Nafziger Road Industrial Development Transportation Impact Study

Paradigm Transportation Solutions Limited

November 2018

Project Summary

Project Number
180248

November 2018

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Executive Summary

Content

Paradigm Transportation Solutions Limited (Paradigm) has been retained by Badenview Development Inc. (BDI) and New Hamburglrs Inc. (NHI) to carry out this Transportation Impact Study (TIS) for two proposed industrial developments located in Baden, Ontario. The subject lands are located to the north of Highway 7&8, between Nafziger Road to the east and Hamilton Road to the west.

Development Concept

The subject lands are proposed to be developed to accommodate 1.7 million ft^2 Gross Floor Area (GFA) of industrial land uses on the BDI lands to the west, and an additional 0.5 million ft^2 GFA of industrial land uses on the NHI lands to the east. The two developments are anticipated to be completed by 2023, subject to market conditions. The timing of development and the GFA of individual parcels may change depending on market conditions.

Vehicular access will be provided by two (2) new municipal road connections: West Road connecting to Hamilton Road; and East Road connecting to Nafziger Road. The two new roads will be built on existing unopened municipal road allowances.

Impact Assessment

The purpose of this study is to determine the impacts of development traffic on the surrounding road network and to identify any improvements necessary to accommodate this traffic. The study area intersections analysed in this study include:

- Hamilton Road and West Road (new road connection);
- Nafziger Road and East Road (new road connection);
- Highway 7/8 and Hamilton Road (existing signalized intersection);
- Highway 7/8 and Nafziger Road (existing signalized intersection);
- Highway 7/8 and Hamilton Road (signalized intersection with future improvements); and
- Highway 7/8 and Nafziger Road (future interchange with ramp terminals at East Road and at Nafziger Road).

The Ministry of Transportation Ontario (MTO) is currently undertaking the Highway 7&8 Transportation Corridor Planning and Class Environmental Assessment (Class EA) Study, involving the Highway 7&8 corridor from Greater Stratford to the New Hamburg Area.

The Provincial Class EA study includes the existing at-grade and signalized intersections of Highway 7&8 at Hamilton Road and at Nafziger Road. The two intersections and roadway sections are also within the impacted study area of the proposed development.

The impact assessment undertaken in this TIS, therefore, addresses two scenarios: (1) existing Highway 7&8 intersection configurations at Hamilton Road and at Nafziger Road; and (2) future configurations involving at-grade improvements at the Hamilton Road intersection, and a new interchange at Nafziger Road. The intersections analysed in the TIS, as listed above, incorporate both scenarios.

The following traffic conditions were analyzed for weekday AM and PM peak hour traffic volumes:

- 2018 Existing Traffic Conditions – to establish pre-development base year intersection operations;
- 2023 Background and Total Traffic Conditions – corresponding to the anticipated opening year of the two developments;
- 2028 Background and Total Traffic Conditions – corresponding to a five-year horizon after the opening year; and
- 2033 Background and Total Traffic Conditions – corresponding to a ten-year horizon after the opening year.

Conclusions

The main findings and conclusions of this study are as follows:

- **Existing (2018) Traffic Conditions**: the study area intersections are operating with generally acceptable levels of service during the AM and PM peak hours.

  At the intersection of Highway 7/8 and Hamilton Road, the queue length for the southbound left-turn lane is noted to be exceeding the existing storage length under current traffic conditions.
- **Background Traffic Conditions (2023, 2028 and 2033) – Existing Highway 7/8 Intersections**:
  - At the two existing Highway 7/8 intersections, individual turning movements are forecast to operate with level of service deficiencies and v/c values greater than 0.9.
  - The queue lengths for the southbound left-turn lanes at Hamilton Road and at Nafziger Road are projected to exceed existing storage lengths under future background conditions without the proposed developments in place.
- **Development Generated Traffic**: The two developments are estimated to generate approximately: 856 AM peak hour vehicular trips and 856 PM peak hour vehicular trips. Given the location of the

subject sites and the proposed land use, no reduction to vehicular trip generation has been assumed.

- **Total Traffic Conditions (2023, 2028 and 2033)**:

  Highway 7/8 Intersections

  - At the two existing Highway 7/8 intersections, Individual turning movements, intersections are forecast to operate with level of service deficiencies, v/c values greater than 0.9.
  - The queue lengths for the southbound left-turn lanes at Hamilton Road and at Nafziger Road are projected to exceed existing storage lengths under future total traffic conditions with the proposed developments in place.
  - The two intersections are projected to operate with acceptable levels of service after the proposed Highway 7/8 improvements are in place.

  Hamilton Road and West Road

  - A southbound left-turn lane with a storage length of 50 metres will be required at this new intersection.

  Nafziger Road and East Road

  - Traffic Signals are warranted along with an eastbound left-turn lane with a storage length of 100 metres.
  - The results of an initial screening analysis for providing a roundabout instead of traffic signal control indicates that an Intersection Control Study (ICS) is justified for further investigation to determine which alternative would be appropriate at this location.

Recommendations

Based on the findings of this study, the following lane configurations and traffic control measures for the study area intersections are recommended:

- Hamilton Road and West Road intersection:
  - Stop Sign Control on West Road.
  - A southbound left-turn lane with a storage length of 50 metres.
- Nafziger Road and East Road intersection:
  - Traffic Signal Control OR Roundabout - to be determined through an Intersection Control Study.
- Highway 7/8 intersections at Hamilton Road and at Nafziger Road:

- Southbound left-turn lane storage at both intersections should be extended as part of the road modifications on Hamilton Road and Nafziger Road.

Contents

Appendices

Figures

Tables

1 Introduction

1.1 Overview

Paradigm Transportation Solutions Limited (Paradigm) has been retained by Badenview Development Inc. (BDI) and New Hamburglrs Inc. (NHI) to carry out this Transportation Impact Study (TIS) for two proposed industrial developments located in Baden, Ontario. The subject lands are located to the north of Highway 7&8, between Nafziger Road to the east and Hamilton Road to the west.

Figure 1.1 depicts the location of the subject sites.

The subject lands are proposed to be developed to accommodate 1.7 million ft^2 Gross Floor Area (GFA) of industrial land uses on the BDI lands to the west, and an additional 0.5 million ft^2 GFA of industrial land uses on the NHI lands to the east. The two developments are anticipated to be completed by 2023, subject to market conditions.

Vehicular access is proposed by two (2) new municipal road connections: West Road connecting to Hamilton Road; and East Road connecting to Nafziger Road. The two new roads will be built on existing unopened municipal road allowances.

This study will identify and address the impacts of additional traffic on the surrounding road network and identify potential remedial measures to accommodate future traffic increases in a satisfactory manner. The scope of the study includes:

- Assessment of the current traffic and site conditions within the study area;
- Estimates of background traffic growth;
- Estimates of additional traffic generated by the subject site;
- Analyses of the impact of the future traffic on the surrounding road network; and
- Recommendations as necessary to mitigate the impacts of the site generated traffic in a satisfactory manner.

1.2 Study Area

The study area impacted by the proposed development is also illustrated in **Figure 1.1**, and includes the following intersections for impact assessment :

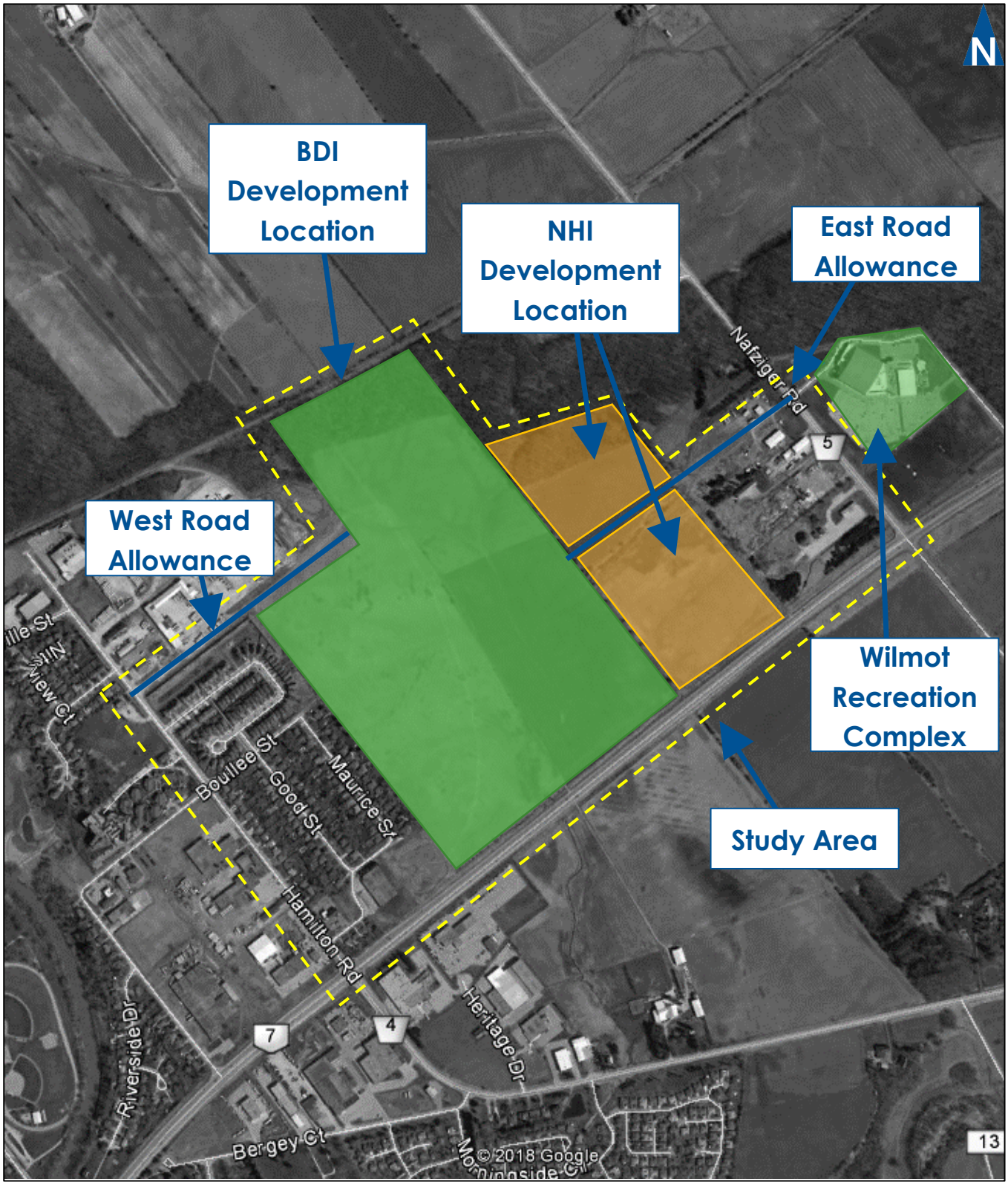
- Hamilton Road and West Road (new road connection);
- Nafziger Road and East Road (new road connection);

- Highway 7/8 and Hamilton Road (existing signalized intersection);
- Highway 7/8 and Nafziger Road (existing signalized intersection);
- Highway 7/8 and Hamilton Road (signalized intersection with future improvements); and
- Highway 7/8 and Nafziger Road (future interchange with ramp terminals at East Road and at Nafziger Road).

The Ministry of Transportation Ontario (MTO) is currently undertaking the Highway 7&8 Transportation Corridor Planning and Class Environmental Assessment (Class EA) Study, involving the Highway 7&8 corridor from Greater Stratford to the New Hamburg Area.

The Provincial Class EA study includes the existing at-grade and signalized intersections of Highway 7&8 at Hamilton Road and at Nafziger Road. The two intersections and roadway sections are also within impacted study area of the proposed development.

The impact assessment undertaken in this TIS, therefore, addresses two scenarios: (1) existing Highway 7&8 intersection configurations at Hamilton Road and at Nafziger Road; and (2) future configurations involving at-grade improvements at the Hamilton Road intersection, and a new interchange at Nafziger Road. The intersections analysed in the TIS, as listed above, incorporate both scenarios.



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Location of Subject Site

2 Existing Conditions

2.1 Existing Road Network

The main roadways near the subject site considered in assessing the traffic impacts of the development include:

- **Highway 7/8** is an east-west Controlled Access Provincial Highway[1]. The posted speed limit within the study area is 80 km/h. The intersections with Nafziger Road and Hamilton Road are signalized.
- **Hamilton Road** is a north-south primary Wilmot Township roadway[2]. The posted speed limit within the study area is 50 km/h. Pedestrian sidewalks are provided on the west side of this roadway within the study area, and on the east side between Boullee Street and Captain McCallum Drive.
- **Nafziger Road** is a north-south Region of Waterloo roadway (Regional Road #5) with a rural cross-section. The posted speed limit within the study area is 80 km/h.

Figure 2.1 details the existing lane configurations and traffic controls at the study area intersections

Table 2.1 summarizes the existing storage lengths at the two Highway 7/8 intersections.

TABLE 2.1: STORAGE LENGTH SUMMARY

Intersection	Movement	Available Length (m)
Highway 7/8 & Hamilton Road	EBL	400.0
	WBL	100.0
	NBL	70.0
	SBL	65.0
Highway 7/8 & Nafziger Road	EBL	145.0
	WBL	140.0
	NBL	80.0
	SBL	120.0

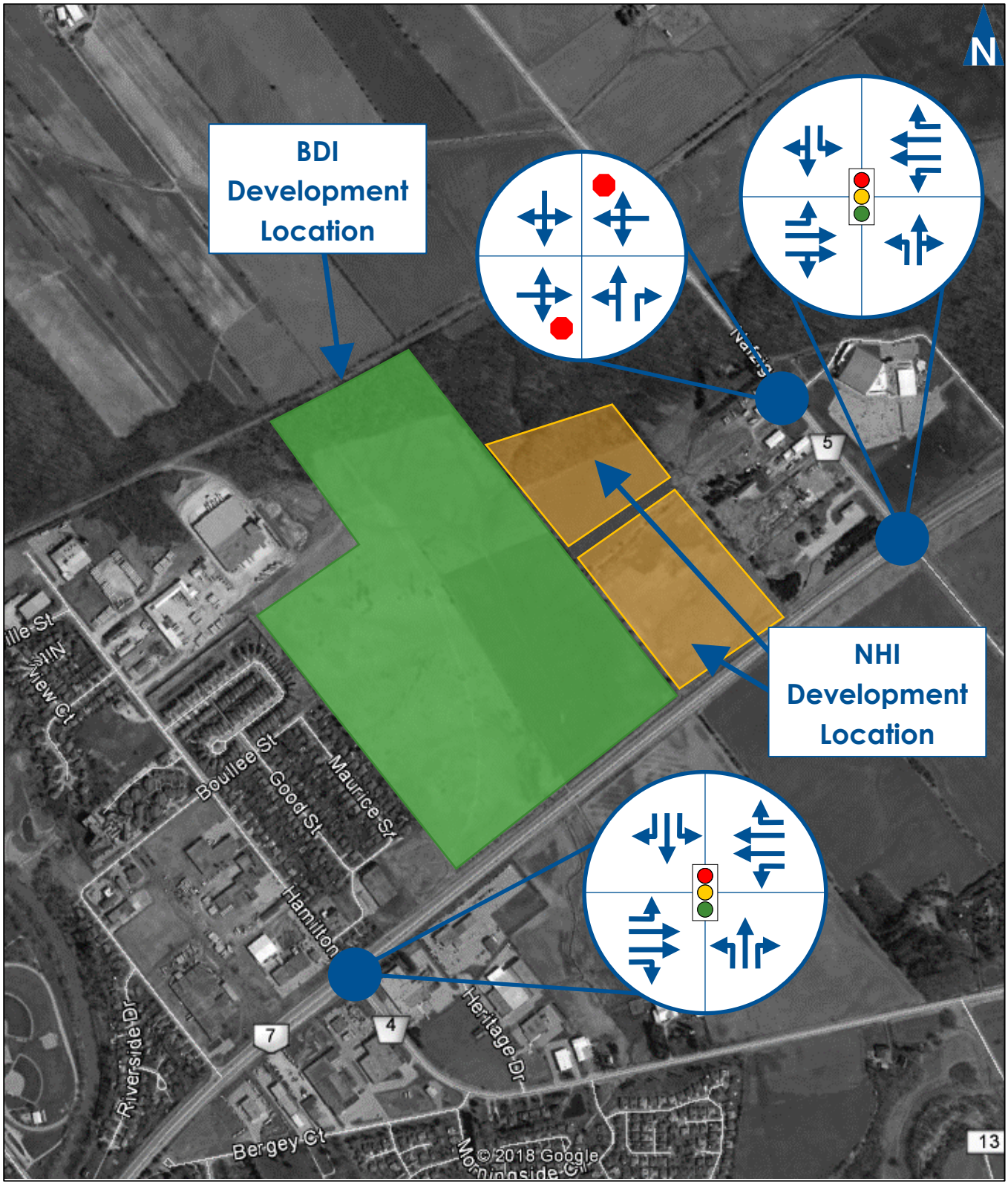
2.2 Future Road Network

The proposed improvements to Highway 7/8 will include the upgrading of the existing at-grade intersection at Nafziger Road to a new interchange with full

[1] MTO Comments – Badenview Developments Inc. – Pre-consultation. October 2017.
[2] Township of Wilmot Official Plan Map Number 7 Transportation. July 2004.

connections through ramp terminals. The intersection at Hamilton Road is expected to be improved as an at-grade intersection.

Figure 2.2A and **Figure 2.2B** detail the future study area intersection modifications including the proposed lane configurations at the at-grade intersection of Highway 7/8 and Hamilton Road, and the new interchange at Nafziger Road.



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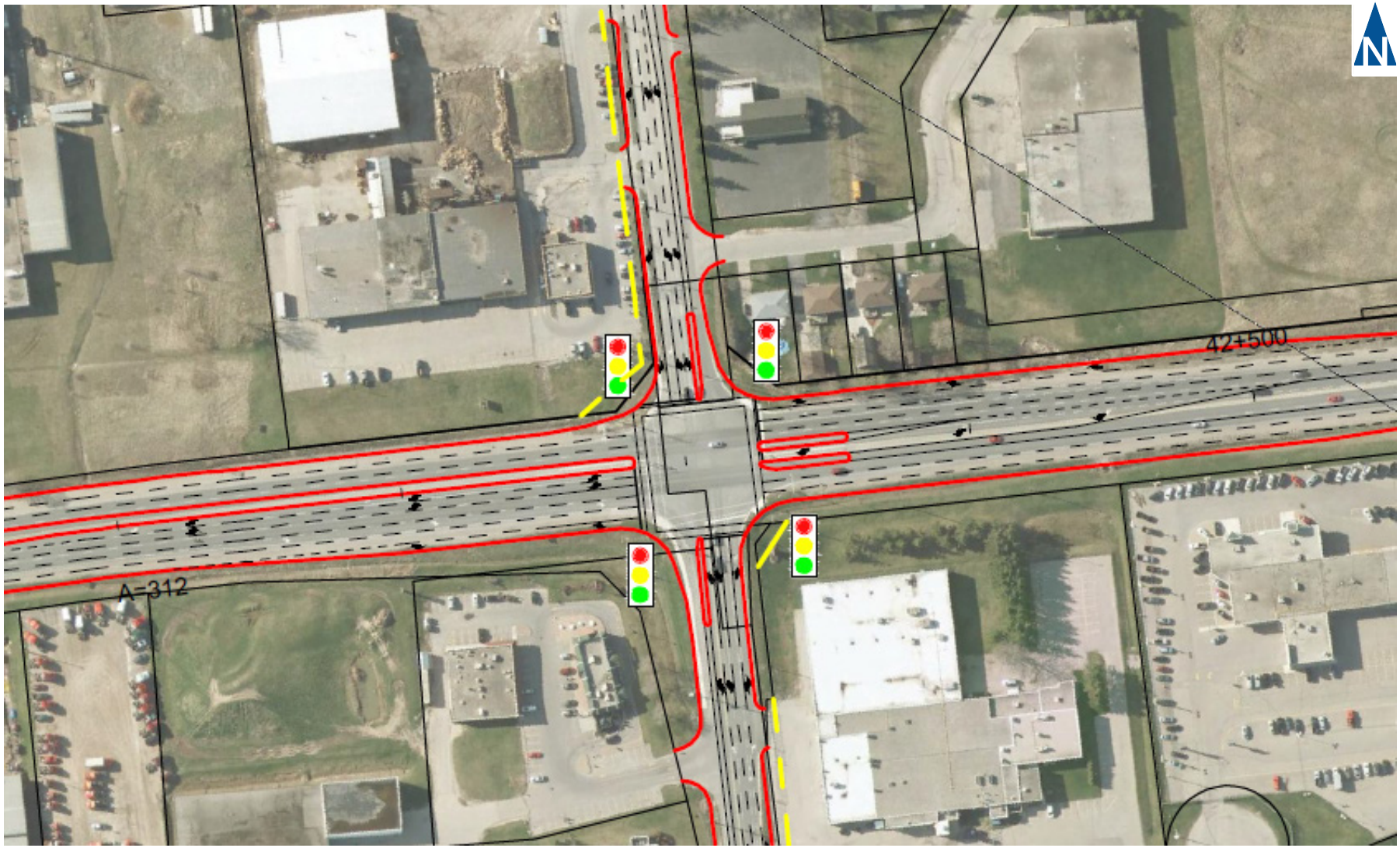
Existing Lane Configurations & Traffic Control



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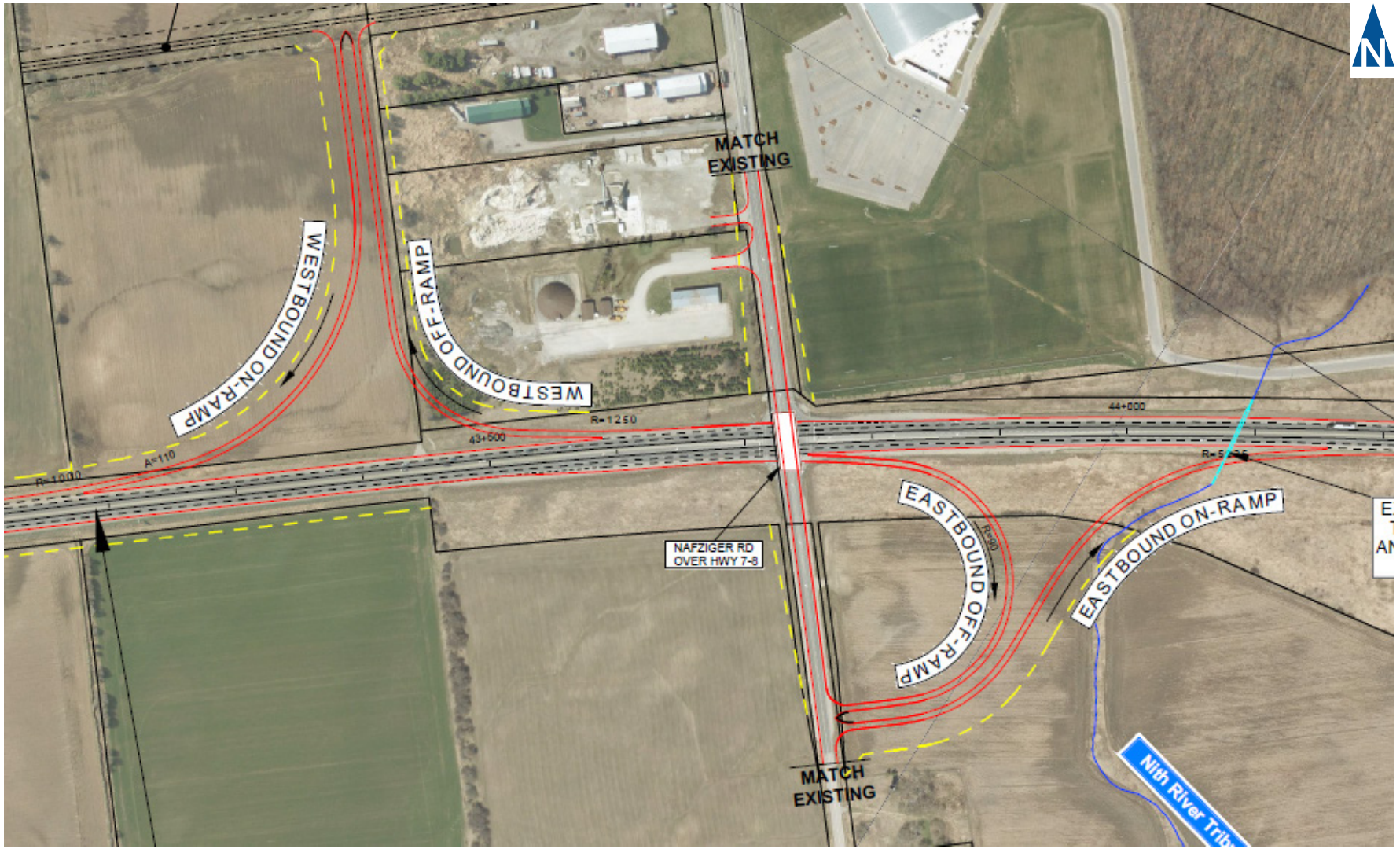
Future Intersections – Hamilton Road & Highway 7/8



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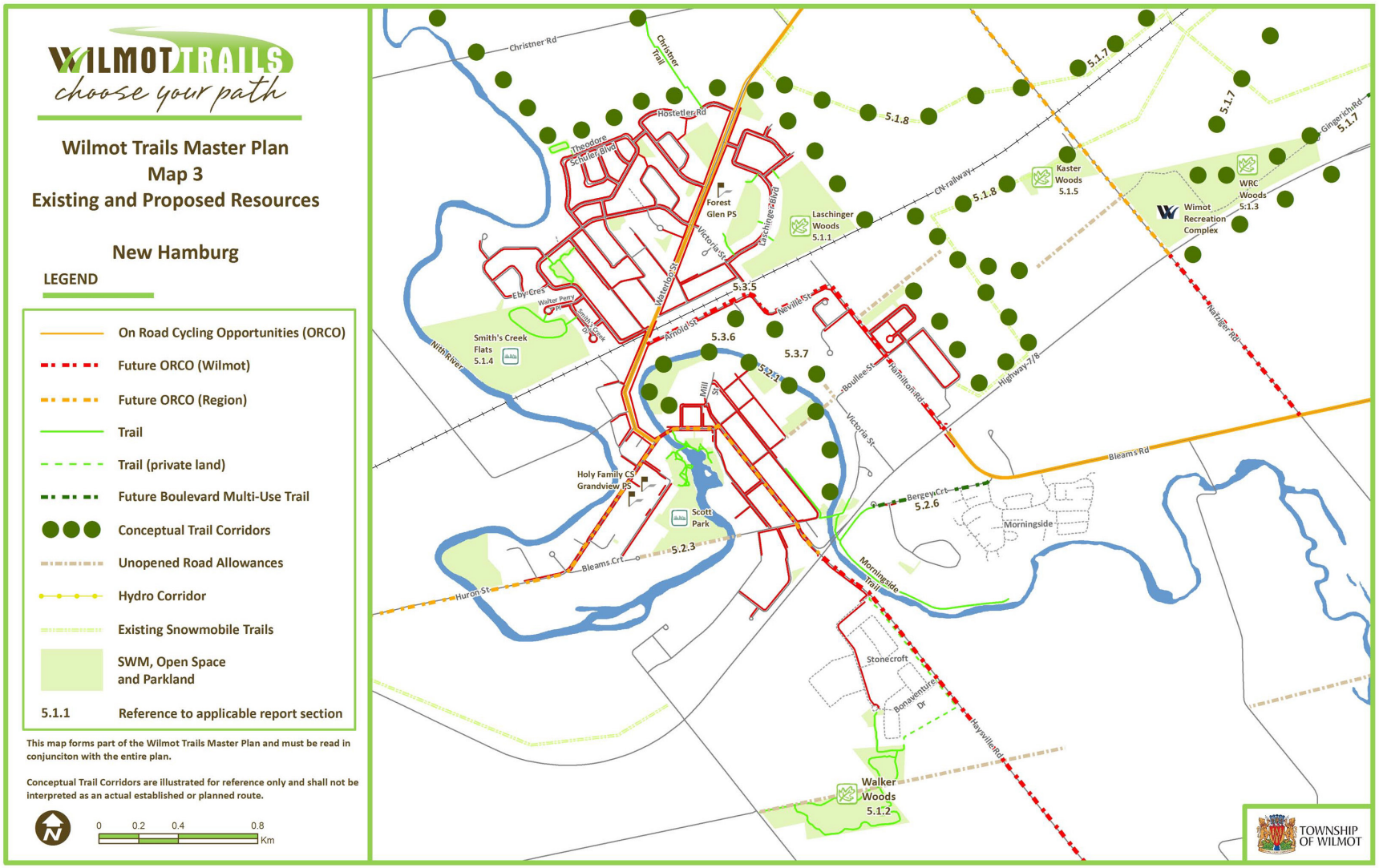
Future Intersections – Nafziger Road & Highway 7/8

2.3 Future Cycling Facilities

Hamilton Road is classified as a Future On-Road Cycling Opportunity in the Township of Wilmot Trails Master Plan.[3] Nafziger Road is classified as a Future On-Road Cycling Opportunity by the Region of Waterloo. **Figure 2.3** details the future cycling infrastructure.

A multi-use trail is also proposed within the new East Road right-of-way and West Road right-of-way from Hamilton Road to Nafziger Road and connecting to the Wilmot Recreation Complex to the east of Nafziger Road.

[3] Township of Wilmot. Township of Wilmot Trails Master Plan. November 2013



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Future Cycling Network

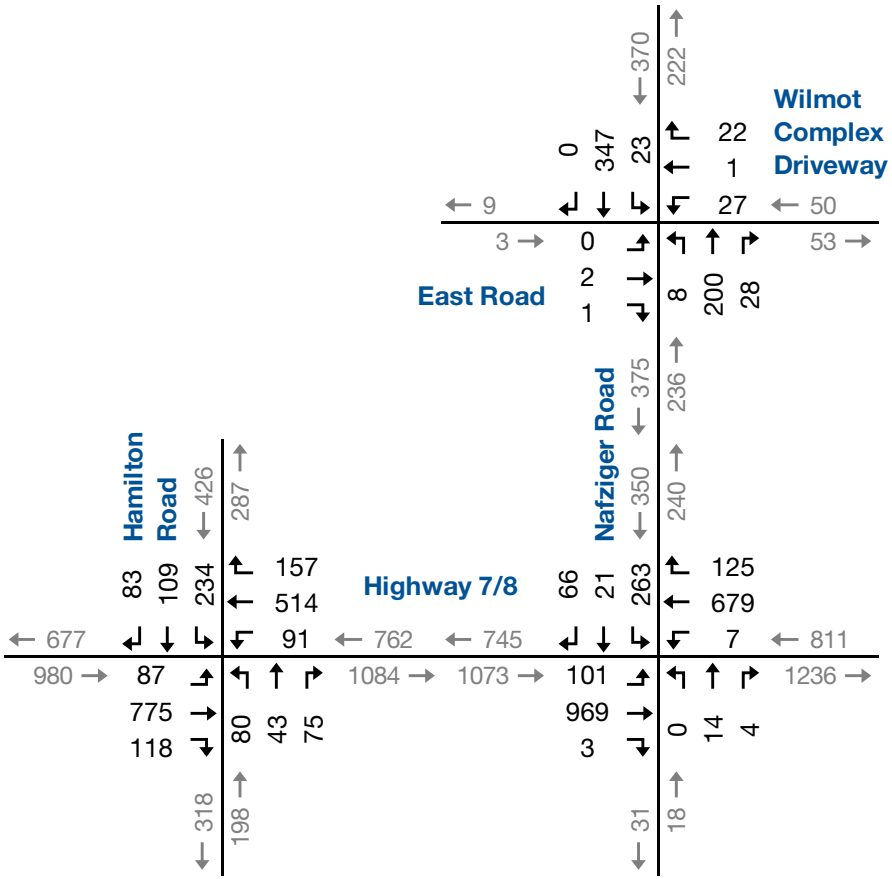
2.4 Existing Traffic Volumes

Turning movement counts were collected by Paradigm at the study area intersection using Miovision Scout Unit technology during February and September 2018.

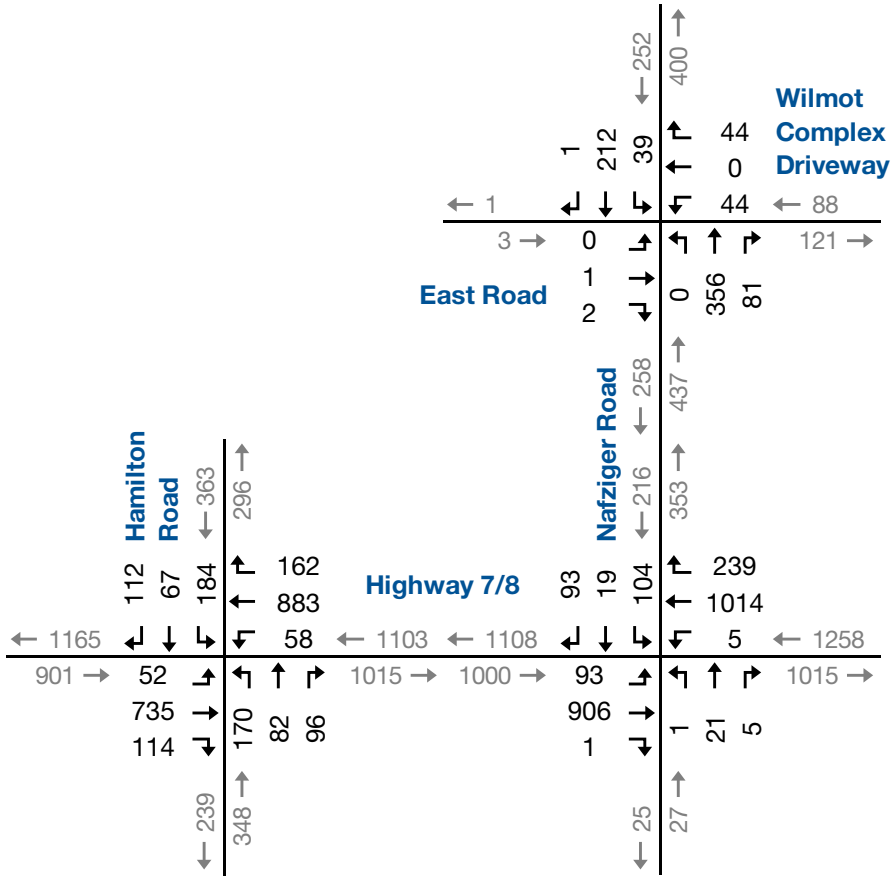
Figure 2.4 details the existing weekday AM and PM peak hour traffic volumes at the study area intersections.

Appendix A contains the count data as collected and signal timings corresponding to existing traffic conditions.

AM Peak Hour



PM Peak Hour



Existing Traffic Volumes

Figure 2.4

2.5 Existing Traffic Operations

The operations of the intersections in the study area were evaluated for level-of-service conditions using the existing lane configurations, traffic controls and the existing peak hour traffic volumes.

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 (or 50 seconds at unsignalized intersections), the movement is considered to have a LOS F and remedial measures are usually implemented, if they are feasible.

The level of service conditions on the existing road network have been assessed using Synchro 9 with HCM 2000 procedures. Movements are considered critical under the following conditions:

- Signalized intersections
  - V/C ratios for exclusive turning movements increased to greater than 0.90; or
  - Queues for an individual movement are projected to exceed available turning lane storage or impact upstream transportation facilities.

Table 2.2 summarizes the results of the analysis indicating acceptable level of service conditions overall, with the exception of the following critical movement:

- **Highway 7/8 and Hamilton Road**: the southbound left turn movement is exceeding the available storage length of 65 metres during the AM peak hour.

Appendix B contains the supporting detailed Synchro 9 output.

2.5.1 Queue Length Analysis (MTO Methodology)

In addition to Synchro 9 analysis, queue length analysis for the Highway 7/8 was also carried out using the MTO Geometric Design Standards[4], Table B7-4 under Level of Service (LOS) A conditions and assuming a vehicle length of 7.5 meters.

[4] Geometric Design Standards for Ontario Highways, *Ministry of Transportation*, 1985

Table 2.3 summarizes the results of the queue length analysis for existing traffic conditions.

The results indicate at the intersection of Highway 7/8 and Hamilton Road, the northbound and southbound left turn movements exceed the available storage capacity under existing conditions.

TABLE 2.2: EXISTING 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	1 - Highway 7/8 & Hamilton Road	TCS	LOS	A	B	A	**B**	A	B	A	**B**	C	C	A	**C**	D	C	A	**D**	**B**
			Delay	8	18	4	**15**	9	16	4	**13**	35	30	8	**24**	55	33	8	**40**	**20**
			V/C	0.15	0.43	0.15		0.21	0.31	0.19		0.29	0.09	0.19		0.78	0.25	0.20		
			Avail.	-	-	110		100	-	75		70		85		65	-	155		
			95th	15	87	11		16	56	12		28	16	11		77	34	12		
	2 - Highway 7/8 & Nafziger Road	TCS	LOS	A	B	>	**B**	A	C	A	**B**	A	A	>	**B**	B	D	>	**D**	**C**
			Delay	10	17	>	**11**	8	20	4	**16**	0	0	>	**18**	20	46	>	**37**	**20**
			V/C	0.24	0.59	>		0.02	0.49	0.19		0.00	0.00	>		0.05	0.78	>		
			Avail.	145	-	>		140	-	90		80	-	>		120	-	>		
			95th	15	99	>		2	67	11		0	0	>		7	84	>		
	3 - Nafziger Road & Wilmot Complex Driveway/East Road	TWSC	LOS	<	B	>	**B**	<	B	>	**B**	<	A	A	**A**	<	A	>	**A**	
			Delay	<	13	>	**13**	<	13	>	**13**	<	0	0	**0**	<	1	>	**1**	
			V/C	<	0.01	>		<	0.10	>		<	0.01	0.02		<	0.02	>		
			Avail.	<	-	>		<	-	>		<	-	50		<	-	>		
			95th	<	0	>		<	3	>		<	0	0		<	0	>		
PM Peak Hour	1 - Highway 7/8 & Hamilton Road	TCS	LOS	A	B	A	**B**	A	B	A	**B**	D	C	A	**C**	D	C	A	**D**	**B**
			Delay	7	15	3	**13**	7	16	3	**14**	50	33	8	**35**	54	32	8	**36**	**19**
			V/C	0.13	0.39	0.14		0.12	0.50	0.19		0.69	0.21	0.26		0.74	0.18	0.29		
			Avail.	-	-	110		100	-	75		70		85		65	-	155		
			95th	9	71	10		10	91	11		55	27	13		59	23	14		
	2 - Highway 7/8 & Nafziger Road	TCS	LOS	A	B	>	**B**	A	B	A	**B**	A	C	>	**B**	C	D	>	**C**	**B**
			Delay	6	11	>	**13**	5	17	3	**10**	0	26	>	**14**	24	37	>	**25**	**14**
			V/C	0.26	0.47	>		0.01	0.62	0.31		0.00	0.00	>		0.11	0.50	>		
			Avail.	145	-	>		140	-	90		80	-	>		120	-	>		
			95th	10	74	>		1	91	12		0	2	>		10	32	>		
	3 - Nafziger Road & Wilmot Complex Driveway/East Road	TWSC	LOS	<	B	>	**B**	<	B	>	**B**	<	A	A	**A**	<	A	>	**A**	
			Delay	<	11	>	**11**	<	14	>	**14**	<	0	0	**0**	<	2	>	**2**	
			V/C	<	0.01	>		<	0.18	>		<	0.00	0.05		<	0.03	>		
			Avail.	<	-	>		<	-	>		<	-	50		<	-	>		
			95th	<	0	>		<	5	>		<	0	0		<	1	>		

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
> - Shared Right-Turn Lane
< - Shared Left-Turn Lane
Avail. - Available Storage Length

TABLE 2.3: EXISTING TRAFFIC OPERATIONS – QUEUE LENGTH ANALYSIS

Intersection	Movement	Cycle Length		Left Turn Counts		m_u max	Calc'd Length	Available Length	95th Queue	
		AM Peak	PM Peak	AM Peak	PM Peak				AM Peak	PM Peak
Highway 7/8 & Hamilton Road	EBL	130	130	87	52	3.1	45.0	400	15	9
	WBL			91	58	3.3	52.5	100	16	10
	NBL			80	170	6.1	75.0	70	28	55
	SBL			234	184	8.5	105.0	65	77	59
Highway 7/8 & Nafziger Road	EBL	105	105	101	93	2.9	52.5	145	15	10
	WBL			7	5	0.2	7.5	140	2	1
	NBL			0	1	0.0	7.5	80	0	0
	SBL			263	104	7.7	112.5	120	7	10

3 Development Concept

3.1 Proposed Developments

The subject sites are located north of Highway 7/8, between Nafziger Road and Hamilton Road, in Baden, Ontario.

The westerly BDI lands include 312 hectares (77.1 acres) of developable land, and the easterly NHI lands include 8.92 hectares (22.04 acres) of developable lands.

The Gross Floor Area (GFA) for each property is assumed to be 50% of the developable land area, the maximum allowed under current Zoning.

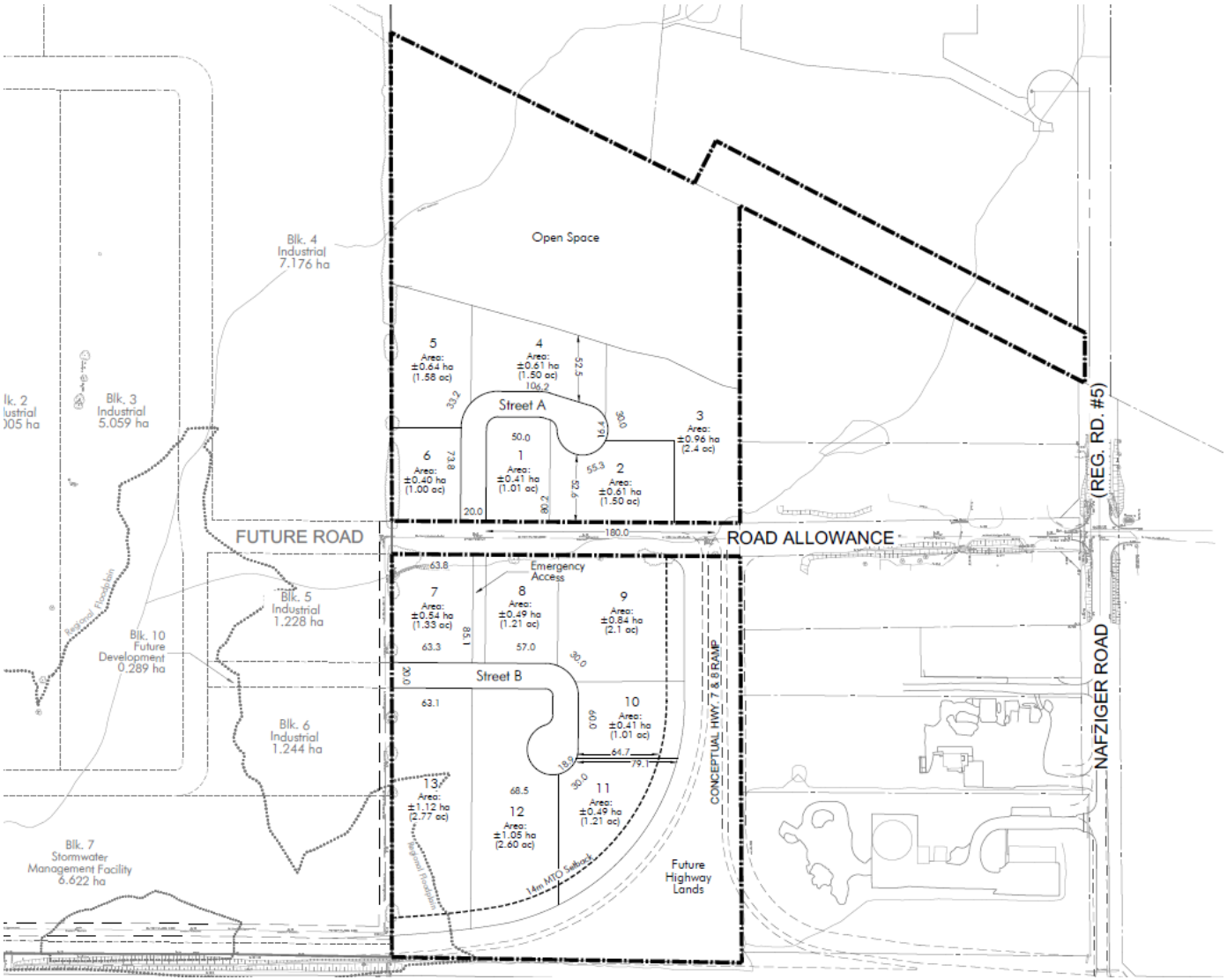
Figure 3.1a details the layout of the westerly site (BDI lands), where the lands are planned to be developed for accommodating 1,696,000 ft^2 GFA of industrial land uses, subdivided into six (6) development parcels.

Figure 3.1b details the layout of the easterly site, where the lands are planned to be developed for accommodating 480,000 ft^2 GFA of industrial land uses, subdivided into thirteen (13) development parcels north and south of East Road.

Vehicular access is proposed by two new municipal road connections: West Road connecting to Hamilton Road; and East Road connecting to Nafziger Road. The two new roads will be built on existing unopened municipal road allowances.

The developments are anticipated to be completed by 2023. The timing of development and the GFA of individual parcels may change depending on market conditions.

Site Concept Plan – BDI Development



Site Concept Plan - NHI Development

Figure 3.1B

3.2 Development Traffic Estimates

The Institute of Transportation Engineers (ITE) Trip Generation[5] rates corresponding to Land Use Code 130 (Industrial Park) were used to estimate the trip generation for the two developments.

Table 3.1 summarizes the total trip generation by the two developments, estimated to be approximately 856 AM peak hour vehicle trips and 856 PM peak hour vehicle trips. No reduction to vehicle trip generation has been assumed given the location of the lands and the proposed uses.

TABLE 3.1: ESTIMATED TRIP GENERATION

Land Use Code	Ground Floor Area	AM Peak Hour				PM Peak Hour			
		Rate	In	Out	Total	Rate	In	Out	Total
BDI Development	1680 1000 Sq.	0.40	544	128	672	0.40	141	531	672
NHI Development	461 1000 Sq.	0.40	149	35	184	0.40	39	145	184
Total (BDI and NHI Developments)	2141 1000 Sq.	0.40	693	163	856	0.40	180	676	856

Table 3.2 summarizes the estimated trip distribution for the site generated trips and is primarily based on the directional distribution of traffic in the two main study area intersections on Highway 7/8.

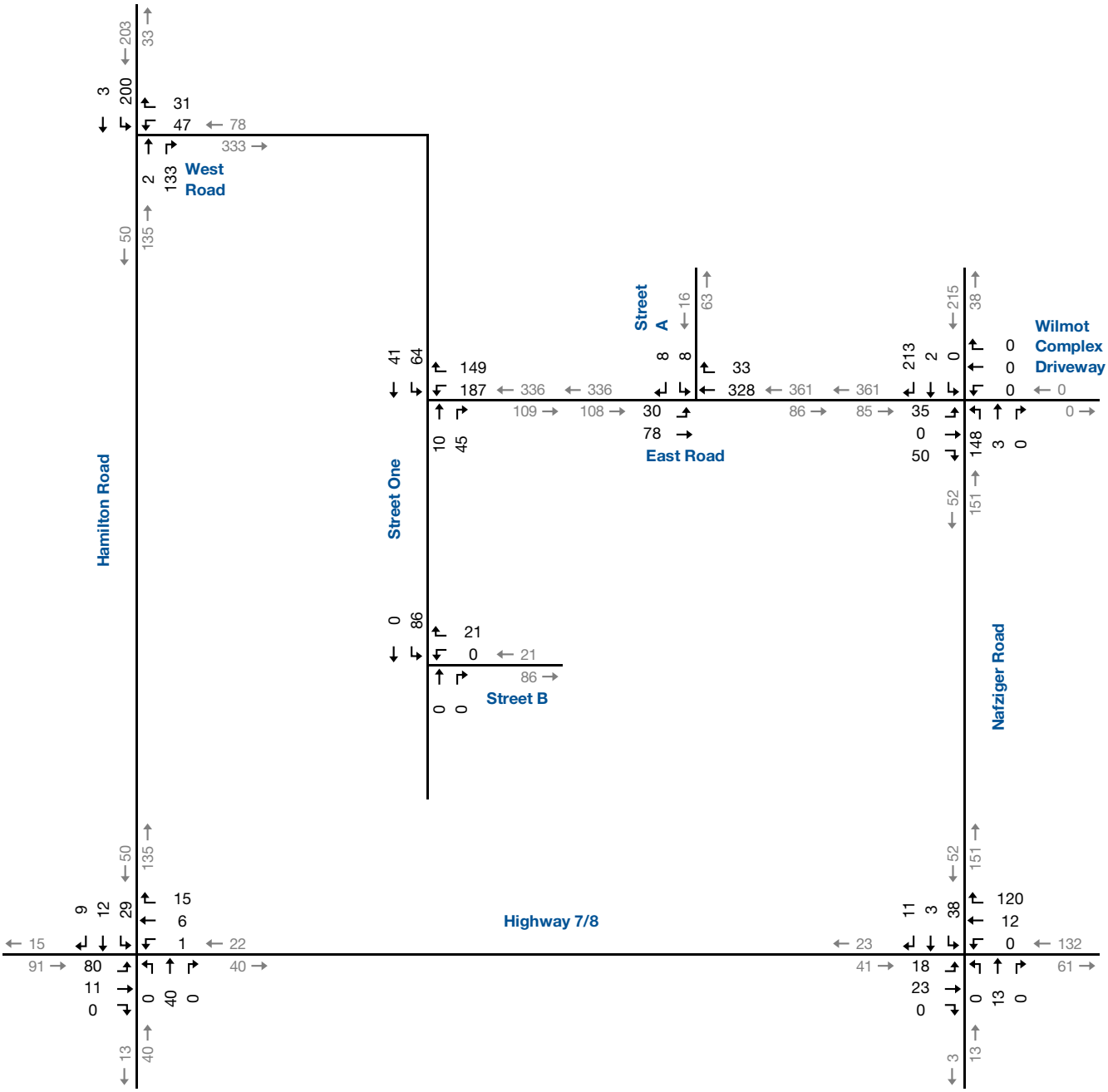
Figure 3.2 details the assignment of the site-generated AM and PM peak hour traffic to the study area road network, including West Road and East Road, e the new road connections to Hamilton Road and Nafziger Road, respectively.

Figure 3.3A and **Figure 3.3B** respectively detail the assignment of AM and PM peak hour traffic to the future road network based on the anticipated improvements to the Highway 7/8 intersections at Hamilton Road and at Nafziger Road.

TABLE 3.2: DIRECTIONAL TRIP DISTRIBUTION

Direction	AM		PM	
	INS	OUTS	INS	OUTS
Hamilton Road - North	29%	19%	19%	15%
Hamilton Road - South	19%	29%	15%	19%
Nafziger Road - North	31%	21%	25%	41%
Nafziger Road - South	21%	31%	41%	25%
Total:	**100%**	**100%**	**100%**	**100%**

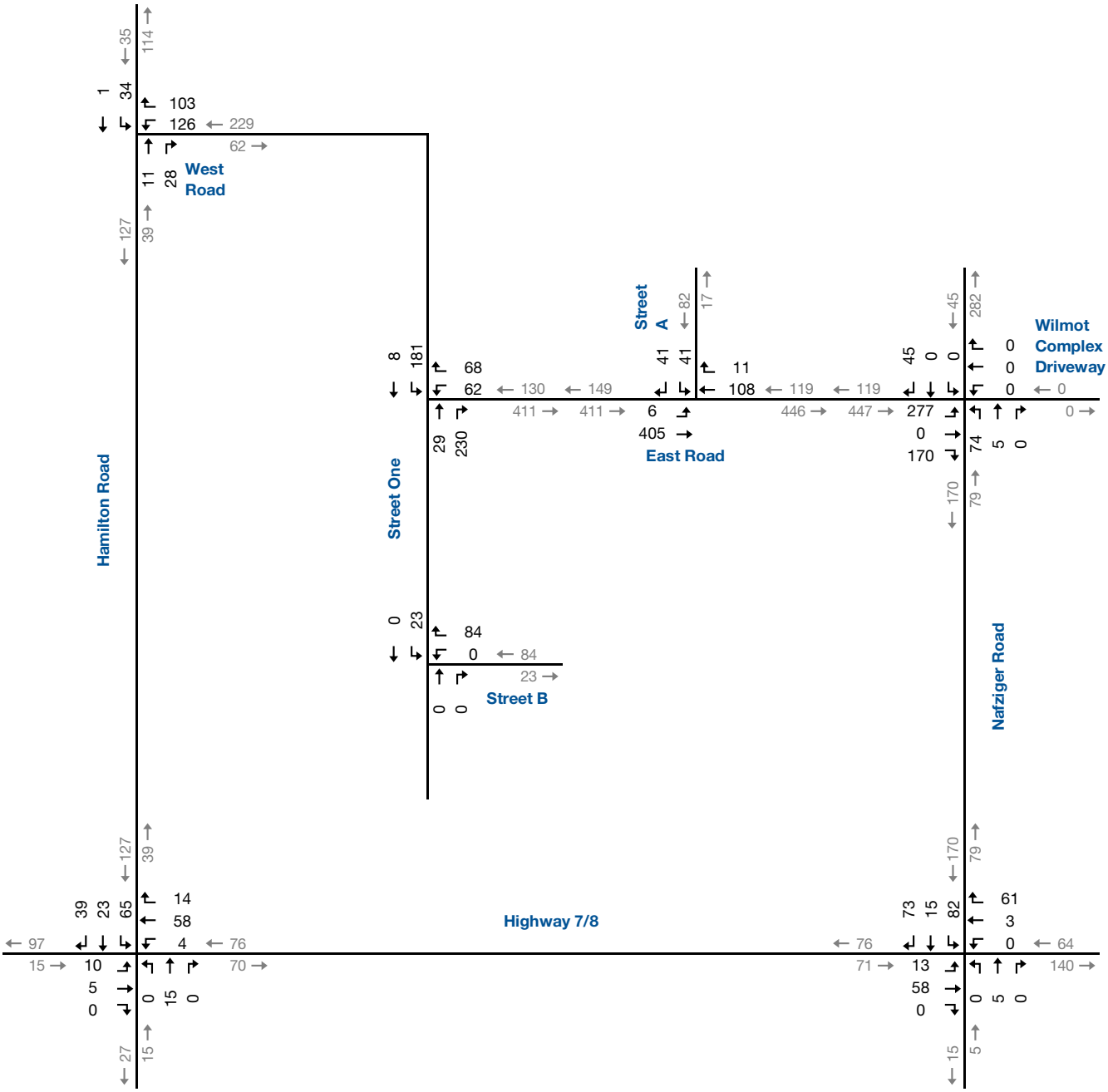
[5] Trip Generation Manual 10th Edition Institute of Transportation Engineers Washington DC 2017



Estimated Site Generated Traffic – AM Peak Hour

Nafziger Road Industrial Development TIS
180248

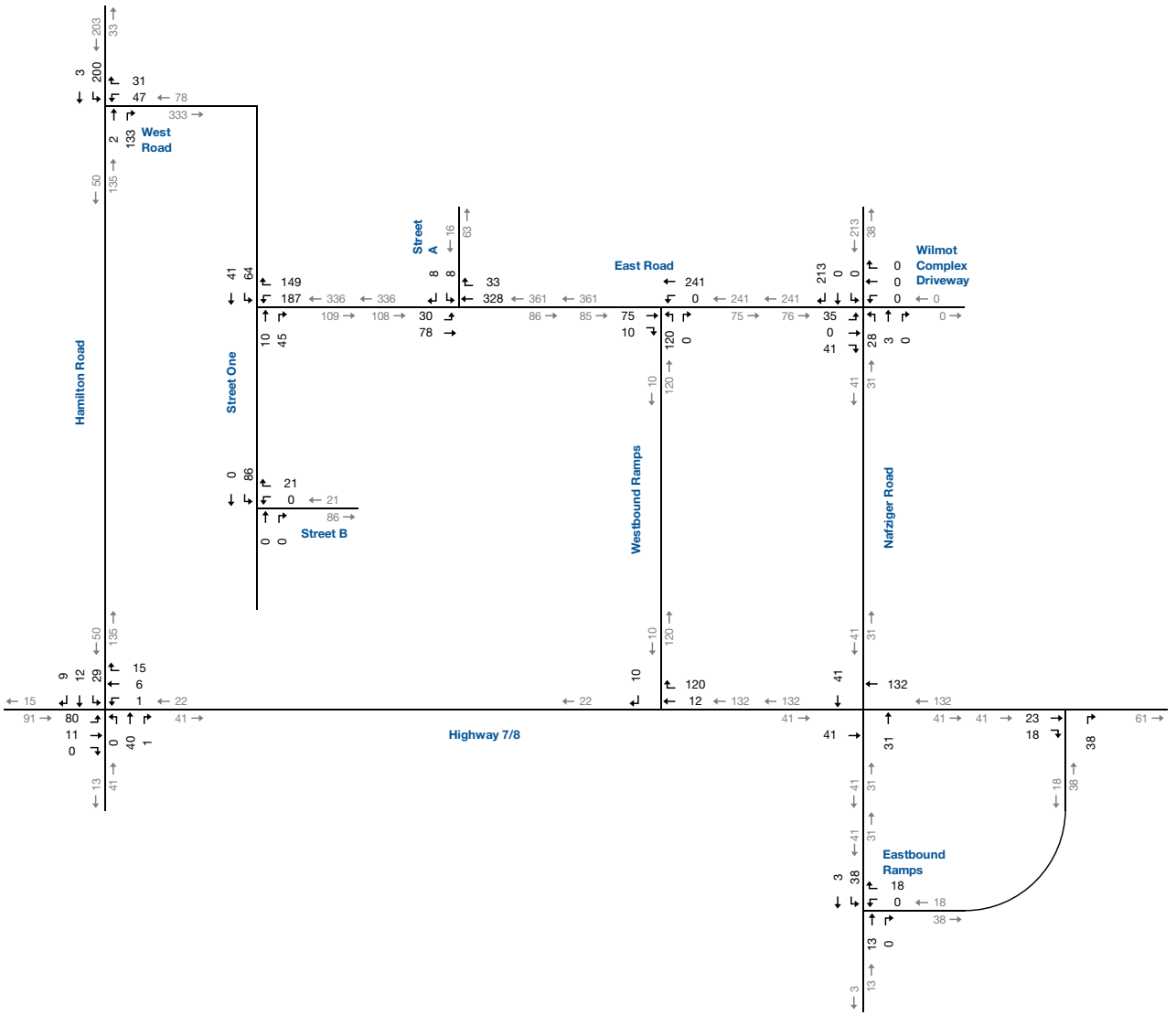
Figure 3.2A



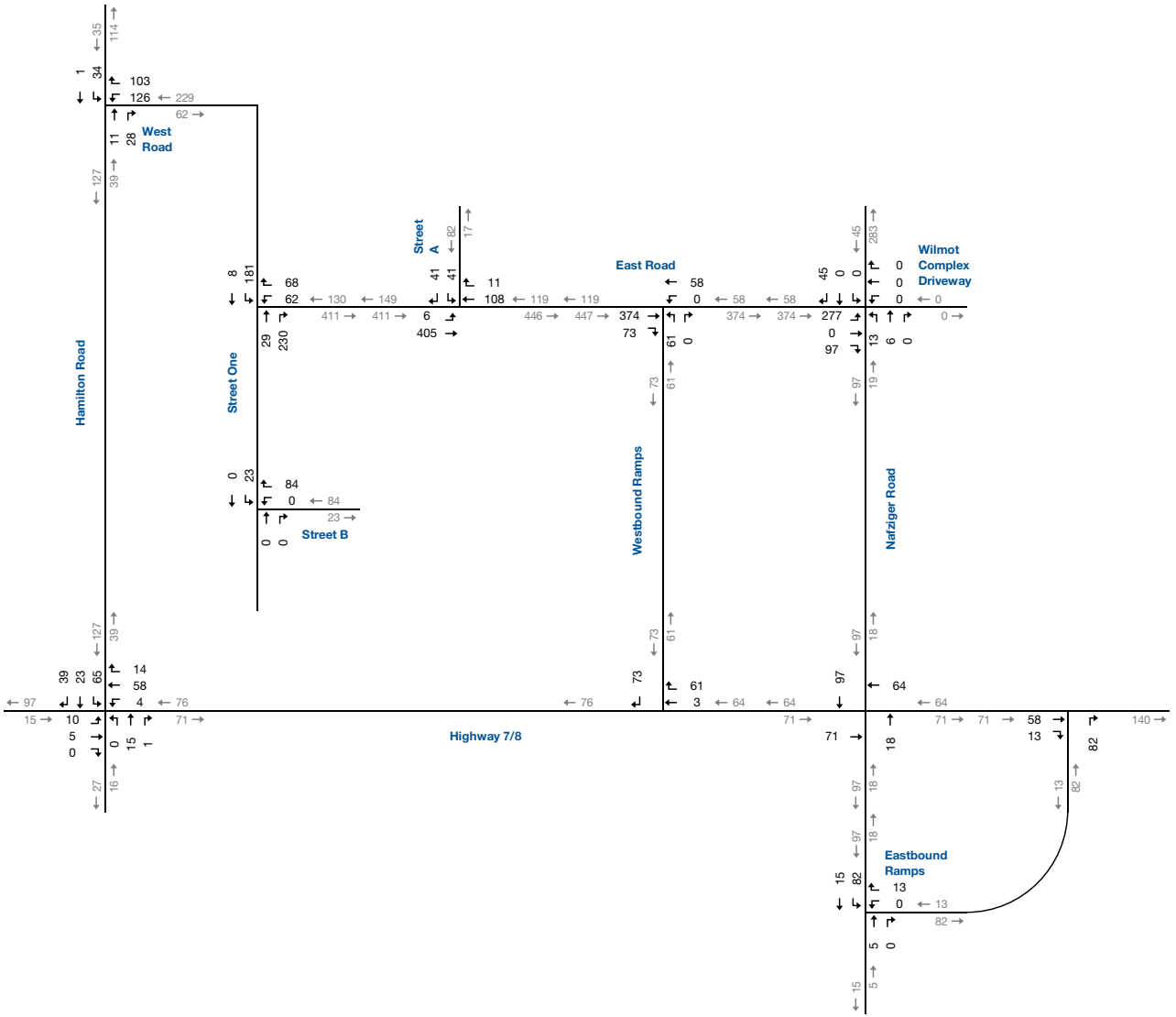
Estimated Site Generated Traffic – PM Peak Hour

Nafziger Road Industrial Development TIS
180248

Figure 3.2B



Estimated Site Generated Traffic Future Intersections – AM Peak Hour



Estimated Site Generated Traffic Future Intersections – PM Peak Hour

4 Future Traffic Conditions

The assessment of future traffic conditions includes estimates of future background and total traffic volumes, and operational analyses corresponding to the 2023, 2028 and 2033 horizon years.

The future background traffic volumes include road traffic increases and traffic generated by other area developments. The total traffic volumes include the background traffic volumes and the traffic generated by the proposed developments.

Background road traffic increases were estimated at an annual growth rate of 1.5%, as confirmed by the Region of Waterloo. There are no other developments in the area to be included in estimating the background traffic.

The operational analysis was undertaken using Synchro 9 software. In addition, the queue lengths at the two Highway 7/8 intersections were analysed using the methodology in the MTO Geometric Design Standards.

The background and total traffic volumes, as well as the results of the Synchro analysis and the MTO methodology for queue length analysis, corresponding to both the existing and the future Highway 7/8 intersection configurations, for the 2023, 2028 and 2033 horizon years are detailed in this Section.

4.1 2023 Horizon (Opening Year)

4.1.1 2023 Background Traffic Operations

Figure 4.1 shows the assignment of 2023 AM and PM peak hour background traffic volumes at the existing study area intersections.

Figure 4.2A and 4.2B respectively show the assignment of 2023 AM and PM peak hour background traffic volumes at the future study area intersections including the ramp terminals of the new interchange at Highway 7/8 and Nafziger Road.

Table 4.1 summarizes the results of the Synchro analysis corresponding to existing intersection configurations.

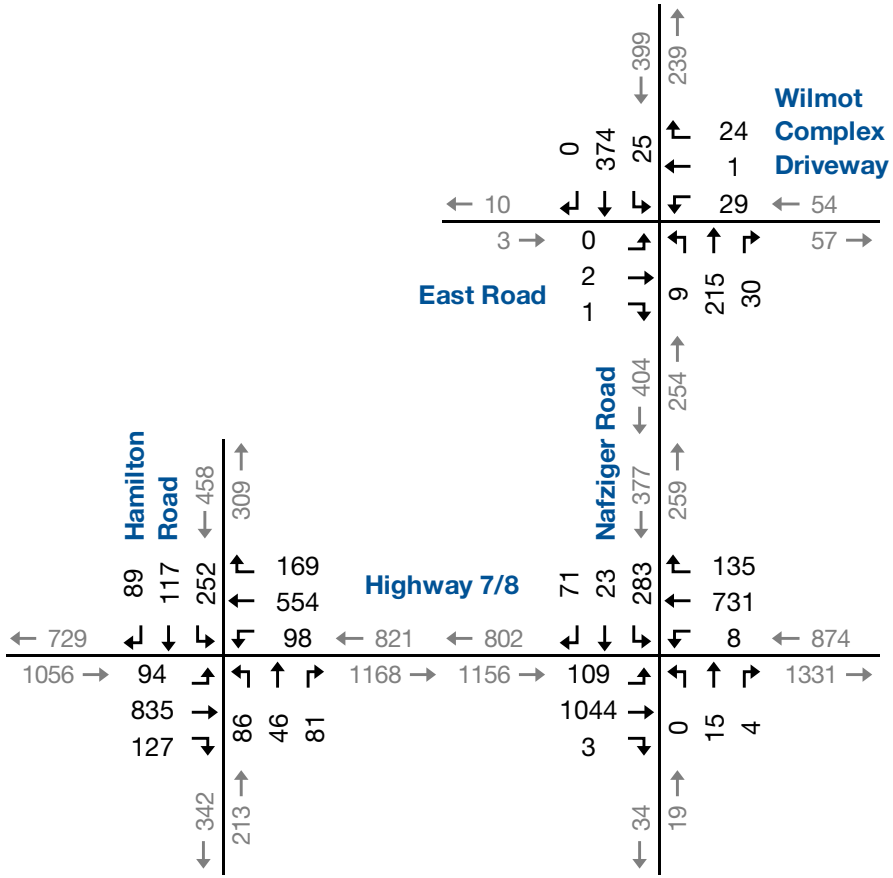
Table 4.2 summarizes the results of the Synchro analysis corresponding to future intersection configurations with the new Highway 7/8 and Nafziger Road interchange in place.

The intersection operations under 2023 background traffic conditions are similar to those under existing traffic conditions, with all movements operating at acceptable levels of service, except:

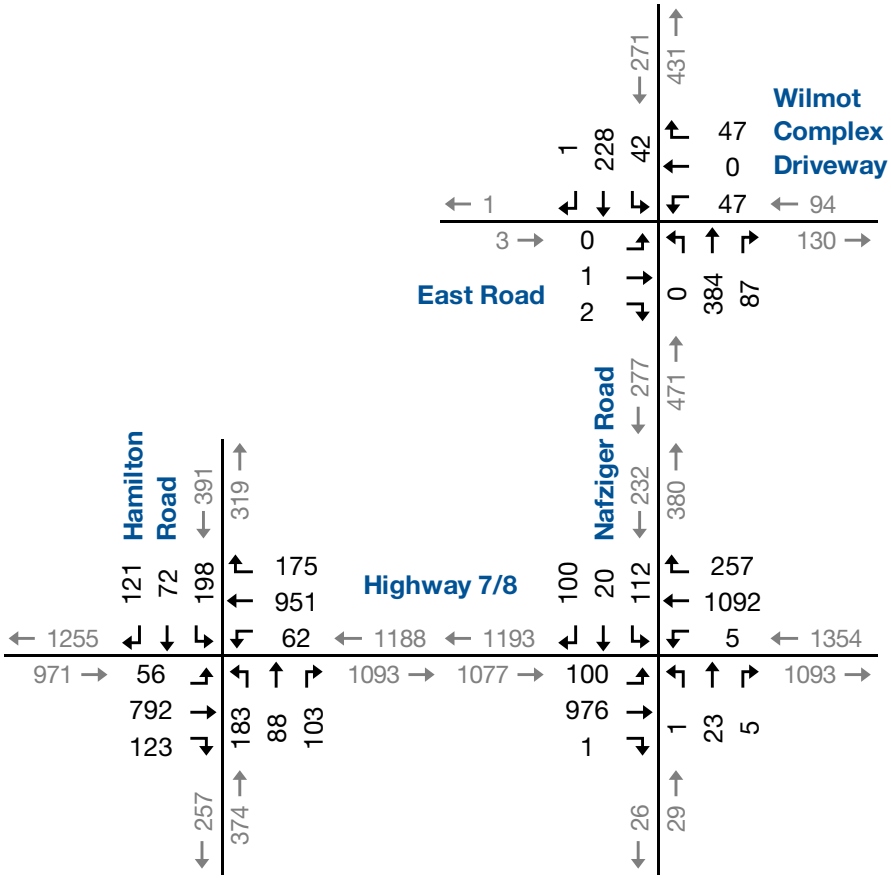
- **Highway 7/8 & Hamilton Road**: the southbound left turn movement has a LOS E during the AM peak hour, under the existing configuration (Table 4.1). However, the LOS is noted to improve to LOS D with Highway 7/8 improvements, including dual southbound left turn lanes, in place (**Table 4.2**). The queue length is also projected to exceed available storage under existing configuration but could be accommodated with dual left turn lanes in place.

Appendix C contains the supporting detailed Synchro 9 reports.

AM Peak Hour



PM Peak Hour



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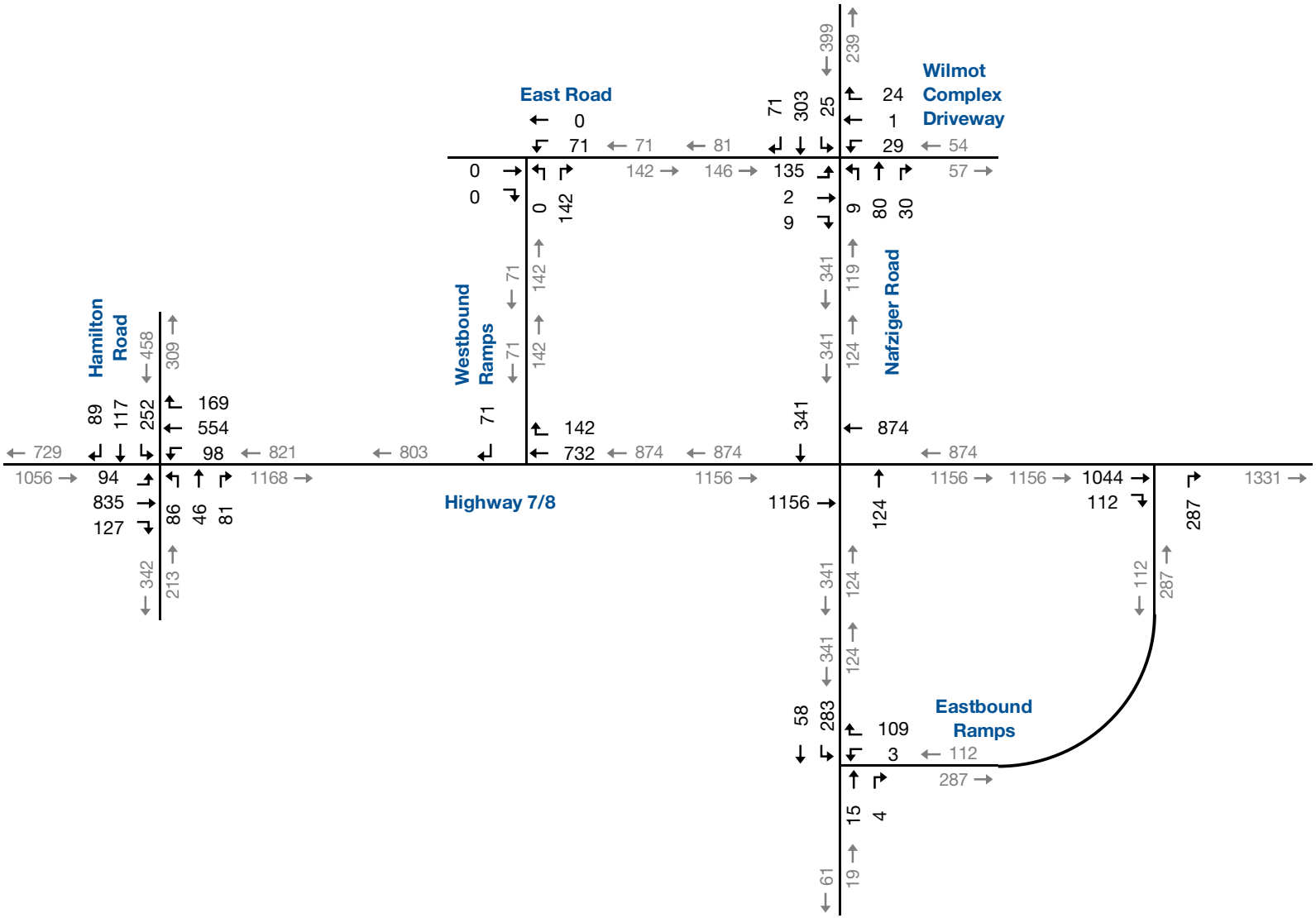
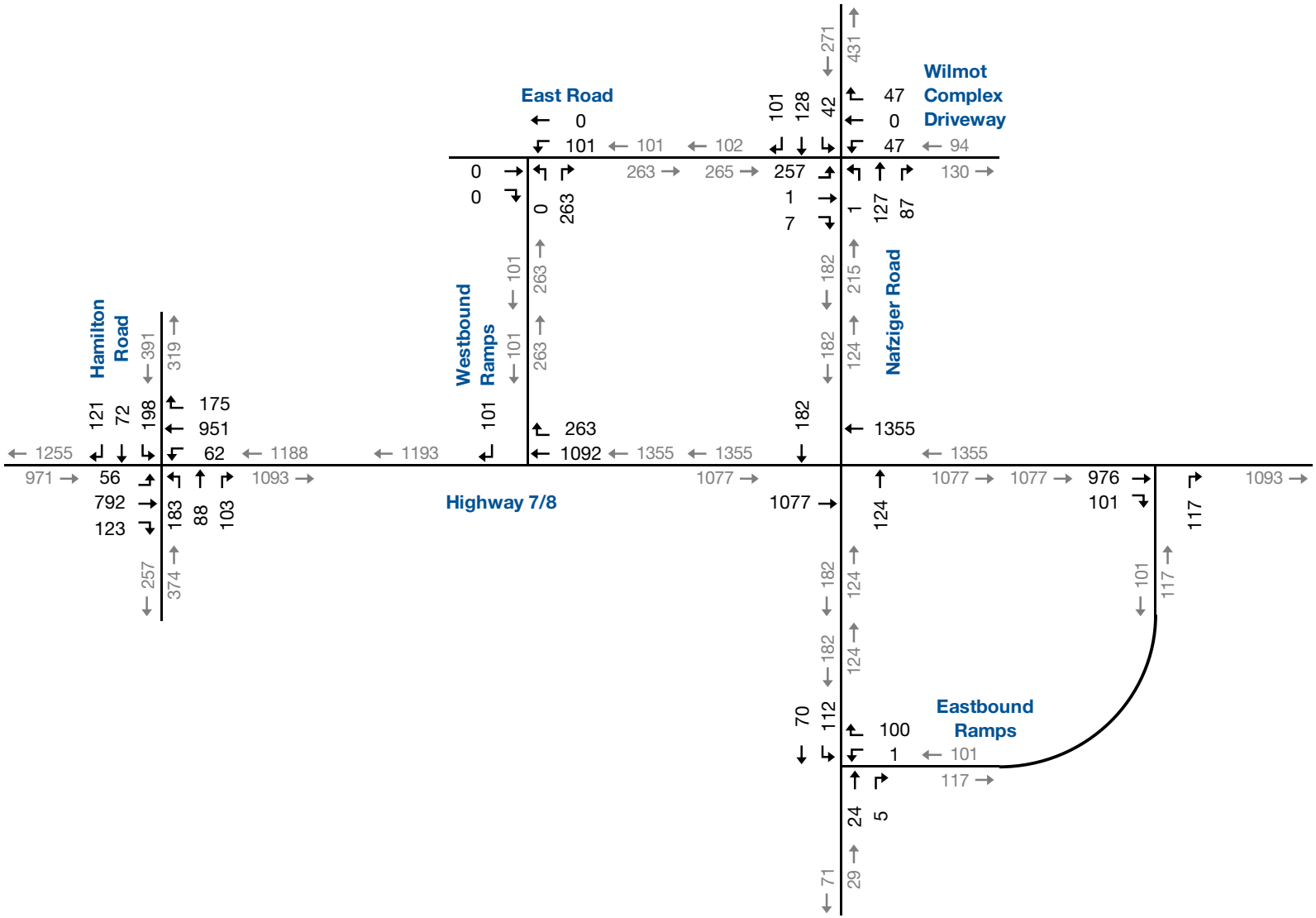
2023 Background Traffic



2023 Background Traffic Future Intersections – AM Peak Hour



2023 Background Traffic Future Intersections – PM Peak Hour

TABLE 4.1: 2023 BACKGROUND TRAFFIC OPERATIONS – EXISTING INTERSECTIONS

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	1 - Highway 7/8 & Hamilton Road	TCS	LOS	A	C	A	**B**	B	B	A	**B**	C	C	A	**C**	E	C	A	**D**	**C**
			Delay	9	20	4	**17**	10	18	4	**14**	34	30	8	**23**	57	33	7	**41**	**21**
			V/C	0.18	0.49	0.16		0.25	0.35	0.21		0.30	0.10	0.20		0.81	0.26	0.21		
			Avail.	-	-	110		100	-	75		70		85		65	-	155		
			95th	18	103	12		18	65	13		30	17	11		83	36	12		
	2 - Highway 7/8 & Nafziger Road	TCS	LOS	B	B	>	**B**	A	C	A	**B**	A	B	>	**B**	D	B	>	**D**	**C**
			Delay	11	19	>	**18**	9	22	4	**19**	0	20	>	**20**	46	10	>	**37**	**21**
			V/C	0.28	0.65	>		0.02	0.54	0.21		0.00	0.05	>		0.79	0.22	>		
			Avail.	145	-	>		140	-	90		80	-	>		120	-	>		
			95th	16	110	>		2	74	11		0	8	>		94	15	>		
	3 - Nafziger Road & Wilmot Complex Driveway/East Road	TWSC	LOS	<	B	>	**B**	<	B	>	**B**	<	A	A	**A**	<	A	>	**A**	
			Delay	<	14	>	**14**	<	13	>	**13**	<	0	0	**0**	<	0	>	**1**	
			V/C	<	0.01	>		<	0.11	>		<	0.01	0.02		<	0.02	>		
			Avail.	<	-	>		<	-	>		<	-	50		<	-	>		
			95th	<	0	>		<	3	>		<	0	0		<	1	>		
PM Peak Hour	1 - Highway 7/8 & Hamilton Road	TCS	LOS	A	B	A	**B**	A	B	A	**B**	D	C	A	**C**	D	C	A	**D**	**B**
			Delay	8	16	3	**14**	8	18	3	**15**	51	33	8	**35**	55	32	8	**36**	**20**
			V/C	0.15	0.42	0.15		0.14	0.55	0.21		0.70	0.21	0.27		0.76	0.18	0.30		
			Avail.	-	-	110		100	-	75		70		85		65	-	155		
			95th	10	81	10		11	106	13		59	28	13		64	24	14		
	2 - Highway 7/8 & Nafziger Road	TCS	LOS	A	B	>	**B**	A	B	A	**B**	A	C	>	**B**	C	D	>	**C**	**B**
			Delay	7	11	>	**13**	5	18	3	**11**	0	27	>	**15**	25	38	>	**25**	**15**
			V/C	0.30	0.51	>		0.01	0.68	0.33		0.00	0.00	>		0.11	0.52	>		
			Avail.	145	-	>		140	-	90		80	-	>		120	-	>		
			95th	11	83	>		1	104	13		0	2	>		11	34	>		
	3 - Nafziger Road & Wilmot Complex Driveway/East Road	TWSC	LOS	<	B	>	**B**	<	C	>	**C**	<	A	A	**A**	<	A	>	**A**	
			Delay	<	12	>	**12**	<	15	>	**15**	<	0	0	**0**	<	2	>	**2**	
			V/C	<	0.01	>		<	0.21	>		<	0.00	0.05		<	0.04	>		
			Avail.	<	-	>		<	-	>		<	-	50		<	-	>		
			95th	<	0	>		<	6	>		<	0	0		<	1	>		

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
> - Shared Right-Turn Lane
< - Shared Left-Turn Lane
Avail. - Available Storage Length

TABLE 4.2: 2023 BACKGROUND TRAFFIC OPERATIONS – FUTURE INTERSECTIONS

Analysis Period	Intersection	Control Type	MOE	Direction / Movement / Approach																	OVERALL
				Eastbound				Westbound				Northbound				Southbound					
				Left	Through	Right	Approach	Left	Through	Right	Approach	Left	Through	Right	Approach	Left	Through	Right	Approach		
AM Peak Hour	1 - Highway 7/8 & Hamilton Road	TCS	LOS	D	C	A	**C**	B	C	A	**B**	D	D	A	**C**	D	D	A	**C**	**C**
			Delay	39	23	5	**22**	11	20	4	**16**	40	36	4	**25**	41	38	4	**33**	**22**
			V/C	0.29	0.58	0.19		0.27	0.41	0.25		0.29	0.18	0.26		0.56	0.40	0.26		
			Avail.	-	-	110		100	-	75		70		85		65	-	155		
			95th	16	90	12		16	57	13		15	18	4		39	36	6		
	2 - Nafziger Road & Wilmot Complex Driveway/East Road	TWSC	LOS	<	C	>	**C**	<	B	>	**B**	<	A	A	**A**	<	A	>	**A**	**A**
			Delay	<	16	>	**16**	<	12	>	**12**	<	1	0	**1**	<	1	>	**1**	**5**
			V/C	<	0.31	>		<	0.09	>		<	0.01	0.02		<	0.02	>		
			Avail.	<	-	>		<	-	>		<	-	50		<	-	>		
			95th	<	11	>		<	2	>		<	0	0		<	0	>		
	3 - Nafziger Road & Eastbound Ramps	TWSC	LOS					A		A	**A**		A	>	**A**	<	A		**A**	
			Delay					9		9	**9**		0	>	**0**	<	7		**7**	
			V/C					0.11		0.11			0.01	>		<	0.18			
			Avail.					-		-			-	>		<	-			
			95th					3		3			0	>		<	5			
	4 - East Road & Westbound Ramps	TWSC	LOS		A	>	**A**	<	A		**A**	A		A	**A**					
			Delay		0	>	**0**	<	7		**7**	9		9	**9**					
			V/C		0.00	>		<	0.04			0.13		0.13						
			Avail.		-	>		<	-			-		-						
			95th		0	>		<	1			4		4						
PM Peak Hour	1 - Highway 7/8 & Hamilton Road	TCS	LOS	D	C	A	**C**	B	C	A	**C**	D	D	A	**C**	D	D	A	**C**	**B**
			Delay	39	23	4	**21**	10	27	6	**23**	39	39	7	**30**	39	38	10	**30**	**16**
			V/C	0.20	0.57	0.19		0.18	0.74	0.27		0.48	0.36	0.34		0.49	0.30	0.39		
			Avail.	-	-	110		100	-	75		70		85		65	-	155		
			95th	11	85	11		11	110	16		27	30	9		28	25	13		
	2 - Nafziger Road & Wilmot Complex Driveway/East Road	TWSC	LOS	<	C	>	**C**	<	B	>	**B**	<	A	A	**A**	<	A	>	**A**	**A**
			Delay	<	20	>	**20**	<	11	>	**11**	<	0	0	**0**	<	1	>	**1**	**8**
			V/C	<	0.54	>		<	0.14	>		<	0.00	0.05		<	0.03	>		
			Avail.	<	-	>		<	-	>		<	-	50		<	-	>		
			95th	<	25	>		<	4	>		<	0	0		<	1	>		
	3 - Nafziger Road & Eastbound Ramps	TWSC	LOS					A		A	**A**		A	>	**A**	<	A		**A**	
			Delay					9		9	**9**		0	>	**0**	<	6		**6**	
			V/C					0.10		0.10			0.02	>		<	0.07			
			Avail.					-		-			-	>		<	-			
			95th					3		3			0	>		<	2			
	4 - East Road & Westbound Ramps	TWSC	LOS		A	>	**A**	<	A		**A**	A		A	**A**					
			Delay		0	>	**0**	<	7		**7**	9		9	**9**					
			V/C		0.00	>		<	0.06			0.24		0.24						
			Avail.		-	>		<	-			-		-						
			95th		0	>		<	2			8		8						

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

> - Shared Right-Turn Lane
< - Shared Left-Turn Lane
Avail. - Available Storage Length

4.1.2 2023 Total Traffic Operations

The total traffic volumes in 2023 correspond to the opening year of development and include the increased background road traffic volumes between 2018 and 2023, and traffic volumes generated by the proposed developments.

Figure 4.3 shows the assignment of 2023 AM and PM peak hour total traffic volumes at the existing study area intersections.

Figure 4.4A and 4.4B respectively show the assignment of 2023 AM and PM peak hour total traffic volumes at the future study area intersections including the ramp terminals of the new interchange at Highway 7/8 and Nafziger Road.

The study area intersections were analysed, using Synchro 9 software and the MTO Queue Analysis method, under 2023 total traffic conditions and corresponding to existing intersection configurations as well as future intersection configurations.

Table 4.3 summarizes the results of the Synchro analysis corresponding to existing intersection configurations.

Table 4.4 summarizes the results of the Synchro analysis corresponding to future intersection configurations with the new Highway 7/8 and Nafziger Road interchange in place.

The intersection operations under 2023 total traffic conditions are similar to those under 2023 background traffic conditions, with all movements operating at acceptable levels of service, except:

- **Nafziger Road and East Road /Wilmot Complex Driveway:** the eastbound movements have a LOS F during the Peak PM peak hour, with and without the proposed new interchange at Highway 7/8; and
- **Highway 7/8 and Hamilton Road**: the southbound left turn movement has a LOS E during the AM peak hour, under the existing configuration. However, the LOS is noted to improve to LOS D with Highway 7/8 improvements in place.

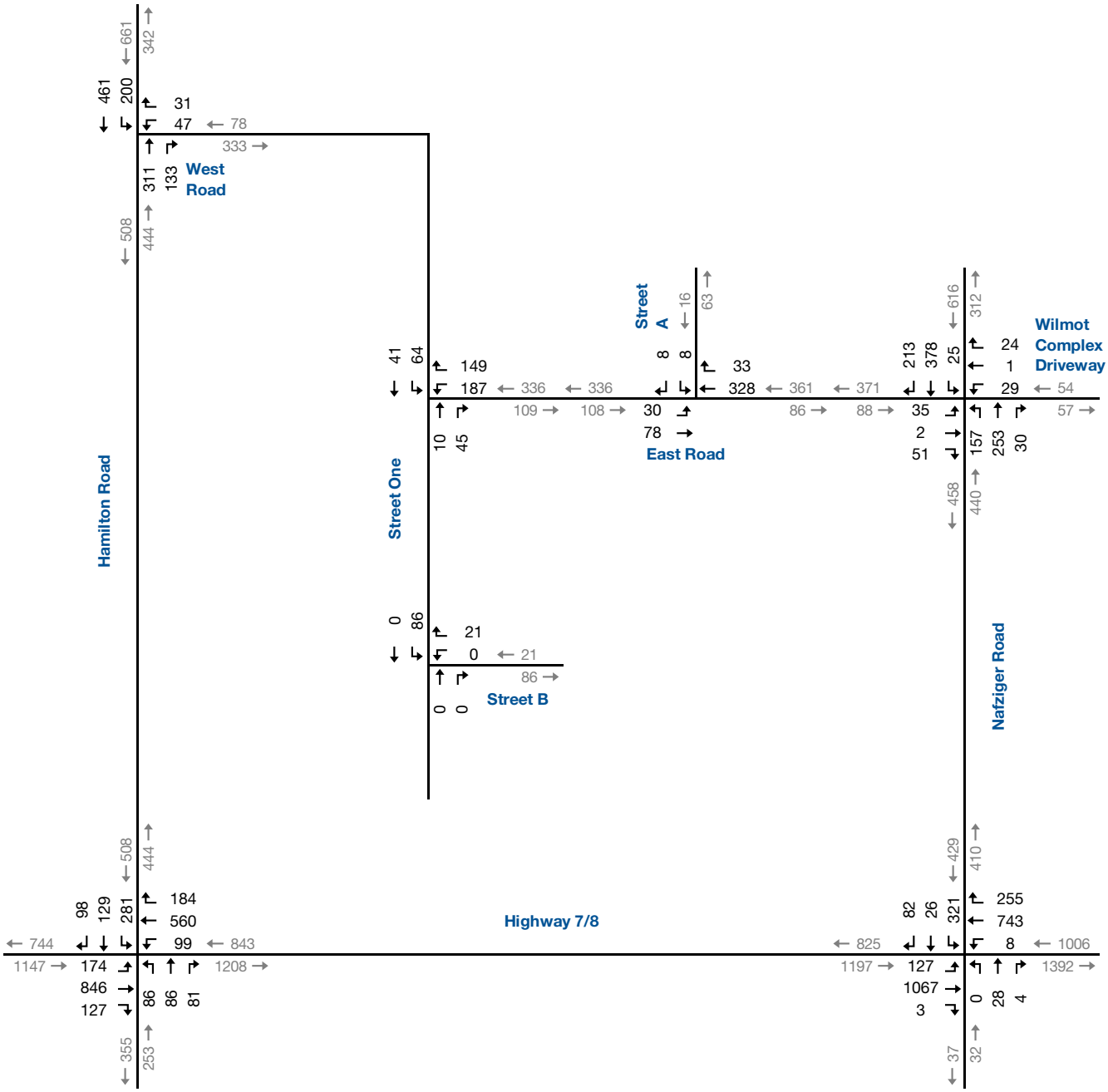
Appendix D contains the supporting detailed Synchro 9 reports.

The delay for the eastbound movements of the Nafziger Road and East Road/ Wilmot Complex Driveway intersection are quite significant so a signal warrant requirement was analyzed.

The results indicate that the intersection does warrant a signal under both the existing intersection configurations, as well as future intersection configurations. The intersection was then analyzed under traffic control signal control. The results are in **Table 4.5** and **Table 4.6**.

The analysis also assumed an eastbound left-turn lane with a 100 metre storage length. These improvements were included in the analyses for all future traffic conditions corresponding to 2028 and 2033 horizon years.

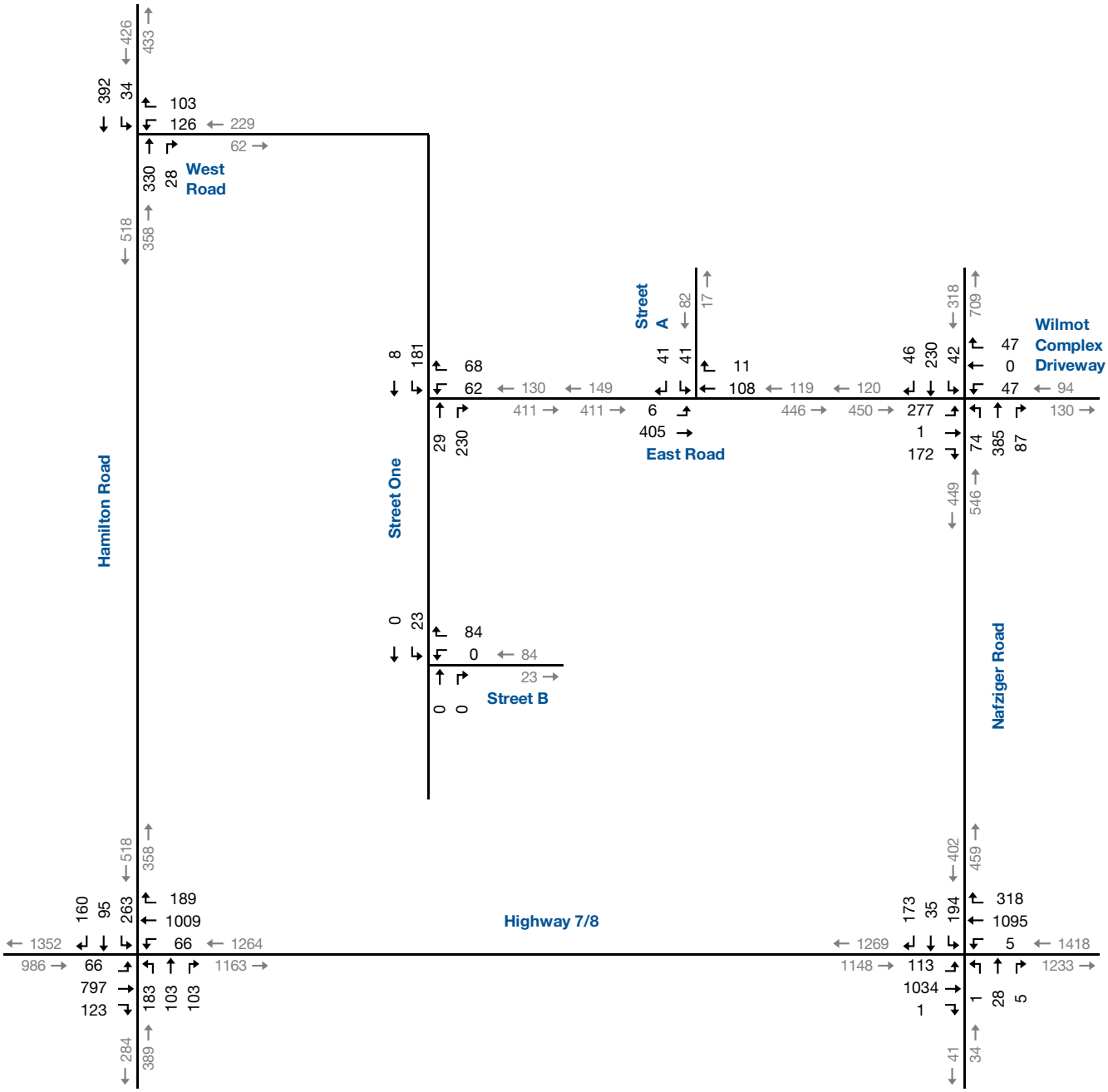
Appendix E contains the supporting detailed Synchro 9 reports.



2023 Total Traffic – AM Peak Hour

Nafziger Road Industrial Development TIS
180248

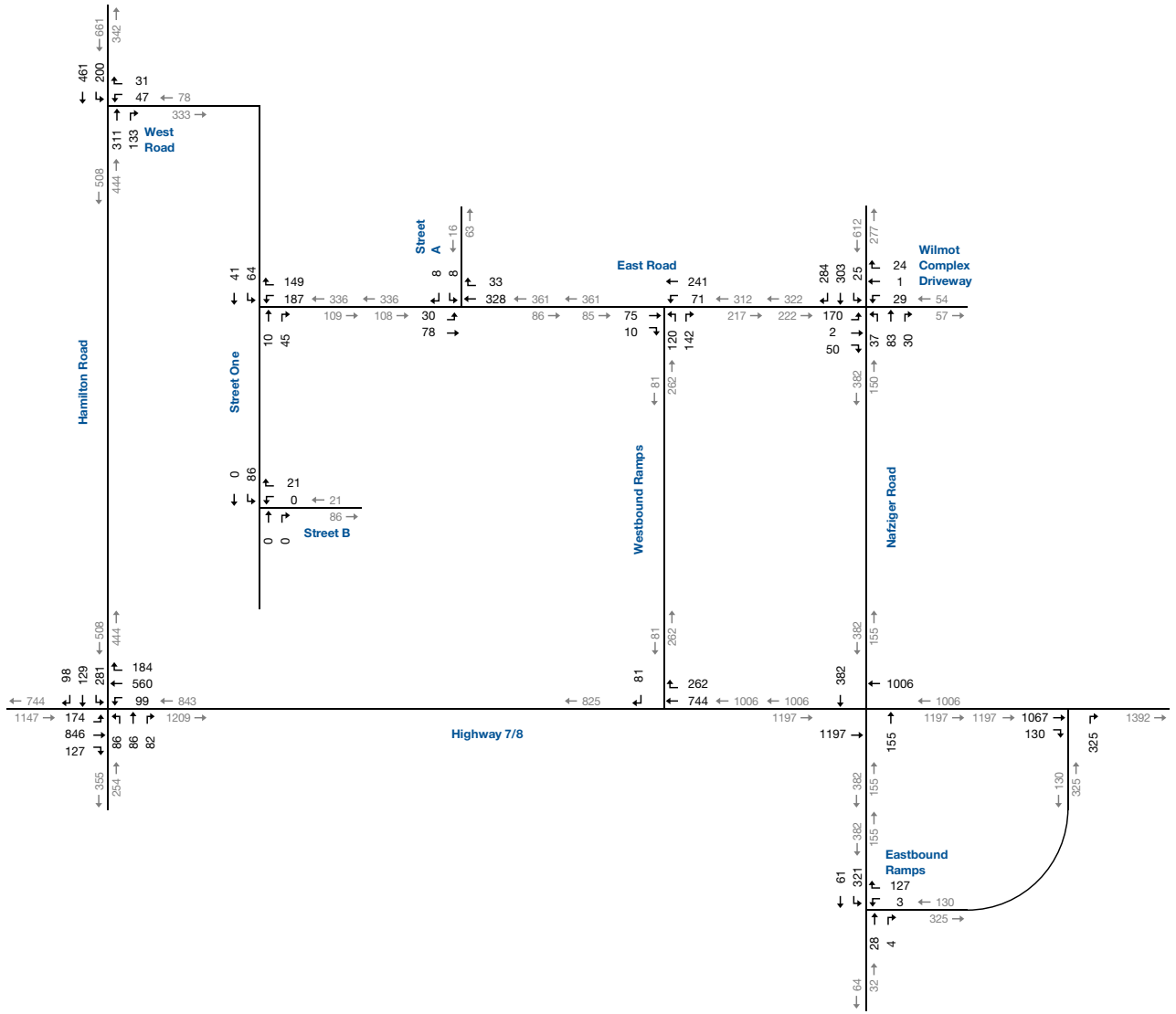
Figure 4.3A



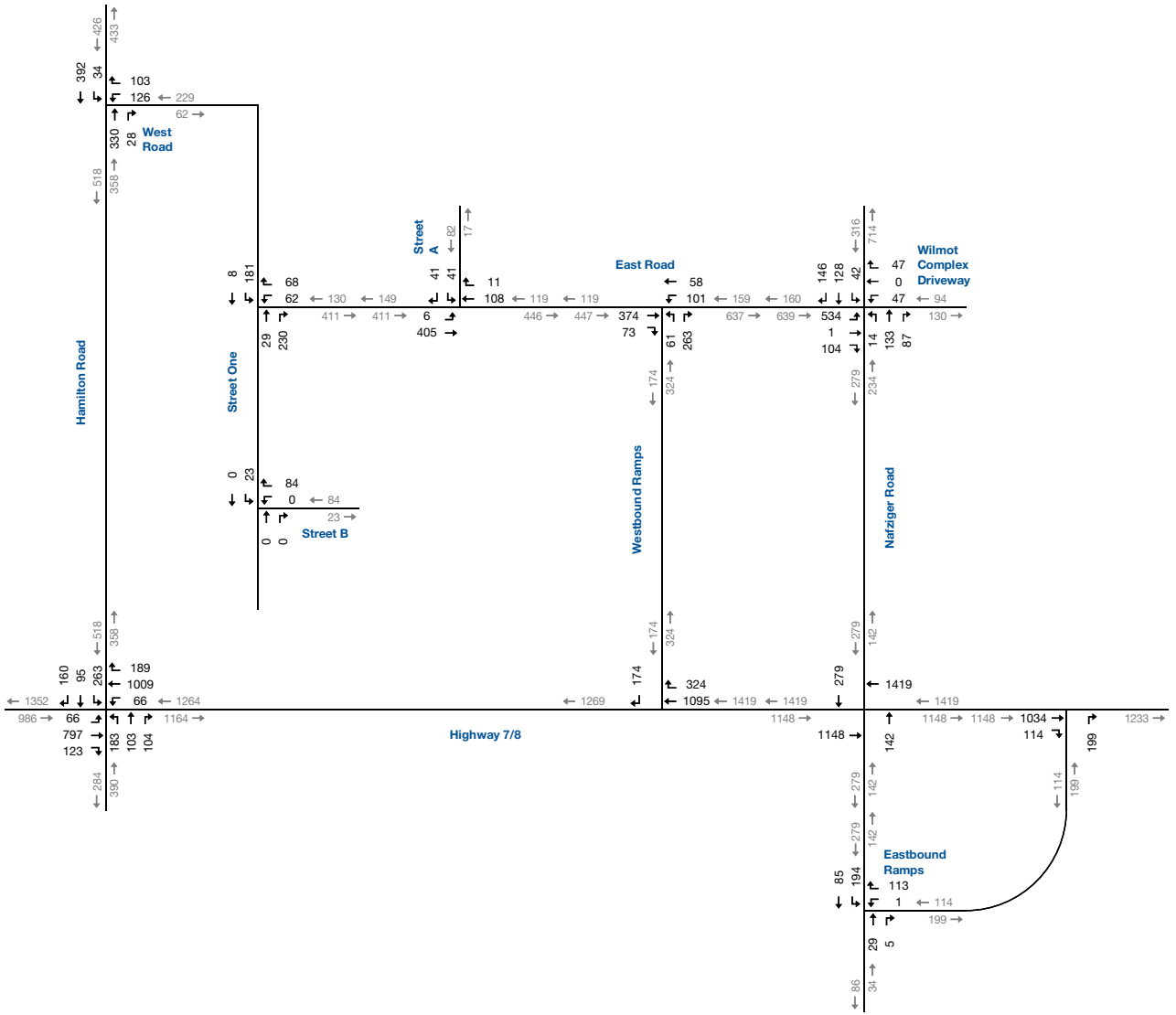
2023 Total Traffic – PM Peak Hour

Nafziger Road Industrial Development TIS
180248

Figure 4.3B



2023 Total Traffic Future Intersections – AM Peak Hour



2023 Total Traffic Future Intersections – PM Peak Hour

Nafziger Road Industrial Development TIS
180248

Figure 4.4B

TABLE 4.3: 2023 TOTAL TRAFFIC OPERATIONS – EXISTING INTERSECTIONS

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	1 - Highway 7/8 & Hamilton Road	TCS	LOS	B	C	A	B	B	C	A	B	C	C	A	C	E	C	A	D	C
			Delay	12	22	4	19	12	22	4	17	35	32	8	25	64	33	7	45	24
			V/C	0.34	0.50	0.17		0.27	0.37	0.24		0.28	0.17	0.18		0.86	0.26	0.21		
			Avail.	-	-	110		100	-	75		70		85		65	-	155		
			95th	32	107	12		19	73	15		31	29	12		101	41	13		
	2 - Highway 7/8 & Nafziger Road	TCS	LOS	B	C	>	B	A	C	A	B	A	C	>	C	D	A	>	D	C
			Delay	12	21	>	20	9	25	5	20	0	21	>	21	50	10	>	40	23
			V/C	0.35	0.69	>		0.03	0.62	0.39		0.00	0.07	>		0.84	0.23	>		
			Avail.	145	-	>		140	-	90		80	-	>		120	-	>		
			95th	18	114	>		2	77	15		0	11	>		112	17	>		
	3 - Hamilton Road & West Road	TWSC	LOS					D		D	D		A	>	A	<	A		A	
			Delay					29		29	29		0	>	0	<	4		4	
			V/C					0.34		0.34			0.26	>		<	0.18			
			Avail.					-		-			-	>		<	-			
			95th					12		12			0	>		<	5			
	4 - Nafziger Road & Wilmot Complex Driveway/East Road	TWSC	LOS	<	C	>	C	<	D	>	D	<	A	A	A	<	A	>	A	A
			Delay	<	25	>	25	<	27	>	27	<	5	0	4	<	1	>	1	5
			V/C	<	0.33	>		<	0.25	>		<	0.16	0.02		<	0.02	>		
			Avail.	<	-	>		<	-	>		<	-	50		<	-	>		
			95th	<	11	>		<	8	>		<	5	0		<	1	>		
	5 - East Road & Street A	TWSC	LOS	<	A		A		A	>	A					B		B	B	
			Delay	<	2		0		0	>	0.9					11		11	11	
			V/C	<	0.03				0.21	>						0.03		0.03		
			Avail.	<	-				-	>						-		-		
			95th	<	1				0	>						1		1		
	6 - Street One & East Road	TWSC	LOS					B		B	B		A	>	A	<	A		A	
			Delay					12		12	12		0	>	0	<	5		5	
			V/C					0.39		0.39			0.03	>		<	0.04			
			Avail.					-		-			-	>		<	-			
			95th					15		15			0	>		<	1			
	7 - Street B & Street One	TWSC	LOS					A		A	A		A	>	A	<	A		A	
			Delay					8.4		8.4	8.4		0	>	0	<	7.3		7.3	
			V/C					0.02		0.02			0.00	>		<	0.05			
			Avail.					-		-			-	>		<	-			
			95th					0		0			0	>		<	1			
PM Peak Hour	1 - Highway 7/8 & Hamilton Road	TCS	LOS	B	C	A	B	B	C	A	C	D	C	A	C	E	C	A	D	C
			Delay	11	20	4	18	11	24	5	20	41	30	7	29	58	30	6	37	23
			V/C	0.21	0.46	0.16		0.17	0.63	0.24		0.58	0.2	0.23		0.83	0.19	0.32		
			Avail.	-	-	110		100	-	75		70		85		65	-	155		
			95th	14	98	12		14	138	17		59	32	13		88	30	15		
	2 - Highway 7/8 & Nafziger Road	TCS	LOS	A	B	>	B	A	C	A	C	C	C	>	C	D	B	>	B	A
			Delay	10	15	>	18	7	23	4	25	26	24	>	28	47	12	>	18	0
			V/C	0.36	0.57	>		0.01	0.71	0.40		0.00	0.11	>		0.72	0.49	>		
			Avail.	145	-	>		140	-	90		80	-	>		120	-	>		
			95th	16	108	>		2	127	16		2	12	>		58	25	>		
	3 - Hamilton Road & West Road	TWSC	LOS					C		C	C		A	>	A	<	A		A	
			Delay					22		22	22		0	>	0	<	1		1	
			V/C					0.52		0.52			0.21	>		<	0.03			
			Avail.					-		-			-	>		<	-			
			95th					24		24			0	>		<	1			
	4 - Nafziger Road & Wilmot Complex Driveway/East Road	TWSC	LOS	<	F	>	F	<	D	>	D	<	A	A	A	<	A	>	A	A
			Delay	<	271	>	271	<	28	>	28	<	2	0	2	<	1	>	1	1
			V/C	<	1.49	>		<	0.38	>		<	0.06	0.05		<	0.04	>		
			Avail.	<	-	>		<	-	>		<	-	50		<	-	>		
			95th	<	203	>		<	14	>		<	1	0		<	1	>		
	5 - East Road & Street A	TWSC	LOS	<	A		A		A	>	A					B		B	B	
			Delay	<	2		0		0	>	0.9					11		11	11	
			V/C	<	0.03				0.21	>						0.03		0.03		
			Avail.	<	-				-	>						-		-		
			95th	<	1				0	>						1		1		
	6 - Street One & East Road	TWSC	LOS					B		B	B		A	>	A	<	A		A	
			Delay					13		13	13		0	>	0	<	8		8	
			V/C					0.21		0.21			0.15	>		<	0.14			
			Avail.					-		-			-	>		<	-			
			95th					6		6			0	>		<	4			
	7 - Street B & Street One	TWSC	LOS					A		A	A		A	>	A	<	A		A	
			Delay					9		9	9		0	>	0	<	7		7	
			V/C					0.08		0.08			0.00	>		<	0.01			
			Avail.					-		-			-	>		<	-			
			95th					2		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

> - Shared Right-Turn Lane
< - Shared Left-Turn Lane
Avail. - Available Storage Length

TABLE 4.4: 2023 TOTAL TRAFFIC OPERATIONS – FUTURE INTERSECTIONS

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	1 - Highway 7/8 & Hamilton Road	TCS	LOS	D	C	A	C	B	C	A	B	D	D	A	C	D	D	A	D	C
			Delay	42	23	5	24	12	24	5	18	42	40	4	29	53	38	5	40	25
			V/C	0.48	0.59	0.19		0.29	0.47	0.29		0.31	0.35	0.28		0.75	0.39	0.26		
				-	-	110		100	-	75		70		85		65	-	155		
			95th	27	93	12		16	63	14		16	29	4		49	41	8		
	2 - Hamilton Road & West Road	TWSC	LOS					D		D	D		A	>	A	<	A		A	
			Delay					29		29	29		0	>	4	<	4		4	
			V/C					0.34		0.34			0.26	>	0.18	<				
								-		-			-	>	-	<				
			95th					12		12			0	>	5	<				
	3 - Nafziger Road & Wilmot Complex Driveway/East Road	TWSC	LOS	<	D	>	D	<	B	>	B	<	A	A	A	<	A	>	A	A
			Delay	<	27	>	27	<	14	>	14	<	3	0	2	<	1	>	1	7
			V/C	<	0.58	>		<	0.12	>		<	0.04	0.02		<	0.02	>		
			Avail.	<	-	>		<	-	>		<	-	50		<	-	>		
			95th	<	28	>		<	3	>		<	1	0		<	0	>		
	4 - Nafziger Road & Eastbound Ramps	TWSC	LOS					A		A	A		A	>	A	<	A		A	
			Delay					9		9	9		0	>	0	<	7		7	
			V/C					0.13		0.13			0.02	>	0.20	<	-			
								-		-			-	>	-	<	6			
			95th					4		4			0	>		<				
	5 - East Road & Westbound Ramps	TWSC	LOS		A	>	A	<	A		A	B		B	B					
			Delay		0	>	0	<	2		2	13		13	13					
			V/C		0.05	>		<	0.05			0.37		0.37						
					-	>		<	-			-		-						
			95th		0	>		<	1			14		14						
	6 - East Road & Street A	TWSC	LOS	<	A		A	>	A		A					B		B	B	1
			Delay	<	2		0	>	0		0.9					11		11	11	
			V/C	<	0.03			>	0.21							0.03		0.03		
			Avail.	<	-			>	-							-		-		
			95th	<	1			>	0							1		1		
	7 - Street One & East Road	TWSC	LOS					B		B	B		A	>	A	<	A		A	
			Delay					12		12	12		0	>	5	<			5	
			V/C					0.39		0.39			0.03	>	0.04	<				
			Avail.					-		-			-	>	-	<				
			95th					15		15			0	>	1	<				
	8 - Street B & Street One	TWSC	LOS					A		A	A		A	>	A	<	A		A	
			Delay					8.4		8.4	8.4		0	>	0	<	7.3		7.3	
			V/C					0.02		0.02			0.00	>	0.05	<	-			
			Avail.					-		-			-	>	-	<	1			
			95th					0		0			0	>		<				
PM Peak Hour	1 - Highway 7/8 & Hamilton Road	TCS	LOS	D	C	A	C	B	C	A	C	D	D	A	C	D	D	B	C	C
			Delay	39	23	4	21	10	29	5	24	41	40	7	32	45	39	11	33	26
			V/C	0.23	0.58	0.19		0.19	0.79	0.29		0.52	0.41	0.35		0.67	0.37	0.47		
			95th	12	81	11		11	124	16		27	32	9		40	31	17		
	2 - Hamilton Road & West Road	TWSC	LOS					C		C	C		A	>	A	<	A		A	
			Delay					22		22	22		0	>	0	<	1		1	
			V/C					0.52		0.52			0.21	>	0.03	<	-			
								-		-			-	>	-	<	1			
			95th					24		24			0	>		<				
	3 - Nafziger Road & Wilmot Complex Driveway/East Road	TWSC	LOS	<	F	>	F	<	B	>	B	<	A	A	A	<	A	>	A	A
			Delay	<	182	>	182	<	13	>	13	<	1	0	1	<	1	>	1	1
			V/C	<	1.32	>		<	0.18	>		<	0.01	0.05		<	0.03	>		
			Avail.	<	-	>		<	-	>		<	-	50		<	-	>		
			95th	<	224	>		<	5	>		<	0	0		<	1	>		
	4 - Nafziger Road & Eastbound Ramps	TWSC	LOS					A		A	A		A	>	A	<	A		A	
			Delay					9		9	9		0	>	6	<	6		6	
			V/C					0.11		0.11			0.02	>	0.12	<	-			
								-		-			-	>	-	<	3			
			95th					3		3			0	>		<				
	5 - East Road & Westbound Ramps	TWSC	LOS		A	>	A	<	A		A	C		C	C					
			Delay		0	>	0	<	6		6	20		20	20					
			V/C		0.26	>		<	0.09			0.57		0.57						
					-	>		<	-			-		-						
			95th		0	>		<	2			29		29						
	6 - East Road & Street A	TWSC	LOS	<	A		A	>	A		A					B		B	B	1
			Delay	<	2		0	>	0		0.9					11		11	11	
			V/C	<	0.03			>	0.21							0.03		0.03		
			Avail.	<	-			>	-							-		-		
			95th	<	1			>	0							1		1		
	7 - Street One & East Road	TWSC	LOS					B		B	B		A	>	A	<	A		A	
			Delay					12		12	12		0	>	0	<	5		5	
			V/C					0.39		0.39			0.03	>	0.04	<				
			Avail.					-		-			-	>	-	<				
			95th					15		15			0	>	1	<				
	8 - Street B & Street One	TWSC	LOS					A		A	A		A	>	A	<	A		A	
			Delay					8.4		8.4	8.4		0	>	0	<	7.3		7.3	
			V/C					0.02		0.02			0.00	>	0.05	<	-			
			Avail.					-		-			-	>	-	<	1			
			95th					0		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

> - Shared Right-Turn Lane
< - Shared Left-Turn Lane
Avail. - Available Storage Length

TABLE 4.5: 2023 TOTAL TRAFFIC OPERATIONS – EXISTING INTERSECTIONS WITH IMPROVEMENTS

Analysis Period	Intersection	Control Type	MOE	Direction / Movement / Approach																OVERALL
				Eastbound				Westbound				Northbound				Southbound				
				Left	Through	Right	Approach	Left	Through	Right	Approach	Left	Through	Right	Approach	Left	Through	Right	Approach	
AM Peak Hour	1 - Highway 7/8 & Hamilton Road	TCS	LOS	B	C	A	B	B	C	A	B	C	C	A	C	E	C	A	D	C
			Delay	12	22	4	19	12	22	4	17	35	32	8	25	64	33	7	45	24
			V/C	0.34	0.50	0.17		0.27	0.37	0.24		0.28	0.17	0.18		0.86	0.26	0.21		
			Avail.	-	-	110		100	-	75		70		85		65	-	155		
			95th	32	107	12		19	73	15		31	29	12		101	41	13		
	2 - Highway 7/8 & Nafziger Road	TCS	LOS	B	C	>	B	A	C	A	B	A	C	>	C	D	A	>	D	C
			Delay	12	21	>	20	9	25	5	20	0	21	>	21	50	10	>	40	23
			V/C	0.35	0.69	>		0.03	0.62	0.39		0.00	0.07	>		0.84	0.23	>		
			Avail.	145	-	>		140	-	90		80	-	>		120	-	>		
			95th	18	114	>		2	77	15		0	11	>		112	17	>		
	3 - Hamilton Road & West Road	TWSC	LOS					D		D	D		A	>	A	<	A		A	
			Delay					29		29	29		0	>	0	<	4		4	
			V/C					0.34		0.34			0.26	>		<	0.18			
			Avail.					-		-			-	>		<	-			
			95th					12		12			0	>		<	5			
	4 - Nafziger Road & Wilmot Complex Driveway/East Road	TWSC	LOS	<	B	>	B	<	B	>	B	<	A	A	A	<	A	>	A	A
			Delay	<	12	>	12	<	13	>	13	<	8	1	7	<	6	>	6	5
			V/C	<	0.29	>		<	0.19	>		<	0.51	0.02		<	0.52	>		
			Avail.	<	-	>		<	-	>		<	-	50		<	-	>		
			95th	<	12	>		<	10	>		<	48	1		<	55	>		
	5 - East Road & Street A	TWSC	LOS	<	A		A		A	>	A					B		B	B	
			Delay	<	2		0		0	>	0.9					11		11	11	
			V/C	<	0.03				0.21	>						0.03		0.03		
			Avail.	<	-				-	>						-		-		
			95th	<	1				0	>						1		1		
	6 - Street One & East Road	TWSC	LOS					B		B	B		A	>	A	<	A		A	
			Delay					12		12	12		0	>	0	<	5		5	
			V/C					0.39		0.39			0.03	>		<	0.04			
			Avail.					-		-			-	>		<	-			
			95th					15		15			0	>		<	1			
	7 - Street B & Street One	TWSC	LOS					A		A	A		A	>	A	<	A		A	
			Delay					8.4		8.4	8.4		0	>	0	<	7.3		7.3	
			V/C					0.02		0.02			0.00	>		<	0.05			
			Avail.					-		-			-	>		<	-			
			95th					0		0			0	>		<	1			
PM Peak Hour	1 - Highway 7/8 & Hamilton Road	TCS	LOS	B	C	A	B	B	C	A	C	D	C	A	C	E	C	A	D	C
			Delay	11	20	4	18	11	24	5	20	41	30	7	29	58	30	6	37	23
			V/C	0.21	0.46	0.16		0.17	0.63	0.24		0.58	0.2	0.23		0.83	0.19	0.32		
			Avail.	-	-	110		100	-	75		70		85		65	-	155		
			95th	14	98	12		14	138	17		59	32	13		88	30	15		
	2 - Highway 7/8 & Nafziger Road	TCS	LOS	A	B	>	B	A	C	A	C	C	C	>	C	D	B	>	B	A
			Delay	10	15	>	18	7	23	4	25	26	24	>	28	47	12	>	18	0
			V/C	0.36	0.57	>		0.01	0.71	0.40		0.00	0.11	>		0.72	0.49	>		
			Avail.	145	-	>		140	-	90		80	-	>		120	-	>		
			95th	16	108	>		2	127	16		2	12	>		58	25	>		
	3 - Hamilton Road & West Road	TWSC	LOS					C		C	C		A	>	A	<	A		A	
			Delay					22		22	22		0	>	0	<	1		1	
			V/C					0.52		0.52			0.21	>		<	0.03			
			Avail.					-		-			-	>		<	-			
			95th					24		24			0	>		<	1			
	4 - Nafziger Road & Wilmot Complex Driveway/East Road	TWSC	LOS	<	C	>	C	<	A	>	A	<	D	A	C	<	C	>	C	C
			Delay	<	18	>	18	<	5	>	5	<	26	4	22	<	16	>	16	18
			V/C	<	0.74	>		<	0.16	>		<	0.75	0.12		<	0.53	>		
			Avail.	<	-	>		<	-	>		<	-	50		<	-	>		
			95th	<	55	>		<	8	>		<	101	8		<	53	>		
	5 - East Road & Street A	TWSC	LOS	<	A		A		A	>	A					B		B	B	
			Delay	<	2		0		0	>	0.9					11		11	11	
			V/C	<	0.03				0.21	>						0.03		0.03		
			Avail.	<	-				-	>						-		-		
			95th	<	1				0	>						1		1		
	6 - Street One & East Road	TWSC	LOS					B		B	B		A	>	A	<	A		A	
			Delay					13		13	13		0	>	0	<	8		8	
			V/C					0.21		0.21			0.15	>		<	0.14			
			Avail.					-		-			-	>		<	-			
			95th					6		6			0	>		<	4			
	7 - Street B & Street One	TWSC	LOS					A		A	A		A	>	A	<	A		A	
			Delay					9		9	9		0	>	0	<	7		7	
			V/C					0.08		0.08			0.00	>		<	0.01			
			Avail.					-		-			-	>		<	-			
			95th					2		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

> - Shared Right-Turn Lane
< - Shared Left-Turn Lane
Avail. - Available Storage Length

TABLE 4.6: 2023 TOTAL TRAFFIC OPERATIONS – FUTURE INTERSECTIONS WITH IMPROVEMENTS

Analysis Period	Intersection	Control Type	MOE	Direction / Movement / Approach																	
				Eastbound				Westbound				Northbound				Southbound					
				Left	Through	Right	Approach	Left	Through	Right	Approach	Left	Through	Right	Approach	Left	Through	Right	Approach	OVERALL
AM Peak Hour	1 - Highway 7/8 & Hamilton Road	TCS	LOS	D	C	A	C	B	C	A	B	D	D	A	C	D	D	A	D	C
			Delay	42	23	5	24	12	24	5	18	42	40	4	29	53	38	5	40	25
			V/C	0.48	0.59	0.19		0.29	0.47	0.29		0.31	0.35	0.28		0.75	0.39	0.26		
				-	-	110		100	-	75		70		85		65	-	155		
			95th	27	93	12		16	63	14		16	29	4		49	41	8		
	2 - Hamilton Road & West Road	TWSC	LOS					D		D	D		A	>	A	<	A		A	
			Delay					29		29	29		0	>	0	<	4		4	
			V/C					0.34		0.34			0.26	>		<	0.18			
								-		-			-	>		<	-			
			95th					12		12			0	>		<	5			
	3 - Nafziger Road & Wilmot Complex Driveway/East Road	TCS	LOS	C	A	>	C	<	B	>	B	<	A	A	A	<	B	>	B	B
			Delay	28	6	>	23	<	11	>	11	<	7	1	6	<	10	>	10	12
			V/C	0.60	0.11	>		<	0.14	>		<	0.15	0.03		<	0.60	>		
			Avail.	100	-	>		<	-	>		<	-	50		<	-	>		
			95th	32	6	>		<	9	>		<	14	2		<	78	>		
	4 - Nafziger Road & Eastbound Ramps	TWSC	LOS					A		A	A		A	>	A	<	A		A	
			Delay					9		9	9		0	>	0	<	7		7	
			V/C					0.13		0.13			0.02	>		<	0.20			
								-		-			-	>		<	-			
			95th					4		4			0	>		<	6			
	5 - East Road & Westbound Ramps	TWSC	LOS		A	>	A	<	A		A	B		B	B					
			Delay		0	>	0	<	2		2	13		13	13					
			V/C		0.05	>		<	0.05			0.37		0.37						
					-	>		<	-			-		-						
			95th		0	>		<	1			14		14						
	6 - East Road & Street A	TWSC	LOS	<	A		A		A	>	A					B		B	B	
			Delay	<	2		0		0	>	0.9					11		11	11	1
			V/C	<	0.03				0.21	>						0.03		0.03		
			Avail.	<	-				-	>						-		-		
			95th	<	1				0	>						1		1		
	7 - Street One & East Road	TWSC	LOS					B		B	B		A	>	A	<	A		A	
			Delay					12		12	12		0	>	0	<	5		5	
			V/C					0.39		0.39			0.03	>		<	0.04			
			Avail.					-		-			-	>		<	-			
			95th					15		15			0	>		<	1			
	8 - Street B & Street One	TWSC	LOS					A		A	A		A	>	A	<	A		A	
			Delay					8.4		8.4	8.4		0	>	0	<	7.3		7.3	
			V/C					0.02		0.02			0.00	>		<	0.05			
			Avail.					-		-			-	>		<	-			
			95th					0		0			0	>		<	1			
PM Peak Hour	1 - Highway 7/8 & Hamilton Road	TCS	LOS	D	C	A	C	B	C	A	C	D	D	A	C	D	D	B	C	C
			Delay	39	23	4	21	10	29	5	24	41	40	7	32	45	39	11	33	26
			V/C	0.23	0.58	0.19		0.19	0.79	0.29		0.52	0.41	0.35		0.67	0.37	0.47		
				-	-	110		100	-	75		70		85		65	-	155		
			95th	12	81	11		11	124	16		27	32	9		40	31	17		
	2 - Hamilton Road & West Road	TWSC	LOS					C		C	C		A	>	A	<	A		A	
			Delay					22		22	22		0	>	0	<	1		1	
			V/C					0.52		0.52			0.21	>		<	0.03			
								-		-			-	>		<	-			
			95th					24		24			0	>		<	1			
	3 - Nafziger Road & Wilmot Complex Driveway/East Road	TCS	LOS	C	A	>	B	<	B	>	B	<	B	A	B	<	B	>	B	B
			Delay	20	2	>	17	<	13	>	13	<	18	5	14	<	20	>	20	17
			V/C	0.75	0.13	>		<	0.37	>		<	0.24	0.15		<	0.53	>		
			Avail.	100	-	>		<	-	>		<	-	50		<	-	>		
			95th	79	6	>		<	14	>		<	30	9		<	60	>		
	4 - Nafziger Road & Eastbound Ramps	TWSC	LOS					A		A	A		A	>	A	<	A		A	
			Delay					9		9	9		0	>	0	<	6		6	
			V/C					0.11		0.11			0.02	>		<	0.12			
								-		-			-	>		<	-			
			95th					3		3			0	>		<	3			
	5 - East Road & Westbound Ramps	TWSC	LOS		A	>	A	<	A		A	C		C	C					
			Delay		0	>	0	<	6		6	20		20	20					
			V/C		0.26	>		<	0.09			0.57		0.57						
					-	>		<	-			-		-						
			95th		0	>		<	2			29		29						
	6 - East Road & Street A	TWSC	LOS	<	A		A		A	>	A					B		B	B	
			Delay	<	2		0		0	>	0.9					11		11	11	1
			V/C	<	0.03				0.21	>						0.03		0.03		
			Avail.	<	-				-	>						-		-		
			95th	<	1				0	>						1		1		
	7 - Street One & East Road	TWSC	LOS					B		B	B		A	>	A	<	A		A	
			Delay					12		12	12		0	>	0	<	5		5	
			V/C					0.39		0.39			0.03	>		<	0.04			
			Avail.					-		-			-	>		<	-			
			95th					15		15			0	>		<	1			
	8 - Street B & Street One	TWSC	LOS					A		A	A		A	>	A	<	A		A	
			Delay					8.4		8.4	8.4		0	>	0	<	7.3		7.3	
			V/C					0.02		0.02			0.00	>		<	0.05			
			Avail.					-		-			-	>		<	-			
			95th					0		0			0	>		<	1			

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
> - Shared Right-Turn Lane
< - Shared Left-Turn Lane
Avail. - Available Storage Length

4.1.3 2023 Left-Turn Queue Analysis

In addition to Synchro 9 analysis, queue length analysis was also carried out using the MTO Geometric Design Standards[6], Table B7-4 under Level of Service (LOS) A conditions and assuming a vehicle length of 7.5 meters. The results are summarized in **Table 4.7**.

TABLE 4.7: 2023 LEFT-TURN QUEUE ANALYSIS SUMMARY

Scenario	Intersection	Movement	Cycle Length		Left Turn Counts		m_u max	Calc'd Length	Available Length
			AM Peak	PM Peak	AM Peak	PM Peak			
Background - Existing Intersections	Highway 7/8 & Hamilton Road	EBL	130	130	94	56	3.4	52.5	400
		WBL			98	62	3.5	52.5	100
		NBL			86	183	6.6	82.5	70
		SBL			252	198	9.1	105.0	65
	Highway 7/8 & Nafziger Road	EBL	105	105	109	100	3.9	52.5	145
		WBL			8	5	0.3	7.5	140
		NBL			0	1	0.0	7.5	80
		SBL			283	112	10.2	120.0	120
Total - Existing Intersections	Highway 7/8 & Hamilton Road	EBL	130	130	174	66	6.3	82.5	400
		WBL			99	66	3.6	52.5	100
		NBL			86	183	6.6	82.5	70
		SBL			281	263	10.1	120.0	65
	Highway 7/8 & Nafziger Road	EBL	105	105	127	113	4.6	60.0	145
		WBL			8	5	0.3	7.5	140
		NBL			0	1	0.0	7.5	80
		SBL			321	194	11.6	127.5	120

It is noted that the existing southbound left-turn lane storage of 65 metres at the Highway 7/8 and Hamilton Road intersection is not adequate to meet the storage requirement of 105 meters.

However, the introduction of a second left-turn lane with the same (65 m) storage length, as identified for future improvements, will address the actual storage requirement for the southbound left-turn movement.

Alternatively, the storage on the existing southbound left-turn lane could be increased as part of the roadworks involving the construction of the new intersections at Hamilton Road and West Road.

[6] Geometric Design Standards for Ontario Highways, *Ministry of Transportation*, 1985

4.2 2028 Horizon

4.2.1 2028 Background Traffic Operations

Figure 4.5 shows the assignment of 2028 AM and PM peak hour background traffic volumes at the existing study area intersections. **Figure 4.6A and 4.6B** respectively show the assignment of 2023 AM and PM peak hour background traffic volumes at the future study area intersections including the ramp terminals of the new interchange at Highway 7/8 and Nafziger Road.

The study area intersections were analysed under 2028 background traffic conditions, using Synchro 9 software and the MTO Queue Analysis method.

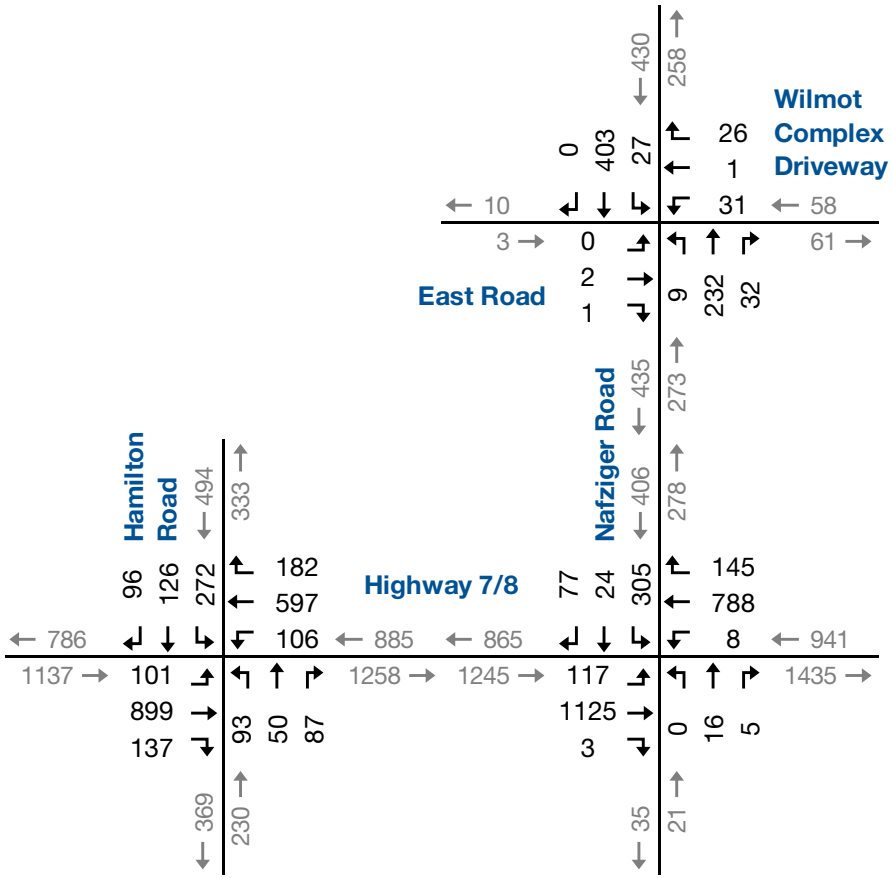
Table 4.8 summarizes the results of the analysis corresponding to existing intersection configurations. **Table 4.9** summarizes the results of the analysis corresponding to future intersection configurations with the new Highway 7/8 and Nafziger Road interchange in place.

The intersection operations under 2028 background traffic conditions are similar to those under 2023 background traffic conditions, with all movements operating at acceptable levels of service, except:

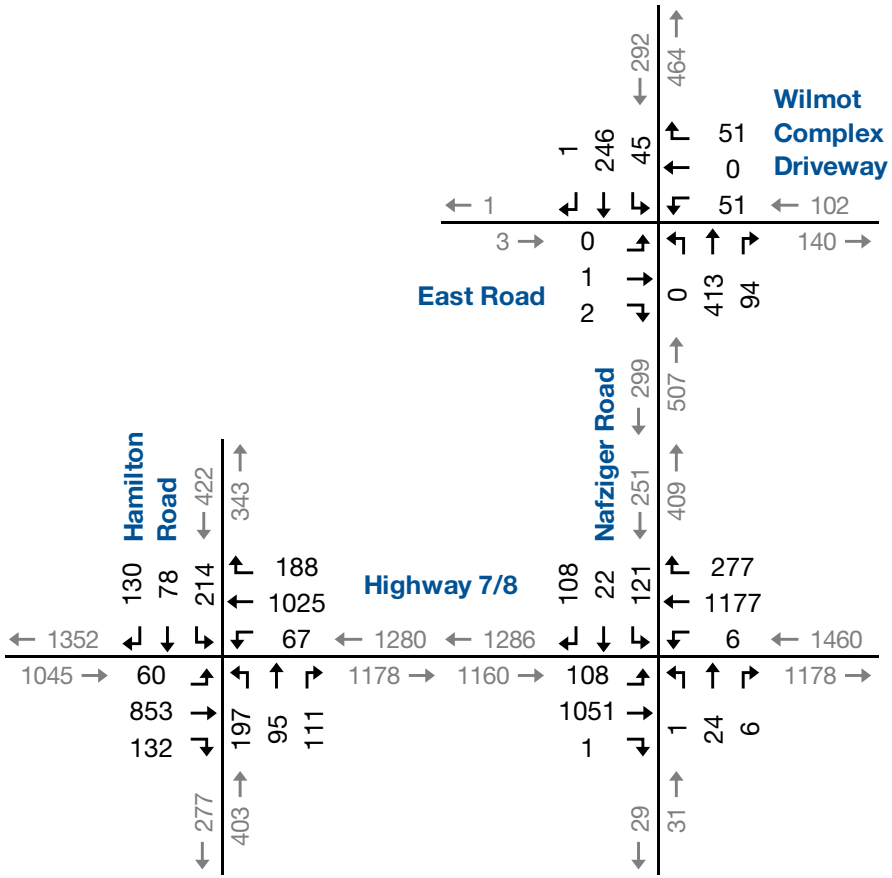
- **Hamilton Road and Highway 7/8**: the southbound left movement has a LOS E and exceeded storage capacity during both AM and PM peak hours, with existing intersections configurations.

Appendix F contains the supporting detailed Synchro 9 reports.

