



I/O Highway 407 & Trafalgar Road, Oakville, ON Transportation Impact Study

Paradigm Transportation Solutions Limited

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Project Summary



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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).

Two separate illustrative development scenarios have been prepared:

- ▶ Scenario A – 70% Residential Focus; and
- ▶ Scenario B – 50% Employment Focus.

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 at the following intersections:
 - Trafalgar Rad and Lower Base Line;
 - Trafalgar Road and Highway 407 Eastbound Off-Ramp;
 - Trafalgar Road and William Halton Parkway; and
 - Trafalgar Road and Burnhamthorpe Road.
- ▶ **Estimated Site Generated Traffic:** The subject site, following build-out, is estimated to generate approximately 3,129 vehicle trips during the AM peak hour and 5,823 vehicle trips during the PM peak hour for Scenario A, and approximately 4,107 vehicle trips during the AM peak hour and 6,088 vehicle trips during the PM peak hour.
- ▶ **Background Traffic Operations:** As the traffic volumes increase at the study area intersections, capacity issues continue. Capacity issues are identified at the following intersections:
 - Trafalgar Rad and Lower Base Line;
 - Trafalgar Road and Highway 407 Eastbound Off-Ramp;
 - Trafalgar Road and GO Carpool lot;
 - Trafalgar Road and William Halton Parkway; and
 - Trafalgar Road and Burnhamthorpe Road.
- ▶ **Total Traffic Operations:** The capacity deficiencies identified under background conditions will continue to occur with the addition of site generated traffic. Site generated traffic results in capacity deficiencies at the following intersections:
 - Trafalgar Rad and Lower Base Line;
 - Trafalgar Road and Highway 407 Westbound Off-Ramp;
 - Trafalgar Road and Highway 407 Eastbound Off-Ramp;
 - Trafalgar Road and Street A (formerly the GO Carpool lot);
 - Trafalgar Road and William Halton Parkway; and
 - Trafalgar Road and Burnhamthorpe Road.
- ▶ It is noted under background (without subject development) traffic conditions, operational issues are noted at the study area



intersections. With the addition of site-generated traffic, the intersection operations are estimated to become even more congested.

- ▶ The level of development proposed results in poor operations throughout the network. The transportation network cannot support the development without major infrastructure improvements to increase capacity, significant shift towards alternative mode support, or reduction in density.

Recommendations

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

- ▶ Each separate development Block have a detailed Transportation Impact Study and Transit Facilities Plan prepared prior to approval.
- ▶ 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.

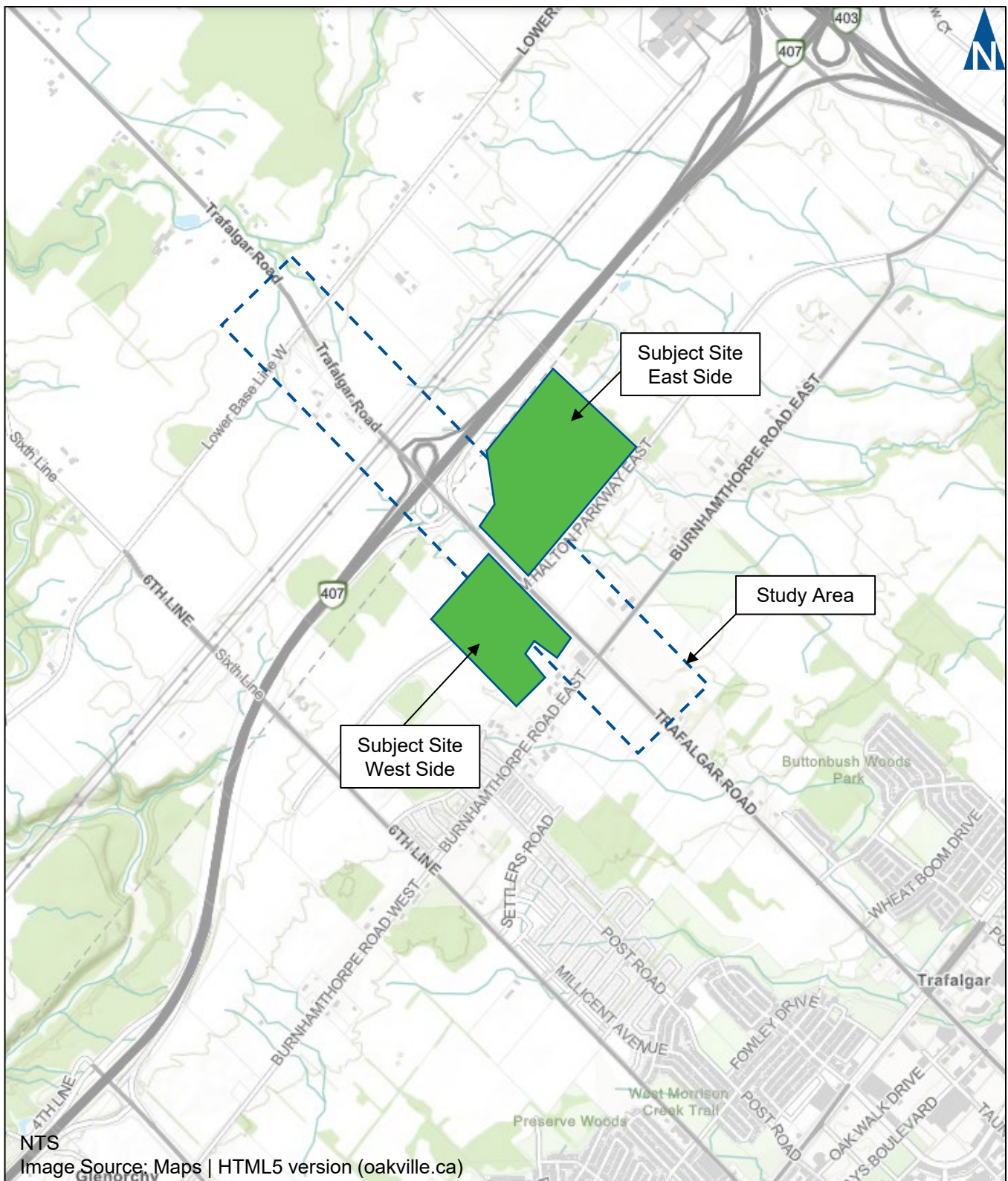
The study scope was developed in consultation with the Town of Oakville, Halton Region, and the Ministry of Transportation, Ontario (MTO) in June 2021. **Appendix A** contains the pre-study consultation material and responses from the review agencies.

The study has been completed using Halton Region Transportation Impact Study Guidelines¹ and the North Oakville Transportation Impact Study Reference².

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





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:

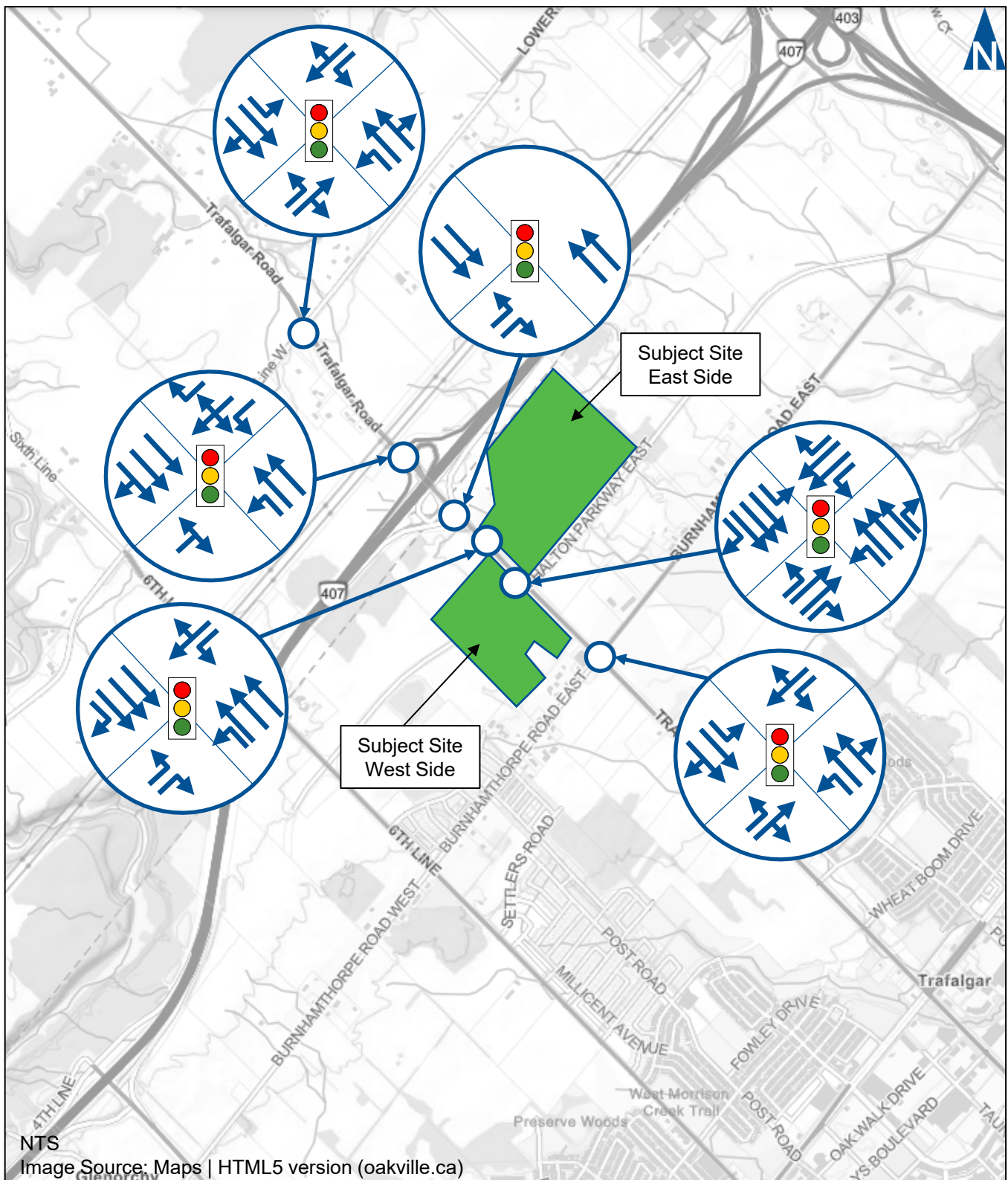
- ▶ **Highway 407** is an east-west tolled limited access highway with a posted speed limit of 100 km/h.

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 it 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.





2.2 Transit Service

GO Transit³ 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 corridor⁴ 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 Transitway⁵ 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 Transit⁶ 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

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. With the exception of Highway 407, cyclists are permitted to ride on the roadways within the study area.

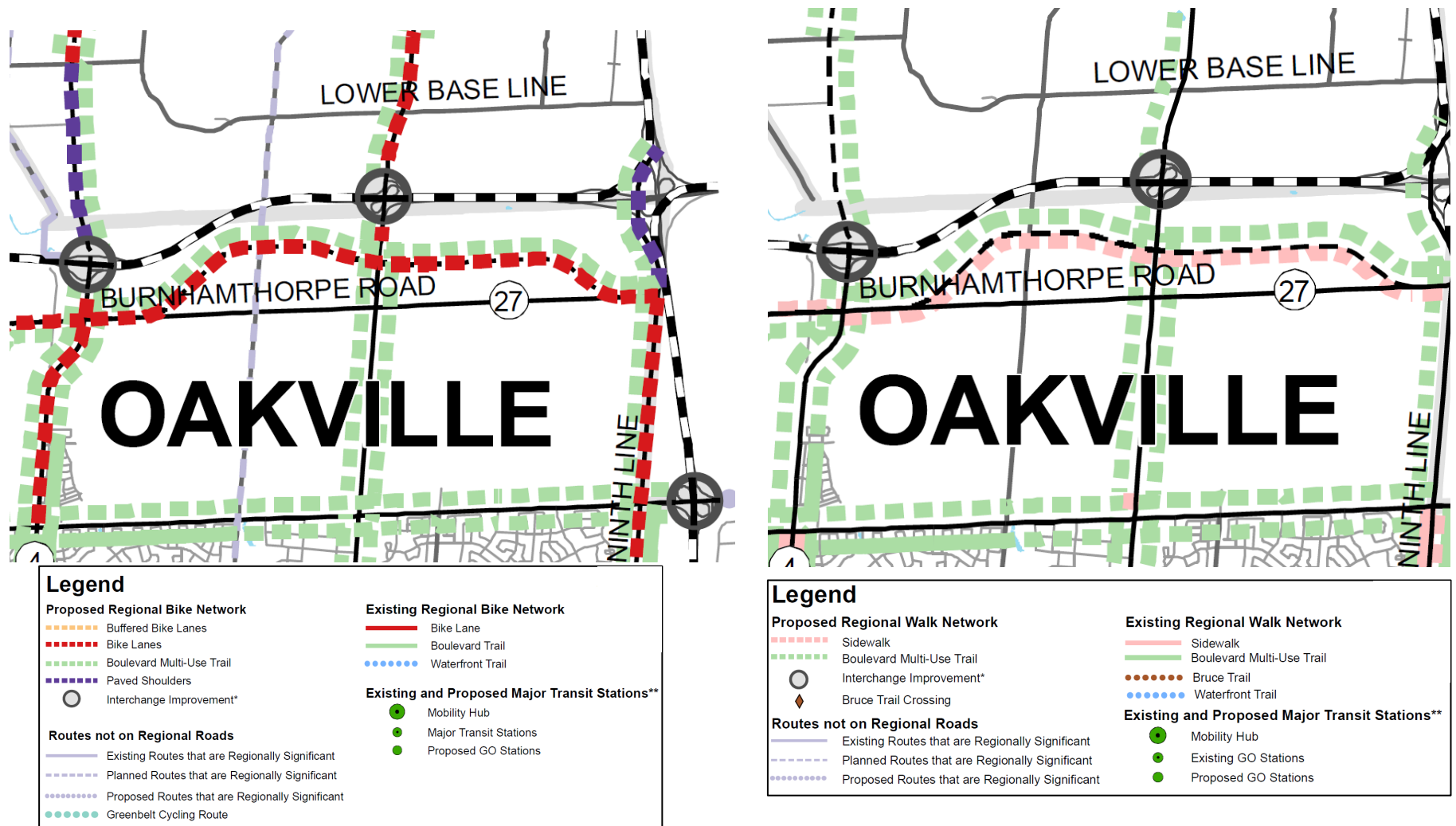
2.3.3 Proposed Network

The Halton Region Active Transportation Master Plan⁷ 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



Proposed Active Transportation network

10 Trafalgar & 407 Oakville, ON T1S
210156/210157

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

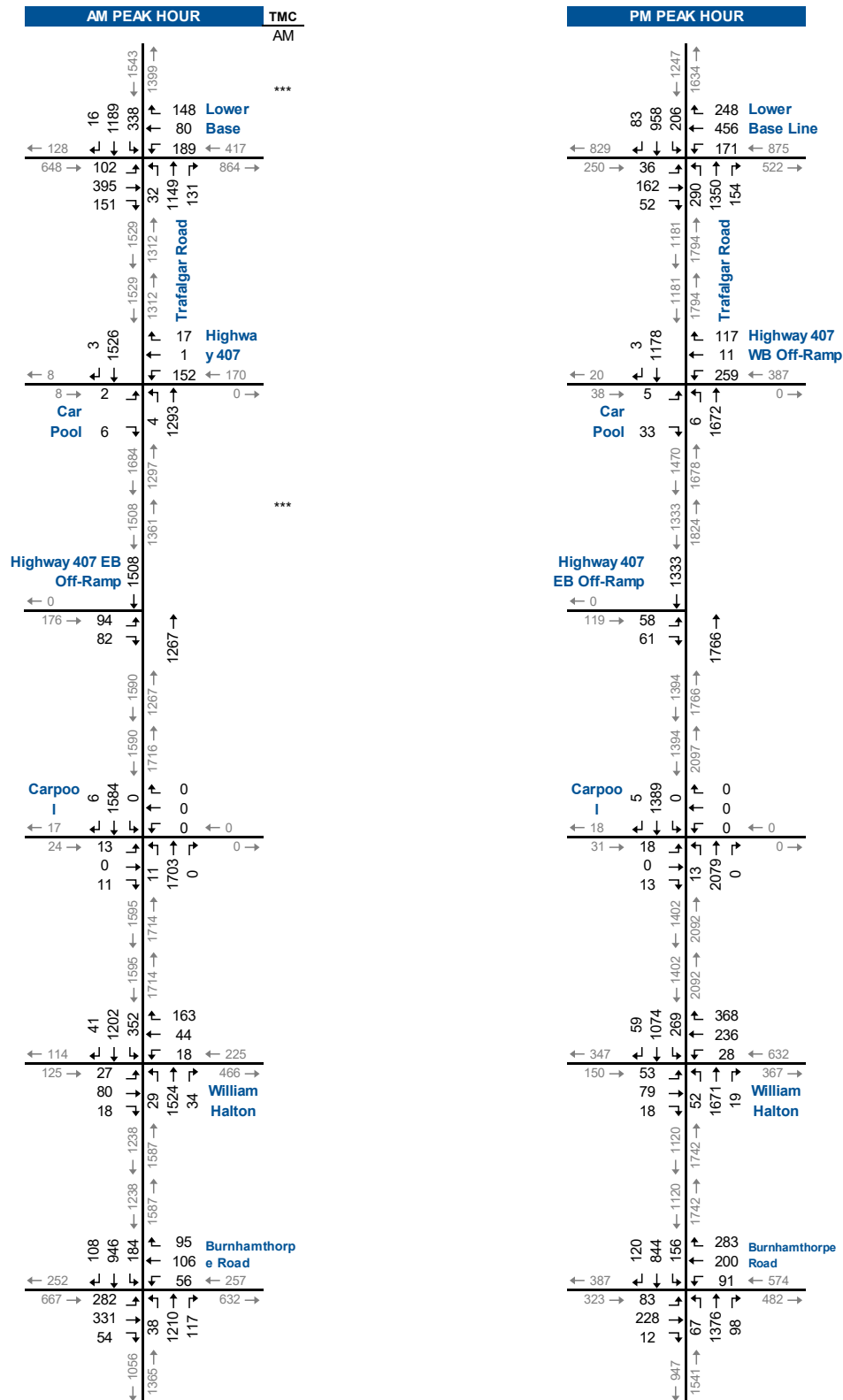
The 2019 turning movement counts were factored to a 2021 base year using a 2% growth rate (provided by review agencies). Volume balancing between intersections was done to provide consistent traffic volumes through the study area intersections.

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 as a result 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.





2.4.1 Daily Volumes

Table 2.2 shows the daily traffic volumes on the study area road network. The daily traffic volumes are 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: Classification 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 a number of 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 10 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.
 - Northbound through/right-turn – LOS F and v/c ratio greater than 1.00 during AM peak hour.

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

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

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).

Two separate illustrative development illustrative scenarios have been prepared:

- ▶ Scenario A – 70% Residential Focus; and
- ▶ Scenario B – 50% Employment Focus.

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 for both Scenario A and Scenario B. **Figure 3.1** illustrates the concept plan for Scenario A. **Figure 3.2** illustrates the concept plan for Scenario B.

For the 2031 horizon year, for both Scenario A and Scenario B, it is assumed that Blocks 1, 2, 3 and 6 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 the purpose of 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

Scenario	Block	Land Use	Towers	Area (m2)	GFA (m2)	Res GFA	Res Units	Emp GFA (m2)	Emp GFA (ft2)	Emp. Employees
A	1	Mixed	High Rise	45,087	118,380	82,866	948	35,514	382,269	1,776
	2	Mixed	High Rise	29,290	105,492	73,844	845	31,648	340,656	1,582
	3	Mixed	High Rise	29,540	134,596	94,217	1,078	40,379	434,636	2,019
	4	Mixed	Mid-Rise	23,772	63,440	44,408	508	19,032	204,859	952
	5	Mixed	Mid-Rise	21,833	47,380	33,166	379	14,214	152,998	711
	6	Mixed	High Rise	27,701	70,728	49,510	566	21,218	228,389	1,061
	7	Mixed	High Rise	14,928	42,047	29,433	337	12,614	135,776	631
	8	Mixed	Mid-Rise	18,731	40,955	28,669	328	12,286	132,245	614
	9	Mixed	Mid-Rise	18,655	39,081	27,357	313	11,724	126,196	586
	10	Mixed	Mid-Rise	19,167	30,453	21,317	244	9,136	98,339	457
	11	Res.	Mid-Rise	14,654	14,531	14,531	166	-	-	-
Scenario A Total				263,358	707,083	499,318	5,712	207,765	2,236,364	10,389
B	1	Mixed	High Rise	45,087	118,380	59,190	676	59,190	637,116	2,960
	2	Mixed	High Rise	29,290	105,492	52,746	602	52,746	567,753	2,637
	3	Mixed	High Rise	29,540	134,596	67,298	769	67,298	724,390	3,365
	4	Mixed	Mid-Rise	23,772	63,440	31,720	362	31,720	341,431	1,586
	5	Mixed	Mid-Rise	21,833	47,352	23,676	270	23,676	254,846	1,184
	6	Mixed	High Rise	27,701	70,728	35,364	404	35,364	380,655	1,768
	7	Mixed	High Rise	14,928	42,047	21,024	240	21,023	226,290	1,051
	8	Mixed	Mid-Rise	18,731	38,583	19,292	220	19,291	207,647	965
	9	Mixed	Mid-Rise	18,655	39,069	19,535	223	19,534	210,262	977
	10	Mixed	Mid-Rise	19,167	31,537	15,769	180	15,768	169,725	788
	11	Emp.		14,654	20,160	-	-	20,160	217,000	1,008
Scenario B Total				263,358	711,384	345,614	3,946	365,770	3,937,115	18,289





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Scenario A Illustrative Concept Plan

IO Trafalgar & 407 Oakville, ON TIS
210156/210157

Figure 3.1



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3.2 Trip Generation

The Institute of Transportation Engineers (ITE) Trip Generation⁹ methods predict the site trip generation. The following land use codes were used to estimate the site's trip generation:

- ▶ LUC 221 – Multifamily Housing, Mid-Rise (Dwelling Units);
- ▶ LUC 222 – Multifamily Housing, High-Rise (Dwelling Units)
- ▶ LUC 710 – General Office Building (GFA/1,000ft²); and
- ▶ LUC 820 – Shopping Center (GFA/1,000ft²).

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.

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 for Scenario A. **Table 3.3** summarizes the estimated trip generation for Scenario B. **Appendix D** contains the detailed trip generation calculations for both scenarios. Scenario A is forecast to generate approximately 3,129 vehicle trips during the AM peak hour and 5,823 vehicle trips during the PM peak hour. Scenario B is forecast to generate 4,107 vehicle trips during the AM peak hour and 6,088 vehicle trips during the PM peak hour. Scenario B generates approximately 978 vehicles trips more than Scenario A during the AM peak hour and 265 vehicle trips during the PM peak hour.

⁹ Trip Generation Manual 10th Edition Institute of Transportation Engineers, Washington DC, September 2017



TABLE 3.2: TRIP GENERATION SUMMARY – SCENARIO A

Block	AM Peak Hour			PM Peak Hour		
	In	Out	Total	In	Out	Total
1	298	211	509	301	422	723
2	270	187	457	269	382	651
3	339	239	578	269	215	484
4	169	130	299	273	218	491
5	127	98	225	269	218	487
6	179	129	308	269	215	484
7	108	79	187	269	215	484
8	110	84	194	273	218	491
9	104	79	183	269	218	487
10	80	61	141	273	218	491
11	13	35	48	308	242	550
Total	1,797	1,332	3,129	3,042	2,781	5,823

TABLE 3.3: TRIP GENERATION SUMMARY – SCENARIO B

Block	AM Peak Hour			PM Peak Hour		
	In	Out	Total	In	Out	Total
1	457	202	659	356	619	975
2	407	180	587	318	551	869
3	513	241	754	405	702	1,107
4	251	117	368	201	339	540
5	184	87	271	153	254	407
6	274	123	397	214	371	585
7	164	76	240	131	221	352
8	154	73	227	124	207	331
9	154	74	228	128	209	337
10	125	59	184	101	169	270
11	156	36	192	103	212	315
Total	2,839	1,268	4,107	2,234	3,854	6,088



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.

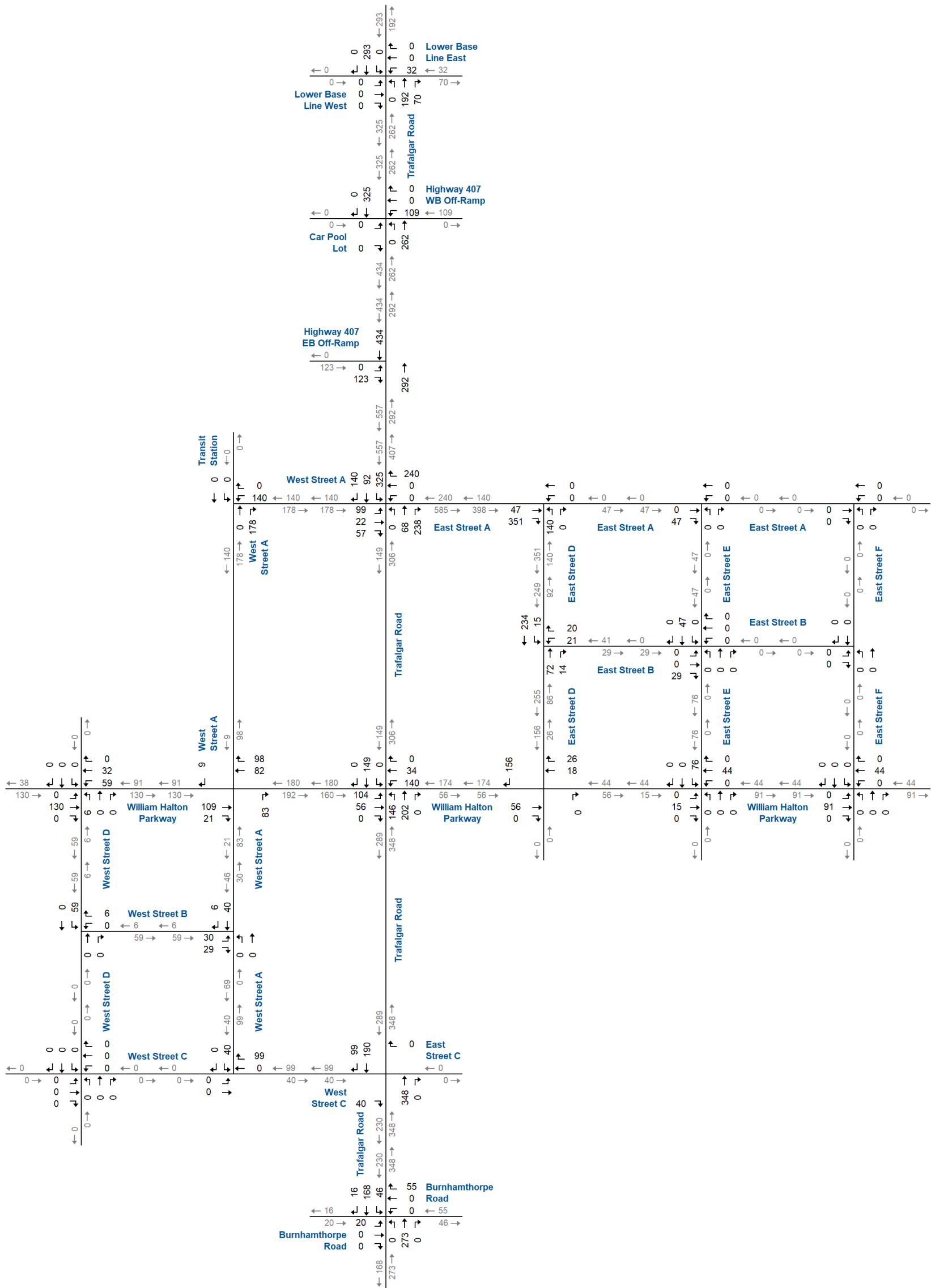
TABLE 3.4: TRIP DISTRIBUTION

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%

For Scenario A, **Figure 3.3A** and **Figure 3.3B** illustrates the 2031 site generated traffic volumes. **Figure 3.4A** and **Figure 3.4B** illustrates the 2041 site generated traffic volumes

For Scenario B, **Figure 3.5A** and **Figure 3.5B** illustrates the 2031 site generated traffic volumes. **Figure 3.6A** and **Figure 3.6B** illustrates the 2041 site generated traffic volumes

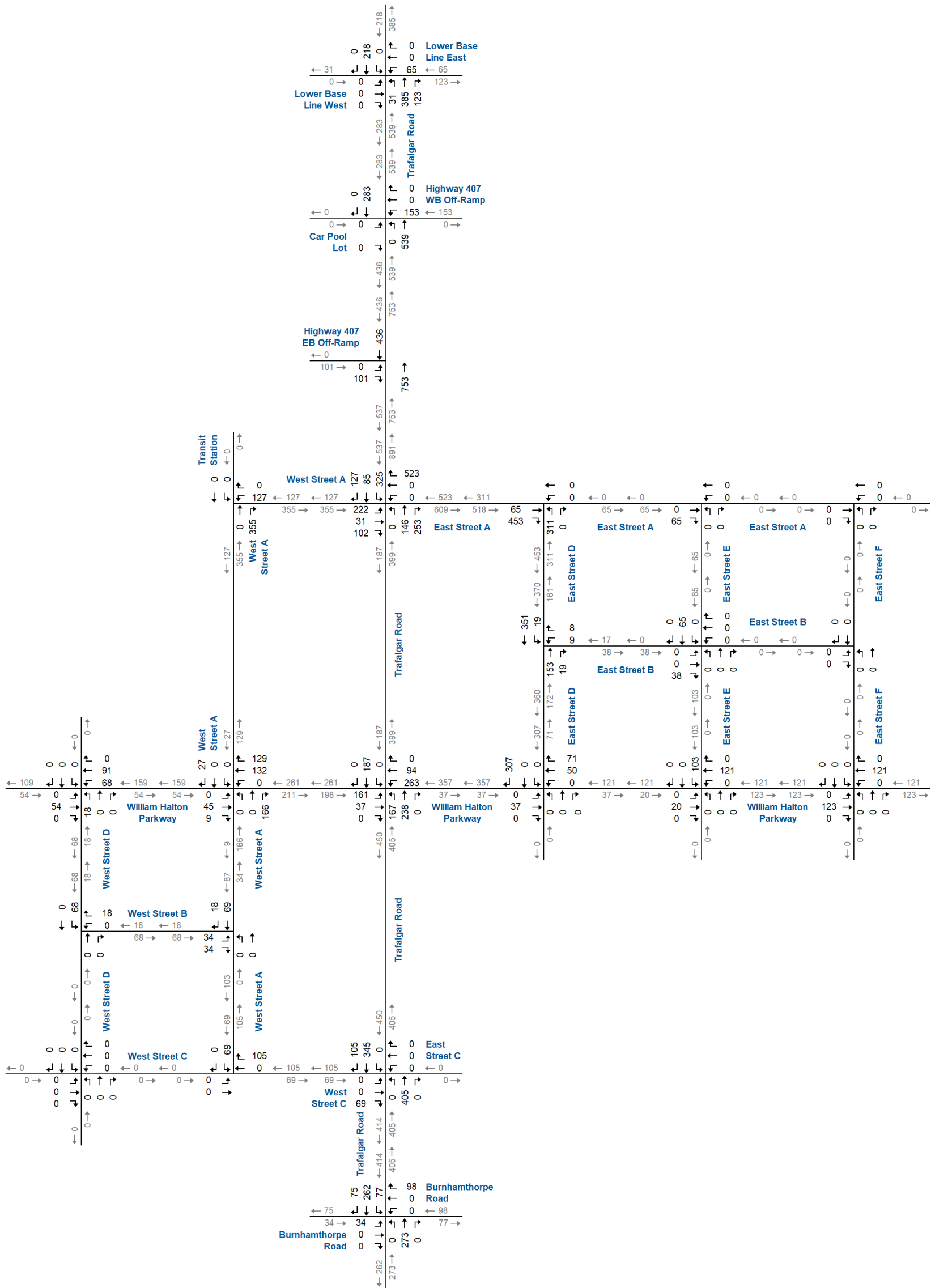




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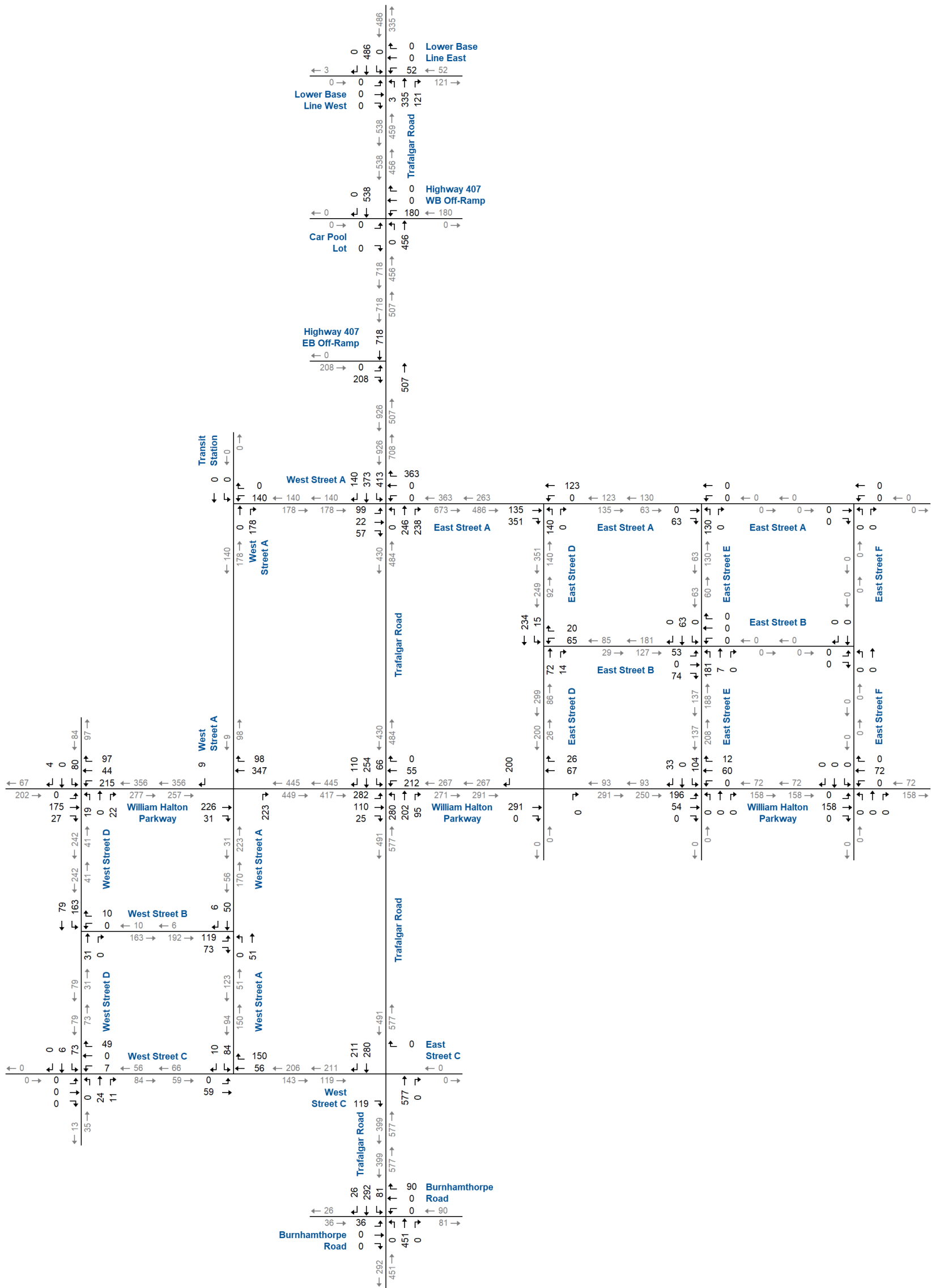
Scenario A 2031 Site Generated Traffic Volumes – AM Peak Hour



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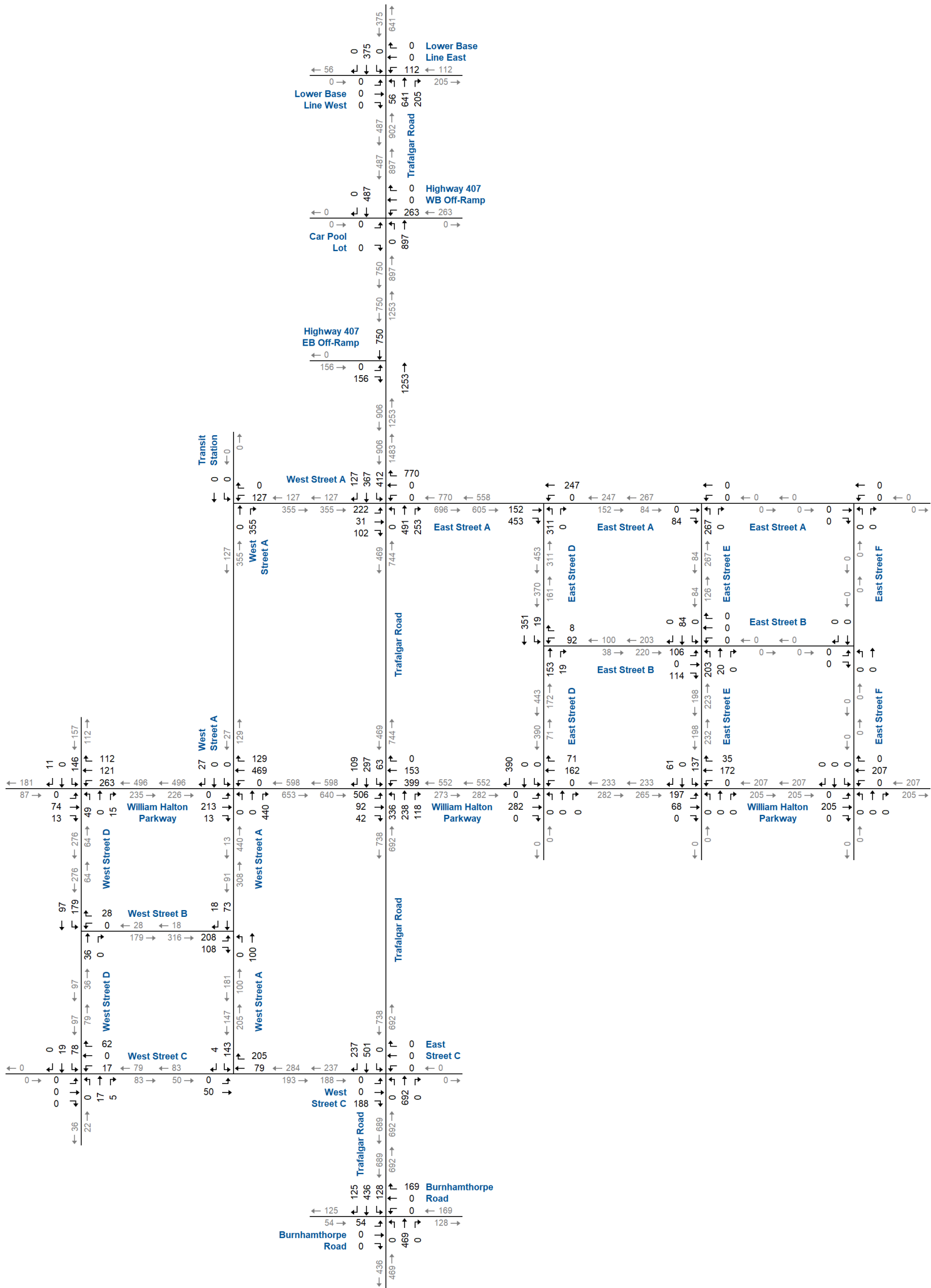
Scenario A 2031 Site Generated Traffic Volumes – PM Peak Hour



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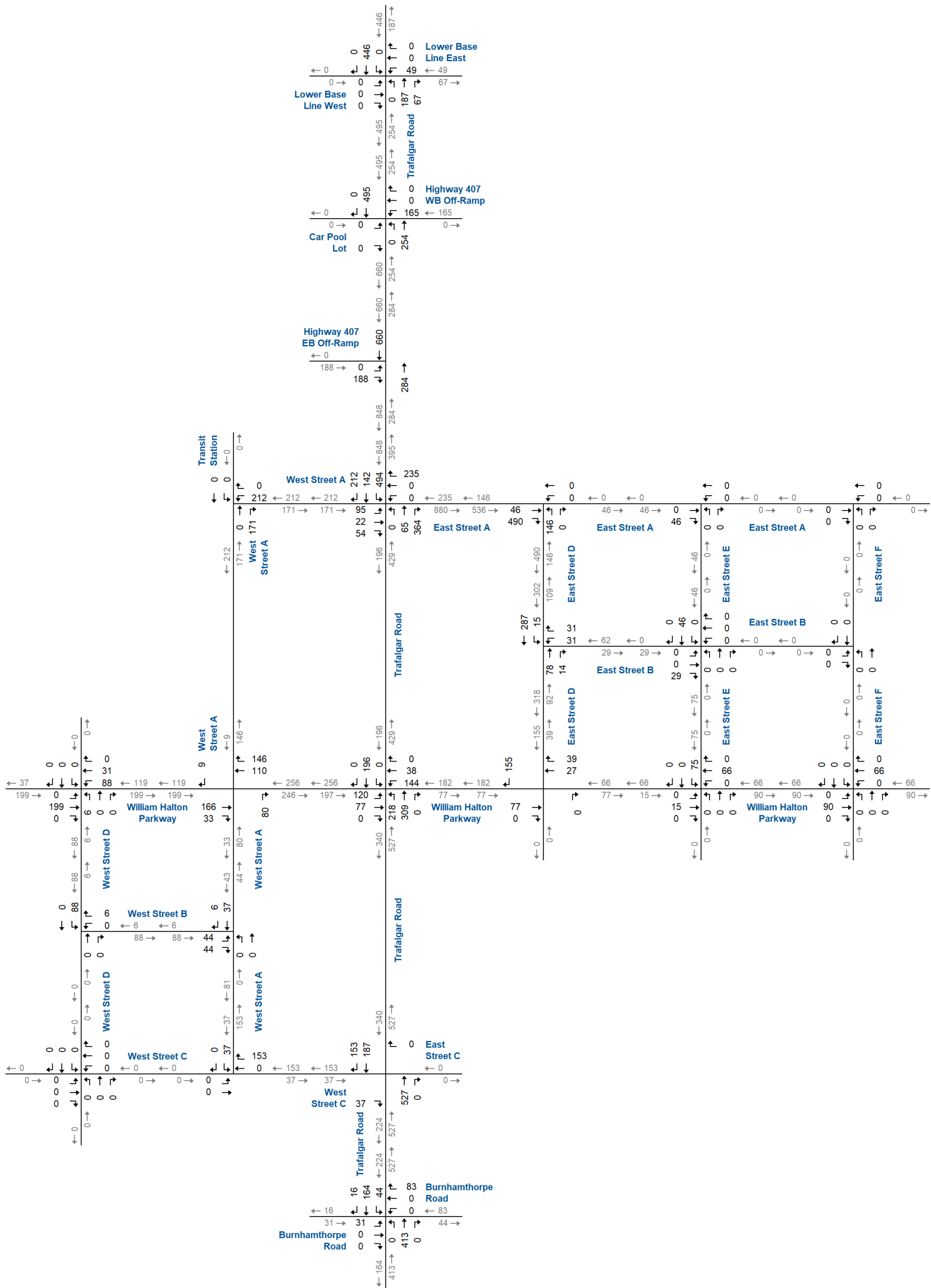
Scenario A 2041 Site Generated Traffic Volumes – AM Peak Hour



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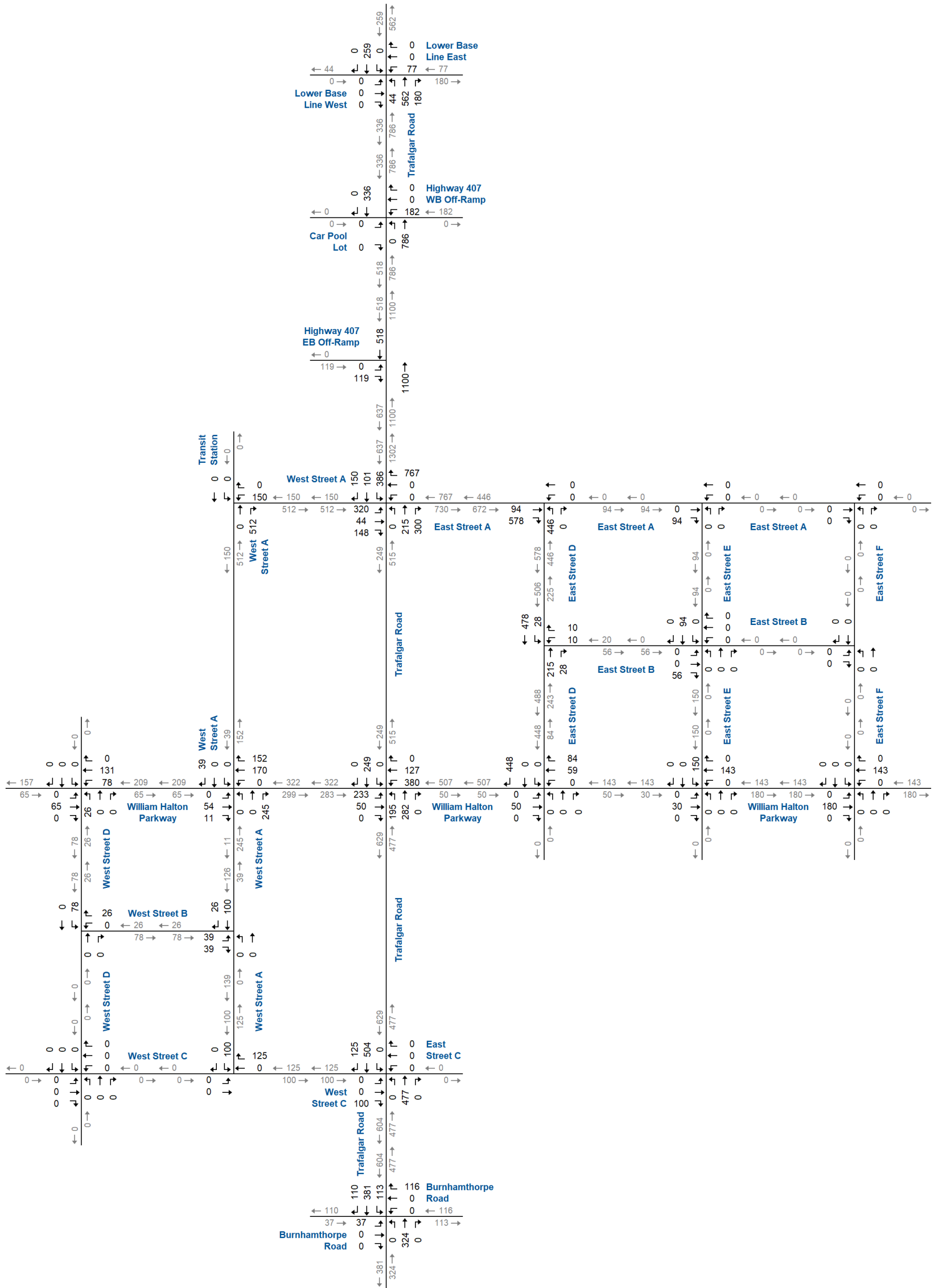
Scenario A 2041 Site Generated Traffic Volumes – PM Peak Hour



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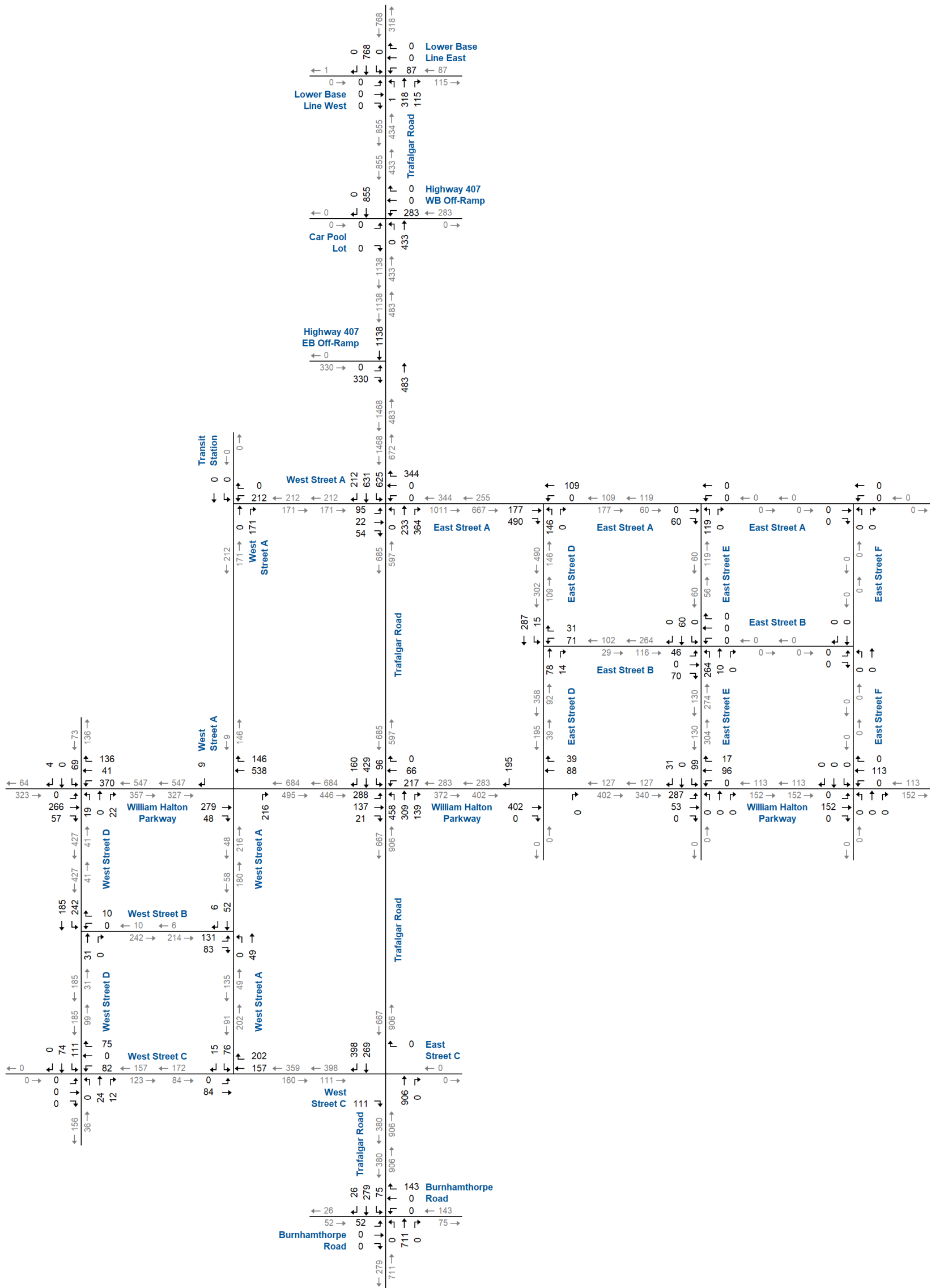
Scenario B 2031 Site Generated Traffic Volumes – AM Peak Hour



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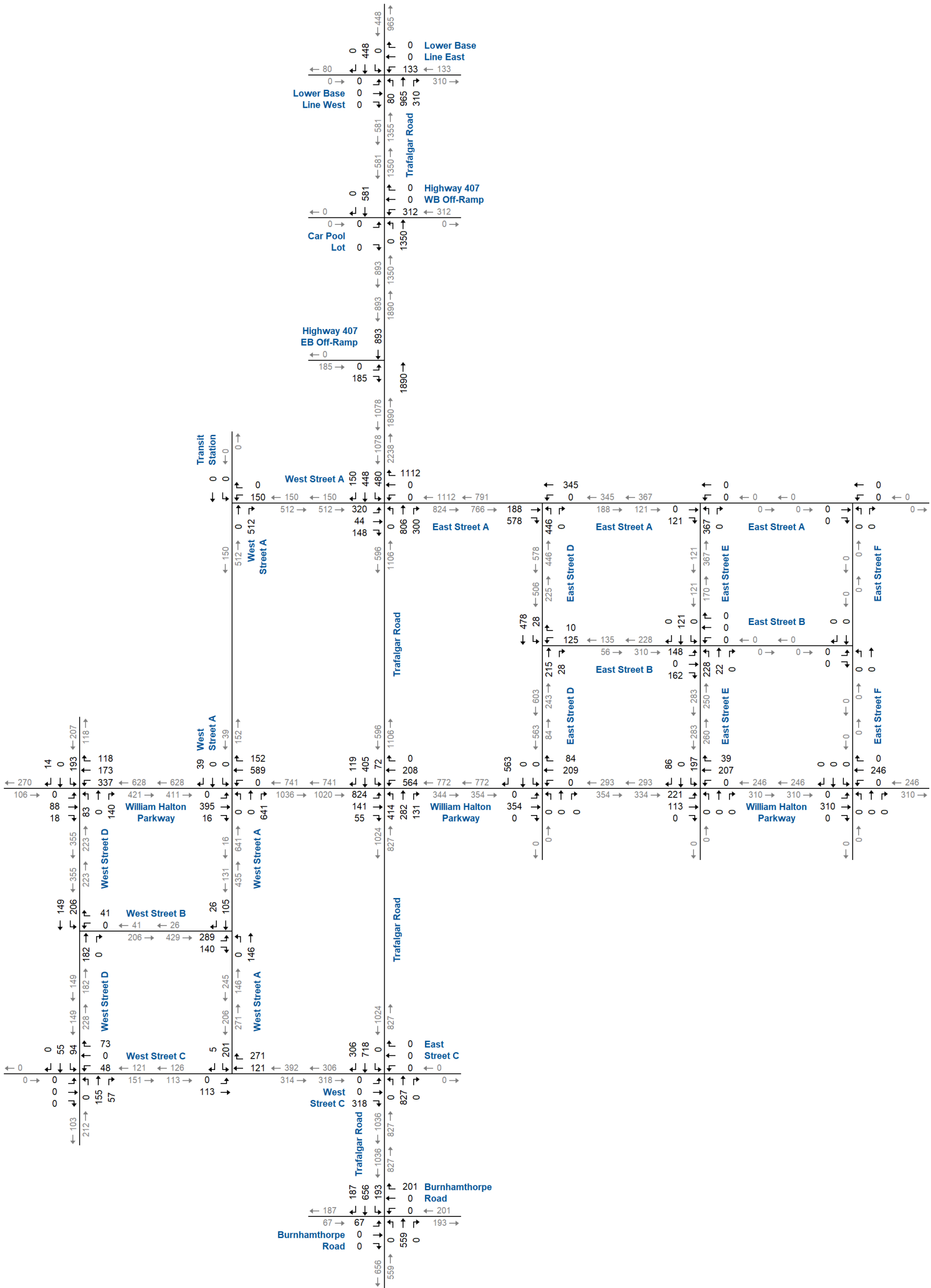
Scenario B 2031 Site Generated Traffic Volumes – PM Peak Hour



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Scenario B 2041 Site Generated Traffic Volumes – AM Peak Hour



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Scenario B 2041 Site Generated Traffic Volumes – PM Peak Hour

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 Transitway¹⁰ 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 Street¹¹ 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 Move¹² 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; and

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



- Traffic generated by the subject site.

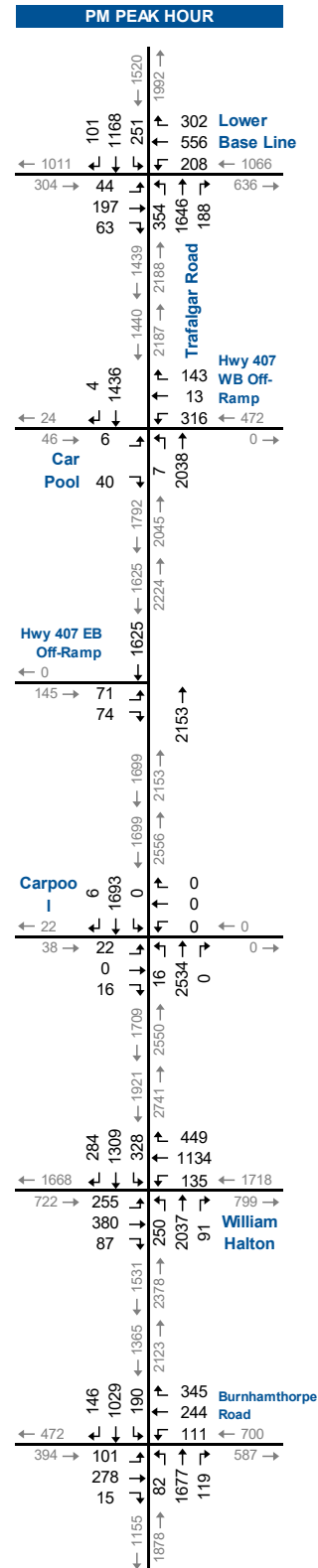
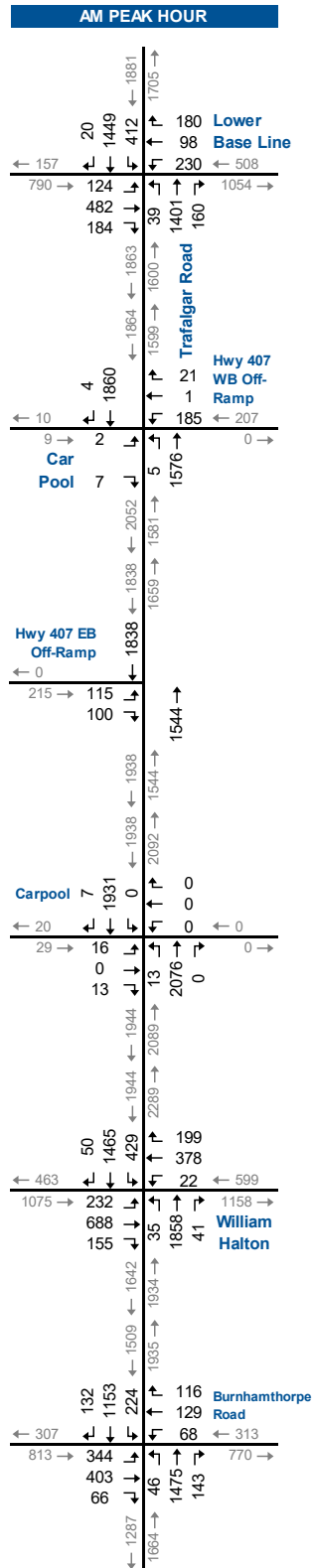
No background developments were included in the future traffic forecasts.

For William Halton Parkway, Halton Region provided 2031 demand model forecasts volumes for the AM and PM peak hour. The existing traffic volumes were increased to match the 2031 demand forecast model outputs. This resulted in growing the William Halton Parkway traffic volumes by 24% per annum in the AM peak hour 17% per annum in the PM peak hour to match. For the 2041 horizon year, all 2031 traffic volumes used a 2% per annum growth rate.

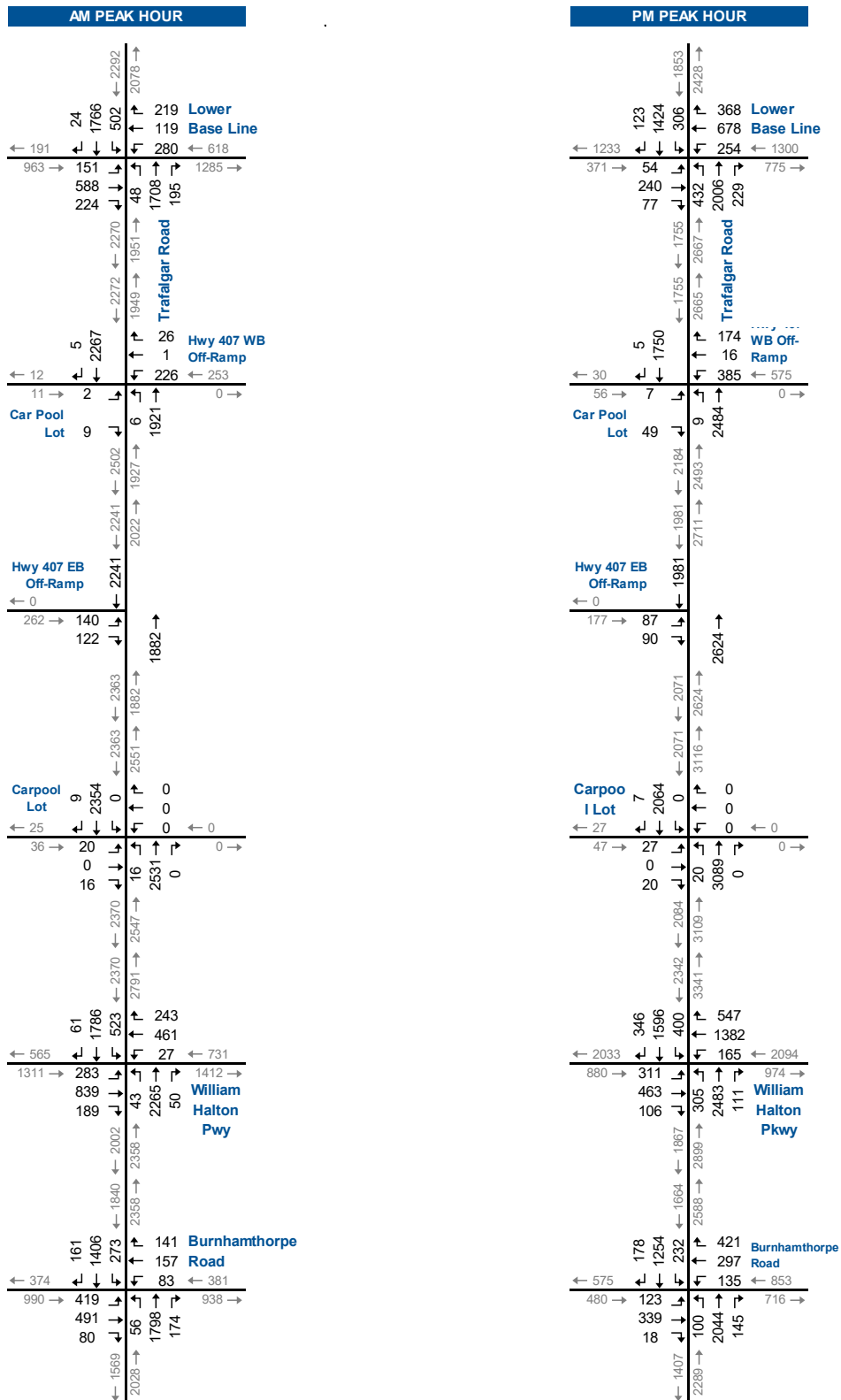
Figure 4.1 illustrates the forecast background 2031 traffic volumes. **Figure 4.2** illustrates the forecast background 2041 traffic volumes.

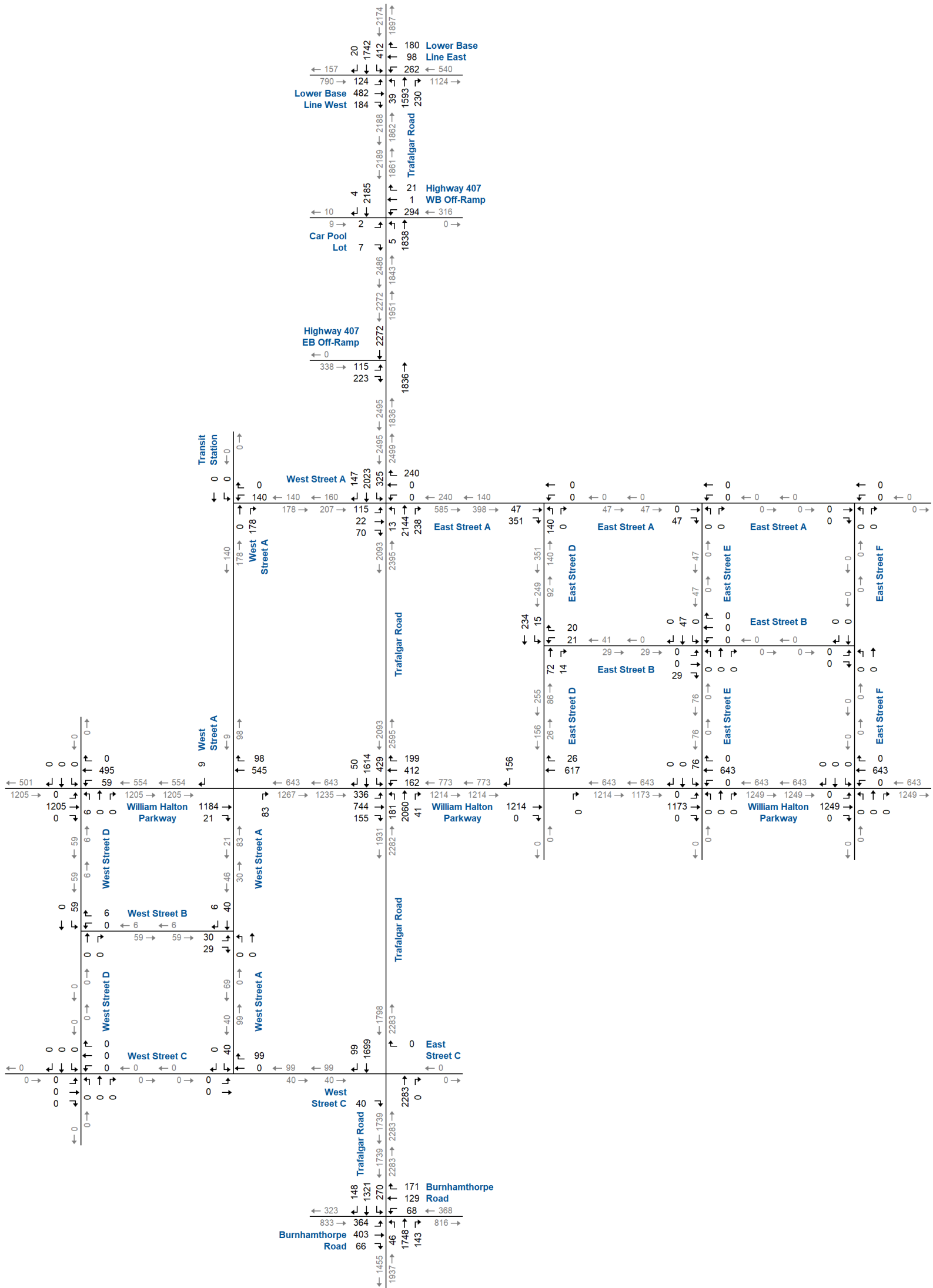
Figure 4.3A and **Figure 4.3B** illustrates the forecast Total 2031 traffic volumes for Scenario A. **Figure 4.4A** and **Figure 4.4B** illustrates the forecast Total 2031 traffic volumes for Scenario B. **Figure 4.5A** and **Figure 4.5B** illustrates the forecast Total 2041 traffic volumes for Scenario A. **Figure 4.6A** and **Figure 4.6B** illustrates the forecast Total 2041 traffic volumes for Scenario B.





2031 Background Traffic Volumes

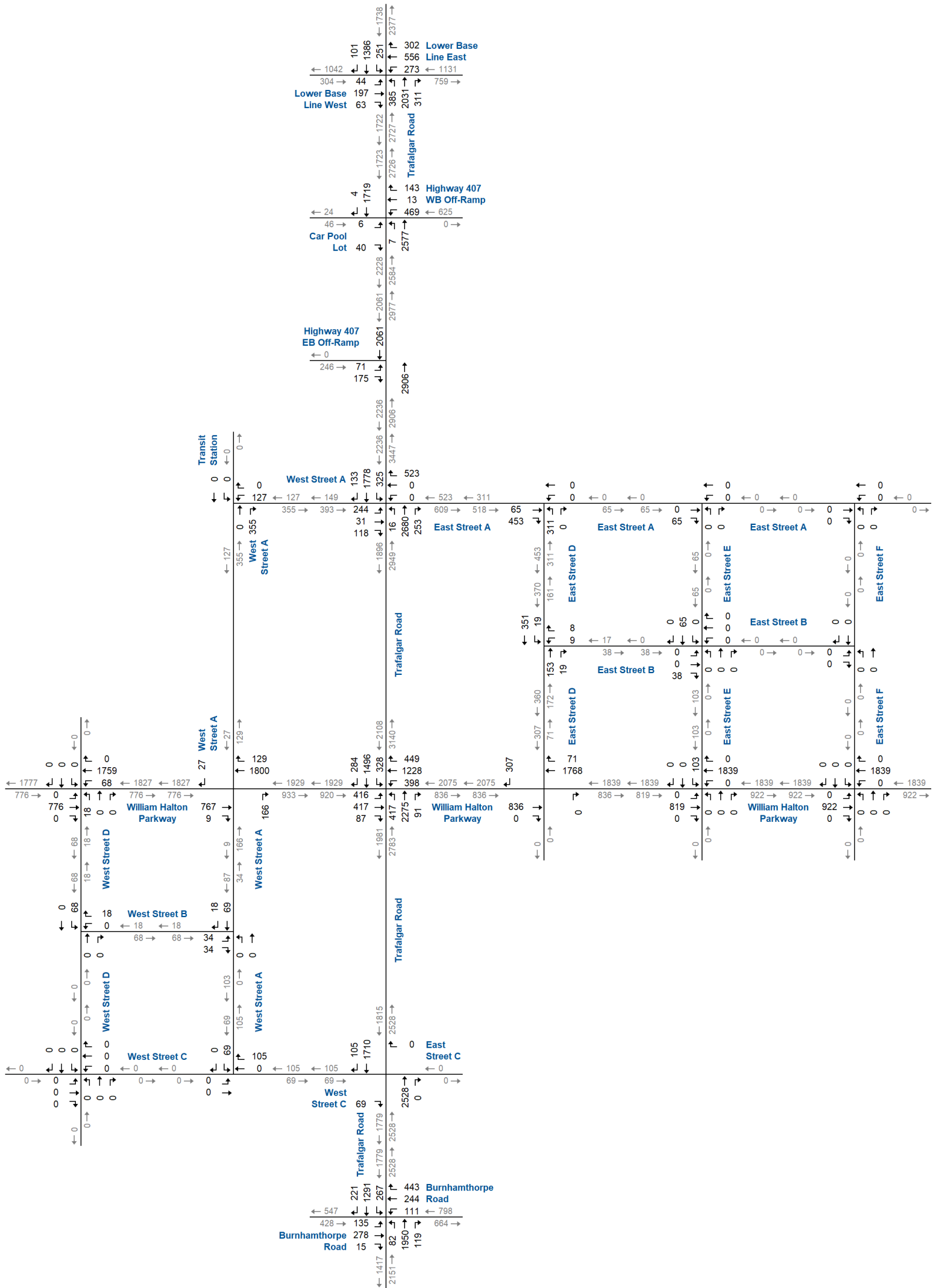




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Scenario A 2031 Total Traffic Volumes – AM Peak Hour

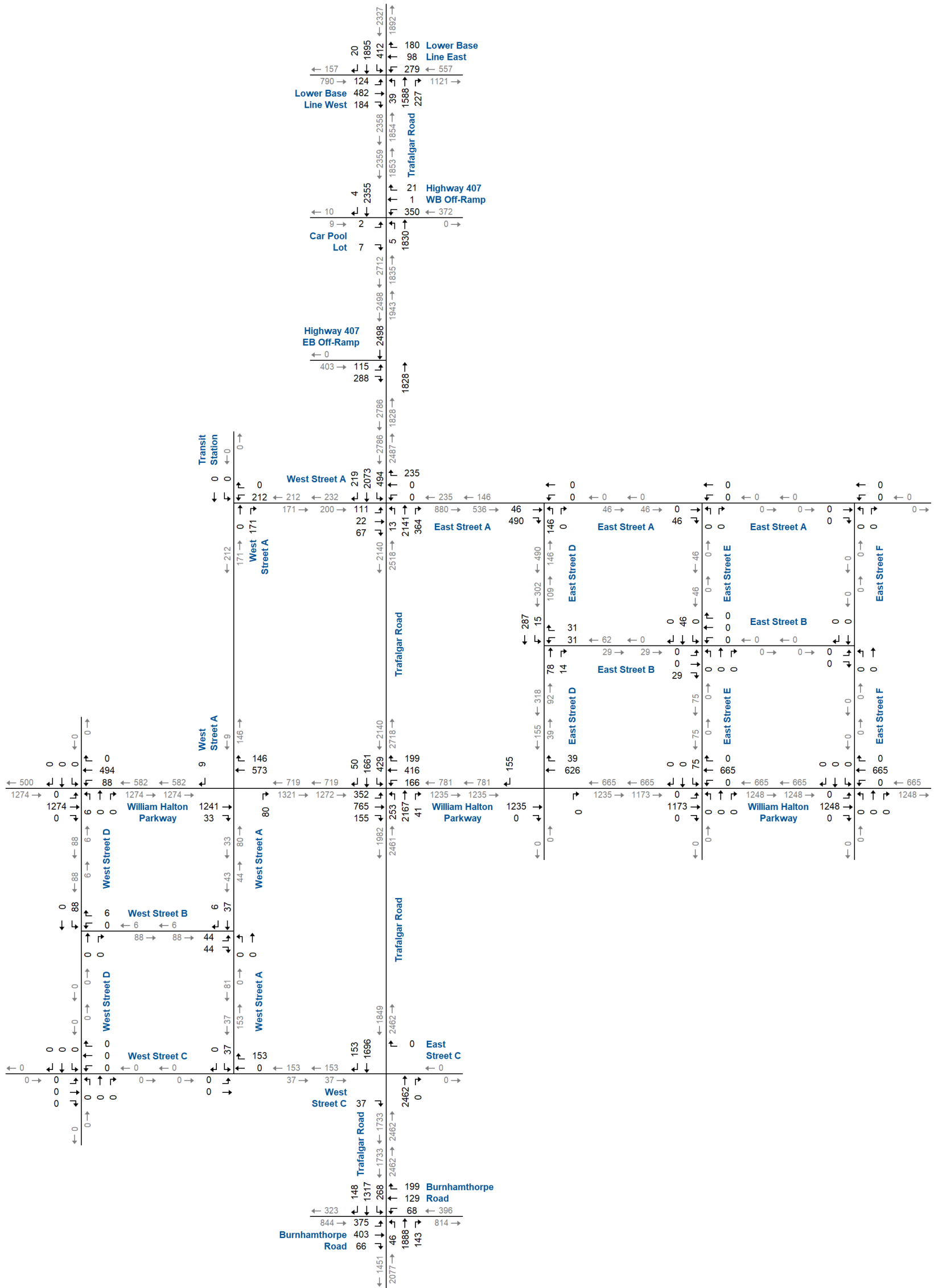


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Scenario A 2031 Total Traffic Volumes – PM Peak Hour

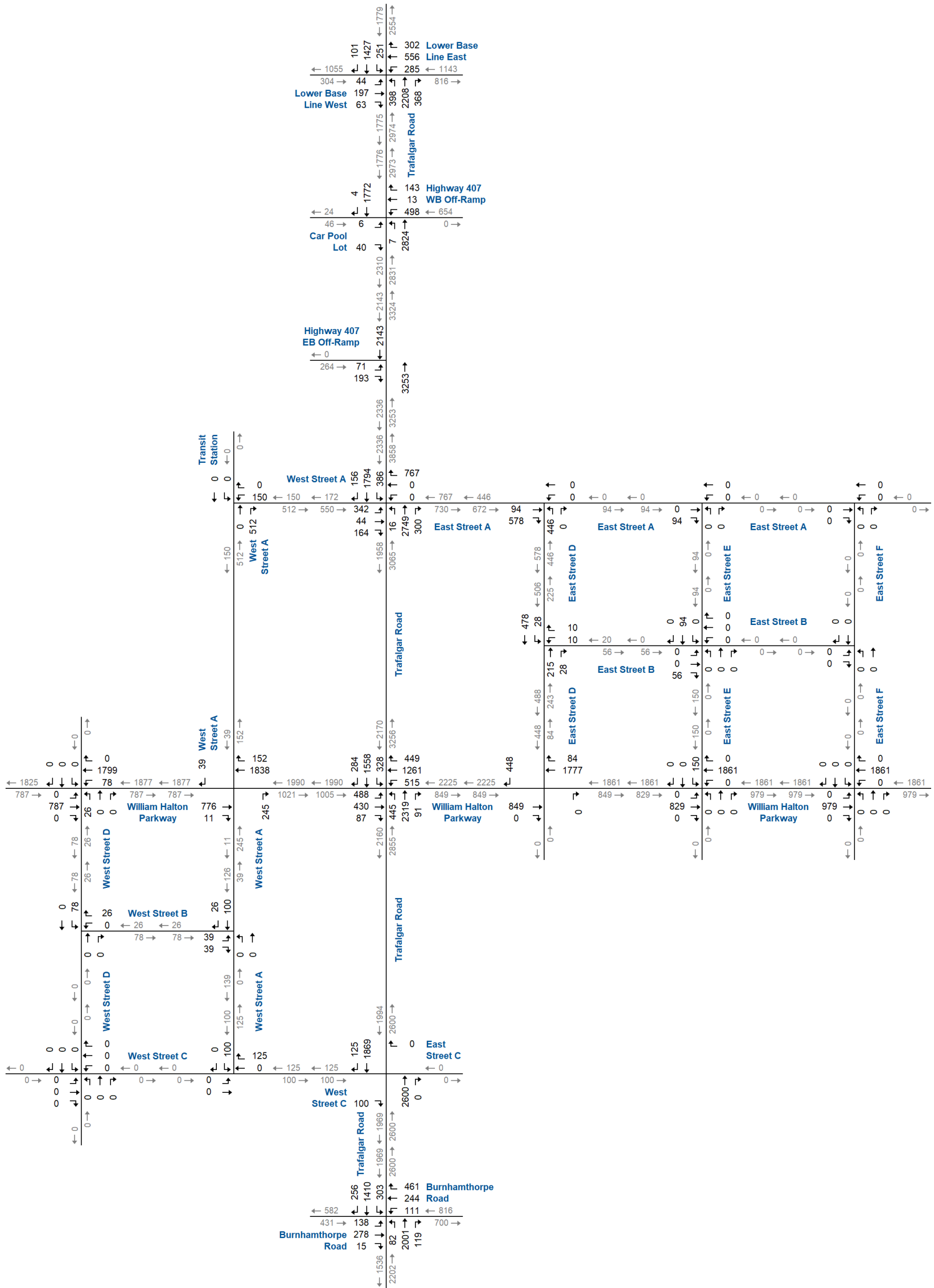
Figure 4.3B



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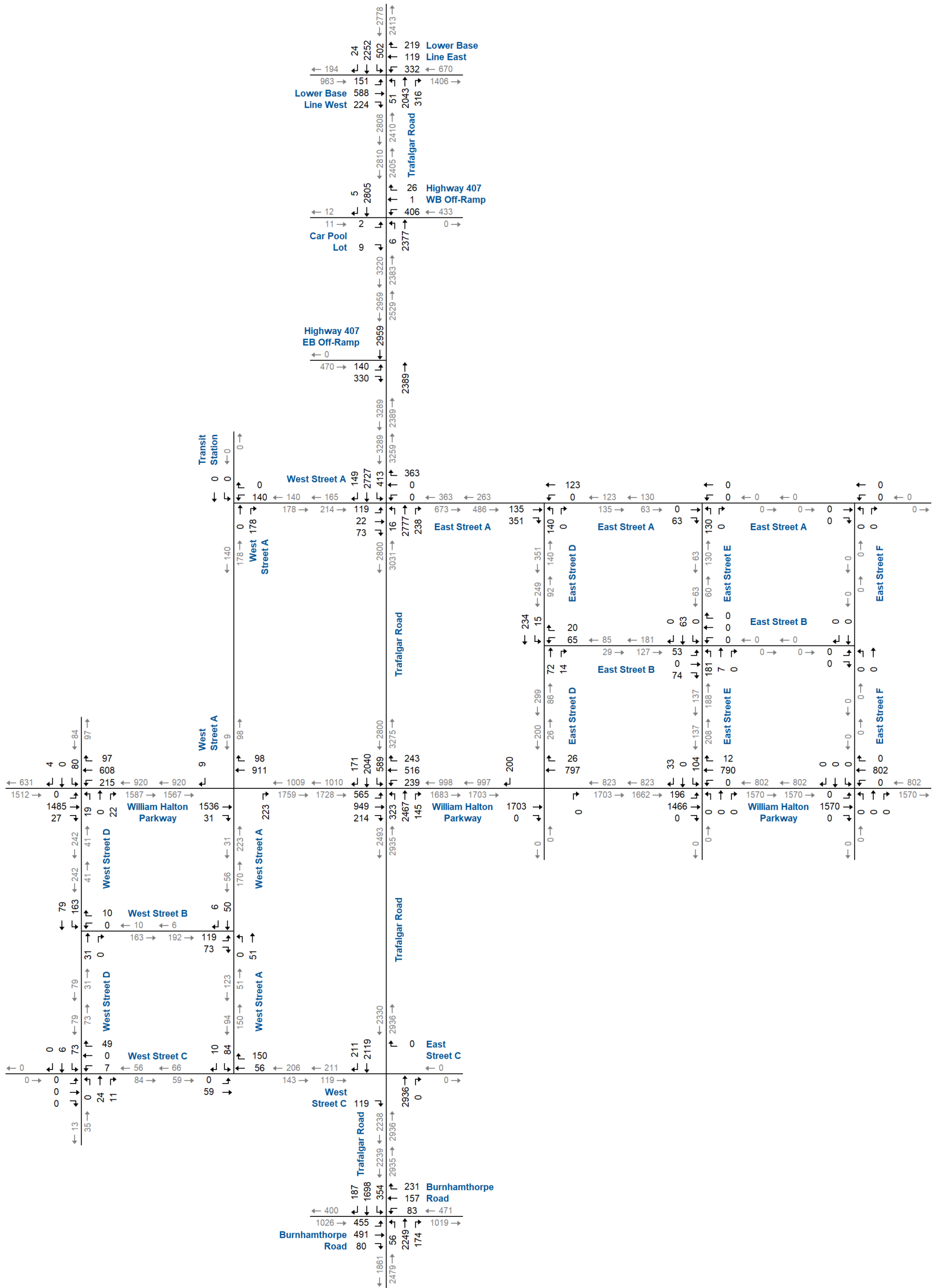
Scenario B 2031 Total Traffic Volumes – AM Peak Hour



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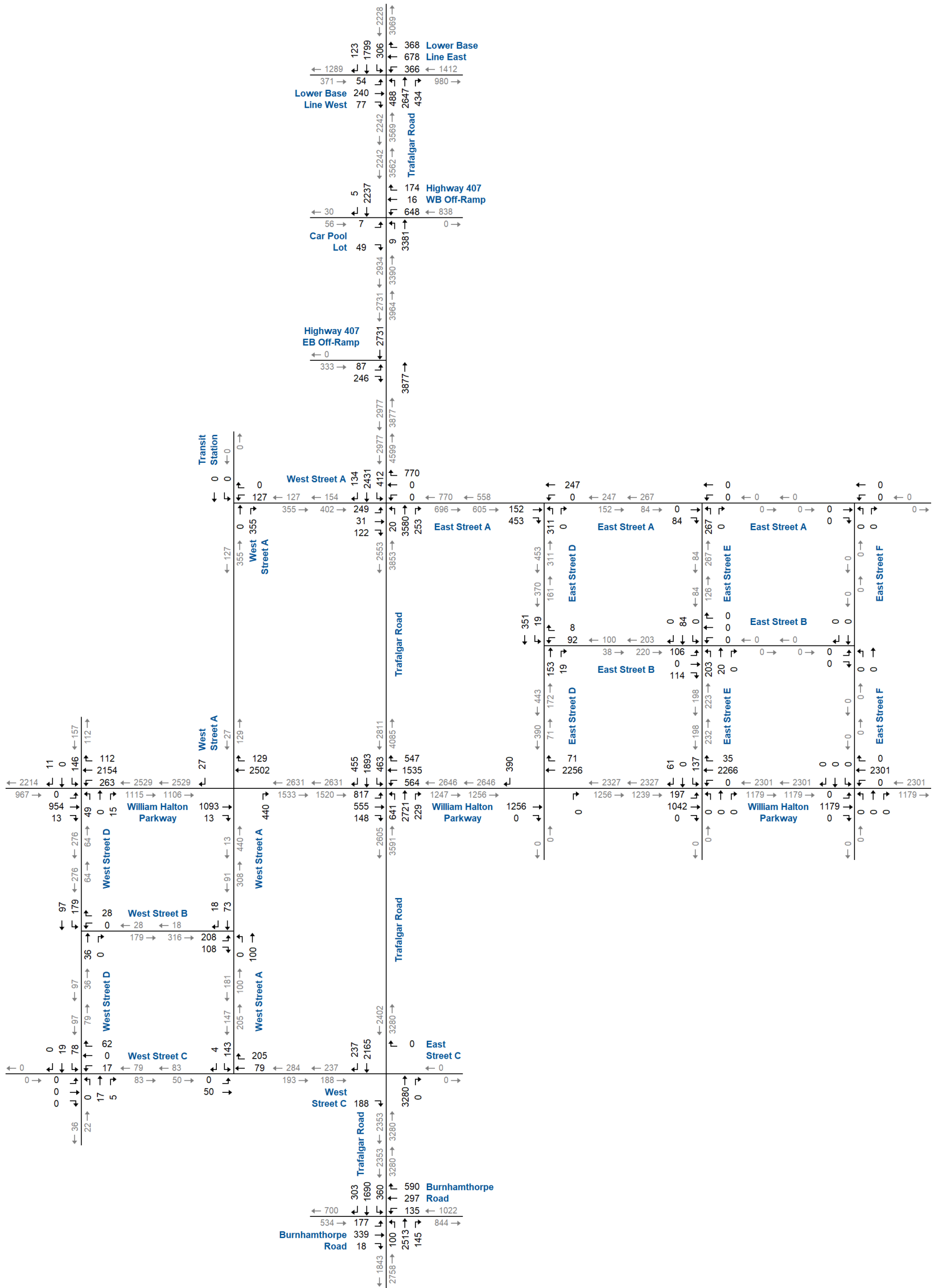
Scenario B 2031 Total Traffic Volumes – PM Peak Hour



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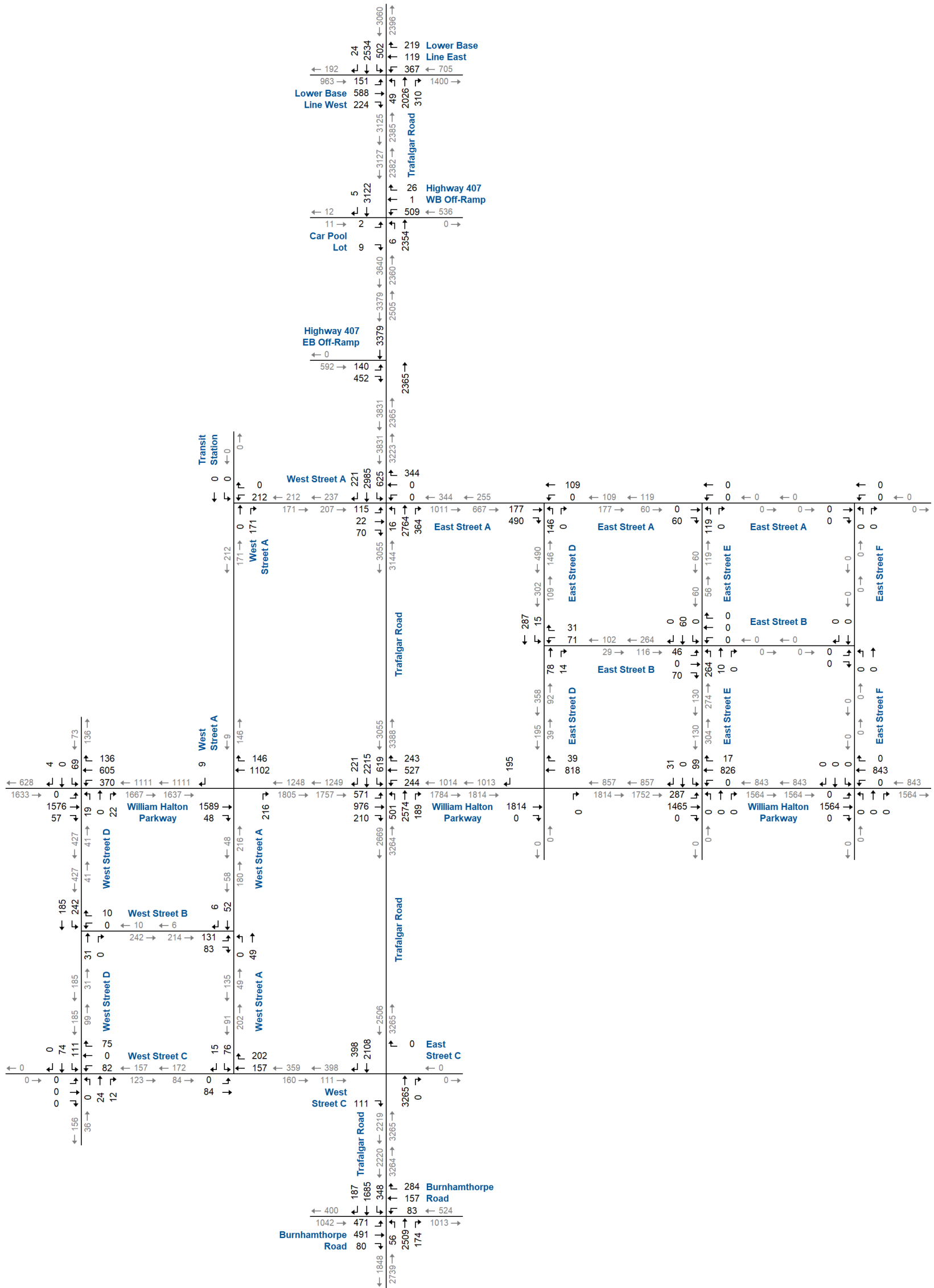
Scenario A 2041 Total Traffic Volumes – AM Peak Hour



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Scenario A 2041 Total Traffic Volumes – PM Peak Hour

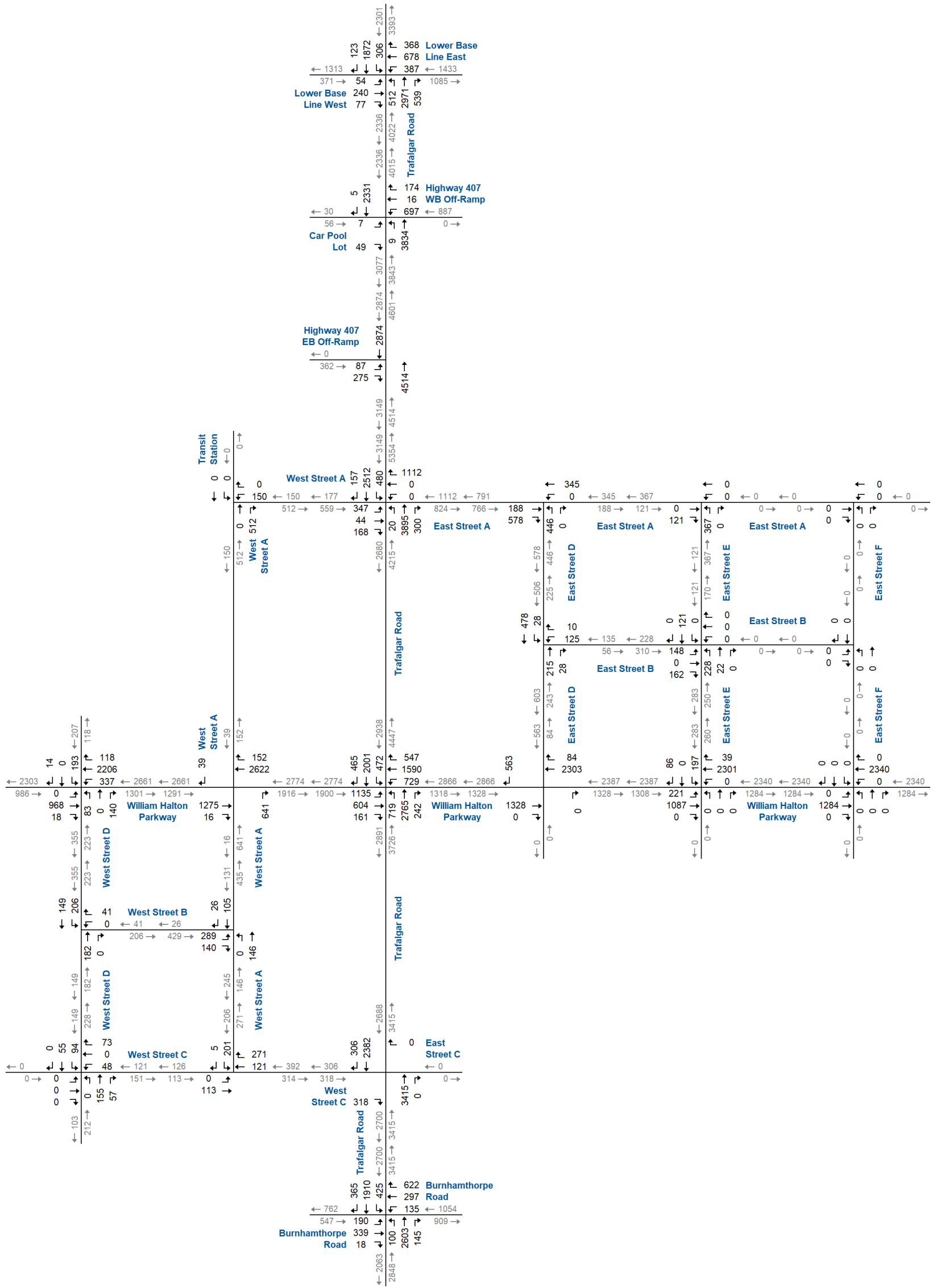


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Scenario B 2041 Total Traffic Volumes – AM Peak Hour

Figure 4.6A



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Scenario B 2041 Total Traffic Volumes – PM Peak Hour

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	
		Existing	2031 Background	Scenario A	Scenario B	Rural**	Urban***
From	To						
Trafalgar Road							
North	Lower Base Line	28,810	35,120	40,440	43,330	< 12,000	10,000 - 30,000
Lower Base Line	Highway 407 WB Off-Ramp	29,750	36,280	43,490	47,500	< 12,000	10,000 - 30,000
Highway 407 WB Off-Ramp	Highway 407 EB Off-Ramp	32,940	40,160	50,650	56,340	< 12,000	10,000 - 30,000
Highway 407 EB Off-Ramp	GO Carpool Lot/Street A	34,910	42,550	55,110	61,940	< 12,000	10,000 - 30,000
GO Carpool Lot/Street A	William Halton Parkway	34,940	46,620	52,410	54,260	< 12,000	10,000 - 30,000
William Halton Parkway	Burnhamthorpe Road	28,620	39,090	44,940	47,600	< 12,000	10,000 - 30,000
Burnhamthorpe Road	South	24,880	30,330	35,200	37,380	< 12,000	10,000 - 30,000
Lower Base Line							
Trafalgar Road	East	13,970	17,020	18,670	19,590	< 12,000	5,000 - 20,000
Trafalgar Road	West	10,790	13,150	13,390	13,590	< 12,000	5,000 - 20,000
William Halton Parkway							
Trafalgar Road	East	9,990	25,170	28,240	30,740	< 12,000	10,000 - 30,000
Trafalgar Road	West	4,970	23,900	28,450	30,110	< 12,000	10,000 - 30,000
Burnhamthorpe Road							
Trafalgar Road	East	10,560	12,870	14,480	15,160	< 12,000	5,000 - 20,000
Trafalgar Road	West	7,100	8,660	9,600	10,130	< 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: Classification of Urban Roads

TABLE 4.2: 2041 FUTURE DAILY TRAFFIC VOLUMES

Road Section		Two-Way Daily Traffic*				TAC Threshold	
		Existing	2041 Background	Scenario A	Scenario B	Rural**	Urban***
From	To						
Trafalgar Road							
North	Lower Base Line	28,810	42,810	55,920	56,940	< 12,000	10,000 - 30,000
Lower Base Line	Highway 407 WB Off-Ramp	29,750	44,220	61,930	63,580	< 12,000	10,000 - 30,000
Highway 407 WB Off-Ramp	Highway 407 EB Off-Ramp	32,940	46,770	74,770	76,780	< 12,000	10,000 - 30,000
Highway 407 EB Off-Ramp	GO Carpool Lot/Street A	34,910	51,870	82,530	85,030	< 12,000	10,000 - 30,000
GO Carpool Lot/Street A	William Halton Parkway	34,940	56,830	76,900	73,850	< 12,000	10,000 - 30,000
William Halton Parkway	Burnhamthorpe Road	28,620	47,660	64,430	61,150	< 12,000	10,000 - 30,000
Burnhamthorpe Road	South	24,880	36,960	49,280	49,110	< 12,000	10,000 - 30,000
Lower Base Line							
Trafalgar Road	East	13,970	20,750	24,750	25,180	< 12,000	5,000 - 20,000
Trafalgar Road	West	10,790	16,040	16,640	16,840	< 12,000	5,000 - 20,000
William Halton Parkway							
Trafalgar Road	East	9,990	30,680	41,180	41,940	< 12,000	10,000 - 30,000
Trafalgar Road	West	4,970	29,130	50,660	46,900	< 12,000	10,000 - 30,000
Burnhamthorpe Road							
Trafalgar Road	East	10,560	15,690	19,830	19,630	< 12,000	5,000 - 20,000
Trafalgar Road	West	7,100	10,550	12,840	13,090	< 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: Classification 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 greater than 1.00 during the AM and PM peak hours;
 - 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;
 - Westbound through/right-turn – LOS F and v/c ratio greater than 1.00;
 - Northbound left-turn – LOS F, v/c ratio greater than 1.00, and queue exceeds storage during PM peak hour;
 - Northbound through – LOS D and v/c ratio of 0.93 during the AM peak hour;
 - Southbound left-turn – LOS E, v/c ratio of 0.98, and queue exceeds storage during AM peak hour. LOS F and v/c ratio greater than 1.00 during PM 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, v/c ratio of 0.98, and queue exceeds storage during AM peak hour. LOS F, v/c ratio greater than 1.00, and queue exceeds storage during PM peak hour;
 - Westbound through – 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 – LOS D and v/c ratio of 0.96 during PM peak hour;
 - Southbound left-turn – LOS F, v/c ratio greater than 1.00, and queue exceeds storage during AM peak hour. LOS F, v/c ratio greater than 1.00, and queue exceeds storage during PM peak hour.
- **Trafalgar Road and Burnhamthorpe Road:**
- Overall – v/c ratio of 0.93 during AM peak hour and v/c ratio greater than 1.00 during PM peak hour.
 - Eastbound left-turn – queue exceeds storage during AM peak hour. LOS F, v/c ratio greater than 1.00, and queue exceeds storage during PM peak hour;
 - Westbound through/right-turn – LOS F and v/c ratio greater than 1.00 during PM peak hour'
 - Northbound through – LOS D and v/c ratio of 0.90 during AM peak hour;
 - Southbound left-turn – LOS F, v/c ratio of 0.96, and queue exceeds storage during AM peak hour. Queue exceeds storage during the PM peak hour.

Appendix E1 contains the detailed Synchro 10 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																	Overall
				Eastbound				Westbound				Northbound				Southbound					
				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 Delay V/C Q Stor. Avail.	D 37 0.42 39 45 6	E 76 0.98 131 - -	> > > > >	E 70	F 82 0.97 94 110 16	D 36 0.2 23 - -	> > > > >	E 57	C 29 0.30 9 90 81	D 50 0.93 166 17 90 73	C 29 0.12 17 90 73	D 47	E 76 0.98 162 90 -72	C 21 0.60 116 0 90 90	B 14 0.01 0 90 90	C 33	D 47 1.30	
	Trafalgar Rd & Hwy 407 WB Off	TCS	LOS Delay V/C Q Stor. Avail.	< < < < <	D 36 0.01 0 - -	> > > > >	D 36	D 44 0.57 37 - -	D 46 0.60 38 0 60 60	D 36 0.01 0 60 60	D 44	A 6 0.05 1 65 64	A 6 0.46 66 - -		A 6		A 9 0.59 116 - 15	A 5 0.00 0 15 15	A 9	A 10 0.59	
	Trafalgar Rd & Hwy 407 EB Off	TCS	LOS Delay V/C Q	B 15 0.21 15		B 15 0.20 15	B 15						B 11 0.62 58		B 11		B 13 0.74 76		B 13	B 12 0.53	
	Trafalgar Rd & GO Carpool Lot	TCS	LOS Delay V/C Q Stor. Avail.	B 18 0.03 6 - -		B 18 0.02 4 - -	B 18					A 9 0.13 4 50 46	B 12 0.74 91 - -		B 12		B 11 0.69 80 - 28	A 6 0.01 2 30 28	B 11	B 11 0.51	
	Trafalgar Rd & William Halton Parkway	TCS	LOS Delay V/C Q Stor. Avail.	F 93 0.98 107 100 -7	D 48 0.75 129 - -	D 36 0.11 18 100 82	E 56	D 40 0.21 11 100 89	D 44 0.47 68 - -	D 42 0.27 38 150 112	D 43	B 19 0.24 10 150 140	C 31 0.80 206 0 75 75	B 18 0.03 0 75 75	C 31	F 740 2.52 283 - -	C 23 0.59 141 - -	B 16 0.03 2 - -	F 181	F 90 1.96	
	Trafalgar Rd & Burhamthorpe Rd	TCS	LOS Delay V/C Q Stor. Avail.	D 55 0.89 146 30 -116	C 30 0.63 132 - -	> > > > >	D 40	C 26 0.33 25 15 -10	C 23 0.31 55 - -	> > > > >	C 23	D 36 0.36 22 60 38	D 45 0.90 159 60 -	C 27 0.16 24 60 36	D 43	F 82 0.96 95 60 -35	C 21 0.50 88 - -	B 16 0.09 11 60 49	C 30	D 36 0.93	

MC\

Q - 95th Percentile Queue Length (m)

</> - Shared with through movement

LOS - Level of Service

Stor. - Existing Storage (m)

Delay - Average Delay per Vehicle in Seconds

Avail. - Available Storage (m)

V/C - Volume to Capacity Ratio

TCS - Traffic Control Signal



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 Delay V/C Q Stor. Avail.	F 91 0.77 13 45 32	D 41 0.57 31 - -	> > > > >	D 48	D 51 0.82 48 110 62	F 235 1.42 121 - -	> > > > >	F 199	F 633 2.29 109 90 -19	C 32 0.80 148 - -	C 22 0.14 14 90 76	F 129	F 168 1.22 79 90 11	B 15 0.44 92 - 88	B 13 0.07 2 90 -	D 40	F 112 1.89	
	Trafalgar Rd & Hwy 407 WB Off	TCS	LOS Delay V/C Q Stor. Avail.	< < < < <	C 33 0.03 4 - -	> > > > >	C 33	D 43 0.65 62 -	D 44 0.67 63 - -	C 35 0.24 28 60 32	D 41	A 7 0.05 2 65 63	A 8 0.61 121 - -		A 8		A 9 0.46 92 - 15	A 6 0.00 0 15 15	A 9	B 13 0.65	
	Trafalgar Rd & Hwy 407 EB Off	TCS	LOS Delay V/C Q	B 19 0.15 18		B 19 0.15 16	B 19							B 12 0.77 97		B 12		A 9 0.58 61		A 9	B 11 0.57
	Trafalgar Rd & GO Carpool Lot	TCS	LOS Delay V/C Q Stor. Avail.	C 28 0.06 10 - -		C 27 0.01 5 - -	C 28						A 8 0.15 4 50 46	B 11 0.79 128 - -		B 11		A 7 0.53 62 - 29	A 4 0.00 1 30 -	A 7	A 10 0.61
	Trafalgar Rd & William Halton Parkway	TCS	LOS Delay V/C Q Stor. Avail.	F 386 1.71 160 100 -60	D 42 0.42 68 - -	D 37 0.06 14 100 86	F 163	D 37 0.51 46 100 54	F 167 1.24 278 - -	E 59 0.82 155 150 -5	F 128	F 137 1.14 126 150 24	D 50 0.96 265 - -	C 22 0.07 12 75 63	E 58	F 362 1.66 200 -	C 30 0.62 130 -	C 25 0.29 45 -	F 86	F 95 1.60	
	Trafalgar Rd & Burnhamthorpe Rd	TCS	LOS Delay V/C Q Stor. Avail.	F 448 1.77 79 30 -49	D 39 0.60 99 - -	> > > > >	F 144	D 49 0.69 56 15 -41	F 162 1.23 257 - -	> > > > >	F 144	C 22 0.38 28 60 32	C 23 0.69 138 - -	B 15 0.10 13 60 47	C 23	E 68 0.90 80 60 -20	A 10 0.34 50 - -	A 8 0.10 8 60 52	B 18	D 52 1.18	

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 E 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 Highway 407 Eastbound Off-Ramp:**
 - Northbound through – LOS B and v/c ratio of 0.93 during the PM peak hour;
 - Southbound through – LOS B and v/c ratio of 0.90 during the AM peak hour.
- ▶ **Trafalgar Road and GO Carpool Lot:**
 - Northbound through – LOS B and v/c ratio of 0.90 during the AM peak hour. LOS C and v/c ratio of 0.96 during the PM 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, v/c ratio greater than 1.00, and queue exceeds storage during AM and PM peak hours;
 - Eastbound through – LOS E and v/c ratio of 0.89 during the AM peak hour;



- Westbound through – LOS F and v/c ratio greater than 1.00 during PM peak hour;
 - 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 PM peak hour;
 - Northbound through – LOS D and v/c ratio of 0.99 during the AM peak hour. LOS F and v/c ratio greater than 1.00 during PM 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 AM and PM peak hours;
 - Westbound left-turn – LOS F, v/c ratio greater than 1.00, and queue exceeds storage during PM peak hour;
 - Westbound through/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 AM peak hour. LOS C and v/c ratio of 0.85 during PM peak hour;
 - 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 E2 contains the detailed Synchro 10 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																	Overall
				Eastbound				Westbound				Northbound				Southbound					
				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 Delay V/C Q Stor. Avail.	C 34 0.56 41 45 4	F 147 1.20 153 - -	> > > > >	F 130	F 178 1.25 115 110 -5	D 37 0.27 25 - -	> > > > >	F 101	C 26 0.39 10 90 80	E 65 1.03 185 - -	C 25 0.14 16 90 74	F 60	F 210 1.35 199 90 -109	C 24 0.75 136 - -	B 14 0.02 0 90 90	E 64	E 78 1.30	
	Trafalgar Rd & Hwy 407 WB Off	TCS	LOS Delay V/C Q Stor. Avail.	< < < < <	D 36 0.01 0 - -	> > > > >	D 36	D 45 0.61 41 - -	D 48 0.66 43 60 60	D 36 0.02 0 60 60	D 46	A 9 0.08 2 65 63	A 8 0.57 94 - -		A 8		B 12 0.73 166 - -	A 6 0.00 0 15 15	B 12	B 12 0.72	
	Trafalgar Rd & Hwy 407 EB Off	TCS	LOS Delay V/C Q	B 16 0.26 23		B 16 0.25 21	B 16						B 13 0.75 74		B 13		B 18 0.90 105		B 18	B 16 0.65	
	Trafalgar Rd & GO Carpool Lot	TCS	LOS Delay V/C Q Stor. Avail.	B 18 0.04 7 - -		B 18 0.03 5 - -	B 18					A 9 0.16 4 50 46	B 17 0.90 126 - -		B 17		B 14 0.84 108 - -	A 6 0.01 2 30 28	B 14	B 16 0.62	
	Trafalgar Rd & William Halton Parkway	TCS	LOS Delay V/C Q Stor. Avail.	F 218 1.33 152 100 -52	E 57 0.89 164 - -	D 36 0.13 18 100 82	F 89	D 41 0.26 12 100 88	D 45 0.55 78 150 96	D 43 0.39 54 150 96	D 44	C 24 0.36 11 150 139	D 51 0.99 288 - -	B 18 0.03 1 75 74	D 50	F 1005 3.10 329 - -	C 28 0.74 179 - -	B 16 0.04 4 - -	F 243	F 124 2.44	
	Trafalgar Rd & Burnhamthorpe Rd	TCS	LOS Delay V/C Q Stor. Avail.	F 158 1.23 192 30 -162	D 35 0.77 164 - -	> > > > >	F 87	D 45 0.62 41 15 -26	C 24 0.39 65 - -	> > > > >	C 28	E 73 0.71 36 60 24	F 93 1.10 217 - -	C 28 0.21 30 60 30	F 86	F 148 1.17 120 60 -60	C 23 0.61 106 - -	B 17 0.12 12 60 48	D 41	E 66 1.21	

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 Delay V/C Q Stor. Avail.	D 44 0.48 18 45 27	D 44 0.50 50 - -	> > > > >	D 44	D 51 0.85 79 110 31	F 125 1.16 198 - -	> > > > >	F 111	F 108 1.09 170 90 -80	E 57 1.01 227 21 90 69	C 22 0.19 21 90 69	E 62	F 140 1.16 131 90 -41	D 44 0.89 145 12 90 78	C 27 0.08 12 90 78	E 59	E 70 1.11
	Trafalgar Rd & Hwy 407 WB Off	TCS	LOS Delay V/C Q Stor. Avail.	< < < < <	C 32 0.04 7 - -	> > > > >	C 32	D 47 0.73 71 -	D 51 0.77 75 -	C 35 0.31 35 60 25	D 45	A 9 0.10 2 65 63	B 13		B 13		B 12 0.58 115 -	A 7 0.00 0 15 15	B 12	B 16 0.80
	Trafalgar Rd & Hwy 407 EB Off	TCS	LOS Delay V/C Q	B 20 0.19 19		B 20 0.20 19	B 20						B 20 0.93 147		B 20		B 11 0.71 78		B 11	B 16 0.70
	Trafalgar Rd & GO Carpool Lot	TCS	LOS Delay V/C Q Stor. Avail.	C 28 0.07 11 -		C 28 0.03 7 -	C 28					B 13 0.27 6 50 44	C 21 0.96 213 -		C 21		A 9 0.64 80 -	A 4 0.01 1 30 29	A 9	B 16 0.74
	Trafalgar Rd & William Halton Parkway	TCS	LOS Delay V/C Q Stor. Avail.	F 551 2.09 189 100 -89	D 43 0.51 78 -	D 37 0.07 14 100 86	F 222	D 48 0.71 52 100 48	F 285 1.51 342 150 -61	F 110 1.06 211 150 -61	F 220	F 309 1.54 171 150 -21	F 122 1.18 347 15 75 60	C 22 0.10 15 75 60	F 138	F 521 2.02 236 -	C 34 0.76 160 -	C 27 0.40 64 -	F 116	F 162 1.95
	Trafalgar Rd & Burnhamthorpe Rd	TCS	LOS Delay V/C Q Stor. Avail.	F 615 2.16 88 30 -58	D 44 0.73 116 -	> > > > >	F 190	F 190 1.20 82 15 -67	F 285 1.52 314 -	> > > > >	F 270	C 35 0.61 43 60 17	C 28 0.85 178 60 44	B 15 0.13 16 60 44	C 28	F 122 1.09 101 60 -41	B 11 0.41 61 -	A 8 0.12 8 60 52	C 26	F 81 1.43

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



4.3.3 Total Operations – 2031 Scenario A

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 F and v/c ratio greater than 1.00 during AM peak hour;
 - Westbound through/right-turn – LOS F and v/c ratio of 0.99 during PM peak hour;
 - Northbound left-turn – LOS F, v/c ratio of 0.97, and queue exceeds storage during PM peak hour;
 - Northbound through – LOS D and v/c ratio of 0.96 during AM peak hour;
 - Southbound left-turn – LOS F, v/c ratio greater than 1.00, and queue exceed storage during AM and PM peak hour.
- ▶ **Trafalgar Road and Highway 407 Westbound Off-Ramp:**
 - Northbound through – LOS C and v/c ratio of 0.89 during the PM peak hour.
- ▶ **Trafalgar Road and Street A (formerly GO Carpool lot):**
 - Overall – v/c ratio of 0.86 during the AM peak hour and v/c ratio of 0.97 during PM peak hour;
 - Eastbound left-turn – LOS F, v/c ratio greater than 1.00, and queue exceed storage during PM peak hour;
 - Westbound right-turn – queue exceeds storage during AM peak hour. LOS F and queue exceeds storage during PM peak hour;
 - Northbound through – LOS C and v/c ratio of 0.90 during PM peak hour;
 - Southbound left-turn – queue exceed storage during AM and PM peak hour.
- ▶ **Trafalgar Road and William Halton Parkway:**



- Overall – v/c ratio greater than 1.00 during AM and PM peak hour;
 - Eastbound left-turn – LOS F, v/c ratio greater than 1.00, and queue exceeds storage during AM and PM peak hour;
 - Westbound left-turn – LOS F and v/c ratio greater than 1.00 during AM peak hour;
 - Westbound through – 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 – LOS F and v/c ratio greater than 1.00 during AM and PM peak hour;
 - Southbound left-turn – LOS F, v/c ratio greater than 1.00, and queue exceed storage during AM and PM peak hour;
 - Southbound through – LOS E and v/c ratio of 0.99 during PM peak hour.
- **Trafalgar Road and Burnhamthorpe Road:**
- Overall – v/c ratio greater than 1.00 during AM and PM peak hour;
 - Eastbound left-turn – LOS F, v/c ratio greater than 1.00, and queue exceeds storage during AM peak hour;
 - Eastbound through-right – LOS E and v/c ratio of 0.91 during AM peak hour;
 - Westbound through-right – LOS F and v/c ratio of 0.92 during AM and PM peak hour;
 - Northbound through – LOS D and v/c ratio of 0.89 during AM peak hour. LOS E and v/c ratio greater than 1.00 during PM peak hour;
 - Southbound left-turn – LOS F, v/c ratio greater than 1.00, and queue exceed storage during AM peak hour.

The new municipal roads are forecast to operate with acceptable levels of service during the AM and PM peak hours.

Appendix F1 contains the detailed Synchro 10 reports.

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: SCENARIO A 2031 TOTAL OPERATIONS – AM PEAK HOUR (TRAFALGAR INTERSECTIONS)

Analysis Period	Intersection	Control Type	MOE	Direction/Movement/Approach																
				Eastbound				Westbound				Northbound				Southbound				Overall
				Left	Through	Right	Approach	Left	Through	Right	Approach	Left	Through	Right	Approach	Left	Through	Right	Approach	
AM Peak Hour	Trafalgar Rd & Lower Base Line	TCS	LOS Delay V/C Q Stor. Avail.	36 0.40 36 45 9	F 105 1.07 131 -	> > > > >	F 94	F 91 1.01 104 110 6	D 36 0.19 21 -	> > > > >	E 62	C 23 0.27 8 90 82	D 52 0.96 178 -	C 28 0.17 19 90 71	D 49	F 108 1.08 162 90 -72	C 24 0.72 141 -	B 14 0.01 0 90 90	D 40	D 53 1.07
	Trafalgar Rd & Hwy 407 WB Off	TCS	LOS Delay V/C Q Stor. Avail.	< < < < <	D 48 0.01 0 -	> > > > >	D 48	D 42 0.62 52 -	D 46 0.68 56 -	C 33 0.01 0 60 60	D 44	B 14 0.06 2 65 63	B 11 0.60 130 -		B 11		B 16 0.77 226 -	A 8 0.00 0 15 15	B 16	B 16 0.74
	Trafalgar Rd & Hwy 407 EB Off	TCS	LOS Delay V/C Q	C 34 0.56 48		D 36 0.59 49	D 35						A 7 0.55 78		A 7		A 8 0.68 113		A 8	A 10 0.68
	Trafalgar Rd & West Street A/East Street A	TCS	LOS Delay V/C Q Stor. Avail.	E 67 0.69 54 50 -4	D 52 0.10 14 -	D 51 0.05 12 50 38	E 60	A 0 0.00 0 50 50	A 0 0.00 0 -	D 35 35 0.46 64 50 -14	D 35	B 13 0.13 2 50 48	C 23 0.78 226 -	B 14 0.22 50 14	C 22	E 63 0.88 107 30 -77	A 7 0.56 104 -	A 4 0.11 10 30 20	B 14	C 20 0.86
	Trafalgar Rd & William Halton Parkway	TCS	LOS Delay V/C Q Stor. Avail.	F 109 1.07 138 100 -38	D 52 0.79 134 -	D 38 0.11 17 100 83	E 66	F 115 1.01 80 100 20	D 51 0.56 76 -	D 45 0.14 20 150 130	E 63	E 60 0.83 72 150 78	F 117 1.15 301 -	C 28 0.03 0 75 75	F 111	F 289 1.50 235 -	D 40 0.81 183 -	C 24 0.03 0 -	F 90	F 90 1.32
	Trafalgar Rd & Burnhamthorpe Rd	TCS	LOS Delay V/C Q Stor. Avail.	F 131 1.13 172 30 -142	E 69 0.91 197 -	> > > > >	F 96	E 57 0.52 24 15 -9	F 90 0.92 134 -	> > > > >	F 84	C 24 0.26 11 60 49	D 43 0.89 195 -	C 25 0.10 12 60 48	D 42	F 129 1.09 130 60 -70	C 25 0.56 111 -	B 19 0.11 14 60 46	D 40	D 54 1.14
	Trafalgar Rd & West Street C	TWSC	LOS Delay V/C Q Stor. Avail.			A 10 0.06 1.3 -	A 10							A 0 0.49 0.0 -		A 0		A 0 0.36 0.0 -	A 0 0.0 90.0 -	A 0

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

TWSC - Two-Way Stop Control

</> - Shared with through movement



TABLE 4.5B: SCENARIO A 2031 TOTAL OPERATIONS – AM PEAK HOUR (NEW INTERSECTIONS)

Analysis Period	Intersection	Control Type	MOE	Direction/Movement/Approach																
				Eastbound				Westbound				Northbound				Southbound				Overall
				Left	Through	Right	Approach	Left	Through	Right	Approach	Left	Through	Right	Approach	Left	Through	Right	Approach	
AM Peak Hour	East Street D & East Street A	TWSC	LOS Delay V/C Q		A 0 0.25 0.0	> > >	A 0	< < <	A 0 0.00 0.0		A 0	B 11 0.20 5.7	> > >	B 11					A 3	
	East Street E & East Street A	TWSC	LOS Delay V/C Q		A 0 0.03 0.0	> > >	A 0	< < <	A 0 0.00 0.0		A 0	A 0 0.00 0.0	> > >	A 0					A 0	
	East Street D & East Street B	TWSC	LOS Delay V/C Q					B 10 0.06 1.4	> > >	B 10		A 0 0.05 0.0	> > >	A 0	< < <	A 0 0.01 0.2		A 0	A 2	
	East Street E & East Street B	TWSC	LOS Delay V/C Q	< < <	A 9 0.03 0.7	> > >	A 9	< < <	A 0 0.00 0.0	> > >	A 0	< < <	A 0 0.00 0.0	> > >	A 0	< < <	A 0 0.00 0.0	> > >	A 0	A 3
	William Halton Parkway & East Street D	TWSC	LOS Delay V/C Q Stor. Avail.		A 0 0.39 0.0 - -		A 0		A 0 0.20 0.0 - -	A 0 0.02 0.0 50.0 - -	A 0						B 12 0.25 7.5 - -	B 12	A 1	
	William Halton Parkway & East Street E	TCS	LOS Delay V/C Q Stor. Avail.	A 0 0.00 50 50	A 4 0.49 45 - -		A 4		A 3 0.27 20 - -	A 0 0.00 0 50 50	A 3				C 24 0.37 15 - -		> > >	C 24	A 4 0.53	
	West Street A & Transit Station	TWSC	LOS Delay V/C Q					A 7 0.09 2.3	> > >	A 7		A 9 0.18 4.8	> > >	A 9	< < <	A 0 0.00 0.0		A 0	A 8	
	West Street A & William Halton Parkway	TWSC	LOS Delay V/C Q Stor. Avail.		A 0 0.38 0.0 - -	A 0 0.01 0.0 50.0 - -	A 0		A 0 0.17 0.0 - -	A 0 0.06 0.0 50.0 - -	A 0		A 10 0.11 2.8 - -		A 10		A 9 0.01 0.2 - -	A 9	A 1	
	West Street D & William Halton Parkway	TCS	LOS Delay V/C Q Stor. Avail.	A 0 0.00 50 50	B 14 0.62 116 0 50 - 50	A 0 0.00 0 50 50	B 14	A 5 0.11 3 50 47	A 1 0.17 10 0 - 50	A 0 0.00 0 50 50	A 1	D 50 0.12 6 50 44	A 0 0.00 0 - -	D 50	A 0 0.00 0 50 50	A 0 0.00 0 - -	> > >	A 0	B 10 0.47	
	West Street A & West Street B	TWSC	LOS Delay V/C Q	A 9 0.07 1.6		> > >	A 9					< < <	A 0 0.00 0.0		A 0		A 0 0.03 0.0	> > >	A 0	A 5
	West Street D & West Street B	TWSC	LOS Delay V/C Q					A 8 0.01 0.1	> > >	A 8		A 0 0.00 0.0	> > >	A 0	< < <	A 7 0.04 0.9		A 7	A 7	
	West Street C & West Street A	TWSC	LOS Delay V/C Q	< < <	A 0 0.00 0.0		A 0		A 0 0.06 0.0	> > >	A 0					A 9 0.05 1.1		> > >	A 9	A 3
	West Street D & West Street C	TWSC	LOS Delay V/C Q	< < <	A 0 0.00 0.0	> > >	A 0	< < <	A 4 0.05 1.3	> > >	A 4	< < <	B 10 0.05 1.3	> > >	B 10	< < <	B 13 0.31 9.9	> > >	B 13	A 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

TWSC - Two-Way Stop Control

</> - Shared with through movement



TABLE 4.5C: SCENARIO A 2031 TOTAL OPERATIONS – PM PEAK HOUR (TRAFALGAR INTERSECTIONS)

Analysis Period	Intersection	Control Type	MOE	Direction/Movement/Approach																
				Eastbound				Westbound				Northbound				Southbound				Overall
				Left	Through	Right	Approach	Left	Through	Right	Approach	Left	Through	Right	Approach	Left	Through	Right	Approach	
PM Peak Hour	Trafalgar Rd & Lower Base Line	TCS	LOS Delay V/C Q Stor. Avail.	D 53 0.43 18 45 27	D 54 0.42 46 - -	> > > > >	D 53	D 52 0.79 86 110 24	F 82 0.99 160 - -	> > > > >	E 75	F 82 0.97 145 90 -55	C 34 0.25 182 - 64	D 39	F 111 1.04 110 90 -20	D 37 0.69 132 - 79	C 22 0.06 11 90 79	D 47	D 49 1.01	
	Trafalgar Rd & Hwy 407 WB Off	TCS	LOS Delay V/C Q Stor. Avail.	< < < < <	D 46 0.03 4 - -	> > > > >	D 46	D 40 0.70 75 - -	C 29 0.14 19 60 41	D 39	B 14 0.09 4 65 61	C 26		B 18 0.62 131 - -	B 11 0.00 0 15 15	B 18	C 25 0.80			
	Trafalgar Rd & Hwy 407 EB Off	TCS	LOS Delay V/C Q	C 26 0.20 18	C 30 0.53 37	C 29						A 9 0.77 127	A 9		A 7 0.58 73		A 7	A 9 0.74		
	Trafalgar Rd & West Street A/East Street A	TCS	LOS Delay V/C Q Stor. Avail.	F 157 1.10 121 50 -71	E 67 0.24 19 19 -	E 66 0.08 19 50 31	F 122	A 0 0.00 50 -	A 0 0.00 166 - -	F 80 -116	F 80	B 15 0.12 2 90 88	C 33 0.90 264 - 80	C 31	D 53 0.67 97 -7	A 6 0.46 82 - 89	A 0 0.08 1 90 89	B 12	C 33 0.97	
	Trafalgar Rd & William Halton Parkway	TCS	LOS Delay V/C Q Stor. Avail.	F 115 1.07 176 100 -76	D 41 0.38 67 - 89	D 37 0.06 11 100 89	E 74	D 40 0.73 87 100 13	F 176 1.25 274 - 40	D 54 0.68 110 150 40	F 126	F 322 1.57 236 150 -86	F 178 1.28 331 - 59	C 33 0.08 16 75 59	F 196	F 306 1.53 178 - -	E 72 0.99 198 - -	D 42 0.31 47 - -	F 103	F 139 1.36
	Trafalgar Rd & Burnhamthorpe Rd	TCS	LOS Delay V/C Q Stor. Avail.	E 58 0.82 42 30 -12	C 34 0.54 78 - -	> > > > >	D 42	C 26 0.37 26 15 -11	F 150 1.21 233 - -	> > > > >	F 133	C 28 0.42 16 60 44	E 64 1.03 192 - 49	B 16 0.09 11 60 49	E 60	E 67 0.91 81 60 -21	C 24 0.55 83 - 50	B 14 0.13 10 60 50	C 29	E 59 1.07
	Trafalgar Rd & West Street C	TWSC	LOS Delay V/C Q Stor. Avail.			A 10 0.08 1.8 - -	A 10						A 0 0.50 0.0 - -		A 0		A 0 0.32 0.0 - -	A 0 0.09 0.0 90.0 -	A 0	A 0

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

TWSC - Two-Way Stop Control

AWSC - All-Way Stop Control

</> - Shared with through movement



TABLE 4.5D: SCENARIO A 2031 TOTAL OPERATIONS – PM PEAK HOUR (NEW INTERSECTIONS)

Analysis Period	Intersection	Control Type	MOE	Direction/Movement/Approach																Overall
				Eastbound				Westbound				Northbound				Southbound				
				Left	Through	Right	Approach	Left	Through	Right	Approach	Left	Through	Right	Approach	Left	Through	Right	Approach	
PM Peak Hour	East Street D & East Street A	TWSC	LOS Delay V/C Q		A 0 0.04 0.0	A 0 0.23 0.0	A 0	< < < <	A 0 0.00 0.0		A 0	A 10 0.17 4.5	> > > >	A 10					A 3	
	East Street E & East Street A	TWSC	LOS Delay V/C Q		A 0 0.04 0.0	> > > >	A 0	< < < <	A 0 0.00 0.0		A 0	A 0 0.00 0.0	> > > >	A 0					A 0	
	East Street D & East Street B	TWSC	LOS Delay V/C Q					A 10 0.02 0.4	> > > >	A 10		A 0 0.06 0.0	> > > >	A 0	< < < <	A 0 0.01 0.1		A 0	A 1	
	East Street E & East Street B	TWSC	LOS Delay V/C Q	< < <	A 9 0.02 0.4	> > >	A 9	< < <	A 0 0.00 0.0	> > >	A 0	< < <	A 0 0.00 0.0	> > >	A 0	< < <	A 0 0.00 0.0	> > >	A 0	A 2
	William Halton Parkway & East Street D	TWSC	LOS Delay V/C Q Stor. Avail.		A 0 0.24 0.0 - -		A 0		A 0 0.52 0.0 - -	A 0 0.04 0.0 50.0 - -	A 0						B 13 0.33 11.0 - -	B 13	A 1	
	William Halton Parkway & East Street E	TCS	LOS Delay V/C Q Stor. Avail.	A 0 0.00 90 90	A 2 0.28 28 - -		A 2		B 15 0.78 186 - -	A 0 0.00 0 50 50	B 15				D 49 0.47 32 - -	> > > >	D 49	B 12 0.69		
	West Street A & Transit Station	TWSC	LOS Delay V/C Q					B 10 0.16 4.1	> > >	B 10		A 0 0.21 0.0	> > >	A 0	< < <	A 0 0.00 0.0		A 0	A 3	
	East Street A/West Street A & William Halton Parkway	TWSC	LOS Delay V/C Q Stor. Avail.		A 0 0.22 0.0 - -	A 0 0.01 0.0 90.0 - -	A 0		A 0 0.53 0.0 - -	A 0 0.08 0.0 90.0 - -	A 0		A 10 0.16 4.4 - -			B 11 0.04 1.0 - -		B 11	A 1	
	West Street D & William Halton Parkway	TCS	LOS Delay V/C Q Stor. Avail.	A 0 0.00 90 90	A 8 0.41 34 0 - 90 - 90	A 0 0.00 0 90 90	A 8	A 5 0.24 6 90 84	A 6 0.72 61 0 - 90 - 90	A 0 0.00 0 90 90	A 6	B 19 0.07 6 50 44	A 0 0.00 0 - -	B 19	A 0 0.00 0 50 50	A 0 0.00 0 - -	> > > >	A 0	A 7 0.65	
	East Street A & West Street B	TWSC	LOS Delay V/C Q	A 9 0.10 2.6	> > >	A 9						< < <	A 0 0.00 0.0		A 0		A 0 0.04 0.0	> > >	A 0	A 5
	West Street D & West Street B	TWSC	LOS Delay V/C Q					A 8 0.01 0.3	> > >	A 8		A 0 0.00 0.0	> > >	A 0	< < <	A 7 0.06 1.5		A 7	A 8	
	East Street C & East Street A	TWSC	LOS Delay V/C Q	< < <	A 0 0.00 0.0	> > >	A 0		A 0 0.00 0.0	> > >	A 0					A 9 0.06 1.5	> > >	A 9	A 3	
	West Street D & East Street C	TWSC	LOS Delay V/C Q	< < <	A 0 0.00 0.0	> > >	A 0	< < <	A 4 0.09 2.2	> > >	A 4	< < <	C 17 0.45 17.4	> > >	C 17	< < <	F 106 1.08 103.1	> > >	F 106	E 49

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

TWSC - Two-Way Stop Control

AWSC - All-Way Stop Control

</> - Shared with through movement



4.3.4 Total Operations – 2031 Scenario B

Table 4.6 summarizes the level of service conditions for Scenario B 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 F and v/c ratio greater than 1.00 during AM peak hour;
 - Westbound through/right-turn – LOS F and v/c ratio of 0.99 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 – LOS D and v/c ratio of 0.96 during AM peak hour. LOS D and v/c ratio of 0.91 during PM peak hour;
 - Southbound left-turn – LOS F, v/c ratio greater than 1.00, and queue exceed storage during AM and PM peak hour.
- ▶ **Trafalgar Road and Highway 407 Westbound Off-Ramp:**
 - Southbound through – LOS C and v/c ratio of 0.85 during the AM peak hour;
 - Northbound through – LOS D and v/c ratio greater than 1.00 during the PM peak hour.
- ▶ **Trafalgar Road and Highway 407 Eastbound Off-Ramp:**
 - Northbound through – LOS B and v/c ratio of 0.93 during the PM peak hour.
- ▶ **Trafalgar Road and Street A (formerly GO Carpool lot):**
 - Overall – v/c ratio greater than 1.00 during AM and PM peak hour;
 - Eastbound left-turn – LOS F, v/c ratio greater than 1.00, and queue exceed storage during PM peak hour;
 - Westbound right-turn – queue exceeds storage during AM peak hour. LOS F and queue exceeds storage during PM peak hour;



- Northbound through – LOS C and v/c ratio of 0.86 during AM peak hour. LOS D and v/c ratio of 0.93 during PM peak hour;
- Southbound left-turn – LOS F, v/c ratio greater than 1.00, and queue exceeds storage during AM peak hour. Queue exceeds storage during PM peak hour.

► **Trafalgar Road and William Halton Parkway:**

- Overall – v/c ratio greater than 1.00 during AM and PM peak hour;
- Eastbound left-turn – LOS F, v/c ratio greater than 1.00, and queue exceeds storage during AM and PM peak hour;
- Westbound left-turn – LOS F and v/c ratio greater than 1.00 during AM and PM peak hour;
- Westbound through – 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 AM and PM peak hour;
- Northbound through – LOS F and v/c ratio greater than 1.00 during AM and PM peak hour;
- Southbound left-turn – LOS F, v/c ratio greater than 1.00, and queue exceed storage during AM and PM peak hour;
- Southbound through – LOS D and v/c ratio of 0.87 during AM peak hour. LOS E and v/c ratio of 1.00 during PM peak hour.

► **Trafalgar Road and Burnhamthorpe Road:**

- Overall – v/c ratio greater than 1.00 during AM and PM peak hour;
- Eastbound left-turn – LOS F, v/c ratio greater than 1.00, and queue exceeds storage during AM peak hour;
- Eastbound through-right – LOS F and v/c ratio greater than 1.00 during AM peak hour;
- Westbound through-right – LOS F and v/c ratio greater than 1.00 during AM and PM peak hour;
- Northbound through – LOS F and v/c ratio of greater than 1.00 during AM peak hour. LOS E and v/c ratio greater than 1.00 during PM peak hour;
- Southbound left-turn – LOS F, v/c ratio greater than 1.00, and queue exceed storage during AM peak hour.



The new municipal roads are forecast to operate with acceptable levels of service during the AM and PM peak hours.

Appendix F2 contains the detailed Synchro 10 reports.

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: SCENARIO B 2031 TOTAL OPERATIONS – AM PEAK HOUR (TRAFALGAR INTERSECTIONS)

Analysis Period	Intersection	Control Type	MOE	Direction/Movement/Approach																	
				Eastbound				Westbound				Northbound				Southbound				Overall	
				Left	Through	Right	Approach	Left	Through	Right	Approach	Left	Through	Right	Approach	Left	Through	Right	Approach		
AM Peak Hour	Trafalgar Rd & Lower Base Line	TCS	LOS Delay V/C Q Stor. Avail.	D 36 0.40 36 45 9	F 105 1.07 131 - ->	> > > > >	F 94 -> -> ->	F 109 1.07 114 110 -4	D 36 0.19 21 -> ->	> > > > ->	E 73 -> -> ->	C 24 0.27 8 90 82	D 52 0.96 178 -> ->	C 28 0.17 19 90 71	D 48 -> -> ->	F 108 1.08 162 90 -72	C 26 0.79 162 -> ->	B 14 0.01 90 90	D 41 -> -> ->	D 54 1.09 -> ->	
	Trafalgar Rd & Hwy 407 WB Off	TCS	LOS Delay V/C Q Stor. Avail.	< < < < <	D 50 0.01 0 -> ->	> > > > >	D 50 -> -> ->	D 43 0.66 61 -> ->	D 48 0.73 66 -> ->	C 32 0.01 0 60 60	D 45 -> -> ->	B 19 0.06 2 65 63	B 12 -> -> ->		B 12 -> -> ->		C 21 0.85 278 -> ->	A 9 0.00 0 15 15	C 21 -> -> ->	B 19 0.81 -> ->	
	Trafalgar Rd & Hwy 407 EB Off	TCS	LOS Delay V/C Q	C 35 0.61 57		D 37 0.65 58	D 36 -> ->						A 8 0.56 87		A 8 -> ->		B 11 0.77 155		B 11 -> ->	B 12 0.76 -> ->	
	Trafalgar Rd & West Street A/East Street A	TCS	LOS Delay V/C Q Stor. Avail.	E 70 0.69 53 50 -3	D 54 0.10 14 -> ->	D 54 0.05 11 50 39	E 63 -> -> ->	A 0 0.00 0 50 50	A 0 0.00 0 -> ->	C 30 0.39 62 50 -12	C 30 -> -> ->	B 18 0.14 2 50 48	C 32 0.86 225 -> ->	C 20 0.37 57 50 -7	C 30 -> -> ->	F 102 1.06 214 30 -184	A 7 0.57 108 -> ->	A 4 0.17 14 30 16	C 24 -> -> ->	C 28 1.01 -> ->	
	Trafalgar Rd & William Halton Parkway	TCS	LOS Delay V/C Q Stor. Avail.	F 126 1.12 149 100 -49	D 53 0.81 139 -> ->	D 38 0.11 17 100 83	E 71 -> -> ->	F 123 1.03 83 100 17	D 50 0.56 77 -> ->	D 45 0.14 20 150 130	E 64 -> -> ->	F 118 1.06 125 150 25	F 145 1.21 326 -> ->	C 28 0.03 0 75 75	F 140 -> -> ->	F 291 1.50 235 -> ->	D 44 0.87 191 -> ->	C 26 0.03 0 -> ->	F 93 -> -> ->	F 103 1.34 -> ->	
	Trafalgar Rd & Burnhamthorpe Rd	TCS	LOS Delay V/C Q Stor. Avail.	F 269 1.47 245 30 -215	F 123 1.12 265 -> ->	> > > > >	F 189 -> -> ->	E 65 0.64 29 15 -14	F 238 1.36 219 -> ->	> > > > >	F 210 -> -> ->		C 33 0.43 15 60 45	F 157 1.25 358 -> ->	C 25 0.14 19 60 41	F 146 -> -> ->	F 265 1.44 190 60 -130	C 29 0.72 159 -> ->	B 19 0.16 22 60 38	E 66 -> -> ->	F 130 1.15 -> ->
	Trafalgar Rd & West Street C	TWSC	LOS Delay V/C Q Stor. Avail.			B 10 0.05 1.3 -> ->	B 10 -> ->							A 0 0.52 0.0 -> ->		A 0 -> ->		A 0 0.36 0.0 90.0 ->	A 0 -> ->	A 0 -> ->	A 0 -> ->

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

TWSC - Two-Way Stop Control

</> - Shared with through movement



TABLE 4.6B: SCENARIO B 2031 TOTAL OPERATIONS – AM PEAK HOUR (NEW INTERSECTIONS)

Analysis Period	Intersection	Control Type	MOE	Direction/Movement/Approach																Overall
				Eastbound				Westbound				Northbound				Southbound				
				Left	Through	Right	Approach	Left	Through	Right	Approach	Left	Through	Right	Approach	Left	Through	Right	Approach	
AM Peak Hour	East Street D & East Street A	TWSC	LOS Delay V/C Q		A 0 0.34 0.0	> > >	A 0	< < <	A 0 0.00 0.0		A 0	B 12 0.23 6.7	> > >	B 12					A 3	
	East Street E & East Street A	TWSC	LOS Delay V/C Q		A 0 0.03 0.0	> > >	A 0	< < <	A 0 0.00 0.0		A 0	A 0 0.00 0.0	> > >	A 0					A 0	
	East Street D & East Street B	TWSC	LOS Delay V/C Q					B 10 0.09 2.3	> > >	B 10		A 0 0.06 0.0	> > >	A 0	< < <	A 0 0.01 0.2		A 0	A 2	
	East Street E & East Street B	TWSC	LOS Delay V/C Q	< < <	A 9 0.03 0.7	> > >	A 9	< < <	A 0 0.00 0.0	> > >	A 0	< < <	A 0 0.00 0.0	> > >	A 0	< < <	A 0 0.00 0.0	> > >	A 3	
	William Halton Parkway & East Street D	TWSC	LOS Delay V/C Q Stor. Avail.		A 0 0.39 0.0 - -		A 0		A 0 0.20 0.0 - -	A 0 0.02 0.0 50.0	A 0						B 12 0.25 7.5 - -	B 12	A 1	
	William Halton Parkway & East Street E	TCS	LOS Delay V/C Q Stor. Avail.	A 0 0.00 50 50	A 4 0.49 45 - -		A 4		A 3 0.28 21 - 50	A 0 0.00 0 50 50	A 3				C 25 0.37 15 - -		> > >	C 25	A 4 0.53	
	West Street A & Transit Station	TWSC	LOS Delay V/C Q					A 8 0.14 3.7	> > >	A 8		A 9 0.17 4.6	> > >	A 9	< < <	A 0 0.00 0.0		A 0		
	West Street A & William Halton Parkway	TWSC	LOS Delay V/C Q Stor. Avail.		A 0 0.40 0.0 - -	A 0 0.02 0.0 50.0 - -	A 0		A 0 0.18 0.0 - -	A 0 0.09 0.0 50.0 - -	A 0		B 10 0.11 2.8 - -				A 9 0.01 0.2 - -	A 9	A 0	
	West Street D & William Halton Parkway	TCS	LOS Delay V/C Q Stor. Avail.	A 0 0.00 50 50	B 15 0.65 127 0 - 50 - 50	A 0 0.00 0 50 50	B 15	A 7 0.17 4 50 46	A 1 0.00 10 0 50 - 50	A 0 0.00 0 50 50	A 2	D 50 0.12 6 50 44	A 0 0.00 0 50 - 44	> > >	D 50	A 0 0.00 0 50 50	A 0 0.00 0 - -	> > >	A 0	B 11 0.50
	West Street A & West Street B	TWSC	LOS Delay V/C Q	A 9 0.10 2.4		> > >	A 9					< < <	A 0 0.00 0.0		A 0		A 0 0.00 0.0	> > >	A 0	A 6
	West Street D & West Street B	TWSC	LOS Delay V/C Q					A 8 0.01 0.1	> > >	A 8		A 0 0.00 0.0	> > >	A 0	< < <	A 7 0.06 1.4		A 7	A 7	
	West Street C & West Street A	TWSC	LOS Delay V/C Q	< < <	A 0 0.00 0.0	> > >	A 0		A 0 0.10 0.0	> > >	A 0					A 9 0.04 1.0	> > >	A 9	A 2	
	West Street D & West Street C	TWSC	LOS Delay V/C Q	< < <	A 0 0.00 0.0	> > >	A 0	< < <	A 4 0.05 1.3	> > >	A 4	< < <	B 10 0.05 1.3	> > >	B 10	< < <	B 13 0.31 9.9	> > >	B 13	A 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

TWSC - Two-Way Stop Control

</> - Shared with through movement



TABLE 4.6C: SCENARIO B 2031 TOTAL OPERATIONS – PM PEAK HOUR (TRAFALGAR INTERSECTIONS)

Analysis Period	Intersection	Control Type	MOE	Direction/Movement/Approach																	
				Eastbound				Westbound				Northbound				Southbound				Overall	
				Left	Through	Right	Approach	Left	Through	Right	Approach	Left	Through	Right	Approach	Left	Through	Right	Approach		
PM Peak Hour	Trafalgar Rd & Lower Base Line	TCS	LOS Delay V/C Q Stor. Avail.	D 54 0.43 18 45 27	D 54 0.44 46 - -	> > > > >	D 54	D 54 0.82 90 110 20	F 82 0.99 160 - -	> > > > >	E 75	F 93 1.01 159 90 -69	D 40 0.91 222 - 51	B 15 0.34 39 90 51	D 44	F 112 1.04 110 90 -20	D 38 0.71 137 - 79	C 22 0.06 11 90 -	D 48	D 51 1.03	
	Trafalgar Rd & Hwy 407 WB Off	TCS	LOS Delay V/C Q Stor. Avail.	< < < < <	D 47 0.03 4 - -	> > > > >	D 47	D 41 0.72 79 - -	C 43 0.75 83 - -	> > 18 60 42	D 39	B 15 0.10 4 65 61	D 51				B 19 0.65 140 - 15	B 11 0.00 0 15 15	B 19	D 39 0.89	
	Trafalgar Rd & Hwy 407 EB Off	TCS	LOS Delay V/C Q	C 26 0.19 18		C 30 0.57 42	C 29							B 16 0.93 224	B 16			A 7 0.61 84		A 7	B 14 0.87
	Trafalgar Rd & West Street A/East Street A	TCS	LOS Delay V/C Q Stor. Avail.	F 295 1.46 180 50 -130	E 67 0.31 24 - -	E 65 0.15 23 50 27	F 208	A 0 0.00 0 50 50	A 0 0.00 0 - -	F 536 2.04 431 50 -381	F 536	B 15 0.11 2 90 88	D 36 0.93 12 - 78	B 12 0.20 12 90 78	C 33	F 81 0.93 174 90 -84	A 6 0.45 85 - -	A 0 0.10 1 90 89	B 18	F 100 1.32	
	Trafalgar Rd & William Halton Parkway	TCS	LOS Delay V/C Q Stor. Avail.	F 212 1.33 235 100 -135	D 45 0.43 71 - -	D 40 0.06 11 100 89	F 126	F 108 1.10 175 100 -75	F 199 1.30 291 - -	E 55 0.70 114 150 36	F 149	F 317 1.56 234 150 -84	F 195 1.32 346 - 59	C 33 0.08 16 75 59	F 209	F 306 1.53 178 - -	E 75 1.00 202 - -	D 42 0.32 48 - -	F 105	F 156 1.42	
	Trafalgar Rd & Burnhamthorpe Rd	TCS	LOS Delay V/C Q Stor. Avail.	E 62 0.84 44 30 -14	C 34 0.54 78 - -	> > > > >	D 43	C 26 0.37 26 15 -11	F 162 1.24 240 - -	> > > > >	F 143	C 33 0.50 16 60 44	E 72 1.06 199 - 49	B 16 0.09 11 60 49	E 67	F 116 1.10 108 60 -48	C 25 0.63 98 - -	B 14 0.16 10 60 50	D 38	E 66 1.13	
	Trafalgar Rd & West Street C	TWSC	LOS Delay V/C Q Stor. Avail.			B 10 0.13 3.3 - -	B 10							A 0 0.51 0.0 - -	A 0			A 0 0.37 0.0 - -	A 0 0.07 0.0 90.0 -	A 0	A 0

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

TWSC - Two-Way Stop Control

AWSC - All-Way Stop Control

</> - Shared with through movement



TABLE 4.6D: SCENARIO B 2031 TOTAL OPERATIONS – PM PEAK HOUR (NEW INTERSECTIONS)

Analysis Period	Intersection	Control Type	MOE	Direction/Movement/Approach																
				Eastbound				Westbound				Northbound				Southbound				Overall
				Left	Through	Right	Approach	Left	Through	Right	Approach	Left	Through	Right	Approach	Left	Through	Right	Approach	
PM Peak Hour	East Street D & East Street A	TWSC	LOS Delay V/C Q		A 0 0.06 0.0	A 0 0.34 0.0	A 0	< < <	A 0 0.00 0.0		A 0	B 13 0.49 20.8	> > >	B 13					A 5	
	East Street E & East Street A	TWSC	LOS Delay V/C Q		A 0 0.06 0.0	> > >	A 0	< < <	A 0 0.00 0.0		A 0	A 0 0.00 0.0	> > >	A 0					A 0	
	East Street D & East Street B	TWSC	LOS Delay V/C Q					B 12 0.04 0.9	> > >	B 12		A 0 0.14 0.0	> > >	A 0	< < <	A 1 0.02 0.5		A 1	A 1	
	East Street E & East Street B	TWSC	LOS Delay V/C Q	< < <	A 9 0.06 1.4	> > >	A 9	< < <	A 0 0.00 0.0	> > >	A 0	< < <	A 0 0.00 0.0	> > >	A 0	< < <	A 0 0.00 0.0	> > >	A 0	A 3
	William Halton Parkway & East Street D	TWSC	LOS Delay V/C Q Stor. Avail.		A 0 0.25 0.0 - -		A 0		A 0 0.05 0.0 - -	A 0							D 26 0.74 48.3 - -	D 26	A 4	
	William Halton Parkway & East Street E	TCS	LOS Delay V/C Q Stor. Avail.	A 0 0.00 90 90	A 4 0.30 33 - -		A 4		B 20 0.83 208 - -	A 0 0.00 0 50	B 20				D 50 0.60 53 - -		> > > >	D 50	B 17 0.74	
	West Street A & Transit Station	TWSC	LOS Delay V/C Q					B 11 0.20 5.7	> > >	B 11		A 0 0.30 0.0	> > >	A 0	< < <	A 0 0.00 0.0		A 0	A 3	
	East Street A/West Street A & William Halton Parkway	TWSC	LOS Delay V/C Q Stor. Avail.		A 0 0.23 0.0 - -	A 0 0.01 90.0 - -	A 0		A 0 0.54 0.0 - -	A 0 0.09 0.0 90.0 - -	A 0		B 11 0.29 8.9 - -	B 11			B 11 0.06 1.5 - -	B 11	A 1	
	West Street D & William Halton Parkway	TCS	LOS Delay V/C Q Stor. Avail.	A 0 0.00 90 90	A 7 0.40 35 0 - 90 - 90	A 0 0.00 90 90	A 7	A 4 0.19 5 90 85	A 6 0.73 70 0 90 - 90	A 0 0.00 0 90	A 6	B 20 0.11 10 50 40	A 0 0.00 0 - -	B 20	A 0 0.00 50 50	A 0 0.00 0 - -	> > > >	A 0	A 7 0.67	
	East Street A & West Street B	TWSC	LOS Delay V/C Q	A 9 0.09 2.1		> > >	A 9					< < <	A 0 0.00 0.0		A 0		A 0 0.07 0.0	> > >	A 0	A 4
	West Street D & West Street B	TWSC	LOS Delay V/C Q					A 8 0.02 0.6	> > >	A 8		A 0 0.00 0.0	> > >	A 0	< < <	A 7 0.05 1.1		A 7	A 8	
	East Street C & East Street A	TWSC	LOS Delay V/C Q	< < <	A 0 0.00 0.0		A 0		A 0 0.07 0.0	> > >	A 0					A 9 0.11 2.7		> > >	A 9	A 4
	West Street D & East Street C	TWSC	LOS Delay V/C Q	< < <	A 0 0.00 0.0	> > >	A 0	< < <	A 4 0.09 2.2	> > >	A 4	< < <	C 17 0.45 17.4	> > >	C 17	< < <	F 106 1.08 103.1	> > >	F 106	

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

TWSC - Two-Way Stop Control

AWSC - All-Way Stop Control

</> - Shared with through movement



4.3.5 Total Operations – 2041 Scenario A

Table 4.7 summarizes the level of service conditions for Scenario A 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 peak hour. LOS F, v/c ratio greater than 1.00, and queue exceeds storage during PM peak hour;
- Westbound through/right-turn – LOS F and v/c ratio of 0.99 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 – LOS F and v/c ratio greater than 1.00 during AM peak hour;
- Southbound left-turn – LOS F, v/c ratio greater than 1.00, and queue exceed storage during AM and PM peak hour;
- Southbound through – LOS E and v/c ratio greater than 1.00 during PM peak hour.

► **Trafalgar Road and Highway 407 Westbound Off-Ramp:**

- Overall – v/c ratio of 0.96 during AM peak hour and greater than 1.00 during PM peak hour;
- Westbound left – LOS and v/c ratio of 0.82 during PM peak hour;
- Westbound through – LOS D and v/c ratio of 0.77 during the AM peak hour. LOS D and v/c ratio of 0.88 during PM peak hour;
- Northbound through – LOS F and v/c ratio greater than 1.00 during the PM peak hour.
- Southbound through – LOS D 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.



► **Trafalgar Road and Highway 407 Eastbound Off-Ramp:**

- Overall – v/c ratio greater than 1.00 during AM and PM peak hour;
- Northbound through – LOS F and v/c ratio greater than 1.00 during PM peak hour;
- Southbound through – LOS B and v/c ratio of 0.94 during AM peak hour. LOS D and v/c ratio greater than 1.00 during PM peak hour.

► **Trafalgar Road and Street A (formerly GO Carpool lot):**

- Overall – v/c ratio of 1.00 during the AM peak hour and greater than 1.00 during PM peak hour;
- Eastbound left-turn – LOS F, v/c ratio greater than 1.00, and queue exceed storage during PM peak hour;
- Westbound right-turn – queue exceeds storage during AM peak hour. LOS F and queue exceeds storage during PM 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, v/c ratio of 0.95, and queue exceeds storage during AM peak hour. LOS F, v/c ratio of 0.97, and queue exceeds storage during PM peak hour.

► **Trafalgar Road and William Halton Parkway:**

- Overall – v/c ratio greater than 1.00 during AM and PM peak hour;
- Eastbound left-turn – LOS F, v/c ratio greater than 1.00, and queue exceeds storage during AM and PM peak hour;
- Westbound left-turn – LOS F and v/c ratio greater than 1.00 during AM peak hour;
- Westbound through – LOS F and v/c ratio greater than 1.00 during PM peak hour;
- Westbound right-turn – LOS F, v/c ratio of 0.95, and queue exceeds storage during PM peak hour.
- Northbound left-turn – LOS F, v/c ratio greater than 1.00, and queue exceeds storage during AM and PM peak hour;
- Northbound through – LOS F and v/c ratio greater than 1.00 during AM and PM peak hour;



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

The new municipal roads are forecast to operate with acceptable levels of service during the AM and PM peak hours.

Appendix G1 contains the detailed Synchro 10 reports.

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 4.7A: SCENARIO A 2041 TOTAL OPERATIONS – AM PEAK HOUR (TRAFALGAR INTERSECTIONS)

Analysis Period	Intersection	Control Type	MOE	Direction/Movement/Approach																
				Eastbound				Westbound				Northbound				Southbound				Overall
				Left	Through	Right	Approach	Left	Through	Right	Approach	Left	Through	Right	Approach	Left	Through	Right	Approach	
AM Peak Hour	Trafalgar Rd & Lower Base Line	TCS	LOS Delay V/C Stor. Avail.	C 34 0.49 44 45 1	F 178 1.26 170 - -	> > > > >	F 155	F 255 1.44 154 110 -44	D 40 0.26 26 - -	> > > > >	F 146	C 27 0.35 10 90 80	F 101 1.13 249 - -	C 27 0.31 37 90 53	F 90	F 271 1.48 225 90 -135	C 33 0.92 214 0 - 90	B 14 0.02 0 90 90	E 76	F 99 1.47
	Trafalgar Rd & Hwy 407 WB Off	TCS	LOS Delay V/C Stor. Avail.	< < < < <	D 51 0.01 0 - -	> > > > >	D 51	D 44 0.70 71 - -	D 51 0.77 78 - 60 60	C 32 0.02 0 60 60	D 47	C 26 0.08 3 65 62	B 18 0.82 247 - -		B 18		D 50 1.04 363 - 15 15	A 10 0.00 0 15 15	D 50	D 36 0.96
	Trafalgar Rd & Hwy 407 EB Off	TCS	LOS Delay V/C Stor. Avail.	D 36 0.65 66		D 38 0.69 68	D 37						B 12 0.76 158		B 12		B 20 0.94 275		B 20	B 18 0.89
	Trafalgar Rd & West Street A/East Street A	TCS	LOS Delay V/C Stor. Avail.	E 70 0.72 56 50 -6	D 53 0.10 14 - -	D 53 0.05 13 50 37	E 62	A 0 0.00 0 50 50	A 0 0.00 106 50 - -56	D 37	C 26 0.21 3 47	E 76 1.08 378 - -	B 17 0.25 42 50 8	E 71	E 75 0.95 160 30 -130	B 10 0.76 188 - -	A 4 0.12 12 30 18	B 18	D 44 1.00	
	Trafalgar Rd & William Halton Parkway	TCS	LOS Delay V/C Stor. Avail.	F 499 2.00 319 100 -219	E 74 0.98 198 - -	D 38 0.17 23 100 77	F 209	F 300 1.50 140 100 -40	D 53 0.68 97 - -	D 46 0.25 35 150 115	F 111	F 232 1.36 176 150 -26	F 224 1.39 394 - -	C 30 0.14 22 75 53	F 216	F 548 2.08 344 - -	F 85 1.07 282 - -	C 28 0.18 28 - -	F 179	F 190 2.04
	Trafalgar Rd & Burnhamthorpe Rd	TCS	LOS Delay V/C Stor. Avail.	F 245 1.41 233 30 -203	F 123 1.12 265 - -	> > > > >	F 177	E 65 0.64 29 15 -14	F 182 1.22 193 - -	> > > > >	F 161	C 33 0.43 15 60 45	F 110 1.14 311 - -	C 25 0.14 19 60 41	F 103	F 264 1.44 189 60 -129	C 29 0.72 158 - -	B 19 0.17 22 60 38	E 65	F 106 1.46
	Trafalgar Rd & West Street C	TWSC	LOS Delay V/C Stor. Avail.			B 12 0.19 5.4 - -	B 12						A 0 0.63 0.0 - -		A 0		A 0 0.45 0.0 - -	A 0 0.13 0.0 90.0 -	A 0	A 0

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

TWSC - Two-Way Stop Control

</> - Shared with through movement



TABLE 4.7B: SCENARIO A 2041 TOTAL OPERATIONS – AM PEAK HOUR (NEW INTERSECTIONS)

Analysis Period	Intersection	Control Type	MOE	Direction/Movement/Approach																Overall
				Eastbound				Westbound				Northbound				Southbound				
				Left	Through	Right	Approach	Left	Through	Right	Approach	Left	Through	Right	Approach	Left	Through	Right	Approach	
AM Peak Hour	East Street D & East Street A	TWSC	LOS Delay V/C Q		A 0 0.31 0.0	> > >	A 0	< < <	A 0 0.00 0.0		A 0	B 14 0.27 8.2	> > >	B 14					A 3	
	East Street E & East Street A	TWSC	LOS Delay V/C Q		A 0 0.04 0.0	> > >	A 0	< < <	A 0 0.00 0.0		A 0	A 9 0.14 3.8	> > >	A 9					A 6	
	East Street D & East Street B	TWSC	LOS Delay V/C Q					B 11 0.14 3.5	> > >	B 11		A 0 0.05 0.0	> > >	A 0	< < <	A 0 0.01 0.2		A 0	A 3	
	East Street E & East Street B	TWSC	LOS Delay V/C Q	< < <	B 12 0.21 5.8	> > >	B 12	< < <	A 0 0.00 0.0	> > >	A 0	< < <	A 7 0.13 3.3	> > >	A 7	< < <	A 0 0.00 0.0	> > >	A 0	A 8
	William Halton Parkway & East Street D	TWSC	LOS Delay V/C Q Stor. Avail.		A 0 0.54 0.0 - -		A 0		A 0 0.25 0.0 - 50.0	A 0 0.02 0.0 - -	A 0						B 10 0.24 7.0 - -	B 10	A 1	
	William Halton Parkway & East Street E	TCS	LOS Delay V/C Q Stor. Avail.	A 8 0.56 21 50 29	A 7 0.68 77 - -		A 7		B 12 0.56 52 3 50 47	A 8 0.01 3 50 47	B 12					B 20 0.39 21 - -	> > > > >	B 20	A 10 0.70	
	West Street A & Transit Station	TWSC	LOS Delay V/C Q					A 7 0.09 2.3	> > >	A 7		A 9 0.18 4.8	> > >	A 9	< < <	A 0 0.00 0.0		A 0	A 8	
	West Street A & William Halton Parkway	TWSC	LOS Delay V/C Q Stor. Avail.		A 0 0.49 0.0 - -	A 0 0.02 0.0 50.0 - -	A 0		A 0 0.29 0.0 0.0 50.0 - -	A 0 0.06 0.0 50.0 - -	A 0		B 14 0.37 12.8 - -		B 14		A 10 0.01 0.3 - -	A 10	A 1	
	West Street D & William Halton Parkway	TCS	LOS Delay V/C Q Stor. Avail.	A 0 0.00 0 50 50	C 25 0.83 204 2 50 - 48	B 12 0.02 50 48	C 25	C 30 0.49 56 50 -6	A 2 0.23 25 4 50 - 46	A 2 0.07 4 50 46	A 9	D 46 0.13 11 50 39	D 45 0.02 0 - -	D 45	D 52 0.56 34 50 16	D 45 0.00 0 50 -	> > > > >	D 52	C 20 0.71	
	West Street A & West Street B	TWSC	LOS Delay V/C Q	A 10 0.22 6.4		> > >	A 10					< < <	A 0 0.00 0.0		A 0		A 0 0.04 0.0	> > >	A 0	A 6
	West Street D & West Street B	TWSC	LOS Delay V/C Q					A 8 0.01 0.2	> > >	A 8		A 0 0.02 0.0	> > >	A 0	< < <	A 5 0.11 2.8		A 5	A 5	
	West Street C & West Street A	TWSC	LOS Delay V/C Q	< < <	A 0 0.00 0.0	> > >	A 0		A 0 0.13 0.0	> > >	A 0					B 10 0.13 3.3	> > >	B 10	A 3	
	West Street D & West Street C	TWSC	LOS Delay V/C Q	< < <	A 0 0.00 0.0	> > >	A 0	< < <	A 1 0.00 0.1	> > >	A 1	< < <	A 9 0.04 1.0	> > >	A 9	< < <	A 10 0.10 2.4	> > >	A 10	A 7

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

TWSC - Two-Way Stop Control

</> - Shared with through movement



TABLE 4.7C: SCENARIO A 2041 TOTAL OPERATIONS – PM PEAK HOUR (TRAFALGAR INTERSECTIONS)

Analysis Period	Intersection	Control Type	MOE	Direction/Movement/Approach																
				Eastbound				Westbound				Northbound				Southbound				Overall
				Left	Through	Right	Approach	Left	Through	Right	Approach	Left	Through	Right	Approach	Left	Through	Right	Approach	
PM Peak Hour	Trafalgar Rd & Lower Base Line	TCS	LOS Delay V/C Q Stor. Avail.	E 59 0.52 22 45 23	E 62 0.65 57 - -	> > > > >	E 62	F 184 1.27 194 110 -84	F 164 1.22 218 - -	> > > > >	F 170	F 178 1.25 218 90 -128	F 94 1.11 334 - -	B 14 0.43 60 90 30	F 95	F 192 1.26 146 90 -56	E 68 1.02 243 - -	C 23 0.09 15 90 75	F 81	F 103 1.31
	Trafalgar Rd & Hwy 407 WB Off	TCS	LOS Delay V/C Q Stor. Avail.	< < < < <	E 58 0.03 8 - -	> > > > >	E 58	D 44 0.82 141 - -	D 52 0.88 156 - -	C 24 0.16 24 60 36	D 44	C 26 0.16 7 65 58	F 270 1.52 526 - -		F 269		F 93 1.11 342 - -	B 19 0.00 0 15 15	F 93	F 172 1.17
	Trafalgar Rd & Hwy 407 EB Off	TCS	LOS Delay V/C Q	C 22 0.17 20		C 32 0.72 71	C 30						F 137 1.26 360		F 137		D 35 1.01 258		D 35	F 88 1.12
	Trafalgar Rd & West Street A/East Street A	TCS	LOS Delay V/C Q Stor. Avail.	F 164 1.13 123 50 -73	E 67 0.24 19 - -	E 66 0.08 19 50 31	F 127	A 0 0.00 0 50 50	A 0 0.00 0 - -	F 335 1.59 334 50 -284	F 335	C 28 0.25 3 90 87	F 173 1.31 546 - -	B 12 0.17 17 90 73	F 163	F 89 0.97 186 90 -96	B 10 0.75 203 - -	A 0 0.08 1 90 89	B 19	F 115 1.41
	Trafalgar Rd & William Halton Parkway	TCS	LOS Delay V/C Q Stor. Avail.	F 946 2.98 623 100 -523	D 48 0.60 99 - -	D 40 0.10 17 100 83	F 578	F 202 1.34 240 100 -140	F 345 1.63 393 - -	F 86 0.95 189 150 -39	F 263	F 1213 3.57 600 150 -450	F 290 1.53 428 75 5	D 40 0.42 70 75 5	F 504	F 716 2.46 310 - -	F 248 1.43 349 - -	E 64 0.84 170 - -	F 289	F 401 3.17
	Trafalgar Rd & Burnhamthorpe Rd	TCS	LOS Delay V/C Q Stor. Avail.	F 209 1.30 86 30 -56	D 37 0.66 97 - -	> > > > >	F 102	C 29 0.53 31 15 -16	F 396 1.78 368 - -	> > > > >	F 352	D 42 0.64 24 60 36	F 253 1.48 327 - -	B 17 0.13 16 60 44	F 235	F 212 1.35 144 60 -84	C 29 0.77 129 - -	B 15 0.21 13 60 47	E 55	F 182 1.56
	Trafalgar Rd & West Street C	TWSC	LOS Delay V/C Q Stor. Avail.			B 13 0.39 14.2 - -	B 13						A 0 0.73 0.0 - -		A 0		A 0 0.41 0.0 - -	A 0 0.36 0.0 90.0 -	A 0	A 1

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

TWSC - Two-Way Stop Control

AWSC - All-Way Stop Control

</> - Shared with through movement



TABLE 4.7D: SCENARIO A 2041 TOTAL OPERATIONS – PM PEAK HOUR (NEW INTERSECTIONS)

Analysis Period	Intersection	Control Type	MOE	Direction/Movement/Approach																Overall
				Eastbound				Westbound				Northbound				Southbound				
				Left	Through	Right	Approach	Left	Through	Right	Approach	Left	Through	Right	Approach	Left	Through	Right	Approach	
PM Peak Hour	East Street D & East Street A	TWSC	LOS Delay V/C Q		A 0 0.11 0.0	A 0 0.23 0.0	A 0	< < <	A 0 0.00 0.0		A 0	B 14 0.28 8.4	> > >	B 14					A 2	
	East Street E & East Street A	TWSC	LOS Delay V/C Q		A 0 0.05 0.0	> > >	A 0	< < <	A 0 0.00 0.0		A 0	B 10 0.29 9.2	> > >	B 10					A 8	
	East Street D & East Street B	TWSC	LOS Delay V/C Q					B 12 0.14 3.6	> > >	B 12		A 0 0.06 0.0	> > >	A 0	< < <	A 0 0.01 0.1		A 0	A 2	
	East Street E & East Street B	TWSC	LOS Delay V/C Q	< < <	D 34 0.67 34.6	> > >	D 34	< < <	A 0 0.00 0.0	> > >	A 0	< < <	A 8 0.24 7.2	> > >	A 8	< < <	A 0 0.00 0.0	> > >	A 0	C 15
	William Halton Parkway & East Street D	TWSC	LOS Delay V/C Q Stor. Avail.		A 0 0.42 0.0 - -		A 0		A 0 0.70 0.0 - -	A 0 0.04 0.0 50.0 - -	A 0						D 33 0.71 40.7 - -	D 33	A 2	
	William Halton Parkway & East Street E	TCS	LOS Delay V/C Q Stor. Avail.	F 209 1.32 150 90 -60	A 4 0.39 47 - -		D 55		E 58 1.06 366 - 42	A 8 0.05 8 50 42	E 57					D 54 0.67 60 - -	> > >	D 54	E 56 1.23	
	West Street A & Transit Station	TWSC	LOS Delay V/C Q					B 10 0.16 4.1	> > >	B 10		A 0 0.21 0.0	> > >	A 0	< < <	A 0 0.00 0.0		A 0	A 3	
	East Street A/West Street A & William Halton Parkway	TWSC	LOS Delay V/C Q Stor. Avail.		A 0 0.38 0.0 - -	A 0 0.02 0.0 90.0 -	A 0		A 0 0.90 0.0 - 90.0 -	A 0 0.08 0.0 90.0 -	A 0		C 19 0.70 44.1 - -	C 19			D 29 0.15 4.0 - -	D 29	A 2	
	West Street D & William Halton Parkway	TCS	LOS Delay V/C Q Stor. Avail.	A 0 0.00 0 90 90	C 30 0.81 102 - -	B 19 0.03 3 90 87	C 29	F 160 1.27 205 90 -115	C 20 0.93 233 - 82	A 6 0.16 8 90 82	D 51	C 25 0.22 21 50 29	C 24 0.10 0 - -	C 25	E 57 0.86 66 50 -16	C 24 0.01 0 - -	> > >	D 54	D 45 1.11	
	East Street A & West Street B	TWSC	LOS Delay V/C Q	C 16 0.61 32.0		> > >	C 16					< < <	A 0 0.00 0.0		A 0		A 0 0.05 0.0	> > >	A 0	A 11
	West Street D & West Street B	TWSC	LOS Delay V/C Q					A 10 0.04 0.8	> > >	A 10		A 0 0.12 0.0	> > >	A 0	< < <	A 6 0.27 8.2		A 6	A 5	
	East Street C & East Street A	TWSC	LOS Delay V/C Q	< < <	A 0 0.00 0.0		A 0		A 0 0.36 0.0	> > >	A 0					C 19 0.43 15.8	> > >	C 19	A 4	
	West Street D & East Street C	TWSC	LOS Delay V/C Q	< < <	A 0 0.00 0.0	> > >	A 0	< < <	A 4 0.09 2.2	> > >	A 4	< < <	C 17 0.45 17.4	> > >	C 17	< < <	F 106 1.08 103.1	> > >	F 106	E 49

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

TWSC - Two-Way Stop Control

AWSC - All-Way Stop Control

</> - Shared with through movement



4.3.6 Total Operations – 2041 Scenario B

Table 4.8 summarizes the level of service conditions for Scenario B 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, v/c ratio greater than 1.00, and queue exceeds storage during AM and 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, 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 AM and PM peak hour;
- Southbound left-turn – LOS F, v/c ratio greater than 1.00, and queue exceed storage during AM and PM peak hour;
- Southbound through – LOS E and v/c ratio greater than 1.00 during AM peak hour. LOS D and v/c ratio of 0.93 during PM peak hour.

► **Trafalgar Road and Highway 407 Westbound Off-Ramp:**

- Overall – v/c ratio of 0.96 during AM peak hour and greater than 1.00 during PM peak hour;
- Westbound left – LOS D and v/c ratio of 0.79 during AM peak hour. LOS D and v/c ratio of 0.77 during PM peak hour;
- Westbound through – LOS D and v/c ratio of 0.87 during the AM peak hour. LOS D and v/c ratio of 0.84 during PM peak hour;
- Northbound through – LOS F and v/c ratio greater than 1.00 during the PM peak hour.
- Southbound through – LOS F and v/c ratio greater than 1.00 during AM peak hour. LOS D and v/c ratio of 0.96 during PM peak hour.



► **Trafalgar Road and Highway 407 Eastbound Off-Ramp:**

- Overall – v/c ratio greater than 1.00 during AM and 0.89 during PM peak hour;
- Eastbound right-turn – LOS D and v/c ratio of 0.75 during AM peak hour;
- Northbound through – LOS F and v/c ratio greater than 1.00 during PM peak hour;
- Southbound through – LOS E and v/c ratio greater than 1.00 during AM peak hour. LOS B and v/c ratio of 0.88 during PM peak hour.

► **Trafalgar Road and Street A (formerly GO Carpool lot):**

- Overall – v/c ratio of 1.00 during the AM peak hour and greater than 1.00 during PM peak hour;
- Eastbound left-turn – LOS F, v/c ratio greater than 1.00, and queue exceeds storage during PM peak hour;
- Westbound right-turn – queue exceeds storage during AM peak hour. LOS F and queue exceeds storage during PM peak hour;
- Northbound through – LOS F and v/c ratio greater than 1.00 during AM and PM peak hour;
- Southbound left-turn – LOS F, v/c ratio greater than 1.00, and queue exceeds storage during AM peak hour. Queue exceeds storage during PM peak hour.

► **Trafalgar Road and William Halton Parkway:**

- Overall – v/c ratio greater than 1.00 during AM and PM peak hour;
- Eastbound left-turn – LOS F, v/c ratio greater than 1.00, and queue exceeds storage during AM and PM peak hour;
- Eastbound through – 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 hour;
- Westbound through – LOS F and v/c ratio greater than 1.00 during PM peak hour;
- Westbound right-turn – LOS F, v/c ratio of 0.95, and queue exceeds storage during PM peak hour.
- Northbound left-turn – LOS F, v/c ratio greater than 1.00, and queue exceeds storage during AM and PM peak hour;



- Northbound through – LOS F and v/c ratio greater than 1.00 during AM and PM peak hour;
 - Southbound left-turn – LOS F, v/c ratio greater than 1.00, and queue exceed storage during AM and PM peak hour;
 - Southbound through – LOS F and v/c ratio greater than 1.00 during AM and PM peak hour.
- **Trafalgar Road and Burnhamthorpe Road:**
- Overall – v/c ratio greater than 1.00 during AM and PM peak hour;
 - Eastbound left-turn – LOS F, v/c ratio greater than 1.00, and queue exceeds storage during AM and PM peak hour;
 - Eastbound through-right – LOS F and v/c ratio greater of 0.91 during AM peak hour;
 - Westbound left-turn – queue exceeds storage during AM and PM peak hour;
 - Westbound through-right – LOS F and v/c ratio greater than 1.00 during AM and PM peak hour;
 - Northbound through – LOS F and v/c ratio of 0.96 during AM peak hour. LOS F and v/c ratio greater than 1.00 during PM peak hour;
 - Southbound left-turn – LOS F, v/c ratio greater than 1.00, and queue exceed storage during AM and PM peak hour.

The new municipal roads are forecast to operate with acceptable levels of service during the AM and PM peak hours.

Appendix G2 contains the detailed Synchro 10 reports.

