I/O Highway 407 & Trafalgar Road, Oakville, ON

Transportation Impact Study

Paradigm Transportation Solutions Limited

2024-08
210156

ptsl.com

Project Summary

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Client:

c/o GSP Group Inc.
162 Locke St. S., Suite 200
Hamilton, ON L8P 4A9

Brenda Khes, MCIP, RPP
Vice President, Hamilton

Consultant Project Team

Erica Bayley, P.Eng.
Andrew Evans
Chris Skelton

Paradigm Transportation Solutions Limited

5A-150 Pinebush Road
Cambridge ON N1R 8J8
p: 519.896.3163
905.381.2229
416.479.9684
www.ptsl.com

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Transportation Impact Study

Erica Bayley, P.Eng.

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Executive Summary

Content

Paradigm Transportation Solutions Limited (Paradigm) was retained to conduct this Transportation Impact Study (TIS) for a proposed mixed-use development located at on both sides of Trafalgar Road south of Highway 407 in Oakville, Ontario.

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

Development Concept

The subject site (Trafalgar Lands) is located on both sides of Trafalgar Road south of Highway 407 and north of Burnhamthorpe. The Trafalgar Lands are approximately 53 hectares (131 acres). The east parcel (east of Trafalgar Road) is approximately 33 hectares (81.5 acres), and the west parcel (west of Trafalgar Road) is approximately 20 hectares (49.5 acres).

The ultimate development mix and intensity will be subject to future development applications and supported by Traffic Impact Studies specific to the proposed development subject to those applications.

The Environmental Study Report for Trafalgar Road (Regional Road 3) Improvements Class Environmental Assessment Study from Cornwall Road to Highway 407, Town of Oakville (April 2015), contemplates future dedicated bus lines along the Trafalgar Road, with future transit stops at the William Halton Parkway intersection.

The Illustrative Concept Plans prepared in support of the Official Plan Amendment Application show a conceptual road network and good pedestrian connectivity throughout the land subject to the application to the Trafalgar Road Corridor and to the Future Highway 407 Transitway Station. It is recommended that future development applications shall be designed to ensure that the long-term transit plans, including the future Trafalgar Road Bus Rapid Transit (BRT) and the Highway 407 Transit Way are integrated with local transit services.

Conclusions

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

- **Existing Traffic Operations:** Capacity issues are identified along the Trafalgar Road corridor. Trafalgar Road has over

30,000 vehicles per day near the Highway 407 Ramp terminal which reflects the higher end of the capacity of an arterial road.

- **Estimated Site Generated Traffic:** Based on the illustrative concept plan, the subject site, following 2031 build-out, is estimated to generate approximately 1,154 vehicle trips during the AM peak hour and 1,438 vehicle trips during the PM peak hour. Following 2041 build-out, it is estimated to generate a total of 3,190 vehicle trips during the AM peak hour and 4,069 vehicle trips during the trips during the PM peak hour.
- **Background Traffic Operations:** As the traffic volumes increase at the study area intersections, capacity issues continue along Trafalgar Road. Under the 2031 and 2041 background horizon years, Trafalgar Road, near the Highway 407 ramp terminal, is forecast to have more than 38,000 and 47,000 vehicles per day.
- **Total Traffic Operations:** The capacity deficiencies identified under background conditions will continue to occur with the addition of site generated traffic. With the addition of the site generated traffic for the 2031 and 2041 total horizon years, Trafalgar Road, near the Highway 407 ramp terminal, is forecast to have more than 47,000 and 64,000 vehicles per day, respectively.
- The level of development proposed results in poor operations throughout the network. The transportation network cannot support the level of development without major infrastructure improvements to increase capacity, or significant shift towards alternative mode support.

Recommendations

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

- When each parcel is pursuing Zoning Bylaw Amendment or Site Plan Application, that detailed Transportation Impact Study and Transit Facilities Plan be prepared as part of submission.
- That Halton Region and the Town of Oakville monitor the future traffic volumes along the Trafalgar Road corridor and optimize the signal timings accordingly. The need for improvements at the study area intersections are noted to occur with or without the development of the subject site.
- That Halton Region and the Town of Oakville prioritize public transit and active transportation modes along the Trafalgar Road corridor to reduce the need for single-occupant vehicles.

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1 Introduction

1.1 Overview

Paradigm Transportation Solutions Limited (Paradigm) was retained to undertake a Transportation Impact Study for a proposed mixed-use development in the area of Trafalgar Road and Highway 407, the Town of Oakville, Ontario.

The subject site is located on the both the east and west side of Trafalgar Road, between Highway 407 and Burnhamthorpe Road, as shown in **Figure 1.1**. The proposed development is to consist of residential and employment land uses.

1.2 Purpose and Scope

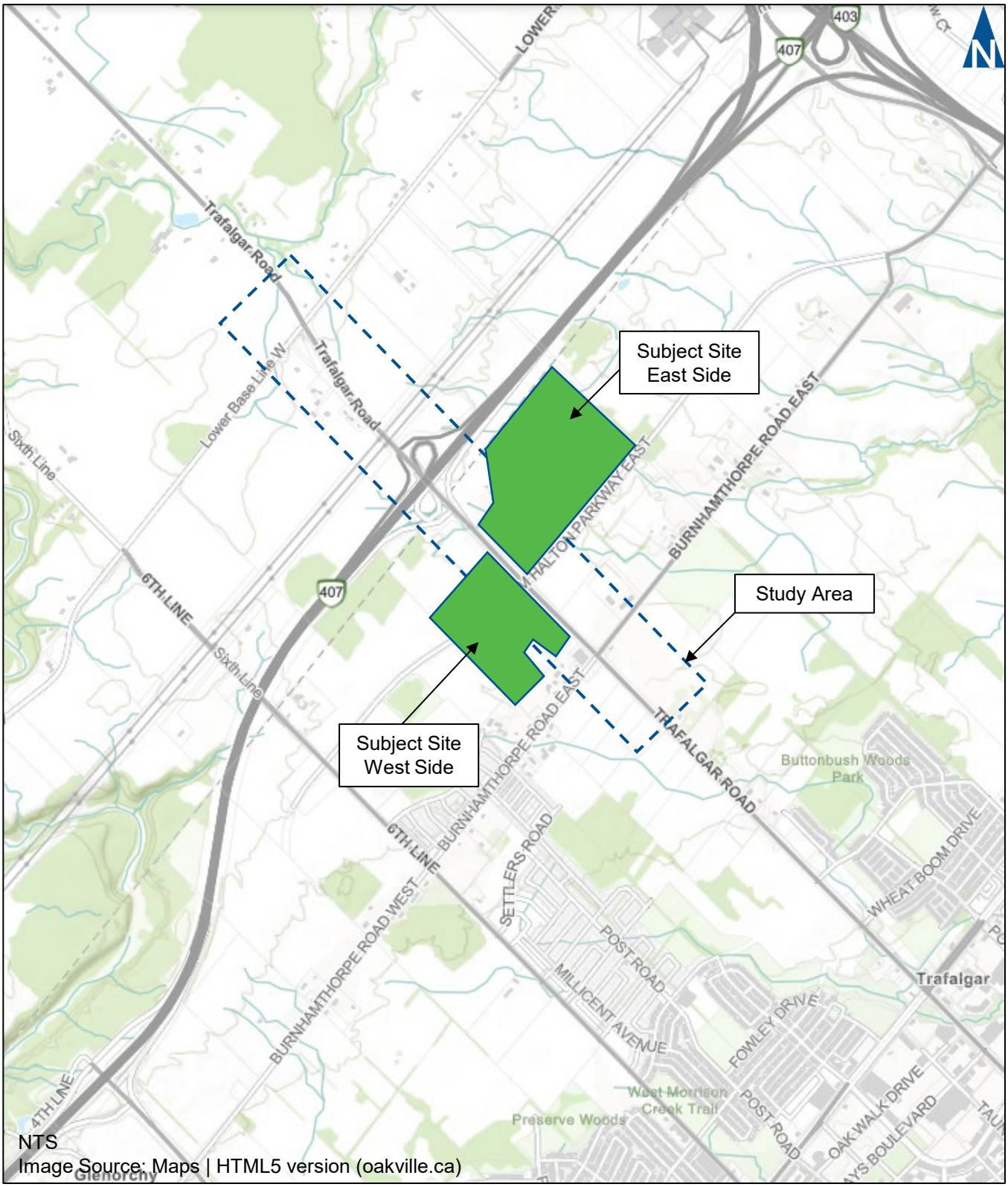
This study determines the impacts of the additional traffic generated by the development on the surrounding road network and the remedial measures necessary, if any, to accommodate future traffic in a satisfactory manner. The scope of this study includes:

- Assessments of the current traffic and site conditions within the study area
- Estimates of background traffic growth
- Estimates of the additional traffic generated by the planned expansion
- Analyses of the impact(s) of the future traffic on the surrounding road network for the 2031 and 2041 horizon years (10 and 20 years from date of study is commissioned); and
- Recommendations necessary to mitigate the site generated traffic in a satisfactory manner.

The study scope was developed in consultation with the Town of Oakville, Halton Region, and the Ministry of Transportation, Ontario (MTO) in June 2021. **Appendix A** contains the pre-study consultation material and responses from the review agencies.

The study has been completed using Halton Region Transportation Impact Study Guidelines[1] and the North Oakville Transportation Impact Study Reference[2].

[1] Transportation Impact Study Guidelines, Halton Region, January 2015
[2] North Oakville Terms of Reference for Transportation Impact Study and Transportation Functional Design Studies, Oakville



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Site Location

IO Trafalgar & 407 Oakville, ON TIS
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Figure 1.1

1.3 Study Area Intersections

The intersections that have been identified for assessment in this study and approved by the review agencies staff are as follows:

- Trafalgar Road (RR3) and Lower Base Line (signalized)
- Trafalgar Road (RR3) and Highway 407 Westbound Off-Ramp Terminal (signalized)
- Trafalgar Road (RR3) and Highway 407 Eastbound Off-Ramp Terminal (signalized)
- Trafalgar Road (RR3) and the GO Carpool Lot (signalized)
- Trafalgar Road (RR3) and William Halton Parkway (signalized); and
- Trafalgar Road (RR3) and Burnhamthorpe Road (RR27) (signalized).

2 Existing Conditions

This section documents current traffic conditions, operational deficiencies, and constraints experienced by the public travelling at the intersections within the study area. The operational deficiencies and constraints identified at this stage will be fundamental to the process of defining the required remedial measures.

2.1 Road Characteristics

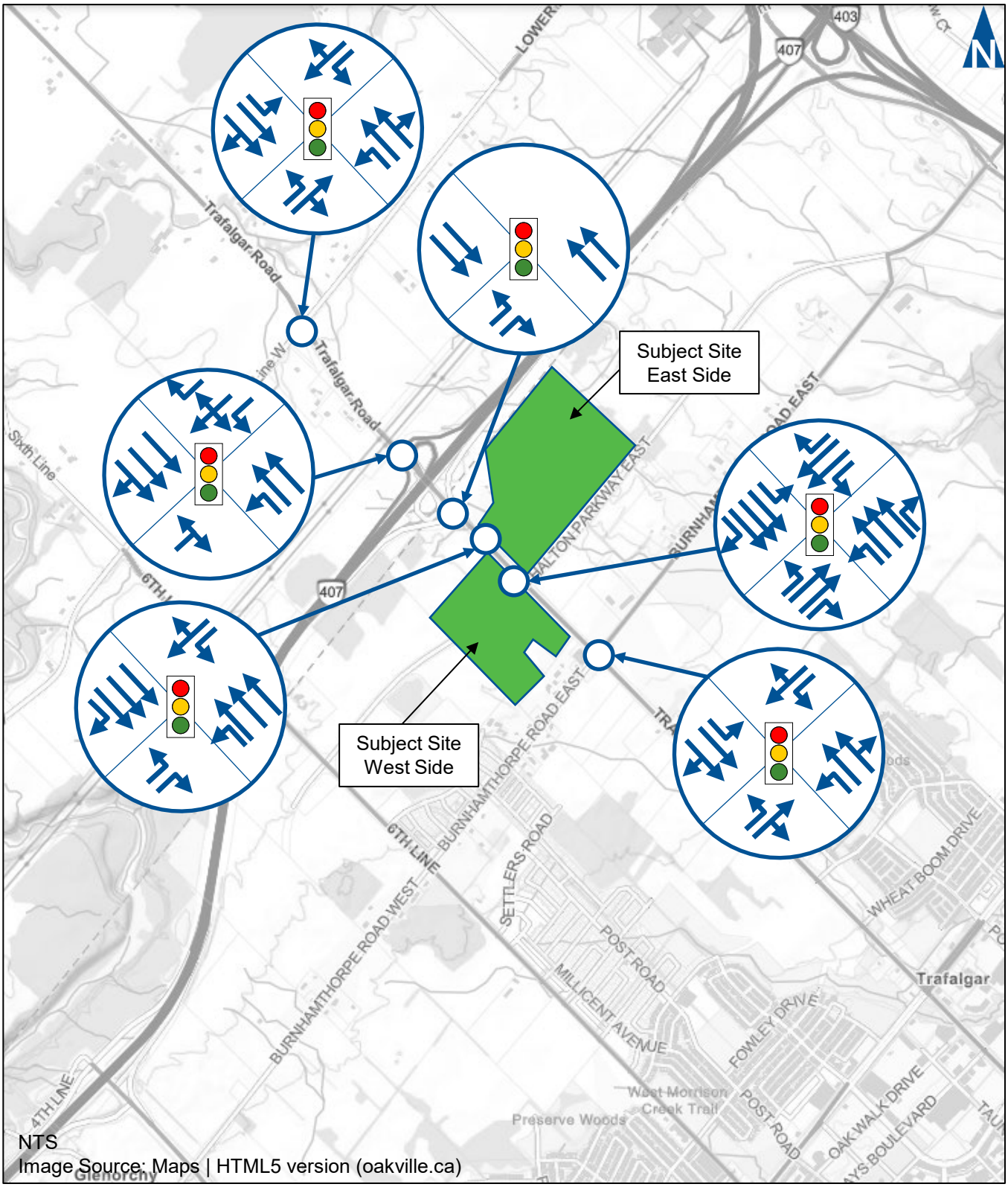
The following MTO roads near the subject site include:

- **Highway 407** is an east-west tolled limited access highway with a posted speed limit of 100 km/h.

The following Halton Region roads near the subject site include:

- **Trafalgar Road (Regional Road 3**) – is a major north-south undivided arterial roadway running from Lakeshore Road East to the north of the northern Halton Region boundary. In the study area it has a four-lane rural cross-section from Lower Base Line to the Highway 407 Ramp Eastbound Off-Ramp terminal. From south of the Highway 407 Eastbound Off-Ramp terminal, Trafalgar Road widens to a six-lane cross-section to south of William Halton Parkway where is merges back to a four-lane cross-section. The posted speed limit is 80 kilometers per hour; and
- **William Halton Parkway** is an east-west arterial roadway running from Ninth Line to Sixth Line. In the study area it has a four-lane cross-section with a posted speed limit of 60 km/h.

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



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Existing Lane Configuration & Traffic Control

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Figure 2.1

2.2 Transit Service

GO Transit[3] operates several routes through the Highway 407/Trafalgar Road GO Carpool Lot that travel between Oakville to Oshawa and Hamilton to Pickering via Highway 407. The routes are:

- Route 40 (Hamilton/Richmond Hill/Pearson Express) operates with 24-hour service seven days a week with headways every 30 to 60 minutes.
- Route 41/47 (Hamilton/Pickering) operates weekday service from 05:24 AM to 02:05AM with headways approximately every 30 minutes, and weekend service from 05:24 AM to 02:05AM with headways approximately every 60 minutes; and
- Route 46/56 (Oshawa/Oakville) operates weekday service from 05:29 AM to 01:05AM with headways approximately every 30 minutes. There is no weekend service for this route.

Metrolinx, which is the Provincial Crown agency that manages and integrates road and public transport in the Golder Horseshoe region, has identified a regional rapid transit corridor[4] along Trafalgar Road from Midtown Oakville to Highway 401 in their 15-year plan. This rapid transit corridor is likely to consist of either Bus Rapid Transit (BRT) or Light Rail Transit (LRT). The Trafalgar Road corridor is to be expanded northward to Milton in the longer 25-year plan. Provision of long-term rapid transit along Trafalgar Road would improve service through the study area and would promote multi-modal travel within the area.

In addition to the Trafalgar Road corridor, a Highway 407 Transitway[5] is also proposed. The 407 Transitway will be a separated bus rapid transit corridor along the length of Highway 407 with stops at specific locations. It will allow buses to run unimpeded by general traffic with higher frequency of routes.

Oakville Transit[6] operates one route along Trafalgar Road to the Highway 407/Trafalgar Road GO Carpool Lot. Route 1 (Trafalgar) operates between the Oakville GO Station and the Highway 407 GO Carpool lot with seven-day service between 05:58 AM and 11:51 PM with headways approximately every 60 minutes.

The Highway 407/Trafalgar Road GO Carpool Lot will be located centrally in the proposed development. This will provide excellent

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3 Full Schedules | Trip Planning | GO Transit
4 The Big Move, Transforming Transportation in the Greater Toronto and Hamilton Area, Metrolinx, 2008
5 407 Transitway - Brant Street to Winston Churchill Boulevard
6 1 Trafalgar (oakvilletransit.ca)

public transport opportunities for residents, employees, and visitors to/from the subject site.

2.3 Active Transportation

2.3.1 Pedestrian

Within the study area, multi-use paths are provided on Trafalgar Road from approximately 100 metres south of William Halton Parkway to the GO Carpool Lot intersections. Along William Halton Parkway, there is a sidewalk provided on the north side and a multi-use path along the southside of the roadway. No other sidewalks or multi-use paths are provided along the study area roadways.

2.3.2 Cycling

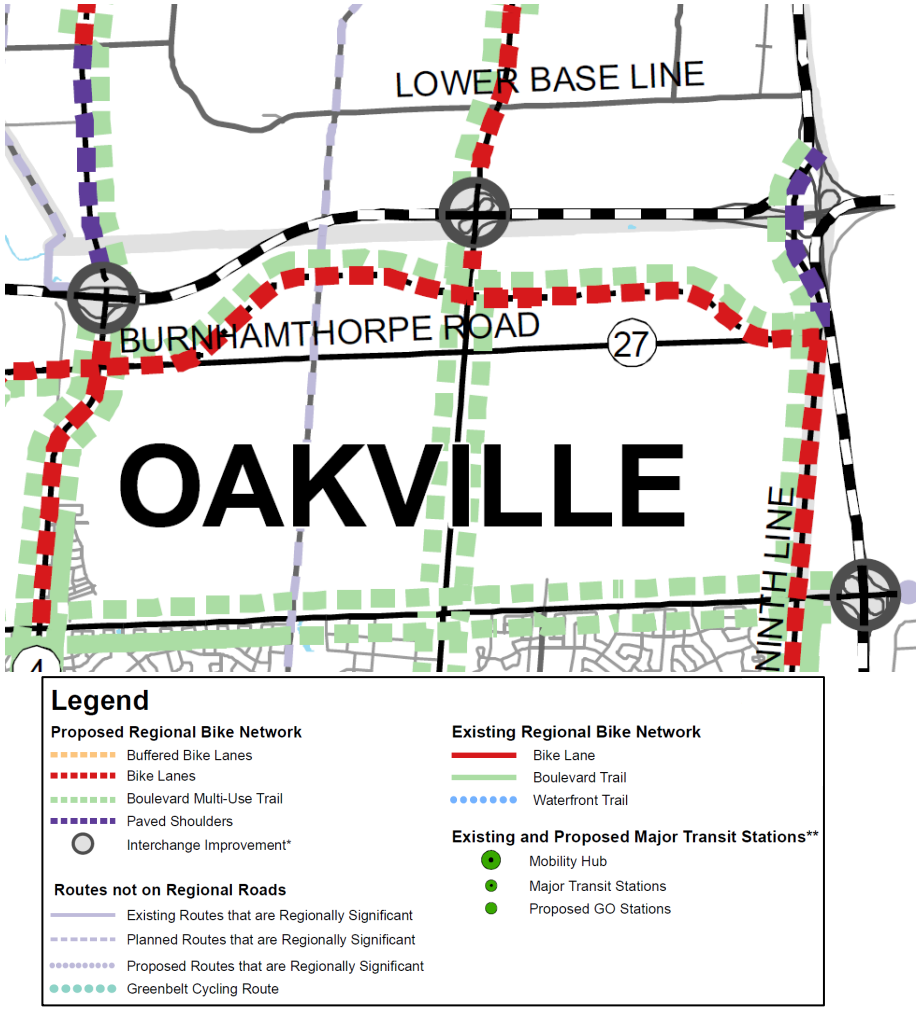
Within the study area, on-street cycle lanes are provided on both sides of William Halton Parkway. Other than the multi-use paths noted above, there are no other dedicated cycling facilities in the study area. Except for Highway 407, cyclists are permitted to ride on the roadways within the study area.

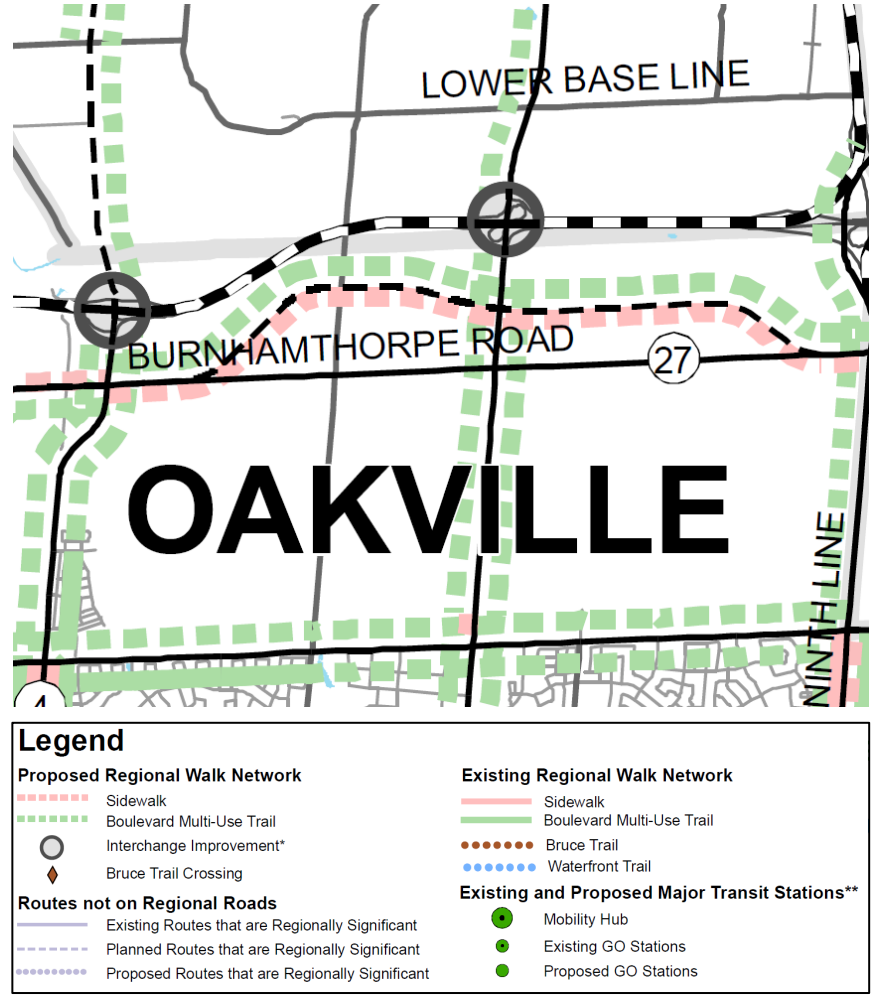
2.3.3 Proposed Network

The Halton Region Active Transportation Master Plan[7] identifies multi-use paths along both sides of Trafalgar Road through the study area. On-street cycle lanes are identified on Trafalgar Road from William Halton Parkway northwards.

Figure 2.2 illustrates the proposed cycling and walking infrastructure in the study area.

[7] Halton Region Active Transportation Master Plan, Map 3 Proposed Regional Cycling Network & Map 4 Proposed Regional Walking Network, IBI Group, April 2015





NTS

Image Source: Halton Region Active Transportation Master Plan, Appendix H Existing & Proposed Regional Cycling & Walking Maps

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Proposed Active Transportation Network

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Figure 2.2

2.4 Traffic Volumes

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

TABLE 2.1: EXISTING COUNT DATA SUMMARY

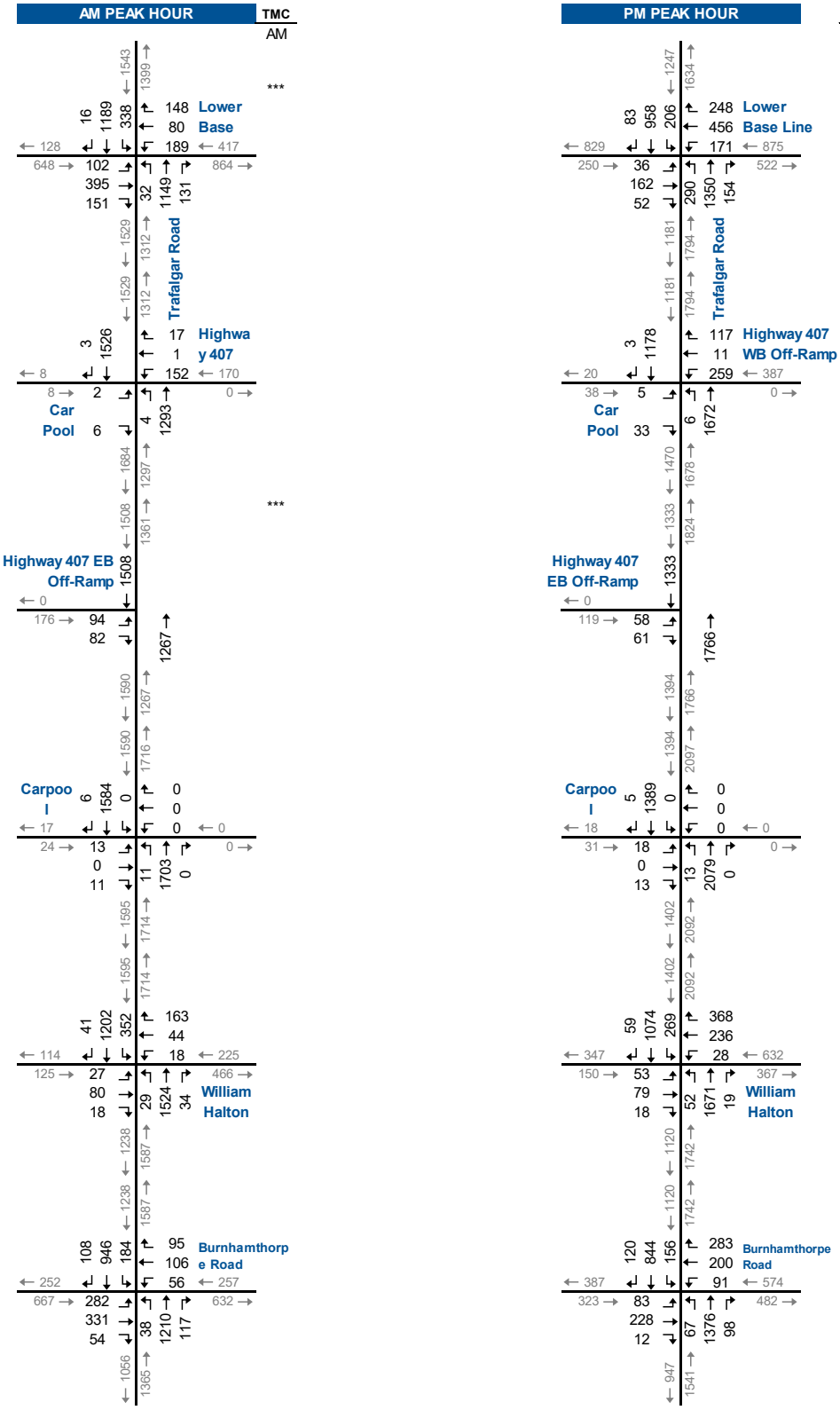
Intersection	Date
Trafalgar Road & Lower Base Line	November 2019
Trafalgar Road & Highway 407 Westbound Off-Ramp	November 2019
Trafalgar Road & Highway 407 Eastbound Off-Ramp	November 2019
Trafalgar Road & GO Carpool Lot	July 2021
Trafalgar Road & William Halton Parkway	July 2021
Trafalgar Road & Burnhamthorpe Road	December 2019

The 2019 turning movement counts were factored to a 2021 base year using a 2% growth rate (provided by review agencies). Volume balancing between intersections was done to provide consistent traffic volumes through the study area intersections.

Figure 2.3 illustrates the factored base year weekday AM and PM peak hour traffic volumes.

A potential quantum shift in travel demands and patterns may occur due to the COVID-19 global pandemic. Employers are beginning to shift away from traditional office-based environments to work-from-home models and with commercial/retail and service-based businesses adapting by adjusting business hours and/or switching to web-based e-commerce storefronts, resulting in travel demands and patterns potentially changing from the previous norm.

In a post-COVID condition, it is plausible that traffic volumes may never reach pre-COVID levels because of this quantum shift. With changes in travel demand, behaviour, and patterns, the forecasts as analyzed are conservative (i.e., err on the high side) and potentially under post-COVID conditions, traffic volumes may be lower.



Base Year Traffic Volumes

IO Trafalgar & 407 Oakville, ON TIS
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Figure 2.3

2.4.1 Daily Volumes

Table 2.2 shows the daily traffic volumes on the study area road network. The daily traffic volumes ere derived from the Base Year PM peak hour traffic volumes shown in **Figure 2.3**. Typical Traffic Engineering standards to calculate daily traffic volumes assume PM peak hour volumes to be 10 per cent of total daily traffic.

The Transportation Association of Canada (TAC)[8] identifies less than 12,000 vehicles per day for rural arterial roads and between 5,000 -and 20,000 vehicles per day for urban minor arterial and 10,000 and 30,000 vehicles per day for urban major arterial roads.

Based on the existing volumes, Trafalgar Road exceeds the rural arterial threshold and is approaching/exceeding the urban arterial threshold. Lower Base Line is exceeding the rural threshold from Trafalgar Road eastwards, while both William Halton Parkway and Burnhamthorpe Road are below the rural TAC threshold.

TABLE 2.2: DAILY TRAFFIC VOLUMES

Road Section		Two-Way	TAC Threshold	
From	To	Daily Traffic*	Rural**	Urban***
Trafalgar Road				
North	Lower Base Line	28,810	< 12,000	10,000 - 30,000
Lower Base Line	Highway 407 WB Off-Ramp	29,750	< 12,000	10,000 - 30,000
Highway 407 WB Off-Ramp	Highway 407 EB Off-Ramp	32,940	< 12,000	10,000 - 30,000
Highway 407 EB Off-Ramp	GO Carpool Lot	34,910	< 12,000	10,000 - 30,000
GO Carpool Lot	William Halton Parkway	34,940	< 12,000	10,000 - 30,000
William Halton Parkway	Burnhamthorpe Road	28,620	< 12,000	10,000 - 30,000
Burnhamthorpe Road	South	24,880	< 12,000	10,000 - 30,000
Lower Base Line				
Trafalgar Road	East	13,970	< 12,000	5,000 - 20,000
Trafalgar Road	West	10,790	< 12,000	5,000 - 20,000
William Halton Parkway				
Trafalgar Road	East	9,990	< 12,000	10,000 - 30,000
Trafalgar Road	West	4,970	< 12,000	10,000 - 30,000
Burnhamthorpe Road				
Trafalgar Road	East	10,560	< 12,000	5,000 - 20,000
Trafalgar Road	West	7,100	< 12,000	5,000 - 20,000

* PM peak hour x 10

** TAC Table 2.6.4: Classification of Rural Roads

*** TAC Table 2.6.5: Classificaiton of Urban Roads

[8] Transportation Association of Canada, Geometric Design Guide for Canadian Roads, Table 2.6.5: Characteristics of Urban Roads, June 2017

2.5 Traffic Operations

Intersection level of service (LOS) is a recognized method of quantifying the average delay experienced by drivers 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 intending to make a particular movement, compared to the estimated capacity for that movement. The capacity is based on several criteria related to the opposing traffic flows and intersection geometry.

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 for signalized intersections, 50 seconds for unsignalized intersections or when the volume to capacity ratio is greater than 1.0, the movement is classed as LOS F and remedial measures are usually implemented if they are feasible. LOS E is usually used as a guideline for the determination of road improvement needs on through lanes, while LOS F may be acceptable for left-turn movements at peak times, depending on delays.

The operations of the intersections in the study area were evaluated using the existing lane configuration, traffic control, existing traffic volumes and signal timings. The intersection analysis considered three separate measures of performance:

- The LOS for each turning movement
- The volume to capacity ratio (v/c) for each movement; and
- The 95th percentile queue lengths estimated using Synchro.

Synchro 11 assessed the traffic conditions and performance. In accordance with the Halton Region's TIS Guidelines and MTO Guidelines, the following criteria were used in the determination of critical movements:

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

- At signalized intersections,
  - Overall intersection operations, through movements, or shared through/turning movements increased to 0.85 or above.
  - V/C ratios for exclusive movements increased to 0.95 or above; or

    - Queues for an individual movement are projected to exceed turning lane storage.
  - At unsignalized intersections,
    - LOS, based on average delay per vehicle, on individual movements exceeds LOS “D”; or
    - The estimated 95th percentile length for an individual movement exceeds the available queue storage.

The MTO’s Traffic Impact Study Guidelines identifies the following thresholds for critical movements for MTO controlled intersections:

- Movements with a volume to capacity ratio greater than 0.85; and
- v/c ratio for terminal ramp approaches greater than 0.75.

Table 2.3 summarizes the base year level of service conditions and notes:

- **Trafalgar Road and Lower Base Line:**
  - Overall – v/c ratio greater than 1.00 during AM and PM peak hours
  - Eastbound through/right-turn – LOS F, v/c ratio greater than 1.00 during AM peak hour
  - Westbound left-turn – LOS F, v/c greater than 1.00 during AM peak hour
  - Westbound through-right turn – LOS F and v/c ratio greater than 1.00 during PM peak hour
  - Northbound left-turn – LOS F, v/c ratio greater than 1.00, and queue exceeds storage during PM peak hour
  - Northbound through/right-turn – LOS E and v/c ratio greater than 1.00 during the AM and PM peak hours
  - Southbound left-turn – LOS F, v/c ratio greater than 1.00, and queue exceeds storage during AM and PM peak hours
- **Trafalgar Road and Highway 407 Eastbound Off-Ramp:**
  - Northbound through – LOS D and v/c ratio greater than 1.00 during the PM peak hour
- **Trafalgar Road and William Halton Parkway:**
  - Overall - v/c ratio greater than 1.00 during AM and PM peak hours

- Southbound left-turn – LOS F and v/c ratio greater than 1.00 during AM and PM peak hours

- **Trafalgar Road and Burnhamthorpe Road:**
  - Overall – v/c ratio of 0.90 during the AM peak hour and v/c ratio greater than 1.00 during the PM peak hour
  - Eastbound left-turn – queue exceeds storage in AM peak hour. LOS F, v/c ratio greater than 1.00, and queue exceeds storage in PM peak hour
  - Westbound left-turn – queue exceeds storage in AM and PM peak hours
  - Westbound through/right-turn – LOS F and v/c ratio of 0.99 in PM peak hour; and
  - Northbound through/right-turn – LOS F and v/c ratio greater than 1.00 during AM peak hour.

Appendix C contains the Synchro reports .

TABLE 2.3A: BASE YEAR TRAFFIC OPERATIONS – AM PEAK HOUR

Analysis Period	Intersection	Control Type	MOE	Direction/Movement/Approach																
				Eastbound				Westbound				Northbound				Southbound				Overall
				Left	Through	Right	Approach	Left	Through	Right	Approach	Left	Through	Right	Approach	Left	Through	Right	Approach	
AM Peak Hour	Trafalgar Rd & Lower Base Line	TCS	LOS	D	F	>	F	F	C	>	E	C	E	>	E	F	C	>	D	E
			Delay	36	132	>	117	143	26	>	79	32	75	>	74	168	21	>	53	73
			V/C	0.35	1.15	>		1.14	0.30	>		0.30	1.04	>		1.23	0.67	>		1.22
			Q	39	242	>		91	48	>		16	241	>		158	140	>		
			Stor.	45	-	>		110	-	>		90	-	>		90	-	>		
			Avail.	6	-	>		19	-	>		74	-	>		-68	-	>		
	Trafalgar Rd & Hwy 407 WB Off	TCS	LOS	<	D	>	D	D	D	D	D	A	A		A		B	A	B	B
			Delay	<	37	>	37	42	44	37	43	7	6		6		10	5	10	10
			V/C	<	0.01	>		0.51	0.55	0.01		0.03	0.54				0.68	0.00		0.67
			Q	<	0	>		31	33	0		1	84				154	0		
			Stor.	<	-	>		-	-	60		65	-				-	15		
			Avail.	<	-	>		-	-	60		64	-				-	15		
	Trafalgar Rd & Hwy 407 EB Off	TCS	LOS	B		B	B						B		B		B		B	B
			Delay	15		15	15						13		13		18		18	16
			V/C	0.17		0.15							0.73				0.87			0.60
			Q	18		15							81				118			
	Trafalgar Rd & GO Carpool Lot	TCS	LOS	B		B	B					A	A		A		A	A	A	A
			Delay	18		18	18					8	10		10		9	6	9	10
			V/C	0.03		0.01						0.11	0.61				0.56	0.00		0.42
			Q	5		4						3	65				58	1		
			Stor.	-		-						50	-				-	30		
			Avail.	-		-						47	-				-	29		
	Trafalgar Rd & William Halton Parkway	TCS	LOS	D	D	D	D	D	D	D	D	B	B	B	B	F	B	A	F	D
			Delay	38	40	38	39	40	40	41	41	12	19	12	18	345	13	10	86	51
			V/C	0.10	0.12	0.01		0.08	0.07	0.11		0.14	0.59	0.02		1.66	0.43	0.03		1.24
			Q	13	18	0		10	11	20		6	119	0		185	82	0		
			Stor.	100	-	100		100	-	150		150	-	75		-	-	-		
			Avail.	87	-	100		90	-	130		144	-	75		-	-	-		
	Trafalgar Rd & Burnhamthorpe Rd	TCS	LOS	D	C	>	D	C	C	>	C	C	F	>	F	D	B	>	C	D
			Delay	48	33	>	39	28	26	>	27	30	91	>	90	40	20	>	23	52
			V/C	0.79	0.59	>		0.27	0.29	>		0.25	1.09	>		0.66	0.60	>		0.90
			Q	116	114	>		22	49	>		17	257	>		56	116	>		
			Stor.	30	-	>		15	-	>		60	-	>		60	-	>		
			Avail.	-86	-	>		-7	-	>		43	-	>		4	-	>		

MOE - Measure of Effectiveness
LOS - Level of Service
Delay - Average Delay per Vehicle in Seconds
Q - 95th Percentile Queue Length (m)
Stor. - Existing Storage (m)
Avail. - Available Storage (m)
< / > - Shared with through movement

TABLE 2.3B: BASE YEAR TRAFFIC OPERATIONS – PM PEAK HOUR

Analysis Period	Intersection	Control Type	MOE	Direction/Movement/Approach																
				Eastbound				Westbound				Northbound				Southbound				Overall
				Left	Through	Right	Approach	Left	Through	Right	Approach	Left	Through	Right	Approach	Left	Through	Right	Approach	
PM Peak Hour	Trafalgar Rd & Lower Base Line	TCS	LOS	E	D	>	D	C	F	>	F	F	E	>	F	F	B	>	C	F
			Delay	66	38	>	42	33	127	>	108	406	76	>	130	98	17	>	31	90
			V/C	0.64	0.46	>		0.59	1.16	>		1.78	1.07	>		1.00	0.56	>		1.50
			Q	28	72	>		51	298	>		133	280	>		92	108	>		
			Stor.	45	-	>		110	-	>		90	-	>		90	-	>		
			Avail.	17	-	>		59	-	>		-43	-	>		-2	-	>		
	Trafalgar Rd & Hwy 407 WB Off	TCS	LOS	<	D	>	D	D	D	D	D	A	B		B		B	A	B	B
			Delay	<	35	>	35	49	50	36	46	6	12		11		11	6	11	16
			V/C	<	0.03	>		0.70	0.70	0.19		0.03	0.73				0.56	0.00		0.76
			Q	<	2	>		53	54	22		2	184				126	0		
			Stor.	<	-	>		-	-	60		65	-				-	15		
			Avail.	<	-	>		-	-	38		63	-				-	15		
	Trafalgar Rd & Hwy 407 EB Off	TCS	LOS	B		B	B						D		D		B		B	C
			Delay	15		15	15						44		44		16		16	32
			V/C	0.10		0.09							1.03				0.77			0.65
			Q	13		11							194				104			
	Trafalgar Rd & GO Carpool Lot	TCS	LOS	C		C	C					A	A		A		A	A	A	A
			Delay	28		27	28					6	9		9		7	4	7	8
			V/C	0.05		0.01						0.08	0.65				0.43	0.00		0.50
			Q	9		5						3	87				47	1		
			Stor.	-		-						50	-				-	30		
			Avail.	-		-						47	-				-	29		
	Trafalgar Rd & William Halton Parkway	TCS	LOS	D	D	D	D	D	D	D	D	B	C	B	C	F	B	B	D	D
			Delay	36	38	37	37	38	42	48	46	16	27	16	26	180	17	13	48	38
			V/C	0.21	0.10	0.01		0.09	0.32	0.58		0.22	0.71	0.01		1.24	0.41	0.04		1.01
			Q	21	17	0		13	43	75		14	183	0		156	96	4		
			Stor.	100	-	100		100	-	150		150	-	75		-	-	-		
			Avail.	79	-	100		87	-	75		136	-	75		-	-	-		
	Trafalgar Rd & Burnhamthorpe Rd	TCS	LOS	F	D	>	F	D	F	>	E	B	C	>	C	D	B	>	B	D
			Delay	316	36	>	108	36	81	>	74	18	31	>	30	49	11	>	17	40
			V/C	1.45	0.49	>		0.45	0.99	>		0.27	0.87	>		0.78	0.46	>		1.04
			Q	66	80	>		39	192	>		21	216	>		56	76	>		
			Stor.	30	-	>		15	-	>		60	-	>		60	-	>		
			Avail.	-36	-	>		-24	-	>		39	-	>		4	-	>		

MOE - Measure of Effectiveness
LOS - Level of Service
Delay - Average Delay per Vehicle in Seconds
V/C - Volume to Capacity Ratio
Q - 95th Percentile Queue Length (m)
Stor. - Existing Storage (m)
Avail. - Available Storage (m)
TCS - Traffic Control Signal
< / > - Shared with through movement

3 Development Concept

3.1 Development Description

The subject site (Trafalgar Lands) is located on both sides of Trafalgar Road south of Highway 407 and north of Burnhamthorpe. The Trafalgar Lands are approximately 53 hectares (131 acres). The east parcel (east of Trafalgar Road) is approximately 33 hectares (81.5 acres), and the west parcel (west of Trafalgar Road) is approximately 20 hectares (49.5 acres).

The ultimate development mix and intensity will be subject to future development applications and supported by Traffic Impact Studies specific to the proposed development subject to those applications. It is noted that the development shown in the development concepts were prepared for illustrative purposes only and would be subject to detailed Draft Plan of Subdivision, Zoning By-law amendment, and Site Plan applications.

Table 3.1 summarizes the site statistics. **Figure 3.1** illustrates the concept plan.

For the 2031 horizon year, it is assumed that Blocks 1, 2, and 3 will be developed. For the 2041 horizon year it is assumed that all remaining blocks will be developed.

Vehicle access is proposed by eight new municipal roadways that run in a grid pattern over the lands. Based on discussions with regional staff, the proposed intersection to Trafalgar Road south of William Halton Parkway, and the two intersections to William Halton Parkway to the immediate west and east of Trafalgar Road are to be right-in/right-out only intersections.

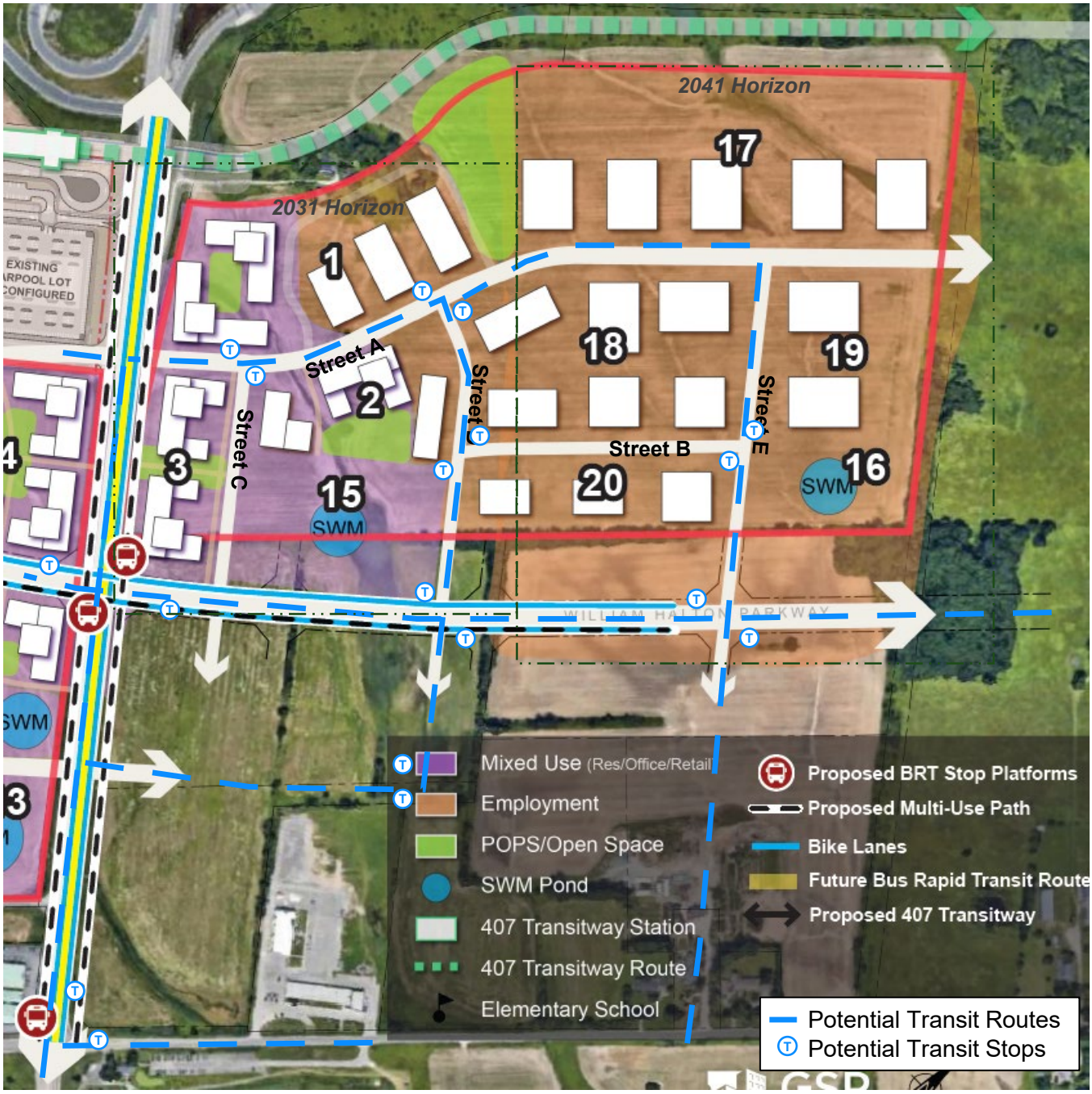
The northerly east-west new road will intersect with Trafalgar Road at the current intersection with the GO Carpool Lot. For this study, all new roadways will start as two-lane roadways.

These properties are intended to be sold for future development. The ultimate development mix and intensity will be subject to future development applications and supported by Traffic Impact Studies specific to the proposed development subject to those applications.

TABLE 3.1: SITE STATISTICS

Block	Land Use	Res Units	Emp GFA (m^2)	Emp GFA (ft^2)
1	Mixed	810	40,706	438,156
2	Mixed	669	4,480	48,222
3	Residential	1,741	-	-
4	Residential	2,253	-	-
5	Residential	1,163	-	-
6	Employment	-	9,100	97,952
7	Employment	-	5,600	60,278
8	Employment	-	3,500	37,674
9	Employment	-	7,700	82,882
10	Residential/School	492	1,220	13,132
11	Mixed	648	3,620	38,965
12	Mixed	1,078	6,020	64,799
13	SWM	-	-	-
14	SWM	-	-	-
15	SWM	-	-	-
16	SWM	-	-	-
17	Employment	-	85,200	917,085
18	Employment	-	44,600	480,070
19	Employment	-	30,200	325,070
20	Employment	-	20,400	219,584
Total		**8,854**	**262,346**	**2,823,869**

SWM - Storm Water Management



NTS

Illustrative Concept Plan East Side

IO Trafalgar & 407 Oakville, ON TIS
210156/210157

Figure 3.1A

paradigm TRANSPORTATION SOLUTIONS LIMITED

Illustrative Concept Plan West Side

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210156/210157

Figure 3.1B

3.2 Trip Generation

The Institute of Transportation Engineers (ITE) Trip Generation[9] methods predict the site trip generation. The following land use codes were used to estimate the site's trip generation:

- LUC 222 – Multifamily Housing, High-Rise (Dwelling Units);
- LUC 710 – General Office Building (GFA/1,000 sq.ft.);
- LUC 520 – Elementary School (Employees);
- LUC 820 – Shopping Center, >150K (GFA/1,000 sq.ft.)
- LUC 821 – Shopping Plaza, 40-150k (GFA/1,000 sq.ft.); and
- LUC 822 – Strip Retail Plaza, <40k (GFA/1,000 sq.ft.).

The highest generated trips by either using the average rate or the linear equation was used to estimate the trip generation to represent a conservative estimate.

For the Elementary School land use, it was assumed that 70% of trips to/from the school would be bussed, cycle or walk trips.

A transit modal split of 12% along with an active transportation modal split of 5% and transportation demand management reduction of 3% (for a total of 20%) was used. These rates have been used in other studies in Halton Region.

Table 3.2 summarizes the estimated trip generation. **Appendix D** contains the detailed trip generation calculations.

For the 2031 horizon year, Blocks 1, 2, and 3 are forecast to generate approximately 1,154 AM peak hour trips and 1,438 PM peak hour trips. For the 2041 horizon year, the remaining blocks are forecast to generate 2,036 AM peak hour trips and 2,631 PM peak hour trips. Following the 2041 horizon year, the total forecast trip generation is approximately 3,190 AM peak hour trips and 4,069 PM peak hour trips.

[9] Institute of Transportation Engineers, *Trip Generation Manual,* 11th ed., (Washington, DC: ITE, 2021).

TABLE 3.2: TRIP GENERATION SUMMARY

Block	AM Peak Hour			PM Peak Hour		
	In	Out	Total	In	Out	Total
1	409	173	582	269	479	748
2	82	114	196	129	115	244
3	98	278	376	276	170	446
2031 Sub-Total	*589*	*565*	*1,154*	*674*	*764*	*1,438*
4	126	360	486	358	219	577
5	66	186	252	185	113	298
6	107	29	136	78	135	213
7	54	17	71	46	75	121
8	41	11	52	30	52	82
9	90	25	115	66	115	181
10	8	168	176	156	127	283
11	71	108	179	121	104	225
12	121	181	302	201	172	373
13	-	-	-	-	-	-
14	-	-	-	-	-	-
15	-	-	-	-	-	-
16	-	-	-	-	-	-
17	96	36	132	37	95	132
18	50	15	65	19	50	69
19	34	10	44	14	34	48
20	20	6	26	8	21	29
2041 Sub-Total	*884*	*1,152*	*2,036*	*1,319*	*1,312*	*2,631*
Total	**1,473**	**1,717**	**3,190**	**1,993**	**2,076**	**4,069**

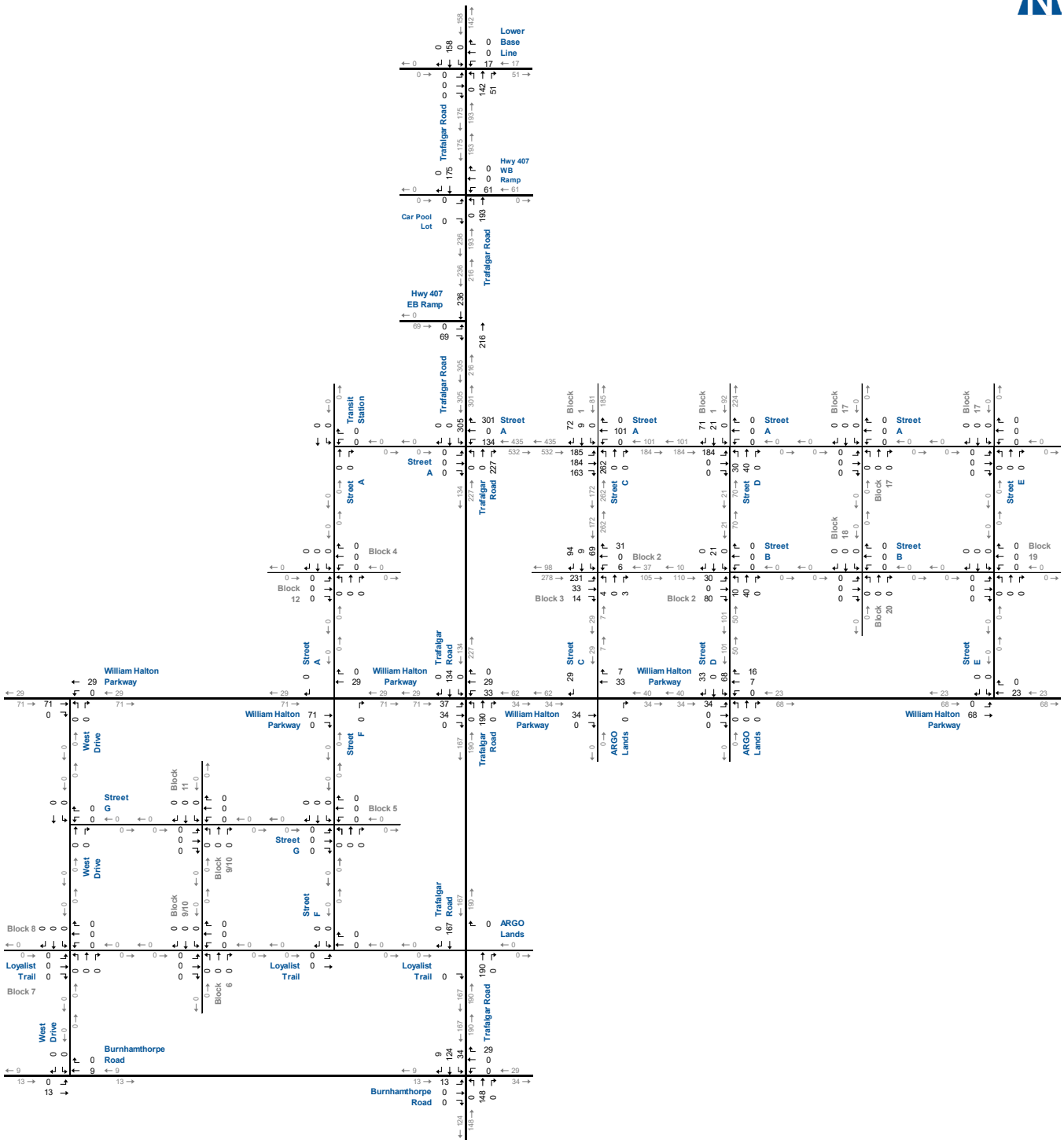
3.3 Trip Distribution and Assignment

The site generated trips were assigned to the road network based on the existing distribution at the study area intersections. The distribution between Burnhamthorpe Road and William Halton Parkway were switched to account for the more arterial nature of William Halton Parkway compared to Burnhamthorpe Road. **Table 3.4** summarizes the estimated site trip distribution.

TABLE 3.4: TRIP DISTRIBUTION

Origin / Destination		AM Peak hour		PM Peak hour	
		Inbound	Outbound	Inbound	Outbound
North	Trafalgar Road	27%	25%	20%	25%
East	Lower Base Line	3%	9%	6%	8%
	Highway 407	10%	15%	14%	9%
	William Halton Parkway	4%	12%	11%	8%
	Burnhamthorpe Road	5%	6%	9%	5%
South	Trafalgar Road	25%	22%	25%	17%
West	Lower Base Line	0%	0%	0%	2%
	Highway 407	12%	4%	7%	14%
	William Halton Parkway	12%	5%	5%	7%
	Burnhamthorpe Road	2%	2%	3%	5%
Total		**100%**	**100%**	**100%**	**100%**

Figure 3.2A and **Figure 3.2B** illustrates the 2031 site generated traffic volumes. **Figure 3.3A** and **Figure 3.3B** illustrates the 2041 site generated traffic volumes



2031 Site Generated Traffic Volumes AM Peak Hour

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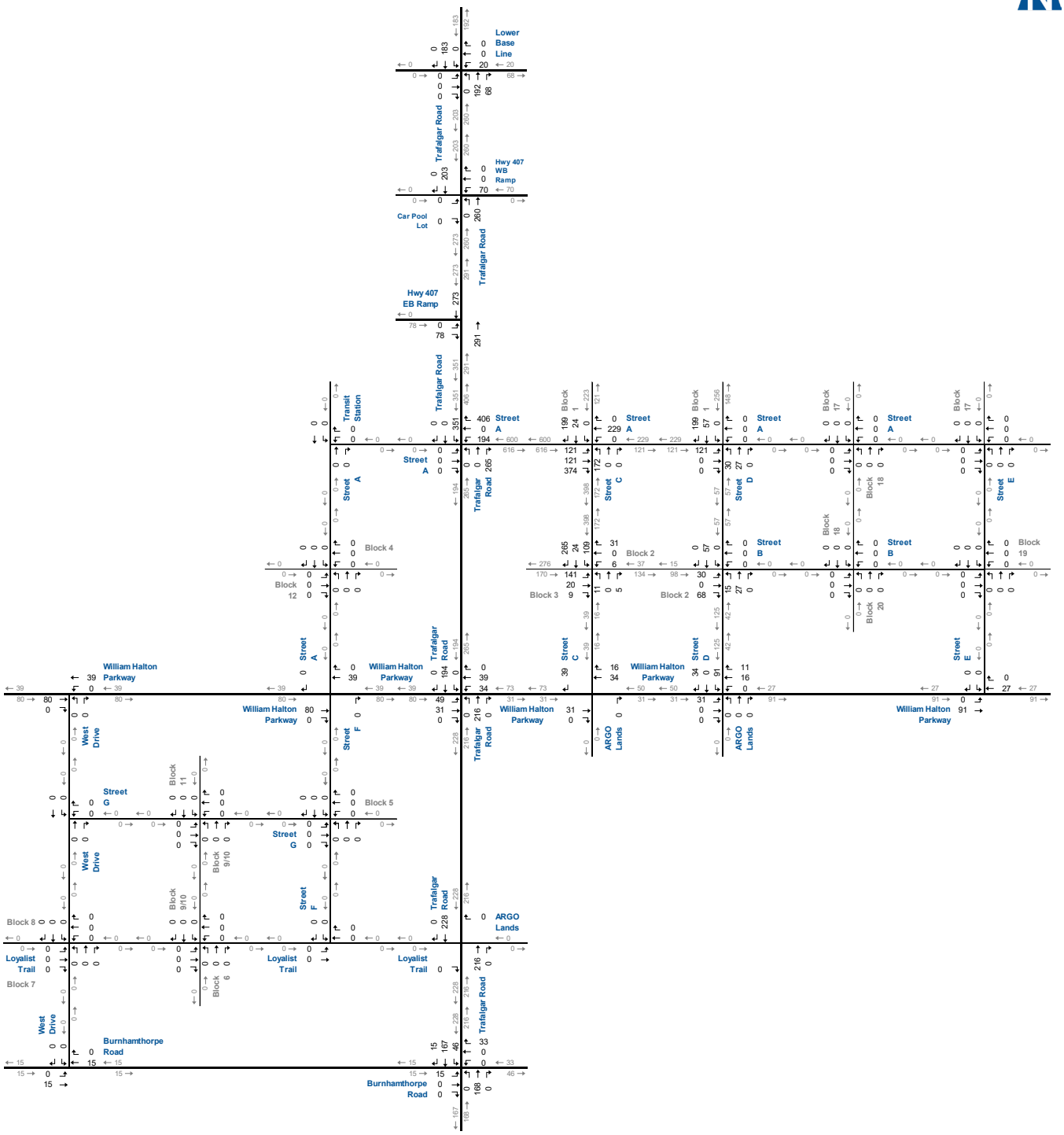
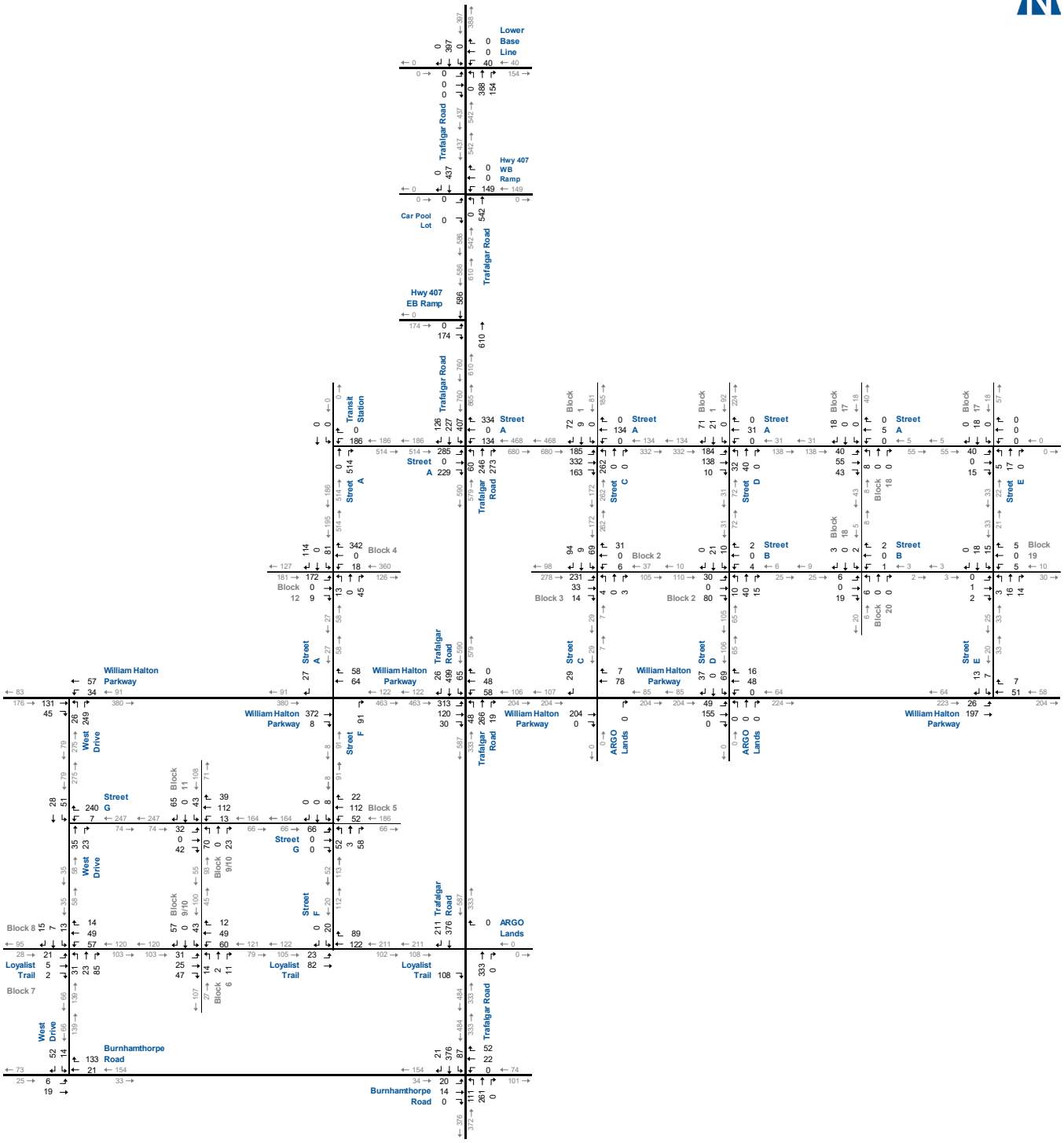
Figure 3.2A



2031 Site Generated Traffic Volumes PM Peak Hour

IO Trafalgar & 407 Oakville, ON TIS
210156/210157

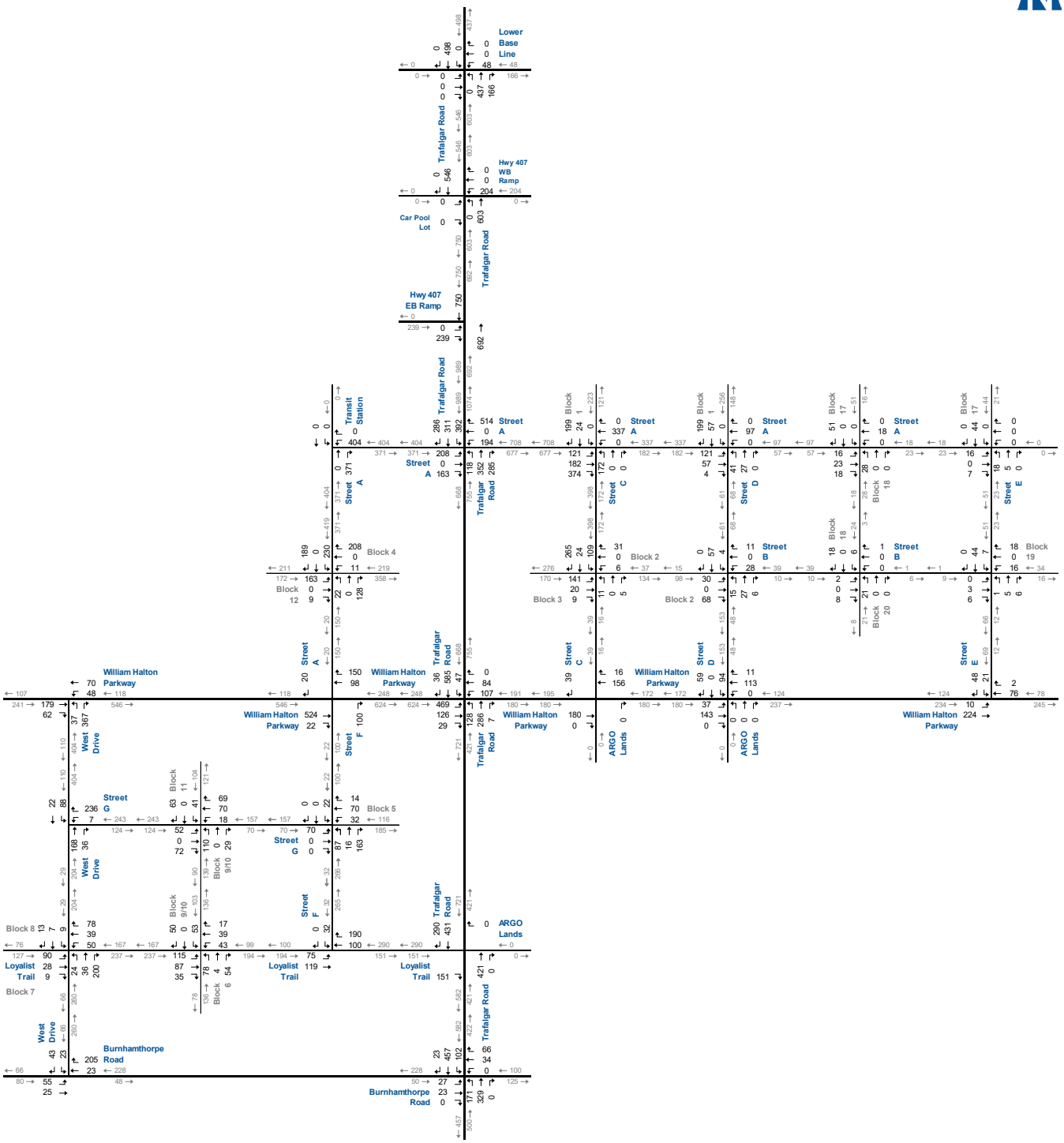
Figure 3.2B



2041 Site Generated Traffic Volumes AM Peak Hour

IO Trafalgar & 407 Oakville, ON TIS
210156/210157

Figure 3.3A



2041 Site Generated Traffic Volumes PM Peak Hour

IO Trafalgar & 407 Oakville, ON TIS
210156/210157

Figure 3.3B

4 Future Conditions

The assessment of the future traffic conditions contained in this section includes the traffic forecast as well as the level of service analysis.

4.1 Network Improvements

4.1.1 Road Network

The Halton Region Environmental Study Report for Trafalgar Road (Regional Road 3) Improvements Class Environmental Assessment Study from Cornwall Road to Highway 407, Town of Oakville (April 2015), details the widening of Trafalgar Road to six lanes which include future dedicated bus lanes up to Highway 407.

For this study, from Highway 407 northwards, the lane widening of Trafalgar Road as detailed in the April 2015 Class EA was carried northwards to Lower Base Line.

These improvements have been incorporated into the future 2031 background analysis.

4.1.2 Transit Facilities Plan

The North Oakville East Secondary Plan identifies a transit first policy to ensure that development will proceed in a manner which will be supportive of the early provision of transit services. Transit stops are to be located at the centre of each neighbourhood with additional stops located so that all residents, employees, and visitors are predominantly within 400 metre walking distance to a transit stop.

Further, as a condition of approval of any plan of subdivision, a transit facilities plan must be developed by the applicant, in conjunction with the Town, and approved by the Town, which addresses transit facilities in the plan of subdivision and how they will be integrated with existing and/or proposed transit network and connected to major intermodal terminals as identified in the Town's Transit Plan. In particular, the transit facilities plan will show and describe the location of transit facilities including stops and shelters and transit signal priority facilities.

4.1.3 Highway 407 Transitway

The 407 Transitway[10] is a planned 150 km long high-speed interregional facility planned to be ultimately constructed on a separate

[10] 407 Transitway

right-of-way that parallels Highway 407 from Burlington to Highway 35/115, with stations, parking and access connections.

It is currently being designed in four segments with the Trafalgar Road station included in the Brant Street to Hurontario Street[11] segment. This 35 km section will be a two-lane, fully grade separated transit facility. The Trafalgar Road station will include vehicular and pedestrian accesses, park and ride and pick-up/drop-off facilities, bus lay bay facilities, on-street integration with local transit, shelters, buildings and other amenities. The transitway and the stations will initially be designed to support a two-lane busway service with provisions for future conversion to a two-track light-rail transit technology.

The Big Move[12] report shows Bus Rapid Transit on Highway 407 in mixed traffic with congestion management under the 15-year plan and full separate transitway between Highway 427 and Markham in the 25-year plan. No timing has been provided for the full separated transitway in the study area.

The Illustrative Concept Plans prepared in support of the Official Plan Amendment Application show a conceptual road network and good pedestrian connectivity throughout the land subject to the application to the Trafalgar Road Corridor and to the Future Highway 407 Transitway Station. It is recommended that future development applications shall be designed to ensure that the long-term transit plans, including the future Trafalgar Road Bus Rapid Transit (BRT) and the Highway 407 Transit Way are integrated with local transit services.

4.2 Forecast Traffic

Two horizon years have been assessed to estimate the impact of the subject development and background roadway traffic:

- Build-out of Phase 1 (Year 2031); and
- Full build-out (Year 2041).

Future traffic volumes near the subject site are estimated to consist of:

- Increased non-site traffic (generalized background traffic growth). A generalized growth rate of 2% per annum (compounded) was identified by the review agencies during the pre-study consultation

[11] 407 Transitway - Brant Street to Winston Churchill Boulevard

[12] The Big Move, Transforming Transportation in the Greater Toronto Area and Hamilton Area, Metrolinx, November 2008

- Background traffic from the following developments:
  - 45 & 55 William Halton Parkway East[13] a proposed industrial development
  - 40, 64 & 86 Burnhamthorpe Road East[14] a proposed residential development containing approximately 232 townhouse units
  - Star Oak Developments[15] a proposed mixed-use development containing residential and employment land uses
  - ARGO Trafalgar[16] a proposed mixed-use development with approximately 3,000 residential units and commercial and employment land uses; and
- Traffic generated by the subject site.

The traffic volumes from the background developments were obtained from their respective studies. **Appendix E** contains the background development trip assignments.

Figure 4.1 illustrates the forecast background 2031 traffic volumes. **Figure 4.2** illustrates the forecast background 2041 traffic volumes.

Figure 4.3A and **Figure 4.3B** illustrates the forecast Total 2031 traffic volumes. **Figure 4.4A** and **Figure 4.4B** illustrates the forecast Total 2041 traffic volumes.

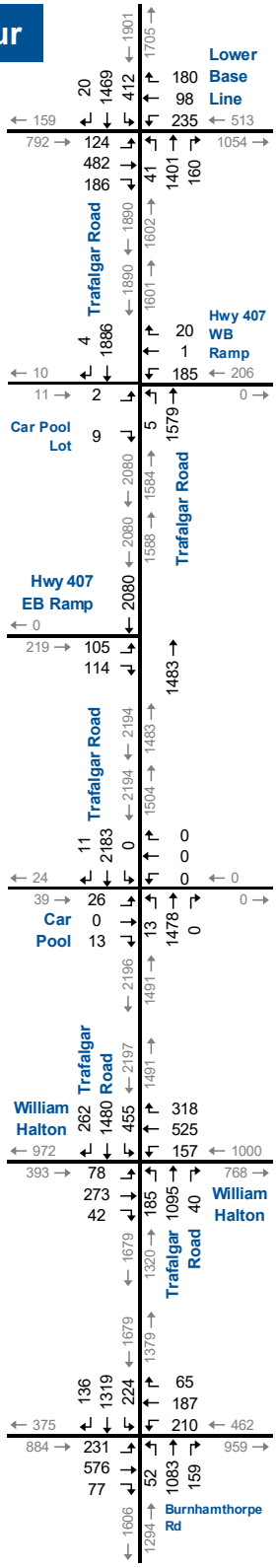
[13] LEA Consulting Ltd, *Updated Transportation Impact Study 45 and 55 William Halton Parkway East, Town of Oakville, Proposed Industrial Development,* (LEA: Oakville, May 2023).

[14] LEA Consulting Ltd, *Transportation Impact Assessment 40 64 & 86 Burnhamthorpe Road East, Town of Oakville, Proposed Residential Development,* (LEA: Oakville, December 2020).

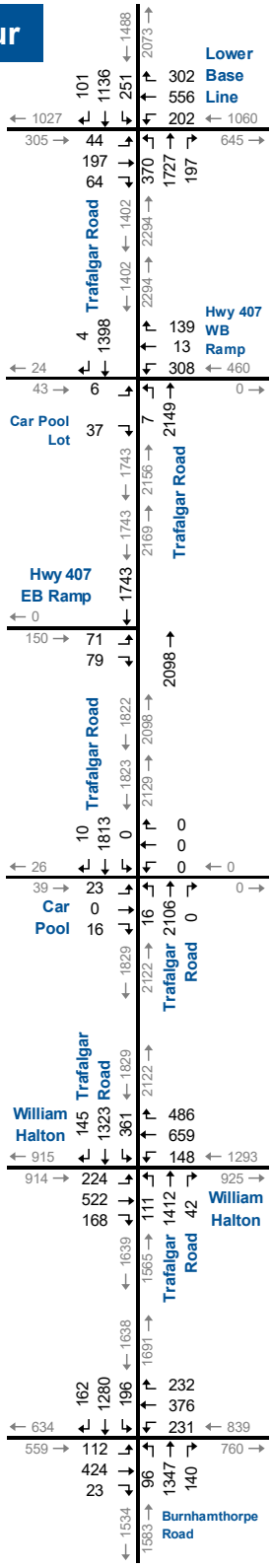
[15] URS Canada Inc., *Transportation Impact Study Star Oak Developments Limited Town of Oakville,* (URS: Oakville, April 2013).

[16] CGH Transportation, *ARGO Trafalgar Transportation Impact Study,* (CGH: Oakville, June 2023).

AM Peak Hour



PM Peak Hour



2031 Background Traffic Volumes

IO Trafalgar & 407 Oakville, ON TIS
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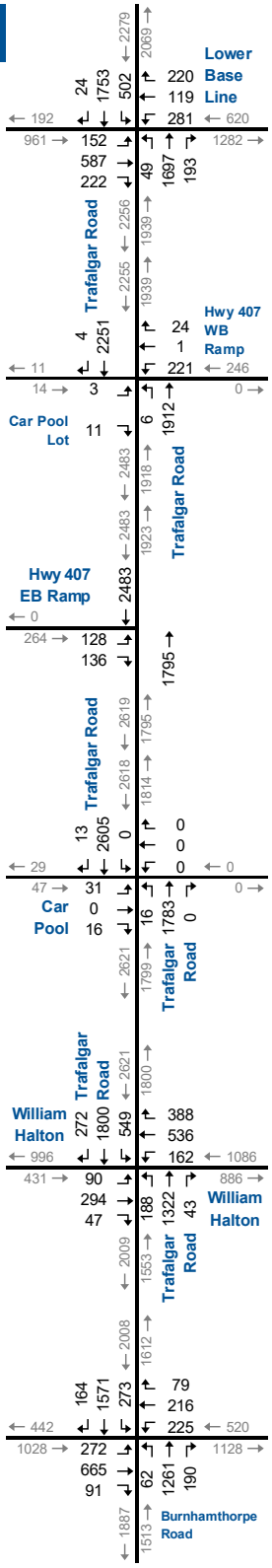
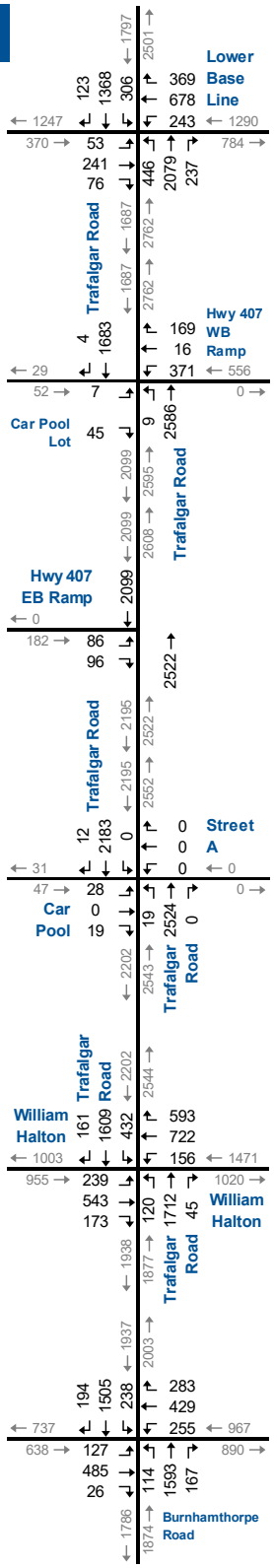
Figure 4.1

AM Peak Hour



PM Peak Hour



2041 Background Traffic Volumes

IO Trafalgar & 407 Oakville, ON TIS
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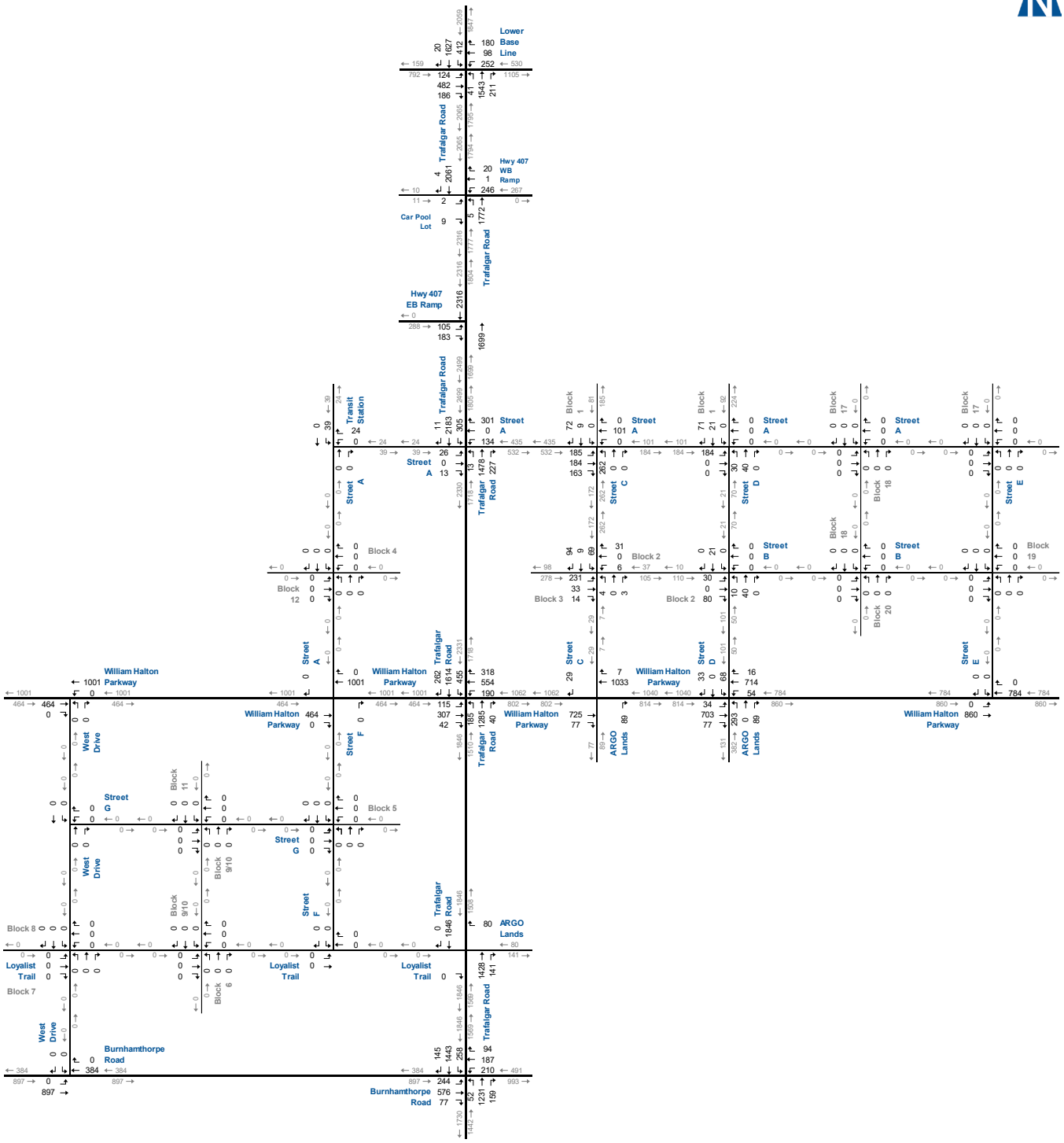
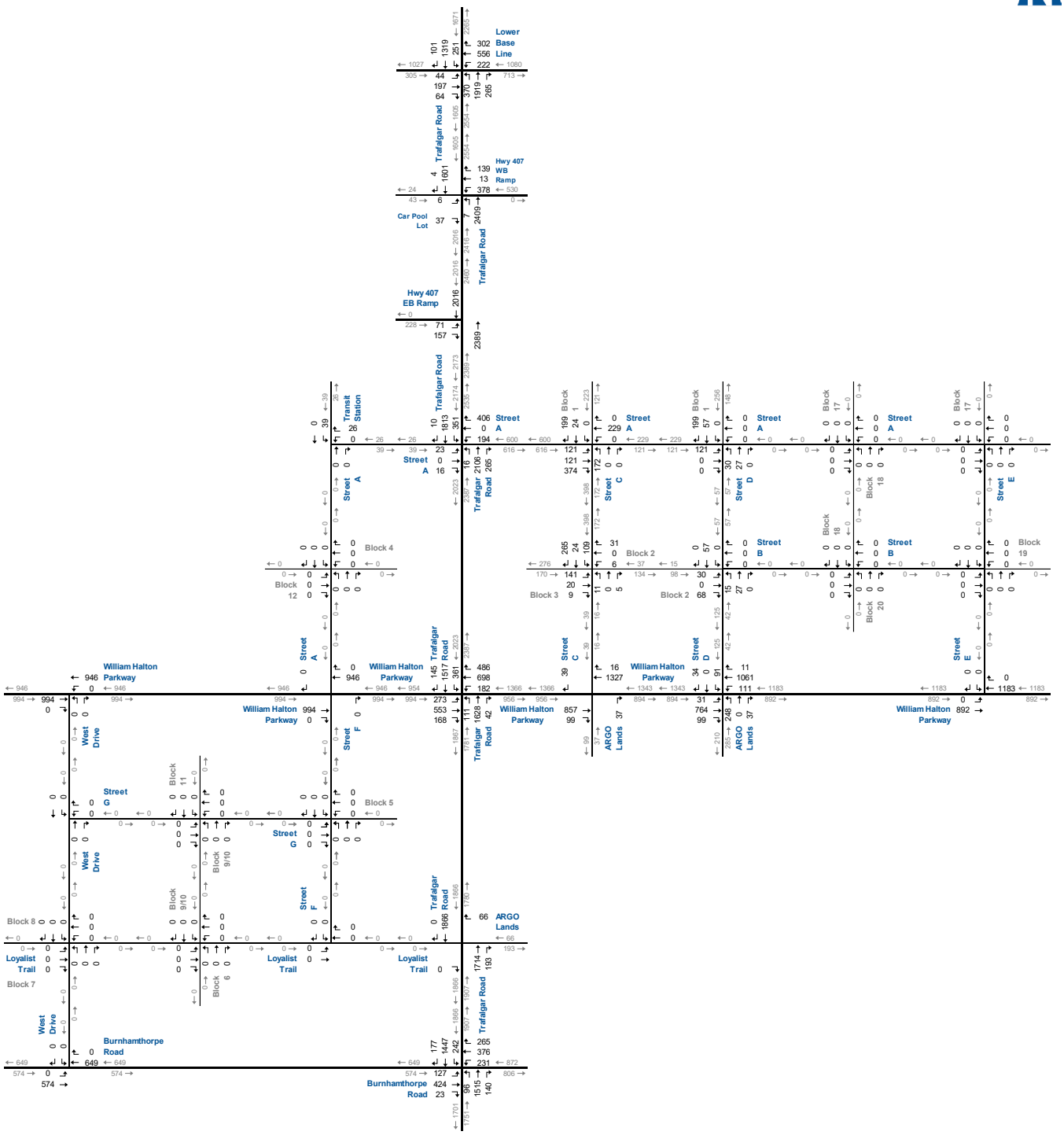
Figure 4.2



2031 Total Traffic Volumes AM Peak Hour

IO Trafalgar & 407 Oakville, ON TIS
210156/210157

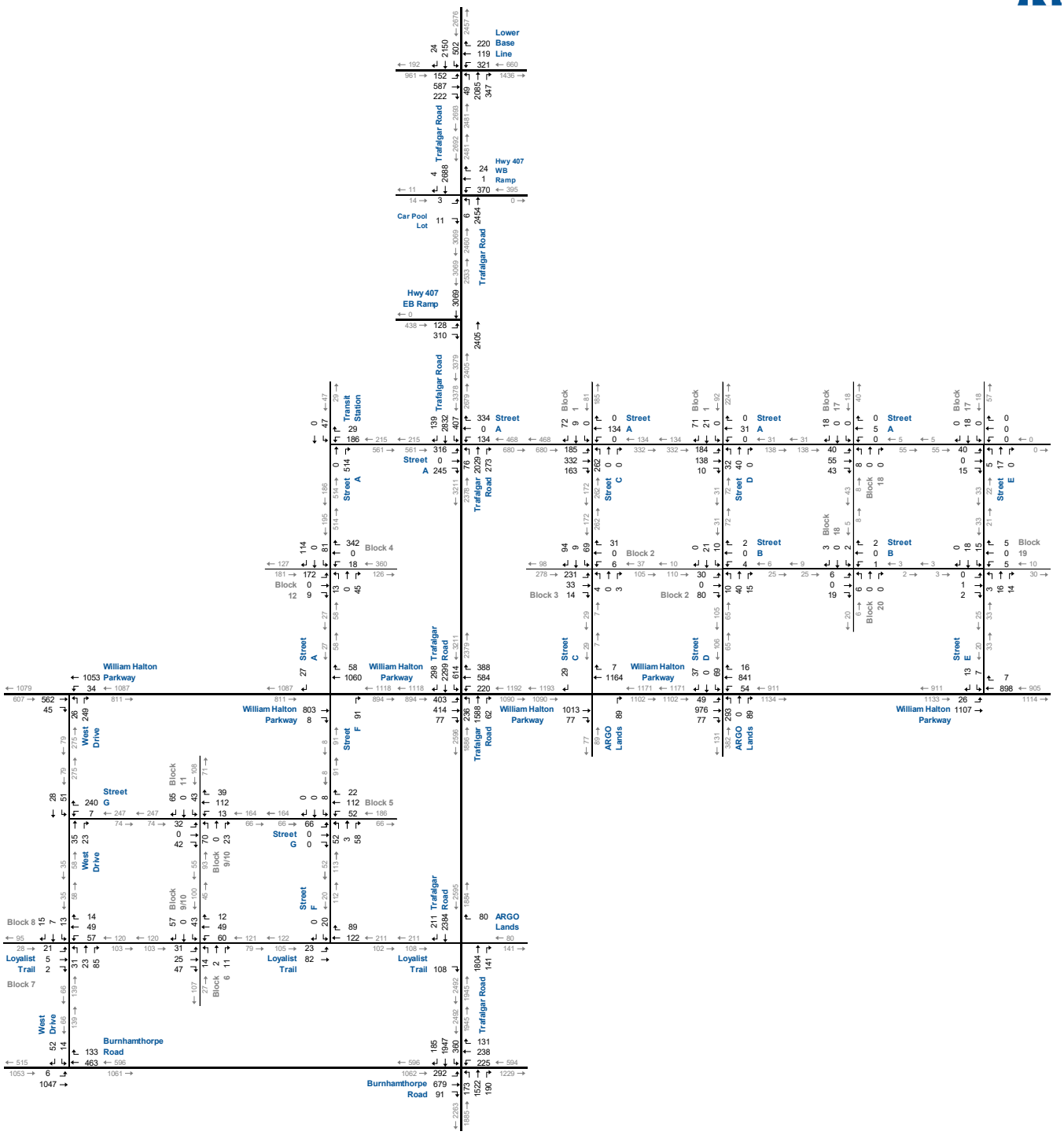
Figure 4.3A



2031 Total Traffic Volumes PM Peak Hour

IO Trafalgar & 407 Oakville, ON TIS
210156/210157

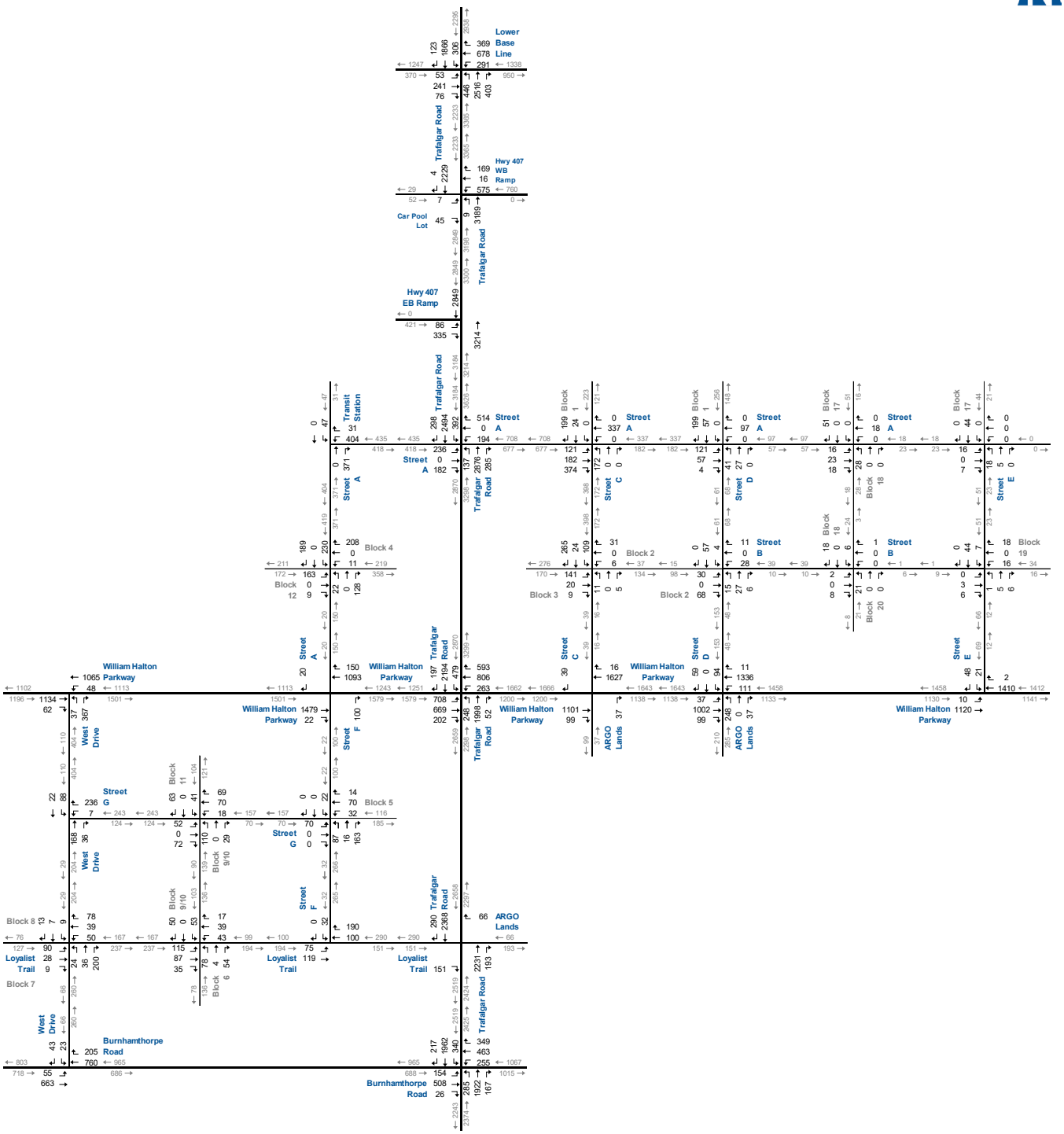
Figure 4.3B



2041 Total Traffic Volumes AM Peak Hour

IO Trafalgar & 407 Oakville, ON TIS
210156/210157

Figure 4.4A



2041 Total Traffic Volumes PM Peak Hour

IO Trafalgar & 407 Oakville, ON TIS
210156/210157

Figure 4.4B

4.2.1 Forecast Daily Traffic Volumes

The daily volumes were derived from the PM peak hour traffic forecasts. The PM peak hour volumes were assumed to be 10 per cent of the total daily traffic volumes. **Table 4.1** shows the forecast 2031 future daily traffic volumes on the study area roadways. **Table 4.2** shows the forecast 2041 future daily volumes on the study area roadways.

With the 2% background growth rate, the Trafalgar Road corridor will exceed the maximum 30,000 vehicles per day TAC threshold for urban arterial roads under 2031 and 2041 future background traffic conditions.

The introduction of the site generated traffic will only add to the congestion and delay in the study area.

TABLE 4.1: 2031 FUTURE DAILY TRAFFIC VOLUMES

Road Section		Two-Way Daily Traffic*				TAC Threshold	
From	To	Existing	2031 Background	Site Traffic	2031 Total	Rural**	Urban***
Trafalgar Road							
North	Lower Base Line	28,810	50,810	3,750	54,560	< 12,000	10,000 - 30,000
Lower Base Line	Highway 407 WB Off-Ramp	29,750	36,960	4,630	41,590	< 12,000	10,000 - 30,000
Highway 407 WB Off-Ramp	Highway 407 EB Off-Ramp	32,940	38,990	5,640	44,630	< 12,000	10,000 - 30,000
Highway 407 EB Off-Ramp	GO Carpool Lot/Street A	34,910	39,510	7,570	47,080	< 12,000	10,000 - 30,000
GO Carpool Lot/Street A	William Halton Parkway	34,940	39,510	4,590	44,100	< 12,000	10,000 - 30,000
William Halton Parkway	Burnhamthorpe Road	28,620	32,030	4,440	36,470	< 12,000	10,000 - 30,000
Burnhamthorpe Road	South	24,880	31,170	3,350	34,520	< 12,000	10,000 - 30,000
Lower Base Line							
Trafalgar Road	East	13,970	17,050	880	17,930	< 12,000	5,000 - 20,000
Trafalgar Road	West	10,790	13,320	-	13,320	< 12,000	5,000 - 20,000
William Halton Parkway							
Trafalgar Road	East	9,990	18,220	1,180	19,400	< 12,000	10,000 - 30,000
Trafalgar Road	West	4,970	22,180	1,190	23,370	< 12,000	10,000 - 30,000
Burnhamthorpe Road							
Trafalgar Road	East	10,560	15,990	790	16,780	< 12,000	5,000 - 20,000
Trafalgar Road	West	7,100	11,930	300	12,230	< 12,000	5,000 - 20,000

* PM peak hour x 10

** TAC Table 2.6.4: Classification of Rural Roads

*** TAC Table 2.6.5: Classificaiton of Urban Roads

TABLE 4.2: 2041 FUTURE DAILY TRAFFIC VOLUMES

Road Section		Two-Way Daily Traffic*				TAC Threshold	
From	To	Existing	2041 Background	Site Traffic	2041 Total	Rural**	Urban***
Trafalgar Road							
North	Lower Base Line	28,810	42,980	13,100	56,080	< 12,000	10,000 - 30,000
Lower Base Line	Highway 407 WB Off-Ramp	29,750	44,490	16,120	60,610	< 12,000	10,000 - 30,000
Highway 407 WB Off-Ramp	Highway 407 EB Off-Ramp	32,940	47,070	20,060	67,130	< 12,000	10,000 - 30,000
Highway 407 EB Off-Ramp	GO Carpool Lot/Street A	34,910	47,470	28,200	75,670	< 12,000	10,000 - 30,000
GO Carpool Lot/Street A	William Halton Parkway	34,940	47,460	18,820	66,280	< 12,000	10,000 - 30,000
William Halton Parkway	Burnhamthorpe Road	28,620	20,730	15,860	36,590	< 12,000	10,000 - 30,000
Burnhamthorpe Road	South	24,880	36,600	12,920	49,520	< 12,000	10,000 - 30,000
Lower Base Line							
Trafalgar Road	East	13,970	20,740	3,020	23,760	< 12,000	5,000 - 20,000
Trafalgar Road	West	10,790	16,170	-	16,170	< 12,000	5,000 - 20,000
William Halton Parkway							
Trafalgar Road	East	9,990	22,300	4,410	26,710	< 12,000	10,000 - 30,000
Trafalgar Road	West	4,970	19,500	4,670	24,170	< 12,000	10,000 - 30,000
Burnhamthorpe Road							
Trafalgar Road	East	10,560	18,570	3,040	21,610	< 12,000	5,000 - 20,000
Trafalgar Road	West	7,100	13,750	1,760	15,510	< 12,000	5,000 - 20,000

* PM peak hour x 10

** TAC Table 2.6.4: Classification of Rural Roads

*** TAC Table 2.6.5: Classificaiton of Urban Roads

4.3 Forecast Traffic Operations

The study area intersection operations analyses for the future background and future total traffic forecast used the road network improvements noted in **Section 4.1** and the new municipal roads noted in **Section 3.1**. The signalized intersections used optimized signal timings.

4.3.1 Background Operations – 2031

Table 4.3 summarizes the level of service conditions. The road improvements noted in Section 4.1 and optimized signal timings have been assumed. The following critical movements are noted:

- **Trafalgar Road and Lower Base Line:**
  - Overall – v/c ratio of 0.99 during the AM peak hour and v/c ratio of 0.97 during the PM peak hour
  - Eastbound through/right-turn – LOS E and v/c ratio of 0.98 during the AM peak hour
  - Westbound left-turn – LOS F and v/c ratio of 0.97 during the AM peak hour
  - Northbound left-turn – LOS E and v/c ratio of 1.00 during PM Peak hour
  - Southbound left-turn – LOS E, v/c ratio of 0.98, and queue exceeds storage during AM peak hour
- **Trafalgar Road and William Halton Parkway:**
  - Overall – v/c ratio greater than 1.00 during the AM and PM peak hours
  - Eastbound left-turn – LOS F and v/c ratio greater than 1.00 during PM peak hour
  - Northbound left-turn – LOS F and v/c ratio greater than 1.00 during the AM peak hour
  - Southbound left-turn – LOS F and v/c ratio greater than 1.00 during the AM and PM peak hours
- **Trafalgar Road and Burnhamthorpe Road:**
  - Overall – v/c ratio of 1.00 during PM peak hour
  - Eastbound left-turn with LOS F and v/c ratio greater than 1.00 during the PM peak hour; and
  - Westbound left-turn with LOS F and v/c ratio greater than 1.00 during the PM peak hour.

Appendix F1 contains the detailed Synchro reports.

The above noted capacity issues are expected to occur without the development of the subject site.

TABLE 4.3A: 2031 BACKGROUND OPERATIONS – AM PEAK HOUR

Analysis Period	Intersection	Control Type	MOE	Direction/Movement/Approach																
				Eastbound				Westbound				Northbound				Southbound				Overall
				Left	Through	Right	Approach	Left	Through	Right	Approach	Left	Through	Right	Approach	Left	Through	Right	Approach	
AM Peak Hour	Trafalgar Rd & Lower Base Line	TCS	LOS	D	E	>	**E**	F	D	>	**E**	C	D	C	**D**	E	C	B	**C**	**D**
			Delay	37	77	>	**71**	85	36	>	**58**	29	50	29	**48**	76	22	14	**33**	**47**
			V/C	0.42	0.98	>		0.97	0.20	>		0.30	0.93	0.11		0.98	0.60	0.01		**0.99**
			Q	37	124	>		91	22	>		9	156	15		152	111	0		
			Stor.	45	-	>		110	-	>		90	-	90		90	-	90		
			Avail.	8	-	>		19	-	>		81	-	75		-62	-	90		
	Trafalgar Rd & North Carpool Lot/Hwy 407 WB Off	TCS	LOS	<	D	>	**D**	D	D	D	**D**	A	A		**A**		A	A	**A**	**A**
			Delay	<	37	>	**37**	44	46	37	**44**	6	6		**6**		9	5	**9**	**10**
			V/C	<	0.01	>		0.57	0.60	0.01		0.05	0.46				0.59	0.00		**0.60**
			Q	<	0	>		35	36	0		1	63				111	0		
			Stor.	<	-	>		-	-	60		65	-				-	15		
			Avail.	<	-	>		-	-	60		64	-				-	15		
	Trafalgar Rd & Hwy 407 EB Off	TCS	LOS	B		B	**B**						B		**B**		B		**B**	**B**
			Delay	15		16	**15**						11		**11**		15		**15**	**13**
			V/C	0.19		0.23							0.59				0.83			**0.60**
			Q	18		20							51				88			
	Trafalgar Rd & South Carpool Lot	TCS	LOS	B		B	**B**					A	A		**A**		B	A	**B**	**B**
			Delay	18		18	**18**					9	12		**12**		11	6	**11**	**11**
			V/C	0.06		0.02						0.13	0.53				0.78	0.01		**0.51**
			Q	8		5						3	50				93	2		
			Stor.	-		-						50	-				-	30		
			Avail.	-		-						47	-				-	28		
	Trafalgar Rd & William Halton Parkway	TCS	LOS	D	D	D	**D**	D	D	D	**D**	F	C	B	**C**	F	C	C	**F**	**E**
			Delay	38	42	38	**41**	40	47	44	**45**	100	23	18	**34**	403	27	20	**104**	**68**
			V/C	0.43	0.33	0.03		0.55	0.64	0.47		1.01	0.48	0.03		1.81	0.64	0.21		**1.34**
			Q	27	46	0		50	89	63		89	94	0		244	139	24		
			Stor.	100	-	100		100	-	150		150	-	75		-	-	-		
			Avail.	0	-	100		50	-	87		61	-	75		-	-	-		
	Trafalgar Rd & Burhamthorpe Rd/Burnhamthorpe Rd	TCS	LOS	C	C	>	**C**	E	B	>	**D**	E	D	C	**D**	E	C	B	**C**	**C**
			Delay	25	22	>	**23**	58	18	>	**36**	70	41	31	**41**	67	26	19	**31**	**33**
			V/C	0.50	0.43	>		0.87	0.15	>		0.66	0.75	0.13		0.91	0.62	0.10		**0.89**
			Q	64	70	>		95	22	>		34	107	18		85	105	12		
			Stor.	30	-	>		15	-	>		60	-	60		60	-	60		
			Avail.	-34	-	>		-9	-	>		26	-	42		-25	-	48		

MOE - Measure of Effectiveness
LOS - Level of Service
Delay - Average Delay per Vehicle in Seconds
V/C - Volume to Capacity Ratio
Q - 95th Percentile Queue Length (m)
Stor. - Existing Storage (m)
Avail. - Available Storage (m)
TCS - Traffic Control Signal
< / > - Shared with through movement

TABLE 4.3B: 2031 BACKGROUND OPERATIONS – PM PEAK HOUR

Analysis Period	Intersection	Control Type	MOE	Direction/Movement/Approach																
				Eastbound				Westbound				Northbound				Southbound				Overall
				Left	Through	Right	Approach	Left	Through	Right	Approach	Left	Through	Right	Approach	Left	Through	Right	Approach	
PM Peak Hour	Trafalgar Rd & Lower Base Line	TCS	LOS	C	C	>	C	C	D	>	D	E	D	B	D	E	C	C	C	D
			Delay	31	30	>	30	28	46	>	43	68	39	18	42	55	28	20	32	39
			V/C	0.34	0.34	>		0.67	0.92	>		1.00	0.96	0.14		0.92	0.72	0.07		0.97
			Q	12	29	>		44	114	>		109	150	13		74	84	2		
			Stor.	45	-	>		110	-	>		90	-	90		90	-	90		
			Avail.	33	-	>		66	-	>		-19	-	77		16	-	88		
	Trafalgar Rd & North Carpool Lot/Hwy 407 WB Off	TCS	LOS	<	C	>	C	D	D	C	D	A	A		A		A	A	A	B
			Delay	<	33	>	33	42	44	35	41	7	9		9		9	6	9	13
			V/C	<	0.03	>		0.62	0.66	0.23		0.05	0.64				0.45	0.00		0.68
			Q	<	3	>		55	59	25		2	125				83	0		
			Stor.	<	-	>		-	-	60		65	-				-	15		
			Avail.	<	-	>		-	-	35		63	-				-	15		
	Trafalgar Rd & Hwy 407 EB Off	TCS	LOS	B		B	B						B		B		A		A	B
			Delay	19		19	19						12		12		10		10	11
			V/C	0.15		0.17							0.75				0.62			0.56
			Q	17		17							87				64			
	Trafalgar Rd & South Carpool Lot	TCS	LOS	C		C	C					A	A		A		A	A	A	A
			Delay	28		27	28					9	9		9		8	4	8	8
			V/C	0.06		0.01						0.18	0.63				0.56	0.01		0.49
			Q	10		5						4	77				65	2		
			Stor.	-		-						50	-				-	30		
			Avail.	-		-						46	-				-	28		
	Trafalgar Rd & William Halton Parkway	TCS	LOS	F	D	D	F	D	D	E	E	C	C	C	C	F	C	C	F	E
			Delay	248	45	38	93	49	49	71	57	25	31	21	31	295	28	21	100	70
			V/C	1.39	0.58	0.12		0.72	0.73	0.90		0.57	0.67	0.03		1.75	0.60	0.10		1.57
			Q	119	89	17		49	115	166		25	135	0		205	124	13		
			Stor.	100	-	100		100	-	150		150	-	75		-	-	-		
			Avail.	-19	-	83		51	-	-16		125	-	75		-	-	-		
	Trafalgar Rd & Burhamthorpe Rd/Burnhamthorpe Rd	TCS	LOS	F	D	>	E	F	D	>	F	C	C	B	C	C	B	A	B	D
			Delay	157	36	>	60	257	38	>	98	33	20	15	20	35	11	8	13	37
			V/C	1.77	0.60	>		1.23	0.69	>		0.38	0.69	0.09		0.90	0.34	0.10		1.00
			Q	70	65	>		129	79	>		40	95	11		56	62	8		
			Stor.	30	-	>		15	-	>		60	-	60		60	-	60		
			Avail.	-40	-	>		-114	-	>		20	-	49		4	-	52		

MOE - Measure of Effectiveness
LOS - Level of Service
Delay - Average Delay per Vehicle in Seconds
V/C - Volume to Capacity Ratio
Q - 95th Percentile Queue Length (m)
Stor. - Existing Storage (m)
Avail. - Available Storage (m)
TCS - Traffic Control Signal
< / > - Shared with through movement

4.3.2 Background Operations – 2041

Table 4.4 summarizes the level of service conditions. The road improvements noted in Section 4.1 and optimized signal timings have been assumed. The following critical movements are noted:

- **Trafalgar Road and Lower Base Line:**
  - Overall – v/c ratio greater than 1.00 during the AM and PM peak hours
  - Eastbound through/right-turn – LOS F and v/c ratio greater than 1.00 during the AM peak hour
  - Westbound left-turn – LOS F, v/c ratio greater than 1.00, and queue exceeds storage during the AM peak hour
  - Westbound through/right-turn – LOS F and v/c ratio greater than 1.00 during the PM peak hour
  - Northbound left-turn – LOS F, v/c ratio greater than 1.00, and queue exceeds storage during PM peak hour
  - Northbound through – LOS F and v/c ratio greater than 1.00 during the AM peak hour. LOS E and v/c ratio greater than 1.00 during the PM peak hour
  - Southbound left-turn – LOS F, v/c ratio greater than 1.00, and queue exceeds storage during AM and PM peak hours
- **Trafalgar Road and William Halton Parkway:**
  - Overall – v/c ratio greater than 1.00 during the AM and PM peak hours
  - Eastbound left-turn – LOS F, v/c ratio greater than 1.00, and queue exceeds storage during AM and PM peak hours
  - Westbound right-turn – LOS F, v/c ratio greater than 1.00, and queue exceeds storage during the PM peak hour.
  - Northbound left-turn – LOS F, v/c ratio greater than 1.00, and queue exceeds storage during AM peak hour
  - Southbound left-turn – LOS F, v/c ratio greater than 1.00, and queue exceeds storage during the AM and PM peak hours
- **Trafalgar Road and Burnhamthorpe Road:**
  - Overall – v/c ratio greater than 1.00 during AM and PM peak hours
  - Eastbound left-turn – LOS F, v/c ratio greater than 1.00, and queue exceeds storage during PM peak hour

- Westbound left-turn – L:OS F, v/c ratio greater than 1.00, and queue exceeds storage during PM peak hour; and
- Southbound left-turn – LOS F, v/c ratio greater than 1.00, and queue exceeds storage during AM peak hour. Queue exceeds storage during the PM peak hour.

Appendix F2 contains the detailed Synchro reports.

The above noted capacity issues are expected to occur without the development of the subject site.