AM Peak Hour

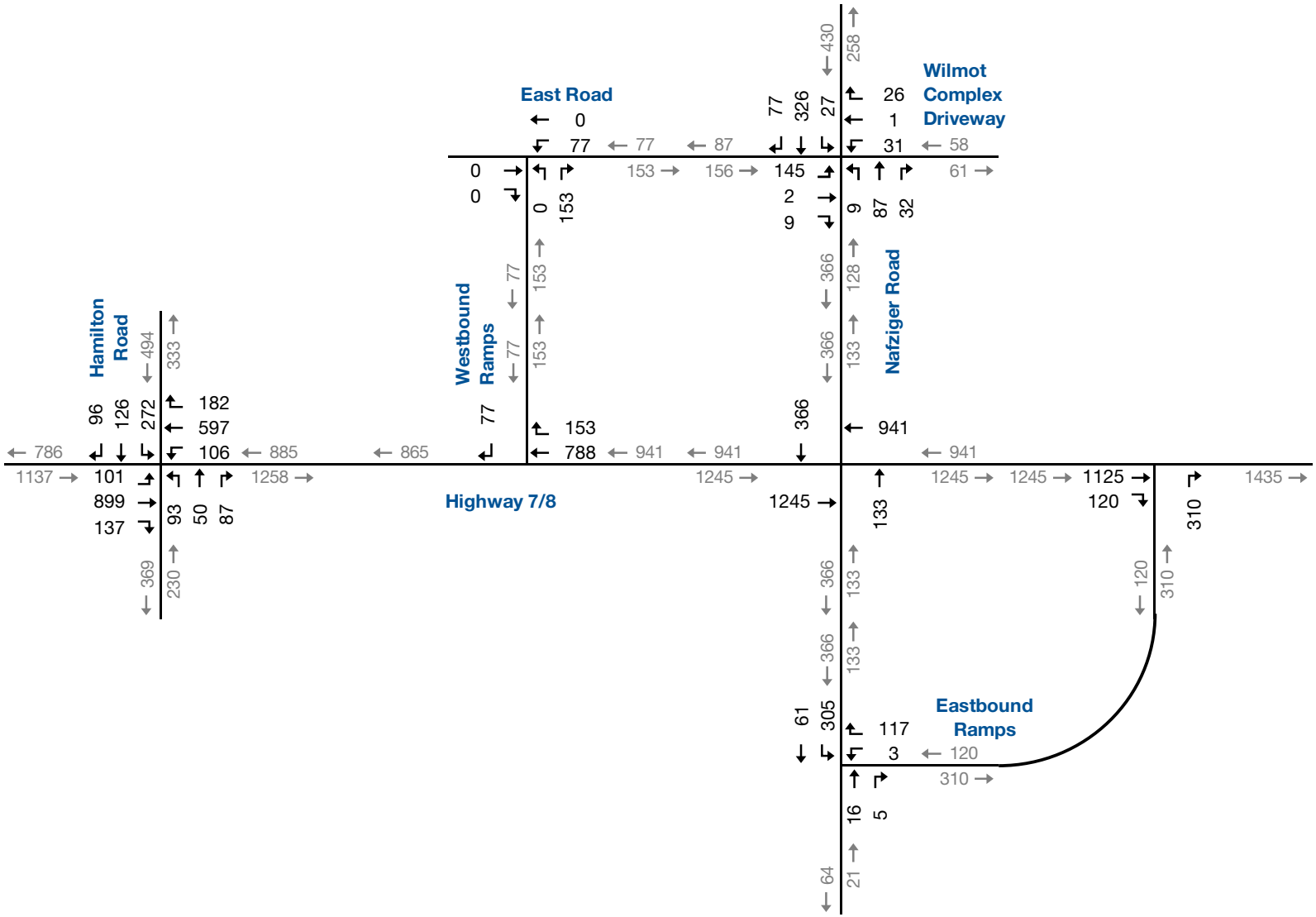


PM Peak Hour

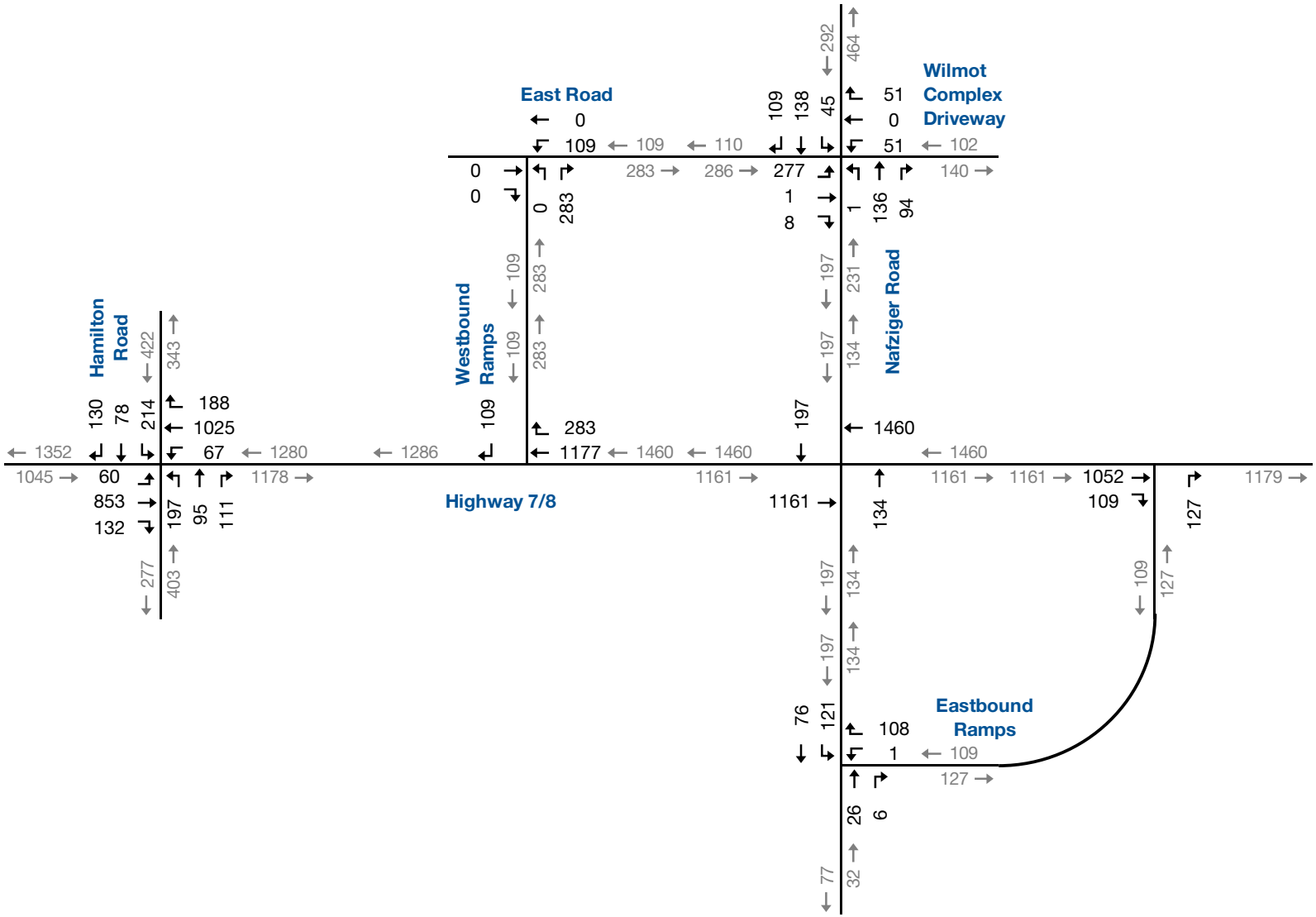


2028 Background Traffic

Figure 4.5



2028 Background Traffic Future Intersections – AM Peak Hour



2028 Background Traffic Future Intersections – PM Peak Hour

TABLE 4.8: 2028 BACKGROUND TRAFFIC OPERATIONS – EXISTING INTERSECTIONS

Analysis Period	Intersection	Control Type	MOE	Direction / Movement / Approach																	OVERALL
				Eastbound				Westbound				Northbound				Southbound					
				Left	Through	Right	Approach	Left	Through	Right	Approach	Left	Through	Right	Approach	Left	Through	Right	Approach		
AM Peak Hour	1 - Highway 7/8 & Hamilton Road	TCS	LOS	B	C	A	**B**	B	B	A	**B**	C	C	A	**C**	E	C	A	**D**	**B**
			Delay	10	23	4	**19**	12	20	4	**16**	34	30	7	**23**	58	32	7	**42**	**20**
			V/C	0.20	0.54	0.18		0.30	0.38	0.23		0.31	0.10	0.20		0.83	0.26	0.21		
			Avail.	-	-	110		100	-	75		70		85		65	-	155		
			95th	20	117	12		21	74	14		32	18	12		91	39	12		
	2 - Highway 7/8 & Nafziger Road	TCS	LOS	B	C	>	**C**	A	C	A	**C**	A	B	>	**B**	D	A	>	**D**	**C**
			Delay	12	21	>	**20**	9	25	5	**22**	0	19	>	**19**	47	10	>	**38**	**24**
			V/C	0.34	0.71	>		0.03	0.64	0.24		0.00	0.05	>		0.81	0.22	>		
			Avail.	145	-	>		140	-	90		80	-	>		120	-	>		
			95th	17	123	>		2	82	12		0	8	>		104	16	>		
	3 - Nafziger Road & Wilmot Complex Driveway/East Road	TCS	LOS	<	B	>	**B**	<	B	>	**B**	<	A	A	**A**	<	A	>	**A**	**A**
			Delay	<	15	>	**15**	<	14	>	**14**	<	3	1	**3**	<	4	>	**4**	**4**
			V/C	<	0.01	>		<	0.24	>		<	0.19	0.02		<	0.35	>		
			Avail.	<	-	>		<	-	>		<	-	50		<	-	>		
			95th	<	2	>		<	10	>		<	17	1		<	36	>		
PM Peak Hour	1 - Highway 7/8 & Hamilton Road	TCS	LOS	A	B	A	**B**	A	B	A	**B**	D	C	A	**C**	E	C	A	**D**	**C**
			Delay	9	17	4	**15**	8	20	4	**17**	51	32	8	**35**	56	32	7	**36**	**21**
			V/C	0.18	0.47	0.16		0.17	0.60	0.23		0.72	0.22	0.27		0.78	0.19	0.30		
			Avail.	-	-	110		100	-	75		70		85		65	-	155		
			95th	11	94	11		12	124	16		64	30	13		70	26	14		
	2 - Highway 7/8 & Nafziger Road	TCS	LOS	A	B	>	**B**	A	B	A	**B**	A	C	>	**B**	C	D	>	**C**	**B**
			Delay	8	12	>	**13**	5	20	3	**11**	0	28	>	**17**	26	41	>	**27**	**16**
			V/C	0.34	0.55	>		0.01	0.72	0.35		0.00	0.00	>		0.12	0.56	>		
			Avail.	145	-	>		140	-	90		80	-	>		120	-	>		
			95th	12	96	>		2	124	14		0	2	>		11	38	>		
	3 - Nafziger Road & Wilmot Complex Driveway/East Road	TWSC	LOS	<	B	>	**B**	<	B	>	**B**	<	A	A	**A**	<	A	>	**A**	**A**
			Delay	<	11	>	**11**	<	12	>	**12**	<	5	2	**5**	<	5	>	**5**	**6**
			V/C	<	0.01	>		<	0.36	>		<	0.34	0.08		<	0.28	>		
			Avail.	<	-	>		<	-	>		<	-	50		<	-	>		
			95th	<	2	>		<	12	>		<	35	4		<	25	>		

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

TABLE 4.9: 2028 BACKGROUND TRAFFIC OPERATIONS – FUTURE INTERSECTIONS

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	1 - Highway 7/8 & Hamilton Road	TCS	LOS	D	C	A	**C**	B	C	A	**B**	D	D	A	**C**	D	D	A	**C**	**C**
			Delay	40	24	5	**23**	12	21	4	**17**	40	36	5	**26**	43	39	5	**35**	**23**
			V/C	0.31	0.63	0.20		0.31	0.45	0.26		0.31	0.19	0.28		0.61	0.43	0.28		
			Avail.	-	-	110		100	-	75		70		85		65	-	155		
			95th	17	101	12		17	64	14		16	19	5		45	39	7		
	2 - Nafziger Road & Wilmot Complex Driveway/East Road	TCS	LOS	C	A	>	**C**	<	B	>	**B**	<	A	A	**A**	<	A	>	**A**	**A**
			Delay	26	10	>	**25**	<	11	>	**11**	<	6	3	**5**	<	7	>	**7**	**9**
			V/C	0.54	0.03	>		<	0.18	>		<	0.10	0.03		<	0.41	>		
			Avail.	100	-	>		<	-	>		<	-	50		<	-	>		
			95th	26	3	>		<	9	>		<	10	3		<	45	>		
	3 - Nafziger Road & Eastbound Ramps	TWSC	LOS					A		A	**A**		A	>	**A**	<	A		**A**	
			Delay					9		9	**9**		0	>	**0**	<	7		**7**	
			V/C					0.12		0.12			0.01	>		<	0.19			
			Avail.											>		<	-			
			95th					3		3			0	>		<	6			
	4 - East Road & Westbound Ramps	TWSC	LOS		A	>	**A**	<	A		**A**	A		A	**A**					
			Delay		0	>	**0**	<	7		**7**	9		9	**9**					
			V/C		0.00	>		<	0.05			0.14		0.14						
			Avail.		-	>		<	-			-		-						
			95th		0	>		<	1			4		4						
PM Peak Hour	1 - Highway 7/8 & Hamilton Road	TCS	LOS	D	C	A	**C**	B	C	A	**C**	D	D	A	**C**	D	D	B	**C**	**C**
			Delay	40	24	5	**23**	11	30	7	**26**	39	40	8	**31**	39	39	11	**30**	**26**
			V/C	0.21	0.62	0.20		0.21	0.80	0.29		0.50	0.38	0.37		0.51	0.32	0.42		
			Avail.	-	-	110		100	-	75		70		85		65	-	155		
			95th	12	95	12		12	136	19		29	32	11		30	27	15		
	2 - Nafziger Road & Wilmot Complex Driveway/East Road	TCS	LOS	C	A	>	**C**	<	A	>	**A**	<	A	A	**A**	<	A	>	**A**	**B**
			Delay	34	8	>	**33**	<	9	>	**9**	<	8	3	**6**	<	7	>	**7**	**15**
			V/C	0.76	0.02	>		<	0.20	>		<	0.15	0.11		<	0.35	>		
			Avail.	100	-	>		<	-	>		<	-	50		<	-	>		
			95th	57	3	>		<	13	>		<	16	6		<	28	>		
	3 - Nafziger Road & Eastbound Ramps	TWSC	LOS					A		A	**A**		A	>	**A**	<	A		**A**	
			Delay					9		9	**9**		0	>	**0**	<	6		**6**	
			V/C					0.10		0.10			0.02	>		<	0.08			
			Avail.											>		<	-			
			95th					3		3			0	>		<	2			
	4 - East Road & Westbound Ramps	TWSC	LOS		A	>	**A**	<	A		**A**	A		A	**A**					
			Delay		0	>	**0**	<	7		**7**	10		10	**10**					
			V/C		0.00	>		<	0.07			0.26		0.26						
			Avail.		-	>		<	-			-		-						
			95th		0	>		<	2			8		8						

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
> - Shared Right-Turn Lane
< - Shared Left-Turn Lane
Avail. - Available Storage Length

4.2.2 2028 Total Traffic Operations

The total traffic volumes in 2028 correspond to the five-year post-build-out horizon and include the increased background road traffic volumes between 2018 and 2028, and traffic volumes generated by the proposed development.

Figure 4.7 shows the assignment of 2028 AM and PM peak hour total traffic volumes at the existing study area intersections. **Figure 4.8A and 4.8B** respectively show the assignment of 2028 AM and PM peak hour total traffic volumes at the future study area intersections including the ramp terminals of the new interchange at Highway 7/8 and Nafziger Road.

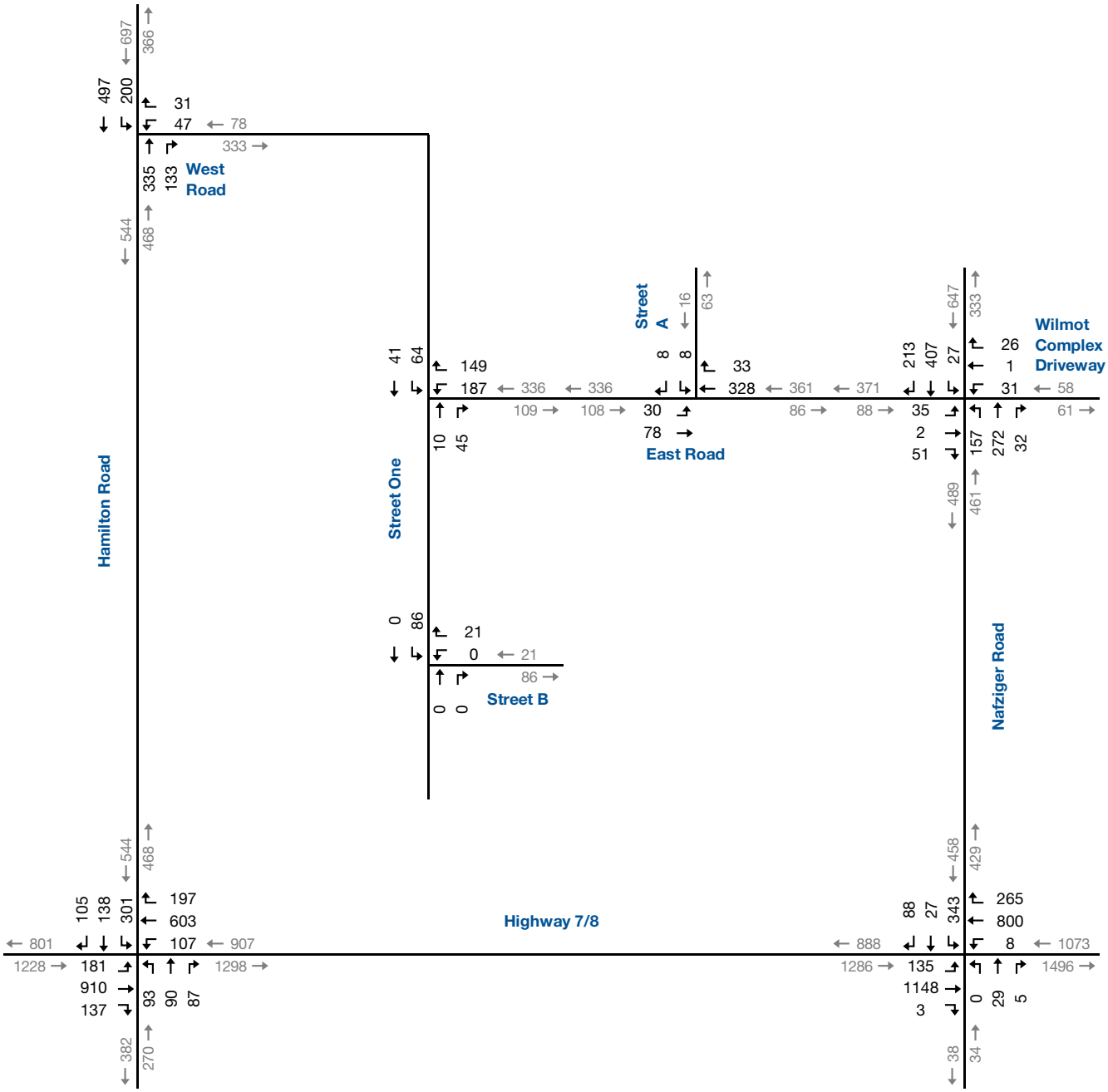
The study area intersections were analysed, using Synchro 9 software and the MTO Queue Analysis method, under 2028 total traffic conditions and corresponding to existing intersection configurations as well as future intersection configurations.

Table 4.10 summarizes the results of the analysis corresponding to existing intersection configurations. **Table 4.11** summarizes the results of the analysis corresponding to future intersection configurations with the new Highway 7/8 and Nafziger Road interchange in place.

Appendix G contains the supporting detailed Synchro reports.

The intersection operations under 2028 total traffic conditions are similar to those under 2028 background traffic conditions, with all movements operating at acceptable levels of service, except:

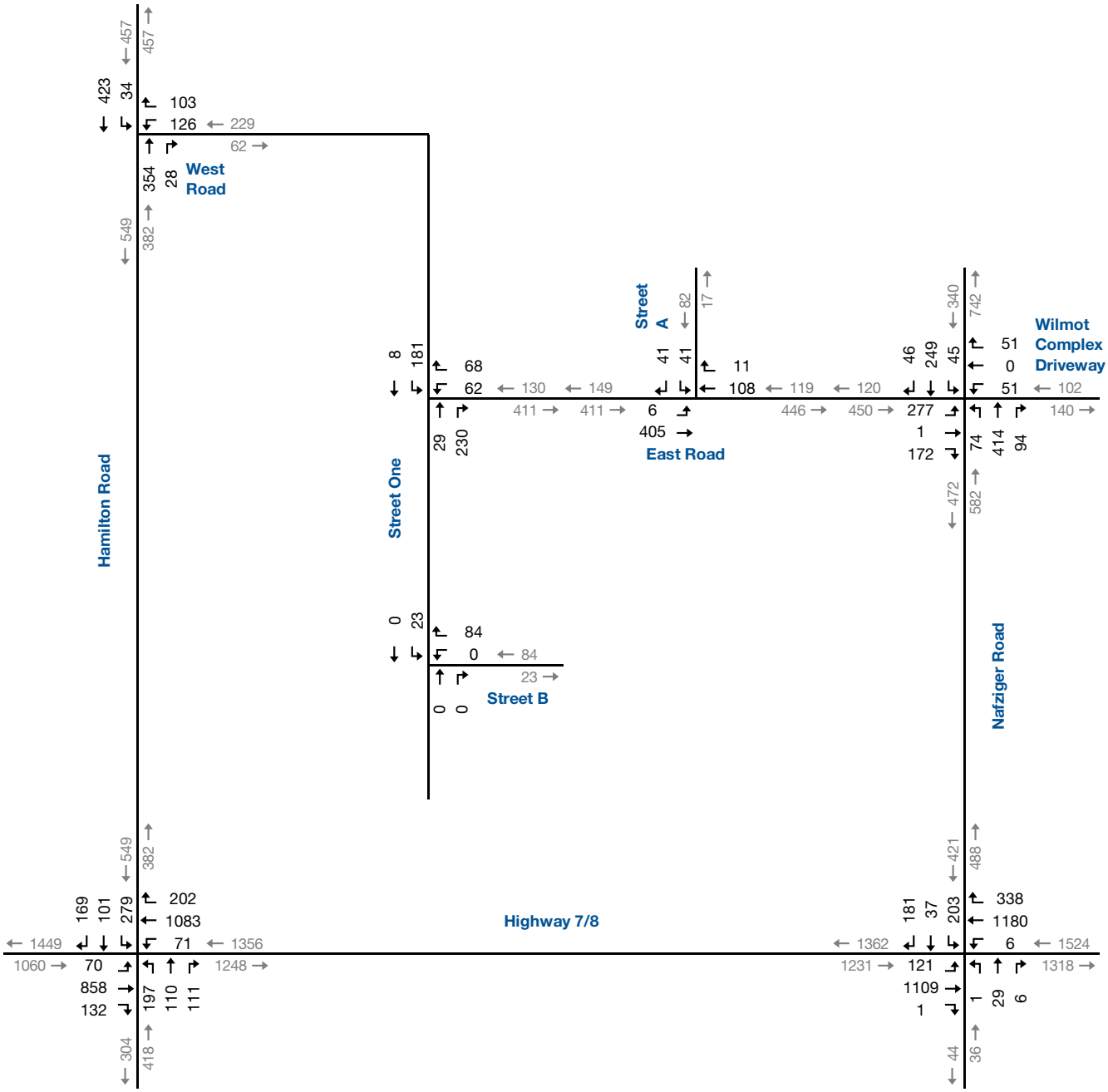
- **Highway 7/8 and Nafziger Road:** the southbound left turn movement has a LOS E and exceeded storage capacity during the AM peak hour, under existing intersection conditions; and
- **Highway 7/8 and Hamilton Road**: the southbound left turn movement has a LOS E and exceeded storage capacity during both the AM and PM peak hour, under existing intersection conditions. This is resolved under the future intersection conditions.



2028 Total Traffic – AM Peak Hour

Nafziger Road Industrial Development TIS
180248

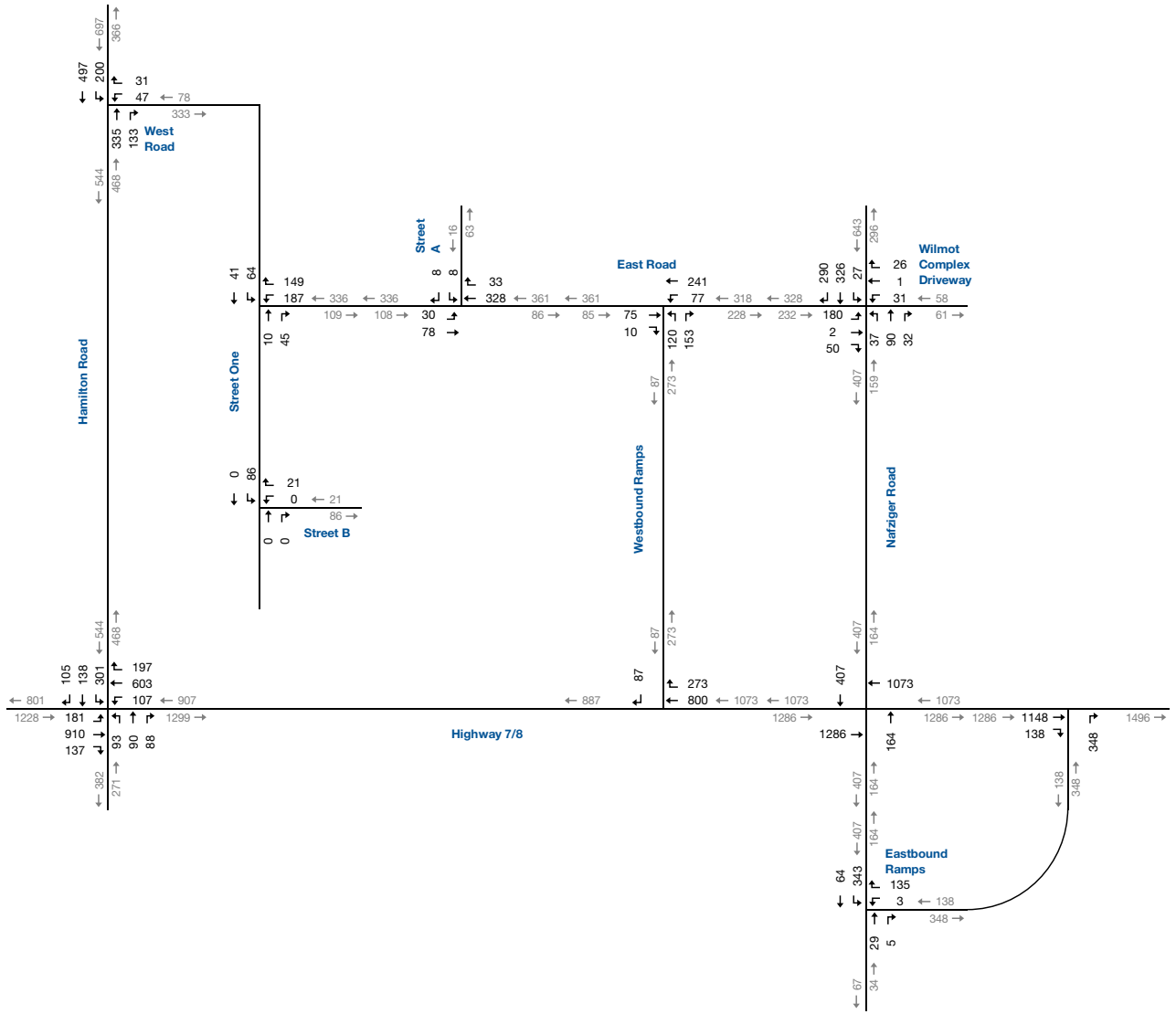
Figure 4.7A



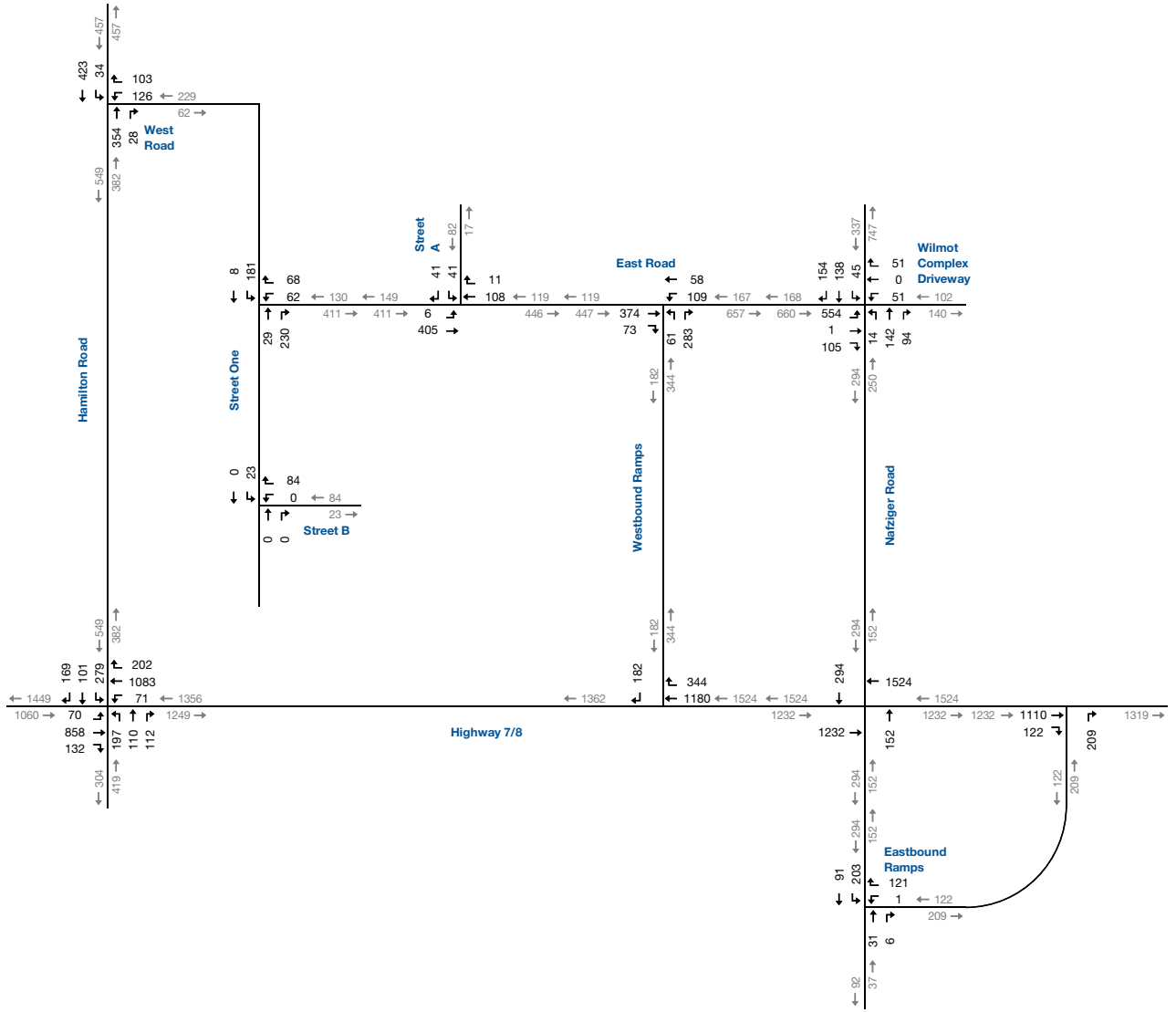
2028 Total Traffic – PM Peak Hour

Nafziger Road Industrial Development TIS
180248

Figure 4.7B



2028 Total Traffic Future Intersections – AM Peak Hour



2028 Total Traffic Future Intersections – PM Peak Hour

TABLE 4.10: 2028 TOTAL TRAFFIC OPERATIONS – EXISTING INTERSECTIONS

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	1 - Highway 7/8 & Hamilton Road	TCS	LOS	B	C	A	C	B	C	A	B	C	C	A	C	E	C	A	D	C
			Delay	13	24	4	21	13	24	4	19	35	31	7	25	65	33	7	46	25
			V/C	0.37	0.55	0.18		0.32	0.42	0.26		0.29	0.17	0.19		0.88	0.26	0.21		
			Avail.	-	-	110		100	-	75		70		85		65	-	155		
			95th	34	119	12		21	80	15		33	31	12		116	44	13		
	2 - Highway 7/8 & Nafziger Road	TCS	LOS	B	C	>	C	A	C	A	C	A	C	>	C	E	A	>	D	C
			Delay	13	22	>	21	9	27	5	21	0	21	>	21	58	10	>	46	25
			V/C	0.39	0.74	>		0.03	0.67	0.40		0.00	0.08	>		0.90	0.24	>		
			Avail.	145	-	>		140	-	90		80	-	>		120	-	>		
			95th	19	127	>		2	84	15		0	12	>		123	17	>		
	3 - Hamilton Road & West Road	TWSC	LOS					D		D	D		A	>	A	<	A		A	
			Delay					32		32	32		0	>	0	<	4		4	
			V/C					0.37		0.37			0.28	>		<	0.18			
			Avail.					-		-			-	>		<	-			
			95th					13		13			0	>		<	5			
	4 - Nafziger Road & Wilmot Complex Driveway/East Road	TWSC	LOS	<	B	>	B	<	B	>	B	<	A	A	A	<	A	>	A	A
			Delay	<	12	>	12	<	13	>	13	<	9	1	8	<	7	>	7	8
			V/C	<	0.29	>		<	0.20	>		<	0.53	0.03		<	0.55	>		
			Avail.	<	-	>		<	-	>		<	-	50		<	-	>		
			95th	<	12	>		<	10	>		<	56	2		<	62	>		
	5 - East Road & Street A	TWSC	LOS	<	A		A		A	>	A					B		B	B	1
			Delay	<	2		0		0	>	0.9					11		11	11	
			V/C	<	0.03				0.21	>						0.03		0.03		
			Avail.	<	-				-	>						-		-		
			95th	<	1				0	>						1		1		
	6 - Street One & East Road	TWSC	LOS					B		B	B		A	>	A	<	A		A	
			Delay					12		12	12		0	>	0	<	5		5	
			V/C					0.39		0.39			0.03	>		<	0.04			
			Avail.					-		-			-	>		<	-			
			95th					15		15			0	>		<	1			
	7 - Street B & Street One	TWSC	LOS					A		A	A		A	>	A	<	A		A	
			Delay					8.4		8.4	8.4		0	>	0	<	7.3		7.3	
			V/C					0.02		0.02			0.00	>		<	0.05			
			Avail.					-		-			-	>		<	-			
			95th					0		0			0	>		<	1			
PM Peak Hour	1 - Highway 7/8 & Hamilton Road	TCS	LOS	B	C	A	B	B	C	A	C	D	C	A	C	E	C	A	D	C
			Delay	12	22	4	19	11	26	6	22	42	30	7	29	60	30	6	38	25
			V/C	0.25	0.5	0.17		0.2	0.68	0.26		0.6	0.21	0.24		0.85	0.2	0.32		
			Avail.	-	-	110		100	-	75		70		85		65	-	155		
			95th	15	108	12		15	153	20		64	33	13		95	31	15		
	2 - Highway 7/8 & Nafziger Road	TCS	LOS	B	B	>	C	A	C	A	C	C	C	>	C	D	B	>	C	A
			Delay	11	15	>	23	7	28	4	25	27	25	>	30	50	12	>	21	0
			V/C	0.42	0.60	>		0.02	0.82	0.44		0.00	0.11	>		0.75	0.50	>		
			Avail.	145	-	>		140	-	90		80	-	>		120	-	>		
			95th	17	118	>		2	151	17		2	13	>		63	26	>		
	3 - Hamilton Road & West Road	TWSC	LOS					C		C	C		A	>	A	<	A		A	
			Delay					24		24	24		0	>	0	<	1		1	
			V/C					0.56		0.56			0.22	>		<	0.03			
			Avail.					-		-			-	>		<	-			
			95th					26		26			0	>		<	1			
	4 - Nafziger Road & Wilmot Complex Driveway/East Road	TWSC	LOS	<	C	>	C	<	A	>	A	<	D	A	C	<	C	>	C	
			Delay	<	18	>	18	<	5	>	5	<	29	4	25	<	19	>	19	
			V/C	<	0.74	>		<	0.17	>		<	0.80	0.13		<	0.59	>		
			Avail.	<	-	>		<	-	>		<	-	50		<	-	>		
			95th	<	55	>		<	9	>		<	109	8		<	68	>		
	5 - East Road & Street A	TWSC	LOS	<	A		A		A	>	A					B		B	B	1
			Delay	<	2		0		0	>	0.9					11		11	11	
			V/C	<	0.03				0.21	>						0.03		0.03		
			Avail.	<	-				-	>						-		-		
			95th	<	1				0	>						1		1		
	6 - Street One & East Road	TWSC	LOS					B		B	B		A	>	A	<	A		A	
			Delay					12		12	12		0	>	0	<	5		5	
			V/C					0.39		0.39			0.03	>		<	0.04			
			Avail.					-		-			-	>		<	-			
			95th					15		15			0	>		<	1			
	7 - Street B & Street One	TWSC	LOS					A		A	A		A	>	A	<	A		A	
			Delay					8.4		8.4	8.4		0	>	0	<	7.3		7.3	
			V/C					0.02		0.02			0.00	>		<	0.05			
			Avail.					-		-			-	>		<	-			
			95th					0		0			0	>		<	1			

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
> - Shared Right-Turn Lane
< - Shared Left-Turn Lane
Avail. - Available Storage Length

TABLE 4.11: 2028 TOTAL TRAFFIC OPERATIONS – FUTURE INTERSECTIONS

Analysis Period	Intersection	Control Type	MOE	Direction / Movement / Approach																OVERALL
				Eastbound				Westbound				Northbound				Southbound				
				Left	Through	Right	Approach	Left	Through	Right	Approach	Left	Through	Right	Approach	Left	Through	Right	Approach	
AM Peak Hour	1 - Highway 7/8 & Hamilton Road	TCS	LOS	D	C	A	C	B	C	A	B	D	D	A	C	E	D	A	D	C
			Delay	42	25	5	25	12	25	5	19	42	40	5	29	57	39	6	43	27
			V/C	0.49	0.63	0.20		0.33	0.51	0.30		0.33	0.36	0.29		0.81	0.41	0.28		
				-	-	110		100	-	75		70		85		65	-	155		
			95th	28	106	12		18	69	15		17	30	5		56	44	9		
	2 - Hamilton Road & West Road	TWSC	LOS					D		D	D		A	>	A	<	A		A	
			Delay					32		32	32		0	>	4	<	4		4	
			V/C					0.37		0.37			0.28	>	0.18	<				
								-		-			-	>	-	<				
			95th					13		13			0	>	5	<				
	3 - Nafziger Road & Wilmot Complex Driveway/East Road	TCS	LOS	C	A	>	C	<	B	>	B	<	A	A	A	<	B	>	B	B
			Delay	29	6	>	24	<	10	>	10	<	7	1	6	<	12	>	12	13
			V/C	0.62	0.11	>		<	0.15	>		<	0.16	0.03		<	0.64	>		
			Avail.	100	-	>		<	-	>		<	-	50		<	-	>		
			95th	34	6	>		<	9	>		<	15	2		<	96	>		
	4 - Nafziger Road & Eastbound Ramps	TWSC	LOS					A		A	A		A	>	A	<	A		A	
			Delay					9		9	9		0	>	7	<	7		7	
			V/C					0.14		0.14			0.02	>	0.22	<				
								-		-			-	>	-	<				
			95th					4		4			0	>	7	<				
	5 - East Road & Westbound Ramps	TWSC	LOS		A	>	A	<	A		A	B		B	B					
			Delay		0	>	0	<	2		2	13		13	13					
			V/C		0.05	>		<	0.05			0.39		0.39						
					-	>		<	-			-		-						
			95th		0	>		<	1			15		15						
	6 - East Road & Street A	TWSC	LOS	<	A		A		A	>	A					B		B	B	
			Delay	<	2		0		0	>	0.9					11		11	11	1
			V/C	<	0.03				0.21	>						0.03		0.03		
			Avail.	<	-				-	>						-		-		
			95th	<	1				0	>						1		1		
	7 - Street One & East Road	TWSC	LOS					B		B	B		A	>	A	<	A		A	
			Delay					12		12	12		0	>	5	<	5		5	
			V/C					0.39		0.39			0.03	>	0.04	<				
			Avail.					-		-			-	>	-	<				
			95th					15		15			0	>	1	<				
	8 - Street B & Street One	TWSC	LOS					A		A	A		A	>	A	<	A		A	
			Delay					8.4		8.4	8.4		0	>	7.3	<	7.3		7.3	
			V/C					0.02		0.02			0.00	>	0.05	<				
			Avail.					-		-			-	>	-	<				
			95th					0		0			0	>	1	<				
PM Peak Hour	1 - Highway 7/8 & Hamilton Road	TCS	LOS	D	C	A	C	B	C	A	C	D	D	A	C	D	D	B	C	C
			Delay	39	24	5	22	11	33	6	28	42	40	9	33	47	39	11	34	28
			V/C	0.24	0.63	0.20		0.22	0.86	0.31		0.55	0.43	0.37		0.70	0.39	0.48		
				-	-	110		100	-	75		70		85		65	-	155		
			95th	13	90	12		12	142	19		29	34	11		44	32	18		
	2 - Hamilton Road & West Road	TWSC	LOS					C		C	C		A	>	A	<	A		A	
			Delay					24		24	24		0	>	1	<	1		1	
			V/C					0.56		0.56			0.22	>	0.03	<				
								-		-			-	>	-	<				
			95th					26		26			0	>	1	<				
	3 - Nafziger Road & Wilmot Complex Driveway/East Road	TCS	LOS	C	A	>	B	<	B	>	B	<	B	A	B	<	C	>	C	B
			Delay	20	2	>	18	<	15	>	15	<	19	5	14	<	22	>	22	18
			V/C	0.77	0.12	>		<	0.39	>		<	0.26	0.16		<	0.58	>		
			Avail.	100	-	>		<	-	>		<	-	50		<	-	>		
			95th	83	6	>		<	15	>		<	32	10		<	67	>		
	4 - Nafziger Road & Eastbound Ramps	TWSC	LOS					A		A	A		A	>	A	<	A		A	
			Delay					9		9	9		0	>	0	<	6		6	
			V/C					0.12		0.12			0.02	>	0.13	<				
								-		-			-	>	-	<				
			95th					3		3			0	>	4	<				
	5 - East Road & Westbound Ramps	TWSC	LOS		A	>	A	<	A		A	C		C	C					
			Delay		0	>	0	<	6		6	21		21	21					
			V/C		0.26	>		<	0.10			0.61		0.61						
					-	>		<	-			-		-						
			95th		0	>		<	3			32		32						
	6 - East Road & Street A	TWSC	LOS	<	A		A		A	>	A					B		B	B	
			Delay	<	2		0		0	>	0.9					11		11	11	1
			V/C	<	0.03				0.21	>						0.03		0.03		
			Avail.	<	-				-	>						-		-		
			95th	<	1				0	>						1		1		
	7 - Street One & East Road	TWSC	LOS					B		B	B		A	>	A	<	A		A	
			Delay					12		12	12		0	>	5	<	5		5	
			V/C					0.39		0.39			0.03	>	0.04	<				
			Avail.					-		-			-	>	-	<				
			95th					15		15			0	>	1	<				
	8 - Street B & Street One	TWSC	LOS					A		A	A		A	>	A	<	A		A	
			Delay					8.4		8.4	8.4		0	>	7.3	<	7.3		7.3	
			V/C					0.02		0.02			0.00	>	0.05	<				
			Avail.					-		-			-	>	-	<				
			95th					0		0			0	>	1	<				

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

> - Shared Right-Turn Lane
< - Shared Left-Turn Lane
Avail. - Available Storage Length

4.2.3 2028 Left-Turn Queue Analysis

In addition to Synchro 9 analysis, queue length analysis was also carried out using the MTO Geometric Design Standards, Table B7-4 under Level of Service (LOS) A conditions and assuming a vehicle length of 7.5 meters. The results are summarized in **Table 4.12**.

TABLE 4.12: 2028 LEFT-TURN QUEUE ANALYSIS SUMMARY

Scenario	Intersection	Movement	Cycle Length		Left Turn Counts		m_u max	Calc'd Length	Available Length
			AM Peak	PM Peak	AM Peak	PM Peak			
Background - Existing Intersections	Highway 7/8 & Hamilton Road	EBL	130	130	101	60	3.6	52.5	400
		WBL			106	67	3.8	52.5	100
		NBL			93	197	7.1	90.0	70
		SBL			272	214	9.8	112.5	65
	Highway 7/8 & Nafziger Road	EBL	105	105	117	108	4.2	60.0	145
		WBL			8	6	0.3	7.5	140
		NBL			0	1	0.0	7.5	80
		SBL			305	121	11.0	127.5	120
Total - Existing Intersections	Highway 7/8 & Hamilton Road	EBL	130	130	181	70	6.5	82.5	400
		WBL			107	71	3.9	52.5	100
		NBL			93	197	7.1	90.0	70
		SBL			301	279	10.9	127.5	65
	Highway 7/8 & Nafziger Road	EBL	105	105	135	121	4.9	67.5	145
		WBL			8	6	0.3	7.5	140
		NBL			0	1	0.0	7.5	80
		SBL			343	203	12.4	135.0	120

It is noted that the existing turn lanes are inadequate under the queue analysis above:

- **Highway 7/8 & Hamilton Road:** the southbound and northbound left-turn lane is forecast to have a requirement of 127.5 and 90 meters, respectively, under the total conditions. The introduction of a second left-turn lane with the same storage length, as identified for future improvements, will address the actual storage requirement for these movements; and
- **Highway 7/8 & Nafziger Road:** the southbound left-turn lane is forecast to have a requirement of 135 meters under the total conditions. The introduction of a grade separated intersection in place of this signalized intersection addresses the actual storage requirement for these movements.

Alternatively, the storage lengths of southbound left-lanes at both Hamilton Road and Nafziger Road could be extended to accommodate increasing queue lengths in the interim prior to future improvements at the two Highway 7/8 intersections.

4.3 2033 Horizon

4.3.1 2033 Background Traffic Operations

Figure 4.9 shows the assignment of 2033 AM and PM peak hour background traffic volumes at the existing study area intersections. **Figure 4.10A and 4.10B** respectively show the assignment of 2033 AM and PM peak hour background traffic volumes at the future study area intersections including the ramp terminals of the new interchange at Highway 7/8 and Nafziger Road.

The study area intersections were analysed under 2033 background traffic conditions, using Synchro 9 software and the MTO Queue Analysis method.

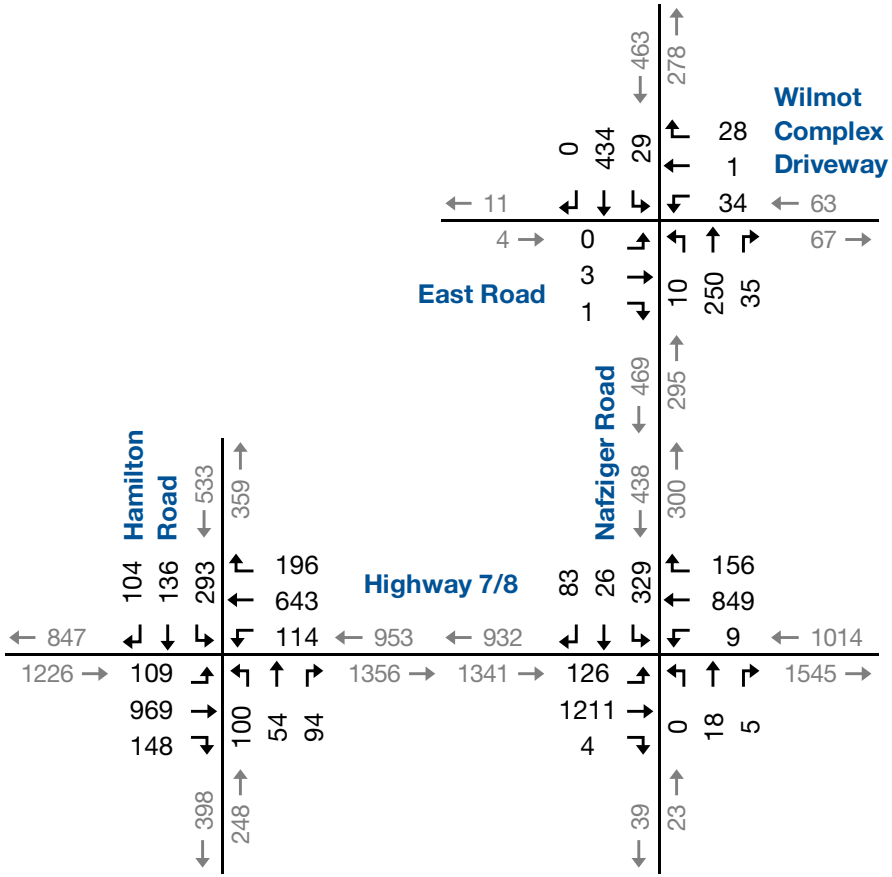
Table 4.13 summarizes the results of the analysis corresponding to existing intersection configurations. **Table 4.14** summarizes the results of the analysis corresponding to future intersection configurations with the new Highway 7/8 and Nafziger Road interchange in place.

The intersection operations under 2033 background traffic conditions are similar to those under 2028 background traffic conditions, with all movements operating at acceptable levels of service, except:

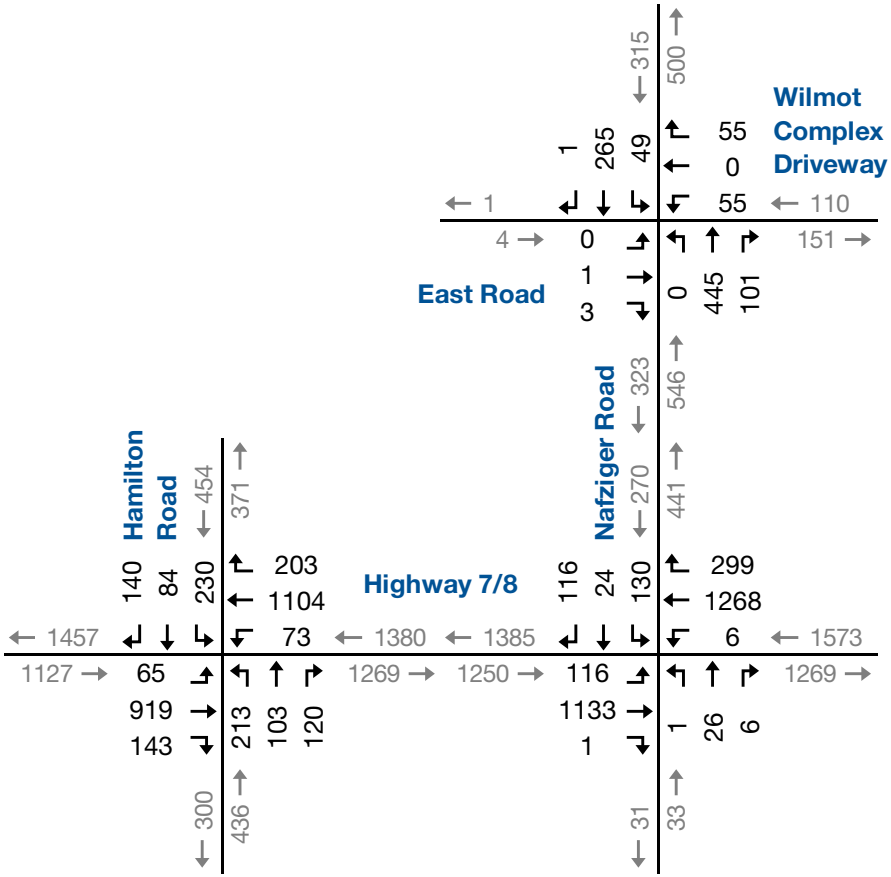
- **Hamilton Road and Highway 7/8**: the southbound left movement has a LOS E and exceeded storage capacity during both AM and PM peak hours, with existing intersections configurations.

Appendix H contains the supporting detailed Synchro 9 reports.

AM Peak Hour

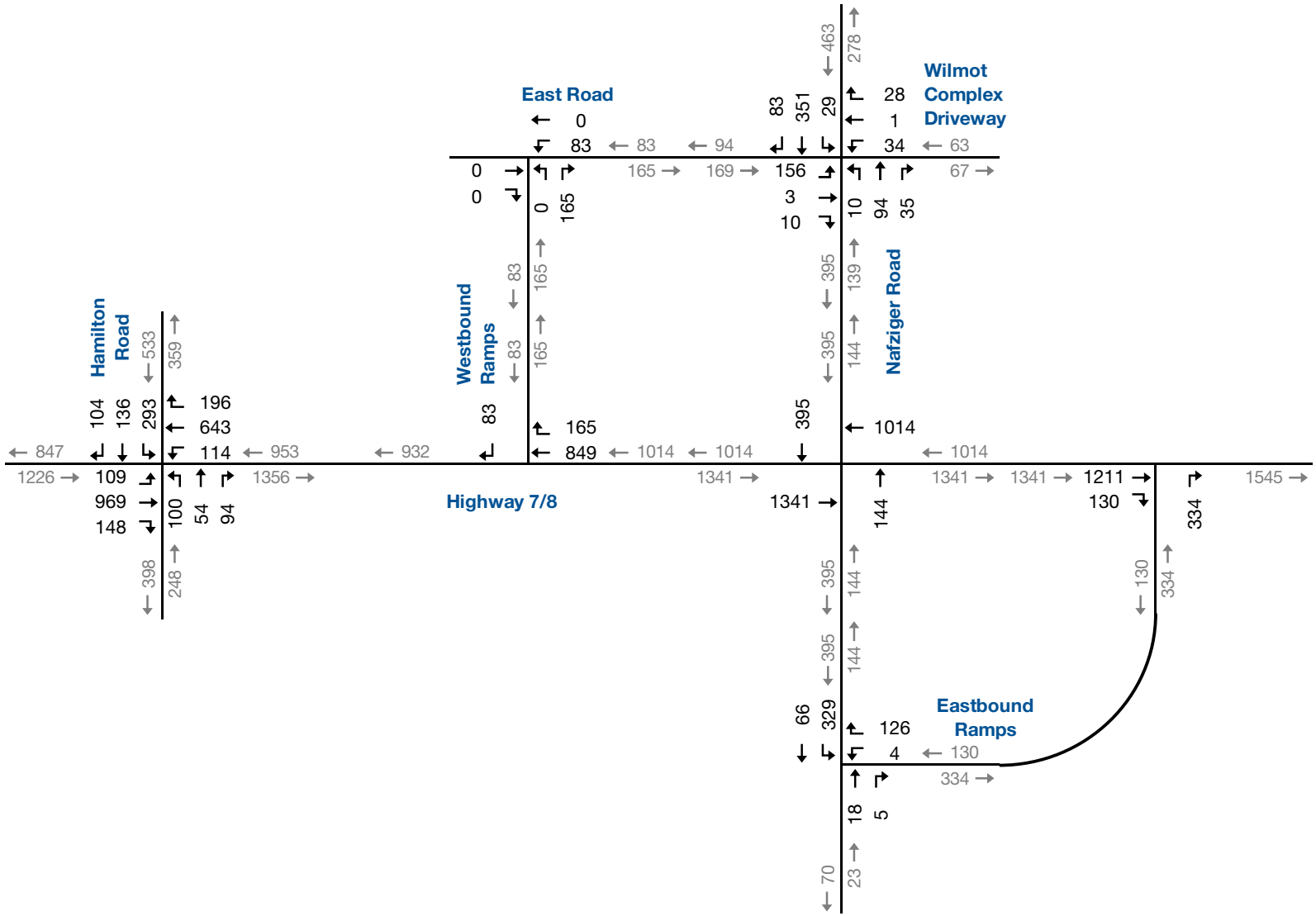


PM Peak Hour

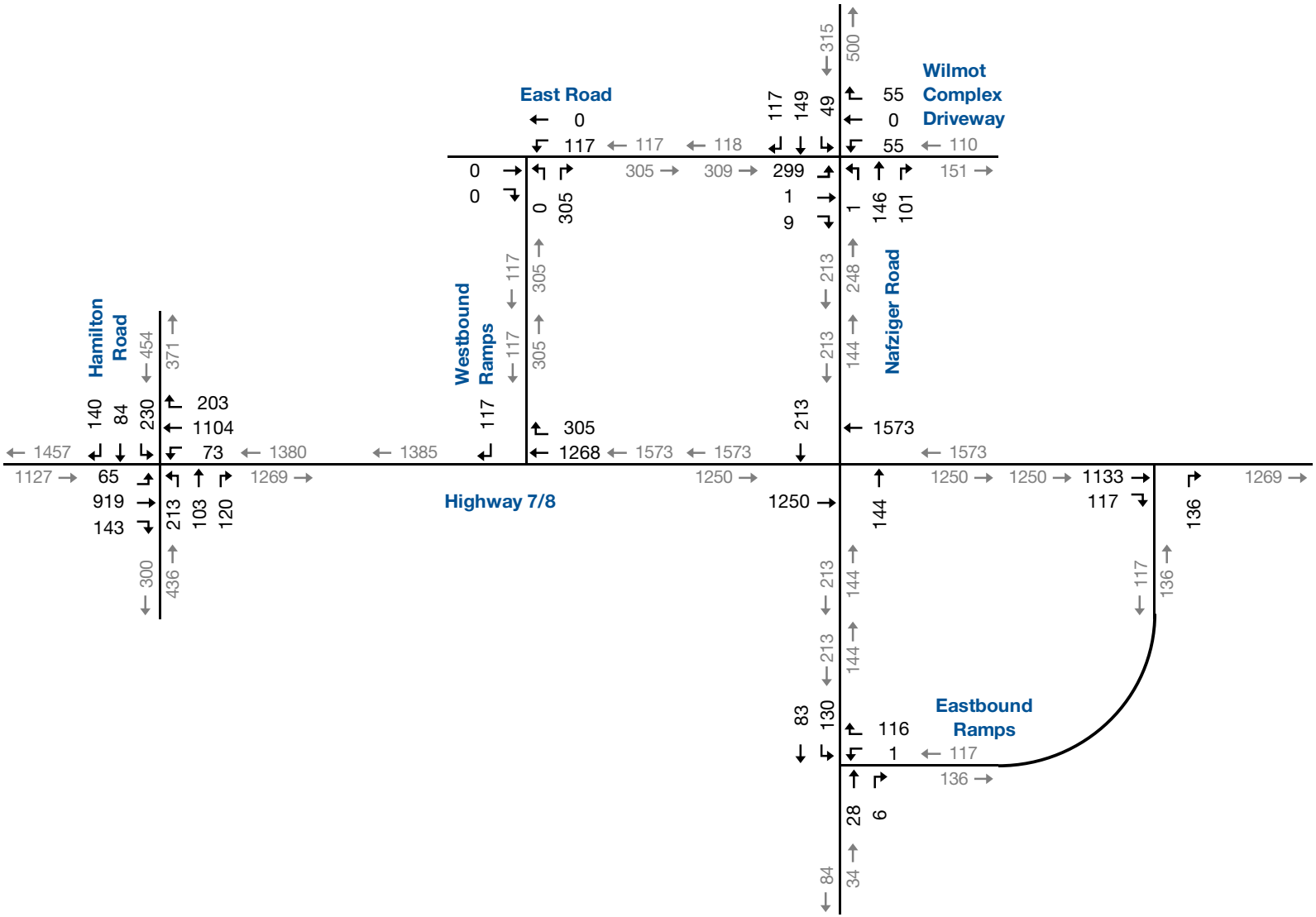


paradigm TRANSPORTATION SOLUTIONS LIMITED

2033 Background Traffic



2033 Background Traffic Future Intersections – AM Peak Hour



2033 Background Traffic Future Intersections – PM Peak Hour

TABLE 4.13: 2033 BACKGROUND OPERATIONS – EXISTING INTERSECTIONS

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	1 - Highway 7/8 & Hamilton Road	TCS	LOS	B	C	A	**C**	B	C	A	**B**	C	C	A	**C**	E	C	A	**D**	**C**
			Delay	11	25	4	**21**	13	22	4	**17**	34	29	7	**23**	61	32	7	**43**	**24**
			V/C	0.24	0.59	0.20		0.35	0.42	0.25		0.32	0.10	0.21		0.86	0.27	0.22		
			Avail.	-	-	110		100	-	75		70		85		65	-	155		
			95th	21	130	13		22	81	14		34	19	12		100	41	13		
	2 - Highway 7/8 & Nafziger Road	TCS	LOS	B	C	>	**C**	A	C	A	**C**	A	B	>	**B**	D	A	>	**D**	**C**
			Delay	13	23	>	**22**	9	27	5	**24**	0	20	>	**20**	53	10	>	**42**	**26**
			V/C	0.39	0.77	>		0.04	0.70	0.26		0.00	0.05	>		0.86	0.23	>		
			Avail.	145	-	>		140	-	90		80	-	>		120	-	>		
			95th	18	138	>		3	91	12		0	9	>		116	17	>		
	3 - Nafziger Road & Wilmot Complex Driveway/East Road	TWSC	LOS	<	B	>	**B**	<	B	>	**B**	<	A	A	**A**	<	A	>	**A**	
			Delay	<	15	>	**15**	<	15	>	**15**	<	4	1	**4**	<	5	>	**5**	
			V/C	<	0.01	>		<	0.27	>		<	0.23	0.03		<	0.41	>		
			Avail.	<	-	>		<	-	>		<	-	50		<	-	>		
			95th	<	2	>		<	10	>		<	19	2		<	41	>		
PM Peak Hour	1 - Highway 7/8 & Hamilton Road	TCS	LOS	B	B	A	**B**	A	C	A	**B**	D	C	A	**C**	E	C	A	**D**	**C**
			Delay	10	19	4	**17**	10	23	5	**19**	51	32	7	**34**	56	31	7	**36**	**23**
			V/C	0.22	0.51	0.18		0.20	0.66	0.25		0.74	0.22	0.28		0.79	0.19	0.31		
			Avail.	-	-	110		100	-	75		70		85		65	-	155		
			95th	13	111	12		14	147	20		70	32	13		75	27	14		
	2 - Highway 7/8 & Nafziger Road	TCS	LOS	A	B	>	**B**	A	C	A	**B**	A	C	>	**B**	C	D	>	**C**	**B**
			Delay	9	13	>	**13**	5	22	3	**12**	0	28	>	**18**	26	44	>	**28**	**17**
			V/C	0.39	0.58	>		0.02	0.76	0.37		0.00	0.00	>		0.13	0.60	>		
			Avail.	145	-	>		140	-	90		80	-	>		120	-	>		
			95th	14	110	>		2	151	15		0	2	>		12	40	>		
	3 - Nafziger Road & Wilmot Complex Driveway/East Road	TWSC	LOS	<	B	>	**B**	<	B	>	**B**	<	A	A	**A**	<	A	>	**A**	
			Delay	<	10	>	**10**	<	13	>	**13**	<	6	2	**6**	<	6	>	**6**	
			V/C	<	0.01	>		<	0.38	>		<	0.39	0.09		<	0.33	>		
			Avail.	<	-	>		<	-	>		<	-	50.00		<	-	>		
			95th	<	2	>		<	13	>		<	40	4		<	28	>		

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
> - Shared Right-Turn Lane
< - Shared Left-Turn Lane
Avail. - Available Storage Length

TABLE 4.14: 2033 BACKGROUND OPERATIONS – FUTURE INTERSECTIONS

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	1 - Highway 7/8 & Hamilton Road	TCS	LOS	D	C	A	**C**	B	C	A	**B**	D	D	A	**C**	D	D	A	**D**	**C**
			Delay	40	27	5	**25**	13	22	4	**17**	41	36	5	**26**	48	40	6	**38**	**25**
			V/C	0.34	0.71	0.23		0.38	0.47	0.27		0.33	0.20	0.30		0.70	0.48	0.31		
			Avail.	-	-	110		100	-	75		70		85		65	-	155		
			95th	19	115	13		19	71	15		17	20	7		51	42	9		
	2 - Nafziger Road & Wilmot Complex Driveway/East Road	TCS	LOS	<	A	>	**C**	<	B	>	**B**	<	A	A	**A**	<	A	>	**A**	**B**
			Delay	26	10	>	**25**	<	11	>	**11**	<	6	3	**5**	<	8	>	**8**	**11**
			V/C	0.57	0.03	>		<	0.18	>		<	0.11	0.03		<	0.45	>		
			Avail.	100	-	>		<	-	>		<	-	50		<	-	>		
			95th	28	3	>		<	10	>		<	11	3		<	52	>		
	3 - Nafziger Road & Eastbound Ramps	TWSC	LOS					A		A	**A**		A	>	**A**	<	A		**A**	
			Delay					9		9	**9**		0	>	**0**	<	7		**7**	
			V/C					0.13		0.13			0.01	>		<	0.21			
			Avail.											>		<	-			
			95th					4		4			0	>		<	6			
	4 - East Road & Westbound Ramps	TWSC	LOS		A	>	**A**	<	A		**A**	A		A	**A**					
			Delay		0	>	**0**	<	7		**7**	9		9	**9**					
			V/C		0.00	>		<	0.05			0.15		0.15						
			Avail.		-	>		<	-			-		-						
			95th		0	>		<	1			4		4						
PM Peak Hour	1 - Highway 7/8 & Hamilton Road	TCS	LOS	D	C	A	**C**	B	C	A	**C**	D	D	A	**C**	D	D	B	**C**	**C**
			Delay	40	26	5	**24**	12	35	7	**29**	40	41	10	**32**	40	39	12	**31**	**28**
			V/C	0.23	0.68	0.22		0.24	0.87	0.31		0.52	0.41	0.40		0.53	0.34	0.44		
			Avail.	-	-	110		100	-	75		70		85		65	-	155		
			95th	13	107	13		14	158	22		31	34	13		33	29	17		
	2 - Nafziger Road & Wilmot Complex Driveway/East Road	TCS	LOS	D	A	>	**D**	<	A	>	**A**	<	A	A	**A**	<	A	>	**A**	**B**
			Delay	37	8	>	**37**	<	9	>	**9**	<	8	3	**6**	<	8	>	**8**	**17**
			V/C	0.80	0.02	>		<	0.21	>		<	0.17	0.12		<	0.39	>		
			Avail.	100	-	>		<	-	>		<	-	50		<	-	>		
			95th	65	3	>		<	14	>		<	17	6		<	31	>		
	3 - Nafziger Road & Eastbound Ramps	TWSC	LOS					A		A	**A**		A	>	**A**	<	A		**A**	
			Delay					9		9	**9**		0	>	**0**	<	6		**6**	
			V/C					0.11		0.11			0.02	>		<	0.08			
			Avail.											>		<	-			
			95th					3		3			0	>		<	2			
	4 - East Road & Westbound Ramps	TWSC	LOS		A	>	**A**	<	A		**A**	A		A	**A**					
			Delay		0	>	**0**	<	7		**7**	10		10	**10**					
			V/C		0.00	>		<	0.07			0.28		0.28						
			Avail.		-	>		<	-			-		-						
			95th		0	>		<	2			9		9						

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
> - Shared Right-Turn Lane
< - Shared Left-Turn Lane
Avail. - Available Storage Length

4.3.2 2033 Total Traffic Operations

The total traffic volumes in 2033 correspond to the ten-year post-development horizon and include the increased background road traffic volumes between 2018 and 2033, and traffic volumes generated by the proposed development.

Figure 4.11 shows the assignment of 2033 AM and PM peak hour total traffic volumes at the existing study area intersections. **Figure 4.12A and 4.12B** respectively show the assignment of 2023 AM and PM peak hour total traffic volumes at the future study area intersections including the ramp terminals of the new interchange at Highway 7/8 and Nafziger Road.

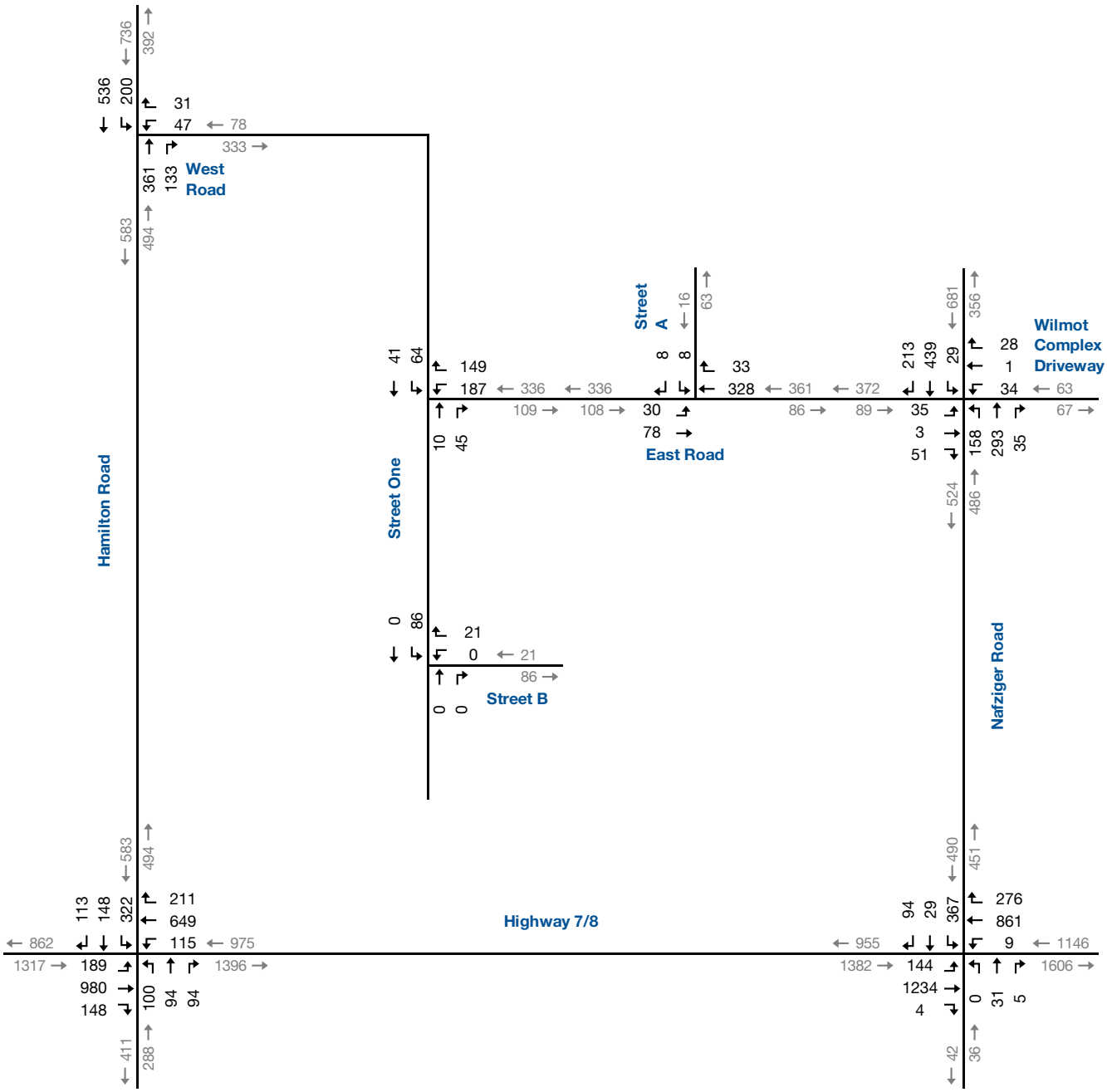
The study area intersections were analysed, using Synchro 9 software and the MTO Queue Analysis method, under 2033 total traffic conditions and corresponding to existing intersection configurations as well as future intersection configurations.

Table 4.15 summarizes the results of the analysis corresponding to existing intersection configurations. **Table 4.16** summarizes the results of the analysis corresponding to future intersection configurations with the new Highway 7/8 and Nafziger Road interchange in place.

Appendix I contains the supporting detailed Synchro reports.

The intersection operations under 2033 total traffic conditions are similar to those under 2033 background traffic conditions, with all movements operating at acceptable levels of service, except:

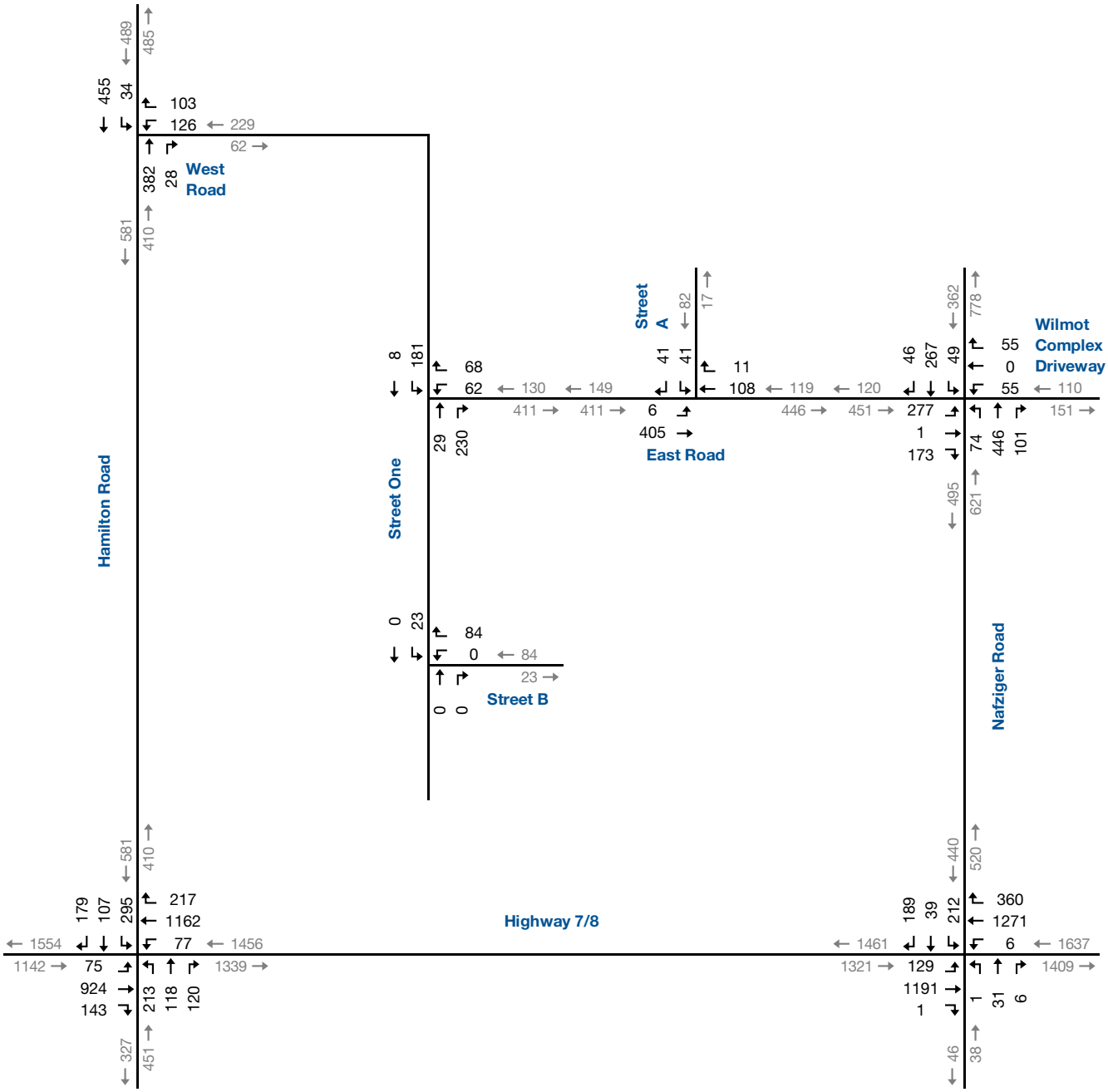
- **Highway 7/8 and Nafziger Road:** the southbound left turn movement has a LOS E, a v/c > 0.9 and exceeded storage capacity during the AM peak hour, under existing intersection conditions; and
- **Highway 7/8 and Hamilton Road**: the southbound left turn movement has a LOS E and exceeded storage capacity during both the AM and PM peak hour, under existing intersection conditions. This is resolved under the future intersection conditions.



2033 Total Traffic – AM Peak Hour

Nafziger Road Industrial Development TIS
180248

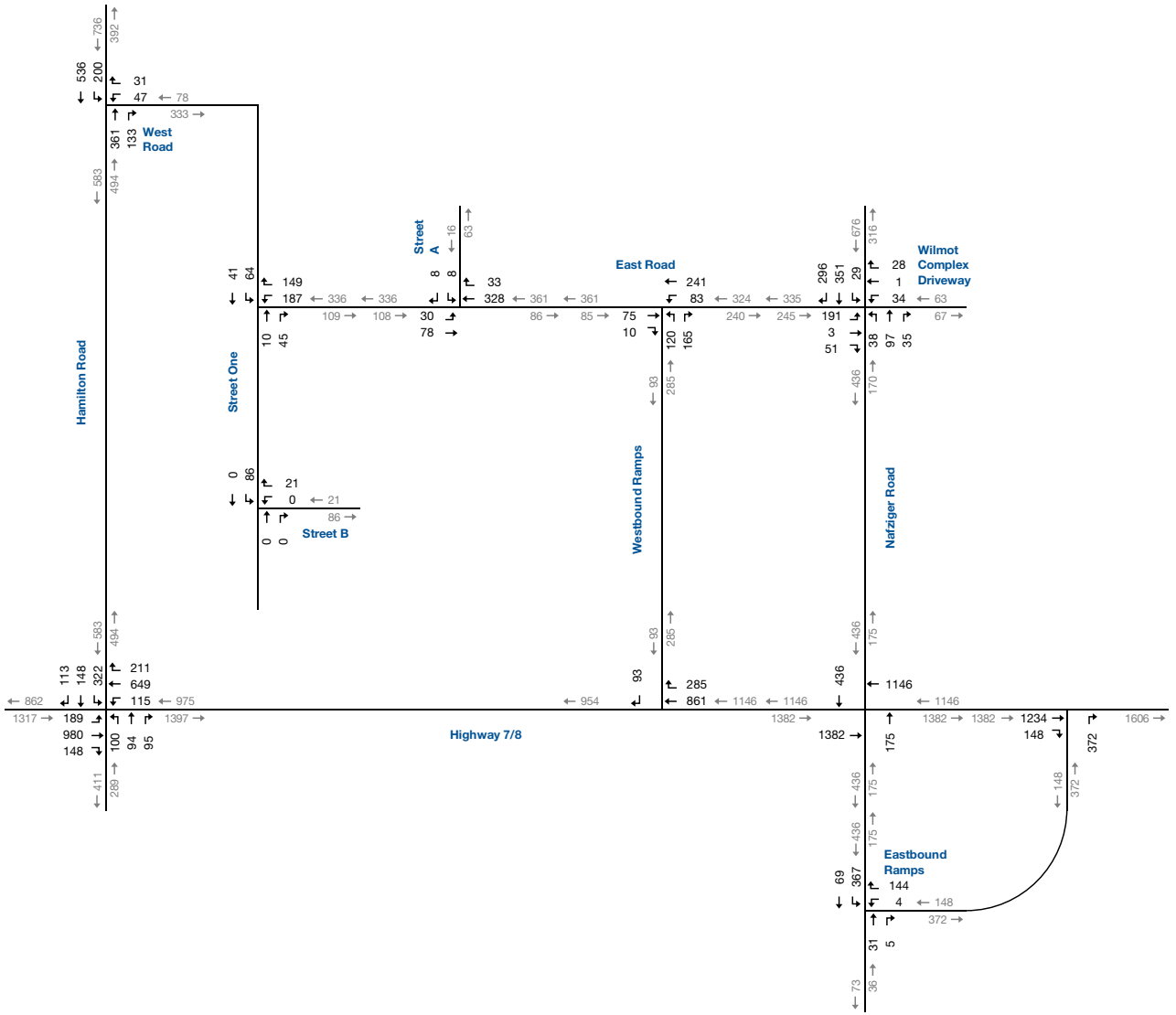
Figure 4.11A



2033 Total Traffic – PM Peak Hour

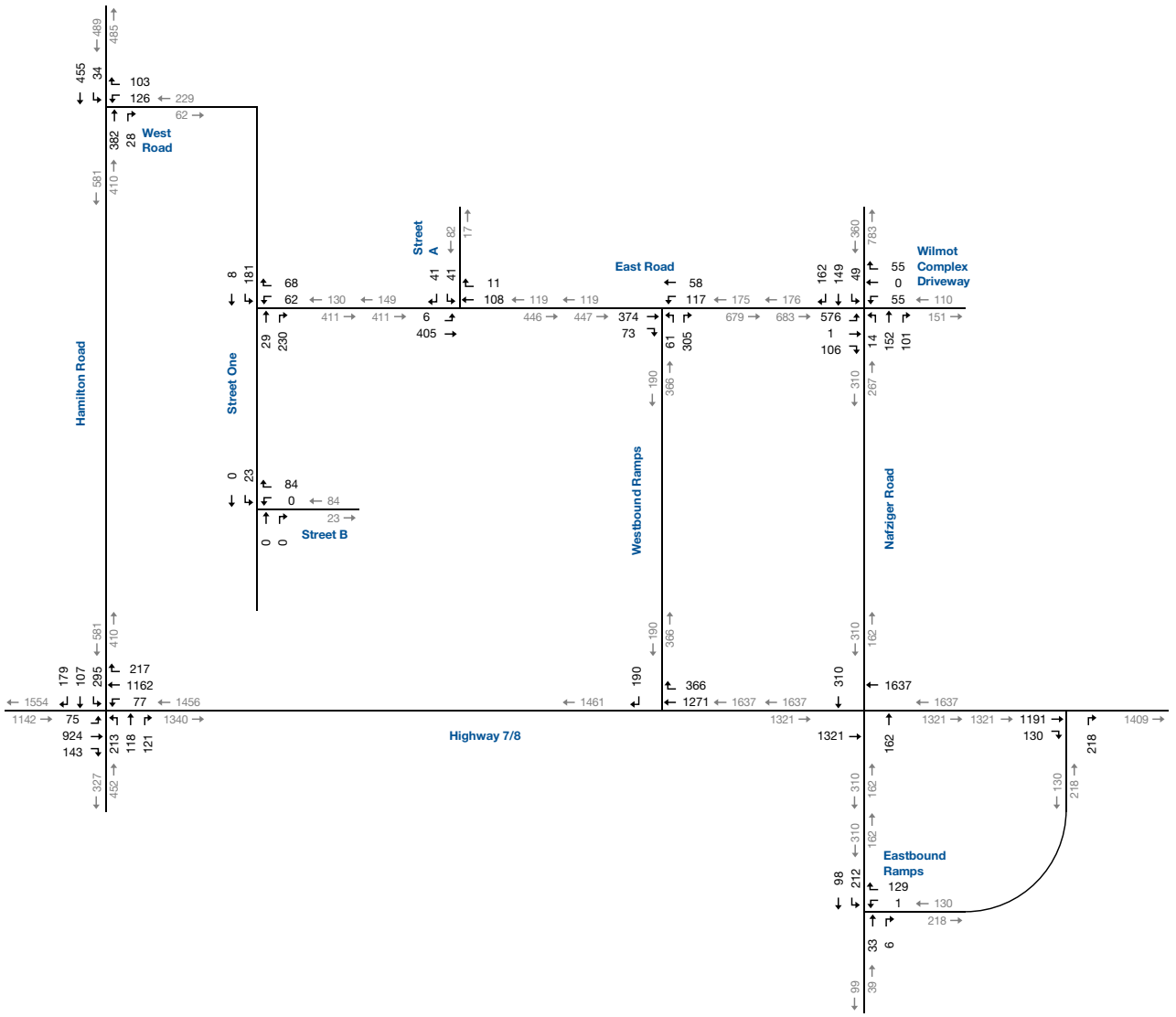
Nafziger Road Industrial Development TIS
180248

Figure 4.11B



2033 Total Traffic Future Intersections – AM Peak Hour

Figure 4.12A



2033 Total Traffic Future Intersections – PM Peak Hour

TABLE 4.15: 2033 TOTAL TRAFFIC OPERATIONS – EXISTING INTERSECTIONS

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	1 - Highway 7/8 & Hamilton Road	TCS	LOS	B	C	A	C	B	C	A	B	C	C	A	C	E	C	A	D	C
			Delay	14	27	4	22	15	26	4	20	35	31	7	25	68	33	7	47	26
			V/C	0.42	0.61	0.20		0.38	0.46	0.28		0.30	0.17	0.19		0.90	0.27	0.22		
			Avail.	-	-	110		100	-	75		70		85		65	-	155		
			95th	35	132	13		22	87	16		36	32	13		130	47	14		
	2 - Highway 7/8 & Nafziger Road	TCS	LOS	B	C	>	C	A	C	A	C	A	C	>	C	E	B	>	E	C
			Delay	13	23	>	22	8	28	5	22	0	22	>	22	76	10	>	60	28
			V/C	0.44	0.78	>		0.04	0.71	0.41		0.00	0.08	>		0.98	0.26	>		
			Avail.	145	-	>		140	-	90		80	-	>		120	-	>		
			95th	20	141	>		3	94	16		0	12	>		140	19	>		
	3 - Hamilton Road & West Road	TWSC	LOS					E		E	E		A	>	A	<	A		A	
			Delay					36		36	36		0	>	0	<	4		4	
			V/C					0.41		0.41			0.29	>		<	0.19			
			Avail.					-		-			-	>		<	-			
			95th					15		15			0	>		<	6			
	4 - Nafziger Road & Wilmot Complex Driveway/East Road	TWSC	LOS	<	B	>	B	<	B	>	B	<	A	A	A	<	A	>	A	A
			Delay	<	12	>	12	<	13	>	13	<	10	1	9	<	7	>	7	9
			V/C	<	0.29	>		<	0.22	>		<	0.57	0.03		<	0.58	>		
			Avail.	<	-	>		<	-	>		<	-	50		<	-	>		
			95th	<	12	>		<	11	>		<	76	2		<	70	>		
	5 - East Road & Street A	TWSC	LOS	<	A		A		A	>	A					B		B	B	1
			Delay	<	2		0		0	>	0.9					11		11	11	
			V/C	<	0.03				0.21	>						0.03		0.03		
			Avail.	<	-				-	>						-		-		
			95th	<	1				0	>						1		1		
	6 - Street One & East Road	TWSC	LOS					B		B	B		A	>	A	<	A		A	
			Delay					12		12	12		0	>	0	<	5		5	
			V/C					0.39		0.39			0.03	>		<	0.04			
			Avail.					-		-			-	>		<	-			
			95th					15		15			0	>		<	1			
	7 - Street B & Street One	TWSC	LOS					A		A	A		A	>	A	<	A		A	
			Delay					8.4		8.4	8.4		0	>	0	<	7.3		7.3	
			V/C					0.02		0.02			0.00	>		<	0.05			
			Avail.					-		-			-	>		<	-			
			95th					0		0			0	>		<	1			
PM Peak Hour	1 - Highway 7/8 & Hamilton Road	TCS	LOS	B	C	A	C	B	C	A	C	D	C	A	C	E	C	A	D	C
			Delay	14	24	4	21	13	29	7	25	42	30	6	29	60	30	6	38	26
			V/C	0.3	0.55	0.19		0.23	0.75	0.28		0.62	0.21	0.24		0.86	0.2	0.33		
			Avail.	-	-	110		100	-	75		70		85		65	-	155		
			95th	16	119	12		16	171	24		70	36	13		102	33	16		
	2 - Highway 7/8 & Nafziger Road	TCS	LOS	B	B	>	C	A	C	A	C	C	C	>	C	D	B	>	C	A
			Delay	16	16	>	25	7	31	4	26	28	26	>	32	54	12	>	23	0
			V/C	0.49	0.64	>		0.02	0.86	0.46		0.00	0.12	>		0.78	0.52	>		
			Avail.	145	-	>		140	-	90		80	-	>		120	-	>		
			95th	24	132	>		2	182	18		2	13	>		67	27	>		
	3 - Hamilton Road & West Road	TWSC	LOS					D		D	D		A	>	A	<	A		A	
			Delay					27		27	27		0	>	0	<	1		1	
			V/C					0.60		0.60			0.24	>		<	0.03			
			Avail.					-		-			-	>		<	-			
			95th					30		30			0	>		<	1			
	4 - Nafziger Road & Wilmot Complex Driveway/East Road	TWSC	LOS	<	C	>	C	<	A	>	A	<	D	A	D	<	C	>	C	C
			Delay	<	18	>	18	<	6	>	6	<	33	4	28	<	23	>	23	23
			V/C	<	0.75	>		<	0.19	>		<	0.85	0.14		<	0.68	>		
			Avail.	<	-	>		<	-	>		<	-	50		<	-	>		
			95th	<	55	>		<	10	>		<	118	8		<	80	>		
	5 - East Road & Street A	TWSC	LOS	<	A		A		A	>	A					B		B	B	1
			Delay	<	2		0		0	>	0.9					11		11	11	
			V/C	<	0.03				0.21	>						0.03		0.03		
			Avail.	<	-				-	>						-		-		
			95th	<	1				0	>						1		1		
	6 - Street One & East Road	TWSC	LOS					B		B	B		A	>	A	<	A		A	
			Delay					12		12	12		0	>	0	<	5		5	
			V/C					0.39		0.39			0.03	>		<	0.04			
			Avail.					-		-			-	>		<	-			
			95th					15		15			0	>		<	1			
	7 - Street B & Street One	TWSC	LOS					A		A	A		A	>	A	<	A		A	
			Delay					8.4		8.4	8.4		0	>	0	<	7.3		7.3	
			V/C					0.02		0.02			0.00	>		<	0.05			
			Avail.					-		-			-	>		<	-			
			95th					0		0			0	>		<	1			

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
> - Shared Right-Turn Lane
< - Shared Left-Turn Lane
Avail. - Available Storage Length

TABLE 4.16: 2033 TOTAL TRAFFIC OPERATIONS – FUTURE INTERSECTIONS

Analysis Period	Intersection	Control Type	MOE	Direction / Movement / Approach																OVERALL
				Eastbound				Westbound				Northbound				Southbound				
				Left	Through	Right	Approach	Left	Through	Right	Approach	Left	Through	Right	Approach	Left	Through	Right	Approach	
AM Peak Hour	1 - Highway 7/8 & Hamilton Road	TCS	LOS	D	C	A	C	B	C	A	C	D	D	A	C	D	D	A	D	C
			Delay	44	30	5	29	15	27	5	21	44	45	6	32	46	38	6	36	28
			V/C	0.51	0.75	0.23		0.42	0.57	0.33		0.36	0.41	0.33		0.69	0.40	0.28		
				-	-	110		100	-	75		70		85		65	-	155		
			95th	30	120	13		20	78	16		18	33	6		47	47	10		
	2 - Hamilton Road & West Road	TWSC	LOS					E		E	E		A	>	A	<	A		A	
			Delay					36		36	36		0	>	0	<	4		4	
			V/C					0.41		0.41			0.29	>		<	0.19			
								-		-			-	>		<	-			
			95th					15		15			0	>		<	6			
	3 - Nafziger Road & Wilmot Complex Driveway/East Road	TCS	LOS	C	A	>	C	<	B	>	B	<	A	A	A	<	B	>	B	B
			Delay	33	6	>	27	<	11	>	11	<	7	3	6	<	16	>	16	17
			V/C	0.66	0.12	>		<	0.15	>		<	0.18	0.03		<	0.73	>		
			Avail.	100	-	>		<	-	>		<	-	50		<	-	>		
			95th	39	7	>		<	11	>		<	17	3		<	131	>		
	4 - Nafziger Road & Eastbound Ramps	TWSC	LOS					A		A	A		A	>	A	<	A		A	
			Delay					9		9	9		0	>	0	<	7		7	
			V/C					0.15		0.15			0.02	>		<	0.23			
								-		-			-	>		<	-			
			95th					4		4			0	>		<	7			
	5 - East Road & Westbound Ramps	TWSC	LOS		A	>	A	<	A		A	B		B	B					
			Delay		0	>	0	<	2		2	14		14	14					
			V/C		0.05	>		<	0.05			0.41		0.41						
					-	>		<	-			-		-						
			95th		0	>		<	1			16		16						
	6 - East Road & Street A	TWSC	LOS	<	A		A	>	A		A					B		B	B	1
			Delay	<	2		0	>	0		0.9					11		11	11	
			V/C	<	0.03			>	0.21							0.03		0.03		
			Avail.	<	-			>	-							-		-		
			95th	<	1			>	0							1		1		
	7 - Street One & East Road	TWSC	LOS					B		B	B		A	>	A	<	A		A	
			Delay					12		12	12		0	>	5	<	5		5	
			V/C					0.39		0.39			0.03	>	0.04	<				
			Avail.					-		-			-	>	-	<				
			95th					15		15			0	>	1	<				
	8 - Street B & Street One	TWSC	LOS					A		A	A		A	>	A	<	A		A	
			Delay					8.4		8.4	8.4		0	>	7.3	<	7.3		7.3	
			V/C					0.02		0.02			0.00	>	0.05	<				
			Avail.					-		-			-	>	-	<				
			95th					0		0			0	>	1	<				
PM Peak Hour	1 - Highway 7/8 & Hamilton Road	TCS	LOS	D	C	A	C	B	D	A	C	D	D	A	C	D	D	B	D	C
			Delay	39	25	5	24	12	39	7	33	43	41	10	34	50	39	11	36	31
			V/C	0.26	0.68	0.22		0.26	0.92	0.33		0.58	0.46	0.40		0.74	0.41	0.50		
				-	-	110		100	-	75		70		85		65	-	155		
			95th	14	101	12		13	161	22		31	36	13		49	34	18		
	2 - Hamilton Road & West Road	TWSC	LOS					D		D	D		A	>	A	<	A		A	
			Delay					27		27	27		0	>	1	<	1		1	
			V/C					0.60		0.60			0.24	>	0.03	<				
								-		-			-	>	-	<				
			95th					30		30			0	>	1	<				
	3 - Nafziger Road & Wilmot Complex Driveway/East Road	TCS	LOS	C	A	>	B	<	B	>	B	<	B	A	B	<	C	>	C	B
			Delay	22	2	>	19	<	16	>	16	<	19	5	14	<	24	>	24	19
			V/C	0.79	0.12	>		<	0.42	>		<	0.28	0.17		<	0.63	>		
			Avail.	100	-	>		<	-	>		<	-	50		<	-	>		
			95th	87	6	>		<	17	>		<	35	10		<	77	>		
	4 - Nafziger Road & Eastbound Ramps	TWSC	LOS					A		A	A		A	>	A	<	A		A	
			Delay					9		9	9		0	>	0	<	6		6	
			V/C					0.13		0.13			0.02	>		<	0.13			
								-		-			-	>		<	-			
			95th					4		4			0	>		<	4			
	5 - East Road & Westbound Ramps	TWSC	LOS		A	>	A	<	A		A	C		C	C					
			Delay		0	>	0	<	6		6	22		22	22					
			V/C		0.26	>		<	0.11			0.65		0.65						
					-	>		<	-			-		-						
			95th		0	>		<	3			37		37						
	6 - East Road & Street A	TWSC	LOS	<	A		A	>	A		A					B		B	B	1
			Delay	<	2		0	>	0		0.9					11		11	11	
			V/C	<	0.03			>	0.21							0.03		0.03		
			Avail.	<	-			>	-							-		-		
			95th	<	1			>	0							1		1		
	7 - Street One & East Road	TWSC	LOS					B		B	B		A	>	A	<	A		A	
			Delay					12		12	12		0	>	5	<	5		5	
			V/C					0.39		0.39			0.03	>	0.04	<				
			Avail.					-		-			-	>	-	<				
			95th					15		15			0	>	1	<				
	8 - Street B & Street One	TWSC	LOS					A		A	A		A	>	A	<	A		A	
			Delay					8.4		8.4	8.4		0	>	7.3	<	7.3		7.3	
			V/C					0.02		0.02			0.00	>	0.05	<				
			Avail.					-		-			-	>	-	<				
			95th					0		0			0	>	1	<				

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

> - Shared Right-Turn Lane
< - Shared Left-Turn Lane
Avail. - Available Storage Length

4.3.3 2033 Left-Turn Queue Analysis

In addition to Synchro 9 analysis, queue length analysis was also carried out using the MTO Geometric Design Standards, Table B7-4 under Level of Service (LOS) A conditions and assuming a vehicle length of 7.5 meters. The results are summarized in **Table 4.17**.

TABLE 4.17: 2033 LEFT-TURN QUEUE ANALYSIS SUMMARY

Scenario	Intersection	Movement	Cycle Length		Left Turn Counts		m_u max	Calc'd Length	Available Length
			AM Peak	PM Peak	AM Peak	PM Peak			
Background - Existing Intersections	Highway 7/8 & Hamilton Road	EBL	130	130	109	65	3.9	52.5	400
		WBL			114	73	4.1	60.0	100
		NBL			100	213	7.7	90.0	70
		SBL			293	230	10.6	120.0	65
	Highway 7/8 & Nafziger Road	EBL	105	105	126	116	4.6	60.0	145
		WBL			9	6	0.3	7.5	140
		NBL			0	1	0.0	7.5	80
		SBL			329	130	11.9	135.0	120
Total - Existing Intersections	Highway 7/8 & Hamilton Road	EBL	130	130	189	75	6.8	82.5	400
		WBL			115	77	4.2	60.0	100
		NBL			100	213	7.7	90.0	70
		SBL			322	295	11.6	127.5	65
	Highway 7/8 & Nafziger Road	EBL	105	105	144	129	5.2	67.5	145
		WBL			9	6	0.3	7.5	140
		NBL			0	1	0.0	7.5	80
		SBL			367	212	13.3	150.0	120

It is noted that the existing turn lanes are inadequate under the queue analysis above:

- **Highway 7/8 & Hamilton Road:** the southbound and northbound left-turn lane is forecast to have a requirement of 127.5 and 90 meters, respectively, under the total conditions. The introduction of a second left-turn lane with the same storage length, as identified for future improvements, will address the actual storage requirement for these movements; and
- **Highway 7/8 & Nafziger Road:** the southbound left-turn lane is forecast to have a requirement of 150 meters under the total conditions. The introduction of a grade separated intersection in place of this signalized intersection addresses the actual storage requirement for these movements.

Alternatively, the storage lengths of southbound left-lanes at both Hamilton Road and Nafziger Road could be extended to accommodate increasing queue lengths in the interim prior to future improvements at the two Highway 7/8 intersections.

5 Remedial Measures

Section 5 discusses the remedial measures to accommodate the impacts of the proposed development on the road network within the study area.

5.1 Left-Turn Lane Requirement

Left-turn lane requirements were reviewed at the Hamilton Road and West Road intersection, and the Nafziger Road and East Road intersection, using the Ministry of Transportation's (MTO) Geometric Design Standards Manual[7] procedures. The results are summarized below.

The results indicate the following left-turn lane requirements corresponding to both 2028 and 2033 total traffic conditions under the existing intersection configurations:

- Hamilton Road and West Road (based on 60 kilometres per hour design speed): southbound left-turn lane with 50-meter storage length.
- East Road and Street A (based on 60 kilometres per hour design speed): no turn lane warranted.

The warrant nomographs corresponding to the assessments are included in **Appendix J**.

5.2 Traffic Control Requirements

5.2.1 Signal Warrant Analysis

Signal warrant analysis was carried out for the new Nafziger Road & Wilmot Complex Driveway/East Road intersection, as per Justification 7 of the Ontario Traffic Manual (OTM) Book 12[8], corresponding to 2023 total traffic volumes, with and without the new Highway 7/8 and Nafziger Road intersection in place. The results indicate that traffic signal control at the new Nafziger Road and East Road intersection is warranted along with an eastbound left-turn lane with a storage length of 100 metres, as discussed in **Section 4.1.2**.

Appendix K includes the signal warrant analysis.

5.2.2 10-Year Roundabout Screening Tool

In accordance with the Region of Waterloo policy, a 10-year roundabout screening analysis was undertaken to estimate the cost of a roundabout in

[7]Ministry of Transportation Ontario. *Geometric Design Standards for Ontario Highways, Chapter E*. 1976.
[8] Ministry of Transportation Ontario. *Ontario Traffic Manual, Book 12*. Mar 2012

comparison to a signalized intersection. The results indicate that further investigation through an Intersection Control Study is justified to determine the appropriate traffic control at this intersection.

Appendix L includes the screening analysis documentation.

6 Conclusions and Recommendations

6.1 Conclusions

The main findings and conclusions of this study are as follows:

- **Existing (2018) Traffic Conditions**: the study area intersections are operating with generally acceptable levels of service during the AM and PM peak hours.

  At the intersection of Highway 7/8 and Hamilton Road, the queue length for the southbound left-turn lane is noted to be exceeding the existing storage length under current traffic conditions.

- **Background Traffic Conditions (2023, 2028 and 2033) – Existing Highway 7/8 Intersections**:
  - At the two existing Highway 7/8 intersections, individual turning movements are forecast to operate with level of service deficiencies and v/c values greater than 0.9.
  - The queue lengths for the southbound left-turn lanes at Hamilton Road and at Nafziger Road are projected to exceed existing storage lengths under future background conditions without the proposed developments in place.
- **Development Generated Traffic**: The two developments are estimated to generate approximately: 856 AM peak hour vehicular trips and 856 PM peak hour vehicular trips. Given the location of the subject sites and the proposed land use, no reduction to vehicular trip generation has been assumed.
- **Total Traffic Conditions (2023, 2028 and 2033)**:

  <u>Highway 7/8 Intersections</u>

  - At the two existing Highway 7/8 intersections, Individual turning movements, intersections are forecast to operate with level of service deficiencies, v/c values greater than 0.9.
  - The queue lengths for the southbound left-turn lanes at Hamilton Road and at Nafziger Road are projected to exceed existing storage lengths under future total traffic conditions with the proposed developments in place.
  - The two intersections are projected to operate with acceptable levels of service after the proposed Highway 7/8 improvements are in place.

  <u>Hamilton Road and West Road</u>

  - A southbound left-turn lane with a storage length of 50 metres will be required at this new intersection.

Nafziger Road and East Road

- Traffic Signals are warranted along with an eastbound left-turn lane with a storage length of 100 metres.
- The results of an initial screening analysis for providing a roundabout instead of traffic signal control indicates that an Intersection Control Study (ICS) is justified for further investigation to determine which alternative would be appropriate at this location.

6.2 Recommendations

Based on the findings of this study, the following lane configurations and traffic control measures for the study area intersections are recommended:

- Hamilton Road and West Road intersection:
  - Stop Sign Control on West Road.
  - A southbound left-turn lane with a storage length of 50 metres.
- Nafziger Road and East Road intersection:
  - Traffic Signal Control OR Roundabout - to be determined through an Intersection Control Study.
- Highway 7/8 intersections at Hamilton Road and at Nafziger Road:
  - Southbound left-turn lane storage at both intersections should be extended as part of the road modifications on Hamilton Road and Nafziger Road.

Appendix A Existing Count Data & Signal Timings

Paradigm Transportation Solutions Limited
22 King Street South, Suite 300

Waterloo, Ontario, Canada N2J 1N8
519-896-3163 cbowness@ptsl.com

Count Name: Highway 7/8 & Hamilton Road
Site Code:
Start Date: 02/08/2018

Turning Movement Data

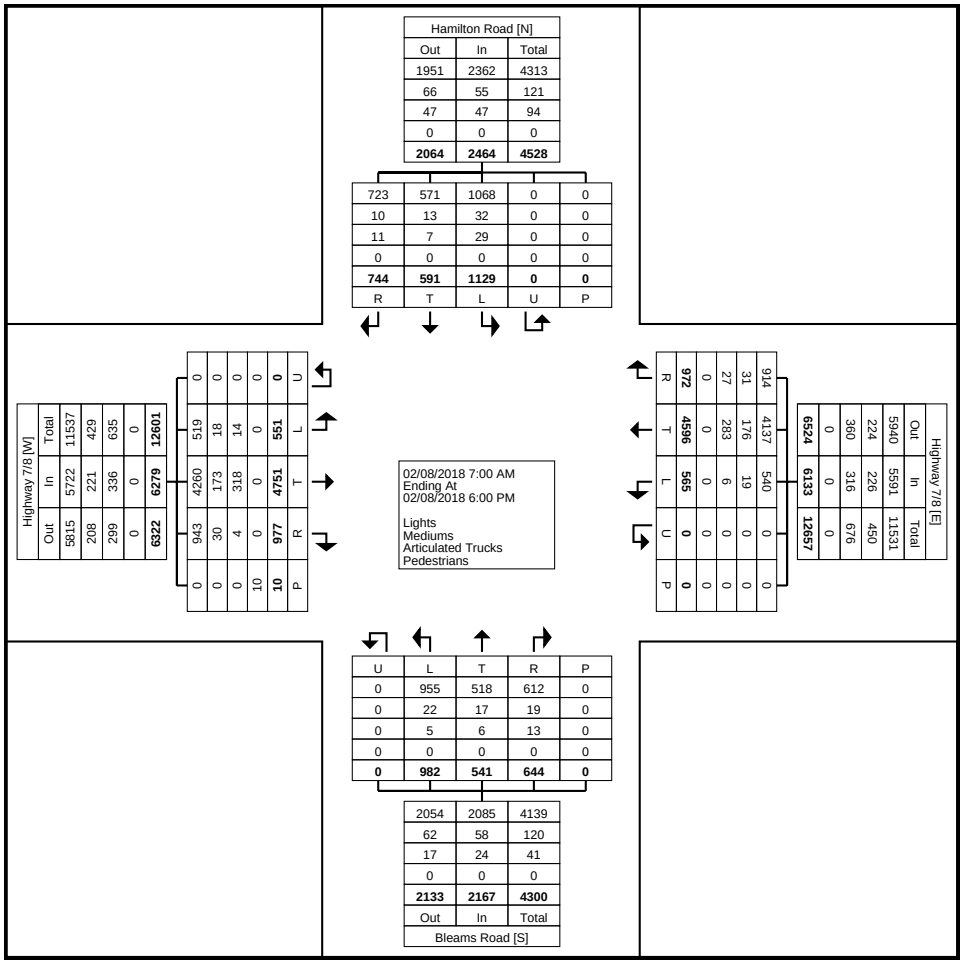
Start Time	Highway 7/8 Eastbound						Highway 7/8 Westbound						Bleams Road Northbound						Hamilton Road Southbound						Int. Total
	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	
7:00 AM	21	157	29	0	0	207	15	97	17	0	0	129	14	7	12	0	0	33	53	14	16	0	0	83	452
7:15 AM	21	157	22	0	0	200	13	137	33	0	0	183	17	14	22	0	0	53	38	17	19	0	0	74	510
7:30 AM	24	244	26	0	0	294	14	151	30	0	0	195	13	9	21	0	0	43	58	28	16	0	0	102	634
7:45 AM	30	181	31	0	0	242	23	108	54	0	0	185	28	15	17	0	0	60	64	27	21	0	0	112	599
Hourly Total	96	739	108	0	0	943	65	493	134	0	0	692	72	45	72	0	0	189	213	86	72	0	0	371	2195
8:00 AM	19	185	29	0	0	233	28	146	32	0	0	206	22	9	18	0	0	49	56	24	19	0	0	99	587
8:15 AM	14	165	32	0	0	211	26	109	41	0	0	176	17	10	19	0	0	46	56	30	27	0	0	113	546
8:30 AM	13	148	20	0	0	181	23	132	37	0	0	192	26	17	19	0	0	62	41	21	28	0	0	90	525
8:45 AM	12	119	33	0	0	164	12	120	39	0	0	171	23	10	25	0	0	58	35	18	32	0	0	85	478
Hourly Total	58	617	114	0	0	789	89	507	149	0	0	745	88	46	81	0	0	215	188	93	106	0	0	387	2136
9:00 AM	23	147	29	0	0	199	14	99	20	0	0	133	21	12	24	0	0	57	21	14	20	0	0	55	444
9:15 AM	25	138	32	0	1	195	18	105	26	0	0	149	14	14	15	0	0	43	24	16	21	0	0	61	448
9:30 AM	13	131	23	0	0	167	17	103	22	0	0	142	30	11	13	0	0	54	28	10	28	0	0	66	429
9:45 AM	20	108	31	0	0	159	10	107	19	0	0	136	28	16	10	0	0	54	39	16	20	0	0	75	424
Hourly Total	81	524	115	0	1	720	59	414	87	0	0	560	93	53	62	0	0	208	112	56	89	0	0	257	1745
*** BREAK ***	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
12:00 PM	15	86	35	0	0	136	29	126	17	0	0	172	31	26	17	0	0	74	30	39	25	0	0	94	476
12:15 PM	13	112	33	0	0	158	23	113	24	0	0	160	43	23	21	0	0	87	22	26	20	0	0	68	473
12:30 PM	16	120	33	0	0	169	19	123	22	0	0	164	39	25	26	0	0	90	25	23	26	0	0	74	497
12:45 PM	21	106	54	0	0	181	17	90	17	0	0	124	35	22	22	0	0	79	22	23	16	0	0	61	445
Hourly Total	65	424	155	0	0	644	88	452	80	0	0	620	148	96	86	0	0	330	99	111	87	0	0	297	1891
1:00 PM	23	105	42	0	1	170	14	89	14	0	0	117	42	19	13	0	0	74	25	16	18	0	0	59	420
1:15 PM	14	102	39	0	1	155	15	115	20	0	0	150	26	15	21	0	0	62	24	17	16	0	0	57	424
1:30 PM	25	112	30	0	0	167	16	104	23	0	0	143	19	21	12	0	0	52	23	14	28	0	0	65	427
1:45 PM	20	101	22	0	0	143	31	114	28	0	0	173	38	18	29	0	0	85	25	20	25	0	0	70	471
Hourly Total	82	420	133	0	2	635	76	422	85	0	0	583	125	73	75	0	0	273	97	67	87	0	0	251	1742
*** BREAK ***	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
3:00 PM	14	117	33	0	0	164	15	139	42	0	0	196	27	13	18	0	0	58	30	15	27	0	0	72	490
3:15 PM	14	134	29	0	1	177	11	174	41	0	0	226	31	21	18	0	0	70	21	16	30	0	0	67	540
3:30 PM	23	179	29	0	0	231	17	152	27	0	0	196	40	21	21	0	0	82	40	13	35	0	0	88	597
3:45 PM	13	160	28	0	2	201	13	181	27	0	0	221	47	19	24	0	0	90	25	17	22	0	0	64	576
Hourly Total	64	590	119	0	3	773	56	646	137	0	0	839	145	74	81	0	0	300	116	61	114	0	0	291	2203
4:00 PM	13	168	34	0	1	215	20	208	35	0	0	263	36	19	34	0	0	89	36	16	25	0	0	77	644
4:15 PM	14	181	34	0	0	229	20	200	46	0	0	266	44	25	22	0	0	91	31	17	25	0	0	73	659
4:30 PM	13	179	28	0	1	220	18	246	42	0	0	306	42	26	30	0	0	98	58	17	28	0	0	103	727
4:45 PM	10	180	29	0	0	219	15	201	41	0	0	257	57	18	26	0	0	101	43	15	28	0	0	86	663
Hourly Total	50	708	125	0	2	883	73	855	164	0	0	1092	179	88	112	0	0	379	168	65	106	0	0	339	2693

5:00 PM	12	193	25	0	0	230	9	196	41	0	0	246	44	18	20	0	0	82	51	23	32	0	0	106	664
5:15 PM	17	183	32	0	1	232	16	240	38	0	0	294	27	20	20	0	0	67	32	12	24	0	0	68	661
5:30 PM	14	196	28	0	1	238	13	192	34	0	0	239	40	22	18	0	0	80	35	10	13	0	0	58	615
5:45 PM	12	157	23	0	0	192	21	179	23	0	0	223	21	6	17	0	0	44	18	7	14	0	0	39	498
Hourly Total	55	729	108	0	2	892	59	807	136	0	0	1002	132	66	75	0	0	273	136	52	83	0	0	271	2438
Grand Total	551	4751	977	0	10	6279	565	4596	972	0	0	6133	982	541	644	0	0	2167	1129	591	744	0	0	2464	17043
Approach %	8.8	75.7	15.6	0.0	-	-	9.2	74.9	15.8	0.0	-	-	45.3	25.0	29.7	0.0	-	-	45.8	24.0	30.2	0.0	-	-	-
Total %	3.2	27.9	5.7	0.0	-	36.8	3.3	27.0	5.7	0.0	-	36.0	5.8	3.2	3.8	0.0	-	12.7	6.6	3.5	4.4	0.0	-	14.5	-
Lights	519	4260	943	0	-	5722	540	4137	914	0	-	5591	955	518	612	0	-	2085	1068	571	723	0	-	2362	15760
% Lights	94.2	89.7	96.5	-	-	91.1	95.6	90.0	94.0	-	-	91.2	97.3	95.7	95.0	-	-	96.2	94.6	96.6	97.2	-	-	95.9	92.5
Mediums	18	173	30	0	-	221	19	176	31	0	-	226	22	17	19	0	-	58	32	13	10	0	-	55	560
% Mediums	3.3	3.6	3.1	-	-	3.5	3.4	3.8	3.2	-	-	3.7	2.2	3.1	3.0	-	-	2.7	2.8	2.2	1.3	-	-	2.2	3.3
Articulated Trucks	14	318	4	0	-	336	6	283	27	0	-	316	5	6	13	0	-	24	29	7	11	0	-	47	723
% Articulated Trucks	2.5	6.7	0.4	-	-	5.4	1.1	6.2	2.8	-	-	5.2	0.5	1.1	2.0	-	-	1.1	2.6	1.2	1.5	-	-	1.9	4.2
Pedestrians	-	-	-	-	10	-	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-
% Pedestrians	-	-	-	-	100.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Paradigm Transportation Solutions Limited
22 King Street South, Suite 300

Waterloo, Ontario, Canada N2J 1N8
519-896-3163 cbowness@ptsl.com

Count Name: Highway 7/8 & Hamilton Road
Site Code:
Start Date: 02/08/2018



Turning Movement Data Plot

Paradigm Transportation Solutions Limited
22 King Street South, Suite 300

Waterloo, Ontario, Canada N2J 1N8
519-896-3163 cbowness@ptsl.com

Count Name: Highway 7/8 & Hamilton Road
Site Code:
Start Date: 02/08/2018

Turning Movement Peak Hour Data (7:30 AM)

Start Time	Highway 7/8 Eastbound						Highway 7/8 Westbound						Bleams Road Northbound						Hamilton Road Southbound						
	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	Int. Total
7:30 AM	24	244	26	0	0	294	14	151	30	0	0	195	13	9	21	0	0	43	58	28	16	0	0	102	634
7:45 AM	30	181	31	0	0	242	23	108	54	0	0	185	28	15	17	0	0	60	64	27	21	0	0	112	599
8:00 AM	19	185	29	0	0	233	28	146	32	0	0	206	22	9	18	0	0	49	56	24	19	0	0	99	587
8:15 AM	14	165	32	0	0	211	26	109	41	0	0	176	17	10	19	0	0	46	56	30	27	0	0	113	546
Total	87	775	118	0	0	980	91	514	157	0	0	762	80	43	75	0	0	198	234	109	83	0	0	426	2366
Approach %	8.9	79.1	12.0	0.0	-	-	11.9	67.5	20.6	0.0	-	-	40.4	21.7	37.9	0.0	-	-	54.9	25.6	19.5	0.0	-	-	-
Total %	3.7	32.8	5.0	0.0	-	41.4	3.8	21.7	6.6	0.0	-	32.2	3.4	1.8	3.2	0.0	-	8.4	9.9	4.6	3.5	0.0	-	18.0	-
PHF	0.725	0.794	0.922	0.000	-	0.833	0.813	0.851	0.727	0.000	-	0.925	0.714	0.717	0.893	0.000	-	0.825	0.914	0.908	0.769	0.000	-	0.942	0.933
Lights	84	734	116	0	-	934	88	449	152	0	-	689	76	43	72	0	-	191	226	105	81	0	-	412	2226
% Lights	96.6	94.7	98.3	-	-	95.3	96.7	87.4	96.8	-	-	90.4	95.0	100.0	96.0	-	-	96.5	96.6	96.3	97.6	-	-	96.7	94.1
Mediums	1	12	2	0	-	15	2	29	2	0	-	33	3	0	2	0	-	5	3	3	1	0	-	7	60
% Mediums	1.1	1.5	1.7	-	-	1.5	2.2	5.6	1.3	-	-	4.3	3.8	0.0	2.7	-	-	2.5	1.3	2.8	1.2	-	-	1.6	2.5
Articulated Trucks	2	29	0	0	-	31	1	36	3	0	-	40	1	0	1	0	-	2	5	1	1	0	-	7	80
% Articulated Trucks	2.3	3.7	0.0	-	-	3.2	1.1	7.0	1.9	-	-	5.2	1.3	0.0	1.3	-	-	1.0	2.1	0.9	1.2	-	-	1.6	3.4
Pedestrians	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-
% Pedestrians	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

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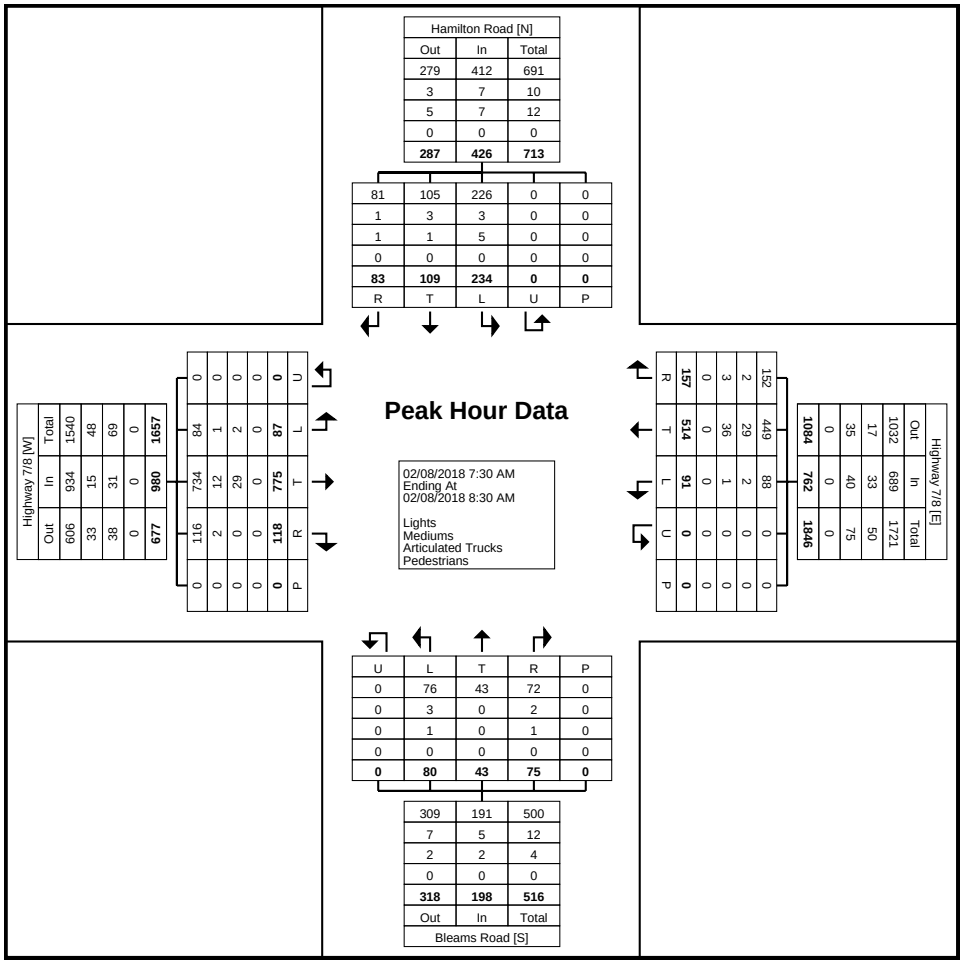
Start Date: 02/08/2018



Turning Movement Peak Hour Data Plot (7:30 AM)

Paradigm Transportation Solutions Limited
22 King Street South, Suite 300

Waterloo, Ontario, Canada N2J 1N8
519-896-3163 cbowness@ptsl.com

Count Name: Highway 7/8 & Hamilton Road
Site Code:
Start Date: 02/08/2018

Turning Movement Peak Hour Data (12:00 PM)

Start Time	Highway 7/8 Eastbound						Highway 7/8 Westbound						Bleams Road Northbound						Hamilton Road Southbound						
	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	Int. Total
12:00 PM	15	86	35	0	0	136	29	126	17	0	0	172	31	26	17	0	0	74	30	39	25	0	0	94	476
12:15 PM	13	112	33	0	0	158	23	113	24	0	0	160	43	23	21	0	0	87	22	26	20	0	0	68	473
12:30 PM	16	120	33	0	0	169	19	123	22	0	0	164	39	25	26	0	0	90	25	23	26	0	0	74	497
12:45 PM	21	106	54	0	0	181	17	90	17	0	0	124	35	22	22	0	0	79	22	23	16	0	0	61	445
Total	65	424	155	0	0	644	88	452	80	0	0	620	148	96	86	0	0	330	99	111	87	0	0	297	1891
Approach %	10.1	65.8	24.1	0.0	-	-	14.2	72.9	12.9	0.0	-	-	44.8	29.1	26.1	0.0	-	-	33.3	37.4	29.3	0.0	-	-	-
Total %	3.4	22.4	8.2	0.0	-	34.1	4.7	23.9	4.2	0.0	-	32.8	7.8	5.1	4.5	0.0	-	17.5	5.2	5.9	4.6	0.0	-	15.7	-
PHF	0.774	0.883	0.718	0.000	-	0.890	0.759	0.897	0.833	0.000	-	0.901	0.860	0.923	0.827	0.000	-	0.917	0.825	0.712	0.837	0.000	-	0.790	0.951
Lights	61	355	150	0	-	566	81	369	73	0	-	523	144	94	78	0	-	316	90	106	85	0	-	281	1686
% Lights	93.8	83.7	96.8	-	-	87.9	92.0	81.6	91.3	-	-	84.4	97.3	97.9	90.7	-	-	95.8	90.9	95.5	97.7	-	-	94.6	89.2
Mediums	1	32	4	0	-	37	6	33	1	0	-	40	3	1	7	0	-	11	3	3	1	0	-	7	95
% Mediums	1.5	7.5	2.6	-	-	5.7	6.8	7.3	1.3	-	-	6.5	2.0	1.0	8.1	-	-	3.3	3.0	2.7	1.1	-	-	2.4	5.0
Articulated Trucks	3	37	1	0	-	41	1	50	6	0	-	57	1	1	1	0	-	3	6	2	1	0	-	9	110
% Articulated Trucks	4.6	8.7	0.6	-	-	6.4	1.1	11.1	7.5	-	-	9.2	0.7	1.0	1.2	-	-	0.9	6.1	1.8	1.1	-	-	3.0	5.8
Pedestrians	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-
% Pedestrians	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

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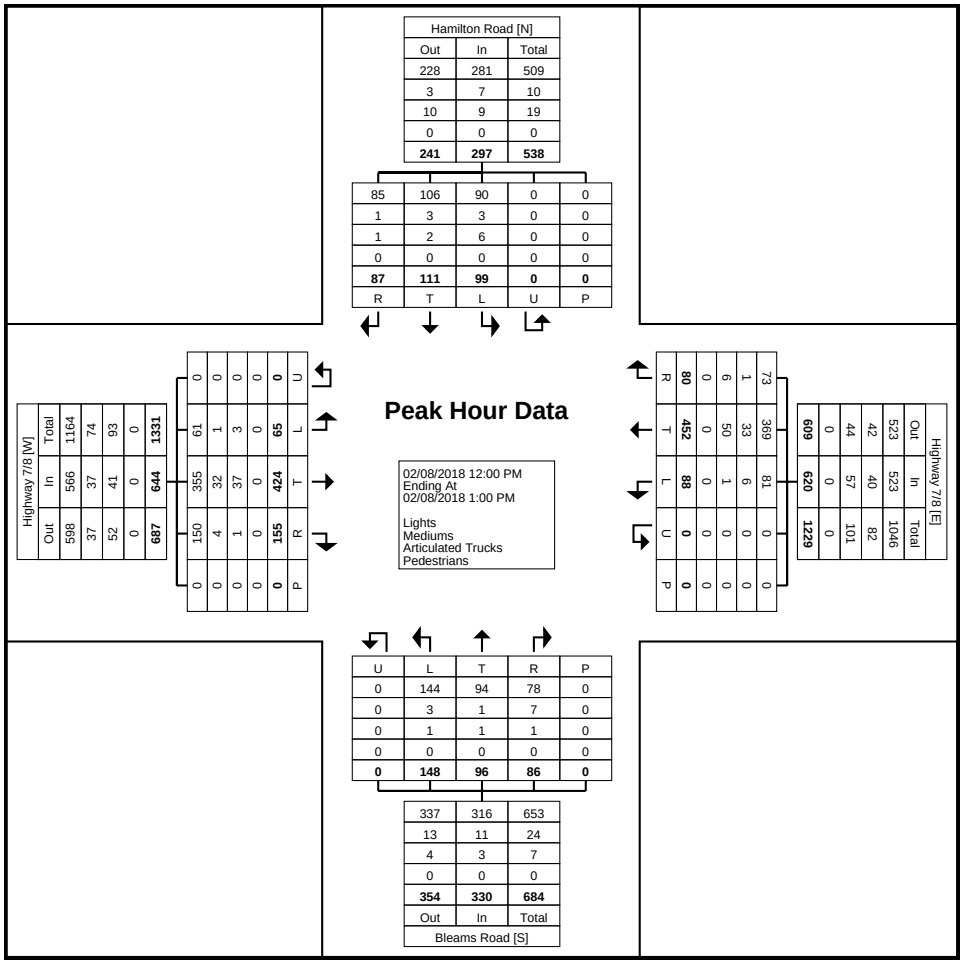
Start Date: 02/08/2018



Turning Movement Peak Hour Data Plot (12:00 PM)

Paradigm Transportation Solutions Limited
22 King Street South, Suite 300

Waterloo, Ontario, Canada N2J 1N8
519-896-3163 cbowness@ptsl.com

Count Name: Highway 7/8 & Hamilton Road
Site Code:
Start Date: 02/08/2018

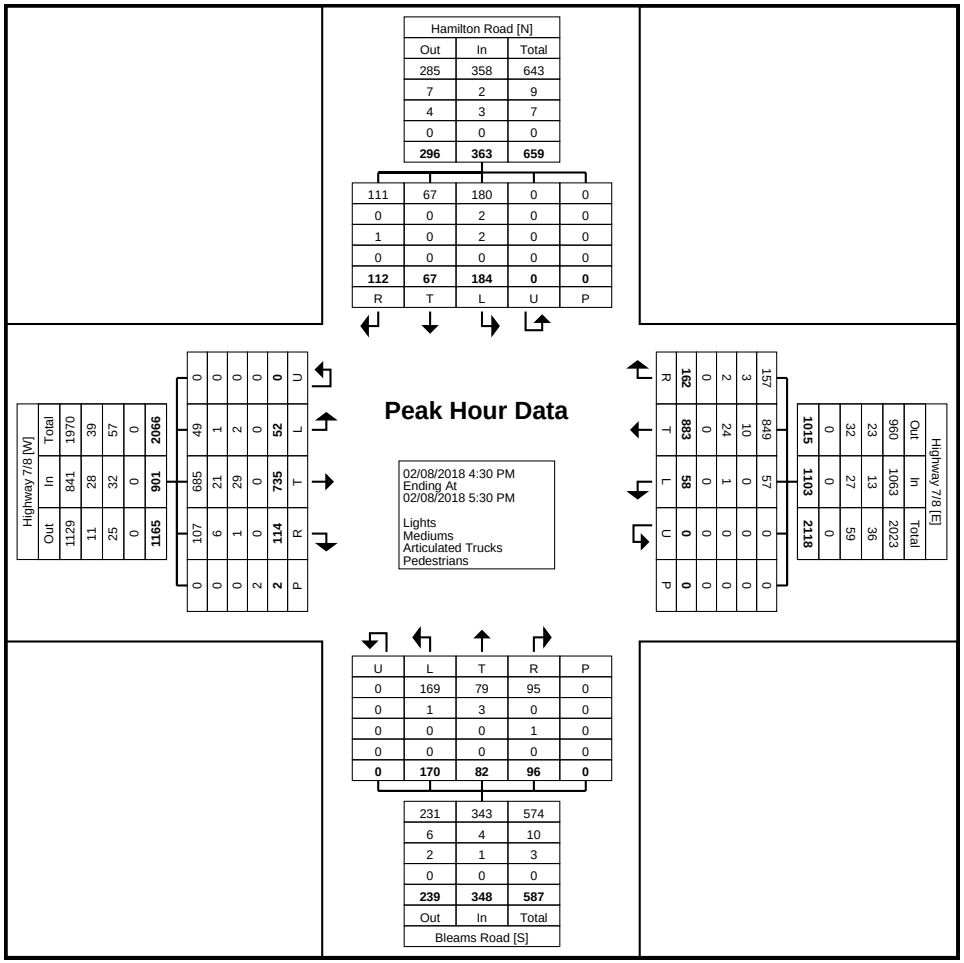
Turning Movement Peak Hour Data (4:30 PM)

Start Time	Highway 7/8 Eastbound						Highway 7/8 Westbound						Bleams Road Northbound						Hamilton Road Southbound						
	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	Int. Total
4:30 PM	13	179	28	0	1	220	18	246	42	0	0	306	42	26	30	0	0	98	58	17	28	0	0	103	727
4:45 PM	10	180	29	0	0	219	15	201	41	0	0	257	57	18	26	0	0	101	43	15	28	0	0	86	663
5:00 PM	12	193	25	0	0	230	9	196	41	0	0	246	44	18	20	0	0	82	51	23	32	0	0	106	664
5:15 PM	17	183	32	0	1	232	16	240	38	0	0	294	27	20	20	0	0	67	32	12	24	0	0	68	661
Total	52	735	114	0	2	901	58	883	162	0	0	1103	170	82	96	0	0	348	184	67	112	0	0	363	2715
Approach %	5.8	81.6	12.7	0.0	-	-	5.3	80.1	14.7	0.0	-	-	48.9	23.6	27.6	0.0	-	-	50.7	18.5	30.9	0.0	-	-	-
Total %	1.9	27.1	4.2	0.0	-	33.2	2.1	32.5	6.0	0.0	-	40.6	6.3	3.0	3.5	0.0	-	12.8	6.8	2.5	4.1	0.0	-	13.4	-
PHF	0.765	0.952	0.891	0.000	-	0.971	0.806	0.897	0.964	0.000	-	0.901	0.746	0.788	0.800	0.000	-	0.861	0.793	0.728	0.875	0.000	-	0.856	0.934
Lights	49	685	107	0	-	841	57	849	157	0	-	1063	169	79	95	0	-	343	180	67	111	0	-	358	2605
% Lights	94.2	93.2	93.9	-	-	93.3	98.3	96.1	96.9	-	-	96.4	99.4	96.3	99.0	-	-	98.6	97.8	100.0	99.1	-	-	98.6	95.9
Mediums	1	21	6	0	-	28	0	10	3	0	-	13	1	3	0	0	-	4	2	0	0	0	-	2	47
% Mediums	1.9	2.9	5.3	-	-	3.1	0.0	1.1	1.9	-	-	1.2	0.6	3.7	0.0	-	-	1.1	1.1	0.0	0.0	-	-	0.6	1.7
Articulated Trucks	2	29	1	0	-	32	1	24	2	0	-	27	0	0	1	0	-	1	2	0	1	0	-	3	63
% Articulated Trucks	3.8	3.9	0.9	-	-	3.6	1.7	2.7	1.2	-	-	2.4	0.0	0.0	1.0	-	-	0.3	1.1	0.0	0.9	-	-	0.8	2.3
Pedestrians	-	-	-	-	2	-	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-
% Pedestrians	-	-	-	-	100.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Paradigm Transportation Solutions Limited
22 King Street South, Suite 300

Waterloo, Ontario, Canada N2J 1N8
519-896-3163 cbowness@ptsl.com

Count Name: Highway 7/8 & Hamilton Road
Site Code:
Start Date: 02/08/2018



Turning Movement Peak Hour Data Plot (4:30 PM)

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22 King Street South, Suite 300

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519-896-3163 cbowness@ptsl.com

Count Name: Highway 7/8 & Nafziger Road
Site Code:
Start Date: 02/08/2018

Turning Movement Data

Start Time	Highway 7/8 Eastbound						Highway 7/8 Westbound						Nafziger Road Northbound						Nafziger Road Southbound						Int. Total
	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	
7:00 AM	18	201	0	0	0	219	0	115	13	0	0	128	0	3	0	0	0	3	48	2	21	0	0	71	421
7:15 AM	14	205	0	0	0	219	1	180	22	0	0	203	0	1	0	0	0	1	59	3	15	0	0	77	500
7:30 AM	23	280	0	0	0	303	0	182	26	0	0	208	0	3	0	0	0	3	67	2	10	0	0	79	593
7:45 AM	37	237	2	0	0	276	2	162	39	0	0	203	0	4	1	0	0	5	62	6	16	0	0	84	568
Hourly Total	92	923	2	0	0	1017	3	639	100	0	0	742	0	11	1	0	0	12	236	13	62	0	0	311	2082
8:00 AM	25	232	0	0	0	257	0	176	31	0	0	207	0	3	1	0	0	4	73	6	19	0	0	98	566
8:15 AM	16	220	1	0	0	237	5	159	29	0	0	193	0	4	2	0	0	6	61	7	21	0	0	89	525
8:30 AM	17	183	0	0	0	200	2	161	22	0	0	185	0	6	0	0	0	6	59	4	14	0	0	77	468
8:45 AM	12	171	0	0	0	183	1	159	19	0	0	179	0	3	2	0	0	5	37	3	11	0	0	51	418
Hourly Total	70	806	1	0	0	877	8	655	101	0	0	764	0	16	5	0	0	21	230	20	65	0	0	315	1977
9:00 AM	18	179	0	0	0	197	0	116	17	0	0	133	0	1	0	0	0	1	27	4	10	0	0	41	372
9:15 AM	20	148	0	0	0	168	1	132	25	0	0	158	0	5	1	0	0	6	24	0	16	0	0	40	372
9:30 AM	18	150	0	0	0	168	0	112	21	0	0	133	1	2	1	0	0	4	29	3	13	0	0	45	350
9:45 AM	8	151	1	0	0	160	1	125	18	0	0	144	0	3	1	0	0	4	34	3	17	0	0	54	362
Hourly Total	64	628	1	0	0	693	2	485	81	0	0	568	1	11	3	0	0	15	114	10	56	0	0	180	1456
*** BREAK ***	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
12:00 PM	15	115	0	0	0	130	0	155	16	0	0	171	0	3	1	0	0	4	14	3	20	0	0	37	342
12:15 PM	20	135	1	0	0	156	0	137	28	0	0	165	0	5	3	0	0	8	24	0	23	0	0	47	376
12:30 PM	17	153	0	0	0	170	0	158	22	0	0	180	0	2	2	0	0	4	20	4	21	0	0	45	399
12:45 PM	18	131	0	0	0	149	0	111	17	0	0	128	0	0	0	0	0	0	14	5	17	0	0	36	313
Hourly Total	70	534	1	0	0	605	0	561	83	0	0	644	0	10	6	0	0	16	72	12	81	0	0	165	1430
1:00 PM	13	136	1	0	0	150	4	99	20	0	0	123	0	3	0	0	0	3	21	3	10	0	0	34	310
1:15 PM	11	137	1	0	0	149	0	129	15	0	0	144	0	3	0	0	0	3	29	3	17	0	0	49	345
1:30 PM	16	117	1	1	0	135	1	135	22	0	0	158	0	6	1	0	0	7	21	2	15	0	0	38	338
1:45 PM	21	132	1	0	0	154	1	139	20	0	0	160	1	5	1	0	0	7	33	3	19	0	0	55	376
Hourly Total	61	522	4	1	0	588	6	502	77	0	0	585	1	17	2	0	0	20	104	11	61	0	0	176	1369
*** BREAK ***	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
3:00 PM	19	151	0	0	0	170	0	167	30	1	0	198	0	2	2	0	0	4	26	3	18	0	0	47	419
3:15 PM	26	145	0	0	0	171	2	210	29	0	0	241	0	2	0	0	0	2	21	2	14	0	0	37	451
3:30 PM	18	207	0	0	0	225	3	194	29	0	0	226	0	3	1	0	0	4	26	4	12	0	0	42	497
3:45 PM	36	190	0	0	0	226	2	207	42	0	0	251	0	3	0	0	0	3	22	7	20	0	0	49	529
Hourly Total	99	693	0	0	0	792	7	778	130	1	0	916	0	10	3	0	0	13	95	16	64	0	0	175	1896
4:00 PM	31	200	0	1	0	232	1	230	62	0	0	293	0	1	0	0	0	1	20	3	17	0	0	40	566
4:15 PM	23	210	0	0	0	233	0	239	58	0	0	297	0	1	1	0	0	2	25	3	30	0	0	58	590
4:30 PM	27	225	1	0	0	253	1	284	53	0	0	338	0	5	1	0	0	6	39	6	30	0	0	75	672
4:45 PM	28	211	0	0	0	239	3	250	57	0	0	310	0	3	1	0	0	4	25	5	19	0	0	49	602
Hourly Total	109	846	1	1	0	957	5	1003	230	0	0	1238	0	10	3	0	0	13	109	17	96	0	0	222	2430

5:00 PM	15	252	0	0	0	267	1	223	65	0	0	289	1	7	1	0	0	9	18	3	20	0	0	41	606
5:15 PM	23	218	0	0	0	241	0	257	64	0	0	321	0	6	2	0	0	8	22	5	24	0	0	51	621
5:30 PM	31	212	1	0	0	244	1	222	49	0	0	272	0	6	1	0	0	7	28	2	20	0	0	50	573
5:45 PM	25	167	0	0	0	192	1	200	63	0	0	264	0	4	0	0	0	4	17	4	14	0	0	35	495
Hourly Total	94	849	1	0	0	944	3	902	241	0	0	1146	1	23	4	0	0	28	85	14	78	0	0	177	2295
Grand Total	659	5801	11	2	0	6473	34	5525	1043	1	0	6603	3	108	27	0	0	138	1045	113	563	0	0	1721	14935
Approach %	10.2	89.6	0.2	0.0	-	-	0.5	83.7	15.8	0.0	-	-	2.2	78.3	19.6	0.0	-	-	60.7	6.6	32.7	0.0	-	-	-
Total %	4.4	38.8	0.1	0.0	-	43.3	0.2	37.0	7.0	0.0	-	44.2	0.0	0.7	0.2	0.0	-	0.9	7.0	0.8	3.8	0.0	-	11.5	-
Lights	623	5275	11	2	-	5911	32	5027	948	1	-	6008	2	99	26	0	-	127	950	99	532	0	-	1581	13627
% Lights	94.5	90.9	100.0	100.0	-	91.3	94.1	91.0	90.9	100.0	-	91.0	66.7	91.7	96.3	-	-	92.0	90.9	87.6	94.5	-	-	91.9	91.2
Mediums	22	178	0	0	-	200	2	195	30	0	-	227	1	8	1	0	-	10	45	11	19	0	-	75	512
% Mediums	3.3	3.1	0.0	0.0	-	3.1	5.9	3.5	2.9	0.0	-	3.4	33.3	7.4	3.7	-	-	7.2	4.3	9.7	3.4	-	-	4.4	3.4
Articulated Trucks	14	348	0	0	-	362	0	303	65	0	-	368	0	1	0	0	-	1	50	3	12	0	-	65	796
% Articulated Trucks	2.1	6.0	0.0	0.0	-	5.6	0.0	5.5	6.2	0.0	-	5.6	0.0	0.9	0.0	-	-	0.7	4.8	2.7	2.1	-	-	3.8	5.3
Pedestrians	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-
% Pedestrians	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Paradigm Transportation Solutions Limited
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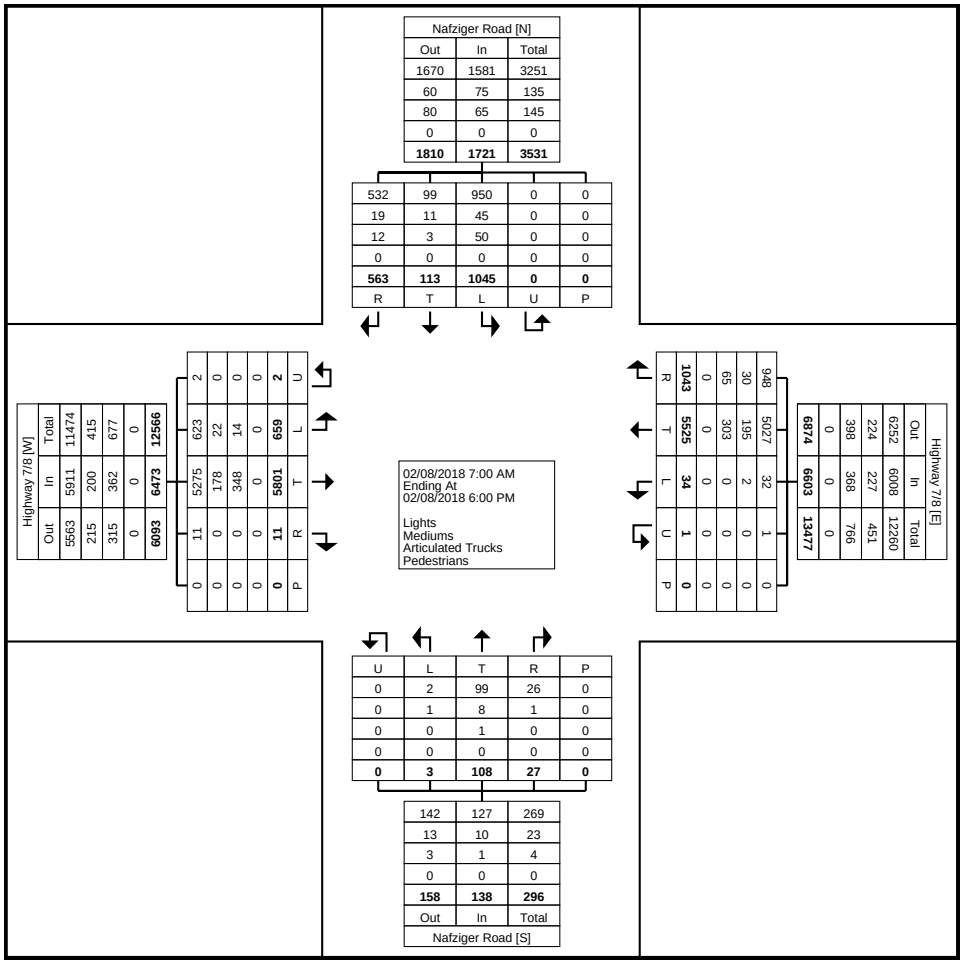
519-896-3163 cbowness@ptsl.com

Count Name: Highway 7/8 & Nafziger Road
Site Code:
Start Date: 02/08/2018



Turning Movement Data Plot

Paradigm Transportation Solutions Limited
22 King Street South, Suite 300

Waterloo, Ontario, Canada N2J 1N8
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Count Name: Highway 7/8 & Nafziger Road
Site Code:
Start Date: 02/08/2018

Turning Movement Peak Hour Data (7:30 AM)

Start Time	Highway 7/8 Eastbound						Highway 7/8 Westbound						Nafziger Road Northbound						Nafziger Road Southbound						
	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	Int. Total
7:30 AM	23	280	0	0	0	303	0	182	26	0	0	208	0	3	0	0	0	3	67	2	10	0	0	79	593
7:45 AM	37	237	2	0	0	276	2	162	39	0	0	203	0	4	1	0	0	5	62	6	16	0	0	84	568
8:00 AM	25	232	0	0	0	257	0	176	31	0	0	207	0	3	1	0	0	4	73	6	19	0	0	98	566
8:15 AM	16	220	1	0	0	237	5	159	29	0	0	193	0	4	2	0	0	6	61	7	21	0	0	89	525
Total	101	969	3	0	0	1073	7	679	125	0	0	811	0	14	4	0	0	18	263	21	66	0	0	350	2252
Approach %	9.4	90.3	0.3	0.0	-	-	0.9	83.7	15.4	0.0	-	-	0.0	77.8	22.2	0.0	-	-	75.1	6.0	18.9	0.0	-	-	-
Total %	4.5	43.0	0.1	0.0	-	47.6	0.3	30.2	5.6	0.0	-	36.0	0.0	0.6	0.2	0.0	-	0.8	11.7	0.9	2.9	0.0	-	15.5	-
PHF	0.682	0.865	0.375	0.000	-	0.885	0.350	0.933	0.801	0.000	-	0.975	0.000	0.875	0.500	0.000	-	0.750	0.901	0.750	0.786	0.000	-	0.893	0.949
Lights	93	924	3	0	-	1020	7	605	111	0	-	723	0	11	4	0	-	15	243	17	61	0	-	321	2079
% Lights	92.1	95.4	100.0	-	-	95.1	100.0	89.1	88.8	-	-	89.1	-	78.6	100.0	-	-	83.3	92.4	81.0	92.4	-	-	91.7	92.3
Mediums	5	13	0	0	-	18	0	31	6	0	-	37	0	3	0	0	-	3	11	4	4	0	-	19	77
% Mediums	5.0	1.3	0.0	-	-	1.7	0.0	4.6	4.8	-	-	4.6	-	21.4	0.0	-	-	16.7	4.2	19.0	6.1	-	-	5.4	3.4
Articulated Trucks	3	32	0	0	-	35	0	43	8	0	-	51	0	0	0	0	-	0	9	0	1	0	-	10	96
% Articulated Trucks	3.0	3.3	0.0	-	-	3.3	0.0	6.3	6.4	-	-	6.3	-	0.0	0.0	-	-	0.0	3.4	0.0	1.5	-	-	2.9	4.3
Pedestrians	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-
% Pedestrians	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

