link Speed (k/h)	50			50	50	
Link Distance (m)	35.0			75.5	38.8	
Travel Time (s)	2.5			5.4	2.8	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	189	22	77	207	15	26
Shared Lane Traffic (%)						
Lane Group Flow (vph)	211	0	0	284	41	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	0.0			0.0	3.6	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	4.8			4.8	4.8	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)		15	25		25	15
Sign Control	Free			Free	Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 37.6%		ICU Level of Service A	
Analysis Period (min) 15			

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	174	20	71	190	14	24
Future Volume (Veh/h)	174	20	71	190	14	24
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	189	22	77	207	15	26
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (m)				168		
pX, platoon unblocked						
vC, conflicting volume			211		561	200
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			211		561	200
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			94		97	97
cM capacity (veh/h)			1360		461	841

Direction, Lane #	EB 1	WB 1	NB 1
Volume Total	211	284	41
Volume Left	0	77	15
Volume Right	22	0	26
cSH	1700	1360	646
Volume to Capacity	0.12	0.06	0.06
Queue Length 95th (m)	0.0	1.4	1.6
Control Delay (s)	0.0	2.5	10.9
Lane LOS		A	B
Approach Delay (s)	0.0	2.5	10.9
Approach LOS			B

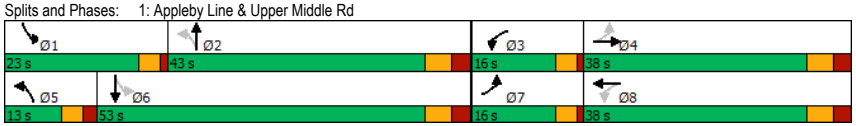
Intersection Summary				
Average Delay		2.2		
Intersection Capacity Utilization		37.6%	ICU Level of Service	A
Analysis Period (min)		15		

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	192	922	356	250	301	220	178	970	103	342	1489	64
Future Volume (vph)	192	922	356	250	301	220	178	970	103	342	1489	64
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	45.0		0.0	120.0		0.0	80.0		0.0	40.0		0.0
Storage Lanes	1		0	1		0	2		0	1		0
Taper Length (m)	30.0			20.0			40.0			35.0		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	0.95	0.97	0.95	0.95	1.00	0.95	0.95
Ped Bike Factor	1.00	0.99			0.99			1.00			1.00	
Frt		0.958			0.937			0.986			0.994	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1752	3378	0	1752	3243	0	3367	3341	0	1736	3435	0
Flt Permitted	0.317			0.125			0.110			0.099		
Satd. Flow (perm)	582	3378	0	231	3243	0	390	3341	0	181	3435	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		46			149			10			4	
Link Speed (k/h)		60			60			60			60	
Link Distance (m)		184.7			208.3			210.6			231.6	
Travel Time (s)		11.1			12.5			12.6			13.9	
Confl. Peds. (#/hr)	9		21	21		9	10		11	11		10
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Heavy Vehicles (%)	3%	1%	2%	3%	2%	5%	4%	6%	9%	4%	4%	13%
Adj. Flow (vph)	198	951	367	258	310	227	184	1000	106	353	1535	66
Shared Lane Traffic (%)												
Lane Group Flow (vph)	198	1318	0	258	537	0	184	1106	0	353	1601	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.6			3.6			7.2			7.2	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway 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
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2		1	2		1	2		1	2	
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	
Leading Detector (m)	2.0	10.0		2.0	10.0		2.0	10.0		2.0	10.0	
Trailing Detector (m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Position(m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Size(m)	2.0	0.6		2.0	0.6		2.0	0.6		2.0	0.6	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Type	pm+pt	NA		pm+pt	NA		pm+pt	NA		pm+pt	NA	
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4			8			2			6		
Detector Phase	7	4		3	8		5	2		1	6	
Switch Phase												
Minimum Initial (s)	7.0	8.0		7.0	8.0		7.0	8.0		7.0	8.0	
Minimum Split (s)	11.0	34.4		11.0	34.4		12.0	34.5		11.0	34.5	
Total Split (s)	16.0	38.0		16.0	38.0		13.0	43.0		23.0	53.0	
Total Split (%)	13.3%	31.7%		13.3%	31.7%		10.8%	35.8%		19.2%	44.2%	
Maximum Green (s)	12.0	31.6		12.0	31.6		8.0	36.5		19.0	46.5	
Yellow Time (s)	3.0	3.7		3.0	3.7		3.0	3.7		3.0	3.7	
All-Red Time (s)	1.0	2.7		1.0	2.7		2.0	2.8		1.0	2.8	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)	4.0	6.4		4.0	6.4		5.0	6.5		4.0	6.5	
Lead/Lag	Lead	Lag		Lead	Lag		Lead	Lag		Lead	Lag	
Lead-Lag Optimize?	Yes	Yes		Yes	Yes		Yes	Yes		Yes	Yes	
Vehicle Extension (s)	3.0	5.0		3.0	5.0		3.0	3.0		3.0	3.0	
Recall Mode	None	None		None	None		None	Max		None	Max	
Walk Time (s)		7.0			7.0			7.0			7.0	
Flash Dont Walk (s)		21.0			21.0			21.0			21.0	
Pedestrian Calls (#/hr)		0			0			0			0	
Act Effct Green (s)	45.5	31.6		46.5	32.1		45.8	36.5		62.0	46.7	
Actuated g/C Ratio	0.38	0.26		0.39	0.27		0.38	0.30		0.52	0.39	
v/c Ratio	0.59	1.43		1.07	0.55		0.54	1.08		1.04	1.20	
Control Delay	31.5	232.1		108.2	29.3		23.7	92.3		93.5	129.7	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	31.5	232.1		108.2	29.3		23.7	92.3		93.5	129.7	
LOS	C	F		F	C		C	F		F	F	
Approach Delay		205.9			54.9			82.5			123.1	
Approach LOS		F			D			F			F	