TABLE 4.4A: 2041 BACKGROUND OPERATIONS – AM PEAK HOUR

Analysis Period	Intersection	Control Type	MOE	Direction/Movement/Approach																
				Eastbound				Westbound				Northbound				Southbound				Overall
				Left	Through	Right	Approach	Left	Through	Right	Approach	Left	Through	Right	Approach	Left	Through	Right	Approach	
AM Peak Hour	Trafalgar Rd & Lower Base Line	TCS	LOS	D	F	>	F	F	D	>	F	C	F	C	F	F	C	B	D	F
			Delay	39	153	>	135	142	37	>	85	31	107	30	98	149	24	14	52	84
			V/C	0.56	1.20	>		1.16	0.24	>		0.43	1.13	0.18		1.21	0.73	0.02		1.21
			Q	44	165	>		119	25	>		11	212	23		204	143	0		
			Stor.	45	-	>		110	-	>		90	-	90		90	-	90		
			Avail.	1	-	>		-9	-	>		79	-	67		-114	-	90		
	Trafalgar Rd & North Carpool Lot/Hwy 407 WB Off	TCS	LOS	<	D	>	D	D	D	D	D	B	A		A		B	A	B	B
			Delay	<	36	>	36	45	48	36	44	13	7		7		15	6	15	13
			V/C	<	0.01	>		0.61	0.65	0.02		0.8	0.57				0.82	0		0.79
			Q	<	0	>		40	42	0		2	93				231	0		
			Stor.	<	-	>		-	-	60		65	-				-	15		
			Avail.	<	-	>		-	-	60		63	-				-	15		
	Trafalgar Rd & Hwy 407 EB Off	TCS	LOS	B		B	B						B		B		C		C	C
			Delay	15		16	16						12		12		30		30	22
			V/C	0.24		0.28							0.72				1.00			0.72
			Q	22		23							68				143			
	Trafalgar Rd & South Carpool Lot	TCS	LOS	B		B	B					A	B		B		B	A	B	B
			Delay	19		18	18					9	10		10		19	6	19	15
			V/C	0.07		0.04						0.16	0.64				0.93	0.01		0.65
			Q	9		6						4	66				142	2		
			Stor.	-		-						50	-				-	30		
			Avail.	-		-						46	-				-	28		
	Trafalgar Rd & William Halton Parkway	TCS	LOS	D	D	D	D	D	D	D	D	F	C	B	D	F	C	C	F	F
			Delay	39	42	38	41	41	47	52	48	136	26	18	39	800	31	21	191	111
			V/C	0.49	0.35	0.03		0.58	0.64	0.69		1.10	0.58	0.03		2.69	0.79	0.24		1.89
			Q	31	50	1		52	91	99		98	119	0		324	185	29		
			Stor.	100	-	100		100	-	150		150	-	75		-	-	-		
			Avail.	0	-	99		48	-	51		52	-	75		-	-	-		
	Trafalgar Rd & Burhamthorpe Rd/Burnhamthorpe Rd	TCS	LOS	C	C	>	C	F	B	>	E	F	D	C	D	F	C	B	D	D
			Delay	30	23	>	25	130	18	>	67	186	46	32	50	122	29	19	41	43
			V/C	0.63	0.50	>		1.12	0.18	>		1.10	0.87	0.23		1.11	0.73	0.14		1.12
			Q	82	84	>		115	26	>		46	129	32		116	133	17		
			Stor.	30	-	>		15	-	>		60	-	60		60	-	60		
			Avail.	-52	-	>		-9	-	>		14	-	28		-56	-	43		

MOE - Measure of Effectiveness
LOS - Level of Service
Delay - Average Delay per Vehicle in Seconds
V/C - Volume to Capacity Ratio
Q - 95th Percentile Queue Length (m)
Stor. - Existing Storage (m)
Avail. - Available Storage (m)
TCS - Traffic Control Signal
< / > - Shared with through movement

TABLE 4.4B: 2041 BACKGROUND OPERATIONS – PM PEAK HOUR

Analysis Period	Intersection	Control Type	MOE	Direction/Movement/Approach																
				Eastbound				Westbound				Northbound				Southbound				Overall
				Left	Through	Right	Approach	Left	Through	Right	Approach	Left	Through	Right	Approach	Left	Through	Right	Approach	
PM Peak Hour	Trafalgar Rd & Lower Base Line	TCS	LOS	C	C	>	**C**	D	F	>	**F**	F	F	B	**F**	F	C	C	**D**	**F**
			Delay	30	31	>	**31**	43	123	>	**108**	143	109	19	**106**	114	35	21	**47**	**85**
			V/C	0.35	0.43	>		0.84	1.18	>		1.22	1.17	0.16		1.13	0.88	0.08		**1.23**
			Q	14	36	>		62	155	>		143	201	14		100	109	5		
			Stor.	45	-	>		110	-	>		90	-	90		90	-	90		
			Avail.	31	-	>		48	-	>		-53	-	76		-10	-	85		
	Trafalgar Rd & North Carpool Lot/Hwy 407 WB Off	TCS	LOS	<	C	>	**C**	D	D	C	**D**	A	B		**B**		B	A	**B**	**B**
			Delay	<	32	>	**32**	45	49	35	**44**	9	13		**13**		11	7	**11**	**16**
			V/C	<	0.04	>		0.71	0.75	0.30		0.09	0.80				0.56	0.00		**0.82**
			Q	<	6	>		68	72	33		3	181				108	0		
			Stor.	<	-	>		-	-	60		65	-				-	15		
			Avail.	<	-	>		-	-	27		62	-				-	15		
	Trafalgar Rd & Hwy 407 EB Off	TCS	LOS	B		C	**B**						B		**B**		B		**B**	**B**
			Delay	20		20	**20**						17		**17**		12		**12**	**15**
			V/C	0.18		0.22							0.90				0.75			**0.68**
			Q	19		21							126				87			
	Trafalgar Rd & South Carpool Lot	TCS	LOS	C		C	**C**					B	B		**B**		A	A	**A**	**B**
			Delay	28		28	**28**					13	11		**11**		9	4	**9**	**11**
			V/C	0.08		0.04						0.26	0.78				0.68	0.01		**0.61**
			Q	11		7						6	119				89	2		
			Stor.	-		-						50	-				-	30		
			Avail.	-		-						44	-				-	28		
	Trafalgar Rd & William Halton Parkway	TCS	LOS	F	D	D	**F**	D	D	F	**F**	D	D	C	**D**	F	C	C	**F**	**F**
			Delay	340	45	38	**118**	55	51	148	**90**	39	37	21	**36**	597	32	22	**143**	**96**
			V/C	1.60	0.59	0.12		0.78	0.79	1.17		0.70	0.81	0.03		2.20	0.74	0.14		**1.91**
			Q	139	93	18		57	1128	240		40	178	0		259	162	19		
			Stor.	100	-	100		100	-	150		150	-	75		-	-	-		
			Avail.	-39	-	82		43	-	-90		110	-	75		-	-	-		
	Trafalgar Rd & Burhamthorpe Rd/Burnhamthorpe Rd	TCS	LOS	F	D	>	**F**	F	D	>	**F**	F	C	B	**C**	F	B	A	**C**	**E**
			Delay	479	37	>	**125**	448	41	>	**148**	93	23	16	**26**	127	12	9	**25**	**59**
			V/C	1.86	0.55	>		1.85	0.71	>		0.95	0.66	0.17		1.11	0.50	0.16		**1.35**
			Q	88	74	>		149	95	>		66	120	23		104	77	16		
			Stor.	30	-	>		15	-	>		60	-	60		60	-	60		
			Avail.	-58	-	>		-134	-	>		-6	-	37		-44	-	44		

MOE - Measure of Effectiveness
LOS - Level of Service
Delay - Average Delay per Vehicle in Seconds
V/C - Volume to Capacity Ratio
Q - 95th Percentile Queue Length (m)
Stor. - Existing Storage (m)
Avail. - Available Storage (m)
TCS - Traffic Control Signal
< / > - Shared with through movement

4.3.3 Total Operations – 2031

Table 4.5 summarizes the level of service conditions for Scenario A under 2031 total traffic conditions. The road improvements noted in **Section 4.1** and new roads identified in **Section 3.1** along with optimized signal timings have been assumed. The following critical movements are noted:

- **Trafalgar Road and Lower Base Line:**
  - Overall – v/c ratio greater than 1.00 during AM and PM peak hours;
  - Eastbound through/right-turn – LOS F and v/c ratio greater than 1.00 during AM peak hour;
  - Westbound left-turn – LOS E and v/c ratio of 0.98 during AM peak hour;
  - Westbound through/right-turn – LOS E and v/c ratio greater than 1.00 during PM peak hour;
  - Northbound left-turn – LOS E and v/c ratio of 0.99 during PM peak hour;
  - Northbound through – LOS E and v/c ratio of 0.98 during AM peak hour; and
  - Southbound left-turn – LOS F and v/c ratio greater than 1.00 during AM and PM peak hours.
- **Trafalgar Road and William Halton Parkway:**
  - Overall – v/c ratio greater than 1.00 during PM peak hour;
  - Eastbound left-turn – LOS F and v/c ratio greater than 1.00 during PM peak hour
  - Northbound through – LOS E and v/c ratio greater than 1.00 during PM peak hour; and
  - Southbound left-turn – LOS E and v/c ratio of 0.97 during AM peak hour and LOS F and v/c ratio greater than 1.00 during PM peak hour
- **Trafalgar Road and Burnhamthorpe Road:**
  - Overall – v/c ratio greater than 1.00 during PM peak hour;
  - Eastbound left-turn – LOS F and v/c ratio of 0.98 during PM peak hour;
  - Westbound left-turn – LOS F and v/c ratio greater than 1.00 during PM peak hour; and

- Southbound left-turn – LOS F and v/c ratio greater than 1.00 during PM peak hour.

Appendix G1 contains the detailed Synchro reports.

The new municipal roads are forecast to operate with acceptable levels of service during the AM and PM peak hours except for Street A and Street C with approaches operating at LOS D and v/c ratio of 0.90 during the PM peak hours. This is likely to the high forecast site generated traffic volumes to/from Block 1. Consideration of the driveways in relation to the intersection of Street A and Street C should be considered in the final design of Block 1.

The capacity issues experienced under the background traffic horizon are expected to continue to occur with or without the first phase of development of the subject site. Site traffic impacts are minimal with minor changes in delay at the study area intersections.

TABLE 4.5A: 2031 TOTAL OPERATIONS – AM PEAK HOUR

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	Trafalgar Rd & Lower Base Line	TCS	LOS	D	F	>	F	E	C	>	E	C	E	C	D	F	C	B	D	D
			Delay	35	93	>	84	80	35	>	56	24	56	29	52	94	24	15	38	52
			V/C	0.40	1.04	>		0.98	0.19	>		0.28	0.98	0.16		1.04	0.68	0.01		1.04
			Q	36	128	>		98	21	>		9	176	18		158	130	0		
			Stor.	45	-	>		110	-	>		90	-	90		90	-	90		
			Avail.	9	-	>		12	-	>		81	-	72		-68	-	90		
	Trafalgar Rd & North Carpool Lot/Hwy 407 WB Off	TCS	LOS	<	D	>	D	D	D	D	D	B	A		A		B	A	B	B
			Delay	<	53	>	53	51	54	40	52	12	9		9		14	7	13	14
			V/C	<	0.01	>		0.63	0.67	0.01		0.06	0.54				0.67	0.00		0.67
			Q	<	0	>		51	53	0		2	103				165	0		
			Stor.	<	-	>		-	-	60		65	-				-	15		
			Avail.	<	-	>		-	-	60		63	-				-	15		
	Trafalgar Rd & Hwy 407 EB Off	TCS	LOS	D		D	D						A		A		A		A	A
			Delay	44		46	45						5		5		7		7	9
			V/C	0.57		0.60							0.47				0.65			0.65
			Q	49		49							62				105			
	Trafalgar Rd & Street A	TCS	LOS	D	A	D	D	E	A	D	D	B	B	B	B	D	A	A	B	B
			Delay	50	0	49	49	66	0	38	47	12	17	14	17	40	9	4	12	18
			V/C	0.14	0.00	0.01		0.72	0.00	0.58		0.16	0.54	0.21		0.78	0.62	0.01		0.77
			Q	16	0	0		61	0	80		3	133	33		82	130	0		
			Stor.	-	-	-		-	-	-		50	-	-		-	-	30		
			Avail.	-	-	-		-	-	-		47	-	-		-	-	30		
	Trafalgar Rd & William Halton Parkway	TCS	LOS	E	D	D	D	E	E	D	D	D	D	C	D	E	C	C	D	D
			Delay	56	47	43	49	57	55	45	53	50	48	32	48	77	32	23	39	45
			V/C	0.73	0.41	0.03		0.76	0.74	0.22		0.79	0.82	0.03		0.97	0.82	0.23		0.89
			Q	43	57	0		68	105	25		64	153	0		190	171	30		
			Stor.	100	-	100		100	-	150		150	-	75		-	-	-		
			Avail.	0	-	100		32	-	125		86	-	75		-	-	-		
	Trafalgar Rd & Burhamthorpe Rd	TCS	LOS	D	E	>	E	D	D	>	D	C	D	C	D	D	C	C	C	D
			Delay	36	63	>	55	53	50	>	51	33	44	32	43	52	29	20	31	41
			V/C	0.57	0.86	>		0.76	0.38	>		0.35	0.77	0.13		0.76	0.64	0.12		0.80
			Q	73	123	>		79	46	>		13	137	18		93	131	16		
			Stor.	30	-	>		15	-	>		60	-	60		60	-	60		
			Avail.	-43	-	>		-9	-	>		47	-	42		-33	-	44		
	Street A & Street C	TWSC	LOS	<	B	>	B	<	B	>	B	<	B	>	B	<	A	>	A	B
			Delay	<	15	>	15	<	10	>	10	<	14	>	14	<	10	>	10	13
			V/C	<	0.58	>		<	0.18	>		<	0.47	>		<	0.14	>		
			Q	<	-	>		<	-	>		<	-	>		<	-	>		
			Stor.	<	-	>		<	-	>		<	-	>		<	-	>		
			Avail.	<	-	>		<	-	>		<	-	>		<	-	>		
	Street A & Street D	TWSC	LOS	<	A	>	A	<	A	>	A	<	B	>	B	<	A	>	A	A
			Delay	<	8	>	8	<	0	>	0	<	15	>	15	<	10	>	10	10
			V/C	<	0.12	>		<	0.00	>		<	0.17	>		<	0.12	>		
			Q	<	3	>		<	0	>		<	5	>		<	3	>		
			Stor.	<	-	>		<	-	>		<	-	>		<	-	>		
			Avail.	<	-	>		<	-	>		<	-	>		<	-	>		
	Street D & Street B	TWSC	LOS	<	A	>	A	<	A	>	A	<	A	>	A	<	A	>	A	A
			Delay	<	9	>	9	<	0	>	0	<	2	>	2	<	0	>	0	6
			V/C	<	0.12	>		<	0.00	>		<	0.01	>		<	0.00	>		
			Q	<	3	>		<	0	>		<	0	>		<	0	>		
			Stor.	<	-	>		<	-	>		<	-	>		<	-	>		
			Avail.	<	-	>		<	-	>		<	-	>		<	-	>		
	William Halton Parkway & Street C / ARGO Lands	TWSC	LOS		A	A	A		A	A	A			B	B			B	B	A
			Delay		0	0	0		0	0	0			11	11			10	10	1
			V/C		0.31	0.20			0.44	0.22				0.13				0.04		
			Q		0	0			0	0				4				1		
			Stor.		-	>			-	>				-				-		
			Avail.		-	>			-	>				-				-		
	William Halton Parkway & Street D / ARGO Lands	TCS	LOS	A	B	>	B	B	B	>	B	C	B	>	B	B	B	>	B	B
			Delay	10	12	>	12	12	12	>	12	20	12	>	18	13	12	>	12	13
			V/C	0.15	0.55	>		0.26	0.52	>		0.71	0.10	>		0.17	0.02	>		0.62
			Q	9	55	>		13	52	>		45	8	>		11	2	>		
			Stor.	30	-	>		15	-	>		15	-	>		15	-	>		
			Avail.	21	-	>		-9	-	>		-9	-	>		-9	-	>		

MOE - Measure of Effectiveness
LOS - Level of Service
Delay - Average Delay per Vehicle in Seconds
V/C - Volume to Capacity Ratio
Q - 95th Percentile Queue Length (m)
Stor. - Existing Storage (m)
Avail. - Available Storage (m)
TCS - Traffic Control Signal
< / > - Shared with through movement

TABLE 4.5B: 2031 TOTAL OPERATIONS – PM PEAK HOUR

Analysis Period	Intersection	Control Type	MOE	Direction/Movement/Approach																
				Eastbound				Westbound				Northbound				Southbound				Overall
				Left	Through	Right	Approach	Left	Through	Right	Approach	Left	Through	Right	Approach	Left	Through	Right	Approach	
PM Peak Hour	Trafalgar Rd & Lower Base Line	TCS	LOS	D	D	>	D	D	E	>	E	E	D	C	D	F	C	C	D	D
			Delay	43	44	>	44	44	80	>	73	77	37	20	41	89	34	23	42	47
			V/C	0.38	0.42	>		0.77	1.02	>		0.99	0.91	0.20		1.00	0.73	0.07		1.01
			Q	16	41	>		66	154	>		136	186	18		103	124	7		
			Stor.	45	-	>		110	-	>		90	-	90		90	-	90		
			Avail.	29	-	>		44	-	>		-46	-	72		-13	-	83		
	Trafalgar Rd & North Carpool Lot/Hwy 407 WB Off	TCS	LOS	<	C	>	C	D	D	C	D	A	B		B		B	A	B	B
			Delay	<	32	>	32	45	48	34	44	8	12		12		11	7	11	15
			V/C	<	0.03	>		0.70	0.74	0.22		0.06	0.74				0.53	0.00		0.77
			Q	<	3	>		68	71	25		2	156				100	0		
			Stor.	<	-	>		-	-	60		65	-				-	15		
			Avail.	<	-	>		-	-	35		63	-				-	15		
	Trafalgar Rd & Hwy 407 EB Off	TCS	LOS	B		C	C						B		B		B		B	B
			Delay	19		22	21						15		15		11		11	14
			V/C	0.15		0.37							0.85				0.72			0.70
			Q	17		32							112				81			
	Trafalgar Rd & Street A	TCS	LOS	D	A	D	D	E	A	D	D	B	D	C	C	E	B	A	C	C
			Delay	46	0	42	44	74	0	38	50	16	37	21	35	67	12	7	21	31
			V/C	0.10	0.00	0.01		0.84	0.00	0.70		0.12	0.91	0.29		0.91	0.57	0.01		0.92
			Q	14	0	0		87	0	112		3	264	50		133	124	0		
			Stor.	-	-	-		-	-	-		50	-	-		-	-	30		
			Avail.	-	-	-		-	-	-		47	-	-		-	-	30		
	Trafalgar Rd & William Halton Parkway	TCS	LOS	F	D	D	E	D	E	E	E	D	E	C	E	F	C	C	D	E
			Delay	113	47	39	64	46	63	63	60	45	72	31	69	124	33	23	49	60
			V/C	1.06	0.63	0.12		0.72	0.88	0.81		0.72	1.02	0.03		1.10	0.72	0.12		1.08
			Q	130	98	19		55	137	133		42	215	0		167	151	17		
			Stor.	100	-	100		100	-	150		150	-	75		-	-	-		
			Avail.	-30	-	81		45	-	17		108	-	75		-	-	-		
	Trafalgar Rd & Burhamthorpe Rd	TCS	LOS	F	C	>	D	F	C	>	E	E	C	B	C	F	B	B	C	C
			Delay	108	31	>	48	133	33	>	59	75	29	20	31	93	15	11	23	35
			V/C	0.98	0.41	>		1.11	0.53	>		0.84	0.72	0.12		0.97	0.52	0.12		1.02
			Q	72	60	>		117	73	>		55	129	15		96	85	9		
			Stor.	30	-	>		15	-	>		60	-	60		60	-	60		
			Avail.	-42	-	>		-102	-	>		5	-	45		-36	-	51		
	Street A & Street C	TWSC	LOS	<	D	>	D	<	C	>	C	<	B	>	B	<	B	>	B	C
			Delay	<	39	>	39	<	15	>	15	<	15	>	15	<	14	>	14	24
			V/C	<	0.90	>		<	0.46	>		<	0.38	>		<	0.43	>		
			Q	<	-	>		<	-	>		<	-	>		<	-	>		
			Stor.	<	-	>		<	-	>		<	-	>		<	-	>		
			Avail.	<	-	>		<	-	>		<	-	>		<	-	>		
	Street A & Street D	TWSC	LOS	<	A	>	A	<	A	>	A	<	A	>	A	<	A	>	A	A
			Delay	<	9	>	9	<	8	>	0	<	8	>	8	<	9	>	9	9
			V/C	<	0.18	>		<	0.00	>		<	0.08	>		<	0.30	>		
			Q	<	-	>		<	-	>		<	-	>		<	-	>		
			Stor.	<	-	>		<	-	>		<	-	>		<	-	>		
			Avail.	<	-	>		<	-	>		<	-	>		<	-	>		
	Street D & Street B	TWSC	LOS	<	A	>	A	<	A	>	A	<	A	>	A	<	A	>	A	A
			Delay	<	9	>	9	<	0	>	0	<	3	>	3	<	0	>	0	5
			V/C	<	0.11	>		<	0.00	>		<	0.01	>		<	0.00	>		
			Q	<	3	>		<	0	>		<	0	>		<	0	>		
			Stor.	<	-	>		<	-	>		<	-	>		<	-	>		
			Avail.	<	-	>		<	-	>		<	-	>		<	-	>		
	William Halton Parkway & Street C / ARGO Lands	TWSC	LOS		A	A	A		A	A	A			A	A			A	A	A
			Delay		0	0	0		0	0	0			10	10			10	10	0
			V/C		0.37	0.25			0.57	0.29				0.05				0.5		
			Q		0	0			0	0				1				1		
			Stor.		-	>			-	>				-				-		
			Avail.		-	>			-	>				-				-		
	William Halton Parkway & Street D / ARGO Lands	TCS	LOS	B	B	>	B	B	B	>	B	C	B	>	C	B	B	>	B	B
			Delay	10	10	>	10	16	12	>	12	26	16	>	24	17	16	>	16	13
			V/C	0.20	0.51	>		0.49	0.64	>		0.73	0.05	>		0.27	0.05	>		0.67
			Q	8	50	>		29	69	>		45	7	>		17	6	>		
			Stor.	30	-	>		15	-	>		15	-	>		15	-	>		
			Avail.	22	-	>		-14	-	>		-30	-	>		-2	-	>		

MOE - Measure of Effectiveness
LOS - Level of Service
Delay - Average Delay per Vehicle in Seconds
V/C - Volume to Capacity Ratio
Q - 95th Percentile Queue Length (m)
Stor. - Existing Storage (m)
Avail. - Available Storage (m)
TCS - Traffic Control Signal
< / > - Shared with through movement

4.3.4 Total Operations – 2041

Table 4.6 summarizes the level of service conditions under 2041 total traffic conditions. The road improvements noted in **Section 4.1** and new roads identified in **Section 3.1** along with optimized signal timings have been assumed. The following critical movements are noted:

- **Trafalgar Road and Lower Base Line:**
  - Overall – v/c ratio greater than 1.00 during AM and PM peak hours;
  - Eastbound through/right-turn – LOS F and v/c ratio greater than 1.00 during AM peak hour;
  - Westbound left-turn – LOS F and v/c ratio greater than 1.00 during AM and PM peak hours;
  - Westbound through/right-turn – LOS F and v/c ratio greater than 1.00 during PM peak hour;
  - Northbound left-turn – LOS F and v/c ratio greater than 1.00 during PM peak hour;
  - Northbound through – LOS F and v/c ratio greater than 1.00 during AM and PM peak hours; and
  - Southbound left-turn – LOS F and v/c ratio greater than 1.00 during AM and PM peak hours.
- **Trafalgar Road and Highway 407 Westbound Ramp Terminal:**
  - Overall – v/c ratio greater than 1.00 during PM peak hour;
  - Westbound left and through movement with v/c ratio over MTO critical threshold of 0.75 during PM peak hour, however, no impact to ramp and mainline Highway 407;
  - Northbound through – LOS F and v/c ratio greater than 1.00 during the PM peak hour; and
  - Southbound through – LOS E and v/c ratio of 0.99 during the AM peak hour.
- **Trafalgar Road and Highway 407 Eastbound Ramp Terminal:**
  - Overall – v/c ratio greater than 1.00 during PM peak hour;
  - Eastbound right-turn with v/c ratio over MTO critical threshold of 0.75 during PM peak hour, however, no impact to ramp and mainline Highway 407;

- Northbound through – LOS E and v/c ratio greater than 1.00 during the PM peak hour; and
- Southbound through – LOS D and v/c ratio greater than 1.00 during the AM peak hour.

- **Trafalgar Road and Street A:**
  - Overall – v/c ratio greater than 1.00 during AM and PM peak hours;
  - Eastbound left-turn – LOS F and v/c ratio greater than 1.00 during AM peak hour;
  - Westbound left-turn – LOS F and v/c ratio greater than 1.00 during PM peak hour;
  - Westbound right-turn – LOS F and v/c ratio greater than 1.00 during PM peak hour;
  - Northbound through – LOS F and v/c ratio greater than 1.00 during PM peak hour; and
  - Southbound left-turn – LOS F and v/c ratio greater than 1.00 during AM and PM peak hours.
- **Trafalgar Road and William Halton Parkway:**
  - Overall – v/c ratio greater than 1.00 during AM and PM peak hours;
  - Eastbound left-turn – LOS F and v/c ratio greater than 1.00 during AM and PM peak hours;
  - Westbound left-turn – LOS F and v/c ratio greater than 1.00 during PM peak hour;
  - Northbound left-turn – LOS F and v/c ratio greater than 1.00 during AM peak hour;
  - Northbound through – LOS E and v/c ratio greater than 1.00 during AM peak hour. LOS F and v/c ratio greater than 1.00 during PM peak hour;
  - Southbound left-turn – LOS E and v/c ratio of 0.97 during AM peak hour and LOS F and v/c ratio greater than 1.00 during PM peak hour; and
  - Southbound through – LOS E/F and v/c ratio greater than 1.00 during AM and PM peak hours.
- **Trafalgar Road and Burnhamthorpe Road:**
  - Overall – v/c ratio greater than 1.00 during AM and PM peak hours;

- Eastbound left-turn – LOS F and v/c ratio greater of 0.99 during PM peak hour;
- Eastbound through/right-turn – LOS E and v/c ratio greater than 1.00 during AM peak hour and LOS F and v/c ratio of 0.99 during PM peak hour;
- Westbound left-turn – LOS F and v/c ratio of 0.98 during AM peak hour and LOS F and v/c ratio greater than 1.00 during PM peak hour;
- Westbound through/right-turn – LOS F and v/c ratio greater than 1.00 during PM peak hour
- Northbound left-turn – LOS F and v/c ratio greater than 1.00 during PM peak hour;
- Northbound through – LOS D and v/c ratio of 0.99 during AM peak hour and LOS E and v/c ratio greater than 1.00 during PM peak hour; and
- Southbound left-turn – LOS F and v/c ratio greater than 1.00 during AM and PM peak hour.

Appendix G2 contains the detailed Synchro reports.

The new municipal roads are forecast to operate with acceptable levels of service during the AM and PM peak hours except for Street A and Street C with approaches operating at LOS F during the PM peak hour. This is likely to the high forecast site generated traffic volumes to/from Block 1. Consideration of the driveways in relation to the intersection of Street A and Street C should be considered in the final design of Block 1.

The capacity issues experienced under the background traffic horizon are expected to continue to occur with or without the first phase of development of the subject site. Site traffic impacts are minimal with minor changes in delay at the study area intersections.

TABLE 4.6A: 2041 TOTAL OPERATIONS – AM PEAK HOUR

Analysis Period	Intersection	Control Type	MOE	Direction/Movement/Approach																
				Eastbound				Westbound				Northbound				Southbound				Overall
				Left	Through	Right	Approach	Left	Through	Right	Approach	Left	Through	Right	Approach	Left	Through	Right	Approach	
AM Peak Hour	Trafalgar Rd & Lower Base Line	TCS	LOS	C	F	>	F	F	D	>	F	C	F	C	F	F	C	B	E	F
			Delay	34	176	>	154	235	40	>	135	25	111	28	97	271	30	14	75	100
			V/C	0.49	1.26	>		1.39	0.26	>		0.34	1.15	0.36		1.48	0.88	0.02		1.45
			Q	44	169	>		147	26	>		10	257	47		225	196	0		
			Stor.	45	-	>		110	-	>		90	-	90		90	-	90		
			Avail.	1	-	>		-37	-	>		80	-	43		-135	-	90		
	Trafalgar Rd & North Carpool Lot/Hwy 407 WB Off	TCS	LOS	<	D	>	D	D	D	C	D	C	B		B		D	A	D	C
			Delay	<	50	>	50	46	49	33	47	26	19		19		36	9	36	29
			V/C	<	0.01	>		0.69	0.74	0.02		0.08	0.84				0.99	0.00		0.97
			Q	<	0	>		66	69	0		3	261				341	0		
			Stor.	<	-	>		-	-	60		65	-				-	15		
			Avail.	<	-	>		-	-	60		62	-				-	15		
	Trafalgar Rd & Hwy 407 EB Off	TCS	LOS	D		D	D						B		B		C		C	B
			Delay	36		37	36						11		11		22		22	18
			V/C	0.64		0.67							0.75				0.96			0.91
			Q	62		63							151				283			
	Trafalgar Rd & Street A	TCS	LOS	F	D	D	F	D	D	C	C	C	D	C	D	E	C	A	C	D
			Delay	177	44	50	120	50	44	26	33	31	43	24	41	64	27	9	31	42
			V/C	1.21	0.03	0.52		0.51	0.03	0.48		0.53	0.93	0.31		0.91	0.93	0.13		1.08
			Q	174	8	66		58	8	78		24	263	55		135	291	18		
			Stor.	-	-	-		-	-	-		50	-	-		-	-	30		
			Avail.	-	-	-		-	-	-		26	-	-		-	-	12		
	Trafalgar Rd & William Halton Parkway	TCS	LOS	F	D	D	F	D	D	D	D	F	E	C	F	F	E	C	F	F
			Delay	301	45	39	160	44	54	49	50	360	69	31	105	415	78	25	138	117
			V/C	1.54	0.50	0.05		0.71	0.75	0.54		1.66	1.01	0.04		1.80	1.07	0.31		1.68
			Q	216	72	4		66	106	72		140	210	0		332	304	45		
			Stor.	100	-	100		100	-	150		150	-	75		-	-	-		
			Avail.	0	-	96		34	-	78		10	-	75		-	-	-		
	Trafalgar Rd & Burhamthorpe Rd	TCS	LOS	D	E	>	E	F	D	>	D	D	D	C	D	F	C	B	D	D
			Delay	55	79	>	73	82	38	>	54	48	41	23	40	83	34	17	39	47
			V/C	0.90	1.03	>		0.98	0.48	>		0.81	0.93	0.17		1.02	0.92	0.16		1.05
			Q	76	127	>		75	43	>		54	140	19		118	161	17		
			Stor.	30	-	>		15	-	>		60	-	60		60	-	60		
			Avail.	-46	-	>		-9	-	>		6	-	41		-58	-	43		
	Trafalgar Rd & Loyalist Trail / ARGO Lands	TWSC	LOS			B	B			B	B		A	A	A		A	A	A	A
			Delay			13	13			10	10		0	0	0		0	0	0	1
			V/C			0.20				0.11			0.38	0.09			0.51	0.13		
			Q			5				3			0	0			0	0		
			Stor.			-				-			-	>			-	>		
			Avail.			-				-			-	>			-	>		
	Street A & Street C	TWSC	LOS	<	D	>	D	<	B	>	B	<	C	>	C	<	B	>	B	C
			Delay	<	34	>	34	<	12	>	12	<	16	>	16	<	10	>	10	22
			V/C	<	0.87	>		<	0.26	>		<	0.51	>		<	0.15	>		
			Q	<	-	>		<	-	>		<	-	>		<	-	>		
			Stor.	<	-	>		<	-	>		<	-	>		<	-	>		
			Avail.	<	-	>		<	-	>		<	-	>		<	-	>		
	Street A & Street D	TWSC	LOS	<	A	>	A	<	A	>	A	<	C	>	C	<	B	>	B	A
			Delay	<	5	>	5	<	0	>	0	<	19	>	19	<	11	>	11	8
			V/C	<	0.13	>		<	0.00	>		<	0.24	>		<	0.14	>		
			Q	<	3	>		<	0	>		<	7	>		<	4	>		
			Stor.	<	-	>		<	-	>		<	-	>		<	-	>		
			Avail.	<	-	>		<	-	>		<	-	>		<	-	>		
	Street A & Street E	TWSC	LOS	<	A	>	A	<	A	>	A	<	A	>	A	<	A	>	A	A
			Delay	<	5	>	5	<	0	>	0	<	10	>	10	<	10	>	10	7
			V/C	<	0.03	>		<	0.00	>		<	0.03	>		<	0.03	>		
			Q	<	1	>		<	0	>		<	1	>		<	1	>		
			Stor.	<	-	>		<	-	>		<	-	>		<	-	>		
			Avail.	<	-	>		<	-	>		<	-	>		<	-	>		

MOE - Measure of Effectiveness
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TCS - Traffic Control Signal
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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	Street D & Street B	TWSC	LOS	<	A	>	A	<	A	>	A	<	A	>	A	<	A	>	A	A
			Delay	<	9	>	9	<	10	>	10	<	1	>	1	<	2	>	2	6
			V/C	<	0.12	>		<	0.01	>		<	0.01	>		<	0.01	>		
			Q	<	3	>		<	0	>		<	0	>		<	0	>		
			Stor.	<	-	>		<	-	>		<	-	>		<	-	>		
			Avail.	<	-	>		<	-	>		<	-	>		<	-	>		
	Street E & Street B	TWSC	LOS	<	A	>	A	<	A	>	A	<	A	>	A	<	A	>	A	A
			Delay	<	9	>	9	<	9	>	9	<	1	>	1	<	3	>	3	3
			V/C	<	0.00	>		<	0.01	>		<	0.00	>		<	0.01	>		
			Q	<	0	>		<	0	>		<	0	>		<	0	>		
			Stor.	<	-	>		<	-	>		<	-	>		<	-	>		
			Avail.	<	-	>		<	-	>		<	-	>		<	-	>		
	William Halton Parkway & Street C / ARGO Lands	TWSC	LOS		A	A	A		A	A	A			B	B			B	B	A
			Delay		0	0	0		0	0	0			12	12			10	10	1
			V/C		0.43	0.27			0.50	0.25				0.16				0.04		
			Q		0	0			0	0				4				1		
			Stor.		-	>			-	>				-				-		
			Avail.		-	>			-	>				-				-		
	William Halton Parkway & Street D / ARGO Lands	TCS	LOS	B	B	>	B	B	B	>	B	C	B	>	C	B	B	>	B	B
			Delay	11	13	>	13	17	11	>	12	27	14	>	24	15	14	>	14	14
			V/C	0.23	0.67	>		0.39	0.54	>		0.77	0.12	>		0.19	0.03	>		0.71
			Q	10	70	>		14	53	>		55	11	>		13	3	>		
			Stor.	30	-	>		15	-	>		15	-	>		15	-	>		
			Avail.	20	-	>		1	-	>		-40	-	>		2	-	>		
	William Halton Parkway & Street E	TWSC	LOS	B	A		A		A	>	A					C		>	C	A
			Delay	10	0		0		0	>	0					21		>	21	0
			V/C	0.04	0.35				0.29	>						0.09		>		
			Q	1	0				0	>						2		>		
			Stor.	30	-				-	>						-		>		
			Avail.	29	-				-	>						-		>		
	William Halton Parkway & Street A / Street F	TWSC	LOS		A	A	A		A	A	A			B	B			B	B	A
			Delay		0	0	0		0	0	0			12	12			10	10	1
			V/C		0.34	0.18			0.45	0.26				0.16				0.04		
			Q		0	0			0	0				4				1		
			Stor.		-	>			-	>				-				-		
			Avail.		-	>			-	>				-				-		
	William Halton Parkway & West Drive	TCS	LOS		A	A	A	A	A		A	C		>	C					A
			Delay		6	5	6	5	7		7	20		>	20					9
			V/C		0.29	0.03		0.08	0.55			0.44		>						0.52
			Q		26	4		5	56			24		>						
			Stor.		-	>		15	-			15		>						
			Avail.		-	>		10	-			-9		>						
	Street F & Street G	TWSC	LOS	<	B	>	B	<	B	>	B	<	A	>	A	<	A	>	A	A
			Delay	<	12	>	12	<	12	>	12	<	4	>	4	<	7	>	7	9
			V/C	<	0.13	>		<	0.27	>		<	0.04	>		<	0.01	>		
			Q	<	3	>		<	8	>		<	1	>		<	0	>		
			Stor.	<	-	>		<	-	>		<	-	>		<	-	>		
			Avail.	<	-	>		<	-	>		<	-	>		<	-	>		
	West Drive & Street G	TWSC	LOS					A		>	A	<	A		A		A	>	A	A
			Delay					10		>	10	<	0		0		5	>	5	7
			V/C					0.27		>		<	0.04				0.04	>		
			Q					8		>		<	0				1	>		
			Stor.					-		>		<	-				-	>		
			Avail.					-		>		<	-				-	>		
	Loyalist Trail & Street F	TWSC	LOS	<	A		A		A	>	A					B		>	B	A
			Delay	<	2		2		0	>	0					11		>	11	1
			V/C	<	0.02				0.14	>						0.03		>		
			Q	<	0				0	>						1		>		
			Stor.	<	-				-	>						-		>		
			Avail.	<	-				-	>						-		>		
	Loyalist Trail & West Drive	AWSC	LOS	<	A	>	A	<	A	>	A	<	A	>	A	<	A	>	A	A
			Delay	<	8	>	8	<	8	>	8	<	8	>	8	<	8	>	8	8
			V/C	<	0.04	>		<	0.16	>		<	0.17	>		<	0.05	>		
			Q	<	-	>		<	-	>		<	-	>		<	-	>		
			Stor.	<	-	>		<	-	>		<	-	>		<	-	>		
			Avail.	<	-	>		<	-	>		<	-	>		<	-	>		
	Burnhamthorpe Rd & West Drive	TWSC	LOS	A	A		A		A	>	A					B		>	B	A
			Delay	9	0		0		0	>	0					15		>	15	1
			V/C	0.01	0.33				0.20	>						0.16		>		
			Q	0	0				0	>						4		>		
			Stor.	-	-				-	>						-		>		
			Avail.	-	-				-	>						-		>		

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TABLE 4.6B: 2041 TOTAL OPERATIONS – PM PEAK HOUR

Analysis Period	Intersection	Control Type	MOE	Direction/Movement/Approach																
				Eastbound				Westbound				Northbound				Southbound				Overall
				Left	Through	Right	Approach	Left	Through	Right	Approach	Left	Through	Right	Approach	Left	Through	Right	Approach	
PM Peak Hour	Trafalgar Rd & Lower Base Line	TCS	LOS	E	E	>	**E**	F	F	>	**F**	F	F	C	**F**	F	D	C	**E**	**F**
			Delay	58	59	>	**59**	93	163	>	**147**	226	104	25	**111**	209	49	25	**69**	**102**
			V/C	0.55	0.63	>		1.00	1.22	>		1.36	1.14	0.39		1.31	0.94	0.10		**1.31**
			Q	22	60	>		124	238	>		225	343	55		160	218	15		
			Stor.	45	-	>		110	-	>		90	-	90		90	-	90		
			Avail.	23	-	>		-14	-	>		-135	-	35		-70	-	75		
	Trafalgar Rd & North Carpool Lot/Hwy 407 WB Off	TCS	LOS	<	C	>	**C**	D	D	C	**D**	B	E		**E**		B	A	**B**	**D**
			Delay	<	26	>	**26**	45	53	29	**45**	14	73		**72**		17	8	**17**	**49**
			V/C	<	0.06	>		0.81	0.86	0.30		0.14	1.10				0.77	0.00		**1.02**
			Q	<	11	>		108	120	39		5	339				154	0		
			Stor.	<	-	>		-	-	60		65	-				-	15		
			Avail.	<	-	>		-	-	21		60	-				-	15		
	Trafalgar Rd & Hwy 407 EB Off	TCS	LOS	C		D	**D**						E		**E**		C		**C**	**D**
			Delay	28		49	**45**						58		**58**		25		**25**	**42**
			V/C	0.19		0.82							1.07				0.95			**1.00**
			Q	26		110							299				217			
	Trafalgar Rd & Street A	TCS	LOS	F	D	D	**F**	F	D	F	**F**	D	E	B	**E**	F	B	B	**D**	**E**
			Delay	206	48	44	**133**	128	48	106	**111**	49	77	16	**70**	159	19	10	**36**	**63**
			V/C	1.26	0.04	0.43		1.03	0.04	1.07		0.77	1.09	0.28		1.20	0.82	0.27		**1.23**
			Q	133	8	51		106	8	201		48	350	39		177	199	33		
			Stor.	-	-	-		-	-	-		50	-	-		-	-	30		
			Avail.	-	-	-		-	-	-		2	-	-		-	-	-3		
	Trafalgar Rd & William Halton Parkway	TCS	LOS	F	D	D	**F**	E	F	F	**F**	F	F	C	**F**	F	F	C	**F**	**F**
			Delay	547	52	41	**272**	65	93	217	**133**	318	160	32	**174**	476	127	30	**178**	**186**
			V/C	2.09	0.75	0.22		0.90	1.03	1.32		1.56	1.24	0.04		1.92	1.17	0.23		**1.99**
			Q	405	124	33		106	179	258		148	306	0		281	321	38		
			Stor.	100	-	100		100	-	150		150	-	75		-	-	-		
			Avail.	-305	-	67		-6	-	-108		2	-	75		-	-	-		
	Trafalgar Rd & Burhamthorpe Rd	TCS	LOS	F	F	>	**F**	F	F	>	**F**	F	D	C	**E**	F	D	C	**D**	**E**
			Delay	111	83	>	**89**	114	100	>	**103**	94	54	23	**56**	83	40	21	**44**	**63**
			V/C	0.99	0.99	>		1.07	1.07	>		1.02	1.00	0.16		0.99	0.93	0.22		**1.05**
			Q	61	108	>		104	143	>		114	213	20		130	191	28		
			Stor.	30	-	>		15	-	>		60	-	60		60	-	60		
			Avail.	-31	-	>		-89	-	>		-54	-	40		-70	-	32		
	Trafalgar Rd & Loyalist Trail / ARGO Lands	TWSC	LOS			B	**B**			B	**B**		A	A	**A**		A	A	**A**	**A**
			Delay			12	**12**			11	**11**		0	0	**0**		0	0	**0**	**1**
			V/C			0.25				0.11			0.48	0.12			0.50	0.19		
			Q			7				3			0	0			0	0		
			Stor.			-				-			-	>			-	>		
			Avail.			-				-			-	>			-	>		
	Street A & Street C	TWSC	LOS	<	F	>	**F**	<	D	>	**D**	<	C	>	**C**	<	C	>	**C**	**F**
			Delay	<	106	>	**106**	<	30	>	**30**	<	18	>	**18**	<	18	>	**18**	**54**
			V/C	<	1.14	>		<	0.77	>		<	0.46	>		<	0.51	>		
			Q	<	-	>		<	-	>		<	-	>		<	-	>		
			Stor.	<	-	>		<	-	>		<	-	>		<	-	>		
			Avail.	<	-	>		<	-	>		<	-	>		<	-	>		
	Street A & Street D	TWSC	LOS	<	A	>	**A**	<	A	>	**A**	<	C	>	**C**	<	B	>	**B**	**A**
			Delay	<	5	>	**5**	<	1	>	**1**	<	21	>	**21**	<	13	>	**13**	**10**
			V/C	<	0.09	>		<	0.01	>		<	0.28	>		<	0.39	>		
			Q	<	2	>		<	0	>		<	8	>		<	14	>		
			Stor.	<	-	>		<	-	>		<	-	>		<	-	>		
			Avail.	<	-	>		<	-	>		<	-	>		<	-	>		
	Street A & Street E	TWSC	LOS	<	A	>	**A**	<	A	>	**A**	<	A	>	**A**	<	A	>	**A**	**A**
			Delay	<	5	>	**5**	<	0	>	**0**	<	9	>	**9**	<	10	>	**10**	**8**
			V/C	<	0.01	>		<	0.00	>		<	0.03	>		<	0.06	>		
			Q	<	0	>		<	0	>		<	1	>		<	1	>		
			Stor.	<	-	>		<	-	>		<	-	>		<	-	>		
			Avail.	<	-	>		<	-	>		<	-	>		<	-	>		

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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
PM Peak Hour	Street D & Street B	TWSC	LOS	<	A	>	**A**	<	B	>	**B**	<	A	>	**A**	<	A	>	**A**	**A**
			Delay	<	10	>	**10**	<	10	>	**10**	<	2	>	**2**	<	0	>	**0**	**6**
			V/C	<	0.13	>		<	0.07	>		<	0.01	>		<	0.00	>		
			Q	<	3	>		<	2	>		<	0	>		<	0	>		
			Stor.	<	-	>		<	-	>		<	-	>		<	-	>		
			Avail.	<	-	>		<	-	>		<	-	>		<	-	>		
	Street E & Street B	TWSC	LOS	<	A	>	**A**	<	A	>	**A**	<	A	>	**A**	<	A	>	**A**	**A**
			Delay	<	9	>	**9**	<	9	>	**9**	<	1	>	**1**	<	1	>	**1**	**4**
			V/C	<	0.01	>		<	0.04	>		<	0.00	>		<	0.00	>		
			Q	<	0	>		<	1	>		<	0	>		<	0	>		
			Stor.	<	-	>		<	-	>		<	-	>		<	-	>		
			Avail.	<	-	>		<	-	>		<	-	>		<	-	>		
	William Halton Parkway & Street C / ARGO Lands	TWSC	LOS		A	A	**A**		A	A	**A**			B	**B**			B	**B**	**A**
			Delay		0	0	**0**		0	0	**0**			10	**10**			10	**10**	**0**
			V/C		0.47	0.30			0.69	0.36				0.05				0.06		
			Q		0	0			0	0				1				1		
			Stor.		-	>			-	>				-				-		
			Avail.		-	>			-	>				-				-		
	William Halton Parkway & Street D / ARGO Lands	TCS	LOS	B	B	>	**B**	C	B	>	**B**	D	C	>	**D**	C	C	>	**C**	**B**
			Delay	14	11	>	**11**	23	13	>	**13**	44	23	>	**40**	25	23	>	**24**	**16**
			V/C	0.32	0.57	>		0.60	0.69	>		0.83	0.05	>		0.31	0.12	>		**0.73**
			Q	11	72	>		38	100	>		71	9	>		24	14	>		
			Stor.	30	-	>		15	-	>		15	-	>		15	-	>		
			Avail.	19	-	>		-23	-	>		-56	-	>		-9	-	>		
	William Halton Parkway & Street E	TWSC	LOS	B	A		**A**		A	>	**A**					F		>	**F**	**A**
			Delay	14	0		**0**		0	>	**0**					89		>	**89**	**2**
			V/C	0.03	0.36				0.60	>						0.68		>		
			Q	1	0				0	>						27		>		
			Stor.	30	-				-	>						-		>		
			Avail.	29	-				-	>						-		>		
	William Halton Parkway & Street A / Street F	TWSC	LOS		A	A	**A**		A	A	**A**			B	**B**			A	**A**	**A**
			Delay		0	0	**0**		0	0	**0**			11	**11**			10	**10**	**0**
			V/C		0.63	0.33			0.47	0.33				0.15				0.03		
			Q		0	0			0	0				4				1		
			Stor.		-	>			-	>				-				-		
			Avail.		-	>			-	>				-				-		
	William Halton Parkway & West Drive	TCS	LOS		B	A	**B**	B	B		**B**	C		>	**C**					**B**
			Delay		16	9	**16**	18	15		**15**	25		>	**25**					**17**
			V/C		0.77	0.04		0.39	0.72			0.79		>						**0.78**
			Q		88	6		16	77			65		>						
			Stor.		-	>		15	-			-		>						
			Avail.		-	>		-1	-			-		>						
	Street F & Street G	TWSC	LOS	<	B	>	**B**	<	B	>	**B**	<	A	>	**A**	<	A	>	**A**	**A**
			Delay	<	14	>	**14**	<	13	>	**13**	<	3	>	**3**	<	4	>	**4**	**7**
			V/C	<	0.20	>		<	0.23	>		<	0.06	>		<	0.02	>		
			Q	<	6	>		<	7	>		<	1	>		<	0	>		
			Stor.	<	-	>		<	-	>		<	-	>		<	-	>		
			Avail.	<	-	>		<	-	>		<	-	>		<	-	>		
	West Drive & Street G	TWSC	LOS					B		>	**B**	<	A		**A**		A	>	**A**	**A**
			Delay					11		>	**11**	<	0		**0**		6	>	**6**	**6**
			V/C					0.32		>		<	0.13				0.07	>		
			Q					10		>		<	0				2	>		
			Stor.					-		>		<	-				-	>		
			Avail.					-		>		<	-				-	>		
	Loyalist Trail & Street F	TWSC	LOS	<	A		**A**		A	>	**A**					B		>	**B**	**A**
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			V/C	<	0.07				0.19	>						0.08		>		
			Q	<	2				0	>						2		>		
			Stor.	<	-				-	>						-		>		
			Avail.	<	-				-	>						-		>		
	Loyalist Trail & West Drive	AWSC	LOS	<	A	>	**A**	<	A	>	**A**	<	A	>	**A**	<	A	>	**A**	**A**
			Delay	<	9	>	**9**	<	9	>	**9**	<	10	>	**10**	<	8	>	**8**	**9**
			V/C	<	0.19	>		<	0.23	>		<	0.34	>		<	0.04	>		
			Q	<	-	>		<	-	>		<	-	>		<	-	>		
			Stor.	<	-	>		<	-	>		<	-	>		<	-	>		
			Avail.	<	-	>		<	-	>		<	-	>		<	-	>		
	Burnhamthorpe Rd & West Drive	TWSC	LOS	B	A		**A**		A	>	**A**					C		>	**C**	**A**
			Delay	10	0		**1**		0	>	**0**					21		>	**21**	**1**
			V/C	0.08	0.21				0.32	>						0.24		>		
			Q	2	0				0	>						7		>		
			Stor.	-	-				-	>						-		>		
			Avail.	-	-				-	>						-		>		

MOE - Measure of Effectiveness
LOS - Level of Service
Delay - Average Delay per Vehicle in Seconds
V/C - Volume to Capacity Ratio
Q - 95th Percentile Queue Length (m)
Stor. - Existing Storage (m)
Avail. - Available Storage (m)
TCS - Traffic Control Signal
< / > - Shared with through movement

5 Remedial Measures

Deficiencies currently exist at certain locations, primarily along the Trafalgar Road corridor, and they can be expected to persist in the future with anticipated growth in traffic independent of the subject development.

Due to the high levels of congestion occurring, further remedial measures to improve intersection capacity are not likely to be implemented. This aligns with the Towns focus where future improvements to the transportation network should be focused on public transit and active transportation (AT) infrastructure to reduce the use of single-occupant vehicles and create a balanced transportation system.

By shifting commuter travel to public transit and AT, intersection operations could be expected to maintain the status-quo (capacity constraint during peak hours) or possibly improve if fewer vehicles transverse the intersections during the peak hours of a typical weekday.

It is recommended that Halton Region and the Town of Oakville prioritize public transit and active transportation modes along the Trafalgar Road corridor to reduce the need for single-occupant vehicles.

The following provides a high-level assessment of potential mitigation measures for each intersection in the study area.

5.1 Existing Intersections

5.1.1 Trafalgar Road and Lower Base Line Road

The intersection of Trafalgar Road and Lower Base Line Road is forecast to experience delay and capacity constraints under future background and total traffic conditions.

Dual left-turn lanes are typically required when there are over 300 vehicles per hour making the turn. The following exclusive left-turn movements will require dualling:

- Southbound left-turn – 2031 horizon
- Northbound left-turn – 2031 horizon; and
- Westbound left-turn – 2041 horizon.

The road authorities should monitor future traffic volumes at this intersection and plan for including second left-turn lanes for the movements noted about along with optimizing the signal timings where possible.

5.1.2 Trafalgar Road and Highway 407 Ramp Terminals

Trafalgar Road southbound (AM peak hour) and northbound (PM peak hour) are forecast to experience capacity issues during the 2041 horizon year at the Highway 407 ramp terminals. Optimizing the signal timings would mitigate the capacity issues on Trafalgar Road.

The road authorities should monitor future traffic volumes at this intersection and optimize the signal timings where possible.

5.1.3 Trafalgar Road and Street A

This intersection is currently a signalized intersection with Trafalgar Road and the existing MTO carpool lot on the west side of the roadway. During the 2031 horizon and the initial phases of the subject site, a new roadway is proposed to connect to this intersection. This will require a southbound left-turn lane (possible dual left-turn lanes with over 300 vehicles per hour in both the AM and PM peak hours) and a northbound right-turn lane.

The east leg of the intersection (westbound approach) would require a separate left-turn lane and a through/turn lane to accommodate the site generated traffic volumes.

5.1.4 Trafalgar Road and William Halton Parkway

The intersection of Trafalgar Road and William Halton Parkway is forecast to experience delay and capacity constraints under future background and total traffic conditions.

The southbound left-turn is forecast to have over 300 vehicles per hour in both the AM and PM peak hours under future 2031 and 2041 background conditions. The eastbound left-turn is forecast to have over 300 vehicles per hour in both the AM and PM peak hours under future 2041 total traffic conditions. Dual left-turn lanes are recommended under the following horizons:

- Southbound left-turn – 2031 horizon; and
- Eastbound left-turn – 2041 horizon.

The road authorities should monitor future traffic volumes at this intersection and plan for including second left-turn lanes for the

movements noted about along with optimizing the signal timings where possible.

5.1.5 Trafalgar Road and Burnhamthorpe Road

The intersection of Trafalgar Road and Burnhamthorpe Road is forecast to experience delay and capacity constraints under future background and total traffic conditions.

The road authorities should monitor future traffic volumes at this intersection and optimize the signal timings where possible.

5.2 New Intersections

5.2.1 Trafalgar Road and Loyalist Trail/ARGO Lands

This is a proposed right-in/right-out only intersection to Trafalgar Road between William Halton Parkway and Burnhamthorpe Road. The east leg is proposed for the 2031 horizon for the ARGO Lands while the west leg is proposed for the 2041 horizon for the later stages of the subject site.

Exclusive right-turn lanes on Trafalgar Road would be required for both the northbound and southbound approaches to accommodate the forecast traffic volumes.

5.2.2 William Halton Parkway and Street C/ARGO Lands

This is a proposed right-in/right-out only intersection to William Halton Parkway approximately 100 to 150 metres east of Trafalgar Road. Both the north and south legs are proposed for the 2031 horizon year. Eastbound and westbound left-turn lanes on William Halton Parkway would likely be required to accommodate the forecast traffic volumes.

5.2.3 William Halton Parkway and ARGO Lands/Street D

This is a proposed all-moves intersection located approximately 300 metres east of Trafalgar Road. Due to forecast high left-turns from the lands to the south and north, it is recommended that this intersection be controlled by traffic signals. Exclusive left-turn lanes for the eastbound and westbound approaches would be required on William Halton Parkway starting from the 2031 horizon to accommodate traffic generated by both the ARGO Lands development and the subject site.

5.2.4 William Halton Parkway and Street E

This is a proposed all-moves intersection located approximately 600 metres east of Trafalgar Road. The minor leg would be from the north

to service the planned employment lands of the subject development during the 2041 horizon. This was analyzed as a stop-control intersection for the minor leg under 2041 total traffic conditions. The operations showed acceptable levels of service for the AM and PM peak hour.

5.2.5 William Halton Parkway and Street A/Street F

This is a proposed right-in/right-out only intersection to William Halton Parkway approximately 100 to 150 metres west of Trafalgar Road. Both the north and south legs are proposed for the 2041 horizon year. The forecast right-turns on William Halton Parkway are not expected to warrant exclusive right-turn lanes.

5.2.6 William Halton Parkway and West Drive

This is a proposed all-moves intersection to William Halton Parkway approximately 300 to 400 metres west of Trafalgar Road. It was analyzed with traffic signals as traffic control along with exclusive left-turn lane on William Halton Parkway. This intersection is required for the 2041 horizon year.

5.2.7 Burnhamthorpe Road and West Drive

This is a proposed all-moves intersection for the 2041 horizon year. It was analyzed as stop-control for the minor approach. The forecast eastbound left-turn volumes would not likely warrant left-turn lanes. The westbound right-turn volumes would warrant exclusive right-turn lane on Burnhamthorpe Road.

5.2.8 Internal Intersections

All internal intersections are forecast to operate with acceptable levels of service under 2031 and 2041 future traffic conditions with stop-control except for Street A and Street C.

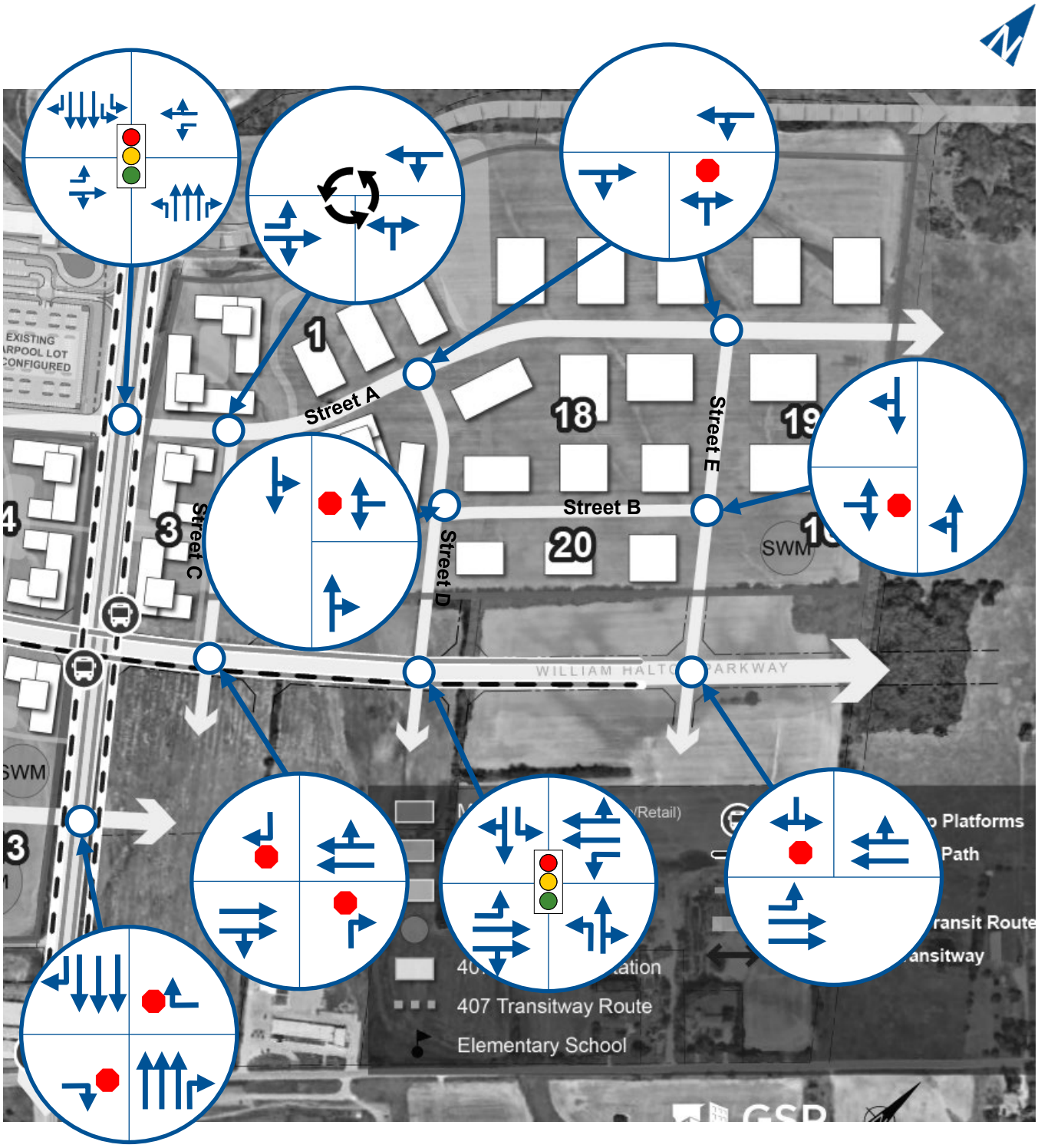
The intersection of Street A and Street C is forecast to operate with tall approaches operating in the LOS E/F range and capacity constraints. This is likely due to the north leg operating as the driveway to the large Block 1. As the driveways to Block 1 have not been identified, this could impact the operations of the intersection.

A possible mitigation measure could be a roundabout at Street A and Street C. This would improve operations for the northbound approach and act as a gateway into the new development.

Street A between Trafalgar Road and Street C should also have two lanes per direction to accommodate the forecast traffic demand.

Figure 5.1 and **Figure 5.2** illustrates the proposed lane configuration and traffic control for the study area.

It is recommended that each separate development parcel have a detailed Transportation Impact Study and Transit Facilities Plan prepared as part of Zoning Bylaw Amendment or Site Plan Application submission to confirm or refine the recommended lane configurations and traffic control.



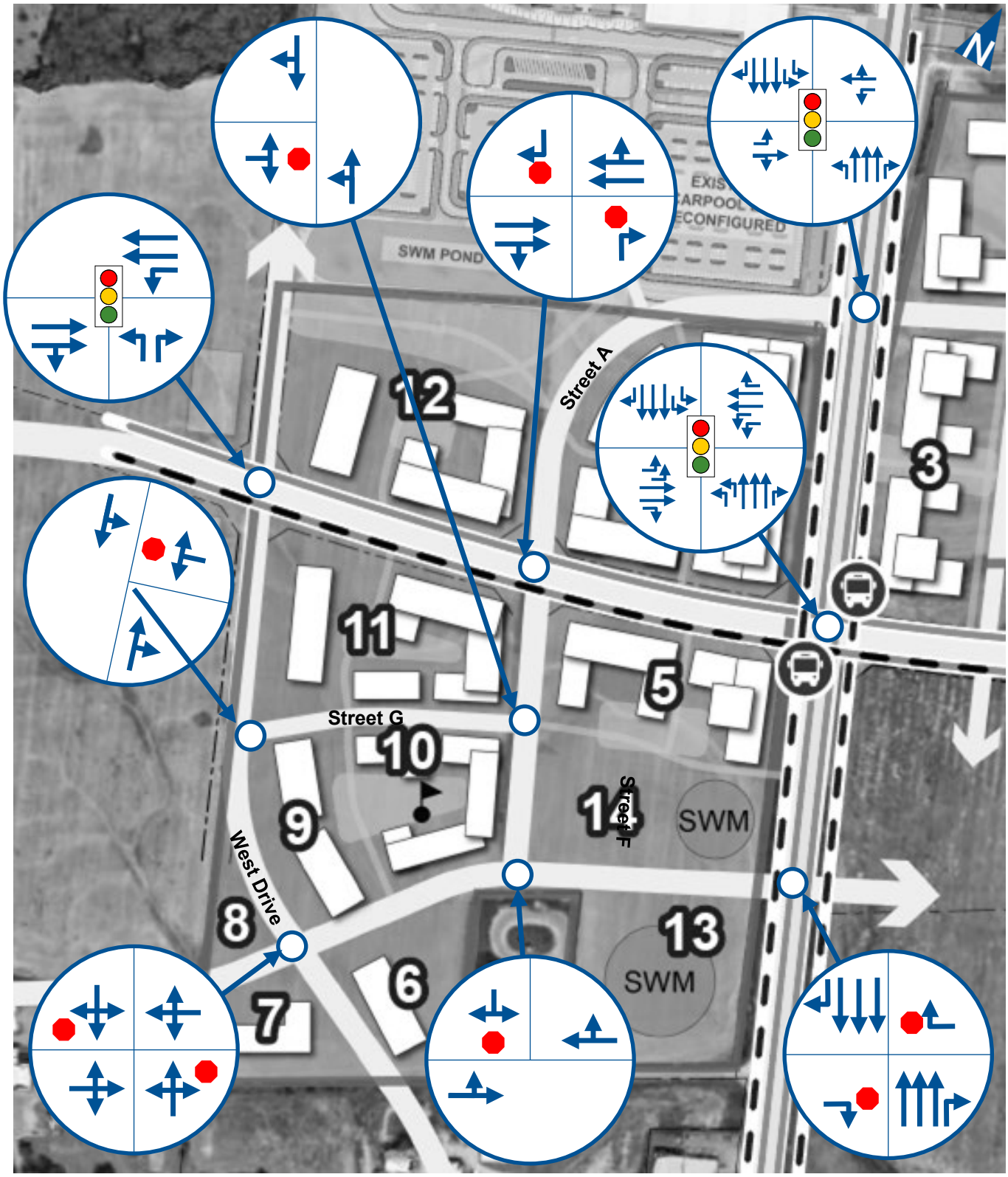
NTS

paradigm TRANSPORTATION SOLUTIONS LIMITED

Proposed Lane Configuration & Traffic Control East Side

IO Trafalgar & 407 Oakville, ON TIS
210156/210157

Figure 5.1



paradigm
TRANSPORTATION SOLUTIONS LIMITED

Proposed Lane Configuration & Traffic Control West Side

IO Trafalgar & 407 Oakville, ON TIS
210156/210157

Figure 5.2

6 Conclusions and Recommendations

6.1 Conclusions

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

- **Existing Traffic Operations:** Capacity issues are identified along the Trafalgar Road corridor. Trafalgar Road has over 30,000 vehicles per day near the Highway 407 Ramp terminal which reflects the higher end of the capacity of an arterial road.
- **Estimated Site Generated Traffic:** Based on the illustrative concept plan, the subject site, following 2031 build-out, is estimated to generate approximately 1,154 vehicle trips during the AM peak hour and 1,438 vehicle trips during the PM peak hour. Following 2041 build-out, it is estimated to generate a total of 3,190 vehicle trips during the AM peak hour and 4,069 vehicle trips during the trips during the PM peak hour.
- **Background Traffic Operations:** As the traffic volumes increase at the study area intersections, capacity issues continue along Trafalgar Road. Under the 2031 and 2041 background horizon years, Trafalgar Road, near the Highway 407 ramp terminal, is forecast to have more than 38,000 and 47,000 vehicles per day.
- **Total Traffic Operations:** The capacity deficiencies identified under background conditions will continue to occur with the addition of site generated traffic. With the addition of the site generated traffic for the 2031 and 2041 total horizon years, Trafalgar Road, near the Highway 407 ramp terminal, is forecast to have more than 47,000 and 64,000 vehicles per day, respectively.
- The level of development proposed results in poor operations throughout the network. The transportation network cannot support the level of development without major infrastructure improvements to increase capacity, or significant shift towards alternative mode support.

6.2 Recommendations

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

- When each parcel is pursuing Zoning Bylaw Amendment or Site Plan Application, that detailed Transportation Impact Study and Transit Facilities Plan be prepared as part of submission.

- That Halton Region and the Town of Oakville monitor the future traffic volumes along the Trafalgar Road corridor and optimize the signal timings accordingly. The need for improvements at the study area intersections are noted to occur with or without the development of the subject site.
- That Halton Region and the Town of Oakville prioritize public transit and active transportation modes along the Trafalgar Road corridor to reduce the need for single-occupant vehicles.

Appendix A

Pre-Study Consultation

From: Krusto, Matt
To: Andrew Evans; Erica Bayley
Subject: RE: (210156/210157) Trafalgar & Hwy 407 TIS - Scope of Work
Date: July 26, 2021 2:05:59 PM
Attachments: image001.png

Hi Andrew,

Sorry for the delay on this one, the William Halton Parkway numbers took a bit more time to produce.

Trafalgar Road:

For the Trafalgar Road growth rate, our transportation modeler recommends to use a standard 2%.

William Halton Parkway:

The peak hour volumes (4 lanes, two directions) just west of Trafalgar are 2031 AM: 1700, 2031 PM: 2100.

I hope this helps.

Matt

From: Krusto, Matt <Matt.Krusto@halton.ca>
Sent: Tuesday, July 13, 2021 3:40 PM
To: Andrew Evans <aevans@ptsl.com>
Cc: Erica Bayley <ebayley@ptsl.com>
Subject: Re: (210156/210157) Trafalgar & Hwy 407 TIS - Scope of Work

Hi Andrew,

I will follow up on this one asap tomorrow. Sorry for the delay.

Matt

Sent via BlackBerry Hub+ Inbox for Android

From: aevans@ptsl.com
Sent: July 13, 2021 2:57 p.m.
To: Matt.Krusto@halton.ca
Cc: ebayley@ptsl.com
Subject: RE: (210156/210157) Trafalgar & Hwy 407 TIS - Scope of Work

Hi Matt,

Just following up with regards to the Emme growth rate.

Thank you and regards.

Andrew Evans, M.Sc.
Transportation Planner

Paradigm Transportation Solutions Limited
p: 905.381.2229 x **305**
m: 519.497.3239

From: Krusto, Matt <Matt.Krusto@halton.ca>
Sent: June 18, 2021 8:28 AM
To: Andrew Evans <aevans@ptsl.com>
Cc: Erica Bayley <ebayley@ptsl.com>; Steiger, Bernie <Bernie.Steiger@halton.ca>; Tricia Collingwood <tricia.collingwood@oakville.ca>; Routledge, Graham (MTO) <Graham.Routledge@ontario.ca>; White, Mark J. (MTO) <Mark.J.White@ontario.ca>; Pasquini-Smith, Alexsandria <Alex.Pasquini@halton.ca>; 'Asadullah Yousfani' <asad.yousfani@oakville.ca>
Subject: RE: (210156/210157) Trafalgar & Hwy 407 TIS - Scope of Work

Hi Andrew,

Thank you for the scope of work, sorry for the delay in responding.

I agree with Asad's additional comment, as that is an important issue.

For any traffic data (counts, signal timing) for the Trafalgar Road Regional intersections, please send your request to our Road Operations group at trafficdatarequests@halton.ca

I will provide you a growth rate from our EMME modeler shortly.

Regarding Access:

To Trafalgar Road:

The proposed access (east leg) at the existing signalized intersection to the GO Lot will require road works for the completion of the 4-leg intersection. This includes, but not limited to, southbound left-turn lane, northbound right-turn lane, completion of intersection signalization, illumination, signage and pavement markings.

The proposed access to Trafalgar Road between William Halton Parkway (WHP) and Burnhamthorpe Road will be restricted to right-in/right-out movements. The location, mid-way and approximately 200m from WHP and 250m from Burnhamhtorpe Road is generally acceptable. The location must also be in accordance to the approved North Oakville Secondary Plan and at a location supported by the Town of Oakville.

All costs associated with the design & construction of all new intersections/intersection works is the responsibility of the developer.

To William Halton Parkway:

The proposed access to William Halton Parkway immediately to the east and west of Trafalgar Road will be restricted to right-in/right-out movements. The location must also be in accordance to the approved North Oakville Secondary Plan and at a location supported by the Town of Oakville.

The proposed access to William Halton Parkway approximately 350m to the east and 375m to the west of Trafalgar Road is generally acceptable. The location must also be in accordance to the approved North Oakville Secondary Plan and at a location supported by the Town of Oakville.

All intersections/accesses are subject to the review and approval of a transportation impact study. Access to a Regional road must comply with the Region's By-law No. 32-17, a By-law to prohibit, restrict and regulate access to the Regional road system and the Region's Access Management Guideline (2015).

Matt

Matt Krusto
Project Manager II, Transportation Planning Coordination
Infrastructure Planning & Policy
Public Works
Halton Region
905-825-6000, ext. 7225 | 1-866-442-5866

From: Asadullah Yousfani <asad.yousfani@oakville.ca>
Sent: Tuesday, June 15, 2021 2:00 PM

To: 'Andrew Evans' <aevans@ptsl.com>
Cc: Erica Bayley <ebayley@ptsl.com>; Krusto, Matt <Matt.Krusto@halton.ca>; Steiger, Bernie <Bernie.Steiger@halton.ca>; Tricia Collingwood <tricia.collingwood@oakville.ca>; Routledge, Graham (MTO) <Graham.Routledge@ontario.ca>; White, Mark J. (MTO) <Mark.J.White@ontario.ca>
Subject: RE: (210156/210157) Trafalgar & Hwy 407 TIS - Scope of Work

Hi Andrew,

The intersections to be analysed are under the jurisdiction of Halton and MTO. I've added a comment in yellow.

Thanks,

Asad

Asadullah Yousfani, M.Eng., P. Eng. PMP
Transportation Engineer
Transportation and Engineering
Town of Oakville | 905-845-6601, ext.3236 | www.oakville.ca

From: Andrew Evans <aevans@ptsl.com>
Sent: June 4, 2021 1:51 PM
To: Krusto, Matt <Matt.Krusto@halton.ca>; Bernie.Steiger@halton.ca; Tricia Collingwood <tricia.collingwood@oakville.ca>; Asadullah Yousfani <asad.yousfani@oakville.ca>; Routledge, Graham (MTO) <Graham.Routledge@ontario.ca>; White, Mark J. (MTO) <Mark.J.White@ontario.ca>
Cc: Erica Bayley <ebayley@ptsl.com>
Subject: (210156/210157) Trafalgar & Hwy 407 TIS - Scope of Work

Greetings,

Paradigm was retained to undertake a transportation impact study for the proposed Infrastructure Ontario Lands located east and west of Trafalgar Road and south of Highway 407. Infrastructure Ontario is proposing two scenarios: a residential focus

scenario with 5,660 residential units and 2.3M square feet of employment land uses (8,450 jobs); and a employment focus scenario with 4,060 residential units and 3.8M square feet of employment land uses (14,200 jobs).

Below is our scope of work for your review and approval. The study will be based on Region of Halton TIS Guidelines, North Oakville Transportation Impact Studies and Transportation Functional Design Studies, and MTO TIS Guidelines.

Please let us know you availability next week so we can schedule an online meeting to go over our proposed scope.

Study Area Intersections:

- Trafalgar Road and Lower Baseline Road (signalized);
- Trafalgar Road and Hwy 407 Westbound Ramp Terminal (signalized);
- Trafalgar Road and Hwy 407 Eastbound Ramp Terminal (signalized);
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- Trafalgar Road and Burnhamthorpe Road (signalized); and
- Up to 11 proposed new intersections.

Planning Horizons:

- Build-Out (assumed Year 2031);
- Five-Years post Build-Out (Year 2036); and
- Ten-Years post Build-Out (Year 2041).

Analysis Periods:

- Weekday AM and PM peak hours.

Existing Traffic:

- Derived from Turning Movement Counts at study area intersections

Background Traffic:

- A provided background growth rate applied to the existing turning movement counts; or
- The use of 2031 volumes from the Regional travel demand forecasting model, then factored using a provided growth rate to the 2036 and 2041 horizon years.

Site Generated Traffic:

- ITE Trip Generation Manual (10th Edition) land uses to include, but limited to:
    - LUC 221 – Multifamily Housing, Mid-Rise;
    - LUC 222 – Multifamily Housing, High-Rise;
    - LUC 710 – General Office; and
    - LUC 820 – Shopping Centre.
- Reductions for modal split, TDM measures, and internal capture based on 2016 TTS or information provided by review agencies.

Trip Distribution based on 2016 Transportation Tomorrow Survey

Traffic Analysis

- Using the worst case scenario (based on trip generation) we will analyze the operation of the study area intersections for the Existing, Future Background (without the development) and Future Total (with the development) traffic conditions for each analysis period using Synchro v10 software. Volume to capacity (v/c) rations, Level of Service (LOS) and 95th percentile queueing will be assessed.
- Based on the analysis results, we will identify any operational deficiencies as well as the net impact of the proposed development on the study area road network. The need for road improvements (e.g. auxiliary turn lanes) and/or other mitigating measures (e.g. traffic control device modifications & modifications to existing storage lengths/tapers at turning lanes) to address deficiencies (if any) will be determined.
- A sensitivity analysis will be conducted to determine what traffic impacts the second scenario have on the road network under the full build-out planning horizon.

Thank you and regards

Andrew Evans, M.Sc.
Transportation Planner

Paradigm Transportation Solutions Limited
5A-150 Pinebush Road Cambridge ON N1R 8J8
p: 905.381.2229 x **305**
m: 519.497.3239
e: aevans@ptsl.com
w: www.ptsl.com

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liability for any damage caused by any virus transmitted by this e-mail.

Matt Krusto
Supervisor, Transportation Development Review
Infrastructure Planning & Policy
Public Works
Halton Region
905-825-6000, ext. 7225 | 1-866-442-5866

From:	Krusto, Matt
To:	Andrew Evans
Cc:	Erica Bayley; Steiger, Bernie; Tricia Collingwood; Routledge, Graham (MTO); White, Mark J. (MTO); Pasquini-Smith, Alexsandria; "Asadullah Yousfani"
Subject:	RE: (210156/210157) Trafalgar & Hwy 407 TIS - Scope of Work
Date:	June 18, 2021 8:28:16 AM
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Site Generated Traffic:
- ITE Trip Generation Manual (10th Edition) land uses to include, but limited to:
    - LUC 221 – Multifamily Housing, Mid-Rise;
    - LUC 222 – Multifamily Housing, High-Rise;
    - LUC 710 – General Office; and
    - LUC 820 – Shopping Centre.
- Reductions for modal split, TDM measures, and internal capture based on 2016 TTS or information provided by review agencies.
- Trip Distribution based on 2016 Transportation Tomorrow Survey

Traffic Analysis
- Using the worst case scenario (based on trip generation) we will analyze the operation of the study area intersections for the Existing, Future Background (without the development) and Future Total (with the development) traffic conditions for each analysis period using Synchro v10 software. Volume to capacity (v/c) rations, Level of Service (LOS) and 95th percentile queueing will be assessed.
- Based on the analysis results, we will identify any operational deficiencies as well as the net impact of the proposed development on the study area road network. The need for road improvements (e.g. auxiliary turn lanes) and/or other mitigating measures (e.g. traffic control device modifications & modifications to existing storage lengths/tapers at turning lanes) to address deficiencies (if any) will be determined.
- A sensitivity analysis will be conducted to determine what traffic impacts the second scenario have on the road network under the full build-out planning horizon.

Thank you and regards

Andrew Evans, M.Sc.

Transportation Planner

Paradigm Transportation Solutions Limited
5A-150 Pinebush Road Cambridge ON N1R 8J8
p: 905.381.2229 x **305**
m: 519.497.3239
e: aevans@ptsl.com
w: www.ptsl.com

From: Routledge, Graham (MTO)
To: Andrew Evans
Subject: FW: (210156/210157) Trafalgar & Hwy 407 TIS - Scope of Work
Date: June 11, 2021 11:20:06 AM
Attachments: image001.png
210157) Trafalgar & Hwy 407 TIS - Scope of Work.docx

Good morning Andrew,

Please find MTO's comments on your proposed ToR attached.

Thank you

Graham

From: Andrew Evans <aevans@ptsl.com>
Sent: June 4, 2021 1:51 PM
To: Krusto, Matt <Matt.Krusto@halton.ca>; Bernie.Steiger@halton.ca; tricia.collingwood@oakville.ca; asad.yousfani@oakville.ca; Routledge, Graham (MTO) <Graham.Routledge@ontario.ca>; White, Mark J. (MTO) <Mark.J.White@ontario.ca>
Cc: Erica Bayley <ebayley@ptsl.com>
Subject: (210156/210157) Trafalgar & Hwy 407 TIS - Scope of Work

Greetings,

Paradigm was retained to undertake a transportation impact study for the proposed Infrastructure Ontario Lands located east and west of Trafalgar Road and south of Highway 407. Infrastructure Ontario is proposing two scenarios: a residential focus scenario with 5,660 residential units and 2.3M square feet of employment land uses (8,450 jobs); and a employment focus scenario with 4,060 residential units and 3.8M square feet of employment land uses (14,200 jobs).

Below is our scope of work for your review and approval. The study will be based on Region of Halton TIS Guidelines, North Oakville Transportation Impact Studies and Transportation Functional Design Studies, and MTO TIS Guidelines.

Please let us know you availability next week so we can schedule an online meeting to go over our proposed scope.

Study Area Intersections:

- Trafalgar Road and Lower Baseline Road (signalized);
- Trafalgar Road and Hwy 407 Westbound Ramp Terminal (signalized);
- Trafalgar Road and Hwy 407 Eastbound Ramp Terminal (signalized);
- Trafalgar Road and Hwy 407 GO/Carpool Lot Driveway (signalized);
- Trafalgar Road and William Halton Parkway (signalized);

- Trafalgar Road and Burnhamthorpe Road (signalized); and
- Up to 11 proposed new intersections.

Planning Horizons:
- Build-Out (assumed Year 2031);
- Five-Years post Build-Out (Year 2036); and
- Ten-Years post Build-Out (Year 2041).

Analysis Periods:
- Weekday AM and PM peak hours.

Existing Traffic:
- Derived from Turning Movement Counts at study area intersections

Background Traffic:
- A provided background growth rate applied to the existing turning movement counts; or
- The use of 2031 volumes from the Regional travel demand forecasting model, then factored using a provided growth rate to the 2036 and 2041 horizon years.

Site Generated Traffic:
- ITE Trip Generation Manual (10th Edition) land uses to include, but limited to:
    - LUC 221 – Multifamily Housing, Mid-Rise;
    - LUC 222 – Multifamily Housing, High-Rise;
    - LUC 710 – General Office; and
    - LUC 820 – Shopping Centre.
- Reductions for modal split, TDM measures, and internal capture based on 2016 TTS or information provided by review agencies.
- Trip Distribution based on 2016 Transportation Tomorrow Survey

Traffic Analysis
- Using the worst case scenario (based on trip generation) we will analyze the operation of the study area intersections for the Existing, Future Background (without the development) and Future Total (with the development) traffic conditions for each analysis period using Synchro v10 software. Volume to capacity (v/c) rations, Level of Service (LOS) and 95th percentile queueing will be assessed.
- Based on the analysis results, we will identify any operational deficiencies as well as the net impact of the proposed development on the study area road network. The need for road improvements (e.g. auxiliary turn lanes) and/or other mitigating measures (e.g. traffic control device modifications) to address deficiencies (if any) will be determined.
- A sensitivity analysis will be conducted to determine what traffic impacts the second scenario have on the road network under the full build-out planning

horizon.

Thank you and regards

Andrew Evans, M.Sc.
Transportation Planner

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RE: (210156/210157) Trafalgar & Hwy 407 TIS - Scope of Work

Paradigm was retained to undertake a transportation impact study for the proposed Infrastructure Ontario Lands located east and west of Trafalgar Road and south of Highway 407. Infrastructure Ontario is proposing two scenarios: a residential focus scenario with 5,660 residential units and 2.3M square feet of employment land uses (8,450 jobs); and a employment focus scenario with 4,060 residential units and 3.8M square feet of employment land uses (14,200 jobs).

Below is our scope of work for your review and approval. The study will be based on Region of Halton TIS Guidelines, North Oakville Transportation Impact Studies and Transportation Functional Design Studies, and MTO TIS Guidelines.

Please let us know you availability next week so we can schedule an online meeting to go over our proposed scope.

Please include more detail of

- The type of land uses proposed
- More detail information of the size, type of each proposed development,
- Stages or phasing schemes of the development if applicable.
- Other developments that under construction, approved or in the approval process that have the potential to impact on the study area
- Any road improvement that are planned or currently under construction within the defined study area

Study Area Intersections:

- Trafalgar Road and Lower Baseline Road (signalized);
- Trafalgar Road and Hwy 407 Westbound Ramp Terminal (signalized);
- Trafalgar Road and Hwy 407 Eastbound Ramp Terminal (signalized);
- Trafalgar Road and Hwy 407 GO/Carpool Lot Driveway (signalized);
- Trafalgar Road and William Halton Parkway (signalized);
- Trafalgar Road and Burnhamthorpe Road (signalized); and
- Up to 11 proposed new intersections.

Planning Horizons:

- Existing year 2021
- Build-Out (assumed Year 2031);
- Five-Years post Build-Out (Year 2036); and
- Ten-Years post Build-Out (Year 2041).

Analysis Periods:

- Weekday AM and PM peak hours.

Existing Traffic:

- Derived from Turning Movement Counts at study area intersections

Under current COVID-19 pandemic, new data counts are not being available for the study, however, the appropriateness of the data shall be confirmed with MTO prior to stating work on TIS.

Background Traffic:

- A provided background growth rate applied to the existing turning movement counts; or
- The use of 2031 volumes from the Regional travel demand forecasting model, then factored using a provided growth rate to the 2036 and 2041 horizon years.

Please apply 2% annual growth rate for MTO owned intersections.

Site Generated Traffic:

- ITE Trip Generation Manual (10th Edition) land uses to include, but limited to:
    - LUC 221 – Multifamily Housing, Mid-Rise;
    - LUC 222 – Multifamily Housing, High-Rise;
    - LUC 710 – General Office; and
    - LUC 820 – Shopping Centre.

  Trip generation assumptions and results identifying the categories and quantities of land used, with corresponding trip generation rates or equations and the resulting number of trips.

- Reductions for modal split, TDM measures, and internal capture based on 2016 TTS or information provided by review agencies.
- Trip Distribution based on 2016 Transportation Tomorrow Survey

  All assumption should be explained in a detail, such as the report should explained in a detail of the method, procedure, and should attached any reference file used.

  Assumption for origin/destination and percent distribution shall be presented in tabular form, traffic assignment should be presented as a diagram with detail explanation.

Traffic Analysis

- Using the worst case scenario (based on trip generation) we will analyze the operation of the study area intersections for the Existing, Future Background (without the development) and Future Total (with the development) traffic conditions for each analysis period using Synchro v10 software. Volume to capacity (v/c) rations, Delay, Level of Service (LOS) and 95th percentile queueing will be assessed.

  For ramps, a v/c ratio for terminal ramp approaches with a value grater than 0.75 would be deemed a critical and shall be evaluated for possible operational improvement.

- Based on the analysis results, we will identify any operational deficiencies as well as the net impact of the proposed development on the study area road network. The need for road improvements (e.g. auxiliary turn lanes) and/or other mitigating measures (e.g. traffic control device modifications) to address deficiencies (if any) will be determined.
- A sensitivity analysis will be conducted to determine what traffic impacts the second scenario have on the road network under the full build-out planning horizon.
- Please submit Synchro files along with the TIS report, not a report only.

Appendix B

Traffic Data

Burnhamthorpe Rd E @ Trafalgar Rd

Morning Peak Diagram

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

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

Municipality: Halton Region
Site #: 0000003299
Intersection: Trafalgar Rd & Burnhamthorpe Rd E
TFR File #: 5
Count date: 4-Dec-2019

Weather conditions:
Overcast/Wet

Person(s) who counted:
Cam

**** Signalized Intersection ****

Major Road: Trafalgar Rd runs N/S

North Leg Total:	2899
North Entering:	1374
North Peds:	0
Peds Cross:	⋈

Heavys	2	41	2	45
Trucks	1	21	1	23
Cars	117	988	201	1306
Totals	120	1050	204	

Heavys	55
Trucks	14
Cars	1456
Totals	1525

East Leg Total:	881
East Entering:	247
East Peds:	0
Peds Cross:	⧗

Trafalgar Rd

Heavys	Trucks	Cars	Totals
6	1	252	259

Cars	Trucks	Heavys	Totals
90	0	1	91
99	0	3	102
54	0	0	54
243	0	4	

Burnhamthorpe Rd E

N
W E
S

Heavys	Trucks	Cars	Totals
2	3	266	271
3	0	315	318
2	1	49	52
7	4	630	

Burnhamthorpe Rd E

Cars	Trucks	Heavys	Totals
627	2	5	634

Trafalgar Rd

Peds Cross:	⧗
West Peds:	0
West Entering:	641
West Leg Total:	900

Cars	1091
Trucks	22
Heavys	43
Totals	1156

Cars	36	1100	111	1247
Trucks	0	11	1	12
Heavys	1	52	0	53
Totals	37	1163	112	

Peds Cross:	⋈
South Peds:	0
South Entering:	1312
South Leg Total:	2468

Comments

Burnhamthorpe Rd E @ Trafalgar Rd

Mid-day Peak Diagram

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

One Hour Peak
From: 13:00:00
To: 14:00:00

Municipality: Halton Region
Site #: 0000003299
Intersection: Trafalgar Rd & Burnhamthorpe Rd E
TFR File #: 5
Count date: 4-Dec-2019

Weather conditions:
Overcast/Wet

Person(s) who counted:
Cam

**** Signalized Intersection ****

Major Road: Trafalgar Rd runs N/S

North Leg Total: 1536
North Entering: 791
North Peds: 0
Peds Cross: ⋈

Heavys	2	46	3	51
Trucks	2	20	1	23
Cars	37	555	125	717
Totals	41	621	129	

Heavys	59
Trucks	20
Cars	666
Totals	745

East Leg Total: 525
East Entering: 266
East Peds: 0
Peds Cross: ⧗

Trafalgar Rd

Heavys	Trucks	Cars	Totals
5	6	145	156

Cars	Trucks	Heavys	Totals
120	3	3	126
78	2	1	81
59	0	0	59
257	5	4	

Burnhamthorpe Rd E

N
W E
S

Heavys	Trucks	Cars	Totals
3	3	41	47
0	4	74	78
1	2	15	18
4	9	130	

Burnhamthorpe Rd E

Cars	Trucks	Heavys	Totals
249	6	4	259

Trafalgar Rd

Peds Cross: ⧗
West Peds: 0
West Entering: 143
West Leg Total: 299

Cars	629
Trucks	22
Heavys	47
Totals	698

Cars	30	505	50	585
Trucks	2	14	1	17
Heavys	2	53	1	56
Totals	34	572	52	

Peds Cross: ⋈
South Peds: 0
South Entering: 658
South Leg Total: 1356

Comments

Burnhamthorpe Rd E @ Trafalgar Rd

Afternoon Peak Diagram

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

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

Municipality: Halton Region
Site #: 0000003299
Intersection: Trafalgar Rd & Burnhamthorpe Rd E
TFR File #: 5
Count date: 4-Dec-2019

Weather conditions:
Overcast/Wet

Person(s) who counted:
Cam

**** Signalized Intersection ****

Major Road: Trafalgar Rd runs N/S

North Leg Total: 2855
North Entering: 1180
North Peds: 0
Peds Cross: ⋈

Heavys	0	16	0	16
Trucks	1	8	1	10
Cars	126	865	163	1154
Totals	127	889	164	

Heavys	23
Trucks	6
Cars	1646
Totals	1675

East Leg Total: 1028
East Entering: 551
East Peds: 0
Peds Cross: ⧗

Trafalgar Rd

Heavys	Trucks	Cars	Totals
1	1	381	383

Burnhamthorpe Rd E

Cars	Trucks	Heavys	Totals
271	1	0	272
191	0	1	192
87	0	0	87
549	1	1	

N
W E
S

Heavys	Trucks	Cars	Totals
4	0	76	80
0	0	219	219
0	0	12	12
4	0	307	

Burnhamthorpe Rd E

Cars	Trucks	Heavys	Totals
474	2	1	477

Trafalgar Rd

Peds Cross: ⧗
West Peds: 0
West Entering: 311
West Leg Total: 694

Cars	964
Trucks	8
Heavys	16
Totals	988

Cars	64	1299	92	1455
Trucks	0	5	1	6
Heavys	0	19	1	20
Totals	64	1323	94	

Peds Cross: ⋈
South Peds: 0
South Entering: 1481
South Leg Total: 2469

Comments

Burnhamthorpe Rd E @ Trafalgar Rd

Total Count Diagram

Municipality: Halton Region
Site #: 0000003299
Intersection: Trafalgar Rd & Burnhamthorpe Rd E
TFR File #: 5
Count date: 4-Dec-2019

Weather conditions:
Overcast/Wet
Person(s) who counted:
Cam

**** Signalized Intersection ****

Major Road: Trafalgar Rd runs N/S

North Leg Total: 17561
North Entering: 8246
North Peds: 0
Peds Cross: ⋈

Heavys	7	302	9	318
Trucks	9	93	6	108
Cars	620	5925	1275	7820
Totals	636	6320	1290	

Heavys	415
Trucks	99
Cars	8801
Totals	9315

East Leg Total: 5982
East Entering: 2709
East Peds: 0
Peds Cross: ⧗

Trafalgar Rd

Heavys	Trucks	Cars	Totals
19	15	1901	1935

Cars	Trucks	Heavys	Totals
1236	6	17	1259
975	2	6	983
467	0	0	467
2678	8	23	

Burnhamthorpe Rd E

N
W E
S

Heavys	Trucks	Cars	Totals
16	12	785	813
6	10	1356	1372
7	4	173	184
29	26	2314	

Burnhamthorpe Rd E

Cars	Trucks	Heavys	Totals
3233	22	18	3273

Trafalgar Rd

Peds Cross: ⧗
West Peds: 0
West Entering: 2369
West Leg Total: 4304

Cars	6565
Trucks	97
Heavys	309
Totals	6971

Cars	306	6780	602	7688
Trucks	4	81	6	91
Heavys	6	382	3	391
Totals	316	7243	611	

Peds Cross: ⋈
South Peds: 0
South Entering: 8170
South Leg Total: 15141

Comments

Burnhamthorpe Rd E @ Trafalgar Rd

Municipality: Halton Region
Major Road: Trafalgar Rd
Minor Road: Burnhamthorpe Rd E

Date: Dec 4, 2019

Major Road Runs: North/South
Weather Conditions: Overcast/Wet
Person No. 1 Cam
Person No. 2

Period	North Approach							East Approach							South Approach							West Approach							Veh. Summary	
	Cars			Trucks			Ped.	Cars			Trucks			Ped.	Cars			Trucks			Ped.	Cars			Trucks			Ped.		
Ending	Left	Thru	Right	Left	Thru	Right	Cross.	Left	Thru	Right	Left	Thru	Right	Cross.	Left	Thru	Right	Left	Thru	Right	Cross.	Left	Thru	Right	Left	Thru	Right	Cross.	15	60
7:15	78	202	11	0	11	0	0	7	12	17	0	0	0	0	1	169	7	0	14	0	0	31	34	10	0	0	0	0	604	
7:30	70	217	16	0	9	1	0	4	20	16	0	0	0	0	3	184	27	1	8	0	0	53	71	7	0	0	0	0	707	
7:45	72	253	30	0	8	1	0	9	19	21	0	0	0	0	3	241	30	0	14	0	0	54	110	8	1	1	0	0	875	
8:00	56	231	20	2	8	1	0	12	22	24	0	0	0	0	6	216	25	0	16	0	0	74	90	9	2	0	0	0	814	3000
8:15	48	238	36	0	20	0	0	11	21	18	0	1	0	0	9	321	21	0	15	1	0	72	68	15	1	0	1	0	917	3313
8:30	43	247	35	0	15	2	0	17	36	23	0	2	1	0	9	267	13	1	20	0	0	71	76	13	1	2	1	0	895	3501
8:45	54	272	26	1	19	0	0	14	20	25	0	0	0	0	12	296	52	0	12	0	0	49	81	12	1	1	1	0	948	3574
9:00	69	209	15	2	22	0	0	19	20	44	0	0	0	0	11	180	40	0	18	1	0	26	71	12	0	0	0	0	759	3519
11:15	32	153	7	2	20	1	0	13	18	25	0	0	1	0	7	108	8	0	17	0	0	11	22	3	0	0	1	0	449	
11:30	29	146	6	0	14	0	0	10	11	12	0	0	1	0	1	121	14	0	16	0	0	14	23	3	0	0	0	0	421	
11:45	31	146	8	0	9	0	0	14	15	18	0	0	1	0	4	127	5	1	17	1	0	17	21	5	1	1	0	0	442	
12:00	28	137	10	0	17	0	0	12	21	22	0	0	1	0	2	103	6	0	21	0	0	15	33	5	0	0	1	0	434	1746
12:15	32	132	6	0	19	3	0	5	14	27	0	0	0	0	5	103	5	0	19	0	0	15	15	3	2	0	1	0	406	1703
12:30	20	144	4	0	21	0	0	9	20	20	0	0	1	0	9	140	18	0	22	0	0	15	30	2	2	1	0	0	478	1760
12:45	27	150	9	0	24	1	0	9	20	27	0	0	0	0	8	122	10	1	17	0	0	15	18	4	0	0	1	0	463	1781
13:00	28	137	6	0	21	0	0	8	15	21	0	0	0	0	10	127	12	1	13	0	0	15	19	2	0	0	0	0	435	1782
13:15	28	128	11	2	14	2	0	7	13	24	0	1	2	0	3	119	14	1	15	1	0	14	23	4	1	0	1	0	428	1804
13:30	42	142	8	2	17	2	0	19	17	26	0	1	1	0	11	125	14	1	21	0	0	13	14	2	0	2	1	0	481	1807
13:45	27	136	6	0	14	0	0	16	27	43	0	0	1	0	8	138	13	0	18	0	0	7	21	4	2	1	1	0	483	1827
14:00	28	149	12	0	21	0	0	17	21	27	0	1	2	0	8	123	9	2	13	1	0	7	16	5	3	1	0	0	466	1858
15:15	25	140	16	0	10	0	0	20	33	43	0	0	0	0	11	241	14	0	16	0	0	11	17	1	0	1	0	0	599	
15:30	35	156	23	0	6	0	0	14	45	54	0	0	1	0	17	215	24	0	20	0	0	18	41	4	0	1	0	0	674	
15:45	31	185	27	1	7	1	0	23	56	52	0	0	1	0	12	249	23	0	18	0	0	18	44	10	2	3	0	0	763	
16:00	32	195	22	0	8	0	0	23	63	70	0	1	1	0	10	230	11	0	8	1	0	17	34	3	2	0	0	0	731	2767
16:15	35	211	25	1	6	0	0	17	61	55	0	0	3	0	21	325	21	1	13	0	0	15	38	1	1	0	0	0	850	3018
16:30	26	189	27	0	5	0	0	18	48	79	0	0	3	0	16	292	27	0	16	0	0	15	42	4	1	1	1	0	810	3154
16:45	41	200	32	1	3	0	0	21	59	69	0	0	1	0	15	326	25	0	14	0	0	15	31	4	1	0	0	0	858	3249
17:00	49	195	22	0	7	1	0	17	51	72	0	0	0	0	19	338	32	0	7	1	0	26	65	4	2	0	0	0	908	3426
17:15	37	200	40	0	6	0	0	22	48	64	0	1	0	0	15	323	21	0	5	0	0	13	53	0	2	0	0	0	850	3426
17:30	34	218	27	1	7	0	0	27	49	75	0	0	0	0	15	309	16	0	7	1	0	21	69	4	0	0	0	0	880	3496
17:45	43	252	37	0	4	0	0	21	43	60	0	0	1	0	15	329	23	0	5	0	0	16	32	4	0	0	0	0	885	3523
18:00	45	215	40	0	3	0	0	12	37	63	0	0	0	0	10	273	22	0	8	1	0	12	34	6	0	0	0	0	781	3396

Trafalgar Rd @ Hwy 407 EB Off Ramp

Morning Peak Diagram

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

One Hour Peak
From: 7:30:00
To: 8:30:00

Municipality: Halton Region
Site #: 0000003376
Intersection: Trafalgar Rd & Hwy 407 EB Off Ran
TFR File #: 11
Count date: 6-Nov-2019

Weather conditions:
Cloudy/Dry

Person(s) who counted:
Cam

**** Signalized Intersection ****

Major Road: Trafalgar Rd runs N/S

North Leg Total: 2757
North Entering: 1449
North Peds: 0
Peds Cross: ⋈

Heavys	0	55	55
Trucks	0	14	14
Cars	0	1380	1380
Totals	0	1449	

Heavys	64
Trucks	7
Cars	1237
Totals	1308

Trafalgar Rd

Heavys	Trucks	Cars	Totals
0	0	0	0

Hwy 407 EB Off Ramp

Heavys	Trucks	Cars	Totals
3	3	84	90
7	0	72	79
10	3	156	

N
W E
S

Trafalgar Rd

Peds Cross: ⋈
West Peds: 0
West Entering: 169
West Leg Total: 169

Cars	1452		
Trucks	14		
Heavys	62		
Totals	1528		

Cars	0	1153	1153
Trucks	0	4	4
Heavys	0	61	61
Totals	0	1218	

Peds Cross: ⋈
South Peds: 0
South Entering: 1218
South Leg Total: 2746

Comments

Trafalgar Rd @ Hwy 407 EB Off Ramp

Mid-day Peak Diagram

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

One Hour Peak
From: 13:00:00
To: 14:00:00

Municipality: Halton Region
Site #: 0000003376
Intersection: Trafalgar Rd & Hwy 407 EB Off Ran
TFR File #: 11
Count date: 6-Nov-2019

Weather conditions:
Cloudy/Dry

Person(s) who counted:
Cam

**** Signalized Intersection ****

Major Road: Trafalgar Rd runs N/S

North Leg Total: 1505
North Entering: 738
North Peds: 0
Peds Cross: ⋈

Heavys	0	57	57
Trucks	0	17	17
Cars	0	664	664
Totals	0	738	

Heavys	74
Trucks	14
Cars	679
Totals	767

Trafalgar Rd

Heavys	Trucks	Cars	Totals
0	0	0	0

Hwy 407 EB Off Ramp

Heavys	Trucks	Cars	Totals
4	1	23	28
8	0	13	21
12	1	36	

N
W E
S

Trafalgar Rd

Peds Cross: ⋈
West Peds: 0
West Entering: 49
West Leg Total: 49

Cars	677
Trucks	17
Heavys	65
Totals	759

Cars	0	656	656
Trucks	0	13	13
Heavys	0	70	70
Totals	0	739	

Peds Cross: ⋈
South Peds: 0
South Entering: 739
South Leg Total: 1498

Comments

Trafalgar Rd @ Hwy 407 EB Off Ramp

Afternoon Peak Diagram

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

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

Municipality: Halton Region
Site #: 0000003376
Intersection: Trafalgar Rd & Hwy 407 EB Off Ran
TFR File #: 11
Count date: 6-Nov-2019

Weather conditions:
Cloudy/Dry

Person(s) who counted:
Cam

**** Signalized Intersection ****

Major Road: Trafalgar Rd runs N/S

North Leg Total: 3034
North Entering: 1281
North Peds: 0
Peds Cross: ⋈

Heavys	0	22	22
Trucks	0	7	7
Cars	0	1252	1252
Totals	0	1281	

Heavys	26
Trucks	10
Cars	1717
Totals	1753

Trafalgar Rd

Heavys	Trucks	Cars	Totals
0	0	0	0

Hwy 407 EB Off Ramp

Heavys	Trucks	Cars	Totals
1	0	55	56
7	0	52	59
8	0	107	

N
W E
S

Trafalgar Rd

Peds Cross: ⋈
West Peds: 1
West Entering: 115
West Leg Total: 115

Cars	1304		
Trucks	7		
Heavys	29		
Totals	1340		

Cars	0	1662	1662
Trucks	0	10	10
Heavys	0	25	25
Totals	0	1697	

Peds Cross: ⋈
South Peds: 0
South Entering: 1697
South Leg Total: 3037

Comments

Trafalgar Rd @ Hwy 407 EB Off Ramp

Total Count Diagram

Municipality: Halton Region
Site #: 0000003376
Intersection: Trafalgar Rd & Hwy 407 EB Off Ran
TFR File #: 11
Count date: 6-Nov-2019

Weather conditions:
Cloudy/Dry

Person(s) who counted:
Cam

**** Signalized Intersection ****

Major Road: Trafalgar Rd runs N/S

North Leg Total: 17668
North Entering: 8418
North Peds: 0
Peds Cross: ⋈

Heavys	0	389	389
Trucks	0	96	96
Cars	0	7933	7933
Totals	0	8418	

Heavys	455
Trucks	93
Cars	8702
Totals	9250

Trafalgar Rd

Heavys	Trucks	Cars	Totals
0	0	0	0

Hwy 407 EB Off Ramp

Heavys	Trucks	Cars	Totals
18	7	379	404
56	6	288	350
74	13	667	

N
W E
S

Trafalgar Rd

Peds Cross: ⋈
West Peds: 1
West Entering: 754
West Leg Total: 754

Cars	8221		
Trucks	102		
Heavys	445		
Totals	8768		

Cars	0	8323	8323
Trucks	0	86	86
Heavys	0	437	437
Totals	0	8846	

Peds Cross: ⋈
South Peds: 0
South Entering: 8846
South Leg Total: 17614

Comments

Trafalgar Rd @ Hwy 407 EB Off Ramp

Municipality: Halton Region
Major Road: Trafalgar Rd
Minor Road: Hwy 407 EB Off Ramp

Date: Nov 6, 2019

Major Road Runs: North/South
Weather Conditions: Cloudy/Dry
Person No. 1 Cam
Person No. 2

Period	North Approach							East Approach							South Approach							West Approach							Veh. Summary	
	Cars			Trucks			Ped.	Cars			Trucks			Ped.	Cars			Trucks			Ped.	Cars			Trucks			Ped.		
Ending	Left	Thru	Right	Left	Thru	Right	Cross.	Left	Thru	Right	Left	Thru	Right	Cross.	Left	Thru	Right	Left	Thru	Right	Cross.	Left	Thru	Right	Left	Thru	Right	Cross.	15	60
7:15	0	301	0	0	26	0	0	0	0	0	0	0	0	0	0	193	0	0	4	0	0	9	0	6	2	0	2	0	543	
7:30	0	319	0	0	23	0	0	0	0	0	0	0	0	0	0	230	0	0	13	0	0	14	0	9	1	0	1	0	610	
7:45	0	347	0	0	11	0	0	0	0	0	0	0	0	0	0	299	0	0	20	0	0	21	0	15	1	0	2	0	716	
8:00	0	363	0	0	21	0	0	0	0	0	0	0	0	0	0	315	0	0	12	0	0	24	0	15	1	0	3	0	754	2623
8:15	0	324	0	0	13	0	0	0	0	0	0	0	0	0	0	268	0	0	13	0	0	20	0	29	3	0	2	0	672	2752
8:30	0	346	0	0	24	0	0	0	0	0	0	0	0	0	0	271	0	0	20	0	0	19	0	13	1	0	0	0	694	2836
8:45	0	334	0	0	18	0	0	0	0	0	0	0	0	0	0	257	0	0	27	0	0	22	0	22	0	0	2	0	682	2802
9:00	0	299	0	0	10	0	0	0	0	0	0	0	0	0	0	231	0	0	27	0	0	17	0	16	1	0	3	0	604	2652
11:15	0	150	0	0	22	0	0	0	0	0	0	0	0	0	0	136	0	0	28	0	0	6	0	4	0	0	3	0	349	
11:30	0	169	0	0	20	0	0	0	0	0	0	0	0	0	0	140	0	0	16	0	0	4	0	2	1	0	2	0	354	
11:45	0	195	0	0	21	0	0	0	0	0	0	0	0	0	0	142	0	0	15	0	0	4	0	8	0	0	3	0	388	
12:00	0	165	0	0	23	0	0	0	0	0	0	0	0	0	0	137	0	0	20	0	0	4	0	5	1	0	3	0	358	1449
12:15	0	181	0	0	16	0	0	0	0	0	0	0	0	0	0	131	0	0	23	0	0	12	0	5	0	0	2	0	370	1470
12:30	0	149	0	0	19	0	0	0	0	0	0	0	0	0	0	179	0	0	15	0	0	4	0	4	0	0	1	0	371	1487
12:45	0	185	0	0	23	0	0	0	0	0	0	0	0	0	0	146	0	0	18	0	0	8	0	3	1	0	3	0	387	1486
13:00	0	153	0	0	16	0	0	0	0	0	0	0	0	0	0	132	0	0	14	0	0	11	0	6	1	0	2	0	335	1463
13:15	0	161	0	0	13	0	0	0	0	0	0	0	0	0	0	151	0	0	20	0	0	6	0	3	0	0	2	0	356	1449
13:30	0	170	0	0	17	0	0	0	0	0	0	0	0	0	0	153	0	0	31	0	0	1	0	4	2	0	3	0	381	1459
13:45	0	168	0	0	23	0	0	0	0	0	0	0	0	0	0	183	0	0	11	0	0	5	0	4	1	0	1	0	396	1468
14:00	0	165	0	0	21	0	0	0	0	0	0	0	0	0	0	169	0	0	21	0	0	11	0	2	2	0	2	0	393	1526
15:15	0	197	0	0	13	0	0	0	0	0	0	0	0	0	0	271	0	0	32	0	0	10	0	6	3	0	2	0	534	
15:30	0	235	0	0	13	0	0	0	0	0	0	0	0	0	0	299	0	0	17	0	0	18	0	6	0	0	3	0	591	
15:45	0	230	0	0	6	0	0	0	0	0	0	0	0	0	0	312	0	0	16	0	0	16	0	6	0	0	1	0	587	
16:00	0	253	0	0	12	0	0	0	0	0	0	0	0	0	0	354	0	0	23	0	0	11	0	6	0	0	3	0	662	2374
16:15	0	234	0	0	12	0	0	0	0	0	0	0	0	0	0	360	0	0	10	0	0	13	0	12	1	0	0	0	642	2482
16:30	0	281	0	0	5	0	0	0	0	0	0	0	0	0	0	465	0	0	8	0	0	15	0	8	1	0	3	0	786	2677
16:45	0	285	0	0	6	0	0	0	0	0	0	0	0	0	0	374	0	0	7	0	0	14	0	6	0	0	0	0	692	2782
17:00	0	287	0	0	15	0	0	0	0	0	0	0	0	0	0	436	0	0	15	0	0	19	0	15	0	0	2	0	789	2909
17:15	0	285	0	0	3	0	0	0	0	0	0	0	0	0	0	417	0	0	8	0	0	19	0	13	1	0	2	1	748	3015
17:30	0	319	0	0	5	0	0	0	0	0	0	0	0	0	0	428	0	0	7	0	0	9	0	12	0	0	2	0	782	3011
17:45	0	361	0	0	6	0	0	0	0	0	0	0	0	0	0	381	0	0	5	0	0	8	0	12	0	0	1	0	774	3093
18:00	0	322	0	0	9	0	0	0	0	0	0	0	0	0	0	363	0	0	7	0	0	5	0	11	0	0	1	0	718	3022

Trafalgar Rd @ Hwy 407 WB Off Ramp

Morning Peak Diagram

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

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

Municipality: Halton Region
Site #: 0000003377
Intersection: Trafalgar Rd & Hwy 407 WB Off Rai
TFR File #: 12
Count date: 6-Nov-2019

Weather conditions:
Cloudy/Dry

Person(s) who counted:
Cam

**** Signalized Intersection ****

Major Road: Trafalgar Rd runs N/S

North Leg Total: 2731
North Entering: 1470
North Peds: 0
Peds Cross: ⋈

Heavys	2	46	0	48
Trucks	0	16	0	16
Cars	1	1405	0	1406
Totals	3	1467	0	

Heavys	58
Trucks	12
Cars	1191
Totals	1261

East Leg Total: 163
East Entering: 163
East Peds: 0
Peds Cross: ⧗

Trafalgar Rd

Heavys	Trucks	Cars	Totals
3	1	4	8

Cars	Trucks	Heavys	Totals
13	1	2	16
0	0	1	1
123	4	19	146
136	5	22	

Carpool Lot

N
W E
S

Hwy 407 WB Off Ramp

Heavys	Trucks	Cars	Totals
2	0	0	2
0	0	0	0
1	1	4	6
3	1	4	

Cars	Trucks	Heavys	Totals
0	0	0	0

Trafalgar Rd

Peds Cross: ⧗
West Peds: 0
West Entering: 8
West Leg Total: 16

Cars	1532
Trucks	21
Heavys	66
Totals	1619

Cars	3	1178	0	1181
Trucks	1	11	0	12
Heavys	0	54	0	54
Totals	4	1243	0	

Peds Cross: ⋈
South Peds: 0
South Entering: 1247
South Leg Total: 2866

Comments

Trafalgar Rd @ Hwy 407 WB Off Ramp

Mid-day Peak Diagram

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

One Hour Peak
From: 13:00:00
To: 14:00:00

Municipality: Halton Region
Site #: 0000003377
Intersection: Trafalgar Rd & Hwy 407 WB Off Rai
TFR File #: 12
Count date: 6-Nov-2019

Weather conditions:
Cloudy/Dry

Person(s) who counted:
Cam

**** Signalized Intersection ****

Major Road: Trafalgar Rd runs N/S

North Leg Total: 1438
North Entering: 714
North Peds: 0
Peds Cross: ⋈

Heavys	0	45	0	45
Trucks	0	14	0	14
Cars	5	650	0	655
Totals	5	709	0	

Heavys	64
Trucks	15
Cars	645
Totals	724

East Leg Total: 73
East Entering: 73
East Peds: 0
Peds Cross: ⧗

Trafalgar Rd

Heavys	Trucks	Cars	Totals
0	0	12	12

Carpool Lot

Cars	Trucks	Heavys	Totals
3	0	1	4
0	0	0	0
52	6	11	69
55	6	12	

N
W E
S

Hwy 407 WB Off Ramp

Heavys	Trucks	Cars	Totals
0	0	1	1
0	0	0	0
0	0	6	6
0	0	7	

Cars	Trucks	Heavys	Totals
0	0	0	0

Trafalgar Rd

Peds Cross: ⧗
West Peds: 0
West Entering: 7
West Leg Total: 19

Cars	708
Trucks	20
Heavys	56
Totals	784

Cars	7	641	0	648
Trucks	0	15	0	15
Heavys	0	63	0	63
Totals	7	719	0	

Peds Cross: ⋈
South Peds: 0
South Entering: 726
South Leg Total: 1510

Comments

Trafalgar Rd @ Hwy 407 WB Off Ramp

Afternoon Peak Diagram

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

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

Municipality: Halton Region
Site #: 0000003377
Intersection: Trafalgar Rd & Hwy 407 WB Off Rai
TFR File #: 12
Count date: 6-Nov-2019

Weather conditions:
Cloudy/Dry

Person(s) who counted:
Cam

**** Signalized Intersection ****

Major Road: Trafalgar Rd runs N/S

North Leg Total: 2859
North Entering: 1135
North Peds: 0
Peds Cross: ⋈

Heavys	0	15	0	15
Trucks	0	10	0	10
Cars	3	1107	0	1110
Totals	3	1132	0	

Heavys	17
Trucks	14
Cars	1693
Totals	1724

East Leg Total: 372
East Entering: 372
East Peds: 0
Peds Cross: ⧗

Trafalgar Rd

Heavys	Trucks	Cars	Totals
1	0	19	20

Carpool Lot

Cars	Trucks	Heavys	Totals
110	2	0	112
10	0	1	11
241	1	7	249
361	3	8	

N
W E
S

Heavys	Trucks	Cars	Totals
0	0	5	5
0	0	0	0
2	0	30	32
2	0	35	

Hwy 407 WB Off Ramp

Cars	Trucks	Heavys	Totals
0	0	0	0

Trafalgar Rd

Peds Cross: ⧗
West Peds: 0
West Entering: 37
West Leg Total: 57

Cars	1378
Trucks	11
Heavys	24
Totals	1413

Cars	6	1578	0	1584
Trucks	0	12	0	12
Heavys	0	17	0	17
Totals	6	1607	0	

Peds Cross: ⋈
South Peds: 0
South Entering: 1613
South Leg Total: 3026

Comments

Trafalgar Rd @ Hwy 407 WB Off Ramp

Total Count Diagram

Municipality: Halton Region
Site #: 0000003377
Intersection: Trafalgar Rd & Hwy 407 WB Off Rai
TFR File #: 12
Count date: 6-Nov-2019

Weather conditions:
Cloudy/Dry
Person(s) who counted:
Cam

**** Signalized Intersection ****

Major Road: Trafalgar Rd runs N/S

North Leg Total: 17096
North Entering: 8132
North Peds: 0
Peds Cross: ⋈

Heavys	5	303	0	308
Trucks	1	105	0	106
Cars	25	7693	0	7718
Totals	31	8101	0	

Heavys	403
Trucks	103
Cars	8458
Totals	8964

East Leg Total: 1379
East Entering: 1379
East Peds: 0
Peds Cross: ⧗

Trafalgar Rd

Heavys	Trucks	Cars	Totals
10	2	87	99

Carpool Lot

Cars	Trucks	Heavys	Totals
288	4	9	301
22	0	3	25
936	26	91	1053
1246	30	103	

N
W E
S

Heavys	Trucks	Cars	Totals
4	2	21	27
0	0	0	0
6	1	86	93
10	3	107	

Hwy 407 WB Off Ramp

Cars	Trucks	Heavys	Totals
0	0	0	0

Trafalgar Rd

Peds Cross: ⧗
West Peds: 0
West Entering: 120
West Leg Total: 219

Cars	8715
Trucks	132
Heavys	400
Totals	9247

Cars	40	8149	0	8189
Trucks	1	97	0	98
Heavys	2	390	0	392
Totals	43	8636	0	

Peds Cross: ⋈
South Peds: 0
South Entering: 8679
South Leg Total: 17926

Comments

Trafalgar Rd @ Hwy 407 WB Off Ramp

Municipality: Halton Region
Major Road: Trafalgar Rd
Minor Road: Hwy 407 WB Off Ramp

Date: Nov 6, 2019

Major Road Runs: North/South
Weather Conditions: Cloudy/Dry
Person No. 1 Cam
Person No. 2