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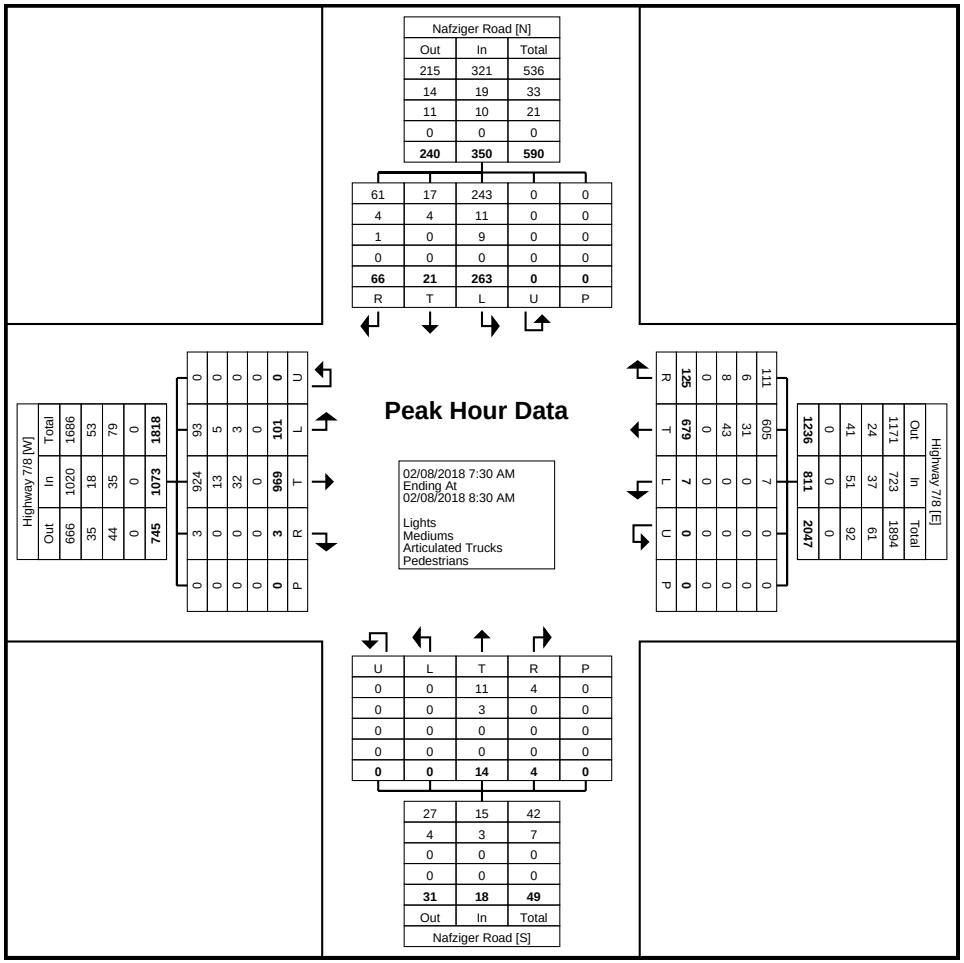

Turning Movement Peak Hour Data Plot (7:30 AM)

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Count Name: Highway 7/8 & Nafziger Road
Site Code:
Start Date: 02/08/2018

Turning Movement Peak Hour Data (12:00 PM)

Start Time	Highway 7/8 Eastbound						Highway 7/8 Westbound						Nafziger Road Northbound						Nafziger Road Southbound						
	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	Int. Total
12:00 PM	15	115	0	0	0	130	0	155	16	0	0	171	0	3	1	0	0	4	14	3	20	0	0	37	342
12:15 PM	20	135	1	0	0	156	0	137	28	0	0	165	0	5	3	0	0	8	24	0	23	0	0	47	376
12:30 PM	17	153	0	0	0	170	0	158	22	0	0	180	0	2	2	0	0	4	20	4	21	0	0	45	399
12:45 PM	18	131	0	0	0	149	0	111	17	0	0	128	0	0	0	0	0	0	14	5	17	0	0	36	313
Total	70	534	1	0	0	605	0	561	83	0	0	644	0	10	6	0	0	16	72	12	81	0	0	165	1430
Approach %	11.6	88.3	0.2	0.0	-	-	0.0	87.1	12.9	0.0	-	-	0.0	62.5	37.5	0.0	-	-	43.6	7.3	49.1	0.0	-	-	-
Total %	4.9	37.3	0.1	0.0	-	42.3	0.0	39.2	5.8	0.0	-	45.0	0.0	0.7	0.4	0.0	-	1.1	5.0	0.8	5.7	0.0	-	11.5	-
PHF	0.875	0.873	0.250	0.000	-	0.890	0.000	0.888	0.741	0.000	-	0.894	0.000	0.500	0.500	0.000	-	0.500	0.750	0.600	0.880	0.000	-	0.878	0.896
Lights	65	459	1	0	-	525	0	465	73	0	-	538	0	9	6	0	-	15	62	12	76	0	-	150	1228
% Lights	92.9	86.0	100.0	-	-	86.8	-	82.9	88.0	-	-	83.5	-	90.0	100.0	-	-	93.8	86.1	100.0	93.8	-	-	90.9	85.9
Mediums	4	33	0	0	-	37	0	38	2	0	-	40	0	0	0	0	-	0	4	0	5	0	-	9	86
% Mediums	5.7	6.2	0.0	-	-	6.1	-	6.8	2.4	-	-	6.2	-	0.0	0.0	-	-	0.0	5.6	0.0	6.2	-	-	5.5	6.0
Articulated Trucks	1	42	0	0	-	43	0	58	8	0	-	66	0	1	0	0	-	1	6	0	0	0	-	6	116
% Articulated Trucks	1.4	7.9	0.0	-	-	7.1	-	10.3	9.6	-	-	10.2	-	10.0	0.0	-	-	6.3	8.3	0.0	0.0	-	-	3.6	8.1
Pedestrians	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-
% Pedestrians	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

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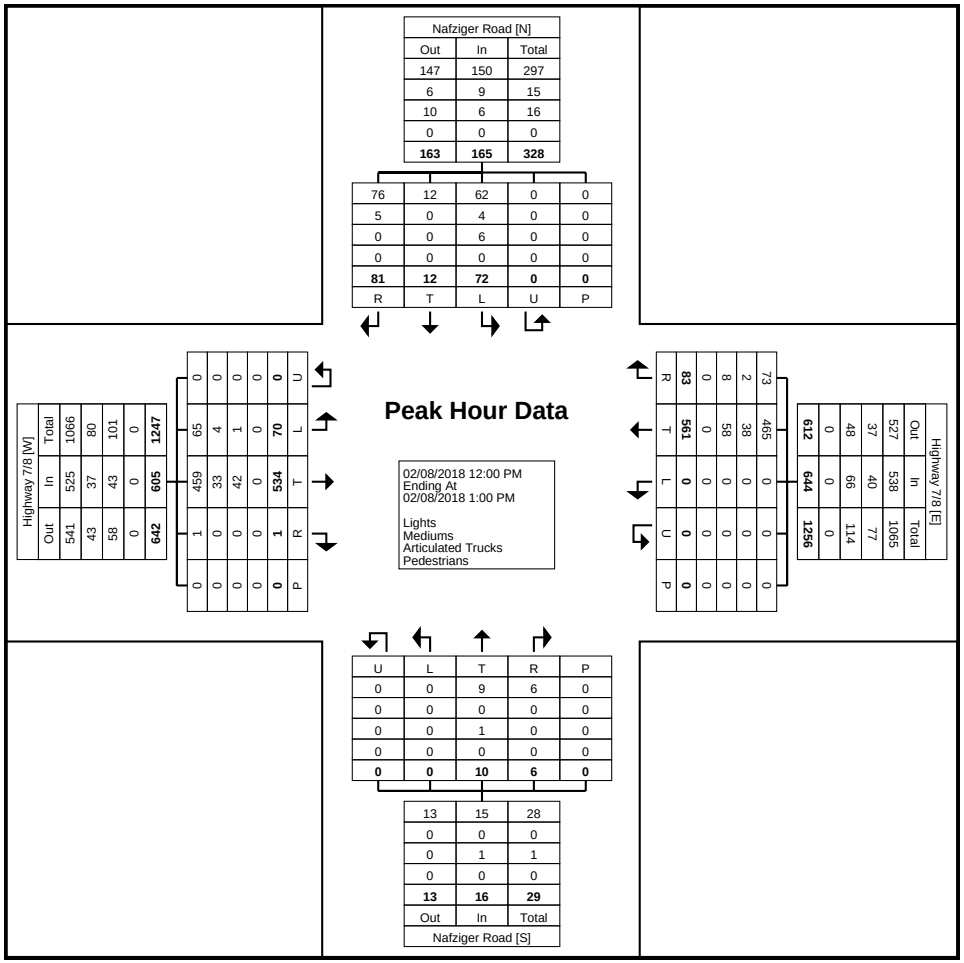
Start Date: 02/08/2018



Turning Movement Peak Hour Data Plot (12:00 PM)

Paradigm Transportation Solutions Limited
22 King Street South, Suite 300

Waterloo, Ontario, Canada N2J 1N8
519-896-3163 cbowness@ptsl.com

Count Name: Highway 7/8 & Nafziger Road
Site Code:
Start Date: 02/08/2018

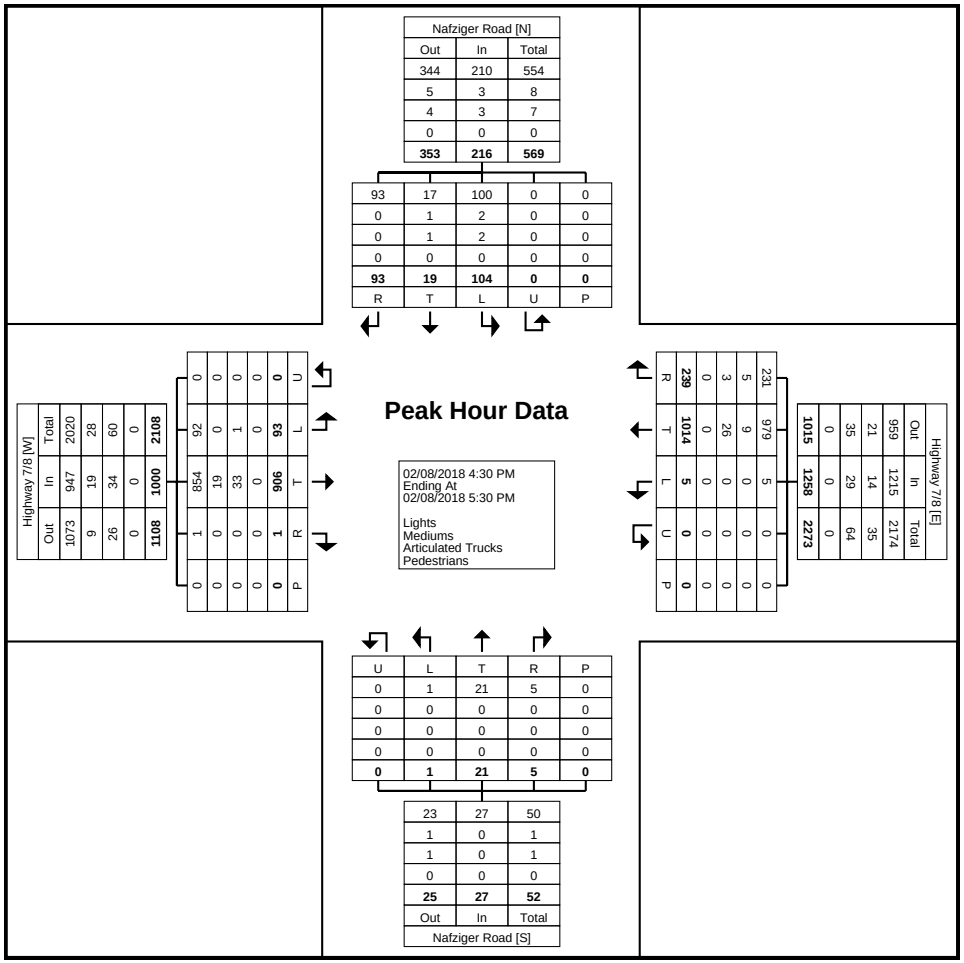
Turning Movement Peak Hour Data (4:30 PM)

Start Time	Highway 7/8 Eastbound						Highway 7/8 Westbound						Nafziger Road Northbound						Nafziger Road Southbound						
	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	Int. Total
4:30 PM	27	225	1	0	0	253	1	284	53	0	0	338	0	5	1	0	0	6	39	6	30	0	0	75	672
4:45 PM	28	211	0	0	0	239	3	250	57	0	0	310	0	3	1	0	0	4	25	5	19	0	0	49	602
5:00 PM	15	252	0	0	0	267	1	223	65	0	0	289	1	7	1	0	0	9	18	3	20	0	0	41	606
5:15 PM	23	218	0	0	0	241	0	257	64	0	0	321	0	6	2	0	0	8	22	5	24	0	0	51	621
Total	93	906	1	0	0	1000	5	1014	239	0	0	1258	1	21	5	0	0	27	104	19	93	0	0	216	2501
Approach %	9.3	90.6	0.1	0.0	-	-	0.4	80.6	19.0	0.0	-	-	3.7	77.8	18.5	0.0	-	-	48.1	8.8	43.1	0.0	-	-	-
Total %	3.7	36.2	0.0	0.0	-	40.0	0.2	40.5	9.6	0.0	-	50.3	0.0	0.8	0.2	0.0	-	1.1	4.2	0.8	3.7	0.0	-	8.6	-
PHF	0.830	0.899	0.250	0.000	-	0.936	0.417	0.893	0.919	0.000	-	0.930	0.250	0.750	0.625	0.000	-	0.750	0.667	0.792	0.775	0.000	-	0.720	0.930
Lights	92	854	1	0	-	947	5	979	231	0	-	1215	1	21	5	0	-	27	100	17	93	0	-	210	2399
% Lights	98.9	94.3	100.0	-	-	94.7	100.0	96.5	96.7	-	-	96.6	100.0	100.0	100.0	-	-	100.0	96.2	89.5	100.0	-	-	97.2	95.9
Mediums	0	19	0	0	-	19	0	9	5	0	-	14	0	0	0	0	-	0	2	1	0	0	-	3	36
% Mediums	0.0	2.1	0.0	-	-	1.9	0.0	0.9	2.1	-	-	1.1	0.0	0.0	0.0	-	-	0.0	1.9	5.3	0.0	-	-	1.4	1.4
Articulated Trucks	1	33	0	0	-	34	0	26	3	0	-	29	0	0	0	0	-	0	2	1	0	0	-	3	66
% Articulated Trucks	1.1	3.6	0.0	-	-	3.4	0.0	2.6	1.3	-	-	2.3	0.0	0.0	0.0	-	-	0.0	1.9	5.3	0.0	-	-	1.4	2.6
Pedestrians	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-
% Pedestrians	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Paradigm Transportation Solutions Limited
22 King Street South, Suite 300

Waterloo, Ontario, Canada N2J 1N8
519-896-3163 cbowness@ptsl.com

Count Name: Highway 7/8 & Nafziger Road
Site Code:
Start Date: 02/08/2018



Turning Movement Peak Hour Data Plot (4:30 PM)

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Count Name: Highway 7/8 & Nafziger Road
Site Code:
Start Date: 02/08/2018

Paradigm Transportation Solutions Limited
22 King Street South, Suite 300

Waterloo, Ontario, Canada N2J 1N8
519-896-3163 cbowness@ptsl.com

Count Name: Nafziger Road & Wilmot Recreation Complex
Site Code:
Start Date: 10/10/2018

Turning Movement Data

Start Time	Driveway Eastbound						Wilmot Recreation Complex Westbound						Nafziger Road Northbound						Nafziger Road Southbound						Int. Total
	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	
7:00 AM	1	0	0	0	0	1	3	0	3	0	0	6	0	25	2	0	0	27	1	63	0	0	0	64	98
7:15 AM	0	1	0	0	0	1	10	0	5	0	0	15	0	35	1	0	0	36	0	64	0	0	0	64	116
7:30 AM	0	0	0	0	0	0	9	1	9	0	0	19	3	57	4	0	0	64	5	98	0	0	0	103	186
7:45 AM	0	0	1	0	0	1	11	0	9	0	0	20	4	69	11	0	0	84	7	84	0	0	0	91	196
Hourly Total	1	1	1	0	0	3	33	1	26	0	0	60	7	186	18	0	0	211	13	309	0	0	0	322	596
8:00 AM	0	2	0	0	0	2	6	0	3	0	0	9	0	44	5	0	0	49	9	81	0	0	0	90	150
8:15 AM	0	0	0	0	0	0	1	0	1	0	0	2	1	30	8	0	0	39	2	84	0	0	0	86	127
8:30 AM	0	0	0	0	0	0	3	0	1	0	0	4	0	26	7	0	0	33	3	60	0	0	0	63	100
8:45 AM	0	0	0	0	0	0	5	0	1	0	0	6	0	39	12	0	0	51	10	44	0	0	0	54	111
Hourly Total	0	2	0	0	0	2	15	0	6	0	0	21	1	139	32	0	0	172	24	269	0	0	0	293	488
9:00 AM	0	0	0	0	0	0	1	0	1	0	0	2	0	32	8	0	0	40	3	42	0	0	0	45	87
9:15 AM	0	0	0	0	0	0	2	0	3	0	0	5	0	38	5	0	0	43	2	41	0	0	0	43	91
9:30 AM	0	0	1	0	0	1	5	0	3	0	0	8	0	35	6	0	0	41	6	64	0	0	0	70	120
9:45 AM	0	0	0	0	0	0	8	0	3	0	0	11	0	30	8	0	0	38	7	37	0	0	0	44	93
Hourly Total	0	0	1	0	0	1	16	0	10	0	0	26	0	135	27	0	0	162	18	184	0	0	0	202	391
10:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
*** BREAK ***	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Hourly Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11:30 AM	1	0	0	0	0	1	9	0	4	0	0	13	1	36	8	0	0	45	3	33	0	0	0	36	95
11:45 AM	0	0	0	0	0	0	5	0	3	0	0	8	1	37	2	0	0	40	3	35	0	1	0	39	87
Hourly Total	1	0	0	0	0	1	14	0	7	0	0	21	2	73	10	0	0	85	6	68	0	1	0	75	182
12:00 PM	0	0	1	0	0	1	7	0	5	0	0	12	0	50	8	0	0	58	5	28	1	0	0	34	105
12:15 PM	0	1	1	0	0	2	7	0	6	0	0	13	1	29	7	0	0	37	3	39	1	0	0	43	95
12:30 PM	0	0	0	0	0	0	11	0	3	0	0	14	0	39	3	0	1	42	5	48	0	0	0	53	109
12:45 PM	0	0	0	0	0	0	8	0	3	0	0	11	0	54	4	0	0	58	5	39	0	0	0	44	113
Hourly Total	0	1	2	0	0	3	33	0	17	0	0	50	1	172	22	0	1	195	18	154	2	0	0	174	422
1:00 PM	1	0	0	0	0	1	1	0	3	0	0	4	0	40	7	0	0	47	0	42	0	0	0	42	94
1:15 PM	0	0	0	0	0	0	4	0	4	0	0	8	0	39	6	0	0	45	5	29	0	0	0	34	87
*** BREAK ***	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Hourly Total	1	0	0	0	0	1	5	0	7	0	0	12	0	79	13	0	0	92	5	71	0	0	0	76	181
3:00 PM	0	1	0	0	0	1	7	0	6	0	0	13	0	58	5	0	0	63	1	35	0	0	0	36	113
3:15 PM	0	0	1	0	0	1	3	0	1	0	0	4	0	56	3	0	0	59	4	40	0	0	0	44	108
3:30 PM	0	0	0	0	0	0	8	0	11	0	0	19	0	61	3	0	0	64	9	57	0	0	0	66	149
3:45 PM	0	0	1	0	0	1	7	0	5	0	0	12	0	58	13	0	0	71	7	39	0	0	0	46	130
Hourly Total	0	1	2	0	0	3	25	0	23	0	0	48	0	233	24	0	0	257	21	171	0	0	0	192	500
4:00 PM	0	0	0	0	0	0	5	0	7	0	0	12	0	58	13	0	0	71	16	47	0	0	0	63	146
4:15 PM	1	0	0	0	0	1	4	0	3	0	0	7	1	77	12	0	0	90	12	67	1	0	0	80	178

4:30 PM	0	0	4	0	0	4	6	0	9	0	0	15	1	71	11	0	0	83	9	58	0	0	0	67	169
4:45 PM	0	0	0	0	0	0	4	0	5	0	0	9	0	98	21	0	0	119	8	63	0	0	0	71	199
Hourly Total	1	0	4	0	0	5	19	0	24	0	0	43	2	304	57	0	0	363	45	235	1	0	0	281	692
5:00 PM	0	0	1	0	0	1	7	0	14	0	0	21	0	91	14	0	0	105	5	55	1	0	0	61	188
5:15 PM	0	0	0	0	0	0	19	0	15	0	0	34	0	78	18	0	0	96	9	48	0	0	0	57	187
5:30 PM	0	1	1	0	0	2	14	0	10	0	0	24	0	89	28	0	0	117	17	46	0	0	0	63	206
5:45 PM	0	0	0	0	0	0	15	0	11	0	0	26	0	89	18	0	0	107	28	36	0	0	0	64	197
Hourly Total	0	1	2	0	0	3	55	0	50	0	0	105	0	347	78	0	0	425	59	185	1	0	0	245	778
6:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Grand Total	4	6	12	0	0	22	215	1	170	0	0	386	13	1668	281	0	1	1962	209	1646	4	1	0	1860	4230
Approach %	18.2	27.3	54.5	0.0	-	-	55.7	0.3	44.0	0.0	-	-	0.7	85.0	14.3	0.0	-	-	11.2	88.5	0.2	0.1	-	-	-
Total %	0.1	0.1	0.3	0.0	-	0.5	5.1	0.0	4.0	0.0	-	9.1	0.3	39.4	6.6	0.0	-	46.4	4.9	38.9	0.1	0.0	-	44.0	-
Lights	4	6	10	0	-	20	213	1	165	0	-	379	13	1551	276	0	-	1840	205	1520	2	1	-	1728	3967
% Lights	100.0	100.0	83.3	-	-	90.9	99.1	100.0	97.1	-	-	98.2	100.0	93.0	98.2	-	-	93.8	98.1	92.3	50.0	100.0	-	92.9	93.8
Mediums	0	0	2	0	-	2	2	0	4	0	-	6	0	75	4	0	-	79	4	75	2	0	-	81	168
% Mediums	0.0	0.0	16.7	-	-	9.1	0.9	0.0	2.4	-	-	1.6	0.0	4.5	1.4	-	-	4.0	1.9	4.6	50.0	0.0	-	4.4	4.0
Articulated Trucks	0	0	0	0	-	0	0	0	1	0	-	1	0	42	1	0	-	43	0	51	0	0	-	51	95
% Articulated Trucks	0.0	0.0	0.0	-	-	0.0	0.0	0.0	0.6	-	-	0.3	0.0	2.5	0.4	-	-	2.2	0.0	3.1	0.0	0.0	-	2.7	2.2
Pedestrians	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	1	-	-	-	-	-	0	-	-
% Pedestrians	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	100.0	-	-	-	-	-	-	-	-

Paradigm Transportation Solutions Limited
22 King Street South, Suite 300

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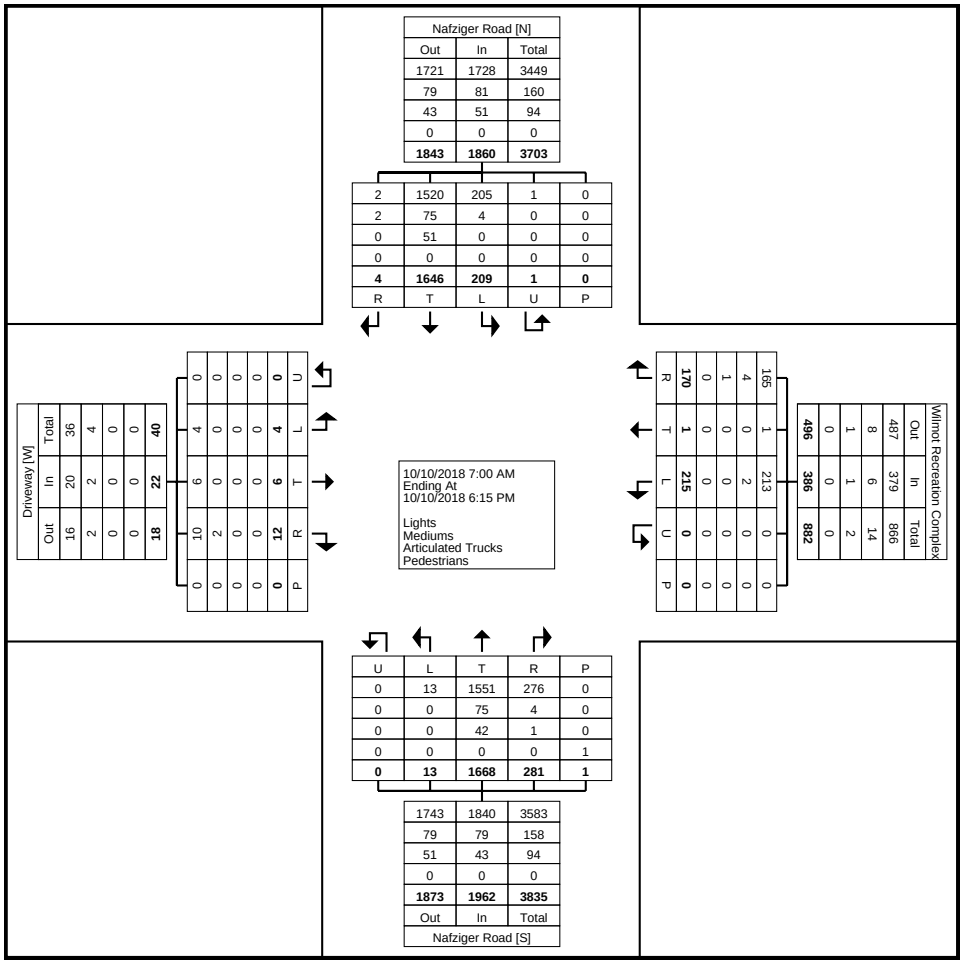
519-896-3163 cbowness@ptsl.com

Count Name: Nafziger Road & Wilmot Recreation Complex
Site Code:
Start Date: 10/10/2018



Turning Movement Data Plot

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22 King Street South, Suite 300

Waterloo, Ontario, Canada N2J 1N8
519-896-3163 cbowness@ptsl.com

Count Name: Nafziger Road & Wilmot Recreation Complex
Site Code:
Start Date: 10/10/2018

Turning Movement Peak Hour Data (7:30 AM)

Start Time	Driveway Eastbound						Wilmot Recreation Complex Westbound						Nafziger Road Northbound						Nafziger Road Southbound						
	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	Int. Total
7:30 AM	0	0	0	0	0	0	9	1	9	0	0	19	3	57	4	0	0	64	5	98	0	0	0	103	186
7:45 AM	0	0	1	0	0	1	11	0	9	0	0	20	4	69	11	0	0	84	7	84	0	0	0	91	196
8:00 AM	0	2	0	0	0	2	6	0	3	0	0	9	0	44	5	0	0	49	9	81	0	0	0	90	150
8:15 AM	0	0	0	0	0	0	1	0	1	0	0	2	1	30	8	0	0	39	2	84	0	0	0	86	127
Total	0	2	1	0	0	3	27	1	22	0	0	50	8	200	28	0	0	236	23	347	0	0	0	370	659
Approach %	0.0	66.7	33.3	0.0	-	-	54.0	2.0	44.0	0.0	-	-	3.4	84.7	11.9	0.0	-	-	6.2	93.8	0.0	0.0	-	-	-
Total %	0.0	0.3	0.2	0.0	-	0.5	4.1	0.2	3.3	0.0	-	7.6	1.2	30.3	4.2	0.0	-	35.8	3.5	52.7	0.0	0.0	-	56.1	-
PHF	0.000	0.250	0.250	0.000	-	0.375	0.614	0.250	0.611	0.000	-	0.625	0.500	0.725	0.636	0.000	-	0.702	0.639	0.885	0.000	0.000	-	0.898	0.841
Lights	0	2	1	0	-	3	27	1	21	0	-	49	8	176	28	0	-	212	23	325	0	0	-	348	612
% Lights	-	100.0	100.0	-	-	100.0	100.0	100.0	95.5	-	-	98.0	100.0	88.0	100.0	-	-	89.8	100.0	93.7	-	-	-	94.1	92.9
Mediums	0	0	0	0	-	0	0	0	1	0	-	1	0	15	0	0	-	15	0	13	0	0	-	13	29
% Mediums	-	0.0	0.0	-	-	0.0	0.0	0.0	4.5	-	-	2.0	0.0	7.5	0.0	-	-	6.4	0.0	3.7	-	-	-	3.5	4.4
Articulated Trucks	0	0	0	0	-	0	0	0	0	0	-	0	0	9	0	0	-	9	0	9	0	0	-	9	18
% Articulated Trucks	-	0.0	0.0	-	-	0.0	0.0	0.0	0.0	-	-	0.0	0.0	4.5	0.0	-	-	3.8	0.0	2.6	-	-	-	2.4	2.7
Pedestrians	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-
% Pedestrians	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

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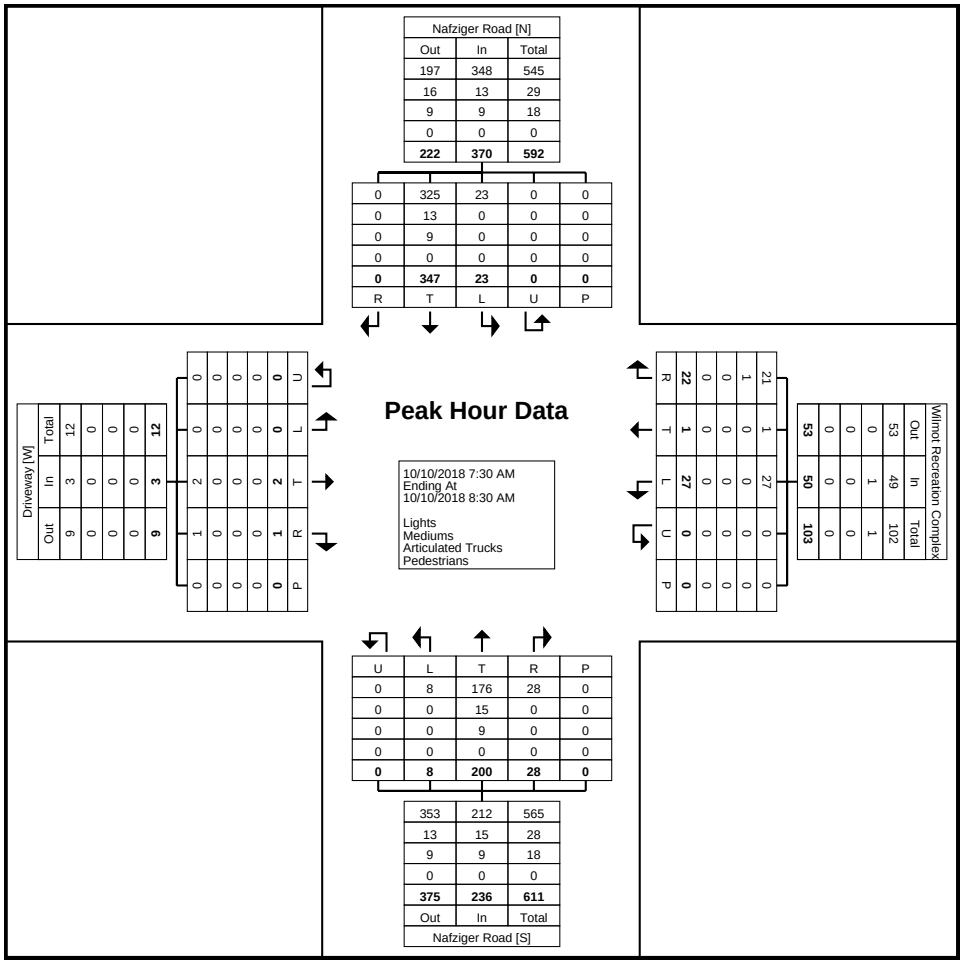

Turning Movement Peak Hour Data Plot (7:30 AM)

Paradigm Transportation Solutions Limited
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Count Name: Nafziger Road & Wilmot Recreation Complex
Site Code:
Start Date: 10/10/2018

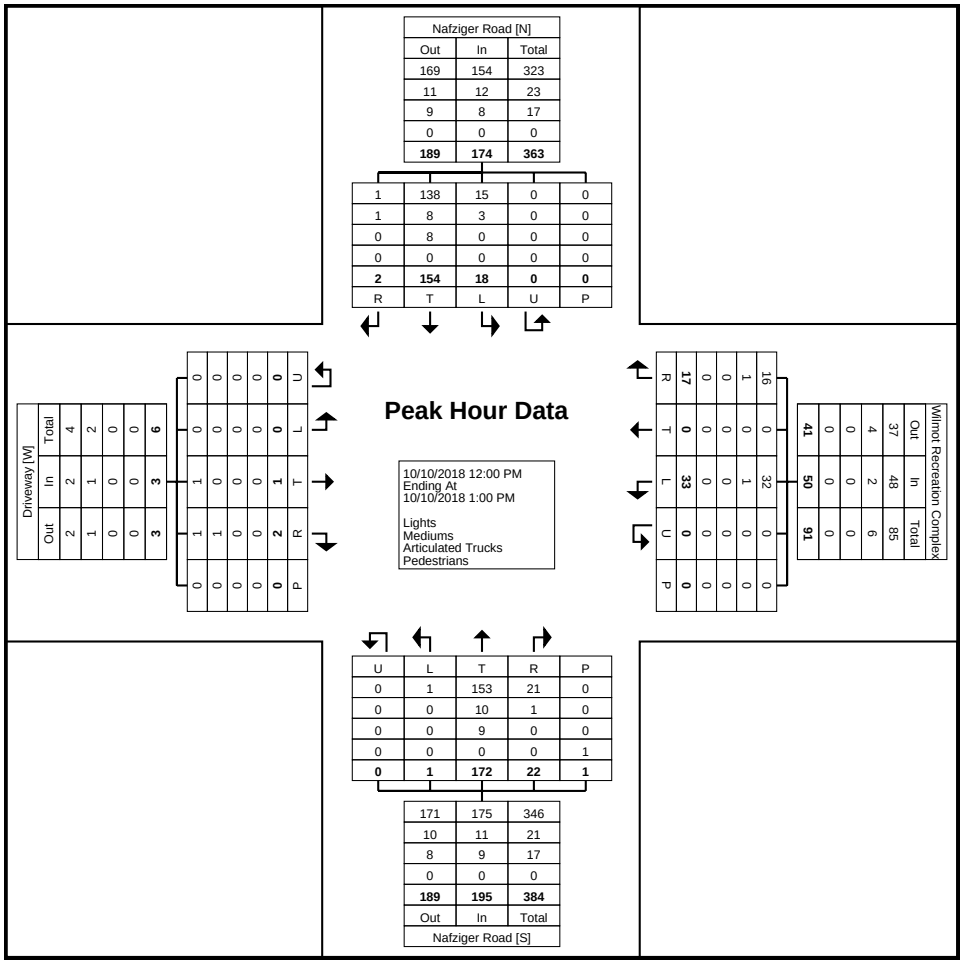
Turning Movement Peak Hour Data (12:00 PM)

Start Time	Driveway Eastbound						Wilmot Recreation Complex Westbound						Nafziger Road Northbound						Nafziger Road Southbound						
	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	Int. Total
12:00 PM	0	0	1	0	0	1	7	0	5	0	0	12	0	50	8	0	0	58	5	28	1	0	0	34	105
12:15 PM	0	1	1	0	0	2	7	0	6	0	0	13	1	29	7	0	0	37	3	39	1	0	0	43	95
12:30 PM	0	0	0	0	0	0	11	0	3	0	0	14	0	39	3	0	1	42	5	48	0	0	0	53	109
12:45 PM	0	0	0	0	0	0	8	0	3	0	0	11	0	54	4	0	0	58	5	39	0	0	0	44	113
Total	0	1	2	0	0	3	33	0	17	0	0	50	1	172	22	0	1	195	18	154	2	0	0	174	422
Approach %	0.0	33.3	66.7	0.0	-	-	66.0	0.0	34.0	0.0	-	-	0.5	88.2	11.3	0.0	-	-	10.3	88.5	1.1	0.0	-	-	-
Total %	0.0	0.2	0.5	0.0	-	0.7	7.8	0.0	4.0	0.0	-	11.8	0.2	40.8	5.2	0.0	-	46.2	4.3	36.5	0.5	0.0	-	41.2	-
PHF	0.000	0.250	0.500	0.000	-	0.375	0.750	0.000	0.708	0.000	-	0.893	0.250	0.796	0.688	0.000	-	0.841	0.900	0.802	0.500	0.000	-	0.821	0.934
Lights	0	1	1	0	-	2	32	0	16	0	-	48	1	153	21	0	-	175	15	138	1	0	-	154	379
% Lights	-	100.0	50.0	-	-	66.7	97.0	-	94.1	-	-	96.0	100.0	89.0	95.5	-	-	89.7	83.3	89.6	50.0	-	-	88.5	89.8
Mediums	0	0	1	0	-	1	1	0	1	0	-	2	0	10	1	0	-	11	3	8	1	0	-	12	26
% Mediums	-	0.0	50.0	-	-	33.3	3.0	-	5.9	-	-	4.0	0.0	5.8	4.5	-	-	5.6	16.7	5.2	50.0	-	-	6.9	6.2
Articulated Trucks	0	0	0	0	-	0	0	0	0	0	-	0	0	9	0	0	-	9	0	8	0	0	-	8	17
% Articulated Trucks	-	0.0	0.0	-	-	0.0	0.0	-	0.0	-	-	0.0	0.0	5.2	0.0	-	-	4.6	0.0	5.2	0.0	-	-	4.6	4.0
Pedestrians	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	1	-	-	-	-	-	0	-	-
% Pedestrians	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	100.0	-	-	-	-	-	-	-	-

Paradigm Transportation Solutions Limited
22 King Street South, Suite 300

Waterloo, Ontario, Canada N2J 1N8
519-896-3163 cbowness@ptsl.com

Count Name: Nafziger Road & Wilmot Recreation Complex
Site Code:
Start Date: 10/10/2018



Turning Movement Peak Hour Data Plot (12:00 PM)

Paradigm Transportation Solutions Limited
22 King Street South, Suite 300

Waterloo, Ontario, Canada N2J 1N8
519-896-3163 cbowness@ptsl.com

Count Name: Nafziger Road & Wilmot Recreation Complex
Site Code:
Start Date: 10/10/2018

Turning Movement Peak Hour Data (4:45 PM)

Start Time	Driveway Eastbound						Wilmot Recreation Complex Westbound						Nafziger Road Northbound						Nafziger Road Southbound						
	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	Int. Total
4:45 PM	0	0	0	0	0	0	4	0	5	0	0	9	0	98	21	0	0	119	8	63	0	0	0	71	199
5:00 PM	0	0	1	0	0	1	7	0	14	0	0	21	0	91	14	0	0	105	5	55	1	0	0	61	188
5:15 PM	0	0	0	0	0	0	19	0	15	0	0	34	0	78	18	0	0	96	9	48	0	0	0	57	187
5:30 PM	0	1	1	0	0	2	14	0	10	0	0	24	0	89	28	0	0	117	17	46	0	0	0	63	206
Total	0	1	2	0	0	3	44	0	44	0	0	88	0	356	81	0	0	437	39	212	1	0	0	252	780
Approach %	0.0	33.3	66.7	0.0	-	-	50.0	0.0	50.0	0.0	-	-	0.0	81.5	18.5	0.0	-	-	15.5	84.1	0.4	0.0	-	-	-
Total %	0.0	0.1	0.3	0.0	-	0.4	5.6	0.0	5.6	0.0	-	11.3	0.0	45.6	10.4	0.0	-	56.0	5.0	27.2	0.1	0.0	-	32.3	-
PHF	0.000	0.250	0.500	0.000	-	0.375	0.579	0.000	0.733	0.000	-	0.647	0.000	0.908	0.723	0.000	-	0.918	0.574	0.841	0.250	0.000	-	0.887	0.947
Lights	0	1	2	0	-	3	44	0	43	0	-	87	0	344	81	0	-	425	39	201	0	0	-	240	755
% Lights	-	100.0	100.0	-	-	100.0	100.0	-	97.7	-	-	98.9	-	96.6	100.0	-	-	97.3	100.0	94.8	0.0	-	-	95.2	96.8
Mediums	0	0	0	0	-	0	0	0	0	0	-	0	0	7	0	0	-	7	0	9	1	0	-	10	17
% Mediums	-	0.0	0.0	-	-	0.0	0.0	-	0.0	-	-	0.0	-	2.0	0.0	-	-	1.6	0.0	4.2	100.0	-	-	4.0	2.2
Articulated Trucks	0	0	0	0	-	0	0	0	1	0	-	1	0	5	0	0	-	5	0	2	0	0	-	2	8
% Articulated Trucks	-	0.0	0.0	-	-	0.0	0.0	-	2.3	-	-	1.1	-	1.4	0.0	-	-	1.1	0.0	0.9	0.0	-	-	0.8	1.0
Pedestrians	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-
% Pedestrians	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

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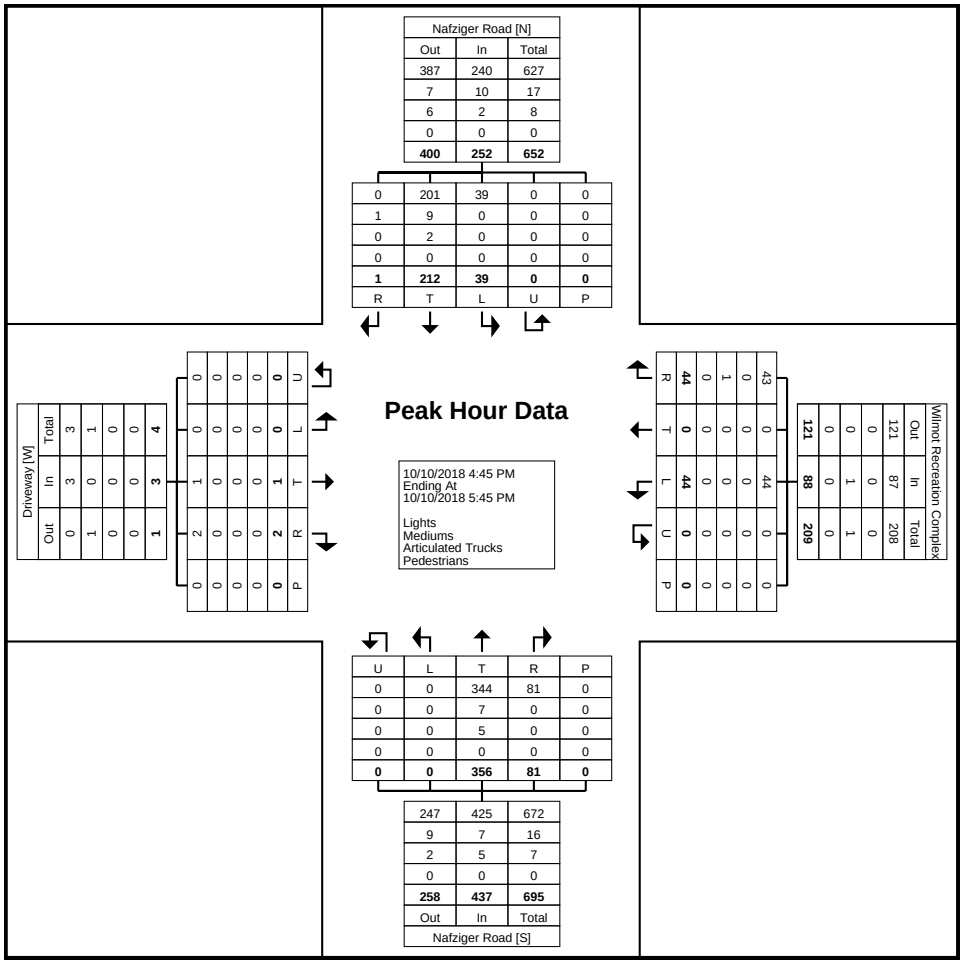
Start Date: 10/10/2018



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

Paradigm Transportation Solutions Limited
22 King Street South, Suite 300

Waterloo, Ontario, Canada N2J 1N8
519-896-3163 cbowness@ptsl.com

Count Name: Nafziger Road & Wilmot Recreation Complex
Site Code:
Start Date: 10/10/2018

ACTUATED INTERVAL TIMING AND FAZE FUNCTIONS

		PHASE 1	2	3	4	5	6	7	8
0	WALK	-	16	-	16	-	16	-	16
1	DON'T WALK	-	11	-	11	-	11	-	11
2	MIN INITIAL	7	20		10	7	20		10
3	TYPE 3 LIMIT	-		-		-		-	
4	ADD PER VEH	-		-		-		-	
5	VEH EXT	3.0	3.0		3.0	3.0	3.0		3.0
6	MAX GAP	3.0	3.0		3.0	3.0	3.0		3.0
7	MIN GAP	3.0	3.0		3.0	3.0	3.0		3.0
8	MAX LIMIT	20	50		35	20	50		35
9	MAXIMUM 2	-		-		-		-	
A	ADV /DLY WALK	-		-		-		-	
B	SEQUENCE TO	-		-		-		-	
C	COND SRV MIN	-		-		-		-	
D	REDUCE EVERY	-		-		-		-	
E	YELLOW	3.0	5.9		5.9	3.0	5.9		5.9
F	RED CLEAR		1.9		1.7		1.9		1.7

PHASE BANK # 1 < C + O + F = 1 >

		9	A	B	C	D		E
0							RR1 DLY	
1	PHASE 1	-					RR1 CLR	
2	PHASE 2	-					EVA DLY	
3	PHASE 3	-					EVA CLR	5
4	PHASE 4	-					EVB DLY	
5	PHASE 5	-					EVB CLR	
6	PHASE 6	-					EVC DLY	
7	PHASE 7	-					EVC CLR	5
8	PHASE 8	-					EVD DLY	
							EVD CLR	
		MAX INT	ALT WALK	ALT FLH D/W	ALT INT	ALT EXT	RR2 DLY	
							RR2 CLR	
							EV CLR	
							EV DLY	
							RR CLR	
							RR DLY	

ALL RED START
(F/1 + C +O) = **5.0**
RED REVERT
(F/1 + O + F) = **5.0**

		COLUMN F PHASES 1	2	3	4	5	6	7	8
0	PERMIT	X	X		X	X	X		X
1	RED LOCK								
2	YELLOW LOCK								
3	VEH MIN CALL								
4	PED RECALL		X				X		
5	PEDESTRIANS			View Only					
6	YIELD AT FLSH D/W								
7	RED REST								
8	DOUBLE ENTRY		X		X		X		X
9	VEH MAX CALL		X				X		
A	SOFT RECALL								
B	MAXIMUM 2								
C	COND SERVICE								
D	MAN CONT CALL								
E	YELLOW START		X				X		
F	FIRST PHASES				X				X

< C + O + F = 1 >

BI Tran Systems, Inc.
510 Bercut Dr., Sacremento, Calif. 95814
916/441-0260
Traffic Signal Program **233** Ontario
Timing Sheet #2

Date: 24-Apr-14

LOCATION
Hwy: Hwy 7/8
At: Waterloo 5 (Nafziger)

		A	B	C
PREEMPT		RR1-2	SP	EMER
MINIMUMS		SPEV1	EV2	VEH
A	WLK (DFLT)	4	4	4
B	FD WALK			11
C	INITAL			5

< C + O + F = 1 >

Column E Phases / Bits

		1	2	3	4	5	6	7	8
0	EXCLUSIVE								
1	RR1 CLEAR								
2	RR2 CLEAR								
3	RR2 LTD SRV								
4	PROT/PERM	X				X			
5	FLH TO PREMT								
6	FLASH ENTRY								
7	DISABL MIN YEL								
8	DISABL OVP YEL								
9	OVP FLH YEL								
A	EM VEH A		X				X		
B	EM VEH B								
C	EM VEH C				X				X
D	EM VEH D								
E	EXTRA 1	X		X		X			
F	IC SELECT		X						

< C + O + E = 125 >

Column F Phases / Bits

		1	2	3	4	5	6	7	8
0									
1	EXT PERMIT 1								
2	EXT PERMIT 2								
3	EXCLU PED								
4									
5	PED 2P OUT		X						
6	PED 6P OUT						X		
7	PED 4P OUT				X				
8	PED 8P OUT								X
9	FLH YELLOW								
A									
B									
C									
D									
E	RESTRICTED								
F	EXTRA 2								

Column F Phases / Bits

		1	2	3	4	5	6	7	8
0	ADV GRN FLH								
1	PHASE FLASH								
2	FLASH WALK								
3	GUAR PASS								
4	SIMUL GAP				X				X
5	SEQ TIMING								
6	ADV WALK								
7	DELAY WALK								
8	EXT RECALL								
9									
A	MAX EXTEN								
B	INH PED RSRV								
C	SEMI ACTUATED		X				X		
D									
E	STRT VEH CALL	X				X			
F	STRT PED CALL		X		X		X		X

SPECIALS < C + O + F = 2 >

MANUAL PLAN	0
< C/0 + A + 1 >	
MANUAL OFFSET	0
< C/0 + B + 1 >	

MANUAL SELECTION

MANUAL PLAN
0 = Automatic (Master)
9 = Control Plan 1 - 9
14 (E) = Free (Isolated)
15 (F) = Software Flash

MANUAL OFFSET
0 = Automatic (Master)
1 = Offset A
2 = Offset B
3 = Offset C

FLASH TO PREEMPT
1 = EVA
2 = EVB
3 = EVC
4 = EVD
5 = RR1
6 = RR2
7 = SE1
8 = SE2

EXTRA 1
1 = TBC TYPE 1
2 = NEMA EXT. COORD.
3 = DAYLIGHT SAVINGS
4 =
5 = EXPANDED STATUS REPORTING
6 = INTERNATIONAL PED
7 = CLEAR OUTPUTS DURING FLASH
8 = SPLIT RING

EXTRA 2
1 = AWR ON DURING PHASE INITAL
2 = LMU INSTALLED

IC SELECT
2 = 2 WAY MODEM
3 = 7 WIRE SLAVE
4 = FLASH / FREE
5 = SIMPLEX MASTER
7 = 7 WIRE MASTER
8 = OFFSET INTURP

Cover Sheet

Location: Hwy 7/8 @ Hamilton-Waterloo 4 (Bleams)

Area/District:

Timing Based On T.M. Dated:

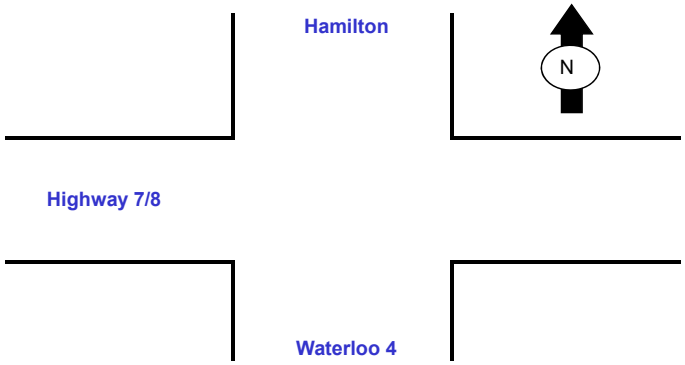
Traffic Signal 127

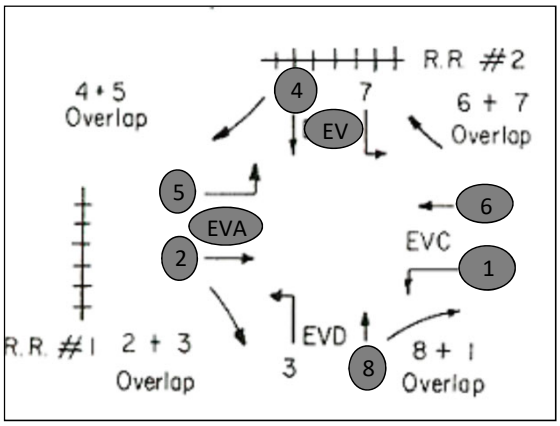
Timing Developed By: H Nichols

Approved By: K Plut

Installed By:

Installation Date: 29-Oct-14





Circle Movements and Operations

COMMUNICATIONS ADDRESSING

COMM ADDRESS
(C/0 + 0 + 0) = 1

ZONE ADDRESS
(C/0 + 0 + 1) = 1

AREA NUMBER
(C/0 + 0 + 2) = 1

AREA ADDRESS 127
(C/0 + 0 + 3) =

CELL # :

UDP PORT:

IP ADDRESS:

AMPIFIER: ☐

PROGRAM: 233ON1.C

DISABLE ALARM REPORTING

Column F

		1	2	3	4	5	6	7	8
0	OMIT ALARMS					X			

< C + 0 + C = 5 >

1 = STOP TIME
2 = FLASH SENSE
3 = KEYBOARD ENTRY
4 = MANUAL PLAN SELECT
5 = ENABLE POLICE CNTRL (Not Used)
6 = EXTERNAL ALARM (Door Alarm)
7 = DETECTOR FAILURE

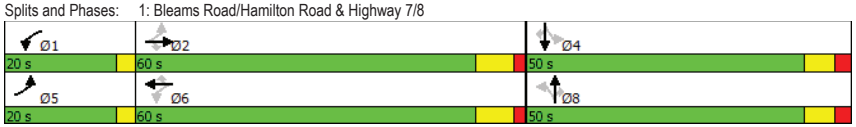
Appendix B Existing Traffic Operations

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	87	775	118	91	514	157	80	43	75	234	109	83
Future Volume (vph)	87	775	118	91	514	157	80	43	75	234	109	83
Ideal Flow (vphpl)	1775	1900	1750	1775	1900	1750	1775	1900	1750	1775	1900	1750
Storage Length (m)	300.0		110.0	100.0		75.0	70.0		85.0	55.0		155.0
Storage Lanes	1		1	1		1	1		1	1		1
Taper Length (m)	40.0			40.0			40.0			40.0		
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor	1.00		0.98	1.00		0.98			0.99	1.00		
Frt			0.850			0.850			0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1637	3438	1458	1637	3195	1444	1606	1900	1430	1637	1827	1458
Flt Permitted	0.455			0.314			0.687			0.729		
Satd. Flow (perm)	783	3438	1424	541	3195	1413	1161	1900	1411	1255	1827	1458
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			118			157			75			83
Link Speed (k/h)		80			80			50			50	
Link Distance (m)		163.4			1424.6			147.6			715.9	
Travel Time (s)		7.4			64.1			10.6			51.5	
Confl. Peds. (#/hr)	1		2	2		1			1	1		
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	3%	5%	2%	3%	13%	3%	5%	0%	4%	3%	4%	2%
Adj. Flow (vph)	87	775	118	91	514	157	80	43	75	234	109	83
Shared Lane Traffic (%)												
Lane Group Flow (vph)	87	775	118	91	514	157	80	43	75	234	109	83
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	Perm	NA	Perm	Perm	NA	Perm
Protected Phases	5	2		1	6			8			4	
Permitted Phases	2		2	6		6	8		8	4		4
Detector Phase	5	2	2	1	6	6	8	8	8	4	4	4
Switch Phase												
Minimum Initial (s)	7.0	20.0	20.0	7.0	20.0	20.0	10.0	10.0	10.0	10.0	10.0	10.0
Minimum Split (s)	20.0	60.0	60.0	20.0	60.0	60.0	50.0	50.0	50.0	50.0	50.0	50.0
Total Split (s)	20.0	60.0	60.0	20.0	60.0	60.0	50.0	50.0	50.0	50.0	50.0	50.0
Total Split (%)	15.4%	46.2%	46.2%	15.4%	46.2%	46.2%	38.5%	38.5%	38.5%	38.5%	38.5%	38.5%
Maximum Green (s)	17.0	52.2	52.2	17.0	52.2	52.2	42.7	42.7	42.7	42.7	42.7	42.7
Yellow Time (s)	3.0	5.9	5.9	3.0	5.9	5.9	4.5	4.5	4.5	4.5	4.5	4.5
All-Red Time (s)	0.0	1.9	1.9	0.0	1.9	1.9	2.8	2.8	2.8	2.8	2.8	2.8
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	3.0	7.8	7.8	3.0	7.8	7.8	7.3	7.3	7.3	7.3	7.3	7.3
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag						
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes						
Vehicle Extension (s)	3.0	1.8	1.8	3.0	1.8	1.8	3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	Max	Max	None	Max	Max	None	None	None	None	None	None
Walk Time (s)		19.0	19.0		19.0	19.0	19.0	19.0	19.0	19.0	19.0	19.0
Flash Dont Walk (s)		14.0	14.0		14.0	14.0	14.0	14.0	14.0	14.0	14.0	14.0
Pedestrian Calls (#/hr)		0	0		0	0	0	0	0	0	0	0
Act Effct Green (s)	64.2	52.9	52.9	64.2	53.0	53.0	24.3	24.3	24.3	24.3	24.3	24.3
Actuated g/C Ratio	0.63	0.52	0.52	0.63	0.52	0.52	0.24	0.24	0.24	0.24	0.24	0.24
v/c Ratio	0.15	0.43	0.15	0.21	0.31	0.19	0.29	0.09	0.19	0.78	0.25	0.20

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Control Delay	8.4	17.8	3.8	9.0	16.3	3.5	34.5	30.3	8.2	54.5	32.6	7.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	8.4	17.8	3.8	9.0	16.3	3.5	34.5	30.3	8.2	54.5	32.6	7.9
LOS	A	B	A	A	B	A	C	C	A	D	C	A
Approach Delay		15.3			12.8			23.6			39.8	
Approach LOS		B			B			C			D	
Queue Length 50th (m)	5.8	51.2	0.0	6.1	31.3	0.0	13.8	7.0	0.0	46.0	18.5	0.0
Queue Length 95th (m)	15.4	87.1	10.6	16.0	55.8	12.1	27.8	16.3	11.1	76.6	34.0	11.5
Internal Link Dist (m)		139.4			1400.6			123.6			691.9	
Turn Bay Length (m)	300.0		110.0	100.0		75.0	70.0		85.0	55.0		155.0
Base Capacity (vph)	660	1798	801	542	1672	814	496	812	646	537	781	671
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.13	0.43	0.15	0.17	0.31	0.19	0.16	0.05	0.12	0.44	0.14	0.12

Intersection Summary			
Area Type:	Other		
Cycle Length: 130			
Actuated Cycle Length: 101.2			
Natural Cycle: 130			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 0.78			
Intersection Signal Delay: 19.6		Intersection LOS: B	
Intersection Capacity Utilization 69.8%		ICU Level of Service C	
Analysis Period (min) 15			

Splits and Phases: 1: Bleams Road/Hamilton Road & Highway 7/8



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	87	775	118	91	514	157	80	43	75	234	109	83
Future Volume (vph)	87	775	118	91	514	157	80	43	75	234	109	83
Ideal Flow (vphpl)	1775	1900	1750	1775	1900	1750	1775	1900	1750	1775	1900	1750
Total Lost time (s)	3.0	7.8	7.8	3.0	7.8	7.8	7.3	7.3	7.3	7.3	7.3	7.3
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frpb, ped/bikes	1.00	1.00	0.98	1.00	1.00	0.98	1.00	1.00	0.99	1.00	1.00	1.00
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1637	3438	1425	1637	3195	1413	1606	1900	1412	1636	1827	1458
Flt Permitted	0.46	1.00	1.00	0.31	1.00	1.00	0.69	1.00	1.00	0.73	1.00	1.00
Satd. Flow (perm)	784	3438	1425	541	3195	1413	1161	1900	1412	1255	1827	1458
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	87	775	118	91	514	157	80	43	75	234	109	83
RTOR Reduction (vph)	0	0	57	0	0	75	0	0	57	0	0	63
Lane Group Flow (vph)	87	775	61	91	514	82	80	43	18	234	109	20
Confl. Peds. (#/hr)	1		2	2		1			1	1		
Heavy Vehicles (%)	3%	5%	2%	3%	13%	3%	5%	0%	4%	3%	4%	2%
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	Perm	NA	Perm	Perm	NA	Perm
Protected Phases	5	2		1	6			8			4	
Permitted Phases	2		2	6		6	8		8	4		4
Actuated Green, G (s)	59.4	53.0	53.0	59.4	53.0	53.0	24.3	24.3	24.3	24.3	24.3	24.3
Effective Green, g (s)	59.4	53.0	53.0	59.4	53.0	53.0	24.3	24.3	24.3	24.3	24.3	24.3
Actuated g/C Ratio	0.58	0.52	0.52	0.58	0.52	0.52	0.24	0.24	0.24	0.24	0.24	0.24
Clearance Time (s)	3.0	7.8	7.8	3.0	7.8	7.8	7.3	7.3	7.3	7.3	7.3	7.3
Vehicle Extension (s)	3.0	1.8	1.8	3.0	1.8	1.8	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	511	1789	741	384	1663	735	277	453	337	299	436	348
v/s Ratio Prot	0.01	c0.23		c0.01	0.16			0.02			0.06	
v/s Ratio Perm	0.09		0.04	0.12		0.06	0.07		0.01	c0.19		0.01
v/c Ratio	0.17	0.43	0.08	0.24	0.31	0.11	0.29	0.09	0.05	0.78	0.25	0.06
Uniform Delay, d1	9.3	15.1	12.2	9.6	13.9	12.4	31.7	30.2	29.9	36.3	31.4	29.9
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	0.2	0.8	0.2	0.3	0.5	0.3	0.6	0.1	0.1	12.5	0.3	0.1
Delay (s)	9.5	15.9	12.4	9.9	14.4	12.7	32.3	30.3	29.9	48.8	31.7	30.0
Level of Service	A	B	B	A	B	B	C	C	C	D	C	C
Approach Delay (s)		14.9			13.5			31.0			40.8	
Approach LOS		B			B			C			D	

Intersection Summary			
HCM 2000 Control Delay	20.5	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.52		
Actuated Cycle Length (s)	101.8	Sum of lost time (s)	18.1
Intersection Capacity Utilization	69.8%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	101	969	3	7	679	125	0	14	4	263	21	66
Future Volume (vph)	101	969	3	7	679	125	0	14	4	263	21	66
Ideal Flow (vphpl)	1775	1775	1775	1775	1900	1750	1775	1650	1650	1775	1650	1650
Storage Length (m)	145.0		0.0	105.0		90.0	80.0		0.0	120.0		0.0
Storage Lanes	1		0	1		1	1		0	1		0
Taper Length (m)	40.0			40.0			40.0			100.0		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor		1.00		1.00							0.99	
Frt						0.850		0.967			0.886	
Flt Protected	0.950			0.950						0.950		
Satd. Flow (prot)	1561	3212	0	1686	3252	1340	1775	1372	0	1561	1308	0
Flt Permitted	0.324			0.267						0.746		
Satd. Flow (perm)	532	3212	0	474	3252	1340	1775	1372	0	1226	1308	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)						125		4			66	
Link Speed (k/h)		80			80			80			80	
Link Distance (m)		1424.6			264.2			138.9			368.7	
Travel Time (s)		64.1			11.9			6.3			16.6	
Confl. Peds. (#/hr)			1	1			1					1
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	8%	5%	0%	0%	11%	11%	0%	21%	0%	8%	19%	8%
Adj. Flow (vph)	101	969	3	7	679	125	0	14	4	263	21	66
Shared Lane Traffic (%)												
Lane Group Flow (vph)	101	972	0	7	679	125	0	18	0	263	87	0
Turn Type	pm+pt	NA		pm+pt	NA	Perm	Perm	NA		Perm	NA	
Protected Phases	5	2		1	6			8			4	
Permitted Phases	2			6		6	8			4		
Detector Phase	5	2		1	6	6	8	8		4	4	
Switch Phase												
Minimum Initial (s)	7.0	20.0		7.0	20.0	20.0	10.0	10.0		10.0	10.0	
Minimum Split (s)	20.0	50.0		20.0	50.0	50.0	35.0	35.0		35.0	35.0	
Total Split (s)	20.0	50.0		20.0	50.0	50.0	35.0	35.0		35.0	35.0	
Total Split (%)	19.0%	47.6%		19.0%	47.6%	47.6%	33.3%	33.3%		33.3%	33.3%	
Maximum Green (s)	17.0	42.2		17.0	42.2	42.2	27.4	27.4		27.4	27.4	
Yellow Time (s)	3.0	5.9		3.0	5.9	5.9	5.9	5.9		5.9	5.9	
All-Red Time (s)	0.0	1.9		0.0	1.9	1.9	1.7	1.7		1.7	1.7	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Total Lost Time (s)	3.0	7.8		3.0	7.8	7.8	7.6	7.6		7.6	7.6	
Lead/Lag	Lead	Lag		Lead	Lag	Lag						
Lead-Lag Optimize?	Yes	Yes		Yes	Yes	Yes						
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	
Recall Mode	None	Max		None	Min	Min	None	None		None	None	
Walk Time (s)		16.0			16.0	16.0	16.0	16.0		16.0	16.0	
Flash Dont Walk (s)		11.0			11.0	11.0	11.0	11.0		11.0	11.0	
Pedestrian Calls (#/hr)		0			0	0	0	0		0	0	
Act Effct Green (s)	49.1	42.5		45.5	35.2	35.2		22.6		22.6	22.6	
Actuated g/C Ratio	0.60	0.52		0.55	0.43	0.43		0.27		0.27	0.27	
v/c Ratio	0.24	0.59		0.02	0.49	0.19		0.05		0.78	0.21	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Control Delay	9.6	17.0		8.1	20.3	4.4		19.6		45.5	10.6	
Queue Delay	0.0	0.0		0.0	0.0	0.0		0.0		0.0	0.0	
Total Delay	9.6	17.0		8.1	20.3	4.4		19.6		45.5	10.6	
LOS	A	B		A	C	A		B		D	B	
Approach Delay		16.3			17.8			19.6			36.8	
Approach LOS		B			B			B			D	
Queue Length 50th (m)	6.9	54.4		0.4	44.6	0.0		1.6		38.4	2.5	
Queue Length 95th (m)	14.8	99.3		2.3	67.3	10.6		7.3		#83.9	14.3	
Internal Link Dist (m)		1400.6			240.2			114.9			344.7	
Turn Bay Length (m)	145.0			105.0		90.0				120.0		
Base Capacity (vph)	530	1657		534	1677	752		462		410	482	
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	0.19	0.59		0.01	0.40	0.17		0.04		0.64	0.18	

Intersection Summary			
Area Type:	Other		
Cycle Length: 105			
Actuated Cycle Length: 82.4			
Natural Cycle: 105			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 0.78			
Intersection Signal Delay: 20.1		Intersection LOS: C	
Intersection Capacity Utilization 73.0%		ICU Level of Service D	
Analysis Period (min) 15			
# 95th percentile volume exceeds capacity, queue may be longer.			
Queue shown is maximum after two cycles.			

Splits and Phases: 2: Nafziger Road & Highway 7/8

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	101	969	3	7	679	125	0	14	4	263	21	66
Future Volume (vph)	101	969	3	7	679	125	0	14	4	263	21	66
Ideal Flow (vphpl)	1775	1775	1775	1775	1900	1750	1775	1650	1650	1775	1650	1650
Total Lost time (s)	3.0	7.8		3.0	7.8	7.8		7.6		7.6	7.6	
Lane Util. Factor	1.00	0.95		1.00	0.95	1.00		1.00		1.00	1.00	
Frpb, ped/bikes	1.00	1.00		1.00	1.00	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	1.00		1.00	1.00	0.85		0.97		1.00	0.89	
Flt Protected	0.95	1.00		0.95	1.00	1.00		1.00		0.95	1.00	
Satd. Flow (prot)	1561	3211		1686	3252	1340		1371		1561	1308	
Flt Permitted	0.32	1.00		0.27	1.00	1.00		1.00		0.75	1.00	
Satd. Flow (perm)	533	3211		474	3252	1340		1371		1226	1308	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	101	969	3	7	679	125	0	14	4	263	21	66
RTOR Reduction (vph)	0	0	0	0	0	70	0	3	0	0	48	0
Lane Group Flow (vph)	101	972	0	7	679	55	0	15	0	263	39	0
Confl. Peds. (#/hr)			1	1			1					1
Heavy Vehicles (%)	8%	5%	0%	0%	11%	11%	0%	21%	0%	8%	19%	8%
Turn Type	pm+pt	NA		pm+pt	NA	Perm	Perm	NA		Perm	NA	
Protected Phases	5	2		1	6			8			4	
Permitted Phases	2			6		6	8			4		
Actuated Green, G (s)	46.7	42.5		38.2	37.0	37.0		22.6		22.6	22.6	
Effective Green, g (s)	46.7	42.5		38.2	37.0	37.0		22.6		22.6	22.6	
Actuated g/C Ratio	0.55	0.50		0.45	0.44	0.44		0.27		0.27	0.27	
Clearance Time (s)	3.0	7.8		3.0	7.8	7.8		7.6		7.6	7.6	
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0		3.0		3.0	3.0	
Lane Grp Cap (vph)	375	1611		230	1420	585		365		327	349	
v/s Ratio Prot	c0.02	c0.30		0.00	0.21			0.01			0.03	
v/s Ratio Perm	0.13			0.01		0.04				c0.21		
v/c Ratio	0.27	0.60		0.03	0.48	0.09		0.04		0.80	0.11	
Uniform Delay, d1	9.5	15.1		12.9	17.0	14.0		23.0		29.0	23.5	
Progression Factor	1.00	1.00		1.00	1.00	1.00		1.00		1.00	1.00	
Incremental Delay, d2	0.4	1.7		0.1	0.3	0.1		0.0		13.4	0.1	
Delay (s)	9.8	16.8		12.9	17.2	14.1		23.1		42.3	23.6	
Level of Service	A	B		B	B	B		C		D	C	
Approach Delay (s)		16.1			16.7			23.1			37.7	
Approach LOS		B			B			C			D	

Intersection Summary					
HCM 2000 Control Delay	19.7	HCM 2000 Level of Service		B	
HCM 2000 Volume to Capacity ratio	0.67				
Actuated Cycle Length (s)	84.7	Sum of lost time (s)		18.4	
Intersection Capacity Utilization	73.0%	ICU Level of Service		D	
Analysis Period (min)	15				
c Critical Lane Group					

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	2	1	27	1	22	8	200	28	23	347	0
Future Volume (vph)	0	2	1	27	1	22	8	200	28	23	347	0
Ideal Flow (vphpl)	1550	1550	1550	1550	1550	1550	1650	1650	1750	1550	1550	1550
Storage Length (m)	0.0		0.0	0.0		0.0	0.0		50.0	0.0		0.0
Storage Lanes	0		0	0		0	0		1	0		0
Taper Length (m)	7.5			7.5			7.5			7.5		
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		0.955			0.941				0.850			
Flt Protected					0.974			0.998			0.997	
Satd. Flow (prot)	0	1480	0	0	1396	0	0	1476	1488	0	1463	0
Flt Permitted					0.974			0.998			0.997	
Satd. Flow (perm)	0	1480	0	0	1396	0	0	1476	1488	0	1463	0
Link Speed (k/h)		50			50			80			80	
Link Distance (m)		79.8			58.8			368.7			154.9	
Travel Time (s)		5.7			4.2			16.6			7.0	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	0%	0%	0%	0%	0%	4%	0%	12%	0%	0%	6%	0%
Adj. Flow (vph)	0	2	1	27	1	22	8	200	28	23	347	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	3	0	0	50	0	0	208	28	0	370	0
Sign Control		Stop			Stop			Free			Free	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 56.8%		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)	0	2	1	27	1	22	8	200	28	23	347	0
Future Volume (Veh/h)	0	2	1	27	1	22	8	200	28	23	347	0
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	0	2	1	27	1	22	8	200	28	23	347	0
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (m)								369				
pX, platoon unblocked												
vC, conflicting volume	632	637	347	611	609	200	347			228		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	632	637	347	611	609	200	347			228		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	100	99	100	93	100	97	99			98		
cM capacity (veh/h)	378	388	701	399	403	836	1223			1352		

Direction, Lane #	EB 1	WB 1	NB 1	NB 2	SB 1
Volume Total	3	50	208	28	370
Volume Left	0	27	8	0	23
Volume Right	1	22	0	28	0
cSH	456	519	1223	1700	1352
Volume to Capacity	0.01	0.10	0.01	0.02	0.02
Queue Length 95th (m)	0.2	2.5	0.2	0.0	0.4
Control Delay (s)	12.9	12.7	0.4	0.0	0.6
Lane LOS	B	B	A		A
Approach Delay (s)	12.9	12.7	0.3		0.6
Approach LOS	B	B			

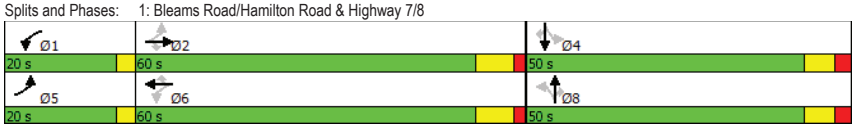
Intersection Summary				
Average Delay	1.5			
Intersection Capacity Utilization	56.8%	ICU Level of Service	B	
Analysis Period (min)	15			

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	52	735	114	58	883	162	170	82	96	184	67	112
Future Volume (vph)	52	735	114	58	883	162	170	82	96	184	67	112
Ideal Flow (vphpl)	1775	1900	1750	1775	1900	1750	1775	1900	1750	1775	1900	1750
Storage Length (m)	300.0		110.0	100.0		75.0	70.0		85.0	55.0		155.0
Storage Lanes	1		1	1		1	1		1	1		1
Taper Length (m)	40.0			40.0			40.0			40.0		
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor	1.00		0.98	1.00		0.97	1.00		0.99	1.00		0.99
Frt			0.850			0.850			0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1637	3438	1458	1637	3195	1444	1606	1900	1430	1637	1827	1458
Flt Permitted	0.278			0.343			0.713			0.704		
Satd. Flow (perm)	478	3438	1426	591	3195	1404	1204	1900	1411	1212	1827	1439
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			114			162			96			112
Link Speed (k/h)		80			80			50			50	
Link Distance (m)		163.4			1424.6			147.6			715.9	
Travel Time (s)		7.4			64.1			10.6			51.5	
Confl. Peds. (#/hr)	4		1	1		4	1		1	1		1
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	3%	5%	2%	3%	13%	3%	5%	0%	4%	3%	4%	2%
Adj. Flow (vph)	52	735	114	58	883	162	170	82	96	184	67	112
Shared Lane Traffic (%)												
Lane Group Flow (vph)	52	735	114	58	883	162	170	82	96	184	67	112
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	Perm	NA	Perm	Perm	NA	Perm
Protected Phases	5	2		1	6			8			4	
Permitted Phases	2		2	6		6	8		8	4		4
Detector Phase	5	2	2	1	6	6	8	8	8	4	4	4
Switch Phase												
Minimum Initial (s)	7.0	20.0	20.0	7.0	20.0	20.0	10.0	10.0	10.0	10.0	10.0	10.0
Minimum Split (s)	20.0	60.0	60.0	20.0	60.0	60.0	50.0	50.0	50.0	50.0	50.0	50.0
Total Split (s)	20.0	60.0	60.0	20.0	60.0	60.0	50.0	50.0	50.0	50.0	50.0	50.0
Total Split (%)	15.4%	46.2%	46.2%	15.4%	46.2%	46.2%	38.5%	38.5%	38.5%	38.5%	38.5%	38.5%
Maximum Green (s)	17.0	52.2	52.2	17.0	52.2	52.2	42.7	42.7	42.7	42.7	42.7	42.7
Yellow Time (s)	3.0	5.9	5.9	3.0	5.9	5.9	4.5	4.5	4.5	4.5	4.5	4.5
All-Red Time (s)	0.0	1.9	1.9	0.0	1.9	1.9	2.8	2.8	2.8	2.8	2.8	2.8
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	3.0	7.8	7.8	3.0	7.8	7.8	7.3	7.3	7.3	7.3	7.3	7.3
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag						
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes						
Vehicle Extension (s)	3.0	1.8	1.8	3.0	1.8	1.8	3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	Max	Max	None	Max	Max	None	None	None	None	None	None
Walk Time (s)		19.0	19.0		19.0	19.0	19.0	19.0	19.0	19.0	19.0	19.0
Flash Dont Walk (s)		14.0	14.0		14.0	14.0	14.0	14.0	14.0	14.0	14.0	14.0
Pedestrian Calls (#/hr)		0	0		0	0	0	0	0	0	0	0
Act Effct Green (s)	63.3	52.8	52.8	63.5	52.9	52.9	19.7	19.7	19.7	19.7	19.7	19.7
Actuated g/C Ratio	0.66	0.55	0.55	0.66	0.55	0.55	0.21	0.21	0.21	0.21	0.21	0.21
v/c Ratio	0.13	0.39	0.14	0.12	0.50	0.19	0.69	0.21	0.26	0.74	0.18	0.29

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Control Delay	7.0	14.6	3.3	6.8	16.2	3.0	50.4	32.9	8.4	54.1	32.4	8.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	7.0	14.6	3.3	6.8	16.2	3.0	50.4	32.9	8.4	54.1	32.4	8.1
LOS	A	B	A	A	B	A	D	C	A	D	C	A
Approach Delay		12.8			13.8			34.7			35.9	
Approach LOS		B			B			C			D	
Queue Length 50th (m)	2.9	42.6	0.0	3.2	55.6	0.0	31.4	13.6	0.0	34.4	11.0	0.0
Queue Length 95th (m)	8.7	70.8	9.5	9.5	91.3	11.1	55.0	26.6	12.7	59.4	22.8	13.5
Internal Link Dist (m)		139.4			1400.6			123.6			691.9	
Turn Bay Length (m)	300.0		110.0	100.0		75.0	70.0		85.0	55.0		155.0
Base Capacity (vph)	535	1895	837	592	1764	847	543	856	689	546	823	710
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.10	0.39	0.14	0.10	0.50	0.19	0.31	0.10	0.14	0.34	0.08	0.16

Intersection Summary			
Area Type:	Other		
Cycle Length: 130			
Actuated Cycle Length: 95.8			
Natural Cycle: 130			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 0.74			
Intersection Signal Delay: 19.1		Intersection LOS: B	
Intersection Capacity Utilization 67.2%		ICU Level of Service C	
Analysis Period (min) 15			

Splits and Phases: 1: Bleams Road/Hamilton Road & Highway 7/8



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	52	735	114	58	883	162	170	82	96	184	67	112
Future Volume (vph)	52	735	114	58	883	162	170	82	96	184	67	112
Ideal Flow (vphpl)	1775	1900	1750	1775	1900	1750	1775	1900	1750	1775	1900	1750
Total Lost time (s)	3.0	7.8	7.8	3.0	7.8	7.8	7.3	7.3	7.3	7.3	7.3	7.3
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frpb, ped/bikes	1.00	1.00	0.98	1.00	1.00	0.97	1.00	1.00	0.99	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	1.00	1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1637	3438	1427	1637	3195	1407	1605	1900	1412	1636	1827	1440
Flt Permitted	0.28	1.00	1.00	0.34	1.00	1.00	0.71	1.00	1.00	0.70	1.00	1.00
Satd. Flow (perm)	479	3438	1427	591	3195	1407	1205	1900	1412	1212	1827	1440
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	52	735	114	58	883	162	170	82	96	184	67	112
RTOR Reduction (vph)	0	0	51	0	0	73	0	0	76	0	0	89
Lane Group Flow (vph)	52	735	63	58	883	89	170	82	20	184	67	23
Confl. Peds. (#/hr)	4		1	1		4	1		1	1		1
Heavy Vehicles (%)	3%	5%	2%	3%	13%	3%	5%	0%	4%	3%	4%	2%
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	Perm	NA	Perm	Perm	NA	Perm
Protected Phases	5	2		1	6			8			4	
Permitted Phases	2		2	6		6	8		8	4		4
Actuated Green, G (s)	58.4	52.8	52.8	58.6	52.9	52.9	19.7	19.7	19.7	19.7	19.7	19.7
Effective Green, g (s)	58.4	52.8	52.8	58.6	52.9	52.9	19.7	19.7	19.7	19.7	19.7	19.7
Actuated g/C Ratio	0.61	0.55	0.55	0.61	0.55	0.55	0.20	0.20	0.20	0.20	0.20	0.20
Clearance Time (s)	3.0	7.8	7.8	3.0	7.8	7.8	7.3	7.3	7.3	7.3	7.3	7.3
Vehicle Extension (s)	3.0	1.8	1.8	3.0	1.8	1.8	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	357	1885	782	421	1755	772	246	388	288	247	373	294
v/s Ratio Prot	c0.01	0.21		0.01	c0.28			0.04			0.04	
v/s Ratio Perm	0.08		0.04	0.08		0.06	0.14		0.01	c0.15		0.02
v/c Ratio	0.15	0.39	0.08	0.14	0.50	0.12	0.69	0.21	0.07	0.74	0.18	0.08
Uniform Delay, d1	8.0	12.5	10.3	7.8	13.5	10.4	35.5	31.8	30.9	35.9	31.6	31.0
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	0.2	0.6	0.2	0.2	1.0	0.3	8.1	0.3	0.1	11.5	0.2	0.1
Delay (s)	8.2	13.1	10.5	7.9	14.5	10.7	43.6	32.1	31.0	47.5	31.9	31.1
Level of Service	A	B	B	A	B	B	D	C	C	D	C	C
Approach Delay (s)		12.5			13.6			37.4			39.5	
Approach LOS		B			B			D			D	

Intersection Summary			
HCM 2000 Control Delay	19.8	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.54		
Actuated Cycle Length (s)	96.3	Sum of lost time (s)	18.1
Intersection Capacity Utilization	67.2%	ICU Level of Service	C
Analysis Period (min)	15		

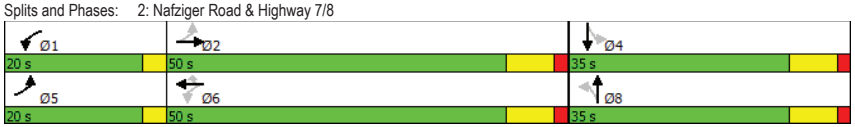
c Critical Lane Group

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	93	906	1	5	1014	239	1	21	5	104	19	93
Future Volume (vph)	93	906	1	5	1014	239	1	21	5	104	19	93
Ideal Flow (vphpl)	1775	1775	1775	1775	1900	1750	1775	1650	1650	1775	1650	1650
Storage Length (m)	145.0		0.0	105.0		90.0	80.0		0.0	120.0		0.0
Storage Lanes	1		0	1		1	1		0	1		0
Taper Length (m)	40.0			40.0			40.0			100.0		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor	1.00					0.98						
Frt						0.850		0.971			0.875	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1561	3212	0	1686	3252	1340	1686	1370	0	1561	1314	0
Flt Permitted	0.208			0.314			0.685			0.740		
Satd. Flow (perm)	342	3212	0	557	3252	1311	1216	1370	0	1216	1314	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)						239		5			93	
Link Speed (k/h)		80			80			80			80	
Link Distance (m)		1424.6			264.2			138.9			365.2	
Travel Time (s)		64.1			11.9			6.3			16.4	
Confl. Peds. (#/hr)	1					1						
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	8%	5%	0%	0%	11%	11%	0%	21%	0%	8%	19%	8%
Adj. Flow (vph)	93	906	1	5	1014	239	1	21	5	104	19	93
Shared Lane Traffic (%)												
Lane Group Flow (vph)	93	907	0	5	1014	239	1	26	0	104	112	0
Turn Type	pm+pt	NA		pm+pt	NA	Perm	Perm	NA		Perm	NA	
Protected Phases	5	2		1	6			8			4	
Permitted Phases	2			6		6	8			4		
Detector Phase	5	2		1	6	6	8	8		4	4	
Switch Phase												
Minimum Initial (s)	7.0	20.0		7.0	20.0	20.0	10.0	10.0		10.0	10.0	
Minimum Split (s)	20.0	50.0		20.0	50.0	50.0	35.0	35.0		35.0	35.0	
Total Split (s)	20.0	50.0		20.0	50.0	50.0	35.0	35.0		35.0	35.0	
Total Split (%)	19.0%	47.6%		19.0%	47.6%	47.6%	33.3%	33.3%		33.3%	33.3%	
Maximum Green (s)	17.0	42.2		17.0	42.2	42.2	27.4	27.4		27.4	27.4	
Yellow Time (s)	3.0	5.9		3.0	5.9	5.9	5.9	5.9		5.9	5.9	
All-Red Time (s)	0.0	1.9		0.0	1.9	1.9	1.7	1.7		1.7	1.7	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Total Lost Time (s)	3.0	7.8		3.0	7.8	7.8	7.6	7.6		7.6	7.6	
Lead/Lag	Lead	Lag		Lead	Lag	Lag						
Lead-Lag Optimize?	Yes	Yes		Yes	Yes	Yes						
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	
Recall Mode	None	Max		None	Min	Min	None	None		None	None	
Walk Time (s)		16.0			16.0	16.0	16.0	16.0		16.0	16.0	
Flash Dont Walk (s)		11.0			11.0	11.0	11.0	11.0		11.0	11.0	
Pedestrian Calls (#/hr)		0			0	0	0	0		0	0	
Act Effct Green (s)	50.6	44.2		47.5	37.0	37.0	12.7	12.7		12.7	12.7	
Actuated g/C Ratio	0.68	0.60		0.64	0.50	0.50	0.17	0.17		0.17	0.17	
v/c Ratio	0.26	0.47		0.01	0.62	0.31	0.00	0.11		0.50	0.37	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Control Delay	6.2	10.5		4.6	16.9	3.1	26.0	23.9		37.1	12.8	
Queue Delay	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Total Delay	6.2	10.5		4.6	16.9	3.1	26.0	23.9		37.1	12.8	
LOS	A	B		A	B	A	C	C		D	B	
Approach Delay		10.1			14.2			24.0			24.5	
Approach LOS		B			B			C			C	
Queue Length 50th (m)	3.6	31.2		0.2	54.2	0.0	0.1	2.4		13.0	2.2	
Queue Length 95th (m)	10.0	73.7		1.4	90.7	12.1	1.6	10.0		32.0	16.7	
Internal Link Dist (m)		1400.6			240.2			114.9			341.2	
Turn Bay Length (m)	145.0			105.0		90.0	80.0			120.0		
Base Capacity (vph)	515	1914		642	1909	868	453	514		453	548	
Starvation Cap Reductn	0	0		0	0	0	0	0		0	0	
Spillback Cap Reductn	0	0		0	0	0	0	0		0	0	
Storage Cap Reductn	0	0		0	0	0	0	0		0	0	
Reduced v/c Ratio	0.18	0.47		0.01	0.53	0.28	0.00	0.05		0.23	0.20	

Intersection Summary			
Area Type:	Other		
Cycle Length: 105			
Actuated Cycle Length: 74.1			
Natural Cycle: 105			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 0.62			
Intersection Signal Delay: 13.6		Intersection LOS: B	
Intersection Capacity Utilization 62.9%		ICU Level of Service B	
Analysis Period (min) 15			

Splits and Phases: 2: Nafziger Road & Highway 7/8



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	93	906	1	5	1014	239	1	21	5	104	19	93
Future Volume (vph)	93	906	1	5	1014	239	1	21	5	104	19	93
Ideal Flow (vphpl)	1775	1775	1775	1775	1900	1750	1775	1650	1650	1775	1650	1650
Total Lost time (s)	3.0	7.8		3.0	7.8	7.8	7.6	7.6		7.6	7.6	
Lane Util. Factor	1.00	0.95		1.00	0.95	1.00	1.00	1.00		1.00	1.00	
Frpb, ped/bikes	1.00	1.00		1.00	1.00	0.98	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	1.00	
Frt	1.00	1.00		1.00	1.00	0.85	1.00	0.97		1.00	0.88	
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1561	3212		1686	3252	1311	1686	1370		1561	1315	
Flt Permitted	0.21	1.00		0.31	1.00	1.00	0.68	1.00		0.74	1.00	
Satd. Flow (perm)	342	3212		558	3252	1311	1216	1370		1217	1315	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	93	906	1	5	1014	239	1	21	5	104	19	93
RTOR Reduction (vph)	0	0	0	0	0	117	0	4	0	0	78	0
Lane Group Flow (vph)	93	907	0	5	1014	122	1	22	0	104	34	0
Confl. Peds. (#/hr)	1					1						
Heavy Vehicles (%)	8%	5%	0%	0%	11%	11%	0%	21%	0%	8%	19%	8%
Turn Type	pm+pt	NA		pm+pt	NA	Perm	Perm	NA		Perm	NA	
Protected Phases	5	2		1	6			8			4	
Permitted Phases	2			6		6	8			4		
Actuated Green, G (s)	48.4	44.2		40.1	38.9	38.9	12.7	12.7		12.7	12.7	
Effective Green, g (s)	48.4	44.2		40.1	38.9	38.9	12.7	12.7		12.7	12.7	
Actuated g/C Ratio	0.63	0.58		0.52	0.51	0.51	0.17	0.17		0.17	0.17	
Clearance Time (s)	3.0	7.8		3.0	7.8	7.8	7.6	7.6		7.6	7.6	
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	319	1855		310	1653	666	201	227		202	218	
v/s Ratio Prot	c0.02	0.28		0.00	c0.31			0.02			0.03	
v/s Ratio Perm	0.16			0.01		0.09	0.00			c0.09		
v/c Ratio	0.29	0.49		0.02	0.61	0.18	0.00	0.10		0.51	0.16	
Uniform Delay, d1	6.5	9.5		8.7	13.4	10.2	26.6	27.0		29.1	27.3	
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.5	0.9		0.0	0.7	0.1	0.0	0.2		2.2	0.3	
Delay (s)	7.0	10.4		8.7	14.1	10.3	26.6	27.2		31.3	27.7	
Level of Service	A	B		A	B	B	C	C		C	C	
Approach Delay (s)		10.1			13.4			27.2			29.4	
Approach LOS		B			B			C			C	

Intersection Summary					
HCM 2000 Control Delay	13.6	HCM 2000 Level of Service		B	
HCM 2000 Volume to Capacity ratio	0.56				
Actuated Cycle Length (s)	76.5	Sum of lost time (s)		18.4	
Intersection Capacity Utilization	62.9%	ICU Level of Service		B	
Analysis Period (min)	15				

c Critical Lane Group

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	1	2	44	0	44	0	356	81	39	212	1
Future Volume (vph)	0	1	2	44	0	44	0	356	81	39	212	1
Ideal Flow (vphpl)	1550	1550	1550	1550	1550	1550	1650	1650	1750	1550	1550	1550
Storage Length (m)	0.0		0.0	0.0		0.0	0.0		50.0	0.0		0.0
Storage Lanes	0		0	0		0	0		1	0		0
Taper Length (m)	7.5			7.5			7.5			7.5		
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		0.910			0.932				0.850		0.999	
Flt Protected					0.976						0.992	
Satd. Flow (prot)	0	1410	0	0	1396	0	0	1602	1488	0	1474	0
Flt Permitted					0.976						0.992	
Satd. Flow (perm)	0	1410	0	0	1396	0	0	1602	1488	0	1474	0
Link Speed (k/h)		50			50			80			80	
Link Distance (m)		101.2			67.1			365.2			154.9	
Travel Time (s)		7.3			4.8			16.4			7.0	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	0%	0%	0%	0%	0%	2%	0%	3%	0%	0%	5%	2%
Adj. Flow (vph)	0	1	2	44	0	44	0	356	81	39	212	1
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	3	0	0	88	0	0	356	81	0	252	0
Sign Control		Stop			Stop			Free			Free	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 60.9%		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)	0	1	2	44	0	44	0	356	81	39	212	1
Future Volume (Veh/h)	0	1	2	44	0	44	0	356	81	39	212	1
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	0	1	2	44	0	44	0	356	81	39	212	1
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (m)								365				
pX, platoon unblocked												
vC, conflicting volume	690	728	212	649	647	356	213			437		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	690	728	212	649	647	356	213			437		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	100	100	100	88	100	94	100			97		
cM capacity (veh/h)	330	341	833	374	379	688	1369			1134		

Direction, Lane #	EB 1	WB 1	NB 1	NB 2	SB 1
Volume Total	3	88	356	81	252
Volume Left	0	44	0	0	39
Volume Right	2	44	0	81	1
cSH	562	484	1369	1700	1134
Volume to Capacity	0.01	0.18	0.00	0.05	0.03
Queue Length 95th (m)	0.1	5.3	0.0	0.0	0.9
Control Delay (s)	11.4	14.1	0.0	0.0	1.6
Lane LOS	B	B			A
Approach Delay (s)	11.4	14.1	0.0		1.6
Approach LOS	B	B			

Intersection Summary				
Average Delay	2.1			
Intersection Capacity Utilization	60.9%	ICU Level of Service	B	
Analysis Period (min)	15			

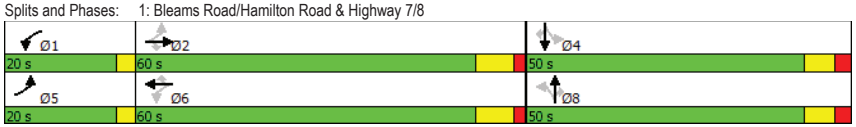
Appendix C 2023 Background Traffic Operations

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	94	835	127	98	554	169	86	46	81	252	117	89
Future Volume (vph)	94	835	127	98	554	169	86	46	81	252	117	89
Ideal Flow (vphpl)	1775	1900	1750	1775	1900	1750	1775	1900	1750	1775	1900	1750
Storage Length (m)	300.0		110.0	100.0		75.0	70.0		85.0	65.0		155.0
Storage Lanes	1		1	1		1	1		1	1		1
Taper Length (m)	40.0			100.0			40.0			20.0		
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor	1.00		0.98	1.00		0.98			0.99	1.00		
Frt			0.850			0.850			0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1637	3438	1458	1637	3195	1444	1606	1900	1430	1637	1827	1458
Flt Permitted	0.425			0.277			0.682			0.727		
Satd. Flow (perm)	732	3438	1424	477	3195	1413	1153	1900	1411	1251	1827	1458
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			127			169			81			89
Link Speed (k/h)		80			80			50			50	
Link Distance (m)		341.3			1424.6			147.6			715.9	
Travel Time (s)		15.4			64.1			10.6			51.5	
Confl. Peds. (#/hr)	1		2	2		1			1	1		
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	3%	5%	2%	3%	13%	3%	5%	0%	4%	3%	4%	2%
Adj. Flow (vph)	94	835	127	98	554	169	86	46	81	252	117	89
Shared Lane Traffic (%)												
Lane Group Flow (vph)	94	835	127	98	554	169	86	46	81	252	117	89
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	Perm	NA	Perm	Perm	NA	Perm
Protected Phases	5	2		1	6			8			4	
Permitted Phases	2		2	6		6	8		8	4		4
Detector Phase	5	2	2	1	6	6	8	8	8	4	4	4
Switch Phase												
Minimum Initial (s)	7.0	20.0	20.0	7.0	20.0	20.0	10.0	10.0	10.0	10.0	10.0	10.0
Minimum Split (s)	20.0	60.0	60.0	20.0	60.0	60.0	50.0	50.0	50.0	50.0	50.0	50.0
Total Split (s)	20.0	60.0	60.0	20.0	60.0	60.0	50.0	50.0	50.0	50.0	50.0	50.0
Total Split (%)	15.4%	46.2%	46.2%	15.4%	46.2%	46.2%	38.5%	38.5%	38.5%	38.5%	38.5%	38.5%
Maximum Green (s)	17.0	52.2	52.2	17.0	52.2	52.2	42.7	42.7	42.7	42.7	42.7	42.7
Yellow Time (s)	3.0	5.9	5.9	3.0	5.9	5.9	4.5	4.5	4.5	4.5	4.5	4.5
All-Red Time (s)	0.0	1.9	1.9	0.0	1.9	1.9	2.8	2.8	2.8	2.8	2.8	2.8
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	3.0	7.8	7.8	3.0	7.8	7.8	7.3	7.3	7.3	7.3	7.3	7.3
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag						
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes						
Vehicle Extension (s)	3.0	1.8	1.8	3.0	1.8	1.8	3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	Max	Max	None	Max	Max	None	None	None	None	None	None
Walk Time (s)		19.0	19.0		19.0	19.0	19.0	19.0	19.0	19.0	19.0	19.0
Flash Dont Walk (s)		14.0	14.0		14.0	14.0	14.0	14.0	14.0	14.0	14.0	14.0
Pedestrian Calls (#/hr)		0	0		0	0	0	0	0	0	0	0
Act Effct Green (s)	65.8	52.6	52.6	66.0	52.7	52.7	26.4	26.4	26.4	26.4	26.4	26.4
Actuated g/C Ratio	0.62	0.50	0.50	0.62	0.50	0.50	0.25	0.25	0.25	0.25	0.25	0.25
v/c Ratio	0.18	0.49	0.16	0.25	0.35	0.21	0.30	0.10	0.20	0.81	0.26	0.21

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Control Delay	9.4	20.4	4.0	10.2	18.4	3.7	34.3	29.8	7.6	56.8	32.5	7.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	9.4	20.4	4.0	10.2	18.4	3.7	34.3	29.8	7.6	56.8	32.5	7.3
LOS	A	C	A	B	B	A	C	C	A	E	C	A
Approach Delay		17.4			14.4			23.2			41.0	
Approach LOS		B			B			C			D	
Queue Length 50th (m)	6.7	59.3	0.0	7.0	36.0	0.0	14.9	7.6	0.0	50.7	20.1	0.0
Queue Length 95th (m)	18.0	102.8	11.7	18.4	65.1	13.2	29.5	17.0	11.3	83.4	36.3	11.8
Internal Link Dist (m)		317.3			1400.6			123.6			691.9	
Turn Bay Length (m)	300.0		110.0	100.0		75.0	70.0		85.0	65.0		155.0
Base Capacity (vph)	623	1712	772	499	1593	789	469	774	622	509	744	646
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.15	0.49	0.16	0.20	0.35	0.21	0.18	0.06	0.13	0.50	0.16	0.14

Intersection Summary			
Area Type:	Other		
Cycle Length: 130			
Actuated Cycle Length: 105.7			
Natural Cycle: 130			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 0.81			
Intersection Signal Delay: 21.2		Intersection LOS: C	
Intersection Capacity Utilization 70.9%		ICU Level of Service C	
Analysis Period (min) 15			

Splits and Phases: 1: Bleams Road/Hamilton Road & Highway 7/8



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	94	835	127	98	554	169	86	46	81	252	117	89
Future Volume (vph)	94	835	127	98	554	169	86	46	81	252	117	89
Ideal Flow (vphpl)	1775	1900	1750	1775	1900	1750	1775	1900	1750	1775	1900	1750
Total Lost time (s)	3.0	7.8	7.8	3.0	7.8	7.8	7.3	7.3	7.3	7.3	7.3	7.3
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frpb, ped/bikes	1.00	1.00	0.98	1.00	1.00	0.98	1.00	1.00	0.99	1.00	1.00	1.00
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1637	3438	1425	1637	3195	1413	1606	1900	1412	1636	1827	1458
Flt Permitted	0.43	1.00	1.00	0.28	1.00	1.00	0.68	1.00	1.00	0.73	1.00	1.00
Satd. Flow (perm)	733	3438	1425	478	3195	1413	1152	1900	1412	1252	1827	1458
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	94	835	127	98	554	169	86	46	81	252	117	89
RTOR Reduction (vph)	0	0	64	0	0	85	0	0	61	0	0	67
Lane Group Flow (vph)	94	835	63	98	554	85	86	46	20	252	117	22
Confl. Peds. (#/hr)	1		2	2		1			1	1		
Heavy Vehicles (%)	3%	5%	2%	3%	13%	3%	5%	0%	4%	3%	4%	2%
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	Perm	NA	Perm	Perm	NA	Perm
Protected Phases	5	2		1	6			8			4	
Permitted Phases	2		2	6		6	8		8	4		4
Actuated Green, G (s)	61.0	52.7	52.7	61.2	52.8	52.8	26.4	26.4	26.4	26.4	26.4	26.4
Effective Green, g (s)	61.0	52.7	52.7	61.2	52.8	52.8	26.4	26.4	26.4	26.4	26.4	26.4
Actuated g/C Ratio	0.58	0.50	0.50	0.58	0.50	0.50	0.25	0.25	0.25	0.25	0.25	0.25
Clearance Time (s)	3.0	7.8	7.8	3.0	7.8	7.8	7.3	7.3	7.3	7.3	7.3	7.3
Vehicle Extension (s)	3.0	1.8	1.8	3.0	1.8	1.8	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	494	1715	711	369	1597	706	288	475	353	313	456	364
v/s Ratio Prot	0.01	c0.24		c0.02	0.17			0.02			0.06	
v/s Ratio Perm	0.09		0.04	0.13		0.06	0.07		0.01	c0.20		0.02
v/c Ratio	0.19	0.49	0.09	0.27	0.35	0.12	0.30	0.10	0.06	0.81	0.26	0.06
Uniform Delay, d1	10.0	17.5	13.9	10.4	16.0	14.0	32.1	30.4	30.1	37.2	31.7	30.2
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	0.2	1.0	0.2	0.4	0.6	0.3	0.6	0.1	0.1	13.9	0.3	0.1
Delay (s)	10.2	18.5	14.1	10.8	16.6	14.4	32.7	30.5	30.2	51.1	32.0	30.2
Level of Service	B	B	B	B	B	B	C	C	C	D	C	C
Approach Delay (s)		17.2			15.4			31.3			42.2	
Approach LOS		B			B			C			D	

Intersection Summary			
HCM 2000 Control Delay	22.3	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.56		
Actuated Cycle Length (s)	105.6	Sum of lost time (s)	18.1
Intersection Capacity Utilization	70.9%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	109	1044	3	8	731	135	0	15	4	283	23	71
Future Volume (vph)	109	1044	3	8	731	135	0	15	4	283	23	71
Ideal Flow (vphpl)	1775	1775	1775	1775	1900	1750	1775	1650	1650	1775	1650	1650
Storage Length (m)	145.0		0.0	140.0		90.0	80.0		0.0	120.0		0.0
Storage Lanes	1		0	1		1	1		0	1		0
Taper Length (m)	100.0			100.0			40.0			100.0		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor		1.00		1.00							0.99	
Frt						0.850		0.968			0.887	
Flt Protected	0.950			0.950						0.950		
Satd. Flow (prot)	1561	3212	0	1686	3252	1340	1775	1370	0	1561	1309	0
Flt Permitted	0.292			0.229						0.745		
Satd. Flow (perm)	480	3212	0	406	3252	1340	1775	1370	0	1224	1309	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)						135		4			71	
Link Speed (k/h)		80			80			80			80	
Link Distance (m)		1424.6			340.0			138.9			368.7	
Travel Time (s)		64.1			15.3			6.3			16.6	
Confl. Peds. (#/hr)			1	1			1					1
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	8%	5%	0%	0%	11%	11%	0%	21%	0%	8%	19%	8%
Adj. Flow (vph)	109	1044	3	8	731	135	0	15	4	283	23	71
Shared Lane Traffic (%)												
Lane Group Flow (vph)	109	1047	0	8	731	135	0	19	0	283	94	0
Turn Type	pm+pt	NA		pm+pt	NA	Perm	Perm	NA		Perm	NA	
Protected Phases	5	2		1	6			8			4	
Permitted Phases	2			6		6	8			4		
Detector Phase	5	2		1	6	6	8	8		4	4	
Switch Phase												
Minimum Initial (s)	7.0	20.0		7.0	20.0	20.0	10.0	10.0		10.0	10.0	
Minimum Split (s)	20.0	50.0		20.0	50.0	50.0	35.0	35.0		35.0	35.0	
Total Split (s)	20.0	50.0		20.0	50.0	50.0	35.0	35.0		35.0	35.0	
Total Split (%)	19.0%	47.6%		19.0%	47.6%	47.6%	33.3%	33.3%		33.3%	33.3%	
Maximum Green (s)	17.0	42.2		17.0	42.2	42.2	27.4	27.4		27.4	27.4	
Yellow Time (s)	3.0	5.9		3.0	5.9	5.9	5.9	5.9		5.9	5.9	
All-Red Time (s)	0.0	1.9		0.0	1.9	1.9	1.7	1.7		1.7	1.7	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Total Lost Time (s)	3.0	7.8		3.0	7.8	7.8	7.6	7.6		7.6	7.6	
Lead/Lag	Lead	Lag		Lead	Lag	Lag						
Lead-Lag Optimize?	Yes	Yes		Yes	Yes	Yes						
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	
Recall Mode	None	Max		None	Min	Min	None	None		None	None	
Walk Time (s)		16.0			16.0	16.0	16.0	16.0		16.0	16.0	
Flash Dont Walk (s)		11.0			11.0	11.0	11.0	11.0		11.0	11.0	
Pedestrian Calls (#/hr)		0			0	0	0	0		0	0	
Act Effct Green (s)	49.0	42.4		45.3	35.0	35.0		24.5		24.5	24.5	
Actuated g/C Ratio	0.58	0.50		0.54	0.42	0.42		0.29		0.29	0.29	
v/c Ratio	0.28	0.65		0.02	0.54	0.21		0.05		0.79	0.22	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Control Delay	10.5	18.9		8.5	22.0	4.4		19.5		46.0	10.3	
Queue Delay	0.0	0.0		0.0	0.0	0.0		0.0		0.0	0.0	
Total Delay	10.5	18.9		8.5	22.0	4.4		19.5		46.0	10.3	
LOS	B	B		A	C	A		B		D	B	
Approach Delay		18.1			19.1			19.5			37.1	
Approach LOS		B			B			B			D	
Queue Length 50th (m)	8.3	66.7		0.6	53.0	0.0		1.7		42.2	2.7	
Queue Length 95th (m)	15.8	110.4		2.4	73.9	11.2		7.6		#93.7	15.2	
Internal Link Dist (m)		1400.6			316.0			114.9			344.7	
Turn Bay Length (m)	145.0			140.0		90.0				120.0		
Base Capacity (vph)	498	1618		496	1638	742		450		400	476	
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	0.22	0.65		0.02	0.45	0.18		0.04		0.71	0.20	

Intersection Summary			
Area Type:	Other		
Cycle Length: 105			
Actuated Cycle Length: 84.2			
Natural Cycle: 105			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 0.79			
Intersection Signal Delay: 21.4		Intersection LOS: C	
Intersection Capacity Utilization 76.4%		ICU Level of Service D	
Analysis Period (min) 15			
# 95th percentile volume exceeds capacity, queue may be longer.			
Queue shown is maximum after two cycles.			

Splits and Phases: 2: Nafziger Road & Highway 7/8

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	109	1044	3	8	731	135	0	15	4	283	23	71
Future Volume (vph)	109	1044	3	8	731	135	0	15	4	283	23	71
Ideal Flow (vphpl)	1775	1775	1775	1775	1900	1750	1775	1650	1650	1775	1650	1650
Total Lost time (s)	3.0	7.8		3.0	7.8	7.8		7.6		7.6	7.6	
Lane Util. Factor	1.00	0.95		1.00	0.95	1.00		1.00		1.00	1.00	
Frpb, ped/bikes	1.00	1.00		1.00	1.00	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	1.00		1.00	1.00	0.85		0.97		1.00	0.89	
Flt Protected	0.95	1.00		0.95	1.00	1.00		1.00		0.95	1.00	
Satd. Flow (prot)	1561	3211		1686	3252	1340		1371		1561	1309	
Flt Permitted	0.29	1.00		0.23	1.00	1.00		1.00		0.75	1.00	
Satd. Flow (perm)	479	3211		407	3252	1340		1371		1224	1309	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	109	1044	3	8	731	135	0	15	4	283	23	71
RTOR Reduction (vph)	0	0	0	0	0	78	0	3	0	0	51	0
Lane Group Flow (vph)	109	1047	0	8	731	57	0	16	0	283	43	0
Confl. Peds. (#/hr)			1	1			1					1
Heavy Vehicles (%)	8%	5%	0%	0%	11%	11%	0%	21%	0%	8%	19%	8%
Turn Type	pm+pt	NA		pm+pt	NA	Perm	Perm	NA		Perm	NA	
Protected Phases	5	2		1	6			8			4	
Permitted Phases	2			6		6	8			4		
Actuated Green, G (s)	46.6	42.4		37.9	36.7	36.7		24.5		24.5	24.5	
Effective Green, g (s)	46.6	42.4		37.9	36.7	36.7		24.5		24.5	24.5	
Actuated g/C Ratio	0.54	0.49		0.44	0.42	0.42		0.28		0.28	0.28	
Clearance Time (s)	3.0	7.8		3.0	7.8	7.8		7.6		7.6	7.6	
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0		3.0		3.0	3.0	
Lane Grp Cap (vph)	344	1573		196	1379	568		388		346	370	
v/s Ratio Prot	c0.03	c0.33		0.00	0.22			0.01			0.03	
v/s Ratio Perm	0.15			0.02		0.04				c0.23		
v/c Ratio	0.32	0.67		0.04	0.53	0.10		0.04		0.82	0.12	
Uniform Delay, d1	10.4	16.7		13.9	18.5	15.0		22.5		28.9	23.0	
Progression Factor	1.00	1.00		1.00	1.00	1.00		1.00		1.00	1.00	
Incremental Delay, d2	0.5	2.2		0.1	0.4	0.1		0.0		13.9	0.1	
Delay (s)	11.0	18.9		14.0	18.9	15.1		22.5		42.8	23.1	
Level of Service	B	B		B	B	B		C		D	C	
Approach Delay (s)		18.2			18.3			22.5			37.9	
Approach LOS		B			B			C			D	

Intersection Summary					
HCM 2000 Control Delay	21.3	HCM 2000 Level of Service		C	
HCM 2000 Volume to Capacity ratio	0.72				
Actuated Cycle Length (s)	86.5	Sum of lost time (s)		18.4	
Intersection Capacity Utilization	76.4%	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)	0	2	1	29	1	24	9	215	30	25	374	0
Future Volume (vph)	0	2	1	29	1	24	9	215	30	25	374	0
Ideal Flow (vphpl)	1550	1550	1550	1550	1550	1550	1650	1650	1750	1550	1550	1550
Storage Length (m)	0.0		0.0	0.0		0.0	0.0		50.0	0.0		0.0
Storage Lanes	0		0	0		0	0		1	0		0
Taper Length (m)	7.5			7.5			7.5			7.5		
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		0.955			0.940				0.850			
Flt Protected					0.974			0.998			0.997	
Satd. Flow (prot)	0	1480	0	0	1394	0	0	1477	1488	0	1463	0
Flt Permitted					0.974			0.998			0.997	
Satd. Flow (perm)	0	1480	0	0	1394	0	0	1477	1488	0	1463	0
Link Speed (k/h)		50			50			80			80	
Link Distance (m)		79.8			58.8			368.7			154.9	
Travel Time (s)		5.7			4.2			16.6			7.0	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	0%	0%	0%	0%	0%	4%	0%	12%	0%	0%	6%	0%
Adj. Flow (vph)	0	2	1	29	1	24	9	215	30	25	374	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	3	0	0	54	0	0	224	30	0	399	0
Sign Control		Stop			Stop			Free			Free	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 59.9%		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)	0	2	1	29	1	24	9	215	30	25	374	0
Future Volume (Veh/h)	0	2	1	29	1	24	9	215	30	25	374	0
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	0	2	1	29	1	24	9	215	30	25	374	0
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (m)								369				
pX, platoon unblocked												
vC, conflicting volume	682	687	374	659	657	215	374			245		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	682	687	374	659	657	215	374			245		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	100	99	100	92	100	97	99			98		
cM capacity (veh/h)	348	362	677	370	377	820	1196			1333		

Direction, Lane #	EB 1	WB 1	NB 1	NB 2	SB 1
Volume Total	3	54	224	30	399
Volume Left	0	29	9	0	25
Volume Right	1	24	0	30	0
cSH	429	490	1196	1700	1333
Volume to Capacity	0.01	0.11	0.01	0.02	0.02
Queue Length 95th (m)	0.2	3.0	0.2	0.0	0.5
Control Delay (s)	13.5	13.3	0.4	0.0	0.7
Lane LOS	B	B	A		A
Approach Delay (s)	13.5	13.3	0.3		0.7
Approach LOS	B	B			

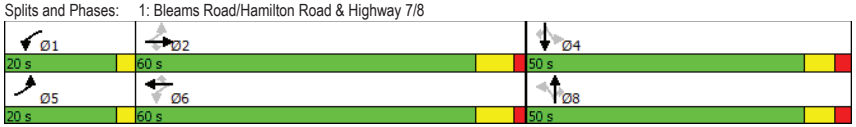
Intersection Summary				
Average Delay	1.6			
Intersection Capacity Utilization	59.9%	ICU Level of Service	B	
Analysis Period (min)	15			

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	56	792	123	62	951	175	183	88	103	198	72	121
Future Volume (vph)	56	792	123	62	951	175	183	88	103	198	72	121
Ideal Flow (vphpl)	1775	1900	1750	1775	1900	1750	1775	1900	1750	1775	1900	1750
Storage Length (m)	300.0		110.0	100.0		75.0	70.0		85.0	65.0		155.0
Storage Lanes	1		1	1		1	1		1	1		1
Taper Length (m)	40.0			100.0			40.0			20.0		
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor	1.00		0.98	1.00		0.97	1.00		0.99	1.00		0.99
Frt			0.850			0.850			0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1637	3438	1458	1637	3195	1444	1606	1900	1430	1637	1827	1458
Flt Permitted	0.247			0.313			0.710			0.700		
Satd. Flow (perm)	425	3438	1426	539	3195	1404	1199	1900	1411	1205	1827	1439
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			123			168			103			121
Link Speed (k/h)		80			80			50			50	
Link Distance (m)		341.3			1424.6			147.6			715.9	
Travel Time (s)		15.4			64.1			10.6			51.5	
Confl. Peds. (#/hr)	4		1	1		4	1		1	1		1
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	3%	5%	2%	3%	13%	3%	5%	0%	4%	3%	4%	2%
Adj. Flow (vph)	56	792	123	62	951	175	183	88	103	198	72	121
Shared Lane Traffic (%)												
Lane Group Flow (vph)	56	792	123	62	951	175	183	88	103	198	72	121
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	Perm	NA	Perm	Perm	NA	Perm
Protected Phases	5	2		1	6			8			4	
Permitted Phases	2		2	6		6	8		8	4		4
Detector Phase	5	2	2	1	6	6	8	8	8	4	4	4
Switch Phase												
Minimum Initial (s)	7.0	20.0	20.0	7.0	20.0	20.0	10.0	10.0	10.0	10.0	10.0	10.0
Minimum Split (s)	20.0	60.0	60.0	20.0	60.0	60.0	50.0	50.0	50.0	50.0	50.0	50.0
Total Split (s)	20.0	60.0	60.0	20.0	60.0	60.0	50.0	50.0	50.0	50.0	50.0	50.0
Total Split (%)	15.4%	46.2%	46.2%	15.4%	46.2%	46.2%	38.5%	38.5%	38.5%	38.5%	38.5%	38.5%
Maximum Green (s)	17.0	52.2	52.2	17.0	52.2	52.2	42.7	42.7	42.7	42.7	42.7	42.7
Yellow Time (s)	3.0	5.9	5.9	3.0	5.9	5.9	4.5	4.5	4.5	4.5	4.5	4.5
All-Red Time (s)	0.0	1.9	1.9	0.0	1.9	1.9	2.8	2.8	2.8	2.8	2.8	2.8
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	3.0	7.8	7.8	3.0	7.8	7.8	7.3	7.3	7.3	7.3	7.3	7.3
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag						
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes						
Vehicle Extension (s)	3.0	1.8	1.8	3.0	1.8	1.8	3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	Max	Max	None	Max	Max	None	None	None	None	None	None
Walk Time (s)		19.0	19.0		19.0	19.0	19.0	19.0	19.0	19.0	19.0	19.0
Flash Dont Walk (s)		14.0	14.0		14.0	14.0	14.0	14.0	14.0	14.0	14.0	14.0
Pedestrian Calls (#/hr)		0	0		0	0	0	0	0	0	0	0
Act Effct Green (s)	63.5	52.9	52.9	63.6	52.9	52.9	21.1	21.1	21.1	21.1	21.1	21.1
Actuated g/C Ratio	0.65	0.54	0.54	0.65	0.54	0.54	0.22	0.22	0.22	0.22	0.22	0.22
v/c Ratio	0.15	0.42	0.15	0.14	0.55	0.21	0.70	0.21	0.27	0.76	0.18	0.30

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Control Delay	7.7	15.9	3.4	7.5	17.8	3.4	50.6	32.5	8.0	54.8	32.1	7.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	7.7	15.9	3.4	7.5	17.8	3.4	50.6	32.5	8.0	54.8	32.1	7.7
LOS	A	B	A	A	B	A	D	C	A	D	C	A
Approach Delay		13.8			15.2			34.6			36.0	
Approach LOS		B			B			C			D	
Queue Length 50th (m)	3.3	48.5	0.0	3.7	63.8	0.6	34.2	14.6	0.0	37.5	11.9	0.0
Queue Length 95th (m)	9.8	81.0	10.1	10.6	105.5	12.7	59.1	28.0	12.9	64.1	23.9	13.9
Internal Link Dist (m)		317.3			1400.6			123.6			691.9	
Turn Bay Length (m)	300.0		110.0	100.0		75.0	70.0		85.0	65.0		155.0
Base Capacity (vph)	501	1866	830	558	1736	839	532	843	684	535	811	706
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.11	0.42	0.15	0.11	0.55	0.21	0.34	0.10	0.15	0.37	0.09	0.17

Intersection Summary			
Area Type:	Other		
Cycle Length: 130			
Actuated Cycle Length: 97.4			
Natural Cycle: 130			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 0.76			
Intersection Signal Delay: 20.0		Intersection LOS: B	
Intersection Capacity Utilization 68.0%		ICU Level of Service C	
Analysis Period (min) 15			

Splits and Phases: 1: Bleams Road/Hamilton Road & Highway 7/8



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	56	792	123	62	951	175	183	88	103	198	72	121
Future Volume (vph)	56	792	123	62	951	175	183	88	103	198	72	121
Ideal Flow (vphpl)	1775	1900	1750	1775	1900	1750	1775	1900	1750	1775	1900	1750
Total Lost time (s)	3.0	7.8	7.8	3.0	7.8	7.8	7.3	7.3	7.3	7.3	7.3	7.3
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frpb, ped/bikes	1.00	1.00	0.98	1.00	1.00	0.97	1.00	1.00	0.99	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	1.00	1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1637	3438	1427	1637	3195	1407	1605	1900	1412	1636	1827	1440
Flt Permitted	0.25	1.00	1.00	0.31	1.00	1.00	0.71	1.00	1.00	0.70	1.00	1.00
Satd. Flow (perm)	426	3438	1427	540	3195	1407	1199	1900	1412	1205	1827	1440
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	56	792	123	62	951	175	183	88	103	198	72	121
RTOR Reduction (vph)	0	0	57	0	0	77	0	0	81	0	0	95
Lane Group Flow (vph)	56	792	66	62	951	98	183	88	22	198	72	26
Confl. Peds. (#/hr)	4		1	1		4	1		1	1		1
Heavy Vehicles (%)	3%	5%	2%	3%	13%	3%	5%	0%	4%	3%	4%	2%
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	Perm	NA	Perm	Perm	NA	Perm
Protected Phases	5	2		1	6			8			4	
Permitted Phases	2		2	6		6	8		8	4		4
Actuated Green, G (s)	58.6	52.9	52.9	58.8	53.0	53.0	21.1	21.1	21.1	21.1	21.1	21.1
Effective Green, g (s)	58.6	52.9	52.9	58.8	53.0	53.0	21.1	21.1	21.1	21.1	21.1	21.1
Actuated g/C Ratio	0.60	0.54	0.54	0.60	0.54	0.54	0.22	0.22	0.22	0.22	0.22	0.22
Clearance Time (s)	3.0	7.8	7.8	3.0	7.8	7.8	7.3	7.3	7.3	7.3	7.3	7.3
Vehicle Extension (s)	3.0	1.8	1.8	3.0	1.8	1.8	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	325	1857	771	389	1729	761	258	409	304	259	393	310
v/s Ratio Prot	c0.01	0.23		0.01	c0.30			0.05			0.04	
v/s Ratio Perm	0.09		0.05	0.09		0.07	0.15		0.02	c0.16		0.02
v/c Ratio	0.17	0.43	0.09	0.16	0.55	0.13	0.71	0.22	0.07	0.76	0.18	0.08
Uniform Delay, d1	8.7	13.4	10.8	8.3	14.7	11.1	35.6	31.6	30.6	36.1	31.4	30.7
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	0.3	0.7	0.2	0.2	1.3	0.3	8.6	0.3	0.1	12.6	0.2	0.1
Delay (s)	8.9	14.2	11.1	8.5	15.9	11.4	44.2	31.9	30.7	48.6	31.6	30.8
Level of Service	A	B	B	A	B	B	D	C	C	D	C	C
Approach Delay (s)		13.5			14.9			37.6			40.0	
Approach LOS		B			B			D			D	

Intersection Summary			
HCM 2000 Control Delay	20.7	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.58		
Actuated Cycle Length (s)	97.9	Sum of lost time (s)	18.1
Intersection Capacity Utilization	68.0%	ICU Level of Service	C
Analysis Period (min)	15		

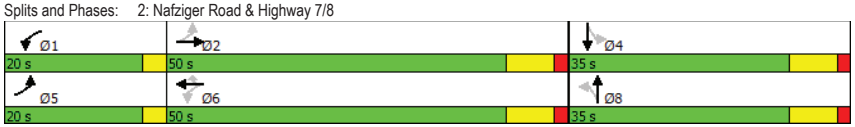
c Critical Lane Group

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	100	976	1	5	1092	257	1	23	5	112	20	100
Future Volume (vph)	100	976	1	5	1092	257	1	23	5	112	20	100
Ideal Flow (vphpl)	1775	1775	1775	1775	1900	1750	1775	1650	1650	1775	1650	1650
Storage Length (m)	145.0		0.0	105.0		90.0	80.0		0.0	120.0		0.0
Storage Lanes	1		0	1		1	1		0	1		0
Taper Length (m)	100.0			100.0			40.0			100.0		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor	1.00					0.98						
Frt						0.850		0.973			0.875	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1561	3212	0	1686	3252	1340	1686	1369	0	1561	1314	0
Flt Permitted	0.180			0.293			0.680			0.739		
Satd. Flow (perm)	296	3212	0	520	3252	1311	1207	1369	0	1215	1314	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)						257		5			100	
Link Speed (k/h)		80			80			80			80	
Link Distance (m)		1424.6			340.0			138.9			368.7	
Travel Time (s)		64.1			15.3			6.3			16.6	
Confl. Peds. (#/hr)	1					1						
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	8%	5%	0%	0%	11%	11%	0%	21%	0%	8%	19%	8%
Adj. Flow (vph)	100	976	1	5	1092	257	1	23	5	112	20	100
Shared Lane Traffic (%)												
Lane Group Flow (vph)	100	977	0	5	1092	257	1	28	0	112	120	0
Turn Type	pm+pt	NA		pm+pt	NA	Perm	Perm	NA		Perm	NA	
Protected Phases	5	2		1	6			8			4	
Permitted Phases	2			6		6	8			4		
Detector Phase	5	2		1	6	6	8	8		4	4	
Switch Phase												
Minimum Initial (s)	7.0	20.0		7.0	20.0	20.0	10.0	10.0		10.0	10.0	
Minimum Split (s)	20.0	50.0		20.0	50.0	50.0	35.0	35.0		35.0	35.0	
Total Split (s)	20.0	50.0		20.0	50.0	50.0	35.0	35.0		35.0	35.0	
Total Split (%)	19.0%	47.6%		19.0%	47.6%	47.6%	33.3%	33.3%		33.3%	33.3%	
Maximum Green (s)	17.0	42.2		17.0	42.2	42.2	27.4	27.4		27.4	27.4	
Yellow Time (s)	3.0	5.9		3.0	5.9	5.9	5.9	5.9		5.9	5.9	
All-Red Time (s)	0.0	1.9		0.0	1.9	1.9	1.7	1.7		1.7	1.7	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Total Lost Time (s)	3.0	7.8		3.0	7.8	7.8	7.6	7.6		7.6	7.6	
Lead/Lag	Lead	Lag		Lead	Lag	Lag						
Lead-Lag Optimize?	Yes	Yes		Yes	Yes	Yes						
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	
Recall Mode	None	Max		None	Min	Min	None	None		None	None	
Walk Time (s)		16.0			16.0	16.0	16.0	16.0		16.0	16.0	
Flash Dont Walk (s)		11.0			11.0	11.0	11.0	11.0		11.0	11.0	
Pedestrian Calls (#/hr)		0			0	0	0	0		0	0	
Act Effct Green (s)	50.9	44.4		47.5	37.1	37.1	13.2	13.2		13.2	13.2	
Actuated g/C Ratio	0.68	0.59		0.64	0.50	0.50	0.18	0.18		0.18	0.18	
v/c Ratio	0.30	0.51		0.01	0.68	0.33	0.00	0.11		0.52	0.38	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Control Delay	6.9	11.2		4.8	18.3	3.1	27.0	24.8		38.4	12.8	
Queue Delay	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Total Delay	6.9	11.2		4.8	18.3	3.1	27.0	24.8		38.4	12.8	
LOS	A	B		A	B	A	C	C		D	B	
Approach Delay		10.8			15.4			24.8			25.2	
Approach LOS		B			B			C			C	
Queue Length 50th (m)	4.1	36.1		0.3	63.1	0.0	0.1	2.7		14.2	2.3	
Queue Length 95th (m)	11.0	83.2		1.3	103.8	12.7	1.5	10.6		34.2	17.4	
Internal Link Dist (m)		1400.6			316.0			114.9			344.7	
Turn Bay Length (m)	145.0			105.0		90.0	80.0			120.0		
Base Capacity (vph)	492	1905		621	1856	858	447	510		450	549	
Starvation Cap Reductn	0	0		0	0	0	0	0		0	0	
Spillback Cap Reductn	0	0		0	0	0	0	0		0	0	
Storage Cap Reductn	0	0		0	0	0	0	0		0	0	
Reduced v/c Ratio	0.20	0.51		0.01	0.59	0.30	0.00	0.05		0.25	0.22	

Intersection Summary			
Area Type:	Other		
Cycle Length: 105			
Actuated Cycle Length: 74.8			
Natural Cycle: 105			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 0.68			
Intersection Signal Delay: 14.5		Intersection LOS: B	
Intersection Capacity Utilization 65.6%		ICU Level of Service C	
Analysis Period (min) 15			

Splits and Phases: 2: Nafziger Road & Highway 7/8



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	100	976	1	5	1092	257	1	23	5	112	20	100
Future Volume (vph)	100	976	1	5	1092	257	1	23	5	112	20	100
Ideal Flow (vphpl)	1775	1775	1775	1775	1900	1750	1775	1650	1650	1775	1650	1650
Total Lost time (s)	3.0	7.8		3.0	7.8	7.8	7.6	7.6		7.6	7.6	
Lane Util. Factor	1.00	0.95		1.00	0.95	1.00	1.00	1.00		1.00	1.00	
Frpb, ped/bikes	1.00	1.00		1.00	1.00	0.98	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	1.00	
Frt	1.00	1.00		1.00	1.00	0.85	1.00	0.97		1.00	0.88	
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1561	3212		1686	3252	1311	1686	1370		1561	1314	
Flt Permitted	0.18	1.00		0.29	1.00	1.00	0.68	1.00		0.74	1.00	
Satd. Flow (perm)	296	3212		520	3252	1311	1207	1370		1215	1314	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	100	976	1	5	1092	257	1	23	5	112	20	100
RTOR Reduction (vph)	0	0	0	0	0	127	0	4	0	0	83	0
Lane Group Flow (vph)	100	977	0	5	1092	130	1	24	0	112	37	0
Confl. Peds. (#/hr)	1					1						
Heavy Vehicles (%)	8%	5%	0%	0%	11%	11%	0%	21%	0%	8%	19%	8%
Turn Type	pm+pt	NA		pm+pt	NA	Perm	Perm	NA		Perm	NA	
Protected Phases	5	2		1	6			8			4	
Permitted Phases	2			6		6	8			4		
Actuated Green, G (s)	48.6	44.4		40.2	39.0	39.0	13.2	13.2		13.2	13.2	
Effective Green, g (s)	48.6	44.4		40.2	39.0	39.0	13.2	13.2		13.2	13.2	
Actuated g/C Ratio	0.63	0.58		0.52	0.51	0.51	0.17	0.17		0.17	0.17	
Clearance Time (s)	3.0	7.8		3.0	7.8	7.8	7.6	7.6		7.6	7.6	
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	294	1847		288	1642	662	206	234		207	224	
v/s Ratio Prot	c0.03	0.30		0.00	c0.34			0.02			0.03	
v/s Ratio Perm	0.19			0.01		0.10	0.00			c0.09		
v/c Ratio	0.34	0.53		0.02	0.67	0.20	0.00	0.10		0.54	0.17	
Uniform Delay, d1	7.1	10.0		8.9	14.2	10.5	26.6	27.0		29.2	27.3	
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.7	1.1		0.0	1.0	0.1	0.0	0.2		2.9	0.4	
Delay (s)	7.8	11.1		8.9	15.3	10.6	26.6	27.2		32.1	27.7	
Level of Service	A	B		A	B	B	C	C		C	C	
Approach Delay (s)		10.8			14.4			27.2			29.8	
Approach LOS		B			B			C			C	

Intersection Summary					
HCM 2000 Control Delay	14.4	HCM 2000 Level of Service		B	
HCM 2000 Volume to Capacity ratio	0.60				
Actuated Cycle Length (s)	77.2	Sum of lost time (s)		18.4	
Intersection Capacity Utilization	65.6%	ICU Level of Service		C	
Analysis Period (min)	15				

c Critical Lane Group

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	1	2	47	0	47	0	384	87	42	228	1
Future Volume (vph)	0	1	2	47	0	47	0	384	87	42	228	1
Ideal Flow (vphpl)	1550	1550	1550	1550	1550	1550	1650	1650	1750	1550	1550	1550
Storage Length (m)	0.0		0.0	0.0		0.0	0.0		50.0	0.0		0.0
Storage Lanes	0		0	0		0	0		1	0		0
Taper Length (m)	7.5			7.5			7.5			7.5		
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		0.910			0.932				0.850			
Flt Protected					0.976						0.992	
Satd. Flow (prot)	0	1410	0	0	1396	0	0	1602	1488	0	1475	0
Flt Permitted					0.976						0.992	
Satd. Flow (perm)	0	1410	0	0	1396	0	0	1602	1488	0	1475	0
Link Speed (k/h)		50			50			80			80	
Link Distance (m)		79.8			58.8			368.7			154.9	
Travel Time (s)		5.7			4.2			16.6			7.0	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	0%	0%	0%	0%	0%	2%	0%	3%	0%	0%	5%	2%
Adj. Flow (vph)	0	1	2	47	0	47	0	384	87	42	228	1
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	3	0	0	94	0	0	384	87	0	271	0
Sign Control		Stop			Stop			Free			Free	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	64.3%	ICU Level of Service	C
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	1	2	47	0	47	0	384	87	42	228	1
Future Volume (Veh/h)	0	1	2	47	0	47	0	384	87	42	228	1
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	0	1	2	47	0	47	0	384	87	42	228	1
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (m)								369				
pX, platoon unblocked												
vC, conflicting volume	744	784	228	699	697	384	229			471		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	744	784	228	699	697	384	229			471		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	100	100	100	86	100	93	100			96		
cM capacity (veh/h)	301	315	816	345	353	664	1351			1101		

Direction, Lane #	EB 1	WB 1	NB 1	NB 2	SB 1
Volume Total	3	94	384	87	271
Volume Left	0	47	0	0	42
Volume Right	2	47	0	87	1
cSH	533	454	1351	1700	1101
Volume to Capacity	0.01	0.21	0.00	0.05	0.04
Queue Length 95th (m)	0.1	6.2	0.0	0.0	1.0
Control Delay (s)	11.8	15.0	0.0	0.0	1.6
Lane LOS	B	B			A
Approach Delay (s)	11.8	15.0	0.0		1.6
Approach LOS	B	B			

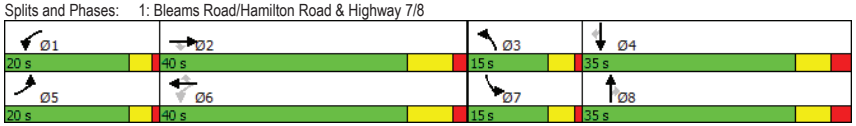
Intersection Summary				
Average Delay	2.2			
Intersection Capacity Utilization	64.3%	ICU Level of Service	C	
Analysis Period (min)	15			

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	94	835	127	98	554	169	86	46	81	252	117	89
Future Volume (vph)	94	835	127	98	554	169	86	46	81	252	117	89
Ideal Flow (vphpl)	1775	1900	1750	1775	1900	1750	1775	1900	1750	1775	1900	1750
Storage Length (m)	300.0		110.0	100.0		75.0	70.0		85.0	55.0		155.0
Storage Lanes	2		1	1		1	2		1	2		1
Taper Length (m)	40.0			40.0			40.0			40.0		
Lane Util. Factor	0.97	0.95	1.00	1.00	0.95	1.00	0.97	1.00	1.00	0.97	1.00	1.00
Ped Bike Factor	1.00		0.98	1.00		0.98			0.99	1.00		
Frt			0.850			0.850			0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	3176	3438	1458	1637	3195	1444	3116	1900	1430	3176	1827	1458
Flt Permitted	0.950			0.256			0.950			0.950		
Satd. Flow (perm)	3174	3438	1424	441	3195	1413	3116	1900	1412	3171	1827	1458
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			127			169			132			132
Link Speed (k/h)		80			80			50			50	
Link Distance (m)		163.4			1398.3			147.6			715.9	
Travel Time (s)		7.4			62.9			10.6			51.5	
Confl. Peds. (#/hr)	1		2	2		1			1	1		
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	3%	5%	2%	3%	13%	3%	5%	0%	4%	3%	4%	2%
Adj. Flow (vph)	94	835	127	98	554	169	86	46	81	252	117	89
Shared Lane Traffic (%)												
Lane Group Flow (vph)	94	835	127	98	554	169	86	46	81	252	117	89
Turn Type	Prot	NA	Perm	pm+pt	NA	Perm	Prot	NA	Perm	Prot	NA	Perm
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases			2	6		6			8			4
Detector Phase	5	2	2	1	6	6	3	8	8	7	4	4
Switch Phase												
Minimum Initial (s)	7.0	20.0	20.0	7.0	20.0	20.0	5.0	10.0	10.0	5.0	10.0	10.0
Minimum Split (s)	20.0	40.0	40.0	20.0	40.0	40.0	9.5	35.0	35.0	9.5	35.0	35.0
Total Split (s)	20.0	40.0	40.0	20.0	40.0	40.0	15.0	35.0	35.0	15.0	35.0	35.0
Total Split (%)	18.2%	36.4%	36.4%	18.2%	36.4%	36.4%	13.6%	31.8%	31.8%	13.6%	31.8%	31.8%
Maximum Green (s)	16.0	32.2	32.2	16.0	32.2	32.2	10.5	27.7	27.7	10.5	27.7	27.7
Yellow Time (s)	3.0	5.9	5.9	3.0	5.9	5.9	3.5	4.5	4.5	3.5	4.5	4.5
All-Red Time (s)	1.0	1.9	1.9	1.0	1.9	1.9	1.0	2.8	2.8	1.0	2.8	2.8
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.0	7.8	7.8	4.0	7.8	7.8	4.5	7.3	7.3	4.5	7.3	7.3
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	1.8	1.8	3.0	1.8	1.8	3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	Max	Max	None	Max	Max	None	None	None	None	None	None
Walk Time (s)		19.0	19.0		19.0	19.0		19.0	19.0		19.0	19.0
Flash Dont Walk (s)		14.0	14.0		14.0	14.0		14.0	14.0		14.0	14.0
Pedestrian Calls (#/hr)		0	0		0	0		0	0		0	0
Act Effct Green (s)	8.3	33.9	33.9	44.1	33.9	33.9	7.8	11.2	11.2	11.4	12.8	12.8
Actuated g/C Ratio	0.10	0.42	0.42	0.54	0.42	0.42	0.10	0.14	0.14	0.14	0.16	0.16
v/c Ratio	0.29	0.58	0.19	0.27	0.41	0.25	0.29	0.18	0.26	0.56	0.40	0.26

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Control Delay	39.3	22.6	4.7	11.0	20.2	4.4	39.5	35.7	3.8	41.3	38.2	4.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	39.3	22.6	4.7	11.0	20.2	4.4	39.5	35.7	3.8	41.3	38.2	4.4
LOS	D	C	A	B	C	A	D	D	A	D	D	A
Approach Delay		21.9			15.9			25.1			33.3	
Approach LOS		C			B			C			C	
Queue Length 50th (m)	7.8	59.2	0.0	7.0	36.0	0.0	7.2	7.2	0.0	21.4	18.4	0.0
Queue Length 95th (m)	16.0	89.7	11.6	15.7	57.1	13.2	15.0	17.5	4.0	#38.8	36.4	5.6
Internal Link Dist (m)		139.4			1374.3			123.6			691.9	
Turn Bay Length (m)	300.0		110.0	100.0		75.0	70.0		85.0	55.0		155.0
Base Capacity (vph)	643	1438	669	498	1335	688	414	666	581	447	640	597
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.15	0.58	0.19	0.20	0.41	0.25	0.21	0.07	0.14	0.56	0.18	0.15

Intersection Summary			
Area Type:	Other		
Cycle Length: 110			
Actuated Cycle Length: 81.1			
Natural Cycle: 105			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 0.58			
Intersection Signal Delay: 22.3		Intersection LOS: C	
Intersection Capacity Utilization 63.6%		ICU Level of Service B	
Analysis Period (min) 15			
# 95th percentile volume exceeds capacity, queue may be longer.			
Queue shown is maximum after two cycles.			