Intersection Summary			
Area Type:	Other		
Cycle Length: 120			
Actuated Cycle Length: 120			
Natural Cycle: 145			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 1.43			
Intersection Signal Delay: 126.5		Intersection LOS: F	
Intersection Capacity Utilization 118.6%		ICU Level of Service H	
Analysis Period (min) 15			

Splits and Phases: 1: Appleby Line & Upper Middle Rd



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	198	1318	258	537	184	1106	353	1601
v/c Ratio	0.59	1.43	1.07	0.55	0.54	1.08	1.04	1.20
Control Delay	31.5	232.1	108.2	29.3	23.7	92.3	93.5	129.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	31.5	232.1	108.2	29.3	23.7	92.3	93.5	129.7
Queue Length 50th (m)	31.8	~229.5	~53.7	43.5	11.8	~160.7	~77.3	~254.5
Queue Length 95th (m)	50.0	#274.5	#108.8	62.1	18.1	#204.6	#138.7	#300.0
Internal Link Dist (m)		160.7		184.3		186.6		207.6
Turn Bay Length (m)	45.0		120.0		80.0		40.0	
Base Capacity (vph)	340	923	241	975	347	1023	339	1338
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.58	1.43	1.07	0.55	0.53	1.08	1.04	1.20

Intersection Summary

~ 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.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	192	922	356	250	301	220	178	970	103	342	1489	64
Future Volume (vph)	192	922	356	250	301	220	178	970	103	342	1489	64
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	6.4		4.0	6.4		5.0	6.5		4.0	6.5	
Lane Util. Factor	1.00	0.95		1.00	0.95		0.97	0.95		1.00	0.95	
Frpb, ped/bikes	1.00	0.99		1.00	0.99		1.00	1.00		1.00	1.00	
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Frt	1.00	0.96		1.00	0.94		1.00	0.99		1.00	0.99	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1750	3379		1752	3242		3367	3339		1736	3434	
Flt Permitted	0.32	1.00		0.12	1.00		0.11	1.00		0.10	1.00	
Satd. Flow (perm)	583	3379		230	3242		388	3339		180	3434	
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	198	951	367	258	310	227	184	1000	106	353	1535	66
RTOR Reduction (vph)	0	34	0	0	109	0	0	7	0	0	2	0
Lane Group Flow (vph)	198	1284	0	258	428	0	184	1099	0	353	1599	0
Confl. Peds. (#/hr)	9		21	21		9	10		11	11		10
Heavy Vehicles (%)	3%	1%	2%	3%	2%	5%	4%	6%	9%	4%	4%	13%
Turn Type	pm+pt	NA		pm+pt	NA		pm+pt	NA		pm+pt	NA	
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)	43.1	31.6		44.1	32.1		44.3	36.5		59.5	46.7	
Effective Green, g (s)	43.1	31.6		44.1	32.1		44.3	36.5		59.5	46.7	
Actuated g/C Ratio	0.36	0.26		0.37	0.27		0.37	0.30		0.50	0.39	
Clearance Time (s)	4.0	6.4		4.0	6.4		5.0	6.5		4.0	6.5	
Vehicle Extension (s)	3.0	5.0		3.0	5.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	321	889		236	867		336	1015		335	1336	
v/s Ratio Prot	0.06	c0.38		c0.11	0.13		0.04	0.33		c0.17	c0.47	
v/s Ratio Perm	0.16			0.29			0.17			0.35		
v/c Ratio	0.62	1.44		1.09	0.49		0.55	1.08		1.05	1.20	
Uniform Delay, d1	28.3	44.2		32.1	37.1		29.9	41.8		37.4	36.6	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	3.5	206.4		85.7	0.9		1.8	53.4		64.0	96.0	
Delay (s)	31.8	250.6		117.8	38.0		31.7	95.2		101.4	132.6	
Level of Service	C	F		F	D		C	F		F	F	
Approach Delay (s)		222.0			63.9			86.1			127.0	
Approach LOS		F			E			F			F	

Intersection Summary

HCM 2000 Control Delay	134.4	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	1.28		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	21.9