Period	North Approach							East Approach							South Approach							West Approach							Veh. Summary	
	Cars			Trucks			Ped.	Cars			Trucks			Ped.	Cars			Trucks			Ped.	Cars			Trucks			Ped.		
Ending	Left	Thru	Right	Left	Thru	Right	Cross.	Left	Thru	Right	Left	Thru	Right	Cross.	Left	Thru	Right	Left	Thru	Right	Cross.	Left	Thru	Right	Left	Thru	Right	Cross.	15	60
7:15	0	302	2	0	19	0	0	6	1	0	3	0	0	0	4	161	0	1	7	0	0	1	0	9	0	0	1	0	517	
7:30	0	327	0	0	16	0	0	26	0	0	7	0	0	0	2	257	0	1	6	0	0	0	0	4	0	0	1	0	647	
7:45	0	344	1	0	13	1	0	37	0	1	5	0	0	0	2	270	0	0	22	0	0	0	0	0	1	0	0	0	697	
8:00	0	355	0	0	16	0	0	37	0	4	7	1	1	0	2	330	0	0	14	0	0	0	0	2	0	0	1	0	770	2631
8:15	0	329	0	0	13	0	0	24	0	2	3	0	2	0	0	302	0	0	11	0	0	0	0	1	0	0	0	0	687	2801
8:30	0	364	1	0	18	1	0	33	0	4	6	0	0	0	1	254	0	0	15	0	0	0	0	1	0	0	0	0	698	2852
8:45	0	357	0	0	15	1	0	29	0	3	7	0	0	0	0	292	0	1	25	0	0	0	0	0	2	0	1	0	733	2888
9:00	0	303	3	0	11	0	0	28	0	4	4	0	0	0	1	256	0	0	22	0	0	2	0	0	0	0	0	0	634	2752
11:15	0	149	1	0	22	0	0	16	0	3	5	0	0	0	0	140	0	0	23	0	0	0	0	0	0	0	0	0	359	
11:30	0	160	0	0	16	0	0	14	0	1	2	0	0	0	0	154	0	0	23	0	0	0	0	1	0	0	0	0	371	
11:45	0	198	1	0	24	0	0	8	0	2	3	0	0	0	0	130	0	0	12	0	0	1	0	2	0	0	0	0	381	
12:00	0	148	0	0	20	0	0	15	0	6	5	0	1	0	0	128	0	0	13	0	0	0	0	0	0	0	0	0	336	1447
12:15	0	169	0	0	5	0	0	14	0	3	4	0	0	0	1	153	0	0	23	0	0	1	0	1	0	0	0	0	374	1462
12:30	0	149	1	0	13	0	0	15	0	2	4	0	0	0	1	157	0	0	16	0	0	0	0	0	0	0	0	0	358	1449
12:45	0	169	1	0	20	0	0	14	1	1	2	0	0	0	1	156	0	0	16	0	0	2	0	10	0	0	0	0	393	1461
13:00	0	151	0	0	20	0	0	18	1	4	3	0	0	0	1	132	0	0	13	0	0	0	0	0	0	0	0	0	343	1468
13:15	0	153	1	0	11	0	0	7	0	0	2	0	0	0	2	147	0	0	18	0	0	0	0	1	0	0	0	0	342	1436
13:30	0	176	0	0	13	0	0	20	0	1	3	0	0	0	2	160	0	0	30	0	0	0	0	0	0	0	0	0	405	1483
13:45	0	157	3	0	18	0	0	14	0	0	6	0	0	0	3	175	0	0	14	0	0	1	0	2	0	0	0	0	393	1483
14:00	0	164	1	0	17	0	0	11	0	2	6	0	1	0	0	159	0	0	16	0	0	0	0	3	0	0	0	0	380	1520
15:15	0	210	1	0	10	0	0	23	2	11	1	0	2	0	2	254	0	0	33	0	0	0	0	2	0	0	0	0	551	
15:30	0	245	1	0	13	0	0	26	0	13	4	0	0	0	1	321	0	0	22	0	0	1	0	4	0	0	0	0	651	
15:45	0	225	0	0	7	0	0	34	0	11	3	0	2	0	1	280	0	0	16	0	0	0	0	0	0	0	0	0	579	
16:00	0	238	0	0	10	1	0	32	0	22	2	0	0	0	2	322	0	0	19	0	0	1	0	1	1	0	0	0	651	2432
16:15	0	207	1	0	9	0	0	39	1	19	4	0	2	0	1	342	0	0	10	0	0	0	0	2	0	0	0	0	637	2518
16:30	0	276	1	0	4	1	0	47	2	21	3	0	0	0	2	410	0	0	6	0	0	4	0	4	1	0	1	0	783	2650
16:45	0	260	1	0	7	1	0	54	2	26	1	1	0	0	2	359	0	0	8	0	0	2	0	2	1	0	0	0	727	2798
17:00	0	269	0	0	10	0	0	52	5	30	4	1	0	0	4	424	0	0	10	0	0	1	0	19	0	0	2	0	831	2978
17:15	0	263	1	0	4	0	0	52	0	25	1	0	0	0	0	404	0	0	10	0	0	1	0	1	0	0	0	0	762	3103
17:30	0	271	2	0	5	0	0	61	4	27	2	0	1	0	0	399	0	0	6	0	0	2	0	4	0	0	0	0	784	3104
17:45	0	304	0	0	6	0	0	76	1	28	1	0	1	0	2	351	0	0	3	0	0	1	0	6	0	0	0	0	780	3157
18:00	0	301	1	0	3	0	0	54	2	12	4	0	0	0	0	370	0	0	5	0	0	0	0	4	0	0	0	0	756	3082

Trafalgar Rd @ Lower Base Line E

Morning Peak Diagram

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

One Hour Peak
From: 7:30:00
To: 8:30:00

Municipality: Halton Region
Site #: 0000003378
Intersection: Trafalgar Rd & Lower Base Line E
TFR File #: 13
Count date: 6-Nov-2019

Weather conditions:
Cloudy/Dry

Person(s) who counted:
Cam

**** Signalized Intersection ****

Major Road: Trafalgar Rd runs N/S

North Leg Total: 2768
North Entering: 1462
North Peds: 0
Peds Cross: ⋈

Heavys	3	42	12	57
Trucks	0	11	2	13
Cars	12	1069	311	1392
Totals	15	1122	325	

Heavys	65
Trucks	8
Cars	1233
Totals	1306

East Leg Total: 1224
East Entering: 398
East Peds: 0
Peds Cross: ⧗

Trafalgar Rd

Heavys	Trucks	Cars	Totals
7	3	112	122

Cars	Trucks	Heavys	Totals
121	0	21	142
75	1	1	77
176	0	3	179
372	1	25	

Lower Base Line E

N
W E
S

Heavys	Trucks	Cars	Totals
1	0	97	98
1	1	378	380
5	0	137	142
7	1	612	

Lower Base Line E

Cars	Trucks	Heavys	Totals
809	3	14	826

Trafalgar Rd

Peds Cross: ⧗
West Peds: 0
West Entering: 620
West Leg Total: 742

Cars	1382
Trucks	11
Heavys	50
Totals	1443

Cars	25	1015	120	1160
Trucks	2	8	0	10
Heavys	3	43	1	47
Totals	30	1066	121	

Peds Cross: ⋈
South Peds: 0
South Entering: 1217
South Leg Total: 2660

Comments

Trafalgar Rd @ Lower Base Line E

Mid-day Peak Diagram

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

One Hour Peak
From: 13:00:00
To: 14:00:00

Municipality: Halton Region
Site #: 0000003378
Intersection: Trafalgar Rd & Lower Base Line E
TFR File #: 13
Count date: 6-Nov-2019

Weather conditions:
Cloudy/Dry

Person(s) who counted:
Cam

**** Signalized Intersection ****

Major Road: Trafalgar Rd runs N/S

North Leg Total:	1491
North Entering:	739
North Peds:	0
Peds Cross:	⋈

Heavys	3	46	19	68
Trucks	1	10	2	13
Cars	13	547	98	658
Totals	17	603	119	

Heavys	89
Trucks	14
Cars	649
Totals	752

East Leg Total:	555
East Entering:	312
East Peds:	0
Peds Cross:	⧗

Trafalgar Rd

Heavys	Trucks	Cars	Totals
8	3	138	149

Cars	Trucks	Heavys	Totals
110	1	24	135
93	1	4	98
79	0	0	79
282	2	28	

Lower Base Line E

N
W E
S

Heavys	Trucks	Cars	Totals
1	0	6	7
3	1	57	61
2	3	23	28
6	4	86	

Lower Base Line E

Cars	Trucks	Heavys	Totals
217	3	23	243

Trafalgar Rd

Peds Cross:	⧗
West Peds:	0
West Entering:	96
West Leg Total:	245

Cars	649
Trucks	13
Heavys	48
Totals	710

Cars	32	533	62	627
Trucks	1	13	0	14
Heavys	1	64	1	66
Totals	34	610	63	

Peds Cross:	⋈
South Peds:	0
South Entering:	707
South Leg Total:	1417

Comments

Trafalgar Rd @ Lower Base Line E

Afternoon Peak Diagram

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

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

Municipality: Halton Region
Site #: 0000003378
Intersection: Trafalgar Rd & Lower Base Line E
TFR File #: 13
Count date: 6-Nov-2019

Weather conditions:
Cloudy/Dry

Person(s) who counted:
Cam

**** Signalized Intersection ****

Major Road: Trafalgar Rd runs N/S

North Leg Total:	2716
North Entering:	1172
North Peds:	0
Peds Cross:	⋈

Heavys	2	15	9	26
Trucks	1	8	2	11
Cars	77	871	187	1135
Totals	80	894	198	

Heavys	33
Trucks	11
Cars	1500
Totals	1544

East Leg Total:	1335
East Entering:	836
East Peds:	0
Peds Cross:	⋈

Trafalgar Rd

Heavys	Trucks	Cars	Totals
3	1	787	791

Cars	Trucks	Heavys	Totals
232	2	4	238
437	0	1	438
158	0	2	160
827	2	7	

Lower Base Line E

N
W E
S

Heavys	Trucks	Cars	Totals
3	0	32	35
5	3	148	156
3	0	46	49
11	3	226	

Lower Base Line E

Cars	Trucks	Heavys	Totals
478	6	15	499

Trafalgar Rd

Peds Cross:	⋈
West Peds:	0
West Entering:	240
West Leg Total:	1031

Cars	1075
Trucks	8
Heavys	20
Totals	1103

Cars	273	1236	143	1652
Trucks	0	9	1	10
Heavys	0	26	1	27
Totals	273	1271	145	

Peds Cross:	⋈
South Peds:	0
South Entering:	1689
South Leg Total:	2792

Comments

Trafalgar Rd @ Lower Base Line E

Total Count Diagram

Municipality: Halton Region
Site #: 0000003378
Intersection: Trafalgar Rd & Lower Base Line E
TFR File #: 13
Count date: 6-Nov-2019

Weather conditions:
Cloudy/Dry
Person(s) who counted:
Cam

**** Signalized Intersection ****

Major Road: Trafalgar Rd runs N/S

North Leg Total:	17184
North Entering:	8425
North Peds:	1
Peds Cross:	⋈

Heavys	20	312	139	471
Trucks	3	73	14	90
Cars	261	6157	1446	7864
Totals	284	6542	1599	

Heavys	515
Trucks	95
Cars	8149
Totals	8759

East Leg Total:	7678
East Entering:	3917
East Peds:	0
Peds Cross:	⧗

Trafalgar Rd

Heavys	Trucks	Cars	Totals
36	15	2601	2652

Lower Base Line E

Heavys	Trucks	Cars	Totals
20	1	279	300
11	9	1395	1415
13	6	487	506
44	16	2161	

N
W E
S

Cars	Trucks	Heavys	Totals
1176	8	105	1289
1572	5	10	1587
1022	7	12	1041
3770	20	127	

Lower Base Line E

Cars	Trucks	Heavys	Totals
3574	27	160	3761

Trafalgar Rd

Peds Cross:	⧗
West Peds:	0
West Entering:	2221
West Leg Total:	4873

Cars	7666
Trucks	86
Heavys	337
Totals	8089

Cars	768	6694	733	8195
Trucks	7	86	4	97
Heavys	6	390	10	406
Totals	781	7170	747	

Peds Cross:	⋈
South Peds:	1
South Entering:	8698
South Leg Total:	16787

Comments

Trafalgar Rd @ Lower Base Line E

Municipality: Halton Region
Major Road: Trafalgar Rd
Minor Road: Lower Base Line E

Date: Nov 6, 2019

Major Road Runs: North/South
Weather Conditions: Cloudy/Dry
Person No. 1 Cam
Person No. 2

Period	North Approach							East Approach							South Approach							West Approach							Veh. Summary	
	Cars			Trucks			Ped.	Cars			Trucks			Ped.	Cars			Trucks			Ped.	Cars			Trucks			Ped.		
Ending	Left	Thru	Right	Left	Thru	Right	Cross.	Left	Thru	Right	Left	Thru	Right	Cross.	Left	Thru	Right	Left	Thru	Right	Cross.	Left	Thru	Right	Left	Thru	Right	Cross.	15	60
7:15	74	252	5	2	13	1	0	22	11	19	1	2	0	0	4	127	25	0	9	2	0	18	106	29	1	0	0	0	723	
7:30	85	259	6	3	13	0	0	30	17	20	0	2	2	0	4	201	20	0	7	1	0	27	110	30	0	2	2	0	841	
7:45	94	269	3	0	12	1	0	35	21	38	1	0	4	0	5	242	31	0	18	1	0	25	108	31	1	0	0	0	940	
8:00	84	285	6	3	15	0	0	36	16	32	1	1	6	0	3	268	26	3	12	0	0	28	105	34	0	0	0	0	964	3468
8:15	69	256	2	6	10	2	0	46	20	24	0	0	5	0	10	260	38	1	10	0	0	23	87	32	0	2	2	0	905	3650
8:30	64	259	1	5	16	0	0	59	18	27	1	1	6	0	7	245	25	1	11	0	0	21	78	40	0	0	3	0	888	3697
8:45	63	268	4	5	14	0	0	59	24	27	0	1	0	0	9	243	39	1	23	1	0	16	108	31	0	0	0	0	936	3693
9:00	58	244	4	8	9	0	0	51	25	21	1	1	2	0	14	226	36	2	25	0	0	8	72	31	1	0	0	0	839	3568
11:15	29	121	3	6	19	0	0	20	20	23	3	1	0	0	7	117	14	0	26	1	0	1	22	7	0	0	1	0	441	
11:30	36	145	0	10	16	0	0	13	13	21	0	0	9	0	6	140	17	0	17	1	0	3	20	5	0	0	0	0	472	
11:45	31	157	3	7	21	0	0	28	14	19	1	0	6	0	8	99	15	0	15	0	0	6	30	10	0	0	2	0	472	
12:00	25	127	2	4	17	0	0	8	15	24	1	0	4	0	9	130	10	0	15	0	0	2	25	13	2	0	1	0	434	1819
12:15	21	145	1	11	13	3	1	18	22	23	1	0	5	0	5	125	8	0	17	0	1	2	18	5	1	0	0	0	444	1822
12:30	37	123	1	6	13	3	0	7	21	19	0	0	8	0	7	137	18	0	19	0	0	6	17	8	0	0	0	0	450	1800
12:45	27	136	2	7	20	1	0	17	16	21	0	0	1	0	6	125	16	0	15	3	0	0	19	13	2	0	0	0	447	1775
13:00	20	131	4	15	19	1	0	12	19	22	1	0	5	0	7	130	12	0	13	0	0	2	18	7	2	0	0	0	440	1781
13:15	23	134	1	7	10	2	0	17	27	20	0	0	8	0	7	107	18	1	19	0	0	2	15	4	0	0	1	0	423	1760
13:30	24	135	1	6	13	1	0	29	16	36	0	1	8	0	6	136	14	1	21	0	0	1	15	3	0	3	1	0	471	1781
13:45	23	140	1	4	18	1	0	16	23	31	0	3	3	0	12	151	16	0	21	1	0	1	17	6	1	0	1	0	490	1824
14:00	28	138	10	4	15	0	0	17	27	23	0	1	6	0	7	139	14	0	16	0	0	2	10	10	0	1	2	0	470	1854
15:15	23	164	7	6	11	0	0	31	77	58	0	0	6	0	23	201	24	1	30	0	0	4	17	6	2	0	0	0	691	
15:30	31	185	7	4	13	1	0	39	77	73	0	0	3	0	35	265	19	1	24	0	0	6	18	11	1	0	0	0	813	
15:45	35	177	12	4	6	0	0	37	90	55	1	0	5	0	27	241	28	0	15	0	0	4	20	12	1	1	0	0	771	
16:00	45	181	20	3	10	2	0	39	113	65	2	0	3	0	48	250	20	1	20	0	0	5	28	17	1	1	0	0	874	3149
16:15	41	155	17	4	8	1	0	48	109	77	1	0	2	0	46	252	22	0	11	1	0	9	27	8	0	2	0	0	841	3299
16:30	46	232	17	3	4	2	0	36	110	68	0	0	1	0	69	295	26	0	9	1	0	11	37	12	1	4	0	0	984	3470
16:45	50	217	26	2	8	0	0	30	92	62	0	1	4	0	73	322	40	0	8	0	0	7	33	11	0	0	0	0	986	3685
17:00	42	214	13	2	7	0	0	47	135	49	2	0	0	0	52	296	46	0	10	1	0	8	47	12	1	1	3	0	988	3799
17:15	49	208	21	4	4	1	0	45	100	53	0	0	1	0	79	323	31	0	8	0	0	6	31	11	1	3	0	0	979	3937
17:30	60	214	14	2	4	0	0	47	89	49	0	0	0	0	65	295	25	0	6	0	0	7	50	11	2	0	0	0	940	3893
17:45	61	234	26	0	7	0	0	46	99	38	0	0	0	0	56	287	19	0	2	0	0	7	41	19	0	0	0	0	942	3849
18:00	48	252	21	0	7	0	0	37	96	39	1	0	0	0	52	319	21	0	4	0	0	11	46	8	0	0	0	0	962	3823

Paradigm Transportation Solutions Limited
5A-150 Pinebush Rd

Cambridge, Ontario, Canada N1R 8J8
519-896-3163 cbowness@ptsl.com

Count Name: Trafalgar Road & Hwy 407 GO/Car Pool Lot
Site Code: 210156
Start Date: 07/15/2021

Turning Movement Data

Start Time	Hwy 407 GO/Car Pool Lot Eastbound					Trafalgar Road Northbound					Trafalgar Road Southbound					
	Left	Right	U-Turn	Peds	App. Total	Left	Thru	U-Turn	Peds	App. Total	Thru	Right	U-Turn	Peds	App. Total	Int. Total
6:00 AM	3	2	0	0	5	2	75	1	0	78	112	0	0	0	112	195
6:15 AM	1	1	0	0	2	0	85	0	0	85	142	0	0	0	142	229
6:30 AM	3	2	0	0	5	2	125	0	0	127	173	2	0	0	175	307
6:45 AM	2	0	0	0	2	1	104	0	0	105	205	1	0	0	206	313
Hourly Total	9	5	0	0	14	5	389	1	0	395	632	3	0	0	635	1044
7:00 AM	2	0	0	0	2	3	138	0	0	141	184	2	0	0	186	329
7:15 AM	5	2	0	0	7	0	141	0	0	141	215	0	0	0	215	363
7:30 AM	2	2	0	0	4	4	156	0	0	160	251	1	1	0	253	417
7:45 AM	4	1	0	0	5	2	180	0	0	182	220	5	0	0	225	412
Hourly Total	13	5	0	0	18	9	615	0	0	624	870	8	1	0	879	1521
8:00 AM	2	2	0	0	4	1	163	0	0	164	232	2	0	0	234	402
8:15 AM	3	1	0	0	4	2	180	0	0	182	234	1	0	0	235	421
8:30 AM	2	4	0	0	6	3	191	0	0	194	250	1	0	0	251	451
8:45 AM	6	4	0	0	10	5	186	0	0	191	283	2	0	0	285	486
Hourly Total	13	11	0	0	24	11	720	0	0	731	999	6	0	0	1005	1760
9:00 AM	3	2	0	0	5	0	133	0	0	133	200	2	0	0	202	340
9:15 AM	4	1	0	0	5	0	156	0	0	156	189	0	0	0	189	350
9:30 AM	1	2	0	0	3	4	135	0	0	139	202	1	0	0	203	345
9:45 AM	9	2	0	0	11	3	155	0	0	158	194	3	0	0	197	366
Hourly Total	17	7	0	0	24	7	579	0	0	586	785	6	0	0	791	1401
*** BREAK ***	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
3:00 PM	1	0	0	0	1	0	275	0	0	275	189	1	1	0	191	467
3:15 PM	3	3	0	0	6	0	328	0	0	328	209	1	2	0	212	546
3:30 PM	1	3	0	0	4	3	323	1	0	327	208	2	0	0	210	541
3:45 PM	4	4	0	0	8	3	340	0	0	343	219	0	1	0	220	571
Hourly Total	9	10	0	0	19	6	1266	1	0	1273	825	4	4	0	833	2125
4:00 PM	2	1	0	0	3	0	328	1	0	329	178	4	0	0	182	514
4:15 PM	6	6	0	0	12	3	379	1	0	383	205	3	0	0	208	603
4:30 PM	7	3	0	0	10	7	356	0	0	363	205	2	0	0	207	580
4:45 PM	5	4	0	0	9	3	360	0	0	363	240	0	0	0	240	612
Hourly Total	20	14	0	0	34	13	1423	2	0	1438	828	9	0	0	837	2309
5:00 PM	0	0	0	0	0	0	392	0	0	392	262	0	0	0	262	654
5:15 PM	5	5	0	0	10	4	326	0	0	330	226	3	0	0	229	569
5:30 PM	1	1	0	0	2	1	338	0	0	339	256	0	0	0	256	597
5:45 PM	5	0	0	0	5	1	311	0	0	312	205	3	0	0	208	525
Hourly Total	11	6	0	0	17	6	1367	0	0	1373	949	6	0	0	955	2345

6:00 PM	3	1	0	0	4	1	264	0	0	265	207	2	0	0	209	478
6:15 PM	5	3	0	0	8	0	307	0	0	307	206	1	0	0	207	522
6:30 PM	2	5	0	0	7	5	243	0	0	248	226	1	0	0	227	482
6:45 PM	7	1	0	0	8	0	213	1	0	214	193	1	0	0	194	416
Hourly Total	17	10	0	0	27	6	1027	1	0	1034	832	5	0	0	837	1898
Grand Total	109	68	0	0	177	63	7386	5	0	7454	6720	47	5	0	6772	14403
Approach %	61.6	38.4	0.0	-	-	0.8	99.1	0.1	-	-	99.2	0.7	0.1	-	-	-
Total %	0.8	0.5	0.0	-	1.2	0.4	51.3	0.0	-	51.8	46.7	0.3	0.0	-	47.0	-
Motorcycles	0	0	0	-	0	0	9	0	-	9	14	0	0	-	14	23
% Motorcycles	0.0	0.0	-	-	0.0	0.0	0.1	0.0	-	0.1	0.2	0.0	0.0	-	0.2	0.2
Cars & Light Goods	43	51	0	-	94	47	7074	5	-	7126	6377	47	5	-	6429	13649
% Cars & Light Goods	39.4	75.0	-	-	53.1	74.6	95.8	100.0	-	95.6	94.9	100.0	100.0	-	94.9	94.8
Buses	64	17	0	-	81	15	1	0	-	16	0	0	0	-	0	97
% Buses	58.7	25.0	-	-	45.8	23.8	0.0	0.0	-	0.2	0.0	0.0	0.0	-	0.0	0.7
Single-Unit Trucks	2	0	0	-	2	1	195	0	-	196	202	0	0	-	202	400
% Single-Unit Trucks	1.8	0.0	-	-	1.1	1.6	2.6	0.0	-	2.6	3.0	0.0	0.0	-	3.0	2.8
Articulated Trucks	0	0	0	-	0	0	106	0	-	106	125	0	0	-	125	231
% Articulated Trucks	0.0	0.0	-	-	0.0	0.0	1.4	0.0	-	1.4	1.9	0.0	0.0	-	1.8	1.6
Bicycles on Road	0	0	0	-	0	0	1	0	-	1	2	0	0	-	2	3
% Bicycles on Road	0.0	0.0	-	-	0.0	0.0	0.0	0.0	-	0.0	0.0	0.0	0.0	-	0.0	0.0
Bicycles on Crosswalk	-	-	-	0	-	-	-	-	0	-	-	-	-	0	-	-
% Bicycles on Crosswalk	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Pedestrians	-	-	-	0	-	-	-	-	0	-	-	-	-	0	-	-
% Pedestrians	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Paradigm Transportation Solutions Limited
5A-150 Pinebush Rd

Cambridge, Ontario, Canada N1R 8J8
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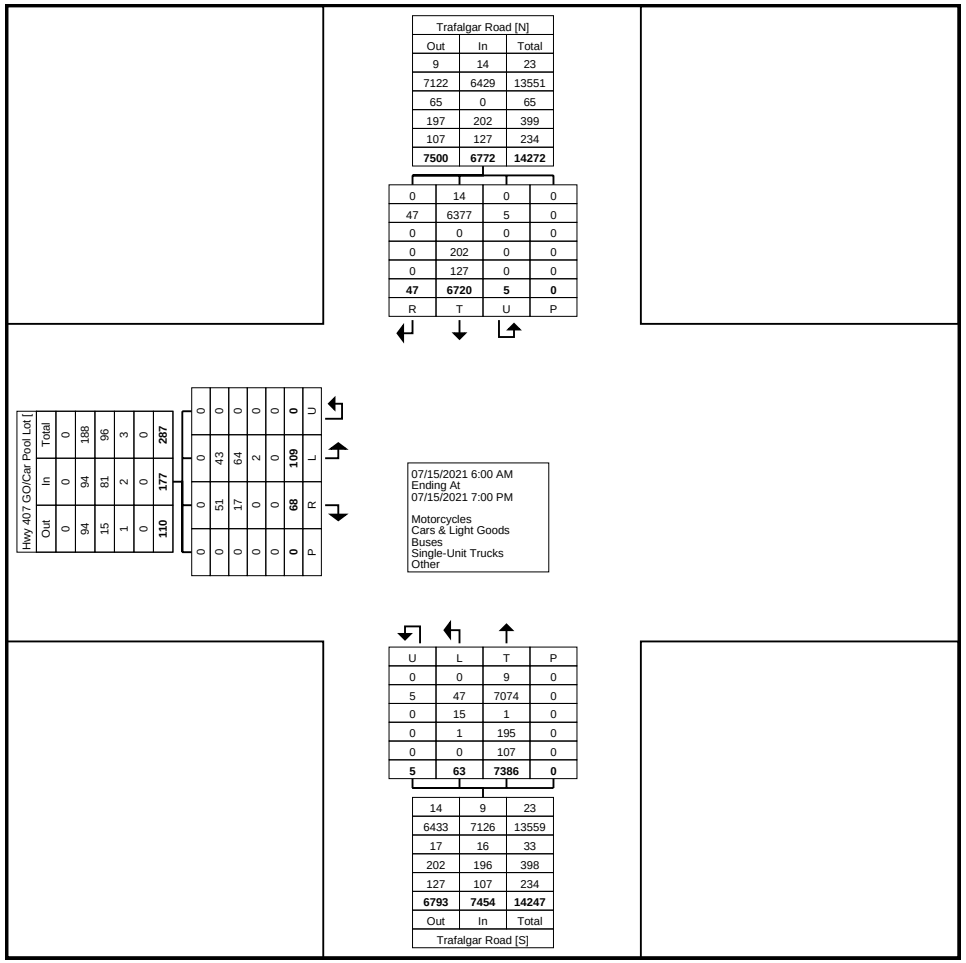
Count Name: Trafalgar Road & Hwy 407 GO/Car Pool Lot
Site Code: 210156
Start Date: 07/15/2021



Turning Movement Data Plot

Paradigm Transportation Solutions Limited
5A-150 Pinebush Rd

Cambridge, Ontario, Canada N1R 8J8
519-896-3163 cbowness@ptsl.com

Count Name: Trafalgar Road & Hwy 407 GO/Car Pool Lot
Site Code: 210156
Start Date: 07/15/2021

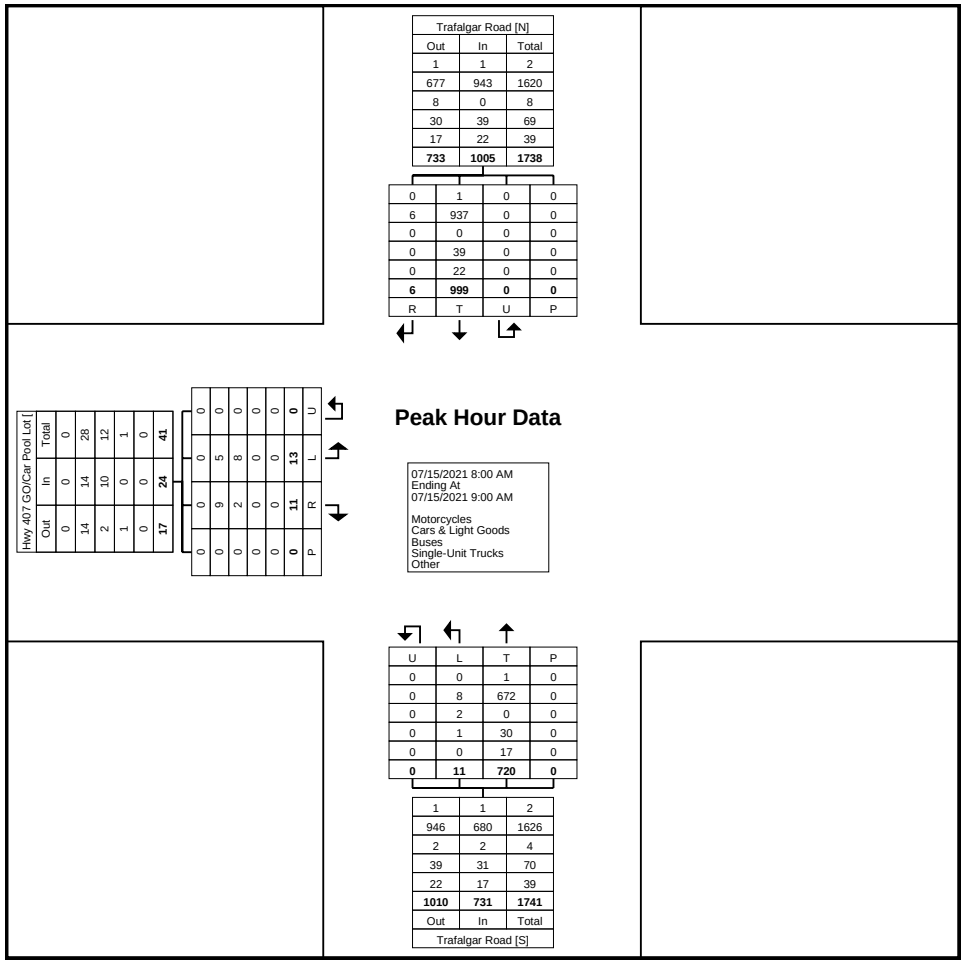
Turning Movement Peak Hour Data (8:00 AM)

Start Time	Hwy 407 GO/Car Pool Lot Eastbound					Trafalgar Road Northbound					Trafalgar Road Southbound					
	Left	Right	U-Turn	Peds	App. Total	Left	Thru	U-Turn	Peds	App. Total	Thru	Right	U-Turn	Peds	App. Total	Int. Total
8:00 AM	2	2	0	0	4	1	163	0	0	164	232	2	0	0	234	402
8:15 AM	3	1	0	0	4	2	180	0	0	182	234	1	0	0	235	421
8:30 AM	2	4	0	0	6	3	191	0	0	194	250	1	0	0	251	451
8:45 AM	6	4	0	0	10	5	186	0	0	191	283	2	0	0	285	486
Total	13	11	0	0	24	11	720	0	0	731	999	6	0	0	1005	1760
Approach %	54.2	45.8	0.0	-	-	1.5	98.5	0.0	-	-	99.4	0.6	0.0	-	-	-
Total %	0.7	0.6	0.0	-	1.4	0.6	40.9	0.0	-	41.5	56.8	0.3	0.0	-	57.1	-
PHF	0.542	0.688	0.000	-	0.600	0.550	0.942	0.000	-	0.942	0.883	0.750	0.000	-	0.882	0.905
Motorcycles	0	0	0	-	0	0	1	0	-	1	1	0	0	-	1	2
% Motorcycles	0.0	0.0	-	-	0.0	0.0	0.1	-	-	0.1	0.1	0.0	-	-	0.1	0.1
Cars & Light Goods	5	9	0	-	14	8	672	0	-	680	937	6	0	-	943	1637
% Cars & Light Goods	38.5	81.8	-	-	58.3	72.7	93.3	-	-	93.0	93.8	100.0	-	-	93.8	93.0
Buses	8	2	0	-	10	2	0	0	-	2	0	0	0	-	0	12
% Buses	61.5	18.2	-	-	41.7	18.2	0.0	-	-	0.3	0.0	0.0	-	-	0.0	0.7
Single-Unit Trucks	0	0	0	-	0	1	30	0	-	31	39	0	0	-	39	70
% Single-Unit Trucks	0.0	0.0	-	-	0.0	9.1	4.2	-	-	4.2	3.9	0.0	-	-	3.9	4.0
Articulated Trucks	0	0	0	-	0	0	16	0	-	16	22	0	0	-	22	38
% Articulated Trucks	0.0	0.0	-	-	0.0	0.0	2.2	-	-	2.2	2.2	0.0	-	-	2.2	2.2
Bicycles on Road	0	0	0	-	0	0	1	0	-	1	0	0	0	-	0	1
% Bicycles on Road	0.0	0.0	-	-	0.0	0.0	0.1	-	-	0.1	0.0	0.0	-	-	0.0	0.1
Bicycles on Crosswalk	-	-	-	0	-	-	-	-	0	-	-	-	-	0	-	-
% Bicycles on Crosswalk	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Pedestrians	-	-	-	0	-	-	-	-	0	-	-	-	-	0	-	-
% Pedestrians	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Paradigm Transportation Solutions Limited
5A-150 Pinebush Rd

Cambridge, Ontario, Canada N1R 8J8
519-896-3163 cbowness@ptsl.com

Count Name: Trafalgar Road & Hwy 407 GO/Car Pool Lot
Site Code: 210156
Start Date: 07/15/2021



Turning Movement Peak Hour Data Plot (8:00 AM)

Paradigm Transportation Solutions Limited
5A-150 Pinebush Rd

Cambridge, Ontario, Canada N1R 8J8
519-896-3163 cbowness@ptsl.com

Count Name: Trafalgar Road & Hwy 407 GO/Car Pool Lot
Site Code: 210156
Start Date: 07/15/2021

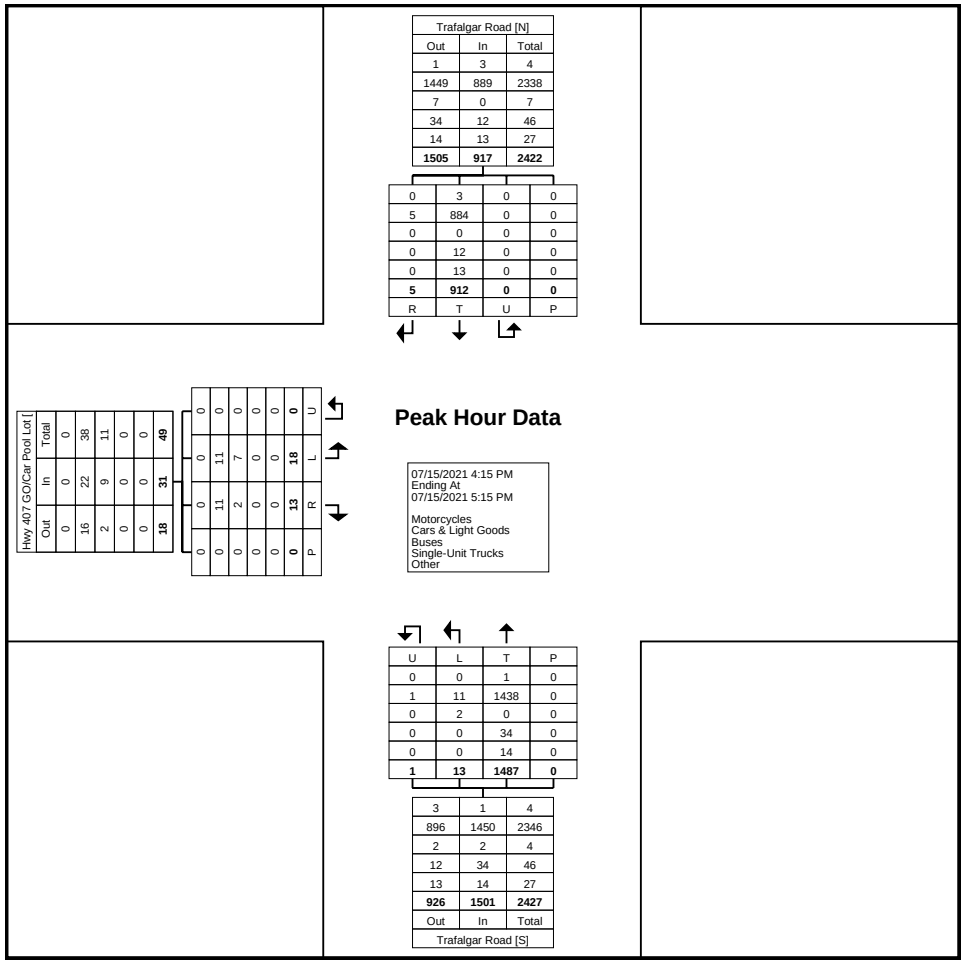
Turning Movement Peak Hour Data (4:15 PM)

Start Time	Hwy 407 GO/Car Pool Lot Eastbound					Trafalgar Road Northbound					Trafalgar Road Southbound					
	Left	Right	U-Turn	Peds	App. Total	Left	Thru	U-Turn	Peds	App. Total	Thru	Right	U-Turn	Peds	App. Total	Int. Total
4:15 PM	6	6	0	0	12	3	379	1	0	383	205	3	0	0	208	603
4:30 PM	7	3	0	0	10	7	356	0	0	363	205	2	0	0	207	580
4:45 PM	5	4	0	0	9	3	360	0	0	363	240	0	0	0	240	612
5:00 PM	0	0	0	0	0	0	392	0	0	392	262	0	0	0	262	654
Total	18	13	0	0	31	13	1487	1	0	1501	912	5	0	0	917	2449
Approach %	58.1	41.9	0.0	-	-	0.9	99.1	0.1	-	-	99.5	0.5	0.0	-	-	-
Total %	0.7	0.5	0.0	-	1.3	0.5	60.7	0.0	-	61.3	37.2	0.2	0.0	-	37.4	-
PHF	0.643	0.542	0.000	-	0.646	0.464	0.948	0.250	-	0.957	0.870	0.417	0.000	-	0.875	0.936
Motorcycles	0	0	0	-	0	0	1	0	-	1	3	0	0	-	3	4
% Motorcycles	0.0	0.0	-	-	0.0	0.0	0.1	0.0	-	0.1	0.3	0.0	-	-	0.3	0.2
Cars & Light Goods	11	11	0	-	22	11	1438	1	-	1450	884	5	0	-	889	2361
% Cars & Light Goods	61.1	84.6	-	-	71.0	84.6	96.7	100.0	-	96.6	96.9	100.0	-	-	96.9	96.4
Buses	7	2	0	-	9	2	0	0	-	2	0	0	0	-	0	11
% Buses	38.9	15.4	-	-	29.0	15.4	0.0	0.0	-	0.1	0.0	0.0	-	-	0.0	0.4
Single-Unit Trucks	0	0	0	-	0	0	34	0	-	34	12	0	0	-	12	46
% Single-Unit Trucks	0.0	0.0	-	-	0.0	0.0	2.3	0.0	-	2.3	1.3	0.0	-	-	1.3	1.9
Articulated Trucks	0	0	0	-	0	0	14	0	-	14	13	0	0	-	13	27
% Articulated Trucks	0.0	0.0	-	-	0.0	0.0	0.9	0.0	-	0.9	1.4	0.0	-	-	1.4	1.1
Bicycles on Road	0	0	0	-	0	0	0	0	-	0	0	0	0	-	0	0
% Bicycles on Road	0.0	0.0	-	-	0.0	0.0	0.0	0.0	-	0.0	0.0	0.0	-	-	0.0	0.0
Bicycles on Crosswalk	-	-	-	0	-	-	-	-	0	-	-	-	-	0	-	-
% Bicycles on Crosswalk	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Pedestrians	-	-	-	0	-	-	-	-	0	-	-	-	-	0	-	-
% Pedestrians	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Paradigm Transportation Solutions Limited
5A-150 Pinebush Rd

Cambridge, Ontario, Canada N1R 8J8
519-896-3163 cbowness@ptsl.com

Count Name: Trafalgar Road & Hwy 407 GO/Car Pool Lot
Site Code: 210156
Start Date: 07/15/2021



Turning Movement Peak Hour Data Plot (4:15 PM)

Paradigm Transportation Solutions Limited
5A-150 Pinebush Rd

Cambridge, Ontario, Canada N1R 8J8
519-896-3163 cbowness@ptsl.com

Count Name: Trafalgar Road & William Halton Parkway
Site Code: 210156
Start Date: 07/15/2021

Turning Movement Data

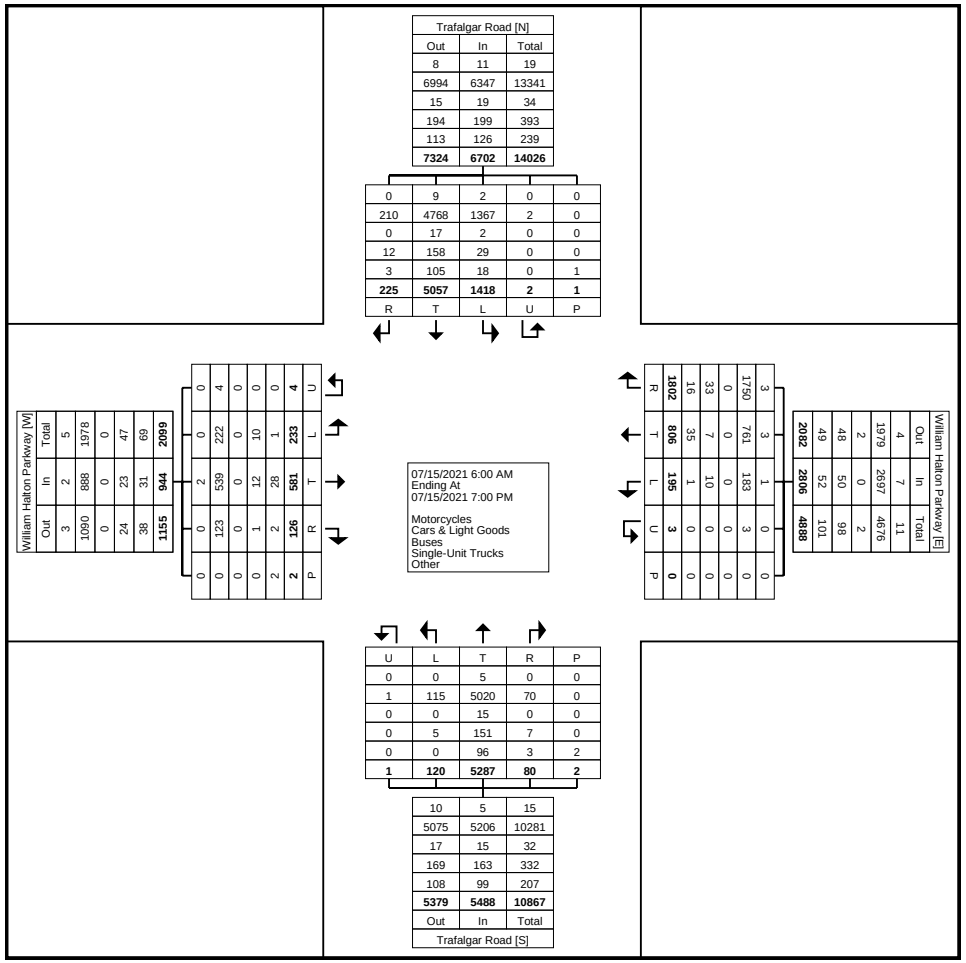
Start Time	William Halton Parkway Eastbound						William Halton Parkway Westbound						Trafalgar Road Northbound						Trafalgar Road Southbound						
	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	Int. Total
6:00 AM	3	9	0	0	0	12	2	1	12	0	0	15	0	61	1	0	0	62	34	73	5	0	0	112	201
6:15 AM	2	8	2	0	0	12	0	4	14	0	0	18	1	75	1	0	0	77	37	108	6	0	0	151	258
6:30 AM	6	21	4	0	0	31	1	4	22	0	0	27	2	110	2	0	0	114	44	148	6	0	0	198	370
6:45 AM	0	13	4	0	0	17	4	9	23	1	0	37	0	86	0	0	0	86	49	174	2	0	1	225	365
Hourly Total	11	51	10	0	0	72	7	18	71	1	0	97	3	332	4	0	0	339	164	503	19	0	1	686	1194
7:00 AM	3	20	1	0	0	24	1	7	34	0	0	42	0	103	4	0	2	107	57	126	8	0	0	191	364
7:15 AM	7	16	4	0	0	27	3	20	23	0	0	46	1	111	2	0	0	114	43	156	6	0	0	205	392
7:30 AM	4	22	5	0	0	31	5	9	32	0	0	46	0	133	2	0	0	135	73	174	11	0	0	258	470
7:45 AM	6	22	4	0	0	32	8	9	30	0	0	47	1	142	3	0	0	146	61	155	3	0	0	219	444
Hourly Total	20	80	14	0	0	114	17	45	119	0	0	181	2	489	11	0	2	502	234	611	28	0	0	873	1670
8:00 AM	8	20	2	0	0	30	3	10	36	0	0	49	1	124	4	0	0	129	51	167	9	0	0	227	435
8:15 AM	5	17	4	3	0	29	1	11	35	0	0	47	1	132	2	0	0	135	62	168	6	0	0	236	447
8:30 AM	8	21	7	1	0	37	8	16	55	0	0	79	5	129	1	0	0	135	48	172	7	0	0	227	478
8:45 AM	6	22	5	0	0	33	6	7	37	0	0	50	3	147	5	0	0	155	57	237	3	0	0	297	535
Hourly Total	27	80	18	4	0	129	18	44	163	0	0	225	10	532	12	0	0	554	218	744	25	0	0	987	1895
9:00 AM	6	29	4	0	0	39	4	18	31	0	0	53	1	95	3	0	0	99	41	157	2	0	0	200	391
9:15 AM	2	17	2	0	0	21	5	5	27	0	0	37	2	122	0	0	0	124	37	152	8	0	0	197	379
9:30 AM	6	10	5	0	0	21	3	6	32	0	0	41	1	95	1	0	0	97	34	167	4	0	0	205	364
9:45 AM	11	13	4	0	0	28	6	8	33	0	0	47	1	105	2	0	0	108	40	148	3	0	0	191	374
Hourly Total	25	69	15	0	0	109	18	37	123	0	0	178	5	417	6	0	0	428	152	624	17	0	0	793	1508
*** BREAK ***	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
3:00 PM	3	7	4	0	0	14	4	25	76	0	0	105	8	180	5	0	0	193	30	158	3	0	0	191	503
3:15 PM	5	10	6	0	0	21	6	37	82	0	0	125	4	231	4	0	0	239	39	168	3	0	0	210	595
3:30 PM	10	17	0	0	0	27	8	42	111	0	0	161	3	195	3	0	0	201	42	141	17	0	0	200	589
3:45 PM	10	16	4	0	0	30	12	26	100	0	0	138	5	229	1	0	0	235	56	168	7	0	0	231	634
Hourly Total	28	50	14	0	0	92	30	130	369	0	0	529	20	835	13	0	0	868	167	635	30	0	0	832	2321
4:00 PM	12	19	4	0	0	35	11	42	85	1	0	139	6	210	1	0	0	217	42	127	4	0	0	173	564
4:15 PM	7	12	4	0	1	23	5	50	87	0	0	142	7	274	3	0	0	284	39	176	8	0	0	223	672
4:30 PM	20	20	3	0	0	43	8	60	98	0	0	166	13	229	3	0	0	245	35	156	9	0	0	200	654
4:45 PM	14	26	5	0	0	45	8	67	91	0	0	166	3	251	3	0	0	257	45	182	9	1	0	237	705
Hourly Total	53	77	16	0	1	146	32	219	361	1	0	613	29	964	10	0	0	1003	161	641	30	1	0	833	2595
5:00 PM	12	21	6	0	1	39	7	59	92	0	0	158	9	281	3	1	0	294	54	178	12	0	0	244	735
5:15 PM	8	34	3	0	0	45	13	67	100	1	0	181	10	225	5	0	0	240	33	153	13	0	0	199	665
5:30 PM	9	27	11	0	0	47	10	35	73	0	0	118	12	257	4	0	0	273	52	153	11	0	0	216	654
5:45 PM	11	22	5	0	0	38	8	43	70	0	0	121	6	223	3	0	0	232	31	134	8	0	0	173	564

Hourly Total	40	104	25	0	1	169	38	204	335	1	0	578	37	986	15	1	0	1039	170	618	44	0	0	832	2618
6:00 PM	10	25	4	0	0	39	13	21	73	0	0	107	7	194	3	0	0	204	38	172	5	1	0	216	566
6:15 PM	3	15	5	0	0	23	10	33	76	0	0	119	2	211	2	0	0	215	41	165	5	0	0	211	568
6:30 PM	9	18	3	0	0	30	4	35	71	0	0	110	4	165	2	0	0	171	39	193	14	0	0	246	557
6:45 PM	7	12	2	0	0	21	8	20	41	0	0	69	1	162	2	0	0	165	34	151	8	0	0	193	448
Hourly Total	29	70	14	0	0	113	35	109	261	0	0	405	14	732	9	0	0	755	152	681	32	1	0	866	2139
Grand Total	233	581	126	4	2	944	195	806	1802	3	0	2806	120	5287	80	1	2	5488	1418	5057	225	2	1	6702	15940
Approach %	24.7	61.5	13.3	0.4	-	-	6.9	28.7	64.2	0.1	-	-	2.2	96.3	1.5	0.0	-	-	21.2	75.5	3.4	0.0	-	-	-
Total %	1.5	3.6	0.8	0.0	-	5.9	1.2	5.1	11.3	0.0	-	17.6	0.8	33.2	0.5	0.0	-	34.4	8.9	31.7	1.4	0.0	-	42.0	-
Motorcycles	0	2	0	0	-	2	1	3	3	0	-	7	0	5	0	0	-	5	2	9	0	0	-	11	25
% Motorcycles	0.0	0.3	0.0	0.0	-	0.2	0.5	0.4	0.2	0.0	-	0.2	0.0	0.1	0.0	0.0	-	0.1	0.1	0.2	0.0	0.0	-	0.2	0.2
Cars & Light Goods	222	539	123	4	-	888	183	761	1750	3	-	2697	115	5020	70	1	-	5206	1367	4768	210	2	-	6347	15138
% Cars & Light Goods	95.3	92.8	97.6	100.0	-	94.1	93.8	94.4	97.1	100.0	-	96.1	95.8	94.9	87.5	100.0	-	94.9	96.4	94.3	93.3	100.0	-	94.7	95.0
Buses	0	0	0	0	-	0	0	0	0	0	-	0	0	15	0	0	-	15	2	17	0	0	-	19	34
% Buses	0.0	0.0	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0	-	0.0	0.0	0.3	0.0	0.0	-	0.3	0.1	0.3	0.0	0.0	-	0.3	0.2
Single-Unit Trucks	10	12	1	0	-	23	10	7	33	0	-	50	5	151	7	0	-	163	29	158	12	0	-	199	435
% Single-Unit Trucks	4.3	2.1	0.8	0.0	-	2.4	5.1	0.9	1.8	0.0	-	1.8	4.2	2.9	8.8	0.0	-	3.0	2.0	3.1	5.3	0.0	-	3.0	2.7
Articulated Trucks	0	2	0	0	-	2	1	2	16	0	-	19	0	95	0	0	-	95	18	105	2	0	-	125	241
% Articulated Trucks	0.0	0.3	0.0	0.0	-	0.2	0.5	0.2	0.9	0.0	-	0.7	0.0	1.8	0.0	0.0	-	1.7	1.3	2.1	0.9	0.0	-	1.9	1.5
Bicycles on Road	1	26	2	0	-	29	0	33	0	0	-	33	0	1	3	0	-	4	0	0	1	0	-	1	67
% Bicycles on Road	0.4	4.5	1.6	0.0	-	3.1	0.0	4.1	0.0	0.0	-	1.2	0.0	0.0	3.8	0.0	-	0.1	0.0	0.0	0.4	0.0	-	0.0	0.4
Bicycles on Crosswalk	-	-	-	-	1	-	-	-	-	-	0	-	-	-	-	-	2	-	-	-	-	-	1	-	-
% Bicycles on Crosswalk	-	-	-	-	50.0	-	-	-	-	-	-	-	-	-	-	-	100.0	-	-	-	-	-	100.0	-	-
Pedestrians	-	-	-	-	1	-	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-
% Pedestrians	-	-	-	-	50.0	-	-	-	-	-	-	-	-	-	-	-	0.0	-	-	-	-	-	0.0	-	-

Paradigm Transportation Solutions Limited
5A-150 Pinebush Rd

Cambridge, Ontario, Canada N1R 8J8
519-896-3163 cbowness@ptsl.com

Count Name: Trafalgar Road & William Halton Parkway
Site Code: 210156
Start Date: 07/15/2021



Turning Movement Data Plot

Paradigm Transportation Solutions Limited
5A-150 Pinebush Rd

Cambridge, Ontario, Canada N1R 8J8
519-896-3163 cbowness@ptsl.com

Count Name: Trafalgar Road & William Halton Parkway
Site Code: 210156
Start Date: 07/15/2021

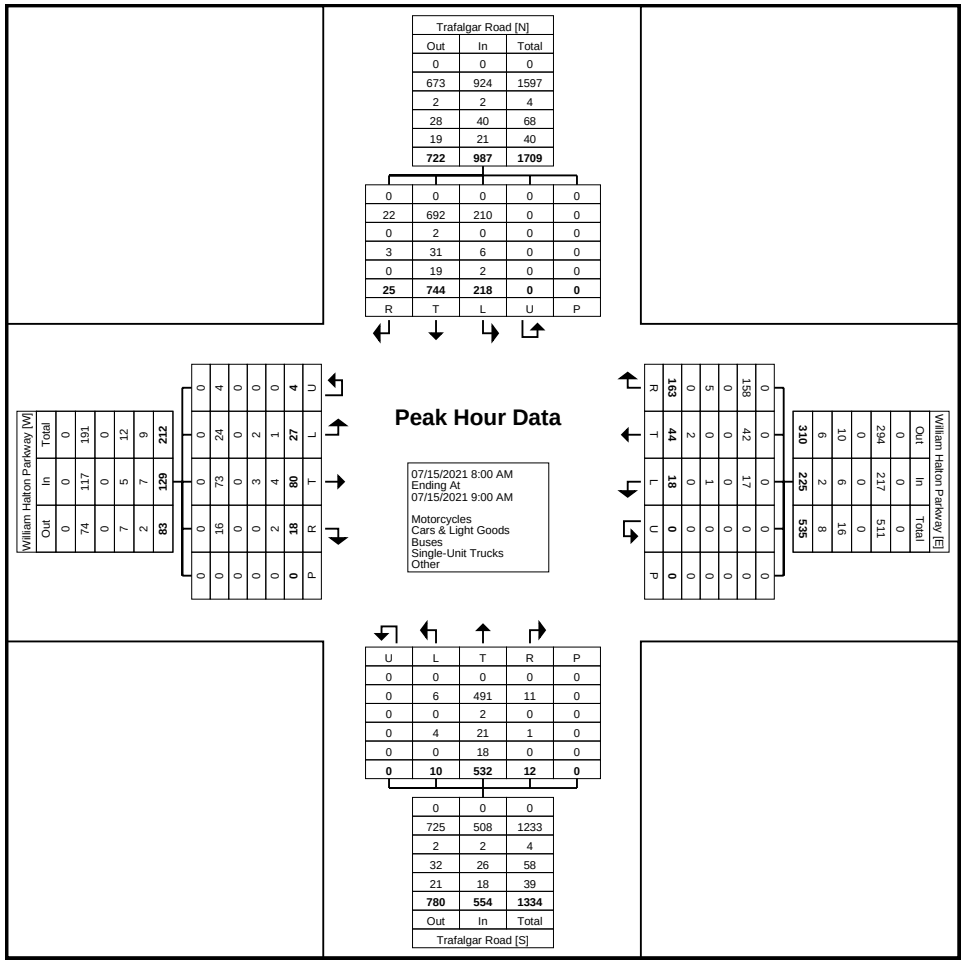
Turning Movement Peak Hour Data (8:00 AM)

Start Time	William Halton Parkway Eastbound						William Halton Parkway Westbound						Trafalgar Road Northbound						Trafalgar 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
8:00 AM	8	20	2	0	0	30	3	10	36	0	0	49	1	124	4	0	0	129	51	167	9	0	0	227	435
8:15 AM	5	17	4	3	0	29	1	11	35	0	0	47	1	132	2	0	0	135	62	168	6	0	0	236	447
8:30 AM	8	21	7	1	0	37	8	16	55	0	0	79	5	129	1	0	0	135	48	172	7	0	0	227	478
8:45 AM	6	22	5	0	0	33	6	7	37	0	0	50	3	147	5	0	0	155	57	237	3	0	0	297	535
Total	27	80	18	4	0	129	18	44	163	0	0	225	10	532	12	0	0	554	218	744	25	0	0	987	1895
Approach %	20.9	62.0	14.0	3.1	-	-	8.0	19.6	72.4	0.0	-	-	1.8	96.0	2.2	0.0	-	-	22.1	75.4	2.5	0.0	-	-	-
Total %	1.4	4.2	0.9	0.2	-	6.8	0.9	2.3	8.6	0.0	-	11.9	0.5	28.1	0.6	0.0	-	29.2	11.5	39.3	1.3	0.0	-	52.1	-
PHF	0.844	0.909	0.643	0.333	-	0.872	0.563	0.688	0.741	0.000	-	0.712	0.500	0.905	0.600	0.000	-	0.894	0.879	0.785	0.694	0.000	-	0.831	0.886
Motorcycles	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0
% Motorcycles	0.0	0.0	0.0	0.0	-	0.0	0.0	0.0	0.0	-	-	0.0	0.0	0.0	0.0	-	-	0.0	0.0	0.0	0.0	-	-	0.0	0.0
Cars & Light Goods	24	73	16	4	-	117	17	42	158	0	-	217	6	491	11	0	-	508	210	692	22	0	-	924	1766
% Cars & Light Goods	88.9	91.3	88.9	100.0	-	90.7	94.4	95.5	96.9	-	-	96.4	60.0	92.3	91.7	-	-	91.7	96.3	93.0	88.0	-	-	93.6	93.2
Buses	0	0	0	0	-	0	0	0	0	0	-	0	0	2	0	0	-	2	0	2	0	0	-	2	4
% Buses	0.0	0.0	0.0	0.0	-	0.0	0.0	0.0	0.0	-	-	0.0	0.0	0.4	0.0	-	-	0.4	0.0	0.3	0.0	-	-	0.2	0.2
Single-Unit Trucks	2	3	0	0	-	5	1	0	5	0	-	6	4	21	1	0	-	26	6	31	3	0	-	40	77
% Single-Unit Trucks	7.4	3.8	0.0	0.0	-	3.9	5.6	0.0	3.1	-	-	2.7	40.0	3.9	8.3	-	-	4.7	2.8	4.2	12.0	-	-	4.1	4.1
Articulated Trucks	0	1	0	0	-	1	0	0	0	0	-	0	0	17	0	0	-	17	2	19	0	0	-	21	39
% Articulated Trucks	0.0	1.3	0.0	0.0	-	0.8	0.0	0.0	0.0	-	-	0.0	0.0	3.2	0.0	-	-	3.1	0.9	2.6	0.0	-	-	2.1	2.1
Bicycles on Road	1	3	2	0	-	6	0	2	0	0	-	2	0	1	0	0	-	1	0	0	0	0	-	0	9
% Bicycles on Road	3.7	3.8	11.1	0.0	-	4.7	0.0	4.5	0.0	-	-	0.9	0.0	0.2	0.0	-	-	0.2	0.0	0.0	0.0	-	-	0.0	0.5
Bicycles on Crosswalk	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-
% Bicycles on Crosswalk	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Pedestrians	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-
% Pedestrians	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Paradigm Transportation Solutions Limited
5A-150 Pinebush Rd

Cambridge, Ontario, Canada N1R 8J8
519-896-3163 cbowness@ptsl.com

Count Name: Trafalgar Road & William Halton Parkway
Site Code: 210156
Start Date: 07/15/2021



Turning Movement Peak Hour Data Plot (8:00 AM)

Paradigm Transportation Solutions Limited
5A-150 Pinebush Rd

Cambridge, Ontario, Canada N1R 8J8
519-896-3163 cbowness@ptsl.com

Count Name: Trafalgar Road & William Halton Parkway
Site Code: 210156
Start Date: 07/15/2021

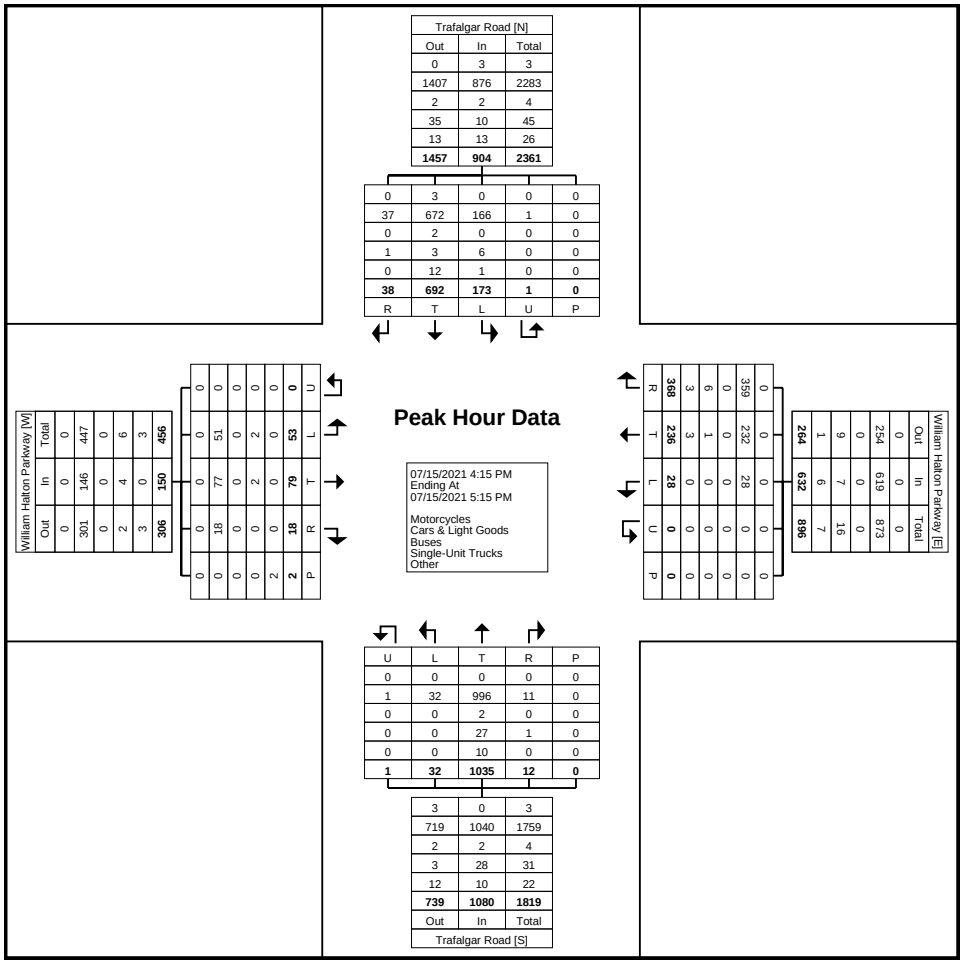
Turning Movement Peak Hour Data (4:15 PM)

Start Time	William Halton Parkway Eastbound						William Halton Parkway Westbound						Trafalgar Road Northbound						Trafalgar 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
4:15 PM	7	12	4	0	1	23	5	50	87	0	0	142	7	274	3	0	0	284	39	176	8	0	0	223	672
4:30 PM	20	20	3	0	0	43	8	60	98	0	0	166	13	229	3	0	0	245	35	156	9	0	0	200	654
4:45 PM	14	26	5	0	0	45	8	67	91	0	0	166	3	251	3	0	0	257	45	182	9	1	0	237	705
5:00 PM	12	21	6	0	1	39	7	59	92	0	0	158	9	281	3	1	0	294	54	178	12	0	0	244	735
Total	53	79	18	0	2	150	28	236	368	0	0	632	32	1035	12	1	0	1080	173	692	38	1	0	904	2766
Approach %	35.3	52.7	12.0	0.0	-	-	4.4	37.3	58.2	0.0	-	-	3.0	95.8	1.1	0.1	-	-	19.1	76.5	4.2	0.1	-	-	-
Total %	1.9	2.9	0.7	0.0	-	5.4	1.0	8.5	13.3	0.0	-	22.8	1.2	37.4	0.4	0.0	-	39.0	6.3	25.0	1.4	0.0	-	32.7	-
PHF	0.663	0.760	0.750	0.000	-	0.833	0.875	0.881	0.939	0.000	-	0.952	0.615	0.921	1.000	0.250	-	0.918	0.801	0.951	0.792	0.250	-	0.926	0.941
Motorcycles	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0	3	0	0	-	3	3
% Motorcycles	0.0	0.0	0.0	-	-	0.0	0.0	0.0	0.0	-	-	0.0	0.0	0.0	0.0	0.0	-	0.0	0.0	0.4	0.0	0.0	-	0.3	0.1
Cars & Light Goods	51	77	18	0	-	146	28	232	359	0	-	619	32	996	11	1	-	1040	166	672	37	1	-	876	2681
% Cars & Light Goods	96.2	97.5	100.0	-	-	97.3	100.0	98.3	97.6	-	-	97.9	100.0	96.2	91.7	100.0	-	96.3	96.0	97.1	97.4	100.0	-	96.9	96.9
Buses	0	0	0	0	-	0	0	0	0	0	-	0	0	2	0	0	-	2	0	2	0	0	-	2	4
% Buses	0.0	0.0	0.0	-	-	0.0	0.0	0.0	0.0	-	-	0.0	0.0	0.2	0.0	0.0	-	0.2	0.0	0.3	0.0	0.0	-	0.2	0.1
Single-Unit Trucks	2	2	0	0	-	4	0	1	6	0	-	7	0	27	1	0	-	28	6	3	1	0	-	10	49
% Single-Unit Trucks	3.8	2.5	0.0	-	-	2.7	0.0	0.4	1.6	-	-	1.1	0.0	2.6	8.3	0.0	-	2.6	3.5	0.4	2.6	0.0	-	1.1	1.8
Articulated Trucks	0	0	0	0	-	0	0	0	3	0	-	3	0	10	0	0	-	10	1	12	0	0	-	13	26
% Articulated Trucks	0.0	0.0	0.0	-	-	0.0	0.0	0.0	0.8	-	-	0.5	0.0	1.0	0.0	0.0	-	0.9	0.6	1.7	0.0	0.0	-	1.4	0.9
Bicycles on Road	0	0	0	0	-	0	0	3	0	0	-	3	0	0	0	0	-	0	0	0	0	0	-	0	3
% Bicycles on Road	0.0	0.0	0.0	-	-	0.0	0.0	1.3	0.0	-	-	0.5	0.0	0.0	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0	-	0.0	0.1
Bicycles on Crosswalk	-	-	-	-	1	-	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-
% Bicycles on Crosswalk	-	-	-	-	50.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Pedestrians	-	-	-	-	1	-	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-
% Pedestrians	-	-	-	-	50.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Paradigm Transportation Solutions Limited
5A-150 Pinebush Rd

Cambridge, Ontario, Canada N1R 8J8
519-896-3163 cbowness@ptsl.com

Count Name: Trafalgar Road & William Halton Parkway
Site Code: 210156
Start Date: 07/15/2021



Peak Hour Data

07/15/2021 4:15 PM
Ending At
07/15/2021 5:15 PM

Motorcycles
Cars & Light Goods
Buses
Single-Unit Trucks
Other

Trafalgar Road [N]

Out	In	Total
0	3	3
1407	876	2283
2	2	4
35	10	45
13	13	26
1457	**904**	**2361**

0	3	0	0	0
37	672	166	1	0
0	2	0	0	0
1	3	6	0	0
0	12	1	0	0
38	**692**	**173**	**1**	**0**
R	T	L	U	P

William Halton Parkway [W]

Out	In	Total
0	0	0
301	146	447
0	0	0
2	4	6
3	0	3
306	**150**	**456**

0	0	0	0	0
0	18	77	51	0
0	0	0	0	0
0	0	2	2	0
2	0	0	0	0
2	**18**	**79**	**53**	**0**
P	R	T	L	U

R	T	L	U	P
368	**236**	**28**	**0**	**0**
3	3	0	0	0
6	1	0	0	0
0	0	0	0	0
359	232	28	0	0
0	0	0	0	0

William Halton Parkway [E]

Out	In	Total
0	0	0
254	619	873
0	0	0
9	7	16
1	6	7
264	**632**	**896**

U	L	T	R	P
0	0	0	0	0
1	32	996	11	0
0	0	2	0	0
0	0	27	1	0
0	0	10	0	0
1	**32**	**1035**	**12**	**0**

3	0	3
719	1040	1759
2	2	4
3	28	31
12	10	22
739	**1080**	**1819**
Out	In	Total

Trafalgar Road [S]

Turning Movement Peak Hour Data Plot (4:15 PM)

Date: 02-Jun-21
Intersection: Trafalgar Road & Burnhamthorpe Road

8 Phase Basic Timing Sheet

	1	2	3	4	5	6	7	8	2 Ped	4 Ped	6 Ped	8 Ped
Phases in use	x	x	X	x		x		x				
Direction	SBLT	NB	WBLT	EB		SB		WB				
Min Green	7	20	7	10		20		10				
Veh Ext.	3.0	5.0	3.0	3.0		5.0		3.0				
Yellow	3	4.6	3	3.7		4.6		3.7				
Red	1	1.4	1	2.3		1.4		2.3				
Walk	-	-	-	-		-		-				
Don't Walk	-	-	-	-		-		-				
Max 1	15	45		30		60		30				
Max 2												
Max 3												
Veh Recall												
Ped Recall												
Notes:												

Pattern 1
Time: 6:00
Cycle Length: 120
Offset (%): 0%

Direction	**SBLT**	**NB**	**WBLT**	**EB**
Phase	***1***	***2***	***3***	***4***
%	17	41	0	42
Direction		**SB**		**WB**
Phase	***5***	***6***	***7***	***8***
%	0	58	0	42

Pattern 2
Time: 10:00
Cycle Length: 110
Offset (%): 0%

Direction	**SBLT**	**NB**
Phase	***1***	***2***
%	10	60
Direction		**SB**
Phase	***5***	***6***
%		70

Pattern 3
Time: 15:00
Cycle Length: 120
Offset (%): 0%

Direction	**SBLT**	**NB**	**WBLT**	**EB**
Phase	***1***	***2***	***3***	***4***
%	13	55	0	32
Direction		**SB**		**WB**
Phase	***5***	***6***	***7***	***8***
%	0	68	0	32

Pattern 4
Time: Fridays, 13:00 to 15:00
Cycle Length: 110
Offset (%): 0%

Direction	**SBLT**	**NB**
Phase	***1***	***2***
%	13	42
Direction		**SB**
Phase	***5***	***6***
%	0	55

Pattern 5
Time: 22:00
Cycle Length: Local
Offset (%):

Direction	**SBLT**	**NB**	**WBLT**	**EB**
Phase	***1***	***2***	***3***	***4***
%				
Direction		**SB**		**WB**
Phase	**5**	**6**	**7**	**8**
%				

Pattern 6
Time:
Cycle Length:
Offset (%):

Direction		
Phase	***1***	***2***
%		
Direction		
Phase	**5**	**6**
%		

WBLT	EB
3	*4*
	30
	WB
7	*8*
	30

)

WBLT	EB
3	*4*
13	32
	WB
7	*8*
0	45

3	*4*
7	*8*

Cycle **120** Seconds

CDT

Phase	*Min*	*Walk*	*DW*	*Yel*	*AR*
1	7			3	1
2	20 -	-		4.6	1.4
3	7			3	1
4	10 -	-		3.7	2.3
5	0			0	0
6	20 -	-		4.6	1.4
7	0			0	0
8	10 -	-		3.7	2.3

Enter %

Phase	1	2	3	4
Percent	**11**	**57**	**0**	**32**

Phase	5	6	7	8
Percent	**11**	**57**	**0**	**32**

Ph Time R1	*1*	*2*	*3*	*4*
Seconds	12	69	0	39

Ph Time R2	*5*	*6*	*7*	*8*
Seconds	12	69	0	39

Perm	*Phase Min*	*Min Cycle*
0	11	
1	26	
0	11	
0	6	54
0	0	
1	26	
0	0	
0	6	32

	Ring Check	Enter Time					
Total Percent	68	Phase	1	2	3	4	Total Percent
100	68	Percent	11	60	0	29	100
Total Percent	32	Phase	5	6	7	8	Total Percent
100	32	Percent	11	60	0	29	100

Cycle Time	*Ph Time R1*	*1*	*2*	*3*	*4*	*Cycle Time*
120	Seconds	11	73	0	36	120

Cycle Time	*Ph Time R2*	*5*	*6*	*7*	*8*	*Cycle Time*
120	Seconds	11	73	0	36	120

Date: 15-Oct-20
Intersection: Trafalgar Road & William Halton Parkway

8 Phase Basic Timing Sheet

	1	2	3	4	5	6	7	8	2 Ped	4 Ped	6 Ped	8 Ped
Phases in use	x	x	x	x	x	x	x	x	X	x	x	x
Direction	SBLT	NB	WBLT	EB	NBLT	SB	EBLT	WB				
Min Green	7	20	7	20	7	20	7	20				
Veh Ext.	3.0	5.0	3.0	5.0	3.0	5.0	3.0	5.0				
Yellow	3	4.6	3	3.7	3	4.6	3	3.7				
Red	1	2.3	1	3.3	1	2.3	1	3.3				
Walk		7		7		7		7				
Don't Walk		29		24		29		24				
Max 1	15	60	12	40	15	60	12	40				
Max 2												
Max 3												
Veh Recall		X				X						
Ped Recall												

Notes:

Set Sync Reference to 3:15

Pattern 1
Time: 6:00
Cycle Length: 140
Offset (%):

Direction				
Phase	***1***	***2***	***3***	***4***
%	10	50	9	31
Direction				
Phase	***5***	***6***	***7***	***8***
%	10	50	9	31

Pattern 2
Time: 10:00
Cycle Length: 120
Offset (%): 0%

Direction				
Phase	***1***	***2***	***3***	***4***
%	10	48	10	32
Direction				
Phase	***5***	***6***	***7***	***8***
%	10	48	10	32

Pattern 3
Time: 15:15
Cycle Length: 140
Offset (%):

Direction				
Phase	***1***	***2***	***3***	***4***
%	12	48	9	31
Direction				
Phase	***5***	***6***	***7***	***8***
%	12	48	9	31

Pattern 4
Time: 20:00
Cycle Length: 120
Offset (%):

Direction				
Phase	***1***	***2***	***3***	***4***
%	10	45	10	35
Direction				
Phase	***5***	***6***	***7***	***8***
%	10	45	10	35

Pattern 5
Time: 22:00
Cycle Length: Local
Offset (%):

Direction				
Phase	***1***	***2***	***3***	***4***
%				
Direction				
Phase	**5**	**6**	**7**	**8**
%				

Pattern 6
Time:
Cycle Length:
Offset (%):

Direction				
Phase	***1***	***2***	***3***	***4***
%				
Direction				
Phase	**5**	**6**	**7**	**8**
%				

Date:
Intersection:

4 Phase Basic Timing Sheet						
	1	**2**	**3**	**4**	**2 Ped**	**4 Ped**
Phases in use						
Direction						
Min Green						
Veh Ext.						
Yellow						
Red						
Walk						
Don't Walk						
Max 1						
Max 2						
Max 3						
Veh Recall						
Ped Recall						
Notes:						

Pattern 1
Time:
Cycle Length:
Offset (%):

Direction				
Phase	*1*	*2*	*3*	*4*
%				

Pattern 2
Time:
Cycle Length:
Offset (%):

Direction			
Phase	*1*	*2*	*3*
%			

Pattern 3
Time:
Cycle Length:
Offset (%):

Direction				
Phase	*1*	*2*	*3*	*4*
%				

Pattern 4
Time:
Cycle Length:
Offset (%):

Direction			
Phase	*1*	*2*	*3*
%			

Pattern 5
Time:
Cycle Length:
Offset (%):

Direction				
Phase	*1*	*2*	*3*	*4*
%				

Pattern 6
Time:
Cycle Length:
Offset (%):

Direction			
Phase	*1*	*2*	*3*
%			

Date: 2-21-2020
Intersection: Trafalgar Rd @ 407 WB Off Ramp

8 Phase Basic Timing Sheet

	1	2	3	4	5	6	7	8	2 Ped	4 Ped	6 Ped	8 Ped
Phases in use		x		x	x	x		x	x	x	x	x
Direction		SB		WB	NBLT	NB		EB				
Min Green		20		7	4	20		7				
Veh Ext.		7.0		3.5	2.5	7.0		3.5				
Yellow		5		4	3	5		4				
Red		2		2	1	2		2				
Walk												
Don't Walk												
Max 1		50		35	25	5		35				
Max 2												
Max 3												
Veh Recall		X				X						
Ped Recall												
Notes:												

Pattern 1
Time:
Cycle Length:
Offset (%):

Direction				
Phase	*1*	*2*	*3*	*4*
%				
Direction				
Phase	*5*	*6*	*7*	*8*
%				

Pattern 2
Time:
Cycle Length:
Offset (%):

Direction				
Phase	*1*	*2*	*3*	*4*
%				
Direction				
Phase	*5*	*6*	*7*	*8*
%				

Pattern 3
Time:
Cycle Length:
Offset (%):

Direction				
Phase	*1*	*2*	*3*	*4*
%				
Direction				
Phase	*5*	*6*	*7*	*8*
%				

Pattern 4
Time:
Cycle Length:
Offset (%):

Direction				
Phase	*1*	*2*	*3*	*4*
%				
Direction				
Phase	*5*	*6*	*7*	*8*
%				

Pattern 5
Time:
Cycle Length:
Offset (%):

Direction				
Phase	*1*	*2*	*3*	*4*
%				
Direction				
Phase	5	6	7	8
%				

Pattern 6
Time:
Cycle Length:
Offset (%):

Direction				
Phase	*1*	*2*	*3*	*4*
%	x	x	x	x
Direction				
Phase	5	6	7	8
%	x	x	x	x

Date: 03-Jun-17
Intersection: Trafalgar Road & Lowerbase Line

8 Phase Basic Timing Sheet

	1	2	3	4	5	6	7	8	2 Ped	4 Ped	6 Ped	8 Ped
Phases in use	x	x	X	x		x		x				
Direction	SBLT	NB	WBLT	EB	NBLT	SB	EBLT	WB				
Min Green	7	25	7	10	7	25		10				
Veh Ext.	-	5.0	-	5.0		5.0		5.0				
Yellow	3	4.6	3	4.2	3	4.6		4.2				
Red	1	2	1	2	1	2		2				
Walk	-	-	-	-		-		-				
Don't Walk	-	-	-	-		-		-				
Max 1	20	50	12	38	11	59		50				
Max 2	15	57	12	36	15	57		48				
Max 3	12	53	12	43	11	54		55				
Veh Recall												
Ped Recall												

Notes:
Use Max 1 during AM Peak (6:00am-9:00am)
Use Max 2 during PM Peak (3:00pm-7:00pm)
Use Max 3 during OFF Peak (9:00am-3:00pm, 7:00pm-6:00am)

Appendix C

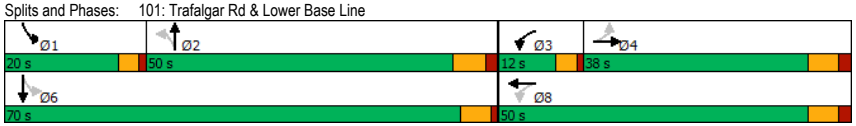
Base Year Operations Synchro Reports

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Future Volume (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	45.0		0.0	110.0		0.0	90.0		0.0	90.0		0.0
Storage Lanes	1		0	1		0	1		0	1		0
Taper Length (m)	100.0			100.0			100.0			100.0		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	1.00	0.95	0.95
Frt												
Flt Protected												
Satd. Flow (prot)	1863	1863	0	1863	1863	0	1863	3539	0	1863	3539	0
Flt Permitted												
Satd. Flow (perm)	1863	1863	0	1863	1863	0	1863	3539	0	1863	3539	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)												
Link Speed (k/h)		70			60			80			80	
Link Distance (m)		749.3			690.6			498.3			434.3	
Travel Time (s)		38.5			41.4			22.4			19.5	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.6			3.6			3.6			3.6	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2		1	2		1	2		1	2	
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	
Leading Detector (m)	2.0	10.0		2.0	10.0		2.0	10.0		2.0	10.0	
Trailing Detector (m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Position(m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Size(m)	2.0	0.6		2.0	0.6		2.0	0.6		2.0	0.6	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Perm			pm+pt			Perm			pm+pt		
Protected Phases		4		3	8			2		1	6	
Permitted Phases	4			8			2			6		

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector Phase	4	4		3	8		2	2		1	6	
Switch Phase												
Minimum Initial (s)	10.0	10.0		7.0	10.0		25.0	25.0		7.0	25.0	
Minimum Split (s)	22.5	22.5		11.5	22.5		31.6	31.6		11.5	30.6	
Total Split (s)	38.0	38.0		12.0	50.0		50.0	50.0		20.0	70.0	
Total Split (%)	31.7%	31.7%		10.0%	41.7%		41.7%	41.7%		16.7%	58.3%	
Maximum Green (s)	31.8	31.8		8.0	43.8		43.4	43.4		16.0	64.4	
Yellow Time (s)	4.2	4.2		3.0	4.2		4.6	4.6		3.0	4.6	
All-Red Time (s)	2.0	2.0		1.0	2.0		2.0	2.0		1.0	1.0	
Lost Time Adjust (s)	-2.2	-2.2		0.0	-2.2		-2.2	-2.2		0.0	-2.2	
Total Lost Time (s)	4.0	4.0		4.0	4.0		4.4	4.4		4.0	3.4	
Lead/Lag	Lag	Lag		Lead			Lag	Lag		Lead		
Lead-Lag Optimize?	Yes	Yes		Yes			Yes	Yes		Yes		
Vehicle Extension (s)	5.0	5.0		0.2	5.0		5.0	5.0		0.2	5.0	
Recall Mode	None	None		None	None		Max	Max		Max	Max	
Act Effct Green (s)												
Actuated g/C Ratio												
v/c Ratio												
Control Delay												
Queue Delay												
Total Delay												
LOS												
Approach Delay												
Approach LOS												

Intersection Summary	
Area Type: Other	
Cycle Length: 120	
Actuated Cycle Length: 70	
Natural Cycle: 80	
Control Type: Semi Act-Uncoord	
Maximum v/c Ratio: 0.00	
Intersection Signal Delay: 0.0	Intersection LOS: A
Intersection Capacity Utilization 0.0%	ICU Level of Service A
Analysis Period (min) 15	

Splits and Phases: 101: Trafalgar Rd & Lower Base Line



Lane Group	
Lane Group Flow (vph)	
v/c Ratio	
Control Delay	
Queue Delay	
Total Delay	
Queue Length 50th (m)	
Queue Length 95th (m)	
Internal Link Dist (m)	
Turn Bay Length (m)	
Base Capacity (vph)	
Starvation Cap Reductn	
Spillback Cap Reductn	
Storage Cap Reductn	
Reduced v/c Ratio	

Intersection Summary

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Future Volume (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)												
Lane Util. Factor												
Frt												
Flt Protected												
Satd. Flow (prot)												
Flt Permitted												
Satd. Flow (perm)												
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	0	0	0	0	0	0	0	0	0	0	0
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Turn Type	Perm			pm+pt			Perm			pm+pt		
Protected Phases		4		3	8			2		1	6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)												
Effective Green, g (s)												
Actuated g/C Ratio												
Clearance Time (s)												
Vehicle Extension (s)												
Lane Grp Cap (vph)												
v/s Ratio Prot												
v/s Ratio Perm												
v/c Ratio												
Uniform Delay, d1												
Progression Factor												
Incremental Delay, d2												
Delay (s)												
Level of Service												
Approach Delay (s)		0.0			0.0			0.0			0.0	
Approach LOS		A			A			A			A	

Intersection Summary			
HCM 2000 Control Delay	0.0	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.00		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	16.4
Intersection Capacity Utilization	0.0%	ICU Level of Service	A
Analysis Period (min)	15		

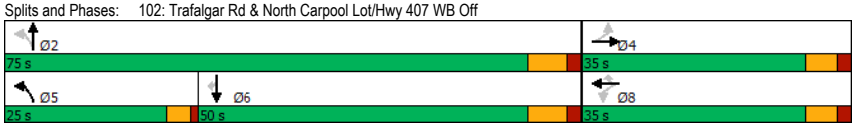
c Critical Lane Group

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Future Volume (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	0.0		0.0	0.0		60.0	65.0		0.0	0.0		15.0
Storage Lanes	0		0	1		1	1		0	0		1
Taper Length (m)	7.5			7.5			100.0			7.5		
Lane Util. Factor	1.00	1.00	1.00	0.95	0.91	0.95	1.00	0.95	1.00	1.00	0.95	1.00
Frt												
Flt Protected												
Satd. Flow (prot)	0	1863	0	1770	1695	1770	1863	3539	0	0	3539	1863
Flt Permitted												
Satd. Flow (perm)	0	1863	0	1770	1695	1770	1863	3539	0	0	3539	1863
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)												
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		134.0			574.1			363.6			118.9	
Travel Time (s)		9.6			41.3			26.2			8.6	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Shared Lane Traffic (%)				0%		0%						
Lane Group Flow (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.8			3.6			3.6			3.6	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2		1	2	1	1	2			2	1
Detector Template	Left	Thru		Left	Thru	Right	Left	Thru			Thru	Right
Leading Detector (m)	2.0	10.0		2.0	10.0	2.0	2.0	10.0			10.0	2.0
Trailing Detector (m)	0.0	0.0		0.0	0.0	0.0	0.0	0.0			0.0	0.0
Detector 1 Position(m)	0.0	0.0		0.0	0.0	0.0	0.0	0.0			0.0	0.0
Detector 1 Size(m)	2.0	0.6		2.0	0.6	2.0	2.0	0.6			0.6	2.0
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex			Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0			0.0	0.0
Detector 1 Queue (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0			0.0	0.0
Detector 1 Delay (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0			0.0	0.0
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type				Perm		Perm	pm+pt					Perm
Protected Phases		4			8		5	2			6	
Permitted Phases	4			8		8	2					6

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector Phase	4	4		8	8	8	5	2			6	6
Switch Phase												
Minimum Initial (s)	7.0	7.0		7.0	7.0	7.0	4.0	20.0			20.0	20.0
Minimum Split (s)	22.5	22.5		22.5	22.5	22.5	9.5	27.0			27.0	27.0
Total Split (s)	35.0	35.0		35.0	35.0	35.0	25.0	75.0			50.0	50.0
Total Split (%)	31.8%	31.8%		31.8%	31.8%	31.8%	22.7%	68.2%			45.5%	45.5%
Maximum Green (s)	29.0	29.0		29.0	29.0	29.0	21.0	68.0			43.0	43.0
Yellow Time (s)	4.0	4.0		4.0	4.0	4.0	3.0	5.0			5.0	5.0
All-Red Time (s)	2.0	2.0		2.0	2.0	2.0	1.0	2.0			2.0	2.0
Lost Time Adjust (s)		0.0		0.0	0.0	0.0	0.0	0.0			0.0	0.0
Total Lost Time (s)		6.0		6.0	6.0	6.0	4.0	7.0			7.0	7.0
Lead/Lag							Lead				Lag	Lag
Lead-Lag Optimize?							Yes				Yes	Yes
Vehicle Extension (s)	3.5	3.5		3.5	3.5	3.5	2.5	7.0			7.0	7.0
Recall Mode	None	None		None	None	None	None	Max			Max	Max
Act Effct Green (s)												
Actuated g/C Ratio												
v/c Ratio												
Control Delay												
Queue Delay												
Total Delay												
LOS												
Approach Delay												
Approach LOS												

Intersection Summary	
Area Type:	Other
Cycle Length: 110	
Actuated Cycle Length: 90	
Natural Cycle: 60	
Control Type: Actuated-Uncoordinated	
Maximum v/c Ratio: 0.00	
Intersection Signal Delay: 0.0	Intersection LOS: A
Intersection Capacity Utilization 0.0%	ICU Level of Service A
Analysis Period (min) 15	

Splits and Phases: 102: Trafalgar Rd & North Carpool Lot/Hwy 407 WB Off



Lane Group	
Lane Group Flow (vph)	
v/c Ratio	
Control Delay	
Queue Delay	
Total Delay	
Queue Length 50th (m)	
Queue Length 95th (m)	
Internal Link Dist (m)	
Turn Bay Length (m)	
Base Capacity (vph)	
Starvation Cap Reductn	
Spillback Cap Reductn	
Storage Cap Reductn	
Reduced v/c Ratio	

Intersection Summary

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Future Volume (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)												
Lane Util. Factor												
Frt												
Flt Protected												
Satd. Flow (prot)												
Flt Permitted												
Satd. Flow (perm)												
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	0	0	0	0	0	0	0	0	0	0	0
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Turn Type				Perm		Perm	pm+pt					Perm
Protected Phases		4			8		5	2			6	
Permitted Phases	4			8		8	2					6
Actuated Green, G (s)												
Effective Green, g (s)												
Actuated g/C Ratio												
Clearance Time (s)												
Vehicle Extension (s)												
Lane Grp Cap (vph)												
v/s Ratio Prot												
v/s Ratio Perm												
v/c Ratio												
Uniform Delay, d1												
Progression Factor												
Incremental Delay, d2												
Delay (s)												
Level of Service												
Approach Delay (s)		0.0			0.0			0.0			0.0	
Approach LOS		A			A			A			A	

Intersection Summary			
HCM 2000 Control Delay	0.0	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.00		
Actuated Cycle Length (s)	90.0	Sum of lost time (s)	17.0
Intersection Capacity Utilization	0.0%	ICU Level of Service	A
Analysis Period (min)	15		

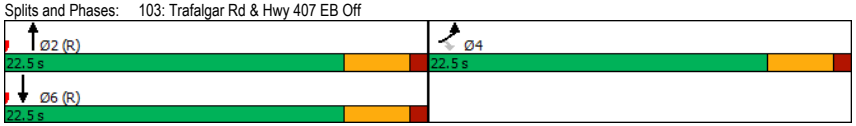
c Critical Lane Group

Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	0	0	0	0	0	0
Future Volume (vph)	0	0	0	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	0.95	0.95	1.00
Frt						
Flt Protected						
Satd. Flow (prot)	1863	1863	0	3539	3539	0
Flt Permitted						
Satd. Flow (perm)	1863	1863	0	3539	3539	0
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)						
Link Speed (k/h)	50			50	50	
Link Distance (m)	554.6			120.3	363.6	
Travel Time (s)	39.9			8.7	26.2	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	0	0	0	0	0
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	0	0	0	0	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	3.6			3.6	3.6	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	4.8			4.8	4.8	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)	25	15	25			15
Turn Type	Prot	Perm				
Protected Phases	4			2	6	
Permitted Phases		4				
Minimum Split (s)	22.5	22.5		22.5	22.5	
Total Split (s)	22.5	22.5		22.5	22.5	
Total Split (%)	50.0%	50.0%		50.0%	50.0%	
Maximum Green (s)	18.0	18.0		18.0	18.0	
Yellow Time (s)	3.5	3.5		3.5	3.5	
All-Red Time (s)	1.0	1.0		1.0	1.0	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0	
Total Lost Time (s)	4.5	4.5		4.5	4.5	
Lead/Lag						
Lead-Lag Optimize?						
Walk Time (s)	7.0	7.0		7.0	7.0	
Flash Dont Walk (s)	11.0	11.0		11.0	11.0	
Pedestrian Calls (#/hr)	0	0		0	0	
Act Effct Green (s)						
Actuated g/C Ratio						
v/c Ratio						
Control Delay						
Queue Delay						
Total Delay						

Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
LOS						
Approach Delay						
Approach LOS						

Intersection Summary			
Area Type:	Other		
Cycle Length: 45			
Actuated Cycle Length: 45			
Offset: 0 (0%), Referenced to phase 2:NBT and 6:SBT, Start of Green			
Natural Cycle: 45			
Control Type: Pretimed			
Maximum v/c Ratio: 0.00			
Intersection Signal Delay: 0.0		Intersection LOS: A	
Intersection Capacity Utilization 0.0%		ICU Level of Service A	
Analysis Period (min) 15			

Splits and Phases: 103: Trafalgar Rd & Hwy 407 EB Off



Lane Group
Lane Group Flow (vph)
v/c Ratio
Control Delay
Queue Delay
Total Delay
Queue Length 50th (m)
Queue Length 95th (m)
Internal Link Dist (m)
Turn Bay Length (m)
Base Capacity (vph)
Starvation Cap Reductn
Spillback Cap Reductn
Storage Cap Reductn
Reduced v/c Ratio

Intersection Summary

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	0	0	0	0	0	0
Future Volume (vph)	0	0	0	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)						
Lane Util. Factor						
Frt						
Flt Protected						
Satd. Flow (prot)						
Flt Permitted						
Satd. Flow (perm)						
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	0	0	0	0	0
RTOR Reduction (vph)	0	0	0	0	0	0
Lane Group Flow (vph)	0	0	0	0	0	0
Turn Type	Prot	Perm				
Protected Phases	4			2	6	
Permitted Phases		4				
Actuated Green, G (s)						
Effective Green, g (s)						
Actuated g/C Ratio						
Clearance Time (s)						
Lane Grp Cap (vph)						
v/s Ratio Prot						
v/s Ratio Perm						
v/c Ratio						
Uniform Delay, d1						
Progression Factor						
Incremental Delay, d2						
Delay (s)						
Level of Service						
Approach Delay (s)	0.0			0.0	0.0	
Approach LOS	A			A	A	

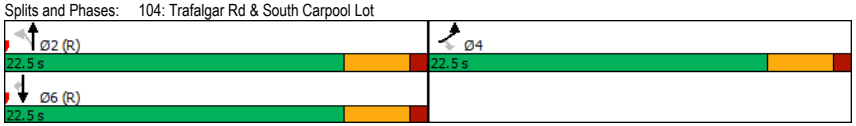
Intersection Summary			
HCM 2000 Control Delay	0.0	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.00		
Actuated Cycle Length (s)	45.0	Sum of lost time (s)	9.0
Intersection Capacity Utilization	0.0%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	0	0	0	0	0	0
Future Volume (vph)	0	0	0	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (m)	0.0	0.0	50.0			30.0
Storage Lanes	1	1	1			1
Taper Length (m)	7.5		100.0			
Lane Util. Factor	1.00	1.00	1.00	0.91	0.91	1.00
Frt						
Flt Protected						
Satd. Flow (prot)	1863	1863	1863	5085	5085	1863
Flt Permitted						
Satd. Flow (perm)	1863	1863	1863	5085	5085	1863
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)						
Link Speed (k/h)	50			80	80	
Link Distance (m)	107.1			233.3	131.6	
Travel Time (s)	7.7			10.5	5.9	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	0	0	0	0	0
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	0	0	0	0	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	3.6			3.6	3.6	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	4.8			4.8	4.8	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)	25	15	25			15
Turn Type	Prot	Perm	Perm			Perm
Protected Phases	4			2	6	
Permitted Phases		4	2			6
Minimum Split (s)	22.5	22.5	22.5	22.5	22.5	22.5
Total Split (s)	22.5	22.5	22.5	22.5	22.5	22.5
Total Split (%)	50.0%	50.0%	50.0%	50.0%	50.0%	50.0%
Maximum Green (s)	18.0	18.0	18.0	18.0	18.0	18.0
Yellow Time (s)	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
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?						
Walk Time (s)	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
Pedestrian Calls (#/hr)	0	0	0	0	0	0
Act Effct Green (s)						
Actuated g/C Ratio						
v/c Ratio						

Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Control Delay						
Queue Delay						
Total Delay						
LOS						
Approach Delay						
Approach LOS						

Intersection Summary			
Area Type:	Other		
Cycle Length: 45			
Actuated Cycle Length: 45			
Offset: 0 (0%), Referenced to phase 2:NBTL and 6:SBT, Start of Green			
Natural Cycle: 45			
Control Type: Pretimed			
Maximum v/c Ratio: 0.00			
Intersection Signal Delay: 0.0		Intersection LOS: A	
Intersection Capacity Utilization 0.0%		ICU Level of Service A	
Analysis Period (min) 15			

Splits and Phases: 104: Trafalgar Rd & South Carpool Lot



Lane Group
Lane Group Flow (vph)
v/c Ratio
Control Delay
Queue Delay
Total Delay
Queue Length 50th (m)
Queue Length 95th (m)
Internal Link Dist (m)
Turn Bay Length (m)
Base Capacity (vph)
Starvation Cap Reductn
Spillback Cap Reductn
Storage Cap Reductn
Reduced v/c Ratio

Intersection Summary

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	0	0	0	0	0	0
Future Volume (vph)	0	0	0	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)						
Lane Util. Factor						
Frt						
Flt Protected						
Satd. Flow (prot)						
Flt Permitted						
Satd. Flow (perm)						
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	0	0	0	0	0
RTOR Reduction (vph)	0	0	0	0	0	0
Lane Group Flow (vph)	0	0	0	0	0	0
Turn Type	Prot	Perm	Perm			Perm
Protected Phases	4			2	6	
Permitted Phases		4	2			6
Actuated Green, G (s)						
Effective Green, g (s)						
Actuated g/C Ratio						
Clearance Time (s)						
Lane Grp Cap (vph)						
v/s Ratio Prot						
v/s Ratio Perm						
v/c Ratio						
Uniform Delay, d1						
Progression Factor						
Incremental Delay, d2						
Delay (s)						
Level of Service						
Approach Delay (s)	0.0			0.0	0.0	
Approach LOS	A			A	A	

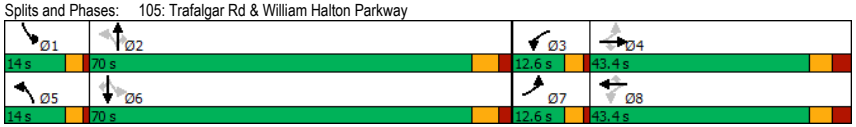
Intersection Summary			
HCM 2000 Control Delay	0.0	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.00		
Actuated Cycle Length (s)	45.0	Sum of lost time (s)	9.0
Intersection Capacity Utilization	0.0%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Future Volume (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	100.0		100.0	100.0		150.0	150.0		75.0	0.0		0.0
Storage Lanes	1		1	1		1	1		1	1		1
Taper Length (m)	100.0			100.0			100.0			7.5		
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.91	1.00	1.00	0.91	1.00
Frt												
Flt Protected												
Satd. Flow (prot)	1863	3539	1863	1863	3539	1863	1863	5085	1863	1863	5085	1863
Flt Permitted												
Satd. Flow (perm)	1863	3539	1863	1863	3539	1863	1863	5085	1863	1863	5085	1863
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)												
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		443.3			449.5			285.3			233.3	
Travel Time (s)		31.9			32.4			20.5			16.8	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.6			3.6			7.2			7.2	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2	1	1	2	1	1	2	1	1	2	1
Detector Template	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Leading Detector (m)	2.0	10.0	2.0	2.0	10.0	2.0	2.0	10.0	2.0	2.0	10.0	2.0
Trailing Detector (m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Position(m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Size(m)	2.0	0.6	2.0	2.0	0.6	2.0	2.0	0.6	2.0	2.0	0.6	2.0
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	pm+pt		Perm	pm+pt		Perm	pm+pt		Perm	pm+pt		Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4		4	8		8	2		2	6		6

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector Phase	7	4	4	3	8	8	5	2	2	1	6	6
Switch Phase												
Minimum Initial (s)	7.0	20.0	20.0	7.0	20.0	20.0	7.0	20.0	20.0	7.0	20.0	20.0
Minimum Split (s)	11.5	38.0	38.0	11.5	38.0	38.0	11.5	42.9	42.9	11.5	42.9	42.9
Total Split (s)	12.6	43.4	43.4	12.6	43.4	43.4	14.0	70.0	70.0	14.0	70.0	70.0
Total Split (%)	9.0%	31.0%	31.0%	9.0%	31.0%	31.0%	10.0%	50.0%	50.0%	10.0%	50.0%	50.0%
Maximum Green (s)	8.6	36.4	36.4	8.6	36.4	36.4	10.0	63.1	63.1	10.0	63.1	63.1
Yellow Time (s)	3.0	3.7	3.7	3.0	3.7	3.7	3.0	4.6	4.6	3.0	4.6	4.6
All-Red Time (s)	1.0	3.3	3.3	1.0	3.3	3.3	1.0	2.3	2.3	1.0	2.3	2.3
Lost Time Adjust (s)	0.0	-3.0	-3.0	0.0	-3.0	-3.0	0.0	-2.9	-2.9	0.0	-2.9	-2.9
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Vehicle Extension (s)	3.0	5.0	5.0	3.0	5.0	5.0	3.0	5.0	5.0	3.0	5.0	5.0
Recall Mode	None	None	None	None	None	None	None	Max	Max	None	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)		24.0	24.0		24.0	24.0		29.0	29.0		29.0	29.0
Pedestrian Calls (#/hr)		0	0		0	0		0	0		0	0
Act Effct Green (s)												
Actuated g/C Ratio												
v/c Ratio												
Control Delay												
Queue Delay												
Total Delay												
LOS												
Approach Delay												
Approach LOS												

Intersection Summary			
Area Type:	Other		
Cycle Length: 140			
Actuated Cycle Length: 85			
Natural Cycle: 105			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 0.00			
Intersection Signal Delay: 0.0		Intersection LOS: A	
Intersection Capacity Utilization 0.0%		ICU Level of Service A	
Analysis Period (min) 15			

Splits and Phases: 105: Trafalgar Rd & William Halton Parkway



Lane Group	
Lane Group Flow (vph)	
v/c Ratio	
Control Delay	
Queue Delay	
Total Delay	
Queue Length 50th (m)	
Queue Length 95th (m)	
Internal Link Dist (m)	
Turn Bay Length (m)	
Base Capacity (vph)	
Starvation Cap Reductn	
Spillback Cap Reductn	
Storage Cap Reductn	
Reduced v/c Ratio	

Intersection Summary

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Future Volume (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)												
Lane Util. Factor												
Frt												
Flt Protected												
Satd. Flow (prot)												
Flt Permitted												
Satd. Flow (perm)												
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	0	0	0	0	0	0	0	0	0	0	0
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Turn Type	pm+pt		Perm	pm+pt		Perm	pm+pt		Perm	pm+pt		Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4		4	8		8	2		2	6		6
Actuated Green, G (s)												
Effective Green, g (s)												
Actuated g/C Ratio												
Clearance Time (s)												
Vehicle Extension (s)												
Lane Grp Cap (vph)												
v/s Ratio Prot												
v/s Ratio Perm												
v/c Ratio												
Uniform Delay, d1												
Progression Factor												
Incremental Delay, d2												
Delay (s)												
Level of Service												
Approach Delay (s)		0.0			0.0			0.0			0.0	
Approach LOS		A			A			A			A	

Intersection Summary			
HCM 2000 Control Delay	0.0	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.00		
Actuated Cycle Length (s)	85.0	Sum of lost time (s)	16.0
Intersection Capacity Utilization	0.0%	ICU Level of Service	A
Analysis Period (min)	15		

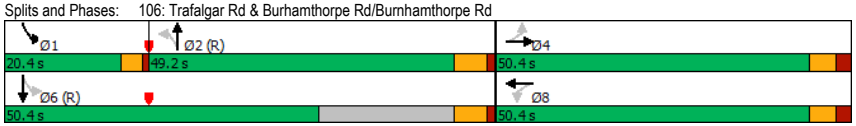
c Critical Lane Group

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Future Volume (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	30.0		0.0	15.0		0.0	60.0		0.0	60.0		0.0
Storage Lanes	1		0	1		0	1		0	1		0
Taper Length (m)	70.0			50.0			100.0			100.0		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	1.00	0.95	0.95
Frt												
Flt Protected												
Satd. Flow (prot)	1863	1863	0	1863	1863	0	1863	3539	0	1863	3539	0
Flt Permitted												
Satd. Flow (perm)	1863	1863	0	1863	1863	0	1863	3539	0	1863	3539	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)												
Link Speed (k/h)		60			60			80			80	
Link Distance (m)		828.7			989.6			1077.8			170.3	
Travel Time (s)		49.7			59.4			48.5			7.7	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.6			3.6			3.6			3.6	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Turn Type	Perm			Perm			Perm			pm+pt		
Protected Phases		4			8			2		1	6	
Permitted Phases	4			8			2			6		
Minimum Split (s)	24.0	24.0		24.0	24.0		26.0	26.0		11.5	26.0	
Total Split (s)	50.4	50.4		50.4	50.4		49.2	49.2		20.4	50.4	
Total Split (%)	42.0%	42.0%		42.0%	42.0%		41.0%	41.0%		17.0%	42.0%	
Maximum Green (s)	44.4	44.4		44.4	44.4		43.2	43.2		16.4	44.4	
Yellow Time (s)	3.7	3.7		3.7	3.7		4.6	4.6		3.0	4.6	
All-Red Time (s)	2.3	2.3		2.3	2.3		1.4	1.4		1.0	1.4	
Lost Time Adjust (s)	-2.0	-2.0		-2.0	-2.0		-2.0	-2.0		0.0	-2.0	
Total Lost Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
Lead/Lag							Lag	Lag		Lead		
Lead-Lag Optimize?							Yes	Yes		Yes		
Act Effct Green (s)												
Actuated g/C Ratio												
v/c Ratio												
Control Delay												
Queue Delay												
Total Delay												

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
LOS												
Approach Delay												
Approach LOS												

Intersection Summary			
Area Type:	Other		
Cycle Length: 120			
Actuated Cycle Length: 120			
Offset: 0 (0%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green			
Natural Cycle: 65			
Control Type: Pretimed			
Maximum v/c Ratio: 0.00			
Intersection Signal Delay: 0.0		Intersection LOS: A	
Intersection Capacity Utilization 0.0%		ICU Level of Service A	
Analysis Period (min) 15			

Splits and Phases: 106: Trafalgar Rd & Burhamthorpe Rd/Burnhamthorpe Rd



Lane Group
Lane Group Flow (vph)
v/c Ratio
Control Delay
Queue Delay
Total Delay
Queue Length 50th (m)
Queue Length 95th (m)
Internal Link Dist (m)
Turn Bay Length (m)
Base Capacity (vph)
Starvation Cap Reductn
Spillback Cap Reductn
Storage Cap Reductn
Reduced v/c Ratio

Intersection Summary

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Future Volume (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)												
Lane Util. Factor												
Frt												
Flt Protected												
Satd. Flow (prot)												
Flt Permitted												
Satd. Flow (perm)												
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	0	0	0	0	0	0	0	0	0	0	0
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Turn Type	Perm			Perm			Perm			pm+pt		
Protected Phases		4			8			2		1	6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)												
Effective Green, g (s)												
Actuated g/C Ratio												
Clearance Time (s)												
Lane Grp Cap (vph)												
v/s Ratio Prot												
v/s Ratio Perm												
v/c Ratio												
Uniform Delay, d1												
Progression Factor												
Incremental Delay, d2												
Delay (s)												
Level of Service												
Approach Delay (s)		0.0			0.0			0.0			0.0	
Approach LOS		A			A			A			A	

Intersection Summary			
HCM 2000 Control Delay	0.0	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.00		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	0.0%	ICU Level of Service	A
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	0	0	0	0	0	0	0	0	0	0	0
Future Volume (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	45.0		0.0	110.0		0.0	90.0		0.0	90.0		0.0
Storage Lanes	1		0	1		0	1		0	1		0
Taper Length (m)	100.0			100.0			100.0			100.0		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	1.00	0.95	0.95
Frt												
Flt Protected												
Satd. Flow (prot)	1863	1863	0	1863	1863	0	1863	3539	0	1863	3539	0
Flt Permitted												
Satd. Flow (perm)	1863	1863	0	1863	1863	0	1863	3539	0	1863	3539	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)												
Link Speed (k/h)		70			60			80			80	
Link Distance (m)		749.3			690.6			498.3			434.3	
Travel Time (s)		38.5			41.4			22.4			19.5	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Turn Type	Perm			pm+pt			Perm			pm+pt		
Protected Phases		4		3	8			2		1	6	
Permitted Phases	4			8			2			6		
Detector Phase	4	4		3	8		2	2		1	6	
Switch Phase												
Minimum Initial (s)	10.0	10.0		7.0	10.0		25.0	25.0		7.0	25.0	
Minimum Split (s)	22.5	22.5		11.5	22.5		31.6	31.6		11.5	30.6	
Total Split (s)	36.0	36.0		12.0	48.0		57.0	57.0		15.0	72.0	
Total Split (%)	30.0%	30.0%		10.0%	40.0%		47.5%	47.5%		12.5%	60.0%	
Maximum Green (s)	29.8	29.8		8.0	41.8		50.4	50.4		11.0	66.4	
Yellow Time (s)	4.2	4.2		3.0	4.2		4.6	4.6		3.0	4.6	
All-Red Time (s)	2.0	2.0		1.0	2.0		2.0	2.0		1.0	1.0	
Lost Time Adjust (s)	-2.2	-2.2		0.0	-2.2		-2.2	-2.2		0.0	-2.2	
Total Lost Time (s)	4.0	4.0		4.0	4.0		4.4	4.4		4.0	3.4	
Lead/Lag	Lag	Lag		Lead			Lag	Lag		Lead		
Lead-Lag Optimize?	Yes	Yes		Yes			Yes	Yes		Yes		
Vehicle Extension (s)	5.0	5.0		0.2	5.0		5.0	5.0		0.2	5.0	
Recall Mode	None	None		None	None		Max	Max		Max	Max	
Act Effct Green (s)												
Actuated g/C Ratio												
v/c Ratio												
Control Delay												
Queue Delay												
Total Delay												
LOS												
Approach Delay												
Approach LOS												

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Queue Length 50th (m)												
Queue Length 95th (m)												
Internal Link Dist (m)		725.3			666.6			474.3			410.3	
Turn Bay Length (m)												
Base Capacity (vph)												
Starvation Cap Reductn												
Spillback Cap Reductn												
Storage Cap Reductn												
Reduced v/c Ratio												

Intersection Summary			
Area Type:	Other		
Cycle Length: 120			
Actuated Cycle Length: 72			
Natural Cycle: 80			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 0.00			
Intersection Signal Delay: 0.0		Intersection LOS: A	
Intersection Capacity Utilization 0.0%		ICU Level of Service A	
Analysis Period (min) 15			

Splits and Phases: 101: Trafalgar Rd & Lower Base Line

Lane Group	
Lane Group Flow (vph)	
v/c Ratio	
Control Delay	
Queue Delay	
Total Delay	
Queue Length 50th (m)	
Queue Length 95th (m)	
Internal Link Dist (m)	
Turn Bay Length (m)	
Base Capacity (vph)	
Starvation Cap Reductn	
Spillback Cap Reductn	
Storage Cap Reductn	
Reduced v/c Ratio	

Intersection Summary

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Future Volume (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)												
Lane Util. Factor												
Frt												
Flt Protected												
Satd. Flow (prot)												
Flt Permitted												
Satd. Flow (perm)												
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	0	0	0	0	0	0	0	0	0	0	0
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Turn Type	Perm			pm+pt			Perm			pm+pt		
Protected Phases		4		3	8			2		1	6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)												
Effective Green, g (s)												
Actuated g/C Ratio												
Clearance Time (s)												
Vehicle Extension (s)												
Lane Grp Cap (vph)												
v/s Ratio Prot												
v/s Ratio Perm												
v/c Ratio												
Uniform Delay, d1												
Progression Factor												
Incremental Delay, d2												
Delay (s)												
Level of Service												
Approach Delay (s)		0.0			0.0			0.0			0.0	
Approach LOS		A			A			A			A	

Intersection Summary			
HCM 2000 Control Delay	0.0	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.00		
Actuated Cycle Length (s)	72.0	Sum of lost time (s)	16.4
Intersection Capacity Utilization	0.0%	ICU Level of Service	A
Analysis Period (min)	15		

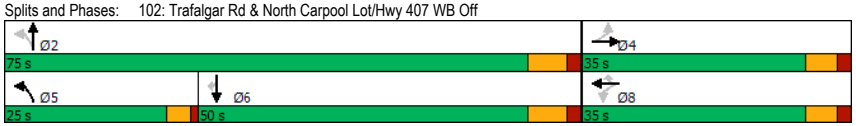
c Critical Lane Group

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Future Volume (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	0.0		0.0	0.0		60.0	65.0		0.0	0.0		15.0
Storage Lanes	0		0	1		1	1		0	0		1
Taper Length (m)	7.5			7.5			100.0			7.5		
Lane Util. Factor	1.00	1.00	1.00	0.95	0.91	0.95	1.00	0.95	1.00	1.00	0.95	1.00
Frt												
Flt Protected												
Satd. Flow (prot)	0	1863	0	1770	1695	1770	1863	3539	0	0	3539	1863
Flt Permitted												
Satd. Flow (perm)	0	1863	0	1770	1695	1770	1863	3539	0	0	3539	1863
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)												
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		134.0			574.1			363.6			118.9	
Travel Time (s)		9.6			41.3			26.2			8.6	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Shared Lane Traffic (%)				0%		0%						
Lane Group Flow (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Turn Type				Perm		Perm	pm+pt					Perm
Protected Phases		4			8		5	2			6	
Permitted Phases	4			8		8	2					6
Detector Phase	4	4		8	8	8	5	2			6	6
Switch Phase												
Minimum Initial (s)	7.0	7.0		7.0	7.0	7.0	4.0	20.0			20.0	20.0
Minimum Split (s)	22.5	22.5		22.5	22.5	22.5	9.5	27.0			27.0	27.0
Total Split (s)	35.0	35.0		35.0	35.0	35.0	25.0	75.0			50.0	50.0
Total Split (%)	31.8%	31.8%		31.8%	31.8%	31.8%	22.7%	68.2%			45.5%	45.5%
Maximum Green (s)	29.0	29.0		29.0	29.0	29.0	21.0	68.0			43.0	43.0
Yellow Time (s)	4.0	4.0		4.0	4.0	4.0	3.0	5.0			5.0	5.0
All-Red Time (s)	2.0	2.0		2.0	2.0	2.0	1.0	2.0			2.0	2.0
Lost Time Adjust (s)		0.0		0.0	0.0	0.0	0.0	0.0			0.0	0.0
Total Lost Time (s)		6.0		6.0	6.0	6.0	4.0	7.0			7.0	7.0
Lead/Lag							Lead				Lag	Lag
Lead-Lag Optimize?							Yes				Yes	Yes
Vehicle Extension (s)	3.5	3.5		3.5	3.5	3.5	2.5	7.0			7.0	7.0
Recall Mode	None	None		None	None	None	None	Max			Max	Max
Act Effct Green (s)												
Actuated g/C Ratio												
v/c Ratio												
Control Delay												
Queue Delay												
Total Delay												
LOS												
Approach Delay												
Approach LOS												