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 4.8A: SCENARIO B 2041 TOTAL OPERATIONS – AM PEAK HOUR (TRAFALGAR INTERSECTIONS)

Analysis Period	Intersection	Control Type	MOE	Direction/Movement/Approach																
				Eastbound				Westbound				Northbound				Southbound				Overall
				Left	Through	Right	Approach	Left	Through	Right	Approach	Left	Through	Right	Approach	Left	Through	Right	Approach	
AM Peak Hour	Trafalgar Rd & Lower Base Line	TCS	LOS Delay V/C Q Stor. Avail.	D 40 F 188 1.27 49 195 45 -4	> > > > > > >	F 165	F 257 D 43 0.24 193 110 -83	> > > > > >	F 154	C 35 F 120 1.15 12 288 90 78	F 107	F 260 E 58 1.03 0.02 323 0 90 -166	F 90	F 112 1.47						
	Trafalgar Rd & Hwy 407 WB Off	TCS	LOS Delay V/C Q Stor. Avail.	< 40 D 53 0.01 0 - -	> > > > > >	D 53	D 50 E 62 31 0.79 0.87 0.02 91 108 0 - - 60 60	E 55	C 27 C 22 0.09 0.85 3 229 65 - 62	C 22	F 125 B 12 0.00 1.21 0.00 422 0 15 15	F 125	E 78 0.96							
	Trafalgar Rd & Hwy 407 EB Off	TCS	LOS Delay V/C Q	D 37 40 0.71 83	D 40 0.75 87	D 38	E 63	A 0 A 0 34 C 34	C 33 F 89 21 F 80	F 213 B 12 4 D 44	E 60 1.00									
	Trafalgar Rd & West Street A/East Street A	TCS	LOS Delay V/C Q Stor. Avail.	E 71 D 54 54 0.71 0.10 0.05 54 14 12 50 - 50 38 -4 -	D 54 0.05 12 50 38	E 63	A 0 A 0 34 C 34	C 33 F 89 21 F 80	F 213 B 12 4 D 44	E 60 1.00										
	Trafalgar Rd & William Halton Parkway	TCS	LOS Delay V/C Q Stor. Avail.	F 524 D 82 38 2.06 1.01 0.18 326 207 24 100 - 100 76 -226 -	D 38 0.18 24 100 76	F 220	F 313 D 54 46 1.53 0.69 0.25 142 99 35 100 - 150 115 -42 -	D 46 0.25 35 150 115	F 114	F 560 D 251 31 2.11 1.45 0.22 299 419 35 150 - 75 40 -149 -	F 286	F 596 E 122 30 2.19 1.16 0.26 365 322 41 - - - -	F 212	F 229 2.04						
	Trafalgar Rd & Burnhamthorpe Rd	TCS	LOS Delay V/C Q Stor. Avail.	F 144 E 69 25 1.17 0.91 25 179 197 30 - 149 -	> > > > > >	F 102	E 57 F 110 25 0.52 1.01 25 151 25 15 - - 9 -	> > > > > >	F 100	C 24 D 51 25 0.26 0.96 0.10 11 232 12 60 - 60 48 49	D 49	F 127 C 25 19 1.09 0.56 0.11 129 110 14 60 - 60 46 -69 -	D 40	E 59 1.46						
	Trafalgar Rd & West Street C	TWSC	LOS Delay V/C Q Stor. Avail.		B 12 0.18 5.0 - -	B 12					A 0 0.70 0.0 - -	A 0		A 0 0 0.25 0.0 90.0 -	A 0	A 0				

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

TWSC - Two-Way Stop Control

</> - Shared with through movement



TABLE 4.8B: SCENARIO B 2041 TOTAL OPERATIONS – AM PEAK HOUR (NEW INTERSECTIONS)

Analysis Period	Intersection	Control Type	MOE	Direction/Movement/Approach																
				Eastbound				Westbound				Northbound				Southbound				Overall
				Left	Through	Right	Approach	Left	Through	Right	Approach	Left	Through	Right	Approach	Left	Through	Right	Approach	
AM Peak Hour	East Street D & East Street A	TWSC	LOS Delay V/C Q		A 0 0.43 0.0	> > >	A 0	< < <	A 0 0.00 0.0		A 0	C 16 0.32 10.4	> > >	C 16					A 3	
	East Street E & East Street A	TWSC	LOS Delay V/C Q		A 0 0.04 0.0	> > >	A 0	< < <	A 0 0.00 0.0		A 0	A 9 0.13 3.4	> > >	A 9					A 6	
	East Street D & East Street B	TWSC	LOS Delay V/C Q					B 12 0.17 4.6	> > >	B 12		A 0 0.06 0.0	> > >	A 0	< < <	A 0 0.01 0.2		A 0	A 3	
	East Street E & East Street B	TWSC	LOS Delay V/C Q	< < <	B 14 0.23 6.6	> > >	B 14	< < <	A 0 0.00 0.0	> > >	A 0	< < <	A 8 0.19 5.1	> > >	A 8	< < <	A 0 0.00 0.0	> > >	A 0	A 8
	William Halton Parkway & East Street D	TWSC	LOS Delay V/C Q Stor. Avail.		A 0 0.58 0.0 - -			A 0	A 0 0.26 0.0 50.0 - -	A 0 0.02 0.0 50.0 - -	A 0						B 10 0.24 7.0 - -	B 10	A 1	
	William Halton Parkway & East Street E	TCS	LOS Delay V/C Q Stor. Avail.	C 21 0.82 52 50 -2	A 7 0.68 75 - -		A 9	B 13 0.61 54 50 47	A 9 0.01 3 50 47	B 13					B 19 0.38 20 - -	> > >	B 19	B 11 0.7		
	West Street A & Transit Station	TWSC	LOS Delay V/C Q					A 8 0.14 3.7	> > >	A 8		A 9 0.17 4.6	> > >	A 9	< < <	A 0 0.00 0.0		A 0	A 8	
	West Street A & William Halton Parkway	TWSC	LOS Delay V/C Q Stor. Avail.		A 0 0.51 0.0 - -	A 0 0.03 0.0 50.0 - -	A 0		A 0 0.35 0.0 50.0 - -	A 0 0.09 0.0 50.0 - -	A 0		B 15 0.39 13.8 - -				B 10 0.01 0.3 - -	B 10	A 1	
	West Street D & William Halton Parkway	TCS	LOS Delay V/C Q Stor. Avail.	A 0 0.00 0 50 50	C 27 0.87 231 - -	B 12 0.04 7 50 43	C 27	D 51 0.84 128 50 -78	A 2 0.23 24 4 50 46	A 2 0.09 4 50 46	B 18	D 46 0.14 12 50 38	D 45 0.02 0 - -	D 46	D 50 0.51 30 50 20	D 45 0.00 0 - -	D 50	C 24 0.71		
	West Street A & West Street B	TWSC	LOS Delay V/C Q	B 10 0.25 7.4		> > >	B 10					A 0 0.00 0.0	> > >	A 0		A 0 0.04 0.0	> > >	A 0	A 7	
	West Street D & West Street B	TWSC	LOS Delay V/C Q					A 8 0.01 0.2	> > >	A 8		A 0 0.02 0.0	> > >	A 0	< < <	A 5 0.17 4.5	> > >	A 5	A 5	
	West Street C & West Street A	TWSC	LOS Delay V/C Q	< < <	A 0 0.00 0.0	> > >	A 0		A 0 0.23 0.0	> > >	A 0					B 12 0.15 4.0	> > >	B 12	A 2	
	West Street D & West Street C	TWSC	LOS Delay V/C Q	< < <	A 0 0.00 0.0	> > >	A 0	< < <	A 4 0.05 1.3	> > >	A 4	< < <	B 10 0.05 1.3	> > >	B 10	< < <	B 13 0.31 9.9	> > >	B 13	A 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

TWSC - Two-Way Stop Control

</> - Shared with through movement



TABLE 4.8C: SCENARIO B 2041 TOTAL OPERATIONS – PM PEAK HOUR (TRAFALGAR INTERSECTIONS)

Analysis Period	Intersection	Control Type	MOE	Direction/Movement/Approach																
				Eastbound				Westbound				Northbound				Southbound				Overall
				Left	Through	Right	Approach	Left	Through	Right	Approach	Left	Through	Right	Approach	Left	Through	Right	Approach	
PM Peak Hour	Trafalgar Rd & Lower Base Line	TCS	LOS Delay V/C Q Stor. Avail.	53 0.39 21 45 24	E 61 0.63 56 -	> > > > >	E 60	F 161 1.20 169 110 -59	F 174 1.25 221 -	> > > > >	F 170	F 178 1.25 226 90 -136	F 129 1.20 384 82 -	B 15 0.52 90 8	F 120	F 190 1.26 146 90 -56	D 50 0.93 202 -	C 24 0.10 15 90 75	E 67	F 111 1.27
	Trafalgar Rd & Hwy 407 WB Off	TCS	LOS Delay V/C Q Stor. Avail.	< < < < <	D 54 0.03 8 -	> > > > >	D 54	D 41 0.77 114 -	D 48 0.84 126 -	C 26 0.17 24 60 36	D 41	C 23 0.15 7 65 58	F 296 1.58 602 -		F 295		D 42 0.96 300 -	B 16 0.00 0 15 15	D 42	F 179 1.21
	Trafalgar Rd & Hwy 407 EB Off	TCS	LOS Delay V/C Q	C 24 0.19 20		C 31 0.67 60	C 29						F 190 1.39 417		F 190		B 16 0.88 210		B 16	F 118 1.21
	Trafalgar Rd & West Street A/East Street A	TCS	LOS Delay V/C Q Stor. Avail.	F 205 1.26 161 50 -111	E 64 0.26 23 -	E 67 0.46 39 50 11	F 152	A 0 0.00 0 50 50	A 0 0.00 0 -	F 637 2.28 619 50 -569	F 637	C 22 0.17 3 90 87	F 299 1.57 606 -	B 19 0.27 38 90 52	F 278	E 65 0.89 207 90 -117	B 11 0.67 180 -	A 1 0.10 1 90 89	B 19	F 224 1.81
	Trafalgar Rd & William Halton Parkway	TCS	LOS Delay V/C Q Stor. Avail.	F 993 3.08 646 100 -546	D 48 0.61 101 -	D 40 0.10 17 100 83	F 612	F 407 1.80 361 100 -261	F 349 1.64 396 -	F 86 0.95 189 150 -39	F 314	F 744 2.52 412 150 -262	F 308 1.57 443 -	D 38 0.33 55 75 20	F 374	F 602 2.21 273 -	F 185 1.28 300 -	D 50 0.61 102 -	F 230	F 362 2.72
	Trafalgar Rd & Burnhamthorpe Rd	TCS	LOS Delay V/C Q Stor. Avail.	F 154 1.16 73 30 -43	D 37 0.66 97 -	> > > > >	E 78	C 29 0.53 31 15 -16	F 337 1.65 338 -	> > > > >	F 298	D 43 0.64 24 60 36	F 206 1.37 296 -	B 17 0.13 16 60 44	F 191	F 293 1.54 170 60 -110	C 32 0.85 150 -	B 15 0.27 19 60 41	E 71	F 153 1.55
	Trafalgar Rd & West Street C	TWSC	LOS Delay V/C Q Stor. Avail.			B 13 0.42 15.5 - -	B 13						A 0 0.67 0.0 - -		A 0		A 0 0.47 0.0 - -	A 0 0.18 0.0 90.0 -	A 0	A 1

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

TWSC - Two-Way Stop Control

</> - Shared with through movement



TABLE 4.8D: SCENARIO B 2041 TOTAL OPERATIONS – PM PEAK HOUR (NEW INTERSECTIONS)

Analysis Period	Intersection	Control Type	MOE	Direction/Movement/Approach																Overall
				Eastbound				Westbound				Northbound				Southbound				
				Left	Through	Right	Approach	Left	Through	Right	Approach	Left	Through	Right	Approach	Left	Through	Right	Approach	
PM Peak Hour	East Street D & East Street A	TWSC	LOS Delay V/C Q		A 0 0.11 0.0	A 0 0.34 0.0	A 0	< < < <	A 0 0.00 0.0		A 0	E 44 0.88 72.4	> > > >	E 44					B 13	
	East Street E & East Street A	TWSC	LOS Delay V/C Q		A 0 0.07 0.0	> > > >	A 0	< < < <	A 0 0.00 0.0		A 0	B 11 0.39 13.9	> > > >	B 11					A 8	
	East Street D & East Street B	TWSC	LOS Delay V/C Q					C 20 0.36 11.8	> > > >	C 20		A 0 0.14 0.0	> > > >	A 0	< < < <	A 1 0.02 0.5		A 1	A 3	
	East Street E & East Street B	TWSC	LOS Delay V/C Q	< < < <	C 21 0.58 27.5	> > > >	C 21	< < < <	A 0 0.00 0.0	> > > >	A 0	< < < <	A 7 0.16 4.1	> > > >	A 7	< < < <	A 0 0.00 0.0	> > > >	A 0	B 12
	William Halton Parkway & East Street D	TWSC	LOS Delay V/C Q Stor. Avail.		A 0 0.39 0.0 - -		A 0		A 0 0.68 0.0 - -	A 0 0.05 0.0 50.0 - -	A 0						F 188 1.32 190.9 - -	F 188	C 25	
	William Halton Parkway & East Street E	TCS	LOS Delay V/C Q Stor. Avail.	E 68 0.84 75 90 15	A 5 0.40 47 - -		B 16		E 59 1.05 348 - -	A 9 0.03 6 50 44	E 58				F 82 0.92 113 - -	> > > >	F 82	D 46 1.02		
	West Street A & Transit Station	TWSC	LOS Delay V/C Q					B 11 0.20 5.7	> > > >	B 11		A 0 0.30 0.0	> > > >	A 0	< < < <	A 0 0.00 0.0		A 0	A 3	
	East Street A/West Street A & William Halton Parkway	TWSC	LOS Delay V/C Q Stor. Avail.		A 0 0.38 0.0 - -	A 0 0.01 0.0 90.0 - -	A 0		A 0 0.77 0.0 - -	A 0 0.09 0.0 90.0 - -	A 0		C 22 0.77 57.4 - -	C 22			C 20 0.14 3.6 - -	C 20	A 3	
	West Street D & William Halton Parkway	TCS	LOS Delay V/C Q Stor. Avail.	A 0 0.00 0 90 90	B 18 0.61 101 - -	B 13 0.01 0 90 90	B 18	C 23 0.78 55 90 35	C 20 0.93 246 - -	A 5 0.07 5 90 85	B 20	C 27 0.25 22 50 28	C 25 0.09 0 - -	C 26	D 54 0.83 50 - -9	C 25 0.01 0 - -	> > > >	D 52	C 22 0.92	
	East Street A & West Street B	TWSC	LOS Delay V/C Q	B 15 0.55 25.4	> > > >	B 15						< < < <	A 0 0.00 0.0	A 0		A 0 0.08 0.0	> > > >	A 0	A 9	
	West Street D & West Street B	TWSC	LOS Delay V/C Q					A 9 0.05 1.1	> > > >	A 9		A 0 0.11 0.0	> > > >	A 0	< < < <	A 5 0.15 3.9		A 5	A 4	
	East Street C & East Street A	TWSC	LOS Delay V/C Q	< < < <	A 0 0.00 0.0	> > > >	A 0		A 0 0.23 0.0	> > > >	A 0					B 13 0.33 10.6	> > > >	B 13	A 4	
	West Street D & East Street C	TWSC	LOS Delay V/C Q	< < < <	A 0 0.00 0.0	> > > >	A 0	< < < <	A 3 0.03 0.7	> > > >	A 3	< < < <	B 11 0.27 8.3	B 11	< < < <	B 13 0.25 7.5	> > > >	B 13	A 10	

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

TWSC - Two-Way Stop Control

</> - Shared with through movement



5 Scenario Alternatives

Upon full build-out, the subject development is estimated to add significant traffic volumes to the study area roadways. Paradigm tested four development alternatives to determine their impacts of the local road network. The alternatives include:

- ▶ Density Reduction – an overall reduction in the number of units and GFA of 25% over the entire subject site;
- ▶ Increase Mode Share – a 35% mode share reduction on trip generation;
- ▶ East Side Only – only the development situated on the east side of Trafalgar Road; and
- ▶ West Side Only – only the development situated on the west side of Trafalgar Road.

Each alternative was tested separately. For instance, the density reduction, east side only, and west side only alternatives used the previously identified 20% mode share reduction.

The trip generation calculations, site generated traffic volumes, and 2041 total traffic volumes for each of the four alternatives are included in **Appendix H**.

Figure 5.1 and Figure 5.2 illustrate a graphical comparison of forecast traffic volumes along Trafalgar Road for Scenario A and Scenario B, respectively. It shows that each alternative will still be impacted by the forecast background traffic volumes on Trafalgar Road.

The Synchro analysis for each alternative includes the road improvements noted in **Section 4.1** and optimized signal timings.

Table 5.1 summarizes the critical movements for the four alternatives along the Trafalgar Road intersections can compares them to the scenarios presented in **Chapter 4**.

Appendix I contains the detailed Synchro 10 reports.











TABLE 5.1A: ALTERNATIVE OPERATIONS SUMMARY – AM PEAK HOUR

Analysis Period	Intersection	Results	2041 Base Case				25% Density Reduction				35% Mode Share				East Side Only		West Side Only	
			Background	Scenario A	Scenario B	Scenario A	Scenario B	Scenario A	Scenario B	Scenario A	Scenario B	Scenario A	Scenario B	Scenario A	Scenario B	Scenario A	Scenario B	
AM Peak Hour	Trafalgar Rd & Lower Base Line	Overall	(E) [1.31]	(F) [1.47]	(F) [1.47]	(F) [1.45]	(F) [1.49]	(F) [1.45]	(F) [1.49]	(F) [1.45]	(F) [1.49]	(F) [1.42]	(F) [1.45]	(F) [1.42]	(F) [1.45]	(F) [1.42]	(F) [1.45]	
		Critical Movements	EBT (F) [1.20] WBL (F) [1.25] NBT (E) [1.03] SBL (F) [1.35]	EBT (F) [1.26] WBL (F) [1.44] NBT (F) [1.13] SBL (F) [1.48] SBT (C) [0.92]	EBT (F) [1.27] WBL (F) [1.44] NBT (F) [1.15] SBL (F) [1.44] SBT (E) [1.03]	EBT (F) [1.26] WBL (F) [1.39] NBT (F) [1.08] SBL (F) [1.48] SBT (C) [0.87]	EBT (F) [1.26] WBL (F) [1.49] NBT (F) [1.07] SBL (F) [1.48] SBT (D) [0.96]	EBT (F) [1.26] WBL (F) [1.39] NBT (F) [1.09] SBL (F) [1.48] SBT (C) [0.88]	EBT (F) [1.26] WBL (F) [1.31] NBT (F) [1.02] SBL (F) [1.48] SBT (D) [0.88]	EBT (F) [1.26] WBL (F) [1.40] NBT (F) [1.03] SBL (F) [1.48] SBT (D) [0.88]								
		Overall	(B) [0.72]	(D) [0.96]	(E) [0.96]	(C) [0.91]	(D) [1.1]	(C) [0.91]	(E) [1.02]	(B) [0.83]	(C) [0.91]	(B) [0.83]	(B) [0.84]	(C) [0.91]	(B) [0.84]	(C) [0.91]		
		Critical Movements	-	WBT (D) [0.77] SBT (D) [1.04]	WBL (D) [0.79] WBT (E) [0.87] SBT (F) [1.21]	SBT (C) [0.97]	WBT (E) [0.81] SBT (E) [1.10]	SBT (C) [0.98]	WBT (E) [0.82] SBT (F) [1.12]	SBT (C) [0.89]	SBT (C) [0.98]	SBT (C) [0.89]	SBT (C) [0.98]	SBT (C) [0.89]	SBT (C) [0.98]	SBT (C) [0.89]	SBT (C) [0.98]	
AM Peak Hour	Trafalgar Rd & Hwy 407 EB Off	Overall	(B) [0.65]	(B) [0.89]	(D) [0.89]	(B) [0.83]	(C) [0.94]	(B) [0.84]	(C) [0.96]	(B) [0.84]	(C) [0.96]	(B) [0.75]	(B) [0.84]	(B) [0.76]	(B) [0.84]	(B) [0.76]	(B) [0.84]	
		Critical Movements	SBT (B) [0.90]	SBT (B) [0.94]	SBT (E) [1.13]	SBT (B) [0.86]	SBT (C) [1.00]	SBT (B) [0.87]	SBT (D) [1.02]	-	SBT (B) [0.87]	-	SBT (B) [0.87]	-	SBT (B) [0.87]	-	SBT (B) [0.87]	
		Overall	(B) [0.62]	(D) [1.1]	(E) [1.1]	(C) [0.91]	(D) [1.1]	(C) [0.91]	(D) [1.02]	(D) [1.02]	(B) [0.92]	(B) [0.92]	(B) [0.75]	(B) [0.84]	(B) [0.75]	(B) [0.84]	(B) [0.75]	(B) [0.84]
		Critical Movements	NBT* (B) [0.90]	NBT* (E) [1.08] SBL (E) [0.95]	NBT* (F) [1.11] SBL* (F) [1.34]	NBT* (D) [0.97]	NBT* (E) [1.08] SBL* (F) [1.06]	NBT* (D) [0.99]	NBT* (E) [1.08] SBL* (F) [1.06]	NBT* (C) [0.89]	NBT* (C) [0.94] SBL* (F) [1.24]	NBT* (C) [0.89]	NBT* (C) [0.94] SBL* (F) [1.24]	-	-	-	-	
AM Peak Hour	Trafalgar Rd & William Halton Parkway	Overall	(F) [2.44]	(F) [2.04]	(F) [2.04]	(F) [1.91]	(F) [1.96]	(F) [1.92]	(F) [1.98]	(F) [1.92]	(F) [1.98]	(F) [1.55]	(F) [1.81]	(F) [1.87]	(F) [1.9]	(F) [1.87]	(F) [1.9]	
		Critical Movements	EBL (F) [1.33] EBT (E) [0.89] NBT* (D) [0.99] SBL* (F) [3.10]	EBL* (F) [2.00] EBT (E) [0.98] WBL (F) [1.50] NBL (F) [1.36] NBT* (F) [1.39] SBL* (F) [2.08]	EBL* (F) [2.06] EBT (E) [1.01] WBL (F) [1.53] NBL* (F) [2.11] NBT* (F) [1.45] SBL* (F) [2.19] SBT (F) [1.16]	EBL* (F) [1.73] EBT (E) [0.96] WBL (F) [1.18] NBL (F) [1.08] NBT* (F) [1.36] SBL* (F) [2.03] SBT* (E) [1.04]	EBL* (F) [1.77] EBT (E) [0.96] WBL (F) [1.21] NBL* (F) [1.62] NBT* (F) [1.41] SBL* (F) [2.11] SBT (F) [1.11]	EBL* (F) [1.77] EBT (E) [0.96] WBL (F) [1.26] NBL (F) [1.10] NBT* (F) [1.37] SBL* (F) [2.04] SBT* (E) [1.04]	EBL* (F) [1.80] EBT (E) [0.98] WBL (F) [1.24] NBL* (F) [1.72] NBT* (F) [1.42] SBL* (F) [2.12] SBT (F) [1.12]	EBL (F) [1.11] EBT (E) [0.92] WBL (F) [1.24] NBT* (F) [1.38] NBT* (F) [1.44] SBL* (F) [1.86]	EBL (F) [1.18] EBT (E) [0.96] WBL (F) [1.40] NBT* (F) [1.44] SBL* (F) [2.20]	EBL (F) [1.84] EBT (E) [0.88] NBL (F) [1.34] NBT* (F) [1.26] SBL* (F) [1.90] SBT* (E) [1.06]	EBL (F) [1.84] EBT (E) [0.88] WBL (F) [1.24] NBL* (F) [1.72] NBT* (F) [1.42] SBL* (F) [2.12] SBT (F) [1.12]	EBL* (F) [1.80] EBT (E) [0.98] WBL (F) [1.24] NBL* (F) [1.72] NBT* (F) [1.42] SBL* (F) [2.12] SBT (F) [1.12]				
		Overall	(E) [1.21]	(F) [1.46]	(E) [1.46]	(F) [1.41]	(F) [1.44]	(F) [1.41]	(F) [1.42]	(F) [1.41]	(F) [1.42]	(E) [1.32]	(F) [1.34]	(F) [1.34]	(F) [1.34]	(F) [1.34]	(F) [1.34]	
		Critical Movements	EBL (F) [1.23] NBT* (F) [1.10] SBL (F) [1.17]	EBL* (F) [1.41] EBT* (F) [1.12] WBT (F) [1.22] NBT* (F) [1.14] SBL (F) [1.41]	EBL* (F) [1.17] EBT (E) [0.91] WBT (F) [1.01] NBT* (F) [0.96] SBL (F) [1.09]	EBL* (F) [1.38] EBT* (F) [1.12] WBT (F) [1.15] NBT* (F) [1.09]	EBL* (F) [1.39] EBT* (F) [1.12] WBT (F) [1.16] NBT* (F) [1.10]	EBL* (F) [1.39] EBT* (F) [1.12] WBT (F) [1.16] NBT* (F) [1.10]	EBL* (F) [1.43] EBT* (E) [1.12] WBT (F) [1.29] NBT* (F) [1.20]	EBL* (F) [1.38] EBT* (E) [1.12] WBT (F) [1.16] NBT* (F) [1.09]	EBL* (F) [1.35] EBT* (F) [1.12] WBT (F) [1.07] NBT* (F) [1.01]	EBL* (F) [1.35] EBT* (F) [1.12] WBT (F) [1.07] NBT* (F) [1.01]	EBL* (F) [1.36] EBT* (E) [1.12] WBT (F) [1.08] NBT* (F) [1.02]	EBL* (F) [1.36] EBT* (E) [1.12] WBT (F) [1.08] NBT* (F) [1.02]	EBL* (F) [1.38] EBT* (E) [1.12] WBT (F) [1.16] NBT* (F) [1.10]	EBL* (F) [1.38] EBT* (E) [1.12] WBT (F) [1.16] NBT* (F) [1.10]		

Movement (LOS) [v/c]

*Queues may impact upstream intersection



TABLE 5.1B: ALTERNATIVE OPERATIONS SUMMARY – PM PEAK HOUR

Movement (LOS) [v/c]
***Queues may impact upstream intersection**

Due to the high levels of congestion forecast for Trafalgar Road, further remedial measures to improve intersection capacity are not likely to be implemented. Rather, 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 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.

It is further recommended that Halton Region and the Town of Oakville push alternative mode of transportation along the Trafalgar Road corridor to reduce the use of single-occupant vehicles.



6 Conclusions and Recommendations

6.1 Conclusions

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

- ▶ **Existing Traffic Operations:** Capacity issues are identified at the following intersections:
 - Trafalgar Rad and Lower Base Line;
 - Trafalgar Road and Highway 407 Eastbound Off-Ramp;
 - Trafalgar Road and William Halton Parkway; and
 - Trafalgar Road and Burnhamthorpe Road.
- ▶ **Estimated Site Generated Traffic:** The subject site, following build-out, is estimated to generate approximately 3,129 vehicle trips during the AM peak hour and 5,823 vehicle trips during the PM peak hour for Scenario A, and approximately 4,107 vehicle trips during the AM peak hour and 6,088 vehicle trips during the PM peak hour.
- ▶ **Background Traffic Operations:** As the traffic volumes increase at the study area intersections, capacity issues continue. Capacity issues are identified at the following intersections:
 - Trafalgar Rad and Lower Base Line;
 - Trafalgar Road and Highway 407 Eastbound Off-Ramp;
 - Trafalgar Road and GO Carpool lot;
 - Trafalgar Road and William Halton Parkway; and
 - Trafalgar Road and Burnhamthorpe Road.
- ▶ **Total Traffic Operations:** The capacity deficiencies identified under background conditions will continue to occur with the addition of site generated traffic. Site generated traffic results in capacity deficiencies at the following intersections:
 - Trafalgar Rad and Lower Base Line;
 - Trafalgar Road and Highway 407 Westbound Off-Ramp;
 - Trafalgar Road and Highway 407 Eastbound Off-Ramp;
 - Trafalgar Road and Street A (formerly the GO Carpool lot);
 - Trafalgar Road and William Halton Parkway; and
 - Trafalgar Road and Burnhamthorpe Road.



- ▶ It is noted under background (without subject development) traffic conditions, operational issues are noted at the study area intersections. With the addition of site-generated traffic, the intersection operations are estimated to be come even more congested.
- ▶ The level of development proposed results in poor operations throughout the network. The transportation network cannot support the development without major infrastructure improvements to increase capacity, significant shift towards alternative mode support, or reduction in density.

6.2 Recommendations

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

- ▶ Each separate development Block have a detailed Transportation Impact Study and Transit Facilities Plan prepared prior to approval.
- ▶ 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

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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, Alexsandra <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 Burnhamthorpe 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:

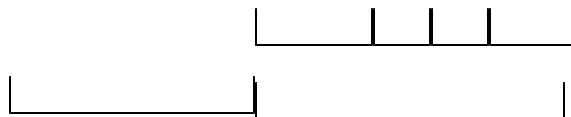
The proposed access to William Halton Parkway immediately to the east and west of Trafalgar Road will be restricted to right-in/right-out movements. The location must also be in accordance to the approved North Oakville Secondary Plan and at a location supported by the Town of Oakville.

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



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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

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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

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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

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

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 your 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) ratios, 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

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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, Alexandria](#); ["Asadullah Yousfani"](#)
Subject: RE: (210156/210157) Trafalgar & Hwy 407 TIS - Scope of Work
Date: June 18, 2021 8:28:16 AM
Attachments: [image001.png](#)

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 Burnhamthorpe 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



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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

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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

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Please consider the environment before printing this email.

<http://www.oakville.ca/privacy.html>

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

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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 your 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:
 - o LUC 221 – Multifamily Housing, Mid-Rise;
 - o LUC 222 – Multifamily Housing, High-Rise;
 - o LUC 710 – General Office; and
 - o 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) ratios, Level of Service (LOS) and 95th percentile queueing will be assessed.
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- 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

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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 <aevens@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

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Greetings,

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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 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.
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- 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 your 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) ratios, 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 greater 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: $\nless$

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

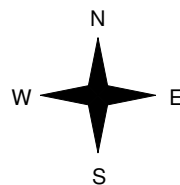
Peds Cross: $\nless$

Heavys	Trucks	Cars	Totals
6	1	252	259



Burnhamthorpe Rd E

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



Trafalgar Rd

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

Burnhamthorpe Rd E



Cars	Trucks	Heavys	Totals
627	2	5	634

Peds Cross: $\nless$

West Peds: 0

West Entering: 641

West Leg Total: 900

Cars	1091	Cars	36	1100	111	1247
Trucks	22	Trucks	0	11	1	12
Heavys	43	Heavys	1	52	0	53
Totals	1156	Totals	37	1163	112	



Peds Cross: $\nless$

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: $\nlessgtr$

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: $\nlessgtr$

Heavys	Trucks	Cars	Totals
5	6	145	156

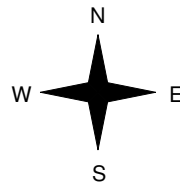


Burnhamthorpe Rd E

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



Trafalgar Rd



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

Burnhamthorpe Rd E



Cars	Trucks	Heavys	Totals
249	6	4	259

Peds Cross: $\nlessgtr$

West Peds: 0

West Entering: 143

West Leg Total: 299

Cars	629	Cars	30	505	50	585
Trucks	22	Trucks	2	14	1	17
Heavys	47	Heavys	2	53	1	56
Totals	698	Totals	34	572	52	



Peds Cross: $\nlessgtr$

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: $\nlessgtr$

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

	Heavys	Trucks	Cars	Totals
23	6	1646		
Totals	1675			

East Leg Total: 1028

East Entering: 551

East Peds: 0

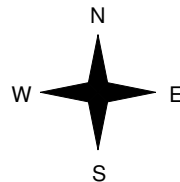
Peds Cross: $\nlessgtr$

Heavys	Trucks	Cars	Totals
1	1	381	383



Burnhamthorpe Rd E

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



Trafalgar Rd



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

Burnhamthorpe Rd E



Cars	Trucks	Heavys	Totals
474	2	1	477

Peds Cross: $\nlessgtr$

West Peds: 0

West Entering: 311

West Leg Total: 694

Cars	Trucks	Heavys	Totals
964	8	16	988
64	0	0	64
1299	5	19	1323
92	1	1	94
1455	6	20	



Peds Cross: $\nlessgtr$

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: $\nlessgtr$

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

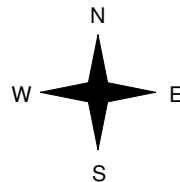
Peds Cross: $\nlessgtr$

Heavys	Trucks	Cars	Totals
19	15	1901	1935



Burnhamthorpe Rd E

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



Trafalgar Rd

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

Burnhamthorpe Rd E



Cars	Trucks	Heavys	Totals
3233	22	18	3273

Peds Cross: $\nlessgtr$

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: $\nlessgtr$

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 Ending	North Approach							East Approach							South Approach							West Approach							Veh. Summary	
	Cars			Trucks			Ped. Cross.	Cars			Trucks			Ped. Cross.	Cars			Trucks			Ped. Cross.	Cars			Trucks			Ped. Cross.	15	60
	Left	Thru	Right	Left	Thru	Right		Left	Thru	Right	Left	Thru	Right		Left	Thru	Right	Left	Thru	Right		Left	Thru	Right	Left	Thru	Right			
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

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	

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

Trucks 0 17

Cars 0 664

Totals 0 738

57

17

664



Heavys 74

Trucks 14

Cars 679

Totals 767

Heavys Trucks Cars Totals

0 0 0 0



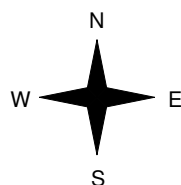
Hwy 407 EB Off Ramp

Heavys Trucks Cars Totals

4 1 23 28

8 0 13 21

12 1 36



Trafalgar Rd



Peds Cross: 

West Peds: 0

West Entering: 49

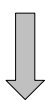
West Leg Total: 49

Cars 677

Trucks 17

Heavys 65

Totals 759



Cars 0 656

Trucks 0 13

Heavys 0 70

Totals 0 739

656

13

70

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

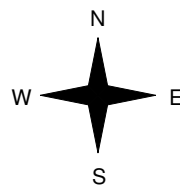
Heavys	Trucks	Cars	Totals
0	0	0	0



Trafalgar Rd



Hwy 407 EB Off Ramp



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



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	Trucks	Cars	Totals
	0	389	7933	8418

	Heavys	Trucks	Cars	Totals
	455	93	8702	9250

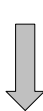
Heavys	Trucks	Cars	Totals
0	0	0	0


 Hwy 407 EB Off Ramp

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

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

	Cars	Trucks	Heavys	Totals
	8221	102	445	8768



	Cars	Trucks	Heavys	Totals
	8323	86	437	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 Ending	North Approach							East Approach							South Approach							West Approach							Veh. Summary	
	Cars			Trucks			Ped. Cross.	Cars			Trucks			Ped. Cross.	Cars			Trucks			Ped. Cross.	Cars			Trucks			Ped. Cross.	15	60
	Left	Thru	Right	Left	Thru	Right		Left	Thru	Right	Left	Thru	Right		Left	Thru	Right	Left	Thru	Right		Left	Thru	Right	Left	Thru	Right			
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 Ramp

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: $\times$

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



	Heavys	Trucks	Cars	Totals
South	58	12	1191	1261
Totals				

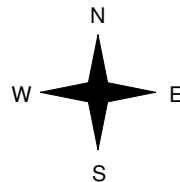
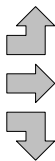
East Leg Total: 163
 East Entering: 163
 East Peds: 0
 Peds Cross: $\times$

Heavys	Trucks	Cars	Totals
3	1	4	8



Carpool Lot

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



Trafalgar Rd

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

Hwy 407 WB Off Ramp



Cars	Trucks	Heavys	Totals
0	0	0	0

Peds Cross: $\times$
 West Peds: 0
 West Entering: 8
 West Leg Total: 16

Cars	Trucks	Heavys	Totals
1532	21	66	1619



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

Peds Cross: $\times$
 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 Ramp

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: $\nlessgtr$

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

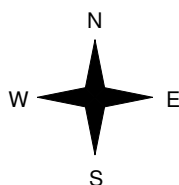
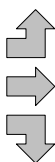
Peds Cross: $\nlessgtr$

Heavys	Trucks	Cars	Totals
0	0	12	12



Carpool Lot

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



Trafalgar Rd

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

Hwy 407 WB Off Ramp



Cars	Trucks	Heavys	Totals
0	0	0	0

Peds Cross: $\nlessgtr$

West Peds: 0

West Entering: 7

West Leg Total: 19

Cars	708	Cars	7	641	0	648
Trucks	20	Trucks	0	15	0	15
Heavys	56	Heavys	0	63	0	63
Totals	784	Totals	7	719	0	

Peds Cross: $\nlessgtr$

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 Ramp

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: $\nlessgtr$

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

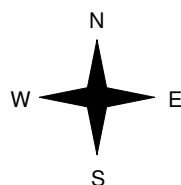
Peds Cross: $\nlessgtr$

Heavys	Trucks	Cars	Totals
1	0	19	20



Carpool Lot

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



Trafalgar Rd

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

Hwy 407 WB Off Ramp



Cars	Trucks	Heavys	Totals
0	0	0	0

Peds Cross: $\nlessgtr$

West Peds: 0

West Entering: 37

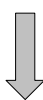
West Leg Total: 57

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: $\nlessgtr$

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 Ramp

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: $\nlessgtr$

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

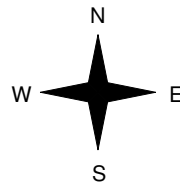
Peds Cross: $\nlessgtr$

Heavys	Trucks	Cars	Totals
10	2	87	99



Carpool Lot

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



Trafalgar Rd

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

Hwy 407 WB Off Ramp



Cars	Trucks	Heavys	Totals
0	0	0	0

Peds Cross: $\nlessgtr$

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: $\nlessgtr$

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 Ending	North Approach							East Approach							South Approach							West Approach							Veh. Summary	
	Cars			Trucks			Ped. Cross.	Cars			Trucks			Ped. Cross.	Cars			Trucks			Ped. Cross.	Cars			Trucks			Ped. Cross.	15	60
	Left	Thru	Right	Left	Thru	Right		Left	Thru	Right	Left	Thru	Right		Left	Thru	Right	Left	Thru	Right		Left	Thru	Right	Left	Thru	Right			
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: $\nlessgtr$

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: $\nlessgtr$

Heavys	Trucks	Cars	Totals
7	3	112	122

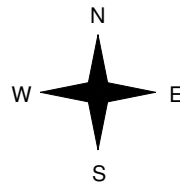


Lower Base Line E

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



Trafalgar Rd



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

Lower Base Line E



Cars	Trucks	Heavys	Totals
809	3	14	826

Peds Cross: $\nlessgtr$

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: $\nlessgtr$

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: $\nlessgtr$

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

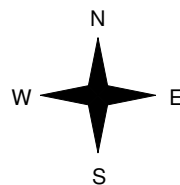
Peds Cross: $\nlessgtr$

Heavys	Trucks	Cars	Totals
8	3	138	149



Lower Base Line E

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



Trafalgar Rd

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

Lower Base Line E



Cars	Trucks	Heavys	Totals
217	3	23	243

Peds Cross: $\nlessgtr$

West Peds: 0

West Entering: 96

West Leg Total: 245

Cars	649	Cars	32	533	62	627
Trucks	13	Trucks	1	13	0	14
Heavys	48	Heavys	1	64	1	66
Totals	710	Totals	34	610	63	

Peds Cross: $\nlessgtr$

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: $\nlessgtr$

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: $\nlessgtr$

Heavys	Trucks	Cars	Totals
3	1	787	791

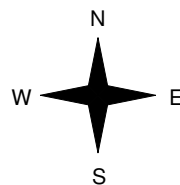


Lower Base Line E

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



Trafalgar Rd



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

Lower Base Line E



Cars	Trucks	Heavys	Totals
478	6	15	499

Peds Cross: $\nlessgtr$

West Peds: 0

West Entering: 240

West Leg Total: 1031

Cars	1075	Cars	273	1236	143	1652
Trucks	8	Trucks	0	9	1	10
Heavys	20	Heavys	0	26	1	27
Totals	1103	Totals	273	1271	145	



Peds Cross: $\nlessgtr$

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	Trucks	Cars	Totals
North	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

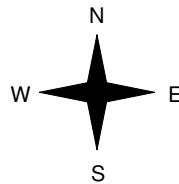
Peds Cross: 

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	



Trafalgar Rd

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

Peds Cross: 

West Peds: 0

West Entering: 2221

West Leg Total: 4873

Cars	Trucks	Heavys	Totals
7666	86	337	8089
768	7	6	781
6694	86	390	7170
733	4	10	747
8195	97	406	



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 Ending	North Approach									East Approach									South Approach									West Approach									Veh. Summary	
	Cars			Trucks			Ped. Cross.	Cars			Trucks			Ped. Cross.	Cars			Trucks			Ped. Cross.	Cars			Trucks			Ped. Cross.										
	Left	Thru	Right	Left	Thru	Right		Left	Thru	Right	Left	Thru	Right		Left	Thru	Right	Left	Thru	Right		Left	Thru	Right	Left	Thru	Right		Left	Thru	Right							
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@ptsll.com

Count Name: Trafalgar Road & Hwy 407 GO/Car
Pool Lot
Site Code: 210156
Start Date: 07/15/2021
Page No: 1

Turning Movement Data

Start Time	Hwy 407 GO/Car Pool Lot Eastbound					Trafalgar Road Northbound					Trafalgar Road Southbound					Int. Total
	Left	Right	U-Turn	Peds	App. Total	Left	Thru	U-Turn	Peds	App. Total	Thru	Right	U-Turn	Peds	App. 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

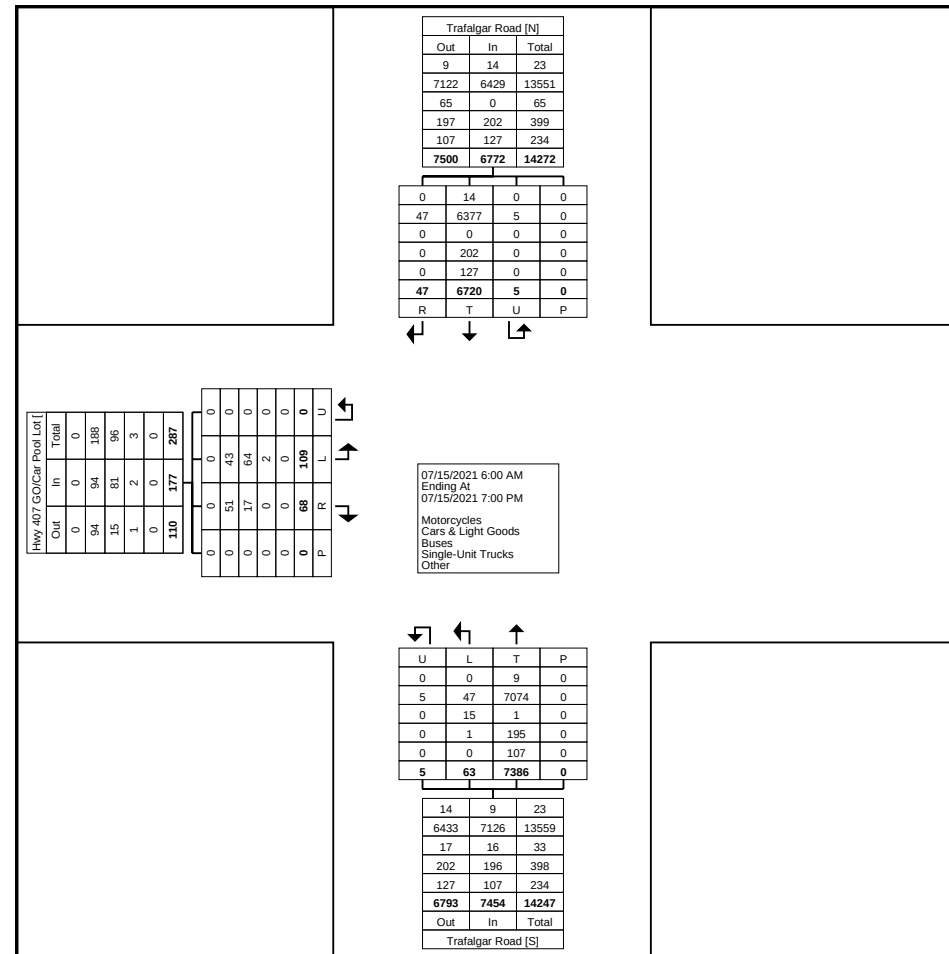
[illegible]



Paradigm Transportation Solutions Limited
5A-150 Pinebush Rd

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Count Name: Trafalgar Road & Hwy 407 GO/Car
Pool Lot
Site Code: 210156
Start Date: 07/15/2021
Page No: 3



Turning Movement Data Plot

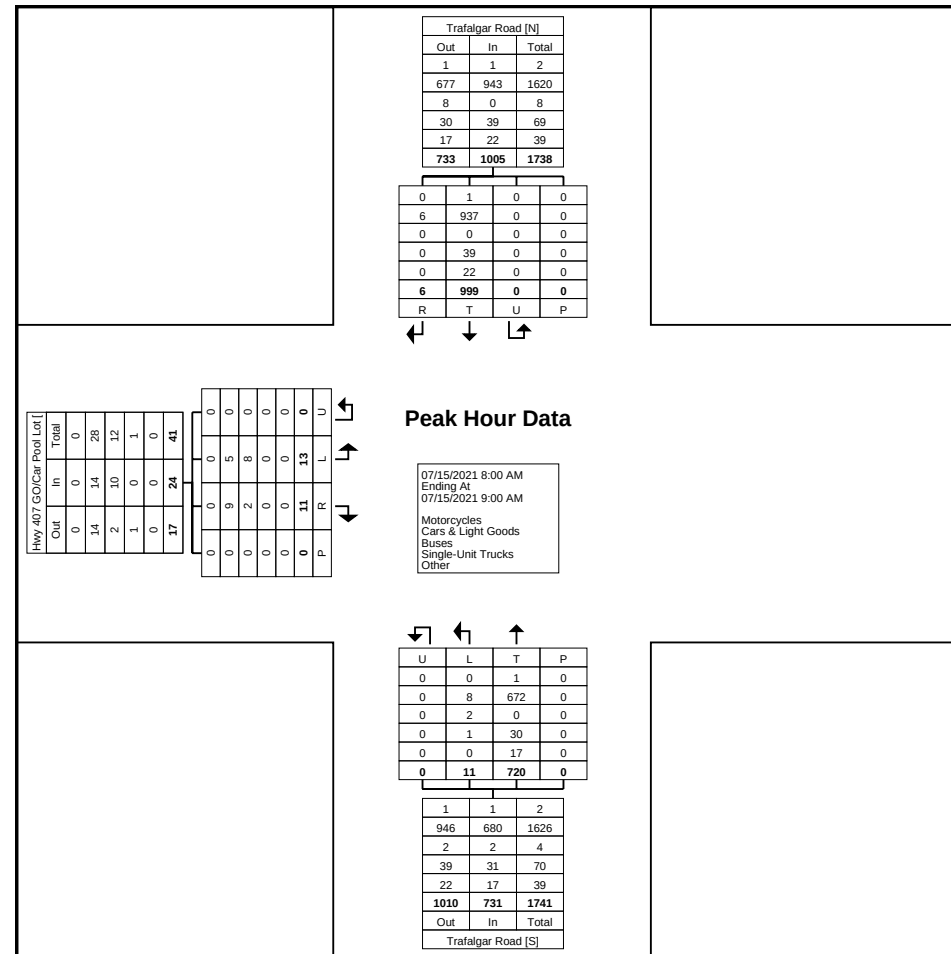
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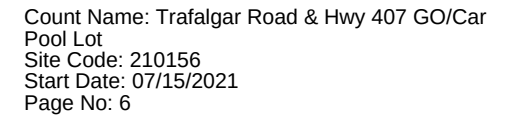
Paradigm Transportation Solutions Limited
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Count Name: Trafalgar Road & Hwy 407 GO/Car
Pool Lot
Site Code: 210156
Start Date: 07/15/2021
Page No: 5



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

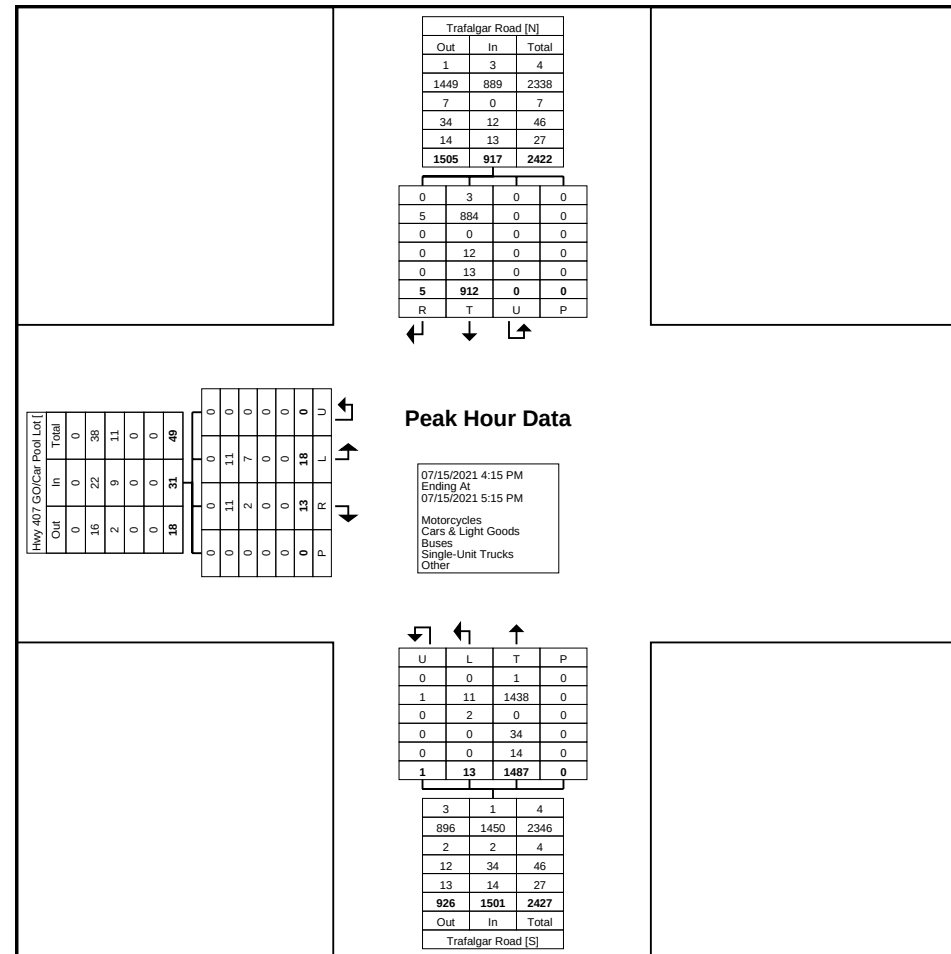
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Paradigm Transportation Solutions Limited
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Count Name: Trafalgar Road & Hwy 407 GO/Car
Pool Lot
Site Code: 210156
Start Date: 07/15/2021
Page No: 7



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 cdowness@ptsl.com

Count Name: Trafalgar Road & William Halton
Parkway
Site Code: 210156
Start Date: 07/15/2021
Page No: 1

Turning Movement Data

Start Time	William Halton Parkway Eastbound						William Halton Parkway Westbound						Trafalgar Road Northbound						Trafalgar Road Southbound						Int. Total
	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	
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

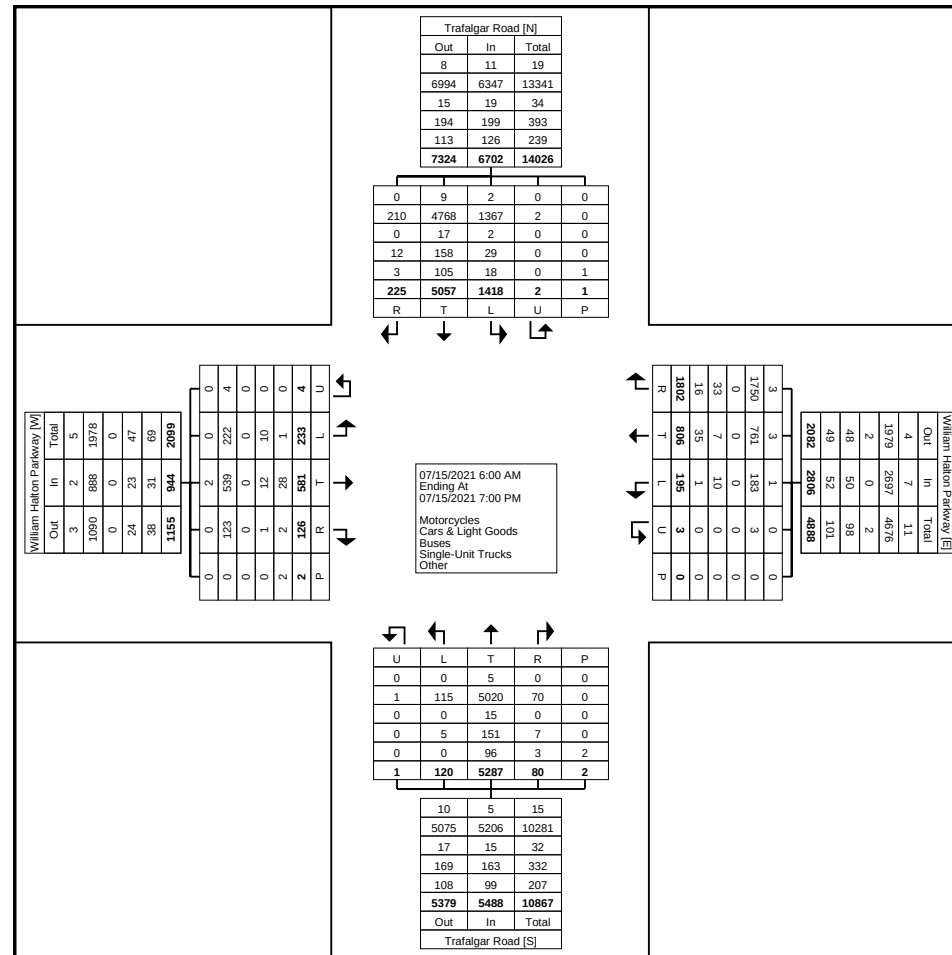
Hourly Total	40	104	25	0	1	169	38	204	335	1	0	578	37	986	15	1	0	1039	170	618	44	0	0	832	2618
6:00 PM	10	25	4	0	0	39	13	21	73	0	0	107	7	194	3	0	0	204	38	172	5	1	0	216	566
6:15 PM	3	15	5	0	0	23	10	33	76	0	0	119	2	211	2	0	0	215	41	165	5	0	0	211	568
6:30 PM	9	18	3	0	0	30	4	35	71	0	0	110	4	165	2	0	0	171	39	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	-	-

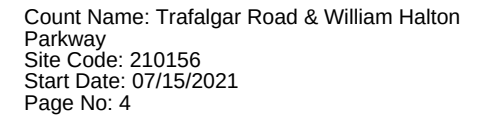


Paradigm Transportation Solutions Limited
5A-150 Pinebush Rd

Cambridge, Ontario, Canada N1R 8J8
519-896-3163 cbowness@pts1.com

Count Name: Trafalgar Road & William Halton
Parkway
Site Code: 210156
Start Date: 07/15/2021
Page No: 3





Start Time	William Halton Parkway Eastbound						William Halton Parkway Westbound						Trafalgar Road Northbound						Trafalgar Road Southbound						Int. Total
	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	
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	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

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

Start Time	William Halton Parkway Eastbound						William Halton Parkway Westbound						Trafalgar Road Northbound						Trafalgar Road Southbound						Int. Total
	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	
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	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

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

Pattern 1 Time: 6:00 Cycle Length: 120 Offset (%): 0%					Pattern 2 Time: 10:00 Cycle Length: 110 Offset (%): 0%		
Direction	SBLT	NB	WBLT	EB	Direction	SBLT	NB
Phase	1	2	3	4	Phase	1	2
%	17	41	0	42	%	10	60
Direction		SB		WB	Direction		SB
Phase	5	6	7	8	Phase	5	6
%	0	58	0	42	%		70
Pattern 3 Time: 15:00 Cycle Length: 120 Offset (%): 0%					Pattern 4 Time: Fridays, 13:00 to 15:00 Cycle Length: 110 Offset (%): 0%		
Direction	SBLT	NB	WBLT	EB	Direction	SBLT	NB
Phase	1	2	3	4	Phase	1	2
%	13	55	0	32	%	13	42
Direction		SB		WB	Direction		SB
Phase	5	6	7	8	Phase	5	6
%	0	68	0	32	%	0	55
Pattern 5 Time: 22:00 Cycle Length: Local Offset (%):					Pattern 6 Time: Cycle Length: Offset (%):		
Direction	SBLT	NB	WBLT	EB	Direction		
Phase	1	2	3	4	Phase	1	2
%					%		
Direction		SB		WB	Direction		
Phase	5	6	7	8	Phase	5	6
%					%		

)

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

<i>Ph Time R1</i>	<i>1</i>	<i>2</i>	<i>3</i>	<i>4</i>
Seconds	12	69	0	39

<i>Ph Time R2</i>	<i>5</i>	<i>6</i>	<i>7</i>	<i>8</i>
Seconds	12	69	0	39

<i>Perm</i>	<i>Phase Min</i>	<i>Min Cycle</i>
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

<i>Cycle Time</i>	<i>Ph Time R1</i>	<i>1</i>	<i>2</i>	<i>3</i>	<i>4</i>	<i>Cycle Time</i>
120	Seconds	11	73	0	36	120
<i>Cycle Time</i>	<i>Ph Time R2</i>	<i>5</i>	<i>6</i>	<i>7</i>	<i>8</i>	<i>Cycle Time</i>
120	Seconds	11	73	0	36	120



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 (%): <table><tr><td>Direction</td><td></td><td></td><td></td><td></td></tr><tr><td>Phase</td><td>1</td><td>2</td><td>3</td><td>4</td></tr><tr><td>%</td><td></td><td></td><td></td><td></td></tr><tr><td>Direction</td><td></td><td></td><td></td><td></td></tr><tr><td>Phase</td><td>5</td><td>6</td><td>7</td><td>8</td></tr><tr><td>%</td><td></td><td></td><td></td><td></td></tr></table>	Direction					Phase	1	2	3	4	%					Direction					Phase	5	6	7	8	%					Pattern 2 Time: Cycle Length: Offset (%): <table><tr><td>Direction</td><td></td><td></td><td></td><td></td></tr><tr><td>Phase</td><td>1</td><td>2</td><td>3</td><td>4</td></tr><tr><td>%</td><td></td><td></td><td></td><td></td></tr><tr><td>Direction</td><td></td><td></td><td></td><td></td></tr><tr><td>Phase</td><td>5</td><td>6</td><td>7</td><td>8</td></tr><tr><td>%</td><td></td><td></td><td></td><td></td></tr></table>	Direction					Phase	1	2	3	4	%					Direction					Phase	5	6	7	8	%				
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Appendix C

Base Year Operation Synchro Reports



Lanes, Volumes, Timings

101: Trafalgar Rd & Lower Base Line

Base Year

Timing Plan: AM Peak Hour

	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	CI+Ex	CI+Ex		CI+Ex	CI+Ex		CI+Ex	CI+Ex		CI+Ex	CI+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		CI+Ex			CI+Ex			CI+Ex			CI+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		

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Lanes, Volumes, Timings

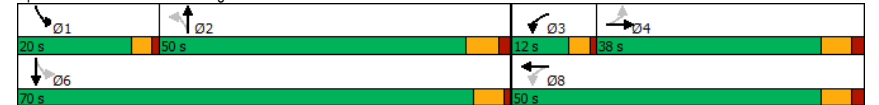
101: Trafalgar Rd & Lower Base Line

Base Year

Timing Plan: AM Peak Hour

	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	2.0	
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 Effect 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 Capacity Utilization 0.0%												
Analysis Period (min) 15												

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



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Synchro 10 Report
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Queues
101: Trafalgar Rd & Lower Base Line

Base Year
Timing Plan: AM Peak Hour

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

HCM Signalized Intersection Capacity Analysis
101: Trafalgar Rd & Lower Base Line

Base Year
Timing Plan: AM Peak Hour

													
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	0
Future Volume (vph)	0	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	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	0.92
Adj. Flow (vph)	0	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	0
Lane Group Flow (vph)	0	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

Lanes, Volumes, Timings

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

Base Year

Timing Plan: AM Peak Hour

												
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
Fr												
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

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Lanes, Volumes, Timings

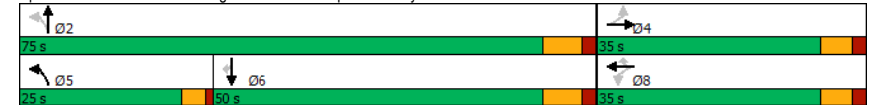
102: Trafalgar Rd & North Carpool Lot/Hwy 407 WB Off

Base Year

Timing Plan: AM Peak Hour

												
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

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Queues Base Year
 102: Trafalgar Rd & North Carpool Lot/Hwy 407 WB Off Timing Plan: AM Peak Hour

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

HCM Signalized Intersection Capacity Analysis Base Year
 102: Trafalgar Rd & North Carpool Lot/Hwy 407 WB Off Timing Plan: AM Peak Hour

												
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

Lanes, Volumes, Timings
103: Trafalgar Rd & Hwy 407 EB Off

Base Year
Timing Plan: AM Peak Hour

						
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
Flt						
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 Effect Green (s)						
Actuated g/C Ratio						
v/c Ratio						
Control Delay						
Queue Delay						
Total Delay						

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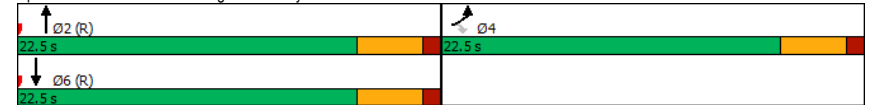
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Lanes, Volumes, Timings
103: Trafalgar Rd & Hwy 407 EB Off

Base Year
Timing Plan: AM Peak Hour

						
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



I/O Trafalgar 407, Oakville TIS
PTSL (210156/210157)

Synchro 10 Report
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Queues
103: Trafalgar Rd & Hwy 407 EB Off

Base Year
Timing Plan: AM Peak Hour

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

HCM Signalized Intersection Capacity Analysis
103: Trafalgar Rd & Hwy 407 EB Off

Base Year
Timing Plan: AM Peak Hour

						
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						

Lanes, Volumes, Timings

104: Trafalgar Rd & South Carpool Lot

Base Year

Timing Plan: AM Peak Hour

						
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						

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Lanes, Volumes, Timings

104: Trafalgar Rd & South Carpool Lot

Base Year

Timing Plan: AM Peak Hour

						
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: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: 104: Trafalgar Rd & South Carpool Lot

 Ø2 (R)	 Ø4
22.5 s	22.5 s
 Ø6 (R)	
22.5 s	

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Queues

104: Trafalgar Rd & South Carpool Lot

Base Year

Timing Plan: AM Peak Hour

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

HCM Signalized Intersection Capacity Analysis

104: Trafalgar Rd & South Carpool Lot

Base Year

Timing Plan: AM Peak Hour

						
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						

Lanes, Volumes, Timings

105: Trafalgar Rd & William Halton Parkway

Base Year

Timing Plan: AM Peak Hour

	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
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

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Lanes, Volumes, Timings

105: Trafalgar Rd & William Halton Parkway

Base Year

Timing Plan: AM Peak Hour

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰	↰	↰	↰	↰	↰	↰	↰	↰	↰	↰	↰
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

↰ Ø1	↰ Ø2	↰ Ø3	↰ Ø4
14 s	70 s	12.6 s	43.4 s
↰ Ø5	↰ Ø6	↰ Ø7	↰ Ø8
14 s	70 s	12.6 s	43.4 s

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Queues Base Year
 105: Trafalgar Rd & William Halton Parkway Timing Plan: AM Peak Hour

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

HCM Signalized Intersection Capacity Analysis Base Year
 105: Trafalgar Rd & William Halton Parkway Timing Plan: AM Peak Hour

												
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

Lanes, Volumes, Timings

106: Trafalgar Rd & Burnhamthorpe Rd/Burnhamthorpe Rd

Base Year
Timing Plan: AM Peak Hour

	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
Fit Protected												
Satd. Flow (prot)	1863	1863	0	1863	1863	0	1863	3539	0	1863	3539	0
Fit 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			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
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 Effect Green (s)												
Actuated g/C Ratio												
v/c Ratio												
Control Delay												
Queue Delay												
Total Delay												

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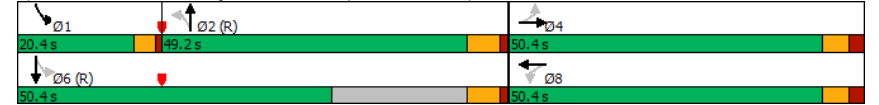
Lanes, Volumes, Timings

106: Trafalgar Rd & Burnhamthorpe Rd/Burnhamthorpe Rd

Base Year
Timing Plan: AM Peak Hour

												
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:NBT 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 & Burnhamthorpe Rd/Burnhamthorpe Rd



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Queues

106: Trafalgar Rd & Burhamthorpe Rd/Burnhamthorpe Rd

Base Year

Timing Plan: AM Peak Hour

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

HCM Signalized Intersection Capacity Analysis

106: Trafalgar Rd & Burhamthorpe Rd/Burnhamthorpe Rd

Base Year

Timing Plan: AM Peak Hour

												
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												

Lanes, Volumes, Timings

101: Trafalgar Rd & Lower Base Line

Base Year

Timing Plan: PM Peak Hour

	↖	→	↘	↙	←	↖	↗	↘	↙	↖	↗	↘	↙
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	
Fr													
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 Effect Green (s)													
Actuated g/C Ratio													
v/c Ratio													
Control Delay													
Queue Delay													
Total Delay													
LOS													
Approach Delay													
Approach LOS													

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Synchro 10 Report
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Lanes, Volumes, Timings

101: Trafalgar Rd & Lower Base Line

Base Year

Timing Plan: PM Peak Hour

	↖	→	↘	↙	←	↖	↗	↘	↙	↖	↗	↘	↙
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



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Synchro 10 Report
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Queues
101: Trafalgar Rd & Lower Base Line

Base Year
Timing Plan: PM Peak Hour

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

HCM Signalized Intersection Capacity Analysis
101: Trafalgar Rd & Lower Base Line

Base Year
Timing Plan: PM Peak Hour

												
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

Lanes, Volumes, Timings

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

Base Year

Timing Plan: PM Peak Hour

	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
Fr												
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 Effect Green (s)												
Actuated g/C Ratio												
v/c Ratio												
Control Delay												
Queue Delay												
Total Delay												
LOS												
Approach Delay												
Approach LOS												

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Synchro 10 Report
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Lanes, Volumes, Timings

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

Base Year

Timing Plan: PM Peak Hour

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



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Queues Base Year
 102: Trafalgar Rd & North Carpool Lot/Hwy 407 WB Off Timing Plan: PM Peak Hour

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

HCM Signalized Intersection Capacity Analysis Base Year
 102: Trafalgar Rd & North Carpool Lot/Hwy 407 WB Off Timing Plan: PM Peak Hour

												
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												

c Critical Lane Group

Lanes, Volumes, Timings

103: Trafalgar Rd & Hwy 407 EB Off

Base Year

Timing Plan: PM Peak Hour

	EBL	EBR	NBL	NBT	SBT	SBR
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
Flt						
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 Effect 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)						

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Lanes, Volumes, Timings

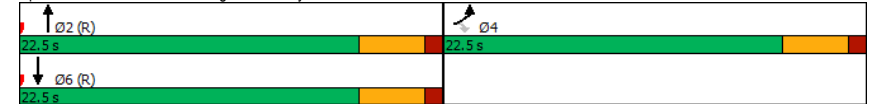
103: Trafalgar Rd & Hwy 407 EB Off

Base Year

Timing Plan: PM Peak Hour

	EBL	EBR	NBL	NBT	SBT	SBR
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

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Queues
103: Trafalgar Rd & Hwy 407 EB Off

Base Year
Timing Plan: PM Peak Hour

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

HCM Signalized Intersection Capacity Analysis
103: Trafalgar Rd & Hwy 407 EB Off

Base Year
Timing Plan: PM Peak Hour

						
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						

Lanes, Volumes, Timings

104: Trafalgar Rd & South Carpool Lot

Base Year

Timing Plan: PM Peak Hour

	EBL	EBR	NBL	NBT	SBT	SBR
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 Effect 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)						

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Lanes, Volumes, Timings

104: Trafalgar Rd & South Carpool Lot

Base Year

Timing Plan: PM Peak Hour

	EBL	EBR	NBL	NBT	SBT	SBR
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: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: 104: Trafalgar Rd & South Carpool Lot

↑ Ø2 (R)	22.5 s	Ø4	22.5 s
↓ Ø6 (R)	22.5 s		

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Queues

104: Trafalgar Rd & South Carpool Lot

Base Year

Timing Plan: PM Peak Hour

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

HCM Signalized Intersection Capacity Analysis

104: Trafalgar Rd & South Carpool Lot

Base Year

Timing Plan: PM Peak Hour

						
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						

Lanes, Volumes, Timings

105: Trafalgar Rd & William Halton Parkway

Base Year

Timing Plan: PM Peak Hour

	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
Fr												
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 Effect Green (s)												
Actuated g/C Ratio												
v/c Ratio												
Control Delay												
Queue Delay												
Total Delay												

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Lanes, Volumes, Timings

105: Trafalgar Rd & William Halton Parkway

Base Year

Timing Plan: PM Peak Hour

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰	↰	↰	↰	↰	↰	↰	↰	↰	↰	↰	↰
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

Ø1	Ø2	Ø3	Ø4
16.8 s	67.2 s	12.6 s	43.4 s
Ø5	Ø6	Ø7	Ø8
16.8 s	67.2 s	12.6 s	43.4 s

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Queues

105: Trafalgar Rd & William Halton Parkway

Base Year

Timing Plan: PM Peak Hour

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

HCM Signalized Intersection Capacity Analysis

105: Trafalgar Rd & William Halton Parkway

Base Year

Timing Plan: PM Peak Hour

												
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												

c Critical Lane Group

106: Trafalgar Rd & Burhamthorpe Rd/Burnhamthorpe Rd

Base Year

Timing Plan: PM Peak Hour

												
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
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
Fr												
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 Effect Green (s)												
Actuated g/C Ratio												
v/c Ratio												
Control Delay												
Queue Delay												
Total Delay												
LOS												
Approach Delay												
Approach LOS												

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Lanes, Volumes, Timings

106: Trafalgar Rd & Burhamthorpe Rd/Burnhamthorpe Rd

Base Year

Timing Plan: PM Peak Hour

												
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

 Ø1  Ø2	 Ø4
 Ø6  Ø8	 Ø8

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Queues

106: Trafalgar Rd & Burhamthorpe Rd/Burnhamthorpe Rd

Base Year

Timing Plan: PM Peak Hour

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

HCM Signalized Intersection Capacity Analysis

106: Trafalgar Rd & Burhamthorpe Rd/Burnhamthorpe Rd

Base Year

Timing Plan: PM Peak Hour

												
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												

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)	948	67	211	278	202	129	331
	710 - General Office Building (GFA/1,000ft ²)	286.7	286	47	333	53	277	330
	820 - Shopping Center (GFA/1,000ft ²)	95.6	56	34	90	175	189	364
	Block 1 Trip Generation		409	292	701	430	595	1,025
	Modal Split	20%	82	58	140	86	119	205
	Internal AM Entering	7%	29		29			
	Internal AM Exiting	8%		23	23			
	Inermtal PM Entering	10%				43		43
	Internal PM Exiting	9%					54	54
	Block 1 Net Trip Generation		298	211	509	301	422	723
2	222 - Multifamily Housing, High-Rise (Dwelling Units)	845	60	189	249	181	115	296
	710 - General Office Building (GFA/1,000ft ²)	255.5	255	41	296	47	247	294
	820 - Shopping Center (GFA/1,000ft ²)	85.2	50	30	80	156	168	324
	Block 2 Trip Generation		365	260	625	384	530	914
	Modal Split	20%	73	52	125	77	106	183
	Internal AM Entering	6%	22		22			
	Internal AM Exiting	8%		21	21			
	Inermtal PM Entering	10%				38		38
	Internal PM Exiting	8%					42	42
	Block 2 Net Trip Generation		270	187	457	269	382	651
3	222 - Multifamily Housing, High-Rise (Dwelling Units)	1078	76	239	315	229	146	375
	710 - General Office Building (GFA/1,000ft ²)	326.0	325	53	378	60	315	375
	820 - Shopping Center (GFA/1,000ft ²)	108.7	63	39	102	199	215	414
	Block 3 Trip Generation		464	331	795	385	303	688
	Modal Split	20%	93	66	159	77	61	138
	Internal AM Entering	7%	32		32			
	Internal AM Exiting	8%		26	26			
	Inermtal PM Entering	10%				39		39
	Internal PM Exiting	9%					27	27
	Block 3 Net Trip Generation		339	239	578	269	215	484
4	221 - Multifamily Housing, Mid-Rise (Dwelling Units)	508	48	135	183	137	87	224
	710 - General Office Building (GFA/1,000ft ²)	153.6	153	25	178	28	149	177
	820 - Shopping Center (GFA/1,000ft ²)	51.2	30	18	48	94	101	195
	Block 4 Trip Generation		231	178	409	385	303	688
	Modal Split	20%	46	36	82	77	61	138
	Internal AM Entering	7%	16		16			
	Internal AM Exiting	7%		12	12			
	Inermtal PM Entering	9%				35		35
	Internal PM Exiting	8%					24	24
	Block 4 Net Trip Generation		169	130	299	273	218	491
5	221 - Multifamily Housing, Mid-Rise (Dwelling Units)	379	35	101	136	102	65	167
	710 - General Office Building (GFA/1,000ft ²)	114.7	114	19	133	21	111	132
	820 - Shopping Center (GFA/1,000ft ²)	38.2	22	14	36	70	76	146
	Block 5 Trip Generation		171	134	305	385	303	688
	Modal Split	20%	34	27	61	77	61	138
	Internal AM Entering	6%	10		10			
	Internal AM Exiting	7%		9	9			
	Inermtal PM Entering	10%				39		39
	Internal PM Exiting	8%					24	24
	Block 5 Net Trip Generation		127	98	225	269	218	487
6	222 - Multifamily Housing, High-Rise (Dwelling Units)	566	41	130	171	123	78	201
	710 - General Office Building (GFA/1,000ft ²)	171.3	171	28	199	32	165	197
	820 - Shopping Center (GFA/1,000ft ²)	57.1	33	21	54	105	113	218
	Block 6 Trip Generation		245	179	424	385	303	688
	Modal Split	20%	49	36	85	77	61	138
	Internal AM Entering	7%	17		17			
	Internal AM Exiting	8%		14	14			
	Inermtal PM Entering	10%				39		39
	Internal PM Exiting	9%					27	27
	Block 6 Net Trip Generation		179	129	308	269	215	484
7	222 - Multifamily Housing, High-Rise (Dwelling Units)	337	26	81	107	75	48	123
	710 - General Office Building (GFA/1,000ft ²)	101.8	101	17	118	19	98	117
	820 - Shopping Center (GFA/1,000ft ²)	33.9	20	12	32	62	67	129
	Block 7 Trip Generation		147	110	257	385	303	688
	Modal Split	20%	29	22	51	77	61	138
	Internal AM Entering	7%	10		10			
	Internal AM Exiting	8%		9	9			
	Inermtal PM Entering	10%				39		39
	Internal PM Exiting	9%					27	27
	Block 7 Net Trip Generation		108	79	187	269	215	484
8	221 - Multifamily Housing, Mid-Rise (Dwelling Units)	328	31	87	118	88	56	144
	710 - General Office Building (GFA/1,000ft ²)	99.2	99	16	115	18	96	114
	820 - Shopping Center (GFA/1,000ft ²)	33.1	19	12	31	60	66	126
	Block 8 Trip Generation		149	115	264	385	303	688
	Modal Split	20%	30	23	53	77	61	138
	Internal AM Entering	6%	9		9			
	Internal AM Exiting	7%		8	8			
	Inermtal PM Entering	9%				35		35
	Internal PM Exiting	8%					24	24
	Block 8 Net Trip Generation		110	84	194	273	218	491
9	221 - Multifamily Housing, Mid-Rise (Dwelling Units)	313	29	84	113	84	54	138
	710 - General Office Building (GFA/1,000ft ²)	94.6	95	15	110	17	92	109
	820 - Shopping Center (GFA/1,000ft ²)	31.5	19	11	30	58	62	120
	Block 9 Trip Generation		143	110	253	385	303	688
	Modal Split	20%	29	22	51	77	61	138
	Internal AM Entering	7%	10		10			
	Internal AM Exiting	8%		9	9			
	Inermtal PM Entering	10%				39		39
	Internal PM Exiting	8%					24	24
	Block 9 Net Trip Generation		104	79	183	269	218	487
10	221 - Multifamily Housing, Mid-Rise (Dwelling Units)	244	23	65	88	65	42	107
	710 - General Office Building (GFA/1,000ft ²)	73.8	74	12	86	14	71	85
	820 - Shopping Center (GFA/1,000ft ²)	24.6	14	9	23	45	49	94
	Block 10 Trip Generation		111	86	197	385	303	688
	Modal Split	20%	22	17	39	77	61	138
	Internal AM Entering	8%	9		9			
	Internal AM Exiting	9%		8	8			
	Inermtal PM Entering	9%				35		35
	Internal PM Exiting	8%					24	24
	Block 10 Net Trip Generation		80	61	141	273	218	491
11	221 - Multifamily Housing, Mid-Rise (Dwelling Units)	166	16	44	60	45	28	73
	710 - General Office Building (GFA/1,000ft ²)	0.0	-	-	-	-	-	-
	820 - Shopping Center (GFA/1,000ft ²)	0.0	-	-	-	-	-	-
	Block 11 Trip Generation		16	44	60	385	303	688
	Modal Split	20%	3	9	12	77	61	138
	Internal AM Entering	0%	-		-			
	Internal AM Exiting	0%		-	-			
	Inermtal PM Entering	0%				-		-
	Internal PM Exiting	0%					-	-
	Block 11 Net Trip Generation		13	35	48	308	242	550
	Residential (Dwelling Units)	5,712	452	1,366	1,818	1,331	848	2,179
	Office (GFA/1,000ft ²)	1,677	1,673	273	1,946	309	1,621	1,930
	Retail (GFA/1,000ft ²)	559	326	200	526	1,024	1,106	2,130
Scenario A Total Trip Generation			2,451	1,839	4,290	2,664	3,575	6,239
Scenario A Net Trip Generation			1,797	1,332	3,129	3,042	2,781	5,823

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)	676	48	154	202	145	93	238
	710 - General Office Building (GFA/1,000ft ²)	477.8	476	78	554	88	462	550
	820 - Shopping Center (GFA/1,000ft ²)	159.3	93	57	150	291	316	607
	Block 1 Trip Generation		617	289	906	524	871	1,395
	Modal Split	20%	- 123	- 58	- 181	- 105	- 174	- 279
	Internal AM Entering	6%	- 37		- 37			
	Internal AM Exiting	10%		- 29	- 29			
	Inermtal PM Entering	12%				- 63		- 63
	Internal PM Exiting	9%				- 78	- 78	
	Block 1 Net Trip Generation		457	202	659	356	619	975
2	222 - Multifamily Housing, High-Rise (Dwelling Units)	602	43	138	181	130	83	213
	710 - General Office Building (GFA/1,000ft ²)	425.8	425	69	494	78	412	490
	820 - Shopping Center (GFA/1,000ft ²)	141.9	82	51	133	260	281	541
	Block 2 Trip Generation		550	258	808	468	776	1,244
	Modal Split	20%	- 110	- 52	- 162	- 94	- 155	- 249
	Internal AM Entering	6%	- 33		- 33			
	Internal AM Exiting	10%		- 26	- 26			
	Inermtal PM Entering	12%				- 56		- 56
	Internal PM Exiting	9%				- 70	- 70	
	Block 2 Net Trip Generation		407	180	587	318	551	869
3	222 - Multifamily Housing, High-Rise (Dwelling Units)	769	55	173	228	165	105	270
	710 - General Office Building (GFA/1,000ft ²)	543.3	542	88	630	100	525	625
	820 - Shopping Center (GFA/1,000ft ²)	181.1	105	65	170	331	359	690
	Block 3 Trip Generation		702	326	1,028	596	989	1,585
	Modal Split	20%	- 140	- 65	- 205	- 119	- 198	- 317
	Internal AM Entering	7%	- 49		- 49			
	Internal AM Exiting	6%		- 20	- 20			
	Inermtal PM Entering	12%				- 72		- 72
	Internal PM Exiting	9%				- 89	- 89	
	Block 3 Net Trip Generation		513	241	754	405	702	1,107
4	221 - Multifamily Housing, Mid-Rise (Dwelling Units)	362	34	96	130	97	62	159
	710 - General Office Building (GFA/1,000ft ²)	256.1	255	42	297	47	247	294
	820 - Shopping Center (GFA/1,000ft ²)	85.4	50	30	80	156	169	325
	Block 4 Trip Generation		339	168	507	300	478	778
	Modal Split	20%	- 68	- 34	- 102	- 60	- 96	- 156
	Internal AM Entering	6%	- 20		- 20			
	Internal AM Exiting	10%		- 17	- 17			
	Inermtal PM Entering	13%				- 39		- 39
	Internal PM Exiting	9%				- 43	- 43	
	Block 4 Net Trip Generation		251	117	368	201	339	540
5	221 - Multifamily Housing, Mid-Rise (Dwelling Units)	270	25	72	97	73	46	119
	710 - General Office Building (GFA/1,000ft ²)	191.1	191	31	222	35	185	220
	820 - Shopping Center (GFA/1,000ft ²)	63.7	37	23	60	117	126	243
	Block 5 Trip Generation		253	126	379	225	357	582
	Modal Split	20%	- 51	- 25	- 76	- 45	- 71	- 116
	Internal AM Entering	7%	- 18		- 18			
	Internal AM Exiting	11%		- 14	- 14			
	Inermtal PM Entering	12%				- 27		- 27
	Internal PM Exiting	9%				- 32	- 32	
	Block 5 Net Trip Generation		184	87	271	153	254	407
6	222 - Multifamily Housing, High-Rise (Dwelling Units)	404	30	96	126	89	57	146
	710 - General Office Building (GFA/1,000ft ²)	285.5	285	46	331	52	276	328
	820 - Shopping Center (GFA/1,000ft ²)	95.2	55	34	89	174	189	363
	Block 6 Trip Generation		370	176	546	315	522	837
	Modal Split	20%	- 74	- 35	- 109	- 63	- 104	- 167
	Internal AM Entering	6%	- 22		- 22			
	Internal AM Exiting	10%		- 18	- 18			
	Inermtal PM Entering	12%				- 38		- 38
	Internal PM Exiting	9%				- 47	- 47	
	Block 6 Net Trip Generation		274	123	397	214	371	585
7	222 - Multifamily Housing, High-Rise (Dwelling Units)	240	19	61	80	55	35	90
	710 - General Office Building (GFA/1,000ft ²)	169.7	169	28	197	31	164	195
	820 - Shopping Center (GFA/1,000ft ²)	56.6	33	20	53	104	112	216
	Block 7 Trip Generation		221	109	330	190	311	501
	Modal Split	20%	- 44	- 22	- 66	- 38	- 62	- 100
	Internal AM Entering	6%	- 13		- 13			
	Internal AM Exiting	10%		- 11	- 11			
	Inermtal PM Entering	11%				- 21		- 21
	Internal PM Exiting	9%				- 28	- 28	
	Block 7 Net Trip Generation		164	76	240	131	221	352
8	221 - Multifamily Housing, Mid-Rise (Dwelling Units)	220	21	58	79	59	38	97
	710 - General Office Building (GFA/1,000ft ²)	155.7	156	25	181	29	150	179
	820 - Shopping Center (GFA/1,000ft ²)	51.9	30	19	49	95	103	198
	Block 8 Trip Generation		207	102	309	183	291	474
	Modal Split	20%	- 41	- 20	- 61	- 37	- 58	- 95
	Internal AM Entering	6%	- 12		- 12			
	Internal AM Exiting	9%		- 9	- 9			
	Inermtal PM Entering	12%				- 22		- 22
	Internal PM Exiting	9%				- 26	- 26	
	Block 8 Net Trip Generation		154	73	227	124	207	331
9	221 - Multifamily Housing, Mid-Rise (Dwelling Units)	223	21	59	80	60	38	98
	710 - General Office Building (GFA/1,000ft ²)	157.7	157	26	183	29	152	181
	820 - Shopping Center (GFA/1,000ft ²)	52.6	30	19	49	96	104	200
	Block 9 Trip Generation		208	104	312	185	294	479
	Modal Split	20%	- 42	- 21	- 63	- 37	- 59	- 96
	Internal AM Entering	6%	- 12		- 12			
	Internal AM Exiting	9%		- 9	- 9			
	Inermtal PM Entering	11%				- 20		- 20
	Internal PM Exiting	9%				- 26	- 26	
	Block 9 Net Trip Generation		154	74	228	128	209	337
10	221 - Multifamily Housing, Mid-Rise (Dwelling Units)	180	17	48	65	48	31	79
	710 - General Office Building (GFA/1,000ft ²)	127.3	127	21	148	23	123	146
	820 - Shopping Center (GFA/1,000ft ²)	42.4	25	15	40	78	84	162
	Block 10 Trip Generation		169	84	253	149	238	387
	Modal Split	20%	- 34	- 17	- 51	- 30	- 48	- 78
	Internal AM Entering	6%	- 10		- 10			
	Internal AM Exiting	9%		- 8	- 8			
	Inermtal PM Entering	12%				- 18		- 18
	Internal PM Exiting	9%				- 21	- 21	
	Block 10 Net Trip Generation		125	59	184	101	169	270
11	221 - Multifamily Housing, Mid-Rise (Dwelling Units)	0	-	-	-	-	-	-
	710 - General Office Building (GFA/1,000ft ²)	162.8	163	26	189	30	157	187
	820 - Shopping Center (GFA/1,000ft ²)	54.3	32	19	51	99	108	207
	Block 11 Trip Generation		195	45	240	129	265	394
	Modal Split	20%	- 39	- 9	- 48	- 26	- 53	- 79
	Internal AM Entering	0%	-		-			
	Internal AM Exiting	0%		-	-			
	Inermtal PM Entering	0%				-		-
	Internal PM Exiting	0%				-	-	
	Block 11 Net Trip Generation		156	36	192	103	212	315
	Residential (Dwelling Units)	3,946	313	955	1,268	921	588	1,509
	Office (GFA/1,000ft ²)	2,953	2,946	480	3,426	542	2,853	3,395
	Retail (GFA/1,000ft ²)	984	572	352	924	1,801	1,951	3,752
Scenario B Total Trip Generation			3,831	1,787	5,618	3,264	5,392	8,656
Scenario B Net Trip Generation			2,839	1,268	4,107	2,234	3,854	6,088

Appendix E1

2031 Background Operation Synchro Reports



Lanes, Volumes, Timings

101: Trafalgar Rd & Lower Base Line

Background (2031) - 2% Growth Rate

Timing Plan: AM Peak Hour

	↖	→	↗	↖	←	↖	↖	↖	↖	↖	↖	↖
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖	↖		↖	↖		↖	↖	↖	↖	↖	↖
Traffic Volume (vph)	124	482	184	230	98	180	39	1401	160	412	1449	20
Future Volume (vph)	124	482	184	230	98	180	39	1401	160	412	1449	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		0.959			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	0.559			0.155			0.144			0.099		
Satd. Flow (perm)	1041	3394	0	289	3196	0	268	5085	1583	184	5085	1583
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		42			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	200	250	107	196	42	1523	174	448	1575	22
Shared Lane Traffic (%)												
Lane Group Flow (vph)	135	724	0	250	303	0	42	1523	174	448	1575	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

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Lanes, Volumes, Timings

101: Trafalgar Rd & Lower Base Line

Background (2031) - 2% Growth Rate

Timing Plan: AM Peak Hour

	↖	→	↗	↖	←	↖	↖	↖	↖	↖	↖	↖
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		42.3	29.5		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		0.94	0.32		0.26	0.94	0.28	0.97	0.59	0.03
Control Delay	31.3	72.1		73.4	14.1		18.3	51.7	5.5	70.1	21.5	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	31.3	72.1		73.4	14.1		18.3	51.7	5.5	70.1	21.5	0.1
LOS	C	E		E	B		B	D	A	E	C	A
Approach Delay		65.7			40.9			46.3			31.9	
Approach LOS		E			D			D			C	

Intersection Summary

Area Type: Other

Cycle Length: 120

Actuated Cycle Length: 119.6

Natural Cycle: 90

Control Type: Semi Act-Uncooord

Maximum v/c Ratio: 0.98

Intersection Signal Delay: 43.3

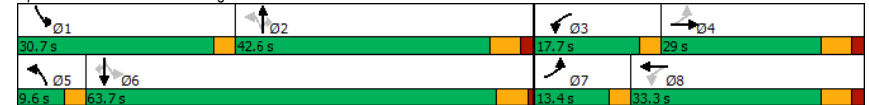
Intersection LOS: D

Intersection Capacity Utilization 95.5%

ICU Level of Service F

Analysis Period (min) 15

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

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Queues
101: Trafalgar Rd & Lower Base Line

Background (2031) - 2% Growth Rate
Timing Plan: AM Peak Hour

	EBL	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	135	724	250	303	42	1523	174	448	1575	22
v/c Ratio	0.39	0.98	0.94	0.32	0.26	0.94	0.28	0.97	0.59	0.03
Control Delay	31.3	72.1	73.4	14.1	18.3	51.7	5.5	70.1	21.5	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	31.3	72.1	73.4	14.1	18.3	51.7	5.5	70.1	21.5	0.1
Queue Length 50th (m)	21.7	84.2	43.3	10.2	4.0	125.7	0.0	87.2	93.4	0.0
Queue Length 95th (m)	36.6	#123.1	#88.2	21.7	8.8	#155.6	15.1	#151.7	108.4	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)	356	742	271	935	169	1624	624	460	2651	878
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	0.92	0.32	0.25	0.94	0.28	0.97	0.59	0.03

Intersection Summary

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

HCM Signalized Intersection Capacity Analysis
101: Trafalgar Rd & Lower Base Line

Background (2031) - 2% Growth Rate
Timing Plan: AM Peak Hour

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔
Traffic Volume (vph)	124	482	184	230	98	180	39	1401	160	412	1449	20
Future Volume (vph)	124	482	184	230	98	180	39	1401	160	412	1449	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
Flt	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	3393		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)	1041	3393		289	3196		268	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	200	250	107	196	42	1523	174	448	1575	22
RTOR Reduction (vph)	0	33	0	0	148	0	0	0	118	0	0	11
Lane Group Flow (vph)	135	691	0	250	155	0	42	1523	56	448	1575	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	
Actuated Green, G (s)	32.6	22.8		40.1	27.3		41.8	36.6	36.6	68.3	60.1	60.1
Effective Green, g (s)	30.6	25.0		39.1	29.5		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)	318	705		257	784		141	1641	510	455	2635	820
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			0.09		0.04	c0.33		0.01
v/c Ratio	0.42	0.98		0.97	0.20		0.30	0.93	0.11	0.98	0.60	0.01
Uniform Delay, d1	36.2	47.3		34.2	36.0		27.6	39.4	28.6	37.1	20.2	14.0
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	0.9	28.8		48.1	0.3		1.2	10.7	0.4	38.5	1.0	0.0
Delay (s)	37.1	76.2		82.3	36.2		28.7	50.0	29.0	75.6	21.2	14.1
Level of Service	D	E		F	D		C	D	C	E	C	B
Approach Delay (s)		70.0			57.0			47.4			33.1	
Approach LOS		E			E			D			C	

Intersection Summary

HCM 2000 Control Delay	46.5	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.99		
Actuated Cycle Length (s)	120.2	Sum of lost time (s)	16.4
Intersection Capacity Utilization	95.5%	ICU Level of Service	F
Analysis Period (min)	15		

c Critical Lane Group

Lanes, Volumes, Timings Background (2031) - 2% Growth Rate
102: Trafalgar Rd & North Carpool Lot/Hwy 407 WB Off Timing Plan: AM Peak Hour

	←	→	↖	↗	↙	↘	↖	↗	↙	↘	↖	↗
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔		↔	↔	↔	↔	↔		↔	↔	↔
Traffic Volume (vph)	2	0	7	185	1	21	5	1576	0	0	1860	4
Future Volume (vph)	2	0	7	185	1	21	5	1576	0	0	1860	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				0.997	0.850						0.850
Flt Protected	0.990			0.950	0.954		0.950					
Satd. Flow (prot)	0	1645	0	1681	1612	1504	1770	5085	0	0	5085	1583
Flt Permitted	0.943			0.751	0.726		0.068					
Satd. Flow (perm)	0	1567	0	1329	1227	1504	127	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	8	201	1	23	5	1713	0	0	2022	4
Shared Lane Traffic (%)				49%		10%						
Lane Group Flow (vph)	0	10	0	103	101	21	5	1713	0	0	2022	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	CI+Ex	CI+Ex		CI+Ex	CI+Ex	CI+Ex	CI+Ex	CI+Ex			CI+Ex	CI+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		CI+Ex			CI+Ex			CI+Ex				CI+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	Perm
Protected Phases		4			8		5	2			6	
Permitted Phases	4			8		8	2					6

I/O Trafalgar 407, Oakville TIS
PTSL (210156/210157)

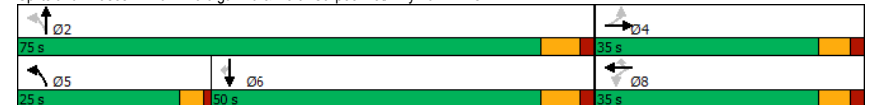
Synchro 10 Report
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Lanes, Volumes, Timings Background (2031) - 2% Growth Rate
102: Trafalgar Rd & North Carpool Lot/Hwy 407 WB Off Timing Plan: AM Peak Hour

	←	→	↖	↗	↙	↘	↖	↗	↙	↘	↖	↗
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		0.03		0.55	0.58	0.07	0.03	0.47			0.57	0.00
Control Delay		0.2		48.6	50.7	0.5	4.2	6.5			8.9	0.0
Queue Delay		0.0		0.0	0.0	0.0	0.0	0.0			0.0	0.0
Total Delay		0.2		48.6	50.7	0.5	4.2	6.5			8.9	0.0
LOS		A		D	D	A	A	A			A	A
Approach Delay		0.2			45.1		6.5				8.9	
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 58.8%	ICU Level of Service B											
Analysis Period (min) 15												

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



I/O Trafalgar 407, Oakville TIS
PTSL (210156/210157)

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Queues Background (2031) - 2% Growth Rate
102: Trafalgar Rd & North Carpool Lot/Hwy 407 WB Off Timing Plan: AM Peak Hour

	→	↖	←	↗	↖	↑	↓	↗
Lane Group	EBT	WBL	WBT	WBR	NBL	NBT	SBT	SBR
Lane Group Flow (vph)	10	103	101	21	5	1713	2022	4
v/c Ratio	0.03	0.55	0.58	0.07	0.03	0.47	0.57	0.00
Control Delay	0.2	48.6	50.7	0.5	4.2	6.5	8.9	0.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	0.2	48.6	50.7	0.5	4.2	6.5	8.9	0.0
Queue Length 50th (m)	0.0	18.4	18.6	0.0	0.2	40.3	52.3	0.0
Queue Length 95th (m)	0.0	34.9	36.0	0.0	1.2	62.3	108.4	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	408	377	516	461	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								

HCM Signalized Intersection Capacity Analysis Background (2031) - 2% Growth Rate
102: Trafalgar Rd & North Carpool Lot/Hwy 407 WB Off Timing Plan: AM Peak Hour

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	2	0	7	185	1	21	5	1576	0	0	1860	4
Future Volume (vph)	2	0	7	185	1	21	5	1576	0	0	1860	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	1612	1504	1770	5085			5085	1583
Flt Permitted		0.94		0.75	0.73	1.00	0.07	1.00			1.00	1.00
Satd. Flow (perm)		1567		1329	1226	1504	126	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	8	201	1	23	5	1713	0	0	2022	4
RTOR Reduction (vph)	0	9	0	0	1	18	0	0	0	0	0	1
Lane Group Flow (vph)	0	1	0	103	100	3	5	1713	0	0	2022	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)		214		182	167	206	108	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		36.4		39.5	39.7	36.5	5.5	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		4.3	6.0	0.0	0.1	0.4			0.7	0.0
Delay (s)		36.5		43.8	45.7	36.5	5.6	5.8			9.1	5.1
Level of Service		D		D	D	D	A	A			A	A
Approach Delay (s)		36.5			44.0			5.8			9.1	
Approach LOS		D			D			A			A	
Intersection Summary												
HCM 2000 Control Delay			9.7		HCM 2000 Level of Service				A			
HCM 2000 Volume to Capacity ratio			0.59									
Actuated Cycle Length (s)			97.8		Sum of lost time (s)				17.0			
Intersection Capacity Utilization			58.8%		ICU Level of Service				B			
Analysis Period (min)			15									
c Critical Lane Group												

c Critical Lane Group

Lanes, Volumes, Timings
103: Trafalgar Rd & Hwy 407 EB Off

Background (2031) - 2% Growth Rate
Timing Plan: AM Peak Hour

	EBL	EBR	NBL	NBT	SBT	SBR
Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	↩	↩		↑↑↑	↑↑↑	
Traffic Volume (vph)	115	100	0	1544	1838	0
Future Volume (vph)	115	100	0	1544	1838	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)	125	109	0	1678	1998	0
Shared Lane Traffic (%)						
Lane Group Flow (vph)	125	109	0	1678	1998	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 Effect 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	0.21	0.21		0.62	0.74	
Control Delay	15.6	14.8		11.0	12.9	
Queue Delay	0.0	0.0		0.0	0.0	
Total Delay	15.6	14.8		11.0	12.9	

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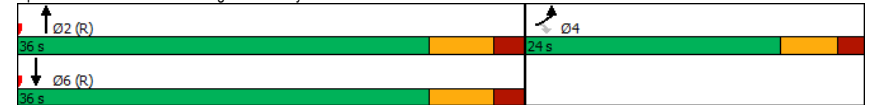
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Lanes, Volumes, Timings
103: Trafalgar Rd & Hwy 407 EB Off

Background (2031) - 2% Growth Rate
Timing Plan: AM Peak Hour

Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
LOS	B	B		B	B	
Approach Delay	15.2			11.0	12.9	
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:	55					
Control Type:	Pretimed					
Maximum v/c Ratio:	0.74					
Intersection Signal Delay:	12.2			Intersection LOS: B		
Intersection Capacity Utilization	48.6%			ICU Level of Service A		
Analysis Period (min)	15					

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



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Queues
103: Trafalgar Rd & Hwy 407 EB Off

Background (2031) - 2% Growth Rate
Timing Plan: AM Peak Hour

	EBL	EBR	NBT	SBT
Lane Group	EBL	EBR	NBT	SBT
Lane Group Flow (vph)	125	109	1678	1998
v/c Ratio	0.21	0.21	0.62	0.74
Control Delay	15.6	14.8	11.0	12.9
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	15.6	14.8	11.0	12.9
Queue Length 50th (m)	9.6	7.8	42.0	55.2
Queue Length 95th (m)	19.7	17.4	54.4	71.1
Internal Link Dist (m)	530.6		96.3	339.6
Turn Bay Length (m)				
Base Capacity (vph)	590	531	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	0.21	0.21	0.62	0.74
Intersection Summary				

HCM Signalized Intersection Capacity Analysis
103: Trafalgar Rd & Hwy 407 EB Off

Background (2031) - 2% Growth Rate
Timing Plan: AM Peak Hour

	EBL	EBR	NBL	NBT	SBT	SBR
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	↰	↱		↰	↰	↰
Traffic Volume (vph)	115	100	0	1544	1838	0
Future Volume (vph)	115	100	0	1544	1838	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)	125	109	0	1678	1998	0
RTOR Reduction (vph)	0	4	0	0	0	0
Lane Group Flow (vph)	125	105	0	1678	1998	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	c0.07			0.33	c0.39	
v/s Ratio Perm		0.07				
v/c Ratio	0.21	0.20		0.62	0.74	
Uniform Delay, d1	14.3	14.3		9.8	10.8	
Progression Factor	1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.8	0.8		1.1	1.8	
Delay (s)	15.2	15.1		10.8	12.6	
Level of Service	B	B		B	B	
Approach Delay (s)	15.1			10.8	12.6	
Approach LOS	B			B	B	
Intersection Summary						
HCM 2000 Control Delay			12.0		HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio			0.53			
Actuated Cycle Length (s)			60.0		Sum of lost time (s)	8.0
Intersection Capacity Utilization			48.6%		ICU Level of Service	A
Analysis Period (min)			15			
c Critical Lane Group						

Lanes, Volumes, Timings

104: Trafalgar Rd & South Carpool Lot

Background (2031) - 2% Growth Rate

Timing Plan: AM Peak Hour

Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	16	13	13	2076	1931	7
Future Volume (vph)	16	13	13	2076	1931	7
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)		9				7
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)	17	14	14	2257	2099	8
Shared Lane Traffic (%)						
Lane Group Flow (vph)	17	14	14	2257	2099	8
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 Effect 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	0.03	0.03	0.13	0.74	0.69	0.01

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Lanes, Volumes, Timings

104: Trafalgar Rd & South Carpool Lot

Background (2031) - 2% Growth Rate

Timing Plan: AM Peak Hour

Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Control Delay	18.4	12.8	9.7	12.0	11.0	3.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	18.4	12.8	9.7	12.0	11.0	3.7
LOS	B	B	A	B	B	A
Approach Delay	15.9			12.0	11.0	
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: 0.74

Intersection Signal Delay: 11.5

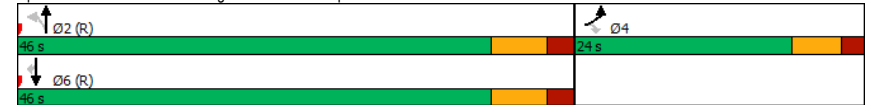
Intersection LOS: B

Intersection Capacity Utilization 50.9%

ICU Level of Service A

Analysis Period (min) 15

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

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Queues Background (2031) - 2% Growth Rate
104: Trafalgar Rd & South Carpool Lot Timing Plan: AM Peak Hour

	EBL	EBR	NBL	NBT	SBT	SBR
Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Group Flow (vph)	17	14	14	2257	2099	8
v/c Ratio	0.03	0.03	0.13	0.74	0.69	0.01
Control Delay	18.4	12.8	9.7	12.0	11.0	3.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	18.4	12.8	9.7	12.0	11.0	3.7
Queue Length 50th (m)	1.6	0.5	0.7	68.1	60.0	0.1
Queue Length 95th (m)	5.6	4.1	3.4	85.0	74.9	1.4
Internal Link Dist (m)	83.1			209.3	107.6	
Turn Bay Length (m)			50.0			30.0
Base Capacity (vph)	505	458	106	3051	3051	952
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	0.03	0.03	0.13	0.74	0.69	0.01
Intersection Summary						

HCM Signalized Intersection Capacity Analysis Background (2031) - 2% Growth Rate
104: Trafalgar Rd & South Carpool Lot Timing Plan: AM Peak Hour

	EBL	EBR	NBL	NBT	SBT	SBR
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	↰	↱	↰	↰↱↱	↰↱↱	↱
Traffic Volume (vph)	16	13	13	2076	1931	7
Future Volume (vph)	16	13	13	2076	1931	7
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)	17	14	14	2257	2099	8
RTOR Reduction (vph)	0	6	0	0	0	3
Lane Group Flow (vph)	17	8	14	2257	2099	5
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	c0.01			c0.44	0.41	
v/s Ratio Perm		0.00	0.08			0.00
v/c Ratio	0.03	0.02	0.13	0.74	0.69	0.01
Uniform Delay, d1	18.0	17.9	6.1	10.1	9.5	5.6
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	0.1	0.1	2.6	1.7	1.3	0.0
Delay (s)	18.2	18.0	8.6	11.7	10.8	5.6
Level of Service	B	B	A	B	B	A
Approach Delay (s)	18.1			11.7	10.8	
Approach LOS	B			B	B	
Intersection Summary						
HCM 2000 Control Delay			11.3		HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio			0.51			
Actuated Cycle Length (s)			70.0		Sum of lost time (s)	8.0
Intersection Capacity Utilization			50.9%		ICU Level of Service	A
Analysis Period (min)			15			
c Critical Lane Group						

Lanes, Volumes, Timings

105: Trafalgar Rd & William Halton Parkway

Background (2031) - 2% Growth Rate

Timing Plan: AM Peak Hour

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↩	↩↩	↩	↩	↩↩	↩	↩↩	↩↩	↩	↩↩	↩↩	↩
Traffic Volume (vph)	232	688	155	22	378	199	35	1858	41	429	1465	50
Future Volume (vph)	232	688	155	22	378	199	35	1858	41	429	1465	50
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	0.306			0.141			0.095			0.059		
Satd. Flow (perm)	570	3539	1583	263	3539	1583	177	5085	1583	110	5085	1583
Right Turn on Red			Yes			Yes			Yes		Yes	
Satd. Flow (RTOR)			168			148			94		94	
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)	252	748	168	24	411	216	38	2020	45	466	1592	54
Shared Lane Traffic (%)												
Lane Group Flow (vph)	252	748	168	24	411	216	38	2020	45	466	1592	54
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

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Lanes, Volumes, Timings

105: Trafalgar Rd & William Halton Parkway

Background (2031) - 2% Growth Rate

Timing Plan: AM Peak Hour

	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 Effect Green (s)	42.9	38.0	38.0	39.3	32.0	32.0	73.5	66.2	66.2	79.2	71.3	71.3
Actuated g/C Ratio	0.32	0.29	0.29	0.30	0.24	0.24	0.55	0.50	0.50	0.60	0.54	0.54
v/c Ratio	0.97	0.74	0.29	0.15	0.48	0.44	0.21	0.80	0.05	2.45	0.58	0.06
Control Delay	86.4	48.7	6.7	30.8	44.9	16.5	15.1	31.7	0.1	687.1	23.4	0.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	86.4	48.7	6.7	30.8	44.9	16.5	15.1	31.7	0.1	687.1	23.4	0.7
LOS	F	D	A	C	D	B	B	C	A	F	C	A
Approach Delay		50.8			35.0			30.7			169.2	
Approach LOS		D			C			C			F	

Intersection Summary

Area Type: Other

Cycle Length: 140

Actuated Cycle Length: 132.9

Natural Cycle: 145

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 2.45

Intersection Signal Delay: 83.5

Intersection LOS: F

Intersection Capacity Utilization 102.5%

ICU Level of Service G

Analysis Period (min) 15

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

Ø1	Ø2	Ø3	Ø4
14 s	70 s	12.6 s	43.4 s
Ø5	Ø6	Ø7	Ø8
14 s	70 s	12.6 s	43.4 s

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Queues Background (2031) - 2% Growth Rate
105: Trafalgar Rd & William Halton Parkway Timing Plan: AM Peak Hour

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	252	748	168	24	411	216	38	2020	45	466	1592	54
v/c Ratio	0.97	0.74	0.29	0.15	0.48	0.44	0.21	0.80	0.05	2.45	0.58	0.06
Control Delay	86.4	48.7	6.7	30.8	44.9	16.5	15.1	31.7	0.1	687.1	23.4	0.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	86.4	48.7	6.7	30.8	44.9	16.5	15.1	31.7	0.1	687.1	23.4	0.7
Queue Length 50th (m)	50.2	96.7	0.0	4.2	48.2	14.0	4.3	169.9	0.0	~196.4	112.1	0.0
Queue Length 95th (m)	#99.9	120.7	16.6	10.4	63.5	36.1	9.4	193.4	0.0	#265.5	132.1	1.4
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)	261	1052	588	178	1052	574	221	2533	836	190	2728	892
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.97	0.71	0.29	0.13	0.39	0.38	0.17	0.80	0.05	2.45	0.58	0.06

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.

HCM Signalized Intersection Capacity Analysis Background (2031) - 2% Growth Rate
105: Trafalgar Rd & William Halton Parkway Timing Plan: AM Peak Hour

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰	↰	↰	↰	↰	↰	↰	↰	↰	↰	↰	↰
Traffic Volume (vph)	232	688	155	22	378	199	35	1858	41	429	1465	50
Future Volume (vph)	232	688	155	22	378	199	35	1858	41	429	1465	50
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
Flt	1.00	1.00	0.85	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00
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	0.31	1.00	1.00	0.14	1.00	1.00	0.10	1.00	1.00	0.06	1.00	1.00
Satd. Flow (perm)	571	3539	1583	262	3539	1583	178	5085	1583	109	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)	252	748	168	24	411	216	38	2020	45	466	1592	54
RTOR Reduction (vph)	0	0	121	0	0	111	0	0	23	0	0	26
Lane Group Flow (vph)	252	748	47	24	411	105	38	2020	22	466	1592	28
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)	43.3	35.0	35.0	35.0	30.7	30.7	70.0	64.2	64.2	78.2	68.4	68.4
Effective Green, g (s)	43.3	38.0	38.0	35.0	33.7	33.7	70.0	67.1	67.1	78.2	71.3	71.3
Actuated g/C Ratio	0.32	0.28	0.28	0.26	0.25	0.25	0.52	0.50	0.50	0.58	0.53	0.53
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)	258	993	444	115	880	393	160	2519	784	185	2677	833
v/s Ratio Prot	c0.06	0.21		0.01	0.12		0.01	0.40		c0.19	0.31	
v/s Ratio Perm	c0.25		0.03	0.05		0.07	0.11		0.01	c1.26		0.02
v/c Ratio	0.98	0.75	0.11	0.21	0.47	0.27	0.24	0.80	0.03	2.52	0.59	0.03
Uniform Delay, d1	44.3	44.4	36.1	39.1	43.2	40.9	18.3	28.6	17.5	41.1	22.1	15.5
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	49.1	3.9	0.2	0.9	0.8	0.8	0.8	2.8	0.1	699.3	1.0	0.1
Delay (s)	93.3	48.3	36.3	40.0	44.0	41.7	19.1	31.4	17.5	740.4	23.1	15.5
Level of Service	F	D	D	D	D	D	B	C	B	F	C	B
Approach Delay (s)		56.3			43.1			30.9			181.2	
Approach LOS		E			D			C			F	

Intersection Summary

HCM 2000 Control Delay	89.7	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	1.96		
Actuated Cycle Length (s)	135.4	Sum of lost time (s)	16.0
Intersection Capacity Utilization	102.5%	ICU Level of Service	G
Analysis Period (min)	15		
c Critical Lane Group			

Lanes, Volumes, Timings

106: Trafalgar Rd & Burnhamthorpe Rd/Burnhamthorpe Rd

Background (2031) - 2% Growth Rate

Timing Plan: AM Peak Hour

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰	↱	↲	↰	↱	↲	↰	↱	↲	↰	↱	↲
Traffic Volume (vph)	344	403	66	68	129	116	46	1475	143	224	1153	132
Future Volume (vph)	344	403	66	68	129	116	46	1475	143	224	1153	132
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	1.00	1.00	1.00	1.00	1.00	1.00	0.91	1.00	1.00	0.91	1.00
Frt		0.979			0.929				0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1770	1824	0	1770	1730	0	1770	5085	1583	1770	5085	1583
Flt Permitted	0.510			0.274			0.211			0.091		
Satd. Flow (perm)	950	1824	0	510	1730	0	393	5085	1583	170	5085	1583
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		9			48				110			143
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)	374	438	72	74	140	126	50	1603	155	243	1253	143
Shared Lane Traffic (%)												
Lane Group Flow (vph)	374	510	0	74	266	0	50	1603	155	243	1253	143
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)	57.0	57.0		57.0	57.0		46.0	46.0	46.0	17.0	63.0	63.0
Total Split (%)	47.5%	47.5%		47.5%	47.5%		38.3%	38.3%	38.3%	14.2%	52.5%	52.5%
Maximum Green (s)	51.0	51.0		51.0	51.0		40.0	40.0	40.0	13.0	57.0	57.0
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 Effect Green (s)	53.0	53.0		53.0	53.0		42.0	42.0	42.0	59.0	59.0	59.0
Actuated g/C Ratio	0.44	0.44		0.44	0.44		0.35	0.35	0.35	0.49	0.49	0.49
v/c Ratio	0.89	0.63		0.33	0.34		0.36	0.90	0.25	0.95	0.50	0.17
Control Delay	56.3	29.7		27.1	19.1		38.7	45.2	10.3	75.0	21.4	3.1
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	56.3	29.7		27.1	19.1		38.7	45.2	10.3	75.0	21.4	3.1

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Lanes, Volumes, Timings

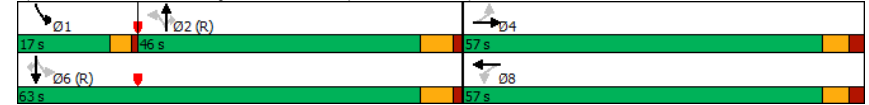
106: Trafalgar Rd & Burnhamthorpe Rd/Burnhamthorpe Rd

Background (2031) - 2% Growth Rate

Timing Plan: AM Peak Hour

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
LOS	E	C		C	B		D	D	B	E	C	A
Approach Delay		40.9			20.9			42.0			27.8	
Approach LOS		D			C			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: 75												
Control Type: Pretimed												
Maximum v/c Ratio: 0.95												
Intersection Signal Delay: 35.3						Intersection LOS: D						
Intersection Capacity Utilization 87.8%						ICU Level of Service E						
Analysis Period (min) 15												

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



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Queues Background (2031) - 2% Growth Rate
106: Trafalgar Rd & Burhamthorpe Rd/Burnhamthorpe Rd Timing Plan: AM Peak Hour

	EBL	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	374	510	74	266	50	1603	155	243	1253	143
v/c Ratio	0.89	0.63	0.33	0.34	0.36	0.90	0.25	0.95	0.50	0.17
Control Delay	56.3	29.7	27.1	19.1	38.7	45.2	10.3	75.0	21.4	3.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	56.3	29.7	27.1	19.1	38.7	45.2	10.3	75.0	21.4	3.1
Queue Length 50th (m)	78.5	88.3	11.0	32.0	8.6	128.6	7.0	40.4	69.8	0.0
Queue Length 95th (m)	#137.0	124.0	23.8	51.7	21.0	148.9	21.4	#89.1	82.3	10.0
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)	419	810	225	790	137	1779	625	256	2500	851
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	0.89	0.63	0.33	0.34	0.36	0.90	0.25	0.95	0.50	0.17

Intersection Summary

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

HCM Signalized Intersection Capacity Analysis Background (2031) - 2% Growth Rate
106: Trafalgar Rd & Burhamthorpe Rd/Burnhamthorpe Rd Timing Plan: AM Peak Hour

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰	↱		↰	↱		↰	↱	↱	↰	↱	↱
Traffic Volume (vph)	344	403	66	68	129	116	46	1475	143	224	1153	132
Future Volume (vph)	344	403	66	68	129	116	46	1475	143	224	1153	132
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	1.00		1.00	1.00		1.00	0.91	1.00	1.00	0.91	1.00
Frt	1.00	0.98		1.00	0.93		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	1823		1770	1730		1770	5085	1583	1770	5085	1583
Flt Permitted	0.51	1.00		0.27	1.00		0.21	1.00	1.00	0.09	1.00	1.00
Satd. Flow (perm)	949	1823		510	1730		392	5085	1583	169	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)	374	438	72	74	140	126	50	1603	155	243	1253	143
RTOR Reduction (vph)	0	5	0	0	27	0	0	0	72	0	0	73
Lane Group Flow (vph)	374	505	0	74	239	0	50	1603	84	243	1253	70
Turn Type	Perm	NA		Perm	NA		Perm	NA	Perm	pm+pt	NA	Perm
Protected Phases	4			8			2		2		1	
Permitted Phases	4			8			2		2		6	
Actuated Green, G (s)	51.0	51.0		51.0	51.0		40.0	40.0	40.0	57.0	57.0	57.0
Effective Green, g (s)	53.0	53.0		53.0	53.0		42.0	42.0	42.0	57.0	59.0	59.0
Actuated g/C Ratio	0.44	0.44		0.44	0.44		0.35	0.35	0.35	0.48	0.49	0.49
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)	419	805		225	764		137	1779	554	253	2500	778
v/s Ratio Prot	0.28			0.14			0.32		c0.10		0.25	
v/s Ratio Perm	c0.39			0.15			0.13		0.05	c0.35		0.04
v/c Ratio	0.89	0.63		0.33	0.31		0.36	0.90	0.15	0.96	0.50	0.09
Uniform Delay, d1	30.9	25.9		21.9	21.7		29.1	37.0	26.8	34.7	20.6	16.2
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	23.9	3.7		3.9	1.1		7.4	7.8	0.6	47.3	0.7	0.2
Delay (s)	54.8	29.6		25.8	22.8		36.4	44.9	27.3	81.9	21.3	16.5
Level of Service	D	C		C	C		D	D	C	F	C	B
Approach Delay (s)	40.2			23.4			43.1		29.9			
Approach LOS	D			C			D		C			

Intersection Summary

HCM 2000 Control Delay	36.5	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.93		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	87.8%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			

Lanes, Volumes, Timings

101: Trafalgar Rd & Lower Base Line

Background (2031) - 2% Growth Rate

Timing Plan: PM Peak Hour

	↖	→	↗	↖	←	↖	↖	↖	↖	↖	↖	↖
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖	↖	↖	↖	↖	↖	↖	↖	↖	↖	↖	↖
Traffic Volume (vph)	44	197	63	208	556	302	354	1646	188	251	1168	101
Future Volume (vph)	44	197	63	208	556	302	354	1646	188	251	1168	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		0.964			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	0.258			0.394			0.135			0.150		
Satd. Flow (perm)	481	3412	0	734	3352	0	251	5085	1583	279	5085	1583
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		44			109				204			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	68	226	604	328	385	1789	204	273	1270	110
Shared Lane Traffic (%)												
Lane Group Flow (vph)	48	282	0	226	932	0	385	1789	204	273	1270	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

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Lanes, Volumes, Timings

101: Trafalgar Rd & Lower Base Line

Background (2031) - 2% Growth Rate

Timing Plan: PM Peak Hour

	↖	→	↗	↖	←	↖	↖	↖	↖	↖	↖	↖
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 Effect Green (s)	22.6	17.3		29.7	24.3		48.7	33.8	33.8	40.0	29.9	29.9
Actuated g/C Ratio	0.26	0.20		0.34	0.28		0.56	0.39	0.39	0.46	0.35	0.35
v/c Ratio	0.24	0.39		0.64	0.92		0.93	0.90	0.27	0.88	0.72	0.16
Control Delay	22.0	26.9		30.5	42.5		52.8	33.3	4.0	49.3	28.2	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	22.0	26.9		30.5	42.5		52.8	33.3	4.0	49.3	28.2	1.0
LOS	C	C		C	D		D	C	A	D	C	A
Approach Delay		26.2			40.2			33.9			29.9	
Approach LOS		C			D			C			C	

Intersection Summary

Area Type: Other

Cycle Length: 90

Actuated Cycle Length: 86.6

Natural Cycle: 90

Control Type: Semi Act-Uncooord

Maximum v/c Ratio: 0.93

Intersection Signal Delay: 33.6

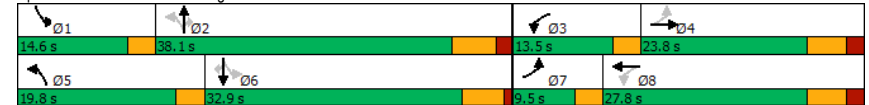
Intersection LOS: C

Intersection Capacity Utilization 88.6%

ICU Level of Service E

Analysis Period (min) 15

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

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Queues Background (2031) - 2% Growth Rate
101: Trafalgar Rd & Lower Base Line Timing Plan: PM Peak Hour

	EBL	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	48	282	226	932	385	1789	204	273	1270	110
v/c Ratio	0.24	0.39	0.64	0.92	0.93	0.90	0.27	0.88	0.72	0.16
Control Delay	22.0	26.9	30.5	42.5	52.8	33.3	4.0	49.3	28.2	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	22.0	26.9	30.5	42.5	52.8	33.3	4.0	49.3	28.2	1.0
Queue Length 50th (m)	5.2	18.0	27.3	74.3	48.0	106.0	0.0	28.7	70.4	0.0
Queue Length 95th (m)	12.1	29.0	45.1	#113.8	#101.7	#138.4	12.9	#74.4	86.6	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)	208	815	365	1017	419	1984	742	311	1756	667
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	0.62	0.92	0.92	0.90	0.27	0.88	0.72	0.16

Intersection Summary

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

HCM Signalized Intersection Capacity Analysis Background (2031) - 2% Growth Rate
101: Trafalgar Rd & Lower Base Line Timing Plan: PM Peak Hour

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰	↱	↱	↰	↱	↱	↰	↱	↱	↰	↱	↱
Traffic Volume (vph)	44	197	63	208	556	302	354	1646	188	251	1168	101
Future Volume (vph)	44	197	63	208	556	302	354	1646	188	251	1168	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	3411		1770	3352		1770	5085	1583	1770	5085	1583
Flt Permitted	0.26	1.00		0.39	1.00		0.13	1.00	1.00	0.15	1.00	1.00
Satd. Flow (perm)	481	3411		734	3352		251	5085	1583	279	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	68	226	604	328	385	1789	204	273	1270	110
RTOR Reduction (vph)	0	35	0	0	79	0	0	0	126	0	0	73
Lane Group Flow (vph)	48	247	0	226	853	0	385	1789	78	273	1270	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	
Actuated Green, G (s)	20.3	16.5		28.9	22.1		46.2	31.6	31.6	39.3	27.7	27.7
Effective Green, g (s)	18.3	18.7		27.9	24.3		45.2	33.8	33.8	37.3	29.9	29.9
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	725		331	926		396	1955	608	298	1729	538
v/s Ratio Prot	0.01	0.07		c0.07	c0.25		c0.17	c0.35		0.11	0.25	
v/s Ratio Perm	0.06			0.15			0.33		0.05	0.28		0.02
v/c Ratio	0.34	0.34		0.68	0.92		0.97	0.92	0.13	0.92	0.73	0.07
Uniform Delay, d1	29.1	29.4		24.0	30.9		23.9	25.7	17.5	20.5	25.5	19.6
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		4.6	14.8		37.7	8.2	0.4	34.5	2.8	0.2
Delay (s)	30.5	30.0		28.6	45.6		61.6	33.9	18.0	55.0	28.3	19.8
Level of Service	C	C		C	D		E	C	B	D	C	B
Approach Delay (s)	30.0			42.3			37.0			32.2		
Approach LOS	C			D			D			C		

Intersection Summary

HCM 2000 Control Delay	36.2	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.97		
Actuated Cycle Length (s)	87.9	Sum of lost time (s)	16.4
Intersection Capacity Utilization	88.6%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

Lanes, Volumes, Timings Background (2031) - 2% Growth Rate
102: Trafalgar Rd & North Carpool Lot/Hwy 407 WB Off Timing Plan: PM Peak Hour

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔		↔	↔	↔	↔	↔			↔	↔
Traffic Volume (vph)	6	0	40	316	13	143	7	2038	0	0	1436	4
Future Volume (vph)	6	0	40	316	13	143	7	2038	0	0	1436	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				0.987	0.850						0.850
Flt Protected	0.993			0.950	0.960		0.950					
Satd. Flow (prot)	0	1635	0	1681	1606	1504	1770	5085	0	0	5085	1583
Flt Permitted	0.954			0.776	0.768		0.117					
Satd. Flow (perm)	0	1571	0	1373	1285	1504	218	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	43	343	14	155	8	2215	0	0	1561	4
Shared Lane Traffic (%)				45%		10%						
Lane Group Flow (vph)	0	50	0	189	184	139	8	2215	0	0	1561	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	CI+Ex	CI+Ex		CI+Ex	CI+Ex	CI+Ex	CI+Ex	CI+Ex			CI+Ex	CI+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		CI+Ex			CI+Ex			CI+Ex			CI+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	Perm
Protected Phases		4			8		5	2			6	
Permitted Phases	4			8		8	2					6

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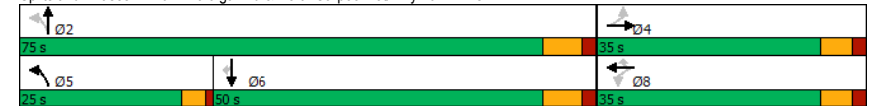
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Lanes, Volumes, Timings Background (2031) - 2% Growth Rate
102: Trafalgar Rd & North Carpool Lot/Hwy 407 WB Off Timing Plan: PM Peak Hour

	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	
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)		22.0		22.0	22.0	22.0	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		0.64	0.65	0.36	0.03	0.62			0.45	0.00
Control Delay		3.3		45.7	46.4	17.6	6.4	9.6			9.0	0.0
Queue Delay		0.0		0.0	0.0	0.0	0.0	0.0			0.0	0.0
Total Delay		3.3		45.7	46.4	17.6	6.4	9.6			9.0	0.0
LOS		A		D	D	B	A	A			A	A
Approach Delay		3.3			38.3		9.6				9.0	
Approach LOS		A			D		A				A	

Intersection Summary												
Area Type:	Other											
Cycle Length: 110												
Actuated Cycle Length: 101.3												
Natural Cycle: 60												
Control Type: Actuated-Uncoordinated												
Maximum v/c Ratio: 0.65												
Intersection Signal Delay: 12.7	Intersection LOS: B											
Intersection Capacity Utilization 63.3%	ICU Level of Service B											
Analysis Period (min) 15												

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



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Queues Background (2031) - 2% Growth Rate
102: Trafalgar Rd & North Carpool Lot/Hwy 407 WB Off Timing Plan: PM Peak Hour

	→	↖	←	↙	↘	↑	↓	↗
Lane Group	EBT	WBL	WBT	WBR	NBL	NBT	SBT	SBR
Lane Group Flow (vph)	50	189	184	139	8	2215	1561	4
v/c Ratio	0.12	0.64	0.65	0.36	0.03	0.62	0.45	0.00
Control Delay	3.3	45.7	46.4	17.6	6.4	9.6	9.0	0.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	3.3	45.7	46.4	17.6	6.4	9.6	9.0	0.0
Queue Length 50th (m)	0.0	35.1	35.0	10.0	0.4	71.2	41.0	0.0
Queue Length 95th (m)	4.0	57.7	59.1	26.3	2.2	113.8	85.9	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	421	397	516	476	3577	3488	1107
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	0.45	0.46	0.27	0.02	0.62	0.45	0.00
Intersection Summary								

HCM Signalized Intersection Capacity Analysis Background (2031) - 2% Growth Rate
102: Trafalgar Rd & North Carpool Lot/Hwy 407 WB Off Timing Plan: PM Peak Hour

	↖	→	↘	↙	←	↗	↘	↑	↖	↙	↓	↗
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔		↖	↔	↗	↖	↔		↖	↔	↗
Traffic Volume (vph)	6	0	40	316	13	143	7	2038	0	0	1436	4
Future Volume (vph)	6	0	40	316	13	143	7	2038	0	0	1436	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	1606	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)	1570		1373	1285	1504	218	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	43	343	14	155	8	2215	0	0	1561	4
RTOR Reduction (vph)	0	39	0	0	3	62	0	0	0	0	0	1
Lane Group Flow (vph)	0	11	0	189	181	77	8	2215	0	0	1561	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)		20.0		20.0	20.0	20.0	71.5	71.5			66.5	66.5
Effective Green, g (s)		22.0		22.0	22.0	22.0	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)		330		289	270	316	164	3625			3381	1052
v/s Ratio Prot							0.00	c0.44			0.31	
v/s Ratio Perm		0.01		0.14	c0.14	0.05	0.03					0.00
v/c Ratio		0.03		0.65	0.67	0.24	0.05	0.61			0.46	0.00
Uniform Delay, d1		32.8		37.8	37.9	34.3	6.5	7.6			8.5	5.9
Progression Factor		1.00		1.00	1.00	1.00	1.00	1.00			1.00	1.00
Incremental Delay, d2		0.0		5.5	6.4	0.5	0.1	0.8			0.5	0.0
Delay (s)		32.8		43.2	44.3	34.8	6.6	8.4			8.9	5.9
Level of Service		C		D	D	C	A	A			A	A
Approach Delay (s)		32.8			41.3			8.4			8.9	
Approach LOS		C			D			A			A	
Intersection Summary												
HCM 2000 Control Delay			12.7							B		
HCM 2000 Volume to Capacity ratio			0.65									
Actuated Cycle Length (s)			104.5			Sum of lost time (s)			12.0			
Intersection Capacity Utilization			63.3%			ICU Level of Service			B			
Analysis Period (min)			15									

c Critical Lane Group

Lanes, Volumes, Timings
103: Trafalgar Rd & Hwy 407 EB Off

Background (2031) - 2% Growth Rate
Timing Plan: PM Peak Hour

	↖	↗	↖	↗	↘	↙
Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	↖	↗		↗↗↗	↗↗↗	
Traffic Volume (vph)	71	74	0	2153	1625	0
Future Volume (vph)	71	74	0	2153	1625	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)		20				
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	80	0	2340	1766	0
Shared Lane Traffic (%)						
Lane Group Flow (vph)	77	80	0	2340	1766	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 Effect 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	0.17		0.77	0.58	
Control Delay	19.7	16.1		12.6	9.5	
Queue Delay	0.0	0.0		0.0	0.0	
Total Delay	19.7	16.1		12.6	9.5	

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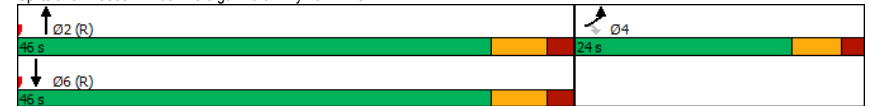
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Lanes, Volumes, Timings
103: Trafalgar Rd & Hwy 407 EB Off

Background (2031) - 2% Growth Rate
Timing Plan: PM Peak Hour

Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
LOS	B	B		B	A	
Approach Delay	17.9			12.6	9.5	
Approach LOS	B			B	A	
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: 0.77						
Intersection Signal Delay: 11.5				Intersection LOS: B		
Intersection Capacity Utilization 52.4%				ICU Level of Service A		
Analysis Period (min) 15						

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



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Queues
103: Trafalgar Rd & Hwy 407 EB Off

Background (2031) - 2% Growth Rate
Timing Plan: PM Peak Hour

	EBL	EBR	NBT	SBT
Lane Group	EBL	EBR	NBT	SBT
Lane Group Flow (vph)	77	80	2340	1766
v/c Ratio	0.15	0.17	0.77	0.58
Control Delay	19.7	16.1	12.6	9.5
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	19.7	16.1	12.6	9.5
Queue Length 50th (m)	7.4	5.7	72.7	45.4
Queue Length 95th (m)	16.5	14.9	90.8	56.9
Internal Link Dist (m)	530.6		96.3	339.6
Turn Bay Length (m)				
Base Capacity (vph)	505	466	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	0.17	0.77	0.58
Intersection Summary				

HCM Signalized Intersection Capacity Analysis
103: Trafalgar Rd & Hwy 407 EB Off

Background (2031) - 2% Growth Rate
Timing Plan: PM Peak Hour

	EBL	EBR	NBL	NBT	SBT	SBR
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	↰	↱		↰	↰	↰
Traffic Volume (vph)	71	74	0	2153	1625	0
Future Volume (vph)	71	74	0	2153	1625	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	80	0	2340	1766	0
RTOR Reduction (vph)	0	14	0	0	0	0
Lane Group Flow (vph)	77	66	0	2340	1766	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	c0.04			c0.46	0.35	
v/s Ratio Perm		0.04				
v/c Ratio	0.15	0.15		0.77	0.58	
Uniform Delay, d1	18.7	18.6		10.4	8.6	
Progression Factor	1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.6	0.7		1.9	0.8	
Delay (s)	19.3	19.3		12.3	9.4	
Level of Service	B	B		B	A	
Approach Delay (s)	19.3			12.3	9.4	
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			0.57			
Actuated Cycle Length (s)			70.0		Sum of lost time (s)	8.0
Intersection Capacity Utilization			52.4%		ICU Level of Service	A
Analysis Period (min)			15			
c Critical Lane Group						

Lanes, Volumes, Timings

104: Trafalgar Rd & South Carpool Lot

Background (2031) - 2% Growth Rate

Timing Plan: PM Peak Hour

	EBL	EBR	NBL	NBT	SBT	SBR
Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	↩	↩	↩	↩↩↩	↩↩↩	↩
Traffic Volume (vph)	22	16	16	2534	1693	6
Future Volume (vph)	22	16	16	2534	1693	6
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		0.089			
Satd. Flow (perm)	1770	1583	166	5085	5085	1583
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)		17				7
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)	24	17	17	2754	1840	7
Shared Lane Traffic (%)						
Lane Group Flow (vph)	24	17	17	2754	1840	7
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	0.15	0.79	0.53	0.01

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Lanes, Volumes, Timings

104: Trafalgar Rd & South Carpool Lot

Background (2031) - 2% Growth Rate

Timing Plan: PM Peak Hour

	EBL	EBR	NBL	NBT	SBT	SBR
Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Control Delay	28.3	13.1	8.4	11.6	7.5	2.5
Queue Delay	0.0	0.0	0.0	0.1	0.0	0.0
Total Delay	28.3	13.1	8.4	11.8	7.5	2.5
LOS	C	B	A	B	A	A
Approach Delay	22.0			11.7	7.5	
Approach LOS	C			B	A	

Intersection Summary

Area Type: Other

Cycle Length: 90

Actuated Cycle Length: 90

Offset: 0 (0%), Referenced to phase 2:NBT and 6:SBT, Start of Green

Natural Cycle: 65

Control Type: Pretimed

Maximum v/c Ratio: 0.79

Intersection Signal Delay: 10.1

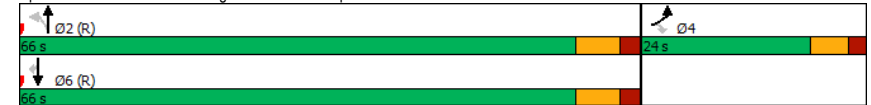
Intersection LOS: B

Intersection Capacity Utilization 59.8%

ICU Level of Service B

Analysis Period (min) 15

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

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Queues
104: Trafalgar Rd & South Carpool Lot

Background (2031) - 2% Growth Rate
Timing Plan: PM Peak Hour

	EBL	EBR	NBL	NBT	SBT	SBR
Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Group Flow (vph)	24	17	17	2754	1840	7
v/c Ratio	0.06	0.05	0.15	0.79	0.53	0.01
Control Delay	28.3	13.1	8.4	11.6	7.5	2.5
Queue Delay	0.0	0.0	0.0	0.1	0.0	0.0
Total Delay	28.3	13.1	8.4	11.8	7.5	2.5
Queue Length 50th (m)	3.3	0.0	0.9	100.9	48.3	0.0
Queue Length 95th (m)	9.4	5.1	3.7	120.2	58.1	1.2
Internal Link Dist (m)	83.1			209.3	107.6	
Turn Bay Length (m)			50.0			30.0
Base Capacity (vph)	393	365	114	3503	3503	1092
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	0.06	0.05	0.15	0.81	0.53	0.01
Intersection Summary						

HCM Signalized Intersection Capacity Analysis
104: Trafalgar Rd & South Carpool Lot

Background (2031) - 2% Growth Rate
Timing Plan: PM Peak Hour

	EBL	EBR	NBL	NBT	SBT	SBR
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	↰	↱	↰	↱	↱	↱
Traffic Volume (vph)	22	16	16	2534	1693	6
Future Volume (vph)	22	16	16	2534	1693	6
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
Flt	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	0.09	1.00	1.00	1.00
Satd. Flow (perm)	1770	1583	167	5085	5085	1583
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	24	17	17	2754	1840	7
RTOR Reduction (vph)	0	13	0	0	0	2
Lane Group Flow (vph)	24	4	17	2754	1840	5
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	115	3503	3503	1090
v/s Ratio Prot	c0.01			c0.54	0.36	
v/s Ratio Perm		0.00	0.10			0.00
v/c Ratio	0.06	0.01	0.15	0.79	0.53	0.00
Uniform Delay, d1	27.6	27.3	4.8	9.5	6.8	4.4
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	0.3	0.1	2.7	1.9	0.6	0.0
Delay (s)	27.9	27.3	7.5	11.4	7.4	4.4
Level of Service	C	C	A	B	A	A
Approach Delay (s)	27.7			11.3	7.4	
Approach LOS	C			B	A	
Intersection Summary						
HCM 2000 Control Delay			9.9		HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio			0.61			
Actuated Cycle Length (s)			90.0		Sum of lost time (s)	8.0
Intersection Capacity Utilization			59.8%		ICU Level of Service	B
Analysis Period (min)			15			
c Critical Lane Group						

Lanes, Volumes, Timings

105: Trafalgar Rd & William Halton Parkway

Background (2031) - 2% Growth Rate

Timing Plan: PM Peak Hour

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↩	↩↩	↩	↩	↩↩	↩	↩↩	↩↩	↩	↩↩	↩↩	↩
Traffic Volume (vph)	255	380	87	135	1134	449	250	2037	91	328	1309	284
Future Volume (vph)	255	380	87	135	1134	449	250	2037	91	328	1309	284
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			0.372			0.096			0.066		
Satd. Flow (perm)	205	3539	1583	693	3539	1583	179	5085	1583	123	5085	1583
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			95			174			94			181
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)	277	413	95	147	1233	488	272	2214	99	357	1423	309
Shared Lane Traffic (%)												
Lane Group Flow (vph)	277	413	95	147	1233	488	272	2214	99	357	1423	309
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

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Lanes, Volumes, Timings

105: Trafalgar Rd & William Halton Parkway

Background (2031) - 2% Growth Rate

Timing Plan: PM Peak Hour

	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	76.0	63.2	63.2	76.0	63.2	63.2
Actuated g/C Ratio	0.34	0.28	0.28	0.34	0.28	0.28	0.54	0.45	0.45	0.54	0.45	0.45
v/c Ratio	1.67	0.42	0.19	0.49	1.24	0.86	1.12	0.96	0.13	1.65	0.62	0.38
Control Delay	351.8	42.5	7.8	36.9	158.4	45.9	125.2	49.5	5.0	338.6	30.7	11.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	351.8	42.5	7.8	36.9	158.4	45.9	125.2	49.5	5.0	338.6	30.7	11.3
LOS	F	D	A	D	F	D	F	D	A	F	C	B
Approach Delay		147.4			119.4			55.8			80.5	
Approach LOS		F			F			E			F	

Intersection Summary

Area Type: Other

Cycle Length: 140

Actuated Cycle Length: 140

Natural Cycle: 115

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 1.67

Intersection Signal Delay: 88.9

Intersection LOS: F

Intersection Capacity Utilization 116.3%

ICU Level of Service H

Analysis Period (min) 15

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

Ø1	Ø2	Ø3	Ø4
16.8 s	67.2 s	12.6 s	43.4 s
Ø5	Ø6	Ø7	Ø8
16.8 s	67.2 s	12.6 s	43.4 s

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Queues Background (2031) - 2% Growth Rate
105: Trafalgar Rd & William Halton Parkway Timing Plan: PM Peak Hour

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	277	413	95	147	1233	488	272	2214	99	357	1423	309
v/c Ratio	1.67	0.42	0.19	0.49	1.24	0.86	1.12	0.96	0.13	1.65	0.62	0.38
Control Delay	351.8	42.5	7.8	36.9	158.4	45.9	125.2	49.5	5.0	338.6	30.7	11.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	351.8	42.5	7.8	36.9	158.4	45.9	125.2	49.5	5.0	338.6	30.7	11.3
Queue Length 50th (m)	~93.9	48.4	0.0	27.4	~219.3	86.3	~62.1	211.9	0.8	~125.7	106.8	20.6
Queue Length 95th (m)	#149.7	64.0	12.9	43.6	#261.0	#145.1	#117.9	#248.8	10.8	#187.3	122.1	42.5
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)	166	995	513	303	995	570	242	2295	766	217	2295	813
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	1.67	0.42	0.19	0.49	1.24	0.86	1.12	0.96	0.13	1.65	0.62	0.38

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.

HCM Signalized Intersection Capacity Analysis Background (2031) - 2% Growth Rate
105: Trafalgar Rd & William Halton Parkway Timing Plan: PM Peak Hour

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔
Traffic Volume (vph)	255	380	87	135	1134	449	250	2037	91	328	1309	284
Future Volume (vph)	255	380	87	135	1134	449	250	2037	91	328	1309	284
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
Flt	1.00	1.00	0.85	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00
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	0.37	1.00	1.00	0.10	1.00	1.00	0.07	1.00	1.00
Satd. Flow (perm)	205	3539	1583	694	3539	1583	179	5085	1583	124	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)	277	413	95	147	1233	488	272	2214	99	357	1423	309
RTOR Reduction (vph)	0	0	68	0	0	125	0	0	52	0	0	99
Lane Group Flow (vph)	277	413	27	147	1233	363	272	2214	47	357	1423	210
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	73.1	60.3	60.3	73.1	60.3	60.3
Effective Green, g (s)	45.0	39.4	39.4	45.0	39.4	39.4	73.1	63.2	63.2	73.1	63.2	63.2
Actuated g/C Ratio	0.32	0.28	0.28	0.32	0.28	0.28	0.52	0.45	0.45	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)	162	995	445	289	995	445	238	2295	714	215	2295	714
v/s Ratio Prot	c0.11	0.12		0.03	0.35		0.10	0.44		c0.15	0.28	
v/s Ratio Perm	c0.45		0.02	0.13		0.23	0.49		0.03	c0.72		0.13
v/c Ratio	1.71	0.42	0.06	0.51	1.24	0.82	1.14	0.96	0.07	1.66	0.62	0.29
Uniform Delay, d1	42.0	40.9	36.8	35.6	50.3	46.9	34.4	37.3	21.7	45.0	29.3	24.3
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	344.3	0.6	0.1	1.4	116.3	12.3	102.3	12.1	0.2	316.9	1.3	1.0
Delay (s)	386.3	41.5	36.9	37.0	166.6	59.3	136.7	49.5	21.9	361.9	30.5	25.3
Level of Service	F	D	D	D	F	E	F	D	C	F	C	C
Approach Delay (s)		162.6			128.4			57.6			86.4	
Approach LOS		F			F			E			F	

Intersection Summary

HCM 2000 Control Delay	95.1	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	1.60		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	16.0
Intersection Capacity Utilization	116.3%	ICU Level of Service	H
Analysis Period (min)	15		
c Critical Lane Group			

Lanes, Volumes, Timings

Background (2031) - 2% Growth Rate

106: Trafalgar Rd & Burnhamthorpe Rd/Burnhamthorpe Rd

Timing Plan: PM Peak Hour

	←	→	↖	↗	←	→	↖	↗	←	→	↖	↗
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖	↖		↖	↖		↖	↖	↖	↖	↖	↖
Traffic Volume (vph)	101	278	15	111	244	345	82	1677	119	190	1029	146
Future Volume (vph)	101	278	15	111	244	345	82	1677	119	190	1029	146
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	1.00	1.00	1.00	1.00	1.00	1.00	0.91	1.00	1.00	0.91	1.00
Frt		0.992			0.912				0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1770	1848	0	1770	1699	0	1770	5085	1583	1770	5085	1583
Flt Permitted	0.116			0.331			0.243			0.062		
Satd. Flow (perm)	216	1848	0	617	1699	0	453	5085	1583	115	5085	1583
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		2			60				108			159
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)	110	302	16	121	265	375	89	1823	129	207	1118	159
Shared Lane Traffic (%)												
Lane Group Flow (vph)	110	318	0	121	640	0	89	1823	129	207	1118	159
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	pm+pt	NA	NA	Perm
Protected Phases		4			8			2		1	6	
Permitted Phases	4			8			2		2	6		6

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Lanes, Volumes, Timings

Background (2031) - 2% Growth Rate

106: Trafalgar Rd & Burnhamthorpe Rd/Burnhamthorpe Rd

Timing Plan: PM Peak Hour

	←	→	↖	↗	←	→	↖	↗	←	→	↖	↗
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	Lag	Lag	Lag
Lead-Lag Optimize?							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		Max	Max	Max	None	Max	Max
Act Effect Green (s)	34.4	34.4		34.4	34.4		62.2	62.2	62.2	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	1.80	0.60		0.69	1.21		0.38	0.69	0.15	0.90	0.34	0.15
Control Delay	446.8	42.2		59.8	145.7		23.4	23.5	4.4	67.4	9.9	1.5
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	446.8	42.2		59.8	145.7		23.4	23.5	4.4	67.4	9.9	1.5
LOS	F	D		E	F		C	C	A	E	A	A
Approach Delay		146.2			132.0			22.2			17.1	
Approach LOS		F			F			C			B	

Intersection Summary

Area Type: Other

Cycle Length: 120

Actuated Cycle Length: 120

Natural Cycle: 70

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 1.80

Intersection Signal Delay: 49.6

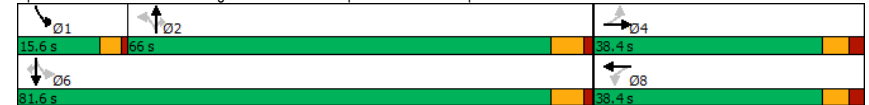
Intersection LOS: D

Intersection Capacity Utilization 98.6%

ICU Level of Service F

Analysis Period (min) 15

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

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Queues Background (2031) - 2% Growth Rate
106: Trafalgar Rd & Burnhamthorpe Rd/Burnhamthorpe Rd Timing Plan: PM Peak Hour

	EBL	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	110	318	121	640	89	1823	129	207	1118	159
v/c Ratio	1.80	0.60	0.69	1.21	0.38	0.69	0.15	0.90	0.34	0.15
Control Delay	446.8	42.2	59.8	145.7	23.4	23.5	4.4	67.4	9.9	1.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	446.8	42.2	59.8	145.7	23.4	23.5	4.4	67.4	9.9	1.5
Queue Length 50th (m)	~38.2	63.3	24.9	~171.6	12.0	112.8	2.3	32.1	39.8	0.0
Queue Length 95th (m)	#74.0	92.8	#53.0	#240.9	26.0	129.5	11.6	#74.6	47.3	7.0
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)	61	531	176	529	235	2637	873	234	3288	1079
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	1.80	0.60	0.69	1.21	0.38	0.69	0.15	0.88	0.34	0.15

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.

HCM Signalized Intersection Capacity Analysis Background (2031) - 2% Growth Rate
106: Trafalgar Rd & Burnhamthorpe Rd/Burnhamthorpe Rd Timing Plan: PM Peak Hour

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰	↱		↰	↱		↰	↱	↱	↰	↱	↱
Traffic Volume (vph)	101	278	15	111	244	345	82	1677	119	190	1029	146
Future Volume (vph)	101	278	15	111	244	345	82	1677	119	190	1029	146
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	1.00		1.00	1.00		1.00	0.91	1.00	1.00	0.91	1.00
Frt	1.00	0.99		1.00	0.91		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	1849		1770	1699		1770	5085	1583	1770	5085	1583
Flt Permitted	0.12	1.00		0.33	1.00		0.24	1.00	1.00	0.06	1.00	1.00
Satd. Flow (perm)	217	1849		616	1699		452	5085	1583	116	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)	110	302	16	121	265	375	89	1823	129	207	1118	159
RTOR Reduction (vph)	0	1	0	0	43	0	0	0	52	0	0	56
Lane Group Flow (vph)	110	317	0	121	597	0	89	1823	77	207	1118	103
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		60.2	60.2	60.2	75.6	75.6	75.6
Effective Green, g (s)	34.4	34.4		34.4	34.4		62.2	62.2	62.2	77.6	77.6	77.6
Actuated g/C Ratio	0.29	0.29		0.29	0.29		0.52	0.52	0.52	0.63	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)	62	530		176	487		234	2635	820	230	3288	1023
v/s Ratio Prot		0.17			0.35			0.36		c0.09	0.22	
v/s Ratio Perm	c0.51			0.20			0.20		0.05	c0.48		0.06
v/c Ratio	1.77	0.60		0.69	1.23		0.38	0.69	0.09	0.90	0.34	0.10
Uniform Delay, d1	42.8	36.8		38.0	42.8		17.3	21.7	14.6	34.2	9.6	8.0
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	405.5	1.8		10.6	119.0		4.6	1.5	0.2	33.8	0.3	0.2
Delay (s)	448.3	38.7		48.7	161.8		22.0	23.2	14.9	68.0	9.9	8.2
Level of Service	F	D		D	F		C	C	B	E	A	A
Approach Delay (s)		143.9			143.8			22.6			17.8	
Approach LOS		F			F			C			B	

Intersection Summary

HCM 2000 Control Delay	51.7	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	1.18		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	98.6%	ICU Level of Service	F
Analysis Period (min)	15		

c Critical Lane Group

Appendix E2

2041 Background Operation Synchro Reports



Lanes, Volumes, Timings

101: Trafalgar Rd & Lower Base Line

Background (2041) - 2% Growth Rate

Timing Plan: AM Peak Hour

	↖	→	↘	↙	←	↖	↗	↘	↙	↖	↗	↘	↙
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations	↖	↖		↖	↖		↖	↖	↖	↖	↖	↖	
Traffic Volume (vph)	151	588	224	280	119	219	48	1708	195	502	1766	24	
Future Volume (vph)	151	588	224	280	119	219	48	1708	195	502	1766	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	0.366			0.199			0.111			0.100			
Satd. Flow (perm)	682	3394	0	371	3196	0	207	5085	1583	186	5085	1583	
Right Turn on Red			Yes			Yes			Yes			Yes	
Satd. Flow (RTOR)		45			238				204			91	
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)	164	639	243	304	129	238	52	1857	212	546	1920	26	
Shared Lane Traffic (%)													
Lane Group Flow (vph)	164	882	0	304	367	0	52	1857	212	546	1920	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	CI+Ex	CI+Ex		CI+Ex	CI+Ex		CI+Ex	CI+Ex	CI+Ex	CI+Ex	CI+Ex	CI+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		CI+Ex			CI+Ex			CI+Ex			CI+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	

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Lanes, Volumes, Timings

101: Trafalgar Rd & Lower Base Line

Background (2041) - 2% Growth Rate

Timing Plan: AM Peak Hour

	↖	→	↘	↙	←	↖	↗	↘	↙	↖	↗	↘	↙
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	25.0	25.0	7.0	25.0	25.0	
Minimum Split (s)	9.5	22.5		9.5	22.5		9.5	31.6	31.6	11.5	31.6	31.6	
Total Split (s)	16.1	27.0		15.0	25.9		9.6	43.0	43.0	25.0	58.4	58.4	
Total Split (%)	14.6%	24.5%		13.6%	23.5%		8.7%	39.1%	39.1%	22.7%	53.1%	53.1%	
Maximum Green (s)	13.1	20.8		12.0	19.7		6.6	36.4	36.4	22.0	51.8	51.8	
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	2.0	2.0	
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	4.4	4.4	
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		3.0	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)	33.7	23.0		34.3	23.3		44.3	38.6	38.6	64.0	56.0	56.0	
Actuated g/C Ratio	0.31	0.21		0.31	0.21		0.40	0.35	0.35	0.58	0.51	0.51	
v/c Ratio	0.52	1.18		1.19	0.42		0.33	1.04	0.31	1.33	0.74	0.03	
Control Delay	32.6	133.3		148.5	15.0		18.4	68.3	5.3	193.8	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	32.6	133.3		148.5	15.0		18.4	68.3	5.3	193.8	24.0	0.1	
LOS	C	F		F	B		B	E	A	F	C	A	
Approach Delay		117.5			75.5			60.7			60.9		
Approach LOS		F			E			E			E		

Intersection Summary

Area Type: Other

Cycle Length: 110

Actuated Cycle Length: 110

Natural Cycle: 100

Control Type: Semi Act-Uncooord

Maximum v/c Ratio: 1.33

Intersection Signal Delay: 71.8

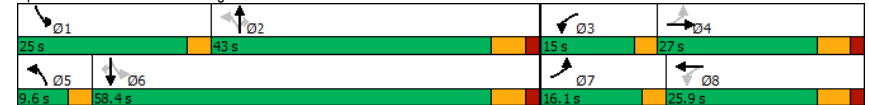
Intersection LOS: E

Intersection Capacity Utilization 113.4%

ICU Level of Service H

Analysis Period (min) 15

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

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Queues Background (2041) - 2% Growth Rate
101: Trafalgar Rd & Lower Base Line Timing Plan: AM Peak Hour

	EBL	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	164	882	304	367	52	1857	212	546	1920	26
v/c Ratio	0.52	1.18	1.19	0.42	0.33	1.04	0.31	1.33	0.74	0.03
Control Delay	32.6	133.3	148.5	15.0	18.4	68.3	5.3	193.8	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	32.6	133.3	148.5	15.0	18.4	68.3	5.3	193.8	24.0	0.1
Queue Length 50th (m)	24.9	~114.7	~61.4	12.0	4.5	~156.1	1.1	~135.0	117.7	0.0
Queue Length 95th (m)	41.4	#153.3	#115.1	25.1	9.6	#185.3	16.1	#199.4	136.4	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)	337	745	255	864	163	1784	687	410	2588	850
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	0.49	1.18	1.19	0.42	0.32	1.04	0.31	1.33	0.74	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.

HCM Signalized Intersection Capacity Analysis Background (2041) - 2% Growth Rate
101: Trafalgar Rd & Lower Base Line Timing Plan: AM Peak Hour

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰	↱	↱	↰	↱	↱	↰	↱	↱	↰	↱	↱
Traffic Volume (vph)	151	588	224	280	119	219	48	1708	195	502	1766	24
Future Volume (vph)	151	588	224	280	119	219	48	1708	195	502	1766	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	4.4	4.4
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	0.91	1.00	1.00	0.91	1.00
Flt	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	3393		1770	3195		1770	5085	1583	1770	5085	1583
Flt Permitted	0.37	1.00		0.20	1.00		0.11	1.00	1.00	0.10	1.00	1.00
Satd. Flow (perm)	682	3393		371	3195		207	5085	1583	186	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)	164	639	243	304	129	238	52	1857	212	546	1920	26
RTOR Reduction (vph)	0	36	0	0	188	0	0	0	132	0	0	13
Lane Group Flow (vph)	164	846	0	304	179	0	52	1857	80	546	1920	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)	32.5	20.8		33.1	21.1		42.2	37.0	37.0	62.0	53.8	53.8
Effective Green, g (s)	30.5	23.0		31.1	23.3		40.2	39.2	39.2	61.0	56.0	56.0
Actuated g/C Ratio	0.28	0.21		0.28	0.21		0.36	0.35	0.35	0.55	0.51	0.51
Clearance Time (s)	3.0	6.2		3.0	6.2		3.0	6.6	6.6	3.0	6.6	6.6
Vehicle Extension (s)	3.0	5.0		3.0	5.0		3.0	5.0	5.0	0.2	5.0	5.0
Lane Grp Cap (vph)	293	705		243	673		134	1802	561	403	2574	801
v/s Ratio Prot	0.05	c0.25		c0.12	0.06		0.01	0.37		c0.26	0.38	
v/s Ratio Perm	0.10			0.23			0.13		0.05	c0.49		0.01
v/c Ratio	0.56	1.20		1.25	0.27		0.39	1.03	0.14	1.35	0.75	0.02
Uniform Delay, d1	32.2	43.8		36.2	36.5		24.1	35.7	24.3	34.4	21.7	13.6
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	2.3	103.5		142.3	0.4		1.9	29.5	0.5	175.2	2.0	0.0
Delay (s)	34.5	147.3		178.5	36.9		26.0	65.2	24.8	209.6	23.7	13.6
Level of Service	C	F		F	D		C	E	C	F	C	B
Approach Delay (s)		129.7			101.1			60.2			64.3	
Approach LOS		F			F			E			E	

Intersection Summary

HCM 2000 Control Delay	77.6	HCM 2000 Level of Service	E
HCM 2000 Volume to Capacity ratio	1.30		
Actuated Cycle Length (s)	110.6	Sum of lost time (s)	16.4
Intersection Capacity Utilization	113.4%	ICU Level of Service	H
Analysis Period (min)	15		

c Critical Lane Group

Lanes, Volumes, Timings Background (2041) - 2% Growth Rate
102: Trafalgar Rd & North Carpool Lot/Hwy 407 WB Off Timing Plan: AM Peak Hour

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔		↔	↔	↔	↔	↔	↔	↔	↔	↔
Traffic Volume (vph)	2	0	9	226	1	26	6	1921	0	0	2267	5
Future Volume (vph)	2	0	9	226	1	26	6	1921	0	0	2267	5
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				0.996	0.850						0.850
Flt Protected	0.992			0.950	0.954		0.950					
Satd. Flow (prot)	0	1639	0	1681	1611	1504	1770	5085	0	0	5085	1583
Flt Permitted	0.953			0.750	0.724		0.057					
Satd. Flow (perm)	0	1575	0	1327	1222	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)	2	0	10	246	1	28	7	2088	0	0	2464	5
Shared Lane Traffic (%)				49%		10%						
Lane Group Flow (vph)	0	12	0	125	125	25	7	2088	0	0	2464	5
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	CI+Ex	CI+Ex		CI+Ex	CI+Ex	CI+Ex	CI+Ex	CI+Ex			CI+Ex	CI+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		CI+Ex			CI+Ex			CI+Ex				CI+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	Perm
Protected Phases		4			8		5	2			6	
Permitted Phases	4			8		8	2					6

I/O Trafalgar 407, Oakville TIS
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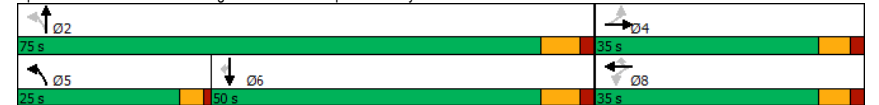
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Lanes, Volumes, Timings Background (2041) - 2% Growth Rate
102: Trafalgar Rd & North Carpool Lot/Hwy 407 WB Off Timing Plan: AM Peak Hour

	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)		15.4		15.4	15.4	15.4	71.1	68.1			66.4	66.4
Actuated g/C Ratio		0.16		0.16	0.16	0.16	0.74	0.70			0.69	0.69
v/c Ratio		0.04		0.59	0.64	0.08	0.04	0.58			0.71	0.00
Control Delay		0.2		49.1	52.5	0.5	5.2	8.5			12.1	0.0
Queue Delay		0.0		0.0	0.0	0.0	0.0	0.0			0.0	0.0
Total Delay		0.2		49.1	52.5	0.5	5.2	8.5			12.1	0.0
LOS		A		D	D	A	A	A			B	A
Approach Delay		0.2			46.2		8.5				12.1	
Approach LOS		A			D		A				B	

Intersection Summary												
Area Type:	Other											
Cycle Length: 110												
Actuated Cycle Length: 96.6												
Natural Cycle: 80												
Control Type: Actuated-Uncoordinated												
Maximum v/c Ratio: 0.71												
Intersection Signal Delay: 12.5	Intersection LOS: B											
Intersection Capacity Utilization 67.9%	ICU Level of Service C											
Analysis Period (min) 15												

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



I/O Trafalgar 407, Oakville TIS
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Queues Background (2041) - 2% Growth Rate
102: Trafalgar Rd & North Carpool Lot/Hwy 407 WB Off Timing Plan: AM Peak Hour

	→	↖	←	↗	↖	↑	↓	↗
Lane Group	EBT	WBL	WBT	WBR	NBL	NBT	SBT	SBR
Lane Group Flow (vph)	12	125	125	25	7	2088	2464	5
v/c Ratio	0.04	0.59	0.64	0.08	0.04	0.58	0.71	0.00
Control Delay	0.2	49.1	52.5	0.5	5.2	8.5	12.1	0.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	0.2	49.1	52.5	0.5	5.2	8.5	12.1	0.0
Queue Length 50th (m)	0.0	22.7	23.7	0.0	0.3	60.6	81.7	0.0
Queue Length 95th (m)	0.0	41.0	43.4	0.0	1.7	94.2	166.4	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)	529	399	368	507	440	3586	3494	1109
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	0.31	0.34	0.05	0.02	0.58	0.71	0.00
Intersection Summary								

HCM Signalized Intersection Capacity Analysis Background (2041) - 2% Growth Rate
102: Trafalgar Rd & North Carpool Lot/Hwy 407 WB Off Timing Plan: AM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	2	0	9	226	1	26	6	1921	0	0	2267	5
Future Volume (vph)	2	0	9	226	1	26	6	1921	0	0	2267	5
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	1611	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)		1576		1327	1224	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)	2	0	10	246	1	28	7	2088	0	0	2464	5
RTOR Reduction (vph)	0	10	0	0	1	21	0	0	0	0	0	2
Lane Group Flow (vph)	0	2	0	125	124	4	7	2088	0	0	2464	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)		15.4		15.4	15.4	15.4	71.4	71.4			66.4	66.4
Effective Green, g (s)		15.4		15.4	15.4	15.4	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)		243		204	188	232	92	3637			3383	1053
v/s Ratio Prot							0.00	c0.41			c0.48	
v/s Ratio Perm		0.00		0.09	c0.10	0.00	0.05					0.00
v/c Ratio		0.01		0.61	0.66	0.02	0.08	0.57			0.73	0.00
Uniform Delay, d1		35.7		39.4	39.7	35.8	8.9	6.9			10.8	5.6
Progression Factor		1.00		1.00	1.00	1.00	1.00	1.00			1.00	1.00
Incremental Delay, d2		0.0		5.6	8.7	0.0	0.3	0.7			1.4	0.0
Delay (s)		35.7		45.0	48.5	35.8	9.2	7.5			12.3	5.6
Level of Service		D		D	D	D	A	A			B	A
Approach Delay (s)		35.7			45.8			7.5			12.2	
Approach LOS		D			D			A			B	
Intersection Summary												
HCM 2000 Control Delay			12.2		HCM 2000 Level of Service					B		
HCM 2000 Volume to Capacity ratio			0.72									
Actuated Cycle Length (s)			99.8		Sum of lost time (s)					17.0		
Intersection Capacity Utilization			67.9%		ICU Level of Service					C		
Analysis Period (min)			15									
c Critical Lane Group												

c Critical Lane Group

Lanes, Volumes, Timings
103: Trafalgar Rd & Hwy 407 EB Off

Background (2041) - 2% Growth Rate
Timing Plan: AM Peak Hour

	EBL	EBR	NBL	NBT	SBT	SBR
Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	↩	↩		↑↑↑	↑↑↑	
Traffic Volume (vph)	140	122	0	1882	2241	0
Future Volume (vph)	140	122	0	1882	2241	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)		2				
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)	152	133	0	2046	2436	0
Shared Lane Traffic (%)						
Lane Group Flow (vph)	152	133	0	2046	2436	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 Effect 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	0.26	0.25		0.75	0.90	
Control Delay	16.1	16.0		13.2	18.7	
Queue Delay	0.0	0.0		0.0	0.0	
Total Delay	16.1	16.0		13.2	18.7	

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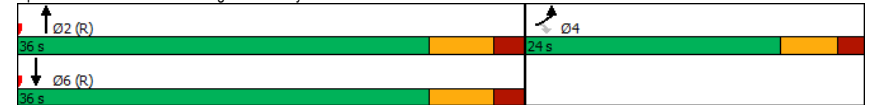
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Lanes, Volumes, Timings
103: Trafalgar Rd & Hwy 407 EB Off

Background (2041) - 2% Growth Rate
Timing Plan: AM Peak Hour

Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
LOS	B	B		B	B	
Approach Delay	16.0			13.2	18.7	
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: 0.90						
Intersection Signal Delay: 16.2				Intersection LOS: B		
Intersection Capacity Utilization 57.7%				ICU Level of Service B		
Analysis Period (min) 15						

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



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Queues
103: Trafalgar Rd & Hwy 407 EB Off

Background (2041) - 2% Growth Rate
Timing Plan: AM Peak Hour

	EBL	EBR	NBT	SBT
Lane Group	EBL	EBR	NBT	SBT
Lane Group Flow (vph)	152	133	2046	2436
v/c Ratio	0.26	0.25	0.75	0.90
Control Delay	16.1	16.0	13.2	18.7
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	16.1	16.0	13.2	18.7
Queue Length 50th (m)	11.8	10.1	57.5	78.5
Queue Length 95th (m)	23.4	21.1	74.1	#105.4
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	0.26	0.25	0.75	0.90

Intersection Summary

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

HCM Signalized Intersection Capacity Analysis
103: Trafalgar Rd & Hwy 407 EB Off

Background (2041) - 2% Growth Rate
Timing Plan: AM Peak Hour

	EBL	EBR	NBL	NBT	SBT	SBR
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	↰	↱	↰	↱	↰	↱
Traffic Volume (vph)	140	122	0	1882	2241	0
Future Volume (vph)	140	122	0	1882	2241	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)	152	133	0	2046	2436	0
RTOR Reduction (vph)	0	1	0	0	0	0
Lane Group Flow (vph)	152	132	0	2046	2436	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	c0.09			0.40	c0.48	
v/s Ratio Perm		0.08				
v/c Ratio	0.26	0.25		0.75	0.90	
Uniform Delay, d1	14.6	14.5		10.9	12.5	
Progression Factor	1.00	1.00		1.00	1.00	
Incremental Delay, d2	1.1	1.1		2.0	5.3	
Delay (s)	15.6	15.7		12.9	17.8	
Level of Service	B	B		B	B	
Approach Delay (s)	15.7			12.9	17.8	
Approach LOS	B			B	B	

Intersection Summary

HCM 2000 Control Delay	15.6	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.65		
Actuated Cycle Length (s)	60.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	57.7%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

Lanes, Volumes, Timings

104: Trafalgar Rd & South Carpool Lot

Background (2041) - 2% Growth Rate

Timing Plan: AM Peak Hour

						
Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	20	16	16	2531	2354	9
Future Volume (vph)	20	16	16	2531	2354	9
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)		3				7
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)	22	17	17	2751	2559	10
Shared Lane Traffic (%)						
Lane Group Flow (vph)	22	17	17	2751	2559	10
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 Effect 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	0.04	0.04	0.16	0.90	0.84	0.01

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Lanes, Volumes, Timings

104: Trafalgar Rd & South Carpool Lot

Background (2041) - 2% Growth Rate

Timing Plan: AM Peak Hour

						
Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Control Delay	18.5	16.8	10.6	17.8	14.6	4.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	18.5	16.8	10.6	17.8	14.6	4.0
LOS	B	B	B	B	B	A
Approach Delay	17.7			17.8	14.5	
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: 16.2	Intersection LOS: B					
Intersection Capacity Utilization 59.7%	ICU Level of Service B					
Analysis Period (min) 15						

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

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Queues Background (2041) - 2% Growth Rate
104: Trafalgar Rd & South Carpool Lot Timing Plan: AM Peak Hour

	EBL	EBR	NBL	NBT	SBT	SBR
Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Group Flow (vph)	22	17	17	2751	2559	10
v/c Ratio	0.04	0.04	0.16	0.90	0.84	0.01
Control Delay	18.5	16.8	10.6	17.8	14.6	4.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	18.5	16.8	10.6	17.8	14.6	4.0
Queue Length 50th (m)	2.0	1.3	0.9	100.8	86.6	0.2
Queue Length 95th (m)	6.6	5.3	4.1	126.2	108.2	1.7
Internal Link Dist (m)	83.1			209.3	107.6	
Turn Bay Length (m)			50.0			30.0
Base Capacity (vph)	505	454	106	3051	3051	952
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	0.04	0.04	0.16	0.90	0.84	0.01
Intersection Summary						

HCM Signalized Intersection Capacity Analysis Background (2041) - 2% Growth Rate
104: Trafalgar Rd & South Carpool Lot Timing Plan: AM Peak Hour

	EBL	EBR	NBL	NBT	SBT	SBR
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	↰	↱	↰	↰↱↱	↰↱↱	↱
Traffic Volume (vph)	20	16	16	2531	2354	9
Future Volume (vph)	20	16	16	2531	2354	9
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)	22	17	17	2751	2559	10
RTOR Reduction (vph)	0	2	0	0	0	3
Lane Group Flow (vph)	22	15	17	2751	2559	7
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	c0.01			c0.54	0.50	
v/s Ratio Perm		0.01	0.10			0.00
v/c Ratio	0.04	0.03	0.16	0.90	0.84	0.01
Uniform Delay, d1	18.1	18.0	6.2	12.2	11.3	5.6
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	0.2	0.1	3.2	4.9	2.9	0.0
Delay (s)	18.2	18.2	9.4	17.1	14.2	5.6
Level of Service	B	B	A	B	B	A
Approach Delay (s)	18.2			17.0	14.2	
Approach LOS	B			B	B	
Intersection Summary						
HCM 2000 Control Delay			15.7		HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio			0.62			
Actuated Cycle Length (s)			70.0		Sum of lost time (s)	8.0
Intersection Capacity Utilization			59.7%		ICU Level of Service	B
Analysis Period (min)			15			
c Critical Lane Group						

Lanes, Volumes, Timings

105: Trafalgar Rd & William Halton Parkway

Background (2041) - 2% Growth Rate

Timing Plan: AM Peak Hour

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↩	↩↩	↩	↩	↩↩	↩	↩↩	↩↩	↩	↩↩	↩↩	↩
Traffic Volume (vph)	283	839	189	27	461	243	43	2265	50	523	1786	61
Future Volume (vph)	283	839	189	27	461	243	43	2265	50	523	1786	61
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	0.245			0.123			0.062			0.059		
Satd. Flow (perm)	456	3539	1583	229	3539	1583	115	5085	1583	110	5085	1583
Right Turn on Red		Yes			Yes			Yes			Yes	
Satd. Flow (RTOR)			205			139			94			94
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)	308	912	205	29	501	264	47	2462	54	568	1941	66
Shared Lane Traffic (%)												
Lane Group Flow (vph)	308	912	205	29	501	264	47	2462	54	568	1941	66
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

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Lanes, Volumes, Timings

105: Trafalgar Rd & William Halton Parkway

Background (2041) - 2% Growth Rate

Timing Plan: AM Peak Hour

	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 Effect Green (s)	44.6	39.6	39.6	41.3	33.8	33.8	73.6	66.1	66.1	78.9	71.0	71.0
Actuated g/C Ratio	0.33	0.29	0.29	0.31	0.25	0.25	0.55	0.49	0.49	0.59	0.53	0.53
v/c Ratio	1.31	0.88	0.34	0.19	0.56	0.53	0.31	0.99	0.07	3.02	0.72	0.08
Control Delay	200.1	56.2	6.4	31.5	46.4	23.5	18.1	49.1	0.7	943.6	27.7	1.6
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	200.1	56.2	6.4	31.5	46.4	23.5	18.1	49.1	0.7	943.6	28.0	1.6
LOS	F	E	A	C	D	C	B	D	A	F	C	A
Approach Delay		80.2			38.2			47.5			229.3	
Approach LOS		F			D			D			F	

Intersection Summary

Area Type: Other

Cycle Length: 140

Actuated Cycle Length: 134.6

Natural Cycle: 145

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 3.02

Intersection Signal Delay: 116.5

Intersection LOS: F

Intersection Capacity Utilization 118.4%

ICU Level of Service H

Analysis Period (min) 15

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

Ø1	Ø2	Ø3	Ø4
14 s	70 s	12.6 s	43.4 s
Ø5	Ø6	Ø7	Ø8
14 s	70 s	12.6 s	43.4 s

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Queues Background (2041) - 2% Growth Rate
105: Trafalgar Rd & William Halton Parkway Timing Plan: AM Peak Hour

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	308	912	205	29	501	264	47	2462	54	568	1941	66
v/c Ratio	1.31	0.88	0.34	0.19	0.56	0.53	0.31	0.99	0.07	3.02	0.72	0.08
Control Delay	200.1	56.2	6.4	31.5	46.4	23.5	18.1	49.1	0.7	943.6	27.7	1.6
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	200.1	56.2	6.4	31.5	46.4	23.5	18.1	49.1	0.7	943.6	28.0	1.6
Queue Length 50th (m)	~85.9	125.2	0.0	5.0	60.5	27.5	5.3	~256.4	0.0	~254.4	151.9	0.0
Queue Length 95th (m)	#151.7	#164.1	18.1	11.9	77.8	54.2	11.2	#288.4	1.4	#329.1	178.9	3.8
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)	235	1042	610	170	1037	562	188	2497	825	188	2681	879
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	244	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	1.31	0.88	0.34	0.17	0.48	0.47	0.25	0.99	0.07	3.02	0.80	0.08

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.