Intersection Capacity Utilization	118.6%	ICU Level of Service	H
Analysis Period (min)	15		

c Critical Lane Group

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	96	33	275	93	69	146	159	1058	18	46	2091	119
Future Volume (vph)	96	33	275	93	69	146	159	1058	18	46	2091	119
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	15.0		0.0	15.0		0.0	0.0		0.0	30.0		0.0
Storage Lanes	1		0	1		0	1		0	1		0
Taper Length (m)	15.0			15.0			7.5			25.0		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	1.00	0.95	0.95
Ped Bike Factor	1.00	0.98		1.00	0.99			1.00			1.00	
Frt		0.866			0.898			0.997			0.992	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1671	1516	0	1805	1656	0	1687	3419	0	1656	3473	0
Flt Permitted	0.493			0.317			0.063			0.170		
Satd. Flow (perm)	866	1516	0	601	1656	0	112	3419	0	296	3473	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		7			90			2			9	
Link Speed (k/h)		50			40			60			60	
Link Distance (m)		92.7			93.5			93.1			210.6	
Travel Time (s)		6.7			8.4			5.6			12.6	
Confl. Peds. (#/hr)	2		5	5		2	2		10	2		10
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Heavy Vehicles (%)	8%	6%	7%	0%	0%	3%	7%	5%	15%	9%	3%	0%
Adj. Flow (vph)	100	34	286	97	72	152	166	1102	19	48	2178	124
Shared Lane Traffic (%)												
Lane Group Flow (vph)	100	320	0	97	224	0	166	1121	0	48	2302	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.6			3.6			7.2			7.2	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway 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
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2		1	2		1	2		1	2	
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	
Leading Detector (m)	2.0	10.0		2.0	10.0		2.0	10.0		2.0	10.0	
Trailing Detector (m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Position(m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Size(m)	2.0	0.6		2.0	0.6		2.0	0.6		2.0	0.6	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Type	Perm	NA		Perm	NA		Perm	NA		pm+pt	NA	
Protected Phases		4			8			2		1	6	
Permitted Phases	4			8			2			6		
Detector Phase	4	4		8	8		2	2		1	6	
Switch Phase												
Minimum Initial (s)	8.0	8.0		8.0	8.0		8.0	8.0		7.0	8.0	
Minimum Split (s)	40.5	40.5		40.6	40.6		26.8	26.8		11.0	26.8	
Total Split (s)	42.0	42.0		42.0	42.0		66.0	66.0		12.0	78.0	
Total Split (%)	35.0%	35.0%		35.0%	35.0%		55.0%	55.0%		10.0%	65.0%	
Maximum Green (s)	35.5	35.5		35.4	35.4		60.2	60.2		8.0	72.2	
Yellow Time (s)	3.3	3.3		3.3	3.3		3.7	3.7		3.0	3.7	
All-Red Time (s)	3.2	3.2		3.3	3.3		2.1	2.1		1.0	2.1	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)	6.5	6.5		6.6	6.6		5.8	5.8		4.0	5.8	
Lead/Lag							Lag	Lag		Lead		
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	None	None		None	None		Max	Max		None	Max	
Walk Time (s)	7.0	7.0		7.0	7.0		7.0	7.0			7.0	
Flash Dont Walk (s)	27.0	27.0		27.0	27.0		14.0	14.0			14.0	
Pedestrian Calls (#/hr)	0	0		0	0		0	0			0	
Act Effct Green (s)	27.4	27.4		27.3	27.3		63.6	63.6		74.3	72.5	
Actuated g/C Ratio	0.24	0.24		0.24	0.24		0.57	0.57		0.66	0.65	
v/c Ratio	0.47	0.85		0.66	0.48		2.63	0.58		0.17	1.02	
Control Delay	43.7	60.8		60.6	24.1		793.0	18.9		9.4	47.0	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	30.2	
Total Delay	43.7	60.8		60.6	24.1		793.0	18.9		9.4	77.3	
LOS	D	E		E	C		F	B		A	E	
Approach Delay		56.7			35.1			118.8			75.9	
Approach LOS		E			D			F			E	