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Queue Length 50th (m)												
Queue Length 95th (m)												
Internal Link Dist (m)		110.0			550.1			339.6			94.9	
Turn Bay Length (m)												
Base Capacity (vph)												
Starvation Cap Reductn												
Spillback Cap Reductn												
Storage Cap Reductn												
Reduced v/c Ratio												

Intersection Summary			
Area Type:	Other		
Cycle Length: 110			
Actuated Cycle Length: 90			
Natural Cycle: 60			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 0.00			
Intersection Signal Delay: 0.0		Intersection LOS: A	
Intersection Capacity Utilization 0.0%		ICU Level of Service A	
Analysis Period (min) 15			

Splits and Phases: 102: Trafalgar Rd & North Carpool Lot/Hwy 407 WB Off



Lane Group
Lane Group Flow (vph)
v/c Ratio
Control Delay
Queue Delay
Total Delay
Queue Length 50th (m)
Queue Length 95th (m)
Internal Link Dist (m)
Turn Bay Length (m)
Base Capacity (vph)
Starvation Cap Reductn
Spillback Cap Reductn
Storage Cap Reductn
Reduced v/c Ratio

Intersection Summary

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Future Volume (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)												
Lane Util. Factor												
Frt												
Flt Protected												
Satd. Flow (prot)												
Flt Permitted												
Satd. Flow (perm)												
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	0	0	0	0	0	0	0	0	0	0	0
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Turn Type				Perm		Perm	pm+pt					Perm
Protected Phases		4			8		5	2			6	
Permitted Phases	4			8		8	2					6
Actuated Green, G (s)												
Effective Green, g (s)												
Actuated g/C Ratio												
Clearance Time (s)												
Vehicle Extension (s)												
Lane Grp Cap (vph)												
v/s Ratio Prot												
v/s Ratio Perm												
v/c Ratio												
Uniform Delay, d1												
Progression Factor												
Incremental Delay, d2												
Delay (s)												
Level of Service												
Approach Delay (s)		0.0			0.0			0.0			0.0	
Approach LOS		A			A			A			A	

Intersection Summary			
HCM 2000 Control Delay	0.0	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.00		
Actuated Cycle Length (s)	90.0	Sum of lost time (s)	17.0
Intersection Capacity Utilization	0.0%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

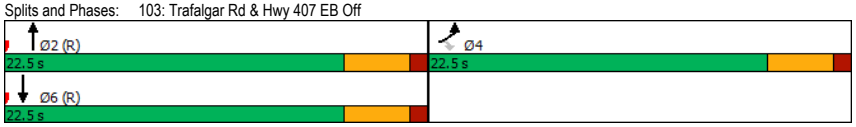
Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	0	0	0	0	0	0
Future Volume (vph)	0	0	0	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	0.95	0.95	1.00
Frt						
Flt Protected						
Satd. Flow (prot)	1863	1863	0	3539	3539	0
Flt Permitted						
Satd. Flow (perm)	1863	1863	0	3539	3539	0
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)						
Link Speed (k/h)	50			50	50	
Link Distance (m)	554.6			120.3	363.6	
Travel Time (s)	39.9			8.7	26.2	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	0	0	0	0	0
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	0	0	0	0	0
Turn Type	Prot	Perm				
Protected Phases	4			2	6	
Permitted Phases		4				
Minimum Split (s)	22.5	22.5		22.5	22.5	
Total Split (s)	22.5	22.5		22.5	22.5	
Total Split (%)	50.0%	50.0%		50.0%	50.0%	
Maximum Green (s)	18.0	18.0		18.0	18.0	
Yellow Time (s)	3.5	3.5		3.5	3.5	
All-Red Time (s)	1.0	1.0		1.0	1.0	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0	
Total Lost Time (s)	4.5	4.5		4.5	4.5	
Lead/Lag						
Lead-Lag Optimize?						
Walk Time (s)	7.0	7.0		7.0	7.0	
Flash Dont Walk (s)	11.0	11.0		11.0	11.0	
Pedestrian Calls (#/hr)	0	0		0	0	
Act Effct Green (s)						
Actuated g/C Ratio						
v/c Ratio						
Control Delay						
Queue Delay						
Total Delay						
LOS						
Approach Delay						
Approach LOS						
Queue Length 50th (m)						
Queue Length 95th (m)						
Internal Link Dist (m)	530.6			96.3	339.6	
Turn Bay Length (m)						
Base Capacity (vph)						

Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Starvation Cap Reductn						
Spillback Cap Reductn						
Storage Cap Reductn						
Reduced v/c Ratio						

Intersection Summary

Area Type:	Other		
Cycle Length: 45			
Actuated Cycle Length: 45			
Offset: 0 (0%), Referenced to phase 2:NBT and 6:SBT, Start of Green			
Natural Cycle: 45			
Control Type: Pretimed			
Maximum v/c Ratio: 0.00			
Intersection Signal Delay: 0.0		Intersection LOS: A	
Intersection Capacity Utilization 0.0%		ICU Level of Service A	
Analysis Period (min) 15			

Splits and Phases: 103: Trafalgar Rd & Hwy 407 EB Off



Lane Group	
Lane Group Flow (vph)	
v/c Ratio	
Control Delay	
Queue Delay	
Total Delay	
Queue Length 50th (m)	
Queue Length 95th (m)	
Internal Link Dist (m)	
Turn Bay Length (m)	
Base Capacity (vph)	
Starvation Cap Reductn	
Spillback Cap Reductn	
Storage Cap Reductn	
Reduced v/c Ratio	

Intersection Summary

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	0	0	0	0	0	0
Future Volume (vph)	0	0	0	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)						
Lane Util. Factor						
Frt						
Flt Protected						
Satd. Flow (prot)						
Flt Permitted						
Satd. Flow (perm)						
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	0	0	0	0	0
RTOR Reduction (vph)	0	0	0	0	0	0
Lane Group Flow (vph)	0	0	0	0	0	0
Turn Type	Prot	Perm				
Protected Phases	4			2	6	
Permitted Phases		4				
Actuated Green, G (s)						
Effective Green, g (s)						
Actuated g/C Ratio						
Clearance Time (s)						
Lane Grp Cap (vph)						
v/s Ratio Prot						
v/s Ratio Perm						
v/c Ratio						
Uniform Delay, d1						
Progression Factor						
Incremental Delay, d2						
Delay (s)						
Level of Service						
Approach Delay (s)	0.0			0.0	0.0	
Approach LOS	A			A	A	

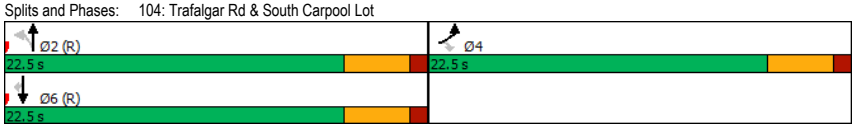
Intersection Summary			
HCM 2000 Control Delay	0.0	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.00		
Actuated Cycle Length (s)	45.0	Sum of lost time (s)	9.0
Intersection Capacity Utilization	0.0%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	0	0	0	0	0	0
Future Volume (vph)	0	0	0	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (m)	0.0	0.0	50.0			30.0
Storage Lanes	1	1	1			1
Taper Length (m)	7.5		100.0			
Lane Util. Factor	1.00	1.00	1.00	0.91	0.91	1.00
Frt						
Flt Protected						
Satd. Flow (prot)	1863	1863	1863	5085	5085	1863
Flt Permitted						
Satd. Flow (perm)	1863	1863	1863	5085	5085	1863
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)						
Link Speed (k/h)	50			80	80	
Link Distance (m)	107.1			233.3	131.6	
Travel Time (s)	7.7			10.5	5.9	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	0	0	0	0	0
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	0	0	0	0	0
Turn Type	Prot	Perm	Perm			Perm
Protected Phases	4			2	6	
Permitted Phases		4	2			6
Minimum Split (s)	22.5	22.5	22.5	22.5	22.5	22.5
Total Split (s)	22.5	22.5	22.5	22.5	22.5	22.5
Total Split (%)	50.0%	50.0%	50.0%	50.0%	50.0%	50.0%
Maximum Green (s)	18.0	18.0	18.0	18.0	18.0	18.0
Yellow Time (s)	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
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?						
Walk Time (s)	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
Pedestrian Calls (#/hr)	0	0	0	0	0	0
Act Effct Green (s)						
Actuated g/C Ratio						
v/c Ratio						
Control Delay						
Queue Delay						
Total Delay						
LOS						
Approach Delay						
Approach LOS						
Queue Length 50th (m)						
Queue Length 95th (m)						

Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Internal Link Dist (m)	83.1			209.3	107.6	
Turn Bay Length (m)						
Base Capacity (vph)						
Starvation Cap Reductn						
Spillback Cap Reductn						
Storage Cap Reductn						
Reduced v/c Ratio						

Intersection Summary			
Area Type:	Other		
Cycle Length: 45			
Actuated Cycle Length: 45			
Offset: 0 (0%), Referenced to phase 2:NBTL and 6:SBT, Start of Green			
Natural Cycle: 45			
Control Type: Pretimed			
Maximum v/c Ratio: 0.00			
Intersection Signal Delay: 0.0		Intersection LOS: A	
Intersection Capacity Utilization 0.0%		ICU Level of Service A	
Analysis Period (min) 15			

Splits and Phases: 104: Trafalgar Rd & South Carpool Lot



Lane Group
Lane Group Flow (vph)
v/c Ratio
Control Delay
Queue Delay
Total Delay
Queue Length 50th (m)
Queue Length 95th (m)
Internal Link Dist (m)
Turn Bay Length (m)
Base Capacity (vph)
Starvation Cap Reductn
Spillback Cap Reductn
Storage Cap Reductn
Reduced v/c Ratio

Intersection Summary

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	0	0	0	0	0	0
Future Volume (vph)	0	0	0	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)						
Lane Util. Factor						
Frt						
Flt Protected						
Satd. Flow (prot)						
Flt Permitted						
Satd. Flow (perm)						
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	0	0	0	0	0
RTOR Reduction (vph)	0	0	0	0	0	0
Lane Group Flow (vph)	0	0	0	0	0	0
Turn Type	Prot	Perm	Perm			Perm
Protected Phases	4			2	6	
Permitted Phases		4	2			6
Actuated Green, G (s)						
Effective Green, g (s)						
Actuated g/C Ratio						
Clearance Time (s)						
Lane Grp Cap (vph)						
v/s Ratio Prot						
v/s Ratio Perm						
v/c Ratio						
Uniform Delay, d1						
Progression Factor						
Incremental Delay, d2						
Delay (s)						
Level of Service						
Approach Delay (s)	0.0			0.0	0.0	
Approach LOS	A			A	A	

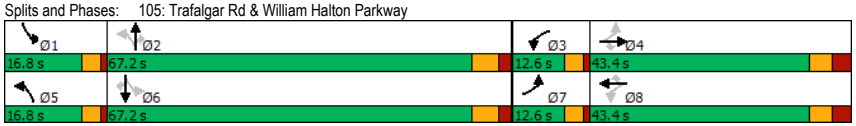
Intersection Summary			
HCM 2000 Control Delay	0.0	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.00		
Actuated Cycle Length (s)	45.0	Sum of lost time (s)	9.0
Intersection Capacity Utilization	0.0%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Future Volume (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	100.0		100.0	100.0		150.0	150.0		75.0	0.0		0.0
Storage Lanes	1		1	1		1	1		1	1		1
Taper Length (m)	100.0			100.0			100.0			7.5		
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.91	1.00	1.00	0.91	1.00
Frt												
Flt Protected												
Satd. Flow (prot)	1863	3539	1863	1863	3539	1863	1863	5085	1863	1863	5085	1863
Flt Permitted												
Satd. Flow (perm)	1863	3539	1863	1863	3539	1863	1863	5085	1863	1863	5085	1863
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)												
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		443.3			449.5			285.3			233.3	
Travel Time (s)		31.9			32.4			20.5			16.8	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Turn Type	pm+pt		Perm	pm+pt		Perm	pm+pt		Perm	pm+pt		Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4		4	8		8	2		2	6		6
Detector Phase	7	4	4	3	8	8	5	2	2	1	6	6
Switch Phase												
Minimum Initial (s)	7.0	20.0	20.0	7.0	20.0	20.0	7.0	20.0	20.0	7.0	20.0	20.0
Minimum Split (s)	11.5	38.0	38.0	11.5	38.0	38.0	11.5	42.9	42.9	11.5	42.9	42.9
Total Split (s)	12.6	43.4	43.4	12.6	43.4	43.4	16.8	67.2	67.2	16.8	67.2	67.2
Total Split (%)	9.0%	31.0%	31.0%	9.0%	31.0%	31.0%	12.0%	48.0%	48.0%	12.0%	48.0%	48.0%
Maximum Green (s)	8.6	36.4	36.4	8.6	36.4	36.4	12.8	60.3	60.3	12.8	60.3	60.3
Yellow Time (s)	3.0	3.7	3.7	3.0	3.7	3.7	3.0	4.6	4.6	3.0	4.6	4.6
All-Red Time (s)	1.0	3.3	3.3	1.0	3.3	3.3	1.0	2.3	2.3	1.0	2.3	2.3
Lost Time Adjust (s)	0.0	-3.0	-3.0	0.0	-3.0	-3.0	0.0	-2.9	-2.9	0.0	-2.9	-2.9
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Vehicle Extension (s)	3.0	5.0	5.0	3.0	5.0	5.0	3.0	5.0	5.0	3.0	5.0	5.0
Recall Mode	None	None	None	None	None	None	None	Max	Max	None	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)		24.0	24.0		24.0	24.0		29.0	29.0		29.0	29.0
Pedestrian Calls (#/hr)		0	0		0	0		0	0		0	0
Act Effct Green (s)												
Actuated g/C Ratio												
v/c Ratio												
Control Delay												
Queue Delay												
Total Delay												

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
LOS												
Approach Delay												
Approach LOS												
Queue Length 50th (m)												
Queue Length 95th (m)												
Internal Link Dist (m)		419.3			425.5			261.3			209.3	
Turn Bay Length (m)												
Base Capacity (vph)												
Starvation Cap Reductn												
Spillback Cap Reductn												
Storage Cap Reductn												
Reduced v/c Ratio												

Intersection Summary			
Area Type:	Other		
Cycle Length: 140			
Actuated Cycle Length: 82.2			
Natural Cycle: 105			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 0.00			
Intersection Signal Delay: 0.0		Intersection LOS: A	
Intersection Capacity Utilization 0.0%		ICU Level of Service A	
Analysis Period (min) 15			

Splits and Phases: 105: Trafalgar Rd & William Halton Parkway



Lane Group	
Lane Group Flow (vph)	
v/c Ratio	
Control Delay	
Queue Delay	
Total Delay	
Queue Length 50th (m)	
Queue Length 95th (m)	
Internal Link Dist (m)	
Turn Bay Length (m)	
Base Capacity (vph)	
Starvation Cap Reductn	
Spillback Cap Reductn	
Storage Cap Reductn	
Reduced v/c Ratio	

Intersection Summary

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Future Volume (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)												
Lane Util. Factor												
Frt												
Flt Protected												
Satd. Flow (prot)												
Flt Permitted												
Satd. Flow (perm)												
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	0	0	0	0	0	0	0	0	0	0	0
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Turn Type	pm+pt		Perm	pm+pt		Perm	pm+pt		Perm	pm+pt		Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4		4	8		8	2		2	6		6
Actuated Green, G (s)												
Effective Green, g (s)												
Actuated g/C Ratio												
Clearance Time (s)												
Vehicle Extension (s)												
Lane Grp Cap (vph)												
v/s Ratio Prot												
v/s Ratio Perm												
v/c Ratio												
Uniform Delay, d1												
Progression Factor												
Incremental Delay, d2												
Delay (s)												
Level of Service												
Approach Delay (s)		0.0			0.0			0.0			0.0	
Approach LOS		A			A			A			A	

Intersection Summary			
HCM 2000 Control Delay	0.0	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.00		
Actuated Cycle Length (s)	82.2	Sum of lost time (s)	16.0
Intersection Capacity Utilization	0.0%	ICU Level of Service	A
Analysis Period (min)	15		

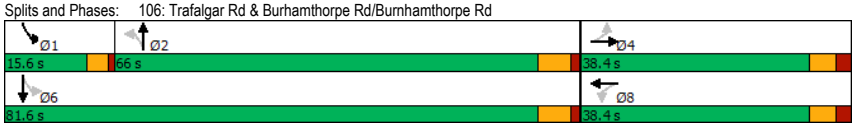
c Critical Lane Group

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Future Volume (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	30.0		0.0	15.0		0.0	60.0		0.0	60.0		0.0
Storage Lanes	1		0	1		0	1		0	1		0
Taper Length (m)	70.0			50.0			100.0			100.0		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	1.00	0.95	0.95
Frt												
Flt Protected												
Satd. Flow (prot)	1863	1863	0	1863	1863	0	1863	3539	0	1863	3539	0
Flt Permitted												
Satd. Flow (perm)	1863	1863	0	1863	1863	0	1863	3539	0	1863	3539	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)												
Link Speed (k/h)		60			60			80			80	
Link Distance (m)		828.7			989.6			1077.8			170.3	
Travel Time (s)		49.7			59.4			48.5			7.7	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Turn Type	Perm			Perm			Perm			pm+pt		
Protected Phases		4			8			2		1	6	
Permitted Phases	4			8			2			6		
Detector Phase	4	4		8	8		2	2		1	6	
Switch Phase												
Minimum Initial (s)	10.0	10.0		10.0	10.0		20.0	20.0		7.0	20.0	
Minimum Split (s)	24.0	24.0		24.0	24.0		26.0	26.0		11.5	26.0	
Total Split (s)	38.4	38.4		38.4	38.4		66.0	66.0		15.6	81.6	
Total Split (%)	32.0%	32.0%		32.0%	32.0%		55.0%	55.0%		13.0%	68.0%	
Maximum Green (s)	32.4	32.4		32.4	32.4		60.0	60.0		11.6	75.6	
Yellow Time (s)	3.7	3.7		3.7	3.7		4.6	4.6		3.0	4.6	
All-Red Time (s)	2.3	2.3		2.3	2.3		1.4	1.4		1.0	1.4	
Lost Time Adjust (s)	-2.0	-2.0		-2.0	-2.0		-2.0	-2.0		0.0	-2.0	
Total Lost Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
Lead/Lag							Lag	Lag		Lead		
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	
Recall Mode	None	None		None	None		Max	Max		None	Max	
Act Effct Green (s)												
Actuated g/C Ratio												
v/c Ratio												
Control Delay												
Queue Delay												
Total Delay												
LOS												
Approach Delay												
Approach LOS												

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Queue Length 50th (m)												
Queue Length 95th (m)												
Internal Link Dist (m)		804.7			965.6			1053.8			146.3	
Turn Bay Length (m)												
Base Capacity (vph)												
Starvation Cap Reductn												
Spillback Cap Reductn												
Storage Cap Reductn												
Reduced v/c Ratio												

Intersection Summary		
Area Type:	Other	
Cycle Length: 120		
Actuated Cycle Length: 96.6		
Natural Cycle: 65		
Control Type: Actuated-Uncoordinated		
Maximum v/c Ratio: 0.00		
Intersection Signal Delay: 0.0		Intersection LOS: A
Intersection Capacity Utilization 0.0%		ICU Level of Service A
Analysis Period (min) 15		

Splits and Phases: 106: Trafalgar Rd & Burhamthorpe Rd/Burnhamthorpe Rd



Lane Group
Lane Group Flow (vph)
v/c Ratio
Control Delay
Queue Delay
Total Delay
Queue Length 50th (m)
Queue Length 95th (m)
Internal Link Dist (m)
Turn Bay Length (m)
Base Capacity (vph)
Starvation Cap Reductn
Spillback Cap Reductn
Storage Cap Reductn
Reduced v/c Ratio

Intersection Summary

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Future Volume (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)												
Lane Util. Factor												
Frt												
Flt Protected												
Satd. Flow (prot)												
Flt Permitted												
Satd. Flow (perm)												
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	0	0	0	0	0	0	0	0	0	0	0
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Turn Type	Perm			Perm			Perm			pm+pt		
Protected Phases		4			8			2		1	6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)												
Effective Green, g (s)												
Actuated g/C Ratio												
Clearance Time (s)												
Vehicle Extension (s)												
Lane Grp Cap (vph)												
v/s Ratio Prot												
v/s Ratio Perm												
v/c Ratio												
Uniform Delay, d1												
Progression Factor												
Incremental Delay, d2												
Delay (s)												
Level of Service												
Approach Delay (s)		0.0			0.0			0.0			0.0	
Approach LOS		A			A			A			A	

Intersection Summary			
HCM 2000 Control Delay	0.0	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.00		
Actuated Cycle Length (s)	96.6	Sum of lost time (s)	12.0
Intersection Capacity Utilization	0.0%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Appendix D

Trip Generation Calculations

Block	ITE Land Use	Units	AM Peak Hour			PM Peak Hour		
			In	Out	Total	In	Out	Total
1	222 - Multifamily Housing, High-Rise (Dwelling Units)	810	57	162	219	161	98	259
	710 - General Office Building (GFA/1,000ft^2)	328.6	439	60	499	80	393	473
	820 - Shopping Center, >150K (GFA/1,000ft^2)	109.5	57	35	92	179	193	372
	Block 1 Trip Generation		553	257	810	420	684	1,104
	Modal Split	*20%*	*- 111*	*- 51*	*- 162*	*- 84*	*- 137*	*- 221*
	Internal AM Entering	*6%*	*- 33*		*- 33*			
	Internal AM Exiting	*13%*		*- 33*	*- 33*			
	Inerntal PM Entering	*16%*				*- 67*		*- 67*
	Internal PM Exiting	*10%*					*- 68*	*- 68*
	Block 1 Net Trip Generation		**409**	**173**	**582**	**269**	**479**	**748**
2	222 - Multifamily Housing, High-Rise (Dwelling Units)	669	47	134	181	133	81	214
	710 - General Office Building (GFA/1,000ft^2)	36.2	48	7	55	9	43	52
	822 - Strip Plaza, <40K (GFA/1,000ft^2)	12.1	17	11	28	39	40	79
	Block 2 Trip Generation		112	152	264	181	164	345
	Modal Split	*20%*	*- 22*	*- 30*	*- 52*	*- 36*	*- 33*	*- 69*
	Internal AM Entering	*7%*	*- 8*		*- 8*			
	Internal AM Exiting	*5%*		*- 8*	*- 8*			
	Inerntal PM Entering	*9%*				*- 16*		*- 16*
	Internal PM Exiting	*10%*					*- 16*	*- 16*
	Block 2 Net Trip Generation		**82**	**114**	**196**	**129**	**115**	**244**
3	222 - Multifamily Housing, High-Rise (Dwelling Units)	1,741	122	348	470	345	212	557
	710 - General Office Building (GFA/1,000ft^2)	0.0	-	-	-	-	-	-
	822 - Strip Plaza, <40K (GFA/1,000ft^2)	0.0	-	-	-	-	-	-
	Block 3 Trip Generation		122	348	470	345	212	557
	Modal Split	*20%*	*- 24*	*- 70*	*- 94*	*- 69*	*- 42*	*- 111*
	Internal AM Entering	*0%*	-		-			
	Internal AM Exiting	*0%*		-	-			
	Inerntal PM Entering	*0%*				-		-
	Internal PM Exiting	*0%*					-	-
	Block 3 Net Trip Generation		**98**	**278**	**376**	**276**	**170**	**446**
4	222 - Multifamily Housing, High-Rise (Dwelling Units)	2,253	158	450	608	447	274	721
	710 - General Office Building (GFA/1,000ft^2)	0.0	-	-	-	-	-	-
	822 - Strip Plaza, <40K (GFA/1,000ft^2)	0.0	-	-	-	-	-	-
	Block 4 Trip Generation		158	450	608	447	274	721
	Modal Split	*20%*	*- 32*	*- 90*	*- 122*	*- 89*	*- 55*	*- 144*
	Internal AM Entering	*0%*	-		-			
	Internal AM Exiting	*0%*		-	-			
	Inerntal PM Entering	*0%*				-		-
	Internal PM Exiting	*0%*					-	-
	Block 4 Net Trip Generation		**126**	**360**	**486**	**358**	**219**	**577**

5	222 - Multifamily Housing, High-Rise (Dwelling Units)	1,163	82	232	314	231	141	372
	710 - General Office Building (GFA/1,000ft^2)	0.0	-	-	-	-	-	-
	822 - Strip Plaza, <40K (GFA/1,000ft^2)	0.0	-	-	-	-	-	-
	Block 5 Trip Generation		82	232	314	231	141	372
	Modal Split	*20%*	*- 16*	*- 46*	*- 62*	*- 46*	*- 28*	*- 74*
	Internal AM Entering	*0%*	-		-			
	Internal AM Exiting	*0%*		-	-			
	Inerntal PM Entering	*0%*				-		-
	Internal PM Exiting	*0%*					-	-
	Block 5 Net Trip Generation		**66**	**186**	**252**	**185**	**113**	**298**
6	222 - Multifamily Housing, High-Rise (Dwelling Units)	0	-	-	-	-	-	-
	710 - General Office Building (GFA/1,000ft^2)	73.5	99	13	112	18	88	106
	822 - Strip Plaza, <40K (GFA/1,000ft^2)	24.5	35	23	58	80	81	161
	Block 5 Trip Generation		134	36	170	98	169	267
	Modal Split	*20%*	*- 27*	*- 7*	*- 34*	*- 20*	*- 34*	*- 54*
	Internal AM Entering	*0%*	-		-			
	Internal AM Exiting	*0%*		-	-			
	Inerntal PM Entering	*0%*				-		-
	Internal PM Exiting	*0%*					-	-
	Block 5 Net Trip Generation		**107**	**29**	**136**	**78**	**135**	**213**
7	222 - Multifamily Housing, High-Rise (Dwelling Units)	0	-	-	-	-	-	-
	710 - General Office Building (GFA/1,000ft^2)	45.2	45	7	52	8	44	52
	822 - Strip Plaza, <40K (GFA/1,000ft^2)	15.1	22	14	36	49	50	99
	Block 7 Trip Generation		67	21	88	57	94	151
	Modal Split	*20%*	*- 13*	*- 4*	*- 17*	*- 11*	*- 19*	*- 30*
	Internal AM Entering	*0%*	-		-			
	Internal AM Exiting	*0%*		-	-			
	Inerntal PM Entering	*0%*				-		-
	Internal PM Exiting	*0%*					-	-
	Block 7 Net Trip Generation		**54**	**17**	**71**	**46**	**75**	**121**
8	222 - Multifamily Housing, High-Rise (Dwelling Units)	0	-	-	-	-	-	-
	710 - General Office Building (GFA/1,000ft^2)	28.3	38	5	43	7	34	41
	822 - Strip Plaza, <40K (GFA/1,000ft^2)	9.4	13	9	22	31	31	62
	Block 8 Trip Generation		51	14	65	38	65	103
	Modal Split	*20%*	*- 10*	*- 3*	*- 13*	*- 8*	*- 13*	*- 21*
	Internal AM Entering	*0%*	-		-			
	Internal AM Exiting	*0%*		-	-			
	Inerntal PM Entering	*0%*				-		-
	Internal PM Exiting	*0%*					-	-
	Block 8 Net Trip Generation		**41**	**11**	**52**	**30**	**52**	**82**

9	222 - Multifamily Housing, High-Rise (Dwelling Units)	0	-	-	-	-	-	-
	710 - General Office Building (GFA/1,000ft^2)	62.2	83	11	94	15	75	90
	822 - Strip Plaza, <40K (GFA/1,000ft^2)	20.7	29	20	49	68	69	137
	Block 9 Trip Generation		112	31	143	83	144	227
	Modal Split	*20%*	*- 22*	*- 6*	*- 28*	*- 17*	*- 29*	*- 46*
	Internal AM Entering	*0%*	*-*		*-*			
	Internal AM Exiting	*0%*		*-*	*-*			
	Inerntal PM Entering	*0%*				*-*		*-*
	Internal PM Exiting	*0%*					*-*	*-*
	Block 9 Net Trip Generation		**90**	**25**	**115**	**66**	**115**	**181**
10	222 - Multifamily Housing, High-Rise (Dwelling Units)	492	35	98	133	97	60	157
	520 - Elementary School (Employees)	88	102	90	192	78	79	157
	Block 10 Trip Generation		137	188	325	175	139	314
	Modal Split	*20%*	*- 27*	*- 20*	*- 47*	*- 19*	*- 12*	*- 31*
	Block 10 Net Trip Generation		**8**	**168**	**176**	**156**	**127**	**283**
11	222 - Multifamily Housing, High-Rise (Dwelling Units)	648	45	130	175	128	79	207
	710 - General Office Building (GFA/1,000ft^2)	29.2	39	5	44	7	35	42
	822 - Strip Plaza, <40K (GFA/1,000ft^2)	9.7	14	9	23	32	32	64
	Block 11 Trip Generation		98	144	242	167	146	313
	Modal Split	*20%*	*- 20*	*- 29*	*- 49*	*- 33*	*- 29*	*- 62*
	Internal AM Entering	*7%*	*- 7*		*- 7*			
	Internal AM Exiting	*5%*		*- 7*	*- 7*			
	Inerntal PM Entering	*8%*				*- 13*		*- 13*
	Internal PM Exiting	*9%*					*- 13*	*- 13*
	Block 11 Net Trip Generation		**71**	**108**	**179**	**121**	**104**	**225**
12	222 - Multifamily Housing, High-Rise (Dwelling Units)	1,078	76	215	291	214	131	345
	710 - General Office Building (GFA/1,000ft^2)	48.6	65	9	74	12	58	70
	822 - Strip Plaza, <40K (GFA/1,000ft^2)	16.2	23	15	38	53	54	107
	Block 12 Trip Generation		164	239	403	279	243	522
	Modal Split	*20%*	*- 33*	*- 48*	*- 81*	*- 56*	*- 49*	*- 105*
	Internal AM Entering	*6%*	*- 10*		*- 10*			
	Internal AM Exiting	*4%*		*- 10*	*- 10*			
	Inerntal PM Entering	*8%*				*- 22*		*- 22*
	Internal PM Exiting	*9%*					*- 22*	*- 22*
	Block 12 Net Trip Generation		**121**	**181**	**302**	**201**	**172**	**373**

17	150 - Warehousing (GFA/1,000ft^2)	917.1	120	36	156	46	119	165
	Block 17 Trip Generation		120	36	156	46	119	165
	Modal Split	*20%*	*- 24*	*-*	*- 24*	*- 9*	*- 24*	*- 33*
	Block 17 Net Trip Generation		**96**	**36**	**132**	**37**	**95**	**132**
18	150 - Warehousing (GFA/1,000ft^2)	480.1	63	19	82	24	62	86
	Block 18 Trip Generation		63	19	82	24	62	86
	Modal Split	*20%*	*- 13*	*- 4*	*- 17*	*- 5*	*- 12*	*- 17*
	Block 18 Net Trip Generation		**50**	**15**	**65**	**19**	**50**	**69**
19	150 - Warehousing (GFA/1,000ft^2)	325.1	42	13	55	17	42	59
	Block 19 Trip Generation		42	13	55	17	42	59
	Modal Split	*20%*	*- 8*	*- 3*	*- 11*	*- 3*	*- 8*	*- 11*
	Block 19 Net Trip Generation		**34**	**10**	**44**	**14**	**34**	**48**
20	150 - Warehousing (GFA/1,000ft^2)	219.6	28	9	37	11	29	40
	Block 20 Trip Generation		28	9	37	11	29	40
	Modal Split	*20%*	*- 8*	*- 3*	*- 11*	*- 3*	*- 8*	*- 11*
	Block 20 Net Trip Generation		**20**	**6**	**26**	**8**	**21**	**29**
	Residential (Dwelling Units)	**8,854**	**622**	**1,769**	**2,391**	**1,756**	**1,076**	**2,832**
	Office (GFA/1,000ft^2)	**652**	**856**	**117**	**973**	**156**	**770**	**926**
	Retail (GFA/1,000ft^2)	**217**	**210**	**136**	**346**	**531**	**550**	**1,081**
	Institutional (Employees)	**88**	**102**	**90**	**192**	**78**	**79**	**157**
	Industrial (GFA/1,000ft^2)	**1,810**	**261**	**245**	**506**	**254**	**379**	**633**
Total Trip Generation			**1,949**	**2,267**	**4,216**	**2,697**	**2,775**	**5,472**
Net Trip Generation			**1,473**	**1,717**	**3,190**	**1,993**	**2,076**	**4,069**

NCHRP 8-51 Internal Trip Capture Estimation Tool			
Project Name:	210156/210157	**Organization:**	PTSL
Project Location:	Trafalgar I/O Lands	**Performed By:**	AE
Scenario Description:	Block 1	**Date:**	Jun-24
Analysis Year:	2031	**Checked By:**	
Analysis Period:	**AM Street Peak Hour**	**Date:**	

Table 1-A: Base Vehicle-Trip Generation Estimates (Single-Use Site Estimate)

Land Use	Development Data (*For Information Only*)			Estimated Vehicle-Trips		
	ITE LUCs[1]	Quantity	Units	Total	Entering	Exiting
Office	710	329	/1000 ft2	499	439	60
Retail	820	110	/1000 ft2	92	57	35
Restaurant				0		
Cinema/Entertainment				0		
Residential	222	810	Dwelling Units	219	57	162
Hotel				0		
All Other Land Uses[2]				0		
Total				810	553	257

Table 2-A: Mode Split and Vehicle Occupancy Estimates

Land Use	Entering Trips			Exiting Trips		
	Veh. Occ.	% Transit	% Non-Motorized	Veh. Occ.	% Transit	% Non-Motorized
Office	1.13	12%	8%	1.13	12%	8%
Retail	1.13	12%	8%	1.13	12%	8%
Restaurant						
Cinema/Entertainment						
Residential	1.16	12%	8%	1.16	12%	8%
Hotel						
All Other Land Uses[2]						

Table 3-A: Average Land Use Interchange Distances (Feet Walking Distance)

Origin (From)	Destination (To)					
	Office	Retail	Restaurant	Cinema/Entertainment	Residential	Hotel
Office						
Retail						
Restaurant						
Cinema/Entertainment						
Residential						
Hotel						

Table 4-A: Internal Person-Trip Origin-Destination Matrix*

Origin (From)	Destination (To)					
	Office	Retail	Restaurant	Cinema/Entertainment	Residential	Hotel
Office		19	0	0	0	0
Retail	12		0	0	1	0
Restaurant	0	0		0	0	0
Cinema/Entertainment	0	0	0		0	0
Residential	4	2	0	0		0
Hotel	0	0	0	0	0	

Table 5-A: Computations Summary

	Total	Entering	Exiting
All Person-Trips	922	626	296
Internal Capture Percentage	8%	6%	13%
External Vehicle-Trips[3]	595	416	179
External Transit-Trips[4]	102	71	31
External Non-Motorized Trips[4]	67	46	21

Table 6-A: Internal Trip Capture Percentages by Land Use

Land Use	Entering Trips	Exiting Trips
Office	3%	28%
Retail	33%	33%
Restaurant	N/A	N/A
Cinema/Entertainment	N/A	N/A
Residential	2%	3%
Hotel	N/A	N/A

[1]Land Use Codes (LUCs) from *Trip Generation Informational Report*, published by the Institute of Transportation Engineers.
[2]Total estimate for all other land uses at mixed-use development site-not subject to internal trip capture computations in this estimator
[3]Vehicle-trips computed using the mode split and vehicle occupancy values provided in Table 2-A
[4]Person-Trips
*Indicates computation that has been rounded to the nearest whole number.

Estimation Tool Developed by the Texas Transportation Institute

Project Name:	210156/210157
Analysis Period:	**AM Street Peak Hour**

Table 7-A: Conversion of Vehicle-Trip Ends to Person-Trip Ends

Land Use	Table 7-A (D): Entering Trips			Table 7-A (O): Exiting Trips		
	Veh. Occ.	Vehicle-Trips	Person-Trips*	Veh. Occ.	Vehicle-Trips	Person-Trips*
Office	1.13	439	496	1.13	60	68
Retail	1.13	57	64	1.13	35	40
Restaurant	1.00	0	0	1.00	0	0
Cinema/Entertainment	1.00	0	0	1.00	0	0
Residential	1.16	57	66	1.16	162	188
Hotel	1.00	0	0	1.00	0	0

Table 8-A (O): Internal Person-Trip Origin-Destination Matrix (Computed at Origin)

Origin (From)	Destination (To)					
	Office	Retail	Restaurant	Cinema/Entertainment	Residential	Hotel
Office		19	43	0	1	0
Retail	12		5	0	6	0
Restaurant	0	0		0	0	0
Cinema/Entertainment	0	0	0		0	0
Residential	4	2	38	0		0
Hotel	0	0	0	0	0	

Table 8-A (D): Internal Person-Trip Origin-Destination Matrix (Computed at Destination)

Origin (From)	Destination (To)					
	Office	Retail	Restaurant	Cinema/Entertainment	Residential	Hotel
Office		20	0	0	0	0
Retail	20		0	0	1	0
Restaurant	69	5		0	3	0
Cinema/Entertainment	0	0	0		0	0
Residential	15	11	0	0		0
Hotel	15	3	0	0	0	

Table 9-A (D): Internal and External Trips Summary (Entering Trips)

Destination Land Use	Person-Trip Estimates			External Trips by Mode*		
	Internal	External	Total	Vehicles[1]	Transit[2]	Non-Motorized[2]
Office	16	480	496	340	58	38
Retail	21	43	64	31	5	3
Restaurant	0	0	0	0	0	0
Cinema/Entertainment	0	0	0	0	0	0
Residential	1	65	66	45	8	5
Hotel	0	0	0	0	0	0
All Other Land Uses[3]	0	0	0	0	0	0

Table 9-A (O): Internal and External Trips Summary (Exiting Trips)

Origin Land Use	Person-Trip Estimates			External Trips by Mode*		
	Internal	External	Total	Vehicles[1]	Transit[2]	Non-Motorized[2]
Office	19	49	68	35	6	4
Retail	13	27	40	19	3	2
Restaurant	0	0	0	0	0	0
Cinema/Entertainment	0	0	0	0	0	0
Residential	6	182	188	125	22	15
Hotel	0	0	0	0	0	0
All Other Land Uses[3]	0	0	0	0	0	0

[1]Vehicle-trips computed using the mode split and vehicle occupancy values provided in Table 2-A

[2]Person-Trips

[3]Total estimate for all other land uses at mixed-use development site-not subject to internal trip capture computations in this estimator

*Indicates computation that has been rounded to the nearest whole number.

NCHRP 8-51 Internal Trip Capture Estimation Tool			
Project Name:	210156/210157	**Organization:**	PTSL
Project Location:	Trafalgar I/O Lands	**Performed By:**	AE
Scenario Description:	Block 1	**Date:**	Jun-24
Analysis Year:	2031	**Checked By:**	
Analysis Period:	**PM Street Peak Hour**	**Date:**	

Table 1-A: Base Vehicle-Trip Generation Estimates (Single-Use Site Estimate)

Land Use	Development Data (*For Information Only*)			Estimated Vehicle-Trips		
	ITE LUCs[1]	Quantity	Units	Total	Entering	Exiting
Office	710	329	/1000 ft2	473	80	393
Retail	820	110	/1000 ft2	372	179	193
Restaurant				0		
Cinema/Entertainment				0		
Residential	222	810	Dwelling Units	259	161	98
Hotel				0		
All Other Land Uses[2]				0		
Total				1104	420	684

Table 2-A: Mode Split and Vehicle Occupancy Estimates

Land Use	Entering Trips			Exiting Trips		
	Veh. Occ.	% Transit	% Non-Motorized	Veh. Occ.	% Transit	% Non-Motorized
Office	1.13	12%	8%	1.13	12%	8%
Retail	1.13	12%	8%	1.13	12%	8%
Restaurant						
Cinema/Entertainment						
Residential	1.16	12%	8%	1.16	12%	8%
Hotel						
All Other Land Uses[2]						

Table 3-A: Average Land Use Interchange Distances (Feet Walking Distance)

Origin (From)	Destination (To)					
	Office	Retail	Restaurant	Cinema/Entertainment	Residential	Hotel
Office						
Retail						
Restaurant						
Cinema/Entertainment						
Residential						
Hotel						

Table 4-A: Internal Person-Trip Origin-Destination Matrix*

Origin (From)	Destination (To)					
	Office	Retail	Restaurant	Cinema/Entertainment	Residential	Hotel
Office		65	0	0	0	0
Retail	4		0	0	4	0
Restaurant	0	0		0	0	0
Cinema/Entertainment	0	0	0		0	0
Residential	2	1	0	0		0
Hotel	0	0	0	0	0	

Table 5-A: Computations Summary

	Total	Entering	Exiting
All Person-Trips	1,255	479	776
Internal Capture Percentage	12%	16%	10%
External Vehicle-Trips[3]	776	281	495
External Transit-Trips[4]	131	48	83
External Non-Motorized Trips[4]	89	33	56

Table 6-A: Internal Trip Capture Percentages by Land Use

Land Use	Entering Trips	Exiting Trips
Office	7%	15%
Retail	33%	4%
Restaurant	N/A	N/A
Cinema/Entertainment	N/A	N/A
Residential	2%	3%
Hotel	N/A	N/A

[1]Land Use Codes (LUCs) from *Trip Generation Informational Report*, published by the Institute of Transportation Engineers.
[2]Total estimate for all other land uses at mixed-use development site-not subject to internal trip capture computations in this estimator
[3]Vehicle-trips computed using the mode split and vehicle occupancy values provided in Table 2-A
[4]Person-Trips
*Indicates computation that has been rounded to the nearest whole number.

Estimation Tool Developed by the Texas Transportation Institute

Project Name:	210156/210157
Analysis Period:	**PM Street Peak Hour**

Table 7-A: Conversion of Vehicle-Trip Ends to Person-Trip Ends

Land Use	Table 7-A (D): Entering Trips			Table 7-A (O): Exiting Trips		
	Veh. Occ.	Vehicle-Trips	Person-Trips*	Veh. Occ.	Vehicle-Trips	Person-Trips*
Office	1.13	80	90	1.13	393	444
Retail	1.13	179	202	1.13	193	218
Restaurant	1.00	0	0	1.00	0	0
Cinema/Entertainment	1.00	0	0	1.00	0	0
Residential	1.16	161	187	1.16	98	114
Hotel	1.00	0	0	1.00	0	0

Table 8-A (O): Internal Person-Trip Origin-Destination Matrix (Computed at Origin)

Origin (From)	Destination (To)					
	Office	Retail	Restaurant	Cinema/Entertainment	Residential	Hotel
Office		124	280	0	4	0
Retail	63		28	0	31	0
Restaurant	0	0		0	0	0
Cinema/Entertainment	0	0	0		0	0
Residential	2	1	23	0		0
Hotel	0	0	0	0	0	

Table 8-A (D): Internal Person-Trip Origin-Destination Matrix (Computed at Destination)

Origin (From)	Destination (To)					
	Office	Retail	Restaurant	Cinema/Entertainment	Residential	Hotel
Office		65	0	0	0	0
Retail	4		0	0	4	0
Restaurant	13	16		0	9	0
Cinema/Entertainment	0	0	0		0	0
Residential	3	34	0	0		0
Hotel	3	8	0	0	0	

Table 9-A (D): Internal and External Trips Summary (Entering Trips)

Destination Land Use	Person-Trip Estimates			External Trips by Mode*		
	Internal	External	Total	Vehicles[1]	Transit[2]	Non-Motorized[2]
Office	6	84	90	59	10	7
Retail	66	136	202	96	16	11
Restaurant	0	0	0	0	0	0
Cinema/Entertainment	0	0	0	0	0	0
Residential	4	183	187	126	22	15
Hotel	0	0	0	0	0	0
All Other Land Uses[3]	0	0	0	0	0	0

Table 9-A (O): Internal and External Trips Summary (Exiting Trips)

Origin Land Use	Person-Trip Estimates			External Trips by Mode*		
	Internal	External	Total	Vehicles[1]	Transit[2]	Non-Motorized[2]
Office	65	379	444	269	45	30
Retail	8	210	218	149	25	17
Restaurant	0	0	0	0	0	0
Cinema/Entertainment	0	0	0	0	0	0
Residential	3	111	114	77	13	9
Hotel	0	0	0	0	0	0
All Other Land Uses[3]	0	0	0	0	0	0

[1]Vehicle-trips computed using the mode split and vehicle occupancy values provided in Table 2-A

[2]Person-Trips

[3]Total estimate for all other land uses at mixed-use development site-not subject to internal trip capture computations in this estimator

*Indicates computation that has been rounded to the nearest whole number.

NCHRP 8-51 Internal Trip Capture Estimation Tool			
Project Name:	210156/210157	**Organization:**	PTSL
Project Location:	Trafalgar I/O Lands	**Performed By:**	AE
Scenario Description:	Block 2	**Date:**	Jun-24
Analysis Year:	2031	**Checked By:**	
Analysis Period:	**AM Street Peak Hour**	**Date:**	

Table 1-A: Base Vehicle-Trip Generation Estimates (Single-Use Site Estimate)

Land Use	Development Data (*For Information Only*)			Estimated Vehicle-Trips		
	ITE LUCs[1]	Quantity	Units	Total	Entering	Exiting
Office	710	36	/1000 ft2	55	48	7
Retail	822	12	/1000 ft2	28	17	11
Restaurant				0		
Cinema/Entertainment				0		
Residential	222	669	Dwelling Units	181	47	134
Hotel				0		
All Other Land Uses[2]				0		
Total				264	112	152

Table 2-A: Mode Split and Vehicle Occupancy Estimates

Land Use	Entering Trips			Exiting Trips		
	Veh. Occ.	% Transit	% Non-Motorized	Veh. Occ.	% Transit	% Non-Motorized
Office	1.13	12%	8%	1.13	12%	8%
Retail	1.13	12%	8%	1.13	12%	8%
Restaurant						
Cinema/Entertainment						
Residential	1.16	12%	8%	1.16	12%	8%
Hotel						
All Other Land Uses[2]						

Table 3-A: Average Land Use Interchange Distances (Feet Walking Distance)

Origin (From)	Destination (To)					
	Office	Retail	Restaurant	Cinema/Entertainment	Residential	Hotel
Office						
Retail						
Restaurant						
Cinema/Entertainment						
Residential						
Hotel						

Table 4-A: Internal Person-Trip Origin-Destination Matrix*

Origin (From)	Destination (To)					
	Office	Retail	Restaurant	Cinema/Entertainment	Residential	Hotel
Office		2	0	0	0	0
Retail	2		0	0	1	0
Restaurant	0	0		0	0	0
Cinema/Entertainment	0	0	0		0	0
Residential	2	2	0	0		0
Hotel	0	0	0	0	0	

Table 5-A: Computations Summary

	Total	Entering	Exiting
All Person-Trips	303	128	175
Internal Capture Percentage	6%	7%	5%
External Vehicle-Trips[3]	198	84	114
External Transit-Trips[4]	34	14	20
External Non-Motorized Trips[4]	22	9	13

Table 6-A: Internal Trip Capture Percentages by Land Use

Land Use	Entering Trips	Exiting Trips
Office	7%	25%
Retail	21%	25%
Restaurant	N/A	N/A
Cinema/Entertainment	N/A	N/A
Residential	2%	3%
Hotel	N/A	N/A

[1]Land Use Codes (LUCs) from *Trip Generation Informational Report*, published by the Institute of Transportation Engineers.

[2]Total estimate for all other land uses at mixed-use development site-not subject to internal trip capture computations in this estimator

[3]Vehicle-trips computed using the mode split and vehicle occupancy values provided in Table 2-A

[4]Person-Trips

*Indicates computation that has been rounded to the nearest whole number.

Estimation Tool Developed by the Texas Transportation Institute

Project Name:	210156/210157
Analysis Period:	**AM Street Peak Hour**

Table 7-A: Conversion of Vehicle-Trip Ends to Person-Trip Ends

Land Use	Table 7-A (D): Entering Trips			Table 7-A (O): Exiting Trips		
	Veh. Occ.	Vehicle-Trips	Person-Trips*	Veh. Occ.	Vehicle-Trips	Person-Trips*
Office	1.13	48	54	1.13	7	8
Retail	1.13	17	19	1.13	11	12
Restaurant	1.00	0	0	1.00	0	0
Cinema/Entertainment	1.00	0	0	1.00	0	0
Residential	1.16	47	55	1.16	134	155
Hotel	1.00	0	0	1.00	0	0

Table 8-A (O): Internal Person-Trip Origin-Destination Matrix (Computed at Origin)

Origin (From)	Destination (To)					
	Office	Retail	Restaurant	Cinema/Entertainment	Residential	Hotel
Office		2	5	0	0	0
Retail	3		2	0	2	0
Restaurant	0	0		0	0	0
Cinema/Entertainment	0	0	0		0	0
Residential	3	2	31	0		0
Hotel	0	0	0	0	0	

Table 8-A (D): Internal Person-Trip Origin-Destination Matrix (Computed at Destination)

Origin (From)	Destination (To)					
	Office	Retail	Restaurant	Cinema/Entertainment	Residential	Hotel
Office		6	0	0	0	0
Retail	2		0	0	1	0
Restaurant	8	2		0	3	0
Cinema/Entertainment	0	0	0		0	0
Residential	2	3	0	0		0
Hotel	2	1	0	0	0	

Table 9-A (D): Internal and External Trips Summary (Entering Trips)

Destination Land Use	Person-Trip Estimates			External Trips by Mode*		
	Internal	External	Total	Vehicles[1]	Transit[2]	Non-Motorized[2]
Office	4	50	54	35	6	4
Retail	4	15	19	11	2	1
Restaurant	0	0	0	0	0	0
Cinema/Entertainment	0	0	0	0	0	0
Residential	1	54	55	38	6	4
Hotel	0	0	0	0	0	0
All Other Land Uses[3]	0	0	0	0	0	0

Table 9-A (O): Internal and External Trips Summary (Exiting Trips)

Origin Land Use	Person-Trip Estimates			External Trips by Mode*		
	Internal	External	Total	Vehicles[1]	Transit[2]	Non-Motorized[2]
Office	2	6	8	4	1	0
Retail	3	9	12	6	1	1
Restaurant	0	0	0	0	0	0
Cinema/Entertainment	0	0	0	0	0	0
Residential	4	151	155	104	18	12
Hotel	0	0	0	0	0	0
All Other Land Uses[3]	0	0	0	0	0	0

[1]Vehicle-trips computed using the mode split and vehicle occupancy values provided in Table 2-A

[2]Person-Trips

[3]Total estimate for all other land uses at mixed-use development site-not subject to internal trip capture computations in this estimator

*Indicates computation that has been rounded to the nearest whole number.

NCHRP 8-51 Internal Trip Capture Estimation Tool			
Project Name:	210156/210157	**Organization:**	PTSL
Project Location:	Trafalgar I/O Lands	**Performed By:**	AE
Scenario Description:	Block 2	**Date:**	Jun-24
Analysis Year:	2031	**Checked By:**	
Analysis Period:	**PM Street Peak Hour**	**Date:**	

Table 1-A: Base Vehicle-Trip Generation Estimates (Single-Use Site Estimate)

Land Use	Development Data (*For Information Only*)			Estimated Vehicle-Trips		
	ITE LUCs[1]	Quantity	Units	Total	Entering	Exiting
Office	710	36	/1000 ft2	52	9	43
Retail	822	12	/1000 ft2	79	39	40
Restaurant				0		
Cinema/Entertainment				0		
Residential	222	669	Dwelling Units	214	133	81
Hotel				0		
All Other Land Uses[2]				0		
Total				345	181	164

Table 2-A: Mode Split and Vehicle Occupancy Estimates

Land Use	Entering Trips			Exiting Trips		
	Veh. Occ.	% Transit	% Non-Motorized	Veh. Occ.	% Transit	% Non-Motorized
Office	1.13	12%	8%	1.13	12%	8%
Retail	1.13	12%	8%	1.13	12%	8%
Restaurant						
Cinema/Entertainment						
Residential	1.16	12%	8%	1.16	12%	8%
Hotel						
All Other Land Uses[2]						

Table 3-A: Average Land Use Interchange Distances (Feet Walking Distance)

Origin (From)	Destination (To)					
	Office	Retail	Restaurant	Cinema/Entertainment	Residential	Hotel
Office						
Retail						
Restaurant						
Cinema/Entertainment						
Residential						
Hotel						

Table 4-A: Internal Person-Trip Origin-Destination Matrix*

Origin (From)	Destination (To)					
	Office	Retail	Restaurant	Cinema/Entertainment	Residential	Hotel
Office		14	0	0	0	0
Retail	0		0	0	3	0
Restaurant	0	0		0	0	0
Cinema/Entertainment	0	0	0		0	0
Residential	0	1	0	0		0
Hotel	0	0	0	0	0	

Table 5-A: Computations Summary

	Total	Entering	Exiting
All Person-Trips	396	208	188
Internal Capture Percentage	9%	9%	10%
External Vehicle-Trips[3]	252	132	120
External Transit-Trips[4]	42	22	20
External Non-Motorized Trips[4]	28	15	13

Table 6-A: Internal Trip Capture Percentages by Land Use

Land Use	Entering Trips	Exiting Trips
Office	0%	29%
Retail	34%	7%
Restaurant	N/A	N/A
Cinema/Entertainment	N/A	N/A
Residential	2%	1%
Hotel	N/A	N/A

[1]Land Use Codes (LUCs) from *Trip Generation Informational Report*, published by the Institute of Transportation Engineers.
[2]Total estimate for all other land uses at mixed-use development site-not subject to internal trip capture computations in this estimator
[3]Vehicle-trips computed using the mode split and vehicle occupancy values provided in Table 2-A
[4]Person-Trips
*Indicates computation that has been rounded to the nearest whole number.

Estimation Tool Developed by the Texas Transportation Institute

Project Name:	210156/210157
Analysis Period:	**PM Street Peak Hour**

Table 7-A: Conversion of Vehicle-Trip Ends to Person-Trip Ends

Land Use	Table 7-A (D): Entering Trips			Table 7-A (O): Exiting Trips		
	Veh. Occ.	Vehicle-Trips	Person-Trips*	Veh. Occ.	Vehicle-Trips	Person-Trips*
Office	1.13	9	10	1.13	43	49
Retail	1.13	39	44	1.13	40	45
Restaurant	1.00	0	0	1.00	0	0
Cinema/Entertainment	1.00	0	0	1.00	0	0
Residential	1.16	133	154	1.16	81	94
Hotel	1.00	0	0	1.00	0	0

Table 8-A (O): Internal Person-Trip Origin-Destination Matrix (Computed at Origin)

Origin (From)	Destination (To)					
	Office	Retail	Restaurant	Cinema/Entertainment	Residential	Hotel
Office		14	31	0	0	0
Retail	13		6	0	6	0
Restaurant	0	0		0	0	0
Cinema/Entertainment	0	0	0		0	0
Residential	2	1	19	0		0
Hotel	0	0	0	0	0	

Table 8-A (D): Internal Person-Trip Origin-Destination Matrix (Computed at Destination)

Origin (From)	Destination (To)					
	Office	Retail	Restaurant	Cinema/Entertainment	Residential	Hotel
Office		14	0	0	0	0
Retail	0		0	0	3	0
Restaurant	1	4		0	8	0
Cinema/Entertainment	0	0	0		0	0
Residential	0	7	0	0		0
Hotel	0	2	0	0	0	

Table 9-A (D): Internal and External Trips Summary (Entering Trips)

Destination Land Use	Person-Trip Estimates			External Trips by Mode*		
	Internal	External	Total	Vehicles[1]	Transit[2]	Non-Motorized[2]
Office	0	10	10	7	1	1
Retail	15	29	44	21	3	2
Restaurant	0	0	0	0	0	0
Cinema/Entertainment	0	0	0	0	0	0
Residential	3	151	154	104	18	12
Hotel	0	0	0	0	0	0
All Other Land Uses[3]	0	0	0	0	0	0

Table 9-A (O): Internal and External Trips Summary (Exiting Trips)

Origin Land Use	Person-Trip Estimates			External Trips by Mode*		
	Internal	External	Total	Vehicles[1]	Transit[2]	Non-Motorized[2]
Office	14	35	49	25	4	3
Retail	3	42	45	30	5	3
Restaurant	0	0	0	0	0	0
Cinema/Entertainment	0	0	0	0	0	0
Residential	1	93	94	65	11	7
Hotel	0	0	0	0	0	0
All Other Land Uses[3]	0	0	0	0	0	0

[1]Vehicle-trips computed using the mode split and vehicle occupancy values provided in Table 2-A

[2]Person-Trips

[3]Total estimate for all other land uses at mixed-use development site-not subject to internal trip capture computations in this estimator

*Indicates computation that has been rounded to the nearest whole number.

NCHRP 8-51 Internal Trip Capture Estimation Tool			
Project Name:	210156/210157	**Organization:**	PTSL
Project Location:	Trafalgar I/O Lands	**Performed By:**	AE
Scenario Description:	Block 11	**Date:**	Jun-24
Analysis Year:	2041	**Checked By:**	
Analysis Period:	**AM Street Peak Hour**	**Date:**	

Table 1-A: Base Vehicle-Trip Generation Estimates (Single-Use Site Estimate)

Land Use	Development Data (*For Information Only*)			Estimated Vehicle-Trips		
	ITE LUCs[1]	Quantity	Units	Total	Entering	Exiting
Office	710	29	/1000 ft2	44	39	5
Retail	822	10	/1000 ft2	23	14	9
Restaurant				0		
Cinema/Entertainment				0		
Residential	222	648	Dwelling Units	175	45	130
Hotel				0		
All Other Land Uses[2]				0		
Total				242	98	144

Table 2-A: Mode Split and Vehicle Occupancy Estimates

Land Use	Entering Trips			Exiting Trips		
	Veh. Occ.	% Transit	% Non-Motorized	Veh. Occ.	% Transit	% Non-Motorized
Office	1.13	12%	8%	1.13	12%	8%
Retail	1.13	12%	8%	1.13	12%	8%
Restaurant						
Cinema/Entertainment						
Residential	1.16	12%	8%	1.16	12%	8%
Hotel						
All Other Land Uses[2]						

Table 3-A: Average Land Use Interchange Distances (Feet Walking Distance)

Origin (From)	Destination (To)					
	Office	Retail	Restaurant	Cinema/Entertainment	Residential	Hotel
Office						
Retail						
Restaurant						
Cinema/Entertainment						
Residential						
Hotel						

Table 4-A: Internal Person-Trip Origin-Destination Matrix*

Origin (From)	Destination (To)					
	Office	Retail	Restaurant	Cinema/Entertainment	Residential	Hotel
Office		2	0	0	0	0
Retail	2		0	0	1	0
Restaurant	0	0		0	0	0
Cinema/Entertainment	0	0	0		0	0
Residential	1	2	0	0		0
Hotel	0	0	0	0	0	

Table 5-A: Computations Summary

	Total	Entering	Exiting
All Person-Trips	279	112	167
Internal Capture Percentage	6%	7%	5%
External Vehicle-Trips[3]	183	73	110
External Transit-Trips[4]	31	12	19
External Non-Motorized Trips[4]	21	8	13

Table 6-A: Internal Trip Capture Percentages by Land Use

Land Use	Entering Trips	Exiting Trips
Office	7%	33%
Retail	25%	30%
Restaurant	N/A	N/A
Cinema/Entertainment	N/A	N/A
Residential	2%	2%
Hotel	N/A	N/A

[1]Land Use Codes (LUCs) from *Trip Generation Informational Report*, published by the Institute of Transportation Engineers.
[2]Total estimate for all other land uses at mixed-use development site-not subject to internal trip capture computations in this estimator
[3]Vehicle-trips computed using the mode split and vehicle occupancy values provided in Table 2-A
[4]Person-Trips
*Indicates computation that has been rounded to the nearest whole number.

Estimation Tool Developed by the Texas Transportation Institute

Project Name:	210156/210157
Analysis Period:	**AM Street Peak Hour**

Table 7-A: Conversion of Vehicle-Trip Ends to Person-Trip Ends

Land Use	Table 7-A (D): Entering Trips			Table 7-A (O): Exiting Trips		
	Veh. Occ.	Vehicle-Trips	Person-Trips*	Veh. Occ.	Vehicle-Trips	Person-Trips*
Office	1.13	39	44	1.13	5	6
Retail	1.13	14	16	1.13	9	10
Restaurant	1.00	0	0	1.00	0	0
Cinema/Entertainment	1.00	0	0	1.00	0	0
Residential	1.16	45	52	1.16	130	151
Hotel	1.00	0	0	1.00	0	0

Table 8-A (O): Internal Person-Trip Origin-Destination Matrix (Computed at Origin)

Origin (From)	Destination (To)					
	Office	Retail	Restaurant	Cinema/Entertainment	Residential	Hotel
Office		2	4	0	0	0
Retail	3		1	0	1	0
Restaurant	0	0		0	0	0
Cinema/Entertainment	0	0	0		0	0
Residential	3	2	30	0		0
Hotel	0	0	0	0	0	

Table 8-A (D): Internal Person-Trip Origin-Destination Matrix (Computed at Destination)

Origin (From)	Destination (To)					
	Office	Retail	Restaurant	Cinema/Entertainment	Residential	Hotel
Office		5	0	0	0	0
Retail	2		0	0	1	0
Restaurant	6	1		0	3	0
Cinema/Entertainment	0	0	0		0	0
Residential	1	3	0	0		0
Hotel	1	1	0	0	0	

Table 9-A (D): Internal and External Trips Summary (Entering Trips)

Destination Land Use	Person-Trip Estimates			External Trips by Mode*		
	Internal	External	Total	Vehicles[1]	Transit[2]	Non-Motorized[2]
Office	3	41	44	29	5	3
Retail	4	12	16	9	1	1
Restaurant	0	0	0	0	0	0
Cinema/Entertainment	0	0	0	0	0	0
Residential	1	51	52	35	6	4
Hotel	0	0	0	0	0	0
All Other Land Uses[3]	0	0	0	0	0	0

Table 9-A (O): Internal and External Trips Summary (Exiting Trips)

Origin Land Use	Person-Trip Estimates			External Trips by Mode*		
	Internal	External	Total	Vehicles[1]	Transit[2]	Non-Motorized[2]
Office	2	4	6	4	0	0
Retail	3	7	10	4	1	1
Restaurant	0	0	0	0	0	0
Cinema/Entertainment	0	0	0	0	0	0
Residential	3	148	151	102	18	12
Hotel	0	0	0	0	0	0
All Other Land Uses[3]	0	0	0	0	0	0

[1]Vehicle-trips computed using the mode split and vehicle occupancy values provided in Table 2-A

[2]Person-Trips

[3]Total estimate for all other land uses at mixed-use development site-not subject to internal trip capture computations in this estimator

*Indicates computation that has been rounded to the nearest whole number.

NCHRP 8-51 Internal Trip Capture Estimation Tool			
Project Name:	210156/210157	**Organization:**	PTSL
Project Location:	Trafalgar I/O Lands	**Performed By:**	AE
Scenario Description:	Block 11	**Date:**	Jun-24
Analysis Year:	2041	**Checked By:**	
Analysis Period:	**PM Street Peak Hour**	**Date:**	

Table 1-A: Base Vehicle-Trip Generation Estimates (Single-Use Site Estimate)

Land Use	Development Data (*For Information Only*)			Estimated Vehicle-Trips		
	ITE LUCs[1]	Quantity	Units	Total	Entering	Exiting
Office	710	29	/1000 ft2	42	7	35
Retail	822	10	/1000 ft2	64	32	32
Restaurant				0		
Cinema/Entertainment				0		
Residential	222	648	Dwelling Units	207	128	79
Hotel				0		
All Other Land Uses[2]				0		
Total				313	167	146

Table 2-A: Mode Split and Vehicle Occupancy Estimates

Land Use	Entering Trips			Exiting Trips		
	Veh. Occ.	% Transit	% Non-Motorized	Veh. Occ.	% Transit	% Non-Motorized
Office	1.13	12%	8%	1.13	12%	8%
Retail	1.13	12%	8%	1.13	12%	8%
Restaurant						
Cinema/Entertainment						
Residential	1.16	12%	8%	1.16	12%	8%
Hotel						
All Other Land Uses[2]						

Table 3-A: Average Land Use Interchange Distances (Feet Walking Distance)

Origin (From)	Destination (To)					
	Office	Retail	Restaurant	Cinema/Entertainment	Residential	Hotel
Office						
Retail						
Restaurant						
Cinema/Entertainment						
Residential						
Hotel						

Table 4-A: Internal Person-Trip Origin-Destination Matrix*

Origin (From)	Destination (To)					
	Office	Retail	Restaurant	Cinema/Entertainment	Residential	Hotel
Office		11	0	0	0	0
Retail	0		0	0	3	0
Restaurant	0	0		0	0	0
Cinema/Entertainment	0	0	0		0	0
Residential	0	1	0	0		0
Hotel	0	0	0	0	0	

Table 5-A: Computations Summary

	Total	Entering	Exiting
All Person-Trips	360	192	168
Internal Capture Percentage	8%	8%	9%
External Vehicle-Trips[3]	229	122	107
External Transit-Trips[4]	39	21	18
External Non-Motorized Trips[4]	27	15	12

Table 6-A: Internal Trip Capture Percentages by Land Use

Land Use	Entering Trips	Exiting Trips
Office	0%	28%
Retail	33%	8%
Restaurant	N/A	N/A
Cinema/Entertainment	N/A	N/A
Residential	2%	1%
Hotel	N/A	N/A

[1]Land Use Codes (LUCs) from *Trip Generation Informational Report*, published by the Institute of Transportation Engineers.

[2]Total estimate for all other land uses at mixed-use development site-not subject to internal trip capture computations in this estimator

[3]Vehicle-trips computed using the mode split and vehicle occupancy values provided in Table 2-A

[4]Person-Trips

*Indicates computation that has been rounded to the nearest whole number.

Estimation Tool Developed by the Texas Transportation Institute

Project Name:	210156/210157
Analysis Period:	**PM Street Peak Hour**

Table 7-A: Conversion of Vehicle-Trip Ends to Person-Trip Ends

Land Use	Table 7-A (D): Entering Trips			Table 7-A (O): Exiting Trips		
	Veh. Occ.	Vehicle-Trips	Person-Trips*	Veh. Occ.	Vehicle-Trips	Person-Trips*
Office	1.13	7	8	1.13	35	40
Retail	1.13	32	36	1.13	32	36
Restaurant	1.00	0	0	1.00	0	0
Cinema/Entertainment	1.00	0	0	1.00	0	0
Residential	1.16	128	148	1.16	79	92
Hotel	1.00	0	0	1.00	0	0

Table 8-A (O): Internal Person-Trip Origin-Destination Matrix (Computed at Origin)

Origin (From)	Destination (To)					
	Office	Retail	Restaurant	Cinema/Entertainment	Residential	Hotel
Office		11	25	0	0	0
Retail	10		5	0	5	0
Restaurant	0	0		0	0	0
Cinema/Entertainment	0	0	0		0	0
Residential	2	1	18	0		0
Hotel	0	0	0	0	0	

Table 8-A (D): Internal Person-Trip Origin-Destination Matrix (Computed at Destination)

Origin (From)	Destination (To)					
	Office	Retail	Restaurant	Cinema/Entertainment	Residential	Hotel
Office		12	0	0	0	0
Retail	0		0	0	3	0
Restaurant	1	3		0	7	0
Cinema/Entertainment	0	0	0		0	0
Residential	0	6	0	0		0
Hotel	0	1	0	0	0	

Table 9-A (D): Internal and External Trips Summary (Entering Trips)

Destination Land Use	Person-Trip Estimates			External Trips by Mode*		
	Internal	External	Total	Vehicles[1]	Transit[2]	Non-Motorized[2]
Office	0	8	8	5	1	1
Retail	12	24	36	17	3	2
Restaurant	0	0	0	0	0	0
Cinema/Entertainment	0	0	0	0	0	0
Residential	3	145	148	100	17	12
Hotel	0	0	0	0	0	0
All Other Land Uses[3]	0	0	0	0	0	0

Table 9-A (O): Internal and External Trips Summary (Exiting Trips)

Origin Land Use	Person-Trip Estimates			External Trips by Mode*		
	Internal	External	Total	Vehicles[1]	Transit[2]	Non-Motorized[2]
Office	11	29	40	21	3	2
Retail	3	33	36	23	4	3
Restaurant	0	0	0	0	0	0
Cinema/Entertainment	0	0	0	0	0	0
Residential	1	91	92	63	11	7
Hotel	0	0	0	0	0	0
All Other Land Uses[3]	0	0	0	0	0	0

[1]Vehicle-trips computed using the mode split and vehicle occupancy values provided in Table 2-A

[2]Person-Trips

[3]Total estimate for all other land uses at mixed-use development site-not subject to internal trip capture computations in this estimator

*Indicates computation that has been rounded to the nearest whole number.

NCHRP 8-51 Internal Trip Capture Estimation Tool			
Project Name:	210156/210157	**Organization:**	PTSL
Project Location:	Trafalgar I/O Lands	**Performed By:**	AE
Scenario Description:	Block 12	**Date:**	Jun-24
Analysis Year:	2041	**Checked By:**	
Analysis Period:	**AM Street Peak Hour**	**Date:**	

Table 1-A: Base Vehicle-Trip Generation Estimates (Single-Use Site Estimate)

Land Use	Development Data (*For Information Only*)			Estimated Vehicle-Trips		
	ITE LUCs[1]	Quantity	Units	Total	Entering	Exiting
Office	710	49	/1000 ft2	74	65	9
Retail	822	16	/1000 ft2	38	23	15
Restaurant				0		
Cinema/Entertainment				0		
Residential	222	1,078	Dwelling Units	291	76	215
Hotel				0		
All Other Land Uses[2]				0		
Total				403	164	239

Table 2-A: Mode Split and Vehicle Occupancy Estimates

Land Use	Entering Trips			Exiting Trips		
	Veh. Occ.	% Transit	% Non-Motorized	Veh. Occ.	% Transit	% Non-Motorized
Office	1.13	12%	8%	1.13	12%	8%
Retail	1.13	12%	8%	1.13	12%	8%
Restaurant						
Cinema/Entertainment						
Residential	1.16	12%	8%	1.16	12%	8%
Hotel						
All Other Land Uses[2]						

Table 3-A: Average Land Use Interchange Distances (Feet Walking Distance)

Origin (From)	Destination (To)					
	Office	Retail	Restaurant	Cinema/Entertainment	Residential	Hotel
Office						
Retail						
Restaurant						
Cinema/Entertainment						
Residential						
Hotel						

Table 4-A: Internal Person-Trip Origin-Destination Matrix*

Origin (From)	Destination (To)					
	Office	Retail	Restaurant	Cinema/Entertainment	Residential	Hotel
Office		3	0	0	0	0
Retail	3		0	0	2	0
Restaurant	0	0		0	0	0
Cinema/Entertainment	0	0	0		0	0
Residential	2	2	0	0		0
Hotel	0	0	0	0	0	

Table 5-A: Computations Summary

	Total	Entering	Exiting
All Person-Trips	463	187	276
Internal Capture Percentage	5%	6%	4%
External Vehicle-Trips[3]	304	122	182
External Transit-Trips[4]	52	21	31
External Non-Motorized Trips[4]	36	14	22

Table 6-A: Internal Trip Capture Percentages by Land Use

Land Use	Entering Trips	Exiting Trips
Office	7%	30%
Retail	19%	29%
Restaurant	N/A	N/A
Cinema/Entertainment	N/A	N/A
Residential	2%	2%
Hotel	N/A	N/A

[1]Land Use Codes (LUCs) from *Trip Generation Informational Report*, published by the Institute of Transportation Engineers.
[2]Total estimate for all other land uses at mixed-use development site-not subject to internal trip capture computations in this estimator
[3]Vehicle-trips computed using the mode split and vehicle occupancy values provided in Table 2-A
[4]Person-Trips
*Indicates computation that has been rounded to the nearest whole number.

Estimation Tool Developed by the Texas Transportation Institute

Project Name:	210156/210157
Analysis Period:	**AM Street Peak Hour**

Table 7-A: Conversion of Vehicle-Trip Ends to Person-Trip Ends

Land Use	Table 7-A (D): Entering Trips			Table 7-A (O): Exiting Trips		
	Veh. Occ.	Vehicle-Trips	Person-Trips*	Veh. Occ.	Vehicle-Trips	Person-Trips*
Office	1.13	65	73	1.13	9	10
Retail	1.13	23	26	1.13	15	17
Restaurant	1.00	0	0	1.00	0	0
Cinema/Entertainment	1.00	0	0	1.00	0	0
Residential	1.16	76	88	1.16	215	249
Hotel	1.00	0	0	1.00	0	0

Table 8-A (O): Internal Person-Trip Origin-Destination Matrix (Computed at Origin)

Origin (From)	Destination (To)					
	Office	Retail	Restaurant	Cinema/Entertainment	Residential	Hotel
Office		3	6	0	0	0
Retail	5		2	0	2	0
Restaurant	0	0		0	0	0
Cinema/Entertainment	0	0	0		0	0
Residential	5	2	50	0		0
Hotel	0	0	0	0	0	

Table 8-A (D): Internal Person-Trip Origin-Destination Matrix (Computed at Destination)

Origin (From)	Destination (To)					
	Office	Retail	Restaurant	Cinema/Entertainment	Residential	Hotel
Office		8	0	0	0	0
Retail	3		0	0	2	0
Restaurant	10	2		0	4	0
Cinema/Entertainment	0	0	0		0	0
Residential	2	4	0	0		0
Hotel	2	1	0	0	0	

Table 9-A (D): Internal and External Trips Summary (Entering Trips)

Destination Land Use	Person-Trip Estimates			External Trips by Mode*		
	Internal	External	Total	Vehicles[1]	Transit[2]	Non-Motorized[2]
Office	5	68	73	49	8	5
Retail	5	21	26	14	3	2
Restaurant	0	0	0	0	0	0
Cinema/Entertainment	0	0	0	0	0	0
Residential	2	86	88	59	10	7
Hotel	0	0	0	0	0	0
All Other Land Uses[3]	0	0	0	0	0	0

Table 9-A (O): Internal and External Trips Summary (Exiting Trips)

Origin Land Use	Person-Trip Estimates			External Trips by Mode*		
	Internal	External	Total	Vehicles[1]	Transit[2]	Non-Motorized[2]
Office	3	7	10	4	1	1
Retail	5	12	17	9	1	1
Restaurant	0	0	0	0	0	0
Cinema/Entertainment	0	0	0	0	0	0
Residential	4	245	249	169	29	20
Hotel	0	0	0	0	0	0
All Other Land Uses[3]	0	0	0	0	0	0

[1]Vehicle-trips computed using the mode split and vehicle occupancy values provided in Table 2-A

[2]Person-Trips

[3]Total estimate for all other land uses at mixed-use development site-not subject to internal trip capture computations in this estimator

*Indicates computation that has been rounded to the nearest whole number.

NCHRP 8-51 Internal Trip Capture Estimation Tool			
Project Name:	210156/210157	**Organization:**	PTSL
Project Location:	Trafalgar I/O Lands	**Performed By:**	AE
Scenario Description:	Block 12	**Date:**	Jun-24
Analysis Year:	2041	**Checked By:**	
Analysis Period:	**PM Street Peak Hour**	**Date:**	

Table 1-A: Base Vehicle-Trip Generation Estimates (Single-Use Site Estimate)

Land Use	Development Data (*For Information Only*)			Estimated Vehicle-Trips		
	ITE LUCs[1]	Quantity	Units	Total	Entering	Exiting
Office	710	49	/1000 ft2	70	12	58
Retail	822	16	/1000 ft2	107	53	54
Restaurant				0		
Cinema/Entertainment				0		
Residential	222	1,078	Dwelling Units	345	214	131
Hotel				0		
All Other Land Uses[2]				0		
Total				522	279	243

Table 2-A: Mode Split and Vehicle Occupancy Estimates

Land Use	Entering Trips			Exiting Trips		
	Veh. Occ.	% Transit	% Non-Motorized	Veh. Occ.	% Transit	% Non-Motorized
Office	1.13	12%	8%	1.13	12%	8%
Retail	1.13	12%	8%	1.13	12%	8%
Restaurant						
Cinema/Entertainment						
Residential	1.16	12%	8%	1.16	12%	8%
Hotel						
All Other Land Uses[2]						

Table 3-A: Average Land Use Interchange Distances (Feet Walking Distance)

Origin (From)	Destination (To)					
	Office	Retail	Restaurant	Cinema/Entertainment	Residential	Hotel
Office						
Retail						
Restaurant						
Cinema/Entertainment						
Residential						
Hotel						

Table 4-A: Internal Person-Trip Origin-Destination Matrix*

Origin (From)	Destination (To)					
	Office	Retail	Restaurant	Cinema/Entertainment	Residential	Hotel
Office		18	0	0	0	0
Retail	1		0	0	5	0
Restaurant	0	0		0	0	0
Cinema/Entertainment	0	0	0		0	0
Residential	0	2	0	0		0
Hotel	0	0	0	0	0	

Table 5-A: Computations Summary

	Total	Entering	Exiting
All Person-Trips	601	322	279
Internal Capture Percentage	9%	8%	9%
External Vehicle-Trips[3]	381	205	176
External Transit-Trips[4]	67	36	31
External Non-Motorized Trips[4]	43	23	20

Table 6-A: Internal Trip Capture Percentages by Land Use

Land Use	Entering Trips	Exiting Trips
Office	7%	27%
Retail	33%	10%
Restaurant	N/A	N/A
Cinema/Entertainment	N/A	N/A
Residential	2%	1%
Hotel	N/A	N/A

[1]Land Use Codes (LUCs) from *Trip Generation Informational Report*, published by the Institute of Transportation Engineers.
[2]Total estimate for all other land uses at mixed-use development site-not subject to internal trip capture computations in this estimator
[3]Vehicle-trips computed using the mode split and vehicle occupancy values provided in Table 2-A
[4]Person-Trips
*Indicates computation that has been rounded to the nearest whole number.

Estimation Tool Developed by the Texas Transportation Institute

Project Name:	210156/210157
Analysis Period:	**PM Street Peak Hour**

Table 7-A: Conversion of Vehicle-Trip Ends to Person-Trip Ends

Land Use	Table 7-A (D): Entering Trips			Table 7-A (O): Exiting Trips		
	Veh. Occ.	Vehicle-Trips	Person-Trips*	Veh. Occ.	Vehicle-Trips	Person-Trips*
Office	1.13	12	14	1.13	58	66
Retail	1.13	53	60	1.13	54	61
Restaurant	1.00	0	0	1.00	0	0
Cinema/Entertainment	1.00	0	0	1.00	0	0
Residential	1.16	214	248	1.16	131	152
Hotel	1.00	0	0	1.00	0	0

Table 8-A (O): Internal Person-Trip Origin-Destination Matrix (Computed at Origin)

Origin (From)	Destination (To)					
	Office	Retail	Restaurant	Cinema/Entertainment	Residential	Hotel
Office		18	42	0	1	0
Retail	18		8	0	9	0
Restaurant	0	0		0	0	0
Cinema/Entertainment	0	0	0		0	0
Residential	3	2	30	0		0
Hotel	0	0	0	0	0	

Table 8-A (D): Internal Person-Trip Origin-Destination Matrix (Computed at Destination)

Origin (From)	Destination (To)					
	Office	Retail	Restaurant	Cinema/Entertainment	Residential	Hotel
Office		19	0	0	0	0
Retail	1		0	0	5	0
Restaurant	2	5		0	12	0
Cinema/Entertainment	0	0	0		0	0
Residential	0	10	0	0		0
Hotel	0	2	0	0	0	

Table 9-A (D): Internal and External Trips Summary (Entering Trips)

Destination Land Use	Person-Trip Estimates			External Trips by Mode*		
	Internal	External	Total	Vehicles[1]	Transit[2]	Non-Motorized[2]
Office	1	13	14	9	2	1
Retail	20	40	60	28	5	3
Restaurant	0	0	0	0	0	0
Cinema/Entertainment	0	0	0	0	0	0
Residential	5	243	248	168	29	19
Hotel	0	0	0	0	0	0
All Other Land Uses[3]	0	0	0	0	0	0

Table 9-A (O): Internal and External Trips Summary (Exiting Trips)

Origin Land Use	Person-Trip Estimates			External Trips by Mode*		
	Internal	External	Total	Vehicles[1]	Transit[2]	Non-Motorized[2]
Office	18	48	66	34	6	4
Retail	6	55	61	39	7	4
Restaurant	0	0	0	0	0	0
Cinema/Entertainment	0	0	0	0	0	0
Residential	2	150	152	103	18	12
Hotel	0	0	0	0	0	0
All Other Land Uses[3]	0	0	0	0	0	0

[1]Vehicle-trips computed using the mode split and vehicle occupancy values provided in Table 2-A

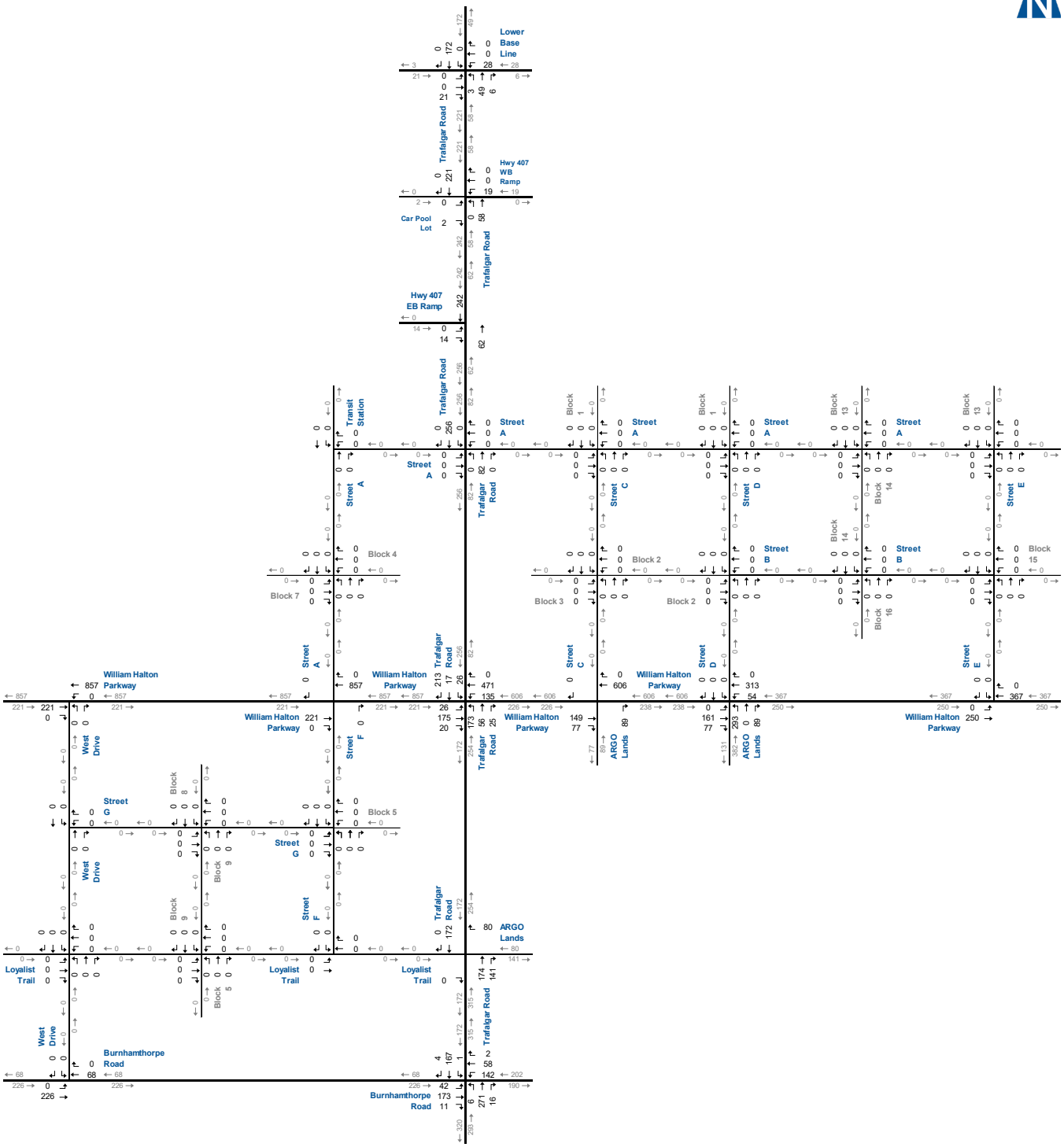
[2]Person-Trips

[3]Total estimate for all other land uses at mixed-use development site-not subject to internal trip capture computations in this estimator

*Indicates computation that has been rounded to the nearest whole number.

Appendix E

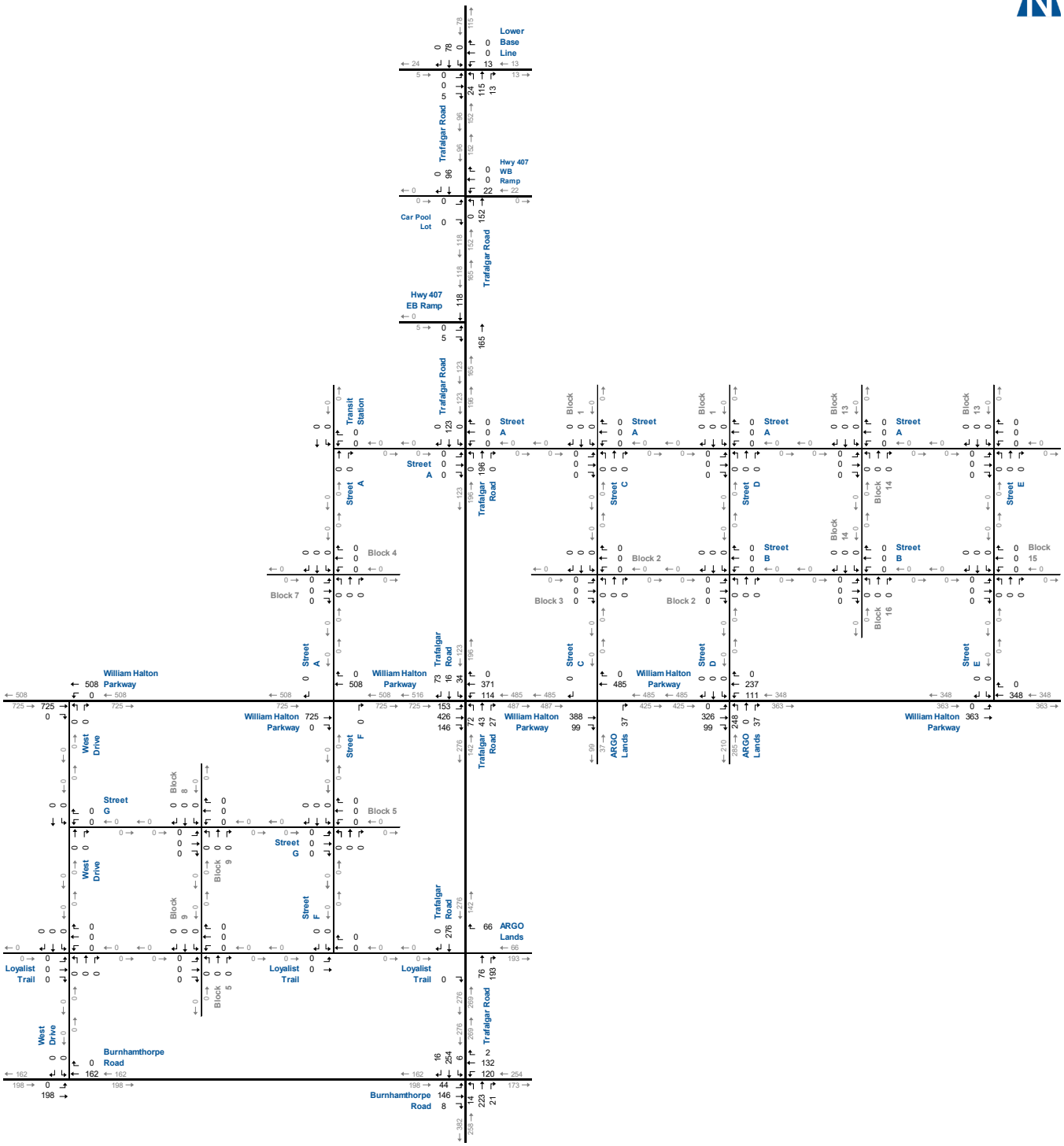
Background Developments Traffic Volumes



Background Developments Traffic Volumes AM Peak Hour

IO Trafalgar & 407 Oakville, ON TIS
210156/210157

Figure 1



Background Developments Traffic Volumes PM Peak Hour

IO Trafalgar & 407 Oakville, ON TIS
210156/210157

Figure 2

Appendix F1

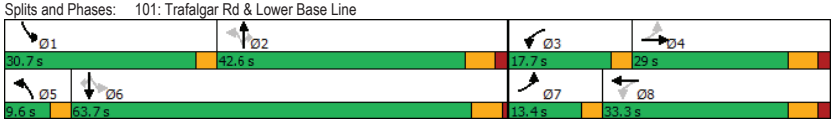
2031 Background Operations Synchro Reports

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	124	482	186	235	98	180	41	1401	160	412	1469	20
Future Volume (vph)	124	482	186	235	98	180	41	1401	160	412	1469	20
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	45.0		0.0	110.0		0.0	90.0		90.0	90.0		90.0
Storage Lanes	1		0	1		0	1		1	1		1
Taper Length (m)	100.0			100.0			100.0			100.0		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	0.95	1.00	0.91	1.00	1.00	0.91	1.00
Frt		0.958			0.903				0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1770	3391	0	1770	3196	0	1770	5085	1583	1770	5085	1583
Flt Permitted	0.564			0.155			0.138			0.099		
Satd. Flow (perm)	1051	3391	0	289	3196	0	257	5085	1583	184	5085	1583
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		43			196				174			111
Link Speed (k/h)		70			60			80			80	
Link Distance (m)		749.3			690.6			498.3			434.3	
Travel Time (s)		38.5			41.4			22.4			19.5	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	135	524	202	255	107	196	45	1523	174	448	1597	22
Shared Lane Traffic (%)												
Lane Group Flow (vph)	135	726	0	255	303	0	45	1523	174	448	1597	22
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.6			3.6			3.6			3.6	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2		1	2		1	2	1	1	2	1
Detector Template	Left	Thru		Left	Thru		Left	Thru	Right	Left	Thru	Right
Leading Detector (m)	2.0	10.0		2.0	10.0		2.0	10.0	2.0	2.0	10.0	2.0
Trailing Detector (m)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Position(m)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Size(m)	2.0	0.6		2.0	0.6		2.0	0.6	2.0	2.0	0.6	2.0
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	pm+pt	NA		pm+pt	NA		pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4			8			2		2	6		6

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector Phase	7	4		3	8		5	2	2	1	6	6
Switch Phase												
Minimum Initial (s)	5.0	10.0		7.0	10.0		5.0	25.0	25.0	7.0	25.0	25.0
Minimum Split (s)	9.5	22.5		11.5	22.5		9.5	31.6	31.6	11.5	30.6	30.6
Total Split (s)	13.4	29.0		17.7	33.3		9.6	42.6	42.6	30.7	63.7	63.7
Total Split (%)	11.2%	24.2%		14.8%	27.8%		8.0%	35.5%	35.5%	25.6%	53.1%	53.1%
Maximum Green (s)	10.4	22.8		14.7	27.1		6.6	36.0	36.0	27.7	58.1	58.1
Yellow Time (s)	3.0	4.2		3.0	4.2		3.0	4.6	4.6	3.0	4.6	4.6
All-Red Time (s)	0.0	2.0		0.0	2.0		0.0	2.0	2.0	0.0	1.0	1.0
Lost Time Adjust (s)	1.0	-2.2		1.0	-2.2		1.0	-2.2	-2.2	1.0	-2.2	-2.2
Total Lost Time (s)	4.0	4.0		4.0	4.0		4.0	4.4	4.4	4.0	3.4	3.4
Lead/Lag	Lead	Lag		Lead	Lag		Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes		Yes	Yes		Yes	Yes	Yes	Yes	Yes	Yes
Vehicle Extension (s)	3.0	5.0		0.2	5.0		3.0	5.0	5.0	0.2	5.0	5.0
Recall Mode	None	None		None	None		None	Max	Max	Max	Max	Max
Act Effct Green (s)	33.8	25.0		42.5	29.6		43.9	38.2	38.2	69.3	62.3	62.3
Actuated g/C Ratio	0.28	0.21		0.35	0.25		0.37	0.32	0.32	0.58	0.52	0.52
v/c Ratio	0.39	0.98		0.95	0.32		0.28	0.94	0.28	0.97	0.60	0.03
Control Delay	31.2	73.0		75.8	14.1		19.0	51.9	5.6	70.4	21.8	0.1
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	31.2	73.0		75.8	14.1		19.0	51.9	5.6	70.4	21.8	0.1
LOS	C	E		E	B		B	D	A	E	C	A
Approach Delay		66.4			42.3			46.4			32.1	
Approach LOS		E			D			D			C	

Intersection Summary	
Area Type: Other	
Cycle Length: 120	
Actuated Cycle Length: 119.8	
Natural Cycle: 90	
Control Type: Semi Act-Uncoord	
Maximum v/c Ratio: 0.98	
Intersection Signal Delay: 43.6	Intersection LOS: D
Intersection Capacity Utilization 95.9%	ICU Level of Service F
Analysis Period (min) 15	

Splits and Phases: 101: Trafalgar Rd & Lower Base Line



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	135	726	255	303	45	1523	174	448	1597	22
v/c Ratio	0.39	0.98	0.95	0.32	0.28	0.94	0.28	0.97	0.60	0.03
Control Delay	31.2	73.0	75.8	14.1	19.0	51.9	5.6	70.4	21.8	0.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	31.2	73.0	75.8	14.1	19.0	51.9	5.6	70.4	21.8	0.1
Queue Length 50th (m)	21.7	84.4	44.3	10.2	4.3	125.7	0.0	87.2	95.4	0.0
Queue Length 95th (m)	36.6	#123.7	#91.1	21.7	9.4	#155.6	15.1	#151.7	110.5	0.0
Internal Link Dist (m)		725.3		666.6		474.3			410.3	
Turn Bay Length (m)	45.0		110.0		90.0		90.0	90.0		90.0
Base Capacity (vph)	358	741	271	938	165	1621	623	460	2646	876
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.38	0.98	0.94	0.32	0.27	0.94	0.28	0.97	0.60	0.03

Intersection Summary

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

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	124	482	186	235	98	180	41	1401	160	412	1469	20
Future Volume (vph)	124	482	186	235	98	180	41	1401	160	412	1469	20
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0	4.4	4.4	4.0	3.4	3.4
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	0.91	1.00	1.00	0.91	1.00
Frt	1.00	0.96		1.00	0.90		1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1770	3392		1770	3196		1770	5085	1583	1770	5085	1583
Flt Permitted	0.56	1.00		0.16	1.00		0.14	1.00	1.00	0.10	1.00	1.00
Satd. Flow (perm)	1051	3392		289	3196		257	5085	1583	184	5085	1583
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	135	524	202	255	107	196	45	1523	174	448	1597	22
RTOR Reduction (vph)	0	34	0	0	148	0	0	0	118	0	0	11
Lane Group Flow (vph)	135	692	0	255	155	0	45	1523	56	448	1597	11
Turn Type	pm+pt	NA		pm+pt	NA		pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4			8			2		2	6		6
Actuated Green, G (s)	32.6	22.8		40.3	27.5		41.8	36.6	36.6	68.3	60.1	60.1
Effective Green, g (s)	30.6	25.0		39.3	29.7		39.8	38.8	38.8	67.3	62.3	62.3
Actuated g/C Ratio	0.25	0.21		0.33	0.25		0.33	0.32	0.32	0.56	0.52	0.52
Clearance Time (s)	3.0	6.2		3.0	6.2		3.0	6.6	6.6	3.0	5.6	5.6
Vehicle Extension (s)	3.0	5.0		0.2	5.0		3.0	5.0	5.0	0.2	5.0	5.0
Lane Grp Cap (vph)	319	704		260	788		137	1638	510	454	2631	819
v/s Ratio Prot	0.03	c0.20		c0.11	0.05		0.01	0.30		c0.22	0.31	
v/s Ratio Perm	0.08			0.21			0.10		0.04	c0.33		0.01
v/c Ratio	0.42	0.98		0.98	0.20		0.33	0.93	0.11	0.99	0.61	0.01
Uniform Delay, d1	36.3	47.5		34.4	35.9		27.7	39.5	28.7	37.2	20.4	14.1
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	0.9	29.7		50.1	0.3		1.4	10.8	0.4	39.1	1.1	0.0
Delay (s)	37.2	77.1		84.5	36.2		29.1	50.3	29.1	76.3	21.5	14.2
Level of Service	D	E		F	D		C	D	C	E	C	B
Approach Delay (s)		70.9			58.3			47.7			33.3	
Approach LOS		E			E			D			C	

Intersection Summary

HCM 2000 Control Delay	46.9	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.99		
Actuated Cycle Length (s)	120.4	Sum of lost time (s)	16.4
Intersection Capacity Utilization	95.9%	ICU Level of Service	F
Analysis Period (min)	15		

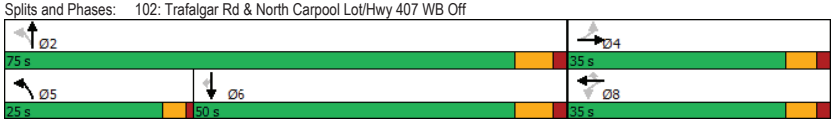
c Critical Lane Group

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	2	0	9	185	1	20	5	1579	0	0	1886	4
Future Volume (vph)	2	0	9	185	1	20	5	1579	0	0	1886	4
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	0.0		0.0	0.0		60.0	65.0		0.0	0.0		15.0
Storage Lanes	0		0	1		1	1		0	0		1
Taper Length (m)	7.5			7.5			100.0			7.5		
Lane Util. Factor	1.00	1.00	1.00	0.95	0.91	0.95	1.00	0.91	1.00	1.00	0.91	1.00
Frt		0.887			0.997	0.850						0.850
Flt Protected		0.992		0.950	0.954		0.950					
Satd. Flow (prot)	0	1639	0	1681	1612	1504	1770	5085	0	0	5085	1583
Flt Permitted		0.952		0.750	0.724		0.065					
Satd. Flow (perm)	0	1573	0	1327	1224	1504	121	5085	0	0	5085	1583
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		79			1	79						69
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		134.0			574.1			363.6			118.9	
Travel Time (s)		9.6			41.3			26.2			8.6	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	2	0	10	201	1	22	5	1716	0	0	2050	4
Shared Lane Traffic (%)				49%		10%						
Lane Group Flow (vph)	0	12	0	103	101	20	5	1716	0	0	2050	4
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.8			3.6			3.6			3.6	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2		1	2	1	1	2			2	1
Detector Template	Left	Thru		Left	Thru	Right	Left	Thru			Thru	Right
Leading Detector (m)	2.0	10.0		2.0	10.0	2.0	2.0	10.0			10.0	2.0
Trailing Detector (m)	0.0	0.0		0.0	0.0	0.0	0.0	0.0			0.0	0.0
Detector 1 Position(m)	0.0	0.0		0.0	0.0	0.0	0.0	0.0			0.0	0.0
Detector 1 Size(m)	2.0	0.6		2.0	0.6	2.0	2.0	0.6			0.6	2.0
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex			Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0			0.0	0.0
Detector 1 Queue (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0			0.0	0.0
Detector 1 Delay (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0			0.0	0.0
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Perm	NA		Perm	NA	Perm	pm+pt	NA			NA	Perm
Protected Phases		4			8		5	2			6	
Permitted Phases	4			8		8	2					6

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector Phase	4	4		8	8	8	5	2			6	6
Switch Phase												
Minimum Initial (s)	7.0	7.0		7.0	7.0	7.0	4.0	20.0			20.0	20.0
Minimum Split (s)	22.5	22.5		22.5	22.5	22.5	9.5	27.0			27.0	27.0
Total Split (s)	35.0	35.0		35.0	35.0	35.0	25.0	75.0			50.0	50.0
Total Split (%)	31.8%	31.8%		31.8%	31.8%	31.8%	22.7%	68.2%			45.5%	45.5%
Maximum Green (s)	29.0	29.0		29.0	29.0	29.0	21.0	68.0			43.0	43.0
Yellow Time (s)	4.0	4.0		4.0	4.0	4.0	3.0	5.0			5.0	5.0
All-Red Time (s)	2.0	2.0		2.0	2.0	2.0	1.0	2.0			2.0	2.0
Lost Time Adjust (s)		0.0		0.0	0.0	0.0	0.0	0.0			0.0	0.0
Total Lost Time (s)		6.0		6.0	6.0	6.0	4.0	7.0			7.0	7.0
Lead/Lag							Lead				Lag	Lag
Lead-Lag Optimize?							Yes				Yes	Yes
Vehicle Extension (s)	3.5	3.5		3.5	3.5	3.5	2.5	7.0			7.0	7.0
Recall Mode	None	None		None	None	None	None	Max			Max	Max
Act Effct Green (s)		13.4		13.4	13.4	13.4	71.1	68.1			66.4	66.4
Actuated g/C Ratio		0.14		0.14	0.14	0.14	0.75	0.72			0.70	0.70
v/c Ratio		0.04		0.55	0.58	0.07	0.03	0.47			0.57	0.00
Control Delay		0.3		48.7	50.8	0.5	4.2	6.5			9.0	0.0
Queue Delay		0.0		0.0	0.0	0.0	0.0	0.0			0.0	0.0
Total Delay		0.3		48.7	50.8	0.5	4.2	6.5			9.0	0.0
LOS		A		D	D	A	A	A			A	A
Approach Delay		0.3			45.4			6.5			9.0	
Approach LOS		A			D			A			A	

Intersection Summary	
Area Type:	Other
Cycle Length: 110	
Actuated Cycle Length: 94.6	
Natural Cycle: 65	
Control Type: Actuated-Uncoordinated	
Maximum v/c Ratio: 0.58	
Intersection Signal Delay: 9.9	Intersection LOS: A
Intersection Capacity Utilization 59.3%	ICU Level of Service B
Analysis Period (min) 15	

Splits and Phases: 102: Trafalgar Rd & North Carpool Lot/Hwy 407 WB Off



Lane Group	EBT	WBL	WBT	WBR	NBL	NBT	SBT	SBR
Lane Group Flow (vph)	12	103	101	20	5	1716	2050	4
v/c Ratio	0.04	0.55	0.58	0.07	0.03	0.47	0.57	0.00
Control Delay	0.3	48.7	50.8	0.5	4.2	6.5	9.0	0.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	0.3	48.7	50.8	0.5	4.2	6.5	9.0	0.0
Queue Length 50th (m)	0.0	18.4	18.6	0.0	0.2	40.4	53.5	0.0
Queue Length 95th (m)	0.0	34.9	36.0	0.0	1.2	62.6	110.9	0.0
Internal Link Dist (m)	110.0		550.1			339.6	94.9	
Turn Bay Length (m)				60.0	65.0			15.0
Base Capacity (vph)	537	407	376	516	457	3662	3568	1131
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	0.02	0.25	0.27	0.04	0.01	0.47	0.57	0.00

Intersection Summary

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	2	0	9	185	1	20	5	1579	0	0	1886	4
Future Volume (vph)	2	0	9	185	1	20	5	1579	0	0	1886	4
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		6.0		6.0	6.0	6.0	4.0	7.0			7.0	7.0
Lane Util. Factor		1.00		0.95	0.91	0.95	1.00	0.91			0.91	1.00
Frt		0.89		1.00	1.00	0.85	1.00	1.00			1.00	0.85
Flt Protected		0.99		0.95	0.95	1.00	0.95	1.00			1.00	1.00
Satd. Flow (prot)		1640		1681	1612	1504	1770	5085			5085	1583
Flt Permitted		0.95		0.75	0.72	1.00	0.06	1.00			1.00	1.00
Satd. Flow (perm)		1573		1327	1224	1504	121	5085			5085	1583
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	2	0	10	201	1	22	5	1716	0	0	2050	4
RTOR Reduction (vph)	0	10	0	0	1	17	0	0	0	0	0	1
Lane Group Flow (vph)	0	2	0	103	100	3	5	1716	0	0	2050	3
Turn Type	Perm	NA		Perm	NA	Perm	pm+pt	NA			NA	Perm
Protected Phases		4			8		5	2			6	
Permitted Phases	4			8		8	2					6
Actuated Green, G (s)		13.4		13.4	13.4	13.4	71.4	71.4			66.4	66.4
Effective Green, g (s)		13.4		13.4	13.4	13.4	71.4	71.4			66.4	66.4
Actuated g/C Ratio		0.14		0.14	0.14	0.14	0.73	0.73			0.68	0.68
Clearance Time (s)		6.0		6.0	6.0	6.0	4.0	7.0			7.0	7.0
Vehicle Extension (s)		3.5		3.5	3.5	3.5	2.5	7.0			7.0	7.0
Lane Grp Cap (vph)		215		181	167	206	105	3712			3452	1074
v/s Ratio Prot							0.00	c0.34			c0.40	
v/s Ratio Perm		0.00		0.08	c0.08	0.00	0.03					0.00
v/c Ratio		0.01		0.57	0.60	0.01	0.05	0.46			0.59	0.00
Uniform Delay, d1		36.5		39.5	39.7	36.5	5.6	5.4			8.4	5.0
Progression Factor		1.00		1.00	1.00	1.00	1.00	1.00			1.00	1.00
Incremental Delay, d2		0.0		4.4	6.0	0.0	0.1	0.4			0.8	0.0
Delay (s)		36.5		43.9	45.7	36.5	5.7	5.8			9.2	5.1
Level of Service		D		D	D	D	A	A			A	A
Approach Delay (s)		36.5			44.1			5.8			9.2	
Approach LOS		D			D			A			A	

Intersection Summary

HCM 2000 Control Delay	9.8	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.60		
Actuated Cycle Length (s)	97.8	Sum of lost time (s)	17.0
Intersection Capacity Utilization	59.3%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	105	114	0	1483	2080	0
Future Volume (vph)	105	114	0	1483	2080	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	0.91	0.91	1.00
Frt		0.850				
Flt Protected	0.950					
Satd. Flow (prot)	1770	1583	0	5085	5085	0
Flt Permitted	0.950					
Satd. Flow (perm)	1770	1583	0	5085	5085	0
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)		3				
Link Speed (k/h)	50			50	50	
Link Distance (m)	554.6			120.3	363.6	
Travel Time (s)	39.9			8.7	26.2	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	114	124	0	1612	2261	0
Shared Lane Traffic (%)						
Lane Group Flow (vph)	114	124	0	1612	2261	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	3.6			3.6	3.6	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	4.8			4.8	4.8	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)	25	15	25			15
Turn Type	Prot	Perm		NA	NA	
Protected Phases	4			2	6	
Permitted Phases		4				
Minimum Split (s)	24.0	24.0		24.9	24.9	
Total Split (s)	24.0	24.0		36.0	36.0	
Total Split (%)	40.0%	40.0%		60.0%	60.0%	
Maximum Green (s)	18.0	18.0		29.1	29.1	
Yellow Time (s)	4.0	4.0		4.6	4.6	
All-Red Time (s)	2.0	2.0		2.3	2.3	
Lost Time Adjust (s)	-2.0	-2.0		-2.9	-2.9	
Total Lost Time (s)	4.0	4.0		4.0	4.0	
Lead/Lag						
Lead-Lag Optimize?						
Walk Time (s)	7.0	7.0		7.0	7.0	
Flash Dont Walk (s)	11.0	11.0		11.0	11.0	
Pedestrian Calls (#/hr)	0	0		0	0	
Act Effct Green (s)	20.0	20.0		32.0	32.0	
Actuated g/C Ratio	0.33	0.33		0.53	0.53	
v/c Ratio	0.19	0.23		0.59	0.83	
Control Delay	15.4	15.6		10.7	15.4	
Queue Delay	0.0	0.0		0.0	0.0	
Total Delay	15.4	15.6		10.7	15.4	

Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
LOS	B	B		B	B	
Approach Delay	15.5			10.7	15.4	
Approach LOS	B			B	B	

Intersection Summary

Area Type: Other
Cycle Length: 60
Actuated Cycle Length: 60
Offset: 0 (0%), Referenced to phase 2:NBT and 6:SBT, Start of Green
Natural Cycle: 60
Control Type: Pretimed
Maximum v/c Ratio: 0.83
Intersection Signal Delay: 13.5 — Intersection LOS: B
Intersection Capacity Utilization 53.9% — ICU Level of Service A
Analysis Period (min) 15

Splits and Phases: 103: Trafalgar Rd & Hwy 407 EB Off

Lane Group	EBL	EBR	NBT	SBT
Lane Group Flow (vph)	114	124	1612	2261
v/c Ratio	0.19	0.23	0.59	0.83
Control Delay	15.4	15.6	10.7	15.4
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	15.4	15.6	10.7	15.4
Queue Length 50th (m)	8.6	9.3	39.6	68.4
Queue Length 95th (m)	18.3	19.7	51.4	88.1
Internal Link Dist (m)	530.6		96.3	339.6
Turn Bay Length (m)				
Base Capacity (vph)	590	529	2712	2712
Starvation Cap Reductn	0	0	0	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.19	0.23	0.59	0.83

Intersection Summary

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	105	114	0	1483	2080	0
Future Volume (vph)	105	114	0	1483	2080	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0	
Lane Util. Factor	1.00	1.00		0.91	0.91	
Frt	1.00	0.85		1.00	1.00	
Flt Protected	0.95	1.00		1.00	1.00	
Satd. Flow (prot)	1770	1583		5085	5085	
Flt Permitted	0.95	1.00		1.00	1.00	
Satd. Flow (perm)	1770	1583		5085	5085	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	114	124	0	1612	2261	0
RTOR Reduction (vph)	0	2	0	0	0	0
Lane Group Flow (vph)	114	122	0	1612	2261	0
Turn Type	Prot	Perm		NA	NA	
Protected Phases	4			2	6	
Permitted Phases		4				
Actuated Green, G (s)	18.0	18.0		29.1	29.1	
Effective Green, g (s)	20.0	20.0		32.0	32.0	
Actuated g/C Ratio	0.33	0.33		0.53	0.53	
Clearance Time (s)	6.0	6.0		6.9	6.9	
Lane Grp Cap (vph)	590	527		2712	2712	
v/s Ratio Prot	0.06			0.32	c0.44	
v/s Ratio Perm		c0.08				
v/c Ratio	0.19	0.23		0.59	0.83	
Uniform Delay, d1	14.3	14.4		9.6	11.8	
Progression Factor	1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.7	1.0		1.0	3.2	
Delay (s)	15.0	15.5		10.5	15.0	
Level of Service	B	B		B	B	
Approach Delay (s)	15.2			10.5	15.0	
Approach LOS	B			B	B	

Intersection Summary

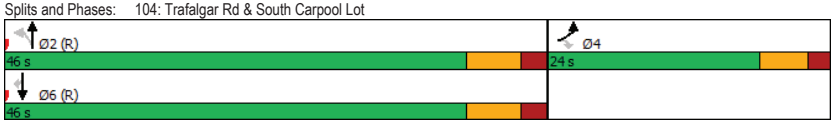
HCM 2000 Control Delay	13.2	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.60		
Actuated Cycle Length (s)	60.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	53.9%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	26	13	13	1478	2183	11
Future Volume (vph)	26	13	13	1478	2183	11
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (m)	0.0	0.0	50.0			30.0
Storage Lanes	1	1	1			1
Taper Length (m)	7.5		100.0			
Lane Util. Factor	1.00	1.00	1.00	0.91	0.91	1.00
Frt		0.850				0.850
Flt Protected	0.950		0.950			
Satd. Flow (prot)	1770	1583	1770	5085	5085	1583
Flt Permitted	0.950		0.095			
Satd. Flow (perm)	1770	1583	177	5085	5085	1583
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)		4				9
Link Speed (k/h)	50			80	80	
Link Distance (m)	107.1			233.3	131.6	
Travel Time (s)	7.7			10.5	5.9	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	28	14	14	1607	2373	12
Shared Lane Traffic (%)						
Lane Group Flow (vph)	28	14	14	1607	2373	12
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	3.6			3.6	3.6	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	4.8			4.8	4.8	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)	25	15	25			15
Turn Type	Prot	Perm	Perm	NA	NA	Perm
Protected Phases	4			2	6	
Permitted Phases		4	2			6
Minimum Split (s)	24.0	24.0	24.9	24.9	24.9	24.9
Total Split (s)	24.0	24.0	46.0	46.0	46.0	46.0
Total Split (%)	34.3%	34.3%	65.7%	65.7%	65.7%	65.7%
Maximum Green (s)	18.0	18.0	39.1	39.1	39.1	39.1
Yellow Time (s)	4.0	4.0	4.6	4.6	4.6	4.6
All-Red Time (s)	2.0	2.0	2.3	2.3	2.3	2.3
Lost Time Adjust (s)	-2.0	-2.0	-2.9	-2.9	-2.9	-2.9
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0
Lead/Lag						
Lead-Lag Optimize?						
Walk Time (s)	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
Pedestrian Calls (#/hr)	0	0	0	0	0	0
Act Effct Green (s)	20.0	20.0	42.0	42.0	42.0	42.0
Actuated g/C Ratio	0.29	0.29	0.60	0.60	0.60	0.60
v/c Ratio	0.06	0.03	0.13	0.53	0.78	0.01

Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Control Delay	18.6	15.9	9.7	9.0	12.8	3.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	18.6	15.9	9.7	9.0	12.8	3.8
LOS	B	B	A	A	B	A
Approach Delay	17.7			9.0	12.8	
Approach LOS	B			A	B	

Intersection Summary		
Area Type:	Other	
Cycle Length: 70		
Actuated Cycle Length: 70		
Offset: 0 (0%), Referenced to phase 2:NBTL and 6:SBT, Start of Green		
Natural Cycle: 60		
Control Type: Pretimed		
Maximum v/c Ratio: 0.78		
Intersection Signal Delay: 11.3		Intersection LOS: B
Intersection Capacity Utilization 53.0%		ICU Level of Service A
Analysis Period (min) 15		

Splits and Phases: 104: Trafalgar Rd & South Carpool Lot



Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Group Flow (vph)	28	14	14	1607	2373	12
v/c Ratio	0.06	0.03	0.13	0.53	0.78	0.01
Control Delay	18.6	15.9	9.7	9.0	12.8	3.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	18.6	15.9	9.7	9.0	12.8	3.8
Queue Length 50th (m)	2.6	0.9	0.7	39.5	74.8	0.2
Queue Length 95th (m)	7.8	4.5	3.4	49.7	93.4	1.8
Internal Link Dist (m)	83.1			209.3	107.6	
Turn Bay Length (m)			50.0			30.0
Base Capacity (vph)	505	455	106	3051	3051	953
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	0.06	0.03	0.13	0.53	0.78	0.01

Intersection Summary

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	26	13	13	1478	2183	11
Future Volume (vph)	26	13	13	1478	2183	11
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
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	0.91	0.91	1.00
Frt	1.00	0.85	1.00	1.00	1.00	0.85
Flt Protected	0.95	1.00	0.95	1.00	1.00	1.00
Satd. Flow (prot)	1770	1583	1770	5085	5085	1583
Flt Permitted	0.95	1.00	0.10	1.00	1.00	1.00
Satd. Flow (perm)	1770	1583	177	5085	5085	1583
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	28	14	14	1607	2373	12
RTOR Reduction (vph)	0	3	0	0	0	4
Lane Group Flow (vph)	28	11	14	1607	2373	8
Turn Type	Prot	Perm	Perm	NA	NA	Perm
Protected Phases	4			2	6	
Permitted Phases		4	2			6
Actuated Green, G (s)	18.0	18.0	39.1	39.1	39.1	39.1
Effective Green, g (s)	20.0	20.0	42.0	42.0	42.0	42.0
Actuated g/C Ratio	0.29	0.29	0.60	0.60	0.60	0.60
Clearance Time (s)	6.0	6.0	6.9	6.9	6.9	6.9
Lane Grp Cap (vph)	505	452	106	3051	3051	949
v/s Ratio Prot	c0.02			0.32	c0.47	
v/s Ratio Perm		0.01	0.08			0.01
v/c Ratio	0.06	0.02	0.13	0.53	0.78	0.01
Uniform Delay, d1	18.1	18.0	6.1	8.2	10.5	5.6
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	0.2	0.1	2.6	0.7	2.0	0.0
Delay (s)	18.4	18.1	8.6	8.8	12.5	5.6
Level of Service	B	B	A	A	B	A
Approach Delay (s)	18.3			8.8	12.5	
Approach LOS	B			A	B	

Intersection Summary

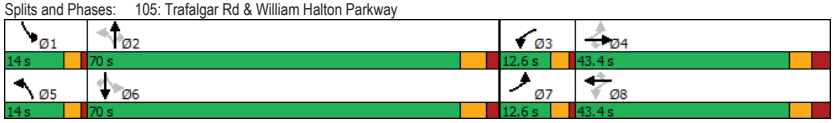
HCM 2000 Control Delay	11.1	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.54		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	53.0%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	78	273	42	157	525	318	185	1095	40	455	1480	262
Future Volume (vph)	78	273	42	157	525	318	185	1095	40	455	1480	262
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	100.0		100.0	100.0		150.0	150.0		75.0	0.0		0.0
Storage Lanes	1		1	1		1	1		1	1		1
Taper Length (m)	100.0			100.0			100.0			7.5		
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.91	1.00	1.00	0.91	1.00
Frt			0.850			0.850			0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1770	3539	1583	1770	3539	1583	1770	5085	1583	1770	5085	1583
Flt Permitted	0.213			0.463			0.077			0.161		
Satd. Flow (perm)	397	3539	1583	862	3539	1583	143	5085	1583	300	5085	1583
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			93			209			94			236
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		443.3			449.5			285.3			233.3	
Travel Time (s)		31.9			32.4			20.5			16.8	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	85	297	46	171	571	346	201	1190	43	495	1609	285
Shared Lane Traffic (%)												
Lane Group Flow (vph)	85	297	46	171	571	346	201	1190	43	495	1609	285
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.6			3.6			7.2			7.2	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2	1	1	2	1	1	2	1	1	2	1
Detector Template	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Leading Detector (m)	2.0	10.0	2.0	2.0	10.0	2.0	2.0	10.0	2.0	2.0	10.0	2.0
Trailing Detector (m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Position(m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Size(m)	2.0	0.6	2.0	2.0	0.6	2.0	2.0	0.6	2.0	2.0	0.6	2.0
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4		4	8		8	2		2	6		6

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector Phase	7	4	4	3	8	8	5	2	2	1	6	6
Switch Phase												
Minimum Initial (s)	7.0	20.0	20.0	7.0	20.0	20.0	7.0	20.0	20.0	7.0	20.0	20.0
Minimum Split (s)	11.5	38.0	38.0	11.5	38.0	38.0	11.5	42.9	42.9	11.5	42.9	42.9
Total Split (s)	12.6	43.4	43.4	12.6	43.4	43.4	14.0	70.0	70.0	14.0	70.0	70.0
Total Split (%)	9.0%	31.0%	31.0%	9.0%	31.0%	31.0%	10.0%	50.0%	50.0%	10.0%	50.0%	50.0%
Maximum Green (s)	8.6	36.4	36.4	8.6	36.4	36.4	10.0	63.1	63.1	10.0	63.1	63.1
Yellow Time (s)	3.0	3.7	3.7	3.0	3.7	3.7	3.0	4.6	4.6	3.0	4.6	4.6
All-Red Time (s)	1.0	3.3	3.3	1.0	3.3	3.3	1.0	2.3	2.3	1.0	2.3	2.3
Lost Time Adjust (s)	0.0	-3.0	-3.0	0.0	-3.0	-3.0	0.0	-2.9	-2.9	0.0	-2.9	-2.9
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Vehicle Extension (s)	3.0	5.0	5.0	3.0	5.0	5.0	3.0	5.0	5.0	3.0	5.0	5.0
Recall Mode	None	None	None	None	None	None	None	Max	Max	None	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)		24.0	24.0		24.0	24.0		29.0	29.0		29.0	29.0
Pedestrian Calls (#/hr)		0	0		0	0		0	0		0	0
Act Effct Green (s)	42.0	33.8	33.8	42.7	34.1	34.1	76.1	66.1	66.1	76.1	66.1	66.1
Actuated g/C Ratio	0.31	0.25	0.25	0.32	0.25	0.25	0.57	0.49	0.49	0.57	0.49	0.49
v/c Ratio	0.41	0.33	0.10	0.52	0.64	0.62	1.00	0.48	0.05	1.77	0.64	0.32
Control Delay	36.0	41.9	0.4	38.7	48.1	21.9	93.9	24.1	0.1	383.2	27.5	5.5
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	36.0	41.9	0.4	38.7	48.1	21.9	93.9	24.1	0.1	383.2	27.5	5.5
LOS	D	D	A	D	D	C	F	C	A	F	C	A
Approach Delay		36.3			38.3			33.1			98.6	
Approach LOS		D			D			C			F	

Intersection Summary	
Area Type:	Other
Cycle Length: 140	
Actuated Cycle Length: 134.5	
Natural Cycle: 125	
Control Type: Actuated-Uncoordinated	
Maximum v/c Ratio: 1.77	
Intersection Signal Delay: 63.7	Intersection LOS: E
Intersection Capacity Utilization 85.1%	ICU Level of Service E
Analysis Period (min) 15	

Splits and Phases: 105: Trafalgar Rd & William Halton Parkway



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	85	297	46	171	571	346	201	1190	43	495	1609	285
v/c Ratio	0.41	0.33	0.10	0.52	0.64	0.62	1.00	0.48	0.05	1.77	0.64	0.32
Control Delay	36.0	41.9	0.4	38.7	48.1	21.9	93.9	24.1	0.1	383.2	27.5	5.5
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	36.0	41.9	0.4	38.7	48.1	21.9	93.9	24.1	0.1	383.2	27.5	5.5
Queue Length 50th (m)	15.3	33.6	0.0	32.4	70.6	31.2	~34.6	75.3	0.0	~147.3	114.1	6.7
Queue Length 95th (m)	27.2	46.4	0.0	50.2	89.4	63.1	#88.9	93.5	0.0	#244.3	138.5	23.6
Internal Link Dist (m)		419.3			425.5			261.3			209.3	
Turn Bay Length (m)	100.0		100.0	100.0		150.0	150.0		75.0			
Base Capacity (vph)	212	1037	530	331	1037	611	201	2498	825	279	2498	898
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	0.40	0.29	0.09	0.52	0.55	0.57	1.00	0.48	0.05	1.77	0.64	0.32

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

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

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	78	273	42	157	525	318	185	1095	40	455	1480	262
Future Volume (vph)	78	273	42	157	525	318	185	1095	40	455	1480	262
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.91	1.00	1.00	0.91	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)	1770	3539	1583	1770	3539	1583	1770	5085	1583	1770	5085	1583
Flt Permitted	0.21	1.00	1.00	0.46	1.00	1.00	0.08	1.00	1.00	0.16	1.00	1.00
Satd. Flow (perm)	396	3539	1583	862	3539	1583	144	5085	1583	301	5085	1583
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	85	297	46	171	571	346	201	1190	43	495	1609	285
RTOR Reduction (vph)	0	0	34	0	0	156	0	0	22	0	0	120
Lane Group Flow (vph)	85	297	12	171	571	190	201	1190	21	495	1609	165
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4		4	8		8	2		2	6		6
Actuated Green, G (s)	39.1	30.8	30.8	39.7	31.1	31.1	73.2	63.2	63.2	73.2	63.2	63.2
Effective Green, g (s)	39.1	33.8	33.8	39.7	34.1	34.1	73.2	66.1	66.1	73.2	66.1	66.1
Actuated g/C Ratio	0.29	0.25	0.25	0.30	0.25	0.25	0.54	0.49	0.49	0.54	0.49	0.49
Clearance Time (s)	4.0	7.0	7.0	4.0	7.0	7.0	4.0	6.9	6.9	4.0	6.9	6.9
Vehicle Extension (s)	3.0	5.0	5.0	3.0	5.0	5.0	3.0	5.0	5.0	3.0	5.0	5.0
Lane Grp Cap (vph)	199	889	397	312	897	401	199	2499	777	273	2499	777
v/s Ratio Prot	0.03	0.08		c0.03	c0.16		0.08	0.23		c0.13	0.32	
v/s Ratio Perm	0.10		0.01	0.13		0.12	0.47		0.01	c0.85		0.10
v/c Ratio	0.43	0.33	0.03	0.55	0.64	0.47	1.01	0.48	0.03	1.81	0.64	0.21
Uniform Delay, d1	36.6	41.2	38.0	38.0	44.7	42.6	33.9	22.7	17.6	22.7	25.4	19.4
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	1.5	0.5	0.1	2.0	2.1	1.8	66.4	0.7	0.1	380.1	1.3	0.6
Delay (s)	38.1	41.6	38.0	39.9	46.8	44.4	100.3	23.4	17.7	402.7	26.7	20.0
Level of Service	D	D	D	D	D	D	F	C	B	F	C	C
Approach Delay (s)		40.5			44.9			34.0			103.8	
Approach LOS		D			D			C			F	

Intersection Summary

HCM 2000 Control Delay	68.0	HCM 2000 Level of Service	E
HCM 2000 Volume to Capacity ratio	1.34		
Actuated Cycle Length (s)	134.5	Sum of lost time (s)	16.0
Intersection Capacity Utilization	85.1%	ICU Level of Service	E
Analysis Period (min)	15		

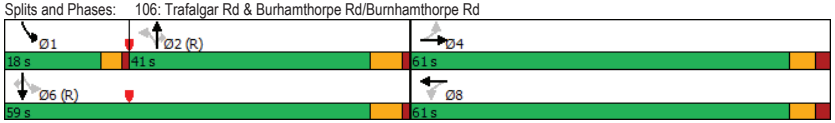
c Critical Lane Group

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	231	576	77	210	187	65	52	1083	159	224	1319	136
Future Volume (vph)	231	576	77	210	187	65	52	1083	159	224	1319	136
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	30.0		0.0	15.0		0.0	60.0		60.0	60.0		60.0
Storage Lanes	1		0	1		0	1		1	1		1
Taper Length (m)	70.0			50.0			100.0			100.0		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	0.95	1.00	0.91	1.00	1.00	0.91	1.00
Frt		0.982			0.961				0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1770	3476	0	1770	3401	0	1770	5085	1583	1770	5085	1583
Flt Permitted	0.568			0.298			0.151			0.103		
Satd. Flow (perm)	1058	3476	0	555	3401	0	281	5085	1583	192	5085	1583
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		15			56				157			141
Link Speed (k/h)		60			60			80			80	
Link Distance (m)		828.7			989.6			1077.8			170.3	
Travel Time (s)		49.7			59.4			48.5			7.7	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	251	626	84	228	203	71	57	1177	173	243	1434	148
Shared Lane Traffic (%)												
Lane Group Flow (vph)	251	710	0	228	274	0	57	1177	173	243	1434	148
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.6			3.6			3.6			3.6	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Turn Type	Perm	NA		Perm	NA		Perm	NA	Perm	pm+pt	NA	Perm
Protected Phases		4			8			2		1	6	
Permitted Phases	4			8			2		2	6		6
Minimum Split (s)	24.0	24.0		24.0	24.0		26.0	26.0	26.0	11.5	26.0	26.0
Total Split (s)	61.0	61.0		61.0	61.0		41.0	41.0	41.0	18.0	59.0	59.0
Total Split (%)	50.8%	50.8%		50.8%	50.8%		34.2%	34.2%	34.2%	15.0%	49.2%	49.2%
Maximum Green (s)	55.0	55.0		55.0	55.0		35.0	35.0	35.0	14.0	53.0	53.0
Yellow Time (s)	3.7	3.7		3.7	3.7		4.6	4.6	4.6	3.0	4.6	4.6
All-Red Time (s)	2.3	2.3		2.3	2.3		1.4	1.4	1.4	1.0	1.4	1.4
Lost Time Adjust (s)	-2.0	-2.0		-2.0	-2.0		-2.0	-2.0	-2.0	0.0	-2.0	-2.0
Total Lost Time (s)	4.0	4.0		4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0
Lead/Lag							Lag	Lag	Lag	Lead		
Lead-Lag Optimize?							Yes	Yes	Yes	Yes		
Act Effct Green (s)	57.0	57.0		57.0	57.0		37.0	37.0	37.0	55.0	55.0	55.0
Actuated g/C Ratio	0.48	0.48		0.48	0.48		0.31	0.31	0.31	0.46	0.46	0.46
v/c Ratio	0.50	0.43		0.87	0.17		0.66	0.75	0.29	0.89	0.62	0.18
Control Delay	26.0	21.3		60.3	14.4		73.9	41.0	7.5	62.3	26.0	4.0
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	26.0	21.3		60.3	14.4		73.9	41.0	7.5	62.3	26.0	4.0

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
LOS	C	C		E	B		E	D	A	E	C	A
Approach Delay		22.5			35.3			38.2			29.0	
Approach LOS		C			D			D			C	

Intersection Summary	
Area Type:	Other
Cycle Length: 120	
Actuated Cycle Length: 120	
Offset: 0 (0%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green	
Natural Cycle: 70	
Control Type: Pretimed	
Maximum v/c Ratio: 0.89	
Intersection Signal Delay: 31.1	Intersection LOS: C
Intersection Capacity Utilization 85.5%	ICU Level of Service E
Analysis Period (min) 15	

Splits and Phases: 106: Trafalgar Rd & Burhamthorpe Rd/Burnhamthorpe Rd



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	251	710	228	274	57	1177	173	243	1434	148
v/c Ratio	0.50	0.43	0.87	0.17	0.66	0.75	0.29	0.89	0.62	0.18
Control Delay	26.0	21.3	60.3	14.4	73.9	41.0	7.5	62.3	26.0	4.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	26.0	21.3	60.3	14.4	73.9	41.0	7.5	62.3	26.0	4.0
Queue Length 50th (m)	39.1	54.5	46.0	14.5	11.5	89.9	2.6	39.7	90.0	0.9
Queue Length 95th (m)	63.5	69.5	#94.9	22.4	#33.7	106.6	18.2	#85.2	104.9	11.9
Internal Link Dist (m)		804.7		965.6		1053.8			146.3	
Turn Bay Length (m)	30.0		15.0		60.0		60.0	60.0		60.0
Base Capacity (vph)	502	1658	263	1644	86	1567	596	272	2330	801
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.50	0.43	0.87	0.17	0.66	0.75	0.29	0.89	0.62	0.18

Intersection Summary

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

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	231	576	77	210	187	65	52	1083	159	224	1319	136
Future Volume (vph)	231	576	77	210	187	65	52	1083	159	224	1319	136
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	0.91	1.00	1.00	0.91	1.00
Frt	1.00	0.98		1.00	0.96		1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1770	3476		1770	3402		1770	5085	1583	1770	5085	1583
Flt Permitted	0.57	1.00		0.30	1.00		0.15	1.00	1.00	0.10	1.00	1.00
Satd. Flow (perm)	1058	3476		555	3402		282	5085	1583	191	5085	1583
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	251	626	84	228	203	71	57	1177	173	243	1434	148
RTOR Reduction (vph)	0	8	0	0	29	0	0	0	109	0	0	76
Lane Group Flow (vph)	251	702	0	228	245	0	57	1177	64	243	1434	72
Turn Type	Perm	NA		Perm	NA		Perm	NA	Perm	pm+pt	NA	Perm
Protected Phases		4			8			2		1	6	
Permitted Phases	4			8			2		2	6		6
Actuated Green, G (s)	55.0	55.0		55.0	55.0		35.0	35.0	35.0	53.0	53.0	53.0
Effective Green, g (s)	57.0	57.0		57.0	57.0		37.0	37.0	37.0	53.0	55.0	55.0
Actuated g/C Ratio	0.48	0.48		0.48	0.48		0.31	0.31	0.31	0.44	0.46	0.46
Clearance Time (s)	6.0	6.0		6.0	6.0		6.0	6.0	6.0	4.0	6.0	6.0
Lane Grp Cap (vph)	502	1651		263	1615		86	1567	488	268	2330	725
v/s Ratio Prot		0.20			0.07			0.23		c0.11	0.28	
v/s Ratio Perm	0.24			c0.41			0.20		0.04	c0.29		0.05
v/c Ratio	0.50	0.43		0.87	0.15		0.66	0.75	0.13	0.91	0.62	0.10
Uniform Delay, d1	21.7	20.7		28.1	17.8		36.1	37.4	29.9	31.8	24.5	18.4
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	3.5	0.8		29.8	0.2		33.7	3.4	0.6	35.4	1.2	0.3
Delay (s)	25.2	21.5		57.9	18.0		69.7	40.7	30.5	67.2	25.7	18.7
Level of Service	C	C		E	B		E	D	C	E	C	B
Approach Delay (s)		22.5			36.1			40.6			30.7	
Approach LOS		C			D			D			C	

Intersection Summary

HCM 2000 Control Delay	32.6	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.89		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	85.5%	ICU Level of Service	E
Analysis Period (min)	15		

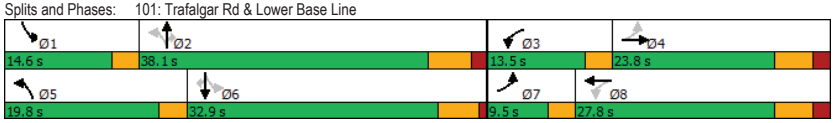
c Critical Lane Group

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	44	197	64	202	556	302	370	1727	197	251	1136	101
Future Volume (vph)	44	197	64	202	556	302	370	1727	197	251	1136	101
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	45.0		0.0	110.0		0.0	90.0		90.0	90.0		90.0
Storage Lanes	1		0	1		0	1		1	1		1
Taper Length (m)	100.0			100.0			100.0			100.0		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	0.95	1.00	0.91	1.00	1.00	0.91	1.00
Frt		0.963			0.947				0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1770	3408	0	1770	3352	0	1770	5085	1583	1770	5085	1583
Flt Permitted	0.260			0.391			0.136			0.152		
Satd. Flow (perm)	484	3408	0	728	3352	0	253	5085	1583	283	5085	1583
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		45			109				214			184
Link Speed (k/h)		70			60			80			80	
Link Distance (m)		749.3			690.6			498.3			434.3	
Travel Time (s)		38.5			41.4			22.4			19.5	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	48	214	70	220	604	328	402	1877	214	273	1235	110
Shared Lane Traffic (%)												
Lane Group Flow (vph)	48	284	0	220	932	0	402	1877	214	273	1235	110
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.6			3.6			3.6			3.6	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2		1	2		1	2	1	1	2	1
Detector Template	Left	Thru		Left	Thru		Left	Thru	Right	Left	Thru	Right
Leading Detector (m)	2.0	10.0		2.0	10.0		2.0	10.0	2.0	2.0	10.0	2.0
Trailing Detector (m)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Position(m)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Size(m)	2.0	0.6		2.0	0.6		2.0	0.6	2.0	2.0	0.6	2.0
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	pm+pt	NA		pm+pt	NA		pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4			8			2		2	6		6

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector Phase	7	4		3	8		5	2	2	1	6	6
Switch Phase												
Minimum Initial (s)	5.0	10.0		7.0	10.0		5.0	25.0	25.0	7.0	25.0	25.0
Minimum Split (s)	9.5	22.5		11.5	22.5		9.5	31.6	31.6	11.5	30.6	30.6
Total Split (s)	9.5	23.8		13.5	27.8		19.8	38.1	38.1	14.6	32.9	32.9
Total Split (%)	10.6%	26.4%		15.0%	30.9%		22.0%	42.3%	42.3%	16.2%	36.6%	36.6%
Maximum Green (s)	6.5	17.6		10.5	21.6		16.8	31.5	31.5	11.6	27.3	27.3
Yellow Time (s)	3.0	4.2		3.0	4.2		3.0	4.6	4.6	3.0	4.6	4.6
All-Red Time (s)	0.0	2.0		0.0	2.0		0.0	2.0	2.0	0.0	1.0	1.0
Lost Time Adjust (s)	1.0	-2.2		1.0	-2.2		1.0	-2.2	-2.2	1.0	-2.2	-2.2
Total Lost Time (s)	4.0	4.0		4.0	4.0		4.0	4.4	4.4	4.0	3.4	3.4
Lead/Lag	Lead	Lag		Lead	Lag		Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes		Yes	Yes		Yes	Yes	Yes	Yes	Yes	Yes
Vehicle Extension (s)	3.0	5.0		0.2	5.0		3.0	5.0	5.0	0.2	5.0	5.0
Recall Mode	None	None		None	None		None	Max	Max	Max	Max	Max
Act Effct Green (s)	22.6	17.3		29.7	24.2		48.8	33.8	33.8	39.6	29.6	29.6
Actuated g/C Ratio	0.26	0.20		0.34	0.28		0.56	0.39	0.39	0.46	0.34	0.34
v/c Ratio	0.24	0.40		0.63	0.92		0.96	0.95	0.29	0.88	0.71	0.17
Control Delay	21.9	26.9		29.9	42.6		57.8	37.9	4.0	49.0	28.1	1.0
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	21.9	26.9		29.9	42.6		57.8	37.9	4.0	49.0	28.1	1.0
LOS	C	C		C	D		E	D	A	D	C	A
Approach Delay		26.1			40.2			38.2			29.7	
Approach LOS		C			D			D			C	

Intersection Summary	
Area Type: Other	
Cycle Length: 90	
Actuated Cycle Length: 86.6	
Natural Cycle: 90	
Control Type: Semi Act-Uncoord	
Maximum v/c Ratio: 0.96	
Intersection Signal Delay: 35.4	Intersection LOS: D
Intersection Capacity Utilization 90.1%	ICU Level of Service E
Analysis Period (min) 15	

Splits and Phases: 101: Trafalgar Rd & Lower Base Line



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	48	284	220	932	402	1877	214	273	1235	110
v/c Ratio	0.24	0.40	0.63	0.92	0.96	0.95	0.29	0.88	0.71	0.17
Control Delay	21.9	26.9	29.9	42.6	57.8	37.9	4.0	49.0	28.1	1.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	21.9	26.9	29.9	42.6	57.8	37.9	4.0	49.0	28.1	1.0
Queue Length 50th (m)	5.2	18.1	26.6	74.3	51.6	114.2	0.0	28.5	67.9	0.0
Queue Length 95th (m)	12.1	29.1	44.0	#113.8	#108.8	#150.1	13.0	#73.9	83.6	1.5
Internal Link Dist (m)		725.3		666.6		474.3			410.3	
Turn Bay Length (m)	45.0		110.0		90.0		90.0	90.0		90.0
Base Capacity (vph)	209	816	364	1016	420	1984	748	312	1737	661
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.23	0.35	0.60	0.92	0.96	0.95	0.29	0.88	0.71	0.17

Intersection Summary

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

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	44	197	64	202	556	302	370	1727	197	251	1136	101
Future Volume (vph)	44	197	64	202	556	302	370	1727	197	251	1136	101
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0	4.4	4.4	4.0	3.4	3.4
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	0.91	1.00	1.00	0.91	1.00
Frt	1.00	0.96		1.00	0.95		1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1770	3408		1770	3352		1770	5085	1583	1770	5085	1583
Flt Permitted	0.26	1.00		0.39	1.00		0.14	1.00	1.00	0.15	1.00	1.00
Satd. Flow (perm)	484	3408		728	3352		253	5085	1583	282	5085	1583
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	48	214	70	220	604	328	402	1877	214	273	1235	110
RTOR Reduction (vph)	0	35	0	0	79	0	0	0	132	0	0	73
Lane Group Flow (vph)	48	249	0	220	853	0	402	1877	82	273	1235	37
Turn Type	pm+pt	NA		pm+pt	NA		pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4			8			2		2	6		6
Actuated Green, G (s)	20.2	16.4		28.8	22.0		46.2	31.6	31.6	39.0	27.4	27.4
Effective Green, g (s)	18.2	18.6		27.8	24.2		45.2	33.8	33.8	37.0	29.6	29.6
Actuated g/C Ratio	0.21	0.21		0.32	0.28		0.51	0.38	0.38	0.42	0.34	0.34
Clearance Time (s)	3.0	6.2		3.0	6.2		3.0	6.6	6.6	3.0	5.6	5.6
Vehicle Extension (s)	3.0	5.0		0.2	5.0		3.0	5.0	5.0	0.2	5.0	5.0
Lane Grp Cap (vph)	141	721		330	923		403	1957	609	298	1714	533
v/s Ratio Prot	0.01	0.07		c0.06	c0.25		c0.18	c0.37		0.11	0.24	
v/s Ratio Perm	0.06			0.15			0.33		0.05	0.27		0.02
v/c Ratio	0.34	0.34		0.67	0.92		1.00	0.96	0.14	0.92	0.72	0.07
Uniform Delay, d1	29.1	29.4		23.8	30.9		24.3	26.3	17.5	20.7	25.5	19.8
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	1.4	0.6		3.9	15.1		43.9	12.7	0.5	34.5	2.7	0.3
Delay (s)	30.6	30.0		27.7	46.1		68.2	39.1	18.0	55.2	28.1	20.0
Level of Service	C	C		C	D		E	D	B	E	C	C
Approach Delay (s)		30.1			42.5			42.0			32.1	
Approach LOS		C			D			D			C	

Intersection Summary

HCM 2000 Control Delay	38.5	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	1.00		
Actuated Cycle Length (s)	87.8	Sum of lost time (s)	16.4
Intersection Capacity Utilization	90.1%	ICU Level of Service	E
Analysis Period (min)	15		

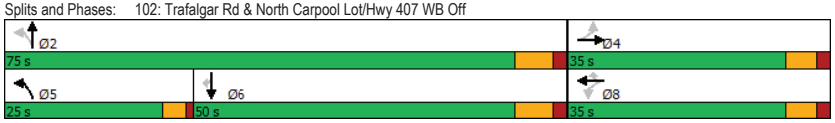
c Critical Lane Group

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	6	0	37	308	13	139	7	2149	0	0	1398	4
Future Volume (vph)	6	0	37	308	13	139	7	2149	0	0	1398	4
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	0.0		0.0	0.0		60.0	65.0		0.0	0.0		15.0
Storage Lanes	0		0	1		1	1		0	0		1
Taper Length (m)	7.5			7.5			100.0			7.5		
Lane Util. Factor	1.00	1.00	1.00	0.95	0.91	0.95	1.00	0.91	1.00	1.00	0.91	1.00
Frt		0.885			0.988	0.850						0.850
Flt Protected		0.993		0.950	0.960		0.950					
Satd. Flow (prot)	0	1637	0	1681	1608	1504	1770	5085	0	0	5085	1583
Flt Permitted		0.951		0.785	0.772		0.124					
Satd. Flow (perm)	0	1568	0	1389	1293	1504	231	5085	0	0	5085	1583
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		79			4	79						69
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		134.0			574.1			363.6			118.9	
Travel Time (s)		9.6			41.3			26.2			8.6	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	7	0	40	335	14	151	8	2336	0	0	1520	4
Shared Lane Traffic (%)				46%		10%						
Lane Group Flow (vph)	0	47	0	181	183	136	8	2336	0	0	1520	4
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.8			3.6			3.6			3.6	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2		1	2	1	1	2			2	1
Detector Template	Left	Thru		Left	Thru	Right	Left	Thru			Thru	Right
Leading Detector (m)	2.0	10.0		2.0	10.0	2.0	2.0	10.0			10.0	2.0
Trailing Detector (m)	0.0	0.0		0.0	0.0	0.0	0.0	0.0			0.0	0.0
Detector 1 Position(m)	0.0	0.0		0.0	0.0	0.0	0.0	0.0			0.0	0.0
Detector 1 Size(m)	2.0	0.6		2.0	0.6	2.0	2.0	0.6			0.6	2.0
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex			Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0			0.0	0.0
Detector 1 Queue (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0			0.0	0.0
Detector 1 Delay (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0			0.0	0.0
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Perm	NA		Perm	NA	Perm	pm+pt	NA			NA	Perm
Protected Phases		4			8		5	2			6	
Permitted Phases	4			8		8	2					6

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector Phase	4	4		8	8	8	5	2			6	6
Switch Phase												
Minimum Initial (s)	7.0	7.0		7.0	7.0	7.0	4.0	20.0			20.0	20.0
Minimum Split (s)	22.5	22.5		22.5	22.5	22.5	9.5	27.0			27.0	27.0
Total Split (s)	35.0	35.0		35.0	35.0	35.0	25.0	75.0			50.0	50.0
Total Split (%)	31.8%	31.8%		31.8%	31.8%	31.8%	22.7%	68.2%			45.5%	45.5%
Maximum Green (s)	29.0	29.0		29.0	29.0	29.0	21.0	68.0			43.0	43.0
Yellow Time (s)	4.0	4.0		4.0	4.0	4.0	3.0	5.0			5.0	5.0
All-Red Time (s)	2.0	2.0		2.0	2.0	2.0	1.0	2.0			2.0	2.0
Lost Time Adjust (s)		-2.0		-2.0	-2.0	-2.0	0.0	-3.0			-3.0	-3.0
Total Lost Time (s)		4.0		4.0	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)	3.5	3.5		3.5	3.5	3.5	2.5	7.0			7.0	7.0
Recall Mode	None	None		None	None	None	None	Max			Max	Max
Act Effct Green (s)		21.9		21.9	21.9	21.9	71.3	71.3			69.5	69.5
Actuated g/C Ratio		0.22		0.22	0.22	0.22	0.70	0.70			0.69	0.69
v/c Ratio		0.12		0.60	0.65	0.35	0.03	0.65			0.44	0.00
Control Delay		2.8		44.1	46.1	17.3	6.4	10.1			8.8	0.0
Queue Delay		0.0		0.0	0.0	0.0	0.0	0.0			0.0	0.0
Total Delay		2.8		44.1	46.1	17.3	6.4	10.1			8.8	0.0
LOS		A		D	D	B	A	B			A	A
Approach Delay		2.8			37.5			10.1			8.8	
Approach LOS		A			D			B			A	

Intersection Summary	
Area Type:	Other
Cycle Length: 110	
Actuated Cycle Length: 101.2	
Natural Cycle: 60	
Control Type: Actuated-Uncoordinated	
Maximum v/c Ratio: 0.65	
Intersection Signal Delay: 12.7	Intersection LOS: B
Intersection Capacity Utilization 65.1%	ICU Level of Service C
Analysis Period (min) 15	

Splits and Phases: 102: Trafalgar Rd & North Carpool Lot/Hwy 407 WB Off



Lane Group	EBT	WBL	WBT	WBR	NBL	NBT	SBT	SBR
Lane Group Flow (vph)	47	181	183	136	8	2336	1520	4
v/c Ratio	0.12	0.60	0.65	0.35	0.03	0.65	0.44	0.00
Control Delay	2.8	44.1	46.1	17.3	6.4	10.1	8.8	0.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	2.8	44.1	46.1	17.3	6.4	10.1	8.8	0.0
Queue Length 50th (m)	0.0	33.3	34.8	9.4	0.4	78.3	39.2	0.0
Queue Length 95th (m)	3.4	55.3	58.5	25.4	2.2	125.0	82.8	0.0
Internal Link Dist (m)	110.0		550.1			339.6	94.9	
Turn Bay Length (m)				60.0	65.0			15.0
Base Capacity (vph)	536	427	400	517	483	3580	3491	1108
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	0.09	0.42	0.46	0.26	0.02	0.65	0.44	0.00

Intersection Summary

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	6	0	37	308	13	139	7	2149	0	0	1398	4
Future Volume (vph)	6	0	37	308	13	139	7	2149	0	0	1398	4
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0		4.0	4.0	4.0	4.0	4.0			4.0	4.0
Lane Util. Factor		1.00		0.95	0.91	0.95	1.00	0.91			0.91	1.00
Frt		0.89		1.00	0.99	0.85	1.00	1.00			1.00	0.85
Flt Protected		0.99		0.95	0.96	1.00	0.95	1.00			1.00	1.00
Satd. Flow (prot)		1637		1681	1607	1504	1770	5085			5085	1583
Flt Permitted		0.95		0.78	0.77	1.00	0.12	1.00			1.00	1.00
Satd. Flow (perm)		1568		1389	1292	1504	230	5085			5085	1583
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	7	0	40	335	14	151	8	2336	0	0	1520	4
RTOR Reduction (vph)	0	37	0	0	3	62	0	0	0	0	0	1
Lane Group Flow (vph)	0	10	0	181	180	74	8	2336	0	0	1520	3
Turn Type	Perm	NA		Perm	NA	Perm	pm+pt	NA			NA	Perm
Protected Phases		4			8		5	2			6	
Permitted Phases	4			8		8	2					6
Actuated Green, G (s)		19.9		19.9	19.9	19.9	71.5	71.5			66.5	66.5
Effective Green, g (s)		21.9		21.9	21.9	21.9	71.5	74.5			69.5	69.5
Actuated g/C Ratio		0.21		0.21	0.21	0.21	0.68	0.71			0.67	0.67
Clearance Time (s)		6.0		6.0	6.0	6.0	4.0	7.0			7.0	7.0
Vehicle Extension (s)		3.5		3.5	3.5	3.5	2.5	7.0			7.0	7.0
Lane Grp Cap (vph)		328		291	271	315	172	3628			3385	1053
v/s Ratio Prot							0.00	c0.46			0.30	
v/s Ratio Perm		0.01		0.13	c0.14	0.05	0.03					0.00
v/c Ratio		0.03		0.62	0.66	0.23	0.05	0.64			0.45	0.00
Uniform Delay, d1		32.8		37.5	37.9	34.3	6.4	7.9			8.3	5.8
Progression Factor		1.00		1.00	1.00	1.00	1.00	1.00			1.00	1.00
Incremental Delay, d2		0.0		4.3	6.2	0.5	0.1	0.9			0.4	0.0
Delay (s)		32.8		41.8	44.1	34.7	6.5	8.8			8.8	5.8
Level of Service		C		D	D	C	A	A			A	A
Approach Delay (s)		32.8			40.7			8.8			8.7	
Approach LOS		C			D			A			A	

Intersection Summary

HCM 2000 Control Delay	12.7	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.68		
Actuated Cycle Length (s)	104.4	Sum of lost time (s)	12.0
Intersection Capacity Utilization	65.1%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	71	79	0	2098	1743	0
Future Volume (vph)	71	79	0	2098	1743	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	0.91	0.91	1.00
Frt		0.850				
Flt Protected	0.950					
Satd. Flow (prot)	1770	1583	0	5085	5085	0
Flt Permitted	0.950					
Satd. Flow (perm)	1770	1583	0	5085	5085	0
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)		15				
Link Speed (k/h)	50			50	50	
Link Distance (m)	554.6			120.3	363.6	
Travel Time (s)	39.9			8.7	26.2	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	77	86	0	2280	1895	0
Shared Lane Traffic (%)						
Lane Group Flow (vph)	77	86	0	2280	1895	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	3.6			3.6	3.6	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	4.8			4.8	4.8	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)	25	15	25			15
Turn Type	Prot	Perm		NA	NA	
Protected Phases	4			2	6	
Permitted Phases		4				
Minimum Split (s)	24.0	24.0		24.9	24.9	
Total Split (s)	24.0	24.0		46.0	46.0	
Total Split (%)	34.3%	34.3%		65.7%	65.7%	
Maximum Green (s)	18.0	18.0		39.1	39.1	
Yellow Time (s)	4.0	4.0		4.6	4.6	
All-Red Time (s)	2.0	2.0		2.3	2.3	
Lost Time Adjust (s)	-2.0	-2.0		-2.9	-2.9	
Total Lost Time (s)	4.0	4.0		4.0	4.0	
Lead/Lag						
Lead-Lag Optimize?						
Walk Time (s)	7.0	7.0		7.0	7.0	
Flash Dont Walk (s)	11.0	11.0		11.0	11.0	
Pedestrian Calls (#/hr)	0	0		0	0	
Act Effct Green (s)	20.0	20.0		42.0	42.0	
Actuated g/C Ratio	0.29	0.29		0.60	0.60	
v/c Ratio	0.15	0.19		0.75	0.62	
Control Delay	19.7	17.4		12.1	10.1	
Queue Delay	0.0	0.0		0.0	0.0	
Total Delay	19.7	17.4		12.1	10.1	

Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
LOS	B	B		B	B	
Approach Delay	18.5			12.1	10.1	
Approach LOS	B			B	B	

Intersection Summary

Area Type: Other
Cycle Length: 70
Actuated Cycle Length: 70
Offset: 0 (0%), Referenced to phase 2:NBT and 6:SBT, Start of Green
Natural Cycle: 60
Control Type: Pretimed
Maximum v/c Ratio: 0.75
Intersection Signal Delay: 11.5 — Intersection LOS: B
Intersection Capacity Utilization 51.4% — ICU Level of Service A
Analysis Period (min) 15

Splits and Phases: 103: Trafalgar Rd & Hwy 407 EB Off

Lane Group	EBL	EBR	NBT	SBT
Lane Group Flow (vph)	77	86	2280	1895
v/c Ratio	0.15	0.19	0.75	0.62
Control Delay	19.7	17.4	12.1	10.1
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	19.7	17.4	12.1	10.1
Queue Length 50th (m)	7.4	6.8	69.5	50.8
Queue Length 95th (m)	16.5	16.5	86.6	63.6
Internal Link Dist (m)	530.6		96.3	339.6
Turn Bay Length (m)				
Base Capacity (vph)	505	463	3051	3051
Starvation Cap Reductn	0	0	0	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.15	0.19	0.75	0.62

Intersection Summary

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	71	79	0	2098	1743	0
Future Volume (vph)	71	79	0	2098	1743	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0	
Lane Util. Factor	1.00	1.00		0.91	0.91	
Frt	1.00	0.85		1.00	1.00	
Flt Protected	0.95	1.00		1.00	1.00	
Satd. Flow (prot)	1770	1583		5085	5085	
Flt Permitted	0.95	1.00		1.00	1.00	
Satd. Flow (perm)	1770	1583		5085	5085	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	77	86	0	2280	1895	0
RTOR Reduction (vph)	0	11	0	0	0	0
Lane Group Flow (vph)	77	75	0	2280	1895	0
Turn Type	Prot	Perm		NA	NA	
Protected Phases	4			2	6	
Permitted Phases		4				
Actuated Green, G (s)	18.0	18.0		39.1	39.1	
Effective Green, g (s)	20.0	20.0		42.0	42.0	
Actuated g/C Ratio	0.29	0.29		0.60	0.60	
Clearance Time (s)	6.0	6.0		6.9	6.9	
Lane Grp Cap (vph)	505	452		3051	3051	
v/s Ratio Prot	0.04			c0.45	0.37	
v/s Ratio Perm		c0.05				
v/c Ratio	0.15	0.17		0.75	0.62	
Uniform Delay, d1	18.7	18.7		10.2	8.9	
Progression Factor	1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.6	0.8		1.7	1.0	
Delay (s)	19.3	19.5		11.9	9.9	
Level of Service	B	B		B	A	
Approach Delay (s)	19.4			11.9	9.9	
Approach LOS	B			B	A	

Intersection Summary

HCM 2000 Control Delay	11.3	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.56		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	51.4%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

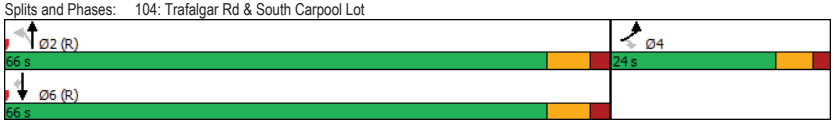
Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	23	16	16	2016	1813	10
Future Volume (vph)	23	16	16	2016	1813	10
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (m)	0.0	0.0	50.0			30.0
Storage Lanes	1	1	1			1
Taper Length (m)	7.5		100.0			
Lane Util. Factor	1.00	1.00	1.00	0.91	0.91	1.00
Frt		0.850				0.850
Flt Protected	0.950		0.950			
Satd. Flow (prot)	1770	1583	1770	5085	5085	1583
Flt Permitted	0.950		0.075			
Satd. Flow (perm)	1770	1583	140	5085	5085	1583
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)		17				10
Link Speed (k/h)	50			80	80	
Link Distance (m)	107.1			233.3	131.6	
Travel Time (s)	7.7			10.5	5.9	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	25	17	17	2191	1971	11
Shared Lane Traffic (%)						
Lane Group Flow (vph)	25	17	17	2191	1971	11
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	3.6			3.6	3.6	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	4.8			4.8	4.8	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)	25	15	25			15
Turn Type	Prot	Perm	Perm	NA	NA	Perm
Protected Phases	4			2	6	
Permitted Phases		4	2			6
Minimum Split (s)	24.0	24.0	25.5	25.5	25.5	25.5
Total Split (s)	24.0	24.0	66.0	66.0	66.0	66.0
Total Split (%)	26.7%	26.7%	73.3%	73.3%	73.3%	73.3%
Maximum Green (s)	18.0	18.0	59.1	59.1	59.1	59.1
Yellow Time (s)	4.0	4.0	4.6	4.6	4.6	4.6
All-Red Time (s)	2.0	2.0	2.3	2.3	2.3	2.3
Lost Time Adjust (s)	-2.0	-2.0	-2.9	-2.9	-2.9	-2.9
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0
Lead/Lag						
Lead-Lag Optimize?						
Walk Time (s)	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
Pedestrian Calls (#/hr)	0	0	0	0	0	0
Act Effct Green (s)	20.0	20.0	62.0	62.0	62.0	62.0
Actuated g/C Ratio	0.22	0.22	0.69	0.69	0.69	0.69
v/c Ratio	0.06	0.05	0.18	0.63	0.56	0.01

Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Control Delay	28.3	13.1	10.0	8.6	7.9	2.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	28.3	13.1	10.0	8.6	7.9	2.6
LOS	C	B	A	A	A	A
Approach Delay	22.2			8.7	7.8	
Approach LOS	C			A	A	

Intersection Summary

Area Type: Other
Cycle Length: 90
Actuated Cycle Length: 90
Offset: 0 (0%), Referenced to phase 2:NBTL and 6:SBT, Start of Green
Natural Cycle: 60
Control Type: Pretimed
Maximum v/c Ratio: 0.63
Intersection Signal Delay: 8.4 — Intersection LOS: A
Intersection Capacity Utilization 49.8% — ICU Level of Service A
Analysis Period (min) 15

Splits and Phases: 104: Trafalgar Rd & South Carpool Lot



Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Group Flow (vph)	25	17	17	2191	1971	11
v/c Ratio	0.06	0.05	0.18	0.63	0.56	0.01
Control Delay	28.3	13.1	10.0	8.6	7.9	2.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	28.3	13.1	10.0	8.6	7.9	2.6
Queue Length 50th (m)	3.4	0.0	0.9	64.6	54.0	0.1
Queue Length 95th (m)	9.6	5.1	4.0	77.1	64.6	1.5
Internal Link Dist (m)	83.1			209.3	107.6	
Turn Bay Length (m)			50.0			30.0
Base Capacity (vph)	393	365	96	3503	3503	1093
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	0.06	0.05	0.18	0.63	0.56	0.01

Intersection Summary

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	23	16	16	2016	1813	10
Future Volume (vph)	23	16	16	2016	1813	10
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
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	0.91	0.91	1.00
Frt	1.00	0.85	1.00	1.00	1.00	0.85
Flt Protected	0.95	1.00	0.95	1.00	1.00	1.00
Satd. Flow (prot)	1770	1583	1770	5085	5085	1583
Flt Permitted	0.95	1.00	0.07	1.00	1.00	1.00
Satd. Flow (perm)	1770	1583	139	5085	5085	1583
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	25	17	17	2191	1971	11
RTOR Reduction (vph)	0	13	0	0	0	3
Lane Group Flow (vph)	25	4	17	2191	1971	8
Turn Type	Prot	Perm	Perm	NA	NA	Perm
Protected Phases	4			2	6	
Permitted Phases		4	2			6
Actuated Green, G (s)	18.0	18.0	59.1	59.1	59.1	59.1
Effective Green, g (s)	20.0	20.0	62.0	62.0	62.0	62.0
Actuated g/C Ratio	0.22	0.22	0.69	0.69	0.69	0.69
Clearance Time (s)	6.0	6.0	6.9	6.9	6.9	6.9
Lane Grp Cap (vph)	393	351	95	3503	3503	1090
v/s Ratio Prot	c0.01			c0.43	0.39	
v/s Ratio Perm		0.00	0.12			0.00
v/c Ratio	0.06	0.01	0.18	0.63	0.56	0.01
Uniform Delay, d1	27.6	27.3	5.0	7.7	7.1	4.4
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	0.3	0.1	4.1	0.9	0.7	0.0
Delay (s)	27.9	27.3	9.1	8.5	7.8	4.4
Level of Service	C	C	A	A	A	A
Approach Delay (s)	27.7			8.5	7.8	
Approach LOS	C			A	A	

Intersection Summary

HCM 2000 Control Delay	8.3	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.49		
Actuated Cycle Length (s)	90.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	49.8%	ICU Level of Service	A
Analysis Period (min)	15		

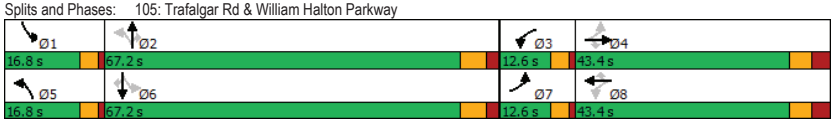
c Critical Lane Group

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	224	522	168	148	659	486	111	1412	42	361	1323	145
Future Volume (vph)	224	522	168	148	659	486	111	1412	42	361	1323	145
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	100.0		100.0	100.0		150.0	150.0		75.0	0.0		0.0
Storage Lanes	1		1	1		1	1		1	1		1
Taper Length (m)	100.0			100.0			100.0			7.5		
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.91	1.00	1.00	0.91	1.00
Frt			0.850			0.850			0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1770	3539	1583	1770	3539	1583	1770	5085	1583	1770	5085	1583
Flt Permitted	0.139			0.242			0.106			0.073		
Satd. Flow (perm)	259	3539	1583	451	3539	1583	197	5085	1583	136	5085	1583
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			183			183			94			155
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		805.8			927.6			285.3			233.3	
Travel Time (s)		58.0			66.8			20.5			16.8	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	243	567	183	161	716	528	121	1535	46	392	1438	158
Shared Lane Traffic (%)												
Lane Group Flow (vph)	243	567	183	161	716	528	121	1535	46	392	1438	158
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.6			3.6			7.2			7.2	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2	1	1	2	1	1	2	1	1	2	1
Detector Template	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Leading Detector (m)	2.0	10.0	2.0	2.0	10.0	2.0	2.0	10.0	2.0	2.0	10.0	2.0
Trailing Detector (m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Position(m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Size(m)	2.0	0.6	2.0	2.0	0.6	2.0	2.0	0.6	2.0	2.0	0.6	2.0
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4		4	8		8	2		2	6		6

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector Phase	7	4	4	3	8	8	5	2	2	1	6	6
Switch Phase												
Minimum Initial (s)	7.0	20.0	20.0	7.0	20.0	20.0	7.0	20.0	20.0	7.0	20.0	20.0
Minimum Split (s)	11.5	38.0	38.0	11.5	38.0	38.0	11.5	42.9	42.9	11.5	42.9	42.9
Total Split (s)	12.6	43.4	43.4	12.6	43.4	43.4	16.8	67.2	67.2	16.8	67.2	67.2
Total Split (%)	9.0%	31.0%	31.0%	9.0%	31.0%	31.0%	12.0%	48.0%	48.0%	12.0%	48.0%	48.0%
Maximum Green (s)	8.6	36.4	36.4	8.6	36.4	36.4	12.8	60.3	60.3	12.8	60.3	60.3
Yellow Time (s)	3.0	3.7	3.7	3.0	3.7	3.7	3.0	4.6	4.6	3.0	4.6	4.6
All-Red Time (s)	1.0	3.3	3.3	1.0	3.3	3.3	1.0	2.3	2.3	1.0	2.3	2.3
Lost Time Adjust (s)	0.0	-3.0	-3.0	0.0	-3.0	-3.0	0.0	-2.9	-2.9	0.0	-2.9	-2.9
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Vehicle Extension (s)	3.0	5.0	5.0	3.0	5.0	5.0	3.0	5.0	5.0	3.0	5.0	5.0
Recall Mode	None	None	None	None	None	None	None	Max	Max	None	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)		24.0	24.0		24.0	24.0		29.0	29.0		29.0	29.0
Pedestrian Calls (#/hr)		0	0		0	0		0	0		0	0
Act Effct Green (s)	47.3	38.7	38.7	47.3	38.7	38.7	73.1	63.2	63.2	78.5	66.1	66.1
Actuated g/C Ratio	0.34	0.28	0.28	0.34	0.28	0.28	0.52	0.45	0.45	0.56	0.47	0.47
v/c Ratio	1.34	0.58	0.32	0.69	0.73	0.92	0.56	0.67	0.06	1.73	0.60	0.19
Control Delay	217.9	46.0	6.6	48.5	50.6	54.7	25.4	31.7	0.1	373.4	28.5	3.9
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	217.9	46.0	6.6	48.5	50.6	54.7	25.4	31.7	0.1	373.4	28.5	3.9
LOS	F	D	A	D	D	D	C	C	A	F	C	A
Approach Delay		80.8			51.9			30.4			94.5	
Approach LOS		F			D			C			F	

Intersection Summary	
Area Type:	Other
Cycle Length: 140	
Actuated Cycle Length: 139.3	
Natural Cycle: 125	
Control Type: Actuated-Uncoordinated	
Maximum v/c Ratio: 1.73	
Intersection Signal Delay: 64.5	Intersection LOS: E
Intersection Capacity Utilization 91.2%	ICU Level of Service F
Analysis Period (min) 15	

Splits and Phases: 105: Trafalgar Rd & William Halton Parkway



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	243	567	183	161	716	528	121	1535	46	392	1438	158
v/c Ratio	1.34	0.58	0.32	0.69	0.73	0.92	0.56	0.67	0.06	1.73	0.60	0.19
Control Delay	217.9	46.0	6.6	48.5	50.6	54.7	25.4	31.7	0.1	373.4	28.5	3.9
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	217.9	46.0	6.6	48.5	50.6	54.7	25.4	31.7	0.1	373.4	28.5	3.9
Queue Length 50th (m)	~64.8	70.0	0.0	30.3	93.1	98.6	14.6	118.8	0.0	~140.8	103.8	0.4
Queue Length 95th (m)	#119.0	88.7	17.3	#48.8	115.1	#166.0	25.2	135.1	0.0	#205.1	123.6	12.8
Internal Link Dist (m)		781.8			903.6			261.3			209.3	
Turn Bay Length (m)	100.0		100.0	100.0		150.0	150.0		75.0			
Base Capacity (vph)	181	1000	579	234	1000	579	251	2306	769	226	2412	832
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	1.34	0.57	0.32	0.69	0.72	0.91	0.48	0.67	0.06	1.73	0.60	0.19

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

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

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	224	522	168	148	659	486	111	1412	42	361	1323	145
Future Volume (vph)	224	522	168	148	659	486	111	1412	42	361	1323	145
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.91	1.00	1.00	0.91	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)	1770	3539	1583	1770	3539	1583	1770	5085	1583	1770	5085	1583
Flt Permitted	0.14	1.00	1.00	0.24	1.00	1.00	0.11	1.00	1.00	0.07	1.00	1.00
Satd. Flow (perm)	259	3539	1583	451	3539	1583	197	5085	1583	137	5085	1583
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	243	567	183	161	716	528	121	1535	46	392	1438	158
RTOR Reduction (vph)	0	0	132	0	0	132	0	0	25	0	0	81
Lane Group Flow (vph)	243	567	51	161	716	396	121	1535	21	392	1438	77
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4		4	8		8	2		2	6		6
Actuated Green, G (s)	44.3	35.7	35.7	44.3	35.7	35.7	70.2	60.3	60.3	76.0	63.2	63.2
Effective Green, g (s)	44.3	38.7	38.7	44.3	38.7	38.7	70.2	63.2	63.2	76.0	66.1	66.1
Actuated g/C Ratio	0.32	0.28	0.28	0.32	0.28	0.28	0.50	0.45	0.45	0.55	0.47	0.47
Clearance Time (s)	4.0	7.0	7.0	4.0	7.0	7.0	4.0	6.9	6.9	4.0	6.9	6.9
Vehicle Extension (s)	3.0	5.0	5.0	3.0	5.0	5.0	3.0	5.0	5.0	3.0	5.0	5.0
Lane Grp Cap (vph)	175	983	439	224	983	439	211	2307	718	224	2412	751
v/s Ratio Prot	c0.09	0.16		0.04	0.20		0.04	0.30		c0.16	0.28	
v/s Ratio Perm	c0.36		0.03	0.18		0.25	0.25		0.01	c0.79		0.05
v/c Ratio	1.39	0.58	0.12	0.72	0.73	0.90	0.57	0.67	0.03	1.75	0.60	0.10
Uniform Delay, d1	42.2	43.3	37.5	38.1	45.5	48.5	21.5	29.8	21.1	39.8	26.8	20.2
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	206.0	1.3	0.2	10.5	3.3	22.5	3.7	1.5	0.1	355.3	1.1	0.3
Delay (s)	248.3	44.6	37.8	48.6	48.9	70.9	25.3	31.3	21.1	395.1	27.9	20.5
Level of Service	F	D	D	D	D	E	C	C	C	F	C	C
Approach Delay (s)		93.2			57.1			30.6			99.7	
Approach LOS		F			E			C			F	

Intersection Summary

HCM 2000 Control Delay	69.5	HCM 2000 Level of Service	E
HCM 2000 Volume to Capacity ratio	1.57		
Actuated Cycle Length (s)	139.3	Sum of lost time (s)	16.0
Intersection Capacity Utilization	91.2%	ICU Level of Service	F
Analysis Period (min)	15		

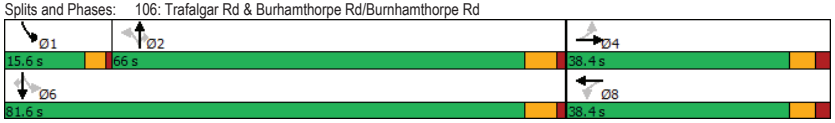
c Critical Lane Group

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	112	424	23	231	376	232	96	1347	140	196	1280	162
Future Volume (vph)	112	424	23	231	376	232	96	1347	140	196	1280	162
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	30.0		0.0	15.0		0.0	60.0		60.0	60.0		60.0
Storage Lanes	1		0	1		0	1		1	1		1
Taper Length (m)	70.0			50.0			100.0			100.0		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	0.95	1.00	0.91	1.00	1.00	0.91	1.00
Frt		0.992			0.943				0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1770	3511	0	1770	3337	0	1770	5085	1583	1770	5085	1583
Flt Permitted	0.208			0.334			0.182			0.105		
Satd. Flow (perm)	387	3511	0	622	3337	0	339	5085	1583	196	5085	1583
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		5			110				145			167
Link Speed (k/h)		60			60			80			80	
Link Distance (m)		828.7			989.6			1077.8			170.3	
Travel Time (s)		49.7			59.4			48.5			7.7	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	122	461	25	251	409	252	104	1464	152	213	1391	176
Shared Lane Traffic (%)												
Lane Group Flow (vph)	122	486	0	251	661	0	104	1464	152	213	1391	176
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.6			3.6			3.6			3.6	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2		1	2		1	2	1	1	2	1
Detector Template	Left	Thru		Left	Thru		Left	Thru	Right	Left	Thru	Right
Leading Detector (m)	2.0	10.0		2.0	10.0		2.0	10.0	2.0	2.0	10.0	2.0
Trailing Detector (m)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Position(m)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Size(m)	2.0	0.6		2.0	0.6		2.0	0.6	2.0	2.0	0.6	2.0
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Perm	NA		Perm	NA		Perm	NA	Perm	pm+pt	NA	Perm
Protected Phases		4			8			2		1	6	
Permitted Phases	4			8			2		2	6		6

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector Phase	4	4		8	8		2	2	2	1	6	6
Switch Phase												
Minimum Initial (s)	10.0	10.0		10.0	10.0		20.0	20.0	20.0	7.0	20.0	20.0
Minimum Split (s)	24.0	24.0		24.0	24.0		26.0	26.0	26.0	11.5	26.0	26.0
Total Split (s)	38.4	38.4		38.4	38.4		66.0	66.0	66.0	15.6	81.6	81.6
Total Split (%)	32.0%	32.0%		32.0%	32.0%		55.0%	55.0%	55.0%	13.0%	68.0%	68.0%
Maximum Green (s)	32.4	32.4		32.4	32.4		60.0	60.0	60.0	11.6	75.6	75.6
Yellow Time (s)	3.7	3.7		3.7	3.7		4.6	4.6	4.6	3.0	4.6	4.6
All-Red Time (s)	2.3	2.3		2.3	2.3		1.4	1.4	1.4	1.0	1.4	1.4
Lost Time Adjust (s)	-2.0	-2.0		-2.0	-2.0		-2.0	-2.0	-2.0	0.0	-2.0	-2.0
Total Lost Time (s)	4.0	4.0		4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0
Lead/Lag							Lag	Lag	Lag	Lead		
Lead-Lag Optimize?							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	3.0
Recall Mode	None	None		None	None		Max	Max	Max	None	Max	Max
Act Effct Green (s)	34.4	34.4		34.4	34.4		62.7	62.7	62.7	77.6	77.6	77.6
Actuated g/C Ratio	0.29	0.29		0.29	0.29		0.52	0.52	0.52	0.65	0.65	0.65
v/c Ratio	1.11	0.48		1.41	0.64		0.59	0.55	0.17	0.79	0.42	0.16
Control Delay	159.5	37.0		248.5	34.1		36.7	20.3	3.2	38.1	10.8	1.7
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	159.5	37.0		248.5	34.1		36.7	20.3	3.2	38.1	10.8	1.7
LOS	F	D		F	C		D	C	A	D	B	A
Approach Delay		61.5			93.1			19.8			13.2	
Approach LOS		E			F			B			B	

Intersection Summary	
Area Type:	Other
Cycle Length: 120	
Actuated Cycle Length: 120	
Natural Cycle: 70	
Control Type: Actuated-Uncoordinated	
Maximum v/c Ratio: 1.41	
Intersection Signal Delay: 35.8	Intersection LOS: D
Intersection Capacity Utilization 80.9%	ICU Level of Service D
Analysis Period (min) 15	

Splits and Phases: 106: Trafalgar Rd & Burhamthorpe Rd/Burnhamthorpe Rd



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	122	486	251	661	104	1464	152	213	1391	176
v/c Ratio	1.11	0.48	1.41	0.64	0.59	0.55	0.17	0.79	0.42	0.16
Control Delay	159.5	37.0	248.5	34.1	36.7	20.3	3.2	38.1	10.8	1.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	159.5	37.0	248.5	34.1	36.7	20.3	3.2	38.1	10.8	1.7
Queue Length 50th (m)	~32.2	48.6	~78.3	59.0	16.3	81.6	0.8	21.1	53.2	0.7
Queue Length 95th (m)	#69.9	64.7	#128.5	78.8	#40.1	95.0	10.6	#55.8	62.1	8.0
Internal Link Dist (m)		804.7		965.6		1053.8			146.3	
Turn Bay Length (m)	30.0		15.0		60.0		60.0	60.0		60.0
Base Capacity (vph)	110	1010	178	1035	177	2657	896	278	3288	1082
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	1.11	0.48	1.41	0.64	0.59	0.55	0.17	0.77	0.42	0.16

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

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

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	112	424	23	231	376	232	96	1347	140	196	1280	162
Future Volume (vph)	112	424	23	231	376	232	96	1347	140	196	1280	162
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	0.91	1.00	1.00	0.91	1.00
Frt	1.00	0.99		1.00	0.94		1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1770	3512		1770	3337		1770	5085	1583	1770	5085	1583
Flt Permitted	0.21	1.00		0.33	1.00		0.18	1.00	1.00	0.11	1.00	1.00
Satd. Flow (perm)	388	3512		623	3337		339	5085	1583	196	5085	1583
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	122	461	25	251	409	252	104	1464	152	213	1391	176
RTOR Reduction (vph)	0	4	0	0	78	0	0	0	69	0	0	59
Lane Group Flow (vph)	122	482	0	251	583	0	104	1464	83	213	1391	117
Turn Type	Perm	NA		Perm	NA		Perm	NA	Perm	pm+pt	NA	Perm
Protected Phases		4			8			2		1	6	
Permitted Phases	4			8			2		2	6		6
Actuated Green, G (s)	32.4	32.4		32.4	32.4		60.7	60.7	60.7	75.6	75.6	75.6
Effective Green, g (s)	34.4	34.4		34.4	34.4		62.7	62.7	62.7	75.6	77.6	77.6
Actuated g/C Ratio	0.29	0.29		0.29	0.29		0.52	0.52	0.52	0.63	0.65	0.65
Clearance Time (s)	6.0	6.0		6.0	6.0		6.0	6.0	6.0	4.0	6.0	6.0
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	111	1006		178	956		177	2656	827	266	3288	1023
v/s Ratio Prot		0.14			0.17			0.29		c0.07	0.27	
v/s Ratio Perm	0.31			c0.40			0.31		0.05	c0.43		0.07
v/c Ratio	1.10	0.48		1.41	0.61		0.59	0.55	0.10	0.80	0.42	0.11
Uniform Delay, d1	42.8	35.4		42.8	37.0		19.7	19.2	14.4	19.0	10.3	8.1
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	114.6	0.4		214.5	1.1		13.5	0.8	0.2	15.7	0.4	0.2
Delay (s)	157.4	35.8		257.3	38.1		33.2	20.0	14.7	34.7	10.7	8.3
Level of Service	F	D		F	D		C	C	B	C	B	A
Approach Delay (s)		60.2			98.4			20.4			13.3	
Approach LOS		E			F			C			B	

Intersection Summary

HCM 2000 Control Delay	36.9	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	1.00		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	80.9%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

Appendix F2

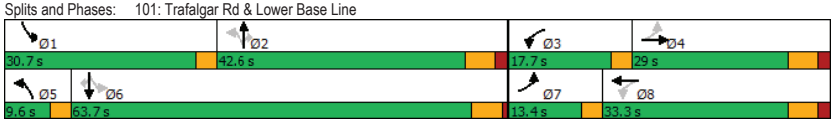
2041 Background Operations Synchro Reports

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	152	587	222	281	119	220	49	1697	193	502	1753	24
Future Volume (vph)	152	587	222	281	119	220	49	1697	193	502	1753	24
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	45.0		0.0	110.0		0.0	90.0		90.0	90.0		90.0
Storage Lanes	1		0	1		0	1		1	1		1
Taper Length (m)	100.0			100.0			100.0			100.0		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	0.95	1.00	0.91	1.00	1.00	0.91	1.00
Frt		0.959			0.903				0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1770	3394	0	1770	3196	0	1770	5085	1583	1770	5085	1583
Flt Permitted	0.475			0.155			0.112			0.099		
Satd. Flow (perm)	885	3394	0	289	3196	0	209	5085	1583	184	5085	1583
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		41			239				178			111
Link Speed (k/h)		70			60			80			80	
Link Distance (m)		749.3			690.6			498.3			434.3	
Travel Time (s)		38.5			41.4			22.4			19.5	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	165	638	241	305	129	239	53	1845	210	546	1905	26
Shared Lane Traffic (%)												
Lane Group Flow (vph)	165	879	0	305	368	0	53	1845	210	546	1905	26
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.6			3.6			3.6			3.6	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2		1	2		1	2	1	1	2	1
Detector Template	Left	Thru		Left	Thru		Left	Thru	Right	Left	Thru	Right
Leading Detector (m)	2.0	10.0		2.0	10.0		2.0	10.0	2.0	2.0	10.0	2.0
Trailing Detector (m)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Position(m)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Size(m)	2.0	0.6		2.0	0.6		2.0	0.6	2.0	2.0	0.6	2.0
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	pm+pt	NA		pm+pt	NA		pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4			8			2		2	6		6

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector Phase	7	4		3	8		5	2	2	1	6	6
Switch Phase												
Minimum Initial (s)	5.0	10.0		7.0	10.0		5.0	25.0	25.0	7.0	25.0	25.0
Minimum Split (s)	9.5	22.5		11.5	22.5		9.5	31.6	31.6	11.5	30.6	30.6
Total Split (s)	13.4	29.0		17.7	33.3		9.6	42.6	42.6	30.7	63.7	63.7
Total Split (%)	11.2%	24.2%		14.8%	27.8%		8.0%	35.5%	35.5%	25.6%	53.1%	53.1%
Maximum Green (s)	10.4	22.8		14.7	27.1		6.6	36.0	36.0	27.7	58.1	58.1
Yellow Time (s)	3.0	4.2		3.0	4.2		3.0	4.6	4.6	3.0	4.6	4.6
All-Red Time (s)	0.0	2.0		0.0	2.0		0.0	2.0	2.0	0.0	1.0	1.0
Lost Time Adjust (s)	1.0	-2.2		1.0	-2.2		1.0	-2.2	-2.2	1.0	-2.2	-2.2
Total Lost Time (s)	4.0	4.0		4.0	4.0		4.0	4.4	4.4	4.0	3.4	3.4
Lead/Lag	Lead	Lag		Lead	Lag		Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes		Yes	Yes		Yes	Yes	Yes	Yes	Yes	Yes
Vehicle Extension (s)	3.0	5.0		0.2	5.0		3.0	5.0	5.0	0.2	5.0	5.0
Recall Mode	None	None		None	None		None	Max	Max	Max	Max	Max
Act Effct Green (s)	34.1	25.0		42.7	29.6		43.9	38.2	38.2	69.3	62.3	62.3
Actuated g/C Ratio	0.28	0.21		0.36	0.25		0.37	0.32	0.32	0.58	0.52	0.52
v/c Ratio	0.52	1.19		1.13	0.38		0.37	1.14	0.34	1.19	0.72	0.03
Control Delay	35.1	138.2		123.6	14.1		22.4	109.1	8.3	137.7	24.7	0.1
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	35.1	138.2		123.6	14.1		22.4	109.1	8.3	137.7	24.7	0.1
LOS	D	F		F	B		C	F	A	F	C	A
Approach Delay		121.9			63.7			96.9			49.3	
Approach LOS		F			E			F			D	

Intersection Summary	
Area Type: Other	
Cycle Length: 120	
Actuated Cycle Length: 120	
Natural Cycle: 90	
Control Type: Semi Act-Uncoord	
Maximum v/c Ratio: 1.19	
Intersection Signal Delay: 78.8	Intersection LOS: E
Intersection Capacity Utilization 113.2%	ICU Level of Service H
Analysis Period (min) 15	

Splits and Phases: 101: Trafalgar Rd & Lower Base Line



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	165	879	305	368	53	1845	210	546	1905	26
v/c Ratio	0.52	1.19	1.13	0.38	0.37	1.14	0.34	1.19	0.72	0.03
Control Delay	35.1	138.2	123.6	14.1	22.4	109.1	8.3	137.7	24.7	0.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	35.1	138.2	123.6	14.1	22.4	109.1	8.3	137.7	24.7	0.1
Queue Length 50th (m)	27.0	~125.9	~64.6	12.4	5.1	~183.4	5.2	~137.4	124.9	0.0
Queue Length 95th (m)	43.8	#165.2	#119.1	25.3	10.6	#212.4	22.5	#203.8	143.0	0.0
Internal Link Dist (m)		725.3		666.6		474.3			410.3	
Turn Bay Length (m)	45.0		110.0		90.0		90.0	90.0		90.0
Base Capacity (vph)	323	739	271	968	149	1618	625	459	2638	874
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.51	1.19	1.13	0.38	0.36	1.14	0.34	1.19	0.72	0.03

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

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

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	152	587	222	281	119	220	49	1697	193	502	1753	24
Future Volume (vph)	152	587	222	281	119	220	49	1697	193	502	1753	24
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0	4.4	4.4	4.0	3.4	3.4
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	0.91	1.00	1.00	0.91	1.00
Frt	1.00	0.96		1.00	0.90		1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1770	3394		1770	3194		1770	5085	1583	1770	5085	1583
Flt Permitted	0.47	1.00		0.16	1.00		0.11	1.00	1.00	0.10	1.00	1.00
Satd. Flow (perm)	884	3394		289	3194		209	5085	1583	184	5085	1583
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	165	638	241	305	129	239	53	1845	210	546	1905	26
RTOR Reduction (vph)	0	33	0	0	180	0	0	0	121	0	0	13
Lane Group Flow (vph)	165	846	0	305	188	0	53	1845	89	546	1905	13
Turn Type	pm+pt	NA		pm+pt	NA		pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4			8			2		2	6		6
Actuated Green, G (s)	32.9	22.8		40.5	27.4		41.8	36.6	36.6	68.3	60.1	60.1
Effective Green, g (s)	30.9	25.0		39.5	29.6		39.8	38.8	38.8	67.3	62.3	62.3
Actuated g/C Ratio	0.26	0.21		0.33	0.25		0.33	0.32	0.32	0.56	0.52	0.52
Clearance Time (s)	3.0	6.2		3.0	6.2		3.0	6.6	6.6	3.0	5.6	5.6
Vehicle Extension (s)	3.0	5.0		0.2	5.0		3.0	5.0	5.0	0.2	5.0	5.0
Lane Grp Cap (vph)	293	703		262	783		123	1635	509	453	2626	817
v/s Ratio Prot	0.04	c0.25		c0.13	0.06		0.01	0.36		c0.27	0.37	
v/s Ratio Perm	0.10			0.25			0.13		0.06	c0.41		0.01
v/c Ratio	0.56	1.20		1.16	0.24		0.43	1.13	0.18	1.21	0.73	0.02
Uniform Delay, d1	36.8	47.8		34.8	36.5		28.5	40.9	29.4	37.6	22.5	14.2
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	2.5	105.1		107.4	0.3		2.4	66.2	0.8	111.7	1.8	0.0
Delay (s)	39.3	152.9		142.2	36.8		30.9	107.1	30.2	149.3	24.3	14.2
Level of Service	D	F		F	D		C	F	C	F	C	B
Approach Delay (s)		134.9			84.6			97.6			51.8	
Approach LOS		F			F			F			D	

Intersection Summary

HCM 2000 Control Delay	84.4	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	1.21		
Actuated Cycle Length (s)	120.6	Sum of lost time (s)	16.4
Intersection Capacity Utilization	113.2%	ICU Level of Service	H
Analysis Period (min)	15		

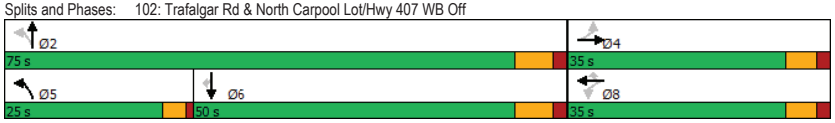
c Critical Lane Group

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	3	0	11	221	1	24	6	1912	0	0	2551	4
Future Volume (vph)	3	0	11	221	1	24	6	1912	0	0	2551	4
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	0.0		0.0	0.0		60.0	65.0		0.0	0.0		15.0
Storage Lanes	0		0	1		1	1		0	0		1
Taper Length (m)	7.5			7.5			100.0			7.5		
Lane Util. Factor	1.00	1.00	1.00	0.95	0.91	0.95	1.00	0.91	1.00	1.00	0.91	1.00
Frt		0.892			0.996	0.850						0.850
Flt Protected		0.990		0.950	0.954		0.950					
Satd. Flow (prot)	0	1645	0	1681	1611	1504	1770	5085	0	0	5085	1583
Flt Permitted		0.941		0.748	0.722		0.057					
Satd. Flow (perm)	0	1564	0	1324	1219	1504	106	5085	0	0	5085	1583
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		79			1	79						69
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		134.0			574.1			363.6			118.9	
Travel Time (s)		9.6			41.3			26.2			8.6	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	3	0	12	240	1	26	7	2078	0	0	2773	4
Shared Lane Traffic (%)				49%		10%						
Lane Group Flow (vph)	0	15	0	122	122	23	7	2078	0	0	2773	4
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.8			3.6			3.6			3.6	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2		1	2	1	1	2			2	1
Detector Template	Left	Thru		Left	Thru	Right	Left	Thru			Thru	Right
Leading Detector (m)	2.0	10.0		2.0	10.0	2.0	2.0	10.0			10.0	2.0
Trailing Detector (m)	0.0	0.0		0.0	0.0	0.0	0.0	0.0			0.0	0.0
Detector 1 Position(m)	0.0	0.0		0.0	0.0	0.0	0.0	0.0			0.0	0.0
Detector 1 Size(m)	2.0	0.6		2.0	0.6	2.0	2.0	0.6			0.6	2.0
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex			Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0			0.0	0.0
Detector 1 Queue (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0			0.0	0.0
Detector 1 Delay (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0			0.0	0.0
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Perm	NA		Perm	NA	Perm	pm+pt	NA			NA	Perm
Protected Phases		4			8		5	2			6	
Permitted Phases	4			8		8	2					6

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector Phase	4	4		8	8	8	5	2			6	6
Switch Phase												
Minimum Initial (s)	7.0	7.0		7.0	7.0	7.0	4.0	20.0			20.0	20.0
Minimum Split (s)	22.5	22.5		22.5	22.5	22.5	9.5	27.0			27.0	27.0
Total Split (s)	35.0	35.0		35.0	35.0	35.0	25.0	75.0			50.0	50.0
Total Split (%)	31.8%	31.8%		31.8%	31.8%	31.8%	22.7%	68.2%			45.5%	45.5%
Maximum Green (s)	29.0	29.0		29.0	29.0	29.0	21.0	68.0			43.0	43.0
Yellow Time (s)	4.0	4.0		4.0	4.0	4.0	3.0	5.0			5.0	5.0
All-Red Time (s)	2.0	2.0		2.0	2.0	2.0	1.0	2.0			2.0	2.0
Lost Time Adjust (s)		0.0		0.0	0.0	0.0	0.0	0.0			0.0	0.0
Total Lost Time (s)		6.0		6.0	6.0	6.0	4.0	7.0			7.0	7.0
Lead/Lag							Lead				Lag	Lag
Lead-Lag Optimize?							Yes				Yes	Yes
Vehicle Extension (s)	3.5	3.5		3.5	3.5	3.5	2.5	7.0			7.0	7.0
Recall Mode	None	None		None	None	None	None	Max			Max	Max
Act Effct Green (s)		15.2		15.2	15.2	15.2	71.2	68.1			66.4	66.4
Actuated g/C Ratio		0.16		0.16	0.16	0.16	0.74	0.71			0.69	0.69
v/c Ratio		0.05		0.58	0.63	0.08	0.04	0.58			0.79	0.00
Control Delay		0.3		49.0	52.3	0.5	5.0	8.4			14.3	0.0
Queue Delay		0.0		0.0	0.0	0.0	0.0	0.0			0.0	0.0
Total Delay		0.3		49.0	52.3	0.5	5.0	8.4			14.3	0.0
LOS		A		D	D	A	A	A			B	A
Approach Delay		0.3			46.3			8.3			14.3	
Approach LOS		A			D			A			B	

Intersection Summary	
Area Type:	Other
Cycle Length: 110	
Actuated Cycle Length: 96.4	
Natural Cycle: 90	
Control Type: Actuated-Uncoordinated	
Maximum v/c Ratio: 0.79	
Intersection Signal Delay: 13.5	Intersection LOS: B
Intersection Capacity Utilization 73.2%	ICU Level of Service D
Analysis Period (min) 15	

Splits and Phases: 102: Trafalgar Rd & North Carpool Lot/Hwy 407 WB Off



Lane Group	EBT	WBL	WBT	WBR	NBL	NBT	SBT	SBR
Lane Group Flow (vph)	15	122	122	23	7	2078	2773	4
v/c Ratio	0.05	0.58	0.63	0.08	0.04	0.58	0.79	0.00
Control Delay	0.3	49.0	52.3	0.5	5.0	8.4	14.3	0.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	0.3	49.0	52.3	0.5	5.0	8.4	14.3	0.0
Queue Length 50th (m)	0.0	22.1	23.0	0.0	0.4	59.5	103.5	0.0
Queue Length 95th (m)	0.0	40.1	42.3	0.0	1.7	92.5	#230.8	0.0
Internal Link Dist (m)	110.0		550.1			339.6	94.9	
Turn Bay Length (m)				60.0	65.0			15.0
Base Capacity (vph)	526	399	368	508	441	3594	3502	1111
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.03	0.31	0.33	0.05	0.02	0.58	0.79	0.00

Intersection Summary

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

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	3	0	11	221	1	24	6	1912	0	0	2551	4
Future Volume (vph)	3	0	11	221	1	24	6	1912	0	0	2551	4
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		6.0		6.0	6.0	6.0	4.0	7.0			7.0	7.0
Lane Util. Factor		1.00		0.95	0.91	0.95	1.00	0.91			0.91	1.00
Frt		0.89		1.00	1.00	0.85	1.00	1.00			1.00	0.85
Flt Protected		0.99		0.95	0.95	1.00	0.95	1.00			1.00	1.00
Satd. Flow (prot)		1645		1681	1611	1504	1770	5085			5085	1583
Flt Permitted		0.94		0.75	0.72	1.00	0.06	1.00			1.00	1.00
Satd. Flow (perm)		1564		1323	1220	1504	106	5085			5085	1583
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	3	0	12	240	1	26	7	2078	0	0	2773	4
RTOR Reduction (vph)	0	13	0	0	1	19	0	0	0	0	0	1
Lane Group Flow (vph)	0	2	0	122	121	4	7	2078	0	0	2773	3
Turn Type	Perm	NA		Perm	NA	Perm	pm+pt	NA			NA	Perm
Protected Phases		4			8		5	2			6	
Permitted Phases	4			8		8	2					6
Actuated Green, G (s)		15.2		15.2	15.2	15.2	71.4	71.4			66.4	66.4
Effective Green, g (s)		15.2		15.2	15.2	15.2	71.4	71.4			66.4	66.4
Actuated g/C Ratio		0.15		0.15	0.15	0.15	0.72	0.72			0.67	0.67
Clearance Time (s)		6.0		6.0	6.0	6.0	4.0	7.0			7.0	7.0
Vehicle Extension (s)		3.5		3.5	3.5	3.5	2.5	7.0			7.0	7.0
Lane Grp Cap (vph)		238		201	186	229	92	3645			3390	1055
v/s Ratio Prot							0.00	c0.41			c0.55	
v/s Ratio Perm		0.00		0.09	c0.10	0.00	0.05					0.00
v/c Ratio		0.01		0.61	0.65	0.02	0.08	0.57			0.82	0.00
Uniform Delay, d1		35.8		39.4	39.7	35.8	12.3	6.8			12.2	5.5
Progression Factor		1.00		1.00	1.00	1.00	1.00	1.00			1.00	1.00
Incremental Delay, d2		0.0		5.4	8.2	0.0	0.3	0.7			2.3	0.0
Delay (s)		35.8		44.8	48.0	35.9	12.5	7.4			14.5	5.5
Level of Service		D		D	D	D	B	A			B	A
Approach Delay (s)		35.8			45.5			7.4			14.5	
Approach LOS		D			D			A			B	

Intersection Summary

HCM 2000 Control Delay	13.3	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.79		
Actuated Cycle Length (s)	99.6	Sum of lost time (s)	17.0
Intersection Capacity Utilization	73.2%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	128	136	0	1795	2483	0
Future Volume (vph)	128	136	0	1795	2483	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	0.91	0.91	1.00
Frt		0.850				
Flt Protected	0.950					
Satd. Flow (prot)	1770	1583	0	5085	5085	0
Flt Permitted	0.950					
Satd. Flow (perm)	1770	1583	0	5085	5085	0
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)		1				
Link Speed (k/h)	50			50	50	
Link Distance (m)	554.6			120.3	363.6	
Travel Time (s)	39.9			8.7	26.2	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	139	148	0	1951	2699	0
Shared Lane Traffic (%)						
Lane Group Flow (vph)	139	148	0	1951	2699	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	3.6			3.6	3.6	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	4.8			4.8	4.8	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)	25	15	25			15
Turn Type	Prot	Perm		NA	NA	
Protected Phases	4			2	6	
Permitted Phases		4				
Minimum Split (s)	24.0	24.0		24.9	24.9	
Total Split (s)	24.0	24.0		36.0	36.0	
Total Split (%)	40.0%	40.0%		60.0%	60.0%	
Maximum Green (s)	18.0	18.0		29.1	29.1	
Yellow Time (s)	4.0	4.0		4.6	4.6	
All-Red Time (s)	2.0	2.0		2.3	2.3	
Lost Time Adjust (s)	-2.0	-2.0		-2.9	-2.9	
Total Lost Time (s)	4.0	4.0		4.0	4.0	
Lead/Lag						
Lead-Lag Optimize?						
Walk Time (s)	7.0	7.0		7.0	7.0	
Flash Dont Walk (s)	11.0	11.0		11.0	11.0	
Pedestrian Calls (#/hr)	0	0		0	0	
Act Effct Green (s)	20.0	20.0		32.0	32.0	
Actuated g/C Ratio	0.33	0.33		0.53	0.53	
v/c Ratio	0.24	0.28		0.72	1.00	
Control Delay	15.8	16.4		12.5	31.9	
Queue Delay	0.0	0.0		0.0	0.0	
Total Delay	15.8	16.4		12.5	31.9	

Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
LOS	B	B		B	C	
Approach Delay	16.1			12.5	31.9	
Approach LOS	B			B	C	

Intersection Summary

Area Type: Other
Cycle Length: 60
Actuated Cycle Length: 60
Offset: 0 (0%), Referenced to phase 2:NBT and 6:SBT, Start of Green
Natural Cycle: 65
Control Type: Pretimed
Maximum v/c Ratio: 1.00
Intersection Signal Delay: 23.3 — Intersection LOS: C
Intersection Capacity Utilization 63.1% — ICU Level of Service B
Analysis Period (min) 15

Splits and Phases: 103: Trafalgar Rd & Hwy 407 EB Off

Lane Group	EBL	EBR	NBT	SBT
Lane Group Flow (vph)	139	148	1951	2699
v/c Ratio	0.24	0.28	0.72	1.00
Control Delay	15.8	16.4	12.5	31.9
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	15.8	16.4	12.5	31.9
Queue Length 50th (m)	10.7	11.5	53.2	96.7
Queue Length 95th (m)	21.6	23.3	68.4	#142.7
Internal Link Dist (m)	530.6		96.3	339.6
Turn Bay Length (m)				
Base Capacity (vph)	590	528	2712	2712
Starvation Cap Reductn	0	0	0	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.24	0.28	0.72	1.00

Intersection Summary

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

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	128	136	0	1795	2483	0
Future Volume (vph)	128	136	0	1795	2483	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0	
Lane Util. Factor	1.00	1.00		0.91	0.91	
Frt	1.00	0.85		1.00	1.00	
Flt Protected	0.95	1.00		1.00	1.00	
Satd. Flow (prot)	1770	1583		5085	5085	
Flt Permitted	0.95	1.00		1.00	1.00	
Satd. Flow (perm)	1770	1583		5085	5085	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	139	148	0	1951	2699	0
RTOR Reduction (vph)	0	1	0	0	0	0
Lane Group Flow (vph)	139	147	0	1951	2699	0
Turn Type	Prot	Perm		NA	NA	
Protected Phases	4			2	6	
Permitted Phases		4				
Actuated Green, G (s)	18.0	18.0		29.1	29.1	
Effective Green, g (s)	20.0	20.0		32.0	32.0	
Actuated g/C Ratio	0.33	0.33		0.53	0.53	
Clearance Time (s)	6.0	6.0		6.9	6.9	
Lane Grp Cap (vph)	590	527		2712	2712	
v/s Ratio Prot	0.08			0.38	c0.53	
v/s Ratio Perm		c0.09				
v/c Ratio	0.24	0.28		0.72	1.00	
Uniform Delay, d1	14.5	14.7		10.6	13.9	
Progression Factor	1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.9	1.3		1.7	16.2	
Delay (s)	15.4	16.0		12.3	30.1	
Level of Service	B	B		B	C	
Approach Delay (s)	15.7			12.3	30.1	
Approach LOS	B			B	C	

Intersection Summary

HCM 2000 Control Delay	22.2	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.72		
Actuated Cycle Length (s)	60.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	63.1%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

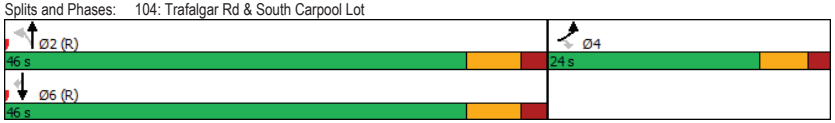
Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	31	16	16	1783	2605	13
Future Volume (vph)	31	16	16	1783	2605	13
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (m)	0.0	0.0	50.0			30.0
Storage Lanes	1	1	1			1
Taper Length (m)	7.5		100.0			
Lane Util. Factor	1.00	1.00	1.00	0.91	0.91	1.00
Frt		0.850				0.850
Flt Protected	0.950		0.950			
Satd. Flow (prot)	1770	1583	1770	5085	5085	1583
Flt Permitted	0.950		0.095			
Satd. Flow (perm)	1770	1583	177	5085	5085	1583
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)		1				9
Link Speed (k/h)	50			80	80	
Link Distance (m)	107.1			233.3	131.6	
Travel Time (s)	7.7			10.5	5.9	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	34	17	17	1938	2832	14
Shared Lane Traffic (%)						
Lane Group Flow (vph)	34	17	17	1938	2832	14
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	3.6			3.6	3.6	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	4.8			4.8	4.8	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)	25	15	25			15
Turn Type	Prot	Perm	Perm	NA	NA	Perm
Protected Phases	4			2	6	
Permitted Phases		4	2			6
Minimum Split (s)	24.0	24.0	24.9	24.9	24.9	24.9
Total Split (s)	24.0	24.0	46.0	46.0	46.0	46.0
Total Split (%)	34.3%	34.3%	65.7%	65.7%	65.7%	65.7%
Maximum Green (s)	18.0	18.0	39.1	39.1	39.1	39.1
Yellow Time (s)	4.0	4.0	4.6	4.6	4.6	4.6
All-Red Time (s)	2.0	2.0	2.3	2.3	2.3	2.3
Lost Time Adjust (s)	-2.0	-2.0	-2.9	-2.9	-2.9	-2.9
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0
Lead/Lag						
Lead-Lag Optimize?						
Walk Time (s)	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
Pedestrian Calls (#/hr)	0	0	0	0	0	0
Act Effct Green (s)	20.0	20.0	42.0	42.0	42.0	42.0
Actuated g/C Ratio	0.29	0.29	0.60	0.60	0.60	0.60
v/c Ratio	0.07	0.04	0.16	0.64	0.93	0.01

Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Control Delay	18.8	17.8	10.6	10.2	19.9	4.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	18.8	17.8	10.6	10.2	19.9	4.0
LOS	B	B	B	B	B	A
Approach Delay	18.5			10.2	19.8	
Approach LOS	B			B	B	

Intersection Summary

Area Type: Other
Cycle Length: 70
Actuated Cycle Length: 70
Offset: 0 (0%), Referenced to phase 2:NBTL and 6:SBT, Start of Green
Natural Cycle: 70
Control Type: Pretimed
Maximum v/c Ratio: 0.93
Intersection Signal Delay: 15.9 — Intersection LOS: B
Intersection Capacity Utilization 61.2% — ICU Level of Service B
Analysis Period (min) 15

Splits and Phases: 104: Trafalgar Rd & South Carpool Lot



Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Group Flow (vph)	34	17	17	1938	2832	14
v/c Ratio	0.07	0.04	0.16	0.64	0.93	0.01
Control Delay	18.8	17.8	10.6	10.2	19.9	4.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	18.8	17.8	10.6	10.2	19.9	4.0
Queue Length 50th (m)	3.2	1.5	0.9	52.5	107.2	0.3
Queue Length 95th (m)	9.0	5.5	4.1	65.7	#142.4	2.0
Internal Link Dist (m)	83.1			209.3	107.6	
Turn Bay Length (m)			50.0			30.0
Base Capacity (vph)	505	453	106	3051	3051	953
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	0.07	0.04	0.16	0.64	0.93	0.01

Intersection Summary

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

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	31	16	16	1783	2605	13
Future Volume (vph)	31	16	16	1783	2605	13
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
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	0.91	0.91	1.00
Frt	1.00	0.85	1.00	1.00	1.00	0.85
Flt Protected	0.95	1.00	0.95	1.00	1.00	1.00
Satd. Flow (prot)	1770	1583	1770	5085	5085	1583
Flt Permitted	0.95	1.00	0.10	1.00	1.00	1.00
Satd. Flow (perm)	1770	1583	177	5085	5085	1583
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	34	17	17	1938	2832	14
RTOR Reduction (vph)	0	1	0	0	0	4
Lane Group Flow (vph)	34	16	17	1938	2832	10
Turn Type	Prot	Perm	Perm	NA	NA	Perm
Protected Phases	4			2	6	
Permitted Phases		4	2			6
Actuated Green, G (s)	18.0	18.0	39.1	39.1	39.1	39.1
Effective Green, g (s)	20.0	20.0	42.0	42.0	42.0	42.0
Actuated g/C Ratio	0.29	0.29	0.60	0.60	0.60	0.60
Clearance Time (s)	6.0	6.0	6.9	6.9	6.9	6.9
Lane Grp Cap (vph)	505	452	106	3051	3051	949
v/s Ratio Prot	c0.02			0.38	c0.56	
v/s Ratio Perm		0.01	0.10			0.01
v/c Ratio	0.07	0.04	0.16	0.64	0.93	0.01
Uniform Delay, d1	18.2	18.0	6.2	9.0	12.6	5.6
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	0.3	0.1	3.2	1.0	6.4	0.0
Delay (s)	18.5	18.2	9.4	10.1	19.0	5.7
Level of Service	B	B	A	B	B	A
Approach Delay (s)	18.4			10.1	18.9	
Approach LOS	B			B	B	

Intersection Summary

HCM 2000 Control Delay	15.4	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.65		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	61.2%	ICU Level of Service	B
Analysis Period (min)	15		

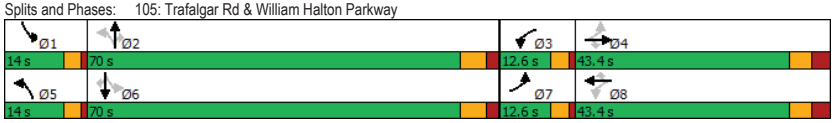
c Critical Lane Group

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	90	294	47	162	536	388	188	1322	43	549	1800	272
Future Volume (vph)	90	294	47	162	536	388	188	1322	43	549	1800	272
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	100.0		100.0	100.0		150.0	150.0		75.0	0.0		0.0
Storage Lanes	1		1	1		1	1		1	1		1
Taper Length (m)	100.0			100.0			100.0			7.5		
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.91	1.00	1.00	0.91	1.00
Frt			0.850			0.850			0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1770	3539	1583	1770	3539	1583	1770	5085	1583	1770	5085	1583
Flt Permitted	0.209			0.441			0.063			0.106		
Satd. Flow (perm)	389	3539	1583	821	3539	1583	117	5085	1583	197	5085	1583
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			93			188			94			221
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		641.4			859.3			285.3			233.3	
Travel Time (s)		46.2			61.9			20.5			16.8	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	98	320	51	176	583	422	204	1437	47	597	1957	296
Shared Lane Traffic (%)												
Lane Group Flow (vph)	98	320	51	176	583	422	204	1437	47	597	1957	296
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.6			3.6			7.2			7.2	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2	1	1	2	1	1	2	1	1	2	1
Detector Template	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Leading Detector (m)	2.0	10.0	2.0	2.0	10.0	2.0	2.0	10.0	2.0	2.0	10.0	2.0
Trailing Detector (m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Position(m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Size(m)	2.0	0.6	2.0	2.0	0.6	2.0	2.0	0.6	2.0	2.0	0.6	2.0
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4		4	8		8	2		2	6		6

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector Phase	7	4	4	3	8	8	5	2	2	1	6	6
Switch Phase												
Minimum Initial (s)	7.0	20.0	20.0	7.0	20.0	20.0	7.0	20.0	20.0	7.0	20.0	20.0
Minimum Split (s)	11.5	38.0	38.0	11.5	38.0	38.0	11.5	42.9	42.9	11.5	42.9	42.9
Total Split (s)	12.6	43.4	43.4	12.6	43.4	43.4	14.0	70.0	70.0	14.0	70.0	70.0
Total Split (%)	9.0%	31.0%	31.0%	9.0%	31.0%	31.0%	10.0%	50.0%	50.0%	10.0%	50.0%	50.0%
Maximum Green (s)	8.6	36.4	36.4	8.6	36.4	36.4	10.0	63.1	63.1	10.0	63.1	63.1
Yellow Time (s)	3.0	3.7	3.7	3.0	3.7	3.7	3.0	4.6	4.6	3.0	4.6	4.6
All-Red Time (s)	1.0	3.3	3.3	1.0	3.3	3.3	1.0	2.3	2.3	1.0	2.3	2.3
Lost Time Adjust (s)	0.0	-3.0	-3.0	0.0	-3.0	-3.0	0.0	-2.9	-2.9	0.0	-2.9	-2.9
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Vehicle Extension (s)	3.0	5.0	5.0	3.0	5.0	5.0	3.0	5.0	5.0	3.0	5.0	5.0
Recall Mode	None	None	None	None	None	None	None	Max	Max	None	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)		24.0	24.0		24.0	24.0		29.0	29.0		29.0	29.0
Pedestrian Calls (#/hr)		0	0		0	0		0	0		0	0
Act Effct Green (s)	42.9	34.6	34.6	43.5	34.9	34.9	76.1	66.1	66.1	76.1	66.1	66.1
Actuated g/C Ratio	0.32	0.26	0.26	0.32	0.26	0.26	0.56	0.49	0.49	0.56	0.49	0.49
v/c Ratio	0.47	0.35	0.11	0.54	0.64	0.77	1.09	0.58	0.06	2.63	0.79	0.33
Control Delay	37.8	42.1	1.0	39.7	48.1	35.4	124.2	26.4	0.1	764.5	32.3	7.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.5	0.0
Total Delay	37.8	42.1	1.0	39.7	48.1	35.4	124.2	26.4	0.1	764.5	32.8	7.0
LOS	D	D	A	D	D	D	F	C	A	F	C	A
Approach Delay		36.7			42.3			37.5			183.4	
Approach LOS		D			D			D			F	

Intersection Summary			
Area Type:	Other		
Cycle Length: 140			
Actuated Cycle Length: 135.3			
Natural Cycle: 135			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 2.63			
Intersection Signal Delay: 105.6		Intersection LOS: F	
Intersection Capacity Utilization 94.9%		ICU Level of Service F	
Analysis Period (min) 15			

Splits and Phases: 105: Trafalgar Rd & William Halton Parkway



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	98	320	51	176	583	422	204	1437	47	597	1957	296
v/c Ratio	0.47	0.35	0.11	0.54	0.64	0.77	1.09	0.58	0.06	2.63	0.79	0.33
Control Delay	37.8	42.1	1.0	39.7	48.1	35.4	124.2	26.4	0.1	764.5	32.3	7.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.5	0.0
Total Delay	37.8	42.1	1.0	39.7	48.1	35.4	124.2	26.4	0.1	764.5	32.8	7.0
Queue Length 50th (m)	17.7	36.5	0.0	33.4	72.4	59.7	~46.0	99.8	0.0	~245.6	158.6	10.7
Queue Length 95th (m)	30.7	49.7	1.4	51.6	91.4	99.4	#98.3	118.6	0.0	#323.6	184.5	29.4
Internal Link Dist (m)		617.4			835.3			261.3			209.3	
Turn Bay Length (m)	100.0		100.0	100.0		150.0	150.0		75.0			
Base Capacity (vph)	212	1031	527	324	1031	594	188	2484	821	227	2484	886
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	190	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	0.46	0.31	0.10	0.54	0.57	0.71	1.09	0.58	0.06	2.63	0.85	0.33

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

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

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	90	294	47	162	536	388	188	1322	43	549	1800	272
Future Volume (vph)	90	294	47	162	536	388	188	1322	43	549	1800	272
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.91	1.00	1.00	0.91	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)	1770	3539	1583	1770	3539	1583	1770	5085	1583	1770	5085	1583
Flt Permitted	0.21	1.00	1.00	0.44	1.00	1.00	0.06	1.00	1.00	0.11	1.00	1.00
Satd. Flow (perm)	389	3539	1583	821	3539	1583	118	5085	1583	197	5085	1583
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	98	320	51	176	583	422	204	1437	47	597	1957	296
RTOR Reduction (vph)	0	0	38	0	0	140	0	0	24	0	0	113
Lane Group Flow (vph)	98	320	13	176	583	282	204	1437	23	597	1957	183
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4		4	8		8	2		2	6		6
Actuated Green, G (s)	39.9	31.6	31.6	40.5	31.9	31.9	73.2	63.2	63.2	73.2	63.2	63.2
Effective Green, g (s)	39.9	34.6	34.6	40.5	34.9	34.9	73.2	66.1	66.1	73.2	66.1	66.1
Actuated g/C Ratio	0.29	0.26	0.26	0.30	0.26	0.26	0.54	0.49	0.49	0.54	0.49	0.49
Clearance Time (s)	4.0	7.0	7.0	4.0	7.0	7.0	4.0	6.9	6.9	4.0	6.9	6.9
Vehicle Extension (s)	3.0	5.0	5.0	3.0	5.0	5.0	3.0	5.0	5.0	3.0	5.0	5.0
Lane Grp Cap (vph)	199	905	404	306	912	408	185	2484	773	222	2484	773
v/s Ratio Prot	0.03	0.09		c0.04	0.16		0.08	0.28		c0.20	0.38	
v/s Ratio Perm	0.11		0.01	0.14		c0.18	0.51		0.01	c1.25		0.12
v/c Ratio	0.49	0.35	0.03	0.58	0.64	0.69	1.10	0.58	0.03	2.69	0.79	0.24
Uniform Delay, d1	36.7	41.2	37.8	38.2	44.6	45.4	39.5	24.7	18.0	26.8	28.8	20.0
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	1.9	0.5	0.1	2.6	2.1	6.3	96.3	1.0	0.1	772.8	2.6	0.7
Delay (s)	38.6	41.7	37.9	40.8	46.7	51.7	135.8	25.7	18.0	799.6	31.4	20.7
Level of Service	D	D	D	D	D	D	F	C	B	F	C	C
Approach Delay (s)		40.6			47.6			38.8			191.2	
Approach LOS		D			D			D			F	

Intersection Summary

HCM 2000 Control Delay	110.8	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	1.89		
Actuated Cycle Length (s)	135.3	Sum of lost time (s)	16.0
Intersection Capacity Utilization	94.9%	ICU Level of Service	F
Analysis Period (min)	15		

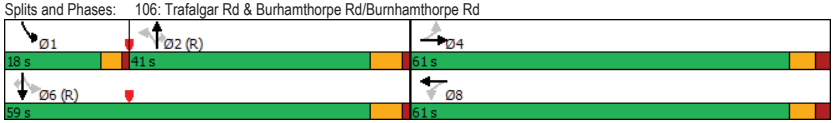
c Critical Lane Group

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	272	665	91	225	216	79	62	1261	190	273	1571	164
Future Volume (vph)	272	665	91	225	216	79	62	1261	190	273	1571	164
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	30.0		0.0	15.0		0.0	60.0		60.0	60.0		60.0
Storage Lanes	1		0	1		0	1		1	1		1
Taper Length (m)	70.0			50.0			100.0			100.0		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	0.95	1.00	0.91	1.00	1.00	0.91	1.00
Frt		0.982			0.960				0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1770	3476	0	1770	3398	0	1770	5085	1583	1770	5085	1583
Flt Permitted	0.533			0.246			0.108			0.103		
Satd. Flow (perm)	993	3476	0	458	3398	0	201	5085	1583	192	5085	1583
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		6			59				134			142
Link Speed (k/h)		60			60			80			80	
Link Distance (m)		828.7			989.6			1077.8			170.3	
Travel Time (s)		49.7			59.4			48.5			7.7	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	296	723	99	245	235	86	67	1371	207	297	1708	178
Shared Lane Traffic (%)												
Lane Group Flow (vph)	296	822	0	245	321	0	67	1371	207	297	1708	178
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.6			3.6			3.6			3.6	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Turn Type	Perm	NA		Perm	NA		Perm	NA	Perm	pm+pt	NA	Perm
Protected Phases		4			8			2		1	6	
Permitted Phases	4			8			2		2	6		6
Minimum Split (s)	24.0	24.0		24.0	24.0		26.0	26.0	26.0	11.5	26.0	26.0
Total Split (s)	61.0	61.0		61.0	61.0		41.0	41.0	41.0	18.0	59.0	59.0
Total Split (%)	50.8%	50.8%		50.8%	50.8%		34.2%	34.2%	34.2%	15.0%	49.2%	49.2%
Maximum Green (s)	55.0	55.0		55.0	55.0		35.0	35.0	35.0	14.0	53.0	53.0
Yellow Time (s)	3.7	3.7		3.7	3.7		4.6	4.6	4.6	3.0	4.6	4.6
All-Red Time (s)	2.3	2.3		2.3	2.3		1.4	1.4	1.4	1.0	1.4	1.4
Lost Time Adjust (s)	-2.0	-2.0		-2.0	-2.0		-2.0	-2.0	-2.0	0.0	-2.0	-2.0
Total Lost Time (s)	4.0	4.0		4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0
Lead/Lag							Lag	Lag	Lag	Lead		
Lead-Lag Optimize?							Yes	Yes	Yes	Yes		
Act Effct Green (s)	57.0	57.0		57.0	57.0		37.0	37.0	37.0	55.0	55.0	55.0
Actuated g/C Ratio	0.48	0.48		0.48	0.48		0.31	0.31	0.31	0.46	0.46	0.46
v/c Ratio	0.63	0.50		1.13	0.20		1.10	0.87	0.36	1.09	0.73	0.22
Control Delay	30.9	22.8		131.8	15.0		186.6	46.7	13.7	112.2	28.9	5.7
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	30.9	22.8		131.8	15.0		186.6	46.7	13.7	112.2	28.9	5.7

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
LOS	C	C		F	B		F	D	B	F	C	A
Approach Delay		24.9			65.6			48.3			38.3	
Approach LOS		C			E			D			D	

Intersection Summary	
Area Type:	Other
Cycle Length: 120	
Actuated Cycle Length: 120	
Offset: 0 (0%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green	
Natural Cycle: 75	
Control Type: Pretimed	
Maximum v/c Ratio: 1.13	
Intersection Signal Delay: 41.4	Intersection LOS: D
Intersection Capacity Utilization 94.1%	ICU Level of Service F
Analysis Period (min) 15	

Splits and Phases: 106: Trafalgar Rd & Burhamthorpe Rd/Burnhamthorpe Rd



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	296	822	245	321	67	1371	207	297	1708	178
v/c Ratio	0.63	0.50	1.13	0.20	1.10	0.87	0.36	1.09	0.73	0.22
Control Delay	30.9	22.8	131.8	15.0	186.6	46.7	13.7	112.2	28.9	5.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	30.9	22.8	131.8	15.0	186.6	46.7	13.7	112.2	28.9	5.7
Queue Length 50th (m)	50.1	66.7	~65.9	17.7	~17.4	110.3	12.3	~61.6	115.8	4.5
Queue Length 95th (m)	81.6	83.8	#115.2	26.4	#46.4	129.1	31.5	#115.7	133.3	16.9
Internal Link Dist (m)		804.7		965.6		1053.8			146.3	
Turn Bay Length (m)	30.0		15.0		60.0		60.0	60.0		60.0
Base Capacity (vph)	471	1654	217	1645	61	1567	580	272	2330	802
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.63	0.50	1.13	0.20	1.10	0.87	0.36	1.09	0.73	0.22

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

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

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	272	665	91	225	216	79	62	1261	190	273	1571	164
Future Volume (vph)	272	665	91	225	216	79	62	1261	190	273	1571	164
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	0.91	1.00	1.00	0.91	1.00
Frt	1.00	0.98		1.00	0.96		1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1770	3475		1770	3397		1770	5085	1583	1770	5085	1583
Flt Permitted	0.53	1.00		0.25	1.00		0.11	1.00	1.00	0.10	1.00	1.00
Satd. Flow (perm)	992	3475		459	3397		201	5085	1583	191	5085	1583
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	296	723	99	245	235	86	67	1371	207	297	1708	178
RTOR Reduction (vph)	0	3	0	0	31	0	0	0	93	0	0	77
Lane Group Flow (vph)	296	819	0	245	290	0	67	1371	114	297	1708	101
Turn Type	Perm	NA		Perm	NA		Perm	NA	Perm	pm+pt	NA	Perm
Protected Phases		4			8			2		1	6	
Permitted Phases	4			8			2		2	6		6
Actuated Green, G (s)	55.0	55.0		55.0	55.0		35.0	35.0	35.0	53.0	53.0	53.0
Effective Green, g (s)	57.0	57.0		57.0	57.0		37.0	37.0	37.0	53.0	55.0	55.0
Actuated g/C Ratio	0.48	0.48		0.48	0.48		0.31	0.31	0.31	0.44	0.46	0.46
Clearance Time (s)	6.0	6.0		6.0	6.0		6.0	6.0	6.0	4.0	6.0	6.0
Lane Grp Cap (vph)	471	1650		218	1613		61	1567	488	268	2330	725
v/s Ratio Prot		0.24			0.09			0.27		c0.13	0.34	
v/s Ratio Perm	0.30			c0.53			0.33		0.07	c0.36		0.06
v/c Ratio	0.63	0.50		1.12	0.18		1.10	0.87	0.23	1.11	0.73	0.14
Uniform Delay, d1	23.6	21.6		31.5	18.1		41.5	39.3	30.9	35.0	26.5	18.8
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	6.2	1.1		98.2	0.2		144.9	7.1	1.1	87.1	2.1	0.4
Delay (s)	29.8	22.7		129.7	18.3		186.4	46.4	32.1	122.2	28.6	19.2
Level of Service	C	C		F	B		F	D	C	F	C	B
Approach Delay (s)		24.6			66.6			50.3			40.6	
Approach LOS		C			E			D			D	

Intersection Summary

HCM 2000 Control Delay	42.9	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	1.12		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	94.1%	ICU Level of Service	F
Analysis Period (min)	15		

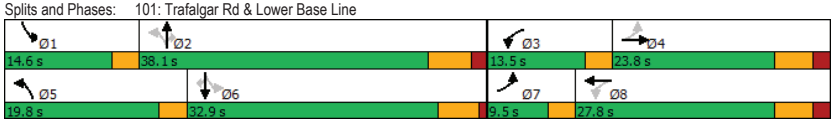
c Critical Lane Group

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	53	241	76	243	678	369	446	2079	237	306	1368	123
Future Volume (vph)	53	241	76	243	678	369	446	2079	237	306	1368	123
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	45.0		0.0	110.0		0.0	90.0		90.0	90.0		90.0
Storage Lanes	1		0	1		0	1		1	1		1
Taper Length (m)	100.0			100.0			100.0			100.0		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	0.95	1.00	0.91	1.00	1.00	0.91	1.00
Frt		0.964			0.947				0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1770	3412	0	1770	3352	0	1770	5085	1583	1770	5085	1583
Flt Permitted	0.253			0.330			0.136			0.152		
Satd. Flow (perm)	471	3412	0	615	3352	0	253	5085	1583	283	5085	1583
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		43			110				258			184
Link Speed (k/h)		70			60			80			80	
Link Distance (m)		749.3			690.6			498.3			434.3	
Travel Time (s)		38.5			41.4			22.4			19.5	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	58	262	83	264	737	401	485	2260	258	333	1487	134
Shared Lane Traffic (%)												
Lane Group Flow (vph)	58	345	0	264	1138	0	485	2260	258	333	1487	134
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.6			3.6			3.6			3.6	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2		1	2		1	2	1	1	2	1
Detector Template	Left	Thru		Left	Thru		Left	Thru	Right	Left	Thru	Right
Leading Detector (m)	2.0	10.0		2.0	10.0		2.0	10.0	2.0	2.0	10.0	2.0
Trailing Detector (m)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Position(m)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Size(m)	2.0	0.6		2.0	0.6		2.0	0.6	2.0	2.0	0.6	2.0
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	pm+pt	NA		pm+pt	NA		pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4			8			2		2	6		6

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector Phase	7	4		3	8		5	2	2	1	6	6
Switch Phase												
Minimum Initial (s)	5.0	10.0		7.0	10.0		5.0	25.0	25.0	7.0	25.0	25.0
Minimum Split (s)	9.5	22.5		11.5	22.5		9.5	31.6	31.6	11.5	30.6	30.6
Total Split (s)	9.5	23.8		13.5	27.8		19.8	38.1	38.1	14.6	32.9	32.9
Total Split (%)	10.6%	26.4%		15.0%	30.9%		22.0%	42.3%	42.3%	16.2%	36.6%	36.6%
Maximum Green (s)	6.5	17.6		10.5	21.6		16.8	31.5	31.5	11.6	27.3	27.3
Yellow Time (s)	3.0	4.2		3.0	4.2		3.0	4.6	4.6	3.0	4.6	4.6
All-Red Time (s)	0.0	2.0		0.0	2.0		0.0	2.0	2.0	0.0	1.0	1.0
Lost Time Adjust (s)	1.0	-2.2		1.0	-2.2		1.0	-2.2	-2.2	1.0	-2.2	-2.2
Total Lost Time (s)	4.0	4.0		4.0	4.0		4.0	4.4	4.4	4.0	3.4	3.4
Lead/Lag	Lead	Lag		Lead	Lag		Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes		Yes	Yes		Yes	Yes	Yes	Yes	Yes	Yes
Vehicle Extension (s)	3.0	5.0		0.2	5.0		3.0	5.0	5.0	0.2	5.0	5.0
Recall Mode	None	None		None	None		None	Max	Max	Max	Max	Max
Act Effct Green (s)	23.6	18.4		31.3	23.8		48.8	33.8	33.8	39.6	29.6	29.6
Actuated g/C Ratio	0.27	0.21		0.36	0.27		0.55	0.38	0.38	0.45	0.34	0.34
v/c Ratio	0.28	0.46		0.79	1.15		1.18	1.16	0.34	1.09	0.87	0.21
Control Delay	22.7	28.8		40.5	109.5		126.2	105.7	3.9	101.6	34.9	2.1
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	22.7	28.8		40.5	109.5		126.2	105.7	3.9	101.6	34.9	2.1
LOS	C	C		D	F		F	F	A	F	C	A
Approach Delay		27.9			96.5			100.3			44.0	
Approach LOS		C			F			F			D	

Intersection Summary	
Area Type: Other	
Cycle Length: 90	
Actuated Cycle Length: 88.1	
Natural Cycle: 110	
Control Type: Semi Act-Uncoord	
Maximum v/c Ratio: 1.18	
Intersection Signal Delay: 78.9	Intersection LOS: E
Intersection Capacity Utilization 105.5%	ICU Level of Service G
Analysis Period (min) 15	

Splits and Phases: 101: Trafalgar Rd & Lower Base Line



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	58	345	264	1138	485	2260	258	333	1487	134
v/c Ratio	0.28	0.46	0.79	1.15	1.18	1.16	0.34	1.09	0.87	0.21
Control Delay	22.7	28.8	40.5	109.5	126.2	105.7	3.9	101.6	34.9	2.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	22.7	28.8	40.5	109.5	126.2	105.7	3.9	101.6	34.9	2.1
Queue Length 50th (m)	6.4	23.3	32.8	~116.2	~85.0	~171.7	0.0	~49.0	87.5	0.0
Queue Length 95th (m)	14.0	35.8	#61.6	#155.2	#142.9	#200.6	14.2	#99.6	#109.3	5.3
Internal Link Dist (m)		725.3		666.6		474.3			410.3	
Turn Bay Length (m)	45.0		110.0		90.0		90.0	90.0		90.0
Base Capacity (vph)	208	801	343	987	412	1949	766	306	1705	653
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.28	0.43	0.77	1.15	1.18	1.16	0.34	1.09	0.87	0.21