Splits and Phases: 1: Bleams Road/Hamilton Road & Highway 7/8



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	94	835	127	98	554	169	86	46	81	252	117	89
Future Volume (vph)	94	835	127	98	554	169	86	46	81	252	117	89
Ideal Flow (vphpl)	1775	1900	1750	1775	1900	1750	1775	1900	1750	1775	1900	1750
Total Lost time (s)	4.0	7.8	7.8	4.0	7.8	7.8	4.5	7.3	7.3	4.5	7.3	7.3
Lane Util. Factor	0.97	0.95	1.00	1.00	0.95	1.00	0.97	1.00	1.00	0.97	1.00	1.00
Frpb, ped/bikes	1.00	1.00	0.98	1.00	1.00	0.98	1.00	1.00	0.99	1.00	1.00	1.00
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	3176	3438	1426	1637	3195	1413	3116	1900	1412	3176	1827	1458
Flt Permitted	0.95	1.00	1.00	0.26	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	3176	3438	1426	440	3195	1413	3116	1900	1412	3176	1827	1458
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	94	835	127	98	554	169	86	46	81	252	117	89
RTOR Reduction (vph)	0	0	75	0	0	100	0	0	73	0	0	75
Lane Group Flow (vph)	94	835	52	98	554	69	86	46	8	252	117	14
Confl. Peds. (#/hr)	1		2	2		1			1	1		
Heavy Vehicles (%)	3%	5%	2%	3%	13%	3%	5%	0%	4%	3%	4%	2%
Turn Type	Prot	NA	Perm	pm+pt	NA	Perm	Prot	NA	Perm	Prot	NA	Perm
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases			2	6		6			8			4
Actuated Green, G (s)	6.3	34.0	34.0	40.3	34.0	34.0	6.2	8.4	8.4	11.4	13.6	13.6
Effective Green, g (s)	6.3	34.0	34.0	40.3	34.0	34.0	6.2	8.4	8.4	11.4	13.6	13.6
Actuated g/C Ratio	0.08	0.41	0.41	0.48	0.41	0.41	0.07	0.10	0.10	0.14	0.16	0.16
Clearance Time (s)	4.0	7.8	7.8	4.0	7.8	7.8	4.5	7.3	7.3	4.5	7.3	7.3
Vehicle Extension (s)	3.0	1.8	1.8	3.0	1.8	1.8	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	239	1396	579	301	1297	573	230	190	141	432	296	236
v/s Ratio Prot	c0.03	c0.24		0.02	0.17		0.03	0.02		c0.08	c0.06	
v/s Ratio Perm			0.04	0.13		0.05			0.01			0.01
v/c Ratio	0.39	0.60	0.09	0.33	0.43	0.12	0.37	0.24	0.06	0.58	0.40	0.06
Uniform Delay, d1	36.9	19.5	15.3	12.5	17.9	15.5	36.9	34.7	34.1	33.9	31.4	29.7
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	1.1	1.9	0.3	0.6	1.0	0.4	1.0	0.7	0.2	2.0	0.9	0.1
Delay (s)	37.9	21.4	15.6	13.1	18.9	15.9	37.9	35.4	34.2	35.9	32.2	29.8
Level of Service	D	C	B	B	B	B	D	D	C	D	C	C
Approach Delay (s)		22.2			17.6			36.0			33.8	
Approach LOS		C			B			D			C	

Intersection Summary				
HCM 2000 Control Delay	23.9	HCM 2000 Level of Service	C	
HCM 2000 Volume to Capacity ratio	0.56			
Actuated Cycle Length (s)	83.7	Sum of lost time (s)	23.6	
Intersection Capacity Utilization	63.6%	ICU Level of Service	B	
Analysis Period (min)	15			

c Critical Lane Group

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	135	2	9	29	1	24	9	80	30	25	303	71
Future Volume (vph)	135	2	9	29	1	24	9	80	30	25	303	71
Ideal Flow (vphpl)	1765	1900	1765	1900	1900	1900	1650	1650	1900	1900	1650	1650
Storage Length (m)	0.0		0.0	0.0		0.0	0.0		50.0	0.0		0.0
Storage Lanes	0		0	0		0	0		1	0		0
Taper Length (m)	0.0			7.5			0.0			0.0		
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
Frt		0.992			0.940				0.850		0.976	
Flt Protected		0.956			0.974			0.995			0.997	
Satd. Flow (prot)	0	1802	0	0	1709	0	0	1482	1615	0	1536	0
Flt Permitted		0.956			0.974			0.995			0.997	
Satd. Flow (perm)	0	1802	0	0	1709	0	0	1482	1615	0	1536	0
Link Speed (k/h)		50			50			80			80	
Link Distance (m)		380.0			59.8			535.4			181.7	
Travel Time (s)		27.4			4.3			24.1			8.2	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	0%	0%	0%	0%	0%	4%	0%	12%	0%	0%	6%	0%
Adj. Flow (vph)	135	2	9	29	1	24	9	80	30	25	303	71
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	146	0	0	54	0	0	89	30	0	399	0
Sign Control		Stop			Stop			Free			Free	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	51.2%	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)	135	2	9	29	1	24	9	80	30	25	303	71
Future Volume (Veh/h)	135	2	9	29	1	24	9	80	30	25	303	71
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	135	2	9	29	1	24	9	80	30	25	303	71
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	511	516	338	496	522	80	374			110		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	511	516	338	496	522	80	374			110		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	70	100	99	94	100	98	99			98		
cM capacity (veh/h)	455	454	708	470	451	975	1196			1493		

Direction, Lane #	EB 1	WB 1	NB 1	NB 2	SB 1
Volume Total	146	54	89	30	399
Volume Left	135	29	9	0	25
Volume Right	9	24	0	30	71
cSH	466	610	1196	1700	1493
Volume to Capacity	0.31	0.09	0.01	0.02	0.02
Queue Length 95th (m)	10.6	2.3	0.2	0.0	0.4
Control Delay (s)	16.2	11.5	0.9	0.0	0.6
Lane LOS	C	B	A		A
Approach Delay (s)	16.2	11.5	0.7		0.6
Approach LOS	C	B			

Intersection Summary					
Average Delay			4.6		
Intersection Capacity Utilization			51.2%	ICU Level of Service	A
Analysis Period (min)			15		

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	3	109	15	4	283	58
Future Volume (vph)	3	109	15	4	283	58
Ideal Flow (vphpl)	1765	1765	1650	1650	1650	1650
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.869		0.972			
Flt Protected	0.999					0.960
Satd. Flow (prot)	1502	0	1572	0	0	1553
Flt Permitted	0.999					0.960
Satd. Flow (perm)	1502	0	1572	0	0	1553
Link Speed (k/h)	50		80			80
Link Distance (m)	149.7		232.9			535.4
Travel Time (s)	10.8		10.5			24.1
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	3	109	15	4	283	58
Shared Lane Traffic (%)						
Lane Group Flow (vph)	112	0	19	0	0	341
Sign Control	Stop		Free			Free

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	42.3%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	3	109	15	4	283	58
Future Volume (Veh/h)	3	109	15	4	283	58
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	3	109	15	4	283	58
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	641	17			19	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	641	17			19	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	99	90			82	
cM capacity (veh/h)	361	1062			1597	

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	112	19	341
Volume Left	3	0	283
Volume Right	109	4	0
cSH	1009	1700	1597
Volume to Capacity	0.11	0.01	0.18
Queue Length 95th (m)	3.0	0.0	5.1
Control Delay (s)	9.0	0.0	6.7
Lane LOS	A		A
Approach Delay (s)	9.0	0.0	6.7
Approach LOS	A		

Intersection Summary			
Average Delay	7.0		
Intersection Capacity Utilization	42.3%	ICU Level of Service	A
Analysis Period (min)	15		

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	0	0	71	0	0	142
Future Volume (vph)	0	0	71	0	0	142
Ideal Flow (vphpl)	1650	1650	1650	1650	1765	1765
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt					0.865	
Flt Protected				0.950		
Satd. Flow (prot)	1618	0	0	1537	1497	0
Flt Permitted				0.950		
Satd. Flow (perm)	1618	0	0	1537	1497	0
Link Speed (k/h)	50			50	50	
Link Distance (m)	199.2			380.0	206.9	
Travel Time (s)	14.3			27.4	14.9	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	0	0	71	0	0	142
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	0	0	71	142	0
Sign Control	Free			Free	Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	20.7%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	0	0	71	0	0	142
Future Volume (Veh/h)	0	0	71	0	0	142
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	0	0	71	0	0	142
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume			0		142	0
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			0		142	0
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		100	87
cM capacity (veh/h)			1623		814	1085

Direction, Lane #	EB 1	WB 1	NB 1
Volume Total	0	71	142
Volume Left	0	71	0
Volume Right	0	0	142
cSH	1700	1623	1085
Volume to Capacity	0.00	0.04	0.13
Queue Length 95th (m)	0.0	1.1	3.6
Control Delay (s)	0.0	7.3	8.8
Lane LOS		A	A
Approach Delay (s)	0.0	7.3	8.8
Approach LOS			A

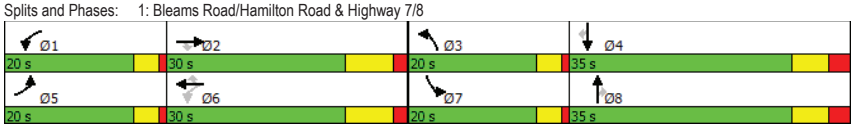
Intersection Summary			
Average Delay	8.3		
Intersection Capacity Utilization	20.7%	ICU Level of Service	A
Analysis Period (min)	15		

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	56	792	123	62	951	175	183	88	103	198	72	121
Future Volume (vph)	56	792	123	62	951	175	183	88	103	198	72	121
Ideal Flow (vphpl)	1775	1900	1750	1775	1900	1750	1775	1900	1750	1775	1900	1750
Storage Length (m)	300.0		110.0	100.0		75.0	70.0		85.0	55.0		155.0
Storage Lanes	2		1	1		1	2		1	2		1
Taper Length (m)	40.0			40.0			40.0			40.0		
Lane Util. Factor	0.97	0.95	1.00	1.00	0.95	1.00	0.97	1.00	1.00	0.97	1.00	1.00
Ped Bike Factor	1.00		0.98	1.00		0.97	1.00		0.99	1.00		0.99
Frt			0.850			0.850			0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	3176	3438	1458	1637	3195	1444	3116	1900	1430	3176	1827	1458
Flt Permitted	0.950			0.273			0.950			0.950		
Satd. Flow (perm)	3171	3438	1427	470	3195	1406	3111	1900	1412	3172	1827	1439
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			128			158			133			133
Link Speed (k/h)		80			80			50			50	
Link Distance (m)		163.4			1398.3			147.6			715.9	
Travel Time (s)		7.4			62.9			10.6			51.5	
Confl. Peds. (#/hr)	4		1	1		4	1		1	1		1
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	3%	5%	2%	3%	13%	3%	5%	0%	4%	3%	4%	2%
Adj. Flow (vph)	56	792	123	62	951	175	183	88	103	198	72	121
Shared Lane Traffic (%)												
Lane Group Flow (vph)	56	792	123	62	951	175	183	88	103	198	72	121
Turn Type	Prot	NA	Perm	pm+pt	NA	Perm	Prot	NA	Perm	Prot	NA	Perm
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases			2	6		6			8			4
Detector Phase	5	2	2	1	6	6	3	8	8	7	4	4
Switch Phase												
Minimum Initial (s)	7.0	20.0	20.0	7.0	20.0	20.0	5.0	10.0	10.0	5.0	10.0	10.0
Minimum Split (s)	20.0	30.0	30.0	20.0	30.0	30.0	9.5	35.0	35.0	9.5	35.0	35.0
Total Split (s)	20.0	30.0	30.0	20.0	30.0	30.0	20.0	35.0	35.0	20.0	35.0	35.0
Total Split (%)	19.0%	28.6%	28.6%	19.0%	28.6%	28.6%	19.0%	33.3%	33.3%	19.0%	33.3%	33.3%
Maximum Green (s)	16.0	22.2	22.2	16.0	22.2	22.2	16.0	27.7	27.7	16.0	27.7	27.7
Yellow Time (s)	3.0	5.9	5.9	3.0	5.9	5.9	3.0	4.5	4.5	3.0	4.5	4.5
All-Red Time (s)	1.0	1.9	1.9	1.0	1.9	1.9	1.0	2.8	2.8	1.0	2.8	2.8
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.0	7.8	7.8	4.0	7.8	7.8	4.0	7.3	7.3	4.0	7.3	7.3
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	1.8	1.8	3.0	1.8	1.8	3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	Max	Max	None	Max	Max	None	None	None	None	None	None
Walk Time (s)		19.0	19.0		19.0	19.0		19.0	19.0		19.0	19.0
Flash Dont Walk (s)		14.0	14.0		14.0	14.0		14.0	14.0		14.0	14.0
Pedestrian Calls (#/hr)		0	0		0	0		0	0		0	0
Act Effct Green (s)	7.5	33.3	33.3	43.0	33.3	33.3	10.2	10.8	10.8	10.5	11.1	11.1
Actuated g/C Ratio	0.09	0.40	0.40	0.52	0.40	0.40	0.12	0.13	0.13	0.13	0.13	0.13
v/c Ratio	0.20	0.57	0.19	0.18	0.74	0.27	0.48	0.36	0.34	0.49	0.30	0.39

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Control Delay	38.9	22.6	4.4	10.4	26.9	5.5	39.0	39.3	7.0	38.9	37.9	9.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	38.9	22.6	4.4	10.4	26.9	5.5	39.0	39.3	7.0	38.9	37.9	9.8
LOS	D	C	A	B	C	A	D	D	A	D	D	A
Approach Delay		21.2			22.9			30.3			29.7	
Approach LOS		C			C			C			C	
Queue Length 50th (m)	4.6	53.6	0.0	4.3	70.6	1.7	15.0	13.9	0.0	16.2	11.2	0.0
Queue Length 95th (m)	11.0	84.5	10.7	11.4	110.0	15.8	26.5	29.5	9.0	28.2	25.1	13.3
Internal Link Dist (m)		139.4			1374.3			123.6			691.9	
Turn Bay Length (m)	300.0		110.0	100.0		75.0	70.0		85.0	55.0		155.0
Base Capacity (vph)	619	1382	650	488	1286	660	607	641	564	619	616	573
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.09	0.57	0.19	0.13	0.74	0.27	0.30	0.14	0.18	0.32	0.12	0.21

Intersection Summary			
Area Type:	Other		
Cycle Length: 105			
Actuated Cycle Length: 82.8			
Natural Cycle: 105			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 0.74			
Intersection Signal Delay: 24.2		Intersection LOS: C	
Intersection Capacity Utilization 62.4%		ICU Level of Service B	
Analysis Period (min) 15			

Splits and Phases: 1: Bleams Road/Hamilton Road & Highway 7/8



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	56	792	123	62	951	175	183	88	103	198	72	121
Future Volume (vph)	56	792	123	62	951	175	183	88	103	198	72	121
Ideal Flow (vphpl)	1775	1900	1750	1775	1900	1750	1775	1900	1750	1775	1900	1750
Total Lost time (s)	4.0	7.8	7.8	4.0	7.8	7.8	4.0	7.3	7.3	4.0	7.3	7.3
Lane Util. Factor	0.97	0.95	1.00	1.00	0.95	1.00	0.97	1.00	1.00	0.97	1.00	1.00
Frpb, ped/bikes	1.00	1.00	0.98	1.00	1.00	0.98	1.00	1.00	0.99	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	1.00	1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	3176	3438	1427	1637	3195	1408	3116	1900	1412	3176	1827	1440
Flt Permitted	0.95	1.00	1.00	0.27	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	3176	3438	1427	471	3195	1408	3116	1900	1412	3176	1827	1440
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	56	792	123	62	951	175	183	88	103	198	72	121
RTOR Reduction (vph)	0	0	74	0	0	95	0	0	90	0	0	105
Lane Group Flow (vph)	56	792	49	62	951	80	183	88	13	198	72	16
Confl. Peds. (#/hr)	4		1	1		4	1		1	1		1
Heavy Vehicles (%)	3%	5%	2%	3%	13%	3%	5%	0%	4%	3%	4%	2%
Turn Type	Prot	NA	Perm	pm+pt	NA	Perm	Prot	NA	Perm	Prot	NA	Perm
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases			2	6		6			8			4
Actuated Green, G (s)	5.8	33.3	33.3	39.3	33.4	33.4	10.2	10.8	10.8	10.5	11.1	11.1
Effective Green, g (s)	5.8	33.3	33.3	39.3	33.4	33.4	10.2	10.8	10.8	10.5	11.1	11.1
Actuated g/C Ratio	0.07	0.40	0.40	0.47	0.40	0.40	0.12	0.13	0.13	0.13	0.13	0.13
Clearance Time (s)	4.0	7.8	7.8	4.0	7.8	7.8	4.0	7.3	7.3	4.0	7.3	7.3
Vehicle Extension (s)	3.0	1.8	1.8	3.0	1.8	1.8	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	220	1369	568	303	1276	562	380	245	182	398	242	191
v/s Ratio Prot	c0.02	0.23		0.01	c0.30		0.06	c0.05		c0.06	0.04	
v/s Ratio Perm			0.03	0.08		0.06			0.01			0.01
v/c Ratio	0.25	0.58	0.09	0.20	0.75	0.14	0.48	0.36	0.07	0.50	0.30	0.08
Uniform Delay, d1	36.9	19.7	15.7	12.6	21.5	16.0	34.2	33.2	32.0	34.1	32.7	31.8
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	0.6	1.8	0.3	0.3	4.0	0.5	1.0	0.9	0.2	1.0	0.7	0.2
Delay (s)	37.5	21.5	16.0	12.9	25.5	16.5	35.2	34.1	32.2	35.1	33.4	32.0
Level of Service	D	C	B	B	C	B	D	C	C	D	C	C
Approach Delay (s)		21.7			23.5			34.1			33.8	
Approach LOS		C			C			C			C	

Intersection Summary					
HCM 2000 Control Delay	25.6	HCM 2000 Level of Service		C	
HCM 2000 Volume to Capacity ratio	0.59				
Actuated Cycle Length (s)	83.6	Sum of lost time (s)		23.1	
Intersection Capacity Utilization	62.4%	ICU Level of Service		B	
Analysis Period (min)	15				

c Critical Lane Group

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	257	1	7	47	0	47	1	127	87	42	128	101
Future Volume (vph)	257	1	7	47	0	47	1	127	87	42	128	101
Ideal Flow (vphpl)	1765	1900	1765	1900	1900	1900	1650	1650	1900	1900	1650	1650
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		0.996			0.932				0.850		0.950	
Flt Protected		0.954			0.976						0.992	
Satd. Flow (prot)	0	1770	0	0	1694	0	0	1618	1583	0	1524	0
Flt Permitted		0.954			0.976						0.992	
Satd. Flow (perm)	0	1770	0	0	1694	0	0	1618	1583	0	1524	0
Link Speed (k/h)		50			50			80			80	
Link Distance (m)		380.0			75.0			535.4			181.7	
Travel Time (s)		27.4			5.4			24.1			8.2	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	257	1	7	47	0	47	1	127	87	42	128	101
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	265	0	0	94	0	0	128	87	0	271	0
Sign Control		Stop			Stop			Free			Free	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 57.3%		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)	257	1	7	47	0	47	1	127	87	42	128	101
Future Volume (Veh/h)	257	1	7	47	0	47	1	127	87	42	128	101
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	257	1	7	47	0	47	1	127	87	42	128	101
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	438	478	178	399	442	127	229			214		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	438	478	178	399	442	127	229			214		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	47	100	99	91	100	95	100			97		
cM capacity (veh/h)	490	471	864	542	494	923	1339			1356		

Direction, Lane #	EB 1	WB 1	NB 1	NB 2	SB 1
Volume Total	265	94	128	87	271
Volume Left	257	47	1	0	42
Volume Right	7	47	0	87	101
cSH	495	683	1339	1700	1356
Volume to Capacity	0.54	0.14	0.00	0.05	0.03
Queue Length 95th (m)	24.9	3.8	0.0	0.0	0.8
Control Delay (s)	20.3	11.1	0.1	0.0	1.4
Lane LOS	C	B	A		A
Approach Delay (s)	20.3	11.1	0.0		1.4
Approach LOS	C	B			

Intersection Summary				
Average Delay	8.1			
Intersection Capacity Utilization	57.3%	ICU Level of Service	B	
Analysis Period (min)	15			

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	1	100	24	5	112	70
Future Volume (vph)	1	100	24	5	112	70
Ideal Flow (vphpl)	1765	1765	1650	1650	1650	1650
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.866		0.977			
Flt Protected						0.970
Satd. Flow (prot)	1499	0	1580	0	0	1569
Flt Permitted						0.970
Satd. Flow (perm)	1499	0	1580	0	0	1569
Link Speed (k/h)	50		80			80
Link Distance (m)	149.7		232.9			535.4
Travel Time (s)	10.8		10.5			24.1
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	1	100	24	5	112	70
Shared Lane Traffic (%)						
Lane Group Flow (vph)	101	0	29	0	0	182
Sign Control	Stop		Free			Free

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 31.4%		ICU Level of Service A	
Analysis Period (min) 15			

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	1	100	24	5	112	70
Future Volume (Veh/h)	1	100	24	5	112	70
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	1	100	24	5	112	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)						
pX, platoon unblocked						
vC, conflicting volume	320	26			29	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	320	26			29	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	100	90			93	
cM capacity (veh/h)	625	1049			1584	

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	101	29	182
Volume Left	1	0	112
Volume Right	100	5	0
cSH	1042	1700	1584
Volume to Capacity	0.10	0.02	0.07
Queue Length 95th (m)	2.6	0.0	1.8
Control Delay (s)	8.8	0.0	4.8
Lane LOS	A		A
Approach Delay (s)	8.8	0.0	4.8
Approach LOS	A		

Intersection Summary			
Average Delay	5.7		
Intersection Capacity Utilization	31.4%	ICU Level of Service	A
Analysis Period (min)	15		

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	0	0	101	0	0	263
Future Volume (vph)	0	0	101	0	0	263
Ideal Flow (vphpl)	1650	1650	1650	1650	1765	1765
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt					0.865	
Flt Protected				0.950		
Satd. Flow (prot)	1618	0	0	1537	1497	0
Flt Permitted				0.950		
Satd. Flow (perm)	1618	0	0	1537	1497	0
Link Speed (k/h)	50			50	50	
Link Distance (m)	199.2			380.0	206.9	
Travel Time (s)	14.3			27.4	14.9	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	0	0	101	0	0	263
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	0	0	101	263	0
Sign Control	Free			Free	Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 30.6%		ICU Level of Service A	
Analysis Period (min) 15			

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	0	0	101	0	0	263
Future Volume (Veh/h)	0	0	101	0	0	263
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	0	0	101	0	0	263
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume			0		202	0
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			0		202	0
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		100	76
cM capacity (veh/h)			1623		738	1085

Direction, Lane #	EB 1	WB 1	NB 1
Volume Total	0	101	263
Volume Left	0	101	0
Volume Right	0	0	263
cSH	1700	1623	1085
Volume to Capacity	0.00	0.06	0.24
Queue Length 95th (m)	0.0	1.6	7.6
Control Delay (s)	0.0	7.4	9.4
Lane LOS		A	A
Approach Delay (s)	0.0	7.4	9.4
Approach LOS			A

Intersection Summary				
Average Delay		8.8		
Intersection Capacity Utilization		30.6%	ICU Level of Service	A
Analysis Period (min)		15		

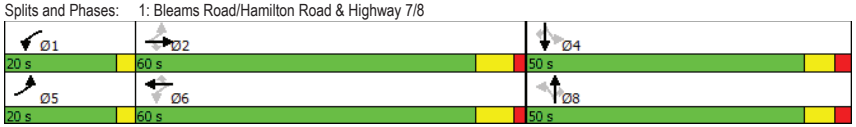
Appendix D 2023 Total Traffic Operations

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	174	846	127	99	560	184	86	86	81	281	129	98
Future Volume (vph)	174	846	127	99	560	184	86	86	81	281	129	98
Ideal Flow (vphpl)	1775	1900	1750	1775	1900	1750	1775	1900	1750	1775	1900	1750
Storage Length (m)	300.0		110.0	100.0		75.0	70.0		85.0	65.0		155.0
Storage Lanes	1		1	1		1	1		1	1		1
Taper Length (m)	40.0			100.0			40.0			20.0		
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor	1.00		0.98	1.00		0.98			0.99	1.00		
Frt			0.850			0.850			0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1637	3438	1458	1637	3195	1444	1606	1900	1430	1637	1827	1458
Flt Permitted	0.390			0.281			0.674			0.701		
Satd. Flow (perm)	672	3438	1424	484	3195	1413	1139	1900	1411	1207	1827	1458
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			127			184			81			98
Link Speed (k/h)		80			80			50			50	
Link Distance (m)		163.4			1424.6			147.6			715.9	
Travel Time (s)		7.4			64.1			10.6			51.5	
Confl. Peds. (#/hr)	1		2	2		1			1	1		
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	3%	5%	2%	3%	13%	3%	5%	0%	4%	3%	4%	2%
Adj. Flow (vph)	174	846	127	99	560	184	86	86	81	281	129	98
Shared Lane Traffic (%)												
Lane Group Flow (vph)	174	846	127	99	560	184	86	86	81	281	129	98
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	Perm	NA	Perm	Perm	NA	Perm
Protected Phases	5	2		1	6			8			4	
Permitted Phases	2		2	6		6	8		8	4		4
Detector Phase	5	2	2	1	6	6	8	8	8	4	4	4
Switch Phase												
Minimum Initial (s)	7.0	20.0	20.0	7.0	20.0	20.0	10.0	10.0	10.0	10.0	10.0	10.0
Minimum Split (s)	20.0	60.0	60.0	20.0	60.0	60.0	50.0	50.0	50.0	50.0	50.0	50.0
Total Split (s)	20.0	60.0	60.0	20.0	60.0	60.0	50.0	50.0	50.0	50.0	50.0	50.0
Total Split (%)	15.4%	46.2%	46.2%	15.4%	46.2%	46.2%	38.5%	38.5%	38.5%	38.5%	38.5%	38.5%
Maximum Green (s)	17.0	52.2	52.2	17.0	52.2	52.2	42.7	42.7	42.7	42.7	42.7	42.7
Yellow Time (s)	3.0	5.9	5.9	3.0	5.9	5.9	4.5	4.5	4.5	4.5	4.5	4.5
All-Red Time (s)	0.0	1.9	1.9	0.0	1.9	1.9	2.8	2.8	2.8	2.8	2.8	2.8
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	3.0	7.8	7.8	3.0	7.8	7.8	7.3	7.3	7.3	7.3	7.3	7.3
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag						
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes						
Vehicle Extension (s)	3.0	1.8	1.8	3.0	1.8	1.8	3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	Max	Max	None	Max	Max	None	None	None	None	None	None
Walk Time (s)		19.0	19.0		19.0	19.0	19.0	19.0	19.0	19.0	19.0	19.0
Flash Dont Walk (s)		14.0	14.0		14.0	14.0	14.0	14.0	14.0	14.0	14.0	14.0
Pedestrian Calls (#/hr)		0	0		0	0	0	0	0	0	0	0
Act Effct Green (s)	71.0	55.4	55.4	66.2	52.8	52.8	30.5	30.5	30.5	30.5	30.5	30.5
Actuated g/C Ratio	0.63	0.49	0.49	0.59	0.47	0.47	0.27	0.27	0.27	0.27	0.27	0.27
v/c Ratio	0.34	0.50	0.17	0.27	0.37	0.24	0.28	0.17	0.18	0.86	0.26	0.21

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Control Delay	11.6	22.1	4.0	11.6	22.2	4.2	34.6	31.7	7.6	64.2	33.3	7.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	11.6	22.1	4.0	11.6	22.2	4.2	34.6	31.7	7.6	64.2	33.3	7.0
LOS	B	C	A	B	C	A	C	C	A	E	C	A
Approach Delay		18.5			17.0			25.0			45.3	
Approach LOS		B			B			C			D	
Queue Length 50th (m)	15.3	67.5	0.0	8.3	43.0	0.0	15.6	15.1	0.0	61.3	23.3	0.0
Queue Length 95th (m)	32.2	107.4	11.8	19.4	73.2	14.9	30.7	29.0	11.7	100.6	41.4	12.8
Internal Link Dist (m)		139.4			1400.6			123.6			691.9	
Turn Bay Length (m)	300.0		110.0	100.0		75.0	70.0		85.0	65.0		155.0
Base Capacity (vph)	575	1688	763	482	1495	758	436	727	589	462	699	618
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.30	0.50	0.17	0.21	0.37	0.24	0.20	0.12	0.14	0.61	0.18	0.16

Intersection Summary			
Area Type:	Other		
Cycle Length: 130			
Actuated Cycle Length: 112.8			
Natural Cycle: 130			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 0.86			
Intersection Signal Delay: 23.6		Intersection LOS: C	
Intersection Capacity Utilization 85.4%		ICU Level of Service E	
Analysis Period (min) 15			

Splits and Phases: 1: Bleams Road/Hamilton Road & Highway 7/8



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	174	846	127	99	560	184	86	86	81	281	129	98
Future Volume (vph)	174	846	127	99	560	184	86	86	81	281	129	98
Ideal Flow (vphpl)	1775	1900	1750	1775	1900	1750	1775	1900	1750	1775	1900	1750
Total Lost time (s)	3.0	7.8	7.8	3.0	7.8	7.8	7.3	7.3	7.3	7.3	7.3	7.3
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frpb, ped/bikes	1.00	1.00	0.98	1.00	1.00	0.98	1.00	1.00	0.99	1.00	1.00	1.00
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1637	3438	1424	1637	3195	1413	1606	1900	1412	1636	1827	1458
Flt Permitted	0.39	1.00	1.00	0.28	1.00	1.00	0.67	1.00	1.00	0.70	1.00	1.00
Satd. Flow (perm)	672	3438	1424	484	3195	1413	1140	1900	1412	1207	1827	1458
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	174	846	127	99	560	184	86	86	81	281	129	98
RTOR Reduction (vph)	0	0	65	0	0	98	0	0	59	0	0	71
Lane Group Flow (vph)	174	846	62	99	560	86	86	86	22	281	129	27
Confl. Peds. (#/hr)	1		2	2		1			1	1		
Heavy Vehicles (%)	3%	5%	2%	3%	13%	3%	5%	0%	4%	3%	4%	2%
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	Perm	NA	Perm	Perm	NA	Perm
Protected Phases	5	2		1	6			8			4	
Permitted Phases	2		2	6		6	8		8	4		4
Actuated Green, G (s)	66.6	55.4	55.4	61.4	52.8	52.8	30.5	30.5	30.5	30.5	30.5	30.5
Effective Green, g (s)	66.6	55.4	55.4	61.4	52.8	52.8	30.5	30.5	30.5	30.5	30.5	30.5
Actuated g/C Ratio	0.59	0.49	0.49	0.55	0.47	0.47	0.27	0.27	0.27	0.27	0.27	0.27
Clearance Time (s)	3.0	7.8	7.8	3.0	7.8	7.8	7.3	7.3	7.3	7.3	7.3	7.3
Vehicle Extension (s)	3.0	1.8	1.8	3.0	1.8	1.8	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	493	1691	700	351	1498	662	308	514	382	326	494	394
v/s Ratio Prot	c0.04	c0.25		0.02	0.18			0.05			0.07	
v/s Ratio Perm	0.17		0.04	0.13		0.06	0.08		0.02	c0.23		0.02
v/c Ratio	0.35	0.50	0.09	0.28	0.37	0.13	0.28	0.17	0.06	0.86	0.26	0.07
Uniform Delay, d1	10.8	19.3	15.2	12.8	19.3	16.9	32.4	31.4	30.4	39.0	32.2	30.5
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	0.4	1.1	0.3	0.4	0.7	0.4	0.5	0.2	0.1	20.2	0.3	0.1
Delay (s)	11.2	20.3	15.4	13.2	20.0	17.3	32.9	31.5	30.5	59.2	32.5	30.6
Level of Service	B	C	B	B	B	B	C	C	C	E	C	C
Approach Delay (s)		18.4			18.6			31.6			46.9	
Approach LOS		B			B			C			D	

Intersection Summary			
HCM 2000 Control Delay	24.9	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.61		
Actuated Cycle Length (s)	112.6	Sum of lost time (s)	18.1
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)	127	1067	3	8	743	256	0	28	4	321	26	82
Future Volume (vph)	127	1067	3	8	743	256	0	28	4	321	26	82
Ideal Flow (vphpl)	1775	1775	1775	1775	1900	1750	1775	1650	1650	1775	1650	1650
Storage Length (m)	145.0		0.0	105.0		90.0	80.0		0.0	120.0		0.0
Storage Lanes	1		0	1		1	1		0	1		0
Taper Length (m)	100.0			100.0			40.0			100.0		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor		1.00		1.00							0.99	
Frt						0.850		0.981			0.886	
Flt Protected	0.950			0.950						0.950		
Satd. Flow (prot)	1561	3212	0	1686	3252	1340	1775	1367	0	1561	1308	0
Flt Permitted	0.267			0.220						0.736		
Satd. Flow (perm)	439	3212	0	390	3252	1340	1775	1367	0	1210	1308	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)						256		4			82	
Link Speed (k/h)		80			80			80			80	
Link Distance (m)		1424.6			264.2			138.9			365.2	
Travel Time (s)		64.1			11.9			6.3			16.4	
Confl. Peds. (#/hr)			1	1			1					1
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	8%	5%	0%	0%	11%	11%	0%	21%	0%	8%	19%	8%
Adj. Flow (vph)	127	1067	3	8	743	256	0	28	4	321	26	82
Shared Lane Traffic (%)												
Lane Group Flow (vph)	127	1070	0	8	743	256	0	32	0	321	108	0
Turn Type	pm+pt	NA		pm+pt	NA	Perm	Perm	NA		Perm	NA	
Protected Phases	5	2		1	6			8			4	
Permitted Phases	2			6		6	8			4		
Detector Phase	5	2		1	6	6	8	8		4	4	
Switch Phase												
Minimum Initial (s)	7.0	20.0		7.0	20.0	20.0	10.0	10.0		10.0	10.0	
Minimum Split (s)	20.0	50.0		20.0	50.0	50.0	35.0	35.0		35.0	35.0	
Total Split (s)	20.0	50.0		20.0	50.0	50.0	35.0	35.0		35.0	35.0	
Total Split (%)	19.0%	47.6%		19.0%	47.6%	47.6%	33.3%	33.3%		33.3%	33.3%	
Maximum Green (s)	17.0	42.2		17.0	42.2	42.2	27.4	27.4		27.4	27.4	
Yellow Time (s)	3.0	5.9		3.0	5.9	5.9	5.9	5.9		5.9	5.9	
All-Red Time (s)	0.0	1.9		0.0	1.9	1.9	1.7	1.7		1.7	1.7	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Total Lost Time (s)	3.0	7.8		3.0	7.8	7.8	7.6	7.6		7.6	7.6	
Lead/Lag	Lead	Lag		Lead	Lag	Lag						
Lead-Lag Optimize?	Yes	Yes		Yes	Yes	Yes						
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	
Recall Mode	None	Max		None	Min	Min	None	None		None	None	
Walk Time (s)		16.0			16.0	16.0	16.0	16.0		16.0	16.0	
Flash Dont Walk (s)		11.0			11.0	11.0	11.0	11.0		11.0	11.0	
Pedestrian Calls (#/hr)		0			0	0	0	0		0	0	
Act Effct Green (s)	48.9	42.3		44.0	32.2	32.2		27.5		27.5	27.5	
Actuated g/C Ratio	0.56	0.49		0.51	0.37	0.37		0.32		0.32	0.32	
v/c Ratio	0.35	0.69		0.03	0.62	0.39		0.07		0.84	0.23	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Control Delay	11.8	20.6		8.5	25.2	4.5		20.8		49.9	9.8	
Queue Delay	0.0	0.0		0.0	0.0	0.0		0.0		0.0	0.0	
Total Delay	11.8	20.6		8.5	25.2	4.5		20.8		49.9	9.8	
LOS	B	C		A	C	A		C		D	A	
Approach Delay		19.7			19.8			20.8			39.8	
Approach LOS		B			B			C			D	
Queue Length 50th (m)	9.9	69.0		0.6	54.7	0.0		3.3		50.1	3.1	
Queue Length 95th (m)	17.9	113.6		2.4	76.5	15.0		11.0		#112.3	16.5	
Internal Link Dist (m)		1400.6			240.2			114.9			341.2	
Turn Bay Length (m)	145.0			105.0		90.0				120.0		
Base Capacity (vph)	466	1560		472	1580	783		434		382	469	
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	0.27	0.69		0.02	0.47	0.33		0.07		0.84	0.23	

Intersection Summary			
Area Type:	Other		
Cycle Length: 105			
Actuated Cycle Length: 87			
Natural Cycle: 105			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 0.84			
Intersection Signal Delay: 23.0		Intersection LOS: C	
Intersection Capacity Utilization 79.4%		ICU Level of Service D	
Analysis Period (min) 15			
# 95th percentile volume exceeds capacity, queue may be longer.			
Queue shown is maximum after two cycles.			

Splits and Phases: 2: Nafziger Road & Highway 7/8

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	127	1067	3	8	743	256	0	28	4	321	26	82
Future Volume (vph)	127	1067	3	8	743	256	0	28	4	321	26	82
Ideal Flow (vphpl)	1775	1775	1775	1775	1900	1750	1775	1650	1650	1775	1650	1650
Total Lost time (s)	3.0	7.8		3.0	7.8	7.8		7.6		7.6	7.6	
Lane Util. Factor	1.00	0.95		1.00	0.95	1.00		1.00		1.00	1.00	
Frpb, ped/bikes	1.00	1.00		1.00	1.00	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	1.00		1.00	1.00	0.85		0.98		1.00	0.89	
Flt Protected	0.95	1.00		0.95	1.00	1.00		1.00		0.95	1.00	
Satd. Flow (prot)	1561	3211		1686	3252	1340		1368		1561	1308	
Flt Permitted	0.27	1.00		0.22	1.00	1.00		1.00		0.74	1.00	
Satd. Flow (perm)	440	3211		391	3252	1340		1368		1210	1308	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	127	1067	3	8	743	256	0	28	4	321	26	82
RTOR Reduction (vph)	0	0	0	0	0	157	0	3	0	0	57	0
Lane Group Flow (vph)	127	1070	0	8	743	99	0	29	0	321	51	0
Confl. Peds. (#/hr)			1	1			1					1
Heavy Vehicles (%)	8%	5%	0%	0%	11%	11%	0%	21%	0%	8%	19%	8%
Turn Type	pm+pt	NA		pm+pt	NA	Perm	Perm	NA		Perm	NA	
Protected Phases	5	2		1	6			8			4	
Permitted Phases	2			6		6	8			4		
Actuated Green, G (s)	46.6	42.3		36.0	34.7	34.7		27.5		27.5	27.5	
Effective Green, g (s)	46.6	42.3		36.0	34.7	34.7		27.5		27.5	27.5	
Actuated g/C Ratio	0.52	0.47		0.40	0.39	0.39		0.31		0.31	0.31	
Clearance Time (s)	3.0	7.8		3.0	7.8	7.8		7.6		7.6	7.6	
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0		3.0		3.0	3.0	
Lane Grp Cap (vph)	340	1517		176	1260	519		420		371	401	
v/s Ratio Prot	c0.04	c0.33		0.00	0.23			0.02			0.04	
v/s Ratio Perm	0.16			0.02		0.07				c0.27		
v/c Ratio	0.37	0.71		0.05	0.59	0.19		0.07		0.87	0.13	
Uniform Delay, d1	12.0	18.7		16.3	21.7	18.1		21.9		29.3	22.4	
Progression Factor	1.00	1.00		1.00	1.00	1.00		1.00		1.00	1.00	
Incremental Delay, d2	0.7	2.8		0.1	0.7	0.2		0.1		18.5	0.1	
Delay (s)	12.7	21.5		16.4	22.5	18.3		22.0		47.8	22.5	
Level of Service	B	C		B	C	B		C		D	C	
Approach Delay (s)		20.5			21.4			22.0			41.4	
Approach LOS		C			C			C			D	

Intersection Summary					
HCM 2000 Control Delay	24.2	HCM 2000 Level of Service		C	
HCM 2000 Volume to Capacity ratio	0.76				
Actuated Cycle Length (s)	89.5	Sum of lost time (s)		18.4	
Intersection Capacity Utilization	79.4%	ICU Level of Service		D	
Analysis Period (min)	15				
c Critical Lane Group					

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	47	31	310	134	201	461
Future Volume (vph)	47	31	310	134	201	461
Ideal Flow (vphpl)	1765	1765	1650	1650	1650	1650
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.946		0.959			
Flt Protected	0.971					0.985
Satd. Flow (prot)	1589	0	1551	0	0	1593
Flt Permitted	0.971					0.985
Satd. Flow (perm)	1589	0	1551	0	0	1593
Link Speed (k/h)	50		50			50
Link Distance (m)	280.1		715.9			178.4
Travel Time (s)	20.2		51.5			12.8
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	47	31	310	134	201	461
Shared Lane Traffic (%)						
Lane Group Flow (vph)	78	0	444	0	0	662
Sign Control	Stop		Free			Free

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	83.8%	ICU Level of Service	E
Analysis Period (min)	15		

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	47	31	310	134	201	461
Future Volume (Veh/h)	47	31	310	134	201	461
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	47	31	310	134	201	461
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	1240	377			444	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1240	377			444	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	70	95			82	
cM capacity (veh/h)	159	670			1116	

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	78	444	662
Volume Left	47	0	201
Volume Right	31	134	0
cSH	228	1700	1116
Volume to Capacity	0.34	0.26	0.18
Queue Length 95th (m)	11.6	0.0	5.2
Control Delay (s)	28.8	0.0	4.2
Lane LOS	D		A
Approach Delay (s)	28.8	0.0	4.2
Approach LOS	D		

Intersection Summary			
Average Delay	4.3		
Intersection Capacity Utilization	83.8%	ICU Level of Service	E
Analysis Period (min)	15		

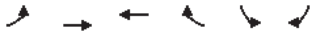
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	35	2	51	29	1	24	158	253	30	25	378	214
Future Volume (vph)	35	2	51	29	1	24	158	253	30	25	378	214
Ideal Flow (vphpl)	1765	1900	1765	1900	1900	1900	1650	1650	1900	1900	1650	1650
Storage Length (m)	0.0		0.0	0.0		0.0	0.0		50.0	0.0		0.0
Storage Lanes	0		0	0		0	0		1	0		0
Taper Length (m)	0.0			7.5			0.0			0.0		
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
Frt		0.922			0.940				0.850		0.953	
Flt Protected		0.981			0.974			0.981			0.998	
Satd. Flow (prot)	0	1719	0	0	1709	0	0	1507	1615	0	1514	0
Flt Permitted		0.981			0.974			0.981			0.998	
Satd. Flow (perm)	0	1719	0	0	1709	0	0	1507	1615	0	1514	0
Link Speed (k/h)		50			50			80			80	
Link Distance (m)		519.1			71.1			365.2			154.9	
Travel Time (s)		37.4			5.1			16.4			7.0	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	0%	0%	0%	0%	0%	4%	0%	12%	0%	0%	6%	0%
Adj. Flow (vph)	35	2	51	29	1	24	158	253	30	25	378	214
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	88	0	0	54	0	0	411	30	0	617	0
Sign Control		Stop			Stop			Free			Free	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	80.8%	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)	35	2	51	29	1	24	158	253	30	25	378	214
Future Volume (Veh/h)	35	2	51	29	1	24	158	253	30	25	378	214
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	35	2	51	29	1	24	158	253	30	25	378	214
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (m)								365				
pX, platoon unblocked												
vC, conflicting volume	1128	1134	485	1156	1211	253	592			283		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	1128	1134	485	1156	1211	253	592			283		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	77	99	91	79	99	97	84			98		
cM capacity (veh/h)	153	168	586	137	152	781	994			1291		

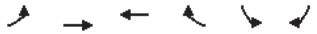
Direction, Lane #	EB 1	WB 1	NB 1	NB 2	SB 1
Volume Total	88	54	411	30	617
Volume Left	35	29	158	0	25
Volume Right	51	24	0	30	214
cSH	268	217	994	1700	1291
Volume to Capacity	0.33	0.25	0.16	0.02	0.02
Queue Length 95th (m)	11.0	7.6	4.5	0.0	0.5
Control Delay (s)	24.8	27.0	4.6	0.0	0.5
Lane LOS	C	D	A		A
Approach Delay (s)	24.8	27.0	4.3		0.5
Approach LOS	C	D			

Intersection Summary					
Average Delay		4.9			
Intersection Capacity Utilization	80.8%	ICU Level of Service		D	
Analysis Period (min)	15				



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	30	77	331	33	8	8
Future Volume (vph)	30	77	331	33	8	8
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			0.988		0.932	
Flt Protected		0.986			0.976	
Satd. Flow (prot)	0	1837	1840	0	1694	0
Flt Permitted		0.986			0.976	
Satd. Flow (perm)	0	1837	1840	0	1694	0
Link Speed (k/h)		50	50		50	
Link Distance (m)		120.3	519.1		92.2	
Travel Time (s)		8.7	37.4		6.6	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	30	77	331	33	8	8
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	107	364	0	16	0
Sign Control		Free	Free		Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 38.5%		ICU Level of Service A	
Analysis Period (min) 15			



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	30	77	331	33	8	8
Future Volume (Veh/h)	30	77	331	33	8	8
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	30	77	331	33	8	8
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		None	None			
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	364				484	348
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	364				484	348
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	97				98	99
cM capacity (veh/h)	1195				528	696

Direction, Lane #	EB 1	WB 1	SB 1
Volume Total	107	364	16
Volume Left	30	0	8
Volume Right	0	33	8
cSH	1195	1700	600
Volume to Capacity	0.03	0.21	0.03
Queue Length 95th (m)	0.6	0.0	0.7
Control Delay (s)	2.4	0.0	11.2
Lane LOS	A		B
Approach Delay (s)	2.4	0.0	11.2
Approach LOS			B

Intersection Summary			
Average Delay	0.9		
Intersection Capacity Utilization	38.5%	ICU Level of Service	A
Analysis Period (min)	15		

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	188	151	9	44	64	40
Future Volume (vph)	188	151	9	44	64	40
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	0.940		0.888			
Flt Protected	0.973					0.970
Satd. Flow (prot)	1704	0	1654	0	0	1807
Flt Permitted	0.973					0.970
Satd. Flow (perm)	1704	0	1654	0	0	1807
Link Speed (k/h)	50		50			50
Link Distance (m)	120.3		87.0			145.0
Travel Time (s)	8.7		6.3			10.4
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	188	151	9	44	64	40
Shared Lane Traffic (%)						
Lane Group Flow (vph)	339	0	53	0	0	104
Sign Control	Stop		Free			Free

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 38.6%		ICU Level of Service A	
Analysis Period (min) 15			

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	188	151	9	44	64	40
Future Volume (Veh/h)	188	151	9	44	64	40
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	188	151	9	44	64	40
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	199	31			53	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	199	31			53	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	75	86			96	
cM capacity (veh/h)	757	1043			1553	

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	339	53	104
Volume Left	188	0	64
Volume Right	151	44	0
cSH	862	1700	1553
Volume to Capacity	0.39	0.03	0.04
Queue Length 95th (m)	15.1	0.0	1.0
Control Delay (s)	11.9	0.0	4.7
Lane LOS	B		A
Approach Delay (s)	11.9	0.0	4.7
Approach LOS	B		

Intersection Summary				
Average Delay		9.1		
Intersection Capacity Utilization		38.6%	ICU Level of Service	A
Analysis Period (min)		15		

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	0	19	0	0	84	0
Future Volume (vph)	0	19	0	0	84	0
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	0.865					
Flt Protected						0.950
Satd. Flow (prot)	1611	0	1863	0	0	1770
Flt Permitted						0.950
Satd. Flow (perm)	1611	0	1863	0	0	1770
Link Speed (k/h)	50		50			50
Link Distance (m)	87.2		30.3			87.0
Travel Time (s)	6.3		2.2			6.3
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	0	19	0	0	84	0
Shared Lane Traffic (%)						
Lane Group Flow (vph)	19	0	0	0	0	84
Sign Control	Stop		Free			Free

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	14.7%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	0	19	0	0	84	0
Future Volume (Veh/h)	0	19	0	0	84	0
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	0	19	0	0	84	0
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	168	0			0	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	168	0			0	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	100	98			95	
cM capacity (veh/h)	780	1085			1623	

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	19	0	84
Volume Left	0	0	84
Volume Right	19	0	0
cSH	1085	1700	1623
Volume to Capacity	0.02	0.00	0.05
Queue Length 95th (m)	0.4	0.0	1.3
Control Delay (s)	8.4	0.0	7.3
Lane LOS	A		A
Approach Delay (s)	8.4	0.0	7.3
Approach LOS	A		

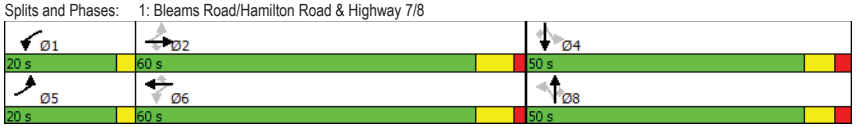
Intersection Summary			
Average Delay	7.5		
Intersection Capacity Utilization	14.7%	ICU Level of Service	A
Analysis Period (min)	15		

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	66	797	123	66	1010	189	183	103	103	264	95	161
Future Volume (vph)	66	797	123	66	1010	189	183	103	103	264	95	161
Ideal Flow (vphpl)	1775	1900	1750	1775	1900	1750	1775	1900	1750	1775	1900	1750
Storage Length (m)	300.0		110.0	100.0		75.0	70.0		85.0	65.0		155.0
Storage Lanes	1		1	1		1	1		1	1		1
Taper Length (m)	40.0			100.0			40.0			20.0		
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor	1.00		0.98	1.00		0.97	1.00		0.99	1.00		0.99
Frt			0.850			0.850			0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1637	3438	1458	1637	3195	1444	1606	1900	1430	1637	1827	1458
Flt Permitted	0.208			0.297			0.695			0.690		
Satd. Flow (perm)	358	3438	1426	512	3195	1404	1174	1900	1411	1188	1827	1439
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			123			171			103			161
Link Speed (k/h)		80			80			50			50	
Link Distance (m)		163.4			1424.6			147.6			715.9	
Travel Time (s)		7.4			64.1			10.6			51.5	
Confl. Peds. (#/hr)	4		1	1		4	1		1	1		1
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	3%	5%	2%	3%	13%	3%	5%	0%	4%	3%	4%	2%
Adj. Flow (vph)	66	797	123	66	1010	189	183	103	103	264	95	161
Shared Lane Traffic (%)												
Lane Group Flow (vph)	66	797	123	66	1010	189	183	103	103	264	95	161
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	Perm	NA	Perm	Perm	NA	Perm
Protected Phases	5	2		1	6			8			4	
Permitted Phases	2		2	6		6	8		8	4		4
Detector Phase	5	2	2	1	6	6	8	8	8	4	4	4
Switch Phase												
Minimum Initial (s)	7.0	20.0	20.0	7.0	20.0	20.0	10.0	10.0	10.0	10.0	10.0	10.0
Minimum Split (s)	20.0	60.0	60.0	20.0	60.0	60.0	50.0	50.0	50.0	50.0	50.0	50.0
Total Split (s)	20.0	60.0	60.0	20.0	60.0	60.0	50.0	50.0	50.0	50.0	50.0	50.0
Total Split (%)	15.4%	46.2%	46.2%	15.4%	46.2%	46.2%	38.5%	38.5%	38.5%	38.5%	38.5%	38.5%
Maximum Green (s)	17.0	52.2	52.2	17.0	52.2	52.2	42.7	42.7	42.7	42.7	42.7	42.7
Yellow Time (s)	3.0	5.9	5.9	3.0	5.9	5.9	4.5	4.5	4.5	4.5	4.5	4.5
All-Red Time (s)	0.0	1.9	1.9	0.0	1.9	1.9	2.8	2.8	2.8	2.8	2.8	2.8
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	3.0	7.8	7.8	3.0	7.8	7.8	7.3	7.3	7.3	7.3	7.3	7.3
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag						
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes						
Vehicle Extension (s)	3.0	1.8	1.8	3.0	1.8	1.8	3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	Max	Max	None	Max	Max	None	None	None	None	None	None
Walk Time (s)		19.0	19.0		19.0	19.0	19.0	19.0	19.0	19.0	19.0	19.0
Flash Dont Walk (s)		14.0	14.0		14.0	14.0	14.0	14.0	14.0	14.0	14.0	14.0
Pedestrian Calls (#/hr)		0	0		0	0	0	0	0	0	0	0
Act Effct Green (s)	64.1	53.1	53.1	64.0	53.1	53.1	28.2	28.2	28.2	28.2	28.2	28.2
Actuated g/C Ratio	0.61	0.51	0.51	0.61	0.51	0.51	0.27	0.27	0.27	0.27	0.27	0.27
v/c Ratio	0.21	0.46	0.16	0.17	0.63	0.24	0.58	0.20	0.23	0.83	0.19	0.32

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Control Delay	11.2	20.1	4.1	10.6	23.5	4.8	41.1	30.3	6.7	57.9	30.2	6.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	11.2	20.1	4.1	10.6	23.5	4.8	41.1	30.3	6.7	57.9	30.2	6.2
LOS	B	C	A	B	C	A	D	C	A	E	C	A
Approach Delay		17.5			20.1			29.1			36.8	
Approach LOS		B			C			C			D	
Queue Length 50th (m)	5.0	58.0	0.0	5.0	82.6	2.0	34.5	17.3	0.0	54.0	15.9	0.0
Queue Length 95th (m)	14.0	98.2	11.7	14.0	138.2	17.0	58.8	31.5	12.3	87.7	29.6	15.1
Internal Link Dist (m)		139.4			1400.6			123.6			691.9	
Turn Bay Length (m)	300.0		110.0	100.0		75.0	70.0		85.0	65.0		155.0
Base Capacity (vph)	436	1738	781	508	1615	794	485	785	644	491	755	689
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.15	0.46	0.16	0.13	0.63	0.24	0.38	0.13	0.16	0.54	0.13	0.23

Intersection Summary			
Area Type:	Other		
Cycle Length: 130			
Actuated Cycle Length: 105			
Natural Cycle: 130			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 0.83			
Intersection Signal Delay: 23.1		Intersection LOS: C	
Intersection Capacity Utilization 72.2%		ICU Level of Service C	
Analysis Period (min) 15			

Splits and Phases: 1: Bleams Road/Hamilton Road & Highway 7/8



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	66	797	123	66	1010	189	183	103	103	264	95	161
Future Volume (vph)	66	797	123	66	1010	189	183	103	103	264	95	161
Ideal Flow (vphpl)	1775	1900	1750	1775	1900	1750	1775	1900	1750	1775	1900	1750
Total Lost time (s)	3.0	7.8	7.8	3.0	7.8	7.8	7.3	7.3	7.3	7.3	7.3	7.3
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frpb, ped/bikes	1.00	1.00	0.98	1.00	1.00	0.97	1.00	1.00	0.99	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	1.00	1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1637	3438	1427	1637	3195	1406	1605	1900	1412	1636	1827	1439
Flt Permitted	0.21	1.00	1.00	0.30	1.00	1.00	0.70	1.00	1.00	0.69	1.00	1.00
Satd. Flow (perm)	359	3438	1427	511	3195	1406	1175	1900	1412	1189	1827	1439
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	66	797	123	66	1010	189	183	103	103	264	95	161
RTOR Reduction (vph)	0	0	61	0	0	85	0	0	75	0	0	118
Lane Group Flow (vph)	66	797	62	66	1010	104	183	103	28	264	95	43
Confl. Peds. (#/hr)	4		1	1		4	1		1	1		1
Heavy Vehicles (%)	3%	5%	2%	3%	13%	3%	5%	0%	4%	3%	4%	2%
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	Perm	NA	Perm	Perm	NA	Perm
Protected Phases	5	2		1	6			8			4	
Permitted Phases	2		2	6		6	8		8	4		4
Actuated Green, G (s)	59.2	53.1	53.1	59.2	53.1	53.1	28.2	28.2	28.2	28.2	28.2	28.2
Effective Green, g (s)	59.2	53.1	53.1	59.2	53.1	53.1	28.2	28.2	28.2	28.2	28.2	28.2
Actuated g/C Ratio	0.56	0.50	0.50	0.56	0.50	0.50	0.27	0.27	0.27	0.27	0.27	0.27
Clearance Time (s)	3.0	7.8	7.8	3.0	7.8	7.8	7.3	7.3	7.3	7.3	7.3	7.3
Vehicle Extension (s)	3.0	1.8	1.8	3.0	1.8	1.8	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	275	1730	718	351	1608	707	314	507	377	317	488	384
v/s Ratio Prot	c0.01	0.23		0.01	c0.32			0.05			0.05	
v/s Ratio Perm	0.12		0.04	0.09		0.07	0.16		0.02	c0.22		0.03
v/c Ratio	0.24	0.46	0.09	0.19	0.63	0.15	0.58	0.20	0.07	0.83	0.19	0.11
Uniform Delay, d1	11.7	16.9	13.6	10.9	19.0	14.1	33.5	29.9	28.9	36.4	29.9	29.2
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	0.5	0.9	0.2	0.3	1.9	0.4	2.7	0.2	0.1	16.8	0.2	0.1
Delay (s)	12.1	17.8	13.8	11.2	20.9	14.5	36.3	30.1	29.0	53.3	30.1	29.3
Level of Service	B	B	B	B	C	B	D	C	C	D	C	C
Approach Delay (s)		16.9			19.4			32.7			41.6	
Approach LOS		B			B			C			D	

Intersection Summary			
HCM 2000 Control Delay	23.9	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.67		
Actuated Cycle Length (s)	105.5	Sum of lost time (s)	18.1
Intersection Capacity Utilization	72.2%	ICU Level of Service	C
Analysis Period (min)	15		

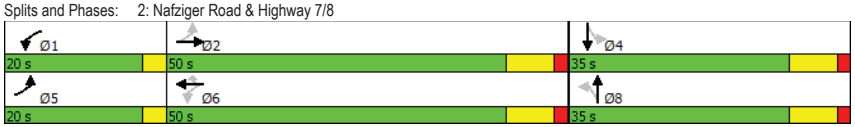
c Critical Lane Group

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	114	1035	1	5	1095	318	1	28	5	194	35	174
Future Volume (vph)	114	1035	1	5	1095	318	1	28	5	194	35	174
Ideal Flow (vphpl)	1775	1775	1775	1775	1900	1750	1775	1650	1650	1775	1650	1650
Storage Length (m)	145.0		0.0	105.0		90.0	80.0		0.0	120.0		0.0
Storage Lanes	1		0	1		1	1		0	1		0
Taper Length (m)	100.0			100.0			40.0			100.0		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor	1.00					0.98						
Frt						0.850		0.977			0.875	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1561	3212	0	1686	3252	1340	1686	1368	0	1561	1314	0
Flt Permitted	0.167			0.258			0.587			0.736		
Satd. Flow (perm)	274	3212	0	458	3252	1311	1042	1368	0	1210	1314	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)						318		5			174	
Link Speed (k/h)		80			80			80			80	
Link Distance (m)		1424.6			264.2			138.9			365.2	
Travel Time (s)		64.1			11.9			6.3			16.4	
Confl. Peds. (#/hr)	1					1						
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	8%	5%	0%	0%	11%	11%	0%	21%	0%	8%	19%	8%
Adj. Flow (vph)	114	1035	1	5	1095	318	1	28	5	194	35	174
Shared Lane Traffic (%)												
Lane Group Flow (vph)	114	1036	0	5	1095	318	1	33	0	194	209	0
Turn Type	pm+pt	NA		pm+pt	NA	Perm	Perm	NA		Perm	NA	
Protected Phases	5	2		1	6			8			4	
Permitted Phases	2			6		6	8			4		
Detector Phase	5	2		1	6	6	8	8		4	4	
Switch Phase												
Minimum Initial (s)	7.0	20.0		7.0	20.0	20.0	10.0	10.0		10.0	10.0	
Minimum Split (s)	20.0	50.0		20.0	50.0	50.0	35.0	35.0		35.0	35.0	
Total Split (s)	20.0	50.0		20.0	50.0	50.0	35.0	35.0		35.0	35.0	
Total Split (%)	19.0%	47.6%		19.0%	47.6%	47.6%	33.3%	33.3%		33.3%	33.3%	
Maximum Green (s)	17.0	42.2		17.0	42.2	42.2	27.4	27.4		27.4	27.4	
Yellow Time (s)	3.0	5.9		3.0	5.9	5.9	5.9	5.9		5.9	5.9	
All-Red Time (s)	0.0	1.9		0.0	1.9	1.9	1.7	1.7		1.7	1.7	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Total Lost Time (s)	3.0	7.8		3.0	7.8	7.8	7.6	7.6		7.6	7.6	
Lead/Lag	Lead	Lag		Lead	Lag	Lag						
Lead-Lag Optimize?	Yes	Yes		Yes	Yes	Yes						
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	
Recall Mode	None	Max		None	Min	Min	None	None		None	None	
Walk Time (s)		16.0			16.0	16.0	16.0	16.0		16.0	16.0	
Flash Dont Walk (s)		11.0			11.0	11.0	11.0	11.0		11.0	11.0	
Pedestrian Calls (#/hr)		0			0	0	0	0		0	0	
Act Effct Green (s)	53.8	47.2		49.7	39.3	39.3	18.5	18.5		18.5	18.5	
Actuated g/C Ratio	0.65	0.57		0.60	0.47	0.47	0.22	0.22		0.22	0.22	
v/c Ratio	0.36	0.57		0.01	0.71	0.40	0.00	0.11		0.72	0.49	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Control Delay	9.9	14.5		7.0	22.7	3.8	26.0	24.4		46.6	11.5	
Queue Delay	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Total Delay	9.9	14.5		7.0	22.7	3.8	26.0	24.4		46.6	11.5	
LOS	A	B		A	C	A	C	C		D	B	
Approach Delay		14.1			18.4			24.5			28.4	
Approach LOS		B			B			C			C	
Queue Length 50th (m)	6.5	51.0		0.3	77.9	0.0	0.1	3.6		29.1	4.5	
Queue Length 95th (m)	16.1	107.7		1.7	126.5	16.1	1.5	11.8		58.3	24.6	
Internal Link Dist (m)		1400.6			240.2			114.9			341.2	
Turn Bay Length (m)	145.0			105.0		90.0	80.0			120.0		
Base Capacity (vph)	446	1824		553	1687	833	351	464		407	558	
Starvation Cap Reductn	0	0		0	0	0	0	0		0	0	
Spillback Cap Reductn	0	0		0	0	0	0	0		0	0	
Storage Cap Reductn	0	0		0	0	0	0	0		0	0	
Reduced v/c Ratio	0.26	0.57		0.01	0.65	0.38	0.00	0.07		0.48	0.37	

Intersection Summary			
Area Type:	Other		
Cycle Length: 105			
Actuated Cycle Length: 83.1			
Natural Cycle: 105			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 0.72			
Intersection Signal Delay: 18.2		Intersection LOS: B	
Intersection Capacity Utilization 71.4%		ICU Level of Service C	
Analysis Period (min) 15			

Splits and Phases: 2: Nafziger Road & Highway 7/8



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	114	1035	1	5	1095	318	1	28	5	194	35	174
Future Volume (vph)	114	1035	1	5	1095	318	1	28	5	194	35	174
Ideal Flow (vphpl)	1775	1775	1775	1775	1900	1750	1775	1650	1650	1775	1650	1650
Total Lost time (s)	3.0	7.8		3.0	7.8	7.8	7.6	7.6		7.6	7.6	
Lane Util. Factor	1.00	0.95		1.00	0.95	1.00	1.00	1.00		1.00	1.00	
Frpb, ped/bikes	1.00	1.00		1.00	1.00	0.98	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	1.00	
Frt	1.00	1.00		1.00	1.00	0.85	1.00	0.98		1.00	0.88	
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1561	3212		1686	3252	1311	1686	1369		1561	1315	
Flt Permitted	0.17	1.00		0.26	1.00	1.00	0.59	1.00		0.74	1.00	
Satd. Flow (perm)	274	3212		458	3252	1311	1042	1369		1209	1315	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	114	1035	1	5	1095	318	1	28	5	194	35	174
RTOR Reduction (vph)	0	0	0	0	0	164	0	4	0	0	136	0
Lane Group Flow (vph)	114	1036	0	5	1095	154	1	29	0	194	73	0
Confl. Peds. (#/hr)	1					1						
Heavy Vehicles (%)	8%	5%	0%	0%	11%	11%	0%	21%	0%	8%	19%	8%
Turn Type	pm+pt	NA		pm+pt	NA	Perm	Perm	NA		Perm	NA	
Protected Phases	5	2		1	6			8			4	
Permitted Phases	2			6		6	8			4		
Actuated Green, G (s)	51.4	47.2		42.4	41.2	41.2	18.5	18.5		18.5	18.5	
Effective Green, g (s)	51.4	47.2		42.4	41.2	41.2	18.5	18.5		18.5	18.5	
Actuated g/C Ratio	0.60	0.55		0.50	0.48	0.48	0.22	0.22		0.22	0.22	
Clearance Time (s)	3.0	7.8		3.0	7.8	7.8	7.6	7.6		7.6	7.6	
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	273	1777		244	1570	633	225	296		262	285	
v/s Ratio Prot	c0.04	0.32		0.00	c0.34			0.02			0.06	
v/s Ratio Perm	0.22			0.01		0.12	0.00			c0.16		
v/c Ratio	0.42	0.58		0.02	0.70	0.24	0.00	0.10		0.74	0.26	
Uniform Delay, d1	9.3	12.6		10.9	17.2	12.9	26.2	26.7		31.2	27.7	
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Incremental Delay, d2	1.0	1.4		0.0	1.4	0.2	0.0	0.1		10.7	0.5	
Delay (s)	10.3	14.0		10.9	18.6	13.1	26.2	26.9		41.9	28.2	
Level of Service	B	B		B	B	B	C	C		D	C	
Approach Delay (s)		13.6			17.3			26.9			34.8	
Approach LOS		B			B			C			C	

Intersection Summary					
HCM 2000 Control Delay	18.3	HCM 2000 Level of Service		B	
HCM 2000 Volume to Capacity ratio	0.68				
Actuated Cycle Length (s)	85.3	Sum of lost time (s)		18.4	
Intersection Capacity Utilization	71.4%	ICU Level of Service		C	
Analysis Period (min)	15				

c Critical Lane Group

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	128	104	330	28	34	392
Future Volume (vph)	128	104	330	28	34	392
Ideal Flow (vphpl)	1765	1765	1650	1650	1650	1650
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.939		0.989			
Flt Protected	0.973					0.996
Satd. Flow (prot)	1581	0	1600	0	0	1611
Flt Permitted	0.973					0.996
Satd. Flow (perm)	1581	0	1600	0	0	1611
Link Speed (k/h)	50		50			50
Link Distance (m)	280.1		715.9			178.4
Travel Time (s)	20.2		51.5			12.8
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	128	104	330	28	34	392
Shared Lane Traffic (%)						
Lane Group Flow (vph)	232	0	358	0	0	426
Sign Control	Stop		Free			Free

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	72.4%	ICU Level of Service	C
Analysis Period (min)	15		

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	128	104	330	28	34	392
Future Volume (Veh/h)	128	104	330	28	34	392
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	128	104	330	28	34	392
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	804	344			358	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	804	344			358	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	63	85			97	
cM capacity (veh/h)	342	699			1201	

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	232	358	426
Volume Left	128	0	34
Volume Right	104	28	0
cSH	444	1700	1201
Volume to Capacity	0.52	0.21	0.03
Queue Length 95th (m)	23.7	0.0	0.7
Control Delay (s)	21.7	0.0	0.9
Lane LOS	C		A
Approach Delay (s)	21.7	0.0	0.9
Approach LOS	C		

Intersection Summary			
Average Delay	5.3		
Intersection Capacity Utilization	72.4%	ICU Level of Service	C
Analysis Period (min)	15		

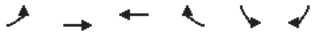
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	279	1	173	47	0	47	74	386	87	42	230	46
Future Volume (vph)	279	1	173	47	0	47	74	386	87	42	230	46
Ideal Flow (vphpl)	1765	1900	1765	1900	1900	1900	1650	1650	1900	1900	1650	1650
Storage Length (m)	0.0		0.0	0.0		0.0	0.0		50.0	0.0		0.0
Storage Lanes	0		0	0		0	0		1	0		0
Taper Length (m)	0.0			7.5			0.0			0.0		
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
Frt		0.948			0.932				0.850		0.980	
Flt Protected		0.970			0.976			0.992			0.993	
Satd. Flow (prot)	0	1747	0	0	1711	0	0	1597	1615	0	1545	0
Flt Permitted		0.970			0.976			0.992			0.993	
Satd. Flow (perm)	0	1747	0	0	1711	0	0	1597	1615	0	1545	0
Link Speed (k/h)		50			50			80			80	
Link Distance (m)		510.3			56.6			365.2			154.9	
Travel Time (s)		36.7			4.1			16.4			7.0	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	0%	0%	0%	0%	0%	2%	0%	3%	0%	0%	5%	2%
Adj. Flow (vph)	279	1	173	47	0	47	74	386	87	42	230	46
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	453	0	0	94	0	0	460	87	0	318	0
Sign Control		Stop			Stop			Free			Free	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 90.7%		ICU Level of Service E	
Analysis Period (min) 15			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	279	1	173	47	0	47	74	386	87	42	230	46
Future Volume (Veh/h)	279	1	173	47	0	47	74	386	87	42	230	46
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	279	1	173	47	0	47	74	386	87	42	230	46
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (m)								365				
pX, platoon unblocked												
vC, conflicting volume	918	958	253	1044	894	386	276			473		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	918	958	253	1044	894	386	276			473		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	0	100	78	69	100	93	94			96		
cM capacity (veh/h)	219	235	791	151	256	662	1299			1099		

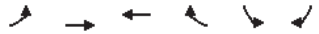
Direction, Lane #	EB 1	WB 1	NB 1	NB 2	SB 1
Volume Total	453	94	460	87	318
Volume Left	279	47	74	0	42
Volume Right	173	47	0	87	46
cSH	303	246	1299	1700	1099
Volume to Capacity	1.49	0.38	0.06	0.05	0.04
Queue Length 95th (m)	203.3	13.6	1.4	0.0	1.0
Control Delay (s)	270.8	28.4	1.8	0.0	1.4
Lane LOS	F	D	A		A
Approach Delay (s)	270.8	28.4	1.5		1.4
Approach LOS	F	D			

Intersection Summary				
Average Delay	89.7			
Intersection Capacity Utilization	90.7%	ICU Level of Service	E	
Analysis Period (min)	15			



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	6	410	108	11	41	41
Future Volume (vph)	6	410	108	11	41	41
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			0.988		0.932	
Flt Protected		0.999			0.976	
Satd. Flow (prot)	0	1861	1840	0	1694	0
Flt Permitted		0.999			0.976	
Satd. Flow (perm)	0	1861	1840	0	1694	0
Link Speed (k/h)		50	50		50	
Link Distance (m)		129.1	510.3		89.7	
Travel Time (s)		9.3	36.7		6.5	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	6	410	108	11	41	41
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	416	119	0	82	0
Sign Control		Free	Free		Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	37.8%	ICU Level of Service	A
Analysis Period (min)	15		



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	6	410	108	11	41	41
Future Volume (Veh/h)	6	410	108	11	41	41
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	6	410	108	11	41	41
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		None	None			
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	119				536	114
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	119				536	114
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	100				92	96
cM capacity (veh/h)	1469				504	939

Direction, Lane #	EB 1	WB 1	SB 1
Volume Total	416	119	82
Volume Left	6	0	41
Volume Right	0	11	41
cSH	1469	1700	656
Volume to Capacity	0.00	0.07	0.13
Queue Length 95th (m)	0.1	0.0	3.4
Control Delay (s)	0.1	0.0	11.3
Lane LOS	A		B
Approach Delay (s)	0.1	0.0	11.3
Approach LOS			B

Intersection Summary			
Average Delay	1.6		
Intersection Capacity Utilization	37.8%	ICU Level of Service	A
Analysis Period (min)	15		

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	61	68	28	232	184	7
Future Volume (vph)	61	68	28	232	184	7
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	0.929		0.880			
Flt Protected	0.977					0.954
Satd. Flow (prot)	1691	0	1639	0	0	1777
Flt Permitted	0.977					0.954
Satd. Flow (perm)	1691	0	1639	0	0	1777
Link Speed (k/h)	50		50			50
Link Distance (m)	129.1		88.3			154.4
Travel Time (s)	9.3		6.4			11.1
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	61	68	28	232	184	7
Shared Lane Traffic (%)						
Lane Group Flow (vph)	129	0	260	0	0	191
Sign Control	Stop		Free			Free

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	43.9%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	61	68	28	232	184	7
Future Volume (Veh/h)	61	68	28	232	184	7
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	61	68	28	232	184	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)						
pX, platoon unblocked						
vC, conflicting volume	519	144			260	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	519	144			260	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	86	92			86	
cM capacity (veh/h)	444	903			1304	

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	129	260	191
Volume Left	61	0	184
Volume Right	68	232	0
cSH	607	1700	1304
Volume to Capacity	0.21	0.15	0.14
Queue Length 95th (m)	6.4	0.0	3.9
Control Delay (s)	12.5	0.0	8.0
Lane LOS	B		A
Approach Delay (s)	12.5	0.0	8.0
Approach LOS	B		

Intersection Summary			
Average Delay	5.4		
Intersection Capacity Utilization	43.9%	ICU Level of Service	A
Analysis Period (min)	15		

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	0	82	0	0	21	0
Future Volume (vph)	0	82	0	0	21	0
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	0.865					
Flt Protected						0.950
Satd. Flow (prot)	1611	0	1863	0	0	1770
Flt Permitted						0.950
Satd. Flow (perm)	1611	0	1863	0	0	1770
Link Speed (k/h)	50		50			50
Link Distance (m)	106.3		29.7			88.3
Travel Time (s)	7.7		2.1			6.4
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	0	82	0	0	21	0
Shared Lane Traffic (%)						
Lane Group Flow (vph)	82	0	0	0	0	21
Sign Control	Stop		Free			Free

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	15.1%	ICU Level of Service A	
Analysis Period (min)	15		

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	0	82	0	0	21	0
Future Volume (Veh/h)	0	82	0	0	21	0
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	0	82	0	0	21	0
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	42	0			0	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	42	0			0	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	100	92			99	
cM capacity (veh/h)	957	1085			1623	

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	82	0	21
Volume Left	0	0	21
Volume Right	82	0	0
cSH	1085	1700	1623
Volume to Capacity	0.08	0.00	0.01
Queue Length 95th (m)	2.0	0.0	0.3
Control Delay (s)	8.6	0.0	7.2
Lane LOS	A		A
Approach Delay (s)	8.6	0.0	7.2
Approach LOS	A		

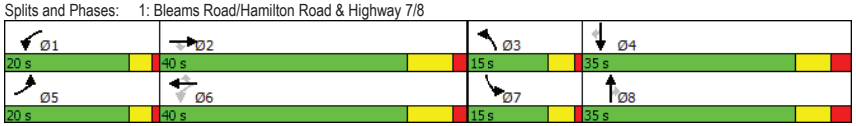
Intersection Summary			
Average Delay	8.3		
Intersection Capacity Utilization	15.1%	ICU Level of Service	A
Analysis Period (min)	15		

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	174	846	127	99	560	184	86	86	82	281	129	98
Future Volume (vph)	174	846	127	99	560	184	86	86	82	281	129	98
Ideal Flow (vphpl)	1775	1900	1750	1775	1900	1750	1775	1900	1750	1775	1900	1750
Storage Length (m)	300.0		110.0	100.0		75.0	70.0		85.0	55.0		155.0
Storage Lanes	2		1	1		1	2		1	2		1
Taper Length (m)	40.0			40.0			40.0			40.0		
Lane Util. Factor	0.97	0.95	1.00	1.00	0.95	1.00	0.97	1.00	1.00	0.97	1.00	1.00
Ped Bike Factor	1.00		0.98	1.00		0.98			0.99	1.00		
Frt			0.850			0.850			0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	3176	3438	1458	1637	3195	1444	3116	1900	1430	3176	1827	1458
Flt Permitted	0.950			0.273			0.950			0.950		
Satd. Flow (perm)	3174	3438	1424	470	3195	1413	3116	1900	1412	3171	1827	1458
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			127			184			132			132
Link Speed (k/h)		80			80			50			50	
Link Distance (m)		163.4			1398.3			147.6			715.9	
Travel Time (s)		7.4			62.9			10.6			51.5	
Confl. Peds. (#/hr)	1		2	2		1			1	1		
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	3%	5%	2%	3%	13%	3%	5%	0%	4%	3%	4%	2%
Adj. Flow (vph)	174	846	127	99	560	184	86	86	82	281	129	98
Shared Lane Traffic (%)												
Lane Group Flow (vph)	174	846	127	99	560	184	86	86	82	281	129	98
Turn Type	Prot	NA	Perm	pm+pt	NA	Perm	Prot	NA	Perm	Prot	NA	Perm
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases			2	6		6			8			4
Detector Phase	5	2	2	1	6	6	3	8	8	7	4	4
Switch Phase												
Minimum Initial (s)	7.0	20.0	20.0	7.0	20.0	20.0	5.0	10.0	10.0	5.0	10.0	10.0
Minimum Split (s)	20.0	40.0	40.0	20.0	40.0	40.0	9.5	35.0	35.0	9.5	35.0	35.0
Total Split (s)	20.0	40.0	40.0	20.0	40.0	40.0	15.0	35.0	35.0	15.0	35.0	35.0
Total Split (%)	18.2%	36.4%	36.4%	18.2%	36.4%	36.4%	13.6%	31.8%	31.8%	13.6%	31.8%	31.8%
Maximum Green (s)	16.0	32.2	32.2	16.0	32.2	32.2	10.5	27.7	27.7	10.5	27.7	27.7
Yellow Time (s)	3.0	5.9	5.9	3.0	5.9	5.9	3.5	4.5	4.5	3.5	4.5	4.5
All-Red Time (s)	1.0	1.9	1.9	1.0	1.9	1.9	1.0	2.8	2.8	1.0	2.8	2.8
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.0	7.8	7.8	4.0	7.8	7.8	4.5	7.3	7.3	4.5	7.3	7.3
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	1.8	1.8	3.0	1.8	1.8	3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	Max	Max	None	Max	Max	None	None	None	None	None	None
Walk Time (s)		19.0	19.0		19.0	19.0		19.0	19.0		19.0	19.0
Flash Dont Walk (s)		14.0	14.0		14.0	14.0		14.0	14.0		14.0	14.0
Pedestrian Calls (#/hr)		0	0		0	0		0	0		0	0
Act Effct Green (s)	10.2	37.4	37.4	45.1	33.1	33.1	7.9	11.5	11.5	10.5	16.3	16.3
Actuated g/C Ratio	0.11	0.42	0.42	0.51	0.37	0.37	0.09	0.13	0.13	0.12	0.18	0.18
v/c Ratio	0.48	0.59	0.19	0.29	0.47	0.29	0.31	0.35	0.28	0.75	0.39	0.26

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Control Delay	41.7	23.1	4.5	11.5	23.6	4.7	41.7	40.0	4.1	52.5	38.2	4.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	41.7	23.1	4.5	11.5	23.6	4.7	41.7	40.0	4.1	52.5	38.2	4.7
LOS	D	C	A	B	C	A	D	D	A	D	D	A
Approach Delay		23.8			18.0			29.0			39.6	
Approach LOS		C			B			C			D	
Queue Length 50th (m)	15.0	60.3	0.0	7.1	38.2	0.0	7.4	14.3	0.0	24.9	21.2	0.0
Queue Length 95th (m)	26.5	93.3	11.6	16.3	62.5	14.4	15.6	29.2	4.1	#49.2	41.1	7.7
Internal Link Dist (m)		139.4			1374.3			123.6			691.9	
Turn Bay Length (m)	300.0		110.0	100.0		75.0	70.0		85.0	55.0		155.0
Base Capacity (vph)	572	1446	672	479	1188	641	369	593	531	375	570	545
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.30	0.59	0.19	0.21	0.47	0.29	0.23	0.15	0.15	0.75	0.23	0.18

Intersection Summary		
Area Type:	Other	
Cycle Length: 110		
Actuated Cycle Length: 88.9		
Natural Cycle: 105		
Control Type: Actuated-Uncoordinated		
Maximum v/c Ratio: 0.75		
Intersection Signal Delay: 25.4		Intersection LOS: C
Intersection Capacity Utilization 70.6%		ICU Level of Service C
Analysis Period (min) 15		
# 95th percentile volume exceeds capacity, queue may be longer.		
Queue shown is maximum after two cycles.		

Splits and Phases: 1: Bleams Road/Hamilton Road & Highway 7/8



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	174	846	127	99	560	184	86	86	82	281	129	98
Future Volume (vph)	174	846	127	99	560	184	86	86	82	281	129	98
Ideal Flow (vphpl)	1775	1900	1750	1775	1900	1750	1775	1900	1750	1775	1900	1750
Total Lost time (s)	4.0	7.8	7.8	4.0	7.8	7.8	4.5	7.3	7.3	4.5	7.3	7.3
Lane Util. Factor	0.97	0.95	1.00	1.00	0.95	1.00	0.97	1.00	1.00	0.97	1.00	1.00
Frpb, ped/bikes	1.00	1.00	0.98	1.00	1.00	0.98	1.00	1.00	0.99	1.00	1.00	1.00
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	3176	3438	1425	1637	3195	1413	3116	1900	1412	3176	1827	1458
Flt Permitted	0.95	1.00	1.00	0.27	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	3176	3438	1425	470	3195	1413	3116	1900	1412	3176	1827	1458
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	174	846	127	99	560	184	86	86	82	281	129	98
RTOR Reduction (vph)	0	0	75	0	0	115	0	0	71	0	0	80
Lane Group Flow (vph)	174	846	52	99	560	69	86	86	11	281	129	18
Confl. Peds. (#/hr)	1		2	2		1			1	1		
Heavy Vehicles (%)	3%	5%	2%	3%	13%	3%	5%	0%	4%	3%	4%	2%
Turn Type	Prot	NA	Perm	pm+pt	NA	Perm	Prot	NA	Perm	Prot	NA	Perm
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases			2	6		6			8			4
Actuated Green, G (s)	10.2	37.4	37.4	40.6	33.9	33.9	6.6	12.4	12.4	10.5	16.3	16.3
Effective Green, g (s)	10.2	37.4	37.4	40.6	33.9	33.9	6.6	12.4	12.4	10.5	16.3	16.3
Actuated g/C Ratio	0.11	0.41	0.41	0.45	0.37	0.37	0.07	0.14	0.14	0.12	0.18	0.18
Clearance Time (s)	4.0	7.8	7.8	4.0	7.8	7.8	4.5	7.3	7.3	4.5	7.3	7.3
Vehicle Extension (s)	3.0	1.8	1.8	3.0	1.8	1.8	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	357	1419	588	296	1195	528	226	260	193	368	328	262
v/s Ratio Prot	c0.05	c0.25		0.02	0.18		0.03	0.05		c0.09	c0.07	
v/s Ratio Perm			0.04	0.12		0.05			0.01			0.01
v/c Ratio	0.49	0.60	0.09	0.33	0.47	0.13	0.38	0.33	0.06	0.76	0.39	0.07
Uniform Delay, d1	37.7	20.7	16.2	14.9	21.5	18.7	40.1	35.3	34.0	38.8	32.8	30.8
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	1.0	1.9	0.3	0.7	1.3	0.5	1.1	0.8	0.1	9.1	0.8	0.1
Delay (s)	38.8	22.6	16.5	15.6	22.8	19.2	41.1	36.1	34.1	47.9	33.6	30.9
Level of Service	D	C	B	B	C	B	D	D	C	D	C	C
Approach Delay (s)		24.4			21.2			37.2			41.0	
Approach LOS		C			C			D			D	

Intersection Summary				
HCM 2000 Control Delay	27.6	HCM 2000 Level of Service	C	
HCM 2000 Volume to Capacity ratio	0.59			
Actuated Cycle Length (s)	90.6	Sum of lost time (s)	23.6	
Intersection Capacity Utilization	70.6%	ICU Level of Service	C	
Analysis Period (min)	15			

c Critical Lane Group

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	47	31	310	134	201	461
Future Volume (vph)	47	31	310	134	201	461
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	0.946		0.959			
Flt Protected	0.971					0.985
Satd. Flow (prot)	1711	0	1786	0	0	1835
Flt Permitted	0.971					0.985
Satd. Flow (perm)	1711	0	1786	0	0	1835
Link Speed (k/h)	50		50			50
Link Distance (m)	231.4		715.9			178.4
Travel Time (s)	16.7		51.5			12.8
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	47	31	310	134	201	461
Shared Lane Traffic (%)						
Lane Group Flow (vph)	78	0	444	0	0	662
Sign Control	Stop		Free			Free

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	74.4%	ICU Level of Service	D
Analysis Period (min)	15		

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	47	31	310	134	201	461
Future Volume (Veh/h)	47	31	310	134	201	461
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	47	31	310	134	201	461
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	1240	377			444	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1240	377			444	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	70	95			82	
cM capacity (veh/h)	159	670			1116	

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	78	444	662
Volume Left	47	0	201
Volume Right	31	134	0
cSH	228	1700	1116
Volume to Capacity	0.34	0.26	0.18
Queue Length 95th (m)	11.6	0.0	5.2
Control Delay (s)	28.8	0.0	4.2
Lane LOS	D		A
Approach Delay (s)	28.8	0.0	4.2
Approach LOS	D		

Intersection Summary			
Average Delay		4.3	
Intersection Capacity Utilization		74.4%	ICU Level of Service D
Analysis Period (min)		15	

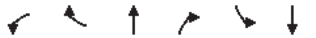
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	170	2	50	29	1	24	37	83	30	25	303	285
Future Volume (vph)	170	2	50	29	1	24	37	83	30	25	303	285
Ideal Flow (vphpl)	1765	1900	1765	1900	1900	1900	1650	1650	1900	1900	1650	1650
Storage Length (m)	0.0		0.0	0.0		0.0	0.0		50.0	0.0		0.0
Storage Lanes	0		0	0		0	0		1	0		0
Taper Length (m)	0.0			7.5			0.0			0.0		
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
Frt		0.970			0.940				0.850		0.937	
Flt Protected		0.963			0.974			0.985			0.998	
Satd. Flow (prot)	0	1775	0	0	1709	0	0	1501	1615	0	1499	0
Flt Permitted		0.963			0.974			0.985			0.998	
Satd. Flow (perm)	0	1775	0	0	1709	0	0	1501	1615	0	1499	0
Link Speed (k/h)		50			50			80			80	
Link Distance (m)		380.0			59.8			535.4			181.7	
Travel Time (s)		27.4			4.3			24.1			8.2	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	0%	0%	0%	0%	0%	4%	0%	12%	0%	0%	6%	0%
Adj. Flow (vph)	170	2	50	29	1	24	37	83	30	25	303	285
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	222	0	0	54	0	0	120	30	0	613	0
Sign Control		Stop			Stop			Free			Free	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	71.4%	ICU Level of Service C	
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	170	2	50	29	1	24	37	83	30	25	303	285
Future Volume (Veh/h)	170	2	50	29	1	24	37	83	30	25	303	285
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	170	2	50	29	1	24	37	83	30	25	303	285
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	677	682	446	704	795	83	588			113		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	677	682	446	704	795	83	588			113		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	51	99	92	91	100	98	96			98		
cM capacity (veh/h)	345	354	617	311	305	971	997			1489		

Direction, Lane #	EB 1	WB 1	NB 1	NB 2	SB 1
Volume Total	222	54	120	30	613
Volume Left	170	29	37	0	25
Volume Right	50	24	0	30	285
cSH	383	446	997	1700	1489
Volume to Capacity	0.58	0.12	0.04	0.02	0.02
Queue Length 95th (m)	28.2	3.3	0.9	0.0	0.4
Control Delay (s)	26.6	14.2	2.9	0.0	0.5
Lane LOS	D	B	A		A
Approach Delay (s)	26.6	14.2	2.3		0.5
Approach LOS	D	B			

Intersection Summary				
Average Delay		7.0		
Intersection Capacity Utilization		71.4%	ICU Level of Service	C
Analysis Period (min)		15		



Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	3	127	28	4	321	61
Future Volume (vph)	3	127	28	4	321	61
Ideal Flow (vphpl)	1765	1765	1650	1650	1650	1650
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.868		0.983			
Flt Protected	0.999					0.960
Satd. Flow (prot)	1500	0	1590	0	0	1553
Flt Permitted	0.999					0.960
Satd. Flow (perm)	1500	0	1590	0	0	1553
Link Speed (k/h)	50		80			80
Link Distance (m)	149.7		232.9			535.4
Travel Time (s)	10.8		10.5			24.1
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	3	127	28	4	321	61
Shared Lane Traffic (%)						
Lane Group Flow (vph)	130	0	32	0	0	382
Sign Control	Stop		Free			Free

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	46.1%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	3	127	28	4	321	61
Future Volume (Veh/h)	3	127	28	4	321	61
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	3	127	28	4	321	61
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	733	30			32	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	733	30			32	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	99	88			80	
cM capacity (veh/h)	309	1044			1580	

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	130	32	382
Volume Left	3	0	321
Volume Right	127	4	0
cSH	990	1700	1580
Volume to Capacity	0.13	0.02	0.20
Queue Length 95th (m)	3.6	0.0	6.1
Control Delay (s)	9.2	0.0	6.9
Lane LOS	A		A
Approach Delay (s)	9.2	0.0	6.9
Approach LOS	A		

Intersection Summary			
Average Delay	7.0		
Intersection Capacity Utilization	46.1%	ICU Level of Service	A
Analysis Period (min)	15		

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	75	10	71	242	121	142
Future Volume (vph)	75	10	71	242	121	142
Ideal Flow (vphpl)	1650	1650	1650	1650	1765	1765
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.984				0.927	
Flt Protected				0.989	0.978	
Satd. Flow (prot)	1592	0	0	1600	1569	0
Flt Permitted				0.989	0.978	
Satd. Flow (perm)	1592	0	0	1600	1569	0
Link Speed (k/h)	50			50	50	
Link Distance (m)	95.3			380.0	206.9	
Travel Time (s)	6.9			27.4	14.9	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	75	10	71	242	121	142
Shared Lane Traffic (%)						
Lane Group Flow (vph)	85	0	0	313	263	0
Sign Control	Free			Free	Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	49.1%	ICU Level of Service	A
Analysis Period (min)	15		

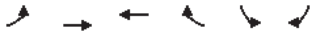
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	75	10	71	242	121	142
Future Volume (Veh/h)	75	10	71	242	121	142
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	75	10	71	242	121	142
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume			85		464	80
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			85		464	80
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			95		77	86
cM capacity (veh/h)			1512		530	980

Direction, Lane #	EB 1	WB 1	NB 1
Volume Total	85	313	263
Volume Left	0	71	121
Volume Right	10	0	142
cSH	1700	1512	705
Volume to Capacity	0.05	0.05	0.37
Queue Length 95th (m)	0.0	1.2	13.8
Control Delay (s)	0.0	2.0	13.1
Lane LOS		A	B
Approach Delay (s)	0.0	2.0	13.1
Approach LOS			B

Intersection Summary			
Average Delay		6.2	
Intersection Capacity Utilization		49.1%	ICU Level of Service A
Analysis Period (min)		15	

Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	30	77	331	33	8	8
Future Volume (vph)	30	77	331	33	8	8
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			0.988		0.932	
Flt Protected		0.986			0.976	
Satd. Flow (prot)	0	1837	1840	0	1694	0
Flt Permitted		0.986			0.976	
Satd. Flow (perm)	0	1837	1840	0	1694	0
Link Speed (k/h)		50	50		50	
Link Distance (m)		103.9	95.3		100.8	
Travel Time (s)		7.5	6.9		7.3	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	30	77	331	33	8	8
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	107	364	0	16	0
Sign Control		Free	Free		Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	38.5%		ICU Level of Service A
Analysis Period (min)	15		



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	30	77	331	33	8	8
Future Volume (Veh/h)	30	77	331	33	8	8
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	30	77	331	33	8	8
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		None	None			
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	364				484	348
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	364				484	348
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	97				98	99
cM capacity (veh/h)	1195				528	696

Direction, Lane #	EB 1	WB 1	SB 1
Volume Total	107	364	16
Volume Left	30	0	8
Volume Right	0	33	8
cSH	1195	1700	600
Volume to Capacity	0.03	0.21	0.03
Queue Length 95th (m)	0.6	0.0	0.7
Control Delay (s)	2.4	0.0	11.2
Lane LOS	A		B
Approach Delay (s)	2.4	0.0	11.2
Approach LOS			B

Intersection Summary			
Average Delay		0.9	
Intersection Capacity Utilization		38.5%	ICU Level of Service A
Analysis Period (min)		15	

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	188	151	9	44	64	40
Future Volume (vph)	188	151	9	44	64	40
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	0.940		0.888			
Flt Protected	0.973					0.970
Satd. Flow (prot)	1704	0	1654	0	0	1807
Flt Permitted	0.973					0.970
Satd. Flow (perm)	1704	0	1654	0	0	1807
Link Speed (k/h)	50		50			50
Link Distance (m)	103.9		84.1			156.4
Travel Time (s)	7.5		6.1			11.3
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	188	151	9	44	64	40
Shared Lane Traffic (%)						
Lane Group Flow (vph)	339	0	53	0	0	104
Sign Control	Stop		Free			Free

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 38.6%			ICU Level of Service A
Analysis Period (min) 15			

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	188	151	9	44	64	40
Future Volume (Veh/h)	188	151	9	44	64	40
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	188	151	9	44	64	40
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	199	31			53	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	199	31			53	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	75	86			96	
cM capacity (veh/h)	757	1043			1553	

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	339	53	104
Volume Left	188	0	64
Volume Right	151	44	0
cSH	862	1700	1553
Volume to Capacity	0.39	0.03	0.04
Queue Length 95th (m)	15.1	0.0	1.0
Control Delay (s)	11.9	0.0	4.7
Lane LOS	B		A
Approach Delay (s)	11.9	0.0	4.7
Approach LOS	B		

Intersection Summary			
Average Delay	9.1		
Intersection Capacity Utilization	38.6%	ICU Level of Service	A
Analysis Period (min)	15		

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	0	19	0	0	84	0
Future Volume (vph)	0	19	0	0	84	0
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	0.865					
Flt Protected						0.950
Satd. Flow (prot)	1611	0	1863	0	0	1770
Flt Permitted						0.950
Satd. Flow (perm)	1611	0	1863	0	0	1770
Link Speed (k/h)	50		50			50
Link Distance (m)	84.0		68.8			84.1
Travel Time (s)	6.0		5.0			6.1
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	0	19	0	0	84	0
Shared Lane Traffic (%)						
Lane Group Flow (vph)	19	0	0	0	0	84
Sign Control	Stop		Free			Free

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	14.7%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	0	19	0	0	84	0
Future Volume (Veh/h)	0	19	0	0	84	0
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	0	19	0	0	84	0
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	168	0			0	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	168	0			0	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	100	98			95	
cM capacity (veh/h)	780	1085			1623	

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	19	0	84
Volume Left	0	0	84
Volume Right	19	0	0
cSH	1085	1700	1623
Volume to Capacity	0.02	0.00	0.05
Queue Length 95th (m)	0.4	0.0	1.3
Control Delay (s)	8.4	0.0	7.3
Lane LOS	A		A
Approach Delay (s)	8.4	0.0	7.3
Approach LOS	A		

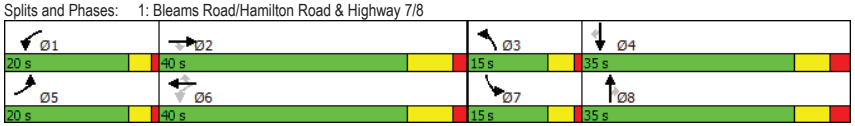
Intersection Summary			
Average Delay	7.5		
Intersection Capacity Utilization	14.7%	ICU Level of Service	A
Analysis Period (min)	15		

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	66	797	123	66	1010	189	183	103	104	264	95	161
Future Volume (vph)	66	797	123	66	1010	189	183	103	104	264	95	161
Ideal Flow (vphpl)	1775	1900	1750	1775	1900	1750	1775	1900	1750	1775	1900	1750
Storage Length (m)	300.0		110.0	100.0		75.0	70.0		85.0	55.0		155.0
Storage Lanes	2		1	1		1	2		1	2		1
Taper Length (m)	40.0			40.0			40.0			40.0		
Lane Util. Factor	0.97	0.95	1.00	1.00	0.95	1.00	0.97	1.00	1.00	0.97	1.00	1.00
Ped Bike Factor	1.00		0.98	1.00		0.97	1.00		0.99	1.00		0.99
Frt			0.850			0.850			0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	3176	3438	1458	1637	3195	1444	3116	1900	1430	3176	1827	1458
Flt Permitted	0.950			0.271			0.950			0.950		
Satd. Flow (perm)	3171	3438	1427	467	3195	1406	3111	1900	1412	3171	1827	1439
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			127			171			132			161
Link Speed (k/h)		80			80			50			50	
Link Distance (m)		163.4			1398.3			147.6			715.9	
Travel Time (s)		7.4			62.9			10.6			51.5	
Confl. Peds. (#/hr)	4		1	1		4	1		1	1		1
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	3%	5%	2%	3%	13%	3%	5%	0%	4%	3%	4%	2%
Adj. Flow (vph)	66	797	123	66	1010	189	183	103	104	264	95	161
Shared Lane Traffic (%)												
Lane Group Flow (vph)	66	797	123	66	1010	189	183	103	104	264	95	161
Turn Type	Prot	NA	Perm	pm+pt	NA	Perm	Prot	NA	Perm	Prot	NA	Perm
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases			2	6		6			8			4
Detector Phase	5	2	2	1	6	6	3	8	8	7	4	4
Switch Phase												
Minimum Initial (s)	7.0	20.0	20.0	7.0	20.0	20.0	5.0	10.0	10.0	5.0	10.0	10.0
Minimum Split (s)	20.0	40.0	40.0	20.0	40.0	40.0	9.5	35.0	35.0	9.5	35.0	35.0
Total Split (s)	20.0	40.0	40.0	20.0	40.0	40.0	15.0	35.0	35.0	15.0	35.0	35.0
Total Split (%)	18.2%	36.4%	36.4%	18.2%	36.4%	36.4%	13.6%	31.8%	31.8%	13.6%	31.8%	31.8%
Maximum Green (s)	16.0	32.2	32.2	16.0	32.2	32.2	10.5	27.7	27.7	10.5	27.7	27.7
Yellow Time (s)	3.0	5.9	5.9	3.0	5.9	5.9	3.5	4.5	4.5	3.5	4.5	4.5
All-Red Time (s)	1.0	1.9	1.9	1.0	1.9	1.9	1.0	2.8	2.8	1.0	2.8	2.8
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.0	7.8	7.8	4.0	7.8	7.8	4.5	7.3	7.3	4.5	7.3	7.3
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	1.8	1.8	3.0	1.8	1.8	3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	Max	Max	None	Max	Max	None	None	None	None	None	None
Walk Time (s)		19.0	19.0		19.0	19.0		19.0	19.0		19.0	19.0
Flash Dont Walk (s)		14.0	14.0		14.0	14.0		14.0	14.0		14.0	14.0
Pedestrian Calls (#/hr)		0	0		0	0		0	0		0	0
Act Effct Green (s)	7.6	33.2	33.2	42.9	33.2	33.2	9.5	11.0	11.0	10.4	11.8	11.8
Actuated g/C Ratio	0.09	0.40	0.40	0.52	0.40	0.40	0.11	0.13	0.13	0.12	0.14	0.14
v/c Ratio	0.23	0.58	0.19	0.19	0.79	0.29	0.52	0.41	0.35	0.67	0.37	0.47

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Control Delay	38.8	22.6	4.3	10.2	28.9	5.4	41.2	39.8	7.2	45.2	38.5	11.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	38.8	22.6	4.3	10.2	28.9	5.4	41.2	39.8	7.2	45.2	38.5	11.0
LOS	D	C	A	B	C	A	D	D	A	D	D	B
Approach Delay		21.4			24.4			31.7			33.4	
Approach LOS		C			C			C			C	
Queue Length 50th (m)	5.5	54.7	0.0	4.7	78.1	1.8	15.1	16.5	0.0	22.3	15.2	0.0
Queue Length 95th (m)	12.1	81.1	10.5	11.2	#123.9	15.8	26.9	32.4	9.3	#40.0	30.5	17.3
Internal Link Dist (m)		139.4			1374.3			123.6			691.9	
Turn Bay Length (m)	300.0		110.0	100.0		75.0	70.0		85.0	55.0		155.0
Base Capacity (vph)	613	1372	646	484	1272	662	395	635	560	402	610	588
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.11	0.58	0.19	0.14	0.79	0.29	0.46	0.16	0.19	0.66	0.16	0.27

Intersection Summary			
Area Type:	Other		
Cycle Length: 110			
Actuated Cycle Length: 83.3			
Natural Cycle: 105			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 0.79			
Intersection Signal Delay: 25.9		Intersection LOS: C	
Intersection Capacity Utilization 64.8%		ICU Level of Service C	
Analysis Period (min) 15			
# 95th percentile volume exceeds capacity, queue may be longer.			
Queue shown is maximum after two cycles.			

Splits and Phases: 1: Bleams Road/Hamilton Road & Highway 7/8



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	66	797	123	66	1010	189	183	103	104	264	95	161
Future Volume (vph)	66	797	123	66	1010	189	183	103	104	264	95	161
Ideal Flow (vphpl)	1775	1900	1750	1775	1900	1750	1775	1900	1750	1775	1900	1750
Total Lost time (s)	4.0	7.8	7.8	4.0	7.8	7.8	4.5	7.3	7.3	4.5	7.3	7.3
Lane Util. Factor	0.97	0.95	1.00	1.00	0.95	1.00	0.97	1.00	1.00	0.97	1.00	1.00
Frpb, ped/bikes	1.00	1.00	0.98	1.00	1.00	0.97	1.00	1.00	0.99	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	1.00	1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	3176	3438	1427	1637	3195	1408	3116	1900	1412	3176	1827	1440
Flt Permitted	0.95	1.00	1.00	0.27	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	3176	3438	1427	466	3195	1408	3116	1900	1412	3176	1827	1440
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	66	797	123	66	1010	189	183	103	104	264	95	161
RTOR Reduction (vph)	0	0	74	0	0	104	0	0	90	0	0	138
Lane Group Flow (vph)	66	797	49	66	1010	85	183	103	14	264	95	23
Confl. Peds. (#/hr)	4		1	1		4	1		1	1		1
Heavy Vehicles (%)	3%	5%	2%	3%	13%	3%	5%	0%	4%	3%	4%	2%
Turn Type	Prot	NA	Perm	pm+pt	NA	Perm	Prot	NA	Perm	Prot	NA	Perm
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases			2	6		6			8			4
Actuated Green, G (s)	6.0	33.3	33.3	39.1	33.2	33.2	9.5	11.0	11.0	10.4	11.9	11.9
Effective Green, g (s)	6.0	33.3	33.3	39.1	33.2	33.2	9.5	11.0	11.0	10.4	11.9	11.9
Actuated g/C Ratio	0.07	0.40	0.40	0.46	0.39	0.39	0.11	0.13	0.13	0.12	0.14	0.14
Clearance Time (s)	4.0	7.8	7.8	4.0	7.8	7.8	4.5	7.3	7.3	4.5	7.3	7.3
Vehicle Extension (s)	3.0	1.8	1.8	3.0	1.8	1.8	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	226	1359	564	298	1259	555	351	248	184	392	258	203
v/s Ratio Prot	c0.02	0.23		0.02	c0.32		0.06	c0.05		c0.08	0.05	
v/s Ratio Perm			0.03	0.09		0.06			0.01			0.02
v/c Ratio	0.29	0.59	0.09	0.22	0.80	0.15	0.52	0.42	0.07	0.67	0.37	0.11
Uniform Delay, d1	37.1	20.0	15.9	13.0	22.6	16.4	35.2	33.6	32.1	35.3	32.7	31.5
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	0.7	1.9	0.3	0.4	5.5	0.6	1.4	1.1	0.2	4.5	0.9	0.2
Delay (s)	37.8	21.9	16.2	13.3	28.1	17.0	36.6	34.8	32.3	39.8	33.6	31.8
Level of Service	D	C	B	B	C	B	D	C	C	D	C	C
Approach Delay (s)		22.2			25.6			35.0			36.2	
Approach LOS		C			C			C			D	

Intersection Summary					
HCM 2000 Control Delay	27.5	HCM 2000 Level of Service		C	
HCM 2000 Volume to Capacity ratio	0.66				
Actuated Cycle Length (s)	84.2	Sum of lost time (s)		23.6	
Intersection Capacity Utilization	64.8%	ICU Level of Service		C	
Analysis Period (min)	15				
c Critical Lane Group					

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	128	104	330	28	34	392
Future Volume (vph)	128	104	330	28	34	392
Ideal Flow (vphpl)	1900	1900	1650	1900	1900	1650
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.939		0.989			
Flt Protected	0.973					0.996
Satd. Flow (prot)	1702	0	1600	0	0	1611
Flt Permitted	0.973					0.996
Satd. Flow (perm)	1702	0	1600	0	0	1611
Link Speed (k/h)	50		80			80
Link Distance (m)	231.4		715.9			178.4
Travel Time (s)	16.7		32.2			8.0
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	128	104	330	28	34	392
Shared Lane Traffic (%)						
Lane Group Flow (vph)	232	0	358	0	0	426
Sign Control	Stop		Free			Free

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	71.3%	ICU Level of Service	C
Analysis Period (min)	15		

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	128	104	330	28	34	392
Future Volume (Veh/h)	128	104	330	28	34	392
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	128	104	330	28	34	392
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	804	344			358	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	804	344			358	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	63	85			97	
cM capacity (veh/h)	342	699			1201	

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	232	358	426
Volume Left	128	0	34
Volume Right	104	28	0
cSH	444	1700	1201
Volume to Capacity	0.52	0.21	0.03
Queue Length 95th (m)	23.7	0.0	0.7
Control Delay (s)	21.7	0.0	0.9
Lane LOS	C		A
Approach Delay (s)	21.7	0.0	0.9
Approach LOS	C		

Intersection Summary			
Average Delay	5.3		
Intersection Capacity Utilization	71.3%	ICU Level of Service	C
Analysis Period (min)	15		

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	536	1	104	47	0	47	14	134	87	42	128	146
Future Volume (vph)	536	1	104	47	0	47	14	134	87	42	128	146
Ideal Flow (vphpl)	1765	1900	1765	1765	1900	1765	1650	1650	1650	1650	1650	1650
Storage Length (m)	0.0		0.0	0.0		0.0	0.0		50.0	0.0		0.0
Storage Lanes	0		0	0		0	0		1	0		0
Taper Length (m)	0.0			0.0			0.0			0.0		
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
Frt		0.978			0.932				0.850		0.938	
Flt Protected		0.960			0.976			0.995			0.993	
Satd. Flow (prot)	0	1784	0	0	1711	0	0	1598	1402	0	1493	0
Flt Permitted		0.960			0.976			0.995			0.993	
Satd. Flow (perm)	0	1784	0	0	1711	0	0	1598	1402	0	1493	0
Link Speed (k/h)		50			50			80			80	
Link Distance (m)		380.0			59.8			534.5			181.7	
Travel Time (s)		27.4			4.3			24.1			8.2	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	0%	0%	0%	0%	0%	2%	0%	3%	0%	0%	5%	2%
Adj. Flow (vph)	536	1	104	47	0	47	14	134	87	42	128	146
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	641	0	0	94	0	0	148	87	0	316	0
Sign Control		Stop			Stop			Free			Free	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	82.5%	ICU Level of Service	E
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	536	1	104	47	0	47	14	134	87	42	128	146
Future Volume (Veh/h)	536	1	104	47	0	47	14	134	87	42	128	146
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	536	1	104	47	0	47	14	134	87	42	128	146
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	494	534	201	552	520	134	274			221		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	494	534	201	552	520	134	274			221		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	0	100	88	88	100	95	99			97		
cM capacity (veh/h)	449	436	845	380	444	915	1301			1360		

Direction, Lane #	EB 1	WB 1	NB 1	NB 2	SB 1
Volume Total	641	94	148	87	316
Volume Left	536	47	14	0	42
Volume Right	104	47	0	87	146
cSH	486	537	1301	1700	1360
Volume to Capacity	1.32	0.18	0.01	0.05	0.03
Queue Length 95th (m)	223.7	5.0	0.3	0.0	0.8
Control Delay (s)	181.8	13.1	0.8	0.0	1.3
Lane LOS	F	B	A		A
Approach Delay (s)	181.8	13.1	0.5		1.3
Approach LOS	F	B			

Intersection Summary				
Average Delay	92.0			
Intersection Capacity Utilization	82.5%	ICU Level of Service	E	
Analysis Period (min)	15			

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	1	114	29	5	194	85
Future Volume (vph)	1	114	29	5	194	85
Ideal Flow (vphpl)	1650	1765	1650	1765	1650	1650
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.866		0.980			
Flt Protected						0.966
Satd. Flow (prot)	1401	0	1585	0	0	1563
Flt Permitted						0.966
Satd. Flow (perm)	1401	0	1585	0	0	1563
Link Speed (k/h)	50		80			80
Link Distance (m)	149.7		232.9			534.5
Travel Time (s)	10.8		10.5			24.1
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	1	114	29	5	194	85
Shared Lane Traffic (%)						
Lane Group Flow (vph)	115	0	34	0	0	279
Sign Control	Stop		Free			Free

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	39.0%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	1	114	29	5	194	85
Future Volume (Veh/h)	1	114	29	5	194	85
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	1	114	29	5	194	85
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	504	32			34	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	504	32			34	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	100	89			88	
cM capacity (veh/h)	462	1043			1578	

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	115	34	279
Volume Left	1	0	194
Volume Right	114	5	0
cSH	1031	1700	1578
Volume to Capacity	0.11	0.02	0.12
Queue Length 95th (m)	3.0	0.0	3.4
Control Delay (s)	8.9	0.0	5.6
Lane LOS	A		A
Approach Delay (s)	8.9	0.0	5.6
Approach LOS	A		

Intersection Summary			
Average Delay	6.0		
Intersection Capacity Utilization	39.0%	ICU Level of Service	A
Analysis Period (min)	15		

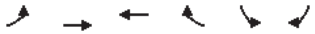
Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	376	74	101	58	61	263
Future Volume (vph)	376	74	101	58	61	263
Ideal Flow (vphpl)	1650	1650	1650	1650	1765	1765
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.978				0.890	
Flt Protected				0.969	0.991	
Satd. Flow (prot)	1582	0	0	1567	1526	0
Flt Permitted				0.969	0.991	
Satd. Flow (perm)	1582	0	0	1567	1526	0
Link Speed (k/h)	50			50	50	
Link Distance (m)	95.3			380.0	206.9	
Travel Time (s)	6.9			27.4	14.9	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	376	74	101	58	61	263
Shared Lane Traffic (%)						
Lane Group Flow (vph)	450	0	0	159	324	0
Sign Control	Free			Free	Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	69.0%	ICU Level of Service	C
Analysis Period (min)	15		

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	376	74	101	58	61	263
Future Volume (Veh/h)	376	74	101	58	61	263
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	376	74	101	58	61	263
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume			450		673	413
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			450		673	413
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			91		84	59
cM capacity (veh/h)			1110		382	639

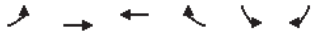
Direction, Lane #	EB 1	WB 1	NB 1
Volume Total	450	159	324
Volume Left	0	101	61
Volume Right	74	0	263
cSH	1700	1110	567
Volume to Capacity	0.26	0.09	0.57
Queue Length 95th (m)	0.0	2.4	28.6
Control Delay (s)	0.0	5.7	19.5
Lane LOS		A	C
Approach Delay (s)	0.0	5.7	19.5
Approach LOS			C

Intersection Summary				
Average Delay	7.7			
Intersection Capacity Utilization	69.0%	ICU Level of Service	C	
Analysis Period (min)	15			



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	6	410	108	11	41	41
Future Volume (vph)	6	410	108	11	41	41
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			0.988		0.932	
Flt Protected		0.999			0.976	
Satd. Flow (prot)	0	1861	1840	0	1694	0
Flt Permitted		0.999			0.976	
Satd. Flow (perm)	0	1861	1840	0	1694	0
Link Speed (k/h)		50	50		50	
Link Distance (m)		103.9	95.3		100.8	
Travel Time (s)		7.5	6.9		7.3	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	6	410	108	11	41	41
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	416	119	0	82	0
Sign Control		Free	Free		Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	37.8%	ICU Level of Service	A
Analysis Period (min)	15		



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	6	410	108	11	41	41
Future Volume (Veh/h)	6	410	108	11	41	41
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	6	410	108	11	41	41
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		None	None			
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	119				536	114
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	119				536	114
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	100				92	96
cM capacity (veh/h)	1469				504	939

Direction, Lane #	EB 1	WB 1	SB 1
Volume Total	416	119	82
Volume Left	6	0	41
Volume Right	0	11	41
cSH	1469	1700	656
Volume to Capacity	0.00	0.07	0.13
Queue Length 95th (m)	0.1	0.0	3.4
Control Delay (s)	0.1	0.0	11.3
Lane LOS	A		B
Approach Delay (s)	0.1	0.0	11.3
Approach LOS			B

Intersection Summary			
Average Delay	1.6		
Intersection Capacity Utilization	37.8%	ICU Level of Service	A
Analysis Period (min)	15		

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	61	68	28	232	184	7
Future Volume (vph)	61	68	28	232	184	7
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	0.929		0.880			
Flt Protected	0.977					0.954
Satd. Flow (prot)	1691	0	1639	0	0	1777
Flt Permitted	0.977					0.954
Satd. Flow (perm)	1691	0	1639	0	0	1777
Link Speed (k/h)	50		50			50
Link Distance (m)	103.9		84.1			156.4
Travel Time (s)	7.5		6.1			11.3
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	61	68	28	232	184	7
Shared Lane Traffic (%)						
Lane Group Flow (vph)	129	0	260	0	0	191
Sign Control	Stop		Free			Free

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	43.9%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	61	68	28	232	184	7
Future Volume (Veh/h)	61	68	28	232	184	7
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	61	68	28	232	184	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)						
pX, platoon unblocked						
vC, conflicting volume	519	144			260	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	519	144			260	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	86	92			86	
cM capacity (veh/h)	444	903			1304	

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	129	260	191
Volume Left	61	0	184
Volume Right	68	232	0
cSH	607	1700	1304
Volume to Capacity	0.21	0.15	0.14
Queue Length 95th (m)	6.4	0.0	3.9
Control Delay (s)	12.5	0.0	8.0
Lane LOS	B		A
Approach Delay (s)	12.5	0.0	8.0
Approach LOS	B		

Intersection Summary			
Average Delay	5.4		
Intersection Capacity Utilization	43.9%	ICU Level of Service	A
Analysis Period (min)	15		

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	0	82	0	0	21	0
Future Volume (vph)	0	82	0	0	21	0
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	0.865					
Flt Protected						0.950
Satd. Flow (prot)	1611	0	1863	0	0	1770
Flt Permitted						0.950
Satd. Flow (perm)	1611	0	1863	0	0	1770
Link Speed (k/h)	50		50			50
Link Distance (m)	84.0		68.8			84.1
Travel Time (s)	6.0		5.0			6.1
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	0	82	0	0	21	0
Shared Lane Traffic (%)						
Lane Group Flow (vph)	82	0	0	0	0	21
Sign Control	Stop		Free			Free

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	15.1%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	0	82	0	0	21	0
Future Volume (Veh/h)	0	82	0	0	21	0
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	0	82	0	0	21	0
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	42	0			0	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	42	0			0	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	100	92			99	
cM capacity (veh/h)	957	1085			1623	

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	82	0	21
Volume Left	0	0	21
Volume Right	82	0	0
cSH	1085	1700	1623
Volume to Capacity	0.08	0.00	0.01
Queue Length 95th (m)	2.0	0.0	0.3
Control Delay (s)	8.6	0.0	7.2
Lane LOS	A		A
Approach Delay (s)	8.6	0.0	7.2
Approach LOS	A		

Intersection Summary			
Average Delay	8.3		
Intersection Capacity Utilization	15.1%	ICU Level of Service	A
Analysis Period (min)	15		

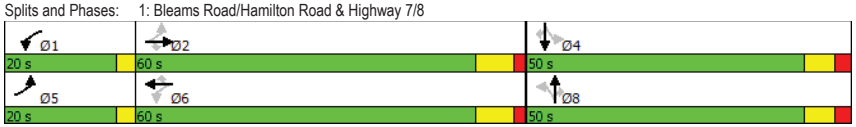
Appendix E 2023 Total Traffic Operations with Improvements

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	174	846	127	99	560	184	86	86	81	281	129	98
Future Volume (vph)	174	846	127	99	560	184	86	86	81	281	129	98
Ideal Flow (vphpl)	1775	1900	1750	1775	1900	1750	1775	1900	1750	1775	1900	1750
Storage Length (m)	300.0		110.0	100.0		75.0	70.0		85.0	65.0		155.0
Storage Lanes	1		1	1		1	1		1	1		1
Taper Length (m)	40.0			100.0			40.0			20.0		
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor	1.00		0.98	1.00		0.98			0.99	1.00		
Frt			0.850			0.850			0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1637	3438	1458	1637	3195	1444	1606	1900	1430	1637	1827	1458
Flt Permitted	0.390			0.281			0.674			0.701		
Satd. Flow (perm)	672	3438	1424	484	3195	1413	1139	1900	1411	1207	1827	1458
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			127			184			81			98
Link Speed (k/h)		80			80			50			50	
Link Distance (m)		163.4			1424.6			147.6			715.9	
Travel Time (s)		7.4			64.1			10.6			51.5	
Confl. Peds. (#/hr)	1		2	2		1			1	1		
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	3%	5%	2%	3%	13%	3%	5%	0%	4%	3%	4%	2%
Adj. Flow (vph)	174	846	127	99	560	184	86	86	81	281	129	98
Shared Lane Traffic (%)												
Lane Group Flow (vph)	174	846	127	99	560	184	86	86	81	281	129	98
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	Perm	NA	Perm	Perm	NA	Perm
Protected Phases	5	2		1	6			8			4	
Permitted Phases	2		2	6		6	8		8	4		4
Detector Phase	5	2	2	1	6	6	8	8	8	4	4	4
Switch Phase												
Minimum Initial (s)	7.0	20.0	20.0	7.0	20.0	20.0	10.0	10.0	10.0	10.0	10.0	10.0
Minimum Split (s)	20.0	60.0	60.0	20.0	60.0	60.0	50.0	50.0	50.0	50.0	50.0	50.0
Total Split (s)	20.0	60.0	60.0	20.0	60.0	60.0	50.0	50.0	50.0	50.0	50.0	50.0
Total Split (%)	15.4%	46.2%	46.2%	15.4%	46.2%	46.2%	38.5%	38.5%	38.5%	38.5%	38.5%	38.5%
Maximum Green (s)	17.0	52.2	52.2	17.0	52.2	52.2	42.7	42.7	42.7	42.7	42.7	42.7
Yellow Time (s)	3.0	5.9	5.9	3.0	5.9	5.9	4.5	4.5	4.5	4.5	4.5	4.5
All-Red Time (s)	0.0	1.9	1.9	0.0	1.9	1.9	2.8	2.8	2.8	2.8	2.8	2.8
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	3.0	7.8	7.8	3.0	7.8	7.8	7.3	7.3	7.3	7.3	7.3	7.3
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag						
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes						
Vehicle Extension (s)	3.0	1.8	1.8	3.0	1.8	1.8	3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	Max	Max	None	Max	Max	None	None	None	None	None	None
Walk Time (s)		19.0	19.0		19.0	19.0	19.0	19.0	19.0	19.0	19.0	19.0
Flash Dont Walk (s)		14.0	14.0		14.0	14.0	14.0	14.0	14.0	14.0	14.0	14.0
Pedestrian Calls (#/hr)		0	0		0	0	0	0	0	0	0	0
Act Effct Green (s)	71.0	55.4	55.4	66.2	52.8	52.8	30.5	30.5	30.5	30.5	30.5	30.5
Actuated g/C Ratio	0.63	0.49	0.49	0.59	0.47	0.47	0.27	0.27	0.27	0.27	0.27	0.27
v/c Ratio	0.34	0.50	0.17	0.27	0.37	0.24	0.28	0.17	0.18	0.86	0.26	0.21

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Control Delay	11.6	22.1	4.0	11.6	22.2	4.2	34.6	31.7	7.6	64.2	33.3	7.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	11.6	22.1	4.0	11.6	22.2	4.2	34.6	31.7	7.6	64.2	33.3	7.0
LOS	B	C	A	B	C	A	C	C	A	E	C	A
Approach Delay		18.5			17.0			25.0			45.3	
Approach LOS		B			B			C			D	
Queue Length 50th (m)	15.3	67.5	0.0	8.3	43.0	0.0	15.6	15.1	0.0	61.3	23.3	0.0
Queue Length 95th (m)	32.2	107.4	11.8	19.4	73.2	14.9	30.7	29.0	11.7	100.6	41.4	12.8
Internal Link Dist (m)		139.4			1400.6			123.6			691.9	
Turn Bay Length (m)	300.0		110.0	100.0		75.0	70.0		85.0	65.0		155.0
Base Capacity (vph)	575	1688	763	482	1495	758	436	727	589	462	699	618
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.30	0.50	0.17	0.21	0.37	0.24	0.20	0.12	0.14	0.61	0.18	0.16

Intersection Summary			
Area Type:	Other		
Cycle Length: 130			
Actuated Cycle Length: 112.8			
Natural Cycle: 130			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 0.86			
Intersection Signal Delay: 23.6		Intersection LOS: C	
Intersection Capacity Utilization 85.4%		ICU Level of Service E	
Analysis Period (min) 15			

Splits and Phases: 1: Bleams Road/Hamilton Road & Highway 7/8



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	174	846	127	99	560	184	86	86	81	281	129	98
Future Volume (vph)	174	846	127	99	560	184	86	86	81	281	129	98
Ideal Flow (vphpl)	1775	1900	1750	1775	1900	1750	1775	1900	1750	1775	1900	1750
Total Lost time (s)	3.0	7.8	7.8	3.0	7.8	7.8	7.3	7.3	7.3	7.3	7.3	7.3
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frpb, ped/bikes	1.00	1.00	0.98	1.00	1.00	0.98	1.00	1.00	0.99	1.00	1.00	1.00
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1637	3438	1424	1637	3195	1413	1606	1900	1412	1636	1827	1458
Flt Permitted	0.39	1.00	1.00	0.28	1.00	1.00	0.67	1.00	1.00	0.70	1.00	1.00
Satd. Flow (perm)	672	3438	1424	484	3195	1413	1140	1900	1412	1207	1827	1458
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	174	846	127	99	560	184	86	86	81	281	129	98
RTOR Reduction (vph)	0	0	65	0	0	98	0	0	59	0	0	71
Lane Group Flow (vph)	174	846	62	99	560	86	86	86	22	281	129	27
Confl. Peds. (#/hr)	1		2	2		1			1	1		
Heavy Vehicles (%)	3%	5%	2%	3%	13%	3%	5%	0%	4%	3%	4%	2%
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	Perm	NA	Perm	Perm	NA	Perm
Protected Phases	5	2		1	6			8			4	
Permitted Phases	2		2	6		6	8		8	4		4
Actuated Green, G (s)	66.6	55.4	55.4	61.4	52.8	52.8	30.5	30.5	30.5	30.5	30.5	30.5
Effective Green, g (s)	66.6	55.4	55.4	61.4	52.8	52.8	30.5	30.5	30.5	30.5	30.5	30.5
Actuated g/C Ratio	0.59	0.49	0.49	0.55	0.47	0.47	0.27	0.27	0.27	0.27	0.27	0.27
Clearance Time (s)	3.0	7.8	7.8	3.0	7.8	7.8	7.3	7.3	7.3	7.3	7.3	7.3
Vehicle Extension (s)	3.0	1.8	1.8	3.0	1.8	1.8	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	493	1691	700	351	1498	662	308	514	382	326	494	394
v/s Ratio Prot	c0.04	c0.25		0.02	0.18			0.05			0.07	
v/s Ratio Perm	0.17		0.04	0.13		0.06	0.08		0.02	c0.23		0.02
v/c Ratio	0.35	0.50	0.09	0.28	0.37	0.13	0.28	0.17	0.06	0.86	0.26	0.07
Uniform Delay, d1	10.8	19.3	15.2	12.8	19.3	16.9	32.4	31.4	30.4	39.0	32.2	30.5
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	0.4	1.1	0.3	0.4	0.7	0.4	0.5	0.2	0.1	20.2	0.3	0.1
Delay (s)	11.2	20.3	15.4	13.2	20.0	17.3	32.9	31.5	30.5	59.2	32.5	30.6
Level of Service	B	C	B	B	B	B	C	C	C	E	C	C
Approach Delay (s)		18.4			18.6			31.6			46.9	
Approach LOS		B			B			C			D	

Intersection Summary			
HCM 2000 Control Delay	24.9	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.61		
Actuated Cycle Length (s)	112.6	Sum of lost time (s)	18.1
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)	127	1067	3	8	743	256	0	28	4	321	26	82
Future Volume (vph)	127	1067	3	8	743	256	0	28	4	321	26	82
Ideal Flow (vphpl)	1775	1775	1775	1775	1900	1750	1775	1650	1650	1775	1650	1650
Storage Length (m)	145.0		0.0	105.0		90.0	80.0		0.0	120.0		0.0
Storage Lanes	1		0	1		1	1		0	1		0
Taper Length (m)	100.0			100.0			40.0			100.0		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor		1.00		1.00							0.99	
Frt						0.850		0.981			0.886	
Flt Protected	0.950			0.950						0.950		
Satd. Flow (prot)	1561	3212	0	1686	3252	1340	1775	1367	0	1561	1308	0
Flt Permitted	0.267			0.220						0.736		
Satd. Flow (perm)	439	3212	0	390	3252	1340	1775	1367	0	1210	1308	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)						256		4			82	
Link Speed (k/h)		80			80			80			80	
Link Distance (m)		1424.6			264.2			138.9			365.2	
Travel Time (s)		64.1			11.9			6.3			16.4	
Confl. Peds. (#/hr)			1	1			1					1
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	8%	5%	0%	0%	11%	11%	0%	21%	0%	8%	19%	8%
Adj. Flow (vph)	127	1067	3	8	743	256	0	28	4	321	26	82
Shared Lane Traffic (%)												
Lane Group Flow (vph)	127	1070	0	8	743	256	0	32	0	321	108	0
Turn Type	pm+pt	NA		pm+pt	NA	Perm	Perm	NA		Perm	NA	
Protected Phases	5	2		1	6			8			4	
Permitted Phases	2			6		6	8			4		
Detector Phase	5	2		1	6	6	8	8		4	4	
Switch Phase												
Minimum Initial (s)	7.0	20.0		7.0	20.0	20.0	10.0	10.0		10.0	10.0	
Minimum Split (s)	20.0	50.0		20.0	50.0	50.0	35.0	35.0		35.0	35.0	
Total Split (s)	20.0	50.0		20.0	50.0	50.0	35.0	35.0		35.0	35.0	
Total Split (%)	19.0%	47.6%		19.0%	47.6%	47.6%	33.3%	33.3%		33.3%	33.3%	
Maximum Green (s)	17.0	42.2		17.0	42.2	42.2	27.4	27.4		27.4	27.4	
Yellow Time (s)	3.0	5.9		3.0	5.9	5.9	5.9	5.9		5.9	5.9	
All-Red Time (s)	0.0	1.9		0.0	1.9	1.9	1.7	1.7		1.7	1.7	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Total Lost Time (s)	3.0	7.8		3.0	7.8	7.8	7.6	7.6		7.6	7.6	
Lead/Lag	Lead	Lag		Lead	Lag	Lag						
Lead-Lag Optimize?	Yes	Yes		Yes	Yes	Yes						
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	
Recall Mode	None	Max		None	Min	Min	None	None		None	None	
Walk Time (s)		16.0			16.0	16.0	16.0	16.0		16.0	16.0	
Flash Dont Walk (s)		11.0			11.0	11.0	11.0	11.0		11.0	11.0	
Pedestrian Calls (#/hr)		0			0	0	0	0		0	0	
Act Effct Green (s)	48.9	42.3		44.0	32.2	32.2		27.5		27.5	27.5	
Actuated g/C Ratio	0.56	0.49		0.51	0.37	0.37		0.32		0.32	0.32	
v/c Ratio	0.35	0.69		0.03	0.62	0.39		0.07		0.84	0.23	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Control Delay	11.8	20.6		8.5	25.2	4.5		20.8		49.9	9.8	
Queue Delay	0.0	0.0		0.0	0.0	0.0		0.0		0.0	0.0	
Total Delay	11.8	20.6		8.5	25.2	4.5		20.8		49.9	9.8	
LOS	B	C		A	C	A		C		D	A	
Approach Delay		19.7			19.8			20.8			39.8	
Approach LOS		B			B			C			D	
Queue Length 50th (m)	9.9	69.0		0.6	54.7	0.0		3.3		50.1	3.1	
Queue Length 95th (m)	17.9	113.6		2.4	76.5	15.0		11.0		#112.3	16.5	
Internal Link Dist (m)		1400.6			240.2			114.9			341.2	
Turn Bay Length (m)	145.0			105.0		90.0				120.0		
Base Capacity (vph)	466	1560		472	1580	783		434		382	469	
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	0.27	0.69		0.02	0.47	0.33		0.07		0.84	0.23	

Intersection Summary			
Area Type:	Other		
Cycle Length: 105			
Actuated Cycle Length: 87			
Natural Cycle: 105			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 0.84			
Intersection Signal Delay: 23.0		Intersection LOS: C	
Intersection Capacity Utilization 79.4%		ICU Level of Service D	
Analysis Period (min) 15			
# 95th percentile volume exceeds capacity, queue may be longer.			
Queue shown is maximum after two cycles.			