Intersection Summary			
Area Type:	Other		
Cycle Length: 120			
Actuated Cycle Length: 112.2			
Natural Cycle: 140			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 2.63			
Intersection Signal Delay: 83.7		Intersection LOS: F	
Intersection Capacity Utilization 118.3%		ICU Level of Service H	
Analysis Period (min) 15			

Splits and Phases: 2: Appleby Line & Ironstone Dr



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	100	320	97	224	166	1121	48	2302
v/c Ratio	0.47	0.85	0.66	0.48	2.63	0.58	0.17	1.02
Control Delay	43.7	60.8	60.6	24.1	793.0	18.9	9.4	47.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	30.2
Total Delay	43.7	60.8	60.6	24.1	793.0	18.9	9.4	77.3
Queue Length 50th (m)	19.7	69.1	20.2	25.7	~52.2	88.5	3.6	~302.1
Queue Length 95th (m)	37.2	103.9	40.4	49.1	#104.3	128.6	9.4	#385.1
Internal Link Dist (m)		68.7		69.5		69.1		186.6
Turn Bay Length (m)	15.0		15.0				30.0	
Base Capacity (vph)	275	486	190	585	63	1938	293	2246
Starvation Cap Reductn	0	0	0	0	0	0	0	226
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.36	0.66	0.51	0.38	2.63	0.58	0.16	1.14