HCM Signalized Intersection Capacity Analysis Background (2041) - 2% Growth Rate
105: Trafalgar Rd & William Halton Parkway Timing Plan: AM Peak Hour

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔
Traffic Volume (vph)	283	839	189	27	461	243	43	2265	50	523	1786	61
Future Volume (vph)	283	839	189	27	461	243	43	2265	50	523	1786	61
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
Flt	1.00	1.00	0.85	1.00	0.85	1.00	0.85	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	0.24	1.00	1.00	0.12	1.00	1.00	0.06	1.00	1.00	0.06	1.00	1.00
Satd. Flow (perm)	455	3539	1583	229	3539	1583	116	5085	1583	109	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)	308	912	205	29	501	264	47	2462	54	568	1941	66
RTOR Reduction (vph)	0	0	146	0	0	103	0	0	28	0	0	32
Lane Group Flow (vph)	308	912	59	29	501	161	47	2462	26	568	1941	34
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)	45.1	36.6	36.6	37.0	32.5	32.5	70.1	64.1	64.1	78.1	68.1	68.1
Effective Green, g (s)	45.1	39.6	39.6	37.0	35.5	35.5	70.1	67.0	67.0	78.1	71.0	71.0
Actuated g/C Ratio	0.33	0.29	0.29	0.27	0.26	0.26	0.51	0.49	0.49	0.57	0.52	0.52
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)	232	1022	457	112	916	409	131	2485	773	183	2633	819
v/s Ratio Prot	c0.08	0.26		0.01	0.14		0.02	0.48		c0.23	0.38	
v/s Ratio Perm	c0.35		0.04	0.06		0.10	0.17		0.02	c1.53		0.02
v/c Ratio	1.33	0.89	0.13	0.26	0.55	0.39	0.36	0.99	0.03	3.10	0.74	0.04
Uniform Delay, d1	44.0	46.7	36.0	39.9	43.9	41.9	22.3	34.7	18.2	43.9	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	1.00	1.00
Incremental Delay, d2	174.0	10.6	0.3	1.2	1.2	1.3	1.7	16.0	0.1	961.0	1.9	0.1
Delay (s)	218.1	57.3	36.3	41.2	45.0	43.2	24.0	50.8	18.3	1005.0	27.7	16.4
Level of Service	F	E	D	D	D	D	C	D	B	F	C	B
Approach Delay (s)		89.1			44.3			49.6			242.9	
Approach LOS		F			D			D			F	

Intersection Summary

HCM 2000 Control Delay	124.3	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	2.44		
Actuated Cycle Length (s)	137.1	Sum of lost time (s)	16.0
Intersection Capacity Utilization	118.4%	ICU Level of Service	H
Analysis Period (min)	15		
c Critical Lane Group			

Lanes, Volumes, Timings Background (2041) - 2% Growth Rate
106: Trafalgar Rd & Burnhamthorpe Rd/Burnhamthorpe Rd Timing Plan: AM Peak Hour

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰	↱	↲	↰	↱	↲	↰	↱	↲	↰	↱	↲
Traffic Volume (vph)	419	491	80	83	157	141	56	1798	174	273	1406	161
Future Volume (vph)	419	491	80	83	157	141	56	1798	174	273	1406	161
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	1.00	1.00	1.00	1.00	1.00	1.00	0.91	1.00	1.00	0.91	1.00
Frt		0.979			0.929				0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1770	1824	0	1770	1730	0	1770	5085	1583	1770	5085	1583
Flt Permitted	0.450			0.176			0.133			0.091		
Satd. Flow (perm)	838	1824	0	328	1730	0	248	5085	1583	170	5085	1583
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		9			48				110			166
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)	455	534	87	90	171	153	61	1954	189	297	1528	175
Shared Lane Traffic (%)												
Lane Group Flow (vph)	455	621	0	90	324	0	61	1954	189	297	1528	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			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)	57.0	57.0		57.0	57.0		46.0	46.0	46.0	17.0	63.0	63.0
Total Split (%)	47.5%	47.5%		47.5%	47.5%		38.3%	38.3%	38.3%	14.2%	52.5%	52.5%
Maximum Green (s)	51.0	51.0		51.0	51.0		40.0	40.0	40.0	13.0	57.0	57.0
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 Effect Green (s)	53.0	53.0		53.0	53.0		42.0	42.0	42.0	59.0	59.0	59.0
Actuated g/C Ratio	0.44	0.44		0.44	0.44		0.35	0.35	0.35	0.49	0.49	0.49
v/c Ratio	1.23	0.77		0.62	0.41		0.71	1.10	0.30	1.16	0.61	0.20
Control Delay	156.3	35.5		48.1	21.1		77.6	90.8	13.4	136.4	23.5	3.5
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	156.3	35.5		48.1	21.1		77.6	90.8	13.4	136.4	23.5	3.5

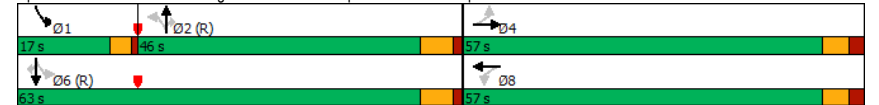
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Lanes, Volumes, Timings Background (2041) - 2% Growth Rate
106: Trafalgar Rd & Burnhamthorpe Rd/Burnhamthorpe Rd Timing Plan: AM Peak Hour

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
LOS	F	D		D	C		E	F	B	F	C	A
Approach Delay		86.6			26.9			83.8			38.5	
Approach LOS		F			C			F			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: 80												
Control Type: Pretimed												
Maximum v/c Ratio: 1.23												
Intersection Signal Delay: 64.3						Intersection LOS: E						
Intersection Capacity Utilization 103.3%						ICU Level of Service G						
Analysis Period (min) 15												

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



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Queues Background (2041) - 2% Growth Rate
106: Trafalgar Rd & Burhamthorpe Rd/Burnhamthorpe Rd Timing Plan: AM Peak Hour

	EBL	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	455	621	90	324	61	1954	189	297	1528	175
v/c Ratio	1.23	0.77	0.62	0.41	0.71	1.10	0.30	1.16	0.61	0.20
Control Delay	156.3	35.5	48.1	21.1	77.6	90.8	13.4	136.4	23.5	3.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	156.3	35.5	48.1	21.1	77.6	90.8	13.4	136.4	23.5	3.5
Queue Length 50th (m)	~130.5	117.7	15.8	42.4	12.2	~188.4	12.5	~65.5	91.7	1.0
Queue Length 95th (m)	#192.0	163.7	#41.4	65.4	#36.1	#217.3	29.8	#119.6	106.5	12.1
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	
Base Capacity (vph)	370	810	144	790	86	1779	625	256	2500	862
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	1.23	0.77	0.63	0.41	0.71	1.10	0.30	1.16	0.61	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.

HCM Signalized Intersection Capacity Analysis Background (2041) - 2% Growth Rate
106: Trafalgar Rd & Burhamthorpe Rd/Burnhamthorpe Rd Timing Plan: AM Peak Hour

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰	↱		↰	↱		↰	↱	↱	↰	↱	↱
Traffic Volume (vph)	419	491	80	83	157	141	56	1798	174	273	1406	161
Future Volume (vph)	419	491	80	83	157	141	56	1798	174	273	1406	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
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	0.98		1.00	0.93		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	1824		1770	1731		1770	5085	1583	1770	5085	1583
Flt Permitted	0.45	1.00		0.18	1.00		0.13	1.00	1.00	0.09	1.00	1.00
Satd. Flow (perm)	839	1824		328	1731		248	5085	1583	169	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)	455	534	87	90	171	153	61	1954	189	297	1528	175
RTOR Reduction (vph)	0	5	0	0	27	0	0	0	72	0	0	84
Lane Group Flow (vph)	455	616	0	90	297	0	61	1954	118	297	1528	91
Turn Type	Perm	NA		Perm	NA		Perm	NA	Perm	pm+pt	NA	Perm
Protected Phases	4			8			2		2		1	
Permitted Phases	4			8			2		2		6	
Actuated Green, G (s)	51.0	51.0		51.0	51.0		40.0	40.0	40.0	57.0	57.0	57.0
Effective Green, g (s)	53.0	53.0		53.0	53.0		42.0	42.0	42.0	57.0	59.0	59.0
Actuated g/C Ratio	0.44	0.44		0.44	0.44		0.35	0.35	0.35	0.48	0.49	0.49
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)	370	805		144	764		86	1779	554	253	2500	778
v/s Ratio Prot	0.34			0.17			0.38		c0.13		0.30	
v/s Ratio Perm	c0.54			0.27			0.25		0.07		c0.43	
v/c Ratio	1.23	0.77		0.62	0.39		0.71	1.10	0.21	1.17	0.61	0.12
Uniform Delay, d1	33.5	28.3		25.8	22.6		33.7	39.0	27.4	35.9	22.2	16.4
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	124.9	6.8		18.8	1.5		39.3	53.6	0.9	111.9	1.1	0.3
Delay (s)	158.4	35.1		44.6	24.1		73.0	92.6	28.3	147.8	23.3	16.8
Level of Service	F	D		D	C		E	F	C	F	C	B
Approach Delay (s)	87.2			28.5			86.5		41.2			
Approach LOS	F			C			F		D			

Intersection Summary

HCM 2000 Control Delay	66.5	HCM 2000 Level of Service	E
HCM 2000 Volume to Capacity ratio	1.21		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	103.3%	ICU Level of Service	G
Analysis Period (min)	15		
c Critical Lane Group			

Lanes, Volumes, Timings

101: Trafalgar Rd & Lower Base Line

Background (2041) - 2% Growth Rate

Timing Plan: PM Peak Hour

	↖	→	↘	↙	←	↖	↗	↘	↙	↖	↗	↘	↙
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations	↖	↖	↖	↖	↖	↖	↖	↖	↖	↖	↖	↖	
Traffic Volume (vph)	54	240	77	254	678	368	432	2006	229	306	1424	123	
Future Volume (vph)	54	240	77	254	678	368	432	2006	229	306	1424	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		0.963			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	0.208			0.291			0.097			0.107			
Satd. Flow (perm)	387	3408	0	542	3352	0	181	5085	1583	199	5085	1583	
Right Turn on Red			Yes			Yes			Yes			Yes	
Satd. Flow (RTOR)		31			84				209			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)	59	261	84	276	737	400	470	2180	249	333	1548	134	
Shared Lane Traffic (%)													
Lane Group Flow (vph)	59	345	0	276	1137	0	470	2180	249	333	1548	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

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Lanes, Volumes, Timings

101: Trafalgar Rd & Lower Base Line

Background (2041) - 2% Growth Rate

Timing Plan: PM Peak Hour

	↖	→	↘	↙	←	↖	↗	↘	↙	↖	↗	↘	↙
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)	9.5	25.9		20.6	37.0		28.7	54.5	54.5	19.0	44.8	44.8	
Total Split (%)	7.9%	21.6%		17.2%	30.8%		23.9%	45.4%	45.4%	15.8%	37.3%	37.3%	
Maximum Green (s)	6.5	19.7		17.6	30.8		25.7	47.9	47.9	16.0	38.2	38.2	
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	2.0	2.0	
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	4.4	4.4	
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)	27.2	21.9		40.5	33.0		69.6	50.2	50.2	55.9	40.4	40.4	
Actuated g/C Ratio	0.23	0.19		0.34	0.28		0.59	0.43	0.43	0.47	0.34	0.34	
v/c Ratio	0.39	0.53		0.82	1.14		1.07	1.01	0.31	1.14	0.89	0.21	
Control Delay	34.9	43.0		50.6	111.9		97.0	56.2	6.0	127.4	44.6	5.2	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	
Total Delay	34.9	43.0		50.6	111.9		97.0	56.2	6.0	127.4	44.6	5.2	
LOS	C	D		D	F		F	E	A	F	D	A	
Approach Delay		41.8			99.9			58.5			55.7		
Approach LOS		D			F			E			E		

Intersection Summary

Area Type: Other

Cycle Length: 120

Actuated Cycle Length: 118.1

Natural Cycle: 120

Control Type: Semi Act-Uncooord

Maximum v/c Ratio: 1.14

Intersection Signal Delay: 65.3

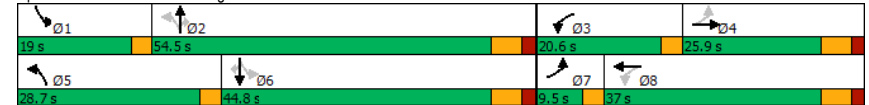
Intersection LOS: E

Intersection Capacity Utilization 104.1%

ICU Level of Service G

Analysis Period (min) 15

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

I/O Trafalgar 407 Oakville TIS
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Queues Background (2041) - 2% Growth Rate
101: Trafalgar Rd & Lower Base Line Timing Plan: PM Peak Hour

	EBL	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	59	345	276	1137	470	2180	249	333	1548	134
v/c Ratio	0.39	0.53	0.82	1.14	1.07	1.01	0.31	1.14	0.89	0.21
Control Delay	34.9	43.0	50.6	111.9	97.0	56.2	6.0	127.4	44.6	5.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	34.9	43.0	50.6	111.9	97.0	56.2	6.0	127.4	44.6	5.2
Queue Length 50th (m)	9.1	35.0	48.7	~156.9	~106.3	~198.1	5.5	~74.6	125.0	0.0
Queue Length 95th (m)	18.3	50.0	#79.1	#198.3	#169.7	#226.6	21.2	#130.7	#145.0	12.2
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)	153	673	358	997	439	2159	792	293	1741	632
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	0.39	0.51	0.77	1.14	1.07	1.01	0.31	1.14	0.89	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.

HCM Signalized Intersection Capacity Analysis Background (2041) - 2% Growth Rate
101: Trafalgar Rd & Lower Base Line Timing Plan: PM Peak Hour

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰	↱	↱	↰	↱	↱	↰	↱	↱	↰	↱	↱
Traffic Volume (vph)	54	240	77	254	678	368	432	2006	229	306	1424	123
Future Volume (vph)	54	240	77	254	678	368	432	2006	229	306	1424	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	4.4	4.4
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	3410		1770	3352		1770	5085	1583	1770	5085	1583
Flt Permitted	0.21	1.00		0.29	1.00		0.10	1.00	1.00	0.11	1.00	1.00
Satd. Flow (perm)	388	3410		542	3352		180	5085	1583	200	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)	59	261	84	276	737	400	470	2180	249	333	1548	134
RTOR Reduction (vph)	0	25	0	0	61	0	0	0	121	0	0	88
Lane Group Flow (vph)	59	320	0	276	1076	0	470	2180	128	333	1548	46
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)	25.3	20.2		38.9	30.8		67.0	48.0	48.0	54.3	38.3	38.3
Effective Green, g (s)	23.3	22.4		37.9	33.0		66.0	50.2	50.2	52.3	40.5	40.5
Actuated g/C Ratio	0.20	0.19		0.32	0.28		0.56	0.42	0.42	0.44	0.34	0.34
Clearance Time (s)	3.0	6.2		3.0	6.2		3.0	6.6	6.6	3.0	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)	123	643		325	931		430	2150	669	286	1734	540
v/s Ratio Prot	0.02	0.09		c0.11	c0.32		c0.23	c0.43		0.15	0.30	
v/s Ratio Perm	0.08			0.17			0.38			0.08	0.37	0.03
v/c Ratio	0.48	0.50		0.85	1.16		1.09	1.01	0.19	1.16	0.89	0.08
Uniform Delay, d1	40.7	43.1		33.4	42.9		37.1	34.2	21.5	35.2	37.0	26.5
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	2.9	1.3		17.6	82.5		70.9	22.9	0.6	105.3	7.5	0.3
Delay (s)	43.6	44.4		51.0	125.3		108.0	57.2	22.1	140.5	44.5	26.8
Level of Service	D	D		D	F		F	E	C	F	D	C
Approach Delay (s)		44.3			110.8			62.4			59.2	
Approach LOS		D			F			E			E	

Intersection Summary

HCM 2000 Control Delay	70.5	HCM 2000 Level of Service	E
HCM 2000 Volume to Capacity ratio	1.11		
Actuated Cycle Length (s)	118.7	Sum of lost time (s)	16.4
Intersection Capacity Utilization	104.1%	ICU Level of Service	G
Analysis Period (min)	15		

c Critical Lane Group

Lanes, Volumes, Timings Background (2041) - 2% Growth Rate
102: Trafalgar Rd & North Carpool Lot/Hwy 407 WB Off Timing Plan: PM Peak Hour

	←	→	↙	↘	↖	↗	↖	↗	↖	↗	↖	↗
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔		↔	↔	↔	↔	↔		↔	↔	↔
Traffic Volume (vph)	7	0	49	385	16	174	9	2484	0	0	1750	5
Future Volume (vph)	7	0	49	385	16	174	9	2484	0	0	1750	5
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		0.883				0.987	0.850					0.850
Flt Protected		0.993		0.950	0.960		0.950					
Satd. Flow (prot)	0	1633	0	1681	1606	1504	1770	5085	0	0	5085	1583
Flt Permitted		0.952		0.742	0.742		0.069					
Satd. Flow (perm)	0	1566	0	1313	1241	1504	129	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)	8	0	53	418	17	189	10	2700	0	0	1902	5
Shared Lane Traffic (%)				46%		10%						
Lane Group Flow (vph)	0	61	0	226	228	170	10	2700	0	0	1902	5
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	CI+Ex	CI+Ex		CI+Ex	CI+Ex	CI+Ex	CI+Ex	CI+Ex			CI+Ex	CI+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		CI+Ex			CI+Ex			CI+Ex			CI+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

I/O Trafalgar 407 Oakville TIS
PTSL (210156/210157)

Synchro 10 Report
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Lanes, Volumes, Timings Background (2041) - 2% Growth Rate
102: Trafalgar Rd & North Carpool Lot/Hwy 407 WB Off Timing Plan: PM Peak Hour

	←	→	↙	↘	↖	↗	↖	↗	↖	↗	↖	↗
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	
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)		25.4		25.4	25.4	25.4	71.2	71.2			69.4	69.4
Actuated g/C Ratio		0.24		0.24	0.24	0.24	0.68	0.68			0.66	0.66
v/c Ratio		0.14		0.71	0.75	0.40	0.06	0.78			0.56	0.00
Control Delay		4.9		49.0	52.3	20.2	7.6	14.4			11.6	0.0
Queue Delay		0.0		0.0	0.0	0.0	0.0	0.0			0.0	0.0
Total Delay		4.9		49.0	52.3	20.2	7.6	14.4			11.6	0.0
LOS	A			D	D	C	A	B			B	A
Approach Delay		4.9			42.3			14.3			11.5	
Approach LOS		A			D			B			B	

Intersection Summary

Area Type: Other

Cycle Length: 110

Actuated Cycle Length: 104.6

Natural Cycle: 60

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 0.78

Intersection Signal Delay: 16.5

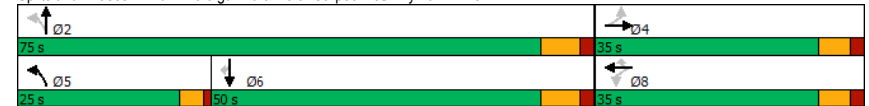
Intersection LOS: B

Intersection Capacity Utilization 74.2%

ICU Level of Service D

Analysis Period (min) 15

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



I/O Trafalgar 407 Oakville TIS
PTSL (210156/210157)

Synchro 10 Report
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Queues Background (2041) - 2% Growth Rate
102: Trafalgar Rd & North Carpool Lot/Hwy 407 WB Off Timing Plan: PM Peak Hour

	→	↖	←	↗	↖	↑	↓	↗
Lane Group	EBT	WBL	WBT	WBR	NBL	NBT	SBT	SBR
Lane Group Flow (vph)	61	226	228	170	10	2700	1902	5
v/c Ratio	0.14	0.71	0.75	0.40	0.06	0.78	0.56	0.00
Control Delay	4.9	49.0	52.3	20.2	7.6	14.4	11.6	0.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	4.9	49.0	52.3	20.2	7.6	14.4	11.6	0.0
Queue Length 50th (m)	0.0	43.7	46.0	15.4	0.6	129.7	68.5	0.0
Queue Length 95th (m)	6.6	70.6	75.3	34.6	2.5	166.1	114.9	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)	521	390	370	502	418	3461	3371	1072
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	0.12	0.58	0.62	0.34	0.02	0.78	0.56	0.00
Intersection Summary								

HCM Signalized Intersection Capacity Analysis Background (2041) - 2% Growth Rate
102: Trafalgar Rd & North Carpool Lot/Hwy 407 WB Off Timing Plan: PM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	7	0	49	385	16	174	9	2484	0	0	1750	5
Future Volume (vph)	7	0	49	385	16	174	9	2484	0	0	1750	5
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)		1634		1681	1606	1504	1770	5085			5085	1583
Flt Permitted		0.95		0.74	0.74	1.00	0.07	1.00			1.00	1.00
Satd. Flow (perm)		1566		1314	1242	1504	128	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	53	418	17	189	10	2700	0	0	1902	5
RTOR Reduction (vph)	0	47	0	0	2	60	0	0	0	0	0	2
Lane Group Flow (vph)	0	14	0	226	226	110	10	2700	0	0	1902	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)		23.4		23.4	23.4	23.4	71.5	71.5			66.4	66.4
Effective Green, g (s)		25.4		25.4	25.4	25.4	71.5	74.5			69.4	69.4
Actuated g/C Ratio		0.24		0.24	0.24	0.24	0.66	0.69			0.64	0.64
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)		368		309	292	354	101	3510			3270	1018
v/s Ratio Prot							0.00	c0.53			0.37	
v/s Ratio Perm		0.01		0.17	c0.18	0.07	0.06					0.00
v/c Ratio		0.04		0.73	0.77	0.31	0.10	0.77			0.58	0.00
Uniform Delay, d1		31.8		38.1	38.6	34.0	9.1	11.0			11.0	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		8.9	12.3	0.6	0.3	1.7			0.8	0.0
Delay (s)		31.9		47.0	50.9	34.6	9.4	12.7			11.7	6.9
Level of Service		C		D	D	C	A	B			B	A
Approach Delay (s)		31.9			45.0			12.7			11.7	
Approach LOS		C			D			B			B	
Intersection Summary												
HCM 2000 Control Delay			16.4		HCM 2000 Level of Service					B		
HCM 2000 Volume to Capacity ratio			0.80									
Actuated Cycle Length (s)			107.9		Sum of lost time (s)					12.0		
Intersection Capacity Utilization			74.2%		ICU Level of Service					D		
Analysis Period (min)			15									
c Critical Lane Group												

c Critical Lane Group

Lanes, Volumes, Timings
103: Trafalgar Rd & Hwy 407 EB Off

Background (2041) - 2% Growth Rate
Timing Plan: PM Peak Hour

	↖	↗	↖	↗	↘	↙
Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	↖	↗		↗↗↗	↗↗↗	
Traffic Volume (vph)	87	90	0	2624	1981	0
Future Volume (vph)	87	90	0	2624	1981	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)		8				
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)	95	98	0	2852	2153	0
Shared Lane Traffic (%)						
Lane Group Flow (vph)	95	98	0	2852	2153	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 Effect 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	0.19	0.21		0.93	0.71	
Control Delay	20.1	19.0		20.5	11.3	
Queue Delay	0.0	0.0		0.0	0.0	
Total Delay	20.1	19.0		20.5	11.3	

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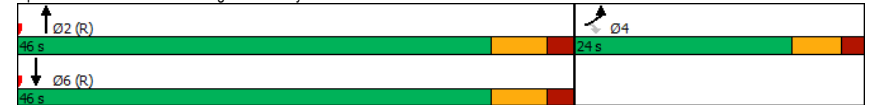
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Lanes, Volumes, Timings
103: Trafalgar Rd & Hwy 407 EB Off

Background (2041) - 2% Growth Rate
Timing Plan: PM Peak Hour

	↖	↗	↖	↗	↘	↙
Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
LOS	C	B		C	B	
Approach Delay	19.6			20.5	11.3	
Approach LOS	B			C	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: 70						
Control Type: Pretimed						
Maximum v/c Ratio: 0.93						
Intersection Signal Delay: 16.7	Intersection LOS: B					
Intersection Capacity Utilization 62.2%	ICU Level of Service B					
Analysis Period (min) 15						

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



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Queues
103: Trafalgar Rd & Hwy 407 EB Off

Background (2041) - 2% Growth Rate
Timing Plan: PM Peak Hour

	EBL	EBR	NBT	SBT
Lane Group	EBL	EBR	NBT	SBT
Lane Group Flow (vph)	95	98	2852	2153
v/c Ratio	0.19	0.21	0.93	0.71
Control Delay	20.1	19.0	20.5	11.3
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	20.1	19.0	20.5	11.3
Queue Length 50th (m)	9.2	8.8	109.3	62.6
Queue Length 95th (m)	19.4	19.3	#147.4	78.3
Internal Link Dist (m)	530.6		96.3	339.6
Turn Bay Length (m)				
Base Capacity (vph)	505	458	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	0.19	0.21	0.93	0.71

Intersection Summary

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

HCM Signalized Intersection Capacity Analysis
103: Trafalgar Rd & Hwy 407 EB Off

Background (2041) - 2% Growth Rate
Timing Plan: PM Peak Hour

	EBL	EBR	NBL	NBT	SBT	SBR
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	↰	↱	↰	↱	↰	↱
Traffic Volume (vph)	87	90	0	2624	1981	0
Future Volume (vph)	87	90	0	2624	1981	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)	95	98	0	2852	2153	0
RTOR Reduction (vph)	0	6	0	0	0	0
Lane Group Flow (vph)	95	92	0	2852	2153	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			0.56	0.42	
v/s Ratio Perm		0.06				
v/c Ratio	0.19	0.20		0.93	0.71	
Uniform Delay, d1	18.9	19.0		12.8	9.7	
Progression Factor	1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.8	1.0		6.9	1.4	
Delay (s)	19.7	20.0		19.6	11.1	
Level of Service	B	B		B	B	
Approach Delay (s)	19.8			19.6	11.1	
Approach LOS	B			B	B	

Intersection Summary

HCM 2000 Control Delay	16.1	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	62.2%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

Lanes, Volumes, Timings

104: Trafalgar Rd & South Carpool Lot

Background (2041) - 2% Growth Rate

Timing Plan: PM Peak Hour

	EBL	EBR	NBL	NBT	SBT	SBR
Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	↩	↩	↩	↩↩↩	↩↩↩	↩
Traffic Volume (vph)	27	20	20	3089	2064	7
Future Volume (vph)	27	20	20	3089	2064	7
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)		13				6
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)	29	22	22	3358	2243	8
Shared Lane Traffic (%)						
Lane Group Flow (vph)	29	22	22	3358	2243	8
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	0.07	0.06	0.27	0.96	0.64	0.01

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Lanes, Volumes, Timings

104: Trafalgar Rd & South Carpool Lot

Background (2041) - 2% Growth Rate

Timing Plan: PM Peak Hour

	EBL	EBR	NBL	NBT	SBT	SBR
Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Control Delay	28.4	18.2	14.8	21.9	8.8	3.0
Queue Delay	0.0	0.0	0.0	2.1	0.0	0.0
Total Delay	28.4	18.2	14.8	24.0	8.8	3.0
LOS	C	B	B	C	A	A
Approach Delay	24.0			23.9	8.8	
Approach LOS	C			C	A	

Intersection Summary

Area Type: Other

Cycle Length: 90

Actuated Cycle Length: 90

Offset: 0 (0%), Referenced to phase 2:NBT and 6:SBT, Start of Green

Natural Cycle: 90

Control Type: Pretimed

Maximum v/c Ratio: 0.96

Intersection Signal Delay: 18.0

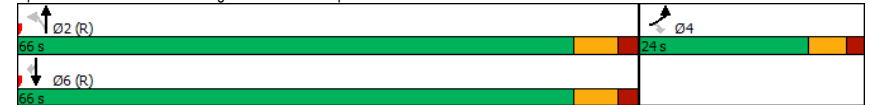
Intersection LOS: B

Intersection Capacity Utilization 70.5%

ICU Level of Service C

Analysis Period (min) 15

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

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Queues Background (2041) - 2% Growth Rate
104: Trafalgar Rd & South Carpool Lot Timing Plan: PM Peak Hour

	EBL	EBR	NBL	NBT	SBT	SBR
Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Group Flow (vph)	29	22	22	3358	2243	8
v/c Ratio	0.07	0.06	0.27	0.96	0.64	0.01
Control Delay	28.4	18.2	14.8	21.9	8.8	3.0
Queue Delay	0.0	0.0	0.0	2.1	0.0	0.0
Total Delay	28.4	18.2	14.8	24.0	8.8	3.0
Queue Length 50th (m)	3.9	1.2	1.3	166.4	67.3	0.1
Queue Length 95th (m)	10.7	7.0	6.3	#213.2	80.3	1.3
Internal Link Dist (m)	83.1			209.3	107.6	
Turn Bay Length (m)			50.0			30.0
Base Capacity (vph)	393	361	83	3503	3503	1092
Starvation Cap Reductn	0	0	0	82	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	0.06	0.27	0.98	0.64	0.01

Intersection Summary

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

HCM Signalized Intersection Capacity Analysis Background (2041) - 2% Growth Rate
104: Trafalgar Rd & South Carpool Lot Timing Plan: PM Peak Hour

	EBL	EBR	NBL	NBT	SBT	SBR
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	↰	↱	↰	↱	↱	↱
Traffic Volume (vph)	27	20	20	3089	2064	7
Future Volume (vph)	27	20	20	3089	2064	7
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)	29	22	22	3358	2243	8
RTOR Reduction (vph)	0	10	0	0	0	2
Lane Group Flow (vph)	29	12	22	3358	2243	6
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			c0.66	0.44	
v/s Ratio Perm		0.01	0.18			0.00
v/c Ratio	0.07	0.03	0.27	0.96	0.64	0.01
Uniform Delay, d1	27.7	27.4	5.3	12.8	7.8	4.4
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	0.4	0.2	7.9	8.2	0.9	0.0
Delay (s)	28.0	27.6	13.2	21.1	8.7	4.4
Level of Service	C	C	B	C	A	A
Approach Delay (s)	27.9			21.0	8.7	
Approach LOS	C			C	A	

Intersection Summary

HCM 2000 Control Delay	16.2	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.74		
Actuated Cycle Length (s)	90.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	70.5%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

Lanes, Volumes, Timings

105: Trafalgar Rd & William Halton Parkway

Background (2041) - 2% Growth Rate

Timing Plan: PM Peak Hour

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↩	↩↩	↩	↩	↩↩	↩	↩↩	↩↩	↩	↩	↩↩	↩
Traffic Volume (vph)	311	463	106	165	1382	547	305	2483	111	400	1596	346
Future Volume (vph)	311	463	106	165	1382	547	305	2483	111	400	1596	346
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			0.296			0.066			0.066		
Satd. Flow (perm)	205	3539	1583	551	3539	1583	123	5085	1583	123	5085	1583
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			115			172			94			169
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)	338	503	115	179	1502	595	332	2699	121	435	1735	376
Shared Lane Traffic (%)												
Lane Group Flow (vph)	338	503	115	179	1502	595	332	2699	121	435	1735	376
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

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Lanes, Volumes, Timings

105: Trafalgar Rd & William Halton Parkway

Background (2041) - 2% Growth Rate

Timing Plan: PM Peak Hour

	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 Effect Green (s)	48.0	39.4	39.4	48.0	39.4	39.4	76.0	63.2	63.2	76.0	63.2	63.2
Actuated g/C Ratio	0.34	0.28	0.28	0.34	0.28	0.28	0.54	0.45	0.45	0.54	0.45	0.45
v/c Ratio	2.04	0.51	0.22	0.68	1.51	1.05	1.53	1.18	0.16	2.00	0.76	0.47
Control Delay	509.4	44.3	7.4	47.2	270.0	84.6	290.4	119.5	7.1	492.6	34.6	16.0
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	509.4	44.3	7.4	47.2	270.0	84.6	290.4	119.5	7.1	492.6	34.9	16.0
LOS	F	D	A	D	F	F	F	F	A	F	C	B
Approach Delay		204.3			204.0			133.2			110.3	
Approach LOS		F			F			F			F	

Intersection Summary

Area Type: Other

Cycle Length: 140

Actuated Cycle Length: 140

Natural Cycle: 125

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 2.04

Intersection Signal Delay: 152.3

Intersection LOS: F

Intersection Capacity Utilization 138.9%

ICU Level of Service H

Analysis Period (min) 15

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

Ø1	Ø2	Ø3	Ø4
16.8 s	67.2 s	12.6 s	43.4 s
Ø5	Ø6	Ø7	Ø8
16.8 s	67.2 s	12.6 s	43.4 s

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Queues Background (2041) - 2% Growth Rate
105: Trafalgar Rd & William Halton Parkway Timing Plan: PM Peak Hour

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	338	503	115	179	1502	595	332	2699	121	435	1735	376
v/c Ratio	2.04	0.51	0.22	0.68	1.51	1.05	1.53	1.18	0.16	2.00	0.76	0.47
Control Delay	509.4	44.3	7.4	47.2	270.0	84.6	290.4	119.5	7.1	492.6	34.6	16.0
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	509.4	44.3	7.4	47.2	270.0	84.6	290.4	119.5	7.1	492.6	34.9	16.0
Queue Length 50th (m)	~129.0	60.7	0.0	34.0	~299.5	~140.2	~111.3	~322.1	4.1	~170.6	142.2	37.2
Queue Length 95th (m)	#188.8	78.1	14.2	52.5	#341.6	#210.9	#171.2	#347.0	15.4	#235.6	160.4	64.0
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)	166	995	528	263	995	569	217	2295	766	217	2295	807
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	137	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	2.04	0.51	0.22	0.68	1.51	1.05	1.53	1.18	0.16	2.00	0.80	0.47

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.												

HCM Signalized Intersection Capacity Analysis Background (2041) - 2% Growth Rate
105: Trafalgar Rd & William Halton Parkway Timing Plan: PM Peak Hour

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰	↰	↰	↰	↰	↰	↰	↰	↰	↰	↰	↰
Traffic Volume (vph)	311	463	106	165	1382	547	305	2483	111	400	1596	346
Future Volume (vph)	311	463	106	165	1382	547	305	2483	111	400	1596	346
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
Flt	1.00	1.00	0.85	1.00	0.85	1.00	0.85	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	0.30	1.00	1.00	0.07	1.00	1.00	0.07	1.00	1.00
Satd. Flow (perm)	205	3539	1583	551	3539	1583	124	5085	1583	124	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)	338	503	115	179	1502	595	332	2699	121	435	1735	376
RTOR Reduction (vph)	0	0	83	0	0	124	0	0	52	0	0	93
Lane Group Flow (vph)	338	503	32	179	1502	471	332	2699	69	435	1735	283
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	73.1	60.3	60.3	73.1	60.3	60.3
Effective Green, g (s)	45.0	39.4	39.4	45.0	39.4	39.4	73.1	63.2	63.2	73.1	63.2	63.2
Actuated g/C Ratio	0.32	0.28	0.28	0.32	0.28	0.28	0.52	0.45	0.45	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)	162	995	445	251	995	445	215	2295	714	215	2295	714
v/s Ratio Prot	c0.13	0.14		0.04	0.42		0.14	0.53		c0.18	0.34	
v/s Ratio Perm	c0.54		0.02	0.18		0.30	0.67		0.04	c0.87		0.18
v/c Ratio	2.09	0.51	0.07	0.71	1.51	1.06	1.54	1.18	0.10	2.02	0.76	0.40
Uniform Delay, d1	42.0	42.1	36.9	39.1	50.3	50.3	42.7	38.4	22.0	45.0	32.0	25.7
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	509.4	0.8	0.1	9.2	234.5	59.2	266.7	84.1	0.3	476.5	2.4	1.6
Delay (s)	551.4	43.0	37.0	48.3	284.8	109.5	309.4	122.5	22.3	521.4	34.4	27.3
Level of Service	F	D	D	D	F	F	F	F	C	F	C	C
Approach Delay (s)		222.0			220.4			138.4			116.5	
Approach LOS		F			F			F			F	

Intersection Summary			
HCM 2000 Control Delay	162.0	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	1.95		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	16.0
Intersection Capacity Utilization	138.9%	ICU Level of Service	H
Analysis Period (min)	15		
c Critical Lane Group			

Lanes, Volumes, Timings

Background (2041) - 2% Growth Rate

106: Trafalgar Rd & Burnhamthorpe Rd/Burnhamthorpe Rd

Timing Plan: PM Peak Hour

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰	↱	↲	↰	↱	↲	↰	↱	↲	↰	↱	↲
Traffic Volume (vph)	123	339	18	135	297	421	100	2044	145	232	1254	178
Future Volume (vph)	123	339	18	135	297	421	100	2044	145	232	1254	178
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	1.00	1.00	1.00	1.00	1.00	1.00	0.91	1.00	1.00	0.91	1.00
Frt		0.992			0.912				0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1770	1848	0	1770	1699	0	1770	5085	1583	1770	5085	1583
Flt Permitted	0.116			0.230			0.187			0.062		
Satd. Flow (perm)	216	1848	0	428	1699	0	348	5085	1583	115	5085	1583
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		2			60				108			193
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)	134	368	20	147	323	458	109	2222	158	252	1363	193
Shared Lane Traffic (%)												
Lane Group Flow (vph)	134	368	0	147	781	0	109	2222	158	252	1363	193
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	pm+pt	NA	Perm	Perm
Protected Phases		4			8			2		1	6	
Permitted Phases	4			8			2		2	6		6

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Lanes, Volumes, Timings

Background (2041) - 2% Growth Rate

106: Trafalgar Rd & Burnhamthorpe Rd/Burnhamthorpe Rd

Timing Plan: PM Peak Hour

	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	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	2.20	0.73		1.20	1.48		0.61	0.85	0.18	1.08	0.41	0.18
Control Delay	611.8	47.8		185.3	254.9		38.0	28.8	5.9	112.8	10.7	1.5
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	611.8	47.8		185.3	254.9		38.0	28.8	5.9	112.8	10.7	1.5
LOS	F	D		F	F		D	C	A	F	B	A
Approach Delay		192.6			243.9			27.8			23.9	
Approach LOS		F			F			C			C	

Intersection Summary

Area Type: Other

Cycle Length: 120

Actuated Cycle Length: 120

Natural Cycle: 70

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 2.20

Intersection Signal Delay: 76.4

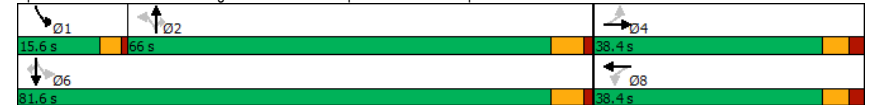
Intersection LOS: E

Intersection Capacity Utilization 115.4%

ICU Level of Service H

Analysis Period (min) 15

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

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Queues Background (2041) - 2% Growth Rate
106: Trafalgar Rd & Burnhamthorpe Rd/Burnhamthorpe Rd Timing Plan: PM Peak Hour

	EBL	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	134	388	147	781	109	2222	158	252	1363	193
v/c Ratio	2.20	0.73	1.20	1.48	0.61	0.85	0.18	1.08	0.41	0.18
Control Delay	611.8	47.8	185.3	254.9	38.0	28.8	5.9	112.8	10.7	1.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	611.8	47.8	185.3	254.9	38.0	28.8	5.9	112.8	10.7	1.5
Queue Length 50th (m)	~49.8	81.0	~41.4	~240.9	17.2	156.7	5.6	~49.5	51.7	0.0
Queue Length 95th (m)	#88.5	116.1	#81.6	#314.2	#43.4	178.0	16.1	#100.7	60.6	7.5
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)	61	531	122	529	179	2627	870	234	3288	1091
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	2.20	0.73	1.20	1.48	0.61	0.85	0.18	1.08	0.41	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.

HCM Signalized Intersection Capacity Analysis Background (2041) - 2% Growth Rate
106: Trafalgar Rd & Burnhamthorpe Rd/Burnhamthorpe Rd Timing Plan: PM Peak Hour

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰	↱		↰	↱		↰	↱	↱	↰	↱	↱
Traffic Volume (vph)	123	339	18	135	297	421	100	2044	145	232	1254	178
Future Volume (vph)	123	339	18	135	297	421	100	2044	145	232	1254	178
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	1.00		1.00	1.00		1.00	0.91	1.00	1.00	0.91	1.00
Frt	1.00	0.99		1.00	0.91		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	1848		1770	1699		1770	5085	1583	1770	5085	1583
Flt Permitted	0.12	1.00		0.23	1.00		0.19	1.00	1.00	0.06	1.00	1.00
Satd. Flow (perm)	217	1848		429	1699		349	5085	1583	116	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)	134	368	20	147	323	458	109	2222	158	252	1363	193
RTOR Reduction (vph)	0	1	0	0	43	0	0	0	52	0	0	68
Lane Group Flow (vph)	134	387	0	147	738	0	109	2222	106	252	1363	125
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)	62	529		122	487		180	2627	817	232	3288	1023
v/s Ratio Prot		0.21			0.43			0.44		c0.10	0.27	
v/s Ratio Perm	c0.62			0.34			0.31		0.07	c0.57		0.08
v/c Ratio	2.16	0.73		1.20	1.52		0.61	0.85	0.13	1.09	0.41	0.12
Uniform Delay, d1	42.8	38.6		42.8	42.8		20.4	24.9	15.0	38.6	10.2	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	571.9	5.2		146.7	242.5		14.2	3.6	0.3	84.0	0.4	0.2
Delay (s)	614.7	43.8		189.5	285.3		34.6	28.5	15.3	122.5	10.6	8.4
Level of Service	F	D		F	F		C	C	B	F	B	A
Approach Delay (s)		190.3			270.1			27.9			26.0	
Approach LOS		F			F			C			C	

Intersection Summary

HCM 2000 Control Delay	81.2	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	1.43		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	115.4%	ICU Level of Service	H
Analysis Period (min)	15		

c Critical Lane Group

Appendix F1

2031 Scenario A Total Operation Synchro Reports



Lanes, Volumes, Timings
101: Trafalgar Rd & Lower Base Line

Total (2031) - Scenario A Phase 1 - 2% Growth Rate

Timing Plan: AM Peak Hour

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↩	↩↪	↪	↩	↩↪	↪	↩	↩↪	↪	↩	↩↪	↪
Traffic Volume (vph)	124	482	184	262	98	180	39	1593	230	412	1742	20
Future Volume (vph)	124	482	184	262	98	180	39	1593	230	412	1742	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		0.959			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	0.567			0.161			0.093			0.090		
Satd. Flow (perm)	1056	3394	0	300	3196	0	173	5085	1583	168	5085	1583
Right Turn on Red		Yes			Yes			Yes			Yes	
Satd. Flow (RTOR)		41			196			236			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	200	285	107	196	42	1732	250	448	1893	22
Shared Lane Traffic (%)												
Lane Group Flow (vph)	135	724	0	285	303	0	42	1732	250	448	1893	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	CI+Ex	CI+Ex		CI+Ex	CI+Ex		CI+Ex	CI+Ex	CI+Ex	CI+Ex	CI+Ex	CI+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		CI+Ex			CI+Ex			CI+Ex			CI+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

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Synchro 10 Report
Page 1

Lanes, Volumes, Timings
101: Trafalgar Rd & Lower Base Line

Total (2031) - Scenario A Phase 1 - 2% Growth Rate

Timing Plan: AM Peak Hour

	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)	11.6	27.0		19.1	34.5		9.5	45.9	45.9	28.0	64.4	64.4
Total Split (%)	9.7%	22.5%		15.9%	28.8%		7.9%	38.3%	38.3%	23.3%	53.7%	53.7%
Maximum Green (s)	7.1	20.8		15.1	28.3		5.0	39.3	39.3	24.0	57.8	57.8
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)	34.0	23.0		42.1	30.5		51.6	41.9	41.9	69.9	62.3	62.3
Actuated g/C Ratio	0.28	0.19		0.35	0.25		0.43	0.35	0.35	0.58	0.52	0.52
v/c Ratio	0.38	1.06		0.98	0.32		0.24	0.98	0.35	1.07	0.72	0.02
Control Delay	30.5	95.3		81.8	13.7		16.1	55.1	5.7	98.9	24.5	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	30.5	95.3		81.8	13.7		16.1	55.1	5.7	98.9	24.5	0.1
LOS	C	F		F	B		B	E	A	F	C	A
Approach Delay		85.1			46.7			48.2			38.4	
Approach LOS		F			D			D			D	

Intersection Summary

Area Type: Other

Cycle Length: 120

Actuated Cycle Length: 120

Natural Cycle: 100

Control Type: Semi Act-Uncooord

Maximum v/c Ratio: 1.07

Intersection Signal Delay: 49.5

Intersection LOS: D

Intersection Capacity Utilization 100.7%

ICU Level of Service G

Analysis Period (min) 15

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



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Queues
101: Trafalgar Rd & Lower Base Line

Total (2031) - Scenario A Phase 1 - 2% Growth Rate
Timing Plan: AM Peak Hour

	EBL	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	135	724	285	303	42	1732	250	448	1893	22
v/c Ratio	0.38	1.06	0.98	0.32	0.24	0.98	0.35	1.07	0.72	0.02
Control Delay	30.5	95.3	81.8	13.7	16.1	55.1	5.7	98.9	24.5	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	30.5	95.3	81.8	13.7	16.1	55.1	5.7	98.9	24.5	0.1
Queue Length 50th (m)	21.4	~93.1	50.9	10.1	3.8	144.5	2.1	~99.7	123.4	0.0
Queue Length 95th (m)	36.0	#130.6	#103.8	21.4	8.3	#178.5	19.0	#162.1	141.3	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	683	290	958	175	1775	706	418	2640	892
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	1.06	0.98	0.32	0.24	0.98	0.35	1.07	0.72	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.

HCM Signalized Intersection Capacity Analysis (2031) - Scenario A Phase 1 - 2% Growth Rate
101: Trafalgar Rd & Lower Base Line

Timing Plan: AM Peak Hour

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰	↱	↱	↰	↱	↱	↰	↱	↱	↰	↱	↱
Traffic Volume (vph)	124	482	184	262	98	180	39	1593	230	412	1742	20
Future Volume (vph)	124	482	184	262	98	180	39	1593	230	412	1742	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	3393		1770	3196		1770	5085	1583	1770	5085	1583
Flt Permitted	0.57	1.00		0.16	1.00		0.09	1.00	1.00	0.09	1.00	1.00
Satd. Flow (perm)	1056	3393		300	3196		174	5085	1583	169	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	200	285	107	196	42	1732	250	448	1893	22
RTOR Reduction (vph)	0	33	0	0	147	0	0	0	152	0	0	11
Lane Group Flow (vph)	135	691	0	285	156	0	42	1732	98	448	1893	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	
Actuated Green, G (s)	27.9	20.8		39.9	28.3		44.2	40.2	40.2	68.2	59.7	59.7
Effective Green, g (s)	32.3	23.0		39.9	30.5		49.4	42.8	42.8	68.2	62.3	62.3
Actuated g/C Ratio	0.27	0.19		0.33	0.25		0.41	0.35	0.35	0.56	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)	337	645		282	806		158	1800	560	413	2620	815
v/s Ratio Prot	0.03	c0.20		c0.13	0.05		0.01	0.34		c0.22	0.37	
v/s Ratio Perm	0.08			0.21			0.09			0.06	c0.40	
v/c Ratio	0.40	1.07		1.01	0.19		0.27	0.96	0.17	1.08	0.72	0.01
Uniform Delay, d1	35.1	49.0		34.7	35.5		22.5	38.3	26.9	38.5	22.6	14.3
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	0.8	56.0		56.3	0.2		0.9	14.0	0.7	69.0	1.8	0.0
Delay (s)	35.9	104.9		91.0	35.8		23.4	52.2	27.6	107.5	24.4	14.3
Level of Service	D	F		F	D		C	D	C	F	C	B
Approach Delay (s)		94.1			62.5			48.6			40.0	
Approach LOS		F			E			D			D	

Intersection Summary

HCM 2000 Control Delay	53.2	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	1.07		
Actuated Cycle Length (s)	120.9	Sum of lost time (s)	16.0
Intersection Capacity Utilization	100.7%	ICU Level of Service	G
Analysis Period (min)	15		

c Critical Lane Group

Lanes, Volumes, Timings

Total (2031) - Scenario A Phase 1 - 2% Growth Rate

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

Timing Plan: AM Peak Hour

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔		↔	↔	↔	↔	↔		↔	↔	↔
Traffic Volume (vph)	2	0	7	294	1	21	5	1838	0	0	2185	4
Future Volume (vph)	2	0	7	294	1	21	5	1838	0	0	2185	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		0.751	0.723		0.063					
Satd. Flow (perm)	0	1645	0	1329	1223	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)	2	0	8	320	1	23	5	1998	0	0	2375	4
Shared Lane Traffic (%)				50%		10%						
Lane Group Flow (vph)	0	10	0	160	163	21	5	1998	0	0	2375	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	CI+Ex	CI+Ex		CI+Ex	CI+Ex	CI+Ex	CI+Ex	CI+Ex			CI+Ex	CI+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		CI+Ex			CI+Ex			CI+Ex			CI+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

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Lanes, Volumes, Timings

Total (2031) - Scenario A Phase 1 - 2% Growth Rate

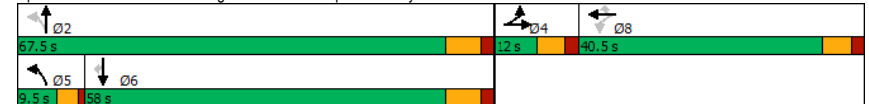
102: Trafalgar Rd & North Carpool Lot/Hwy 407 WB Off

Timing Plan: AM Peak Hour

	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	
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		20.1	20.1	20.1	64.2	64.2			62.7	62.7
Actuated g/C Ratio		0.09		0.21	0.21	0.21	0.68	0.68			0.66	0.66
v/c Ratio		0.04		0.57	0.62	0.05	0.03	0.58			0.70	0.00
Control Delay		0.3		41.7	44.9	0.2	8.8	10.4			14.6	0.0
Queue Delay		0.0		0.0	0.0	0.0	0.0	0.0			0.0	0.0
Total Delay		0.3		41.7	44.9	0.2	8.8	10.4			14.6	0.0
LOS	A			D	D	A	A	B			B	A
Approach Delay		0.3			40.7			10.4			14.5	
Approach LOS		A			D			B			B	

Intersection Summary												
Area Type:	Other											
Cycle Length: 120												
Actuated Cycle Length: 94.4												
Natural Cycle: 90												
Control Type: Actuated-Uncoordinated												
Maximum v/c Ratio: 0.70												
Intersection Signal Delay: 14.7	Intersection LOS: B											
Intersection Capacity Utilization 63.9%	ICU Level of Service B											
Analysis Period (min) 15												

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



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Synchro 10 Report
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Queues
Total (2031) - Scenario A Phase 1 - 2% Growth Rate
102: Trafalgar Rd & North Carpool Lot/Hwy 407 WB Off
Timing Plan: AM Peak Hour

	→	↖	←	↙	↘	↑	↓	↗
Lane Group	EBT	WBL	WBT	WBR	NBL	NBT	SBT	SBR
Lane Group Flow (vph)	10	160	163	21	5	1998	2375	4
v/c Ratio	0.04	0.57	0.62	0.05	0.03	0.58	0.70	0.00
Control Delay	0.3	41.7	44.9	0.2	8.8	10.4	14.6	0.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	0.3	41.7	44.9	0.2	8.8	10.4	14.6	0.0
Queue Length 50th (m)	0.0	26.1	28.0	0.0	0.3	54.3	73.4	0.0
Queue Length 95th (m)	0.0	52.1	56.3	0.0	2.2	129.5	#226.0	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)	257	519	478	665	177	3459	3374	1090
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.04	0.31	0.34	0.03	0.03	0.58	0.70	0.00

Intersection Summary

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

HCM Signalized Intersection Capacity Analysis
Total (2031) - Scenario A Phase 1 - 2% Growth Rate
102: Trafalgar Rd & North Carpool Lot/Hwy 407 WB Off
Timing Plan: AM Peak Hour

	↖	→	↘	↙	←	↗	↘	↑	↖	↙	↓	↗
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔		↖	↔	↗	↖	↔	↗	↖	↔	↗
Traffic Volume (vph)	2	0	7	294	1	21	5	1838	0	0	2185	4
Future Volume (vph)	2	0	7	294	1	21	5	1838	0	0	2185	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	1613	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		1329	1224	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)	2	0	8	320	1	23	5	1998	0	0	2375	4
RTOR Reduction (vph)	0	10	0	0	1	17	0	0	0	0	0	2
Lane Group Flow (vph)	0	0	0	160	162	4	5	1998	0	0	2375	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)		1.0		18.1	18.1	18.1	64.5	64.5			59.6	59.6
Effective Green, g (s)		3.0		20.1	20.1	20.1	64.5	67.5			62.6	62.6
Actuated g/C Ratio		0.03		0.20	0.20	0.20	0.63	0.66			0.61	0.61
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)		48		260	239	294	88	3345			3102	965
v/s Ratio Prot		c0.00					0.00	c0.39			c0.47	
v/s Ratio Perm				0.12	c0.13	0.00	0.04					0.00
v/c Ratio		0.01		0.62	0.68	0.01	0.06	0.60			0.77	0.00
Uniform Delay, d1		48.4		37.7	38.3	33.3	14.0	9.9			14.6	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		4.5	7.7	0.0	0.2	0.8			1.9	0.0
Delay (s)		48.4		42.2	46.0	33.3	14.2	10.7			16.5	7.8
Level of Service		D		D	D	C	B	B			B	A
Approach Delay (s)		48.4			43.5			10.7			16.5	
Approach LOS		D			D			B			B	

Intersection Summary

HCM 2000 Control Delay	16.1	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.74		
Actuated Cycle Length (s)	102.6	Sum of lost time (s)	18.0
Intersection Capacity Utilization	63.9%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

Lanes, Volumes, Timings
103: Trafalgar Rd & Hwy 407 EB Off

Total (2031) - Scenario A Phase 1 - 2% Growth Rate
Timing Plan: AM Peak Hour

	EBL	EBR	NBL	NBT	SBT	SBR
Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	↔	↔		↕	↕	
Traffic Volume (vph)	115	223	0	1836	2272	0
Future Volume (vph)	115	223	0	1836	2272	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	0.949	0.850				
Frt Protected	0.968					
Satd. Flow (prot)	1711	1504	0	5085	5085	0
Frt Permitted	0.968					
Satd. Flow (perm)	1711	1504	0	5085	5085	0
Right Turn on Red	Yes				Yes	
Satd. Flow (RTOR)	3	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)	125	242	0	1996	2470	0
Shared Lane Traffic (%)		27%				
Lane Group Flow (vph)	190	177	0	1996	2470	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	CI+Ex	CI+Ex		CI+Ex	CI+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				CI+Ex	CI+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	

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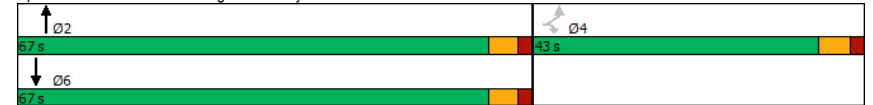
Lanes, Volumes, Timings
103: Trafalgar Rd & Hwy 407 EB Off

Total (2031) - Scenario A Phase 1 - 2% Growth Rate
Timing Plan: AM Peak Hour

	EBL	EBR	NBL	NBT	SBT	SBR
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)	17.4	17.4		63.4	63.4	
Actuated g/C Ratio	0.20	0.20		0.71	0.71	
v/c Ratio	0.56	0.60		0.55	0.68	
Control Delay	38.2	40.4		7.2	8.9	
Queue Delay	0.0	0.0		0.0	0.0	
Total Delay	38.2	40.4		7.2	8.9	
LOS	D	D		A	A	
Approach Delay	39.2			7.2	8.9	
Approach LOS	D			A	A	

Intersection Summary	
Area Type:	Other
Cycle Length: 110	
Actuated Cycle Length: 88.9	
Natural Cycle: 60	
Control Type: Semi Act-Uncoord	
Maximum v/c Ratio: 0.68	
Intersection Signal Delay: 10.5	Intersection LOS: B
Intersection Capacity Utilization 61.5%	ICU Level of Service B
Analysis Period (min) 15	

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



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Queues
103: Trafalgar Rd & Hwy 407 EB Off

Total (2031) - Scenario A Phase 1 - 2% Growth Rate
Timing Plan: AM Peak Hour

	EBL	EBR	NBT	SBT
Lane Group	EBL	EBR	NBT	SBT
Lane Group Flow (vph)	190	177	1996	2470
v/c Ratio	0.56	0.60	0.55	0.68
Control Delay	38.2	40.4	7.2	8.9
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	38.2	40.4	7.2	8.9
Queue Length 50th (m)	28.5	28.1	48.4	70.7
Queue Length 95th (m)	48.0	48.7	77.7	113.0
Internal Link Dist (m)	530.6		96.3	339.6
Turn Bay Length (m)				
Base Capacity (vph)	753	662	3629	3629
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	0.25	0.27	0.55	0.68
Intersection Summary				

HCM Signalized Intersection Capacity Analysis
103: Trafalgar Rd & Hwy 407 EB Off

Total (2031) - Scenario A Phase 1 - 2% Growth Rate
Timing Plan: AM Peak Hour

	EBL	EBR	NBL	NBT	SBT	SBR
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	↰	↱		↰	↰	↰
Traffic Volume (vph)	115	223	0	1836	2272	0
Future Volume (vph)	115	223	0	1836	2272	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	0.95	0.85		1.00	1.00	
Flt Protected	0.97	1.00		1.00	1.00	
Satd. Flow (prot)	1711	1504		5085	5085	
Flt Permitted	0.97	1.00		1.00	1.00	
Satd. Flow (perm)	1711	1504		5085	5085	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	125	242	0	1996	2470	0
RTOR Reduction (vph)	2	2	0	0	0	0
Lane Group Flow (vph)	188	175	0	1996	2470	0
Turn Type	Perm	Perm		NA	NA	
Protected Phases				2	6	
Permitted Phases	4	4				
Actuated Green, G (s)	15.4	15.4		61.5	61.5	
Effective Green, g (s)	17.4	17.4		63.5	63.5	
Actuated g/C Ratio	0.20	0.20		0.71	0.71	
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)	334	294		3632	3632	
v/s Ratio Prot				0.39	0.49	
v/s Ratio Perm	0.11	0.12				
v/c Ratio	0.56	0.59		0.55	0.68	
Uniform Delay, d1	32.3	32.5		6.0	7.1	
Progression Factor	1.00	1.00		1.00	1.00	
Incremental Delay, d2	2.2	3.2		0.6	1.0	
Delay (s)	34.5	35.7		6.6	8.1	
Level of Service	C	D		A	A	
Approach Delay (s)	35.1			6.6	8.1	
Approach LOS	D			A	A	
Intersection Summary						
HCM 2000 Control Delay			9.5		HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio			0.68			
Actuated Cycle Length (s)			88.9		Sum of lost time (s)	10.0
Intersection Capacity Utilization			61.5%		ICU Level of Service	B
Analysis Period (min)			15			

c Critical Lane Group

Lanes, Volumes, Timings
104: Trafalgar Rd & West Street A/East Street A

Total (2031) - Scenario A Phase 1 - 2% Growth Rate

Timing Plan: AM Peak Hour

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰	↑	↱	↰	↑	↱	↰	↑	↱	↰	↑	↱
Traffic Volume (vph)	115	22	70	0	0	240	13	2144	238	325	2023	147
Future Volume (vph)	115	22	70	0	0	240	13	2144	238	325	2023	147
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		
Satd. Flow (prot)	1770	1863	1583	1863	1863	1583	1770	5085	1583	1770	5085	1583
Flt Permitted	0.757						0.076			0.050		
Satd. Flow (perm)	1410	1863	1583	1863	1863	1583	142	5085	1583	93	5085	1583
Right Turn on Red			Yes			Yes			Yes		Yes	
Satd. Flow (RTOR)			86			23			123		95	
Link Speed (k/h)		50			50			80			80	
Link Distance (m)		143.5			212.6			233.3			131.6	
Travel Time (s)		10.3			15.3			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)	125	24	76	0	0	261	14	2330	259	353	2199	160
Shared Lane Traffic (%)												
Lane Group Flow (vph)	125	24	76	0	0	261	14	2330	259	353	2199	160
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		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

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Lanes, Volumes, Timings
104: Trafalgar Rd & West Street A/East Street A

Total (2031) - Scenario A Phase 1 - 2% Growth Rate

Timing Plan: AM Peak Hour

	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)	24.0	24.0	24.0	24.0	24.0	40.0	9.5	76.0	76.0	40.0	106.5	106.5
Total Split (%)	17.1%	17.1%	17.1%	17.1%	17.1%	28.6%	6.8%	54.3%	54.3%	28.6%	76.1%	76.1%
Maximum Green (s)	18.0	18.0	18.0	18.0	18.0	36.0	5.5	70.0	70.0	36.0	100.5	100.5
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 Effect Green (s)	17.2	17.2	17.2			49.4	81.7	76.2	76.2	106.4	102.8	102.8
Actuated g/C Ratio	0.13	0.13	0.13			0.38	0.62	0.58	0.58	0.81	0.78	0.78
v/c Ratio	0.68	0.10	0.27			0.43	0.09	0.79	0.27	0.86	0.55	0.13
Control Delay	74.4	52.4	10.8			29.0	8.5	25.8	9.0	59.1	6.9	2.2
Queue Delay	0.0	0.0	0.0			0.0	0.0	0.8	0.0	0.0	0.2	0.0
Total Delay	74.4	52.4	10.8			29.0	8.5	26.6	9.0	59.1	7.1	2.2
LOS	E	D	B			C	A	C	A	E	A	A
Approach Delay		50.6			29.0			24.7			13.6	
Approach LOS		D			C			C			B	

Intersection Summary

Area Type: Other

Cycle Length: 140

Actuated Cycle Length: 131.6

Natural Cycle: 90

Control Type: Actuated-Uncoordinated

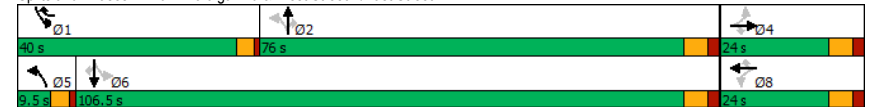
Maximum v/c Ratio: 0.86

Intersection Signal Delay: 20.7

Intersection Capacity Utilization 75.8%

Analysis Period (min) 15

Splits and Phases: 104: Trafalgar Rd & West Street A/East Street A



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Synchro 10 Report
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Queues
104: Trafalgar Rd & West Street A/East Street A

Total (2031) - Scenario A Phase 1 - 2% Growth Rate
Timing Plan: AM Peak Hour

	EBL	EBT	EBR	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group	EBL	EBT	EBR	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	125	24	76	261	14	2330	259	353	2199	160
v/c Ratio	0.68	0.10	0.27	0.43	0.09	0.79	0.27	0.86	0.55	0.13
Control Delay	74.4	52.4	10.8	29.0	8.5	25.8	9.0	59.1	6.9	2.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.8	0.0	0.0	0.2	0.0
Total Delay	74.4	52.4	10.8	29.0	8.5	26.6	9.0	59.1	7.1	2.2
Queue Length 50th (m)	29.9	5.3	0.0	42.5	0.6	167.2	15.8	70.5	60.9	2.9
Queue Length 95th (m)	54.0	14.5	11.8	64.1	2.5	225.7	36.5	106.7	103.6	10.4
Internal Link Dist (m)	119.5		209.3		107.6					
Turn Bay Length (m)	50.0	50.0	50.0	50.0	50.0	30.0	30.0	30.0	30.0	30.0
Base Capacity (vph)	215	284	314	725	156	2944	968	535	3973	1257
Starvation Cap Reductn	0	0	0	0	0	297	0	0	817	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	0.58	0.08	0.24	0.36	0.09	0.88	0.27	0.66	0.70	0.13
Intersection Summary										

HCM Signalized Intersection Capacity Analysis (2031) - Scenario A Phase 1 - 2% Growth Rate
104: Trafalgar Rd & West Street A/East Street A

Timing Plan: AM Peak Hour

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Movement												
Lane Configurations	↰	↑	↱	↰	↑	↱	↰	↱↱↱	↱	↰	↱↱↱	↱
Traffic Volume (vph)	115	22	70	0	0	240	13	2144	238	325	2023	147
Future Volume (vph)	115	22	70	0	0	240	13	2144	238	325	2023	147
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	1.00	0.85			0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00			1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1770	1863	1583			1583	1770	5085	1583	1770	5085	1583
Flt Permitted	0.76	1.00	1.00			1.00	0.08	1.00	1.00	0.05	1.00	1.00
Satd. Flow (perm)	1410	1863	1583			1583	142	5085	1583	92	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	24	76	0	0	261	14	2330	259	353	2199	160
RTOR Reduction (vph)	0	0	66	0	0	15	0	0	51	0	0	22
Lane Group Flow (vph)	125	24	10	0	0	246	14	2330	208	353	2199	138
Turn Type	Perm	NA	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)	15.2	15.2	15.2			41.4	78.8	76.7	76.7	106.9	100.8	100.8
Effective Green, g (s)	17.2	17.2	17.2			45.4	78.8	78.7	78.7	106.9	102.8	102.8
Actuated g/C Ratio	0.13	0.13	0.13			0.34	0.59	0.59	0.59	0.80	0.77	0.77
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)	180	238	203			535	108	2984	929	401	3898	1213
v/s Ratio Prot		0.01				0.10	0.00	0.46		c0.17	0.43	
v/s Ratio Perm	c0.09		0.01			0.06	0.07		0.13	c0.53		0.09
v/c Ratio	0.69	0.10	0.05			0.46	0.13	0.78	0.22	0.88	0.56	0.11
Uniform Delay, d1	55.9	51.6	51.3			34.7	12.6	21.1	13.2	43.7	6.4	4.0
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	11.0	0.2	0.1			0.6	0.5	2.1	0.6	19.6	0.6	0.2
Delay (s)	67.0	51.8	51.4			35.4	13.2	23.2	13.7	63.3	7.0	4.2
Level of Service	E	D	D			D	B	C	B	E	A	A
Approach Delay (s)	60.1		35.4		22.2		14.2					
Approach LOS	E		D		C		B					
Intersection Summary												
HCM 2000 Control Delay	20.5		HCM 2000 Level of Service		C							
HCM 2000 Volume to Capacity ratio	0.86											
Actuated Cycle Length (s)	134.1		Sum of lost time (s)		12.0							
Intersection Capacity Utilization	75.8%		ICU Level of Service		D							
Analysis Period (min)	15											
c Critical Lane Group												

Lanes, Volumes, Timings
105: Trafalgar Rd & William Halton Parkway

Total (2031) - Scenario A Phase 1 - 2% Growth Rate

Timing Plan: AM Peak Hour

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔
Traffic Volume (vph)	336	744	155	162	412	199	181	2060	41	429	1614	50
Future Volume (vph)	336	744	155	162	412	199	181	2060	41	429	1614	50
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	0.246			0.136			0.077			0.071		
Satd. Flow (perm)	458	3539	1583	253	3539	1583	143	5085	1583	132	5085	1583
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			168			216			120			120
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		209.3			204.1			208.3			233.3	
Travel Time (s)		15.1			14.7			15.0			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)	365	809	168	176	448	216	197	2239	45	466	1754	54
Shared Lane Traffic (%)												
Lane Group Flow (vph)	365	809	168	176	448	216	197	2239	45	466	1754	54
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

I/O Trafalgar Oakville TIS
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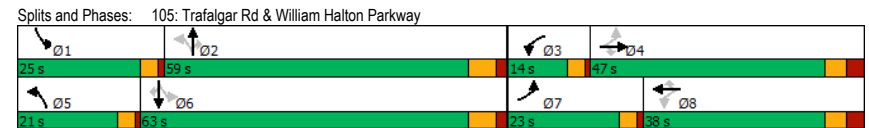
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Lanes, Volumes, Timings
105: Trafalgar Rd & William Halton Parkway

Total (2031) - Scenario A Phase 1 - 2% Growth Rate

Timing Plan: AM Peak Hour

	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)	23.0	47.0	47.0	14.0	38.0	38.0	21.0	59.0	59.0	25.0	63.0	63.0
Total Split (%)	15.9%	32.4%	32.4%	9.7%	26.2%	26.2%	14.5%	40.7%	40.7%	17.2%	43.4%	43.4%
Maximum Green (s)	19.0	40.0	40.0	10.0	31.0	31.0	17.0	52.1	52.1	21.0	56.1	56.1
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)	55.4	41.4	41.4	42.4	32.4	32.4	70.0	55.0	55.0	80.0	61.0	61.0
Actuated g/C Ratio	0.39	0.29	0.29	0.30	0.23	0.23	0.49	0.38	0.38	0.56	0.43	0.43
v/c Ratio	1.04	0.79	0.29	0.98	0.56	0.41	0.82	1.15	0.07	1.49	0.81	0.07
Control Delay	95.2	53.6	6.5	96.2	52.2	7.9	62.4	113.4	0.2	268.6	40.5	0.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0
Total Delay	95.2	53.6	6.5	96.2	52.2	7.9	62.4	113.4	0.2	268.6	40.6	0.2
LOS	F	D	A	F	D	A	E	F	A	F	D	A
Approach Delay		59.0			50.0			107.3			86.4	
Approach LOS		E			D			F			F	
Intersection Summary												
Area Type:		Other										
Cycle Length: 145												
Actuated Cycle Length: 143.4												
Natural Cycle: 135												
Control Type: Actuated-Uncoordinated												
Maximum v/c Ratio: 1.49												
Intersection Signal Delay: 84.2												
Intersection Capacity Utilization 112.2%												
ICU Level of Service H												
Analysis Period (min) 15												



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Queues
105: Trafalgar Rd & William Halton Parkway

Total (2031) - Scenario A Phase 1 - 2% Growth Rate
Timing Plan: AM Peak Hour

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	365	809	168	176	448	216	197	2239	45	466	1754	54
v/c Ratio	1.04	0.79	0.29	0.98	0.56	0.41	0.82	1.15	0.07	1.49	0.81	0.07
Control Delay	95.2	53.6	6.5	96.2	52.2	7.9	62.4	113.4	0.2	268.6	40.5	0.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0
Total Delay	95.2	53.6	6.5	96.2	52.2	7.9	62.4	113.4	0.2	268.6	40.6	0.2
Queue Length 50th (m)	~83.3	110.4	0.0	33.4	59.0	0.0	37.9	~274.3	0.0	~167.8	163.5	0.0
Queue Length 95th (m)	#137.5	134.3	16.6	#80.4	76.4	19.9	#72.0	#301.3	0.0	#235.2	183.2	0.0
Internal Link Dist (m)	185.3			180.1			184.3			209.3		
Turn Bay Length (m)	100.0		100.0	100.0		150.0	150.0		75.0			
Base Capacity (vph)	350	1061	592	180	839	540	264	1950	680	313	2165	742
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	38	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	1.04	0.76	0.28	0.98	0.53	0.40	0.75	1.15	0.07	1.49	0.82	0.07

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.

Queue shown is maximum after two cycles.

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

Queue shown is maximum after two cycles.

HCM Signalized Intersection Capacity Analysis (2031) - Scenario A Phase 1 - 2% Growth Rate
105: Trafalgar Rd & William Halton Parkway

Timing Plan: AM Peak Hour

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔
Traffic Volume (vph)	336	744	155	162	412	199	181	2060	41	429	1614	50
Future Volume (vph)	336	744	155	162	412	199	181	2060	41	429	1614	50
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	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00
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	0.25	1.00	1.00	0.14	1.00	1.00	0.08	1.00	1.00	0.07	1.00	1.00
Satd. Flow (perm)	458	3539	1583	253	3539	1583	143	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)	365	809	168	176	448	216	197	2239	45	466	1754	54
RTOR Reduction (vph)	0	0	120	0	0	167	0	0	28	0	0	31
Lane Group Flow (vph)	365	809	48	176	448	49	197	2239	17	466	1754	23
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)	52.4	38.4	38.4	39.4	29.4	29.4	67.2	52.2	52.2	77.2	58.2	58.2
Effective Green, g (s)	52.4	41.4	41.4	39.4	32.4	32.4	67.2	55.1	55.1	77.2	61.1	61.1
Actuated g/C Ratio	0.37	0.29	0.29	0.27	0.23	0.23	0.47	0.38	0.38	0.54	0.43	0.43
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)	340	1021	456	175	799	357	237	1952	607	311	2165	674
v/s Ratio Prot	c0.14	0.23		0.07	0.13		0.09	0.44		c0.22	0.34	
v/s Ratio Perm	c0.25		0.03	0.21		0.03	0.30		0.01	c0.59		0.01
v/c Ratio	1.07	0.79	0.11	1.01	0.56	0.14	0.83	1.15	0.03	1.50	0.81	0.03
Uniform Delay, d1	39.6	47.1	37.5	45.9	49.2	44.4	38.8	44.2	27.5	48.1	36.1	24.0
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	69.8	4.9	0.2	69.5	1.5	0.4	21.3	72.7	0.1	240.5	3.4	0.1
Delay (s)	109.3	52.0	37.7	115.4	50.7	44.7	60.1	116.9	27.6	288.6	39.5	24.1
Level of Service	F	D	D	F	D	D	E	F	C	F	D	C
Approach Delay (s)		65.8			62.7			110.8			90.2	
Approach LOS		E			E			F			F	

Intersection Summary

HCM 2000 Control Delay	89.5	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	1.32		
Actuated Cycle Length (s)	143.5	Sum of lost time (s)	16.0
Intersection Capacity Utilization	112.2%	ICU Level of Service	H
Analysis Period (min)	15		
c Critical Lane Group			

Lanes, Volumes, Timings

Total (2031) - Scenario A Phase 1 - 2% Growth Rate

106: Trafalgar Rd & Burnhamthorpe Rd/Burnhamthorpe Rd

Timing Plan: AM Peak Hour

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰	↱	↲	↰	↱	↲	↰	↱	↲	↰	↱	↲
Traffic Volume (vph)	364	403	66	68	129	171	46	1748	143	270	1321	148
Future Volume (vph)	364	403	66	68	129	171	46	1748	143	270	1321	148
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	1.00	1.00	1.00	1.00	1.00	1.00	0.91	1.00	1.00	0.91	1.00
Frt		0.979			0.914				0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1770	1824	0	1770	1703	0	1770	5085	1583	1770	5085	1583
Flt Permitted	0.140			0.154			0.134			0.066		
Satd. Flow (perm)	261	1824	0	287	1703	0	250	5085	1583	123	5085	1583
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		6			42				160			142
Link Speed (k/h)		60			60			80			80	
Link Distance (m)		828.7			989.6			1077.8			247.3	
Travel Time (s)		49.7			59.4			48.5			11.1	
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)	396	438	72	74	140	186	50	1900	155	293	1436	161
Shared Lane Traffic (%)												
Lane Group Flow (vph)	396	510	0	74	326	0	50	1900	155	293	1436	161
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)	26.0	46.5		9.5	30.0		9.6	63.0	63.0	21.0	74.4	74.4
Total Split (%)	18.6%	33.2%		6.8%	21.4%		6.9%	45.0%	45.0%	15.0%	53.1%	53.1%
Maximum Green (s)	21.5	40.5		5.0	24.0		5.1	57.0	57.0	17.0	68.4	68.4
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 Effect Green (s)	53.5	42.5		34.5	26.0		67.6	59.0	59.0	80.0	70.4	70.4
Actuated g/C Ratio	0.38	0.30		0.25	0.19		0.48	0.42	0.42	0.57	0.50	0.50
v/c Ratio	1.12	0.92		0.51	0.93		0.25	0.89	0.20	1.09	0.56	0.19
Control Delay	122.6	68.9		42.7	82.2		16.8	43.6	3.9	118.0	25.2	4.4
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	122.6	68.9		42.7	82.2		16.8	43.6	3.9	118.0	25.2	4.4

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Synchro 10 Report
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Lanes, Volumes, Timings

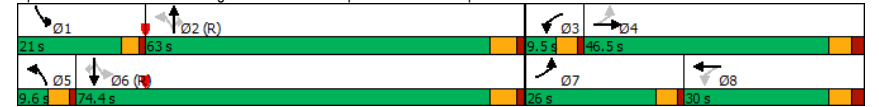
Total (2031) - Scenario A Phase 1 - 2% Growth Rate

106: Trafalgar Rd & Burnhamthorpe Rd/Burnhamthorpe Rd

Timing Plan: AM Peak Hour

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
LOS	F	E		D	F		B	D	A	F	C	A
Approach Delay		92.4			74.9			40.1			37.8	
Approach LOS		F			E			D			D	
Intersection Summary												
Area Type:	Other											
Cycle Length: 140												
Actuated Cycle Length: 140												
Offset: 0 (0%), Referenced to phase 2:NBT and 6:SBTL, Start of Green												
Natural Cycle: 110												
Control Type: Pretimed												
Maximum v/c Ratio: 1.12												
Intersection Signal Delay: 50.8							Intersection LOS: D					
Intersection Capacity Utilization 99.5%							ICU Level of Service F					
Analysis Period (min) 15												

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



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Synchro 10 Report
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Queues
106: Trafalgar Rd & Burhamthorpe Rd/Burnhamthorpe Rd

Total (2031) - Scenario A Phase 1 - 2% Growth Rate
Timing Plan: AM Peak Hour

	EBL	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	396	510	74	326	50	1900	155	293	1436	161
v/c Ratio	1.12	0.92	0.51	0.93	0.25	0.89	0.20	1.09	0.56	0.19
Control Delay	122.6	68.9	42.7	82.2	16.8	43.6	3.9	118.0	25.2	4.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	122.6	68.9	42.7	82.2	16.8	43.6	3.9	118.0	25.2	4.4
Queue Length 50th (m)	~108.5	133.3	12.9	78.4	5.6	173.7	0.0	~73.5	97.1	2.6
Queue Length 95th (m)	#171.7	#197.2	23.7	#134.5	11.4	194.6	12.0	#130.5	110.9	13.8
Internal Link Dist (m)		804.7		965.6		1053.8			223.3	
Turn Bay Length (m)	30.0		15.0		60.0		60.0	60.0		60.0
Base Capacity (vph)	353	557	144	350	197	2142	759	270	2557	866
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	1.12	0.92	0.51	0.93	0.25	0.89	0.20	1.09	0.56	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.

HCM Signalized Intersection Capacity Analysis
106: Trafalgar Rd & Burhamthorpe Rd/Burnhamthorpe Rd

Total (2031) - Scenario A Phase 1 - 2% Growth Rate
Timing Plan: AM Peak Hour

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰	↱	↲	↰	↱	↲	↰	↱	↲	↰	↱	↲
Traffic Volume (vph)	364	403	66	68	129	171	46	1748	143	270	1321	148
Future Volume (vph)	364	403	66	68	129	171	46	1748	143	270	1321	148
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	1.00		1.00	1.00		1.00	0.91	1.00	1.00	0.91	1.00
Frt	1.00	0.98		1.00	0.91		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	1823		1770	1703		1770	5085	1583	1770	5085	1583
Flt Permitted	0.14	1.00		0.15	1.00		0.13	1.00	1.00	0.07	1.00	1.00
Satd. Flow (perm)	261	1823		287	1703		250	5085	1583	122	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)	396	438	72	74	140	186	50	1900	155	293	1436	161
RTOR Reduction (vph)	0	4	0	0	34	0	0	0	90	0	0	71
Lane Group Flow (vph)	396	506	0	74	292	0	50	1900	65	293	1436	90
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)	50.0	40.5		29.0	24.0		62.1	57.0	57.0	78.0	68.4	68.4
Effective Green, g (s)	52.0	42.5		33.0	26.0		66.1	59.0	59.0	78.0	70.4	70.4
Actuated g/C Ratio	0.37	0.30		0.24	0.19		0.47	0.42	0.42	0.56	0.50	0.50
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)	350	553		141	316		195	2142	667	268	2557	796
v/s Ratio Prot	c0.19	0.28		0.03	0.17		0.01	0.37		c0.13	0.28	
v/s Ratio Perm	c0.23			0.10			0.11		0.04	c0.48		0.06
v/c Ratio	1.13	0.91		0.52	0.92		0.26	0.89	0.10	1.09	0.56	0.11
Uniform Delay, d1	42.7	47.0		43.9	56.0		20.8	37.4	24.4	46.5	24.1	18.3
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	88.7	22.1		13.3	34.4		3.2	5.9	0.3	82.2	0.9	0.3
Delay (s)	131.4	69.1		57.2	90.4		24.0	43.3	24.7	128.7	25.0	18.6
Level of Service	F	E		E	F		C	D	C	F	C	B
Approach Delay (s)		96.3			84.3			41.5			40.5	
Approach LOS		F			F			D			D	

Intersection Summary

HCM 2000 Control Delay	53.8	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	1.14		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	14.5
Intersection Capacity Utilization	99.5%	ICU Level of Service	F
Analysis Period (min)	15		
c Critical Lane Group			

Lanes, Volumes, Timings
202: Trafalgar Rd & West Street C

Total (2031) - Scenario A Phase 1 - 2% Growth Rate

Timing Plan: AM Peak Hour

	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations		↑		↑↑↑	↑↑↑	↑
Traffic Volume (vph)	0	40	0	2283	1699	99
Future Volume (vph)	0	40	0	2283	1699	99
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (m)	0.0	0.0	0.0			90.0
Storage Lanes	0	1	0			1
Taper Length (m)	7.5		7.5			
Lane Util. Factor	1.00	1.00	1.00	0.91	0.91	1.00
Frt		0.865				0.850
Flt Protected						
Satd. Flow (prot)	0	1611	0	5085	5085	1583
Flt Permitted						
Satd. Flow (perm)	0	1611	0	5085	5085	1583
Link Speed (k/h)	50			50	50	
Link Distance (m)	202.4			247.3	208.3	
Travel Time (s)	14.6			17.8	15.0	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	43	0	2482	1847	108
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	43	0	2482	1847	108
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	0.0			3.6	3.6	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	4.8			4.8	4.8	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)	25	15	25			15
Sign Control	Stop			Free	Free	
Intersection Summary						
Area Type:	Other					
Control Type:	Unsignalized					
Intersection Capacity Utilization 47.4%	ICU Level of Service A					
Analysis Period (min) 15						

HCM Unsignalized Intersection Capacity Analysis (2031) - Scenario A Phase 1 - 2% Growth Rate
202: Trafalgar Rd & West Street C

Timing Plan: AM Peak Hour

								
Movement	EBL	EBR	NBL	NBT	SBT	SBR		
Lane Configurations				  	  			
Traffic Volume (veh/h)	0	40	0	2283	1699	99		
Future Volume (Veh/h)	0	40	0	2283	1699	99		
Sign Control	Stop			Free	Free			
Grade	0%			0%	0%			
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92		
Hourly flow rate (vph)	0	43	0	2482	1847	108		
Pedestrians								
Lane Width (m)								
Walking Speed (m/s)								
Percent Blockage								
Right turn flare (veh)								
Median type			None	None				
Median storage (veh)								
Upstream signal (m)				247	208			
pX, platoon unblocked	0.79	0.71	0.71					
vC, conflicting volume	2674	616	1955					
vC1, stage 1 conf vol								
vC2, stage 2 conf vol								
vCu, unblocked vol	0	0	916					
tC, single (s)	6.8	6.9	4.1					
tC, 2 stage (s)								
tF (s)	3.5	3.3	2.2					
p0 queue free %	100	94	100					
cM capacity (veh/h)	812	770	526					
Direction, Lane #	EB 1	NB 1	NB 2	NB 3	SB 1	SB 2	SB 3	SB 4
Volume Total	43	827	827	827	616	616	616	108
Volume Left	0	0	0	0	0	0	0	0
Volume Right	43	0	0	0	0	0	0	108
cSH	770	1700	1700	1700	1700	1700	1700	1700
Volume to Capacity	0.06	0.49	0.49	0.49	0.36	0.36	0.36	0.06
Queue Length 95th (m)	1.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Control Delay (s)	10.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Lane LOS	A							
Approach Delay (s)	10.0	0.0	0.0					
Approach LOS	A							
Intersection Summary								
Average Delay			0.1					
Intersection Capacity Utilization			47.4%		ICU Level of Service		A	
Analysis Period (min)			15					

Lanes, Volumes, Timings
 203: East Street D & East Street A

Total (2031) - Scenario A Phase 1 - 2% Growth Rate
 Timing Plan: AM Peak Hour

	→	↖	↗	←	↖	↗
Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↖			↖	↖	↖
Traffic Volume (vph)	47	351	0	0	140	0
Future Volume (vph)	47	351	0	0	140	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	0.881					
Flt Protected					0.950	
Satd. Flow (prot)	1641	0	0	1863	1770	0
Flt Permitted					0.950	
Satd. Flow (perm)	1641	0	0	1863	1770	0
Link Speed (k/h)	50			50	50	
Link Distance (m)	212.6			202.8	119.6	
Travel Time (s)	15.3			14.6	8.6	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	51	382	0	0	152	0
Shared Lane Traffic (%)						
Lane Group Flow (vph)	433	0	0	0	152	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
Sign Control	Free			Free	Stop	

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

HCM Unsignalized Intersection Capacity Analysis (2031) - Scenario A Phase 1 - 2% Growth Rate
 203: East Street D & East Street A

Timing Plan: AM Peak Hour

	→	↖	↗	←	↖	↗
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↖			↖	↖	↖
Traffic Volume (veh/h)	47	351	0	0	140	0
Future Volume (Veh/h)	47	351	0	0	140	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)	51	382	0	0	152	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)	213					
pX, platoon unblocked						
vC, conflicting volume			433		242	242
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			433		242	242
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			100		80	100
cM capacity (veh/h)			1127		746	797

Direction, Lane #	EB 1	WB 1	NB 1
Volume Total	433	0	152
Volume Left	0	0	152
Volume Right	382	0	0
cSH	1700	1700	746
Volume to Capacity	0.25	0.00	0.20
Queue Length 95th (m)	0.0	0.0	5.7
Control Delay (s)	0.0	0.0	11.1
Lane LOS			B
Approach Delay (s)	0.0	0.0	11.1
Approach LOS			B

Intersection Summary			
Average Delay	2.9		
Intersection Capacity Utilization	38.6%	ICU Level of Service	A
Analysis Period (min)	15		

Lanes, Volumes, Timings
204: East Street E & East Street A

Total (2031) - Scenario A Phase 1 - 2% Growth Rate
Timing Plan: AM Peak Hour

	→	↖	↗	←	↖	↗
Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↖			↖	↖	
Traffic Volume (vph)	0	47	0	0	0	0
Future Volume (vph)	0	47	0	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.865					
Flt Protected						
Satd. Flow (prot)	1611	0	0	1863	1863	0
Flt Permitted						
Satd. Flow (perm)	1611	0	0	1863	1863	0
Link Speed (k/h)	50			50	50	
Link Distance (m)	202.8			186.3	118.9	
Travel Time (s)	14.6			13.4	8.6	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	51	0	0	0	0
Shared Lane Traffic (%)						
Lane Group Flow (vph)	51	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)	0.0			0.0	3.6	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	4.8			4.8	4.8	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)		15	25		25	15
Sign Control	Free			Free	Stop	

Intersection Summary

Area Type: Other

Control Type: Unsignalized

Intersection Capacity Utilization 6.7% ICU Level of Service A

Analysis Period (min) 15

HCM Unsignalized Intersection Capacity Analysis (2031) - Scenario A Phase 1 - 2% Growth Rate
204: East Street E & East Street A

Timing Plan: AM Peak Hour

	→	↖	↗	←	↖	↗
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↖			↖	↖	
Traffic Volume (veh/h)	0	47	0	0	0	0
Future Volume (Veh/h)	0	47	0	0	0	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)	0	51	0	0	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			51		26	26
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			51		26	26
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			100		100	100
cM capacity (veh/h)			1555		990	1050

Direction, Lane #	EB 1	WB 1	NB 1
Volume Total	51	0	0
Volume Left	0	0	0
Volume Right	51	0	0
cSH	1700	1700	1700
Volume to Capacity	0.03	0.00	0.00
Queue Length 95th (m)	0.0	0.0	0.0
Control Delay (s)	0.0	0.0	0.0
Lane LOS			A
Approach Delay (s)	0.0	0.0	0.0
Approach LOS			A

Intersection Summary

Average Delay

0.0

Intersection Capacity Utilization

6.7%

ICU Level of Service

A

Analysis Period (min)

15

Lanes, Volumes, Timings

Total (2031) - Scenario A Phase 1 - 2% Growth Rate

205: East Street F & East Street A

Timing Plan: AM Peak Hour

	→	↘	↙	←	↖	↗
Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
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	1.00	1.00	1.00
Fr						
Flt Protected						
Satd. Flow (prot)	1863	0	0	1863	1863	0
Flt Permitted						
Satd. Flow (perm)	1863	0	0	1863	1863	0
Link Speed (k/h)	50			50	50	
Link Distance (m)	186.3			197.2	119.9	
Travel Time (s)	13.4			14.2	8.6	
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)	0.0			0.0	3.6	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	4.8			4.8	4.8	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)		15	25		25	15
Sign Control	Stop			Free	Free	
Intersection Summary						
Area Type:	Other					
Control Type:	Unsignalized					
Intersection Capacity Utilization	0.0%			ICU Level of Service A		
Analysis Period (min)	15					

HCM Unsignalized Intersection Capacity Analysis (2031) - Scenario A Phase 1 - 2% Growth Rate

205: East Street F & East Street A

Timing Plan: AM Peak Hour

Intersection Sign configuration not allowed in HCM analysis.

Lanes, Volumes, Timings
206: East Street D & East Street B

Total (2031) - Scenario A Phase 1 - 2% Growth Rate
Timing Plan: AM Peak Hour

	←	←	↑	↗	↘	↓
Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	↔		↔			↔
Traffic Volume (vph)	21	20	72	14	15	234
Future Volume (vph)	21	20	72	14	15	234
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	0.934		0.978			
Flt Protected	0.975					0.997
Satd. Flow (prot)	1696	0	1822	0	0	1857
Flt Permitted	0.975					0.997
Satd. Flow (perm)	1696	0	1822	0	0	1857
Link Speed (k/h)	50		50			50
Link Distance (m)	200.4		111.4			119.6
Travel Time (s)	14.4		8.0			8.6
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	23	22	78	15	16	254
Shared Lane Traffic (%)						
Lane Group Flow (vph)	45	0	93	0	0	270
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 29.8% ICU Level of Service A

Analysis Period (min) 15

HCM Unsignalized Intersection Capacity Analysis (2031) - Scenario A Phase 1 - 2% Growth Rate
206: East Street D & East Street B

Timing Plan: AM Peak Hour

	←	←	↑	↗	↘	↓
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	↔		↔			↔
Traffic Volume (veh/h)	21	20	72	14	15	234
Future Volume (Veh/h)	21	20	72	14	15	234
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)	23	22	78	15	16	254
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	372	86			93	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	372	86			93	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	96	98			99	
cM capacity (veh/h)	622	973			1501	

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	45	93	270
Volume Left	23	0	16
Volume Right	22	15	0
cSH	756	1700	1501
Volume to Capacity	0.06	0.05	0.01
Queue Length 95th (m)	1.4	0.0	0.2
Control Delay (s)	10.1	0.0	0.5
Lane LOS	B		A
Approach Delay (s)	10.1	0.0	0.5
Approach LOS	B		

Intersection Summary

Average Delay	1.5		
Intersection Capacity Utilization	29.8%	ICU Level of Service	A
Analysis Period (min)	15		

Lanes, Volumes, Timings
207: East Street E & East Street B

Total (2031) - Scenario A Phase 1 - 2% Growth Rate

Timing Plan: AM Peak Hour

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	0	29	0	0	0	0	0	0	0	47	0
Future Volume (vph)	0	0	29	0	0	0	0	0	0	0	47	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	0.865											
Flt Protected												
Satd. Flow (prot)	0	1611	0	0	1863	0	0	1863	0	0	1863	0
Flt Permitted												
Satd. Flow (perm)	0	1611	0	0	1863	0	0	1863	0	0	1863	0
Link Speed (k/h)	50			50			50			50		
Link Distance (m)	200.4			185.7			114.3			118.9		
Travel Time (s)	14.4			13.4			8.2			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	32	0	0	0	0	0	0	0	51	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	32	0	0	0	0	0	0	0	0	51	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	13.3%	ICU Level of Service A
Analysis Period (min)	15	

HCM Unsignalized Intersection Capacity Analysis (2031) - Scenario A Phase 1 - 2% Growth Rate
207: East Street E & East Street B

Timing Plan: AM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	0	29	0	0	0	0	0	0	0	47	0
Future Volume (Veh/h)	0	0	29	0	0	0	0	0	0	0	47	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	0	32	0	0	0	0	0	0	0	51	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)	114											
pX, platoon unblocked												
vC, conflicting volume	51	51	51	83	51	0	51	0				
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	51	51	51	83	51	0	51	0				
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	97	100	100	100	100	100				
cM capacity (veh/h)	948	840	1017	876	840	1085	1555	1623				
Direction, Lane #	EB 1	WB 1	NB 1	SB 1								
Volume Total	32	0	0	51								
Volume Left	0	0	0	0								
Volume Right	32	0	0	0								
cSH	1017	1700	1700	1623								
Volume to Capacity	0.03	0.00	0.00	0.00								
Queue Length 95th (m)	0.7	0.0	0.0	0.0								
Control Delay (s)	8.7	0.0	0.0	0.0								
Lane LOS	A	A										
Approach Delay (s)	8.7	0.0	0.0	0.0								
Approach LOS	A	A										
Intersection Summary												
Average Delay				3.3								
Intersection Capacity Utilization	13.3%			ICU Level of Service					A			
Analysis Period (min)	15											

Lanes, Volumes, Timings
208: East Street F & East Street B

Total (2031) - Scenario A Phase 1 - 2% Growth Rate
Timing Plan: AM Peak Hour

	EBL	EBR	NBL	NBT	SBT	SBR
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	1.00	1.00	1.00
Fit						
Fit Protected						
Satd. Flow (prot)	1863	0	0	1863	1863	0
Fit Permitted						
Satd. Flow (perm)	1863	0	0	1863	1863	0
Link Speed (k/h)	50			50	50	
Link Distance (m)	185.7			112.6	119.9	
Travel Time (s)	13.4			8.1	8.6	
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			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	25			15
Sign Control	Stop			Free	Free	

Intersection Summary

Area Type: Other
Control Type: Unsignalized
Intersection Capacity Utilization 0.0% ICU Level of Service A
Analysis Period (min) 15

HCM Unsignalized Intersection Capacity Analysis (2031) - Scenario A Phase 1 - 2% Growth Rate
208: East Street F & East Street B

Timing Plan: AM Peak Hour

	EBL	EBR	NBL	NBT	SBT	SBR
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	↔	↔	↔	↔	↔	↔
Traffic Volume (veh/h)	0	0	0	0	0	0
Future Volume (Veh/h)	0	0	0	0	0	0
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	0	0	0	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	0	0	0			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	0	0	0			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	100	100	100			
cM capacity (veh/h)	1023	1085	1623			

Direction, Lane #	EB 1	NB 1	SB 1
Volume Total	0	0	0
Volume Left	0	0	0
Volume Right	0	0	0
cSH	1700	1700	1700
Volume to Capacity	0.00	0.00	0.00
Queue Length 95th (m)	0.0	0.0	0.0
Control Delay (s)	0.0	0.0	0.0
Lane LOS	A		
Approach Delay (s)	0.0	0.0	0.0
Approach LOS	A		

Intersection Summary

Average Delay 0.0
Intersection Capacity Utilization 0.0% ICU Level of Service A
Analysis Period (min) 15

Lanes, Volumes, Timings Total (2031) - Scenario A Phase 1 - 2% Growth Rate
 209: William Halton Parkway & East Street D Timing Plan: AM Peak Hour

						
Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		 	 	 		 
Traffic Volume (vph)	0	1214	617	26	0	156
Future Volume (vph)	0	1214	617	26	0	156
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (m)	0.0			50.0	0.0	0.0
Storage Lanes	0			1	0	1
Taper Length (m)	7.5				7.5	
Lane Util. Factor	1.00	0.95	0.95	1.00	1.00	1.00
Frt				0.850		0.865
Flt Protected						
Satd. Flow (prot)	0	3539	3539	1583	0	1611
Flt Permitted						
Satd. Flow (perm)	0	3539	3539	1583	0	1611
Link Speed (k/h)		50	50		50	
Link Distance (m)		204.1	194.7		111.4	
Travel Time (s)		14.7	14.0		8.0	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	1320	671	28	0	170
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	1320	671	28	0	170
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(m)		3.6	3.6		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	25	15
Sign Control		Free	Free		Stop	
Intersection Summary						
Area Type:	Other					
Control Type:	Unsignalized					
Intersection Capacity Utilization 36.9%	ICU Level of Service A					
Analysis Period (min) 15						

HCM Unsignalized Intersection Capacity Analysis (2031) - Scenario A Phase 1 - 2% Growth Rate
 209: William Halton Parkway & East Street D Timing Plan: AM Peak Hour

						
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		 	 	 		 
Traffic Volume (veh/h)	0	1214	617	26	0	156
Future Volume (Veh/h)	0	1214	617	26	0	156
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)	0	1320	671	28	0	170
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		None	None			
Median storage (veh)						
Upstream signal (m)		204	195			
pX, platoon unblocked	1.00				0.79	1.00
vC, conflicting volume	699				1331	336
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	688				865	323
tC, single (s)	4.1				6.8	6.9
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	100				100	75
cM capacity (veh/h)	898				232	670
Direction, Lane #	EB 1	EB 2	WB 1	WB 2	WB 3	SB 1
Volume Total	660	660	336	336	28	170
Volume Left	0	0	0	0	0	0
Volume Right	0	0	0	0	28	170
cSH	1700	1700	1700	1700	1700	670
Volume to Capacity	0.39	0.39	0.20	0.20	0.02	0.25
Queue Length 95th (m)	0.0	0.0	0.0	0.0	0.0	7.5
Control Delay (s)	0.0	0.0	0.0	0.0	0.0	12.2
Lane LOS						B
Approach Delay (s)	0.0		0.0			12.2
Approach LOS						B
Intersection Summary						
Average Delay			0.9			
Intersection Capacity Utilization			36.9%		ICU Level of Service	A
Analysis Period (min)			15			

Lanes, Volumes, Timings Total (2031) - Scenario A Phase 1 - 2% Growth Rate
 210: William Halton Parkway & East Street E Timing Plan: AM Peak Hour

	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations	↰	↱	↱	↰	↰	↰
Traffic Volume (vph)	0	1173	643	0	76	0
Future Volume (vph)	0	1173	643	0	76	0
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						
Flt Protected					0.950	
Satd. Flow (prot)	1863	3539	3539	1863	1770	0
Flt Permitted					0.950	
Satd. Flow (perm)	1863	3539	3539	1863	1770	0
Right Turn on Red				Yes		Yes
Satd. Flow (RTOR)						
Link Speed (k/h)		50	50		50	
Link Distance (m)		194.7	188.1		114.3	
Travel Time (s)		14.0	13.5		8.2	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	1275	699	0	83	0
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	1275	699	0	83	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
Number of Detectors	1	2	2	1	1	
Detector Template	Left	Thru	Thru	Right	Left	
Leading Detector (m)	2.0	10.0	10.0	2.0	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)	2.0	0.6	0.6	2.0	2.0	
Detector 1 Type	CI+Ex	CI+Ex	CI+Ex	CI+Ex	CI+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		CI+Ex	CI+Ex			
Detector 2 Channel						
Detector 2 Extend (s)		0.0	0.0			
Turn Type	pm+pt	NA	NA	Perm	Prot	
Protected Phases	7	4	8		6	
Permitted Phases	4			8		

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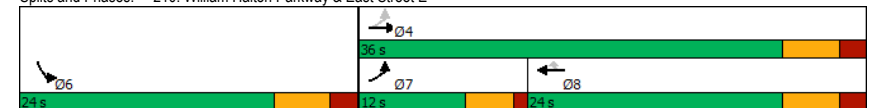
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Lanes, Volumes, Timings Total (2031) - Scenario A Phase 1 - 2% Growth Rate
 210: William Halton Parkway & East Street E Timing Plan: AM Peak Hour

	EBL	EBT	WBT	WBR	SBL	SBR
Detector Phase	7	4	8	8	6	
Switch Phase						
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	
Minimum Split (s)	9.5	24.0	24.0	24.0	24.0	
Total Split (s)	12.0	36.0	24.0	24.0	24.0	
Total Split (%)	20.0%	60.0%	40.0%	40.0%	40.0%	
Maximum Green (s)	7.5	30.0	18.0	18.0	18.0	
Yellow Time (s)	3.5	4.0	4.0	4.0	4.0	
All-Red Time (s)	1.0	2.0	2.0	2.0	2.0	
Lost Time Adjust (s)	1.0	-2.0	-2.0	-2.0	-2.0	
Total Lost Time (s)	5.5	4.0	4.0	4.0	4.0	
Lead/Lag	Lead		Lag	Lag		
Lead-Lag Optimize?	Yes		Yes	Yes		
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	
Recall Mode	None	Max	Max	Max	None	
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)		44.9	44.9		10.1	
Actuated g/C Ratio		0.80	0.80		0.18	
v/c Ratio		0.45	0.25		0.26	
Control Delay		4.4	3.3		21.8	
Queue Delay		0.0	0.0		0.0	
Total Delay		4.4	3.3		21.8	
LOS		A	A		C	
Approach Delay		4.4	3.3		21.8	
Approach LOS		A	A		C	

Intersection Summary	
Area Type:	Other
Cycle Length: 60	
Actuated Cycle Length: 56	
Natural Cycle: 60	
Control Type: Semi Act-Uncoord	
Maximum v/c Ratio: 0.45	
Intersection Signal Delay: 4.7	Intersection LOS: A
Intersection Capacity Utilization 43.3%	ICU Level of Service A
Analysis Period (min) 15	

Splits and Phases: 210: William Halton Parkway & East Street E



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Queues Total (2031) - Scenario A Phase 1 - 2% Growth Rate
 210: William Halton Parkway & East Street E Timing Plan: AM Peak Hour

	→	←	↘
Lane Group	EBT	WBT	SBL
Lane Group Flow (vph)	1275	699	83
v/c Ratio	0.45	0.25	0.26
Control Delay	4.4	3.3	21.8
Queue Delay	0.0	0.0	0.0
Total Delay	4.4	3.3	21.8
Queue Length 50th (m)	27.2	11.8	8.9
Queue Length 95th (m)	45.1	20.5	15.2
Internal Link Dist (m)	170.7	164.1	90.3
Turn Bay Length (m)			
Base Capacity (vph)	2839	2839	638
Starvation Cap Reductn	0	0	0
Spillback Cap Reductn	0	0	0
Storage Cap Reductn	0	0	0
Reduced v/c Ratio	0.45	0.25	0.13
Intersection Summary			

HCM Signalized Intersection Capacity Analysis Total (2031) - Scenario A Phase 1 - 2% Growth Rate
 210: William Halton Parkway & East Street E Timing Plan: AM Peak Hour

	↖	→	←	↙	↘	↗
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations	↘	↖↗	↖↗	↖	↘	↗
Traffic Volume (vph)	0	1173	643	0	76	0
Future Volume (vph)	0	1173	643	0	76	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0	4.0		4.0	
Lane Util. Factor		0.95	0.95		1.00	
Frt		1.00	1.00		1.00	
Flt Protected		1.00	1.00		0.95	
Satd. Flow (prot)		3539	3539		1770	
Flt Permitted		1.00	1.00		0.95	
Satd. Flow (perm)		3539	3539		1770	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	1275	699	0	83	0
RTOR Reduction (vph)	0	0	0	0	0	0
Lane Group Flow (vph)	0	1275	699	0	83	0
Turn Type	pm+pt	NA	NA	Perm	Prot	
Protected Phases	7	4	8		6	
Permitted Phases	4			8		
Actuated Green, G (s)		41.1	41.1		5.4	
Effective Green, g (s)		43.1	43.1		7.4	
Actuated g/C Ratio		0.74	0.74		0.13	
Clearance Time (s)		6.0	6.0		6.0	
Vehicle Extension (s)		3.0	3.0		3.0	
Lane Grp Cap (vph)		2607	2607		223	
v/s Ratio Prot		c0.36	0.20		c0.05	
v/s Ratio Perm						
v/c Ratio		0.49	0.27		0.37	
Uniform Delay, d1		3.2	2.5		23.4	
Progression Factor		1.00	1.00		1.00	
Incremental Delay, d2		0.7	0.3		1.0	
Delay (s)		3.8	2.8		24.5	
Level of Service		A	A		C	
Approach Delay (s)		3.8	2.8		24.5	
Approach LOS		A	A		C	
Intersection Summary						
HCM 2000 Control Delay		4.3		HCM 2000 Level of Service		A
HCM 2000 Volume to Capacity ratio		0.53				
Actuated Cycle Length (s)		58.5		Sum of lost time (s)		13.5
Intersection Capacity Utilization		43.3%		ICU Level of Service		A
Analysis Period (min)		15				

c Critical Lane Group

Lanes, Volumes, Timings Total (2031) - Scenario A Phase 1 - 2% Growth Rate
 211: William Halton Parkway & East Street F Timing Plan: AM Peak Hour

						
Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	0	1249	643	0	0	0
Future Volume (vph)	0	1249	643	0	0	0
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						
Fit Protected						
Satd. Flow (prot)	1863	3539	3539	1863	1863	0
Fit Permitted						
Satd. Flow (perm)	1863	3539	3539	1863	1863	0
Link Speed (k/h)		50	50		50	
Link Distance (m)		188.1	219.2		112.6	
Travel Time (s)		13.5	15.8		8.1	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	1358	699	0	0	0
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	1358	699	0	0	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 37.9%	ICU Level of Service A					
Analysis Period (min) 15						

HCM Unsignalized Intersection Capacity Analysis (2031) - Scenario A Phase 1 - 2% Growth Rate
 211: William Halton Parkway & East Street F Timing Plan: AM Peak Hour

							
Movement	EBL	EBT	WBT	WBR	SBL	SBR	
Lane Configurations							
Traffic Volume (veh/h)	0	1249	643	0	0	0	
Future Volume (Veh/h)	0	1249	643	0	0	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)	0	1358	699	0	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)	188						
pX, platoon unblocked					0.84		
vC, conflicting volume	699				1378	350	
vC1, stage 1 conf vol							
vC2, stage 2 conf vol							
vCu, unblocked vol	699				1079	350	
tC, single (s)	4.1				6.8	6.9	
tC, 2 stage (s)							
tF (s)	2.2				3.5	3.3	
p0 queue free %	100				100	100	
cM capacity (veh/h)	893				180	647	
Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	WB 3	SB 1
Volume Total	0	679	679	350	350	0	0
Volume Left	0	0	0	0	0	0	0
Volume Right	0	0	0	0	0	0	0
cSH	1700	1700	1700	1700	1700	1700	1700
Volume to Capacity	0.00	0.40	0.40	0.21	0.21	0.00	0.00
Queue Length 95th (m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Control Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Lane LOS							A
Approach Delay (s)	0.0				0.0	0.0	
Approach LOS							A
Intersection Summary							
Average Delay	0.0						
Intersection Capacity Utilization	37.9%			ICU Level of Service		A	
Analysis Period (min)	15						

Lanes, Volumes, Timings

Total (2031) - Scenario A Phase 1 - 2% Growth Rate

212: West Street A & Transit Station

Timing Plan: AM Peak Hour

	WBL	WBR	NBT	NBR	SBL	SBT
Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	WBL	WBR	NBT	NBR	SBL	SBT
Traffic Volume (vph)	140	0	0	178	0	0
Future Volume (vph)	140	0	0	178	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt			0.865			
Flt Protected	0.950					
Satd. Flow (prot)	1770	0	1611	0	0	1863
Flt Permitted	0.950					
Satd. Flow (perm)	1770	0	1611	0	0	1863
Link Speed (k/h)	50		50			50
Link Distance (m)	70.0		239.0			98.7
Travel Time (s)	5.0		17.2			7.1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	152	0	0	193	0	0
Shared Lane Traffic (%)						
Lane Group Flow (vph)	152	0	193	0	0	0
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 25.4%	ICU Level of Service A
Analysis Period (min) 15	

HCM Unsignalized Intersection Capacity Analysis (2031) - Scenario A Phase 1 - 2% Growth Rate

212: West Street A & Transit Station

Timing Plan: AM Peak Hour

	WBL	WBR	NBT	NBR	SBL	SBT
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	WBL	WBR	NBT	NBR	SBL	SBT
Traffic Volume (veh/h)	140	0	0	178	0	0
Future Volume (Veh/h)	140	0	0	178	0	0
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)	152	0	0	193	0	0
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None					
Median storage (veh)						
Upstream signal (m)	213					
pX, platoon unblocked						
vC, conflicting volume	0		304	0	497	304
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	0		304	0	497	304
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 %	91		100	82	100	100
cM capacity (veh/h)	1623		552	1085	369	552

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	152	193	0
Volume Left	152	0	0
Volume Right	0	193	0
cSH	1623	1085	1700
Volume to Capacity	0.09	0.18	0.00
Queue Length 95th (m)	2.3	4.8	0.0
Control Delay (s)	7.4	9.0	0.0
Lane LOS	A	A	A
Approach Delay (s)	7.4	9.0	0.0
Approach LOS	A	A	A

Intersection Summary	
Average Delay	8.3
Intersection Capacity Utilization 25.4%	ICU Level of Service A
Analysis Period (min) 15	

Lanes, Volumes, Timings Total (2031) - Scenario A Phase 1 - 2% Growth Rate
 213: West Street A & William Halton Parkway Timing Plan: AM Peak Hour

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	1184	21	0	545	98	0	0	83	0	0	9
Future Volume (vph)	0	1184	21	0	545	98	0	0	83	0	0	9
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		1	0		1	0		1	0		1
Taper Length (m)	7.5			7.5			7.5			7.5		
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt			0.850			0.850			0.865			0.865
Flt Protected												
Satd. Flow (prot)	0	3539	1583	0	3539	1583	0	0	1611	0	0	1611
Flt Permitted												
Satd. Flow (perm)	0	3539	1583	0	3539	1583	0	0	1611	0	0	1611
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		202.0			209.3			100.4			239.0	
Travel Time (s)		14.5			15.1			7.2			17.2	
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	1287	23	0	592	107	0	0	90	0	0	10
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	1287	23	0	592	107	0	0	90	0	0	10
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 44.5%	ICU Level of Service A											
Analysis Period (min) 15												

HCM Unsignalized Intersection Capacity Analysis (2031) - Scenario A Phase 1 - 2% Growth Rate
 213: West Street A & William Halton Parkway Timing Plan: AM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	1184	21	0	545	98	0	0	83	0	0	9
Future Volume (Veh/h)	0	1184	21	0	545	98	0	0	83	0	0	9
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	1287	23	0	592	107	0	0	90	0	0	10
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			209								
pX, platoon unblocked	0.91			0.75			0.80	0.80	0.75	0.80	0.80	0.91
vC, conflicting volume	699			1310			1593	1986	644	1326	1902	296
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	465			761			725	1216	0	391	1111	21
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	89	100	100	99
cM capacity (veh/h)	992			639			248	144	818	387	166	954
Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	WB 3	NB 1	SB 1				
Volume Total	644	644	23	296	296	107	90	10				
Volume Left	0	0	0	0	0	0	0	0				
Volume Right	0	0	23	0	0	107	90	10				
cSH	1700	1700	1700	1700	1700	1700	818	954				
Volume to Capacity	0.38	0.38	0.01	0.17	0.17	0.06	0.11	0.01				
Queue Length 95th (m)	0.0	0.0	0.0	0.0	0.0	0.0	2.8	0.2				
Control Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	9.9	8.8				
Lane LOS							A	A				
Approach Delay (s)	0.0			0.0			9.9	8.8				
Approach LOS							A	A				
Intersection Summary												
Average Delay				0.5								
Intersection Capacity Utilization				44.5%			ICU Level of Service			A		
Analysis Period (min)				15								

Lanes, Volumes, Timings

Total (2031) - Scenario A Phase 1 - 2% Growth Rate

214: West Street D & William Halton Parkway

Timing Plan: AM Peak Hour

	←	→	↙	↘	←	↙	↘	→	↙	↘	→	↙	↘
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations	↙	↕	↘	↙	↕	↘	↙	↕	↘	↙	↕	↘	
Traffic Volume (vph)	0	1205	0	59	495	0	6	0	0	0	0	0	
Future Volume (vph)	0	1205	0	59	495	0	6	0	0	0	0	0	
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		0.0	50.0		0.0	
Storage Lanes	1		0	1		1	1		0	1		0	
Taper Length (m)	100.0			100.0			75.0			75.0			
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Flt													
Flt Protected				0.950			0.950						
Satd. Flow (prot)	1863	3539	1863	1770	3539	1863	1770	1863	0	1863	1863	0	
Flt Permitted				0.125									
Satd. Flow (perm)	1863	3539	1863	233	3539	1863	1863	1863	0	1863	1863	0	
Right Turn on Red			Yes			Yes			Yes			Yes	
Satd. Flow (RTOR)													
Link Speed (k/h)		50			50			50			50		
Link Distance (m)		241.6			202.0			103.2			133.4		
Travel Time (s)		17.4			14.5			7.4			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)	0	1310	0	64	538	0	7	0	0	0	0	0	
Shared Lane Traffic (%)													
Lane Group Flow (vph)	0	1310	0	64	538	0	7	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	1	2	1	1	2		1	2		
Detector Template	Left	Thru	Right	Left	Thru	Right	Left	Thru		Left	Thru		
Leading Detector (m)	2.0	10.0	2.0	2.0	10.0	2.0	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		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	2.0	0.6	2.0	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		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	pm+pt	NA	Perm	Perm			Perm			
Protected Phases		4			3		8		2		6		
Permitted Phases	4		4	8		8	2			6			

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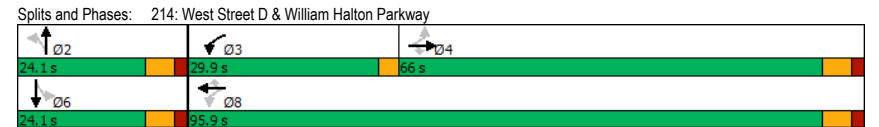
Lanes, Volumes, Timings

Total (2031) - Scenario A Phase 1 - 2% Growth Rate

214: West Street D & William Halton Parkway

Timing Plan: AM Peak Hour

	←	→	↙	↘	←	↙	↘	→	↙	↘	→	↙	↘
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Detector Phase	4	4	4	3	8	8	2	2		6	6		
Switch Phase													
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0		5.0	5.0		
Minimum Split (s)	24.0	24.0	24.0	9.5	24.0	24.0	24.0	24.0		24.0	24.0		
Total Split (s)	66.0	66.0	66.0	29.9	95.9	95.9	24.1	24.1		24.1	24.1		
Total Split (%)	55.0%	55.0%	55.0%	24.9%	79.9%	79.9%	20.1%	20.1%		20.1%	20.1%		
Maximum Green (s)	60.0	60.0	60.0	26.9	89.9	89.9	18.1	18.1		18.1	18.1		
Yellow Time (s)	4.0	4.0	4.0	3.0	4.0	4.0	4.0	4.0		4.0	4.0		
All-Red Time (s)	2.0	2.0	2.0	0.0	2.0	2.0	2.0	2.0		2.0	2.0		
Lost Time Adjust (s)	-2.0	-2.0	-2.0	1.0	-2.0	-2.0	-2.0	-2.0		-2.0	-2.0		
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0		4.0	4.0		
Lead/Lag	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	Max	Max	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	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 Effect Green (s)		62.2			92.2	95.5		8.1					
Actuated g/C Ratio		0.63			0.94	0.97		0.08					
v/c Ratio		0.59			0.10	0.16		0.05					
Control Delay		12.7			1.0	0.6		44.0					
Queue Delay		0.0			0.0	0.0		0.0					
Total Delay		12.7			1.0	0.6		44.0					
LOS		B			A			D					
Approach Delay		12.7			0.6			44.0					
Approach LOS		B			A			D					
Intersection Summary													
Area Type:		Other											
Cycle Length: 120													
Actuated Cycle Length: 98.6													
Natural Cycle: 60													
Control Type: Semi Act-Uncoord													
Maximum v/c Ratio: 0.59													
Intersection Signal Delay: 9.0								Intersection LOS: A					
Intersection Capacity Utilization 51.6%								ICU Level of Service A					
Analysis Period (min) 15													



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Queues
214: West Street D & William Halton Parkway

Total (2031) - Scenario A Phase 1 - 2% Growth Rate
Timing Plan: AM Peak Hour

	→	↖	←	↗
Lane Group	EBT	WBL	WBT	NBL
Lane Group Flow (vph)	1310	64	538	7
v/c Ratio	0.59	0.10	0.16	0.05
Control Delay	12.7	1.0	0.6	44.0
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	12.7	1.0	0.6	44.0
Queue Length 50th (m)	63.7	0.0	0.0	1.2
Queue Length 95th (m)	116.1	3.3	10.5	5.8
Internal Link Dist (m)	217.6		178.0	
Turn Bay Length (m)		50.0		50.0
Base Capacity (vph)	2231	622	3426	380
Starvation Cap Reductn	0	0	0	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.59	0.10	0.16	0.02
Intersection Summary				

HCM Signalized Intersection Capacity Analysis (2031) - Scenario A Phase 1 - 2% Growth Rate
214: West Street D & William Halton Parkway

Timing Plan: AM Peak Hour

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	1205	0	59	495	0	6	0	0	0	0	0
Future Volume (vph)	0	1205	0	59	495	0	6	0	0	0	0	0
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					
Lane Util. Factor		0.95		1.00	0.95		1.00					
Flt		1.00		1.00	1.00		1.00					
Flt Protected		1.00		0.95	1.00		0.95					
Satd. Flow (prot)		3539		1770	3539		1770					
Flt Permitted		1.00		0.12	1.00		1.00					
Satd. Flow (perm)		3539		233	3539		1863					
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	1310	0	64	538	0	7	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	1310	0	64	538	0	7	0	0	0	0	0
Turn Type	Perm	NA	Perm	pm+pt	NA	Perm	Perm			Perm		
Protected Phases		4		3	8		2		2		6	
Permitted Phases	4		4	8		8	2			6		
Actuated Green, G (s)		60.2		90.2	90.2		1.3					
Effective Green, g (s)		62.2		89.2	92.2		3.3					
Actuated g/C Ratio		0.60		0.86	0.89		0.03					
Clearance Time (s)		6.0		3.0	6.0		6.0					
Vehicle Extension (s)		3.0		3.0	3.0		3.0					
Lane Grp Cap (vph)		2126		586	3152		59					
v/s Ratio Prot		c0.37		0.03	c0.15							
v/s Ratio Perm				0.07			c0.00					
v/c Ratio		0.62		0.11	0.17		0.12					
Uniform Delay, d1		13.1		4.8	0.7		48.7					
Progression Factor		1.00		1.00	1.00		1.00					
Incremental Delay, d2		1.3		0.4	0.1		0.9					
Delay (s)		14.4		5.2	0.8		49.6					
Level of Service		B		A	A		D					
Approach Delay (s)		14.4			1.3		49.6				0.0	
Approach LOS		B			A		D				A	
Intersection Summary												
HCM 2000 Control Delay			10.4			HCM 2000 Level of Service				B		
HCM 2000 Volume to Capacity ratio			0.47									
Actuated Cycle Length (s)			103.5			Sum of lost time (s)				12.0		
Intersection Capacity Utilization			51.6%			ICU Level of Service				A		
Analysis Period (min)			15									
c Critical Lane Group												

c Critical Lane Group

Lanes, Volumes, Timings

Total (2031) - Scenario A Phase 1 - 2% Growth Rate

215: West Street A & West Street B

Timing Plan: AM Peak Hour

	EBL	EBR	NBL	NBT	SBT	SBR
Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	↔	↔	↔	↔	↔	↔
Traffic Volume (vph)	30	29	0	0	40	6
Future Volume (vph)	30	29	0	0	40	6
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	0.934				0.981	
Flt Protected	0.975					
Satd. Flow (prot)	1696	0	0	1863	1827	0
Flt Permitted	0.975					
Satd. Flow (perm)	1696	0	0	1863	1827	0
Link Speed (k/h)	50			50	50	
Link Distance (m)	202.8			106.4	100.4	
Travel Time (s)	14.6			7.7	7.2	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	33	32	0	0	43	7
Shared Lane Traffic (%)						
Lane Group Flow (vph)	65	0	0	0	50	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
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	25			15
Sign Control	Stop			Free	Free	

Intersection Summary		
Area Type:	Other	
Control Type:	Unsignalized	
Intersection Capacity Utilization	13.4%	ICU Level of Service A
Analysis Period (min)	15	

HCM Unsignalized Intersection Capacity Analysis (2031) - Scenario A Phase 1 - 2% Growth Rate

215: West Street A & West Street B

Timing Plan: AM Peak Hour

	EBL	EBR	NBL	NBT	SBT	SBR
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	↔	↔	↔	↔	↔	↔
Traffic Volume (veh/h)	30	29	0	0	40	6
Future Volume (Veh/h)	30	29	0	0	40	6
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)	33	32	0	0	43	7
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	None	
Median storage (veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	46	46	50			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	46	46	50			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	97	97	100			
cM capacity (veh/h)	963	1023	1557			

Direction, Lane #	EB 1	NB 1	SB 1
Volume Total	65	0	50
Volume Left	33	0	0
Volume Right	32	0	7
cSH	992	1700	1700
Volume to Capacity	0.07	0.00	0.03
Queue Length 95th (m)	1.6	0.0	0.0
Control Delay (s)	8.9	0.0	0.0
Lane LOS	A		
Approach Delay (s)	8.9	0.0	0.0
Approach LOS	A		

Intersection Summary			
Average Delay	5.0		
Intersection Capacity Utilization	13.4%	ICU Level of Service	A
Analysis Period (min)	15		

Lanes, Volumes, Timings

216: West Street D & West Street B

Total (2031) - Scenario A Phase 1 - 2% Growth Rate

Timing Plan: AM Peak Hour

	←	←	↑	↗	↘	↓
Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	↔		↔			↔
Traffic Volume (vph)	0	6	0	0	59	0
Future Volume (vph)	0	6	0	0	59	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.865					
Flt Protected						0.950
Satd. Flow (prot)	1611	0	1863	0	0	1770
Flt Permitted						0.950
Satd. Flow (perm)	1611	0	1863	0	0	1770
Link Speed (k/h)	50		50			50
Link Distance (m)	202.8		99.7			103.2
Travel Time (s)	14.6		7.2			7.4
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	7	0	0	64	0
Shared Lane Traffic (%)						
Lane Group Flow (vph)	7	0	0	0	0	64
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
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		15	25	
Sign Control	Stop		Free			Free

Intersection Summary

Area Type: Other

Control Type: Unsignalized

Intersection Capacity Utilization 13.3%

ICU Level of Service A

Analysis Period (min) 15

HCM Unsignalized Intersection Capacity Analysis

216: West Street D & West Street B

Total (2031) - Scenario A Phase 1 - 2% Growth Rate

Timing Plan: AM Peak Hour

	←	←	↑	↗	↘	↓
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	↔		↔			↔
Traffic Volume (veh/h)	0	6	0	0	59	0
Future Volume (Veh/h)	0	6	0	0	59	0
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	7	0	0	64	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)						103
pX, platoon unblocked						
vC, conflicting volume	128	0			0	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	128	0			0	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	100	99			96	
cM capacity (veh/h)	832	1085			1623	

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	7	0	64
Volume Left	0	0	64
Volume Right	7	0	0
cSH	1085	1700	1623
Volume to Capacity	0.01	0.00	0.04
Queue Length 95th (m)	0.1	0.0	0.9
Control Delay (s)	8.3	0.0	7.3
Lane LOS	A		A
Approach Delay (s)	8.3	0.0	7.3
Approach LOS	A		

Intersection Summary

Average Delay 7.4

Intersection Capacity Utilization 13.3%

ICU Level of Service

A

Analysis Period (min) 15

Lanes, Volumes, Timings
217: West Street C & West Street A

Total (2031) - Scenario A Phase 1 - 2% Growth Rate

Timing Plan: AM Peak Hour

	EBL	EBT	WBT	WBR	SBL	SBR
Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↔	↔		↔	↔
Traffic Volume (vph)	0	0	0	99	40	0
Future Volume (vph)	0	0	0	99	40	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.865				
Flt Protected					0.950	
Satd. Flow (prot)	0	1863	1611	0	1770	0
Flt Permitted					0.950	
Satd. Flow (perm)	0	1863	1611	0	1770	0
Link Speed (k/h)		50	50		50	
Link Distance (m)		208.6	202.4		106.4	
Travel Time (s)		15.0	14.6		7.7	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	0	0	108	43	0
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	0	108	0	43	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	16.1%
Analysis Period (min)	15
	ICU Level of Service A

HCM Unsignalized Intersection Capacity Analysis (2031) - Scenario A Phase 1 - 2% Growth Rate
217: West Street C & West Street A

Timing Plan: AM Peak Hour

	EBL	EBT	WBT	WBR	SBL	SBR
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↔	↔		↔	↔
Traffic Volume (veh/h)	0	0	0	99	40	0
Future Volume (Veh/h)	0	0	0	99	40	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)	0	0	0	108	43	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	108				54	54
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	108				54	54
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	100				95	100
cM capacity (veh/h)	1483				954	1013

Direction, Lane #	EB 1	WB 1	SB 1
Volume Total	0	108	43
Volume Left	0	0	43
Volume Right	0	108	0
cSH	1700	1700	954
Volume to Capacity	0.00	0.06	0.05
Queue Length 95th (m)	0.0	0.0	1.1
Control Delay (s)	0.0	0.0	9.0
Lane LOS			A
Approach Delay (s)	0.0	0.0	9.0
Approach LOS			A

Intersection Summary

Average Delay		2.5	
Intersection Capacity Utilization	16.1%		ICU Level of Service A
Analysis Period (min)		15	

Lanes, Volumes, Timings
218: West Street D & West Street C

Total (2031) - Scenario A Phase 1 - 2% Growth Rate

Timing Plan: AM Peak Hour

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔			↔			↔			↔	
Traffic Volume (vph)	0	0	0	82	0	75	0	24	12	111	74	0
Future Volume (vph)	0	0	0	82	0	75	0	24	12	111	74	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					0.935			0.955				
Flt Protected					0.975						0.971	
Satd. Flow (prot)	0	1863	0	0	1698	0	0	1779	0	0	1809	0
Flt Permitted					0.975						0.971	
Satd. Flow (perm)	0	1863	0	0	1698	0	0	1779	0	0	1809	0
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		258.7			208.6			93.0			99.7	
Travel Time (s)		18.6			15.0			6.7			7.2	
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	0	89	0	82	0	26	13	121	80	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	0	0	0	171	0	0	39	0	0	201	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 32.5% ICU Level of Service A

Analysis Period (min) 15

HCM Unsignalized Intersection Capacity Analysis (2031) - Scenario A Phase 1 - 2% Growth Rate
218: West Street D & West Street C

Timing Plan: AM Peak Hour

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Movement		↔			↔			↔			↔	
Lane Configurations		↔			↔			↔			↔	
Traffic Volume (veh/h)	0	0	0	82	0	75	0	24	12	111	74	0
Future Volume (Veh/h)	0	0	0	82	0	75	0	24	12	111	74	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)	0	0	0	89	0	82	0	26	13	121	80	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	82			0			259	260	0	245	219	41
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	82			0			259	260	0	245	219	41
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			95			100	96	99	81	88	100
cM capacity (veh/h)	1515			1623			602	609	1085	649	642	1030
Direction, Lane #	EB 1	WB 1	NB 1	SB 1								
Volume Total	0	171	39	201								
Volume Left	0	89	0	121								
Volume Right	0	82	13	0								
cSH	1700	1623	714	646								
Volume to Capacity	0.00	0.05	0.05	0.31								
Queue Length 95th (m)	0.0	1.3	1.3	9.9								
Control Delay (s)	0.0	4.0	10.3	13.1								
Lane LOS		A	B	B								
Approach Delay (s)	0.0	4.0	10.3	13.1								
Approach LOS			B	B								
Intersection Summary												
Average Delay			9.0									
Intersection Capacity Utilization		32.5%		ICU Level of Service					A			
Analysis Period (min)			15									

Lanes, Volumes, Timings

TT (2031) - Scenario A Phase 1 - 2% Growth Rate

101: Trafalgar Rd & Lower Base Line

Timing Plan: PM Peak Hour

	←	→	↙	↘	↖	↗	↖	↗	↖	↗	↖	↗
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖	↖	↖	↖	↖	↖	↖	↖	↖	↖	↖	↖
Traffic Volume (vph)	44	197	63	274	556	302	378	1956	287	251	1390	101
Future Volume (vph)	44	197	63	274	556	302	378	1956	287	251	1390	101
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	45.0		45.0	110.0		110.0	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	0.200			0.354			0.076			0.076		
Satd. Flow (perm)	373	3412	0	659	3352	0	142	5085	1583	142	5085	1583
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		25			68				127			95
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	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	44	197	63	274	556	302	378	1956	287	251	1390	101
Shared Lane Traffic (%)												
Lane Group Flow (vph)	44	260	0	274	858	0	378	1956	287	251	1390	101
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	CI+Ex	CI+Ex		CI+Ex	CI+Ex		CI+Ex	CI+Ex	CI+Ex	CI+Ex	CI+Ex	CI+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		CI+Ex			CI+Ex			CI+Ex			CI+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	pm+ov	pm+pt	NA	pm+ov
Protected Phases	7	4		3	8		5	2	3	1	6	7
Permitted Phases	4			8			2		2	6		6

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Lanes, Volumes, Timings

TT (2031) - Scenario A Phase 1 - 2% Growth Rate

101: Trafalgar Rd & Lower Base Line

Timing Plan: PM Peak Hour

	←	→	↙	↘	↖	↗	↖	↗	↖	↗	↖	↗
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector Phase	7	4		3	8		5	2	3	1	6	7
Switch Phase												
Minimum Initial (s)	5.0	10.0		7.0	10.0		5.0	25.0	7.0	7.0	25.0	5.0
Minimum Split (s)	11.6	22.5		13.6	22.5		11.6	31.6	13.6	13.6	31.6	11.6
Total Split (s)	11.6	22.6		27.0	38.0		31.0	71.4	27.0	19.0	59.4	11.6
Total Split (%)	8.3%	16.1%		19.3%	27.1%		22.1%	51.0%	19.3%	13.6%	42.4%	8.3%
Maximum Green (s)	5.0	16.4		24.0	31.8		28.0	64.8	24.0	16.0	52.8	5.0
Yellow Time (s)	4.6	4.2		3.0	4.2		3.0	4.6	3.0	3.0	4.6	4.6
All-Red Time (s)	2.0	2.0		0.0	2.0		0.0	2.0	0.0	0.0	2.0	2.0
Lost Time Adjust (s)	1.0	-2.2		1.0	-2.2		1.0	-2.2	1.0	1.0	-2.2	-2.2
Total Lost Time (s)	7.6	4.0		4.0	4.0		4.0	4.4	4.0	4.0	4.4	4.4
Lead/Lag	Lead	Lag		Lead	Lag		Lead	Lag	Lead	Lag	Lead	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	0.2	0.2	5.0	3.0
Recall Mode	None	None		None	None		None	Max	None	Max	Max	None
Act Effct Green (s)	23.6	23.2		45.6	34.0		86.4	67.0	89.8	71.1	55.7	67.3
Actuated g/C Ratio	0.17	0.17		0.33	0.24		0.62	0.48	0.64	0.51	0.40	0.48
v/c Ratio	0.43	0.44		0.76	0.99		0.96	0.80	0.27	1.02	0.69	0.12
Control Delay	52.1	51.2		52.4	77.0		77.3	34.2	6.0	103.6	37.2	4.7
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	52.1	51.2		52.4	77.0		77.3	34.2	6.0	103.6	37.2	4.7
LOS	D	D		D	E		E	C	A	F	D	A
Approach Delay		51.3			71.1			37.3			44.9	
Approach LOS		D			E			D			D	

Intersection Summary

Area Type: Other

Cycle Length: 140

Actuated Cycle Length: 140

Natural Cycle: 85

Control Type: Semi Act-Uncooord

Maximum v/c Ratio: 1.02

Intersection Signal Delay: 46.9

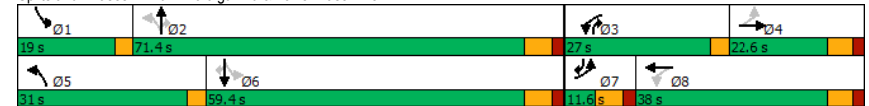
Intersection LOS: D

Intersection Capacity Utilization 97.6%

ICU Level of Service F

Analysis Period (min) 15

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

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Queues
101: Trafalgar Rd & Lower Base Line

TT (2031) - Scenario A Phase 1 - 2% Growth Rate
Timing Plan: PM Peak Hour

	EBL	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	44	260	274	858	378	1956	287	251	1390	101
v/c Ratio	0.43	0.44	0.76	0.99	0.96	0.80	0.27	1.02	0.69	0.12
Control Delay	52.1	51.2	52.4	77.0	77.3	34.2	6.0	103.6	37.2	4.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	52.1	51.2	52.4	77.0	77.3	34.2	6.0	103.6	37.2	4.7
Queue Length 50th (m)	8.7	30.9	59.7	115.8	84.8	162.6	16.2	~56.3	115.3	0.9
Queue Length 95th (m)	18.0	46.5	86.5	#159.5	#144.8	181.8	26.1	#110.3	132.0	10.6
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)	102	586	397	865	401	2433	1108	246	2022	810
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	0.43	0.44	0.69	0.99	0.94	0.80	0.26	1.02	0.69	0.12

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.

HCM Signalized Intersection Capacity Analysis (2031) - Scenario A Phase 1 - 2% Growth Rate
101: Trafalgar Rd & Lower Base Line

Timing Plan: PM Peak Hour

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰	↱	↱	↰	↱	↱	↰	↱	↱	↰	↱	↱
Traffic Volume (vph)	44	197	63	274	556	302	378	1956	287	251	1390	101
Future Volume (vph)	44	197	63	274	556	302	378	1956	287	251	1390	101
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	7.6	4.0		4.0	4.0		4.0	4.4	4.0	4.0	4.4	4.4
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	0.20	1.00		0.35	1.00		0.08	1.00	1.00	0.08	1.00	1.00
Satd. Flow (perm)	373	3411		660	3352		142	5085	1583	142	5085	1583
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	44	197	63	274	556	302	378	1956	287	251	1390	101
RTOR Reduction (vph)	0	21	0	0	51	0	0	0	52	0	0	52
Lane Group Flow (vph)	44	239	0	274	807	0	378	1956	235	251	1390	49
Turn Type	pm+pt	NA		pm+pt	NA		pm+pt	NA	pm+ov	pm+pt	NA	pm+ov
Protected Phases	7	4		3	8		5	2	3	1	6	7
Permitted Phases	4			8			2		2	6		6
Actuated Green, G (s)	26.0	21.0		43.4	31.8		83.8	64.8	84.2	69.5	53.5	58.5
Effective Green, g (s)	24.0	23.2		42.4	34.0		82.8	67.0	82.2	67.5	55.7	62.9
Actuated g/C Ratio	0.17	0.17		0.30	0.24		0.59	0.48	0.59	0.48	0.40	0.45
Clearance Time (s)	6.6	6.2		3.0	6.2		3.0	6.6	3.0	3.0	6.6	6.6
Vehicle Extension (s)	3.0	5.0		0.2	5.0		3.0	5.0	0.2	0.2	5.0	3.0
Lane Grp Cap (vph)	103	565		345	814		389	2433	929	242	2023	760
v/s Ratio Prot	0.01	0.07		c0.10	c0.24		c0.18	0.38	0.03	0.11	0.27	0.00
v/s Ratio Perm	0.06			0.14			0.39		0.11	c0.39		0.03
v/c Ratio	0.43	0.42		0.79	0.99		0.97	0.80	0.25	1.04	0.69	0.06
Uniform Delay, d1	50.2	52.4		40.7	52.8		44.0	30.9	14.0	42.7	34.9	21.9
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	2.8	1.1		11.1	29.2		38.0	2.9	0.1	67.9	1.9	0.0
Delay (s)	53.1	53.5		51.8	82.1		82.0	33.9	14.1	110.6	36.9	21.9
Level of Service	D	D		D	F		F	C	B	F	D	C
Approach Delay (s)		53.4			74.8			38.6			46.6	
Approach LOS		D			E			D			D	

Intersection Summary

HCM 2000 Control Delay	48.9	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	1.01		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	20.0
Intersection Capacity Utilization	97.6%	ICU Level of Service	F
Analysis Period (min)	15		

c Critical Lane Group

Lanes, Volumes, Timings TT (2031) - Scenario A Phase 1 - 2% Growth Rate
102: Trafalgar Rd & North Carpool Lot/Hwy 407 WB Off Timing Plan: PM Peak Hour

	←	→	↖	↗	↖	↗	↖	↗	↖	↗	↖	↗
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔		↖	↔	↖	↖	↖		↖	↖	↖
Traffic Volume (vph)	6	0	40	472	13	143	7	2471	0	0	1724	4
Future Volume (vph)	6	0	40	472	13	143	7	2471	0	0	1724	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	0.883				0.992	0.850						0.850
Flt Protected	0.994			0.950	0.957		0.950					
Satd. Flow (prot)	0	1635	0	1681	1609	1504	1770	5085	0	0	5085	1583
Flt Permitted	0.994			0.727	0.716		0.079					
Satd. Flow (perm)	0	1635	0	1287	1204	1504	147	5085	0	0	5085	1583
Right Turn on Red		Yes			Yes			Yes			Yes	
Satd. Flow (RTOR)		78			3	97						70
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	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	6	0	40	472	13	143	7	2471	0	0	1724	4
Shared Lane Traffic (%)				47%		10%						
Lane Group Flow (vph)	0	46	0	250	249	129	7	2471	0	0	1724	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	CI+Ex	CI+Ex		CI+Ex	CI+Ex	CI+Ex	CI+Ex	CI+Ex			CI+Ex	CI+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		CI+Ex			CI+Ex			CI+Ex				CI+Ex
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0				0.0
Turn Type	Split	NA		Perm	NA	Perm	Perm	NA		NA	Perm	Perm
Protected Phases	4	4			8			2			6	
Permitted Phases				8		8	2					6

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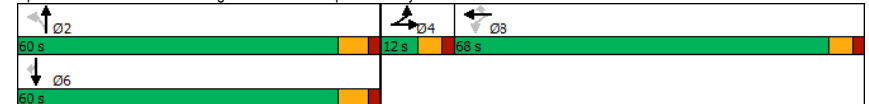
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Lanes, Volumes, Timings TT (2031) - Scenario A Phase 1 - 2% Growth Rate
102: Trafalgar Rd & North Carpool Lot/Hwy 407 WB Off Timing Plan: PM Peak Hour

	←	→	↖	↗	↖	↗	↖	↗	↖	↗	↖	↗
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)	6.0	6.0		7.0	7.0	7.0	20.0	20.0			20.0	20.0
Minimum Split (s)	12.0	12.0		22.5	22.5	22.5	27.0	27.0			27.0	27.0
Total Split (s)	12.0	12.0		68.0	68.0	68.0	60.0	60.0			60.0	60.0
Total Split (%)	8.6%	8.6%		48.6%	48.6%	48.6%	42.9%	42.9%			42.9%	42.9%
Maximum Green (s)	6.0	6.0		62.0	62.0	62.0	53.0	53.0			53.0	53.0
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	-3.0	-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 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)	8.1			29.1	29.1	29.1	56.9	56.9			56.9	56.9
Actuated g/C Ratio	0.08			0.28	0.28	0.28	0.55	0.55			0.55	0.55
v/c Ratio	0.23			0.69	0.73	0.26	0.09	0.88			0.62	0.00
Control Delay	6.3			43.7	46.4	10.3	19.4	27.6			19.1	0.0
Queue Delay	0.0			0.0	0.0	0.0	0.0	0.0			0.0	0.0
Total Delay	6.3			43.7	46.4	10.3	19.4	27.6			19.1	0.0
LOS	A			D	D	B	B	C			B	A
Approach Delay	6.3				37.9			27.6			19.1	
Approach LOS	A				D			C			B	

Intersection Summary												
Area Type:	Other											
Cycle Length: 140												
Actuated Cycle Length: 103.3												
Natural Cycle: 90												
Control Type: Actuated-Uncoordinated												
Maximum v/c Ratio: 0.88												
Intersection Signal Delay: 25.7	Intersection LOS: C											
Intersection Capacity Utilization 75.9%	ICU Level of Service D											
Analysis Period (min) 15												

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



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Queues TT (2031) - Scenario A Phase 1 - 2% Growth Rate
102: Trafalgar Rd & North Carpool Lot/Hwy 407 WB Off Timing Plan: PM Peak Hour

	→	↖	←	↗	↖	↑	↓	↗
Lane Group	EBT	WBL	WBT	WBR	NBL	NBT	SBT	SBR
Lane Group Flow (vph)	46	250	249	129	7	2471	1724	4
v/c Ratio	0.23	0.69	0.73	0.26	0.09	0.88	0.62	0.00
Control Delay	6.3	43.7	46.4	10.3	19.4	27.6	19.1	0.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	6.3	43.7	46.4	10.3	19.4	27.6	19.1	0.0
Queue Length 50th (m)	0.0	47.6	49.6	5.0	0.7	160.3	86.8	0.0
Queue Length 95th (m)	4.0	74.9	79.3	18.6	4.1	#251.1	130.7	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)	200	810	759	983	80	2802	2802	903
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	0.31	0.33	0.13	0.09	0.88	0.62	0.00

Intersection Summary

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

HCM Signalized Intersection Capacity Analysis (2031) - Scenario A Phase 1 - 2% Growth Rate
102: Trafalgar Rd & North Carpool Lot/Hwy 407 WB Off Timing Plan: PM Peak Hour

	↖	→	↗	↖	←	↗	↖	↑	↗	↓	↖	
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔		↖	↔	↗	↖	↕			↕	↗
Traffic Volume (vph)	6	0	40	472	13	143	7	2471	0	0	1724	4
Future Volume (vph)	6	0	40	472	13	143	7	2471	0	0	1724	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)		1633		1681	1609	1504	1770	5085			5085	1583
Flt Permitted		0.99		0.73	0.72	1.00	0.08	1.00			1.00	1.00
Satd. Flow (perm)		1633		1287	1204	1504	147	5085			5085	1583
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	6	0	40	472	13	143	7	2471	0	0	1724	4
RTOR Reduction (vph)	0	43	0	0	2	70	0	0	0	0	0	2
Lane Group Flow (vph)	0	3	0	250	247	59	7	2471	0	0	1724	2
Turn Type	Split	NA		Perm	NA	Perm	Perm	NA			NA	Perm
Protected Phases	4	4			8		2				6	
Permitted Phases				8		8	2					6
Actuated Green, G (s)		4.6		27.0	27.0	27.0	53.9	53.9			53.9	53.9
Effective Green, g (s)		6.6		29.0	29.0	29.0	56.9	56.9			56.9	56.9
Actuated g/C Ratio		0.06		0.28	0.28	0.28	0.54	0.54			0.54	0.54
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)		103		357	334	417	80	2768			2768	861
v/s Ratio Prot		c0.00						c0.49			0.34	
v/s Ratio Perm				0.19	c0.21	0.04	0.05					0.00
v/c Ratio		0.03		0.70	0.74	0.14	0.09	0.89			0.62	0.00
Uniform Delay, d1		45.9		33.9	34.3	28.4	11.4	21.1			16.4	10.9
Progression Factor		1.00		1.00	1.00	1.00	1.00	1.00			1.00	1.00
Incremental Delay, d2		0.1		6.3	8.6	0.2	2.1	4.9			1.1	0.0
Delay (s)		46.1		40.2	42.9	28.6	13.5	26.0			17.5	10.9
Level of Service		D		D	D	C	B	C			B	B
Approach Delay (s)		46.1			38.9			26.0			17.5	
Approach LOS		D			D			C			B	
Intersection Summary												
HCM 2000 Control Delay			24.8		HCM 2000 Level of Service					C		
HCM 2000 Volume to Capacity ratio			0.80									
Actuated Cycle Length (s)			104.5		Sum of lost time (s)					14.0		
Intersection Capacity Utilization			75.9%		ICU Level of Service					D		
Analysis Period (min)			15									
c Critical Lane Group												

Lanes, Volumes, Timings
103: Trafalgar Rd & Hwy 407 EB Off

TT (2031) - Scenario A Phase 1 - 2% Growth Rate

Timing Plan: PM Peak Hour

	EBL	EBR	NBL	NBT	SBT	SBR
Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	↩	↩		↩↩↩	↩↩↩	
Traffic Volume (vph)	71	171	0	2758	2069	0
Future Volume (vph)	71	171	0	2758	2069	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			251.9	363.6	
Travel Time (s)	39.9			18.1	26.2	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	71	171	0	2758	2069	0
Shared Lane Traffic (%)						
Lane Group Flow (vph)	71	171	0	2758	2069	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	CI+Ex	CI+Ex		CI+Ex	CI+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				CI+Ex	CI+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	

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Lanes, Volumes, Timings
103: Trafalgar Rd & Hwy 407 EB Off

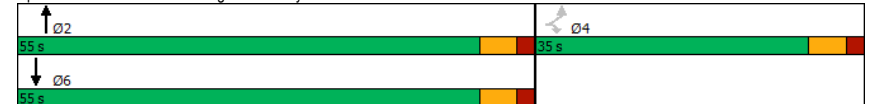
TT (2031) - Scenario A Phase 1 - 2% Growth Rate

Timing Plan: PM Peak Hour

	EBL	EBR	NBL	NBT	SBT	SBR
Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Minimum Split (s)	24.0	24.0		24.0	24.0	
Total Split (s)	35.0	35.0		55.0	55.0	
Total Split (%)	38.9%	38.9%		61.1%	61.1%	
Maximum Green (s)	29.0	29.0		49.0	49.0	
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)	15.2	15.2		54.2	54.2	
Actuated g/C Ratio	0.20	0.20		0.70	0.70	
v/c Ratio	0.20	0.54		0.77	0.58	
Control Delay	25.6	32.4		10.3	7.2	
Queue Delay	0.0	0.0		0.0	0.0	
Total Delay	25.6	32.4		10.3	7.2	
LOS	C	C		B	A	
Approach Delay	30.4			10.3	7.2	
Approach LOS	C			B	A	

Intersection Summary	
Area Type:	Other
Cycle Length: 90	
Actuated Cycle Length: 77.4	
Natural Cycle: 65	
Control Type: Semi Act-Uncoord	
Maximum v/c Ratio: 0.77	
Intersection Signal Delay: 10.0	Intersection LOS: B
Intersection Capacity Utilization 64.1%	ICU Level of Service C
Analysis Period (min) 15	

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



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Queues TT (2031) - Scenario A Phase 1 - 2% Growth Rate
103: Trafalgar Rd & Hwy 407 EB Off Timing Plan: PM Peak Hour

	EBL	EBR	NBT	SBT
Lane Group	EBL	EBR	NBT	SBT
Lane Group Flow (vph)	71	171	2758	2069
v/c Ratio	0.20	0.54	0.77	0.58
Control Delay	25.6	32.4	10.3	7.2
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	25.6	32.4	10.3	7.2
Queue Length 50th (m)	8.2	20.2	77.5	44.9
Queue Length 95th (m)	17.8	37.2	126.9	73.4
Internal Link Dist (m)	530.6		227.9	339.6
Turn Bay Length (m)				
Base Capacity (vph)	710	639	3559	3559
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	0.10	0.27	0.77	0.58
Intersection Summary				

HCM Signalized Intersection Capacity Analysis TT (2031) - Scenario A Phase 1 - 2% Growth Rate
103: Trafalgar Rd & Hwy 407 EB Off Timing Plan: PM Peak Hour

						
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations				  	  	
Traffic Volume (vph)	71	171	0	2758	2069	0
Future Volume (vph)	71	171	0	2758	2069	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	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	71	171	0	2758	2069	0
RTOR Reduction (vph)	0	6	0	0	0	0
Lane Group Flow (vph)	71	165	0	2758	2069	0
Turn Type	Perm	Perm		NA	NA	
Protected Phases				2	6	
Permitted Phases	4	4				
Actuated Green, G (s)	13.2	13.2		52.2	52.2	
Effective Green, g (s)	15.2	15.2		54.2	54.2	
Actuated g/C Ratio	0.20	0.20		0.70	0.70	
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)	347	310		3560	3560	
v/s Ratio Prot				c0.54	0.41	
v/s Ratio Perm	0.04	c0.10				
v/c Ratio	0.20	0.53		0.77	0.58	
Uniform Delay, d1	26.0	27.9		7.6	5.9	
Progression Factor	1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.3	1.8		1.7	0.7	
Delay (s)	26.3	29.7		9.3	6.6	
Level of Service	C	C		A	A	
Approach Delay (s)	28.7			9.3	6.6	
Approach LOS	C			A	A	
Intersection Summary						
HCM 2000 Control Delay			9.1	HCM 2000 Level of Service		A
HCM 2000 Volume to Capacity ratio			0.74			
Actuated Cycle Length (s)			77.4	Sum of lost time (s)		10.0
Intersection Capacity Utilization			64.1%	ICU Level of Service		C
Analysis Period (min)			15			
c Critical Lane Group						

Lanes, Volumes, Timings TT (2031) - Scenario A Phase 1 - 2% Growth Rate
104: Trafalgar Rd & West Street A/East Street A Timing Plan: PM Peak Hour

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰	↑	↱	↰	↑	↱	↰	↑	↱	↰	↑	↱
Traffic Volume (vph)	244	31	118	0	0	369	16	2658	226	287	1820	133
Future Volume (vph)	244	31	118	0	0	369	16	2658	226	287	1820	133
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	90.0		90.0	90.0		90.0
Storage Lanes	1		1	1		1	1		1	1		1
Taper Length (m)	75.0		75.0			100.0			100.0			
Lane Util. Factor	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			
Satd. Flow (prot)	1770	1863	1583	1863	1863	1583	1770	5085	1583	1770	5085	1583
Flt Permitted	0.950					0.115			0.045			
Satd. Flow (perm)	1770	1863	1583	1863	1863	1583	214	5085	1583	84	5085	1583
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			118			44			216			133
Link Speed (k/h)		50			50			80			80	
Link Distance (m)		216.0			205.9			233.3			251.9	
Travel Time (s)		15.6			14.8			10.5			11.3	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	244	31	118	0	0	369	16	2658	226	287	1820	133
Shared Lane Traffic (%)												
Lane Group Flow (vph)	244	31	118	0	0	369	16	2658	226	287	1820	133
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	pm+pt	NA	Perm	pm+pt		pm+ov	pm+pt	NA	pm+ov	pm+pt	NA	pm+ov
Protected Phases	7	4		3	8	1	5	2	3	1	6	7
Permitted Phases	4		4	8		8	2		2	6		6

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Lanes, Volumes, Timings TT (2031) - Scenario A Phase 1 - 2% Growth Rate
104: Trafalgar Rd & West Street A/East Street A Timing Plan: PM Peak Hour

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector Phase	7	4	4	3	8	1	5	2	3	1	6	7
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)	9.5	24.0	24.0	9.5	24.0	11.0	9.5	24.0	9.5	11.0	24.0	9.5
Total Split (s)	10.0	24.3	24.3	9.7	24.0	25.0	9.5	91.0	9.7	25.0	106.5	10.0
Total Split (%)	6.7%	16.2%	16.2%	6.5%	16.0%	16.7%	6.3%	60.7%	6.5%	16.7%	71.0%	6.7%
Maximum Green (s)	7.0	18.3	18.3	6.7	18.0	22.0	6.5	85.0	6.7	22.0	100.5	7.0
Yellow Time (s)	3.0	4.0	4.0	3.0	4.0	3.0	3.0	4.0	3.0	3.0	4.0	3.0
All-Red Time (s)	0.0	2.0	2.0	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
Lost Time Adjust (s)	1.0	-2.0	-2.0	1.0	-2.0	-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	1.0	4.0	4.0	1.0	4.0	4.0	1.0
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lead	Lead	Lag	Lead	Lag	Lag	Lead
Lead-Lag Optimize?	Yes	Yes	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	3.0	3.0
Recall Mode	None	None	None	None	None	Max	None	C-Max	None	Max	C-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 Effect Green (s)	18.8	10.3	10.3			35.2	91.8	87.0	98.5	123.2	119.6	146.0
Actuated g/C Ratio	0.13	0.07	0.07			0.23	0.61	0.58	0.66	0.82	0.80	0.97
v/c Ratio	1.10	0.24	0.54			0.91	0.09	0.90	0.20	0.67	0.45	0.09
Control Delay	148.7	69.7	19.9			76.3	7.1	33.1	1.8	48.0	5.7	0.2
Queue Delay	0.0	0.0	0.0			0.0	0.0	31.7	0.0	0.0	0.2	0.0
Total Delay	148.7	69.7	19.9			76.3	7.1	64.8	1.8	48.0	6.0	0.2
LOS	F	E	B			E	A	E	A	D	A	A
Approach Delay		103.8			76.3			59.6			11.0	
Approach LOS		F			E			E			B	

Intersection Summary

Area Type: Other

Cycle Length: 150

Actuated Cycle Length: 150

Offset: 0 (0%), Referenced to phase 2:NBT and 6:SBTL, Start of Green

Natural Cycle: 110

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 1.10

Intersection Signal Delay: 45.1

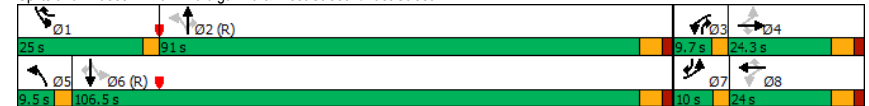
Intersection LOS: D

Intersection Capacity Utilization 97.7%

ICU Level of Service F

Analysis Period (min) 15

Splits and Phases: 104: Trafalgar Rd & West Street A/East Street A



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Queues TT (2031) - Scenario A Phase 1 - 2% Growth Rate
104: Trafalgar Rd & West Street A/East Street A Timing Plan: PM Peak Hour

	EBL	EBT	EBR	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group	EBL	EBT	EBR	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	244	31	118	369	16	2658	226	287	1820	133
v/c Ratio	1.10	0.24	0.54	0.91	0.09	0.90	0.20	0.67	0.45	0.09
Control Delay	148.7	69.7	19.9	76.3	7.1	33.1	1.8	48.0	5.7	0.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	31.7	0.0	0.0	0.2	0.0
Total Delay	148.7	69.7	19.9	76.3	7.1	64.8	1.8	48.0	6.0	0.2
Queue Length 50th (m)	~82.4	8.8	0.0	95.0	0.9	242.3	1.0	60.5	44.2	0.0
Queue Length 95th (m)	#120.8	19.1	18.9	#166.4	2.3	263.9	9.7	97.3	81.9	0.7
Internal Link Dist (m)	192.0		50.0		209.3		90.0		227.9	
Turn Bay Length (m)	50.0	50.0		50.0	90.0	90.0		90.0	90.0	
Base Capacity (vph)	222	252	316	405	189	2949	1124	430	4054	1544
Starvation Cap Reductn	0	0	0	0	0	458	0	0	1177	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	1.10	0.12	0.37	0.91	0.08	1.07	0.20	0.67	0.63	0.09

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.

HCM Signalized Intersection Capacity Analysis (2031) - Scenario A Phase 1 - 2% Growth Rate
104: Trafalgar Rd & West Street A/East Street A Timing Plan: PM Peak Hour

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰	↑	↱	↰	↑	↱	↰	↑	↱	↰	↑	↱
Traffic Volume (vph)	244	31	118	0	0	369	16	2658	226	287	1820	133
Future Volume (vph)	244	31	118	0	0	369	16	2658	226	287	1820	133
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			1.0	4.0	4.0	1.0	4.0	4.0	1.0
Lane Util. Factor	1.00	1.00	1.00			1.00	1.00	0.91	1.00	1.00	0.91	1.00
Flt	1.00	1.00	0.85			0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00			1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1770	1863	1583			1583	1770	5085	1583	1770	5085	1583
Flt Permitted	0.95	1.00	1.00			1.00	0.12	1.00	1.00	0.05	1.00	1.00
Satd. Flow (perm)	1770	1863	1583			1583	214	5085	1583	85	5085	1583
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	244	31	118	0	0	369	16	2658	226	287	1820	133
RTOR Reduction (vph)	0	0	110	0	0	34	0	0	80	0	0	9
Lane Group Flow (vph)	244	31	8	0	0	335	16	2658	146	287	1820	124
Turn Type	pm+pt	NA	Perm	pm+pt		pm+ov	pm+pt	NA	pm+ov	pm+pt	NA	pm+ov
Protected Phases	7	4		3	8	1	5	2	3	1	6	7
Permitted Phases	4		4	8		8	2		2	6		6
Actuated Green, G (s)	19.8	8.3	8.3			33.2	87.4	85.0	90.5	121.2	115.8	135.6
Effective Green, g (s)	18.8	10.3	10.3			35.2	85.4	87.0	94.5	120.2	117.8	139.6
Actuated g/C Ratio	0.13	0.07	0.07			0.23	0.57	0.58	0.63	0.80	0.79	0.93
Clearance Time (s)	3.0	6.0	6.0			3.0	3.0	6.0	3.0	3.0	6.0	3.0
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)	221	127	108			371	136	2949	997	429	3993	1473
v/s Ratio Prot	c0.14	0.02				c0.21	0.00	c0.52	0.01	0.14	0.36	0.01
v/s Ratio Perm			0.01				0.07		0.08	0.39		0.07
v/c Ratio	1.10	0.24	0.08			0.90	0.12	0.90	0.15	0.67	0.46	0.08
Uniform Delay, d1	65.6	66.2	65.4			55.8	15.0	27.7	11.3	45.3	5.4	0.4
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	91.2	1.0	0.3			24.5	0.4	5.0	0.1	8.0	0.4	0.0
Delay (s)	156.8	67.2	65.7			80.2	15.4	32.7	11.4	53.4	5.8	0.4
Level of Service	F	E	E			F	B	C	B	D	A	A
Approach Delay (s)	122.4		80.2		31.0		11.5					
Approach LOS	F		F		C		B					

Intersection Summary

HCM 2000 Control Delay	32.8	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.97		
Actuated Cycle Length (s)	150.0	Sum of lost time (s)	16.0
Intersection Capacity Utilization	97.7%	ICU Level of Service	F
Analysis Period (min)	15		
c Critical Lane Group			

Lanes, Volumes, Timings
105: Trafalgar Rd & William Halton Parkway

TT (2031) - Scenario A Phase 1 - 2% Growth Rate

Timing Plan: PM Peak Hour

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↩	↩	↩	↩	↩	↩	↩	↩	↩	↩	↩	↩
Traffic Volume (vph)	394	410	87	337	1209	449	448	2248	91	328	1538	284
Future Volume (vph)	394	410	87	337	1209	449	448	2248	91	328	1538	284
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	0.098			0.442			0.087			0.095		
Satd. Flow (perm)	183	3539	1583	823	3539	1583	162	5085	1583	177	5085	1583
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			94			213			73			192
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		212.9			205.0			193.0			233.3	
Travel Time (s)		15.3			14.8			13.9			16.8	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	394	410	87	337	1209	449	448	2248	91	328	1538	284
Shared Lane Traffic (%)												
Lane Group Flow (vph)	394	410	87	337	1209	449	448	2248	91	328	1538	284
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

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Lanes, Volumes, Timings
105: Trafalgar Rd & William Halton Parkway

TT (2031) - Scenario A Phase 1 - 2% Growth Rate

Timing Plan: PM Peak Hour

	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)	14.0	38.0	38.0	14.2	38.0	38.0	13.9	42.9	42.9	13.9	42.9	42.9
Total Split (s)	31.0	46.2	46.2	29.8	45.0	45.0	24.0	56.0	56.0	18.0	50.0	50.0
Total Split (%)	20.7%	30.8%	30.8%	19.9%	30.0%	30.0%	16.0%	37.3%	37.3%	12.0%	33.3%	33.3%
Maximum Green (s)	28.0	39.2	39.2	26.8	38.0	38.0	21.0	49.1	49.1	15.0	43.1	43.1
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)	0.0	3.3	3.3	0.0	3.3	3.3	0.0	2.3	2.3	0.0	2.3	2.3
Lost Time Adjust (s)	1.0	-3.0	-3.0	1.0	-3.0	-3.0	1.0	-2.9	-2.9	1.0	-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	Max	Max	Max	Max	Max	Max
Walk Time (s)		7.0	7.0		7.0	7.0		7.0	7.0		7.0	7.0
Flash Dont Walk (s)		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 Effect Green (s)	70.9	46.1	46.1	62.9	41.0	41.0	70.0	52.0	52.0	60.0	46.0	46.0
Actuated g/C Ratio	0.47	0.31	0.31	0.42	0.27	0.27	0.47	0.35	0.35	0.40	0.31	0.31
v/c Ratio	1.06	0.38	0.16	0.70	1.25	0.76	1.54	1.28	0.15	1.50	0.99	0.46
Control Delay	106.0	42.7	6.9	34.0	165.7	35.3	293.6	168.9	10.7	277.9	71.1	15.9
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	106.0	42.7	6.9	34.0	165.7	35.3	293.6	168.9	10.7	277.9	71.1	15.9
LOS	F	D	A	C	F	D	F	F	B	F	E	B
Approach Delay		67.2			114.1			183.8			95.4	
Approach LOS		E			F			F			F	

Intersection Summary

Area Type: Other

Cycle Length: 150

Actuated Cycle Length: 150

Natural Cycle: 130

Control Type: Semi Act-Uncoord

Maximum v/c Ratio: 1.54

Intersection Signal Delay: 128.4

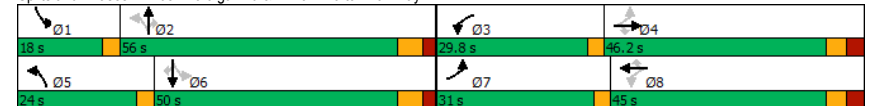
Intersection LOS: F

Intersection Capacity Utilization 130.2%

ICU Level of Service H

Analysis Period (min) 15

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



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Queues TT (2031) - Scenario A Phase 1 - 2% Growth Rate
105: Trafalgar Rd & William Halton Parkway Timing Plan: PM Peak Hour

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	394	410	87	337	1209	449	448	2248	91	328	1538	284
v/c Ratio	1.06	0.38	0.16	0.70	1.25	0.76	1.54	1.28	0.15	1.50	0.99	0.46
Control Delay	106.0	42.7	6.9	34.0	165.7	35.3	293.6	168.9	10.7	277.9	71.1	15.9
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	106.0	42.7	6.9	34.0	165.7	35.3	293.6	168.9	10.7	277.9	71.1	15.9
Queue Length 50th (m)	~109.1	50.2	0.0	62.5	~232.3	67.0	~168.8	~304.6	3.5	~116.8	164.8	20.0
Queue Length 95th (m)	#176.0	67.4	11.4	87.1	#274.2	110.3	#236.0	#331.1	15.7	#177.8	#198.2	46.7
Internal Link Dist (m)	188.9			181.0			169.0			209.3		
Turn Bay Length (m)	100.0		100.0	100.0		150.0	150.0		75.0			
Base Capacity (vph)	372	1086	551	529	967	587	290	1762	596	219	1559	618
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	1.06	0.38	0.16	0.64	1.25	0.76	1.54	1.28	0.15	1.50	0.99	0.46

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.

HCM Signalized Intersection Capacity Analysis TT (2031) - Scenario A Phase 1 - 2% Growth Rate
105: Trafalgar Rd & William Halton Parkway Timing Plan: PM Peak Hour

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰	↰	↰	↰	↰	↰	↰	↰	↰	↰	↰	↰
Traffic Volume (vph)	394	410	87	337	1209	449	448	2248	91	328	1538	284
Future Volume (vph)	394	410	87	337	1209	449	448	2248	91	328	1538	284
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	0.10	1.00	1.00	0.44	1.00	1.00	0.09	1.00	1.00	0.10	1.00	1.00
Satd. Flow (perm)	182	3539	1583	823	3539	1583	162	5085	1583	177	5085	1583
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	394	410	87	337	1209	449	448	2248	91	328	1538	284
RTOR Reduction (vph)	0	0	60	0	0	155	0	0	48	0	0	133
Lane Group Flow (vph)	394	410	27	337	1209	294	448	2248	43	328	1538	151
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)	69.0	43.1	43.1	60.9	38.0	38.0	67.1	49.1	49.1	58.1	43.1	43.1
Effective Green, g (s)	68.0	46.1	46.1	58.9	41.0	41.0	66.1	52.0	52.0	56.1	46.0	46.0
Actuated g/C Ratio	0.45	0.31	0.31	0.39	0.27	0.27	0.44	0.35	0.35	0.37	0.31	0.31
Clearance Time (s)	3.0	7.0	7.0	3.0	7.0	7.0	3.0	6.9	6.9	3.0	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	1087	486	461	967	432	285	1762	548	214	1559	485
v/s Ratio Prot	c0.19	0.12		0.11	c0.34		c0.21	0.44		0.14	0.30	
v/s Ratio Perm	0.29		0.02	0.18		0.19	c0.48		0.03	0.43		0.10
v/c Ratio	1.07	0.38	0.06	0.73	1.25	0.68	1.57	1.28	0.08	1.53	0.99	0.31
Uniform Delay, d1	48.3	40.7	36.6	34.3	54.5	48.7	48.3	49.0	32.9	44.1	51.7	39.9
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	67.0	0.5	0.1	5.9	121.3	5.6	273.7	128.7	0.3	261.9	19.8	1.7
Delay (s)	115.3	41.2	36.7	40.2	175.8	54.3	322.0	177.7	33.2	306.0	71.5	41.5
Level of Service	F	D	D	D	F	D	F	F	C	F	E	D
Approach Delay (s)		73.5			125.5			196.2			103.3	
Approach LOS		E			F			F			F	

Intersection Summary

HCM 2000 Control Delay	138.7	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	1.36		
Actuated Cycle Length (s)	150.0	Sum of lost time (s)	16.0
Intersection Capacity Utilization	130.2%	ICU Level of Service	H
Analysis Period (min)	15		

c Critical Lane Group

Lanes, Volumes, Timings TT (2031) - Scenario A Phase 1 - 2% Growth Rate
106: Trafalgar Rd & Burnhamthorpe Rd/Burnhamthorpe Rd Timing Plan: PM Peak Hour

	←	→	↖	↗	←	→	↖	↗	←	→	↖	↗
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖	↖		↖	↖		↖	↖	↖	↖	↖	↖
Traffic Volume (vph)	135	278	15	111	244	444	82	1953	119	252	1240	206
Future Volume (vph)	135	278	15	111	244	444	82	1953	119	252	1240	206
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	1.00	1.00	1.00	1.00	1.00	1.00	0.91	1.00	1.00	0.91	1.00
Frt		0.992			0.903				0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1770	1848	0	1770	1682	0	1770	5085	1583	1770	5085	1583
Flt Permitted	0.137			0.339			0.161			0.095		
Satd. Flow (perm)	255	1848	0	631	1682	0	300	5085	1583	177	5085	1583
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		2			86				99			206
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	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	135	278	15	111	244	444	82	1953	119	252	1240	206
Shared Lane Traffic (%)												
Lane Group Flow (vph)	135	293	0	111	688	0	82	1953	119	252	1240	206
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	pm+ov	pm+pt	NA	pm+ov
Protected Phases	7	4		3	8		5	2	3	1	6	7
Permitted Phases	4			8			2		2	6		6

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Lanes, Volumes, Timings TT (2031) - Scenario A Phase 1 - 2% Growth Rate
106: Trafalgar Rd & Burnhamthorpe Rd/Burnhamthorpe Rd Timing Plan: PM Peak Hour

	←	→	↖	↗	←	→	↖	↗	←	→	↖	↗
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector Phase	7	4		3	8		5	2	3	1	6	7
Switch Phase												
Minimum Initial (s)	5.0	10.0		5.0	10.0		5.0	20.0	5.0	7.0	20.0	5.0
Minimum Split (s)	9.5	24.0		9.5	24.0		9.5	26.0	9.5	11.5	26.0	9.5
Total Split (s)	10.0	36.2		11.8	38.0		9.6	45.0	11.8	17.0	52.4	10.0
Total Split (%)	9.1%	32.9%		10.7%	34.5%		8.7%	40.9%	10.7%	15.5%	47.6%	9.1%
Maximum Green (s)	7.0	30.2		8.8	32.0		6.6	39.0	8.8	14.0	46.4	7.0
Yellow Time (s)	3.0	3.7		3.0	3.7		3.0	4.6	3.0	3.0	4.6	3.0
All-Red Time (s)	0.0	2.3		0.0	2.3		0.0	1.4	0.0	0.0	1.4	0.0
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	1.0	4.0	4.0	1.0
Lead/Lag	Lead	Lag		Lead	Lag		Lead	Lag	Lead	Lag	Lag	Lead
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	Max	None		Max	None		Max	Max	Max	Max	Max	Max
Act Effct Green (s)	38.2	32.2		41.8	34.0		46.6	41.0	55.8	58.0	48.4	61.4
Actuated g/C Ratio	0.35	0.29		0.38	0.31		0.42	0.37	0.51	0.53	0.44	0.56
v/c Ratio	0.79	0.54		0.35	1.19		0.41	1.03	0.14	0.90	0.55	0.21
Control Delay	55.9	36.9		24.5	132.2		20.1	63.5	4.4	59.3	24.0	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	55.9	36.9		24.5	132.2		20.1	63.5	4.4	59.3	24.0	2.1
LOS	E	D		C	F		C	E	A	E	C	A
Approach Delay		42.9			117.3			58.5			26.6	
Approach LOS		D			F			E			C	

Intersection Summary

Area Type: Other

Cycle Length: 110

Actuated Cycle Length: 110

Natural Cycle: 110

Control Type: Semi Act-Uncooord

Maximum v/c Ratio: 1.19

Intersection Signal Delay: 55.8

Intersection LOS: E

Intersection Capacity Utilization 112.6%

ICU Level of Service H

Analysis Period (min) 15

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



I/O Trafalgar Oakville TIS
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Queues TT (2031) - Scenario A Phase 1 - 2% Growth Rate
106: Trafalgar Rd & Burhamthorpe Rd/Burnhamthorpe Rd Timing Plan: PM Peak Hour

	EBL	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	135	293	111	688	82	1953	119	252	1240	206
v/c Ratio	0.79	0.54	0.35	1.19	0.41	1.03	0.14	0.90	0.55	0.21
Control Delay	55.9	36.9	24.5	132.2	20.1	63.5	4.4	59.3	24.0	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	55.9	36.9	24.5	132.2	20.1	63.5	4.4	59.3	24.0	2.1
Queue Length 50th (m)	18.3	51.7	14.8	~163.3	8.2	~162.7	2.0	36.4	69.5	0.0
Queue Length 95th (m)	#42.1	78.2	26.5	#232.6	15.8	#191.6	10.8	#81.4	83.1	9.6
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	
Base Capacity (vph)	171	542	320	579	201	1895	851	281	2237	974
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	0.79	0.54	0.35	1.19	0.41	1.03	0.14	0.90	0.55	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.