Splits and Phases: 2: Nafziger Road & Highway 7/8

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	127	1067	3	8	743	256	0	28	4	321	26	82
Future Volume (vph)	127	1067	3	8	743	256	0	28	4	321	26	82
Ideal Flow (vphpl)	1775	1775	1775	1775	1900	1750	1775	1650	1650	1775	1650	1650
Total Lost time (s)	3.0	7.8		3.0	7.8	7.8		7.6		7.6	7.6	
Lane Util. Factor	1.00	0.95		1.00	0.95	1.00		1.00		1.00	1.00	
Frpb, ped/bikes	1.00	1.00		1.00	1.00	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	1.00		1.00	1.00	0.85		0.98		1.00	0.89	
Flt Protected	0.95	1.00		0.95	1.00	1.00		1.00		0.95	1.00	
Satd. Flow (prot)	1561	3211		1686	3252	1340		1368		1561	1308	
Flt Permitted	0.27	1.00		0.22	1.00	1.00		1.00		0.74	1.00	
Satd. Flow (perm)	440	3211		391	3252	1340		1368		1210	1308	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	127	1067	3	8	743	256	0	28	4	321	26	82
RTOR Reduction (vph)	0	0	0	0	0	157	0	3	0	0	57	0
Lane Group Flow (vph)	127	1070	0	8	743	99	0	29	0	321	51	0
Confl. Peds. (#/hr)			1	1			1					1
Heavy Vehicles (%)	8%	5%	0%	0%	11%	11%	0%	21%	0%	8%	19%	8%
Turn Type	pm+pt	NA		pm+pt	NA	Perm	Perm	NA		Perm	NA	
Protected Phases	5	2		1	6			8			4	
Permitted Phases	2			6		6	8			4		
Actuated Green, G (s)	46.6	42.3		36.0	34.7	34.7		27.5		27.5	27.5	
Effective Green, g (s)	46.6	42.3		36.0	34.7	34.7		27.5		27.5	27.5	
Actuated g/C Ratio	0.52	0.47		0.40	0.39	0.39		0.31		0.31	0.31	
Clearance Time (s)	3.0	7.8		3.0	7.8	7.8		7.6		7.6	7.6	
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0		3.0		3.0	3.0	
Lane Grp Cap (vph)	340	1517		176	1260	519		420		371	401	
v/s Ratio Prot	c0.04	c0.33		0.00	0.23			0.02			0.04	
v/s Ratio Perm	0.16			0.02		0.07				c0.27		
v/c Ratio	0.37	0.71		0.05	0.59	0.19		0.07		0.87	0.13	
Uniform Delay, d1	12.0	18.7		16.3	21.7	18.1		21.9		29.3	22.4	
Progression Factor	1.00	1.00		1.00	1.00	1.00		1.00		1.00	1.00	
Incremental Delay, d2	0.7	2.8		0.1	0.7	0.2		0.1		18.5	0.1	
Delay (s)	12.7	21.5		16.4	22.5	18.3		22.0		47.8	22.5	
Level of Service	B	C		B	C	B		C		D	C	
Approach Delay (s)		20.5			21.4			22.0			41.4	
Approach LOS		C			C			C			D	

Intersection Summary					
HCM 2000 Control Delay	24.2	HCM 2000 Level of Service		C	
HCM 2000 Volume to Capacity ratio	0.76				
Actuated Cycle Length (s)	89.5	Sum of lost time (s)		18.4	
Intersection Capacity Utilization	79.4%	ICU Level of Service		D	
Analysis Period (min)	15				
c Critical Lane Group					

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	47	31	310	134	201	461
Future Volume (vph)	47	31	310	134	201	461
Ideal Flow (vphpl)	1765	1765	1650	1650	1650	1650
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.946		0.959			
Flt Protected	0.971					0.985
Satd. Flow (prot)	1589	0	1551	0	0	1593
Flt Permitted	0.971					0.985
Satd. Flow (perm)	1589	0	1551	0	0	1593
Link Speed (k/h)	50		50			50
Link Distance (m)	280.1		715.9			178.4
Travel Time (s)	20.2		51.5			12.8
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	47	31	310	134	201	461
Shared Lane Traffic (%)						
Lane Group Flow (vph)	78	0	444	0	0	662
Sign Control	Stop		Free			Free

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	83.8%	ICU Level of Service	E
Analysis Period (min)	15		

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	47	31	310	134	201	461
Future Volume (Veh/h)	47	31	310	134	201	461
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	47	31	310	134	201	461
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	1240	377			444	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1240	377			444	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	70	95			82	
cM capacity (veh/h)	159	670			1116	

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	78	444	662
Volume Left	47	0	201
Volume Right	31	134	0
cSH	228	1700	1116
Volume to Capacity	0.34	0.26	0.18
Queue Length 95th (m)	11.6	0.0	5.2
Control Delay (s)	28.8	0.0	4.2
Lane LOS	D		A
Approach Delay (s)	28.8	0.0	4.2
Approach LOS	D		

Intersection Summary			
Average Delay	4.3		
Intersection Capacity Utilization	83.8%	ICU Level of Service	E
Analysis Period (min)	15		

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	35	2	51	29	1	24	158	253	30	25	378	214
Future Volume (vph)	35	2	51	29	1	24	158	253	30	25	378	214
Ideal Flow (vphpl)	1765	1900	1765	1900	1900	1900	1650	1650	1900	1900	1650	1650
Storage Length (m)	0.0		0.0	0.0		0.0	0.0		50.0	0.0		0.0
Storage Lanes	0		0	0		0	0		1	0		0
Taper Length (m)	0.0			7.5			0.0			0.0		
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
Frt		0.922			0.940				0.850		0.953	
Flt Protected		0.981			0.974			0.981			0.998	
Satd. Flow (prot)	0	1719	0	0	1709	0	0	1507	1615	0	1514	0
Flt Permitted		0.846			0.862			0.665			0.978	
Satd. Flow (perm)	0	1482	0	0	1513	0	0	1022	1615	0	1483	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		51			24				55		68	
Link Speed (k/h)		50			50			80			80	
Link Distance (m)		519.1			71.1			365.2			154.9	
Travel Time (s)		37.4			5.1			16.4			7.0	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	0%	0%	0%	0%	0%	4%	0%	12%	0%	0%	6%	0%
Adj. Flow (vph)	35	2	51	29	1	24	158	253	30	25	378	214
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	88	0	0	54	0	0	411	30	0	617	0
Turn Type	Perm	NA		Perm	NA		Perm	NA	Perm	Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2		2	6		
Detector Phase	4	4		8	8		2	2	2	6	6	
Switch Phase												
Minimum Initial (s)	5.0	5.0		5.0	5.0		5.0	5.0	5.0	5.0	5.0	
Minimum Split (s)	24.0	24.0		24.0	24.0		24.0	24.0	24.0	24.0	24.0	
Total Split (s)	24.0	24.0		24.0	24.0		36.0	36.0	36.0	36.0	36.0	
Total Split (%)	40.0%	40.0%		40.0%	40.0%		60.0%	60.0%	60.0%	60.0%	60.0%	
Maximum Green (s)	18.0	18.0		18.0	18.0		30.0	30.0	30.0	30.0	30.0	
Yellow Time (s)	4.0	4.0		4.0	4.0		4.0	4.0	4.0	4.0	4.0	
All-Red Time (s)	2.0	2.0		2.0	2.0		2.0	2.0	2.0	2.0	2.0	
Lost Time Adjust (s)		-2.0			-2.0			-2.0	0.0		-2.0	
Total Lost Time (s)		4.0			4.0			4.0	6.0		4.0	
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0	3.0	3.0	3.0	
Recall Mode	None	None		None	None		Max	Max	Max	Max	Max	
Walk Time (s)	7.0	7.0		7.0	7.0		7.0	7.0	7.0	7.0	7.0	
Flash Dont Walk (s)	11.0	11.0		11.0	11.0		11.0	11.0	11.0	11.0	11.0	
Pedestrian Calls (#/hr)	0	0		0	0		0	0	0	0	0	
Act Effct Green (s)		9.0			9.0			40.4	39.2		40.4	
Actuated g/C Ratio		0.18			0.18			0.79	0.77		0.79	
v/c Ratio		0.29			0.19			0.51	0.02		0.52	
Control Delay		12.1			13.1			7.7	0.9		6.0	
Queue Delay		0.0			0.0			0.0	0.0		0.0	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Total Delay		12.1			13.1			7.7	0.9		6.0	
LOS		B			B			A	A		A	
Approach Delay		12.1			13.1			7.2			6.0	
Approach LOS		B			B			A			A	
Queue Length 50th (m)		3.2			2.6			16.4	0.0		20.9	
Queue Length 95th (m)		12.1			9.5			48.0	1.4		55.4	
Internal Link Dist (m)		495.1			47.1			341.2			130.9	
Turn Bay Length (m)									50.0			
Base Capacity (vph)		610			606			806	1249		1184	
Starvation Cap Reductn		0			0			0	0		0	
Spillback Cap Reductn		0			0			0	0		0	
Storage Cap Reductn		0			0			0	0		0	
Reduced v/c Ratio		0.14			0.09			0.51	0.02		0.52	

Intersection Summary			
Area Type:	Other		
Cycle Length: 60			
Actuated Cycle Length: 51.2			
Natural Cycle: 60			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 0.52			
Intersection Signal Delay: 7.2		Intersection LOS: A	
Intersection Capacity Utilization 80.8%		ICU Level of Service D	
Analysis Period (min) 15			

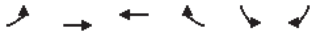
Splits and Phases: 4: Nafziger Road & East Road/Wilmot Complex Driveway

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	35	2	51	29	1	24	158	253	30	25	378	214
Future Volume (vph)	35	2	51	29	1	24	158	253	30	25	378	214
Ideal Flow (vphpl)	1765	1900	1765	1900	1900	1900	1650	1650	1900	1900	1650	1650
Total Lost time (s)		4.0			4.0			4.0	6.0		4.0	
Lane Util. Factor		1.00			1.00			1.00	1.00		1.00	
Frt		0.92			0.94			1.00	0.85		0.95	
Flt Protected		0.98			0.97			0.98	1.00		1.00	
Satd. Flow (prot)		1717			1709			1508	1615		1514	
Flt Permitted		0.85			0.86			0.67	1.00		0.98	
Satd. Flow (perm)		1482			1513			1022	1615		1484	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	35	2	51	29	1	24	158	253	30	25	378	214
RTOR Reduction (vph)	0	45	0	0	21	0	0	0	9	0	19	0
Lane Group Flow (vph)	0	43	0	0	33	0	0	411	21	0	598	0
Heavy Vehicles (%)	0%	0%	0%	0%	0%	4%	0%	12%	0%	0%	6%	0%
Turn Type	Perm	NA		Perm	NA		Perm	NA	Perm	Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2		2	6		
Actuated Green, G (s)		4.8			4.8			36.7	36.7		36.7	
Effective Green, g (s)		6.8			6.8			38.7	36.7		38.7	
Actuated g/C Ratio		0.13			0.13			0.72	0.69		0.72	
Clearance Time (s)		6.0			6.0			6.0	6.0		6.0	
Vehicle Extension (s)		3.0			3.0			3.0	3.0		3.0	
Lane Grp Cap (vph)		188			192			739	1107		1073	
v/s Ratio Prot												
v/s Ratio Perm		c0.03			0.02			0.40	0.01		c0.40	
v/c Ratio		0.23			0.17			0.56	0.02		0.56	
Uniform Delay, d1		21.0			20.8			3.4	2.7		3.4	
Progression Factor		1.00			1.00			1.00	1.00		1.00	
Incremental Delay, d2		0.6			0.4			3.0	0.0		2.1	
Delay (s)		21.6			21.3			6.4	2.7		5.5	
Level of Service		C			C			A	A		A	
Approach Delay (s)		21.6			21.3			6.2			5.5	
Approach LOS		C			C			A			A	

Intersection Summary			
HCM 2000 Control Delay	7.7	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.51		
Actuated Cycle Length (s)	53.5	Sum of lost time (s)	8.0
Intersection Capacity Utilization	80.8%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	30	77	331	33	8	8
Future Volume (vph)	30	77	331	33	8	8
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			0.988		0.932	
Flt Protected		0.986			0.976	
Satd. Flow (prot)	0	1837	1840	0	1694	0
Flt Permitted		0.986			0.976	
Satd. Flow (perm)	0	1837	1840	0	1694	0
Link Speed (k/h)		50	50		50	
Link Distance (m)		120.3	519.1		92.2	
Travel Time (s)		8.7	37.4		6.6	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	30	77	331	33	8	8
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	107	364	0	16	0
Sign Control		Free	Free		Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	38.5%	ICU Level of Service	A
Analysis Period (min)	15		



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	30	77	331	33	8	8
Future Volume (Veh/h)	30	77	331	33	8	8
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	30	77	331	33	8	8
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		None	None			
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	364				484	348
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	364				484	348
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	97				98	99
cM capacity (veh/h)	1195				528	696

Direction, Lane #	EB 1	WB 1	SB 1
Volume Total	107	364	16
Volume Left	30	0	8
Volume Right	0	33	8
cSH	1195	1700	600
Volume to Capacity	0.03	0.21	0.03
Queue Length 95th (m)	0.6	0.0	0.7
Control Delay (s)	2.4	0.0	11.2
Lane LOS	A		B
Approach Delay (s)	2.4	0.0	11.2
Approach LOS			B

Intersection Summary			
Average Delay		0.9	
Intersection Capacity Utilization		38.5%	ICU Level of Service A
Analysis Period (min)		15	

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	188	151	9	44	64	40
Future Volume (vph)	188	151	9	44	64	40
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	0.940		0.888			
Flt Protected	0.973					0.970
Satd. Flow (prot)	1704	0	1654	0	0	1807
Flt Permitted	0.973					0.970
Satd. Flow (perm)	1704	0	1654	0	0	1807
Link Speed (k/h)	50		50			50
Link Distance (m)	120.3		87.0			145.0
Travel Time (s)	8.7		6.3			10.4
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	188	151	9	44	64	40
Shared Lane Traffic (%)						
Lane Group Flow (vph)	339	0	53	0	0	104
Sign Control	Stop		Free			Free

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	38.6%		ICU Level of Service A
Analysis Period (min)	15		

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	188	151	9	44	64	40
Future Volume (Veh/h)	188	151	9	44	64	40
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	188	151	9	44	64	40
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	199	31			53	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	199	31			53	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	75	86			96	
cM capacity (veh/h)	757	1043			1553	

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	339	53	104
Volume Left	188	0	64
Volume Right	151	44	0
cSH	862	1700	1553
Volume to Capacity	0.39	0.03	0.04
Queue Length 95th (m)	15.1	0.0	1.0
Control Delay (s)	11.9	0.0	4.7
Lane LOS	B		A
Approach Delay (s)	11.9	0.0	4.7
Approach LOS	B		

Intersection Summary			
Average Delay	9.1		
Intersection Capacity Utilization	38.6%	ICU Level of Service	A
Analysis Period (min)	15		

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	0	19	0	0	84	0
Future Volume (vph)	0	19	0	0	84	0
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	0.865					
Flt Protected						0.950
Satd. Flow (prot)	1611	0	1863	0	0	1770
Flt Permitted						0.950
Satd. Flow (perm)	1611	0	1863	0	0	1770
Link Speed (k/h)	50		50			50
Link Distance (m)	87.2		30.3			87.0
Travel Time (s)	6.3		2.2			6.3
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	0	19	0	0	84	0
Shared Lane Traffic (%)						
Lane Group Flow (vph)	19	0	0	0	0	84
Sign Control	Stop		Free			Free

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	14.7%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	0	19	0	0	84	0
Future Volume (Veh/h)	0	19	0	0	84	0
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	0	19	0	0	84	0
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	168	0			0	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	168	0			0	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	100	98			95	
cM capacity (veh/h)	780	1085			1623	

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	19	0	84
Volume Left	0	0	84
Volume Right	19	0	0
cSH	1085	1700	1623
Volume to Capacity	0.02	0.00	0.05
Queue Length 95th (m)	0.4	0.0	1.3
Control Delay (s)	8.4	0.0	7.3
Lane LOS	A		A
Approach Delay (s)	8.4	0.0	7.3
Approach LOS	A		

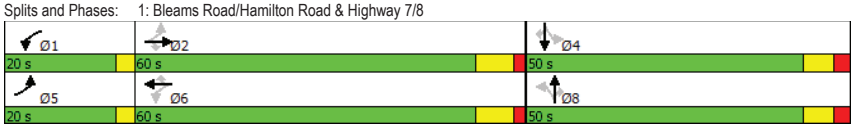
Intersection Summary			
Average Delay	7.5		
Intersection Capacity Utilization	14.7%	ICU Level of Service	A
Analysis Period (min)	15		

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	66	797	123	66	1010	189	183	103	103	264	95	161
Future Volume (vph)	66	797	123	66	1010	189	183	103	103	264	95	161
Ideal Flow (vphpl)	1775	1900	1750	1775	1900	1750	1775	1900	1750	1775	1900	1750
Storage Length (m)	300.0		110.0	100.0		75.0	70.0		85.0	65.0		155.0
Storage Lanes	1		1	1		1	1		1	1		1
Taper Length (m)	40.0			100.0			40.0			20.0		
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor	1.00		0.98	1.00		0.97	1.00		0.99	1.00		0.99
Frt			0.850			0.850			0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1637	3438	1458	1637	3195	1444	1606	1900	1430	1637	1827	1458
Flt Permitted	0.208			0.297			0.695			0.690		
Satd. Flow (perm)	358	3438	1426	512	3195	1404	1174	1900	1411	1188	1827	1439
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			123			171			103			161
Link Speed (k/h)		80			80			50			50	
Link Distance (m)		163.4			1424.6			147.6			715.9	
Travel Time (s)		7.4			64.1			10.6			51.5	
Confl. Peds. (#/hr)	4		1	1		4	1		1	1		1
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	3%	5%	2%	3%	13%	3%	5%	0%	4%	3%	4%	2%
Adj. Flow (vph)	66	797	123	66	1010	189	183	103	103	264	95	161
Shared Lane Traffic (%)												
Lane Group Flow (vph)	66	797	123	66	1010	189	183	103	103	264	95	161
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	Perm	NA	Perm	Perm	NA	Perm
Protected Phases	5	2		1	6			8			4	
Permitted Phases	2		2	6		6	8		8	4		4
Detector Phase	5	2	2	1	6	6	8	8	8	4	4	4
Switch Phase												
Minimum Initial (s)	7.0	20.0	20.0	7.0	20.0	20.0	10.0	10.0	10.0	10.0	10.0	10.0
Minimum Split (s)	20.0	60.0	60.0	20.0	60.0	60.0	50.0	50.0	50.0	50.0	50.0	50.0
Total Split (s)	20.0	60.0	60.0	20.0	60.0	60.0	50.0	50.0	50.0	50.0	50.0	50.0
Total Split (%)	15.4%	46.2%	46.2%	15.4%	46.2%	46.2%	38.5%	38.5%	38.5%	38.5%	38.5%	38.5%
Maximum Green (s)	17.0	52.2	52.2	17.0	52.2	52.2	42.7	42.7	42.7	42.7	42.7	42.7
Yellow Time (s)	3.0	5.9	5.9	3.0	5.9	5.9	4.5	4.5	4.5	4.5	4.5	4.5
All-Red Time (s)	0.0	1.9	1.9	0.0	1.9	1.9	2.8	2.8	2.8	2.8	2.8	2.8
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	3.0	7.8	7.8	3.0	7.8	7.8	7.3	7.3	7.3	7.3	7.3	7.3
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag						
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes						
Vehicle Extension (s)	3.0	1.8	1.8	3.0	1.8	1.8	3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	Max	Max	None	Max	Max	None	None	None	None	None	None
Walk Time (s)		19.0	19.0		19.0	19.0	19.0	19.0	19.0	19.0	19.0	19.0
Flash Dont Walk (s)		14.0	14.0		14.0	14.0	14.0	14.0	14.0	14.0	14.0	14.0
Pedestrian Calls (#/hr)		0	0		0	0	0	0	0	0	0	0
Act Effct Green (s)	64.1	53.1	53.1	64.0	53.1	53.1	28.2	28.2	28.2	28.2	28.2	28.2
Actuated g/C Ratio	0.61	0.51	0.51	0.61	0.51	0.51	0.27	0.27	0.27	0.27	0.27	0.27
v/c Ratio	0.21	0.46	0.16	0.17	0.63	0.24	0.58	0.20	0.23	0.83	0.19	0.32

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Control Delay	11.2	20.1	4.1	10.6	23.5	4.8	41.1	30.3	6.7	57.9	30.2	6.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	11.2	20.1	4.1	10.6	23.5	4.8	41.1	30.3	6.7	57.9	30.2	6.2
LOS	B	C	A	B	C	A	D	C	A	E	C	A
Approach Delay		17.5			20.1			29.1			36.8	
Approach LOS		B			C			C			D	
Queue Length 50th (m)	5.0	58.0	0.0	5.0	82.6	2.0	34.5	17.3	0.0	54.0	15.9	0.0
Queue Length 95th (m)	14.0	98.2	11.7	14.0	138.2	17.0	58.8	31.5	12.3	87.7	29.6	15.1
Internal Link Dist (m)		139.4			1400.6			123.6			691.9	
Turn Bay Length (m)	300.0		110.0	100.0		75.0	70.0		85.0	65.0		155.0
Base Capacity (vph)	436	1738	781	508	1615	794	485	785	644	491	755	689
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.15	0.46	0.16	0.13	0.63	0.24	0.38	0.13	0.16	0.54	0.13	0.23

Intersection Summary			
Area Type:	Other		
Cycle Length: 130			
Actuated Cycle Length: 105			
Natural Cycle: 130			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 0.83			
Intersection Signal Delay: 23.1		Intersection LOS: C	
Intersection Capacity Utilization 72.2%		ICU Level of Service C	
Analysis Period (min) 15			

Splits and Phases: 1: Bleams Road/Hamilton Road & Highway 7/8



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	66	797	123	66	1010	189	183	103	103	264	95	161
Future Volume (vph)	66	797	123	66	1010	189	183	103	103	264	95	161
Ideal Flow (vphpl)	1775	1900	1750	1775	1900	1750	1775	1900	1750	1775	1900	1750
Total Lost time (s)	3.0	7.8	7.8	3.0	7.8	7.8	7.3	7.3	7.3	7.3	7.3	7.3
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frpb, ped/bikes	1.00	1.00	0.98	1.00	1.00	0.97	1.00	1.00	0.99	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	1.00	1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1637	3438	1427	1637	3195	1406	1605	1900	1412	1636	1827	1439
Flt Permitted	0.21	1.00	1.00	0.30	1.00	1.00	0.70	1.00	1.00	0.69	1.00	1.00
Satd. Flow (perm)	359	3438	1427	511	3195	1406	1175	1900	1412	1189	1827	1439
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	66	797	123	66	1010	189	183	103	103	264	95	161
RTOR Reduction (vph)	0	0	61	0	0	85	0	0	75	0	0	118
Lane Group Flow (vph)	66	797	62	66	1010	104	183	103	28	264	95	43
Confl. Peds. (#/hr)	4		1	1		4	1		1	1		1
Heavy Vehicles (%)	3%	5%	2%	3%	13%	3%	5%	0%	4%	3%	4%	2%
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	Perm	NA	Perm	Perm	NA	Perm
Protected Phases	5	2		1	6			8			4	
Permitted Phases	2		2	6		6	8		8	4		4
Actuated Green, G (s)	59.2	53.1	53.1	59.2	53.1	53.1	28.2	28.2	28.2	28.2	28.2	28.2
Effective Green, g (s)	59.2	53.1	53.1	59.2	53.1	53.1	28.2	28.2	28.2	28.2	28.2	28.2
Actuated g/C Ratio	0.56	0.50	0.50	0.56	0.50	0.50	0.27	0.27	0.27	0.27	0.27	0.27
Clearance Time (s)	3.0	7.8	7.8	3.0	7.8	7.8	7.3	7.3	7.3	7.3	7.3	7.3
Vehicle Extension (s)	3.0	1.8	1.8	3.0	1.8	1.8	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	275	1730	718	351	1608	707	314	507	377	317	488	384
v/s Ratio Prot	c0.01	0.23		0.01	c0.32			0.05			0.05	
v/s Ratio Perm	0.12		0.04	0.09		0.07	0.16		0.02	c0.22		0.03
v/c Ratio	0.24	0.46	0.09	0.19	0.63	0.15	0.58	0.20	0.07	0.83	0.19	0.11
Uniform Delay, d1	11.7	16.9	13.6	10.9	19.0	14.1	33.5	29.9	28.9	36.4	29.9	29.2
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	0.5	0.9	0.2	0.3	1.9	0.4	2.7	0.2	0.1	16.8	0.2	0.1
Delay (s)	12.1	17.8	13.8	11.2	20.9	14.5	36.3	30.1	29.0	53.3	30.1	29.3
Level of Service	B	B	B	B	C	B	D	C	C	D	C	C
Approach Delay (s)		16.9			19.4			32.7			41.6	
Approach LOS		B			B			C			D	

Intersection Summary					
HCM 2000 Control Delay	23.9	HCM 2000 Level of Service		C	
HCM 2000 Volume to Capacity ratio	0.67				
Actuated Cycle Length (s)	105.5	Sum of lost time (s)		18.1	
Intersection Capacity Utilization	72.2%	ICU Level of Service		C	
Analysis Period (min)	15				

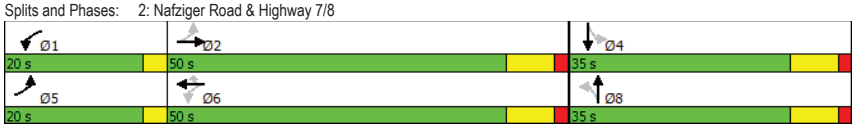
c Critical Lane Group

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	114	1035	1	5	1095	318	1	28	5	194	35	174
Future Volume (vph)	114	1035	1	5	1095	318	1	28	5	194	35	174
Ideal Flow (vphpl)	1775	1775	1775	1775	1900	1750	1775	1650	1650	1775	1650	1650
Storage Length (m)	145.0		0.0	105.0		90.0	80.0		0.0	120.0		0.0
Storage Lanes	1		0	1		1	1		0	1		0
Taper Length (m)	100.0			100.0			40.0			100.0		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor	1.00					0.98						
Frt						0.850		0.977			0.875	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1561	3212	0	1686	3252	1340	1686	1368	0	1561	1314	0
Flt Permitted	0.167			0.258			0.587			0.736		
Satd. Flow (perm)	274	3212	0	458	3252	1311	1042	1368	0	1210	1314	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)						318		5			174	
Link Speed (k/h)		80			80			80			80	
Link Distance (m)		1424.6			264.2			138.9			365.2	
Travel Time (s)		64.1			11.9			6.3			16.4	
Confl. Peds. (#/hr)	1					1						
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	8%	5%	0%	0%	11%	11%	0%	21%	0%	8%	19%	8%
Adj. Flow (vph)	114	1035	1	5	1095	318	1	28	5	194	35	174
Shared Lane Traffic (%)												
Lane Group Flow (vph)	114	1036	0	5	1095	318	1	33	0	194	209	0
Turn Type	pm+pt	NA		pm+pt	NA	Perm	Perm	NA		Perm	NA	
Protected Phases	5	2		1	6			8			4	
Permitted Phases	2			6		6	8			4		
Detector Phase	5	2		1	6	6	8	8		4	4	
Switch Phase												
Minimum Initial (s)	7.0	20.0		7.0	20.0	20.0	10.0	10.0		10.0	10.0	
Minimum Split (s)	20.0	50.0		20.0	50.0	50.0	35.0	35.0		35.0	35.0	
Total Split (s)	20.0	50.0		20.0	50.0	50.0	35.0	35.0		35.0	35.0	
Total Split (%)	19.0%	47.6%		19.0%	47.6%	47.6%	33.3%	33.3%		33.3%	33.3%	
Maximum Green (s)	17.0	42.2		17.0	42.2	42.2	27.4	27.4		27.4	27.4	
Yellow Time (s)	3.0	5.9		3.0	5.9	5.9	5.9	5.9		5.9	5.9	
All-Red Time (s)	0.0	1.9		0.0	1.9	1.9	1.7	1.7		1.7	1.7	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Total Lost Time (s)	3.0	7.8		3.0	7.8	7.8	7.6	7.6		7.6	7.6	
Lead/Lag	Lead	Lag		Lead	Lag	Lag						
Lead-Lag Optimize?	Yes	Yes		Yes	Yes	Yes						
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	
Recall Mode	None	Max		None	Min	Min	None	None		None	None	
Walk Time (s)		16.0			16.0	16.0	16.0	16.0		16.0	16.0	
Flash Dont Walk (s)		11.0			11.0	11.0	11.0	11.0		11.0	11.0	
Pedestrian Calls (#/hr)		0			0	0	0	0		0	0	
Act Effct Green (s)	53.8	47.2		49.7	39.3	39.3	18.5	18.5		18.5	18.5	
Actuated g/C Ratio	0.65	0.57		0.60	0.47	0.47	0.22	0.22		0.22	0.22	
v/c Ratio	0.36	0.57		0.01	0.71	0.40	0.00	0.11		0.72	0.49	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Control Delay	9.9	14.5		7.0	22.7	3.8	26.0	24.4		46.6	11.5	
Queue Delay	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Total Delay	9.9	14.5		7.0	22.7	3.8	26.0	24.4		46.6	11.5	
LOS	A	B		A	C	A	C	C		D	B	
Approach Delay		14.1			18.4			24.5			28.4	
Approach LOS		B			B			C			C	
Queue Length 50th (m)	6.5	51.0		0.3	77.9	0.0	0.1	3.6		29.1	4.5	
Queue Length 95th (m)	16.1	107.7		1.7	126.5	16.1	1.5	11.8		58.3	24.6	
Internal Link Dist (m)		1400.6			240.2			114.9			341.2	
Turn Bay Length (m)	145.0			105.0		90.0	80.0			120.0		
Base Capacity (vph)	446	1824		553	1687	833	351	464		407	558	
Starvation Cap Reductn	0	0		0	0	0	0	0		0	0	
Spillback Cap Reductn	0	0		0	0	0	0	0		0	0	
Storage Cap Reductn	0	0		0	0	0	0	0		0	0	
Reduced v/c Ratio	0.26	0.57		0.01	0.65	0.38	0.00	0.07		0.48	0.37	

Intersection Summary			
Area Type:	Other		
Cycle Length: 105			
Actuated Cycle Length: 83.1			
Natural Cycle: 105			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 0.72			
Intersection Signal Delay: 18.2		Intersection LOS: B	
Intersection Capacity Utilization 71.4%		ICU Level of Service C	
Analysis Period (min) 15			

Splits and Phases: 2: Nafziger Road & Highway 7/8



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	114	1035	1	5	1095	318	1	28	5	194	35	174
Future Volume (vph)	114	1035	1	5	1095	318	1	28	5	194	35	174
Ideal Flow (vphpl)	1775	1775	1775	1775	1900	1750	1775	1650	1650	1775	1650	1650
Total Lost time (s)	3.0	7.8		3.0	7.8	7.8	7.6	7.6		7.6	7.6	
Lane Util. Factor	1.00	0.95		1.00	0.95	1.00	1.00	1.00		1.00	1.00	
Frpb, ped/bikes	1.00	1.00		1.00	1.00	0.98	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	1.00	
Frt	1.00	1.00		1.00	1.00	0.85	1.00	0.98		1.00	0.88	
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1561	3212		1686	3252	1311	1686	1369		1561	1315	
Flt Permitted	0.17	1.00		0.26	1.00	1.00	0.59	1.00		0.74	1.00	
Satd. Flow (perm)	274	3212		458	3252	1311	1042	1369		1209	1315	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	114	1035	1	5	1095	318	1	28	5	194	35	174
RTOR Reduction (vph)	0	0	0	0	0	164	0	4	0	0	136	0
Lane Group Flow (vph)	114	1036	0	5	1095	154	1	29	0	194	73	0
Confl. Peds. (#/hr)	1					1						
Heavy Vehicles (%)	8%	5%	0%	0%	11%	11%	0%	21%	0%	8%	19%	8%
Turn Type	pm+pt	NA		pm+pt	NA	Perm	Perm	NA		Perm	NA	
Protected Phases	5	2		1	6			8			4	
Permitted Phases	2			6		6	8			4		
Actuated Green, G (s)	51.4	47.2		42.4	41.2	41.2	18.5	18.5		18.5	18.5	
Effective Green, g (s)	51.4	47.2		42.4	41.2	41.2	18.5	18.5		18.5	18.5	
Actuated g/C Ratio	0.60	0.55		0.50	0.48	0.48	0.22	0.22		0.22	0.22	
Clearance Time (s)	3.0	7.8		3.0	7.8	7.8	7.6	7.6		7.6	7.6	
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	273	1777		244	1570	633	225	296		262	285	
v/s Ratio Prot	c0.04	0.32		0.00	c0.34			0.02			0.06	
v/s Ratio Perm	0.22			0.01		0.12	0.00			c0.16		
v/c Ratio	0.42	0.58		0.02	0.70	0.24	0.00	0.10		0.74	0.26	
Uniform Delay, d1	9.3	12.6		10.9	17.2	12.9	26.2	26.7		31.2	27.7	
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Incremental Delay, d2	1.0	1.4		0.0	1.4	0.2	0.0	0.1		10.7	0.5	
Delay (s)	10.3	14.0		10.9	18.6	13.1	26.2	26.9		41.9	28.2	
Level of Service	B	B		B	B	B	C	C		D	C	
Approach Delay (s)		13.6			17.3			26.9			34.8	
Approach LOS		B			B			C			C	

Intersection Summary			
HCM 2000 Control Delay	18.3	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.68		
Actuated Cycle Length (s)	85.3	Sum of lost time (s)	18.4
Intersection Capacity Utilization	71.4%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	128	104	330	28	34	392
Future Volume (vph)	128	104	330	28	34	392
Ideal Flow (vphpl)	1765	1765	1650	1650	1650	1650
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.939		0.989			
Flt Protected	0.973					0.996
Satd. Flow (prot)	1581	0	1600	0	0	1611
Flt Permitted	0.973					0.996
Satd. Flow (perm)	1581	0	1600	0	0	1611
Link Speed (k/h)	50		50			50
Link Distance (m)	280.1		715.9			178.4
Travel Time (s)	20.2		51.5			12.8
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	128	104	330	28	34	392
Shared Lane Traffic (%)						
Lane Group Flow (vph)	232	0	358	0	0	426
Sign Control	Stop		Free			Free

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	72.4%	ICU Level of Service	C
Analysis Period (min)	15		

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	128	104	330	28	34	392
Future Volume (Veh/h)	128	104	330	28	34	392
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	128	104	330	28	34	392
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	804	344			358	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	804	344			358	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	63	85			97	
cM capacity (veh/h)	342	699			1201	

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	232	358	426
Volume Left	128	0	34
Volume Right	104	28	0
cSH	444	1700	1201
Volume to Capacity	0.52	0.21	0.03
Queue Length 95th (m)	23.7	0.0	0.7
Control Delay (s)	21.7	0.0	0.9
Lane LOS	C		A
Approach Delay (s)	21.7	0.0	0.9
Approach LOS	C		

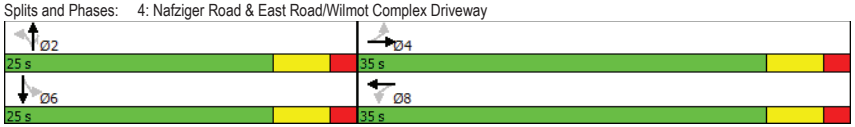
Intersection Summary			
Average Delay	5.3		
Intersection Capacity Utilization	72.4%	ICU Level of Service	C
Analysis Period (min)	15		

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	279	1	173	47	0	47	74	386	87	42	230	46
Future Volume (vph)	279	1	173	47	0	47	74	386	87	42	230	46
Ideal Flow (vphpl)	1765	1900	1765	1900	1900	1900	1650	1650	1900	1900	1650	1650
Storage Length (m)	0.0		0.0	0.0		0.0	0.0		50.0	0.0		0.0
Storage Lanes	0		0	0		0	0		1	0		0
Taper Length (m)	0.0			7.5			0.0			0.0		
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
Frt		0.948			0.932				0.850		0.980	
Flt Protected		0.970			0.976			0.992			0.993	
Satd. Flow (prot)	0	1747	0	0	1711	0	0	1597	1615	0	1545	0
Flt Permitted		0.757			0.763			0.903			0.904	
Satd. Flow (perm)	0	1364	0	0	1338	0	0	1453	1615	0	1407	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		77			55				87		16	
Link Speed (k/h)		50			50			80			80	
Link Distance (m)		510.3			56.6			365.2			154.9	
Travel Time (s)		36.7			4.1			16.4			7.0	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	0%	0%	0%	0%	0%	2%	0%	3%	0%	0%	5%	2%
Adj. Flow (vph)	279	1	173	47	0	47	74	386	87	42	230	46
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	453	0	0	94	0	0	460	87	0	318	0
Turn Type	Perm	NA		Perm	NA		Perm	NA	Perm	Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2		2	6		
Detector Phase	4	4		8	8		2	2	2	6	6	
Switch Phase												
Minimum Initial (s)	5.0	5.0		5.0	5.0		5.0	5.0	5.0	5.0	5.0	
Minimum Split (s)	24.0	24.0		24.0	24.0		24.0	24.0	24.0	24.0	24.0	
Total Split (s)	35.0	35.0		35.0	35.0		25.0	25.0	25.0	25.0	25.0	
Total Split (%)	58.3%	58.3%		58.3%	58.3%		41.7%	41.7%	41.7%	41.7%	41.7%	
Maximum Green (s)	29.0	29.0		29.0	29.0		19.0	19.0	19.0	19.0	19.0	
Yellow Time (s)	4.0	4.0		4.0	4.0		4.0	4.0	4.0	4.0	4.0	
All-Red Time (s)	2.0	2.0		2.0	2.0		2.0	2.0	2.0	2.0	2.0	
Lost Time Adjust (s)		-2.0			-2.0			-2.0	-2.0		-2.0	
Total Lost Time (s)		4.0			4.0			4.0	4.0		4.0	
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0	3.0	3.0	3.0	
Recall Mode	None	None		None	None		Max	Max	Max	Max	Max	
Walk Time (s)	7.0	7.0		7.0	7.0		7.0	7.0	7.0	7.0	7.0	
Flash Dont Walk (s)	11.0	11.0		11.0	11.0		11.0	11.0	11.0	11.0	11.0	
Pedestrian Calls (#/hr)	0	0		0	0		0	0	0	0	0	
Act Effct Green (s)		21.1			21.1			21.3	21.3		21.3	
Actuated g/C Ratio		0.42			0.42			0.42	0.42		0.42	
v/c Ratio		0.74			0.16			0.75	0.12		0.53	
Control Delay		17.7			4.9			25.8	4.2		16.4	
Queue Delay		0.0			0.0			0.0	0.0		0.0	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Total Delay		17.7			4.9			25.8	4.2		16.4	
LOS		B			A			C	A		B	
Approach Delay		17.7			4.9			22.4			16.4	
Approach LOS		B			A			C			B	
Queue Length 50th (m)		27.2			2.1			34.9	0.0		20.0	
Queue Length 95th (m)		54.5			8.1			#101.1	7.7		53.2	
Internal Link Dist (m)		486.3			32.6			341.2			130.9	
Turn Bay Length (m)									50.0			
Base Capacity (vph)		878			853			612	731		602	
Starvation Cap Reductn		0			0			0	0		0	
Spillback Cap Reductn		0			0			0	0		0	
Storage Cap Reductn		0			0			0	0		0	
Reduced v/c Ratio		0.52			0.11			0.75	0.12		0.53	

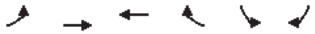
Intersection Summary			
Area Type:	Other		
Cycle Length: 60			
Actuated Cycle Length: 50.6			
Natural Cycle: 50			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 0.75			
Intersection Signal Delay: 18.4		Intersection LOS: B	
Intersection Capacity Utilization 90.7%		ICU Level of Service E	
Analysis Period (min) 15			
# 95th percentile volume exceeds capacity, queue may be longer.			
Queue shown is maximum after two cycles.			

Splits and Phases: 4: Nafziger Road & East Road/Wilmot Complex Driveway



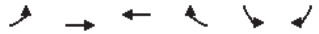
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	279	1	173	47	0	47	74	386	87	42	230	46
Future Volume (vph)	279	1	173	47	0	47	74	386	87	42	230	46
Ideal Flow (vphpl)	1765	1900	1765	1900	1900	1900	1650	1650	1900	1900	1650	1650
Total Lost time (s)		4.0			4.0			4.0	4.0		4.0	
Lane Util. Factor		1.00			1.00			1.00	1.00		1.00	
Frt		0.95			0.93			1.00	0.85		0.98	
Flt Protected		0.97			0.98			0.99	1.00		0.99	
Satd. Flow (prot)		1748			1711			1597	1615		1547	
Flt Permitted		0.76			0.76			0.90	1.00		0.90	
Satd. Flow (perm)		1365			1339			1453	1615		1407	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	279	1	173	47	0	47	74	386	87	42	230	46
RTOR Reduction (vph)	0	45	0	0	32	0	0	0	50	0	9	0
Lane Group Flow (vph)	0	408	0	0	62	0	0	460	37	0	309	0
Heavy Vehicles (%)	0%	0%	0%	0%	0%	2%	0%	3%	0%	0%	5%	2%
Turn Type	Perm	NA		Perm	NA		Perm	NA	Perm	Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2		2	6		
Actuated Green, G (s)		19.1			19.1			19.3	19.3		19.3	
Effective Green, g (s)		21.1			21.1			21.3	21.3		21.3	
Actuated g/C Ratio		0.42			0.42			0.42	0.42		0.42	
Clearance Time (s)		6.0			6.0			6.0	6.0		6.0	
Vehicle Extension (s)		3.0			3.0			3.0	3.0		3.0	
Lane Grp Cap (vph)		571			560			614	682		594	
v/s Ratio Prot												
v/s Ratio Perm		c0.30			0.05			c0.32	0.02		0.22	
v/c Ratio		0.71			0.11			0.75	0.05		0.52	
Uniform Delay, d1		12.2			8.9			12.3	8.6		10.8	
Progression Factor		1.00			1.00			1.00	1.00		1.00	
Incremental Delay, d2		4.2			0.1			8.2	0.2		3.2	
Delay (s)		16.4			9.0			20.5	8.7		14.0	
Level of Service		B			A			C	A		B	
Approach Delay (s)		16.4			9.0			18.6			14.0	
Approach LOS		B			A			B			B	

Intersection Summary			
HCM 2000 Control Delay	16.2	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.73		
Actuated Cycle Length (s)	50.4	Sum of lost time (s)	8.0
Intersection Capacity Utilization	90.7%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	6	410	108	11	41	41
Future Volume (vph)	6	410	108	11	41	41
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			0.988		0.932	
Flt Protected		0.999			0.976	
Satd. Flow (prot)	0	1861	1840	0	1694	0
Flt Permitted		0.999			0.976	
Satd. Flow (perm)	0	1861	1840	0	1694	0
Link Speed (k/h)		50	50		50	
Link Distance (m)		129.1	510.3		89.7	
Travel Time (s)		9.3	36.7		6.5	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	6	410	108	11	41	41
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	416	119	0	82	0
Sign Control		Free	Free		Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 37.8%		ICU Level of Service A	
Analysis Period (min) 15			



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	6	410	108	11	41	41
Future Volume (Veh/h)	6	410	108	11	41	41
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	6	410	108	11	41	41
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		None	None			
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	119				536	114
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	119				536	114
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	100				92	96
cM capacity (veh/h)	1469				504	939

Direction, Lane #	EB 1	WB 1	SB 1
Volume Total	416	119	82
Volume Left	6	0	41
Volume Right	0	11	41
cSH	1469	1700	656
Volume to Capacity	0.00	0.07	0.13
Queue Length 95th (m)	0.1	0.0	3.4
Control Delay (s)	0.1	0.0	11.3
Lane LOS	A		B
Approach Delay (s)	0.1	0.0	11.3
Approach LOS			B

Intersection Summary			
Average Delay	1.6		
Intersection Capacity Utilization	37.8%	ICU Level of Service	A
Analysis Period (min)	15		

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	61	68	28	232	184	7
Future Volume (vph)	61	68	28	232	184	7
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	0.929		0.880			
Flt Protected	0.977					0.954
Satd. Flow (prot)	1691	0	1639	0	0	1777
Flt Permitted	0.977					0.954
Satd. Flow (perm)	1691	0	1639	0	0	1777
Link Speed (k/h)	50		50			50
Link Distance (m)	129.1		88.3			154.4
Travel Time (s)	9.3		6.4			11.1
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	61	68	28	232	184	7
Shared Lane Traffic (%)						
Lane Group Flow (vph)	129	0	260	0	0	191
Sign Control	Stop		Free			Free

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	43.9%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	61	68	28	232	184	7
Future Volume (Veh/h)	61	68	28	232	184	7
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	61	68	28	232	184	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)						
pX, platoon unblocked						
vC, conflicting volume	519	144			260	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	519	144			260	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	86	92			86	
cM capacity (veh/h)	444	903			1304	

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	129	260	191
Volume Left	61	0	184
Volume Right	68	232	0
cSH	607	1700	1304
Volume to Capacity	0.21	0.15	0.14
Queue Length 95th (m)	6.4	0.0	3.9
Control Delay (s)	12.5	0.0	8.0
Lane LOS	B		A
Approach Delay (s)	12.5	0.0	8.0
Approach LOS	B		

Intersection Summary			
Average Delay	5.4		
Intersection Capacity Utilization	43.9%	ICU Level of Service	A
Analysis Period (min)	15		

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	0	82	0	0	21	0
Future Volume (vph)	0	82	0	0	21	0
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	0.865					
Flt Protected						0.950
Satd. Flow (prot)	1611	0	1863	0	0	1770
Flt Permitted						0.950
Satd. Flow (perm)	1611	0	1863	0	0	1770
Link Speed (k/h)	50		50			50
Link Distance (m)	106.3		29.7			88.3
Travel Time (s)	7.7		2.1			6.4
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	0	82	0	0	21	0
Shared Lane Traffic (%)						
Lane Group Flow (vph)	82	0	0	0	0	21
Sign Control	Stop		Free			Free

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	15.1%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	0	82	0	0	21	0
Future Volume (Veh/h)	0	82	0	0	21	0
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	0	82	0	0	21	0
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	42	0			0	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	42	0			0	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	100	92			99	
cM capacity (veh/h)	957	1085			1623	

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	82	0	21
Volume Left	0	0	21
Volume Right	82	0	0
cSH	1085	1700	1623
Volume to Capacity	0.08	0.00	0.01
Queue Length 95th (m)	2.0	0.0	0.3
Control Delay (s)	8.6	0.0	7.2
Lane LOS	A		A
Approach Delay (s)	8.6	0.0	7.2
Approach LOS	A		

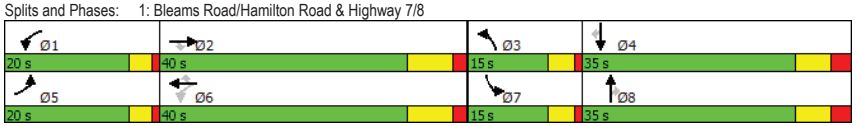
Intersection Summary			
Average Delay	8.3		
Intersection Capacity Utilization	15.1%	ICU Level of Service	A
Analysis Period (min)	15		

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	174	846	127	99	560	184	86	86	82	281	129	98
Future Volume (vph)	174	846	127	99	560	184	86	86	82	281	129	98
Ideal Flow (vphpl)	1775	1900	1750	1775	1900	1750	1775	1900	1750	1775	1900	1750
Storage Length (m)	300.0		110.0	100.0		75.0	70.0		85.0	55.0		155.0
Storage Lanes	2		1	1		1	2		1	2		1
Taper Length (m)	40.0			40.0			40.0			40.0		
Lane Util. Factor	0.97	0.95	1.00	1.00	0.95	1.00	0.97	1.00	1.00	0.97	1.00	1.00
Ped Bike Factor	1.00		0.98	1.00		0.98			0.99	1.00		
Frt			0.850			0.850			0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	3176	3438	1458	1637	3195	1444	3116	1900	1430	3176	1827	1458
Flt Permitted	0.950			0.273			0.950			0.950		
Satd. Flow (perm)	3174	3438	1424	470	3195	1413	3116	1900	1412	3171	1827	1458
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			127			184			132			132
Link Speed (k/h)		80			80			50			50	
Link Distance (m)		163.4			1398.3			147.6			715.9	
Travel Time (s)		7.4			62.9			10.6			51.5	
Confl. Peds. (#/hr)	1		2	2		1			1	1		
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	3%	5%	2%	3%	13%	3%	5%	0%	4%	3%	4%	2%
Adj. Flow (vph)	174	846	127	99	560	184	86	86	82	281	129	98
Shared Lane Traffic (%)												
Lane Group Flow (vph)	174	846	127	99	560	184	86	86	82	281	129	98
Turn Type	Prot	NA	Perm	pm+pt	NA	Perm	Prot	NA	Perm	Prot	NA	Perm
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases			2	6		6			8			4
Detector Phase	5	2	2	1	6	6	3	8	8	7	4	4
Switch Phase												
Minimum Initial (s)	7.0	20.0	20.0	7.0	20.0	20.0	5.0	10.0	10.0	5.0	10.0	10.0
Minimum Split (s)	20.0	40.0	40.0	20.0	40.0	40.0	9.5	35.0	35.0	9.5	35.0	35.0
Total Split (s)	20.0	40.0	40.0	20.0	40.0	40.0	15.0	35.0	35.0	15.0	35.0	35.0
Total Split (%)	18.2%	36.4%	36.4%	18.2%	36.4%	36.4%	13.6%	31.8%	31.8%	13.6%	31.8%	31.8%
Maximum Green (s)	16.0	32.2	32.2	16.0	32.2	32.2	10.5	27.7	27.7	10.5	27.7	27.7
Yellow Time (s)	3.0	5.9	5.9	3.0	5.9	5.9	3.5	4.5	4.5	3.5	4.5	4.5
All-Red Time (s)	1.0	1.9	1.9	1.0	1.9	1.9	1.0	2.8	2.8	1.0	2.8	2.8
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.0	7.8	7.8	4.0	7.8	7.8	4.5	7.3	7.3	4.5	7.3	7.3
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	1.8	1.8	3.0	1.8	1.8	3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	Max	Max	None	Max	Max	None	None	None	None	None	None
Walk Time (s)		19.0	19.0		19.0	19.0		19.0	19.0		19.0	19.0
Flash Dont Walk (s)		14.0	14.0		14.0	14.0		14.0	14.0		14.0	14.0
Pedestrian Calls (#/hr)		0	0		0	0		0	0		0	0
Act Effct Green (s)	10.2	37.4	37.4	45.1	33.1	33.1	7.9	11.5	11.5	10.5	16.3	16.3
Actuated g/C Ratio	0.11	0.42	0.42	0.51	0.37	0.37	0.09	0.13	0.13	0.12	0.18	0.18
v/c Ratio	0.48	0.59	0.19	0.29	0.47	0.29	0.31	0.35	0.28	0.75	0.39	0.26

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Control Delay	41.7	23.1	4.5	11.5	23.6	4.7	41.7	40.0	4.1	52.5	38.2	4.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	41.7	23.1	4.5	11.5	23.6	4.7	41.7	40.0	4.1	52.5	38.2	4.7
LOS	D	C	A	B	C	A	D	D	A	D	D	A
Approach Delay		23.8			18.0			29.0			39.6	
Approach LOS		C			B			C			D	
Queue Length 50th (m)	15.0	60.3	0.0	7.1	38.2	0.0	7.4	14.3	0.0	24.9	21.2	0.0
Queue Length 95th (m)	26.5	93.3	11.6	16.3	62.5	14.4	15.6	29.2	4.1	#49.2	41.1	7.7
Internal Link Dist (m)		139.4			1374.3			123.6			691.9	
Turn Bay Length (m)	300.0		110.0	100.0		75.0	70.0		85.0	55.0		155.0
Base Capacity (vph)	572	1446	672	479	1188	641	369	593	531	375	570	545
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.30	0.59	0.19	0.21	0.47	0.29	0.23	0.15	0.15	0.75	0.23	0.18

Intersection Summary		
Area Type:	Other	
Cycle Length: 110		
Actuated Cycle Length: 88.9		
Natural Cycle: 105		
Control Type: Actuated-Uncoordinated		
Maximum v/c Ratio: 0.75		
Intersection Signal Delay: 25.4		Intersection LOS: C
Intersection Capacity Utilization 70.6%		ICU Level of Service C
Analysis Period (min) 15		
# 95th percentile volume exceeds capacity, queue may be longer.		
Queue shown is maximum after two cycles.		

Splits and Phases: 1: Bleams Road/Hamilton Road & Highway 7/8



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	174	846	127	99	560	184	86	86	82	281	129	98
Future Volume (vph)	174	846	127	99	560	184	86	86	82	281	129	98
Ideal Flow (vphpl)	1775	1900	1750	1775	1900	1750	1775	1900	1750	1775	1900	1750
Total Lost time (s)	4.0	7.8	7.8	4.0	7.8	7.8	4.5	7.3	7.3	4.5	7.3	7.3
Lane Util. Factor	0.97	0.95	1.00	1.00	0.95	1.00	0.97	1.00	1.00	0.97	1.00	1.00
Frpb, ped/bikes	1.00	1.00	0.98	1.00	1.00	0.98	1.00	1.00	0.99	1.00	1.00	1.00
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	3176	3438	1425	1637	3195	1413	3116	1900	1412	3176	1827	1458
Flt Permitted	0.95	1.00	1.00	0.27	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	3176	3438	1425	470	3195	1413	3116	1900	1412	3176	1827	1458
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	174	846	127	99	560	184	86	86	82	281	129	98
RTOR Reduction (vph)	0	0	75	0	0	115	0	0	71	0	0	80
Lane Group Flow (vph)	174	846	52	99	560	69	86	86	11	281	129	18
Confl. Peds. (#/hr)	1		2	2		1			1	1		
Heavy Vehicles (%)	3%	5%	2%	3%	13%	3%	5%	0%	4%	3%	4%	2%
Turn Type	Prot	NA	Perm	pm+pt	NA	Perm	Prot	NA	Perm	Prot	NA	Perm
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases			2	6		6			8			4
Actuated Green, G (s)	10.2	37.4	37.4	40.6	33.9	33.9	6.6	12.4	12.4	10.5	16.3	16.3
Effective Green, g (s)	10.2	37.4	37.4	40.6	33.9	33.9	6.6	12.4	12.4	10.5	16.3	16.3
Actuated g/C Ratio	0.11	0.41	0.41	0.45	0.37	0.37	0.07	0.14	0.14	0.12	0.18	0.18
Clearance Time (s)	4.0	7.8	7.8	4.0	7.8	7.8	4.5	7.3	7.3	4.5	7.3	7.3
Vehicle Extension (s)	3.0	1.8	1.8	3.0	1.8	1.8	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	357	1419	588	296	1195	528	226	260	193	368	328	262
v/s Ratio Prot	c0.05	c0.25		0.02	0.18		0.03	0.05		c0.09	c0.07	
v/s Ratio Perm			0.04	0.12		0.05			0.01			0.01
v/c Ratio	0.49	0.60	0.09	0.33	0.47	0.13	0.38	0.33	0.06	0.76	0.39	0.07
Uniform Delay, d1	37.7	20.7	16.2	14.9	21.5	18.7	40.1	35.3	34.0	38.8	32.8	30.8
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	1.0	1.9	0.3	0.7	1.3	0.5	1.1	0.8	0.1	9.1	0.8	0.1
Delay (s)	38.8	22.6	16.5	15.6	22.8	19.2	41.1	36.1	34.1	47.9	33.6	30.9
Level of Service	D	C	B	B	C	B	D	D	C	D	C	C
Approach Delay (s)		24.4			21.2			37.2			41.0	
Approach LOS		C			C			D			D	

Intersection Summary				
HCM 2000 Control Delay	27.6	HCM 2000 Level of Service	C	
HCM 2000 Volume to Capacity ratio	0.59			
Actuated Cycle Length (s)	90.6	Sum of lost time (s)	23.6	
Intersection Capacity Utilization	70.6%	ICU Level of Service	C	
Analysis Period (min)	15			

c Critical Lane Group

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	47	31	310	134	201	461
Future Volume (vph)	47	31	310	134	201	461
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	0.946		0.959			
Flt Protected	0.971					0.985
Satd. Flow (prot)	1711	0	1786	0	0	1835
Flt Permitted	0.971					0.985
Satd. Flow (perm)	1711	0	1786	0	0	1835
Link Speed (k/h)	50		50			50
Link Distance (m)	231.4		715.9			178.4
Travel Time (s)	16.7		51.5			12.8
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	47	31	310	134	201	461
Shared Lane Traffic (%)						
Lane Group Flow (vph)	78	0	444	0	0	662
Sign Control	Stop		Free			Free

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	74.4%	ICU Level of Service	D
Analysis Period (min)	15		

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	47	31	310	134	201	461
Future Volume (Veh/h)	47	31	310	134	201	461
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	47	31	310	134	201	461
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	1240	377			444	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1240	377			444	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	70	95			82	
cM capacity (veh/h)	159	670			1116	

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	78	444	662
Volume Left	47	0	201
Volume Right	31	134	0
cSH	228	1700	1116
Volume to Capacity	0.34	0.26	0.18
Queue Length 95th (m)	11.6	0.0	5.2
Control Delay (s)	28.8	0.0	4.2
Lane LOS	D		A
Approach Delay (s)	28.8	0.0	4.2
Approach LOS	D		

Intersection Summary			
Average Delay	4.3		
Intersection Capacity Utilization	74.4%	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)	170	2	50	29	1	24	37	83	30	25	303	285
Future Volume (vph)	170	2	50	29	1	24	37	83	30	25	303	285
Ideal Flow (vphpl)	1765	1900	1765	1900	1900	1900	1650	1650	1900	1900	1650	1650
Storage Length (m)	100.0		0.0	0.0		0.0	0.0		50.0	0.0		0.0
Storage Lanes	1		0	0		0	0		1	0		0
Taper Length (m)	50.0			7.5			0.0			0.0		
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
Frt		0.856			0.940				0.850		0.937	
Flt Protected	0.950				0.974			0.985			0.998	
Satd. Flow (prot)	1677	1626	0	0	1709	0	0	1501	1615	0	1499	0
Flt Permitted	0.722				0.841			0.804			0.988	
Satd. Flow (perm)	1274	1626	0	0	1476	0	0	1225	1615	0	1484	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		50			24				55		112	
Link Speed (k/h)		50			50			80			80	
Link Distance (m)		380.0			59.8			535.4			181.7	
Travel Time (s)		27.4			4.3			24.1			8.2	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	0%	0%	0%	0%	0%	4%	0%	12%	0%	0%	6%	0%
Adj. Flow (vph)	170	2	50	29	1	24	37	83	30	25	303	285
Shared Lane Traffic (%)												
Lane Group Flow (vph)	170	52	0	0	54	0	0	120	30	0	613	0
Turn Type	Perm	NA		Perm	NA		Perm	NA	Perm	Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2		2	6		
Detector Phase	4	4		8	8		2	2	2	6	6	
Switch Phase												
Minimum Initial (s)	5.0	5.0		5.0	5.0		5.0	5.0	5.0	5.0	5.0	
Minimum Split (s)	24.0	24.0		24.0	24.0		24.0	24.0	24.0	24.0	24.0	
Total Split (s)	24.0	24.0		24.0	24.0		36.0	36.0	36.0	36.0	36.0	
Total Split (%)	40.0%	40.0%		40.0%	40.0%		60.0%	60.0%	60.0%	60.0%	60.0%	
Maximum Green (s)	18.0	18.0		18.0	18.0		30.0	30.0	30.0	30.0	30.0	
Yellow Time (s)	4.0	4.0		4.0	4.0		4.0	4.0	4.0	4.0	4.0	
All-Red Time (s)	2.0	2.0		2.0	2.0		2.0	2.0	2.0	2.0	2.0	
Lost Time Adjust (s)	0.0	-2.0			-2.0			-2.0	-2.0		-2.0	
Total Lost Time (s)	6.0	4.0			4.0			4.0	4.0		4.0	
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0	3.0	3.0	3.0	
Recall Mode	None	None		None	None		Max	Max	Max	Max	Max	
Walk Time (s)	7.0	7.0		7.0	7.0		7.0	7.0	7.0	7.0	7.0	
Flash Dont Walk (s)	11.0	11.0		11.0	11.0		11.0	11.0	11.0	11.0	11.0	
Pedestrian Calls (#/hr)	0	0		0	0		0	0	0	0	0	
Act Effct Green (s)	12.3	14.3			14.0			36.6	36.6		36.6	
Actuated g/C Ratio	0.22	0.26			0.25			0.66	0.66		0.66	
v/c Ratio	0.60	0.11			0.14			0.15	0.03		0.60	
Control Delay	28.1	6.0			10.5			6.8	1.2		10.1	
Queue Delay	0.0	0.0			0.0			0.0	0.0		0.0	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Total Delay	28.1	6.0			10.5			6.8	1.2		10.1	
LOS	C	A			B			A	A		B	
Approach Delay		23.0			10.5			5.7			10.1	
Approach LOS		C			B			A			B	
Queue Length 50th (m)	15.7	0.2			2.3			4.9	0.0		28.4	
Queue Length 95th (m)	31.7	6.4			8.9			14.2	1.8		77.6	
Internal Link Dist (m)		356.0			35.8			511.4			157.7	
Turn Bay Length (m)	100.0								50.0			
Base Capacity (vph)	416	622			551			811	1088		1020	
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	0.41	0.08			0.10			0.15	0.03		0.60	

Intersection Summary			
Area Type:	Other		
Cycle Length: 60			
Actuated Cycle Length: 55.2			
Natural Cycle: 60			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 0.60			
Intersection Signal Delay: 12.2		Intersection LOS: B	
Intersection Capacity Utilization 70.1%		ICU Level of Service C	
Analysis Period (min) 15			

Splits and Phases: 3: Nafziger Road & East Road/Wilmot Complex Driveway

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	170	2	50	29	1	24	37	83	30	25	303	285
Future Volume (vph)	170	2	50	29	1	24	37	83	30	25	303	285
Ideal Flow (vphpl)	1765	1900	1765	1900	1900	1900	1650	1650	1900	1900	1650	1650
Total Lost time (s)	6.0	4.0			4.0			4.0	4.0		4.0	
Lane Util. Factor	1.00	1.00			1.00			1.00	1.00		1.00	
Frt	1.00	0.86			0.94			1.00	0.85		0.94	
Flt Protected	0.95	1.00			0.97			0.98	1.00		1.00	
Satd. Flow (prot)	1677	1626			1709			1500	1615		1499	
Flt Permitted	0.72	1.00			0.84			0.80	1.00		0.99	
Satd. Flow (perm)	1274	1626			1475			1226	1615		1484	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	170	2	50	29	1	24	37	83	30	25	303	285
RTOR Reduction (vph)	0	39	0	0	19	0	0	0	11	0	41	0
Lane Group Flow (vph)	170	13	0	0	35	0	0	120	19	0	572	0
Heavy Vehicles (%)	0%	0%	0%	0%	0%	4%	0%	12%	0%	0%	6%	0%
Turn Type	Perm	NA		Perm	NA		Perm	NA	Perm	Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2		2	6		
Actuated Green, G (s)	10.8	10.8			10.8			33.7	33.7		33.7	
Effective Green, g (s)	10.8	12.8			12.8			35.7	35.7		35.7	
Actuated g/C Ratio	0.19	0.23			0.23			0.63	0.63		0.63	
Clearance Time (s)	6.0	6.0			6.0			6.0	6.0		6.0	
Vehicle Extension (s)	3.0	3.0			3.0			3.0	3.0		3.0	
Lane Grp Cap (vph)	243	368			334			774	1020		937	
v/s Ratio Prot		0.01										
v/s Ratio Perm	c0.13				0.02			0.10	0.01		c0.39	
v/c Ratio	0.70	0.04			0.11			0.16	0.02		0.61	
Uniform Delay, d1	21.3	17.0			17.3			4.2	3.9		6.2	
Progression Factor	1.00	1.00			1.00			1.00	1.00		1.00	
Incremental Delay, d2	8.5	0.0			0.1			0.4	0.0		3.0	
Delay (s)	29.8	17.1			17.5			4.7	3.9		9.2	
Level of Service	C	B			B			A	A		A	
Approach Delay (s)		26.9			17.5			4.5			9.2	
Approach LOS		C			B			A			A	

Intersection Summary					
HCM 2000 Control Delay	12.7	HCM 2000 Level of Service	B		
HCM 2000 Volume to Capacity ratio	0.60				
Actuated Cycle Length (s)	56.5	Sum of lost time (s)	8.0		
Intersection Capacity Utilization	70.1%	ICU Level of Service	C		
Analysis Period (min)	15				
c Critical Lane Group					

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	3	127	28	4	321	61
Future Volume (vph)	3	127	28	4	321	61
Ideal Flow (vphpl)	1765	1765	1650	1650	1650	1650
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.868		0.983			
Flt Protected	0.999					0.960
Satd. Flow (prot)	1500	0	1590	0	0	1553
Flt Permitted	0.999					0.960
Satd. Flow (perm)	1500	0	1590	0	0	1553
Link Speed (k/h)	50		80			80
Link Distance (m)	149.7		232.9			535.4
Travel Time (s)	10.8		10.5			24.1
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	3	127	28	4	321	61
Shared Lane Traffic (%)						
Lane Group Flow (vph)	130	0	32	0	0	382
Sign Control	Stop		Free			Free

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	46.1%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	3	127	28	4	321	61
Future Volume (Veh/h)	3	127	28	4	321	61
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	3	127	28	4	321	61
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	733	30			32	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	733	30			32	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	99	88			80	
cM capacity (veh/h)	309	1044			1580	

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	130	32	382
Volume Left	3	0	321
Volume Right	127	4	0
cSH	990	1700	1580
Volume to Capacity	0.13	0.02	0.20
Queue Length 95th (m)	3.6	0.0	6.1
Control Delay (s)	9.2	0.0	6.9
Lane LOS	A		A
Approach Delay (s)	9.2	0.0	6.9
Approach LOS	A		

Intersection Summary			
Average Delay	7.0		
Intersection Capacity Utilization	46.1%	ICU Level of Service	A
Analysis Period (min)	15		

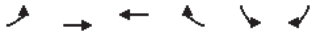
Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	75	10	71	242	121	142
Future Volume (vph)	75	10	71	242	121	142
Ideal Flow (vphpl)	1650	1650	1650	1650	1765	1765
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.984				0.927	
Flt Protected				0.989	0.978	
Satd. Flow (prot)	1592	0	0	1600	1569	0
Flt Permitted				0.989	0.978	
Satd. Flow (perm)	1592	0	0	1600	1569	0
Link Speed (k/h)	50			50	50	
Link Distance (m)	95.3			380.0	206.9	
Travel Time (s)	6.9			27.4	14.9	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	75	10	71	242	121	142
Shared Lane Traffic (%)						
Lane Group Flow (vph)	85	0	0	313	263	0
Sign Control	Free			Free	Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	49.1%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	75	10	71	242	121	142
Future Volume (Veh/h)	75	10	71	242	121	142
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	75	10	71	242	121	142
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (m)				380		
pX, platoon unblocked						
vC, conflicting volume			85		464	80
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			85		464	80
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			95		77	86
cM capacity (veh/h)			1512		530	980

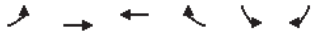
Direction, Lane #	EB 1	WB 1	NB 1
Volume Total	85	313	263
Volume Left	0	71	121
Volume Right	10	0	142
cSH	1700	1512	705
Volume to Capacity	0.05	0.05	0.37
Queue Length 95th (m)	0.0	1.2	13.8
Control Delay (s)	0.0	2.0	13.1
Lane LOS		A	B
Approach Delay (s)	0.0	2.0	13.1
Approach LOS			B

Intersection Summary				
Average Delay	6.2			
Intersection Capacity Utilization	49.1%	ICU Level of Service	A	
Analysis Period (min)	15			



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	30	77	331	33	8	8
Future Volume (vph)	30	77	331	33	8	8
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			0.988		0.932	
Flt Protected		0.986			0.976	
Satd. Flow (prot)	0	1837	1840	0	1694	0
Flt Permitted		0.986			0.976	
Satd. Flow (perm)	0	1837	1840	0	1694	0
Link Speed (k/h)		50	50		50	
Link Distance (m)		103.9	95.3		100.8	
Travel Time (s)		7.5	6.9		7.3	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	30	77	331	33	8	8
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	107	364	0	16	0
Sign Control		Free	Free		Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 38.5%		ICU Level of Service A	
Analysis Period (min) 15			



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	30	77	331	33	8	8
Future Volume (Veh/h)	30	77	331	33	8	8
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	30	77	331	33	8	8
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		None	None			
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	364				484	348
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	364				484	348
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	97				98	99
cM capacity (veh/h)	1195				528	696

Direction, Lane #	EB 1	WB 1	SB 1
Volume Total	107	364	16
Volume Left	30	0	8
Volume Right	0	33	8
cSH	1195	1700	600
Volume to Capacity	0.03	0.21	0.03
Queue Length 95th (m)	0.6	0.0	0.7
Control Delay (s)	2.4	0.0	11.2
Lane LOS	A		B
Approach Delay (s)	2.4	0.0	11.2
Approach LOS			B

Intersection Summary			
Average Delay	0.9		
Intersection Capacity Utilization	38.5%	ICU Level of Service	A
Analysis Period (min)	15		

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	188	151	9	44	64	40
Future Volume (vph)	188	151	9	44	64	40
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	0.940		0.888			
Flt Protected	0.973					0.970
Satd. Flow (prot)	1704	0	1654	0	0	1807
Flt Permitted	0.973					0.970
Satd. Flow (perm)	1704	0	1654	0	0	1807
Link Speed (k/h)	50		50			50
Link Distance (m)	103.9		84.1			156.4
Travel Time (s)	7.5		6.1			11.3
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	188	151	9	44	64	40
Shared Lane Traffic (%)						
Lane Group Flow (vph)	339	0	53	0	0	104
Sign Control	Stop		Free			Free

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	38.6%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	188	151	9	44	64	40
Future Volume (Veh/h)	188	151	9	44	64	40
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	188	151	9	44	64	40
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	199	31			53	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	199	31			53	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	75	86			96	
cM capacity (veh/h)	757	1043			1553	

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	339	53	104
Volume Left	188	0	64
Volume Right	151	44	0
cSH	862	1700	1553
Volume to Capacity	0.39	0.03	0.04
Queue Length 95th (m)	15.1	0.0	1.0
Control Delay (s)	11.9	0.0	4.7
Lane LOS	B		A
Approach Delay (s)	11.9	0.0	4.7
Approach LOS	B		

Intersection Summary				
Average Delay		9.1		
Intersection Capacity Utilization		38.6%	ICU Level of Service	A
Analysis Period (min)		15		

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	0	19	0	0	84	0
Future Volume (vph)	0	19	0	0	84	0
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	0.865					
Flt Protected						0.950
Satd. Flow (prot)	1611	0	1863	0	0	1770
Flt Permitted						0.950
Satd. Flow (perm)	1611	0	1863	0	0	1770
Link Speed (k/h)	50		50			50
Link Distance (m)	84.0		68.8			84.1
Travel Time (s)	6.0		5.0			6.1
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	0	19	0	0	84	0
Shared Lane Traffic (%)						
Lane Group Flow (vph)	19	0	0	0	0	84
Sign Control	Stop		Free			Free

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	14.7%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	0	19	0	0	84	0
Future Volume (Veh/h)	0	19	0	0	84	0
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	0	19	0	0	84	0
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	168	0			0	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	168	0			0	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	100	98			95	
cM capacity (veh/h)	780	1085			1623	

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	19	0	84
Volume Left	0	0	84
Volume Right	19	0	0
cSH	1085	1700	1623
Volume to Capacity	0.02	0.00	0.05
Queue Length 95th (m)	0.4	0.0	1.3
Control Delay (s)	8.4	0.0	7.3
Lane LOS	A		A
Approach Delay (s)	8.4	0.0	7.3
Approach LOS	A		

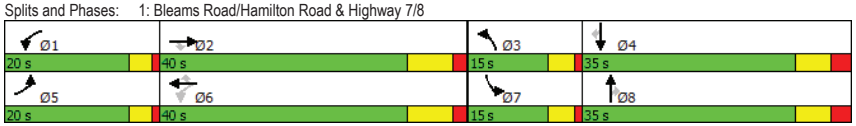
Intersection Summary			
Average Delay	7.5		
Intersection Capacity Utilization	14.7%	ICU Level of Service	A
Analysis Period (min)	15		

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	66	797	123	66	1010	189	183	103	104	264	95	161
Future Volume (vph)	66	797	123	66	1010	189	183	103	104	264	95	161
Ideal Flow (vphpl)	1775	1900	1750	1775	1900	1750	1775	1900	1750	1775	1900	1750
Storage Length (m)	300.0		110.0	100.0		75.0	70.0		85.0	55.0		155.0
Storage Lanes	2		1	1		1	2		1	2		1
Taper Length (m)	40.0			40.0			40.0			40.0		
Lane Util. Factor	0.97	0.95	1.00	1.00	0.95	1.00	0.97	1.00	1.00	0.97	1.00	1.00
Ped Bike Factor	1.00		0.98	1.00		0.97	1.00		0.99	1.00		0.99
Frt			0.850			0.850			0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	3176	3438	1458	1637	3195	1444	3116	1900	1430	3176	1827	1458
Flt Permitted	0.950			0.271			0.950			0.950		
Satd. Flow (perm)	3171	3438	1427	467	3195	1406	3111	1900	1412	3171	1827	1439
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			127			171			132			161
Link Speed (k/h)		80			80			50			50	
Link Distance (m)		163.4			1398.3			147.6			715.9	
Travel Time (s)		7.4			62.9			10.6			51.5	
Confl. Peds. (#/hr)	4		1	1		4	1		1	1		1
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	3%	5%	2%	3%	13%	3%	5%	0%	4%	3%	4%	2%
Adj. Flow (vph)	66	797	123	66	1010	189	183	103	104	264	95	161
Shared Lane Traffic (%)												
Lane Group Flow (vph)	66	797	123	66	1010	189	183	103	104	264	95	161
Turn Type	Prot	NA	Perm	pm+pt	NA	Perm	Prot	NA	Perm	Prot	NA	Perm
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases			2	6		6			8			4
Detector Phase	5	2	2	1	6	6	3	8	8	7	4	4
Switch Phase												
Minimum Initial (s)	7.0	20.0	20.0	7.0	20.0	20.0	5.0	10.0	10.0	5.0	10.0	10.0
Minimum Split (s)	20.0	40.0	40.0	20.0	40.0	40.0	9.5	35.0	35.0	9.5	35.0	35.0
Total Split (s)	20.0	40.0	40.0	20.0	40.0	40.0	15.0	35.0	35.0	15.0	35.0	35.0
Total Split (%)	18.2%	36.4%	36.4%	18.2%	36.4%	36.4%	13.6%	31.8%	31.8%	13.6%	31.8%	31.8%
Maximum Green (s)	16.0	32.2	32.2	16.0	32.2	32.2	10.5	27.7	27.7	10.5	27.7	27.7
Yellow Time (s)	3.0	5.9	5.9	3.0	5.9	5.9	3.5	4.5	4.5	3.5	4.5	4.5
All-Red Time (s)	1.0	1.9	1.9	1.0	1.9	1.9	1.0	2.8	2.8	1.0	2.8	2.8
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.0	7.8	7.8	4.0	7.8	7.8	4.5	7.3	7.3	4.5	7.3	7.3
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	1.8	1.8	3.0	1.8	1.8	3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	Max	Max	None	Max	Max	None	None	None	None	None	None
Walk Time (s)		19.0	19.0		19.0	19.0		19.0	19.0		19.0	19.0
Flash Dont Walk (s)		14.0	14.0		14.0	14.0		14.0	14.0		14.0	14.0
Pedestrian Calls (#/hr)		0	0		0	0		0	0		0	0
Act Effct Green (s)	7.6	33.2	33.2	42.9	33.2	33.2	9.5	11.0	11.0	10.4	11.8	11.8
Actuated g/C Ratio	0.09	0.40	0.40	0.52	0.40	0.40	0.11	0.13	0.13	0.12	0.14	0.14
v/c Ratio	0.23	0.58	0.19	0.19	0.79	0.29	0.52	0.41	0.35	0.67	0.37	0.47

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Control Delay	38.8	22.6	4.3	10.2	28.9	5.4	41.2	39.8	7.2	45.2	38.5	11.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	38.8	22.6	4.3	10.2	28.9	5.4	41.2	39.8	7.2	45.2	38.5	11.0
LOS	D	C	A	B	C	A	D	D	A	D	D	B
Approach Delay		21.4			24.4			31.7			33.4	
Approach LOS		C			C			C			C	
Queue Length 50th (m)	5.5	54.7	0.0	4.7	78.1	1.8	15.1	16.5	0.0	22.3	15.2	0.0
Queue Length 95th (m)	12.1	81.1	10.5	11.2	#123.9	15.8	26.9	32.4	9.3	#40.0	30.5	17.3
Internal Link Dist (m)		139.4			1374.3			123.6			691.9	
Turn Bay Length (m)	300.0		110.0	100.0		75.0	70.0		85.0	55.0		155.0
Base Capacity (vph)	613	1372	646	484	1272	662	395	635	560	402	610	588
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.11	0.58	0.19	0.14	0.79	0.29	0.46	0.16	0.19	0.66	0.16	0.27

Intersection Summary			
Area Type:	Other		
Cycle Length: 110			
Actuated Cycle Length: 83.3			
Natural Cycle: 105			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 0.79			
Intersection Signal Delay: 25.9		Intersection LOS: C	
Intersection Capacity Utilization 64.8%		ICU Level of Service C	
Analysis Period (min) 15			
# 95th percentile volume exceeds capacity, queue may be longer.			
Queue shown is maximum after two cycles.			

Splits and Phases: 1: Bleams Road/Hamilton Road & Highway 7/8



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	66	797	123	66	1010	189	183	103	104	264	95	161
Future Volume (vph)	66	797	123	66	1010	189	183	103	104	264	95	161
Ideal Flow (vphpl)	1775	1900	1750	1775	1900	1750	1775	1900	1750	1775	1900	1750
Total Lost time (s)	4.0	7.8	7.8	4.0	7.8	7.8	4.5	7.3	7.3	4.5	7.3	7.3
Lane Util. Factor	0.97	0.95	1.00	1.00	0.95	1.00	0.97	1.00	1.00	0.97	1.00	1.00
Frpb, ped/bikes	1.00	1.00	0.98	1.00	1.00	0.97	1.00	1.00	0.99	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	1.00	1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	3176	3438	1427	1637	3195	1408	3116	1900	1412	3176	1827	1440
Flt Permitted	0.95	1.00	1.00	0.27	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	3176	3438	1427	466	3195	1408	3116	1900	1412	3176	1827	1440
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	66	797	123	66	1010	189	183	103	104	264	95	161
RTOR Reduction (vph)	0	0	74	0	0	104	0	0	90	0	0	138
Lane Group Flow (vph)	66	797	49	66	1010	85	183	103	14	264	95	23
Confl. Peds. (#/hr)	4		1	1		4	1		1	1		1
Heavy Vehicles (%)	3%	5%	2%	3%	13%	3%	5%	0%	4%	3%	4%	2%
Turn Type	Prot	NA	Perm	pm+pt	NA	Perm	Prot	NA	Perm	Prot	NA	Perm
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases			2	6		6			8			4
Actuated Green, G (s)	6.0	33.3	33.3	39.1	33.2	33.2	9.5	11.0	11.0	10.4	11.9	11.9
Effective Green, g (s)	6.0	33.3	33.3	39.1	33.2	33.2	9.5	11.0	11.0	10.4	11.9	11.9
Actuated g/C Ratio	0.07	0.40	0.40	0.46	0.39	0.39	0.11	0.13	0.13	0.12	0.14	0.14
Clearance Time (s)	4.0	7.8	7.8	4.0	7.8	7.8	4.5	7.3	7.3	4.5	7.3	7.3
Vehicle Extension (s)	3.0	1.8	1.8	3.0	1.8	1.8	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	226	1359	564	298	1259	555	351	248	184	392	258	203
v/s Ratio Prot	c0.02	0.23		0.02	c0.32		0.06	c0.05		c0.08	0.05	
v/s Ratio Perm			0.03	0.09		0.06			0.01			0.02
v/c Ratio	0.29	0.59	0.09	0.22	0.80	0.15	0.52	0.42	0.07	0.67	0.37	0.11
Uniform Delay, d1	37.1	20.0	15.9	13.0	22.6	16.4	35.2	33.6	32.1	35.3	32.7	31.5
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	0.7	1.9	0.3	0.4	5.5	0.6	1.4	1.1	0.2	4.5	0.9	0.2
Delay (s)	37.8	21.9	16.2	13.3	28.1	17.0	36.6	34.8	32.3	39.8	33.6	31.8
Level of Service	D	C	B	B	C	B	D	C	C	D	C	C
Approach Delay (s)		22.2			25.6			35.0			36.2	
Approach LOS		C			C			C			D	

Intersection Summary				
HCM 2000 Control Delay	27.5	HCM 2000 Level of Service	C	
HCM 2000 Volume to Capacity ratio	0.66			
Actuated Cycle Length (s)	84.2	Sum of lost time (s)	23.6	
Intersection Capacity Utilization	64.8%	ICU Level of Service	C	
Analysis Period (min)	15			

c Critical Lane Group

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	128	104	330	28	34	392
Future Volume (vph)	128	104	330	28	34	392
Ideal Flow (vphpl)	1900	1900	1650	1900	1900	1650
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.939		0.989			
Flt Protected	0.973					0.996
Satd. Flow (prot)	1702	0	1600	0	0	1611
Flt Permitted	0.973					0.996
Satd. Flow (perm)	1702	0	1600	0	0	1611
Link Speed (k/h)	50		80			80
Link Distance (m)	231.4		715.9			178.4
Travel Time (s)	16.7		32.2			8.0
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	128	104	330	28	34	392
Shared Lane Traffic (%)						
Lane Group Flow (vph)	232	0	358	0	0	426
Sign Control	Stop		Free			Free

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	71.3%	ICU Level of Service	C
Analysis Period (min)	15		

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	128	104	330	28	34	392
Future Volume (Veh/h)	128	104	330	28	34	392
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	128	104	330	28	34	392
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	804	344			358	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	804	344			358	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	63	85			97	
cM capacity (veh/h)	342	699			1201	

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	232	358	426
Volume Left	128	0	34
Volume Right	104	28	0
cSH	444	1700	1201
Volume to Capacity	0.52	0.21	0.03
Queue Length 95th (m)	23.7	0.0	0.7
Control Delay (s)	21.7	0.0	0.9
Lane LOS	C		A
Approach Delay (s)	21.7	0.0	0.9
Approach LOS	C		

Intersection Summary			
Average Delay	5.3		
Intersection Capacity Utilization	71.3%	ICU Level of Service	C
Analysis Period (min)	15		

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	536	1	104	47	0	47	14	134	87	42	128	146
Future Volume (vph)	536	1	104	47	0	47	14	134	87	42	128	146
Ideal Flow (vphpl)	1765	1900	1765	1765	1900	1765	1650	1650	1650	1650	1650	1650
Storage Length (m)	100.0		0.0	0.0		0.0	0.0		50.0	0.0		0.0
Storage Lanes	1		0	0		0	0		1	0		0
Taper Length (m)	50.0			0.0			0.0			0.0		
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
Frt		0.851			0.932				0.850		0.938	
Flt Protected	0.950				0.976			0.995			0.993	
Satd. Flow (prot)	1644	1585	0	0	1694	0	0	1610	1375	0	1507	0
Flt Permitted	0.589				0.788			0.959			0.947	
Satd. Flow (perm)	1019	1585	0	0	1368	0	0	1551	1375	0	1437	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		104			85				87		48	
Link Speed (k/h)		50			50			80			80	
Link Distance (m)		380.0			59.8			534.5			181.7	
Travel Time (s)		27.4			4.3			24.1			8.2	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	536	1	104	47	0	47	14	134	87	42	128	146
Shared Lane Traffic (%)												
Lane Group Flow (vph)	536	105	0	0	94	0	0	148	87	0	316	0
Turn Type	pm+pt	NA		Perm	NA		Perm	NA	Perm	Perm	NA	
Protected Phases	7	4			8			2			6	
Permitted Phases	4			8			2		2	6		
Detector Phase	7	4		8	8		2	2	2	6	6	
Switch Phase												
Minimum Initial (s)	5.0	5.0		5.0	5.0		5.0	5.0	5.0	5.0	5.0	
Minimum Split (s)	9.5	24.0		24.0	24.0		24.0	24.0	24.0	24.0	24.0	
Total Split (s)	30.0	60.0		30.0	30.0		30.0	30.0	30.0	30.0	30.0	
Total Split (%)	33.3%	66.7%		33.3%	33.3%		33.3%	33.3%	33.3%	33.3%	33.3%	
Maximum Green (s)	26.0	54.0		24.0	24.0		24.0	24.0	24.0	24.0	24.0	
Yellow Time (s)	3.0	4.0		4.0	4.0		4.0	4.0	4.0	4.0	4.0	
All-Red Time (s)	1.0	2.0		2.0	2.0		2.0	2.0	2.0	2.0	2.0	
Lost Time Adjust (s)	0.0	-2.0			-2.0			-2.0	-2.0		-2.0	
Total Lost Time (s)	4.0	4.0			4.0			4.0	4.0		4.0	
Lead/Lag	Lead			Lag	Lag							
Lead-Lag Optimize?	Yes			Yes	Yes							
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0	3.0	3.0	3.0	
Recall Mode	None	None		None	None		Max	Max	Max	Max	Max	
Walk Time (s)		7.0		7.0	7.0		7.0	7.0	7.0	7.0	7.0	
Flash Dont Walk (s)		11.0		11.0	11.0		11.0	11.0	11.0	11.0	11.0	
Pedestrian Calls (#/hr)		0		0	0		0	0	0	0	0	
Act Effct Green (s)	33.2	33.2			9.0			26.7	26.7		26.7	
Actuated g/C Ratio	0.49	0.49			0.13			0.39	0.39		0.39	
v/c Ratio	0.75	0.13			0.37			0.24	0.15		0.53	
Control Delay	20.1	2.4			13.4			18.3	5.1		19.9	
Queue Delay	0.0	0.0			0.0			0.0	0.0		0.0	
Total Delay	20.1	2.4			13.4			18.3	5.1		19.9	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
LOS	C	A			B			B	A		B	
Approach Delay		17.2			13.4			13.5			19.9	
Approach LOS		B			B			B			B	
Queue Length 50th (m)	49.5	0.1			1.2			14.5	0.0		29.6	
Queue Length 95th (m)	79.4	6.3			13.8			30.3	9.0		59.7	
Internal Link Dist (m)		356.0			35.8			510.5			157.7	
Turn Bay Length (m)	100.0								50.0			
Base Capacity (vph)	786	1312			587			607	591		591	
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	0.68	0.08			0.16			0.24	0.15		0.53	

Intersection Summary			
Area Type:	Other		
Cycle Length: 90			
Actuated Cycle Length: 68.1			
Natural Cycle: 60			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 0.75			
Intersection Signal Delay: 16.9		Intersection LOS: B	
Intersection Capacity Utilization 78.4%		ICU Level of Service D	
Analysis Period (min) 15			

Splits and Phases: 3: Nafziger Road & East Road

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	536	1	104	47	0	47	14	134	87	42	128	146
Future Volume (vph)	536	1	104	47	0	47	14	134	87	42	128	146
Ideal Flow (vphpl)	1765	1900	1765	1765	1900	1765	1650	1650	1650	1650	1650	1650
Total Lost time (s)	4.0	4.0			4.0			4.0	4.0		4.0	
Lane Util. Factor	1.00	1.00			1.00			1.00	1.00		1.00	
Frt	1.00	0.85			0.93			1.00	0.85		0.94	
Flt Protected	0.95	1.00			0.98			1.00	1.00		0.99	
Satd. Flow (prot)	1644	1586			1695			1610	1375		1507	
Flt Permitted	0.59	1.00			0.79			0.96	1.00		0.95	
Satd. Flow (perm)	1020	1586			1369			1551	1375		1436	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	536	1	104	47	0	47	14	134	87	42	128	146
RTOR Reduction (vph)	0	52	0	0	76	0	0	0	54	0	30	0
Lane Group Flow (vph)	536	53	0	0	18	0	0	148	33	0	286	0
Turn Type	pm+pt	NA		Perm	NA		Perm	NA	Perm	Perm	NA	
Protected Phases	7	4			8			2			6	
Permitted Phases	4			8			2		2	6		
Actuated Green, G (s)	32.7	32.7			5.4			24.6	24.6		24.6	
Effective Green, g (s)	32.7	34.7			7.4			26.6	26.6		26.6	
Actuated g/C Ratio	0.47	0.50			0.11			0.38	0.38		0.38	
Clearance Time (s)	4.0	6.0			6.0			6.0	6.0		6.0	
Vehicle Extension (s)	3.0	3.0			3.0			3.0	3.0		3.0	
Lane Grp Cap (vph)	691	794			146			595	527		551	
v/s Ratio Prot	c0.26	0.03										
v/s Ratio Perm	c0.11				0.01			0.10	0.02		c0.20	
v/c Ratio	0.78	0.07			0.12			0.25	0.06		0.52	
Uniform Delay, d1	14.6	8.9			28.0			14.5	13.5		16.4	
Progression Factor	1.00	1.00			1.00			1.00	1.00		1.00	
Incremental Delay, d2	5.5	0.0			0.4			1.0	0.2		3.5	
Delay (s)	20.1	9.0			28.4			15.5	13.7		19.9	
Level of Service	C	A			C			B	B		B	
Approach Delay (s)		18.2			28.4			14.9			19.9	
Approach LOS		B			C			B			B	

Intersection Summary			
HCM 2000 Control Delay	18.8	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.68		
Actuated Cycle Length (s)	69.3	Sum of lost time (s)	12.0
Intersection Capacity Utilization	78.4%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	1	114	29	5	194	85
Future Volume (vph)	1	114	29	5	194	85
Ideal Flow (vphpl)	1650	1765	1650	1765	1650	1650
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.866		0.980			
Flt Protected						0.966
Satd. Flow (prot)	1401	0	1585	0	0	1563
Flt Permitted						0.966
Satd. Flow (perm)	1401	0	1585	0	0	1563
Link Speed (k/h)	50		80			80
Link Distance (m)	149.7		232.9			534.5
Travel Time (s)	10.8		10.5			24.1
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	1	114	29	5	194	85
Shared Lane Traffic (%)						
Lane Group Flow (vph)	115	0	34	0	0	279
Sign Control	Stop		Free			Free

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	39.0%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	1	114	29	5	194	85
Future Volume (Veh/h)	1	114	29	5	194	85
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	1	114	29	5	194	85
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	504	32			34	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	504	32			34	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	100	89			88	
cM capacity (veh/h)	462	1043			1578	

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	115	34	279
Volume Left	1	0	194
Volume Right	114	5	0
cSH	1031	1700	1578
Volume to Capacity	0.11	0.02	0.12
Queue Length 95th (m)	3.0	0.0	3.4
Control Delay (s)	8.9	0.0	5.6
Lane LOS	A		A
Approach Delay (s)	8.9	0.0	5.6
Approach LOS	A		

Intersection Summary			
Average Delay	6.0		
Intersection Capacity Utilization	39.0%	ICU Level of Service	A
Analysis Period (min)	15		

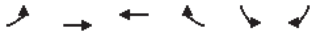
Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	376	74	101	58	61	263
Future Volume (vph)	376	74	101	58	61	263
Ideal Flow (vphpl)	1650	1650	1650	1650	1765	1765
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.978				0.890	
Flt Protected				0.969	0.991	
Satd. Flow (prot)	1582	0	0	1567	1526	0
Flt Permitted				0.969	0.991	
Satd. Flow (perm)	1582	0	0	1567	1526	0
Link Speed (k/h)	50			50	50	
Link Distance (m)	95.3			380.0	206.9	
Travel Time (s)	6.9			27.4	14.9	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	376	74	101	58	61	263
Shared Lane Traffic (%)						
Lane Group Flow (vph)	450	0	0	159	324	0
Sign Control	Free			Free	Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	69.0%	ICU Level of Service	C
Analysis Period (min)	15		

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	376	74	101	58	61	263
Future Volume (Veh/h)	376	74	101	58	61	263
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	376	74	101	58	61	263
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (m)				380		
pX, platoon unblocked						
vC, conflicting volume			450		673	413
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			450		673	413
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			91		84	59
cM capacity (veh/h)			1110		382	639

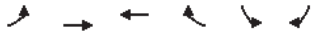
Direction, Lane #	EB 1	WB 1	NB 1
Volume Total	450	159	324
Volume Left	0	101	61
Volume Right	74	0	263
cSH	1700	1110	567
Volume to Capacity	0.26	0.09	0.57
Queue Length 95th (m)	0.0	2.4	28.6
Control Delay (s)	0.0	5.7	19.5
Lane LOS		A	C
Approach Delay (s)	0.0	5.7	19.5
Approach LOS			C

Intersection Summary				
Average Delay	7.7			
Intersection Capacity Utilization	69.0%	ICU Level of Service		C
Analysis Period (min)	15			



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	6	410	108	11	41	41
Future Volume (vph)	6	410	108	11	41	41
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			0.988		0.932	
Flt Protected		0.999			0.976	
Satd. Flow (prot)	0	1861	1840	0	1694	0
Flt Permitted		0.999			0.976	
Satd. Flow (perm)	0	1861	1840	0	1694	0
Link Speed (k/h)		50	50		50	
Link Distance (m)		103.9	95.3		100.8	
Travel Time (s)		7.5	6.9		7.3	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	6	410	108	11	41	41
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	416	119	0	82	0
Sign Control		Free	Free		Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 37.8%		ICU Level of Service A	
Analysis Period (min) 15			



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	6	410	108	11	41	41
Future Volume (Veh/h)	6	410	108	11	41	41
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	6	410	108	11	41	41
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		None	None			
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	119				536	114
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	119				536	114
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	100				92	96
cM capacity (veh/h)	1469				504	939

Direction, Lane #	EB 1	WB 1	SB 1
Volume Total	416	119	82
Volume Left	6	0	41
Volume Right	0	11	41
cSH	1469	1700	656
Volume to Capacity	0.00	0.07	0.13
Queue Length 95th (m)	0.1	0.0	3.4
Control Delay (s)	0.1	0.0	11.3
Lane LOS	A		B
Approach Delay (s)	0.1	0.0	11.3
Approach LOS			B

Intersection Summary			
Average Delay		1.6	
Intersection Capacity Utilization		37.8%	ICU Level of Service A
Analysis Period (min)		15	

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	61	68	28	232	184	7
Future Volume (vph)	61	68	28	232	184	7
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	0.929		0.880			
Flt Protected	0.977					0.954
Satd. Flow (prot)	1691	0	1639	0	0	1777
Flt Permitted	0.977					0.954
Satd. Flow (perm)	1691	0	1639	0	0	1777
Link Speed (k/h)	50		50			50
Link Distance (m)	103.9		84.1			156.4
Travel Time (s)	7.5		6.1			11.3
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	61	68	28	232	184	7
Shared Lane Traffic (%)						
Lane Group Flow (vph)	129	0	260	0	0	191
Sign Control	Stop		Free			Free

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	43.9%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	61	68	28	232	184	7
Future Volume (Veh/h)	61	68	28	232	184	7
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	61	68	28	232	184	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)						
pX, platoon unblocked						
vC, conflicting volume	519	144			260	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	519	144			260	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	86	92			86	
cM capacity (veh/h)	444	903			1304	

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	129	260	191
Volume Left	61	0	184
Volume Right	68	232	0
cSH	607	1700	1304
Volume to Capacity	0.21	0.15	0.14
Queue Length 95th (m)	6.4	0.0	3.9
Control Delay (s)	12.5	0.0	8.0
Lane LOS	B		A
Approach Delay (s)	12.5	0.0	8.0
Approach LOS	B		

Intersection Summary			
Average Delay	5.4		
Intersection Capacity Utilization	43.9%	ICU Level of Service	A
Analysis Period (min)	15		

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	0	82	0	0	21	0
Future Volume (vph)	0	82	0	0	21	0
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	0.865					
Flt Protected						0.950
Satd. Flow (prot)	1611	0	1863	0	0	1770
Flt Permitted						0.950
Satd. Flow (perm)	1611	0	1863	0	0	1770
Link Speed (k/h)	50		50			50
Link Distance (m)	84.0		68.8			84.1
Travel Time (s)	6.0		5.0			6.1
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	0	82	0	0	21	0
Shared Lane Traffic (%)						
Lane Group Flow (vph)	82	0	0	0	0	21
Sign Control	Stop		Free			Free

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	15.1%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	0	82	0	0	21	0
Future Volume (Veh/h)	0	82	0	0	21	0
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	0	82	0	0	21	0
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	42	0			0	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	42	0			0	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	100	92			99	
cM capacity (veh/h)	957	1085			1623	

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	82	0	21
Volume Left	0	0	21
Volume Right	82	0	0
cSH	1085	1700	1623
Volume to Capacity	0.08	0.00	0.01
Queue Length 95th (m)	2.0	0.0	0.3
Control Delay (s)	8.6	0.0	7.2
Lane LOS	A		A
Approach Delay (s)	8.6	0.0	7.2
Approach LOS	A		

Intersection Summary			
Average Delay	8.3		
Intersection Capacity Utilization	15.1%	ICU Level of Service	A
Analysis Period (min)	15		

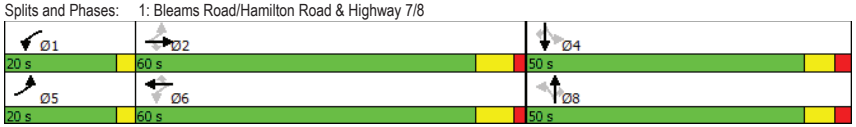
Appendix F 2028 Background Traffic Operations

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	101	899	137	106	597	182	93	50	87	272	126	96
Future Volume (vph)	101	899	137	106	597	182	93	50	87	272	126	96
Ideal Flow (vphpl)	1775	1900	1750	1775	1900	1750	1775	1900	1750	1775	1900	1750
Storage Length (m)	300.0		110.0	100.0		75.0	70.0		85.0	65.0		155.0
Storage Lanes	1		1	1		1	1		1	1		1
Taper Length (m)	40.0			100.0			40.0			20.0		
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor	1.00		0.98	1.00		0.98			0.99	1.00		
Frt			0.850			0.850			0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1637	3438	1458	1637	3195	1444	1606	1900	1430	1637	1827	1458
Flt Permitted	0.396			0.244			0.676			0.724		
Satd. Flow (perm)	682	3438	1424	420	3195	1413	1143	1900	1411	1246	1827	1458
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			137			182			87			96
Link Speed (k/h)		80			80			50			50	
Link Distance (m)		341.3			1424.6			147.6			715.9	
Travel Time (s)		15.4			64.1			10.6			51.5	
Confl. Peds. (#/hr)	1		2	2		1			1	1		
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	3%	5%	2%	3%	13%	3%	5%	0%	4%	3%	4%	2%
Adj. Flow (vph)	101	899	137	106	597	182	93	50	87	272	126	96
Shared Lane Traffic (%)												
Lane Group Flow (vph)	101	899	137	106	597	182	93	50	87	272	126	96
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	Perm	NA	Perm	Perm	NA	Perm
Protected Phases	5	2		1	6			8			4	
Permitted Phases	2		2	6		6	8		8	4		4
Detector Phase	5	2	2	1	6	6	8	8	8	4	4	4
Switch Phase												
Minimum Initial (s)	7.0	20.0	20.0	7.0	20.0	20.0	10.0	10.0	10.0	10.0	10.0	10.0
Minimum Split (s)	20.0	60.0	60.0	20.0	60.0	60.0	50.0	50.0	50.0	50.0	50.0	50.0
Total Split (s)	20.0	60.0	60.0	20.0	60.0	60.0	50.0	50.0	50.0	50.0	50.0	50.0
Total Split (%)	15.4%	46.2%	46.2%	15.4%	46.2%	46.2%	38.5%	38.5%	38.5%	38.5%	38.5%	38.5%
Maximum Green (s)	17.0	52.2	52.2	17.0	52.2	52.2	42.7	42.7	42.7	42.7	42.7	42.7
Yellow Time (s)	3.0	5.9	5.9	3.0	5.9	5.9	4.5	4.5	4.5	4.5	4.5	4.5
All-Red Time (s)	0.0	1.9	1.9	0.0	1.9	1.9	2.8	2.8	2.8	2.8	2.8	2.8
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	3.0	7.8	7.8	3.0	7.8	7.8	7.3	7.3	7.3	7.3	7.3	7.3
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag						
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes						
Vehicle Extension (s)	3.0	1.8	1.8	3.0	1.8	1.8	3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	Max	Max	None	Max	Max	None	None	None	None	None	None
Walk Time (s)		19.0	19.0		19.0	19.0	19.0	19.0	19.0	19.0	19.0	19.0
Flash Dont Walk (s)		14.0	14.0		14.0	14.0	14.0	14.0	14.0	14.0	14.0	14.0
Pedestrian Calls (#/hr)		0	0		0	0	0	0	0	0	0	0
Act Effct Green (s)	66.1	52.7	52.7	66.3	52.8	52.8	28.6	28.6	28.6	28.6	28.6	28.6
Actuated g/C Ratio	0.61	0.49	0.49	0.61	0.49	0.49	0.26	0.26	0.26	0.26	0.26	0.26
v/c Ratio	0.20	0.54	0.18	0.30	0.38	0.23	0.31	0.10	0.20	0.83	0.26	0.21

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Control Delay	10.3	22.5	4.1	11.5	20.0	3.8	34.1	29.5	7.2	58.4	32.2	6.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	10.3	22.5	4.1	11.5	20.0	3.8	34.1	29.5	7.2	58.4	32.2	6.9
LOS	B	C	A	B	C	A	C	C	A	E	C	A
Approach Delay		19.2			15.7			22.9			41.7	
Approach LOS		B			B			C			D	
Queue Length 50th (m)	7.8	69.3	0.0	8.2	41.7	0.0	16.4	8.3	0.0	56.1	21.9	0.0
Queue Length 95th (m)	19.9	117.4	12.4	20.8	73.7	14.0	31.5	18.1	11.5	91.0	38.7	12.3
Internal Link Dist (m)		317.3			1400.6			123.6			691.9	
Turn Bay Length (m)	300.0		110.0	100.0		75.0	70.0		85.0	65.0		155.0
Base Capacity (vph)	587	1674	763	461	1557	782	455	756	614	496	727	638
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.17	0.54	0.18	0.23	0.38	0.23	0.20	0.07	0.14	0.55	0.17	0.15

Intersection Summary			
Area Type:	Other		
Cycle Length: 130			
Actuated Cycle Length: 108.2			
Natural Cycle: 130			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 0.83			
Intersection Signal Delay: 22.4		Intersection LOS: C	
Intersection Capacity Utilization 80.9%		ICU Level of Service D	
Analysis Period (min) 15			

Splits and Phases: 1: Bleams Road/Hamilton Road & Highway 7/8



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	101	899	137	106	597	182	93	50	87	272	126	96
Future Volume (vph)	101	899	137	106	597	182	93	50	87	272	126	96
Ideal Flow (vphpl)	1775	1900	1750	1775	1900	1750	1775	1900	1750	1775	1900	1750
Total Lost time (s)	3.0	7.8	7.8	3.0	7.8	7.8	7.3	7.3	7.3	7.3	7.3	7.3
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frpb, ped/bikes	1.00	1.00	0.98	1.00	1.00	0.98	1.00	1.00	0.99	1.00	1.00	1.00
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1637	3438	1424	1637	3195	1413	1606	1900	1412	1636	1827	1458
Flt Permitted	0.40	1.00	1.00	0.24	1.00	1.00	0.68	1.00	1.00	0.72	1.00	1.00
Satd. Flow (perm)	682	3438	1424	421	3195	1413	1143	1900	1412	1247	1827	1458
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	101	899	137	106	597	182	93	50	87	272	126	96
RTOR Reduction (vph)	0	0	70	0	0	93	0	0	64	0	0	71
Lane Group Flow (vph)	101	899	67	106	597	89	93	50	23	272	126	25
Confl. Peds. (#/hr)	1		2	2		1			1	1		
Heavy Vehicles (%)	3%	5%	2%	3%	13%	3%	5%	0%	4%	3%	4%	2%
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	Perm	NA	Perm	Perm	NA	Perm
Protected Phases	5	2		1	6			8			4	
Permitted Phases	2		2	6		6	8		8	4		4
Actuated Green, G (s)	61.3	52.7	52.7	61.5	52.8	52.8	28.6	28.6	28.6	28.6	28.6	28.6
Effective Green, g (s)	61.3	52.7	52.7	61.5	52.8	52.8	28.6	28.6	28.6	28.6	28.6	28.6
Actuated g/C Ratio	0.57	0.49	0.49	0.57	0.49	0.49	0.26	0.26	0.26	0.26	0.26	0.26
Clearance Time (s)	3.0	7.8	7.8	3.0	7.8	7.8	7.3	7.3	7.3	7.3	7.3	7.3
Vehicle Extension (s)	3.0	1.8	1.8	3.0	1.8	1.8	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	462	1676	694	337	1560	690	302	502	373	329	483	385
v/s Ratio Prot	0.02	c0.26		c0.03	0.19			0.03			0.07	
v/s Ratio Perm	0.11		0.05	0.15		0.06	0.08		0.02	c0.22		0.02
v/c Ratio	0.22	0.54	0.10	0.31	0.38	0.13	0.31	0.10	0.06	0.83	0.26	0.07
Uniform Delay, d1	10.9	19.2	14.9	11.6	17.4	15.1	31.8	30.0	29.7	37.4	31.4	29.8
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	0.2	1.2	0.3	0.5	0.7	0.4	0.6	0.1	0.1	15.5	0.3	0.1
Delay (s)	11.1	20.5	15.2	12.1	18.1	15.5	32.4	30.1	29.8	52.9	31.7	29.8
Level of Service	B	C	B	B	B	B	C	C	C	D	C	C
Approach Delay (s)		19.0			16.9			30.9			43.0	
Approach LOS		B			B			C			D	

Intersection Summary			
HCM 2000 Control Delay	23.6	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.61		
Actuated Cycle Length (s)	108.1	Sum of lost time (s)	18.1
Intersection Capacity Utilization	80.9%	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)	117	1125	3	8	788	145	0	16	5	305	24	77
Future Volume (vph)	117	1125	3	8	788	145	0	16	5	305	24	77
Ideal Flow (vphpl)	1775	1775	1775	1775	1900	1750	1775	1650	1650	1775	1650	1650
Storage Length (m)	145.0		0.0	140.0		90.0	80.0		0.0	120.0		0.0
Storage Lanes	1		0	1		1	1		0	1		0
Taper Length (m)	100.0			100.0			40.0			100.0		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor		1.00		1.00							0.99	
Frt						0.850		0.964			0.886	
Flt Protected	0.950			0.950						0.950		
Satd. Flow (prot)	1561	3212	0	1686	3252	1340	1775	1371	0	1561	1308	0
Flt Permitted	0.249			0.198						0.744		
Satd. Flow (perm)	409	3212	0	351	3252	1340	1775	1371	0	1223	1308	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)						145		5			77	
Link Speed (k/h)		80			80			80			80	
Link Distance (m)		1424.6			340.0			138.9			368.7	
Travel Time (s)		64.1			15.3			6.3			16.6	
Confl. Peds. (#/hr)			1	1			1					1
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	8%	5%	0%	0%	11%	11%	0%	21%	0%	8%	19%	8%
Adj. Flow (vph)	117	1125	3	8	788	145	0	16	5	305	24	77
Shared Lane Traffic (%)												
Lane Group Flow (vph)	117	1128	0	8	788	145	0	21	0	305	101	0
Turn Type	pm+pt	NA		pm+pt	NA	Perm	Perm	NA		Perm	NA	
Protected Phases	5	2		1	6			8			4	
Permitted Phases	2			6		6	8			4		
Detector Phase	5	2		1	6	6	8	8		4	4	
Switch Phase												
Minimum Initial (s)	7.0	20.0		7.0	20.0	20.0	10.0	10.0		10.0	10.0	
Minimum Split (s)	20.0	50.0		20.0	50.0	50.0	35.0	35.0		35.0	35.0	
Total Split (s)	20.0	50.0		20.0	50.0	50.0	35.0	35.0		35.0	35.0	
Total Split (%)	19.0%	47.6%		19.0%	47.6%	47.6%	33.3%	33.3%		33.3%	33.3%	
Maximum Green (s)	17.0	42.2		17.0	42.2	42.2	27.4	27.4		27.4	27.4	
Yellow Time (s)	3.0	5.9		3.0	5.9	5.9	5.9	5.9		5.9	5.9	
All-Red Time (s)	0.0	1.9		0.0	1.9	1.9	1.7	1.7		1.7	1.7	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Total Lost Time (s)	3.0	7.8		3.0	7.8	7.8	7.6	7.6		7.6	7.6	
Lead/Lag	Lead	Lag		Lead	Lag	Lag						
Lead-Lag Optimize?	Yes	Yes		Yes	Yes	Yes						
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	
Recall Mode	None	Max		None	Min	Min	None	None		None	None	
Walk Time (s)		16.0			16.0	16.0	16.0	16.0		16.0	16.0	
Flash Dont Walk (s)		11.0			11.0	11.0	11.0	11.0		11.0	11.0	
Pedestrian Calls (#/hr)		0			0	0	0	0		0	0	
Act Effct Green (s)	49.0	42.3		44.2	32.4	32.4		26.5		26.5	26.5	
Actuated g/C Ratio	0.57	0.49		0.51	0.38	0.38		0.31		0.31	0.31	
v/c Ratio	0.34	0.71		0.03	0.64	0.24		0.05		0.81	0.22	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Control Delay	11.5	21.1		8.5	25.3	4.5		19.0		46.9	9.9	
Queue Delay	0.0	0.0		0.0	0.0	0.0		0.0		0.0	0.0	
Total Delay	11.5	21.1		8.5	25.3	4.5		19.0		46.9	9.9	
LOS	B	C		A	C	A		B		D	A	
Approach Delay		20.2			22.0			19.0			37.7	
Approach LOS		C			C			B			D	
Queue Length 50th (m)	9.0	74.8		0.6	58.7	0.0		1.9		46.6	2.8	
Queue Length 95th (m)	16.7	122.7		2.4	81.5	11.6		7.9		#104.3	15.8	
Internal Link Dist (m)		1400.6			316.0			114.9			344.7	
Turn Bay Length (m)	145.0			140.0		90.0				120.0		
Base Capacity (vph)	460	1578		464	1598	732		440		390	469	
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	0.25	0.71		0.02	0.49	0.20		0.05		0.78	0.22	

Intersection Summary			
Area Type:	Other		
Cycle Length: 105			
Actuated Cycle Length: 86.1			
Natural Cycle: 105			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 0.81			
Intersection Signal Delay: 23.6		Intersection LOS: C	
Intersection Capacity Utilization 80.1%		ICU Level of Service D	
Analysis Period (min) 15			
# 95th percentile volume exceeds capacity, queue may be longer.			
Queue shown is maximum after two cycles.			

Splits and Phases: 2: Nafziger Road & Highway 7/8

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	117	1125	3	8	788	145	0	16	5	305	24	77
Future Volume (vph)	117	1125	3	8	788	145	0	16	5	305	24	77
Ideal Flow (vphpl)	1775	1775	1775	1775	1900	1750	1775	1650	1650	1775	1650	1650
Total Lost time (s)	3.0	7.8		3.0	7.8	7.8		7.6		7.6	7.6	
Lane Util. Factor	1.00	0.95		1.00	0.95	1.00		1.00		1.00	1.00	
Frpb, ped/bikes	1.00	1.00		1.00	1.00	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	1.00		1.00	1.00	0.85		0.96		1.00	0.89	
Flt Protected	0.95	1.00		0.95	1.00	1.00		1.00		0.95	1.00	
Satd. Flow (prot)	1561	3211		1686	3252	1340		1372		1561	1308	
Flt Permitted	0.25	1.00		0.20	1.00	1.00		1.00		0.74	1.00	
Satd. Flow (perm)	409	3211		351	3252	1340		1372		1222	1308	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	117	1125	3	8	788	145	0	16	5	305	24	77
RTOR Reduction (vph)	0	0	0	0	0	88	0	4	0	0	54	0
Lane Group Flow (vph)	117	1128	0	8	788	57	0	17	0	305	47	0
Confl. Peds. (#/hr)			1	1			1					1
Heavy Vehicles (%)	8%	5%	0%	0%	11%	11%	0%	21%	0%	8%	19%	8%
Turn Type	pm+pt	NA		pm+pt	NA	Perm	Perm	NA		Perm	NA	
Protected Phases	5	2		1	6			8			4	
Permitted Phases	2			6		6	8			4		
Actuated Green, G (s)	46.6	42.3		36.2	34.9	34.9		26.5		26.5	26.5	
Effective Green, g (s)	46.6	42.3		36.2	34.9	34.9		26.5		26.5	26.5	
Actuated g/C Ratio	0.53	0.48		0.41	0.39	0.39		0.30		0.30	0.30	
Clearance Time (s)	3.0	7.8		3.0	7.8	7.8		7.6		7.6	7.6	
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0		3.0		3.0	3.0	
Lane Grp Cap (vph)	328	1534		163	1282	528		410		365	391	
v/s Ratio Prot	c0.03	c0.35		0.00	0.24			0.01			0.04	
v/s Ratio Perm	0.15			0.02		0.04				c0.25		
v/c Ratio	0.36	0.74		0.05	0.61	0.11		0.04		0.84	0.12	
Uniform Delay, d1	11.6	18.6		15.9	21.4	17.0		22.0		29.0	22.5	
Progression Factor	1.00	1.00		1.00	1.00	1.00		1.00		1.00	1.00	
Incremental Delay, d2	0.7	3.2		0.1	0.9	0.1		0.0		15.1	0.1	
Delay (s)	12.3	21.8		16.0	22.3	17.0		22.0		44.1	22.7	
Level of Service	B	C		B	C	B		C		D	C	
Approach Delay (s)		20.9			21.4			22.0			38.8	
Approach LOS		C			C			C			D	

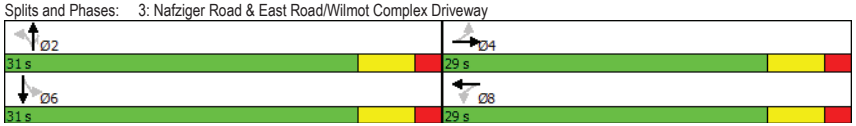
Intersection Summary					
HCM 2000 Control Delay	23.9	HCM 2000 Level of Service		C	
HCM 2000 Volume to Capacity ratio	0.77				
Actuated Cycle Length (s)	88.5	Sum of lost time (s)		18.4	
Intersection Capacity Utilization	80.1%	ICU Level of Service		D	
Analysis Period (min)	15				
c Critical Lane Group					

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	2	1	31	1	26	9	232	32	27	403	0
Future Volume (vph)	0	2	1	31	1	26	9	232	32	27	403	0
Ideal Flow (vphpl)	1550	1550	1550	1550	1550	1550	1650	1650	1750	1550	1550	1550
Storage Length (m)	0.0		0.0	0.0		0.0	0.0		50.0	0.0		0.0
Storage Lanes	0		0	0		0	0		1	0		0
Taper Length (m)	7.5			7.5			7.5			7.5		
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		0.955			0.939				0.850			
Flt Protected					0.974			0.998			0.997	
Satd. Flow (prot)	0	1480	0	0	1393	0	0	1476	1488	0	1463	0
Flt Permitted					0.831			0.985			0.976	
Satd. Flow (perm)	0	1480	0	0	1188	0	0	1457	1488	0	1432	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		1			26				55			
Link Speed (k/h)		50			50			80			80	
Link Distance (m)		79.8			58.8			368.7			154.9	
Travel Time (s)		5.7			4.2			16.6			7.0	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	0%	0%	0%	0%	0%	4%	0%	12%	0%	0%	6%	0%
Adj. Flow (vph)	0	2	1	31	1	26	9	232	32	27	403	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	3	0	0	58	0	0	241	32	0	430	0
Turn Type		NA		Perm	NA		Perm	NA	Perm	Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2		2	6		
Detector Phase	4	4		8	8		2	2	2	6	6	
Switch Phase												
Minimum Initial (s)	5.0	5.0		5.0	5.0		5.0	5.0	5.0	5.0	5.0	
Minimum Split (s)	29.0	29.0		24.0	24.0		24.0	24.0	24.0	24.0	24.0	
Total Split (s)	29.0	29.0		29.0	29.0		31.0	31.0	31.0	31.0	31.0	
Total Split (%)	48.3%	48.3%		48.3%	48.3%		51.7%	51.7%	51.7%	51.7%	51.7%	
Maximum Green (s)	23.0	23.0		23.0	23.0		25.0	25.0	25.0	25.0	25.0	
Yellow Time (s)	4.0	4.0		4.0	4.0		4.0	4.0	4.0	4.0	4.0	
All-Red Time (s)	2.0	2.0		2.0	2.0		2.0	2.0	2.0	2.0	2.0	
Lost Time Adjust (s)		-2.0			-2.0			-2.0	-2.0		-2.0	
Total Lost Time (s)		4.0			4.0			4.0	4.0		4.0	
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0	3.0	3.0	3.0	
Recall Mode	None	None		None	None		Max	Max	Max	Max	Max	
Walk Time (s)	7.0	7.0		7.0	7.0		7.0	7.0	7.0	7.0	7.0	
Flash Dont Walk (s)	11.0	11.0		11.0	11.0		11.0	11.0	11.0	11.0	11.0	
Pedestrian Calls (#/hr)	0	0		0	0		0	0	0	0	0	
Act Effct Green (s)		8.8			9.0			41.6	41.6		41.6	
Actuated g/C Ratio		0.18			0.19			0.86	0.86		0.86	
v/c Ratio		0.01			0.24			0.19	0.02		0.35	
Control Delay		14.7			13.9			3.1	0.9		4.1	
Queue Delay		0.0			0.0			0.0	0.0		0.0	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Total Delay		14.7			13.9			3.1	0.9		4.1	
LOS		B			B			A	A		A	
Approach Delay		14.7			13.9			2.9			4.1	
Approach LOS		B			B			A			A	
Queue Length 50th (m)		0.2			2.3			0.0	0.0		0.0	
Queue Length 95th (m)		1.6			9.6			17.3	1.4		35.7	
Internal Link Dist (m)		55.8			34.8			344.7			130.9	
Turn Bay Length (m)									50.0			
Base Capacity (vph)		765			627			1247	1282		1226	
Starvation Cap Reductn		0			0			0	0		0	
Spillback Cap Reductn		0			0			0	0		0	
Storage Cap Reductn		0			0			0	0		0	
Reduced v/c Ratio		0.00			0.09			0.19	0.02		0.35	

Intersection Summary			
Area Type:	Other		
Cycle Length: 60			
Actuated Cycle Length: 48.6			
Natural Cycle: 60			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 0.35			
Intersection Signal Delay: 4.4		Intersection LOS: A	
Intersection Capacity Utilization 63.3%		ICU Level of Service B	
Analysis Period (min) 15			

Splits and Phases: 3: Nafziger Road & East Road/Wilmot Complex Driveway



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	2	1	31	1	26	9	232	32	27	403	0
Future Volume (vph)	0	2	1	31	1	26	9	232	32	27	403	0
Ideal Flow (vphpl)	1550	1550	1550	1550	1550	1550	1650	1650	1750	1550	1550	1550
Total Lost time (s)		4.0			4.0			4.0	4.0		4.0	
Lane Util. Factor		1.00			1.00			1.00	1.00		1.00	
Frt		0.95			0.94			1.00	0.85		1.00	
Flt Protected		1.00			0.97			1.00	1.00		1.00	
Satd. Flow (prot)		1480			1393			1476	1488		1463	
Flt Permitted		1.00			0.83			0.99	1.00		0.98	
Satd. Flow (perm)		1480			1189			1458	1488		1433	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	0	2	1	31	1	26	9	232	32	27	403	0
RTOR Reduction (vph)	0	1	0	0	23	0	0	0	8	0	0	0
Lane Group Flow (vph)	0	2	0	0	35	0	0	241	24	0	430	0
Heavy Vehicles (%)	0%	0%	0%	0%	0%	4%	0%	12%	0%	0%	6%	0%
Turn Type		NA		Perm	NA		Perm	NA	Perm	Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2		2	6		
Actuated Green, G (s)		3.3			3.3			37.1	37.1		37.1	
Effective Green, g (s)		5.3			5.3			39.1	39.1		39.1	
Actuated g/C Ratio		0.10			0.10			0.75	0.75		0.75	
Clearance Time (s)		6.0			6.0			6.0	6.0		6.0	
Vehicle Extension (s)		3.0			3.0			3.0	3.0		3.0	
Lane Grp Cap (vph)		149			120			1087	1110		1069	
v/s Ratio Prot		0.00										
v/s Ratio Perm					c0.03			0.17	0.02		c0.30	
v/c Ratio		0.01			0.29			0.22	0.02		0.40	
Uniform Delay, d1		21.2			21.8			2.0	1.7		2.4	
Progression Factor		1.00			1.00			1.00	1.00		1.00	
Incremental Delay, d2		0.0			1.3			0.5	0.0		1.1	
Delay (s)		21.2			23.1			2.5	1.8		3.5	
Level of Service		C			C			A	A		A	
Approach Delay (s)		21.2			23.1			2.4			3.5	
Approach LOS		C			C			A			A	

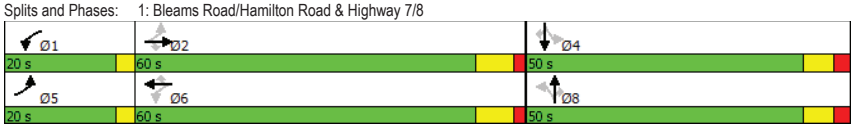
Intersection Summary			
HCM 2000 Control Delay	4.7	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.39		
Actuated Cycle Length (s)	52.4	Sum of lost time (s)	8.0
Intersection Capacity Utilization	63.3%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	60	853	132	67	1025	188	197	95	111	214	78	130
Future Volume (vph)	60	853	132	67	1025	188	197	95	111	214	78	130
Ideal Flow (vphpl)	1775	1900	1750	1775	1900	1750	1775	1900	1750	1775	1900	1750
Storage Length (m)	300.0		110.0	100.0		75.0	70.0		85.0	65.0		155.0
Storage Lanes	1		1	1		1	1		1	1		1
Taper Length (m)	40.0			100.0			40.0			20.0		
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor	1.00		0.98	1.00		0.97	1.00		0.99	1.00		0.99
Frt			0.850			0.850			0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1637	3438	1458	1637	3195	1444	1606	1900	1430	1637	1827	1458
Flt Permitted	0.215			0.282			0.706			0.695		
Satd. Flow (perm)	370	3438	1426	486	3195	1404	1192	1900	1411	1196	1827	1439
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			132			167			111			130
Link Speed (k/h)		80			80			50			50	
Link Distance (m)		341.3			1424.6			147.6			715.9	
Travel Time (s)		15.4			64.1			10.6			51.5	
Confl. Peds. (#/hr)	4		1	1		4	1		1	1		1
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	3%	5%	2%	3%	13%	3%	5%	0%	4%	3%	4%	2%
Adj. Flow (vph)	60	853	132	67	1025	188	197	95	111	214	78	130
Shared Lane Traffic (%)												
Lane Group Flow (vph)	60	853	132	67	1025	188	197	95	111	214	78	130
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	Perm	NA	Perm	Perm	NA	Perm
Protected Phases	5	2		1	6			8			4	
Permitted Phases	2		2	6		6	8		8	4		4
Detector Phase	5	2	2	1	6	6	8	8	8	4	4	4
Switch Phase												
Minimum Initial (s)	7.0	20.0	20.0	7.0	20.0	20.0	10.0	10.0	10.0	10.0	10.0	10.0
Minimum Split (s)	20.0	60.0	60.0	20.0	60.0	60.0	50.0	50.0	50.0	50.0	50.0	50.0
Total Split (s)	20.0	60.0	60.0	20.0	60.0	60.0	50.0	50.0	50.0	50.0	50.0	50.0
Total Split (%)	15.4%	46.2%	46.2%	15.4%	46.2%	46.2%	38.5%	38.5%	38.5%	38.5%	38.5%	38.5%
Maximum Green (s)	17.0	52.2	52.2	17.0	52.2	52.2	42.7	42.7	42.7	42.7	42.7	42.7
Yellow Time (s)	3.0	5.9	5.9	3.0	5.9	5.9	4.5	4.5	4.5	4.5	4.5	4.5
All-Red Time (s)	0.0	1.9	1.9	0.0	1.9	1.9	2.8	2.8	2.8	2.8	2.8	2.8
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	3.0	7.8	7.8	3.0	7.8	7.8	7.3	7.3	7.3	7.3	7.3	7.3
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag						
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes						
Vehicle Extension (s)	3.0	1.8	1.8	3.0	1.8	1.8	3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	Max	Max	None	Max	Max	None	None	None	None	None	None
Walk Time (s)		19.0	19.0		19.0	19.0	19.0	19.0	19.0	19.0	19.0	19.0
Flash Dont Walk (s)		14.0	14.0		14.0	14.0	14.0	14.0	14.0	14.0	14.0	14.0
Pedestrian Calls (#/hr)		0	0		0	0	0	0	0	0	0	0
Act Effct Green (s)	63.6	52.9	52.9	63.8	53.0	53.0	22.9	22.9	22.9	22.9	22.9	22.9
Actuated g/C Ratio	0.64	0.53	0.53	0.64	0.53	0.53	0.23	0.23	0.23	0.23	0.23	0.23
v/c Ratio	0.18	0.47	0.16	0.17	0.60	0.23	0.72	0.22	0.27	0.78	0.19	0.30

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Control Delay	8.7	17.4	3.5	8.4	19.9	4.3	50.8	32.0	7.5	55.7	31.6	7.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	8.7	17.4	3.5	8.4	19.9	4.3	50.8	32.0	7.5	55.7	31.6	7.3
LOS	A	B	A	A	B	A	D	C	A	E	C	A
Approach Delay		15.2			17.0			34.5			36.3	
Approach LOS		B			B			C			D	
Queue Length 50th (m)	3.8	55.9	0.0	4.3	74.4	2.0	37.4	15.9	0.0	41.3	12.9	0.0
Queue Length 95th (m)	11.1	93.9	10.9	12.1	123.6	15.8	63.9	29.9	13.2	69.7	25.6	14.2
Internal Link Dist (m)		317.3			1400.6			123.6			691.9	
Turn Bay Length (m)	300.0		110.0	100.0		75.0	70.0		85.0	65.0		155.0
Base Capacity (vph)	465	1832	821	522	1705	827	519	828	677	521	796	700
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.13	0.47	0.16	0.13	0.60	0.23	0.38	0.11	0.16	0.41	0.10	0.19

Intersection Summary			
Area Type:	Other		
Cycle Length: 130			
Actuated Cycle Length: 99.3			
Natural Cycle: 130			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 0.78			
Intersection Signal Delay: 21.2		Intersection LOS: C	
Intersection Capacity Utilization 69.7%		ICU Level of Service C	
Analysis Period (min) 15			

Splits and Phases: 1: Bleams Road/Hamilton Road & Highway 7/8



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	60	853	132	67	1025	188	197	95	111	214	78	130
Future Volume (vph)	60	853	132	67	1025	188	197	95	111	214	78	130
Ideal Flow (vphpl)	1775	1900	1750	1775	1900	1750	1775	1900	1750	1775	1900	1750
Total Lost time (s)	3.0	7.8	7.8	3.0	7.8	7.8	7.3	7.3	7.3	7.3	7.3	7.3
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frpb, ped/bikes	1.00	1.00	0.98	1.00	1.00	0.97	1.00	1.00	0.99	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	1.00	1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1637	3438	1427	1637	3195	1407	1605	1900	1412	1636	1827	1440
Flt Permitted	0.22	1.00	1.00	0.28	1.00	1.00	0.71	1.00	1.00	0.70	1.00	1.00
Satd. Flow (perm)	371	3438	1427	486	3195	1407	1193	1900	1412	1198	1827	1440
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	60	853	132	67	1025	188	197	95	111	214	78	130
RTOR Reduction (vph)	0	0	62	0	0	78	0	0	86	0	0	100
Lane Group Flow (vph)	60	853	70	67	1025	110	197	95	25	214	78	30
Confl. Peds. (#/hr)	4		1	1		4	1		1	1		1
Heavy Vehicles (%)	3%	5%	2%	3%	13%	3%	5%	0%	4%	3%	4%	2%
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	Perm	NA	Perm	Perm	NA	Perm
Protected Phases	5	2		1	6			8			4	
Permitted Phases	2		2	6		6	8		8	4		4
Actuated Green, G (s)	58.7	52.9	52.9	58.9	53.0	53.0	22.9	22.9	22.9	22.9	22.9	22.9
Effective Green, g (s)	58.7	52.9	52.9	58.9	53.0	53.0	22.9	22.9	22.9	22.9	22.9	22.9
Actuated g/C Ratio	0.59	0.53	0.53	0.59	0.53	0.53	0.23	0.23	0.23	0.23	0.23	0.23
Clearance Time (s)	3.0	7.8	7.8	3.0	7.8	7.8	7.3	7.3	7.3	7.3	7.3	7.3
Vehicle Extension (s)	3.0	1.8	1.8	3.0	1.8	1.8	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	291	1822	756	354	1696	747	273	435	323	274	419	330
v/s Ratio Prot	c0.01	0.25		0.01	c0.32			0.05			0.04	
v/s Ratio Perm	0.11		0.05	0.10		0.08	0.17		0.02	c0.18		0.02
v/c Ratio	0.21	0.47	0.09	0.19	0.60	0.15	0.72	0.22	0.08	0.78	0.19	0.09
Uniform Delay, d1	9.6	14.7	11.6	9.1	16.2	11.9	35.5	31.2	30.2	36.1	30.9	30.3
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	0.4	0.9	0.2	0.3	1.6	0.4	9.1	0.3	0.1	13.4	0.2	0.1
Delay (s)	10.0	15.5	11.8	9.4	17.8	12.3	44.6	31.4	30.3	49.5	31.2	30.4
Level of Service	A	B	B	A	B	B	D	C	C	D	C	C
Approach Delay (s)		14.7			16.5			37.5			40.2	
Approach LOS		B			B			D			D	

Intersection Summary					
HCM 2000 Control Delay	21.8	HCM 2000 Level of Service		C	
HCM 2000 Volume to Capacity ratio	0.62				
Actuated Cycle Length (s)	99.8	Sum of lost time (s)		18.1	
Intersection Capacity Utilization	69.7%	ICU Level of Service		C	
Analysis Period (min)	15				

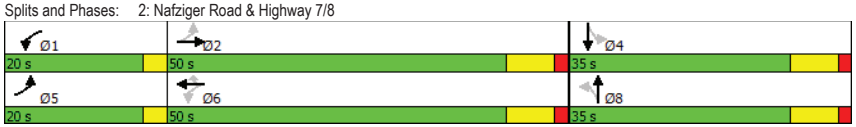
c Critical Lane Group

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	108	1051	1	6	1177	277	1	24	6	121	22	108
Future Volume (vph)	108	1051	1	6	1177	277	1	24	6	121	22	108
Ideal Flow (vphpl)	1775	1775	1775	1775	1900	1750	1775	1650	1650	1775	1650	1650
Storage Length (m)	145.0		0.0	105.0		90.0	80.0		0.0	120.0		0.0
Storage Lanes	1		0	1		1	1		0	1		0
Taper Length (m)	100.0			100.0			40.0			100.0		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor	1.00					0.98						
Frt						0.850		0.970			0.875	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1561	3212	0	1686	3252	1340	1686	1370	0	1561	1314	0
Flt Permitted	0.154			0.263			0.674			0.738		
Satd. Flow (perm)	253	3212	0	467	3252	1311	1196	1370	0	1213	1314	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)						277		6			108	
Link Speed (k/h)		80			80			80			80	
Link Distance (m)		1424.6			340.0			138.9			368.7	
Travel Time (s)		64.1			15.3			6.3			16.6	
Confl. Peds. (#/hr)	1					1						
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	8%	5%	0%	0%	11%	11%	0%	21%	0%	8%	19%	8%
Adj. Flow (vph)	108	1051	1	6	1177	277	1	24	6	121	22	108
Shared Lane Traffic (%)												
Lane Group Flow (vph)	108	1052	0	6	1177	277	1	30	0	121	130	0
Turn Type	pm+pt	NA		pm+pt	NA	Perm	Perm	NA		Perm	NA	
Protected Phases	5	2		1	6			8			4	
Permitted Phases	2			6		6	8			4		
Detector Phase	5	2		1	6	6	8	8		4	4	
Switch Phase												
Minimum Initial (s)	7.0	20.0		7.0	20.0	20.0	10.0	10.0		10.0	10.0	
Minimum Split (s)	20.0	50.0		20.0	50.0	50.0	35.0	35.0		35.0	35.0	
Total Split (s)	20.0	50.0		20.0	50.0	50.0	35.0	35.0		35.0	35.0	
Total Split (%)	19.0%	47.6%		19.0%	47.6%	47.6%	33.3%	33.3%		33.3%	33.3%	
Maximum Green (s)	17.0	42.2		17.0	42.2	42.2	27.4	27.4		27.4	27.4	
Yellow Time (s)	3.0	5.9		3.0	5.9	5.9	5.9	5.9		5.9	5.9	
All-Red Time (s)	0.0	1.9		0.0	1.9	1.9	1.7	1.7		1.7	1.7	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Total Lost Time (s)	3.0	7.8		3.0	7.8	7.8	7.6	7.6		7.6	7.6	
Lead/Lag	Lead	Lag		Lead	Lag	Lag						
Lead-Lag Optimize?	Yes	Yes		Yes	Yes	Yes						
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	
Recall Mode	None	Max		None	Min	Min	None	None		None	None	
Walk Time (s)		16.0			16.0	16.0	16.0	16.0		16.0	16.0	
Flash Dont Walk (s)		11.0			11.0	11.0	11.0	11.0		11.0	11.0	
Pedestrian Calls (#/hr)		0			0	0	0	0		0	0	
Act Effct Green (s)	53.4	46.8		49.6	39.2	39.2	13.9	13.9		13.9	13.9	
Actuated g/C Ratio	0.68	0.60		0.64	0.50	0.50	0.18	0.18		0.18	0.18	
v/c Ratio	0.34	0.55		0.01	0.72	0.35	0.00	0.12		0.56	0.40	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Control Delay	7.8	11.8		5.0	19.9	3.2	28.0	25.5		41.2	13.1	
Queue Delay	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Total Delay	7.8	11.8		5.0	19.9	3.2	28.0	25.5		41.2	13.1	
LOS	A	B		A	B	A	C	C		D	B	
Approach Delay		11.4			16.7			25.5			26.6	
Approach LOS		B			B			C			C	
Queue Length 50th (m)	4.7	41.7		0.3	73.1	0.0	0.1	3.1		16.9	2.8	
Queue Length 95th (m)	12.4	95.5		1.6	124.4	13.8	1.5	11.0		37.6	18.5	
Internal Link Dist (m)		1400.6			316.0			114.9			344.7	
Turn Bay Length (m)	145.0			105.0		90.0	80.0			120.0		
Base Capacity (vph)	462	1926		588	1783	844	426	491		432	537	
Starvation Cap Reductn	0	0		0	0	0	0	0		0	0	
Spillback Cap Reductn	0	0		0	0	0	0	0		0	0	
Storage Cap Reductn	0	0		0	0	0	0	0		0	0	
Reduced v/c Ratio	0.23	0.55		0.01	0.66	0.33	0.00	0.06		0.28	0.24	

Intersection Summary			
Area Type:	Other		
Cycle Length: 105			
Actuated Cycle Length: 78.1			
Natural Cycle: 105			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 0.72			
Intersection Signal Delay: 15.5		Intersection LOS: B	
Intersection Capacity Utilization 68.9%		ICU Level of Service C	
Analysis Period (min) 15			

Splits and Phases: 2: Nafziger Road & Highway 7/8



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	108	1051	1	6	1177	277	1	24	6	121	22	108
Future Volume (vph)	108	1051	1	6	1177	277	1	24	6	121	22	108
Ideal Flow (vphpl)	1775	1775	1775	1775	1900	1750	1775	1650	1650	1775	1650	1650
Total Lost time (s)	3.0	7.8		3.0	7.8	7.8	7.6	7.6		7.6	7.6	
Lane Util. Factor	1.00	0.95		1.00	0.95	1.00	1.00	1.00		1.00	1.00	
Frpb, ped/bikes	1.00	1.00		1.00	1.00	0.98	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	1.00	
Frt	1.00	1.00		1.00	1.00	0.85	1.00	0.97		1.00	0.88	
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1561	3212		1686	3252	1311	1686	1370		1561	1315	
Flt Permitted	0.15	1.00		0.26	1.00	1.00	0.67	1.00		0.74	1.00	
Satd. Flow (perm)	253	3212		466	3252	1311	1196	1370		1212	1315	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	108	1051	1	6	1177	277	1	24	6	121	22	108
RTOR Reduction (vph)	0	0	0	0	0	135	0	5	0	0	89	0
Lane Group Flow (vph)	108	1052	0	6	1177	142	1	25	0	121	41	0
Confl. Peds. (#/hr)	1					1						
Heavy Vehicles (%)	8%	5%	0%	0%	11%	11%	0%	21%	0%	8%	19%	8%
Turn Type	pm+pt	NA		pm+pt	NA	Perm	Perm	NA		Perm	NA	
Protected Phases	5	2		1	6			8			4	
Permitted Phases	2			6		6	8			4		
Actuated Green, G (s)	51.1	46.9		42.4	41.2	41.2	14.0	14.0		14.0	14.0	
Effective Green, g (s)	51.1	46.9		42.4	41.2	41.2	14.0	14.0		14.0	14.0	
Actuated g/C Ratio	0.63	0.58		0.53	0.51	0.51	0.17	0.17		0.17	0.17	
Clearance Time (s)	3.0	7.8		3.0	7.8	7.8	7.6	7.6		7.6	7.6	
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	272	1871		263	1664	670	208	238		210	228	
v/s Ratio Prot	c0.03	0.33		0.00	c0.36			0.02			0.03	
v/s Ratio Perm	0.22			0.01		0.11	0.00			c0.10		
v/c Ratio	0.40	0.56		0.02	0.71	0.21	0.00	0.11		0.58	0.18	
Uniform Delay, d1	7.9	10.4		9.1	15.0	10.8	27.5	28.0		30.5	28.3	
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Incremental Delay, d2	1.0	1.2		0.0	1.4	0.2	0.0	0.2		3.8	0.4	
Delay (s)	8.9	11.7		9.1	16.4	10.9	27.5	28.2		34.3	28.7	
Level of Service	A	B		A	B	B	C	C		C	C	
Approach Delay (s)		11.4			15.4			28.2			31.4	
Approach LOS		B			B			C			C	

Intersection Summary			
HCM 2000 Control Delay	15.3	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.64		
Actuated Cycle Length (s)	80.5	Sum of lost time (s)	18.4
Intersection Capacity Utilization	68.9%	ICU Level of Service	C
Analysis Period (min)	15		

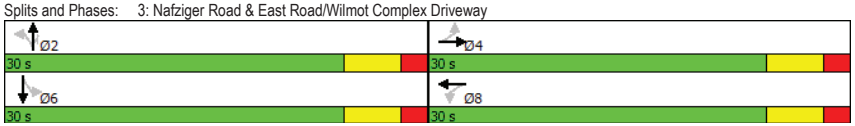
c Critical Lane Group

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	1	2	51	0	51	0	413	94	45	246	1
Future Volume (vph)	0	1	2	51	0	51	0	413	94	45	246	1
Ideal Flow (vphpl)	1550	1550	1550	1550	1550	1550	1650	1650	1750	1550	1550	1550
Storage Length (m)	0.0		0.0	0.0		0.0	0.0		50.0	0.0		0.0
Storage Lanes	0		0	0		0	0		1	0		0
Taper Length (m)	7.5			7.5			7.5			7.5		
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		0.910			0.932				0.850			
Flt Protected					0.976						0.992	
Satd. Flow (prot)	0	1410	0	0	1396	0	0	1602	1488	0	1475	0
Flt Permitted					0.841						0.910	
Satd. Flow (perm)	0	1410	0	0	1203	0	0	1602	1488	0	1353	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		2			55				94			
Link Speed (k/h)		50			50			80			80	
Link Distance (m)		79.8			58.8			368.7			154.9	
Travel Time (s)		5.7			4.2			16.6			7.0	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	0%	0%	0%	0%	0%	2%	0%	3%	0%	0%	5%	2%
Adj. Flow (vph)	0	1	2	51	0	51	0	413	94	45	246	1
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	3	0	0	102	0	0	413	94	0	292	0
Turn Type		NA		Perm	NA			NA	Perm	Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2		2	6		
Detector Phase	4	4		8	8		2	2	2	6	6	
Switch Phase												
Minimum Initial (s)	5.0	5.0		5.0	5.0		5.0	5.0	5.0	5.0	5.0	
Minimum Split (s)	24.0	24.0		24.0	24.0		24.0	24.0	24.0	24.0	24.0	
Total Split (s)	30.0	30.0		30.0	30.0		30.0	30.0	30.0	30.0	30.0	
Total Split (%)	50.0%	50.0%		50.0%	50.0%		50.0%	50.0%	50.0%	50.0%	50.0%	
Maximum Green (s)	24.0	24.0		24.0	24.0		24.0	24.0	24.0	24.0	24.0	
Yellow Time (s)	4.0	4.0		4.0	4.0		4.0	4.0	4.0	4.0	4.0	
All-Red Time (s)	2.0	2.0		2.0	2.0		2.0	2.0	2.0	2.0	2.0	
Lost Time Adjust (s)		-2.0			-2.0			-2.0	-2.0		-2.0	
Total Lost Time (s)		4.0			4.0			4.0	4.0		4.0	
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0	3.0	3.0	3.0	
Recall Mode	None	None		None	None		Max	Max	Max	Max	Max	
Walk Time (s)	7.0	7.0		7.0	7.0		7.0	7.0	7.0	7.0	7.0	
Flash Dont Walk (s)	11.0	11.0		11.0	11.0		11.0	11.0	11.0	11.0	11.0	
Pedestrian Calls (#/hr)	0	0		0	0		0	0	0	0	0	
Act Effct Green (s)		9.6			9.6			36.4	36.4		36.4	
Actuated g/C Ratio		0.20			0.20			0.77	0.77		0.77	
v/c Ratio		0.01			0.36			0.34	0.08		0.28	
Control Delay		11.0			12.3			5.2	1.6		5.1	
Queue Delay		0.0			0.0			0.0	0.0		0.0	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Total Delay		11.0			12.3			5.2	1.6		5.1	
LOS		B			B			A	A		A	
Approach Delay		11.0			12.3			4.6			5.1	
Approach LOS		B			B			A			A	
Queue Length 50th (m)		0.1			4.1			14.2	0.0		9.4	
Queue Length 95th (m)		1.5			12.2			34.7	4.2		25.0	
Internal Link Dist (m)		55.8			34.8			344.7			130.9	
Turn Bay Length (m)									50.0			
Base Capacity (vph)		776			686			1228	1162		1037	
Starvation Cap Reductn		0			0			0	0		0	
Spillback Cap Reductn		0			0			0	0		0	
Storage Cap Reductn		0			0			0	0		0	
Reduced v/c Ratio		0.00			0.15			0.34	0.08		0.28	

Intersection Summary			
Area Type:	Other		
Cycle Length: 60			
Actuated Cycle Length: 47.5			
Natural Cycle: 50			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 0.36			
Intersection Signal Delay: 5.6		Intersection LOS: A	
Intersection Capacity Utilization 68.0%		ICU Level of Service C	
Analysis Period (min) 15			

Splits and Phases: 3: Nafziger Road & East Road/Wilmot Complex Driveway



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	1	2	51	0	51	0	413	94	45	246	1
Future Volume (vph)	0	1	2	51	0	51	0	413	94	45	246	1
Ideal Flow (vphpl)	1550	1550	1550	1550	1550	1550	1650	1650	1750	1550	1550	1550
Total Lost time (s)		4.0			4.0			4.0	4.0		4.0	
Lane Util. Factor		1.00			1.00			1.00	1.00		1.00	
Frt		0.91			0.93			1.00	0.85		1.00	
Flt Protected		1.00			0.98			1.00	1.00		0.99	
Satd. Flow (prot)		1410			1396			1602	1488		1475	
Flt Permitted		1.00			0.84			1.00	1.00		0.91	
Satd. Flow (perm)		1410			1203			1602	1488		1352	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	0	1	2	51	0	51	0	413	94	45	246	1
RTOR Reduction (vph)	0	2	0	0	47	0	0	0	29	0	0	0
Lane Group Flow (vph)	0	1	0	0	55	0	0	413	65	0	292	0
Heavy Vehicles (%)	0%	0%	0%	0%	0%	2%	0%	3%	0%	0%	5%	2%
Turn Type		NA		Perm	NA			NA	Perm	Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2		2	6		
Actuated Green, G (s)		5.3			5.3			32.7	32.7		32.7	
Effective Green, g (s)		7.3			7.3			34.7	34.7		34.7	
Actuated g/C Ratio		0.15			0.15			0.69	0.69		0.69	
Clearance Time (s)		6.0			6.0			6.0	6.0		6.0	
Vehicle Extension (s)		3.0			3.0			3.0	3.0		3.0	
Lane Grp Cap (vph)		205			175			1111	1032		938	
v/s Ratio Prot		0.00						c0.26				
v/s Ratio Perm					c0.05				0.04		0.22	
v/c Ratio		0.01			0.31			0.37	0.06		0.31	
Uniform Delay, d1		18.2			19.1			3.2	2.4		3.0	
Progression Factor		1.00			1.00			1.00	1.00		1.00	
Incremental Delay, d2		0.0			1.0			1.0	0.1		0.9	
Delay (s)		18.3			20.1			4.1	2.6		3.9	
Level of Service		B			C			A	A		A	
Approach Delay (s)		18.3			20.1			3.8			3.9	
Approach LOS		B			C			A			A	

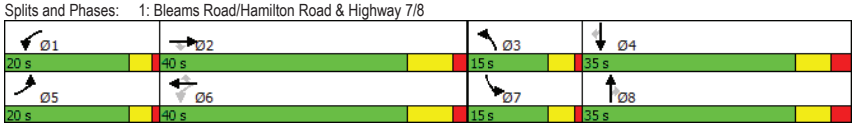
Intersection Summary			
HCM 2000 Control Delay	5.7	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.36		
Actuated Cycle Length (s)	50.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	68.0%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	101	899	137	106	597	182	93	50	87	272	126	96
Future Volume (vph)	101	899	137	106	597	182	93	50	87	272	126	96
Ideal Flow (vphpl)	1775	1900	1750	1775	1900	1750	1775	1900	1750	1775	1900	1750
Storage Length (m)	300.0		110.0	100.0		75.0	70.0		85.0	55.0		155.0
Storage Lanes	2		1	1		1	2		1	2		1
Taper Length (m)	40.0			40.0			40.0			40.0		
Lane Util. Factor	0.97	0.95	1.00	1.00	0.95	1.00	0.97	1.00	1.00	0.97	1.00	1.00
Ped Bike Factor	1.00		0.98	1.00		0.98			0.99	1.00		
Frt			0.850			0.850			0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	3176	3438	1458	1637	3195	1444	3116	1900	1430	3176	1827	1458
Flt Permitted	0.950			0.223			0.950			0.950		
Satd. Flow (perm)	3174	3438	1424	384	3195	1413	3116	1900	1412	3171	1827	1458
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			137			182			132			132
Link Speed (k/h)		80			80			50			50	
Link Distance (m)		163.4			1398.3			147.6			715.9	
Travel Time (s)		7.4			62.9			10.6			51.5	
Confl. Peds. (#/hr)	1		2	2		1			1	1		
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	3%	5%	2%	3%	13%	3%	5%	0%	4%	3%	4%	2%
Adj. Flow (vph)	101	899	137	106	597	182	93	50	87	272	126	96
Shared Lane Traffic (%)												
Lane Group Flow (vph)	101	899	137	106	597	182	93	50	87	272	126	96
Turn Type	Prot	NA	Perm	pm+pt	NA	Perm	Prot	NA	Perm	Prot	NA	Perm
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases			2	6		6			8			4
Detector Phase	5	2	2	1	6	6	3	8	8	7	4	4
Switch Phase												
Minimum Initial (s)	7.0	20.0	20.0	7.0	20.0	20.0	5.0	10.0	10.0	5.0	10.0	10.0
Minimum Split (s)	20.0	40.0	40.0	20.0	40.0	40.0	9.5	35.0	35.0	9.5	35.0	35.0
Total Split (s)	20.0	40.0	40.0	20.0	40.0	40.0	15.0	35.0	35.0	15.0	35.0	35.0
Total Split (%)	18.2%	36.4%	36.4%	18.2%	36.4%	36.4%	13.6%	31.8%	31.8%	13.6%	31.8%	31.8%
Maximum Green (s)	16.0	32.2	32.2	16.0	32.2	32.2	10.5	27.7	27.7	10.5	27.7	27.7
Yellow Time (s)	3.0	5.9	5.9	3.0	5.9	5.9	3.5	4.5	4.5	3.5	4.5	4.5
All-Red Time (s)	1.0	1.9	1.9	1.0	1.9	1.9	1.0	2.8	2.8	1.0	2.8	2.8
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.0	7.8	7.8	4.0	7.8	7.8	4.5	7.3	7.3	4.5	7.3	7.3
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	1.8	1.8	3.0	1.8	1.8	3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	Max	Max	None	Max	Max	None	None	None	None	None	None
Walk Time (s)		19.0	19.0		19.0	19.0		19.0	19.0		19.0	19.0
Flash Dont Walk (s)		14.0	14.0		14.0	14.0		14.0	14.0		14.0	14.0
Pedestrian Calls (#/hr)		0	0		0	0		0	0		0	0
Act Effct Green (s)	8.5	34.0	34.0	44.4	34.0	34.0	8.0	11.5	11.5	11.5	13.1	13.1
Actuated g/C Ratio	0.10	0.42	0.42	0.54	0.42	0.42	0.10	0.14	0.14	0.14	0.16	0.16
v/c Ratio	0.31	0.63	0.20	0.31	0.45	0.26	0.31	0.19	0.28	0.61	0.43	0.28

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Control Delay	39.8	23.9	4.7	11.8	21.0	4.4	40.1	35.7	4.5	43.3	38.9	5.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	39.8	23.9	4.7	11.8	21.0	4.4	40.1	35.7	4.5	43.3	38.9	5.1
LOS	D	C	A	B	C	A	D	D	A	D	D	A
Approach Delay		23.0			16.5			25.7			34.7	
Approach LOS		C			B			C			C	
Queue Length 50th (m)	8.5	65.6	0.0	7.6	39.6	0.0	7.8	7.9	0.0	23.4	20.1	0.0
Queue Length 95th (m)	17.1	101.4	12.1	17.3	63.5	13.9	16.1	18.7	5.2	#44.8	39.1	7.2
Internal Link Dist (m)		139.4			1374.3			123.6			691.9	
Turn Bay Length (m)	300.0		110.0	100.0		75.0	70.0		85.0	55.0		155.0
Base Capacity (vph)	639	1429	671	474	1328	693	411	662	578	444	636	594
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.16	0.63	0.20	0.22	0.45	0.26	0.23	0.08	0.15	0.61	0.20	0.16

Intersection Summary			
Area Type:	Other		
Cycle Length: 110			
Actuated Cycle Length: 81.8			
Natural Cycle: 105			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 0.63			
Intersection Signal Delay: 23.3		Intersection LOS: C	
Intersection Capacity Utilization 70.7%		ICU Level of Service C	
Analysis Period (min) 15			
# 95th percentile volume exceeds capacity, queue may be longer.			
Queue shown is maximum after two cycles.			