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

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

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	53	241	76	243	678	369	446	2079	237	306	1368	123
Future Volume (vph)	53	241	76	243	678	369	446	2079	237	306	1368	123
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0	4.4	4.4	4.0	3.4	3.4
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	0.91	1.00	1.00	0.91	1.00
Frt	1.00	0.96		1.00	0.95		1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1770	3411		1770	3352		1770	5085	1583	1770	5085	1583
Flt Permitted	0.25	1.00		0.33	1.00		0.14	1.00	1.00	0.15	1.00	1.00
Satd. Flow (perm)	472	3411		614	3352		253	5085	1583	282	5085	1583
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	58	262	83	264	737	401	485	2260	258	333	1487	134
RTOR Reduction (vph)	0	34	0	0	80	0	0	0	160	0	0	89
Lane Group Flow (vph)	58	311	0	264	1058	0	485	2260	98	333	1487	45
Turn Type	pm+pt	NA		pm+pt	NA		pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4			8			2		2	6		6
Actuated Green, G (s)	21.9	16.8		29.7	21.6		46.2	31.6	31.6	39.0	27.4	27.4
Effective Green, g (s)	19.9	19.0		28.7	23.8		45.2	33.8	33.8	37.0	29.6	29.6
Actuated g/C Ratio	0.22	0.21		0.32	0.27		0.51	0.38	0.38	0.42	0.33	0.33
Clearance Time (s)	3.0	6.2		3.0	6.2		3.0	6.6	6.6	3.0	5.6	5.6
Vehicle Extension (s)	3.0	5.0		0.2	5.0		3.0	5.0	5.0	0.2	5.0	5.0
Lane Grp Cap (vph)	165	730		314	899		399	1937	603	295	1696	528
v/s Ratio Prot	0.02	0.09		c0.08	c0.32		c0.22	c0.44		0.13	0.29	
v/s Ratio Perm	0.06			0.19			0.40		0.06	0.34		0.03
v/c Ratio	0.35	0.43		0.84	1.18		1.22	1.17	0.16	1.13	0.88	0.08
Uniform Delay, d1	28.4	30.1		25.5	32.5		25.2	27.5	18.1	22.2	27.8	20.3
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	1.3	0.8		17.3	91.0		117.9	81.1	0.6	91.7	6.7	0.3
Delay (s)	29.7	31.0		42.9	123.4		143.1	108.5	18.7	114.0	34.6	20.6
Level of Service	C	C		D	F		F	F	B	F	C	C
Approach Delay (s)		30.8			108.3			106.4			47.1	
Approach LOS		C			F			F			D	

Intersection Summary

HCM 2000 Control Delay	85.1	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	1.23		
Actuated Cycle Length (s)	88.7	Sum of lost time (s)	16.4
Intersection Capacity Utilization	105.5%	ICU Level of Service	G
Analysis Period (min)	15		

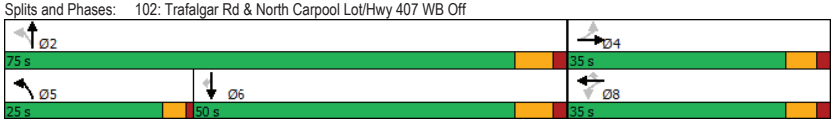
c Critical Lane Group

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	7	0	45	371	16	169	9	2586	0	0	1683	4
Future Volume (vph)	7	0	45	371	16	169	9	2586	0	0	1683	4
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	0.0		0.0	0.0		60.0	65.0		0.0	0.0		15.0
Storage Lanes	0		0	1		1	1		0	0		1
Taper Length (m)	7.5			7.5			100.0			7.5		
Lane Util. Factor	1.00	1.00	1.00	0.95	0.91	0.95	1.00	0.91	1.00	1.00	0.91	1.00
Frt		0.884			0.988	0.850						0.850
Flt Protected		0.993		0.950	0.960		0.950					
Satd. Flow (prot)	0	1635	0	1681	1608	1504	1770	5085	0	0	5085	1583
Flt Permitted		0.950		0.753	0.750		0.078					
Satd. Flow (perm)	0	1564	0	1333	1256	1504	145	5085	0	0	5085	1583
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		79			2	79						69
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		134.0			574.1			363.6			118.9	
Travel Time (s)		9.6			41.3			26.2			8.6	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	8	0	49	403	17	184	10	2811	0	0	1829	4
Shared Lane Traffic (%)				46%		10%						
Lane Group Flow (vph)	0	57	0	218	220	166	10	2811	0	0	1829	4
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.8			3.6			3.6			3.6	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2		1	2	1	1	2			2	1
Detector Template	Left	Thru		Left	Thru	Right	Left	Thru			Thru	Right
Leading Detector (m)	2.0	10.0		2.0	10.0	2.0	2.0	10.0			10.0	2.0
Trailing Detector (m)	0.0	0.0		0.0	0.0	0.0	0.0	0.0			0.0	0.0
Detector 1 Position(m)	0.0	0.0		0.0	0.0	0.0	0.0	0.0			0.0	0.0
Detector 1 Size(m)	2.0	0.6		2.0	0.6	2.0	2.0	0.6			0.6	2.0
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex			Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0			0.0	0.0
Detector 1 Queue (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0			0.0	0.0
Detector 1 Delay (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0			0.0	0.0
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Perm	NA		Perm	NA	Perm	pm+pt	NA			NA	Perm
Protected Phases		4			8		5	2			6	
Permitted Phases	4			8		8	2					6

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector Phase	4	4		8	8	8	5	2			6	6
Switch Phase												
Minimum Initial (s)	7.0	7.0		7.0	7.0	7.0	4.0	20.0			20.0	20.0
Minimum Split (s)	22.5	22.5		22.5	22.5	22.5	9.5	27.0			27.0	27.0
Total Split (s)	35.0	35.0		35.0	35.0	35.0	25.0	75.0			50.0	50.0
Total Split (%)	31.8%	31.8%		31.8%	31.8%	31.8%	22.7%	68.2%			45.5%	45.5%
Maximum Green (s)	29.0	29.0		29.0	29.0	29.0	21.0	68.0			43.0	43.0
Yellow Time (s)	4.0	4.0		4.0	4.0	4.0	3.0	5.0			5.0	5.0
All-Red Time (s)	2.0	2.0		2.0	2.0	2.0	1.0	2.0			2.0	2.0
Lost Time Adjust (s)		-2.0		-2.0	-2.0	-2.0	0.0	-3.0			-3.0	-3.0
Total Lost Time (s)		4.0		4.0	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)	3.5	3.5		3.5	3.5	3.5	2.5	7.0			7.0	7.0
Recall Mode	None	None		None	None	None	None	Max			Max	Max
Act Effct Green (s)		24.9		24.9	24.9	24.9	71.2	71.2			69.4	69.4
Actuated g/C Ratio		0.24		0.24	0.24	0.24	0.68	0.68			0.67	0.67
v/c Ratio		0.13		0.69	0.73	0.40	0.06	0.81			0.54	0.00
Control Delay		4.1		47.4	50.7	19.9	7.4	15.1			11.1	0.0
Queue Delay		0.0		0.0	0.0	0.0	0.0	0.0			0.0	0.0
Total Delay		4.1		47.4	50.7	19.9	7.4	15.1			11.1	0.0
LOS		A		D	D	B	A	B			B	A
Approach Delay		4.1			41.0			15.1			11.1	
Approach LOS		A			D			B			B	

Intersection Summary	
Area Type:	Other
Cycle Length: 110	
Actuated Cycle Length: 104.2	
Natural Cycle: 65	
Control Type: Actuated-Uncoordinated	
Maximum v/c Ratio: 0.81	
Intersection Signal Delay: 16.5	Intersection LOS: B
Intersection Capacity Utilization 75.7%	ICU Level of Service D
Analysis Period (min) 15	

Splits and Phases: 102: Trafalgar Rd & North Carpool Lot/Hwy 407 WB Off



Lane Group	EBT	WBL	WBT	WBR	NBL	NBT	SBT	SBR
Lane Group Flow (vph)	57	218	220	166	10	2811	1829	4
v/c Ratio	0.13	0.69	0.73	0.40	0.06	0.81	0.54	0.00
Control Delay	4.1	47.4	50.7	19.9	7.4	15.1	11.1	0.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	4.1	47.4	50.7	19.9	7.4	15.1	11.1	0.0
Queue Length 50th (m)	0.0	41.6	44.1	14.8	0.6	137.3	62.4	0.0
Queue Length 95th (m)	5.6	67.6	72.4	33.3	2.5	181.3	108.2	0.0
Internal Link Dist (m)	110.0		550.1			339.6	94.9	
Turn Bay Length (m)				60.0	65.0			15.0
Base Capacity (vph)	522	397	376	504	427	3476	3386	1077
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	0.11	0.55	0.59	0.33	0.02	0.81	0.54	0.00

Intersection Summary

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	7	0	45	371	16	169	9	2586	0	0	1683	4
Future Volume (vph)	7	0	45	371	16	169	9	2586	0	0	1683	4
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0		4.0	4.0	4.0	4.0	4.0			4.0	4.0
Lane Util. Factor		1.00		0.95	0.91	0.95	1.00	0.91			0.91	1.00
Frt		0.88		1.00	0.99	0.85	1.00	1.00			1.00	0.85
Flt Protected		0.99		0.95	0.96	1.00	0.95	1.00			1.00	1.00
Satd. Flow (prot)		1635		1681	1607	1504	1770	5085			5085	1583
Flt Permitted		0.95		0.75	0.75	1.00	0.08	1.00			1.00	1.00
Satd. Flow (perm)		1564		1332	1256	1504	144	5085			5085	1583
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	8	0	49	403	17	184	10	2811	0	0	1829	4
RTOR Reduction (vph)	0	44	0	0	2	61	0	0	0	0	0	1
Lane Group Flow (vph)	0	13	0	218	218	105	10	2811	0	0	1829	3
Turn Type	Perm	NA		Perm	NA	Perm	pm+pt	NA			NA	Perm
Protected Phases		4			8		5	2			6	
Permitted Phases	4			8		8	2					6
Actuated Green, G (s)		22.9		22.9	22.9	22.9	71.5	71.5			66.4	66.4
Effective Green, g (s)		24.9		24.9	24.9	24.9	71.5	74.5			69.4	69.4
Actuated g/C Ratio		0.23		0.23	0.23	0.23	0.67	0.69			0.65	0.65
Clearance Time (s)		6.0		6.0	6.0	6.0	4.0	7.0			7.0	7.0
Vehicle Extension (s)		3.5		3.5	3.5	3.5	2.5	7.0			7.0	7.0
Lane Grp Cap (vph)		362		308	291	348	112	3527			3285	1022
v/s Ratio Prot							0.00	c0.55			0.36	
v/s Ratio Perm		0.01		0.16	c0.17	0.07	0.06					0.00
v/c Ratio		0.04		0.71	0.75	0.30	0.09	0.80			0.56	0.00
Uniform Delay, d1		32.0		37.9	38.4	34.1	8.5	11.3			10.5	6.7
Progression Factor		1.00		1.00	1.00	1.00	1.00	1.00			1.00	1.00
Incremental Delay, d2		0.0		7.5	10.7	0.6	0.3	2.0			0.7	0.0
Delay (s)		32.0		45.4	49.1	34.7	8.8	13.2			11.2	6.7
Level of Service		C		D	D	C	A	B			B	A
Approach Delay (s)		32.0			43.8			13.2			11.2	
Approach LOS		C			D			B			B	

Intersection Summary

HCM 2000 Control Delay	16.2	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.82		
Actuated Cycle Length (s)	107.4	Sum of lost time (s)	12.0
Intersection Capacity Utilization	75.7%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	86	96	0	2522	2099	0
Future Volume (vph)	86	96	0	2522	2099	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	0.91	0.91	1.00
Frt		0.850				
Flt Protected	0.950					
Satd. Flow (prot)	1770	1583	0	5085	5085	0
Flt Permitted	0.950					
Satd. Flow (perm)	1770	1583	0	5085	5085	0
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)		6				
Link Speed (k/h)	50			50	50	
Link Distance (m)	554.6			120.3	363.6	
Travel Time (s)	39.9			8.7	26.2	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	93	104	0	2741	2282	0
Shared Lane Traffic (%)						
Lane Group Flow (vph)	93	104	0	2741	2282	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	3.6			3.6	3.6	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	4.8			4.8	4.8	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)	25	15	25			15
Turn Type	Prot	Perm		NA	NA	
Protected Phases	4			2	6	
Permitted Phases		4				
Minimum Split (s)	24.0	24.0		24.9	24.9	
Total Split (s)	24.0	24.0		46.0	46.0	
Total Split (%)	34.3%	34.3%		65.7%	65.7%	
Maximum Green (s)	18.0	18.0		39.1	39.1	
Yellow Time (s)	4.0	4.0		4.6	4.6	
All-Red Time (s)	2.0	2.0		2.3	2.3	
Lost Time Adjust (s)	-2.0	-2.0		-2.9	-2.9	
Total Lost Time (s)	4.0	4.0		4.0	4.0	
Lead/Lag						
Lead-Lag Optimize?						
Walk Time (s)	7.0	7.0		7.0	7.0	
Flash Dont Walk (s)	11.0	11.0		11.0	11.0	
Pedestrian Calls (#/hr)	0	0		0	0	
Act Effct Green (s)	20.0	20.0		42.0	42.0	
Actuated g/C Ratio	0.29	0.29		0.60	0.60	
v/c Ratio	0.18	0.23		0.90	0.75	
Control Delay	20.1	19.6		17.6	12.1	
Queue Delay	0.0	0.0		0.0	0.0	
Total Delay	20.1	19.6		17.6	12.1	

Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
LOS	C	B		B	B	
Approach Delay	19.9			17.6	12.1	
Approach LOS	B			B	B	

Intersection Summary

Area Type: Other
Cycle Length: 70
Actuated Cycle Length: 70
Offset: 0 (0%), Referenced to phase 2:NBT and 6:SBT, Start of Green
Natural Cycle: 65
Control Type: Pretimed
Maximum v/c Ratio: 0.90
Intersection Signal Delay: 15.3 — Intersection LOS: B
Intersection Capacity Utilization 60.2% — ICU Level of Service B
Analysis Period (min) 15

Splits and Phases: 103: Trafalgar Rd & Hwy 407 EB Off

Lane Group	EBL	EBR	NBT	SBT
Lane Group Flow (vph)	93	104	2741	2282
v/c Ratio	0.18	0.23	0.90	0.75
Control Delay	20.1	19.6	17.6	12.1
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	20.1	19.6	17.6	12.1
Queue Length 50th (m)	9.0	9.6	99.8	69.5
Queue Length 95th (m)	19.1	20.5	125.6	86.6
Internal Link Dist (m)	530.6		96.3	339.6
Turn Bay Length (m)				
Base Capacity (vph)	505	456	3051	3051
Starvation Cap Reductn	0	0	0	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.18	0.23	0.90	0.75

Intersection Summary

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	86	96	0	2522	2099	0
Future Volume (vph)	86	96	0	2522	2099	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0	
Lane Util. Factor	1.00	1.00		0.91	0.91	
Frt	1.00	0.85		1.00	1.00	
Flt Protected	0.95	1.00		1.00	1.00	
Satd. Flow (prot)	1770	1583		5085	5085	
Flt Permitted	0.95	1.00		1.00	1.00	
Satd. Flow (perm)	1770	1583		5085	5085	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	93	104	0	2741	2282	0
RTOR Reduction (vph)	0	4	0	0	0	0
Lane Group Flow (vph)	93	100	0	2741	2282	0
Turn Type	Prot	Perm		NA	NA	
Protected Phases	4			2	6	
Permitted Phases		4				
Actuated Green, G (s)	18.0	18.0		39.1	39.1	
Effective Green, g (s)	20.0	20.0		42.0	42.0	
Actuated g/C Ratio	0.29	0.29		0.60	0.60	
Clearance Time (s)	6.0	6.0		6.9	6.9	
Lane Grp Cap (vph)	505	452		3051	3051	
v/s Ratio Prot	0.05			c0.54	0.45	
v/s Ratio Perm		c0.06				
v/c Ratio	0.18	0.22		0.90	0.75	
Uniform Delay, d1	18.8	19.1		12.1	10.2	
Progression Factor	1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.8	1.1		4.7	1.7	
Delay (s)	19.7	20.2		16.9	11.9	
Level of Service	B	C		B	B	
Approach Delay (s)	19.9			16.9	11.9	
Approach LOS	B			B	B	

Intersection Summary

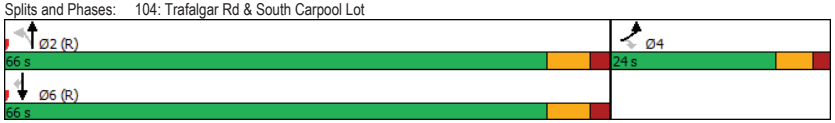
HCM 2000 Control Delay	14.8	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.68		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	60.2%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	28	19	19	2524	2183	12
Future Volume (vph)	28	19	19	2524	2183	12
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (m)	0.0	0.0	50.0			30.0
Storage Lanes	1	1	1			1
Taper Length (m)	7.5		100.0			
Lane Util. Factor	1.00	1.00	1.00	0.91	0.91	1.00
Frt		0.850				0.850
Flt Protected	0.950		0.950			
Satd. Flow (prot)	1770	1583	1770	5085	5085	1583
Flt Permitted	0.950		0.065			
Satd. Flow (perm)	1770	1583	121	5085	5085	1583
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)		10				10
Link Speed (k/h)	50			80	80	
Link Distance (m)	107.1			233.3	131.6	
Travel Time (s)	7.7			10.5	5.9	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	30	21	21	2743	2373	13
Shared Lane Traffic (%)						
Lane Group Flow (vph)	30	21	21	2743	2373	13
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	3.6			3.6	3.6	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	4.8			4.8	4.8	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)	25	15	25			15
Turn Type	Prot	Perm	Perm	NA	NA	Perm
Protected Phases	4			2	6	
Permitted Phases		4	2			6
Minimum Split (s)	24.0	24.0	25.5	25.5	25.5	25.5
Total Split (s)	24.0	24.0	66.0	66.0	66.0	66.0
Total Split (%)	26.7%	26.7%	73.3%	73.3%	73.3%	73.3%
Maximum Green (s)	18.0	18.0	59.1	59.1	59.1	59.1
Yellow Time (s)	4.0	4.0	4.6	4.6	4.6	4.6
All-Red Time (s)	2.0	2.0	2.3	2.3	2.3	2.3
Lost Time Adjust (s)	-2.0	-2.0	-2.9	-2.9	-2.9	-2.9
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0
Lead/Lag						
Lead-Lag Optimize?						
Walk Time (s)	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
Pedestrian Calls (#/hr)	0	0	0	0	0	0
Act Effct Green (s)	20.0	20.0	62.0	62.0	62.0	62.0
Actuated g/C Ratio	0.22	0.22	0.69	0.69	0.69	0.69
v/c Ratio	0.08	0.06	0.25	0.78	0.68	0.01

Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Control Delay	28.4	19.9	14.2	11.5	9.4	2.8
Queue Delay	0.0	0.0	0.0	0.1	0.0	0.0
Total Delay	28.4	19.9	14.2	11.7	9.4	2.8
LOS	C	B	B	B	A	A
Approach Delay	24.9			11.7	9.4	
Approach LOS	C			B	A	

Intersection Summary		
Area Type:	Other	
Cycle Length: 90		
Actuated Cycle Length: 90		
Offset: 0 (0%), Referenced to phase 2:NBTL and 6:SBT, Start of Green		
Natural Cycle: 65		
Control Type: Pretimed		
Maximum v/c Ratio: 0.78		
Intersection Signal Delay: 10.8		Intersection LOS: B
Intersection Capacity Utilization 59.6%		ICU Level of Service B
Analysis Period (min) 15		

Splits and Phases: 104: Trafalgar Rd & South Carpool Lot



Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Group Flow (vph)	30	21	21	2743	2373	13
v/c Ratio	0.08	0.06	0.25	0.78	0.68	0.01
Control Delay	28.4	19.9	14.2	11.5	9.4	2.8
Queue Delay	0.0	0.0	0.0	0.1	0.0	0.0
Total Delay	28.4	19.9	14.2	11.7	9.4	2.8
Queue Length 50th (m)	4.1	1.5	1.2	99.9	74.8	0.2
Queue Length 95th (m)	10.9	7.2	5.8	118.9	88.9	1.7
Internal Link Dist (m)	83.1			209.3	107.6	
Turn Bay Length (m)			50.0			30.0
Base Capacity (vph)	393	359	83	3503	3503	1093
Starvation Cap Reductn	0	0	0	114	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.08	0.06	0.25	0.81	0.68	0.01

Intersection Summary

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	28	19	19	2524	2183	12
Future Volume (vph)	28	19	19	2524	2183	12
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
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	0.91	0.91	1.00
Frt	1.00	0.85	1.00	1.00	1.00	0.85
Flt Protected	0.95	1.00	0.95	1.00	1.00	1.00
Satd. Flow (prot)	1770	1583	1770	5085	5085	1583
Flt Permitted	0.95	1.00	0.06	1.00	1.00	1.00
Satd. Flow (perm)	1770	1583	120	5085	5085	1583
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	30	21	21	2743	2373	13
RTOR Reduction (vph)	0	8	0	0	0	3
Lane Group Flow (vph)	30	13	21	2743	2373	10
Turn Type	Prot	Perm	Perm	NA	NA	Perm
Protected Phases	4			2	6	
Permitted Phases		4	2			6
Actuated Green, G (s)	18.0	18.0	59.1	59.1	59.1	59.1
Effective Green, g (s)	20.0	20.0	62.0	62.0	62.0	62.0
Actuated g/C Ratio	0.22	0.22	0.69	0.69	0.69	0.69
Clearance Time (s)	6.0	6.0	6.9	6.9	6.9	6.9
Lane Grp Cap (vph)	393	351	82	3503	3503	1090
v/s Ratio Prot	c0.02			c0.54	0.47	
v/s Ratio Perm		0.01	0.17			0.01
v/c Ratio	0.08	0.04	0.26	0.78	0.68	0.01
Uniform Delay, d1	27.7	27.5	5.3	9.5	8.2	4.4
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	0.4	0.2	7.4	1.8	1.1	0.0
Delay (s)	28.1	27.7	12.7	11.3	9.2	4.4
Level of Service	C	C	B	B	A	A
Approach Delay (s)	27.9			11.3	9.2	
Approach LOS	C			B	A	

Intersection Summary

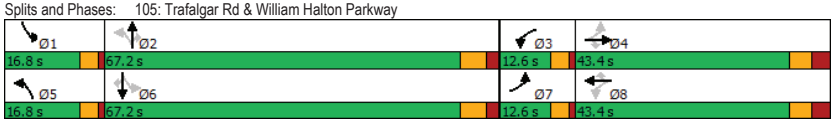
HCM 2000 Control Delay	10.5	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.61		
Actuated Cycle Length (s)	90.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	59.6%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	239	543	173	156	722	593	120	1712	45	432	1609	161
Future Volume (vph)	239	543	173	156	722	593	120	1712	45	432	1609	161
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	100.0		100.0	100.0		150.0	150.0		75.0	0.0		0.0
Storage Lanes	1		1	1		1	1		1	1		1
Taper Length (m)	100.0			100.0			100.0			7.5		
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.91	1.00	1.00	0.91	1.00
Frt			0.850			0.850			0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1770	3539	1583	1770	3539	1583	1770	5085	1583	1770	5085	1583
Flt Permitted	0.110			0.229			0.066			0.064		
Satd. Flow (perm)	205	3539	1583	427	3539	1583	123	5085	1583	119	5085	1583
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			188			176			94			141
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		805.8			927.6			285.3			233.3	
Travel Time (s)		58.0			66.8			20.5			16.8	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	260	590	188	170	785	645	130	1861	49	470	1749	175
Shared Lane Traffic (%)												
Lane Group Flow (vph)	260	590	188	170	785	645	130	1861	49	470	1749	175
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.6			3.6			7.2			7.2	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2	1	1	2	1	1	2	1	1	2	1
Detector Template	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Leading Detector (m)	2.0	10.0	2.0	2.0	10.0	2.0	2.0	10.0	2.0	2.0	10.0	2.0
Trailing Detector (m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Position(m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Size(m)	2.0	0.6	2.0	2.0	0.6	2.0	2.0	0.6	2.0	2.0	0.6	2.0
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4		4	8		8	2		2	6		6

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector Phase	7	4	4	3	8	8	5	2	2	1	6	6
Switch Phase												
Minimum Initial (s)	7.0	20.0	20.0	7.0	20.0	20.0	7.0	20.0	20.0	7.0	20.0	20.0
Minimum Split (s)	11.5	38.0	38.0	11.5	38.0	38.0	11.5	42.9	42.9	11.5	42.9	42.9
Total Split (s)	12.6	43.4	43.4	12.6	43.4	43.4	16.8	67.2	67.2	16.8	67.2	67.2
Total Split (%)	9.0%	31.0%	31.0%	9.0%	31.0%	31.0%	12.0%	48.0%	48.0%	12.0%	48.0%	48.0%
Maximum Green (s)	8.6	36.4	36.4	8.6	36.4	36.4	12.8	60.3	60.3	12.8	60.3	60.3
Yellow Time (s)	3.0	3.7	3.7	3.0	3.7	3.7	3.0	4.6	4.6	3.0	4.6	4.6
All-Red Time (s)	1.0	3.3	3.3	1.0	3.3	3.3	1.0	2.3	2.3	1.0	2.3	2.3
Lost Time Adjust (s)	0.0	-3.0	-3.0	0.0	-3.0	-3.0	0.0	-2.9	-2.9	0.0	-2.9	-2.9
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Vehicle Extension (s)	3.0	5.0	5.0	3.0	5.0	5.0	3.0	5.0	5.0	3.0	5.0	5.0
Recall Mode	None	None	None	None	None	None	None	Max	Max	None	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)		24.0	24.0		24.0	24.0		29.0	29.0		29.0	29.0
Pedestrian Calls (#/hr)		0	0		0	0		0	0		0	0
Act Effct Green (s)	48.0	39.4	39.4	48.0	39.4	39.4	73.8	63.2	63.2	77.9	65.4	65.4
Actuated g/C Ratio	0.34	0.28	0.28	0.34	0.28	0.28	0.53	0.45	0.45	0.56	0.47	0.47
v/c Ratio	1.57	0.59	0.32	0.75	0.79	1.13	0.69	0.81	0.06	2.18	0.74	0.21
Control Delay	308.8	46.3	6.6	53.6	53.2	111.9	44.6	36.8	0.2	565.4	32.9	6.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.3	0.0
Total Delay	308.8	46.3	6.6	53.6	53.2	111.9	44.6	36.8	0.2	565.4	33.2	6.3
LOS	F	D	A	D	D	F	D	D	A	F	C	A
Approach Delay		104.9			76.9			36.4			135.7	
Approach LOS		F			E			D			F	

Intersection Summary	
Area Type:	Other
Cycle Length: 140	
Actuated Cycle Length: 140	
Natural Cycle: 135	
Control Type: Actuated-Uncoordinated	
Maximum v/c Ratio: 2.18	
Intersection Signal Delay: 89.2	Intersection LOS: F
Intersection Capacity Utilization 103.5%	ICU Level of Service G
Analysis Period (min) 15	

Splits and Phases: 105: Trafalgar Rd & William Halton Parkway



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	260	590	188	170	785	645	130	1861	49	470	1749	175
v/c Ratio	1.57	0.59	0.32	0.75	0.79	1.13	0.69	0.81	0.06	2.18	0.74	0.21
Control Delay	308.8	46.3	6.6	53.6	53.2	111.9	44.6	36.8	0.2	565.4	32.9	6.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.3	0.0
Total Delay	308.8	46.3	6.6	53.6	53.2	111.9	44.6	36.8	0.2	565.4	33.2	6.3
Queue Length 50th (m)	~84.2	73.4	0.0	32.1	104.6	~167.2	18.4	158.7	0.0	~190.9	140.6	5.0
Queue Length 95th (m)	#139.4	92.8	17.5	#57.0	128.3	#239.7	39.6	177.9	0.3	#258.5	162.3	18.5
Internal Link Dist (m)		781.8			903.6			261.3			209.3	
Turn Bay Length (m)	100.0		100.0	100.0		150.0	150.0		75.0			
Base Capacity (vph)	166	995	580	228	995	571	217	2295	766	216	2374	814
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	164	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	1.57	0.59	0.32	0.75	0.79	1.13	0.60	0.81	0.06	2.18	0.79	0.21

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

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

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	239	543	173	156	722	593	120	1712	45	432	1609	161
Future Volume (vph)	239	543	173	156	722	593	120	1712	45	432	1609	161
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.91	1.00	1.00	0.91	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)	1770	3539	1583	1770	3539	1583	1770	5085	1583	1770	5085	1583
Flt Permitted	0.11	1.00	1.00	0.23	1.00	1.00	0.07	1.00	1.00	0.06	1.00	1.00
Satd. Flow (perm)	205	3539	1583	427	3539	1583	124	5085	1583	119	5085	1583
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	260	590	188	170	785	645	130	1861	49	470	1749	175
RTOR Reduction (vph)	0	0	135	0	0	126	0	0	27	0	0	75
Lane Group Flow (vph)	260	590	53	170	785	519	130	1861	22	470	1749	100
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4		4	8		8	2		2	6		6
Actuated Green, G (s)	45.0	36.4	36.4	45.0	36.4	36.4	70.9	60.3	60.3	75.3	62.5	62.5
Effective Green, g (s)	45.0	39.4	39.4	45.0	39.4	39.4	70.9	63.2	63.2	75.3	65.4	65.4
Actuated g/C Ratio	0.32	0.28	0.28	0.32	0.28	0.28	0.51	0.45	0.45	0.54	0.47	0.47
Clearance Time (s)	4.0	7.0	7.0	4.0	7.0	7.0	4.0	6.9	6.9	4.0	6.9	6.9
Vehicle Extension (s)	3.0	5.0	5.0	3.0	5.0	5.0	3.0	5.0	5.0	3.0	5.0	5.0
Lane Grp Cap (vph)	162	995	445	219	995	445	187	2295	714	214	2375	739
v/s Ratio Prot	c0.10	0.17		0.05	0.22		0.05	0.37		c0.20	0.34	
v/s Ratio Perm	c0.42		0.03	0.20		0.33	0.30		0.01	c0.97		0.06
v/c Ratio	1.60	0.59	0.12	0.78	0.79	1.17	0.70	0.81	0.03	2.20	0.74	0.14
Uniform Delay, d1	41.0	43.4	37.4	39.2	46.5	50.3	27.8	33.2	21.4	43.7	30.3	21.2
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	299.1	1.4	0.3	15.7	4.9	96.4	10.7	3.2	0.1	553.3	2.1	0.4
Delay (s)	340.0	44.8	37.6	55.0	51.3	146.7	38.5	36.5	21.4	597.1	32.4	21.6
Level of Service	F	D	D	D	D	F	D	D	C	F	C	C
Approach Delay (s)		117.5			90.2			36.2			142.5	
Approach LOS		F			F			D			F	

Intersection Summary

HCM 2000 Control Delay	96.3	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	1.91		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	16.0
Intersection Capacity Utilization	103.5%	ICU Level of Service	G
Analysis Period (min)	15		

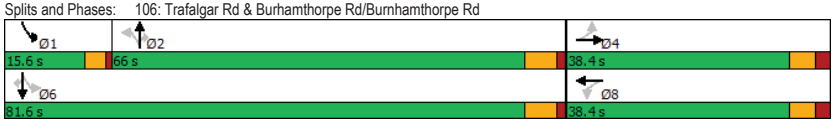
c Critical Lane Group

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	127	485	26	255	429	283	114	1593	167	238	1505	194
Future Volume (vph)	127	485	26	255	429	283	114	1593	167	238	1505	194
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	30.0		0.0	15.0		0.0	60.0		60.0	60.0		60.0
Storage Lanes	1		0	1		0	1		1	1		1
Taper Length (m)	70.0			50.0			100.0			100.0		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	0.95	1.00	0.91	1.00	1.00	0.91	1.00
Frt		0.992			0.940				0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1770	3511	0	1770	3327	0	1770	5085	1583	1770	5085	1583
Flt Permitted	0.139			0.282			0.137			0.064		
Satd. Flow (perm)	259	3511	0	525	3327	0	255	5085	1583	119	5085	1583
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		4			131				92			127
Link Speed (k/h)		60			60			80			80	
Link Distance (m)		828.7			989.6			1077.8			170.3	
Travel Time (s)		49.7			59.4			48.5			7.7	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	138	527	28	277	466	308	124	1732	182	259	1636	211
Shared Lane Traffic (%)												
Lane Group Flow (vph)	138	555	0	277	774	0	124	1732	182	259	1636	211
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.6			3.6			3.6			3.6	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2		1	2		1	2	1	1	2	1
Detector Template	Left	Thru		Left	Thru		Left	Thru	Right	Left	Thru	Right
Leading Detector (m)	2.0	10.0		2.0	10.0		2.0	10.0	2.0	2.0	10.0	2.0
Trailing Detector (m)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Position(m)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Size(m)	2.0	0.6		2.0	0.6		2.0	0.6	2.0	2.0	0.6	2.0
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Perm	NA		Perm	NA		Perm	NA	Perm	pm+pt	NA	Perm
Protected Phases		4			8			2		1	6	
Permitted Phases	4			8			2		2	6		6

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector Phase	4	4		8	8		2	2	2	1	6	6
Switch Phase												
Minimum Initial (s)	10.0	10.0		10.0	10.0		20.0	20.0	20.0	7.0	20.0	20.0
Minimum Split (s)	24.0	24.0		24.0	24.0		26.0	26.0	26.0	11.5	26.0	26.0
Total Split (s)	38.4	38.4		38.4	38.4		66.0	66.0	66.0	15.6	81.6	81.6
Total Split (%)	32.0%	32.0%		32.0%	32.0%		55.0%	55.0%	55.0%	13.0%	68.0%	68.0%
Maximum Green (s)	32.4	32.4		32.4	32.4		60.0	60.0	60.0	11.6	75.6	75.6
Yellow Time (s)	3.7	3.7		3.7	3.7		4.6	4.6	4.6	3.0	4.6	4.6
All-Red Time (s)	2.3	2.3		2.3	2.3		1.4	1.4	1.4	1.0	1.4	1.4
Lost Time Adjust (s)	-2.0	-2.0		-2.0	-2.0		-2.0	-2.0	-2.0	0.0	-2.0	-2.0
Total Lost Time (s)	4.0	4.0		4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0
Lead/Lag							Lag	Lag	Lag	Lead		
Lead-Lag Optimize?							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	3.0
Recall Mode	None	None		None	None		Max	Max	Max	None	Max	Max
Act Effct Green (s)	34.4	34.4		34.4	34.4		62.0	62.0	62.0	77.6	77.6	77.6
Actuated g/C Ratio	0.29	0.29		0.29	0.29		0.52	0.52	0.52	0.65	0.65	0.65
v/c Ratio	1.86	0.55		1.85	0.74		0.95	0.66	0.21	1.10	0.50	0.20
Control Delay	463.3	38.4		433.0	36.9		96.9	22.8	8.3	118.5	11.7	3.8
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	463.3	38.4		433.0	36.9		96.9	22.8	8.3	118.5	11.7	3.8
LOS	F	D		F	D		F	C	A	F	B	A
Approach Delay		123.0			141.3			26.0			24.0	
Approach LOS		F			F			C			C	

Intersection Summary	
Area Type:	Other
Cycle Length: 120	
Actuated Cycle Length: 120	
Natural Cycle: 65	
Control Type: Actuated-Uncoordinated	
Maximum v/c Ratio: 1.86	
Intersection Signal Delay: 57.3	Intersection LOS: E
Intersection Capacity Utilization 88.3%	ICU Level of Service E
Analysis Period (min) 15	

Splits and Phases: 106: Trafalgar Rd & Burhamthorpe Rd/Burnhamthorpe Rd



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	138	555	277	774	124	1732	182	259	1636	211
v/c Ratio	1.86	0.55	1.85	0.74	0.95	0.66	0.21	1.10	0.50	0.20
Control Delay	463.3	38.4	433.0	36.9	96.9	22.8	8.3	118.5	11.7	3.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	463.3	38.4	433.0	36.9	96.9	22.8	8.3	118.5	11.7	3.8
Queue Length 50th (m)	~48.8	57.1	~97.6	72.0	26.2	104.2	10.4	~51.9	67.1	6.7
Queue Length 95th (m)	#88.4	74.4	#149.3	94.5	#65.8	120.0	22.5	#103.5	77.3	15.5
Internal Link Dist (m)		804.7		965.6		1053.8			146.3	
Turn Bay Length (m)	30.0		15.0		60.0		60.0	60.0		60.0
Base Capacity (vph)	74	1009	150	1047	131	2627	862	236	3288	1068
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	1.86	0.55	1.85	0.74	0.95	0.66	0.21	1.10	0.50	0.20

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

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

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	127	485	26	255	429	283	114	1593	167	238	1505	194
Future Volume (vph)	127	485	26	255	429	283	114	1593	167	238	1505	194
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	0.91	1.00	1.00	0.91	1.00
Frt	1.00	0.99		1.00	0.94		1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1770	3512		1770	3328		1770	5085	1583	1770	5085	1583
Flt Permitted	0.14	1.00		0.28	1.00		0.14	1.00	1.00	0.06	1.00	1.00
Satd. Flow (perm)	259	3512		525	3328		255	5085	1583	119	5085	1583
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	138	527	28	277	466	308	124	1732	182	259	1636	211
RTOR Reduction (vph)	0	3	0	0	93	0	0	0	44	0	0	45
Lane Group Flow (vph)	138	552	0	277	681	0	124	1732	138	259	1636	166
Turn Type	Perm	NA		Perm	NA		Perm	NA	Perm	pm+pt	NA	Perm
Protected Phases		4			8			2		1	6	
Permitted Phases	4			8			2		2	6		6
Actuated Green, G (s)	32.4	32.4		32.4	32.4		60.0	60.0	60.0	75.6	75.6	75.6
Effective Green, g (s)	34.4	34.4		34.4	34.4		62.0	62.0	62.0	75.6	77.6	77.6
Actuated g/C Ratio	0.29	0.29		0.29	0.29		0.52	0.52	0.52	0.63	0.65	0.65
Clearance Time (s)	6.0	6.0		6.0	6.0		6.0	6.0	6.0	4.0	6.0	6.0
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	74	1006		150	954		131	2627	817	234	3288	1023
v/s Ratio Prot		0.16			0.20			0.34		c0.11	0.32	
v/s Ratio Perm	c0.53			0.53			0.49		0.09	c0.59		0.10
v/c Ratio	1.86	0.55		1.85	0.71		0.95	0.66	0.17	1.11	0.50	0.16
Uniform Delay, d1	42.8	36.2		42.8	38.4		27.4	21.3	15.4	36.1	11.0	8.4
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	436.0	0.6		405.6	2.6		65.4	1.3	0.4	90.4	0.5	0.3
Delay (s)	478.8	36.8		448.4	40.9		92.9	22.6	15.8	126.5	11.6	8.7
Level of Service	F	D		F	D		F	C	B	F	B	A
Approach Delay (s)		124.9			148.3			26.2			25.4	
Approach LOS		F			F			C			C	

Intersection Summary

HCM 2000 Control Delay	59.4	HCM 2000 Level of Service	E
HCM 2000 Volume to Capacity ratio	1.35		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	88.3%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

Appendix G1

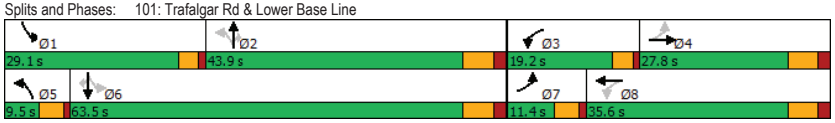
2031 Total Operations Synchro Reports

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	124	482	186	252	98	180	41	1543	211	412	1627	20
Future Volume (vph)	124	482	186	252	98	180	41	1543	211	412	1627	20
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	45.0		0.0	110.0		0.0	90.0		90.0	90.0		90.0
Storage Lanes	1		0	1		0	1		1	1		1
Taper Length (m)	100.0			100.0			100.0			100.0		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	0.95	1.00	0.91	1.00	1.00	0.91	1.00
Frt		0.958			0.903				0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1770	3391	0	1770	3196	0	1770	5085	1583	1770	5085	1583
Flt Permitted	0.567			0.156			0.098			0.095		
Satd. Flow (perm)	1056	3391	0	291	3196	0	183	5085	1583	177	5085	1583
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		42			196				218			147
Link Speed (k/h)		70			60			80			80	
Link Distance (m)		749.3			690.6			498.3			434.3	
Travel Time (s)		38.5			41.4			22.4			19.5	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	135	524	202	274	107	196	45	1677	229	448	1768	22
Shared Lane Traffic (%)												
Lane Group Flow (vph)	135	726	0	274	303	0	45	1677	229	448	1768	22
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.6			3.6			3.6			3.6	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2		1	2		1	2	1	1	2	1
Detector Template	Left	Thru		Left	Thru		Left	Thru	Right	Left	Thru	Right
Leading Detector (m)	2.0	10.0		2.0	10.0		2.0	10.0	2.0	2.0	10.0	2.0
Trailing Detector (m)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Position(m)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Size(m)	2.0	0.6		2.0	0.6		2.0	0.6	2.0	2.0	0.6	2.0
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	pm+pt	NA		pm+pt	NA		pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4			8			2		2	6		6

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector Phase	7	4		3	8		5	2	2	1	6	6
Switch Phase												
Minimum Initial (s)	5.0	10.0		7.0	10.0		5.0	25.0	25.0	7.0	25.0	25.0
Minimum Split (s)	9.5	22.5		11.5	22.5		9.5	31.6	31.6	11.5	31.6	31.6
Total Split (s)	11.4	27.8		19.2	35.6		9.5	43.9	43.9	29.1	63.5	63.5
Total Split (%)	9.5%	23.2%		16.0%	29.7%		7.9%	36.6%	36.6%	24.3%	52.9%	52.9%
Maximum Green (s)	6.9	21.6		15.2	29.4		5.0	37.3	37.3	25.1	56.9	56.9
Yellow Time (s)	3.5	4.2		3.0	4.2		3.5	4.6	4.6	3.0	4.6	4.6
All-Red Time (s)	1.0	2.0		1.0	2.0		1.0	2.0	2.0	1.0	2.0	2.0
Lost Time Adjust (s)	-2.2	-2.2		0.0	-2.2		-2.6	-2.6	-2.6	0.0	-2.6	-2.6
Total Lost Time (s)	2.3	4.0		4.0	4.0		1.9	4.0	4.0	4.0	4.0	4.0
Lead/Lag	Lead	Lag		Lead	Lag		Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes		Yes	Yes		Yes	Yes	Yes	Yes	Yes	Yes
Vehicle Extension (s)	3.0	5.0		0.2	5.0		3.0	5.0	5.0	0.2	5.0	5.0
Recall Mode	None	None		None	None		None	Max	Max	Max	Max	Max
Act Effct Green (s)	34.6	23.8		42.8	31.4		49.6	39.9	39.9	69.0	61.4	61.4
Actuated g/C Ratio	0.29	0.20		0.36	0.26		0.41	0.33	0.33	0.58	0.51	0.51
v/c Ratio	0.38	1.03		0.95	0.31		0.26	0.99	0.34	1.03	0.68	0.02
Control Delay	29.8	85.5		73.1	13.3		17.0	59.8	6.0	86.0	24.0	0.1
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	29.8	85.5		73.1	13.3		17.0	59.8	6.0	86.0	24.0	0.1
LOS	C	F		E	B		B	E	A	F	C	A
Approach Delay		76.8			41.7			52.5			36.2	
Approach LOS		E			D			D			D	

Intersection Summary	
Area Type: Other	
Cycle Length: 120	
Actuated Cycle Length: 119.8	
Natural Cycle: 90	
Control Type: Semi Act-Uncoord	
Maximum v/c Ratio: 1.03	
Intersection Signal Delay: 48.6	Intersection LOS: D
Intersection Capacity Utilization 99.2%	ICU Level of Service F
Analysis Period (min) 15	

Splits and Phases: 101: Trafalgar Rd & Lower Base Line



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	135	726	274	303	45	1677	229	448	1768	22
v/c Ratio	0.38	1.03	0.95	0.31	0.26	0.99	0.34	1.03	0.68	0.02
Control Delay	29.8	85.5	73.1	13.3	17.0	59.8	6.0	86.0	24.0	0.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	29.8	85.5	73.1	13.3	17.0	59.8	6.0	86.0	24.0	0.1
Queue Length 50th (m)	21.1	~90.5	48.0	10.0	4.1	141.6	1.7	~95.4	112.7	0.0
Queue Length 95th (m)	35.5	#128.3	#97.6	21.1	9.0	#176.3	18.4	#157.8	129.5	0.0
Internal Link Dist (m)		725.3		666.6		474.3			410.3	
Turn Bay Length (m)	45.0		110.0		90.0		90.0	90.0		90.0
Base Capacity (vph)	359	707	291	987	176	1692	672	435	2605	883
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.38	1.03	0.94	0.31	0.26	0.99	0.34	1.03	0.68	0.02

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

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

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	124	482	186	252	98	180	41	1543	211	412	1627	20
Future Volume (vph)	124	482	186	252	98	180	41	1543	211	412	1627	20
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	2.3	4.0		4.0	4.0		1.9	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	0.91	1.00	1.00	0.91	1.00
Frt	1.00	0.96		1.00	0.90		1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1770	3392		1770	3196		1770	5085	1583	1770	5085	1583
Flt Permitted	0.57	1.00		0.16	1.00		0.10	1.00	1.00	0.09	1.00	1.00
Satd. Flow (perm)	1056	3392		291	3196		183	5085	1583	177	5085	1583
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	135	524	202	274	107	196	45	1677	229	448	1768	22
RTOR Reduction (vph)	0	34	0	0	145	0	0	0	144	0	0	11
Lane Group Flow (vph)	135	692	0	274	158	0	45	1677	85	448	1768	11
Turn Type	pm+pt	NA		pm+pt	NA		pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4			8			2		2	6		6
Actuated Green, G (s)	28.5	21.6		40.6	29.2		42.2	38.2	38.2	67.3	58.8	58.8
Effective Green, g (s)	32.9	23.8		40.6	31.4		47.4	40.8	40.8	67.3	61.4	61.4
Actuated g/C Ratio	0.27	0.20		0.34	0.26		0.39	0.34	0.34	0.56	0.51	0.51
Clearance Time (s)	4.5	6.2		4.0	6.2		4.5	6.6	6.6	4.0	6.6	6.6
Vehicle Extension (s)	3.0	5.0		0.2	5.0		3.0	5.0	5.0	0.2	5.0	5.0
Lane Grp Cap (vph)	341	668		281	831		158	1718	535	429	2586	805
v/s Ratio Prot	0.03	c0.20		c0.12	0.05		0.02	0.33		c0.22	0.35	
v/s Ratio Perm	0.08			0.21			0.10		0.05	c0.37		0.01
v/c Ratio	0.40	1.04		0.98	0.19		0.28	0.98	0.16	1.04	0.68	0.01
Uniform Delay, d1	34.6	48.5		33.7	34.8		23.2	39.5	27.9	38.0	22.3	14.7
Progression Factor	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	44.6		46.3	0.2		1.0	16.7	0.6	55.5	1.5	0.0
Delay (s)	35.3	93.0		80.0	35.0		24.2	56.2	28.6	93.5	23.8	14.7
Level of Service	D	F		E	C		C	E	C	F	C	B
Approach Delay (s)		84.0			56.4			52.2			37.7	
Approach LOS		F			E			D			D	

Intersection Summary

HCM 2000 Control Delay	51.7	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	1.03		
Actuated Cycle Length (s)	120.7	Sum of lost time (s)	16.0
Intersection Capacity Utilization	99.2%	ICU Level of Service	F
Analysis Period (min)	15		

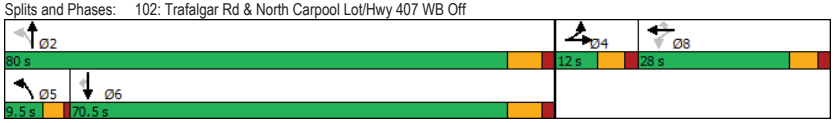
c Critical Lane Group

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	2	0	9	246	1	20	5	1772	0	0	2061	4
Future Volume (vph)	2	0	9	246	1	20	5	1772	0	0	2061	4
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	0.0		0.0	0.0		60.0	65.0		0.0	0.0		15.0
Storage Lanes	0		0	1		1	1		0	0		1
Taper Length (m)	7.5			7.5			100.0			7.5		
Lane Util. Factor	1.00	1.00	1.00	0.95	0.91	0.95	1.00	0.91	1.00	1.00	0.91	1.00
Frt		0.887			0.998	0.850						0.850
Flt Protected		0.992		0.950	0.953		0.950					
Satd. Flow (prot)	0	1639	0	1681	1612	1504	1770	5085	0	0	5085	1583
Flt Permitted		0.992		0.750	0.722		0.053					
Satd. Flow (perm)	0	1639	0	1327	1221	1504	99	5085	0	0	5085	1583
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		127			1	127						118
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		134.0			574.1			363.6			118.9	
Travel Time (s)		9.6			41.3			26.2			8.6	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	2	0	10	267	1	22	5	1926	0	0	2240	4
Shared Lane Traffic (%)				49%		10%						
Lane Group Flow (vph)	0	12	0	136	134	20	5	1926	0	0	2240	4
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.8			3.6			3.6			3.6	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2		1	2	1	1	2			2	1
Detector Template	Left	Thru		Left	Thru	Right	Left	Thru			Thru	Right
Leading Detector (m)	2.0	10.0		2.0	10.0	2.0	2.0	10.0			10.0	2.0
Trailing Detector (m)	0.0	0.0		0.0	0.0	0.0	0.0	0.0			0.0	0.0
Detector 1 Position(m)	0.0	0.0		0.0	0.0	0.0	0.0	0.0			0.0	0.0
Detector 1 Size(m)	2.0	0.6		2.0	0.6	2.0	2.0	0.6			0.6	2.0
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex			Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0			0.0	0.0
Detector 1 Queue (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0			0.0	0.0
Detector 1 Delay (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0			0.0	0.0
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Split	NA		Perm	NA	Perm	pm+pt	NA			NA	Perm
Protected Phases	4	4			8		5	2			6	
Permitted Phases				8		8	2					6

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector Phase	4	4		8	8	8	5	2			6	6
Switch Phase												
Minimum Initial (s)	6.0	6.0		7.0	7.0	7.0	4.0	20.0			20.0	20.0
Minimum Split (s)	12.0	12.0		22.5	22.5	22.5	9.5	27.0			27.0	27.0
Total Split (s)	12.0	12.0		28.0	28.0	28.0	9.5	80.0			70.5	70.5
Total Split (%)	10.0%	10.0%		23.3%	23.3%	23.3%	7.9%	66.7%			58.8%	58.8%
Maximum Green (s)	6.0	6.0		22.0	22.0	22.0	5.5	73.0			63.5	63.5
Yellow Time (s)	4.0	4.0		4.0	4.0	4.0	3.0	5.0			5.0	5.0
All-Red Time (s)	2.0	2.0		2.0	2.0	2.0	1.0	2.0			2.0	2.0
Lost Time Adjust (s)		-2.0		-2.0	-2.0	-2.0	0.0	-3.0			-3.0	-3.0
Total Lost Time (s)		4.0		4.0	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)	3.5	3.5		3.5	3.5	3.5	2.5	7.0			7.0	7.0
Recall Mode	None	None		None	None	None	None	Max			Max	Max
Act Effct Green (s)		8.1		18.6	18.6	18.6	76.7	76.7			75.0	75.0
Actuated g/C Ratio		0.08		0.17	0.17	0.17	0.71	0.71			0.70	0.70
v/c Ratio		0.05		0.59	0.63	0.05	0.03	0.53			0.63	0.00
Control Delay		0.4		53.1	55.8	0.3	7.8	9.2			12.3	0.0
Queue Delay		0.0		0.0	0.0	0.0	0.0	0.0			0.0	0.0
Total Delay		0.4		53.1	55.8	0.3	7.8	9.2			12.3	0.0
LOS		A		D	E	A	A	A			B	A
Approach Delay		0.4			50.7			9.2			12.3	
Approach LOS		A			D			A			B	

Intersection Summary	
Area Type:	Other
Cycle Length: 120	
Actuated Cycle Length: 107.7	
Natural Cycle: 80	
Control Type: Actuated-Uncoordinated	
Maximum v/c Ratio: 0.63	
Intersection Signal Delay: 13.4	Intersection LOS: B
Intersection Capacity Utilization 60.2%	ICU Level of Service B
Analysis Period (min) 15	

Splits and Phases: 102: Trafalgar Rd & North Carpool Lot/Hwy 407 WB Off



Lane Group	EBT	WBL	WBT	WBR	NBL	NBT	SBT	SBR
Lane Group Flow (vph)	12	136	134	20	5	1926	2240	4
v/c Ratio	0.05	0.59	0.63	0.05	0.03	0.53	0.63	0.00
Control Delay	0.4	53.1	55.8	0.3	7.8	9.2	12.3	0.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	0.4	53.1	55.8	0.3	7.8	9.2	12.3	0.0
Queue Length 50th (m)	0.0	25.8	26.7	0.0	0.3	49.3	63.6	0.0
Queue Length 95th (m)	0.0	51.1	53.1	0.0	1.9	102.8	164.6	0.0
Internal Link Dist (m)	110.0		550.1			339.6	94.9	
Turn Bay Length (m)				60.0	65.0			15.0
Base Capacity (vph)	240	298	275	436	156	3620	3540	1138
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.05	0.46	0.49	0.05	0.03	0.53	0.63	0.00

Intersection Summary

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	2	0	9	246	1	20	5	1772	0	0	2061	4
Future Volume (vph)	2	0	9	246	1	20	5	1772	0	0	2061	4
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0		4.0	4.0	4.0	4.0	4.0			4.0	4.0
Lane Util. Factor		1.00		0.95	0.91	0.95	1.00	0.91			0.91	1.00
Frt		0.89		1.00	1.00	0.85	1.00	1.00			1.00	0.85
Flt Protected		0.99		0.95	0.95	1.00	0.95	1.00			1.00	1.00
Satd. Flow (prot)		1640		1681	1612	1504	1770	5085			5085	1583
Flt Permitted		0.99		0.75	0.72	1.00	0.05	1.00			1.00	1.00
Satd. Flow (perm)		1640		1327	1222	1504	98	5085			5085	1583
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	2	0	10	267	1	22	5	1926	0	0	2240	4
RTOR Reduction (vph)	0	12	0	0	1	17	0	0	0	0	0	1
Lane Group Flow (vph)	0	0	0	136	133	3	5	1926	0	0	2240	3
Turn Type	Split	NA		Perm	NA	Perm	pm+pt	NA			NA	Perm
Protected Phases	4	4			8		5	2			6	
Permitted Phases				8		8	2					6
Actuated Green, G (s)		2.2		16.6	16.6	16.6	76.9	76.9			71.9	71.9
Effective Green, g (s)		4.2		18.6	18.6	18.6	76.9	79.9			74.9	74.9
Actuated g/C Ratio		0.04		0.16	0.16	0.16	0.67	0.70			0.65	0.65
Clearance Time (s)		6.0		6.0	6.0	6.0	4.0	7.0			7.0	7.0
Vehicle Extension (s)		3.5		3.5	3.5	3.5	2.5	7.0			7.0	7.0
Lane Grp Cap (vph)		60		215	198	243	80	3542			3320	1033
v/s Ratio Prot		c0.00					0.00	c0.38			c0.44	
v/s Ratio Perm				0.10	c0.11	0.00	0.04					0.00
v/c Ratio		0.01		0.63	0.67	0.01	0.06	0.54			0.67	0.00
Uniform Delay, d1		53.2		44.9	45.2	40.3	11.2	8.5			12.3	6.9
Progression Factor		1.00		1.00	1.00	1.00	1.00	1.00			1.00	1.00
Incremental Delay, d2		0.1		6.2	9.0	0.0	0.2	0.6			1.1	0.0
Delay (s)		53.3		51.1	54.2	40.4	11.5	9.1			13.5	6.9
Level of Service		D		D	D	D	B	A			B	A
Approach Delay (s)		53.3			51.8			9.1			13.4	
Approach LOS		D			D			A			B	

Intersection Summary

HCM 2000 Control Delay	14.2	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.67		
Actuated Cycle Length (s)	114.7	Sum of lost time (s)	18.0
Intersection Capacity Utilization	60.2%	ICU Level of Service	B
Analysis Period (min)	15		

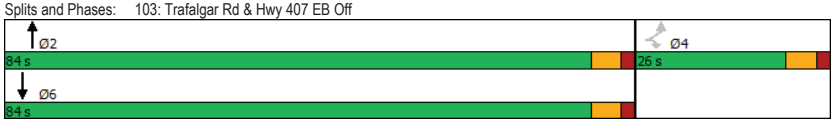
c Critical Lane Group

Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	105	183	0	1699	2316	0
Future Volume (vph)	105	183	0	1699	2316	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	0.95	1.00	0.91	0.91	1.00
Frt	0.956	0.850				
Flt Protected	0.966					
Satd. Flow (prot)	1720	1504	0	5085	5085	0
Flt Permitted	0.966					
Satd. Flow (perm)	1720	1504	0	5085	5085	0
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)	9	9				
Link Speed (k/h)	50			50	50	
Link Distance (m)	554.6			120.3	363.6	
Travel Time (s)	39.9			8.7	26.2	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	114	199	0	1847	2517	0
Shared Lane Traffic (%)		24%				
Lane Group Flow (vph)	162	151	0	1847	2517	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	3.6			3.6	3.6	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	4.8			4.8	4.8	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)	25	15	25			15
Number of Detectors	1	1		2	2	
Detector Template	Left	Right		Thru	Thru	
Leading Detector (m)	2.0	2.0		10.0	10.0	
Trailing Detector (m)	0.0	0.0		0.0	0.0	
Detector 1 Position(m)	0.0	0.0		0.0	0.0	
Detector 1 Size(m)	2.0	2.0		0.6	0.6	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel						
Detector 1 Extend (s)	0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0	
Detector 2 Position(m)				9.4	9.4	
Detector 2 Size(m)				0.6	0.6	
Detector 2 Type				Cl+Ex	Cl+Ex	
Detector 2 Channel						
Detector 2 Extend (s)				0.0	0.0	
Turn Type	Perm	Perm		NA	NA	
Protected Phases				2	6	
Permitted Phases	4	4				
Detector Phase	4	4		2	6	
Switch Phase						
Minimum Initial (s)	5.0	5.0		5.0	5.0	

Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Minimum Split (s)	24.0	24.0		24.0	24.0	
Total Split (s)	26.0	26.0		84.0	84.0	
Total Split (%)	23.6%	23.6%		76.4%	76.4%	
Maximum Green (s)	20.0	20.0		78.0	78.0	
Yellow Time (s)	4.0	4.0		4.0	4.0	
All-Red Time (s)	2.0	2.0		2.0	2.0	
Lost Time Adjust (s)	-2.0	-2.0		-2.0	-2.0	
Total Lost Time (s)	4.0	4.0		4.0	4.0	
Lead/Lag						
Lead-Lag Optimize?						
Vehicle Extension (s)	3.0	3.0		3.0	3.0	
Recall Mode	None	None		Max	Max	
Walk Time (s)	7.0	7.0		7.0	7.0	
Flash Dont Walk (s)	11.0	11.0		11.0	11.0	
Pedestrian Calls (#/hr)	0	0		0	0	
Act Effct Green (s)	16.9	16.9		81.2	81.2	
Actuated g/C Ratio	0.16	0.16		0.77	0.77	
v/c Ratio	0.58	0.61		0.47	0.65	
Control Delay	47.0	49.7		5.4	7.2	
Queue Delay	0.0	0.0		0.0	0.0	
Total Delay	47.0	49.7		5.4	7.2	
LOS	D	D		A	A	
Approach Delay	48.3			5.4	7.2	
Approach LOS	D			A	A	

Intersection Summary	
Area Type: Other	
Cycle Length: 110	
Actuated Cycle Length: 106.1	
Natural Cycle: 60	
Control Type: Semi Act-Uncoord	
Maximum v/c Ratio: 0.65	
Intersection Signal Delay: 9.2	Intersection LOS: A
Intersection Capacity Utilization 61.0%	ICU Level of Service B
Analysis Period (min) 15	

Splits and Phases: 103: Trafalgar Rd & Hwy 407 EB Off



Lane Group	EBL	EBR	NBT	SBT
Lane Group Flow (vph)	162	151	1847	2517
v/c Ratio	0.58	0.61	0.47	0.65
Control Delay	47.0	49.7	5.4	7.2
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	47.0	49.7	5.4	7.2
Queue Length 50th (m)	28.7	28.2	42.4	73.0
Queue Length 95th (m)	49.0	49.2	61.7	104.7
Internal Link Dist (m)	530.6		96.3	339.6
Turn Bay Length (m)				
Base Capacity (vph)	363	319	3893	3893
Starvation Cap Reductn	0	0	0	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.45	0.47	0.47	0.65

Intersection Summary

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	105	183	0	1699	2316	0
Future Volume (vph)	105	183	0	1699	2316	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0	
Lane Util. Factor	1.00	0.95		0.91	0.91	
Frt	0.96	0.85		1.00	1.00	
Flt Protected	0.97	1.00		1.00	1.00	
Satd. Flow (prot)	1719	1504		5085	5085	
Flt Permitted	0.97	1.00		1.00	1.00	
Satd. Flow (perm)	1719	1504		5085	5085	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	114	199	0	1847	2517	0
RTOR Reduction (vph)	8	8	0	0	0	0
Lane Group Flow (vph)	154	143	0	1847	2517	0
Turn Type	Perm	Perm		NA	NA	
Protected Phases				2	6	
Permitted Phases	4	4				
Actuated Green, G (s)	14.9	14.9		79.3	79.3	
Effective Green, g (s)	16.9	16.9		81.3	81.3	
Actuated g/C Ratio	0.16	0.16		0.77	0.77	
Clearance Time (s)	6.0	6.0		6.0	6.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	273	239		3892	3892	
v/s Ratio Prot				0.36	c0.49	
v/s Ratio Perm	0.09	c0.10				
v/c Ratio	0.57	0.60		0.47	0.65	
Uniform Delay, d1	41.3	41.5		4.6	5.8	
Progression Factor	1.00	1.00		1.00	1.00	
Incremental Delay, d2	2.7	4.2		0.4	0.8	
Delay (s)	43.9	45.7		5.0	6.6	
Level of Service	D	D		A	A	
Approach Delay (s)	44.8			5.0	6.6	
Approach LOS	D			A	A	

Intersection Summary

HCM 2000 Control Delay	8.5	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.65		
Actuated Cycle Length (s)	106.2	Sum of lost time (s)	10.0
Intersection Capacity Utilization	61.0%	ICU Level of Service	B
Analysis Period (min)	15		

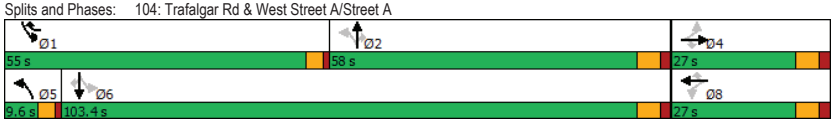
c Critical Lane Group

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	26	0	13	134	0	301	13	1478	227	305	2183	11
Future Volume (vph)	26	0	13	134	0	301	13	1478	227	305	2183	11
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	50.0		50.0	50.0		50.0	50.0		50.0	30.0		30.0
Storage Lanes	1		1	1		1	1		1	1		1
Taper Length (m)	75.0			75.0			100.0			90.0		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.91	1.00	1.00	0.91	1.00
Frt			0.850			0.850			0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1770	1863	1583	1770	1863	1583	1770	5085	1583	1770	5085	1583
Flt Permitted	0.757			0.757			0.059			0.096		
Satd. Flow (perm)	1410	1863	1583	1410	1863	1583	110	5085	1583	179	5085	1583
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			86			23			135			55
Link Speed (k/h)		50			50			80			80	
Link Distance (m)		79.2			134.2			233.3			131.6	
Travel Time (s)		5.7			9.7			10.5			5.9	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	28	0	14	146	0	327	14	1607	247	332	2373	12
Shared Lane Traffic (%)												
Lane Group Flow (vph)	28	0	14	146	0	327	14	1607	247	332	2373	12
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.6			3.6			3.6			3.6	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2	1	1	2	1	1	2	1	1	2	1
Detector Template	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Leading Detector (m)	2.0	10.0	2.0	2.0	10.0	2.0	2.0	10.0	2.0	2.0	10.0	2.0
Trailing Detector (m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Position(m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Size(m)	2.0	0.6	2.0	2.0	0.6	2.0	2.0	0.6	2.0	2.0	0.6	2.0
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Perm		Perm	Perm		pm+ov	pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases		4			8	1	5	2		1	6	
Permitted Phases	4		4	8		8	2		2	6		6

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector Phase	4	4	4	8	8	1	5	2	2	1	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	5.0	5.0	5.0
Minimum Split (s)	24.0	24.0	24.0	24.0	24.0	9.5	9.5	24.0	24.0	9.5	24.0	24.0
Total Split (s)	27.0	27.0	27.0	27.0	27.0	55.0	9.6	58.0	58.0	55.0	103.4	103.4
Total Split (%)	19.3%	19.3%	19.3%	19.3%	19.3%	39.3%	6.9%	41.4%	41.4%	39.3%	73.9%	73.9%
Maximum Green (s)	21.0	21.0	21.0	21.0	21.0	51.0	5.6	52.0	52.0	51.0	97.4	97.4
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	3.0	3.0	4.0	4.0	3.0	4.0	4.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	1.0	1.0	2.0	2.0	1.0	2.0	2.0
Lost Time Adjust (s)	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0	0.0	-2.0	-2.0	0.0	-2.0	-2.0
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	2.0	4.0	4.0	4.0	4.0	4.0	4.0
Lead/Lag						Lead	Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?						Yes	Yes	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	3.0	3.0	3.0
Recall Mode	None	None	None	None	None	None	None	Max	Max	None	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)	19.2		19.2	19.2		49.1	81.1	75.5	75.5	103.4	99.8	99.8
Actuated g/C Ratio	0.15		0.15	0.15		0.38	0.62	0.58	0.58	0.79	0.76	0.76
v/c Ratio	0.14		0.05	0.71		0.54	0.10	0.55	0.25	0.77	0.61	0.01
Control Delay	50.8		0.3	72.5		31.7	9.5	19.6	8.2	37.3	8.6	0.0
Queue Delay	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.3	0.0
Total Delay	50.8		0.3	72.5		31.7	9.5	19.6	8.2	37.3	8.9	0.0
LOS	D		A	E		C	A	B	A	D	A	A
Approach Delay		34.0			44.3			18.0			12.3	
Approach LOS		C			D			B			B	

Intersection Summary			
Area Type:	Other		
Cycle Length: 140			
Actuated Cycle Length: 130.6			
Natural Cycle: 75			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 0.77			
Intersection Signal Delay: 17.5		Intersection LOS: B	
Intersection Capacity Utilization 70.4%		ICU Level of Service C	
Analysis Period (min) 15			

Splits and Phases: 104: Trafalgar Rd & West Street A/Street A



Lane Group	EBL	EBR	WBL	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	28	14	146	327	14	1607	247	332	2373	12
v/c Ratio	0.14	0.05	0.71	0.54	0.10	0.55	0.25	0.77	0.61	0.01
Control Delay	50.8	0.3	72.5	31.7	9.5	19.6	8.2	37.3	8.6	0.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.3	0.0
Total Delay	50.8	0.3	72.5	31.7	9.5	19.6	8.2	37.3	8.9	0.0
Queue Length 50th (m)	6.1	0.0	34.4	57.1	0.7	89.4	12.5	48.8	76.1	0.0
Queue Length 95th (m)	15.8	0.0	60.9	79.6	2.5	132.7	33.4	81.8	130.0	0.0
Internal Link Dist (m)						209.3			107.6	
Turn Bay Length (m)	50.0	50.0	50.0	50.0	50.0		50.0	30.0		30.0
Base Capacity (vph)	249	350	249	935	139	2937	971	765	3885	1222
Starvation Cap Reductn	0	0	0	0	0	0	0	0	709	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.11	0.04	0.59	0.35	0.10	0.55	0.25	0.43	0.75	0.01

Intersection Summary

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	26	0	13	134	0	301	13	1478	227	305	2183	11
Future Volume (vph)	26	0	13	134	0	301	13	1478	227	305	2183	11
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0		4.0	4.0		2.0	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	0.91	1.00	1.00	0.91	1.00
Frt	1.00		0.85	1.00		0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95		1.00	0.95		1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1770		1583	1770		1583	1770	5085	1583	1770	5085	1583
Flt Permitted	0.76		1.00	0.76		1.00	0.06	1.00	1.00	0.10	1.00	1.00
Satd. Flow (perm)	1410		1583	1410		1583	109	5085	1583	179	5085	1583
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	28	0	14	146	0	327	14	1607	247	332	2373	12
RTOR Reduction (vph)	0	0	12	0	0	15	0	0	56	0	0	3
Lane Group Flow (vph)	28	0	2	146	0	312	14	1607	191	332	2373	9
Turn Type	Perm		Perm	Perm		pm+ov	pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases		4			8	1	5	2		1	6	
Permitted Phases	4		4	8		8	2		2	6		6
Actuated Green, G (s)	17.2		17.2	17.2		41.1	78.1	76.0	76.0	103.9	97.8	97.8
Effective Green, g (s)	19.2		19.2	19.2		45.1	78.1	78.0	78.0	103.9	99.8	99.8
Actuated g/C Ratio	0.14		0.14	0.14		0.34	0.59	0.59	0.59	0.78	0.75	0.75
Clearance Time (s)	6.0		6.0	6.0		4.0	4.0	6.0	6.0	4.0	6.0	6.0
Vehicle Extension (s)	3.0		3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	203		228	203		536	90	2979	927	425	3812	1186
v/s Ratio Prot						0.11	0.00	0.32		c0.14	0.47	
v/s Ratio Perm	0.02		0.00	c0.10		0.08	0.09		0.12	c0.47		0.01
v/c Ratio	0.14		0.01	0.72		0.58	0.16	0.54	0.21	0.78	0.62	0.01
Uniform Delay, d1	49.7		48.8	54.4		36.2	11.6	16.7	13.0	30.5	7.8	4.2
Progression Factor	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		0.0	11.5		1.6	0.8	0.7	0.5	9.0	0.8	0.0
Delay (s)	50.0		48.8	65.9		37.8	12.4	17.4	13.5	39.5	8.6	4.2
Level of Service	D		D	E		D	B	B	B	D	A	A
Approach Delay (s)		49.6			46.5			16.8			12.3	
Approach LOS		D			D			B			B	

Intersection Summary

HCM 2000 Control Delay	17.5	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.77		
Actuated Cycle Length (s)	133.1	Sum of lost time (s)	12.0
Intersection Capacity Utilization	70.4%	ICU Level of Service	C
Analysis Period (min)	15		

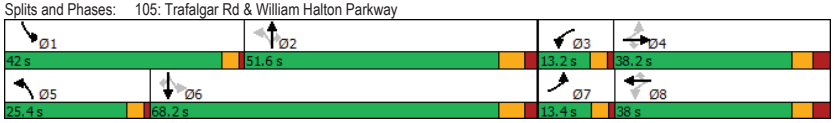
c Critical Lane Group

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	115	307	42	190	557	318	185	1285	40	455	1614	262
Future Volume (vph)	115	307	42	190	557	318	185	1285	40	455	1614	262
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	100.0		100.0	100.0		150.0	150.0		75.0	0.0		0.0
Storage Lanes	1		1	1		1	1		1	1		1
Taper Length (m)	100.0			100.0			100.0			7.5		
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.91	1.00	1.00	0.91	1.00
Frt			0.850			0.850			0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1770	3539	1583	1770	3539	1583	1770	5085	1583	1770	5085	1583
Flt Permitted	0.145			0.407			0.089			0.082		
Satd. Flow (perm)	270	3539	1583	758	3539	1583	166	5085	1583	153	5085	1583
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			120			346			120			218
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		128.3			126.0			197.1			233.3	
Travel Time (s)		9.2			9.1			14.2			16.8	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	125	334	46	207	605	346	201	1397	43	495	1754	285
Shared Lane Traffic (%)												
Lane Group Flow (vph)	125	334	46	207	605	346	201	1397	43	495	1754	285
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.6			3.6			7.2			7.2	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2	1	1	2	1	1	2	1	1	2	1
Detector Template	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Leading Detector (m)	2.0	10.0	2.0	2.0	10.0	2.0	2.0	10.0	2.0	2.0	10.0	2.0
Trailing Detector (m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Position(m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Size(m)	2.0	0.6	2.0	2.0	0.6	2.0	2.0	0.6	2.0	2.0	0.6	2.0
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4		4	8		8	2		2	6		6

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector Phase	7	4	4	3	8	8	5	2	2	1	6	6
Switch Phase												
Minimum Initial (s)	7.0	20.0	20.0	7.0	20.0	20.0	7.0	20.0	20.0	7.0	20.0	20.0
Minimum Split (s)	11.5	38.0	38.0	11.5	38.0	38.0	11.5	42.9	42.9	11.5	42.9	42.9
Total Split (s)	13.4	38.2	38.2	13.2	38.0	38.0	25.4	51.6	51.6	42.0	68.2	68.2
Total Split (%)	9.2%	26.3%	26.3%	9.1%	26.2%	26.2%	17.5%	35.6%	35.6%	29.0%	47.0%	47.0%
Maximum Green (s)	9.4	31.2	31.2	9.2	31.0	31.0	21.4	44.7	44.7	38.0	61.3	61.3
Yellow Time (s)	3.0	3.7	3.7	3.0	3.7	3.7	3.0	4.6	4.6	3.0	4.6	4.6
All-Red Time (s)	1.0	3.3	3.3	1.0	3.3	3.3	1.0	2.3	2.3	1.0	2.3	2.3
Lost Time Adjust (s)	0.0	-3.0	-3.0	0.0	-3.0	-3.0	0.0	-2.9	-2.9	0.0	-2.9	-2.9
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Vehicle Extension (s)	3.0	5.0	5.0	3.0	5.0	5.0	3.0	5.0	5.0	3.0	5.0	5.0
Recall Mode	None	None	None	None	None	None	None	Max	Max	None	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)		24.0	24.0		24.0	24.0		29.0	29.0		29.0	29.0
Pedestrian Calls (#/hr)		0	0		0	0		0	0		0	0
Act Effct Green (s)	42.3	33.0	33.0	42.1	32.9	32.9	64.0	47.7	47.7	88.5	68.2	68.2
Actuated g/C Ratio	0.30	0.23	0.23	0.30	0.23	0.23	0.45	0.33	0.33	0.62	0.48	0.48
v/c Ratio	0.71	0.41	0.10	0.72	0.74	0.55	0.78	0.82	0.07	0.97	0.72	0.33
Control Delay	57.9	48.4	0.4	54.9	57.4	7.9	58.4	48.9	0.2	73.8	32.7	7.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.4	0.0
Total Delay	57.9	48.4	0.4	54.9	57.4	7.9	58.4	48.9	0.2	73.8	33.1	7.3
LOS	E	D	A	D	E	A	E	D	A	E	C	A
Approach Delay		46.4			42.2			48.8			38.1	
Approach LOS		D			D			D			D	

Intersection Summary	
Area Type:	Other
Cycle Length: 145	
Actuated Cycle Length: 142.7	
Natural Cycle: 125	
Control Type: Actuated-Uncoordinated	
Maximum v/c Ratio: 0.97	
Intersection Signal Delay: 42.7	Intersection LOS: D
Intersection Capacity Utilization 90.6%	ICU Level of Service E
Analysis Period (min) 15	

Splits and Phases: 105: Trafalgar Rd & William Halton Parkway



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	125	334	46	207	605	346	201	1397	43	495	1754	285
v/c Ratio	0.71	0.41	0.10	0.72	0.74	0.55	0.78	0.82	0.07	0.97	0.72	0.33
Control Delay	57.9	48.4	0.4	54.9	57.4	7.9	58.4	48.9	0.2	73.8	32.7	7.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.4	0.0
Total Delay	57.9	48.4	0.4	54.9	57.4	7.9	58.4	48.9	0.2	73.8	33.1	7.3
Queue Length 50th (m)	25.7	42.4	0.0	44.8	84.0	0.0	39.0	134.3	0.0	121.8	144.3	10.3
Queue Length 95th (m)	#43.0	57.1	0.0	#68.0	105.2	25.1	63.7	153.0	0.0	#189.9	171.2	29.9
Internal Link Dist (m)		104.3			102.0			173.1			209.3	
Turn Bay Length (m)	100.0		100.0	100.0		150.0	150.0		75.0			
Base Capacity (vph)	179	849	471	289	844	641	321	1698	608	526	2428	869
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	218	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	0.70	0.39	0.10	0.72	0.72	0.54	0.63	0.82	0.07	0.94	0.79	0.33

Intersection Summary

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

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	115	307	42	190	557	318	185	1285	40	455	1614	262
Future Volume (vph)	115	307	42	190	557	318	185	1285	40	455	1614	262
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.91	1.00	1.00	0.91	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)	1770	3539	1583	1770	3539	1583	1770	5085	1583	1770	5085	1583
Flt Permitted	0.15	1.00	1.00	0.41	1.00	1.00	0.09	1.00	1.00	0.08	1.00	1.00
Satd. Flow (perm)	271	3539	1583	759	3539	1583	166	5085	1583	153	5085	1583
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	125	334	46	207	605	346	201	1397	43	495	1754	285
RTOR Reduction (vph)	0	0	35	0	0	266	0	0	29	0	0	114
Lane Group Flow (vph)	125	334	11	207	605	80	201	1397	14	495	1754	171
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4		4	8		8	2		2	6		6
Actuated Green, G (s)	39.3	30.0	30.0	39.1	29.9	29.9	61.1	44.8	44.8	85.6	65.3	65.3
Effective Green, g (s)	39.3	33.0	33.0	39.1	32.9	32.9	61.1	47.7	47.7	85.6	68.2	68.2
Actuated g/C Ratio	0.28	0.23	0.23	0.27	0.23	0.23	0.43	0.33	0.33	0.60	0.48	0.48
Clearance Time (s)	4.0	7.0	7.0	4.0	7.0	7.0	4.0	6.9	6.9	4.0	6.9	6.9
Vehicle Extension (s)	3.0	5.0	5.0	3.0	5.0	5.0	3.0	5.0	5.0	3.0	5.0	5.0
Lane Grp Cap (vph)	172	818	366	273	815	364	254	1699	529	508	2430	756
v/s Ratio Prot	0.05	0.09		c0.05	c0.17		0.09	0.27		c0.25	0.34	
v/s Ratio Perm	0.15		0.01	0.16		0.05	0.25		0.01	c0.33		0.11
v/c Ratio	0.73	0.41	0.03	0.76	0.74	0.22	0.79	0.82	0.03	0.97	0.72	0.23
Uniform Delay, d1	41.9	46.6	42.5	45.7	51.0	44.5	34.7	43.6	31.9	43.9	29.7	21.8
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	14.2	0.7	0.1	11.4	4.4	0.6	15.4	4.6	0.1	33.1	1.9	0.7
Delay (s)	56.1	47.3	42.5	57.1	55.4	45.1	50.1	48.2	32.0	77.0	31.6	22.5
Level of Service	E	D	D	E	E	D	D	D	C	E	C	C
Approach Delay (s)		49.0			52.6			48.0			39.4	
Approach LOS		D			D			D			D	

Intersection Summary

HCM 2000 Control Delay	45.3	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.89		
Actuated Cycle Length (s)	142.7	Sum of lost time (s)	16.0
Intersection Capacity Utilization	90.6%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

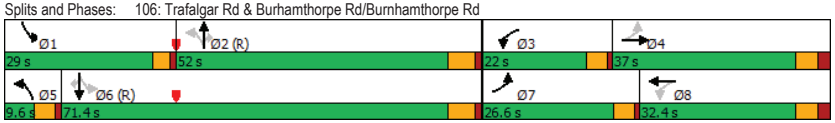
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	244	576	77	210	187	94	52	1231	159	258	1443	145
Future Volume (vph)	244	576	77	210	187	94	52	1231	159	258	1443	145
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	30.0		0.0	15.0		0.0	60.0		60.0	60.0		60.0
Storage Lanes	1		0	1		0	1		1	1		1
Taper Length (m)	70.0			50.0			100.0			100.0		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	0.95	1.00	0.91	1.00	1.00	0.91	1.00
Frt		0.982			0.950				0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1770	3476	0	1770	3362	0	1770	5085	1583	1770	5085	1583
Flt Permitted	0.393			0.141			0.117			0.080		
Satd. Flow (perm)	732	3476	0	263	3362	0	218	5085	1583	149	5085	1583
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		10			56				160			129
Link Speed (k/h)		60			60			80			80	
Link Distance (m)		306.5			989.6			1077.8			258.6	
Travel Time (s)		18.4			59.4			48.5			11.6	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	265	626	84	228	203	102	57	1338	173	280	1568	158
Shared Lane Traffic (%)												
Lane Group Flow (vph)	265	710	0	228	305	0	57	1338	173	280	1568	158
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.6			3.6			3.6			3.6	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Turn Type	pm+pt	NA		pm+pt	NA		pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4			8			2		2	6		6
Minimum Split (s)	9.5	24.0		9.5	24.0		9.5	26.0	26.0	11.5	26.0	26.0
Total Split (s)	26.6	37.0		22.0	32.4		9.6	52.0	52.0	29.0	71.4	71.4
Total Split (%)	19.0%	26.4%		15.7%	23.1%		6.9%	37.1%	37.1%	20.7%	51.0%	51.0%
Maximum Green (s)	22.1	31.0		17.5	26.4		5.1	46.0	46.0	25.0	65.4	65.4
Yellow Time (s)	3.5	3.7		3.5	3.7		3.5	4.6	4.6	3.0	4.6	4.6
All-Red Time (s)	1.0	2.3		1.0	2.3		1.0	1.4	1.4	1.0	1.4	1.4
Lost Time Adjust (s)	-2.0	-2.0		-2.0	-2.0		-2.0	-2.0	-2.0	0.0	-2.0	-2.0
Total Lost Time (s)	2.5	4.0		2.5	4.0		2.5	4.0	4.0	4.0	4.0	4.0
Lead/Lag	Lead	Lag		Lead	Lag		Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes		Yes	Yes		Yes	Yes	Yes	Yes	Yes	Yes
Act Effct Green (s)	56.5	33.0		49.4	28.4		56.6	48.0	48.0	77.0	67.4	67.4
Actuated g/C Ratio	0.40	0.24		0.35	0.20		0.40	0.34	0.34	0.55	0.48	0.48
v/c Ratio	0.56	0.86		0.75	0.42		0.34	0.77	0.27	0.75	0.64	0.19
Control Delay	34.4	62.1		50.6	41.4		22.4	44.6	6.9	48.8	28.7	5.6
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	34.4	62.1		50.6	41.4		22.4	44.6	6.9	48.8	28.7	5.6

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
LOS	C	E		D	D		C	D	A	D	C	A
Approach Delay		54.6			45.3			39.6			29.7	
Approach LOS		D			D			D			C	

Intersection Summary

Area Type: Other
Cycle Length: 140
Actuated Cycle Length: 140
Offset: 0 (0%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green
Natural Cycle: 75
Control Type: Pretimed
Maximum v/c Ratio: 0.86
Intersection Signal Delay: 39.2 — Intersection LOS: D
Intersection Capacity Utilization 81.4% — ICU Level of Service D
Analysis Period (min) 15

Splits and Phases: 106: Trafalgar Rd & Burhamthorpe Rd/Burnhamthorpe Rd



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	265	710	228	305	57	1338	173	280	1568	158
v/c Ratio	0.56	0.86	0.75	0.42	0.34	0.77	0.27	0.75	0.64	0.19
Control Delay	34.4	62.1	50.6	41.4	22.4	44.6	6.9	48.8	28.7	5.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	34.4	62.1	50.6	41.4	22.4	44.6	6.9	48.8	28.7	5.6
Queue Length 50th (m)	50.4	97.3	43.6	31.3	6.8	119.1	2.4	56.4	115.3	4.1
Queue Length 95th (m)	73.2	#123.4	#78.8	45.6	13.3	136.9	18.1	#92.9	130.8	16.1
Internal Link Dist (m)		282.5		965.6		1053.8			234.6	
Turn Bay Length (m)	30.0		15.0		60.0		60.0	60.0		60.0
Base Capacity (vph)	474	826	302	726	166	1743	647	371	2448	828
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.56	0.86	0.75	0.42	0.34	0.77	0.27	0.75	0.64	0.19

Intersection Summary

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

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	244	576	77	210	187	94	52	1231	159	258	1443	145
Future Volume (vph)	244	576	77	210	187	94	52	1231	159	258	1443	145
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	2.5	4.0		2.5	4.0		2.5	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	0.91	1.00	1.00	0.91	1.00
Frt	1.00	0.98		1.00	0.95		1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1770	3476		1770	3362		1770	5085	1583	1770	5085	1583
Flt Permitted	0.39	1.00		0.14	1.00		0.12	1.00	1.00	0.08	1.00	1.00
Satd. Flow (perm)	733	3476		262	3362		219	5085	1583	149	5085	1583
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	265	626	84	228	203	102	57	1338	173	280	1568	158
RTOR Reduction (vph)	0	8	0	0	45	0	0	0	105	0	0	67
Lane Group Flow (vph)	265	702	0	228	260	0	57	1338	68	280	1568	91
Turn Type	pm+pt	NA		pm+pt	NA		pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4			8			2		2	6		6
Actuated Green, G (s)	53.0	31.0		43.9	26.4		51.1	46.0	46.0	75.0	65.4	65.4
Effective Green, g (s)	55.0	33.0		47.9	28.4		55.1	48.0	48.0	75.0	67.4	67.4
Actuated g/C Ratio	0.39	0.24		0.34	0.20		0.39	0.34	0.34	0.54	0.48	0.48
Clearance Time (s)	4.5	6.0		4.5	6.0		4.5	6.0	6.0	4.0	6.0	6.0
Lane Grp Cap (vph)	466	819		299	682		164	1743	542	369	2448	762
v/s Ratio Prot	c0.10	c0.20		c0.11	0.08		0.02	c0.26		c0.14	0.31	
v/s Ratio Perm	0.13			0.15			0.12		0.04	0.27		0.06
v/c Ratio	0.57	0.86		0.76	0.38		0.35	0.77	0.13	0.76	0.64	0.12
Uniform Delay, d1	30.8	51.2		36.6	48.2		27.1	41.0	31.6	38.6	27.2	20.0
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	5.0	11.3		16.7	1.6		5.7	3.3	0.5	13.6	1.3	0.3
Delay (s)	35.7	62.5		53.4	49.8		32.8	44.3	32.1	52.3	28.5	20.3
Level of Service	D	E		D	D		C	D	C	D	C	C
Approach Delay (s)		55.2			51.3			42.6			31.2	
Approach LOS		E			D			D			C	

Intersection Summary

HCM 2000 Control Delay	41.4	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.80		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	14.5
Intersection Capacity Utilization	81.4%	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)	185	184	163	0	101	0	262	0	0	0	9	72
Future Volume (vph)	185	184	163	0	101	0	262	0	0	0	9	72
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.930									0.880	
Flt Protected	0.950							0.950				
Satd. Flow (prot)	1770	1732	0	0	1863	0	0	1770	0	0	1639	0
Flt Permitted	0.950							0.950				
Satd. Flow (perm)	1770	1732	0	0	1863	0	0	1770	0	0	1639	0
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		134.2			184.9			114.5			42.0	
Travel Time (s)		9.7			13.3			8.2			3.0	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	201	200	177	0	110	0	285	0	0	0	10	78
Shared Lane Traffic (%)												
Lane Group Flow (vph)	201	377	0	0	110	0	0	285	0	0	88	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		7.2			7.2			0.0			0.0	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Sign Control		Stop			Stop			Stop			Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 47.5%		ICU Level of Service A	
Analysis Period (min) 15			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Stop			Stop	
Traffic Volume (vph)	185	184	163	0	101	0	262	0	0	0	9	72
Future Volume (vph)	185	184	163	0	101	0	262	0	0	0	9	72
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	201	200	177	0	110	0	285	0	0	0	10	78

Direction, Lane #	EB 1	EB 2	WB 1	NB 1	SB 1
Volume Total (vph)	201	377	110	285	88
Volume Left (vph)	201	0	0	285	0
Volume Right (vph)	0	177	0	0	78
Hadj (s)	0.53	-0.29	0.03	0.23	-0.50
Departure Headway (s)	6.4	5.5	6.0	6.0	5.7
Degree Utilization, x	0.35	0.58	0.18	0.47	0.14
Capacity (veh/h)	546	635	546	567	564
Control Delay (s)	11.6	14.6	10.3	14.1	9.6
Approach Delay (s)	13.6		10.3	14.1	9.6
Approach LOS	B		B	B	A

Intersection Summary				
Delay	13.1			
Level of Service	B			
Intersection Capacity Utilization	47.5%	ICU Level of Service	A	
Analysis Period (min)	15			

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	184	0	0	0	0	0	30	40	0	0	21	71
Future Volume (vph)	184	0	0	0	0	0	30	40	0	0	21	71
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt											0.896	
Flt Protected		0.950						0.979				
Satd. Flow (prot)	0	1770	0	0	1863	0	0	1824	0	0	1669	0
Flt Permitted		0.950						0.979				
Satd. Flow (perm)	0	1770	0	0	1863	0	0	1824	0	0	1669	0
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		184.9			187.0			108.2			52.3	
Travel Time (s)		13.3			13.5			7.8			3.8	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	200	0	0	0	0	0	33	43	0	0	23	77
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	200	0	0	0	0	0	76	0	0	100	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		0.0			0.0			0.0			0.0	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Sign Control		Free			Free			Stop			Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 27.3%		ICU Level of Service A	
Analysis Period (min) 15			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	184	0	0	0	0	0	30	40	0	0	21	71
Future Volume (Veh/h)	184	0	0	0	0	0	30	40	0	0	21	71
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	200	0	0	0	0	0	33	43	0	0	23	77
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			0			488	400	0	422	400	0
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	0			0			488	400	0	422	400	0
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	88			100			92	91	100	100	95	93
cM capacity (veh/h)	1623			1623			397	472	1085	458	472	1085

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	200	0	76	100
Volume Left	200	0	33	0
Volume Right	0	0	0	77
cSH	1623	1700	436	835
Volume to Capacity	0.12	0.00	0.17	0.12
Queue Length 95th (m)	3.2	0.0	4.7	3.0
Control Delay (s)	7.5	0.0	15.0	9.9
Lane LOS	A		B	A
Approach Delay (s)	7.5	0.0	15.0	9.9
Approach LOS			B	A

Intersection Summary			
Average Delay	9.7		
Intersection Capacity Utilization	27.3%	ICU Level of Service	A
Analysis Period (min)	15		

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	30	0	80	0	0	0	10	40	0	0	21	0
Future Volume (vph)	30	0	80	0	0	0	10	40	0	0	21	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.902										
Flt Protected		0.986						0.990				
Satd. Flow (prot)	0	1657	0	0	1863	0	0	1844	0	0	1863	0
Flt Permitted		0.986						0.990				
Satd. Flow (perm)	0	1657	0	0	1863	0	0	1844	0	0	1863	0
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		41.9			201.5			117.5			108.2	
Travel Time (s)		3.0			14.5			8.5			7.8	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	33	0	87	0	0	0	11	43	0	0	23	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	120	0	0	0	0	0	54	0	0	23	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		0.0			0.0			3.6			3.6	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Sign Control		Stop			Stop			Free			Free	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 22.6%		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)	30	0	80	0	0	0	10	40	0	0	21	0
Future Volume (Veh/h)	30	0	80	0	0	0	10	40	0	0	21	0
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	33	0	87	0	0	0	11	43	0	0	23	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)								117				
pX, platoon unblocked												
vC, conflicting volume	88	88	23	175	88	43	23			43		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	88	88	23	175	88	43	23			43		
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 %	96	100	92	100	100	100	99			100		
cM capacity (veh/h)	893	797	1054	719	797	1027	1592			1566		

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	120	0	54	23
Volume Left	33	0	11	0
Volume Right	87	0	0	0
cSH	1004	1700	1592	1566
Volume to Capacity	0.12	0.00	0.01	0.00
Queue Length 95th (m)	3.0	0.0	0.2	0.0
Control Delay (s)	9.1	0.0	1.5	0.0
Lane LOS	A	A	A	
Approach Delay (s)	9.1	0.0	1.5	0.0
Approach LOS	A	A		

Intersection Summary				
Average Delay		5.9		
Intersection Capacity Utilization		22.6%	ICU Level of Service	A
Analysis Period (min)		15		

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	725	77	0	1033	7	0	0	89	0	0	29
Future Volume (vph)	0	725	77	0	1033	7	0	0	89	0	0	29
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	0.0		50.0	0.0		50.0	0.0		0.0	0.0		0.0
Storage Lanes	0		0	0		0	0		1	0		1
Taper Length (m)	7.5			7.5			7.5			7.5		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.986			0.999				0.865			0.865
Flt Protected												
Satd. Flow (prot)	0	3490	0	0	3536	0	0	0	1611	0	0	1611
Flt Permitted												
Satd. Flow (perm)	0	3490	0	0	3536	0	0	0	1611	0	0	1611
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		126.0			207.1			115.6			112.7	
Travel Time (s)		9.1			14.9			8.3			8.1	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	788	84	0	1123	8	0	0	97	0	0	32
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	872	0	0	1131	0	0	0	97	0	0	32
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.6			3.6			0.0			0.0	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Sign Control		Free			Free			Stop			Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 38.8%		ICU Level of Service A	
Analysis Period (min) 15			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	725	77	0	1033	7	0	0	89	0	0	29
Future Volume (Veh/h)	0	725	77	0	1033	7	0	0	89	0	0	29
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	788	84	0	1123	8	0	0	97	0	0	32
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (m)		126			207							
pX, platoon unblocked	0.86			0.92			0.90	0.90	0.92	0.90	0.90	0.86
vC, conflicting volume	1131			872			1424	1961	436	1618	1999	566
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	829			697			865	1463	225	1081	1505	172
tC, single (s)	4.1			4.1			7.5	6.5	6.9	7.5	6.5	6.9
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			100			100	100	87	100	100	96
cM capacity (veh/h)	687			827			213	115	719	134	108	725

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	SB 1
Volume Total	525	347	749	382	97	32
Volume Left	0	0	0	0	0	0
Volume Right	0	84	0	8	97	32
cSH	1700	1700	1700	1700	719	725
Volume to Capacity	0.31	0.20	0.44	0.22	0.13	0.04
Queue Length 95th (m)	0.0	0.0	0.0	0.0	3.5	1.0
Control Delay (s)	0.0	0.0	0.0	0.0	10.8	10.2
Lane LOS					B	B
Approach Delay (s)	0.0		0.0		10.8	10.2
Approach LOS					B	B

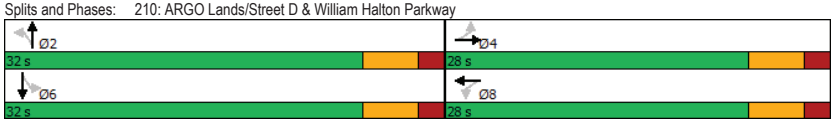
Intersection Summary			
Average Delay	0.6		
Intersection Capacity Utilization	38.8%	ICU Level of Service	A
Analysis Period (min)	15		

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	34	703	77	54	717	16	293	0	89	68	0	33
Future Volume (vph)	34	703	77	54	717	16	293	0	89	68	0	33
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	50.0		0.0	50.0		0.0	50.0		0.0	50.0		0.0
Storage Lanes	1		0	1		0	1		0	1		0
Taper Length (m)	70.0			70.0			50.0			50.0		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.985			0.997			0.850			0.850	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1770	3486	0	1770	3529	0	1770	1583	0	1770	1583	0
Flt Permitted	0.308			0.281			0.734			0.694		
Satd. Flow (perm)	574	3486	0	523	3529	0	1367	1583	0	1293	1583	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		22			4			68			64	
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		207.1			202.1			61.6			117.5	
Travel Time (s)		14.9			14.6			4.4			8.5	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	37	764	84	59	779	17	318	0	97	74	0	36
Shared Lane Traffic (%)												
Lane Group Flow (vph)	37	848	0	59	796	0	318	97	0	74	36	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.6			3.6			3.6			3.6	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2		1	2		1	2		1	2	
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	
Leading Detector (m)	2.0	10.0		2.0	10.0		2.0	10.0		2.0	10.0	
Trailing Detector (m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Position(m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Size(m)	2.0	0.6		2.0	0.6		2.0	0.6		2.0	0.6	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector Phase	4	4		8	8		2	2		6	6	
Switch Phase												
Minimum Initial (s)	10.0	10.0		10.0	10.0		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	
Total Split (s)	28.0	28.0		28.0	28.0		32.0	32.0		32.0	32.0	
Total Split (%)	46.7%	46.7%		46.7%	46.7%		53.3%	53.3%		53.3%	53.3%	
Maximum Green (s)	22.0	22.0		22.0	22.0		26.0	26.0		26.0	26.0	
Yellow Time (s)	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	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)	6.0	6.0		6.0	6.0		6.0	6.0		6.0	6.0	
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	Max	Max		Max	Max		None	None		Min	Min	
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)	22.3	22.3		22.3	22.3		16.8	16.8		16.8	16.8	
Actuated g/C Ratio	0.44	0.44		0.44	0.44		0.33	0.33		0.33	0.33	
v/c Ratio	0.15	0.55		0.26	0.52		0.71	0.17		0.17	0.06	
Control Delay	13.2	13.4		15.6	13.2		24.1	5.8		12.4	1.8	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	13.2	13.4		15.6	13.2		24.1	5.8		12.4	1.8	
LOS	B	B		B	B		C	A		B	A	
Approach Delay		13.4			13.4			19.8			8.9	
Approach LOS		B			B			B			A	

Intersection Summary	
Area Type:	Other
Cycle Length: 60	
Actuated Cycle Length: 51.2	
Natural Cycle: 50	
Control Type: Semi Act-Uncoord	
Maximum v/c Ratio: 0.71	
Intersection Signal Delay: 14.4	Intersection LOS: B
Intersection Capacity Utilization 68.1%	ICU Level of Service C
Analysis Period (min) 15	

Splits and Phases: 210: ARGO Lands/Street D & William Halton Parkway



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	37	848	59	796	318	97	74	36
v/c Ratio	0.15	0.55	0.26	0.52	0.71	0.17	0.17	0.06
Control Delay	13.2	13.4	15.6	13.2	24.1	5.8	12.4	1.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	13.2	13.4	15.6	13.2	24.1	5.8	12.4	1.8
Queue Length 50th (m)	1.9	26.8	3.1	25.3	24.2	1.7	4.6	0.0
Queue Length 95th (m)	8.5	54.8	12.9	51.5	44.8	8.4	11.1	2.2
Internal Link Dist (m)		183.1		178.1		37.6		93.5
Turn Bay Length (m)	50.0		50.0		50.0		50.0	
Base Capacity (vph)	249	1528	227	1536	702	846	664	844
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.15	0.55	0.26	0.52	0.45	0.11	0.11	0.04

Intersection Summary

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	34	703	77	54	717	16	293	0	89	68	0	33
Future Volume (vph)	34	703	77	54	717	16	293	0	89	68	0	33
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0	6.0		6.0	6.0		6.0	6.0		6.0	6.0	
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	1.00		1.00	1.00	
Frt	1.00	0.99		1.00	1.00		1.00	0.85		1.00	0.85	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	3487		1770	3528		1770	1583		1770	1583	
Flt Permitted	0.31	1.00		0.28	1.00		0.73	1.00		0.69	1.00	
Satd. Flow (perm)	573	3487		523	3528		1367	1583		1293	1583	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	37	764	84	59	779	17	318	0	97	74	0	36
RTOR Reduction (vph)	0	12	0	0	2	0	0	46	0	0	24	0
Lane Group Flow (vph)	37	836	0	59	794	0	318	51	0	74	12	0
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)	22.3	22.3		22.3	22.3		16.8	16.8		16.8	16.8	
Effective Green, g (s)	22.3	22.3		22.3	22.3		16.8	16.8		16.8	16.8	
Actuated g/C Ratio	0.44	0.44		0.44	0.44		0.33	0.33		0.33	0.33	
Clearance Time (s)	6.0	6.0		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		3.0	3.0	
Lane Grp Cap (vph)	250	1521		228	1539		449	520		425	520	
v/s Ratio Prot		c0.24			0.22			0.03			0.01	
v/s Ratio Perm	0.06			0.11			c0.23			0.06		
v/c Ratio	0.15	0.55		0.26	0.52		0.71	0.10		0.17	0.02	
Uniform Delay, d1	8.7	10.7		9.1	10.5		15.0	11.9		12.2	11.6	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	1.2	1.4		2.7	1.2		5.1	0.1		0.2	0.0	
Delay (s)	9.9	12.1		11.9	11.7		20.1	12.0		12.4	11.6	
Level of Service	A	B		B	B		C	B		B	B	
Approach Delay (s)		12.0			11.7			18.2			12.1	
Approach LOS		B			B			B			B	

Intersection Summary

HCM 2000 Control Delay	13.0	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.62		
Actuated Cycle Length (s)	51.1	Sum of lost time (s)	12.0
Intersection Capacity Utilization	68.1%	ICU Level of Service	C
Analysis Period (min)	15		

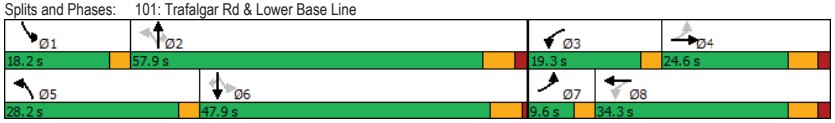
c Critical Lane Group

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	44	197	64	222	556	302	370	1919	265	251	1319	101
Future Volume (vph)	44	197	64	222	556	302	370	1919	265	251	1319	101
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	45.0		0.0	110.0		0.0	90.0		90.0	90.0		90.0
Storage Lanes	1		0	1		0	1		1	1		1
Taper Length (m)	100.0			100.0			100.0			100.0		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	0.95	1.00	0.91	1.00	1.00	0.91	1.00
Frt		0.963			0.947				0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1770	3408	0	1770	3352	0	1770	5085	1583	1770	5085	1583
Flt Permitted	0.217			0.351			0.088			0.094		
Satd. Flow (perm)	404	3408	0	654	3352	0	164	5085	1583	175	5085	1583
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		32			81				265			138
Link Speed (k/h)		70			60			80			80	
Link Distance (m)		749.3			690.6			498.3			434.3	
Travel Time (s)		38.5			41.4			22.4			19.5	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	48	214	70	241	604	328	402	2086	288	273	1434	110
Shared Lane Traffic (%)												
Lane Group Flow (vph)	48	284	0	241	932	0	402	2086	288	273	1434	110
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.6			3.6			3.6			3.6	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2		1	2		1	2	1	1	2	1
Detector Template	Left	Thru		Left	Thru		Left	Thru	Right	Left	Thru	Right
Leading Detector (m)	2.0	10.0		2.0	10.0		2.0	10.0	2.0	2.0	10.0	2.0
Trailing Detector (m)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Position(m)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Size(m)	2.0	0.6		2.0	0.6		2.0	0.6	2.0	2.0	0.6	2.0
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	pm+pt	NA		pm+pt	NA		pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4			8			2		2	6		6

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector Phase	7	4		3	8		5	2	2	1	6	6
Switch Phase												
Minimum Initial (s)	5.0	10.0		7.0	10.0		5.0	25.0	25.0	7.0	25.0	25.0
Minimum Split (s)	9.5	22.5		11.5	22.5		9.5	31.6	31.6	11.5	30.6	30.6
Total Split (s)	9.6	24.6		19.3	34.3		28.2	57.9	57.9	18.2	47.9	47.9
Total Split (%)	8.0%	20.5%		16.1%	28.6%		23.5%	48.3%	48.3%	15.2%	39.9%	39.9%
Maximum Green (s)	6.6	18.4		16.3	28.1		25.2	51.3	51.3	15.2	42.3	42.3
Yellow Time (s)	3.0	4.2		3.0	4.2		3.0	4.6	4.6	3.0	4.6	4.6
All-Red Time (s)	0.0	2.0		0.0	2.0		0.0	2.0	2.0	0.0	1.0	1.0
Lost Time Adjust (s)	1.0	-2.2		1.0	-2.2		1.0	-2.2	-2.2	1.0	-2.2	-2.2
Total Lost Time (s)	4.0	4.0		4.0	4.0		4.0	4.4	4.4	4.0	3.4	3.4
Lead/Lag	Lead	Lag		Lead	Lag		Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes		Yes	Yes		Yes	Yes	Yes	Yes	Yes	Yes
Vehicle Extension (s)	3.0	5.0		0.2	5.0		3.0	5.0	5.0	0.2	5.0	5.0
Recall Mode	None	None		None	None		None	Max	Max	Max	Max	Max
Act Effct Green (s)	26.4	21.0		37.9	30.3		72.2	53.6	53.6	59.2	45.5	45.5
Actuated g/C Ratio	0.22	0.18		0.32	0.26		0.61	0.45	0.45	0.50	0.39	0.39
v/c Ratio	0.32	0.45		0.73	1.01		0.97	0.90	0.33	0.98	0.73	0.16
Control Delay	34.1	41.2		45.3	73.1		70.3	37.0	4.4	82.9	34.4	2.6
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	34.1	41.2		45.3	73.1		70.3	37.0	4.4	82.9	34.4	2.6
LOS	C	D		D	E		E	D	A	F	C	A
Approach Delay		40.2			67.4			38.5			39.8	
Approach LOS		D			E			D			D	

Intersection Summary	
Area Type: Other	
Cycle Length: 120	
Actuated Cycle Length: 118.1	
Natural Cycle: 90	
Control Type: Semi Act-Uncoord	
Maximum v/c Ratio: 1.01	
Intersection Signal Delay: 44.5	Intersection LOS: D
Intersection Capacity Utilization 93.9%	ICU Level of Service F
Analysis Period (min) 15	

Splits and Phases: 101: Trafalgar Rd & Lower Base Line



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	48	284	241	932	402	2086	288	273	1434	110
v/c Ratio	0.32	0.45	0.73	1.01	0.97	0.90	0.33	0.98	0.73	0.16
Control Delay	34.1	41.2	45.3	73.1	70.3	37.0	4.4	82.9	34.4	2.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	34.1	41.2	45.3	73.1	70.3	37.0	4.4	82.9	34.4	2.6
Queue Length 50th (m)	7.6	27.6	43.1	~113.9	76.1	163.4	2.9	48.2	105.9	0.0
Queue Length 95th (m)	16.2	41.4	65.7	#153.7	#136.2	186.0	18.2	#102.5	123.5	6.9
Internal Link Dist (m)		725.3		666.6		474.3			410.3	
Turn Bay Length (m)	45.0		110.0		90.0		90.0	90.0		90.0
Base Capacity (vph)	155	647	354	920	429	2306	862	279	1960	694
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.31	0.44	0.68	1.01	0.94	0.90	0.33	0.98	0.73	0.16

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

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

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	44	197	64	222	556	302	370	1919	265	251	1319	101
Future Volume (vph)	44	197	64	222	556	302	370	1919	265	251	1319	101
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0	4.4	4.4	4.0	3.4	3.4
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	0.91	1.00	1.00	0.91	1.00
Frt	1.00	0.96		1.00	0.95		1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1770	3408		1770	3352		1770	5085	1583	1770	5085	1583
Flt Permitted	0.22	1.00		0.35	1.00		0.09	1.00	1.00	0.09	1.00	1.00
Satd. Flow (perm)	405	3408		654	3352		164	5085	1583	176	5085	1583
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	48	214	70	241	604	328	402	2086	288	273	1434	110
RTOR Reduction (vph)	0	26	0	0	60	0	0	0	145	0	0	68
Lane Group Flow (vph)	48	258	0	241	872	0	402	2086	143	273	1434	42
Turn Type	pm+pt	NA		pm+pt	NA		pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4			8			2		2	6		6
Actuated Green, G (s)	24.6	19.4		36.3	28.1		69.6	51.4	51.4	58.6	43.4	43.4
Effective Green, g (s)	22.6	21.6		35.3	30.3		68.6	53.6	53.6	56.6	45.6	45.6
Actuated g/C Ratio	0.19	0.18		0.30	0.26		0.58	0.45	0.45	0.48	0.38	0.38
Clearance Time (s)	3.0	6.2		3.0	6.2		3.0	6.6	6.6	3.0	5.6	5.6
Vehicle Extension (s)	3.0	5.0		0.2	5.0		3.0	5.0	5.0	0.2	5.0	5.0
Lane Grp Cap (vph)	125	620		315	855		408	2296	714	274	1953	608
v/s Ratio Prot	0.01	0.08		c0.08	c0.26		c0.19	0.41		0.12	0.28	
v/s Ratio Perm	0.06			0.14			c0.38		0.09	0.36		0.03
v/c Ratio	0.38	0.42		0.77	1.02		0.99	0.91	0.20	1.00	0.73	0.07
Uniform Delay, d1	40.9	43.0		34.5	44.2		36.8	30.3	19.6	35.4	31.4	23.1
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	2.0	0.9		9.6	35.8		40.3	6.7	0.6	53.5	2.5	0.2
Delay (s)	42.8	43.9		44.0	80.0		77.1	37.0	20.3	88.9	33.8	23.3
Level of Service	D	D		D	E		E	D	C	F	C	C
Approach Delay (s)		43.8			72.6			41.0			41.5	
Approach LOS		D			E			D			D	

Intersection Summary

HCM 2000 Control Delay	47.4	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.99		
Actuated Cycle Length (s)	118.7	Sum of lost time (s)	16.4
Intersection Capacity Utilization	93.9%	ICU Level of Service	F
Analysis Period (min)	15		

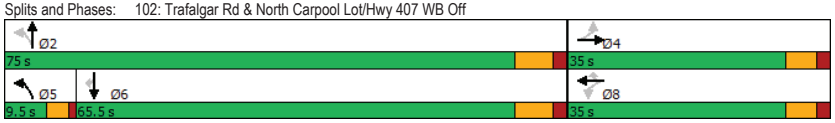
c Critical Lane Group

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	6	0	37	378	13	139	7	2409	0	0	1601	4
Future Volume (vph)	6	0	37	378	13	139	7	2409	0	0	1601	4
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	0.0		0.0	0.0		60.0	65.0		0.0	0.0		15.0
Storage Lanes	0		0	1		1	1		0	0		1
Taper Length (m)	7.5			7.5			100.0			7.5		
Lane Util. Factor	1.00	1.00	1.00	0.95	0.91	0.95	1.00	0.91	1.00	1.00	0.91	1.00
Frt		0.885			0.990	0.850						0.850
Flt Protected		0.993		0.950	0.958		0.950					
Satd. Flow (prot)	0	1637	0	1681	1608	1504	1770	5085	0	0	5085	1583
Flt Permitted		0.949		0.780	0.763		0.089					
Satd. Flow (perm)	0	1564	0	1380	1280	1504	166	5085	0	0	5085	1583
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		79			3	79						69
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		134.0			574.1			363.6			118.9	
Travel Time (s)		9.6			41.3			26.2			8.6	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	7	0	40	411	14	151	8	2618	0	0	1740	4
Shared Lane Traffic (%)				46%		10%						
Lane Group Flow (vph)	0	47	0	222	218	136	8	2618	0	0	1740	4
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.8			3.6			3.6			3.6	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2		1	2	1	1	2			2	1
Detector Template	Left	Thru		Left	Thru	Right	Left	Thru			Thru	Right
Leading Detector (m)	2.0	10.0		2.0	10.0	2.0	2.0	10.0			10.0	2.0
Trailing Detector (m)	0.0	0.0		0.0	0.0	0.0	0.0	0.0			0.0	0.0
Detector 1 Position(m)	0.0	0.0		0.0	0.0	0.0	0.0	0.0			0.0	0.0
Detector 1 Size(m)	2.0	0.6		2.0	0.6	2.0	2.0	0.6			0.6	2.0
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex			Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0			0.0	0.0
Detector 1 Queue (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0			0.0	0.0
Detector 1 Delay (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0			0.0	0.0
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Perm	NA		Perm	NA	Perm	pm+pt	NA			NA	Perm
Protected Phases		4			8		5	2			6	
Permitted Phases	4			8		8	2					6

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector Phase	4	4		8	8	8	5	2			6	6
Switch Phase												
Minimum Initial (s)	7.0	7.0		7.0	7.0	7.0	4.0	20.0			20.0	20.0
Minimum Split (s)	22.5	22.5		22.5	22.5	22.5	9.5	27.0			27.0	27.0
Total Split (s)	35.0	35.0		35.0	35.0	35.0	9.5	75.0			65.5	65.5
Total Split (%)	31.8%	31.8%		31.8%	31.8%	31.8%	8.6%	68.2%			59.5%	59.5%
Maximum Green (s)	29.0	29.0		29.0	29.0	29.0	5.5	68.0			58.5	58.5
Yellow Time (s)	4.0	4.0		4.0	4.0	4.0	3.0	5.0			5.0	5.0
All-Red Time (s)	2.0	2.0		2.0	2.0	2.0	1.0	2.0			2.0	2.0
Lost Time Adjust (s)		-2.0		-2.0	-2.0	-2.0	0.0	-3.0			-3.0	-3.0
Total Lost Time (s)		4.0		4.0	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)	3.5	3.5		3.5	3.5	3.5	2.5	7.0			7.0	7.0
Recall Mode	None	None		None	None	None	None	Max			Max	Max
Act Effct Green (s)		24.4		24.4	24.4	24.4	71.3	71.3			69.5	69.5
Actuated g/C Ratio		0.24		0.24	0.24	0.24	0.69	0.69			0.67	0.67
v/c Ratio		0.11		0.69	0.72	0.33	0.04	0.75			0.51	0.00
Control Delay		2.7		47.3	49.7	16.6	7.1	13.1			10.5	0.0
Queue Delay		0.0		0.0	0.0	0.0	0.0	0.0			0.0	0.0
Total Delay		2.7		47.3	49.7	16.6	7.1	13.1			10.5	0.0
LOS		A		D	D	B	A	B			B	A
Approach Delay		2.7			40.9			13.1			10.5	
Approach LOS		A			D			B			B	