HCM Signalized Intersection Capacity Analysis (2031) - Scenario A Phase 1 - 2% Growth Rate
106: Trafalgar Rd & Burhamthorpe Rd/Burnhamthorpe Rd Timing Plan: PM Peak Hour

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰	↱		↰	↱		↰	↱	↱	↰	↱	↱
Traffic Volume (vph)	135	278	15	111	244	444	82	1953	119	252	1240	206
Future Volume (vph)	135	278	15	111	244	444	82	1953	119	252	1240	206
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	1.0	4.0	4.0	1.0
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	0.99		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	1848		1770	1682		1770	5085	1583	1770	5085	1583
Flt Permitted	0.14	1.00		0.34	1.00		0.16	1.00	1.00	0.10	1.00	1.00
Satd. Flow (perm)	255	1848		631	1682		299	5085	1583	177	5085	1583
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	135	278	15	111	244	444	82	1953	119	252	1240	206
RTOR Reduction (vph)	0	1	0	0	59	0	0	0	52	0	0	99
Lane Group Flow (vph)	135	292	0	111	629	0	82	1953	67	252	1240	107
Turn Type	pm+pt	NA		pm+pt	NA		pm+pt	NA	pm+ov	pm+pt	NA	pm+ov
Protected Phases	7	4		3	8		5	2	3	1	6	7
Permitted Phases	4			8			2		2	6		6
Actuated Green, G (s)	37.2	30.2		40.8	32.0		45.6	39.0	47.8	56.0	46.4	53.4
Effective Green, g (s)	35.2	32.2		38.8	34.0		43.6	41.0	51.8	55.0	48.4	57.4
Actuated g/C Ratio	0.32	0.29		0.35	0.31		0.40	0.37	0.47	0.50	0.44	0.52
Clearance Time (s)	3.0	6.0		3.0	6.0		3.0	6.0	3.0	3.0	6.0	3.0
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)	164	540		303	519		193	1895	745	276	2237	826
v/s Ratio Prot	c0.04	0.16		0.03	c0.37		0.02	c0.38	c0.01	c0.11	0.24	0.01
v/s Ratio Perm	0.22			0.10			0.15		0.03	0.35		0.06
v/c Ratio	0.82	0.54		0.37	1.21		0.42	1.03	0.09	0.91	0.55	0.13
Uniform Delay, d1	31.2	32.7		25.4	38.0		21.5	34.5	16.1	30.9	22.8	13.5
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	27.1	1.0		0.8	111.9		6.7	29.0	0.2	35.8	1.0	0.3
Delay (s)	58.3	33.7		26.2	149.9		28.2	63.5	16.3	66.7	23.8	13.8
Level of Service	E	C		C	F		C	E	B	E	C	B
Approach Delay (s)	41.5			132.7			59.5			29.0		
Approach LOS	D			F			E			C		

Intersection Summary

HCM 2000 Control Delay	59.3	HCM 2000 Level of Service	E
HCM 2000 Volume to Capacity ratio	1.07		
Actuated Cycle Length (s)	110.0	Sum of lost time (s)	16.0
Intersection Capacity Utilization	112.6%	ICU Level of Service	H
Analysis Period (min)	15		
c Critical Lane Group			

Lanes, Volumes, Timings
202: Trafalgar Rd & East Street C

TT (2031) - Scenario A Phase 1 - 2% Growth Rate
Timing Plan: PM Peak Hour

						
Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations				  	  	
Traffic Volume (vph)	0	59	0	2532	1639	157
Future Volume (vph)	0	59	0	2532	1639	157
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (m)	0.0	0.0	0.0			90.0
Storage Lanes	0	1	0			1
Taper Length (m)	7.5		7.5			
Lane Util. Factor	1.00	1.00	1.00	0.91	0.91	1.00
Frt		0.865				0.850
Flt Protected						
Satd. Flow (prot)	0	1611	0	5085	5085	1583
Flt Permitted						
Satd. Flow (perm)	0	1611	0	5085	5085	1583
Link Speed (k/h)	50			50	50	
Link Distance (m)	205.4			92.4	193.0	
Travel Time (s)	14.8			6.7	13.9	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	0	59	0	2532	1639	157
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	59	0	2532	1639	157
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	0.0			3.6	3.6	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	4.8			4.8	4.8	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)	25	15	25			15
Sign Control	Stop			Free	Free	
Intersection Summary						
Area Type:	Other					
Control Type:	Unsignalized					
Intersection Capacity Utilization	52.3%			ICU Level of Service A		
Analysis Period (min)	15					

HCM Unsignalized Intersection Capacity Analysis (2031) - Scenario A Phase 1 - 2% Growth Rate
202: Trafalgar Rd & East Street C

Timing Plan: PM Peak Hour

								
Movement	EBL	EBR	NBL	NBT	SBT	SBR		
Lane Configurations				  	  			
Traffic Volume (veh/h)	0	59	0	2532	1639	157		
Future Volume (Veh/h)	0	59	0	2532	1639	157		
Sign Control	Stop			Free	Free			
Grade	0%			0%	0%			
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00		
Hourly flow rate (vph)	0	59	0	2532	1639	157		
Pedestrians								
Lane Width (m)								
Walking Speed (m/s)								
Percent Blockage								
Right turn flare (veh)								
Median type				None	None			
Median storage (veh)								
Upstream signal (m)				263	193			
pX, platoon unblocked	0.78	0.72	0.72					
vC, conflicting volume	2483	546	1796					
vC1, stage 1 conf vol								
vC2, stage 2 conf vol								
vCu, unblocked vol	0	0	751					
tC, single (s)	6.8	6.9	4.1					
tC, 2 stage (s)								
tF (s)	3.5	3.3	2.2					
p0 queue free %	100	92	100					
cM capacity (veh/h)	802	782	616					
Direction, Lane #	EB 1	NB 1	NB 2	NB 3	SB 1	SB 2	SB 3	SB 4
Volume Total	59	844	844	844	546	546	546	157
Volume Left	0	0	0	0	0	0	0	0
Volume Right	59	0	0	0	0	0	0	157
cSH	782	1700	1700	1700	1700	1700	1700	1700
Volume to Capacity	0.08	0.50	0.50	0.50	0.32	0.32	0.32	0.09
Queue Length 95th (m)	1.8	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Control Delay (s)	10.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Lane LOS	A							
Approach Delay (s)	10.0	0.0	0.0					
Approach LOS	A							
Intersection Summary								
Average Delay	0.1							
Intersection Capacity Utilization	52.3%			ICU Level of Service			A	
Analysis Period (min)	15							

Lanes, Volumes, Timings
203: East Street D & East Street A

TT (2031) - Scenario A Phase 1 - 2% Growth Rate
Timing Plan: PM Peak Hour

						
Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	65	388	0	0	157	0
Future Volume (vph)	65	388	0	0	157	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	0.850					
Flt Protected			0.950			
Satd. Flow (prot)	1863	1583	0	1863	1770	0
Flt Permitted			0.950			
Satd. Flow (perm)	1863	1583	0	1863	1770	0
Link Speed (k/h)	50		50		50	
Link Distance (m)	205.9		205.1		113.3	
Travel Time (s)	14.8		14.8		8.2	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	65	388	0	0	157	0
Shared Lane Traffic (%)						
Lane Group Flow (vph)	65	388	0	0	157	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	
Sign Control	Free		Free		Stop	
Intersection Summary						
Area Type:	Other					
Control Type:	Unsignalized					
Intersection Capacity Utilization	27.4%			ICU Level of Service A		
Analysis Period (min)	15					

HCM Unsignalized Intersection Capacity Analysis (2031) - Scenario A Phase 1 - 2% Growth Rate
203: East Street D & East Street A

Timing Plan: PM Peak Hour

						
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	65	388	0	0	157	0
Future Volume (Veh/h)	65	388	0	0	157	0
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	65	388	0	0	157	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)	206					
pX, platoon unblocked						
vC, conflicting volume			453		65	65
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			453		65	65
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			100		83	100
cM capacity (veh/h)			1108		941	999
Direction, Lane #	EB 1	EB 2	WB 1	NB 1		
Volume Total	65	388	0	157		
Volume Left	0	0	0	157		
Volume Right	0	388	0	0		
cSH	1700	1700	1700	941		
Volume to Capacity	0.04	0.23	0.00	0.17		
Queue Length 95th (m)	0.0	0.0	0.0	4.5		
Control Delay (s)	0.0	0.0	0.0	9.6		
Lane LOS				A		
Approach Delay (s)	0.0		0.0	9.6		
Approach LOS				A		
Intersection Summary						
Average Delay	2.5					
Intersection Capacity Utilization	27.4%		ICU Level of Service		A	
Analysis Period (min)	15					

Lanes, Volumes, Timings
204: East Street E & East Street A

TT (2031) - Scenario A Phase 1 - 2% Growth Rate
Timing Plan: PM Peak Hour

	→	↘	↙	←	↖	↗
Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↗			↖	↗	↖
Traffic Volume (vph)	0	65	0	0	0	0
Future Volume (vph)	0	65	0	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.865					
Flt Protected						
Satd. Flow (prot)	1611	0	0	1863	1863	0
Flt Permitted						
Satd. Flow (perm)	1611	0	0	1863	1863	0
Link Speed (k/h)	50			50	50	
Link Distance (m)	205.1			192.2	115.1	
Travel Time (s)	14.8			13.8	8.3	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	0	65	0	0	0	0
Shared Lane Traffic (%)						
Lane Group Flow (vph)	65	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)	0.0			0.0	3.6	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	4.8			4.8	4.8	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)		15	25		25	15
Sign Control	Free			Free	Stop	

Intersection Summary

Area Type: Other

Control Type: Unsignalized

Intersection Capacity Utilization 7.4% ICU Level of Service A

Analysis Period (min) 15

HCM Unsignalized Intersection Capacity Analysis (2031) - Scenario A Phase 1 - 2% Growth Rate
204: East Street E & East Street A

Timing Plan: PM Peak Hour

	→	↘	↙	←	↖	↗
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↗			↖	↗	↖
Traffic Volume (veh/h)	0	65	0	0	0	0
Future Volume (Veh/h)	0	65	0	0	0	0
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	0	65	0	0	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			65		32	32
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			65		32	32
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			100		100	100
cM capacity (veh/h)			1537		981	1041

Direction, Lane #	EB 1	WB 1	NB 1
Volume Total	65	0	0
Volume Left	0	0	0
Volume Right	65	0	0
cSH	1700	1700	1700
Volume to Capacity	0.04	0.00	0.00
Queue Length 95th (m)	0.0	0.0	0.0
Control Delay (s)	0.0	0.0	0.0
Lane LOS			A
Approach Delay (s)	0.0	0.0	0.0
Approach LOS			A

Intersection Summary

Average Delay	0.0		
Intersection Capacity Utilization	7.4%	ICU Level of Service	A
Analysis Period (min)	15		

Lanes, Volumes, Timings
205: East Street F & East Street A

TT (2031) - Scenario A Phase 1 - 2% Growth Rate
Timing Plan: PM Peak Hour

						
Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
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	1.00	1.00	1.00
Frt						
Flt Protected						
Satd. Flow (prot)	1863	0	0	1863	1863	0
Flt Permitted						
Satd. Flow (perm)	1863	0	0	1863	1863	0
Link Speed (k/h)	50			50	50	
Link Distance (m)	192.2			209.4	115.6	
Travel Time (s)	13.8			15.1	8.3	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
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)	0.0			0.0	3.6	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	4.8			4.8	4.8	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)		15	25		25	15
Sign Control	Free			Free	Stop	
Intersection Summary						
Area Type:	Other					
Control Type:	Unsignalized					
Intersection Capacity Utilization	0.0%			ICU Level of Service A		
Analysis Period (min)	15					

HCM Unsignalized Intersection Capacity Analysis (2031) - Scenario A Phase 1 - 2% Growth Rate
205: East Street F & East Street A

Timing Plan: PM Peak Hour

	→	↖	↗	←	↖	↗
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↖			↖	↖	
Traffic Volume (veh/h)	0	0	0	0	0	0
Future Volume (Veh/h)	0	0	0	0	0	0
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	0	0	0	0	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			0		0	0
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			0		0	0
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			100		100	100
cM capacity (veh/h)			1623		1023	1085
Direction, Lane #	EB 1	WB 1	NB 1			
Volume Total	0	0	0			
Volume Left	0	0	0			
Volume Right	0	0	0			
cSH	1700	1700	1700			
Volume to Capacity	0.00	0.00	0.00			
Queue Length 95th (m)	0.0	0.0	0.0			
Control Delay (s)	0.0	0.0	0.0			
Lane LOS			A			
Approach Delay (s)	0.0	0.0	0.0			
Approach LOS			A			
Intersection Summary						
Average Delay			0.0			
Intersection Capacity Utilization			0.0%		ICU Level of Service	A
Analysis Period (min)			15			

Lanes, Volumes, Timings
206: East Street D & East Street B

TT (2031) - Scenario A Phase 1 - 2% Growth Rate
Timing Plan: PM Peak Hour

	WBL	WBR	NBT	NBR	SBL	SBT
Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	7	6	87	8	9	279
Traffic Volume (vph)	7	6	87	8	9	279
Future Volume (vph)	1900	1900	1900	1900	1900	1900
Ideal Flow (vphpl)	1.00	1.00	1.00	1.00	1.00	1.00
Lane Util. Factor	0.938		0.989			
Frt	0.974				0.998	
Flt Protected	1702	0	1842	0	0	1859
Satd. Flow (prot)	0.974				0.998	
Flt Permitted	1702	0	1842	0	0	1859
Satd. Flow (perm)	50		50		50	
Link Speed (k/h)	203.4		120.6		113.3	
Link Distance (m)	14.6		8.7		8.2	
Travel Time (s)	1.00	1.00	1.00	1.00	1.00	1.00
Peak Hour Factor	7	6	87	8	9	279
Adj. Flow (vph)	Shared Lane Traffic (%)					
	13	0	95	0	0	288
Lane Group Flow (vph)	No	No	No	No	No	No
Enter Blocked Intersection	Left	Right	Left	Right	Left	Left
Lane Alignment	3.6		0.0		0.0	
Median Width(m)	0.0		0.0		0.0	
Link Offset(m)	4.8		4.8		4.8	
Crosswalk Width(m)	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 31.8% ICU Level of Service A

Analysis Period (min) 15

HCM Unsignalized Intersection Capacity Analysis (2031) - Scenario A Phase 1 - 2% Growth Rate
206: East Street D & East Street B

Timing Plan: PM Peak Hour

						
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	7	6	87	8	9	279
Future Volume (Veh/h)	7	6	87	8	9	279
Sign Control	Stop		Free		Free	
Grade	0%		0%		0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	7	6	87	8	9	279
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	388	91			95	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	388	91			95	
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	99			99	
cM capacity (veh/h)	612	967			1499	

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	13	95	288
Volume Left	7	0	9
Volume Right	6	8	0
cSH	737	1700	1499
Volume to Capacity	0.02	0.06	0.01
Queue Length 95th (m)	0.4	0.0	0.1
Control Delay (s)	10.0	0.0	0.3
Lane LOS	A		A
Approach Delay (s)	10.0	0.0	0.3
Approach LOS	A		

Intersection Summary

Average Delay	0.5		
Intersection Capacity Utilization	31.8%	ICU Level of Service	A
Analysis Period (min)	15		

Lanes, Volumes, Timings
207: East Street E & East Street B

TT (2031) - Scenario A Phase 1 - 2% Growth Rate
Timing Plan: PM Peak Hour

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	0	17	0	0	0	0	0	0	0	65	0
Future Volume (vph)	0	0	17	0	0	0	0	0	0	0	65	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	0.865											
Flt Protected												
Satd. Flow (prot)	0	1611	0	0	1863	0	0	1863	0	0	1863	0
Flt Permitted												
Satd. Flow (perm)	0	1611	0	0	1863	0	0	1863	0	0	1863	0
Link Speed (k/h)	50				50				50			
Link Distance (m)	203.4				193.8				120.6			
Travel Time (s)	14.6				14.0				8.7			
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	0	0	17	0	0	0	0	0	0	0	65	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	17	0	0	0	0	0	0	0	0	65	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			
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	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 13.4% ICU Level of Service A

Analysis Period (min) 15

HCM Unsignalized Intersection Capacity Analysis (2031) - Scenario A Phase 1 - 2% Growth Rate
207: East Street E & East Street B

Timing Plan: PM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	0	17	0	0	0	0	0	0	0	65	0
Future Volume (Veh/h)	0	0	17	0	0	0	0	0	0	0	65	0
Sign Control	Stop			Stop			Free			Free		
Grade	0%			0%			0%			0%		
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	0	0	17	0	0	0	0	0	0	0	65	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)	121											
pX, platoon unblocked												
vC, conflicting volume	65	65	65	82	65	0	65	0				
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	65	65	65	82	65	0	65	0				
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	98	100	100	100	100	100				
cM capacity (veh/h)	929	826	999	890	826	1085	1537	1623				

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	17	0	0	65
Volume Left	0	0	0	0
Volume Right	17	0	0	0
cSH	999	1700	1700	1623
Volume to Capacity	0.02	0.00	0.00	0.00
Queue Length 95th (m)	0.4	0.0	0.0	0.0
Control Delay (s)	8.7	0.0	0.0	0.0
Lane LOS	A	A		
Approach Delay (s)	8.7	0.0	0.0	0.0
Approach LOS	A	A		

Intersection Summary

Average Delay	1.8
Intersection Capacity Utilization	13.4%
ICU Level of Service	A
Analysis Period (min)	15

Lanes, Volumes, Timings
208: East Street F & East Street B

TT (2031) - Scenario A Phase 1 - 2% Growth Rate

Timing Plan: PM Peak Hour

	EBL	EBR	NBL	NBT	SBT	SBR
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	1.00	1.00	1.00
Flt						
Flt Protected						
Satd. Flow (prot)	1863	0	0	1863	1863	0
Flt Permitted						
Satd. Flow (perm)	1863	0	0	1863	1863	0
Link Speed (k/h)	50			50	50	
Link Distance (m)	193.8			120.1	115.6	
Travel Time (s)	14.0			8.6	8.3	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
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			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	25			15
Sign Control	Stop			Free	Free	

Intersection Summary

Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	0.0%
Analysis Period (min)	15
ICU Level of Service	A

HCM Unsignalized Intersection Capacity Analysis (2031) - Scenario A Phase 1 - 2% Growth Rate
208: East Street F & East Street B

Timing Plan: PM Peak Hour

	EBL	EBR	NBL	NBT	SBT	SBR
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	↔			↔	↔	
Traffic Volume (veh/h)	0	0	0	0	0	0
Future Volume (Veh/h)	0	0	0	0	0	0
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	0	0	0	0	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	0	0	0			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	0	0	0			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	100	100	100			
cM capacity (veh/h)	1023	1085	1623			
Direction, Lane #	EB 1	NB 1	SB 1			
Volume Total	0	0	0			
Volume Left	0	0	0			
Volume Right	0	0	0			
cSH	1700	1700	1700			
Volume to Capacity	0.00	0.00	0.00			
Queue Length 95th (m)	0.0	0.0	0.0			
Control Delay (s)	0.0	0.0	0.0			
Lane LOS	A					
Approach Delay (s)	0.0	0.0	0.0			
Approach LOS	A					
Intersection Summary						
Average Delay		0.0				
Intersection Capacity Utilization		0.0%		ICU Level of Service	A	
Analysis Period (min)		15				

Lanes, Volumes, Timings TT (2031) - Scenario A Phase 1 - 2% Growth Rate
209: William Halton Parkway & East Street D Timing Plan: PM Peak Hour

						
Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	0	829	1778	63	0	217
Future Volume (vph)	0	829	1778	63	0	217
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (m)	0.0			50.0	0.0	0.0
Storage Lanes	0			1	0	1
Taper Length (m)	7.5				7.5	
Lane Util. Factor	1.00	0.95	0.95	1.00	1.00	1.00
Frt				0.850		0.865
Flt Protected						
Satd. Flow (prot)	0	3539	3539	1583	0	1611
Flt Permitted						
Satd. Flow (perm)	0	3539	3539	1583	0	1611
Link Speed (k/h)		50	50		50	
Link Distance (m)		205.0	201.5		120.6	
Travel Time (s)		14.8	14.5		8.7	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	0	829	1778	63	0	217
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	829	1778	63	0	217
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(m)		3.6	3.6		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	25	15
Sign Control		Free	Free		Stop	
Intersection Summary						
Area Type:	Other					
Control Type:	Unsignalized					
Intersection Capacity Utilization 69.3%	ICU Level of Service C					
Analysis Period (min) 15						

HCM Unsignalized Intersection Capacity Analysis (2031) - Scenario A Phase 1 - 2% Growth Rate
209: William Halton Parkway & East Street D Timing Plan: PM Peak Hour

						
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	0	829	1778	63	0	217
Future Volume (Veh/h)	0	829	1778	63	0	217
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	0	829	1778	63	0	217
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		None	None			
Median storage (veh)						
Upstream signal (m)		205	201			
pX, platoon unblocked	0.60				0.64	0.60
vC, conflicting volume	1841				2192	889
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1065				1146	0
tC, single (s)	4.1				6.8	6.9
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	100				100	67
cM capacity (veh/h)	389				124	650
Direction, Lane #	EB 1	EB 2	WB 1	WB 2	WB 3	SB 1
Volume Total	414	414	889	889	63	217
Volume Left	0	0	0	0	0	0
Volume Right	0	0	0	0	63	217
cSH	1700	1700	1700	1700	1700	650
Volume to Capacity	0.24	0.24	0.52	0.52	0.04	0.33
Queue Length 95th (m)	0.0	0.0	0.0	0.0	0.0	11.0
Control Delay (s)	0.0	0.0	0.0	0.0	0.0	13.3
Lane LOS						B
Approach Delay (s)	0.0		0.0			13.3
Approach LOS						B
Intersection Summary						
Average Delay			1.0			
Intersection Capacity Utilization			69.3%		ICU Level of Service	C
Analysis Period (min)			15			

Lanes, Volumes, Timings TT (2031) - Scenario A Phase 1 - 2% Growth Rate
210: William Halton Parkway & East Street E Timing Plan: PM Peak Hour

	EBL	EBT	WBT	WBR	SBL	SBR
Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations	↔	↕↕	↕↕	↕	↕	↕
Traffic Volume (vph)	0	816	1841	0	82	0
Future Volume (vph)	0	816	1841	0	82	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (m)	90.0			50.0	0.0	0.0
Storage Lanes	1			1	1	0
Taper Length (m)	100.0				7.5	
Lane Util. Factor	1.00	*0.95	*0.95	1.00	1.00	1.00
Frt						
Flt Protected					0.950	
Satd. Flow (prot)	1863	3539	3539	1863	1770	0
Flt Permitted					0.950	
Satd. Flow (perm)	1863	3539	3539	1863	1770	0
Right Turn on Red				Yes		Yes
Satd. Flow (RTOR)						
Link Speed (k/h)		50	50		50	
Link Distance (m)		201.5	195.6		120.6	
Travel Time (s)		14.5	14.1		8.7	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	0	816	1841	0	82	0
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	816	1841	0	82	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
Number of Detectors	1	2	2	1	1	
Detector Template	Left	Thru	Thru	Right	Left	
Leading Detector (m)	2.0	10.0	10.0	2.0	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)	2.0	0.6	0.6	2.0	2.0	
Detector 1 Type	CI+Ex	CI+Ex	CI+Ex	CI+Ex	CI+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		CI+Ex	CI+Ex			
Detector 2 Channel						
Detector 2 Extend (s)		0.0	0.0			
Turn Type	pm+pt	NA	NA	Perm	Perm	
Protected Phases	7	4	8			
Permitted Phases	4			8	6	

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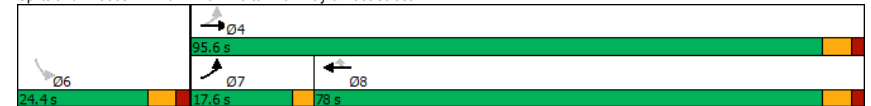
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Lanes, Volumes, Timings TT (2031) - Scenario A Phase 1 - 2% Growth Rate
210: William Halton Parkway & East Street E Timing Plan: PM Peak Hour

	EBL	EBT	WBT	WBR	SBL	SBR
Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Detector Phase	7	4	8	8	6	
Switch Phase						
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	
Minimum Split (s)	9.5	24.0	24.0	24.0	24.0	
Total Split (s)	17.6	95.6	78.0	78.0	24.4	
Total Split (%)	14.7%	79.7%	65.0%	65.0%	20.3%	
Maximum Green (s)	14.6	89.6	72.0	72.0	18.4	
Yellow Time (s)	3.0	4.0	4.0	4.0	4.0	
All-Red Time (s)	0.0	2.0	2.0	2.0	2.0	
Lost Time Adjust (s)	1.0	-2.0	-2.0	-2.0	-2.0	
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	
Lead/Lag	Lead		Lag	Lag		
Lead-Lag Optimize?	Yes		Yes	Yes		
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	
Flash Dont Walk (s)		11.0	11.0	11.0	11.0	
Pedestrian Calls (#/hr)		0	0	0	0	
Act Effct Green (s)		93.0	74.4		12.4	
Actuated g/C Ratio		0.85	0.68		0.11	
v/c Ratio		0.27	0.77		0.41	
Control Delay		2.7	16.0		52.3	
Queue Delay		0.0	0.0		0.0	
Total Delay		2.7	16.0		52.3	
LOS		A	B		D	
Approach Delay		2.7	16.0		52.3	
Approach LOS		A	B		D	

Intersection Summary	
Area Type:	Other
Cycle Length: 120	
Actuated Cycle Length: 109.7	
Natural Cycle: 80	
Control Type: Semi Act-Uncoord	
Maximum v/c Ratio: 0.77	
Intersection Signal Delay: 13.1	Intersection LOS: B
Intersection Capacity Utilization 62.1%	ICU Level of Service B
Analysis Period (min) 15	
* User Entered Value	

Splits and Phases: 210: William Halton Parkway & East Street E



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Queues
210: William Halton Parkway & East Street E

TT (2031) - Scenario A Phase 1 - 2% Growth Rate
Timing Plan: PM Peak Hour

	→	←	↘
Lane Group	EBT	WBT	SBL
Lane Group Flow (vph)	816	1841	82
v/c Ratio	0.27	0.77	0.41
Control Delay	2.7	16.0	52.3
Queue Delay	0.0	0.0	0.0
Total Delay	2.7	16.0	52.3
Queue Length 50th (m)	16.8	135.3	16.8
Queue Length 95th (m)	27.5	186.0	31.7
Internal Link Dist (m)	177.5	171.6	96.6
Turn Bay Length (m)			
Base Capacity (vph)	2999	2399	330
Starvation Cap Reductn	0	0	0
Spillback Cap Reductn	0	0	0
Storage Cap Reductn	0	0	0
Reduced v/c Ratio	0.27	0.77	0.25
Intersection Summary			

HCM Signalized Intersection Capacity Analysis
210: William Halton Parkway & East Street E

TT (2031) - Scenario A Phase 1 - 2% Growth Rate
Timing Plan: PM Peak Hour

	↖	→	←	↗	↘	↙
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations	↖	↗	↗	↖	↖	↗
Traffic Volume (vph)	0	816	1841	0	82	0
Future Volume (vph)	0	816	1841	0	82	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0	4.0		4.0	
Lane Util. Factor		*0.95	*0.95		1.00	
Frt		1.00	1.00		1.00	
Flt Protected		1.00	1.00		0.95	
Satd. Flow (prot)		3539	3539		1770	
Flt Permitted		1.00	1.00		0.95	
Satd. Flow (perm)		3539	3539		1770	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	0	816	1841	0	82	0
RTOR Reduction (vph)	0	0	0	0	0	0
Lane Group Flow (vph)	0	816	1841	0	82	0
Turn Type	pm+pt	NA	NA	Perm	Perm	
Protected Phases	7	4	8			
Permitted Phases	4			8	6	
Actuated Green, G (s)		90.1	72.4		9.0	
Effective Green, g (s)		92.1	74.4		11.0	
Actuated g/C Ratio		0.83	0.67		0.10	
Clearance Time (s)		6.0	6.0		6.0	
Vehicle Extension (s)		3.0	3.0		3.0	
Lane Grp Cap (vph)		2933	2369		175	
v/s Ratio Prot		c0.23	c0.52			
v/s Ratio Perm					c0.05	
v/c Ratio		0.28	0.78		0.47	
Uniform Delay, d1		2.1	12.6		47.3	
Progression Factor		1.00	1.00		1.00	
Incremental Delay, d2		0.2	2.6		2.0	
Delay (s)		2.3	15.2		49.3	
Level of Service		A	B		D	
Approach Delay (s)		2.3	15.2		49.3	
Approach LOS		A	B		D	
Intersection Summary						
HCM 2000 Control Delay			12.4		HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio			0.69			
Actuated Cycle Length (s)			111.1		Sum of lost time (s)	14.0
Intersection Capacity Utilization			62.1%		ICU Level of Service	B
Analysis Period (min)			15			

c Critical Lane Group

Lanes, Volumes, Timings TT (2031) - Scenario A Phase 1 - 2% Growth Rate
211: William Halton Parkway & East Street F Timing Plan: PM Peak Hour

						
Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		 	 		 	
Traffic Volume (vph)	0	898	1841	0	0	0
Future Volume (vph)	0	898	1841	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (m)	90.0			0.0	0.0	0.0
Storage Lanes	1			0	1	0
Taper Length (m)	100.0				7.5	
Lane Util. Factor	1.00	0.95	0.95	0.95	1.00	1.00
Fr						
Flt Protected						
Satd. Flow (prot)	1863	3539	3539	0	1863	0
Flt Permitted						
Satd. Flow (perm)	1863	3539	3539	0	1863	0
Link Speed (k/h)		50	50		50	
Link Distance (m)		195.6	407.9		120.1	
Travel Time (s)		14.1	29.4		8.6	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	0	898	1841	0	0	0
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	898	1841	0	0	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 54.2%				ICU Level of Service A		
Analysis Period (min) 15						

HCM Unsignalized Intersection Capacity Analysis (2031) - Scenario A Phase 1 - 2% Growth Rate
211: William Halton Parkway & East Street F Timing Plan: PM Peak Hour

	EBL	EBT	WBT	WBR	SBL	SBR
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations	↰	↱	↱		↰	
Traffic Volume (veh/h)	0	898	1841	0	0	0
Future Volume (Veh/h)	0	898	1841	0	0	0
Sign Control	Free		Free		Stop	
Grade	0%		0%		0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	0	898	1841	0	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)	196					
pX, platoon unblocked					0.96	
vC, conflicting volume	1841				2290	920
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1841				2263	920
tC, single (s)	4.1				6.8	6.9
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	100				100	100
cM capacity (veh/h)	327				33	273
Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	SB 1
Volume Total	0	449	449	1227	614	0
Volume Left	0	0	0	0	0	0
Volume Right	0	0	0	0	0	0
cSH	1700	1700	1700	1700	1700	1700
Volume to Capacity	0.00	0.26	0.26	0.72	0.36	0.00
Queue Length 95th (m)	0.0	0.0	0.0	0.0	0.0	0.0
Control Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0
Lane LOS						A
Approach Delay (s)	0.0			0.0		0.0
Approach LOS						A
Intersection Summary						
Average Delay	0.0					
Intersection Capacity Utilization	54.2%			ICU Level of Service		A
Analysis Period (min)	15					

Lanes, Volumes, Timings
212: West Street A & Transit Station

TT (2031) - Scenario A Phase 1 - 2% Growth Rate

Timing Plan: PM Peak Hour

	WBL	WBR	NBT	NBR	SBL	SBT
Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	←	→	←	→	←	→
Traffic Volume (vph)	127	0	0	355	0	0
Future Volume (vph)	127	0	0	355	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt			0.865			
Flt Protected	0.950					
Satd. Flow (prot)	1770	0	1611	0	0	1863
Flt Permitted	0.950					
Satd. Flow (perm)	1770	0	1611	0	0	1863
Link Speed (k/h)	50		50			50
Link Distance (m)	216.0		234.7			101.9
Travel Time (s)	15.6		16.9			7.3
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	127	0	0	355	0	0
Shared Lane Traffic (%)						
Lane Group Flow (vph)	127	0	355	0	0	0
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 35.7%	ICU Level of Service A
Analysis Period (min)	15

HCM Unsignalized Intersection Capacity Analysis (2031) - Scenario A Phase 1 - 2% Growth Rate
212: West Street A & Transit Station

Timing Plan: PM Peak Hour

	WBL	WBR	NBT	NBR	SBL	SBT
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	←	→	←	→	←	→
Traffic Volume (veh/h)	127	0	0	355	0	0
Future Volume (Veh/h)	127	0	0	355	0	0
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	127	0	0	355	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	178	178			355	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	178	178			355	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	84	100			100	
cM capacity (veh/h)	812	866			1204	

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	127	355	0
Volume Left	127	0	0
Volume Right	0	355	0
cSH	812	1700	1700
Volume to Capacity	0.16	0.21	0.00
Queue Length 95th (m)	4.1	0.0	0.0
Control Delay (s)	10.3	0.0	0.0
Lane LOS	B		
Approach Delay (s)	10.3	0.0	0.0
Approach LOS	B		

Intersection Summary

Average Delay		2.7	
Intersection Capacity Utilization		35.7%	ICU Level of Service A
Analysis Period (min)		15	

Lanes, Volumes, Timings TT (2031) - Scenario A Phase 1 - 2% Growth Rate
213: East Street A/West Street A & William Halton Parkway Timing Plan: PM Peak Hour

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑	↑		↑↑	↑			↑			↑
Traffic Volume (vph)	0	763	13	0	1812	129	0	0	141	0	0	27
Future Volume (vph)	0	763	13	0	1812	129	0	0	141	0	0	27
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	0.0		90.0	0.0		90.0	0.0		0.0	0.0		0.0
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	0.95	1.00	1.00	0.95	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt			0.850			0.850			0.865			0.865
Flt Protected												
Satd. Flow (prot)	0	3539	1583	0	3539	1583	0	0	1611	0	0	1611
Flt Permitted												
Satd. Flow (perm)	0	3539	1583	0	3539	1583	0	0	1611	0	0	1611
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		200.8			212.9			103.7			234.7	
Travel Time (s)		14.5			15.3			7.5			16.9	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	0	763	13	0	1812	129	0	0	141	0	0	27
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	763	13	0	1812	129	0	0	141	0	0	27
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 60.1%	ICU Level of Service B											
Analysis Period (min) 15												

HCM Unsignalized Intersection Capacity Analysis (2031) - Scenario A Phase 1 - 2% Growth Rate
213: East Street A/West Street A & William Halton Parkway Timing Plan: PM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕↕	↕		↕↕	↕			↕			↕
Traffic Volume (veh/h)	0	763	13	0	1812	129	0	0	141	0	0	27
Future Volume (Veh/h)	0	763	13	0	1812	129	0	0	141	0	0	27
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	0	763	13	0	1812	129	0	0	141	0	0	27
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type	None			None								
Median storage veh												
Upstream signal (m)	201			213								
pX, platoon unblocked	0.73			0.90			0.79	0.79	0.90	0.79	0.79	0.73
vC, conflicting volume	1941			776			1696	2704	382	2334	2588	906
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	1558			521			751	2034	81	1564	1886	149
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)	309			934			225	44	864	50	55	640
Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	WB 3	NB 1	SB 1				
Volume Total	382	382	13	906	906	129	141	27				
Volume Left	0	0	0	0	0	0	0	0				
Volume Right	0	0	13	0	0	129	141	27				
cSH	1700	1700	1700	1700	1700	1700	864	640				
Volume to Capacity	0.22	0.22	0.01	0.53	0.53	0.08	0.16	0.04				
Queue Length 95th (m)	0.0	0.0	0.0	0.0	0.0	0.0	4.4	1.0				
Control Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	10.0	10.9				
Lane LOS							A	B				
Approach Delay (s)	0.0			0.0			10.0	10.9				
Approach LOS							A	B				
Intersection Summary												
Average Delay				0.6								
Intersection Capacity Utilization				60.1%			ICU Level of Service			B		
Analysis Period (min)				15								

Lanes, Volumes, Timings TT (2031) - Scenario A Phase 1 - 2% Growth Rate
214: West Street D & William Halton Parkway Timing Plan: PM Peak Hour

	←	→	↙	↘	←	↙	↘	→	↙	↘	→	↙	↘
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations	↙	↖	↗	↙	↖	↗	↙	↖	↗	↙	↖	↗	
Traffic Volume (vph)	0	776	0	99	1740	0	15	0	0	0	0	0	
Future Volume (vph)	0	776	0	99	1740	0	15	0	0	0	0	0	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	
Storage Length (m)	90.0		90.0	90.0		90.0	50.0		0.0	50.0		0.0	
Storage Lanes	1		1	1		1	1		0	1		0	
Taper Length (m)	100.0			100.0			75.0			75.0			
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Flt													
Flt Protected				0.950			0.950						
Satd. Flow (prot)	1863	3539	1863	1770	3539	1863	1770	1863	0	1863	1863	0	
Flt Permitted				0.267			0.757						
Satd. Flow (perm)	1863	3539	1863	497	3539	1863	1410	1863	0	1863	1863	0	
Right Turn on Red			Yes			Yes			Yes			Yes	
Satd. Flow (RTOR)													
Link Speed (k/h)		50			50			50			50		
Link Distance (m)		573.3			200.8			99.4			133.2		
Travel Time (s)		41.3			14.5			7.2			9.6		
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Adj. Flow (vph)	0	776	0	99	1740	0	15	0	0	0	0	0	
Shared Lane Traffic (%)													
Lane Group Flow (vph)	0	776	0	99	1740	0	15	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	1	2	1	1	2		1	2		
Detector Template	Left	Thru	Right	Left	Thru	Right	Left	Thru		Left	Thru		
Leading Detector (m)	2.0	10.0	2.0	2.0	10.0	2.0	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		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	2.0	0.6	2.0	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		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	pm+pt	NA	Perm	Perm			Perm			
Protected Phases		4		3	8			2			6		
Permitted Phases	4		4	8		8	2			6			

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Lanes, Volumes, Timings TT (2031) - Scenario A Phase 1 - 2% Growth Rate
214: West Street D & William Halton Parkway Timing Plan: PM Peak Hour

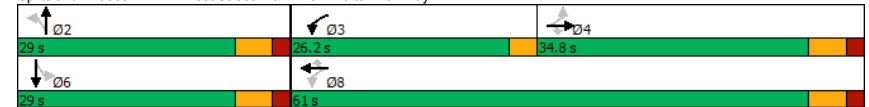
	←	→	↙	↘	←	↙	↘	→	↙	↘	→	↙	↘
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Detector Phase	4	4	4	3	8	8	2	2		6	6		
Switch Phase													
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0		5.0	5.0		
Minimum Split (s)	24.0	24.0	24.0	9.5	24.0	24.0	24.0	24.0		29.0	29.0		
Total Split (s)	34.8	34.8	34.8	26.2	61.0	61.0	29.0	29.0		29.0	29.0		
Total Split (%)	38.7%	38.7%	38.7%	29.1%	67.8%	67.8%	32.2%	32.2%		32.2%	32.2%		
Maximum Green (s)	28.8	28.8	28.8	23.2	55.0	55.0	23.0	23.0		23.0	23.0		
Yellow Time (s)	4.0	4.0	4.0	3.0	4.0	4.0	4.0	4.0		4.0	4.0		
All-Red Time (s)	2.0	2.0	2.0	0.0	2.0	2.0	2.0	2.0		2.0	2.0		
Lost Time Adjust (s)	-2.0	-2.0	-2.0	1.0	-2.0	-2.0	-2.0	-2.0		1.0	-2.0		
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0		7.0	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	None	None	Min	Min		Min	Min		
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 Effect Green (s)		27.6			35.0	35.0		8.5					
Actuated g/C Ratio		0.53			0.68	0.68		0.16					
v/c Ratio		0.41			0.21	0.73		0.07					
Control Delay		8.5			3.7	7.2		23.2					
Queue Delay		0.0			0.0	0.0		0.0					
Total Delay		8.5			3.7	7.2		23.2					
LOS		A			A			C					
Approach Delay		8.5			7.0			23.2					
Approach LOS		A			A			C					

Intersection Summary

Area Type: Other
Cycle Length: 90
Actuated Cycle Length: 51.8
Natural Cycle: 70
Control Type: Actuated-Uncoordinated
Maximum v/c Ratio: 0.73
Intersection Signal Delay: 7.5
Intersection Capacity Utilization 66.4%
Analysis Period (min) 15

Intersection LOS: A
ICU Level of Service C

Splits and Phases: 214: West Street D & William Halton Parkway



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Queues
214: West Street D & William Halton Parkway

TT (2031) - Scenario A Phase 1 - 2% Growth Rate
Timing Plan: PM Peak Hour

	→	↖	←	↗
Lane Group	EBT	WBL	WBT	NBL
Lane Group Flow (vph)	776	99	1740	15
v/c Ratio	0.41	0.21	0.73	0.07
Control Delay	8.5	3.7	7.2	23.2
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	8.5	3.7	7.2	23.2
Queue Length 50th (m)	21.2	2.2	37.8	1.2
Queue Length 95th (m)	34.2	5.5	61.2	6.2
Internal Link Dist (m)	549.3		176.8	
Turn Bay Length (m)		90.0		50.0
Base Capacity (vph)	2258	899	3433	703
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	0.11	0.51	0.02
Intersection Summary				

HCM Signalized Intersection Capacity Analysis
214: West Street D & William Halton Parkway

TT (2031) - Scenario A Phase 1 - 2% Growth Rate
Timing Plan: PM Peak Hour

	↖	→	↗	←	↖	↗	↖	↗	↖	↗	↖	↗	↖	↗
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR		
Lane Configurations	↖	↖↗	↗	↖	↖↗	↗	↖	↖	↗	↖	↖	↗		
Traffic Volume (vph)	0	776	0	99	1740	0	15	0	0	0	0	0		
Future Volume (vph)	0	776	0	99	1740	0	15	0	0	0	0	0		
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							
Lane Util. Factor		0.95		1.00	0.95		1.00							
Flt		1.00		1.00	1.00		1.00							
Flt Protected		1.00		0.95	1.00		0.95							
Satd. Flow (prot)		3539		1770	3539		1770							
Flt Permitted		1.00		0.27	1.00		0.76							
Satd. Flow (perm)		3539		498	3539		1410							
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		
Adj. Flow (vph)	0	776	0	99	1740	0	15	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	776	0	99	1740	0	15	0	0	0	0	0		
Turn Type	Perm	NA	Perm	pm+pt	NA	Perm	Perm			Perm				
Protected Phases		4		3	8		2			6				
Permitted Phases	4		4	8		8	2			6				
Actuated Green, G (s)		25.5		33.6	33.6		6.4							
Effective Green, g (s)		27.5		32.6	35.6		8.4							
Actuated g/C Ratio		0.53		0.63	0.68		0.16							
Clearance Time (s)		6.0		3.0	6.0		6.0							
Vehicle Extension (s)		3.0		3.0	3.0		3.0							
Lane Grp Cap (vph)		1871		412	2422		227							
v/s Ratio Prot		0.22		0.02	c0.49									
v/s Ratio Perm				0.13			c0.01							
v/c Ratio		0.41		0.24	0.72		0.07							
Uniform Delay, d1		7.4		4.4	5.1		18.5							
Progression Factor		1.00		1.00	1.00		1.00							
Incremental Delay, d2		0.1		0.3	1.0		0.1							
Delay (s)		7.5		4.7	6.1		18.6							
Level of Service		A		A	A		B							
Approach Delay (s)		7.5			6.1		18.6					0.0		
Approach LOS		A			A		B					A		
Intersection Summary														
HCM 2000 Control Delay				6.6			HCM 2000 Level of Service					A		
HCM 2000 Volume to Capacity ratio				0.65										
Actuated Cycle Length (s)				52.0			Sum of lost time (s)					12.0		
Intersection Capacity Utilization				66.4%			ICU Level of Service					C		
Analysis Period (min)				15										

c Critical Lane Group

Lanes, Volumes, Timings
215: East Street A & West Street B

TT (2031) - Scenario A Phase 1 - 2% Growth Rate

Timing Plan: PM Peak Hour

	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	50	49	0	0	59	15
Future Volume (vph)	50	49	0	0	59	15
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	0.933				0.973	
Flt Protected	0.975					
Satd. Flow (prot)	1694	0	0	1863	1812	0
Flt Permitted	0.975					
Satd. Flow (perm)	1694	0	0	1863	1812	0
Link Speed (k/h)	50			50	50	
Link Distance (m)	202.4			83.5	103.7	
Travel Time (s)	14.6			6.0	7.5	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	50	49	0	0	59	15
Shared Lane Traffic (%)						
Lane Group Flow (vph)	99	0	0	0	74	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
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	25			15
Sign Control	Stop			Free	Free	

Intersection Summary

Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	16.5%
Analysis Period (min)	15
ICU Level of Service A	

HCM Unsignalized Intersection Capacity Analysis (2031) - Scenario A Phase 1 - 2% Growth Rate
215: East Street A & West Street B

Timing Plan: PM Peak Hour

	EBL	EBR	NBL	NBT	SBT	SBR
Movement						
Lane Configurations						
Traffic Volume (veh/h)	50	49	0	0	59	15
Future Volume (Veh/h)	50	49	0	0	59	15
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	50	49	0	0	59	15
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	66	66	74			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	66	66	74			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	95	95	100			
cM capacity (veh/h)	939	997	1526			

Direction, Lane #	EB 1	NB 1	SB 1
Volume Total	99	0	74
Volume Left	50	0	0
Volume Right	49	0	15
cSH	967	1700	1700
Volume to Capacity	0.10	0.00	0.04
Queue Length 95th (m)	2.6	0.0	0.0
Control Delay (s)	9.1	0.0	0.0
Lane LOS	A		
Approach Delay (s)	9.1	0.0	0.0
Approach LOS	A		

Intersection Summary

Average Delay	5.2		
Intersection Capacity Utilization	16.5%	ICU Level of Service	A
Analysis Period (min)	15		

Lanes, Volumes, Timings
216: West Street D & West Street B

TT (2031) - Scenario A Phase 1 - 2% Growth Rate

Timing Plan: PM Peak Hour

	WBL	WBR	NBT	NBR	SBL	SBT
Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	←	→	←	→	←	→
Traffic Volume (vph)	0	15	0	0	99	0
Future Volume (vph)	0	15	0	0	99	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.865					
Flt Protected						0.950
Satd. Flow (prot)	1611	0	1863	0	0	1770
Flt Permitted						0.950
Satd. Flow (perm)	1611	0	1863	0	0	1770
Link Speed (k/h)	50		50			50
Link Distance (m)	202.4		82.8			99.4
Travel Time (s)	14.6		6.0			7.2
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	0	15	0	0	99	0
Shared Lane Traffic (%)						
Lane Group Flow (vph)	15	0	0	0	0	99
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
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		15	25	
Sign Control	Stop		Free			Free

Intersection Summary

Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	15.5%
Analysis Period (min)	15
	ICU Level of Service A

HCM Unsignalized Intersection Capacity Analysis (2031) - Scenario A Phase 1 - 2% Growth Rate
216: West Street D & West Street B

Timing Plan: PM Peak Hour

	WBL	WBR	NBT	NBR	SBL	SBT
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	←	→	←	→	←	→
Traffic Volume (veh/h)	0	15	0	0	99	0
Future Volume (Veh/h)	0	15	0	0	99	0
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	0	15	0	0	99	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)						99
pX, platoon unblocked						
vC, conflicting volume	198	0			0	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	198	0			0	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	100	99			94	
cM capacity (veh/h)	742	1085			1623	

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	15	0	99
Volume Left	0	0	99
Volume Right	15	0	0
cSH	1085	1700	1623
Volume to Capacity	0.01	0.00	0.06
Queue Length 95th (m)	0.3	0.0	1.5
Control Delay (s)	8.4	0.0	7.4
Lane LOS	A		A
Approach Delay (s)	8.4	0.0	7.4
Approach LOS	A		

Intersection Summary

Average Delay	7.5
Intersection Capacity Utilization	15.5%
Analysis Period (min)	15
	ICU Level of Service A

Lanes, Volumes, Timings
217: East Street C & East Street A

TT (2031) - Scenario A Phase 1 - 2% Growth Rate

Timing Plan: PM Peak Hour

	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↔	↔		↔	
Traffic Volume (vph)	0	0	0	157	59	0
Future Volume (vph)	0	0	0	157	59	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.865				
Flt Protected					0.950	
Satd. Flow (prot)	0	1863	1611	0	1770	0
Flt Permitted					0.950	
Satd. Flow (perm)	0	1863	1611	0	1770	0
Link Speed (k/h)		50	50		50	
Link Distance (m)		206.1	205.4		83.5	
Travel Time (s)		14.8	14.8		6.0	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	0	0	0	157	59	0
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	0	157	0	59	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 19.7%	ICU Level of Service A
Analysis Period (min)	15

HCM Unsignalized Intersection Capacity Analysis (2031) - Scenario A Phase 1 - 2% Growth Rate
217: East Street C & East Street A

Timing Plan: PM Peak Hour

	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↔	↔		↔	
Traffic Volume (veh/h)	0	0	0	157	59	0
Future Volume (Veh/h)	0	0	0	157	59	0
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	0	0	0	157	59	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	157				78	78
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	157				78	78
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	100				94	100
cM capacity (veh/h)	1423				924	982

Direction, Lane #	EB 1	WB 1	SB 1
Volume Total	0	157	59
Volume Left	0	0	59
Volume Right	0	157	0
cSH	1700	1700	924
Volume to Capacity	0.00	0.09	0.06
Queue Length 95th (m)	0.0	0.0	1.5
Control Delay (s)	0.0	0.0	9.2
Lane LOS			A
Approach Delay (s)	0.0	0.0	9.2
Approach LOS			A

Intersection Summary

Average Delay	2.5
Intersection Capacity Utilization 19.7%	ICU Level of Service A
Analysis Period (min)	15

Lanes, Volumes, Timings

TT (2031) - Scenario A Phase 1 - 2% Growth Rate

218: West Street D & East Street C

Timing Plan: PM Peak Hour

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔			↔			↔			↔	
Traffic Volume (vph)	0	0	0	145	0	173	0	177	65	213	163	0
Future Volume (vph)	0	0	0	145	0	173	0	177	65	213	163	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					0.927			0.964				
Flt Protected					0.978						0.972	
Satd. Flow (prot)	0	1863	0	0	1689	0	0	1796	0	0	1811	0
Flt Permitted					0.978						0.972	
Satd. Flow (perm)	0	1863	0	0	1689	0	0	1796	0	0	1811	0
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		164.8			206.1			68.2			82.8	
Travel Time (s)		11.9			14.8			4.9			6.0	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	0	0	0	145	0	173	0	177	65	213	163	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	0	0	0	318	0	0	242	0	0	376	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	62.3%	ICU Level of Service B
Analysis Period (min)	15	

HCM Unsignalized Intersection Capacity Analysis (2031) - Scenario A Phase 1 - 2% Growth Rate

218: West Street D & East Street C

Timing Plan: PM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	0	0	145	0	173	0	177	65	213	163	0
Future Volume (Veh/h)	0	0	0	145	0	173	0	177	65	213	163	0
Sign Control	Free			Free			Stop			Stop		
Grade	0%			0%			0%			0%		
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	0	0	0	145	0	173	0	177	65	213	163	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	173	0			458			463	0	530	376	86
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	173	0			458			463	0	530	376	86
tC, single (s)	4.1	4.1			7.1			6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2	2.2			3.5			4.0	3.3	3.5	4.0	3.3
p0 queue free %	100	91			100			61	94	24	68	100
cM capacity (veh/h)	1404	1623			360			452	1085	281	505	972

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	0	318	242	376
Volume Left	0	145	0	213
Volume Right	0	173	65	0
cSH	1700	1623	536	348
Volume to Capacity	0.00	0.09	0.45	1.08
Queue Length 95th (m)	0.0	2.2	17.4	103.1
Control Delay (s)	0.0	3.8	17.1	106.5
Lane LOS		A	C	F
Approach Delay (s)	0.0	3.8	17.1	106.5
Approach LOS		C	F	

Intersection Summary			
Average Delay	48.5		
Intersection Capacity Utilization	62.3%	ICU Level of Service	B
Analysis Period (min)	15		

Appendix F2

2031 Scenario B Total Operation Synchro Reports



Lanes, Volumes, Timings
101: Trafalgar Rd & Lower Base Line

Total (2031) - Scenario B Phase 1 - 2% Growth Rate
Timing Plan: AM Peak Hour

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰	↰	↰	↰	↰	↰	↰	↰	↰	↰	↰	↰
Traffic Volume (vph)	124	482	184	279	98	180	39	1588	227	412	1895	20
Future Volume (vph)	124	482	184	279	98	180	39	1588	227	412	1895	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		0.959			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	0.567			0.161			0.093			0.090		
Satd. Flow (perm)	1056	3394	0	300	3196	0	173	5085	1583	168	5085	1583
Right Turn on Red		Yes			Yes			Yes			Yes	
Satd. Flow (RTOR)		41			196			234			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	200	303	107	196	42	1726	247	448	2060	22
Shared Lane Traffic (%)												
Lane Group Flow (vph)	135	724	0	303	303	0	42	1726	247	448	2060	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	CI+Ex	CI+Ex		CI+Ex	CI+Ex		CI+Ex	CI+Ex	CI+Ex	CI+Ex	CI+Ex	CI+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		CI+Ex			CI+Ex			CI+Ex			CI+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

Lanes, Volumes, Timings
101: Trafalgar Rd & Lower Base Line

Total (2031) - Scenario B Phase 1 - 2% Growth Rate
Timing Plan: AM Peak Hour

	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)	11.6	27.0		19.1	34.5		9.5	45.9	45.9	28.0	64.4	64.4
Total Split (%)	9.7%	22.5%		15.9%	28.8%		7.9%	38.3%	38.3%	23.3%	53.7%	53.7%
Maximum Green (s)	7.1	20.8		15.1	28.3		5.0	39.3	39.3	24.0	57.8	57.8
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)	34.0	23.0		42.1	30.5		51.6	41.9	41.9	69.9	62.3	62.3
Actuated g/C Ratio	0.28	0.19		0.35	0.25		0.43	0.35	0.35	0.58	0.52	0.52
v/c Ratio	0.38	1.06		1.04	0.32		0.24	0.97	0.35	1.07	0.78	0.02
Control Delay	30.5	95.3		97.6	13.7		16.1	54.5	5.7	98.9	26.4	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	30.5	95.3		97.6	13.7		16.1	54.5	5.7	98.9	26.4	0.1
LOS	C	F		F	B		B	D	A	F	C	A
Approach Delay		85.1			55.7			47.7			39.0	
Approach LOS		F			E			D			D	

Intersection Summary												
Area Type:	Other											
Cycle Length:	120											
Actuated Cycle Length:	120											
Natural Cycle:	100											
Control Type:	Semi Act-Uncooord											
Maximum v/c Ratio:	1.07											
Intersection Signal Delay:	50.2											
Intersection Capacity Utilization	101.5%											
Analysis Period (min)	15											



Queues
101: Trafalgar Rd & Lower Base Line

Total (2031) - Scenario B Phase 1 - 2% Growth Rate
Timing Plan: AM Peak Hour

	EBL	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	135	724	303	303	42	1726	247	448	2060	22
v/c Ratio	0.38	1.06	1.04	0.32	0.24	0.97	0.35	1.07	0.78	0.02
Control Delay	30.5	95.3	97.6	13.7	16.1	54.5	5.7	98.9	26.4	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	30.5	95.3	97.6	13.7	16.1	54.5	5.7	98.9	26.4	0.1
Queue Length 50th (m)	21.4	~93.1	~59.6	10.1	3.8	143.7	2.0	~99.7	141.7	0.0
Queue Length 95th (m)	36.0	#130.6	#114.2	21.4	8.3	#177.5	18.8	#162.1	161.5	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)	354	683	290	958	175	1775	705	418	2640	892
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	1.06	1.04	0.32	0.24	0.97	0.35	1.07	0.78	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.

HCM Signalized Intersection Capacity Analysis (2031) - Scenario B Phase 1 - 2% Growth Rate
101: Trafalgar Rd & Lower Base Line

Timing Plan: AM Peak Hour

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰	↱	↱	↰	↱	↱	↰	↱	↱	↰	↱	↱
Traffic Volume (vph)	124	482	184	279	98	180	39	1588	227	412	1895	20
Future Volume (vph)	124	482	184	279	98	180	39	1588	227	412	1895	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	3393		1770	3196		1770	5085	1583	1770	5085	1583
Flt Permitted	0.57	1.00		0.16	1.00		0.09	1.00	1.00	0.09	1.00	1.00
Satd. Flow (perm)	1056	3393		300	3196		174	5085	1583	169	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	200	303	107	196	42	1726	247	448	2060	22
RTOR Reduction (vph)	0	33	0	0	147	0	0	0	151	0	0	11
Lane Group Flow (vph)	135	691	0	303	156	0	42	1726	96	448	2060	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	
Actuated Green, G (s)	27.9	20.8		39.9	28.3		44.2	40.2	40.2	68.2	59.7	59.7
Effective Green, g (s)	32.3	23.0		39.9	30.5		49.4	42.8	42.8	68.2	62.3	62.3
Actuated g/C Ratio	0.27	0.19		0.33	0.25		0.41	0.35	0.35	0.56	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)	337	645		282	806		158	1800	560	413	2620	815
v/s Ratio Prot	0.03	0.20		c0.13	0.05		0.01	0.34		c0.22	0.41	
v/s Ratio Perm	0.08			c0.22			0.09			0.06	c0.40	
v/c Ratio	0.40	1.07		1.07	0.19		0.27	0.96	0.17	1.08	0.79	0.01
Uniform Delay, d1	35.1	49.0		34.7	35.5		23.3	38.2	26.9	38.5	23.9	14.3
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	0.8	56.0		74.8	0.2		0.9	13.5	0.7	69.0	2.5	0.0
Delay (s)	35.9	104.9		109.4	35.8		24.3	51.7	27.5	107.5	26.3	14.3
Level of Service	D	F		F	D		C	D	C	F	C	B
Approach Delay (s)		94.1			72.6			48.1			40.6	
Approach LOS		F			E			D			D	

Intersection Summary

HCM 2000 Control Delay	54.0	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	1.09		
Actuated Cycle Length (s)	120.9	Sum of lost time (s)	16.0
Intersection Capacity Utilization	101.5%	ICU Level of Service	G
Analysis Period (min)	15		

c Critical Lane Group

Lanes, Volumes, Timings

Total (2031) - Scenario B Phase 1 - 2% Growth Rate

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

Timing Plan: AM Peak Hour

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔		↔	↔	↔	↔	↔	↔	↔	↔	↔
Traffic Volume (vph)	2	0	7	350	1	21	5	1830	0	0	2355	4
Future Volume (vph)	2	0	7	350	1	21	5	1830	0	0	2355	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			0.751	0.723		0.063					
Satd. Flow (perm)	0	1645	0	1329	1223	1504	117	5085	0	0	5085	1583
Right Turn on Red		Yes			Yes			Yes			Yes	
Satd. Flow (RTOR)	127				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	8	380	1	23	5	1989	0	0	2560	4
Shared Lane Traffic (%)				50%		10%						
Lane Group Flow (vph)	0	10	0	190	193	21	5	1989	0	0	2560	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	CI+Ex	CI+Ex		CI+Ex	CI+Ex	CI+Ex	CI+Ex	CI+Ex			CI+Ex	CI+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		CI+Ex			CI+Ex			CI+Ex				CI+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	Perm
Protected Phases	4	4			8		5	2			6	
Permitted Phases				8		8	2					6

I/O Trafalgar Oakville TIS
PTSL (210156/210157)

Synchro 10 Report
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Lanes, Volumes, Timings

Total (2031) - Scenario B Phase 1 - 2% Growth Rate

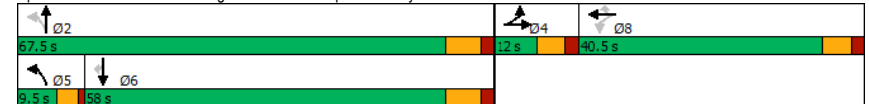
102: Trafalgar Rd & North Carpool Lot/Hwy 407 WB Off

Timing Plan: AM Peak Hour

	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			23.0	23.0	23.0	64.3	64.3			62.8	62.8
Actuated g/C Ratio	0.08			0.24	0.24	0.24	0.66	0.66			0.64	0.64
v/c Ratio	0.04			0.61	0.67	0.05	0.03	0.59			0.78	0.00
Control Delay	0.3			41.8	45.8	0.2	10.2	12.1			17.7	0.0
Queue Delay	0.0			0.0	0.0	0.0	0.0	0.0			0.0	0.0
Total Delay	0.3			41.8	45.8	0.2	10.2	12.1			17.7	0.0
LOS	A			D	D	A	B	B			B	A
Approach Delay	0.3				41.6		12.1				17.7	
Approach LOS	A				D		B				B	

Intersection Summary												
Area Type:	Other											
Cycle Length: 120												
Actuated Cycle Length: 97.4												
Natural Cycle: 90												
Control Type: Actuated-Uncoordinated												
Maximum v/c Ratio: 0.78												
Intersection Signal Delay: 17.3	Intersection LOS: B											
Intersection Capacity Utilization 68.8%	ICU Level of Service C											
Analysis Period (min) 15												

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



I/O Trafalgar Oakville TIS
PTSL (210156/210157)

Synchro 10 Report
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Queues
Total (2031) - Scenario B Phase 1 - 2% Growth Rate
102: Trafalgar Rd & North Carpool Lot/Hwy 407 WB Off
Timing Plan: AM Peak Hour

	→	↖	←	↙	↘	↑	↓	↗
Lane Group	EBT	WBL	WBT	WBR	NBL	NBT	SBT	SBR
Lane Group Flow (vph)	10	190	193	21	5	1989	2560	4
v/c Ratio	0.04	0.61	0.67	0.05	0.03	0.59	0.78	0.00
Control Delay	0.3	41.8	45.8	0.2	10.2	12.1	17.7	0.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	0.3	41.8	45.8	0.2	10.2	12.1	17.7	0.0
Queue Length 50th (m)	0.0	31.8	34.3	0.0	0.3	60.4	95.4	0.0
Queue Length 95th (m)	0.0	61.1	66.2	0.0	2.5	143.4	#277.6	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)	253	504	464	649	171	3358	3277	1062
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.04	0.38	0.42	0.03	0.03	0.59	0.78	0.00

Intersection Summary

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

HCM Signalized Intersection Capacity Analysis
Total (2031) - Scenario B Phase 1 - 2% Growth Rate
102: Trafalgar Rd & North Carpool Lot/Hwy 407 WB Off
Timing Plan: AM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	2	0	7	350	1	21	5	1830	0	0	2355	4
Future Volume (vph)	2	0	7	350	1	21	5	1830	0	0	2355	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	1613	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		1329	1223	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)	2	0	8	380	1	23	5	1989	0	0	2560	4
RTOR Reduction (vph)	0	10	0	0	0	16	0	0	0	0	0	2
Lane Group Flow (vph)	0	0	0	190	193	5	5	1989	0	0	2560	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)		1.0		21.0	21.0	21.0	64.7	64.7			59.8	59.8
Effective Green, g (s)		3.0		23.0	23.0	23.0	64.7	67.7			62.8	62.8
Actuated g/C Ratio		0.03		0.22	0.22	0.22	0.61	0.64			0.59	0.59
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)		46		289	266	327	85	3256			3021	940
v/s Ratio Prot		c0.00					0.00	c0.39			c0.50	
v/s Ratio Perm				0.14	c0.16	0.00	0.04					0.00
v/c Ratio		0.01		0.66	0.73	0.01	0.06	0.61			0.85	0.00
Uniform Delay, d1		49.9		37.8	38.4	32.5	18.4	11.2			17.5	8.7
Progression Factor		1.00		1.00	1.00	1.00	1.00	1.00			1.00	1.00
Incremental Delay, d2		0.1		5.5	9.7	0.0	0.2	0.9			3.2	0.0
Delay (s)		50.0		43.3	48.2	32.5	18.6	12.1			20.7	8.7
Level of Service		D		D	D	C	B	B			C	A
Approach Delay (s)		50.0			45.1			12.1			20.7	
Approach LOS		D			D			B			C	

Intersection Summary

HCM 2000 Control Delay	19.3	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.81		
Actuated Cycle Length (s)	105.7	Sum of lost time (s)	18.0
Intersection Capacity Utilization	68.8%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

Lanes, Volumes, Timings
103: Trafalgar Rd & Hwy 407 EB Off

Total (2031) - Scenario B Phase 1 - 2% Growth Rate
Timing Plan: AM Peak Hour

	EBL	EBR	NBL	NBT	SBT	SBR
Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	↔	↔		↕	↕	
Traffic Volume (vph)	115	288	0	1828	2498	0
Future Volume (vph)	115	288	0	1828	2498	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	0.933	0.850				
Frt Protected	0.973					
Satd. Flow (prot)	1691	1504	0	5085	5085	0
Frt Permitted	0.973					
Satd. Flow (perm)	1691	1504	0	5085	5085	0
Right Turn on Red	Yes				Yes	
Satd. Flow (RTOR)	1	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)	125	313	0	1987	2715	0
Shared Lane Traffic (%)		32%				
Lane Group Flow (vph)	225	213	0	1987	2715	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	CI+Ex	CI+Ex		CI+Ex	CI+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				CI+Ex	CI+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	

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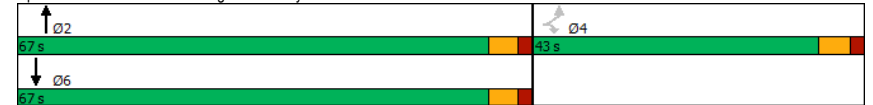
Lanes, Volumes, Timings
103: Trafalgar Rd & Hwy 407 EB Off

Total (2031) - Scenario B Phase 1 - 2% Growth Rate
Timing Plan: AM Peak Hour

	EBL	EBR	NBL	NBT	SBT	SBR
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)	19.9	19.9		63.2	63.2	
Actuated g/C Ratio	0.22	0.22		0.69	0.69	
v/c Ratio	0.61	0.65		0.56	0.77	
Control Delay	39.1	41.7		8.4	12.0	
Queue Delay	0.0	0.0		0.0	0.0	
Total Delay	39.1	41.7		8.4	12.0	
LOS	D	D		A	B	
Approach Delay	40.3			8.4	12.0	
Approach LOS	D			A	B	

Intersection Summary	
Area Type:	Other
Cycle Length: 110	
Actuated Cycle Length: 91.1	
Natural Cycle: 60	
Control Type: Semi Act-Uncoord	
Maximum v/c Ratio: 0.77	
Intersection Signal Delay: 13.0	Intersection LOS: B
Intersection Capacity Utilization 67.2%	ICU Level of Service C
Analysis Period (min) 15	

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



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Queues
103: Trafalgar Rd & Hwy 407 EB Off

Total (2031) - Scenario B Phase 1 - 2% Growth Rate
Timing Plan: AM Peak Hour

	EBL	EBR	NBT	SBT
Lane Group	EBL	EBR	NBT	SBT
Lane Group Flow (vph)	225	213	1987	2715
v/c Ratio	0.61	0.65	0.56	0.77
Control Delay	39.1	41.7	8.4	12.0
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	39.1	41.7	8.4	12.0
Queue Length 50th (m)	35.0	35.1	54.3	97.0
Queue Length 95th (m)	56.8	58.2	87.3	154.8
Internal Link Dist (m)	530.6		96.3	339.6
Turn Bay Length (m)				
Base Capacity (vph)	726	646	3526	3526
Starvation Cap Reductn	0	0	0	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.31	0.33	0.56	0.77
Intersection Summary				

HCM Signalized Intersection Capacity Analysis
103: Trafalgar Rd & Hwy 407 EB Off

Total (2031) - Scenario B Phase 1 - 2% Growth Rate
Timing Plan: AM Peak Hour

	EBL	EBR	NBL	NBT	SBT	SBR
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	↰	↱		↰	↱	
Traffic Volume (vph)	115	288	0	1828	2498	0
Future Volume (vph)	115	288	0	1828	2498	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	
Flt	0.93	0.85		1.00	1.00	
Flt Protected	0.97	1.00		1.00	1.00	
Satd. Flow (prot)	1692	1504		5085	5085	
Flt Permitted	0.97	1.00		1.00	1.00	
Satd. Flow (perm)	1692	1504		5085	5085	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	125	313	0	1987	2715	0
RTOR Reduction (vph)	1	1	0	0	0	0
Lane Group Flow (vph)	224	212	0	1987	2715	0
Turn Type	Perm	Perm		NA	NA	
Protected Phases				2	6	
Permitted Phases	4	4				
Actuated Green, G (s)	17.9	17.9		61.2	61.2	
Effective Green, g (s)	19.9	19.9		63.2	63.2	
Actuated g/C Ratio	0.22	0.22		0.69	0.69	
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)	369	328		3527	3527	
v/s Ratio Prot				0.39	0.53	
v/s Ratio Perm	0.13	0.14				
v/c Ratio	0.61	0.65		0.56	0.77	
Uniform Delay, d1	32.1	32.4		7.0	9.2	
Progression Factor	1.00	1.00		1.00	1.00	
Incremental Delay, d2	2.8	4.3		0.7	1.7	
Delay (s)	34.9	36.8		7.7	10.8	
Level of Service	C	D		A	B	
Approach Delay (s)	35.8			7.7	10.8	
Approach LOS	D			A	B	
Intersection Summary						
HCM 2000 Control Delay			11.7		HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio			0.76			
Actuated Cycle Length (s)			91.1		Sum of lost time (s)	10.0
Intersection Capacity Utilization			67.2%		ICU Level of Service	C
Analysis Period (min)			15			

c Critical Lane Group

Lanes, Volumes, Timings
104: Trafalgar Rd & West Street A/East Street A

Total (2031) - Scenario B Phase 1 - 2% Growth Rate

Timing Plan: AM Peak Hour

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰	↑	↱	↰	↑	↱	↰	↑	↱	↰	↑	↱
Traffic Volume (vph)	111	22	67	0	0	235	13	2141	364	494	2073	219
Future Volume (vph)	111	22	67	0	0	235	13	2141	364	494	2073	219
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		
Satd. Flow (prot)	1770	1863	1583	1863	1863	1583	1770	5085	1583	1770	5085	1583
Flt Permitted	0.757						0.072			0.052		
Satd. Flow (perm)	1410	1863	1583	1863	1863	1583	134	5085	1583	97	5085	1583
Right Turn on Red			Yes			Yes			Yes		Yes	
Satd. Flow (RTOR)			86			23			189			138
Link Speed (k/h)		50			50			80			80	
Link Distance (m)		143.5			212.6			233.3			131.6	
Travel Time (s)		10.3			15.3			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)	121	24	73	0	0	255	14	2327	396	537	2253	238
Shared Lane Traffic (%)												
Lane Group Flow (vph)	121	24	73	0	0	255	14	2327	396	537	2253	238
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		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

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Lanes, Volumes, Timings
104: Trafalgar Rd & West Street A/East Street A

Total (2031) - Scenario B Phase 1 - 2% Growth Rate

Timing Plan: AM Peak Hour

	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)	24.0	24.0	24.0	24.0	24.0	40.0	9.5	76.0	76.0	40.0	106.5	106.5
Total Split (%)	17.1%	17.1%	17.1%	17.1%	17.1%	28.6%	6.8%	54.3%	54.3%	28.6%	76.1%	76.1%
Maximum Green (s)	18.0	18.0	18.0	18.0	18.0	36.0	5.5	70.0	70.0	36.0	100.5	100.5
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 Effect Green (s)	17.4	17.4	17.4			59.4	77.5	72.0	72.0	112.0	108.3	108.3
Actuated g/C Ratio	0.13	0.13	0.13			0.43	0.56	0.52	0.52	0.82	0.79	0.79
v/c Ratio	0.68	0.10	0.27			0.37	0.10	0.87	0.43	1.04	0.56	0.19
Control Delay	76.9	53.6	10.0			25.4	9.6	33.7	11.7	91.2	6.9	2.3
Queue Delay	0.0	0.0	0.0			0.0	0.0	4.5	0.0	0.0	0.3	0.0
Total Delay	76.9	53.6	10.0			25.4	9.6	38.2	11.7	91.2	7.2	2.3
LOS	E	D	B			C	A	D	B	F	A	A
Approach Delay		51.9			25.4			34.2			21.7	
Approach LOS		D			C			C			C	

Intersection Summary

Area Type: Other

Cycle Length: 140

Actuated Cycle Length: 137.4

Natural Cycle: 120

Control Type: Actuated-Uncoordinated

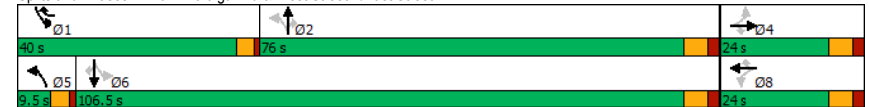
Maximum v/c Ratio: 1.04

Intersection Signal Delay: 28.4

Intersection Capacity Utilization 84.9%

Analysis Period (min) 15

Splits and Phases: 104: Trafalgar Rd & West Street A/East Street A



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Queues
104: Trafalgar Rd & West Street A/East Street A

Total (2031) - Scenario B Phase 1 - 2% Growth Rate
Timing Plan: AM Peak Hour

	EBL	EBT	EBR	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group	EBL	EBT	EBR	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	121	24	73	255	14	2327	396	537	2253	238
v/c Ratio	0.68	0.10	0.27	0.37	0.10	0.87	0.43	1.04	0.56	0.19
Control Delay	76.9	53.6	10.0	25.4	9.6	33.7	11.7	91.2	6.9	2.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	4.5	0.0	0.0	0.3	0.0
Total Delay	76.9	53.6	10.0	25.4	9.6	38.2	11.7	91.2	7.2	2.3
Queue Length 50th (m)	31.4	5.8	0.0	41.2	0.8	200.2	32.0	~143.4	65.2	4.7
Queue Length 95th (m)	52.8	14.5	10.8	62.4	2.5	225.0	56.8	#214.4	107.9	14.4
Internal Link Dist (m)	119.5		50.0		209.3		107.6			
Turn Bay Length (m)	50.0		50.0	50.0	50.0		50.0	30.0		30.0
Base Capacity (vph)	205	271	303	696	141	2665	919	517	4008	1276
Starvation Cap Reductn	0	0	0	0	0	280	0	0	888	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	0.59	0.09	0.24	0.37	0.10	0.98	0.43	1.04	0.72	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.

HCM Signalized Intersection Capacity Analysis (2031) - Scenario B Phase 1 - 2% Growth Rate
104: Trafalgar Rd & West Street A/East Street A

Timing Plan: AM Peak Hour

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰	↑	↱	↰	↑	↱	↰	↑	↱	↰	↑	↱
Traffic Volume (vph)	111	22	67	0	0	235	13	2141	364	494	2073	219
Future Volume (vph)	111	22	67	0	0	235	13	2141	364	494	2073	219
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
Flt	1.00	1.00	0.85			0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00			1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1770	1863	1583			1583	1770	5085	1583	1770	5085	1583
Flt Permitted	0.76	1.00	1.00			1.00	0.07	1.00	1.00	0.05	1.00	1.00
Satd. Flow (perm)	1410	1863	1583			1583	134	5085	1583	97	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)	121	24	73	0	0	255	14	2327	396	537	2253	238
RTOR Reduction (vph)	0	0	64	0	0	14	0	0	88	0	0	31
Lane Group Flow (vph)	121	24	9	0	0	241	14	2327	308	537	2253	207
Turn Type	Perm	NA	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)	15.4	15.4	15.4			51.4	74.7	72.5	72.5	112.5	106.3	106.3
Effective Green, g (s)	17.4	17.4	17.4			55.4	74.7	74.5	74.5	112.5	108.3	108.3
Actuated g/C Ratio	0.12	0.12	0.12			0.40	0.53	0.53	0.53	0.80	0.77	0.77
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)	175	231	196			626	97	2707	842	508	3936	1225
v/s Ratio Prot		0.01				0.10	0.00	0.46		c0.27	0.44	
v/s Ratio Perm	c0.09		0.01			0.05	0.07		0.19	c0.58		0.13
v/c Ratio	0.69	0.10	0.05			0.39	0.14	0.86	0.37	1.06	0.57	0.17
Uniform Delay, d1	58.7	54.3	53.9			30.1	17.0	28.2	19.0	46.2	6.4	4.1
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	11.2	0.2	0.1			0.4	0.7	3.8	1.2	55.9	0.6	0.3
Delay (s)	69.9	54.5	54.0			30.5	17.7	32.0	20.2	102.1	7.0	4.4
Level of Service	E	D	D			C	B	C	C	F	A	A
Approach Delay (s)		62.9			30.5			30.2			23.7	
Approach LOS		E			C			C			C	

Intersection Summary

HCM 2000 Control Delay	28.2	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	1.01		
Actuated Cycle Length (s)	139.9	Sum of lost time (s)	12.0
Intersection Capacity Utilization	84.9%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

Lanes, Volumes, Timings
105: Trafalgar Rd & William Halton Parkway

Total (2031) - Scenario B Phase 1 - 2% Growth Rate

Timing Plan: AM Peak Hour

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↩	↩↩	↩	↩	↩↩	↩	↩↩↩	↩	↩	↩↩	↩↩	↩
Traffic Volume (vph)	352	765	155	166	416	199	253	2167	41	429	1661	50
Future Volume (vph)	352	765	155	166	416	199	253	2167	41	429	1661	50
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	0.246			0.134			0.077			0.071		
Satd. Flow (perm)	458	3539	1583	250	3539	1583	143	5085	1583	132	5085	1583
Right Turn on Red			Yes			Yes			Yes		Yes	
Satd. Flow (RTOR)			168			216			120		120	
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		209.3			204.1			208.3			233.3	
Travel Time (s)		15.1			14.7			15.0			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)	383	832	168	180	452	216	275	2355	45	466	1805	54
Shared Lane Traffic (%)												
Lane Group Flow (vph)	383	832	168	180	452	216	275	2355	45	466	1805	54
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

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Lanes, Volumes, Timings
105: Trafalgar Rd & William Halton Parkway

Total (2031) - Scenario B Phase 1 - 2% Growth Rate

Timing Plan: AM Peak Hour

	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)	23.0	47.0	47.0	14.0	38.0	38.0	21.0	59.0	59.0	25.0	63.0	63.0
Total Split (%)	15.9%	32.4%	32.4%	9.7%	26.2%	26.2%	14.5%	40.7%	40.7%	17.2%	43.4%	43.4%
Maximum Green (s)	19.0	40.0	40.0	10.0	31.0	31.0	17.0	52.1	52.1	21.0	56.1	56.1
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)	55.9	41.9	41.9	42.9	32.9	32.9	72.0	55.0	55.0	80.0	59.0	59.0
Actuated g/C Ratio	0.39	0.29	0.29	0.30	0.23	0.23	0.50	0.38	0.38	0.56	0.41	0.41
v/c Ratio	1.09	0.81	0.29	1.01	0.56	0.41	1.05	1.21	0.07	1.49	0.87	0.07
Control Delay	110.1	54.4	6.5	103.2	52.1	7.9	108.6	139.3	0.2	270.3	44.4	0.2
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	110.1	54.4	6.5	103.2	52.1	7.9	108.6	139.3	0.2	270.3	44.7	0.2
LOS	F	D	A	F	D	A	F	F	A	F	D	A
Approach Delay		64.0			51.7			133.8			88.9	
Approach LOS		E			D			F			F	

Intersection Summary

Area Type: Other

Cycle Length: 145

Actuated Cycle Length: 143.9

Natural Cycle: 135

Control Type: Actuated-Uncoordinated

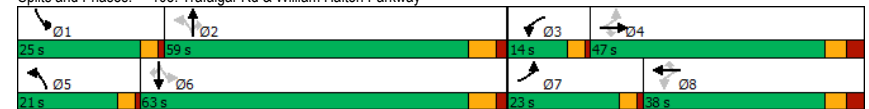
Maximum v/c Ratio: 1.49

Intersection Signal Delay: 96.4

Intersection Capacity Utilization 115.1%

Analysis Period (min) 15

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



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Queues
105: Trafalgar Rd & William Halton Parkway

Total (2031) - Scenario B Phase 1 - 2% Growth Rate
Timing Plan: AM Peak Hour

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	383	832	168	180	452	216	275	2355	45	466	1805	54
v/c Ratio	1.09	0.81	0.29	1.01	0.56	0.41	1.05	1.21	0.07	1.49	0.87	0.07
Control Delay	110.1	54.4	6.5	103.2	52.1	7.9	108.6	139.3	0.2	270.3	44.4	0.2
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	110.1	54.4	6.5	103.2	52.1	7.9	108.6	139.3	0.2	270.3	44.7	0.2
Queue Length 50th (m)	~85.5	114.5	0.0	34.2	59.6	0.0	~68.4	~299.3	0.0	~167.8	170.8	0.0
Queue Length 95th (m)	#148.8	138.9	16.6	#83.2	77.1	19.9	#125.0	#325.8	0.0	#235.2	191.1	0.0
Internal Link Dist (m)	185.3			180.1			184.3			209.3		
Turn Bay Length (m)	100.0		100.0	100.0		150.0	150.0		75.0			
Base Capacity (vph)	350	1057	590	179	836	539	263	1943	678	312	2085	720
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	37	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	1.09	0.79	0.28	1.01	0.54	0.40	1.05	1.21	0.07	1.49	0.88	0.07

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.

Queue shown is maximum after two cycles.

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

Queue shown is maximum after two cycles.

HCM Signalized Intersection Capacity Analysis (2031) - Scenario B Phase 1 - 2% Growth Rate
105: Trafalgar Rd & William Halton Parkway

Timing Plan: AM Peak Hour

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰	↰↰	↰	↰	↰↰	↰	↰	↰↰	↰	↰	↰↰	↰
Traffic Volume (vph)	352	765	155	166	416	199	253	2167	41	429	1661	50
Future Volume (vph)	352	765	155	166	416	199	253	2167	41	429	1661	50
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	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00
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	0.25	1.00	1.00	0.13	1.00	1.00	0.08	1.00	1.00	0.07	1.00	1.00
Satd. Flow (perm)	459	3539	1583	249	3539	1583	143	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)	383	832	168	180	452	216	275	2355	45	466	1805	54
RTOR Reduction (vph)	0	0	119	0	0	167	0	0	28	0	0	32
Lane Group Flow (vph)	383	832	49	180	452	49	275	2355	17	466	1805	22
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)	52.9	38.9	38.9	39.9	29.9	29.9	69.1	52.1	52.1	77.1	56.1	56.1
Effective Green, g (s)	52.9	41.9	41.9	39.9	32.9	32.9	69.1	55.0	55.0	77.1	59.0	59.0
Actuated g/C Ratio	0.37	0.29	0.29	0.28	0.23	0.23	0.48	0.38	0.38	0.54	0.41	0.41
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)	341	1030	460	174	809	361	260	1943	605	310	2084	649
v/s Ratio Prot	c0.15	0.24		0.07	0.13		0.12	0.46		c0.22	0.35	
v/s Ratio Perm	c0.26		0.03	0.21		0.03	0.38		0.01	c0.59		0.01
v/c Ratio	1.12	0.81	0.11	1.03	0.56	0.14	1.06	1.21	0.03	1.50	0.87	0.03
Uniform Delay, d1	39.5	47.3	37.3	45.8	49.1	44.2	45.8	44.5	27.8	48.2	38.8	25.4
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	86.3	5.4	0.2	77.6	1.4	0.4	71.8	100.4	0.1	242.6	5.1	0.1
Delay (s)	125.8	52.7	37.5	123.4	50.5	44.6	117.6	144.9	27.8	290.8	44.0	25.5
Level of Service	F	D	D	F	D	D	F	F	C	F	D	C
Approach Delay (s)		71.1			64.5			140.1			93.0	
Approach LOS		E			E			F			F	

Intersection Summary

HCM 2000 Control Delay	102.9	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	1.34		
Actuated Cycle Length (s)	143.9	Sum of lost time (s)	16.0
Intersection Capacity Utilization	115.1%	ICU Level of Service	H
Analysis Period (min)	15		

c Critical Lane Group

Lanes, Volumes, Timings Total (2031) - Scenario B Phase 1 - 2% Growth Rate
106: Trafalgar Rd & Burnhamthorpe Rd/Burnhamthorpe Rd Timing Plan: AM Peak Hour

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰	↱	↲	↰	↱	↲	↰	↱	↲	↰	↱	↲
Traffic Volume (vph)	375	403	66	68	129	199	46	1888	143	268	1317	148
Future Volume (vph)	375	403	66	68	129	199	46	1888	143	268	1317	148
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	1.00	1.00	1.00	1.00	1.00	1.00	0.91	1.00	1.00	0.91	1.00
Frt		0.979			0.909				0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1770	1824	0	1770	1693	0	1770	5085	1583	1770	5085	1583
Flt Permitted	0.140			0.154			0.135			0.066		
Satd. Flow (perm)	261	1824	0	287	1693	0	251	5085	1583	123	5085	1583
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		6			49				160			143
Link Speed (k/h)		60			60			80			80	
Link Distance (m)		828.7			989.6			1077.8			247.3	
Travel Time (s)		49.7			59.4			48.5			11.1	
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)	408	438	72	74	140	216	50	2052	155	291	1432	161
Shared Lane Traffic (%)												
Lane Group Flow (vph)	408	510	0	74	356	0	50	2052	155	291	1432	161
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)	26.0	46.5		9.5	30.0		9.6	63.0	63.0	21.0	74.4	74.4
Total Split (%)	18.6%	33.2%		6.8%	21.4%		6.9%	45.0%	45.0%	15.0%	53.1%	53.1%
Maximum Green (s)	21.5	40.5		5.0	24.0		5.1	57.0	57.0	17.0	68.4	68.4
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 Effect Green (s)	53.5	42.5		34.5	26.0		67.6	59.0	59.0	80.0	70.4	70.4
Actuated g/C Ratio	0.38	0.30		0.25	0.19		0.48	0.42	0.42	0.57	0.50	0.50
v/c Ratio	1.16	0.92		0.51	1.01		0.25	0.96	0.20	1.08	0.56	0.19
Control Delay	134.3	68.9		42.7	97.6		16.7	51.2	3.9	115.8	25.1	4.3
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	134.3	68.9		42.7	97.6		16.7	51.2	3.9	115.8	25.1	4.3

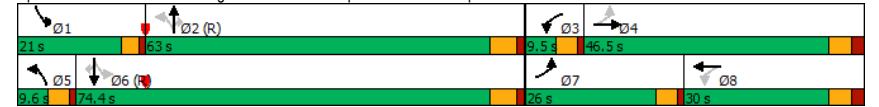
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Lanes, Volumes, Timings Total (2031) - Scenario B Phase 1 - 2% Growth Rate
106: Trafalgar Rd & Burnhamthorpe Rd/Burnhamthorpe Rd Timing Plan: AM Peak Hour

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
LOS	F	E		D	F		B	D	A	F	C	A
Approach Delay		97.9			88.2			47.2			37.4	
Approach LOS		F			F			D			D	
Intersection Summary												
Area Type:	Other											
Cycle Length: 140												
Actuated Cycle Length: 140												
Offset: 0 (0%), Referenced to phase 2:NBT and 6:SBTL, Start of Green												
Natural Cycle: 110												
Control Type: Pretimed												
Maximum v/c Ratio: 1.16												
Intersection Signal Delay: 55.5							Intersection LOS: E					
Intersection Capacity Utilization 104.4%							ICU Level of Service G					
Analysis Period (min) 15												

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



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Queues
106: Trafalgar Rd & Burhamthorpe Rd/Burnhamthorpe Rd

Total (2031) - Scenario B Phase 1 - 2% Growth Rate
Timing Plan: AM Peak Hour

	EBL	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	408	510	74	356	50	2052	155	291	1432	161
v/c Ratio	1.16	0.92	0.51	1.01	0.25	0.96	0.20	1.08	0.56	0.19
Control Delay	134.3	68.9	42.7	97.6	16.7	51.2	3.9	115.8	25.1	4.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	134.3	68.9	42.7	97.6	16.7	51.2	3.9	115.8	25.1	4.3
Queue Length 50th (m)	~115.4	133.3	12.9	~87.4	5.6	196.9	0.0	~72.4	96.7	2.4
Queue Length 95th (m)	#178.6	#197.2	23.7	#150.7	11.4	#231.6	12.0	#129.3	110.5	13.7
Internal Link Dist (m)		804.7		965.6		1053.8			223.3	
Turn Bay Length (m)	30.0		15.0		60.0		60.0	60.0		60.0
Base Capacity (vph)	353	557	144	354	198	2142	759	270	2557	867
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	1.16	0.92	0.51	1.01	0.25	0.96	0.20	1.08	0.56	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.

HCM Signalized Intersection Capacity Analysis (2031) - Scenario B Phase 1 - 2% Growth Rate
106: Trafalgar Rd & Burhamthorpe Rd/Burnhamthorpe Rd

Timing Plan: AM Peak Hour

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰	↱		↰	↱		↰	↱	↱	↰	↱	↱
Traffic Volume (vph)	375	403	66	68	129	199	46	1888	143	268	1317	148
Future Volume (vph)	375	403	66	68	129	199	46	1888	143	268	1317	148
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	1.00		1.00	1.00		1.00	0.91	1.00	1.00	0.91	1.00
Frt	1.00	0.98		1.00	0.91		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	1823		1770	1693		1770	5085	1583	1770	5085	1583
Flt Permitted	0.14	1.00		0.15	1.00		0.14	1.00	1.00	0.07	1.00	1.00
Satd. Flow (perm)	261	1823		287	1693		252	5085	1583	122	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)	408	438	72	74	140	216	50	2052	155	291	1432	161
RTOR Reduction (vph)	0	4	0	0	40	0	0	0	90	0	0	71
Lane Group Flow (vph)	408	506	0	74	316	0	50	2052	65	291	1432	90
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)	50.0	40.5		29.0	24.0		62.1	57.0	57.0	78.0	68.4	68.4
Effective Green, g (s)	52.0	42.5		33.0	26.0		66.1	59.0	59.0	78.0	70.4	70.4
Actuated g/C Ratio	0.37	0.30		0.24	0.19		0.47	0.42	0.42	0.56	0.50	0.50
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)	350	553		141	314		195	2142	667	268	2557	796
v/s Ratio Prot	c0.20	0.28		0.03	0.19		0.01	0.40		c0.13	0.28	
v/s Ratio Perm	c0.24			0.10			0.11		0.04	c0.47		0.06
v/c Ratio	1.17	0.91		0.52	1.01		0.26	0.96	0.10	1.09	0.56	0.11
Uniform Delay, d1	42.8	47.0		43.9	57.0		20.8	39.3	24.4	47.1	24.1	18.3
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	101.2	22.1		13.3	52.5		3.2	11.8	0.3	79.8	0.9	0.3
Delay (s)	144.0	69.1		57.2	109.5		24.0	51.1	24.7	126.9	25.0	18.6
Level of Service	F	E		E	F		C	D	C	F	C	B
Approach Delay (s)		102.4			100.5			48.7			40.2	
Approach LOS		F			F			D			D	

Intersection Summary

HCM 2000 Control Delay	58.8	HCM 2000 Level of Service	E
HCM 2000 Volume to Capacity ratio	1.15		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	14.5
Intersection Capacity Utilization	104.4%	ICU Level of Service	G
Analysis Period (min)	15		
c Critical Lane Group			

Lanes, Volumes, Timings
202: Trafalgar Rd & West Street C

Total (2031) - Scenario B Phase 1 - 2% Growth Rate

Timing Plan: AM Peak Hour

						
Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations				  	  	
Traffic Volume (vph)	0	37	0	2462	1696	153
Future Volume (vph)	0	37	0	2462	1696	153
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (m)	0.0	0.0	0.0			90.0
Storage Lanes	0	1	0			1
Taper Length (m)	7.5		7.5			
Lane Util. Factor	1.00	1.00	1.00	0.91	0.91	1.00
Frt		0.865				0.850
Flt Protected						
Satd. Flow (prot)	0	1611	0	5085	5085	1583
Flt Permitted						
Satd. Flow (perm)	0	1611	0	5085	5085	1583
Link Speed (k/h)	50			50	50	
Link Distance (m)	202.4			247.3	208.3	
Travel Time (s)	14.6			17.8	15.0	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	40	0	2676	1843	166
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	40	0	2676	1843	166
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	0.0			3.6	3.6	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	4.8			4.8	4.8	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)	25	15	25			15
Sign Control	Stop			Free	Free	
Intersection Summary						
Area Type:	Other					
Control Type:	Unsignalized					
Intersection Capacity Utilization	50.9%			ICU Level of Service A		
Analysis Period (min)	15					

HCM Unsignalized Intersection Capacity Analysis (2031) - Scenario B Phase 1 - 2% Growth Rate
202: Trafalgar Rd & West Street C

Timing Plan: AM Peak Hour

								
Movement	EBL	EBR	NBL	NBT	SBT	SBR		
Lane Configurations				  	  			
Traffic Volume (veh/h)	0	37	0	2462	1696	153		
Future Volume (Veh/h)	0	37	0	2462	1696	153		
Sign Control	Stop			Free	Free			
Grade	0%			0%	0%			
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92		
Hourly flow rate (vph)	0	40	0	2676	1843	166		
Pedestrians								
Lane Width (m)								
Walking Speed (m/s)								
Percent Blockage								
Right turn flare (veh)								
Median type			None		None			
Median storage (veh)								
Upstream signal (m)				247	208			
pX, platoon unblocked	0.76	0.69	0.69					
vC, conflicting volume	2735	614	2009					
vC1, stage 1 conf vol								
vC2, stage 2 conf vol								
vCu, unblocked vol	0	0	894					
tC, single (s)	6.8	6.9	4.1					
tC, 2 stage (s)								
tF (s)	3.5	3.3	2.2					
p0 queue free %	100	95	100					
cM capacity (veh/h)	779	749	521					
Direction, Lane #	EB 1	NB 1	NB 2	NB 3	SB 1	SB 2	SB 3	SB 4
Volume Total	40	892	892	892	614	614	614	166
Volume Left	0	0	0	0	0	0	0	0
Volume Right	40	0	0	0	0	0	0	166
cSH	749	1700	1700	1700	1700	1700	1700	1700
Volume to Capacity	0.05	0.52	0.52	0.52	0.36	0.36	0.36	0.10
Queue Length 95th (m)	1.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Control Delay (s)	10.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Lane LOS	B							
Approach Delay (s)	10.1	0.0			0.0			
Approach LOS	B							
Intersection Summary								
Average Delay			0.1					
Intersection Capacity Utilization			50.9%		ICU Level of Service		A	
Analysis Period (min)			15					

Lanes, Volumes, Timings
203: East Street D & East Street A

Total (2031) - Scenario B Phase 1 - 2% Growth Rate
Timing Plan: AM Peak Hour

						
Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	46	490	0	0	146	0
Future Volume (vph)	46	490	0	0	146	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	0.877					
Flt Protected					0.950	
Satd. Flow (prot)	1634	0	0	1863	1770	0
Flt Permitted					0.950	
Satd. Flow (perm)	1634	0	0	1863	1770	0
Link Speed (k/h)	50			50	50	
Link Distance (m)	212.6			202.8	119.6	
Travel Time (s)	15.3			14.6	8.6	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	50	533	0	0	159	0
Shared Lane Traffic (%)						
Lane Group Flow (vph)	583	0	0	0	159	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
Sign Control	Free			Free	Stop	
Intersection Summary						
Area Type:	Other					
Control Type:	Unsignalized					
Intersection Capacity Utilization	47.4%			ICU Level of Service A		
Analysis Period (min)	15					

HCM Unsignalized Intersection Capacity Analysis (2031) - Scenario B Phase 1 - 2% Growth Rate
203: East Street D & East Street A

Timing Plan: AM Peak Hour

	→	↖	↗	←	↖	↗
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↖			↖	↖	
Traffic Volume (veh/h)	46	490	0	0	146	0
Future Volume (Veh/h)	46	490	0	0	146	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)	50	533	0	0	159	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)	213					
pX, platoon unblocked			0.99		0.99	0.99
vC, conflicting volume			583		316	316
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			569		299	299
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			100		77	100
cM capacity (veh/h)			988		682	730
Direction, Lane #	EB 1	WB 1	NB 1			
Volume Total	583	0	159			
Volume Left	0	0	159			
Volume Right	533	0	0			
cSH	1700	1700	682			
Volume to Capacity	0.34	0.00	0.23			
Queue Length 95th (m)	0.0	0.0	6.7			
Control Delay (s)	0.0	0.0	11.9			
Lane LOS			B			
Approach Delay (s)	0.0	0.0	11.9			
Approach LOS			B			
Intersection Summary						
Average Delay			2.5			
Intersection Capacity Utilization			47.4%		ICU Level of Service	A
Analysis Period (min)			15			

Lanes, Volumes, Timings

Total (2031) - Scenario B Phase 1 - 2% Growth Rate

204: East Street E & East Street A

Timing Plan: AM Peak Hour

	→	↖	↗	←	↖	↗
Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↖			↖	↖	
Traffic Volume (vph)	0	46	0	0	0	0
Future Volume (vph)	0	46	0	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.865					
Flt Protected						
Satd. Flow (prot)	1611	0	0	1863	1863	0
Flt Permitted						
Satd. Flow (perm)	1611	0	0	1863	1863	0
Link Speed (k/h)	50			50	50	
Link Distance (m)	202.8			186.3	118.9	
Travel Time (s)	14.6			13.4	8.6	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	50	0	0	0	0
Shared Lane Traffic (%)						
Lane Group Flow (vph)	50	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)	0.0			0.0	3.6	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	4.8			4.8	4.8	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)		15	25		25	15
Sign Control	Free			Free	Stop	

Intersection Summary						
Area Type:	Other					
Control Type:	Unsignalized					
Intersection Capacity Utilization 6.7%	ICU Level of Service A					
Analysis Period (min) 15						

HCM Unsignalized Intersection Capacity Analysis (2031) - Scenario B Phase 1 - 2% Growth Rate

204: East Street E & East Street A

Timing Plan: AM Peak Hour

	→	↖	↗	←	↖	↗
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↖			↖	↖	
Traffic Volume (veh/h)	0	46	0	0	0	0
Future Volume (Veh/h)	0	46	0	0	0	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)	0	50	0	0	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			50		25	25
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			50		25	25
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			100		100	100
cM capacity (veh/h)			1557		991	1051

Direction, Lane #	EB 1	WB 1	NB 1
Volume Total	50	0	0
Volume Left	0	0	0
Volume Right	50	0	0
cSH	1700	1700	1700
Volume to Capacity	0.03	0.00	0.00
Queue Length 95th (m)	0.0	0.0	0.0
Control Delay (s)	0.0	0.0	0.0
Lane LOS			A
Approach Delay (s)	0.0	0.0	0.0
Approach LOS			A
Intersection Summary			
Average Delay	0.0		
Intersection Capacity Utilization	6.7%	ICU Level of Service	A
Analysis Period (min)	15		

Lanes, Volumes, Timings

Total (2031) - Scenario B Phase 1 - 2% Growth Rate

205: East Street F & East Street A

Timing Plan: AM Peak Hour

	→	↘	↙	←	↖	↗
Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
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	1.00	1.00	1.00
Flt						
Flt Protected						
Satd. Flow (prot)	1863	0	0	1863	1863	0
Flt Permitted						
Satd. Flow (perm)	1863	0	0	1863	1863	0
Link Speed (k/h)	50			50	50	
Link Distance (m)	186.3			197.2	119.9	
Travel Time (s)	13.4			14.2	8.6	
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)	0.0			0.0	3.6	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	4.8			4.8	4.8	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)		15	25		25	15
Sign Control	Stop			Free	Free	
Intersection Summary						
Area Type:	Other					
Control Type:	Unsignalized					
Intersection Capacity Utilization	0.0%			ICU Level of Service A		
Analysis Period (min)	15					

HCM Unsignalized Intersection Capacity Analysis (2031) - Scenario B Phase 1 - 2% Growth Rate

205: East Street F & East Street A

Timing Plan: AM Peak Hour

Intersection Sign configuration not allowed in HCM analysis.

Lanes, Volumes, Timings
206: East Street D & East Street B

Total (2031) - Scenario B Phase 1 - 2% Growth Rate

Timing Plan: AM Peak Hour

	←	←	↑	↗	↘	↓
Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	↖		↖			↗
Traffic Volume (vph)	31	31	78	14	15	287
Future Volume (vph)	31	31	78	14	15	287
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	0.932		0.980			
Flt Protected	0.976					0.998
Satd. Flow (prot)	1694	0	1825	0	0	1859
Flt Permitted	0.976					0.998
Satd. Flow (perm)	1694	0	1825	0	0	1859
Link Speed (k/h)	50		50			50
Link Distance (m)	200.4		111.4			119.6
Travel Time (s)	14.4		8.0			8.6
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	34	34	85	15	16	312
Shared Lane Traffic (%)						
Lane Group Flow (vph)	68	0	100	0	0	328
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

HCM Unsignalized Intersection Capacity Analysis (2031) - Scenario B Phase 1 - 2% Growth Rate
206: East Street D & East Street B

Timing Plan: AM Peak Hour

	←	←	↑	↗	↘	↓
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	↖		↖			↗
Traffic Volume (veh/h)	31	31	78	14	15	287
Future Volume (Veh/h)	31	31	78	14	15	287
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)	34	34	85	15	16	312
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	436	92			100	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	436	92			100	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	94	96			99	
cM capacity (veh/h)	571	965			1493	

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	68	100	328
Volume Left	34	0	16
Volume Right	34	15	0
cSH	717	1700	1493
Volume to Capacity	0.09	0.06	0.01
Queue Length 95th (m)	2.3	0.0	0.2
Control Delay (s)	10.5	0.0	0.5
Lane LOS	B		A
Approach Delay (s)	10.5	0.0	0.5
Approach LOS	B		

Intersection Summary

Average Delay	1.7		
Intersection Capacity Utilization	32.9%	ICU Level of Service	A
Analysis Period (min)	15		

Lanes, Volumes, Timings
207: East Street E & East Street B

Total (2031) - Scenario B Phase 1 - 2% Growth Rate

Timing Plan: AM Peak Hour

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	0	29	0	0	0	0	0	0	0	46	0
Future Volume (vph)	0	0	29	0	0	0	0	0	0	0	46	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	0.865											
Flt Protected												
Satd. Flow (prot)	0	1611	0	0	1863	0	0	1863	0	0	1863	0
Flt Permitted												
Satd. Flow (perm)	0	1611	0	0	1863	0	0	1863	0	0	1863	0
Link Speed (k/h)	50											
Link Distance (m)	200.4											
Travel Time (s)	14.4											
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)	0	0	32	0	0	0	0	0	0	0	50	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	32	0	0	0	0	0	0	0	0	50	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											
Link Offset(m)	0.0											
Crosswalk Width(m)	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											

Intersection Summary

Area Type: Other

Control Type: Unsignalized

Intersection Capacity Utilization 13.3% ICU Level of Service A

Analysis Period (min) 15

HCM Unsignalized Intersection Capacity Analysis (2031) - Scenario B Phase 1 - 2% Growth Rate
207: East Street E & East Street B

Timing Plan: AM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	0	29	0	0	0	0	0	0	0	46	0
Future Volume (Veh/h)	0	0	29	0	0	0	0	0	0	0	46	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	0	32	0	0	0	0	0	0	0	50	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)	114											
pX, platoon unblocked												
vC, conflicting volume	50	50	50	82	50	0	50	0				
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	50	50	50	82	50	0	50	0				
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	97	100	100	100	100	100				
cM capacity (veh/h)	950	841	1018	877	841	1085	1557	1623				
Direction, Lane #	EB 1	WB 1	NB 1	SB 1								
Volume Total	32	0	0	50								
Volume Left	0	0	0	0								
Volume Right	32	0	0	0								
cSH	1018	1700	1700	1623								
Volume to Capacity	0.03	0.00	0.00	0.00								
Queue Length 95th (m)	0.7	0.0	0.0	0.0								
Control Delay (s)	8.6	0.0	0.0	0.0								
Lane LOS	A	A										
Approach Delay (s)	8.6	0.0	0.0	0.0								
Approach LOS	A	A										
Intersection Summary												
Average Delay	3.4											
Intersection Capacity Utilization	13.3%			ICU Level of Service					A			
Analysis Period (min)	15											

Lanes, Volumes, Timings
208: East Street F & East Street B

Total (2031) - Scenario B Phase 1 - 2% Growth Rate
Timing Plan: AM Peak Hour

						
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	1.00	1.00	1.00
Fit						
Fit Protected						
Satd. Flow (prot)	1863	0	0	1863	1863	0
Fit Permitted						
Satd. Flow (perm)	1863	0	0	1863	1863	0
Link Speed (k/h)	50			50	50	
Link Distance (m)	185.7			112.6	119.9	
Travel Time (s)	13.4			8.1	8.6	
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			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	25			15
Sign Control	Stop			Free	Free	
Intersection Summary						
Area Type:	Other					
Control Type:	Unsignalized					
Intersection Capacity Utilization	0.0%			ICU Level of Service A		
Analysis Period (min)	15					

HCM Unsignalized Intersection Capacity Analysis (2031) - Scenario B Phase 1 - 2% Growth Rate
208: East Street F & East Street B

Timing Plan: AM Peak Hour

						
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	0	0	0	0	0	0
Future Volume (Veh/h)	0	0	0	0	0	0
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	0	0	0	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	0	0	0			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	0	0	0			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	100	100	100			
cM capacity (veh/h)	1023	1085	1623			
Direction, Lane #	EB 1	NB 1	SB 1			
Volume Total	0	0	0			
Volume Left	0	0	0			
Volume Right	0	0	0			
cSH	1700	1700	1700			
Volume to Capacity	0.00	0.00	0.00			
Queue Length 95th (m)	0.0	0.0	0.0			
Control Delay (s)	0.0	0.0	0.0			
Lane LOS	A					
Approach Delay (s)	0.0	0.0	0.0			
Approach LOS	A					
Intersection Summary						
Average Delay		0.0				
Intersection Capacity Utilization		0.0%		ICU Level of Service		A
Analysis Period (min)		15				

Lanes, Volumes, Timings Total (2031) - Scenario B Phase 1 - 2% Growth Rate
 209: William Halton Parkway & East Street D Timing Plan: AM Peak Hour

						
Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑↑	↑↑	↑		↑
Traffic Volume (vph)	0	1235	626	39	0	155
Future Volume (vph)	0	1235	626	39	0	155
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (m)	0.0			50.0	0.0	0.0
Storage Lanes	0			1	0	1
Taper Length (m)	7.5				7.5	
Lane Util. Factor	1.00	0.95	0.95	1.00	1.00	1.00
Frt				0.850		0.865
Flt Protected						
Satd. Flow (prot)	0	3539	3539	1583	0	1611
Flt Permitted						
Satd. Flow (perm)	0	3539	3539	1583	0	1611
Link Speed (k/h)		50	50		50	
Link Distance (m)		204.1	194.7		111.4	
Travel Time (s)		14.7	14.0		8.0	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	1342	680	42	0	168
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	1342	680	42	0	168
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(m)		3.6	3.6		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	25	15
Sign Control		Free	Free		Stop	
Intersection Summary						
Area Type:	Other					
Control Type:	Unsignalized					
Intersection Capacity Utilization	37.5%			ICU Level of Service A		
Analysis Period (min)	15					

HCM Unsignalized Intersection Capacity Analysis (2031) - Scenario B Phase 1 - 2% Growth Rate
 209: William Halton Parkway & East Street D Timing Plan: AM Peak Hour

						
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑↑	↑↑	↗		↗
Traffic Volume (veh/h)	0	1235	626	39	0	155
Future Volume (Veh/h)	0	1235	626	39	0	155
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)	0	1342	680	42	0	168
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		None	None			
Median storage veh						
Upstream signal (m)		204	195			
pX, platoon unblocked	0.99				0.78	0.99
vC, conflicting volume	722				1351	340
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	710				869	326
tC, single (s)	4.1				6.8	6.9
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	100				100	75
cM capacity (veh/h)	880				229	666
Direction, Lane #	EB 1	EB 2	WB 1	WB 2	WB 3	SB 1
Volume Total	671	671	340	340	42	168
Volume Left	0	0	0	0	0	0
Volume Right	0	0	0	0	42	168
cSH	1700	1700	1700	1700	1700	666
Volume to Capacity	0.39	0.39	0.20	0.20	0.02	0.25
Queue Length 95th (m)	0.0	0.0	0.0	0.0	0.0	7.5
Control Delay (s)	0.0	0.0	0.0	0.0	0.0	12.2
Lane LOS						B
Approach Delay (s)	0.0		0.0			12.2
Approach LOS						B
Intersection Summary						
Average Delay	0.9					
Intersection Capacity Utilization	37.5%			ICU Level of Service		
Analysis Period (min)	15					
				A		

Lanes, Volumes, Timings Total (2031) - Scenario B Phase 1 - 2% Growth Rate
 210: William Halton Parkway & East Street E Timing Plan: AM Peak Hour

	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations	↰	↱	↱	↰	↰	↰
Traffic Volume (vph)	0	1173	665	0	75	0
Future Volume (vph)	0	1173	665	0	75	0
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						
Flt Protected					0.950	
Satd. Flow (prot)	1863	3539	3539	1863	1770	0
Flt Permitted					0.950	
Satd. Flow (perm)	1863	3539	3539	1863	1770	0
Right Turn on Red				Yes		Yes
Satd. Flow (RTOR)						
Link Speed (k/h)		50	50		50	
Link Distance (m)		194.7	188.1		114.3	
Travel Time (s)		14.0	13.5		8.2	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	1275	723	0	82	0
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	1275	723	0	82	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
Number of Detectors	1	2	2	1	1	
Detector Template	Left	Thru	Thru	Right	Left	
Leading Detector (m)	2.0	10.0	10.0	2.0	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)	2.0	0.6	0.6	2.0	2.0	
Detector 1 Type	CI+Ex	CI+Ex	CI+Ex	CI+Ex	CI+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		CI+Ex	CI+Ex			
Detector 2 Channel						
Detector 2 Extend (s)		0.0	0.0			
Turn Type	pm+pt	NA	NA	Perm	Prot	
Protected Phases	7	4	8		6	
Permitted Phases	4			8		

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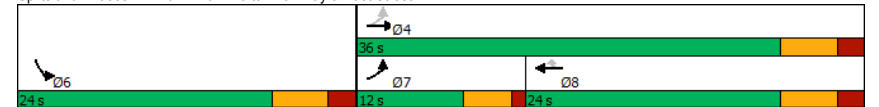
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Lanes, Volumes, Timings Total (2031) - Scenario B Phase 1 - 2% Growth Rate
 210: William Halton Parkway & East Street E Timing Plan: AM Peak Hour

	EBL	EBT	WBT	WBR	SBL	SBR
Detector Phase	7	4	8	8	6	
Switch Phase						
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	
Minimum Split (s)	9.5	24.0	24.0	24.0	24.0	
Total Split (s)	12.0	36.0	24.0	24.0	24.0	
Total Split (%)	20.0%	60.0%	40.0%	40.0%	40.0%	
Maximum Green (s)	7.5	30.0	18.0	18.0	18.0	
Yellow Time (s)	3.5	4.0	4.0	4.0	4.0	
All-Red Time (s)	1.0	2.0	2.0	2.0	2.0	
Lost Time Adjust (s)	1.0	-2.0	-2.0	-2.0	-2.0	
Total Lost Time (s)	5.5	4.0	4.0	4.0	4.0	
Lead/Lag	Lead		Lag	Lag		
Lead-Lag Optimize?	Yes		Yes	Yes		
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	
Recall Mode	None	Max	Max	Max	None	
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)		45.0	45.0		10.0	
Actuated g/C Ratio		0.80	0.80		0.18	
v/c Ratio		0.45	0.25		0.26	
Control Delay		4.4	3.3		21.8	
Queue Delay		0.0	0.0		0.0	
Total Delay		4.4	3.3		21.8	
LOS		A	A		C	
Approach Delay		4.4	3.3		21.8	
Approach LOS		A	A		C	

Intersection Summary	
Area Type:	Other
Cycle Length: 60	
Actuated Cycle Length: 56	
Natural Cycle: 60	
Control Type: Semi Act-Uncoord	
Maximum v/c Ratio: 0.45	
Intersection Signal Delay: 4.7	Intersection LOS: A
Intersection Capacity Utilization 43.3%	ICU Level of Service A
Analysis Period (min) 15	

Splits and Phases: 210: William Halton Parkway & East Street E



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Queues
210: William Halton Parkway & East Street E

Total (2031) - Scenario B Phase 1 - 2% Growth Rate
Timing Plan: AM Peak Hour

	→	←	↘
Lane Group	EBT	WBT	SBL
Lane Group Flow (vph)	1275	723	82
v/c Ratio	0.45	0.25	0.26
Control Delay	4.4	3.3	21.8
Queue Delay	0.0	0.0	0.0
Total Delay	4.4	3.3	21.8
Queue Length 50th (m)	27.0	12.2	8.8
Queue Length 95th (m)	45.1	21.3	15.1
Internal Link Dist (m)	170.7	164.1	90.3
Turn Bay Length (m)			
Base Capacity (vph)	2841	2841	638
Starvation Cap Reductn	0	0	0
Spillback Cap Reductn	0	0	0
Storage Cap Reductn	0	0	0
Reduced v/c Ratio	0.45	0.25	0.13
Intersection Summary			

HCM Signalized Intersection Capacity Analysis (2031) - Scenario B Phase 1 - 2% Growth Rate
210: William Halton Parkway & East Street E

Timing Plan: AM Peak Hour

	↖	→	←	↗	↘	↙
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations	↖	↗	↗	↖	↖	↗
Traffic Volume (vph)	0	1173	665	0	75	0
Future Volume (vph)	0	1173	665	0	75	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0	4.0		4.0	
Lane Util. Factor		0.95	0.95		1.00	
Frt		1.00	1.00		1.00	
Flt Protected		1.00	1.00		0.95	
Satd. Flow (prot)		3539	3539		1770	
Flt Permitted		1.00	1.00		0.95	
Satd. Flow (perm)		3539	3539		1770	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	1275	723	0	82	0
RTOR Reduction (vph)	0	0	0	0	0	0
Lane Group Flow (vph)	0	1275	723	0	82	0
Turn Type	pm+pt	NA	NA	Perm	Prot	
Protected Phases	7	4	8		6	
Permitted Phases	4			8		
Actuated Green, G (s)		41.2	41.2		5.3	
Effective Green, g (s)		43.2	43.2		7.3	
Actuated g/C Ratio		0.74	0.74		0.12	
Clearance Time (s)		6.0	6.0		6.0	
Vehicle Extension (s)		3.0	3.0		3.0	
Lane Grp Cap (vph)		2613	2613		220	
v/s Ratio Prot		c0.36	0.20		c0.05	
v/s Ratio Perm						
v/c Ratio		0.49	0.28		0.37	
Uniform Delay, d1		3.1	2.5		23.5	
Progression Factor		1.00	1.00		1.00	
Incremental Delay, d2		0.7	0.3		1.1	
Delay (s)		3.8	2.8		24.6	
Level of Service		A	A		C	
Approach Delay (s)		3.8	2.8		24.6	
Approach LOS		A	A		C	
Intersection Summary						
HCM 2000 Control Delay		4.3		HCM 2000 Level of Service		A
HCM 2000 Volume to Capacity ratio		0.53				
Actuated Cycle Length (s)		58.5		Sum of lost time (s)		13.5
Intersection Capacity Utilization		43.3%		ICU Level of Service		A
Analysis Period (min)		15				

c Critical Lane Group

Lanes, Volumes, Timings Total (2031) - Scenario B Phase 1 - 2% Growth Rate
 211: William Halton Parkway & East Street F Timing Plan: AM Peak Hour

						
Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	0	1248	665	0	0	0
Future Volume (vph)	0	1248	665	0	0	0
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						
Fit Protected						
Satd. Flow (prot)	1863	3539	3539	1863	1863	0
Fit Permitted						
Satd. Flow (perm)	1863	3539	3539	1863	1863	0
Link Speed (k/h)		50	50		50	
Link Distance (m)		188.1	219.2		112.6	
Travel Time (s)		13.5	15.8		8.1	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	1357	723	0	0	0
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	1357	723	0	0	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 37.8%	ICU Level of Service A					
Analysis Period (min) 15						

HCM Unsignalized Intersection Capacity Analysis (2031) - Scenario B Phase 1 - 2% Growth Rate
 211: William Halton Parkway & East Street F Timing Plan: AM Peak Hour

							
Movement	EBL	EBT	WBT	WBR	SBL	SBR	
Lane Configurations							
Traffic Volume (veh/h)	0	1248	665	0	0	0	
Future Volume (Veh/h)	0	1248	665	0	0	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)	0	1357	723	0	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)	188						
pX, platoon unblocked					0.85		
vC, conflicting volume	723				1402	362	
vC1, stage 1 conf vol							
vC2, stage 2 conf vol							
vCu, unblocked vol	723				1109	362	
tC, single (s)	4.1				6.8	6.9	
tC, 2 stage (s)							
tF (s)	2.2				3.5	3.3	
p0 queue free %	100				100	100	
cM capacity (veh/h)	875				172	635	
Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	WB 3	SB 1
Volume Total	0	678	678	362	362	0	0
Volume Left	0	0	0	0	0	0	0
Volume Right	0	0	0	0	0	0	0
cSH	1700	1700	1700	1700	1700	1700	1700
Volume to Capacity	0.00	0.40	0.40	0.21	0.21	0.00	0.00
Queue Length 95th (m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Control Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Lane LOS							A
Approach Delay (s)	0.0				0.0	0.0	
Approach LOS							A
Intersection Summary							
Average Delay							0.0
Intersection Capacity Utilization	37.8%			ICU Level of Service		A	
Analysis Period (min)							15

Lanes, Volumes, Timings

Total (2031) - Scenario B Phase 1 - 2% Growth Rate

212: West Street A & Transit Station

Timing Plan: AM Peak Hour

	WBL	WBR	NBT	NBR	SBL	SBT
Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	WBL	WBR	NBT	NBR	SBL	SBT
Traffic Volume (vph)	212	0	0	171	0	0
Future Volume (vph)	212	0	0	171	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt			0.865			
Flt Protected	0.950					
Satd. Flow (prot)	1770	0	1611	0	0	1863
Flt Permitted	0.950					
Satd. Flow (perm)	1770	0	1611	0	0	1863
Link Speed (k/h)	50		50			50
Link Distance (m)	70.0		239.0			98.7
Travel Time (s)	5.0		17.2			7.1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	230	0	0	186	0	0
Shared Lane Traffic (%)						
Lane Group Flow (vph)	230	0	186	0	0	0
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 29.0%

ICU Level of Service A

Analysis Period (min) 15

HCM Unsignalized Intersection Capacity Analysis (2031) - Scenario B Phase 1 - 2% Growth Rate

212: West Street A & Transit Station

Timing Plan: AM Peak Hour

	WBL	WBR	NBT	NBR	SBL	SBT
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	WBL	WBR	NBT	NBR	SBL	SBT
Traffic Volume (veh/h)	212	0	0	171	0	0
Future Volume (Veh/h)	212	0	0	171	0	0
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)	230	0	0	186	0	0
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None					
Median storage (veh)						
Upstream signal (m)	213					
pX, platoon unblocked						
vC, conflicting volume	0		460	0	646	460
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	0		460	0	646	460
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 %	86		100	83	100	100
cM capacity (veh/h)	1623		427	1085	284	427

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	230	186	0
Volume Left	230	0	0
Volume Right	0	186	0
cSH	1623	1085	1700
Volume to Capacity	0.14	0.17	0.00
Queue Length 95th (m)	3.7	4.6	0.0
Control Delay (s)	7.6	9.0	0.0
Lane LOS	A	A	A
Approach Delay (s)	7.6	9.0	0.0
Approach LOS	A	A	

Intersection Summary

Average Delay 8.2

Intersection Capacity Utilization 29.0%

ICU Level of Service A

Analysis Period (min) 15

Lanes, Volumes, Timings Total (2031) - Scenario B Phase 1 - 2% Growth Rate
 213: West Street A & William Halton Parkway Timing Plan: AM Peak Hour

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	1241	33	0	573	146	0	0	80	0	0	9
Future Volume (vph)	0	1241	33	0	573	146	0	0	80	0	0	9
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		1	0		1	0		1	0		1
Taper Length (m)	7.5			7.5			7.5			7.5		
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt			0.850			0.850			0.865			0.865
Fit Protected												
Satd. Flow (prot)	0	3539	1583	0	3539	1583	0	0	1611	0	0	1611
Fit Permitted												
Satd. Flow (perm)	0	3539	1583	0	3539	1583	0	0	1611	0	0	1611
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		202.0			209.3			100.4			239.0	
Travel Time (s)		14.5			15.1			7.2			17.2	
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	1349	36	0	623	159	0	0	87	0	0	10
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	1349	36	0	623	159	0	0	87	0	0	10
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 45.9%	ICU Level of Service A											
Analysis Period (min) 15												

HCM Unsignalized Intersection Capacity Analysis (2031) - Scenario B Phase 1 - 2% Growth Rate
 213: West Street A & William Halton Parkway Timing Plan: AM Peak Hour

																
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR				
Lane Configurations																
Traffic Volume (veh/h)	0	1241	33	0	573	146	0	0	80	0	0	9				
Future Volume (Veh/h)	0	1241	33	0	573	146	0	0	80	0	0	9				
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	1349	36	0	623	159	0	0	87	0	0	10				
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			209												
pX, platoon unblocked	0.91			0.73			0.77	0.77	0.73	0.77	0.77	0.91				
vC, conflicting volume	782			1385			1670	2131	674	1384	2008	312				
vC1, stage 1 conf vol																
vC2, stage 2 conf vol																
vCu, unblocked vol	571			791			780	1374	0	410	1216	56				
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	89	100	100	99				
cM capacity (veh/h)	911			603			219	112	793	362	139	912				
Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	WB 3	NB 1	SB 1								
Volume Total	674	674	36	312	312	159	87	10								
Volume Left	0	0	0	0	0	0	0	0								
Volume Right	0	0	36	0	0	159	87	10								
cSH	1700	1700	1700	1700	1700	1700	793	912								
Volume to Capacity	0.40	0.40	0.02	0.18	0.18	0.09	0.11	0.01								
Queue Length 95th (m)	0.0	0.0	0.0	0.0	0.0	0.0	2.8	0.2								
Control Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	10.1	9.0								
Lane LOS							B	A								
Approach Delay (s)	0.0			0.0			10.1	9.0								
Approach LOS							B	A								
Intersection Summary																
Average Delay	0.4															
Intersection Capacity Utilization	45.9%			ICU Level of Service			A									
Analysis Period (min)	15															

Lanes, Volumes, Timings

Total (2031) - Scenario B Phase 1 - 2% Growth Rate

214: West Street D & William Halton Parkway

Timing Plan: AM Peak Hour

	←	→	↖	↗	←	↖	↗	↖	↗	↖	↗	↖	↗
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations	↖	↖	↖	↖	↖	↖	↖	↖	↖	↖	↖	↖	
Traffic Volume (vph)	0	1274	0	88	494	0	6	0	0	0	0	0	
Future Volume (vph)	0	1274	0	88	494	0	6	0	0	0	0	0	
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		0.0	50.0		0.0	
Storage Lanes	1		0	1		1	1		0	1		0	
Taper Length (m)	100.0			100.0			75.0			75.0			
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Flt													
Flt Protected				0.950			0.950						
Satd. Flow (prot)	1863	3539	1863	1770	3539	1863	1770	1863	0	1863	1863	0	
Flt Permitted				0.108									
Satd. Flow (perm)	1863	3539	1863	201	3539	1863	1863	1863	0	1863	1863	0	
Right Turn on Red			Yes			Yes			Yes			Yes	
Satd. Flow (RTOR)													
Link Speed (k/h)		50			50			50			50		
Link Distance (m)		241.6			202.0			103.2			133.4		
Travel Time (s)		17.4			14.5			7.4			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)	0	1385	0	96	537	0	7	0	0	0	0	0	
Shared Lane Traffic (%)													
Lane Group Flow (vph)	0	1385	0	96	537	0	7	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	1	2	1	1	2		1	2		
Detector Template	Left	Thru	Right	Left	Thru	Right	Left	Thru		Left	Thru		
Leading Detector (m)	2.0	10.0	2.0	2.0	10.0	2.0	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		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	2.0	0.6	2.0	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		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	pm+pt	NA	Perm	Perm			Perm			
Protected Phases		4			3		8		2		6		
Permitted Phases	4		4		8		8		2		6		

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Lanes, Volumes, Timings

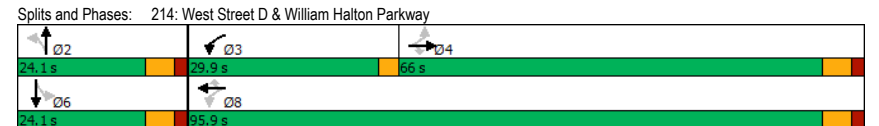
Total (2031) - Scenario B Phase 1 - 2% Growth Rate

214: West Street D & William Halton Parkway

Timing Plan: AM Peak Hour

	←	→	↖	↗	←	↖	↗	↖	↗	↖	↗	↖	↗
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Detector Phase	4	4	4	3	8	8	2	2		6	6		
Switch Phase													
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0		5.0	5.0		
Minimum Split (s)	24.0	24.0	24.0	9.5	24.0	24.0	24.0	24.0		24.0	24.0		
Total Split (s)	66.0	66.0	66.0	29.9	95.9	95.9	24.1	24.1		24.1	24.1		
Total Split (%)	55.0%	55.0%	55.0%	24.9%	79.9%	79.9%	20.1%	20.1%		20.1%	20.1%		
Maximum Green (s)	60.0	60.0	60.0	26.9	89.9	89.9	18.1	18.1		18.1	18.1		
Yellow Time (s)	4.0	4.0	4.0	3.0	4.0	4.0	4.0	4.0		4.0	4.0		
All-Red Time (s)	2.0	2.0	2.0	0.0	2.0	2.0	2.0	2.0		2.0	2.0		
Lost Time Adjust (s)	-2.0	-2.0	-2.0	1.0	-2.0	-2.0	-2.0	-2.0		-2.0	-2.0		
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0		4.0	4.0		
Lead/Lag	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	Max	Max	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	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 Effect Green (s)		62.2			92.2	95.5		8.1					
Actuated g/C Ratio		0.63			0.94	0.97		0.08					
v/c Ratio		0.62			0.16	0.16		0.05					
Control Delay		13.3			1.2	0.6		44.0					
Queue Delay		0.0			0.0	0.0		0.0					
Total Delay		13.3			1.2	0.6		44.0					
LOS		B			A	A		D					
Approach Delay		13.3			0.6			44.0					
Approach LOS		B			A			D					

Intersection Summary												
Area Type:	Other											
Cycle Length:	120											
Actuated Cycle Length:	98.6											
Natural Cycle:	65											
Control Type:	Semi Act-Uncoord											
Maximum v/c Ratio:	0.62											
Intersection Signal Delay:	9.4											
Intersection Capacity Utilization	54.3%											
ICU Level of Service	A											
Analysis Period (min)	15											



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Queues
214: West Street D & William Halton Parkway

Total (2031) - Scenario B Phase 1 - 2% Growth Rate
Timing Plan: AM Peak Hour

	→	↖	←	↗
Lane Group	EBT	WBL	WBT	NBL
Lane Group Flow (vph)	1385	96	537	7
v/c Ratio	0.62	0.16	0.16	0.05
Control Delay	13.3	1.2	0.6	44.0
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	13.3	1.2	0.6	44.0
Queue Length 50th (m)	69.6	0.0	0.0	1.2
Queue Length 95th (m)	126.6	4.5	10.5	5.8
Internal Link Dist (m)	217.6		178.0	
Turn Bay Length (m)		50.0		50.0
Base Capacity (vph)	2231	601	3426	380
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	0.62	0.16	0.16	0.02
Intersection Summary				

HCM Signalized Intersection Capacity Analysis (2031) - Scenario B Phase 1 - 2% Growth Rate
214: West Street D & William Halton Parkway

Timing Plan: AM Peak Hour

	↖	→	↗	←	↖	↗	↖	↗	↖	↗	↖	↗	↖	↗
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR		
Lane Configurations	↖	↖↖	↖	↖	↖↖	↖	↖	↖	↖	↖	↖	↖		
Traffic Volume (vph)	0	1274	0	88	494	0	6	0	0	0	0	0		
Future Volume (vph)	0	1274	0	88	494	0	6	0	0	0	0	0		
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							
Lane Util. Factor		0.95		1.00	0.95		1.00							
Flt		1.00		1.00	1.00		1.00							
Flt Protected		1.00		0.95	1.00		0.95							
Satd. Flow (prot)		3539		1770	3539		1770							
Flt Permitted		1.00		0.11	1.00		1.00							
Satd. Flow (perm)		3539		201	3539		1863							
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	1385	0	96	537	0	7	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	1385	0	96	537	0	7	0	0	0	0	0		
Turn Type	Perm	NA	Perm	pm+pt	NA	Perm	Perm			Perm				
Protected Phases		4		3	8		2			6				
Permitted Phases	4		4	8		8	2			6				
Actuated Green, G (s)		60.2		90.2	90.2		1.3							
Effective Green, g (s)		62.2		89.2	92.2		3.3							
Actuated g/C Ratio		0.60		0.86	0.89		0.03							
Clearance Time (s)		6.0		3.0	6.0		6.0							
Vehicle Extension (s)		3.0		3.0	3.0		3.0							
Lane Grp Cap (vph)		2126		567	3152		59							
v/s Ratio Prot		c0.39		0.04	c0.15									
v/s Ratio Perm				0.10			c0.00							
v/c Ratio		0.65		0.17	0.17		0.12							
Uniform Delay, d1		13.5		6.2	0.7		48.7							
Progression Factor		1.00		1.00	1.00		1.00							
Incremental Delay, d2		1.6		0.6	0.1		0.9							
Delay (s)		15.1		6.9	0.8		49.6							
Level of Service		B		A	A		D							
Approach Delay (s)		15.1			1.8		49.6					0.0		
Approach LOS		B			A		D					A		
Intersection Summary														
HCM 2000 Control Delay				11.1			HCM 2000 Level of Service					B		
HCM 2000 Volume to Capacity ratio				0.50										
Actuated Cycle Length (s)				103.5			Sum of lost time (s)					12.0		
Intersection Capacity Utilization				54.3%			ICU Level of Service					A		
Analysis Period (min)				15										

c Critical Lane Group

Lanes, Volumes, Timings

Total (2031) - Scenario B Phase 1 - 2% Growth Rate

215: West Street A & West Street B

Timing Plan: AM Peak Hour

	EBL	EBR	NBL	NBT	SBT	SEB
Lane Group	EBL	EBR	NBL	NBT	SBT	SEB
Lane Configurations	↔	↔	↔	↔	↔	↔
Traffic Volume (vph)	44	44	0	0	37	6
Future Volume (vph)	44	44	0	0	37	6
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	0.932				0.980	
Flt Protected	0.976					
Satd. Flow (prot)	1694	0	0	1863	1825	0
Flt Permitted	0.976					
Satd. Flow (perm)	1694	0	0	1863	1825	0
Link Speed (k/h)	50			50	50	
Link Distance (m)	202.8			106.4	100.4	
Travel Time (s)	14.6			7.7	7.2	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	48	48	0	0	40	7
Shared Lane Traffic (%)						
Lane Group Flow (vph)	96	0	0	0	47	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
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	25			15
Sign Control	Stop			Free	Free	
Intersection Summary						
Area Type:	Other					
Control Type:	Unsignalized					
Intersection Capacity Utilization 15.1%	ICU Level of Service A					
Analysis Period (min) 15						

HCM Unsignalized Intersection Capacity Analysis (2031) - Scenario B Phase 1 - 2% Growth Rate

215: West Street A & West Street B

Timing Plan: AM Peak Hour

	EBL	EBR	NBL	NBT	SBT	SEB
Movement	EBL	EBR	NBL	NBT	SBT	SEB
Lane Configurations	↔	↔	↔	↔	↔	↔
Traffic Volume (veh/h)	44	44	0	0	37	6
Future Volume (Veh/h)	44	44	0	0	37	6
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)	48	48	0	0	40	7
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	None	
Median storage (veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	44	44	47			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	44	44	47			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	95	95	100			
cM capacity (veh/h)	967	1027	1560			
Direction, Lane #	EB 1	NB 1	SB 1			
Volume Total	96	0	47			
Volume Left	48	0	0			
Volume Right	48	0	7			
cSH	996	1700	1700			
Volume to Capacity	0.10	0.00	0.03			
Queue Length 95th (m)	2.4	0.0	0.0			
Control Delay (s)	9.0	0.0	0.0			
Lane LOS	A					
Approach Delay (s)	9.0	0.0	0.0			
Approach LOS	A					
Intersection Summary						
Average Delay		6.0				
Intersection Capacity Utilization		15.1%		ICU Level of Service	A	
Analysis Period (min)		15				

Lanes, Volumes, Timings Total (2031) - Scenario B Phase 1 - 2% Growth Rate
 216: West Street D & West Street B Timing Plan: AM Peak Hour

	←	←	↑	↗	↘	↓
Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	↰		↱			↱
Traffic Volume (vph)	0	6	0	0	88	0
Future Volume (vph)	0	6	0	0	88	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.865					
Flt Protected						0.950
Satd. Flow (prot)	1611	0	1863	0	0	1770
Flt Permitted						0.950
Satd. Flow (perm)	1611	0	1863	0	0	1770
Link Speed (k/h)	50		50			50
Link Distance (m)	202.8		99.7			103.2
Travel Time (s)	14.6		7.2			7.4
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	7	0	0	96	0
Shared Lane Traffic (%)						
Lane Group Flow (vph)	7	0	0	0	0	96
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
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		15	25	
Sign Control	Stop		Free			Free

Intersection Summary	
Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization 14.9%	ICU Level of Service A
Analysis Period (min) 15	

HCM Unsignalized Intersection Capacity Analysis (2031) - Scenario B Phase 1 - 2% Growth Rate
 216: West Street D & West Street B Timing Plan: AM Peak Hour

	←	←	↑	↗	↘	↓
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	↰		↱			↱
Traffic Volume (veh/h)	0	6	0	0	88	0
Future Volume (Veh/h)	0	6	0	0	88	0
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	7	0	0	96	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)						103
pX, platoon unblocked						
vC, conflicting volume	192	0			0	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	192	0			0	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	100	99			94	
cM capacity (veh/h)	750	1085			1623	

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	7	0	96
Volume Left	0	0	96
Volume Right	7	0	0
cSH	1085	1700	1623
Volume to Capacity	0.01	0.00	0.06
Queue Length 95th (m)	0.1	0.0	1.4
Control Delay (s)	8.3	0.0	7.4
Lane LOS	A		A
Approach Delay (s)	8.3	0.0	7.4
Approach LOS	A		

Intersection Summary			
Average Delay		7.4	
Intersection Capacity Utilization		14.9%	ICU Level of Service A
Analysis Period (min)		15	

Lanes, Volumes, Timings
217: West Street C & West Street A

Total (2031) - Scenario B Phase 1 - 2% Growth Rate

Timing Plan: AM Peak Hour

	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↔	↔		↔	
Traffic Volume (vph)	0	0	0	153	37	0
Future Volume (vph)	0	0	0	153	37	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.865				
Flt Protected					0.950	
Satd. Flow (prot)	0	1863	1611	0	1770	0
Flt Permitted					0.950	
Satd. Flow (perm)	0	1863	1611	0	1770	0
Link Speed (k/h)		50	50		50	
Link Distance (m)		208.6	202.4		106.4	
Travel Time (s)		15.0	14.6		7.7	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	0	0	166	40	0
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	0	166	0	40	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 19.5% ICU Level of Service A

Analysis Period (min) 15

HCM Unsignalized Intersection Capacity Analysis (2031) - Scenario B Phase 1 - 2% Growth Rate
217: West Street C & West Street A

Timing Plan: AM Peak Hour

	EBL	EBT	WBT	WBR	SBL	SBR
Movement		↔	↔		↔	
Lane Configurations		↔	↔		↔	
Traffic Volume (veh/h)	0	0	0	153	37	0
Future Volume (Veh/h)	0	0	0	153	37	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)	0	0	0	166	40	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	166				83	83
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	166				83	83
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	100				96	100
cM capacity (veh/h)	1412				919	976

Direction, Lane #	EB 1	WB 1	SB 1
Volume Total	0	166	40
Volume Left	0	0	40
Volume Right	0	166	0
cSH	1700	1700	919
Volume to Capacity	0.00	0.10	0.04
Queue Length 95th (m)	0.0	0.0	1.0
Control Delay (s)	0.0	0.0	9.1
Lane LOS			A
Approach Delay (s)	0.0	0.0	9.1
Approach LOS			A

Intersection Summary

Average Delay	1.8		
Intersection Capacity Utilization	19.5%	ICU Level of Service	A
Analysis Period (min)	15		

Lanes, Volumes, Timings
218: West Street D & West Street C

Total (2031) - Scenario B Phase 1 - 2% Growth Rate

Timing Plan: AM Peak Hour

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	0	0	82	0	75	0	24	12	111	74	0
Future Volume (vph)	0	0	0	82	0	75	0	24	12	111	74	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					0.935			0.955				
Flt Protected					0.975						0.971	
Satd. Flow (prot)	0	1863	0	0	1698	0	0	1779	0	0	1809	0
Flt Permitted					0.975						0.971	
Satd. Flow (perm)	0	1863	0	0	1698	0	0	1779	0	0	1809	0
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		258.7			208.6			93.0			99.7	
Travel Time (s)		18.6			15.0			6.7			7.2	
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	0	89	0	82	0	26	13	121	80	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	0	0	0	171	0	0	39	0	0	201	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 32.5% ICU Level of Service A

Analysis Period (min) 15

HCM Unsignalized Intersection Capacity Analysis (2031) - Scenario B Phase 1 - 2% Growth Rate
218: West Street D & West Street C

Timing Plan: AM Peak Hour

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Movement												
Lane Configurations												
Traffic Volume (veh/h)	0	0	0	82	0	75	0	24	12	111	74	0
Future Volume (Veh/h)	0	0	0	82	0	75	0	24	12	111	74	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)	0	0	0	89	0	82	0	26	13	121	80	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	82			0			259	260	0	245	219	41
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	82			0			259	260	0	245	219	41
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			95			100	96	99	81	88	100
cM capacity (veh/h)	1515			1623			602	609	1085	649	642	1030
Direction, Lane #	EB 1	WB 1	NB 1	SB 1								
Volume Total	0	171	39	201								
Volume Left	0	89	0	121								
Volume Right	0	82	13	0								
cSH	1700	1623	714	646								
Volume to Capacity	0.00	0.05	0.05	0.31								
Queue Length 95th (m)	0.0	1.3	1.3	9.9								
Control Delay (s)	0.0	4.0	10.3	13.1								
Lane LOS		A	B	B								
Approach Delay (s)	0.0	4.0	10.3	13.1								
Approach LOS			B	B								
Intersection Summary												
Average Delay			9.0									
Intersection Capacity Utilization		32.5%		ICU Level of Service					A			
Analysis Period (min)			15									

Lanes, Volumes, Timings

TT (2031) - Scenario B Phase 1 - 2% Growth Rate

101: Trafalgar Rd & Lower Base Line

Timing Plan: PM Peak Hour

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰	↰	↰	↰	↰	↰	↰	↰	↰	↰	↰	↰
Traffic Volume (vph)	44	197	63	285	556	302	398	2208	368	251	1427	101
Future Volume (vph)	44	197	63	285	556	302	398	2208	368	251	1427	101
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	45.0		45.0	110.0		110.0	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	0.207			0.346			0.072			0.077		
Satd. Flow (perm)	386	3412	0	645	3352	0	134	5085	1583	143	5085	1583
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		25			68				128			95
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	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	44	197	63	285	556	302	398	2208	368	251	1427	101
Shared Lane Traffic (%)												
Lane Group Flow (vph)	44	260	0	285	858	0	398	2208	368	251	1427	101
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	pm+ov	pm+pt	NA	pm+ov
Protected Phases	7	4		3	8		5	2	3	1	6	7
Permitted Phases	4			8			2		2	6		6

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Lanes, Volumes, Timings

TT (2031) - Scenario B Phase 1 - 2% Growth Rate

101: Trafalgar Rd & Lower Base Line

Timing Plan: PM Peak Hour

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector Phase	7	4		3	8		5	2	3	1	6	7
Switch Phase												
Minimum Initial (s)	5.0	10.0		7.0	10.0		5.0	25.0	7.0	7.0	25.0	5.0
Minimum Split (s)	11.6	22.5		13.6	22.5		11.6	31.6	13.6	13.6	31.6	11.6
Total Split (s)	11.6	22.6		27.0	38.0		31.0	71.4	27.0	19.0	59.4	11.6
Total Split (%)	8.3%	16.1%		19.3%	27.1%		22.1%	51.0%	19.3%	13.6%	42.4%	8.3%
Maximum Green (s)	5.0	16.4		24.0	31.8		28.0	64.8	24.0	16.0	52.8	5.0
Yellow Time (s)	4.6	4.2		3.0	4.2		3.0	4.6	3.0	3.0	4.6	4.6
All-Red Time (s)	2.0	2.0		0.0	2.0		0.0	2.0	0.0	0.0	2.0	2.0
Lost Time Adjust (s)	1.0	-2.2		1.0	-2.2		1.0	-2.2	1.0	1.0	-2.2	-2.2
Total Lost Time (s)	7.6	4.0		4.0	4.0		4.0	4.4	4.0	4.0	4.4	4.4
Lead/Lag	Lead	Lag		Lead	Lag		Lead	Lag	Lead	Lag	Lead	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	0.2	0.2	5.0	3.0
Recall Mode	None	None		None	None		None	Max	None	Max	Max	None
Act Effct Green (s)	22.9	22.5		45.6	34.0		86.4	67.0	90.5	70.4	55.0	66.6
Actuated g/C Ratio	0.16	0.16		0.33	0.24		0.62	0.48	0.65	0.50	0.39	0.48
v/c Ratio	0.43	0.46		0.79	0.99		1.00	0.91	0.34	1.02	0.71	0.13
Control Delay	52.2	51.9		54.4	77.0		87.3	40.3	7.5	103.6	38.3	4.7
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	52.2	51.9		54.4	77.0		87.3	40.3	7.5	103.6	38.3	4.7
LOS	D	D		D	E		F	D	A	F	D	A
Approach Delay		52.0			71.4			42.5			45.6	
Approach LOS		D			E			D			D	

Intersection Summary

Area Type: Other

Cycle Length: 140

Actuated Cycle Length: 140

Natural Cycle: 105

Control Type: Semi Act-Uncooord

Maximum v/c Ratio: 1.02

Intersection Signal Delay: 49.2

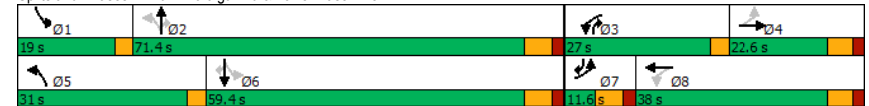
Intersection LOS: D

Intersection Capacity Utilization 102.4%

ICU Level of Service G

Analysis Period (min) 15

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



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Synchro 10 Report
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Queues
101: Trafalgar Rd & Lower Base Line

TT (2031) - Scenario B Phase 1 - 2% Growth Rate
Timing Plan: PM Peak Hour

	EBL	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	44	260	285	858	398	2208	368	251	1427	101
v/c Ratio	0.43	0.46	0.79	0.99	1.00	0.91	0.34	1.02	0.71	0.13
Control Delay	52.2	51.9	54.4	77.0	87.3	40.3	7.5	103.6	38.3	4.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	52.2	51.9	54.4	77.0	87.3	40.3	7.5	103.6	38.3	4.7
Queue Length 50th (m)	8.7	31.2	62.6	115.8	93.1	199.5	25.5	~56.0	119.6	0.9
Queue Length 95th (m)	18.0	46.5	90.0	#159.5	#159.4	221.6	38.7	#110.1	136.7	10.6
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	
Base Capacity (vph)	102	569	394	865	398	2433	1109	246	1997	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	0.43	0.46	0.72	0.99	1.00	0.91	0.33	1.02	0.71	0.13

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.

HCM Signalized Intersection Capacity Analysis (2031) - Scenario B Phase 1 - 2% Growth Rate
101: Trafalgar Rd & Lower Base Line

Timing Plan: PM Peak Hour

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰	↱	↱	↰	↱	↱	↰	↱	↱	↰	↱	↱
Traffic Volume (vph)	44	197	63	285	556	302	398	2208	368	251	1427	101
Future Volume (vph)	44	197	63	285	556	302	398	2208	368	251	1427	101
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	7.6	4.0		4.0	4.0		4.0	4.4	4.0	4.0	4.4	4.4
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	0.21	1.00		0.35	1.00		0.07	1.00	1.00	0.08	1.00	1.00
Satd. Flow (perm)	386	3411		644	3352		134	5085	1583	144	5085	1583
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	44	197	63	285	556	302	398	2208	368	251	1427	101
RTOR Reduction (vph)	0	21	0	0	51	0	0	0	52	0	0	53
Lane Group Flow (vph)	44	239	0	285	807	0	398	2208	316	251	1427	48
Turn Type	pm+pt	NA		pm+pt	NA		pm+pt	NA	pm+ov	pm+pt	NA	pm+ov
Protected Phases	7	4		3	8		5	2	3	1	6	7
Permitted Phases	4			8			2		2	6		6
Actuated Green, G (s)	25.3	20.3		43.4	31.8		83.8	64.8	84.9	68.8	52.8	57.8
Effective Green, g (s)	23.3	22.5		42.4	34.0		82.8	67.0	82.9	66.8	55.0	62.2
Actuated g/C Ratio	0.17	0.16		0.30	0.24		0.59	0.48	0.59	0.48	0.39	0.44
Clearance Time (s)	6.6	6.2		3.0	6.2		3.0	6.6	3.0	3.0	6.6	6.6
Vehicle Extension (s)	3.0	5.0		0.2	5.0		3.0	5.0	0.2	0.2	5.0	3.0
Lane Grp Cap (vph)	103	548		348	814		394	2433	937	242	1997	753
v/s Ratio Prot	0.01	0.07		c0.11	c0.24		c0.19	0.43	0.05	0.11	0.28	0.00
v/s Ratio Perm	0.06			0.14			c0.40		0.15	0.38		0.03
v/c Ratio	0.43	0.44		0.82	0.99		1.01	0.91	0.34	1.04	0.71	0.06
Uniform Delay, d1	50.7	53.0		41.0	52.8		45.5	33.6	14.5	43.8	35.9	22.3
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	2.8	1.2		13.2	29.2		47.9	6.3	0.1	67.9	2.2	0.0
Delay (s)	53.6	54.2		54.2	82.1		93.4	39.9	14.6	111.7	38.1	22.3
Level of Service	D	D		D	F		F	D	B	F	D	C
Approach Delay (s)		54.1			75.1			44.0			47.6	
Approach LOS		D			E			D			D	

Intersection Summary

HCM 2000 Control Delay	51.2	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	1.03		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	20.0
Intersection Capacity Utilization	102.4%	ICU Level of Service	G
Analysis Period (min)	15		

c Critical Lane Group

Lanes, Volumes, Timings TT (2031) - Scenario B Phase 1 - 2% Growth Rate
102: Trafalgar Rd & North Carpool Lot/Hwy 407 WB Off Timing Plan: PM Peak Hour

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔		↔	↔	↔	↔	↔			↔	↔
Traffic Volume (vph)	6	0	40	498	13	143	7	2824	0	0	1772	4
Future Volume (vph)	6	0	40	498	13	143	7	2824	0	0	1772	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	0.883				0.992	0.850						0.850
Flt Protected	0.994			0.950	0.957		0.950					
Satd. Flow (prot)	0	1635	0	1681	1609	1504	1770	5085	0	0	5085	1583
Flt Permitted	0.994			0.727	0.715		0.071					
Satd. Flow (perm)	0	1635	0	1287	1202	1504	132	5085	0	0	5085	1583
Right Turn on Red		Yes			Yes			Yes			Yes	
Satd. Flow (RTOR)		78			3	97						70
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	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	6	0	40	498	13	143	7	2824	0	0	1772	4
Shared Lane Traffic (%)				47%		10%						
Lane Group Flow (vph)	0	46	0	264	261	129	7	2824	0	0	1772	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	CI+Ex	CI+Ex		CI+Ex	CI+Ex	CI+Ex	CI+Ex	CI+Ex			CI+Ex	CI+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		CI+Ex			CI+Ex			CI+Ex			CI+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Split	NA		Perm	NA	Perm	Perm	NA		NA	Perm	Perm
Protected Phases	4	4			8			2			6	
Permitted Phases				8		8	2					6

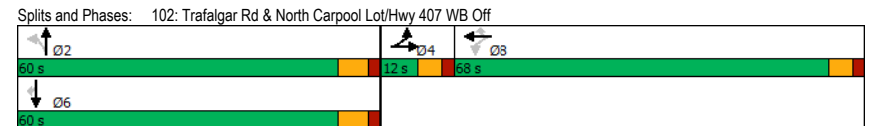
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Lanes, Volumes, Timings TT (2031) - Scenario B Phase 1 - 2% Growth Rate
102: Trafalgar Rd & North Carpool Lot/Hwy 407 WB Off Timing Plan: PM Peak Hour

	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)	6.0	6.0		7.0	7.0	7.0	20.0	20.0			20.0	20.0
Minimum Split (s)	12.0	12.0		22.5	22.5	22.5	27.0	27.0			27.0	27.0
Total Split (s)	12.0	12.0		68.0	68.0	68.0	60.0	60.0			60.0	60.0
Total Split (%)	8.6%	8.6%		48.6%	48.6%	48.6%	42.9%	42.9%			42.9%	42.9%
Maximum Green (s)	6.0	6.0		62.0	62.0	62.0	53.0	53.0			53.0	53.0
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	-3.0	-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 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)	8.1			30.4	30.4	30.4	57.0	57.0			57.0	57.0
Actuated g/C Ratio	0.08			0.29	0.29	0.29	0.54	0.54			0.54	0.54
v/c Ratio	0.23			0.71	0.74	0.26	0.10	1.02			0.64	0.00
Control Delay	6.2			44.1	46.8	10.1	21.3	48.8			20.3	0.0
Queue Delay	0.0			0.0	0.0	0.0	0.0	0.0			0.0	0.0
Total Delay	6.2			44.1	46.8	10.1	21.3	48.8			20.3	0.0
LOS	A			D	D	B	C	D			C	A
Approach Delay	6.2				38.5		48.7				20.3	
Approach LOS	A				D		D				C	

Intersection Summary												
Area Type:	Other											
Cycle Length: 140												
Actuated Cycle Length: 104.7												
Natural Cycle: 90												
Control Type: Actuated-Uncoordinated												
Maximum v/c Ratio: 1.02												
Intersection Signal Delay: 37.6	Intersection LOS: D											
Intersection Capacity Utilization 83.5%	ICU Level of Service E											
Analysis Period (min) 15												



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Queues TT (2031) - Scenario B Phase 1 - 2% Growth Rate
102: Trafalgar Rd & North Carpool Lot/Hwy 407 WB Off Timing Plan: PM Peak Hour

	→	↖	←	↙	↗	↑	↓	↘
Lane Group	EBT	WBL	WBT	WBR	NBL	NBT	SBT	SBR
Lane Group Flow (vph)	46	264	261	129	7	2824	1772	4
v/c Ratio	0.23	0.71	0.74	0.26	0.10	1.02	0.64	0.00
Control Delay	6.2	44.1	46.8	10.1	21.3	48.8	20.3	0.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	6.2	44.1	46.8	10.1	21.3	48.8	20.3	0.0
Queue Length 50th (m)	0.0	51.0	52.8	5.0	0.7	~234.8	93.3	0.0
Queue Length 95th (m)	4.1	79.4	83.2	18.4	4.4	#320.1	140.3	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)	199	800	748	972	72	2767	2767	893
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	0.33	0.35	0.13	0.10	1.02	0.64	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.

HCM Signalized Intersection Capacity Analysis TT (2031) - Scenario B Phase 1 - 2% Growth Rate
102: Trafalgar Rd & North Carpool Lot/Hwy 407 WB Off Timing Plan: PM Peak Hour

	↖	→	↗	↙	←	↘	↗	↖	↙	↘	↗	↖	↙	↘
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR		
Lane Configurations		↔		↖	↔	↗	↖	↔↔↔			↔↔↔	↗		
Traffic Volume (vph)	6	0	40	498	13	143	7	2824	0	0	1772	4		
Future Volume (vph)	6	0	40	498	13	143	7	2824	0	0	1772	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		
Flt		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)		1633		1681	1609	1504	1770	5085			5085	1583		
Flt Permitted		0.99		0.73	0.71	1.00	0.07	1.00			1.00	1.00		
Satd. Flow (perm)		1633		1287	1202	1504	132	5085			5085	1583		
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		
Adj. Flow (vph)	6	0	40	498	13	143	7	2824	0	0	1772	4		
RTOR Reduction (vph)	0	43	0	0	2	69	0	0	0	0	0	2		
Lane Group Flow (vph)	0	3	0	264	259	60	7	2824	0	0	1772	2		
Turn Type	Split	NA		Perm	NA	Perm	Perm	NA		NA	Perm			
Protected Phases	4	4			8		2			6		6		
Permitted Phases				8		8	2					6		
Actuated Green, G (s)		4.6		28.4	28.4	28.4	53.9	53.9			53.9	53.9		
Effective Green, g (s)		6.6		30.4	30.4	30.4	56.9	56.9			56.9	56.9		
Actuated g/C Ratio		0.06		0.29	0.29	0.29	0.54	0.54			0.54	0.54		
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)		101		369	345	431	70	2732			2732	850		
v/s Ratio Prot		c0.00						c0.56			0.35			
v/s Ratio Perm				0.21	c0.22	0.04	0.05					0.00		
v/c Ratio		0.03		0.72	0.75	0.14	0.10	1.03			0.65	0.00		
Uniform Delay, d1		46.6		33.9	34.3	28.0	12.0	24.5			17.4	11.4		
Progression Factor		1.00		1.00	1.00	1.00	1.00	1.00			1.00	1.00		
Incremental Delay, d2		0.1		6.7	9.1	0.2	2.8	26.7			1.2	0.0		
Delay (s)		46.8		40.6	43.4	28.2	14.8	51.2			18.6	11.4		
Level of Service		D		D	D	C	B	D			B	B		
Approach Delay (s)		46.8			39.3		51.1				18.6			
Approach LOS		D			D		D				B			

Intersection Summary

HCM 2000 Control Delay	38.7	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.89		
Actuated Cycle Length (s)	105.9	Sum of lost time (s)	14.0
Intersection Capacity Utilization	83.5%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

Lanes, Volumes, Timings
103: Trafalgar Rd & Hwy 407 EB Off

TT (2031) - Scenario B Phase 1 - 2% Growth Rate

Timing Plan: PM Peak Hour

	EBL	EBR	NBL	NBT	SBT	SBR
Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	↩	↩		↩↩↩	↩↩↩	
Traffic Volume (vph)	71	193	0	3253	2143	0
Future Volume (vph)	71	193	0	3253	2143	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			251.9	363.6	
Travel Time (s)	39.9			18.1	26.2	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	71	193	0	3253	2143	0
Shared Lane Traffic (%)						
Lane Group Flow (vph)	71	193	0	3253	2143	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	CI+Ex	CI+Ex		CI+Ex	CI+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				CI+Ex	CI+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	

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Lanes, Volumes, Timings
103: Trafalgar Rd & Hwy 407 EB Off

TT (2031) - Scenario B Phase 1 - 2% Growth Rate

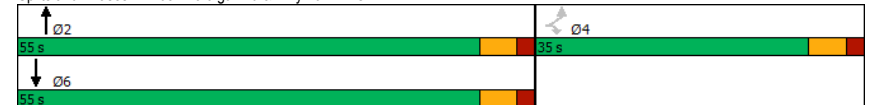
Timing Plan: PM Peak Hour

	EBL	EBR	NBL	NBT	SBT	SBR
Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Minimum Split (s)	24.0	24.0		24.0	24.0	
Total Split (s)	35.0	35.0		55.0	55.0	
Total Split (%)	38.9%	38.9%		61.1%	61.1%	
Maximum Green (s)	29.0	29.0		49.0	49.0	
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)	16.4	16.4		53.9	53.9	
Actuated g/C Ratio	0.21	0.21		0.69	0.69	
v/c Ratio	0.19	0.57		0.93	0.61	
Control Delay	24.9	33.1		18.4	8.1	
Queue Delay	0.0	0.0		0.0	0.0	
Total Delay	24.9	33.1		18.4	8.1	
LOS	C	C		B	A	
Approach Delay	30.9			18.4	8.1	
Approach LOS	C			B	A	

Intersection Summary

Area Type:	Other
Cycle Length: 90	
Actuated Cycle Length: 78.4	
Natural Cycle: 80	
Control Type: Semi Act-Uncoord	
Maximum v/c Ratio: 0.93	
Intersection Signal Delay: 15.1	Intersection LOS: B
Intersection Capacity Utilization 73.7%	ICU Level of Service D
Analysis Period (min) 15	

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



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Queues
103: Trafalgar Rd & Hwy 407 EB Off

TT (2031) - Scenario B Phase 1 - 2% Growth Rate
Timing Plan: PM Peak Hour

	EBL	EBR	NBT	SBT
Lane Group	EBL	EBR	NBT	SBT
Lane Group Flow (vph)	71	193	3253	2143
v/c Ratio	0.19	0.57	0.93	0.61
Control Delay	24.9	33.1	18.4	8.1
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	24.9	33.1	18.4	8.1
Queue Length 50th (m)	8.2	23.5	124.5	50.9
Queue Length 95th (m)	17.7	41.9	#224.1	83.7
Internal Link Dist (m)	530.6		227.9	339.6
Turn Bay Length (m)				
Base Capacity (vph)	702	631	3498	3498
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	0.10	0.31	0.93	0.61

Intersection Summary

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

HCM Signalized Intersection Capacity Analysis
103: Trafalgar Rd & Hwy 407 EB Off

TT (2031) - Scenario B Phase 1 - 2% Growth Rate
Timing Plan: PM Peak Hour

	EBL	EBR	NBL	NBT	SBT	SBR
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	↰	↱		↰	↰	↰
Traffic Volume (vph)	71	193	0	3253	2143	0
Future Volume (vph)	71	193	0	3253	2143	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	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	71	193	0	3253	2143	0
RTOR Reduction (vph)	0	5	0	0	0	0
Lane Group Flow (vph)	71	188	0	3253	2143	0
Turn Type	Perm	Perm		NA	NA	
Protected Phases				2	6	
Permitted Phases	4	4				
Actuated Green, G (s)	14.4	14.4		51.9	51.9	
Effective Green, g (s)	16.4	16.4		53.9	53.9	
Actuated g/C Ratio	0.21	0.21		0.69	0.69	
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)	370	331		3500	3500	
v/s Ratio Prot				c0.64	0.42	
v/s Ratio Perm	0.04	c0.12				
v/c Ratio	0.19	0.57		0.93	0.61	
Uniform Delay, d1	25.5	27.8		10.6	6.6	
Progression Factor	1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.3	2.2		5.7	0.8	
Delay (s)	25.7	30.0		16.3	7.4	
Level of Service	C	C		B	A	
Approach Delay (s)	28.9			16.3	7.4	
Approach LOS	C			B	A	

Intersection Summary

HCM 2000 Control Delay	13.5	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.87		
Actuated Cycle Length (s)	78.3	Sum of lost time (s)	10.0
Intersection Capacity Utilization	73.7%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

Lanes, Volumes, Timings TT (2031) - Scenario B Phase 1 - 2% Growth Rate
104: Trafalgar Rd & West Street A/East Street A Timing Plan: PM Peak Hour

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰	↱	↰	↰	↱	↱	↰	↰	↰	↰	↱	↱
Traffic Volume (vph)	342	44	164	0	0	767	16	2749	300	386	1794	156
Future Volume (vph)	342	44	164	0	0	767	16	2749	300	386	1794	156
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	90.0		90.0	90.0		90.0
Storage Lanes	1		1	1		1	1		1	1		1
Taper Length (m)	75.0			75.0			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		
Satd. Flow (prot)	1770	1863	1583	1863	1863	1583	1770	5085	1583	1770	5085	1583
Flt Permitted	0.950						0.118			0.045		
Satd. Flow (perm)	1770	1863	1583	1863	1863	1583	220	5085	1583	84	5085	1583
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			158			44			277			156
Link Speed (k/h)		50			50			80			80	
Link Distance (m)		216.0			205.9			233.3			251.9	
Travel Time (s)		15.6			14.8			10.5			11.3	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	342	44	164	0	0	767	16	2749	300	386	1794	156
Shared Lane Traffic (%)												
Lane Group Flow (vph)	342	44	164	0	0	767	16	2749	300	386	1794	156
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	pm+pt	NA	Perm	pm+pt		pm+ov	pm+pt	NA	pm+ov	pm+pt	NA	pm+ov
Protected Phases	7	4		3	8	1	5	2	3	1	6	7
Permitted Phases	4		4	8		8	2		2	6		6

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Lanes, Volumes, Timings TT (2031) - Scenario B Phase 1 - 2% Growth Rate
104: Trafalgar Rd & West Street A/East Street A Timing Plan: PM Peak Hour

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector Phase	7	4	4	3	8	1	5	2	3	1	6	7
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)	9.5	24.0	24.0	9.5	24.0	11.0	9.5	24.0	9.5	11.0	24.0	9.5
Total Split (s)	10.0	24.3	24.3	9.7	24.0	25.0	9.5	91.0	9.7	25.0	106.5	10.0
Total Split (%)	6.7%	16.2%	16.2%	6.5%	16.0%	16.7%	6.3%	60.7%	6.5%	16.7%	71.0%	6.7%
Maximum Green (s)	7.0	18.3	18.3	6.7	18.0	22.0	6.5	85.0	6.7	22.0	100.5	7.0
Yellow Time (s)	3.0	4.0	4.0	3.0	4.0	3.0	3.0	4.0	3.0	3.0	4.0	3.0
All-Red Time (s)	0.0	2.0	2.0	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
Lost Time Adjust (s)	1.0	-2.0	-2.0	1.0	-2.0	-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	1.0	4.0	4.0	1.0	4.0	4.0	1.0
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lead	Lead	Lag	Lead	Lag	Lag	Lead
Lead-Lag Optimize?	Yes	Yes	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	3.0	3.0
Recall Mode	None	None	None	None	None	Max	None	C-Max	None	Max	C-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 Effect Green (s)	19.9	11.3	11.3			34.1	91.8	87.0	98.5	122.1	118.5	146.0
Actuated g/C Ratio	0.13	0.08	0.08			0.23	0.61	0.58	0.66	0.81	0.79	0.97
v/c Ratio	1.46	0.31	0.62			1.95	0.09	0.93	0.26	0.92	0.45	0.10
Control Delay	274.0	70.2	20.6			464.6	7.0	36.0	2.0	74.7	6.1	0.2
Queue Delay	0.0	0.0	0.0			0.0	0.0	43.0	0.0	0.0	0.0	0.0
Total Delay	274.0	70.2	20.6			464.6	7.0	79.0	2.0	74.7	6.1	0.2
LOS	F	E	C			F	A	E	A	E	A	A
Approach Delay		182.2			464.6			71.1			17.1	
Approach LOS		F			F			E			B	

Intersection Summary

Area Type:	Other
Cycle Length: 150	
Actuated Cycle Length: 150	
Offset: 0 (0%), Referenced to phase 2:NBT and 6:SBTL, Start of Green	
Natural Cycle: 130	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 1.95	
Intersection Signal Delay: 106.3	Intersection LOS: F
Intersection Capacity Utilization 129.6%	ICU Level of Service H
Analysis Period (min) 15	

Splits and Phases: 104: Trafalgar Rd & West Street A/East Street A

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Queues
104: Trafalgar Rd & West Street A/East Street A

TT (2031) - Scenario B Phase 1 - 2% Growth Rate
Timing Plan: PM Peak Hour

	EBL	EBT	EBR	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group	EBL	EBT	EBR	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	342	44	164	767	16	2749	300	386	1794	156
v/c Ratio	1.46	0.31	0.62	1.95	0.09	0.93	0.26	0.92	0.45	0.10
Control Delay	274.0	70.2	20.6	464.6	7.0	36.0	2.0	74.7	6.1	0.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	43.0	0.0	0.0	0.0	0.0
Total Delay	274.0	70.2	20.6	464.6	7.0	79.0	2.0	74.7	6.1	0.2
Queue Length 50th (m)	~138.5	12.5	1.7	~337.8	0.8	260.4	2.2	95.2	45.3	0.0
Queue Length 95th (m)	#179.6	24.3	23.4	#431.4	2.5	283.5	12.2	#174.1	85.1	0.7
Internal Link Dist (m)	192.0		50.0		209.3		90.0		227.9	
Turn Bay Length (m)	50.0	50.0		50.0	90.0	90.0		90.0	90.0	
Base Capacity (vph)	234	252	350	394	192	2949	1145	418	4017	1544
Starvation Cap Reductn	0	0	0	0	0	440	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	1.46	0.17	0.47	1.95	0.08	1.10	0.26	0.92	0.45	0.10

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.

HCM Signalized Intersection Capacity Analysis
104: Trafalgar Rd & West Street A/East Street A

TT (2031) - Scenario B Phase 1 - 2% Growth Rate
Timing Plan: PM Peak Hour

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰	↑	↱	↰	↑	↱	↰	↑	↱	↰	↑	↱
Traffic Volume (vph)	342	44	164	0	0	767	16	2749	300	386	1794	156
Future Volume (vph)	342	44	164	0	0	767	16	2749	300	386	1794	156
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			1.0	4.0	4.0	1.0	4.0	4.0	1.0
Lane Util. Factor	1.00	1.00	1.00			1.00	1.00	0.91	1.00	1.00	0.91	1.00
Flt	1.00	1.00	0.85			0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00			1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1770	1863	1583			1583	1770	5085	1583	1770	5085	1583
Flt Permitted	0.95	1.00	1.00			1.00	0.12	1.00	1.00	0.05	1.00	1.00
Satd. Flow (perm)	1770	1863	1583			1583	221	5085	1583	85	5085	1583
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	342	44	164	0	0	767	16	2749	300	386	1794	156
RTOR Reduction (vph)	0	0	146	0	0	34	0	0	102	0	0	11
Lane Group Flow (vph)	342	44	18	0	0	733	16	2749	198	386	1794	145
Turn Type	pm+pt	NA	Perm	pm+pt		pm+ov	pm+pt	NA	pm+ov	pm+pt	NA	pm+ov
Protected Phases	7	4		3	8	1	5	2	3	1	6	7
Permitted Phases	4		4	8		8	2		2	6		6
Actuated Green, G (s)	20.9	9.4	9.4			32.1	87.4	85.0	90.5	120.1	114.7	135.6
Effective Green, g (s)	19.9	11.4	11.4			34.1	85.4	87.0	94.5	119.1	116.7	139.6
Actuated g/C Ratio	0.13	0.08	0.08			0.23	0.57	0.58	0.63	0.79	0.78	0.93
Clearance Time (s)	3.0	6.0	6.0			3.0	3.0	6.0	3.0	3.0	6.0	3.0
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)	234	141	120			359	140	2949	997	416	3956	1473
v/s Ratio Prot	c0.19	0.02				c0.46	0.00	c0.54	0.01	0.19	0.35	0.02
v/s Ratio Perm			0.01				0.06		0.11	0.55		0.08
v/c Ratio	1.46	0.31	0.15			2.04	0.11	0.93	0.20	0.93	0.45	0.10
Uniform Delay, d1	65.0	65.6	64.8			58.0	15.0	28.8	11.7	51.9	5.7	0.4
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	229.7	1.3	0.6			478.4	0.4	6.9	0.1	29.3	0.4	0.0
Delay (s)	294.8	66.9	65.4			536.4	15.4	35.7	11.8	81.1	6.1	0.4
Level of Service	F	E	E			F	B	D	B	F	A	A
Approach Delay (s)	208.1		536.4		33.2		18.1					
Approach LOS	F		F		C		B					

Intersection Summary

HCM 2000 Control Delay	99.7	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	1.32		
Actuated Cycle Length (s)	150.0	Sum of lost time (s)	16.0
Intersection Capacity Utilization	129.6%	ICU Level of Service	H
Analysis Period (min)	15		
c Critical Lane Group			

Lanes, Volumes, Timings
105: Trafalgar Rd & William Halton Parkway

TT (2031) - Scenario B Phase 1 - 2% Growth Rate

Timing Plan: PM Peak Hour

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↩	↩↩	↩	↩	↩↩	↩	↩↩	↩↩	↩	↩	↩↩	↩
Traffic Volume (vph)	488	430	87	515	1261	449	445	2319	91	328	1558	284
Future Volume (vph)	488	430	87	515	1261	449	445	2319	91	328	1558	284
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	0.105			0.362			0.087			0.095		
Satd. Flow (perm)	196	3539	1583	674	3539	1583	162	5085	1583	177	5085	1583
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			94			201			73			189
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		212.9			205.0			193.0			233.3	
Travel Time (s)		15.3			14.8			13.9			16.8	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	488	430	87	515	1261	449	445	2319	91	328	1558	284
Shared Lane Traffic (%)												
Lane Group Flow (vph)	488	430	87	515	1261	449	445	2319	91	328	1558	284
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

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Lanes, Volumes, Timings
105: Trafalgar Rd & William Halton Parkway

TT (2031) - Scenario B Phase 1 - 2% Growth Rate

Timing Plan: PM Peak Hour

	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)	14.0	38.0	38.0	14.2	38.0	38.0	13.9	42.9	42.9	13.9	42.9	42.9
Total Split (s)	31.0	46.2	46.2	29.8	45.0	45.0	24.0	56.0	56.0	18.0	50.0	50.0
Total Split (%)	20.7%	30.8%	30.8%	19.9%	30.0%	30.0%	16.0%	37.3%	37.3%	12.0%	33.3%	33.3%
Maximum Green (s)	28.0	39.2	39.2	26.8	38.0	38.0	21.0	49.1	49.1	15.0	43.1	43.1
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)	0.0	3.3	3.3	0.0	3.3	3.3	0.0	2.3	2.3	0.0	2.3	2.3
Lost Time Adjust (s)	1.0	-3.0	-3.0	1.0	-3.0	-3.0	1.0	-2.9	-2.9	1.0	-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	Max	Max	Max	Max	Max	Max
Walk Time (s)		7.0	7.0		7.0	7.0		7.0	7.0		7.0	7.0
Flash Dont Walk (s)		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 Effect Green (s)	69.2	42.2	42.2	66.8	41.0	41.0	70.0	52.0	52.0	60.0	46.0	46.0
Actuated g/C Ratio	0.46	0.28	0.28	0.45	0.27	0.27	0.47	0.35	0.35	0.40	0.31	0.31
v/c Ratio	1.31	0.43	0.17	1.06	1.30	0.78	1.53	1.32	0.15	1.50	1.00	0.46
Control Delay	193.7	45.7	7.0	87.0	187.1	37.4	289.3	185.6	10.7	277.9	74.1	16.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	193.7	45.7	7.0	87.0	187.1	37.4	289.3	185.6	10.7	277.9	74.1	16.3
LOS	F	D	A	F	F	D	F	F	B	F	E	B
Approach Delay		114.3			133.7			196.2			97.3	
Approach LOS		F			F			F			F	

Intersection Summary

Area Type: Other

Cycle Length: 150

Actuated Cycle Length: 150

Natural Cycle: 150

Control Type: Semi Act-Uncoord

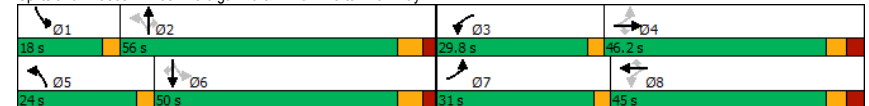
Maximum v/c Ratio: 1.53

Intersection Signal Delay: 143.4 Intersection LOS: F

Intersection Capacity Utilization 138.2% ICU Level of Service H

Analysis Period (min) 15

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



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Queues
105: Trafalgar Rd & William Halton Parkway
TT (2031) - Scenario B Phase 1 - 2% Growth Rate
Timing Plan: PM Peak Hour

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	488	430	87	515	1261	449	445	2319	91	328	1558	284
v/c Ratio	1.31	0.43	0.17	1.06	1.30	0.78	1.53	1.32	0.15	1.50	1.00	0.46
Control Delay	193.7	45.7	7.0	87.0	187.1	37.4	289.3	185.6	10.7	277.9	74.1	16.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	193.7	45.7	7.0	87.0	187.1	37.4	289.3	185.6	10.7	277.9	74.1	16.3
Queue Length 50th (m)	~167.0	54.6	0.0	~107.4	~248.9	70.9	~167.0	~320.4	3.5	~116.8	168.0	20.8
Queue Length 95th (m)	#235.4	70.6	11.4	#175.3	#290.9	114.5	#234.2	#346.5	15.7	#177.8	#202.4	47.6
Internal Link Dist (m)		188.9			181.0			169.0			209.3	
Turn Bay Length (m)	100.0		100.0	100.0		150.0	150.0		75.0			
Base Capacity (vph)	373	995	512	488	967	578	290	1762	596	219	1559	616
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	1.31	0.43	0.17	1.06	1.30	0.78	1.53	1.32	0.15	1.50	1.00	0.46

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.

HCM Signalized Intersection Capacity Analysis (2031) - Scenario B Phase 1 - 2% Growth Rate
105: Trafalgar Rd & William Halton Parkway
Timing Plan: PM Peak Hour

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰	↱	↱	↰	↱	↱	↰	↱	↱	↰	↱	↱
Traffic Volume (vph)	488	430	87	515	1261	449	445	2319	91	328	1558	284
Future Volume (vph)	488	430	87	515	1261	449	445	2319	91	328	1558	284
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	0.10	1.00	1.00	0.36	1.00	1.00	0.09	1.00	1.00	0.10	1.00	1.00
Satd. Flow (perm)	195	3539	1583	674	3539	1583	162	5085	1583	177	5085	1583
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	488	430	87	515	1261	449	445	2319	91	328	1558	284
RTOR Reduction (vph)	0	0	63	0	0	146	0	0	48	0	0	131
Lane Group Flow (vph)	488	430	24	515	1261	303	445	2319	43	328	1558	153
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)	67.2	39.2	39.2	64.8	38.0	38.0	67.1	49.1	49.1	58.1	43.1	43.1
Effective Green, g (s)	65.2	42.2	42.2	62.8	41.0	41.0	66.1	52.0	52.0	56.1	46.0	46.0
Actuated g/C Ratio	0.43	0.28	0.28	0.42	0.27	0.27	0.44	0.35	0.35	0.37	0.31	0.31
Clearance Time (s)	3.0	7.0	7.0	3.0	7.0	7.0	3.0	6.9	6.9	3.0	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	995	445	470	967	432	285	1762	548	214	1559	485
v/s Ratio Prot	c0.24	0.12		0.19	c0.36		c0.21	0.46		0.14	0.31	
v/s Ratio Perm	0.34		0.02	0.27		0.19	c0.48		0.03	0.43		0.10
v/c Ratio	1.33	0.43	0.06	1.10	1.30	0.70	1.56	1.32	0.08	1.53	1.00	0.32
Uniform Delay, d1	48.0	44.1	39.3	38.0	54.5	49.0	48.3	49.0	32.9	44.1	52.0	39.9
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	164.5	0.6	0.1	70.0	144.4	6.4	269.1	146.4	0.3	261.9	22.6	1.7
Delay (s)	212.4	44.7	39.5	108.0	198.9	55.3	317.4	195.4	33.2	306.0	74.6	41.6
Level of Service	F	D	D	F	F	E	F	F	C	F	E	D
Approach Delay (s)		125.7			148.9			209.2			105.3	
Approach LOS		F			F			F			F	

Intersection Summary

HCM 2000 Control Delay	155.5	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	1.42		
Actuated Cycle Length (s)	150.0	Sum of lost time (s)	16.0
Intersection Capacity Utilization	138.2%	ICU Level of Service	H
Analysis Period (min)	15		
c Critical Lane Group			

Lanes, Volumes, Timings TT (2031) - Scenario B Phase 1 - 2% Growth Rate
106: Trafalgar Rd & Burnhamthorpe Rd/Burnhamthorpe Rd Timing Plan: PM Peak Hour

	←	→	↙	↘	←	→	↙	↘	←	→	↙	↘
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↙	↘		↙	↘		↙	↘	↙	↘	↙	↘
Traffic Volume (vph)	138	278	15	111	244	461	82	2001	119	303	1410	256
Future Volume (vph)	138	278	15	111	244	461	82	2001	119	303	1410	256
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	1.00	1.00	1.00	1.00	1.00	1.00	0.91	1.00	1.00	0.91	1.00
Frt		0.992			0.902				0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1770	1848	0	1770	1680	0	1770	5085	1583	1770	5085	1583
Flt Permitted	0.137			0.339			0.116			0.095		
Satd. Flow (perm)	255	1848	0	631	1680	0	216	5085	1583	177	5085	1583
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		2			89				97			256
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	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	138	278	15	111	244	461	82	2001	119	303	1410	256
Shared Lane Traffic (%)												
Lane Group Flow (vph)	138	293	0	111	705	0	82	2001	119	303	1410	256
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	pm+ov	pm+pt	NA	pm+ov
Protected Phases	7	4		3	8		5	2	3	1	6	7
Permitted Phases	4			8			2		2	6		6

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Lanes, Volumes, Timings TT (2031) - Scenario B Phase 1 - 2% Growth Rate
106: Trafalgar Rd & Burnhamthorpe Rd/Burnhamthorpe Rd Timing Plan: PM Peak Hour

	←	→	↙	↘	←	→	↙	↘	←	→	↙	↘
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector Phase	7	4		3	8		5	2	3	1	6	7
Switch Phase												
Minimum Initial (s)	5.0	10.0		5.0	10.0		5.0	20.0	5.0	7.0	20.0	5.0
Minimum Split (s)	9.5	24.0		9.5	24.0		9.5	26.0	9.5	11.5	26.0	9.5
Total Split (s)	10.0	36.2		11.8	38.0		9.6	45.0	11.8	17.0	52.4	10.0
Total Split (%)	9.1%	32.9%		10.7%	34.5%		8.7%	40.9%	10.7%	15.5%	47.6%	9.1%
Maximum Green (s)	7.0	30.2		8.8	32.0		6.6	39.0	8.8	14.0	46.4	7.0
Yellow Time (s)	3.0	3.7		3.0	3.7		3.0	4.6	3.0	3.0	4.6	3.0
All-Red Time (s)	0.0	2.3		0.0	2.3		0.0	1.4	0.0	0.0	1.4	0.0
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	1.0	4.0	4.0	1.0
Lead/Lag	Lead	Lag		Lead	Lag		Lead	Lag	Lead	Lag	Lag	Lead
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	Max	None		Max	None		Max	Max	Max	Max	Max	Max
Act Effct Green (s)	38.2	32.2		41.8	34.0		46.6	41.0	55.8	58.0	48.4	61.4
Actuated g/C Ratio	0.35	0.29		0.38	0.31		0.42	0.37	0.51	0.53	0.44	0.56
v/c Ratio	0.81	0.54		0.35	1.22		0.48	1.06	0.14	1.08	0.63	0.26
Control Delay	58.3	36.9		24.5	142.8		23.9	71.4	4.6	104.6	25.4	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	58.3	36.9		24.5	142.8		23.9	71.4	4.6	104.6	25.4	2.1
LOS	E	D		C	F		C	E	A	F	C	A
Approach Delay		43.7			126.7			66.0			34.6	
Approach LOS		D			F			E			C	

Intersection Summary

Area Type: Other

Cycle Length: 110

Actuated Cycle Length: 110

Natural Cycle: 110

Control Type: Semi Act-Uncooord

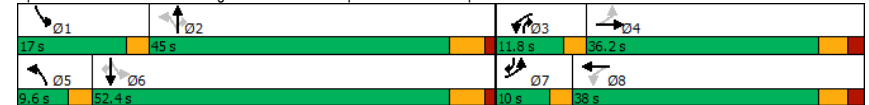
Maximum v/c Ratio: 1.22

Intersection Signal Delay: 62.0

Intersection Capacity Utilization 117.6%

Analysis Period (min) 15

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



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Synchro 10 Report
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Queues
106: Trafalgar Rd & Burhamthorpe Rd/Burnhamthorpe Rd
TT (2031) - Scenario B Phase 1 - 2% Growth Rate
Timing Plan: PM Peak Hour

	EBL	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	138	293	111	705	82	2001	119	303	1410	256
v/c Ratio	0.81	0.54	0.35	1.22	0.48	1.06	0.14	1.08	0.63	0.26
Control Delay	58.3	36.9	24.5	142.8	23.9	71.4	4.6	104.6	25.4	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	58.3	36.9	24.5	142.8	23.9	71.4	4.6	104.6	25.4	2.1
Queue Length 50th (m)	18.7	51.7	14.8	~170.2	8.2	~170.4	2.2	~55.3	82.7	0.0
Queue Length 95th (m)	#43.8	78.2	26.5	#239.9	15.8	#199.4	11.1	#107.9	97.9	10.5
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)	171	542	320	580	170	1895	850	281	2237	996
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	0.81	0.54	0.35	1.22	0.48	1.06	0.14	1.08	0.63	0.26

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.