Intersection Summary

~ 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.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	96	33	275	93	69	146	159	1058	18	46	2091	119
Future Volume (vph)	96	33	275	93	69	146	159	1058	18	46	2091	119
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.5	6.5		6.6	6.6		5.8	5.8		4.0	5.8	
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	0.95		1.00	0.95	
Frpb, ped/bikes	1.00	0.98		1.00	0.99		1.00	1.00		1.00	1.00	
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Frt	1.00	0.87		1.00	0.90		1.00	1.00		1.00	0.99	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1669	1516		1800	1657		1687	3421		1656	3473	
Flt Permitted	0.49	1.00		0.32	1.00		0.06	1.00		0.17	1.00	
Satd. Flow (perm)	865	1516		601	1657		112	3421		297	3473	
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	100	34	286	97	72	152	166	1102	19	48	2178	124
RTOR Reduction (vph)	0	5	0	0	68	0	0	1	0	0	3	0
Lane Group Flow (vph)	100	315	0	97	156	0	166	1120	0	48	2299	0
Confl. Peds. (#/hr)	2		5	5		2	2		10	2		10
Heavy Vehicles (%)	8%	6%	7%	0%	0%	3%	7%	5%	15%	9%	3%	0%
Turn Type	Perm	NA		Perm	NA		Perm	NA		pm+pt	NA	
Protected Phases		4			8			2		1	6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)	27.4	27.4		27.3	27.3		63.6	63.6		73.3	73.3	
Effective Green, g (s)	27.4	27.4		27.3	27.3		63.6	63.6		73.3	73.3	
Actuated g/C Ratio	0.24	0.24		0.24	0.24		0.56	0.56		0.65	0.65	
Clearance Time (s)	6.5	6.5		6.6	6.6		5.8	5.8		4.0	5.8	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	209	367		145	400		63	1925		261	2252	
v/s Ratio Prot		c0.21			0.09			0.33		0.01	c0.66	
v/s Ratio Perm	0.12			0.16			c1.49			0.11		
v/c Ratio	0.48	0.86		0.67	0.39		2.63	0.58		0.18	1.02	
Uniform Delay, d1	36.7	40.9		38.8	35.9		24.7	16.1		9.6	19.9	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	1.7	17.6		11.1	0.6		779.2	1.3		0.3	24.4	
Delay (s)	38.4	58.5		49.9	36.5		803.9	17.3		10.0	44.3	
Level of Service	D	E		D	D		F	B		A	D	
Approach Delay (s)		53.7			40.5			118.8			43.6	
Approach LOS		D			D			F			D	

Intersection Summary

HCM 2000 Control Delay	66.4	HCM 2000 Level of Service	E
HCM 2000 Volume to Capacity ratio	2.05		
Actuated Cycle Length (s)	113.0	Sum of lost time (s)	16.4
Intersection Capacity Utilization	118.3%	ICU Level of Service	H
Analysis Period (min)	15		

c Critical Lane Group

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	22	9	30	145	25	146	39	1067	52	62	2295	47
Future Volume (vph)	22	9	30	145	25	146	39	1067	52	62	2295	47
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	0.0		0.0	0.0		0.0	30.0		0.0	110.0		0.0
Storage Lanes	0		0	0		0	1		0	1		0
Taper Length (m)	7.5			7.5			40.0			25.0		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	1.00	0.95	0.95
Ped Bike Factor		0.99			1.00			1.00			1.00	