Intersection Summary			
Area Type:	Other		
Cycle Length: 110			
Actuated Cycle Length: 103.7			
Natural Cycle: 60			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 0.75			
Intersection Signal Delay: 15.3		Intersection LOS: B	
Intersection Capacity Utilization 72.1%		ICU Level of Service C	
Analysis Period (min) 15			

Splits and Phases: 102: Trafalgar Rd & North Carpool Lot/Hwy 407 WB Off



Lane Group	EBT	WBL	WBT	WBR	NBL	NBT	SBT	SBR
Lane Group Flow (vph)	47	222	218	136	8	2618	1740	4
v/c Ratio	0.11	0.69	0.72	0.33	0.04	0.75	0.51	0.00
Control Delay	2.7	47.3	49.7	16.6	7.1	13.1	10.5	0.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	2.7	47.3	49.7	16.6	7.1	13.1	10.5	0.0
Queue Length 50th (m)	0.0	42.4	43.2	9.4	0.5	111.7	54.7	0.0
Queue Length 95th (m)	3.4	68.4	70.8	25.4	2.2	155.9	100.1	0.0
Internal Link Dist (m)	110.0		550.1			339.6	94.9	
Turn Bay Length (m)				60.0	65.0			15.0
Base Capacity (vph)	524	413	386	506	199	3494	3406	1083
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	0.09	0.54	0.56	0.27	0.04	0.75	0.51	0.00

Intersection Summary

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	6	0	37	378	13	139	7	2409	0	0	1601	4
Future Volume (vph)	6	0	37	378	13	139	7	2409	0	0	1601	4
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0		4.0	4.0	4.0	4.0	4.0			4.0	4.0
Lane Util. Factor		1.00		0.95	0.91	0.95	1.00	0.91			0.91	1.00
Frt		0.89		1.00	0.99	0.85	1.00	1.00			1.00	0.85
Flt Protected		0.99		0.95	0.96	1.00	0.95	1.00			1.00	1.00
Satd. Flow (prot)		1637		1681	1608	1504	1770	5085			5085	1583
Flt Permitted		0.95		0.78	0.76	1.00	0.09	1.00			1.00	1.00
Satd. Flow (perm)		1564		1380	1280	1504	166	5085			5085	1583
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	7	0	40	411	14	151	8	2618	0	0	1740	4
RTOR Reduction (vph)	0	36	0	0	2	61	0	0	0	0	0	1
Lane Group Flow (vph)	0	11	0	222	216	75	8	2618	0	0	1740	3
Turn Type	Perm	NA		Perm	NA	Perm	pm+pt	NA			NA	Perm
Protected Phases		4			8		5	2			6	
Permitted Phases	4			8		8	2					6
Actuated Green, G (s)		22.4		22.4	22.4	22.4	71.4	71.4			66.4	66.4
Effective Green, g (s)		24.4		24.4	24.4	24.4	71.4	74.4			69.4	69.4
Actuated g/C Ratio		0.23		0.23	0.23	0.23	0.67	0.70			0.65	0.65
Clearance Time (s)		6.0		6.0	6.0	6.0	4.0	7.0			7.0	7.0
Vehicle Extension (s)		3.5		3.5	3.5	3.5	2.5	7.0			7.0	7.0
Lane Grp Cap (vph)		357		315	292	343	125	3542			3304	1028
v/s Ratio Prot							0.00	c0.51			0.34	
v/s Ratio Perm		0.01		0.16	c0.17	0.05	0.04					0.00
v/c Ratio		0.03		0.70	0.74	0.22	0.06	0.74			0.53	0.00
Uniform Delay, d1		32.0		37.9	38.2	33.5	7.9	10.1			10.0	6.6
Progression Factor		1.00		1.00	1.00	1.00	1.00	1.00			1.00	1.00
Incremental Delay, d2		0.0		7.2	9.7	0.4	0.2	1.4			0.6	0.0
Delay (s)		32.0		45.1	47.9	33.8	8.1	11.6			10.6	6.6
Level of Service		C		D	D	C	A	B			B	A
Approach Delay (s)		32.0			43.5			11.5			10.6	
Approach LOS		C			D			B			B	

Intersection Summary

HCM 2000 Control Delay	15.1	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.77		
Actuated Cycle Length (s)	106.8	Sum of lost time (s)	12.0
Intersection Capacity Utilization	72.1%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	71	157	0	2389	2016	0
Future Volume (vph)	71	157	0	2389	2016	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	0.91	0.91	1.00
Frt		0.850				
Flt Protected	0.950					
Satd. Flow (prot)	1770	1583	0	5085	5085	0
Flt Permitted	0.950					
Satd. Flow (perm)	1770	1583	0	5085	5085	0
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)		7				
Link Speed (k/h)	50			50	50	
Link Distance (m)	554.6			120.3	363.6	
Travel Time (s)	39.9			8.7	26.2	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	77	171	0	2597	2191	0
Shared Lane Traffic (%)						
Lane Group Flow (vph)	77	171	0	2597	2191	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	3.6			3.6	3.6	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	4.8			4.8	4.8	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)	25	15	25			15
Turn Type	Prot	Perm		NA	NA	
Protected Phases	4			2	6	
Permitted Phases		4				
Minimum Split (s)	24.0	24.0		24.9	24.9	
Total Split (s)	24.0	24.0		46.0	46.0	
Total Split (%)	34.3%	34.3%		65.7%	65.7%	
Maximum Green (s)	18.0	18.0		39.1	39.1	
Yellow Time (s)	4.0	4.0		4.6	4.6	
All-Red Time (s)	2.0	2.0		2.3	2.3	
Lost Time Adjust (s)	-2.0	-2.0		-2.9	-2.9	
Total Lost Time (s)	4.0	4.0		4.0	4.0	
Lead/Lag						
Lead-Lag Optimize?						
Walk Time (s)	7.0	7.0		7.0	7.0	
Flash Dont Walk (s)	11.0	11.0		11.0	11.0	
Pedestrian Calls (#/hr)	0	0		0	0	
Act Effct Green (s)	20.0	20.0		42.0	42.0	
Actuated g/C Ratio	0.29	0.29		0.60	0.60	
v/c Ratio	0.15	0.37		0.85	0.72	
Control Delay	19.7	22.1		15.1	11.6	
Queue Delay	0.0	0.0		0.0	0.0	
Total Delay	19.7	22.1		15.1	11.6	

Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
LOS	B	C		B	B	
Approach Delay	21.3			15.1	11.6	
Approach LOS	C			B	B	

Intersection Summary

Area Type: Other
Cycle Length: 70
Actuated Cycle Length: 70
Offset: 0 (0%), Referenced to phase 2:NBT and 6:SBT, Start of Green
Natural Cycle: 60
Control Type: Pretimed
Maximum v/c Ratio: 0.85
Intersection Signal Delay: 13.8 — Intersection LOS: B
Intersection Capacity Utilization 57.0% — ICU Level of Service B
Analysis Period (min) 15

Splits and Phases: 103: Trafalgar Rd & Hwy 407 EB Off

Lane Group	EBL	EBR	NBT	SBT
Lane Group Flow (vph)	77	171	2597	2191
v/c Ratio	0.15	0.37	0.85	0.72
Control Delay	19.7	22.1	15.1	11.6
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	19.7	22.1	15.1	11.6
Queue Length 50th (m)	7.4	16.8	89.2	64.6
Queue Length 95th (m)	16.5	32.1	111.6	80.7
Internal Link Dist (m)	530.6		96.3	339.6
Turn Bay Length (m)				
Base Capacity (vph)	505	457	3051	3051
Starvation Cap Reductn	0	0	0	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.15	0.37	0.85	0.72

Intersection Summary

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	71	157	0	2389	2016	0
Future Volume (vph)	71	157	0	2389	2016	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0	
Lane Util. Factor	1.00	1.00		0.91	0.91	
Frt	1.00	0.85		1.00	1.00	
Flt Protected	0.95	1.00		1.00	1.00	
Satd. Flow (prot)	1770	1583		5085	5085	
Flt Permitted	0.95	1.00		1.00	1.00	
Satd. Flow (perm)	1770	1583		5085	5085	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	77	171	0	2597	2191	0
RTOR Reduction (vph)	0	5	0	0	0	0
Lane Group Flow (vph)	77	166	0	2597	2191	0
Turn Type	Prot	Perm		NA	NA	
Protected Phases	4			2	6	
Permitted Phases		4				
Actuated Green, G (s)	18.0	18.0		39.1	39.1	
Effective Green, g (s)	20.0	20.0		42.0	42.0	
Actuated g/C Ratio	0.29	0.29		0.60	0.60	
Clearance Time (s)	6.0	6.0		6.9	6.9	
Lane Grp Cap (vph)	505	452		3051	3051	
v/s Ratio Prot	0.04			c0.51	0.43	
v/s Ratio Perm		c0.10				
v/c Ratio	0.15	0.37		0.85	0.72	
Uniform Delay, d1	18.7	20.0		11.4	9.8	
Progression Factor	1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.6	2.3		3.2	1.5	
Delay (s)	19.3	22.2		14.7	11.3	
Level of Service	B	C		B	B	
Approach Delay (s)	21.3			14.7	11.3	
Approach LOS	C			B	B	

Intersection Summary

HCM 2000 Control Delay	13.5	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.70		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	57.0%	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)	23	0	16	194	0	406	16	2106	265	351	1813	10
Future Volume (vph)	23	0	16	194	0	406	16	2106	265	351	1813	10
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	50.0		50.0	50.0		50.0	50.0		50.0	50.0		30.0
Storage Lanes	1		1	1		1	1		1	1		1
Taper Length (m)	80.0			80.0			100.0			100.0		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.91	1.00	1.00	0.91	1.00
Frt			0.850			0.850			0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1770	1863	1583	1770	1863	1583	1770	5085	1583	1770	5085	1583
Flt Permitted	0.757			0.757			0.098			0.058		
Satd. Flow (perm)	1410	1863	1583	1410	1863	1583	183	5085	1583	108	5085	1583
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			54			30			123			47
Link Speed (k/h)		50			50			80			80	
Link Distance (m)		107.1			145.8			233.3			131.6	
Travel Time (s)		7.7			10.5			10.5			5.9	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	25	0	17	211	0	441	17	2289	288	382	1971	11
Shared Lane Traffic (%)												
Lane Group Flow (vph)	25	0	17	211	0	441	17	2289	288	382	1971	11
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.6			3.6			3.6			3.6	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2	1	1	2	1	1	2	1	1	2	1
Detector Template	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Leading Detector (m)	2.0	10.0	2.0	2.0	10.0	2.0	2.0	10.0	2.0	2.0	10.0	2.0
Trailing Detector (m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Position(m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Size(m)	2.0	0.6	2.0	2.0	0.6	2.0	2.0	0.6	2.0	2.0	0.6	2.0
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Perm		pm+ov	Perm		pm+ov	pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases		4	5		8	1	5	2		1	6	
Permitted Phases	4		4	8		8	2		2	6		6

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector Phase	4	4	5	8	8	1	5	2	2	1	6	6
Switch Phase												
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	10.0	10.0	5.0	10.0	10.0
Minimum Split (s)	24.0	24.0	9.5	24.0	24.0	9.5	9.5	25.5	25.5	9.5	25.5	25.5
Total Split (s)	35.0	35.0	9.5	35.0	35.0	35.0	9.5	70.0	70.0	35.0	95.5	95.5
Total Split (%)	25.0%	25.0%	6.8%	25.0%	25.0%	25.0%	6.8%	50.0%	50.0%	25.0%	68.2%	68.2%
Maximum Green (s)	29.0	29.0	6.5	29.0	29.0	32.0	6.5	63.1	63.1	32.0	88.6	88.6
Yellow Time (s)	4.0	4.0	3.0	4.0	4.0	3.0	3.0	4.6	4.6	3.0	4.6	4.6
All-Red Time (s)	2.0	2.0	0.0	2.0	2.0	0.0	0.0	2.3	2.3	0.0	2.3	2.3
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.0	6.0	3.0	6.0	6.0	3.0	3.0	6.9	6.9	3.0	6.9	6.9
Lead/Lag			Lead			Lead	Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?			Yes			Yes	Yes	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	3.0	3.0	3.0
Recall Mode	None	None	None	None	None	None	None	Max	Max	None	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)	23.7		35.6	23.7		56.9	74.3	64.5	64.5	98.7	89.6	89.6
Actuated g/C Ratio	0.18		0.27	0.18		0.43	0.57	0.49	0.49	0.75	0.68	0.68
v/c Ratio	0.10		0.04	0.83		0.63	0.10	0.92	0.34	0.90	0.57	0.01
Control Delay	46.2		0.1	78.6		30.5	9.7	39.4	14.0	63.1	12.8	0.0
Queue Delay	0.0		0.0	0.0		0.0	0.0	2.2	0.0	0.0	0.2	0.0
Total Delay	46.2		0.1	78.6		30.5	9.7	41.6	14.0	63.1	13.0	0.0
LOS	D		A	E		C	A	D	B	E	B	A
Approach Delay		27.5			46.1			38.3			21.0	
Approach LOS		C			D			D			C	

Intersection Summary			
Area Type:	Other		
Cycle Length: 140			
Actuated Cycle Length: 131.4			
Natural Cycle: 90			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 0.92			
Intersection Signal Delay: 31.9		Intersection LOS: C	
Intersection Capacity Utilization 91.6%		ICU Level of Service F	
Analysis Period (min) 15			

Splits and Phases: 104: Trafalgar Rd & South Carpool Lot/Street A

Lane Group	EBL	EBR	WBL	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	25	17	211	441	17	2289	288	382	1971	11
v/c Ratio	0.10	0.04	0.83	0.63	0.10	0.92	0.34	0.90	0.57	0.01
Control Delay	46.2	0.1	78.6	30.5	9.7	39.4	14.0	63.1	12.8	0.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	2.2	0.0	0.0	0.2	0.0
Total Delay	46.2	0.1	78.6	30.5	9.7	41.6	14.0	63.1	13.0	0.0
Queue Length 50th (m)	5.5	0.0	54.0	79.2	1.0	212.4	26.2	80.3	101.9	0.0
Queue Length 95th (m)	13.7	0.0	#86.7	112.0	3.2	#264.3	49.6	#132.9	124.3	0.0
Internal Link Dist (m)						209.3			107.6	
Turn Bay Length (m)	50.0	50.0	50.0	50.0	50.0		50.0	50.0		30.0
Base Capacity (vph)	312	475	312	761	183	2496	839	487	3466	1094
Starvation Cap Reductn	0	0	0	0	0	115	0	0	548	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.08	0.04	0.68	0.58	0.09	0.96	0.34	0.78	0.68	0.01

Intersection Summary

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

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	23	0	16	194	0	406	16	2106	265	351	1813	10
Future Volume (vph)	23	0	16	194	0	406	16	2106	265	351	1813	10
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0		3.0	6.0		3.0	3.0	6.9	6.9	3.0	6.9	6.9
Lane Util. Factor	1.00		1.00	1.00		1.00	1.00	0.91	1.00	1.00	0.91	1.00
Frt	1.00		0.85	1.00		0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95		1.00	0.95		1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1770		1583	1770		1583	1770	5085	1583	1770	5085	1583
Flt Permitted	0.76		1.00	0.76		1.00	0.10	1.00	1.00	0.06	1.00	1.00
Satd. Flow (perm)	1410		1583	1410		1583	182	5085	1583	108	5085	1583
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	25	0	17	211	0	441	17	2289	288	382	1971	11
RTOR Reduction (vph)	0	0	14	0	0	18	0	0	62	0	0	4
Lane Group Flow (vph)	25	0	3	211	0	423	17	2289	226	382	1971	7
Turn Type	Perm		pm+ov	Perm		pm+ov	pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases		4	5		8	1	5	2		1	6	
Permitted Phases	4		4	8		8	2		2	6		6
Actuated Green, G (s)	23.7		27.2	23.7		50.9	69.4	65.9	65.9	96.1	89.6	89.6
Effective Green, g (s)	23.7		27.2	23.7		50.9	69.4	65.9	65.9	96.1	89.6	89.6
Actuated g/C Ratio	0.18		0.20	0.18		0.38	0.52	0.50	0.50	0.72	0.68	0.68
Clearance Time (s)	6.0		3.0	6.0		3.0	3.0	6.9	6.9	3.0	6.9	6.9
Vehicle Extension (s)	3.0		3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	251		324	251		607	137	2525	786	418	3433	1068
v/s Ratio Prot			0.00			0.14	0.00	0.45		c0.19	0.39	
v/s Ratio Perm	0.02		0.00	c0.15		0.12	0.06		0.14	c0.47		0.00
v/c Ratio	0.10		0.01	0.84		0.70	0.12	0.91	0.29	0.91	0.57	0.01
Uniform Delay, d1	45.6		42.0	52.7		34.4	15.2	30.6	19.6	43.2	11.4	7.0
Progression Factor	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		0.0	21.6		3.5	0.4	6.0	0.9	24.1	0.7	0.0
Delay (s)	45.8		42.0	74.3		37.9	15.7	36.6	20.5	67.3	12.1	7.0
Level of Service	D		D	E		D	B	D	C	E	B	A
Approach Delay (s)		44.3			49.7			34.7			21.0	
Approach LOS		D			D			C			C	

Intersection Summary

HCM 2000 Control Delay	30.8	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.92		
Actuated Cycle Length (s)	132.7	Sum of lost time (s)	15.9
Intersection Capacity Utilization	91.6%	ICU Level of Service	F
Analysis Period (min)	15		

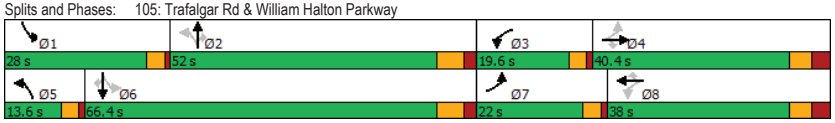
c Critical Lane Group

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	273	553	168	182	698	486	111	1628	42	361	1517	145
Future Volume (vph)	273	553	168	182	698	486	111	1628	42	361	1517	145
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	100.0		100.0	100.0		150.0	150.0		75.0	0.0		0.0
Storage Lanes	1		1	1		1	1		1	1		1
Taper Length (m)	100.0			100.0			100.0			7.5		
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.91	1.00	1.00	0.91	1.00
Frt			0.850			0.850			0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1770	3539	1583	1770	3539	1583	1770	5085	1583	1770	5085	1583
Flt Permitted	0.115			0.231			0.089			0.081		
Satd. Flow (perm)	214	3539	1583	430	3539	1583	166	5085	1583	151	5085	1583
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			180			289			125			133
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		805.8			151.9			285.3			233.3	
Travel Time (s)		58.0			10.9			20.5			16.8	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	297	601	183	198	759	528	121	1770	46	392	1649	158
Shared Lane Traffic (%)												
Lane Group Flow (vph)	297	601	183	198	759	528	121	1770	46	392	1649	158
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.6			3.6			7.2			7.2	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2	1	1	2	1	1	2	1	1	2	1
Detector Template	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Leading Detector (m)	2.0	10.0	2.0	2.0	10.0	2.0	2.0	10.0	2.0	2.0	10.0	2.0
Trailing Detector (m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Position(m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Size(m)	2.0	0.6	2.0	2.0	0.6	2.0	2.0	0.6	2.0	2.0	0.6	2.0
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4		4	8		8	2		2	6		6

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector Phase	7	4	4	3	8	8	5	2	2	1	6	6
Switch Phase												
Minimum Initial (s)	7.0	20.0	20.0	7.0	20.0	20.0	7.0	20.0	20.0	7.0	20.0	20.0
Minimum Split (s)	11.5	38.0	38.0	11.5	38.0	38.0	11.5	42.9	42.9	11.5	42.9	42.9
Total Split (s)	22.0	40.4	40.4	19.6	38.0	38.0	13.6	52.0	52.0	28.0	66.4	66.4
Total Split (%)	15.7%	28.9%	28.9%	14.0%	27.1%	27.1%	9.7%	37.1%	37.1%	20.0%	47.4%	47.4%
Maximum Green (s)	18.0	33.4	33.4	15.6	31.0	31.0	9.6	45.1	45.1	24.0	59.5	59.5
Yellow Time (s)	3.0	3.7	3.7	3.0	3.7	3.7	3.0	4.6	4.6	3.0	4.6	4.6
All-Red Time (s)	1.0	3.3	3.3	1.0	3.3	3.3	1.0	2.3	2.3	1.0	2.3	2.3
Lost Time Adjust (s)	0.0	-3.0	-3.0	0.0	-3.0	-3.0	0.0	-2.9	-2.9	0.0	-2.9	-2.9
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Vehicle Extension (s)	3.0	5.0	5.0	3.0	5.0	5.0	3.0	5.0	5.0	3.0	5.0	5.0
Recall Mode	None	None	None	None	None	None	None	Max	Max	None	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)		24.0	24.0		24.0	24.0		29.0	29.0		29.0	29.0
Pedestrian Calls (#/hr)		0	0		0	0		0	0		0	0
Act Effct Green (s)	55.0	37.7	37.7	48.3	34.0	34.0	57.1	48.0	48.0	76.0	62.9	62.9
Actuated g/C Ratio	0.39	0.27	0.27	0.34	0.24	0.24	0.41	0.34	0.34	0.54	0.45	0.45
v/c Ratio	1.05	0.63	0.33	0.69	0.88	0.88	0.70	1.02	0.07	1.09	0.72	0.20
Control Delay	104.0	48.9	7.5	42.5	64.1	39.3	48.7	70.8	0.2	114.0	33.8	6.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	104.0	48.9	7.5	42.5	64.1	39.3	48.7	70.8	0.2	114.0	33.8	6.1
LOS	F	D	A	D	E	D	D	E	A	F	C	A
Approach Delay		57.0			52.4			67.7			46.1	
Approach LOS		E			D			E			D	

Intersection Summary			
Area Type:	Other		
Cycle Length: 140			
Actuated Cycle Length: 140			
Natural Cycle: 125			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 1.09			
Intersection Signal Delay: 55.5		Intersection LOS: E	
Intersection Capacity Utilization 99.2%		ICU Level of Service F	
Analysis Period (min) 15			

Splits and Phases: 105: Trafalgar Rd & William Halton Parkway



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	297	601	183	198	759	528	121	1770	46	392	1649	158
v/c Ratio	1.05	0.63	0.33	0.69	0.88	0.88	0.70	1.02	0.07	1.09	0.72	0.20
Control Delay	104.0	48.9	7.5	42.5	64.1	39.3	48.7	70.8	0.2	114.0	33.8	6.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	104.0	48.9	7.5	42.5	64.1	39.3	48.7	70.8	0.2	114.0	33.8	6.1
Queue Length 50th (m)	~72.0	77.4	0.6	36.3	106.0	69.3	15.8	~186.5	0.0	~104.2	133.4	3.8
Queue Length 95th (m)	#129.5	97.5	18.5	55.0	#137.3	#132.9	#41.8	#215.3	0.0	#166.9	150.9	16.6
Internal Link Dist (m)		781.8			127.9			261.3			209.3	
Turn Bay Length (m)	100.0		100.0	100.0		150.0	150.0		75.0			
Base Capacity (vph)	284	952	557	301	859	603	178	1743	624	359	2283	784
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	1.05	0.63	0.33	0.66	0.88	0.88	0.68	1.02	0.07	1.09	0.72	0.20

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

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

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	273	553	168	182	698	486	111	1628	42	361	1517	145
Future Volume (vph)	273	553	168	182	698	486	111	1628	42	361	1517	145
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.91	1.00	1.00	0.91	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)	1770	3539	1583	1770	3539	1583	1770	5085	1583	1770	5085	1583
Flt Permitted	0.12	1.00	1.00	0.23	1.00	1.00	0.09	1.00	1.00	0.08	1.00	1.00
Satd. Flow (perm)	215	3539	1583	431	3539	1583	165	5085	1583	152	5085	1583
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	297	601	183	198	759	528	121	1770	46	392	1649	158
RTOR Reduction (vph)	0	0	132	0	0	219	0	0	30	0	0	73
Lane Group Flow (vph)	297	601	51	198	759	309	121	1770	16	392	1649	85
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4		4	8		8	2		2	6		6
Actuated Green, G (s)	52.7	34.7	34.7	45.3	31.0	31.0	54.2	45.1	45.1	73.1	60.0	60.0
Effective Green, g (s)	52.7	37.7	37.7	45.3	34.0	34.0	54.2	48.0	48.0	73.1	62.9	62.9
Actuated g/C Ratio	0.38	0.27	0.27	0.32	0.24	0.24	0.39	0.34	0.34	0.52	0.45	0.45
Clearance Time (s)	4.0	7.0	7.0	4.0	7.0	7.0	4.0	6.9	6.9	4.0	6.9	6.9
Vehicle Extension (s)	3.0	5.0	5.0	3.0	5.0	5.0	3.0	5.0	5.0	3.0	5.0	5.0
Lane Grp Cap (vph)	280	953	426	276	859	384	168	1743	542	356	2284	711
v/s Ratio Prot	c0.14	0.17		0.07	0.21		0.05	0.35		c0.19	0.32	
v/s Ratio Perm	c0.26		0.03	0.16		0.20	0.23		0.01	c0.39		0.05
v/c Ratio	1.06	0.63	0.12	0.72	0.88	0.81	0.72	1.02	0.03	1.10	0.72	0.12
Uniform Delay, d1	42.2	45.0	38.6	37.0	51.1	49.9	30.6	46.0	30.5	45.9	31.4	22.4
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	70.7	1.9	0.3	8.6	11.4	13.1	14.1	25.5	0.1	77.7	2.0	0.3
Delay (s)	112.9	46.9	38.9	45.6	62.5	63.0	44.7	71.5	30.6	123.6	33.4	22.8
Level of Service	F	D	D	D	E	E	D	E	C	F	C	C
Approach Delay (s)		63.7			60.4			68.8			48.7	
Approach LOS		E			E			E			D	

Intersection Summary

HCM 2000 Control Delay	59.6	HCM 2000 Level of Service	E
HCM 2000 Volume to Capacity ratio	1.08		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	16.0
Intersection Capacity Utilization	99.2%	ICU Level of Service	F
Analysis Period (min)	15		

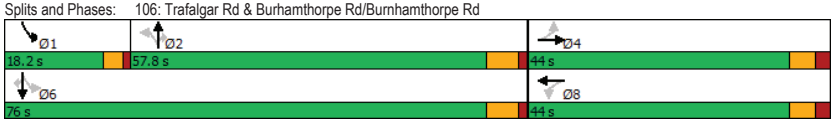
c Critical Lane Group

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	127	424	23	231	376	265	96	1515	140	242	1447	177
Future Volume (vph)	127	424	23	231	376	265	96	1515	140	242	1447	177
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	30.0		0.0	15.0		0.0	60.0		60.0	60.0		60.0
Storage Lanes	1		0	1		0	1		1	1		1
Taper Length (m)	70.0			50.0			100.0			100.0		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	0.95	1.00	0.91	1.00	1.00	0.91	1.00
Frt		0.992			0.938				0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1770	3511	0	1770	3320	0	1770	5085	1583	1770	5085	1583
Flt Permitted	0.227			0.365			0.149			0.072		
Satd. Flow (perm)	423	3511	0	680	3320	0	278	5085	1583	134	5085	1583
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		5			160				123			192
Link Speed (k/h)		60			60			80			80	
Link Distance (m)		828.7			989.6			1077.8			170.3	
Travel Time (s)		49.7			59.4			48.5			7.7	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	138	461	25	251	409	288	104	1647	152	263	1573	192
Shared Lane Traffic (%)												
Lane Group Flow (vph)	138	486	0	251	697	0	104	1647	152	263	1573	192
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.6			3.6			3.6			3.6	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2		1	2		1	2	1	1	2	1
Detector Template	Left	Thru		Left	Thru		Left	Thru	Right	Left	Thru	Right
Leading Detector (m)	2.0	10.0		2.0	10.0		2.0	10.0	2.0	2.0	10.0	2.0
Trailing Detector (m)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Position(m)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Size(m)	2.0	0.6		2.0	0.6		2.0	0.6	2.0	2.0	0.6	2.0
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Perm	NA		Perm	NA		Perm	NA	Perm	pm+pt	NA	Perm
Protected Phases		4			8			2		1	6	
Permitted Phases	4			8			2		2	6		6

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector Phase	4	4		8	8		2	2	2	1	6	6
Switch Phase												
Minimum Initial (s)	10.0	10.0		10.0	10.0		20.0	20.0	20.0	7.0	20.0	20.0
Minimum Split (s)	24.0	24.0		24.0	24.0		26.0	26.0	26.0	11.5	26.0	26.0
Total Split (s)	44.0	44.0		44.0	44.0		57.8	57.8	57.8	18.2	76.0	76.0
Total Split (%)	36.7%	36.7%		36.7%	36.7%		48.2%	48.2%	48.2%	15.2%	63.3%	63.3%
Maximum Green (s)	38.0	38.0		38.0	38.0		51.8	51.8	51.8	14.2	70.0	70.0
Yellow Time (s)	3.7	3.7		3.7	3.7		4.6	4.6	4.6	3.0	4.6	4.6
All-Red Time (s)	2.3	2.3		2.3	2.3		1.4	1.4	1.4	1.0	1.4	1.4
Lost Time Adjust (s)	-2.0	-2.0		-2.0	-2.0		-2.0	-2.0	-2.0	0.0	-2.0	-2.0
Total Lost Time (s)	4.0	4.0		4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0
Lead/Lag							Lag	Lag	Lag	Lead		
Lead-Lag Optimize?							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	3.0
Recall Mode	None	None		None	None		Max	Max	Max	None	Max	Max
Act Effct Green (s)	40.0	40.0		40.0	40.0		53.8	53.8	53.8	72.0	72.0	72.0
Actuated g/C Ratio	0.33	0.33		0.33	0.33		0.45	0.45	0.45	0.60	0.60	0.60
v/c Ratio	0.98	0.41		1.11	0.57		0.84	0.72	0.20	0.96	0.52	0.19
Control Delay	112.0	31.9		131.1	27.1		79.6	29.3	5.9	78.4	14.6	1.9
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	112.0	31.9		131.1	27.1		79.6	29.3	5.9	78.4	14.6	1.9
LOS	F	C		F	C		E	C	A	E	B	A
Approach Delay		49.6			54.6			30.2			21.7	
Approach LOS		D			D			C			C	

Intersection Summary	
Area Type: Other	
Cycle Length: 120	
Actuated Cycle Length: 120	
Natural Cycle: 65	
Control Type: Actuated-Uncoordinated	
Maximum v/c Ratio: 1.11	
Intersection Signal Delay: 33.5	Intersection LOS: C
Intersection Capacity Utilization 85.2%	ICU Level of Service E
Analysis Period (min) 15	

Splits and Phases: 106: Trafalgar Rd & Burhamthorpe Rd/Burnhamthorpe Rd



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	138	486	251	697	104	1647	152	263	1573	192
v/c Ratio	0.98	0.41	1.11	0.57	0.84	0.72	0.20	0.96	0.52	0.19
Control Delay	112.0	31.9	131.1	27.1	79.6	29.3	5.9	78.4	14.6	1.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	112.0	31.9	131.1	27.1	79.6	29.3	5.9	78.4	14.6	1.9
Queue Length 50th (m)	31.6	45.2	~66.6	53.7	20.8	112.0	3.7	45.3	72.9	0.0
Queue Length 95th (m)	#72.3	60.2	#116.9	72.7	#55.0	129.3	15.4	#96.3	84.6	8.7
Internal Link Dist (m)		804.7		965.6		1053.8			146.3	
Turn Bay Length (m)	30.0		15.0		60.0		60.0	60.0		60.0
Base Capacity (vph)	141	1173	226	1213	124	2279	777	273	3051	1026
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.98	0.41	1.11	0.57	0.84	0.72	0.20	0.96	0.52	0.19

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

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

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	127	424	23	231	376	265	96	1515	140	242	1447	177
Future Volume (vph)	127	424	23	231	376	265	96	1515	140	242	1447	177
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	0.91	1.00	1.00	0.91	1.00
Frt	1.00	0.99		1.00	0.94		1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1770	3512		1770	3320		1770	5085	1583	1770	5085	1583
Flt Permitted	0.23	1.00		0.37	1.00		0.15	1.00	1.00	0.07	1.00	1.00
Satd. Flow (perm)	423	3512		680	3320		277	5085	1583	134	5085	1583
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	138	461	25	251	409	288	104	1647	152	263	1573	192
RTOR Reduction (vph)	0	3	0	0	107	0	0	0	68	0	0	77
Lane Group Flow (vph)	138	483	0	251	590	0	104	1647	84	263	1573	115
Turn Type	Perm	NA		Perm	NA		Perm	NA	Perm	pm+pt	NA	Perm
Protected Phases		4			8			2		1	6	
Permitted Phases	4			8			2		2	6		6
Actuated Green, G (s)	38.0	38.0		38.0	38.0		51.8	51.8	51.8	70.0	70.0	70.0
Effective Green, g (s)	40.0	40.0		40.0	40.0		53.8	53.8	53.8	70.0	72.0	72.0
Actuated g/C Ratio	0.33	0.33		0.33	0.33		0.45	0.45	0.45	0.58	0.60	0.60
Clearance Time (s)	6.0	6.0		6.0	6.0		6.0	6.0	6.0	4.0	6.0	6.0
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	141	1170		226	1106		124	2279	709	271	3051	949
v/s Ratio Prot		0.14			0.18			0.32		c0.11	0.31	
v/s Ratio Perm	0.33			c0.37			0.37		0.05	c0.45		0.07
v/c Ratio	0.98	0.41		1.11	0.53		0.84	0.72	0.12	0.97	0.52	0.12
Uniform Delay, d1	39.6	30.9		40.0	32.4		29.3	27.0	19.3	36.6	13.9	10.4
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	68.5	0.2		92.7	0.5		46.1	2.0	0.3	46.3	0.6	0.3
Delay (s)	108.1	31.2		132.7	32.9		75.4	29.0	19.6	82.9	14.5	10.6
Level of Service	F	C		F	C		E	C	B	F	B	B
Approach Delay (s)		48.2			59.4			30.8			23.0	
Approach LOS		D			E			C			C	

Intersection Summary

HCM 2000 Control Delay	34.8	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	1.02		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	85.2%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	121	121	374	0	229	0	172	0	0	0	24	199
Future Volume (vph)	121	121	374	0	229	0	172	0	0	0	24	199
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.887									0.880	
Flt Protected	0.950							0.950				
Satd. Flow (prot)	1770	1652	0	0	1863	0	0	1770	0	0	1639	0
Flt Permitted	0.950							0.950				
Satd. Flow (perm)	1770	1652	0	0	1863	0	0	1770	0	0	1639	0
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		145.8			196.6			231.1			42.5	
Travel Time (s)		10.5			14.2			16.6			3.1	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	132	132	407	0	249	0	187	0	0	0	26	216
Shared Lane Traffic (%)												
Lane Group Flow (vph)	132	539	0	0	249	0	0	187	0	0	242	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		7.2			7.2			0.0			0.0	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Sign Control		Stop			Stop			Stop			Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	77.8%	ICU Level of Service D	
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Stop			Stop	
Traffic Volume (vph)	121	121	374	0	229	0	172	0	0	0	24	199
Future Volume (vph)	121	121	374	0	229	0	172	0	0	0	24	199
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	132	132	407	0	249	0	187	0	0	0	26	216

Direction, Lane #	EB 1	EB 2	WB 1	NB 1	SB 1
Volume Total (vph)	132	539	249	187	242
Volume Left (vph)	132	0	0	187	0
Volume Right (vph)	0	407	0	0	216
Hadj (s)	0.53	-0.49	0.03	0.23	-0.50
Departure Headway (s)	7.0	6.0	6.7	7.3	6.4
Degree Utilization, x	0.26	0.90	0.46	0.38	0.43
Capacity (veh/h)	497	593	497	456	523
Control Delay (s)	11.3	39.0	15.4	14.7	14.3
Approach Delay (s)	33.6		15.4	14.7	14.3
Approach LOS	D		C	B	B

Intersection Summary			
Delay	24.1		
Level of Service	C		
Intersection Capacity Utilization	77.8%	ICU Level of Service	D
Analysis Period (min)	15		

Lanes, Volumes, Timings
204: Street D/Driveway & Street A

Total - 2031
PM Peak Hour

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	121	0	0	0	0	0	30	27	0	0	57	199
Future Volume (vph)	121	0	0	0	0	0	30	27	0	0	57	199
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt											0.895	
Flt Protected		0.950						0.974				
Satd. Flow (prot)	0	1770	0	0	1863	0	0	1814	0	0	1667	0
Flt Permitted		0.950						0.974				
Satd. Flow (perm)	0	1770	0	0	1863	0	0	1814	0	0	1667	0
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		196.6			345.9			95.0			73.1	
Travel Time (s)		14.2			24.9			6.8			5.3	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	132	0	0	0	0	0	33	29	0	0	62	216
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	132	0	0	0	0	0	62	0	0	278	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		0.0			0.0			0.0			0.0	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Sign Control		Stop			Stop			Stop			Stop	

Intersection Summary	
Area Type:	Other
Control Type: Unsignalized	
Intersection Capacity Utilization 35.3%	ICU Level of Service A
Analysis Period (min) 15	

HCM Unsignalized Intersection Capacity Analysis
204: Street D/Driveway & Street A

Total - 2031
PM Peak Hour

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Stop			Stop	
Traffic Volume (vph)	121	0	0	0	0	0	30	27	0	0	57	199
Future Volume (vph)	121	0	0	0	0	0	30	27	0	0	57	199
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	132	0	0	0	0	0	33	29	0	0	62	216

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total (vph)	132	0	62	278
Volume Left (vph)	132	0	33	0
Volume Right (vph)	0	0	0	216
Hadj (s)	0.23	0.00	0.14	-0.43
Departure Headway (s)	4.8	4.8	4.7	3.9
Degree Utilization, x	0.18	0.00	0.08	0.30
Capacity (veh/h)	692	692	734	898
Control Delay (s)	8.9	7.8	8.1	8.5
Approach Delay (s)	8.9	0.0	8.1	8.5
Approach LOS	A	A	A	A

Intersection Summary			
Delay	8.6		
Level of Service	A		
Intersection Capacity Utilization	35.3%	ICU Level of Service	A
Analysis Period (min)	15		

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	30	0	68	0	0	0	15	27	0	0	57	0
Future Volume (vph)	30	0	68	0	0	0	15	27	0	0	57	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.907										
Flt Protected		0.985						0.983				
Satd. Flow (prot)	0	1664	0	0	1863	0	0	1831	0	0	1863	0
Flt Permitted		0.985						0.983				
Satd. Flow (perm)	0	1664	0	0	1863	0	0	1831	0	0	1863	0
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		55.0			349.9			132.9			95.0	
Travel Time (s)		4.0			25.2			9.6			6.8	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	33	0	74	0	0	0	16	29	0	0	62	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	107	0	0	0	0	0	45	0	0	62	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		0.0			0.0			3.6			3.6	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Sign Control		Stop			Stop			Free			Free	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 21.4%		ICU Level of Service A	
Analysis Period (min) 15			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	30	0	68	0	0	0	15	27	0	0	57	0
Future Volume (Veh/h)	30	0	68	0	0	0	15	27	0	0	57	0
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	33	0	74	0	0	0	16	29	0	0	62	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)								133				
pX, platoon unblocked												
vC, conflicting volume	123	123	62	197	123	29	62			29		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	123	123	62	197	123	29	62			29		
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 %	96	100	93	100	100	100	99			100		
cM capacity (veh/h)	845	759	1003	700	759	1046	1541			1584		

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	107	0	45	62
Volume Left	33	0	16	0
Volume Right	74	0	0	0
cSH	948	1700	1541	1584
Volume to Capacity	0.11	0.00	0.01	0.00
Queue Length 95th (m)	2.9	0.0	0.2	0.0
Control Delay (s)	9.3	0.0	2.7	0.0
Lane LOS	A	A	A	
Approach Delay (s)	9.3	0.0	2.7	0.0
Approach LOS	A	A		

Intersection Summary			
Average Delay	5.2		
Intersection Capacity Utilization	21.4%	ICU Level of Service	A
Analysis Period (min)	15		

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	857	99	0	1327	16	0	0	37	0	0	39
Future Volume (vph)	0	857	99	0	1327	16	0	0	37	0	0	39
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.984			0.998				0.865			0.865
Flt Protected												
Satd. Flow (prot)	0	3483	0	0	3532	0	0	0	1611	0	0	1611
Flt Permitted												
Satd. Flow (perm)	0	3483	0	0	3532	0	0	0	1611	0	0	1611
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		151.9			207.4			67.8			231.1	
Travel Time (s)		10.9			14.9			4.9			16.6	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	932	108	0	1442	17	0	0	40	0	0	42
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	1040	0	0	1459	0	0	0	40	0	0	42
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.6			3.6			0.0			0.0	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Sign Control		Free			Free			Stop			Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 47.2%		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)	0	857	99	0	1327	16	0	0	37	0	0	39
Future Volume (Veh/h)	0	857	99	0	1327	16	0	0	37	0	0	39
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	932	108	0	1442	17	0	0	40	0	0	42
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (m)		152			207							
pX, platoon unblocked	0.76			0.85			0.83	0.83	0.85	0.83	0.83	0.76
vC, conflicting volume	1459			1040			1749	2445	520	1956	2490	730
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	960			701			691	1531	92	942	1586	0
tC, single (s)	4.1			4.1			7.5	6.5	6.9	7.5	6.5	6.9
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			100			100	100	95	100	100	95
cM capacity (veh/h)	538			760			260	96	808	172	89	819

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	SB 1
Volume Total	621	419	961	498	40	42
Volume Left	0	0	0	0	0	0
Volume Right	0	108	0	17	40	42
cSH	1700	1700	1700	1700	808	819
Volume to Capacity	0.37	0.25	0.57	0.29	0.05	0.05
Queue Length 95th (m)	0.0	0.0	0.0	0.0	1.2	1.2
Control Delay (s)	0.0	0.0	0.0	0.0	9.7	9.6
Lane LOS					A	A
Approach Delay (s)	0.0		0.0		9.7	9.6
Approach LOS					A	A

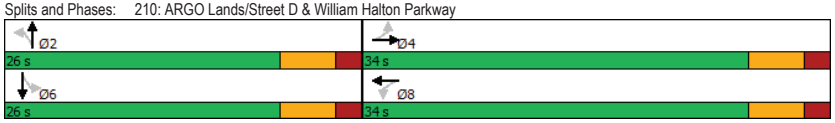
Intersection Summary			
Average Delay	0.3		
Intersection Capacity Utilization	47.2%	ICU Level of Service	A
Analysis Period (min)	15		

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	31	764	99	111	1061	11	248	10	37	91	10	34
Future Volume (vph)	31	764	99	111	1061	11	248	10	37	91	10	34
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	50.0		0.0	50.0		0.0	30.0		0.0	30.0		0.0
Storage Lanes	1		0	1		0	1		0	1		0
Taper Length (m)	100.0			100.0			75.0			75.0		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.983			0.998			0.882			0.884	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1770	3479	0	1770	3532	0	1770	1643	0	1770	1647	0
Flt Permitted	0.175			0.259			0.726			0.724		
Satd. Flow (perm)	326	3479	0	482	3532	0	1352	1643	0	1349	1647	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		31			2			40			37	
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		207.4			568.3			76.3			132.9	
Travel Time (s)		14.9			40.9			5.5			9.6	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	34	830	108	121	1153	12	270	11	40	99	11	37
Shared Lane Traffic (%)												
Lane Group Flow (vph)	34	938	0	121	1165	0	270	51	0	99	48	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.6			3.6			3.6			3.6	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2		1	2		1	2		1	2	
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	
Leading Detector (m)	2.0	10.0		2.0	10.0		2.0	10.0		2.0	10.0	
Trailing Detector (m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Position(m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Size(m)	2.0	0.6		2.0	0.6		2.0	0.6		2.0	0.6	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector Phase	4	4		8	8		2	2		6	6	
Switch Phase												
Minimum Initial (s)	10.0	10.0		10.0	10.0		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	
Total Split (s)	34.0	34.0		34.0	34.0		26.0	26.0		26.0	26.0	
Total Split (%)	56.7%	56.7%		56.7%	56.7%		43.3%	43.3%		43.3%	43.3%	
Maximum Green (s)	28.0	28.0		28.0	28.0		20.0	20.0		20.0	20.0	
Yellow Time (s)	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	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)	6.0	6.0		6.0	6.0		6.0	6.0		6.0	6.0	
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	Max	Max		Max	Max		None	None		None	None	
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)	30.0	30.0		30.0	30.0		15.9	15.9		15.9	15.9	
Actuated g/C Ratio	0.52	0.52		0.52	0.52		0.27	0.27		0.27	0.27	
v/c Ratio	0.20	0.52		0.49	0.64		0.73	0.11		0.27	0.10	
Control Delay	13.2	10.9		19.6	12.9		30.6	7.2		17.1	7.4	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	13.2	10.9		19.6	12.9		30.6	7.2		17.1	7.4	
LOS	B	B		B	B		C	A		B	A	
Approach Delay		11.0			13.5			26.9			13.9	
Approach LOS		B			B			C			B	

Intersection Summary			
Area Type:	Other		
Cycle Length: 60			
Actuated Cycle Length: 58			
Natural Cycle: 60			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 0.73			
Intersection Signal Delay: 14.2		Intersection LOS: B	
Intersection Capacity Utilization 73.4%		ICU Level of Service D	
Analysis Period (min) 15			

Splits and Phases: 210: ARGO Lands/Street D & William Halton Parkway



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	34	938	121	1165	270	51	99	48
v/c Ratio	0.20	0.52	0.49	0.64	0.73	0.11	0.27	0.10
Control Delay	13.2	10.9	19.6	12.9	30.6	7.2	17.1	7.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	13.2	10.9	19.6	12.9	30.6	7.2	17.1	7.4
Queue Length 50th (m)	1.8	30.2	7.6	42.6	23.9	0.8	7.6	0.8
Queue Length 95th (m)	7.5	50.3	#28.6	69.1	44.9	6.6	16.9	6.4
Internal Link Dist (m)		183.4		544.3		52.3		108.9
Turn Bay Length (m)	50.0		50.0		30.0		30.0	
Base Capacity (vph)	168	1816	249	1829	467	594	466	593
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	0.20	0.52	0.49	0.64	0.58	0.09	0.21	0.08

Intersection Summary

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

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	31	764	99	111	1061	11	248	10	37	91	10	34
Future Volume (vph)	31	764	99	111	1061	11	248	10	37	91	10	34
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0	6.0		6.0	6.0		6.0	6.0		6.0	6.0	
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	1.00		1.00	1.00	
Frt	1.00	0.98		1.00	1.00		1.00	0.88		1.00	0.88	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	3478		1770	3534		1770	1644		1770	1647	
Flt Permitted	0.17	1.00		0.26	1.00		0.73	1.00		0.72	1.00	
Satd. Flow (perm)	326	3478		482	3534		1352	1644		1348	1647	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	34	830	108	121	1153	12	270	11	40	99	11	37
RTOR Reduction (vph)	0	15	0	0	1	0	0	29	0	0	27	0
Lane Group Flow (vph)	34	923	0	121	1164	0	270	22	0	99	21	0
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)	30.0	30.0		30.0	30.0		15.9	15.9		15.9	15.9	
Effective Green, g (s)	30.0	30.0		30.0	30.0		15.9	15.9		15.9	15.9	
Actuated g/C Ratio	0.52	0.52		0.52	0.52		0.27	0.27		0.27	0.27	
Clearance Time (s)	6.0	6.0		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		3.0	3.0	
Lane Grp Cap (vph)	168	1802		249	1831		371	451		370	452	
v/s Ratio Prot		0.27			c0.33			0.01			0.01	
v/s Ratio Perm	0.10			0.25			c0.20			0.07		
v/c Ratio	0.20	0.51		0.49	0.64		0.73	0.05		0.27	0.05	
Uniform Delay, d1	7.5	9.2		9.0	10.0		19.0	15.4		16.4	15.4	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	2.7	1.0		6.6	1.7		7.0	0.0		0.4	0.0	
Delay (s)	10.2	10.2		15.6	11.7		26.0	15.5		16.8	15.5	
Level of Service	B	B		B	B		C	B		B	B	
Approach Delay (s)		10.2			12.1			24.3			16.4	
Approach LOS		B			B			C			B	

Intersection Summary

HCM 2000 Control Delay	13.1	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.67		
Actuated Cycle Length (s)	57.9	Sum of lost time (s)	12.0
Intersection Capacity Utilization	73.4%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

Appendix G2

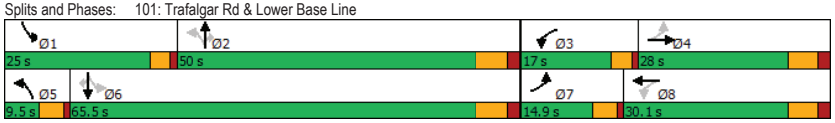
2041 Total Operations Synchro Report

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	152	587	222	321	119	220	49	2085	347	502	2150	24
Future Volume (vph)	152	587	222	321	119	220	49	2085	347	502	2150	24
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	45.0		0.0	110.0		0.0	90.0		90.0	90.0		90.0
Storage Lanes	1		0	1		0	1		1	1		1
Taper Length (m)	100.0			100.0			100.0			100.0		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	0.95	1.00	0.91	1.00	1.00	0.91	1.00
Frt		0.959			0.903				0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1770	3394	0	1770	3196	0	1770	5085	1583	1770	5085	1583
Flt Permitted	0.422			0.165			0.085			0.083		
Satd. Flow (perm)	786	3394	0	307	3196	0	158	5085	1583	155	5085	1583
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		41			239				250			111
Link Speed (k/h)		70			60			80			80	
Link Distance (m)		749.3			690.6			498.3			434.3	
Travel Time (s)		38.5			41.4			22.4			19.5	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	165	638	241	349	129	239	53	2266	377	546	2337	26
Shared Lane Traffic (%)												
Lane Group Flow (vph)	165	879	0	349	368	0	53	2266	377	546	2337	26
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.6			3.6			3.6			3.6	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2		1	2		1	2	1	1	2	1
Detector Template	Left	Thru		Left	Thru		Left	Thru	Right	Left	Thru	Right
Leading Detector (m)	2.0	10.0		2.0	10.0		2.0	10.0	2.0	2.0	10.0	2.0
Trailing Detector (m)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Position(m)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Size(m)	2.0	0.6		2.0	0.6		2.0	0.6	2.0	2.0	0.6	2.0
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	pm+pt	NA		pm+pt	NA		pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4			8			2		2	6		6

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector Phase	7	4		3	8		5	2	2	1	6	6
Switch Phase												
Minimum Initial (s)	5.0	10.0		7.0	10.0		5.0	25.0	25.0	7.0	25.0	25.0
Minimum Split (s)	9.5	22.5		11.5	22.5		9.5	31.6	31.6	11.5	31.6	31.6
Total Split (s)	14.9	28.0		17.0	30.1		9.5	50.0	50.0	25.0	65.5	65.5
Total Split (%)	12.4%	23.3%		14.2%	25.1%		7.9%	41.7%	41.7%	20.8%	54.6%	54.6%
Maximum Green (s)	10.4	21.8		13.0	23.9		5.0	43.4	43.4	21.0	58.9	58.9
Yellow Time (s)	3.5	4.2		3.0	4.2		3.5	4.6	4.6	3.0	4.6	4.6
All-Red Time (s)	1.0	2.0		1.0	2.0		1.0	2.0	2.0	1.0	2.0	2.0
Lost Time Adjust (s)	-2.2	-2.2		0.0	-2.2		-2.6	-2.6	-2.6	0.0	-2.6	-2.6
Total Lost Time (s)	2.3	4.0		4.0	4.0		1.9	4.0	4.0	4.0	4.0	4.0
Lead/Lag	Lead	Lag		Lead	Lag		Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes		Yes	Yes		Yes	Yes	Yes	Yes	Yes	Yes
Vehicle Extension (s)	3.0	5.0		0.2	5.0		3.0	5.0	5.0	0.2	5.0	5.0
Recall Mode	None	None		None	None		None	Max	Max	Max	Max	Max
Act Effct Green (s)	38.0	24.0		39.4	26.4		55.7	46.0	46.0	71.0	63.4	63.4
Actuated g/C Ratio	0.32	0.20		0.33	0.22		0.46	0.38	0.38	0.59	0.53	0.53
v/c Ratio	0.47	1.24		1.35	0.41		0.30	1.16	0.50	1.46	0.87	0.03
Control Delay	32.6	157.1		209.2	15.3		16.7	113.9	11.4	250.6	29.8	0.0
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	32.6	157.1		209.2	15.3		16.7	113.9	11.4	250.6	29.8	0.0
LOS	C	F		F	B		B	F	B	F	C	A
Approach Delay		137.4			109.7			97.6			70.9	
Approach LOS		F			F			F			E	

Intersection Summary	
Area Type: Other	
Cycle Length: 120	
Actuated Cycle Length: 120	
Natural Cycle: 110	
Control Type: Semi Act-Uncoord	
Maximum v/c Ratio: 1.46	
Intersection Signal Delay: 93.9	Intersection LOS: F
Intersection Capacity Utilization 122.5%	ICU Level of Service H
Analysis Period (min) 15	

Splits and Phases: 101: Trafalgar Rd & Lower Base Line



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	165	879	349	368	53	2266	377	546	2337	26
v/c Ratio	0.47	1.24	1.35	0.41	0.30	1.16	0.50	1.46	0.87	0.03
Control Delay	32.6	157.1	209.2	15.3	16.7	113.9	11.4	250.6	29.8	0.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	32.6	157.1	209.2	15.3	16.7	113.9	11.4	250.6	29.8	0.0
Queue Length 50th (m)	27.0	~129.5	~90.3	12.9	4.7	~228.7	19.6	~158.8	173.4	0.0
Queue Length 95th (m)	43.9	#168.8	#147.4	26.3	9.7	#257.0	46.5	#225.2	196.4	0.0
Internal Link Dist (m)		725.3		666.6		474.3			410.3	
Turn Bay Length (m)	45.0		110.0		90.0		90.0	90.0		90.0
Base Capacity (vph)	354	711	259	889	175	1949	760	374	2686	888
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.47	1.24	1.35	0.41	0.30	1.16	0.50	1.46	0.87	0.03

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

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

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	152	587	222	321	119	220	49	2085	347	502	2150	24
Future Volume (vph)	152	587	222	321	119	220	49	2085	347	502	2150	24
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	2.3	4.0		4.0	4.0		1.9	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	0.91	1.00	1.00	0.91	1.00
Frt	1.00	0.96		1.00	0.90		1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1770	3394		1770	3194		1770	5085	1583	1770	5085	1583
Flt Permitted	0.42	1.00		0.17	1.00		0.09	1.00	1.00	0.08	1.00	1.00
Satd. Flow (perm)	786	3394		308	3194		159	5085	1583	154	5085	1583
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	165	638	241	349	129	239	53	2266	377	546	2337	26
RTOR Reduction (vph)	0	33	0	0	187	0	0	0	153	0	0	12
Lane Group Flow (vph)	165	846	0	349	181	0	53	2266	224	546	2337	14
Turn Type	pm+pt	NA		pm+pt	NA		pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4			8			2		2	6		6
Actuated Green, G (s)	31.9	21.8		37.2	24.2		48.3	44.3	44.3	69.3	60.8	60.8
Effective Green, g (s)	36.3	24.0		37.2	26.4		53.5	46.9	46.9	69.3	63.4	63.4
Actuated g/C Ratio	0.30	0.20		0.31	0.22		0.44	0.39	0.39	0.57	0.52	0.52
Clearance Time (s)	4.5	6.2		4.0	6.2		4.5	6.6	6.6	4.0	6.6	6.6
Vehicle Extension (s)	3.0	5.0		0.2	5.0		3.0	5.0	5.0	0.2	5.0	5.0
Lane Grp Cap (vph)	336	673		251	697		158	1972	614	368	2666	830
v/s Ratio Prot	0.05	0.25		c0.15	0.06		0.02	0.45		c0.26	0.46	
v/s Ratio Perm	0.10			c0.28			0.13		0.14	c0.59		0.01
v/c Ratio	0.49	1.26		1.39	0.26		0.34	1.15	0.36	1.48	0.88	0.02
Uniform Delay, d1	32.8	48.5		36.7	39.2		24.0	37.0	26.4	39.2	25.3	13.8
Progression Factor	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	127.6		198.3	0.4		1.3	73.5	1.7	231.8	4.4	0.0
Delay (s)	33.9	176.1		235.0	39.6		25.3	110.5	28.1	270.9	29.7	13.8
Level of Service	C	F		F	D		C	F	C	F	C	B
Approach Delay (s)		153.6			134.7			97.3			74.9	
Approach LOS		F			F			F			E	

Intersection Summary

HCM 2000 Control Delay	100.1	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	1.45		
Actuated Cycle Length (s)	120.9	Sum of lost time (s)	16.0
Intersection Capacity Utilization	122.5%	ICU Level of Service	H
Analysis Period (min)	15		

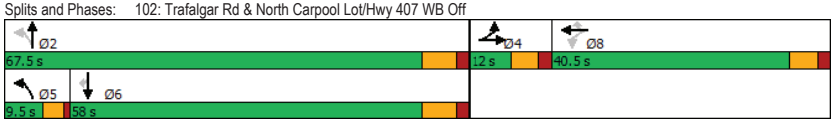
c Critical Lane Group

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	3	0	11	370	1	24	6	2454	0	0	2688	4
Future Volume (vph)	3	0	11	370	1	24	6	2454	0	0	2688	4
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	0.0		0.0	0.0		60.0	65.0		0.0	0.0		15.0
Storage Lanes	0		0	1		1	1		0	0		1
Taper Length (m)	7.5			7.5			100.0			7.5		
Lane Util. Factor	1.00	1.00	1.00	0.95	0.91	0.95	1.00	0.91	1.00	1.00	0.91	1.00
Frt		0.892			0.998	0.850						0.850
Flt Protected		0.990		0.950	0.953		0.950					
Satd. Flow (prot)	0	1645	0	1681	1612	1504	1770	5085	0	0	5085	1583
Flt Permitted		0.990		0.748	0.720		0.063					
Satd. Flow (perm)	0	1645	0	1324	1218	1504	117	5085	0	0	5085	1583
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		127			1	127						118
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		134.0			574.1			363.6			118.9	
Travel Time (s)		9.6			41.3			26.2			8.6	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	3	0	12	402	1	26	7	2667	0	0	2922	4
Shared Lane Traffic (%)				49%		10%						
Lane Group Flow (vph)	0	15	0	205	201	23	7	2667	0	0	2922	4
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.8			3.6			3.6			3.6	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2		1	2	1	1	2			2	1
Detector Template	Left	Thru		Left	Thru	Right	Left	Thru			Thru	Right
Leading Detector (m)	2.0	10.0		2.0	10.0	2.0	2.0	10.0			10.0	2.0
Trailing Detector (m)	0.0	0.0		0.0	0.0	0.0	0.0	0.0			0.0	0.0
Detector 1 Position(m)	0.0	0.0		0.0	0.0	0.0	0.0	0.0			0.0	0.0
Detector 1 Size(m)	2.0	0.6		2.0	0.6	2.0	2.0	0.6			0.6	2.0
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex			Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0			0.0	0.0
Detector 1 Queue (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0			0.0	0.0
Detector 1 Delay (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0			0.0	0.0
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Split	NA		Perm	NA	Perm	pm+pt	NA			NA	Perm
Protected Phases	4	4			8		5	2			6	
Permitted Phases				8		8	2					6

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector Phase	4	4		8	8	8	5	2			6	6
Switch Phase												
Minimum Initial (s)	6.0	6.0		7.0	7.0	7.0	4.0	20.0			20.0	20.0
Minimum Split (s)	12.0	12.0		22.5	22.5	22.5	9.5	27.0			27.0	27.0
Total Split (s)	12.0	12.0		40.5	40.5	40.5	9.5	67.5			58.0	58.0
Total Split (%)	10.0%	10.0%		33.8%	33.8%	33.8%	7.9%	56.3%			48.3%	48.3%
Maximum Green (s)	6.0	6.0		34.5	34.5	34.5	5.5	60.5			51.0	51.0
Yellow Time (s)	4.0	4.0		4.0	4.0	4.0	3.0	5.0			5.0	5.0
All-Red Time (s)	2.0	2.0		2.0	2.0	2.0	1.0	2.0			2.0	2.0
Lost Time Adjust (s)		-2.0		-2.0	-2.0	-2.0	0.0	-3.0			-3.0	-3.0
Total Lost Time (s)		4.0		4.0	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)	3.5	3.5		3.5	3.5	3.5	2.5	7.0			7.0	7.0
Recall Mode	None	None		None	None	None	None	Max			Max	Max
Act Effct Green (s)		8.1		24.1	24.1	24.1	64.6	64.6			63.0	63.0
Actuated g/C Ratio		0.08		0.24	0.24	0.24	0.64	0.64			0.62	0.62
v/c Ratio		0.06		0.65	0.69	0.05	0.04	0.82			0.92	0.00
Control Delay		0.4		45.1	48.1	0.2	12.0	19.5			26.0	0.0
Queue Delay		0.0		0.0	0.0	0.0	0.0	0.0			0.0	0.0
Total Delay		0.4		45.1	48.1	0.2	12.0	19.5			26.0	0.0
LOS		A		D	D	A	B	B			C	A
Approach Delay		0.4			44.1			19.5			26.0	
Approach LOS		A			D			B			C	

Intersection Summary			
Area Type:	Other		
Cycle Length: 120			
Actuated Cycle Length: 101			
Natural Cycle: 120			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 0.92			
Intersection Signal Delay: 24.3		Intersection LOS: C	
Intersection Capacity Utilization 75.8%		ICU Level of Service D	
Analysis Period (min) 15			

Splits and Phases: 102: Trafalgar Rd & North Carpool Lot/Hwy 407 WB Off



Lane Group	EBT	WBL	WBT	WBR	NBL	NBT	SBT	SBR
Lane Group Flow (vph)	15	205	201	23	7	2667	2922	4
v/c Ratio	0.06	0.65	0.69	0.05	0.04	0.82	0.92	0.00
Control Delay	0.4	45.1	48.1	0.2	12.0	19.5	26.0	0.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	0.4	45.1	48.1	0.2	12.0	19.5	26.0	0.0
Queue Length 50th (m)	0.0	34.8	35.9	0.0	0.4	106.5	130.7	0.0
Queue Length 95th (m)	0.0	66.2	69.1	0.0	3.0	#260.9	#340.7	0.0
Internal Link Dist (m)	110.0		550.1			339.6	94.9	
Turn Bay Length (m)				60.0	65.0			15.0
Base Capacity (vph)	249	486	448	632	166	3251	3171	1031
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	0.06	0.42	0.45	0.04	0.04	0.82	0.92	0.00

Intersection Summary

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

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	3	0	11	370	1	24	6	2454	0	0	2688	4
Future Volume (vph)	3	0	11	370	1	24	6	2454	0	0	2688	4
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0		4.0	4.0	4.0	4.0	4.0			4.0	4.0
Lane Util. Factor		1.00		0.95	0.91	0.95	1.00	0.91			0.91	1.00
Frt		0.89		1.00	1.00	0.85	1.00	1.00			1.00	0.85
Flt Protected		0.99		0.95	0.95	1.00	0.95	1.00			1.00	1.00
Satd. Flow (prot)		1645		1681	1612	1504	1770	5085			5085	1583
Flt Permitted		0.99		0.75	0.72	1.00	0.06	1.00			1.00	1.00
Satd. Flow (perm)		1645		1323	1217	1504	117	5085			5085	1583
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	3	0	12	402	1	26	7	2667	0	0	2922	4
RTOR Reduction (vph)	0	14	0	0	1	18	0	0	0	0	0	2
Lane Group Flow (vph)	0	1	0	205	200	5	7	2667	0	0	2922	2
Turn Type	Split	NA		Perm	NA	Perm	pm+pt	NA			NA	Perm
Protected Phases	4	4			8		5	2			6	
Permitted Phases				8		8	2					6
Actuated Green, G (s)		2.1		22.1	22.1	22.1	64.8	64.8			59.9	59.9
Effective Green, g (s)		4.1		24.1	24.1	24.1	64.8	67.8			62.9	62.9
Actuated g/C Ratio		0.04		0.22	0.22	0.22	0.60	0.63			0.58	0.58
Clearance Time (s)		6.0		6.0	6.0	6.0	4.0	7.0			7.0	7.0
Vehicle Extension (s)		3.5		3.5	3.5	3.5	2.5	7.0			7.0	7.0
Lane Grp Cap (vph)		62		295	271	335	83	3192			2961	921
v/s Ratio Prot		c0.00					0.00	c0.52			c0.57	
v/s Ratio Perm				0.15	c0.16	0.00	0.05					0.00
v/c Ratio		0.01		0.69	0.74	0.02	0.08	0.84			0.99	0.00
Uniform Delay, d1		50.0		38.6	39.0	32.7	25.3	15.7			22.1	9.4
Progression Factor		1.00		1.00	1.00	1.00	1.00	1.00			1.00	1.00
Incremental Delay, d2		0.1		7.2	10.4	0.0	0.3	2.8			13.7	0.0
Delay (s)		50.1		45.8	49.4	32.7	25.7	18.5			35.9	9.4
Level of Service		D		D	D	C	C	B			D	A
Approach Delay (s)		50.1			46.8			18.5			35.8	
Approach LOS		D			D			B			D	

Intersection Summary

HCM 2000 Control Delay	29.0	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.91		
Actuated Cycle Length (s)	108.0	Sum of lost time (s)	18.0
Intersection Capacity Utilization	75.8%	ICU Level of Service	D
Analysis Period (min)	15		

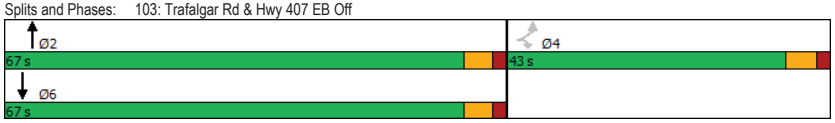
c Critical Lane Group

Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	128	310	0	2405	3069	0
Future Volume (vph)	128	310	0	2405	3069	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	0.95	1.00	0.91	0.91	1.00
Frt	0.934	0.850				
Flt Protected	0.973					
Satd. Flow (prot)	1693	1504	0	5085	5085	0
Flt Permitted	0.973					
Satd. Flow (perm)	1693	1504	0	5085	5085	0
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)						
Link Speed (k/h)	50			50	50	
Link Distance (m)	554.6			120.3	363.6	
Travel Time (s)	39.9			8.7	26.2	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	139	337	0	2614	3336	0
Shared Lane Traffic (%)		32%				
Lane Group Flow (vph)	247	229	0	2614	3336	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	3.6			3.6	3.6	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	4.8			4.8	4.8	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)	25	15	25			15
Number of Detectors	1	1		2	2	
Detector Template	Left	Right		Thru	Thru	
Leading Detector (m)	2.0	2.0		10.0	10.0	
Trailing Detector (m)	0.0	0.0		0.0	0.0	
Detector 1 Position(m)	0.0	0.0		0.0	0.0	
Detector 1 Size(m)	2.0	2.0		0.6	0.6	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel						
Detector 1 Extend (s)	0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0	
Detector 2 Position(m)				9.4	9.4	
Detector 2 Size(m)				0.6	0.6	
Detector 2 Type				Cl+Ex	Cl+Ex	
Detector 2 Channel						
Detector 2 Extend (s)				0.0	0.0	
Turn Type	Perm	Perm		NA	NA	
Protected Phases				2	6	
Permitted Phases	4	4				
Detector Phase	4	4		2	6	
Switch Phase						
Minimum Initial (s)	5.0	5.0		5.0	5.0	

Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Minimum Split (s)	24.0	24.0		24.0	24.0	
Total Split (s)	43.0	43.0		67.0	67.0	
Total Split (%)	39.1%	39.1%		60.9%	60.9%	
Maximum Green (s)	37.0	37.0		61.0	61.0	
Yellow Time (s)	4.0	4.0		4.0	4.0	
All-Red Time (s)	2.0	2.0		2.0	2.0	
Lost Time Adjust (s)	-2.0	-2.0		-2.0	-2.0	
Total Lost Time (s)	4.0	4.0		4.0	4.0	
Lead/Lag						
Lead-Lag Optimize?						
Vehicle Extension (s)	3.0	3.0		3.0	3.0	
Recall Mode	None	None		Max	Max	
Walk Time (s)	7.0	7.0		7.0	7.0	
Flash Dont Walk (s)	11.0	11.0		11.0	11.0	
Pedestrian Calls (#/hr)	0	0		0	0	
Act Effct Green (s)	21.1	21.1		63.2	63.2	
Actuated g/C Ratio	0.23	0.23		0.68	0.68	
v/c Ratio	0.64	0.67		0.75	0.96	
Control Delay	39.9	42.2		12.1	23.5	
Queue Delay	0.0	0.0		0.0	0.0	
Total Delay	39.9	42.2		12.1	23.5	
LOS	D	D		B	C	
Approach Delay	41.0			12.1	23.5	
Approach LOS	D			B	C	

Intersection Summary	
Area Type:	Other
Cycle Length: 110	
Actuated Cycle Length: 92.3	
Natural Cycle: 90	
Control Type: Semi Act-Uncoord	
Maximum v/c Ratio: 0.96	
Intersection Signal Delay: 20.2	Intersection LOS: C
Intersection Capacity Utilization 79.4%	ICU Level of Service D
Analysis Period (min) 15	

Splits and Phases: 103: Trafalgar Rd & Hwy 407 EB Off



Lane Group	EBL	EBR	NBT	SBT
Lane Group Flow (vph)	247	229	2614	3336
v/c Ratio	0.64	0.67	0.75	0.96
Control Delay	39.9	42.2	12.1	23.5
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	39.9	42.2	12.1	23.5
Queue Length 50th (m)	39.2	38.5	94.6	170.6
Queue Length 95th (m)	62.4	62.6	150.5	#283.1
Internal Link Dist (m)	530.6		96.3	339.6
Turn Bay Length (m)				
Base Capacity (vph)	717	637	3480	3480
Starvation Cap Reductn	0	0	0	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.34	0.36	0.75	0.96

Intersection Summary

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

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	128	310	0	2405	3069	0
Future Volume (vph)	128	310	0	2405	3069	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0	
Lane Util. Factor	1.00	0.95		0.91	0.91	
Frt	0.93	0.85		1.00	1.00	
Flt Protected	0.97	1.00		1.00	1.00	
Satd. Flow (prot)	1693	1504		5085	5085	
Flt Permitted	0.97	1.00		1.00	1.00	
Satd. Flow (perm)	1693	1504		5085	5085	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	139	337	0	2614	3336	0
RTOR Reduction (vph)	0	0	0	0	0	0
Lane Group Flow (vph)	247	229	0	2614	3336	0
Turn Type	Perm	Perm		NA	NA	
Protected Phases				2	6	
Permitted Phases	4	4				
Actuated Green, G (s)	19.1	19.1		61.2	61.2	
Effective Green, g (s)	21.1	21.1		63.2	63.2	
Actuated g/C Ratio	0.23	0.23		0.68	0.68	
Clearance Time (s)	6.0	6.0		6.0	6.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	387	343		3481	3481	
v/s Ratio Prot				0.51	c0.66	
v/s Ratio Perm	0.15	c0.15				
v/c Ratio	0.64	0.67		0.75	0.96	
Uniform Delay, d1	32.2	32.4		9.4	13.3	
Progression Factor	1.00	1.00		1.00	1.00	
Incremental Delay, d2	3.4	4.9		1.5	8.3	
Delay (s)	35.6	37.3		11.0	21.6	
Level of Service	D	D		B	C	
Approach Delay (s)	36.4			11.0	21.6	
Approach LOS	D			B	C	

Intersection Summary

HCM 2000 Control Delay	18.4	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.91		
Actuated Cycle Length (s)	92.3	Sum of lost time (s)	10.0
Intersection Capacity Utilization	79.4%	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)	316	10	245	134	10	334	76	2029	273	407	2832	139
Future Volume (vph)	316	10	245	134	10	334	76	2029	273	407	2832	139
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	50.0		50.0	50.0		50.0	50.0		50.0	30.0		30.0
Storage Lanes	1		1	1		1	1		1	1		1
Taper Length (m)	75.0			75.0			100.0			90.0		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.91	1.00	1.00	0.91	1.00
Frt			0.850			0.850			0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1770	1863	1583	1770	1863	1583	1770	5085	1583	1770	5085	1583
Flt Permitted	0.750			0.750			0.065			0.061		
Satd. Flow (perm)	1397	1863	1583	1397	1863	1583	121	5085	1583	114	5085	1583
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			124			23			125			55
Link Speed (k/h)		50			50			80			80	
Link Distance (m)		79.2			134.2			233.3			131.6	
Travel Time (s)		5.7			9.7			10.5			5.9	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	343	11	266	146	11	363	83	2205	297	442	3078	151
Shared Lane Traffic (%)												
Lane Group Flow (vph)	343	11	266	146	11	363	83	2205	297	442	3078	151
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.6			3.6			3.6			3.6	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2	1	1	2	1	1	2	1	1	2	1
Detector Template	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Leading Detector (m)	2.0	10.0	2.0	2.0	10.0	2.0	2.0	10.0	2.0	2.0	10.0	2.0
Trailing Detector (m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Position(m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Size(m)	2.0	0.6	2.0	2.0	0.6	2.0	2.0	0.6	2.0	2.0	0.6	2.0
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Perm	NA	Perm	Perm	NA	pm+ov	pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases		4			8	1	5	2		1	6	
Permitted Phases	4		4	8		8	2		2	6		6

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector Phase	4	4	4	8	8	1	5	2	2	1	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	5.0	5.0	5.0
Minimum Split (s)	24.0	24.0	24.0	24.0	24.0	9.5	9.5	24.0	24.0	9.5	24.0	24.0
Total Split (s)	32.0	32.0	32.0	32.0	32.0	45.0	14.6	63.0	63.0	45.0	93.4	93.4
Total Split (%)	22.9%	22.9%	22.9%	22.9%	22.9%	32.1%	10.4%	45.0%	45.0%	32.1%	66.7%	66.7%
Maximum Green (s)	26.0	26.0	26.0	26.0	26.0	41.0	10.6	57.0	57.0	41.0	87.4	87.4
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	3.0	3.0	4.0	4.0	3.0	4.0	4.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	1.0	1.0	2.0	2.0	1.0	2.0	2.0
Lost Time Adjust (s)	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0	0.0	-2.0	-2.0	0.0	-2.0	-2.0
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	2.0	4.0	4.0	4.0	4.0	4.0	4.0
Lead/Lag						Lead	Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?						Yes	Yes	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	3.0	3.0	3.0
Recall Mode	None	None	None	None	None	None	None	Max	Max	None	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)	28.0	28.0	28.0	28.0	28.0	67.7	71.8	63.8	63.8	101.5	89.5	89.5
Actuated g/C Ratio	0.20	0.20	0.20	0.20	0.20	0.49	0.52	0.46	0.46	0.74	0.65	0.65
v/c Ratio	1.21	0.03	0.63	0.51	0.03	0.46	0.52	0.94	0.37	0.90	0.93	0.14
Control Delay	168.0	45.1	33.9	56.4	45.1	22.7	37.9	44.2	15.8	61.2	27.9	6.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.9	0.0	0.0	20.3	0.0
Total Delay	168.0	45.1	33.9	56.4	45.1	22.7	37.9	46.1	15.8	61.2	48.3	6.3
LOS	F	D	C	E	D	C	D	D	B	E	D	A
Approach Delay		108.3			32.6			42.3			48.1	
Approach LOS		F			C			D			D	

Intersection Summary	
Area Type:	Other
Cycle Length: 140	
Actuated Cycle Length: 137.5	
Natural Cycle: 110	
Control Type: Actuated-Uncoordinated	
Maximum v/c Ratio: 1.21	
Intersection Signal Delay: 50.0	Intersection LOS: D
Intersection Capacity Utilization 95.9%	ICU Level of Service F
Analysis Period (min) 15	

Splits and Phases: 104: Trafalgar Rd & West Street A/Street A

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	343	11	266	146	11	363	83	2205	297	442	3078	151
v/c Ratio	1.21	0.03	0.63	0.51	0.03	0.46	0.52	0.94	0.37	0.90	0.93	0.14
Control Delay	168.0	45.1	33.9	56.4	45.1	22.7	37.9	44.2	15.8	61.2	27.9	6.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.9	0.0	0.0	20.3	0.0
Total Delay	168.0	45.1	33.9	56.4	45.1	22.7	37.9	46.1	15.8	61.2	48.3	6.3
Queue Length 50th (m)	~110.7	2.4	34.7	34.9	2.4	56.2	6.0	205.5	28.6	96.5	246.5	8.8
Queue Length 95th (m)	#174.2	7.9	66.1	58.3	7.9	77.8	23.8	#262.7	54.6	134.9	290.9	18.2
Internal Link Dist (m)		55.2			110.2			209.3			107.6	
Turn Bay Length (m)	50.0		50.0	50.0		50.0	50.0		50.0	30.0		30.0
Base Capacity (vph)	284	379	420	284	379	873	192	2357	801	577	3308	1049
Starvation Cap Reductn	0	0	0	0	0	0	0	70	0	0	352	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	1.21	0.03	0.63	0.51	0.03	0.42	0.43	0.96	0.37	0.77	1.04	0.14

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

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

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	316	10	245	134	10	334	76	2029	273	407	2832	139
Future Volume (vph)	316	10	245	134	10	334	76	2029	273	407	2832	139
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	2.0	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	1.00	0.91	1.00	1.00	0.91	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)	1770	1863	1583	1770	1863	1583	1770	5085	1583	1770	5085	1583
Flt Permitted	0.75	1.00	1.00	0.75	1.00	1.00	0.06	1.00	1.00	0.06	1.00	1.00
Satd. Flow (perm)	1398	1863	1583	1398	1863	1583	121	5085	1583	113	5085	1583
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	343	11	266	146	11	363	83	2205	297	442	3078	151
RTOR Reduction (vph)	0	0	99	0	0	12	0	0	67	0	0	19
Lane Group Flow (vph)	343	11	167	146	11	351	83	2205	230	442	3078	132
Turn Type	Perm	NA	Perm	Perm	NA	pm+ov	pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases		4			8	1	5	2		1	6	
Permitted Phases	4		4	8		8	2		2	6		6
Actuated Green, G (s)	26.0	26.0	26.0	26.0	26.0	59.7	69.8	61.8	61.8	99.5	87.5	87.5
Effective Green, g (s)	28.0	28.0	28.0	28.0	28.0	63.7	69.8	63.8	63.8	99.5	89.5	89.5
Actuated g/C Ratio	0.20	0.20	0.20	0.20	0.20	0.46	0.51	0.46	0.46	0.72	0.65	0.65
Clearance Time (s)	6.0	6.0	6.0	6.0	6.0	4.0	4.0	6.0	6.0	4.0	6.0	6.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	284	379	322	284	379	733	157	2359	734	487	3309	1030
v/s Ratio Prot		0.01			0.01	0.12	0.03	0.43		c0.22	c0.61	
v/s Ratio Perm	c0.25		0.11	0.10		0.10	0.24		0.15	0.43		0.08
v/c Ratio	1.21	0.03	0.52	0.51	0.03	0.48	0.53	0.93	0.31	0.91	0.93	0.13
Uniform Delay, d1	54.8	43.9	48.8	48.7	43.9	25.4	28.2	34.9	23.1	43.3	21.2	9.1
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	121.8	0.0	1.4	1.6	0.0	0.5	3.2	8.5	1.1	20.4	6.1	0.3
Delay (s)	176.5	43.9	50.2	50.3	43.9	25.9	31.4	43.4	24.2	63.8	27.3	9.4
Level of Service	F	D	D	D	D	C	C	D	C	E	C	A
Approach Delay (s)		120.0			33.1			40.8			31.0	
Approach LOS		F			C			D			C	

Intersection Summary

HCM 2000 Control Delay	42.0	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	1.00		
Actuated Cycle Length (s)	137.5	Sum of lost time (s)	12.0
Intersection Capacity Utilization	95.9%	ICU Level of Service	F
Analysis Period (min)	15		

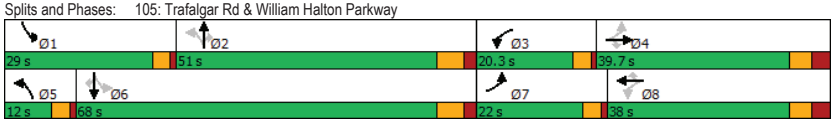
c Critical Lane Group

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	403	414	77	220	584	388	236	1588	62	614	2299	298
Future Volume (vph)	403	414	77	220	584	388	236	1588	62	614	2299	298
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	100.0		100.0	100.0		150.0	150.0		75.0	0.0		0.0
Storage Lanes	1		1	1		1	1		1	1		1
Taper Length (m)	100.0			100.0			100.0			7.5		
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.91	1.00	1.00	0.91	1.00
Frt			0.850			0.850			0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1770	3539	1583	1770	3539	1583	1770	5085	1583	1770	5085	1583
Flt Permitted	0.127			0.343			0.091			0.083		
Satd. Flow (perm)	237	3539	1583	639	3539	1583	170	5085	1583	155	5085	1583
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			124			288			125			185
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		128.3			126.0			197.1			233.3	
Travel Time (s)		9.2			9.1			14.2			16.8	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	438	450	84	239	635	422	257	1726	67	667	2499	324
Shared Lane Traffic (%)												
Lane Group Flow (vph)	438	450	84	239	635	422	257	1726	67	667	2499	324
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.6			3.6			7.2			7.2	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2	1	1	2	1	1	2	1	1	2	1
Detector Template	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Leading Detector (m)	2.0	10.0	2.0	2.0	10.0	2.0	2.0	10.0	2.0	2.0	10.0	2.0
Trailing Detector (m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Position(m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Size(m)	2.0	0.6	2.0	2.0	0.6	2.0	2.0	0.6	2.0	2.0	0.6	2.0
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4		4	8		8	2		2	6		6

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector Phase	7	4	4	3	8	8	5	2	2	1	6	6
Switch Phase												
Minimum Initial (s)	7.0	20.0	20.0	7.0	20.0	20.0	7.0	20.0	20.0	7.0	20.0	20.0
Minimum Split (s)	11.5	38.0	38.0	11.5	38.0	38.0	11.5	42.9	42.9	11.5	42.9	42.9
Total Split (s)	22.0	39.7	39.7	20.3	38.0	38.0	12.0	51.0	51.0	29.0	68.0	68.0
Total Split (%)	15.7%	28.4%	28.4%	14.5%	27.1%	27.1%	8.6%	36.4%	36.4%	20.7%	48.6%	48.6%
Maximum Green (s)	18.0	32.7	32.7	16.3	31.0	31.0	8.0	44.1	44.1	25.0	61.1	61.1
Yellow Time (s)	3.0	3.7	3.7	3.0	3.7	3.7	3.0	4.6	4.6	3.0	4.6	4.6
All-Red Time (s)	1.0	3.3	3.3	1.0	3.3	3.3	1.0	2.3	2.3	1.0	2.3	2.3
Lost Time Adjust (s)	0.0	-3.0	-3.0	0.0	-3.0	-3.0	0.0	-2.9	-2.9	0.0	-2.9	-2.9
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Vehicle Extension (s)	3.0	5.0	5.0	3.0	5.0	5.0	3.0	5.0	5.0	3.0	5.0	5.0
Recall Mode	None	None	None	None	None	None	None	Max	Max	None	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)		24.0	24.0		24.0	24.0		29.0	29.0		29.0	29.0
Pedestrian Calls (#/hr)		0	0		0	0		0	0		0	0
Act Effct Green (s)	53.5	35.8	35.8	48.8	33.3	33.3	55.0	47.0	47.0	76.0	64.0	64.0
Actuated g/C Ratio	0.38	0.26	0.26	0.35	0.24	0.24	0.39	0.34	0.34	0.55	0.46	0.46
v/c Ratio	1.52	0.49	0.17	0.68	0.75	0.71	1.62	1.01	0.11	1.78	1.07	0.39
Control Delay	278.8	46.4	2.6	40.9	55.5	22.0	332.0	69.0	0.4	391.5	77.1	11.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	12.9	0.0
Total Delay	278.8	46.4	2.6	40.9	55.5	22.0	332.0	69.0	0.4	391.5	90.0	11.6
LOS	F	D	A	D	E	C	F	E	A	F	F	B
Approach Delay		147.4			41.9			99.7			140.4	
Approach LOS		F			D			F			F	

Intersection Summary	
Area Type:	Other
Cycle Length: 140	
Actuated Cycle Length: 139.3	
Natural Cycle: 145	
Control Type: Actuated-Uncoordinated	
Maximum v/c Ratio: 1.78	
Intersection Signal Delay: 114.2	Intersection LOS: F
Intersection Capacity Utilization 117.0%	ICU Level of Service H
Analysis Period (min) 15	

Splits and Phases: 105: Trafalgar Rd & William Halton Parkway



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	438	450	84	239	635	422	257	1726	67	667	2499	324
v/c Ratio	1.52	0.49	0.17	0.68	0.75	0.71	1.62	1.01	0.11	1.78	1.07	0.39
Control Delay	278.8	46.4	2.6	40.9	55.5	22.0	332.0	69.0	0.4	391.5	77.1	11.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	12.9	0.0
Total Delay	278.8	46.4	2.6	40.9	55.5	22.0	332.0	69.0	0.4	391.5	90.0	11.6
Queue Length 50th (m)	~150.3	55.5	0.0	45.0	84.8	33.3	~85.0	~176.5	0.0	~258.5	~277.5	22.6
Queue Length 95th (m)	#215.8	72.3	4.2	66.3	106.3	72.0	#139.6	#210.2	0.0	#331.5	#303.5	45.2
Internal Link Dist (m)		104.3			102.0			173.1			209.3	
Turn Bay Length (m)	100.0		100.0	100.0		150.0	150.0		75.0			
Base Capacity (vph)	289	910	499	360	863	604	159	1715	616	374	2336	827
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	118	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	1.52	0.49	0.17	0.66	0.74	0.70	1.62	1.01	0.11	1.78	1.13	0.39

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

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

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	403	414	77	220	584	388	236	1588	62	614	2299	298
Future Volume (vph)	403	414	77	220	584	388	236	1588	62	614	2299	298
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.91	1.00	1.00	0.91	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)	1770	3539	1583	1770	3539	1583	1770	5085	1583	1770	5085	1583
Flt Permitted	0.13	1.00	1.00	0.34	1.00	1.00	0.09	1.00	1.00	0.08	1.00	1.00
Satd. Flow (perm)	236	3539	1583	639	3539	1583	169	5085	1583	155	5085	1583
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	438	450	84	239	635	422	257	1726	67	667	2499	324
RTOR Reduction (vph)	0	0	62	0	0	219	0	0	44	0	0	100
Lane Group Flow (vph)	438	450	22	239	635	203	257	1726	23	667	2499	224
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4		4	8		8	2		2	6		6
Actuated Green, G (s)	50.8	32.8	32.8	45.8	30.3	30.3	52.1	44.1	44.1	73.1	61.1	61.1
Effective Green, g (s)	50.8	35.8	35.8	45.8	33.3	33.3	52.1	47.0	47.0	73.1	64.0	64.0
Actuated g/C Ratio	0.36	0.26	0.26	0.33	0.24	0.24	0.37	0.34	0.34	0.52	0.46	0.46
Clearance Time (s)	4.0	7.0	7.0	4.0	7.0	7.0	4.0	6.9	6.9	4.0	6.9	6.9
Vehicle Extension (s)	3.0	5.0	5.0	3.0	5.0	5.0	3.0	5.0	5.0	3.0	5.0	5.0
Lane Grp Cap (vph)	284	909	406	335	846	378	155	1715	534	371	2336	727
v/s Ratio Prot	c0.20	0.13		0.08	0.18		0.10	0.34		c0.32	0.49	
v/s Ratio Perm	c0.36		0.01	0.15		0.13	0.52		0.01	c0.62		0.14
v/c Ratio	1.54	0.50	0.05	0.71	0.75	0.54	1.66	1.01	0.04	1.80	1.07	0.31
Uniform Delay, d1	40.5	44.1	39.0	36.7	49.1	46.3	37.4	46.2	31.0	45.5	37.7	23.7
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	260.9	0.9	0.1	7.0	4.5	2.7	323.0	23.3	0.1	369.6	40.5	1.1
Delay (s)	301.4	44.9	39.1	43.7	53.6	48.9	360.4	69.4	31.2	415.2	78.2	24.8
Level of Service	F	D	D	D	D	D	F	E	C	F	E	C
Approach Delay (s)		160.0			50.3			104.7			137.6	
Approach LOS		F			D			F			F	

Intersection Summary

HCM 2000 Control Delay	117.3	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	1.68		
Actuated Cycle Length (s)	139.3	Sum of lost time (s)	16.0
Intersection Capacity Utilization	117.0%	ICU Level of Service	H
Analysis Period (min)	15		

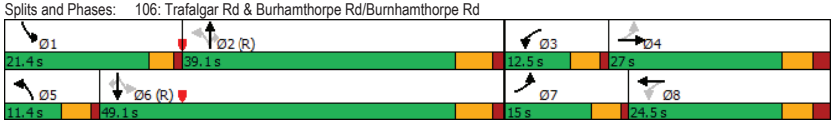
c Critical Lane Group

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	292	679	91	225	241	131	173	1522	190	360	1947	185
Future Volume (vph)	292	679	91	225	241	131	173	1522	190	360	1947	185
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	30.0		0.0	15.0		0.0	60.0		60.0	60.0		60.0
Storage Lanes	1		0	1		0	1		1	1		1
Taper Length (m)	70.0			50.0			100.0			100.0		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	0.95	1.00	0.91	1.00	1.00	0.91	1.00
Frt		0.982			0.947				0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1770	3476	0	1770	3352	0	1770	5085	1583	1770	5085	1583
Flt Permitted	0.310			0.195			0.114			0.108		
Satd. Flow (perm)	577	3476	0	363	3352	0	212	5085	1583	201	5085	1583
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		14			91				175			153
Link Speed (k/h)		60			60			80			80	
Link Distance (m)		306.5			989.6			1077.8			258.6	
Travel Time (s)		18.4			59.4			48.5			11.6	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	317	738	99	245	262	142	188	1654	207	391	2116	201
Shared Lane Traffic (%)												
Lane Group Flow (vph)	317	837	0	245	404	0	188	1654	207	391	2116	201
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.6			3.6			3.6			3.6	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Turn Type	pm+pt	NA		pm+pt	NA		pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4			8			2		2	6		6
Minimum Split (s)	9.5	24.0		9.5	24.0		9.5	26.0	26.0	11.5	26.0	26.0
Total Split (s)	15.0	27.0		12.5	24.5		11.4	39.1	39.1	21.4	49.1	49.1
Total Split (%)	15.0%	27.0%		12.5%	24.5%		11.4%	39.1%	39.1%	21.4%	49.1%	49.1%
Maximum Green (s)	10.5	21.0		8.0	18.5		6.9	33.1	33.1	17.4	43.1	43.1
Yellow Time (s)	3.5	3.7		3.5	3.7		3.5	4.6	4.6	3.0	4.6	4.6
All-Red Time (s)	1.0	2.3		1.0	2.3		1.0	1.4	1.4	1.0	1.4	1.4
Lost Time Adjust (s)	-2.0	-2.0		-2.0	-2.0		-2.0	-2.0	-2.0	0.0	-2.0	-2.0
Total Lost Time (s)	2.5	4.0		2.5	4.0		2.5	4.0	4.0	4.0	4.0	4.0
Lead/Lag	Lead	Lag		Lead	Lag		Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes		Yes	Yes		Yes	Yes	Yes	Yes	Yes	Yes
Act Effct Green (s)	37.0	23.0		32.0	20.5		45.5	35.1	35.1	56.5	45.1	45.1
Actuated g/C Ratio	0.37	0.23		0.32	0.20		0.46	0.35	0.35	0.56	0.45	0.45
v/c Ratio	0.88	1.03		0.96	0.53		0.80	0.93	0.31	1.01	0.92	0.25
Control Delay	51.6	78.6		74.1	30.1		46.1	41.6	6.8	77.3	34.0	5.7
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	51.6	78.6		74.1	30.1		46.1	41.6	6.8	77.3	34.0	5.7

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
LOS	D	E		E	C		D	D	A	E	C	A
Approach Delay		71.1			46.7			38.5			38.2	
Approach LOS		E			D			D			D	

Intersection Summary	
Area Type: Other	
Cycle Length: 100	
Actuated Cycle Length: 100	
Offset: 0 (0%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green	
Natural Cycle: 90	
Control Type: Pretimed	
Maximum v/c Ratio: 1.03	
Intersection Signal Delay: 44.9	Intersection LOS: D
Intersection Capacity Utilization 96.8%	ICU Level of Service F
Analysis Period (min) 15	

Splits and Phases: 106: Trafalgar Rd & Burhamthorpe Rd/Burnhamthorpe Rd



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	317	837	245	404	188	1654	207	391	2116	201
v/c Ratio	0.88	1.03	0.96	0.53	0.80	0.93	0.31	1.01	0.92	0.25
Control Delay	51.6	78.6	74.1	30.1	46.1	41.6	6.8	77.3	34.0	5.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	51.6	78.6	74.1	30.1	46.1	41.6	6.8	77.3	34.0	5.7
Queue Length 50th (m)	45.9	~89.8	33.8	28.0	18.8	110.1	4.0	~60.3	135.4	5.1
Queue Length 95th (m)	#75.8	#127.3	#75.1	42.6	#53.7	#140.3	18.7	#118.3	#161.0	17.4
Internal Link Dist (m)		282.5		965.6		1053.8			234.6	
Turn Bay Length (m)	30.0		15.0		60.0		60.0	60.0		60.0
Base Capacity (vph)	362	810	256	759	235	1784	669	386	2293	797
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.88	1.03	0.96	0.53	0.80	0.93	0.31	1.01	0.92	0.25

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

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

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	292	679	91	225	241	131	173	1522	190	360	1947	185
Future Volume (vph)	292	679	91	225	241	131	173	1522	190	360	1947	185
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	2.5	4.0		2.5	4.0		2.5	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	0.91	1.00	1.00	0.91	1.00
Frt	1.00	0.98		1.00	0.95		1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1770	3476		1770	3353		1770	5085	1583	1770	5085	1583
Flt Permitted	0.31	1.00		0.20	1.00		0.11	1.00	1.00	0.11	1.00	1.00
Satd. Flow (perm)	577	3476		363	3353		212	5085	1583	201	5085	1583
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	317	738	99	245	262	142	188	1654	207	391	2116	201
RTOR Reduction (vph)	0	11	0	0	72	0	0	0	114	0	0	84
Lane Group Flow (vph)	317	826	0	245	332	0	188	1654	93	391	2116	117
Turn Type	pm+pt	NA		pm+pt	NA		pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4			8			2		2	6		6
Actuated Green, G (s)	31.5	21.0		26.5	18.5		40.0	33.1	33.1	54.5	43.1	43.1
Effective Green, g (s)	35.5	23.0		30.5	20.5		44.0	35.1	35.1	54.5	45.1	45.1
Actuated g/C Ratio	0.36	0.23		0.30	0.20		0.44	0.35	0.35	0.54	0.45	0.45
Clearance Time (s)	4.5	6.0		4.5	6.0		4.5	6.0	6.0	4.0	6.0	6.0
Lane Grp Cap (vph)	353	799		251	687		231	1784	555	382	2293	713
v/s Ratio Prot	c0.11	c0.24		c0.10	0.10		0.07	0.33		c0.18	0.42	
v/s Ratio Perm	0.21			0.20			0.28		0.06	c0.38		0.07
v/c Ratio	0.90	1.03		0.98	0.48		0.81	0.93	0.17	1.02	0.92	0.16
Uniform Delay, d1	27.0	38.5		31.0	35.1		22.2	31.2	22.4	30.3	25.8	16.3
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	27.9	40.9		51.0	2.4		26.0	9.9	0.7	52.2	7.7	0.5
Delay (s)	54.9	79.4		82.0	37.5		48.2	41.1	23.0	82.5	33.5	16.8
Level of Service	D	E		F	D		D	D	C	F	C	B
Approach Delay (s)		72.7			54.3			39.9			39.3	
Approach LOS		E			D			D			D	

Intersection Summary

HCM 2000 Control Delay	46.9	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	1.05		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	14.5
Intersection Capacity Utilization	96.8%	ICU Level of Service	F
Analysis Period (min)	15		

c Critical Lane Group

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	0	108	0	0	80	0	1804	141	0	2384	211
Future Volume (vph)	0	0	108	0	0	80	0	1804	141	0	2384	211
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	0.0		0.0	0.0		0.0	0.0		90.0	0.0		90.0
Storage Lanes	0		1	0		1	0		1	0		1
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	0.91	1.00	1.00	0.91	1.00
Frt			0.865			0.865			0.850			0.850
Flt Protected												
Satd. Flow (prot)	0	0	1611	0	0	1611	0	5085	1583	0	5085	1583
Flt Permitted												
Satd. Flow (perm)	0	0	1611	0	0	1611	0	5085	1583	0	5085	1583
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		133.8			58.0			258.6			197.1	
Travel Time (s)		9.6			4.2			18.6			14.2	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	0	117	0	0	87	0	1961	153	0	2591	229
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	0	117	0	0	87	0	1961	153	0	2591	229
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		0.0			0.0			3.6			3.6	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Sign Control		Stop			Stop			Free			Free	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 59.4%		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	0	108	0	0	80	0	1804	141	0	2384	211
Future Volume (Veh/h)	0	0	108	0	0	80	0	1804	141	0	2384	211
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	0	117	0	0	87	0	1961	153	0	2591	229
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (m)								258			197	
pX, platoon unblocked	0.70	0.70	0.55	0.70	0.70	0.70	0.55			0.70		
vC, conflicting volume	3332	4705	864	2942	4781	654	2820			2114		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	0	1920	0	0	2028	0	1461			1097		
tC, single (s)	7.5	6.5	6.9	7.5	6.5	6.9	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	80	100	100	89	100			100		
cM capacity (veh/h)	636	47	599	578	40	760	253			443		

Direction, Lane #	EB 1	WB 1	NB 1	NB 2	NB 3	NB 4	SB 1	SB 2	SB 3	SB 4
Volume Total	117	87	654	654	654	153	864	864	864	229
Volume Left	0	0	0	0	0	0	0	0	0	0
Volume Right	117	87	0	0	0	153	0	0	0	229
cSH	599	760	1700	1700	1700	1700	1700	1700	1700	1700
Volume to Capacity	0.20	0.11	0.38	0.38	0.38	0.09	0.51	0.51	0.51	0.13
Queue Length 95th (m)	5.4	2.9	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Control Delay (s)	12.5	10.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Lane LOS	B	B								
Approach Delay (s)	12.5	10.3	0.0				0.0			
Approach LOS	B	B								

Intersection Summary			
Average Delay	0.5		
Intersection Capacity Utilization	59.4%	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)	185	332	163	0	134	0	262	0	0	0	9	72
Future Volume (vph)	185	332	163	0	134	0	262	0	0	0	9	72
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.951									0.880	
Flt Protected	0.950							0.950				
Satd. Flow (prot)	1770	1771	0	0	1863	0	0	1770	0	0	1639	0
Flt Permitted	0.950							0.950				
Satd. Flow (perm)	1770	1771	0	0	1863	0	0	1770	0	0	1639	0
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		134.2			184.9			114.5			42.0	
Travel Time (s)		9.7			13.3			8.2			3.0	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	201	361	177	0	146	0	285	0	0	0	10	78
Shared Lane Traffic (%)												
Lane Group Flow (vph)	201	538	0	0	146	0	0	285	0	0	88	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		7.2			7.2			0.0			0.0	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Sign Control		Stop			Stop			Stop			Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 65.6%		ICU Level of Service C	
Analysis Period (min) 15			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Stop			Stop	
Traffic Volume (vph)	185	332	163	0	134	0	262	0	0	0	9	72
Future Volume (vph)	185	332	163	0	134	0	262	0	0	0	9	72
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	201	361	177	0	146	0	285	0	0	0	10	78

Direction, Lane #	EB 1	EB 2	WB 1	NB 1	SB 1
Volume Total (vph)	201	538	146	285	88
Volume Left (vph)	201	0	0	285	0
Volume Right (vph)	0	177	0	0	78
Hadj (s)	0.53	-0.20	0.03	0.23	-0.50
Departure Headway (s)	6.5	5.8	6.3	6.4	6.2
Degree Utilization, x	0.36	0.87	0.26	0.51	0.15
Capacity (veh/h)	537	613	531	538	527
Control Delay (s)	12.0	33.6	11.5	15.9	10.4
Approach Delay (s)	27.7		11.5	15.9	10.4
Approach LOS	D		B	C	B

Intersection Summary				
Delay		21.9		
Level of Service		C		
Intersection Capacity Utilization		65.6%	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)	184	138	10	0	31	0	32	40	0	0	21	71
Future Volume (vph)	184	138	10	0	31	0	32	40	0	0	21	71
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.996									0.896	
Flt Protected		0.973						0.978				
Satd. Flow (prot)	0	1805	0	0	1863	0	0	1822	0	0	1669	0
Flt Permitted		0.973						0.978				
Satd. Flow (perm)	0	1805	0	0	1863	0	0	1822	0	0	1669	0
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		184.9			187.0			108.2			52.3	
Travel Time (s)		13.3			13.5			7.8			3.8	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	200	150	11	0	34	0	35	43	0	0	23	77
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	361	0	0	34	0	0	78	0	0	100	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		0.0			0.0			0.0			0.0	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Sign Control		Free			Free			Stop			Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 41.9%		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)	184	138	10	0	31	0	32	40	0	0	21	71
Future Volume (Veh/h)	184	138	10	0	31	0	32	40	0	0	21	71
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	200	150	11	0	34	0	35	43	0	0	23	77
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	34			161			678	590	156	611	595	34
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	34			161			678	590	156	611	595	34
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	87			100			88	88	100	100	94	93
cM capacity (veh/h)	1578			1418			292	367	890	334	364	1039

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	361	34	78	100
Volume Left	200	0	35	0
Volume Right	11	0	0	77
cSH	1578	1418	329	729
Volume to Capacity	0.13	0.00	0.24	0.14
Queue Length 95th (m)	3.3	0.0	6.8	3.6
Control Delay (s)	4.7	0.0	19.3	10.7
Lane LOS	A		C	B
Approach Delay (s)	4.7	0.0	19.3	10.7
Approach LOS			C	B

Intersection Summary			
Average Delay	7.5		
Intersection Capacity Utilization	41.9%	ICU Level of Service	A
Analysis Period (min)	15		

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	40	0	15	0	0	0	5	17	0	0	18	0
Future Volume (vph)	40	0	15	0	0	0	5	17	0	0	18	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.963										
Flt Protected		0.965						0.989				
Satd. Flow (prot)	0	1731	0	0	1863	0	0	1842	0	0	1863	0
Flt Permitted		0.965						0.989				
Satd. Flow (perm)	0	1731	0	0	1863	0	0	1842	0	0	1863	0
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		187.0			197.2			95.7			48.4	
Travel Time (s)		13.5			14.2			6.9			3.5	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	43	0	16	0	0	0	5	18	0	0	20	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	59	0	0	0	0	0	23	0	0	20	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		0.0			0.0			0.0			0.0	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Sign Control		Free			Free			Stop			Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 15.2%		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)	40	0	15	0	0	0	5	17	0	0	18	0
Future Volume (Veh/h)	40	0	15	0	0	0	5	17	0	0	18	0
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	43	0	16	0	0	0	5	18	0	0	20	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	0			16			104	94	8	103	102	0
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	0			16			104	94	8	103	102	0
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	97			100			99	98	100	100	97	100
cM capacity (veh/h)	1623			1602			841	775	1074	845	767	1085

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	59	0	23	20
Volume Left	43	0	5	0
Volume Right	16	0	0	0
cSH	1623	1700	788	767
Volume to Capacity	0.03	0.00	0.03	0.03
Queue Length 95th (m)	0.6	0.0	0.7	0.6
Control Delay (s)	5.4	0.0	9.7	9.8
Lane LOS	A		A	A
Approach Delay (s)	5.4	0.0	9.7	9.8
Approach LOS			A	A

Intersection Summary			
Average Delay	7.2		
Intersection Capacity Utilization	15.2%	ICU Level of Service	A
Analysis Period (min)	15		

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	30	0	80	4	0	2	10	40	15	10	21	0
Future Volume (vph)	30	0	80	4	0	2	10	40	15	10	21	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.902			0.955			0.969				
Flt Protected		0.986			0.968			0.992			0.984	
Satd. Flow (prot)	0	1657	0	0	1722	0	0	1791	0	0	1833	0
Flt Permitted		0.986			0.968			0.992			0.984	
Satd. Flow (perm)	0	1657	0	0	1722	0	0	1791	0	0	1833	0
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		41.9			201.5			117.5			108.2	
Travel Time (s)		3.0			14.5			8.5			7.8	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	33	0	87	4	0	2	11	43	16	11	23	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	120	0	0	6	0	0	70	0	0	34	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		0.0			0.0			3.6			3.6	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Sign Control		Stop			Stop			Free			Free	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 17.2%		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)	30	0	80	4	0	2	10	40	15	10	21	0
Future Volume (Veh/h)	30	0	80	4	0	2	10	40	15	10	21	0
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	33	0	87	4	0	2	11	43	16	11	23	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)								117				
pX, platoon unblocked												
vC, conflicting volume	120	126	23	205	118	51	23			59		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	120	126	23	205	118	51	23			59		
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 %	96	100	92	99	100	100	99			99		
cM capacity (veh/h)	845	754	1054	683	761	1017	1592			1545		

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	120	6	70	34
Volume Left	33	4	11	11
Volume Right	87	2	16	0
cSH	987	767	1592	1545
Volume to Capacity	0.12	0.01	0.01	0.01
Queue Length 95th (m)	3.1	0.2	0.2	0.2
Control Delay (s)	9.2	9.7	1.2	2.4
Lane LOS	A	A	A	A
Approach Delay (s)	9.2	9.7	1.2	2.4
Approach LOS	A	A		

Intersection Summary			
Average Delay	5.7		
Intersection Capacity Utilization	17.2%	ICU Level of Service	A
Analysis Period (min)	15		

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	1	2	5	0	5	3	16	14	15	18	0
Future Volume (vph)	0	1	2	5	0	5	3	16	14	15	18	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.910			0.932			0.942				
Flt Protected					0.976			0.996			0.978	
Satd. Flow (prot)	0	1695	0	0	1694	0	0	1748	0	0	1822	0
Flt Permitted					0.976			0.996			0.978	
Satd. Flow (perm)	0	1695	0	0	1694	0	0	1748	0	0	1822	0
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		201.5			50.5			98.0			95.7	
Travel Time (s)		14.5			3.6			7.1			6.9	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	1	2	5	0	5	3	17	15	16	20	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	3	0	0	10	0	0	35	0	0	36	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		0.0			0.0			0.0			0.0	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Sign Control		Stop			Stop			Free			Free	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 17.4%		ICU Level of Service A	
Analysis Period (min) 15			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	1	2	5	0	5	3	16	14	15	18	0
Future Volume (Veh/h)	0	1	2	5	0	5	3	16	14	15	18	0
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	1	2	5	0	5	3	17	15	16	20	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	88	90	20	85	82	24	20			32		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	88	90	20	85	82	24	20			32		
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	99	100	100	100			99		
cM capacity (veh/h)	886	790	1058	891	798	1052	1596			1580		

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	3	10	35	36
Volume Left	0	5	3	16
Volume Right	2	5	15	0
cSH	951	965	1596	1580
Volume to Capacity	0.00	0.01	0.00	0.01
Queue Length 95th (m)	0.1	0.2	0.0	0.2
Control Delay (s)	8.8	8.8	0.6	3.3
Lane LOS	A	A	A	A
Approach Delay (s)	8.8	8.8	0.6	3.3
Approach LOS	A	A		

Intersection Summary			
Average Delay	3.0		
Intersection Capacity Utilization	17.4%	ICU Level of Service	A
Analysis Period (min)	15		

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	1013	77	0	1164	7	0	0	89	0	0	29
Future Volume (vph)	0	1013	77	0	1164	7	0	0	89	0	0	29
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	0.0		50.0	0.0		50.0	0.0		0.0	0.0		0.0
Storage Lanes	0		0	0		0	0		1	0		1
Taper Length (m)	7.5			7.5			7.5			7.5		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.989			0.999				0.865			0.865
Flt Protected												
Satd. Flow (prot)	0	3500	0	0	3536	0	0	0	1611	0	0	1611
Flt Permitted												
Satd. Flow (perm)	0	3500	0	0	3536	0	0	0	1611	0	0	1611
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		126.0			207.1			115.6			112.7	
Travel Time (s)		9.1			14.9			8.3			8.1	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	1101	84	0	1265	8	0	0	97	0	0	32
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	1185	0	0	1273	0	0	0	97	0	0	32
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.6			3.6			0.0			0.0	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Sign Control		Free			Free			Stop			Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 42.6%		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)	0	1013	77	0	1164	7	0	0	89	0	0	29
Future Volume (Veh/h)	0	1013	77	0	1164	7	0	0	89	0	0	29
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	1101	84	0	1265	8	0	0	97	0	0	32
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (m)		126			207							
pX, platoon unblocked	0.83			0.89			0.88	0.88	0.89	0.88	0.88	0.83
vC, conflicting volume	1273			1185			1808	2416	592	1916	2454	636
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	908			972			1103	1796	309	1227	1839	137
tC, single (s)	4.1			4.1			7.5	6.5	6.9	7.5	6.5	6.9
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			100			100	100	84	100	100	96
cM capacity (veh/h)	615			631			139	70	614	99	66	732

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	SB 1
Volume Total	734	451	843	430	97	32
Volume Left	0	0	0	0	0	0
Volume Right	0	84	0	8	97	32
cSH	1700	1700	1700	1700	614	732
Volume to Capacity	0.43	0.27	0.50	0.25	0.16	0.04
Queue Length 95th (m)	0.0	0.0	0.0	0.0	4.2	1.0
Control Delay (s)	0.0	0.0	0.0	0.0	12.0	10.1
Lane LOS					B	B
Approach Delay (s)	0.0		0.0		12.0	10.1
Approach LOS					B	B

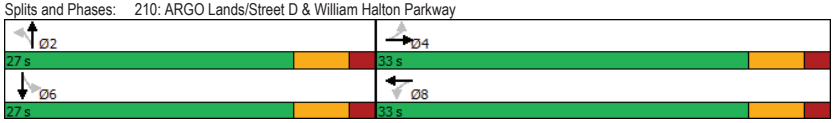
Intersection Summary			
Average Delay	0.6		
Intersection Capacity Utilization	42.6%	ICU Level of Service	A
Analysis Period (min)	15		

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	49	976	77	54	841	16	293	0	89	69	0	37
Future Volume (vph)	49	976	77	54	841	16	293	0	89	69	0	37
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	50.0		0.0	50.0		0.0	50.0		0.0	50.0		0.0
Storage Lanes	1		0	1		0	1		0	1		0
Taper Length (m)	70.0			70.0			50.0			50.0		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.989			0.997			0.850			0.850	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1770	3500	0	1770	3529	0	1770	1583	0	1770	1583	0
Flt Permitted	0.252			0.169			0.731			0.694		
Satd. Flow (perm)	469	3500	0	315	3529	0	1362	1583	0	1293	1583	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		18			4			55			73	
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		207.1			202.1			61.6			117.5	
Travel Time (s)		14.9			14.6			4.4			8.5	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	53	1061	84	59	914	17	318	0	97	75	0	40
Shared Lane Traffic (%)												
Lane Group Flow (vph)	53	1145	0	59	931	0	318	97	0	75	40	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.6			3.6			3.6			3.6	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2		1	2		1	2		1	2	
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	
Leading Detector (m)	2.0	10.0		2.0	10.0		2.0	10.0		2.0	10.0	
Trailing Detector (m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Position(m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Size(m)	2.0	0.6		2.0	0.6		2.0	0.6		2.0	0.6	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector Phase	4	4		8	8		2	2		6	6	
Switch Phase												
Minimum Initial (s)	10.0	10.0		10.0	10.0		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	
Total Split (s)	33.0	33.0		33.0	33.0		27.0	27.0		27.0	27.0	
Total Split (%)	55.0%	55.0%		55.0%	55.0%		45.0%	45.0%		45.0%	45.0%	
Maximum Green (s)	27.0	27.0		27.0	27.0		21.0	21.0		21.0	21.0	
Yellow Time (s)	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	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)	6.0	6.0		6.0	6.0		6.0	6.0		6.0	6.0	
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	Max	Max		Max	Max		None	None		Min	Min	
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)	27.2	27.2		27.2	27.2		17.0	17.0		17.0	17.0	
Actuated g/C Ratio	0.48	0.48		0.48	0.48		0.30	0.30		0.30	0.30	
v/c Ratio	0.23	0.67		0.39	0.55		0.77	0.19		0.19	0.08	
Control Delay	13.3	14.2		20.5	12.4		31.8	8.3		15.3	2.0	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	13.3	14.2		20.5	12.4		31.8	8.3		15.3	2.0	
LOS	B	B		C	B		C	A		B	A	
Approach Delay		14.2			12.9			26.3			10.7	
Approach LOS		B			B			C			B	

Intersection Summary	
Area Type:	Other
Cycle Length: 60	
Actuated Cycle Length: 56.2	
Natural Cycle: 60	
Control Type: Semi Act-Uncoord	
Maximum v/c Ratio: 0.77	
Intersection Signal Delay: 15.4	Intersection LOS: B
Intersection Capacity Utilization 75.7%	ICU Level of Service D
Analysis Period (min) 15	

Splits and Phases: 210: ARGO Lands/Street D & William Halton Parkway



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	53	1145	59	931	318	97	75	40
v/c Ratio	0.23	0.67	0.39	0.55	0.77	0.19	0.19	0.08
Control Delay	13.3	14.2	20.5	12.4	31.8	8.3	15.3	2.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	13.3	14.2	20.5	12.4	31.8	8.3	15.3	2.0
Queue Length 50th (m)	3.1	44.7	3.7	33.7	28.5	3.0	5.5	0.0
Queue Length 95th (m)	10.2	69.5	14.4	52.7	#55.3	11.0	13.2	2.5
Internal Link Dist (m)		183.1		178.1		37.6		93.5
Turn Bay Length (m)	50.0		50.0		50.0		50.0	
Base Capacity (vph)	226	1700	151	1707	511	629	485	640
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	0.23	0.67	0.39	0.55	0.62	0.15	0.15	0.06