HCM Signalized Intersection Capacity Analysis
106: Trafalgar Rd & Burhamthorpe Rd/Burnhamthorpe Rd
TT (2031) - Scenario B Phase 1 - 2% Growth Rate
Timing Plan: PM Peak Hour

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰	↱	↲	↰	↱	↲	↰	↱	↲	↰	↱	↲
Traffic Volume (vph)	138	278	15	111	244	461	82	2001	119	303	1410	256
Future Volume (vph)	138	278	15	111	244	461	82	2001	119	303	1410	256
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	1.0	4.0	4.0	1.0
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	0.99		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	1848		1770	1680		1770	5085	1583	1770	5085	1583
Flt Permitted	0.14	1.00		0.34	1.00		0.12	1.00	1.00	0.10	1.00	1.00
Satd. Flow (perm)	255	1848		631	1680		215	5085	1583	177	5085	1583
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	138	278	15	111	244	461	82	2001	119	303	1410	256
RTOR Reduction (vph)	0	1	0	0	61	0	0	0	51	0	0	122
Lane Group Flow (vph)	138	292	0	111	644	0	82	2001	68	303	1410	134
Turn Type	pm+pt	NA		pm+pt	NA		pm+pt	NA	pm+ov	pm+pt	NA	pm+ov
Protected Phases	7	4		3	8		5	2	3	1	6	7
Permitted Phases	4			8			2		2	6		6
Actuated Green, G (s)	37.2	30.2		40.8	32.0		45.6	39.0	47.8	56.0	46.4	53.4
Effective Green, g (s)	35.2	32.2		38.8	34.0		43.6	41.0	51.8	55.0	48.4	57.4
Actuated g/C Ratio	0.32	0.29		0.35	0.31		0.40	0.37	0.47	0.50	0.44	0.52
Clearance Time (s)	3.0	6.0		3.0	6.0		3.0	6.0	3.0	3.0	6.0	3.0
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)	164	540		303	519		164	1895	745	276	2237	826
v/s Ratio Prot	c0.05	0.16		0.03	c0.38		0.03	0.39	c0.01	c0.13	0.28	0.01
v/s Ratio Perm	0.22			0.10			0.17		0.03	c0.42		0.07
v/c Ratio	0.84	0.54		0.37	1.24		0.50	1.06	0.09	1.10	0.63	0.16
Uniform Delay, d1	31.7	32.7		25.4	38.0		22.1	34.5	16.1	32.9	23.9	13.7
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	30.4	1.0		0.8	123.6		10.5	37.3	0.2	82.9	1.4	0.4
Delay (s)	62.0	33.7		26.2	161.6		32.6	71.8	16.3	115.8	25.2	14.2
Level of Service	E	C		C	F		C	E	B	F	C	B
Approach Delay (s)		42.8			143.2			67.3			37.7	
Approach LOS		D			F			E			D	

Intersection Summary

HCM 2000 Control Delay	66.0	HCM 2000 Level of Service	E
HCM 2000 Volume to Capacity ratio	1.13		
Actuated Cycle Length (s)	110.0	Sum of lost time (s)	16.0
Intersection Capacity Utilization	117.6%	ICU Level of Service	H
Analysis Period (min)	15		

c Critical Lane Group

Lanes, Volumes, Timings
202: Trafalgar Rd & East Street C

TT (2031) - Scenario B Phase 1 - 2% Growth Rate

Timing Plan: PM Peak Hour

						
Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations				  	  	
Traffic Volume (vph)	0	100	0	2600	1869	125
Future Volume (vph)	0	100	0	2600	1869	125
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (m)	0.0	0.0	0.0			90.0
Storage Lanes	0	1	0			1
Taper Length (m)	7.5		7.5			
Lane Util. Factor	1.00	1.00	1.00	0.91	0.91	1.00
Frt		0.865				0.850
Flt Protected						
Satd. Flow (prot)	0	1611	0	5085	5085	1583
Flt Permitted						
Satd. Flow (perm)	0	1611	0	5085	5085	1583
Link Speed (k/h)	50			50	50	
Link Distance (m)	205.4			92.4	193.0	
Travel Time (s)	14.8			6.7	13.9	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	0	100	0	2600	1869	125
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	100	0	2600	1869	125
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	0.0			3.6	3.6	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	4.8			4.8	4.8	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)	25	15	25			15
Sign Control	Stop			Free	Free	
Intersection Summary						
Area Type:	Other					
Control Type:	Unsignalized					
Intersection Capacity Utilization	53.6%			ICU Level of Service A		
Analysis Period (min)	15					

HCM Unsignalized Intersection Capacity Analysis
202: Trafalgar Rd & East Street C

TT (2031) - Scenario B Phase 1 - 2% Growth Rate

Timing Plan: PM Peak Hour

								
Movement	EBL	EBR	NBL	NBT	SBT	SBR		
Lane Configurations				  	  			
Traffic Volume (veh/h)	0	100	0	2600	1869	125		
Future Volume (Veh/h)	0	100	0	2600	1869	125		
Sign Control	Stop			Free	Free			
Grade	0%			0%	0%			
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00		
Hourly flow rate (vph)	0	100	0	2600	1869	125		
Pedestrians								
Lane Width (m)								
Walking Speed (m/s)								
Percent Blockage								
Right turn flare (veh)								
Median type				None	None			
Median storage (veh)								
Upstream signal (m)				263	193			
pX, platoon unblocked	0.79	0.71	0.71					
vC, conflicting volume	2736	623	1994					
vC1, stage 1 conf vol								
vC2, stage 2 conf vol								
vCu, unblocked vol	0	0	992					
tC, single (s)	6.8	6.9	4.1					
tC, 2 stage (s)								
tF (s)	3.5	3.3	2.2					
p0 queue free %	100	87	100					
cM capacity (veh/h)	806	775	495					
Direction, Lane #	EB 1	NB 1	NB 2	NB 3	SB 1	SB 2	SB 3	SB 4
Volume Total	100	867	867	867	623	623	623	125
Volume Left	0	0	0	0	0	0	0	0
Volume Right	100	0	0	0	0	0	0	125
cSH	775	1700	1700	1700	1700	1700	1700	1700
Volume to Capacity	0.13	0.51	0.51	0.51	0.37	0.37	0.37	0.07
Queue Length 95th (m)	3.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Control Delay (s)	10.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Lane LOS	B							
Approach Delay (s)	10.3	0.0				0.0		
Approach LOS	B							
Intersection Summary								
Average Delay				0.2				
Intersection Capacity Utilization				53.6%	ICU Level of Service		A	
Analysis Period (min)				15				

Lanes, Volumes, Timings
203: East Street D & East Street A

TT (2031) - Scenario B Phase 1 - 2% Growth Rate

Timing Plan: PM Peak Hour

	→	↖	↗	←	↖	↗
Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑	↑		↑	↑	
Traffic Volume (vph)	94	578	0	0	446	0
Future Volume (vph)	94	578	0	0	446	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	0.850					
Flt Protected					0.950	
Satd. Flow (prot)	1863	1583	0	1863	1770	0
Flt Permitted					0.950	
Satd. Flow (perm)	1863	1583	0	1863	1770	0
Link Speed (k/h)	50			50	50	
Link Distance (m)	205.9			205.1	113.3	
Travel Time (s)	14.8			14.8	8.2	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	94	578	0	0	446	0
Shared Lane Traffic (%)						
Lane Group Flow (vph)	94	578	0	0	446	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
Sign Control	Free			Free	Stop	

Intersection Summary

Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization 39.1%	ICU Level of Service A
Analysis Period (min)	15

HCM Unsignalized Intersection Capacity Analysis
203: East Street D & East Street A

TT (2031) - Scenario B Phase 1 - 2% Growth Rate

Timing Plan: PM Peak Hour

	→	↖	↗	←	↖	↗
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑	↑		↑	↑	
Traffic Volume (veh/h)	94	578	0	0	446	0
Future Volume (Veh/h)	94	578	0	0	446	0
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	94	578	0	0	446	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)	206					
pX, platoon unblocked						
vC, conflicting volume			672		94	94
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			672		94	94
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			100		51	100
cM capacity (veh/h)			919		906	963

Direction, Lane #	EB 1	EB 2	WB 1	NB 1
Volume Total	94	578	0	446
Volume Left	0	0	0	446
Volume Right	0	578	0	0
cSH	1700	1700	1700	906
Volume to Capacity	0.06	0.34	0.00	0.49
Queue Length 95th (m)	0.0	0.0	0.0	20.8
Control Delay (s)	0.0	0.0	0.0	12.8
Lane LOS				B
Approach Delay (s)	0.0		0.0	12.8
Approach LOS				B

Intersection Summary

Average Delay	5.1
Intersection Capacity Utilization 39.1%	ICU Level of Service A
Analysis Period (min)	15

Lanes, Volumes, Timings

204: East Street E & East Street A

TT (2031) - Scenario B Phase 1 - 2% Growth Rate

Timing Plan: PM Peak Hour

	→	↖	↗	←	↖	↗
Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↖			↖	↖	
Traffic Volume (vph)	0	94	0	0	0	0
Future Volume (vph)	0	94	0	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.865					
Flt Protected						
Satd. Flow (prot)	1611	0	0	1863	1863	0
Flt Permitted						
Satd. Flow (perm)	1611	0	0	1863	1863	0
Link Speed (k/h)	50			50	50	
Link Distance (m)	205.1			192.2	115.1	
Travel Time (s)	14.8			13.8	8.3	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	0	94	0	0	0	0
Shared Lane Traffic (%)						
Lane Group Flow (vph)	94	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)	0.0			0.0	3.6	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	4.8			4.8	4.8	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)		15	25		25	15
Sign Control	Free			Free	Stop	

Intersection Summary

Area Type: Other

Control Type: Unsignalized

Intersection Capacity Utilization 9.2% ICU Level of Service A

Analysis Period (min) 15

HCM Unsignalized Intersection Capacity Analysis

204: East Street E & East Street A

TT (2031) - Scenario B Phase 1 - 2% Growth Rate

Timing Plan: PM Peak Hour

	→	↖	↗	←	↖	↗
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↖			↖	↖	
Traffic Volume (veh/h)	0	94	0	0	0	0
Future Volume (Veh/h)	0	94	0	0	0	0
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	0	94	0	0	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			94		47	47
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			94		47	47
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			100		100	100
cM capacity (veh/h)			1500		963	1022

Direction, Lane #	EB 1	WB 1	NB 1
Volume Total	94	0	0
Volume Left	0	0	0
Volume Right	94	0	0
cSH	1700	1700	1700
Volume to Capacity	0.06	0.00	0.00
Queue Length 95th (m)	0.0	0.0	0.0
Control Delay (s)	0.0	0.0	0.0
Lane LOS			A
Approach Delay (s)	0.0	0.0	0.0
Approach LOS			A

Intersection Summary

Average Delay

Intersection Capacity Utilization 9.2% ICU Level of Service

Analysis Period (min) 15

A

Lanes, Volumes, Timings
205: East Street F & East Street A

TT (2031) - Scenario B Phase 1 - 2% Growth Rate
Timing Plan: PM Peak Hour

						
Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
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	1.00	1.00	1.00
Frt						
Flt Protected						
Satd. Flow (prot)	1863	0	0	1863	1863	0
Flt Permitted						
Satd. Flow (perm)	1863	0	0	1863	1863	0
Link Speed (k/h)	50			50	50	
Link Distance (m)	192.2			209.4	115.6	
Travel Time (s)	13.8			15.1	8.3	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
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)	0.0			0.0	3.6	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	4.8			4.8	4.8	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)		15	25		25	15
Sign Control	Free			Free	Stop	
Intersection Summary						
Area Type:	Other					
Control Type:	Unsignalized					
Intersection Capacity Utilization	0.0%			ICU Level of Service A		
Analysis Period (min)	15					

HCM Unsignalized Intersection Capacity Analysis (2031) - Scenario B Phase 1 - 2% Growth Rate
205: East Street F & East Street A

Timing Plan: PM Peak Hour

	→	↖	↗	←	↖	↗
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↖			↖	↖	
Traffic Volume (veh/h)	0	0	0	0	0	0
Future Volume (Veh/h)	0	0	0	0	0	0
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	0	0	0	0	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			0		0	0
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			0		0	0
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			100		100	100
cM capacity (veh/h)			1623		1023	1085
Direction, Lane #	EB 1	WB 1	NB 1			
Volume Total	0	0	0			
Volume Left	0	0	0			
Volume Right	0	0	0			
cSH	1700	1700	1700			
Volume to Capacity	0.00	0.00	0.00			
Queue Length 95th (m)	0.0	0.0	0.0			
Control Delay (s)	0.0	0.0	0.0			
Lane LOS			A			
Approach Delay (s)	0.0	0.0	0.0			
Approach LOS			A			
Intersection Summary						
Average Delay			0.0			
Intersection Capacity Utilization			0.0%		ICU Level of Service	A
Analysis Period (min)			15			

Lanes, Volumes, Timings
206: East Street D & East Street B

TT (2031) - Scenario B Phase 1 - 2% Growth Rate
Timing Plan: PM Peak Hour

	←	↶	↷	→	↶	↷
Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	↶		↷			↷
Traffic Volume (vph)	10	10	215	28	28	478
Future Volume (vph)	10	10	215	28	28	478
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	0.932		0.984			
Flt Protected	0.976					0.997
Satd. Flow (prot)	1694	0	1833	0	0	1857
Flt Permitted	0.976					0.997
Satd. Flow (perm)	1694	0	1833	0	0	1857
Link Speed (k/h)	50		50			50
Link Distance (m)	203.4		120.6			113.3
Travel Time (s)	14.6		8.7			8.2
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	10	10	215	28	28	478
Shared Lane Traffic (%)						
Lane Group Flow (vph)	20	0	243	0	0	506
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 53.1% ICU Level of Service A

Analysis Period (min) 15

HCM Unsignalized Intersection Capacity Analysis (2031) - Scenario B Phase 1 - 2% Growth Rate
206: East Street D & East Street B

Timing Plan: PM Peak Hour

	←	↶	↷	→	↶	↷
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	↶		↷			↷
Traffic Volume (veh/h)	10	10	215	28	28	478
Future Volume (Veh/h)	10	10	215	28	28	478
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	10	10	215	28	28	478
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	763	229			243	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	763	229			243	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	97	99			98	
cM capacity (veh/h)	364	810			1323	

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	20	243	506
Volume Left	10	0	28
Volume Right	10	28	0
cSH	503	1700	1323
Volume to Capacity	0.04	0.14	0.02
Queue Length 95th (m)	0.9	0.0	0.5
Control Delay (s)	12.5	0.0	0.6
Lane LOS	B		A
Approach Delay (s)	12.5	0.0	0.6
Approach LOS	B		

Intersection Summary

Average Delay 0.7

Intersection Capacity Utilization 53.1% ICU Level of Service A

Analysis Period (min) 15

Lanes, Volumes, Timings

207: East Street E & East Street B

TT (2031) - Scenario B Phase 1 - 2% Growth Rate

Timing Plan: PM Peak Hour

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	0	56	0	0	0	0	0	0	0	94	0
Future Volume (vph)	0	0	56	0	0	0	0	0	0	0	94	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	0.865											
Flt Protected												
Satd. Flow (prot)	0	1611	0	0	1863	0	0	1863	0	0	1863	0
Flt Permitted												
Satd. Flow (perm)	0	1611	0	0	1863	0	0	1863	0	0	1863	0
Link Speed (k/h)	50			50			50			50		
Link Distance (m)	203.4			193.8			120.6			115.1		
Travel Time (s)	14.6			14.0			8.7			8.3		
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	0	0	56	0	0	0	0	0	0	0	94	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	56	0	0	0	0	0	0	0	0	94	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 15.1%

ICU Level of Service A

Analysis Period (min) 15

HCM Unsignalized Intersection Capacity Analysis

207: East Street E & East Street B

TT (2031) - Scenario B Phase 1 - 2% Growth Rate

Timing Plan: PM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	0	56	0	0	0	0	0	0	0	94	0
Future Volume (Veh/h)	0	0	56	0	0	0	0	0	0	0	94	0
Sign Control	Stop			Stop			Free			Free		
Grade	0%			0%			0%			0%		
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	0	0	56	0	0	0	0	0	0	0	94	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)	121											
pX, platoon unblocked												
vC, conflicting volume	94	94	94	150	94	0	94				0	
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	94	94	94	150	94	0	94				0	
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	94	100	100	100	100				100	
cM capacity (veh/h)	889	796	963	770	796	1085	1500				1623	
Direction, Lane #	EB 1	WB 1	NB 1	SB 1								
Volume Total	56	0	0	94								
Volume Left	0	0	0	0								
Volume Right	56	0	0	0								
cSH	963	1700	1700	1623								
Volume to Capacity	0.06	0.00	0.00	0.00								
Queue Length 95th (m)	1.4	0.0	0.0	0.0								
Control Delay (s)	9.0	0.0	0.0	0.0								
Lane LOS	A	A										
Approach Delay (s)	9.0	0.0	0.0	0.0								
Approach LOS	A	A										
Intersection Summary												
Average Delay				3.3								
Intersection Capacity Utilization				15.1%			ICU Level of Service			A		
Analysis Period (min)				15								

Lanes, Volumes, Timings
208: East Street F & East Street B

TT (2031) - Scenario B Phase 1 - 2% Growth Rate
Timing Plan: PM Peak Hour

	EBL	EBR	NBL	NBT	SBT	SBR
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	1.00	1.00	1.00
Flt						
Flt Protected						
Satd. Flow (prot)	1863	0	0	1863	1863	0
Flt Permitted						
Satd. Flow (perm)	1863	0	0	1863	1863	0
Link Speed (k/h)	50			50	50	
Link Distance (m)	193.8			120.1	115.6	
Travel Time (s)	14.0			8.6	8.3	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
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			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	25			15
Sign Control	Stop			Free	Free	

Intersection Summary

Area Type: Other
Control Type: Unsignalized
Intersection Capacity Utilization 0.0%
Analysis Period (min) 15

HCM Unsignalized Intersection Capacity Analysis (2031) - Scenario B Phase 1 - 2% Growth Rate
208: East Street F & East Street B

Timing Plan: PM Peak Hour

	EBL	EBR	NBL	NBT	SBT	SBR
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	↔			↔	↔	
Traffic Volume (veh/h)	0	0	0	0	0	0
Future Volume (Veh/h)	0	0	0	0	0	0
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	0	0	0	0	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	0	0	0			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	0	0	0			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	100	100	100			
cM capacity (veh/h)	1023	1085	1623			

Direction, Lane #	EB 1	NB 1	SB 1
Volume Total	0	0	0
Volume Left	0	0	0
Volume Right	0	0	0
cSH	1700	1700	1700
Volume to Capacity	0.00	0.00	0.00
Queue Length 95th (m)	0.0	0.0	0.0
Control Delay (s)	0.0	0.0	0.0
Lane LOS	A		
Approach Delay (s)	0.0	0.0	0.0
Approach LOS	A		

Intersection Summary

Average Delay 0.0
Intersection Capacity Utilization 0.0%
Analysis Period (min) 15

Lanes, Volumes, Timings TT (2031) - Scenario B Phase 1 - 2% Growth Rate
209: William Halton Parkway & East Street D Timing Plan: PM Peak Hour

						
Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	0	849	1777	84	0	448
Future Volume (vph)	0	849	1777	84	0	448
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (m)	0.0			50.0	0.0	0.0
Storage Lanes	0			1	0	1
Taper Length (m)	7.5				7.5	
Lane Util. Factor	1.00	0.95	0.95	1.00	1.00	1.00
Frt				0.850		0.865
Flt Protected						
Satd. Flow (prot)	0	3539	3539	1583	0	1611
Flt Permitted						
Satd. Flow (perm)	0	3539	3539	1583	0	1611
Link Speed (k/h)		50	50		50	
Link Distance (m)		205.0	201.5		120.6	
Travel Time (s)		14.8	14.5		8.7	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	0	849	1777	84	0	448
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	849	1777	84	0	448
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(m)		3.6	3.6		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	25	15
Sign Control		Free	Free		Stop	
Intersection Summary						
Area Type:	Other					
Control Type:	Unsignalized					
Intersection Capacity Utilization	83.5%			ICU Level of Service E		
Analysis Period (min)	15					

HCM Unsignalized Intersection Capacity Analysis TT (2031) - Scenario B Phase 1 - 2% Growth Rate
209: William Halton Parkway & East Street D Timing Plan: PM Peak Hour

						
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	0	849	1777	84	0	448
Future Volume (Veh/h)	0	849	1777	84	0	448
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	0	849	1777	84	0	448
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		None	None			
Median storage (veh)						
Upstream signal (m)		205	201			
pX, platoon unblocked	0.56				0.61	0.56
vC, conflicting volume	1861				2202	888
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	960				982	0
tC, single (s)	4.1				6.8	6.9
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	100				100	26
cM capacity (veh/h)	398				149	605
Direction, Lane #	EB 1	EB 2	WB 1	WB 2	WB 3	SB 1
Volume Total	424	424	888	888	84	448
Volume Left	0	0	0	0	0	0
Volume Right	0	0	0	0	84	448
cSH	1700	1700	1700	1700	1700	605
Volume to Capacity	0.25	0.25	0.52	0.52	0.05	0.74
Queue Length 95th (m)	0.0	0.0	0.0	0.0	0.0	48.3
Control Delay (s)	0.0	0.0	0.0	0.0	0.0	25.9
Lane LOS						D
Approach Delay (s)	0.0		0.0			25.9
Approach LOS						D
Intersection Summary						
Average Delay			3.7			
Intersection Capacity Utilization			83.5%		ICU Level of Service	E
Analysis Period (min)			15			

Lanes, Volumes, Timings TT (2031) - Scenario B Phase 1 - 2% Growth Rate
210: William Halton Parkway & East Street E Timing Plan: PM Peak Hour

	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations	↰	↱	↱	↰	↰	↰
Traffic Volume (vph)	0	829	1861	0	150	0
Future Volume (vph)	0	829	1861	0	150	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (m)	90.0			50.0	0.0	0.0
Storage Lanes	1			1	1	0
Taper Length (m)	100.0				7.5	
Lane Util. Factor	1.00	*0.95	*0.95	1.00	1.00	1.00
Frt						
Flt Protected					0.950	
Satd. Flow (prot)	1863	3539	3539	1863	1770	0
Flt Permitted					0.950	
Satd. Flow (perm)	1863	3539	3539	1863	1770	0
Right Turn on Red				Yes		Yes
Satd. Flow (RTOR)						
Link Speed (k/h)		50	50		50	
Link Distance (m)		201.5	195.6		120.6	
Travel Time (s)		14.5	14.1		8.7	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	0	829	1861	0	150	0
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	829	1861	0	150	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
Number of Detectors	1	2	2	1	1	
Detector Template	Left	Thru	Thru	Right	Left	
Leading Detector (m)	2.0	10.0	10.0	2.0	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)	2.0	0.6	0.6	2.0	2.0	
Detector 1 Type	CI+Ex	CI+Ex	CI+Ex	CI+Ex	CI+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		CI+Ex	CI+Ex			
Detector 2 Channel						
Detector 2 Extend (s)		0.0	0.0			
Turn Type	pm+pt	NA	NA	Perm	Perm	
Protected Phases	7	4	8			
Permitted Phases	4			8	6	

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Synchro 10 Report
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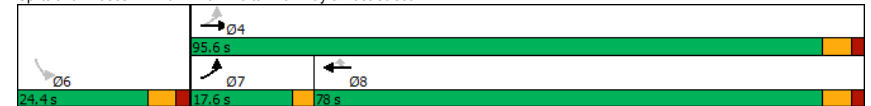
Lanes, Volumes, Timings TT (2031) - Scenario B Phase 1 - 2% Growth Rate
210: William Halton Parkway & East Street E Timing Plan: PM Peak Hour

	EBL	EBT	WBT	WBR	SBL	SBR
Detector Phase	7	4	8	8	6	
Switch Phase						
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	
Minimum Split (s)	9.5	24.0	24.0	24.0	24.0	
Total Split (s)	17.6	95.6	78.0	78.0	24.4	
Total Split (%)	14.7%	79.7%	65.0%	65.0%	20.3%	
Maximum Green (s)	14.6	89.6	72.0	72.0	18.4	
Yellow Time (s)	3.0	4.0	4.0	4.0	4.0	
All-Red Time (s)	0.0	2.0	2.0	2.0	2.0	
Lost Time Adjust (s)	1.0	-2.0	-2.0	-2.0	-2.0	
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	
Lead/Lag	Lead		Lag	Lag		
Lead-Lag Optimize?	Yes		Yes	Yes		
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	
Flash Dont Walk (s)		11.0	11.0	11.0	11.0	
Pedestrian Calls (#/hr)		0	0	0	0	
Act Effct Green (s)		91.6	74.0		16.6	
Actuated g/C Ratio		0.79	0.64		0.14	
v/c Ratio		0.30	0.83		0.60	
Control Delay		3.9	20.8		56.8	
Queue Delay		0.0	0.0		0.0	
Total Delay		3.9	20.8		56.8	
LOS		A	C		E	
Approach Delay		3.9	20.8		56.8	
Approach LOS		A	C		E	

Intersection Summary

Area Type: Other
Cycle Length: 120
Actuated Cycle Length: 116.2
Natural Cycle: 80
Control Type: Semi Act-Uncoord
Maximum v/c Ratio: 0.83
Intersection Signal Delay: 17.8 Intersection LOS: B
Intersection Capacity Utilization 66.4% ICU Level of Service C
Analysis Period (min) 15
* User Entered Value

Splits and Phases: 210: William Halton Parkway & East Street E



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Synchro 10 Report
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Queues TT (2031) - Scenario B Phase 1 - 2% Growth Rate
210: William Halton Parkway & East Street E Timing Plan: PM Peak Hour

	→	←	↘
Lane Group	EBT	WBT	SBL
Lane Group Flow (vph)	829	1861	150
v/c Ratio	0.30	0.83	0.60
Control Delay	3.9	20.8	56.8
Queue Delay	0.0	0.0	0.0
Total Delay	3.9	20.8	56.8
Queue Length 50th (m)	22.6	158.0	32.0
Queue Length 95th (m)	33.2	207.7	52.6
Internal Link Dist (m)	177.5	171.6	96.6
Turn Bay Length (m)			
Base Capacity (vph)	2791	2255	310
Starvation Cap Reductn	0	0	0
Spillback Cap Reductn	0	0	0
Storage Cap Reductn	0	0	0
Reduced v/c Ratio	0.30	0.83	0.48
Intersection Summary			

HCM Signalized Intersection Capacity Analysis TT (2031) - Scenario B Phase 1 - 2% Growth Rate
210: William Halton Parkway & East Street E Timing Plan: PM Peak Hour

	↖	→	←	↗	↘	↙
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations	↖	↗	↗	↖	↖	↗
Traffic Volume (vph)	0	829	1861	0	150	0
Future Volume (vph)	0	829	1861	0	150	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0	4.0		4.0	
Lane Util. Factor		*0.95	*0.95		1.00	
Flt		1.00	1.00		1.00	
Flt Protected		1.00	1.00		0.95	
Satd. Flow (prot)		3539	3539		1770	
Flt Permitted		1.00	1.00		0.95	
Satd. Flow (perm)		3539	3539		1770	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	0	829	1861	0	150	0
RTOR Reduction (vph)	0	0	0	0	0	0
Lane Group Flow (vph)	0	829	1861	0	150	0
Turn Type	pm+pt	NA	NA	Perm	Perm	
Protected Phases	7	4	8			
Permitted Phases	4			8	6	
Actuated Green, G (s)		89.7	72.1		14.6	
Effective Green, g (s)		91.7	74.1		16.6	
Actuated g/C Ratio		0.79	0.64		0.14	
Clearance Time (s)		6.0	6.0		6.0	
Vehicle Extension (s)		3.0	3.0		3.0	
Lane Grp Cap (vph)		2790	2254		252	
v/s Ratio Prot		c0.23	c0.53			
v/s Ratio Perm					c0.08	
v/c Ratio		0.30	0.83		0.60	
Uniform Delay, d1		3.4	16.2		46.7	
Progression Factor		1.00	1.00		1.00	
Incremental Delay, d2		0.3	3.6		3.7	
Delay (s)		3.7	19.8		50.4	
Level of Service		A	B		D	
Approach Delay (s)		3.7	19.8		50.4	
Approach LOS		A	B		D	
Intersection Summary						
HCM 2000 Control Delay			16.7		HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio			0.74			
Actuated Cycle Length (s)			116.3		Sum of lost time (s)	14.0
Intersection Capacity Utilization			66.4%		ICU Level of Service	C
Analysis Period (min)			15			

c Critical Lane Group

Lanes, Volumes, Timings TT (2031) - Scenario B Phase 1 - 2% Growth Rate
211: William Halton Parkway & East Street F Timing Plan: PM Peak Hour

						
Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	0	979	1861	0	0	0
Future Volume (vph)	0	979	1861	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (m)	90.0			0.0	0.0	0.0
Storage Lanes	1			0	1	0
Taper Length (m)	100.0				7.5	
Lane Util. Factor	1.00	0.95	0.95	0.95	1.00	1.00
Frt						
Flt Protected						
Satd. Flow (prot)	1863	3539	3539	0	1863	0
Flt Permitted						
Satd. Flow (perm)	1863	3539	3539	0	1863	0
Link Speed (k/h)		50	50		50	
Link Distance (m)		195.6	407.9		120.1	
Travel Time (s)		14.1	29.4		8.6	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	0	979	1861	0	0	0
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	979	1861	0	0	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 54.8%	ICU Level of Service A					
Analysis Period (min) 15						

HCM Unsignalized Intersection Capacity Analysis TT (2031) - Scenario B Phase 1 - 2% Growth Rate
211: William Halton Parkway & East Street F Timing Plan: PM Peak Hour

						
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	0	979	1861	0	0	0
Future Volume (Veh/h)	0	979	1861	0	0	0
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	0	979	1861	0	0	0
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type						
Median storage (veh)						
Upstream signal (m)						
pX, platoon unblocked					0.94	
vC, conflicting volume	1861				2350	930
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1861				2312	930
tC, single (s)	4.1				6.8	6.9
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	100				100	100
cM capacity (veh/h)	321				30	269
Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	SB 1
Volume Total	0	490	490	1241	620	0
Volume Left	0	0	0	0	0	0
Volume Right	0	0	0	0	0	0
cSH	1700	1700	1700	1700	1700	1700
Volume to Capacity	0.00	0.29	0.29	0.73	0.36	0.00
Queue Length 95th (m)	0.0	0.0	0.0	0.0	0.0	0.0
Control Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0
Lane LOS						A
Approach Delay (s)	0.0			0.0		0.0
Approach LOS						A
Intersection Summary						
Average Delay			0.0			
Intersection Capacity Utilization			54.8%		ICU Level of Service	A
Analysis Period (min)			15			

Lanes, Volumes, Timings

TT (2031) - Scenario B Phase 1 - 2% Growth Rate

212: West Street A & Transit Station

Timing Plan: PM Peak Hour

	WBL	WBR	NBT	NBR	SBL	SBT
Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	WBL	WBR	NBT	NBR	SBL	SBT
Traffic Volume (vph)	150	0	0	512	0	0
Future Volume (vph)	150	0	0	512	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt			0.865			
Flt Protected	0.950					
Satd. Flow (prot)	1770	0	1611	0	0	1863
Flt Permitted	0.950					
Satd. Flow (perm)	1770	0	1611	0	0	1863
Link Speed (k/h)	50		50			50
Link Distance (m)	216.0		234.7			101.9
Travel Time (s)	15.6		16.9			7.3
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	150	0	0	512	0	0
Shared Lane Traffic (%)						
Lane Group Flow (vph)	150	0	512	0	0	0
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	46.7%	ICU Level of Service A
Analysis Period (min)	15	

HCM Unsignalized Intersection Capacity Analysis

TT (2031) - Scenario B Phase 1 - 2% Growth Rate

212: West Street A & Transit Station

Timing Plan: PM Peak Hour

	WBL	WBR	NBT	NBR	SBL	SBT
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	WBL	WBR	NBT	NBR	SBL	SBT
Traffic Volume (veh/h)	150	0	0	512	0	0
Future Volume (Veh/h)	150	0	0	512	0	0
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	150	0	0	512	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	256	256			512	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	256	256			512	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	80	100			100	
cM capacity (veh/h)	733	783			1053	

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	150	512	0
Volume Left	150	0	0
Volume Right	0	512	0
cSH	733	1700	1700
Volume to Capacity	0.20	0.30	0.00
Queue Length 95th (m)	5.7	0.0	0.0
Control Delay (s)	11.2	0.0	0.0
Lane LOS	B		
Approach Delay (s)	11.2	0.0	0.0
Approach LOS	B		

Intersection Summary			
Average Delay	2.5		
Intersection Capacity Utilization	46.7%	ICU Level of Service	A
Analysis Period (min)	15		

Lanes, Volumes, Timings TT (2031) - Scenario B Phase 1 - 2% Growth Rate
213: East Street A/West Street A & William Halton Parkway Timing Plan: PM Peak Hour

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑	↑		↑↑	↑			↑			↑
Traffic Volume (vph)	0	776	11	0	1838	152	0	0	245	0	0	39
Future Volume (vph)	0	776	11	0	1838	152	0	0	245	0	0	39
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	0.0		90.0	0.0		90.0	0.0		0.0	0.0		0.0
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	0.95	1.00	1.00	0.95	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt			0.850			0.850			0.865			0.865
Flt Protected												
Satd. Flow (prot)	0	3539	1583	0	3539	1583	0	0	1611	0	0	1611
Flt Permitted												
Satd. Flow (perm)	0	3539	1583	0	3539	1583	0	0	1611	0	0	1611
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		200.8			212.9			103.7			234.7	
Travel Time (s)		14.5			15.3			7.5			16.9	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	0	776	11	0	1838	152	0	0	245	0	0	39
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	776	11	0	1838	152	0	0	245	0	0	39
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 60.8%	ICU Level of Service B											
Analysis Period (min) 15												

HCM Unsignalized Intersection Capacity Analysis (2031) - Scenario B Phase 1 - 2% Growth Rate
213: East Street A/West Street A & William Halton Parkway Timing Plan: PM Peak Hour

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑	↑		↑↑	↑			↑			↑
Traffic Volume (veh/h)	0	776	11	0	1838	152	0	0	245	0	0	39
Future Volume (Veh/h)	0	776	11	0	1838	152	0	0	245	0	0	39
Sign Control	Free			Free			Stop			Stop		
Grade	0%			0%			0%			0%		
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	0	776	11	0	1838	152	0	0	245	0	0	39
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type	None			None								
Median storage (veh)												
Upstream signal (m)	201			213								
pX, platoon unblocked	0.73			0.90			0.79	0.79	0.90	0.79	0.79	0.73
vC, conflicting volume	1990			787			1734	2766	388	2471	2625	919
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	1625			533			799	2112	88	1737	1933	167
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	71	100	100	94
cM capacity (veh/h)	291			925			204	40	855	31	51	623
Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	WB 3	NB 1	SB 1				
Volume Total	388	388	11	919	919	152	245	39				
Volume Left	0	0	0	0	0	0	0	0				
Volume Right	0	0	11	0	0	152	245	39				
cSH	1700	1700	1700	1700	1700	1700	855	623				
Volume to Capacity	0.23	0.23	0.01	0.54	0.54	0.09	0.29	0.06				
Queue Length 95th (m)	0.0	0.0	0.0	0.0	0.0	0.0	8.9	1.5				
Control Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	10.9	11.2				
Lane LOS							B	B				
Approach Delay (s)	0.0			0.0			10.9	11.2				
Approach LOS							B	B				
Intersection Summary												
Average Delay				1.0								
Intersection Capacity Utilization				60.8%			ICU Level of Service			B		
Analysis Period (min)				15								

Lanes, Volumes, Timings TT (2031) - Scenario B Phase 1 - 2% Growth Rate
214: West Street D & William Halton Parkway Timing Plan: PM Peak Hour

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	787	0	78	1799	0	26	0	0	0	0	0
Future Volume (vph)	0	787	0	78	1799	0	26	0	0	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	90.0		90.0	90.0		90.0	50.0		0.0	50.0		0.0
Storage Lanes	1		1	1		1	1		0	1		0
Taper Length (m)	100.0			100.0			75.0			75.0		
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt												
Flt Protected				0.950			0.950					
Satd. Flow (prot)	1863	3539	1863	1770	3539	1863	1770	1863	0	1863	1863	0
Flt Permitted				0.270			0.757					
Satd. Flow (perm)	1863	3539	1863	503	3539	1863	1410	1863	0	1863	1863	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)												
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		573.3			200.8			99.4			133.2	
Travel Time (s)		41.3			14.5			7.2			9.6	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	0	787	0	78	1799	0	26	0	0	0	0	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	787	0	78	1799	0	26	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	1	2	1	1	2		1	2	
Detector Template	Left	Thru	Right	Left	Thru	Right	Left	Thru		Left	Thru	
Leading Detector (m)	2.0	10.0	2.0	2.0	10.0	2.0	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		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	2.0	0.6	2.0	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		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	pm+pt	NA	Perm	Perm			Perm		
Protected Phases		4		3	8			2			6	
Permitted Phases	4		4	8		8	2			6		

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Lanes, Volumes, Timings TT (2031) - Scenario B Phase 1 - 2% Growth Rate
214: West Street D & William Halton Parkway Timing Plan: PM Peak Hour

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector Phase	4	4	4	3	8	8	2	2		6	6	
Switch Phase												
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0		5.0	5.0	
Minimum Split (s)	24.0	24.0	24.0	9.5	24.0	24.0	24.0	24.0		29.0	29.0	
Total Split (s)	34.8	34.8	34.8	26.2	61.0	61.0	29.0	29.0		29.0	29.0	
Total Split (%)	38.7%	38.7%	38.7%	29.1%	67.8%	67.8%	32.2%	32.2%		32.2%	32.2%	
Maximum Green (s)	28.8	28.8	28.8	23.2	55.0	55.0	23.0	23.0		23.0	23.0	
Yellow Time (s)	4.0	4.0	4.0	3.0	4.0	4.0	4.0	4.0		4.0	4.0	
All-Red Time (s)	2.0	2.0	2.0	0.0	2.0	2.0	2.0	2.0		2.0	2.0	
Lost Time Adjust (s)	-2.0	-2.0	-2.0	1.0	-2.0	-2.0	-2.0	-2.0		1.0	-2.0	
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0		7.0	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	None	None	Min	Min		Min	Min	
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)		30.5		37.7	37.7		9.0					
Actuated g/C Ratio		0.55		0.68	0.68		0.16					
v/c Ratio		0.40		0.17	0.74		0.11					
Control Delay		8.2		3.5	7.6		25.3					
Queue Delay		0.0		0.0	0.0		0.0					
Total Delay		8.2		3.5	7.6		25.3					
LOS		A		A	A		C					
Approach Delay		8.2			7.4		25.3					
Approach LOS		A			A		C					

Intersection Summary

Area Type: Other

Cycle Length: 90

Actuated Cycle Length: 55.1

Natural Cycle: 70

Control Type: Actuated-Uncoordinated

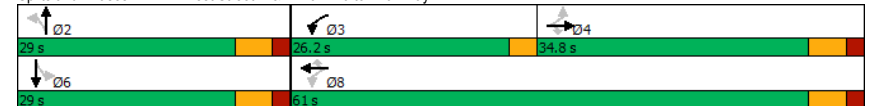
Maximum v/c Ratio: 0.74

Intersection Signal Delay: 7.8 Intersection LOS: A

Intersection Capacity Utilization 68.1% ICU Level of Service C

Analysis Period (min) 15

Splits and Phases: 214: West Street D & William Halton Parkway



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Queues TT (2031) - Scenario B Phase 1 - 2% Growth Rate
214: West Street D & William Halton Parkway Timing Plan: PM Peak Hour

	→	↖	←	↗
Lane Group	EBT	WBL	WBT	NBL
Lane Group Flow (vph)	787	78	1799	26
v/c Ratio	0.40	0.17	0.74	0.11
Control Delay	8.2	3.5	7.6	25.3
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	8.2	3.5	7.6	25.3
Queue Length 50th (m)	22.1	1.8	43.1	2.1
Queue Length 95th (m)	35.3	4.8	69.8	9.6
Internal Link Dist (m)	549.3		176.8	
Turn Bay Length (m)		90.0		50.0
Base Capacity (vph)	2223	876	3336	665
Starvation Cap Reductn	0	0	0	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.35	0.09	0.54	0.04
Intersection Summary				

HCM Signalized Intersection Capacity Analysis TT (2031) - Scenario B Phase 1 - 2% Growth Rate
214: West Street D & William Halton Parkway Timing Plan: PM Peak Hour

	↖	→	↗	←	↖	↗	↖	↗	↖	↗	↖	↗
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖	↖↗	↗	↖	↖↗	↗	↖	↖	↗	↖	↖	↗
Traffic Volume (vph)	0	787	0	78	1799	0	26	0	0	0	0	0
Future Volume (vph)	0	787	0	78	1799	0	26	0	0	0	0	0
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					
Lane Util. Factor		0.95		1.00	0.95		1.00					
Frt		1.00		1.00	1.00		1.00					
Flt Protected		1.00		0.95	1.00		0.95					
Satd. Flow (prot)		3539		1770	3539		1770					
Flt Permitted		1.00		0.27	1.00		0.76					
Satd. Flow (perm)		3539		504	3539		1410					
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	0	787	0	78	1799	0	26	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	787	0	78	1799	0	26	0	0	0	0	0
Turn Type	Perm	NA	Perm	pm+pt	NA	Perm	Perm			Perm		
Protected Phases		4		3	8			2			6	
Permitted Phases	4		4	8		8	2			6		
Actuated Green, G (s)		28.4		36.3	36.3		6.9					
Effective Green, g (s)		30.4		35.3	38.3		8.9					
Actuated g/C Ratio		0.55		0.64	0.69		0.16					
Clearance Time (s)		6.0		3.0	6.0		6.0					
Vehicle Extension (s)		3.0		3.0	3.0		3.0					
Lane Grp Cap (vph)		1949		411	2455		227					
v/s Ratio Prot		0.22		0.01	c0.51							
v/s Ratio Perm				0.11			c0.02					
v/c Ratio		0.40		0.19	0.73		0.11					
Uniform Delay, d1		7.2		4.3	5.3		19.8					
Progression Factor		1.00		1.00	1.00		1.00					
Incremental Delay, d2		0.1		0.2	1.2		0.2					
Delay (s)		7.3		4.5	6.4		20.0					
Level of Service		A		A	A		C					
Approach Delay (s)		7.3			6.3		20.0				0.0	
Approach LOS		A			A		C				A	
Intersection Summary												
HCM 2000 Control Delay			6.8			HCM 2000 Level of Service		A				
HCM 2000 Volume to Capacity ratio			0.67									
Actuated Cycle Length (s)			55.2			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

Lanes, Volumes, Timings

215: East Street A & West Street B

TT (2031) - Scenario B Phase 1 - 2% Growth Rate

Timing Plan: PM Peak Hour

	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	39	39	0	0	100	26
Future Volume (vph)	39	39	0	0	100	26
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	0.932				0.972	
Flt Protected	0.976					
Satd. Flow (prot)	1694	0	0	1863	1811	0
Flt Permitted	0.976					
Satd. Flow (perm)	1694	0	0	1863	1811	0
Link Speed (k/h)	50			50	50	
Link Distance (m)	202.4			83.5	103.7	
Travel Time (s)	14.6			6.0	7.5	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	39	39	0	0	100	26
Shared Lane Traffic (%)						
Lane Group Flow (vph)	78	0	0	0	126	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
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	25			15
Sign Control	Stop			Free	Free	

Intersection Summary

Area Type: Other

Control Type: Unsignalized

Intersection Capacity Utilization 18.1%

ICU Level of Service A

Analysis Period (min) 15

HCM Unsignalized Intersection Capacity Analysis

215: East Street A & West Street B

TT (2031) - Scenario B Phase 1 - 2% Growth Rate

Timing Plan: PM Peak Hour

	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	39	39	0	0	100	26
Future Volume (Veh/h)	39	39	0	0	100	26
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	39	39	0	0	100	26
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	None	
Median storage (veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	113	113	126			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	113	113	126			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	96	96	100			
cM capacity (veh/h)	884	940	1460			

Direction, Lane #	EB 1	NB 1	SB 1
Volume Total	78	0	126
Volume Left	39	0	0
Volume Right	39	0	26
cSH	911	1700	1700
Volume to Capacity	0.09	0.00	0.07
Queue Length 95th (m)	2.1	0.0	0.0
Control Delay (s)	9.3	0.0	0.0
Lane LOS	A		
Approach Delay (s)	9.3	0.0	0.0
Approach LOS	A		

Intersection Summary

Average Delay 3.6

Intersection Capacity Utilization 18.1%

ICU Level of Service

A

Analysis Period (min) 15

Lanes, Volumes, Timings
216: West Street D & West Street B

TT (2031) - Scenario B Phase 1 - 2% Growth Rate

Timing Plan: PM Peak Hour

	WBL	WBR	NBT	NBR	SBL	SBT
Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	←	→	←	→	←	→
Traffic Volume (vph)	0	26	0	0	78	0
Future Volume (vph)	0	26	0	0	78	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.865					
Flt Protected						0.950
Satd. Flow (prot)	1611	0	1863	0	0	1770
Flt Permitted						0.950
Satd. Flow (perm)	1611	0	1863	0	0	1770
Link Speed (k/h)	50		50			50
Link Distance (m)	202.4		82.8			99.4
Travel Time (s)	14.6		6.0			7.2
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	0	26	0	0	78	0
Shared Lane Traffic (%)						
Lane Group Flow (vph)	26	0	0	0	0	78
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
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		15	25	
Sign Control	Stop		Free			Free

Intersection Summary

Area Type: Other

Control Type: Unsignalized

Intersection Capacity Utilization 14.3% ICU Level of Service A

Analysis Period (min) 15

HCM Unsignalized Intersection Capacity Analysis (2031) - Scenario B Phase 1 - 2% Growth Rate
216: West Street D & West Street B

Timing Plan: PM Peak Hour

	WBL	WBR	NBT	NBR	SBL	SBT
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	←	→	←	→	←	→
Traffic Volume (veh/h)	0	26	0	0	78	0
Future Volume (Veh/h)	0	26	0	0	78	0
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	0	26	0	0	78	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)						99
pX, platoon unblocked						
vC, conflicting volume	156	0			0	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	156	0			0	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	100	98			95	
cM capacity (veh/h)	795	1085			1623	

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	26	0	78
Volume Left	0	0	78
Volume Right	26	0	0
cSH	1085	1700	1623
Volume to Capacity	0.02	0.00	0.05
Queue Length 95th (m)	0.6	0.0	1.1
Control Delay (s)	8.4	0.0	7.3
Lane LOS	A		A
Approach Delay (s)	8.4	0.0	7.3
Approach LOS	A		

Intersection Summary

Average Delay 7.6

Intersection Capacity Utilization 14.3% ICU Level of Service A

Analysis Period (min) 15

Lanes, Volumes, Timings

217: East Street C & East Street A

TT (2031) - Scenario B Phase 1 - 2% Growth Rate

Timing Plan: PM Peak Hour

	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↕	↕		↕	
Traffic Volume (vph)	0	0	0	125	100	0
Future Volume (vph)	0	0	0	125	100	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.865				
Flt Protected				0.950		
Satd. Flow (prot)	0	1863	1611	0	1770	0
Flt Permitted				0.950		
Satd. Flow (perm)	0	1863	1611	0	1770	0
Link Speed (k/h)		50	50		50	
Link Distance (m)		206.1	205.4		83.5	
Travel Time (s)		14.8	14.8		6.0	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	0	0	0	125	100	0
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	0	125	0	100	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 19.9%

ICU Level of Service A

Analysis Period (min) 15

HCM Unsignalized Intersection Capacity Analysis

217: East Street C & East Street A

TT (2031) - Scenario B Phase 1 - 2% Growth Rate

Timing Plan: PM Peak Hour

	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↕	↕		↕	
Traffic Volume (veh/h)	0	0	0	125	100	0
Future Volume (Veh/h)	0	0	0	125	100	0
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	0	0	0	125	100	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	125				62	62
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	125				62	62
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	100				89	100
cM capacity (veh/h)	1462				944	1002

Direction, Lane #	EB 1	WB 1	SB 1
Volume Total	0	125	100
Volume Left	0	0	100
Volume Right	0	125	0
cSH	1700	1700	944
Volume to Capacity	0.00	0.07	0.11
Queue Length 95th (m)	0.0	0.0	2.7
Control Delay (s)	0.0	0.0	9.3
Lane LOS			A
Approach Delay (s)	0.0	0.0	9.3
Approach LOS			A

Intersection Summary

Average Delay 4.1
 Intersection Capacity Utilization 19.9% ICU Level of Service A
 Analysis Period (min) 15

Lanes, Volumes, Timings

TT (2031) - Scenario B Phase 1 - 2% Growth Rate

218: West Street D & East Street C

Timing Plan: PM Peak Hour

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔			↔			↔			↔	
Traffic Volume (vph)	0	0	0	145	0	173	0	177	65	213	163	0
Future Volume (vph)	0	0	0	145	0	173	0	177	65	213	163	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					0.927			0.964				
Flt Protected					0.978						0.972	
Satd. Flow (prot)	0	1863	0	0	1689	0	0	1796	0	0	1811	0
Flt Permitted					0.978						0.972	
Satd. Flow (perm)	0	1863	0	0	1689	0	0	1796	0	0	1811	0
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		164.8			206.1			68.2			82.8	
Travel Time (s)		11.9			14.8			4.9			6.0	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	0	0	0	145	0	173	0	177	65	213	163	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	0	0	0	318	0	0	242	0	0	376	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	62.3%	ICU Level of Service B
Analysis Period (min)	15	

HCM Unsignalized Intersection Capacity Analysis

TT (2031) - Scenario B Phase 1 - 2% Growth Rate

218: West Street D & East Street C

Timing Plan: PM Peak Hour

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Movement		↔			↔			↔			↔	
Lane Configurations		↔			↔			↔			↔	
Traffic Volume (veh/h)	0	0	0	145	0	173	0	177	65	213	163	0
Future Volume (Veh/h)	0	0	0	145	0	173	0	177	65	213	163	0
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	0	0	0	145	0	173	0	177	65	213	163	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	173			0			458	463	0	530	376	86
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	173			0			458	463	0	530	376	86
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			91			100	61	94	24	68	100
cM capacity (veh/h)	1404			1623			360	452	1085	281	505	972

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	0	318	242	376
Volume Left	0	145	0	213
Volume Right	0	173	65	0
cSH	1700	1623	536	348
Volume to Capacity	0.00	0.09	0.45	1.08
Queue Length 95th (m)	0.0	2.2	17.4	103.1
Control Delay (s)	0.0	3.8	17.1	106.5
Lane LOS		A	C	F
Approach Delay (s)	0.0	3.8	17.1	106.5
Approach LOS		C	F	

Intersection Summary			
Average Delay	48.5		
Intersection Capacity Utilization	62.3%	ICU Level of Service	B
Analysis Period (min)	15		

Appendix G1

2041 Scenario A Total Operation Synchro Reports



Lanes, Volumes, Timings

101: Trafalgar Rd & Lower Base Line

Total (2041) - Scenario A - 2% Growth Rate

Timing Plan: AM Peak Hour

	↖	→	↗	↙	←	↖	↗	↙	↘	↗	↘	↙
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖	↖	↖	↖	↖	↖	↖	↖	↖	↖	↖	↖
Traffic Volume (vph)	151	588	224	332	119	219	51	2043	316	502	2252	24
Future Volume (vph)	151	588	224	332	119	219	51	2043	316	502	2252	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	0.423			0.165			0.085			0.083		
Satd. Flow (perm)	788	3394	0	307	3196	0	158	5085	1583	155	5085	1583
Right Turn on Red		Yes			Yes			Yes			Yes	
Satd. Flow (RTOR)		41			238				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)	164	639	243	361	129	238	55	2221	343	546	2448	26
Shared Lane Traffic (%)												
Lane Group Flow (vph)	164	882	0	361	367	0	55	2221	343	546	2448	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

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Lanes, Volumes, Timings

101: Trafalgar Rd & Lower Base Line

Total (2041) - Scenario A - 2% Growth Rate

Timing Plan: AM Peak Hour

	↖	→	↗	↙	←	↖	↗	↙	↘	↗	↘	↙
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		1.39	0.41		0.31	1.14	0.45	1.46	0.91	0.03
Control Delay	32.5	158.8		228.0	15.4		17.0	104.5	9.6	250.6	32.6	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	32.5	158.8		228.0	15.4		17.0	104.5	9.6	250.6	32.6	0.0
LOS	C	F		F	B		B	F	A	F	C	A
Approach Delay		139.0			120.8			90.3			71.7	
Approach LOS		F			F			F			E	

Intersection Summary

Area Type: Other

Cycle Length: 120

Actuated Cycle Length: 120

Natural Cycle: 120

Control Type: Semi Act-Uncooord

Maximum v/c Ratio: 1.46

Intersection Signal Delay: 92.6

Intersection LOS: F

Intersection Capacity Utilization 122.4%

ICU Level of Service H

Analysis Period (min) 15

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

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Queues
101: Trafalgar Rd & Lower Base Line

Total (2041) - Scenario A - 2% Growth Rate
Timing Plan: AM Peak Hour

	EBL	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	164	882	361	367	55	2221	343	546	2448	26
v/c Ratio	0.47	1.24	1.39	0.41	0.31	1.14	0.45	1.46	0.91	0.03
Control Delay	32.5	158.8	228.0	15.4	17.0	104.5	9.6	250.6	32.6	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	32.5	158.8	228.0	15.4	17.0	104.5	9.6	250.6	32.6	0.0
Queue Length 50th (m)	26.8	~130.3	~96.2	12.9	4.9	~220.7	14.0	~158.8	189.3	0.0
Queue Length 95th (m)	43.5	#169.9	#154.2	26.3	10.0	#249.0	37.3	#225.2	213.9	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	0.46	1.24	1.39	0.41	0.31	1.14	0.45	1.46	0.91	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.

HCM Signalized Intersection Capacity Analysis
101: Trafalgar Rd & Lower Base Line

Total (2041) - Scenario A - 2% Growth Rate
Timing Plan: AM Peak Hour

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰	↱	↱	↰	↱	↱	↰	↱	↱	↰	↱	↱
Traffic Volume (vph)	151	588	224	332	119	219	51	2043	316	502	2252	24
Future Volume (vph)	151	588	224	332	119	219	51	2043	316	502	2252	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	3393		1770	3195		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)	788	3393		308	3195		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)	164	639	243	361	129	238	55	2221	343	546	2448	26
RTOR Reduction (vph)	0	33	0	0	186	0	0	0	153	0	0	12
Lane Group Flow (vph)	164	849	0	361	181	0	55	2221	190	546	2448	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	
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	0.44		c0.26	0.48	
v/s Ratio Perm	0.10			c0.29			0.13			0.12	c0.59	0.01
v/c Ratio	0.49	1.26		1.44	0.26		0.35	1.13	0.31	1.48	0.92	0.02
Uniform Delay, d1	32.7	48.5		36.7	39.2		25.4	37.0	25.7	39.2	26.4	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	129.5		218.5	0.4		1.3	64.0	1.3	231.8	6.5	0.0
Delay (s)	33.9	178.0		255.1	39.6		26.7	101.0	27.0	270.9	32.8	13.8
Level of Service	C	F		F	D		C	F	C	F	C	B
Approach Delay (s)		155.4			146.5			89.8			75.7	
Approach LOS		F			F			F			E	

Intersection Summary

HCM 2000 Control Delay	98.9	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	1.47		
Actuated Cycle Length (s)	120.9	Sum of lost time (s)	16.0
Intersection Capacity Utilization	122.4%	ICU Level of Service	H
Analysis Period (min)	15		

c Critical Lane Group

Lanes, Volumes, Timings

Total (2041) - Scenario A - 2% Growth Rate

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

Timing Plan: AM Peak Hour

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔		↔	↔	↔	↔	↔	↔	↔	↔	↔
Traffic Volume (vph)	2	0	9	406	1	26	6	2377	0	0	2805	5
Future Volume (vph)	2	0	9	406	1	26	6	2377	0	0	2805	5
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		0.063					
Satd. Flow (perm)	0	1639	0	1327	1221	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)	2	0	10	441	1	28	7	2584	0	0	3049	5
Shared Lane Traffic (%)				50%		10%						
Lane Group Flow (vph)	0	12	0	220	225	25	7	2584	0	0	3049	5
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	CI+Ex	CI+Ex		CI+Ex	CI+Ex	CI+Ex	CI+Ex	CI+Ex			CI+Ex	CI+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		CI+Ex			CI+Ex			CI+Ex				CI+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	Perm
Protected Phases	4	4			8		5	2			6	
Permitted Phases				8		8	2					6

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Lanes, Volumes, Timings

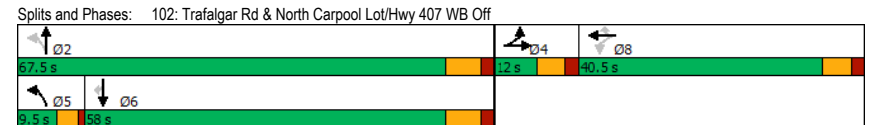
Total (2041) - Scenario A - 2% Growth Rate

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

Timing Plan: AM Peak Hour

	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	
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			25.8	25.8	25.8	64.3	64.3			62.7	62.7
Actuated g/C Ratio	0.08			0.26	0.26	0.26	0.64	0.64			0.63	0.63
v/c Ratio	0.05			0.64	0.71	0.05	0.04	0.79			0.96	0.00
Control Delay	0.4			42.5	47.0	0.2	11.2	17.7			29.0	0.0
Queue Delay	0.0			0.0	0.0	0.0	0.0	0.0			0.0	0.0
Total Delay	0.4			42.5	47.0	0.2	11.2	17.7			29.0	0.0
LOS	A			D	D	A	B	B			C	A
Approach Delay	0.4			42.4			17.7				29.0	
Approach LOS	A			D			B				C	

Intersection Summary												
Area Type:	Other											
Cycle Length:	120											
Actuated Cycle Length:	100.2											
Natural Cycle:	130											
Control Type:	Actuated-Uncoordinated											
Maximum v/c Ratio:	0.96											
Intersection Signal Delay:	25.2											
Intersection Capacity Utilization	79.1%											
ICU Level of Service	D											
Analysis Period (min)	15											



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Queues
102: Trafalgar Rd & North Carpool Lot/Hwy 407 WB Off
Total (2041) - Scenario A - 2% Growth Rate
Timing Plan: AM Peak Hour

	→	↖	←	↗	↖	↑	↓	↗
Lane Group	EBT	WBL	WBT	WBR	NBL	NBT	SBT	SBR
Lane Group Flow (vph)	12	220	225	25	7	2584	3049	5
v/c Ratio	0.05	0.64	0.71	0.05	0.04	0.79	0.96	0.00
Control Delay	0.4	42.5	47.0	0.2	11.2	17.7	29.0	0.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	0.4	42.5	47.0	0.2	11.2	17.7	29.0	0.0
Queue Length 50th (m)	0.0	37.8	41.2	0.0	0.4	108.3	157.3	0.0
Queue Length 95th (m)	0.0	71.3	78.0	0.0	3.0	#246.6	#362.7	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	489	450	634	166	3260	3180	1034
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	0.45	0.50	0.04	0.04	0.79	0.96	0.00

Intersection Summary

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

HCM Signalized Intersection Capacity Analysis
102: Trafalgar Rd & North Carpool Lot/Hwy 407 WB Off
Total (2041) - Scenario A - 2% Growth Rate
Timing Plan: AM Peak Hour

													
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations								  			  		
Traffic Volume (vph)	2	0	9	406	1	26	6	2377	0	0	2805	5	
Future Volume (vph)	2	0	9	406	1	26	6	2377	0	0	2805	5	
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	1613	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)		1640		1327	1221	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)	2	0	10	441	1	28	7	2584	0	0	3049	5	
RTOR Reduction (vph)	0	12	0	0	1	19	0	0	0	0	0	2	
Lane Group Flow (vph)	0	0	0	220	224	6	7	2584	0	0	3049	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)		1.0		23.8	23.8	23.8	64.5	64.5			59.6	59.6	
Effective Green, g (s)		3.0		25.8	25.8	25.8	64.5	67.5			62.6	62.6	
Actuated g/C Ratio		0.03		0.24	0.24	0.24	0.60	0.62			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)		45		316	290	358	83	3169			2939	915	
v/s Ratio Prot		c0.00					0.00	c0.51			c0.60		
v/s Ratio Perm				0.17	c0.18	0.00	0.05					0.00	
v/c Ratio		0.01		0.70	0.77	0.02	0.08	0.82			1.04	0.00	
Uniform Delay, d1		51.2		37.7	38.5	31.5	25.4	15.6			22.8	9.7	
Progression Factor		1.00		1.00	1.00	1.00	1.00	1.00			1.00	1.00	
Incremental Delay, d2		0.1		6.8	12.4	0.0	0.3	2.4			27.3	0.0	
Delay (s)		51.3		44.4	50.9	31.6	25.7	18.1			50.2	9.7	
Level of Service		D		D	D	C	C	B			D	A	
Approach Delay (s)		51.3			46.9			18.1			50.1		
Approach LOS		D			D			B			D		

Intersection Summary

HCM 2000 Control Delay	36.3	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.96		
Actuated Cycle Length (s)	108.3	Sum of lost time (s)	18.0
Intersection Capacity Utilization	79.1%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

Lanes, Volumes, Timings
103: Trafalgar Rd & Hwy 407 EB Off

Total (2041) - Scenario A - 2% Growth Rate
Timing Plan: AM Peak Hour

	EBL	EBR	NBL	NBT	SBT	SBR
Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	↔	↔		↕	↕	
Traffic Volume (vph)	140	330	0	2389	2959	0
Future Volume (vph)	140	330	0	2389	2959	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	0.937	0.850				
Flt Protected	0.972					
Satd. Flow (prot)	1697	1504	0	5085	5085	0
Flt Permitted	0.972					
Satd. Flow (perm)	1697	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)	152	359	0	2597	3216	0
Shared Lane Traffic (%)		31%				
Lane Group Flow (vph)	263	248	0	2597	3216	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	CI+Ex	CI+Ex		CI+Ex	CI+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				CI+Ex	CI+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	

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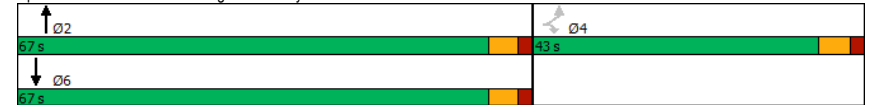
Lanes, Volumes, Timings
103: Trafalgar Rd & Hwy 407 EB Off

Total (2041) - Scenario A - 2% Growth Rate
Timing Plan: AM Peak Hour

	EBL	EBR	NBL	NBT	SBT	SBR
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)	22.5	22.5		63.2	63.2	
Actuated g/C Ratio	0.24	0.24		0.67	0.67	
v/c Ratio	0.65	0.69		0.76	0.94	
Control Delay	39.6	42.6		13.0	21.8	
Queue Delay	0.0	0.0		0.0	0.0	
Total Delay	39.6	42.6		13.0	21.8	
LOS	D	D		B	C	
Approach Delay	41.1			13.0	21.8	
Approach LOS	D			B	C	

Intersection Summary	
Area Type:	Other
Cycle Length: 110	
Actuated Cycle Length: 93.7	
Natural Cycle: 80	
Control Type: Semi Act-Uncoord	
Maximum v/c Ratio: 0.94	
Intersection Signal Delay: 19.7	Intersection LOS: B
Intersection Capacity Utilization 78.3%	ICU Level of Service D
Analysis Period (min) 15	

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



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Queues
103: Trafalgar Rd & Hwy 407 EB Off

Total (2041) - Scenario A - 2% Growth Rate
Timing Plan: AM Peak Hour

	EBL	EBR	NBT	SBT
Lane Group	EBL	EBR	NBT	SBT
Lane Group Flow (vph)	263	248	2597	3216
v/c Ratio	0.65	0.69	0.76	0.94
Control Delay	39.6	42.6	13.0	21.8
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	39.6	42.6	13.0	21.8
Queue Length 50th (m)	42.2	42.3	99.0	163.3
Queue Length 95th (m)	66.1	68.0	157.5	#275.1
Internal Link Dist (m)	530.6		96.3	339.6
Turn Bay Length (m)				
Base Capacity (vph)	708	628	3430	3430
Starvation Cap Reductn	0	0	0	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.37	0.39	0.76	0.94

Intersection Summary

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

HCM Signalized Intersection Capacity Analysis
103: Trafalgar Rd & Hwy 407 EB Off

Total (2041) - Scenario A - 2% Growth Rate
Timing Plan: AM Peak Hour

	EBL	EBR	NBL	NBT	SBT	SBR
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	↰	↱		↰	↰	↰
Traffic Volume (vph)	140	330	0	2389	2959	0
Future Volume (vph)	140	330	0	2389	2959	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	0.94	0.85		1.00	1.00	
Flt Protected	0.97	1.00		1.00	1.00	
Satd. Flow (prot)	1696	1504		5085	5085	
Flt Permitted	0.97	1.00		1.00	1.00	
Satd. Flow (perm)	1696	1504		5085	5085	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	152	359	0	2597	3216	0
RTOR Reduction (vph)	0	0	0	0	0	0
Lane Group Flow (vph)	263	248	0	2597	3216	0
Turn Type	Perm	Perm		NA	NA	
Protected Phases				2	6	
Permitted Phases	4	4				
Actuated Green, G (s)	20.5	20.5		61.2	61.2	
Effective Green, g (s)	22.5	22.5		63.2	63.2	
Actuated g/C Ratio	0.24	0.24		0.67	0.67	
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)	407	361		3429	3429	
v/s Ratio Prot				0.51	c0.63	
v/s Ratio Perm	0.16	c0.16				
v/c Ratio	0.65	0.69		0.76	0.94	
Uniform Delay, d1	32.0	32.4		10.1	13.5	
Progression Factor	1.00	1.00		1.00	1.00	
Incremental Delay, d2	3.5	5.4		1.6	6.4	
Delay (s)	35.5	37.8		11.8	20.0	
Level of Service	D	D		B	B	
Approach Delay (s)	36.6			11.8	20.0	
Approach LOS	D			B	B	

Intersection Summary

HCM 2000 Control Delay	17.9	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.89		
Actuated Cycle Length (s)	93.7	Sum of lost time (s)	10.0
Intersection Capacity Utilization	78.3%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

Lanes, Volumes, Timings

104: Trafalgar Rd & West Street A/East Street A

Total (2041) - Scenario A - 2% Growth Rate

Timing Plan: AM Peak Hour

	←	→	↖	↗	←	↖	↗	←	↖	↗	←	↖	↗
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations	↖	↗	↖	↖	↗	↖	↖	↖	↖	↖	↖	↖	
Traffic Volume (vph)	119	22	73	0	0	363	16	2777	238	413	2727	149	
Future Volume (vph)	119	22	73	0	0	363	16	2777	238	413	2727	149	
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			
Satd. Flow (prot)	1770	1863	1583	1863	1863	1583	1770	5085	1583	1770	5085	1583	
Flt Permitted	0.757						0.055			0.052			
Satd. Flow (perm)	1410	1863	1583	1863	1863	1583	102	5085	1583	97	5085	1583	
Right Turn on Red			Yes			Yes			Yes			Yes	
Satd. Flow (RTOR)			86			23			95			72	
Link Speed (k/h)		50				50			80			80	
Link Distance (m)		143.5				212.6			233.3			131.6	
Travel Time (s)		10.3				15.3			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)	129	24	79	0	0	395	17	3018	259	449	2964	162	
Shared Lane Traffic (%)													
Lane Group Flow (vph)	129	24	79	0	0	395	17	3018	259	449	2964	162	
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		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	

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Lanes, Volumes, Timings

104: Trafalgar Rd & West Street A/East Street A

Total (2041) - Scenario A - 2% Growth Rate

Timing Plan: AM Peak Hour

	←	→	↖	↗	←	↖	↗	←	↖	↗	←	↖	↗
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)	24.0	24.0	24.0	24.0	24.0	40.0	9.5	76.0	76.0	40.0	106.5	106.5	
Total Split (%)	17.1%	17.1%	17.1%	17.1%	17.1%	28.6%	6.8%	54.3%	54.3%	28.6%	76.1%	76.1%	
Maximum Green (s)	18.0	18.0	18.0	18.0	18.0	36.0	5.5	70.0	70.0	36.0	100.5	100.5	
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 Effect Green (s)	17.6	17.6	17.6			56.2	78.3	72.8	72.8	109.3	105.7	105.7	
Actuated g/C Ratio	0.13	0.13	0.13			0.42	0.58	0.54	0.54	0.81	0.78	0.78	
v/c Ratio	0.70	0.10	0.28			0.59	0.13	1.10	0.29	0.93	0.74	0.13	
Control Delay	77.3	53.3	11.7			32.2	11.3	82.3	12.3	68.0	10.2	2.8	
Queue Delay	0.0	0.0	0.0			0.0	0.0	0.2	0.0	0.0	0.9	0.0	
Total Delay	77.3	53.3	11.7			32.2	11.3	82.5	12.3	68.0	11.1	2.8	
LOS	E	D	B			C	B	F	B	E	B	A	
Approach Delay		52.5			32.2			76.6			17.8		
Approach LOS		D			C			E			B		

Intersection Summary

Area Type: Other

Cycle Length: 140

Actuated Cycle Length: 135

Natural Cycle: 150

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 1.10

Intersection Signal Delay: 45.5

Intersection LOS: D

Intersection Capacity Utilization 93.1%

ICU Level of Service F

Analysis Period (min) 15

Splits and Phases: 104: Trafalgar Rd & West Street A/East Street A

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Queues
104: Trafalgar Rd & West Street A/East Street A

Total (2041) - Scenario A - 2% Growth Rate
Timing Plan: AM Peak Hour

	EBL	EBT	EBR	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group	EBL	EBT	EBR	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	129	24	79	395	17	3018	259	449	2964	162
v/c Ratio	0.70	0.10	0.28	0.59	0.13	1.10	0.29	0.93	0.74	0.13
Control Delay	77.3	53.3	11.7	32.2	11.3	82.3	12.3	68.0	10.2	2.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.2	0.0	0.0	0.9	0.0
Total Delay	77.3	53.3	11.7	32.2	11.3	82.5	12.3	68.0	11.1	2.8
Queue Length 50th (m)	33.7	5.8	0.0	74.0	1.0	~355.1	23.9	102.3	119.5	4.4
Queue Length 95th (m)	#56.2	14.5	12.8	105.8	2.8	#378.0	41.6	#160.3	187.6	12.5
Internal Link Dist (m)		119.5				209.3			107.6	
Turn Bay Length (m)	50.0		50.0	50.0	50.0		50.0	30.0		30.0
Base Capacity (vph)	209	276	308	713	127	2742	897	525	3980	1254
Starvation Cap Reductn	0	0	0	0	0	204	0	0	651	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	0.62	0.09	0.26	0.55	0.13	1.19	0.29	0.86	0.89	0.13

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.

HCM Signalized Intersection Capacity Analysis
104: Trafalgar Rd & West Street A/East Street A

Total (2041) - Scenario A - 2% Growth Rate
Timing Plan: AM Peak Hour

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰	↑	↱	↰	↑	↱	↰	↑	↱	↰	↑	↱
Traffic Volume (vph)	119	22	73	0	0	363	16	2777	238	413	2727	149
Future Volume (vph)	119	22	73	0	0	363	16	2777	238	413	2727	149
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	1.00	0.85			0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00			1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1770	1863	1583			1583	1770	5085	1583	1770	5085	1583
Flt Permitted	0.76	1.00	1.00			1.00	0.05	1.00	1.00	0.05	1.00	1.00
Satd. Flow (perm)	1410	1863	1583			1583	102	5085	1583	96	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)	129	24	79	0	0	395	17	3018	259	449	2964	162
RTOR Reduction (vph)	0	0	69	0	0	14	0	0	43	0	0	17
Lane Group Flow (vph)	129	24	10	0	0	381	17	3018	216	449	2964	145
Turn Type	Perm	NA	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)	15.6	15.6	15.6			48.1	75.4	73.3	73.3	109.8	103.7	103.7
Effective Green, g (s)	17.6	17.6	17.6			52.1	75.4	75.3	75.3	109.8	105.7	105.7
Actuated g/C Ratio	0.13	0.13	0.13			0.38	0.55	0.55	0.55	0.80	0.77	0.77
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)	180	238	202			600	81	2786	867	472	3911	1217
v/s Ratio Prot		0.01				0.16	0.00	c0.59		c0.22	0.58	
v/s Ratio Perm	c0.09		0.01			0.08	0.11		0.14	0.53		0.09
v/c Ratio	0.72	0.10	0.05			0.63	0.21	1.08	0.25	0.95	0.76	0.12
Uniform Delay, d1	57.5	52.9	52.6			34.9	24.2	31.1	16.3	46.1	8.8	4.0
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	12.7	0.2	0.1			2.2	1.3	44.5	0.7	29.3	1.4	0.2
Delay (s)	70.2	53.1	52.7			37.1	25.5	75.6	16.9	75.4	10.2	4.2
Level of Service	E	D	D			D	C	E	B	E	B	A
Approach Delay (s)		62.5			37.1			70.7			18.1	
Approach LOS		E			D			E			B	

Intersection Summary

HCM 2000 Control Delay	43.6	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	1.00		
Actuated Cycle Length (s)	137.4	Sum of lost time (s)	12.0
Intersection Capacity Utilization	93.1%	ICU Level of Service	F
Analysis Period (min)	15		
c Critical Lane Group			

Lanes, Volumes, Timings

105: Trafalgar Rd & William Halton Parkway

Total (2041) - Scenario A - 2% Growth Rate

Timing Plan: AM Peak Hour

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔
Traffic Volume (vph)	565	949	214	239	516	243	323	2467	145	589	2040	171
Future Volume (vph)	565	949	214	239	516	243	323	2467	145	589	2040	171
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	0.167			0.129			0.077			0.071		
Satd. Flow (perm)	311	3539	1583	240	3539	1583	143	5085	1583	132	5085	1583
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			217			222			120			120
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		209.3			204.1			208.3			233.3	
Travel Time (s)		15.1			14.7			15.0			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)	614	1032	233	260	561	264	351	2682	158	640	2217	186
Shared Lane Traffic (%)												
Lane Group Flow (vph)	614	1032	233	260	561	264	351	2682	158	640	2217	186
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

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Lanes, Volumes, Timings

105: Trafalgar Rd & William Halton Parkway

Total (2041) - Scenario A - 2% Growth Rate

Timing Plan: AM Peak Hour

	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)	23.0	47.0	47.0	14.0	38.0	38.0	21.0	59.0	59.0	25.0	63.0	63.0
Total Split (%)	15.9%	32.4%	32.4%	9.7%	26.2%	26.2%	14.5%	40.7%	40.7%	17.2%	43.4%	43.4%
Maximum Green (s)	19.0	40.0	40.0	10.0	31.0	31.0	17.0	52.1	52.1	21.0	56.1	56.1
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 Effect Green (s)	57.0	43.0	43.0	44.0	34.0	34.0	72.0	55.0	55.0	80.0	59.0	59.0
Actuated g/C Ratio	0.39	0.30	0.30	0.30	0.23	0.23	0.50	0.38	0.38	0.55	0.41	0.41
v/c Ratio	1.96	0.98	0.37	1.46	0.68	0.49	1.34	1.39	0.23	2.06	1.07	0.26
Control Delay	467.7	74.5	7.8	264.0	55.3	12.7	213.6	214.6	9.5	515.3	83.2	11.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	467.7	74.5	7.8	264.0	55.3	12.7	213.6	214.6	9.5	515.3	90.3	11.3
LOS	F	E	A	F	E	B	F	F	A	F	F	B
Approach Delay		194.7			94.9		204.3			174.8		
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: 2.06

Intersection Signal Delay: 179.7

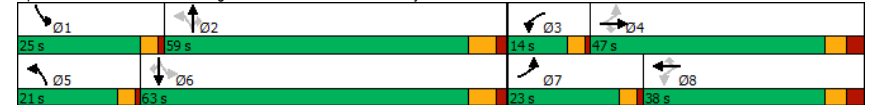
Intersection LOS: F

Intersection Capacity Utilization 141.6%

ICU Level of Service H

Analysis Period (min) 15

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

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Queues
105: Trafalgar Rd & William Halton Parkway

Total (2041) - Scenario A - 2% Growth Rate
Timing Plan: AM Peak Hour

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	614	1032	233	260	561	264	351	2682	158	640	2217	186
v/c Ratio	1.96	0.98	0.37	1.46	0.68	0.49	1.34	1.39	0.23	2.06	1.07	0.26
Control Delay	467.7	74.5	7.8	264.0	55.3	12.7	213.6	214.6	9.5	515.3	83.2	11.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	7.1	0.0
Total Delay	467.7	74.5	7.8	264.0	55.3	12.7	213.6	214.6	9.5	515.3	90.3	11.3
Queue Length 50th (m)	~246.6	153.3	3.3	~84.1	76.7	9.4	~113.7	~369.7	6.8	~271.5	~254.5	11.5
Queue Length 95th (m)	#318.7	#198.3	23.0	#139.5	97.0	34.6	#175.7	#394.1	21.9	#344.2	#281.6	27.9
Internal Link Dist (m)		185.3			180.1			184.3			209.3	
Turn Bay Length (m)	100.0		100.0	100.0		150.0	150.0		75.0			
Base Capacity (vph)	313	1049	622	178	829	541	261	1928	674	310	2069	715
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	32	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	1.96	0.98	0.37	1.46	0.68	0.49	1.34	1.39	0.23	2.06	1.09	0.26

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.

HCM Signalized Intersection Capacity Analysis
105: Trafalgar Rd & William Halton Parkway

Total (2041) - Scenario A - 2% Growth Rate
Timing Plan: AM Peak Hour

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔
Traffic Volume (vph)	565	949	214	239	516	243	323	2467	145	589	2040	171
Future Volume (vph)	565	949	214	239	516	243	323	2467	145	589	2040	171
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	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00
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	0.17	1.00	1.00	0.13	1.00	1.00	0.08	1.00	1.00	0.07	1.00	1.00
Satd. Flow (perm)	311	3539	1583	240	3539	1583	143	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)	614	1032	233	260	561	264	351	2682	158	640	2217	186
RTOR Reduction (vph)	0	0	153	0	0	170	0	0	74	0	0	71
Lane Group Flow (vph)	614	1032	80	260	561	94	351	2682	84	640	2217	115
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)	54.0	40.0	40.0	41.0	31.0	31.0	69.1	52.1	52.1	77.1	56.1	56.1
Effective Green, g (s)	54.0	43.0	43.0	41.0	34.0	34.0	69.1	55.0	55.0	77.1	59.0	59.0
Actuated g/C Ratio	0.37	0.30	0.30	0.28	0.23	0.23	0.48	0.38	0.38	0.53	0.41	0.41
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)	307	1049	469	173	829	371	258	1928	600	307	2069	644
v/s Ratio Prot	c0.26	0.29		0.10	0.16		0.16	0.53		c0.30	0.44	
v/s Ratio Perm	c0.48		0.05	0.32		0.06	0.49		0.05	c0.81		0.07
v/c Ratio	2.00	0.98	0.17	1.50	0.68	0.25	1.36	1.39	0.14	2.08	1.07	0.18
Uniform Delay, d1	37.3	50.7	37.8	46.5	50.5	45.2	46.8	45.0	29.5	48.5	43.0	27.5
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	461.4	23.9	0.4	254.0	2.9	0.8	185.3	179.2	0.5	499.1	42.1	0.6
Delay (s)	498.7	74.5	38.2	300.5	53.4	45.9	232.0	224.2	30.0	547.7	85.1	28.1
Level of Service	F	E	D	F	D	D	F	F	C	F	F	C
Approach Delay (s)		208.6			110.8			215.5			178.9	
Approach LOS		F			F			F			F	

Intersection Summary

HCM 2000 Control Delay	189.6	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	2.04		
Actuated Cycle Length (s)	145.0	Sum of lost time (s)	16.0
Intersection Capacity Utilization	141.6%	ICU Level of Service	H
Analysis Period (min)	15		

c Critical Lane Group

Lanes, Volumes, Timings

Total (2041) - Scenario A - 2% Growth Rate

106: Trafalgar Rd & Burnhamthorpe Rd/Burnhamthorpe Rd

Timing Plan: AM Peak Hour

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰	↱	↲	↰	↱	↲	↰	↱	↲	↰	↱	↲
Traffic Volume (vph)	455	491	80	83	157	231	56	2249	174	354	1698	187
Future Volume (vph)	455	491	80	83	157	231	56	2249	174	354	1698	187
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	1.00	1.00	1.00	1.00	1.00	1.00	0.91	1.00	1.00	0.91	1.00
Frt		0.979			0.911				0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1770	1824	0	1770	1697	0	1770	5085	1583	1770	5085	1583
Flt Permitted	0.140			0.154			0.068			0.066		
Satd. Flow (perm)	261	1824	0	287	1697	0	127	5085	1583	123	5085	1583
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		6			46				160			140
Link Speed (k/h)		60			60			80			80	
Link Distance (m)		828.7			989.6			1077.8			247.3	
Travel Time (s)		49.7			59.4			48.5			11.1	
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)	495	534	87	90	171	251	61	2445	189	385	1846	203
Shared Lane Traffic (%)												
Lane Group Flow (vph)	495	621	0	90	422	0	61	2445	189	385	1846	203
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)	26.0	46.5		9.5	30.0		9.6	63.0	63.0	21.0	74.4	74.4
Total Split (%)	18.6%	33.2%		6.8%	21.4%		6.9%	45.0%	45.0%	15.0%	53.1%	53.1%
Maximum Green (s)	21.5	40.5		5.0	24.0		5.1	57.0	57.0	17.0	68.4	68.4
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 Effect Green (s)	53.5	42.5		34.5	26.0		67.6	59.0	59.0	80.0	70.4	70.4
Actuated g/C Ratio	0.38	0.30		0.25	0.19		0.48	0.42	0.42	0.57	0.50	0.50
v/c Ratio	1.40	1.11		0.62	1.20		0.42	1.14	0.25	1.43	0.72	0.23
Control Delay	230.1	117.9		50.5	156.3		25.4	107.4	6.4	244.5	29.2	7.0
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	230.1	117.9		50.5	156.3		25.4	107.4	6.4	244.5	29.2	7.0

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Lanes, Volumes, Timings

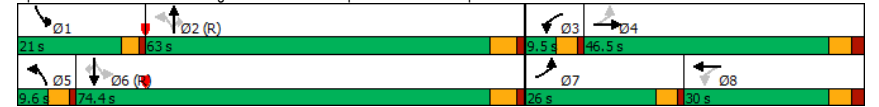
Total (2041) - Scenario A - 2% Growth Rate

106: Trafalgar Rd & Burnhamthorpe Rd/Burnhamthorpe Rd

Timing Plan: AM Peak Hour

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
LOS	F	F		D	F		C	F	A	F	C	A
Approach Delay		167.6			137.7			98.5			61.4	
Approach LOS		F			F			F			E	
Intersection Summary												
Area Type:	Other											
Cycle Length: 140												
Actuated Cycle Length: 140												
Offset: 0 (0%), Referenced to phase 2:NBT and 6:SBTL, Start of Green												
Natural Cycle: 120												
Control Type: Pretimed												
Maximum v/c Ratio: 1.43												
Intersection Signal Delay: 99.5						Intersection LOS: F						
Intersection Capacity Utilization 124.0%						ICU Level of Service H						
Analysis Period (min) 15												

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



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Queues
106: Trafalgar Rd & Burhamthorpe Rd/Burnhamthorpe Rd

Total (2041) - Scenario A - 2% Growth Rate
Timing Plan: AM Peak Hour

	EBL	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	495	621	90	422	61	2445	189	385	1846	203
v/c Ratio	1.40	1.11	0.62	1.20	0.42	1.14	0.25	1.43	0.72	0.23
Control Delay	230.1	117.9	50.5	156.3	25.4	107.4	6.4	244.5	29.2	7.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	230.1	117.9	50.5	156.3	25.4	107.4	6.4	244.5	29.2	7.0
Queue Length 50th (m)	~165.4	~193.2	15.9	~128.9	6.9	~285.2	4.6	~126.4	140.6	8.7
Queue Length 95th (m)	#233.3	#265.1	#28.7	#193.4	14.7	#311.3	19.2	#189.1	157.9	22.2
Internal Link Dist (m)		804.7		965.6		1053.8			223.3	
Turn Bay Length (m)	30.0		15.0		60.0		60.0	60.0		60.0
Base Capacity (vph)	353	557	144	352	144	2142	759	270	2557	865
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	1.40	1.11	0.63	1.20	0.42	1.14	0.25	1.43	0.72	0.23

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.

HCM Signalized Intersection Capacity Analysis
106: Trafalgar Rd & Burhamthorpe Rd/Burnhamthorpe Rd

Total (2041) - Scenario A - 2% Growth Rate
Timing Plan: AM Peak Hour

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔
Traffic Volume (vph)	455	491	80	83	157	231	56	2249	174	354	1698	187
Future Volume (vph)	455	491	80	83	157	231	56	2249	174	354	1698	187
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	1.00		1.00	1.00		1.00	0.91	1.00	1.00	0.91	1.00
Frt	1.00	0.98		1.00	0.91		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	1824		1770	1697		1770	5085	1583	1770	5085	1583
Flt Permitted	0.14	1.00		0.15	1.00		0.07	1.00	1.00	0.07	1.00	1.00
Satd. Flow (perm)	261	1824		287	1697		126	5085	1583	122	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)	495	534	87	90	171	251	61	2445	189	385	1846	203
RTOR Reduction (vph)	0	4	0	0	37	0	0	0	93	0	0	70
Lane Group Flow (vph)	495	617	0	90	385	0	61	2445	96	385	1846	133
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)	50.0	40.5		29.0	24.0		62.1	57.0	57.0	78.0	68.4	68.4
Effective Green, g (s)	52.0	42.5		33.0	26.0		66.1	59.0	59.0	78.0	70.4	70.4
Actuated g/C Ratio	0.37	0.30		0.24	0.19		0.47	0.42	0.42	0.56	0.50	0.50
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)	350	553		141	315		142	2142	667	268	2557	796
v/s Ratio Prot	c0.24	0.34		0.03	0.23		0.02	0.48		c0.17	0.36	
v/s Ratio Perm	c0.29			0.12			0.18		0.06	c0.62		0.08
v/c Ratio	1.41	1.12		0.64	1.22		0.43	1.14	0.14	1.44	0.72	0.17
Uniform Delay, d1	42.8	48.8		44.9	57.0		23.6	40.5	25.0	47.1	27.2	18.9
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	202.6	74.0		20.1	124.6		9.2	69.8	0.5	216.5	1.8	0.5
Delay (s)	245.4	122.8		65.0	181.6		32.8	110.3	25.4	263.6	29.0	19.3
Level of Service	F	F		E	F		C	F	C	F	C	B
Approach Delay (s)		177.1			161.1			102.6			65.3	
Approach LOS		F			F			F			E	

Intersection Summary

HCM 2000 Control Delay	105.9	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	1.46		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	14.5
Intersection Capacity Utilization	124.0%	ICU Level of Service	H
Analysis Period (min)	15		
c Critical Lane Group			

Lanes, Volumes, Timings
202: Trafalgar Rd & West Street C

Total (2041) - Scenario A - 2% Growth Rate
Timing Plan: AM Peak Hour

						
Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations				  	  	
Traffic Volume (vph)	0	119	0	2936	2119	211
Future Volume (vph)	0	119	0	2936	2119	211
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (m)	0.0	0.0	0.0			90.0
Storage Lanes	0	1	0			1
Taper Length (m)	7.5		7.5			
Lane Util. Factor	1.00	1.00	1.00	0.91	0.91	1.00
Frt		0.865				0.850
Flt Protected						
Satd. Flow (prot)	0	1611	0	5085	5085	1583
Flt Permitted						
Satd. Flow (perm)	0	1611	0	5085	5085	1583
Link Speed (k/h)	50			50	50	
Link Distance (m)	202.4			247.3	208.3	
Travel Time (s)	14.6			17.8	15.0	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	129	0	3191	2303	229
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	129	0	3191	2303	229
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	0.0			3.6	3.6	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	4.8			4.8	4.8	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)	25	15	25			15
Sign Control	Stop			Free	Free	
Intersection Summary						
Area Type:	Other					
Control Type:	Unsignalized					
Intersection Capacity Utilization 60.1%	ICU Level of Service B					
Analysis Period (min) 15						

HCM Unsignalized Intersection Capacity Analysis Total (2041) - Scenario A - 2% Growth Rate
202: Trafalgar Rd & West Street C

Timing Plan: AM Peak Hour

								
Movement	EBL	EBR	NBL	NBT	SBT	SBR		
Lane Configurations				  	  			
Traffic Volume (veh/h)	0	119	0	2936	2119	211		
Future Volume (Veh/h)	0	119	0	2936	2119	211		
Sign Control	Stop			Free	Free			
Grade	0%			0%	0%			
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92		
Hourly flow rate (vph)	0	129	0	3191	2303	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)				247	208			
pX, platoon unblocked	0.79	0.61	0.61					
vC, conflicting volume	3367	768	2532					
vC1, stage 1 conf vol								
vC2, stage 2 conf vol								
vCu, unblocked vol	0	0	1282					
tC, single (s)	6.8	6.9	4.1					
tC, 2 stage (s)								
tF (s)	3.5	3.3	2.2					
p0 queue free %	100	81	100					
cM capacity (veh/h)	804	663	329					
Direction, Lane #	EB 1	NB 1	NB 2	NB 3	SB 1	SB 2	SB 3	SB 4
Volume Total	129	1064	1064	1064	768	768	768	229
Volume Left	0	0	0	0	0	0	0	0
Volume Right	129	0	0	0	0	0	0	229
cSH	663	1700	1700	1700	1700	1700	1700	1700
Volume to Capacity	0.19	0.63	0.63	0.63	0.45	0.45	0.45	0.13
Queue Length 95th (m)	5.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Control Delay (s)	11.7	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Lane LOS	B							
Approach Delay (s)	11.7	0.0			0.0			
Approach LOS	B							
Intersection Summary								
Average Delay			0.3					
Intersection Capacity Utilization		60.1%		ICU Level of Service				B
Analysis Period (min)			15					

Lanes, Volumes, Timings
203: East Street D & East Street A

Total (2041) - Scenario A - 2% Growth Rate
Timing Plan: AM Peak Hour

						
Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	135	351	0	123	140	0
Future Volume (vph)	135	351	0	123	140	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	0.903					
Flt Protected					0.950	
Satd. Flow (prot)	1682	0	0	1863	1770	0
Flt Permitted					0.950	
Satd. Flow (perm)	1682	0	0	1863	1770	0
Link Speed (k/h)	50			50	50	
Link Distance (m)	212.6			202.8	119.6	
Travel Time (s)	15.3			14.6	8.6	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	147	382	0	134	152	0
Shared Lane Traffic (%)						
Lane Group Flow (vph)	529	0	0	134	152	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
Sign Control	Free			Free	Stop	
Intersection Summary						
Area Type:	Other					
Control Type:	Unsignalized					
Intersection Capacity Utilization	43.1%			ICU Level of Service A		
Analysis Period (min)	15					

HCM Unsignalized Intersection Capacity Analysis Total (2041) - Scenario A - 2% Growth Rate
203: East Street D & East Street A

Timing Plan: AM Peak Hour

	→	↖	↗	←	↖	↗
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↖			↖	↖	
Traffic Volume (veh/h)	135	351	0	123	140	0
Future Volume (Veh/h)	135	351	0	123	140	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)	147	382	0	134	152	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)	213					
pX, platoon unblocked			0.96		0.96	0.96
vC, conflicting volume			529		472	338
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			492		432	293
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			100		73	100
cM capacity (veh/h)			1032		559	718
Direction, Lane #	EB 1	WB 1	NB 1			
Volume Total	529	134	152			
Volume Left	0	0	152			
Volume Right	382	0	0			
cSH	1700	1032	559			
Volume to Capacity	0.31	0.00	0.27			
Queue Length 95th (m)	0.0	0.0	8.2			
Control Delay (s)	0.0	0.0	13.8			
Lane LOS			B			
Approach Delay (s)	0.0	0.0	13.8			
Approach LOS			B			
Intersection Summary						
Average Delay			2.6			
Intersection Capacity Utilization			43.1%		ICU Level of Service	A
Analysis Period (min)			15			

Lanes, Volumes, Timings
204: East Street E & East Street A

Total (2041) - Scenario A - 2% Growth Rate
Timing Plan: AM Peak Hour

						
Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	0	63	0	0	130	0
Future Volume (vph)	0	63	0	0	130	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.865					
Flt Protected					0.950	
Satd. Flow (prot)	1611	0	0	1863	1770	0
Flt Permitted					0.950	
Satd. Flow (perm)	1611	0	0	1863	1770	0
Link Speed (k/h)	50			50	50	
Link Distance (m)	202.8			186.3	118.9	
Travel Time (s)	14.6			13.4	8.6	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	68	0	0	141	0
Shared Lane Traffic (%)						
Lane Group Flow (vph)	68	0	0	0	141	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	0.0			0.0	3.6	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	4.8			4.8	4.8	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)		15	25		25	15
Sign Control	Free			Free	Stop	
Intersection Summary						
Area Type:	Other					
Control Type:	Unsignalized					
Intersection Capacity Utilization	17.8%			ICU Level of Service A		
Analysis Period (min)	15					

HCM Unsignalized Intersection Capacity Analysis Total (2041) - Scenario A - 2% Growth Rate
204: East Street E & East Street A

Timing Plan: AM Peak Hour

	→	↖	↗	←	↖	↗
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↖			↖	↖	↖
Traffic Volume (veh/h)	0	63	0	0	130	0
Future Volume (Veh/h)	0	63	0	0	130	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)	0	68	0	0	141	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			68		34	34
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			68		34	34
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			100		86	100
cM capacity (veh/h)			1533		979	1039
Direction, Lane #	EB 1	WB 1	NB 1			
Volume Total	68	0	141			
Volume Left	0	0	141			
Volume Right	68	0	0			
cSH	1700	1700	979			
Volume to Capacity	0.04	0.00	0.14			
Queue Length 95th (m)	0.0	0.0	3.8			
Control Delay (s)	0.0	0.0	9.3			
Lane LOS			A			
Approach Delay (s)	0.0	0.0	9.3			
Approach LOS			A			
Intersection Summary						
Average Delay			6.3			
Intersection Capacity Utilization			17.8%		ICU Level of Service	A
Analysis Period (min)			15			

Lanes, Volumes, Timings
205: East Street F & East Street A

Total (2041) - Scenario A - 2% Growth Rate
Timing Plan: AM Peak Hour

						
Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
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	1.00	1.00	1.00
Frt						
Flt Protected						
Satd. Flow (prot)	1863	0	0	1863	1863	0
Flt Permitted						
Satd. Flow (perm)	1863	0	0	1863	1863	0
Link Speed (k/h)	50			50	50	
Link Distance (m)	186.3			197.2	119.9	
Travel Time (s)	13.4			14.2	8.6	
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)	0.0			0.0	3.6	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	4.8			4.8	4.8	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)		15	25		25	15
Sign Control	Stop			Free	Free	
Intersection Summary						
Area Type:	Other					
Control Type:	Unsignalized					
Intersection Capacity Utilization	0.0%			ICU Level of Service A		
Analysis Period (min)	15					

HCM Unsignalized Intersection Capacity Analysis Total (2041) - Scenario A - 2% Growth Rate
205: East Street F & East Street A

Timing Plan: AM Peak Hour

Intersection Sign configuration not allowed in HCM analysis.

Lanes, Volumes, Timings
206: East Street D & East Street B

Total (2041) - Scenario A - 2% Growth Rate
Timing Plan: AM Peak Hour

	←	←	↑	↗	↘	↓
Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	↖		↖			↗
Traffic Volume (vph)	65	20	72	14	15	234
Future Volume (vph)	65	20	72	14	15	234
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	0.968		0.978			
Flt Protected	0.963					0.997
Satd. Flow (prot)	1736	0	1822	0	0	1857
Flt Permitted	0.963					0.997
Satd. Flow (perm)	1736	0	1822	0	0	1857
Link Speed (k/h)	50		50			50
Link Distance (m)	200.4		111.4			119.6
Travel Time (s)	14.4		8.0			8.6
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	71	22	78	15	16	254
Shared Lane Traffic (%)						
Lane Group Flow (vph)	93	0	93	0	0	270
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 31.3% ICU Level of Service A

Analysis Period (min) 15

HCM Unsignalized Intersection Capacity Analysis Total (2041) - Scenario A - 2% Growth Rate
206: East Street D & East Street B

Timing Plan: AM Peak Hour

	←	←	↑	↗	↘	↓
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	↖		↖			↗
Traffic Volume (veh/h)	65	20	72	14	15	234
Future Volume (Veh/h)	65	20	72	14	15	234
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)	71	22	78	15	16	254
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	372	86			93	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	372	86			93	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	89	98			99	
cM capacity (veh/h)	622	973			1501	

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	93	93	270
Volume Left	71	0	16
Volume Right	22	15	0
cSH	680	1700	1501
Volume to Capacity	0.14	0.05	0.01
Queue Length 95th (m)	3.5	0.0	0.2
Control Delay (s)	11.1	0.0	0.5
Lane LOS	B		A
Approach Delay (s)	11.1	0.0	0.5
Approach LOS	B		

Intersection Summary

Average Delay	2.6		
Intersection Capacity Utilization	31.3%	ICU Level of Service	A
Analysis Period (min)	15		

Lanes, Volumes, Timings
207: East Street E & East Street B

Total (2041) - Scenario A - 2% Growth Rate
Timing Plan: AM Peak Hour

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔			↔			↔			↔	
Traffic Volume (vph)	53	0	74	0	0	0	181	7	0	0	63	0
Future Volume (vph)	53	0	74	0	0	0	181	7	0	0	63	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	0.922											
Flt Protected	0.979											
Satd. Flow (prot)	0	1681	0	0	1863	0	0	1777	0	0	1863	0
Flt Permitted	0.979											
Satd. Flow (perm)	0	1681	0	0	1863	0	0	1777	0	0	1863	0
Link Speed (k/h)	50											
Link Distance (m)	200.4											
Travel Time (s)	14.4											
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)	58	0	80	0	0	0	197	8	0	0	68	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	138	0	0	0	0	0	205	0	0	68	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											
Link Offset(m)	0.0											
Crosswalk Width(m)	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											

Intersection Summary

Area Type: Other

Control Type: Unsignalized

Intersection Capacity Utilization 31.2% ICU Level of Service A

Analysis Period (min) 15

HCM Unsignalized Intersection Capacity Analysis Total (2041) - Scenario A - 2% Growth Rate
207: East Street E & East Street B

Timing Plan: AM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	53	0	74	0	0	0	181	7	0	0	63	0
Future Volume (Veh/h)	53	0	74	0	0	0	181	7	0	0	63	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)	58	0	80	0	0	0	197	8	0	0	68	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)	114											
pX, platoon unblocked												
vC, conflicting volume	470	470	68	550	470	8	68				8	
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	470	470	68	550	470	8	68				8	
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	92	100	100	100	87				100	
cM capacity (veh/h)	454	428	995	370	428	1074	1533				1612	
Direction, Lane #	EB 1	WB 1	NB 1	SB 1								
Volume Total	138	0	205	68								
Volume Left	58	0	197	0								
Volume Right	80	0	0	0								
cSH	663	1700	1533	1612								
Volume to Capacity	0.21	0.00	0.13	0.00								
Queue Length 95th (m)	5.8	0.0	3.3	0.0								
Control Delay (s)	11.8	0.0	7.4	0.0								
Lane LOS	B	A	A									
Approach Delay (s)	11.8	0.0	7.4	0.0								
Approach LOS	B	A										
Intersection Summary												
Average Delay				7.7								
Intersection Capacity Utilization	31.2%			ICU Level of Service					A			
Analysis Period (min)	15											

Lanes, Volumes, Timings
208: East Street F & East Street B

Total (2041) - Scenario A - 2% Growth Rate
Timing Plan: AM Peak Hour

	EBL	EBR	NBL	NBT	SBT	SBR
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	1.00	1.00	1.00
Fit						
Fit Protected						
Satd. Flow (prot)	1863	0	0	1863	1863	0
Fit Permitted						
Satd. Flow (perm)	1863	0	0	1863	1863	0
Link Speed (k/h)	50			50	50	
Link Distance (m)	185.7			112.6	119.9	
Travel Time (s)	13.4			8.1	8.6	
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			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	25			15
Sign Control	Stop			Free	Free	

Intersection Summary

Area Type: Other
Control Type: Unsignalized
Intersection Capacity Utilization 0.0% ICU Level of Service A
Analysis Period (min) 15

HCM Unsignalized Intersection Capacity Analysis Total (2041) - Scenario A - 2% Growth Rate
208: East Street F & East Street B

Timing Plan: AM Peak Hour

	EBL	EBR	NBL	NBT	SBT	SBR
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	↔	↔	↔	↔	↔	↔
Traffic Volume (veh/h)	0	0	0	0	0	0
Future Volume (Veh/h)	0	0	0	0	0	0
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	0	0	0	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	0	0	0			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	0	0	0			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	100	100	100			
cM capacity (veh/h)	1023	1085	1623			
Direction, Lane #	EB 1	NB 1	SB 1			
Volume Total	0	0	0			
Volume Left	0	0	0			
Volume Right	0	0	0			
cSH	1700	1700	1700			
Volume to Capacity	0.00	0.00	0.00			
Queue Length 95th (m)	0.0	0.0	0.0			
Control Delay (s)	0.0	0.0	0.0			
Lane LOS	A					
Approach Delay (s)	0.0	0.0	0.0			
Approach LOS	A					
Intersection Summary						
Average Delay		0.0				
Intersection Capacity Utilization		0.0%		ICU Level of Service	A	
Analysis Period (min)		15				

Lanes, Volumes, Timings Total (2041) - Scenario A - 2% Growth Rate
 209: William Halton Parkway & East Street D Timing Plan: AM Peak Hour

						
Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	0	1703	797	26	0	200
Future Volume (vph)	0	1703	797	26	0	200
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (m)	0.0			50.0	0.0	0.0
Storage Lanes	0			1	0	1
Taper Length (m)	7.5				7.5	
Lane Util. Factor	1.00	0.95	0.95	1.00	1.00	1.00
Frt				0.850		0.865
Flt Protected						
Satd. Flow (prot)	0	3539	3539	1583	0	1611
Flt Permitted						
Satd. Flow (perm)	0	3539	3539	1583	0	1611
Link Speed (k/h)		50	50		50	
Link Distance (m)		204.1	194.7		111.4	
Travel Time (s)		14.7	14.0		8.0	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	1851	866	28	0	217
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	1851	866	28	0	217
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(m)		3.6	3.6		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	25	15
Sign Control		Free	Free		Stop	
Intersection Summary						
Area Type:	Other					
Control Type:	Unsignalized					
Intersection Capacity Utilization 50.4%	ICU Level of Service A					
Analysis Period (min) 15						

HCM Unsignalized Intersection Capacity Analysis Total (2041) - Scenario A - 2% Growth Rate
 209: William Halton Parkway & East Street D Timing Plan: AM Peak Hour

						
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	0	1703	797	26	0	200
Future Volume (Veh/h)	0	1703	797	26	0	200
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)	0	1851	866	28	0	217
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		None	None			
Median storage (veh)						
Upstream signal (m)		204	195			
pX, platoon unblocked	0.84				0.80	0.84
vC, conflicting volume	894				1792	433
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	484				565	0
tC, single (s)	4.1				6.8	6.9
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	100				100	76
cM capacity (veh/h)	900				363	908
Direction, Lane #	EB 1	EB 2	WB 1	WB 2	WB 3	SB 1
Volume Total	926	926	433	433	28	217
Volume Left	0	0	0	0	0	0
Volume Right	0	0	0	0	28	217
cSH	1700	1700	1700	1700	1700	908
Volume to Capacity	0.54	0.54	0.25	0.25	0.02	0.24
Queue Length 95th (m)	0.0	0.0	0.0	0.0	0.0	7.0
Control Delay (s)	0.0	0.0	0.0	0.0	0.0	10.2
Lane LOS						B
Approach Delay (s)	0.0		0.0			10.2
Approach LOS						B
Intersection Summary						
Average Delay			0.7			
Intersection Capacity Utilization			50.4%		ICU Level of Service	A
Analysis Period (min)			15			

Lanes, Volumes, Timings

210: William Halton Parkway & East Street E

Total (2041) - Scenario A - 2% Growth Rate

Timing Plan: AM Peak Hour

	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations	↰	↱	↱	↰	↰	↰
Traffic Volume (vph)	196	1466	790	12	104	33
Future Volume (vph)	196	1466	790	12	104	33
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	0.967	
Flt Protected	0.950				0.963	
Satd. Flow (prot)	1770	3539	3539	1583	1735	0
Flt Permitted	0.182				0.963	
Satd. Flow (perm)	339	3539	3539	1583	1735	0
Right Turn on Red				Yes	Yes	
Satd. Flow (RTOR)				13	29	
Link Speed (k/h)		50	50		50	
Link Distance (m)		194.7	188.1		114.3	
Travel Time (s)		14.0	13.5		8.2	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	213	1593	859	13	113	36
Shared Lane Traffic (%)						
Lane Group Flow (vph)	213	1593	859	13	149	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
Number of Detectors	1	2	2	1	1	
Detector Template	Left	Thru	Thru	Right	Left	
Leading Detector (m)	2.0	10.0	10.0	2.0	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)	2.0	0.6	0.6	2.0	2.0	
Detector 1 Type	CI+Ex	CI+Ex	CI+Ex	CI+Ex	CI+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		CI+Ex	CI+Ex			
Detector 2 Channel						
Detector 2 Extend (s)		0.0	0.0			
Turn Type	pm+pt	NA	NA	Perm	Prot	
Protected Phases	7	4	8		6	
Permitted Phases	4			8		

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Lanes, Volumes, Timings

210: William Halton Parkway & East Street E

Total (2041) - Scenario A - 2% Growth Rate

Timing Plan: AM Peak Hour

	EBL	EBT	WBT	WBR	SBL	SBR
Detector Phase	7	4	8	8	6	
Switch Phase						
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	
Minimum Split (s)	9.5	24.0	24.0	24.0	24.0	
Total Split (s)	12.0	36.0	24.0	24.0	24.0	
Total Split (%)	20.0%	60.0%	40.0%	40.0%	40.0%	
Maximum Green (s)	7.5	30.0	18.0	18.0	18.0	
Yellow Time (s)	3.5	4.0	4.0	4.0	4.0	
All-Red Time (s)	1.0	2.0	2.0	2.0	2.0	
Lost Time Adjust (s)	1.0	-2.0	-2.0	-2.0	-2.0	
Total Lost Time (s)	5.5	4.0	4.0	4.0	4.0	
Lead/Lag	Lead		Lag	Lag		
Lead-Lag Optimize?	Yes		Yes	Yes		
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	
Recall Mode	None	Max	Max	Max	None	
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 Effect Green (s)	33.1	35.5	22.8	22.8	10.9	
Actuated g/C Ratio	0.65	0.69	0.45	0.45	0.21	
v/c Ratio	0.54	0.65	0.54	0.02	0.38	
Control Delay	11.1	8.1	13.7	6.3	16.8	
Queue Delay	0.0	0.0	0.0	0.0	0.0	
Total Delay	11.1	8.1	13.7	6.3	16.8	
LOS	B	A	B	A	B	
Approach Delay		8.4	13.6		16.8	
Approach LOS		A	B		B	

Intersection Summary

Area Type: Other

Cycle Length: 60

Actuated Cycle Length: 51.1

Natural Cycle: 60

Control Type: Semi Act-Uncoord

Maximum v/c Ratio: 0.65

Intersection Signal Delay: 10.5

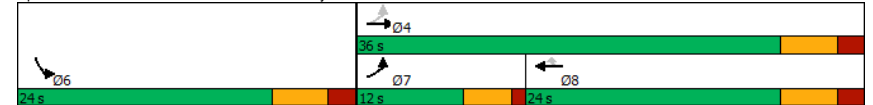
Intersection LOS: B

Intersection Capacity Utilization 55.0%

ICU Level of Service A

Analysis Period (min) 15

Splits and Phases: 210: William Halton Parkway & East Street E

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Queues
210: William Halton Parkway & East Street E

Total (2041) - Scenario A - 2% Growth Rate
Timing Plan: AM Peak Hour

	EBL	EBT	WBT	WBR	SBL
Lane Group	EBL	EBT	WBT	WBR	SBL
Lane Group Flow (vph)	213	1593	859	13	149
v/c Ratio	0.54	0.65	0.54	0.02	0.38
Control Delay	11.1	8.1	13.7	6.3	16.8
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	11.1	8.1	13.7	6.3	16.8
Queue Length 50th (m)	7.2	40.7	30.8	0.0	9.1
Queue Length 95th (m)	#20.7	77.1	52.1	2.6	20.9
Internal Link Dist (m)		170.7	164.1		90.3
Turn Bay Length (m)	50.0		50.0		
Base Capacity (vph)	401	2457	1581	714	697
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	0.53	0.65	0.54	0.02	0.21

Intersection Summary

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

HCM Signalized Intersection Capacity Analysis
210: William Halton Parkway & East Street E

Total (2041) - Scenario A - 2% Growth Rate
Timing Plan: AM Peak Hour

	EBL	EBT	WBT	WBR	SBL	SBR
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations	↰	↱	↰	↱	↰	↱
Traffic Volume (vph)	196	1466	790	12	104	33
Future Volume (vph)	196	1466	790	12	104	33
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.5	4.0	4.0	4.0	4.0	
Lane Util. Factor	1.00	0.95	0.95	1.00	1.00	
Frt	1.00	1.00	1.00	0.85	0.97	
Flt Protected	0.95	1.00	1.00	1.00	0.96	
Satd. Flow (prot)	1770	3539	3539	1583	1736	
Flt Permitted	0.18	1.00	1.00	1.00	0.96	
Satd. Flow (perm)	339	3539	3539	1583	1736	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	213	1593	859	13	113	36
RTOR Reduction (vph)	0	0	0	7	24	0
Lane Group Flow (vph)	213	1593	859	6	125	0
Turn Type	pm+pt	NA	NA	Perm	Prot	
Protected Phases	7	4	8		6	
Permitted Phases	4			8		
Actuated Green, G (s)	32.7	32.7	20.9	20.9	7.7	
Effective Green, g (s)	31.7	34.7	22.9	22.9	9.7	
Actuated g/C Ratio	0.60	0.66	0.44	0.44	0.19	
Clearance Time (s)	4.5	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)	377	2343	1546	691	321	
v/s Ratio Prot	0.07	c0.45	0.24		c0.07	
v/s Ratio Perm	0.27			0.00		
v/c Ratio	0.56	0.68	0.56	0.01	0.39	
Uniform Delay, d1	6.5	5.4	11.0	8.3	18.8	
Progression Factor	1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	1.9	1.6	1.4	0.0	0.8	
Delay (s)	8.5	7.1	12.4	8.4	19.5	
Level of Service	A	A	B	A	B	
Approach Delay (s)		7.2	12.4		19.5	
Approach LOS		A	B		B	

Intersection Summary

HCM 2000 Control Delay	9.5	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.70		
Actuated Cycle Length (s)	52.4	Sum of lost time (s)	13.5
Intersection Capacity Utilization	55.0%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Lanes, Volumes, Timings

211: William Halton Parkway & East Street F

Total (2041) - Scenario A - 2% Growth Rate

Timing Plan: AM Peak Hour

	EBL	EBT	WBT	WBR	SBL	SBR
Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations	↔	↕↕	↕↕	↕	↕	↕
Traffic Volume (vph)	0	1570	802	0	0	0
Future Volume (vph)	0	1570	802	0	0	0
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						
Flt Protected						
Satd. Flow (prot)	1863	3539	3539	1863	1863	0
Flt Permitted						
Satd. Flow (perm)	1863	3539	3539	1863	1863	0
Link Speed (k/h)		50	50		50	
Link Distance (m)		188.1	219.2		112.6	
Travel Time (s)		13.5	15.8		8.1	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	1707	872	0	0	0
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	1707	872	0	0	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 46.7%	ICU Level of Service A					
Analysis Period (min) 15						

HCM Unsignalized Intersection Capacity Analysis

211: William Halton Parkway & East Street F

Total (2041) - Scenario A - 2% Growth Rate

Timing Plan: AM Peak Hour

							
Movement	EBL	EBT	WBT	WBR	SBL	SBR	
Lane Configurations		 	 		 		
Traffic Volume (veh/h)	0	1570	802	0	0	0	
Future Volume (Veh/h)	0	1570	802	0	0	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)	0	1707	872	0	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)		188					
pX, platoon unblocked					0.67		
vC, conflicting volume	872				1726	436	
vC1, stage 1 conf vol							
vC2, stage 2 conf vol							
vCu, unblocked vol	872				1102	436	
tC, single (s)	4.1				6.8	6.9	
tC, 2 stage (s)							
tF (s)	2.2				3.5	3.3	
p0 queue free %	100				100	100	
cM capacity (veh/h)	769				138	568	
Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	WB 3	SB 1
Volume Total	0	854	854	436	436	0	0
Volume Left	0	0	0	0	0	0	0
Volume Right	0	0	0	0	0	0	0
cSH	1700	1700	1700	1700	1700	1700	1700
Volume to Capacity	0.00	0.50	0.50	0.26	0.26	0.00	0.00
Queue Length 95th (m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Control Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Lane LOS							A
Approach Delay (s)	0.0			0.0			0.0
Approach LOS							A
Intersection Summary							
Average Delay			0.0				
Intersection Capacity Utilization			46.7%			ICU Level of Service	A
Analysis Period (min)			15				

Lanes, Volumes, Timings

212: West Street A & Transit Station

Total (2041) - Scenario A - 2% Growth Rate

Timing Plan: AM Peak Hour

	WBL	WBR	NBT	NBR	SBL	SBT
Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	WBL	WBR	NBT	NBR	SBL	SBT
Traffic Volume (vph)	140	0	0	178	0	0
Future Volume (vph)	140	0	0	178	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt			0.865			
Flt Protected	0.950					
Satd. Flow (prot)	1770	0	1611	0	0	1863
Flt Permitted	0.950					
Satd. Flow (perm)	1770	0	1611	0	0	1863
Link Speed (k/h)	50		50			50
Link Distance (m)	70.0		239.0			98.7
Travel Time (s)	5.0		17.2			7.1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	152	0	0	193	0	0
Shared Lane Traffic (%)						
Lane Group Flow (vph)	152	0	193	0	0	0
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 25.4%

ICU Level of Service A

Analysis Period (min) 15

HCM Unsignalized Intersection Capacity Analysis Total (2041) - Scenario A - 2% Growth Rate

212: West Street A & Transit Station

Timing Plan: AM Peak Hour

	WBL	WBR	NBT	NBR	SBL	SBT
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	WBL	WBR	NBT	NBR	SBL	SBT
Traffic Volume (veh/h)	140	0	0	178	0	0
Future Volume (Veh/h)	140	0	0	178	0	0
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)	152	0	0	193	0	0
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None					
Median storage (veh)						
Upstream signal (m)	213					
pX, platoon unblocked						
vC, conflicting volume	0		304	0	497	304
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	0		304	0	497	304
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 %	91		100	82	100	100
cM capacity (veh/h)	1623		552	1085	369	552

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	152	193	0
Volume Left	152	0	0
Volume Right	0	193	0
cSH	1623	1085	1700
Volume to Capacity	0.09	0.18	0.00
Queue Length 95th (m)	2.3	4.8	0.0
Control Delay (s)	7.4	9.0	0.0
Lane LOS	A	A	A
Approach Delay (s)	7.4	9.0	0.0
Approach LOS	A	A	A

Intersection Summary

Average Delay	8.3		
Intersection Capacity Utilization	25.4%	ICU Level of Service	A
Analysis Period (min)	15		

Lanes, Volumes, Timings

Total (2041) - Scenario A - 2% Growth Rate

213: West Street A & William Halton Parkway

Timing Plan: AM Peak Hour

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑	↑		↑↑	↑			↑			↑
Traffic Volume (vph)	0	1536	31	0	911	98	0	0	223	0	0	9
Future Volume (vph)	0	1536	31	0	911	98	0	0	223	0	0	9
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		1	0		1	0		1	0		1
Taper Length (m)	7.5			7.5			7.5			7.5		
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt			0.850			0.850			0.865			0.865
Fit Protected												
Satd. Flow (prot)	0	3539	1583	0	3539	1583	0	0	1611	0	0	1611
Fit Permitted												
Satd. Flow (perm)	0	3539	1583	0	3539	1583	0	0	1611	0	0	1611
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		202.0			209.3			100.4			239.0	
Travel Time (s)		14.5			15.1			7.2			17.2	
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	1670	34	0	990	107	0	0	242	0	0	10
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	1670	34	0	990	107	0	0	242	0	0	10
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 62.9%

ICU Level of Service B

Analysis Period (min) 15

HCM Unsignalized Intersection Capacity Analysis

Total (2041) - Scenario A - 2% Growth Rate

213: West Street A & William Halton Parkway

Timing Plan: AM Peak Hour

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑	↑		↑↑	↑			↑			↑
Traffic Volume (veh/h)	0	1536	31	0	911	98	0	0	223	0	0	9
Future Volume (Veh/h)	0	1536	31	0	911	98	0	0	223	0	0	9
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	1670	34	0	990	107	0	0	242	0	0	10
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			209							
pX, platoon unblocked	0.87			0.60			0.67	0.67	0.60	0.67	0.67	0.87
vC, conflicting volume	1097			1704			2175	2767	835	2067	2694	495
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	808			848			878	1764	0	716	1654	115
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	63	100	100	99
cM capacity (veh/h)	706			473			160	56	653	133	65	795

Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	WB 3	NB 1	SB 1
Volume Total	835	835	34	495	495	107	242	10
Volume Left	0	0	0	0	0	0	0	0
Volume Right	0	0	34	0	0	107	242	10
cSH	1700	1700	1700	1700	1700	1700	653	795
Volume to Capacity	0.49	0.49	0.02	0.29	0.29	0.06	0.37	0.01
Queue Length 95th (m)	0.0	0.0	0.0	0.0	0.0	0.0	12.8	0.3
Control Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	13.7	9.6
Lane LOS							B	A
Approach Delay (s)	0.0			0.0			13.7	9.6
Approach LOS							B	A

Intersection Summary

Average Delay 1.1

Intersection Capacity Utilization 62.9%

ICU Level of Service

B

Analysis Period (min) 15

Lanes, Volumes, Timings

214: West Street D & William Halton Parkway

Total (2041) - Scenario A - 2% Growth Rate

Timing Plan: AM Peak Hour

	←	→	↖	↗	←	↖	↗	→	↖	↗	→	↖	↗
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations	↖	↖	↖	↖	↖	↖	↖	↖	↖	↖	↖	↖	
Traffic Volume (vph)	0	1485	27	215	608	97	19	0	22	80	0	4	
Future Volume (vph)	0	1485	27	215	608	97	19	0	22	80	0	4	
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		0.0	50.0		0.0	
Storage Lanes	1		0	1		1	1		0	1		0	
Taper Length (m)	100.0			100.0			75.0			75.0			
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Frt			0.850			0.850		0.850			0.850		
Flt Protected				0.950			0.950			0.950			
Satd. Flow (prot)	1863	3539	1583	1770	3539	1583	1770	1583	0	1770	1583	0	
Flt Permitted				0.063			0.755			0.742			
Satd. Flow (perm)	1863	3539	1583	117	3539	1583	1406	1583	0	1382	1583	0	
Right Turn on Red			Yes			Yes			Yes			Yes	
Satd. Flow (RTOR)			55			105		348			357		
Link Speed (k/h)		50			50			50			50		
Link Distance (m)		241.6			202.0			103.2			133.4		
Travel Time (s)		17.4			14.5			7.4			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)	0	1614	29	234	661	105	21	0	24	87	0	4	
Shared Lane Traffic (%)													
Lane Group Flow (vph)	0	1614	29	234	661	105	21	24	0	87	4	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	1	2	1	1	2		1	2		
Detector Template	Left	Thru	Right	Left	Thru	Right	Left	Thru		Left	Thru		
Leading Detector (m)	2.0	10.0	2.0	2.0	10.0	2.0	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		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	2.0	0.6	2.0	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		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	pm+pt	NA	Perm	Perm	NA		Perm	NA		
Protected Phases		4			3		8			2		6	
Permitted Phases	4		4		8		8		2		6		

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Lanes, Volumes, Timings

214: West Street D & William Halton Parkway

Total (2041) - Scenario A - 2% Growth Rate

Timing Plan: AM Peak Hour

	←	→	↖	↗	←	↖	↗	→	↖	↗	→	↖	↗
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Detector Phase	4	4	4	3	8	8	2	2		6	6		
Switch Phase													
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0		5.0	5.0		
Minimum Split (s)	24.0	24.0	24.0	9.5	24.0	24.0	24.0	24.0		24.0	24.0		
Total Split (s)	66.0	66.0	66.0	29.9	95.9	95.9	24.1	24.1		24.1	24.1		
Total Split (%)	55.0%	55.0%	55.0%	24.9%	79.9%	79.9%	20.1%	20.1%		20.1%	20.1%		
Maximum Green (s)	60.0	60.0	60.0	26.9	89.9	89.9	18.1	18.1		18.1	18.1		
Yellow Time (s)	4.0	4.0	4.0	3.0	4.0	4.0	4.0	4.0		4.0	4.0		
All-Red Time (s)	2.0	2.0	2.0	0.0	2.0	2.0	2.0	2.0		2.0	2.0		
Lost Time Adjust (s)	-2.0	-2.0	-2.0	1.0	-2.0	-2.0	-2.0	-2.0		-2.0	-2.0		
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	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	Max	Max	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	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 Effect Green (s)		62.4	62.4	92.5	93.4	93.4	14.0	14.0		14.3	14.3		
Actuated g/C Ratio		0.56	0.56	0.83	0.84	0.84	0.13	0.13		0.13	0.13		
v/c Ratio		0.82	0.03	0.49	0.22	0.08	0.12	0.05		0.49	0.01		
Control Delay		26.0	1.1	24.9	3.0	0.8	45.1	0.2		55.9	0.0		
Queue Delay		0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0		
Total Delay		26.0	1.1	24.9	3.0	0.8	45.1	0.2		55.9	0.0		
LOS		C	A	C	A	A	D	A		E	A		
Approach Delay		25.5			7.9		21.1			53.5			
Approach LOS		C			A		C			D			

Intersection Summary

Area Type: Other

Cycle Length: 120

Actuated Cycle Length: 111.8

Natural Cycle: 80

Control Type: Semi Act-Uncoord

Maximum v/c Ratio: 0.82

Intersection Signal Delay: 20.0

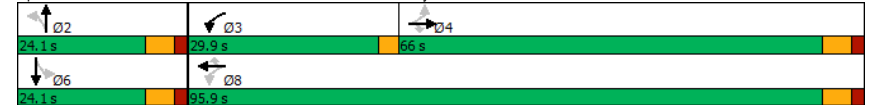
Intersection LOS: C

Intersection Capacity Utilization 74.1%

ICU Level of Service D

Analysis Period (min) 15

Splits and Phases: 214: West Street D & William Halton Parkway

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Queues
214: West Street D & William Halton Parkway

Total (2041) - Scenario A - 2% Growth Rate
Timing Plan: AM Peak Hour

	→	↘	↙	←	↖	↗	↘	↓	
Lane Group	EBT	EBR	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	1614	29	234	661	105	21	24	87	4
v/c Ratio	0.82	0.03	0.49	0.22	0.08	0.12	0.05	0.49	0.01
Control Delay	26.0	1.1	24.9	3.0	0.8	45.1	0.2	55.9	0.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	26.0	1.1	24.9	3.0	0.8	45.1	0.2	55.9	0.0
Queue Length 50th (m)	151.0	0.0	27.8	14.7	0.0	4.2	0.0	18.2	0.0
Queue Length 95th (m)	203.8	1.7	56.0	25.2	3.5	11.4	0.0	33.9	0.0
Internal Link Dist (m)	217.6			178.0			79.2		109.4
Turn Bay Length (m)		50.0	50.0		50.0	50.0		50.0	
Base Capacity (vph)	1974	907	481	2956	1339	254	571	249	578
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.82	0.03	0.49	0.22	0.08	0.08	0.04	0.35	0.01
Intersection Summary									

HCM Signalized Intersection Capacity Analysis
214: West Street D & William Halton Parkway

Total (2041) - Scenario A - 2% Growth Rate
Timing Plan: AM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		 			 			 			 	
Traffic Volume (vph)	0	1485	27	215	608	97	19	0	22	80	0	4
Future Volume (vph)	0	1485	27	215	608	97	19	0	22	80	0	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	4.0	
Lane Util. Factor		0.95	1.00	1.00	0.95	1.00	1.00	1.00		1.00	1.00	
Frt		1.00	0.85	1.00	1.00	0.85	1.00	0.85		1.00	0.85	
Flt Protected		1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)		3539	1583	1770	3539	1583	1770	1583		1770	1583	
Flt Permitted		1.00	1.00	0.06	1.00	1.00	0.76	1.00		0.74	1.00	
Satd. Flow (perm)		3539	1583	118	3539	1583	1407	1583		1381	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)	0	1614	29	234	661	105	21	0	24	87	0	4
RTOR Reduction (vph)	0	0	13	0	0	19	0	21	0	0	4	0
Lane Group Flow (vph)	0	1614	16	234	661	86	21	3	0	87	0	0
Turn Type	Perm	NA	Perm	pm+pt	NA	Perm	Perm	NA		Perm	NA	
Protected Phases		4		3	8		2				6	
Permitted Phases	4		4		8		2			6		
Actuated Green, G (s)		60.4	60.4	90.5	90.5	90.5	10.7	10.7		10.7	10.7	
Effective Green, g (s)		62.4	62.4	89.5	92.5	92.5	12.7	12.7		12.7	12.7	
Actuated g/C Ratio		0.55	0.55	0.79	0.82	0.82	0.11	0.11		0.11	0.11	
Clearance Time (s)		6.0	6.0	3.0	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	3.0	
Lane Grp Cap (vph)		1950	872	474	2891	1293	157	177		154	177	
v/s Ratio Prot		c0.46		c0.11	0.19			0.00			0.00	
v/s Ratio Perm			0.01	0.28		0.05	0.01			c0.06		
v/c Ratio		0.83	0.02	0.49	0.23	0.07	0.13	0.02		0.56	0.00	
Uniform Delay, d1		21.0	11.5	26.4	2.3	2.0	45.3	44.7		47.6	44.6	
Progression Factor		1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Incremental Delay, d2		4.2	0.0	3.6	0.2	0.1	0.4	0.0		4.7	0.0	
Delay (s)		25.2	11.6	30.0	2.5	2.1	45.7	44.7		52.3	44.6	
Level of Service		C	B	C	A	A	D	D		D	D	
Approach Delay (s)		24.9			8.9			45.2			52.0	
Approach LOS		C			A			D			D	
Intersection Summary												
HCM 2000 Control Delay			20.4		HCM 2000 Level of Service					C		
HCM 2000 Volume to Capacity ratio			0.71									
Actuated Cycle Length (s)			113.2		Sum of lost time (s)					12.0		
Intersection Capacity Utilization			74.1%		ICU Level of Service					D		
Analysis Period (min)			15									
c Critical Lane Group												

Lanes, Volumes, Timings

215: West Street A & West Street B

Total (2041) - Scenario A - 2% Growth Rate

Timing Plan: AM Peak Hour

	EBL	EBR	NBL	NBT	SBT	SBR
Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	↔	↔	↔	↔	↔	↔
Traffic Volume (vph)	119	73	0	51	50	6
Future Volume (vph)	119	73	0	51	50	6
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	0.949				0.985	
Flt Protected	0.970					
Satd. Flow (prot)	1715	0	0	1863	1835	0
Flt Permitted	0.970					
Satd. Flow (perm)	1715	0	0	1863	1835	0
Link Speed (k/h)	50			50	50	
Link Distance (m)	202.8			106.4	100.4	
Travel Time (s)	14.6			7.7	7.2	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	129	79	0	55	54	7
Shared Lane Traffic (%)						
Lane Group Flow (vph)	208	0	0	55	61	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
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	25			15
Sign Control	Stop			Free	Free	

Intersection Summary

Area Type: Other

Control Type: Unsignalized

Intersection Capacity Utilization 21.1%

ICU Level of Service A

Analysis Period (min) 15

HCM Unsignalized Intersection Capacity Analysis Total (2041) - Scenario A - 2% Growth Rate

215: West Street A & West Street B

Timing Plan: AM Peak Hour

	EBL	EBR	NBL	NBT	SBT	SBR
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	↔	↔	↔	↔	↔	↔
Traffic Volume (veh/h)	119	73	0	51	50	6
Future Volume (Veh/h)	119	73	0	51	50	6
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)	129	79	0	55	54	7
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	None	
Median storage (veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	112	58	61			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	112	58	61			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	85	92	100			
cM capacity (veh/h)	884	1009	1542			
Direction, Lane #	EB 1	NB 1	SB 1			
Volume Total	208	55	61			
Volume Left	129	0	0			
Volume Right	79	0	7			
cSH	928	1542	1700			
Volume to Capacity	0.22	0.00	0.04			
Queue Length 95th (m)	6.4	0.0	0.0			
Control Delay (s)	10.0	0.0	0.0			
Lane LOS	A					
Approach Delay (s)	10.0	0.0	0.0			
Approach LOS	A					
Intersection Summary						
Average Delay		6.4				
Intersection Capacity Utilization		21.1%		ICU Level of Service	A	
Analysis Period (min)		15				

Lanes, Volumes, Timings

216: West Street D & West Street B

Total (2041) - Scenario A - 2% Growth Rate

Timing Plan: AM Peak Hour

	←	←	↑	↗	↘	↓
Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	↰		↱			↱
Traffic Volume (vph)	0	10	31	0	163	79
Future Volume (vph)	0	10	31	0	163	79
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.865					
Flt Protected						0.967
Satd. Flow (prot)	1611	0	1863	0	0	1801
Flt Permitted						0.967
Satd. Flow (perm)	1611	0	1863	0	0	1801
Link Speed (k/h)	50		50			50
Link Distance (m)	202.8		99.7			103.2
Travel Time (s)	14.6		7.2			7.4
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	11	34	0	177	86
Shared Lane Traffic (%)						
Lane Group Flow (vph)	11	0	34	0	0	263
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
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		15	25	
Sign Control	Stop		Free			Free

Intersection Summary

Area Type: Other

Control Type: Unsignalized

Intersection Capacity Utilization 29.8%

ICU Level of Service A

Analysis Period (min) 15

HCM Unsignalized Intersection Capacity Analysis Total (2041) - Scenario A - 2% Growth Rate

216: West Street D & West Street B

Timing Plan: AM Peak Hour

	←	←	↑	↗	↘	↓
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	↰		↱			↱
Traffic Volume (veh/h)	0	10	31	0	163	79
Future Volume (Veh/h)	0	10	31	0	163	79
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	11	34	0	177	86
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage (veh)						
Upstream signal (m)						103
pX, platoon unblocked	0.98					
vC, conflicting volume	474	34			34	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	452	34			34	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	100	99			89	
cM capacity (veh/h)	491	1039			1578	

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	11	34	263
Volume Left	0	0	177
Volume Right	11	0	0
cSH	1039	1700	1578
Volume to Capacity	0.01	0.02	0.11
Queue Length 95th (m)	0.2	0.0	2.8
Control Delay (s)	8.5	0.0	5.4
Lane LOS	A		A
Approach Delay (s)	8.5	0.0	5.4
Approach LOS	A		

Intersection Summary

Average Delay 4.9

Intersection Capacity Utilization 29.8%

ICU Level of Service

A

Analysis Period (min) 15

Lanes, Volumes, Timings

217: West Street C & West Street A

Total (2041) - Scenario A - 2% Growth Rate

Timing Plan: AM Peak Hour

						
Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	0	59	56	150	84	10
Future Volume (vph)	0	59	56	150	84	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		0.902		0.985		
Flt Protected		0.957				
Satd. Flow (prot)	0	1863	1680	0	1756	0
Flt Permitted		0.957				
Satd. Flow (perm)	0	1863	1680	0	1756	0
Link Speed (k/h)	50		50		50	
Link Distance (m)	208.6		202.4		106.4	
Travel Time (s)	15.0		14.6		7.7	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	64	61	163	91	11
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	64	224	0	102	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	
Sign Control	Free		Free		Stop	

Intersection Summary

Area Type: Other

Control Type: Unsignalized

Intersection Capacity Utilization 24.1%

ICU Level of Service A

Analysis Period (min) 15

HCM Unsignalized Intersection Capacity Analysis Total (2041) - Scenario A - 2% Growth Rate

217: West Street C & West Street A

Timing Plan: AM Peak Hour

						
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	0	59	56	150	84	10
Future Volume (Veh/h)	0	59	56	150	84	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)	0	64	61	163	91	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	224				206	142
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	224				206	142
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	100				88	99
cM capacity (veh/h)	1345				782	905

Direction, Lane #	EB 1	WB 1	SB 1
Volume Total	64	224	102
Volume Left	0	0	91
Volume Right	0	163	11
cSH	1345	1700	794
Volume to Capacity	0.00	0.13	0.13
Queue Length 95th (m)	0.0	0.0	3.3
Control Delay (s)	0.0	0.0	10.2
Lane LOS	B		
Approach Delay (s)	0.0	0.0	10.2
Approach LOS	B		

Intersection Summary

Average Delay 2.7
 Intersection Capacity Utilization 24.1% ICU Level of Service A
 Analysis Period (min) 15

Lanes, Volumes, Timings

218: West Street D & West Street C

Total (2041) - Scenario A - 2% Growth Rate

Timing Plan: AM Peak Hour

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔			↔			↔			↔	
Traffic Volume (vph)	0	0	0	7	0	49	0	24	11	73	6	0
Future Volume (vph)	0	0	0	7	0	49	0	24	11	73	6	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					0.883			0.957				
Flt Protected					0.993						0.956	
Satd. Flow (prot)	0	1863	0	0	1633	0	0	1783	0	0	1781	0
Flt Permitted					0.993						0.956	
Satd. Flow (perm)	0	1863	0	0	1633	0	0	1783	0	0	1781	0
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		258.7			208.6			93.0			99.7	
Travel Time (s)		18.6			15.0			6.7			7.2	
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	0	8	0	53	0	26	12	79	7	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	0	0	0	61	0	0	38	0	0	86	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 21.1%

ICU Level of Service A

Analysis Period (min) 15

HCM Unsignalized Intersection Capacity Analysis Total (2041) - Scenario A - 2% Growth Rate

218: West Street D & West Street C

Timing Plan: AM Peak Hour

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔			↔			↔			↔	
Traffic Volume (veh/h)	0	0	0	7	0	49	0	24	11	73	6	0
Future Volume (Veh/h)	0	0	0	7	0	49	0	24	11	73	6	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)	0	0	0	8	0	53	0	26	12	79	7	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	53			0			46	69	0	68	42	26
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	53			0			46	69	0	68	42	26
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			100			100	97	99	91	99	100
cM capacity (veh/h)	1553			1623			946	818	1085	889	845	1049
Direction, Lane #	EB 1	WB 1	NB 1	SB 1								
Volume Total	0	61	38	86								
Volume Left	0	8	0	79								
Volume Right	0	53	12	0								
cSH	1700	1623	887	886								
Volume to Capacity	0.00	0.00	0.04	0.10								
Queue Length 95th (m)	0.0	0.1	1.0	2.4								
Control Delay (s)	0.0	1.0	9.2	9.5								
Lane LOS		A	A	A								
Approach Delay (s)	0.0	1.0	9.2	9.5								
Approach LOS		A	A									
Intersection Summary												
Average Delay			6.6									
Intersection Capacity Utilization		21.1%		ICU Level of Service					A			
Analysis Period (min)			15									

Lanes, Volumes, Timings

101: Trafalgar Rd & Lower Base Line

TT (2041) - Scenario A - 2% Growth Rate

Timing Plan: PM Peak Hour

	↖	→	↗	↖	←	↖	↖	↖	↖	↖	↖	↖
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖	↖	↖	↖	↖	↖	↖	↖	↖	↖	↖	↖
Traffic Volume (vph)	54	240	77	366	678	368	488	2647	434	306	1799	123
Future Volume (vph)	54	240	77	366	678	368	488	2647	434	306	1799	123
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	45.0		45.0	110.0		110.0	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	0.260			0.206			0.072			0.077		
Satd. Flow (perm)	484	3412	0	384	3352	0	134	5085	1583	143	5085	1583
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		25			68				79			95
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	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	54	240	77	366	678	368	488	2647	434	306	1799	123
Shared Lane Traffic (%)												
Lane Group Flow (vph)	54	317	0	366	1046	0	488	2647	434	306	1799	123
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	pm+ov	pm+pt	NA	pm+ov
Protected Phases	7	4		3	8		5	2	3	1	6	7
Permitted Phases	4			8			2		2	6		6

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Lanes, Volumes, Timings

101: Trafalgar Rd & Lower Base Line

TT (2041) - Scenario A - 2% Growth Rate

Timing Plan: PM Peak Hour

	↖	→	↗	↖	←	↖	↖	↖	↖	↖	↖	↖
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector Phase	7	4		3	8		5	2	3	1	6	7
Switch Phase												
Minimum Initial (s)	5.0	10.0		7.0	10.0		5.0	25.0	7.0	7.0	25.0	5.0
Minimum Split (s)	11.6	22.5		13.6	22.5		11.6	31.6	13.6	13.6	31.6	11.6
Total Split (s)	11.6	22.6		27.0	38.0		31.0	71.4	27.0	19.0	59.4	11.6
Total Split (%)	8.3%	16.1%		19.3%	27.1%		22.1%	51.0%	19.3%	13.6%	42.4%	8.3%
Maximum Green (s)	5.0	16.4		24.0	31.8		28.0	64.8	24.0	16.0	52.8	5.0
Yellow Time (s)	4.6	4.2		3.0	4.2		3.0	4.6	3.0	3.0	4.6	4.6
All-Red Time (s)	2.0	2.0		0.0	2.0		0.0	2.0	0.0	0.0	2.0	2.0
Lost Time Adjust (s)	1.0	-2.2		1.0	-2.2		1.0	-2.2	1.0	1.0	-2.2	-2.2
Total Lost Time (s)	7.6	4.0		4.0	4.0		4.0	4.4	4.0	4.0	4.4	4.4
Lead/Lag	Lead	Lag		Lead	Lag		Lead	Lag	Lead	Lag	Lead	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	0.2	0.2	5.0	3.0
Recall Mode	None	None		None	None		None	Max	None	Max	Max	None
Act Effct Green (s)	19.0	18.6		45.6	34.0		86.4	67.0	94.4	70.4	55.0	66.6
Actuated g/C Ratio	0.14	0.13		0.33	0.24		0.62	0.48	0.67	0.50	0.39	0.48
v/c Ratio	0.53	0.67		1.04	1.21		1.23	1.09	0.40	1.24	0.90	0.15
Control Delay	59.5	60.8		98.7	146.9		159.4	82.5	9.2	175.6	47.3	6.5
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	59.5	60.8		98.7	146.9		159.4	82.5	9.2	175.6	47.3	6.5
LOS	E	E		F	F		F	F	A	F	D	A
Approach Delay		60.6			134.4			84.1			62.6	
Approach LOS		E			F			F			E	

Intersection Summary

Area Type: Other

Cycle Length: 140

Actuated Cycle Length: 140

Natural Cycle: 145

Control Type: Semi Act-Uncooord

Maximum v/c Ratio: 1.24

Intersection Signal Delay: 86.0

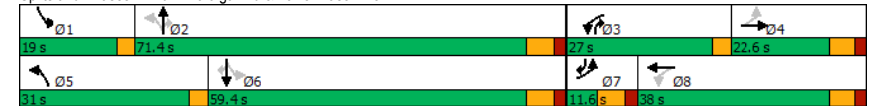
Intersection LOS: F

Intersection Capacity Utilization 119.5%

ICU Level of Service H

Analysis Period (min) 15

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

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Queues
101: Trafalgar Rd & Lower Base Line

TT (2041) - Scenario A - 2% Growth Rate
Timing Plan: PM Peak Hour

	EBL	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	54	317	366	1046	488	2647	434	306	1799	123
v/c Ratio	0.53	0.67	1.04	1.21	1.23	1.09	0.40	1.24	0.90	0.15
Control Delay	59.5	60.8	98.7	146.9	159.4	82.5	9.2	175.6	47.3	6.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	59.5	60.8	98.7	146.9	159.4	82.5	9.2	175.6	47.3	6.5
Queue Length 50th (m)	10.7	40.5	~89.4	~175.8	~147.9	~296.9	39.0	~87.7	167.8	4.0
Queue Length 95th (m)	#21.6	56.6	#151.1	#217.6	#215.2	#322.1	57.5	#145.8	188.7	14.8
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)	102	474	352	865	398	2433	1093	246	1997	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	0.53	0.67	1.04	1.21	1.23	1.09	0.40	1.24	0.90	0.15

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.

HCM Signalized Intersection Capacity Analysis
101: Trafalgar Rd & Lower Base Line

TT (2041) - Scenario A - 2% Growth Rate
Timing Plan: PM Peak Hour

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰	↱	↱	↰	↱	↱	↰	↱	↱	↰	↱	↱
Traffic Volume (vph)	54	240	77	366	678	368	488	2647	434	306	1799	123
Future Volume (vph)	54	240	77	366	678	368	488	2647	434	306	1799	123
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	7.6	4.0		4.0	4.0		4.0	4.4	4.0	4.0	4.4	4.4
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	3410		1770	3352		1770	5085	1583	1770	5085	1583
Flt Permitted	0.26	1.00		0.21	1.00		0.07	1.00	1.00	0.08	1.00	1.00
Satd. Flow (perm)	484	3410		384	3352		134	5085	1583	144	5085	1583
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	54	240	77	366	678	368	488	2647	434	306	1799	123
RTOR Reduction (vph)	0	22	0	0	51	0	0	0	30	0	0	53
Lane Group Flow (vph)	54	295	0	366	995	0	488	2647	404	306	1799	70
Turn Type	pm+pt	NA		pm+pt	NA		pm+pt	NA	pm+ov	pm+pt	NA	pm+ov
Protected Phases	7	4		3	8		5	2	3	1	6	7
Permitted Phases	4			8			2		2	6		6
Actuated Green, G (s)	21.4	16.4		43.4	31.8		83.8	64.8	88.8	68.8	52.8	57.8
Effective Green, g (s)	19.4	18.6		42.4	34.0		82.8	67.0	86.8	66.8	55.0	62.2
Actuated g/C Ratio	0.14	0.13		0.30	0.24		0.59	0.48	0.62	0.48	0.39	0.44
Clearance Time (s)	6.6	6.2		3.0	6.2		3.0	6.6	3.0	3.0	6.6	6.6
Vehicle Extension (s)	3.0	5.0		0.2	5.0		3.0	5.0	0.2	0.2	5.0	3.0
Lane Grp Cap (vph)	103	453		343	814		394	2433	981	242	1997	753
v/s Ratio Prot	0.01	0.09		c0.17	c0.30		c0.24	0.52	0.07	0.13	0.35	0.00
v/s Ratio Perm	0.06			0.15			c0.49		0.19	0.47		0.04
v/c Ratio	0.52	0.65		1.07	1.22		1.24	1.09	0.41	1.26	0.90	0.09
Uniform Delay, d1	54.1	57.6		43.3	53.0		46.5	36.5	13.6	44.3	39.9	22.6
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	4.7	4.5		67.5	110.8		127.4	47.2	0.1	147.7	7.1	0.1
Delay (s)	58.8	62.1		110.8	163.8		173.8	83.7	13.7	192.0	47.0	22.6
Level of Service	E	E		F	F		F	F	B	F	D	C
Approach Delay (s)		61.6			150.0			87.5			65.6	
Approach LOS		E			F			F			E	

Intersection Summary

HCM 2000 Control Delay	91.5	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	1.27		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	20.0
Intersection Capacity Utilization	119.5%	ICU Level of Service	H
Analysis Period (min)	15		

c Critical Lane Group

Lanes, Volumes, Timings TT (2041) - Scenario A - 2% Growth Rate
102: Trafalgar Rd & North Carpool Lot/Hwy 407 WB Off Timing Plan: PM Peak Hour

	←	→	↙	↘	←	↙	↘	→	↙	↘	→	↙	↘
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations		↔		↔	↔	↔	↔	↔		↔	↔	↔	
Traffic Volume (vph)	7	0	49	648	16	174	9	3381	0	0	2237	5	
Future Volume (vph)	7	0	49	648	16	174	9	3381	0	0	2237	5	
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	0.882				0.992	0.850						0.850	
Flt Protected	0.994			0.950	0.957		0.950						
Satd. Flow (prot)	0	1633	0	1681	1609	1504	1770	5085	0	0	5085	1583	
Flt Permitted	0.994			0.720	0.707		0.070						
Satd. Flow (perm)	0	1633	0	1274	1189	1504	130	5085	0	0	5085	1583	
Right Turn on Red		Yes			Yes			Yes			Yes		
Satd. Flow (RTOR)		78			3	95						70	
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	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Adj. Flow (vph)	7	0	49	648	16	174	9	3381	0	0	2237	5	
Shared Lane Traffic (%)				47%		10%							
Lane Group Flow (vph)	0	56	0	343	338	157	9	3381	0	0	2237	5	
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	CI+Ex	CI+Ex		CI+Ex	CI+Ex	CI+Ex	CI+Ex	CI+Ex			CI+Ex	CI+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		CI+Ex			CI+Ex			CI+Ex			CI+Ex		
Detector 2 Channel													
Detector 2 Extend (s)		0.0			0.0			0.0			0.0		
Turn Type	Split	NA		Perm	NA	Perm	Perm	NA			NA	Perm	
Protected Phases	4	4			8			2			6		
Permitted Phases				8		8	2					6	

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Lanes, Volumes, Timings TT (2041) - Scenario A - 2% Growth Rate
102: Trafalgar Rd & North Carpool Lot/Hwy 407 WB Off Timing Plan: PM Peak Hour

	←	→	↙	↘	←	↙	↘	→	↙	↘	→	↙	↘
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)	6.0	6.0		7.0	7.0	7.0		20.0	20.0		20.0	20.0	
Minimum Split (s)	12.0	12.0		22.5	22.5	22.5		27.0	27.0		27.0	27.0	
Total Split (s)	12.0	12.0		68.0	68.0	68.0		60.0	60.0		60.0	60.0	
Total Split (%)	8.6%	8.6%		48.6%	48.6%	48.6%		42.9%	42.9%		42.9%	42.9%	
Maximum Green (s)	6.0	6.0		62.0	62.0	62.0		53.0	53.0		53.0	53.0	
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		-3.0	-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 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)		8.2		40.9	40.9	40.9		57.4	57.4		57.4	57.4	
Actuated g/C Ratio		0.07		0.35	0.35	0.35		0.50	0.50		0.50	0.50	
v/c Ratio		0.30		0.76	0.80	0.26		0.14	1.34		0.89	0.01	
Control Delay		10.2		44.3	47.8	11.6		30.7	183.2		34.4	0.0	
Queue Delay		0.0		0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay		10.2		44.3	47.8	11.6		30.7	183.2		34.4	0.0	
LOS		B		D	D	B		C	F		C	A	
Approach Delay		10.2			39.6			182.8			34.3		
Approach LOS		B			D			F			C		

Intersection Summary

Area Type: Other

Cycle Length: 140

Actuated Cycle Length: 115.6

Natural Cycle: 150

Control Type: Actuated-Uncoordinated

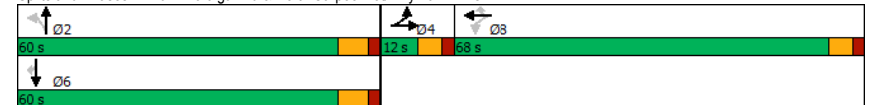
Maximum v/c Ratio: 1.34

Intersection Signal Delay: 111.9

Intersection Capacity Utilization 98.8%

Analysis Period (min) 15

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



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Queues TT (2041) - Scenario A - 2% Growth Rate
102: Trafalgar Rd & North Carpool Lot/Hwy 407 WB Off Timing Plan: PM Peak Hour

	→	↖	←	↗	↖	↑	↓	↗
Lane Group	EBT	WBL	WBT	WBR	NBL	NBT	SBT	SBR
Lane Group Flow (vph)	56	343	338	157	9	3381	2237	5
v/c Ratio	0.30	0.76	0.80	0.26	0.14	1.34	0.89	0.01
Control Delay	10.2	44.3	47.8	11.6	30.7	183.2	34.4	0.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	10.2	44.3	47.8	11.6	30.7	183.2	34.4	0.0
Queue Length 50th (m)	0.0	72.1	74.9	9.8	1.1	~376.4	169.4	0.0
Queue Length 95th (m)	7.6	106.4	112.4	24.2	6.5	#501.8	#274.3	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)	188	722	675	894	64	2523	2523	820
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.30	0.48	0.50	0.18	0.14	1.34	0.89	0.01

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.

HCM Signalized Intersection Capacity Analysis TT (2041) - Scenario A - 2% Growth Rate
102: Trafalgar Rd & North Carpool Lot/Hwy 407 WB Off Timing Plan: PM Peak Hour

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	7	0	49	648	16	174	9	3381	0	0	2237	5
Future Volume (vph)	7	0	49	648	16	174	9	3381	0	0	2237	5
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)		1633		1681	1610	1504	1770	5085			5085	1583
Flt Permitted		0.99		0.72	0.71	1.00	0.07	1.00			1.00	1.00
Satd. Flow (perm)		1633		1275	1189	1504	130	5085			5085	1583
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	7	0	49	648	16	174	9	3381	0	0	2237	5
RTOR Reduction (vph)	0	53	0	0	2	62	0	0	0	0	0	3
Lane Group Flow (vph)	0	3	0	343	336	95	9	3381	0	0	2237	2
Turn Type	Split	NA		Perm	NA	Perm	Perm	NA			NA	Perm
Protected Phases	4	4			8		2				6	
Permitted Phases				8		8	2					6
Actuated Green, G (s)		4.6		38.9	38.9	38.9	54.3	54.3			54.3	54.3
Effective Green, g (s)		6.6		40.9	40.9	40.9	57.3	57.3			57.3	57.3
Actuated g/C Ratio		0.06		0.35	0.35	0.35	0.49	0.49			0.49	0.49
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)		92		446	416	526	63	2494			2494	776
v/s Ratio Prot		c0.00						c0.66			0.44	
v/s Ratio Perm				0.27	c0.28	0.06	0.07					0.00
v/c Ratio		0.03		0.77	0.81	0.18	0.14	1.36			0.90	0.00
Uniform Delay, d1		52.1		33.7	34.4	26.3	16.3	29.8			27.1	15.2
Progression Factor		1.00		1.00	1.00	1.00	1.00	1.00			1.00	1.00
Incremental Delay, d2		0.2		8.0	11.3	0.2	4.7	162.7			5.6	0.0
Delay (s)		52.3		41.8	45.7	26.5	21.0	192.5			32.7	15.2
Level of Service		D		D	D	C	C	F			C	B
Approach Delay (s)		52.3			40.5			192.0			32.6	
Approach LOS		D			D			F			C	

Intersection Summary

HCM 2000 Control Delay	116.6	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	1.08		
Actuated Cycle Length (s)	116.8	Sum of lost time (s)	14.0
Intersection Capacity Utilization	98.8%	ICU Level of Service	F
Analysis Period (min)	15		

c Critical Lane Group

Lanes, Volumes, Timings
103: Trafalgar Rd & Hwy 407 EB Off

TT (2041) - Scenario A - 2% Growth Rate
Timing Plan: PM Peak Hour

	EBL	EBR	NBL	NBT	SBT	SBR
Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	↰	↱		↰↰↰	↰↰↰	
Traffic Volume (vph)	87	246	0	3877	2731	0
Future Volume (vph)	87	246	0	3877	2731	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			251.9	363.6	
Travel Time (s)	39.9			18.1	26.2	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	87	246	0	3877	2731	0
Shared Lane Traffic (%)						
Lane Group Flow (vph)	87	246	0	3877	2731	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	CI+Ex	CI+Ex		CI+Ex	CI+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				CI+Ex	CI+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	

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Synchro 10 Report
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Lanes, Volumes, Timings
103: Trafalgar Rd & Hwy 407 EB Off

TT (2041) - Scenario A - 2% Growth Rate
Timing Plan: PM Peak Hour

	EBL	EBR	NBL	NBT	SBT	SBR
Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Minimum Split (s)	24.0	24.0		24.0	24.0	
Total Split (s)	35.0	35.0		55.0	55.0	
Total Split (%)	38.9%	38.9%		61.1%	61.1%	
Maximum Green (s)	29.0	29.0		49.0	49.0	
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)	19.4	19.4		52.3	52.3	
Actuated g/C Ratio	0.24	0.24		0.66	0.66	
v/c Ratio	0.20	0.64		1.16	0.82	
Control Delay	24.0	34.4		94.1	14.0	
Queue Delay	0.0	0.0		0.0	0.0	
Total Delay	24.0	34.4		94.1	14.0	
LOS	C	C		F	B	
Approach Delay	31.7			94.1	14.0	
Approach LOS	C			F	B	

Intersection Summary

Area Type: Other

Cycle Length: 90

Actuated Cycle Length: 79.7

Natural Cycle: 110

Control Type: Semi Act-Uncoord

Maximum v/c Ratio: 1.16

Intersection Signal Delay: 59.6

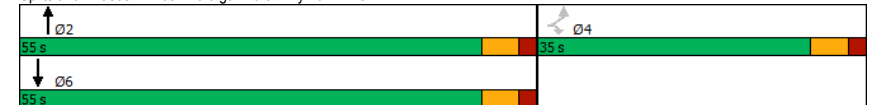
Intersection LOS: E

Intersection Capacity Utilization 86.4%

ICU Level of Service E

Analysis Period (min) 15

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



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Queues
103: Trafalgar Rd & Hwy 407 EB Off

TT (2041) - Scenario A - 2% Growth Rate
Timing Plan: PM Peak Hour

	EBL	EBR	NBT	SBT
Lane Group	EBL	EBR	NBT	SBT
Lane Group Flow (vph)	87	246	3877	2731
v/c Ratio	0.20	0.64	1.16	0.82
Control Delay	24.0	34.4	94.1	14.0
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	24.0	34.4	94.1	14.0
Queue Length 50th (m)	10.1	32.0	~250.8	95.1
Queue Length 95th (m)	20.4	53.6	#322.8	156.5
Internal Link Dist (m)	530.6		227.9	339.6
Turn Bay Length (m)				
Base Capacity (vph)	689	617	3337	3337
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	0.13	0.40	1.16	0.82

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.

HCM Signalized Intersection Capacity Analysis
103: Trafalgar Rd & Hwy 407 EB Off

TT (2041) - Scenario A - 2% Growth Rate
Timing Plan: PM Peak Hour

	EBL	EBR	NBL	NBT	SBT	SBR
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	↰	↱		↰	↰	↰
Traffic Volume (vph)	87	246	0	3877	2731	0
Future Volume (vph)	87	246	0	3877	2731	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	
Flt	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	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	87	246	0	3877	2731	0
RTOR Reduction (vph)	0	1	0	0	0	0
Lane Group Flow (vph)	87	245	0	3877	2731	0
Turn Type	Perm	Perm		NA	NA	
Protected Phases				2	6	
Permitted Phases	4	4				
Actuated Green, G (s)	17.4	17.4		50.3	50.3	
Effective Green, g (s)	19.4	19.4		52.3	52.3	
Actuated g/C Ratio	0.24	0.24		0.66	0.66	
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)	430	385		3336	3336	
v/s Ratio Prot				c0.76	0.54	
v/s Ratio Perm	0.05	c0.15				
v/c Ratio	0.20	0.64		1.16	0.82	
Uniform Delay, d1	24.0	27.0		13.7	10.2	
Progression Factor	1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.2	3.4		76.7	2.4	
Delay (s)	24.2	30.4		90.4	12.5	
Level of Service	C	C		F	B	
Approach Delay (s)	28.8			90.4	12.5	
Approach LOS	C			F	B	

Intersection Summary

HCM 2000 Control Delay	56.8	HCM 2000 Level of Service	E
HCM 2000 Volume to Capacity ratio	1.05		
Actuated Cycle Length (s)	79.7	Sum of lost time (s)	10.0
Intersection Capacity Utilization	86.4%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

Lanes, Volumes, Timings
104: Trafalgar Rd & West Street A/East Street A

TT (2041) - Scenario A - 2% Growth Rate

Timing Plan: PM Peak Hour

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰	↱	↰	↰	↱	↱	↰	↰	↰	↰	↱	↱
Traffic Volume (vph)	249	31	122	0	0	770	20	3580	253	412	2431	134
Future Volume (vph)	249	31	122	0	0	770	20	3580	253	412	2431	134
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	90.0		90.0	90.0		90.0
Storage Lanes	1		1	1		1	1		1	1		1
Taper Length (m)	75.0			75.0			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		
Satd. Flow (prot)	1770	1863	1583	1863	1863	1583	1770	5085	1583	1770	5085	1583
Flt Permitted	0.950						0.059			0.045		
Satd. Flow (perm)	1770	1863	1583	1863	1863	1583	110	5085	1583	84	5085	1583
Right Turn on Red			Yes			Yes			Yes		Yes	
Satd. Flow (RTOR)			122			44			180			134
Link Speed (k/h)		50			50			80			80	
Link Distance (m)		216.0			205.9			233.3			251.9	
Travel Time (s)		15.6			14.8			10.5			11.3	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	249	31	122	0	0	770	20	3580	253	412	2431	134
Shared Lane Traffic (%)												
Lane Group Flow (vph)	249	31	122	0	0	770	20	3580	253	412	2431	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	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		pm+ov	pm+pt	NA	pm+ov	pm+pt	NA	pm+ov
Protected Phases	7	4		3	8	1	5	2	3	1	6	7
Permitted Phases	4		4	8		8	2		2	6		6

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Lanes, Volumes, Timings
104: Trafalgar Rd & West Street A/East Street A

TT (2041) - Scenario A - 2% Growth Rate

Timing Plan: PM Peak Hour

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector Phase	7	4	4	3	8	1	5	2	3	1	6	7
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)	9.5	24.0	24.0	9.5	24.0	11.0	9.5	24.0	9.5	11.0	24.0	9.5
Total Split (s)	10.0	24.3	24.3	9.7	24.0	25.0	9.5	91.0	9.7	25.0	106.5	10.0
Total Split (%)	6.7%	16.2%	16.2%	6.5%	16.0%	16.7%	6.3%	60.7%	6.5%	16.7%	71.0%	6.7%
Maximum Green (s)	7.0	18.3	18.3	6.7	18.0	22.0	6.5	85.0	6.7	22.0	100.5	7.0
Yellow Time (s)	3.0	4.0	4.0	3.0	4.0	3.0	3.0	4.0	3.0	3.0	4.0	3.0
All-Red Time (s)	0.0	2.0	2.0	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
Lost Time Adjust (s)	1.0	-2.0	-2.0	1.0	-2.0	-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	1.0	4.0	4.0	1.0	4.0	4.0	1.0
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lead	Lead	Lag	Lead	Lag	Lag	Lead
Lead-Lag Optimize?	Yes	Yes	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	3.0	3.0
Recall Mode	None	None	None	None	None	Max	None	C-Max	None	Max	C-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 Effect Green (s)	18.8	10.3	10.3			35.2	91.8	87.0	98.5	123.2	117.7	144.0
Actuated g/C Ratio	0.13	0.07	0.07			0.23	0.61	0.58	0.66	0.82	0.78	0.96
v/c Ratio	1.12	0.24	0.55			1.91	0.17	1.21	0.23	0.96	0.61	0.09
Control Delay	154.4	69.6	19.7			445.4	10.0	129.7	3.5	80.9	8.1	0.2
Queue Delay	0.0	0.0	0.0			0.0	0.0	0.2	0.0	0.0	0.4	0.0
Total Delay	154.4	69.6	19.7			445.4	10.0	129.9	3.5	80.9	8.5	0.2
LOS	F	E	B			F	A	F	A	F	A	A
Approach Delay		107.0			445.4			121.0			18.1	
Approach LOS		F			F			F			B	

Intersection Summary

Area Type: Other

Cycle Length: 150

Actuated Cycle Length: 150

Offset: 0 (0%), Referenced to phase 2:NBT and 6:SBTL, Start of Green

Natural Cycle: 150

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 1.91

Intersection Signal Delay: 113.2

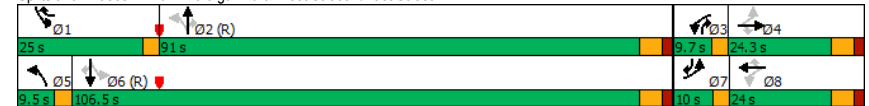
Intersection LOS: F

Intersection Capacity Utilization 140.6%

ICU Level of Service H

Analysis Period (min) 15

Splits and Phases: 104: Trafalgar Rd & West Street A/East Street A



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Queues
104: Trafalgar Rd & West Street A/East Street A

TT (2041) - Scenario A - 2% Growth Rate
Timing Plan: PM Peak Hour

	EBL	EBT	EBR	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group	EBL	EBT	EBR	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	249	31	122	770	20	3580	253	412	2431	134
v/c Ratio	1.12	0.24	0.55	1.91	0.17	1.21	0.23	0.96	0.61	0.09
Control Delay	154.4	69.6	19.7	445.4	10.0	129.7	3.5	80.9	8.1	0.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.2	0.0	0.0	0.4	0.0
Total Delay	154.4	69.6	19.7	445.4	10.0	129.9	3.5	80.9	8.5	0.2
Queue Length 50th (m)	~85.5	8.8	0.0	~336.5	1.1	~469.3	7.3	103.9	103.9	0.0
Queue Length 95th (m)	#123.1	19.1	19.2	#428.0	2.7	#486.2	17.2	#184.4	133.5	0.7
Internal Link Dist (m)		192.0			209.3			227.9		
Turn Bay Length (m)	50.0		50.0	50.0	90.0		90.0	90.0		90.0
Base Capacity (vph)	222	252	319	404	128	2949	1112	430	3991	1525
Starvation Cap Reductn	0	0	0	0	0	273	0	0	842	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	1.12	0.12	0.38	1.91	0.16	1.34	0.23	0.96	0.77	0.09

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.

HCM Signalized Intersection Capacity Analysis
104: Trafalgar Rd & West Street A/East Street A

TT (2041) - Scenario A - 2% Growth Rate
Timing Plan: PM Peak Hour

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔
Traffic Volume (vph)	249	31	122	0	0	770	20	3580	253	412	2431	134
Future Volume (vph)	249	31	122	0	0	770	20	3580	253	412	2431	134
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			1.0	4.0	4.0	1.0	4.0	4.0	1.0
Lane Util. Factor	1.00	1.00	1.00			1.00	1.00	0.91	1.00	1.00	0.91	1.00
Flt	1.00	1.00	0.85			0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00			1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1770	1863	1583			1583	1770	5085	1583	1770	5085	1583
Flt Permitted	0.95	1.00	1.00			1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	1770	1863	1583			1583	110	5085	1583	85	5085	1583
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	249	31	122	0	0	770	20	3580	253	412	2431	134
RTOR Reduction (vph)	0	0	114	0	0	34	0	0	67	0	0	10
Lane Group Flow (vph)	249	31	8	0	0	736	20	3580	186	412	2431	124
Turn Type	pm+pt	NA	Perm	pm+pt		pm+ov	pm+pt	NA	pm+ov	pm+pt	NA	pm+ov
Protected Phases	7	4		3	8	1	5	2	3	1	6	7
Permitted Phases	4		4	8		8	2		2	6		6
Actuated Green, G (s)	19.8	8.3	8.3			33.2	88.6	85.0	90.5	121.2	114.6	134.4
Effective Green, g (s)	18.8	10.3	10.3			35.2	86.6	87.0	94.5	120.2	116.6	138.4
Actuated g/C Ratio	0.13	0.07	0.07			0.23	0.58	0.58	0.63	0.80	0.78	0.92
Clearance Time (s)	3.0	6.0	6.0			3.0	3.0	6.0	3.0	3.0	6.0	3.0
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)	221	127	108			371	92	2949	997	429	3952	1460
v/s Ratio Prot	c0.14	0.02				c0.47	0.00	c0.70	0.01	0.21	0.48	0.01
v/s Ratio Perm			0.01				0.12		0.11	0.56		0.07
v/c Ratio	1.13	0.24	0.08			1.98	0.22	1.21	0.19	0.96	0.62	0.08
Uniform Delay, d1	65.6	66.2	65.4			57.4	16.4	31.5	11.6	52.5	7.1	0.5
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	98.8	1.0	0.3			452.7	1.2	99.6	0.1	34.6	0.7	0.0
Delay (s)	164.4	67.2	65.7			510.1	17.6	131.1	11.7	87.1	7.9	0.5
Level of Service	F	E	E			F	B	F	B	F	A	A
Approach Delay (s)		127.0			510.1			122.7			18.5	
Approach LOS		F			F			F			B	

Intersection Summary

HCM 2000 Control Delay	121.4	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	1.44		
Actuated Cycle Length (s)	150.0	Sum of lost time (s)	16.0
Intersection Capacity Utilization	140.6%	ICU Level of Service	H
Analysis Period (min)	15		

c Critical Lane Group

Lanes, Volumes, Timings

105: Trafalgar Rd & William Halton Parkway

TT (2041) - Scenario A - 2% Growth Rate

Timing Plan: PM Peak Hour

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰	↰	↰	↰	↰	↰	↰	↰	↰	↰	↰	↰
Traffic Volume (vph)	817	555	148	564	1535	547	641	2721	229	463	1893	455
Future Volume (vph)	817	555	148	564	1535	547	641	2721	229	463	1893	455
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	0.105			0.256			0.087			0.095		
Satd. Flow (perm)	196	3539	1583	477	3539	1583	162	5085	1583	177	5085	1583
Right Turn on Red			Yes			Yes			Yes		Yes	
Satd. Flow (RTOR)			148			188			93		250	
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		212.9			205.0			193.0			233.3	
Travel Time (s)		15.3			14.8			13.9			16.8	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	817	555	148	564	1535	547	641	2721	229	463	1893	455
Shared Lane Traffic (%)												
Lane Group Flow (vph)	817	555	148	564	1535	547	641	2721	229	463	1893	455
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

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Lanes, Volumes, Timings

105: Trafalgar Rd & William Halton Parkway

TT (2041) - Scenario A - 2% Growth Rate

Timing Plan: PM Peak Hour

	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)	14.0	38.0	38.0	14.2	38.0	38.0	13.9	42.9	42.9	13.9	42.9	42.9
Total Split (s)	31.0	46.2	46.2	29.8	45.0	45.0	24.0	56.0	56.0	18.0	50.0	50.0
Total Split (%)	20.7%	30.8%	30.8%	19.9%	30.0%	30.0%	16.0%	37.3%	37.3%	12.0%	33.3%	33.3%
Maximum Green (s)	28.0	39.2	39.2	26.8	38.0	38.0	21.0	49.1	49.1	15.0	43.1	43.1
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)	0.0	3.3	3.3	0.0	3.3	3.3	0.0	2.3	2.3	0.0	2.3	2.3
Lost Time Adjust (s)	1.0	-3.0	-3.0	1.0	-3.0	-3.0	1.0	-2.9	-2.9	1.0	-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	Max	Max	Max	Max	Max	Max
Walk Time (s)		7.0	7.0		7.0	7.0		7.0	7.0		7.0	7.0
Flash Dont Walk (s)		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 Effect Green (s)	69.2	42.2	42.2	66.8	41.0	41.0	70.0	52.0	52.0	60.0	46.0	46.0
Actuated g/C Ratio	0.46	0.28	0.28	0.45	0.27	0.27	0.47	0.35	0.35	0.40	0.31	0.31
v/c Ratio	2.19	0.56	0.27	1.30	1.59	0.96	2.21	1.54	0.38	2.11	1.21	0.69
Control Delay	568.6	48.5	7.1	178.5	304.9	64.2	579.5	282.0	23.2	540.6	146.5	25.9
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	568.6	48.5	7.1	178.5	304.9	64.2	579.5	282.0	23.2	540.6	146.5	25.9
LOS	F	D	A	F	F	E	F	F	C	F	F	C
Approach Delay		324.0			228.2			318.6			191.9	
Approach LOS		F			F			F			F	

Intersection Summary

Area Type: Other

Cycle Length: 150

Actuated Cycle Length: 150

Natural Cycle: 150

Control Type: Semi Act-Uncoord

Maximum v/c Ratio: 2.21

Intersection Signal Delay: 263.0

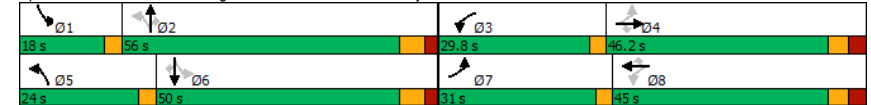
Intersection LOS: F

Intersection Capacity Utilization 179.3%

ICU Level of Service H

Analysis Period (min) 15

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

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Queues
105: Trafalgar Rd & William Halton Parkway

TT (2041) - Scenario A - 2% Growth Rate
Timing Plan: PM Peak Hour

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	817	555	148	564	1535	547	641	2721	229	463	1893	455
v/c Ratio	2.19	0.56	0.27	1.30	1.59	0.96	2.21	1.54	0.38	2.11	1.21	0.69
Control Delay	568.6	48.5	7.1	178.5	304.9	64.2	579.5	282.0	23.2	540.6	146.5	25.9
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	568.6	48.5	7.1	178.5	304.9	64.2	579.5	282.0	23.2	540.6	146.5	25.9
Queue Length 50th (m)	~369.9	73.4	0.0	~171.2	~336.7	114.1	~287.9	~410.0	29.1	~200.0	~248.1	54.4
Queue Length 95th (m)	#447.0	92.4	16.2	#242.8	#378.6	#187.7	#361.9	#433.6	52.0	#267.3	#276.4	94.8
Internal Link Dist (m)	188.9			181.0			169.0			209.3		
Turn Bay Length (m)	100.0		100.0	100.0		150.0	150.0		75.0			
Base Capacity (vph)	373	995	551	434	967	569	290	1762	609	219	1559	658
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	2.19	0.56	0.27	1.30	1.59	0.96	2.21	1.54	0.38	2.11	1.21	0.69

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.