Splits and Phases: 1: Bleams Road/Hamilton Road & Highway 7/8



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	101	899	137	106	597	182	93	50	87	272	126	96
Future Volume (vph)	101	899	137	106	597	182	93	50	87	272	126	96
Ideal Flow (vphpl)	1775	1900	1750	1775	1900	1750	1775	1900	1750	1775	1900	1750
Total Lost time (s)	4.0	7.8	7.8	4.0	7.8	7.8	4.5	7.3	7.3	4.5	7.3	7.3
Lane Util. Factor	0.97	0.95	1.00	1.00	0.95	1.00	0.97	1.00	1.00	0.97	1.00	1.00
Frpb, ped/bikes	1.00	1.00	0.98	1.00	1.00	0.98	1.00	1.00	0.99	1.00	1.00	1.00
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	3176	3438	1426	1637	3195	1413	3116	1900	1412	3176	1827	1458
Flt Permitted	0.95	1.00	1.00	0.22	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	3176	3438	1426	384	3195	1413	3116	1900	1412	3176	1827	1458
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	101	899	137	106	597	182	93	50	87	272	126	96
RTOR Reduction (vph)	0	0	82	0	0	109	0	0	78	0	0	80
Lane Group Flow (vph)	101	899	55	106	597	73	93	50	9	272	126	16
Confl. Peds. (#/hr)	1		2	2		1			1	1		
Heavy Vehicles (%)	3%	5%	2%	3%	13%	3%	5%	0%	4%	3%	4%	2%
Turn Type	Prot	NA	Perm	pm+pt	NA	Perm	Prot	NA	Perm	Prot	NA	Perm
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases			2	6		6			8			4
Actuated Green, G (s)	6.5	34.0	34.0	40.5	34.0	34.0	6.3	8.7	8.7	11.4	13.8	13.8
Effective Green, g (s)	6.5	34.0	34.0	40.5	34.0	34.0	6.3	8.7	8.7	11.4	13.8	13.8
Actuated g/C Ratio	0.08	0.40	0.40	0.48	0.40	0.40	0.07	0.10	0.10	0.14	0.16	0.16
Clearance Time (s)	4.0	7.8	7.8	4.0	7.8	7.8	4.5	7.3	7.3	4.5	7.3	7.3
Vehicle Extension (s)	3.0	1.8	1.8	3.0	1.8	1.8	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	245	1388	575	281	1290	570	233	196	145	430	299	238
v/s Ratio Prot	c0.03	c0.26		0.03	0.19		0.03	0.03		c0.09	c0.07	
v/s Ratio Perm			0.04	0.15		0.05			0.01			0.01
v/c Ratio	0.41	0.65	0.10	0.38	0.46	0.13	0.40	0.26	0.06	0.63	0.42	0.07
Uniform Delay, d1	37.0	20.3	15.6	12.9	18.4	15.8	37.1	34.8	34.1	34.4	31.6	29.8
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	1.1	2.3	0.3	0.9	1.2	0.5	1.1	0.7	0.2	3.0	1.0	0.1
Delay (s)	38.2	22.6	15.9	13.7	19.6	16.3	38.3	35.5	34.2	37.4	32.6	29.9
Level of Service	D	C	B	B	B	B	D	D	C	D	C	C
Approach Delay (s)		23.2			18.2			36.1			34.7	
Approach LOS		C			B			D			C	

Intersection Summary			
HCM 2000 Control Delay	24.7	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.60		
Actuated Cycle Length (s)	84.2	Sum of lost time (s)	23.6
Intersection Capacity Utilization	70.7%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	145	2	9	31	1	26	9	87	32	27	326	77
Future Volume (vph)	145	2	9	31	1	26	9	87	32	27	326	77
Ideal Flow (vphpl)	1765	1900	1765	1900	1900	1900	1650	1650	1900	1900	1650	1650
Storage Length (m)	100.0		0.0	0.0		0.0	0.0		50.0	0.0		0.0
Storage Lanes	1		0	0		0	0		1	0		0
Taper Length (m)	50.0			0.0			0.0			0.0		
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
Frt		0.877			0.939				0.850		0.976	
Flt Protected	0.950				0.974			0.995			0.997	
Satd. Flow (prot)	1677	1666	0	0	1707	0	0	1481	1615	0	1536	0
Flt Permitted	0.719				0.850			0.967			0.984	
Satd. Flow (perm)	1269	1666	0	0	1490	0	0	1439	1615	0	1516	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		9			26				32		27	
Link Speed (k/h)		50			50			80			80	
Link Distance (m)		380.0			59.8			535.4			181.7	
Travel Time (s)		27.4			4.3			24.1			8.2	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	0%	0%	0%	0%	0%	4%	0%	12%	0%	0%	6%	0%
Adj. Flow (vph)	145	2	9	31	1	26	9	87	32	27	326	77
Shared Lane Traffic (%)												
Lane Group Flow (vph)	145	11	0	0	58	0	0	96	32	0	430	0
Turn Type	Perm	NA		Perm	NA		Perm	NA	Perm	Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2		2	6		
Detector Phase	4	4		8	8		2	2	2	6	6	
Switch Phase												
Minimum Initial (s)	5.0	5.0		5.0	5.0		5.0	5.0	5.0	5.0	5.0	
Minimum Split (s)	22.5	22.5		22.5	22.5		22.5	22.5	22.5	22.5	22.5	
Total Split (s)	25.0	25.0		25.0	25.0		35.0	35.0	35.0	35.0	35.0	
Total Split (%)	41.7%	41.7%		41.7%	41.7%		58.3%	58.3%	58.3%	58.3%	58.3%	
Maximum Green (s)	20.5	20.5		20.5	20.5		30.5	30.5	30.5	30.5	30.5	
Yellow Time (s)	3.5	3.5		3.5	3.5		3.5	3.5	3.5	3.5	3.5	
All-Red Time (s)	1.0	1.0		1.0	1.0		1.0	1.0	1.0	1.0	1.0	
Lost Time Adjust (s)	0.0	0.0			0.0			0.0	0.0		0.0	
Total Lost Time (s)	4.5	4.5			4.5			4.5	4.5		4.5	
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0	3.0	3.0	3.0	
Recall Mode	None	None		None	None		Max	Max	Max	Max	Max	
Walk Time (s)	7.0	7.0		7.0	7.0		7.0	7.0	7.0	7.0	7.0	
Flash Dont Walk (s)	11.0	11.0		11.0	11.0		11.0	11.0	11.0	11.0	11.0	
Pedestrian Calls (#/hr)	0	0		0	0		0	0	0	0	0	
Act Effct Green (s)	11.2	11.2			11.0			36.3	36.3		36.3	
Actuated g/C Ratio	0.21	0.21			0.21			0.68	0.68		0.68	
v/c Ratio	0.54	0.03			0.18			0.10	0.03		0.41	
Control Delay	25.9	9.8			11.4			5.6	2.5		7.2	
Queue Delay	0.0	0.0			0.0			0.0	0.0		0.0	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Total Delay	25.9	9.8			11.4			5.6	2.5		7.2	
LOS	C	A			B			A	A		A	
Approach Delay		24.7			11.4			4.8			7.2	
Approach LOS		C			B			A			A	
Queue Length 50th (m)	12.2	0.2			2.4			3.2	0.0		17.0	
Queue Length 95th (m)	26.0	3.1			9.4			10.2	2.9		44.8	
Internal Link Dist (m)		356.0			35.8			511.4			157.7	
Turn Bay Length (m)	100.0								50.0			
Base Capacity (vph)	489	648			590			980	1110		1041	
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	0.30	0.02			0.10			0.10	0.03		0.41	

Intersection Summary			
Area Type:	Other		
Cycle Length: 60			
Actuated Cycle Length: 53.3			
Natural Cycle: 50			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 0.54			
Intersection Signal Delay: 10.7		Intersection LOS: B	
Intersection Capacity Utilization 55.4%		ICU Level of Service B	
Analysis Period (min) 15			

Splits and Phases: 2: Nafziger Road & East Road/Wilmot Complex Driveway

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	145	2	9	31	1	26	9	87	32	27	326	77
Future Volume (vph)	145	2	9	31	1	26	9	87	32	27	326	77
Ideal Flow (vphpl)	1765	1900	1765	1900	1900	1900	1650	1650	1900	1900	1650	1650
Total Lost time (s)	4.5	4.5			4.5			4.5	4.5		4.5	
Lane Util. Factor	1.00	1.00			1.00			1.00	1.00		1.00	
Frt	1.00	0.88			0.94			1.00	0.85		0.98	
Flt Protected	0.95	1.00			0.97			1.00	1.00		1.00	
Satd. Flow (prot)	1677	1667			1708			1481	1615		1535	
Flt Permitted	0.72	1.00			0.85			0.97	1.00		0.98	
Satd. Flow (perm)	1269	1667			1490			1438	1615		1515	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	145	2	9	31	1	26	9	87	32	27	326	77
RTOR Reduction (vph)	0	7	0	0	21	0	0	0	11	0	9	0
Lane Group Flow (vph)	145	4	0	0	37	0	0	96	21	0	421	0
Heavy Vehicles (%)	0%	0%	0%	0%	0%	4%	0%	12%	0%	0%	6%	0%
Turn Type	Perm	NA		Perm	NA		Perm	NA	Perm	Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2		2	6		
Actuated Green, G (s)	9.9	9.9			9.9			35.3	35.3		35.3	
Effective Green, g (s)	9.9	9.9			9.9			35.3	35.3		35.3	
Actuated g/C Ratio	0.18	0.18			0.18			0.65	0.65		0.65	
Clearance Time (s)	4.5	4.5			4.5			4.5	4.5		4.5	
Vehicle Extension (s)	3.0	3.0			3.0			3.0	3.0		3.0	
Lane Grp Cap (vph)	231	304			272			936	1051		986	
v/s Ratio Prot		0.00										
v/s Ratio Perm	c0.11				0.02			0.07	0.01		c0.28	
v/c Ratio	0.63	0.01			0.14			0.10	0.02		0.43	
Uniform Delay, d1	20.4	18.1			18.6			3.5	3.3		4.6	
Progression Factor	1.00	1.00			1.00			1.00	1.00		1.00	
Incremental Delay, d2	5.2	0.0			0.2			0.2	0.0		1.4	
Delay (s)	25.7	18.2			18.8			3.8	3.4		5.9	
Level of Service	C	B			B			A	A		A	
Approach Delay (s)		25.2			18.8			3.7			5.9	
Approach LOS		C			B			A			A	

Intersection Summary				
HCM 2000 Control Delay	10.4	HCM 2000 Level of Service	B	
HCM 2000 Volume to Capacity ratio	0.47			
Actuated Cycle Length (s)	54.2	Sum of lost time (s)	9.0	
Intersection Capacity Utilization	55.4%	ICU Level of Service	B	
Analysis Period (min)	15			
c Critical Lane Group				

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	3	117	16	5	305	61
Future Volume (vph)	3	117	16	5	305	61
Ideal Flow (vphpl)	1765	1765	1650	1650	1650	1650
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.868		0.968			
Flt Protected	0.999					0.960
Satd. Flow (prot)	1500	0	1566	0	0	1553
Flt Permitted	0.999					0.960
Satd. Flow (perm)	1500	0	1566	0	0	1553
Link Speed (k/h)	50		80			80
Link Distance (m)	149.7		232.9			535.4
Travel Time (s)	10.8		10.5			24.1
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	3	117	16	5	305	61
Shared Lane Traffic (%)						
Lane Group Flow (vph)	120	0	21	0	0	366
Sign Control	Stop		Free			Free

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	44.5%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	3	117	16	5	305	61
Future Volume (Veh/h)	3	117	16	5	305	61
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	3	117	16	5	305	61
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	690	18			21	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	690	18			21	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	99	89			81	
cM capacity (veh/h)	333	1060			1595	

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	120	21	366
Volume Left	3	0	305
Volume Right	117	5	0
cSH	1005	1700	1595
Volume to Capacity	0.12	0.01	0.19
Queue Length 95th (m)	3.2	0.0	5.7
Control Delay (s)	9.1	0.0	6.7
Lane LOS	A		A
Approach Delay (s)	9.1	0.0	6.7
Approach LOS	A		

Intersection Summary				
Average Delay		7.0		
Intersection Capacity Utilization		44.5%	ICU Level of Service	A
Analysis Period (min)		15		

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	0	0	77	0	0	153
Future Volume (vph)	0	0	77	0	0	153
Ideal Flow (vphpl)	1650	1650	1650	1650	1765	1765
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt					0.865	
Flt Protected				0.950		
Satd. Flow (prot)	1618	0	0	1537	1497	0
Flt Permitted				0.950		
Satd. Flow (perm)	1618	0	0	1537	1497	0
Link Speed (k/h)	50			50	50	
Link Distance (m)	199.2			380.0	206.9	
Travel Time (s)	14.3			27.4	14.9	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	0	0	77	0	0	153
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	0	0	77	153	0
Sign Control	Free			Free	Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	21.8%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	0	0	77	0	0	153
Future Volume (Veh/h)	0	0	77	0	0	153
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	0	0	77	0	0	153
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (m)				380		
pX, platoon unblocked						
vC, conflicting volume			0		154	0
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			0		154	0
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			95		100	86
cM capacity (veh/h)			1623		798	1085

Direction, Lane #	EB 1	WB 1	NB 1
Volume Total	0	77	153
Volume Left	0	77	0
Volume Right	0	0	153
cSH	1700	1623	1085
Volume to Capacity	0.00	0.05	0.14
Queue Length 95th (m)	0.0	1.2	3.9
Control Delay (s)	0.0	7.3	8.9
Lane LOS		A	A
Approach Delay (s)	0.0	7.3	8.9
Approach LOS			A

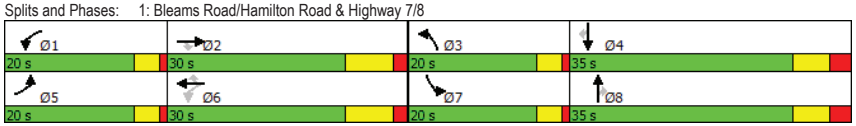
Intersection Summary				
Average Delay		8.3		
Intersection Capacity Utilization		21.8%	ICU Level of Service	A
Analysis Period (min)		15		

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	60	853	132	67	1025	188	197	95	111	214	78	130
Future Volume (vph)	60	853	132	67	1025	188	197	95	111	214	78	130
Ideal Flow (vphpl)	1775	1900	1750	1775	1900	1750	1775	1900	1750	1775	1900	1750
Storage Length (m)	300.0		110.0	100.0		75.0	70.0		85.0	55.0		155.0
Storage Lanes	2		1	1		1	2		1	2		1
Taper Length (m)	40.0			40.0			40.0			40.0		
Lane Util. Factor	0.97	0.95	1.00	1.00	0.95	1.00	0.97	1.00	1.00	0.97	1.00	1.00
Ped Bike Factor	1.00		0.98	1.00		0.97	1.00		0.99	1.00		0.99
Frt			0.850			0.850			0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	3176	3438	1458	1637	3195	1444	3116	1900	1430	3176	1827	1458
Flt Permitted	0.950			0.241			0.950			0.950		
Satd. Flow (perm)	3171	3438	1427	415	3195	1406	3111	1900	1412	3172	1827	1439
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			132			157			133			133
Link Speed (k/h)		80			80			50			50	
Link Distance (m)		163.4			1398.3			147.6			715.9	
Travel Time (s)		7.4			62.9			10.6			51.5	
Confl. Peds. (#/hr)	4		1	1		4	1		1	1		1
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	3%	5%	2%	3%	13%	3%	5%	0%	4%	3%	4%	2%
Adj. Flow (vph)	60	853	132	67	1025	188	197	95	111	214	78	130
Shared Lane Traffic (%)												
Lane Group Flow (vph)	60	853	132	67	1025	188	197	95	111	214	78	130
Turn Type	Prot	NA	Perm	pm+pt	NA	Perm	Prot	NA	Perm	Prot	NA	Perm
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases			2	6		6			8			4
Detector Phase	5	2	2	1	6	6	3	8	8	7	4	4
Switch Phase												
Minimum Initial (s)	7.0	20.0	20.0	7.0	20.0	20.0	5.0	10.0	10.0	5.0	10.0	10.0
Minimum Split (s)	20.0	30.0	30.0	20.0	30.0	30.0	9.5	35.0	35.0	9.5	35.0	35.0
Total Split (s)	20.0	30.0	30.0	20.0	30.0	30.0	20.0	35.0	35.0	20.0	35.0	35.0
Total Split (%)	19.0%	28.6%	28.6%	19.0%	28.6%	28.6%	19.0%	33.3%	33.3%	19.0%	33.3%	33.3%
Maximum Green (s)	16.0	22.2	22.2	16.0	22.2	22.2	16.0	27.7	27.7	16.0	27.7	27.7
Yellow Time (s)	3.0	5.9	5.9	3.0	5.9	5.9	3.0	4.5	4.5	3.0	4.5	4.5
All-Red Time (s)	1.0	1.9	1.9	1.0	1.9	1.9	1.0	2.8	2.8	1.0	2.8	2.8
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.0	7.8	7.8	4.0	7.8	7.8	4.0	7.3	7.3	4.0	7.3	7.3
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	1.8	1.8	3.0	1.8	1.8	3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	Max	Max	None	Max	Max	None	None	None	None	None	None
Walk Time (s)		19.0	19.0		19.0	19.0		19.0	19.0		19.0	19.0
Flash Dont Walk (s)		14.0	14.0		14.0	14.0		14.0	14.0		14.0	14.0
Pedestrian Calls (#/hr)		0	0		0	0		0	0		0	0
Act Effct Green (s)	7.5	33.3	33.3	43.2	33.4	33.4	10.7	11.0	11.0	11.0	11.3	11.3
Actuated g/C Ratio	0.09	0.40	0.40	0.52	0.40	0.40	0.13	0.13	0.13	0.13	0.14	0.14
v/c Ratio	0.21	0.62	0.20	0.21	0.80	0.29	0.50	0.38	0.37	0.51	0.32	0.42

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Control Delay	39.5	24.0	4.8	11.1	29.9	6.5	39.4	40.0	8.4	39.3	38.5	11.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	39.5	24.0	4.8	11.1	29.9	6.5	39.4	40.0	8.4	39.3	38.5	11.0
LOS	D	C	A	B	C	A	D	D	A	D	D	B
Approach Delay		22.5			25.5			31.0			30.4	
Approach LOS		C			C			C			C	
Queue Length 50th (m)	5.0	59.8	0.0	4.7	79.6	3.2	16.2	15.1	0.0	17.6	12.3	0.0
Queue Length 95th (m)	11.7	95.0	12.0	12.4	#136.3	18.6	28.6	31.8	10.9	30.4	26.9	15.3
Internal Link Dist (m)		139.4			1374.3			123.6			691.9	
Turn Bay Length (m)	300.0		110.0	100.0		75.0	70.0		85.0	55.0		155.0
Base Capacity (vph)	613	1370	648	465	1276	656	602	635	560	613	611	570
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.10	0.62	0.20	0.14	0.80	0.29	0.33	0.15	0.20	0.35	0.13	0.23

Intersection Summary		
Area Type:	Other	
Cycle Length: 105		
Actuated Cycle Length: 83.6		
Natural Cycle: 105		
Control Type: Actuated-Uncoordinated		
Maximum v/c Ratio: 0.80		
Intersection Signal Delay: 25.8		Intersection LOS: C
Intersection Capacity Utilization 63.8%		ICU Level of Service B
Analysis Period (min) 15		
# 95th percentile volume exceeds capacity, queue may be longer.		
Queue shown is maximum after two cycles.		

Splits and Phases: 1: Bleams Road/Hamilton Road & Highway 7/8



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	60	853	132	67	1025	188	197	95	111	214	78	130
Future Volume (vph)	60	853	132	67	1025	188	197	95	111	214	78	130
Ideal Flow (vphpl)	1775	1900	1750	1775	1900	1750	1775	1900	1750	1775	1900	1750
Total Lost time (s)	4.0	7.8	7.8	4.0	7.8	7.8	4.0	7.3	7.3	4.0	7.3	7.3
Lane Util. Factor	0.97	0.95	1.00	1.00	0.95	1.00	0.97	1.00	1.00	0.97	1.00	1.00
Frpb, ped/bikes	1.00	1.00	0.98	1.00	1.00	0.97	1.00	1.00	0.99	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	1.00	1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	3176	3438	1427	1637	3195	1408	3116	1900	1412	3176	1827	1440
Flt Permitted	0.95	1.00	1.00	0.24	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	3176	3438	1427	415	3195	1408	3116	1900	1412	3176	1827	1440
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	60	853	132	67	1025	188	197	95	111	214	78	130
RTOR Reduction (vph)	0	0	80	0	0	95	0	0	97	0	0	113
Lane Group Flow (vph)	60	853	52	67	1025	93	197	95	14	214	78	17
Confl. Peds. (#/hr)	4		1	1		4	1		1	1		1
Heavy Vehicles (%)	3%	5%	2%	3%	13%	3%	5%	0%	4%	3%	4%	2%
Turn Type	Prot	NA	Perm	pm+pt	NA	Perm	Prot	NA	Perm	Prot	NA	Perm
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases			2	6		6			8			4
Actuated Green, G (s)	5.9	33.4	33.4	39.3	33.4	33.4	10.7	11.0	11.0	11.0	11.3	11.3
Effective Green, g (s)	5.9	33.4	33.4	39.3	33.4	33.4	10.7	11.0	11.0	11.0	11.3	11.3
Actuated g/C Ratio	0.07	0.40	0.40	0.47	0.40	0.40	0.13	0.13	0.13	0.13	0.13	0.13
Clearance Time (s)	4.0	7.8	7.8	4.0	7.8	7.8	4.0	7.3	7.3	4.0	7.3	7.3
Vehicle Extension (s)	3.0	1.8	1.8	3.0	1.8	1.8	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	222	1360	564	278	1264	557	395	247	184	413	244	192
v/s Ratio Prot	c0.02	0.25		0.02	c0.32		0.06	c0.05		c0.07	0.04	
v/s Ratio Perm			0.04	0.10		0.07			0.01			0.01
v/c Ratio	0.27	0.63	0.09	0.24	0.81	0.17	0.50	0.38	0.08	0.52	0.32	0.09
Uniform Delay, d1	37.2	20.5	16.0	13.1	22.7	16.5	34.4	33.6	32.2	34.2	33.1	32.0
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	0.7	2.2	0.3	0.5	5.7	0.6	1.0	1.0	0.2	1.1	0.8	0.2
Delay (s)	37.9	22.7	16.3	13.6	28.4	17.1	35.3	34.6	32.4	35.3	33.8	32.3
Level of Service	D	C	B	B	C	B	D	C	C	D	C	C
Approach Delay (s)		22.8			26.0			34.4			34.1	
Approach LOS		C			C			C			C	

Intersection Summary			
HCM 2000 Control Delay	27.1	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.63		
Actuated Cycle Length (s)	84.4	Sum of lost time (s)	23.1
Intersection Capacity Utilization	63.8%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	277	1	8	51	0	51	1	136	94	45	138	109
Future Volume (vph)	277	1	8	51	0	51	1	136	94	45	138	109
Ideal Flow (vphpl)	1765	1900	1765	1900	1900	1900	1650	1650	1900	1900	1650	1650
Storage Length (m)	100.0		0.0	0.0		0.0	0.0		50.0	0.0		0.0
Storage Lanes	1		0	0		0	0		1	0		0
Taper Length (m)	50.0			7.5			0.0			0.0		
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
Frt		0.867			0.932				0.850		0.950	
Flt Protected	0.950				0.976						0.992	
Satd. Flow (prot)	1677	1647	0	0	1711	0	0	1602	1615	0	1508	0
Flt Permitted	0.757				0.868			0.998			0.945	
Satd. Flow (perm)	1336	1647	0	0	1522	0	0	1599	1615	0	1437	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		8			55				94		74	
Link Speed (k/h)		50			50			80			80	
Link Distance (m)		380.0			75.0			535.4			181.7	
Travel Time (s)		27.4			5.4			24.1			8.2	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	0%	0%	0%	0%	0%	2%	0%	3%	0%	0%	5%	2%
Adj. Flow (vph)	277	1	8	51	0	51	1	136	94	45	138	109
Shared Lane Traffic (%)												
Lane Group Flow (vph)	277	9	0	0	102	0	0	137	94	0	292	0
Turn Type	Perm	NA		Perm	NA		Perm	NA	Perm	Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2		2	6		
Detector Phase	4	4		8	8		2	2	2	6	6	
Switch Phase												
Minimum Initial (s)	5.0	5.0		5.0	5.0		5.0	5.0	5.0	5.0	5.0	
Minimum Split (s)	24.0	24.0		24.0	24.0		24.0	24.0	24.0	24.0	24.0	
Total Split (s)	25.0	25.0		25.0	25.0		35.0	35.0	35.0	35.0	35.0	
Total Split (%)	41.7%	41.7%		41.7%	41.7%		58.3%	58.3%	58.3%	58.3%	58.3%	
Maximum Green (s)	19.0	19.0		19.0	19.0		29.0	29.0	29.0	29.0	29.0	
Yellow Time (s)	4.0	4.0		4.0	4.0		4.0	4.0	4.0	4.0	4.0	
All-Red Time (s)	2.0	2.0		2.0	2.0		2.0	2.0	2.0	2.0	2.0	
Lost Time Adjust (s)	0.0	-2.0			-2.0			-2.0	0.0		-2.0	
Total Lost Time (s)	6.0	4.0			4.0			4.0	6.0		4.0	
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0	3.0	3.0	3.0	
Recall Mode	None	None		None	None		Max	Max	Max	Max	Max	
Walk Time (s)	7.0	7.0		7.0	7.0		7.0	7.0	7.0	7.0	7.0	
Flash Dont Walk (s)	11.0	11.0		11.0	11.0		11.0	11.0	11.0	11.0	11.0	
Pedestrian Calls (#/hr)	0	0		0	0		0	0	0	0	0	
Act Effct Green (s)	15.9	17.9			17.9			32.7	30.7		32.7	
Actuated g/C Ratio	0.27	0.30			0.30			0.56	0.52		0.56	
v/c Ratio	0.76	0.02			0.20			0.15	0.11		0.35	
Control Delay	34.1	8.4			8.7			7.8	2.7		7.3	
Queue Delay	0.0	0.0			0.0			0.0	0.0		0.0	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Total Delay	34.1	8.4			8.7			7.8	2.7		7.3	
LOS	C	A			A			A	A		A	
Approach Delay		33.3			8.7			5.7			7.3	
Approach LOS		C			A			A			A	
Queue Length 50th (m)	27.2	0.1			3.6			7.1	0.0		12.2	
Queue Length 95th (m)	#56.9	2.6			12.5			15.7	6.1		27.5	
Internal Link Dist (m)		356.0			51.0			511.4			157.7	
Turn Bay Length (m)	100.0								50.0			
Base Capacity (vph)	433	595			580			891	890		834	
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	0.64	0.02			0.18			0.15	0.11		0.35	

Intersection Summary			
Area Type:	Other		
Cycle Length: 60			
Actuated Cycle Length: 58.7			
Natural Cycle: 50			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 0.76			
Intersection Signal Delay: 15.2		Intersection LOS: B	
Intersection Capacity Utilization 60.4%		ICU Level of Service B	
Analysis Period (min) 15			
# 95th percentile volume exceeds capacity, queue may be longer.			
Queue shown is maximum after two cycles.			

Splits and Phases: 2: Nafziger Road & East Road/Wilmot Complex Driveway

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	277	1	8	51	0	51	1	136	94	45	138	109
Future Volume (vph)	277	1	8	51	0	51	1	136	94	45	138	109
Ideal Flow (vphpl)	1765	1900	1765	1900	1900	1900	1650	1650	1900	1900	1650	1650
Total Lost time (s)	6.0	4.0			4.0			4.0	6.0		4.0	
Lane Util. Factor	1.00	1.00			1.00			1.00	1.00		1.00	
Frt	1.00	0.87			0.93			1.00	0.85		0.95	
Flt Protected	0.95	1.00			0.98			1.00	1.00		0.99	
Satd. Flow (prot)	1677	1647			1711			1602	1615		1508	
Flt Permitted	0.76	1.00			0.87			1.00	1.00		0.95	
Satd. Flow (perm)	1335	1647			1523			1600	1615		1436	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	277	1	8	51	0	51	1	136	94	45	138	109
RTOR Reduction (vph)	0	6	0	0	38	0	0	0	45	0	33	0
Lane Group Flow (vph)	277	3	0	0	64	0	0	137	49	0	259	0
Heavy Vehicles (%)	0%	0%	0%	0%	0%	2%	0%	3%	0%	0%	5%	2%
Turn Type	Perm	NA		Perm	NA		Perm	NA	Perm	Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2		2	6		
Actuated Green, G (s)	15.9	15.9			15.9			30.7	30.7		30.7	
Effective Green, g (s)	15.9	17.9			17.9			32.7	30.7		32.7	
Actuated g/C Ratio	0.27	0.31			0.31			0.56	0.52		0.56	
Clearance Time (s)	6.0	6.0			6.0			6.0	6.0		6.0	
Vehicle Extension (s)	3.0	3.0			3.0			3.0	3.0		3.0	
Lane Grp Cap (vph)	362	503			465			892	846		801	
v/s Ratio Prot		0.00										
v/s Ratio Perm	c0.21				0.04			0.09	0.03		c0.18	
v/c Ratio	0.77	0.01			0.14			0.15	0.06		0.32	
Uniform Delay, d1	19.6	14.2			14.8			6.3	6.9		7.0	
Progression Factor	1.00	1.00			1.00			1.00	1.00		1.00	
Incremental Delay, d2	9.3	0.0			0.1			0.4	0.1		1.1	
Delay (s)	28.9	14.2			14.9			6.6	7.0		8.1	
Level of Service	C	B			B			A	A		A	
Approach Delay (s)		28.5			14.9			6.8			8.1	
Approach LOS		C			B			A			A	

Intersection Summary			
HCM 2000 Control Delay	14.9	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.45		
Actuated Cycle Length (s)	58.6	Sum of lost time (s)	8.0
Intersection Capacity Utilization	60.4%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	1	108	26	6	121	76
Future Volume (vph)	1	108	26	6	121	76
Ideal Flow (vphpl)	1765	1765	1650	1650	1650	1650
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.866		0.975			
Flt Protected						0.970
Satd. Flow (prot)	1499	0	1577	0	0	1569
Flt Permitted						0.970
Satd. Flow (perm)	1499	0	1577	0	0	1569
Link Speed (k/h)	50		80			80
Link Distance (m)	149.7		232.9			535.4
Travel Time (s)	10.8		10.5			24.1
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	1	108	26	6	121	76
Shared Lane Traffic (%)						
Lane Group Flow (vph)	109	0	32	0	0	197
Sign Control	Stop		Free			Free

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	32.9%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	1	108	26	6	121	76
Future Volume (Veh/h)	1	108	26	6	121	76
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	1	108	26	6	121	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)						
pX, platoon unblocked						
vC, conflicting volume	347	29			32	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	347	29			32	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	100	90			92	
cM capacity (veh/h)	600	1046			1580	

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	109	32	197
Volume Left	1	0	121
Volume Right	108	6	0
cSH	1039	1700	1580
Volume to Capacity	0.10	0.02	0.08
Queue Length 95th (m)	2.8	0.0	2.0
Control Delay (s)	8.9	0.0	4.8
Lane LOS	A		A
Approach Delay (s)	8.9	0.0	4.8
Approach LOS	A		

Intersection Summary			
Average Delay	5.7		
Intersection Capacity Utilization	32.9%	ICU Level of Service	A
Analysis Period (min)	15		

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	0	0	109	0	0	283
Future Volume (vph)	0	0	109	0	0	283
Ideal Flow (vphpl)	1650	1650	1650	1650	1765	1765
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt					0.865	
Flt Protected				0.950		
Satd. Flow (prot)	1618	0	0	1537	1497	0
Flt Permitted				0.950		
Satd. Flow (perm)	1618	0	0	1537	1497	0
Link Speed (k/h)	50			50	50	
Link Distance (m)	199.2			380.0	206.9	
Travel Time (s)	14.3			27.4	14.9	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	0	0	109	0	0	283
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	0	0	109	283	0
Sign Control	Free			Free	Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	32.5%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	0	0	109	0	0	283
Future Volume (Veh/h)	0	0	109	0	0	283
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	0	0	109	0	0	283
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (m)				380		
pX, platoon unblocked						
vC, conflicting volume			0		218	0
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			0		218	0
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			93		100	74
cM capacity (veh/h)			1623		718	1085

Direction, Lane #	EB 1	WB 1	NB 1
Volume Total	0	109	283
Volume Left	0	109	0
Volume Right	0	0	283
cSH	1700	1623	1085
Volume to Capacity	0.00	0.07	0.26
Queue Length 95th (m)	0.0	1.7	8.4
Control Delay (s)	0.0	7.4	9.5
Lane LOS		A	A
Approach Delay (s)	0.0	7.4	9.5
Approach LOS			A

Intersection Summary				
Average Delay	8.9			
Intersection Capacity Utilization	32.5%	ICU Level of Service	A	
Analysis Period (min)	15			

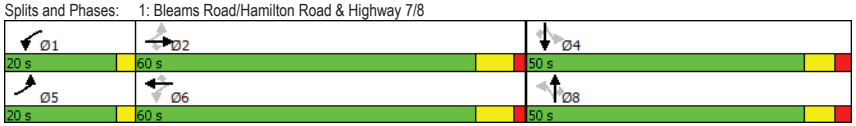
Appendix G 2028 Total Traffic Operations

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	181	910	137	107	603	197	93	90	87	301	138	105
Future Volume (vph)	181	910	137	107	603	197	93	90	87	301	138	105
Ideal Flow (vphpl)	1775	1900	1750	1775	1900	1750	1775	1900	1750	1775	1900	1750
Storage Length (m)	300.0		110.0	100.0		75.0	70.0		85.0	65.0		155.0
Storage Lanes	1		1	1		1	1		1	1		1
Taper Length (m)	40.0			100.0			40.0			20.0		
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor	1.00		0.98	1.00		0.98			0.99	1.00		
Frt			0.850			0.850			0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1637	3438	1458	1637	3195	1444	1606	1900	1430	1637	1827	1458
Flt Permitted	0.360			0.246			0.669			0.699		
Satd. Flow (perm)	620	3438	1424	424	3195	1413	1131	1900	1411	1203	1827	1458
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			137			197			87			105
Link Speed (k/h)		80			80			50			50	
Link Distance (m)		163.4			1424.6			147.6			715.9	
Travel Time (s)		7.4			64.1			10.6			51.5	
Confl. Peds. (#/hr)	1		2	2		1			1	1		
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	3%	5%	2%	3%	13%	3%	5%	0%	4%	3%	4%	2%
Adj. Flow (vph)	181	910	137	107	603	197	93	90	87	301	138	105
Shared Lane Traffic (%)												
Lane Group Flow (vph)	181	910	137	107	603	197	93	90	87	301	138	105
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	Perm	NA	Perm	Perm	NA	Perm
Protected Phases	5	2		1	6			8			4	
Permitted Phases	2		2	6		6	8		8	4		4
Detector Phase	5	2	2	1	6	6	8	8	8	4	4	4
Switch Phase												
Minimum Initial (s)	7.0	20.0	20.0	7.0	20.0	20.0	10.0	10.0	10.0	10.0	10.0	10.0
Minimum Split (s)	20.0	60.0	60.0	20.0	60.0	60.0	50.0	50.0	50.0	50.0	50.0	50.0
Total Split (s)	20.0	60.0	60.0	20.0	60.0	60.0	50.0	50.0	50.0	50.0	50.0	50.0
Total Split (%)	15.4%	46.2%	46.2%	15.4%	46.2%	46.2%	38.5%	38.5%	38.5%	38.5%	38.5%	38.5%
Maximum Green (s)	17.0	52.2	52.2	17.0	52.2	52.2	42.7	42.7	42.7	42.7	42.7	42.7
Yellow Time (s)	3.0	5.9	5.9	3.0	5.9	5.9	4.5	4.5	4.5	4.5	4.5	4.5
All-Red Time (s)	0.0	1.9	1.9	0.0	1.9	1.9	2.8	2.8	2.8	2.8	2.8	2.8
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	3.0	7.8	7.8	3.0	7.8	7.8	7.3	7.3	7.3	7.3	7.3	7.3
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag						
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes						
Vehicle Extension (s)	3.0	1.8	1.8	3.0	1.8	1.8	3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	Max	Max	None	Max	Max	None	None	None	None	None	None
Walk Time (s)		19.0	19.0		19.0	19.0	19.0	19.0	19.0	19.0	19.0	19.0
Flash Dont Walk (s)		14.0	14.0		14.0	14.0	14.0	14.0	14.0	14.0	14.0	14.0
Pedestrian Calls (#/hr)		0	0		0	0	0	0	0	0	0	0
Act Effct Green (s)	71.5	55.5	55.5	66.6	52.7	52.7	33.1	33.1	33.1	33.1	33.1	33.1
Actuated g/C Ratio	0.62	0.48	0.48	0.57	0.45	0.45	0.29	0.29	0.29	0.29	0.29	0.29
v/c Ratio	0.37	0.55	0.18	0.32	0.42	0.26	0.29	0.17	0.19	0.88	0.26	0.21

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Control Delay	12.8	24.4	4.1	13.1	24.1	4.2	34.5	31.4	7.2	65.3	33.1	6.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	12.8	24.4	4.1	13.1	24.1	4.2	34.5	31.4	7.2	65.3	33.1	6.8
LOS	B	C	A	B	C	A	C	C	A	E	C	A
Approach Delay		20.5			18.5			24.7			45.8	
Approach LOS		C			B			C			D	
Queue Length 50th (m)	17.6	80.2	0.0	9.9	50.6	0.0	17.1	15.9	0.0	67.7	25.2	0.0
Queue Length 95th (m)	33.5	118.6	12.1	20.8	79.7	15.3	33.3	30.5	12.1	#116.4	44.2	13.3
Internal Link Dist (m)		139.4			1400.6			123.6			691.9	
Turn Bay Length (m)	300.0		110.0	100.0		75.0	70.0		85.0	65.0		155.0
Base Capacity (vph)	537	1645	752	442	1453	750	421	707	579	447	680	608
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.34	0.55	0.18	0.24	0.42	0.26	0.22	0.13	0.15	0.67	0.20	0.17

Intersection Summary		
Area Type:	Other	
Cycle Length: 130		
Actuated Cycle Length: 115.9		
Natural Cycle: 130		
Control Type: Actuated-Uncoordinated		
Maximum v/c Ratio: 0.88		
Intersection Signal Delay: 24.9		Intersection LOS: C
Intersection Capacity Utilization 87.0%		ICU Level of Service E
Analysis Period (min) 15		
# 95th percentile volume exceeds capacity, queue may be longer.		
Queue shown is maximum after two cycles.		

Splits and Phases: 1: Bleams Road/Hamilton Road & Highway 7/8



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	181	910	137	107	603	197	93	90	87	301	138	105
Future Volume (vph)	181	910	137	107	603	197	93	90	87	301	138	105
Ideal Flow (vphpl)	1775	1900	1750	1775	1900	1750	1775	1900	1750	1775	1900	1750
Total Lost time (s)	3.0	7.8	7.8	3.0	7.8	7.8	7.3	7.3	7.3	7.3	7.3	7.3
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frpb, ped/bikes	1.00	1.00	0.98	1.00	1.00	0.98	1.00	1.00	0.99	1.00	1.00	1.00
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1637	3438	1424	1637	3195	1413	1606	1900	1412	1636	1827	1458
Flt Permitted	0.36	1.00	1.00	0.25	1.00	1.00	0.67	1.00	1.00	0.70	1.00	1.00
Satd. Flow (perm)	620	3438	1424	424	3195	1413	1131	1900	1412	1203	1827	1458
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	181	910	137	107	603	197	93	90	87	301	138	105
RTOR Reduction (vph)	0	0	71	0	0	107	0	0	62	0	0	75
Lane Group Flow (vph)	181	910	66	107	603	90	93	90	25	301	138	30
Confl. Peds. (#/hr)	1		2	2		1			1	1		
Heavy Vehicles (%)	3%	5%	2%	3%	13%	3%	5%	0%	4%	3%	4%	2%
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	Perm	NA	Perm	Perm	NA	Perm
Protected Phases	5	2		1	6			8			4	
Permitted Phases	2		2	6		6	8		8	4		4
Actuated Green, G (s)	67.1	55.4	55.4	61.7	52.7	52.7	33.1	33.1	33.1	33.1	33.1	33.1
Effective Green, g (s)	67.1	55.4	55.4	61.7	52.7	52.7	33.1	33.1	33.1	33.1	33.1	33.1
Actuated g/C Ratio	0.58	0.48	0.48	0.53	0.46	0.46	0.29	0.29	0.29	0.29	0.29	0.29
Clearance Time (s)	3.0	7.8	7.8	3.0	7.8	7.8	7.3	7.3	7.3	7.3	7.3	7.3
Vehicle Extension (s)	3.0	1.8	1.8	3.0	1.8	1.8	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	462	1647	682	320	1456	644	323	544	404	344	523	417
v/s Ratio Prot	c0.04	c0.26		0.03	0.19			0.05			0.08	
v/s Ratio Perm	0.19		0.05	0.15		0.06	0.08		0.02	c0.25		0.02
v/c Ratio	0.39	0.55	0.10	0.33	0.41	0.14	0.29	0.17	0.06	0.88	0.26	0.07
Uniform Delay, d1	11.8	21.3	16.4	14.1	21.1	18.3	32.1	30.9	30.0	39.3	31.8	30.1
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	0.6	1.3	0.3	0.6	0.9	0.5	0.5	0.1	0.1	21.1	0.3	0.1
Delay (s)	12.4	22.7	16.7	14.8	22.0	18.7	32.6	31.0	30.0	60.4	32.1	30.1
Level of Service	B	C	B	B	C	B	C	C	C	E	C	C
Approach Delay (s)		20.5			20.4			31.2			47.4	
Approach LOS		C			C			C			D	

Intersection Summary			
HCM 2000 Control Delay	26.4	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.66		
Actuated Cycle Length (s)	115.6	Sum of lost time (s)	18.1
Intersection Capacity Utilization	87.0%	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)	135	1148	3	8	800	266	0	29	5	343	27	88
Future Volume (vph)	135	1148	3	8	800	266	0	29	5	343	27	88
Ideal Flow (vphpl)	1775	1775	1775	1775	1900	1750	1775	1650	1650	1775	1650	1650
Storage Length (m)	145.0		0.0	105.0		90.0	80.0		0.0	120.0		0.0
Storage Lanes	1		0	1		1	1		0	1		0
Taper Length (m)	100.0			100.0			40.0			100.0		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor		1.00		1.00							0.99	
Frt						0.850		0.978			0.885	
Flt Protected	0.950			0.950						0.950		
Satd. Flow (prot)	1561	3212	0	1686	3252	1340	1775	1369	0	1561	1307	0
Flt Permitted	0.237			0.188						0.735		
Satd. Flow (perm)	390	3212	0	334	3252	1340	1775	1369	0	1208	1307	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)						266		5			88	
Link Speed (k/h)		80			80			80			80	
Link Distance (m)		1424.6			264.2			138.9			365.2	
Travel Time (s)		64.1			11.9			6.3			16.4	
Confl. Peds. (#/hr)			1	1			1					1
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	8%	5%	0%	0%	11%	11%	0%	21%	0%	8%	19%	8%
Adj. Flow (vph)	135	1148	3	8	800	266	0	29	5	343	27	88
Shared Lane Traffic (%)												
Lane Group Flow (vph)	135	1151	0	8	800	266	0	34	0	343	115	0
Turn Type	pm+pt	NA		pm+pt	NA	Perm	Perm	NA		Perm	NA	
Protected Phases	5	2		1	6			8			4	
Permitted Phases	2			6		6	8			4		
Detector Phase	5	2		1	6	6	8	8		4	4	
Switch Phase												
Minimum Initial (s)	7.0	20.0		7.0	20.0	20.0	10.0	10.0		10.0	10.0	
Minimum Split (s)	20.0	50.0		20.0	50.0	50.0	35.0	35.0		35.0	35.0	
Total Split (s)	20.0	50.0		20.0	50.0	50.0	35.0	35.0		35.0	35.0	
Total Split (%)	19.0%	47.6%		19.0%	47.6%	47.6%	33.3%	33.3%		33.3%	33.3%	
Maximum Green (s)	17.0	42.2		17.0	42.2	42.2	27.4	27.4		27.4	27.4	
Yellow Time (s)	3.0	5.9		3.0	5.9	5.9	5.9	5.9		5.9	5.9	
All-Red Time (s)	0.0	1.9		0.0	1.9	1.9	1.7	1.7		1.7	1.7	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Total Lost Time (s)	3.0	7.8		3.0	7.8	7.8	7.6	7.6		7.6	7.6	
Lead/Lag	Lead	Lag		Lead	Lag	Lag						
Lead-Lag Optimize?	Yes	Yes		Yes	Yes	Yes						
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	
Recall Mode	None	Max		None	Min	Min	None	None		None	None	
Walk Time (s)		16.0			16.0	16.0	16.0	16.0		16.0	16.0	
Flash Dont Walk (s)		11.0			11.0	11.0	11.0	11.0		11.0	11.0	
Pedestrian Calls (#/hr)		0			0	0	0	0		0	0	
Act Effct Green (s)	49.0	42.4		43.8	32.0	32.0		27.4		27.4	27.4	
Actuated g/C Ratio	0.56	0.49		0.50	0.37	0.37		0.31		0.31	0.31	
v/c Ratio	0.39	0.74		0.03	0.67	0.40		0.08		0.90	0.24	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Control Delay	12.5	22.0		8.6	26.6	4.6		20.5		58.4	9.7	
Queue Delay	0.0	0.0		0.0	0.0	0.0		0.0		0.0	0.0	
Total Delay	12.5	22.0		8.6	26.6	4.6		20.5		58.4	9.7	
LOS	B	C		A	C	A		C		E	A	
Approach Delay		21.0			21.0			20.5			46.1	
Approach LOS		C			C			C			D	
Queue Length 50th (m)	10.5	77.3		0.6	60.5	0.0		3.4		54.9	3.2	
Queue Length 95th (m)	19.0	126.7		2.4	84.3	15.4		11.5		#123.0	17.1	
Internal Link Dist (m)		1400.6			240.2			114.9			341.2	
Turn Bay Length (m)	145.0			105.0		90.0				120.0		
Base Capacity (vph)	448	1563		452	1577	787		434		380	471	
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	0.74		0.02	0.51	0.34		0.08		0.90	0.24	

Intersection Summary			
Area Type:	Other		
Cycle Length: 105			
Actuated Cycle Length: 87.1			
Natural Cycle: 105			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 0.90			
Intersection Signal Delay: 25.0		Intersection LOS: C	
Intersection Capacity Utilization 83.1%		ICU Level of Service E	
Analysis Period (min) 15			
# 95th percentile volume exceeds capacity, queue may be longer.			
Queue shown is maximum after two cycles.			

Splits and Phases: 2: Nafziger Road & Highway 7/8

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	135	1148	3	8	800	266	0	29	5	343	27	88
Future Volume (vph)	135	1148	3	8	800	266	0	29	5	343	27	88
Ideal Flow (vphpl)	1775	1775	1775	1775	1900	1750	1775	1650	1650	1775	1650	1650
Total Lost time (s)	3.0	7.8		3.0	7.8	7.8		7.6		7.6	7.6	
Lane Util. Factor	1.00	0.95		1.00	0.95	1.00		1.00		1.00	1.00	
Frpb, ped/bikes	1.00	1.00		1.00	1.00	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	1.00		1.00	1.00	0.85		0.98		1.00	0.89	
Flt Protected	0.95	1.00		0.95	1.00	1.00		1.00		0.95	1.00	
Satd. Flow (prot)	1561	3211		1686	3252	1340		1368		1561	1308	
Flt Permitted	0.24	1.00		0.19	1.00	1.00		1.00		0.73	1.00	
Satd. Flow (perm)	390	3211		333	3252	1340		1368		1208	1308	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	135	1148	3	8	800	266	0	29	5	343	27	88
RTOR Reduction (vph)	0	0	0	0	0	164	0	3	0	0	61	0
Lane Group Flow (vph)	135	1151	0	8	800	102	0	31	0	343	54	0
Confl. Peds. (#/hr)			1	1			1					1
Heavy Vehicles (%)	8%	5%	0%	0%	11%	11%	0%	21%	0%	8%	19%	8%
Turn Type	pm+pt	NA		pm+pt	NA	Perm	Perm	NA		Perm	NA	
Protected Phases	5	2		1	6			8			4	
Permitted Phases	2			6		6	8			4		
Actuated Green, G (s)	46.7	42.4		35.8	34.5	34.5		27.5		27.5	27.5	
Effective Green, g (s)	46.7	42.4		35.8	34.5	34.5		27.5		27.5	27.5	
Actuated g/C Ratio	0.52	0.47		0.40	0.39	0.39		0.31		0.31	0.31	
Clearance Time (s)	3.0	7.8		3.0	7.8	7.8		7.6		7.6	7.6	
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0		3.0		3.0	3.0	
Lane Grp Cap (vph)	323	1519		152	1252	515		419		370	401	
v/s Ratio Prot	c0.04	c0.36		0.00	0.25			0.02			0.04	
v/s Ratio Perm	0.17			0.02		0.08				c0.28		
v/c Ratio	0.42	0.76		0.05	0.64	0.20		0.07		0.93	0.13	
Uniform Delay, d1	12.3	19.4		16.6	22.5	18.3		22.0		30.1	22.4	
Progression Factor	1.00	1.00		1.00	1.00	1.00		1.00		1.00	1.00	
Incremental Delay, d2	0.9	3.6		0.1	1.1	0.2		0.1		28.7	0.2	
Delay (s)	13.2	23.0		16.8	23.6	18.5		22.1		58.8	22.6	
Level of Service	B	C		B	C	B		C		E	C	
Approach Delay (s)		21.9			22.3			22.1			49.7	
Approach LOS		C			C			C			D	

Intersection Summary			
HCM 2000 Control Delay	26.5	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.82		
Actuated Cycle Length (s)	89.6	Sum of lost time (s)	18.4
Intersection Capacity Utilization	83.1%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	47	31	334	134	201	497
Future Volume (vph)	47	31	334	134	201	497
Ideal Flow (vphpl)	1765	1765	1650	1650	1650	1650
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.946		0.961			
Flt Protected	0.971					0.986
Satd. Flow (prot)	1589	0	1555	0	0	1595
Flt Permitted	0.971					0.986
Satd. Flow (perm)	1589	0	1555	0	0	1595
Link Speed (k/h)	50		50			50
Link Distance (m)	280.1		715.9			178.4
Travel Time (s)	20.2		51.5			12.8
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	47	31	334	134	201	497
Shared Lane Traffic (%)						
Lane Group Flow (vph)	78	0	468	0	0	698
Sign Control	Stop		Free			Free

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 87.4%		ICU Level of Service E	
Analysis Period (min) 15			

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	47	31	334	134	201	497
Future Volume (Veh/h)	47	31	334	134	201	497
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	47	31	334	134	201	497
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	1300	401			468	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1300	401			468	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	68	95			82	
cM capacity (veh/h)	145	649			1094	

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	78	468	698
Volume Left	47	0	201
Volume Right	31	134	0
cSH	210	1700	1094
Volume to Capacity	0.37	0.28	0.18
Queue Length 95th (m)	12.9	0.0	5.4
Control Delay (s)	31.9	0.0	4.3
Lane LOS	D		A
Approach Delay (s)	31.9	0.0	4.3
Approach LOS	D		

Intersection Summary			
Average Delay	4.4		
Intersection Capacity Utilization	87.4%	ICU Level of Service	E
Analysis Period (min)	15		

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	35	2	51	31	1	26	158	272	32	27	407	214
Future Volume (vph)	35	2	51	31	1	26	158	272	32	27	407	214
Ideal Flow (vphpl)	1765	1900	1765	1900	1900	1900	1650	1650	1900	1900	1650	1650
Storage Length (m)	0.0		0.0	0.0		0.0	0.0		50.0	0.0		0.0
Storage Lanes	0		0	0		0	0		1	0		0
Taper Length (m)	0.0			7.5			0.0			0.0		
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
Frt		0.922			0.939				0.850		0.955	
Flt Protected		0.981			0.974			0.982			0.998	
Satd. Flow (prot)	0	1719	0	0	1707	0	0	1506	1615	0	1515	0
Flt Permitted		0.844			0.863			0.665			0.976	
Satd. Flow (perm)	0	1479	0	0	1513	0	0	1020	1615	0	1482	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		51			26				55		63	
Link Speed (k/h)		50			50			80			80	
Link Distance (m)		519.1			71.1			365.2			154.9	
Travel Time (s)		37.4			5.1			16.4			7.0	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	0%	0%	0%	0%	0%	4%	0%	12%	0%	0%	6%	0%
Adj. Flow (vph)	35	2	51	31	1	26	158	272	32	27	407	214
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	88	0	0	58	0	0	430	32	0	648	0
Turn Type	Perm	NA		Perm	NA		Perm	NA	Perm	Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2		2	6		
Detector Phase	4	4		8	8		2	2	2	6	6	
Switch Phase												
Minimum Initial (s)	5.0	5.0		5.0	5.0		5.0	5.0	5.0	5.0	5.0	
Minimum Split (s)	24.0	24.0		24.0	24.0		24.0	24.0	24.0	24.0	24.0	
Total Split (s)	24.0	24.0		24.0	24.0		36.0	36.0	36.0	36.0	36.0	
Total Split (%)	40.0%	40.0%		40.0%	40.0%		60.0%	60.0%	60.0%	60.0%	60.0%	
Maximum Green (s)	18.0	18.0		18.0	18.0		30.0	30.0	30.0	30.0	30.0	
Yellow Time (s)	4.0	4.0		4.0	4.0		4.0	4.0	4.0	4.0	4.0	
All-Red Time (s)	2.0	2.0		2.0	2.0		2.0	2.0	2.0	2.0	2.0	
Lost Time Adjust (s)		-2.0			-2.0			-2.0	0.0		-2.0	
Total Lost Time (s)		4.0			4.0			4.0	6.0		4.0	
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0	3.0	3.0	3.0	
Recall Mode	None	None		None	None		Max	Max	Max	Max	Max	
Walk Time (s)	7.0	7.0		7.0	7.0		7.0	7.0	7.0	7.0	7.0	
Flash Dont Walk (s)	11.0	11.0		11.0	11.0		11.0	11.0	11.0	11.0	11.0	
Pedestrian Calls (#/hr)	0	0		0	0		0	0	0	0	0	
Act Effct Green (s)		9.0			9.0			40.3	39.1		40.3	
Actuated g/C Ratio		0.18			0.18			0.79	0.77		0.79	
v/c Ratio		0.29			0.20			0.53	0.03		0.55	
Control Delay		12.0			13.0			8.5	1.0		6.5	
Queue Delay		0.0			0.0			0.0	0.0		0.0	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Total Delay		12.0			13.0			8.5	1.0		6.5	
LOS		B			B			A	A		A	
Approach Delay		12.0			13.0			8.0			6.5	
Approach LOS		B			B			A			A	
Queue Length 50th (m)		3.2			2.7			17.7	0.0		23.4	
Queue Length 95th (m)		12.1			9.9			#56.4	1.6		62.3	
Internal Link Dist (m)		495.1			47.1			341.2			130.9	
Turn Bay Length (m)									50.0			
Base Capacity (vph)		610			608			804	1248		1181	
Starvation Cap Reductn		0			0			0	0		0	
Spillback Cap Reductn		0			0			0	0		0	
Storage Cap Reductn		0			0			0	0		0	
Reduced v/c Ratio		0.14			0.10			0.53	0.03		0.55	

Intersection Summary			
Area Type:	Other		
Cycle Length: 60			
Actuated Cycle Length: 51.1			
Natural Cycle: 60			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 0.55			
Intersection Signal Delay: 7.8		Intersection LOS: A	
Intersection Capacity Utilization 83.8%		ICU Level of Service E	
Analysis Period (min) 15			
# 95th percentile volume exceeds capacity, queue may be longer.			
Queue shown is maximum after two cycles.			

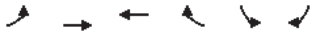
Splits and Phases: 4: Nafziger Road & East Road/Wilmot Complex Driveway

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	35	2	51	31	1	26	158	272	32	27	407	214
Future Volume (vph)	35	2	51	31	1	26	158	272	32	27	407	214
Ideal Flow (vphpl)	1765	1900	1765	1900	1900	1900	1650	1650	1900	1900	1650	1650
Total Lost time (s)		4.0			4.0			4.0	6.0		4.0	
Lane Util. Factor		1.00			1.00			1.00	1.00		1.00	
Frt		0.92			0.94			1.00	0.85		0.96	
Flt Protected		0.98			0.97			0.98	1.00		1.00	
Satd. Flow (prot)		1717			1708			1506	1615		1516	
Flt Permitted		0.84			0.86			0.66	1.00		0.98	
Satd. Flow (perm)		1479			1513			1019	1615		1483	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	35	2	51	31	1	26	158	272	32	27	407	214
RTOR Reduction (vph)	0	45	0	0	23	0	0	0	10	0	17	0
Lane Group Flow (vph)	0	43	0	0	35	0	0	430	22	0	631	0
Heavy Vehicles (%)	0%	0%	0%	0%	0%	4%	0%	12%	0%	0%	6%	0%
Turn Type	Perm	NA		Perm	NA		Perm	NA	Perm	Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2		2	6		
Actuated Green, G (s)		4.8			4.8			36.7	36.7		36.7	
Effective Green, g (s)		6.8			6.8			38.7	36.7		38.7	
Actuated g/C Ratio		0.13			0.13			0.72	0.69		0.72	
Clearance Time (s)		6.0			6.0			6.0	6.0		6.0	
Vehicle Extension (s)		3.0			3.0			3.0	3.0		3.0	
Lane Grp Cap (vph)		187			192			737	1107		1072	
v/s Ratio Prot												
v/s Ratio Perm		c0.03			0.02			0.42	0.01		c0.43	
v/c Ratio		0.23			0.18			0.58	0.02		0.59	
Uniform Delay, d1		21.0			20.9			3.5	2.7		3.6	
Progression Factor		1.00			1.00			1.00	1.00		1.00	
Incremental Delay, d2		0.6			0.5			3.4	0.0		2.4	
Delay (s)		21.6			21.3			6.9	2.7		5.9	
Level of Service		C			C			A	A		A	
Approach Delay (s)		21.6			21.3			6.6			5.9	
Approach LOS		C			C			A			A	

Intersection Summary			
HCM 2000 Control Delay	8.0	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.53		
Actuated Cycle Length (s)	53.5	Sum of lost time (s)	8.0
Intersection Capacity Utilization	83.8%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	30	77	331	33	8	8
Future Volume (vph)	30	77	331	33	8	8
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			0.988		0.932	
Flt Protected		0.986			0.976	
Satd. Flow (prot)	0	1837	1840	0	1694	0
Flt Permitted		0.986			0.976	
Satd. Flow (perm)	0	1837	1840	0	1694	0
Link Speed (k/h)		50	50		50	
Link Distance (m)		120.3	519.1		92.2	
Travel Time (s)		8.7	37.4		6.6	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	30	77	331	33	8	8
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	107	364	0	16	0
Sign Control		Free	Free		Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	38.5%	ICU Level of Service	A
Analysis Period (min)	15		



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	30	77	331	33	8	8
Future Volume (Veh/h)	30	77	331	33	8	8
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	30	77	331	33	8	8
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		None	None			
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	364				484	348
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	364				484	348
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	97				98	99
cM capacity (veh/h)	1195				528	696

Direction, Lane #	EB 1	WB 1	SB 1
Volume Total	107	364	16
Volume Left	30	0	8
Volume Right	0	33	8
cSH	1195	1700	600
Volume to Capacity	0.03	0.21	0.03
Queue Length 95th (m)	0.6	0.0	0.7
Control Delay (s)	2.4	0.0	11.2
Lane LOS	A		B
Approach Delay (s)	2.4	0.0	11.2
Approach LOS			B

Intersection Summary			
Average Delay		0.9	
Intersection Capacity Utilization		38.5%	ICU Level of Service A
Analysis Period (min)		15	

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	188	151	9	44	64	40
Future Volume (vph)	188	151	9	44	64	40
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	0.940		0.888			
Flt Protected	0.973					0.970
Satd. Flow (prot)	1704	0	1654	0	0	1807
Flt Permitted	0.973					0.970
Satd. Flow (perm)	1704	0	1654	0	0	1807
Link Speed (k/h)	50		50			50
Link Distance (m)	120.3		87.0			145.0
Travel Time (s)	8.7		6.3			10.4
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	188	151	9	44	64	40
Shared Lane Traffic (%)						
Lane Group Flow (vph)	339	0	53	0	0	104
Sign Control	Stop		Free			Free

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	38.6%		ICU Level of Service A
Analysis Period (min)	15		

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	188	151	9	44	64	40
Future Volume (Veh/h)	188	151	9	44	64	40
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	188	151	9	44	64	40
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	199	31			53	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	199	31			53	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	75	86			96	
cM capacity (veh/h)	757	1043			1553	

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	339	53	104
Volume Left	188	0	64
Volume Right	151	44	0
cSH	862	1700	1553
Volume to Capacity	0.39	0.03	0.04
Queue Length 95th (m)	15.1	0.0	1.0
Control Delay (s)	11.9	0.0	4.7
Lane LOS	B		A
Approach Delay (s)	11.9	0.0	4.7
Approach LOS	B		

Intersection Summary			
Average Delay	9.1		
Intersection Capacity Utilization	38.6%	ICU Level of Service	A
Analysis Period (min)	15		

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	0	19	0	0	84	0
Future Volume (vph)	0	19	0	0	84	0
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	0.865					
Flt Protected						0.950
Satd. Flow (prot)	1611	0	1863	0	0	1770
Flt Permitted						0.950
Satd. Flow (perm)	1611	0	1863	0	0	1770
Link Speed (k/h)	50		50			50
Link Distance (m)	87.2		30.3			87.0
Travel Time (s)	6.3		2.2			6.3
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	0	19	0	0	84	0
Shared Lane Traffic (%)						
Lane Group Flow (vph)	19	0	0	0	0	84
Sign Control	Stop		Free			Free

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	14.7%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	0	19	0	0	84	0
Future Volume (Veh/h)	0	19	0	0	84	0
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	0	19	0	0	84	0
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	168	0			0	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	168	0			0	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	100	98			95	
cM capacity (veh/h)	780	1085			1623	

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	19	0	84
Volume Left	0	0	84
Volume Right	19	0	0
cSH	1085	1700	1623
Volume to Capacity	0.02	0.00	0.05
Queue Length 95th (m)	0.4	0.0	1.3
Control Delay (s)	8.4	0.0	7.3
Lane LOS	A		A
Approach Delay (s)	8.4	0.0	7.3
Approach LOS	A		

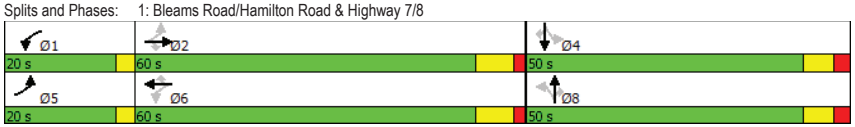
Intersection Summary			
Average Delay	7.5		
Intersection Capacity Utilization	14.7%	ICU Level of Service	A
Analysis Period (min)	15		

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	70	858	132	71	1084	202	197	110	111	280	101	170
Future Volume (vph)	70	858	132	71	1084	202	197	110	111	280	101	170
Ideal Flow (vphpl)	1775	1900	1750	1775	1900	1750	1775	1900	1750	1775	1900	1750
Storage Length (m)	300.0		110.0	100.0		75.0	70.0		85.0	65.0		155.0
Storage Lanes	1		1	1		1	1		1	1		1
Taper Length (m)	40.0			100.0			40.0			20.0		
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor	1.00		0.98	1.00		0.97	1.00		0.99	1.00		0.99
Frt			0.850			0.850			0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1637	3438	1458	1637	3195	1444	1606	1900	1430	1637	1827	1458
Flt Permitted	0.177			0.266			0.692			0.686		
Satd. Flow (perm)	305	3438	1426	458	3195	1404	1169	1900	1411	1181	1827	1439
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			132			170			111			170
Link Speed (k/h)		80			80			50			50	
Link Distance (m)		163.4			1424.6			147.6			715.9	
Travel Time (s)		7.4			64.1			10.6			51.5	
Confl. Peds. (#/hr)	4		1	1		4	1		1	1		1
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	3%	5%	2%	3%	13%	3%	5%	0%	4%	3%	4%	2%
Adj. Flow (vph)	70	858	132	71	1084	202	197	110	111	280	101	170
Shared Lane Traffic (%)												
Lane Group Flow (vph)	70	858	132	71	1084	202	197	110	111	280	101	170
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	Perm	NA	Perm	Perm	NA	Perm
Protected Phases	5	2		1	6			8			4	
Permitted Phases	2		2	6		6	8		8	4		4
Detector Phase	5	2	2	1	6	6	8	8	8	4	4	4
Switch Phase												
Minimum Initial (s)	7.0	20.0	20.0	7.0	20.0	20.0	10.0	10.0	10.0	10.0	10.0	10.0
Minimum Split (s)	20.0	60.0	60.0	20.0	60.0	60.0	50.0	50.0	50.0	50.0	50.0	50.0
Total Split (s)	20.0	60.0	60.0	20.0	60.0	60.0	50.0	50.0	50.0	50.0	50.0	50.0
Total Split (%)	15.4%	46.2%	46.2%	15.4%	46.2%	46.2%	38.5%	38.5%	38.5%	38.5%	38.5%	38.5%
Maximum Green (s)	17.0	52.2	52.2	17.0	52.2	52.2	42.7	42.7	42.7	42.7	42.7	42.7
Yellow Time (s)	3.0	5.9	5.9	3.0	5.9	5.9	4.5	4.5	4.5	4.5	4.5	4.5
All-Red Time (s)	0.0	1.9	1.9	0.0	1.9	1.9	2.8	2.8	2.8	2.8	2.8	2.8
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	3.0	7.8	7.8	3.0	7.8	7.8	7.3	7.3	7.3	7.3	7.3	7.3
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag						
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes						
Vehicle Extension (s)	3.0	1.8	1.8	3.0	1.8	1.8	3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	Max	Max	None	Max	Max	None	None	None	None	None	None
Walk Time (s)		19.0	19.0		19.0	19.0	19.0	19.0	19.0	19.0	19.0	19.0
Flash Dont Walk (s)		14.0	14.0		14.0	14.0	14.0	14.0	14.0	14.0	14.0	14.0
Pedestrian Calls (#/hr)		0	0		0	0	0	0	0	0	0	0
Act Effct Green (s)	64.2	53.1	53.1	64.2	53.1	53.1	29.9	29.9	29.9	29.9	29.9	29.9
Actuated g/C Ratio	0.60	0.50	0.50	0.60	0.50	0.50	0.28	0.28	0.28	0.28	0.28	0.28
v/c Ratio	0.25	0.50	0.17	0.20	0.68	0.26	0.60	0.21	0.23	0.85	0.20	0.32

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Control Delay	12.2	21.6	4.1	11.3	25.9	5.7	41.6	30.1	6.5	59.7	30.0	6.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	12.2	21.6	4.1	11.3	25.9	5.7	41.6	30.1	6.5	59.7	30.0	6.0
LOS	B	C	A	B	C	A	D	C	A	E	C	A
Approach Delay		18.8			22.1			29.2			37.7	
Approach LOS		B			C			C			D	
Queue Length 50th (m)	5.7	67.1	0.0	5.8	96.3	3.7	37.8	18.6	0.0	58.5	17.0	0.0
Queue Length 95th (m)	14.8	107.7	12.0	14.9	153.1	20.1	63.6	33.4	12.9	94.6	31.1	15.3
Internal Link Dist (m)		139.4			1400.6			123.6			691.9	
Turn Bay Length (m)	300.0		110.0	100.0		75.0	70.0		85.0	65.0		155.0
Base Capacity (vph)	405	1708	775	475	1587	783	475	772	639	480	742	685
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.17	0.50	0.17	0.15	0.68	0.26	0.41	0.14	0.17	0.58	0.14	0.25

Intersection Summary			
Area Type:	Other		
Cycle Length: 130			
Actuated Cycle Length: 106.8			
Natural Cycle: 130			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 0.85			
Intersection Signal Delay: 24.5		Intersection LOS: C	
Intersection Capacity Utilization 75.1%		ICU Level of Service D	
Analysis Period (min) 15			

Splits and Phases: 1: Bleams Road/Hamilton Road & Highway 7/8



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	70	858	132	71	1084	202	197	110	111	280	101	170
Future Volume (vph)	70	858	132	71	1084	202	197	110	111	280	101	170
Ideal Flow (vphpl)	1775	1900	1750	1775	1900	1750	1775	1900	1750	1775	1900	1750
Total Lost time (s)	3.0	7.8	7.8	3.0	7.8	7.8	7.3	7.3	7.3	7.3	7.3	7.3
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frpb, ped/bikes	1.00	1.00	0.98	1.00	1.00	0.97	1.00	1.00	0.99	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	1.00	1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1637	3438	1427	1637	3195	1406	1605	1900	1412	1636	1827	1439
Flt Permitted	0.18	1.00	1.00	0.27	1.00	1.00	0.69	1.00	1.00	0.69	1.00	1.00
Satd. Flow (perm)	306	3438	1427	458	3195	1406	1168	1900	1412	1181	1827	1439
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	70	858	132	71	1084	202	197	110	111	280	101	170
RTOR Reduction (vph)	0	0	67	0	0	86	0	0	80	0	0	123
Lane Group Flow (vph)	70	858	65	71	1084	116	197	110	31	280	101	47
Confl. Peds. (#/hr)	4		1	1		4	1		1	1		1
Heavy Vehicles (%)	3%	5%	2%	3%	13%	3%	5%	0%	4%	3%	4%	2%
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	Perm	NA	Perm	Perm	NA	Perm
Protected Phases	5	2		1	6			8			4	
Permitted Phases	2		2	6		6	8		8	4		4
Actuated Green, G (s)	59.3	53.1	53.1	59.3	53.1	53.1	29.9	29.9	29.9	29.9	29.9	29.9
Effective Green, g (s)	59.3	53.1	53.1	59.3	53.1	53.1	29.9	29.9	29.9	29.9	29.9	29.9
Actuated g/C Ratio	0.55	0.49	0.49	0.55	0.49	0.49	0.28	0.28	0.28	0.28	0.28	0.28
Clearance Time (s)	3.0	7.8	7.8	3.0	7.8	7.8	7.3	7.3	7.3	7.3	7.3	7.3
Vehicle Extension (s)	3.0	1.8	1.8	3.0	1.8	1.8	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	246	1701	706	321	1581	695	325	529	393	329	509	400
v/s Ratio Prot	c0.02	0.25		0.01	c0.34			0.06			0.06	
v/s Ratio Perm	0.14		0.05	0.11		0.08	0.17		0.02	c0.24		0.03
v/c Ratio	0.28	0.50	0.09	0.22	0.69	0.17	0.61	0.21	0.08	0.85	0.20	0.12
Uniform Delay, d1	12.9	18.2	14.3	11.8	20.7	14.9	33.6	29.6	28.5	36.6	29.5	28.9
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	0.6	1.1	0.3	0.4	2.4	0.5	3.2	0.2	0.1	18.6	0.2	0.1
Delay (s)	13.5	19.3	14.6	12.1	23.2	15.4	36.8	29.8	28.6	55.2	29.7	29.0
Level of Service	B	B	B	B	C	B	D	C	C	E	C	C
Approach Delay (s)		18.3			21.4			32.8			42.4	
Approach LOS		B			C			C			D	

Intersection Summary					
HCM 2000 Control Delay	25.3	HCM 2000 Level of Service		C	
HCM 2000 Volume to Capacity ratio	0.71				
Actuated Cycle Length (s)	107.3	Sum of lost time (s)		18.1	
Intersection Capacity Utilization	75.1%	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)	122	1110	1	6	1180	338	1	29	6	203	37	182
Future Volume (vph)	122	1110	1	6	1180	338	1	29	6	203	37	182
Ideal Flow (vphpl)	1775	1775	1775	1775	1900	1750	1775	1650	1650	1775	1650	1650
Storage Length (m)	145.0		0.0	105.0		90.0	80.0		0.0	120.0		0.0
Storage Lanes	1		0	1		1	1		0	1		0
Taper Length (m)	100.0			100.0			40.0			100.0		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor	1.00					0.98						
Frt						0.850		0.974			0.875	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1561	3212	0	1686	3252	1340	1686	1369	0	1561	1314	0
Flt Permitted	0.129			0.241			0.559			0.734		
Satd. Flow (perm)	212	3212	0	428	3252	1311	992	1369	0	1206	1314	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)						338		6			182	
Link Speed (k/h)		80			80			80			80	
Link Distance (m)		1424.6			264.2			138.9			365.2	
Travel Time (s)		64.1			11.9			6.3			16.4	
Confl. Peds. (#/hr)	1					1						
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	8%	5%	0%	0%	11%	11%	0%	21%	0%	8%	19%	8%
Adj. Flow (vph)	122	1110	1	6	1180	338	1	29	6	203	37	182
Shared Lane Traffic (%)												
Lane Group Flow (vph)	122	1111	0	6	1180	338	1	35	0	203	219	0
Turn Type	pm+pt	NA		pm+pt	NA	Perm	Perm	NA		Perm	NA	
Protected Phases	5	2		1	6			8			4	
Permitted Phases	2			6		6	8			4		
Detector Phase	5	2		1	6	6	8	8		4	4	
Switch Phase												
Minimum Initial (s)	7.0	20.0		7.0	20.0	20.0	10.0	10.0		10.0	10.0	
Minimum Split (s)	20.0	50.0		20.0	50.0	50.0	35.0	35.0		35.0	35.0	
Total Split (s)	20.0	50.0		20.0	50.0	50.0	35.0	35.0		35.0	35.0	
Total Split (%)	19.0%	47.6%		19.0%	47.6%	47.6%	33.3%	33.3%		33.3%	33.3%	
Maximum Green (s)	17.0	42.2		17.0	42.2	42.2	27.4	27.4		27.4	27.4	
Yellow Time (s)	3.0	5.9		3.0	5.9	5.9	5.9	5.9		5.9	5.9	
All-Red Time (s)	0.0	1.9		0.0	1.9	1.9	1.7	1.7		1.7	1.7	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Total Lost Time (s)	3.0	7.8		3.0	7.8	7.8	7.6	7.6		7.6	7.6	
Lead/Lag	Lead	Lag		Lead	Lag	Lag						
Lead-Lag Optimize?	Yes	Yes		Yes	Yes	Yes						
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	
Recall Mode	None	Max		None	Min	Min	None	None		None	None	
Walk Time (s)		16.0			16.0	16.0	16.0	16.0		16.0	16.0	
Flash Dont Walk (s)		11.0			11.0	11.0	11.0	11.0		11.0	11.0	
Pedestrian Calls (#/hr)		0			0	0	0	0		0	0	
Act Effct Green (s)	55.8	49.2		50.3	38.2	38.2	19.3	19.3		19.3	19.3	
Actuated g/C Ratio	0.65	0.57		0.58	0.44	0.44	0.22	0.22		0.22	0.22	
v/c Ratio	0.42	0.60		0.02	0.82	0.44	0.00	0.11		0.75	0.50	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Control Delay	11.3	15.2		7.2	27.8	4.1	27.0	24.9		49.9	11.8	
Queue Delay	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Total Delay	11.3	15.2		7.2	27.8	4.1	27.0	24.9		49.9	11.8	
LOS	B	B		A	C	A	C	C		D	B	
Approach Delay		14.9			22.5			24.9			30.1	
Approach LOS		B			C			C			C	
Queue Length 50th (m)	7.2	58.5		0.3	90.2	0.0	0.2	4.1		33.8	5.3	
Queue Length 95th (m)	17.0	118.4		2.0	#150.5	16.9	1.5	12.6		63.0	26.4	
Internal Link Dist (m)		1400.6			240.2			114.9			341.2	
Turn Bay Length (m)	145.0			105.0		90.0	80.0			120.0		
Base Capacity (vph)	410	1839		532	1631	826	323	450		392	550	
Starvation Cap Reductn	0	0		0	0	0	0	0		0	0	
Spillback Cap Reductn	0	0		0	0	0	0	0		0	0	
Storage Cap Reductn	0	0		0	0	0	0	0		0	0	
Reduced v/c Ratio	0.30	0.60		0.01	0.72	0.41	0.00	0.08		0.52	0.40	

Intersection Summary		
Area Type:	Other	
Cycle Length: 105		
Actuated Cycle Length: 86		
Natural Cycle: 105		
Control Type: Actuated-Uncoordinated		
Maximum v/c Ratio: 0.82		
Intersection Signal Delay: 20.6		Intersection LOS: C
Intersection Capacity Utilization 74.7%		ICU Level of Service D
Analysis Period (min) 15		
# 95th percentile volume exceeds capacity, queue may be longer.		
Queue shown is maximum after two cycles.		

Splits and Phases: 2: Nafziger Road & Highway 7/8

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	122	1110	1	6	1180	338	1	29	6	203	37	182
Future Volume (vph)	122	1110	1	6	1180	338	1	29	6	203	37	182
Ideal Flow (vphpl)	1775	1775	1775	1775	1900	1750	1775	1650	1650	1775	1650	1650
Total Lost time (s)	3.0	7.8		3.0	7.8	7.8	7.6	7.6		7.6	7.6	
Lane Util. Factor	1.00	0.95		1.00	0.95	1.00	1.00	1.00		1.00	1.00	
Frpb, ped/bikes	1.00	1.00		1.00	1.00	0.98	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	1.00	
Frt	1.00	1.00		1.00	1.00	0.85	1.00	0.97		1.00	0.88	
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1561	3212		1686	3252	1311	1686	1369		1561	1315	
Flt Permitted	0.13	1.00		0.24	1.00	1.00	0.56	1.00		0.73	1.00	
Satd. Flow (perm)	213	3212		427	3252	1311	993	1369		1207	1315	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	122	1110	1	6	1180	338	1	29	6	203	37	182
RTOR Reduction (vph)	0	0	0	0	0	181	0	5	0	0	142	0
Lane Group Flow (vph)	122	1111	0	6	1180	157	1	30	0	203	77	0
Confl. Peds. (#/hr)	1					1						
Heavy Vehicles (%)	8%	5%	0%	0%	11%	11%	0%	21%	0%	8%	19%	8%
Turn Type	pm+pt	NA		pm+pt	NA	Perm	Perm	NA		Perm	NA	
Protected Phases	5	2		1	6			8			4	
Permitted Phases	2			6		6	8			4		
Actuated Green, G (s)	53.4	49.2		42.0	40.8	40.8	19.3	19.3		19.3	19.3	
Effective Green, g (s)	53.4	49.2		42.0	40.8	40.8	19.3	19.3		19.3	19.3	
Actuated g/C Ratio	0.61	0.56		0.48	0.46	0.46	0.22	0.22		0.22	0.22	
Clearance Time (s)	3.0	7.8		3.0	7.8	7.8	7.6	7.6		7.6	7.6	
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	275	1793		220	1506	607	217	299		264	288	
v/s Ratio Prot	c0.05	c0.35		0.00	c0.36			0.02			0.06	
v/s Ratio Perm	0.22			0.01		0.12	0.00			c0.17		
v/c Ratio	0.44	0.62		0.03	0.78	0.26	0.00	0.10		0.77	0.27	
Uniform Delay, d1	10.7	13.1		12.1	19.9	14.4	26.9	27.5		32.3	28.5	
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Incremental Delay, d2	1.1	1.6		0.1	2.7	0.2	0.0	0.1		12.6	0.5	
Delay (s)	11.9	14.8		12.2	22.7	14.6	26.9	27.6		44.9	29.0	
Level of Service	B	B		B	C	B	C	C		D	C	
Approach Delay (s)		14.5			20.9			27.6			36.7	
Approach LOS		B			C			C			D	

Intersection Summary			
HCM 2000 Control Delay	20.6	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.73		
Actuated Cycle Length (s)	88.1	Sum of lost time (s)	18.4
Intersection Capacity Utilization	74.7%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	128	104	354	28	34	423
Future Volume (vph)	128	104	354	28	34	423
Ideal Flow (vphpl)	1765	1765	1650	1650	1650	1650
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.939		0.990			
Flt Protected	0.973					0.996
Satd. Flow (prot)	1581	0	1601	0	0	1611
Flt Permitted	0.973					0.996
Satd. Flow (perm)	1581	0	1601	0	0	1611
Link Speed (k/h)	50		50			50
Link Distance (m)	280.1		715.9			178.4
Travel Time (s)	20.2		51.5			12.8
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	128	104	354	28	34	423
Shared Lane Traffic (%)						
Lane Group Flow (vph)	232	0	382	0	0	457
Sign Control	Stop		Free			Free

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	75.7%	ICU Level of Service	D
Analysis Period (min)	15		

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	128	104	354	28	34	423
Future Volume (Veh/h)	128	104	354	28	34	423
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	128	104	354	28	34	423
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	859	368			382	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	859	368			382	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	60	85			97	
cM capacity (veh/h)	317	677			1176	

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	232	382	457
Volume Left	128	0	34
Volume Right	104	28	0
cSH	417	1700	1176
Volume to Capacity	0.56	0.22	0.03
Queue Length 95th (m)	26.4	0.0	0.7
Control Delay (s)	24.0	0.0	0.9
Lane LOS	C		A
Approach Delay (s)	24.0	0.0	0.9
Approach LOS	C		

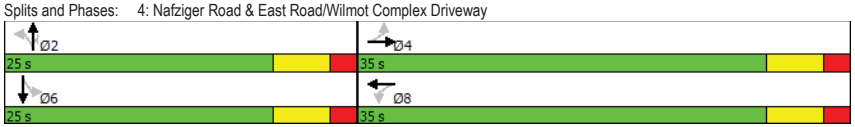
Intersection Summary			
Average Delay	5.6		
Intersection Capacity Utilization	75.7%	ICU Level of Service	D
Analysis Period (min)	15		

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	279	1	173	51	0	51	74	415	94	45	249	46
Future Volume (vph)	279	1	173	51	0	51	74	415	94	45	249	46
Ideal Flow (vphpl)	1765	1900	1765	1900	1900	1900	1650	1650	1900	1900	1650	1650
Storage Length (m)	0.0		0.0	0.0		0.0	0.0		50.0	0.0		0.0
Storage Lanes	0		0	0		0	0		1	0		0
Taper Length (m)	0.0			7.5			0.0			0.0		
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
Frt		0.948			0.932				0.850		0.982	
Flt Protected		0.970			0.976			0.992			0.993	
Satd. Flow (prot)	0	1747	0	0	1711	0	0	1596	1615	0	1548	0
Flt Permitted		0.753			0.759			0.907			0.867	
Satd. Flow (perm)	0	1356	0	0	1331	0	0	1459	1615	0	1352	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		77			55				94		14	
Link Speed (k/h)		50			50			80			80	
Link Distance (m)		510.3			56.6			365.2			154.9	
Travel Time (s)		36.7			4.1			16.4			7.0	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	0%	0%	0%	0%	0%	2%	0%	3%	0%	0%	5%	2%
Adj. Flow (vph)	279	1	173	51	0	51	74	415	94	45	249	46
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	453	0	0	102	0	0	489	94	0	340	0
Turn Type	Perm	NA		Perm	NA		Perm	NA	Perm	Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2		2	6		
Detector Phase	4	4		8	8		2	2	2	6	6	
Switch Phase												
Minimum Initial (s)	5.0	5.0		5.0	5.0		5.0	5.0	5.0	5.0	5.0	
Minimum Split (s)	24.0	24.0		24.0	24.0		24.0	24.0	24.0	24.0	24.0	
Total Split (s)	35.0	35.0		35.0	35.0		25.0	25.0	25.0	25.0	25.0	
Total Split (%)	58.3%	58.3%		58.3%	58.3%		41.7%	41.7%	41.7%	41.7%	41.7%	
Maximum Green (s)	29.0	29.0		29.0	29.0		19.0	19.0	19.0	19.0	19.0	
Yellow Time (s)	4.0	4.0		4.0	4.0		4.0	4.0	4.0	4.0	4.0	
All-Red Time (s)	2.0	2.0		2.0	2.0		2.0	2.0	2.0	2.0	2.0	
Lost Time Adjust (s)		-2.0			-2.0			-2.0	-2.0		-2.0	
Total Lost Time (s)		4.0			4.0			4.0	4.0		4.0	
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0	3.0	3.0	3.0	
Recall Mode	None	None		None	None		Max	Max	Max	Max	Max	
Walk Time (s)	7.0	7.0		7.0	7.0		7.0	7.0	7.0	7.0	7.0	
Flash Dont Walk (s)	11.0	11.0		11.0	11.0		11.0	11.0	11.0	11.0	11.0	
Pedestrian Calls (#/hr)	0	0		0	0		0	0	0	0	0	
Act Effct Green (s)		21.2			21.2			21.4	21.4		21.4	
Actuated g/C Ratio		0.42			0.42			0.42	0.42		0.42	
v/c Ratio		0.74			0.17			0.80	0.13		0.59	
Control Delay		17.9			5.2			28.9	4.1		18.9	
Queue Delay		0.0			0.0			0.0	0.0		0.0	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Total Delay		17.9			5.2			28.9	4.1		18.9	
LOS		B			A			C	A		B	
Approach Delay		17.9			5.2			24.9			18.9	
Approach LOS		B			A			C			B	
Queue Length 50th (m)		27.3			2.5			38.3	0.0		22.4	
Queue Length 95th (m)		54.7			8.9			#109.3	8.0		#68.1	
Internal Link Dist (m)		486.3			32.6			341.2			130.9	
Turn Bay Length (m)									50.0			
Base Capacity (vph)		872			848			614	734		577	
Starvation Cap Reductn		0			0			0	0		0	
Spillback Cap Reductn		0			0			0	0		0	
Storage Cap Reductn		0			0			0	0		0	
Reduced v/c Ratio		0.52			0.12			0.80	0.13		0.59	

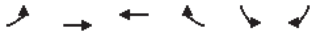
Intersection Summary			
Area Type:	Other		
Cycle Length: 60			
Actuated Cycle Length: 50.7			
Natural Cycle: 55			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 0.80			
Intersection Signal Delay: 20.0		Intersection LOS: C	
Intersection Capacity Utilization 93.8%		ICU Level of Service F	
Analysis Period (min) 15			
# 95th percentile volume exceeds capacity, queue may be longer.			
Queue shown is maximum after two cycles.			

Splits and Phases: 4: Nafziger Road & East Road/Wilmot Complex Driveway



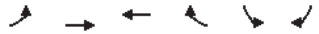
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	279	1	173	51	0	51	74	415	94	45	249	46
Future Volume (vph)	279	1	173	51	0	51	74	415	94	45	249	46
Ideal Flow (vphpl)	1765	1900	1765	1900	1900	1900	1650	1650	1900	1900	1650	1650
Total Lost time (s)		4.0			4.0			4.0	4.0		4.0	
Lane Util. Factor		1.00			1.00			1.00	1.00		1.00	
Frt		0.95			0.93			1.00	0.85		0.98	
Flt Protected		0.97			0.98			0.99	1.00		0.99	
Satd. Flow (prot)		1748			1711			1597	1615		1548	
Flt Permitted		0.75			0.76			0.91	1.00		0.87	
Satd. Flow (perm)		1357			1331			1460	1615		1351	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	279	1	173	51	0	51	74	415	94	45	249	46
RTOR Reduction (vph)	0	45	0	0	32	0	0	0	54	0	8	0
Lane Group Flow (vph)	0	408	0	0	70	0	0	489	40	0	332	0
Heavy Vehicles (%)	0%	0%	0%	0%	0%	2%	0%	3%	0%	0%	5%	2%
Turn Type	Perm	NA		Perm	NA		Perm	NA	Perm	Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2		2	6		
Actuated Green, G (s)		19.2			19.2			19.3	19.3		19.3	
Effective Green, g (s)		21.2			21.2			21.3	21.3		21.3	
Actuated g/C Ratio		0.42			0.42			0.42	0.42		0.42	
Clearance Time (s)		6.0			6.0			6.0	6.0		6.0	
Vehicle Extension (s)		3.0			3.0			3.0	3.0		3.0	
Lane Grp Cap (vph)		569			558			615	681		569	
v/s Ratio Prot												
v/s Ratio Perm		c0.30			0.05			c0.34	0.02		0.25	
v/c Ratio		0.72			0.13			0.80	0.06		0.58	
Uniform Delay, d1		12.2			9.0			12.7	8.7		11.2	
Progression Factor		1.00			1.00			1.00	1.00		1.00	
Incremental Delay, d2		4.3			0.1			10.2	0.2		4.3	
Delay (s)		16.5			9.1			22.9	8.8		15.5	
Level of Service		B			A			C	A		B	
Approach Delay (s)		16.5			9.1			20.7			15.5	
Approach LOS		B			A			C			B	

Intersection Summary			
HCM 2000 Control Delay	17.4	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.76		
Actuated Cycle Length (s)	50.5	Sum of lost time (s)	8.0
Intersection Capacity Utilization	93.8%	ICU Level of Service	F
Analysis Period (min)	15		
c Critical Lane Group			



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	6	410	108	11	41	41
Future Volume (vph)	6	410	108	11	41	41
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			0.988		0.932	
Flt Protected		0.999			0.976	
Satd. Flow (prot)	0	1861	1840	0	1694	0
Flt Permitted		0.999			0.976	
Satd. Flow (perm)	0	1861	1840	0	1694	0
Link Speed (k/h)		50	50		50	
Link Distance (m)		129.1	510.3		89.7	
Travel Time (s)		9.3	36.7		6.5	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	6	410	108	11	41	41
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	416	119	0	82	0
Sign Control		Free	Free		Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 37.8%		ICU Level of Service A	
Analysis Period (min) 15			



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	6	410	108	11	41	41
Future Volume (Veh/h)	6	410	108	11	41	41
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	6	410	108	11	41	41
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		None	None			
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	119				536	114
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	119				536	114
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	100				92	96
cM capacity (veh/h)	1469				504	939

Direction, Lane #	EB 1	WB 1	SB 1
Volume Total	416	119	82
Volume Left	6	0	41
Volume Right	0	11	41
cSH	1469	1700	656
Volume to Capacity	0.00	0.07	0.13
Queue Length 95th (m)	0.1	0.0	3.4
Control Delay (s)	0.1	0.0	11.3
Lane LOS	A		B
Approach Delay (s)	0.1	0.0	11.3
Approach LOS			B

Intersection Summary			
Average Delay	1.6		
Intersection Capacity Utilization	37.8%	ICU Level of Service	A
Analysis Period (min)	15		

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	61	68	28	232	184	7
Future Volume (vph)	61	68	28	232	184	7
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	0.929		0.880			
Flt Protected	0.977					0.954
Satd. Flow (prot)	1691	0	1639	0	0	1777
Flt Permitted	0.977					0.954
Satd. Flow (perm)	1691	0	1639	0	0	1777
Link Speed (k/h)	50		50			50
Link Distance (m)	129.1		88.3			154.4
Travel Time (s)	9.3		6.4			11.1
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	61	68	28	232	184	7
Shared Lane Traffic (%)						
Lane Group Flow (vph)	129	0	260	0	0	191
Sign Control	Stop		Free			Free

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	43.9%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	61	68	28	232	184	7
Future Volume (Veh/h)	61	68	28	232	184	7
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	61	68	28	232	184	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)						
pX, platoon unblocked						
vC, conflicting volume	519	144			260	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	519	144			260	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	86	92			86	
cM capacity (veh/h)	444	903			1304	

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	129	260	191
Volume Left	61	0	184
Volume Right	68	232	0
cSH	607	1700	1304
Volume to Capacity	0.21	0.15	0.14
Queue Length 95th (m)	6.4	0.0	3.9
Control Delay (s)	12.5	0.0	8.0
Lane LOS	B		A
Approach Delay (s)	12.5	0.0	8.0
Approach LOS	B		

Intersection Summary			
Average Delay	5.4		
Intersection Capacity Utilization	43.9%	ICU Level of Service	A
Analysis Period (min)	15		

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	0	82	0	0	21	0
Future Volume (vph)	0	82	0	0	21	0
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	0.865					
Flt Protected						0.950
Satd. Flow (prot)	1611	0	1863	0	0	1770
Flt Permitted						0.950
Satd. Flow (perm)	1611	0	1863	0	0	1770
Link Speed (k/h)	50		50			50
Link Distance (m)	106.3		29.7			88.3
Travel Time (s)	7.7		2.1			6.4
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	0	82	0	0	21	0
Shared Lane Traffic (%)						
Lane Group Flow (vph)	82	0	0	0	0	21
Sign Control	Stop		Free			Free

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	15.1%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	0	82	0	0	21	0
Future Volume (Veh/h)	0	82	0	0	21	0
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	0	82	0	0	21	0
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	42	0			0	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	42	0			0	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	100	92			99	
cM capacity (veh/h)	957	1085			1623	

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	82	0	21
Volume Left	0	0	21
Volume Right	82	0	0
cSH	1085	1700	1623
Volume to Capacity	0.08	0.00	0.01
Queue Length 95th (m)	2.0	0.0	0.3
Control Delay (s)	8.6	0.0	7.2
Lane LOS	A		A
Approach Delay (s)	8.6	0.0	7.2
Approach LOS	A		

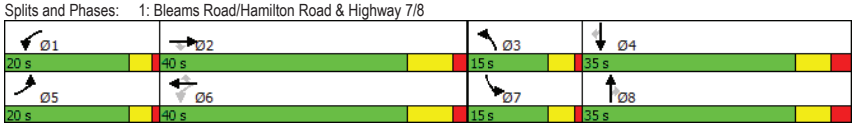
Intersection Summary			
Average Delay	8.3		
Intersection Capacity Utilization	15.1%	ICU Level of Service	A
Analysis Period (min)	15		

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	181	910	137	107	603	197	93	90	88	301	138	105
Future Volume (vph)	181	910	137	107	603	197	93	90	88	301	138	105
Ideal Flow (vphpl)	1775	1900	1750	1775	1900	1750	1775	1900	1750	1775	1900	1750
Storage Length (m)	300.0		110.0	100.0		75.0	70.0		85.0	55.0		155.0
Storage Lanes	2		1	1		1	2		1	2		1
Taper Length (m)	40.0			40.0			40.0			40.0		
Lane Util. Factor	0.97	0.95	1.00	1.00	0.95	1.00	0.97	1.00	1.00	0.97	1.00	1.00
Ped Bike Factor	1.00		0.98	1.00		0.98			0.99	1.00		
Frt			0.850			0.850			0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	3176	3438	1458	1637	3195	1444	3116	1900	1430	3176	1827	1458
Flt Permitted	0.950			0.236			0.950			0.950		
Satd. Flow (perm)	3174	3438	1424	406	3195	1413	3116	1900	1412	3171	1827	1458
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			137			197			132			132
Link Speed (k/h)		80			80			50			50	
Link Distance (m)		163.4			1398.3			147.6			715.9	
Travel Time (s)		7.4			62.9			10.6			51.5	
Confl. Peds. (#/hr)	1		2	2		1			1	1		
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	3%	5%	2%	3%	13%	3%	5%	0%	4%	3%	4%	2%
Adj. Flow (vph)	181	910	137	107	603	197	93	90	88	301	138	105
Shared Lane Traffic (%)												
Lane Group Flow (vph)	181	910	137	107	603	197	93	90	88	301	138	105
Turn Type	Prot	NA	Perm	pm+pt	NA	Perm	Prot	NA	Perm	Prot	NA	Perm
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases			2	6		6			8			4
Detector Phase	5	2	2	1	6	6	3	8	8	7	4	4
Switch Phase												
Minimum Initial (s)	7.0	20.0	20.0	7.0	20.0	20.0	5.0	10.0	10.0	5.0	10.0	10.0
Minimum Split (s)	20.0	40.0	40.0	20.0	40.0	40.0	9.5	35.0	35.0	9.5	35.0	35.0
Total Split (s)	20.0	40.0	40.0	20.0	40.0	40.0	15.0	35.0	35.0	15.0	35.0	35.0
Total Split (%)	18.2%	36.4%	36.4%	18.2%	36.4%	36.4%	13.6%	31.8%	31.8%	13.6%	31.8%	31.8%
Maximum Green (s)	16.0	32.2	32.2	16.0	32.2	32.2	10.5	27.7	27.7	10.5	27.7	27.7
Yellow Time (s)	3.0	5.9	5.9	3.0	5.9	5.9	3.5	4.5	4.5	3.5	4.5	4.5
All-Red Time (s)	1.0	1.9	1.9	1.0	1.9	1.9	1.0	2.8	2.8	1.0	2.8	2.8
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.0	7.8	7.8	4.0	7.8	7.8	4.5	7.3	7.3	4.5	7.3	7.3
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	1.8	1.8	3.0	1.8	1.8	3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	Max	Max	None	Max	Max	None	None	None	None	None	None
Walk Time (s)		19.0	19.0		19.0	19.0		19.0	19.0		19.0	19.0
Flash Dont Walk (s)		14.0	14.0		14.0	14.0		14.0	14.0		14.0	14.0
Pedestrian Calls (#/hr)		0	0		0	0		0	0		0	0
Act Effct Green (s)	10.4	37.4	37.4	45.4	33.1	33.1	8.1	11.8	11.8	10.5	16.5	16.5
Actuated g/C Ratio	0.12	0.42	0.42	0.51	0.37	0.37	0.09	0.13	0.13	0.12	0.18	0.18
v/c Ratio	0.49	0.63	0.20	0.33	0.51	0.30	0.33	0.36	0.29	0.81	0.41	0.28

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Control Delay	42.1	24.6	4.6	12.4	24.6	4.8	42.2	40.0	4.7	57.4	38.9	5.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	42.1	24.6	4.6	12.4	24.6	4.8	42.2	40.0	4.7	57.4	38.9	5.8
LOS	D	C	A	B	C	A	D	D	A	E	D	A
Approach Delay		24.9			18.8			29.3			42.7	
Approach LOS		C			B			C			D	
Queue Length 50th (m)	15.6	66.7	0.0	7.7	42.0	0.0	8.0	15.0	0.0	27.0	22.9	0.0
Queue Length 95th (m)	27.9	105.6	12.4	17.8	69.3	15.1	16.8	30.3	5.3	#55.5	43.9	9.4
Internal Link Dist (m)		139.4			1374.3			123.6			691.9	
Turn Bay Length (m)	300.0		110.0	100.0		75.0	70.0		85.0	55.0		155.0
Base Capacity (vph)	568	1435	674	451	1180	646	366	589	529	373	566	543
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.32	0.63	0.20	0.24	0.51	0.30	0.25	0.15	0.17	0.81	0.24	0.19

Intersection Summary		
Area Type:	Other	
Cycle Length: 110		
Actuated Cycle Length: 89.6		
Natural Cycle: 105		
Control Type: Actuated-Uncoordinated		
Maximum v/c Ratio: 0.81		
Intersection Signal Delay: 26.7		Intersection LOS: C
Intersection Capacity Utilization 71.7%		ICU Level of Service C
Analysis Period (min) 15		
# 95th percentile volume exceeds capacity, queue may be longer.		
Queue shown is maximum after two cycles.		

Splits and Phases: 1: Bleams Road/Hamilton Road & Highway 7/8



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	181	910	137	107	603	197	93	90	88	301	138	105
Future Volume (vph)	181	910	137	107	603	197	93	90	88	301	138	105
Ideal Flow (vphpl)	1775	1900	1750	1775	1900	1750	1775	1900	1750	1775	1900	1750
Total Lost time (s)	4.0	7.8	7.8	4.0	7.8	7.8	4.5	7.3	7.3	4.5	7.3	7.3
Lane Util. Factor	0.97	0.95	1.00	1.00	0.95	1.00	0.97	1.00	1.00	0.97	1.00	1.00
Frpb, ped/bikes	1.00	1.00	0.98	1.00	1.00	0.98	1.00	1.00	0.99	1.00	1.00	1.00
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	3176	3438	1425	1637	3195	1413	3116	1900	1412	3176	1827	1458
Flt Permitted	0.95	1.00	1.00	0.24	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	3176	3438	1425	407	3195	1413	3116	1900	1412	3176	1827	1458
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	181	910	137	107	603	197	93	90	88	301	138	105
RTOR Reduction (vph)	0	0	81	0	0	124	0	0	76	0	0	86
Lane Group Flow (vph)	181	910	56	107	603	73	93	90	12	301	138	19
Confl. Peds. (#/hr)	1		2	2		1			1	1		
Heavy Vehicles (%)	3%	5%	2%	3%	13%	3%	5%	0%	4%	3%	4%	2%
Turn Type	Prot	NA	Perm	pm+pt	NA	Perm	Prot	NA	Perm	Prot	NA	Perm
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases			2	6		6			8			4
Actuated Green, G (s)	10.4	37.4	37.4	41.0	34.0	34.0	6.8	12.8	12.8	10.5	16.5	16.5
Effective Green, g (s)	10.4	37.4	37.4	41.0	34.0	34.0	6.8	12.8	12.8	10.5	16.5	16.5
Actuated g/C Ratio	0.11	0.41	0.41	0.45	0.37	0.37	0.07	0.14	0.14	0.12	0.18	0.18
Clearance Time (s)	4.0	7.8	7.8	4.0	7.8	7.8	4.5	7.3	7.3	4.5	7.3	7.3
Vehicle Extension (s)	3.0	1.8	1.8	3.0	1.8	1.8	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	361	1408	583	277	1189	526	232	266	197	365	330	263
v/s Ratio Prot	c0.06	c0.26		0.03	0.19		0.03	0.05		c0.09	c0.08	
v/s Ratio Perm			0.04	0.14		0.05			0.01			0.01
v/c Ratio	0.50	0.65	0.10	0.39	0.51	0.14	0.40	0.34	0.06	0.82	0.42	0.07
Uniform Delay, d1	38.0	21.6	16.6	15.3	22.2	19.0	40.3	35.4	34.0	39.5	33.1	31.0
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	1.1	2.3	0.3	0.9	1.5	0.6	1.1	0.8	0.1	14.0	0.9	0.1
Delay (s)	39.1	23.9	16.9	16.2	23.7	19.5	41.4	36.2	34.2	53.5	34.0	31.2
Level of Service	D	C	B	B	C	B	D	D	C	D	C	C
Approach Delay (s)		25.4			21.9			37.3			44.3	
Approach LOS		C			C			D			D	

Intersection Summary				
HCM 2000 Control Delay	28.9	HCM 2000 Level of Service	C	
HCM 2000 Volume to Capacity ratio	0.63			
Actuated Cycle Length (s)	91.3	Sum of lost time (s)	23.6	
Intersection Capacity Utilization	71.7%	ICU Level of Service	C	
Analysis Period (min)	15			

c Critical Lane Group

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	47	31	334	134	201	497
Future Volume (vph)	47	31	334	134	201	497
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	0.946		0.961			
Flt Protected	0.971					0.986
Satd. Flow (prot)	1711	0	1790	0	0	1837
Flt Permitted	0.971					0.986
Satd. Flow (perm)	1711	0	1790	0	0	1837
Link Speed (k/h)	50		50			50
Link Distance (m)	231.4		715.9			178.4
Travel Time (s)	16.7		51.5			12.8
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	47	31	334	134	201	497
Shared Lane Traffic (%)						
Lane Group Flow (vph)	78	0	468	0	0	698
Sign Control	Stop		Free			Free

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	77.5%	ICU Level of Service	D
Analysis Period (min)	15		

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	47	31	334	134	201	497
Future Volume (Veh/h)	47	31	334	134	201	497
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	47	31	334	134	201	497
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	1300	401			468	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1300	401			468	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	68	95			82	
cM capacity (veh/h)	145	649			1094	

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	78	468	698
Volume Left	47	0	201
Volume Right	31	134	0
cSH	210	1700	1094
Volume to Capacity	0.37	0.28	0.18
Queue Length 95th (m)	12.9	0.0	5.4
Control Delay (s)	31.9	0.0	4.3
Lane LOS	D		A
Approach Delay (s)	31.9	0.0	4.3
Approach LOS	D		

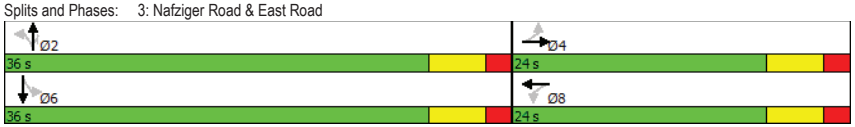
Intersection Summary			
Average Delay	4.4		
Intersection Capacity Utilization	77.5%	ICU Level of Service	D
Analysis Period (min)	15		

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	180	2	50	31	1	26	37	90	32	27	326	291
Future Volume (vph)	180	2	50	31	1	26	37	90	32	27	326	291
Ideal Flow (vphpl)	1765	1900	1765	1900	1900	1900	1650	1650	1900	1900	1650	1650
Storage Length (m)	100.0		0.0	0.0		0.0	0.0		50.0	0.0		0.0
Storage Lanes	1		0	0		0	0		1	0		0
Taper Length (m)	50.0			0.0			0.0			0.0		
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
Frt		0.856			0.939				0.850		0.939	
Flt Protected	0.950				0.974			0.986			0.998	
Satd. Flow (prot)	1677	1626	0	0	1707	0	0	1499	1615	0	1501	0
Flt Permitted	0.719				0.840			0.805			0.987	
Satd. Flow (perm)	1269	1626	0	0	1472	0	0	1224	1615	0	1484	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		50			26				55		106	
Link Speed (k/h)		50			50			80			80	
Link Distance (m)		380.0			59.8			535.4			181.7	
Travel Time (s)		27.4			4.3			24.1			8.2	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	0%	0%	0%	0%	0%	4%	0%	12%	0%	0%	6%	0%
Adj. Flow (vph)	180	2	50	31	1	26	37	90	32	27	326	291
Shared Lane Traffic (%)												
Lane Group Flow (vph)	180	52	0	0	58	0	0	127	32	0	644	0
Turn Type	Perm	NA		Perm	NA		Perm	NA	Perm	Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2		2	6		
Detector Phase	4	4		8	8		2	2	2	6	6	
Switch Phase												
Minimum Initial (s)	5.0	5.0		5.0	5.0		5.0	5.0	5.0	5.0	5.0	
Minimum Split (s)	24.0	24.0		24.0	24.0		24.0	24.0	24.0	24.0	24.0	
Total Split (s)	24.0	24.0		24.0	24.0		36.0	36.0	36.0	36.0	36.0	
Total Split (%)	40.0%	40.0%		40.0%	40.0%		60.0%	60.0%	60.0%	60.0%	60.0%	
Maximum Green (s)	18.0	18.0		18.0	18.0		30.0	30.0	30.0	30.0	30.0	
Yellow Time (s)	4.0	4.0		4.0	4.0		4.0	4.0	4.0	4.0	4.0	
All-Red Time (s)	2.0	2.0		2.0	2.0		2.0	2.0	2.0	2.0	2.0	
Lost Time Adjust (s)	0.0	-2.0			-2.0			-2.0	-2.0		-2.0	
Total Lost Time (s)	6.0	4.0			4.0			4.0	4.0		4.0	
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0	3.0	3.0	3.0	
Recall Mode	None	None		None	None		Max	Max	Max	Max	Max	
Walk Time (s)	7.0	7.0		7.0	7.0		7.0	7.0	7.0	7.0	7.0	
Flash Dont Walk (s)	11.0	11.0		11.0	11.0		11.0	11.0	11.0	11.0	11.0	
Pedestrian Calls (#/hr)	0	0		0	0		0	0	0	0	0	
Act Effct Green (s)	12.6	14.6			14.2			36.4	36.4		36.4	
Actuated g/C Ratio	0.23	0.26			0.26			0.66	0.66		0.66	
v/c Ratio	0.62	0.11			0.15			0.16	0.03		0.64	
Control Delay	28.8	5.9			10.4			7.0	1.2		11.5	
Queue Delay	0.0	0.0			0.0			0.0	0.0		0.0	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Total Delay	28.8	5.9			10.4			7.0	1.2		11.5	
LOS	C	A			B			A	A		B	
Approach Delay		23.7			10.4			5.8			11.5	
Approach LOS		C			B			A			B	
Queue Length 50th (m)	16.8	0.2			2.5			5.3	0.0		33.2	
Queue Length 95th (m)	33.7	6.4			9.3			14.9	2.0		#96.4	
Internal Link Dist (m)		356.0			35.8			511.4			157.7	
Turn Bay Length (m)	100.0								50.0			
Base Capacity (vph)	414	621			550			805	1081		1012	
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	0.43	0.08			0.11			0.16	0.03		0.64	

Intersection Summary			
Area Type:	Other		
Cycle Length: 60			
Actuated Cycle Length: 55.3			
Natural Cycle: 60			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 0.64			
Intersection Signal Delay: 13.2		Intersection LOS: B	
Intersection Capacity Utilization 72.7%		ICU Level of Service C	
Analysis Period (min) 15			
# 95th percentile volume exceeds capacity, queue may be longer.			
Queue shown is maximum after two cycles.			

Splits and Phases: 3: Nafziger Road & East Road



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	180	2	50	31	1	26	37	90	32	27	326	291
Future Volume (vph)	180	2	50	31	1	26	37	90	32	27	326	291
Ideal Flow (vphpl)	1765	1900	1765	1900	1900	1900	1650	1650	1900	1900	1650	1650
Total Lost time (s)	6.0	4.0			4.0			4.0	4.0		4.0	
Lane Util. Factor	1.00	1.00			1.00			1.00	1.00		1.00	
Frt	1.00	0.86			0.94			1.00	0.85		0.94	
Flt Protected	0.95	1.00			0.97			0.99	1.00		1.00	
Satd. Flow (prot)	1677	1626			1708			1499	1615		1501	
Flt Permitted	0.72	1.00			0.84			0.81	1.00		0.99	
Satd. Flow (perm)	1269	1626			1474			1224	1615		1485	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	180	2	50	31	1	26	37	90	32	27	326	291
RTOR Reduction (vph)	0	38	0	0	20	0	0	0	12	0	39	0
Lane Group Flow (vph)	180	14	0	0	38	0	0	127	20	0	605	0
Heavy Vehicles (%)	0%	0%	0%	0%	0%	4%	0%	12%	0%	0%	6%	0%
Turn Type	Perm	NA		Perm	NA		Perm	NA	Perm	Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2		2	6		
Actuated Green, G (s)	11.0	11.0			11.0			33.5	33.5		33.5	
Effective Green, g (s)	11.0	13.0			13.0			35.5	35.5		35.5	
Actuated g/C Ratio	0.19	0.23			0.23			0.63	0.63		0.63	
Clearance Time (s)	6.0	6.0			6.0			6.0	6.0		6.0	
Vehicle Extension (s)	3.0	3.0			3.0			3.0	3.0		3.0	
Lane Grp Cap (vph)	247	374			339			769	1014		933	
v/s Ratio Prot		0.01										
v/s Ratio Perm	c0.14				0.03			0.10	0.01		c0.41	
v/c Ratio	0.73	0.04			0.11			0.17	0.02		0.65	
Uniform Delay, d1	21.3	16.9			17.2			4.4	4.0		6.6	
Progression Factor	1.00	1.00			1.00			1.00	1.00		1.00	
Incremental Delay, d2	10.3	0.0			0.1			0.5	0.0		3.5	
Delay (s)	31.6	16.9			17.3			4.8	4.0		10.1	
Level of Service	C	B			B			A	A		B	
Approach Delay (s)		28.3			17.3			4.7			10.1	
Approach LOS		C			B			A			B	

Intersection Summary			
HCM 2000 Control Delay	13.5	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.64		
Actuated Cycle Length (s)	56.5	Sum of lost time (s)	8.0
Intersection Capacity Utilization	72.7%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	3	135	29	5	343	64
Future Volume (vph)	3	135	29	5	343	64
Ideal Flow (vphpl)	1765	1765	1650	1650	1650	1650
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.868		0.980			
Flt Protected	0.999					0.960
Satd. Flow (prot)	1500	0	1585	0	0	1553
Flt Permitted	0.999					0.960
Satd. Flow (perm)	1500	0	1585	0	0	1553
Link Speed (k/h)	50		80			80
Link Distance (m)	149.7		232.9			535.4
Travel Time (s)	10.8		10.5			24.1
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	3	135	29	5	343	64
Shared Lane Traffic (%)						
Lane Group Flow (vph)	138	0	34	0	0	407
Sign Control	Stop		Free			Free

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	48.3%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	3	135	29	5	343	64
Future Volume (Veh/h)	3	135	29	5	343	64
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	3	135	29	5	343	64
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	782	32			34	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	782	32			34	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	99	87			78	
cM capacity (veh/h)	284	1043			1578	

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	138	34	407
Volume Left	3	0	343
Volume Right	135	5	0
cSH	985	1700	1578
Volume to Capacity	0.14	0.02	0.22
Queue Length 95th (m)	3.9	0.0	6.6
Control Delay (s)	9.2	0.0	7.0
Lane LOS	A		A
Approach Delay (s)	9.2	0.0	7.0
Approach LOS	A		

Intersection Summary			
Average Delay	7.1		
Intersection Capacity Utilization	48.3%	ICU Level of Service	A
Analysis Period (min)	15		

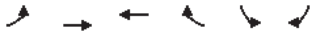
Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	75	10	77	242	121	153
Future Volume (vph)	75	10	77	242	121	153
Ideal Flow (vphpl)	1650	1650	1650	1650	1765	1765
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.984				0.925	
Flt Protected				0.988	0.978	
Satd. Flow (prot)	1592	0	0	1598	1565	0
Flt Permitted				0.988	0.978	
Satd. Flow (perm)	1592	0	0	1598	1565	0
Link Speed (k/h)	50			50	50	
Link Distance (m)	95.3			380.0	206.9	
Travel Time (s)	6.9			27.4	14.9	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	75	10	77	242	121	153
Shared Lane Traffic (%)						
Lane Group Flow (vph)	85	0	0	319	274	0
Sign Control	Free			Free	Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 50.2%		ICU Level of Service A	
Analysis Period (min) 15			

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	75	10	77	242	121	153
Future Volume (Veh/h)	75	10	77	242	121	153
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	75	10	77	242	121	153
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (m)				380		
pX, platoon unblocked						
vC, conflicting volume			85		476	80
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			85		476	80
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			95		77	84
cM capacity (veh/h)			1512		520	980

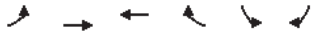
Direction, Lane #	EB 1	WB 1	NB 1
Volume Total	85	319	274
Volume Left	0	77	121
Volume Right	10	0	153
cSH	1700	1512	705
Volume to Capacity	0.05	0.05	0.39
Queue Length 95th (m)	0.0	1.3	14.8
Control Delay (s)	0.0	2.2	13.3
Lane LOS		A	B
Approach Delay (s)	0.0	2.2	13.3
Approach LOS			B

Intersection Summary			
Average Delay	6.4		
Intersection Capacity Utilization	50.2%	ICU Level of Service	A
Analysis Period (min)	15		



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	30	77	331	33	8	8
Future Volume (vph)	30	77	331	33	8	8
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			0.988		0.932	
Flt Protected		0.986			0.976	
Satd. Flow (prot)	0	1837	1840	0	1694	0
Flt Permitted		0.986			0.976	
Satd. Flow (perm)	0	1837	1840	0	1694	0
Link Speed (k/h)		50	50		50	
Link Distance (m)		103.9	95.3		100.8	
Travel Time (s)		7.5	6.9		7.3	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	30	77	331	33	8	8
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	107	364	0	16	0
Sign Control		Free	Free		Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 38.5%		ICU Level of Service A	
Analysis Period (min) 15			



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	30	77	331	33	8	8
Future Volume (Veh/h)	30	77	331	33	8	8
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	30	77	331	33	8	8
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		None	None			
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	364				484	348
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	364				484	348
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	97				98	99
cM capacity (veh/h)	1195				528	696

Direction, Lane #	EB 1	WB 1	SB 1
Volume Total	107	364	16
Volume Left	30	0	8
Volume Right	0	33	8
cSH	1195	1700	600
Volume to Capacity	0.03	0.21	0.03
Queue Length 95th (m)	0.6	0.0	0.7
Control Delay (s)	2.4	0.0	11.2
Lane LOS	A		B
Approach Delay (s)	2.4	0.0	11.2
Approach LOS			B

Intersection Summary			
Average Delay	0.9		
Intersection Capacity Utilization	38.5%	ICU Level of Service	A
Analysis Period (min)	15		

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	188	151	9	44	64	40
Future Volume (vph)	188	151	9	44	64	40
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	0.940		0.888			
Flt Protected	0.973					0.970
Satd. Flow (prot)	1704	0	1654	0	0	1807
Flt Permitted	0.973					0.970
Satd. Flow (perm)	1704	0	1654	0	0	1807
Link Speed (k/h)	50		50			50
Link Distance (m)	103.9		84.1			156.4
Travel Time (s)	7.5		6.1			11.3
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	188	151	9	44	64	40
Shared Lane Traffic (%)						
Lane Group Flow (vph)	339	0	53	0	0	104
Sign Control	Stop		Free			Free

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	38.6%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	188	151	9	44	64	40
Future Volume (Veh/h)	188	151	9	44	64	40
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	188	151	9	44	64	40
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	199	31			53	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	199	31			53	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	75	86			96	
cM capacity (veh/h)	757	1043			1553	

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	339	53	104
Volume Left	188	0	64
Volume Right	151	44	0
cSH	862	1700	1553
Volume to Capacity	0.39	0.03	0.04
Queue Length 95th (m)	15.1	0.0	1.0
Control Delay (s)	11.9	0.0	4.7
Lane LOS	B		A
Approach Delay (s)	11.9	0.0	4.7
Approach LOS	B		

Intersection Summary			
Average Delay	9.1		
Intersection Capacity Utilization	38.6%	ICU Level of Service	A
Analysis Period (min)	15		

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	0	19	0	0	84	0
Future Volume (vph)	0	19	0	0	84	0
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	0.865					
Flt Protected						0.950
Satd. Flow (prot)	1611	0	1863	0	0	1770
Flt Permitted						0.950
Satd. Flow (perm)	1611	0	1863	0	0	1770
Link Speed (k/h)	50		50			50
Link Distance (m)	84.0		68.8			84.1
Travel Time (s)	6.0		5.0			6.1
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	0	19	0	0	84	0
Shared Lane Traffic (%)						
Lane Group Flow (vph)	19	0	0	0	0	84
Sign Control	Stop		Free			Free

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	14.7%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	0	19	0	0	84	0
Future Volume (Veh/h)	0	19	0	0	84	0
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	0	19	0	0	84	0
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	168	0			0	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	168	0			0	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	100	98			95	
cM capacity (veh/h)	780	1085			1623	

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	19	0	84
Volume Left	0	0	84
Volume Right	19	0	0
cSH	1085	1700	1623
Volume to Capacity	0.02	0.00	0.05
Queue Length 95th (m)	0.4	0.0	1.3
Control Delay (s)	8.4	0.0	7.3
Lane LOS	A		A
Approach Delay (s)	8.4	0.0	7.3
Approach LOS	A		

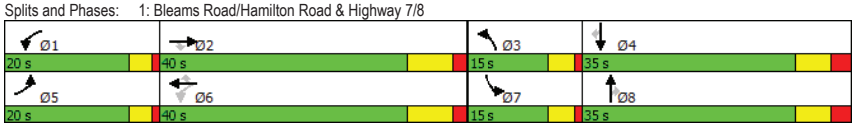
Intersection Summary			
Average Delay	7.5		
Intersection Capacity Utilization	14.7%	ICU Level of Service	A
Analysis Period (min)	15		

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	70	858	132	71	1084	202	197	110	112	280	101	170
Future Volume (vph)	70	858	132	71	1084	202	197	110	112	280	101	170
Ideal Flow (vphpl)	1775	1900	1750	1775	1900	1750	1775	1900	1750	1775	1900	1750
Storage Length (m)	300.0		110.0	100.0		75.0	70.0		85.0	55.0		155.0
Storage Lanes	2		1	1		1	2		1	2		1
Taper Length (m)	40.0			40.0			40.0			40.0		
Lane Util. Factor	0.97	0.95	1.00	1.00	0.95	1.00	0.97	1.00	1.00	0.97	1.00	1.00
Ped Bike Factor	1.00		0.98	1.00		0.97	1.00		0.99	1.00		0.99
Frt			0.850			0.850			0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	3176	3438	1458	1637	3195	1444	3116	1900	1430	3176	1827	1458
Flt Permitted	0.950			0.237			0.950			0.950		
Satd. Flow (perm)	3171	3438	1427	408	3195	1406	3111	1900	1412	3172	1827	1439
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			132			170			132			170
Link Speed (k/h)		80			80			50			50	
Link Distance (m)		163.4			1398.3			147.6			715.9	
Travel Time (s)		7.4			62.9			10.6			51.5	
Confl. Peds. (#/hr)	4		1	1		4	1		1	1		1
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	3%	5%	2%	3%	13%	3%	5%	0%	4%	3%	4%	2%
Adj. Flow (vph)	70	858	132	71	1084	202	197	110	112	280	101	170
Shared Lane Traffic (%)												
Lane Group Flow (vph)	70	858	132	71	1084	202	197	110	112	280	101	170
Turn Type	Prot	NA	Perm	pm+pt	NA	Perm	Prot	NA	Perm	Prot	NA	Perm
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases			2	6		6			8			4
Detector Phase	5	2	2	1	6	6	3	8	8	7	4	4
Switch Phase												
Minimum Initial (s)	7.0	20.0	20.0	7.0	20.0	20.0	5.0	10.0	10.0	5.0	10.0	10.0
Minimum Split (s)	20.0	40.0	40.0	20.0	40.0	40.0	9.5	35.0	35.0	9.5	35.0	35.0
Total Split (s)	20.0	40.0	40.0	20.0	40.0	40.0	15.0	35.0	35.0	15.0	35.0	35.0
Total Split (%)	18.2%	36.4%	36.4%	18.2%	36.4%	36.4%	13.6%	31.8%	31.8%	13.6%	31.8%	31.8%
Maximum Green (s)	16.0	32.2	32.2	16.0	32.2	32.2	10.5	27.7	27.7	10.5	27.7	27.7
Yellow Time (s)	3.0	5.9	5.9	3.0	5.9	5.9	3.5	4.5	4.5	3.5	4.5	4.5
All-Red Time (s)	1.0	1.9	1.9	1.0	1.9	1.9	1.0	2.8	2.8	1.0	2.8	2.8
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.0	7.8	7.8	4.0	7.8	7.8	4.5	7.3	7.3	4.5	7.3	7.3
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	1.8	1.8	3.0	1.8	1.8	3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	Max	Max	None	Max	Max	None	None	None	None	None	None
Walk Time (s)		19.0	19.0		19.0	19.0		19.0	19.0		19.0	19.0
Flash Dont Walk (s)		14.0	14.0		14.0	14.0		14.0	14.0		14.0	14.0
Pedestrian Calls (#/hr)		0	0		0	0		0	0		0	0
Act Effct Green (s)	7.7	33.2	33.2	43.0	33.2	33.2	9.7	11.2	11.2	10.6	12.1	12.1
Actuated g/C Ratio	0.09	0.40	0.40	0.51	0.40	0.40	0.12	0.13	0.13	0.13	0.14	0.14
v/c Ratio	0.24	0.63	0.20	0.22	0.86	0.31	0.55	0.43	0.37	0.70	0.39	0.48

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Control Delay	39.1	23.8	4.5	10.8	32.7	6.2	42.1	40.2	8.5	47.0	38.9	10.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	39.1	23.8	4.5	10.8	32.7	6.2	42.1	40.2	8.5	47.0	38.9	10.8
LOS	D	C	A	B	C	A	D	D	A	D	D	B
Approach Delay		22.4			27.6			32.6			34.3	
Approach LOS		C			C			C			C	
Queue Length 50th (m)	5.8	60.6	0.0	5.0	87.4	3.3	16.3	17.8	0.0	23.9	16.3	0.0
Queue Length 95th (m)	12.7	90.4	11.5	11.9	#141.5	18.5	29.0	34.3	11.2	#44.4	32.1	17.7
Internal Link Dist (m)		139.4			1374.3			123.6			691.9	
Turn Bay Length (m)	300.0		110.0	100.0		75.0	70.0		85.0	55.0		155.0
Base Capacity (vph)	609	1364	645	460	1264	659	392	631	557	400	607	591
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.11	0.63	0.20	0.15	0.86	0.31	0.50	0.17	0.20	0.70	0.17	0.29

Intersection Summary			
Area Type:	Other		
Cycle Length: 110			
Actuated Cycle Length: 83.8			
Natural Cycle: 115			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 0.86			
Intersection Signal Delay: 27.7		Intersection LOS: C	
Intersection Capacity Utilization 67.3%		ICU Level of Service C	
Analysis Period (min) 15			
# 95th percentile volume exceeds capacity, queue may be longer.			
Queue shown is maximum after two cycles.			

Splits and Phases: 1: Bleams Road/Hamilton Road & Highway 7/8



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	70	858	132	71	1084	202	197	110	112	280	101	170
Future Volume (vph)	70	858	132	71	1084	202	197	110	112	280	101	170
Ideal Flow (vphpl)	1775	1900	1750	1775	1900	1750	1775	1900	1750	1775	1900	1750
Total Lost time (s)	4.0	7.8	7.8	4.0	7.8	7.8	4.5	7.3	7.3	4.5	7.3	7.3
Lane Util. Factor	0.97	0.95	1.00	1.00	0.95	1.00	0.97	1.00	1.00	0.97	1.00	1.00
Frpb, ped/bikes	1.00	1.00	0.98	1.00	1.00	0.97	1.00	1.00	0.99	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	1.00	1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	3176	3438	1427	1637	3195	1408	3116	1900	1412	3176	1827	1440
Flt Permitted	0.95	1.00	1.00	0.24	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	3176	3438	1427	409	3195	1408	3116	1900	1412	3176	1827	1440
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	70	858	132	71	1084	202	197	110	112	280	101	170
RTOR Reduction (vph)	0	0	80	0	0	103	0	0	97	0	0	146
Lane Group Flow (vph)	70	858	52	71	1084	99	197	110	15	280	101	24
Confl. Peds. (#/hr)	4		1	1		4	1		1	1		1
Heavy Vehicles (%)	3%	5%	2%	3%	13%	3%	5%	0%	4%	3%	4%	2%
Turn Type	Prot	NA	Perm	pm+pt	NA	Perm	Prot	NA	Perm	Prot	NA	Perm
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases			2	6		6			8			4
Actuated Green, G (s)	6.1	33.3	33.3	39.2	33.2	33.2	9.7	11.2	11.2	10.6	12.1	12.1
Effective Green, g (s)	6.1	33.3	33.3	39.2	33.2	33.2	9.7	11.2	11.2	10.6	12.1	12.1
Actuated g/C Ratio	0.07	0.39	0.39	0.46	0.39	0.39	0.11	0.13	0.13	0.13	0.14	0.14
Clearance Time (s)	4.0	7.8	7.8	4.0	7.8	7.8	4.5	7.3	7.3	4.5	7.3	7.3
Vehicle Extension (s)	3.0	1.8	1.8	3.0	1.8	1.8	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	228	1351	561	276	1252	551	356	251	186	397	261	205
v/s Ratio Prot	c0.02	0.25		0.02	c0.34		0.06	c0.06		c0.09	0.06	
v/s Ratio Perm			0.04	0.10		0.07			0.01			0.02
v/c Ratio	0.31	0.64	0.09	0.26	0.87	0.18	0.55	0.44	0.08	0.71	0.39	0.12
Uniform Delay, d1	37.3	20.8	16.2	13.4	23.7	16.8	35.5	33.9	32.2	35.6	32.9	31.6
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	0.8	2.3	0.3	0.5	8.2	0.7	1.9	1.2	0.2	5.6	1.0	0.3
Delay (s)	38.1	23.1	16.5	13.9	31.9	17.5	37.3	35.1	32.4	41.2	33.9	31.9
Level of Service	D	C	B	B	C	B	D	D	C	D	C	C
Approach Delay (s)		23.2			28.8			35.4			37.0	
Approach LOS		C			C			D			D	

Intersection Summary			
HCM 2000 Control Delay	29.2	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.70		
Actuated Cycle Length (s)	84.7	Sum of lost time (s)	23.6
Intersection Capacity Utilization	67.3%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	128	104	354	28	34	423
Future Volume (vph)	128	104	354	28	34	423
Ideal Flow (vphpl)	1900	1900	1650	1900	1900	1650
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.939		0.990			
Flt Protected	0.973					0.996
Satd. Flow (prot)	1702	0	1601	0	0	1611
Flt Permitted	0.973					0.996
Satd. Flow (perm)	1702	0	1601	0	0	1611
Link Speed (k/h)	50		80			80
Link Distance (m)	231.4		715.9			178.4
Travel Time (s)	16.7		32.2			8.0
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	128	104	354	28	34	423
Shared Lane Traffic (%)						
Lane Group Flow (vph)	232	0	382	0	0	457
Sign Control	Stop		Free			Free

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	74.7%	ICU Level of Service	D
Analysis Period (min)	15		

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	128	104	354	28	34	423
Future Volume (Veh/h)	128	104	354	28	34	423
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	128	104	354	28	34	423
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	859	368			382	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	859	368			382	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	60	85			97	
cM capacity (veh/h)	317	677			1176	

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	232	382	457
Volume Left	128	0	34
Volume Right	104	28	0
cSH	417	1700	1176
Volume to Capacity	0.56	0.22	0.03
Queue Length 95th (m)	26.4	0.0	0.7
Control Delay (s)	24.0	0.0	0.9
Lane LOS	C		A
Approach Delay (s)	24.0	0.0	0.9
Approach LOS	C		

Intersection Summary			
Average Delay	5.6		
Intersection Capacity Utilization	74.7%	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)	556	1	105	51	0	51	14	143	94	45	138	154
Future Volume (vph)	556	1	105	51	0	51	14	143	94	45	138	154
Ideal Flow (vphpl)	1765	1900	1765	1765	1900	1765	1650	1650	1650	1650	1650	1650
Storage Length (m)	100.0		0.0	0.0		0.0	0.0		50.0	0.0		0.0
Storage Lanes	1		0	0		0	0		1	0		0
Taper Length (m)	50.0			0.0			0.0			0.0		
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
Frt		0.851			0.932				0.850		0.938	
Flt Protected	0.950				0.976			0.996			0.993	
Satd. Flow (prot)	1677	1617	0	0	1711	0	0	1600	1402	0	1493	0
Flt Permitted	0.579				0.788			0.959			0.944	
Satd. Flow (perm)	1022	1617	0	0	1382	0	0	1540	1402	0	1419	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		105			85				94		47	
Link Speed (k/h)		50			50			80			80	
Link Distance (m)		380.0			59.8			534.5			181.7	
Travel Time (s)		27.4			4.3			24.1			8.2	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	0%	0%	0%	0%	0%	2%	0%	3%	0%	0%	5%	2%
Adj. Flow (vph)	556	1	105	51	0	51	14	143	94	45	138	154
Shared Lane Traffic (%)												
Lane Group Flow (vph)	556	106	0	0	102	0	0	157	94	0	337	0
Turn Type	pm+pt	NA		Perm	NA		Perm	NA	Perm	Perm	NA	
Protected Phases	7	4			8			2			6	
Permitted Phases	4			8			2		2	6		
Detector Phase	7	4		8	8		2	2	2	6	6	
Switch Phase												
Minimum Initial (s)	5.0	5.0		5.0	5.0		5.0	5.0	5.0	5.0	5.0	
Minimum Split (s)	9.5	24.0		24.0	24.0		24.0	24.0	24.0	24.0	24.0	
Total Split (s)	30.0	60.0		30.0	30.0		30.0	30.0	30.0	30.0	30.0	
Total Split (%)	33.3%	66.7%		33.3%	33.3%		33.3%	33.3%	33.3%	33.3%	33.3%	
Maximum Green (s)	26.0	54.0		24.0	24.0		24.0	24.0	24.0	24.0	24.0	
Yellow Time (s)	3.0	4.0		4.0	4.0		4.0	4.0	4.0	4.0	4.0	
All-Red Time (s)	1.0	2.0		2.0	2.0		2.0	2.0	2.0	2.0	2.0	
Lost Time Adjust (s)	0.0	-2.0			-2.0			-2.0	-2.0		-2.0	
Total Lost Time (s)	4.0	4.0			4.0			4.0	4.0		4.0	
Lead/Lag	Lead			Lag	Lag							
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0	3.0	3.0	3.0	
Recall Mode	None	None		None	None		Max	Max	Max	Max	Max	
Walk Time (s)		7.0		7.0	7.0		7.0	7.0	7.0	7.0	7.0	
Flash Dont Walk (s)		11.0		11.0	11.0		11.0	11.0	11.0	11.0	11.0	
Pedestrian Calls (#/hr)		0		0	0		0	0	0	0	0	
Act Effct Green (s)	33.7	33.7			9.3			26.7	26.7		26.7	
Actuated g/C Ratio	0.49	0.49			0.14			0.39	0.39		0.39	
v/c Ratio	0.77	0.12			0.39			0.26	0.16		0.58	
Control Delay	20.4	2.3			14.7			18.8	5.1		21.5	
Queue Delay	0.0	0.0			0.0			0.0	0.0		0.0	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Total Delay	20.4	2.3			14.7			18.8	5.1		21.5	
LOS	C	A			B			B	A		C	
Approach Delay		17.5			14.7			13.7			21.5	
Approach LOS		B			B			B			C	
Queue Length 50th (m)	51.8	0.1			2.2			15.7	0.0		33.3	
Queue Length 95th (m)	82.5	6.3			15.3			32.4	9.5		66.5	
Internal Link Dist (m)		356.0			35.8			510.5			157.7	
Turn Bay Length (m)	100.0								50.0			
Base Capacity (vph)	799	1332			589			598	602		580	
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	0.70	0.08			0.17			0.26	0.16		0.58	

Intersection Summary			
Area Type:	Other		
Cycle Length: 90			
Actuated Cycle Length: 68.6			
Natural Cycle: 60			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 0.77			
Intersection Signal Delay: 17.6		Intersection LOS: B	
Intersection Capacity Utilization 81.5%		ICU Level of Service D	
Analysis Period (min) 15			

Splits and Phases: 3: Nafziger Road & East Road

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	556	1	105	51	0	51	14	143	94	45	138	154
Future Volume (vph)	556	1	105	51	0	51	14	143	94	45	138	154
Ideal Flow (vphpl)	1765	1900	1765	1765	1900	1765	1650	1650	1650	1650	1650	1650
Total Lost time (s)	4.0	4.0			4.0			4.0	4.0		4.0	
Lane Util. Factor	1.00	1.00			1.00			1.00	1.00		1.00	
Frt	1.00	0.85			0.93			1.00	0.85		0.94	
Flt Protected	0.95	1.00			0.98			1.00	1.00		0.99	
Satd. Flow (prot)	1677	1618			1711			1599	1402		1494	
Flt Permitted	0.58	1.00			0.79			0.96	1.00		0.94	
Satd. Flow (perm)	1021	1618			1382			1541	1402		1419	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	556	1	105	51	0	51	14	143	94	45	138	154
RTOR Reduction (vph)	0	52	0	0	76	0	0	0	58	0	29	0
Lane Group Flow (vph)	556	54	0	0	26	0	0	157	36	0	308	0
Heavy Vehicles (%)	0%	0%	0%	0%	0%	2%	0%	3%	0%	0%	5%	2%
Turn Type	pm+pt	NA		Perm	NA		Perm	NA	Perm	Perm	NA	
Protected Phases	7	4			8			2			6	
Permitted Phases	4			8			2		2	6		
Actuated Green, G (s)	33.2	33.2			5.7			24.6	24.6		24.6	
Effective Green, g (s)	33.2	35.2			7.7			26.6	26.6		26.6	
Actuated g/C Ratio	0.48	0.50			0.11			0.38	0.38		0.38	
Clearance Time (s)	4.0	6.0			6.0			6.0	6.0		6.0	
Vehicle Extension (s)	3.0	3.0			3.0			3.0	3.0		3.0	
Lane Grp Cap (vph)	706	815			152			587	534		540	
v/s Ratio Prot	c0.26	0.03										
v/s Ratio Perm	c0.11				0.02			0.10	0.03		c0.22	
v/c Ratio	0.79	0.07			0.17			0.27	0.07		0.57	
Uniform Delay, d1	14.7	8.9			28.2			14.9	13.7		17.1	
Progression Factor	1.00	1.00			1.00			1.00	1.00		1.00	
Incremental Delay, d2	5.8	0.0			0.5			1.1	0.2		4.3	
Delay (s)	20.5	8.9			28.7			16.0	14.0		21.4	
Level of Service	C	A			C			B	B		C	
Approach Delay (s)		18.6			28.7			15.2			21.4	
Approach LOS		B			C			B			C	

Intersection Summary					
HCM 2000 Control Delay	19.4	HCM 2000 Level of Service		B	
HCM 2000 Volume to Capacity ratio	0.71				
Actuated Cycle Length (s)	69.8	Sum of lost time (s)		12.0	
Intersection Capacity Utilization	81.5%	ICU Level of Service		D	
Analysis Period (min)	15				
c Critical Lane Group					

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	1	122	31	6	203	91
Future Volume (vph)	1	122	31	6	203	91
Ideal Flow (vphpl)	1650	1765	1650	1765	1650	1650
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.866		0.978			
Flt Protected						0.967
Satd. Flow (prot)	1401	0	1582	0	0	1564
Flt Permitted						0.967
Satd. Flow (perm)	1401	0	1582	0	0	1564
Link Speed (k/h)	50		80			80
Link Distance (m)	149.7		232.9			534.5
Travel Time (s)	10.8		10.5			24.1
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	1	122	31	6	203	91
Shared Lane Traffic (%)						
Lane Group Flow (vph)	123	0	37	0	0	294
Sign Control	Stop		Free			Free

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	40.5%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	1	122	31	6	203	91
Future Volume (Veh/h)	1	122	31	6	203	91
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	1	122	31	6	203	91
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	531	34			37	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	531	34			37	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	100	88			87	
cM capacity (veh/h)	443	1039			1574	

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	123	37	294
Volume Left	1	0	203
Volume Right	122	6	0
cSH	1028	1700	1574
Volume to Capacity	0.12	0.02	0.13
Queue Length 95th (m)	3.3	0.0	3.5
Control Delay (s)	9.0	0.0	5.6
Lane LOS	A		A
Approach Delay (s)	9.0	0.0	5.6
Approach LOS	A		

Intersection Summary			
Average Delay	6.1		
Intersection Capacity Utilization	40.5%	ICU Level of Service	A
Analysis Period (min)	15		

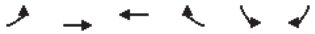
Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	376	74	109	58	61	283
Future Volume (vph)	376	74	109	58	61	283
Ideal Flow (vphpl)	1650	1650	1650	1650	1765	1765
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.978				0.889	
Flt Protected				0.968	0.991	
Satd. Flow (prot)	1582	0	0	1566	1524	0
Flt Permitted				0.968	0.991	
Satd. Flow (perm)	1582	0	0	1566	1524	0
Link Speed (k/h)	50			50	50	
Link Distance (m)	95.3			380.0	206.9	
Travel Time (s)	6.9			27.4	14.9	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	376	74	109	58	61	283
Shared Lane Traffic (%)						
Lane Group Flow (vph)	450	0	0	167	344	0
Sign Control	Free			Free	Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	70.9%	ICU Level of Service	C
Analysis Period (min)	15		

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	376	74	109	58	61	283
Future Volume (Veh/h)	376	74	109	58	61	283
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	376	74	109	58	61	283
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (m)				380		
pX, platoon unblocked						
vC, conflicting volume			450		689	413
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			450		689	413
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			90		84	56
cM capacity (veh/h)			1110		371	639

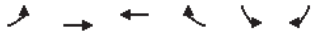
Direction, Lane #	EB 1	WB 1	NB 1
Volume Total	450	167	344
Volume Left	0	109	61
Volume Right	74	0	283
cSH	1700	1110	567
Volume to Capacity	0.26	0.10	0.61
Queue Length 95th (m)	0.0	2.6	32.4
Control Delay (s)	0.0	5.9	20.7
Lane LOS		A	C
Approach Delay (s)	0.0	5.9	20.7
Approach LOS			C

Intersection Summary				
Average Delay	8.4			
Intersection Capacity Utilization	70.9%	ICU Level of Service		C
Analysis Period (min)	15			



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	6	410	108	11	41	41
Future Volume (vph)	6	410	108	11	41	41
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			0.988		0.932	
Flt Protected		0.999			0.976	
Satd. Flow (prot)	0	1861	1840	0	1694	0
Flt Permitted		0.999			0.976	
Satd. Flow (perm)	0	1861	1840	0	1694	0
Link Speed (k/h)		50	50		50	
Link Distance (m)		103.9	95.3		100.8	
Travel Time (s)		7.5	6.9		7.3	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	6	410	108	11	41	41
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	416	119	0	82	0
Sign Control		Free	Free		Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 37.8%		ICU Level of Service A	
Analysis Period (min) 15			



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	6	410	108	11	41	41
Future Volume (Veh/h)	6	410	108	11	41	41
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	6	410	108	11	41	41
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		None	None			
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	119				536	114
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	119				536	114
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	100				92	96
cM capacity (veh/h)	1469				504	939

Direction, Lane #	EB 1	WB 1	SB 1
Volume Total	416	119	82
Volume Left	6	0	41
Volume Right	0	11	41
cSH	1469	1700	656
Volume to Capacity	0.00	0.07	0.13
Queue Length 95th (m)	0.1	0.0	3.4
Control Delay (s)	0.1	0.0	11.3
Lane LOS	A		B
Approach Delay (s)	0.1	0.0	11.3
Approach LOS			B

Intersection Summary				
Average Delay		1.6		
Intersection Capacity Utilization		37.8%	ICU Level of Service	A
Analysis Period (min)		15		

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	61	68	28	232	184	7
Future Volume (vph)	61	68	28	232	184	7
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	0.929		0.880			
Flt Protected	0.977					0.954
Satd. Flow (prot)	1691	0	1639	0	0	1777
Flt Permitted	0.977					0.954
Satd. Flow (perm)	1691	0	1639	0	0	1777
Link Speed (k/h)	50		50			50
Link Distance (m)	103.9		84.1			156.4
Travel Time (s)	7.5		6.1			11.3
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	61	68	28	232	184	7
Shared Lane Traffic (%)						
Lane Group Flow (vph)	129	0	260	0	0	191
Sign Control	Stop		Free			Free

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	43.9%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	61	68	28	232	184	7
Future Volume (Veh/h)	61	68	28	232	184	7
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	61	68	28	232	184	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)						
pX, platoon unblocked						
vC, conflicting volume	519	144			260	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	519	144			260	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	86	92			86	
cM capacity (veh/h)	444	903			1304	

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	129	260	191
Volume Left	61	0	184
Volume Right	68	232	0
cSH	607	1700	1304
Volume to Capacity	0.21	0.15	0.14
Queue Length 95th (m)	6.4	0.0	3.9
Control Delay (s)	12.5	0.0	8.0
Lane LOS	B		A
Approach Delay (s)	12.5	0.0	8.0
Approach LOS	B		

Intersection Summary			
Average Delay	5.4		
Intersection Capacity Utilization	43.9%	ICU Level of Service	A
Analysis Period (min)	15		

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	0	82	0	0	21	0
Future Volume (vph)	0	82	0	0	21	0
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	0.865					
Flt Protected						0.950
Satd. Flow (prot)	1611	0	1863	0	0	1770
Flt Permitted						0.950
Satd. Flow (perm)	1611	0	1863	0	0	1770
Link Speed (k/h)	50		50			50
Link Distance (m)	84.0		68.8			84.1
Travel Time (s)	6.0		5.0			6.1
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	0	82	0	0	21	0
Shared Lane Traffic (%)						
Lane Group Flow (vph)	82	0	0	0	0	21
Sign Control	Stop		Free			Free

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	15.1%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	0	82	0	0	21	0
Future Volume (Veh/h)	0	82	0	0	21	0
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	0	82	0	0	21	0
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	42	0			0	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	42	0			0	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	100	92			99	
cM capacity (veh/h)	957	1085			1623	

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	82	0	21
Volume Left	0	0	21
Volume Right	82	0	0
cSH	1085	1700	1623
Volume to Capacity	0.08	0.00	0.01
Queue Length 95th (m)	2.0	0.0	0.3
Control Delay (s)	8.6	0.0	7.2
Lane LOS	A		A
Approach Delay (s)	8.6	0.0	7.2
Approach LOS	A		

Intersection Summary			
Average Delay	8.3		
Intersection Capacity Utilization	15.1%	ICU Level of Service	A
Analysis Period (min)	15		

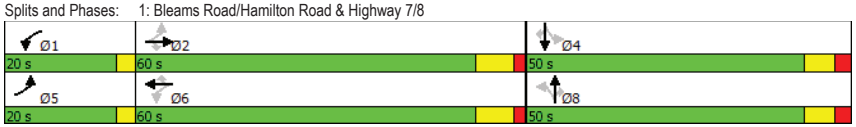
Appendix H 2033 Background Traffic Operations

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	109	969	148	114	643	196	100	54	94	293	136	104
Future Volume (vph)	109	969	148	114	643	196	100	54	94	293	136	104
Ideal Flow (vphpl)	1775	1900	1750	1775	1900	1750	1775	1900	1750	1775	1900	1750
Storage Length (m)	300.0		110.0	100.0		75.0	70.0		85.0	65.0		155.0
Storage Lanes	1		1	1		1	1		1	1		1
Taper Length (m)	40.0			100.0			40.0			20.0		
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor	1.00		0.98	1.00		0.98			0.99	1.00		
Frt			0.850			0.850			0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1637	3438	1458	1637	3195	1444	1606	1900	1430	1637	1827	1458
Flt Permitted	0.366			0.211			0.670			0.722		
Satd. Flow (perm)	630	3438	1424	363	3195	1413	1133	1900	1411	1243	1827	1458
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			148			196			94			104
Link Speed (k/h)		80			80			50			50	
Link Distance (m)		341.3			1424.6			147.6			715.9	
Travel Time (s)		15.4			64.1			10.6			51.5	
Confl. Peds. (#/hr)	1		2	2		1			1	1		
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	3%	5%	2%	3%	13%	3%	5%	0%	4%	3%	4%	2%
Adj. Flow (vph)	109	969	148	114	643	196	100	54	94	293	136	104
Shared Lane Traffic (%)												
Lane Group Flow (vph)	109	969	148	114	643	196	100	54	94	293	136	104
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	Perm	NA	Perm	Perm	NA	Perm
Protected Phases	5	2		1	6			8			4	
Permitted Phases	2		2	6		6	8		8	4		4
Detector Phase	5	2	2	1	6	6	8	8	8	4	4	4
Switch Phase												
Minimum Initial (s)	7.0	20.0	20.0	7.0	20.0	20.0	10.0	10.0	10.0	10.0	10.0	10.0
Minimum Split (s)	20.0	60.0	60.0	20.0	60.0	60.0	50.0	50.0	50.0	50.0	50.0	50.0
Total Split (s)	20.0	60.0	60.0	20.0	60.0	60.0	50.0	50.0	50.0	50.0	50.0	50.0
Total Split (%)	15.4%	46.2%	46.2%	15.4%	46.2%	46.2%	38.5%	38.5%	38.5%	38.5%	38.5%	38.5%
Maximum Green (s)	17.0	52.2	52.2	17.0	52.2	52.2	42.7	42.7	42.7	42.7	42.7	42.7
Yellow Time (s)	3.0	5.9	5.9	3.0	5.9	5.9	4.5	4.5	4.5	4.5	4.5	4.5
All-Red Time (s)	0.0	1.9	1.9	0.0	1.9	1.9	2.8	2.8	2.8	2.8	2.8	2.8
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	3.0	7.8	7.8	3.0	7.8	7.8	7.3	7.3	7.3	7.3	7.3	7.3
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag						
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes						
Vehicle Extension (s)	3.0	1.8	1.8	3.0	1.8	1.8	3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	Max	Max	None	Max	Max	None	None	None	None	None	None
Walk Time (s)		19.0	19.0		19.0	19.0	19.0	19.0	19.0	19.0	19.0	19.0
Flash Dont Walk (s)		14.0	14.0		14.0	14.0	14.0	14.0	14.0	14.0	14.0	14.0
Pedestrian Calls (#/hr)		0	0		0	0	0	0	0	0	0	0
Act Effct Green (s)	66.4	52.6	52.6	66.6	52.7	52.7	30.4	30.4	30.4	30.4	30.4	30.4
Actuated g/C Ratio	0.60	0.48	0.48	0.60	0.48	0.48	0.28	0.28	0.28	0.28	0.28	0.28
v/c Ratio	0.24	0.59	0.20	0.35	0.42	0.25	0.32	0.10	0.21	0.86	0.27	0.22

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Control Delay	11.1	24.5	4.1	12.9	21.5	3.9	34.1	29.4	6.9	61.3	32.1	6.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	11.1	24.5	4.1	12.9	21.5	3.9	34.1	29.4	6.9	61.3	32.1	6.7
LOS	B	C	A	B	C	A	C	C	A	E	C	A
Approach Delay		20.9			16.8			22.8			43.2	
Approach LOS		C			B			C			D	
Queue Length 50th (m)	9.1	81.5	0.0	9.6	48.4	0.0	17.8	9.0	0.0	62.2	23.8	0.0
Queue Length 95th (m)	21.3	130.1	13.0	22.0	80.6	14.4	33.8	19.3	12.2	100.3	41.4	12.7
Internal Link Dist (m)		317.3			1400.6			123.6			691.9	
Turn Bay Length (m)	300.0		110.0	100.0		75.0	70.0		85.0	65.0		155.0
Base Capacity (vph)	553	1640	756	426	1527	778	442	741	608	485	713	632
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.20	0.59	0.20	0.27	0.42	0.25	0.23	0.07	0.15	0.60	0.19	0.16

Intersection Summary			
Area Type:	Other		
Cycle Length: 130			
Actuated Cycle Length: 110.3			
Natural Cycle: 130			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 0.86			
Intersection Signal Delay: 23.7		Intersection LOS: C	
Intersection Capacity Utilization 82.6%		ICU Level of Service E	
Analysis Period (min) 15			

Splits and Phases: 1: Bleams Road/Hamilton Road & Highway 7/8



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	109	969	148	114	643	196	100	54	94	293	136	104
Future Volume (vph)	109	969	148	114	643	196	100	54	94	293	136	104
Ideal Flow (vphpl)	1775	1900	1750	1775	1900	1750	1775	1900	1750	1775	1900	1750
Total Lost time (s)	3.0	7.8	7.8	3.0	7.8	7.8	7.3	7.3	7.3	7.3	7.3	7.3
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frpb, ped/bikes	1.00	1.00	0.98	1.00	1.00	0.98	1.00	1.00	0.99	1.00	1.00	1.00
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1637	3438	1424	1637	3195	1413	1606	1900	1412	1636	1827	1458
Flt Permitted	0.37	1.00	1.00	0.21	1.00	1.00	0.67	1.00	1.00	0.72	1.00	1.00
Satd. Flow (perm)	630	3438	1424	364	3195	1413	1133	1900	1412	1243	1827	1458
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	109	969	148	114	643	196	100	54	94	293	136	104
RTOR Reduction (vph)	0	0	77	0	0	102	0	0	68	0	0	75
Lane Group Flow (vph)	109	969	71	114	643	94	100	54	26	293	136	29
Confl. Peds. (#/hr)	1		2	2		1			1	1		
Heavy Vehicles (%)	3%	5%	2%	3%	13%	3%	5%	0%	4%	3%	4%	2%
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	Perm	NA	Perm	Perm	NA	Perm
Protected Phases	5	2		1	6			8			4	
Permitted Phases	2		2	6		6	8		8	4		4
Actuated Green, G (s)	61.6	52.7	52.7	61.8	52.8	52.8	30.4	30.4	30.4	30.4	30.4	30.4
Effective Green, g (s)	61.6	52.7	52.7	61.8	52.8	52.8	30.4	30.4	30.4	30.4	30.4	30.4
Actuated g/C Ratio	0.56	0.48	0.48	0.56	0.48	0.48	0.28	0.28	0.28	0.28	0.28	0.28
Clearance Time (s)	3.0	7.8	7.8	3.0	7.8	7.8	7.3	7.3	7.3	7.3	7.3	7.3
Vehicle Extension (s)	3.0	1.8	1.8	3.0	1.8	1.8	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	433	1644	680	308	1530	677	312	524	389	342	504	402
v/s Ratio Prot	0.02	c0.28		c0.03	0.20			0.03			0.07	
v/s Ratio Perm	0.12		0.05	0.18		0.07	0.09		0.02	c0.24		0.02
v/c Ratio	0.25	0.59	0.10	0.37	0.42	0.14	0.32	0.10	0.07	0.86	0.27	0.07
Uniform Delay, d1	11.6	20.9	15.8	12.7	18.7	16.0	31.7	29.7	29.4	37.8	31.2	29.5
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	0.3	1.6	0.3	0.8	0.9	0.4	0.6	0.1	0.1	18.6	0.3	0.1
Delay (s)	11.9	22.4	16.1	13.5	19.6	16.4	32.3	29.8	29.5	56.4	31.5	29.5
Level of Service	B	C	B	B	B	B	C	C	C	E	C	C
Approach Delay (s)		20.7			18.2			30.7			44.8	
Approach LOS		C			B			C			D	

Intersection Summary			
HCM 2000 Control Delay	25.1	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.66		
Actuated Cycle Length (s)	110.2	Sum of lost time (s)	18.1
Intersection Capacity Utilization	82.6%	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)	126	1211	4	9	849	156	0	18	5	329	26	83
Future Volume (vph)	126	1211	4	9	849	156	0	18	5	329	26	83
Ideal Flow (vphpl)	1775	1775	1775	1775	1900	1750	1775	1650	1650	1775	1650	1650
Storage Length (m)	145.0		0.0	140.0		90.0	80.0		0.0	120.0		0.0
Storage Lanes	1		0	1		1	1		0	1		0
Taper Length (m)	100.0			100.0			40.0			100.0		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor		1.00		1.00							0.99	
Frt						0.850		0.967			0.886	
Flt Protected	0.950			0.950						0.950		
Satd. Flow (prot)	1561	3212	0	1686	3252	1340	1775	1370	0	1561	1308	0
Flt Permitted	0.216			0.162						0.742		
Satd. Flow (perm)	355	3212	0	287	3252	1340	1775	1370	0	1219	1308	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)						156		5			83	
Link Speed (k/h)		80			80			80			80	
Link Distance (m)		1424.6			340.0			138.9			368.7	
Travel Time (s)		64.1			15.3			6.3			16.6	
Confl. Peds. (#/hr)			1	1			1					1
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	8%	5%	0%	0%	11%	11%	0%	21%	0%	8%	19%	8%
Adj. Flow (vph)	126	1211	4	9	849	156	0	18	5	329	26	83
Shared Lane Traffic (%)												
Lane Group Flow (vph)	126	1215	0	9	849	156	0	23	0	329	109	0
Turn Type	pm+pt	NA		pm+pt	NA	Perm	Perm	NA		Perm	NA	
Protected Phases	5	2		1	6			8			4	
Permitted Phases	2			6		6	8			4		
Detector Phase	5	2		1	6	6	8	8		4	4	
Switch Phase												
Minimum Initial (s)	7.0	20.0		7.0	20.0	20.0	10.0	10.0		10.0	10.0	
Minimum Split (s)	20.0	50.0		20.0	50.0	50.0	35.0	35.0		35.0	35.0	
Total Split (s)	20.0	50.0		20.0	50.0	50.0	35.0	35.0		35.0	35.0	
Total Split (%)	19.0%	47.6%		19.0%	47.6%	47.6%	33.3%	33.3%		33.3%	33.3%	
Maximum Green (s)	17.0	42.2		17.0	42.2	42.2	27.4	27.4		27.4	27.4	
Yellow Time (s)	3.0	5.9		3.0	5.9	5.9	5.9	5.9		5.9	5.9	
All-Red Time (s)	0.0	1.9		0.0	1.9	1.9	1.7	1.7		1.7	1.7	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Total Lost Time (s)	3.0	7.8		3.0	7.8	7.8	7.6	7.6		7.6	7.6	
Lead/Lag	Lead	Lag		Lead	Lag	Lag						
Lead-Lag Optimize?	Yes	Yes		Yes	Yes	Yes						
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	
Recall Mode	None	Max		None	Min	Min	None	None		None	None	
Walk Time (s)		16.0			16.0	16.0	16.0	16.0		16.0	16.0	
Flash Dont Walk (s)		11.0			11.0	11.0	11.0	11.0		11.0	11.0	
Pedestrian Calls (#/hr)		0			0	0	0	0		0	0	
Act Effct Green (s)	49.4	42.8		44.3	32.5	32.5		27.5		27.5	27.5	
Actuated g/C Ratio	0.56	0.49		0.51	0.37	0.37		0.31		0.31	0.31	
v/c Ratio	0.39	0.77		0.04	0.70	0.26		0.05		0.86	0.23	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Control Delay	12.5	23.3		8.6	27.3	4.5		19.6		52.7	9.9	
Queue Delay	0.0	0.0		0.0	0.0	0.0		0.0		0.0	0.0	
Total Delay	12.5	23.3		8.6	27.3	4.5		19.6		52.7	9.9	
LOS	B	C		A	C	A		B		D	A	
Approach Delay		22.3			23.6			19.6			42.0	
Approach LOS		C			C			B			D	
Queue Length 50th (m)	9.8	84.2		0.7	65.3	0.0		2.1		51.7	3.1	
Queue Length 95th (m)	17.8	137.7		2.6	91.0	12.1		8.6		#115.8	16.7	
Internal Link Dist (m)		1400.6			316.0			114.9			344.7	
Turn Bay Length (m)	145.0			140.0		90.0				120.0		
Base Capacity (vph)	435	1569		434	1572	728		433		382	467	
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	0.29	0.77		0.02	0.54	0.21		0.05		0.86	0.23	

Intersection Summary			
Area Type:	Other		
Cycle Length: 105			
Actuated Cycle Length: 87.5			
Natural Cycle: 105			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 0.86			
Intersection Signal Delay: 25.8		Intersection LOS: C	
Intersection Capacity Utilization 84.1%		ICU Level of Service E	
Analysis Period (min) 15			
# 95th percentile volume exceeds capacity, queue may be longer.			
Queue shown is maximum after two cycles.			