Intersection Summary

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

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	49	976	77	54	841	16	293	0	89	69	0	37
Future Volume (vph)	49	976	77	54	841	16	293	0	89	69	0	37
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0	6.0		6.0	6.0		6.0	6.0		6.0	6.0	
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	1.00		1.00	1.00	
Frt	1.00	0.99		1.00	1.00		1.00	0.85		1.00	0.85	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	3500		1770	3530		1770	1583		1770	1583	
Flt Permitted	0.25	1.00		0.17	1.00		0.73	1.00		0.69	1.00	
Satd. Flow (perm)	469	3500		315	3530		1362	1583		1293	1583	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	53	1061	84	59	914	17	318	0	97	75	0	40
RTOR Reduction (vph)	0	9	0	0	2	0	0	38	0	0	28	0
Lane Group Flow (vph)	53	1136	0	59	929	0	318	59	0	75	12	0
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)	27.1	27.1		27.1	27.1		17.0	17.0		17.0	17.0	
Effective Green, g (s)	27.1	27.1		27.1	27.1		17.0	17.0		17.0	17.0	
Actuated g/C Ratio	0.48	0.48		0.48	0.48		0.30	0.30		0.30	0.30	
Clearance Time (s)	6.0	6.0		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		3.0	3.0	
Lane Grp Cap (vph)	226	1690		152	1705		412	479		391	479	
v/s Ratio Prot		c0.32			0.26			0.04			0.01	
v/s Ratio Perm	0.11			0.19			c0.23			0.06		
v/c Ratio	0.23	0.67		0.39	0.54		0.77	0.12		0.19	0.03	
Uniform Delay, d1	8.5	11.1		9.2	10.2		17.8	14.2		14.5	13.7	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	2.4	2.2		7.3	1.3		8.7	0.1		0.2	0.0	
Delay (s)	10.9	13.2		16.5	11.4		26.5	14.3		14.7	13.8	
Level of Service	B	B		B	B		C	B		B	B	
Approach Delay (s)		13.1			11.7			23.6			14.4	
Approach LOS		B			B			C			B	

Intersection Summary

HCM 2000 Control Delay	14.3	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.71		
Actuated Cycle Length (s)	56.1	Sum of lost time (s)	12.0
Intersection Capacity Utilization	75.7%	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)	26	1107	898	7	7	13
Future Volume (vph)	26	1107	898	7	7	13
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (m)	50.0			50.0	0.0	0.0
Storage Lanes	1			1	1	0
Taper Length (m)	90.0				7.5	
Lane Util. Factor	1.00	0.95	0.95	1.00	1.00	1.00
Frt				0.850	0.914	
Flt Protected	0.950				0.982	
Satd. Flow (prot)	1770	3539	3539	1583	1672	0
Flt Permitted	0.950				0.982	
Satd. Flow (perm)	1770	3539	3539	1583	1672	0
Link Speed (k/h)		50	50		50	
Link Distance (m)		202.1	380.0		98.0	
Travel Time (s)		14.6	27.4		7.1	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	28	1203	976	8	8	14
Shared Lane Traffic (%)						
Lane Group Flow (vph)	28	1203	976	8	22	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(m)		3.6	3.6		3.6	
Link Offset(m)		0.0	0.0		0.0	
Crosswalk Width(m)		4.8	4.8		4.8	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)	25			15	25	15
Sign Control		Free	Free		Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 40.6%		ICU Level of Service A	
Analysis Period (min) 15			

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	26	1107	898	7	7	13
Future Volume (Veh/h)	26	1107	898	7	7	13
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	28	1203	976	8	8	14
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		None	None			
Median storage veh)						
Upstream signal (m)		202				
pX, platoon unblocked					0.77	
vC, conflicting volume	984				1634	488
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	984				1222	488
tC, single (s)	4.1				6.8	6.9
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	96				94	97
cM capacity (veh/h)	698				127	526

Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	WB 3	SB 1
Volume Total	28	602	602	488	488	8	22
Volume Left	28	0	0	0	0	0	8
Volume Right	0	0	0	0	0	8	14
cSH	698	1700	1700	1700	1700	1700	245
Volume to Capacity	0.04	0.35	0.35	0.29	0.29	0.00	0.09
Queue Length 95th (m)	0.9	0.0	0.0	0.0	0.0	0.0	2.2
Control Delay (s)	10.4	0.0	0.0	0.0	0.0	0.0	21.1
Lane LOS	B						C
Approach Delay (s)	0.2			0.0			21.1
Approach LOS							C

Intersection Summary			
Average Delay	0.3		
Intersection Capacity Utilization	40.6%	ICU Level of Service	A
Analysis Period (min)	15		

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	186	29	10	514	47	10
Future Volume (vph)	186	29	10	514	47	10
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	0.982		0.868			
Flt Protected	0.959					0.960
Satd. Flow (prot)	1754	0	1617	0	0	1788
Flt Permitted	0.959					0.960
Satd. Flow (perm)	1754	0	1617	0	0	1788
Link Speed (k/h)	50		50			50
Link Distance (m)	52.2		216.1			98.7
Travel Time (s)	3.8		15.6			7.1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	202	32	11	559	51	11
Shared Lane Traffic (%)						
Lane Group Flow (vph)	234	0	570	0	0	62
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(m)	3.6		0.0			0.0
Link Offset(m)	0.0		0.0			0.0
Crosswalk Width(m)	4.8		4.8			4.8
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)	25	15		15	25	
Sign Control	Free		Stop			Stop

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 57.7%		ICU Level of Service B	
Analysis Period (min) 15			

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	186	29	10	514	47	10
Future Volume (Veh/h)	186	29	10	514	47	10
Sign Control	Free		Stop			Stop
Grade	0%		0%			0%
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	202	32	11	559	51	11
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None					
Median storage veh)						
Upstream signal (m)	131					
pX, platoon unblocked						
vC, conflicting volume	0		436	0	984	420
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	0		436	0	984	420
tC, single (s)	4.1		6.5	6.2	7.1	6.5
tC, 2 stage (s)						
tF (s)	2.2		4.0	3.3	3.5	4.0
p0 queue free %	88		98	48	48	98
cM capacity (veh/h)	1623		450	1085	98	459

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	234	570	62
Volume Left	202	0	51
Volume Right	32	559	0
cSH	1623	1056	114
Volume to Capacity	0.12	0.54	0.55
Queue Length 95th (m)	3.2	25.0	19.3
Control Delay (s)	6.6	12.3	69.3
Lane LOS	A	B	F
Approach Delay (s)	6.6	12.3	69.3
Approach LOS		B	F

Intersection Summary			
Average Delay	14.9		
Intersection Capacity Utilization	57.7%	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)	0	803	8	0	1060	58	0	0	91	0	0	27
Future Volume (vph)	0	803	8	0	1060	58	0	0	91	0	0	27
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	0.0		50.0	0.0		50.0	0.0		0.0	0.0		0.0
Storage Lanes	0		0	0		0	0		1	0		1
Taper Length (m)	7.5			7.5			7.5			7.5		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.998			0.992				0.865			0.865
Flt Protected												
Satd. Flow (prot)	0	3532	0	0	3511	0	0	0	1611	0	0	1611
Flt Permitted												
Satd. Flow (perm)	0	3532	0	0	3511	0	0	0	1611	0	0	1611
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		199.2			128.3			127.8			216.1	
Travel Time (s)		14.3			9.2			9.2			15.6	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	873	9	0	1152	63	0	0	99	0	0	29
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	882	0	0	1215	0	0	0	99	0	0	29
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.6			3.6			0.0			0.0	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Sign Control		Free			Free			Stop			Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 41.1%		ICU Level of Service A	
Analysis Period (min) 15			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	803	8	0	1060	58	0	0	91	0	0	27
Future Volume (Veh/h)	0	803	8	0	1060	58	0	0	91	0	0	27
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	873	9	0	1152	63	0	0	99	0	0	29
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (m)		199			128							
pX, platoon unblocked	0.84			0.97			0.85	0.85	0.97	0.85	0.85	0.84
vC, conflicting volume	1215			882			1482	2092	441	1719	2066	608
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	863			808			1041	1757	352	1318	1725	136
tC, single (s)	4.1			4.1			7.5	6.5	6.9	7.5	6.5	6.9
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			100			100	100	84	100	100	96
cM capacity (veh/h)	647			786			151	72	623	82	75	742

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	SB 1
Volume Total	582	300	768	447	99	29
Volume Left	0	0	0	0	0	0
Volume Right	0	9	0	63	99	29
cSH	1700	1700	1700	1700	623	742
Volume to Capacity	0.34	0.18	0.45	0.26	0.16	0.04
Queue Length 95th (m)	0.0	0.0	0.0	0.0	4.2	0.9
Control Delay (s)	0.0	0.0	0.0	0.0	11.9	10.1
Lane LOS					B	B
Approach Delay (s)	0.0		0.0		11.9	10.1
Approach LOS					B	B

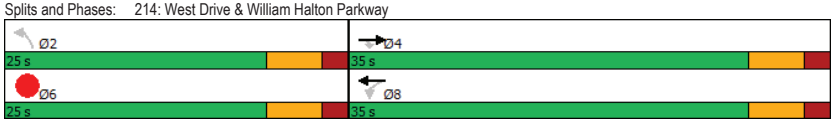
Intersection Summary			
Average Delay	0.7		
Intersection Capacity Utilization	41.1%	ICU Level of Service	A
Analysis Period (min)	15		

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR	Ø6
Lane Configurations							
Traffic Volume (vph)	562	45	34	1053	26	249	
Future Volume (vph)	562	45	34	1053	26	249	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	
Storage Length (m)		50.0	50.0		50.0	0.0	
Storage Lanes		0	1		0	0	
Taper Length (m)			100.0		75.0		
Lane Util. Factor	0.95	1.00	1.00	0.95	1.00	1.00	
Frt		0.850			0.878		
Flt Protected			0.950		0.995		
Satd. Flow (prot)	3539	1583	1770	3539	1627	0	
Flt Permitted			0.421		0.995		
Satd. Flow (perm)	3539	1583	784	3539	1627	0	
Right Turn on Red		Yes				Yes	
Satd. Flow (RTOR)		49			209		
Link Speed (k/h)	50			50	50		
Link Distance (m)	536.3			199.2	153.7		
Travel Time (s)	38.6			14.3	11.1		
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	
Adj. Flow (vph)	611	49	37	1145	28	271	
Shared Lane Traffic (%)							
Lane Group Flow (vph)	611	49	37	1145	299	0	
Enter Blocked Intersection	No	No	No	No	No	No	
Lane Alignment	Left	Right	Left	Left	Left	Right	
Median Width(m)	3.6			3.6	3.6		
Link Offset(m)	0.0			0.0	0.0		
Crosswalk Width(m)	4.8			4.8	4.8		
Two way Left Turn Lane							
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	
Turning Speed (k/h)		15	25		25	15	
Number of Detectors	2	1	1	2	1		
Detector Template	Thru	Right	Left	Thru	Left		
Leading Detector (m)	10.0	2.0	2.0	10.0	2.0		
Trailing Detector (m)	0.0	0.0	0.0	0.0	0.0		
Detector 1 Position(m)	0.0	0.0	0.0	0.0	0.0		
Detector 1 Size(m)	0.6	2.0	2.0	0.6	2.0		
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		
Detector 1 Channel							
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0		
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0		
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0		
Detector 2 Position(m)	9.4			9.4			
Detector 2 Size(m)	0.6			0.6			
Detector 2 Type	Cl+Ex			Cl+Ex			
Detector 2 Channel							
Detector 2 Extend (s)	0.0			0.0			
Turn Type	NA	Perm	Perm	NA	Perm		
Protected Phases	4			8			6
Permitted Phases		4	8		2		

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR	Ø6
Detector Phase	4	4	8	8	2		
Switch Phase							
Minimum Initial (s)	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
Total Split (s)	35.0	35.0	35.0	35.0	25.0		25.0
Total Split (%)	58.3%	58.3%	58.3%	58.3%	41.7%		42%
Maximum Green (s)	29.0	29.0	29.0	29.0	19.0		19.0
Yellow Time (s)	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
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0		
Total Lost Time (s)	6.0	6.0	6.0	6.0	6.0		
Lead/Lag							
Lead-Lag Optimize?							
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0
Recall Mode	Max	Max	Max	Max	None		None
Walk Time (s)	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
Pedestrian Calls (#/hr)	0	0	0	0	0		0
Act Effct Green (s)	30.3	30.3	30.3	30.3	9.1		
Actuated g/C Ratio	0.59	0.59	0.59	0.59	0.18		
v/c Ratio	0.29	0.05	0.08	0.55	0.65		
Control Delay	6.4	2.6	6.6	8.4	13.5		
Queue Delay	0.0	0.0	0.0	0.0	0.0		
Total Delay	6.4	2.6	6.6	8.4	13.5		
LOS	A	A	A	A	B		
Approach Delay	6.1			8.4	13.5		
Approach LOS	A			A	B		

Intersection Summary			
Area Type:	Other		
Cycle Length: 60			
Actuated Cycle Length: 51.5			
Natural Cycle: 50			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 0.65			
Intersection Signal Delay: 8.4		Intersection LOS: A	
Intersection Capacity Utilization 55.9%		ICU Level of Service B	
Analysis Period (min) 15			

Splits and Phases: 214: West Drive & William Halton Parkway



Lane Group	EBT	EBR	WBL	WBT	NBL
Lane Group Flow (vph)	611	49	37	1145	299
v/c Ratio	0.29	0.05	0.08	0.55	0.65
Control Delay	6.4	2.6	6.6	8.4	13.5
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	6.4	2.6	6.6	8.4	13.5
Queue Length 50th (m)	11.6	0.0	1.2	26.7	7.0
Queue Length 95th (m)	25.7	3.7	5.4	56.2	23.5
Internal Link Dist (m)	512.3			175.2	129.7
Turn Bay Length (m)		50.0	50.0		50.0
Base Capacity (vph)	2084	952	461	2084	733
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	0.29	0.05	0.08	0.55	0.41

Intersection Summary

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	562	45	34	1053	26	249
Future Volume (vph)	562	45	34	1053	26	249
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0	6.0	6.0	6.0	6.0	
Lane Util. Factor	0.95	1.00	1.00	0.95	1.00	
Frt	1.00	0.85	1.00	1.00	0.88	
Flt Protected	1.00	1.00	0.95	1.00	1.00	
Satd. Flow (prot)	3539	1583	1770	3539	1627	
Flt Permitted	1.00	1.00	0.42	1.00	1.00	
Satd. Flow (perm)	3539	1583	783	3539	1627	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	611	49	37	1145	28	271
RTOR Reduction (vph)	0	20	0	0	172	0
Lane Group Flow (vph)	611	29	37	1145	127	0
Turn Type	NA	Perm	Perm	NA	Perm	
Protected Phases	4			8		
Permitted Phases		4	8		2	
Actuated Green, G (s)	30.4	30.4	30.4	30.4	9.1	
Effective Green, g (s)	30.4	30.4	30.4	30.4	9.1	
Actuated g/C Ratio	0.59	0.59	0.59	0.59	0.18	
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)	2089	934	462	2089	287	
v/s Ratio Prot	0.17			c0.32		
v/s Ratio Perm		0.02	0.05		c0.08	
v/c Ratio	0.29	0.03	0.08	0.55	0.44	
Uniform Delay, d1	5.2	4.4	4.5	6.4	18.9	
Progression Factor	1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	0.4	0.1	0.3	1.0	1.1	
Delay (s)	5.6	4.5	4.9	7.4	20.0	
Level of Service	A	A	A	A	C	
Approach Delay (s)	5.5			7.3	20.0	
Approach LOS	A			A	C	

Intersection Summary

HCM 2000 Control Delay	8.5	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.52		
Actuated Cycle Length (s)	51.5	Sum of lost time (s)	12.0
Intersection Capacity Utilization	55.9%	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)	66	0	0	52	112	22	52	3	58	8	0	0
Future Volume (vph)	66	0	0	52	112	22	52	3	58	8	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt					0.984			0.931				
Flt Protected		0.950			0.986			0.977			0.950	
Satd. Flow (prot)	0	1770	0	0	1807	0	0	1694	0	0	1770	0
Flt Permitted		0.950			0.986			0.977			0.950	
Satd. Flow (perm)	0	1770	0	0	1807	0	0	1694	0	0	1770	0
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		195.6			38.8			91.6			127.8	
Travel Time (s)		14.1			2.8			6.6			9.2	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	72	0	0	57	122	24	57	3	63	9	0	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	72	0	0	203	0	0	123	0	0	9	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		0.0			0.0			0.0			0.0	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Sign Control		Stop			Stop			Free			Free	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 23.1%		ICU Level of Service A	
Analysis Period (min) 15			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	66	0	0	52	112	22	52	3	58	8	0	0
Future Volume (Veh/h)	66	0	0	52	112	22	52	3	58	8	0	0
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	72	0	0	57	122	24	57	3	63	9	0	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	252	198	0	166	166	34	0			66		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	252	198	0	166	166	34	0			66		
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 %	87	100	100	93	82	98	96			99		
cM capacity (veh/h)	575	669	1085	773	697	1039	1623			1536		

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	72	203	123	9
Volume Left	72	57	57	9
Volume Right	0	24	63	0
cSH	575	746	1623	1536
Volume to Capacity	0.13	0.27	0.04	0.01
Queue Length 95th (m)	3.2	8.3	0.8	0.1
Control Delay (s)	12.1	11.6	3.5	7.4
Lane LOS	B	B	A	A
Approach Delay (s)	12.1	11.6	3.5	7.4
Approach LOS	B	B		

Intersection Summary			
Average Delay	9.2		
Intersection Capacity Utilization	23.1%	ICU Level of Service	A
Analysis Period (min)	15		

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	7	240	35	23	51	28
Future Volume (vph)	7	240	35	23	51	28
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	0.869		0.946			
Flt Protected	0.999					0.969
Satd. Flow (prot)	1617	0	1762	0	0	1805
Flt Permitted	0.999					0.969
Satd. Flow (perm)	1617	0	1762	0	0	1805
Link Speed (k/h)	50		50			50
Link Distance (m)	195.6		88.5			153.7
Travel Time (s)	14.1		6.4			11.1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	8	261	38	25	55	30
Shared Lane Traffic (%)						
Lane Group Flow (vph)	269	0	63	0	0	85
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(m)	3.6		0.0			0.0
Link Offset(m)	0.0		0.0			0.0
Crosswalk Width(m)	4.8		4.8			4.8
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)	25	15		15	25	
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)	7	240	35	23	51	28
Future Volume (Veh/h)	7	240	35	23	51	28
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	8	261	38	25	55	30
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (m)						154
pX, platoon unblocked						
vC, conflicting volume	190	50			63	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	190	50			63	
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	74			96	
cM capacity (veh/h)	770	1018			1540	

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	269	63	85
Volume Left	8	0	55
Volume Right	261	25	0
cSH	1008	1700	1540
Volume to Capacity	0.27	0.04	0.04
Queue Length 95th (m)	8.1	0.0	0.8
Control Delay (s)	9.9	0.0	4.9
Lane LOS	A		A
Approach Delay (s)	9.9	0.0	4.9
Approach LOS	A		

Intersection Summary			
Average Delay	7.4		
Intersection Capacity Utilization	32.9%	ICU Level of Service	A
Analysis Period (min)	15		

Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	23	82	122	89	20	0
Future Volume (vph)	23	82	122	89	20	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			0.943			
Flt Protected		0.989			0.950	
Satd. Flow (prot)	0	1842	1757	0	1770	0
Flt Permitted		0.989			0.950	
Satd. Flow (perm)	0	1842	1757	0	1770	0
Link Speed (k/h)		50	50		50	
Link Distance (m)		186.6	133.8		91.6	
Travel Time (s)		13.4	9.6		6.6	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	25	89	133	97	22	0
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	114	230	0	22	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(m)		0.0	0.0		3.6	
Link Offset(m)		0.0	0.0		0.0	
Crosswalk Width(m)		4.8	4.8		4.8	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)	25			15	25	15
Sign Control		Free	Free		Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 30.8%		ICU Level of Service A	
Analysis Period (min) 15			

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	23	82	122	89	20	0
Future Volume (Veh/h)	23	82	122	89	20	0
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	25	89	133	97	22	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	230				320	182
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	230				320	182
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	98				97	100
cM capacity (veh/h)	1338				660	861

Direction, Lane #	EB 1	WB 1	SB 1
Volume Total	114	230	22
Volume Left	25	0	22
Volume Right	0	97	0
cSH	1338	1700	660
Volume to Capacity	0.02	0.14	0.03
Queue Length 95th (m)	0.4	0.0	0.8
Control Delay (s)	1.8	0.0	10.6
Lane LOS	A		B
Approach Delay (s)	1.8	0.0	10.6
Approach LOS			B

Intersection Summary			
Average Delay	1.2		
Intersection Capacity Utilization	30.8%	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)	21	5	2	57	49	14	31	23	85	13	7	15
Future Volume (vph)	21	5	2	57	49	14	31	23	85	13	7	15
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.991			0.984			0.918			0.943	
Flt Protected		0.963			0.977			0.989			0.982	
Satd. Flow (prot)	0	1778	0	0	1791	0	0	1691	0	0	1725	0
Flt Permitted		0.963			0.977			0.989			0.982	
Satd. Flow (perm)	0	1778	0	0	1791	0	0	1691	0	0	1725	0
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		258.7			186.6			166.5			88.5	
Travel Time (s)		18.6			13.4			12.0			6.4	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	23	5	2	62	53	15	34	25	92	14	8	16
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	30	0	0	130	0	0	151	0	0	38	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		0.0			0.0			0.0			0.0	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Sign Control		Stop			Stop			Stop			Stop	

Intersection Summary	
Area Type:	Other
Control Type: Unsignalized	
Intersection Capacity Utilization 22.6%	ICU Level of Service A
Analysis Period (min) 15	

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Stop			Stop	
Traffic Volume (vph)	21	5	2	57	49	14	31	23	85	13	7	15
Future Volume (vph)	21	5	2	57	49	14	31	23	85	13	7	15
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	23	5	2	62	53	15	34	25	92	14	8	16

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total (vph)	30	130	151	38
Volume Left (vph)	23	62	34	14
Volume Right (vph)	2	15	92	16
Hadj (s)	0.15	0.06	-0.29	-0.14
Departure Headway (s)	4.6	4.4	4.0	4.3
Degree Utilization, x	0.04	0.16	0.17	0.05
Capacity (veh/h)	741	774	854	789
Control Delay (s)	7.8	8.2	7.8	7.5
Approach Delay (s)	7.8	8.2	7.8	7.5
Approach LOS	A	A	A	A

Intersection Summary			
Delay	7.9		
Level of Service	A		
Intersection Capacity Utilization	22.6%	ICU Level of Service	A
Analysis Period (min)	15		

Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	6	1047	463	133	14	52
Future Volume (vph)	6	1047	463	133	14	52
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (m)	50.0			0.0	0.0	0.0
Storage Lanes	1			0	1	0
Taper Length (m)	75.0				7.5	
Lane Util. Factor	1.00	0.95	0.95	0.95	1.00	1.00
Frt			0.966		0.893	
Flt Protected	0.950				0.990	
Satd. Flow (prot)	1770	3539	3419	0	1647	0
Flt Permitted	0.950				0.990	
Satd. Flow (perm)	1770	3539	3419	0	1647	0
Link Speed (k/h)		60	50		50	
Link Distance (m)		798.2	306.5		133.5	
Travel Time (s)		47.9	22.1		9.6	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	7	1138	503	145	15	57
Shared Lane Traffic (%)						
Lane Group Flow (vph)	7	1138	648	0	72	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(m)		3.6	3.6		3.6	
Link Offset(m)		0.0	0.0		0.0	
Crosswalk Width(m)		4.8	4.8		4.8	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)	25			15	25	15
Sign Control		Free	Free		Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 39.6%		ICU Level of Service A	
Analysis Period (min) 15			

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	6	1047	463	133	14	52
Future Volume (Veh/h)	6	1047	463	133	14	52
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	7	1138	503	145	15	57
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		None	None			
Median storage veh)						
Upstream signal (m)			307			
pX, platoon unblocked						
vC, conflicting volume	648				1158	324
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	648				1158	324
tC, single (s)	4.1				6.8	6.9
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	99				92	92
cM capacity (veh/h)	934				188	672

Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	SB 1
Volume Total	7	569	569	335	313	72
Volume Left	7	0	0	0	0	15
Volume Right	0	0	0	0	145	57
cSH	934	1700	1700	1700	1700	437
Volume to Capacity	0.01	0.33	0.33	0.20	0.18	0.16
Queue Length 95th (m)	0.2	0.0	0.0	0.0	0.0	4.4
Control Delay (s)	8.9	0.0	0.0	0.0	0.0	14.9
Lane LOS	A					B
Approach Delay (s)	0.1			0.0		14.9
Approach LOS						B

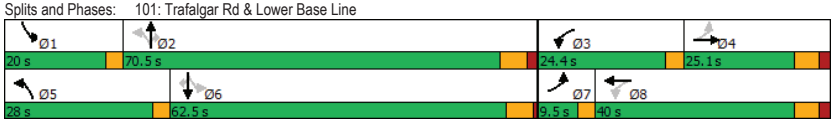
Intersection Summary			
Average Delay	0.6		
Intersection Capacity Utilization	39.6%	ICU Level of Service	A
Analysis Period (min)	15		

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	53	241	76	291	678	369	446	2516	403	306	1866	123
Future Volume (vph)	53	241	76	291	678	369	446	2516	403	306	1866	123
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	45.0		0.0	110.0		0.0	90.0		90.0	90.0		90.0
Storage Lanes	1		0	1		0	1		1	1		1
Taper Length (m)	100.0			100.0			100.0			100.0		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	0.95	1.00	0.91	1.00	1.00	0.91	1.00
Frt		0.964			0.947				0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1770	3412	0	1770	3352	0	1770	5085	1583	1770	5085	1583
Flt Permitted	0.225			0.212			0.068			0.072		
Satd. Flow (perm)	419	3412	0	395	3352	0	127	5085	1583	134	5085	1583
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		25			70				277			118
Link Speed (k/h)		70			60			80			80	
Link Distance (m)		749.3			690.6			498.3			434.3	
Travel Time (s)		38.5			41.4			22.4			19.5	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	58	262	83	316	737	401	485	2735	438	333	2028	134
Shared Lane Traffic (%)												
Lane Group Flow (vph)	58	345	0	316	1138	0	485	2735	438	333	2028	134
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.6			3.6			3.6			3.6	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2		1	2		1	2	1	1	2	1
Detector Template	Left	Thru		Left	Thru		Left	Thru	Right	Left	Thru	Right
Leading Detector (m)	2.0	10.0		2.0	10.0		2.0	10.0	2.0	2.0	10.0	2.0
Trailing Detector (m)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Position(m)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Size(m)	2.0	0.6		2.0	0.6		2.0	0.6	2.0	2.0	0.6	2.0
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	pm+pt	NA		pm+pt	NA		pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4			8			2		2	6		6

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector Phase	7	4		3	8		5	2	2	1	6	6
Switch Phase												
Minimum Initial (s)	5.0	10.0		7.0	10.0		5.0	25.0	25.0	7.0	25.0	25.0
Minimum Split (s)	9.5	22.5		11.5	22.5		9.5	31.6	31.6	11.5	30.6	30.6
Total Split (s)	9.5	25.1		24.4	40.0		28.0	70.5	70.5	20.0	62.5	62.5
Total Split (%)	6.8%	17.9%		17.4%	28.6%		20.0%	50.4%	50.4%	14.3%	44.6%	44.6%
Maximum Green (s)	6.5	18.9		21.4	33.8		25.0	63.9	63.9	17.0	56.9	56.9
Yellow Time (s)	3.0	4.2		3.0	4.2		3.0	4.6	4.6	3.0	4.6	4.6
All-Red Time (s)	0.0	2.0		0.0	2.0		0.0	2.0	2.0	0.0	1.0	1.0
Lost Time Adjust (s)	1.0	-2.2		1.0	-2.2		1.0	-2.2	-2.2	1.0	-2.2	-2.2
Total Lost Time (s)	4.0	4.0		4.0	4.0		4.0	4.4	4.4	4.0	3.4	3.4
Lead/Lag	Lead	Lag		Lead	Lag		Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes		Yes	Yes		Yes	Yes	Yes	Yes	Yes	Yes
Vehicle Extension (s)	3.0	5.0		0.2	5.0		3.0	5.0	5.0	0.2	5.0	5.0
Recall Mode	None	None		None	None		None	Max	Max	Max	Max	Max
Act Effct Green (s)	25.7	20.3		44.5	37.0		86.5	66.1	66.1	74.5	59.1	59.1
Actuated g/C Ratio	0.18	0.15		0.32	0.27		0.62	0.48	0.48	0.54	0.43	0.43
v/c Ratio	0.45	0.66		0.97	1.21		1.34	1.13	0.49	1.28	0.94	0.18
Control Delay	46.6	58.8		83.5	144.5		204.8	99.6	10.5	188.6	48.0	6.2
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	46.6	58.8		83.5	144.5		204.8	99.6	10.5	188.6	48.0	6.2
LOS	D	E		F	F		F	F	B	F	D	A
Approach Delay		57.0			131.3			102.9			64.5	
Approach LOS		E			F			F			E	

Intersection Summary		
Area Type:	Other	
Cycle Length: 140		
Actuated Cycle Length: 139		
Natural Cycle: 140		
Control Type: Semi Act-Uncoord		
Maximum v/c Ratio: 1.34		
Intersection Signal Delay: 93.8		Intersection LOS: F
Intersection Capacity Utilization 114.0%		ICU Level of Service H
Analysis Period (min) 15		

Splits and Phases: 101: Trafalgar Rd & Lower Base Line



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	58	345	316	1138	485	2735	438	333	2028	134
v/c Ratio	0.45	0.66	0.97	1.21	1.34	1.13	0.49	1.28	0.94	0.18
Control Delay	46.6	58.8	83.5	144.5	204.8	99.6	10.5	188.6	48.0	6.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	46.6	58.8	83.5	144.5	204.8	99.6	10.5	188.6	48.0	6.2
Queue Length 50th (m)	11.1	43.8	71.0	~196.1	~157.4	~318.6	26.7	~99.9	192.9	2.5
Queue Length 95th (m)	21.6	60.4	#123.9	#238.2	#224.7	#343.3	54.5	#159.7	#218.4	14.9
Internal Link Dist (m)		725.3		666.6		474.3			410.3	
Turn Bay Length (m)	45.0		110.0		90.0		90.0	90.0		90.0
Base Capacity (vph)	131	539	328	942	362	2417	897	260	2161	740
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.44	0.64	0.96	1.21	1.34	1.13	0.49	1.28	0.94	0.18

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

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

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	53	241	76	291	678	369	446	2516	403	306	1866	123
Future Volume (vph)	53	241	76	291	678	369	446	2516	403	306	1866	123
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0	4.4	4.4	4.0	3.4	3.4
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	0.91	1.00	1.00	0.91	1.00
Frt	1.00	0.96		1.00	0.95		1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1770	3411		1770	3352		1770	5085	1583	1770	5085	1583
Flt Permitted	0.22	1.00		0.21	1.00		0.07	1.00	1.00	0.07	1.00	1.00
Satd. Flow (perm)	419	3411		395	3352		127	5085	1583	133	5085	1583
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	58	262	83	316	737	401	485	2735	438	333	2028	134
RTOR Reduction (vph)	0	21	0	0	51	0	0	0	146	0	0	68
Lane Group Flow (vph)	58	324	0	316	1087	0	485	2735	292	333	2028	66
Turn Type	pm+pt	NA		pm+pt	NA		pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4			8			2		2	6		6
Actuated Green, G (s)	24.0	18.8		43.0	34.8		83.9	63.9	63.9	73.9	56.9	56.9
Effective Green, g (s)	22.0	21.0		42.0	37.0		82.9	66.1	66.1	71.9	59.1	59.1
Actuated g/C Ratio	0.16	0.15		0.30	0.26		0.59	0.47	0.47	0.51	0.42	0.42
Clearance Time (s)	3.0	6.2		3.0	6.2		3.0	6.6	6.6	3.0	5.6	5.6
Vehicle Extension (s)	3.0	5.0		0.2	5.0		3.0	5.0	5.0	0.2	5.0	5.0
Lane Grp Cap (vph)	106	512		317	887		357	2406	749	255	2151	669
v/s Ratio Prot	0.02	0.09		c0.14	c0.32		c0.23	0.54		0.15	0.40	
v/s Ratio Perm	0.07			0.16			c0.57		0.18	0.52		0.04
v/c Ratio	0.55	0.63		1.00	1.22		1.36	1.14	0.39	1.31	0.94	0.10
Uniform Delay, d1	52.0	55.7		43.2	51.3		47.3	36.8	23.8	45.5	38.7	24.3
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	5.7	3.5		49.3	111.3		178.6	67.2	1.5	163.1	9.9	0.3
Delay (s)	57.6	59.3		92.5	162.6		225.9	104.0	25.3	208.6	48.6	24.6
Level of Service	E	E		F	F		F	F	C	F	D	C
Approach Delay (s)		59.0			147.4			110.8			68.7	
Approach LOS		E			F			F			E	

Intersection Summary

HCM 2000 Control Delay	101.7	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	1.31		
Actuated Cycle Length (s)	139.7	Sum of lost time (s)	16.4
Intersection Capacity Utilization	114.0%	ICU Level of Service	H
Analysis Period (min)	15		

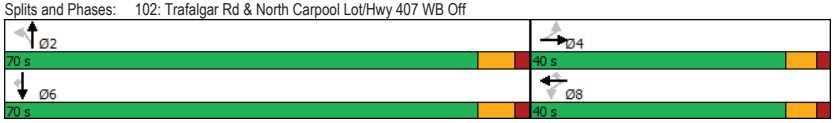
c Critical Lane Group

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	7	0	45	575	16	169	9	3189	0	0	2229	4
Future Volume (vph)	7	0	45	575	16	169	9	3189	0	0	2229	4
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	0.0		0.0	0.0		60.0	65.0		0.0	0.0		15.0
Storage Lanes	0		0	1		1	1		0	0		1
Taper Length (m)	7.5			7.5			100.0			7.5		
Lane Util. Factor	1.00	1.00	1.00	0.95	0.91	0.95	1.00	0.91	1.00	1.00	0.91	1.00
Frt		0.884			0.992	0.850						0.850
Flt Protected		0.993		0.950	0.957		0.950					
Satd. Flow (prot)	0	1635	0	1681	1609	1504	1770	5085	0	0	5085	1583
Flt Permitted		0.943		0.756	0.740		0.063					
Satd. Flow (perm)	0	1553	0	1338	1244	1504	117	5085	0	0	5085	1583
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		40				40						30
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		134.0			574.1			363.6			118.9	
Travel Time (s)		9.6			41.3			26.2			8.6	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	8	0	49	625	17	184	10	3466	0	0	2423	4
Shared Lane Traffic (%)				47%		10%						
Lane Group Flow (vph)	0	57	0	331	329	166	10	3466	0	0	2423	4
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.8			3.6			3.6			3.6	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2		1	2	1	1	2			2	1
Detector Template	Left	Thru		Left	Thru	Right	Left	Thru			Thru	Right
Leading Detector (m)	2.0	10.0		2.0	10.0	2.0	2.0	10.0			10.0	2.0
Trailing Detector (m)	0.0	0.0		0.0	0.0	0.0	0.0	0.0			0.0	0.0
Detector 1 Position(m)	0.0	0.0		0.0	0.0	0.0	0.0	0.0			0.0	0.0
Detector 1 Size(m)	2.0	0.6		2.0	0.6	2.0	2.0	0.6			0.6	2.0
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex			Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0			0.0	0.0
Detector 1 Queue (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0			0.0	0.0
Detector 1 Delay (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0			0.0	0.0
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Perm	NA		Perm	NA	Perm	Perm	NA			NA	Perm
Protected Phases		4			8			2			6	
Permitted Phases	4			8		8	2					6

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector Phase	4	4		8	8	8	2	2			6	6
Switch Phase												
Minimum Initial (s)	7.0	7.0		7.0	7.0	7.0	20.0	20.0			20.0	20.0
Minimum Split (s)	22.5	22.5		22.5	22.5	22.5	27.0	27.0			27.0	27.0
Total Split (s)	40.0	40.0		40.0	40.0	40.0	70.0	70.0			70.0	70.0
Total Split (%)	36.4%	36.4%		36.4%	36.4%	36.4%	63.6%	63.6%			63.6%	63.6%
Maximum Green (s)	34.0	34.0		34.0	34.0	34.0	63.0	63.0			63.0	63.0
Yellow Time (s)	4.0	4.0		4.0	4.0	4.0	5.0	5.0			5.0	5.0
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	0.0	-3.0			-3.0	-3.0
Total Lost Time (s)		4.0		4.0	4.0	4.0	7.0	4.0			4.0	4.0
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	3.5	3.5		3.5	3.5	3.5	7.0	7.0			7.0	7.0
Recall Mode	None	None		None	None	None	Max	Max			Max	Max
Act Effct Green (s)		32.9		32.9	32.9	32.9	63.1	66.1			66.1	66.1
Actuated g/C Ratio		0.31		0.31	0.31	0.31	0.59	0.62			0.62	0.62
v/c Ratio		0.11		0.81	0.86	0.34	0.14	1.10			0.77	0.00
Control Delay		12.2		50.3	57.4	23.2	17.3	74.2			17.7	0.0
Queue Delay		0.0		0.0	0.0	0.0	0.0	0.0			0.0	0.0
Total Delay		12.2		50.3	57.4	23.2	17.3	74.2			17.7	0.0
LOS		B		D	E	C	B	E			B	A
Approach Delay		12.2			47.7			74.1			17.6	
Approach LOS		B			D			E			B	

Intersection Summary	
Area Type:	Other
Cycle Length: 110	
Actuated Cycle Length: 107	
Natural Cycle: 100	
Control Type: Actuated-Uncoordinated	
Maximum v/c Ratio: 1.10	
Intersection Signal Delay: 50.2	Intersection LOS: D
Intersection Capacity Utilization 93.0%	ICU Level of Service F
Analysis Period (min) 15	

Splits and Phases: 102: Trafalgar Rd & North Carpool Lot/Hwy 407 WB Off



Lane Group	EBT	WBL	WBT	WBR	NBL	NBT	SBT	SBR
Lane Group Flow (vph)	57	331	329	166	10	3466	2423	4
v/c Ratio	0.11	0.81	0.86	0.34	0.14	1.10	0.77	0.00
Control Delay	12.2	50.3	57.4	23.2	17.3	74.2	17.7	0.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	12.2	50.3	57.4	23.2	17.3	74.2	17.7	0.0
Queue Length 50th (m)	2.4	65.6	69.7	20.5	0.9	~314.1	134.3	0.0
Queue Length 95th (m)	11.2	#108.4	#119.6	38.6	4.5	#338.6	154.1	0.0
Internal Link Dist (m)	110.0		550.1			339.6	94.9	
Turn Bay Length (m)				60.0	65.0			15.0
Base Capacity (vph)	550	450	419	533	69	3141	3141	989
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	0.10	0.74	0.79	0.31	0.14	1.10	0.77	0.00

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

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

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	7	0	45	575	16	169	9	3189	0	0	2229	4
Future Volume (vph)	7	0	45	575	16	169	9	3189	0	0	2229	4
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0		4.0	4.0	4.0	7.0	4.0			4.0	4.0
Lane Util. Factor		1.00		0.95	0.91	0.95	1.00	0.91			0.91	1.00
Frt		0.88		1.00	0.99	0.85	1.00	1.00			1.00	0.85
Flt Protected		0.99		0.95	0.96	1.00	0.95	1.00			1.00	1.00
Satd. Flow (prot)		1635		1681	1609	1504	1770	5085			5085	1583
Flt Permitted		0.94		0.76	0.74	1.00	0.06	1.00			1.00	1.00
Satd. Flow (perm)		1553		1339	1244	1504	118	5085			5085	1583
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	8	0	49	625	17	184	10	3466	0	0	2423	4
RTOR Reduction (vph)	0	28	0	0	0	28	0	0	0	0	0	2
Lane Group Flow (vph)	0	29	0	331	329	138	10	3466	0	0	2423	2
Turn Type	Perm	NA		Perm	NA	Perm	Perm	NA			NA	Perm
Protected Phases		4			8			2			6	
Permitted Phases	4			8		8	2					6
Actuated Green, G (s)		30.9		30.9	30.9	30.9	63.1	63.1			63.1	63.1
Effective Green, g (s)		32.9		32.9	32.9	32.9	63.1	66.1			66.1	66.1
Actuated g/C Ratio		0.31		0.31	0.31	0.31	0.59	0.62			0.62	0.62
Clearance Time (s)		6.0		6.0	6.0	6.0	7.0	7.0			7.0	7.0
Vehicle Extension (s)		3.5		3.5	3.5	3.5	7.0	7.0			7.0	7.0
Lane Grp Cap (vph)		477		411	382	462	69	3141			3141	977
v/s Ratio Prot								c0.68			0.48	
v/s Ratio Perm		0.02		0.25	c0.26	0.09	0.08					0.00
v/c Ratio		0.06		0.81	0.86	0.30	0.14	1.10			0.77	0.00
Uniform Delay, d1		26.2		34.1	34.9	28.3	9.8	20.5			14.9	7.8
Progression Factor		1.00		1.00	1.00	1.00	1.00	1.00			1.00	1.00
Incremental Delay, d2		0.1		11.2	18.1	0.4	4.4	52.0			1.9	0.0
Delay (s)		26.2		45.3	53.0	28.7	14.2	72.5			16.8	7.8
Level of Service		C		D	D	C	B	E			B	A
Approach Delay (s)		26.2			45.0			72.3			16.8	
Approach LOS		C			D			E			B	

Intersection Summary

HCM 2000 Control Delay	48.8	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	1.02		
Actuated Cycle Length (s)	107.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	93.0%	ICU Level of Service	F
Analysis Period (min)	15		

c Critical Lane Group

Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	86	335	0	3214	2849	0
Future Volume (vph)	86	335	0	3214	2849	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	0.91	0.91	1.00
Frt		0.850				
Flt Protected	0.950					
Satd. Flow (prot)	1770	1583	0	5085	5085	0
Flt Permitted	0.950					
Satd. Flow (perm)	1770	1583	0	5085	5085	0
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)		1				
Link Speed (k/h)	50			50	50	
Link Distance (m)	554.6			120.3	363.6	
Travel Time (s)	39.9			8.7	26.2	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	93	364	0	3493	3097	0
Shared Lane Traffic (%)						
Lane Group Flow (vph)	93	364	0	3493	3097	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	3.6			3.6	3.6	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	4.8			4.8	4.8	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)	25	15	25			15
Turn Type	Prot	Perm		NA	NA	
Protected Phases	4			2	6	
Permitted Phases		4				
Minimum Split (s)	24.0	24.0		24.9	24.9	
Total Split (s)	32.0	32.0		68.0	68.0	
Total Split (%)	32.0%	32.0%		68.0%	68.0%	
Maximum Green (s)	26.0	26.0		61.1	61.1	
Yellow Time (s)	4.0	4.0		4.6	4.6	
All-Red Time (s)	2.0	2.0		2.3	2.3	
Lost Time Adjust (s)	-2.0	-2.0		-2.9	-2.9	
Total Lost Time (s)	4.0	4.0		4.0	4.0	
Lead/Lag						
Lead-Lag Optimize?						
Walk Time (s)	7.0	7.0		7.0	7.0	
Flash Dont Walk (s)	11.0	11.0		11.0	11.0	
Pedestrian Calls (#/hr)	0	0		0	0	
Act Effct Green (s)	28.0	28.0		64.0	64.0	
Actuated g/C Ratio	0.28	0.28		0.64	0.64	
v/c Ratio	0.19	0.82		1.07	0.95	
Control Delay	28.7	50.5		59.4	25.2	
Queue Delay	0.0	0.0		0.6	0.0	
Total Delay	28.7	50.5		59.9	25.2	

Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
LOS	C	D		E	C	
Approach Delay	46.0			59.9	25.2	
Approach LOS	D			E	C	

Intersection Summary

Area Type: Other
Cycle Length: 100
Actuated Cycle Length: 100
Offset: 0 (0%), Referenced to phase 2:NBT and 6:SBT, Start of Green
Natural Cycle: 100
Control Type: Pretimed
Maximum v/c Ratio: 1.07
Intersection Signal Delay: 43.8 — Intersection LOS: D
Intersection Capacity Utilization 82.5% — ICU Level of Service E
Analysis Period (min) 15

Splits and Phases: 103: Trafalgar Rd & Hwy 407 EB Off

Lane Group	EBL	EBR	NBT	SBT
Lane Group Flow (vph)	93	364	3493	3097
v/c Ratio	0.19	0.82	1.07	0.95
Control Delay	28.7	50.5	59.4	25.2
Queue Delay	0.0	0.0	0.6	0.0
Total Delay	28.7	50.5	59.9	25.2
Queue Length 50th (m)	13.5	64.8	~273.5	181.6
Queue Length 95th (m)	25.7	#110.4	#299.1	#217.2
Internal Link Dist (m)	530.6		96.3	339.6
Turn Bay Length (m)				
Base Capacity (vph)	495	443	3254	3254
Starvation Cap Reductn	0	0	4	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.19	0.82	1.07	0.95

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

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

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	86	335	0	3214	2849	0
Future Volume (vph)	86	335	0	3214	2849	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0	
Lane Util. Factor	1.00	1.00		0.91	0.91	
Frt	1.00	0.85		1.00	1.00	
Flt Protected	0.95	1.00		1.00	1.00	
Satd. Flow (prot)	1770	1583		5085	5085	
Flt Permitted	0.95	1.00		1.00	1.00	
Satd. Flow (perm)	1770	1583		5085	5085	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	93	364	0	3493	3097	0
RTOR Reduction (vph)	0	1	0	0	0	0
Lane Group Flow (vph)	93	363	0	3493	3097	0
Turn Type	Prot	Perm		NA	NA	
Protected Phases	4			2	6	
Permitted Phases		4				
Actuated Green, G (s)	26.0	26.0		61.1	61.1	
Effective Green, g (s)	28.0	28.0		64.0	64.0	
Actuated g/C Ratio	0.28	0.28		0.64	0.64	
Clearance Time (s)	6.0	6.0		6.9	6.9	
Lane Grp Cap (vph)	495	443		3254	3254	
v/s Ratio Prot	0.05			c0.69	0.61	
v/s Ratio Perm		c0.23				
v/c Ratio	0.19	0.82		1.07	0.95	
Uniform Delay, d1	27.4	33.6		18.0	16.6	
Progression Factor	1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.8	15.5		39.8	8.0	
Delay (s)	28.2	49.2		57.8	24.6	
Level of Service	C	D		E	C	
Approach Delay (s)	44.9			57.8	24.6	
Approach LOS	D			E	C	

Intersection Summary

HCM 2000 Control Delay	42.3	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	1.00		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	82.5%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	236	10	182	194	10	514	137	2876	285	392	2494	298
Future Volume (vph)	236	10	182	194	10	514	137	2876	285	392	2494	298
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	50.0		50.0	50.0		50.0	50.0		50.0	50.0		30.0
Storage Lanes	1		1	1		1	1		1	1		1
Taper Length (m)	80.0			80.0			100.0			100.0		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.91	1.00	1.00	0.91	1.00
Frt			0.850			0.850			0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1770	1863	1583	1770	1863	1583	1770	5085	1583	1770	5085	1583
Flt Permitted	0.750			0.750			0.055			0.053		
Satd. Flow (perm)	1397	1863	1583	1397	1863	1583	102	5085	1583	99	5085	1583
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			58			33			131			127
Link Speed (k/h)		50			50			80			80	
Link Distance (m)		152.1			145.8			233.3			131.6	
Travel Time (s)		11.0			10.5			10.5			5.9	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	257	11	198	211	11	559	149	3126	310	426	2711	324
Shared Lane Traffic (%)												
Lane Group Flow (vph)	257	11	198	211	11	559	149	3126	310	426	2711	324
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.6			3.6			3.6			3.6	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2	1	1	2	1	1	2	1	1	2	1
Detector Template	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Leading Detector (m)	2.0	10.0	2.0	2.0	10.0	2.0	2.0	10.0	2.0	2.0	10.0	2.0
Trailing Detector (m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Position(m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Size(m)	2.0	0.6	2.0	2.0	0.6	2.0	2.0	0.6	2.0	2.0	0.6	2.0
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Perm	NA	pm+ov	Perm	NA	pm+ov	pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases		4	5		8	1	5	2		1	6	
Permitted Phases	4		4	8		8	2		2	6		6

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector Phase	4	4	5	8	8	1	5	2	2	1	6	6
Switch Phase												
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	10.0	10.0	5.0	10.0	10.0
Minimum Split (s)	24.0	24.0	9.5	24.0	24.0	9.5	9.5	25.5	25.5	9.5	25.5	25.5
Total Split (s)	25.0	25.0	14.4	25.0	25.0	25.0	14.4	80.0	80.0	25.0	90.6	90.6
Total Split (%)	19.2%	19.2%	11.1%	19.2%	19.2%	19.2%	11.1%	61.5%	61.5%	19.2%	69.7%	69.7%
Maximum Green (s)	19.0	19.0	11.4	19.0	19.0	22.0	11.4	73.1	73.1	22.0	83.7	83.7
Yellow Time (s)	4.0	4.0	3.0	4.0	4.0	3.0	3.0	4.6	4.6	3.0	4.6	4.6
All-Red Time (s)	2.0	2.0	0.0	2.0	2.0	0.0	0.0	2.3	2.3	0.0	2.3	2.3
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.0	6.0	3.0	6.0	6.0	3.0	3.0	6.9	6.9	3.0	6.9	6.9
Lead/Lag			Lead			Lead	Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?			Yes			Yes	Yes	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	3.0	3.0	3.0
Recall Mode	None	None	None	None	None	None	None	Max	Max	None	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)	19.0	19.0	35.1	19.0	19.0	47.0	87.1	73.1	73.1	102.0	85.0	85.0
Actuated g/C Ratio	0.15	0.15	0.27	0.15	0.15	0.36	0.67	0.56	0.56	0.78	0.65	0.65
v/c Ratio	1.26	0.04	0.42	1.03	0.04	0.94	0.75	1.09	0.33	1.18	0.82	0.30
Control Delay	194.9	48.3	29.9	125.9	48.3	63.5	53.6	76.9	9.4	144.1	19.6	6.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	3.0	0.0	0.0	1.1	0.0
Total Delay	194.9	48.3	29.9	125.9	48.3	63.5	53.6	79.9	9.4	144.1	20.7	6.6
LOS	F	D	C	F	D	E	D	E	A	F	C	A
Approach Delay		121.3			80.2			72.7			34.5	
Approach LOS		F			F			E			C	

Intersection Summary			
Area Type:	Other		
Cycle Length: 130			
Actuated Cycle Length: 130			
Natural Cycle: 130			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 1.26			
Intersection Signal Delay: 60.2		Intersection LOS: E	
Intersection Capacity Utilization 114.6%		ICU Level of Service H	
Analysis Period (min) 15			

Splits and Phases: 104: Trafalgar Rd & West Street A/Street A

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	257	11	198	211	11	559	149	3126	310	426	2711	324
v/c Ratio	1.26	0.04	0.42	1.03	0.04	0.94	0.75	1.09	0.33	1.18	0.82	0.30
Control Delay	194.9	48.3	29.9	125.9	48.3	63.5	53.6	76.9	9.4	144.1	19.6	6.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	3.0	0.0	0.0	1.1	0.0
Total Delay	194.9	48.3	29.9	125.9	48.3	63.5	53.6	79.9	9.4	144.1	20.7	6.6
Queue Length 50th (m)	~81.4	2.4	28.4	~57.2	2.4	129.8	20.3	~326.3	21.6	~113.1	178.6	18.9
Queue Length 95th (m)	#133.4	8.0	50.5	#105.5	8.0	#200.6	#47.9	#350.0	38.8	#176.6	199.0	33.1
Internal Link Dist (m)		128.1			121.8			209.3			107.6	
Turn Bay Length (m)	50.0		50.0	50.0		50.0	50.0		50.0	50.0		30.0
Base Capacity (vph)	204	272	485	204	272	593	215	2859	947	360	3322	1078
Starvation Cap Reductn	0	0	0	0	0	0	0	223	0	0	347	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	1.26	0.04	0.41	1.03	0.04	0.94	0.69	1.19	0.33	1.18	0.91	0.30

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

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

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	236	10	182	194	10	514	137	2876	285	392	2494	298
Future Volume (vph)	236	10	182	194	10	514	137	2876	285	392	2494	298
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0	6.0	3.0	6.0	6.0	3.0	3.0	6.9	6.9	3.0	6.9	6.9
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.91	1.00	1.00	0.91	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)	1770	1863	1583	1770	1863	1583	1770	5085	1583	1770	5085	1583
Flt Permitted	0.75	1.00	1.00	0.75	1.00	1.00	0.05	1.00	1.00	0.05	1.00	1.00
Satd. Flow (perm)	1398	1863	1583	1398	1863	1583	102	5085	1583	98	5085	1583
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	257	11	198	211	11	559	149	3126	310	426	2711	324
RTOR Reduction (vph)	0	0	45	0	0	23	0	0	57	0	0	44
Lane Group Flow (vph)	257	11	153	211	11	536	149	3126	253	426	2711	280
Turn Type	Perm	NA	pm+ov	Perm	NA	pm+ov	pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases		4	5		8	1	5	2		1	6	
Permitted Phases	4		4	8		8	2		2	6		6
Actuated Green, G (s)	19.0	19.0	29.1	19.0	19.0	41.0	83.2	73.1	73.1	98.1	85.0	85.0
Effective Green, g (s)	19.0	19.0	29.1	19.0	19.0	41.0	83.2	73.1	73.1	98.1	85.0	85.0
Actuated g/C Ratio	0.15	0.15	0.22	0.15	0.15	0.32	0.64	0.56	0.56	0.75	0.65	0.65
Clearance Time (s)	6.0	6.0	3.0	6.0	6.0	3.0	3.0	6.9	6.9	3.0	6.9	6.9
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	204	272	354	204	272	499	194	2859	890	356	3324	1035
v/s Ratio Prot		0.01	0.03		0.01	0.18	0.06	0.61		c0.20	0.53	
v/s Ratio Perm	c0.18		0.06	0.15		0.16	0.43		0.16	c0.70		0.18
v/c Ratio	1.26	0.04	0.43	1.03	0.04	1.07	0.77	1.09	0.28	1.20	0.82	0.27
Uniform Delay, d1	55.5	47.7	43.4	55.5	47.7	44.5	32.0	28.5	14.8	46.7	16.7	9.5
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	150.2	0.1	0.8	72.3	0.1	61.9	16.5	48.4	0.8	112.7	2.3	0.6
Delay (s)	205.7	47.7	44.2	127.8	47.7	106.4	48.5	76.9	15.6	159.4	19.0	10.1
Level of Service	F	D	D	F	D	F	D	E	B	F	B	B
Approach Delay (s)		133.4			111.4			70.4			35.5	
Approach LOS		F			F			E			D	

Intersection Summary

HCM 2000 Control Delay	63.2	HCM 2000 Level of Service	E
HCM 2000 Volume to Capacity ratio	1.23		
Actuated Cycle Length (s)	130.0	Sum of lost time (s)	15.9
Intersection Capacity Utilization	114.6%	ICU Level of Service	H
Analysis Period (min)	15		

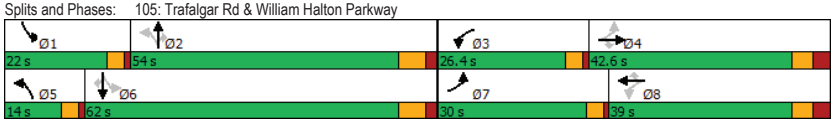
c Critical Lane Group

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	708	669	202	263	806	593	248	1998	52	479	2194	197
Future Volume (vph)	708	669	202	263	806	593	248	1998	52	479	2194	197
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	100.0		100.0	100.0		150.0	150.0		75.0	0.0		0.0
Storage Lanes	1		1	1		1	1		1	1		1
Taper Length (m)	100.0			100.0			100.0			7.5		
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.91	1.00	1.00	0.91	1.00
Frt			0.850			0.850			0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1770	3539	1583	1770	3539	1583	1770	5085	1583	1770	5085	1583
Flt Permitted	0.111			0.145			0.085			0.078		
Satd. Flow (perm)	207	3539	1583	270	3539	1583	158	5085	1583	145	5085	1583
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			172			185			120			111
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		164.7			151.9			204.8			233.3	
Travel Time (s)		11.9			10.9			14.7			16.8	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	770	727	220	286	876	645	270	2172	57	521	2385	214
Shared Lane Traffic (%)												
Lane Group Flow (vph)	770	727	220	286	876	645	270	2172	57	521	2385	214
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.6			3.6			7.2			7.2	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2	1	1	2	1	1	2	1	1	2	1
Detector Template	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Leading Detector (m)	2.0	10.0	2.0	2.0	10.0	2.0	2.0	10.0	2.0	2.0	10.0	2.0
Trailing Detector (m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Position(m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Size(m)	2.0	0.6	2.0	2.0	0.6	2.0	2.0	0.6	2.0	2.0	0.6	2.0
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4		4	8		8	2		2	6		6

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector Phase	7	4	4	3	8	8	5	2	2	1	6	6
Switch Phase												
Minimum Initial (s)	7.0	20.0	20.0	7.0	20.0	20.0	7.0	20.0	20.0	7.0	20.0	20.0
Minimum Split (s)	11.5	38.0	38.0	11.5	38.0	38.0	11.5	42.9	42.9	11.5	42.9	42.9
Total Split (s)	30.0	42.6	42.6	26.4	39.0	39.0	14.0	54.0	54.0	22.0	62.0	62.0
Total Split (%)	20.7%	29.4%	29.4%	18.2%	26.9%	26.9%	9.7%	37.2%	37.2%	15.2%	42.8%	42.8%
Maximum Green (s)	26.0	35.6	35.6	22.4	32.0	32.0	10.0	47.1	47.1	18.0	55.1	55.1
Yellow Time (s)	3.0	3.7	3.7	3.0	3.7	3.7	3.0	4.6	4.6	3.0	4.6	4.6
All-Red Time (s)	1.0	3.3	3.3	1.0	3.3	3.3	1.0	2.3	2.3	1.0	2.3	2.3
Lost Time Adjust (s)	0.0	-3.0	-3.0	0.0	-3.0	-3.0	0.0	-2.9	-2.9	0.0	-2.9	-2.9
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Vehicle Extension (s)	3.0	5.0	5.0	3.0	5.0	5.0	3.0	5.0	5.0	3.0	5.0	5.0
Recall Mode	None	None	None	None	None	None	None	Max	Max	None	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)		24.0	24.0		24.0	24.0		29.0	29.0		29.0	29.0
Pedestrian Calls (#/hr)		0	0		0	0		0	0		0	0
Act Effct Green (s)	64.8	39.8	39.8	56.2	35.0	35.0	60.0	50.0	50.0	72.0	58.0	58.0
Actuated g/C Ratio	0.45	0.27	0.27	0.39	0.24	0.24	0.41	0.34	0.34	0.50	0.40	0.40
v/c Ratio	2.07	0.75	0.39	0.89	1.03	1.24	1.53	1.24	0.09	1.91	1.17	0.31
Control Delay	514.6	54.0	13.1	64.2	90.8	154.2	295.5	152.9	0.3	448.7	122.4	15.1
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	514.6	54.0	13.1	64.2	90.8	154.2	295.5	152.9	0.3	448.7	122.4	15.1
LOS	F	D	B	E	F	F	F	F	A	F	F	B
Approach Delay		255.3			109.2			164.8			169.6	
Approach LOS		F			F			F			F	

Intersection Summary			
Area Type:	Other		
Cycle Length: 145			
Actuated Cycle Length: 145			
Natural Cycle: 145			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 2.07			
Intersection Signal Delay: 172.4		Intersection LOS: F	
Intersection Capacity Utilization 140.0%		ICU Level of Service H	
Analysis Period (min) 15			

Splits and Phases: 105: Trafalgar Rd & William Halton Parkway



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	770	727	220	286	876	645	270	2172	57	521	2385	214
v/c Ratio	2.07	0.75	0.39	0.89	1.03	1.24	1.53	1.24	0.09	1.91	1.17	0.31
Control Delay	514.6	54.0	13.1	64.2	90.8	154.2	295.5	152.9	0.3	448.7	122.4	15.1
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	514.6	54.0	13.1	64.2	90.8	154.2	295.5	152.9	0.3	448.7	122.4	15.1
Queue Length 50th (m)	~329.7	100.7	10.4	59.4	~138.8	~184.2	~91.1	~278.8	0.0	~211.5	~294.5	18.6
Queue Length 95th (m)	#405.4	123.6	32.7	#106.3	#179.3	#257.5	#147.7	#306.1	0.0	#280.6	#320.7	37.9
Internal Link Dist (m)		140.7			127.9			180.8			209.3	
Turn Bay Length (m)	100.0		100.0	100.0		150.0	150.0		75.0			
Base Capacity (vph)	372	972	559	338	854	522	176	1753	624	273	2034	699
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	12	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	2.07	0.75	0.39	0.85	1.03	1.24	1.53	1.24	0.09	1.91	1.18	0.31

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

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

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	708	669	202	263	806	593	248	1998	52	479	2194	197
Future Volume (vph)	708	669	202	263	806	593	248	1998	52	479	2194	197
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.91	1.00	1.00	0.91	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)	1770	3539	1583	1770	3539	1583	1770	5085	1583	1770	5085	1583
Flt Permitted	0.11	1.00	1.00	0.15	1.00	1.00	0.08	1.00	1.00	0.08	1.00	1.00
Satd. Flow (perm)	207	3539	1583	271	3539	1583	158	5085	1583	146	5085	1583
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	770	727	220	286	876	645	270	2172	57	521	2385	214
RTOR Reduction (vph)	0	0	125	0	0	140	0	0	37	0	0	67
Lane Group Flow (vph)	770	727	95	286	876	505	270	2172	20	521	2385	147
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4		4	8		8	2		2	6		6
Actuated Green, G (s)	62.0	36.8	36.8	53.2	32.0	32.0	57.1	47.1	47.1	69.1	55.1	55.1
Effective Green, g (s)	62.0	39.8	39.8	53.2	35.0	35.0	57.1	50.0	50.0	69.1	58.0	58.0
Actuated g/C Ratio	0.43	0.27	0.27	0.37	0.24	0.24	0.39	0.34	0.34	0.48	0.40	0.40
Clearance Time (s)	4.0	7.0	7.0	4.0	7.0	7.0	4.0	6.9	6.9	4.0	6.9	6.9
Vehicle Extension (s)	3.0	5.0	5.0	3.0	5.0	5.0	3.0	5.0	5.0	3.0	5.0	5.0
Lane Grp Cap (vph)	368	971	434	318	854	382	173	1753	545	271	2034	633
v/s Ratio Prot	c0.37	0.21		0.13	0.25		0.11	0.43		c0.24	0.47	
v/s Ratio Perm	c0.52		0.06	0.20		0.32	0.51		0.01	c0.68		0.09
v/c Ratio	2.09	0.75	0.22	0.90	1.03	1.32	1.56	1.24	0.04	1.92	1.17	0.23
Uniform Delay, d1	45.8	48.0	40.6	38.2	55.0	55.0	39.3	47.5	31.5	47.0	43.5	28.8
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	500.8	3.8	0.5	26.4	37.5	161.8	278.5	112.6	0.1	428.5	83.3	0.9
Delay (s)	546.6	51.9	41.1	64.5	92.5	216.8	317.8	160.1	31.6	475.6	126.8	29.6
Level of Service	F	D	D	E	F	F	F	F	C	F	F	C
Approach Delay (s)		272.3			132.5			174.2			178.3	
Approach LOS		F			F			F			F	

Intersection Summary

HCM 2000 Control Delay	185.8	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	1.99		
Actuated Cycle Length (s)	145.0	Sum of lost time (s)	16.0
Intersection Capacity Utilization	140.0%	ICU Level of Service	H
Analysis Period (min)	15		

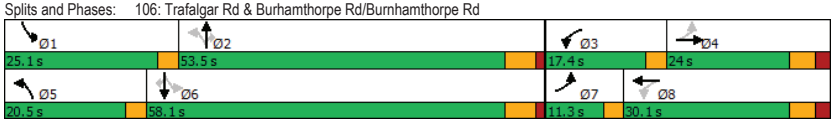
c Critical Lane Group

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	154	508	26	255	463	349	285	1922	167	340	1962	217
Future Volume (vph)	154	508	26	255	463	349	285	1922	167	340	1962	217
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	30.0		0.0	15.0		0.0	60.0		60.0	60.0		60.0
Storage Lanes	1		0	1		0	1		1	1		1
Taper Length (m)	70.0			50.0			100.0			100.0		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	0.95	1.00	0.91	1.00	1.00	0.91	1.00
Frt		0.993			0.936				0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1770	3514	0	1770	3313	0	1770	5085	1583	1770	5085	1583
Flt Permitted	0.235			0.190			0.086			0.079		
Satd. Flow (perm)	438	3514	0	354	3313	0	160	5085	1583	147	5085	1583
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		4			145				136			149
Link Speed (k/h)		60			60			80			80	
Link Distance (m)		322.3			989.6			1077.8			170.3	
Travel Time (s)		19.3			59.4			48.5			7.7	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	167	552	28	277	503	379	310	2089	182	370	2133	236
Shared Lane Traffic (%)												
Lane Group Flow (vph)	167	580	0	277	882	0	310	2089	182	370	2133	236
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.6			3.6			3.6			3.6	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2		1	2		1	2	1	1	2	1
Detector Template	Left	Thru		Left	Thru		Left	Thru	Right	Left	Thru	Right
Leading Detector (m)	2.0	10.0		2.0	10.0		2.0	10.0	2.0	2.0	10.0	2.0
Trailing Detector (m)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Position(m)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Size(m)	2.0	0.6		2.0	0.6		2.0	0.6	2.0	2.0	0.6	2.0
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	pm+pt	NA		pm+pt	NA		pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4			8			2		2	6		6

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector Phase	7	4		3	8		5	2	2	1	6	6
Switch Phase												
Minimum Initial (s)	5.0	10.0		5.0	10.0		5.0	20.0	20.0	7.0	20.0	20.0
Minimum Split (s)	9.5	24.0		9.5	24.0		9.5	26.0	26.0	11.5	26.0	26.0
Total Split (s)	11.3	24.0		17.4	30.1		20.5	53.5	53.5	25.1	58.1	58.1
Total Split (%)	9.4%	20.0%		14.5%	25.1%		17.1%	44.6%	44.6%	20.9%	48.4%	48.4%
Maximum Green (s)	8.3	18.0		14.4	24.1		17.5	47.5	47.5	22.1	52.1	52.1
Yellow Time (s)	3.0	3.7		3.0	3.7		3.0	4.6	4.6	3.0	4.6	4.6
All-Red Time (s)	0.0	2.3		0.0	2.3		0.0	1.4	1.4	0.0	1.4	1.4
Lost Time Adjust (s)	1.0	-2.0		1.0	-2.0		1.0	-2.0	-2.0	1.0	-2.0	-2.0
Total Lost Time (s)	4.0	4.0		4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0
Lead/Lag	Lead	Lag		Lead	Lag		Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes		Yes	Yes		Yes	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	3.0
Recall Mode	None	None		None	None		None	Max	Max	None	Max	Max
Act Effct Green (s)	27.3	20.0		37.4	26.1		66.0	49.5	49.5	74.6	54.1	54.1
Actuated g/C Ratio	0.23	0.17		0.31	0.22		0.55	0.41	0.41	0.62	0.45	0.45
v/c Ratio	0.93	0.98		1.03	1.06		1.00	1.00	0.25	0.98	0.93	0.30
Control Delay	87.6	83.3		99.9	85.4		87.4	54.1	7.7	77.7	39.8	8.7
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	87.6	83.3		99.9	85.4		87.4	54.1	7.7	77.7	39.8	8.7
LOS	F	F		F	F		F	D	A	E	D	A
Approach Delay		84.2			88.9			54.8			42.3	
Approach LOS		F			F			D			D	

Intersection Summary	
Area Type: Other	
Cycle Length: 120	
Actuated Cycle Length: 120	
Natural Cycle: 110	
Control Type: Actuated-Uncoordinated	
Maximum v/c Ratio: 1.06	
Intersection Signal Delay: 58.6	Intersection LOS: E
Intersection Capacity Utilization 101.8%	ICU Level of Service G
Analysis Period (min) 15	

Splits and Phases: 106: Trafalgar Rd & Burhamthorpe Rd/Burnhamthorpe Rd



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	167	580	277	882	310	2089	182	370	2133	236
v/c Ratio	0.93	0.98	1.03	1.06	1.00	1.00	0.25	0.98	0.93	0.30
Control Delay	87.6	83.3	99.9	85.4	87.4	54.1	7.7	77.7	39.8	8.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	87.6	83.3	99.9	85.4	87.4	54.1	7.7	77.7	39.8	8.7
Queue Length 50th (m)	29.5	71.1	~54.8	~103.6	~56.6	174.6	6.4	69.8	168.0	11.5
Queue Length 95th (m)	#61.3	#107.6	#104.0	#143.2	#113.7	#212.9	20.4	#129.9	#191.3	27.5
Internal Link Dist (m)		298.3		965.6		1053.8			146.3	
Turn Bay Length (m)	30.0		15.0		60.0		60.0	60.0		60.0
Base Capacity (vph)	180	589	268	834	309	2097	732	376	2292	795
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.93	0.98	1.03	1.06	1.00	1.00	0.25	0.98	0.93	0.30

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

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

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	154	508	26	255	463	349	285	1922	167	340	1962	217
Future Volume (vph)	154	508	26	255	463	349	285	1922	167	340	1962	217
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	0.91	1.00	1.00	0.91	1.00
Frt	1.00	0.99		1.00	0.94		1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1770	3514		1770	3311		1770	5085	1583	1770	5085	1583
Flt Permitted	0.24	1.00		0.19	1.00		0.09	1.00	1.00	0.08	1.00	1.00
Satd. Flow (perm)	438	3514		355	3311		160	5085	1583	148	5085	1583
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	167	552	28	277	503	379	310	2089	182	370	2133	236
RTOR Reduction (vph)	0	3	0	0	113	0	0	0	80	0	0	82
Lane Group Flow (vph)	167	577	0	277	769	0	310	2089	102	370	2133	154
Turn Type	pm+pt	NA		pm+pt	NA		pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4			8			2		2	6		6
Actuated Green, G (s)	26.3	18.0		35.4	24.1		65.0	47.5	47.5	72.6	52.1	52.1
Effective Green, g (s)	24.3	20.0		34.4	26.1		63.0	49.5	49.5	71.6	54.1	54.1
Actuated g/C Ratio	0.20	0.17		0.29	0.22		0.52	0.41	0.41	0.60	0.45	0.45
Clearance Time (s)	3.0	6.0		3.0	6.0		3.0	6.0	6.0	3.0	6.0	6.0
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	169	585		259	720		305	2097	652	373	2292	713
v/s Ratio Prot	0.06	0.16		c0.12	c0.23		0.14	c0.41		c0.17	0.42	
v/s Ratio Perm	0.14			0.19			0.39		0.06	0.42		0.10
v/c Ratio	0.99	0.99		1.07	1.07		1.02	1.00	0.16	0.99	0.93	0.22
Uniform Delay, d1	45.9	49.9		38.4	46.9		38.0	35.2	22.1	39.1	31.2	20.0
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	65.1	33.3		75.5	53.0		55.8	18.8	0.5	44.3	8.3	0.7
Delay (s)	111.0	83.1		113.9	99.9		93.8	53.9	22.7	83.4	39.5	20.7
Level of Service	F	F		F	F		F	D	C	F	D	C
Approach Delay (s)		89.4			103.3			56.5			43.8	
Approach LOS		F			F			E			D	

Intersection Summary

HCM 2000 Control Delay	62.6	HCM 2000 Level of Service	E
HCM 2000 Volume to Capacity ratio	1.05		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	16.0
Intersection Capacity Utilization	101.8%	ICU Level of Service	G
Analysis Period (min)	15		

c Critical Lane Group

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	0	151	0	0	66	0	2231	193	0	2368	290
Future Volume (vph)	0	0	151	0	0	66	0	2231	193	0	2368	290
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	0.0		0.0	0.0		0.0	0.0		50.0	0.0		50.0
Storage Lanes	0		1	0		1	0		1	0		1
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	0.91	1.00	1.00	0.91	1.00
Frt			0.865			0.865			0.850			0.850
Flt Protected												
Satd. Flow (prot)	0	0	1611	0	0	1611	0	5085	1583	0	5085	1583
Flt Permitted												
Satd. Flow (perm)	0	0	1611	0	0	1611	0	5085	1583	0	5085	1583
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		162.4			71.6			80.5			204.8	
Travel Time (s)		11.7			5.2			5.8			14.7	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	0	164	0	0	72	0	2425	210	0	2574	315
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	0	164	0	0	72	0	2425	210	0	2574	315
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		0.0			0.0			3.6			3.6	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Sign Control		Stop			Stop			Free			Free	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	61.8%	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	0	151	0	0	66	0	2231	193	0	2368	290
Future Volume (Veh/h)	0	0	151	0	0	66	0	2231	193	0	2368	290
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	0	164	0	0	72	0	2425	210	0	2574	315
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (m)								251			205	
pX, platoon unblocked	0.80	0.80	0.61	0.80	0.80	0.61	0.61			0.61		
vC, conflicting volume	3454	5209	858	3447	5314	808	2889			2635		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	0	2142	0	0	2272	0	1862			1463		
tC, single (s)	7.5	6.5	6.9	7.5	6.5	6.9	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	75	100	100	89	100			100		
cM capacity (veh/h)	733	39	662	618	32	666	196			281		

Direction, Lane #	EB 1	WB 1	NB 1	NB 2	NB 3	NB 4	SB 1	SB 2	SB 3	SB 4
Volume Total	164	72	808	808	808	210	858	858	858	315
Volume Left	0	0	0	0	0	0	0	0	0	0
Volume Right	164	72	0	0	0	210	0	0	0	315
cSH	662	666	1700	1700	1700	1700	1700	1700	1700	1700
Volume to Capacity	0.25	0.11	0.48	0.48	0.48	0.12	0.50	0.50	0.50	0.19
Queue Length 95th (m)	7.3	2.7	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Control Delay (s)	12.2	11.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Lane LOS	B	B								
Approach Delay (s)	12.2	11.1	0.0				0.0			
Approach LOS	B	B								

Intersection Summary				
Average Delay	0.5			
Intersection Capacity Utilization	61.8%	ICU Level of Service	B	
Analysis Period (min)	15			

Lanes, Volumes, Timings
203: Street C/Driveway & Street A

Total - 2041
PM Peak Hour

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	121	182	374	10	337	10	172	10	10	10	24	199
Future Volume (vph)	121	182	374	10	337	10	172	10	10	10	24	199
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.899			0.996			0.993			0.885	
Flt Protected	0.950				0.999			0.957			0.998	
Satd. Flow (prot)	1770	1675	0	0	1853	0	0	1770	0	0	1645	0
Flt Permitted	0.950				0.999			0.957			0.998	
Satd. Flow (perm)	1770	1675	0	0	1853	0	0	1770	0	0	1645	0
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		145.8			196.6			231.1			42.5	
Travel Time (s)		10.5			14.2			16.6			3.1	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	132	198	407	11	366	11	187	11	11	11	26	216
Shared Lane Traffic (%)												
Lane Group Flow (vph)	132	605	0	0	388	0	0	209	0	0	253	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		7.2			7.2			0.0			0.0	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Sign Control		Stop			Stop			Stop			Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 89.5%		ICU Level of Service E	
Analysis Period (min) 15			

HCM Unsignalized Intersection Capacity Analysis
203: Street C/Driveway & Street A

Total - 2041
PM Peak Hour

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Stop			Stop	
Traffic Volume (vph)	121	182	374	10	337	10	172	10	10	10	24	199
Future Volume (vph)	121	182	374	10	337	10	172	10	10	10	24	199
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	132	198	407	11	366	11	187	11	11	11	26	216

Direction, Lane #	EB 1	EB 2	WB 1	NB 1	SB 1
Volume Total (vph)	132	605	388	209	253
Volume Left (vph)	132	0	11	187	11
Volume Right (vph)	0	407	11	11	216
Hadj (s)	0.53	-0.44	0.02	0.18	-0.47
Departure Headway (s)	7.8	6.8	7.1	8.0	7.3
Degree Utilization, x	0.28	1.14	0.77	0.46	0.51
Capacity (veh/h)	454	534	491	414	462
Control Delay (s)	12.6	106.4	29.9	17.8	17.6
Approach Delay (s)	89.6		29.9	17.8	17.6
Approach LOS	F		D	C	C

Intersection Summary				
Delay		54.1		
Level of Service		F		
Intersection Capacity Utilization		89.5%	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)	121	57	4	10	97	10	41	27	10	10	57	199
Future Volume (vph)	121	57	4	10	97	10	41	27	10	10	57	199
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.997			0.988			0.983			0.899	
Flt Protected		0.968			0.996			0.974			0.998	
Satd. Flow (prot)	0	1798	0	0	1833	0	0	1783	0	0	1671	0
Flt Permitted		0.968			0.996			0.974			0.998	
Satd. Flow (perm)	0	1798	0	0	1833	0	0	1783	0	0	1671	0
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		196.6			166.0			95.0			73.1	
Travel Time (s)		14.2			12.0			6.8			5.3	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	132	62	4	11	105	11	45	29	11	11	62	216
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	198	0	0	127	0	0	85	0	0	289	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		0.0			0.0			0.0			0.0	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Sign Control		Free			Free			Stop			Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 46.7%		ICU Level of Service A	
Analysis Period (min) 15			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	121	57	4	10	97	10	41	27	10	10	57	199
Future Volume (Veh/h)	121	57	4	10	97	10	41	27	10	10	57	199
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	132	62	4	11	105	11	45	29	11	11	62	216
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	116			66			708	466	64	486	462	110
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	116			66			708	466	64	486	462	110
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	91			99			80	94	99	97	86	77
cM capacity (veh/h)	1473			1536			224	447	1000	428	449	943

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	198	127	85	289
Volume Left	132	11	45	11
Volume Right	4	11	11	216
cSH	1473	1536	307	735
Volume to Capacity	0.09	0.01	0.28	0.39
Queue Length 95th (m)	2.2	0.2	8.3	14.1
Control Delay (s)	5.4	0.7	21.2	13.0
Lane LOS	A	A	C	B
Approach Delay (s)	5.4	0.7	21.2	13.0
Approach LOS			C	B

Intersection Summary			
Average Delay	9.6		
Intersection Capacity Utilization	46.7%	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)	16	0	7	0	0	0	18	5	0	0	44	0
Future Volume (vph)	16	0	7	0	0	0	18	5	0	0	44	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.957										
Flt Protected		0.967						0.962				
Satd. Flow (prot)	0	1724	0	0	1863	0	0	1792	0	0	1863	0
Flt Permitted		0.967						0.962				
Satd. Flow (perm)	0	1724	0	0	1863	0	0	1792	0	0	1863	0
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		166.0			179.9			93.3			48.1	
Travel Time (s)		12.0			13.0			6.7			3.5	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	17	0	8	0	0	0	20	5	0	0	48	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	25	0	0	0	0	0	25	0	0	48	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		0.0			0.0			0.0			0.0	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Sign Control		Free			Free			Stop			Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 17.9%		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)	16	0	7	0	0	0	18	5	0	0	44	0
Future Volume (Veh/h)	16	0	7	0	0	0	18	5	0	0	44	0
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	17	0	8	0	0	0	20	5	0	0	48	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	0			8			62	38	4	40	42	0
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	0			8			62	38	4	40	42	0
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	99			100			98	99	100	100	94	100
cM capacity (veh/h)	1623			1612			885	845	1080	951	841	1085

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	25	0	25	48
Volume Left	17	0	20	0
Volume Right	8	0	0	0
cSH	1623	1700	877	841
Volume to Capacity	0.01	0.00	0.03	0.06
Queue Length 95th (m)	0.2	0.0	0.7	1.4
Control Delay (s)	4.9	0.0	9.2	9.5
Lane LOS	A		A	A
Approach Delay (s)	4.9	0.0	9.2	9.5
Approach LOS			A	A

Intersection Summary			
Average Delay	8.3		
Intersection Capacity Utilization	17.9%	ICU Level of Service	A
Analysis Period (min)	15		

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	30	10	68	28	10	11	15	27	6	4	57	10
Future Volume (vph)	30	10	68	28	10	11	15	27	6	4	57	10
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.915			0.969			0.982			0.981	
Flt Protected		0.986			0.972			0.985			0.997	
Satd. Flow (prot)	0	1681	0	0	1754	0	0	1802	0	0	1822	0
Flt Permitted		0.986			0.972			0.985			0.997	
Satd. Flow (perm)	0	1681	0	0	1754	0	0	1802	0	0	1822	0
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		55.0			164.9			132.9			95.0	
Travel Time (s)		4.0			11.9			9.6			6.8	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	33	11	74	30	11	12	16	29	7	4	62	11
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	118	0	0	53	0	0	52	0	0	77	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		0.0			0.0			3.6			3.6	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Sign Control		Stop			Stop			Free			Free	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 21.0%		ICU Level of Service A	
Analysis Period (min) 15			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	30	10	68	28	10	11	15	27	6	4	57	10
Future Volume (Veh/h)	30	10	68	28	10	11	15	27	6	4	57	10
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	33	11	74	30	11	12	16	29	7	4	62	11
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (m)								133				
pX, platoon unblocked												
vC, conflicting volume	158	144	68	220	146	32	73			36		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	158	144	68	220	146	32	73			36		
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 %	96	99	93	96	99	99	99			100		
cM capacity (veh/h)	782	738	996	667	736	1041	1527			1575		

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	118	53	52	77
Volume Left	33	30	16	4
Volume Right	74	12	7	11
cSH	898	742	1527	1575
Volume to Capacity	0.13	0.07	0.01	0.00
Queue Length 95th (m)	3.4	1.7	0.2	0.1
Control Delay (s)	9.6	10.2	2.3	0.4
Lane LOS	A	B	A	A
Approach Delay (s)	9.6	10.2	2.3	0.4
Approach LOS	A	B		

Intersection Summary			
Average Delay	6.1		
Intersection Capacity Utilization	21.0%	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)	0	3	6	16	5	18	1	5	6	7	44	5
Future Volume (vph)	0	3	6	16	5	18	1	5	6	7	44	5
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.905			0.936			0.927			0.989	
Flt Protected					0.980			0.996			0.993	
Satd. Flow (prot)	0	1686	0	0	1709	0	0	1720	0	0	1829	0
Flt Permitted					0.980			0.996			0.993	
Satd. Flow (perm)	0	1686	0	0	1709	0	0	1720	0	0	1829	0
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		164.9			185.0			132.6			93.3	
Travel Time (s)		11.9			13.3			9.5			6.7	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	3	7	17	5	20	1	5	7	8	48	5
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	10	0	0	42	0	0	13	0	0	61	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		0.0			0.0			0.0			0.0	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Sign Control		Stop			Stop			Free			Free	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 20.1%		ICU Level of Service A	
Analysis Period (min) 15			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	3	6	16	5	18	1	5	6	7	44	5
Future Volume (Veh/h)	0	3	6	16	5	18	1	5	6	7	44	5
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	3	7	17	5	20	1	5	7	8	48	5
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	100	80	50	86	80	8	53			12		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	100	80	50	86	80	8	53			12		
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	99	98	99	98	100			100		
cM capacity (veh/h)	858	805	1018	888	806	1073	1553			1607		

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	10	42	13	61
Volume Left	0	17	1	8
Volume Right	7	20	7	5
cSH	943	955	1553	1607
Volume to Capacity	0.01	0.04	0.00	0.00
Queue Length 95th (m)	0.2	1.0	0.0	0.1
Control Delay (s)	8.9	8.9	0.6	1.0
Lane LOS	A	A	A	A
Approach Delay (s)	8.9	8.9	0.6	1.0
Approach LOS	A	A		

Intersection Summary				
Average Delay		4.2		
Intersection Capacity Utilization		20.1%	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)	0	1101	99	0	1627	16	0	0	37	0	0	39
Future Volume (vph)	0	1101	99	0	1627	16	0	0	37	0	0	39
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.988			0.999				0.865			0.865
Flt Protected												
Satd. Flow (prot)	0	3497	0	0	3536	0	0	0	1611	0	0	1611
Flt Permitted												
Satd. Flow (perm)	0	3497	0	0	3536	0	0	0	1611	0	0	1611
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		151.9			207.4			67.8			231.1	
Travel Time (s)		10.9			14.9			4.9			16.6	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	1197	108	0	1768	17	0	0	40	0	0	42
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	1305	0	0	1785	0	0	0	40	0	0	42
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.6			3.6			0.0			0.0	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Sign Control		Free			Free			Stop			Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 55.5%		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	1101	99	0	1627	16	0	0	37	0	0	39
Future Volume (Veh/h)	0	1101	99	0	1627	16	0	0	37	0	0	39
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	1197	108	0	1768	17	0	0	40	0	0	42
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (m)		152			207							
pX, platoon unblocked	0.69			0.81			0.78	0.78	0.81	0.78	0.78	0.69
vC, conflicting volume	1785			1305			2177	3036	652	2415	3082	892
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	1241			916			880	1975	114	1183	2033	0
tC, single (s)	4.1			4.1			7.5	6.5	6.9	7.5	6.5	6.9
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			100			100	100	95	100	100	94
cM capacity (veh/h)	385			602			179	48	746	107	44	749

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	SB 1
Volume Total	798	507	1179	606	40	42
Volume Left	0	0	0	0	0	0
Volume Right	0	108	0	17	40	42
cSH	1700	1700	1700	1700	746	749
Volume to Capacity	0.47	0.30	0.69	0.36	0.05	0.06
Queue Length 95th (m)	0.0	0.0	0.0	0.0	1.3	1.3
Control Delay (s)	0.0	0.0	0.0	0.0	10.1	10.1
Lane LOS					B	B
Approach Delay (s)	0.0		0.0		10.1	10.1
Approach LOS					B	B

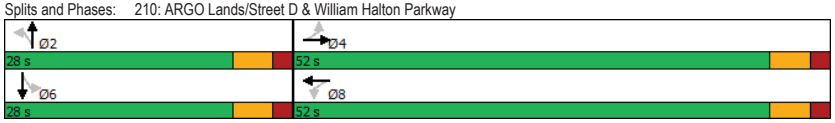
Intersection Summary			
Average Delay	0.3		
Intersection Capacity Utilization	55.5%	ICU Level of Service	B
Analysis Period (min)	15		

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	37	1002	99	111	1336	11	248	10	37	94	10	59
Future Volume (vph)	37	1002	99	111	1336	11	248	10	37	94	10	59
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	50.0		0.0	50.0		0.0	30.0		0.0	30.0		0.0
Storage Lanes	1		0	1		0	1		0	1		0
Taper Length (m)	100.0			100.0			75.0			75.0		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.986			0.999			0.882			0.872	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1770	3490	0	1770	3536	0	1770	1643	0	1770	1624	0
Flt Permitted	0.113			0.181			0.708			0.724		
Satd. Flow (perm)	210	3490	0	337	3536	0	1319	1643	0	1349	1624	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		22			2			40			36	
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		207.4			163.3			76.3			132.9	
Travel Time (s)		14.9			11.8			5.5			9.6	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	40	1089	108	121	1452	12	270	11	40	102	11	64
Shared Lane Traffic (%)												
Lane Group Flow (vph)	40	1197	0	121	1464	0	270	51	0	102	75	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.6			3.6			3.6			3.6	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2		1	2		1	2		1	2	
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	
Leading Detector (m)	2.0	10.0		2.0	10.0		2.0	10.0		2.0	10.0	
Trailing Detector (m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Position(m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Size(m)	2.0	0.6		2.0	0.6		2.0	0.6		2.0	0.6	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector Phase	4	4		8	8		2	2		6	6	
Switch Phase												
Minimum Initial (s)	10.0	10.0		10.0	10.0		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	
Total Split (s)	52.0	52.0		52.0	52.0		28.0	28.0		28.0	28.0	
Total Split (%)	65.0%	65.0%		65.0%	65.0%		35.0%	35.0%		35.0%	35.0%	
Maximum Green (s)	46.0	46.0		46.0	46.0		22.0	22.0		22.0	22.0	
Yellow Time (s)	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	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)	6.0	6.0		6.0	6.0		6.0	6.0		6.0	6.0	
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	Max	Max		Max	Max		None	None		None	None	
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)	46.9	46.9		46.9	46.9		19.4	19.4		19.4	19.4	
Actuated g/C Ratio	0.60	0.60		0.60	0.60		0.25	0.25		0.25	0.25	
v/c Ratio	0.32	0.57		0.60	0.69		0.83	0.12		0.31	0.17	
Control Delay	17.6	11.2		27.5	13.5		49.5	10.4		26.0	14.5	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	17.6	11.2		27.5	13.5		49.5	10.4		26.0	14.5	
LOS	B	B		C	B		D	B		C	B	
Approach Delay		11.4			14.6			43.3			21.2	
Approach LOS		B			B			D			C	

Intersection Summary	
Area Type:	Other
Cycle Length: 80	
Actuated Cycle Length: 78.3	
Natural Cycle: 60	
Control Type: Actuated-Uncoordinated	
Maximum v/c Ratio: 0.83	
Intersection Signal Delay: 16.5	Intersection LOS: B
Intersection Capacity Utilization 81.0%	ICU Level of Service D
Analysis Period (min) 15	

Splits and Phases: 210: ARGO Lands/Street D & William Halton Parkway



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	40	1197	121	1464	270	51	102	75
v/c Ratio	0.32	0.57	0.60	0.69	0.83	0.12	0.31	0.17
Control Delay	17.6	11.2	27.5	13.5	49.5	10.4	26.0	14.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	17.6	11.2	27.5	13.5	49.5	10.4	26.0	14.5
Queue Length 50th (m)	2.9	54.7	11.0	76.5	36.8	1.2	12.0	4.3
Queue Length 95th (m)	10.9	72.1	#38.4	100.1	#71.2	8.8	24.3	13.8
Internal Link Dist (m)		183.4		139.3		52.3		108.9
Turn Bay Length (m)	50.0		50.0		30.0		30.0	
Base Capacity (vph)	125	2097	201	2116	370	490	378	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	0.32	0.57	0.60	0.69	0.73	0.10	0.27	0.16

Intersection Summary

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

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	37	1002	99	111	1336	11	248	10	37	94	10	59
Future Volume (vph)	37	1002	99	111	1336	11	248	10	37	94	10	59
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0	6.0		6.0	6.0		6.0	6.0		6.0	6.0	
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	1.00		1.00	1.00	
Frt	1.00	0.99		1.00	1.00		1.00	0.88		1.00	0.87	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	3491		1770	3535		1770	1644		1770	1624	
Flt Permitted	0.11	1.00		0.18	1.00		0.71	1.00		0.72	1.00	
Satd. Flow (perm)	210	3491		337	3535		1319	1644		1348	1624	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	40	1089	108	121	1452	12	270	11	40	102	11	64
RTOR Reduction (vph)	0	9	0	0	1	0	0	30	0	0	27	0
Lane Group Flow (vph)	40	1188	0	121	1463	0	270	21	0	102	48	0
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)	46.9	46.9		46.9	46.9		19.4	19.4		19.4	19.4	
Effective Green, g (s)	46.9	46.9		46.9	46.9		19.4	19.4		19.4	19.4	
Actuated g/C Ratio	0.60	0.60		0.60	0.60		0.25	0.25		0.25	0.25	
Clearance Time (s)	6.0	6.0		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		3.0	3.0	
Lane Grp Cap (vph)	125	2091		201	2117		326	407		333	402	
v/s Ratio Prot		0.34			c0.41			0.01			0.03	
v/s Ratio Perm	0.19			0.36			c0.20			0.08		
v/c Ratio	0.32	0.57		0.60	0.69		0.83	0.05		0.31	0.12	
Uniform Delay, d1	7.8	9.5		9.8	10.7		27.9	22.4		24.0	22.8	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	6.6	1.1		12.7	1.9		15.7	0.1		0.5	0.1	
Delay (s)	14.4	10.7		22.5	12.6		43.6	22.5		24.5	23.0	
Level of Service	B	B		C	B		D	C		C	C	
Approach Delay (s)		10.8			13.4			40.3			23.8	
Approach LOS		B			B			D			C	

Intersection Summary

HCM 2000 Control Delay	15.6	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.73		
Actuated Cycle Length (s)	78.3	Sum of lost time (s)	12.0
Intersection Capacity Utilization	81.0%	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)	10	1120	1410	2	21	48
Future Volume (vph)	10	1120	1410	2	21	48
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (m)	50.0			0.0	0.0	0.0
Storage Lanes	1			0	1	0
Taper Length (m)	90.0				7.5	
Lane Util. Factor	1.00	0.95	0.95	0.95	1.00	1.00
Frt					0.906	
Flt Protected	0.950				0.985	
Satd. Flow (prot)	1770	3539	3539	0	1662	0
Flt Permitted	0.950				0.985	
Satd. Flow (perm)	1770	3539	3539	0	1662	0
Link Speed (k/h)		50	50		50	
Link Distance (m)		163.3	405.0		132.6	
Travel Time (s)		11.8	29.2		9.5	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	11	1217	1533	2	23	52
Shared Lane Traffic (%)						
Lane Group Flow (vph)	11	1217	1535	0	75	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(m)		3.6	3.6		3.6	
Link Offset(m)		0.0	0.0		0.0	
Crosswalk Width(m)		4.8	4.8		4.8	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)	25			15	25	15
Sign Control		Free	Free		Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 49.8%		ICU Level of Service A	
Analysis Period (min) 15			

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	10	1120	1410	2	21	48
Future Volume (Veh/h)	10	1120	1410	2	21	48
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	11	1217	1533	2	23	52
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		None	None			
Median storage veh)						
Upstream signal (m)		163				
pX, platoon unblocked					0.80	
vC, conflicting volume	1535				2164	768
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1535				1957	768
tC, single (s)	4.1				6.8	6.9
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	97				47	85
cM capacity (veh/h)	429				44	345

Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	SB 1
Volume Total	11	608	608	1022	513	75
Volume Left	11	0	0	0	0	23
Volume Right	0	0	0	0	2	52
cSH	429	1700	1700	1700	1700	110
Volume to Capacity	0.03	0.36	0.36	0.60	0.30	0.68
Queue Length 95th (m)	0.6	0.0	0.0	0.0	0.0	26.5
Control Delay (s)	13.6	0.0	0.0	0.0	0.0	88.7
Lane LOS	B					F
Approach Delay (s)	0.1			0.0		88.7
Approach LOS						F

Intersection Summary			
Average Delay	2.4		
Intersection Capacity Utilization	49.8%	ICU Level of Service	A
Analysis Period (min)	15		

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	404	31	10	371	47	10
Future Volume (vph)	404	31	10	371	47	10
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	0.990		0.869			
Flt Protected	0.956					0.960
Satd. Flow (prot)	1763	0	1619	0	0	1788
Flt Permitted	0.956					0.960
Satd. Flow (perm)	1763	0	1619	0	0	1788
Link Speed (k/h)	50		50			50
Link Distance (m)	152.1		216.5			158.4
Travel Time (s)	11.0		15.6			11.4
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	439	34	11	403	51	11
Shared Lane Traffic (%)						
Lane Group Flow (vph)	473	0	414	0	0	62
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(m)	7.2		0.0			0.0
Link Offset(m)	0.0		0.0			0.0
Crosswalk Width(m)	4.8		4.8			4.8
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)	25	15		15	25	
Sign Control	Stop		Free			Free

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 61.1%		ICU Level of Service B	
Analysis Period (min) 15			

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	404	31	10	371	47	10
Future Volume (Veh/h)	404	31	10	371	47	10
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	439	34	11	403	51	11
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	326	212			414	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	326	212			414	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	31	96			96	
cM capacity (veh/h)	639	828			1145	

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	473	414	62
Volume Left	439	0	51
Volume Right	34	403	0
cSH	649	1700	1145
Volume to Capacity	0.73	0.24	0.04
Queue Length 95th (m)	47.0	0.0	1.0
Control Delay (s)	23.9	0.0	6.9
Lane LOS	C		A
Approach Delay (s)	23.9	0.0	6.9
Approach LOS	C		

Intersection Summary			
Average Delay	12.4		
Intersection Capacity Utilization	61.1%	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)	0	1479	22	0	1093	150	0	0	100	0	0	20
Future Volume (vph)	0	1479	22	0	1093	150	0	0	100	0	0	20
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.998			0.982				0.865			0.865
Flt Protected												
Satd. Flow (prot)	0	3532	0	0	3476	0	0	0	1611	0	0	1611
Flt Permitted												
Satd. Flow (perm)	0	3532	0	0	3476	0	0	0	1611	0	0	1611
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		185.8			164.7			130.1			216.5	
Travel Time (s)		13.4			11.9			9.4			15.6	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	1608	24	0	1188	163	0	0	109	0	0	22
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	1632	0	0	1351	0	0	0	109	0	0	22
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.6			3.6			0.0			0.0	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Sign Control		Free			Free			Stop			Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 54.4%		ICU Level of Service A	
Analysis Period (min) 15			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	1479	22	0	1093	150	0	0	100	0	0	20
Future Volume (Veh/h)	0	1479	22	0	1093	150	0	0	100	0	0	20
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	1608	24	0	1188	163	0	0	109	0	0	22
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (m)		186			165							
pX, platoon unblocked	0.77			0.69			0.81	0.81	0.69	0.81	0.81	0.77
vC, conflicting volume	1351			1632			2236	2971	816	2182	2902	676
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	845			1019			746	1655	0	679	1569	0
tC, single (s)	4.1			4.1			7.5	6.5	6.9	7.5	6.5	6.9
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			100			100	100	85	100	100	97
cM capacity (veh/h)	603			467			238	78	749	233	89	830

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	SB 1
Volume Total	1072	560	792	559	109	22
Volume Left	0	0	0	0	0	0
Volume Right	0	24	0	163	109	22
cSH	1700	1700	1700	1700	749	830
Volume to Capacity	0.63	0.33	0.47	0.33	0.15	0.03
Queue Length 95th (m)	0.0	0.0	0.0	0.0	3.8	0.6
Control Delay (s)	0.0	0.0	0.0	0.0	10.6	9.5
Lane LOS					B	A
Approach Delay (s)	0.0		0.0		10.6	9.5
Approach LOS					B	A

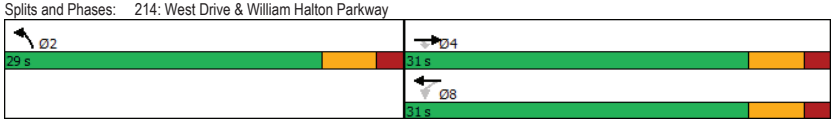
Intersection Summary			
Average Delay		0.4	
Intersection Capacity Utilization		54.4%	ICU Level of Service A
Analysis Period (min)		15	

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	1134	62	48	1065	37	367
Future Volume (vph)	1134	62	48	1065	37	367
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (m)		50.0	50.0		0.0	0.0
Storage Lanes		1	1		1	0
Taper Length (m)			100.0		7.5	
Lane Util. Factor	0.95	1.00	1.00	0.95	1.00	1.00
Frt		0.850			0.877	
Flt Protected			0.950		0.995	
Satd. Flow (prot)	3539	1583	1770	3539	1625	0
Flt Permitted			0.159		0.995	
Satd. Flow (perm)	3539	1583	296	3539	1625	0
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)		67			19	
Link Speed (k/h)	50			50	50	
Link Distance (m)	455.4			185.8	146.7	
Travel Time (s)	32.8			13.4	10.6	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	1233	67	52	1158	40	399
Shared Lane Traffic (%)						
Lane Group Flow (vph)	1233	67	52	1158	439	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	3.6			3.6	3.6	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	4.8			4.8	4.8	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)		15	25		25	15
Number of Detectors	2	1	1	2	1	
Detector Template	Thru	Right	Left	Thru	Left	
Leading Detector (m)	10.0	2.0	2.0	10.0	2.0	
Trailing Detector (m)	0.0	0.0	0.0	0.0	0.0	
Detector 1 Position(m)	0.0	0.0	0.0	0.0	0.0	
Detector 1 Size(m)	0.6	2.0	2.0	0.6	2.0	
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	
Detector 1 Channel						
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	
Detector 2 Position(m)	9.4			9.4		
Detector 2 Size(m)	0.6			0.6		
Detector 2 Type	Cl+Ex			Cl+Ex		
Detector 2 Channel						
Detector 2 Extend (s)	0.0			0.0		
Turn Type	NA	Perm	Perm	NA	Prot	
Protected Phases	4			8	2	
Permitted Phases		4	8			

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Detector Phase	4	4	8	8	2	
Switch Phase						
Minimum Initial (s)	15.0	15.0	15.0	15.0	5.0	
Minimum Split (s)	24.0	24.0	24.0	24.0	24.0	
Total Split (s)	31.0	31.0	31.0	31.0	29.0	
Total Split (%)	51.7%	51.7%	51.7%	51.7%	48.3%	
Maximum Green (s)	25.0	25.0	25.0	25.0	23.0	
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	
Total Lost Time (s)	6.0	6.0	6.0	6.0	6.0	
Lead/Lag						
Lead-Lag Optimize?						
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	
Recall Mode	Max	Max	Max	Max	None	
Walk Time (s)	7.0	7.0	7.0	7.0	7.0	
Flash Dont Walk (s)	11.0	11.0	11.0	11.0	11.0	
Pedestrian Calls (#/hr)	0	0	0	0	0	
Act Effct Green (s)	25.1	25.1	25.1	25.1	18.4	
Actuated g/C Ratio	0.45	0.45	0.45	0.45	0.33	
v/c Ratio	0.77	0.09	0.39	0.72	0.80	
Control Delay	18.3	3.7	23.0	16.7	28.0	
Queue Delay	0.0	0.0	0.0	0.0	0.0	
Total Delay	18.3	3.7	23.0	16.7	28.0	
LOS	B	A	C	B	C	
Approach Delay	17.6			17.0	28.0	
Approach LOS	B			B	C	

Intersection Summary			
Area Type:	Other		
Cycle Length: 60			
Actuated Cycle Length: 55.6			
Natural Cycle: 60			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 0.80			
Intersection Signal Delay: 18.9		Intersection LOS: B	
Intersection Capacity Utilization 74.6%		ICU Level of Service D	
Analysis Period (min) 15			

Splits and Phases: 214: West Drive & William Halton Parkway



Lane Group	EBT	EBR	WBL	WBT	NBL
Lane Group Flow (vph)	1233	67	52	1158	439
v/c Ratio	0.77	0.09	0.39	0.72	0.80
Control Delay	18.3	3.7	23.0	16.7	28.0
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	18.3	3.7	23.0	16.7	28.0
Queue Length 50th (m)	53.0	0.0	3.4	48.3	36.9
Queue Length 95th (m)	#87.9	5.6	#16.0	76.5	#65.1
Internal Link Dist (m)	431.4			161.8	122.7
Turn Bay Length (m)		50.0	50.0		
Base Capacity (vph)	1600	752	133	1600	687
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	0.77	0.09	0.39	0.72	0.64

Intersection Summary

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

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	1134	62	48	1065	37	367
Future Volume (vph)	1134	62	48	1065	37	367
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0	6.0	6.0	6.0	6.0	
Lane Util. Factor	0.95	1.00	1.00	0.95	1.00	
Frt	1.00	0.85	1.00	1.00	0.88	
Flt Protected	1.00	1.00	0.95	1.00	1.00	
Satd. Flow (prot)	3539	1583	1770	3539	1627	
Flt Permitted	1.00	1.00	0.16	1.00	1.00	
Satd. Flow (perm)	3539	1583	296	3539	1627	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	1233	67	52	1158	40	399
RTOR Reduction (vph)	0	37	0	0	13	0
Lane Group Flow (vph)	1233	30	52	1158	426	0
Turn Type	NA	Perm	Perm	NA	Prot	
Protected Phases	4			8	2	
Permitted Phases		4	8			
Actuated Green, G (s)	25.2	25.2	25.2	25.2	18.4	
Effective Green, g (s)	25.2	25.2	25.2	25.2	18.4	
Actuated g/C Ratio	0.45	0.45	0.45	0.45	0.33	
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)	1604	717	134	1604	538	
v/s Ratio Prot	c0.35			0.33	c0.26	
v/s Ratio Perm		0.02	0.18			
v/c Ratio	0.77	0.04	0.39	0.72	0.79	
Uniform Delay, d1	12.8	8.5	10.1	12.4	16.9	
Progression Factor	1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	3.6	0.1	8.3	2.8	7.8	
Delay (s)	16.4	8.6	18.4	15.2	24.7	
Level of Service	B	A	B	B	C	
Approach Delay (s)	16.0			15.3	24.7	
Approach LOS	B			B	C	

Intersection Summary

HCM 2000 Control Delay	17.0	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.78		
Actuated Cycle Length (s)	55.6	Sum of lost time (s)	12.0
Intersection Capacity Utilization	74.6%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	70	10	10	32	70	14	87	16	163	22	10	10
Future Volume (vph)	70	10	10	32	70	14	87	16	163	22	10	10
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.985			0.984			0.917			0.968	
Flt Protected		0.963			0.986			0.984			0.975	
Satd. Flow (prot)	0	1767	0	0	1807	0	0	1681	0	0	1758	0
Flt Permitted		0.963			0.986			0.984			0.975	
Satd. Flow (perm)	0	1767	0	0	1807	0	0	1681	0	0	1758	0
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		177.2			37.2			95.2			130.1	
Travel Time (s)		12.8			2.7			6.9			9.4	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	76	11	11	35	76	15	95	17	177	24	11	11
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	98	0	0	126	0	0	289	0	0	46	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		0.0			0.0			0.0			0.0	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Sign Control		Stop			Stop			Free			Free	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 35.5%		ICU Level of Service A	
Analysis Period (min) 15			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	70	10	10	32	70	14	87	16	163	22	10	10
Future Volume (Veh/h)	70	10	10	32	70	14	87	16	163	22	10	10
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	76	11	11	35	76	15	95	17	177	24	11	11
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	413	448	16	376	366	106	22			194		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	413	448	16	376	366	106	22			194		
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 %	83	98	99	93	85	98	94			98		
cM capacity (veh/h)	453	467	1063	532	520	949	1593			1379		

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	98	126	289	46
Volume Left	76	35	95	24
Volume Right	11	15	177	11
cSH	486	553	1593	1379
Volume to Capacity	0.20	0.23	0.06	0.02
Queue Length 95th (m)	5.6	6.5	1.4	0.4
Control Delay (s)	14.3	13.4	2.8	4.1
Lane LOS	B	B	A	A
Approach Delay (s)	14.3	13.4	2.8	4.1
Approach LOS	B	B		

Intersection Summary			
Average Delay	7.3		
Intersection Capacity Utilization	35.5%	ICU Level of Service	A
Analysis Period (min)	15		

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	7	236	168	36	88	22
Future Volume (vph)	7	236	168	36	88	22
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	0.869		0.976			
Flt Protected	0.998					0.962
Satd. Flow (prot)	1615	0	1818	0	0	1792
Flt Permitted	0.998					0.962
Satd. Flow (perm)	1615	0	1818	0	0	1792
Link Speed (k/h)	50		50			50
Link Distance (m)	177.2		106.7			146.7
Travel Time (s)	12.8		7.7			10.6
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	8	257	183	39	96	24
Shared Lane Traffic (%)						
Lane Group Flow (vph)	265	0	222	0	0	120
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(m)	3.6		0.0			0.0
Link Offset(m)	0.0		0.0			0.0
Crosswalk Width(m)	4.8		4.8			4.8
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)	25	15		15	25	
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)	7	236	168	36	88	22
Future Volume (Veh/h)	7	236	168	36	88	22
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	8	257	183	39	96	24
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (m)						147
pX, platoon unblocked						
vC, conflicting volume	418	202			222	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	418	202			222	
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	69			93	
cM capacity (veh/h)	549	838			1347	

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	265	222	120
Volume Left	8	0	96
Volume Right	257	39	0
cSH	825	1700	1347
Volume to Capacity	0.32	0.13	0.07
Queue Length 95th (m)	10.4	0.0	1.7
Control Delay (s)	11.4	0.0	6.4
Lane LOS	B		A
Approach Delay (s)	11.4	0.0	6.4
Approach LOS	B		

Intersection Summary			
Average Delay	6.3		
Intersection Capacity Utilization	42.1%	ICU Level of Service	A
Analysis Period (min)	15		

Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	75	119	100	190	32	10
Future Volume (vph)	75	119	100	190	32	10
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			0.912		0.968	
Flt Protected		0.981			0.963	
Satd. Flow (prot)	0	1827	1699	0	1736	0
Flt Permitted		0.981			0.963	
Satd. Flow (perm)	0	1827	1699	0	1736	0
Link Speed (k/h)		50	50		50	
Link Distance (m)		171.9	162.4		95.2	
Travel Time (s)		12.4	11.7		6.9	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	82	129	109	207	35	11
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	211	316	0	46	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(m)		0.0	0.0		3.6	
Link Offset(m)		0.0	0.0		0.0	
Crosswalk Width(m)		4.8	4.8		4.8	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)	25			15	25	15
Sign Control		Free	Free		Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 40.7%		ICU Level of Service A	
Analysis Period (min) 15			

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	75	119	100	190	32	10
Future Volume (Veh/h)	75	119	100	190	32	10
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	82	129	109	207	35	11
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		None	None			
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	316				506	212
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	316				506	212
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				93	99
cM capacity (veh/h)	1244				492	828

Direction, Lane #	EB 1	WB 1	SB 1
Volume Total	211	316	46
Volume Left	82	0	35
Volume Right	0	207	11
cSH	1244	1700	545
Volume to Capacity	0.07	0.19	0.08
Queue Length 95th (m)	1.6	0.0	2.1
Control Delay (s)	3.5	0.0	12.2
Lane LOS	A		B
Approach Delay (s)	3.5	0.0	12.2
Approach LOS			B

Intersection Summary			
Average Delay	2.3		
Intersection Capacity Utilization	40.7%	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)	90	28	9	50	39	78	24	36	200	9	7	13
Future Volume (vph)	90	28	9	50	39	78	24	36	200	9	7	13
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.990			0.937			0.896			0.941	
Flt Protected		0.966			0.985			0.995			0.985	
Satd. Flow (prot)	0	1781	0	0	1719	0	0	1661	0	0	1727	0
Flt Permitted		0.966			0.985			0.995			0.985	
Satd. Flow (perm)	0	1781	0	0	1719	0	0	1661	0	0	1727	0
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		278.9			171.9			294.6			106.7	
Travel Time (s)		20.1			12.4			21.2			7.7	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	98	30	10	54	42	85	26	39	217	10	8	14
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	138	0	0	181	0	0	282	0	0	32	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		0.0			0.0			0.0			0.0	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Sign Control		Stop			Stop			Stop			Stop	

Intersection Summary	
Area Type:	Other
Control Type: Unsignalized	
Intersection Capacity Utilization 36.8%	ICU Level of Service A
Analysis Period (min) 15	

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Stop			Stop	
Traffic Volume (vph)	90	28	9	50	39	78	24	36	200	9	7	13
Future Volume (vph)	90	28	9	50	39	78	24	36	200	9	7	13
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	98	30	10	54	42	85	26	39	217	10	8	14

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total (vph)	138	181	282	32
Volume Left (vph)	98	54	26	10
Volume Right (vph)	10	85	217	14
Hadj (s)	0.13	-0.19	-0.41	-0.17
Departure Headway (s)	5.0	4.6	4.3	4.9
Degree Utilization, x	0.19	0.23	0.34	0.04
Capacity (veh/h)	667	723	787	663
Control Delay (s)	9.2	9.0	9.5	8.1
Approach Delay (s)	9.2	9.0	9.5	8.1
Approach LOS	A	A	A	A

Intersection Summary			
Delay	9.2		
Level of Service	A		
Intersection Capacity Utilization	36.8%	ICU Level of Service	A
Analysis Period (min)	15		

Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	55	663	760	205	23	43
Future Volume (vph)	55	663	760	205	23	43
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (m)	50.0			0.0	0.0	0.0
Storage Lanes	1			0	1	0
Taper Length (m)	90.0				7.5	
Lane Util. Factor	1.00	0.95	0.95	0.95	1.00	1.00
Frt			0.968		0.912	
Flt Protected	0.950				0.983	
Satd. Flow (prot)	1770	3539	3426	0	1670	0
Flt Permitted	0.950				0.983	
Satd. Flow (perm)	1770	3539	3426	0	1670	0
Link Speed (k/h)		60	50		50	
Link Distance (m)		506.3	322.3		294.6	
Travel Time (s)		30.4	23.2		21.2	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	60	721	826	223	25	47
Shared Lane Traffic (%)						
Lane Group Flow (vph)	60	721	1049	0	72	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(m)		3.6	3.6		3.6	
Link Offset(m)		0.0	0.0		0.0	
Crosswalk Width(m)		4.8	4.8		4.8	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)	25			15	25	15
Sign Control		Free	Free		Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	44.8%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	55	663	760	205	23	43
Future Volume (Veh/h)	55	663	760	205	23	43
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	60	721	826	223	25	47
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		None	None			
Median storage veh)						
Upstream signal (m)			322			
pX, platoon unblocked	0.88				0.88	0.88
vC, conflicting volume	1049				1418	524
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	793				1211	200
tC, single (s)	4.1				6.8	6.9
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	92				82	93
cM capacity (veh/h)	728				142	714

Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	SB 1
Volume Total	60	360	360	551	498	72
Volume Left	60	0	0	0	0	25
Volume Right	0	0	0	0	223	47
cSH	728	1700	1700	1700	1700	298
Volume to Capacity	0.08	0.21	0.21	0.32	0.29	0.24
Queue Length 95th (m)	2.0	0.0	0.0	0.0	0.0	7.0
Control Delay (s)	10.4	0.0	0.0	0.0	0.0	20.9
Lane LOS	B					C
Approach Delay (s)	0.8			0.0		20.9
Approach LOS						C

Intersection Summary			
Average Delay	1.1		
Intersection Capacity Utilization	44.8%	ICU Level of Service	A
Analysis Period (min)	15		