HCM Signalized Intersection Capacity Analysis
105: Trafalgar Rd & William Halton Parkway

TT (2041) - Scenario A - 2% Growth Rate
Timing Plan: PM Peak Hour

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰	↱	↱	↰	↱	↱	↰	↱	↱	↰	↱	↱
Traffic Volume (vph)	817	555	148	564	1535	547	641	2721	229	463	1893	455
Future Volume (vph)	817	555	148	564	1535	547	641	2721	229	463	1893	455
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	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00
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	0.10	1.00	1.00	0.26	1.00	1.00	0.09	1.00	1.00	0.10	1.00	1.00
Satd. Flow (perm)	195	3539	1583	477	3539	1583	162	5085	1583	177	5085	1583
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	817	555	148	564	1535	547	641	2721	229	463	1893	455
RTOR Reduction (vph)	0	0	106	0	0	137	0	0	61	0	0	173
Lane Group Flow (vph)	817	555	42	564	1535	410	641	2721	168	463	1893	282
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)	67.2	39.2	39.2	64.8	38.0	38.0	67.1	49.1	49.1	58.1	43.1	43.1
Effective Green, g (s)	65.2	42.2	42.2	62.8	41.0	41.0	66.1	52.0	52.0	56.1	46.0	46.0
Actuated g/C Ratio	0.43	0.28	0.28	0.42	0.27	0.27	0.44	0.35	0.35	0.37	0.31	0.31
Clearance Time (s)	3.0	7.0	7.0	3.0	7.0	7.0	3.0	6.9	6.9	3.0	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	995	445	422	967	432	285	1762	548	214	1559	485
v/s Ratio Prot	c0.40	0.16		0.23	0.43		c0.30	0.54		0.20	0.37	
v/s Ratio Perm	c0.56		0.03	0.33		0.26	c0.69		0.11	0.60		0.18
v/c Ratio	2.22	0.56	0.09	1.34	1.59	0.95	2.25	1.54	0.31	2.16	1.21	0.58
Uniform Delay, d1	48.0	45.9	39.8	36.0	54.5	53.5	48.3	49.0	35.8	44.1	52.0	43.9
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	557.8	1.2	0.2	166.8	269.3	31.2	573.3	247.8	1.4	538.8	102.6	5.0
Delay (s)	605.8	47.1	40.0	202.8	323.8	84.7	621.5	296.8	37.3	582.9	154.6	48.9
Level of Service	F	D	D	F	F	F	F	F	D	F	F	D
Approach Delay (s)		346.7			248.6			338.2			208.0	
Approach LOS		F			F			F			F	

Intersection Summary

HCM 2000 Control Delay	282.3	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	2.16		
Actuated Cycle Length (s)	150.0	Sum of lost time (s)	16.0
Intersection Capacity Utilization	179.3%	ICU Level of Service	H
Analysis Period (min)	15		
c Critical Lane Group			

Lanes, Volumes, Timings TT (2041) - Scenario A - 2% Growth Rate
106: Trafalgar Rd & Burnhamthorpe Rd/Burnhamthorpe Rd Timing Plan: PM Peak Hour

	←	→	↙	↘	←	→	↙	↘	←	→	↙	↘
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↙	↘		↙	↘		↙	↘	↙	↘	↙	↘
Traffic Volume (vph)	177	339	18	135	297	590	100	2513	145	360	1690	303
Future Volume (vph)	177	339	18	135	297	590	100	2513	145	360	1690	303
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	1.00	1.00	1.00	1.00	1.00	1.00	0.91	1.00	1.00	0.91	1.00
Frt		0.992			0.900				0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1770	1848	0	1770	1676	0	1770	5085	1583	1770	5085	1583
Flt Permitted	0.137			0.246			0.105			0.095		
Satd. Flow (perm)	255	1848	0	458	1676	0	196	5085	1583	177	5085	1583
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		2			94				94			303
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	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	177	339	18	135	297	590	100	2513	145	360	1690	303
Shared Lane Traffic (%)												
Lane Group Flow (vph)	177	357	0	135	887	0	100	2513	145	360	1690	303
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	pm+ov	pm+pt	NA	pm+ov
Protected Phases	7	4		3	8		5	2	3	1	6	7
Permitted Phases	4			8			2		2	6		6

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Lanes, Volumes, Timings TT (2041) - Scenario A - 2% Growth Rate
106: Trafalgar Rd & Burnhamthorpe Rd/Burnhamthorpe Rd Timing Plan: PM Peak Hour

	←	→	↙	↘	←	→	↙	↘	←	→	↙	↘
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector Phase	7	4		3	8		5	2	3	1	6	7
Switch Phase												
Minimum Initial (s)	5.0	10.0		5.0	10.0		5.0	20.0	5.0	7.0	20.0	5.0
Minimum Split (s)	9.5	24.0		9.5	24.0		9.5	26.0	9.5	11.5	26.0	9.5
Total Split (s)	10.0	36.2		11.8	38.0		9.6	45.0	11.8	17.0	52.4	10.0
Total Split (%)	9.1%	32.9%		10.7%	34.5%		8.7%	40.9%	10.7%	15.5%	47.6%	9.1%
Maximum Green (s)	7.0	30.2		8.8	32.0		6.6	39.0	8.8	14.0	46.4	7.0
Yellow Time (s)	3.0	3.7		3.0	3.7		3.0	4.6	3.0	3.0	4.6	3.0
All-Red Time (s)	0.0	2.3		0.0	2.3		0.0	1.4	0.0	0.0	1.4	0.0
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	1.0	4.0	4.0	1.0
Lead/Lag	Lead	Lag		Lead	Lag		Lead	Lag	Lead	Lag	Lag	Lead
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	Max	None		Max	None		Max	Max	Max	Max	Max	Max
Act Effct Green (s)	38.2	32.2		41.8	34.0		46.6	41.0	55.8	58.0	48.4	61.4
Actuated g/C Ratio	0.35	0.29		0.38	0.31		0.42	0.37	0.51	0.53	0.44	0.56
v/c Ratio	1.04	0.66		0.51	1.52		0.61	1.33	0.17	1.28	0.76	0.30
Control Delay	107.5	40.7		28.8	271.7		32.6	181.2	6.2	178.2	28.5	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	107.5	40.7		28.8	271.7		32.6	181.2	6.2	178.2	28.5	2.1
LOS	F	D		C	F		C	F	A	F	C	A
Approach Delay		62.9			239.6			166.7			48.0	
Approach LOS		E			F			F			D	

Intersection Summary

Area Type: Other

Cycle Length: 110

Actuated Cycle Length: 110

Natural Cycle: 120

Control Type: Semi Act-Uncooord

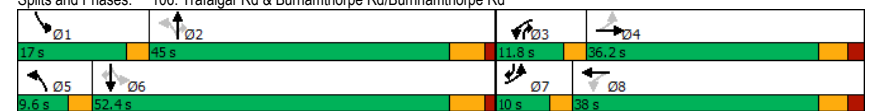
Maximum v/c Ratio: 1.52

Intersection Signal Delay: 127.7

Intersection Capacity Utilization 143.5%

Analysis Period (min) 15

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



I/O Trafalgar Oakville TIS
PTSL (210156/210157)

Synchro 10 Report
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Queues
106: Trafalgar Rd & Burhamthorpe Rd/Burnhamthorpe Rd

TT (2041) - Scenario A - 2% Growth Rate
Timing Plan: PM Peak Hour

	EBL	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	177	357	135	887	100	2513	145	360	1690	303
v/c Ratio	1.04	0.66	0.51	1.52	0.61	1.33	0.17	1.28	0.76	0.30
Control Delay	107.5	40.7	28.8	271.7	32.6	181.2	6.2	178.2	28.5	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	107.5	40.7	28.8	271.7	32.6	181.2	6.2	178.2	28.5	2.1
Queue Length 50th (m)	~25.9	65.8	18.3	~250.8	10.2	~253.3	5.3	~80.9	107.5	0.0
Queue Length 95th (m)	#66.1	97.1	31.4	#324.1	#24.3	#281.5	15.2	#137.2	125.3	11.2
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)	171	542	267	582	163	1895	849	281	2237	1017
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	1.04	0.66	0.51	1.52	0.61	1.33	0.17	1.28	0.76	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.

HCM Signalized Intersection Capacity Analysis
106: Trafalgar Rd & Burhamthorpe Rd/Burnhamthorpe Rd

TT (2041) - Scenario A - 2% Growth Rate
Timing Plan: PM Peak Hour

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰	↱		↰	↱		↰	↱	↱	↰	↱	↱
Traffic Volume (vph)	177	339	18	135	297	590	100	2513	145	360	1690	303
Future Volume (vph)	177	339	18	135	297	590	100	2513	145	360	1690	303
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	1.0	4.0	4.0	1.0
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	0.99		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	1849		1770	1677		1770	5085	1583	1770	5085	1583
Flt Permitted	0.14	1.00		0.25	1.00		0.11	1.00	1.00	0.10	1.00	1.00
Satd. Flow (perm)	255	1849		459	1677		196	5085	1583	177	5085	1583
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	177	339	18	135	297	590	100	2513	145	360	1690	303
RTOR Reduction (vph)	0	1	0	0	65	0	0	0	50	0	0	145
Lane Group Flow (vph)	177	356	0	135	822	0	100	2513	95	360	1690	158
Turn Type	pm+pt	NA		pm+pt	NA		pm+pt	NA	pm+ov	pm+pt	NA	pm+ov
Protected Phases	7	4		3	8		5	2	3	1	6	7
Permitted Phases	4			8			2		2	6		6
Actuated Green, G (s)	37.2	30.2		40.8	32.0		45.6	39.0	47.8	56.0	46.4	53.4
Effective Green, g (s)	35.2	32.2		38.8	34.0		43.6	41.0	51.8	55.0	48.4	57.4
Actuated g/C Ratio	0.32	0.29		0.35	0.31		0.40	0.37	0.47	0.50	0.44	0.52
Clearance Time (s)	3.0	6.0		3.0	6.0		3.0	6.0	3.0	3.0	6.0	3.0
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)	164	541		254	518		157	1895	745	276	2237	826
v/s Ratio Prot	c0.06	0.19		0.04	c0.49		0.03	c0.49	c0.01	c0.15	0.33	0.02
v/s Ratio Perm	0.29			0.15			0.22		0.05	0.50		0.08
v/c Ratio	1.08	0.66		0.53	1.59		0.64	1.33	0.13	1.30	0.76	0.19
Uniform Delay, d1	35.2	34.1		26.5	38.0		23.8	34.5	16.4	32.9	25.8	14.0
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	93.0	2.9		2.1	273.2		18.1	150.5	0.4	160.8	2.4	0.5
Delay (s)	128.2	36.9		28.6	311.2		41.9	185.0	16.7	193.7	28.3	14.5
Level of Service	F	D		C	F		D	F	B	F	C	B
Approach Delay (s)		67.2			273.9			171.0			51.8	
Approach LOS		E			F			F			D	

Intersection Summary

HCM 2000 Control Delay	136.4	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	1.41		
Actuated Cycle Length (s)	110.0	Sum of lost time (s)	16.0
Intersection Capacity Utilization	143.5%	ICU Level of Service	H
Analysis Period (min)	15		

c Critical Lane Group

Lanes, Volumes, Timings
202: Trafalgar Rd & East Street C

TT (2041) - Scenario A - 2% Growth Rate
Timing Plan: PM Peak Hour

	EBL	EBR	NBL	NBT	SBT	SBR
Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations		↗		↗↗↗	↗↗↗	↗
Traffic Volume (vph)	0	188	0	3280	2165	237
Future Volume (vph)	0	188	0	3280	2165	237
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (m)	0.0	0.0	0.0			90.0
Storage Lanes	0	1	0			1
Taper Length (m)	7.5		7.5			
Lane Util. Factor	1.00	1.00	1.00	0.91	0.91	1.00
Frt		0.865				0.850
Flt Protected						
Satd. Flow (prot)	0	1611	0	5085	5085	1583
Flt Permitted						
Satd. Flow (perm)	0	1611	0	5085	5085	1583
Link Speed (k/h)	50			50	50	
Link Distance (m)	205.4			92.4	193.0	
Travel Time (s)	14.8			6.7	13.9	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	0	188	0	3280	2165	237
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	188	0	3280	2165	237
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	0.0			3.6	3.6	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	4.8			4.8	4.8	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)	25	15	25			15
Sign Control	Stop			Free	Free	
Intersection Summary						
Area Type:	Other					
Control Type:	Unsignalized					
Intersection Capacity Utilization 66.7%	ICU Level of Service C					
Analysis Period (min) 15						

HCM Unsignalized Intersection Capacity Analysis TT (2041) - Scenario A - 2% Growth Rate
202: Trafalgar Rd & East Street C

Timing Plan: PM Peak Hour

								
Movement	EBL	EBR	NBL	NBT	SBT	SBR		
Lane Configurations				  	  			
Traffic Volume (veh/h)	0	188	0	3280	2165	237		
Future Volume (Veh/h)	0	188	0	3280	2165	237		
Sign Control	Stop			Free	Free			
Grade	0%			0%	0%			
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00		
Hourly flow rate (vph)	0	188	0	3280	2165	237		
Pedestrians								
Lane Width (m)								
Walking Speed (m/s)								
Percent Blockage								
Right turn flare (veh)								
Median type				None	None			
Median storage (veh)								
Upstream signal (m)				263	193			
pX, platoon unblocked	0.79	0.70	0.70					
vC, conflicting volume	3258	722	2402					
vC1, stage 1 conf vol								
vC2, stage 2 conf vol								
vCu, unblocked vol	411	0	1517					
tC, single (s)	6.8	6.9	4.1					
tC, 2 stage (s)								
tF (s)	3.5	3.3	2.2					
p0 queue free %	100	75	100					
cM capacity (veh/h)	451	763	307					
Direction, Lane #	EB 1	NB 1	NB 2	NB 3	SB 1	SB 2	SB 3	SB 4
Volume Total	188	1093	1093	1093	722	722	722	237
Volume Left	0	0	0	0	0	0	0	0
Volume Right	188	0	0	0	0	0	0	237
cSH	763	1700	1700	1700	1700	1700	1700	1700
Volume to Capacity	0.25	0.64	0.64	0.64	0.42	0.42	0.42	0.14
Queue Length 95th (m)	7.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Control Delay (s)	11.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Lane LOS	B							
Approach Delay (s)	11.3	0.0				0.0		
Approach LOS	B							
Intersection Summary								
Average Delay				0.4				
Intersection Capacity Utilization	66.7%			ICU Level of Service			C	
Analysis Period (min)	15							

Lanes, Volumes, Timings
203: East Street D & East Street A

TT (2041) - Scenario A - 2% Growth Rate
Timing Plan: PM Peak Hour

						
Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	152	453	0	247	311	0
Future Volume (vph)	152	453	0	247	311	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	0.850					
Flt Protected			0.950			
Satd. Flow (prot)	1863	1583	0	1863	1770	0
Flt Permitted			0.950			
Satd. Flow (perm)	1863	1583	0	1863	1770	0
Link Speed (k/h)	50		50		50	
Link Distance (m)	205.9		205.1		113.3	
Travel Time (s)	14.8		14.8		8.2	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	152	453	0	247	311	0
Shared Lane Traffic (%)						
Lane Group Flow (vph)	152	453	0	247	311	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
Sign Control	Free		Free		Stop	
Intersection Summary						
Area Type:	Other					
Control Type:	Unsignalized					
Intersection Capacity Utilization	47.7%			ICU Level of Service A		
Analysis Period (min)	15					

HCM Unsignalized Intersection Capacity Analysis TT (2041) - Scenario A - 2% Growth Rate
203: East Street D & East Street A

Timing Plan: PM Peak Hour

	→	↗	↖	←	↙	↘
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑	↗		↖	↙	↘
Traffic Volume (veh/h)	152	453	0	247	311	0
Future Volume (Veh/h)	152	453	0	247	311	0
Sign Control	Free			Free		Stop
Grade	0%			0%		0%
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	152	453	0	247	311	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)	206					
pX, platoon unblocked						
vC, conflicting volume			605		399	152
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			605		399	152
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			100		49	100
cM capacity (veh/h)			973		607	894
Direction, Lane #	EB 1	EB 2	WB 1	NB 1		
Volume Total	152	453	247	311		
Volume Left	0	0	0	311		
Volume Right	0	453	0	0		
cSH	1700	1700	973	607		
Volume to Capacity	0.09	0.27	0.00	0.51		
Queue Length 95th (m)	0.0	0.0	0.0	21.9		
Control Delay (s)	0.0	0.0	0.0	17.0		
Lane LOS				C		
Approach Delay (s)	0.0		0.0	17.0		
Approach LOS				C		
Intersection Summary						
Average Delay			4.5			
Intersection Capacity Utilization			47.7%		ICU Level of Service	A
Analysis Period (min)			15			

Lanes, Volumes, Timings
204: East Street E & East Street A

TT (2041) - Scenario A - 2% Growth Rate
Timing Plan: PM Peak Hour

	→	↘	↙	←	↖	↗
Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↗			↖	↗	↖
Traffic Volume (vph)	0	84	0	0	267	0
Future Volume (vph)	0	84	0	0	267	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.865					
Flt Protected					0.950	
Satd. Flow (prot)	1611	0	0	1863	1770	0
Flt Permitted					0.950	
Satd. Flow (perm)	1611	0	0	1863	1770	0
Link Speed (k/h)	50			50	50	
Link Distance (m)	205.1			192.2	115.1	
Travel Time (s)	14.8			13.8	8.3	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	0	84	0	0	267	0
Shared Lane Traffic (%)						
Lane Group Flow (vph)	84	0	0	0	267	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	0.0			0.0	3.6	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	4.8			4.8	4.8	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)		15	25		25	15
Sign Control	Free			Free	Stop	
Intersection Summary						
Area Type:	Other					
Control Type:	Unsignalized					
Intersection Capacity Utilization 26.7%	ICU Level of Service A					
Analysis Period (min) 15						

HCM Unsignalized Intersection Capacity Analysis TT (2041) - Scenario A - 2% Growth Rate
204: East Street E & East Street A

Timing Plan: PM Peak Hour

	→	↘	↙	←	↖	↗
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↗			↖	↗	↖
Traffic Volume (veh/h)	0	84	0	0	267	0
Future Volume (Veh/h)	0	84	0	0	267	0
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	0	84	0	0	267	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			84		42	42
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			84		42	42
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			100		72	100
cM capacity (veh/h)			1513		969	1029
Direction, Lane #	EB 1	WB 1	NB 1			
Volume Total	84	0	267			
Volume Left	0	0	267			
Volume Right	84	0	0			
cSH	1700	1700	969			
Volume to Capacity	0.05	0.00	0.28			
Queue Length 95th (m)	0.0	0.0	8.4			
Control Delay (s)	0.0	0.0	10.1			
Lane LOS			B			
Approach Delay (s)	0.0	0.0	10.1			
Approach LOS			B			
Intersection Summary						
Average Delay			7.7			
Intersection Capacity Utilization			26.7%		ICU Level of Service	A
Analysis Period (min)			15			

Lanes, Volumes, Timings
205: East Street F & East Street A

TT (2041) - Scenario A - 2% Growth Rate
Timing Plan: PM Peak Hour

						
Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
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	1.00	1.00	1.00
Frt						
Flt Protected						
Satd. Flow (prot)	1863	0	0	1863	1863	0
Flt Permitted						
Satd. Flow (perm)	1863	0	0	1863	1863	0
Link Speed (k/h)	50			50	50	
Link Distance (m)	192.2			209.4	115.6	
Travel Time (s)	13.8			15.1	8.3	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
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)	0.0			0.0	3.6	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	4.8			4.8	4.8	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)		15	25		25	15
Sign Control	Free			Free	Stop	
Intersection Summary						
Area Type:	Other					
Control Type:	Unsignalized					
Intersection Capacity Utilization	0.0%			ICU Level of Service A		
Analysis Period (min)	15					

HCM Unsignalized Intersection Capacity Analysis TT (2041) - Scenario A - 2% Growth Rate
205: East Street F & East Street A

Timing Plan: PM Peak Hour

	→	↖	↗	←	↖	↗
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↖			↖	↖	
Traffic Volume (veh/h)	0	0	0	0	0	0
Future Volume (Veh/h)	0	0	0	0	0	0
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	0	0	0	0	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			0		0	0
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			0		0	0
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			100		100	100
cM capacity (veh/h)			1623		1023	1085
Direction, Lane #	EB 1	WB 1	NB 1			
Volume Total	0	0	0			
Volume Left	0	0	0			
Volume Right	0	0	0			
cSH	1700	1700	1700			
Volume to Capacity	0.00	0.00	0.00			
Queue Length 95th (m)	0.0	0.0	0.0			
Control Delay (s)	0.0	0.0	0.0			
Lane LOS			A			
Approach Delay (s)	0.0	0.0	0.0			
Approach LOS			A			
Intersection Summary						
Average Delay			0.0			
Intersection Capacity Utilization			0.0%		ICU Level of Service	A
Analysis Period (min)			15			

Lanes, Volumes, Timings
206: East Street D & East Street B

TT (2041) - Scenario A - 2% Growth Rate
Timing Plan: PM Peak Hour

	←	↖	↗	→	↘	↙
Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	↖		↗			↙
Traffic Volume (vph)	92	8	153	19	19	351
Future Volume (vph)	92	8	153	19	19	351
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	0.989		0.985			
Flt Protected	0.956					0.997
Satd. Flow (prot)	1761	0	1835	0	0	1857
Flt Permitted	0.956					0.997
Satd. Flow (perm)	1761	0	1835	0	0	1857
Link Speed (k/h)	50		50			50
Link Distance (m)	203.4		120.6			113.3
Travel Time (s)	14.6		8.7			8.2
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	92	8	153	19	19	351
Shared Lane Traffic (%)						
Lane Group Flow (vph)	100	0	172	0	0	370
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 44.3% ICU Level of Service A

Analysis Period (min) 15

HCM Unsignalized Intersection Capacity Analysis
206: East Street D & East Street B

TT (2041) - Scenario A - 2% Growth Rate
Timing Plan: PM Peak Hour

	←	↖	↗	→	↘	↙
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	↖		↗			↙
Traffic Volume (veh/h)	92	8	153	19	19	351
Future Volume (Veh/h)	92	8	153	19	19	351
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	92	8	153	19	19	351
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	552	162			172	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	552	162			172	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	81	99			99	
cM capacity (veh/h)	488	882			1405	

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	100	172	370
Volume Left	92	0	19
Volume Right	8	19	0
cSH	506	1700	1405
Volume to Capacity	0.20	0.10	0.01
Queue Length 95th (m)	5.5	0.0	0.3
Control Delay (s)	13.8	0.0	0.5
Lane LOS	B		A
Approach Delay (s)	13.8	0.0	0.5
Approach LOS	B		

Intersection Summary

Average Delay	2.5		
Intersection Capacity Utilization	44.3%	ICU Level of Service	A
Analysis Period (min)	15		

Lanes, Volumes, Timings
207: East Street E & East Street B

TT (2041) - Scenario A - 2% Growth Rate
Timing Plan: PM Peak Hour

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔			↔			↔			↔	
Traffic Volume (vph)	106	0	114	0	0	0	203	20	0	0	84	0
Future Volume (vph)	106	0	114	0	0	0	203	20	0	0	84	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	0.930											
Flt Protected	0.976											
Satd. Flow (prot)	0	1691	0	0	1863	0	0	1781	0	0	1863	0
Flt Permitted	0.976											
Satd. Flow (perm)	0	1691	0	0	1863	0	0	1781	0	0	1863	0
Link Speed (k/h)	50											
Link Distance (m)	203.4											
Travel Time (s)	14.6											
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	106	0	114	0	0	0	203	20	0	0	84	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	220	0	0	0	0	0	223	0	0	84	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											
Link Offset(m)	0.0											
Crosswalk Width(m)	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											

Intersection Summary

Area Type: Other

Control Type: Unsignalized

Intersection Capacity Utilization 38.5% ICU Level of Service A

Analysis Period (min) 15

HCM Unsignalized Intersection Capacity Analysis TT (2041) - Scenario A - 2% Growth Rate
207: East Street E & East Street B

Timing Plan: PM Peak Hour

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Movement		↔			↔			↔			↔	
Lane Configurations		↔			↔			↔			↔	
Traffic Volume (veh/h)	106	0	114	0	0	0	203	20	0	0	84	0
Future Volume (Veh/h)	106	0	114	0	0	0	203	20	0	0	84	0
Sign Control	Stop											
Grade	0%											
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	106	0	114	0	0	0	203	20	0	0	84	0
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type	None											
Median storage (veh)												
Upstream signal (m)	121											
pX, platoon unblocked												
vC, conflicting volume	510	510	84	624	510	20	84			20		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	510	510	84	624	510	20	84			20		
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 %	75	100	88	100	100	100	87			100		
cM capacity (veh/h)	425	404	975	315	404	1058	1513			1596		

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	220	0	223	84
Volume Left	106	0	203	0
Volume Right	114	0	0	0
cSH	601	1700	1513	1596
Volume to Capacity	0.37	0.00	0.13	0.00
Queue Length 95th (m)	12.6	0.0	3.5	0.0
Control Delay (s)	14.4	0.0	7.1	0.0
Lane LOS	B	A	A	
Approach Delay (s)	14.4	0.0	7.1	0.0
Approach LOS	B	A		

Intersection Summary

Average Delay 9.0
Intersection Capacity Utilization 38.5% ICU Level of Service A
Analysis Period (min) 15

Lanes, Volumes, Timings
208: East Street F & East Street B

TT (2041) - Scenario A - 2% Growth Rate
Timing Plan: PM Peak Hour

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	1.00	1.00	1.00
Fit						
Fit Protected						
Satd. Flow (prot)	1863	0	0	1863	1863	0
Fit Permitted						
Satd. Flow (perm)	1863	0	0	1863	1863	0
Link Speed (k/h)	50			50	50	
Link Distance (m)	193.8			120.1	115.6	
Travel Time (s)	14.0			8.6	8.3	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
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			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	25			15
Sign Control	Stop			Free	Free	
Intersection Summary						
Area Type:	Other					
Control Type:	Unsignalized					
Intersection Capacity Utilization	0.0%			ICU Level of Service A		
Analysis Period (min)	15					

HCM Unsignalized Intersection Capacity Analysis TT (2041) - Scenario A - 2% Growth Rate
208: East Street F & East Street B

Timing Plan: PM Peak Hour

	EBL	EBR	NBL	NBT	SBT	SBR
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	↔	↔	↔	↔	↔	↔
Traffic Volume (veh/h)	0	0	0	0	0	0
Future Volume (Veh/h)	0	0	0	0	0	0
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	0	0	0	0	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	0	0	0			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	0	0	0			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	100	100	100			
cM capacity (veh/h)	1023	1085	1623			
Direction, Lane #	EB 1	NB 1	SB 1			
Volume Total	0	0	0			
Volume Left	0	0	0			
Volume Right	0	0	0			
cSH	1700	1700	1700			
Volume to Capacity	0.00	0.00	0.00			
Queue Length 95th (m)	0.0	0.0	0.0			
Control Delay (s)	0.0	0.0	0.0			
Lane LOS	A					
Approach Delay (s)	0.0	0.0	0.0			
Approach LOS	A					
Intersection Summary						
Average Delay		0.0				
Intersection Capacity Utilization		0.0%		ICU Level of Service A		
Analysis Period (min)		15				

Lanes, Volumes, Timings
209: William Halton Parkway & East Street D

TT (2041) - Scenario A - 2% Growth Rate
Timing Plan: PM Peak Hour

						
Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑↑	↑↑	↑		↑
Traffic Volume (vph)	0	1256	2256	71	0	390
Future Volume (vph)	0	1256	2256	71	0	390
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (m)	0.0			50.0	0.0	0.0
Storage Lanes	0			1	0	1
Taper Length (m)	7.5				7.5	
Lane Util. Factor	1.00	0.95	0.95	1.00	1.00	1.00
Frt				0.850		0.865
Flt Protected						
Satd. Flow (prot)	0	3539	3539	1583	0	1611
Flt Permitted						
Satd. Flow (perm)	0	3539	3539	1583	0	1611
Link Speed (k/h)		50	50		50	
Link Distance (m)		205.0	201.5		120.6	
Travel Time (s)		14.8	14.5		8.7	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	0	1256	2256	71	0	390
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	1256	2256	71	0	390
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(m)		3.6	3.6		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	25	15
Sign Control		Free	Free		Stop	
Intersection Summary						
Area Type:	Other					
Control Type:	Unsignalized					
Intersection Capacity Utilization	93.2%			ICU Level of Service F		
Analysis Period (min)	15					

HCM Unsignalized Intersection Capacity Analysis
209: William Halton Parkway & East Street D

TT (2041) - Scenario A - 2% Growth Rate
Timing Plan: PM Peak Hour

						
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑↑	↑↑	↑		↑
Traffic Volume (veh/h)	0	1256	2256	71	0	390
Future Volume (Veh/h)	0	1256	2256	71	0	390
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	0	1256	2256	71	0	390
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		None	None			
Median storage (veh)						
Upstream signal (m)		205	201			
pX, platoon unblocked	0.38				0.45	0.38
vC, conflicting volume	2327				2884	1128
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1234				1426	0
tC, single (s)	4.1				6.8	6.9
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	100				100	6
cM capacity (veh/h)	214				56	413
Direction, Lane #	EB 1	EB 2	WB 1	WB 2	WB 3	SB 1
Volume Total	628	628	1128	1128	71	390
Volume Left	0	0	0	0	0	0
Volume Right	0	0	0	0	71	390
cSH	1700	1700	1700	1700	1700	413
Volume to Capacity	0.37	0.37	0.66	0.66	0.04	0.94
Queue Length 95th (m)	0.0	0.0	0.0	0.0	0.0	80.5
Control Delay (s)	0.0	0.0	0.0	0.0	0.0	63.2
Lane LOS						F
Approach Delay (s)	0.0		0.0			63.2
Approach LOS						F
Intersection Summary						
Average Delay			6.2			
Intersection Capacity Utilization			93.2%		ICU Level of Service	F
Analysis Period (min)			15			

Lanes, Volumes, Timings

210: William Halton Parkway & East Street E

TT (2041) - Scenario A - 2% Growth Rate

Timing Plan: PM Peak Hour

	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations	↰	↱	↱	↰	↰	↰
Traffic Volume (vph)	197	1042	2266	35	137	61
Future Volume (vph)	197	1042	2266	35	137	61
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (m)	90.0			50.0	0.0	0.0
Storage Lanes	1			1	1	0
Taper Length (m)	100.0			7.5		
Lane Util. Factor	1.00	*0.95	*0.95	1.00	1.00	1.00
Frt				0.850	0.958	
Flt Protected	0.950				0.967	
Satd. Flow (prot)	1770	3539	3539	1583	1726	0
Flt Permitted	0.053				0.967	
Satd. Flow (perm)	99	3539	3539	1583	1726	0
Right Turn on Red				Yes	Yes	
Satd. Flow (RTOR)				18	16	
Link Speed (k/h)		50	50		50	
Link Distance (m)		201.5	195.6		120.6	
Travel Time (s)		14.5	14.1		8.7	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	197	1042	2266	35	137	61
Shared Lane Traffic (%)						
Lane Group Flow (vph)	197	1042	2266	35	198	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
Number of Detectors	1	2	2	1	1	
Detector Template	Left	Thru	Thru	Right	Left	
Leading Detector (m)	2.0	10.0	10.0	2.0	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)	2.0	0.6	0.6	2.0	2.0	
Detector 1 Type	CI+Ex	CI+Ex	CI+Ex	CI+Ex	CI+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		CI+Ex	CI+Ex			
Detector 2 Channel						
Detector 2 Extend (s)		0.0	0.0			
Turn Type	pm+pt	NA	NA	Perm	Perm	
Protected Phases	7	4	8			
Permitted Phases	4			8	6	

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Lanes, Volumes, Timings

210: William Halton Parkway & East Street E

TT (2041) - Scenario A - 2% Growth Rate

Timing Plan: PM Peak Hour

	EBL	EBT	WBT	WBR	SBL	SBR
Detector Phase	7	4	8	8	6	
Switch Phase						
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	
Minimum Split (s)	9.5	24.0	24.0	24.0	24.0	
Total Split (s)	17.6	95.6	78.0	78.0	24.4	
Total Split (%)	14.7%	79.7%	65.0%	65.0%	20.3%	
Maximum Green (s)	14.6	89.6	72.0	72.0	18.4	
Yellow Time (s)	3.0	4.0	4.0	4.0	4.0	
All-Red Time (s)	0.0	2.0	2.0	2.0	2.0	
Lost Time Adjust (s)	1.0	-2.0	-2.0	-2.0	-2.0	
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	
Lead/Lag	Lead		Lag	Lag		
Lead-Lag Optimize?	Yes		Yes	Yes		
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	
Flash Dont Walk (s)		11.0	11.0	11.0	11.0	
Pedestrian Calls (#/hr)		0	0	0	0	
Act Effct Green (s)	91.7	91.7	74.1	74.1	18.0	
Actuated g/C Ratio	0.78	0.78	0.63	0.63	0.15	
v/c Ratio	0.73	0.38	1.02	0.03	0.71	
Control Delay	44.0	4.7	46.3	5.5	58.4	
Queue Delay	0.0	0.0	0.0	0.0	0.0	
Total Delay	44.0	4.7	46.3	5.5	58.4	
LOS	D	A	D	A	E	
Approach Delay		11.0	45.7		58.4	
Approach LOS		B	D		E	

Intersection Summary

Area Type: Other

Cycle Length: 120

Actuated Cycle Length: 117.7

Natural Cycle: 110

Control Type: Semi Act-Uncoord

Maximum v/c Ratio: 1.02

Intersection Signal Delay: 34.9

Intersection LOS: C

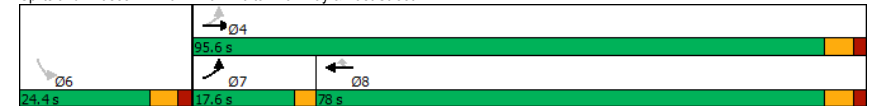
Intersection Capacity Utilization 94.9%

ICU Level of Service F

Analysis Period (min) 15

* User Entered Value

Splits and Phases: 210: William Halton Parkway & East Street E

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Queues
210: William Halton Parkway & East Street E

TT (2041) - Scenario A - 2% Growth Rate
Timing Plan: PM Peak Hour

	EBL	EBT	WBT	WBR	SBL
Lane Group	EBL	EBT	WBT	WBR	SBL
Lane Group Flow (vph)	197	1042	2266	35	198
v/c Ratio	0.73	0.38	1.02	0.03	0.71
Control Delay	44.0	4.7	46.3	5.5	58.4
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	44.0	4.7	46.3	5.5	58.4
Queue Length 50th (m)	28.0	35.3	~296.0	1.4	39.9
Queue Length 95th (m)	#60.8	44.6	#339.6	5.3	64.8
Internal Link Dist (m)		177.5	171.6		96.6
Turn Bay Length (m)	90.0			50.0	
Base Capacity (vph)	270	2757	2227	1003	312
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	0.73	0.38	1.02	0.03	0.63

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.

HCM Signalized Intersection Capacity Analysis
210: William Halton Parkway & East Street E

TT (2041) - Scenario A - 2% Growth Rate
Timing Plan: PM Peak Hour

	EBL	EBT	WBT	WBR	SBL	SBR
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations	↰	↱	↰	↱	↰	↱
Traffic Volume (vph)	197	1042	2266	35	137	61
Future Volume (vph)	197	1042	2266	35	137	61
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	
Lane Util. Factor	1.00	*0.95	*0.95	1.00	1.00	
Flt	1.00	1.00	1.00	0.85	0.96	
Flt Protected	0.95	1.00	1.00	1.00	0.97	
Satd. Flow (prot)	1770	3539	3539	1583	1726	
Flt Permitted	0.05	1.00	1.00	1.00	0.97	
Satd. Flow (perm)	99	3539	3539	1583	1726	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	197	1042	2266	35	137	61
RTOR Reduction (vph)	0	0	0	7	14	0
Lane Group Flow (vph)	197	1042	2266	28	184	0
Turn Type	pm+pt	NA	NA	Perm	Perm	
Protected Phases	7	4	8			
Permitted Phases	4			8	6	
Actuated Green, G (s)	89.7	89.7	72.1	72.1	16.0	
Effective Green, g (s)	88.7	91.7	74.1	74.1	18.0	
Actuated g/C Ratio	0.75	0.78	0.63	0.63	0.15	
Clearance Time (s)	3.0	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)	267	2757	2228	996	263	
v/s Ratio Prot	c0.09	0.29	c0.64			
v/s Ratio Perm	0.47			0.02	c0.11	
v/c Ratio	0.74	0.38	1.02	0.03	0.70	
Uniform Delay, d1	38.4	4.1	21.8	8.2	47.3	
Progression Factor	1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	16.6	0.4	23.4	0.1	8.2	
Delay (s)	55.0	4.5	45.2	8.3	55.5	
Level of Service	E	A	D	A	E	
Approach Delay (s)		12.5	44.7		55.5	
Approach LOS		B	D		E	

Intersection Summary

HCM 2000 Control Delay	34.6	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.95		
Actuated Cycle Length (s)	117.7	Sum of lost time (s)	14.0
Intersection Capacity Utilization	94.9%	ICU Level of Service	F
Analysis Period (min)	15		

c Critical Lane Group

Lanes, Volumes, Timings

211: William Halton Parkway & East Street F

TT (2041) - Scenario A - 2% Growth Rate

Timing Plan: PM Peak Hour

	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations	↰	↱	↱		↰	
Traffic Volume (vph)	0	1179	2301	0	0	0
Future Volume (vph)	0	1179	2301	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (m)	90.0			0.0	0.0	0.0
Storage Lanes	1			0	1	0
Taper Length (m)	100.0				7.5	
Lane Util. Factor	1.00	0.95	0.95	0.95	1.00	1.00
Fr						
Flt Protected						
Satd. Flow (prot)	1863	3539	3539	0	1863	0
Flt Permitted						
Satd. Flow (perm)	1863	3539	3539	0	1863	0
Link Speed (k/h)		50	50		50	
Link Distance (m)		195.6	407.9		120.1	
Travel Time (s)		14.1	29.4		8.6	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	0	1179	2301	0	0	0
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	1179	2301	0	0	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 66.9%	ICU Level of Service C					
Analysis Period (min) 15						

HCM Unsignalized Intersection Capacity Analysis

211: William Halton Parkway & East Street F

TT (2041) - Scenario A - 2% Growth Rate

Timing Plan: PM Peak Hour

						
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	0	1179	2301	0	0	0
Future Volume (Veh/h)	0	1179	2301	0	0	0
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	0	1179	2301	0	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)	196					
pX, platoon unblocked					0.91	
vC, conflicting volume	2301				2890	1150
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	2301				2879	1150
tC, single (s)	4.1				6.8	6.9
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	100				100	100
cM capacity (veh/h)	215				12	191
Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	SB 1
Volume Total	0	590	590	1534	767	0
Volume Left	0	0	0	0	0	0
Volume Right	0	0	0	0	0	0
cSH	1700	1700	1700	1700	1700	1700
Volume to Capacity	0.00	0.35	0.35	0.90	0.45	0.00
Queue Length 95th (m)	0.0	0.0	0.0	0.0	0.0	0.0
Control Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0
Lane LOS						A
Approach Delay (s)	0.0				0.0	
Approach LOS						A
Intersection Summary						
Average Delay	0.0					
Intersection Capacity Utilization	66.9%			ICU Level of Service		C
Analysis Period (min)	15					

Lanes, Volumes, Timings

212: West Street A & Transit Station

TT (2041) - Scenario A - 2% Growth Rate

Timing Plan: PM Peak Hour

	←	↖	↗	→	↘	↙
Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	↖		↗			↘
Traffic Volume (vph)	127	0	0	355	0	0
Future Volume (vph)	127	0	0	355	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt			0.865			
Flt Protected	0.950					
Satd. Flow (prot)	1770	0	1611	0	0	1863
Flt Permitted	0.950					
Satd. Flow (perm)	1770	0	1611	0	0	1863
Link Speed (k/h)	50		50			50
Link Distance (m)	216.0		234.7			101.9
Travel Time (s)	15.6		16.9			7.3
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	127	0	0	355	0	0
Shared Lane Traffic (%)						
Lane Group Flow (vph)	127	0	355	0	0	0
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 35.7%

ICU Level of Service A

Analysis Period (min) 15

HCM Unsignalized Intersection Capacity Analysis

212: West Street A & Transit Station

TT (2041) - Scenario A - 2% Growth Rate

Timing Plan: PM Peak Hour

	←	↖	↗	→	↘	↙
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	↖		↗			↘
Traffic Volume (veh/h)	127	0	0	355	0	0
Future Volume (Veh/h)	127	0	0	355	0	0
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	127	0	0	355	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	178	178			355	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	178	178			355	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	84	100			100	
cM capacity (veh/h)	812	866			1204	

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	127	355	0
Volume Left	127	0	0
Volume Right	0	355	0
cSH	812	1700	1700
Volume to Capacity	0.16	0.21	0.00
Queue Length 95th (m)	4.1	0.0	0.0
Control Delay (s)	10.3	0.0	0.0
Lane LOS	B		
Approach Delay (s)	10.3	0.0	0.0
Approach LOS	B		

Intersection Summary

Average Delay 2.7

Intersection Capacity Utilization 35.7%

ICU Level of Service

A

Analysis Period (min) 15

Lanes, Volumes, Timings TT (2041) - Scenario A - 2% Growth Rate
213: East Street A/West Street A & William Halton Parkway Timing Plan: PM Peak Hour

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑	↑		↑↑	↑			↑			↑
Traffic Volume (vph)	0	1093	13	0	2502	129	0	0	440	0	0	27
Future Volume (vph)	0	1093	13	0	2502	129	0	0	440	0	0	27
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	0.0		90.0	0.0		90.0	0.0		0.0	0.0		0.0
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	0.95	1.00	1.00	0.95	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt			0.850			0.850			0.865			0.865
Flt Protected												
Satd. Flow (prot)	0	3539	1583	0	3539	1583	0	0	1611	0	0	1611
Flt Permitted												
Satd. Flow (perm)	0	3539	1583	0	3539	1583	0	0	1611	0	0	1611
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		200.8			212.9			103.7			234.7	
Travel Time (s)		14.5			15.3			7.5			16.9	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	0	1093	13	0	2502	129	0	0	440	0	0	27
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	1093	13	0	2502	129	0	0	440	0	0	27
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 79.2%	ICU Level of Service D											
Analysis Period (min) 15												

HCM Unsignalized Intersection Capacity Analysis TT (2041) - Scenario A - 2% Growth Rate
213: East Street A/West Street A & William Halton Parkway Timing Plan: PM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑	↑		↑↑	↑			↑			↑
Traffic Volume (veh/h)	0	1093	13	0	2502	129	0	0	440	0	0	27
Future Volume (Veh/h)	0	1093	13	0	2502	129	0	0	440	0	0	27
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	0	1093	13	0	2502	129	0	0	440	0	0	27
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type	None			None								
Median storage veh												
Upstream signal (m)	201			213								
pX, platoon unblocked	0.73			0.82			0.82	0.82	0.82	0.82	0.82	0.73
vC, conflicting volume	2631			1106			2371	3724	546	3488	3608	1251
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	2498			699			1268	2912	19	2626	2771	619
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	49	100	100	91
cM capacity (veh/h)	132			735			94	13	868	5	16	317
Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	WB 3	NB 1	SB 1				
Volume Total	546	546	13	1251	1251	129	440	27				
Volume Left	0	0	0	0	0	0	0	0				
Volume Right	0	0	13	0	0	129	440	27				
cSH	1700	1700	1700	1700	1700	1700	868	317				
Volume to Capacity	0.32	0.32	0.01	0.74	0.74	0.08	0.51	0.09				
Queue Length 95th (m)	0.0	0.0	0.0	0.0	0.0	0.0	21.9	2.1				
Control Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	13.3	17.4				
Lane LOS							B	C				
Approach Delay (s)	0.0			0.0			13.3	17.4				
Approach LOS							B	C				
Intersection Summary												
Average Delay				1.5								
Intersection Capacity Utilization				79.2%			ICU Level of Service			D		
Analysis Period (min)				15								

Lanes, Volumes, Timings

214: West Street D & William Halton Parkway

TT (2041) - Scenario A - 2% Growth Rate

Timing Plan: PM Peak Hour

	←	→	↖	↗	←	↖	↗	↖	↗	↖	↗	↖	↗
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations	↖	↖	↖	↖	↖	↖	↖	↖	↖	↖	↖	↖	
Traffic Volume (vph)	0	954	13	263	2154	112	49	0	15	146	0	11	
Future Volume (vph)	0	954	13	263	2154	112	49	0	15	146	0	11	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	
Storage Length (m)	90.0		90.0	90.0		90.0	50.0		0.0	50.0		0.0	
Storage Lanes	1		1	1		1	1		0	1		0	
Taper Length (m)	100.0			100.0			75.0			75.0			
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Frt			0.850			0.850		0.850			0.850		
Flt Protected				0.950			0.950			0.950			
Satd. Flow (prot)	1863	3539	1583	1770	3539	1583	1770	1583	0	1770	1583	0	
Flt Permitted				0.193			0.750			0.748			
Satd. Flow (perm)	1863	3539	1583	360	3539	1583	1397	1583	0	1393	1583	0	
Right Turn on Red			Yes			Yes			Yes			Yes	
Satd. Flow (RTOR)			73			112			500			73	
Link Speed (k/h)		50			50			50			50		
Link Distance (m)		573.3			200.8			99.4			133.2		
Travel Time (s)		41.3			14.5			7.2			9.6		
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Adj. Flow (vph)	0	954	13	263	2154	112	49	0	15	146	0	11	
Shared Lane Traffic (%)													
Lane Group Flow (vph)	0	954	13	263	2154	112	49	15	0	146	11	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	1	2	1	1	2		1	2		
Detector Template	Left	Thru	Right	Left	Thru	Right	Left	Thru		Left	Thru		
Leading Detector (m)	2.0	10.0	2.0	2.0	10.0	2.0	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		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	2.0	0.6	2.0	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		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	pm+pt	NA	Perm	Perm	NA		Perm	NA		
Protected Phases		4			3		8			2		6	
Permitted Phases	4		4		8		8		2		6		

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Lanes, Volumes, Timings

214: West Street D & William Halton Parkway

TT (2041) - Scenario A - 2% Growth Rate

Timing Plan: PM Peak Hour

	←	→	↖	↗	←	↖	↗	↖	↗	↖	↗	↖	↗
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Detector Phase	4	4	4	3	8	8	2	2		6	6		
Switch Phase													
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0		5.0	5.0		
Minimum Split (s)	24.0	24.0	24.0	9.5	24.0	24.0	24.0	24.0		29.0	29.0		
Total Split (s)	34.8	34.8	34.8	26.2	61.0	61.0	29.0	29.0		29.0	29.0		
Total Split (%)	38.7%	38.7%	38.7%	29.1%	67.8%	67.8%	32.2%	32.2%		32.2%	32.2%		
Maximum Green (s)	28.8	28.8	28.8	23.2	55.0	55.0	23.0	23.0		23.0	23.0		
Yellow Time (s)	4.0	4.0	4.0	3.0	4.0	4.0	4.0	4.0		4.0	4.0		
All-Red Time (s)	2.0	2.0	2.0	0.0	2.0	2.0	2.0	2.0		2.0	2.0		
Lost Time Adjust (s)	-2.0	-2.0	-2.0	1.0	-2.0	-2.0	-2.0	-2.0		1.0	-2.0		
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0		7.0	4.0		
Lead/Lag	Lag	Lag	Lag	Lag	Lag	Lag	Lag	Lag		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	None	Min	Min		Min	Min		
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 Effect Green (s)		40.1	40.1	54.5	54.5	54.5	15.6	15.6		12.5	15.6		
Actuated g/C Ratio		0.51	0.51	0.70	0.70	0.70	0.20	0.20		0.16	0.20		
v/c Ratio		0.53	0.02	0.60	0.87	0.10	0.18	0.02		0.65	0.03		
Control Delay		15.7	0.0	11.6	15.5	1.3	28.0	0.1		45.9	0.2		
Queue Delay		0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0		
Total Delay		15.7	0.0	11.6	15.5	1.3	28.0	0.1		45.9	0.2		
LOS		B	A	B	B	A	C	A		D	A		
Approach Delay		15.5			14.5		21.5			42.7			
Approach LOS		B			B		C			D			

Intersection Summary

Area Type: Other

Cycle Length: 90

Actuated Cycle Length: 78.2

Natural Cycle: 90

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 0.87

Intersection Signal Delay: 16.1

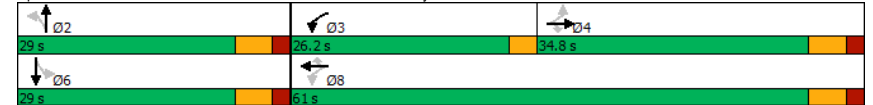
Intersection LOS: B

Intersection Capacity Utilization 88.5%

ICU Level of Service E

Analysis Period (min) 15

Splits and Phases: 214: West Street D & William Halton Parkway

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Queues
214: West Street D & William Halton Parkway

TT (2041) - Scenario A - 2% Growth Rate
Timing Plan: PM Peak Hour

	→	↘	↙	←	↖	↗	↘	↙	↓
Lane Group	EBT	EBR	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	954	13	263	2154	112	49	15	146	11
v/c Ratio	0.53	0.02	0.60	0.87	0.10	0.18	0.02	0.65	0.03
Control Delay	15.7	0.0	11.6	15.5	1.3	28.0	0.1	45.9	0.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	15.7	0.0	11.6	15.5	1.3	28.0	0.1	45.9	0.2
Queue Length 50th (m)	44.5	0.0	11.4	106.4	0.0	6.2	0.0	21.1	0.0
Queue Length 95th (m)	86.2	0.0	28.6	#223.5	4.8	14.8	0.0	38.8	0.0
Internal Link Dist (m)	549.3		176.8			75.4		109.2	
Turn Bay Length (m)		90.0	90.0		90.0	50.0		50.0	
Base Capacity (vph)	1812	846	656	2616	1199	453	851	397	562
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.53	0.02	0.40	0.82	0.09	0.11	0.02	0.37	0.02

Intersection Summary

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

HCM Signalized Intersection Capacity Analysis
214: West Street D & William Halton Parkway

TT (2041) - Scenario A - 2% Growth Rate
Timing Plan: PM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	954	13	263	2154	112	49	0	15	146	0	11
Future Volume (vph)	0	954	13	263	2154	112	49	0	15	146	0	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	4.0	4.0	4.0	4.0		7.0	4.0	
Lane Util. Factor		0.95	1.00	1.00	0.95	1.00	1.00	1.00		1.00	1.00	
Frt		1.00	0.85	1.00	1.00	0.85	1.00	0.85		1.00	0.85	
Flt Protected		1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)		3539	1583	1770	3539	1583	1770	1583		1770	1583	
Flt Permitted		1.00	1.00	0.19	1.00	1.00	0.75	1.00		0.75	1.00	
Satd. Flow (perm)		3539	1583	359	3539	1583	1398	1583		1393	1583	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	0	954	13	263	2154	112	49	0	15	146	0	11
RTOR Reduction (vph)	0	0	6	0	0	34	0	12	0	0	9	0
Lane Group Flow (vph)	0	954	7	263	2154	78	49	3	0	146	2	0
Turn Type	Perm	NA	Perm	pm+pt	NA	Perm	Perm	NA		Perm	NA	
Protected Phases		4		3	8		2				6	
Permitted Phases	4		4	8		8	2			6		
Actuated Green, G (s)		38.1	38.1	52.5	52.5	52.5	13.5	13.5		13.5	13.5	
Effective Green, g (s)		40.1	40.1	51.5	54.5	54.5	15.5	15.5		12.5	15.5	
Actuated g/C Ratio		0.51	0.51	0.66	0.70	0.70	0.20	0.20		0.16	0.20	
Clearance Time (s)		6.0	6.0	3.0	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	3.0	
Lane Grp Cap (vph)		1819	813	425	2472	1106	277	314		223	314	
v/s Ratio Prot		0.27		0.08	c0.61			0.00			0.00	
v/s Ratio Perm			0.00	0.33		0.05	0.04			c0.10		
v/c Ratio		0.52	0.01	0.62	0.87	0.07	0.18	0.01		0.65	0.01	
Uniform Delay, d1		12.6	9.2	7.9	9.1	3.7	26.0	25.1		30.7	25.1	
Progression Factor		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	2.7	3.7	0.0	0.3	0.0		6.7	0.0	
Delay (s)		12.9	9.3	10.6	12.7	3.8	26.3	25.1		37.5	25.1	
Level of Service		B	A	B	B	A	C	C		D	C	
Approach Delay (s)		12.8			12.1			26.0			36.6	
Approach LOS		B			B			C			D	

Intersection Summary

HCM 2000 Control Delay	13.6	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.84		
Actuated Cycle Length (s)	78.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	88.5%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

Lanes, Volumes, Timings

TT (2041) - Scenario A - 2% Growth Rate

215: East Street A & West Street B

Timing Plan: PM Peak Hour

	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	208	108	0	100	73	18
Future Volume (vph)	208	108	0	100	73	18
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	0.954				0.973	
Flt Protected	0.968					
Satd. Flow (prot)	1720	0	0	1863	1812	0
Flt Permitted	0.968					
Satd. Flow (perm)	1720	0	0	1863	1812	0
Link Speed (k/h)	50			50	50	
Link Distance (m)	202.4			83.5	103.7	
Travel Time (s)	14.6			6.0	7.5	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	208	108	0	100	73	18
Shared Lane Traffic (%)						
Lane Group Flow (vph)	316	0	0	100	91	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
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	25			15
Sign Control	Stop			Free	Free	

Intersection Summary

Area Type: Other

Control Type: Unsignalized

Intersection Capacity Utilization 30.1% ICU Level of Service A

Analysis Period (min) 15

HCM Unsignalized Intersection Capacity Analysis

TT (2041) - Scenario A - 2% Growth Rate

215: East Street A & West Street B

Timing Plan: PM Peak Hour

	EBL	EBR	NBL	NBT	SBT	SBR
Movement						
Lane Configurations						
Traffic Volume (veh/h)	208	108	0	100	73	18
Future Volume (Veh/h)	208	108	0	100	73	18
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	208	108	0	100	73	18
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	182	82	91			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	182	82	91			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	74	89	100			
cM capacity (veh/h)	807	978	1504			
Direction, Lane #	EB 1	NB 1	SB 1			
Volume Total	316	100	91			
Volume Left	208	0	0			
Volume Right	108	0	18			
cSH	859	1504	1700			
Volume to Capacity	0.37	0.00	0.05			
Queue Length 95th (m)	12.8	0.0	0.0			
Control Delay (s)	11.6	0.0	0.0			
Lane LOS	B					
Approach Delay (s)	11.6	0.0	0.0			
Approach LOS	B					
Intersection Summary						
Average Delay		7.2				
Intersection Capacity Utilization		30.1%		ICU Level of Service	A	
Analysis Period (min)		15				

Lanes, Volumes, Timings

TT (2041) - Scenario A - 2% Growth Rate

216: West Street D & West Street B

Timing Plan: PM Peak Hour

	←	←	↑	↗	↘	↓
Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	↖		↗			↗
Traffic Volume (vph)	0	28	36	0	179	97
Future Volume (vph)	0	28	36	0	179	97
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.865					
Flt Protected						0.969
Satd. Flow (prot)	1611	0	1863	0	0	1805
Flt Permitted						0.969
Satd. Flow (perm)	1611	0	1863	0	0	1805
Link Speed (k/h)	50		50			50
Link Distance (m)	202.4		82.8			99.4
Travel Time (s)	14.6		6.0			7.2
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	0	28	36	0	179	97
Shared Lane Traffic (%)						
Lane Group Flow (vph)	28	0	36	0	0	276
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
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		15	25	
Sign Control	Stop		Free			Free

Intersection Summary

Area Type: Other

Control Type: Unsignalized

Intersection Capacity Utilization 31.7%

ICU Level of Service A

Analysis Period (min) 15

HCM Unsignalized Intersection Capacity Analysis

TT (2041) - Scenario A - 2% Growth Rate

216: West Street D & West Street B

Timing Plan: PM Peak Hour

	←	←	↑	↗	↘	↓
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	↖		↗			↗
Traffic Volume (veh/h)	0	28	36	0	179	97
Future Volume (Veh/h)	0	28	36	0	179	97
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	0	28	36	0	179	97
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None		None	
Median storage (veh)						
Upstream signal (m)						99
pX, platoon unblocked	0.95					
vC, conflicting volume	491	36			36	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	439	36			36	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	100	97			89	
cM capacity (veh/h)	485	1037			1575	

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	28	36	276
Volume Left	0	0	179
Volume Right	28	0	0
cSH	1037	1700	1575
Volume to Capacity	0.03	0.02	0.11
Queue Length 95th (m)	0.6	0.0	2.9
Control Delay (s)	8.6	0.0	5.2
Lane LOS	A		A
Approach Delay (s)	8.6	0.0	5.2
Approach LOS	A		

Intersection Summary

Average Delay 5.0
 Intersection Capacity Utilization 31.7% ICU Level of Service A
 Analysis Period (min) 15

Lanes, Volumes, Timings
217: East Street C & East Street A

TT (2041) - Scenario A - 2% Growth Rate
Timing Plan: PM Peak Hour

	EBL	EBT	WBT	WBR	SBL	SBR
Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↔	↔		↔	
Traffic Volume (vph)	0	50	79	205	143	4
Future Volume (vph)	0	50	79	205	143	4
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			0.903		0.996	
Flt Protected					0.954	
Satd. Flow (prot)	0	1863	1682	0	1770	0
Flt Permitted					0.954	
Satd. Flow (perm)	0	1863	1682	0	1770	0
Link Speed (k/h)		50	50		50	
Link Distance (m)		206.1	205.4		83.5	
Travel Time (s)		14.8	14.8		6.0	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	0	50	79	205	143	4
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	50	284	0	147	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 31.6%	ICU Level of Service A					
Analysis Period (min) 15						

HCM Unsignalized Intersection Capacity Analysis TT (2041) - Scenario A - 2% Growth Rate
217: East Street C & East Street A

Timing Plan: PM Peak Hour

	EBL	EBT	WBT	WBR	SBL	SBR
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↔	↔		↔	
Traffic Volume (veh/h)	0	50	79	205	143	4
Future Volume (Veh/h)	0	50	79	205	143	4
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	0	50	79	205	143	4
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	284				232	182
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	284				232	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 %	100				81	100
cM capacity (veh/h)	1278				757	861
Direction, Lane #	EB 1	WB 1	SB 1			
Volume Total	50	284	147			
Volume Left	0	0	143			
Volume Right	0	205	4			
cSH	1278	1700	759			
Volume to Capacity	0.00	0.17	0.19			
Queue Length 95th (m)	0.0	0.0	5.4			
Control Delay (s)	0.0	0.0	10.9			
Lane LOS			B			
Approach Delay (s)	0.0	0.0	10.9			
Approach LOS			B			
Intersection Summary						
Average Delay			3.3			
Intersection Capacity Utilization		31.6%		ICU Level of Service	A	
Analysis Period (min)		15				

Lanes, Volumes, Timings

218: West Street D & East Street C

TT (2041) - Scenario A - 2% Growth Rate

Timing Plan: PM Peak Hour

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔			↔			↔			↔	
Traffic Volume (vph)	0	0	0	17	0	62	0	17	5	78	19	0
Future Volume (vph)	0	0	0	17	0	62	0	17	5	78	19	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					0.894			0.969				
Flt Protected					0.989						0.961	
Satd. Flow (prot)	0	1863	0	0	1647	0	0	1805	0	0	1790	0
Flt Permitted					0.989						0.961	
Satd. Flow (perm)	0	1863	0	0	1647	0	0	1805	0	0	1790	0
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		164.8			206.1			68.2			82.8	
Travel Time (s)		11.9			14.8			4.9			6.0	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	0	0	0	17	0	62	0	17	5	78	19	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	0	0	0	79	0	0	22	0	0	97	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 23.4%

ICU Level of Service A

Analysis Period (min) 15

HCM Unsignalized Intersection Capacity Analysis

218: West Street D & East Street C

TT (2041) - Scenario A - 2% Growth Rate

Timing Plan: PM Peak Hour

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Movement		↔			↔			↔			↔	
Lane Configurations		↔			↔			↔			↔	
Traffic Volume (veh/h)	0	0	0	17	0	62	0	17	5	78	19	0
Future Volume (Veh/h)	0	0	0	17	0	62	0	17	5	78	19	0
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	0	0	0	17	0	62	0	17	5	78	19	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	62			0			74	96	0	78	65	31
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	62			0			74	96	0	78	65	31
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			99			100	98	100	91	98	100
cM capacity (veh/h)	1541			1623			892	786	1085	884	817	1043
Direction, Lane #	EB 1	WB 1	NB 1	SB 1								
Volume Total	0	79	22	97								
Volume Left	0	17	0	78								
Volume Right	0	62	5	0								
cSH	1700	1623	838	870								
Volume to Capacity	0.00	0.01	0.03	0.11								
Queue Length 95th (m)	0.0	0.2	0.6	2.8								
Control Delay (s)	0.0	1.6	9.4	9.7								
Lane LOS	A	A	A	A								
Approach Delay (s)	0.0	1.6	9.4	9.7								
Approach LOS		A	A									
Intersection Summary												
Average Delay		6.4										
Intersection Capacity Utilization		23.4%										
Analysis Period (min)		15										

Appendix G2

2041 Scenario B Total Operation Synchro Reports



Lanes, Volumes, Timings

101: Trafalgar Rd & Lower Base Line

Total (2041) - Scenario B - 2% Growth Rate

Timing Plan: AM Peak Hour

	↖	→	↘	↙	←	↖	↗	↘	↙	↖	↗	↘	↙
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations	↖	↖↗		↖	↖↗		↖	↖↗	↖	↖↗	↖↗	↖	
Traffic Volume (vph)	151	588	224	367	119	219	49	2026	310	502	2534	24	
Future Volume (vph)	151	588	224	367	119	219	49	2026	310	502	2534	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	0.498			0.134			0.076			0.074			
Satd. Flow (perm)	928	3394	0	250	3196	0	142	5085	1583	138	5085	1583	
Right Turn on Red			Yes			Yes			Yes			Yes	
Satd. Flow (RTOR)		35			238				222			126	
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)	164	639	243	399	129	238	53	2202	337	546	2754	26	
Shared Lane Traffic (%)													
Lane Group Flow (vph)	164	882	0	399	367	0	53	2202	337	546	2754	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

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Lanes, Volumes, Timings

101: Trafalgar Rd & Lower Base Line

Total (2041) - Scenario B - 2% Growth Rate

Timing Plan: AM Peak Hour

	↖	→	↘	↙	←	↖	↗	↘	↙	↖	↗	↘	↙
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)	15.3	32.0		22.0	38.7		9.5	56.0	56.0	30.0	76.5	76.5	
Total Split (%)	10.9%	22.9%		15.7%	27.6%		6.8%	40.0%	40.0%	21.4%	54.6%	54.6%	
Maximum Green (s)	10.8	25.8		18.0	32.5		5.0	49.4	49.4	26.0	69.9	69.9	
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)	42.5	28.0		50.0	34.9		61.7	52.0	52.0	82.0	74.4	74.4	
Actuated g/C Ratio	0.30	0.20		0.36	0.25		0.44	0.37	0.37	0.59	0.53	0.53	
v/c Ratio	0.46	1.25		1.40	0.38		0.35	1.17	0.46	1.43	1.02	0.03	
Control Delay	35.9	167.4		233.5	16.0		22.2	120.7	13.0	239.7	55.1	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	35.9	167.4		233.5	16.0		22.2	120.7	13.0	239.7	55.1	0.0	
LOS	D	F		F	B		C	F	B	F	E	A	
Approach Delay		146.8			129.3			104.7			85.0		
Approach LOS		F			F			F			F		

Intersection Summary

Area Type: Other

Cycle Length: 140

Actuated Cycle Length: 140

Natural Cycle: 150

Control Type: Semi Act-Uncooord

Maximum v/c Ratio: 1.43

Intersection Signal Delay: 104.3

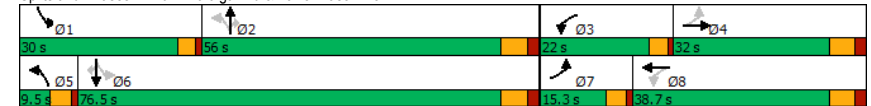
Intersection LOS: F

Intersection Capacity Utilization 124.0%

ICU Level of Service H

Analysis Period (min) 15

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

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Queues
101: Trafalgar Rd & Lower Base Line

Total (2041) - Scenario B - 2% Growth Rate
Timing Plan: AM Peak Hour

	EBL	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	164	882	399	367	53	2202	337	546	2754	26
v/c Ratio	0.46	1.25	1.40	0.38	0.35	1.17	0.46	1.43	1.02	0.03
Control Delay	35.9	167.4	233.5	16.0	22.2	120.7	13.0	239.7	55.1	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	35.9	167.4	233.5	16.0	22.2	120.7	13.0	239.7	55.1	0.0
Queue Length 50th (m)	31.0	~154.1	~129.8	14.6	5.7	~261.1	21.5	~185.9	~298.4	0.0
Queue Length 95th (m)	48.6	#195.0	#193.0	28.3	11.8	#288.5	48.0	#255.5	#323.1	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)	361	706	284	976	150	1888	727	383	2702	900
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	0.45	1.25	1.40	0.38	0.35	1.17	0.46	1.43	1.02	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.

HCM Signalized Intersection Capacity Analysis
101: Trafalgar Rd & Lower Base Line

Total (2041) - Scenario B - 2% Growth Rate
Timing Plan: AM Peak Hour

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰	↱	↱	↰	↱	↱	↰	↱	↱	↰	↱	↱
Traffic Volume (vph)	151	588	224	367	119	219	49	2026	310	502	2534	24
Future Volume (vph)	151	588	224	367	119	219	49	2026	310	502	2534	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	3393		1770	3195		1770	5085	1583	1770	5085	1583
Flt Permitted	0.50	1.00		0.13	1.00		0.08	1.00	1.00	0.07	1.00	1.00
Satd. Flow (perm)	928	3393		250	3195		141	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)	164	639	243	399	129	238	53	2202	337	546	2754	26
RTOR Reduction (vph)	0	28	0	0	179	0	0	0	139	0	0	12
Lane Group Flow (vph)	164	854	0	399	188	0	53	2202	198	546	2754	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	
Actuated Green, G (s)	36.4	25.8		47.8	32.7		54.3	50.3	50.3	80.3	71.8	71.8
Effective Green, g (s)	40.8	28.0		47.8	34.9		59.5	52.9	52.9	80.3	74.4	74.4
Actuated g/C Ratio	0.29	0.20		0.34	0.25		0.42	0.38	0.38	0.57	0.53	0.53
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)	345	674		278	791		135	1909	594	379	2685	835
v/s Ratio Prot	0.04	0.25		c0.18	0.06		0.02	0.43		c0.27	0.54	
v/s Ratio Perm	0.09			c0.30			0.15			0.13	c0.55	0.01
v/c Ratio	0.48	1.27		1.44	0.24		0.39	1.15	0.33	1.44	1.03	0.02
Uniform Delay, d1	39.2	56.5		41.6	42.4		33.0	44.0	31.4	46.9	33.2	15.8
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	1.0	131.7		215.3	0.3		1.9	75.5	1.5	212.8	24.3	0.0
Delay (s)	40.2	188.2		256.9	42.7		34.9	119.5	32.9	259.6	57.5	15.9
Level of Service	D	F		F	D		C	F	C	F	E	B
Approach Delay (s)		165.0			154.3			106.6			90.4	
Approach LOS		F			F			F			F	

Intersection Summary

HCM 2000 Control Delay	112.2	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	1.44		
Actuated Cycle Length (s)	140.9	Sum of lost time (s)	16.0
Intersection Capacity Utilization	124.0%	ICU Level of Service	H
Analysis Period (min)	15		

c Critical Lane Group

Lanes, Volumes, Timings

Total (2041) - Scenario B - 2% Growth Rate

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

Timing Plan: AM Peak Hour

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔		↔	↔	↔	↔	↔	↔	↔	↔	↔
Traffic Volume (vph)	2	0	9	509	1	26	6	2354	0	0	3122	5
Future Volume (vph)	2	0	9	509	1	26	6	2354	0	0	3122	5
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	0.721		0.063					
Satd. Flow (perm)	0	1639	0	1327	1220	1504	117	5085	0	0	5085	1583
Right Turn on Red		Yes			Yes			Yes			Yes	
Satd. Flow (RTOR)	127				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	553	1	28	7	2559	0	0	3393	5
Shared Lane Traffic (%)				50%		10%						
Lane Group Flow (vph)	0	12	0	276	281	25	7	2559	0	0	3393	5
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	CI+Ex	CI+Ex		CI+Ex	CI+Ex	CI+Ex	CI+Ex	CI+Ex			CI+Ex	CI+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		CI+Ex			CI+Ex			CI+Ex				CI+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	Perm
Protected Phases	4	4			8		5	2			6	
Permitted Phases				8		8	2					6

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Synchro 10 Report
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Lanes, Volumes, Timings

Total (2041) - Scenario B - 2% Growth Rate

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

Timing Plan: AM Peak Hour

	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	
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			30.1	30.1	30.1	64.3	64.3			62.6	62.6
Actuated g/C Ratio	0.08			0.28	0.28	0.28	0.60	0.60			0.59	0.59
v/c Ratio	0.05			0.74	0.82	0.05	0.05	0.84			1.14	0.01
Control Delay	0.4			48.2	56.1	0.2	13.2	22.5			90.5	0.0
Queue Delay	0.0			0.0	0.0	0.0	0.0	0.0			0.0	0.0
Total Delay	0.4			48.2	56.1	0.2	13.2	22.5			90.5	0.0
LOS	A			D	E	A	B	C			F	A
Approach Delay	0.4				50.0			22.5			90.4	
Approach LOS	A				D			C			F	

Intersection Summary

Area Type: Other

Cycle Length: 120

Actuated Cycle Length: 106.7

Natural Cycle: 150

Control Type: Actuated-Uncoordinated

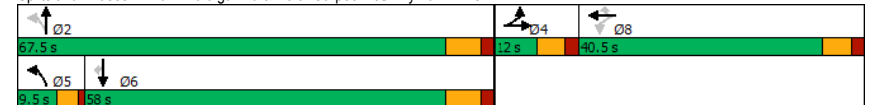
Maximum v/c Ratio: 1.14

Intersection Signal Delay: 60.0

Intersection Capacity Utilization 88.0%

Analysis Period (min) 15

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



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Queues
102: Trafalgar Rd & North Carpool Lot/Hwy 407 WB Off
Total (2041) - Scenario B - 2% Growth Rate
Timing Plan: AM Peak Hour

	→	↖	←	↗	↖	↑	↓	↗
Lane Group	EBT	WBL	WBT	WBR	NBL	NBT	SBT	SBR
Lane Group Flow (vph)	12	276	281	25	7	2559	3393	5
v/c Ratio	0.05	0.74	0.82	0.05	0.05	0.84	1.14	0.01
Control Delay	0.4	48.2	56.1	0.2	13.2	22.5	90.5	0.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	0.4	48.2	56.1	0.2	13.2	22.5	90.5	0.0
Queue Length 50th (m)	0.0	50.1	54.7	0.0	0.5	132.3	~276.4	0.0
Queue Length 95th (m)	0.0	91.4	#108.1	0.0	3.0	#228.6	#421.9	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)	241	459	422	603	156	3062	2981	977
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	0.60	0.67	0.04	0.04	0.84	1.14	0.01

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.

HCM Signalized Intersection Capacity Analysis
102: Trafalgar Rd & North Carpool Lot/Hwy 407 WB Off
Total (2041) - Scenario B - 2% Growth Rate
Timing Plan: AM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	2	0	9	509	1	26	6	2354	0	0	3122	5
Future Volume (vph)	2	0	9	509	1	26	6	2354	0	0	3122	5
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	1613	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)		1640		1327	1220	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)	2	0	10	553	1	28	7	2559	0	0	3393	5
RTOR Reduction (vph)	0	12	0	0	0	18	0	0	0	0	0	2
Lane Group Flow (vph)	0	0	0	276	281	7	7	2559	0	0	3393	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)		2.1		28.0	28.0	28.0	64.5	64.5			59.5	59.5
Effective Green, g (s)		4.1		30.0	30.0	30.0	64.5	67.5			62.5	62.5
Actuated g/C Ratio		0.04		0.26	0.26	0.26	0.57	0.59			0.55	0.55
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)		59		350	322	397	80	3021			2797	870
v/s Ratio Prot		c0.00					0.00	c0.50			c0.67	
v/s Ratio Perm				0.21	c0.23	0.00	0.05					0.00
v/c Ratio		0.01		0.79	0.87	0.02	0.09	0.85			1.21	0.00
Uniform Delay, d1		52.8		38.9	40.0	30.9	26.3	18.8			25.5	11.5
Progression Factor		1.00		1.00	1.00	1.00	1.00	1.00			1.00	1.00
Incremental Delay, d2		0.1		11.5	22.4	0.0	0.3	3.2			99.4	0.0
Delay (s)		52.8		50.4	62.3	30.9	26.6	22.0			125.0	11.5
Level of Service		D		D	E	C	C	C			F	B
Approach Delay (s)		52.8			55.3			22.0			124.8	
Approach LOS		D			E			C			F	

Intersection Summary

HCM 2000 Control Delay	78.3	HCM 2000 Level of Service	E
HCM 2000 Volume to Capacity ratio	1.09		
Actuated Cycle Length (s)	113.6	Sum of lost time (s)	18.0
Intersection Capacity Utilization	88.0%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

Lanes, Volumes, Timings
103: Trafalgar Rd & Hwy 407 EB Off

Total (2041) - Scenario B - 2% Growth Rate
Timing Plan: AM Peak Hour

	EBL	EBR	NBL	NBT	SBT	SBR
Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	↔	↔		↑↑↑	↑↑↑	
Traffic Volume (vph)	140	452	0	2365	3379	0
Future Volume (vph)	140	452	0	2365	3379	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	0.919	0.850				
Frt Protected	0.977					
Satd. Flow (prot)	1672	1504	0	5085	5085	0
Frt Permitted	0.977					
Satd. Flow (perm)	1672	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)	152	491	0	2571	3673	0
Shared Lane Traffic (%)		36%				
Lane Group Flow (vph)	329	314	0	2571	3673	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	CI+Ex	CI+Ex		CI+Ex	CI+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				CI+Ex	CI+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	

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Lanes, Volumes, Timings
103: Trafalgar Rd & Hwy 407 EB Off

Total (2041) - Scenario B - 2% Growth Rate
Timing Plan: AM Peak Hour

	EBL	EBR	NBL	NBT	SBT	SBR
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)	27.5	27.5		63.3	63.3	
Actuated g/C Ratio	0.28	0.28		0.64	0.64	
v/c Ratio	0.71	0.75		0.79	1.13	
Control Delay	40.6	44.1		16.6	82.5	
Queue Delay	0.0	0.0		0.0	0.0	
Total Delay	40.6	44.1		16.6	82.5	
LOS	D	D		B	F	
Approach Delay	42.3			16.6	82.5	
Approach LOS	D			B	F	

Intersection Summary

Area Type: Other

Cycle Length: 110

Actuated Cycle Length: 98.9

Natural Cycle: 90

Control Type: Semi Act-Uncoord

Maximum v/c Ratio: 1.13

Intersection Signal Delay: 54.2

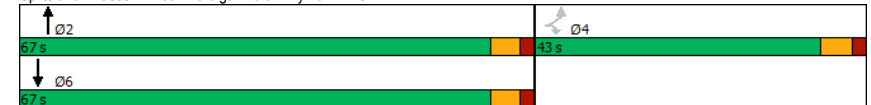
Intersection LOS: D

Intersection Capacity Utilization 90.6%

ICU Level of Service E

Analysis Period (min) 15

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



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Queues
103: Trafalgar Rd & Hwy 407 EB Off

Total (2041) - Scenario B - 2% Growth Rate
Timing Plan: AM Peak Hour

	EBL	EBR	NBT	SBT
Lane Group	EBL	EBR	NBT	SBT
Lane Group Flow (vph)	329	314	2571	3673
v/c Ratio	0.71	0.75	0.79	1.13
Control Delay	40.6	44.1	16.6	82.5
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	40.6	44.1	16.6	82.5
Queue Length 50th (m)	55.4	56.5	116.8	~294.8
Queue Length 95th (m)	83.4	86.7	186.4	#382.4
Internal Link Dist (m)	530.6		96.3	339.6
Turn Bay Length (m)				
Base Capacity (vph)	662	596	3256	3256
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	0.50	0.53	0.79	1.13

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.

HCM Signalized Intersection Capacity Analysis
103: Trafalgar Rd & Hwy 407 EB Off

Total (2041) - Scenario B - 2% Growth Rate
Timing Plan: AM Peak Hour

	EBL	EBR	NBL	NBT	SBT	SBR
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	↔	↔	↔	↔	↔	↔
Traffic Volume (vph)	140	452	0	2365	3379	0
Future Volume (vph)	140	452	0	2365	3379	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	0.92	0.85		1.00	1.00	
Flt Protected	0.98	1.00		1.00	1.00	
Satd. Flow (prot)	1674	1504		5085	5085	
Flt Permitted	0.98	1.00		1.00	1.00	
Satd. Flow (perm)	1674	1504		5085	5085	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	152	491	0	2571	3673	0
RTOR Reduction (vph)	0	0	0	0	0	0
Lane Group Flow (vph)	329	314	0	2571	3673	0
Turn Type	Perm	Perm		NA	NA	
Protected Phases				2	6	
Permitted Phases	4	4				
Actuated Green, G (s)	25.5	25.5		61.3	61.3	
Effective Green, g (s)	27.5	27.5		63.3	63.3	
Actuated g/C Ratio	0.28	0.28		0.64	0.64	
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)	465	418		3257	3257	
v/s Ratio Prot				0.51	c0.72	
v/s Ratio Perm	0.20	c0.21				
v/c Ratio	0.71	0.75		0.79	1.13	
Uniform Delay, d1	32.0	32.5		12.9	17.8	
Progression Factor	1.00	1.00		1.00	1.00	
Incremental Delay, d2	4.9	7.4		2.0	62.0	
Delay (s)	36.9	40.0		14.9	79.7	
Level of Service	D	D		B	E	
Approach Delay (s)	38.4			14.9	79.7	
Approach LOS	D			B	E	

Intersection Summary

HCM 2000 Control Delay	51.7	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	1.04		
Actuated Cycle Length (s)	98.8	Sum of lost time (s)	10.0
Intersection Capacity Utilization	90.6%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

Lanes, Volumes, Timings
104: Trafalgar Rd & West Street A/East Street A

Total (2041) - Scenario B - 2% Growth Rate

Timing Plan: AM Peak Hour

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰	↱	↲	↰	↱	↲	↰	↱	↲	↰	↱	↲
Traffic Volume (vph)	115	22	70	0	0	344	16	2764	364	625	2985	221
Future Volume (vph)	115	22	70	0	0	344	16	2764	364	625	2985	221
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		
Satd. Flow (prot)	1770	1863	1583	1863	1863	1583	1770	5085	1583	1770	5085	1583
Flt Permitted	0.757						0.055			0.052		
Satd. Flow (perm)	1410	1863	1583	1863	1863	1583	102	5085	1583	97	5085	1583
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			86			23			146			97
Link Speed (k/h)		50				50			80			80
Link Distance (m)		143.5				212.6			233.3			131.6
Travel Time (s)		10.3				15.3			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)	125	24	76	0	0	374	17	3004	396	679	3245	240
Shared Lane Traffic (%)												
Lane Group Flow (vph)	125	24	76	0	0	374	17	3004	396	679	3245	240
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		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

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Lanes, Volumes, Timings
104: Trafalgar Rd & West Street A/East Street A

Total (2041) - Scenario B - 2% Growth Rate

Timing Plan: AM Peak Hour

	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)	24.0	24.0	24.0	24.0	24.0	40.0	9.5	76.0	76.0	40.0	106.5	106.5
Total Split (%)	17.1%	17.1%	17.1%	17.1%	17.1%	28.6%	6.8%	54.3%	54.3%	28.6%	76.1%	76.1%
Maximum Green (s)	18.0	18.0	18.0	18.0	18.0	36.0	5.5	70.0	70.0	36.0	100.5	100.5
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 Effect Green (s)	17.6	17.6	17.6			59.6	77.5	72.0	72.0	112.0	108.3	108.3
Actuated g/C Ratio	0.13	0.13	0.13			0.43	0.56	0.52	0.52	0.81	0.79	0.79
v/c Ratio	0.69	0.10	0.27			0.54	0.14	1.13	0.44	1.32	0.81	0.19
Control Delay	77.9	53.5	10.8			30.1	11.5	95.2	14.2	190.5	12.1	3.0
Queue Delay	0.0	0.0	0.0			0.0	0.0	0.2	0.0	0.0	1.8	0.0
Total Delay	77.9	53.5	10.8			30.1	11.5	95.3	14.2	190.5	13.9	3.0
LOS	E	D	B			C	B	F	B	F	B	A
Approach Delay		52.7			30.1			85.5			42.1	
Approach LOS		D			C			F			D	

Intersection Summary

Area Type: Other

Cycle Length: 140

Actuated Cycle Length: 137.6

Natural Cycle: 150

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 1.32

Intersection Signal Delay: 60.0

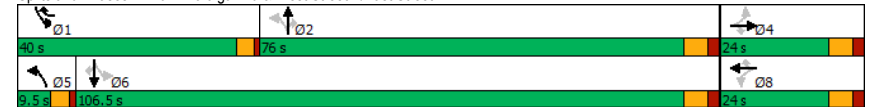
Intersection LOS: E

Intersection Capacity Utilization 104.4%

ICU Level of Service G

Analysis Period (min) 15

Splits and Phases: 104: Trafalgar Rd & West Street A/East Street A



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Queues
104: Trafalgar Rd & West Street A/East Street A

Total (2041) - Scenario B - 2% Growth Rate
Timing Plan: AM Peak Hour

	EBL	EBT	EBR	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group	EBL	EBT	EBR	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	125	24	76	374	17	3004	396	679	3245	240
v/c Ratio	0.69	0.10	0.27	0.54	0.14	1.13	0.44	1.32	0.81	0.19
Control Delay	77.9	53.5	10.8	30.1	11.5	95.2	14.2	190.5	12.1	3.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.2	0.0	0.0	1.8	0.0
Total Delay	77.9	53.5	10.8	30.1	11.5	95.3	14.2	190.5	13.9	3.0
Queue Length 50th (m)	32.6	5.8	0.0	68.6	1.0	~350.4	40.4	~225.9	147.9	7.1
Queue Length 95th (m)	54.0	14.5	11.8	98.6	2.8	#375.3	65.7	#300.1	235.9	18.2
Internal Link Dist (m)		119.5				209.3			107.6	
Turn Bay Length (m)	50.0		50.0	50.0	50.0		50.0	30.0		30.0
Base Capacity (vph)	205	270	303	698	124	2661	898	516	4001	1266
Starvation Cap Reductn	0	0	0	0	0	206	0	0	560	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	0.61	0.09	0.25	0.54	0.14	1.22	0.44	1.32	0.94	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.

HCM Signalized Intersection Capacity Analysis
104: Trafalgar Rd & West Street A/East Street A

Total (2041) - Scenario B - 2% Growth Rate
Timing Plan: AM Peak Hour

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰	↑	↱	↰	↑	↱	↰	↑	↱	↰	↑	↱
Traffic Volume (vph)	115	22	70	0	0	344	16	2764	364	625	2985	221
Future Volume (vph)	115	22	70	0	0	344	16	2764	364	625	2985	221
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
Flt	1.00	1.00	0.85			0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00			1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1770	1863	1583			1583	1770	5085	1583	1770	5085	1583
Flt Permitted	0.76	1.00	1.00			1.00	0.06	1.00	1.00	0.05	1.00	1.00
Satd. Flow (perm)	1410	1863	1583			1583	103	5085	1583	97	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	24	76	0	0	374	17	3004	396	679	3245	240
RTOR Reduction (vph)	0	0	66	0	0	14	0	0	68	0	0	22
Lane Group Flow (vph)	125	24	10	0	0	360	17	3004	328	679	3245	218
Turn Type	Perm	NA	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)	15.6	15.6	15.6			51.6	74.7	72.5	72.5	112.5	106.3	106.3
Effective Green, g (s)	17.6	17.6	17.6			55.6	74.7	74.5	74.5	112.5	108.3	108.3
Actuated g/C Ratio	0.13	0.13	0.13			0.40	0.53	0.53	0.53	0.80	0.77	0.77
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)	177	234	198			628	81	2704	841	507	3930	1223
v/s Ratio Prot		0.01				0.16	0.00	0.59		c0.34	0.64	
v/s Ratio Perm	c0.09		0.01			0.07	0.11		0.21	c0.73		0.14
v/c Ratio	0.71	0.10	0.05			0.57	0.21	1.11	0.39	1.34	0.83	0.18
Uniform Delay, d1	58.8	54.3	53.9			33.0	32.1	32.8	19.4	47.0	10.0	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	12.1	0.2	0.1			1.3	1.3	55.9	1.4	165.6	2.1	0.3
Delay (s)	70.9	54.4	54.0			34.3	33.4	88.7	20.7	212.6	12.1	4.5
Level of Service	E	D	D			C	C	F	C	F	B	A
Approach Delay (s)		63.4			34.3			80.5			44.4	
Approach LOS		E			C			F			D	

Intersection Summary

HCM 2000 Control Delay	59.5	HCM 2000 Level of Service	E
HCM 2000 Volume to Capacity ratio	1.26		
Actuated Cycle Length (s)	140.1	Sum of lost time (s)	12.0
Intersection Capacity Utilization	104.4%	ICU Level of Service	G
Analysis Period (min)	15		

c Critical Lane Group

Lanes, Volumes, Timings

105: Trafalgar Rd & William Halton Parkway

Total (2041) - Scenario B - 2% Growth Rate

Timing Plan: AM Peak Hour

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰	↰	↰	↰	↰	↰	↰	↰	↰	↰	↰	↰
Traffic Volume (vph)	571	976	210	244	527	243	501	2574	189	619	2215	221
Future Volume (vph)	571	976	210	244	527	243	501	2574	189	619	2215	221
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	100.0		100.0			150.0	150.0		75.0	0.0		0.0
Storage Lanes	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	0.158			0.129			0.077			0.071		
Satd. Flow (perm)	294	3539	1583	240	3539	1583	143	5085	1583	132	5085	1583
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			207			222			120			125
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		209.3			204.1			208.3			233.3	
Travel Time (s)		15.1			14.7			15.0			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)	621	1061	228	265	573	264	545	2798	205	673	2408	240
Shared Lane Traffic (%)												
Lane Group Flow (vph)	621	1061	228	265	573	264	545	2798	205	673	2408	240
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

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Lanes, Volumes, Timings

105: Trafalgar Rd & William Halton Parkway

Total (2041) - Scenario B - 2% Growth Rate

Timing Plan: AM Peak Hour

	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)	23.0	47.0	47.0	14.0	38.0	38.0	21.0	59.0	59.0	25.0	63.0	63.0
Total Split (%)	15.9%	32.4%	32.4%	9.7%	26.2%	26.2%	14.5%	40.7%	40.7%	17.2%	43.4%	43.4%
Maximum Green (s)	19.0	40.0	40.0	10.0	31.0	31.0	17.0	52.1	52.1	21.0	56.1	56.1
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)	57.0	43.0	43.0	44.0	34.0	34.0	72.0	55.0	55.0	80.0	59.0	59.0
Actuated g/C Ratio	0.39	0.30	0.30	0.30	0.23	0.23	0.50	0.38	0.38	0.55	0.41	0.41
v/c Ratio	2.02	1.01	0.37	1.49	0.69	0.49	2.09	1.45	0.30	2.17	1.16	0.33
Control Delay	491.9	80.7	8.4	275.4	55.8	12.7	527.4	240.2	14.0	561.7	118.4	14.9
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	491.9	80.7	8.4	275.4	55.8	12.7	527.4	240.2	14.0	561.7	118.5	14.9
LOS	F	F	A	F	E	B	F	F	B	F	F	B
Approach Delay		205.8			98.3			271.3			200.8	
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: 2.17

Intersection Signal Delay: 215.6

Intersection LOS: F

Intersection Capacity Utilization 145.7%

ICU Level of Service H

Analysis Period (min) 15

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

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Queues
105: Trafalgar Rd & William Halton Parkway

Total (2041) - Scenario B - 2% Growth Rate
Timing Plan: AM Peak Hour

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	621	1061	228	265	573	264	545	2798	205	673	2408	240
v/c Ratio	2.02	1.01	0.37	1.49	0.69	0.49	2.09	1.45	0.30	2.17	1.16	0.33
Control Delay	491.9	80.7	8.4	275.4	55.8	12.7	527.4	240.2	14.0	561.7	118.4	14.9
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	491.9	80.7	8.4	275.4	55.8	12.7	527.4	240.2	14.0	561.7	118.5	14.9
Queue Length 50th (m)	~253.5	~162.1	4.3	~87.1	78.7	9.4	~229.3	~394.7	15.7	~291.2	~295.6	20.8
Queue Length 95th (m)	#326.2	#207.3	24.3	#142.5	99.0	34.6	#299.1	#418.6	34.6	#365.1	#321.7	41.2
Internal Link Dist (m)		185.3			180.1			184.3			209.3	
Turn Bay Length (m)	100.0		100.0	100.0		150.0	150.0		75.0			
Base Capacity (vph)	308	1049	615	178	829	541	261	1928	674	310	2069	718
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	30	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	2.02	1.01	0.37	1.49	0.69	0.49	2.09	1.45	0.30	2.17	1.18	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.

HCM Signalized Intersection Capacity Analysis
105: Trafalgar Rd & William Halton Parkway

Total (2041) - Scenario B - 2% Growth Rate
Timing Plan: AM Peak Hour

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔
Traffic Volume (vph)	571	976	210	244	527	243	501	2574	189	619	2215	221
Future Volume (vph)	571	976	210	244	527	243	501	2574	189	619	2215	221
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
Flt	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	0.16	1.00	1.00	0.13	1.00	1.00	0.08	1.00	1.00	0.07	1.00	1.00
Satd. Flow (perm)	294	3539	1583	240	3539	1583	143	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)	621	1061	228	265	573	264	545	2798	205	673	2408	240
RTOR Reduction (vph)	0	0	146	0	0	170	0	0	74	0	0	74
Lane Group Flow (vph)	621	1061	82	265	573	94	545	2798	131	673	2408	166
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)	54.0	40.0	40.0	41.0	31.0	31.0	69.1	52.1	52.1	77.1	56.1	56.1
Effective Green, g (s)	54.0	43.0	43.0	41.0	34.0	34.0	69.1	55.0	55.0	77.1	59.0	59.0
Actuated g/C Ratio	0.37	0.30	0.30	0.28	0.23	0.23	0.48	0.38	0.38	0.53	0.41	0.41
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)	302	1049	469	173	829	371	258	1928	600	307	2069	644
v/s Ratio Prot	c0.27	0.30		0.11	0.16		0.25	0.55		c0.32	0.47	
v/s Ratio Perm	c0.49		0.05	0.33		0.06	0.76		0.08	c0.85		0.10
v/c Ratio	2.06	1.01	0.18	1.53	0.69	0.25	2.11	1.45	0.22	2.19	1.16	0.26
Uniform Delay, d1	37.9	51.0	37.8	46.5	50.7	45.2	46.8	45.0	30.4	48.5	43.0	28.5
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	486.7	30.6	0.4	266.2	3.2	0.8	513.5	206.0	0.8	547.1	79.5	1.0
Delay (s)	524.5	81.6	38.2	312.8	53.9	45.9	560.3	251.0	31.3	595.6	122.5	29.5
Level of Service	F	F	D	F	D	D	F	F	C	F	F	C
Approach Delay (s)		220.5			114.2			285.8			211.6	
Approach LOS		F			F			F			F	

Intersection Summary

HCM 2000 Control Delay	229.1	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	2.12		
Actuated Cycle Length (s)	145.0	Sum of lost time (s)	16.0
Intersection Capacity Utilization	145.7%	ICU Level of Service	H
Analysis Period (min)	15		
c Critical Lane Group			

Lanes, Volumes, Timings

Total (2041) - Scenario B - 2% Growth Rate

106: Trafalgar Rd & Burnhamthorpe Rd/Burnhamthorpe Rd

Timing Plan: AM Peak Hour

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰	↱	↲	↰	↱	↲	↰	↱	↲	↰	↱	↲
Traffic Volume (vph)	471	491	80	83	157	284	56	2509	174	348	1685	187
Future Volume (vph)	471	491	80	83	157	284	56	2509	174	348	1685	187
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	1.00	1.00	1.00	1.00	1.00	1.00	0.91	1.00	1.00	0.91	1.00
Frt		0.979			0.903				0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1770	1824	0	1770	1682	0	1770	5085	1583	1770	5085	1583
Flt Permitted	0.140			0.154			0.068			0.066		
Satd. Flow (perm)	261	1824	0	287	1682	0	127	5085	1583	123	5085	1583
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		6			57				160			141
Link Speed (k/h)		60			60			80			80	
Link Distance (m)		828.7			989.6			1077.8			247.3	
Travel Time (s)		49.7			59.4			48.5			11.1	
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)	512	534	87	90	171	309	61	2727	189	378	1832	203
Shared Lane Traffic (%)												
Lane Group Flow (vph)	512	621	0	90	480	0	61	2727	189	378	1832	203
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)	26.0	46.5		9.5	30.0		9.6	63.0	63.0	21.0	74.4	74.4
Total Split (%)	18.6%	33.2%		6.8%	21.4%		6.9%	45.0%	45.0%	15.0%	53.1%	53.1%
Maximum Green (s)	21.5	40.5		5.0	24.0		5.1	57.0	57.0	17.0	68.4	68.4
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 Effect Green (s)	53.5	42.5		34.5	26.0		67.6	59.0	59.0	80.0	70.4	70.4
Actuated g/C Ratio	0.38	0.30		0.25	0.19		0.48	0.42	0.42	0.57	0.50	0.50
v/c Ratio	1.45	1.11		0.62	1.34		0.42	1.27	0.25	1.40	0.72	0.23
Control Delay	250.0	117.9		50.5	209.0		25.4	161.8	6.4	234.0	29.0	6.9
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	250.0	117.9		50.5	209.0		25.4	161.8	6.4	234.0	29.0	6.9

Lanes, Volumes, Timings

Total (2041) - Scenario B - 2% Growth Rate

106: Trafalgar Rd & Burnhamthorpe Rd/Burnhamthorpe Rd

Timing Plan: AM Peak Hour

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
LOS	F	F		D	F		C	F	A	F	C	A
Approach Delay		177.6			184.0			149.1			59.3	
Approach LOS		F			F			F			E	
Intersection Summary												
Area Type:	Other											
Cycle Length: 140												
Actuated Cycle Length: 140												
Offset: 0 (0%), Referenced to phase 2:NBT and 6:SBTL, Start of Green												
Natural Cycle: 110												
Control Type: Pretimed												
Maximum v/c Ratio: 1.45												
Intersection Signal Delay: 125.9						Intersection LOS: F						
Intersection Capacity Utilization 132.9%						ICU Level of Service H						
Analysis Period (min) 15												

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



Queues
106: Trafalgar Rd & Burhamthorpe Rd/Burnhamthorpe Rd

Total (2041) - Scenario B - 2% Growth Rate
Timing Plan: AM Peak Hour

	EBL	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	512	621	90	480	61	2727	189	378	1832	203
v/c Ratio	1.45	1.11	0.62	1.34	0.42	1.27	0.25	1.40	0.72	0.23
Control Delay	250.0	117.9	50.5	209.0	25.4	161.8	6.4	234.0	29.0	6.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	250.0	117.9	50.5	209.0	25.4	161.8	6.4	234.0	29.0	6.9
Queue Length 50th (m)	~175.2	~193.2	15.9	~157.9	6.9	~343.7	4.6	~122.4	139.0	8.6
Queue Length 95th (m)	#243.6	#265.1	#28.7	#225.2	14.7	#368.6	19.2	#184.5	156.1	22.1
Internal Link Dist (m)		804.7		965.6		1053.8			223.3	
Turn Bay Length (m)	30.0		15.0		60.0		60.0	60.0		60.0
Base Capacity (vph)	353	557	144	358	144	2142	759	270	2557	866
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	1.45	1.11	0.63	1.34	0.42	1.27	0.25	1.40	0.72	0.23

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.

HCM Signalized Intersection Capacity Analysis
106: Trafalgar Rd & Burhamthorpe Rd/Burnhamthorpe Rd

Total (2041) - Scenario B - 2% Growth Rate
Timing Plan: AM Peak Hour

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰	↱		↰	↱		↰	↱	↱	↰	↱	↱
Traffic Volume (vph)	471	491	80	83	157	284	56	2509	174	348	1685	187
Future Volume (vph)	471	491	80	83	157	284	56	2509	174	348	1685	187
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	1.00		1.00	1.00		1.00	0.91	1.00	1.00	0.91	1.00
Frt	1.00	0.98		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	1824		1770	1683		1770	5085	1583	1770	5085	1583
Flt Permitted	0.14	1.00		0.15	1.00		0.07	1.00	1.00	0.07	1.00	1.00
Satd. Flow (perm)	261	1824		287	1683		126	5085	1583	122	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)	512	534	87	90	171	309	61	2727	189	378	1832	203
RTOR Reduction (vph)	0	4	0	0	46	0	0	0	93	0	0	70
Lane Group Flow (vph)	512	617	0	90	434	0	61	2727	96	378	1832	133
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)	50.0	40.5		29.0	24.0		62.1	57.0	57.0	78.0	68.4	68.4
Effective Green, g (s)	52.0	42.5		33.0	26.0		66.1	59.0	59.0	78.0	70.4	70.4
Actuated g/C Ratio	0.37	0.30		0.24	0.19		0.47	0.42	0.42	0.56	0.50	0.50
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)	350	553		141	312		142	2142	667	268	2557	796
v/s Ratio Prot	c0.25	0.34		0.03	0.26		0.02	0.54		c0.17	0.36	
v/s Ratio Perm	c0.30			0.12			0.18		0.06	c0.61		0.08
v/c Ratio	1.46	1.12		0.64	1.39		0.43	1.27	0.14	1.41	0.72	0.17
Uniform Delay, d1	42.8	48.8		44.9	57.0		23.5	40.5	25.0	47.1	27.0	18.9
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	223.4	74.0		20.1	194.0		9.2	126.7	0.5	205.5	1.8	0.5
Delay (s)	266.2	122.8		65.0	251.0		32.7	167.2	25.4	252.5	28.8	19.3
Level of Service	F	F		E	F		C	F	C	F	C	B
Approach Delay (s)		187.6			221.6			155.4			63.1	
Approach LOS		F			F			F			E	

Intersection Summary

HCM 2000 Control Delay	134.5	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	1.47		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	14.5
Intersection Capacity Utilization	132.9%	ICU Level of Service	H
Analysis Period (min)	15		
c Critical Lane Group			

Lanes, Volumes, Timings
202: Trafalgar Rd & West Street C

Total (2041) - Scenario B - 2% Growth Rate
Timing Plan: AM Peak Hour

	EBL	EBR	NBL	NBT	SBT	SBR
Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations		↗		↗↗↗	↗↗↗	↗
Traffic Volume (vph)	0	111	0	3265	2108	398
Future Volume (vph)	0	111	0	3265	2108	398
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (m)	0.0	0.0	0.0			90.0
Storage Lanes	0	1	0			1
Taper Length (m)	7.5		7.5			
Lane Util. Factor	1.00	1.00	1.00	0.91	0.91	1.00
Frt		0.865				0.850
Flt Protected						
Satd. Flow (prot)	0	1611	0	5085	5085	1583
Flt Permitted						
Satd. Flow (perm)	0	1611	0	5085	5085	1583
Link Speed (k/h)	50			50	50	
Link Distance (m)	202.4			247.3	208.3	
Travel Time (s)	14.6			17.8	15.0	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	121	0	3549	2291	433
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	121	0	3549	2291	433
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	0.0			3.6	3.6	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	4.8			4.8	4.8	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)	25	15	25			15
Sign Control	Stop			Free	Free	
Intersection Summary						
Area Type:	Other					
Control Type:	Unsignalized					
Intersection Capacity Utilization 66.4%	ICU Level of Service C					
Analysis Period (min) 15						

HCM Unsignalized Intersection Capacity Analysis Total (2041) - Scenario B - 2% Growth Rate
202: Trafalgar Rd & West Street C

Timing Plan: AM Peak Hour

								
Movement	EBL	EBR	NBL	NBT	SBT	SBR		
Lane Configurations				  	  			
Traffic Volume (veh/h)	0	111	0	3265	2108	398		
Future Volume (Veh/h)	0	111	0	3265	2108	398		
Sign Control	Stop			Free	Free			
Grade	0%			0%	0%			
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92		
Hourly flow rate (vph)	0	121	0	3549	2291	433		
Pedestrians								
Lane Width (m)								
Walking Speed (m/s)								
Percent Blockage								
Right turn flare (veh)								
Median type				None	None			
Median storage (veh)								
Upstream signal (m)				247	208			
pX, platoon unblocked	0.79	0.61	0.61					
vC, conflicting volume	3474	764	2724					
vC1, stage 1 conf vol								
vC2, stage 2 conf vol								
vCu, unblocked vol	0	0	1592					
tC, single (s)	6.8	6.9	4.1					
tC, 2 stage (s)								
tF (s)	3.5	3.3	2.2					
p0 queue free %	100	82	100					
cM capacity (veh/h)	804	662	249					
Direction, Lane #	EB 1	NB 1	NB 2	NB 3	SB 1	SB 2	SB 3	SB 4
Volume Total	121	1183	1183	1183	764	764	764	433
Volume Left	0	0	0	0	0	0	0	0
Volume Right	121	0	0	0	0	0	0	433
cSH	662	1700	1700	1700	1700	1700	1700	1700
Volume to Capacity	0.18	0.70	0.70	0.70	0.45	0.45	0.45	0.25
Queue Length 95th (m)	5.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Control Delay (s)	11.6	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Lane LOS	B							
Approach Delay (s)	11.6	0.0				0.0		
Approach LOS	B							
Intersection Summary								
Average Delay				0.2				
Intersection Capacity Utilization	66.4%			ICU Level of Service			C	
Analysis Period (min)	15							

Lanes, Volumes, Timings
203: East Street D & East Street A

Total (2041) - Scenario B - 2% Growth Rate
Timing Plan: AM Peak Hour

						
Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	177	490	0	109	146	0
Future Volume (vph)	177	490	0	109	146	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	0.901					
Flt Protected					0.950	
Satd. Flow (prot)	1678	0	0	1863	1770	0
Flt Permitted					0.950	
Satd. Flow (perm)	1678	0	0	1863	1770	0
Link Speed (k/h)	50			50	50	
Link Distance (m)	212.6			202.8	119.6	
Travel Time (s)	15.3			14.6	8.6	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	192	533	0	118	159	0
Shared Lane Traffic (%)						
Lane Group Flow (vph)	725	0	0	118	159	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
Sign Control	Free			Free	Stop	
Intersection Summary						
Area Type:	Other					
Control Type:	Unsignalized					
Intersection Capacity Utilization	54.2%			ICU Level of Service A		
Analysis Period (min)	15					

HCM Unsignalized Intersection Capacity Analysis Total (2041) - Scenario B - 2% Growth Rate
203: East Street D & East Street A

Timing Plan: AM Peak Hour

	→	↖	↗	←	↖	↗
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↖			↖	↖	
Traffic Volume (veh/h)	177	490	0	109	146	0
Future Volume (Veh/h)	177	490	0	109	146	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)	192	533	0	118	159	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)	213					
pX, platoon unblocked			0.91		0.91	0.91
vC, conflicting volume			725		576	458
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			647		484	354
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			100		68	100
cM capacity (veh/h)			853		493	627
Direction, Lane #	EB 1	WB 1	NB 1			
Volume Total	725	118	159			
Volume Left	0	0	159			
Volume Right	533	0	0			
cSH	1700	853	493			
Volume to Capacity	0.43	0.00	0.32			
Queue Length 95th (m)	0.0	0.0	10.4			
Control Delay (s)	0.0	0.0	15.8			
Lane LOS			C			
Approach Delay (s)	0.0	0.0	15.8			
Approach LOS			C			
Intersection Summary						
Average Delay			2.5			
Intersection Capacity Utilization			54.2%		ICU Level of Service	A
Analysis Period (min)			15			

Lanes, Volumes, Timings
204: East Street E & East Street A

Total (2041) - Scenario B - 2% Growth Rate
Timing Plan: AM Peak Hour

						
Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	0	60	0	0	119	0
Future Volume (vph)	0	60	0	0	119	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.865					
Flt Protected					0.950	
Satd. Flow (prot)	1611	0	0	1863	1770	0
Flt Permitted					0.950	
Satd. Flow (perm)	1611	0	0	1863	1770	0
Link Speed (k/h)	50			50	50	
Link Distance (m)	202.8			186.3	118.9	
Travel Time (s)	14.6			13.4	8.6	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	65	0	0	129	0
Shared Lane Traffic (%)						
Lane Group Flow (vph)	65	0	0	0	129	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	0.0			0.0	3.6	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	4.8			4.8	4.8	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)		15	25		25	15
Sign Control	Free			Free	Stop	
Intersection Summary						
Area Type:	Other					
Control Type:	Unsignalized					
Intersection Capacity Utilization	17.0%			ICU Level of Service A		
Analysis Period (min)	15					

HCM Unsignalized Intersection Capacity Analysis Total (2041) - Scenario B - 2% Growth Rate
204: East Street E & East Street A

Timing Plan: AM Peak Hour

	→	↗	↖	←	↙	↘
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↗			↖	↙	↘
Traffic Volume (veh/h)	0	60	0	0	119	0
Future Volume (Veh/h)	0	60	0	0	119	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)	0	65	0	0	129	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			65		32	32
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			65		32	32
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			100		87	100
cM capacity (veh/h)			1537		981	1041
Direction, Lane #	EB 1	WB 1	NB 1			
Volume Total	65	0	129			
Volume Left	0	0	129			
Volume Right	65	0	0			
cSH	1700	1700	981			
Volume to Capacity	0.04	0.00	0.13			
Queue Length 95th (m)	0.0	0.0	3.4			
Control Delay (s)	0.0	0.0	9.2			
Lane LOS			A			
Approach Delay (s)	0.0	0.0	9.2			
Approach LOS			A			
Intersection Summary						
Average Delay			6.1			
Intersection Capacity Utilization			17.0%		ICU Level of Service	A
Analysis Period (min)			15			

Lanes, Volumes, Timings
205: East Street F & East Street A

Total (2041) - Scenario B - 2% Growth Rate
Timing Plan: AM Peak Hour

						
Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
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	1.00	1.00	1.00
Fit						
Fit Protected						
Satd. Flow (prot)	1863	0	0	1863	1863	0
Fit Permitted						
Satd. Flow (perm)	1863	0	0	1863	1863	0
Link Speed (k/h)	50			50	50	
Link Distance (m)	186.3			197.2	119.9	
Travel Time (s)	13.4			14.2	8.6	
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)	0.0			0.0	3.6	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	4.8			4.8	4.8	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)		15	25		25	15
Sign Control	Stop			Free	Free	
Intersection Summary						
Area Type:	Other					
Control Type:	Unsignalized					
Intersection Capacity Utilization 0.0%				ICU Level of Service A		
Analysis Period (min) 15						

HCM Unsignalized Intersection Capacity Analysis Total (2041) - Scenario B - 2% Growth Rate
205: East Street F & East Street A
Timing Plan: AM Peak Hour

Intersection Sign configuration not allowed in HCM analysis.

Lanes, Volumes, Timings
206: East Street D & East Street B

Total (2041) - Scenario B - 2% Growth Rate
Timing Plan: AM Peak Hour

	←	←	↑	↘	↘	↓
Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	↘		↘			↘
Traffic Volume (vph)	71	31	78	14	15	287
Future Volume (vph)	71	31	78	14	15	287
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	0.959		0.980			
Flt Protected	0.966					0.998
Satd. Flow (prot)	1726	0	1825	0	0	1859
Flt Permitted	0.966					0.998
Satd. Flow (perm)	1726	0	1825	0	0	1859
Link Speed (k/h)	50		50			50
Link Distance (m)	200.4		111.4			119.6
Travel Time (s)	14.4		8.0			8.6
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	77	34	85	15	16	312
Shared Lane Traffic (%)						
Lane Group Flow (vph)	111	0	100	0	0	328
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 35.1% ICU Level of Service A

Analysis Period (min) 15

HCM Unsignalized Intersection Capacity Analysis Total (2041) - Scenario B - 2% Growth Rate
206: East Street D & East Street B

Timing Plan: AM Peak Hour

	←	←	↑	↘	↘	↓
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	↘		↘			↘
Traffic Volume (veh/h)	71	31	78	14	15	287
Future Volume (Veh/h)	71	31	78	14	15	287
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)	77	34	85	15	16	312
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	436	92			100	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	436	92			100	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	87	96			99	
cM capacity (veh/h)	571	965			1493	

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	111	100	328
Volume Left	77	0	16
Volume Right	34	15	0
cSH	653	1700	1493
Volume to Capacity	0.17	0.06	0.01
Queue Length 95th (m)	4.6	0.0	0.2
Control Delay (s)	11.6	0.0	0.5
Lane LOS	B		A
Approach Delay (s)	11.6	0.0	0.5
Approach LOS	B		

Intersection Summary

Average Delay 2.7
Intersection Capacity Utilization 35.1% ICU Level of Service A
Analysis Period (min) 15

Lanes, Volumes, Timings
207: East Street E & East Street B

Total (2041) - Scenario B - 2% Growth Rate
Timing Plan: AM Peak Hour

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔			↔			↔			↔	
Traffic Volume (vph)	46	0	70	0	0	0	264	10	0	0	60	0
Future Volume (vph)	46	0	70	0	0	0	264	10	0	0	60	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	0.919											
Flt Protected	0.981											
Satd. Flow (prot)	0	1679	0	0	1863	0	0	1777	0	0	1863	0
Flt Permitted	0.981											
Satd. Flow (perm)	0	1679	0	0	1863	0	0	1777	0	0	1863	0
Link Speed (k/h)	50											
Link Distance (m)	200.4											
Travel Time (s)	14.4											
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)	50	0	76	0	0	0	287	11	0	0	65	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	126	0	0	0	0	0	298	0	0	65	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											
Link Offset(m)	0.0											
Crosswalk Width(m)	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											

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 Total (2041) - Scenario B - 2% Growth Rate
207: East Street E & East Street B

Timing Plan: AM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	46	0	70	0	0	0	264	10	0	0	60	0
Future Volume (Veh/h)	46	0	70	0	0	0	264	10	0	0	60	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)	50	0	76	0	0	0	287	11	0	0	65	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)									114			
pX, platoon unblocked												
vC, conflicting volume	650	650	65	726	650	11	65	11				
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	650	650	65	726	650	11	65	11				
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 %	85	100	92	100	100	100	81	100				
cM capacity (veh/h)	327	316	999	269	316	1070	1537	1608				
Direction, Lane #	EB 1	WB 1	NB 1	SB 1								
Volume Total	126	0	298	65								
Volume Left	50	0	287	0								
Volume Right	76	0	0	0								
cSH	551	1700	1537	1608								
Volume to Capacity	0.23	0.00	0.19	0.00								
Queue Length 95th (m)	6.6	0.0	5.1	0.0								
Control Delay (s)	13.5	0.0	7.6	0.0								
Lane LOS	B	A	A									
Approach Delay (s)	13.5	0.0	7.6	0.0								
Approach LOS	B	A										
Intersection Summary												
Average Delay				8.1								
Intersection Capacity Utilization				35.3%	ICU Level of Service				A			
Analysis Period (min)				15								

Lanes, Volumes, Timings
208: East Street F & East Street B

Total (2041) - Scenario B - 2% Growth Rate
Timing Plan: AM Peak Hour

	EBL	EBR	NBL	NBT	SBT	SBR
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	1.00	1.00	1.00
Fit						
Fit Protected						
Satd. Flow (prot)	1863	0	0	1863	1863	0
Fit Permitted						
Satd. Flow (perm)	1863	0	0	1863	1863	0
Link Speed (k/h)	50			50	50	
Link Distance (m)	185.7			112.6	119.9	
Travel Time (s)	13.4			8.1	8.6	
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			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	25			15
Sign Control	Stop			Free	Free	

Intersection Summary

Area Type: Other
Control Type: Unsignalized
Intersection Capacity Utilization 0.0% ICU Level of Service A
Analysis Period (min) 15

HCM Unsignalized Intersection Capacity Analysis Total (2041) - Scenario B - 2% Growth Rate
208: East Street F & East Street B

Timing Plan: AM Peak Hour

	EBL	EBR	NBL	NBT	SBT	SBR
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	↔	↔	↔	↔	↔	↔
Traffic Volume (veh/h)	0	0	0	0	0	0
Future Volume (Veh/h)	0	0	0	0	0	0
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	0	0	0	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	0	0	0			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	0	0	0			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	100	100	100			
cM capacity (veh/h)	1023	1085	1623			
Direction, Lane #	EB 1	NB 1	SB 1			
Volume Total	0	0	0			
Volume Left	0	0	0			
Volume Right	0	0	0			
cSH	1700	1700	1700			
Volume to Capacity	0.00	0.00	0.00			
Queue Length 95th (m)	0.0	0.0	0.0			
Control Delay (s)	0.0	0.0	0.0			
Lane LOS	A					
Approach Delay (s)	0.0	0.0	0.0			
Approach LOS	A					
Intersection Summary						
Average Delay		0.0				
Intersection Capacity Utilization		0.0%		ICU Level of Service	A	
Analysis Period (min)		15				

Lanes, Volumes, Timings
209: William Halton Parkway & East Street D

Total (2041) - Scenario B - 2% Growth Rate
Timing Plan: AM Peak Hour

						
Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		 	 	 		 
Traffic Volume (vph)	0	1814	818	39	0	195
Future Volume (vph)	0	1814	818	39	0	195
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (m)	0.0			50.0	0.0	0.0
Storage Lanes	0			1	0	1
Taper Length (m)	7.5				7.5	
Lane Util. Factor	1.00	0.95	0.95	1.00	1.00	1.00
Frt				0.850		0.865
Flt Protected						
Satd. Flow (prot)	0	3539	3539	1583	0	1611
Flt Permitted						
Satd. Flow (perm)	0	3539	3539	1583	0	1611
Link Speed (k/h)		50	50		50	
Link Distance (m)		204.1	194.7		111.4	
Travel Time (s)		14.7	14.0		8.0	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	1972	889	42	0	212
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	1972	889	42	0	212
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(m)		3.6	3.6		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	25	15
Sign Control		Free	Free		Stop	
Intersection Summary						
Area Type:	Other					
Control Type:	Unsignalized					
Intersection Capacity Utilization 53.5%	ICU Level of Service A					
Analysis Period (min) 15						

HCM Unsignalized Intersection Capacity Analysis Total (2041) - Scenario B - 2% Growth Rate
209: William Halton Parkway & East Street D

Timing Plan: AM Peak Hour

						
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		 	 	 		 
Traffic Volume (veh/h)	0	1814	818	39	0	195
Future Volume (Veh/h)	0	1814	818	39	0	195
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)	0	1972	889	42	0	212
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		None	None			
Median storage (veh)						
Upstream signal (m)		204	195			
pX, platoon unblocked	0.82				0.80	0.82
vC, conflicting volume	931				1875	444
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	480				589	0
tC, single (s)	4.1				6.8	6.9
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	100				100	76
cM capacity (veh/h)	886				352	890
Direction, Lane #	EB 1	EB 2	WB 1	WB 2	WB 3	SB 1
Volume Total	986	986	444	444	42	212
Volume Left	0	0	0	0	0	0
Volume Right	0	0	0	0	42	212
cSH	1700	1700	1700	1700	1700	890
Volume to Capacity	0.58	0.58	0.26	0.26	0.02	0.24
Queue Length 95th (m)	0.0	0.0	0.0	0.0	0.0	7.0
Control Delay (s)	0.0	0.0	0.0	0.0	0.0	10.3
Lane LOS						B
Approach Delay (s)	0.0		0.0			10.3
Approach LOS						B
Intersection Summary						
Average Delay			0.7			
Intersection Capacity Utilization			53.5%		ICU Level of Service	A
Analysis Period (min)			15			

Lanes, Volumes, Timings

210: William Halton Parkway & East Street E

Total (2041) - Scenario B - 2% Growth Rate

Timing Plan: AM Peak Hour

	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations	↰	↱	↱	↰	↰	↰
Traffic Volume (vph)	287	1465	826	17	99	31
Future Volume (vph)	287	1465	826	17	99	31
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	0.968	
Flt Protected	0.950				0.963	
Satd. Flow (prot)	1770	3539	3539	1583	1736	0
Flt Permitted	0.170				0.963	
Satd. Flow (perm)	317	3539	3539	1583	1736	0
Right Turn on Red				Yes	Yes	
Satd. Flow (RTOR)				18	28	
Link Speed (k/h)		50	50		50	
Link Distance (m)		194.7	188.1		114.3	
Travel Time (s)		14.0	13.5		8.2	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	312	1592	898	18	108	34
Shared Lane Traffic (%)						
Lane Group Flow (vph)	312	1592	898	18	142	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
Number of Detectors	1	2	2	1	1	
Detector Template	Left	Thru	Thru	Right	Left	
Leading Detector (m)	2.0	10.0	10.0	2.0	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)	2.0	0.6	0.6	2.0	2.0	
Detector 1 Type	CI+Ex	CI+Ex	CI+Ex	CI+Ex	CI+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		CI+Ex	CI+Ex			
Detector 2 Channel						
Detector 2 Extend (s)		0.0	0.0			
Turn Type	pm+pt	NA	NA	Perm	Prot	
Protected Phases	7	4	8		6	
Permitted Phases	4			8		

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Lanes, Volumes, Timings

210: William Halton Parkway & East Street E

Total (2041) - Scenario B - 2% Growth Rate

Timing Plan: AM Peak Hour

	EBL	EBT	WBT	WBR	SBL	SBR
Detector Phase	7	4	8	8	6	
Switch Phase						
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	
Minimum Split (s)	9.5	24.0	24.0	24.0	24.0	
Total Split (s)	12.0	36.0	24.0	24.0	24.0	
Total Split (%)	20.0%	60.0%	40.0%	40.0%	40.0%	
Maximum Green (s)	7.5	30.0	18.0	18.0	18.0	
Yellow Time (s)	3.5	4.0	4.0	4.0	4.0	
All-Red Time (s)	1.0	2.0	2.0	2.0	2.0	
Lost Time Adjust (s)	1.0	-2.0	-2.0	-2.0	-2.0	
Total Lost Time (s)	5.5	4.0	4.0	4.0	4.0	
Lead/Lag	Lead		Lag	Lag		
Lead-Lag Optimize?	Yes		Yes	Yes		
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	
Recall Mode	None	Max	Max	Max	None	
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 Effect Green (s)	31.6	34.2	21.0	21.0	10.7	
Actuated g/C Ratio	0.64	0.70	0.43	0.43	0.22	
v/c Ratio	0.78	0.65	0.59	0.03	0.36	
Control Delay	26.2	7.9	14.3	5.9	16.7	
Queue Delay	0.0	0.0	0.0	0.0	0.0	
Total Delay	26.2	7.9	14.3	5.9	16.7	
LOS	C	A	B	A	B	
Approach Delay		10.9	14.2		16.7	
Approach LOS		B	B		B	

Intersection Summary

Area Type: Other

Cycle Length: 60

Actuated Cycle Length: 49

Natural Cycle: 60

Control Type: Semi Act-Uncoord

Maximum v/c Ratio: 0.78

Intersection Signal Delay: 12.2

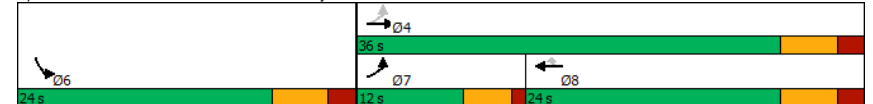
Intersection LOS: B

Intersection Capacity Utilization 57.4%

ICU Level of Service B

Analysis Period (min) 15

Splits and Phases: 210: William Halton Parkway & East Street E

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Queues
210: William Halton Parkway & East Street E

Total (2041) - Scenario B - 2% Growth Rate
Timing Plan: AM Peak Hour

	EBL	EBT	WBT	WBR	SBL
Lane Group	EBL	EBT	WBT	WBR	SBL
Lane Group Flow (vph)	312	1592	898	18	142
v/c Ratio	0.78	0.65	0.59	0.03	0.36
Control Delay	26.2	7.9	14.3	5.9	16.7
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	26.2	7.9	14.3	5.9	16.7
Queue Length 50th (m)	11.2	40.0	32.5	0.0	8.6
Queue Length 95th (m)	#52.0	75.2	54.4	3.1	20.0
Internal Link Dist (m)		170.7	164.1		90.3
Turn Bay Length (m)	50.0			50.0	
Base Capacity (vph)	399	2466	1514	687	735
Starvation Cap Reductn	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.78	0.65	0.59	0.03	0.19

Intersection Summary

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

HCM Signalized Intersection Capacity Analysis
210: William Halton Parkway & East Street E

Total (2041) - Scenario B - 2% Growth Rate
Timing Plan: AM Peak Hour

	EBL	EBT	WBT	WBR	SBL	SBR
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations	↰	↱	↰	↱	↰	↱
Traffic Volume (vph)	287	1465	826	17	99	31
Future Volume (vph)	287	1465	826	17	99	31
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.5	4.0	4.0	4.0	4.0	
Lane Util. Factor	1.00	0.95	0.95	1.00	1.00	
Frt	1.00	1.00	1.00	0.85	0.97	
Flt Protected	0.95	1.00	1.00	1.00	0.96	
Satd. Flow (prot)	1770	3539	3539	1583	1736	
Flt Permitted	0.17	1.00	1.00	1.00	0.96	
Satd. Flow (perm)	317	3539	3539	1583	1736	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	312	1592	898	18	108	34
RTOR Reduction (vph)	0	0	0	10	23	0
Lane Group Flow (vph)	312	1592	898	8	119	0
Turn Type	pm+pt	NA	NA	Perm	Prot	
Protected Phases	7	4	8		6	
Permitted Phases	4			8		
Actuated Green, G (s)	31.1	31.1	19.0	19.0	7.2	
Effective Green, g (s)	30.1	33.1	21.0	21.0	9.2	
Actuated g/C Ratio	0.60	0.66	0.42	0.42	0.18	
Clearance Time (s)	4.5	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)	380	2328	1477	660	317	
v/s Ratio Prot	0.11	c0.45	0.25		c0.07	
v/s Ratio Perm	c0.38			0.00		
v/c Ratio	0.82	0.68	0.61	0.01	0.38	
Uniform Delay, d1	7.7	5.3	11.4	8.6	18.0	
Progression Factor	1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	13.3	1.7	1.9	0.0	0.8	
Delay (s)	21.0	7.0	13.3	8.6	18.8	
Level of Service	C	A	B	A	B	
Approach Delay (s)		9.3	13.2		18.8	
Approach LOS		A	B		B	

Intersection Summary

HCM 2000 Control Delay	11.0	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.73		
Actuated Cycle Length (s)	50.3	Sum of lost time (s)	13.5
Intersection Capacity Utilization	57.4%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

Lanes, Volumes, Timings

211: William Halton Parkway & East Street F

Total (2041) - Scenario B - 2% Growth Rate

Timing Plan: AM Peak Hour

	EBL	EBT	WBT	WBR	SBL	SBR
Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations	↩	↗↗	↗↗	↗	↗	↗
Traffic Volume (vph)	0	1564	843	0	0	0
Future Volume (vph)	0	1564	843	0	0	0
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						
Flt Protected						
Satd. Flow (prot)	1863	3539	3539	1863	1863	0
Flt Permitted						
Satd. Flow (perm)	1863	3539	3539	1863	1863	0
Link Speed (k/h)		50	50		50	
Link Distance (m)		188.1	219.2		112.6	
Travel Time (s)		13.5	15.8		8.1	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	1700	916	0	0	0
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	1700	916	0	0	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 46.6%	ICU Level of Service A					
Analysis Period (min) 15						

HCM Unsignalized Intersection Capacity Analysis Total (2041) - Scenario B - 2% Growth Rate

211: William Halton Parkway & East Street F

Timing Plan: AM Peak Hour

							
Movement	EBL	EBT	WBT	WBR	SBL	SBR	
Lane Configurations							
Traffic Volume (veh/h)	0	1564	843	0	0	0	
Future Volume (Veh/h)	0	1564	843	0	0	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)	0	1700	916	0	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)		188					
pX, platoon unblocked					0.67		
vC, conflicting volume	916				1766	458	
vC1, stage 1 conf vol							
vC2, stage 2 conf vol							
vCu, unblocked vol	916				1150	458	
tC, single (s)	4.1				6.8	6.9	
tC, 2 stage (s)							
tF (s)	2.2				3.5	3.3	
p0 queue free %	100				100	100	
cM capacity (veh/h)	740				128	550	
Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	WB 3	SB 1
Volume Total	0	850	850	458	458	0	0
Volume Left	0	0	0	0	0	0	0
Volume Right	0	0	0	0	0	0	0
cSH	1700	1700	1700	1700	1700	1700	1700
Volume to Capacity	0.00	0.50	0.50	0.27	0.27	0.00	0.00
Queue Length 95th (m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Control Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Lane LOS							A
Approach Delay (s)	0.0			0.0			0.0
Approach LOS							A
Intersection Summary							
Average Delay			0.0				
Intersection Capacity Utilization			46.6%		ICU Level of Service		A
Analysis Period (min)			15				

Lanes, Volumes, Timings

212: West Street A & Transit Station

Total (2041) - Scenario B - 2% Growth Rate

Timing Plan: AM Peak Hour

	←	←	↑	↗	↘	↓
Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	↔		↔			↔
Traffic Volume (vph)	212	0	0	171	0	0
Future Volume (vph)	212	0	0	171	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt			0.865			
Flt Protected	0.950					
Satd. Flow (prot)	1770	0	1611	0	0	1863
Flt Permitted	0.950					
Satd. Flow (perm)	1770	0	1611	0	0	1863
Link Speed (k/h)	50		50			50
Link Distance (m)	70.0		239.0			98.7
Travel Time (s)	5.0		17.2			7.1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	230	0	0	186	0	0
Shared Lane Traffic (%)						
Lane Group Flow (vph)	230	0	186	0	0	0
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 29.0% ICU Level of Service A

Analysis Period (min) 15

HCM Unsignalized Intersection Capacity Analysis Total (2041) - Scenario B - 2% Growth Rate

212: West Street A & Transit Station

Timing Plan: AM Peak Hour

	←	←	↑	↗	↘	↓
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	↔		↔			↔
Traffic Volume (veh/h)	212	0	0	171	0	0
Future Volume (Veh/h)	212	0	0	171	0	0
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)	230	0	0	186	0	0
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None					
Median storage (veh)						
Upstream signal (m)	213					
pX, platoon unblocked						
vC, conflicting volume	0		460	0	646	460
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	0		460	0	646	460
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 %	86		100	83	100	100
cM capacity (veh/h)	1623		427	1085	284	427

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	230	186	0
Volume Left	230	0	0
Volume Right	0	186	0
cSH	1623	1085	1700
Volume to Capacity	0.14	0.17	0.00
Queue Length 95th (m)	3.7	4.6	0.0
Control Delay (s)	7.6	9.0	0.0
Lane LOS	A	A	A
Approach Delay (s)	7.6	9.0	0.0
Approach LOS	A	A	

Intersection Summary

Average Delay	8.2		
Intersection Capacity Utilization	29.0%	ICU Level of Service	A
Analysis Period (min)	15		

Lanes, Volumes, Timings

213: West Street A & William Halton Parkway

Total (2041) - Scenario B - 2% Growth Rate

Timing Plan: AM Peak Hour

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑	↑		↑↑	↑			↑			↑
Traffic Volume (vph)	0	1589	48	0	1102	146	0	0	216	0	0	9
Future Volume (vph)	0	1589	48	0	1102	146	0	0	216	0	0	9
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		1	0		1	0		1	0		1
Taper Length (m)	7.5			7.5			7.5			7.5		
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt			0.850			0.850			0.865			0.865
Fit Protected												
Satd. Flow (prot)	0	3539	1583	0	3539	1583	0	0	1611	0	0	1611
Fit Permitted												
Satd. Flow (perm)	0	3539	1583	0	3539	1583	0	0	1611	0	0	1611
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		202.0			209.3			100.4			239.0	
Travel Time (s)		14.5			15.1			7.2			17.2	
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	1727	52	0	1198	159	0	0	235	0	0	10
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	1727	52	0	1198	159	0	0	235	0	0	10
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 64.0%

ICU Level of Service B

Analysis Period (min) 15

HCM Unsignalized Intersection Capacity Analysis

213: West Street A & William Halton Parkway

Total (2041) - Scenario B - 2% Growth Rate

Timing Plan: AM Peak Hour

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Movement		↑↑	↑		↑↑	↑			↑			↑
Lane Configurations		↑↑	↑		↑↑	↑			↑			↑
Traffic Volume (veh/h)	0	1589	48	0	1102	146	0	0	216	0	0	9
Future Volume (Veh/h)	0	1589	48	0	1102	146	0	0	216	0	0	9
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	1727	52	0	1198	159	0	0	235	0	0	10
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			209							
pX, platoon unblocked	0.87			0.56			0.62	0.62	0.56	0.62	0.62	0.87
vC, conflicting volume	1357			1779			2336	3084	864	2296	2977	599
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	1104			810			974	2172	0	910	2000	229
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	61	100	100	99
cM capacity (veh/h)	544			453			127	29	605	88	37	670
Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	WB 3	NB 1	SB 1				
Volume Total	864	864	52	599	599	159	235	10				
Volume Left	0	0	0	0	0	0	0	0				
Volume Right	0	0	52	0	0	159	235	10				
cSH	1700	1700	1700	1700	1700	1700	605	670				
Volume to Capacity	0.51	0.51	0.03	0.35	0.35	0.09	0.39	0.01				
Queue Length 95th (m)	0.0	0.0	0.0	0.0	0.0	0.0	13.8	0.3				
Control Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	14.7	10.5				
Lane LOS							B	B				
Approach Delay (s)	0.0			0.0			14.7	10.5				
Approach LOS							B	B				
Intersection Summary												
Average Delay			1.1									
Intersection Capacity Utilization		64.0%			ICU Level of Service			B				
Analysis Period (min)		15										

Lanes, Volumes, Timings

214: West Street D & William Halton Parkway

Total (2041) - Scenario B - 2% Growth Rate

Timing Plan: AM Peak Hour

	←	→	↖	↗	←	↖	↗	←	↖	↗	←	↖	↗
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations	↖	↖	↖	↖	↖	↖	↖	↖	↖	↖	↖	↖	
Traffic Volume (vph)	0	1576	57	370	605	136	19	0	22	69	0	4	
Future Volume (vph)	0	1576	57	370	605	136	19	0	22	69	0	4	
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		0.0	50.0		0.0	
Storage Lanes	1		0	1		1	1		0	1		0	
Taper Length (m)	100.0			100.0			75.0			75.0			
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Frt			0.850			0.850		0.850			0.850		
Flt Protected				0.950			0.950			0.950			
Satd. Flow (prot)	1863	3539	1583	1770	3539	1583	1770	1583	0	1770	1583	0	
Flt Permitted				0.063			0.755			0.742			
Satd. Flow (perm)	1863	3539	1583	117	3539	1583	1406	1583	0	1382	1583	0	
Right Turn on Red			Yes			Yes		Yes			Yes		
Satd. Flow (RTOR)			55			148		346			359		
Link Speed (k/h)		50			50			50			50		
Link Distance (m)		241.6			202.0			103.2			133.4		
Travel Time (s)		17.4			14.5			7.4			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)	0	1713	62	402	658	148	21	0	24	75	0	4	
Shared Lane Traffic (%)													
Lane Group Flow (vph)	0	1713	62	402	658	148	21	24	0	75	4	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	1	2	1	1	2		1	2		
Detector Template	Left	Thru	Right	Left	Thru	Right	Left	Thru		Left	Thru		
Leading Detector (m)	2.0	10.0	2.0	2.0	10.0	2.0	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		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	2.0	0.6	2.0	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		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	pm+pt	NA	Perm	Perm	NA		Perm	NA		
Protected Phases		4			3		8			2		6	
Permitted Phases	4		4		8		8		2		6		

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Lanes, Volumes, Timings

214: West Street D & William Halton Parkway

Total (2041) - Scenario B - 2% Growth Rate

Timing Plan: AM Peak Hour

	←	→	↖	↗	←	↖	↗	←	↖	↗	←	↖	↗
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Detector Phase	4	4	4	3	8	8	2	2		6	6		
Switch Phase													
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0		5.0	5.0		
Minimum Split (s)	24.0	24.0	24.0	9.5	24.0	24.0	24.0	24.0		24.0	24.0		
Total Split (s)	66.0	66.0	66.0	29.9	95.9	95.9	24.1	24.1		24.1	24.1		
Total Split (%)	55.0%	55.0%	55.0%	24.9%	79.9%	79.9%	20.1%	20.1%		20.1%	20.1%		
Maximum Green (s)	60.0	60.0	60.0	26.9	89.9	89.9	18.1	18.1		18.1	18.1		
Yellow Time (s)	4.0	4.0	4.0	3.0	4.0	4.0	4.0	4.0		4.0	4.0		
All-Red Time (s)	2.0	2.0	2.0	0.0	2.0	2.0	2.0	2.0		2.0	2.0		
Lost Time Adjust (s)	-2.0	-2.0	-2.0	1.0	-2.0	-2.0	-2.0	-2.0		-2.0	-2.0		
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0		4.0	4.0		
Lead/Lag	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	Max	Max	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	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 Effect Green (s)		62.3	62.3	92.4	93.3	93.3	13.1	13.1		13.3	13.3		
Actuated g/C Ratio		0.56	0.56	0.83	0.84	0.84	0.12	0.12		0.12	0.12		
v/c Ratio		0.86	0.07	0.83	0.22	0.11	0.13	0.05		0.45	0.01		
Control Delay		27.8	4.6	46.4	2.7	0.7	45.7	0.2		55.1	0.0		
Queue Delay		0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0		
Total Delay		27.8	4.6	46.4	2.7	0.7	45.7	0.2		55.1	0.0		
LOS		C	A	D	A	A	D	A		E	A		
Approach Delay		27.0			17.0		21.4				52.3		
Approach LOS		C			B		C				D		

Intersection Summary

Area Type: Other

Cycle Length: 120

Actuated Cycle Length: 110.9

Natural Cycle: 90

Control Type: Semi Act-Uncoord

Maximum v/c Ratio: 0.86

Intersection Signal Delay: 23.7

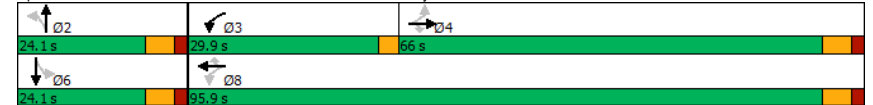
Intersection LOS: C

Intersection Capacity Utilization 84.6%

ICU Level of Service E

Analysis Period (min) 15

Splits and Phases: 214: West Street D & William Halton Parkway

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Queues
214: West Street D & William Halton Parkway

Total (2041) - Scenario B - 2% Growth Rate
Timing Plan: AM Peak Hour

	→	↘	↙	←	↖	↗	↘	↙	↓
Lane Group	EBT	EBR	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	1713	62	402	658	148	21	24	75	4
v/c Ratio	0.86	0.07	0.83	0.22	0.11	0.13	0.05	0.45	0.01
Control Delay	27.8	4.6	46.4	2.7	0.7	45.7	0.2	55.1	0.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	27.8	4.6	46.4	2.7	0.7	45.7	0.2	55.1	0.0
Queue Length 50th (m)	165.0	0.7	67.5	13.6	0.0	4.2	0.0	15.5	0.0
Queue Length 95th (m)	#230.8	7.2	#128.2	23.6	3.9	11.6	0.0	30.0	0.0
Internal Link Dist (m)	217.6			178.0			79.2		109.4
Turn Bay Length (m)		50.0	50.0		50.0	50.0		50.0	
Base Capacity (vph)	1988	913	485	2977	1355	256	571	251	582
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.86	0.07	0.83	0.22	0.11	0.08	0.04	0.30	0.01

Intersection Summary

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

HCM Signalized Intersection Capacity Analysis
214: West Street D & William Halton Parkway

Total (2041) - Scenario B - 2% Growth Rate
Timing Plan: AM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	1576	57	370	605	136	19	0	22	69	0	4
Future Volume (vph)	0	1576	57	370	605	136	19	0	22	69	0	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	4.0	
Lane Util. Factor		0.95	1.00	1.00	0.95	1.00	1.00	1.00		1.00	1.00	
Frt		1.00	0.85	1.00	1.00	0.85	1.00	0.85		1.00	0.85	
Flt Protected		1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)		3539	1583	1770	3539	1583	1770	1583		1770	1583	
Flt Permitted		1.00	1.00	0.06	1.00	1.00	0.76	1.00		0.74	1.00	
Satd. Flow (perm)		3539	1583	118	3539	1583	1407	1583		1381	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)	0	1713	62	402	658	148	21	0	24	75	0	4
RTOR Reduction (vph)	0	0	24	0	0	26	0	21	0	0	4	0
Lane Group Flow (vph)	0	1713	38	402	658	122	21	3	0	75	0	0
Turn Type	Perm	NA	Perm	pm+pt	NA	Perm	Perm	NA		Perm	NA	
Protected Phases		4		3	8		2				6	
Permitted Phases	4		4	8		8	2			6		
Actuated Green, G (s)		60.3	60.3	90.4	90.4	90.4	9.9	9.9		9.9	9.9	
Effective Green, g (s)		62.3	62.3	89.4	92.4	92.4	11.9	11.9		11.9	11.9	
Actuated g/C Ratio		0.55	0.55	0.80	0.82	0.82	0.11	0.11		0.11	0.11	
Clearance Time (s)		6.0	6.0	3.0	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	3.0	
Lane Grp Cap (vph)		1963	878	477	2911	1302	149	167		146	167	
v/s Ratio Prot		c0.48		c0.20	0.19			0.00			0.00	
v/s Ratio Perm			0.02	0.48		0.08	0.01			c0.05		
v/c Ratio		0.87	0.04	0.84	0.23	0.09	0.14	0.02		0.51	0.00	
Uniform Delay, d1		21.6	11.4	34.2	2.2	1.9	45.6	45.0		47.5	44.9	
Progression Factor		1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Incremental Delay, d2		5.7	0.1	16.4	0.2	0.1	0.4	0.0		3.0	0.0	
Delay (s)		27.3	11.5	50.6	2.3	2.1	46.0	45.0		50.5	44.9	
Level of Service		C	B	D	A	A	D	D		D	D	
Approach Delay (s)		26.7			18.4			45.5			50.2	
Approach LOS		C			B			D			D	

Intersection Summary

HCM 2000 Control Delay	24.4	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.82		
Actuated Cycle Length (s)	112.3	Sum of lost time (s)	12.0
Intersection Capacity Utilization	84.6%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

Lanes, Volumes, Timings

215: West Street A & West Street B

Total (2041) - Scenario B - 2% Growth Rate

Timing Plan: AM Peak Hour

	EBL	EBR	NBL	NBT	SBT	SBR
Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	↔	↔	↔	↔	↔	↔
Traffic Volume (vph)	131	83	0	49	52	6
Future Volume (vph)	131	83	0	49	52	6
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	0.948			0.985		
Flt Protected	0.970					
Satd. Flow (prot)	1713	0	0	1863	1835	0
Flt Permitted	0.970					
Satd. Flow (perm)	1713	0	0	1863	1835	0
Link Speed (k/h)	50			50	50	
Link Distance (m)	202.8			106.4	100.4	
Travel Time (s)	14.6			7.7	7.2	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	142	90	0	53	57	7
Shared Lane Traffic (%)						
Lane Group Flow (vph)	232	0	0	53	64	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
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	25			15
Sign Control	Stop			Free	Free	

Intersection Summary

Area Type: Other

Control Type: Unsignalized

Intersection Capacity Utilization 22.3%

ICU Level of Service A

Analysis Period (min) 15

HCM Unsignalized Intersection Capacity Analysis Total (2041) - Scenario B - 2% Growth Rate

215: West Street A & West Street B

Timing Plan: AM Peak Hour

	EBL	EBR	NBL	NBT	SBT	SBR
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	↔	↔	↔	↔	↔	↔
Traffic Volume (veh/h)	131	83	0	49	52	6
Future Volume (Veh/h)	131	83	0	49	52	6
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)	142	90	0	53	57	7
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	None	
Median storage (veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	114	60	64			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	114	60	64			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	84	91	100			
cM capacity (veh/h)	883	1005	1538			
Direction, Lane #	EB 1	NB 1	SB 1			
Volume Total	232	53	64			
Volume Left	142	0	0			
Volume Right	90	0	7			
cSH	927	1538	1700			
Volume to Capacity	0.25	0.00	0.04			
Queue Length 95th (m)	7.4	0.0	0.0			
Control Delay (s)	10.2	0.0	0.0			
Lane LOS	B					
Approach Delay (s)	10.2	0.0	0.0			
Approach LOS	B					
Intersection Summary						
Average Delay		6.8				
Intersection Capacity Utilization		22.3%		ICU Level of Service	A	
Analysis Period (min)		15				

Lanes, Volumes, Timings

216: West Street D & West Street B

Total (2041) - Scenario B - 2% Growth Rate

Timing Plan: AM Peak Hour

	WBL	WBR	NBT	NBR	SBL	SBT
Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	WBL	WBR	NBT	NBR	SBL	SBT
Traffic Volume (vph)	0	10	31	0	242	185
Future Volume (vph)	0	10	31	0	242	185
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.865					
Frt Protected						0.972
Satd. Flow (prot)	1611	0	1863	0	0	1811
Frt Permitted						0.972
Satd. Flow (perm)	1611	0	1863	0	0	1811
Link Speed (k/h)	50		50			50
Link Distance (m)	202.8		99.7			103.2
Travel Time (s)	14.6		7.2			7.4
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	11	34	0	263	201
Shared Lane Traffic (%)						
Lane Group Flow (vph)	11	0	34	0	0	464
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
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		15	25	
Sign Control	Stop		Free			Free

Intersection Summary

Area Type: Other

Control Type: Unsignalized

Intersection Capacity Utilization 39.8%

ICU Level of Service A

Analysis Period (min) 15

HCM Unsignalized Intersection Capacity Analysis

216: West Street D & West Street B

Total (2041) - Scenario B - 2% Growth Rate

Timing Plan: AM Peak Hour

	WBL	WBR	NBT	NBR	SBL	SBT
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	WBL	WBR	NBT	NBR	SBL	SBT
Traffic Volume (veh/h)	0	10	31	0	242	185
Future Volume (Veh/h)	0	10	31	0	242	185
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	11	34	0	263	201
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage (veh)						
Upstream signal (m)						103
pX, platoon unblocked	0.94					
vC, conflicting volume	761	34			34	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	716	34			34	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	100	99			83	
cM capacity (veh/h)	312	1039			1578	

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	11	34	464
Volume Left	0	0	263
Volume Right	11	0	0
cSH	1039	1700	1578
Volume to Capacity	0.01	0.02	0.17
Queue Length 95th (m)	0.2	0.0	4.5
Control Delay (s)	8.5	0.0	5.0
Lane LOS	A		A
Approach Delay (s)	8.5	0.0	5.0
Approach LOS	A		

Intersection Summary

Average Delay 4.8

Intersection Capacity Utilization 39.8%

ICU Level of Service

A

Analysis Period (min) 15

Lanes, Volumes, Timings

217: West Street C & West Street A

Total (2041) - Scenario B - 2% Growth Rate

Timing Plan: AM Peak Hour

	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↔	↔		↔	
Traffic Volume (vph)	0	84	157	202	76	15
Future Volume (vph)	0	84	157	202	76	15
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		0.924		0.978		
Flt Protected					0.960	
Satd. Flow (prot)	0	1863	1721	0	1749	0
Flt Permitted					0.960	
Satd. Flow (perm)	0	1863	1721	0	1749	0
Link Speed (k/h)		50	50		50	
Link Distance (m)		208.6	202.4		106.4	
Travel Time (s)		15.0	14.6		7.7	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	91	171	220	83	16
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	91	391	0	99	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 32.4%

ICU Level of Service A

Analysis Period (min) 15

HCM Unsignalized Intersection Capacity Analysis Total (2041) - Scenario B - 2% Growth Rate

217: West Street C & West Street A

Timing Plan: AM Peak Hour

	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↔	↔		↔	
Traffic Volume (veh/h)	0	84	157	202	76	15
Future Volume (Veh/h)	0	84	157	202	76	15
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)	0	91	171	220	83	16
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		None	None			
Median storage (veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	391				372	281
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	391				372	281
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	100				87	98
cM capacity (veh/h)	1168				629	758

Direction, Lane #	EB 1	WB 1	SB 1
Volume Total	91	391	99
Volume Left	0	0	83
Volume Right	0	220	16
cSH	1168	1700	647
Volume to Capacity	0.00	0.23	0.15
Queue Length 95th (m)	0.0	0.0	4.0
Control Delay (s)	0.0	0.0	11.6
Lane LOS			B
Approach Delay (s)	0.0	0.0	11.6
Approach LOS			B

Intersection Summary

Average Delay 2.0

Intersection Capacity Utilization 32.4%

ICU Level of Service

A

Analysis Period (min) 15

Lanes, Volumes, Timings

218: West Street D & West Street C

Total (2041) - Scenario B - 2% Growth Rate

Timing Plan: AM Peak Hour

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔			↔			↔			↔	
Traffic Volume (vph)	0	0	0	82	0	75	0	24	12	111	74	0
Future Volume (vph)	0	0	0	82	0	75	0	24	12	111	74	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					0.935			0.955				
Flt Protected					0.975						0.971	
Satd. Flow (prot)	0	1863	0	0	1698	0	0	1779	0	0	1809	0
Flt Permitted					0.975						0.971	
Satd. Flow (perm)	0	1863	0	0	1698	0	0	1779	0	0	1809	0
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		258.7			208.6			93.0			99.7	
Travel Time (s)		18.6			15.0			6.7			7.2	
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	0	89	0	82	0	26	13	121	80	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	0	0	0	171	0	0	39	0	0	201	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 32.5%

ICU Level of Service A

Analysis Period (min) 15

HCM Unsignalized Intersection Capacity Analysis Total (2041) - Scenario B - 2% Growth Rate

218: West Street D & West Street C

Timing Plan: AM Peak Hour

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔			↔			↔			↔	
Traffic Volume (veh/h)	0	0	0	82	0	75	0	24	12	111	74	0
Future Volume (Veh/h)	0	0	0	82	0	75	0	24	12	111	74	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)	0	0	0	89	0	82	0	26	13	121	80	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	82			0			259	260	0	245	219	41
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	82			0			259	260	0	245	219	41
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			95			100	96	99	81	88	100
cM capacity (veh/h)	1515			1623			602	609	1085	649	642	1030
Direction, Lane #	EB 1	WB 1	NB 1	SB 1								
Volume Total	0	171	39	201								
Volume Left	0	89	0	121								
Volume Right	0	82	13	0								
cSH	1700	1623	714	646								
Volume to Capacity	0.00	0.05	0.05	0.31								
Queue Length 95th (m)	0.0	1.3	1.3	9.9								
Control Delay (s)	0.0	4.0	10.3	13.1								
Lane LOS		A	B	B								
Approach Delay (s)	0.0	4.0	10.3	13.1								
Approach LOS			B	B								
Intersection Summary												
Average Delay			9.0									
Intersection Capacity Utilization		32.5%		ICU Level of Service					A			
Analysis Period (min)			15									

Lanes, Volumes, Timings

101: Trafalgar Rd & Lower Base Line

TT (2041) - Scenario B - 2% Growth Rate

Timing Plan: PM Peak Hour

	↖	→	↘	↙	←	↖	↗	↘	↙	↖	↗	↘	↙
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations	↖	↖	↖	↖	↖	↖	↖	↖	↖	↖	↖	↖	
Traffic Volume (vph)	54	240	77	387	678	368	512	2971	539	306	1872	123	
Future Volume (vph)	54	240	77	387	678	368	512	2971	539	306	1872	123	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	
Storage Length (m)	45.0		45.0	110.0		110.0	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			0.212			0.072			0.077			
Satd. Flow (perm)	471	3412	0	395	3352	0	134	5085	1583	143	5085	1583	
Right Turn on Red			Yes			Yes			Yes			Yes	
Satd. Flow (RTOR)		26			68				86			95	
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	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Adj. Flow (vph)	54	240	77	387	678	368	512	2971	539	306	1872	123	
Shared Lane Traffic (%)													
Lane Group Flow (vph)	54	317	0	387	1046	0	512	2971	539	306	1872	123	
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	pm+ov	pm+pt	NA	pm+ov	
Protected Phases	7	4		3	8		5	2	3	1	6	7	
Permitted Phases	4			8			2		2	6		6	

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Lanes, Volumes, Timings

101: Trafalgar Rd & Lower Base Line

TT (2041) - Scenario B - 2% Growth Rate

Timing Plan: PM Peak Hour

	↖	→	↘	↙	←	↖	↗	↘	↙	↖	↗	↘	↙
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Detector Phase	7	4		3	8		5	2	3	1	6	7	
Switch Phase													
Minimum Initial (s)	5.0	10.0		7.0	10.0		5.0	25.0	7.0	7.0	25.0	5.0	
Minimum Split (s)	11.6	22.5		13.6	22.5		11.6	31.6	13.6	13.6	31.6	11.6	
Total Split (s)	11.6	23.6		25.0	37.0		32.0	72.4	25.0	19.0	59.4	11.6	
Total Split (%)	8.3%	16.9%		17.9%	26.4%		22.9%	51.7%	17.9%	13.6%	42.4%	8.3%	
Maximum Green (s)	8.6	17.4		22.0	30.8		29.0	65.8	22.0	16.0	52.8	8.6	
Yellow Time (s)	3.0	4.2		3.0	4.2		3.0	4.6	3.0	3.0	4.6	3.0	
All-Red Time (s)	0.0	2.0		0.0	2.0		0.0	2.0	0.0	0.0	2.0	0.0	
Lost Time Adjust (s)	1.0	-2.2		1.0	-2.2		1.0	-2.2	1.0	1.0	-2.2	1.0	
Total Lost Time (s)	4.0	4.0		4.0	4.0		4.0	4.4	4.0	4.0	4.4	4.0	
Lead/Lag	Lead	Lag		Lead	Lag		Lead	Lag	Lead	Lag	Lead	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	0.2	0.2	5.0	3.0	
Recall Mode	None	None		None	None		None	Max	None	Max	None	Max	
Act Effct Green (s)	25.7	19.0		44.0	33.2		87.4	68.0	93.4	70.4	55.0	66.2	
Actuated g/C Ratio	0.18	0.14		0.32	0.24		0.63	0.49	0.67	0.51	0.39	0.47	
v/c Ratio	0.36	0.65		1.17	1.23		1.24	1.20	0.49	1.24	0.93	0.15	
Control Delay	41.9	59.1		140.6	154.9		165.0	126.4	11.1	173.7	50.2	6.5	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	
Total Delay	41.9	59.1		140.6	154.9		165.0	126.4	11.1	173.7	50.2	6.5	
LOS	D	E		F	F		F	F	B	F	D	A	
Approach Delay		56.6			151.0			115.9			64.3		
Approach LOS		E			F			F			E		

Intersection Summary

Area Type: Other

Cycle Length: 140

Actuated Cycle Length: 139.4

Natural Cycle: 145

Control Type: Semi Act-Uncooord

Maximum v/c Ratio: 1.24

Intersection Signal Delay: 104.8

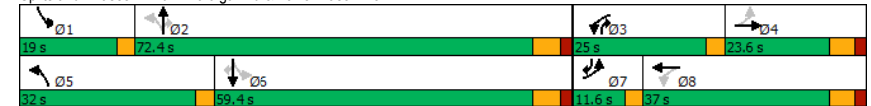
Intersection LOS: F

Intersection Capacity Utilization 122.7%

ICU Level of Service H

Analysis Period (min) 15

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

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Queues
101: Trafalgar Rd & Lower Base Line

TT (2041) - Scenario B - 2% Growth Rate
Timing Plan: PM Peak Hour

	EBL	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	54	317	387	1046	512	2971	539	306	1872	123
v/c Ratio	0.36	0.65	1.17	1.23	1.24	1.20	0.49	1.24	0.93	0.15
Control Delay	41.9	59.1	140.6	154.9	165.0	126.4	11.1	173.7	50.2	6.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	41.9	59.1	140.6	154.9	165.0	126.4	11.1	173.7	50.2	6.5
Queue Length 50th (m)	10.4	40.0	~105.8	~179.0	~158.0	~360.4	56.5	~87.7	178.6	4.0
Queue Length 95th (m)	20.6	56.0	#169.0	#221.1	#226.5	#383.7	81.5	#145.8	#202.5	14.8
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)	160	502	331	851	412	2480	1089	247	2006	810
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	0.34	0.63	1.17	1.23	1.24	1.20	0.49	1.24	0.93	0.15

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.

HCM Signalized Intersection Capacity Analysis
101: Trafalgar Rd & Lower Base Line

TT (2041) - Scenario B - 2% Growth Rate
Timing Plan: PM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	54	240	77	387	678	368	512	2971	539	306	1872	123
Future Volume (vph)	54	240	77	387	678	368	512	2971	539	306	1872	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	4.0	4.0	4.4	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	0.95		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	3410		1770	3352		1770	5085	1583	1770	5085	1583
Flt Permitted	0.25	1.00		0.21	1.00		0.07	1.00	1.00	0.08	1.00	1.00
Satd. Flow (perm)	472	3410		395	3352		134	5085	1583	144	5085	1583
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	54	240	77	387	678	368	512	2971	539	306	1872	123
RTOR Reduction (vph)	0	22	0	0	52	0	0	0	33	0	0	55
Lane Group Flow (vph)	54	295	0	387	994	0	512	2971	506	306	1872	68
Turn Type	pm+pt	NA		pm+pt	NA		pm+pt	NA	pm+ov	pm+pt	NA	pm+ov
Protected Phases	7	4		3	8		5	2	3	1	6	7
Permitted Phases	4			8			2		2	6		6
Actuated Green, G (s)	24.6	16.8		41.8	31.0		84.8	65.8	87.8	68.8	52.8	60.6
Effective Green, g (s)	22.6	19.0		40.8	33.2		83.8	68.0	85.8	66.8	55.0	58.6
Actuated g/C Ratio	0.16	0.14		0.29	0.24		0.60	0.49	0.62	0.48	0.39	0.42
Clearance Time (s)	3.0	6.2		3.0	6.2		3.0	6.6	3.0	3.0	6.6	3.0
Vehicle Extension (s)	3.0	5.0		0.2	5.0		3.0	5.0	0.2	0.2	5.0	3.0
Lane Grp Cap (vph)	139	464		322	798		409	2480	974	243	2006	665
v/s Ratio Prot	0.02	0.09		c0.18	c0.30		c0.25	c0.58	0.08	0.13	0.37	0.00
v/s Ratio Perm	0.04			0.17			0.50		0.24	0.47		0.04
v/c Ratio	0.39	0.63		1.20	1.25		1.25	1.20	0.52	1.26	0.93	0.10
Uniform Delay, d1	51.0	56.9		44.0	53.1		46.3	35.7	15.1	44.1	40.4	24.5
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	1.8	3.9		116.7	121.1		132.1	93.3	0.2	145.5	9.5	0.1
Delay (s)	52.8	60.8		160.7	174.2		178.4	129.0	15.3	189.6	50.0	24.5
Level of Service	D	E		F	F		F	F	B	F	D	C
Approach Delay (s)	59.7				170.5		120.1				67.2	
Approach LOS	E				F		F				E	

Intersection Summary

HCM 2000 Control Delay	111.2	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	1.27		
Actuated Cycle Length (s)	139.4	Sum of lost time (s)	16.4
Intersection Capacity Utilization	122.7%	ICU Level of Service	H
Analysis Period (min)	15		

c Critical Lane Group

Lanes, Volumes, Timings

TT (2041) - Scenario B - 2% Growth Rate

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

Timing Plan: PM Peak Hour

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔		↔	↔	↔	↔	↔	↔	↔	↔	↔
Traffic Volume (vph)	7	0	49	697	16	174	9	3834	0	0	2331	5
Future Volume (vph)	7	0	49	697	16	174	9	3834	0	0	2331	5
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	0.882				0.993	0.850						0.850
Flt Protected	0.994			0.950	0.956		0.950					
Satd. Flow (prot)	0	1633	0	1681	1609	1504	1770	5085	0	0	5085	1583
Flt Permitted	0.994			0.720	0.705		0.070					
Satd. Flow (perm)	0	1633	0	1274	1187	1504	130	5085	0	0	5085	1583
Right Turn on Red		Yes			Yes			Yes			Yes	
Satd. Flow (RTOR)		78			2	95						70
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	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	7	0	49	697	16	174	9	3834	0	0	2331	5
Shared Lane Traffic (%)				48%		10%						
Lane Group Flow (vph)	0	56	0	362	368	157	9	3834	0	0	2331	5
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	CI+Ex	CI+Ex		CI+Ex	CI+Ex	CI+Ex	CI+Ex	CI+Ex			CI+Ex	CI+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		CI+Ex			CI+Ex			CI+Ex				CI+Ex
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0				0.0
Turn Type	Split	NA		Perm	NA	Perm	Perm	NA		NA	Perm	Perm
Protected Phases	4	4			8			2			6	
Permitted Phases				8		8	2					6

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Synchro 10 Report
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Lanes, Volumes, Timings

TT (2041) - Scenario B - 2% Growth Rate

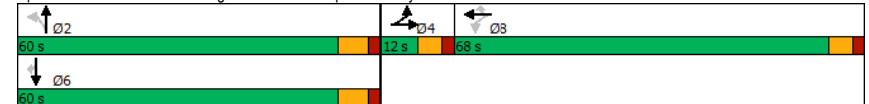
102: Trafalgar Rd & North Carpool Lot/Hwy 407 WB Off

Timing Plan: PM Peak Hour

	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)	6.0	6.0		7.0	7.0	7.0	20.0	20.0			20.0	20.0
Minimum Split (s)	12.0	12.0		22.5	22.5	22.5	27.0	27.0			27.0	27.0
Total Split (s)	12.0	12.0		68.0	68.0	68.0	60.0	60.0			60.0	60.0
Total Split (%)	8.6%	8.6%		48.6%	48.6%	48.6%	42.9%	42.9%			42.9%	42.9%
Maximum Green (s)	6.0	6.0		62.0	62.0	62.0	53.0	53.0			53.0	53.0
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	-3.0	-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 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)		8.2		44.6	44.6	44.6	57.3	57.3			57.3	57.3
Actuated g/C Ratio		0.07		0.37	0.37	0.37	0.48	0.48			0.48	0.48
v/c Ratio		0.30		0.76	0.83	0.25	0.15	1.57			0.95	0.01
Control Delay		10.5		43.3	49.7	11.2	32.7	283.6			42.4	0.0
Queue Delay		0.0		0.0	0.0	0.0	0.0	0.0			0.0	0.0
Total Delay		10.5		43.3	49.7	11.2	32.7	283.6			42.4	0.0
LOS		B		D	D	B	C	F			D	A
Approach Delay		10.5			40.3			283.0			42.3	
Approach LOS		B			D			F			D	

Intersection Summary	
Area Type:	Other
Cycle Length: 140	
Actuated Cycle Length: 119.2	
Natural Cycle: 150	
Control Type: Actuated-Uncoordinated	
Maximum v/c Ratio: 1.57	
Intersection Signal Delay: 171.7	Intersection LOS: F
Intersection Capacity Utilization 108.9%	ICU Level of Service G
Analysis Period (min) 15	

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



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Synchro 10 Report
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Queues TT (2041) - Scenario B - 2% Growth Rate
102: Trafalgar Rd & North Carpool Lot/Hwy 407 WB Off Timing Plan: PM Peak Hour

	→	↖	←	↙	↗	↑	↓	↘
Lane Group	EBT	WBL	WBT	WBR	NBL	NBT	SBT	SBR
Lane Group Flow (vph)	56	362	368	157	9	3834	2331	5
v/c Ratio	0.30	0.76	0.83	0.25	0.15	1.57	0.95	0.01
Control Delay	10.5	43.3	49.7	11.2	32.7	283.6	42.4	0.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	10.5	43.3	49.7	11.2	32.7	283.6	42.4	0.0
Queue Length 50th (m)	0.0	77.5	84.9	9.8	1.2	~479.9	196.8	0.0
Queue Length 95th (m)	7.5	114.0	126.2	24.2	6.6	#601.9	#299.8	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)	185	700	653	869	62	2446	2446	797
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.30	0.52	0.56	0.18	0.15	1.57	0.95	0.01

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.

HCM Signalized Intersection Capacity Analysis TT (2041) - Scenario B - 2% Growth Rate
102: Trafalgar Rd & North Carpool Lot/Hwy 407 WB Off Timing Plan: PM Peak Hour

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕		↖	↕	↗	↖	↕↕↕			↕↕↕	↗
Traffic Volume (vph)	7	0	49	697	16	174	9	3834	0	0	2331	5
Future Volume (vph)	7	0	49	697	16	174	9	3834	0	0	2331	5
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)		1633		1681	1610	1504	1770	5085			5085	1583
Flt Permitted		0.99		0.72	0.70	1.00	0.07	1.00			1.00	1.00
Satd. Flow (perm)		1633		1275	1186	1504	130	5085			5085	1583
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	7	0	49	697	16	174	9	3834	0	0	2331	5
RTOR Reduction (vph)	0	53	0	0	1	60	0	0	0	0	0	3
Lane Group Flow (vph)	0	3	0	362	367	97	9	3834	0	0	2331	2
Turn Type	Split	NA		Perm	NA	Perm	Perm	NA			NA	Perm
Protected Phases	4	4			8		2				6	
Permitted Phases				8		8	2					6
Actuated Green, G (s)		4.5		42.5	42.5	42.5	54.3	54.3			54.3	54.3
Effective Green, g (s)		6.5		44.5	44.5	44.5	57.3	57.3			57.3	57.3
Actuated g/C Ratio		0.05		0.37	0.37	0.37	0.48	0.48			0.48	0.48
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)		88		471	438	556	61	2422			2422	753
v/s Ratio Prot		c0.00						c0.75			0.46	
v/s Ratio Perm				0.28	c0.31	0.06	0.07					0.00
v/c Ratio		0.03		0.77	0.84	0.17	0.15	1.58			0.96	0.00
Uniform Delay, d1		53.9		33.4	34.6	25.5	17.7	31.5			30.5	16.5
Progression Factor		1.00		1.00	1.00	1.00	1.00	1.00			1.00	1.00
Incremental Delay, d2		0.2		7.6	13.4	0.2	5.0	264.3			11.4	0.0
Delay (s)		54.1		41.0	48.0	25.7	22.8	295.8			41.8	16.5
Level of Service		D		D	D	C	C	F			D	B
Approach Delay (s)		54.1			41.2			295.2			41.8	
Approach LOS		D			D			F			D	

Intersection Summary

HCM 2000 Control Delay	178.6	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	1.21		
Actuated Cycle Length (s)	120.3	Sum of lost time (s)	14.0
Intersection Capacity Utilization	108.9%	ICU Level of Service	G
Analysis Period (min)	15		

c Critical Lane Group

Lanes, Volumes, Timings
103: Trafalgar Rd & Hwy 407 EB Off

TT (2041) - Scenario B - 2% Growth Rate
Timing Plan: PM Peak Hour

	EBL	EBR	NBL	NBT	SBT	SBR
Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	↰	↱		↰↰↰	↰↰↰	
Traffic Volume (vph)	87	275	0	4514	2874	0
Future Volume (vph)	87	275	0	4514	2874	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			251.9	363.6	
Travel Time (s)	39.9			18.1	26.2	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	87	275	0	4514	2874	0
Shared Lane Traffic (%)						
Lane Group Flow (vph)	87	275	0	4514	2874	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	CI+Ex	CI+Ex		CI+Ex	CI+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				CI+Ex	CI+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	

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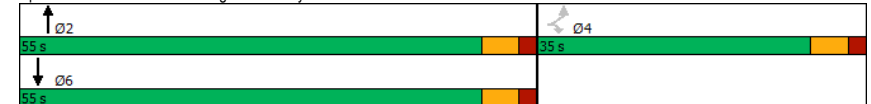
Lanes, Volumes, Timings
103: Trafalgar Rd & Hwy 407 EB Off

TT (2041) - Scenario B - 2% Growth Rate
Timing Plan: PM Peak Hour

	EBL	EBR	NBL	NBT	SBT	SBR
Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Minimum Split (s)	24.0	24.0		24.0	24.0	
Total Split (s)	35.0	35.0		55.0	55.0	
Total Split (%)	38.9%	38.9%		61.1%	61.1%	
Maximum Green (s)	29.0	29.0		49.0	49.0	
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)	21.0	21.0		51.8	51.8	
Actuated g/C Ratio	0.26	0.26		0.64	0.64	
v/c Ratio	0.19	0.67		1.38	0.88	
Control Delay	23.3	34.8		194.5	17.7	
Queue Delay	0.0	0.0		0.0	0.0	
Total Delay	23.3	34.8		194.5	17.7	
LOS	C	C		F	B	
Approach Delay	32.1			194.5	17.7	
Approach LOS	C			F	B	

Intersection Summary	
Area Type:	Other
Cycle Length: 90	
Actuated Cycle Length: 80.8	
Natural Cycle: 140	
Control Type: Semi Act-Uncoord	
Maximum v/c Ratio: 1.38	
Intersection Signal Delay: 121.3	Intersection LOS: F
Intersection Capacity Utilization 98.7%	ICU Level of Service F
Analysis Period (min) 15	

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



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Synchro 10 Report
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Queues
103: Trafalgar Rd & Hwy 407 EB Off

TT (2041) - Scenario B - 2% Growth Rate
Timing Plan: PM Peak Hour

	EBL	EBR	NBT	SBT
Lane Group	EBL	EBR	NBT	SBT
Lane Group Flow (vph)	87	275	4514	2874
v/c Ratio	0.19	0.67	1.38	0.88
Control Delay	23.3	34.8	194.5	17.7
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	23.3	34.8	194.5	17.7
Queue Length 50th (m)	10.1	36.6	~334.4	115.2
Queue Length 95th (m)	20.4	59.8	#417.0	#209.9
Internal Link Dist (m)	530.6		227.9	339.6
Turn Bay Length (m)				
Base Capacity (vph)	681	609	3260	3260
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	0.13	0.45	1.38	0.88

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.

HCM Signalized Intersection Capacity Analysis
103: Trafalgar Rd & Hwy 407 EB Off

TT (2041) - Scenario B - 2% Growth Rate
Timing Plan: PM Peak Hour

	EBL	EBR	NBL	NBT	SBT	SBR
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	↰	↱		↰	↰	↰
Traffic Volume (vph)	87	275	0	4514	2874	0
Future Volume (vph)	87	275	0	4514	2874	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	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	87	275	0	4514	2874	0
RTOR Reduction (vph)	0	1	0	0	0	0
Lane Group Flow (vph)	87	274	0	4514	2874	0
Turn Type	Perm	Perm		NA	NA	
Protected Phases				2	6	
Permitted Phases	4	4				
Actuated Green, G (s)	19.0	19.0		49.8	49.8	
Effective Green, g (s)	21.0	21.0		51.8	51.8	
Actuated g/C Ratio	0.26	0.26		0.64	0.64	
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)	460	411		3259	3259	
v/s Ratio Prot				c0.89	0.57	
v/s Ratio Perm	0.05	c0.17				
v/c Ratio	0.19	0.67		1.39	0.88	
Uniform Delay, d1	23.3	26.8		14.5	12.0	
Progression Factor	1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.2	4.1		175.3	3.8	
Delay (s)	23.5	30.8		189.8	15.8	
Level of Service	C	C		F	B	
Approach Delay (s)	29.1			189.8	15.8	
Approach LOS	C			F	B	

Intersection Summary

HCM 2000 Control Delay	117.7	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	1.21		
Actuated Cycle Length (s)	80.8	Sum of lost time (s)	10.0
Intersection Capacity Utilization	98.7%	ICU Level of Service	F
Analysis Period (min)	15		

c Critical Lane Group

Lanes, Volumes, Timings

104: Trafalgar Rd & West Street A/East Street A

TT (2041) - Scenario B - 2% Growth Rate

Timing Plan: PM Peak Hour

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰	↱	↰	↰	↱	↱	↰	↰	↰	↰	↱	↱
Traffic Volume (vph)	347	44	168	0	0	1112	20	3895	300	480	2512	157
Future Volume (vph)	347	44	168	0	0	1112	20	3895	300	480	2512	157
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	90.0		90.0	90.0		90.0
Storage Lanes	1		1	1		1	1		1	1		1
Taper Length (m)	75.0			75.0			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		
Satd. Flow (prot)	1770	1863	1583	1863	1863	1583	1770	5085	1583	1770	5085	1583
Flt Permitted	0.950						0.055			0.054		
Satd. Flow (perm)	1770	1863	1583	1863	1863	1583	102	5085	1583	101	5085	1583
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			112			55			150			157
Link Speed (k/h)	50				50			80			80	
Link Distance (m)	216.0				205.9			233.3			251.9	
Travel Time (s)	15.6				14.8			10.5			11.3	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	347	44	168	0	0	1112	20	3895	300	480	2512	157
Shared Lane Traffic (%)												
Lane Group Flow (vph)	347	44	168	0	0	1112	20	3895	300	480	2512	157
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	pm+pt	NA	Perm	pm+pt		pm+ov	pm+pt	NA	pm+ov	pm+pt	NA	pm+ov
Protected Phases	7	4		3	8	1	5	2	3	1	6	7
Permitted Phases	4		4	8		8	2		2	6		6

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Lanes, Volumes, Timings

104: Trafalgar Rd & West Street A/East Street A

TT (2041) - Scenario B - 2% Growth Rate

Timing Plan: PM Peak Hour

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector Phase	7	4	4	3	8	1	5	2	3	1	6	7
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)	9.5	24.0	24.0	9.5	24.0	11.0	9.5	24.0	9.5	11.0	24.0	9.5
Total Split (s)	12.0	26.2	26.2	9.8	24.0	37.0	9.5	77.0	9.8	37.0	104.5	12.0
Total Split (%)	8.0%	17.5%	17.5%	6.5%	16.0%	24.7%	6.3%	51.3%	6.5%	24.7%	69.7%	8.0%
Maximum Green (s)	9.0	20.2	20.2	5.3	18.0	34.0	5.0	71.0	5.3	34.0	98.5	9.0
Yellow Time (s)	3.0	4.0	4.0	3.5	4.0	3.0	3.5	4.0	3.5	3.0	4.0	3.0
All-Red Time (s)	0.0	2.0	2.0	1.0	2.0	0.0	1.0	2.0	1.0	0.0	2.0	0.0
Lost Time Adjust (s)	1.0	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0	1.0	-2.0	-2.0
Total Lost Time (s)	4.0	4.0	4.0	2.5	4.0	1.0	2.5	4.0	2.5	4.0	4.0	1.0
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lead	Lead	Lag	Lead	Lag	Lag	Lead
Lead-Lag Optimize?	Yes	Yes	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	3.0	3.0
Recall Mode	None	None	None	None	None	Max	None	C-Max	None	Max	C-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 Effect Green (s)	23.4	13.6	13.6			44.6	82.3	73.0	84.3	118.6	112.3	143.1
Actuated g/C Ratio	0.16	0.09	0.09			0.30	0.55	0.49	0.56	0.79	0.75	0.95
v/c Ratio	1.26	0.26	0.69			2.18	0.14	1.57	0.31	0.89	0.66	0.10
Control Delay	191.2	65.0	37.3			565.0	11.8	289.9	9.2	61.4	11.8	0.2
Queue Delay	0.0	0.0	0.0			0.0	0.0	0.1	0.0	0.0	0.5	0.0
Total Delay	191.2	65.0	37.3			565.0	11.8	290.0	9.2	61.4	12.2	0.2
LOS	F	E	D			F	B	F	A	E	B	A
Approach Delay		135.1			565.0			268.7			19.1	
Approach LOS		F			F			F			B	

Intersection Summary

Area Type: Other

Cycle Length: 150

Actuated Cycle Length: 150

Offset: 0 (0%), Referenced to phase 2:NBT and 6:SBTL, Start of Green

Natural Cycle: 150

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 2.18

Intersection Signal Delay: 209.9

Intersection LOS: F

Intersection Capacity Utilization 173.3%

ICU Level of Service H

Analysis Period (min) 15

Splits and Phases: 104: Trafalgar Rd & West Street A/East Street A

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Queues
104: Trafalgar Rd & West Street A/East Street A

TT (2041) - Scenario B - 2% Growth Rate
Timing Plan: PM Peak Hour

	EBL	EBT	EBR	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group	EBL	EBT	EBR	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	347	44	168	1112	20	3895	300	480	2512	157
v/c Ratio	1.26	0.26	0.69	2.18	0.14	1.57	0.31	0.89	0.66	0.10
Control Delay	191.2	65.0	37.3	565.0	11.8	289.9	9.2	61.4	11.8	0.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.5	0.0
Total Delay	191.2	65.0	37.3	565.0	11.8	290.0	9.2	61.4	12.2	0.2
Queue Length 50th (m)	~129.0	12.3	15.8	~513.1	1.4	~592.4	20.7	117.7	133.5	0.0
Queue Length 95th (m)	#160.7	23.4	38.6	#618.7	3.4	#606.4	38.3	#206.7	180.1	0.9
Internal Link Dist (m)	192.0		50.0		209.3		90.0		227.9	
Turn Bay Length (m)	50.0		50.0		90.0		90.0		90.0	
Base Capacity (vph)	276	275	329	509	142	2474	955	542	3806	1517
Starvation Cap Reductn	0	0	0	0	0	111	0	0	700	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	1.26	0.16	0.51	2.18	0.14	1.65	0.31	0.89	0.81	0.10

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.