Splits and Phases: 2: Nafziger Road & Highway 7/8

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	126	1211	4	9	849	156	0	18	5	329	26	83
Future Volume (vph)	126	1211	4	9	849	156	0	18	5	329	26	83
Ideal Flow (vphpl)	1775	1775	1775	1775	1900	1750	1775	1650	1650	1775	1650	1650
Total Lost time (s)	3.0	7.8		3.0	7.8	7.8		7.6		7.6	7.6	
Lane Util. Factor	1.00	0.95		1.00	0.95	1.00		1.00		1.00	1.00	
Frpb, ped/bikes	1.00	1.00		1.00	1.00	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	1.00		1.00	1.00	0.85		0.97		1.00	0.89	
Flt Protected	0.95	1.00		0.95	1.00	1.00		1.00		0.95	1.00	
Satd. Flow (prot)	1561	3211		1686	3252	1340		1371		1561	1308	
Flt Permitted	0.22	1.00		0.16	1.00	1.00		1.00		0.74	1.00	
Satd. Flow (perm)	354	3211		288	3252	1340		1371		1220	1308	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	126	1211	4	9	849	156	0	18	5	329	26	83
RTOR Reduction (vph)	0	0	0	0	0	95	0	3	0	0	58	0
Lane Group Flow (vph)	126	1215	0	9	849	61	0	20	0	329	51	0
Confl. Peds. (#/hr)			1	1			1					1
Heavy Vehicles (%)	8%	5%	0%	0%	11%	11%	0%	21%	0%	8%	19%	8%
Turn Type	pm+pt	NA		pm+pt	NA	Perm	Perm	NA		Perm	NA	
Protected Phases	5	2		1	6			8			4	
Permitted Phases	2			6		6	8			4		
Actuated Green, G (s)	47.0	42.7		36.2	34.9	34.9		27.5		27.5	27.5	
Effective Green, g (s)	47.0	42.7		36.2	34.9	34.9		27.5		27.5	27.5	
Actuated g/C Ratio	0.52	0.47		0.40	0.39	0.39		0.31		0.31	0.31	
Clearance Time (s)	3.0	7.8		3.0	7.8	7.8		7.6		7.6	7.6	
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0		3.0		3.0	3.0	
Lane Grp Cap (vph)	307	1525		136	1262	520		419		373	400	
v/s Ratio Prot	c0.04	c0.38		0.00	0.26			0.01			0.04	
v/s Ratio Perm	0.17			0.03		0.05				c0.27		
v/c Ratio	0.41	0.80		0.07	0.67	0.12		0.05		0.88	0.13	
Uniform Delay, d1	12.4	19.9		16.7	22.8	17.6		22.0		29.7	22.5	
Progression Factor	1.00	1.00		1.00	1.00	1.00		1.00		1.00	1.00	
Incremental Delay, d2	0.9	4.4		0.2	1.4	0.1		0.0		20.9	0.1	
Delay (s)	13.3	24.3		16.9	24.2	17.7		22.0		50.6	22.7	
Level of Service	B	C		B	C	B		C		D	C	
Approach Delay (s)		23.3			23.1			22.0			43.6	
Approach LOS		C			C			C			D	

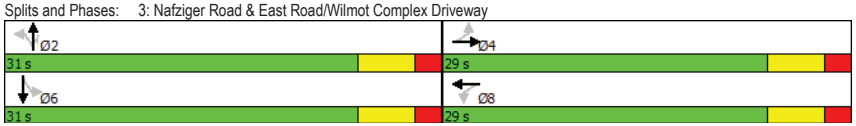
Intersection Summary			
HCM 2000 Control Delay	26.4	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.83		
Actuated Cycle Length (s)	89.9	Sum of lost time (s)	18.4
Intersection Capacity Utilization	84.1%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	3	1	34	1	28	10	250	35	29	434	0
Future Volume (vph)	0	3	1	34	1	28	10	250	35	29	434	0
Ideal Flow (vphpl)	1550	1550	1550	1550	1550	1550	1650	1650	1750	1550	1550	1550
Storage Length (m)	0.0		0.0	0.0		0.0	0.0		50.0	0.0		0.0
Storage Lanes	0		0	0		0	0		1	0		0
Taper Length (m)	7.5			7.5			7.5			7.5		
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		0.966			0.940				0.850			
Flt Protected					0.974			0.998			0.997	
Satd. Flow (prot)	0	1497	0	0	1394	0	0	1476	1488	0	1463	0
Flt Permitted					0.829			0.983			0.974	
Satd. Flow (perm)	0	1497	0	0	1187	0	0	1454	1488	0	1429	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		1			28				55			
Link Speed (k/h)		50			50			80			80	
Link Distance (m)		79.8			58.8			368.7			154.9	
Travel Time (s)		5.7			4.2			16.6			7.0	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	0%	0%	0%	0%	0%	4%	0%	12%	0%	0%	6%	0%
Adj. Flow (vph)	0	3	1	34	1	28	10	250	35	29	434	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	4	0	0	63	0	0	260	35	0	463	0
Turn Type		NA		Perm	NA		Perm	NA	Perm	Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2		2	6		
Detector Phase	4	4		8	8		2	2	2	6	6	
Switch Phase												
Minimum Initial (s)	5.0	5.0		5.0	5.0		5.0	5.0	5.0	5.0	5.0	
Minimum Split (s)	29.0	29.0		24.0	24.0		24.0	24.0	24.0	24.0	24.0	
Total Split (s)	29.0	29.0		29.0	29.0		31.0	31.0	31.0	31.0	31.0	
Total Split (%)	48.3%	48.3%		48.3%	48.3%		51.7%	51.7%	51.7%	51.7%	51.7%	
Maximum Green (s)	23.0	23.0		23.0	23.0		25.0	25.0	25.0	25.0	25.0	
Yellow Time (s)	4.0	4.0		4.0	4.0		4.0	4.0	4.0	4.0	4.0	
All-Red Time (s)	2.0	2.0		2.0	2.0		2.0	2.0	2.0	2.0	2.0	
Lost Time Adjust (s)		-2.0			-2.0			-2.0	-2.0		-2.0	
Total Lost Time (s)		4.0			4.0			4.0	4.0		4.0	
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0	3.0	3.0	3.0	
Recall Mode	None	None		None	None		Max	Max	Max	Max	Max	
Walk Time (s)	7.0	7.0		7.0	7.0		7.0	7.0	7.0	7.0	7.0	
Flash Dont Walk (s)	11.0	11.0		11.0	11.0		11.0	11.0	11.0	11.0	11.0	
Pedestrian Calls (#/hr)	0	0		0	0		0	0	0	0	0	
Act Effct Green (s)		9.1			9.2			40.2	40.2		40.2	
Actuated g/C Ratio		0.18			0.18			0.79	0.79		0.79	
v/c Ratio		0.01			0.27			0.23	0.03		0.41	
Control Delay		14.8			14.5			4.0	1.1		5.4	
Queue Delay		0.0			0.0			0.0	0.0		0.0	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Total Delay		14.8			14.5			4.0	1.1		5.4	
LOS		B			B			A	A		A	
Approach Delay		14.8			14.5			3.6			5.4	
Approach LOS		B			B			A			A	
Queue Length 50th (m)		0.3			3.5			7.6	0.0		16.4	
Queue Length 95th (m)		2.0			9.8			19.2	1.7		40.7	
Internal Link Dist (m)		55.8			34.8			344.7			130.9	
Turn Bay Length (m)									50.0			
Base Capacity (vph)		747			605			1155	1193		1135	
Starvation Cap Reductn		0			0			0	0		0	
Spillback Cap Reductn		0			0			0	0		0	
Storage Cap Reductn		0			0			0	0		0	
Reduced v/c Ratio		0.01			0.10			0.23	0.03		0.41	

Intersection Summary			
Area Type:	Other		
Cycle Length: 60			
Actuated Cycle Length: 50.6			
Natural Cycle: 60			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 0.41			
Intersection Signal Delay: 5.5		Intersection LOS: A	
Intersection Capacity Utilization 66.9%		ICU Level of Service C	
Analysis Period (min) 15			

Splits and Phases: 3: Nafziger Road & East Road/Wilmot Complex Driveway



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	3	1	34	1	28	10	250	35	29	434	0
Future Volume (vph)	0	3	1	34	1	28	10	250	35	29	434	0
Ideal Flow (vphpl)	1550	1550	1550	1550	1550	1550	1650	1650	1750	1550	1550	1550
Total Lost time (s)		4.0			4.0			4.0	4.0		4.0	
Lane Util. Factor		1.00			1.00			1.00	1.00		1.00	
Frt		0.97			0.94			1.00	0.85		1.00	
Flt Protected		1.00			0.97			1.00	1.00		1.00	
Satd. Flow (prot)		1498			1394			1476	1488		1463	
Flt Permitted		1.00			0.83			0.98	1.00		0.97	
Satd. Flow (perm)		1498			1187			1455	1488		1430	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	0	3	1	34	1	28	10	250	35	29	434	0
RTOR Reduction (vph)	0	1	0	0	24	0	0	0	10	0	0	0
Lane Group Flow (vph)	0	3	0	0	39	0	0	260	25	0	463	0
Heavy Vehicles (%)	0%	0%	0%	0%	0%	4%	0%	12%	0%	0%	6%	0%
Turn Type		NA		Perm	NA		Perm	NA	Perm	Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2		2	6		
Actuated Green, G (s)		4.7			4.7			36.5	36.5		36.5	
Effective Green, g (s)		6.7			6.7			38.5	38.5		38.5	
Actuated g/C Ratio		0.13			0.13			0.72	0.72		0.72	
Clearance Time (s)		6.0			6.0			6.0	6.0		6.0	
Vehicle Extension (s)		3.0			3.0			3.0	3.0		3.0	
Lane Grp Cap (vph)		188			149			1052	1076		1034	
v/s Ratio Prot		0.00										
v/s Ratio Perm					c0.03			0.18	0.02		c0.32	
v/c Ratio		0.02			0.26			0.25	0.02		0.45	
Uniform Delay, d1		20.4			21.0			2.5	2.1		3.0	
Progression Factor		1.00			1.00			1.00	1.00		1.00	
Incremental Delay, d2		0.0			0.9			0.6	0.0		1.4	
Delay (s)		20.4			21.9			3.0	2.1		4.4	
Level of Service		C			C			A	A		A	
Approach Delay (s)		20.4			21.9			2.9			4.4	
Approach LOS		C			C			A			A	

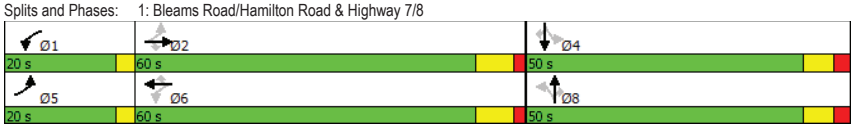
Intersection Summary			
HCM 2000 Control Delay	5.3	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.42		
Actuated Cycle Length (s)	53.2	Sum of lost time (s)	8.0
Intersection Capacity Utilization	66.9%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	65	919	143	73	1104	203	213	103	120	230	84	140
Future Volume (vph)	65	919	143	73	1104	203	213	103	120	230	84	140
Ideal Flow (vphpl)	1775	1900	1750	1775	1900	1750	1775	1900	1750	1775	1900	1750
Storage Length (m)	300.0		110.0	100.0		75.0	70.0		85.0	65.0		155.0
Storage Lanes	1		1	1		1	1		1	1		1
Taper Length (m)	40.0			100.0			40.0			20.0		
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor	1.00		0.98	1.00		0.97	1.00		0.99	1.00		0.99
Frt			0.850			0.850			0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1637	3438	1458	1637	3195	1444	1606	1900	1430	1637	1827	1458
Flt Permitted	0.183			0.250			0.702			0.690		
Satd. Flow (perm)	315	3438	1426	431	3195	1404	1185	1900	1411	1188	1827	1439
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			143			168			120			140
Link Speed (k/h)		80			80			50			50	
Link Distance (m)		341.3			1424.6			147.6			715.9	
Travel Time (s)		15.4			64.1			10.6			51.5	
Confl. Peds. (#/hr)	4		1	1		4	1		1	1		1
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	3%	5%	2%	3%	13%	3%	5%	0%	4%	3%	4%	2%
Adj. Flow (vph)	65	919	143	73	1104	203	213	103	120	230	84	140
Shared Lane Traffic (%)												
Lane Group Flow (vph)	65	919	143	73	1104	203	213	103	120	230	84	140
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	Perm	NA	Perm	Perm	NA	Perm
Protected Phases	5	2		1	6			8			4	
Permitted Phases	2		2	6		6	8		8	4		4
Detector Phase	5	2	2	1	6	6	8	8	8	4	4	4
Switch Phase												
Minimum Initial (s)	7.0	20.0	20.0	7.0	20.0	20.0	10.0	10.0	10.0	10.0	10.0	10.0
Minimum Split (s)	20.0	60.0	60.0	20.0	60.0	60.0	50.0	50.0	50.0	50.0	50.0	50.0
Total Split (s)	20.0	60.0	60.0	20.0	60.0	60.0	50.0	50.0	50.0	50.0	50.0	50.0
Total Split (%)	15.4%	46.2%	46.2%	15.4%	46.2%	46.2%	38.5%	38.5%	38.5%	38.5%	38.5%	38.5%
Maximum Green (s)	17.0	52.2	52.2	17.0	52.2	52.2	42.7	42.7	42.7	42.7	42.7	42.7
Yellow Time (s)	3.0	5.9	5.9	3.0	5.9	5.9	4.5	4.5	4.5	4.5	4.5	4.5
All-Red Time (s)	0.0	1.9	1.9	0.0	1.9	1.9	2.8	2.8	2.8	2.8	2.8	2.8
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	3.0	7.8	7.8	3.0	7.8	7.8	7.3	7.3	7.3	7.3	7.3	7.3
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag						
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes						
Vehicle Extension (s)	3.0	1.8	1.8	3.0	1.8	1.8	3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	Max	Max	None	Max	Max	None	None	None	None	None	None
Walk Time (s)		19.0	19.0		19.0	19.0	19.0	19.0	19.0	19.0	19.0	19.0
Flash Dont Walk (s)		14.0	14.0		14.0	14.0	14.0	14.0	14.0	14.0	14.0	14.0
Pedestrian Calls (#/hr)		0	0		0	0	0	0	0	0	0	0
Act Effct Green (s)	63.8	53.0	53.0	64.1	53.2	53.2	24.8	24.8	24.8	24.8	24.8	24.8
Actuated g/C Ratio	0.63	0.52	0.52	0.63	0.52	0.52	0.24	0.24	0.24	0.24	0.24	0.24
v/c Ratio	0.22	0.51	0.18	0.20	0.66	0.25	0.74	0.22	0.28	0.79	0.19	0.31

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Control Delay	10.1	19.4	3.7	9.6	22.5	5.2	51.1	31.6	7.0	55.9	31.1	6.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	10.1	19.4	3.7	9.6	22.5	5.2	51.1	31.6	7.0	55.9	31.1	6.8
LOS	B	B	A	A	C	A	D	C	A	E	C	A
Approach Delay		16.8			19.3			34.3			36.2	
Approach LOS		B			B			C			D	
Queue Length 50th (m)	4.4	64.7	0.0	5.0	86.6	3.5	41.3	17.3	0.0	45.4	14.0	0.0
Queue Length 95th (m)	12.8	110.8	11.9	14.0	147.4	19.5	69.6	32.0	13.4	75.4	27.0	14.4
Internal Link Dist (m)		317.3			1400.6			123.6			691.9	
Turn Bay Length (m)	300.0		110.0	100.0		75.0	70.0		85.0	65.0		155.0
Base Capacity (vph)	430	1794	812	486	1671	814	505	811	670	507	779	694
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.15	0.51	0.18	0.15	0.66	0.25	0.42	0.13	0.18	0.45	0.11	0.20

Intersection Summary			
Area Type:	Other		
Cycle Length: 130			
Actuated Cycle Length: 101.6			
Natural Cycle: 130			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 0.79			
Intersection Signal Delay: 22.7		Intersection LOS: C	
Intersection Capacity Utilization 72.8%		ICU Level of Service C	
Analysis Period (min) 15			

Splits and Phases: 1: Bleams Road/Hamilton Road & Highway 7/8



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	65	919	143	73	1104	203	213	103	120	230	84	140
Future Volume (vph)	65	919	143	73	1104	203	213	103	120	230	84	140
Ideal Flow (vphpl)	1775	1900	1750	1775	1900	1750	1775	1900	1750	1775	1900	1750
Total Lost time (s)	3.0	7.8	7.8	3.0	7.8	7.8	7.3	7.3	7.3	7.3	7.3	7.3
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frpb, ped/bikes	1.00	1.00	0.98	1.00	1.00	0.97	1.00	1.00	0.99	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	1.00	1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1637	3438	1427	1637	3195	1407	1605	1900	1412	1636	1827	1440
Flt Permitted	0.18	1.00	1.00	0.25	1.00	1.00	0.70	1.00	1.00	0.69	1.00	1.00
Satd. Flow (perm)	316	3438	1427	431	3195	1407	1186	1900	1412	1189	1827	1440
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	65	919	143	73	1104	203	213	103	120	230	84	140
RTOR Reduction (vph)	0	0	69	0	0	81	0	0	91	0	0	106
Lane Group Flow (vph)	65	919	74	73	1104	122	213	103	29	230	84	34
Confl. Peds. (#/hr)	4		1	1		4	1		1	1		1
Heavy Vehicles (%)	3%	5%	2%	3%	13%	3%	5%	0%	4%	3%	4%	2%
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	Perm	NA	Perm	Perm	NA	Perm
Protected Phases	5	2		1	6			8			4	
Permitted Phases	2		2	6		6	8		8	4		4
Actuated Green, G (s)	59.1	53.1	53.1	59.3	53.2	53.2	24.9	24.9	24.9	24.9	24.9	24.9
Effective Green, g (s)	59.1	53.1	53.1	59.3	53.2	53.2	24.9	24.9	24.9	24.9	24.9	24.9
Actuated g/C Ratio	0.58	0.52	0.52	0.58	0.52	0.52	0.24	0.24	0.24	0.24	0.24	0.24
Clearance Time (s)	3.0	7.8	7.8	3.0	7.8	7.8	7.3	7.3	7.3	7.3	7.3	7.3
Vehicle Extension (s)	3.0	1.8	1.8	3.0	1.8	1.8	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	260	1786	741	322	1663	732	288	462	344	289	445	350
v/s Ratio Prot	c0.01	0.27		0.01	c0.35			0.05			0.05	
v/s Ratio Perm	0.13		0.05	0.12		0.09	0.18		0.02	c0.19		0.02
v/c Ratio	0.25	0.51	0.10	0.23	0.66	0.17	0.74	0.22	0.08	0.80	0.19	0.10
Uniform Delay, d1	10.8	16.1	12.4	10.0	17.9	12.9	35.7	30.9	29.9	36.3	30.6	29.9
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	0.5	1.1	0.3	0.4	2.1	0.5	9.6	0.2	0.1	14.0	0.2	0.1
Delay (s)	11.3	17.2	12.7	10.4	20.1	13.4	45.2	31.2	30.0	50.3	30.8	30.1
Level of Service	B	B	B	B	C	B	D	C	C	D	C	C
Approach Delay (s)		16.3			18.6			37.7			40.5	
Approach LOS		B			B			D			D	

Intersection Summary					
HCM 2000 Control Delay	23.2	HCM 2000 Level of Service		C	
HCM 2000 Volume to Capacity ratio	0.67				
Actuated Cycle Length (s)	102.2	Sum of lost time (s)		18.1	
Intersection Capacity Utilization	72.8%	ICU Level of Service		C	
Analysis Period (min)	15				

c Critical Lane Group

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	116	1133	1	6	1268	299	1	26	6	130	24	116
Future Volume (vph)	116	1133	1	6	1268	299	1	26	6	130	24	116
Ideal Flow (vphpl)	1775	1775	1775	1775	1900	1750	1775	1650	1650	1775	1650	1650
Storage Length (m)	145.0		0.0	105.0		90.0	80.0		0.0	120.0		0.0
Storage Lanes	1		0	1		1	1		0	1		0
Taper Length (m)	100.0			100.0			40.0			100.0		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor						0.98						
Frt						0.850		0.972			0.876	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1561	3212	0	1686	3252	1340	1686	1370	0	1561	1315	0
Flt Permitted	0.130			0.233			0.668			0.736		
Satd. Flow (perm)	214	3212	0	414	3252	1311	1186	1370	0	1210	1315	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)						299		6			116	
Link Speed (k/h)		80			80			80			80	
Link Distance (m)		1424.6			340.0			138.9			368.7	
Travel Time (s)		64.1			15.3			6.3			16.6	
Confl. Peds. (#/hr)	1					1						
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	8%	5%	0%	0%	11%	11%	0%	21%	0%	8%	19%	8%
Adj. Flow (vph)	116	1133	1	6	1268	299	1	26	6	130	24	116
Shared Lane Traffic (%)												
Lane Group Flow (vph)	116	1134	0	6	1268	299	1	32	0	130	140	0
Turn Type	pm+pt	NA		pm+pt	NA	Perm	Perm	NA		Perm	NA	
Protected Phases	5	2		1	6			8			4	
Permitted Phases	2			6		6	8			4		
Detector Phase	5	2		1	6	6	8	8		4	4	
Switch Phase												
Minimum Initial (s)	7.0	20.0		7.0	20.0	20.0	10.0	10.0		10.0	10.0	
Minimum Split (s)	20.0	50.0		20.0	50.0	50.0	35.0	35.0		35.0	35.0	
Total Split (s)	20.0	50.0		20.0	50.0	50.0	35.0	35.0		35.0	35.0	
Total Split (%)	19.0%	47.6%		19.0%	47.6%	47.6%	33.3%	33.3%		33.3%	33.3%	
Maximum Green (s)	17.0	42.2		17.0	42.2	42.2	27.4	27.4		27.4	27.4	
Yellow Time (s)	3.0	5.9		3.0	5.9	5.9	5.9	5.9		5.9	5.9	
All-Red Time (s)	0.0	1.9		0.0	1.9	1.9	1.7	1.7		1.7	1.7	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Total Lost Time (s)	3.0	7.8		3.0	7.8	7.8	7.6	7.6		7.6	7.6	
Lead/Lag	Lead	Lag		Lead	Lag	Lag						
Lead-Lag Optimize?	Yes	Yes		Yes	Yes	Yes						
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	
Recall Mode	None	Max		None	Min	Min	None	None		None	None	
Walk Time (s)		16.0			16.0	16.0	16.0	16.0		16.0	16.0	
Flash Dont Walk (s)		11.0			11.0	11.0	11.0	11.0		11.0	11.0	
Pedestrian Calls (#/hr)		0			0	0	0	0		0	0	
Act Effct Green (s)	56.2	49.6		52.1	41.8	41.8	14.6	14.6		14.6	14.6	
Actuated g/C Ratio	0.69	0.61		0.64	0.51	0.51	0.18	0.18		0.18	0.18	
v/c Ratio	0.39	0.58		0.02	0.76	0.37	0.00	0.13		0.60	0.42	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Control Delay	8.9	12.5		5.3	21.9	3.3	28.0	26.3		44.1	13.2	
Queue Delay	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Total Delay	8.9	12.5		5.3	21.9	3.3	28.0	26.3		44.1	13.2	
LOS	A	B		A	C	A	C	C		D	B	
Approach Delay		12.2			18.3			26.4			28.1	
Approach LOS		B			B			C			C	
Queue Length 50th (m)	5.2	48.2		0.3	84.8	0.0	0.2	3.7		20.4	3.4	
Queue Length 95th (m)	13.8	109.7		1.7	#151.0	14.8	1.5	11.7		40.4	19.5	
Internal Link Dist (m)		1400.6			316.0			114.9			344.7	
Turn Bay Length (m)	145.0			105.0		90.0	80.0			120.0		
Base Capacity (vph)	431	1953		553	1705	829	403	470		412	524	
Starvation Cap Reductn	0	0		0	0	0	0	0		0	0	
Spillback Cap Reductn	0	0		0	0	0	0	0		0	0	
Storage Cap Reductn	0	0		0	0	0	0	0		0	0	
Reduced v/c Ratio	0.27	0.58		0.01	0.74	0.36	0.00	0.07		0.32	0.27	

Intersection Summary		
Area Type:	Other	
Cycle Length: 105		
Actuated Cycle Length: 81.6		
Natural Cycle: 105		
Control Type: Actuated-Uncoordinated		
Maximum v/c Ratio: 0.76		
Intersection Signal Delay: 16.8		Intersection LOS: B
Intersection Capacity Utilization 72.5%		ICU Level of Service C
Analysis Period (min) 15		
# 95th percentile volume exceeds capacity, queue may be longer.		
Queue shown is maximum after two cycles.		

Splits and Phases: 2: Nafziger Road & Highway 7/8

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	116	1133	1	6	1268	299	1	26	6	130	24	116
Future Volume (vph)	116	1133	1	6	1268	299	1	26	6	130	24	116
Ideal Flow (vphpl)	1775	1775	1775	1775	1900	1750	1775	1650	1650	1775	1650	1650
Total Lost time (s)	3.0	7.8		3.0	7.8	7.8	7.6	7.6		7.6	7.6	
Lane Util. Factor	1.00	0.95		1.00	0.95	1.00	1.00	1.00		1.00	1.00	
Frpb, ped/bikes	1.00	1.00		1.00	1.00	0.98	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	1.00	
Frt	1.00	1.00		1.00	1.00	0.85	1.00	0.97		1.00	0.88	
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1561	3212		1686	3252	1311	1686	1370		1561	1315	
Flt Permitted	0.13	1.00		0.23	1.00	1.00	0.67	1.00		0.74	1.00	
Satd. Flow (perm)	214	3212		413	3252	1311	1185	1370		1210	1315	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	116	1133	1	6	1268	299	1	26	6	130	24	116
RTOR Reduction (vph)	0	0	0	0	0	143	0	5	0	0	96	0
Lane Group Flow (vph)	116	1134	0	6	1268	156	1	27	0	130	44	0
Confl. Peds. (#/hr)	1					1						
Heavy Vehicles (%)	8%	5%	0%	0%	11%	11%	0%	21%	0%	8%	19%	8%
Turn Type	pm+pt	NA		pm+pt	NA	Perm	Perm	NA		Perm	NA	
Protected Phases	5	2		1	6			8			4	
Permitted Phases	2			6		6	8			4		
Actuated Green, G (s)	53.8	49.6		44.8	43.6	43.6	14.6	14.6		14.6	14.6	
Effective Green, g (s)	53.8	49.6		44.8	43.6	43.6	14.6	14.6		14.6	14.6	
Actuated g/C Ratio	0.64	0.59		0.53	0.52	0.52	0.17	0.17		0.17	0.17	
Clearance Time (s)	3.0	7.8		3.0	7.8	7.8	7.6	7.6		7.6	7.6	
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	253	1901		239	1691	682	206	238		210	229	
v/s Ratio Prot	c0.04	0.35		0.00	c0.39			0.02			0.03	
v/s Ratio Perm	0.25			0.01		0.12	0.00			c0.11		
v/c Ratio	0.46	0.60		0.03	0.75	0.23	0.00	0.11		0.62	0.19	
Uniform Delay, d1	8.9	10.8		9.2	15.8	10.9	28.6	29.1		32.0	29.6	
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Incremental Delay, d2	1.3	1.4		0.0	1.9	0.2	0.0	0.2		5.3	0.4	
Delay (s)	10.3	12.2		9.2	17.7	11.1	28.6	29.4		37.4	30.0	
Level of Service	B	B		A	B	B	C	C		D	C	
Approach Delay (s)		12.0			16.4			29.3			33.5	
Approach LOS		B			B			C			C	

Intersection Summary			
HCM 2000 Control Delay	16.3	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.69		
Actuated Cycle Length (s)	83.8	Sum of lost time (s)	18.4
Intersection Capacity Utilization	72.5%	ICU Level of Service	C
Analysis Period (min)	15		

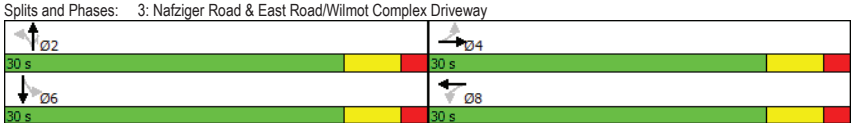
c Critical Lane Group

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	1	3	55	0	55	0	445	101	49	265	1
Future Volume (vph)	0	1	3	55	0	55	0	445	101	49	265	1
Ideal Flow (vphpl)	1550	1550	1550	1550	1550	1550	1650	1650	1750	1550	1550	1550
Storage Length (m)	0.0		0.0	0.0		0.0	0.0		50.0	0.0		0.0
Storage Lanes	0		0	0		0	0		1	0		0
Taper Length (m)	7.5			7.5			7.5			7.5		
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		0.899			0.932				0.850			
Flt Protected					0.976						0.992	
Satd. Flow (prot)	0	1393	0	0	1396	0	0	1602	1488	0	1475	0
Flt Permitted					0.840						0.901	
Satd. Flow (perm)	0	1393	0	0	1201	0	0	1602	1488	0	1340	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		3			55				101			
Link Speed (k/h)		50			50			80			80	
Link Distance (m)		79.8			58.8			368.7			154.9	
Travel Time (s)		5.7			4.2			16.6			7.0	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	0%	0%	0%	0%	0%	2%	0%	3%	0%	0%	5%	2%
Adj. Flow (vph)	0	1	3	55	0	55	0	445	101	49	265	1
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	4	0	0	110	0	0	445	101	0	315	0
Turn Type		NA		Perm	NA			NA	Perm	Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2		2	6		
Detector Phase	4	4		8	8		2	2	2	6	6	
Switch Phase												
Minimum Initial (s)	5.0	5.0		5.0	5.0		5.0	5.0	5.0	5.0	5.0	
Minimum Split (s)	24.0	24.0		24.0	24.0		24.0	24.0	24.0	24.0	24.0	
Total Split (s)	30.0	30.0		30.0	30.0		30.0	30.0	30.0	30.0	30.0	
Total Split (%)	50.0%	50.0%		50.0%	50.0%		50.0%	50.0%	50.0%	50.0%	50.0%	
Maximum Green (s)	24.0	24.0		24.0	24.0		24.0	24.0	24.0	24.0	24.0	
Yellow Time (s)	4.0	4.0		4.0	4.0		4.0	4.0	4.0	4.0	4.0	
All-Red Time (s)	2.0	2.0		2.0	2.0		2.0	2.0	2.0	2.0	2.0	
Lost Time Adjust (s)		-2.0			-2.0			-2.0	-2.0		-2.0	
Total Lost Time (s)		4.0			4.0			4.0	4.0		4.0	
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0	3.0	3.0	3.0	
Recall Mode	None	None		None	None		Max	Max	Max	Max	Max	
Walk Time (s)	7.0	7.0		7.0	7.0		7.0	7.0	7.0	7.0	7.0	
Flash Dont Walk (s)	11.0	11.0		11.0	11.0		11.0	11.0	11.0	11.0	11.0	
Pedestrian Calls (#/hr)	0	0		0	0		0	0	0	0	0	
Act Effct Green (s)		10.0			10.0			34.8	34.8		34.8	
Actuated g/C Ratio		0.20			0.20			0.70	0.70		0.70	
v/c Ratio		0.01			0.38			0.39	0.09		0.33	
Control Delay		10.2			13.2			6.3	1.7		6.1	
Queue Delay		0.0			0.0			0.0	0.0		0.0	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Total Delay		10.2			13.2			6.3	1.7		6.1	
LOS		B			B			A	A		A	
Approach Delay		10.3			13.2			5.5			6.1	
Approach LOS		B			B			A			A	
Queue Length 50th (m)		0.1			4.6			16.1	0.0		10.7	
Queue Length 95th (m)		1.7			13.2			39.6	4.4		28.3	
Internal Link Dist (m)		55.8			34.8			344.7			130.9	
Turn Bay Length (m)									50.0			
Base Capacity (vph)		739			662			1127	1076		942	
Starvation Cap Reductn		0			0			0	0		0	
Spillback Cap Reductn		0			0			0	0		0	
Storage Cap Reductn		0			0			0	0		0	
Reduced v/c Ratio		0.01			0.17			0.39	0.09		0.33	

Intersection Summary			
Area Type:	Other		
Cycle Length: 60			
Actuated Cycle Length: 49.4			
Natural Cycle: 50			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 0.39			
Intersection Signal Delay: 6.5		Intersection LOS: A	
Intersection Capacity Utilization 72.0%		ICU Level of Service C	
Analysis Period (min) 15			

Splits and Phases: 3: Nafziger Road & East Road/Wilmot Complex Driveway



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	1	3	55	0	55	0	445	101	49	265	1
Future Volume (vph)	0	1	3	55	0	55	0	445	101	49	265	1
Ideal Flow (vphpl)	1550	1550	1550	1550	1550	1550	1650	1650	1750	1550	1550	1550
Total Lost time (s)		4.0			4.0			4.0	4.0		4.0	
Lane Util. Factor		1.00			1.00			1.00	1.00		1.00	
Frt		0.90			0.93			1.00	0.85		1.00	
Flt Protected		1.00			0.98			1.00	1.00		0.99	
Satd. Flow (prot)		1393			1396			1602	1488		1475	
Flt Permitted		1.00			0.84			1.00	1.00		0.90	
Satd. Flow (perm)		1393			1202			1602	1488		1339	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	0	1	3	55	0	55	0	445	101	49	265	1
RTOR Reduction (vph)	0	2	0	0	45	0	0	0	33	0	0	0
Lane Group Flow (vph)	0	2	0	0	65	0	0	445	68	0	315	0
Heavy Vehicles (%)	0%	0%	0%	0%	0%	2%	0%	3%	0%	0%	5%	2%
Turn Type		NA		Perm	NA			NA	Perm	Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2		2	6		
Actuated Green, G (s)		6.8			6.8			31.9	31.9		31.9	
Effective Green, g (s)		8.8			8.8			33.9	33.9		33.9	
Actuated g/C Ratio		0.17			0.17			0.67	0.67		0.67	
Clearance Time (s)		6.0			6.0			6.0	6.0		6.0	
Vehicle Extension (s)		3.0			3.0			3.0	3.0		3.0	
Lane Grp Cap (vph)		241			208			1071	994		895	
v/s Ratio Prot		0.00						c0.28				
v/s Ratio Perm					c0.05				0.05		0.24	
v/c Ratio		0.01			0.31			0.42	0.07		0.35	
Uniform Delay, d1		17.3			18.3			3.9	2.9		3.6	
Progression Factor		1.00			1.00			1.00	1.00		1.00	
Incremental Delay, d2		0.0			0.9			1.2	0.1		1.1	
Delay (s)		17.3			19.2			5.0	3.0		4.7	
Level of Service		B			B			A	A		A	
Approach Delay (s)		17.3			19.2			4.7			4.7	
Approach LOS		B			B			A			A	

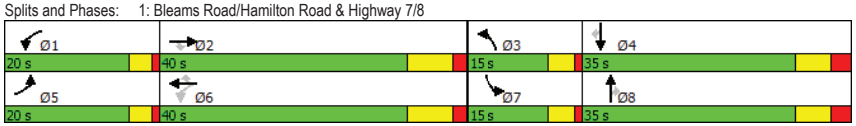
Intersection Summary			
HCM 2000 Control Delay	6.4	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.39		
Actuated Cycle Length (s)	50.7	Sum of lost time (s)	8.0
Intersection Capacity Utilization	72.0%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	109	969	148	114	643	196	100	54	94	293	136	104
Future Volume (vph)	109	969	148	114	643	196	100	54	94	293	136	104
Ideal Flow (vphpl)	1775	1900	1750	1775	1900	1750	1775	1900	1750	1775	1900	1750
Storage Length (m)	300.0		110.0	100.0		75.0	70.0		85.0	55.0		155.0
Storage Lanes	2		1	1		1	2		1	2		1
Taper Length (m)	40.0			40.0			40.0			40.0		
Lane Util. Factor	0.97	0.95	1.00	1.00	0.95	1.00	0.97	1.00	1.00	0.97	1.00	1.00
Ped Bike Factor	1.00		0.98	1.00		0.98			0.99	1.00		
Frt			0.850			0.850			0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	3176	3438	1458	1637	3195	1444	3116	1900	1430	3176	1827	1458
Flt Permitted	0.950			0.175			0.950			0.950		
Satd. Flow (perm)	3174	3438	1424	301	3195	1413	3116	1900	1412	3171	1827	1458
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			148			196			132			132
Link Speed (k/h)		80			80			50			50	
Link Distance (m)		163.4			1398.3			147.6			715.9	
Travel Time (s)		7.4			62.9			10.6			51.5	
Confl. Peds. (#/hr)	1		2	2		1			1	1		
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	3%	5%	2%	3%	13%	3%	5%	0%	4%	3%	4%	2%
Adj. Flow (vph)	109	969	148	114	643	196	100	54	94	293	136	104
Shared Lane Traffic (%)												
Lane Group Flow (vph)	109	969	148	114	643	196	100	54	94	293	136	104
Turn Type	Prot	NA	Perm	pm+pt	NA	Perm	Prot	NA	Perm	Prot	NA	Perm
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases			2	6		6			8			4
Detector Phase	5	2	2	1	6	6	3	8	8	7	4	4
Switch Phase												
Minimum Initial (s)	7.0	20.0	20.0	7.0	20.0	20.0	5.0	10.0	10.0	5.0	10.0	10.0
Minimum Split (s)	20.0	40.0	40.0	20.0	40.0	40.0	9.5	35.0	35.0	9.5	35.0	35.0
Total Split (s)	20.0	40.0	40.0	20.0	40.0	40.0	15.0	35.0	35.0	15.0	35.0	35.0
Total Split (%)	18.2%	36.4%	36.4%	18.2%	36.4%	36.4%	13.6%	31.8%	31.8%	13.6%	31.8%	31.8%
Maximum Green (s)	16.0	32.2	32.2	16.0	32.2	32.2	10.5	27.7	27.7	10.5	27.7	27.7
Yellow Time (s)	3.0	5.9	5.9	3.0	5.9	5.9	3.5	4.5	4.5	3.5	4.5	4.5
All-Red Time (s)	1.0	1.9	1.9	1.0	1.9	1.9	1.0	2.8	2.8	1.0	2.8	2.8
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.0	7.8	7.8	4.0	7.8	7.8	4.5	7.3	7.3	4.5	7.3	7.3
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	1.8	1.8	3.0	1.8	1.8	3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	Max	Max	None	Max	Max	None	None	None	None	None	None
Walk Time (s)		19.0	19.0		19.0	19.0		19.0	19.0		19.0	19.0
Flash Dont Walk (s)		14.0	14.0		14.0	14.0		14.0	14.0		14.0	14.0
Pedestrian Calls (#/hr)		0	0		0	0		0	0		0	0
Act Effct Green (s)	8.6	33.4	33.4	46.9	36.1	36.1	8.2	11.8	11.8	11.2	13.2	13.2
Actuated g/C Ratio	0.10	0.39	0.39	0.55	0.43	0.43	0.10	0.14	0.14	0.13	0.16	0.16
v/c Ratio	0.34	0.71	0.23	0.38	0.47	0.27	0.33	0.20	0.30	0.70	0.48	0.31

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Control Delay	40.4	26.9	4.8	13.1	21.7	4.4	40.7	35.9	5.3	47.6	40.2	6.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	40.4	26.9	4.8	13.1	21.7	4.4	40.7	35.9	5.3	47.6	40.2	6.2
LOS	D	C	A	B	C	A	D	D	A	D	D	A
Approach Delay		25.4			17.1			26.3			37.6	
Approach LOS		C			B			C			D	
Queue Length 50th (m)	9.1	73.1	0.0	8.3	43.7	0.0	8.4	8.6	0.0	25.5	21.9	0.0
Queue Length 95th (m)	18.5	114.7	12.9	18.9	70.8	14.6	17.3	19.7	6.8	#51.0	42.2	9.0
Internal Link Dist (m)		139.4			1374.3			123.6			691.9	
Turn Bay Length (m)	300.0		110.0	100.0		75.0	70.0		85.0	55.0		155.0
Base Capacity (vph)	607	1357	651	432	1365	715	391	629	556	419	604	571
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.18	0.71	0.23	0.26	0.47	0.27	0.26	0.09	0.17	0.70	0.23	0.18

Intersection Summary		
Area Type:	Other	
Cycle Length: 110		
Actuated Cycle Length: 84.6		
Natural Cycle: 105		
Control Type: Actuated-Uncoordinated		
Maximum v/c Ratio: 0.71		
Intersection Signal Delay: 25.0		Intersection LOS: C
Intersection Capacity Utilization 71.8%		ICU Level of Service C
Analysis Period (min) 15		
# 95th percentile volume exceeds capacity, queue may be longer.		
Queue shown is maximum after two cycles.		

Splits and Phases: 1: Bleams Road/Hamilton Road & Highway 7/8



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	109	969	148	114	643	196	100	54	94	293	136	104
Future Volume (vph)	109	969	148	114	643	196	100	54	94	293	136	104
Ideal Flow (vphpl)	1775	1900	1750	1775	1900	1750	1775	1900	1750	1775	1900	1750
Total Lost time (s)	4.0	7.8	7.8	4.0	7.8	7.8	4.5	7.3	7.3	4.5	7.3	7.3
Lane Util. Factor	0.97	0.95	1.00	1.00	0.95	1.00	0.97	1.00	1.00	0.97	1.00	1.00
Frpb, ped/bikes	1.00	1.00	0.98	1.00	1.00	0.98	1.00	1.00	0.99	1.00	1.00	1.00
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	3176	3438	1425	1637	3195	1413	3116	1900	1412	3176	1827	1458
Flt Permitted	0.95	1.00	1.00	0.18	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	3176	3438	1425	302	3195	1413	3116	1900	1412	3176	1827	1458
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	109	969	148	114	643	196	100	54	94	293	136	104
RTOR Reduction (vph)	0	0	89	0	0	115	0	0	84	0	0	88
Lane Group Flow (vph)	109	969	59	114	643	81	100	54	10	293	136	16
Confl. Peds. (#/hr)	1		2	2		1			1	1		
Heavy Vehicles (%)	3%	5%	2%	3%	13%	3%	5%	0%	4%	3%	4%	2%
Turn Type	Prot	NA	Perm	pm+pt	NA	Perm	Prot	NA	Perm	Prot	NA	Perm
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases			2	6		6			8			4
Actuated Green, G (s)	6.9	34.5	34.5	44.8	36.2	36.2	6.7	9.3	9.3	11.2	13.8	13.8
Effective Green, g (s)	6.9	34.5	34.5	44.8	36.2	36.2	6.7	9.3	9.3	11.2	13.8	13.8
Actuated g/C Ratio	0.08	0.40	0.40	0.51	0.42	0.42	0.08	0.11	0.11	0.13	0.16	0.16
Clearance Time (s)	4.0	7.8	7.8	4.0	7.8	7.8	4.5	7.3	7.3	4.5	7.3	7.3
Vehicle Extension (s)	3.0	1.8	1.8	3.0	1.8	1.8	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	251	1360	563	286	1326	586	239	202	150	407	289	230
v/s Ratio Prot	0.03	c0.28		c0.04	0.20		0.03	0.03		c0.09	c0.07	
v/s Ratio Perm			0.04	0.17		0.06			0.01			0.01
v/c Ratio	0.43	0.71	0.10	0.40	0.48	0.14	0.42	0.27	0.07	0.72	0.47	0.07
Uniform Delay, d1	38.3	22.2	16.6	12.7	18.7	15.8	38.4	35.8	35.0	36.5	33.4	31.2
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	1.2	3.2	0.4	0.9	1.3	0.5	1.2	0.7	0.2	6.0	1.2	0.1
Delay (s)	39.5	25.4	17.0	13.6	19.9	16.3	39.6	36.5	35.2	42.5	34.6	31.4
Level of Service	D	C	B	B	B	B	D	D	D	D	C	C
Approach Delay (s)		25.6			18.4			37.3			38.3	
Approach LOS		C			B			D			D	

Intersection Summary			
HCM 2000 Control Delay	26.6	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.64		
Actuated Cycle Length (s)	87.2	Sum of lost time (s)	23.6
Intersection Capacity Utilization	71.8%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	156	3	10	34	1	28	10	94	35	29	351	83
Future Volume (vph)	156	3	10	34	1	28	10	94	35	29	351	83
Ideal Flow (vphpl)	1765	1900	1765	1900	1900	1900	1650	1650	1900	1900	1650	1650
Storage Length (m)	100.0		0.0	0.0		0.0	0.0		50.0	0.0		0.0
Storage Lanes	1		0	0		0	0		1	0		0
Taper Length (m)	50.0			0.0			0.0			0.0		
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
Frt		0.885			0.940				0.850		0.976	
Flt Protected	0.950				0.974			0.995			0.997	
Satd. Flow (prot)	1677	1682	0	0	1709	0	0	1481	1615	0	1536	0
Flt Permitted	0.716				0.848			0.962			0.983	
Satd. Flow (perm)	1264	1682	0	0	1488	0	0	1432	1615	0	1514	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		10			28				35		27	
Link Speed (k/h)		50			50			80			80	
Link Distance (m)		380.0			59.8			535.4			181.7	
Travel Time (s)		27.4			4.3			24.1			8.2	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	0%	0%	0%	0%	0%	4%	0%	12%	0%	0%	6%	0%
Adj. Flow (vph)	156	3	10	34	1	28	10	94	35	29	351	83
Shared Lane Traffic (%)												
Lane Group Flow (vph)	156	13	0	0	63	0	0	104	35	0	463	0
Turn Type	Perm	NA		Perm	NA		Perm	NA	Perm	Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2		2	6		
Detector Phase	4	4		8	8		2	2	2	6	6	
Switch Phase												
Minimum Initial (s)	5.0	5.0		5.0	5.0		5.0	5.0	5.0	5.0	5.0	
Minimum Split (s)	22.5	22.5		22.5	22.5		22.5	22.5	22.5	22.5	22.5	
Total Split (s)	25.0	25.0		25.0	25.0		35.0	35.0	35.0	35.0	35.0	
Total Split (%)	41.7%	41.7%		41.7%	41.7%		58.3%	58.3%	58.3%	58.3%	58.3%	
Maximum Green (s)	20.5	20.5		20.5	20.5		30.5	30.5	30.5	30.5	30.5	
Yellow Time (s)	3.5	3.5		3.5	3.5		3.5	3.5	3.5	3.5	3.5	
All-Red Time (s)	1.0	1.0		1.0	1.0		1.0	1.0	1.0	1.0	1.0	
Lost Time Adjust (s)	0.0	0.0			0.0			0.0	0.0		0.0	
Total Lost Time (s)	4.5	4.5			4.5			4.5	4.5		4.5	
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0	3.0	3.0	3.0	
Recall Mode	None	None		None	None		Max	Max	Max	Max	Max	
Walk Time (s)	7.0	7.0		7.0	7.0		7.0	7.0	7.0	7.0	7.0	
Flash Dont Walk (s)	11.0	11.0		11.0	11.0		11.0	11.0	11.0	11.0	11.0	
Pedestrian Calls (#/hr)	0	0		0	0		0	0	0	0	0	
Act Effct Green (s)	11.7	11.7			11.5			36.0	36.0		36.0	
Actuated g/C Ratio	0.22	0.22			0.22			0.67	0.67		0.67	
v/c Ratio	0.57	0.03			0.18			0.11	0.03		0.45	
Control Delay	26.1	9.8			11.3			5.9	2.6		8.0	
Queue Delay	0.0	0.0			0.0			0.0	0.0		0.0	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Total Delay	26.1	9.8			11.3			5.9	2.6		8.0	
LOS	C	A			B			A	A		A	
Approach Delay		24.9			11.3			5.1			8.0	
Approach LOS		C			B			A			A	
Queue Length 50th (m)	13.3	0.3			2.7			3.6	0.0		19.6	
Queue Length 95th (m)	27.7	3.4			9.9			11.4	3.1		51.9	
Internal Link Dist (m)		356.0			35.8			511.4			157.7	
Turn Bay Length (m)	100.0								50.0			
Base Capacity (vph)	487	654			590			965	1100		1030	
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	0.32	0.02			0.11			0.11	0.03		0.45	

Intersection Summary			
Area Type:	Other		
Cycle Length: 60			
Actuated Cycle Length: 53.4			
Natural Cycle: 50			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 0.57			
Intersection Signal Delay: 11.2		Intersection LOS: B	
Intersection Capacity Utilization 58.4%		ICU Level of Service B	
Analysis Period (min) 15			

Splits and Phases: 2: Nafziger Road & East Road/Wilmot Complex Driveway

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	156	3	10	34	1	28	10	94	35	29	351	83
Future Volume (vph)	156	3	10	34	1	28	10	94	35	29	351	83
Ideal Flow (vphpl)	1765	1900	1765	1900	1900	1900	1650	1650	1900	1900	1650	1650
Total Lost time (s)	4.5	4.5			4.5			4.5	4.5		4.5	
Lane Util. Factor	1.00	1.00			1.00			1.00	1.00		1.00	
Frt	1.00	0.88			0.94			1.00	0.85		0.98	
Flt Protected	0.95	1.00			0.97			1.00	1.00		1.00	
Satd. Flow (prot)	1677	1681			1709			1481	1615		1535	
Flt Permitted	0.72	1.00			0.85			0.96	1.00		0.98	
Satd. Flow (perm)	1264	1681			1487			1433	1615		1514	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	156	3	10	34	1	28	10	94	35	29	351	83
RTOR Reduction (vph)	0	8	0	0	23	0	0	0	12	0	10	0
Lane Group Flow (vph)	156	5	0	0	40	0	0	104	23	0	453	0
Heavy Vehicles (%)	0%	0%	0%	0%	0%	4%	0%	12%	0%	0%	6%	0%
Turn Type	Perm	NA		Perm	NA		Perm	NA	Perm	Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2		2	6		
Actuated Green, G (s)	10.3	10.3			10.3			35.0	35.0		35.0	
Effective Green, g (s)	10.3	10.3			10.3			35.0	35.0		35.0	
Actuated g/C Ratio	0.19	0.19			0.19			0.64	0.64		0.64	
Clearance Time (s)	4.5	4.5			4.5			4.5	4.5		4.5	
Vehicle Extension (s)	3.0	3.0			3.0			3.0	3.0		3.0	
Lane Grp Cap (vph)	239	318			282			923	1040		975	
v/s Ratio Prot		0.00										
v/s Ratio Perm	c0.12				0.03			0.07	0.01		c0.30	
v/c Ratio	0.65	0.02			0.14			0.11	0.02		0.47	
Uniform Delay, d1	20.3	17.9			18.3			3.7	3.5		4.9	
Progression Factor	1.00	1.00			1.00			1.00	1.00		1.00	
Incremental Delay, d2	6.3	0.0			0.2			0.2	0.0		1.6	
Delay (s)	26.6	17.9			18.6			3.9	3.5		6.5	
Level of Service	C	B			B			A	A		A	
Approach Delay (s)		25.9			18.6			3.8			6.5	
Approach LOS		C			B			A			A	

Intersection Summary				
HCM 2000 Control Delay	10.9	HCM 2000 Level of Service	B	
HCM 2000 Volume to Capacity ratio	0.51			
Actuated Cycle Length (s)	54.3	Sum of lost time (s)	9.0	
Intersection Capacity Utilization	58.4%	ICU Level of Service	B	
Analysis Period (min)	15			
c Critical Lane Group				

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	4	126	18	5	329	66
Future Volume (vph)	4	126	18	5	329	66
Ideal Flow (vphpl)	1765	1765	1650	1650	1650	1650
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.869		0.971			
Flt Protected	0.998					0.960
Satd. Flow (prot)	1501	0	1571	0	0	1553
Flt Permitted	0.998					0.960
Satd. Flow (perm)	1501	0	1571	0	0	1553
Link Speed (k/h)	50		80			80
Link Distance (m)	149.7		232.9			535.4
Travel Time (s)	10.8		10.5			24.1
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	4	126	18	5	329	66
Shared Lane Traffic (%)						
Lane Group Flow (vph)	130	0	23	0	0	395
Sign Control	Stop		Free			Free

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	46.9%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	4	126	18	5	329	66
Future Volume (Veh/h)	4	126	18	5	329	66
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	4	126	18	5	329	66
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	744	20			23	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	744	20			23	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	99	88			79	
cM capacity (veh/h)	303	1057			1592	

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	130	23	395
Volume Left	4	0	329
Volume Right	126	5	0
cSH	982	1700	1592
Volume to Capacity	0.13	0.01	0.21
Queue Length 95th (m)	3.6	0.0	6.2
Control Delay (s)	9.2	0.0	6.8
Lane LOS	A		A
Approach Delay (s)	9.2	0.0	6.8
Approach LOS	A		

Intersection Summary			
Average Delay	7.1		
Intersection Capacity Utilization	46.9%	ICU Level of Service	A
Analysis Period (min)	15		

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	0	0	83	0	0	165
Future Volume (vph)	0	0	83	0	0	165
Ideal Flow (vphpl)	1650	1650	1650	1650	1765	1765
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt					0.865	
Flt Protected				0.950		
Satd. Flow (prot)	1618	0	0	1537	1497	0
Flt Permitted				0.950		
Satd. Flow (perm)	1618	0	0	1537	1497	0
Link Speed (k/h)	50			50	50	
Link Distance (m)	199.2			380.0	206.9	
Travel Time (s)	14.3			27.4	14.9	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	0	0	83	0	0	165
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	0	0	83	165	0
Sign Control	Free			Free	Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	23.0%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	0	0	83	0	0	165
Future Volume (Veh/h)	0	0	83	0	0	165
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	0	0	83	0	0	165
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (m)				380		
pX, platoon unblocked						
vC, conflicting volume			0		166	0
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			0		166	0
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			95		100	85
cM capacity (veh/h)			1623		782	1085

Direction, Lane #	EB 1	WB 1	NB 1
Volume Total	0	83	165
Volume Left	0	83	0
Volume Right	0	0	165
cSH	1700	1623	1085
Volume to Capacity	0.00	0.05	0.15
Queue Length 95th (m)	0.0	1.3	4.3
Control Delay (s)	0.0	7.3	8.9
Lane LOS		A	A
Approach Delay (s)	0.0	7.3	8.9
Approach LOS			A

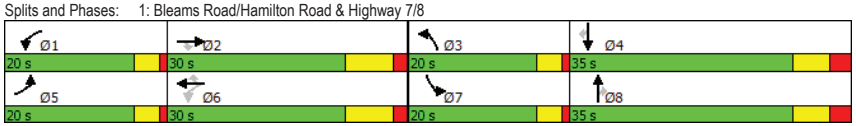
Intersection Summary				
Average Delay		8.4		
Intersection Capacity Utilization		23.0%	ICU Level of Service	A
Analysis Period (min)		15		

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	65	919	143	73	1104	203	213	103	120	230	84	140
Future Volume (vph)	65	919	143	73	1104	203	213	103	120	230	84	140
Ideal Flow (vphpl)	1775	1900	1750	1775	1900	1750	1775	1900	1750	1775	1900	1750
Storage Length (m)	300.0		110.0	100.0		75.0	70.0		85.0	55.0		155.0
Storage Lanes	2		1	1		1	2		1	2		1
Taper Length (m)	40.0			40.0			40.0			40.0		
Lane Util. Factor	0.97	0.95	1.00	1.00	0.95	1.00	0.97	1.00	1.00	0.97	1.00	1.00
Ped Bike Factor	1.00		0.98	1.00		0.97	1.00		0.99	1.00		0.99
Frt			0.850			0.850			0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	3176	3438	1458	1637	3195	1444	3116	1900	1430	3176	1827	1458
Flt Permitted	0.950			0.206			0.950			0.950		
Satd. Flow (perm)	3171	3438	1427	355	3195	1406	3111	1900	1412	3172	1827	1439
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			143			158			133			140
Link Speed (k/h)		80			80			50			50	
Link Distance (m)		163.4			1398.3			147.6			715.9	
Travel Time (s)		7.4			62.9			10.6			51.5	
Confl. Peds. (#/hr)	4		1	1		4	1		1	1		1
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	3%	5%	2%	3%	13%	3%	5%	0%	4%	3%	4%	2%
Adj. Flow (vph)	65	919	143	73	1104	203	213	103	120	230	84	140
Shared Lane Traffic (%)												
Lane Group Flow (vph)	65	919	143	73	1104	203	213	103	120	230	84	140
Turn Type	Prot	NA	Perm	pm+pt	NA	Perm	Prot	NA	Perm	Prot	NA	Perm
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases			2	6		6			8			4
Detector Phase	5	2	2	1	6	6	3	8	8	7	4	4
Switch Phase												
Minimum Initial (s)	7.0	20.0	20.0	7.0	20.0	20.0	5.0	10.0	10.0	5.0	10.0	10.0
Minimum Split (s)	20.0	30.0	30.0	20.0	30.0	30.0	9.5	35.0	35.0	9.5	35.0	35.0
Total Split (s)	20.0	30.0	30.0	20.0	30.0	30.0	20.0	35.0	35.0	20.0	35.0	35.0
Total Split (%)	19.0%	28.6%	28.6%	19.0%	28.6%	28.6%	19.0%	33.3%	33.3%	19.0%	33.3%	33.3%
Maximum Green (s)	16.0	22.2	22.2	16.0	22.2	22.2	16.0	27.7	27.7	16.0	27.7	27.7
Yellow Time (s)	3.0	5.9	5.9	3.0	5.9	5.9	3.0	4.5	4.5	3.0	4.5	4.5
All-Red Time (s)	1.0	1.9	1.9	1.0	1.9	1.9	1.0	2.8	2.8	1.0	2.8	2.8
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.0	7.8	7.8	4.0	7.8	7.8	4.0	7.3	7.3	4.0	7.3	7.3
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	1.8	1.8	3.0	1.8	1.8	3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	Max	Max	None	Max	Max	None	None	None	None	None	None
Walk Time (s)		19.0	19.0		19.0	19.0		19.0	19.0		19.0	19.0
Flash Dont Walk (s)		14.0	14.0		14.0	14.0		14.0	14.0		14.0	14.0
Pedestrian Calls (#/hr)		0	0		0	0		0	0		0	0
Act Effct Green (s)	7.7	33.4	33.4	43.4	33.5	33.5	11.2	11.2	11.2	11.4	11.5	11.5
Actuated g/C Ratio	0.09	0.40	0.40	0.51	0.40	0.40	0.13	0.13	0.13	0.13	0.14	0.14
v/c Ratio	0.23	0.68	0.22	0.24	0.87	0.31	0.52	0.41	0.40	0.53	0.34	0.44

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Control Delay	40.2	25.7	4.8	11.9	34.6	7.4	39.9	40.9	9.8	39.8	39.3	11.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	40.2	25.7	4.8	11.9	34.6	7.4	39.9	40.9	9.8	39.8	39.3	11.5
LOS	D	C	A	B	C	A	D	D	A	D	D	B
Approach Delay		23.9			29.4			31.9			31.0	
Approach LOS		C			C			C			C	
Queue Length 50th (m)	5.4	67.1	0.0	5.2	90.2	4.7	17.6	16.6	0.0	19.1	13.4	0.0
Queue Length 95th (m)	12.5	107.4	12.8	13.6	#157.8	22.0	30.8	34.3	13.2	32.8	29.0	16.7
Internal Link Dist (m)		139.4			1374.3			123.6			691.9	
Turn Bay Length (m)	300.0		110.0	100.0		75.0	70.0		85.0	55.0		155.0
Base Capacity (vph)	607	1357	650	440	1265	652	596	629	556	607	605	570
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.11	0.68	0.22	0.17	0.87	0.31	0.36	0.16	0.22	0.38	0.14	0.25

Intersection Summary		
Area Type:	Other	
Cycle Length: 105		
Actuated Cycle Length: 84.5		
Natural Cycle: 115		
Control Type: Actuated-Uncoordinated		
Maximum v/c Ratio: 0.87		
Intersection Signal Delay: 28.1		Intersection LOS: C
Intersection Capacity Utilization 66.4%		ICU Level of Service C
Analysis Period (min) 15		
# 95th percentile volume exceeds capacity, queue may be longer.		
Queue shown is maximum after two cycles.		

Splits and Phases: 1: Bleams Road/Hamilton Road & Highway 7/8



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	65	919	143	73	1104	203	213	103	120	230	84	140
Future Volume (vph)	65	919	143	73	1104	203	213	103	120	230	84	140
Ideal Flow (vphpl)	1775	1900	1750	1775	1900	1750	1775	1900	1750	1775	1900	1750
Total Lost time (s)	4.0	7.8	7.8	4.0	7.8	7.8	4.0	7.3	7.3	4.0	7.3	7.3
Lane Util. Factor	0.97	0.95	1.00	1.00	0.95	1.00	0.97	1.00	1.00	0.97	1.00	1.00
Frpb, ped/bikes	1.00	1.00	0.98	1.00	1.00	0.97	1.00	1.00	0.99	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	1.00	1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	3176	3438	1427	1637	3195	1408	3116	1900	1412	3176	1827	1440
Flt Permitted	0.95	1.00	1.00	0.21	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	3176	3438	1427	354	3195	1408	3116	1900	1412	3176	1827	1440
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	65	919	143	73	1104	203	213	103	120	230	84	140
RTOR Reduction (vph)	0	0	87	0	0	96	0	0	104	0	0	121
Lane Group Flow (vph)	65	919	56	73	1104	107	213	103	16	230	84	19
Confl. Peds. (#/hr)	4		1	1		4	1		1	1		1
Heavy Vehicles (%)	3%	5%	2%	3%	13%	3%	5%	0%	4%	3%	4%	2%
Turn Type	Prot	NA	Perm	pm+pt	NA	Perm	Prot	NA	Perm	Prot	NA	Perm
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases			2	6		6			8			4
Actuated Green, G (s)	6.0	33.4	33.4	39.6	33.5	33.5	11.1	11.2	11.2	11.4	11.5	11.5
Effective Green, g (s)	6.0	33.4	33.4	39.6	33.5	33.5	11.1	11.2	11.2	11.4	11.5	11.5
Actuated g/C Ratio	0.07	0.39	0.39	0.46	0.39	0.39	0.13	0.13	0.13	0.13	0.13	0.13
Clearance Time (s)	4.0	7.8	7.8	4.0	7.8	7.8	4.0	7.3	7.3	4.0	7.3	7.3
Vehicle Extension (s)	3.0	1.8	1.8	3.0	1.8	1.8	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	223	1347	559	256	1256	553	405	249	185	424	246	194
v/s Ratio Prot	c0.02	0.27		0.02	c0.35		0.07	c0.05		c0.07	0.05	
v/s Ratio Perm			0.04	0.11		0.08			0.01			0.01
v/c Ratio	0.29	0.68	0.10	0.29	0.88	0.19	0.53	0.41	0.09	0.54	0.34	0.10
Uniform Delay, d1	37.6	21.5	16.4	13.6	24.0	17.0	34.6	34.0	32.5	34.5	33.4	32.3
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	0.7	2.8	0.4	0.6	8.9	0.8	1.2	1.1	0.2	1.4	0.8	0.2
Delay (s)	38.3	24.3	16.7	14.3	32.9	17.8	35.8	35.1	32.7	35.9	34.2	32.5
Level of Service	D	C	B	B	C	B	D	D	C	D	C	C
Approach Delay (s)		24.2			29.7			34.8			34.5	
Approach LOS		C			C			C			C	

Intersection Summary			
HCM 2000 Control Delay	29.2	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.68		
Actuated Cycle Length (s)	85.2	Sum of lost time (s)	23.1
Intersection Capacity Utilization	66.4%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	299	1	9	55	0	55	1	146	101	49	149	117
Future Volume (vph)	299	1	9	55	0	55	1	146	101	49	149	117
Ideal Flow (vphpl)	1765	1900	1765	1900	1900	1900	1650	1650	1900	1900	1650	1650
Storage Length (m)	100.0		0.0	0.0		0.0	0.0		50.0	0.0		0.0
Storage Lanes	1		0	0		0	0		1	0		0
Taper Length (m)	50.0			7.5			0.0			0.0		
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
Frt		0.865			0.932				0.850		0.950	
Flt Protected	0.950				0.976						0.992	
Satd. Flow (prot)	1677	1644	0	0	1711	0	0	1602	1615	0	1508	0
Flt Permitted	0.744				0.867			0.998			0.941	
Satd. Flow (perm)	1313	1644	0	0	1520	0	0	1599	1615	0	1431	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		9			55				101		73	
Link Speed (k/h)		50			50			80			80	
Link Distance (m)		380.0			75.0			535.4			181.7	
Travel Time (s)		27.4			5.4			24.1			8.2	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	0%	0%	0%	0%	0%	2%	0%	3%	0%	0%	5%	2%
Adj. Flow (vph)	299	1	9	55	0	55	1	146	101	49	149	117
Shared Lane Traffic (%)												
Lane Group Flow (vph)	299	10	0	0	110	0	0	147	101	0	315	0
Turn Type	Perm	NA		Perm	NA		Perm	NA	Perm	Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2		2	6		
Detector Phase	4	4		8	8		2	2	2	6	6	
Switch Phase												
Minimum Initial (s)	5.0	5.0		5.0	5.0		5.0	5.0	5.0	5.0	5.0	
Minimum Split (s)	24.0	24.0		24.0	24.0		24.0	24.0	24.0	24.0	24.0	
Total Split (s)	25.0	25.0		25.0	25.0		35.0	35.0	35.0	35.0	35.0	
Total Split (%)	41.7%	41.7%		41.7%	41.7%		58.3%	58.3%	58.3%	58.3%	58.3%	
Maximum Green (s)	19.0	19.0		19.0	19.0		29.0	29.0	29.0	29.0	29.0	
Yellow Time (s)	4.0	4.0		4.0	4.0		4.0	4.0	4.0	4.0	4.0	
All-Red Time (s)	2.0	2.0		2.0	2.0		2.0	2.0	2.0	2.0	2.0	
Lost Time Adjust (s)	0.0	-2.0			-2.0			-2.0	0.0		-2.0	
Total Lost Time (s)	6.0	4.0			4.0			4.0	6.0		4.0	
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0	3.0	3.0	3.0	
Recall Mode	None	None		None	None		Max	Max	Max	Max	Max	
Walk Time (s)	7.0	7.0		7.0	7.0		7.0	7.0	7.0	7.0	7.0	
Flash Dont Walk (s)	11.0	11.0		11.0	11.0		11.0	11.0	11.0	11.0	11.0	
Pedestrian Calls (#/hr)	0	0		0	0		0	0	0	0	0	
Act Effct Green (s)	16.7	18.7			18.7			32.1	30.1		32.1	
Actuated g/C Ratio	0.28	0.32			0.32			0.54	0.51		0.54	
v/c Ratio	0.80	0.02			0.21			0.17	0.12		0.39	
Control Delay	37.4	8.2			9.1			8.1	2.6		8.1	
Queue Delay	0.0	0.0			0.0			0.0	0.0		0.0	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Total Delay	37.4	8.2			9.1			8.1	2.6		8.1	
LOS	D	A			A			A	A		A	
Approach Delay		36.5			9.1			5.9			8.1	
Approach LOS		D			A			A			A	
Queue Length 50th (m)	30.1	0.1			4.2			8.3	0.0		14.9	
Queue Length 95th (m)	#64.6	2.7			13.6			16.7	6.3		30.6	
Internal Link Dist (m)		356.0			51.0			511.4			157.7	
Turn Bay Length (m)	100.0								50.0			
Base Capacity (vph)	423	592			577			873	875		814	
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	0.71	0.02			0.19			0.17	0.12		0.39	

Intersection Summary			
Area Type:	Other		
Cycle Length: 60			
Actuated Cycle Length: 58.9			
Natural Cycle: 50			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 0.80			
Intersection Signal Delay: 16.6		Intersection LOS: B	
Intersection Capacity Utilization 63.8%		ICU Level of Service B	
Analysis Period (min) 15			
# 95th percentile volume exceeds capacity, queue may be longer.			
Queue shown is maximum after two cycles.			

Splits and Phases: 2: Nafziger Road & East Road/Wilmot Complex Driveway

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	299	1	9	55	0	55	1	146	101	49	149	117
Future Volume (vph)	299	1	9	55	0	55	1	146	101	49	149	117
Ideal Flow (vphpl)	1765	1900	1765	1900	1900	1900	1650	1650	1900	1900	1650	1650
Total Lost time (s)	6.0	4.0			4.0			4.0	6.0		4.0	
Lane Util. Factor	1.00	1.00			1.00			1.00	1.00		1.00	
Frt	1.00	0.86			0.93			1.00	0.85		0.95	
Flt Protected	0.95	1.00			0.98			1.00	1.00		0.99	
Satd. Flow (prot)	1677	1644			1711			1602	1615		1508	
Flt Permitted	0.74	1.00			0.87			1.00	1.00		0.94	
Satd. Flow (perm)	1313	1644			1521			1600	1615		1431	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	299	1	9	55	0	55	1	146	101	49	149	117
RTOR Reduction (vph)	0	6	0	0	38	0	0	0	49	0	33	0
Lane Group Flow (vph)	299	4	0	0	72	0	0	147	52	0	282	0
Heavy Vehicles (%)	0%	0%	0%	0%	0%	2%	0%	3%	0%	0%	5%	2%
Turn Type	Perm	NA		Perm	NA		Perm	NA	Perm	Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2		2	6		
Actuated Green, G (s)	16.7	16.7			16.7			30.1	30.1		30.1	
Effective Green, g (s)	16.7	18.7			18.7			32.1	30.1		32.1	
Actuated g/C Ratio	0.28	0.32			0.32			0.55	0.51		0.55	
Clearance Time (s)	6.0	6.0			6.0			6.0	6.0		6.0	
Vehicle Extension (s)	3.0	3.0			3.0			3.0	3.0		3.0	
Lane Grp Cap (vph)	372	522			483			873	826		781	
v/s Ratio Prot		0.00										
v/s Ratio Perm	c0.23				0.05			0.09	0.03		c0.20	
v/c Ratio	0.80	0.01			0.15			0.17	0.06		0.36	
Uniform Delay, d1	19.5	13.7			14.4			6.7	7.2		7.5	
Progression Factor	1.00	1.00			1.00			1.00	1.00		1.00	
Incremental Delay, d2	11.9	0.0			0.1			0.4	0.1		1.3	
Delay (s)	31.4	13.7			14.5			7.1	7.4		8.8	
Level of Service	C	B			B			A	A		A	
Approach Delay (s)		30.8			14.5			7.2			8.8	
Approach LOS		C			B			A			A	

Intersection Summary			
HCM 2000 Control Delay	16.0	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.49		
Actuated Cycle Length (s)	58.8	Sum of lost time (s)	8.0
Intersection Capacity Utilization	63.8%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	1	116	28	6	130	83
Future Volume (vph)	1	116	28	6	130	83
Ideal Flow (vphpl)	1765	1765	1650	1650	1650	1650
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.866		0.976			
Flt Protected						0.970
Satd. Flow (prot)	1499	0	1579	0	0	1569
Flt Permitted						0.970
Satd. Flow (perm)	1499	0	1579	0	0	1569
Link Speed (k/h)	50		80			80
Link Distance (m)	149.7		232.9			535.4
Travel Time (s)	10.8		10.5			24.1
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	1	116	28	6	130	83
Shared Lane Traffic (%)						
Lane Group Flow (vph)	117	0	34	0	0	213
Sign Control	Stop		Free			Free

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 34.4%		ICU Level of Service A	
Analysis Period (min) 15			

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	1	116	28	6	130	83
Future Volume (Veh/h)	1	116	28	6	130	83
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	1	116	28	6	130	83
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	374	31			34	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	374	31			34	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	100	89			92	
cM capacity (veh/h)	575	1043			1578	

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	117	34	213
Volume Left	1	0	130
Volume Right	116	6	0
cSH	1036	1700	1578
Volume to Capacity	0.11	0.02	0.08
Queue Length 95th (m)	3.0	0.0	2.2
Control Delay (s)	8.9	0.0	4.8
Lane LOS	A		A
Approach Delay (s)	8.9	0.0	4.8
Approach LOS	A		

Intersection Summary			
Average Delay	5.7		
Intersection Capacity Utilization	34.4%	ICU Level of Service	A
Analysis Period (min)	15		

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	0	0	117	0	0	305
Future Volume (vph)	0	0	117	0	0	305
Ideal Flow (vphpl)	1650	1650	1650	1650	1765	1765
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt					0.865	
Flt Protected				0.950		
Satd. Flow (prot)	1618	0	0	1537	1497	0
Flt Permitted				0.950		
Satd. Flow (perm)	1618	0	0	1537	1497	0
Link Speed (k/h)	50			50	50	
Link Distance (m)	199.2			380.0	206.9	
Travel Time (s)	14.3			27.4	14.9	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	0	0	117	0	0	305
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	0	0	117	305	0
Sign Control	Free			Free	Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	34.5%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	0	0	117	0	0	305
Future Volume (Veh/h)	0	0	117	0	0	305
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	0	0	117	0	0	305
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (m)				380		
pX, platoon unblocked						
vC, conflicting volume			0		234	0
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			0		234	0
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			93		100	72
cM capacity (veh/h)			1623		700	1085

Direction, Lane #	EB 1	WB 1	NB 1
Volume Total	0	117	305
Volume Left	0	117	0
Volume Right	0	0	305
cSH	1700	1623	1085
Volume to Capacity	0.00	0.07	0.28
Queue Length 95th (m)	0.0	1.9	9.3
Control Delay (s)	0.0	7.4	9.6
Lane LOS		A	A
Approach Delay (s)	0.0	7.4	9.6
Approach LOS			A

Intersection Summary				
Average Delay		9.0		
Intersection Capacity Utilization		34.5%	ICU Level of Service	A
Analysis Period (min)		15		

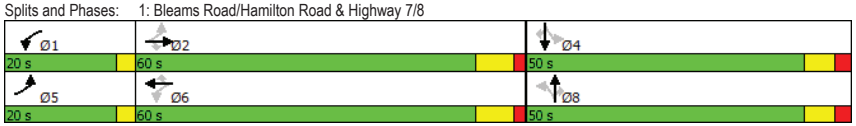
Appendix I 2033 Total Traffic Operations

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	189	980	148	115	649	211	100	94	94	322	148	113
Future Volume (vph)	189	980	148	115	649	211	100	94	94	322	148	113
Ideal Flow (vphpl)	1775	1900	1750	1775	1900	1750	1775	1900	1750	1775	1900	1750
Storage Length (m)	300.0		110.0	100.0		75.0	70.0		85.0	65.0		155.0
Storage Lanes	1		1	1		1	1		1	1		1
Taper Length (m)	40.0			100.0			40.0			20.0		
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor	1.00		0.98	1.00		0.98			0.99	1.00		
Frt			0.850			0.850			0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1637	3438	1458	1637	3195	1444	1606	1900	1430	1637	1827	1458
Flt Permitted	0.328			0.211			0.660			0.696		
Satd. Flow (perm)	565	3438	1424	363	3195	1413	1116	1900	1411	1198	1827	1458
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			148			211			94			113
Link Speed (k/h)		80			80			50			50	
Link Distance (m)		163.4			1424.6			147.6			715.9	
Travel Time (s)		7.4			64.1			10.6			51.5	
Confl. Peds. (#/hr)	1		2	2		1			1	1		
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	3%	5%	2%	3%	13%	3%	5%	0%	4%	3%	4%	2%
Adj. Flow (vph)	189	980	148	115	649	211	100	94	94	322	148	113
Shared Lane Traffic (%)												
Lane Group Flow (vph)	189	980	148	115	649	211	100	94	94	322	148	113
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	Perm	NA	Perm	Perm	NA	Perm
Protected Phases	5	2		1	6			8			4	
Permitted Phases	2		2	6		6	8		8	4		4
Detector Phase	5	2	2	1	6	6	8	8	8	4	4	4
Switch Phase												
Minimum Initial (s)	7.0	20.0	20.0	7.0	20.0	20.0	10.0	10.0	10.0	10.0	10.0	10.0
Minimum Split (s)	20.0	60.0	60.0	20.0	60.0	60.0	50.0	50.0	50.0	50.0	50.0	50.0
Total Split (s)	20.0	60.0	60.0	20.0	60.0	60.0	50.0	50.0	50.0	50.0	50.0	50.0
Total Split (%)	15.4%	46.2%	46.2%	15.4%	46.2%	46.2%	38.5%	38.5%	38.5%	38.5%	38.5%	38.5%
Maximum Green (s)	17.0	52.2	52.2	17.0	52.2	52.2	42.7	42.7	42.7	42.7	42.7	42.7
Yellow Time (s)	3.0	5.9	5.9	3.0	5.9	5.9	4.5	4.5	4.5	4.5	4.5	4.5
All-Red Time (s)	0.0	1.9	1.9	0.0	1.9	1.9	2.8	2.8	2.8	2.8	2.8	2.8
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	3.0	7.8	7.8	3.0	7.8	7.8	7.3	7.3	7.3	7.3	7.3	7.3
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag						
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes						
Vehicle Extension (s)	3.0	1.8	1.8	3.0	1.8	1.8	3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	Max	Max	None	Max	Max	None	None	None	None	None	None
Walk Time (s)		19.0	19.0		19.0	19.0	19.0	19.0	19.0	19.0	19.0	19.0
Flash Dont Walk (s)		14.0	14.0		14.0	14.0	14.0	14.0	14.0	14.0	14.0	14.0
Pedestrian Calls (#/hr)		0	0		0	0	0	0	0	0	0	0
Act Effct Green (s)	72.1	55.5	55.5	66.8	52.6	52.6	35.5	35.5	35.5	35.5	35.5	35.5
Actuated g/C Ratio	0.61	0.47	0.47	0.56	0.44	0.44	0.30	0.30	0.30	0.30	0.30	0.30
v/c Ratio	0.42	0.61	0.20	0.38	0.46	0.28	0.30	0.17	0.19	0.90	0.27	0.22

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Control Delay	14.1	26.7	4.0	14.7	25.9	4.3	34.6	31.3	6.9	68.3	33.0	6.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	14.1	26.7	4.0	14.7	25.9	4.3	34.6	31.3	6.9	68.3	33.0	6.6
LOS	B	C	A	B	C	A	C	C	A	E	C	A
Approach Delay		22.4			19.9			24.5			47.4	
Approach LOS		C			B			C			D	
Queue Length 50th (m)	20.4	96.2	0.0	11.8	60.2	0.0	18.8	16.9	0.0	75.2	27.5	0.0
Queue Length 95th (m)	34.8	131.5	12.6	22.0	87.1	15.7	35.8	31.6	12.5	#130.1	47.1	13.7
Internal Link Dist (m)		139.4			1400.6			123.6			691.9	
Turn Bay Length (m)	300.0		110.0	100.0		75.0	70.0		85.0	65.0		155.0
Base Capacity (vph)	501	1609	745	404	1418	744	405	690	572	435	663	601
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.38	0.61	0.20	0.28	0.46	0.28	0.25	0.14	0.16	0.74	0.22	0.19

Intersection Summary		
Area Type:	Other	
Cycle Length: 130		
Actuated Cycle Length: 118.6		
Natural Cycle: 130		
Control Type: Actuated-Uncoordinated		
Maximum v/c Ratio: 0.90		
Intersection Signal Delay: 26.4		Intersection LOS: C
Intersection Capacity Utilization 88.8%		ICU Level of Service E
Analysis Period (min) 15		
# 95th percentile volume exceeds capacity, queue may be longer.		
Queue shown is maximum after two cycles.		

Splits and Phases: 1: Bleams Road/Hamilton Road & Highway 7/8



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	189	980	148	115	649	211	100	94	94	322	148	113
Future Volume (vph)	189	980	148	115	649	211	100	94	94	322	148	113
Ideal Flow (vphpl)	1775	1900	1750	1775	1900	1750	1775	1900	1750	1775	1900	1750
Total Lost time (s)	3.0	7.8	7.8	3.0	7.8	7.8	7.3	7.3	7.3	7.3	7.3	7.3
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frpb, ped/bikes	1.00	1.00	0.98	1.00	1.00	0.98	1.00	1.00	0.99	1.00	1.00	1.00
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1637	3438	1424	1637	3195	1413	1606	1900	1412	1636	1827	1458
Flt Permitted	0.33	1.00	1.00	0.21	1.00	1.00	0.66	1.00	1.00	0.70	1.00	1.00
Satd. Flow (perm)	566	3438	1424	364	3195	1413	1116	1900	1412	1198	1827	1458
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	189	980	148	115	649	211	100	94	94	322	148	113
RTOR Reduction (vph)	0	0	79	0	0	117	0	0	66	0	0	79
Lane Group Flow (vph)	189	980	69	115	649	94	100	94	28	322	148	34
Confl. Peds. (#/hr)	1		2	2		1			1	1		
Heavy Vehicles (%)	3%	5%	2%	3%	13%	3%	5%	0%	4%	3%	4%	2%
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	Perm	NA	Perm	Perm	NA	Perm
Protected Phases	5	2		1	6			8			4	
Permitted Phases	2		2	6		6	8		8	4		4
Actuated Green, G (s)	67.7	55.5	55.5	61.9	52.6	52.6	35.5	35.5	35.5	35.5	35.5	35.5
Effective Green, g (s)	67.7	55.5	55.5	61.9	52.6	52.6	35.5	35.5	35.5	35.5	35.5	35.5
Actuated g/C Ratio	0.57	0.47	0.47	0.52	0.44	0.44	0.30	0.30	0.30	0.30	0.30	0.30
Clearance Time (s)	3.0	7.8	7.8	3.0	7.8	7.8	7.3	7.3	7.3	7.3	7.3	7.3
Vehicle Extension (s)	3.0	1.8	1.8	3.0	1.8	1.8	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	433	1611	667	290	1419	627	334	569	423	359	547	437
v/s Ratio Prot	c0.04	c0.29		0.03	0.20			0.05			0.08	
v/s Ratio Perm	0.20		0.05	0.18		0.07	0.09		0.02	c0.27		0.02
v/c Ratio	0.44	0.61	0.10	0.40	0.46	0.15	0.30	0.17	0.07	0.90	0.27	0.08
Uniform Delay, d1	12.9	23.4	17.6	15.7	22.9	19.6	31.9	30.5	29.6	39.7	31.6	29.7
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	0.7	1.7	0.3	0.9	1.1	0.5	0.5	0.1	0.1	23.8	0.3	0.1
Delay (s)	13.6	25.1	17.9	16.6	24.0	20.1	32.4	30.7	29.7	63.5	31.9	29.8
Level of Service	B	C	B	B	C	C	C	C	C	E	C	C
Approach Delay (s)		22.6			22.3			30.9			48.9	
Approach LOS		C			C			C			D	

Intersection Summary			
HCM 2000 Control Delay	28.1	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.70		
Actuated Cycle Length (s)	118.4	Sum of lost time (s)	18.1
Intersection Capacity Utilization	88.8%	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)	144	1234	4	9	861	277	0	31	5	367	29	94
Future Volume (vph)	144	1234	4	9	861	277	0	31	5	367	29	94
Ideal Flow (vphpl)	1775	1775	1775	1775	1900	1750	1775	1650	1650	1775	1650	1650
Storage Length (m)	145.0		0.0	105.0		90.0	80.0		0.0	120.0		0.0
Storage Lanes	1		0	1		1	1		0	1		0
Taper Length (m)	100.0			100.0			40.0			100.0		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor		1.00									0.99	
Frt						0.850		0.979			0.885	
Flt Protected	0.950			0.950						0.950		
Satd. Flow (prot)	1561	3212	0	1686	3252	1340	1775	1368	0	1561	1307	0
Flt Permitted	0.210			0.159						0.734		
Satd. Flow (perm)	345	3212	0	282	3252	1340	1775	1368	0	1206	1307	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)						277		5			94	
Link Speed (k/h)		80			80			80			80	
Link Distance (m)		1424.6			264.2			138.9			365.2	
Travel Time (s)		64.1			11.9			6.3			16.4	
Confl. Peds. (#/hr)			1	1			1					1
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	8%	5%	0%	0%	11%	11%	0%	21%	0%	8%	19%	8%
Adj. Flow (vph)	144	1234	4	9	861	277	0	31	5	367	29	94
Shared Lane Traffic (%)												
Lane Group Flow (vph)	144	1238	0	9	861	277	0	36	0	367	123	0
Turn Type	pm+pt	NA		pm+pt	NA	Perm	Perm	NA		Perm	NA	
Protected Phases	5	2		1	6			8			4	
Permitted Phases	2			6		6	8			4		
Detector Phase	5	2		1	6	6	8	8		4	4	
Switch Phase												
Minimum Initial (s)	7.0	20.0		7.0	20.0	20.0	10.0	10.0		10.0	10.0	
Minimum Split (s)	20.0	50.0		20.0	50.0	50.0	35.0	35.0		35.0	35.0	
Total Split (s)	20.0	50.0		20.0	50.0	50.0	35.0	35.0		35.0	35.0	
Total Split (%)	19.0%	47.6%		19.0%	47.6%	47.6%	33.3%	33.3%		33.3%	33.3%	
Maximum Green (s)	17.0	42.2		17.0	42.2	42.2	27.4	27.4		27.4	27.4	
Yellow Time (s)	3.0	5.9		3.0	5.9	5.9	5.9	5.9		5.9	5.9	
All-Red Time (s)	0.0	1.9		0.0	1.9	1.9	1.7	1.7		1.7	1.7	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Total Lost Time (s)	3.0	7.8		3.0	7.8	7.8	7.6	7.6		7.6	7.6	
Lead/Lag	Lead	Lag		Lead	Lag	Lag						
Lead-Lag Optimize?	Yes	Yes		Yes	Yes	Yes						
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	
Recall Mode	None	Max		None	Min	Min	None	None		None	None	
Walk Time (s)		16.0			16.0	16.0	16.0	16.0		16.0	16.0	
Flash Dont Walk (s)		11.0			11.0	11.0	11.0	11.0		11.0	11.0	
Pedestrian Calls (#/hr)		0			0	0	0	0		0	0	
Act Effct Green (s)	50.5	43.9		44.8	33.0	33.0		27.5		27.5	27.5	
Actuated g/C Ratio	0.57	0.50		0.51	0.37	0.37		0.31		0.31	0.31	
v/c Ratio	0.44	0.78		0.04	0.71	0.41		0.08		0.98	0.26	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Control Delay	13.1	23.1		8.4	27.8	4.5		21.9		76.1	10.2	
Queue Delay	0.0	0.0		0.0	0.0	0.0		0.0		0.0	0.0	
Total Delay	13.1	23.1		8.4	27.8	4.5		21.9		76.1	10.2	
LOS	B	C		A	C	A		C		E	B	
Approach Delay		22.1			22.0			21.9			59.5	
Approach LOS		C			C			C			E	
Queue Length 50th (m)	11.3	86.7		0.7	67.4	0.0		3.6		60.5	3.4	
Queue Length 95th (m)	19.9	141.1		2.6	94.1	15.8		12.4		#140.3	18.5	
Internal Link Dist (m)		1400.6			240.2			114.9			341.2	
Turn Bay Length (m)	145.0			105.0		90.0				120.0		
Base Capacity (vph)	430	1590		430	1553	784		427		373	470	
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	0.33	0.78		0.02	0.55	0.35		0.08		0.98	0.26	

Intersection Summary			
Area Type:	Other		
Cycle Length: 105			
Actuated Cycle Length: 88.6			
Natural Cycle: 105			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 0.98			
Intersection Signal Delay: 28.1		Intersection LOS: C	
Intersection Capacity Utilization 87.1%		ICU Level of Service E	
Analysis Period (min) 15			
# 95th percentile volume exceeds capacity, queue may be longer.			
Queue shown is maximum after two cycles.			

Splits and Phases: 2: Nafziger Road & Highway 7/8

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	144	1234	4	9	861	277	0	31	5	367	29	94
Future Volume (vph)	144	1234	4	9	861	277	0	31	5	367	29	94
Ideal Flow (vphpl)	1775	1775	1775	1775	1900	1750	1775	1650	1650	1775	1650	1650
Total Lost time (s)	3.0	7.8		3.0	7.8	7.8		7.6		7.6	7.6	
Lane Util. Factor	1.00	0.95		1.00	0.95	1.00		1.00		1.00	1.00	
Frpb, ped/bikes	1.00	1.00		1.00	1.00	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	1.00		1.00	1.00	0.85		0.98		1.00	0.89	
Flt Protected	0.95	1.00		0.95	1.00	1.00		1.00		0.95	1.00	
Satd. Flow (prot)	1561	3211		1686	3252	1340		1368		1561	1308	
Flt Permitted	0.21	1.00		0.16	1.00	1.00		1.00		0.73	1.00	
Satd. Flow (perm)	345	3211		281	3252	1340		1368		1206	1308	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	144	1234	4	9	861	277	0	31	5	367	29	94
RTOR Reduction (vph)	0	0	0	0	0	169	0	3	0	0	66	0
Lane Group Flow (vph)	144	1238	0	9	861	108	0	33	0	367	57	0
Confl. Peds. (#/hr)			1	1			1					1
Heavy Vehicles (%)	8%	5%	0%	0%	11%	11%	0%	21%	0%	8%	19%	8%
Turn Type	pm+pt	NA		pm+pt	NA	Perm	Perm	NA		Perm	NA	
Protected Phases	5	2		1	6			8			4	
Permitted Phases	2			6		6	8			4		
Actuated Green, G (s)	48.2	43.9		36.8	35.5	35.5		27.5		27.5	27.5	
Effective Green, g (s)	48.2	43.9		36.8	35.5	35.5		27.5		27.5	27.5	
Actuated g/C Ratio	0.53	0.48		0.40	0.39	0.39		0.30		0.30	0.30	
Clearance Time (s)	3.0	7.8		3.0	7.8	7.8		7.6		7.6	7.6	
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0		3.0		3.0	3.0	
Lane Grp Cap (vph)	312	1547		133	1267	522		412		364	394	
v/s Ratio Prot	c0.05	c0.39		0.00	0.26			0.02			0.04	
v/s Ratio Perm	0.19			0.03		0.08				c0.30		
v/c Ratio	0.46	0.80		0.07	0.68	0.21		0.08		1.01	0.15	
Uniform Delay, d1	12.6	19.9		16.9	23.1	18.5		22.7		31.8	23.2	
Progression Factor	1.00	1.00		1.00	1.00	1.00		1.00		1.00	1.00	
Incremental Delay, d2	1.1	4.4		0.2	1.5	0.2		0.1		49.3	0.2	
Delay (s)	13.7	24.3		17.1	24.5	18.7		22.8		81.1	23.4	
Level of Service	B	C		B	C	B		C		F	C	
Approach Delay (s)		23.2			23.1			22.8			66.6	
Approach LOS		C			C			C			E	

Intersection Summary					
HCM 2000 Control Delay	30.1	HCM 2000 Level of Service		C	
HCM 2000 Volume to Capacity ratio	0.88				
Actuated Cycle Length (s)	91.1	Sum of lost time (s)		18.4	
Intersection Capacity Utilization	87.1%	ICU Level of Service		E	
Analysis Period (min)	15				
c Critical Lane Group					

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	47	31	360	134	201	536
Future Volume (vph)	47	31	360	134	201	536
Ideal Flow (vphpl)	1765	1765	1650	1650	1650	1650
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.946		0.963			
Flt Protected	0.971					0.987
Satd. Flow (prot)	1589	0	1558	0	0	1597
Flt Permitted	0.971					0.987
Satd. Flow (perm)	1589	0	1558	0	0	1597
Link Speed (k/h)	50		50			50
Link Distance (m)	280.1		715.9			178.4
Travel Time (s)	20.2		51.5			12.8
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	47	31	360	134	201	536
Shared Lane Traffic (%)						
Lane Group Flow (vph)	78	0	494	0	0	737
Sign Control	Stop		Free			Free

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	91.3%	ICU Level of Service	F
Analysis Period (min)	15		

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	47	31	360	134	201	536
Future Volume (Veh/h)	47	31	360	134	201	536
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	47	31	360	134	201	536
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	1365	427			494	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1365	427			494	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	64	95			81	
cM capacity (veh/h)	132	628			1070	

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	78	494	737
Volume Left	47	0	201
Volume Right	31	134	0
cSH	192	1700	1070
Volume to Capacity	0.41	0.29	0.19
Queue Length 95th (m)	14.5	0.0	5.5
Control Delay (s)	35.9	0.0	4.3
Lane LOS	E		A
Approach Delay (s)	35.9	0.0	4.3
Approach LOS	E		

Intersection Summary					
Average Delay		4.6			
Intersection Capacity Utilization		91.3%	ICU Level of Service		F
Analysis Period (min)		15			

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	35	3	51	34	1	28	159	293	35	29	439	214
Future Volume (vph)	35	3	51	34	1	28	159	293	35	29	439	214
Ideal Flow (vphpl)	1765	1900	1765	1900	1900	1900	1650	1650	1900	1900	1650	1650
Storage Length (m)	0.0		0.0	0.0		0.0	0.0		50.0	0.0		0.0
Storage Lanes	0		0	0		0	0		1	0		0
Taper Length (m)	0.0			7.5			0.0			0.0		
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
Frt		0.923			0.940				0.850		0.958	
Flt Protected		0.981			0.974			0.983			0.998	
Satd. Flow (prot)	0	1720	0	0	1709	0	0	1505	1615	0	1519	0
Flt Permitted		0.850			0.861			0.662			0.974	
Satd. Flow (perm)	0	1491	0	0	1511	0	0	1013	1615	0	1482	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		51			28				55		59	
Link Speed (k/h)		50			50			80			80	
Link Distance (m)		519.1			71.1			365.2			154.9	
Travel Time (s)		37.4			5.1			16.4			7.0	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	0%	0%	0%	0%	0%	4%	0%	12%	0%	0%	6%	0%
Adj. Flow (vph)	35	3	51	34	1	28	159	293	35	29	439	214
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	89	0	0	63	0	0	452	35	0	682	0
Turn Type	Perm	NA		Perm	NA		Perm	NA	Perm	Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2		2	6		
Detector Phase	4	4		8	8		2	2	2	6	6	
Switch Phase												
Minimum Initial (s)	5.0	5.0		5.0	5.0		5.0	5.0	5.0	5.0	5.0	
Minimum Split (s)	24.0	24.0		24.0	24.0		24.0	24.0	24.0	24.0	24.0	
Total Split (s)	24.0	24.0		24.0	24.0		36.0	36.0	36.0	36.0	36.0	
Total Split (%)	40.0%	40.0%		40.0%	40.0%		60.0%	60.0%	60.0%	60.0%	60.0%	
Maximum Green (s)	18.0	18.0		18.0	18.0		30.0	30.0	30.0	30.0	30.0	
Yellow Time (s)	4.0	4.0		4.0	4.0		4.0	4.0	4.0	4.0	4.0	
All-Red Time (s)	2.0	2.0		2.0	2.0		2.0	2.0	2.0	2.0	2.0	
Lost Time Adjust (s)		-2.0			-2.0			-2.0	0.0		-2.0	
Total Lost Time (s)		4.0			4.0			4.0	6.0		4.0	
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0	3.0	3.0	3.0	
Recall Mode	None	None		None	None		Max	Max	Max	Max	Max	
Walk Time (s)	7.0	7.0		7.0	7.0		7.0	7.0	7.0	7.0	7.0	
Flash Dont Walk (s)	11.0	11.0		11.0	11.0		11.0	11.0	11.0	11.0	11.0	
Pedestrian Calls (#/hr)	0	0		0	0		0	0	0	0	0	
Act Effct Green (s)		9.0			9.0			40.1	38.9		40.1	
Actuated g/C Ratio		0.18			0.18			0.79	0.76		0.79	
v/c Ratio		0.29			0.22			0.57	0.03		0.58	
Control Delay		12.1			13.1			9.7	1.1		7.3	
Queue Delay		0.0			0.0			0.0	0.0		0.0	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Total Delay		12.1			13.1			9.7	1.1		7.3	
LOS		B			B			A	A		A	
Approach Delay		12.1			13.1			9.1			7.3	
Approach LOS		B			B			A			A	
Queue Length 50th (m)		3.2			2.9			19.5	0.0		26.1	
Queue Length 95th (m)		12.1			10.5			#75.7	1.8		70.3	
Internal Link Dist (m)		495.1			47.1			341.2			130.9	
Turn Bay Length (m)									50.0			
Base Capacity (vph)		616			610			797	1246		1179	
Starvation Cap Reductn		0			0			0	0		0	
Spillback Cap Reductn		0			0			0	0		0	
Storage Cap Reductn		0			0			0	0		0	
Reduced v/c Ratio		0.14			0.10			0.57	0.03		0.58	

Intersection Summary			
Area Type:	Other		
Cycle Length: 60			
Actuated Cycle Length: 51			
Natural Cycle: 60			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 0.58			
Intersection Signal Delay: 8.6		Intersection LOS: A	
Intersection Capacity Utilization 87.2%		ICU Level of Service E	
Analysis Period (min) 15			
# 95th percentile volume exceeds capacity, queue may be longer.			
Queue shown is maximum after two cycles.			

Splits and Phases: 4: Nafziger Road & East Road/Wilmot Complex Driveway

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	35	3	51	34	1	28	159	293	35	29	439	214
Future Volume (vph)	35	3	51	34	1	28	159	293	35	29	439	214
Ideal Flow (vphpl)	1765	1900	1765	1900	1900	1900	1650	1650	1900	1900	1650	1650
Total Lost time (s)		4.0			4.0			4.0	6.0		4.0	
Lane Util. Factor		1.00			1.00			1.00	1.00		1.00	
Frt		0.92			0.94			1.00	0.85		0.96	
Flt Protected		0.98			0.97			0.98	1.00		1.00	
Satd. Flow (prot)		1719			1709			1504	1615		1518	
Flt Permitted		0.85			0.86			0.66	1.00		0.97	
Satd. Flow (perm)		1490			1511			1014	1615		1482	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	35	3	51	34	1	28	159	293	35	29	439	214
RTOR Reduction (vph)	0	44	0	0	24	0	0	0	11	0	16	0
Lane Group Flow (vph)	0	45	0	0	39	0	0	452	24	0	666	0
Heavy Vehicles (%)	0%	0%	0%	0%	0%	4%	0%	12%	0%	0%	6%	0%
Turn Type	Perm	NA		Perm	NA		Perm	NA	Perm	Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2		2	6		
Actuated Green, G (s)		4.8			4.8			36.5	36.5		36.5	
Effective Green, g (s)		6.8			6.8			38.5	36.5		38.5	
Actuated g/C Ratio		0.13			0.13			0.72	0.68		0.72	
Clearance Time (s)		6.0			6.0			6.0	6.0		6.0	
Vehicle Extension (s)		3.0			3.0			3.0	3.0		3.0	
Lane Grp Cap (vph)		190			192			732	1105		1070	
v/s Ratio Prot												
v/s Ratio Perm		c0.03			0.03			0.45	0.01		c0.45	
v/c Ratio		0.23			0.20			0.62	0.02		0.62	
Uniform Delay, d1		20.9			20.8			3.7	2.7		3.7	
Progression Factor		1.00			1.00			1.00	1.00		1.00	
Incremental Delay, d2		0.6			0.5			3.9	0.0		2.7	
Delay (s)		21.5			21.3			7.6	2.7		6.5	
Level of Service		C			C			A	A		A	
Approach Delay (s)		21.5			21.3			7.2			6.5	
Approach LOS		C			C			A			A	

Intersection Summary			
HCM 2000 Control Delay	8.5	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.56		
Actuated Cycle Length (s)	53.3	Sum of lost time (s)	8.0
Intersection Capacity Utilization	87.2%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	30	77	331	33	8	8
Future Volume (vph)	30	77	331	33	8	8
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			0.988		0.932	
Flt Protected		0.986			0.976	
Satd. Flow (prot)	0	1837	1840	0	1694	0
Flt Permitted		0.986			0.976	
Satd. Flow (perm)	0	1837	1840	0	1694	0
Link Speed (k/h)		50	50		50	
Link Distance (m)		120.3	519.1		92.2	
Travel Time (s)		8.7	37.4		6.6	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	30	77	331	33	8	8
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	107	364	0	16	0
Sign Control		Free	Free		Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	38.5%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	30	77	331	33	8	8
Future Volume (Veh/h)	30	77	331	33	8	8
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	30	77	331	33	8	8
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		None	None			
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	364				484	348
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	364				484	348
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	97				98	99
cM capacity (veh/h)	1195				528	696

Direction, Lane #	EB 1	WB 1	SB 1
Volume Total	107	364	16
Volume Left	30	0	8
Volume Right	0	33	8
cSH	1195	1700	600
Volume to Capacity	0.03	0.21	0.03
Queue Length 95th (m)	0.6	0.0	0.7
Control Delay (s)	2.4	0.0	11.2
Lane LOS	A		B
Approach Delay (s)	2.4	0.0	11.2
Approach LOS			B

Intersection Summary			
Average Delay		0.9	
Intersection Capacity Utilization		38.5%	ICU Level of Service A
Analysis Period (min)		15	

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	188	151	9	44	64	40
Future Volume (vph)	188	151	9	44	64	40
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	0.940		0.888			
Flt Protected	0.973					0.970
Satd. Flow (prot)	1704	0	1654	0	0	1807
Flt Permitted	0.973					0.970
Satd. Flow (perm)	1704	0	1654	0	0	1807
Link Speed (k/h)	50		50			50
Link Distance (m)	120.3		87.0			145.0
Travel Time (s)	8.7		6.3			10.4
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	188	151	9	44	64	40
Shared Lane Traffic (%)						
Lane Group Flow (vph)	339	0	53	0	0	104
Sign Control	Stop		Free			Free

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	38.6%		ICU Level of Service A
Analysis Period (min)	15		

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	188	151	9	44	64	40
Future Volume (Veh/h)	188	151	9	44	64	40
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	188	151	9	44	64	40
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	199	31			53	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	199	31			53	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	75	86			96	
cM capacity (veh/h)	757	1043			1553	

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	339	53	104
Volume Left	188	0	64
Volume Right	151	44	0
cSH	862	1700	1553
Volume to Capacity	0.39	0.03	0.04
Queue Length 95th (m)	15.1	0.0	1.0
Control Delay (s)	11.9	0.0	4.7
Lane LOS	B		A
Approach Delay (s)	11.9	0.0	4.7
Approach LOS	B		

Intersection Summary			
Average Delay	9.1		
Intersection Capacity Utilization	38.6%	ICU Level of Service	A
Analysis Period (min)	15		

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	0	19	0	0	84	0
Future Volume (vph)	0	19	0	0	84	0
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	0.865					
Flt Protected						0.950
Satd. Flow (prot)	1611	0	1863	0	0	1770
Flt Permitted						0.950
Satd. Flow (perm)	1611	0	1863	0	0	1770
Link Speed (k/h)	50		50			50
Link Distance (m)	87.2		30.3			87.0
Travel Time (s)	6.3		2.2			6.3
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	0	19	0	0	84	0
Shared Lane Traffic (%)						
Lane Group Flow (vph)	19	0	0	0	0	84
Sign Control	Stop		Free			Free

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	14.7%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	0	19	0	0	84	0
Future Volume (Veh/h)	0	19	0	0	84	0
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	0	19	0	0	84	0
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	168	0			0	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	168	0			0	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	100	98			95	
cM capacity (veh/h)	780	1085			1623	

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	19	0	84
Volume Left	0	0	84
Volume Right	19	0	0
cSH	1085	1700	1623
Volume to Capacity	0.02	0.00	0.05
Queue Length 95th (m)	0.4	0.0	1.3
Control Delay (s)	8.4	0.0	7.3
Lane LOS	A		A
Approach Delay (s)	8.4	0.0	7.3
Approach LOS	A		

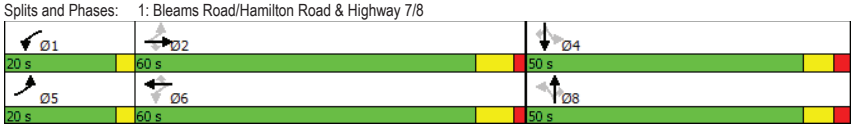
Intersection Summary			
Average Delay	7.5		
Intersection Capacity Utilization	14.7%	ICU Level of Service	A
Analysis Period (min)	15		

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	75	924	143	77	1163	217	213	118	120	296	107	180
Future Volume (vph)	75	924	143	77	1163	217	213	118	120	296	107	180
Ideal Flow (vphpl)	1775	1900	1750	1775	1900	1750	1775	1900	1750	1775	1900	1750
Storage Length (m)	300.0		110.0	100.0		75.0	70.0		85.0	65.0		155.0
Storage Lanes	1		1	1		1	1		1	1		1
Taper Length (m)	40.0			100.0			40.0			20.0		
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor	1.00		0.98	1.00		0.97	1.00		0.99	1.00		0.99
Frt			0.850			0.850			0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1637	3438	1458	1637	3195	1444	1606	1900	1430	1637	1827	1458
Flt Permitted	0.145			0.232			0.688			0.681		
Satd. Flow (perm)	250	3438	1426	400	3195	1404	1162	1900	1411	1172	1827	1439
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			143			170			120			180
Link Speed (k/h)		80			80			50			50	
Link Distance (m)		163.4			1424.6			147.6			715.9	
Travel Time (s)		7.4			64.1			10.6			51.5	
Confl. Peds. (#/hr)	4		1	1		4	1		1	1		1
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	3%	5%	2%	3%	13%	3%	5%	0%	4%	3%	4%	2%
Adj. Flow (vph)	75	924	143	77	1163	217	213	118	120	296	107	180
Shared Lane Traffic (%)												
Lane Group Flow (vph)	75	924	143	77	1163	217	213	118	120	296	107	180
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	Perm	NA	Perm	Perm	NA	Perm
Protected Phases	5	2		1	6			8			4	
Permitted Phases	2		2	6		6	8		8	4		4
Detector Phase	5	2	2	1	6	6	8	8	8	4	4	4
Switch Phase												
Minimum Initial (s)	7.0	20.0	20.0	7.0	20.0	20.0	10.0	10.0	10.0	10.0	10.0	10.0
Minimum Split (s)	20.0	60.0	60.0	20.0	60.0	60.0	50.0	50.0	50.0	50.0	50.0	50.0
Total Split (s)	20.0	60.0	60.0	20.0	60.0	60.0	50.0	50.0	50.0	50.0	50.0	50.0
Total Split (%)	15.4%	46.2%	46.2%	15.4%	46.2%	46.2%	38.5%	38.5%	38.5%	38.5%	38.5%	38.5%
Maximum Green (s)	17.0	52.2	52.2	17.0	52.2	52.2	42.7	42.7	42.7	42.7	42.7	42.7
Yellow Time (s)	3.0	5.9	5.9	3.0	5.9	5.9	4.5	4.5	4.5	4.5	4.5	4.5
All-Red Time (s)	0.0	1.9	1.9	0.0	1.9	1.9	2.8	2.8	2.8	2.8	2.8	2.8
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	3.0	7.8	7.8	3.0	7.8	7.8	7.3	7.3	7.3	7.3	7.3	7.3
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag						
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes						
Vehicle Extension (s)	3.0	1.8	1.8	3.0	1.8	1.8	3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	Max	Max	None	Max	Max	None	None	None	None	None	None
Walk Time (s)		19.0	19.0		19.0	19.0	19.0	19.0	19.0	19.0	19.0	19.0
Flash Dont Walk (s)		14.0	14.0		14.0	14.0	14.0	14.0	14.0	14.0	14.0	14.0
Pedestrian Calls (#/hr)		0	0		0	0	0	0	0	0	0	0
Act Effct Green (s)	64.3	53.1	53.1	64.4	53.1	53.1	32.4	32.4	32.4	32.4	32.4	32.4
Actuated g/C Ratio	0.59	0.48	0.48	0.59	0.48	0.48	0.30	0.30	0.30	0.30	0.30	0.30
v/c Ratio	0.30	0.55	0.19	0.23	0.75	0.28	0.62	0.21	0.24	0.86	0.20	0.33

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Control Delay	13.9	23.8	4.1	12.5	29.3	6.7	41.9	29.7	6.2	59.8	29.6	5.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	13.9	23.8	4.1	12.5	29.3	6.7	41.9	29.7	6.2	59.8	29.6	5.7
LOS	B	C	A	B	C	A	D	C	A	E	C	A
Approach Delay		20.7			25.1			29.2			37.6	
Approach LOS		C			C			C			D	
Queue Length 50th (m)	6.7	79.3	0.0	6.8	114.7	5.8	41.8	20.2	0.0	63.4	18.2	0.0
Queue Length 95th (m)	15.6	119.1	12.4	16.0	170.5	23.6	69.8	35.8	13.1	102.2	32.9	15.7
Internal Link Dist (m)		139.4			1400.6			123.6			691.9	
Turn Bay Length (m)	300.0		110.0	100.0		75.0	70.0		85.0	65.0		155.0
Base Capacity (vph)	371	1666	764	438	1550	768	460	753	631	464	724	679
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.20	0.55	0.19	0.18	0.75	0.28	0.46	0.16	0.19	0.64	0.15	0.27

Intersection Summary			
Area Type:	Other		
Cycle Length: 130			
Actuated Cycle Length: 109.5			
Natural Cycle: 130			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 0.86			
Intersection Signal Delay: 26.2		Intersection LOS: C	
Intersection Capacity Utilization 78.2%		ICU Level of Service D	
Analysis Period (min) 15			

Splits and Phases: 1: Bleams Road/Hamilton Road & Highway 7/8



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	75	924	143	77	1163	217	213	118	120	296	107	180
Future Volume (vph)	75	924	143	77	1163	217	213	118	120	296	107	180
Ideal Flow (vphpl)	1775	1900	1750	1775	1900	1750	1775	1900	1750	1775	1900	1750
Total Lost time (s)	3.0	7.8	7.8	3.0	7.8	7.8	7.3	7.3	7.3	7.3	7.3	7.3
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frpb, ped/bikes	1.00	1.00	0.98	1.00	1.00	0.97	1.00	1.00	0.99	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	1.00	1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1637	3438	1427	1637	3195	1406	1605	1900	1412	1636	1827	1439
Flt Permitted	0.14	1.00	1.00	0.23	1.00	1.00	0.69	1.00	1.00	0.68	1.00	1.00
Satd. Flow (perm)	250	3438	1427	400	3195	1406	1162	1900	1412	1173	1827	1439
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	75	924	143	77	1163	217	213	118	120	296	107	180
RTOR Reduction (vph)	0	0	74	0	0	88	0	0	85	0	0	127
Lane Group Flow (vph)	75	924	69	77	1163	129	213	118	35	296	107	53
Confl. Peds. (#/hr)	4		1	1		4	1		1	1		1
Heavy Vehicles (%)	3%	5%	2%	3%	13%	3%	5%	0%	4%	3%	4%	2%
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	Perm	NA	Perm	Perm	NA	Perm
Protected Phases	5	2		1	6			8			4	
Permitted Phases	2		2	6		6	8		8	4		4
Actuated Green, G (s)	59.5	53.1	53.1	59.5	53.1	53.1	32.4	32.4	32.4	32.4	32.4	32.4
Effective Green, g (s)	59.5	53.1	53.1	59.5	53.1	53.1	32.4	32.4	32.4	32.4	32.4	32.4
Actuated g/C Ratio	0.54	0.48	0.48	0.54	0.48	0.48	0.29	0.29	0.29	0.29	0.29	0.29
Clearance Time (s)	3.0	7.8	7.8	3.0	7.8	7.8	7.3	7.3	7.3	7.3	7.3	7.3
Vehicle Extension (s)	3.0	1.8	1.8	3.0	1.8	1.8	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	215	1659	688	288	1542	678	342	559	415	345	538	423
v/s Ratio Prot	c0.02	0.27		0.02	c0.36			0.06			0.06	
v/s Ratio Perm	0.17		0.05	0.13		0.09	0.18		0.03	c0.25		0.04
v/c Ratio	0.35	0.56	0.10	0.27	0.75	0.19	0.62	0.21	0.09	0.86	0.20	0.13
Uniform Delay, d1	14.7	20.1	15.5	13.1	23.1	16.2	33.5	29.2	28.1	36.6	29.1	28.4
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	1.0	1.4	0.3	0.5	3.5	0.6	3.5	0.2	0.1	18.6	0.2	0.1
Delay (s)	15.7	21.5	15.8	13.6	26.6	16.8	37.0	29.4	28.2	55.2	29.3	28.6
Level of Service	B	C	B	B	C	B	D	C	C	E	C	C
Approach Delay (s)		20.4			24.5			32.7			42.2	
Approach LOS		C			C			C			D	

Intersection Summary					
HCM 2000 Control Delay	27.1	HCM 2000 Level of Service		C	
HCM 2000 Volume to Capacity ratio	0.76				
Actuated Cycle Length (s)	110.0	Sum of lost time (s)		18.1	
Intersection Capacity Utilization	78.2%	ICU Level of Service		D	
Analysis Period (min)	15				

c Critical Lane Group

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	130	1192	1	6	1271	360	1	31	6	212	39	190
Future Volume (vph)	130	1192	1	6	1271	360	1	31	6	212	39	190
Ideal Flow (vphpl)	1775	1775	1775	1775	1900	1750	1775	1650	1650	1775	1650	1650
Storage Length (m)	145.0		0.0	105.0		90.0	80.0		0.0	120.0		0.0
Storage Lanes	1		0	1		1	1		0	1		0
Taper Length (m)	100.0			100.0			40.0			100.0		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor	1.00					0.98						
Frt						0.850		0.976			0.876	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1561	3212	0	1686	3252	1340	1686	1369	0	1561	1316	0
Flt Permitted	0.104			0.211			0.530			0.733		
Satd. Flow (perm)	171	3212	0	375	3252	1311	941	1369	0	1205	1316	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)						360		6			190	
Link Speed (k/h)		80			80			80			80	
Link Distance (m)		1424.6			264.2			138.9			366.2	
Travel Time (s)		64.1			11.9			6.3			16.5	
Confl. Peds. (#/hr)	1					1						
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	8%	5%	0%	0%	11%	11%	0%	21%	0%	8%	19%	8%
Adj. Flow (vph)	130	1192	1	6	1271	360	1	31	6	212	39	190
Shared Lane Traffic (%)												
Lane Group Flow (vph)	130	1193	0	6	1271	360	1	37	0	212	229	0
Turn Type	pm+pt	NA		pm+pt	NA	Perm	Perm	NA		Perm	NA	
Protected Phases	5	2		1	6			8			4	
Permitted Phases	2			6		6	8			4		
Detector Phase	5	2		1	6	6	8	8		4	4	
Switch Phase												
Minimum Initial (s)	7.0	20.0		7.0	20.0	20.0	10.0	10.0		10.0	10.0	
Minimum Split (s)	20.0	50.0		20.0	50.0	50.0	35.0	35.0		35.0	35.0	
Total Split (s)	20.0	50.0		20.0	50.0	50.0	35.0	35.0		35.0	35.0	
Total Split (%)	19.0%	47.6%		19.0%	47.6%	47.6%	33.3%	33.3%		33.3%	33.3%	
Maximum Green (s)	17.0	42.2		17.0	42.2	42.2	27.4	27.4		27.4	27.4	
Yellow Time (s)	3.0	5.9		3.0	5.9	5.9	5.9	5.9		5.9	5.9	
All-Red Time (s)	0.0	1.9		0.0	1.9	1.9	1.7	1.7		1.7	1.7	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Total Lost Time (s)	3.0	7.8		3.0	7.8	7.8	7.6	7.6		7.6	7.6	
Lead/Lag	Lead	Lag		Lead	Lag	Lag						
Lead-Lag Optimize?	Yes	Yes		Yes	Yes	Yes						
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	
Recall Mode	None	Max		None	Min	Min	None	None		None	None	
Walk Time (s)		16.0			16.0	16.0	16.0	16.0		16.0	16.0	
Flash Dont Walk (s)		11.0			11.0	11.0	11.0	11.0		11.0	11.0	
Pedestrian Calls (#/hr)		0			0	0	0	0		0	0	
Act Effct Green (s)	58.6	52.0		52.6	40.6	40.6	20.3	20.3		20.3	20.3	
Actuated g/C Ratio	0.65	0.58		0.59	0.45	0.45	0.23	0.23		0.23	0.23	
v/c Ratio	0.49	0.64		0.02	0.86	0.46	0.00	0.12		0.78	0.52	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Control Delay	15.6	16.1		7.3	31.0	4.2	28.0	25.6		53.5	11.9	
Queue Delay	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Total Delay	15.6	16.1		7.3	31.0	4.2	28.0	25.6		53.5	11.9	
LOS	B	B		A	C	A	C	C		D	B	
Approach Delay		16.1			25.0			25.7			31.9	
Approach LOS		B			C			C			C	
Queue Length 50th (m)	8.1	67.6		0.4	105.0	0.0	0.2	4.5		36.7	5.8	
Queue Length 95th (m)	23.9	131.8		2.0	#182.0	17.8	1.6	13.1		66.9	27.3	
Internal Link Dist (m)		1400.6			240.2			114.9			342.2	
Turn Bay Length (m)	145.0			105.0		90.0	80.0			120.0		
Base Capacity (vph)	379	1861		497	1556	815	292	429		374	540	
Starvation Cap Reductn	0	0		0	0	0	0	0		0	0	
Spillback Cap Reductn	0	0		0	0	0	0	0		0	0	
Storage Cap Reductn	0	0		0	0	0	0	0		0	0	
Reduced v/c Ratio	0.34	0.64		0.01	0.82	0.44	0.00	0.09		0.57	0.42	

Intersection Summary		
Area Type:	Other	
Cycle Length: 105		
Actuated Cycle Length: 89.7		
Natural Cycle: 105		
Control Type: Actuated-Uncoordinated		
Maximum v/c Ratio: 0.86		
Intersection Signal Delay: 22.5		Intersection LOS: C
Intersection Capacity Utilization 78.2%		ICU Level of Service D
Analysis Period (min) 15		
# 95th percentile volume exceeds capacity, queue may be longer.		
Queue shown is maximum after two cycles.		

Splits and Phases: 2: Nafziger Road & Highway 7/8

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	130	1192	1	6	1271	360	1	31	6	212	39	190
Future Volume (vph)	130	1192	1	6	1271	360	1	31	6	212	39	190
Ideal Flow (vphpl)	1775	1775	1775	1775	1900	1750	1775	1650	1650	1775	1650	1650
Total Lost time (s)	3.0	7.8		3.0	7.8	7.8	7.6	7.6		7.6	7.6	
Lane Util. Factor	1.00	0.95		1.00	0.95	1.00	1.00	1.00		1.00	1.00	
Frpb, ped/bikes	1.00	1.00		1.00	1.00	0.98	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	1.00	
Frt	1.00	1.00		1.00	1.00	0.85	1.00	0.98		1.00	0.88	
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1561	3212		1686	3252	1311	1686	1369		1561	1315	
Flt Permitted	0.10	1.00		0.21	1.00	1.00	0.53	1.00		0.73	1.00	
Satd. Flow (perm)	172	3212		374	3252	1311	940	1369		1205	1315	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	130	1192	1	6	1271	360	1	31	6	212	39	190
RTOR Reduction (vph)	0	0	0	0	0	191	0	5	0	0	148	0
Lane Group Flow (vph)	130	1193	0	6	1271	169	1	32	0	212	81	0
Confl. Peds. (#/hr)	1					1						
Heavy Vehicles (%)	8%	5%	0%	0%	11%	11%	0%	21%	0%	8%	19%	8%
Turn Type	pm+pt	NA		pm+pt	NA	Perm	Perm	NA		Perm	NA	
Protected Phases	5	2		1	6			8			4	
Permitted Phases	2			6		6	8			4		
Actuated Green, G (s)	56.2	52.0		44.3	43.1	43.1	20.3	20.3		20.3	20.3	
Effective Green, g (s)	56.2	52.0		44.3	43.1	43.1	20.3	20.3		20.3	20.3	
Actuated g/C Ratio	0.61	0.57		0.48	0.47	0.47	0.22	0.22		0.22	0.22	
Clearance Time (s)	3.0	7.8		3.0	7.8	7.8	7.6	7.6		7.6	7.6	
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	257	1817		197	1525	614	207	302		266	290	
v/s Ratio Prot	c0.06	0.37		0.00	c0.39			0.02			0.06	
v/s Ratio Perm	0.25			0.01		0.13	0.00			c0.18		
v/c Ratio	0.51	0.66		0.03	0.83	0.27	0.00	0.11		0.80	0.28	
Uniform Delay, d1	12.5	13.8		12.5	21.3	14.9	27.9	28.6		33.9	29.7	
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Incremental Delay, d2	1.6	1.9		0.1	4.1	0.2	0.0	0.2		15.2	0.5	
Delay (s)	14.1	15.7		12.6	25.3	15.1	27.9	28.7		49.0	30.3	
Level of Service	B	B		B	C	B	C	C		D	C	
Approach Delay (s)		15.5			23.1			28.7			39.3	
Approach LOS		B			C			C			D	

Intersection Summary			
HCM 2000 Control Delay	22.3	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.78		
Actuated Cycle Length (s)	91.9	Sum of lost time (s)	18.4
Intersection Capacity Utilization	78.2%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	128	104	382	28	34	455
Future Volume (vph)	128	104	382	28	34	455
Ideal Flow (vphpl)	1765	1765	1650	1650	1650	1650
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.939		0.991			
Flt Protected	0.973					0.997
Satd. Flow (prot)	1581	0	1603	0	0	1613
Flt Permitted	0.973					0.997
Satd. Flow (perm)	1581	0	1603	0	0	1613
Link Speed (k/h)	50		50			50
Link Distance (m)	280.1		715.9			178.4
Travel Time (s)	20.2		51.5			12.8
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	128	104	382	28	34	455
Shared Lane Traffic (%)						
Lane Group Flow (vph)	232	0	410	0	0	489
Sign Control	Stop		Free			Free

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	79.3%	ICU Level of Service	D
Analysis Period (min)	15		

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	128	104	382	28	34	455
Future Volume (Veh/h)	128	104	382	28	34	455
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	128	104	382	28	34	455
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	919	396			410	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	919	396			410	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	56	84			97	
cM capacity (veh/h)	292	653			1149	

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	232	410	489
Volume Left	128	0	34
Volume Right	104	28	0
cSH	388	1700	1149
Volume to Capacity	0.60	0.24	0.03
Queue Length 95th (m)	29.9	0.0	0.7
Control Delay (s)	27.1	0.0	0.9
Lane LOS	D		A
Approach Delay (s)	27.1	0.0	0.9
Approach LOS	D		

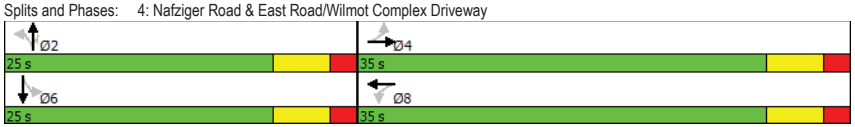
Intersection Summary			
Average Delay	5.9		
Intersection Capacity Utilization	79.3%	ICU Level of Service	D
Analysis Period (min)	15		

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	279	1	174	55	0	55	74	447	101	49	267	46
Future Volume (vph)	279	1	174	55	0	55	74	447	101	49	267	46
Ideal Flow (vphpl)	1765	1900	1765	1900	1900	1900	1650	1650	1900	1900	1650	1650
Storage Length (m)	0.0		0.0	0.0		0.0	0.0		50.0	0.0		0.0
Storage Lanes	0		0	0		0	0		1	0		0
Taper Length (m)	0.0			7.5			0.0			0.0		
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
Frt		0.948			0.932				0.850		0.983	
Flt Protected		0.970			0.976			0.993			0.993	
Satd. Flow (prot)	0	1747	0	0	1711	0	0	1597	1615	0	1550	0
Flt Permitted		0.749			0.754			0.910			0.804	
Satd. Flow (perm)	0	1349	0	0	1322	0	0	1464	1615	0	1255	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		77			55				101		13	
Link Speed (k/h)		50			50			80			80	
Link Distance (m)		502.0			56.6			366.2			156.4	
Travel Time (s)		36.1			4.1			16.5			7.0	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	0%	0%	0%	0%	0%	2%	0%	3%	0%	0%	5%	2%
Adj. Flow (vph)	279	1	174	55	0	55	74	447	101	49	267	46
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	454	0	0	110	0	0	521	101	0	362	0
Turn Type	Perm	NA		Perm	NA		Perm	NA	Perm	Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2		2	6		
Detector Phase	4	4		8	8		2	2	2	6	6	
Switch Phase												
Minimum Initial (s)	5.0	5.0		5.0	5.0		5.0	5.0	5.0	5.0	5.0	
Minimum Split (s)	24.0	24.0		24.0	24.0		24.0	24.0	24.0	24.0	24.0	
Total Split (s)	35.0	35.0		35.0	35.0		25.0	25.0	25.0	25.0	25.0	
Total Split (%)	58.3%	58.3%		58.3%	58.3%		41.7%	41.7%	41.7%	41.7%	41.7%	
Maximum Green (s)	29.0	29.0		29.0	29.0		19.0	19.0	19.0	19.0	19.0	
Yellow Time (s)	4.0	4.0		4.0	4.0		4.0	4.0	4.0	4.0	4.0	
All-Red Time (s)	2.0	2.0		2.0	2.0		2.0	2.0	2.0	2.0	2.0	
Lost Time Adjust (s)		-2.0			-2.0			-2.0	-2.0		-2.0	
Total Lost Time (s)		4.0			4.0			4.0	4.0		4.0	
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0	3.0	3.0	3.0	
Recall Mode	None	None		None	None		Max	Max	Max	Max	Max	
Walk Time (s)	7.0	7.0		7.0	7.0		7.0	7.0	7.0	7.0	7.0	
Flash Dont Walk (s)	11.0	11.0		11.0	11.0		11.0	11.0	11.0	11.0	11.0	
Pedestrian Calls (#/hr)	0	0		0	0		0	0	0	0	0	
Act Effct Green (s)		21.2			21.2			21.3	21.3		21.3	
Actuated g/C Ratio		0.42			0.42			0.42	0.42		0.42	
v/c Ratio		0.75			0.19			0.85	0.14		0.68	
Control Delay		18.2			5.6			33.1	4.0		23.1	
Queue Delay		0.0			0.0			0.0	0.0		0.0	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Total Delay		18.2			5.6			33.1	4.0		23.1	
LOS		B			A			C	A		C	
Approach Delay		18.2			5.6			28.3			23.1	
Approach LOS		B			A			C			C	
Queue Length 50th (m)		27.6			3.0			42.2	0.0		25.4	
Queue Length 95th (m)		55.2			9.7			#118.3	8.2		#79.5	
Internal Link Dist (m)		478.0			32.6			342.2			132.4	
Turn Bay Length (m)									50.0			
Base Capacity (vph)		867			842			616	738		535	
Starvation Cap Reductn		0			0			0	0		0	
Spillback Cap Reductn		0			0			0	0		0	
Storage Cap Reductn		0			0			0	0		0	
Reduced v/c Ratio		0.52			0.13			0.85	0.14		0.68	

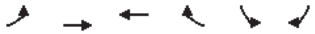
Intersection Summary			
Area Type:	Other		
Cycle Length: 60			
Actuated Cycle Length: 50.7			
Natural Cycle: 55			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 0.85			
Intersection Signal Delay: 22.5		Intersection LOS: C	
Intersection Capacity Utilization 97.1%		ICU Level of Service F	
Analysis Period (min) 15			
# 95th percentile volume exceeds capacity, queue may be longer.			
Queue shown is maximum after two cycles.			