Frt		0.932			0.938			0.993			0.997	
Flt Protected		0.983			0.978		0.950			0.950		
Satd. Flow (prot)	0	1420	0	0	1711	0	1687	3380	0	1570	3460	0
Flt Permitted		0.815			0.823		0.063			0.165		
Satd. Flow (perm)	0	1177	0	0	1439	0	112	3380	0	273	3460	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		5			36			6			3	
Link Speed (k/h)		50			50			60			60	
Link Distance (m)		173.6			79.2			281.3			198.1	
Travel Time (s)		12.5			5.7			16.9			11.9	
Confl. Peds. (#/hr)			2	2			1		2	2		1
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Heavy Vehicles (%)	19%	0%	30%	0%	0%	4%	7%	6%	5%	15%	4%	3%
Adj. Flow (vph)	22	9	31	148	26	149	40	1089	53	63	2342	48
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	62	0	0	323	0	40	1142	0	63	2390	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		0.0			0.0			3.6			3.6	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway 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
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2		1	2		1	2		1	2	
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	
Leading Detector (m)	2.0	10.0		2.0	10.0		2.0	10.0		2.0	10.0	
Trailing Detector (m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Position(m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Size(m)	2.0	0.6		2.0	0.6		2.0	0.6		2.0	0.6	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Type	Perm	NA		Perm	NA		Perm	NA		pm+pt	NA	
Protected Phases		4			8			2		1	6	
Permitted Phases	4			8			2			6		
Detector Phase	4	4		8	8		2	2		1	6	
Switch Phase												
Minimum Initial (s)	8.0	8.0		8.0	8.0		8.0	8.0		7.0	8.0	
Minimum Split (s)	38.5	38.5		38.5	38.5		34.0	34.0		11.0	34.0	
Total Split (s)	42.0	42.0		42.0	42.0		66.0	66.0		12.0	78.0	
Total Split (%)	35.0%	35.0%		35.0%	35.0%		55.0%	55.0%		10.0%	65.0%	
Maximum Green (s)	35.5	35.5		35.5	35.5		60.0	60.0		8.0	72.0	
Yellow Time (s)	3.3	3.3		3.3	3.3		3.7	3.7		3.0	3.7	
All-Red Time (s)	3.2	3.2		3.2	3.2		2.3	2.3		1.0	2.3	
Lost Time Adjust (s)		0.0			0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)		6.5			6.5		6.0	6.0		4.0	6.0	
Lead/Lag							Lag	Lag		Lead		
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	None	None		None	None		Max	Max		None	Max	
Walk Time (s)	7.0	7.0		7.0	7.0		7.0	7.0			7.0	
Flash Dont Walk (s)	25.0	25.0		25.0	25.0		21.0	21.0			21.0	
Pedestrian Calls (#/hr)	0	0		0	0		0	0			0	
Act Effct Green (s)		26.9			26.9		63.2	63.2		74.3	72.2	
Actuated g/C Ratio		0.24			0.24		0.57	0.57		0.67	0.65	
v/c Ratio		0.22			0.86		0.63	0.60		0.24	1.07	
Control Delay		32.4			58.4		69.8	19.4		10.2	61.7	
Queue Delay		0.0			0.0		0.0	0.0		0.0	0.0	
Total Delay		32.4			58.4		69.8	19.4		10.2	61.7	
LOS		C			E		E	B		B	E	
Approach Delay		32.4			58.4			21.1			60.3	
Approach LOS		C			E			C			E	