HCM Signalized Intersection Capacity Analysis
104: Trafalgar Rd & West Street A/East Street A

TT (2041) - Scenario B - 2% Growth Rate
Timing Plan: PM Peak Hour

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔
Traffic Volume (vph)	347	44	168	0	0	1112	20	3895	300	480	2512	157
Future Volume (vph)	347	44	168	0	0	1112	20	3895	300	480	2512	157
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			1.0	2.5	4.0	2.5	4.0	4.0	1.0
Lane Util. Factor	1.00	1.00	1.00			1.00	1.00	0.91	1.00	1.00	0.91	1.00
Flt	1.00	1.00	0.85			0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00			1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1770	1863	1583			1583	1770	5085	1583	1770	5085	1583
Flt Permitted	0.95	1.00	1.00			1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	1770	1863	1583			1583	102	5085	1583	101	5085	1583
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	347	44	168	0	0	1112	20	3895	300	480	2512	157
RTOR Reduction (vph)	0	0	102	0	0	39	0	0	70	0	0	14
Lane Group Flow (vph)	347	44	66	0	0	1073	20	3895	230	480	2512	143
Turn Type	pm+pt	NA	Perm	pm+pt		pm+ov	pm+pt	NA	pm+ov	pm+pt	NA	pm+ov
Protected Phases	7	4		3	8	1	5	2	3	1	6	7
Permitted Phases	4		4	8		8	2		2	6		6
Actuated Green, G (s)	24.4	11.6	11.6			42.6	74.6	71.0	76.3	116.6	108.5	132.9
Effective Green, g (s)	23.4	13.6	13.6			44.6	78.6	73.0	80.3	115.6	110.5	136.9
Actuated g/C Ratio	0.16	0.09	0.09			0.30	0.52	0.49	0.54	0.77	0.74	0.91
Clearance Time (s)	3.0	6.0	6.0			3.0	4.5	6.0	4.5	3.0	6.0	3.0
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)	276	168	143			470	115	2474	847	540	3745	1444
v/s Ratio Prot	c0.20	0.02				c0.68	0.01	c0.77	0.01	0.25	0.49	0.02
v/s Ratio Perm			0.04				0.08		0.13	0.44		0.07
v/c Ratio	1.26	0.26	0.46			2.28	0.17	1.57	0.27	0.89	0.67	0.10
Uniform Delay, d1	63.3	63.5	64.7			52.7	21.1	38.5	19.0	46.1	10.3	0.6
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	141.8	0.8	2.4			584.4	0.7	260.4	0.2	19.3	1.0	0.0
Delay (s)	205.1	64.4	67.1			637.1	21.9	298.9	19.1	65.4	11.3	0.7
Level of Service	F	E	E			F	C	F	B	E	B	A
Approach Delay (s)	152.5		637.1		277.7		19.0					
Approach LOS	F		F		F		B					

Intersection Summary

HCM 2000 Control Delay	224.0	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	1.81		
Actuated Cycle Length (s)	150.0	Sum of lost time (s)	16.0
Intersection Capacity Utilization	173.3%	ICU Level of Service	H
Analysis Period (min)	15		

c Critical Lane Group

Lanes, Volumes, Timings
105: Trafalgar Rd & William Halton Parkway

TT (2041) - Scenario B - 2% Growth Rate

Timing Plan: PM Peak Hour

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↩	↩↩	↩	↩	↩↩	↩	↩↩	↩↩	↩	↩	↩↩	↩
Traffic Volume (vph)	1135	604	161	729	1590	547	719	2765	242	472	2001	465
Future Volume (vph)	1135	604	161	729	1590	547	719	2765	242	472	2001	465
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	0.105			0.218			0.087			0.095		
Satd. Flow (perm)	196	3539	1583	406	3539	1583	162	5085	1583	177	5085	1583
Right Turn on Red			Yes			Yes			Yes		Yes	
Satd. Flow (RTOR)			161			186			97		242	
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		212.9			205.0			193.0			233.3	
Travel Time (s)		15.3			14.8			13.9			16.8	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	1135	604	161	729	1590	547	719	2765	242	472	2001	465
Shared Lane Traffic (%)												
Lane Group Flow (vph)	1135	604	161	729	1590	547	719	2765	242	472	2001	465
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

I/O Trafalgar Oakville TIS
PTSL (210156/210157)

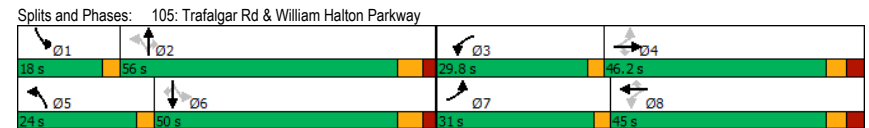
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Lanes, Volumes, Timings
105: Trafalgar Rd & William Halton Parkway

TT (2041) - Scenario B - 2% Growth Rate

Timing Plan: PM Peak Hour

	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)	14.0	38.0	38.0	14.2	38.0	38.0	13.9	42.9	42.9	13.9	42.9	42.9
Total Split (s)	31.0	46.2	46.2	29.8	45.0	45.0	24.0	56.0	56.0	18.0	50.0	50.0
Total Split (%)	20.7%	30.8%	30.8%	19.9%	30.0%	30.0%	16.0%	37.3%	37.3%	12.0%	33.3%	33.3%
Maximum Green (s)	28.0	39.2	39.2	26.8	38.0	38.0	21.0	49.1	49.1	15.0	43.1	43.1
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)	0.0	3.3	3.3	0.0	3.3	3.3	0.0	2.3	2.3	0.0	2.3	2.3
Lost Time Adjust (s)	1.0	-3.0	-3.0	1.0	-3.0	-3.0	1.0	-2.9	-2.9	1.0	-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	Max	Max	Max	Max	Max	Max
Walk Time (s)		7.0	7.0		7.0	7.0		7.0	7.0		7.0	7.0
Flash Dont Walk (s)		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 Effect Green (s)	69.2	42.2	42.2	66.8	41.0	41.0	70.0	52.0	52.0	60.0	46.0	46.0
Actuated g/C Ratio	0.46	0.28	0.28	0.45	0.27	0.27	0.47	0.35	0.35	0.40	0.31	0.31
v/c Ratio	3.04	0.61	0.29	1.76	1.64	0.96	2.48	1.57	0.40	2.16	1.28	0.71
Control Delay	944.5	49.8	7.0	375.4	329.0	65.1	697.5	292.7	23.7	558.5	174.5	28.1
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	944.5	49.8	7.0	375.4	329.0	65.1	697.5	292.7	23.7	558.5	174.5	28.1
LOS	F	D	A	F	F	E	F	F	C	F	F	C
Approach Delay		580.6			290.5			353.3			213.0	
Approach LOS		F			F			F			F	
Intersection Summary												
Area Type:		Other										
Cycle Length: 150												
Actuated Cycle Length: 150												
Natural Cycle: 150												
Control Type: Semi Act-Uncoord												
Maximum v/c Ratio: 3.04												
Intersection Signal Delay: 339.3							Intersection LOS: F					
Intersection Capacity Utilization 199.7%							ICU Level of Service H					
Analysis Period (min) 15												



I/O Trafalgar Oakville TIS
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Queues TT (2041) - Scenario B - 2% Growth Rate
105: Trafalgar Rd & William Halton Parkway Timing Plan: PM Peak Hour

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	1135	604	161	729	1590	547	719	2765	242	472	2001	465
v/c Ratio	3.04	0.61	0.29	1.76	1.64	0.96	2.48	1.57	0.40	2.16	1.28	0.71
Control Delay	944.5	49.8	7.0	375.4	329.0	65.1	697.5	292.7	23.7	558.5	174.5	28.1
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	944.5	49.8	7.0	375.4	329.0	65.1	697.5	292.7	23.7	558.5	174.5	28.1
Queue Length 50th (m)	~566.0	81.3	0.0	~285.1	~354.3	114.8	~336.0	~419.8	31.4	~205.6	~272.2	60.2
Queue Length 95th (m)	#646.2	101.3	16.9	#361.0	#396.0	#188.6	#411.8	#443.2	54.9	#273.4	#299.8	102.0
Internal Link Dist (m)	188.9			181.0			169.0			209.3		
Turn Bay Length (m)	100.0		100.0	100.0		150.0	150.0		75.0			
Base Capacity (vph)	373	995	561	415	967	567	290	1762	612	219	1559	653
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	3.04	0.61	0.29	1.76	1.64	0.96	2.48	1.57	0.40	2.16	1.28	0.71

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.

Queue shown is maximum after two cycles.

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

Queue shown is maximum after two cycles.

HCM Signalized Intersection Capacity Analysis TT (2041) - Scenario B - 2% Growth Rate
105: Trafalgar Rd & William Halton Parkway Timing Plan: PM Peak Hour

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰	↱	↱	↰	↱	↱	↰	↱	↱	↰	↱	↱
Traffic Volume (vph)	1135	604	161	729	1590	547	719	2765	242	472	2001	465
Future Volume (vph)	1135	604	161	729	1590	547	719	2765	242	472	2001	465
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	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00
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	0.10	1.00	1.00	0.22	1.00	1.00	0.09	1.00	1.00	0.10	1.00	1.00
Satd. Flow (perm)	195	3539	1583	407	3539	1583	162	5085	1583	177	5085	1583
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	1135	604	161	729	1590	547	719	2765	242	472	2001	465
RTOR Reduction (vph)	0	0	116	0	0	135	0	0	63	0	0	168
Lane Group Flow (vph)	1135	604	45	729	1590	412	719	2765	179	472	2001	297
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)	67.2	39.2	39.2	64.8	38.0	38.0	67.1	49.1	49.1	58.1	43.1	43.1
Effective Green, g (s)	65.2	42.2	42.2	62.8	41.0	41.0	66.1	52.0	52.0	56.1	46.0	46.0
Actuated g/C Ratio	0.43	0.28	0.28	0.42	0.27	0.27	0.44	0.35	0.35	0.37	0.31	0.31
Clearance Time (s)	3.0	7.0	7.0	3.0	7.0	7.0	3.0	6.9	6.9	3.0	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	995	445	404	967	432	285	1762	548	214	1559	485
v/s Ratio Prot	c0.55	0.17		0.31	0.45		c0.34	0.54		0.21	0.39	
v/s Ratio Perm	c0.78		0.03	0.44		0.26	c0.77		0.11	0.62		0.19
v/c Ratio	3.08	0.61	0.10	1.80	1.64	0.95	2.52	1.57	0.33	2.21	1.28	0.61
Uniform Delay, d1	48.0	46.7	39.9	35.0	54.5	53.6	48.3	49.0	36.1	44.1	52.0	44.4
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	945.1	1.6	0.2	371.7	294.6	32.0	695.6	258.9	1.6	557.5	132.6	5.7
Delay (s)	993.0	48.3	40.1	406.8	349.1	85.6	743.8	307.9	37.7	601.6	184.6	50.1
Level of Service	F	D	D	F	F	F	F	F	D	F	F	D
Approach Delay (s)		612.0			313.5			374.5			230.3	
Approach LOS		F			F			F			F	

Intersection Summary

HCM 2000 Control Delay	361.6	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	2.72		
Actuated Cycle Length (s)	150.0	Sum of lost time (s)	16.0
Intersection Capacity Utilization	199.7%	ICU Level of Service	H
Analysis Period (min)	15		

c Critical Lane Group

Lanes, Volumes, Timings TT (2041) - Scenario B - 2% Growth Rate
106: Trafalgar Rd & Burnhamthorpe Rd/Burnhamthorpe Rd Timing Plan: PM Peak Hour

	←	→	↖	↗	←	→	↖	↗	←	→	↖	↗
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖	↖		↖	↖		↖	↖	↖	↖	↖	↖
Traffic Volume (vph)	190	339	18	135	297	622	100	2603	145	425	1910	365
Future Volume (vph)	190	339	18	135	297	622	100	2603	145	425	1910	365
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	1.00	1.00	1.00	1.00	1.00	1.00	0.91	1.00	1.00	0.91	1.00
Frt		0.992				0.898			0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1770	1848	0	1770	1673	0	1770	5085	1583	1770	5085	1583
Flt Permitted	0.137			0.246			0.105			0.095		
Satd. Flow (perm)	255	1848	0	458	1673	0	196	5085	1583	177	5085	1583
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		2			99				91			305
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	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	190	339	18	135	297	622	100	2603	145	425	1910	365
Shared Lane Traffic (%)												
Lane Group Flow (vph)	190	357	0	135	919	0	100	2603	145	425	1910	365
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	pm+ov	pm+pt	NA	pm+ov
Protected Phases	7	4		3	8		5	2	3	1	6	7
Permitted Phases	4			8			2		2	6		6

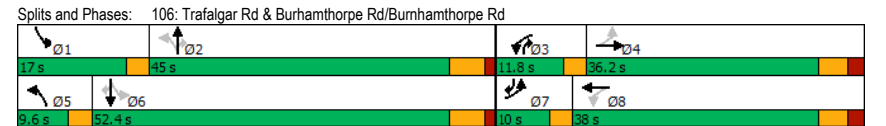
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Lanes, Volumes, Timings TT (2041) - Scenario B - 2% Growth Rate
106: Trafalgar Rd & Burnhamthorpe Rd/Burnhamthorpe Rd Timing Plan: PM Peak Hour

	←	→	↖	↗	←	→	↖	↗	←	→	↖	↗
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector Phase	7	4		3	8		5	2	3	1	6	7
Switch Phase												
Minimum Initial (s)	5.0	10.0		5.0	10.0		5.0	20.0	5.0	7.0	20.0	5.0
Minimum Split (s)	9.5	24.0		9.5	24.0		9.5	26.0	9.5	11.5	26.0	9.5
Total Split (s)	10.0	36.2		11.8	38.0		9.6	45.0	11.8	17.0	52.4	10.0
Total Split (%)	9.1%	32.9%		10.7%	34.5%		8.7%	40.9%	10.7%	15.5%	47.6%	9.1%
Maximum Green (s)	7.0	30.2		8.8	32.0		6.6	39.0	8.8	14.0	46.4	7.0
Yellow Time (s)	3.0	3.7		3.0	3.7		3.0	4.6	3.0	3.0	4.6	3.0
All-Red Time (s)	0.0	2.3		0.0	2.3		0.0	1.4	0.0	0.0	1.4	0.0
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	1.0	4.0	4.0	1.0
Lead/Lag	Lead	Lag		Lead	Lag		Lead	Lag	Lead	Lag	Lag	Lead
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	Max	None		Max	None		Max	Max	Max	Max	Max	Max
Act Effct Green (s)	38.2	32.2		41.8	34.0		46.6	41.0	55.8	58.0	48.4	61.4
Actuated g/C Ratio	0.35	0.29		0.38	0.31		0.42	0.37	0.51	0.53	0.44	0.56
v/c Ratio	1.11	0.66		0.51	1.57		0.61	1.37	0.17	1.51	0.85	0.36
Control Delay	130.0	40.7		28.8	291.8		32.6	201.7	6.5	273.7	32.4	3.5
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	130.0	40.7		28.8	291.8		32.6	201.7	6.5	273.7	32.4	3.5
LOS	F	D		C	F		C	F	A	F	C	A
Approach Delay		71.7			258.1			185.8			66.5	
Approach LOS		E			F			F			E	

Intersection Summary												
Area Type:	Other											
Cycle Length:	110											
Actuated Cycle Length:	110											
Natural Cycle:	120											
Control Type:	Semi Act-Uncooord											
Maximum v/c Ratio:	1.57											
Intersection Signal Delay:	142.7											
Intersection Capacity Utilization	151.5%											
Analysis Period (min)	15											



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Queues
106: Trafalgar Rd & Burhamthorpe Rd/Burnhamthorpe Rd

TT (2041) - Scenario B - 2% Growth Rate
Timing Plan: PM Peak Hour

	EBL	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	190	357	135	919	100	2603	145	425	1910	365
v/c Ratio	1.11	0.66	0.51	1.57	0.61	1.37	0.17	1.51	0.85	0.36
Control Delay	130.0	40.7	28.8	291.8	32.6	201.7	6.5	273.7	32.4	3.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	130.0	40.7	28.8	291.8	32.6	201.7	6.5	273.7	32.4	3.5
Queue Length 50th (m)	~29.1	65.8	18.3	~263.8	10.2	~267.9	5.6	~110.2	129.7	5.5
Queue Length 95th (m)	#73.3	97.1	31.4	#338.1	#24.3	#295.7	15.6	#169.6	150.5	18.7
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	
Base Capacity (vph)	171	542	267	585	163	1895	847	281	2237	1018
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	0.66	0.51	1.57	0.61	1.37	0.17	1.51	0.85	0.36

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.

HCM Signalized Intersection Capacity Analysis
106: Trafalgar Rd & Burhamthorpe Rd/Burnhamthorpe Rd

TT (2041) - Scenario B - 2% Growth Rate
Timing Plan: PM Peak Hour

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰	↱		↰	↱		↰	↱	↱	↰	↱	↱
Traffic Volume (vph)	190	339	18	135	297	622	100	2603	145	425	1910	365
Future Volume (vph)	190	339	18	135	297	622	100	2603	145	425	1910	365
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	1.0	4.0	4.0	1.0
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	0.99		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	1849		1770	1674		1770	5085	1583	1770	5085	1583
Flt Permitted	0.14	1.00		0.25	1.00		0.11	1.00	1.00	0.10	1.00	1.00
Satd. Flow (perm)	255	1849		459	1674		196	5085	1583	177	5085	1583
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	190	339	18	135	297	622	100	2603	145	425	1910	365
RTOR Reduction (vph)	0	1	0	0	68	0	0	0	48	0	0	146
Lane Group Flow (vph)	190	356	0	135	851	0	100	2603	97	425	1910	219
Turn Type	pm+pt	NA		pm+pt	NA		pm+pt	NA	pm+ov	pm+pt	NA	pm+ov
Protected Phases	7	4		3	8		5	2	3	1	6	7
Permitted Phases	4			8			2		2	6		6
Actuated Green, G (s)	37.2	30.2		40.8	32.0		45.6	39.0	47.8	56.0	46.4	53.4
Effective Green, g (s)	35.2	32.2		38.8	34.0		43.6	41.0	51.8	55.0	48.4	57.4
Actuated g/C Ratio	0.32	0.29		0.35	0.31		0.40	0.37	0.47	0.50	0.44	0.52
Clearance Time (s)	3.0	6.0		3.0	6.0		3.0	6.0	3.0	3.0	6.0	3.0
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)	164	541		254	517		157	1895	745	276	2237	826
v/s Ratio Prot	c0.06	0.19		0.04	c0.51		0.03	0.51	c0.01	c0.18	0.38	0.02
v/s Ratio Perm	0.31			0.15			0.22		0.05	c0.58		0.12
v/c Ratio	1.16	0.66		0.53	1.65		0.64	1.37	0.13	1.54	0.85	0.27
Uniform Delay, d1	35.2	34.1		26.5	38.0		25.3	34.5	16.4	32.9	27.6	14.6
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	119.3	2.9		2.1	299.0		18.1	171.5	0.4	260.3	4.4	0.8
Delay (s)	154.5	36.9		28.6	337.0		43.4	206.0	16.8	293.2	32.0	15.4
Level of Service	F	D		C	F		D	F	B	F	C	B
Approach Delay (s)		77.8			297.5			190.7			70.9	
Approach LOS		E			F			F			E	

Intersection Summary

HCM 2000 Control Delay	152.6	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	1.55		
Actuated Cycle Length (s)	110.0	Sum of lost time (s)	16.0
Intersection Capacity Utilization	151.5%	ICU Level of Service	H
Analysis Period (min)	15		

c Critical Lane Group

Lanes, Volumes, Timings
202: Trafalgar Rd & East Street C

TT (2041) - Scenario B - 2% Growth Rate
Timing Plan: PM Peak Hour

	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations		↗		↗↗↗	↗↗↗	↗
Traffic Volume (vph)	0	318	0	3415	2382	306
Future Volume (vph)	0	318	0	3415	2382	306
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (m)	0.0	0.0	0.0			90.0
Storage Lanes	0	1	0			1
Taper Length (m)	7.5		7.5			
Lane Util. Factor	1.00	1.00	1.00	0.91	0.91	1.00
Frt		0.865				0.850
Flt Protected						
Satd. Flow (prot)	0	1611	0	5085	5085	1583
Flt Permitted						
Satd. Flow (perm)	0	1611	0	5085	5085	1583
Link Speed (k/h)	50			50	50	
Link Distance (m)	205.4			92.4	193.0	
Travel Time (s)	14.8			6.7	13.9	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	0	318	0	3415	2382	306
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	318	0	3415	2382	306
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	0.0			3.6	3.6	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	4.8			4.8	4.8	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)	25	15	25			15
Sign Control	Stop			Free	Free	
Intersection Summary						
Area Type:	Other					
Control Type:	Unsignalized					
Intersection Capacity Utilization 72.4%	ICU Level of Service C					
Analysis Period (min) 15						

HCM Unsignalized Intersection Capacity Analysis
202: Trafalgar Rd & East Street C

TT (2041) - Scenario B - 2% Growth Rate
Timing Plan: PM Peak Hour

								
Movement	EBL	EBR	NBL	NBT	SBT	SBR		
Lane Configurations				  	  			
Traffic Volume (veh/h)	0	318	0	3415	2382	306		
Future Volume (Veh/h)	0	318	0	3415	2382	306		
Sign Control	Stop			Free	Free			
Grade	0%			0%	0%			
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00		
Hourly flow rate (vph)	0	318	0	3415	2382	306		
Pedestrians								
Lane Width (m)								
Walking Speed (m/s)								
Percent Blockage								
Right turn flare (veh)								
Median type			None		None			
Median storage (veh)								
Upstream signal (m)				263	193			
pX, platoon unblocked	0.79	0.70	0.70					
vC, conflicting volume	3520	794	2688					
vC1, stage 1 conf vol								
vC2, stage 2 conf vol								
vCu, unblocked vol	741	0	1923					
tC, single (s)	6.8	6.9	4.1					
tC, 2 stage (s)								
tF (s)	3.5	3.3	2.2					
p0 queue free %	100	58	100					
cM capacity (veh/h)	279	763	213					
Direction, Lane #	EB 1	NB 1	NB 2	NB 3	SB 1	SB 2	SB 3	SB 4
Volume Total	318	1138	1138	1138	794	794	794	306
Volume Left	0	0	0	0	0	0	0	0
Volume Right	318	0	0	0	0	0	0	306
cSH	763	1700	1700	1700	1700	1700	1700	1700
Volume to Capacity	0.42	0.67	0.67	0.67	0.47	0.47	0.47	0.18
Queue Length 95th (m)	15.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Control Delay (s)	13.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Lane LOS	B							
Approach Delay (s)	13.1	0.0	0.0					
Approach LOS	B							
Intersection Summary								
Average Delay			0.6					
Intersection Capacity Utilization			72.4%		ICU Level of Service		C	
Analysis Period (min)			15					

Lanes, Volumes, Timings
203: East Street D & East Street A

TT (2041) - Scenario B - 2% Growth Rate
Timing Plan: PM Peak Hour

						
Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	188	578	0	345	446	0
Future Volume (vph)	188	578	0	345	446	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	0.850					
Flt Protected			0.950			
Satd. Flow (prot)	1863	1583	0	1863	1770	0
Flt Permitted			0.950			
Satd. Flow (perm)	1863	1583	0	1863	1770	0
Link Speed (k/h)	50		50		50	
Link Distance (m)	205.9		205.1		113.3	
Travel Time (s)	14.8		14.8		8.2	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	188	578	0	345	446	0
Shared Lane Traffic (%)						
Lane Group Flow (vph)	188	578	0	345	446	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
Sign Control	Free		Free		Stop	
Intersection Summary						
Area Type:	Other					
Control Type:	Unsignalized					
Intersection Capacity Utilization	60.6%			ICU Level of Service B		
Analysis Period (min)	15					

HCM Unsignalized Intersection Capacity Analysis TT (2041) - Scenario B - 2% Growth Rate
203: East Street D & East Street A

Timing Plan: PM Peak Hour

	→	↖	↗	←	↖	↗
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑	↑		↑	↑	
Traffic Volume (veh/h)	188	578	0	345	446	0
Future Volume (Veh/h)	188	578	0	345	446	0
Sign Control	Free			Free		Stop
Grade	0%			0%		0%
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	188	578	0	345	446	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)	206					
pX, platoon unblocked						
vC, conflicting volume			766		533	188
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			766		533	188
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			100		12	100
cM capacity (veh/h)			847		507	854
Direction, Lane #	EB 1	EB 2	WB 1	NB 1		
Volume Total	188	578	345	446		
Volume Left	0	0	0	446		
Volume Right	0	578	0	0		
cSH	1700	1700	847	507		
Volume to Capacity	0.11	0.34	0.00	0.88		
Queue Length 95th (m)	0.0	0.0	0.0	72.4		
Control Delay (s)	0.0	0.0	0.0	44.4		
Lane LOS				E		
Approach Delay (s)	0.0		0.0	44.4		
Approach LOS				E		
Intersection Summary						
Average Delay			12.7			
Intersection Capacity Utilization			60.6%		ICU Level of Service	B
Analysis Period (min)			15			

Lanes, Volumes, Timings
204: East Street E & East Street A

TT (2041) - Scenario B - 2% Growth Rate
Timing Plan: PM Peak Hour

	→	↖	↗	←	↖	↗
Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↖			↖	↖	↖
Traffic Volume (vph)	0	121	0	0	367	0
Future Volume (vph)	0	121	0	0	367	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.865					
Flt Protected					0.950	
Satd. Flow (prot)	1611	0	0	1863	1770	0
Flt Permitted					0.950	
Satd. Flow (perm)	1611	0	0	1863	1770	0
Link Speed (k/h)	50			50	50	
Link Distance (m)	205.1			192.2	115.1	
Travel Time (s)	14.8			13.8	8.3	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	0	121	0	0	367	0
Shared Lane Traffic (%)						
Lane Group Flow (vph)	121	0	0	0	367	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	0.0			0.0	3.6	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	4.8			4.8	4.8	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)		15	25		25	15
Sign Control	Free			Free	Stop	

Intersection Summary

Area Type: Other

Control Type: Unsignalized

Intersection Capacity Utilization 34.5% ICU Level of Service A

Analysis Period (min) 15

HCM Unsignalized Intersection Capacity Analysis
204: East Street E & East Street A

TT (2041) - Scenario B - 2% Growth Rate
Timing Plan: PM Peak Hour

	→	↖	↗	←	↖	↗
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↖			↖	↖	↖
Traffic Volume (veh/h)	0	121	0	0	367	0
Future Volume (Veh/h)	0	121	0	0	367	0
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	0	121	0	0	367	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			121		60	60
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			121		60	60
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			100		61	100
cM capacity (veh/h)			1467		946	1005

Direction, Lane #	EB 1	WB 1	NB 1
Volume Total	121	0	367
Volume Left	0	0	367
Volume Right	121	0	0
cSH	1700	1700	946
Volume to Capacity	0.07	0.00	0.39
Queue Length 95th (m)	0.0	0.0	13.9
Control Delay (s)	0.0	0.0	11.2
Lane LOS			B
Approach Delay (s)	0.0	0.0	11.2
Approach LOS			B

Intersection Summary

Average Delay	8.4		
Intersection Capacity Utilization	34.5%	ICU Level of Service	A
Analysis Period (min)	15		

Lanes, Volumes, Timings
205: East Street F & East Street A

TT (2041) - Scenario B - 2% Growth Rate
Timing Plan: PM Peak Hour

						
Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
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	1.00	1.00	1.00
Frt						
Flt Protected						
Satd. Flow (prot)	1863	0	0	1863	1863	0
Flt Permitted						
Satd. Flow (perm)	1863	0	0	1863	1863	0
Link Speed (k/h)	50			50	50	
Link Distance (m)	192.2			209.4	115.6	
Travel Time (s)	13.8			15.1	8.3	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
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)	0.0			0.0	3.6	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	4.8			4.8	4.8	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)		15	25		25	15
Sign Control	Free			Free	Stop	
Intersection Summary						
Area Type:	Other					
Control Type:	Unsignalized					
Intersection Capacity Utilization	0.0%			ICU Level of Service A		
Analysis Period (min)	15					

HCM Unsignalized Intersection Capacity Analysis TT (2041) - Scenario B - 2% Growth Rate
205: East Street F & East Street A

Timing Plan: PM Peak Hour

	→	↖	↗	←	↖	↗
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↖			↖	↖	
Traffic Volume (veh/h)	0	0	0	0	0	0
Future Volume (Veh/h)	0	0	0	0	0	0
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	0	0	0	0	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			0		0	0
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			0		0	0
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			100		100	100
cM capacity (veh/h)			1623		1023	1085
Direction, Lane #	EB 1	WB 1	NB 1			
Volume Total	0	0	0			
Volume Left	0	0	0			
Volume Right	0	0	0			
cSH	1700	1700	1700			
Volume to Capacity	0.00	0.00	0.00			
Queue Length 95th (m)	0.0	0.0	0.0			
Control Delay (s)	0.0	0.0	0.0			
Lane LOS			A			
Approach Delay (s)	0.0	0.0	0.0			
Approach LOS			A			
Intersection Summary						
Average Delay			0.0			
Intersection Capacity Utilization			0.0%		ICU Level of Service	A
Analysis Period (min)			15			

Lanes, Volumes, Timings
206: East Street D & East Street B

TT (2041) - Scenario B - 2% Growth Rate
Timing Plan: PM Peak Hour

	←	←	↑	↗	↘	↓
Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	↖		↖			↗
Traffic Volume (vph)	125	10	215	28	28	478
Future Volume (vph)	125	10	215	28	28	478
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		0.984			
Flt Protected	0.956					0.997
Satd. Flow (prot)	1763	0	1833	0	0	1857
Flt Permitted	0.956					0.997
Satd. Flow (perm)	1763	0	1833	0	0	1857
Link Speed (k/h)	50		50			50
Link Distance (m)	203.4		120.6			113.3
Travel Time (s)	14.6		8.7			8.2
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	125	10	215	28	28	478
Shared Lane Traffic (%)						
Lane Group Flow (vph)	135	0	243	0	0	506
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 57.3%
Analysis Period (min) 15

ICU Level of Service B

HCM Unsignalized Intersection Capacity Analysis
206: East Street D & East Street B

TT (2041) - Scenario B - 2% Growth Rate
Timing Plan: PM Peak Hour

	←	←	↑	↗	↘	↓
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	↖		↖			↗
Traffic Volume (veh/h)	125	10	215	28	28	478
Future Volume (Veh/h)	125	10	215	28	28	478
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	125	10	215	28	28	478
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	763	229			243	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	763	229			243	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	66	99			98	
cM capacity (veh/h)	364	810			1323	

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	135	243	506
Volume Left	125	0	28
Volume Right	10	28	0
cSH	380	1700	1323
Volume to Capacity	0.36	0.14	0.02
Queue Length 95th (m)	11.8	0.0	0.5
Control Delay (s)	19.6	0.0	0.6
Lane LOS	C		A
Approach Delay (s)	19.6	0.0	0.6
Approach LOS	C		

Intersection Summary

Average Delay 3.4
Intersection Capacity Utilization 57.3% ICU Level of Service B
Analysis Period (min) 15

Lanes, Volumes, Timings
207: East Street E & East Street B

TT (2041) - Scenario B - 2% Growth Rate
Timing Plan: PM Peak Hour

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔			↔			↔			↔	
Traffic Volume (vph)	148	0	162	0	0	0	228	22	0	0	121	0
Future Volume (vph)	148	0	162	0	0	0	228	22	0	0	121	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	0.929											
Flt Protected	0.977											
Satd. Flow (prot)	0	1691	0	0	1863	0	0	1781	0	0	1863	0
Flt Permitted	0.977											
Satd. Flow (perm)	0	1691	0	0	1863	0	0	1781	0	0	1863	0
Link Speed (k/h)	50											
Link Distance (m)	203.4											
Travel Time (s)	14.6											
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	148	0	162	0	0	0	228	22	0	0	121	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	310	0	0	0	0	250	0	0	0	121	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											
Link Offset(m)	0.0											
Crosswalk Width(m)	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											

Intersection Summary

Area Type: Other

Control Type: Unsignalized

Intersection Capacity Utilization 48.3% ICU Level of Service A

Analysis Period (min) 15

HCM Unsignalized Intersection Capacity Analysis TT (2041) - Scenario B - 2% Growth Rate
207: East Street E & East Street B

Timing Plan: PM Peak Hour

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Movement		↔			↔			↔			↔	
Lane Configurations		↔			↔			↔			↔	
Traffic Volume (veh/h)	148	0	162	0	0	0	228	22	0	0	121	0
Future Volume (Veh/h)	148	0	162	0	0	0	228	22	0	0	121	0
Sign Control	Stop											
Grade	0%											
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	148	0	162	0	0	0	228	22	0	0	121	0
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type	None											
Median storage (veh)												
Upstream signal (m)	121											
pX, platoon unblocked												
vC, conflicting volume	599	599	121	761	599	22	121			22		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	599	599	121	761	599	22	121			22		
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 %	59	100	83	100	100	100	84			100		
cM capacity (veh/h)	364	351	930	234	351	1055	1467			1593		

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	310	0	250	121
Volume Left	148	0	228	0
Volume Right	162	0	0	0
cSH	534	1700	1467	1593
Volume to Capacity	0.58	0.00	0.16	0.00
Queue Length 95th (m)	27.5	0.0	4.1	0.0
Control Delay (s)	20.7	0.0	7.3	0.0
Lane LOS	C	A	A	
Approach Delay (s)	20.7	0.0	7.3	0.0
Approach LOS	C	A		

Intersection Summary

Average Delay	12.1			
Intersection Capacity Utilization	48.3%	ICU Level of Service	A	
Analysis Period (min)	15			

Lanes, Volumes, Timings
208: East Street F & East Street B

TT (2041) - Scenario B - 2% Growth Rate
Timing Plan: PM Peak Hour

	EBL	EBR	NBL	NBT	SBT	SBR
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	1.00	1.00	1.00
Flt						
Flt Protected						
Satd. Flow (prot)	1863	0	0	1863	1863	0
Flt Permitted						
Satd. Flow (perm)	1863	0	0	1863	1863	0
Link Speed (k/h)	50			50	50	
Link Distance (m)	193.8			120.1	115.6	
Travel Time (s)	14.0			8.6	8.3	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
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			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	25			15
Sign Control	Stop			Free	Free	

Intersection Summary

Area Type: Other
Control Type: Unsignalized
Intersection Capacity Utilization 0.0% ICU Level of Service A
Analysis Period (min) 15

HCM Unsignalized Intersection Capacity Analysis TT (2041) - Scenario B - 2% Growth Rate
208: East Street F & East Street B

Timing Plan: PM Peak Hour

	EBL	EBR	NBL	NBT	SBT	SBR
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	↔			↔	↔	
Traffic Volume (veh/h)	0	0	0	0	0	0
Future Volume (Veh/h)	0	0	0	0	0	0
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	0	0	0	0	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	0	0	0			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	0	0	0			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	100	100	100			
cM capacity (veh/h)	1023	1085	1623			

Direction, Lane #	EB 1	NB 1	SB 1
Volume Total	0	0	0
Volume Left	0	0	0
Volume Right	0	0	0
cSH	1700	1700	1700
Volume to Capacity	0.00	0.00	0.00
Queue Length 95th (m)	0.0	0.0	0.0
Control Delay (s)	0.0	0.0	0.0
Lane LOS	A		
Approach Delay (s)	0.0	0.0	0.0
Approach LOS	A		

Intersection Summary

Average Delay 0.0
Intersection Capacity Utilization 0.0% ICU Level of Service A
Analysis Period (min) 15

Lanes, Volumes, Timings TT (2041) - Scenario B - 2% Growth Rate
209: William Halton Parkway & East Street D Timing Plan: PM Peak Hour

						
Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑↑	↑↑	↑		↑
Traffic Volume (vph)	0	1328	2303	84	0	563
Future Volume (vph)	0	1328	2303	84	0	563
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (m)	0.0			50.0	0.0	0.0
Storage Lanes	0			1	0	1
Taper Length (m)	7.5				7.5	
Lane Util. Factor	1.00	0.95	0.95	1.00	1.00	1.00
Frt				0.850		0.865
Flt Protected						
Satd. Flow (prot)	0	3539	3539	1583	0	1611
Flt Permitted						
Satd. Flow (perm)	0	3539	3539	1583	0	1611
Link Speed (k/h)		50	50		50	
Link Distance (m)		205.0	201.5		120.6	
Travel Time (s)		14.8	14.5		8.7	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	0	1328	2303	84	0	563
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	1328	2303	84	0	563
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(m)		3.6	3.6		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	25	15
Sign Control		Free	Free		Stop	
Intersection Summary						
Area Type:	Other					
Control Type:	Unsignalized					
Intersection Capacity Utilization	105.2%			ICU Level of Service G		
Analysis Period (min)	15					

HCM Unsignalized Intersection Capacity Analysis TT (2041) - Scenario B - 2% Growth Rate
209: William Halton Parkway & East Street D Timing Plan: PM Peak Hour

						
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑↑	↑↑	↑		↑
Traffic Volume (veh/h)	0	1328	2303	84	0	563
Future Volume (Veh/h)	0	1328	2303	84	0	563
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	0	1328	2303	84	0	563
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		None	None			
Median storage (veh)						
Upstream signal (m)		205	201			
pX, platoon unblocked	0.39				0.47	0.39
vC, conflicting volume	2387				2967	1152
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1439				1525	0
tC, single (s)	4.1				6.8	6.9
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	100				100	0
cM capacity (veh/h)	184				50	426
Direction, Lane #	EB 1	EB 2	WB 1	WB 2	WB 3	SB 1
Volume Total	664	664	1152	1152	84	563
Volume Left	0	0	0	0	0	0
Volume Right	0	0	0	0	84	563
cSH	1700	1700	1700	1700	1700	426
Volume to Capacity	0.39	0.39	0.68	0.68	0.05	1.32
Queue Length 95th (m)	0.0	0.0	0.0	0.0	0.0	190.9
Control Delay (s)	0.0	0.0	0.0	0.0	0.0	187.5
Lane LOS						F
Approach Delay (s)	0.0		0.0			187.5
Approach LOS						F
Intersection Summary						
Average Delay			24.7			
Intersection Capacity Utilization			105.2%		ICU Level of Service	G
Analysis Period (min)			15			

Lanes, Volumes, Timings

210: William Halton Parkway & East Street E

TT (2041) - Scenario B - 2% Growth Rate

Timing Plan: PM Peak Hour

	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations	↰	↱	↱	↰	↰	↰
Traffic Volume (vph)	221	1087	2301	39	197	86
Future Volume (vph)	221	1087	2301	39	197	86
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (m)	90.0			50.0	0.0	0.0
Storage Lanes	1			1	1	0
Taper Length (m)	100.0				7.5	
Lane Util. Factor	1.00	*0.95	*0.95	1.00	1.00	1.00
Frt				0.850	0.959	
Flt Protected	0.950				0.966	
Satd. Flow (prot)	1770	3539	3539	1583	1726	0
Flt Permitted	0.053				0.966	
Satd. Flow (perm)	99	3539	3539	1583	1726	0
Right Turn on Red				Yes	Yes	
Satd. Flow (RTOR)				19	16	
Link Speed (k/h)		50	50		50	
Link Distance (m)		201.5	195.6		120.6	
Travel Time (s)		14.5	14.1		8.7	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	221	1087	2301	39	197	86
Shared Lane Traffic (%)						
Lane Group Flow (vph)	221	1087	2301	39	283	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
Number of Detectors	1	2	2	1	1	
Detector Template	Left	Thru	Thru	Right	Left	
Leading Detector (m)	2.0	10.0	10.0	2.0	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)	2.0	0.6	0.6	2.0	2.0	
Detector 1 Type	CI+Ex	CI+Ex	CI+Ex	CI+Ex	CI+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		CI+Ex	CI+Ex			
Detector 2 Channel						
Detector 2 Extend (s)		0.0	0.0			
Turn Type	pm+pt	NA	NA	Perm	Perm	
Protected Phases	7	4	8			
Permitted Phases	4			8	6	

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Lanes, Volumes, Timings

210: William Halton Parkway & East Street E

TT (2041) - Scenario B - 2% Growth Rate

Timing Plan: PM Peak Hour

	EBL	EBT	WBT	WBR	SBL	SBR
Detector Phase	7	4	8	8	6	
Switch Phase						
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	
Minimum Split (s)	9.5	24.0	24.0	24.0	24.0	
Total Split (s)	17.6	95.6	78.0	78.0	24.4	
Total Split (%)	14.7%	79.7%	65.0%	65.0%	20.3%	
Maximum Green (s)	14.6	89.6	72.0	72.0	18.4	
Yellow Time (s)	3.0	4.0	4.0	4.0	4.0	
All-Red Time (s)	0.0	2.0	2.0	2.0	2.0	
Lost Time Adjust (s)	1.0	-2.0	-2.0	-2.0	-2.0	
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	
Lead/Lag	Lead		Lag	Lag		
Lead-Lag Optimize?	Yes		Yes	Yes		
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	
Flash Dont Walk (s)		11.0	11.0	11.0	11.0	
Pedestrian Calls (#/hr)		0	0	0	0	
Act Effct Green (s)	91.6	91.6	74.0	74.0	20.4	
Actuated g/C Ratio	0.76	0.76	0.62	0.62	0.17	
v/c Ratio	0.84	0.40	1.05	0.04	0.92	
Control Delay	57.2	5.4	59.3	5.7	82.2	
Queue Delay	0.0	0.0	0.0	0.0	0.0	
Total Delay	57.2	5.4	59.3	5.7	82.2	
LOS	E	A	E	A	F	
Approach Delay		14.1	58.4		82.2	
Approach LOS		B	E		F	

Intersection Summary

Area Type: Other

Cycle Length: 120

Actuated Cycle Length: 120

Natural Cycle: 120

Control Type: Semi Act-Uncoord

Maximum v/c Ratio: 1.05

Intersection Signal Delay: 45.4

Intersection LOS: D

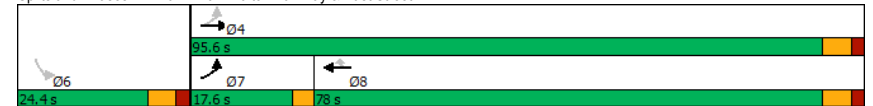
Intersection Capacity Utilization 102.0%

ICU Level of Service G

Analysis Period (min) 15

* User Entered Value

Splits and Phases: 210: William Halton Parkway & East Street E

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Queues
210: William Halton Parkway & East Street E

TT (2041) - Scenario B - 2% Growth Rate
Timing Plan: PM Peak Hour

	EBL	EBT	WBT	WBR	SBL
Lane Group	EBL	EBT	WBT	WBR	SBL
Lane Group Flow (vph)	221	1087	2301	39	283
v/c Ratio	0.84	0.40	1.05	0.04	0.92
Control Delay	57.2	5.4	59.3	5.7	82.2
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	57.2	5.4	59.3	5.7	82.2
Queue Length 50th (m)	34.4	38.5	~307.8	1.7	62.0
Queue Length 95th (m)	#75.1	47.3	#348.3	5.8	#112.8
Internal Link Dist (m)		177.5	171.6		96.6
Turn Bay Length (m)	90.0			50.0	
Base Capacity (vph)	264	2701	2182	983	306
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	0.84	0.40	1.05	0.04	0.92

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.

HCM Signalized Intersection Capacity Analysis
210: William Halton Parkway & East Street E

TT (2041) - Scenario B - 2% Growth Rate
Timing Plan: PM Peak Hour

	EBL	EBT	WBT	WBR	SBL	SBR
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations	↰	↱	↰	↱	↰	↱
Traffic Volume (vph)	221	1087	2301	39	197	86
Future Volume (vph)	221	1087	2301	39	197	86
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	
Lane Util. Factor	1.00	*0.95	*0.95	1.00	1.00	
Frt	1.00	1.00	1.00	0.85	0.96	
Flt Protected	0.95	1.00	1.00	1.00	0.97	
Satd. Flow (prot)	1770	3539	3539	1583	1726	
Flt Permitted	0.05	1.00	1.00	1.00	0.97	
Satd. Flow (perm)	99	3539	3539	1583	1726	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	221	1087	2301	39	197	86
RTOR Reduction (vph)	0	0	0	7	13	0
Lane Group Flow (vph)	221	1087	2301	32	270	0
Turn Type	pm+pt	NA	NA	Perm	Perm	
Protected Phases	7	4	8			
Permitted Phases	4			8	6	
Actuated Green, G (s)	89.6	89.6	72.0	72.0	18.4	
Effective Green, g (s)	88.6	91.6	74.0	74.0	20.4	
Actuated g/C Ratio	0.74	0.76	0.62	0.62	0.17	
Clearance Time (s)	3.0	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)	262	2701	2182	976	293	
v/s Ratio Prot	c0.10	0.31	c0.65			
v/s Ratio Perm	0.52			0.02	c0.16	
v/c Ratio	0.84	0.40	1.05	0.03	0.92	
Uniform Delay, d1	40.9	4.9	23.0	9.0	49.0	
Progression Factor	1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	26.8	0.4	35.6	0.1	32.5	
Delay (s)	67.7	5.3	58.6	9.1	81.5	
Level of Service	E	A	E	A	F	
Approach Delay (s)		15.9	57.7		81.5	
Approach LOS		B	E		F	

Intersection Summary

HCM 2000 Control Delay	45.5	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	1.02		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	14.0
Intersection Capacity Utilization	102.0%	ICU Level of Service	G
Analysis Period (min)	15		

c Critical Lane Group

Lanes, Volumes, Timings

211: William Halton Parkway & East Street F

TT (2041) - Scenario B - 2% Growth Rate

Timing Plan: PM Peak Hour

	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations	↰	↱↱	↱↱		↰	
Traffic Volume (vph)	0	1284	2340	0	0	0
Future Volume (vph)	0	1284	2340	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (m)	90.0			0.0	0.0	0.0
Storage Lanes	1			0	1	0
Taper Length (m)	100.0				7.5	
Lane Util. Factor	1.00	0.95	0.95	0.95	1.00	1.00
Frt						
Fit Protected						
Satd. Flow (prot)	1863	3539	3539	0	1863	0
Fit Permitted						
Satd. Flow (perm)	1863	3539	3539	0	1863	0
Link Speed (k/h)		50	50		50	
Link Distance (m)		195.6	407.9		120.1	
Travel Time (s)		14.1	29.4		8.6	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	0	1284	2340	0	0	0
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	1284	2340	0	0	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 68.0%	ICU Level of Service C					
Analysis Period (min) 15						

HCM Unsignalized Intersection Capacity Analysis

211: William Halton Parkway & East Street F

TT (2041) - Scenario B - 2% Growth Rate

Timing Plan: PM Peak Hour

	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations	↰	↱↱	↱↱		↰	
Traffic Volume (veh/h)	0	1284	2340	0	0	0
Future Volume (Veh/h)	0	1284	2340	0	0	0
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	0	1284	2340	0	0	0
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type						
Median storage veh						
Upstream signal (m)						
pX, platoon unblocked					0.89	
vC, conflicting volume	2340				2982	1170
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	2340				2980	1170
tC, single (s)	4.1				6.8	6.9
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	100				100	100
cM capacity (veh/h)	208				10	186
Direction, Lane #						
Volume Total	0	642	642	1560	780	0
Volume Left	0	0	0	0	0	0
Volume Right	0	0	0	0	0	0
cSH	1700	1700	1700	1700	1700	1700
Volume to Capacity	0.00	0.38	0.38	0.92	0.46	0.00
Queue Length 95th (m)	0.0	0.0	0.0	0.0	0.0	0.0
Control Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0
Lane LOS						
Approach Delay (s)	0.0			0.0		0.0
Approach LOS						
Intersection Summary						
Average Delay			0.0			
Intersection Capacity Utilization			68.0%		ICU Level of Service	C
Analysis Period (min)			15			

Lanes, Volumes, Timings

TT (2041) - Scenario B - 2% Growth Rate

212: West Street A & Transit Station

Timing Plan: PM Peak Hour

	←	↖	↑	↗	→	↓
Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	↖		↗			↘
Traffic Volume (vph)	150	0	0	512	0	0
Future Volume (vph)	150	0	0	512	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt			0.865			
Flt Protected	0.950					
Satd. Flow (prot)	1770	0	1611	0	0	1863
Flt Permitted	0.950					
Satd. Flow (perm)	1770	0	1611	0	0	1863
Link Speed (k/h)	50		50			50
Link Distance (m)	216.0		234.7			101.9
Travel Time (s)	15.6		16.9			7.3
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	150	0	0	512	0	0
Shared Lane Traffic (%)						
Lane Group Flow (vph)	150	0	512	0	0	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(m)	7.2		0.0		Left	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 46.7% ICU Level of Service A

Analysis Period (min) 15

HCM Unsignalized Intersection Capacity Analysis

TT (2041) - Scenario B - 2% Growth Rate

212: West Street A & Transit Station

Timing Plan: PM Peak Hour

	←	↖	↑	↗	→	↓
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	↖		↗			↘
Traffic Volume (veh/h)	150	0	0	512	0	0
Future Volume (Veh/h)	150	0	0	512	0	0
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	150	0	0	512	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	256	256			512	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	256	256			512	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	80	100			100	
cM capacity (veh/h)	733	783			1053	

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	150	512	0
Volume Left	150	0	0
Volume Right	0	512	0
cSH	733	1700	1700
Volume to Capacity	0.20	0.30	0.00
Queue Length 95th (m)	5.7	0.0	0.0
Control Delay (s)	11.2	0.0	0.0
Lane LOS	B		
Approach Delay (s)	11.2	0.0	0.0
Approach LOS	B		

Intersection Summary

Average Delay	2.5		
Intersection Capacity Utilization	46.7%	ICU Level of Service	A
Analysis Period (min)	15		

Lanes, Volumes, Timings TT (2041) - Scenario B - 2% Growth Rate
213: East Street A/West Street A & William Halton Parkway Timing Plan: PM Peak Hour

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑	↑		↑↑	↑			↑			↑
Traffic Volume (vph)	0	1275	16	0	2622	152	0	0	641	0	0	39
Future Volume (vph)	0	1275	16	0	2622	152	0	0	641	0	0	39
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	0.0		90.0	0.0		90.0	0.0		0.0	0.0		0.0
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	0.95	1.00	1.00	0.95	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt			0.850			0.850			0.865			0.865
Flt Protected												
Satd. Flow (prot)	0	3539	1583	0	3539	1583	0	0	1611	0	0	1611
Flt Permitted												
Satd. Flow (perm)	0	3539	1583	0	3539	1583	0	0	1611	0	0	1611
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		200.8			212.9			103.7			234.7	
Travel Time (s)		14.5			15.3			7.5			16.9	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	0	1275	16	0	2622	152	0	0	641	0	0	39
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	1275	16	0	2622	152	0	0	641	0	0	39
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	82.5%				ICU Level of Service E							
Analysis Period (min)	15											

HCM Unsignalized Intersection Capacity Analysis TT (2041) - Scenario B - 2% Growth Rate
213: East Street A/West Street A & William Halton Parkway Timing Plan: PM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		 			 							
Traffic Volume (veh/h)	0	1275	16	0	2622	152	0	0	641	0	0	39
Future Volume (Veh/h)	0	1275	16	0	2622	152	0	0	641	0	0	39
Sign Control	Free				Free				Stop			
Grade	0%				0%				0%			
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	0	1275	16	0	2622	152	0	0	641	0	0	39
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type	None				None							
Median storage (veh)												
Upstream signal (m)	201				213							
pX, platoon unblocked	0.73			0.79			0.84	0.84	0.79	0.84	0.84	0.73
vC, conflicting volume	2774			1291			2625	4049	638	3900	3913	1311
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	2692			847			1444	3145	24	2967	2982	700
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	23	100	100	86
cM capacity (veh/h)	110			624			67	9	831	1	11	280
Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	WB 3	NB 1	SB 1				
Volume Total	638	638	16	1311	1311	152	641	39				
Volume Left	0	0	0	0	0	0	0	0				
Volume Right	0	0	16	0	0	152	641	39				
cSH	1700	1700	1700	1700	1700	1700	831	280				
Volume to Capacity	0.38	0.38	0.01	0.77	0.77	0.09	0.77	0.14				
Queue Length 95th (m)	0.0	0.0	0.0	0.0	0.0	0.0	57.4	3.6				
Control Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	22.3	19.9				
Lane LOS							C	C				
Approach Delay (s)	0.0				0.0			22.3	19.9			
Approach LOS							C	C				
Intersection Summary												
Average Delay				3.2								
Intersection Capacity Utilization				82.5%			ICU Level of Service			E		
Analysis Period (min)	15											

Lanes, Volumes, Timings

214: West Street D & William Halton Parkway

TT (2041) - Scenario B - 2% Growth Rate

Timing Plan: PM Peak Hour

	←	→	↖	↗	←	↖	↗	↖	↗	↖	↗	↖	↗
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations	↖	↖	↖	↖	↖	↖	↖	↖	↖	↖	↖	↖	
Traffic Volume (vph)	0	968	18	337	2206	118	83	0	140	193	0	14	
Future Volume (vph)	0	968	18	337	2206	118	83	0	140	193	0	14	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	
Storage Length (m)	90.0		90.0	90.0		90.0	50.0		0.0	50.0		0.0	
Storage Lanes	1		1	1		1	1		0	1		0	
Taper Length (m)	100.0			100.0			75.0			75.0			
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Frt			0.850			0.850		0.850			0.850		
Flt Protected				0.950			0.950			0.950			
Satd. Flow (prot)	1863	3539	1583	1770	3539	1583	1770	1583	0	1770	1583	0	
Flt Permitted				0.157			0.748			0.611			
Satd. Flow (perm)	1863	3539	1583	292	3539	1583	1393	1583	0	1138	1583	0	
Right Turn on Red			Yes			Yes		Yes			Yes		
Satd. Flow (RTOR)			73			118		500			73		
Link Speed (k/h)		50			50			50			50		
Link Distance (m)		573.3			200.8			99.4			133.2		
Travel Time (s)		41.3			14.5			7.2			9.6		
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Adj. Flow (vph)	0	968	18	337	2206	118	83	0	140	193	0	14	
Shared Lane Traffic (%)													
Lane Group Flow (vph)	0	968	18	337	2206	118	83	140	0	193	14	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	1	2	1	1	2		1	2		
Detector Template	Left	Thru	Right	Left	Thru	Right	Left	Thru		Left	Thru		
Leading Detector (m)	2.0	10.0	2.0	2.0	10.0	2.0	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		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	2.0	0.6	2.0	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		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	pm+pt	NA	Perm	Perm	NA		Perm	NA		
Protected Phases		4			3		8			2		6	
Permitted Phases	4		4		8		8		2		6		

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Lanes, Volumes, Timings

214: West Street D & William Halton Parkway

TT (2041) - Scenario B - 2% Growth Rate

Timing Plan: PM Peak Hour

	←	→	↖	↗	←	↖	↗	↖	↗	↖	↗	↖	↗
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Detector Phase	4	4	4	3	8	8	2	2		6	6		
Switch Phase													
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0		5.0	5.0		
Minimum Split (s)	24.0	24.0	24.0	9.5	24.0	24.0	24.0	24.0		29.0	29.0		
Total Split (s)	34.8	34.8	34.8	26.2	61.0	61.0	29.0	29.0		29.0	29.0		
Total Split (%)	38.7%	38.7%	38.7%	29.1%	67.8%	67.8%	32.2%	32.2%		32.2%	32.2%		
Maximum Green (s)	28.8	28.8	28.8	23.2	55.0	55.0	23.0	23.0		23.0	23.0		
Yellow Time (s)	4.0	4.0	4.0	3.0	4.0	4.0	4.0	4.0		4.0	4.0		
All-Red Time (s)	2.0	2.0	2.0	0.0	2.0	2.0	2.0	2.0		2.0	2.0		
Lost Time Adjust (s)	-2.0	-2.0	-2.0	1.0	-2.0	-2.0	-2.0	-2.0		1.0	-2.0		
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0		7.0	4.0		
Lead/Lag	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	None	None	Min	Min		Min	Min		
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 Effect Green (s)		38.5	38.5	56.9	56.9	56.9	20.4	20.4		17.4	20.4		
Actuated g/C Ratio		0.45	0.45	0.67	0.67	0.67	0.24	0.24		0.20	0.24		
v/c Ratio		0.61	0.02	0.76	0.94	0.11	0.25	0.18		0.83	0.03		
Control Delay		22.1	0.1	23.7	23.3	1.6	27.9	0.5		61.6	0.1		
Queue Delay		0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0		
Total Delay		22.1	0.1	23.7	23.3	1.6	27.9	0.5		61.6	0.1		
LOS		C	A	C	C	A	C	A		E	A		
Approach Delay		21.7			22.4		10.7				57.5		
Approach LOS		C			C		B				E		

Intersection Summary

Area Type: Other

Cycle Length: 90

Actuated Cycle Length: 85.3

Natural Cycle: 90

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 0.94

Intersection Signal Delay: 23.3

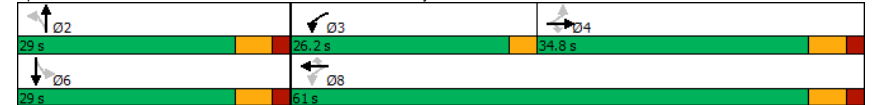
Intersection LOS: C

Intersection Capacity Utilization 97.8%

ICU Level of Service F

Analysis Period (min) 15

Splits and Phases: 214: West Street D & William Halton Parkway

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Queues
214: West Street D & William Halton Parkway

TT (2041) - Scenario B - 2% Growth Rate
Timing Plan: PM Peak Hour

	→	↘	↙	←	↖	↗	↘	↙	↓
Lane Group	EBT	EBR	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	968	18	337	2206	118	83	140	193	14
v/c Ratio	0.61	0.02	0.76	0.94	0.11	0.25	0.18	0.83	0.03
Control Delay	22.1	0.1	23.7	23.3	1.6	27.9	0.5	61.6	0.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	22.1	0.1	23.7	23.3	1.6	27.9	0.5	61.6	0.1
Queue Length 50th (m)	62.1	0.0	25.6	153.7	0.0	10.9	0.0	30.0	0.0
Queue Length 95th (m)	101.0	0.0	54.7	#246.3	5.4	22.2	0.0	#59.1	0.0
Internal Link Dist (m)	549.3		176.8			75.4		109.2	
Turn Bay Length (m)		90.0	90.0		90.0	50.0		50.0	
Base Capacity (vph)	1596	754	580	2374	1100	409	818	294	517
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.61	0.02	0.58	0.93	0.11	0.20	0.17	0.66	0.03

Intersection Summary

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

HCM Signalized Intersection Capacity Analysis
214: West Street D & William Halton Parkway

TT (2041) - Scenario B - 2% Growth Rate
Timing Plan: PM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	968	18	337	2206	118	83	0	140	193	0	14
Future Volume (vph)	0	968	18	337	2206	118	83	0	140	193	0	14
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		7.0	4.0	
Lane Util. Factor		0.95	1.00	1.00	0.95	1.00	1.00	1.00		1.00	1.00	
Frt		1.00	0.85	1.00	1.00	0.85	1.00	0.85		1.00	0.85	
Flt Protected		1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)		3539	1583	1770	3539	1583	1770	1583		1770	1583	
Flt Permitted		1.00	1.00	0.16	1.00	1.00	0.75	1.00		0.61	1.00	
Satd. Flow (perm)		3539	1583	293	3539	1583	1394	1583		1138	1583	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	0	968	18	337	2206	118	83	0	140	193	0	14
RTOR Reduction (vph)	0	0	10	0	0	39	0	107	0	0	11	0
Lane Group Flow (vph)	0	968	8	337	2206	79	83	33	0	193	3	0
Turn Type	Perm	NA	Perm	pm+pt	NA	Perm	Perm	NA		Perm	NA	
Protected Phases		4		3	8		2				6	
Permitted Phases	4		4	8		8	2			6		
Actuated Green, G (s)		36.5	36.5	54.9	54.9	54.9	18.4	18.4		18.4	18.4	
Effective Green, g (s)		38.5	38.5	53.9	56.9	56.9	20.4	20.4		17.4	20.4	
Actuated g/C Ratio		0.45	0.45	0.63	0.67	0.67	0.24	0.24		0.20	0.24	
Clearance Time (s)		6.0	6.0	3.0	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	3.0	
Lane Grp Cap (vph)		1597	714	434	2360	1055	333	378		232	378	
v/s Ratio Prot		0.27		0.13	c0.62			0.02			0.00	
v/s Ratio Perm			0.01	0.36		0.05	0.06			c0.17		
v/c Ratio		0.61	0.01	0.78	0.93	0.07	0.25	0.09		0.83	0.01	
Uniform Delay, d1		17.7	12.9	14.4	12.6	5.0	26.3	25.2		32.5	24.7	
Progression Factor		1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Incremental Delay, d2		0.7	0.0	8.5	7.7	0.0	0.4	0.1		21.7	0.0	
Delay (s)		18.3	12.9	22.9	20.2	5.0	26.6	25.3		54.3	24.8	
Level of Service		B	B	C	C	A	C	C		D	C	
Approach Delay (s)		18.2			19.9			25.8			52.3	
Approach LOS		B			B			C			D	

Intersection Summary

HCM 2000 Control Delay	21.5	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.92		
Actuated Cycle Length (s)	85.3	Sum of lost time (s)	12.0
Intersection Capacity Utilization	97.8%	ICU Level of Service	F
Analysis Period (min)	15		

c Critical Lane Group

Lanes, Volumes, Timings

TT (2041) - Scenario B - 2% Growth Rate

215: East Street A & West Street B

Timing Plan: PM Peak Hour

						
Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	289	140	0	146	105	26
Future Volume (vph)	289	140	0	146	105	26
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	0.956				0.973	
Flt Protected	0.967					
Satd. Flow (prot)	1722	0	0	1863	1812	0
Flt Permitted	0.967					
Satd. Flow (perm)	1722	0	0	1863	1812	0
Link Speed (k/h)	50			50	50	
Link Distance (m)	202.4			83.5	103.7	
Travel Time (s)	14.6			6.0	7.5	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	289	140	0	146	105	26
Shared Lane Traffic (%)						
Lane Group Flow (vph)	429	0	0	146	131	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
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	25			15
Sign Control	Stop			Free	Free	

Intersection Summary

Area Type: Other

Control Type: Unsignalized

Intersection Capacity Utilization 38.9%

ICU Level of Service A

Analysis Period (min) 15

HCM Unsignalized Intersection Capacity Analysis

TT (2041) - Scenario B - 2% Growth Rate

215: East Street A & West Street B

Timing Plan: PM Peak Hour

						
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	289	140	0	146	105	26
Future Volume (Veh/h)	289	140	0	146	105	26
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	289	140	0	146	105	26
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	None	
Median storage (veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	264	118	131			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	264	118	131			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	60	85	100			
cM capacity (veh/h)	725	934	1454			
Direction, Lane #	EB 1	NB 1	SB 1			
Volume Total	429	146	131			
Volume Left	289	0	0			
Volume Right	140	0	26			
cSH	782	1454	1700			
Volume to Capacity	0.55	0.00	0.08			
Queue Length 95th (m)	25.4	0.0	0.0			
Control Delay (s)	15.0	0.0	0.0			
Lane LOS	C					
Approach Delay (s)	15.0	0.0	0.0			
Approach LOS	C					
Intersection Summary						
Average Delay		9.1				
Intersection Capacity Utilization		38.9%		ICU Level of Service	A	
Analysis Period (min)		15				

Lanes, Volumes, Timings

TT (2041) - Scenario B - 2% Growth Rate

216: West Street D & West Street B

Timing Plan: PM Peak Hour

	←	←	↑	↗	↘	↓
Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	↰		↰			↰
Traffic Volume (vph)	0	41	182	0	206	149
Future Volume (vph)	0	41	182	0	206	149
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.865					
Flt Protected						0.972
Satd. Flow (prot)	1611	0	1863	0	0	1811
Flt Permitted						0.972
Satd. Flow (perm)	1611	0	1863	0	0	1811
Link Speed (k/h)	50		50			50
Link Distance (m)	202.4		82.8			99.4
Travel Time (s)	14.6		6.0			7.2
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	0	41	182	0	206	149
Shared Lane Traffic (%)						
Lane Group Flow (vph)	41	0	182	0	0	355
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
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		15	25	
Sign Control	Stop		Free			Free

Intersection Summary

Area Type: Other

Control Type: Unsignalized

Intersection Capacity Utilization 42.2%

ICU Level of Service A

Analysis Period (min) 15

HCM Unsignalized Intersection Capacity Analysis

TT (2041) - Scenario B - 2% Growth Rate

216: West Street D & West Street B

Timing Plan: PM Peak Hour

	←	←	↑	↗	↘	↓
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	↰		↰			↰
Traffic Volume (veh/h)	0	41	182	0	206	149
Future Volume (Veh/h)	0	41	182	0	206	149
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	0	41	182	0	206	149
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage (veh)						
Upstream signal (m)						99
pX, platoon unblocked	0.92					
vC, conflicting volume	743	182			182	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	675	182			182	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	100	95			85	
cM capacity (veh/h)	328	861			1393	
Direction, Lane #	WB 1	NB 1	SB 1			
Volume Total	41	182	355			
Volume Left	0	0	206			
Volume Right	41	0	0			
cSH	861	1700	1393			
Volume to Capacity	0.05	0.11	0.15			
Queue Length 95th (m)	1.1	0.0	3.9			
Control Delay (s)	9.4	0.0	5.2			
Lane LOS	A		A			
Approach Delay (s)	9.4	0.0	5.2			
Approach LOS	A					
Intersection Summary						
Average Delay			3.9			
Intersection Capacity Utilization			42.2%		ICU Level of Service	A
Analysis Period (min)			15			

Lanes, Volumes, Timings
217: East Street C & East Street A

TT (2041) - Scenario B - 2% Growth Rate
Timing Plan: PM Peak Hour

						
Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	0	113	121	271	201	5
Future Volume (vph)	0	113	121	271	201	5
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			0.907		0.997	
Flt Protected					0.953	
Satd. Flow (prot)	0	1863	1690	0	1770	0
Flt Permitted					0.953	
Satd. Flow (perm)	0	1863	1690	0	1770	0
Link Speed (k/h)		50	50		50	
Link Distance (m)		206.1	205.4		83.5	
Travel Time (s)		14.8	14.8		6.0	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	0	113	121	271	201	5
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	113	392	0	206	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	41.1%			ICU Level of Service A		
Analysis Period (min)	15					

HCM Unsignalized Intersection Capacity Analysis TT (2041) - Scenario B - 2% Growth Rate
217: East Street C & East Street A

Timing Plan: PM Peak Hour

	EBL	EBT	WBT	WBR	SBL	SBR
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↔	↔		↔	↔
Traffic Volume (veh/h)	0	113	121	271	201	5
Future Volume (Veh/h)	0	113	121	271	201	5
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	0	113	121	271	201	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	392				370	256
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	392				370	256
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	100				68	99
cM capacity (veh/h)	1167				631	782
Direction, Lane #	EB 1	WB 1	SB 1			
Volume Total	113	392	206			
Volume Left	0	0	201			
Volume Right	0	271	5			
cSH	1167	1700	634			
Volume to Capacity	0.00	0.23	0.33			
Queue Length 95th (m)	0.0	0.0	10.6			
Control Delay (s)	0.0	0.0	13.4			
Lane LOS			B			
Approach Delay (s)	0.0	0.0	13.4			
Approach LOS			B			
Intersection Summary						
Average Delay			3.9			
Intersection Capacity Utilization		41.1%		ICU Level of Service	A	
Analysis Period (min)		15				

Lanes, Volumes, Timings

TT (2041) - Scenario B - 2% Growth Rate

218: West Street D & East Street C

Timing Plan: PM Peak Hour

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔			↔			↔			↔	
Traffic Volume (vph)	0	0	0	48	0	73	0	155	57	94	55	0
Future Volume (vph)	0	0	0	48	0	73	0	155	57	94	55	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					0.919			0.964				
Flt Protected					0.981						0.969	
Satd. Flow (prot)	0	1863	0	0	1679	0	0	1796	0	0	1805	0
Flt Permitted					0.981						0.969	
Satd. Flow (perm)	0	1863	0	0	1679	0	0	1796	0	0	1805	0
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		164.8			206.1			68.2			82.8	
Travel Time (s)		11.9			14.8			4.9			6.0	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	0	0	0	48	0	73	0	155	57	94	55	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	0	0	0	121	0	0	212	0	0	149	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 36.9%

ICU Level of Service A

Analysis Period (min) 15

HCM Unsignalized Intersection Capacity Analysis

TT (2041) - Scenario B - 2% Growth Rate

218: West Street D & East Street C

Timing Plan: PM Peak Hour

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔			↔			↔			↔	
Traffic Volume (veh/h)	0	0	0	48	0	73	0	155	57	94	55	0
Future Volume (Veh/h)	0	0	0	48	0	73	0	155	57	94	55	0
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	0	0	0	48	0	73	0	155	57	94	55	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	73			0			160	169	0	267	132	36
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	73			0			160	169	0	267	132	36
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			97			100	78	95	82	93	100
cM capacity (veh/h)	1527			1623			743	702	1085	528	736	1036
Direction, Lane #	EB 1	WB 1		NB 1	SB 1							
Volume Total	0	121		212	149							
Volume Left	0	48		0	94							
Volume Right	0	73		57	0							
cSH	1700	1623		776	589							
Volume to Capacity	0.00	0.03		0.27	0.25							
Queue Length 95th (m)	0.0	0.7		8.3	7.5							
Control Delay (s)	0.0	3.0		11.4	13.2							
Lane LOS		A		B	B							
Approach Delay (s)	0.0	3.0		11.4	13.2							
Approach LOS				B	B							
Intersection Summary												
Average Delay				9.8								
Intersection Capacity Utilization		36.9%			ICU Level of Service				A			
Analysis Period (min)				15								

Appendix H

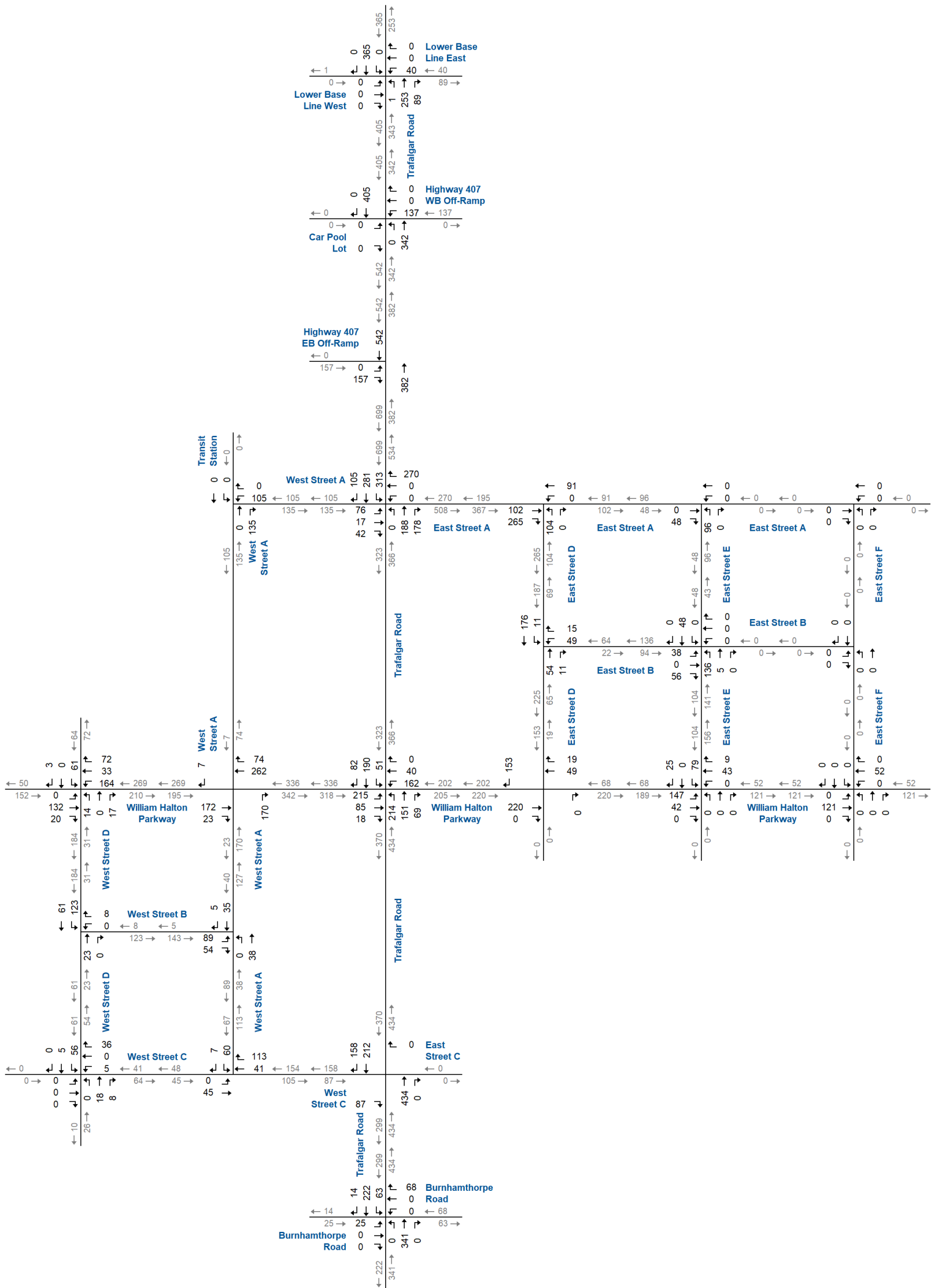
Alternatives Trip Generation and Volumes



TABLE 1 SCENARIO A DENSITY REDUCTION TRIP GENERATION

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)	711	51	161	212	152	98	250
	710 - General Office Building (GFA/1,000ft ²)	215.0	214	35	249	40	207	247
	820 - Shopping Center (GFA/1,000ft ²)	71.7	42	25	67	131	142	273
	Block 1 Trip Generation		307	221	528	323	447	770
	Modal Split	20%	61	44	105	65	89	154
	Internal AM Entering	7%	21	-	21	-	-	-
	Internal AM Exiting	8%	-	18	18	-	-	-
	Internal PM Entering	10%	-	-	-	32	-	32
	Internal PM Exiting	9%	-	-	-	-	40	40
	Block 1 Net Trip Generation		225	199	384	226	318	544
2	222 - Multifamily Housing, High-Rise (Dwelling Units)	633	46	144	190	137	87	224
	710 - General Office Building (GFA/1,000ft ²)	191.6	191	31	222	35	185	220
	820 - Shopping Center (GFA/1,000ft ²)	63.9	37	23	60	117	126	243
	Block 2 Trip Generation		274	198	472	289	398	687
	Modal Split	20%	55	40	95	58	80	138
	Internal AM Entering	6%	16	-	16	-	-	-
	Internal AM Exiting	8%	-	16	16	-	-	-
	Internal PM Entering	10%	-	-	-	29	-	29
	Internal PM Exiting	9%	-	-	-	-	32	32
	Block 2 Net Trip Generation		203	142	345	202	286	488
3	222 - Multifamily Housing, High-Rise (Dwelling Units)	808	57	182	239	173	110	283
	710 - General Office Building (GFA/1,000ft ²)	244.5	244	40	284	45	236	281
	820 - Shopping Center (GFA/1,000ft ²)	81.5	48	29	77	149	161	310
	Block 3 Trip Generation		349	251	600	367	507	874
	Modal Split	20%	70	50	120	73	101	174
	Internal AM Entering	7%	24	-	24	-	-	-
	Internal AM Exiting	8%	-	20	20	-	-	-
	Internal PM Entering	10%	-	-	-	37	-	37
	Internal PM Exiting	9%	-	-	-	-	46	46
	Block 3 Net Trip Generation		255	181	436	257	360	617
4	221 - Multifamily Housing, Mid-Rise (Dwelling Units)	381	36	101	137	102	66	168
	710 - General Office Building (GFA/1,000ft ²)	115.2	115	19	134	21	112	133
	820 - Shopping Center (GFA/1,000ft ²)	38.4	22	14	36	70	76	146
	Block 4 Trip Generation		173	134	307	193	254	447
	Modal Split	20%	35	27	62	39	51	90
	Internal AM Entering	7%	12	-	12	-	-	-
	Internal AM Exiting	7%	-	9	9	-	-	-
	Internal PM Entering	9%	-	-	-	17	-	17
	Internal PM Exiting	8%	-	-	-	-	20	20
	Block 4 Net Trip Generation		126	98	224	137	183	320
5	221 - Multifamily Housing, Mid-Rise (Dwelling Units)	284	27	75	102	76	49	125
	710 - General Office Building (GFA/1,000ft ²)	86.1	86	14	100	16	83	99
	820 - Shopping Center (GFA/1,000ft ²)	28.7	17	10	27	52	57	109
	Block 5 Trip Generation		130	99	229	144	189	333
	Modal Split	20%	26	20	46	29	38	67
	Internal AM Entering	6%	8	-	8	-	-	-
	Internal AM Exiting	7%	-	7	7	-	-	-
	Internal PM Entering	10%	-	-	-	14	-	14
	Internal PM Exiting	8%	-	-	-	-	15	15
	Block 5 Net Trip Generation		96	72	168	101	136	237
6	222 - Multifamily Housing, High-Rise (Dwelling Units)	425	32	100	132	93	60	153
	710 - General Office Building (GFA/1,000ft ²)	128.5	128	21	149	24	124	148
	820 - Shopping Center (GFA/1,000ft ²)	42.8	25	15	40	78	85	163
	Block 6 Trip Generation		185	136	321	195	269	464
	Modal Split	20%	37	27	64	39	54	93
	Internal AM Entering	7%	13	-	13	-	-	-
	Internal AM Exiting	8%	-	11	11	-	-	-
	Internal PM Entering	10%	-	-	-	20	-	20
	Internal PM Exiting	9%	-	-	-	-	24	24
	Block 6 Net Trip Generation		135	98	233	136	191	327
7	222 - Multifamily Housing, High-Rise (Dwelling Units)	252	20	63	83	57	37	94
	710 - General Office Building (GFA/1,000ft ²)	76.4	77	12	89	14	74	88
	820 - Shopping Center (GFA/1,000ft ²)	25.5	15	9	24	47	50	97
	Block 7 Trip Generation		112	84	196	118	161	279
	Modal Split	20%	22	17	39	24	32	56
	Internal AM Entering	7%	8	-	8	-	-	-
	Internal AM Exiting	8%	-	7	7	-	-	-
	Internal PM Entering	10%	-	-	-	12	-	12
	Internal PM Exiting	9%	-	-	-	-	14	14
	Block 7 Net Trip Generation		82	60	142	82	115	197
8	221 - Multifamily Housing, Mid-Rise (Dwelling Units)	246	23	66	89	66	42	108
	710 - General Office Building (GFA/1,000ft ²)	74.4	74	12	86	14	72	86
	820 - Shopping Center (GFA/1,000ft ²)	24.6	14	9	23	45	49	94
	Block 8 Trip Generation		111	87	198	125	163	288
	Modal Split	20%	22	17	39	25	33	58
	Internal AM Entering	6%	7	-	7	-	-	-
	Internal AM Exiting	7%	-	6	6	-	-	-
	Internal PM Entering	9%	-	-	-	11	-	11
	Internal PM Exiting	8%	-	-	-	-	13	13
	Block 8 Net Trip Generation		82	64	146	89	117	206
9	221 - Multifamily Housing, Mid-Rise (Dwelling Units)	235	22	63	85	63	40	103
	710 - General Office Building (GFA/1,000ft ²)	71.0	71	11	82	13	69	82
	820 - Shopping Center (GFA/1,000ft ²)	23.7	14	8	22	43	47	90
	Block 9 Trip Generation		107	82	189	119	156	275
	Modal Split	20%	21	16	37	24	31	55
	Internal AM Entering	7%	7	-	7	-	-	-
	Internal AM Exiting	8%	-	7	7	-	-	-
	Internal PM Entering	10%	-	-	-	12	-	12
	Internal PM Exiting	8%	-	-	-	-	12	12
	Block 9 Net Trip Generation		79	59	138	83	113	196
10	221 - Multifamily Housing, Mid-Rise (Dwelling Units)	183	17	49	66	49	32	81
	710 - General Office Building (GFA/1,000ft ²)	55.3	55	9	64	10	54	64
	820 - Shopping Center (GFA/1,000ft ²)	18.4	11	6	17	34	36	70
	Block 10 Trip Generation		83	64	147	93	122	215
	Modal Split	20%	17	13	30	19	24	43
	Internal AM Entering	8%	7	-	7	-	-	-
	Internal AM Exiting	9%	-	6	6	-	-	-
	Internal PM Entering	9%	-	-	-	8	-	8
	Internal PM Exiting	8%	-	-	-	-	10	10
	Block 10 Net Trip Generation		59	45	104	66	88	154
11	221 - Multifamily Housing, Mid-Rise (Dwelling Units)	125	12	33	45	34	21	55
	710 - General Office Building (GFA/1,000ft ²)	0.0	-	-	-	-	-	-
	820 - Shopping Center (GFA/1,000ft ²)	0.0	-	-	-	-	-	-
	Block 11 Trip Generation		12	33	45	34	21	55
	Modal Split	20%	2	7	9	7	4	11
	Internal AM Entering	0%	-	-	-	-	-	-
	Internal AM Exiting	0%	-	-	-	-	-	-
	Internal PM Entering	0%	-	-	-	-	-	-
	Internal PM Exiting	0%	-	-	-	-	-	-
	Block 11 Net Trip Generation		10	26	36	27	17	44
Residential (Dwelling Units)		4,283	343	1,037	1,380	1,002	642	1,644
Office (GFA/1,000ft ²)		1,258	1,255	204	1,459	232	1,216	1,448
Retail (GFA/1,000ft ²)		419	245	148	393	766	829	1,595
Scenario A Total Trip Generation			1,843	1,389	3,232	2,000	2,687	4,687
Scenario A Net Trip Generation			1,352	1,004	2,356	1,406	1,924	3,330

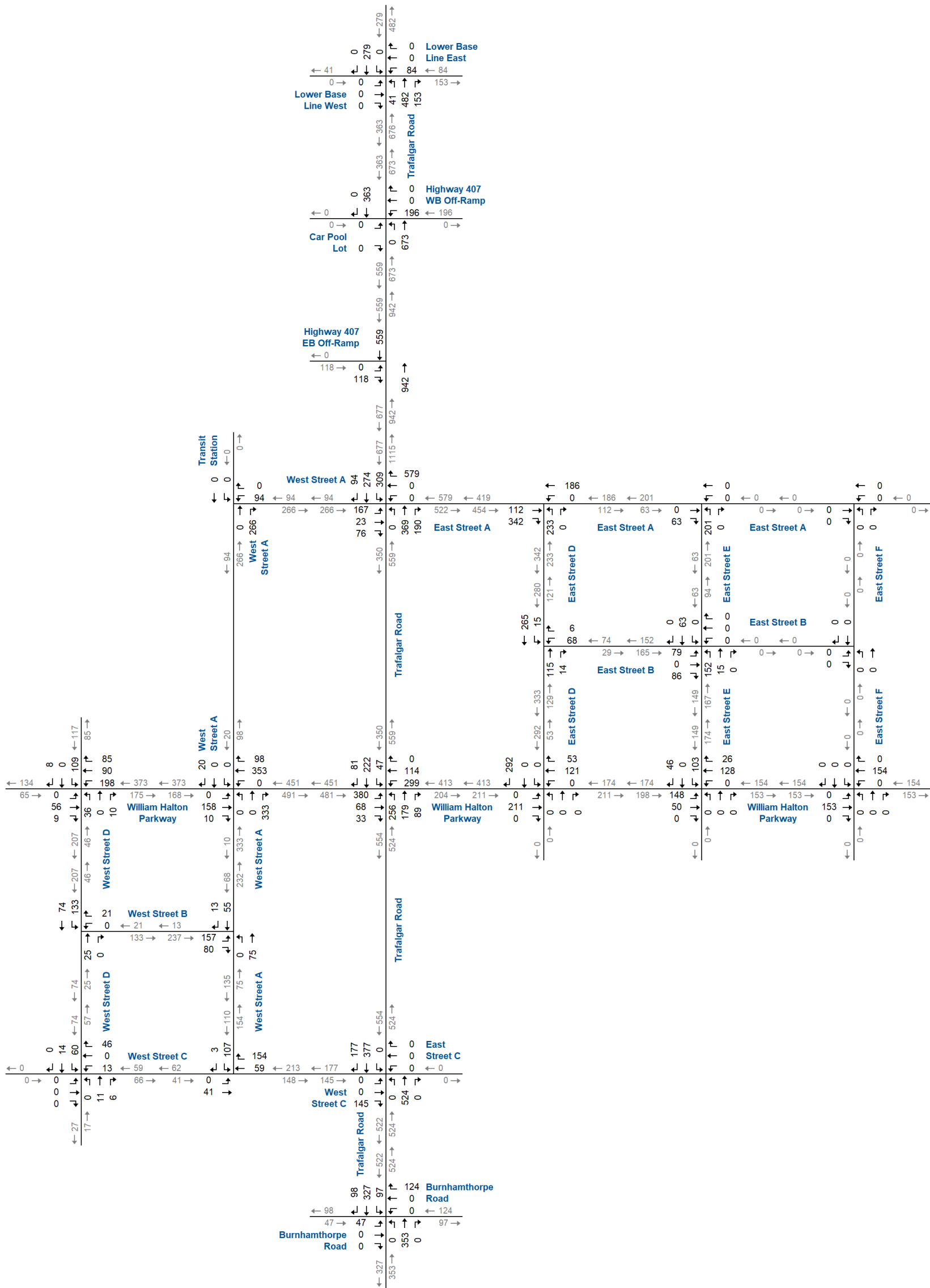




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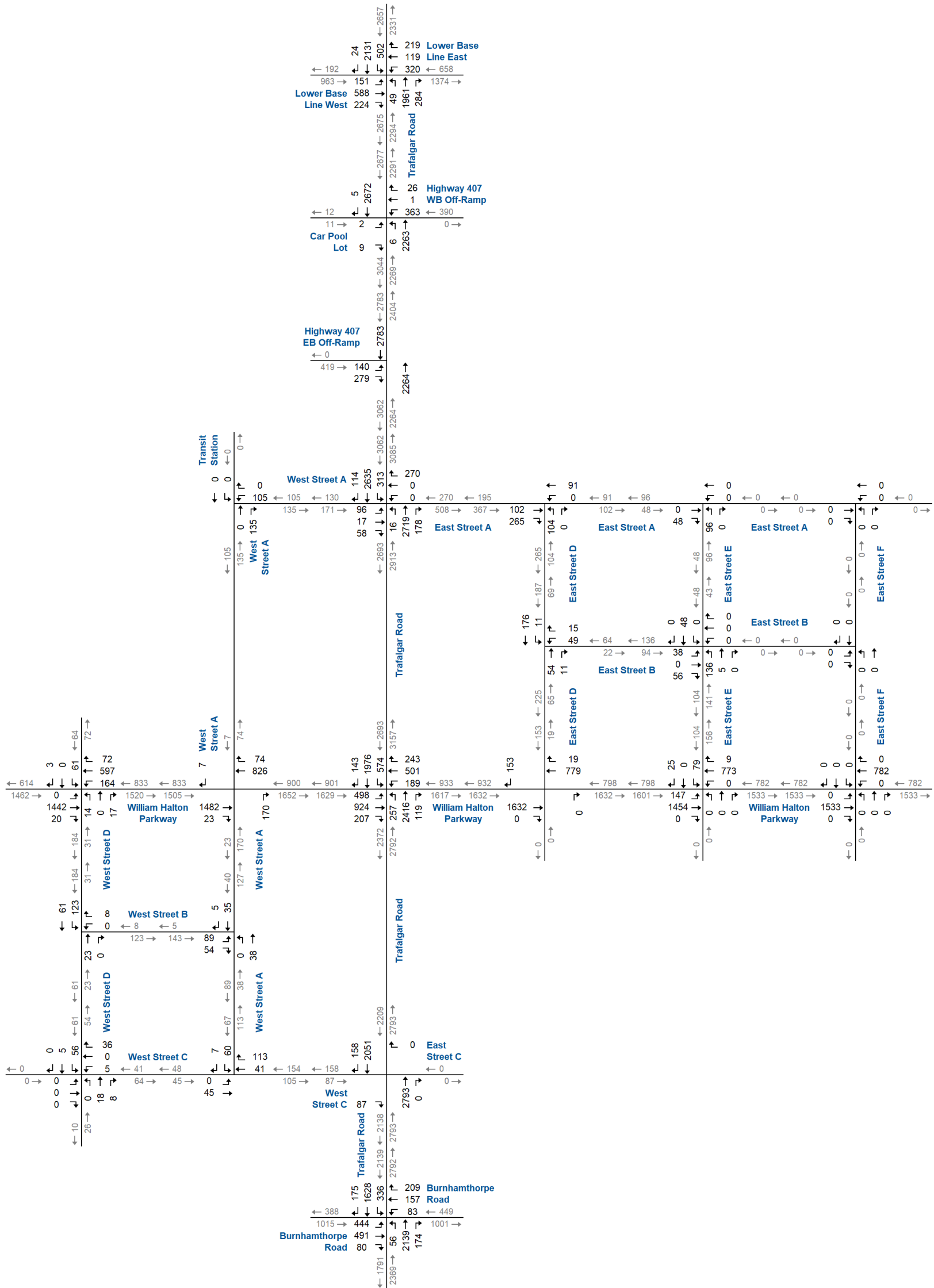
Scenario A Density Reduction Site Generated Traffic Volumes – AM Peak Hour



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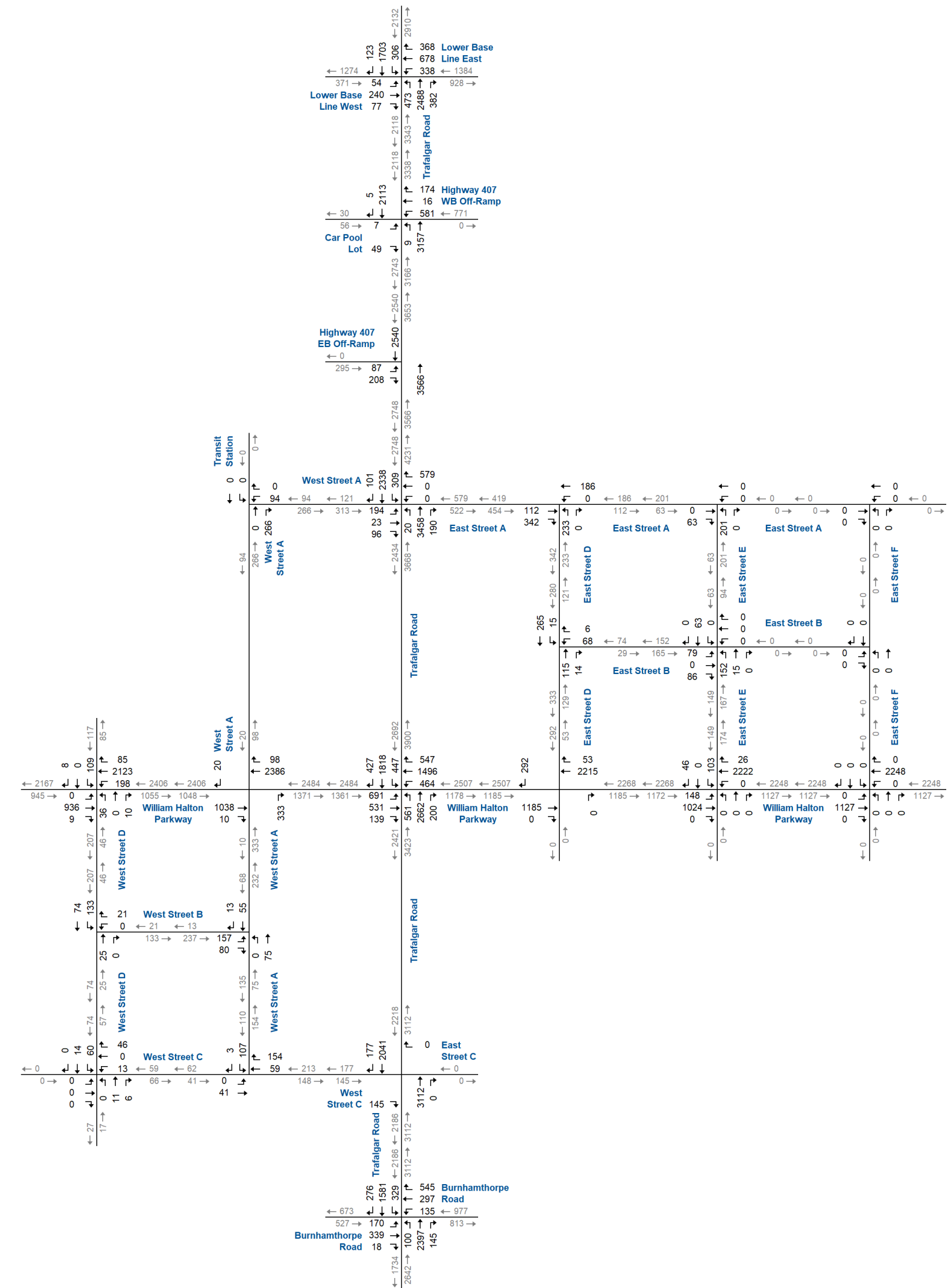
Scenario A Density Reduction Site Generated Traffic Volumes – PM Peak Hour



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Scenario A Density Reduction Total Traffic Volumes – AM Peak Hour



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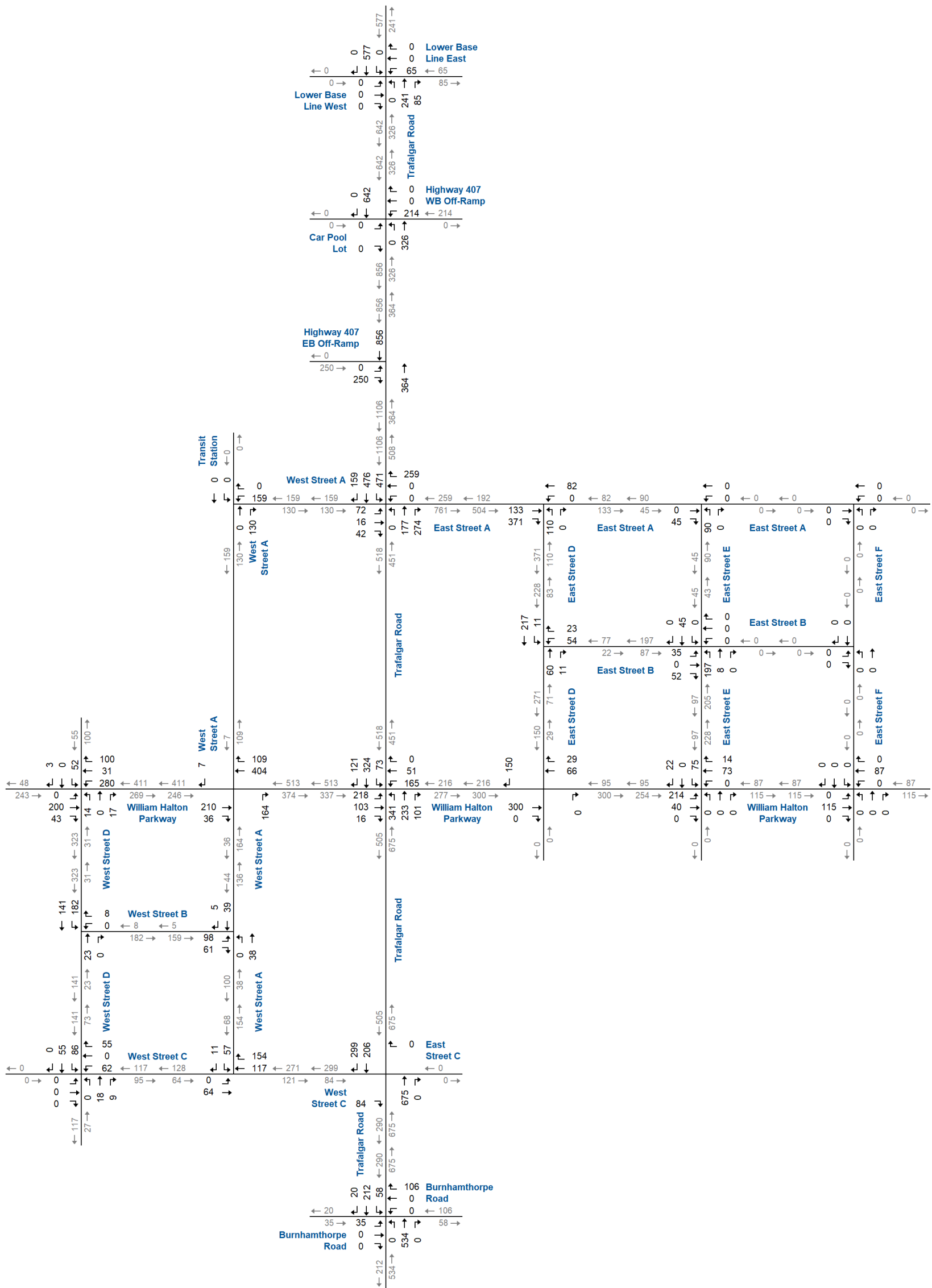


Scenario A Density Reduction Total Traffic Volumes – PM Peak Hour

TABLE 2 SCENARIO B DENSITY REDUCTION TRIP GENERATION

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)	507	37	118	155	110	71	181
	710 - General Office Building (GFA/1,000ft ²)	358.4	358	58	416	66	346	412
	820 - Shopping Center (GFA/1,000ft ²)	119.5	69	43	112	218	237	455
	Block 1 Trip Generation		464	219	683	394	654	1,048
	Modal Split	20%	-	93	44	-	137	-
	Internal AM Entering	6%	-	28	-	28	-	-
	Internal AM Exiting	10%	-	-	22	22	-	-
	Internal PM Entering	12%	-	-	-	-	47	47
	Internal PM Exiting	9%	-	-	-	-	59	59
	Block 1 Net Trip Generation		343	153	496	268	464	732
2	222 - Multifamily Housing, High-Rise (Dwelling Units)	452	33	106	139	99	63	162
	710 - General Office Building (GFA/1,000ft ²)	319.4	318	52	370	59	308	367
	820 - Shopping Center (GFA/1,000ft ²)	106.5	62	38	100	195	211	406
	Block 2 Trip Generation		413	196	609	353	582	935
	Modal Split	20%	-	83	39	-	122	-
	Internal AM Entering	6%	-	25	-	25	-	-
	Internal AM Exiting	10%	-	-	20	20	-	-
	Internal PM Entering	12%	-	-	-	-	42	42
	Internal PM Exiting	9%	-	-	-	-	52	52
	Block 2 Net Trip Generation		305	137	442	240	414	654
3	222 - Multifamily Housing, High-Rise (Dwelling Units)	576	42	132	174	124	80	204
	710 - General Office Building (GFA/1,000ft ²)	407.5	407	66	473	75	394	469
	820 - Shopping Center (GFA/1,000ft ²)	135.8	79	49	128	248	269	517
	Block 3 Trip Generation		528	247	775	447	743	1,190
	Modal Split	20%	-	106	49	-	155	-
	Internal AM Entering	7%	-	37	-	37	-	-
	Internal AM Exiting	6%	-	-	15	15	-	-
	Internal PM Entering	12%	-	-	-	-	54	54
	Internal PM Exiting	9%	-	-	-	-	67	67
	Block 3 Net Trip Generation		385	183	568	304	527	831
4	221 - Multifamily Housing, Mid-Rise (Dwelling Units)	272	25	73	98	73	47	120
	710 - General Office Building (GFA/1,000ft ²)	192.1	192	31	223	35	186	221
	820 - Shopping Center (GFA/1,000ft ²)	64.0	37	23	60	117	127	244
	Block 4 Trip Generation		254	127	381	225	360	585
	Modal Split	20%	-	51	25	-	76	-
	Internal AM Entering	6%	-	15	-	15	-	-
	Internal AM Exiting	10%	-	-	13	13	-	-
	Internal PM Entering	12%	-	-	-	-	29	29
	Internal PM Exiting	9%	-	-	-	-	32	32
	Block 4 Net Trip Generation		188	89	277	151	256	407
5	221 - Multifamily Housing, Mid-Rise (Dwelling Units)	203	19	54	73	54	35	89
	710 - General Office Building (GFA/1,000ft ²)	143.4	143	23	166	26	139	165
	820 - Shopping Center (GFA/1,000ft ²)	47.8	28	17	45	87	95	182
	Block 5 Trip Generation		190	94	284	167	269	436
	Modal Split	20%	-	36	19	-	57	-
	Internal AM Entering	7%	-	13	-	13	-	-
	Internal AM Exiting	11%	-	-	10	10	-	-
	Internal PM Entering	12%	-	-	-	-	20	20
	Internal PM Exiting	9%	-	-	-	-	24	24
	Block 5 Net Trip Generation		139	65	204	114	191	305
6	222 - Multifamily Housing, High-Rise (Dwelling Units)	303	24	74	98	68	44	112
	710 - General Office Building (GFA/1,000ft ²)	214.1	213	35	248	39	207	246
	820 - Shopping Center (GFA/1,000ft ²)	71.4	42	25	67	131	141	272
	Block 6 Trip Generation		279	134	413	238	392	630
	Modal Split	20%	-	56	27	-	83	-
	Internal AM Entering	6%	-	17	-	17	-	-
	Internal AM Exiting	10%	-	-	13	13	-	-
	Internal PM Entering	12%	-	-	-	-	29	29
	Internal PM Exiting	9%	-	-	-	-	35	35
	Block 6 Net Trip Generation		206	94	300	161	279	440
7	222 - Multifamily Housing, High-Rise (Dwelling Units)	180	15	48	63	43	27	70
	710 - General Office Building (GFA/1,000ft ²)	127.3	127	21	148	23	123	146
	820 - Shopping Center (GFA/1,000ft ²)	42.4	25	15	40	78	84	162
	Block 7 Trip Generation		167	84	251	144	234	378
	Modal Split	20%	-	33	17	-	50	-
	Internal AM Entering	6%	-	10	-	10	-	-
	Internal AM Exiting	10%	-	-	8	8	-	-
	Internal PM Entering	11%	-	-	-	-	16	16
	Internal PM Exiting	9%	-	-	-	-	21	21
	Block 7 Net Trip Generation		124	59	183	99	166	265
8	221 - Multifamily Housing, Mid-Rise (Dwelling Units)	168	15	44	59	45	28	73
	710 - General Office Building (GFA/1,000ft ²)	116.8	116	19	135	21	113	134
	820 - Shopping Center (GFA/1,000ft ²)	38.9	23	14	37	71	77	148
	Block 8 Trip Generation		154	77	231	137	218	355
	Modal Split	20%	-	31	15	-	46	-
	Internal AM Entering	6%	-	9	-	9	-	-
	Internal AM Exiting	9%	-	-	7	7	-	-
	Internal PM Entering	12%	-	-	-	-	16	16
	Internal PM Exiting	9%	-	-	-	-	20	20
	Block 8 Net Trip Generation		114	55	169	94	154	248
9	221 - Multifamily Housing, Mid-Rise (Dwelling Units)	167	16	44	60	45	28	73
	710 - General Office Building (GFA/1,000ft ²)	118.3	118	19	137	22	114	136
	820 - Shopping Center (GFA/1,000ft ²)	39.4	23	14	37	72	78	150
	Block 9 Trip Generation		157	77	234	139	220	359
	Modal Split	20%	-	31	15	-	46	-
	Internal AM Entering	6%	-	9	-	9	-	-
	Internal AM Exiting	9%	-	-	7	7	-	-
	Internal PM Entering	11%	-	-	-	-	15	15
	Internal PM Exiting	9%	-	-	-	-	20	20
	Block 9 Net Trip Generation		117	55	172	96	156	252
10	221 - Multifamily Housing, Mid-Rise (Dwelling Units)	138	13	36	49	36	23	59
	710 - General Office Building (GFA/1,000ft ²)	95.5	95	16	111	18	92	110
	820 - Shopping Center (GFA/1,000ft ²)	31.8	19	11	30	58	63	121
	Block 10 Trip Generation		127	63	190	112	178	290
	Modal Split	20%	-	25	13	-	38	-
	Internal AM Entering	6%	-	8	-	8	-	-
	Internal AM Exiting	9%	-	-	6	6	-	-
	Internal PM Entering	12%	-	-	-	-	13	13
	Internal PM Exiting	9%	-	-	-	-	16	16
	Block 10 Net Trip Generation		94	44	138	77	126	203
11	221 - Multifamily Housing, Mid-Rise (Dwelling Units)	0	-	-	-	-	-	-
	710 - General Office Building (GFA/1,000ft ²)	122.1	122	20	142	22	118	140
	820 - Shopping Center (GFA/1,000ft ²)	40.7	24	14	38	74	81	155
	Block 11 Trip Generation		146	34	180	96	199	295
	Modal Split	20%	-	29	7	-	36	-
	Internal AM Entering	0%	-	-	-	-	-	-
	Internal AM Exiting	0%	-	-	-	-	-	-
	Internal PM Entering	0%	-	-	-	-	-	-
	Internal PM Exiting	0%	-	-	-	-	-	-
	Block 11 Net Trip Generation		117	27	144	77	159	236
Residential (Dwelling Units)		2,960	239	729	968	697	446	1,143
Office (GFA/1,000ft ²)		2,215	2,209	360	2,569	406	2,140	2,545
Retail (GFA/1,000ft ²)		738	431	263	694	1,349	1,463	2,812
Scenario B Total Trip Generation			2,879	1,352	4,231	2,452	4,049	6,501
Scenario B Net Trip Generation			2,132	961	3,093	1,681	2,892	4,573

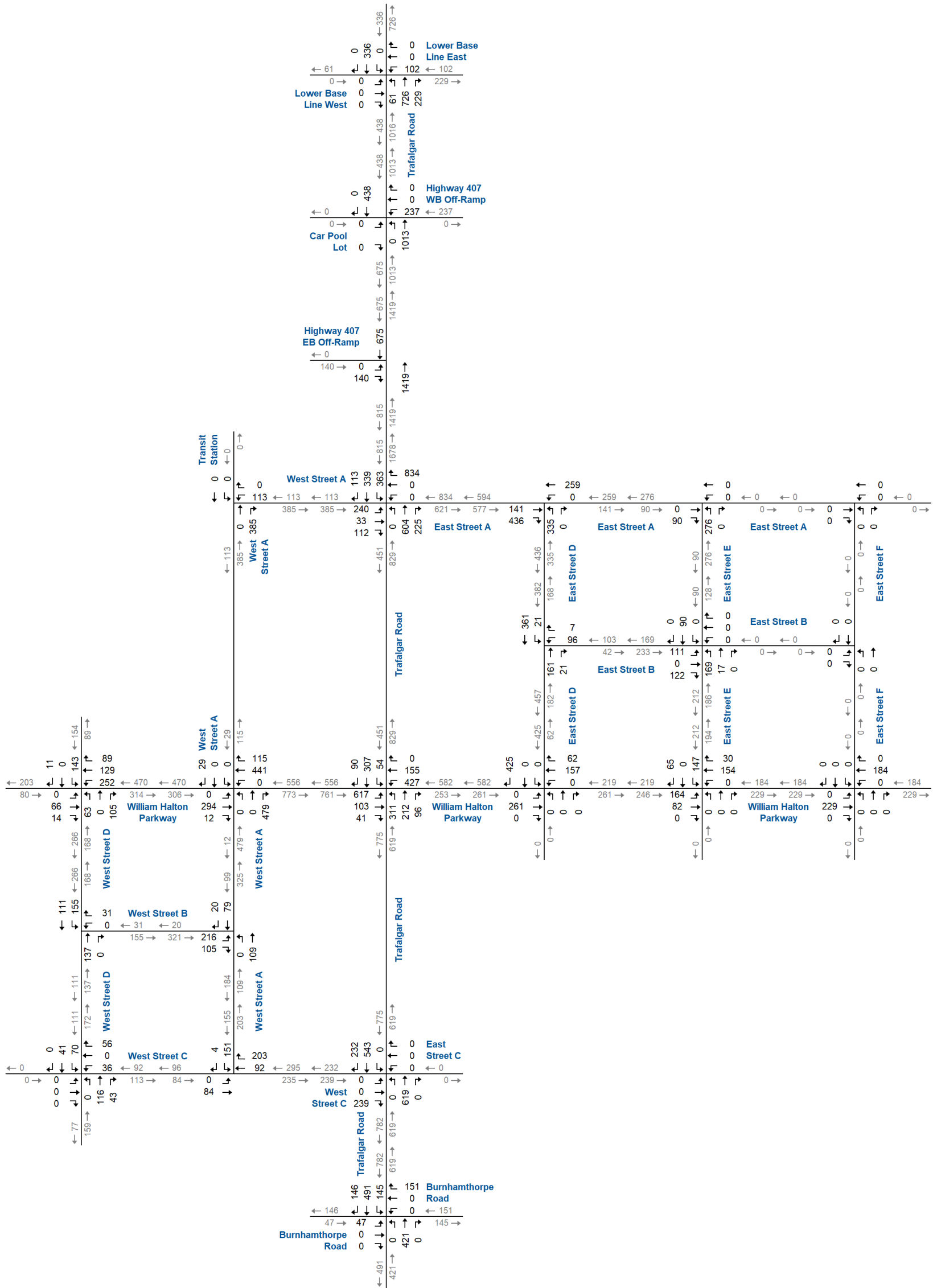




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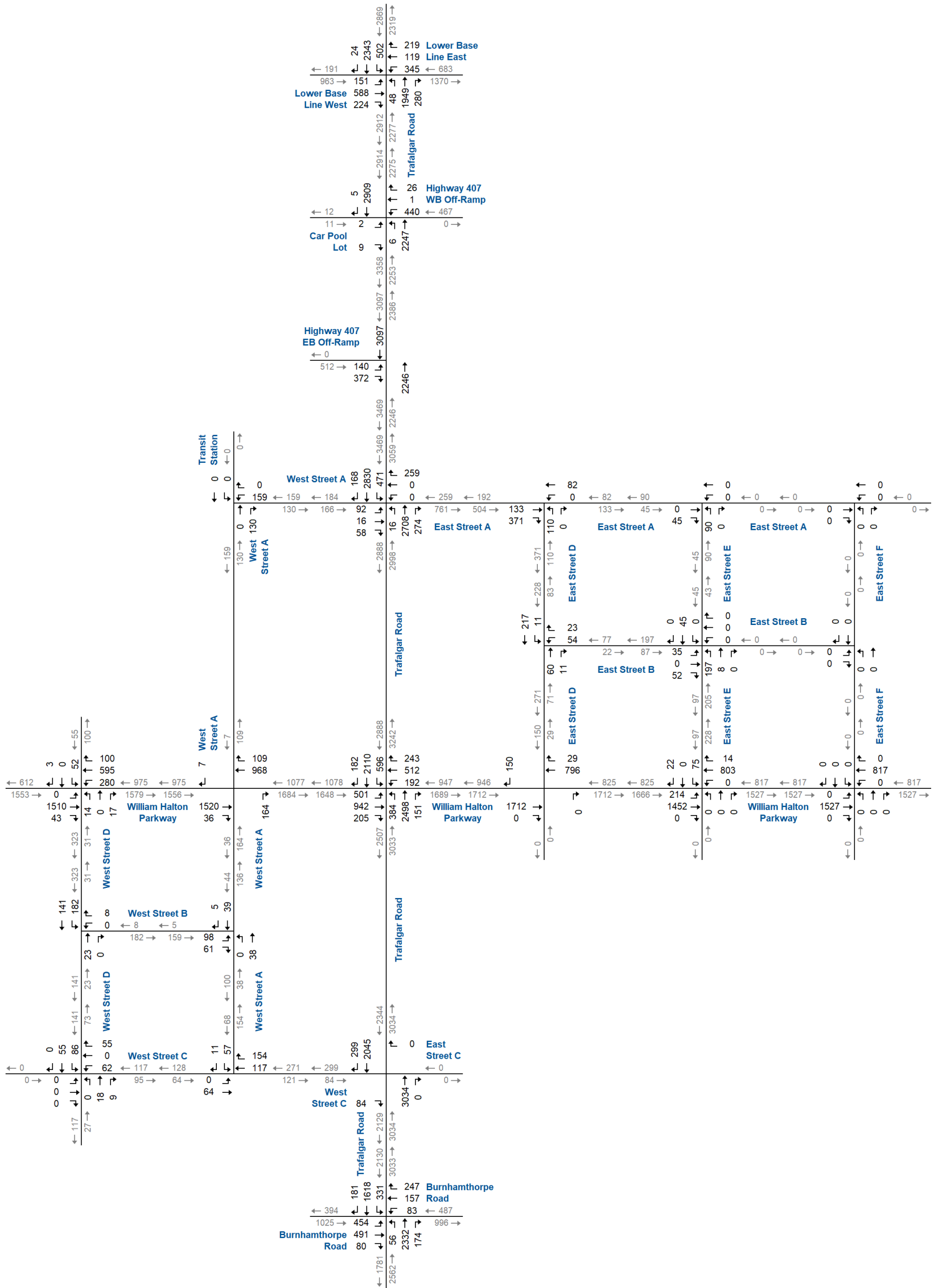
Scenario B Density Reduction Site Generated Traffic Volumes – AM Peak Hour



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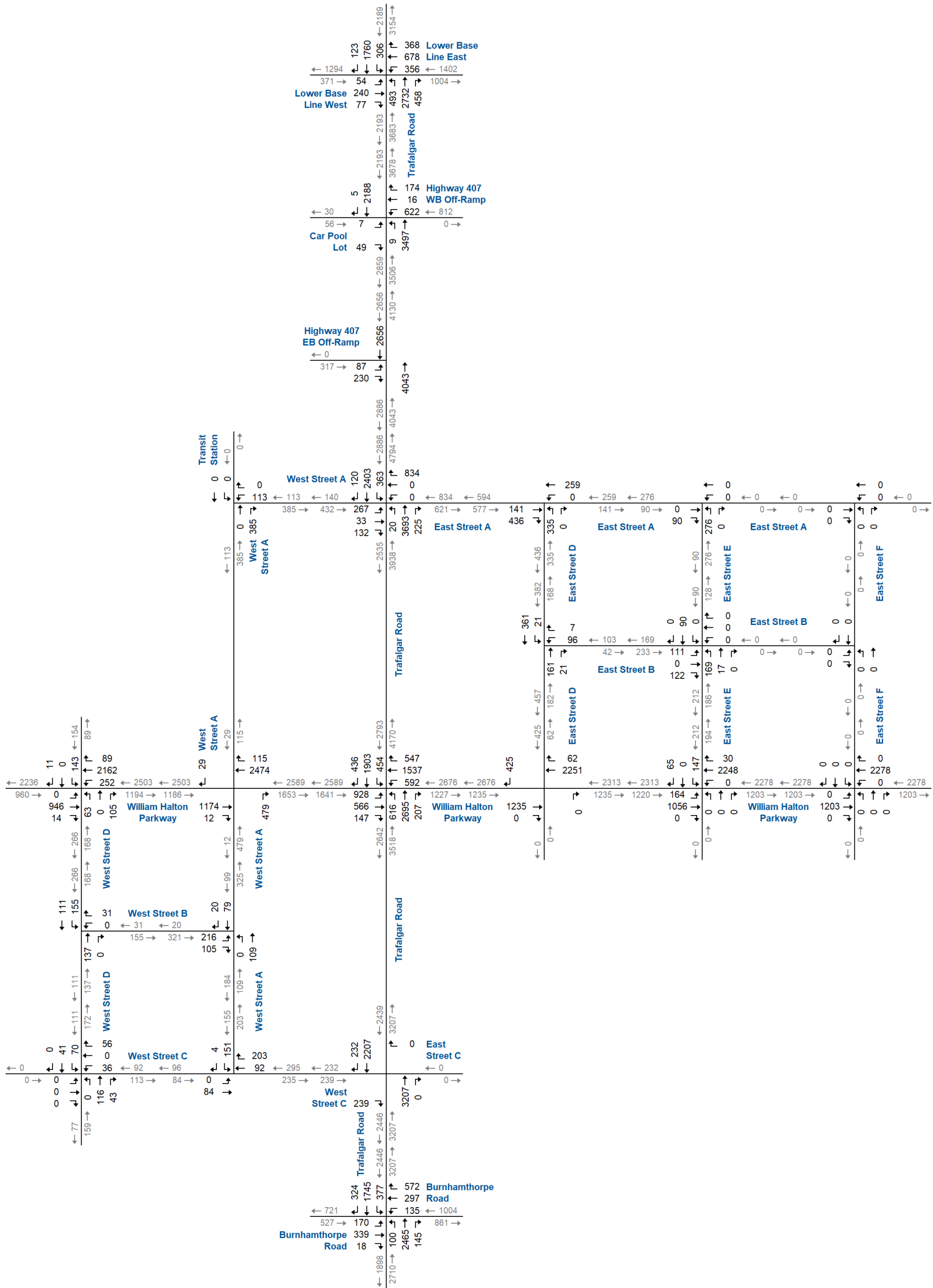
Scenario B Density Reduction Site Generated Traffic Volumes – PM Peak Hour



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Scenario B Density Reduction Total Traffic Volumes – AM Peak Hour



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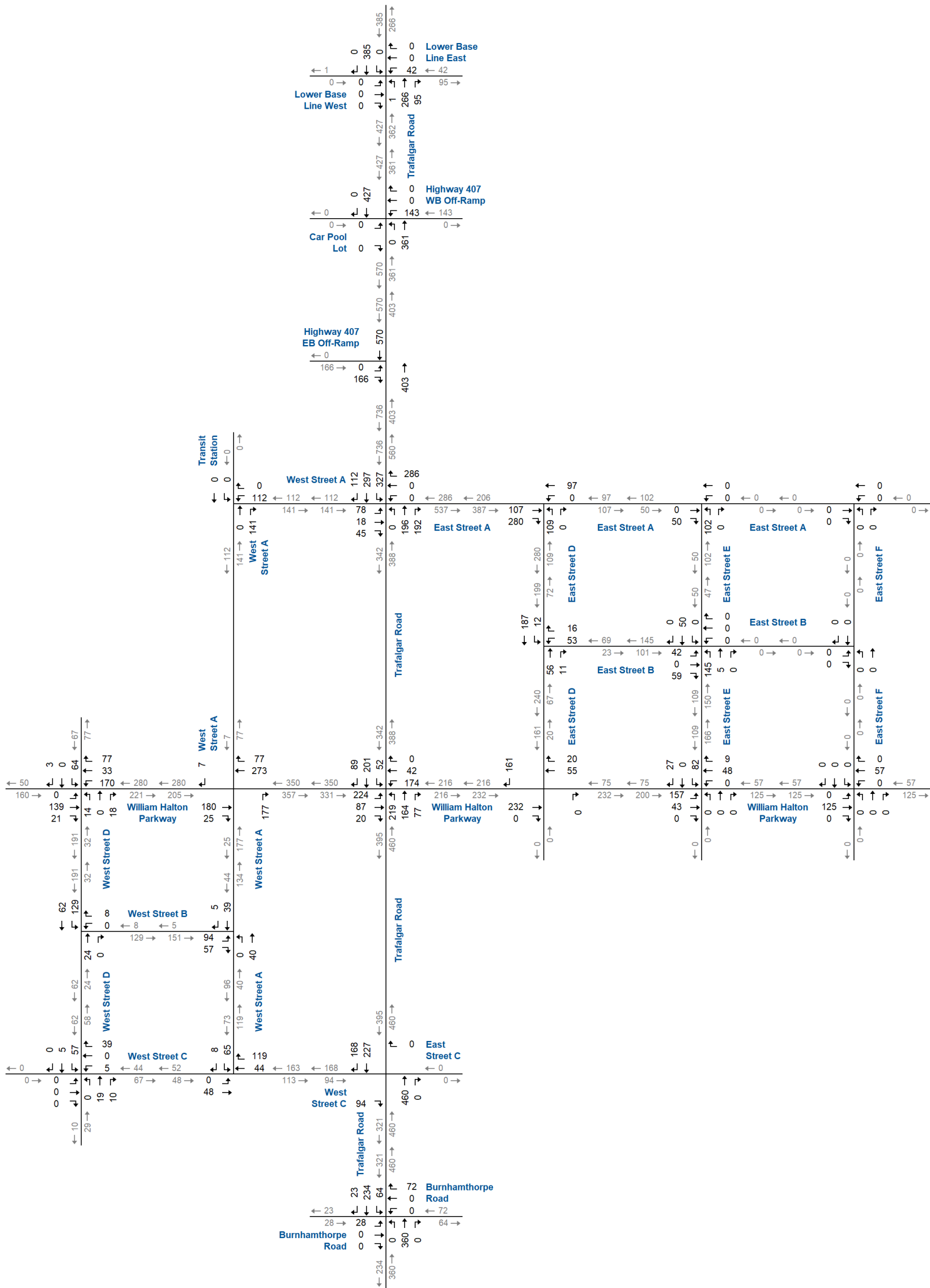


Scenario B Density Reduction Total Traffic Volumes – PM Peak Hour

TABLE 3 SCENARIO A INCREASED MODE SHARE TRIP GENERATION

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)	948	67	211	278	202	129	331
	710 - General Office Building (GFA/1,000ft ²)	286.7	286	47	333	53	277	330
	820 - Shopping Center (GFA/1,000ft ²)	95.6	56	34	90	175	189	364
	Block 1 Trip Generation		409	292	701	430	595	1,025
	Modal Split	35%	-	143	-	245	-	359
	Internal AM Entering	7%	-	29	-	29	-	-
	Internal AM Exiting	8%	-	-	23	-	23	-
	Internal PM Entering	10%	-	-	-	-	43	-
	Internal PM Exiting	9%	-	-	-	-	-	54
	Block 1 Net Trip Generation		237	167	404	236	333	569
2	222 - Multifamily Housing, High-Rise (Dwelling Units)	845	60	189	249	181	115	296
	710 - General Office Building (GFA/1,000ft ²)	255.5	255	41	296	47	247	294
	820 - Shopping Center (GFA/1,000ft ²)	85.2	50	30	80	156	168	324
	Block 2 Trip Generation		365	260	625	384	530	914
	Modal Split	35%	-	128	-	219	-	320
	Internal AM Entering	6%	-	22	-	22	-	-
	Internal AM Exiting	8%	-	-	21	-	21	-
	Internal PM Entering	10%	-	-	-	-	38	-
	Internal PM Exiting	9%	-	-	-	-	-	42
	Block 2 Net Trip Generation		215	148	363	212	302	514
3	222 - Multifamily Housing, High-Rise (Dwelling Units)	1078	76	239	315	229	146	375
	710 - General Office Building (GFA/1,000ft ²)	326.0	325	53	378	60	315	375
	820 - Shopping Center (GFA/1,000ft ²)	108.7	63	39	102	199	215	414
	Block 3 Trip Generation		464	331	795	488	676	1,164
	Modal Split	35%	-	162	-	278	-	408
	Internal AM Entering	7%	-	32	-	32	-	-
	Internal AM Exiting	8%	-	-	26	-	26	-
	Internal PM Entering	10%	-	-	-	-	49	-
	Internal PM Exiting	9%	-	-	-	-	-	61
	Block 3 Net Trip Generation		270	189	459	268	378	646
4	221 - Multifamily Housing, Mid-Rise (Dwelling Units)	508	48	135	183	137	87	224
	710 - General Office Building (GFA/1,000ft ²)	153.6	153	25	178	28	149	177
	820 - Shopping Center (GFA/1,000ft ²)	51.2	30	18	48	94	101	195
	Block 4 Trip Generation		231	178	409	259	337	596
	Modal Split	35%	-	81	-	143	-	209
	Internal AM Entering	7%	-	16	-	16	-	-
	Internal AM Exiting	7%	-	-	12	-	12	-
	Internal PM Entering	9%	-	-	-	-	23	-
	Internal PM Exiting	8%	-	-	-	-	-	27
	Block 4 Net Trip Generation		134	104	238	145	192	337
5	221 - Multifamily Housing, Mid-Rise (Dwelling Units)	379	35	101	136	102	65	167
	710 - General Office Building (GFA/1,000ft ²)	114.7	114	19	133	21	111	132
	820 - Shopping Center (GFA/1,000ft ²)	38.2	22	14	36	70	76	146
	Block 5 Trip Generation		171	134	305	193	252	445
	Modal Split	35%	-	60	-	107	-	156
	Internal AM Entering	6%	-	10	-	10	-	-
	Internal AM Exiting	7%	-	-	9	-	9	-
	Internal PM Entering	10%	-	-	-	-	19	-
	Internal PM Exiting	8%	-	-	-	-	-	20
	Block 5 Net Trip Generation		101	78	179	106	144	250
6	222 - Multifamily Housing, High-Rise (Dwelling Units)	566	41	130	171	123	78	201
	710 - General Office Building (GFA/1,000ft ²)	171.3	171	28	199	32	165	197
	820 - Shopping Center (GFA/1,000ft ²)	57.1	33	21	54	105	113	218
	Block 6 Trip Generation		245	179	424	260	356	616
	Modal Split	35%	-	86	-	149	-	216
	Internal AM Entering	7%	-	17	-	17	-	-
	Internal AM Exiting	8%	-	-	14	-	14	-
	Internal PM Entering	10%	-	-	-	-	26	-
	Internal PM Exiting	9%	-	-	-	-	-	32
	Block 6 Net Trip Generation		142	102	244	143	199	342
7	222 - Multifamily Housing, High-Rise (Dwelling Units)	337	26	81	107	75	48	123
	710 - General Office Building (GFA/1,000ft ²)	101.8	101	17	118	19	98	117
	820 - Shopping Center (GFA/1,000ft ²)	33.9	20	12	32	62	67	129
	Block 7 Trip Generation		147	110	257	156	213	369
	Modal Split	35%	-	51	-	90	-	130
	Internal AM Entering	7%	-	10	-	10	-	-
	Internal AM Exiting	8%	-	-	9	-	9	-
	Internal PM Entering	10%	-	-	-	-	16	-
	Internal PM Exiting	9%	-	-	-	-	-	19
	Block 7 Net Trip Generation		86	62	148	85	119	204
8	221 - Multifamily Housing, Mid-Rise (Dwelling Units)	328	31	87	118	88	56	144
	710 - General Office Building (GFA/1,000ft ²)	99.2	99	16	115	18	96	114
	820 - Shopping Center (GFA/1,000ft ²)	33.1	19	12	31	60	66	126
	Block 8 Trip Generation		149	115	264	166	218	384
	Modal Split	35%	-	52	-	92	-	134
	Internal AM Entering	6%	-	9	-	9	-	-
	Internal AM Exiting	7%	-	-	8	-	8	-
	Internal PM Entering	9%	-	-	-	-	15	-
	Internal PM Exiting	8%	-	-	-	-	-	17
	Block 8 Net Trip Generation		88	67	155	93	125	218
9	221 - Multifamily Housing, Mid-Rise (Dwelling Units)	313	29	84	113	84	54	138
	710 - General Office Building (GFA/1,000ft ²)	94.6	95	15	110	17	92	109
	820 - Shopping Center (GFA/1,000ft ²)	31.5	19	11	30	58	62	120
	Block 9 Trip Generation		143	110	253	159	208	367
	Modal Split	35%	-	50	-	89	-	129
	Internal AM Entering	7%	-	10	-	10	-	-
	Internal AM Exiting	8%	-	-	9	-	9	-
	Internal PM Entering	10%	-	-	-	-	16	-
	Internal PM Exiting	8%	-	-	-	-	-	17
	Block 9 Net Trip Generation		83	62	145	87	118	205
10	221 - Multifamily Housing, Mid-Rise (Dwelling Units)	244	23	65	88	65	42	107
	710 - General Office Building (GFA/1,000ft ²)	73.8	74	12	86	14	71	85
	820 - Shopping Center (GFA/1,000ft ²)	24.6	14	9	23	45	49	94
	Block 10 Trip Generation		111	86	197	124	162	286
	Modal Split	35%	-	39	-	69	-	100
	Internal AM Entering	8%	-	9	-	9	-	-
	Internal AM Exiting	9%	-	-	8	-	8	-
	Internal PM Entering	9%	-	-	-	-	11	-
	Internal PM Exiting	8%	-	-	-	-	-	13
	Block 10 Net Trip Generation		63	48	111	70	92	162
11	221 - Multifamily Housing, Mid-Rise (Dwelling Units)	166	16	44	60	45	28	73
	710 - General Office Building (GFA/1,000ft ²)	0.0	-	-	-	-	-	-
	820 - Shopping Center (GFA/1,000ft ²)	0.0	-	-	-	-	-	-
	Block 11 Trip Generation		16	44	60	45	28	73
	Modal Split	35%	-	6	-	21	-	26
	Internal AM Entering	0%	-	-	-	-	-	-
	Internal AM Exiting	0%	-	-	-	-	-	-
	Internal PM Entering	0%	-	-	-	-	-	-
	Internal PM Exiting	0%	-	-	-	-	-	-
	Block 11 Net Trip Generation		10	29	39	29	18	47
Residential (Dwelling Units)		5,712	452	1,366	1,818	1,331	848	2,179
Office (GFA/1,000ft ²)		1,677	1,673	273	1,946	309	1,621	1,930
Retail (GFA/1,000ft ²)		559	326	200	526	1,024	1,106	2,130
Scenario A Total Trip Generation			2,451	1,839	4,290	2,664	3,575	6,239
Scenario A Net Trip Generation			1,429	1,056	2,485	1,474	2,020	3,494

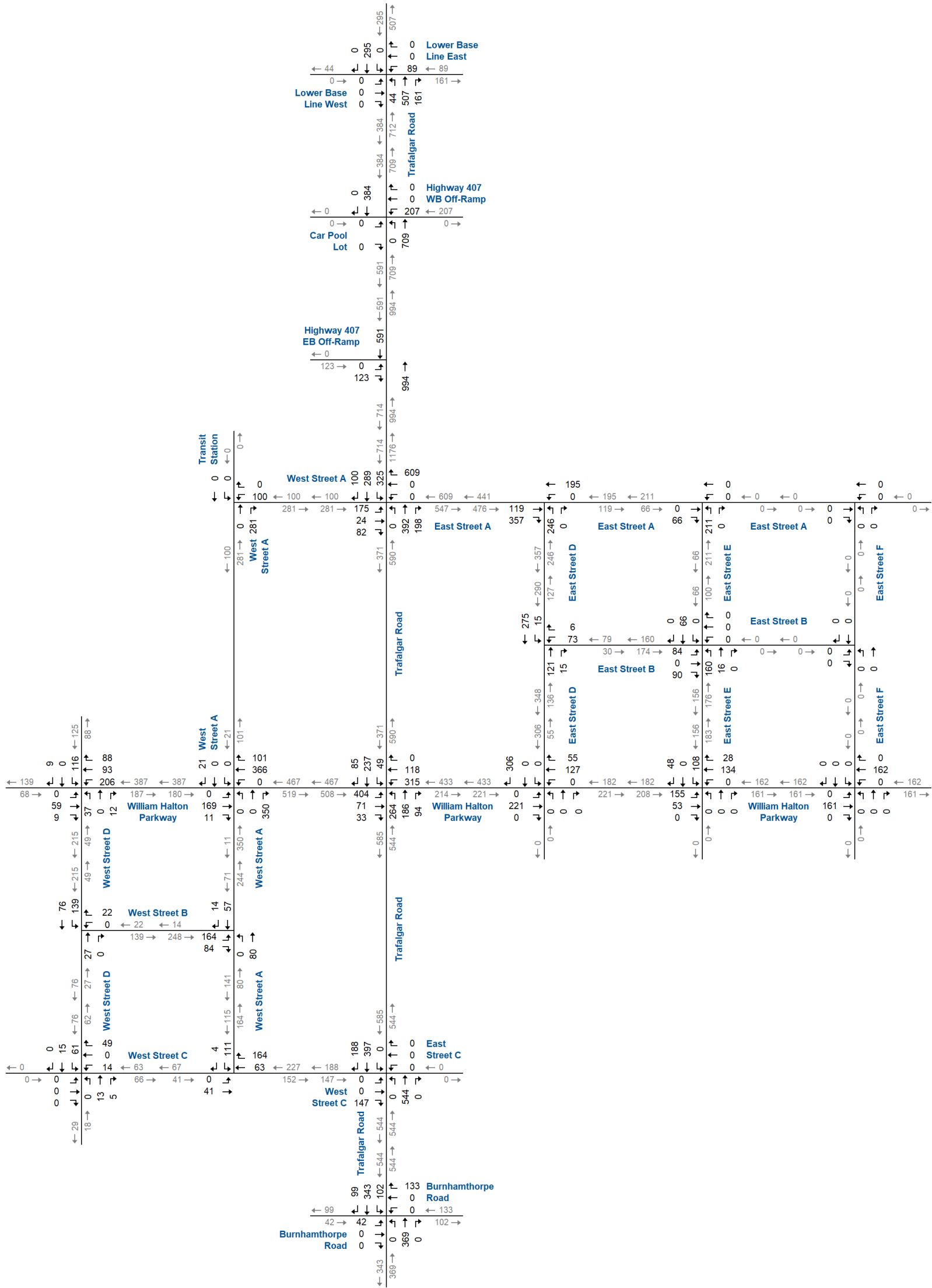




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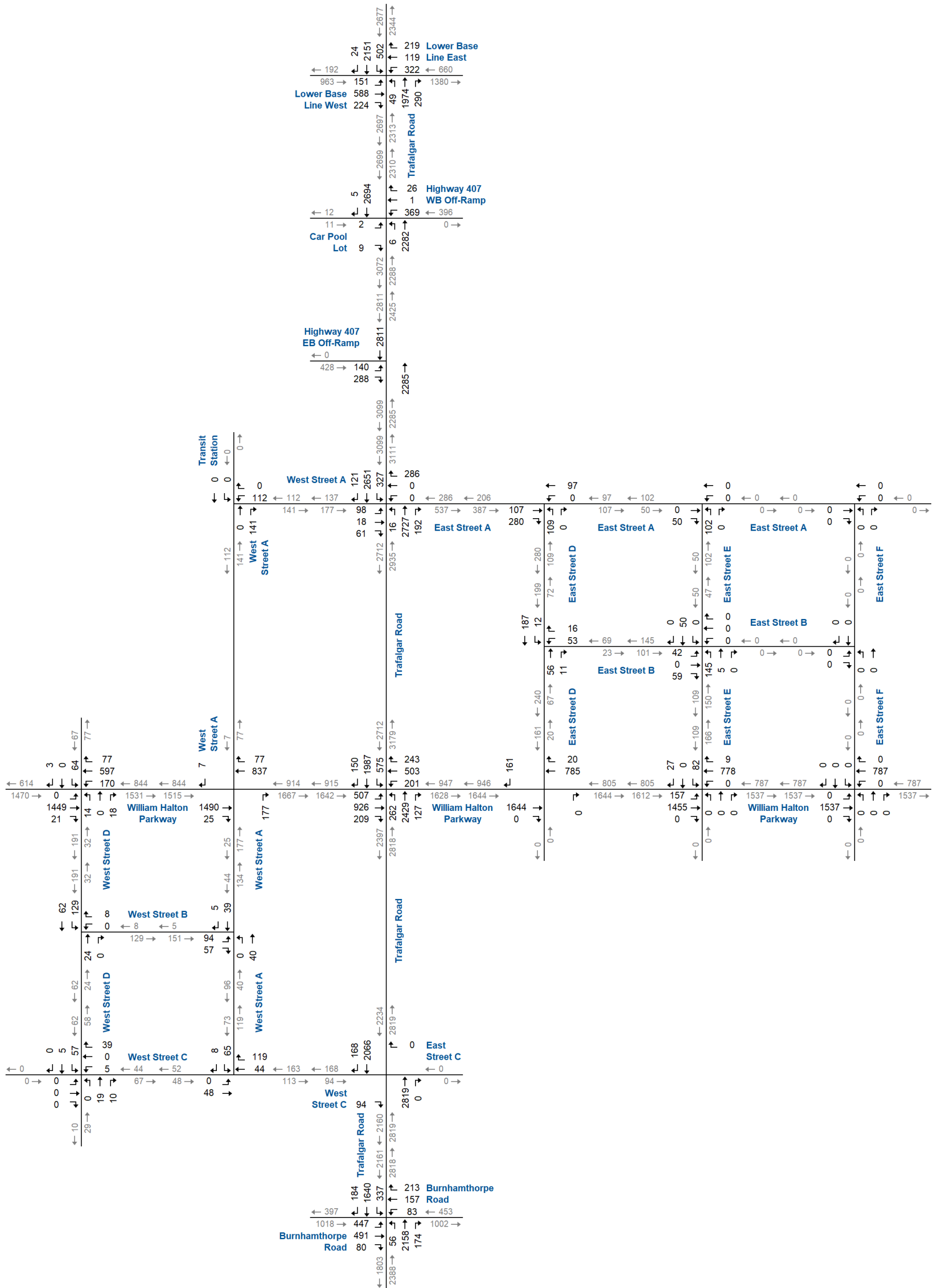
Scenario A Increased Mode Share Site Generated Traffic Volumes – AM Peak Hour



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Scenario A Increased Mode Share Site Generated Traffic Volumes – PM Peak Hour



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Scenario A Increased Mode Share Total Traffic Volumes – AM Peak Hour

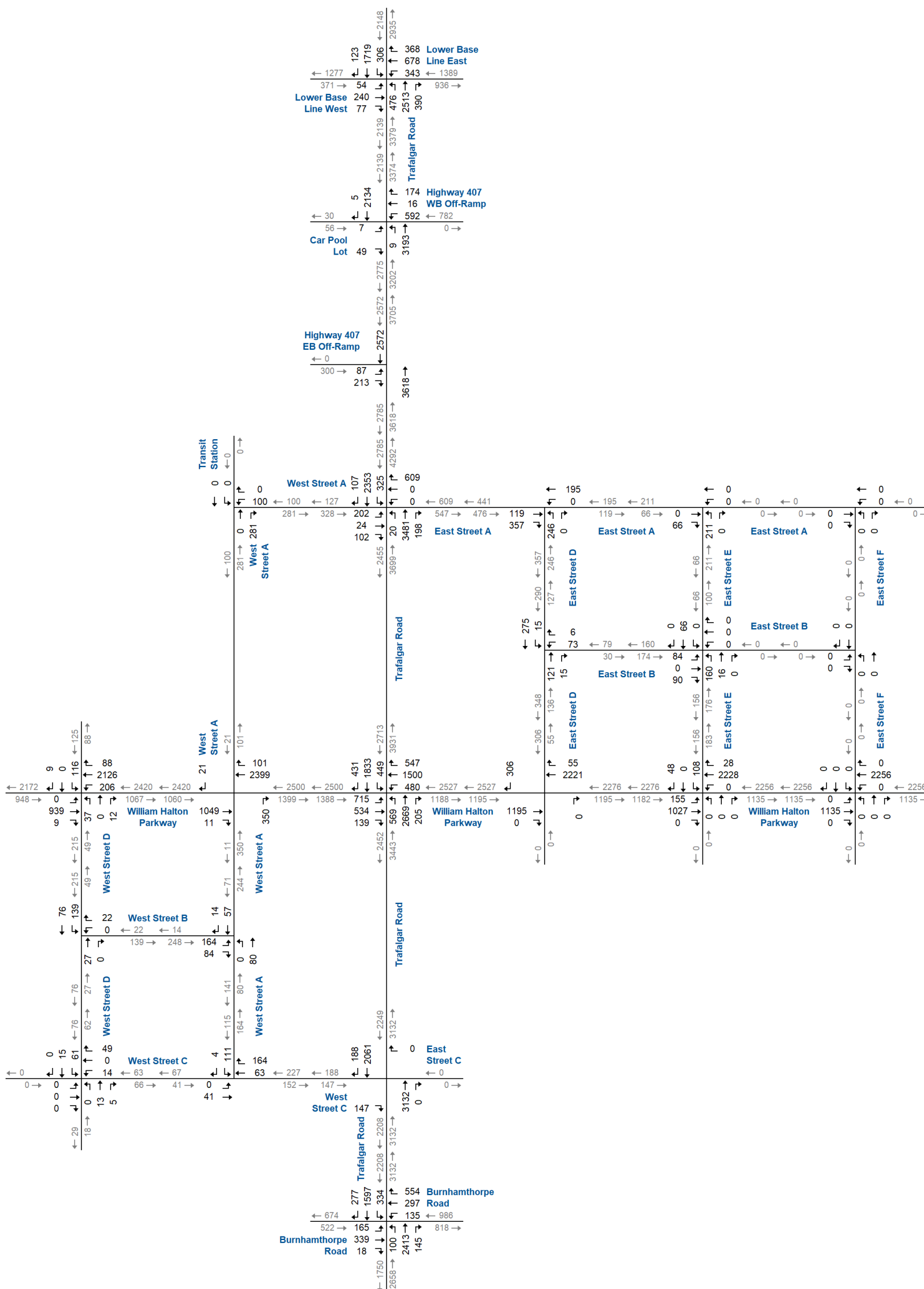


Figure 6B

TABLE 4 SCENARIO B INCREASED MODE SHARE TRIP GENERATION

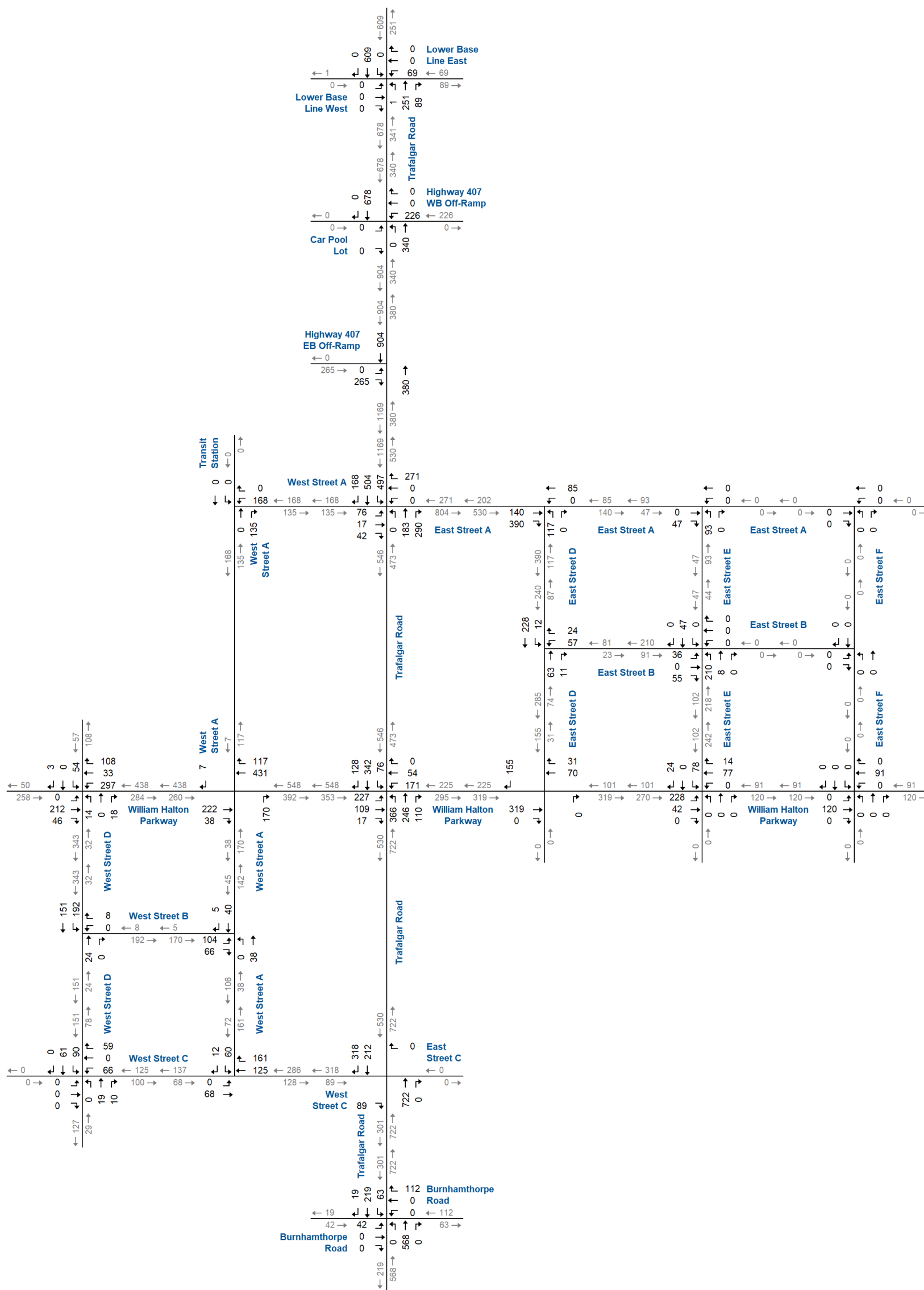
Block	ITE Land Use	Units	AM Peak Hour			PM Peak Hour		
			In	Out	Total	In	Out	Total
1	222 - Multifamily Housing, High-Rise (Dwelling Units)	678	48	154	202	145	93	238
	710 - General Office Building (GFA/1,000ft ²)	477.8	476	78	554	88	462	550
	820 - Shopping Center (GFA/1,000ft ²)	159.3	93	57	150	291	316	607
	Block 1 Trip Generation		617	289	906	524	871	1,395
	Modal Split	35%	216	101	317	183	305	488
	Internal AM Entering	6%	37	-	37	-	-	-
	Internal AM Exiting	10%	-	29	29	-	-	-
	Internal PM Entering	12%	-	-	-	63	-	63
	Internal PM Exiting	9%	-	-	-	-	78	78
	Block 1 Net Trip Generation		364	159	523	278	488	766
2	222 - Multifamily Housing, High-Rise (Dwelling Units)	602	43	138	181	130	83	213
	710 - General Office Building (GFA/1,000ft ²)	425.8	425	69	494	78	412	490
	820 - Shopping Center (GFA/1,000ft ²)	141.9	82	51	133	260	281	541
	Block 2 Trip Generation		550	258	808	468	776	1,244
	Modal Split	35%	193	90	283	164	272	436
	Internal AM Entering	6%	33	-	33	-	-	-
	Internal AM Exiting	10%	-	26	26	-	-	-
	Internal PM Entering	12%	-	-	-	56	-	56
	Internal PM Exiting	9%	-	-	-	-	70	70
	Block 2 Net Trip Generation		324	142	466	248	434	682
3	222 - Multifamily Housing, High-Rise (Dwelling Units)	789	55	173	228	165	105	270
	710 - General Office Building (GFA/1,000ft ²)	543.3	542	88	630	100	525	625
	820 - Shopping Center (GFA/1,000ft ²)	181.1	105	65	170	331	359	690
	Block 3 Trip Generation		702	326	1,028	596	989	1,585
	Modal Split	35%	246	114	360	209	346	555
	Internal AM Entering	7%	49	-	49	-	-	-
	Internal AM Exiting	6%	-	20	20	-	-	-
	Internal PM Entering	12%	-	-	-	72	-	72
	Internal PM Exiting	9%	-	-	-	-	89	89
	Block 3 Net Trip Generation		407	192	599	315	554	869
4	221 - Multifamily Housing, Mid-Rise (Dwelling Units)	362	34	96	130	97	62	159
	710 - General Office Building (GFA/1,000ft ²)	256.1	255	42	297	47	247	294
	820 - Shopping Center (GFA/1,000ft ²)	85.4	50	30	80	156	169	325
	Block 4 Trip Generation		339	168	507	300	478	778
	Modal Split	35%	119	59	178	105	167	272
	Internal AM Entering	6%	20	-	20	-	-	-
	Internal AM Exiting	10%	-	17	17	-	-	-
	Internal PM Entering	13%	-	-	-	39	-	39
	Internal PM Exiting	9%	-	-	-	-	43	43
	Block 4 Net Trip Generation		200	92	292	156	268	424
5	221 - Multifamily Housing, Mid-Rise (Dwelling Units)	270	25	72	97	73	46	119
	710 - General Office Building (GFA/1,000ft ²)	191.1	191	31	222	35	185	220
	820 - Shopping Center (GFA/1,000ft ²)	63.7	37	23	60	117	126	243
	Block 5 Trip Generation		253	126	379	225	357	582
	Modal Split	35%	89	44	133	79	125	204
	Internal AM Entering	7%	18	-	18	-	-	-
	Internal AM Exiting	11%	-	14	14	-	-	-
	Internal PM Entering	12%	-	-	-	27	-	27
	Internal PM Exiting	9%	-	-	-	-	32	32
	Block 5 Net Trip Generation		146	68	214	119	200	319
6	222 - Multifamily Housing, High-Rise (Dwelling Units)	404	30	96	126	89	57	146
	710 - General Office Building (GFA/1,000ft ²)	285.5	285	46	331	52	276	328
	820 - Shopping Center (GFA/1,000ft ²)	95.2	55	34	89	174	189	363
	Block 6 Trip Generation		370	176	546	315	522	837
	Modal Split	35%	130	62	192	110	183	293
	Internal AM Entering	6%	22	-	22	-	-	-
	Internal AM Exiting	10%	-	18	18	-	-	-
	Internal PM Entering	12%	-	-	-	38	-	38
	Internal PM Exiting	9%	-	-	-	-	47	47
	Block 6 Net Trip Generation		218	96	314	167	292	459
7	222 - Multifamily Housing, High-Rise (Dwelling Units)	240	19	61	80	55	35	90
	710 - General Office Building (GFA/1,000ft ²)	169.7	169	28	197	31	164	196
	820 - Shopping Center (GFA/1,000ft ²)	56.8	33	20	53	104	112	216
	Block 7 Trip Generation		221	109	330	190	311	501
	Modal Split	35%	77	38	115	67	109	176
	Internal AM Entering	6%	13	-	13	-	-	-
	Internal AM Exiting	10%	-	11	11	-	-	-
	Internal PM Entering	11%	-	-	-	21	-	21
	Internal PM Exiting	9%	-	-	-	-	28	28
	Block 7 Net Trip Generation		131	60	191	102	174	275
8	221 - Multifamily Housing, Mid-Rise (Dwelling Units)	220	21	58	79	59	38	97
	710 - General Office Building (GFA/1,000ft ²)	155.7	156	25	181	29	150	179
	820 - Shopping Center (GFA/1,000ft ²)	51.9	30	19	49	95	103	198
	Block 8 Trip Generation		207	102	309	183	291	474
	Modal Split	35%	72	36	108	64	102	166
	Internal AM Entering	6%	12	-	12	-	-	-
	Internal AM Exiting	9%	-	9	9	-	-	-
	Internal PM Entering	12%	-	-	-	22	-	22
	Internal PM Exiting	9%	-	-	-	-	26	26
	Block 8 Net Trip Generation		123	57	180	97	163	260
9	221 - Multifamily Housing, Mid-Rise (Dwelling Units)	223	21	59	80	60	38	98
	710 - General Office Building (GFA/1,000ft ²)	157.7	157	26	183	29	152	181
	820 - Shopping Center (GFA/1,000ft ²)	52.6	30	19	49	96	104	200
	Block 9 Trip Generation		208	104	312	185	294	479
	Modal Split	35%	73	36	109	65	103	168
	Internal AM Entering	6%	12	-	12	-	-	-
	Internal AM Exiting	9%	-	9	9	-	-	-
	Internal PM Entering	11%	-	-	-	20	-	20
	Internal PM Exiting	9%	-	-	-	-	26	26
	Block 9 Net Trip Generation		123	59	182	100	165	265
10	221 - Multifamily Housing, Mid-Rise (Dwelling Units)	180	17	48	65	48	31	79
	710 - General Office Building (GFA/1,000ft ²)	127.3	127	21	148	23	123	146
	820 - Shopping Center (GFA/1,000ft ²)	42.4	25	15	40	78	84	162
	Block 10 Trip Generation		169	84	253	149	238	387
	Modal Split	35%	59	29	88	52	83	135
	Internal AM Entering	6%	10	-	10	-	-	-
	Internal AM Exiting	9%	-	8	8	-	-	-
	Internal PM Entering	12%	-	-	-	18	-	18
	Internal PM Exiting	9%	-	-	-	-	21	21
	Block 10 Net Trip Generation		100	47	147	79	134	213
11	221 - Multifamily Housing, Mid-Rise (Dwelling Units)	0	-	-	-	-	-	-
	710 - General Office Building (GFA/1,000ft ²)	162.8	163	26	189	30	157	187
	820 - Shopping Center (GFA/1,000ft ²)	54.3	32	19	51	99	108	207
	Block 11 Trip Generation		195	45	240	129	265	394
	Modal Split	35%	68	16	84	45	93	138
	Internal AM Entering	0%	-	-	-	-	-	-
	Internal AM Exiting	0%	-	-	-	-	-	-
	Internal PM Entering	0%	-	-	-	-	-	-
	Internal PM Exiting	0%	-	-	-	-	-	-
	Block 11 Net Trip Generation		127	29	156	84	172	256
Residential (Dwelling Units)			3,846	313	955	1,268	921	1,569
Office (GFA/1,000ft ²)			2,953	2,946	489	3,426	542	2,853
Retail (GFA/1,000ft ²)			984	672	352	924	1,801	1,951
Scenario B Total Trip Generation			3,831	1,787	5,618	3,264	5,392	6,656
Scenario B Net Trip Generation			2,263	1,001	3,264	1,745	3,044	4,789





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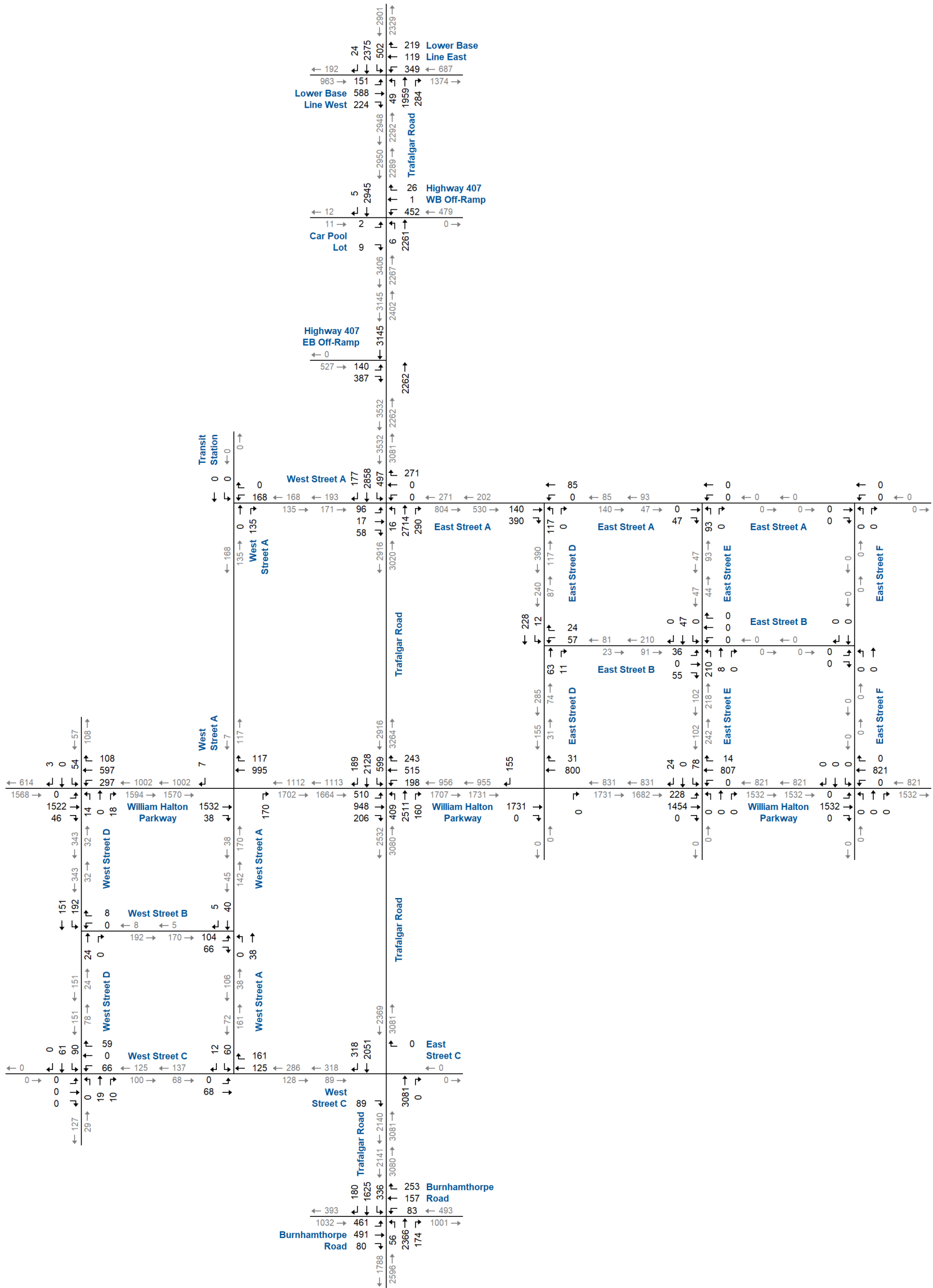
Figure 7A





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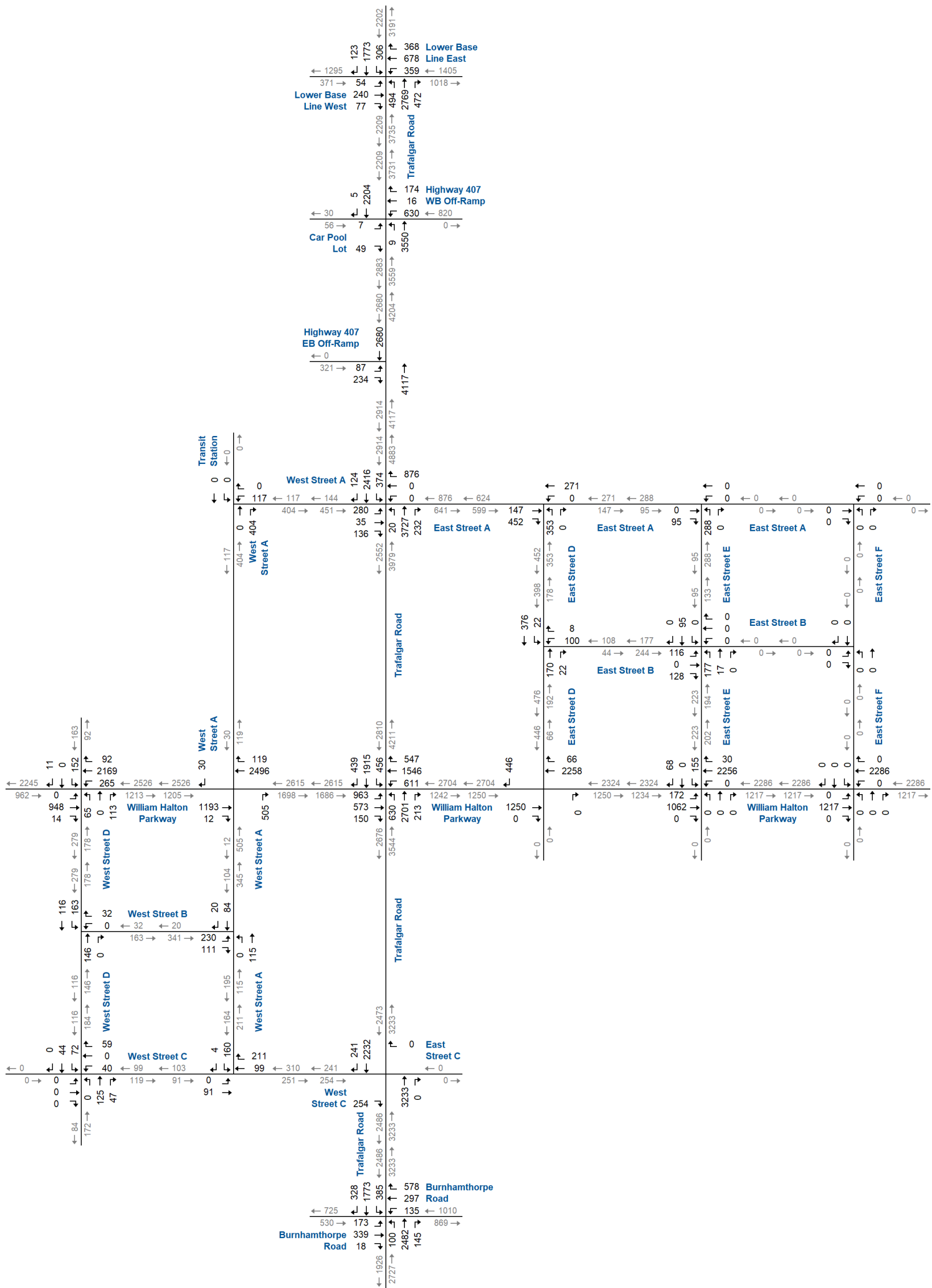
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Scenario B Increased Mode Share Total Traffic Volumes – AM Peak Hour



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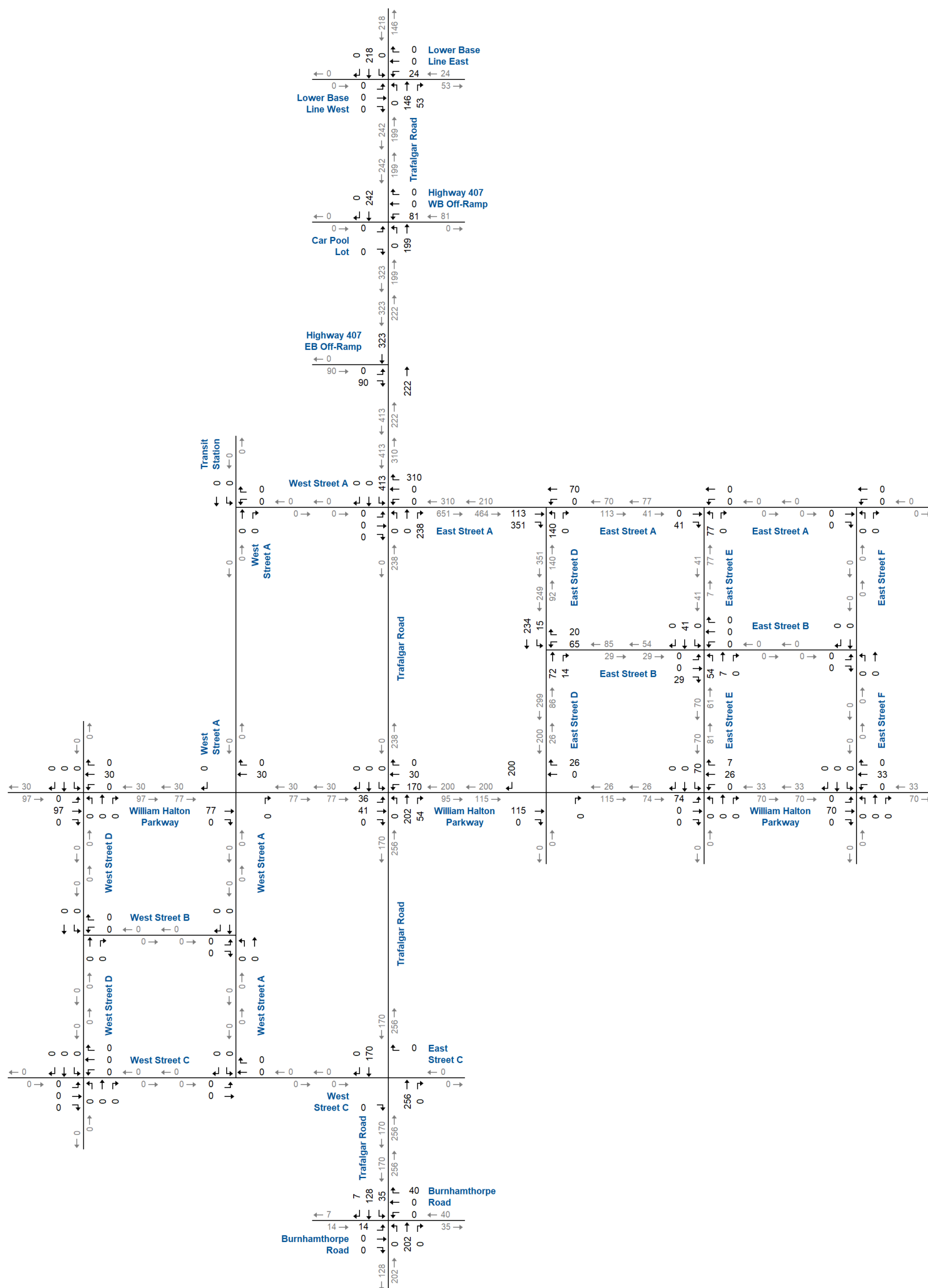
Scenario B Increased Mode Share Total Traffic Volumes – PM Peak Hour

Figure 8B

TABLE 5 SCENARIO A EAST SIDE ONLY TRIP GENERATION

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)	948	67	211	278	202	129	331
	710 - General Office Building (GFA/1,000ft ²)	286.7	286	47	333	53	277	330
	820 - Shopping Center (GFA/1,000ft ²)	95.6	56	34	90	175	189	364
	Block 1 Trip Generation		409	292	701	430	595	1,025
	Modal Split	20%	- 82	- 58	- 140	- 86	- 119	- 205
	Internal AM Entering	7%	- 29	-	- 29			
	Internal AM Exiting	8%		- 23	- 23			
	Internal PM Entering	10%				- 43	-	- 43
	Internal PM Exiting	9%					- 54	- 54
	Block 1 Net Trip Generation		298	211	509	301	422	723
3	222 - Multifamily Housing, High-Rise (Dwelling Units)	1078	76	239	315	229	146	375
	710 - General Office Building (GFA/1,000ft ²)	326.0	325	53	378	60	315	375
	820 - Shopping Center (GFA/1,000ft ²)	108.7	63	39	102	199	215	414
	Block 3 Trip Generation		464	331	795	488	676	1,164
	Modal Split	20%	- 93	- 66	- 159	- 98	- 135	- 233
	Internal AM Entering	7%	- 32	-	- 32			
	Internal AM Exiting	8%		- 26	- 26			
	Internal PM Entering	10%				- 49	-	- 49
	Internal PM Exiting	9%					- 61	- 61
	Block 3 Net Trip Generation		339	239	578	341	480	821
4	221 - Multifamily Housing, Mid-Rise (Dwelling Units)	508	48	135	183	137	87	224
	710 - General Office Building (GFA/1,000ft ²)	153.6	153	25	178	28	149	177
	820 - Shopping Center (GFA/1,000ft ²)	51.2	30	18	48	94	101	195
	Block 4 Trip Generation		231	178	409	259	337	596
	Modal Split	20%	- 46	- 36	- 82	- 52	- 67	- 119
	Internal AM Entering	7%	- 16	-	- 16			
	Internal AM Exiting	7%		- 12	- 12			
	Internal PM Entering	9%				- 23	-	- 23
	Internal PM Exiting	8%					- 27	- 27
	Block 4 Net Trip Generation		169	130	299	184	243	427
	Residential (Dwelling Units)	2,534	191	585	776	568	362	930
	Office (GFA/1,000ft ²)	766	764	125	889	141	741	882
	Retail (GFA/1,000ft ²)	255	149	91	240	468	505	973
Scenario A Total Trip Generation			1,104	801	1,905	1,177	1,608	2,785
Scenario A Net Trip Generation			806	580	1,386	826	1,145	1,971

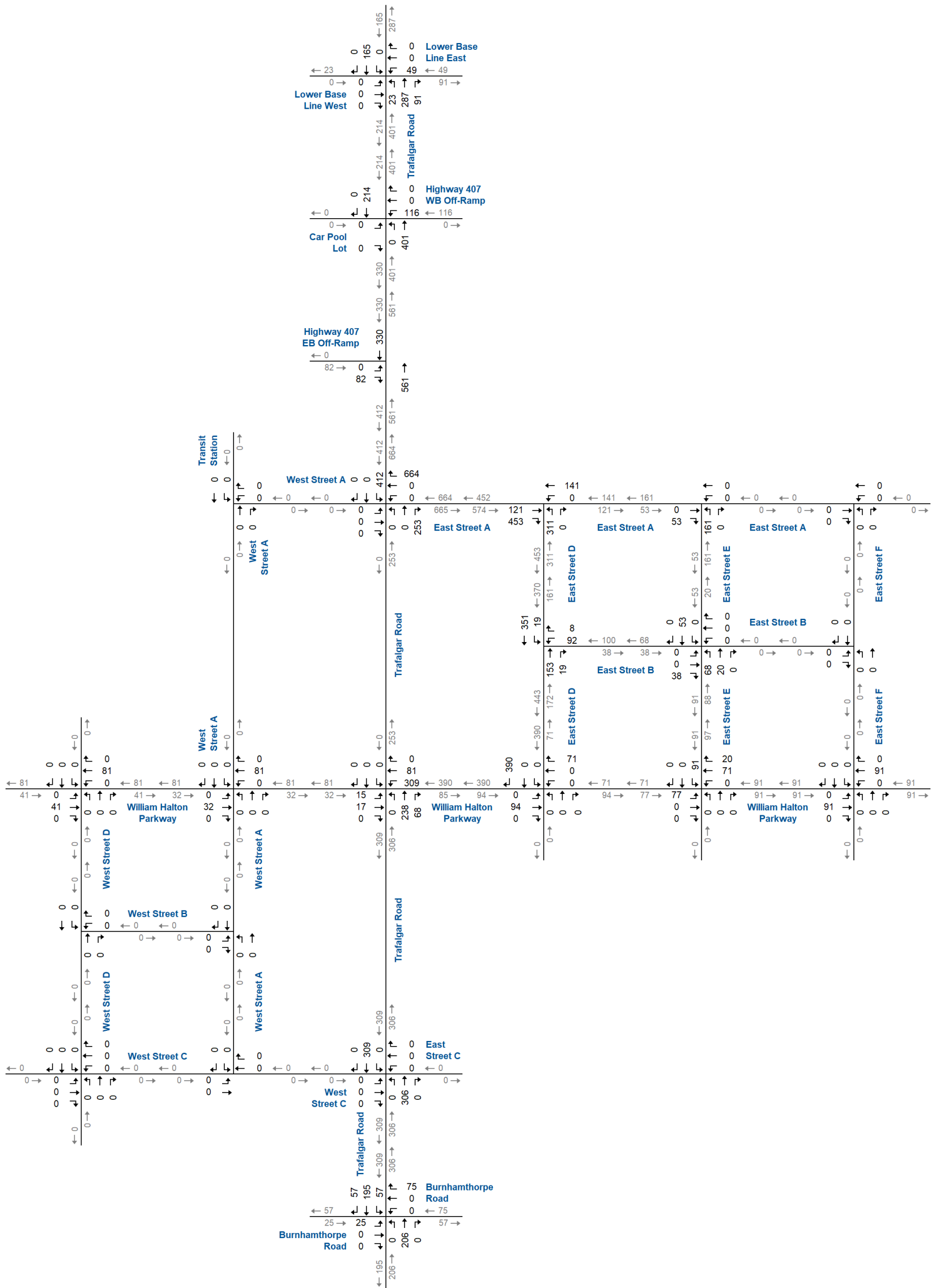




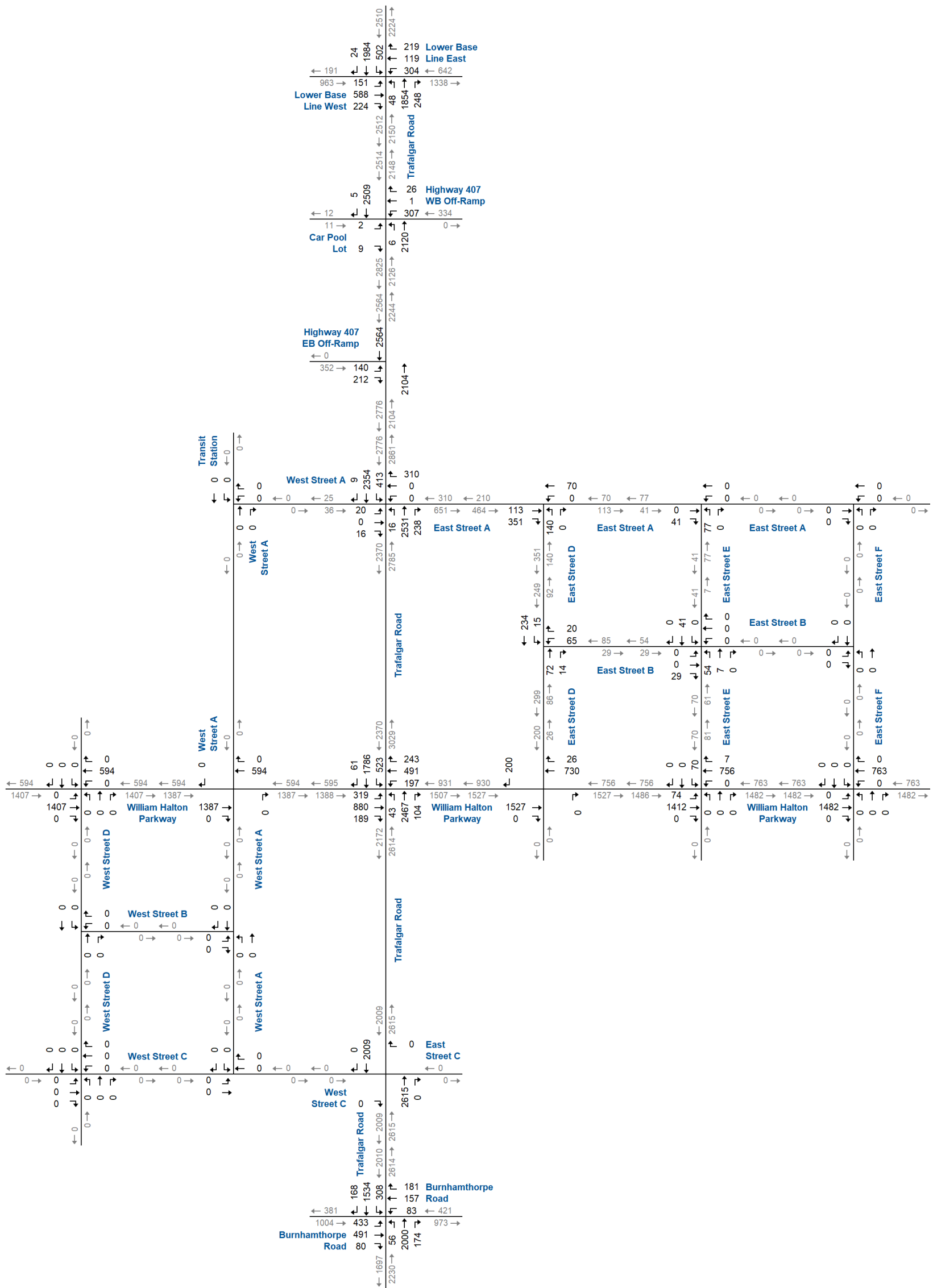
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Figure 9A