Splits and Phases: 4: Nafziger Road & East Road/Wilmot Complex Driveway



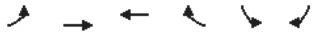
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	279	1	174	55	0	55	74	447	101	49	267	46
Future Volume (vph)	279	1	174	55	0	55	74	447	101	49	267	46
Ideal Flow (vphpl)	1765	1900	1765	1900	1900	1900	1650	1650	1900	1900	1650	1650
Total Lost time (s)		4.0			4.0			4.0	4.0		4.0	
Lane Util. Factor		1.00			1.00			1.00	1.00		1.00	
Frt		0.95			0.93			1.00	0.85		0.98	
Flt Protected		0.97			0.98			0.99	1.00		0.99	
Satd. Flow (prot)		1748			1711			1597	1615		1550	
Flt Permitted		0.75			0.75			0.91	1.00		0.80	
Satd. Flow (perm)		1349			1323			1464	1615		1254	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	279	1	174	55	0	55	74	447	101	49	267	46
RTOR Reduction (vph)	0	45	0	0	32	0	0	0	58	0	8	0
Lane Group Flow (vph)	0	409	0	0	78	0	0	521	43	0	354	0
Heavy Vehicles (%)	0%	0%	0%	0%	0%	2%	0%	3%	0%	0%	5%	2%
Turn Type	Perm	NA		Perm	NA		Perm	NA	Perm	Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2		2	6		
Actuated Green, G (s)		19.2			19.2			19.3	19.3		19.3	
Effective Green, g (s)		21.2			21.2			21.3	21.3		21.3	
Actuated g/C Ratio		0.42			0.42			0.42	0.42		0.42	
Clearance Time (s)		6.0			6.0			6.0	6.0		6.0	
Vehicle Extension (s)		3.0			3.0			3.0	3.0		3.0	
Lane Grp Cap (vph)		566			555			617	681		528	
v/s Ratio Prot												
v/s Ratio Perm		c0.30			0.06			c0.36	0.03		0.28	
v/c Ratio		0.72			0.14			0.84	0.06		0.67	
Uniform Delay, d1		12.2			9.0			13.1	8.7		11.8	
Progression Factor		1.00			1.00			1.00	1.00		1.00	
Incremental Delay, d2		4.6			0.1			13.3	0.2		6.7	
Delay (s)		16.8			9.2			26.4	8.8		18.4	
Level of Service		B			A			C	A		B	
Approach Delay (s)		16.8			9.2			23.6			18.4	
Approach LOS		B			A			C			B	

Intersection Summary			
HCM 2000 Control Delay	19.3	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.78		
Actuated Cycle Length (s)	50.5	Sum of lost time (s)	8.0
Intersection Capacity Utilization	97.1%	ICU Level of Service	F
Analysis Period (min)	15		
c Critical Lane Group			



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	6	410	108	11	41	41
Future Volume (vph)	6	410	108	11	41	41
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			0.988		0.932	
Flt Protected		0.999			0.976	
Satd. Flow (prot)	0	1861	1840	0	1694	0
Flt Permitted		0.999			0.976	
Satd. Flow (perm)	0	1861	1840	0	1694	0
Link Speed (k/h)		50	50		50	
Link Distance (m)		129.1	502.0		89.7	
Travel Time (s)		9.3	36.1		6.5	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	6	410	108	11	41	41
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	416	119	0	82	0
Sign Control		Free	Free		Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 37.8%		ICU Level of Service A	
Analysis Period (min) 15			



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	6	410	108	11	41	41
Future Volume (Veh/h)	6	410	108	11	41	41
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	6	410	108	11	41	41
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		None	None			
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	119				536	114
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	119				536	114
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	100				92	96
cM capacity (veh/h)	1469				504	939

Direction, Lane #	EB 1	WB 1	SB 1
Volume Total	416	119	82
Volume Left	6	0	41
Volume Right	0	11	41
cSH	1469	1700	656
Volume to Capacity	0.00	0.07	0.13
Queue Length 95th (m)	0.1	0.0	3.4
Control Delay (s)	0.1	0.0	11.3
Lane LOS	A		B
Approach Delay (s)	0.1	0.0	11.3
Approach LOS			B

Intersection Summary			
Average Delay	1.6		
Intersection Capacity Utilization	37.8%	ICU Level of Service	A
Analysis Period (min)	15		

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	61	68	28	232	184	7
Future Volume (vph)	61	68	28	232	184	7
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	0.929		0.880			
Flt Protected	0.977					0.954
Satd. Flow (prot)	1691	0	1639	0	0	1777
Flt Permitted	0.977					0.954
Satd. Flow (perm)	1691	0	1639	0	0	1777
Link Speed (k/h)	50		50			50
Link Distance (m)	129.1		88.3			154.4
Travel Time (s)	9.3		6.4			11.1
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	61	68	28	232	184	7
Shared Lane Traffic (%)						
Lane Group Flow (vph)	129	0	260	0	0	191
Sign Control	Stop		Free			Free

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	43.9%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	61	68	28	232	184	7
Future Volume (Veh/h)	61	68	28	232	184	7
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	61	68	28	232	184	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)						
pX, platoon unblocked						
vC, conflicting volume	519	144			260	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	519	144			260	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	86	92			86	
cM capacity (veh/h)	444	903			1304	

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	129	260	191
Volume Left	61	0	184
Volume Right	68	232	0
cSH	607	1700	1304
Volume to Capacity	0.21	0.15	0.14
Queue Length 95th (m)	6.4	0.0	3.9
Control Delay (s)	12.5	0.0	8.0
Lane LOS	B		A
Approach Delay (s)	12.5	0.0	8.0
Approach LOS	B		

Intersection Summary			
Average Delay	5.4		
Intersection Capacity Utilization	43.9%	ICU Level of Service	A
Analysis Period (min)	15		

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	0	82	0	0	21	0
Future Volume (vph)	0	82	0	0	21	0
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	0.865					
Flt Protected						0.950
Satd. Flow (prot)	1611	0	1863	0	0	1770
Flt Permitted						0.950
Satd. Flow (perm)	1611	0	1863	0	0	1770
Link Speed (k/h)	50		50			50
Link Distance (m)	106.3		29.7			88.3
Travel Time (s)	7.7		2.1			6.4
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	0	82	0	0	21	0
Shared Lane Traffic (%)						
Lane Group Flow (vph)	82	0	0	0	0	21
Sign Control	Stop		Free			Free

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	15.1%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	0	82	0	0	21	0
Future Volume (Veh/h)	0	82	0	0	21	0
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	0	82	0	0	21	0
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	42	0			0	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	42	0			0	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	100	92			99	
cM capacity (veh/h)	957	1085			1623	

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	82	0	21
Volume Left	0	0	21
Volume Right	82	0	0
cSH	1085	1700	1623
Volume to Capacity	0.08	0.00	0.01
Queue Length 95th (m)	2.0	0.0	0.3
Control Delay (s)	8.6	0.0	7.2
Lane LOS	A		A
Approach Delay (s)	8.6	0.0	7.2
Approach LOS	A		

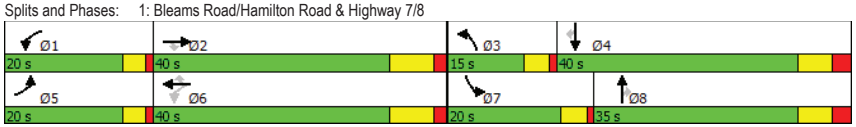
Intersection Summary			
Average Delay	8.3		
Intersection Capacity Utilization	15.1%	ICU Level of Service	A
Analysis Period (min)	15		

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	189	980	148	115	649	211	100	94	95	322	148	113
Future Volume (vph)	189	980	148	115	649	211	100	94	95	322	148	113
Ideal Flow (vphpl)	1775	1900	1750	1775	1900	1750	1775	1900	1750	1775	1900	1750
Storage Length (m)	300.0		110.0	100.0		75.0	70.0		85.0	55.0		155.0
Storage Lanes	2		1	1		1	2		1	2		1
Taper Length (m)	40.0			40.0			40.0			40.0		
Lane Util. Factor	0.97	0.95	1.00	1.00	0.95	1.00	0.97	1.00	1.00	0.97	1.00	1.00
Ped Bike Factor	1.00		0.98	1.00		0.98			0.99	1.00		
Frt			0.850			0.850			0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	3176	3438	1458	1637	3195	1444	3116	1900	1430	3176	1827	1458
Flt Permitted	0.950			0.171			0.950			0.950		
Satd. Flow (perm)	3174	3438	1424	295	3195	1413	3116	1900	1412	3171	1827	1458
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			164			211			169			126
Link Speed (k/h)		80			80			50			50	
Link Distance (m)		163.4			1398.3			147.6			715.9	
Travel Time (s)		7.4			62.9			10.6			51.5	
Confl. Peds. (#/hr)	1		2	2		1			1	1		
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	3%	5%	2%	3%	13%	3%	5%	0%	4%	3%	4%	2%
Adj. Flow (vph)	189	980	148	115	649	211	100	94	95	322	148	113
Shared Lane Traffic (%)												
Lane Group Flow (vph)	189	980	148	115	649	211	100	94	95	322	148	113
Turn Type	Prot	NA	Perm	pm+pt	NA	Perm	Prot	NA	Perm	Prot	NA	Perm
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases			2	6		6			8			4
Detector Phase	5	2	2	1	6	6	3	8	8	7	4	4
Switch Phase												
Minimum Initial (s)	7.0	20.0	20.0	7.0	20.0	20.0	5.0	10.0	10.0	5.0	10.0	10.0
Minimum Split (s)	20.0	40.0	40.0	20.0	40.0	40.0	9.5	35.0	35.0	9.5	35.0	35.0
Total Split (s)	20.0	40.0	40.0	20.0	40.0	40.0	15.0	35.0	35.0	20.0	40.0	40.0
Total Split (%)	17.4%	34.8%	34.8%	17.4%	34.8%	34.8%	13.0%	30.4%	30.4%	17.4%	34.8%	34.8%
Maximum Green (s)	16.0	32.2	32.2	16.0	32.2	32.2	10.5	27.7	27.7	15.5	32.7	32.7
Yellow Time (s)	3.0	5.9	5.9	3.0	5.9	5.9	3.5	4.5	4.5	3.5	4.5	4.5
All-Red Time (s)	1.0	1.9	1.9	1.0	1.9	1.9	1.0	2.8	2.8	1.0	2.8	2.8
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.0	7.8	7.8	4.0	7.8	7.8	4.5	7.3	7.3	4.5	7.3	7.3
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	1.8	1.8	3.0	1.8	1.8	3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	Max	Max	None	Max	Max	None	None	None	None	None	None
Walk Time (s)		19.0	19.0		19.0	19.0		19.0	19.0		19.0	19.0
Flash Dont Walk (s)		14.0	14.0		14.0	14.0		14.0	14.0		14.0	14.0
Pedestrian Calls (#/hr)		0	0		0	0		0	0		0	0
Act Effct Green (s)	10.8	35.0	35.0	45.8	33.1	33.1	8.3	11.1	11.1	13.8	18.9	18.9
Actuated g/C Ratio	0.12	0.38	0.38	0.50	0.36	0.36	0.09	0.12	0.12	0.15	0.20	0.20
v/c Ratio	0.51	0.75	0.23	0.42	0.57	0.33	0.36	0.41	0.30	0.68	0.40	0.28

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Control Delay	43.9	30.2	3.8	15.4	27.2	5.0	44.2	44.7	2.5	45.6	37.7	7.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	43.9	30.2	3.8	15.4	27.2	5.0	44.2	44.7	2.5	45.6	37.7	7.3
LOS	D	C	A	B	C	A	D	D	A	D	D	A
Approach Delay		29.2			21.0			30.6			36.2	
Approach LOS		C			C			C			D	
Queue Length 50th (m)	17.3	81.7	0.0	9.5	50.6	0.0	9.2	16.8	0.0	29.3	25.0	0.0
Queue Length 95th (m)	29.5	121.0	10.7	19.8	77.9	16.0	18.2	33.6	0.5	47.2	46.5	12.3
Internal Link Dist (m)		139.4			1374.3			123.6			691.9	
Turn Bay Length (m)	300.0		110.0	100.0		75.0	70.0		85.0	55.0		155.0
Base Capacity (vph)	551	1300	640	396	1143	641	354	570	542	533	647	598
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.34	0.75	0.23	0.29	0.57	0.33	0.28	0.16	0.18	0.60	0.23	0.19

Intersection Summary			
Area Type:	Other		
Cycle Length: 115			
Actuated Cycle Length: 92.5			
Natural Cycle: 105			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 0.75			
Intersection Signal Delay: 28.1		Intersection LOS: C	
Intersection Capacity Utilization 72.8%		ICU Level of Service C	
Analysis Period (min) 15			

Splits and Phases: 1: Bleams Road/Hamilton Road & Highway 7/8



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	189	980	148	115	649	211	100	94	95	322	148	113
Future Volume (vph)	189	980	148	115	649	211	100	94	95	322	148	113
Ideal Flow (vphpl)	1775	1900	1750	1775	1900	1750	1775	1900	1750	1775	1900	1750
Total Lost time (s)	4.0	7.8	7.8	4.0	7.8	7.8	4.5	7.3	7.3	4.5	7.3	7.3
Lane Util. Factor	0.97	0.95	1.00	1.00	0.95	1.00	0.97	1.00	1.00	0.97	1.00	1.00
Frpb, ped/bikes	1.00	1.00	0.98	1.00	1.00	0.98	1.00	1.00	0.99	1.00	1.00	1.00
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	3176	3438	1425	1637	3195	1413	3116	1900	1412	3176	1827	1458
Flt Permitted	0.95	1.00	1.00	0.17	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	3176	3438	1425	294	3195	1413	3116	1900	1412	3176	1827	1458
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	189	980	148	115	649	211	100	94	95	322	148	113
RTOR Reduction (vph)	0	0	93	0	0	136	0	0	83	0	0	90
Lane Group Flow (vph)	189	980	55	115	649	75	100	94	12	322	148	23
Confl. Peds. (#/hr)	1		2	2		1			1	1		
Heavy Vehicles (%)	3%	5%	2%	3%	13%	3%	5%	0%	4%	3%	4%	2%
Turn Type	Prot	NA	Perm	pm+pt	NA	Perm	Prot	NA	Perm	Prot	NA	Perm
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases			2	6		6			8			4
Actuated Green, G (s)	10.8	35.0	35.0	42.0	33.1	33.1	7.0	12.1	12.1	13.8	18.9	18.9
Effective Green, g (s)	10.8	35.0	35.0	42.0	33.1	33.1	7.0	12.1	12.1	13.8	18.9	18.9
Actuated g/C Ratio	0.12	0.37	0.37	0.45	0.35	0.35	0.07	0.13	0.13	0.15	0.20	0.20
Clearance Time (s)	4.0	7.8	7.8	4.0	7.8	7.8	4.5	7.3	7.3	4.5	7.3	7.3
Vehicle Extension (s)	3.0	1.8	1.8	3.0	1.8	1.8	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	367	1288	533	260	1132	500	233	246	182	469	369	295
v/s Ratio Prot	c0.06	c0.29		0.04	0.20		0.03	0.05		c0.10	c0.08	
v/s Ratio Perm			0.04	0.16		0.05			0.01			0.02
v/c Ratio	0.51	0.76	0.10	0.44	0.57	0.15	0.43	0.38	0.07	0.69	0.40	0.08
Uniform Delay, d1	38.8	25.5	19.0	16.5	24.4	20.6	41.3	37.2	35.7	37.7	32.3	30.2
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	1.2	4.3	0.4	1.2	2.1	0.6	1.3	1.0	0.2	4.1	0.7	0.1
Delay (s)	40.1	29.8	19.4	17.7	26.5	21.2	42.6	38.2	35.9	41.9	33.1	30.3
Level of Service	D	C	B	B	C	C	D	D	D	D	C	C
Approach Delay (s)		30.1			24.3			38.9			37.4	
Approach LOS		C			C			D			D	

Intersection Summary					
HCM 2000 Control Delay	30.5	HCM 2000 Level of Service		C	
HCM 2000 Volume to Capacity ratio	0.68				
Actuated Cycle Length (s)	93.4	Sum of lost time (s)		23.6	
Intersection Capacity Utilization	72.8%	ICU Level of Service		C	
Analysis Period (min)	15				

c Critical Lane Group

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	47	31	360	134	201	536
Future Volume (vph)	47	31	360	134	201	536
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	0.946		0.963			
Flt Protected	0.971					0.987
Satd. Flow (prot)	1711	0	1794	0	0	1839
Flt Permitted	0.971					0.987
Satd. Flow (perm)	1711	0	1794	0	0	1839
Link Speed (k/h)	50		50			50
Link Distance (m)	231.4		715.9			178.4
Travel Time (s)	16.7		51.5			12.8
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	47	31	360	134	201	536
Shared Lane Traffic (%)						
Lane Group Flow (vph)	78	0	494	0	0	737
Sign Control	Stop		Free			Free

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	80.9%	ICU Level of Service	D
Analysis Period (min)	15		

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	47	31	360	134	201	536
Future Volume (Veh/h)	47	31	360	134	201	536
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	47	31	360	134	201	536
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	1365	427			494	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1365	427			494	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	64	95			81	
cM capacity (veh/h)	132	628			1070	

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	78	494	737
Volume Left	47	0	201
Volume Right	31	134	0
cSH	192	1700	1070
Volume to Capacity	0.41	0.29	0.19
Queue Length 95th (m)	14.5	0.0	5.5
Control Delay (s)	35.9	0.0	4.3
Lane LOS	E		A
Approach Delay (s)	35.9	0.0	4.3
Approach LOS	E		

Intersection Summary			
Average Delay	4.6		
Intersection Capacity Utilization	80.9%	ICU Level of Service	D
Analysis Period (min)	15		

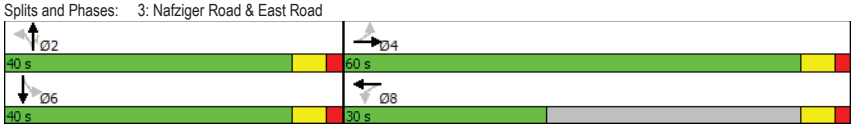
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	191	3	51	34	1	28	38	97	35	29	351	297
Future Volume (vph)	191	3	51	34	1	28	38	97	35	29	351	297
Ideal Flow (vphpl)	1765	1900	1765	1900	1900	1900	1650	1650	1900	1900	1650	1650
Storage Length (m)	100.0		0.0	0.0		0.0	0.0		50.0	0.0		0.0
Storage Lanes	1		0	0		0	0		1	0		0
Taper Length (m)	50.0			0.0			0.0			0.0		
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
Frt		0.858			0.940				0.850		0.941	
Flt Protected	0.950				0.974			0.986			0.998	
Satd. Flow (prot)	1677	1630	0	0	1709	0	0	1498	1615	0	1503	0
Flt Permitted	0.716				0.848			0.798			0.986	
Satd. Flow (perm)	1264	1630	0	0	1488	0	0	1212	1615	0	1485	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		51			28				35		44	
Link Speed (k/h)		50			50			80			80	
Link Distance (m)		380.0			59.8			535.4			181.7	
Travel Time (s)		27.4			4.3			24.1			8.2	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	0%	0%	0%	0%	0%	4%	0%	12%	0%	0%	6%	0%
Adj. Flow (vph)	191	3	51	34	1	28	38	97	35	29	351	297
Shared Lane Traffic (%)												
Lane Group Flow (vph)	191	54	0	0	63	0	0	135	35	0	677	0
Turn Type	Perm	NA		Perm	NA		Perm	NA	Perm	Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2		2	6		
Detector Phase	4	4		8	8		2	2	2	6	6	
Switch Phase												
Minimum Initial (s)	5.0	5.0		5.0	5.0		5.0	5.0	5.0	5.0	5.0	
Minimum Split (s)	24.0	24.0		24.0	24.0		24.0	24.0	24.0	24.0	24.0	
Total Split (s)	60.0	60.0		30.0	30.0		40.0	40.0	40.0	40.0	40.0	
Total Split (%)	60.0%	60.0%		30.0%	30.0%		40.0%	40.0%	40.0%	40.0%	40.0%	
Maximum Green (s)	54.0	54.0		24.0	24.0		34.0	34.0	34.0	34.0	34.0	
Yellow Time (s)	4.0	4.0		4.0	4.0		4.0	4.0	4.0	4.0	4.0	
All-Red Time (s)	2.0	2.0		2.0	2.0		2.0	2.0	2.0	2.0	2.0	
Lost Time Adjust (s)	0.0	-2.0			-2.0			-2.0	-2.0		-2.0	
Total Lost Time (s)	6.0	4.0			4.0			4.0	4.0		4.0	
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0	3.0	3.0	3.0	
Recall Mode	None	None		None	None		Max	Max	Max	Max	Max	
Walk Time (s)	7.0	7.0		7.0	7.0		7.0	7.0	7.0	7.0	7.0	
Flash Dont Walk (s)	11.0	11.0		11.0	11.0		11.0	11.0	11.0	11.0	11.0	
Pedestrian Calls (#/hr)	0	0		0	0		0	0	0	0	0	
Act Effct Green (s)	14.6	16.6			16.6			38.9	38.9		38.9	
Actuated g/C Ratio	0.23	0.26			0.26			0.61	0.61		0.61	
v/c Ratio	0.66	0.12			0.15			0.18	0.03		0.73	
Control Delay	32.6	6.3			11.3			7.2	2.8		15.9	
Queue Delay	0.0	0.0			0.0			0.0	0.0		0.0	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Total Delay	32.6	6.3			11.3			7.2	2.8		15.9	
LOS	C	A			B			A	A		B	
Approach Delay		26.8			11.3			6.3			15.9	
Approach LOS		C			B			A			B	
Queue Length 50th (m)	20.0	0.3			3.1			6.2	0.0		45.7	
Queue Length 95th (m)	38.6	6.9			10.5			16.9	3.4		#130.6	
Internal Link Dist (m)		356.0			35.8			511.4			157.7	
Turn Bay Length (m)	100.0								50.0			
Base Capacity (vph)	1079	1449			1321			741	1001		925	
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	0.18	0.04			0.05			0.18	0.03		0.73	

Intersection Summary			
Area Type:	Other		
Cycle Length: 100			
Actuated Cycle Length: 63.5			
Natural Cycle: 60			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 0.73			
Intersection Signal Delay: 16.5		Intersection LOS: B	
Intersection Capacity Utilization 75.4%		ICU Level of Service D	
Analysis Period (min) 15			

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

Splits and Phases: 3: Nafziger Road & East Road



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	191	3	51	34	1	28	38	97	35	29	351	297
Future Volume (vph)	191	3	51	34	1	28	38	97	35	29	351	297
Ideal Flow (vphpl)	1765	1900	1765	1900	1900	1900	1650	1650	1900	1900	1650	1650
Total Lost time (s)	6.0	4.0			4.0			4.0	4.0		4.0	
Lane Util. Factor	1.00	1.00			1.00			1.00	1.00		1.00	
Frt	1.00	0.86			0.94			1.00	0.85		0.94	
Flt Protected	0.95	1.00			0.97			0.99	1.00		1.00	
Satd. Flow (prot)	1677	1631			1709			1498	1615		1502	
Flt Permitted	0.72	1.00			0.85			0.80	1.00		0.99	
Satd. Flow (perm)	1264	1631			1488			1212	1615		1485	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	191	3	51	34	1	28	38	97	35	29	351	297
RTOR Reduction (vph)	0	38	0	0	21	0	0	0	14	0	17	0
Lane Group Flow (vph)	191	16	0	0	42	0	0	135	21	0	660	0
Heavy Vehicles (%)	0%	0%	0%	0%	0%	4%	0%	12%	0%	0%	6%	0%
Turn Type	Perm	NA		Perm	NA		Perm	NA	Perm	Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2		2	6		
Actuated Green, G (s)	14.6	14.6			14.6			36.9	36.9		36.9	
Effective Green, g (s)	14.6	16.6			16.6			38.9	38.9		38.9	
Actuated g/C Ratio	0.23	0.26			0.26			0.61	0.61		0.61	
Clearance Time (s)	6.0	6.0			6.0			6.0	6.0		6.0	
Vehicle Extension (s)	3.0	3.0			3.0			3.0	3.0		3.0	
Lane Grp Cap (vph)	290	426			388			742	989		909	
v/s Ratio Prot		0.01										
v/s Ratio Perm	c0.15				0.03			0.11	0.01		c0.44	
v/c Ratio	0.66	0.04			0.11			0.18	0.02		0.73	
Uniform Delay, d1	22.2	17.5			17.8			5.4	4.8		8.6	
Progression Factor	1.00	1.00			1.00			1.00	1.00		1.00	
Incremental Delay, d2	5.3	0.0			0.1			0.5	0.0		5.0	
Delay (s)	27.5	17.5			18.0			5.9	4.9		13.6	
Level of Service	C	B			B			A	A		B	
Approach Delay (s)		25.3			18.0			5.7			13.6	
Approach LOS		C			B			A			B	

Intersection Summary					
HCM 2000 Control Delay		15.2	HCM 2000 Level of Service		B
HCM 2000 Volume to Capacity ratio		0.68			
Actuated Cycle Length (s)		63.5	Sum of lost time (s)		8.0
Intersection Capacity Utilization		75.4%	ICU Level of Service		D
Analysis Period (min)		15			
c Critical Lane Group					

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	4	144	31	5	367	69
Future Volume (vph)	4	144	31	5	367	69
Ideal Flow (vphpl)	1765	1765	1650	1650	1650	1650
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.869		0.981			
Flt Protected	0.999					0.960
Satd. Flow (prot)	1502	0	1587	0	0	1553
Flt Permitted	0.999					0.960
Satd. Flow (perm)	1502	0	1587	0	0	1553
Link Speed (k/h)	50		80			80
Link Distance (m)	149.7		232.9			535.4
Travel Time (s)	10.8		10.5			24.1
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	4	144	31	5	367	69
Shared Lane Traffic (%)						
Lane Group Flow (vph)	148	0	36	0	0	436
Sign Control	Stop		Free			Free

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	50.8%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	4	144	31	5	367	69
Future Volume (Veh/h)	4	144	31	5	367	69
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	4	144	31	5	367	69
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	836	34			36	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	836	34			36	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	98	86			77	
cM capacity (veh/h)	258	1040			1575	

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	148	36	436
Volume Left	4	0	367
Volume Right	144	5	0
cSH	961	1700	1575
Volume to Capacity	0.15	0.02	0.23
Queue Length 95th (m)	4.3	0.0	7.2
Control Delay (s)	9.4	0.0	7.0
Lane LOS	A		A
Approach Delay (s)	9.4	0.0	7.0
Approach LOS	A		

Intersection Summary			
Average Delay	7.2		
Intersection Capacity Utilization	50.8%	ICU Level of Service	A
Analysis Period (min)	15		

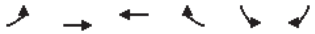
Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	75	10	83	242	121	165
Future Volume (vph)	75	10	83	242	121	165
Ideal Flow (vphpl)	1650	1650	1650	1650	1765	1765
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.984				0.922	
Flt Protected				0.987	0.979	
Satd. Flow (prot)	1592	0	0	1597	1562	0
Flt Permitted				0.987	0.979	
Satd. Flow (perm)	1592	0	0	1597	1562	0
Link Speed (k/h)	50			50	50	
Link Distance (m)	95.3			380.0	206.9	
Travel Time (s)	6.9			27.4	14.9	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	75	10	83	242	121	165
Shared Lane Traffic (%)						
Lane Group Flow (vph)	85	0	0	325	286	0
Sign Control	Free			Free	Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	51.4%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	75	10	83	242	121	165
Future Volume (Veh/h)	75	10	83	242	121	165
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	75	10	83	242	121	165
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (m)				380		
pX, platoon unblocked						
vC, conflicting volume			85		488	80
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			85		488	80
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			95		76	83
cM capacity (veh/h)			1512		509	980

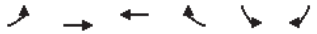
Direction, Lane #	EB 1	WB 1	NB 1
Volume Total	85	325	286
Volume Left	0	83	121
Volume Right	10	0	165
cSH	1700	1512	705
Volume to Capacity	0.05	0.05	0.41
Queue Length 95th (m)	0.0	1.4	15.8
Control Delay (s)	0.0	2.3	13.6
Lane LOS		A	B
Approach Delay (s)	0.0	2.3	13.6
Approach LOS			B

Intersection Summary			
Average Delay	6.6		
Intersection Capacity Utilization	51.4%	ICU Level of Service	A
Analysis Period (min)	15		



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	30	77	331	33	8	8
Future Volume (vph)	30	77	331	33	8	8
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			0.988		0.932	
Flt Protected		0.986			0.976	
Satd. Flow (prot)	0	1837	1840	0	1694	0
Flt Permitted		0.986			0.976	
Satd. Flow (perm)	0	1837	1840	0	1694	0
Link Speed (k/h)		50	50		50	
Link Distance (m)		103.9	95.3		100.8	
Travel Time (s)		7.5	6.9		7.3	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	30	77	331	33	8	8
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	107	364	0	16	0
Sign Control		Free	Free		Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 38.5%		ICU Level of Service A	
Analysis Period (min) 15			



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	30	77	331	33	8	8
Future Volume (Veh/h)	30	77	331	33	8	8
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	30	77	331	33	8	8
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		None	None			
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	364				484	348
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	364				484	348
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	97				98	99
cM capacity (veh/h)	1195				528	696

Direction, Lane #	EB 1	WB 1	SB 1
Volume Total	107	364	16
Volume Left	30	0	8
Volume Right	0	33	8
cSH	1195	1700	600
Volume to Capacity	0.03	0.21	0.03
Queue Length 95th (m)	0.6	0.0	0.7
Control Delay (s)	2.4	0.0	11.2
Lane LOS	A		B
Approach Delay (s)	2.4	0.0	11.2
Approach LOS			B

Intersection Summary			
Average Delay	0.9		
Intersection Capacity Utilization	38.5%	ICU Level of Service	A
Analysis Period (min)	15		

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	188	151	9	44	64	40
Future Volume (vph)	188	151	9	44	64	40
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	0.940		0.888			
Flt Protected	0.973					0.970
Satd. Flow (prot)	1704	0	1654	0	0	1807
Flt Permitted	0.973					0.970
Satd. Flow (perm)	1704	0	1654	0	0	1807
Link Speed (k/h)	50		50			50
Link Distance (m)	103.9		84.1			156.4
Travel Time (s)	7.5		6.1			11.3
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	188	151	9	44	64	40
Shared Lane Traffic (%)						
Lane Group Flow (vph)	339	0	53	0	0	104
Sign Control	Stop		Free			Free

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 38.6%		ICU Level of Service A	
Analysis Period (min) 15			

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	188	151	9	44	64	40
Future Volume (Veh/h)	188	151	9	44	64	40
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	188	151	9	44	64	40
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	199	31			53	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	199	31			53	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	75	86			96	
cM capacity (veh/h)	757	1043			1553	

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	339	53	104
Volume Left	188	0	64
Volume Right	151	44	0
cSH	862	1700	1553
Volume to Capacity	0.39	0.03	0.04
Queue Length 95th (m)	15.1	0.0	1.0
Control Delay (s)	11.9	0.0	4.7
Lane LOS	B		A
Approach Delay (s)	11.9	0.0	4.7
Approach LOS	B		

Intersection Summary				
Average Delay		9.1		
Intersection Capacity Utilization		38.6%	ICU Level of Service	A
Analysis Period (min)		15		

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	0	19	0	0	84	0
Future Volume (vph)	0	19	0	0	84	0
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	0.865					
Flt Protected						0.950
Satd. Flow (prot)	1611	0	1863	0	0	1770
Flt Permitted						0.950
Satd. Flow (perm)	1611	0	1863	0	0	1770
Link Speed (k/h)	50		50			50
Link Distance (m)	84.0		68.8			84.1
Travel Time (s)	6.0		5.0			6.1
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	0	19	0	0	84	0
Shared Lane Traffic (%)						
Lane Group Flow (vph)	19	0	0	0	0	84
Sign Control	Stop		Free			Free

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	14.7%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	0	19	0	0	84	0
Future Volume (Veh/h)	0	19	0	0	84	0
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	0	19	0	0	84	0
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	168	0			0	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	168	0			0	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	100	98			95	
cM capacity (veh/h)	780	1085			1623	

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	19	0	84
Volume Left	0	0	84
Volume Right	19	0	0
cSH	1085	1700	1623
Volume to Capacity	0.02	0.00	0.05
Queue Length 95th (m)	0.4	0.0	1.3
Control Delay (s)	8.4	0.0	7.3
Lane LOS	A		A
Approach Delay (s)	8.4	0.0	7.3
Approach LOS	A		

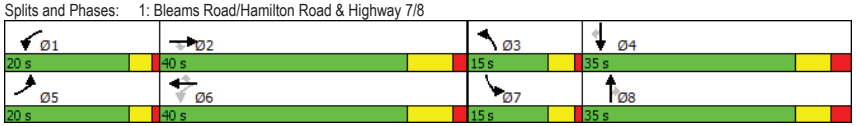
Intersection Summary			
Average Delay	7.5		
Intersection Capacity Utilization	14.7%	ICU Level of Service	A
Analysis Period (min)	15		

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	75	924	143	77	1163	217	213	118	121	296	107	180
Future Volume (vph)	75	924	143	77	1163	217	213	118	121	296	107	180
Ideal Flow (vphpl)	1775	1900	1750	1775	1900	1750	1775	1900	1750	1775	1900	1750
Storage Length (m)	300.0		110.0	100.0		75.0	70.0		85.0	55.0		155.0
Storage Lanes	2		1	1		1	2		1	2		1
Taper Length (m)	40.0			40.0			40.0			40.0		
Lane Util. Factor	0.97	0.95	1.00	1.00	0.95	1.00	0.97	1.00	1.00	0.97	1.00	1.00
Ped Bike Factor	1.00		0.98	1.00		0.97	1.00		0.99	1.00		0.99
Frt			0.850			0.850			0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	3176	3438	1458	1637	3195	1444	3116	1900	1430	3176	1827	1458
Flt Permitted	0.950			0.204			0.950			0.950		
Satd. Flow (perm)	3171	3438	1427	351	3195	1406	3111	1900	1412	3172	1827	1439
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			143			170			132			180
Link Speed (k/h)		80			80			50			50	
Link Distance (m)		163.4			1398.3			147.6			715.9	
Travel Time (s)		7.4			62.9			10.6			51.5	
Confl. Peds. (#/hr)	4		1	1		4	1		1	1		1
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	3%	5%	2%	3%	13%	3%	5%	0%	4%	3%	4%	2%
Adj. Flow (vph)	75	924	143	77	1163	217	213	118	121	296	107	180
Shared Lane Traffic (%)												
Lane Group Flow (vph)	75	924	143	77	1163	217	213	118	121	296	107	180
Turn Type	Prot	NA	Perm	pm+pt	NA	Perm	Prot	NA	Perm	Prot	NA	Perm
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases			2	6		6			8			4
Detector Phase	5	2	2	1	6	6	3	8	8	7	4	4
Switch Phase												
Minimum Initial (s)	7.0	20.0	20.0	7.0	20.0	20.0	5.0	10.0	10.0	5.0	10.0	10.0
Minimum Split (s)	20.0	40.0	40.0	20.0	40.0	40.0	9.5	35.0	35.0	9.5	35.0	35.0
Total Split (s)	20.0	40.0	40.0	20.0	40.0	40.0	15.0	35.0	35.0	15.0	35.0	35.0
Total Split (%)	18.2%	36.4%	36.4%	18.2%	36.4%	36.4%	13.6%	31.8%	31.8%	13.6%	31.8%	31.8%
Maximum Green (s)	16.0	32.2	32.2	16.0	32.2	32.2	10.5	27.7	27.7	10.5	27.7	27.7
Yellow Time (s)	3.0	5.9	5.9	3.0	5.9	5.9	3.5	4.5	4.5	3.5	4.5	4.5
All-Red Time (s)	1.0	1.9	1.9	1.0	1.9	1.9	1.0	2.8	2.8	1.0	2.8	2.8
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.0	7.8	7.8	4.0	7.8	7.8	4.5	7.3	7.3	4.5	7.3	7.3
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	1.8	1.8	3.0	1.8	1.8	3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	Max	Max	None	Max	Max	None	None	None	None	None	None
Walk Time (s)		19.0	19.0		19.0	19.0		19.0	19.0		19.0	19.0
Flash Dont Walk (s)		14.0	14.0		14.0	14.0		14.0	14.0		14.0	14.0
Pedestrian Calls (#/hr)		0	0		0	0		0	0		0	0
Act Effct Green (s)	7.8	33.2	33.2	43.1	33.2	33.2	9.9	11.5	11.5	10.6	12.2	12.2
Actuated g/C Ratio	0.09	0.39	0.39	0.51	0.39	0.39	0.12	0.14	0.14	0.13	0.14	0.14
v/c Ratio	0.26	0.68	0.22	0.26	0.92	0.33	0.58	0.46	0.40	0.74	0.41	0.50

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Control Delay	39.4	25.3	4.5	11.5	39.4	7.1	43.2	40.7	9.7	49.7	39.4	10.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	39.4	25.3	4.5	11.5	39.4	7.1	43.2	40.7	9.7	49.7	39.4	10.8
LOS	D	C	A	B	D	A	D	D	A	D	D	B
Approach Delay		23.6			33.1			33.6			35.8	
Approach LOS		C			C			C			D	
Queue Length 50th (m)	6.2	68.0	0.0	5.6	98.6	5.0	17.9	19.2	0.0	25.6	17.3	0.0
Queue Length 95th (m)	13.5	100.8	12.1	13.0	#160.7	21.7	31.4	36.4	13.3	#48.9	33.8	18.1
Internal Link Dist (m)		139.4			1374.3			123.6			691.9	
Turn Bay Length (m)	300.0		110.0	100.0		75.0	70.0		85.0	55.0		155.0
Base Capacity (vph)	606	1356	649	438	1258	656	390	628	555	398	604	596
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.12	0.68	0.22	0.18	0.92	0.33	0.55	0.19	0.22	0.74	0.18	0.30

Intersection Summary			
Area Type:	Other		
Cycle Length: 110			
Actuated Cycle Length: 84.2			
Natural Cycle: 115			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 0.92			
Intersection Signal Delay: 30.6		Intersection LOS: C	
Intersection Capacity Utilization 70.0%		ICU Level of Service C	
Analysis Period (min) 15			
# 95th percentile volume exceeds capacity, queue may be longer.			
Queue shown is maximum after two cycles.			

Splits and Phases: 1: Bleams Road/Hamilton Road & Highway 7/8



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	75	924	143	77	1163	217	213	118	121	296	107	180
Future Volume (vph)	75	924	143	77	1163	217	213	118	121	296	107	180
Ideal Flow (vphpl)	1775	1900	1750	1775	1900	1750	1775	1900	1750	1775	1900	1750
Total Lost time (s)	4.0	7.8	7.8	4.0	7.8	7.8	4.5	7.3	7.3	4.5	7.3	7.3
Lane Util. Factor	0.97	0.95	1.00	1.00	0.95	1.00	0.97	1.00	1.00	0.97	1.00	1.00
Frpb, ped/bikes	1.00	1.00	0.98	1.00	1.00	0.97	1.00	1.00	0.99	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	1.00	1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	3176	3438	1427	1637	3195	1408	3116	1900	1412	3176	1827	1440
Flt Permitted	0.95	1.00	1.00	0.20	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	3176	3438	1427	352	3195	1408	3116	1900	1412	3176	1827	1440
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	75	924	143	77	1163	217	213	118	121	296	107	180
RTOR Reduction (vph)	0	0	87	0	0	104	0	0	105	0	0	154
Lane Group Flow (vph)	75	924	56	77	1163	113	213	118	16	296	107	26
Confl. Peds. (#/hr)	4		1	1		4	1		1	1		1
Heavy Vehicles (%)	3%	5%	2%	3%	13%	3%	5%	0%	4%	3%	4%	2%
Turn Type	Prot	NA	Perm	pm+pt	NA	Perm	Prot	NA	Perm	Prot	NA	Perm
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases			2	6		6			8			4
Actuated Green, G (s)	6.2	33.3	33.3	39.3	33.2	33.2	9.9	11.5	11.5	10.6	12.2	12.2
Effective Green, g (s)	6.2	33.3	33.3	39.3	33.2	33.2	9.9	11.5	11.5	10.6	12.2	12.2
Actuated g/C Ratio	0.07	0.39	0.39	0.46	0.39	0.39	0.12	0.14	0.14	0.12	0.14	0.14
Clearance Time (s)	4.0	7.8	7.8	4.0	7.8	7.8	4.5	7.3	7.3	4.5	7.3	7.3
Vehicle Extension (s)	3.0	1.8	1.8	3.0	1.8	1.8	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	231	1345	558	254	1246	549	362	256	190	395	261	206
v/s Ratio Prot	c0.02	0.27		0.02	c0.36		0.07	c0.06		c0.09	0.06	
v/s Ratio Perm			0.04	0.12		0.08			0.01			0.02
v/c Ratio	0.32	0.69	0.10	0.30	0.93	0.21	0.59	0.46	0.09	0.75	0.41	0.13
Uniform Delay, d1	37.5	21.6	16.4	13.8	24.9	17.2	35.7	33.9	32.2	36.0	33.2	31.8
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	0.8	2.9	0.4	0.7	13.8	0.9	2.4	1.3	0.2	7.6	1.1	0.3
Delay (s)	38.3	24.4	16.8	14.5	38.7	18.1	38.1	35.3	32.4	43.6	34.2	32.1
Level of Service	D	C	B	B	D	B	D	D	C	D	C	C
Approach Delay (s)		24.4			34.4			35.8			38.3	
Approach LOS		C			C			D			D	

Intersection Summary			
HCM 2000 Control Delay	32.0	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.75		
Actuated Cycle Length (s)	85.1	Sum of lost time (s)	23.6
Intersection Capacity Utilization	70.0%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	128	104	382	28	34	455
Future Volume (vph)	128	104	382	28	34	455
Ideal Flow (vphpl)	1900	1900	1650	1900	1900	1650
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.939		0.991			
Flt Protected	0.973					0.997
Satd. Flow (prot)	1702	0	1603	0	0	1613
Flt Permitted	0.973					0.997
Satd. Flow (perm)	1702	0	1603	0	0	1613
Link Speed (k/h)	50		80			80
Link Distance (m)	231.4		715.9			178.4
Travel Time (s)	16.7		32.2			8.0
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	128	104	382	28	34	455
Shared Lane Traffic (%)						
Lane Group Flow (vph)	232	0	410	0	0	489
Sign Control	Stop		Free			Free

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	78.3%	ICU Level of Service	D
Analysis Period (min)	15		

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	128	104	382	28	34	455
Future Volume (Veh/h)	128	104	382	28	34	455
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	128	104	382	28	34	455
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	919	396			410	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	919	396			410	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	56	84			97	
cM capacity (veh/h)	292	653			1149	

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	232	410	489
Volume Left	128	0	34
Volume Right	104	28	0
cSH	388	1700	1149
Volume to Capacity	0.60	0.24	0.03
Queue Length 95th (m)	29.9	0.0	0.7
Control Delay (s)	27.1	0.0	0.9
Lane LOS	D		A
Approach Delay (s)	27.1	0.0	0.9
Approach LOS	D		

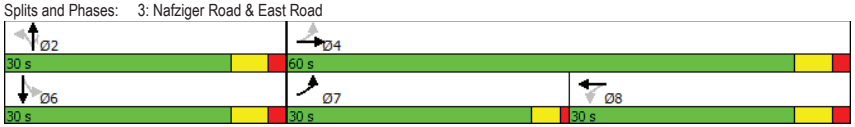
Intersection Summary			
Average Delay	5.9		
Intersection Capacity Utilization	78.3%	ICU Level of Service	D
Analysis Period (min)	15		

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	578	1	106	55	0	55	14	153	101	49	149	162
Future Volume (vph)	578	1	106	55	0	55	14	153	101	49	149	162
Ideal Flow (vphpl)	1765	1900	1765	1765	1900	1765	1650	1650	1650	1650	1650	1650
Storage Length (m)	100.0		0.0	0.0		0.0	0.0		50.0	0.0		0.0
Storage Lanes	1		0	0		0	0		1	0		0
Taper Length (m)	50.0			0.0			0.0			0.0		
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
Frt		0.851			0.932				0.850		0.939	
Flt Protected	0.950				0.976			0.996			0.993	
Satd. Flow (prot)	1677	1617	0	0	1711	0	0	1599	1402	0	1494	0
Flt Permitted	0.569				0.787			0.960			0.940	
Satd. Flow (perm)	1004	1617	0	0	1380	0	0	1542	1402	0	1414	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		106			85				101		46	
Link Speed (k/h)		50			50			80			80	
Link Distance (m)		380.0			59.8			534.5			181.7	
Travel Time (s)		27.4			4.3			24.1			8.2	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	0%	0%	0%	0%	0%	2%	0%	3%	0%	0%	5%	2%
Adj. Flow (vph)	578	1	106	55	0	55	14	153	101	49	149	162
Shared Lane Traffic (%)												
Lane Group Flow (vph)	578	107	0	0	110	0	0	167	101	0	360	0
Turn Type	pm+pt	NA		Perm	NA		Perm	NA	Perm	Perm	NA	
Protected Phases	7	4			8			2			6	
Permitted Phases	4			8			2		2	6		
Detector Phase	7	4		8	8		2	2	2	6	6	
Switch Phase												
Minimum Initial (s)	5.0	5.0		5.0	5.0		5.0	5.0	5.0	5.0	5.0	
Minimum Split (s)	9.5	24.0		24.0	24.0		24.0	24.0	24.0	24.0	24.0	
Total Split (s)	30.0	60.0		30.0	30.0		30.0	30.0	30.0	30.0	30.0	
Total Split (%)	33.3%	66.7%		33.3%	33.3%		33.3%	33.3%	33.3%	33.3%	33.3%	
Maximum Green (s)	26.0	54.0		24.0	24.0		24.0	24.0	24.0	24.0	24.0	
Yellow Time (s)	3.0	4.0		4.0	4.0		4.0	4.0	4.0	4.0	4.0	
All-Red Time (s)	1.0	2.0		2.0	2.0		2.0	2.0	2.0	2.0	2.0	
Lost Time Adjust (s)	0.0	-2.0			-2.0			-2.0	-2.0		-2.0	
Total Lost Time (s)	4.0	4.0			4.0			4.0	4.0		4.0	
Lead/Lag	Lead			Lag	Lag							
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0	3.0	3.0	3.0	
Recall Mode	None	None		None	None		Max	Max	Max	Max	Max	
Walk Time (s)		7.0		7.0	7.0		7.0	7.0	7.0	7.0	7.0	
Flash Dont Walk (s)		11.0		11.0	11.0		11.0	11.0	11.0	11.0	11.0	
Pedestrian Calls (#/hr)		0		0	0		0	0	0	0	0	
Act Effct Green (s)	34.4	34.4			9.6			26.7	26.7		26.7	
Actuated g/C Ratio	0.50	0.50			0.14			0.39	0.39		0.39	
v/c Ratio	0.79	0.12			0.42			0.28	0.17		0.63	
Control Delay	21.6	2.3			16.0			19.3	5.1		23.7	
Queue Delay	0.0	0.0			0.0			0.0	0.0		0.0	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Total Delay	21.6	2.3			16.0			19.3	5.1		23.7	
LOS	C	A			B			B	A		C	
Approach Delay		18.6			16.0			13.9			23.7	
Approach LOS		B			B			B			C	
Queue Length 50th (m)	54.9	0.1			3.3			16.9	0.0		37.3	
Queue Length 95th (m)	87.3	6.3			17.0			34.8	10.0		#77.0	
Internal Link Dist (m)		356.0			35.8			510.5			157.7	
Turn Bay Length (m)	100.0								50.0			
Base Capacity (vph)	796	1323			583			593	601		572	
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	0.73	0.08			0.19			0.28	0.17		0.63	

Intersection Summary			
Area Type:	Other		
Cycle Length: 90			
Actuated Cycle Length: 69.3			
Natural Cycle: 65			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 0.79			
Intersection Signal Delay: 18.8		Intersection LOS: B	
Intersection Capacity Utilization 84.9%		ICU Level of Service E	
Analysis Period (min) 15			
# 95th percentile volume exceeds capacity, queue may be longer.			
Queue shown is maximum after two cycles.			

Splits and Phases: 3: Nafziger Road & East Road



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	578	1	106	55	0	55	14	153	101	49	149	162
Future Volume (vph)	578	1	106	55	0	55	14	153	101	49	149	162
Ideal Flow (vphpl)	1765	1900	1765	1765	1900	1765	1650	1650	1650	1650	1650	1650
Total Lost time (s)	4.0	4.0			4.0			4.0	4.0		4.0	
Lane Util. Factor	1.00	1.00			1.00			1.00	1.00		1.00	
Frt	1.00	0.85			0.93			1.00	0.85		0.94	
Flt Protected	0.95	1.00			0.98			1.00	1.00		0.99	
Satd. Flow (prot)	1677	1618			1711			1599	1402		1495	
Flt Permitted	0.57	1.00			0.79			0.96	1.00		0.94	
Satd. Flow (perm)	1004	1618			1381			1541	1402		1414	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	578	1	106	55	0	55	14	153	101	49	149	162
RTOR Reduction (vph)	0	52	0	0	75	0	0	0	63	0	29	0
Lane Group Flow (vph)	578	55	0	0	35	0	0	167	38	0	331	0
Heavy Vehicles (%)	0%	0%	0%	0%	0%	2%	0%	3%	0%	0%	5%	2%
Turn Type	pm+pt	NA		Perm	NA		Perm	NA	Perm	Perm	NA	
Protected Phases	7	4			8			2			6	
Permitted Phases	4			8			2		2	6		
Actuated Green, G (s)	33.9	33.9			6.0			24.6	24.6		24.6	
Effective Green, g (s)	33.9	35.9			8.0			26.6	26.6		26.6	
Actuated g/C Ratio	0.48	0.51			0.11			0.38	0.38		0.38	
Clearance Time (s)	4.0	6.0			6.0			6.0	6.0		6.0	
Vehicle Extension (s)	3.0	3.0			3.0			3.0	3.0		3.0	
Lane Grp Cap (vph)	710	823			156			581	528		533	
v/s Ratio Prot	c0.28	0.03										
v/s Ratio Perm	c0.12				0.03			0.11	0.03		c0.23	
v/c Ratio	0.81	0.07			0.22			0.29	0.07		0.62	
Uniform Delay, d1	14.8	8.8			28.4			15.3	14.1		17.9	
Progression Factor	1.00	1.00			1.00			1.00	1.00		1.00	
Incremental Delay, d2	7.1	0.0			0.7			1.2	0.3		5.4	
Delay (s)	22.0	8.8			29.1			16.6	14.3		23.2	
Level of Service	C	A			C			B	B		C	
Approach Delay (s)		19.9			29.1			15.7			23.2	
Approach LOS		B			C			B			C	

Intersection Summary			
HCM 2000 Control Delay	20.7	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.75		
Actuated Cycle Length (s)	70.5	Sum of lost time (s)	12.0
Intersection Capacity Utilization	84.9%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	1	130	33	6	212	98
Future Volume (vph)	1	130	33	6	212	98
Ideal Flow (vphpl)	1650	1765	1650	1765	1650	1650
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.866		0.979			
Flt Protected						0.967
Satd. Flow (prot)	1401	0	1584	0	0	1564
Flt Permitted						0.967
Satd. Flow (perm)	1401	0	1584	0	0	1564
Link Speed (k/h)	50		80			80
Link Distance (m)	149.7		232.9			534.5
Travel Time (s)	10.8		10.5			24.1
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	1	130	33	6	212	98
Shared Lane Traffic (%)						
Lane Group Flow (vph)	131	0	39	0	0	310
Sign Control	Stop		Free			Free

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	42.1%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	1	130	33	6	212	98
Future Volume (Veh/h)	1	130	33	6	212	98
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	1	130	33	6	212	98
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	558	36			39	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	558	36			39	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	100	87			87	
cM capacity (veh/h)	425	1037			1571	

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	131	39	310
Volume Left	1	0	212
Volume Right	130	6	0
cSH	1025	1700	1571
Volume to Capacity	0.13	0.02	0.13
Queue Length 95th (m)	3.5	0.0	3.7
Control Delay (s)	9.0	0.0	5.6
Lane LOS	A		A
Approach Delay (s)	9.0	0.0	5.6
Approach LOS	A		

Intersection Summary			
Average Delay	6.1		
Intersection Capacity Utilization	42.1%	ICU Level of Service	A
Analysis Period (min)	15		

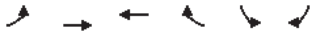
Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	376	74	117	58	61	305
Future Volume (vph)	376	74	117	58	61	305
Ideal Flow (vphpl)	1650	1650	1650	1650	1765	1765
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.978				0.887	
Flt Protected				0.968	0.992	
Satd. Flow (prot)	1582	0	0	1566	1523	0
Flt Permitted				0.968	0.992	
Satd. Flow (perm)	1582	0	0	1566	1523	0
Link Speed (k/h)	50			50	50	
Link Distance (m)	95.3			380.0	206.9	
Travel Time (s)	6.9			27.4	14.9	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	376	74	117	58	61	305
Shared Lane Traffic (%)						
Lane Group Flow (vph)	450	0	0	175	366	0
Sign Control	Free			Free	Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	72.8%	ICU Level of Service	C
Analysis Period (min)	15		

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	376	74	117	58	61	305
Future Volume (Veh/h)	376	74	117	58	61	305
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	376	74	117	58	61	305
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (m)				380		
pX, platoon unblocked						
vC, conflicting volume			450		705	413
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			450		705	413
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			89		83	52
cM capacity (veh/h)			1110		360	639

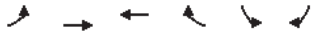
Direction, Lane #	EB 1	WB 1	NB 1
Volume Total	450	175	366
Volume Left	0	117	61
Volume Right	74	0	305
cSH	1700	1110	566
Volume to Capacity	0.26	0.11	0.65
Queue Length 95th (m)	0.0	2.8	37.0
Control Delay (s)	0.0	6.1	22.2
Lane LOS		A	C
Approach Delay (s)	0.0	6.1	22.2
Approach LOS			C

Intersection Summary				
Average Delay		9.3		
Intersection Capacity Utilization		72.8%	ICU Level of Service	C
Analysis Period (min)		15		



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	6	410	108	11	41	41
Future Volume (vph)	6	410	108	11	41	41
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			0.988		0.932	
Flt Protected		0.999			0.976	
Satd. Flow (prot)	0	1861	1840	0	1694	0
Flt Permitted		0.999			0.976	
Satd. Flow (perm)	0	1861	1840	0	1694	0
Link Speed (k/h)		50	50		50	
Link Distance (m)		103.9	95.3		100.8	
Travel Time (s)		7.5	6.9		7.3	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	6	410	108	11	41	41
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	416	119	0	82	0
Sign Control		Free	Free		Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 37.8%		ICU Level of Service A	
Analysis Period (min) 15			



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	6	410	108	11	41	41
Future Volume (Veh/h)	6	410	108	11	41	41
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	6	410	108	11	41	41
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		None	None			
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	119				536	114
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	119				536	114
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	100				92	96
cM capacity (veh/h)	1469				504	939

Direction, Lane #	EB 1	WB 1	SB 1
Volume Total	416	119	82
Volume Left	6	0	41
Volume Right	0	11	41
cSH	1469	1700	656
Volume to Capacity	0.00	0.07	0.13
Queue Length 95th (m)	0.1	0.0	3.4
Control Delay (s)	0.1	0.0	11.3
Lane LOS	A		B
Approach Delay (s)	0.1	0.0	11.3
Approach LOS			B

Intersection Summary				
Average Delay		1.6		
Intersection Capacity Utilization		37.8%	ICU Level of Service	A
Analysis Period (min)		15		

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	61	68	28	232	184	7
Future Volume (vph)	61	68	28	232	184	7
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	0.929		0.880			
Flt Protected	0.977					0.954
Satd. Flow (prot)	1691	0	1639	0	0	1777
Flt Permitted	0.977					0.954
Satd. Flow (perm)	1691	0	1639	0	0	1777
Link Speed (k/h)	50		50			50
Link Distance (m)	103.9		84.1			156.4
Travel Time (s)	7.5		6.1			11.3
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	61	68	28	232	184	7
Shared Lane Traffic (%)						
Lane Group Flow (vph)	129	0	260	0	0	191
Sign Control	Stop		Free			Free

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	43.9%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	61	68	28	232	184	7
Future Volume (Veh/h)	61	68	28	232	184	7
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	61	68	28	232	184	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)						
pX, platoon unblocked						
vC, conflicting volume	519	144			260	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	519	144			260	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	86	92			86	
cM capacity (veh/h)	444	903			1304	

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	129	260	191
Volume Left	61	0	184
Volume Right	68	232	0
cSH	607	1700	1304
Volume to Capacity	0.21	0.15	0.14
Queue Length 95th (m)	6.4	0.0	3.9
Control Delay (s)	12.5	0.0	8.0
Lane LOS	B		A
Approach Delay (s)	12.5	0.0	8.0
Approach LOS	B		

Intersection Summary			
Average Delay	5.4		
Intersection Capacity Utilization	43.9%	ICU Level of Service	A
Analysis Period (min)	15		

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	0	82	0	0	21	0
Future Volume (vph)	0	82	0	0	21	0
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	0.865					
Flt Protected						0.950
Satd. Flow (prot)	1611	0	1863	0	0	1770
Flt Permitted						0.950
Satd. Flow (perm)	1611	0	1863	0	0	1770
Link Speed (k/h)	50		50			50
Link Distance (m)	84.0		68.8			84.1
Travel Time (s)	6.0		5.0			6.1
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	0	82	0	0	21	0
Shared Lane Traffic (%)						
Lane Group Flow (vph)	82	0	0	0	0	21
Sign Control	Stop		Free			Free

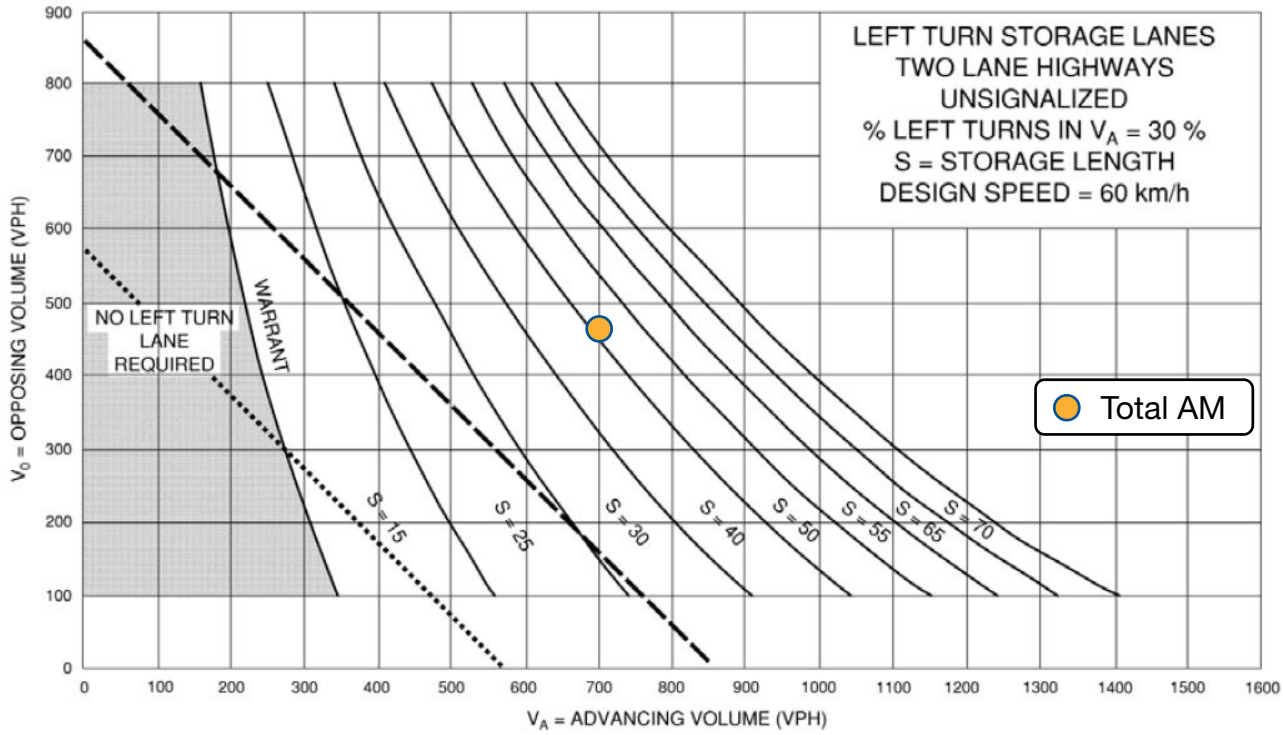
Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	15.1%	ICU Level of Service	A
Analysis Period (min)	15		

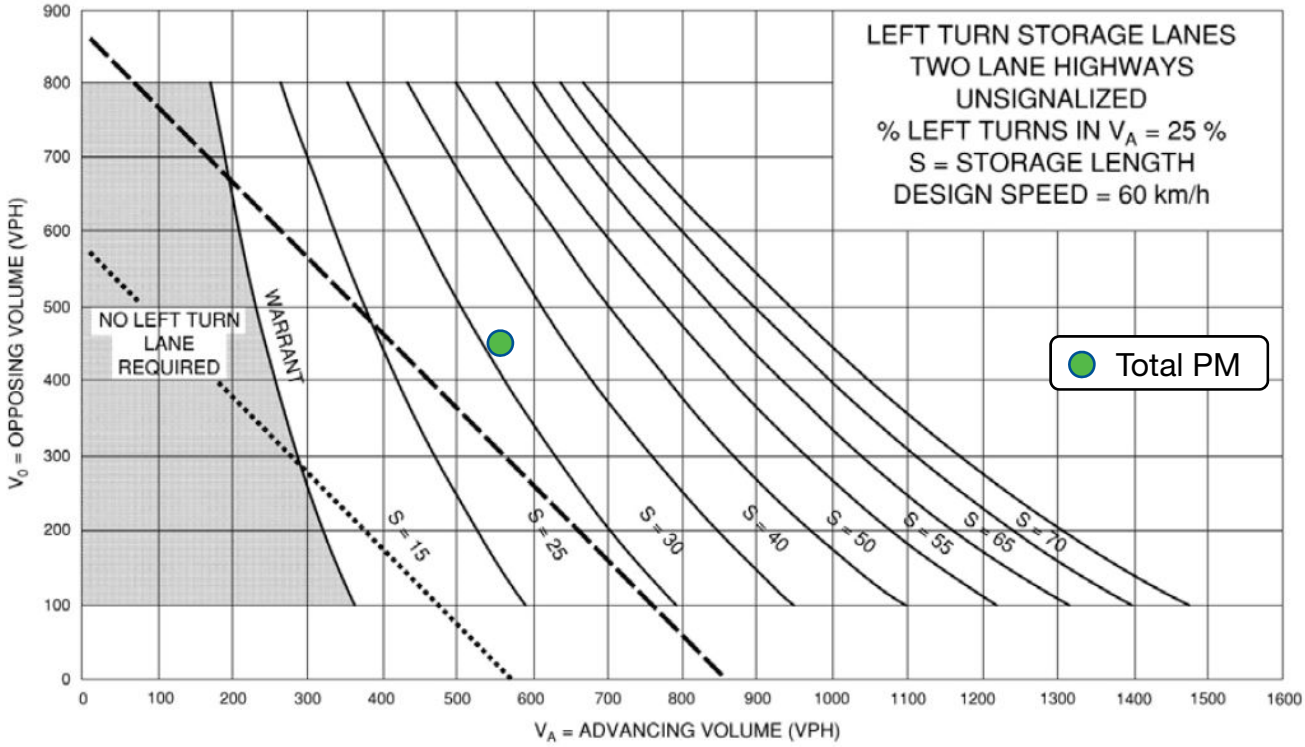
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	0	82	0	0	21	0
Future Volume (Veh/h)	0	82	0	0	21	0
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	0	82	0	0	21	0
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	42	0			0	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	42	0			0	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	100	92			99	
cM capacity (veh/h)	957	1085			1623	

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	82	0	21
Volume Left	0	0	21
Volume Right	82	0	0
cSH	1085	1700	1623
Volume to Capacity	0.08	0.00	0.01
Queue Length 95th (m)	2.0	0.0	0.3
Control Delay (s)	8.6	0.0	7.2
Lane LOS	A		A
Approach Delay (s)	8.6	0.0	7.2
Approach LOS	A		

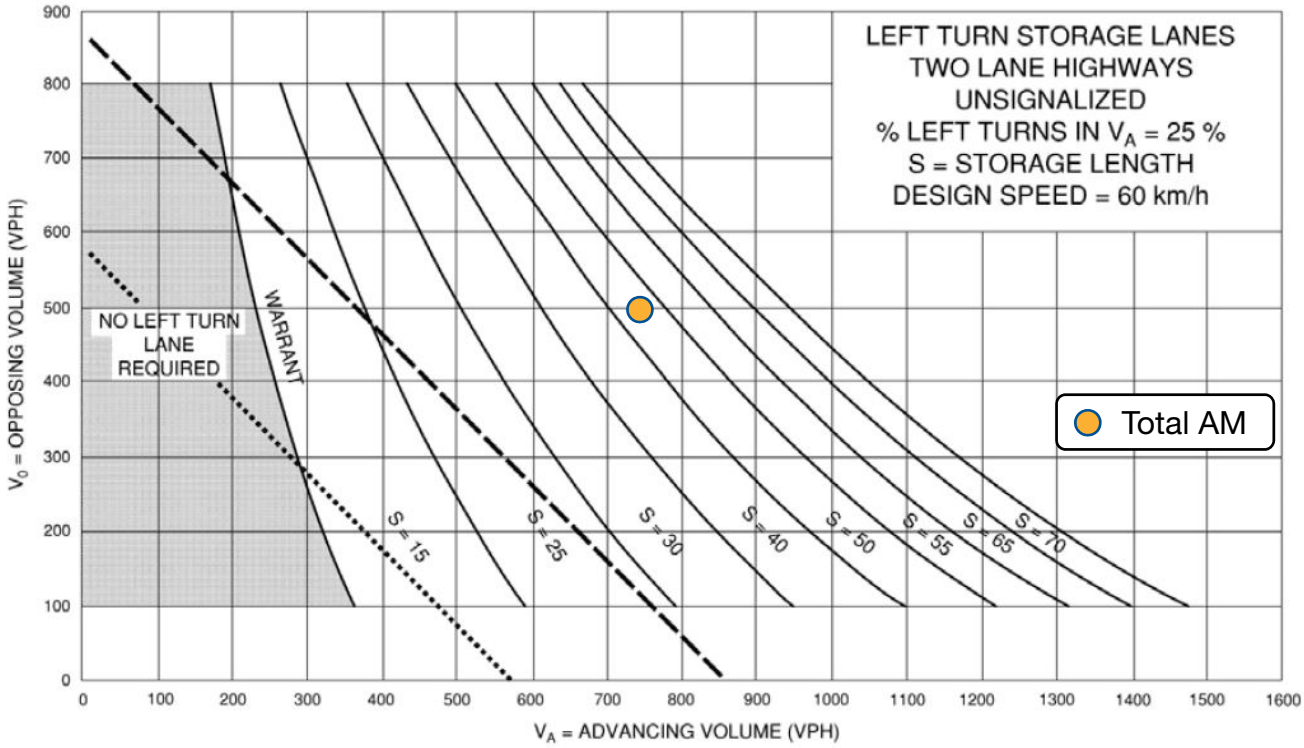
Intersection Summary			
Average Delay	8.3		
Intersection Capacity Utilization	15.1%	ICU Level of Service	A
Analysis Period (min)	15		

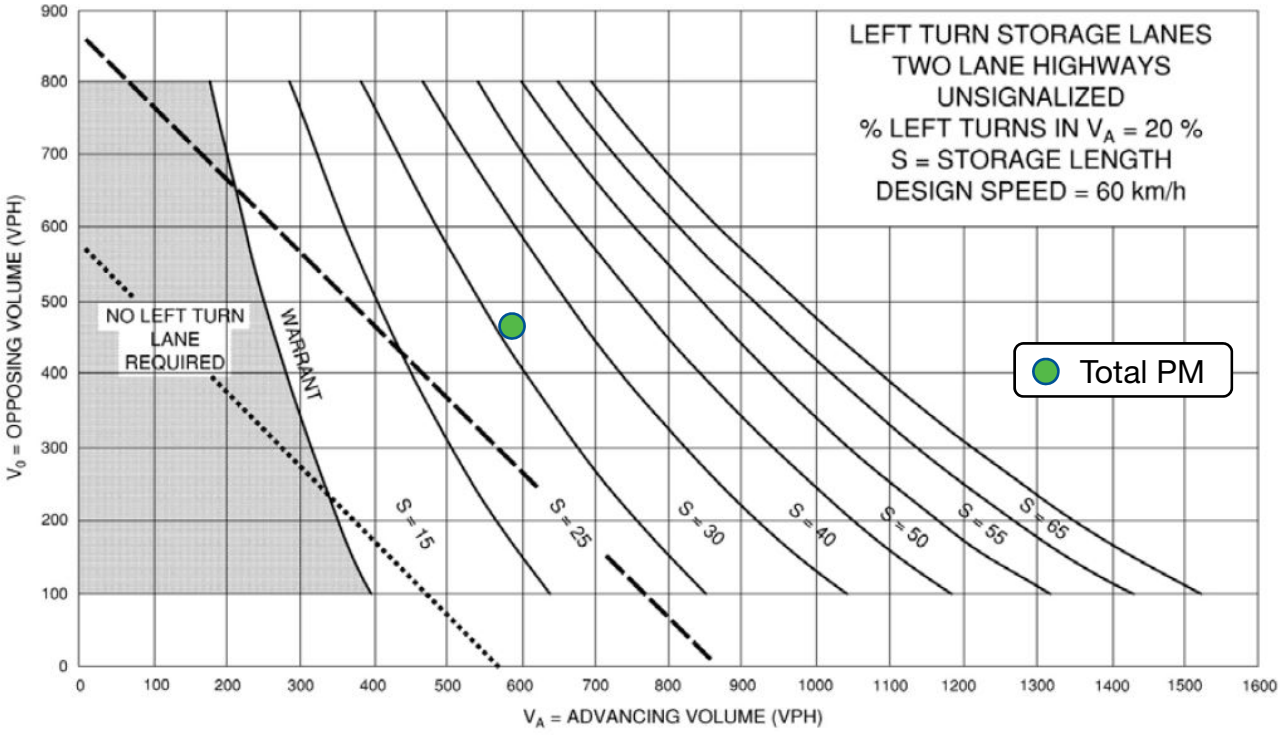
Appendix J Left-Turn Lane Warrants





Southbound Left-Turn Lane Warrants Hamilton Road & West Road – 2028 Horizon





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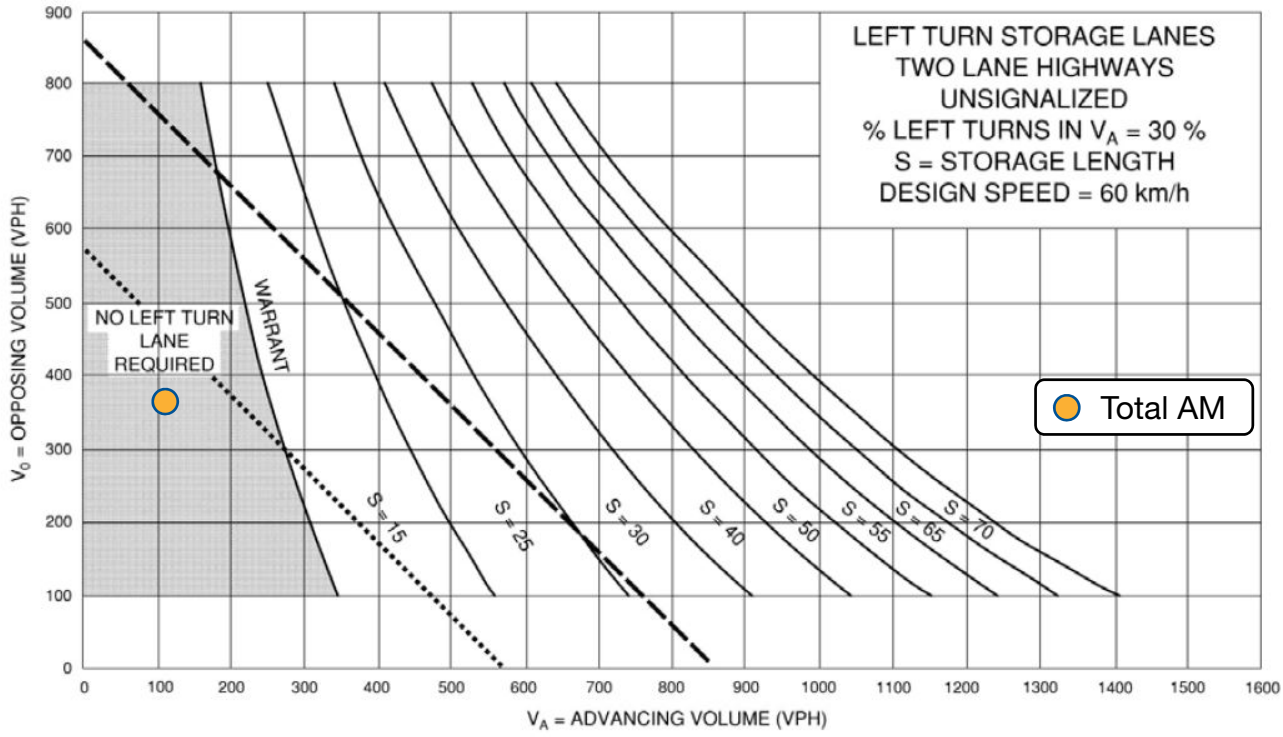
Southbound Left-Turn Lane Warrants Hamilton Road & West Road – 2033 Horizon



Eastbound Left-Turn Lane Warrants
East Road & Street A – 2033 Horizon

Appendix K Signal Warrant Analysis

Signal Justification Calculation for Forecasted Volumes
(OTM Book 12 - Justification 7)

Horizon Year: 2023 Total
Region/City/Township: Baden, Region of Waterloo

Major Street: Nafziger Road
Minor Street: East Road

North/South?: Y

Number of Approach Lanes: 1
Tee Intersection? N
Flow Conditions: Free

PM Forecast Only? N

Warrant Results		
150% Satisfied	No	Justification for new intersections with forecast traffic
120% Satisfied	Yes	Justification for existing intersections with forecast traffic

	Major Street						Minor Street						
	Nafziger Road						East Road						
	Northbound			Southbound			Eastbound			Westbound			Peds Crossing
Time Period	Left	Through	Right	Left	Through	Right	Left	Through	Right	Left	Through	Right	Main Road
AM Peak Hour	158	253	30	25	378	214	35	2	51	29	1	24	0
PM Peak Hour	74	386	87	42	230	46	279	1	173	47	0	47	0
Average Hourly Volume	58	160	29	17	152	65	79	1	56	19	0	18	0

Warrant	AHV
1A - All	653
1B - Minor	172
2A - Major	481
2B - Cross	98

Warrant 1 - Minimum Vehicular Volume

	Approach Lanes	1		2 or more		Average Hourly Volume
1A	Flow Conditions	Free	Restricted	Free	Restricted	
		X				
	All Approaches	480	720	600	900	653
					% Fulfilled	136.0%

	Approach Lanes	1		2 or more		Average Hourly Volume
1B	Flow Conditions	Free	Restricted	Free	Restricted	
		X				
	Minor Street Approaches	120	170	120	170	172
					% Fulfilled	143.5%

Warrant 2 - Delay To Cross Traffic

	Approach Lanes	1		2 or more		Average Hourly Volume
2A	Flow Conditions	Free	Restricted	Free	Restricted	
		X				
	Major Street Approaches	480	720	600	900	481
					% Fulfilled	100.2%

	Approach Lanes	1		2 or more		Average Hourly Volume
2B	Flow Conditions	Free	Restricted	Free	Restricted	
		X				
	Traffic Crossing Major Street	50	75	50	75	98
					% Fulfilled	196.5%

Signal Justification Calculation for Forecasted Volumes
(OTM Book 12 - Justification 7)

Horizon Year: 2028 Total
Region/City/Township: Baden, Region of Waterloo

Major Street: Nafziger Road
Minor Street: East Road

North/South?: Y

Number of Approach Lanes: 1
Tee Intersection? N
Flow Conditions: Free

PM Forecast Only? N

Warrant Results		
150% Satisfied	No	Justification for new intersections with forecast traffic
120% Satisfied	Yes	Justification for existing intersections with forecast traffic

	Major Street						Minor Street						
	Nafziger Road						East Road						
	Northbound			Southbound			Eastbound			Westbound			Peds Crossing
Time Period	Left	Through	Right	Left	Through	Right	Left	Through	Right	Left	Through	Right	Main Road
AM Peak Hour	158	272	32	27	407	214	35	2	51	31	1	26	0
PM Peak Hour	74	415	94	45	249	46	279	1	173	51	0	51	0
Average Hourly Volume	58	172	32	18	164	65	79	1	56	21	0	19	0

Warrant	AHV
1A - All	684
1B - Minor	175
2A - Major	508
2B - Cross	100

Warrant 1 - Minimum Vehicular Volume

	Approach Lanes	1		2 or more		Average Hourly Volume
1A	Flow Conditions	Free	Restricted	Free	Restricted	
		X				
	All Approaches	480	720	600	900	684
					% Fulfilled	142.4%

	Approach Lanes	1		2 or more		Average Hourly Volume
1B	Flow Conditions	Free	Restricted	Free	Restricted	
		X				
	Minor Street Approaches	120	170	120	170	175
					% Fulfilled	146.0%

Warrant 2 - Delay To Cross Traffic

	Approach Lanes	1		2 or more		Average Hourly Volume
2A	Flow Conditions	Free	Restricted	Free	Restricted	
		X				
	Major Street Approaches	480	720	600	900	508
					% Fulfilled	105.9%

	Approach Lanes	1		2 or more		Average Hourly Volume
2B	Flow Conditions	Free	Restricted	Free	Restricted	
		X				
	Traffic Crossing Major Street	50	75	50	75	100
					% Fulfilled	199.5%

Signal Justification Calculation for Forecasted Volumes
(OTM Book 12 - Justification 7)

Horizon Year: 2033 Total
Region/City/Township: Baden, Region of Waterloo

Major Street: Nafziger Road
Minor Street: East Road

North/South?: Y

Number of Approach Lanes: 1
Tee Intersection? N
Flow Conditions: Free

PM Forecast Only? N

Warrant Results		
150% Satisfied	No	Justification for new intersections with forecast traffic
120% Satisfied	Yes	Justification for existing intersections with forecast traffic

	Major Street						Minor Street						
	Nafziger Road						East Road						
	Northbound			Southbound			Eastbound			Westbound			Peds Crossing
Time Period	Left	Through	Right	Left	Through	Right	Left	Through	Right	Left	Through	Right	Main Road
AM Peak Hour	159	293	35	29	439	214	35	3	51	34	1	28	0
PM Peak Hour	74	447	101	49	267	46	279	1	174	55	0	55	0
Average Hourly Volume	58	185	34	20	177	65	79	1	56	22	0	21	0

Warrant	AHV
1A - All	717
1B - Minor	179
2A - Major	538
2B - Cross	102

Warrant 1 - Minimum Vehicular Volume

	Approach Lanes	1		2 or more		Average Hourly Volume
1A	Flow Conditions	Free	Restricted	Free	Restricted	
		X				
	All Approaches	480	720	600	900	717
					% Fulfilled	149.4%

	Approach Lanes	1		2 or more		Average Hourly Volume
1B	Flow Conditions	Free	Restricted	Free	Restricted	
		X				
	Minor Street Approaches	120	170	120	170	179
					% Fulfilled	149.2%

Warrant 2 - Delay To Cross Traffic

	Approach Lanes	1		2 or more		Average Hourly Volume
2A	Flow Conditions	Free	Restricted	Free	Restricted	
		X				
	Major Street Approaches	480	720	600	900	538
					% Fulfilled	112.1%

	Approach Lanes	1		2 or more		Average Hourly Volume
2B	Flow Conditions	Free	Restricted	Free	Restricted	
		X				
	Traffic Crossing Major Street	50	75	50	75	102
					% Fulfilled	203.5%

Signal Justification Calculation for Forecasted Volumes
(OTM Book 12 - Justification 7)

Horizon Year: 2023 Total - New Intersections
Region/City/Township: Baden, Region of Waterloo

Major Street: Nafziger Road
Minor Street: East Road

North/South?: Y

Number of Approach Lanes: 1
Tee Intersection? N
Flow Conditions: Free

PM Forecast Only? N

Warrant Results		
150% Satisfied	No	Justification for new intersections with forecast traffic
120% Satisfied	Yes	Justification for existing intersections with forecast traffic

	Major Street						Minor Street						
	Nafziger Road						East Road						
	Northbound			Southbound			Eastbound			Westbound			Peds Crossing
Time Period	Left	Through	Right	Left	Through	Right	Left	Through	Right	Left	Through	Right	Main Road
AM Peak Hour	37	83	30	25	303	285	170	2	50	29	1	24	0
PM Peak Hour	14	134	87	42	128	146	536	1	104	47	0	47	0
Average Hourly Volume	13	54	29	17	108	108	177	1	39	19	0	18	0

Warrant	AHV
1A - All	581
1B - Minor	253
2A - Major	329
2B - Cross	196

Warrant 1 - Minimum Vehicular Volume

	Approach Lanes	1		2 or more		Average Hourly Volume
1A	Flow Conditions	Free	Restricted	Free	Restricted	
		X				
	All Approaches	480	720	600	900	581
					% Fulfilled	121.1%

	Approach Lanes	1		2 or more		Average Hourly Volume
1B	Flow Conditions	Free	Restricted	Free	Restricted	
		X				
	Minor Street Approaches	120	170	120	170	253
					% Fulfilled	210.6%

Warrant 2 - Delay To Cross Traffic

	Approach Lanes	1		2 or more		Average Hourly Volume
2A	Flow Conditions	Free	Restricted	Free	Restricted	
		X				
	Major Street Approaches	480	720	600	900	329
					% Fulfilled	68.4%

	Approach Lanes	1		2 or more		Average Hourly Volume
2B	Flow Conditions	Free	Restricted	Free	Restricted	
		X				
	Traffic Crossing Major Street	50	75	50	75	196
					% Fulfilled	392.5%

Signal Justification Calculation for Forecasted Volumes
(OTM Book 12 - Justification 7)

Horizon Year: 2028 Total - New Intersections
Region/City/Township: Baden, Region of Waterloo

Major Street: Nafziger Road
Minor Street: East Road

North/South?: Y

Number of Approach Lanes: 1
Tee Intersection? N
Flow Conditions: Free

PM Forecast Only? N

Warrant Results		
150% Satisfied	No	Justification for new intersections with forecast traffic
120% Satisfied	Yes	Justification for existing intersections with forecast traffic

	Major Street						Minor Street						
	Nafziger Road						East Road						
	Northbound			Southbound			Eastbound			Westbound			Peds Crossing
Time Period	Left	Through	Right	Left	Through	Right	Left	Through	Right	Left	Through	Right	Main Road
AM Peak Hour	37	90	32	27	326	291	180	2	50	31	1	26	0
PM Peak Hour	14	143	94	45	138	154	556	1	105	51	0	51	0
Average Hourly Volume	13	58	32	18	116	111	184	1	39	21	0	19	0

Warrant	AHV
1A - All	611
1B - Minor	264
2A - Major	348
2B - Cross	205

Warrant 1 - Minimum Vehicular Volume

	Approach Lanes	1		2 or more		Average Hourly Volume
1A	Flow Conditions	Free	Restricted	Free	Restricted	
		X				
	All Approaches	480	720	600	900	611
					% Fulfilled	127.3%

	Approach Lanes	1		2 or more		Average Hourly Volume
1B	Flow Conditions	Free	Restricted	Free	Restricted	
		X				
	Minor Street Approaches	120	170	120	170	264
					% Fulfilled	219.6%

Warrant 2 - Delay To Cross Traffic

	Approach Lanes	1		2 or more		Average Hourly Volume
2A	Flow Conditions	Free	Restricted	Free	Restricted	
		X				
	Major Street Approaches	480	720	600	900	348
					% Fulfilled	72.4%

	Approach Lanes	1		2 or more		Average Hourly Volume
2B	Flow Conditions	Free	Restricted	Free	Restricted	
		X				
	Traffic Crossing Major Street	50	75	50	75	205
					% Fulfilled	410.5%

Signal Justification Calculation for Forecasted Volumes
(OTM Book 12 - Justification 7)

Horizon Year: 2033 Total - New Intersections
Region/City/Township: Baden, Region of Waterloo

Major Street: Nafziger Road
Minor Street: East Road

North/South?: Y

Number of Approach Lanes: 1
Tee Intersection? N
Flow Conditions: Free

PM Forecast Only? N

Warrant Results		
150% Satisfied	No	Justification for new intersections with forecast traffic
120% Satisfied	Yes	Justification for existing intersections with forecast traffic

	Major Street						Minor Street						
	Nafziger Road						East Road						
	Northbound			Southbound			Eastbound			Westbound			Peds Crossing
Time Period	Left	Through	Right	Left	Through	Right	Left	Through	Right	Left	Through	Right	Main Road
AM Peak Hour	38	97	35	29	351	297	191	3	51	34	1	28	0
PM Peak Hour	14	153	101	49	149	162	578	1	106	55	0	55	0
Average Hourly Volume	13	63	34	20	125	115	192	1	39	22	0	21	0

Warrant	AHV
1A - All	645
1B - Minor	276
2A - Major	369
2B - Cross	216

Warrant 1 - Minimum Vehicular Volume

	Approach Lanes	1		2 or more		Average Hourly Volume
1A	Flow Conditions	Free	Restricted	Free	Restricted	
		X				
	All Approaches	480	720	600	900	645
					% Fulfilled	134.3%

	Approach Lanes	1		2 or more		Average Hourly Volume
1B	Flow Conditions	Free	Restricted	Free	Restricted	
		X				
	Minor Street Approaches	120	170	120	170	276
					% Fulfilled	229.8%

Warrant 2 - Delay To Cross Traffic

	Approach Lanes	1		2 or more		Average Hourly Volume
2A	Flow Conditions	Free	Restricted	Free	Restricted	
		X				
	Major Street Approaches	480	720	600	900	369
					% Fulfilled	76.8%

	Approach Lanes	1		2 or more		Average Hourly Volume
2B	Flow Conditions	Free	Restricted	Free	Restricted	
		X				
	Traffic Crossing Major Street	50	75	50	75	216
					% Fulfilled	431.0%

Appendix L 10-Year Roundabout Screening Tool

Region of Waterloo
Roundabout Feasibility Initial Screening Tool

November 2018

File
180248

Project
Badenview Developments Inc.

New Hamburglrs Inc.

Based On
Region of Waterloo
Roundabout Feasibility
Initial Screening Tool 1.0
23 May 2012

The intent of this screening tool is to provide a relatively quick assessment of the feasibility of a modern roundabout at a particular intersection in comparison to other appropriate forms of traffic control or road improvements including auxiliary lanes, traffic control signals, four-way stops, etc. The intended outcome of this tool is to provide enough information to assist staff in deciding whether to proceed to an Intersection Control Study to further investigate in more detail the feasibility of a roundabout.

1) Project Name / File Number

- Badenview Developments Inc. and New Hamburglrs Inc./ 180248

2) Intersection Locations

(Street/Road Names, distance from major intersection, etc.)

- Nafziger Road & Wilmot Complex Driveway/East Road
- Nearest major intersection: Nafziger Road and Highway 7/8, approximately 350 meters south.

3) Brief Description of Intersection

(Number of legs, lanes on each leg, total AADT, AADT on each road, etc. Attach or sketch diagram showing existing and horizon-year turning movements)

- Four legs, with a northbound right-turn lane;
- Existing volumes attached;
- Existing AADT approximately 7800 based on existing PM peak hour counts;
- 2033 forecast AADT approximately 15440 based on 2033 total PM peak hour forecasts for the existing Nafziger and Highway 7/8 intersection; and
- 2033 forecast AADT approximately 14200 based on 2033 total PM peak hour forecasts for the future grade separated Nafziger and Highway 7/8 intersection.

4) What operation problems are being experienced at this location?

- None.

5) Is it a new intersection or is it a retrofit of an existing intersection?

If existing, what is the existing traffic control?

- Existing two-way stop controlled tee intersection.

6) Is the intersection in the vicinity of a railroad crossing or another intersection?

If so, how close and what type of traffic control exists at the adjacent intersection? Will queues be a problem?

- Nearest existing intersection is Nafziger Road and Highway 7/8, approximately 350 meters south;
- There are also multiple driveways, starting 120 meters to the south;
- There is a rail line 530 meters to the north; and
- Queueing not expected to be a problem.

7) Would the intersection be located within a coordinated signal system?

- No.

8) Would the intersection be located on a Preferred Roundabout Corridor?

- No roundabouts currently exist nearby in this corridor; and
- The existing signalized at-grade intersection at Highway 7/8 to the south is expected to be upgraded to an interchange in the future.

9) Is the intersection located within a corridor that is scheduled for improvements in the 10 Year Transportation Capital Program?

What is the ultimate cross-section of the approach roads?

- Nafziger Road has a 2-lane cross section;
- East Road is proposed to have a 2-lane cross section; and
- The Wilmot Recreation Complex Driveway has a 2-lane cross section.

10) What is the collision history of the intersection over the past five years?

Is there a collision problem that needs to be addressed?

- There is no collision data available for this intersection.

11) Are person with disabilities or horse and buggies frequent users of this intersection?

- Not expected to be.

12) What traditional road improvements are proposed for this intersection?

(eg. Traffic signals, all-way stop, auxiliary lanes, etc.) Please attach a sketch of the traditional road improvements.

- Traffic Signals (also assuming a left-turn lane on East Road)

13) If traffic control signals are being considered, are the traffic signal warrants met for the horizon year?

- Signal warrants met in 2023.

14) What size of roundabout is being considered for this intersection?

- 40 m ICD one-lane

15) 20-Year Life Cycle Cost Estimate

(1) 10-Year AADT – Existing Intersections: 15440

(2) 10-Year AADT – Future Intersections: 14200

Non-injury Social Collision Cost: $5000

Injury Social Collision Cost: $82,000

Fatal Social Collision Cost: $13,600,000

Discount Rate (i): 6%

Table 1: 20 Year Life-Cycle Cost Comparison – Existing Intersections

Cost Item	Other Traffic Control	Roundabout
Implementation Cost	$350,000 (traffic signals w/ one LT lanes)	$750,000
Injury Collision Cost (Present Value)	$1,500,550	$429,571
Total Life Cycle Cost	**$1,850,550**	**$1,179,571**

Table 2: 20 Year Life-Cycle Cost Comparison – Future Intersections

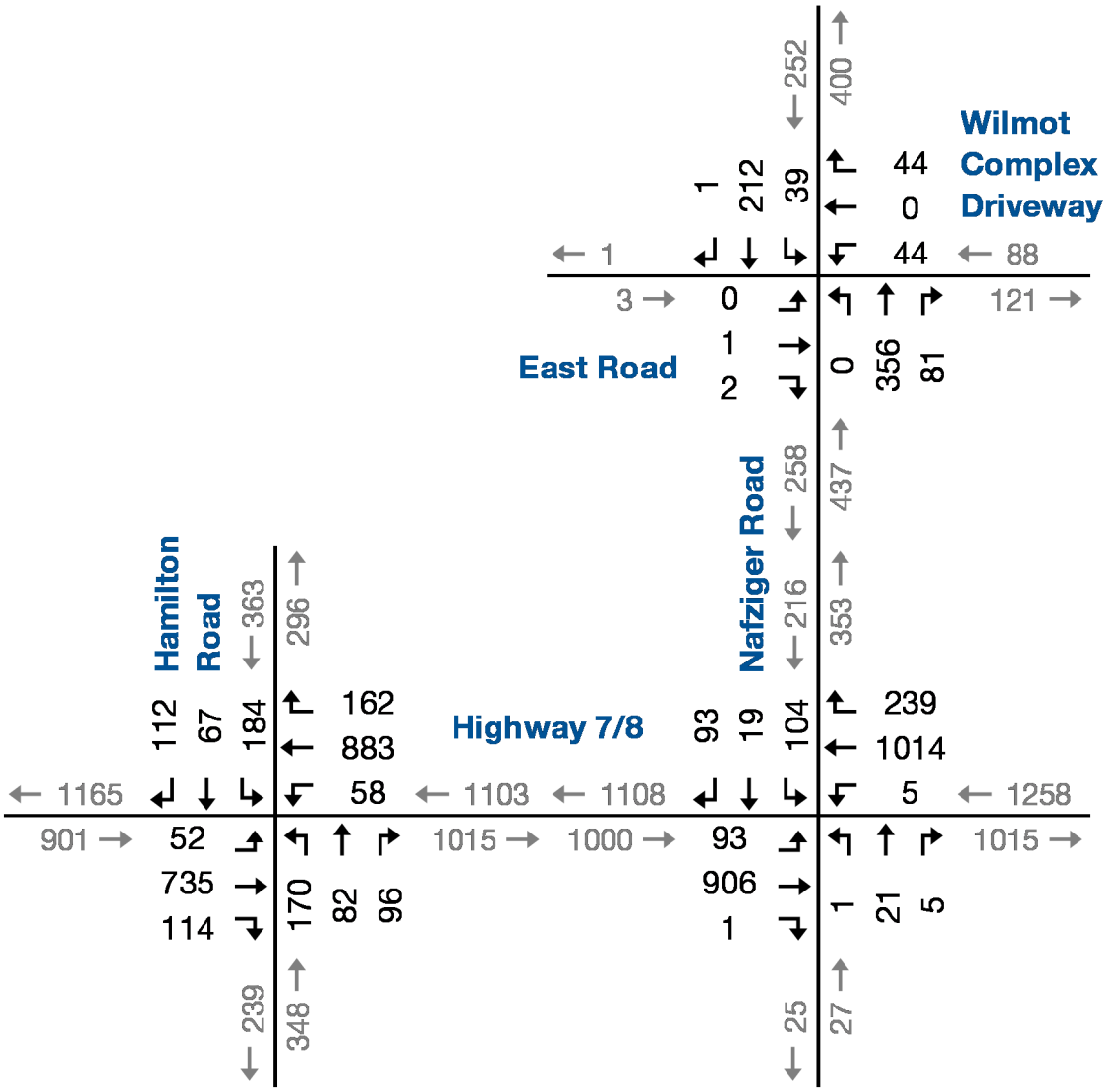
Cost Item	Other Traffic Control	Roundabout
Implementation Cost	$350,000 (traffic signals w/ one LT lanes)	$750,000
Injury Collision Cost (Present Value)	$1,461,603	$361,115
Total Life Cycle Cost	**$1,811,603**	**$ 1,111,115**

Conclusions and Recommendations

- Roundabout cost is less than signalization
- Proceed to Intersection Control Study

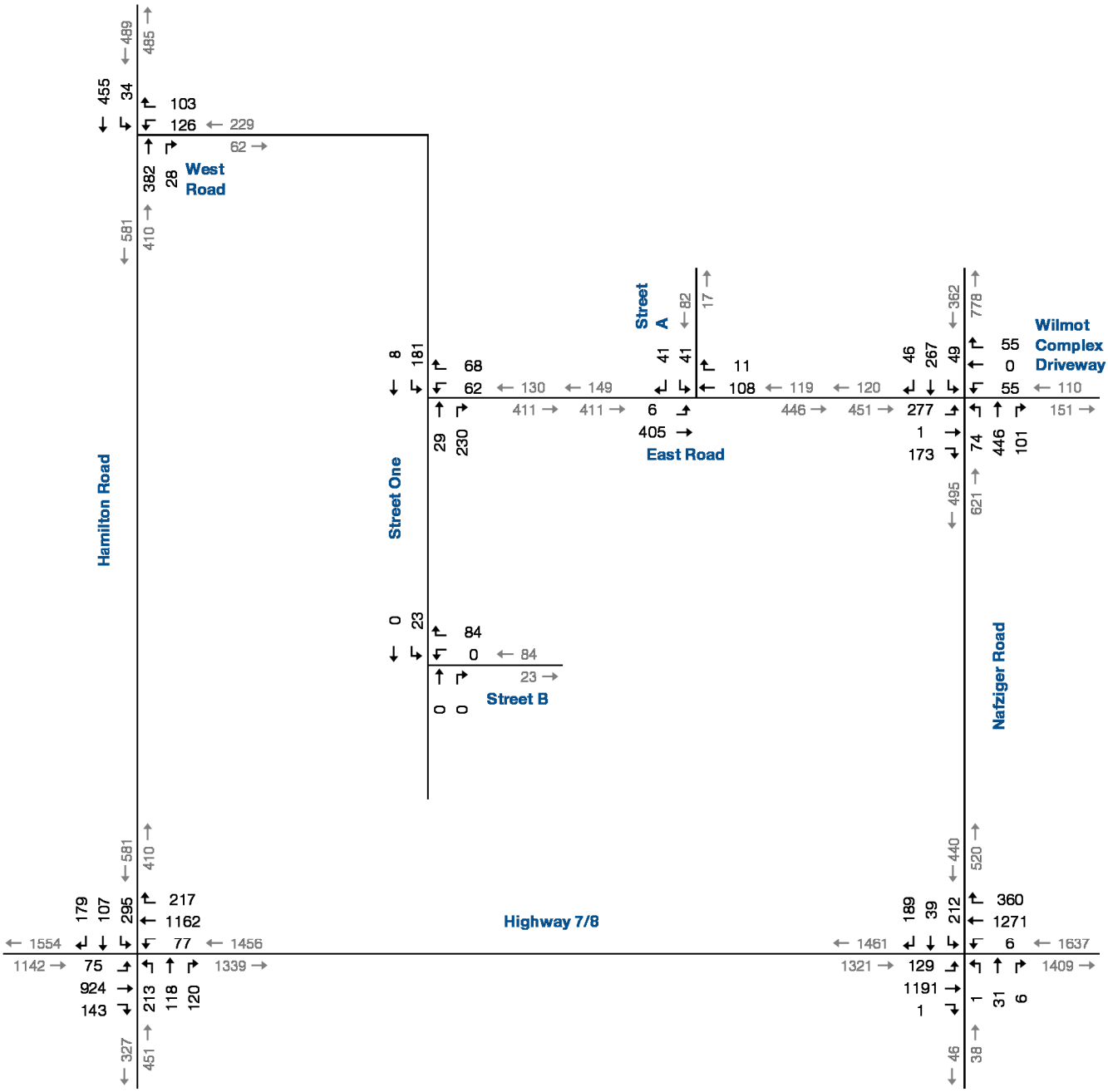
Nafziger Road & Wilmot Complex Driveway/East Road - Existing Conditions	
Step 1	
Base Year AADT	7800
5 Year Collisions (PDO)	1
5 Year Collisions (Injury)	0
Site Specific Collision Rate (Non-Injury)	0.07
Site Specific Collision Rate (Injury)	0.00
Step 2	
Expected Non-Injury Collision Rate (Stop Control, 4 Legged, Township)	0.14
Expected Injury Collision Rate (Stop Control, 4 Legged, Township)	0.08
Step 3	
Non-Injury Adjustment Factor	0.50
Injury Adjustment Factor	0.00
Step 4	
10 Year AADT	15440
Future Non-Injury Collision Rate (Signal, 4 Legs, Township)	0.39
Future Injury Collision Rate (Signal, 4 Legs, Township)	0.12
Apply Adjustment Factors	No
Adjusted Future Annual Non-Injury Collision Rate	0.39
Adjusted Future Annual Injury Collision Rate	0.12
Expected Future Annual Non-Injury Collision Frequency	2.20
Expected Future Annual Injury Collision Frequency	0.68
Step 5	
Social Collision Cost (Non-Injury)	$5,000
Social Collision Cost (Injury)	$82,000
Social Collision Cost (Fatal)	$13,600,000
Fatal Collision Ratio	0.007
Discount Rate (i)	6%
$PV_{non\ injury}$ (Non-Roundabout)	$126,048
PV_{injury} (Non-Roundabout)	$636,056
PV_{fatal} (Non-Roundabout)	$738,446
Step 6	
Expected Future Non-Injury Collision Rate (Roundabout) (Signal Rate * 2)	0.78
Expected Future Annual Non-Injury Collision Frequency (Roundabout)	4.40
Expected Future Injury Collision Rate (Roundabout) (Signal Rate * 0.25)	0.03
Expected Future Annual Injury Collision Frequency (Roundabout)	0.17
Traffic Signal Annual Injury Collision Frequency	0.676
Traffic Signal Fatal Collision Ratio	0.007
$PV_{non\ injury}$ (Roundabout)	$252,096
PV_{injury} (Roundabout)	$159,014
PV_{fatal} (Roundabout)	$18,461
PV_{total} (Non-Roundabout)	**$1,500,550**
PV_{total} (Roundabout)	**$429,571**

Nafziger Road & Wilmot Complex Driveway/East Road - Future Conditions	
Step 1	
Base Year AADT	7800
5 Year Collisions (PDO)	1
5 Year Collisions (Injury)	0
Site Specific Collision Rate (Non-Injury)	0.07
Site Specific Collision Rate (Injury)	0.00
Step 2	
Expected Non-Injury Collision Rate (Stop Control, 4 Legged, Township)	0.14
Expected Injury Collision Rate (Stop Control, 4 Legged, Township)	0.08
Step 3	
Non-Injury Adjustment Factor	0.50
Injury Adjustment Factor	0.00
Step 4	
10 Year AADT	14200
Future Non-Injury Collision Rate (Signal, 4 Legs, Township)	0.31
Future Injury Collision Rate (Signal, 4 Legs, Township)	0.13
Apply Adjustment Factors	No
Adjusted Future Annual Non-Injury Collision Rate	0.31
Adjusted Future Annual Injury Collision Rate	0.13
Expected Future Annual Non-Injury Collision Frequency	1.61
Expected Future Annual Injury Collision Frequency	0.67
Step 5	
Social Collision Cost (Non-Injury)	$5,000
Social Collision Cost (Injury)	$82,000
Social Collision Cost (Fatal)	$13,600,000
Fatal Collision Ratio	0.007
Discount Rate (i)	6%
$PV_{non\ injury}$ (Non-Roundabout)	$92,145
PV_{injury} (Non-Roundabout)	$633,722
PV_{fatal} (Non-Roundabout)	$735,736
Step 6	
Expected Future Non-Injury Collision Rate (Roundabout) (Signal Rate * 2)	0.62
Expected Future Annual Non-Injury Collision Frequency (Roundabout)	3.21
Expected Future Injury Collision Rate (Roundabout) (Signal Rate * 0.25)	0.03
Expected Future Annual Injury Collision Frequency (Roundabout)	0.17
Traffic Signal Annual Injury Collision Frequency	0.674
Traffic Signal Fatal Collision Ratio	0.007
$PV_{non\ injury}$ (Roundabout)	$184,291
PV_{injury} (Roundabout)	$158,431
PV_{fatal} (Roundabout)	$18,393
PV_{total} (Non-Roundabout)	**$1,461,603**
PV_{total} (Roundabout)	**$361,115**



Existing Traffic Volumes – PM Peak

Figure 1



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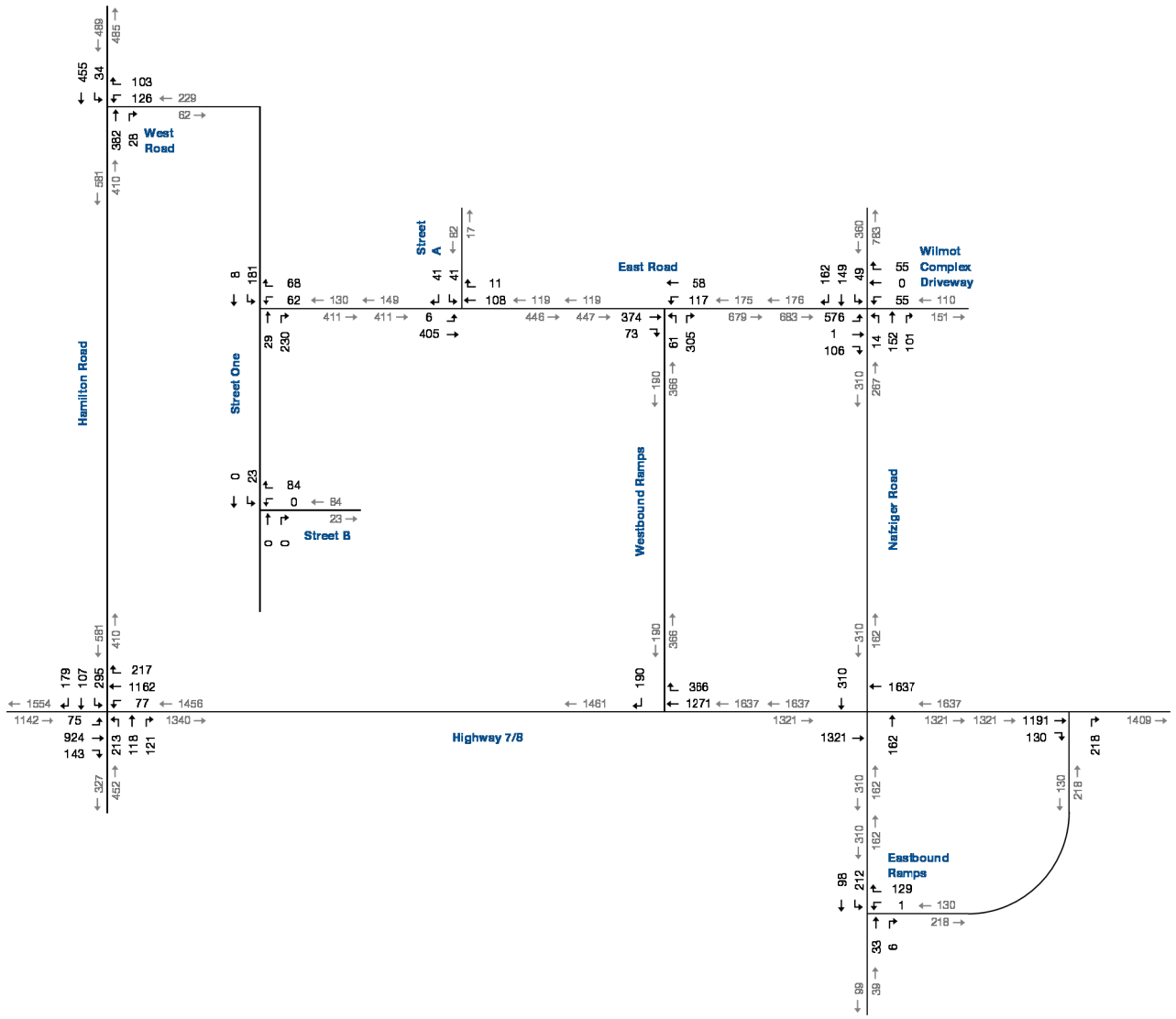
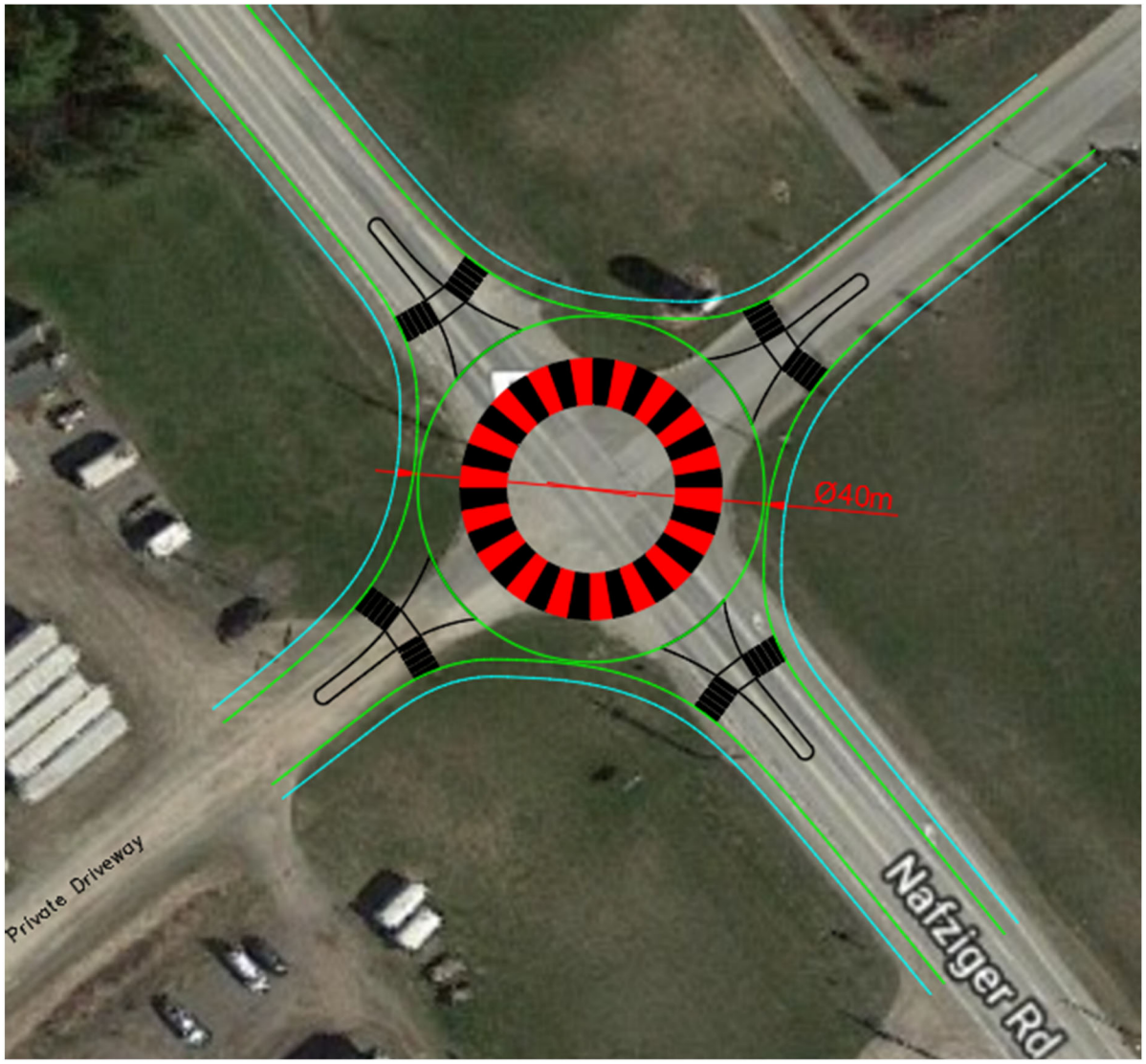
2033 Total Traffic – PM Peak Hour



2033 Total Traffic Future Intersections – PM Peak Hour



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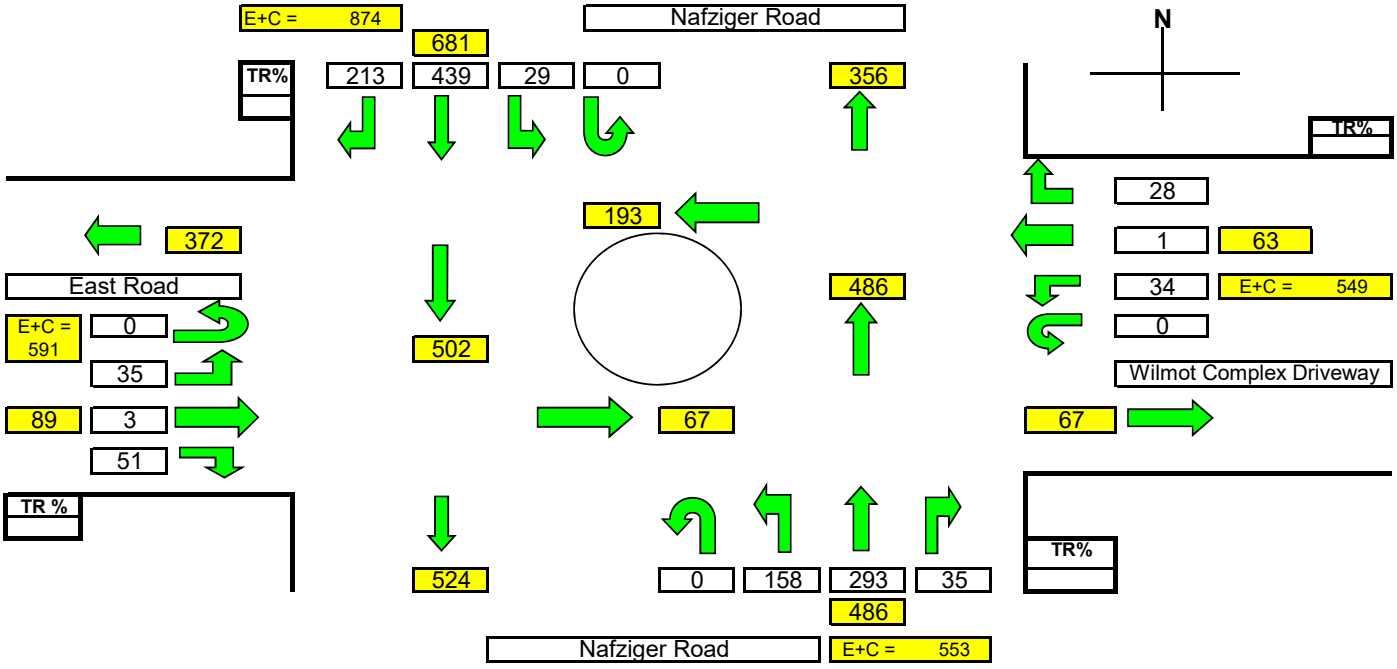
Roundabout Concept Image

REGION OF WATERLOO
ROUNDABOUT TRAFFIC FLOW SHEET

VERSION 1.1 MARCH 12, 2009

Project: Badenview Development **Drawn By:** Adam Morrison
Project No.: 180248 **Sheet** 1 **of** 4
Intersection: Nafziger Road and East Road
Time Period: AM Peak

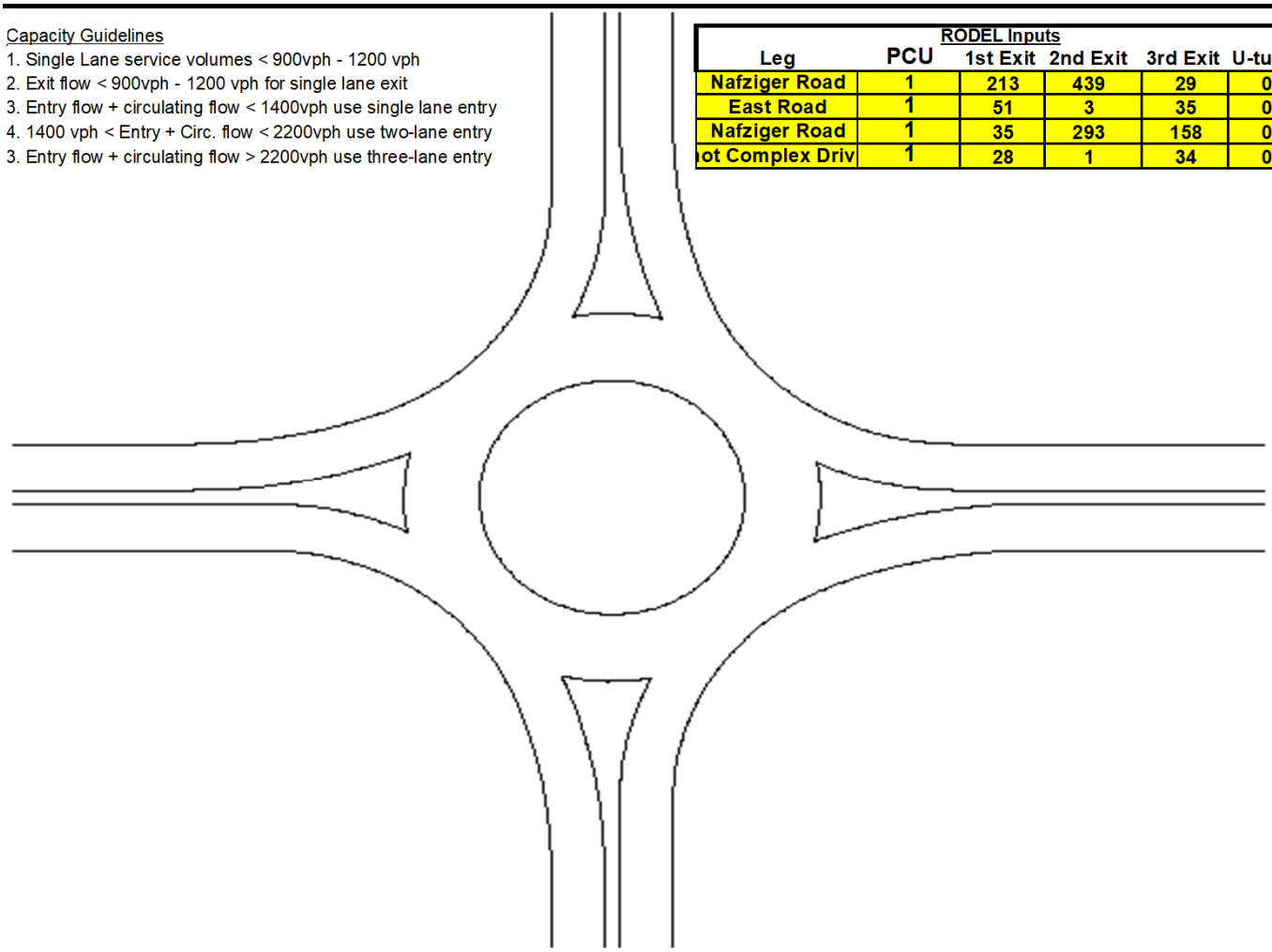


Capacity Guidelines

1. Single Lane service volumes < 900vph - 1200 vph
2. Exit flow < 900vph - 1200 vph for single lane exit
3. Entry flow + circulating flow < 1400vph use single lane entry
4. 1400 vph < Entry + Circ. flow < 2200vph use two-lane entry
3. Entry flow + circulating flow > 2200vph use three-lane entry

RODEL Inputs

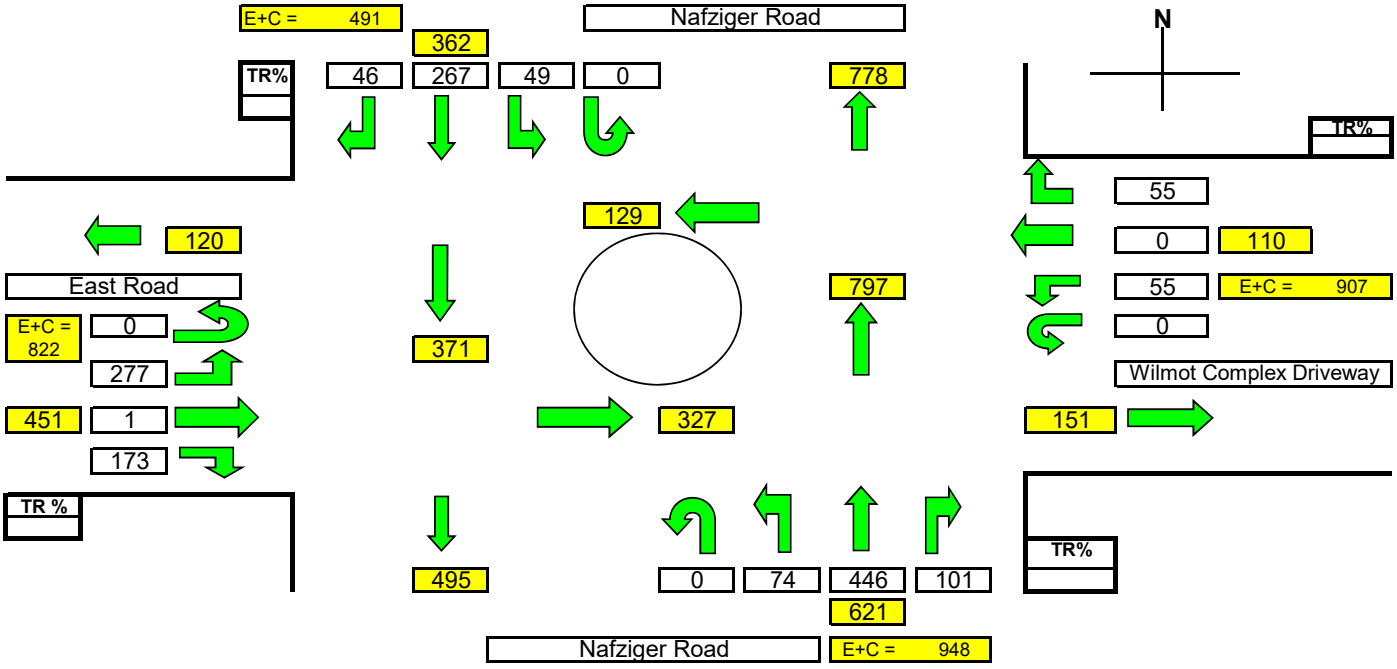
Leg	PCU	1st Exit	2nd Exit	3rd Exit	U-turn
Nafziger Road	1	213	439	29	0
East Road	1	51	3	35	0
Nafziger Road	1	35	293	158	0
ot Complex Driv	1	28	1	34	0



REGION OF WATERLOO
ROUNDABOUT TRAFFIC FLOW SHEET

VERSION 1.1 MARCH 12, 2009

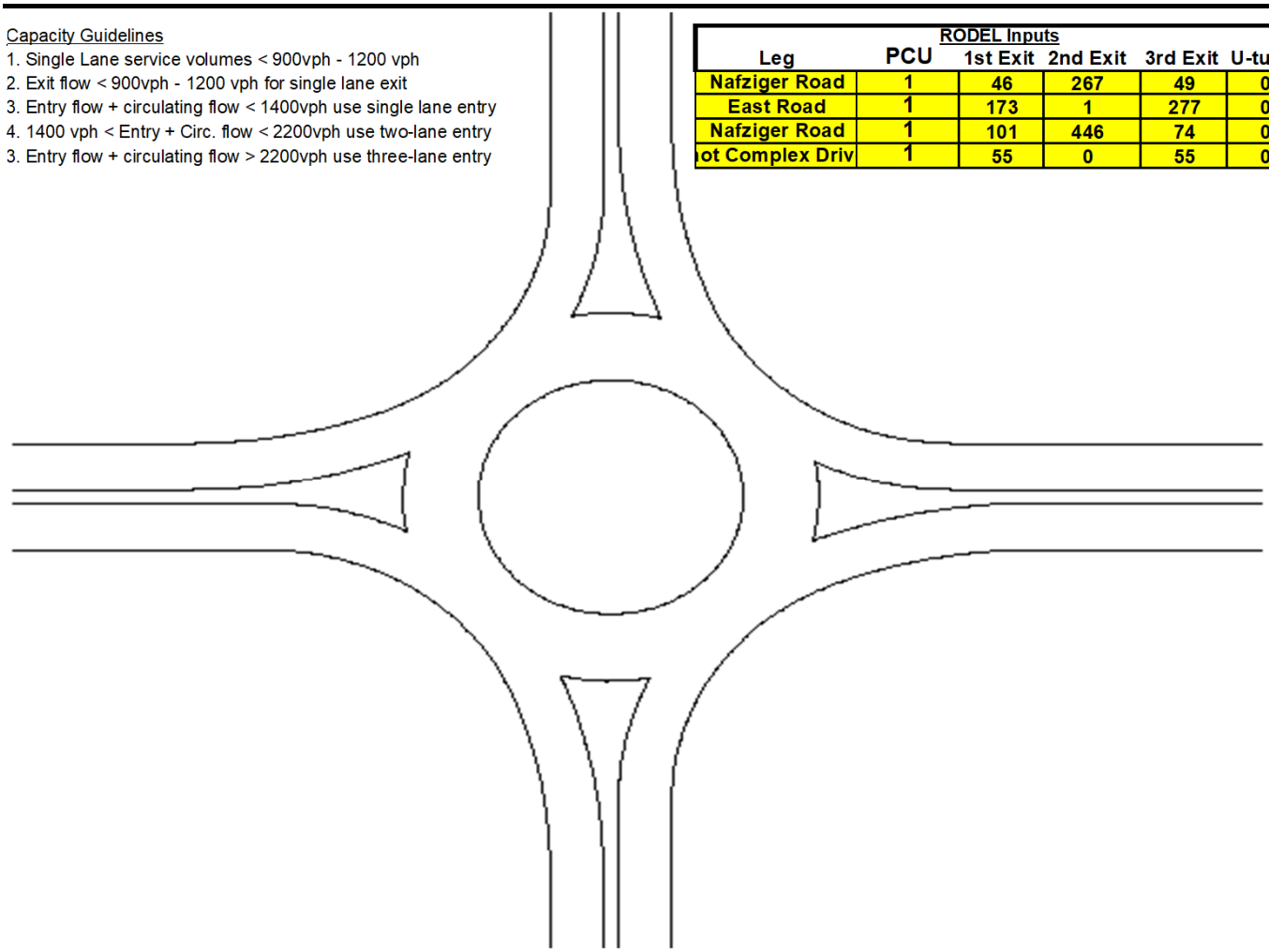
Project: Badenview Development **Drawn By:** Adam Morrison
Project No.: 180248 **Sheet** 2 **of** 4
Intersection: Nafziger Road and East Road
Time Period: PM Peak



Capacity Guidelines

1. Single Lane service volumes < 900vph - 1200 vph
2. Exit flow < 900vph - 1200 vph for single lane exit
3. Entry flow + circulating flow < 1400vph use single lane entry
4. 1400 vph < Entry + Circ. flow < 2200vph use two-lane entry
3. Entry flow + circulating flow > 2200vph use three-lane entry

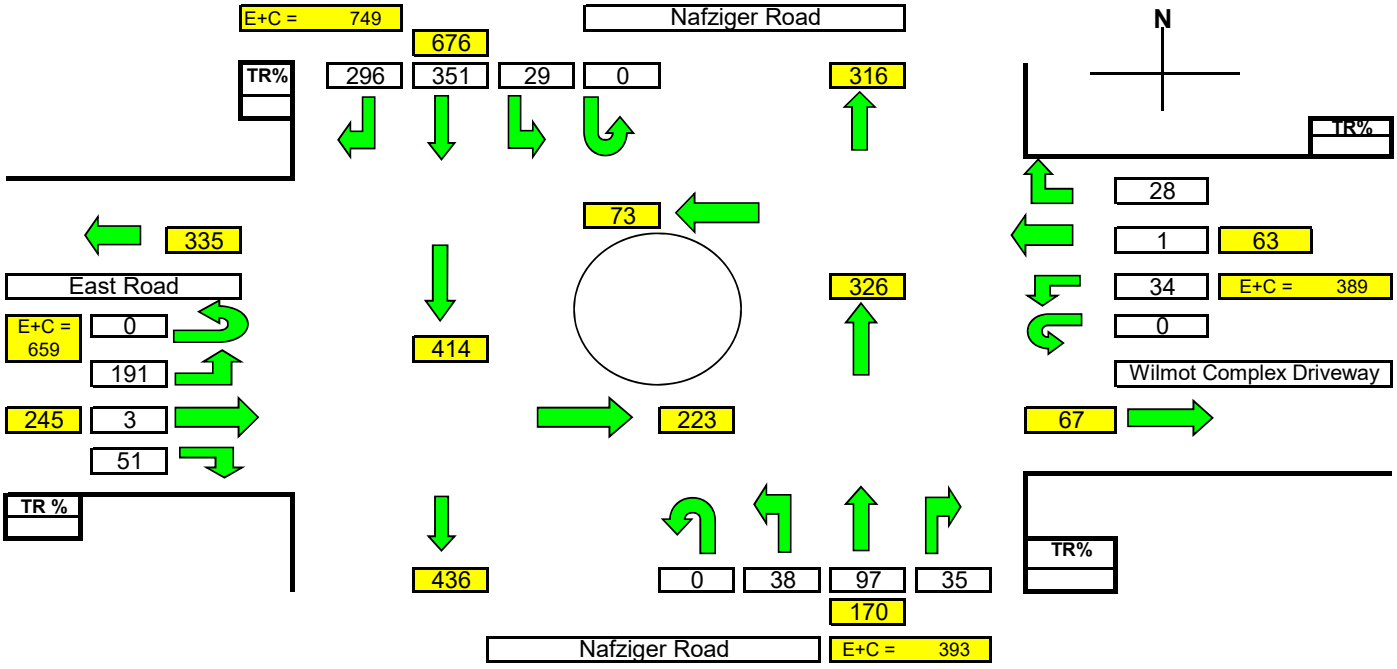
RODEL Inputs					
Leg	PCU	1st Exit	2nd Exit	3rd Exit	U-turn
Nafziger Road	1	46	267	49	0
East Road	1	173	1	277	0
Nafziger Road	1	101	446	74	0
ot Complex Driv	1	55	0	55	0



REGION OF WATERLOO
ROUNDABOUT TRAFFIC FLOW SHEET

VERSION 1.1 MARCH 12, 2009

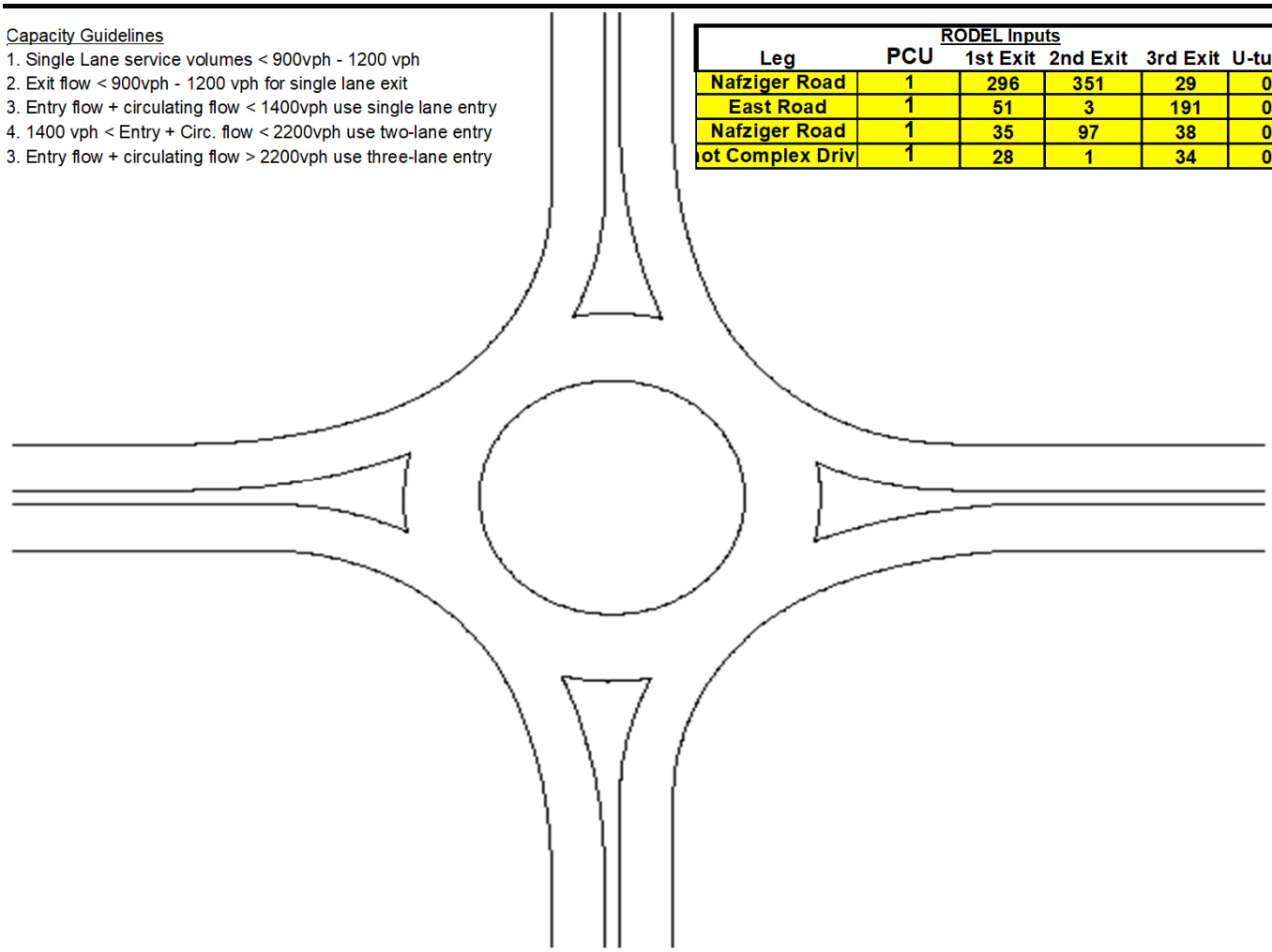
Project: Badenview Development **Drawn By:** Adam Morrison
Project No.: 180248 **Sheet** 3 **of** 4
Intersection: Nafziger Road and East Road
Time Period: AM Peak - Future Intersection



Capacity Guidelines
1. Single Lane service volumes < 900vph - 1200 vph
2. Exit flow < 900vph - 1200 vph for single lane exit
3. Entry flow + circulating flow < 1400vph use single lane entry
4. 1400 vph < Entry + Circ. flow < 2200vph use two-lane entry
3. Entry flow + circulating flow > 2200vph use three-lane entry

RODEL Inputs

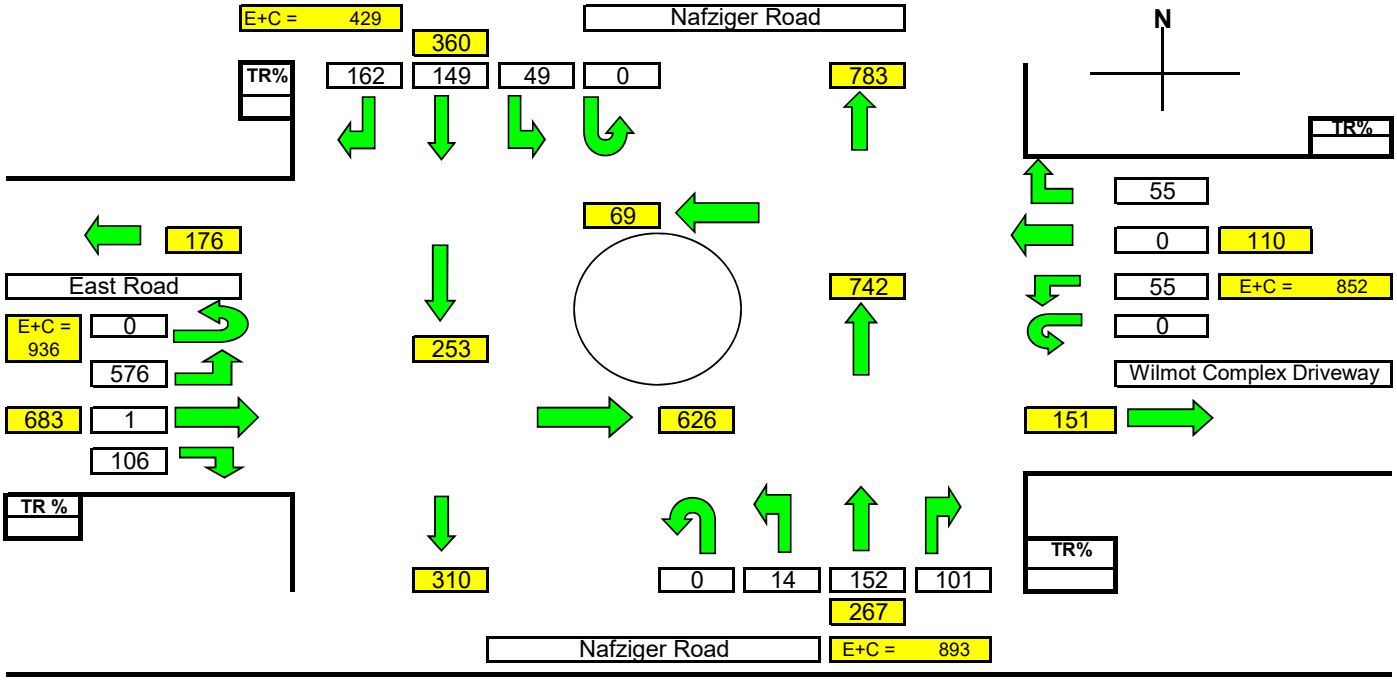
Leg	PCU	1st Exit	2nd Exit	3rd Exit	U-turn
Nafziger Road	1	296	351	29	0
East Road	1	51	3	191	0
Nafziger Road	1	35	97	38	0
ot Complex Driv	1	28	1	34	0



REGION OF WATERLOO
ROUNDABOUT TRAFFIC FLOW SHEET

VERSION 1.1 MARCH 12, 2009

Project: Badenview Development **Drawn By:** Adam Morrison
Project No.: 180248 **Sheet** 4 **of** 4
Intersection: Nafziger Road and East Road
Time Period: PM Peak - Future Intersection



Capacity Guidelines

1. Single Lane service volumes < 900vph - 1200 vph
2. Exit flow < 900vph - 1200 vph for single lane exit
3. Entry flow + circulating flow < 1400vph use single lane entry
4. 1400 vph < Entry + Circ. flow < 2200vph use two-lane entry
3. Entry flow + circulating flow > 2200vph use three-lane entry

RODEL Inputs					
Leg	PCU	1st Exit	2nd Exit	3rd Exit	U-turn
Nafziger Road	1	162	149	49	0
East Road	1	106	1	576	0
Nafziger Road	1	101	152	14	0
ot Complex Driv	1	55	0	55	0