Intersection Summary		
Area Type:	Other	
Cycle Length: 120		
Actuated Cycle Length: 111.7		
Natural Cycle: 135		
Control Type: Semi Act-Uncoord		
Maximum v/c Ratio: 1.07		
Intersection Signal Delay: 48.2		Intersection LOS: D
Intersection Capacity Utilization 100.3%		ICU Level of Service G
Analysis Period (min) 15		

Splits and Phases: 3: Appleby Line & Corporate Dr



Lane Group	EBT	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	62	323	40	1142	63	2390
v/c Ratio	0.22	0.86	0.63	0.60	0.24	1.07
Control Delay	32.4	58.4	69.8	19.4	10.2	61.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	32.4	58.4	69.8	19.4	10.2	61.7
Queue Length 50th (m)	10.5	64.0	6.3	91.0	4.7	~325.1
Queue Length 95th (m)	22.3	99.8	#30.4	132.9	11.8	#411.4
Internal Link Dist (m)	149.6	55.2		257.3		174.1
Turn Bay Length (m)			30.0		110.0	
Base Capacity (vph)	378	483	63	1916	274	2239
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.16	0.67	0.63	0.60	0.23	1.07

Intersection Summary

~ 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.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	22	9	30	145	25	146	39	1067	52	62	2295	47
Future Volume (vph)	22	9	30	145	25	146	39	1067	52	62	2295	47
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		6.5			6.5		6.0	6.0		4.0	6.0	
Lane Util. Factor		1.00			1.00		1.00	0.95		1.00	0.95	
Frpb, ped/bikes		0.99			1.00		1.00	1.00		1.00	1.00	
Flpb, ped/bikes		1.00			1.00		1.00	1.00		1.00	1.00	
Frt		0.93			0.94		1.00	0.99		1.00	1.00	
Flt Protected		0.98			0.98		0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1420			1709		1687	3380		1569	3460	
Flt Permitted		0.81			0.82		0.06	1.00		0.16	1.00	
Satd. Flow (perm)		1177			1438		112	3380		272	3460	
Peak-hour factor, PHF	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Adj. Flow (vph)	22	9	31	148	26	149	40	1089	53	63	2342	48
RTOR Reduction (vph)	0	4	0	0	27	0	0	3	0	0	1	0
Lane Group Flow (vph)	0	58	0	0	296	0	40	1139	0	63	2389	0
Confl. Peds. (#/hr)			2	2			1		2	2		1
Heavy Vehicles (%)	19%	0%	30%	0%	0%	4%	7%	6%	5%	15%	4%	3%
Turn Type	Perm	NA		Perm	NA		Perm	NA		pm+pt	NA	
Protected Phases		4			8			2		1	6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)		26.9			26.9		63.3	63.3		73.2	73.2	
Effective Green, g (s)		26.9			26.9		63.3	63.3		73.2	73.2	
Actuated g/C Ratio		0.24			0.24		0.56	0.56		0.65	0.65	
Clearance Time (s)		6.5			6.5		6.0	6.0		4.0	6.0	
Vehicle Extension (s)		3.0			3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)		281			343		62	1900		244	2249	
v/s Ratio Prot								0.34		0.01	c0.69	
v/s Ratio Perm		0.05			c0.21		0.36			0.15		
v/c Ratio		0.21			0.86		0.65	0.60		0.26	1.06	
Uniform Delay, d1		34.3			41.1		16.9	16.3		9.9	19.7	
Progression Factor		1.00			1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2		0.4			19.4		41.8	1.4		0.6	38.1	
Delay (s)		34.7			60.4		58.8	17.7		10.5	57.8	
Level of Service		C			E		E	B		B	E	
Approach Delay (s)		34.7			60.4			19.1			56.5	
Approach LOS		C			E			B			E	

Intersection Summary

HCM 2000 Control Delay	45.5	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	1.05		
Actuated Cycle Length (s)	112.6	Sum of lost time (s)	16.5
Intersection Capacity Utilization	100.3%	ICU Level of Service	G
Analysis Period (min)	15		

c Critical Lane Group

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	57	76	0	0	80	35	1	1	0	168	15	142
Future Volume (vph)	57	76	0	0	80	35	1	1	0	168	15	142
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	0.0		0.0	0.0		0.0	0.0		0.0	20.0		0.0
Storage Lanes	0		0	0		0	0		0	1		0
Taper Length (m)	7.5			7.5			7.5			20.0		
Lane Util. 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
Ped Bike Factor												
Frt					0.959						0.865	
Flt Protected		0.979						0.976		0.950		
Satd. Flow (prot)	0	1347	0	0	1540	0	0	1854	0	1805	1573	0
Flt Permitted		0.979						0.976		0.950		
Satd. Flow (perm)	0	1347	0	0	1540	0	0	1854	0	1805	1573	0
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		83.4			35.1			72.0			78.5	
Travel Time (s)		6.0			2.5			5.2			5.7	
Confl. Peds. (#/hr)							1		2	2		1
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	29%	45%	0%	0%	22%	10%	0%	0%	0%	0%	0%	5%
Adj. Flow (vph)	63	84	0	0	89	39	1	1	0	187	17	158
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	147	0	0	128	0	0	2	0	187	175	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		0.0			0.0			0.0			3.6	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway 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
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Sign Control		Free			Free			Stop			Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	36.5%	ICU Level of Service A	
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	57	76	0	0	80	35	1	1	0	168	15	142
Future Volume (Veh/h)	57	76	0	0	80	35	1	1	0	168	15	142
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	63	84	0	0	89	39	1	1	0	187	17	158
Pedestrians		1			2							
Lane Width (m)		3.6			3.6							
Walking Speed (m/s)		1.2			1.2							
Percent Blockage		0			0							
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (m)					203							
pX, platoon unblocked												
vC, conflicting volume	128			84			486	338	86	321	318	110
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	128			84			486	338	86	321	318	110
tC, single (s)	4.4			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.5			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	95			100			100	100	100	69	97	83
cM capacity (veh/h)	1307			1526			387	558	977	611	572	935

Direction, Lane #	EB 1	WB 1	NB 1	SB 1	SB 2
Volume Total	147	128	2	187	175
Volume Left	63	0	1	187	0
Volume Right	0	39	0	0	158
cSH	1307	1526	457	611	881
Volume to Capacity	0.05	0.00	0.00	0.31	0.20
Queue Length 95th (m)	1.2	0.0	0.1	10.3	5.9
Control Delay (s)	3.6	0.0	12.9	13.5	10.1
Lane LOS	A		B	B	B
Approach Delay (s)	3.6	0.0	12.9	11.8	
Approach LOS			B	B	

Intersection Summary			
Average Delay	7.6		
Intersection Capacity Utilization	36.5%	ICU Level of Service	A
Analysis Period (min)	15		

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	8	226	27	168	92	88	38	0	151	27	0	6
Future Volume (vph)	8	226	27	168	92	88	38	0	151	27	0	6
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Util. 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
Frt		0.986			0.966			0.892			0.974	
Flt Protected		0.998			0.976			0.990			0.961	
Satd. Flow (prot)	0	1833	0	0	1756	0	0	1645	0	0	1744	0
Flt Permitted		0.998			0.976			0.990			0.961	
Satd. Flow (perm)	0	1833	0	0	1756	0	0	1645	0	0	1744	0
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		75.4			92.7			42.4			48.0	
Travel Time (s)		5.4			6.7			3.1			3.5	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	9	246	29	183	100	96	41	0	164	29	0	7
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	284	0	0	379	0	0	205	0	0	36	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		0.0			3.6			0.0			0.0	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway 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
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Sign Control		Free			Free			Stop			Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 54.3%		ICU Level of Service A	
Analysis Period (min) 15			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	8	226	27	168	92	88	38	0	151	27	0	6
Future Volume (Veh/h)	8	226	27	168	92	88	38	0	151	27	0	6
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	9	246	29	183	100	96	41	0	164	29	0	7
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (m)					93							
pX, platoon unblocked	0.96						0.96	0.96		0.96	0.96	0.96
vC, conflicting volume	196			275			800	840	260	956	807	148
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	143			275			771	814	260	935	779	93
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	99			86			85	100	79	82	100	99
cM capacity (veh/h)	1383			1288			268	256	778	165	268	926

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	284	379	205	36
Volume Left	9	183	41	29
Volume Right	29	96	164	7
cSH	1383	1288	564	197
Volume to Capacity	0.01	0.14	0.36	0.18
Queue Length 95th (m)	0.2	4.0	13.2	5.2
Control Delay (s)	0.3	4.7	15.0	27.3
Lane LOS	A	A	B	D
Approach Delay (s)	0.3	4.7	15.0	27.3
Approach LOS			B	D

Intersection Summary				
Average Delay		6.5		
Intersection Capacity Utilization		54.3%	ICU Level of Service	A
Analysis Period (min)		15		

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	232	13	42	94	21	29
Future Volume (vph)	232	13	42	94	21	29
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.993				0.921	
Flt Protected				0.985	0.980	
Satd. Flow (prot)	1850	0	0	1835	1681	0
Flt Permitted				0.985	0.980	
Satd. Flow (perm)	1850	0	0	1835	1681	0
Link Speed (k/h)	50			50	50	
Link Distance (m)	35.1			75.4	58.6	
Travel Time (s)	2.5			5.4	4.2	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	252	14	46	102	23	32
Shared Lane Traffic (%)						
Lane Group Flow (vph)	266	0	0	148	55	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	0.0			0.0	3.6	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	4.8			4.8	4.8	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)		15	25		25	15
Sign Control	Free			Free	Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	33.6%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	232	13	42	94	21	29
Future Volume (Veh/h)	232	13	42	94	21	29
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	252	14	46	102	23	32
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (m)				168		
pX, platoon unblocked						
vC, conflicting volume			266		453	259
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			266		453	259
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			96		96	96
cM capacity (veh/h)			1298		545	780

Direction, Lane #	EB 1	WB 1	NB 1
Volume Total	266	148	55
Volume Left	0	46	23
Volume Right	14	0	32
cSH	1700	1298	660
Volume to Capacity	0.16	0.04	0.08
Queue Length 95th (m)	0.0	0.9	2.2
Control Delay (s)	0.0	2.7	10.9
Lane LOS		A	B
Approach Delay (s)	0.0	2.7	10.9
Approach LOS			B

Intersection Summary				
Average Delay		2.1		
Intersection Capacity Utilization		33.6%	ICU Level of Service	A
Analysis Period (min)		15		