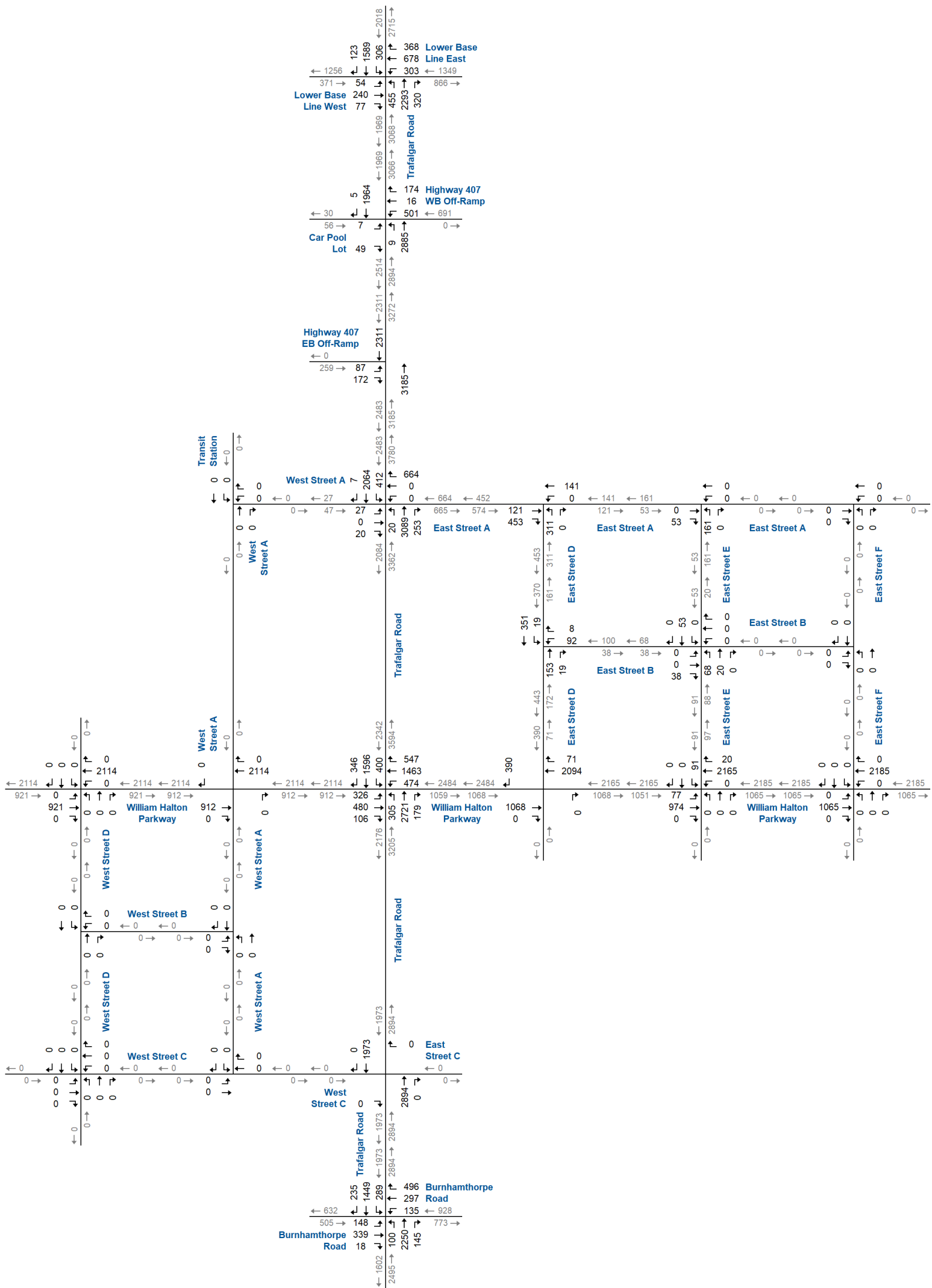
Scenario A East Side Only Site Generated Traffic Volumes – PM Peak Hour



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Scenario A East Side Only Total Traffic Volumes – AM Peak Hour



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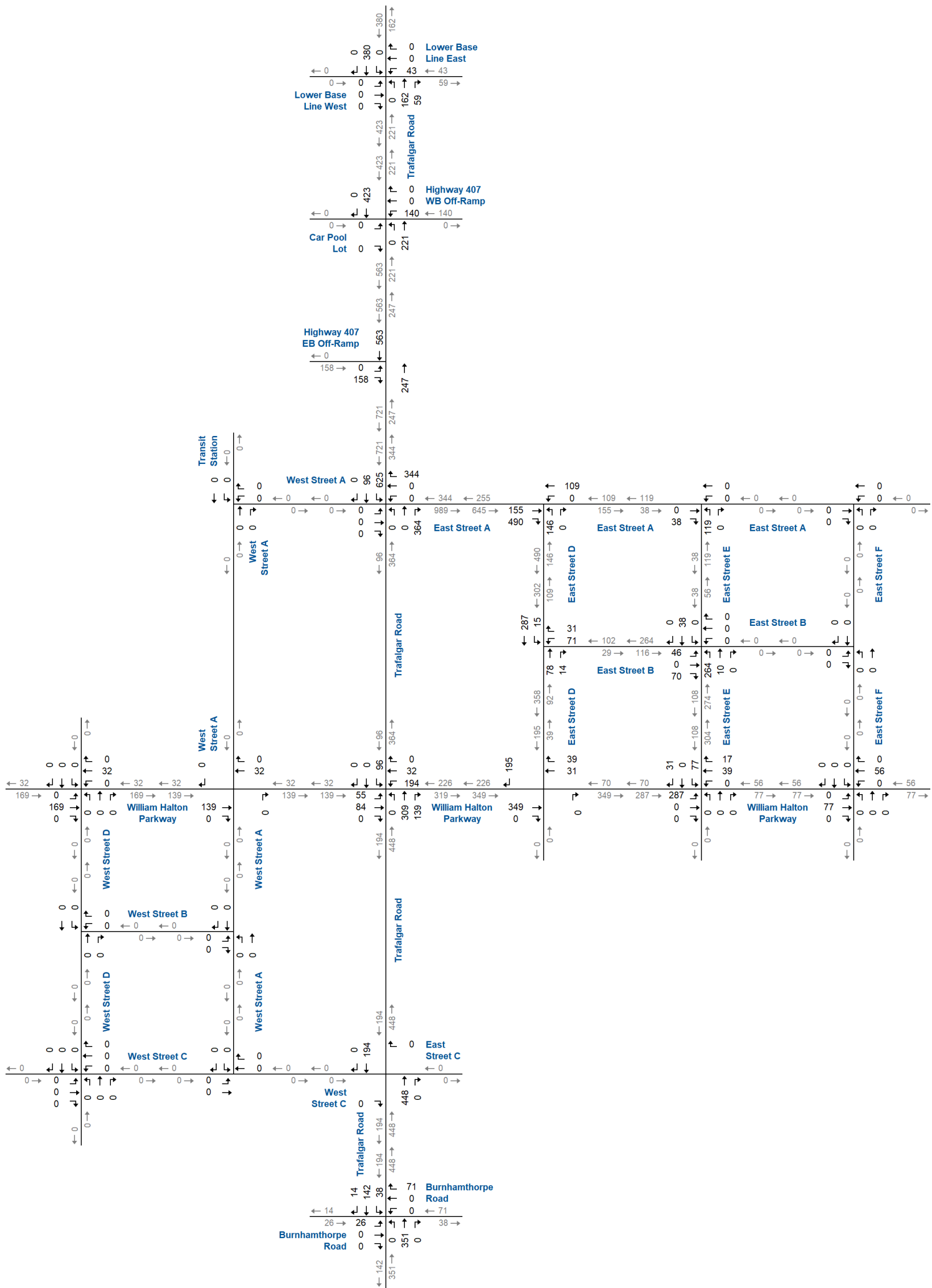


Scenario A East Side Only Total Traffic Volumes – PM Peak Hour

TABLE 6 SCENARIO B EAST SIDE ONLY TRIP GENERATION

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)	676	48	154	202	145	93	238
	710 - General Office Building (GFA/1,000ft ²)	477.8	476	78	554	88	462	550
	820 - Shopping Center (GFA/1,000ft ²)	159.3	93	57	150	291	316	607
	Block 1 Trip Generation		617	289	906	524	871	1,395
	Modal Split	20%	- 123	- 58	- 181	- 105	- 174	- 279
	Internal AM Entering	6%	- 37	-	- 37			
	Internal AM Exiting	10%		- 29	- 29			
	Internal PM Entering	12%				- 63	-	- 63
	Internal PM Exiting	9%					- 78	- 78
	Block 1 Net Trip Generation		457	202	659	356	619	975
3	222 - Multifamily Housing, High-Rise (Dwelling Units)	769	55	173	228	165	105	270
	710 - General Office Building (GFA/1,000ft ²)	543.3	542	88	630	100	525	625
	820 - Shopping Center (GFA/1,000ft ²)	181.1	105	65	170	331	359	690
	Block 3 Trip Generation		702	326	1,028	596	989	1,585
	Modal Split	20%	- 140	- 65	- 205	- 119	- 198	- 317
	Internal AM Entering	7%	- 49	-	- 49			
	Internal AM Exiting	6%		- 20	- 20			
	Internal PM Entering	12%				- 72	-	- 72
	Internal PM Exiting	9%					- 89	- 89
	Block 3 Net Trip Generation		513	241	754	405	702	1,107
4	221 - Multifamily Housing, Mid-Rise (Dwelling Units)	362	34	96	130	97	62	159
	710 - General Office Building (GFA/1,000ft ²)	256.1	255	42	297	47	247	294
	820 - Shopping Center (GFA/1,000ft ²)	85.4	50	30	80	156	169	325
	Block 4 Trip Generation		339	168	507	300	478	778
	Modal Split	20%	- 68	- 34	- 102	- 60	- 96	- 156
	Internal AM Entering	6%	- 20	-	- 20			
	Internal AM Exiting	10%		- 17	- 17			
	Internal PM Entering	13%				- 39	-	- 39
	Internal PM Exiting	9%					- 43	- 43
	Block 4 Net Trip Generation		251	117	368	201	339	540
	Residential (Dwelling Units)	2,077	162	495	657	480	306	786
	Office (GFA/1,000ft ²)	1,468	1,464	239	1,703	270	1,419	1,689
	Retail (GFA/1,000ft ²)	489	285	175	460	895	970	1,865
Scenario B Total Trip Generation			1,911	909	2,820	1,645	2,695	4,340
Scenario B Net Trip Generation			1,405	647	2,052	1,115	1,914	3,029

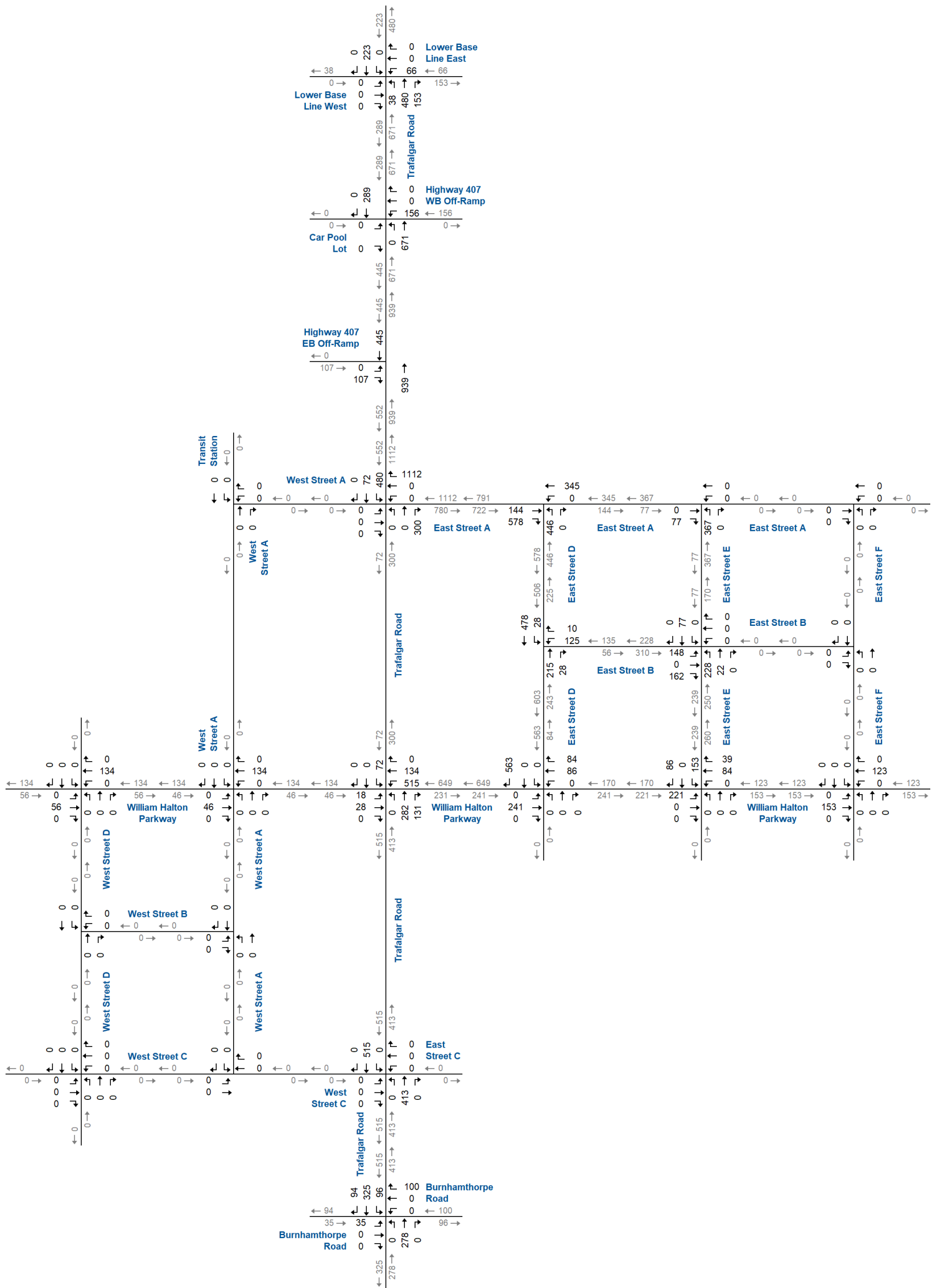




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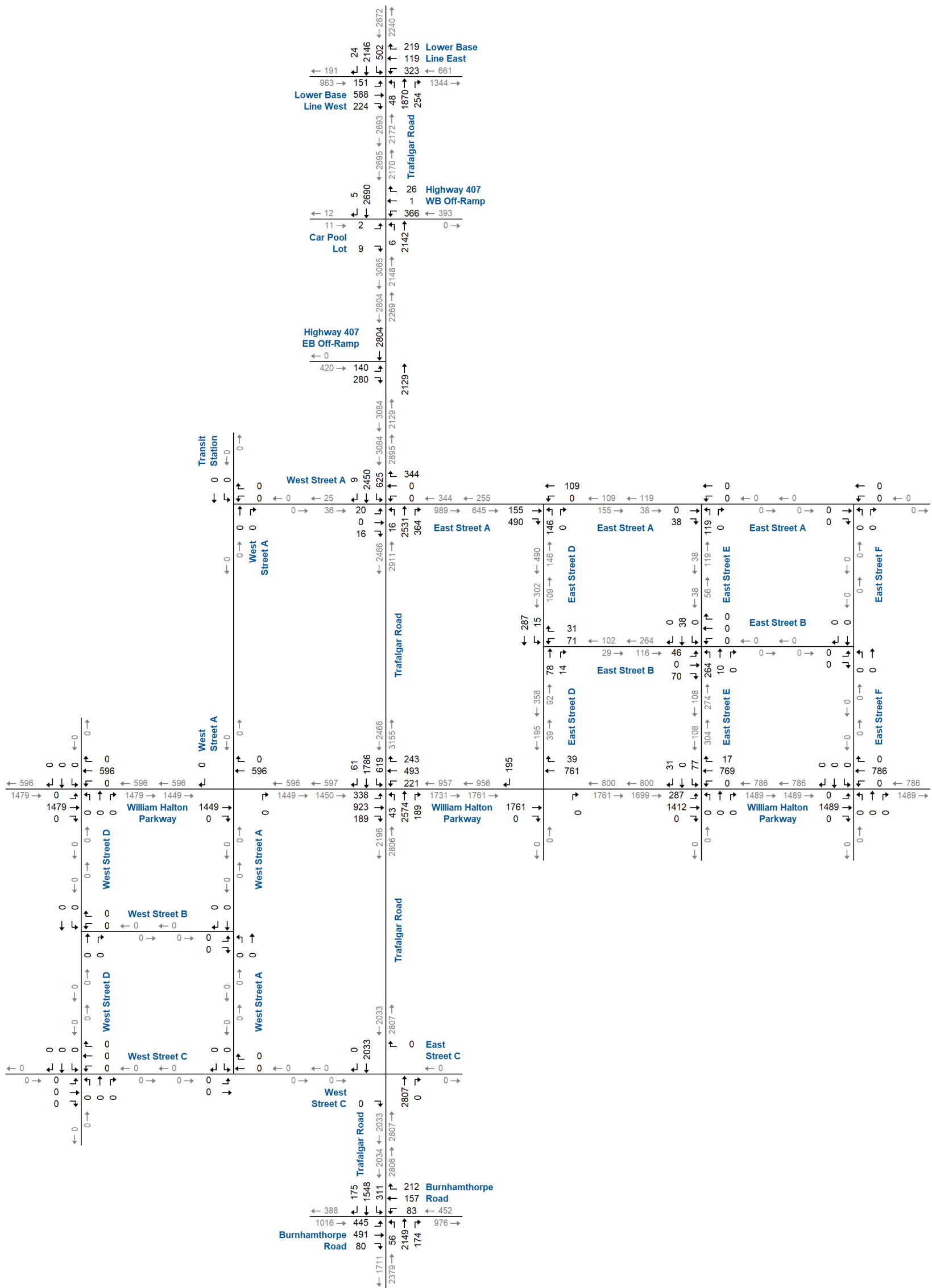
Scenario B East Side Only Site Generated Traffic Volumes – AM Peak Hour



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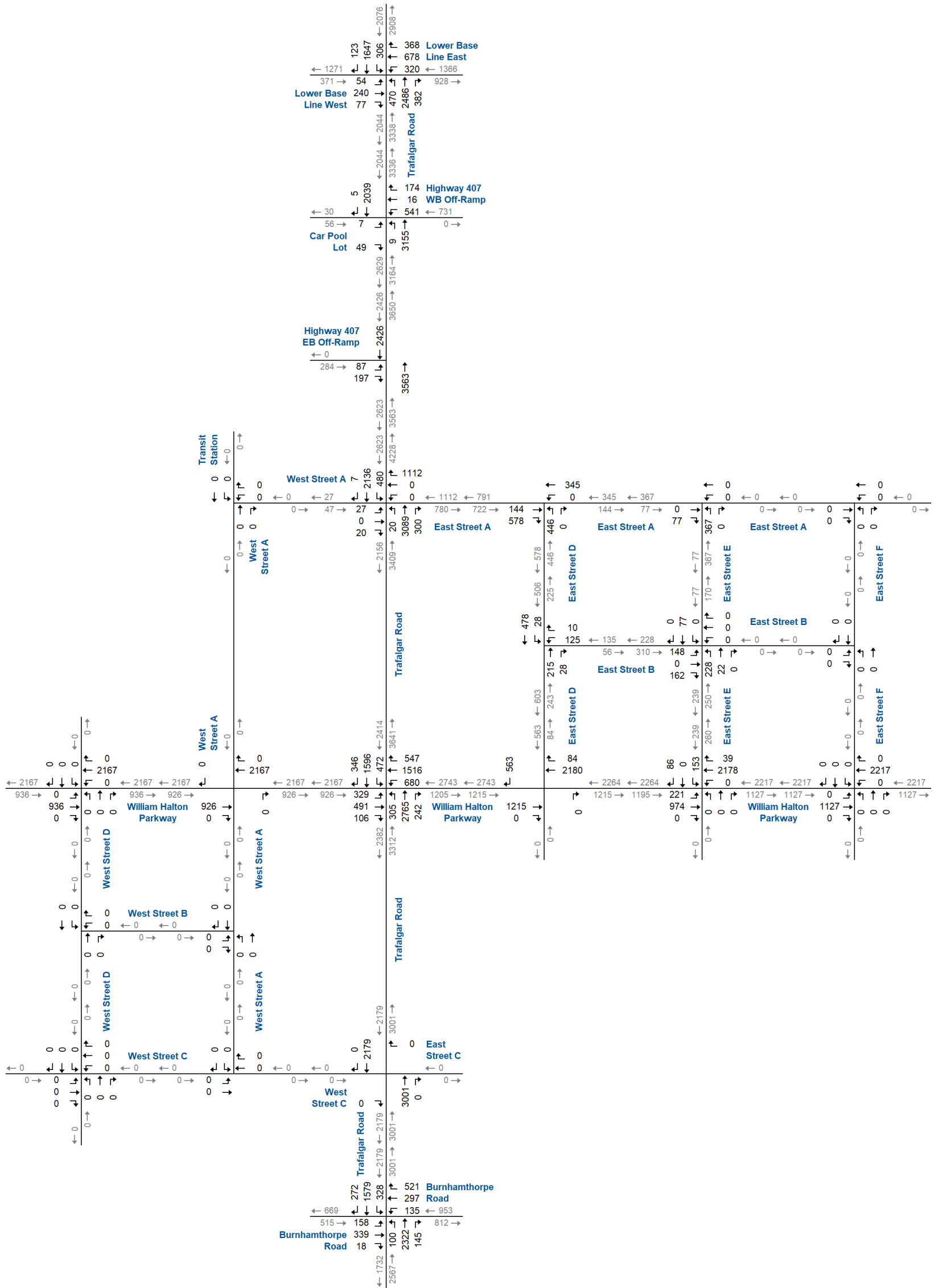
Scenario B East Side Only Site Generated Traffic Volumes – PM Peak Hour



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Scenario B East Side Only Total Traffic Volumes – AM Peak Hour



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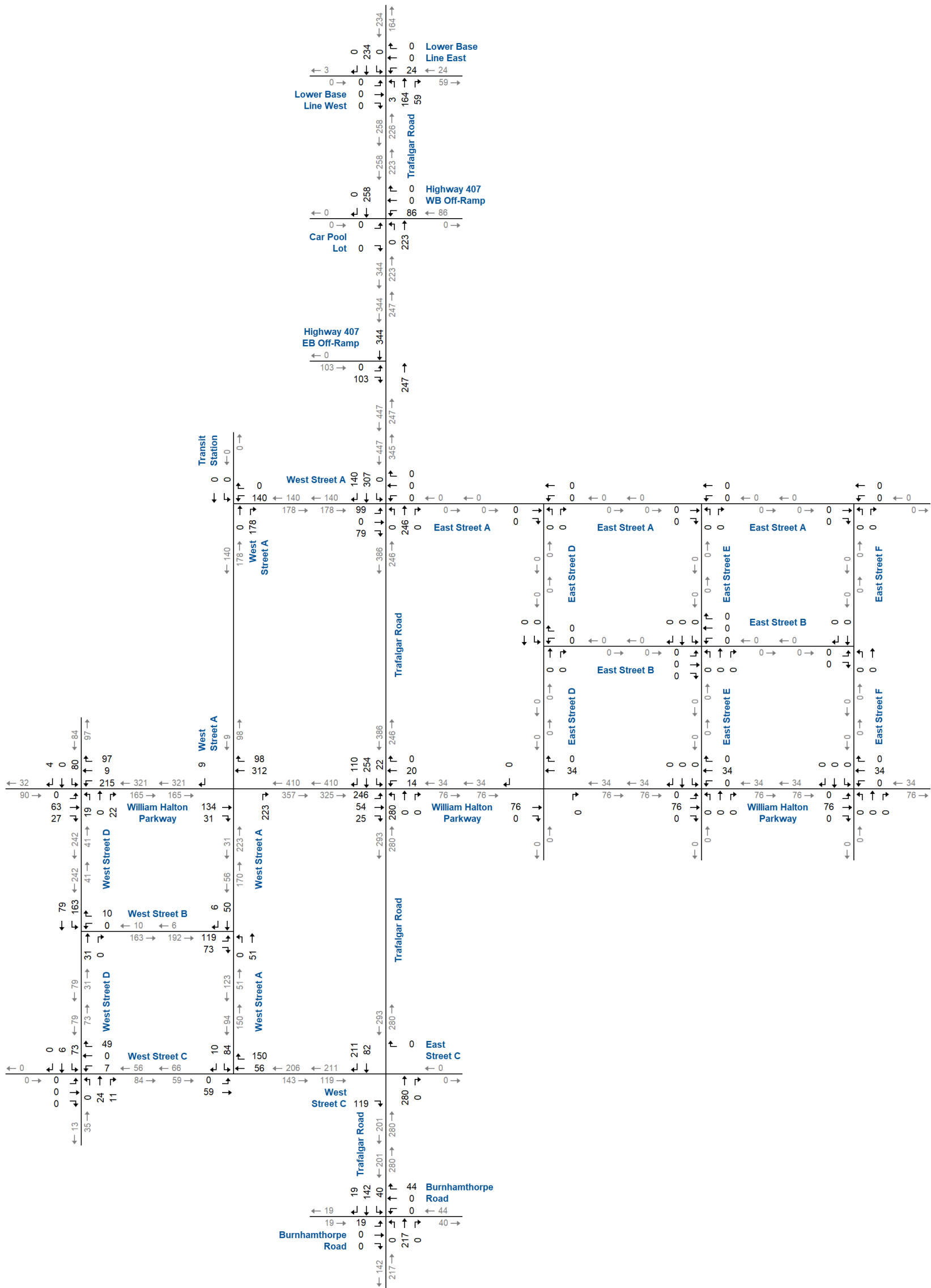


Scenario B 2041 Total Traffic Volumes – PM Peak Hour (East Side Only)

TABLE 7 SCENARIO A WEST SIDE ONLY TRIP GENERATION

Block	ITE Land Use	Units	AM Peak Hour			PM Peak Hour		
			In	Out	Total	In	Out	Total
2	222 - Multifamily Housing, High-Rise (Dwelling Units)	845	60	189	249	181	115	296
	710 - General Office Building (GFA/1,000ft ²)	255.5	255	41	296	47	247	294
	820 - Shopping Center (GFA/1,000ft ²)	85.2	50	30	80	156	168	324
	Block 2 Trip Generation		365	260	625	384	530	914
	Modal Split	20%	73	52	125	77	106	183
	Internal AM Entering	6%	22	-	22	-	-	-
	Internal AM Exiting	8%	-	21	21	-	-	-
	Internal PM Entering	10%	-	-	-	38	-	38
	Internal PM Exiting	8%	-	-	-	-	42	42
	Block 2 Net Trip Generation		270	187	457	269	382	651
6	222 - Multifamily Housing, High-Rise (Dwelling Units)	566	41	130	171	123	78	201
	710 - General Office Building (GFA/1,000ft ²)	171.3	171	28	199	32	165	197
	820 - Shopping Center (GFA/1,000ft ²)	57.1	33	21	54	105	113	218
	Block 6 Trip Generation		245	179	424	260	356	616
	Modal Split	20%	49	36	85	52	71	123
	Internal AM Entering	7%	17	-	17	-	-	-
	Internal AM Exiting	8%	-	14	14	-	-	-
	Internal PM Entering	10%	-	-	-	26	-	26
	Internal PM Exiting	9%	-	-	-	-	32	32
	Block 6 Net Trip Generation		179	129	308	182	253	435
7	222 - Multifamily Housing, High-Rise (Dwelling Units)	337	26	81	107	75	48	123
	710 - General Office Building (GFA/1,000ft ²)	101.8	101	17	118	19	98	117
	820 - Shopping Center (GFA/1,000ft ²)	33.9	20	12	32	62	67	129
	Block 7 Trip Generation		147	110	257	156	213	369
	Modal Split	20%	29	22	51	31	43	74
	Internal AM Entering	7%	10	-	10	-	-	-
	Internal AM Exiting	8%	-	9	9	-	-	-
	Internal PM Entering	10%	-	-	-	16	-	16
	Internal PM Exiting	9%	-	-	-	-	19	19
	Block 7 Net Trip Generation		108	79	187	109	151	260
8	221 - Multifamily Housing, Mid-Rise (Dwelling Units)	328	31	87	118	88	56	144
	710 - General Office Building (GFA/1,000ft ²)	99.2	99	16	115	18	96	114
	820 - Shopping Center (GFA/1,000ft ²)	33.1	19	12	31	60	66	126
	Block 8 Trip Generation		149	115	264	166	218	384
	Modal Split	20%	30	23	53	33	44	77
	Internal AM Entering	6%	9	-	9	-	-	-
	Internal AM Exiting	7%	-	8	8	-	-	-
	Internal PM Entering	9%	-	-	-	15	-	15
	Internal PM Exiting	8%	-	-	-	-	17	17
	Block 8 Net Trip Generation		110	84	194	118	157	275
9	221 - Multifamily Housing, Mid-Rise (Dwelling Units)	313	29	84	113	84	54	138
	710 - General Office Building (GFA/1,000ft ²)	94.6	95	15	110	17	92	109
	820 - Shopping Center (GFA/1,000ft ²)	31.5	19	11	30	58	62	120
	Block 9 Trip Generation		143	110	253	159	208	367
	Modal Split	20%	29	22	51	32	42	74
	Internal AM Entering	7%	10	-	10	-	-	-
	Internal AM Exiting	8%	-	9	9	-	-	-
	Internal PM Entering	10%	-	-	-	16	-	16
	Internal PM Exiting	8%	-	-	-	-	17	17
	Block 9 Net Trip Generation		104	79	183	111	149	260
10	221 - Multifamily Housing, Mid-Rise (Dwelling Units)	244	23	65	88	65	42	107
	710 - General Office Building (GFA/1,000ft ²)	73.8	74	12	86	14	71	85
	820 - Shopping Center (GFA/1,000ft ²)	24.6	14	9	23	45	49	94
	Block 10 Trip Generation		111	86	197	124	162	286
	Modal Split	20%	22	17	39	25	32	57
	Internal AM Entering	8%	9	-	9	-	-	-
	Internal AM Exiting	9%	-	8	8	-	-	-
	Internal PM Entering	9%	-	-	-	11	-	11
	Internal PM Exiting	8%	-	-	-	-	13	13
	Block 10 Net Trip Generation		80	61	141	88	117	205
11	221 - Multifamily Housing, Mid-Rise (Dwelling Units)	166	16	44	60	45	28	73
	710 - General Office Building (GFA/1,000ft ²)	0.0	-	-	-	-	-	-
	820 - Shopping Center (GFA/1,000ft ²)	0.0	-	-	-	-	-	-
	Block 11 Trip Generation		16	44	60	45	28	73
	Modal Split	20%	3	9	12	9	6	15
	Internal AM Entering	0%	-	-	-	-	-	-
	Internal AM Exiting	0%	-	-	-	-	-	-
	Internal PM Entering	0%	-	-	-	-	-	-
	Internal PM Exiting	0%	-	-	-	-	-	-
	Block 11 Net Trip Generation		13	35	48	36	22	58
Residential (Dwelling Units)			2,799	226	680	906	661	1,082
Office (GFA/1,000ft²)			796	795	129	924	147	769
Retail (GFA/1,000ft²)			265	155	95	250	486	525
Scenario A Total Trip Generation			1,176	904	2,080	1,294	1,715	3,009
Scenario A Net Trip Generation			864	654	1,518	913	1,231	2,144

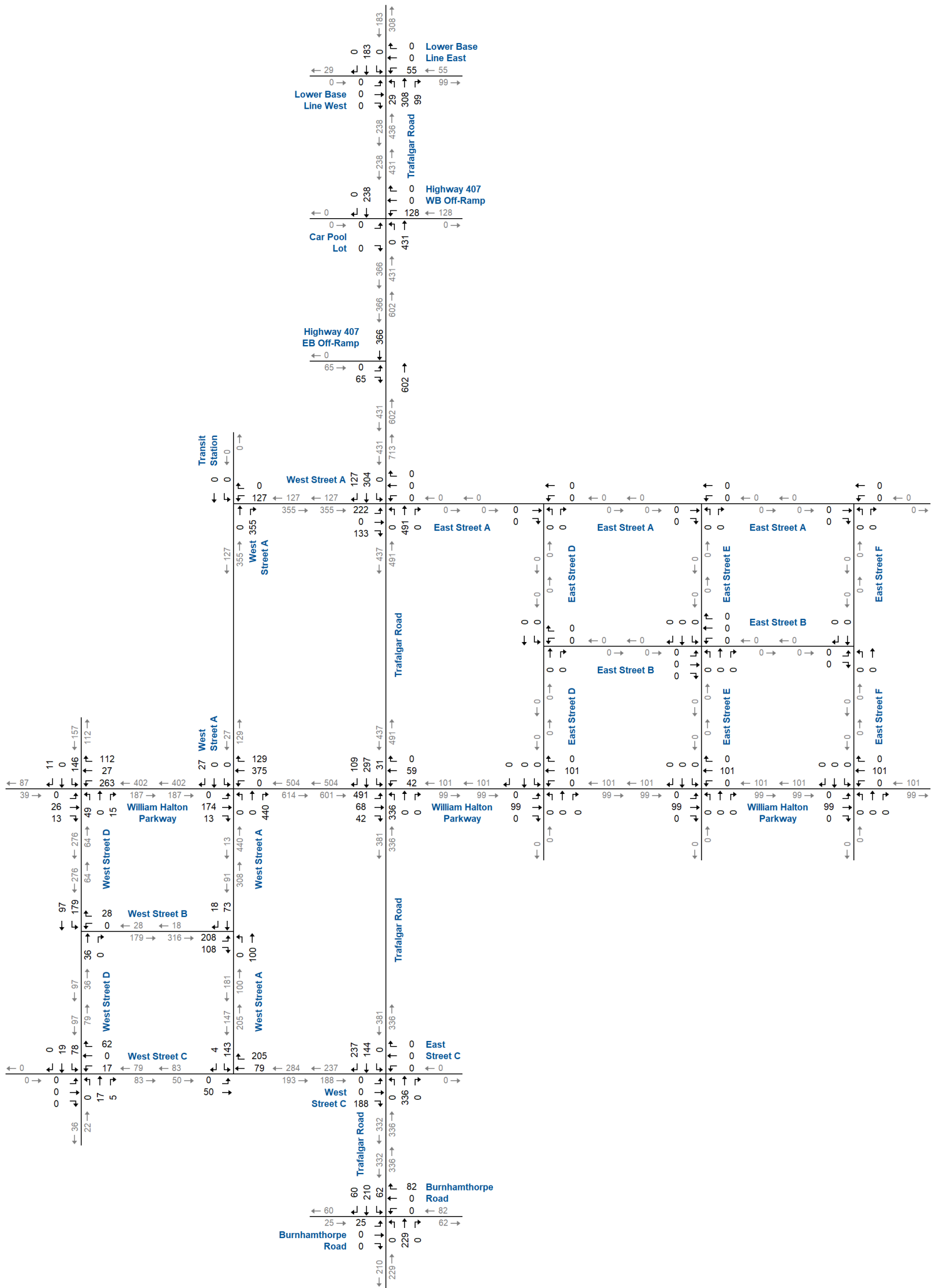




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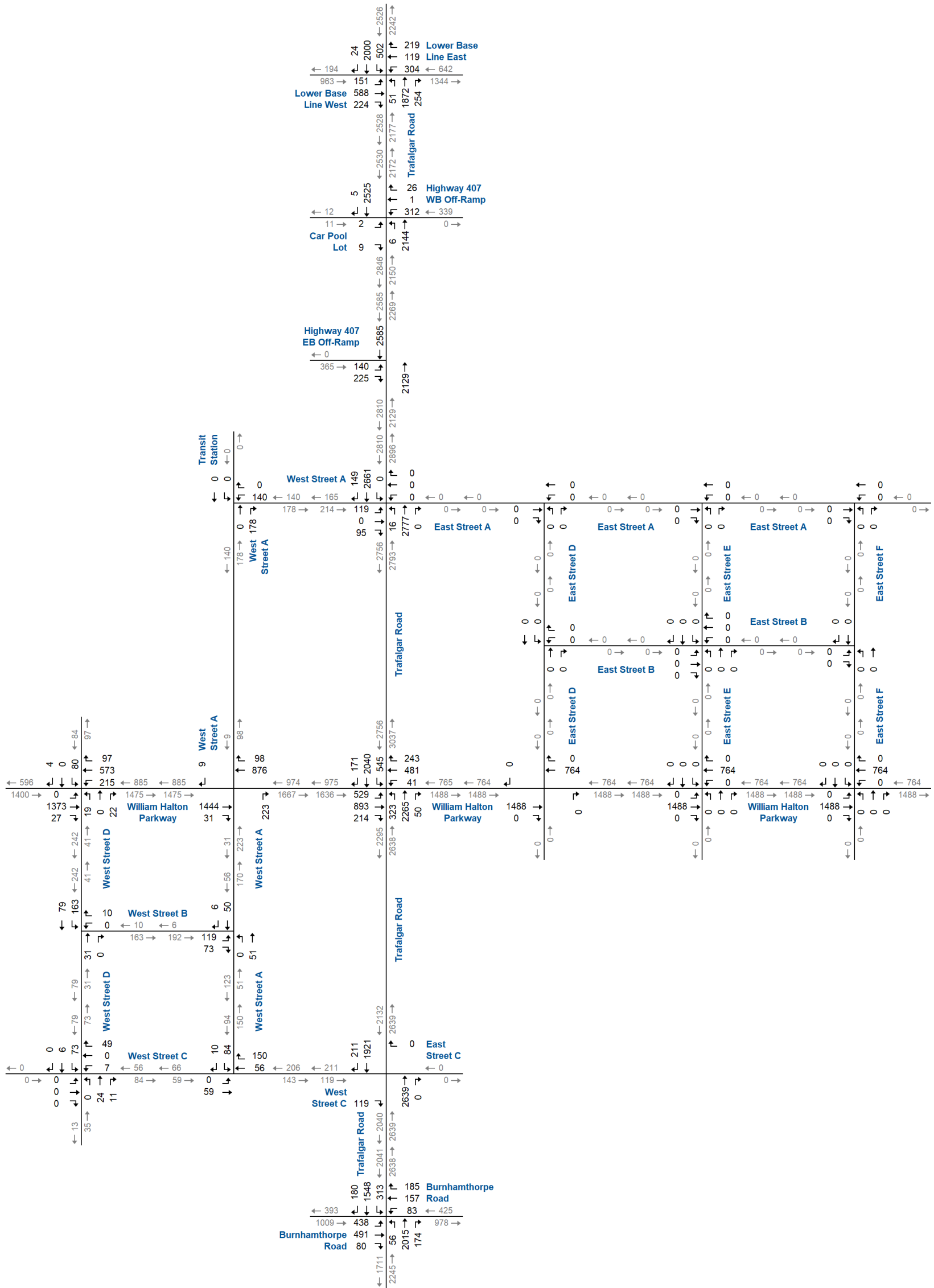
Scenario A West Side Only Site Generated Traffic Volumes – AM Peak Hour



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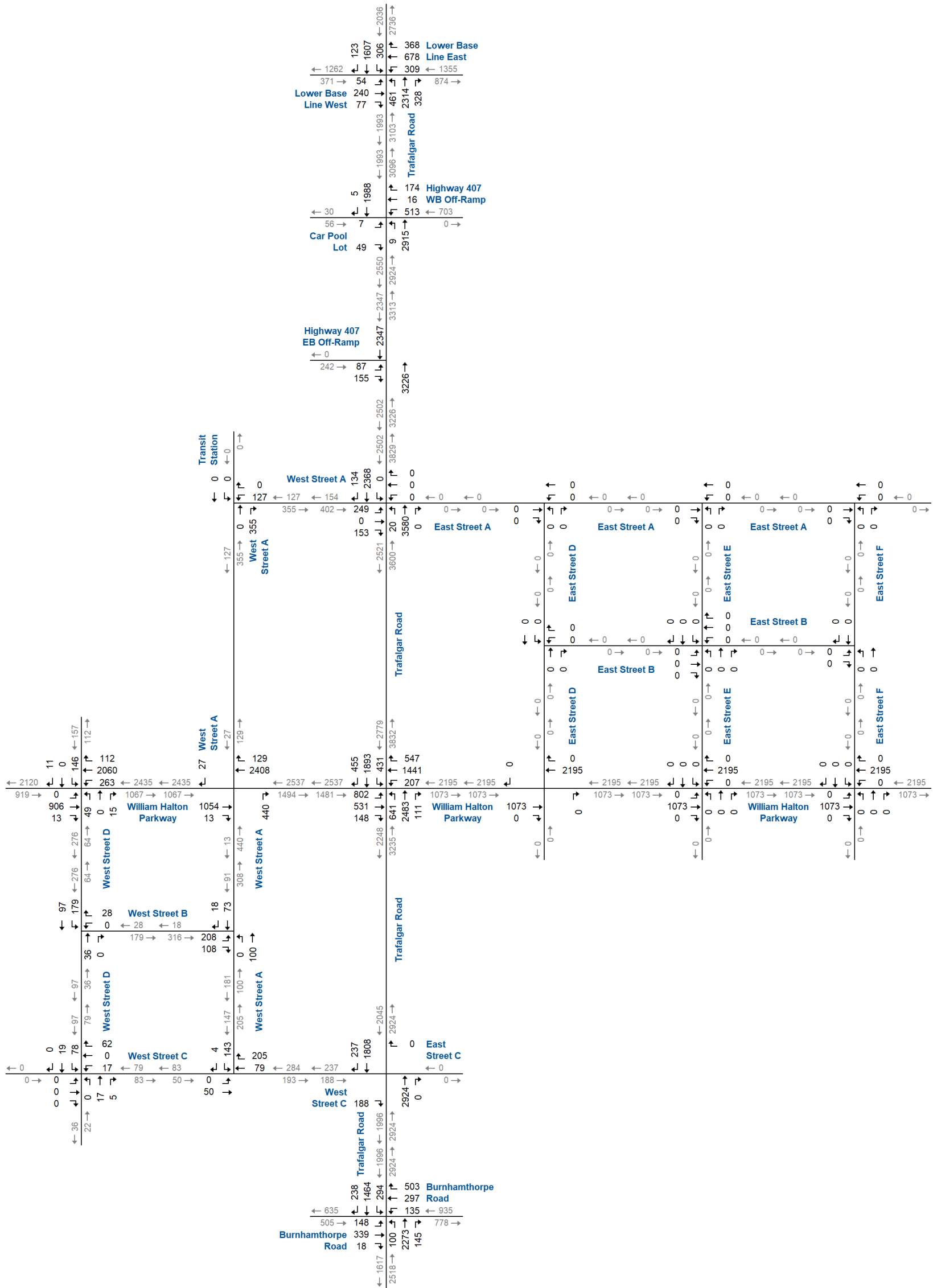
Scenario A West Side Only Site Generated Traffic Volumes – PM Peak Hour



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Scenario A West Side Only Total Traffic Volumes – AM Peak Hour



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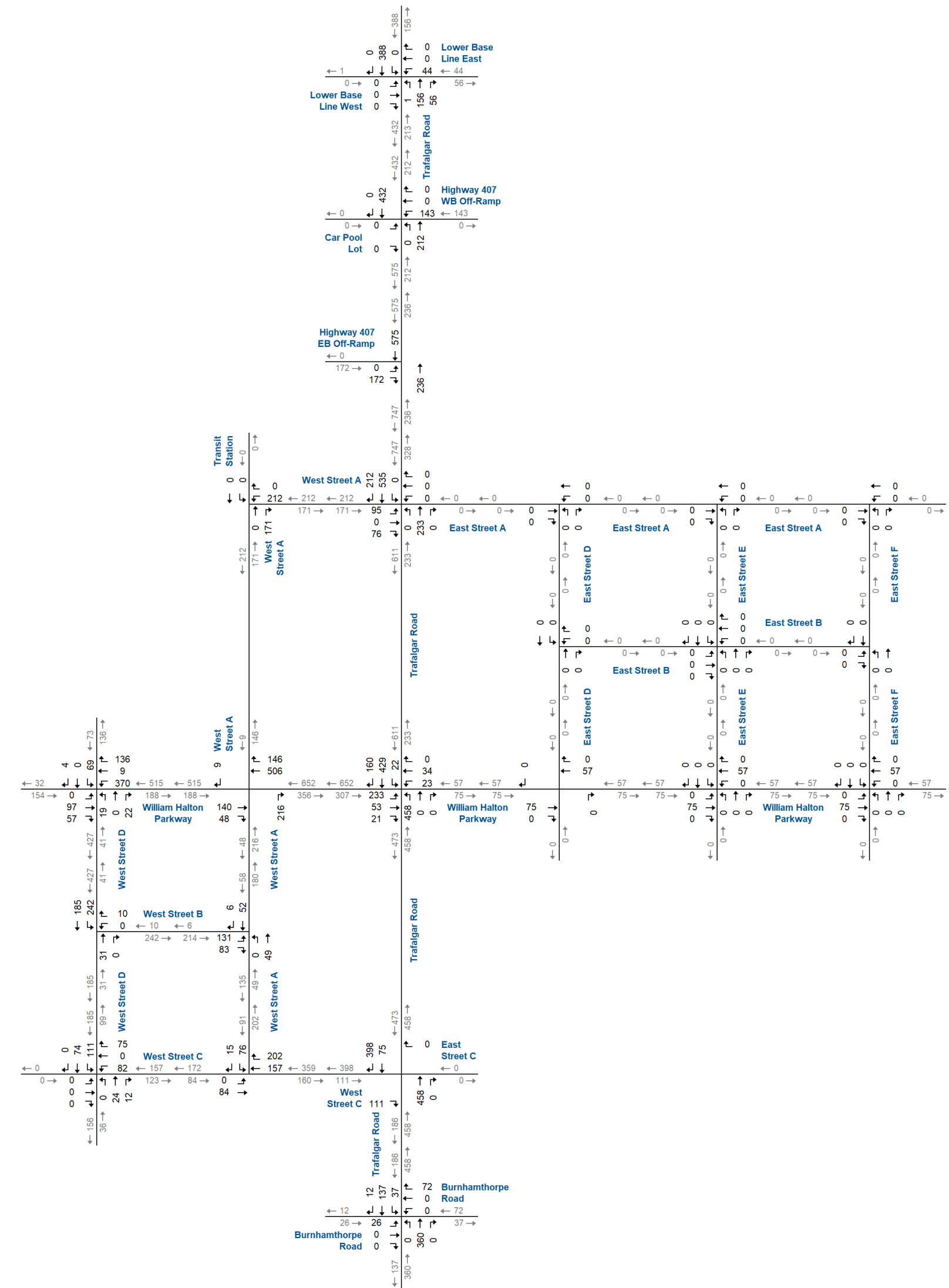


Scenario A West Side Only Total Traffic Volumes – PM Peak Hour

TABLE 8 SCENARIO B WEST SIDE ONLY TRIP GENERATION

Block	ITE Land Use	Units	AM Peak Hour			PM Peak Hour		
			In	Out	Total	In	Out	Total
2	222 - Multifamily Housing, High-Rise (Dwelling Units)	602	43	138	181	130	83	213
	710 - General Office Building (GFA/1,000ft ²)	425.8	425	69	494	78	412	490
	820 - Shopping Center (GFA/1,000ft ²)	141.9	82	51	133	260	281	541
	Block 2 Trip Generation		550	258	808	468	776	1,244
	Modal Split	20%	- 110	- 52	- 162	- 94	- 155	- 249
	Internal AM Entering	6%	- 33	-	- 33			
	Internal AM Exiting	10%		- 26	- 26			
	Internal PM Entering	12%				- 56	-	- 56
	Internal PM Exiting	9%				- 70	-	- 70
	Block 2 Net Trip Generation		407	180	587	318	551	869
6	222 - Multifamily Housing, High-Rise (Dwelling Units)	404	30	96	126	89	57	146
	710 - General Office Building (GFA/1,000ft ²)	285.5	285	46	331	52	276	328
	820 - Shopping Center (GFA/1,000ft ²)	95.2	55	34	89	174	189	363
	Block 6 Trip Generation		370	176	546	315	522	837
	Modal Split	20%	- 74	- 35	- 109	- 63	- 104	- 167
	Internal AM Entering	6%	- 22	-	- 22			
	Internal AM Exiting	10%		- 18	- 18			
	Internal PM Entering	12%				- 38	-	- 38
	Internal PM Exiting	9%				- 47	-	- 47
	Block 6 Net Trip Generation		274	123	397	214	371	585
7	222 - Multifamily Housing, High-Rise (Dwelling Units)	240	19	61	80	55	35	90
	710 - General Office Building (GFA/1,000ft ²)	169.7	169	28	197	31	164	195
	820 - Shopping Center (GFA/1,000ft ²)	56.6	33	20	53	104	112	216
	Block 7 Trip Generation		221	109	330	190	311	501
	Modal Split	20%	- 44	- 22	- 66	- 38	- 62	- 100
	Internal AM Entering	6%	- 13	-	- 13			
	Internal AM Exiting	10%		- 11	- 11			
	Internal PM Entering	11%				- 21	-	- 21
	Internal PM Exiting	9%				- 28	-	- 28
	Block 7 Net Trip Generation		164	76	240	131	221	352
8	221 - Multifamily Housing, Mid-Rise (Dwelling Units)	220	21	58	79	59	38	97
	710 - General Office Building (GFA/1,000ft ²)	155.7	156	25	181	29	150	179
	820 - Shopping Center (GFA/1,000ft ²)	51.9	30	19	49	95	103	198
	Block 8 Trip Generation		207	102	309	183	291	474
	Modal Split	20%	- 41	- 20	- 61	- 37	- 58	- 95
	Internal AM Entering	6%	- 12	-	- 12			
	Internal AM Exiting	9%		- 9	- 9			
	Internal PM Entering	12%				- 22	-	- 22
	Internal PM Exiting	9%				- 26	-	- 26
	Block 8 Net Trip Generation		154	73	227	124	207	331
9	221 - Multifamily Housing, Mid-Rise (Dwelling Units)	223	21	59	80	60	38	98
	710 - General Office Building (GFA/1,000ft ²)	157.7	157	26	183	29	152	181
	820 - Shopping Center (GFA/1,000ft ²)	52.6	30	19	49	96	104	200
	Block 9 Trip Generation		208	104	312	185	294	479
	Modal Split	20%	- 42	- 21	- 63	- 37	- 59	- 96
	Internal AM Entering	6%	- 12	-	- 12			
	Internal AM Exiting	9%		- 9	- 9			
	Internal PM Entering	11%				- 20	-	- 20
	Internal PM Exiting	9%				- 26	-	- 26
	Block 9 Net Trip Generation		154	74	228	128	209	337
10	221 - Multifamily Housing, Mid-Rise (Dwelling Units)	180	17	48	65	48	31	79
	710 - General Office Building (GFA/1,000ft ²)	127.3	127	21	148	23	123	146
	820 - Shopping Center (GFA/1,000ft ²)	42.4	25	15	40	78	84	162
	Block 10 Trip Generation		169	84	253	149	238	387
	Modal Split	20%	- 34	- 17	- 51	- 30	- 48	- 78
	Internal AM Entering	6%	- 10	-	- 10			
	Internal AM Exiting	9%		- 8	- 8			
	Internal PM Entering	12%				- 18	-	- 18
	Internal PM Exiting	9%				- 21	-	- 21
	Block 10 Net Trip Generation		125	59	184	101	169	270
11	221 - Multifamily Housing, Mid-Rise (Dwelling Units)	0	-	-	-	-	-	-
	710 - General Office Building (GFA/1,000ft ²)	162.8	163	26	189	30	157	187
	820 - Shopping Center (GFA/1,000ft ²)	54.3	32	19	51	99	108	207
	Block 11 Trip Generation		195	45	240	129	265	394
	Modal Split	20%	- 39	- 9	- 48	- 26	- 53	- 79
	Internal AM Entering	0%	-	-	-			
	Internal AM Exiting	0%		-	-			
	Internal PM Entering	0%				-	-	-
	Internal PM Exiting	0%				-	-	-
	Block 11 Net Trip Generation		156	36	192	103	212	315
Residential (Dwelling Units)		1,869	151	460	611	441	282	723
Office (GFA/1,000ft²)		1,484	1,482	241	1,723	272	1,434	1,706
Retail (GFA/1,000ft²)		495	287	177	464	906	981	1,887
Scenario B Total Trip Generation			1,920	878	2,798	1,619	2,697	4,316
Scenario B Net Trip Generation			1,434	621	2,055	1,119	1,940	3,059

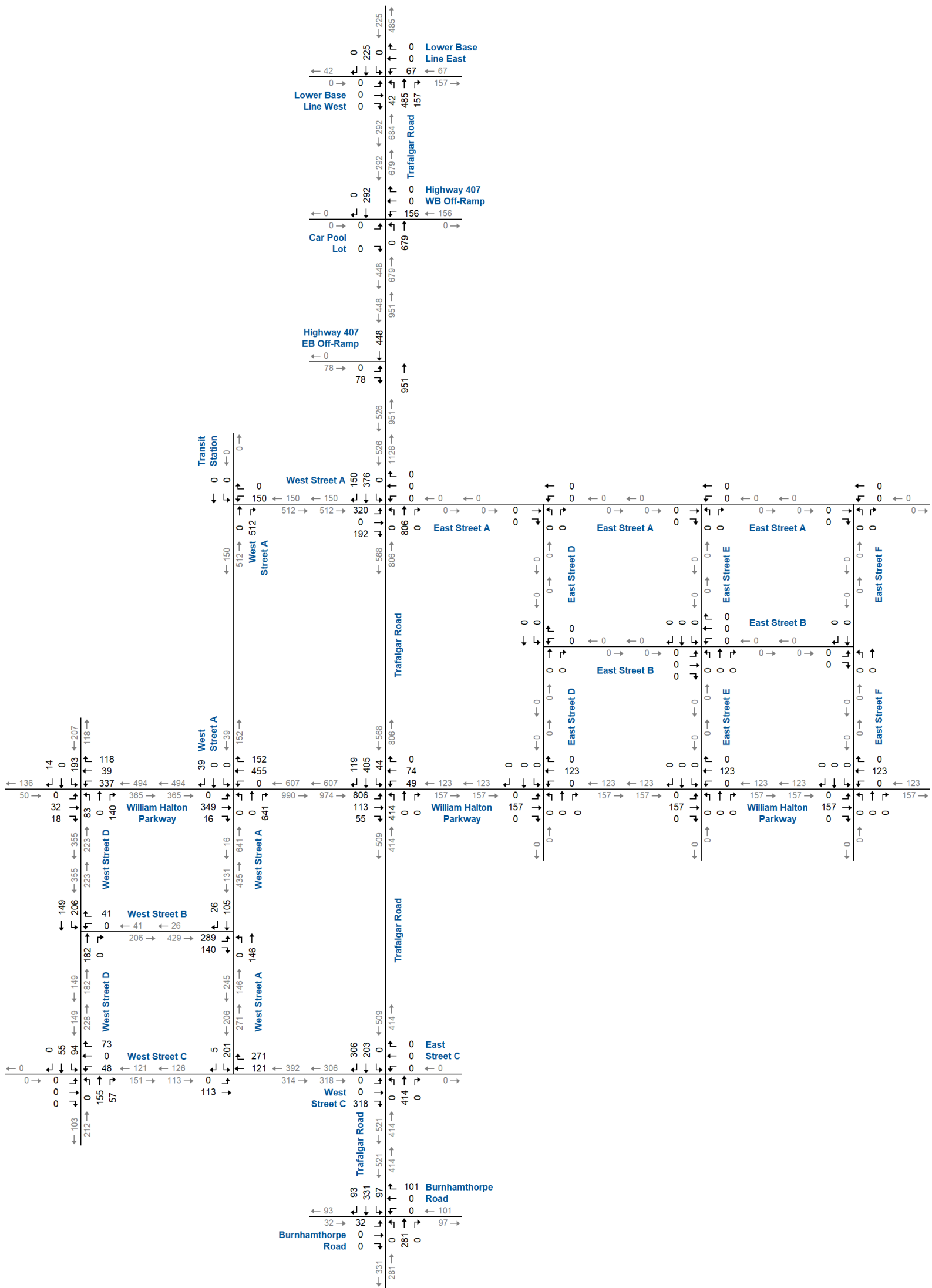




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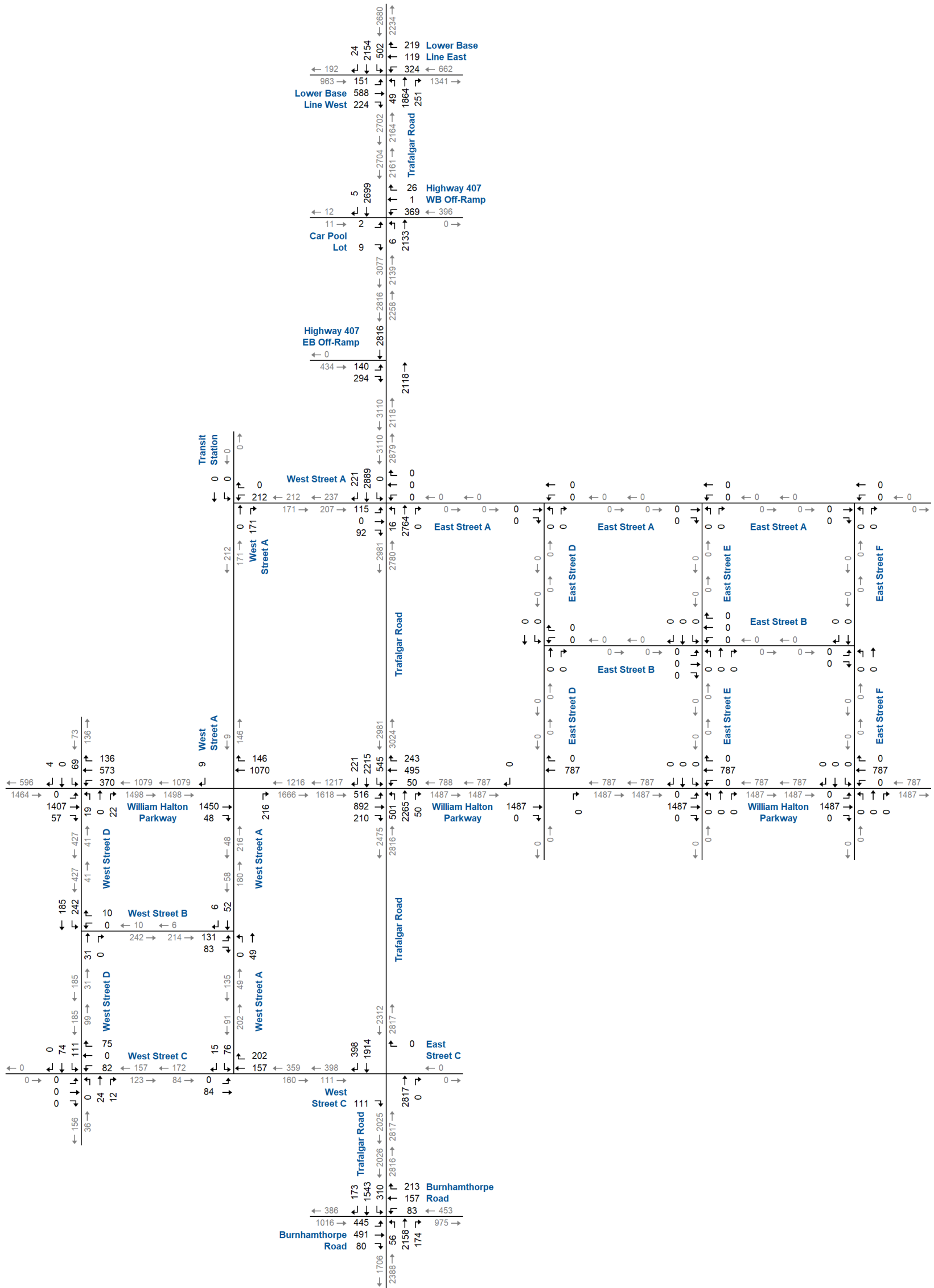
Scenario B West Side Only Site Generated Traffic Volumes – AM Peak Hour



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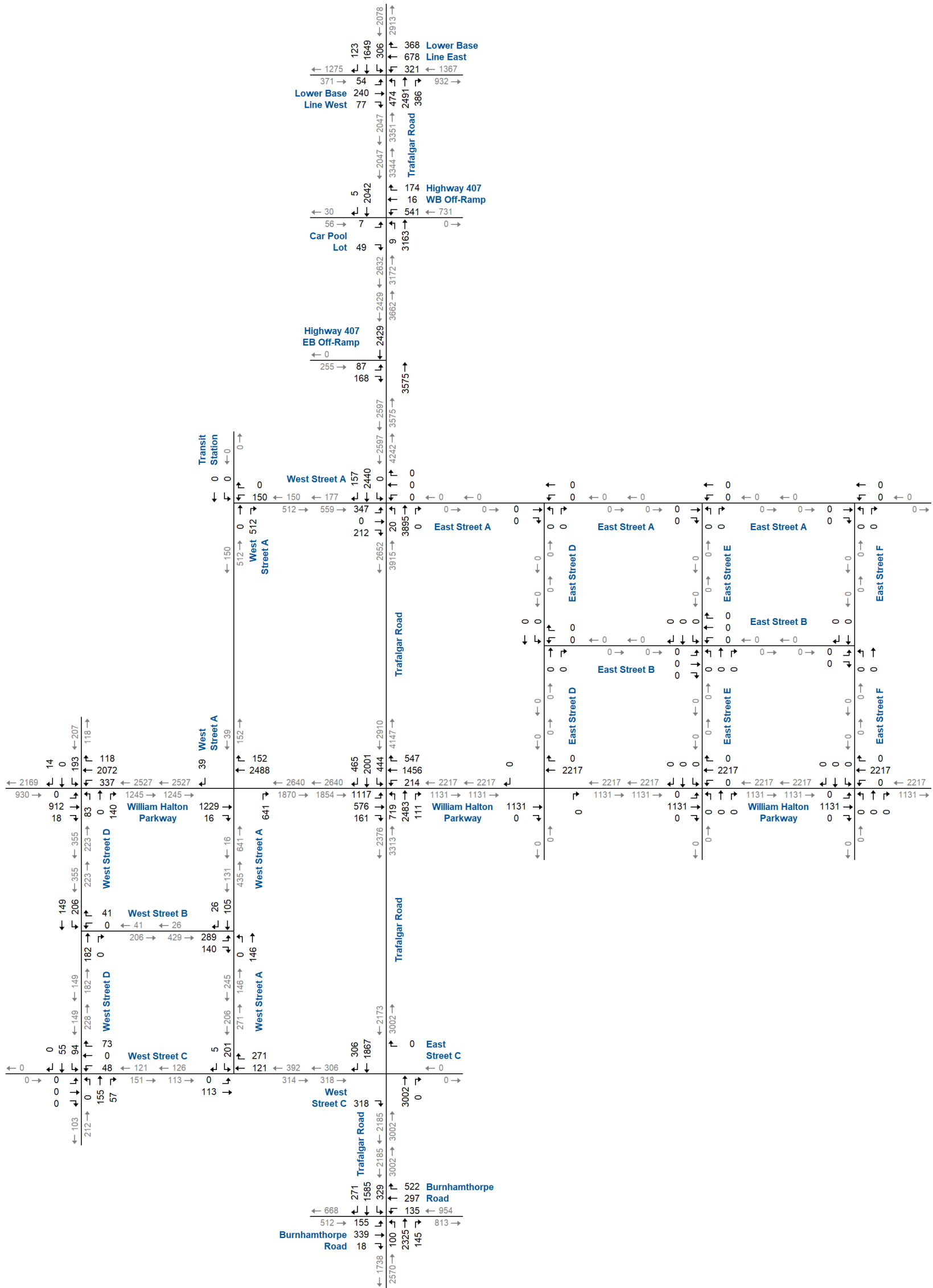
Scenario B West Side Only Site Generated Traffic Volumes – PM Peak Hour



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Scenario B West Side Only Total Traffic Volumes – AM Peak Hour



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Scenario B West Side Only Total Traffic Volumes – PM Peak Hour

Appendix I

Alternatives Total Operation Synchro Reports



Lanes, Volumes, Timings

101: Trafalgar Rd & Lower Base Line

Total (2041) - Scenario A - 25% Reduction

Timing Plan: AM Peak Hour

	↖	→	↗	↙	←	↖	↗	↙	↘	↗	↘	↙
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖	↖↗		↖	↖↗		↖	↖↗	↖	↖↗	↖↗	↖
Traffic Volume (vph)	151	588	224	320	119	219	49	1961	284	502	2131	24
Future Volume (vph)	151	588	224	320	119	219	49	1961	284	502	2131	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	0.423			0.165			0.085			0.083		
Satd. Flow (perm)	788	3394	0	307	3196	0	158	5085	1583	155	5085	1583
Right Turn on Red		Yes			Yes			Yes			Yes	
Satd. Flow (RTOR)		41			238				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)	164	639	243	348	129	238	53	2132	309	546	2316	26
Shared Lane Traffic (%)												
Lane Group Flow (vph)	164	882	0	348	367	0	53	2132	309	546	2316	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

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PTSL (210156/210157)Synchro 10 Report
Page 1

Lanes, Volumes, Timings

101: Trafalgar Rd & Lower Base Line

Total (2041) - Scenario A - 25% Reduction

Timing Plan: AM Peak Hour

	↖	→	↗	↙	←	↖	↗	↙	↘	↗	↘	↙
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		1.34	0.41		0.30	1.09	0.41	1.46	0.86	0.03
Control Delay	32.5	158.8		207.7	15.4		16.7	86.8	7.5	250.6	29.3	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	32.5	158.8		207.7	15.4		16.7	86.8	7.5	250.6	29.3	0.0
LOS	C	F		F	B		B	F	A	F	C	A
Approach Delay		139.0			109.0			75.5			70.9	
Approach LOS		F			F			E			E	

Intersection Summary

Area Type: Other

Cycle Length: 120

Actuated Cycle Length: 120

Natural Cycle: 100

Control Type: Semi Act-Uncooord

Maximum v/c Ratio: 1.46

Intersection Signal Delay: 86.3

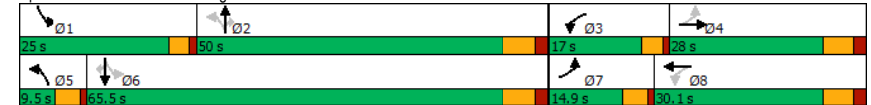
Intersection LOS: F

Intersection Capacity Utilization 120.2%

ICU Level of Service H

Analysis Period (min) 15

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

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PTSL (210156/210157)Synchro 10 Report
Page 2

Queues
101: Trafalgar Rd & Lower Base Line

Total (2041) - Scenario A - 25% Reduction
Timing Plan: AM Peak Hour

	EBL	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	164	882	348	367	53	2132	309	546	2316	26
v/c Ratio	0.47	1.24	1.34	0.41	0.30	1.09	0.41	1.46	0.86	0.03
Control Delay	32.5	158.8	207.7	15.4	16.7	86.8	7.5	250.6	29.3	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	32.5	158.8	207.7	15.4	16.7	86.8	7.5	250.6	29.3	0.0
Queue Length 50th (m)	26.8	~130.3	~89.8	12.9	4.7	~204.9	8.7	~158.8	170.4	0.0
Queue Length 95th (m)	43.5	#169.9	#146.9	26.3	9.7	#233.5	28.6	#225.2	193.3	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	0.46	1.24	1.34	0.41	0.30	1.09	0.41	1.46	0.86	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.

HCM Signalized Intersection Capacity Analysis
101: Trafalgar Rd & Lower Base Line

Total (2041) - Scenario A - 25% Reduction
Timing Plan: AM Peak Hour

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰	↱	↱	↰	↱	↱	↰	↱	↱	↰	↱	↱
Traffic Volume (vph)	151	588	224	320	119	219	49	1961	284	502	2131	24
Future Volume (vph)	151	588	224	320	119	219	49	1961	284	502	2131	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	3393		1770	3195		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)	788	3393		308	3195		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)	164	639	243	348	129	238	53	2132	309	546	2316	26
RTOR Reduction (vph)	0	33	0	0	186	0	0	0	153	0	0	12
Lane Group Flow (vph)	164	849	0	348	181	0	53	2132	156	546	2316	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	
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	0.42		c0.26	0.46	
v/s Ratio Perm	0.10			c0.28			0.13			0.10	c0.59	0.01
v/c Ratio	0.49	1.26		1.39	0.26		0.34	1.08	0.25	1.48	0.87	0.02
Uniform Delay, d1	32.7	48.5		36.7	39.2		23.8	37.0	25.1	39.2	25.1	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	129.5		196.7	0.4		1.3	46.1	1.0	231.8	4.2	0.0
Delay (s)	33.9	178.0		233.3	39.6		25.0	83.1	26.1	270.9	29.3	13.8
Level of Service	C	F		F	D		C	F	C	F	C	B
Approach Delay (s)		155.4			133.9			74.8			74.8	
Approach LOS		F			F			E			E	

Intersection Summary

HCM 2000 Control Delay	92.5	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	120.2%	ICU Level of Service	H
Analysis Period (min)	15		

c Critical Lane Group

Lanes, Volumes, Timings

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

Total (2041) - Scenario A - 25% Reduction

Timing Plan: AM Peak Hour

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔		↔	↔	↔	↔	↔			↔	↔
Traffic Volume (vph)	2	0	9	363	1	26	6	2263	0	0	2672	5
Future Volume (vph)	2	0	9	363	1	26	6	2263	0	0	2672	5
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		0.063					
Satd. Flow (perm)	0	1639	0	1327	1221	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)	2	0	10	395	1	28	7	2460	0	0	2904	5
Shared Lane Traffic (%)				49%		10%						
Lane Group Flow (vph)	0	12	0	201	198	25	7	2460	0	0	2904	5
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	CI+Ex	CI+Ex		CI+Ex	CI+Ex	CI+Ex	CI+Ex	CI+Ex			CI+Ex	CI+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		CI+Ex			CI+Ex			CI+Ex			CI+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

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Synchro 10 Report
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Lanes, Volumes, Timings

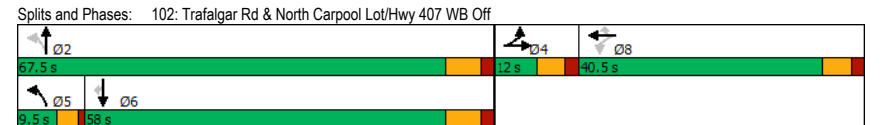
102: Trafalgar Rd & North Carpool Lot/Hwy 407 WB Off

Total (2041) - Scenario A - 25% Reduction

Timing Plan: AM Peak Hour

	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	
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			23.9	23.9	23.9	64.3	64.3			62.8	62.8
Actuated g/C Ratio	0.08			0.24	0.24	0.24	0.65	0.65			0.64	0.64
v/c Ratio	0.05			0.62	0.67	0.05	0.04	0.74			0.89	0.00
Control Delay	0.4			42.2	45.0	0.2	10.7	15.5			22.3	0.0
Queue Delay	0.0			0.0	0.0	0.0	0.0	0.0			0.0	0.0
Total Delay	0.4			42.2	45.0	0.2	10.7	15.5			22.3	0.0
LOS	A			D	D	A	B	B			C	A
Approach Delay	0.4				41.1			15.5			22.3	
Approach LOS	A				D			B			C	

Intersection Summary												
Area Type:	Other											
Cycle Length: 120												
Actuated Cycle Length: 98.3												
Natural Cycle: 110												
Control Type: Actuated-Uncoordinated												
Maximum v/c Ratio: 0.89												
Intersection Signal Delay: 20.7	Intersection LOS: C											
Intersection Capacity Utilization 75.3%	ICU Level of Service D											
Analysis Period (min) 15												



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Synchro 10 Report
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Queues
102: Trafalgar Rd & North Carpool Lot/Hwy 407 WB Off

Total (2041) - Scenario A - 25% Reduction

Timing Plan: AM Peak Hour

	→	↖	←	↗	↖	↑	↓	↗
Lane Group	EBT	WBL	WBT	WBR	NBL	NBT	SBT	SBR
Lane Group Flow (vph)	12	201	198	25	7	2460	2904	5
v/c Ratio	0.05	0.62	0.67	0.05	0.04	0.74	0.89	0.00
Control Delay	0.4	42.2	45.0	0.2	10.7	15.5	22.3	0.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	0.4	42.2	45.0	0.2	10.7	15.5	22.3	0.0
Queue Length 50th (m)	0.0	34.0	35.2	0.0	0.4	89.6	127.3	0.0
Queue Length 95th (m)	0.0	64.7	68.1	0.0	3.0	207.7	#337.7	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)	251	499	460	645	170	3327	3247	1053
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	0.40	0.43	0.04	0.04	0.74	0.89	0.00

Intersection Summary

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

Queue shown is maximum after two cycles.

HCM Signalized Intersection Capacity Analysis
102: Trafalgar Rd & North Carpool Lot/Hwy 407 WB Off

Total (2041) - Scenario A - 25% Reduction

Timing Plan: AM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations								  			  	
Traffic Volume (vph)	2	0	9	363	1	26	6	2263	0	0	2672	5
Future Volume (vph)	2	0	9	363	1	26	6	2263	0	0	2672	5
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	0.06	1.00			1.00	1.00
Satd. Flow (perm)		1640		1327	1221	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)	2	0	10	395	1	28	7	2460	0	0	2904	5
RTOR Reduction (vph)	0	12	0	0	1	19	0	0	0	0	0	2
Lane Group Flow (vph)	0	0	0	201	197	6	7	2460	0	0	2904	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)		1.0		21.9	21.9	21.9	64.6	64.6			59.7	59.7
Effective Green, g (s)		3.0		23.9	23.9	23.9	64.6	67.6			62.7	62.7
Actuated g/C Ratio		0.03		0.22	0.22	0.22	0.61	0.63			0.59	0.59
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)		46		297	274	337	84	3227			2993	931
v/s Ratio Prot		c0.00					0.00	c0.48			c0.57	
v/s Ratio Perm				0.15	c0.16	0.00	0.05					0.00
v/c Ratio		0.01		0.68	0.72	0.02	0.08	0.76			0.97	0.00
Uniform Delay, d1		50.3		37.8	38.2	32.2	25.1	13.8			21.0	9.0
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	0.3	1.8			10.8	0.0
Delay (s)		50.4		44.0	47.2	32.2	25.4	15.5			31.8	9.0
Level of Service		D		D	D	C	C	B			C	A
Approach Delay (s)		50.4			44.8			15.6			31.8	
Approach LOS		D			D			B			C	

Intersection Summary

HCM 2000 Control Delay	25.9	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.90		
Actuated Cycle Length (s)	106.5	Sum of lost time (s)	18.0
Intersection Capacity Utilization	75.3%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

Lanes, Volumes, Timings
103: Trafalgar Rd & Hwy 407 EB Off

Total (2041) - Scenario A - 25% Reduction
Timing Plan: AM Peak Hour

	EBL	EBR	NBL	NBT	SBT	SBR
Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	↔	↔		↑↑↑	↑↑↑	
Traffic Volume (vph)	140	279	0	2264	2783	0
Future Volume (vph)	140	279	0	2264	2783	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	0.946	0.850				
Frt Protected	0.969					
Satd. Flow (prot)	1708	1504	0	5085	5085	0
Frt Permitted	0.969					
Satd. Flow (perm)	1708	1504	0	5085	5085	0
Right Turn on Red	Yes				Yes	
Satd. Flow (RTOR)	1	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)	152	303	0	2461	3025	0
Shared Lane Traffic (%)		28%				
Lane Group Flow (vph)	237	218	0	2461	3025	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	CI+Ex	CI+Ex		CI+Ex	CI+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				CI+Ex	CI+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	

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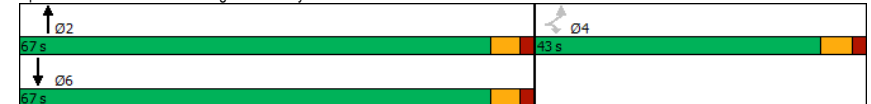
Lanes, Volumes, Timings
103: Trafalgar Rd & Hwy 407 EB Off

Total (2041) - Scenario A - 25% Reduction
Timing Plan: AM Peak Hour

	EBL	EBR	NBL	NBT	SBT	SBR
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)	20.3	20.3		63.2	63.2	
Actuated g/C Ratio	0.22	0.22		0.69	0.69	
v/c Ratio	0.63	0.65		0.70	0.86	
Control Delay	39.5	41.8		10.7	15.4	
Queue Delay	0.0	0.0		0.0	0.0	
Total Delay	39.5	41.8		10.7	15.4	
LOS	D	D		B	B	
Approach Delay	40.6			10.7	15.4	
Approach LOS	D			B	B	

Intersection Summary	
Area Type:	Other
Cycle Length: 110	
Actuated Cycle Length: 91.5	
Natural Cycle: 75	
Control Type: Semi Act-Uncoord	
Maximum v/c Ratio: 0.86	
Intersection Signal Delay: 15.4	Intersection LOS: B
Intersection Capacity Utilization 73.9%	ICU Level of Service D
Analysis Period (min) 15	

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



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Queues
103: Trafalgar Rd & Hwy 407 EB Off

Total (2041) - Scenario A - 25% Reduction
Timing Plan: AM Peak Hour

	EBL	EBR	NBT	SBT
Lane Group	EBL	EBR	NBT	SBT
Lane Group Flow (vph)	237	218	2461	3025
v/c Ratio	0.63	0.65	0.70	0.86
Control Delay	39.5	41.8	10.7	15.4
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	39.5	41.8	10.7	15.4
Queue Length 50th (m)	37.1	36.2	81.0	126.8
Queue Length 95th (m)	59.5	59.5	128.8	202.4
Internal Link Dist (m)	530.6		96.3	339.6
Turn Bay Length (m)				
Base Capacity (vph)	730	643	3512	3512
Starvation Cap Reductn	0	0	0	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.32	0.34	0.70	0.86
Intersection Summary				

HCM Signalized Intersection Capacity Analysis
103: Trafalgar Rd & Hwy 407 EB Off

Total (2041) - Scenario A - 25% Reduction
Timing Plan: AM Peak Hour

						
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations				  	  	
Traffic Volume (vph)	140	279	0	2264	2783	0
Future Volume (vph)	140	279	0	2264	2783	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	0.95	0.85		1.00	1.00	
Flt Protected	0.97	1.00		1.00	1.00	
Satd. Flow (prot)	1708	1504		5085	5085	
Flt Permitted	0.97	1.00		1.00	1.00	
Satd. Flow (perm)	1708	1504		5085	5085	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	152	303	0	2461	3025	0
RTOR Reduction (vph)	1	1	0	0	0	0
Lane Group Flow (vph)	236	217	0	2461	3025	0
Turn Type	Perm	Perm		NA	NA	
Protected Phases				2	6	
Permitted Phases	4	4				
Actuated Green, G (s)	18.3	18.3		61.2	61.2	
Effective Green, g (s)	20.3	20.3		63.2	63.2	
Actuated g/C Ratio	0.22	0.22		0.69	0.69	
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)	378	333		3512	3512	
v/s Ratio Prot				0.48	c0.59	
v/s Ratio Perm	0.14	c0.14				
v/c Ratio	0.62	0.65		0.70	0.86	
Uniform Delay, d1	32.2	32.4		8.5	10.8	
Progression Factor	1.00	1.00		1.00	1.00	
Incremental Delay, d2	3.2	4.5		1.2	3.0	
Delay (s)	35.4	36.9		9.7	13.8	
Level of Service	D	D		A	B	
Approach Delay (s)	36.1			9.7	13.8	
Approach LOS	D			A	B	
Intersection Summary						
HCM 2000 Control Delay			13.8	HCM 2000 Level of Service		B
HCM 2000 Volume to Capacity ratio			0.83			
Actuated Cycle Length (s)			91.5	Sum of lost time (s)		10.0
Intersection Capacity Utilization			73.9%	ICU Level of Service		D
Analysis Period (min)			15			
c Critical Lane Group						

Lanes, Volumes, Timings

104: Trafalgar Rd & West Street A/East Street A

Total (2041) - Scenario A - 25% Reduction

Timing Plan: AM Peak Hour

	←	→	↖	↗	←	↖	↗	↖	↗	↖	↗	↖	↗
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations	↖	↗	↖	↖	↗	↖	↖	↖	↖	↖	↖	↖	↖
Traffic Volume (vph)	96	17	58	0	0	270	16	2719	178	313	2635	114	
Future Volume (vph)	96	17	58	0	0	270	16	2719	178	313	2635	114	
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			
Satd. Flow (prot)	1770	1863	1583	1863	1863	1583	1770	5085	1583	1770	5085	1583	
Flt Permitted	0.757						0.051			0.049			
Satd. Flow (perm)	1410	1863	1583	1863	1863	1583	95	5085	1583	91	5085	1583	
Right Turn on Red			Yes			Yes			Yes			Yes	
Satd. Flow (RTOR)			86			23			86			57	
Link Speed (k/h)		50				50			80			80	
Link Distance (m)		143.5				212.6			233.3			131.6	
Travel Time (s)		10.3				15.3			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)	104	18	63	0	0	293	17	2955	193	340	2864	124	
Shared Lane Traffic (%)													
Lane Group Flow (vph)	104	18	63	0	0	293	17	2955	193	340	2864	124	
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		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	

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Lanes, Volumes, Timings

104: Trafalgar Rd & West Street A/East Street A

Total (2041) - Scenario A - 25% Reduction

Timing Plan: AM Peak Hour

	←	→	↖	↗	←	↖	↗	↖	↗	↖	↗	↖	↗
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)	24.0	24.0	24.0	24.0	24.0	40.0	9.5	76.0	76.0	40.0	106.5	106.5	
Total Split (%)	17.1%	17.1%	17.1%	17.1%	17.1%	28.6%	6.8%	54.3%	54.3%	28.6%	76.1%	76.1%	
Maximum Green (s)	18.0	18.0	18.0	18.0	18.0	36.0	5.5	70.0	70.0	36.0	100.5	100.5	
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 Effect Green (s)	16.1	16.1	16.1			47.3	82.8	77.3	77.3	106.5	102.9	102.9	
Actuated g/C Ratio	0.12	0.12	0.12			0.36	0.63	0.59	0.59	0.82	0.79	0.79	
v/c Ratio	0.60	0.08	0.23			0.50	0.13	0.98	0.20	0.86	0.71	0.10	
Control Delay	69.6	52.2	6.9			31.6	10.4	40.0	8.8	58.5	9.1	2.6	
Queue Delay	0.0	0.0	0.0			0.0	0.0	28.2	0.0	0.0	0.5	0.0	
Total Delay	69.6	52.2	6.9			31.6	10.4	68.2	8.8	58.5	9.7	2.6	
LOS	E	D	A			C	B	E	A	E	A	A	
Approach Delay		46.5			31.6			64.3			14.4		
Approach LOS		D			C			E			B		

Intersection Summary

Area Type: Other

Cycle Length: 140

Actuated Cycle Length: 130.6

Natural Cycle: 120

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 0.98

Intersection Signal Delay: 38.6

Intersection Capacity Utilization 85.2%

Analysis Period (min) 15

Splits and Phases: 104: Trafalgar Rd & West Street A/East Street A

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Queues
104: Trafalgar Rd & West Street A/East Street A

Total (2041) - Scenario A - 25% Reduction
Timing Plan: AM Peak Hour

	EBL	EBT	EBR	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group	EBL	EBT	EBR	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	104	18	63	293	17	2955	193	340	2864	124
v/c Ratio	0.60	0.08	0.23	0.50	0.13	0.98	0.20	0.86	0.71	0.10
Control Delay	69.6	52.2	6.9	31.6	10.4	40.0	8.8	58.5	9.1	2.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	28.2	0.0	0.0	0.5	0.0
Total Delay	69.6	52.2	6.9	31.6	10.4	68.2	8.8	58.5	9.7	2.6
Queue Length 50th (m)	24.4	4.0	0.0	50.5	0.7	~256.8	11.3	66.2	93.2	2.7
Queue Length 95th (m)	45.9	11.7	7.3	73.2	2.8	#365.3	28.8	102.2	173.1	10.0
Internal Link Dist (m)		119.5			209.3			107.6		
Turn Bay Length (m)	50.0		50.0	50.0	50.0		50.0	30.0		30.0
Base Capacity (vph)	216	286	316	719	130	3008	971	538	4006	1259
Starvation Cap Reductn	0	0	0	0	0	245	0	0	625	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	0.48	0.06	0.20	0.41	0.13	1.07	0.20	0.63	0.85	0.10

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.

HCM Signalized Intersection Capacity Analysis
104: Trafalgar Rd & West Street A/East Street A

Total (2041) - Scenario A - 25% Reduction
Timing Plan: AM Peak Hour

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰	↑	↱	↰	↑	↱	↰	↑	↱	↰	↑	↱
Traffic Volume (vph)	96	17	58	0	0	270	16	2719	178	313	2635	114
Future Volume (vph)	96	17	58	0	0	270	16	2719	178	313	2635	114
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
Flt	1.00	1.00	0.85			0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00			1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1770	1863	1583			1583	1770	5085	1583	1770	5085	1583
Flt Permitted	0.76	1.00	1.00			1.00	0.05	1.00	1.00	0.05	1.00	1.00
Satd. Flow (perm)	1410	1863	1583			1583	96	5085	1583	91	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)	104	18	63	0	0	293	17	2955	193	340	2864	124
RTOR Reduction (vph)	0	0	55	0	0	16	0	0	34	0	0	13
Lane Group Flow (vph)	104	18	8	0	0	277	17	2955	159	340	2864	111
Turn Type	Perm	NA	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)	14.1	14.1	14.1			39.3	79.9	77.8	77.8	107.0	100.9	100.9
Effective Green, g (s)	16.1	16.1	16.1			43.3	79.9	79.8	79.8	107.0	102.9	102.9
Actuated g/C Ratio	0.12	0.12	0.12			0.33	0.60	0.60	0.60	0.80	0.77	0.77
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)	170	225	191			514	84	3048	949	391	3931	1223
v/s Ratio Prot		0.01				0.11	0.00	c0.58		c0.16	0.56	
v/s Ratio Perm	c0.07		0.00			0.07	0.12		0.10	0.53		0.07
v/c Ratio	0.61	0.08	0.04			0.54	0.20	0.97	0.17	0.87	0.73	0.09
Uniform Delay, d1	55.5	51.9	51.7			36.7	20.4	25.5	11.9	45.7	7.8	3.7
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	6.4	0.2	0.1			1.1	1.2	10.6	0.4	18.2	1.2	0.1
Delay (s)	61.9	52.1	51.8			37.8	21.6	36.1	12.2	63.9	9.1	3.8
Level of Service	E	D	D			D	C	D	B	E	A	A
Approach Delay (s)		57.5			37.8			34.5			14.5	
Approach LOS		E			D			C			B	

Intersection Summary

HCM 2000 Control Delay	25.7	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.90		
Actuated Cycle Length (s)	133.1	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

Lanes, Volumes, Timings

105: Trafalgar Rd & William Halton Parkway

Total (2041) - Scenario A - 25% Reduction

Timing Plan: AM Peak Hour

	←	→	↖	↗	←	→	↖	↗	←	→	↖	↗
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖	↖	↖	↖	↖	↖	↖	↖	↖	↖	↖	↖
Traffic Volume (vph)	498	924	207	189	501	243	257	2416	119	574	1976	143
Future Volume (vph)	498	924	207	189	501	243	257	2416	119	574	1976	143
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	0.179			0.129			0.077			0.071		
Satd. Flow (perm)	333	3539	1583	240	3539	1583	143	5085	1583	132	5085	1583
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			216			224			120			120
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		209.3			204.1			208.3			233.3	
Travel Time (s)		15.1			14.7			15.0			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)	541	1004	225	205	545	264	279	2626	129	624	2148	155
Shared Lane Traffic (%)												
Lane Group Flow (vph)	541	1004	225	205	545	264	279	2626	129	624	2148	155
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

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Lanes, Volumes, Timings

105: Trafalgar Rd & William Halton Parkway

Total (2041) - Scenario A - 25% Reduction

Timing Plan: AM Peak Hour

	←	→	↖	↗	←	→	↖	↗	←	→	↖	↗
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)	23.0	47.0	47.0	14.0	38.0	38.0	21.0	59.0	59.0	25.0	63.0	63.0
Total Split (%)	15.9%	32.4%	32.4%	9.7%	26.2%	26.2%	14.5%	40.7%	40.7%	17.2%	43.4%	43.4%
Maximum Green (s)	19.0	40.0	40.0	10.0	31.0	31.0	17.0	52.1	52.1	21.0	56.1	56.1
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)	57.0	43.0	43.0	44.0	34.0	34.0	72.0	55.0	55.0	80.0	59.0	59.0
Actuated g/C Ratio	0.39	0.30	0.30	0.30	0.23	0.23	0.50	0.38	0.38	0.55	0.41	0.41
v/c Ratio	1.70	0.96	0.36	1.15	0.66	0.49	1.07	1.36	0.19	2.01	1.04	0.22
Control Delay	352.3	69.1	7.1	146.9	54.6	12.5	115.7	202.3	6.5	492.9	72.3	8.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	6.5	0.0
Total Delay	352.3	69.1	7.1	146.9	54.6	12.5	115.7	202.3	6.5	492.9	78.8	8.4
LOS	F	E	A	F	D	B	F	F	A	F	E	A
Approach Delay		147.8			62.3			186.0			163.4	
Approach LOS		F			E			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: 2.01

Intersection Signal Delay: 156.4

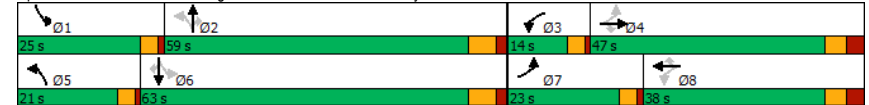
Intersection LOS: F

Intersection Capacity Utilization 136.1%

ICU Level of Service H

Analysis Period (min) 15

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

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Queues
105: Trafalgar Rd & William Halton Parkway

Total (2041) - Scenario A - 25% Reduction
Timing Plan: AM Peak Hour

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	541	1004	225	205	545	264	279	2626	129	624	2148	155
v/c Ratio	1.70	0.96	0.36	1.15	0.66	0.49	1.07	1.36	0.19	2.01	1.04	0.22
Control Delay	352.3	69.1	7.1	146.9	54.6	12.5	115.7	202.3	6.5	492.9	72.3	8.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	6.5	0.0
Total Delay	352.3	69.1	7.1	146.9	54.6	12.5	115.7	202.3	6.5	492.9	78.8	8.4
Queue Length 50th (m)	~199.6	147.5	1.8	~50.9	74.2	9.0	~70.8	~357.7	1.6	~262.0	~239.7	6.0
Queue Length 95th (m)	#269.9	#189.6	20.8	#102.0	93.7	34.0	#127.4	#382.4	14.8	#334.7	#267.0	19.9
Internal Link Dist (m)	185.3			180.1			184.3			209.3		
Turn Bay Length (m)	100.0		100.0	100.0		150.0	150.0		75.0			
Base Capacity (vph)	319	1049	621	178	829	542	261	1928	674	310	2069	715
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	33	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	1.70	0.96	0.36	1.15	0.66	0.49	1.07	1.36	0.19	2.01	1.06	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.

HCM Signalized Intersection Capacity Analysis
105: Trafalgar Rd & William Halton Parkway

Total (2041) - Scenario A - 25% Reduction
Timing Plan: AM Peak Hour

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔
Traffic Volume (vph)	498	924	207	189	501	243	257	2416	119	574	1976	143
Future Volume (vph)	498	924	207	189	501	243	257	2416	119	574	1976	143
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
Flt	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	0.18	1.00	1.00	0.13	1.00	1.00	0.08	1.00	1.00	0.07	1.00	1.00
Satd. Flow (perm)	333	3539	1583	240	3539	1583	143	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)	541	1004	225	205	545	264	279	2626	129	624	2148	155
RTOR Reduction (vph)	0	0	152	0	0	171	0	0	74	0	0	71
Lane Group Flow (vph)	541	1004	73	205	545	93	279	2626	55	624	2148	84
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)	54.0	40.0	40.0	41.0	31.0	31.0	69.1	52.1	52.1	77.1	56.1	56.1
Effective Green, g (s)	54.0	43.0	43.0	41.0	34.0	34.0	69.1	55.0	55.0	77.1	59.0	59.0
Actuated g/C Ratio	0.37	0.30	0.30	0.28	0.23	0.23	0.48	0.38	0.38	0.53	0.41	0.41
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)	312	1049	469	173	829	371	258	1928	600	307	2069	644
v/s Ratio Prot	c0.23	0.28		0.08	0.15		0.13	0.52		c0.29	0.42	
v/s Ratio Perm	c0.42		0.05	0.25		0.06	0.39		0.03	c0.79		0.05
v/c Ratio	1.73	0.96	0.16	1.18	0.66	0.25	1.08	1.36	0.09	2.03	1.04	0.13
Uniform Delay, d1	37.6	50.1	37.6	46.5	50.2	45.1	46.8	45.0	28.9	48.5	43.0	26.9
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	343.4	18.5	0.3	126.9	2.5	0.7	79.4	166.4	0.3	475.9	30.5	0.4
Delay (s)	381.0	68.6	37.9	173.5	52.8	45.9	126.2	211.4	29.2	524.4	73.5	27.3
Level of Service	F	E	D	F	D	D	F	F	C	F	E	C
Approach Delay (s)		160.2			75.4			195.8			167.2	
Approach LOS		F			E			F			F	

Intersection Summary

HCM 2000 Control Delay	165.1	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	1.90		
Actuated Cycle Length (s)	145.0	Sum of lost time (s)	16.0
Intersection Capacity Utilization	136.1%	ICU Level of Service	H
Analysis Period (min)	15		
c Critical Lane Group			

Lanes, Volumes, Timings

Total (2041) - Scenario A - 25% Reduction

106: Trafalgar Rd & Burnhamthorpe Rd/Burnhamthorpe Rd

Timing Plan: AM Peak Hour

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰	↱	↲	↰	↱	↲	↰	↱	↲	↰	↱	↲
Traffic Volume (vph)	444	491	80	83	157	209	56	2139	174	336	1628	175
Future Volume (vph)	444	491	80	83	157	209	56	2139	174	336	1628	175
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	1.00	1.00	1.00	1.00	1.00	1.00	0.91	1.00	1.00	0.91	1.00
Frt		0.979			0.914				0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1770	1824	0	1770	1703	0	1770	5085	1583	1770	5085	1583
Flt Permitted	0.140			0.154			0.073			0.066		
Satd. Flow (perm)	261	1824	0	287	1703	0	136	5085	1583	123	5085	1583
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		6			42				160			136
Link Speed (k/h)		60			60			80			80	
Link Distance (m)		828.7			989.6			1077.8			247.3	
Travel Time (s)		49.7			59.4			48.5			11.1	
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)	483	534	87	90	171	227	61	2325	189	365	1770	190
Shared Lane Traffic (%)												
Lane Group Flow (vph)	483	621	0	90	398	0	61	2325	189	365	1770	190
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)	26.0	46.5		9.5	30.0		9.6	63.0	63.0	21.0	74.4	74.4
Total Split (%)	18.6%	33.2%		6.8%	21.4%		6.9%	45.0%	45.0%	15.0%	53.1%	53.1%
Maximum Green (s)	21.5	40.5		5.0	24.0		5.1	57.0	57.0	17.0	68.4	68.4
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 Effect Green (s)	53.5	42.5		34.5	26.0		67.6	59.0	59.0	80.0	70.4	70.4
Actuated g/C Ratio	0.38	0.30		0.25	0.19		0.48	0.42	0.42	0.57	0.50	0.50
v/c Ratio	1.37	1.11		0.62	1.14		0.41	1.09	0.25	1.35	0.69	0.22
Control Delay	216.2	117.9		50.5	135.6		23.5	85.8	6.4	214.6	28.3	6.6
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	216.2	117.9		50.5	135.6		23.5	85.8	6.4	214.6	28.3	6.6

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Lanes, Volumes, Timings

Total (2041) - Scenario A - 25% Reduction

106: Trafalgar Rd & Burnhamthorpe Rd/Burnhamthorpe Rd

Timing Plan: AM Peak Hour

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
LOS	F	F		D	F		C	F	A	F	C	A
Approach Delay		160.9			119.9			78.5			55.8	
Approach LOS		F			F			E			E	
Intersection Summary												
Area Type:	Other											
Cycle Length: 140												
Actuated Cycle Length: 140												
Offset: 0 (0%), Referenced to phase 2:NBT and 6:SBTL, Start of Green												
Natural Cycle: 120												
Control Type: Pretimed												
Maximum v/c Ratio: 1.37												
Intersection Signal Delay: 87.5							Intersection LOS: F					
Intersection Capacity Utilization 118.9%							ICU Level of Service H					
Analysis Period (min) 15												

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



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Queues
106: Trafalgar Rd & Burhamthorpe Rd/Burnhamthorpe Rd

Total (2041) - Scenario A - 25% Reduction
Timing Plan: AM Peak Hour

	EBL	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	483	621	90	398	61	2325	189	365	1770	190
v/c Ratio	1.37	1.11	0.62	1.14	0.41	1.09	0.25	1.35	0.69	0.22
Control Delay	216.2	117.9	50.5	135.6	23.5	85.8	6.4	214.6	28.3	6.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	216.2	117.9	50.5	135.6	23.5	85.8	6.4	214.6	28.3	6.6
Queue Length 50th (m)	~158.5	~193.2	15.9	~116.7	6.9	~260.2	4.6	~114.9	131.7	7.4
Queue Length 95th (m)	#225.2	#265.1	#28.7	#180.0	13.6	#287.0	19.2	#176.5	148.3	20.3
Internal Link Dist (m)		804.7		965.6		1053.8			223.3	
Turn Bay Length (m)	30.0		15.0		60.0		60.0	60.0		60.0
Base Capacity (vph)	353	557	144	350	148	2142	759	270	2557	863
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	1.37	1.11	0.63	1.14	0.41	1.09	0.25	1.35	0.69	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.

HCM Signalized Intersection Capacity Analysis
106: Trafalgar Rd & Burhamthorpe Rd/Burnhamthorpe Rd

Total (2041) - Scenario A - 25% Reduction
Timing Plan: AM Peak Hour

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰	↱		↰	↱		↰	↱	↱	↰	↱	↱
Traffic Volume (vph)	444	491	80	83	157	209	56	2139	174	336	1628	175
Future Volume (vph)	444	491	80	83	157	209	56	2139	174	336	1628	175
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	1.00		1.00	1.00		1.00	0.91	1.00	1.00	0.91	1.00
Frt	1.00	0.98		1.00	0.91		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	1824		1770	1703		1770	5085	1583	1770	5085	1583
Flt Permitted	0.14	1.00		0.15	1.00		0.07	1.00	1.00	0.07	1.00	1.00
Satd. Flow (perm)	261	1824		287	1703		135	5085	1583	122	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)	483	534	87	90	171	227	61	2325	189	365	1770	190
RTOR Reduction (vph)	0	4	0	0	34	0	0	0	93	0	0	68
Lane Group Flow (vph)	483	617	0	90	364	0	61	2325	96	365	1770	122
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)	50.0	40.5		29.0	24.0		62.1	57.0	57.0	78.0	68.4	68.4
Effective Green, g (s)	52.0	42.5		33.0	26.0		66.1	59.0	59.0	78.0	70.4	70.4
Actuated g/C Ratio	0.37	0.30		0.24	0.19		0.47	0.42	0.42	0.56	0.50	0.50
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)	350	553		141	316		146	2142	667	268	2557	796
v/s Ratio Prot	c0.23	0.34		0.03	0.21		0.02	0.46		c0.17	0.35	
v/s Ratio Perm	c0.28			0.12			0.18		0.06	c0.59		0.08
v/c Ratio	1.38	1.12		0.64	1.15		0.42	1.09	0.14	1.36	0.69	0.15
Uniform Delay, d1	42.8	48.8		44.9	57.0		23.0	40.5	25.0	47.1	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	188.0	74.0		20.1	98.1		8.6	47.2	0.5	185.1	1.6	0.4
Delay (s)	230.8	122.8		65.0	155.1		31.5	87.7	25.4	232.2	28.1	19.2
Level of Service	F	F		E	F		C	F	C	F	C	B
Approach Delay (s)		170.0			138.5			81.8			59.4	
Approach LOS		F			F			F			E	

Intersection Summary

HCM 2000 Control Delay	93.0	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	1.40		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	14.5
Intersection Capacity Utilization	118.9%	ICU Level of Service	H
Analysis Period (min)	15		
c Critical Lane Group			

Lanes, Volumes, Timings
202: Trafalgar Rd & West Street C

Total (2041) - Scenario A - 25% Reduction
Timing Plan: AM Peak Hour

	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations		↗		↗↗↗	↗↗↗	↗
Traffic Volume (vph)	0	87	0	2793	2051	158
Future Volume (vph)	0	87	0	2793	2051	158
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (m)	0.0	0.0	0.0			90.0
Storage Lanes	0	1	0			1
Taper Length (m)	7.5		7.5			
Lane Util. Factor	1.00	1.00	1.00	0.91	0.91	1.00
Frt		0.865				0.850
Flt Protected						
Satd. Flow (prot)	0	1611	0	5085	5085	1583
Flt Permitted						
Satd. Flow (perm)	0	1611	0	5085	5085	1583
Link Speed (k/h)	50			50	50	
Link Distance (m)	202.4			247.3	208.3	
Travel Time (s)	14.6			17.8	15.0	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	95	0	3036	2229	172
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	95	0	3036	2229	172
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	0.0			3.6	3.6	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	4.8			4.8	4.8	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)	25	15	25			15
Sign Control	Stop			Free	Free	
Intersection Summary						
Area Type:	Other					
Control Type:	Unsignalized					
Intersection Capacity Utilization 57.3%	ICU Level of Service B					
Analysis Period (min) 15						

HCM Unsignalized Intersection Capacity Analysis Total (2041) - Scenario A - 25% Reduction
202: Trafalgar Rd & West Street C

Timing Plan: AM Peak Hour

									
Movement	EBL	EBR	NBL	NBT	SBT	SBR			
Lane Configurations				  	  				
Traffic Volume (veh/h)	0	87	0	2793	2051	158			
Future Volume (Veh/h)	0	87	0	2793	2051	158			
Sign Control	Stop			Free	Free				
Grade	0%			0%	0%				
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92			
Hourly flow rate (vph)	0	95	0	3036	2229	172			
Pedestrians									
Lane Width (m)									
Walking Speed (m/s)									
Percent Blockage									
Right turn flare (veh)									
Median type			None	None					
Median storage (veh)									
Upstream signal (m)			247	208					
pX, platoon unblocked	0.79	0.61	0.61						
vC, conflicting volume	3241	743	2401						
vC1, stage 1 conf vol									
vC2, stage 2 conf vol									
vCu, unblocked vol	0	0	1074						
tC, single (s)	6.8	6.9	4.1						
tC, 2 stage (s)									
tF (s)	3.5	3.3	2.2						
p0 queue free %	100	86	100						
cM capacity (veh/h)	803	664	395						
Direction, Lane #	EB 1	NB 1	NB 2	NB 3	SB 1	SB 2	SB 3	SB 4	
Volume Total	95	1012	1012	1012	743	743	743	172	
Volume Left	0	0	0	0	0	0	0	0	
Volume Right	95	0	0	0	0	0	0	172	
cSH	664	1700	1700	1700	1700	1700	1700	1700	
Volume to Capacity	0.14	0.60	0.60	0.60	0.44	0.44	0.44	0.10	
Queue Length 95th (m)	3.7	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Control Delay (s)	11.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Lane LOS	B								
Approach Delay (s)	11.3	0.0	0.0						
Approach LOS	B								
Intersection Summary									
Average Delay			0.2						
Intersection Capacity Utilization			57.3%			ICU Level of Service			B
Analysis Period (min)			15						

Lanes, Volumes, Timings
203: East Street D & East Street A

Total (2041) - Scenario A - 25% Reduction
Timing Plan: AM Peak Hour

						
Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	102	265	0	91	104	0
Future Volume (vph)	102	265	0	91	104	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	0.903					
Flt Protected					0.950	
Satd. Flow (prot)	1682	0	0	1863	1770	0
Flt Permitted					0.950	
Satd. Flow (perm)	1682	0	0	1863	1770	0
Link Speed (k/h)	50			50	50	
Link Distance (m)	212.6			202.8	119.6	
Travel Time (s)	15.3			14.6	8.6	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	111	288	0	99	113	0
Shared Lane Traffic (%)						
Lane Group Flow (vph)	399	0	0	99	113	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
Sign Control	Free			Free	Stop	
Intersection Summary						
Area Type:	Other					
Control Type:	Unsignalized					
Intersection Capacity Utilization	34.1%			ICU Level of Service A		
Analysis Period (min)	15					

HCM Unsignalized Intersection Capacity Analysis Total (2041) - Scenario A - 25% Reduction
203: East Street D & East Street A

Timing Plan: AM Peak Hour

	→	↖	↗	←	↖	↗
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↖			↖	↖	↖
Traffic Volume (veh/h)	102	265	0	91	104	0
Future Volume (Veh/h)	102	265	0	91	104	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)	111	288	0	99	113	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)	213					
pX, platoon unblocked			1.00		1.00	1.00
vC, conflicting volume			399		354	255
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			396		350	251
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			100		82	100
cM capacity (veh/h)			1159		645	785
Direction, Lane #	EB 1	WB 1	NB 1			
Volume Total	399	99	113			
Volume Left	0	0	113			
Volume Right	288	0	0			
cSH	1700	1159	645			
Volume to Capacity	0.23	0.00	0.18			
Queue Length 95th (m)	0.0	0.0	4.7			
Control Delay (s)	0.0	0.0	11.8			
Lane LOS			B			
Approach Delay (s)	0.0	0.0	11.8			
Approach LOS			B			
Intersection Summary						
Average Delay			2.2			
Intersection Capacity Utilization			34.1%		ICU Level of Service	A
Analysis Period (min)			15			

Lanes, Volumes, Timings
204: East Street E & East Street A

Total (2041) - Scenario A - 25% Reduction
Timing Plan: AM Peak Hour

	→	↖	↗	←	↖	↗
Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↖			↖	↖	
Traffic Volume (vph)	0	48	0	0	96	0
Future Volume (vph)	0	48	0	0	96	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.865					
Flt Protected					0.950	
Satd. Flow (prot)	1611	0	0	1863	1770	0
Flt Permitted					0.950	
Satd. Flow (perm)	1611	0	0	1863	1770	0
Link Speed (k/h)	50			50	50	
Link Distance (m)	202.8			186.3	118.9	
Travel Time (s)	14.6			13.4	8.6	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	52	0	0	104	0
Shared Lane Traffic (%)						
Lane Group Flow (vph)	52	0	0	0	104	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	0.0			0.0	3.6	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	4.8			4.8	4.8	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)		15	25		25	15
Sign Control	Free			Free	Stop	

Intersection Summary

Area Type: Other

Control Type: Unsignalized

Intersection Capacity Utilization 15.3% ICU Level of Service A

Analysis Period (min) 15

HCM Unsignalized Intersection Capacity Analysis Total (2041) - Scenario A - 25% Reduction
204: East Street E & East Street A

Timing Plan: AM Peak Hour

	→	↖	↗	←	↖	↗
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↖			↖	↖	
Traffic Volume (veh/h)	0	48	0	0	96	0
Future Volume (Veh/h)	0	48	0	0	96	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)	0	52	0	0	104	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			52		26	26
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			52		26	26
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			100		89	100
cM capacity (veh/h)			1554		989	1050

Direction, Lane #	EB 1	WB 1	NB 1
Volume Total	52	0	104
Volume Left	0	0	104
Volume Right	52	0	0
cSH	1700	1700	989
Volume to Capacity	0.03	0.00	0.11
Queue Length 95th (m)	0.0	0.0	2.6
Control Delay (s)	0.0	0.0	9.1
Lane LOS			A
Approach Delay (s)	0.0	0.0	9.1
Approach LOS			A

Intersection Summary

Average Delay	6.0		
Intersection Capacity Utilization	15.3%	ICU Level of Service	A
Analysis Period (min)	15		

Lanes, Volumes, Timings
205: East Street F & East Street A

Total (2041) - Scenario A - 25% Reduction
Timing Plan: AM Peak Hour

						
Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
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	1.00	1.00	1.00
Frt						
Flt Protected						
Satd. Flow (prot)	1863	0	0	1863	1863	0
Flt Permitted						
Satd. Flow (perm)	1863	0	0	1863	1863	0
Link Speed (k/h)	50			50	50	
Link Distance (m)	186.3			197.2	119.9	
Travel Time (s)	13.4			14.2	8.6	
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)	0.0			0.0	3.6	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	4.8			4.8	4.8	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)		15	25		25	15
Sign Control	Stop			Free	Free	
Intersection Summary						
Area Type:	Other					
Control Type:	Unsignalized					
Intersection Capacity Utilization	0.0%			ICU Level of Service A		
Analysis Period (min)	15					

HCM Unsignalized Intersection Capacity Analysis Total (2041) - Scenario A - 25% Reduction
205: East Street F & East Street A Timing Plan: AM Peak Hour

Intersection Sign configuration not allowed in HCM analysis.

Lanes, Volumes, Timings
206: East Street D & East Street B

Total (2041) - Scenario A - 25% Reduction
Timing Plan: AM Peak Hour

	←	←	↑	↗	↘	↓
Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	↰		↱			↱
Traffic Volume (vph)	49	15	54	11	11	176
Future Volume (vph)	49	15	54	11	11	176
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	0.969		0.977			
Flt Protected	0.963					0.997
Satd. Flow (prot)	1738	0	1820	0	0	1857
Flt Permitted	0.963					0.997
Satd. Flow (perm)	1738	0	1820	0	0	1857
Link Speed (k/h)	50		50			50
Link Distance (m)	200.4		111.4			119.6
Travel Time (s)	14.4		8.0			8.6
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	53	16	59	12	12	191
Shared Lane Traffic (%)						
Lane Group Flow (vph)	69	0	71	0	0	203
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 26.8% ICU Level of Service A

Analysis Period (min) 15

HCM Unsignalized Intersection Capacity Analysis Total (2041) - Scenario A - 25% Reduction
206: East Street D & East Street B

Timing Plan: AM Peak Hour

	←	←	↑	↗	↘	↓
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	↰		↱			↱
Traffic Volume (veh/h)	49	15	54	11	11	176
Future Volume (Veh/h)	49	15	54	11	11	176
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)	53	16	59	12	12	191
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	280	65			71	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	280	65			71	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	92	98			99	
cM capacity (veh/h)	704	999			1529	

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	69	71	203
Volume Left	53	0	12
Volume Right	16	12	0
cSH	756	1700	1529
Volume to Capacity	0.09	0.04	0.01
Queue Length 95th (m)	2.3	0.0	0.2
Control Delay (s)	10.2	0.0	0.5
Lane LOS	B		A
Approach Delay (s)	10.2	0.0	0.5
Approach LOS	B		

Intersection Summary

Average Delay	2.4		
Intersection Capacity Utilization	26.8%	ICU Level of Service	A
Analysis Period (min)	15		

Lanes, Volumes, Timings
207: East Street E & East Street B

Total (2041) - Scenario A - 25% Reduction
Timing Plan: AM Peak Hour

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔			↔			↔			↔	
Traffic Volume (vph)	38	0	56	0	0	0	136	5	0	0	48	0
Future Volume (vph)	38	0	56	0	0	0	136	5	0	0	48	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	0.919											
Flt Protected	0.980											
Satd. Flow (prot)	0	1678	0	0	1863	0	0	1777	0	0	1863	0
Flt Permitted	0.980											
Satd. Flow (perm)	0	1678	0	0	1863	0	0	1777	0	0	1863	0
Link Speed (k/h)	50											
Link Distance (m)	200.4											
Travel Time (s)	14.4											
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)	41	0	61	0	0	0	148	5	0	0	52	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	102	0	0	0	0	0	153	0	0	52	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											
Link Offset(m)	0.0											
Crosswalk Width(m)	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											

Intersection Summary

Area Type: Other

Control Type: Unsignalized

Intersection Capacity Utilization 26.7% ICU Level of Service A

Analysis Period (min) 15

HCM Unsignalized Intersection Capacity Analysis Total (2041) - Scenario A - 25% Reduction
207: East Street E & East Street B Timing Plan: AM Peak Hour

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Movement		↔			↔			↔			↔	
Lane Configurations		↔			↔			↔			↔	
Traffic Volume (veh/h)	38	0	56	0	0	0	136	5	0	0	48	0
Future Volume (Veh/h)	38	0	56	0	0	0	136	5	0	0	48	0
Sign Control	Stop											
Grade	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)	41	0	61	0	0	0	148	5	0	0	52	0
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type	None											
Median storage (veh)												
Upstream signal (m)	114											
pX, platoon unblocked												
vC, conflicting volume	353	353	52	414	353	5	52			5		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	353	353	52	414	353	5	52			5		
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 %	93	100	94	100	100	100	90			100		
cM capacity (veh/h)	558	518	1016	478	518	1078	1554			1616		

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	102	0	153	52
Volume Left	41	0	148	0
Volume Right	61	0	0	0
cSH	764	1700	1554	1616
Volume to Capacity	0.13	0.00	0.10	0.00
Queue Length 95th (m)	3.4	0.0	2.4	0.0
Control Delay (s)	10.4	0.0	7.3	0.0
Lane LOS	B	A	A	
Approach Delay (s)	10.4	0.0	7.3	0.0
Approach LOS	B	A		

Intersection Summary

Average Delay 7.1
Intersection Capacity Utilization 26.7% ICU Level of Service A
Analysis Period (min) 15

Lanes, Volumes, Timings
208: East Street F & East Street B

Total (2041) - Scenario A - 25% Reduction
Timing Plan: AM Peak Hour

	EBL	EBR	NBL	NBT	SBT	SBR
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	1.00	1.00	1.00
Flt						
Flt Protected						
Satd. Flow (prot)	1863	0	0	1863	1863	0
Flt Permitted						
Satd. Flow (perm)	1863	0	0	1863	1863	0
Link Speed (k/h)	50			50	50	
Link Distance (m)	185.7			112.6	119.9	
Travel Time (s)	13.4			8.1	8.6	
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			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	25			15
Sign Control	Stop			Free	Free	

Intersection Summary

Area Type: Other
Control Type: Unsignalized
Intersection Capacity Utilization 0.0% ICU Level of Service A
Analysis Period (min) 15

HCM Unsignalized Intersection Capacity Analysis Total (2041) - Scenario A - 25% Reduction
208: East Street F & East Street B

Timing Plan: AM Peak Hour

	EBL	EBR	NBL	NBT	SBT	SBR
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	↔			↔	↔	
Traffic Volume (veh/h)	0	0	0	0	0	0
Future Volume (Veh/h)	0	0	0	0	0	0
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	0	0	0	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	0	0	0			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	0	0	0			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	100	100	100			
cM capacity (veh/h)	1023	1085	1623			
Direction, Lane #	EB 1	NB 1	SB 1			
Volume Total	0	0	0			
Volume Left	0	0	0			
Volume Right	0	0	0			
cSH	1700	1700	1700			
Volume to Capacity	0.00	0.00	0.00			
Queue Length 95th (m)	0.0	0.0	0.0			
Control Delay (s)	0.0	0.0	0.0			
Lane LOS	A					
Approach Delay (s)	0.0	0.0	0.0			
Approach LOS	A					
Intersection Summary						
Average Delay		0.0				
Intersection Capacity Utilization		0.0%		ICU Level of Service	A	
Analysis Period (min)		15				

Lanes, Volumes, Timings Total (2041) - Scenario A - 25% Reduction
 209: William Halton Parkway & East Street D Timing Plan: AM Peak Hour

						
Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑↑	↑↑	↑		↑
Traffic Volume (vph)	0	1632	779	19	0	153
Future Volume (vph)	0	1632	779	19	0	153
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (m)	0.0			50.0	0.0	0.0
Storage Lanes	0			1	0	1
Taper Length (m)	7.5				7.5	
Lane Util. Factor	1.00	0.95	0.95	1.00	1.00	1.00
Frt				0.850		0.865
Flt Protected						
Satd. Flow (prot)	0	3539	3539	1583	0	1611
Flt Permitted						
Satd. Flow (perm)	0	3539	3539	1583	0	1611
Link Speed (k/h)		50	50		50	
Link Distance (m)		204.1	194.7		111.4	
Travel Time (s)		14.7	14.0		8.0	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	1774	847	21	0	166
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	1774	847	21	0	166
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(m)		3.6	3.6		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	25	15
Sign Control		Free	Free		Stop	
Intersection Summary						
Area Type:	Other					
Control Type:	Unsignalized					
Intersection Capacity Utilization 48.4%	ICU Level of Service A					
Analysis Period (min) 15						

HCM Unsignalized Intersection Capacity Analysis Total (2041) - Scenario A - 25% Reduction
 209: William Halton Parkway & East Street D Timing Plan: AM Peak Hour

						
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑↑	↑↑	↑		↑
Traffic Volume (veh/h)	0	1632	779	19	0	153
Future Volume (Veh/h)	0	1632	779	19	0	153
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)	0	1774	847	21	0	166
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None		None			
Median storage (veh)						
Upstream signal (m)	204		195			
pX, platoon unblocked	0.86				0.79	0.86
vC, conflicting volume	868				1734	424
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	517				604	0
tC, single (s)	4.1				6.8	6.9
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	100				100	82
cM capacity (veh/h)	897				341	931
Direction, Lane #	EB 1	EB 2	WB 1	WB 2	WB 3	SB 1
Volume Total	887	887	424	424	21	166
Volume Left	0	0	0	0	0	0
Volume Right	0	0	0	0	21	166
cSH	1700	1700	1700	1700	1700	931
Volume to Capacity	0.52	0.52	0.25	0.25	0.01	0.18
Queue Length 95th (m)	0.0	0.0	0.0	0.0	0.0	4.8
Control Delay (s)	0.0	0.0	0.0	0.0	0.0	9.7
Lane LOS						A
Approach Delay (s)	0.0		0.0			9.7
Approach LOS						A
Intersection Summary						
Average Delay			0.6			
Intersection Capacity Utilization			48.4%		ICU Level of Service	
Analysis Period (min)			15		A	

Lanes, Volumes, Timings

210: William Halton Parkway & East Street E

Total (2041) - Scenario A - 25% Reduction

Timing Plan: AM Peak Hour

	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations	↰	↱	↱	↰	↰	↰
Traffic Volume (vph)	147	1454	773	9	79	25
Future Volume (vph)	147	1454	773	9	79	25
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	0.968	
Flt Protected	0.950				0.963	
Satd. Flow (prot)	1770	3539	3539	1583	1736	0
Flt Permitted	0.212				0.963	
Satd. Flow (perm)	395	3539	3539	1583	1736	0
Right Turn on Red				Yes	Yes	
Satd. Flow (RTOR)				10	27	
Link Speed (k/h)		50	50		50	
Link Distance (m)		194.7	188.1		114.3	
Travel Time (s)		14.0	13.5		8.2	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	160	1580	840	10	86	27
Shared Lane Traffic (%)						
Lane Group Flow (vph)	160	1580	840	10	113	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
Number of Detectors	1	2	2	1	1	
Detector Template	Left	Thru	Thru	Right	Left	
Leading Detector (m)	2.0	10.0	10.0	2.0	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)	2.0	0.6	0.6	2.0	2.0	
Detector 1 Type	CI+Ex	CI+Ex	CI+Ex	CI+Ex	CI+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		CI+Ex	CI+Ex			
Detector 2 Channel						
Detector 2 Extend (s)		0.0	0.0			
Turn Type	pm+pt	NA	NA	Perm	Prot	
Protected Phases	7	4	8		6	
Permitted Phases	4			8		

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Lanes, Volumes, Timings

210: William Halton Parkway & East Street E

Total (2041) - Scenario A - 25% Reduction

Timing Plan: AM Peak Hour

	EBL	EBT	WBT	WBR	SBL	SBR
Detector Phase	7	4	8	8	6	
Switch Phase						
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	
Minimum Split (s)	9.5	24.0	24.0	24.0	24.0	
Total Split (s)	12.0	36.0	24.0	24.0	24.0	
Total Split (%)	20.0%	60.0%	40.0%	40.0%	40.0%	
Maximum Green (s)	7.5	30.0	18.0	18.0	18.0	
Yellow Time (s)	3.5	4.0	4.0	4.0	4.0	
All-Red Time (s)	1.0	2.0	2.0	2.0	2.0	
Lost Time Adjust (s)	1.0	-2.0	-2.0	-2.0	-2.0	
Total Lost Time (s)	5.5	4.0	4.0	4.0	4.0	
Lead/Lag	Lead		Lag	Lag		
Lead-Lag Optimize?	Yes		Yes	Yes		
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	
Recall Mode	None	Max	Max	Max	None	
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 Effect Green (s)	33.5	35.8	26.4	26.4	10.0	
Actuated g/C Ratio	0.66	0.71	0.52	0.52	0.20	
v/c Ratio	0.38	0.63	0.46	0.01	0.31	
Control Delay	7.3	7.2	12.0	6.2	15.9	
Queue Delay	0.0	0.0	0.0	0.0	0.0	
Total Delay	7.3	7.2	12.0	6.2	15.9	
LOS	A	A	B	A	B	
Approach Delay		7.2	11.9		15.9	
Approach LOS		A	B		B	

Intersection Summary

Area Type: Other

Cycle Length: 60

Actuated Cycle Length: 50.7

Natural Cycle: 60

Control Type: Semi Act-Uncoord

Maximum v/c Ratio: 0.63

Intersection Signal Delay: 9.1

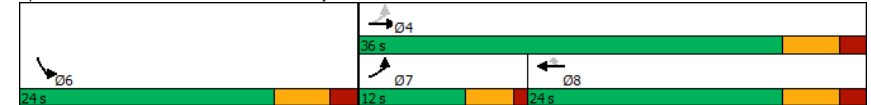
Intersection LOS: A

Intersection Capacity Utilization 52.8%

ICU Level of Service A

Analysis Period (min) 15

Splits and Phases: 210: William Halton Parkway & East Street E

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Queues
210: William Halton Parkway & East Street E

Total (2041) - Scenario A - 25% Reduction
Timing Plan: AM Peak Hour

	EBL	EBT	WBT	WBR	SBL
Lane Group	EBL	EBT	WBT	WBR	SBL
Lane Group Flow (vph)	160	1580	840	10	113
v/c Ratio	0.38	0.63	0.46	0.01	0.31
Control Delay	7.3	7.2	12.0	6.2	15.9
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	7.3	7.2	12.0	6.2	15.9
Queue Length 50th (m)	4.9	37.0	28.6	0.0	6.4
Queue Length 95th (m)	12.4	68.6	48.1	2.2	16.4
Internal Link Dist (m)		170.7	164.1		90.3
Turn Bay Length (m)	50.0			50.0	
Base Capacity (vph)	437	2498	1841	828	701
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	0.37	0.63	0.46	0.01	0.16
Intersection Summary					

HCM Signalized Intersection Capacity Analysis
210: William Halton Parkway & East Street E

Total (2041) - Scenario A - 25% Reduction
Timing Plan: AM Peak Hour

	EBL	EBT	WBT	WBR	SBL	SBR
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations	↰	↱	↰	↱	↰	↱
Traffic Volume (vph)	147	1454	773	9	79	25
Future Volume (vph)	147	1454	773	9	79	25
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.5	4.0	4.0	4.0	4.0	
Lane Util. Factor	1.00	0.95	0.95	1.00	1.00	
Flt	1.00	1.00	1.00	0.85	0.97	
Flt Protected	0.95	1.00	1.00	1.00	0.96	
Satd. Flow (prot)	1770	3539	3539	1583	1737	
Flt Permitted	0.21	1.00	1.00	1.00	0.96	
Satd. Flow (perm)	395	3539	3539	1583	1737	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	160	1580	840	10	86	27
RTOR Reduction (vph)	0	0	0	5	22	0
Lane Group Flow (vph)	160	1580	840	5	91	0
Turn Type	pm+pt	NA	NA	Perm	Prot	
Protected Phases	7	4	8		6	
Permitted Phases	4			8		
Actuated Green, G (s)	33.9	33.9	23.6	23.6	6.9	
Effective Green, g (s)	32.9	35.9	25.6	25.6	8.9	
Actuated g/C Ratio	0.62	0.68	0.48	0.48	0.17	
Clearance Time (s)	4.5	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)	371	2406	1715	767	292	
v/s Ratio Prot	0.04	c0.45	0.24		c0.05	
v/s Ratio Perm	0.23			0.00		
v/c Ratio	0.43	0.66	0.49	0.01	0.31	
Uniform Delay, d1	5.5	4.9	9.2	7.0	19.3	
Progression Factor	1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	0.8	1.4	1.0	0.0	0.6	
Delay (s)	6.3	6.3	10.2	7.0	19.9	
Level of Service	A	A	B	A	B	
Approach Delay (s)		6.3	10.2		19.9	
Approach LOS		A	B		B	
Intersection Summary						
HCM 2000 Control Delay			8.1		HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio			0.67			
Actuated Cycle Length (s)			52.8		Sum of lost time (s)	13.5
Intersection Capacity Utilization			52.8%		ICU Level of Service	A
Analysis Period (min)			15			

c Critical Lane Group

Lanes, Volumes, Timings

211: William Halton Parkway & East Street F

Total (2041) - Scenario A - 25% Reduction

Timing Plan: AM Peak Hour

						
Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	0	1533	782	0	0	0
Future Volume (vph)	0	1533	782	0	0	0
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
Fr						
Flt Protected						
Satd. Flow (prot)	1863	3539	3539	1863	1863	0
Flt Permitted						
Satd. Flow (perm)	1863	3539	3539	1863	1863	0
Link Speed (k/h)		50	50		50	
Link Distance (m)		188.1	219.2		112.6	
Travel Time (s)		13.5	15.8		8.1	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	1666	850	0	0	0
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	1666	850	0	0	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	45.7%			ICU Level of Service A		
Analysis Period (min)	15					

HCM Unsignalized Intersection Capacity Analysis

211: William Halton Parkway & East Street F

Total (2041) - Scenario A - 25% Reduction

Timing Plan: AM Peak Hour

							
Movement	EBL	EBT	WBT	WBR	SBL	SBR	
Lane Configurations							
Traffic Volume (veh/h)	0	1533	782	0	0	0	
Future Volume (Veh/h)	0	1533	782	0	0	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)	0	1666	850	0	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)		188					
pX, platoon unblocked					0.69		
vC, conflicting volume	850				1683	425	
vC1, stage 1 conf vol							
vC2, stage 2 conf vol							
vCu, unblocked vol	850				1100	425	
tC, single (s)	4.1				6.8	6.9	
tC, 2 stage (s)							
tF (s)	2.2				3.5	3.3	
p0 queue free %	100				100	100	
cM capacity (veh/h)	784				143	578	
Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	WB 3	SB 1
Volume Total	0	833	833	425	425	0	0
Volume Left	0	0	0	0	0	0	0
Volume Right	0	0	0	0	0	0	0
cSH	1700	1700	1700	1700	1700	1700	1700
Volume to Capacity	0.00	0.49	0.49	0.25	0.25	0.00	0.00
Queue Length 95th (m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Control Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Lane LOS							A
Approach Delay (s)	0.0			0.0			0.0
Approach LOS							A
Intersection Summary							
Average Delay			0.0				
Intersection Capacity Utilization			45.7%		ICU Level of Service		A
Analysis Period (min)			15				

Lanes, Volumes, Timings

212: West Street A & Transit Station

Total (2041) - Scenario A - 25% Reduction

Timing Plan: AM Peak Hour

	←	←	↑	↗	↘	↓
Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	↔		↔			↔
Traffic Volume (vph)	105	0	0	135	0	0
Future Volume (vph)	105	0	0	135	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt			0.865			
Flt Protected	0.950					
Satd. Flow (prot)	1770	0	1611	0	0	1863
Flt Permitted	0.950					
Satd. Flow (perm)	1770	0	1611	0	0	1863
Link Speed (k/h)	50		50			50
Link Distance (m)	70.0		239.0			98.7
Travel Time (s)	5.0		17.2			7.1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	114	0	0	147	0	0
Shared Lane Traffic (%)						
Lane Group Flow (vph)	114	0	147	0	0	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(m)	3.6		0.0		Left	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 20.8%

ICU Level of Service A

Analysis Period (min) 15

HCM Unsignalized Intersection Capacity Analysis

212: West Street A & Transit Station

Total (2041) - Scenario A - 25% Reduction

Timing Plan: AM Peak Hour

	←	←	↑	↗	↘	↓
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	↔		↔			↔
Traffic Volume (veh/h)	105	0	0	135	0	0
Future Volume (Veh/h)	105	0	0	135	0	0
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)	114	0	0	147	0	0
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None					
Median storage (veh)						
Upstream signal (m)	213					
pX, platoon unblocked						
vC, conflicting volume	0		228	0	375	228
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	0		228	0	375	228
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 %	93		100	86	100	100
cM capacity (veh/h)	1623		624	1085	476	624
Direction, Lane #	WB 1	NB 1	SB 1			
Volume Total	114	147	0			
Volume Left	114	0	0			
Volume Right	0	147	0			
cSH	1623	1085	1700			
Volume to Capacity	0.07	0.14	0.00			
Queue Length 95th (m)	1.7	3.5	0.0			
Control Delay (s)	7.4	8.8	0.0			
Lane LOS	A	A	A			
Approach Delay (s)	7.4	8.8	0.0			
Approach LOS	A	A				
Intersection Summary						
Average Delay		8.2				
Intersection Capacity Utilization		20.8%		ICU Level of Service	A	
Analysis Period (min)		15				

Lanes, Volumes, Timings

213: West Street A & William Halton Parkway

Total (2041) - Scenario A - 25% Reduction

Timing Plan: AM Peak Hour

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑	↑		↑↑	↑			↑			↑
Traffic Volume (vph)	0	1482	23	0	826	74	0	0	170	0	0	7
Future Volume (vph)	0	1482	23	0	826	74	0	0	170	0	0	7
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		1	0		1	0		1	0		1
Taper Length (m)	7.5			7.5			7.5			7.5		
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt			0.850			0.850			0.865			0.865
Fit Protected												
Satd. Flow (prot)	0	3539	1583	0	3539	1583	0	0	1611	0	0	1611
Fit Permitted												
Satd. Flow (perm)	0	3539	1583	0	3539	1583	0	0	1611	0	0	1611
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		202.0			209.3			100.4			239.0	
Travel Time (s)		14.5			15.1			7.2			17.2	
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	1611	25	0	898	80	0	0	185	0	0	8
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	1611	25	0	898	80	0	0	185	0	0	8
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	58.2%											
Analysis Period (min)	15											
ICU Level of Service B												

HCM Unsignalized Intersection Capacity Analysis

213: West Street A & William Halton Parkway

Total (2041) - Scenario A - 25% Reduction

Timing Plan: AM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑	↑		↑↑	↑			↑			↑
Traffic Volume (veh/h)	0	1482	23	0	826	74	0	0	170	0	0	7
Future Volume (Veh/h)	0	1482	23	0	826	74	0	0	170	0	0	7
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	1611	25	0	898	80	0	0	185	0	0	8
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type	None			None								
Median storage veh												
Upstream signal (m)	202			209								
pX, platoon unblocked	0.87			0.63			0.69	0.69	0.63	0.69	0.69	0.87
vC, conflicting volume	978			1636			2068	2589	806	1888	2534	449
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	680			832			823	1574	0	564	1495	74
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	73	100	100	99
cM capacity (veh/h)	791			501			182	76	682	206	84	848
Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	WB 3	NB 1	SB 1				
Volume Total	806	806	25	449	449	80	185	8				
Volume Left	0	0	0	0	0	0	0	0				
Volume Right	0	0	25	0	0	80	185	8				
cSH	1700	1700	1700	1700	1700	1700	682	848				
Volume to Capacity	0.47	0.47	0.01	0.26	0.26	0.05	0.27	0.01				
Queue Length 95th (m)	0.0	0.0	0.0	0.0	0.0	0.0	8.2	0.2				
Control Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	12.2	9.3				
Lane LOS							B	A				
Approach Delay (s)	0.0			0.0			12.2	9.3				
Approach LOS							B	A				
Intersection Summary												
Average Delay				0.8								
Intersection Capacity Utilization				58.2%			ICU Level of Service			B		
Analysis Period (min)	15											

Lanes, Volumes, Timings

214: West Street D & William Halton Parkway

Total (2041) - Scenario A - 25% Reduction

Timing Plan: AM Peak Hour

	←	→	↖	↗	←	↖	↗	→	↖	↗	→	↖	↗
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations	↖	↖	↖	↖	↖	↖	↖	↖	↖	↖	↖	↖	
Traffic Volume (vph)	0	1442	20	164	597	72	14	0	17	61	0	3	
Future Volume (vph)	0	1442	20	164	597	72	14	0	17	61	0	3	
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		0.0	50.0		0.0	
Storage Lanes	1		0	1		1	1		0	1		0	
Taper Length (m)	100.0			100.0			75.0			75.0			
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Frt			0.850			0.850		0.850			0.850		
Flt Protected				0.950			0.950			0.950			
Satd. Flow (prot)	1863	3539	1583	1770	3539	1583	1770	1583	0	1770	1583	0	
Flt Permitted				0.063			0.756			0.746			
Satd. Flow (perm)	1863	3539	1583	117	3539	1583	1408	1583	0	1390	1583	0	
Right Turn on Red			Yes			Yes			Yes			Yes	
Satd. Flow (RTOR)			55			78			350			364	
Link Speed (k/h)		50			50			50			50		
Link Distance (m)		241.6			202.0			103.2			133.4		
Travel Time (s)		17.4			14.5			7.4			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)	0	1567	22	178	649	78	15	0	18	66	0	3	
Shared Lane Traffic (%)													
Lane Group Flow (vph)	0	1567	22	178	649	78	15	18	0	66	3	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	1	2	1	1	2		1	2		
Detector Template	Left	Thru	Right	Left	Thru	Right	Left	Thru		Left	Thru		
Leading Detector (m)	2.0	10.0	2.0	2.0	10.0	2.0	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		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	2.0	0.6	2.0	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		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	pm+pt	NA	Perm	Perm	NA		Perm	NA		
Protected Phases		4			3		8			2		6	
Permitted Phases	4		4		8		8		2		6		

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Lanes, Volumes, Timings

214: West Street D & William Halton Parkway

Total (2041) - Scenario A - 25% Reduction

Timing Plan: AM Peak Hour

	←	→	↖	↗	←	↖	↗	→	↖	↗	→	↖	↗
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Detector Phase	4	4	4	3	8	8	2	2		6	6		
Switch Phase													
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0		5.0	5.0		
Minimum Split (s)	24.0	24.0	24.0	9.5	24.0	24.0	24.0	24.0		24.0	24.0		
Total Split (s)	66.0	66.0	66.0	29.9	95.9	95.9	24.1	24.1		24.1	24.1		
Total Split (%)	55.0%	55.0%	55.0%	24.9%	79.9%	79.9%	20.1%	20.1%		20.1%	20.1%		
Maximum Green (s)	60.0	60.0	60.0	26.9	89.9	89.9	18.1	18.1		18.1	18.1		
Yellow Time (s)	4.0	4.0	4.0	3.0	4.0	4.0	4.0	4.0		4.0	4.0		
All-Red Time (s)	2.0	2.0	2.0	0.0	2.0	2.0	2.0	2.0		2.0	2.0		
Lost Time Adjust (s)	-2.0	-2.0	-2.0	1.0	-2.0	-2.0	-2.0	-2.0		-2.0	-2.0		
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0		4.0	4.0		
Lead/Lag	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	Max	Max	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	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 Effect Green (s)		62.3	62.3	92.3	93.3	93.3	12.5	12.5		12.6	12.6		
Actuated g/C Ratio		0.57	0.57	0.84	0.85	0.85	0.11	0.11		0.11	0.11		
v/c Ratio		0.78	0.02	0.36	0.22	0.06	0.09	0.04		0.42	0.01		
Control Delay		23.6	0.1	18.2	2.5	0.7	45.4	0.1		54.4	0.0		
Queue Delay		0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0		
Total Delay		23.6	0.1	18.2	2.5	0.7	45.4	0.1		54.4	0.0		
LOS		C	A	B	A	A	D	A		D	A		
Approach Delay		23.2			5.5		20.7				52.0		
Approach LOS		C			A		C				D		

Intersection Summary

Area Type: Other

Cycle Length: 120

Actuated Cycle Length: 110.2

Natural Cycle: 75

Control Type: Semi Act-Uncoord

Maximum v/c Ratio: 0.78

Intersection Signal Delay: 17.8

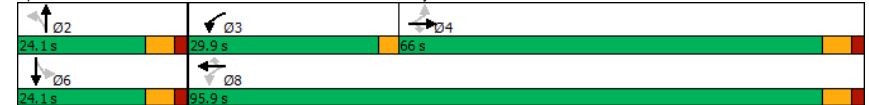
Intersection LOS: B

Intersection Capacity Utilization 69.0%

ICU Level of Service C

Analysis Period (min) 15

Splits and Phases: 214: West Street D & William Halton Parkway

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Queues
214: West Street D & William Halton Parkway

Total (2041) - Scenario A - 25% Reduction
Timing Plan: AM Peak Hour

	→	↘	↙	←	↖	↗	↘	↙	↓
Lane Group	EBT	EBR	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	1567	22	178	649	78	15	18	66	3
v/c Ratio	0.78	0.02	0.36	0.22	0.06	0.09	0.04	0.42	0.01
Control Delay	23.6	0.1	18.2	2.5	0.7	45.4	0.1	54.4	0.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	23.6	0.1	18.2	2.5	0.7	45.4	0.1	54.4	0.0
Queue Length 50th (m)	137.7	0.0	15.4	12.8	0.0	3.0	0.0	13.6	0.0
Queue Length 95th (m)	184.7	0.4	37.6	21.9	2.7	9.1	0.0	27.1	0.0
Internal Link Dist (m)	217.6			178.0			79.2		109.4
Turn Bay Length (m)		50.0	50.0		50.0	50.0		50.0	
Base Capacity (vph)	2000	918	488	2994	1351	258	575	254	587
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.78	0.02	0.36	0.22	0.06	0.06	0.03	0.26	0.01
Intersection Summary									

HCM Signalized Intersection Capacity Analysis
214: West Street D & William Halton Parkway

Total (2041) - Scenario A - 25% Reduction
Timing Plan: AM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		 			 						 	
Traffic Volume (vph)	0	1442	20	164	597	72	14	0	17	61	0	3
Future Volume (vph)	0	1442	20	164	597	72	14	0	17	61	0	3
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	0.95	1.00	1.00	0.95	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	0.85	1.00	1.00	0.85	1.00	0.85	1.00	0.85	1.00	0.85	1.00
Flt Protected	1.00	1.00	0.95	1.00	1.00	0.95	1.00	0.95	1.00	0.95	1.00	1.00
Satd. Flow (prot)	3539	1583	1770	3539	1583	1770	1583	1770	1583	1770	1583	1770
Flt Permitted	1.00	1.00	0.06	1.00	1.00	0.76	1.00	0.75	1.00	0.75	1.00	1.00
Satd. Flow (perm)	3539	1583	118	3539	1583	1408	1583	1389	1583	1389	1583	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)	0	1567	22	178	649	78	15	0	18	66	0	3
RTOR Reduction (vph)	0	0	10	0	0	13	0	16	0	0	3	0
Lane Group Flow (vph)	0	1567	12	178	649	65	15	2	0	66	0	0
Turn Type	Perm	NA	Perm	pm+pt	NA	Perm	Perm	NA	Perm	NA	Perm	NA
Protected Phases		4		3		8		2		6		6
Permitted Phases	4		4	8		8	2			6		6
Actuated Green, G (s)	60.4	60.4	90.4	90.4	90.4	9.2	9.2			9.2	9.2	
Effective Green, g (s)	62.4	62.4	89.4	92.4	92.4	11.2	11.2			11.2	11.2	
Actuated g/C Ratio	0.56	0.56	0.80	0.83	0.83	0.10	0.10			0.10	0.10	
Clearance Time (s)	6.0	6.0	3.0	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	3.0	
Lane Grp Cap (vph)	1978	885	479	2930	1310	141	158			139	158	
v/s Ratio Prot	c0.44		c0.09	0.18			0.00			0.00		
v/s Ratio Perm		0.01	0.21		0.04	0.01				c0.05		
v/c Ratio	0.79	0.01	0.37	0.22	0.05	0.11	0.01			0.47	0.00	
Uniform Delay, d1	19.5	10.9	21.4	2.0	1.7	45.6	45.2			47.4	45.2	
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00			1.00	1.00	
Incremental Delay, d2	3.3	0.0	2.2	0.2	0.1	0.3	0.0			2.5	0.0	
Delay (s)	22.8	11.0	23.6	2.2	1.8	46.0	45.2			50.0	45.2	
Level of Service	C	B	C	A	A	D	D			D	D	
Approach Delay (s)	22.7			6.4		45.6				49.8		
Approach LOS	C			A		D				D		
Intersection Summary												
HCM 2000 Control Delay	18.0			HCM 2000 Level of Service			B					
HCM 2000 Volume to Capacity ratio	0.65											
Actuated Cycle Length (s)	111.6			Sum of lost time (s)			12.0					
Intersection Capacity Utilization	69.0%			ICU Level of Service			C					
Analysis Period (min)	15											
c Critical Lane Group												

Lanes, Volumes, Timings

215: West Street A & West Street B

Total (2041) - Scenario A - 25% Reduction

Timing Plan: AM Peak Hour

	EBL	EBR	NBL	NBT	SBT	SBR
Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	↔	↔	↔	↔	↔	↔
Traffic Volume (vph)	89	54	0	38	35	5
Future Volume (vph)	89	54	0	38	35	5
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	0.949				0.984	
Frt Protected	0.970					
Satd. Flow (prot)	1715	0	0	1863	1833	0
Frt Permitted	0.970					
Satd. Flow (perm)	1715	0	0	1863	1833	0
Link Speed (k/h)	50			50	50	
Link Distance (m)	202.8			106.4	100.4	
Travel Time (s)	14.6			7.7	7.2	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	97	59	0	41	38	5
Shared Lane Traffic (%)						
Lane Group Flow (vph)	156	0	0	41	43	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
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	25			15
Sign Control	Stop			Free	Free	

Intersection Summary

Area Type: Other

Control Type: Unsignalized

Intersection Capacity Utilization 18.2%

ICU Level of Service A

Analysis Period (min) 15

HCM Unsignalized Intersection Capacity Analysis

215: West Street A & West Street B

Total (2041) - Scenario A - 25% Reduction

Timing Plan: AM Peak Hour

	EBL	EBR	NBL	NBT	SBT	SBR
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	↔	↔	↔	↔	↔	↔
Traffic Volume (veh/h)	89	54	0	38	35	5
Future Volume (Veh/h)	89	54	0	38	35	5
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)	97	59	0	41	38	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	82	40	43			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	82	40	43			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	89	94	100			
cM capacity (veh/h)	921	1031	1566			

Direction, Lane #	EB 1	NB 1	SB 1
Volume Total	156	41	43
Volume Left	97	0	0
Volume Right	59	0	5
cSH	959	1566	1700
Volume to Capacity	0.16	0.00	0.03
Queue Length 95th (m)	4.3	0.0	0.0
Control Delay (s)	9.5	0.0	0.0
Lane LOS	A		
Approach Delay (s)	9.5	0.0	0.0
Approach LOS	A		

Intersection Summary

Average Delay

6.2

Intersection Capacity Utilization

18.2%

ICU Level of Service

A

Analysis Period (min)

15

Lanes, Volumes, Timings

216: West Street D & West Street B

Total (2041) - Scenario A - 25% Reduction

Timing Plan: AM Peak Hour

	←	←	↑	↗	↘	↓
Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	↖		↗			↗
Traffic Volume (vph)	0	8	23	0	123	61
Future Volume (vph)	0	8	23	0	123	61
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.865					
Flt Protected						0.968
Satd. Flow (prot)	1611	0	1863	0	0	1803
Flt Permitted						0.968
Satd. Flow (perm)	1611	0	1863	0	0	1803
Link Speed (k/h)	50		50			50
Link Distance (m)	202.8		99.7			103.2
Travel Time (s)	14.6		7.2			7.4
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	9	25	0	134	66
Shared Lane Traffic (%)						
Lane Group Flow (vph)	9	0	25	0	0	200
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
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		15	25	
Sign Control	Stop		Free			Free

Intersection Summary

Area Type: Other

Control Type: Unsignalized

Intersection Capacity Utilization 26.7% ICU Level of Service A

Analysis Period (min) 15

HCM Unsignalized Intersection Capacity Analysis

216: West Street D & West Street B

Total (2041) - Scenario A - 25% Reduction

Timing Plan: AM Peak Hour

	←	←	↑	↗	↘	↓
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	↖		↗			↗
Traffic Volume (veh/h)	0	8	23	0	123	61
Future Volume (Veh/h)	0	8	23	0	123	61
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	9	25	0	134	66
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage (veh)						
Upstream signal (m)						103
pX, platoon unblocked	0.99					
vC, conflicting volume	359	25			25	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	353	25			25	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	100	99			92	
cM capacity (veh/h)	587	1051			1589	
Direction, Lane #	WB 1	NB 1	SB 1			
Volume Total	9	25	200			
Volume Left	0	0	134			
Volume Right	9	0	0			
cSH	1051	1700	1589			
Volume to Capacity	0.01	0.01	0.08			
Queue Length 95th (m)	0.2	0.0	2.1			
Control Delay (s)	8.5	0.0	5.2			
Lane LOS	A		A			
Approach Delay (s)	8.5	0.0	5.2			
Approach LOS	A					
Intersection Summary						
Average Delay			4.8			
Intersection Capacity Utilization			26.7%		ICU Level of Service	A
Analysis Period (min)			15			

Lanes, Volumes, Timings

217: West Street C & West Street A

Total (2041) - Scenario A - 25% Reduction

Timing Plan: AM Peak Hour

	EBL	EBT	WBT	WBR	SBL	SBR
Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↔	↔		↔	↔
Traffic Volume (vph)	0	45	41	113	60	7
Future Volume (vph)	0	45	41	113	60	7
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.901		0.985		
Flt Protected					0.957	
Satd. Flow (prot)	0	1863	1678	0	1756	0
Flt Permitted					0.957	
Satd. Flow (perm)	0	1863	1678	0	1756	0
Link Speed (k/h)		50	50		50	
Link Distance (m)		208.6	202.4		106.4	
Travel Time (s)		15.0	14.6		7.7	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	49	45	123	65	8
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	49	168	0	73	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 19.5% ICU Level of Service A

Analysis Period (min) 15

HCM Unsignalized Intersection Capacity Analysis

217: West Street C & West Street A

Total (2041) - Scenario A - 25% Reduction

Timing Plan: AM Peak Hour

	EBL	EBT	WBT	WBR	SBL	SBR
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↔	↔		↔	↔
Traffic Volume (veh/h)	0	45	41	113	60	7
Future Volume (Veh/h)	0	45	41	113	60	7
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)	0	49	45	123	65	8
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		None	None			
Median storage (veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	168				156	106
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	168				156	106
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	100				92	99
cM capacity (veh/h)	1410				836	948

Direction, Lane #	EB 1	WB 1	SB 1
Volume Total	49	168	73
Volume Left	0	0	65
Volume Right	0	123	8
cSH	1410	1700	847
Volume to Capacity	0.00	0.10	0.09
Queue Length 95th (m)	0.0	0.0	2.1
Control Delay (s)	0.0	0.0	9.7
Lane LOS			A
Approach Delay (s)	0.0	0.0	9.7
Approach LOS			A

Intersection Summary

Average Delay 2.4

Intersection Capacity Utilization 19.5% ICU Level of Service A

Analysis Period (min) 15

Lanes, Volumes, Timings

218: West Street D & West Street C

Total (2041) - Scenario A - 25% Reduction

Timing Plan: AM Peak Hour

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔			↔			↔			↔	
Traffic Volume (vph)	0	0	0	5	0	36	0	18	8	56	5	0
Future Volume (vph)	0	0	0	5	0	36	0	18	8	56	5	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				0.880				0.958				
Flt Protected					0.994						0.956	
Satd. Flow (prot)	0	1863	0	0	1629	0	0	1785	0	0	1781	0
Flt Permitted					0.994						0.956	
Satd. Flow (perm)	0	1863	0	0	1629	0	0	1785	0	0	1781	0
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		258.7			208.6			93.0			99.7	
Travel Time (s)		18.6			15.0			6.7			7.2	
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	0	5	0	39	0	20	9	61	5	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	0	0	0	44	0	0	29	0	0	66	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 20.0%

ICU Level of Service A

Analysis Period (min) 15

HCM Unsignalized Intersection Capacity Analysis

218: West Street D & West Street C

Total (2041) - Scenario A - 25% Reduction

Timing Plan: AM Peak Hour

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔			↔			↔			↔	
Traffic Volume (veh/h)	0	0	0	5	0	36	0	18	8	56	5	0
Future Volume (Veh/h)	0	0	0	5	0	36	0	18	8	56	5	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)	0	0	0	5	0	39	0	20	9	61	5	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	39			0			32	49	0	48	30	20
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	39			0			32	49	0	48	30	20
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			100			100	98	99	93	99	100
cM capacity (veh/h)	1571			1623			969	840	1085	925	861	1058
Direction, Lane #	EB 1	WB 1	NB 1	SB 1								
Volume Total	0	44	29	66								
Volume Left	0	5	0	61								
Volume Right	0	39	9	0								
cSH	1700	1623	903	920								
Volume to Capacity	0.00	0.00	0.03	0.07								
Queue Length 95th (m)	0.0	0.1	0.7	1.7								
Control Delay (s)	0.0	0.8	9.1	9.2								
Lane LOS		A	A	A								
Approach Delay (s)	0.0	0.8	9.1	9.2								
Approach LOS		A	A									
Intersection Summary												
Average Delay			6.5									
Intersection Capacity Utilization		20.0%		ICU Level of Service					A			
Analysis Period (min)			15									

Lanes, Volumes, Timings

101: Trafalgar Rd & Lower Base Line

TT (2041) - Scenario A - 25% Reduction

Timing Plan: PM Peak Hour

	↖	→	↘	↙	←	↖	↗	↘	↙	↖	↗	↘	↙
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations	↖	↖	↖	↖	↖	↖	↖	↖	↖	↖	↖	↖	
Traffic Volume (vph)	54	240	77	338	678	368	473	2488	382	306	1703	123	
Future Volume (vph)	54	240	77	338	678	368	473	2488	382	306	1703	123	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	
Storage Length (m)	45.0		45.0	110.0		110.0	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	0.252			0.212			0.072			0.077			
Satd. Flow (perm)	469	3412	0	395	3352	0	134	5085	1583	143	5085	1583	
Right Turn on Red			Yes			Yes			Yes			Yes	
Satd. Flow (RTOR)		25			68				79			95	
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	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Adj. Flow (vph)	54	240	77	338	678	368	473	2488	382	306	1703	123	
Shared Lane Traffic (%)													
Lane Group Flow (vph)	54	317	0	338	1046	0	473	2488	382	306	1703	123	
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	pm+ov	pm+pt	NA	pm+ov	
Protected Phases	7	4		3	8		5	2	3	1	6	7	
Permitted Phases	4			8			2		2	6		6	

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Lanes, Volumes, Timings

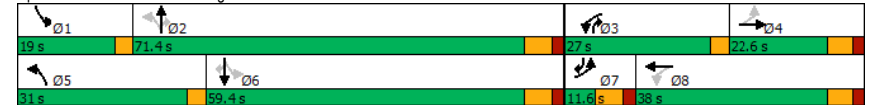
101: Trafalgar Rd & Lower Base Line

TT (2041) - Scenario A - 25% Reduction

Timing Plan: PM Peak Hour

	↖	→	↘	↙	←	↖	↗	↘	↙	↖	↗	↘	↙
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Detector Phase	7	4		3	8		5	2	3	1	6	7	
Switch Phase													
Minimum Initial (s)	5.0	10.0		7.0	10.0		5.0	25.0	7.0	7.0	25.0	5.0	
Minimum Split (s)	11.6	22.5		13.6	22.5		11.6	31.6	13.6	13.6	31.6	11.6	
Total Split (s)	11.6	22.6		27.0	38.0		31.0	71.4	27.0	19.0	59.4	11.6	
Total Split (%)	8.3%	16.1%		19.3%	27.1%		22.1%	51.0%	19.3%	13.6%	42.4%	8.3%	
Maximum Green (s)	5.0	16.4		24.0	31.8		28.0	64.8	24.0	16.0	52.8	5.0	
Yellow Time (s)	4.6	4.2		3.0	4.2		3.0	4.6	3.0	3.0	4.6	4.6	
All-Red Time (s)	2.0	2.0		0.0	2.0		0.0	2.0	0.0	0.0	2.0	2.0	
Lost Time Adjust (s)	1.0	-2.2		1.0	-2.2		1.0	-2.2	1.0	1.0	-2.2	-2.2	
Total Lost Time (s)	7.6	4.0		4.0	4.0		4.0	4.4	4.0	4.0	4.4	4.4	
Lead/Lag	Lead	Lag		Lead	Lag		Lead	Lag	Lead	Lag	Lead	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	0.2	0.2	5.0	3.0	
Recall Mode	None	None		None	None		None	Max	None	Max	Max	None	
Act Effct Green (s)	19.5	19.1		45.6	34.0		86.4	67.0	93.9	70.4	55.0	66.6	
Actuated g/C Ratio	0.14	0.14		0.33	0.24		0.62	0.48	0.67	0.50	0.39	0.48	
v/c Ratio	0.53	0.65		0.97	1.21		1.19	1.02	0.35	1.24	0.85	0.15	
Control Delay	59.7	59.9		81.2	146.9		145.4	60.3	8.5	175.6	44.0	6.5	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	
Total Delay	59.7	59.9		81.2	146.9		145.4	60.3	8.5	175.6	44.0	6.5	
LOS	E	E		F	F		F	E	A	F	D	A	
Approach Delay		59.9			130.8			66.4			60.7		
Approach LOS		E			F			E			E		
Intersection Summary													
Area Type:		Other											
Cycle Length: 140													
Actuated Cycle Length: 140													
Natural Cycle: 135													
Control Type: Semi Act-Uncooord													
Maximum v/c Ratio: 1.24													
Intersection Signal Delay: 76.7													
Intersection Capacity Utilization 116.4%													
Analysis Period (min) 15													

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

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Queues
101: Trafalgar Rd & Lower Base Line

TT (2041) - Scenario A - 25% Reduction
Timing Plan: PM Peak Hour

	EBL	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	54	317	338	1046	473	2488	382	306	1703	123
v/c Ratio	0.53	0.65	0.97	1.21	1.19	1.02	0.35	1.24	0.85	0.15
Control Delay	59.7	59.9	81.2	146.9	145.4	60.3	8.5	175.6	44.0	6.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	59.7	59.9	81.2	146.9	145.4	60.3	8.5	175.6	44.0	6.5
Queue Length 50th (m)	10.7	40.5	76.9	~175.8	~139.3	~263.9	31.7	~87.7	154.4	4.0
Queue Length 95th (m)	#22.1	56.6	#132.2	#217.6	#206.0	#290.1	47.9	#145.8	174.1	14.8
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)	102	485	354	865	398	2433	1093	246	1997	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	0.53	0.65	0.95	1.21	1.19	1.02	0.35	1.24	0.85	0.15

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.

HCM Signalized Intersection Capacity Analysis
101: Trafalgar Rd & Lower Base Line

TT (2041) - Scenario A - 25% Reduction
Timing Plan: PM Peak Hour

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰	↱	↱	↰	↱	↱	↰	↱	↱	↰	↱	↱
Traffic Volume (vph)	54	240	77	338	678	368	473	2488	382	306	1703	123
Future Volume (vph)	54	240	77	338	678	368	473	2488	382	306	1703	123
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	7.6	4.0		4.0	4.0		4.0	4.4	4.0	4.0	4.4	4.4
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	3410		1770	3352		1770	5085	1583	1770	5085	1583
Flt Permitted	0.25	1.00		0.21	1.00		0.07	1.00	1.00	0.08	1.00	1.00
Satd. Flow (perm)	469	3410		395	3352		134	5085	1583	144	5085	1583
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	54	240	77	338	678	368	473	2488	382	306	1703	123
RTOR Reduction (vph)	0	22	0	0	51	0	0	0	30	0	0	53
Lane Group Flow (vph)	54	295	0	338	995	0	473	2488	352	306	1703	70
Turn Type	pm+pt	NA		pm+pt	NA		pm+pt	NA	pm+ov	pm+pt	NA	pm+ov
Protected Phases	7	4		3	8		5	2	3	1	6	7
Permitted Phases	4			8			2		2	6		6
Actuated Green, G (s)	21.9	16.9		43.4	31.8		83.8	64.8	88.3	68.8	52.8	57.8
Effective Green, g (s)	19.9	19.1		42.4	34.0		82.8	67.0	86.3	66.8	55.0	62.2
Actuated g/C Ratio	0.14	0.14		0.30	0.24		0.59	0.48	0.62	0.48	0.39	0.44
Clearance Time (s)	6.6	6.2		3.0	6.2		3.0	6.6	3.0	3.0	6.6	6.6
Vehicle Extension (s)	3.0	5.0		0.2	5.0		3.0	5.0	0.2	0.2	5.0	3.0
Lane Grp Cap (vph)	103	465		340	814		394	2433	975	242	1997	753
v/s Ratio Prot	0.01	0.09		c0.16	c0.30		c0.23	0.49	0.06	0.13	0.33	0.00
v/s Ratio Perm	0.06			0.14			0.48		0.16	c0.47		0.04
v/c Ratio	0.52	0.64		0.99	1.22		1.20	1.02	0.36	1.26	0.85	0.09
Uniform Delay, d1	53.7	57.2		43.2	53.0		46.2	36.5	13.2	44.3	38.8	22.6
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	4.7	3.9		46.9	110.8		112.2	24.2	0.1	147.7	4.9	0.1
Delay (s)	58.4	61.1		90.1	163.8		158.4	60.7	13.3	192.0	43.7	22.6
Level of Service	E	E		F	F		F	E	B	F	D	C
Approach Delay (s)		60.7			145.8			69.1			63.7	
Approach LOS		E			F			E			E	

Intersection Summary

HCM 2000 Control Delay	81.8	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	1.24		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	20.0
Intersection Capacity Utilization	116.4%	ICU Level of Service	H
Analysis Period (min)	15		

c Critical Lane Group

Lanes, Volumes, Timings

TT (2041) - Scenario A - 25% Reduction

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

Timing Plan: PM Peak Hour

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔		↔	↔	↔	↔	↔			↔	↔
Traffic Volume (vph)	7	0	49	581	16	174	9	3157	0	0	2113	5
Future Volume (vph)	7	0	49	581	16	174	9	3157	0	0	2113	5
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	0.882				0.992	0.850						0.850
Flt Protected	0.994			0.950	0.957		0.950					
Satd. Flow (prot)	0	1633	0	1681	1609	1504	1770	5085	0	0	5085	1583
Flt Permitted	0.994			0.720	0.709		0.070					
Satd. Flow (perm)	0	1633	0	1274	1192	1504	130	5085	0	0	5085	1583
Right Turn on Red		Yes			Yes			Yes			Yes	
Satd. Flow (RTOR)		78			3	95						70
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	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	7	0	49	581	16	174	9	3157	0	0	2113	5
Shared Lane Traffic (%)				47%		10%						
Lane Group Flow (vph)	0	56	0	308	306	157	9	3157	0	0	2113	5
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	CI+Ex	CI+Ex		CI+Ex	CI+Ex	CI+Ex	CI+Ex	CI+Ex			CI+Ex	CI+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		CI+Ex			CI+Ex			CI+Ex				CI+Ex
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0				0.0
Turn Type	Split	NA		Perm	NA	Perm	Perm	NA		NA	Perm	Perm
Protected Phases	4	4			8			2			6	
Permitted Phases				8		8	2					6

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Lanes, Volumes, Timings

TT (2041) - Scenario A - 25% Reduction

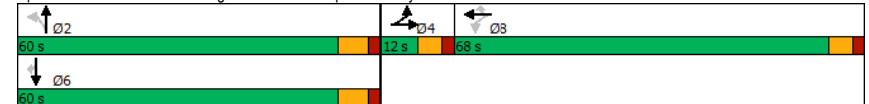
102: Trafalgar Rd & North Carpool Lot/Hwy 407 WB Off

Timing Plan: PM Peak Hour

	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)	6.0	6.0		7.0	7.0	7.0		20.0	20.0		20.0	20.0
Minimum Split (s)	12.0	12.0		22.5	22.5	22.5		27.0	27.0		27.0	27.0
Total Split (s)	12.0	12.0		68.0	68.0	68.0		60.0	60.0		60.0	60.0
Total Split (%)	8.6%	8.6%		48.6%	48.6%	48.6%		42.9%	42.9%		42.9%	42.9%
Maximum Green (s)	6.0	6.0		62.0	62.0	62.0		53.0	53.0		53.0	53.0
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		-3.0	-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 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)		8.2		36.4	36.4	36.4		57.2	57.2		57.2	57.2
Actuated g/C Ratio		0.07		0.33	0.33	0.33		0.52	0.52		0.52	0.52
v/c Ratio		0.29		0.74	0.78	0.28		0.14	1.20		0.81	0.01
Control Delay		9.8		44.0	47.4	12.4		27.1	123.1		28.2	0.0
Queue Delay		0.0		0.0	0.0	0.0		0.0	0.0		0.0	0.0
Total Delay		9.8		44.0	47.4	12.4		27.1	123.1		28.2	0.0
LOS	A			D	D	B		C	F		C	A
Approach Delay		9.8			38.9			122.8			28.1	
Approach LOS		A			D			F			C	

Intersection Summary	
Area Type:	Other
Cycle Length: 140	
Actuated Cycle Length: 110.9	
Natural Cycle: 140	
Control Type: Actuated-Uncoordinated	
Maximum v/c Ratio: 1.20	
Intersection Signal Delay: 78.4	Intersection LOS: E
Intersection Capacity Utilization 92.6%	ICU Level of Service F
Analysis Period (min) 15	

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



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Queues TT (2041) - Scenario A - 25% Reduction
102: Trafalgar Rd & North Carpool Lot/Hwy 407 WB Off Timing Plan: PM Peak Hour

	→	↖	←	↙	↗	↑	↓	↘
Lane Group	EBT	WBL	WBT	WBR	NBL	NBT	SBT	SBR
Lane Group Flow (vph)	56	308	306	157	9	3157	2113	5
v/c Ratio	0.29	0.74	0.78	0.28	0.14	1.20	0.81	0.01
Control Delay	9.8	44.0	47.4	12.4	27.1	123.1	28.2	0.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	9.8	44.0	47.4	12.4	27.1	123.1	28.2	0.0
Queue Length 50th (m)	0.0	62.4	65.2	9.8	1.0	~313.3	139.4	0.0
Queue Length 95th (m)	7.7	94.1	99.8	24.8	6.0	#422.1	#225.2	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)	192	751	703	925	66	2622	2622	850
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.29	0.41	0.44	0.17	0.14	1.20	0.81	0.01

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.

HCM Signalized Intersection Capacity Analysis TT (2041) - Scenario A - 25% Reduction
102: Trafalgar Rd & North Carpool Lot/Hwy 407 WB Off Timing Plan: PM Peak Hour

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	7	0	49	581	16	174	9	3157	0	0	2113	5
Future Volume (vph)	7	0	49	581	16	174	9	3157	0	0	2113	5
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)		1633		1681	1609	1504	1770	5085			5085	1583
Flt Permitted		0.99		0.72	0.71	1.00	0.07	1.00			1.00	1.00
Satd. Flow (perm)		1633		1275	1192	1504	130	5085			5085	1583
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	7	0	49	581	16	174	9	3157	0	0	2113	5
RTOR Reduction (vph)	0	53	0	0	2	64	0	0	0	0	0	2
Lane Group Flow (vph)	0	3	0	308	304	93	9	3157	0	0	2113	3
Turn Type	Split	NA		Perm	NA	Perm	Perm	NA			NA	Perm
Protected Phases	4	4			8		2				6	
Permitted Phases				8		8	2					6
Actuated Green, G (s)		4.6		34.4	34.4	34.4	54.1	54.1			54.1	54.1
Effective Green, g (s)		6.6		36.4	36.4	36.4	57.1	57.1			57.1	57.1
Actuated g/C Ratio		0.06		0.32	0.32	0.32	0.51	0.51			0.51	0.51
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)		96		414	387	488	66	2590			2590	806
v/s Ratio Prot		c0.00						c0.62			0.42	
v/s Ratio Perm				0.24	c0.26	0.06	0.07					0.00
v/c Ratio		0.03		0.74	0.79	0.19	0.14	1.22			0.82	0.00
Uniform Delay, d1		49.7		33.7	34.3	27.2	14.5	27.5			23.1	13.5
Progression Factor		1.00		1.00	1.00	1.00	1.00	1.00			1.00	1.00
Incremental Delay, d2		0.2		7.3	10.3	0.2	4.3	102.2			3.0	0.0
Delay (s)		49.9		41.0	44.6	27.5	18.8	129.7			26.1	13.5
Level of Service		D		D	D	C	B	F			C	B
Approach Delay (s)		49.9			39.7			129.4			26.0	
Approach LOS		D			D			F			C	

Intersection Summary

HCM 2000 Control Delay	81.5	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	1.00		
Actuated Cycle Length (s)	112.1	Sum of lost time (s)	14.0
Intersection Capacity Utilization	92.6%	ICU Level of Service	F
Analysis Period (min)	15		

c Critical Lane Group

Lanes, Volumes, Timings
103: Trafalgar Rd & Hwy 407 EB Off

TT (2041) - Scenario A - 25% Reduction
Timing Plan: PM Peak Hour

Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	↰	↱		↰↰↰	↰↰↰	
Traffic Volume (vph)	87	208	0	3566	2540	0
Future Volume (vph)	87	208	0	3566	2540	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)		2				
Link Speed (k/h)	50			50	50	
Link Distance (m)	554.6			251.9	363.6	
Travel Time (s)	39.9			18.1	26.2	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	87	208	0	3566	2540	0
Shared Lane Traffic (%)						
Lane Group Flow (vph)	87	208	0	3566	2540	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	CI+Ex	CI+Ex		CI+Ex	CI+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				CI+Ex	CI+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	

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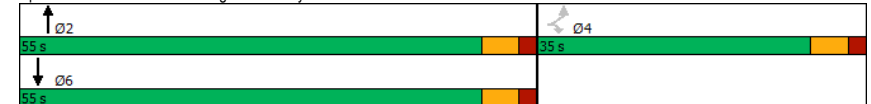
Lanes, Volumes, Timings
103: Trafalgar Rd & Hwy 407 EB Off

TT (2041) - Scenario A - 25% Reduction
Timing Plan: PM Peak Hour

Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Minimum Split (s)	24.0	24.0		24.0	24.0	
Total Split (s)	35.0	35.0		55.0	55.0	
Total Split (%)	38.9%	38.9%		61.1%	61.1%	
Maximum Green (s)	29.0	29.0		49.0	49.0	
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)	17.3	17.3		53.2	53.2	
Actuated g/C Ratio	0.22	0.22		0.68	0.68	
v/c Ratio	0.22	0.59		1.04	0.74	
Control Delay	25.1	33.8		40.8	10.6	
Queue Delay	0.0	0.0		0.0	0.0	
Total Delay	25.1	33.8		40.8	10.6	
LOS	C	C		D	B	
Approach Delay	31.2			40.8	10.6	
Approach LOS	C			D	B	

Intersection Summary	
Area Type:	Other
Cycle Length: 90	
Actuated Cycle Length: 78.6	
Natural Cycle: 90	
Control Type: Semi Act-Uncoord	
Maximum v/c Ratio: 1.04	
Intersection Signal Delay: 28.4	Intersection LOS: C
Intersection Capacity Utilization 80.4%	ICU Level of Service D
Analysis Period (min) 15	

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



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Queues
103: Trafalgar Rd & Hwy 407 EB Off

TT (2041) - Scenario A - 25% Reduction
Timing Plan: PM Peak Hour

	EBL	EBR	NBT	SBT
Lane Group	EBL	EBR	NBT	SBT
Lane Group Flow (vph)	87	208	3566	2540
v/c Ratio	0.22	0.59	1.04	0.74
Control Delay	25.1	33.8	40.8	10.6
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	25.1	33.8	40.8	10.6
Queue Length 50th (m)	10.1	26.2	~204.5	73.7
Queue Length 95th (m)	20.7	45.4	#268.0	120.5
Internal Link Dist (m)	530.6		227.9	339.6
Turn Bay Length (m)				
Base Capacity (vph)	699	626	3445	3445
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	0.12	0.33	1.04	0.74

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.

HCM Signalized Intersection Capacity Analysis
103: Trafalgar Rd & Hwy 407 EB Off

TT (2041) - Scenario A - 25% Reduction
Timing Plan: PM Peak Hour

	EBL	EBR	NBL	NBT	SBT	SBR
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	↰	↱		↰	↰	↰
Traffic Volume (vph)	87	208	0	3566	2540	0
Future Volume (vph)	87	208	0	3566	2540	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	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	87	208	0	3566	2540	0
RTOR Reduction (vph)	0	2	0	0	0	0
Lane Group Flow (vph)	87	206	0	3566	2540	0
Turn Type	Perm	Perm		NA	NA	
Protected Phases				2	6	
Permitted Phases	4	4				
Actuated Green, G (s)	15.3	15.3		51.2	51.2	
Effective Green, g (s)	17.3	17.3		53.2	53.2	
Actuated g/C Ratio	0.22	0.22		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)	390	348		3446	3446	
v/s Ratio Prot				c0.70	0.50	
v/s Ratio Perm	0.05	c0.13				
v/c Ratio	0.22	0.59		1.03	0.74	
Uniform Delay, d1	25.1	27.4		12.6	8.1	
Progression Factor	1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.3	2.7		25.3	1.4	
Delay (s)	25.4	30.1		37.9	9.6	
Level of Service	C	C		D	A	
Approach Delay (s)	28.7			37.9	9.6	
Approach LOS	C			D	A	

Intersection Summary

HCM 2000 Control Delay	26.3	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.95		
Actuated Cycle Length (s)	78.5	Sum of lost time (s)	10.0
Intersection Capacity Utilization	80.4%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

Lanes, Volumes, Timings

104: Trafalgar Rd & West Street A/East Street A

TT (2041) - Scenario A - 25% Reduction

Timing Plan: PM Peak Hour

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↩	↑	↪	↩	↑	↪	↩	↑	↪	↩	↑	↪
Traffic Volume (vph)	194	23	96	0	0	579	20	3458	190	309	2338	101
Future Volume (vph)	194	23	96	0	0	579	20	3458	190	309	2338	101
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	90.0		90.0	90.0		90.0
Storage Lanes	1		1	1		1	1		1	1		1
Taper Length (m)	75.0			75.0			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		
Satd. Flow (prot)	1770	1863	1583	1863	1863	1583	1770	5085	1583	1770	5085	1583
Flt Permitted	0.950						0.065			0.045		
Satd. Flow (perm)	1770	1863	1583	1863	1863	1583	121	5085	1583	84	5085	1583
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			96			44			140			101
Link Speed (k/h)	50					50			80			80
Link Distance (m)	216.0					205.9			233.3			251.9
Travel Time (s)	15.6					14.8			10.5			11.3
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	194	23	96	0	0	579	20	3458	190	309	2338	101
Shared Lane Traffic (%)												
Lane Group Flow (vph)	194	23	96	0	0	579	20	3458	190	309	2338	101
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	pm+pt	NA	Perm	pm+pt		pm+ov	pm+pt	NA	pm+ov	pm+pt	NA	pm+ov
Protected Phases	7	4		3	8	1	5	2	3	1	6	7
Permitted Phases	4		4	8		8	2		2	6		6

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Lanes, Volumes, Timings

104: Trafalgar Rd & West Street A/East Street A

TT (2041) - Scenario A - 25% Reduction

Timing Plan: PM Peak Hour

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector Phase	7	4	4	3	8	1	5	2	3	1	6	7
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)	9.5	24.0	24.0	9.5	24.0	11.0	9.5	24.0	9.5	11.0	24.0	9.5
Total Split (s)	10.0	24.3	24.3	9.7	24.0	25.0	9.5	91.0	9.7	25.0	106.5	10.0
Total Split (%)	6.7%	16.2%	16.2%	6.5%	16.0%	16.7%	6.3%	60.7%	6.5%	16.7%	71.0%	6.7%
Maximum Green (s)	7.0	18.3	18.3	6.7	18.0	22.0	6.5	85.0	6.7	22.0	100.5	7.0
Yellow Time (s)	3.0	4.0	4.0	3.0	4.0	3.0	3.0	4.0	3.0	3.0	4.0	3.0
All-Red Time (s)	0.0	2.0	2.0	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
Lost Time Adjust (s)	1.0	-2.0	-2.0	1.0	-2.0	-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	1.0	4.0	4.0	1.0	4.0	4.0	1.0
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lead	Lead	Lag	Lead	Lead	Lag	Lead
Lead-Lag Optimize?	Yes	Yes	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	3.0	3.0
Recall Mode	None	None	None	None	None	Max	None	C-Max	None	Max	C-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)	18.3	9.8	9.8			35.7	91.8	87.0	98.5	123.7	118.3	144.0
Actuated g/C Ratio	0.12	0.07	0.07			0.24	0.61	0.58	0.66	0.82	0.79	0.96
v/c Ratio	0.90	0.19	0.50			1.41	0.16	1.17	0.17	0.71	0.58	0.07
Control Delay	104.6	68.9	20.7			237.7	9.6	112.0	3.2	50.5	7.5	0.1
Queue Delay	0.0	0.0	0.0			0.0	0.0	0.2	0.0	0.0	0.3	0.0
Total Delay	104.6	68.9	20.7			237.7	9.6	112.2	3.2	50.5	7.8	0.1
LOS	F	E	C			F	A	F	A	D	A	A
Approach Delay		76.2			237.7			106.0			12.3	
Approach LOS		E			F			F			B	

Intersection Summary

Area Type: Other

Cycle Length: 150

Actuated Cycle Length: 150

Offset: 0 (0%), Referenced to phase 2:NBT and 6:SBTL, Start of Green

Natural Cycle: 150

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 1.41

Intersection Signal Delay: 80.0

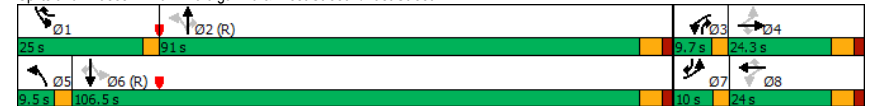
Intersection LOS: E

Intersection Capacity Utilization 123.4%

ICU Level of Service H

Analysis Period (min) 15

Splits and Phases: 104: Trafalgar Rd & West Street A/East Street A

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Queues
104: Trafalgar Rd & West Street A/East Street A

TT (2041) - Scenario A - 25% Reduction
Timing Plan: PM Peak Hour

	EBL	EBT	EBR	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group	EBL	EBT	EBR	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	194	23	96	579	20	3458	190	309	2338	101
v/c Ratio	0.90	0.19	0.50	1.41	0.16	1.17	0.17	0.71	0.58	0.07
Control Delay	104.6	68.9	20.7	237.7	9.6	112.0	3.2	50.5	7.5	0.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.2	0.0	0.0	0.3	0.0
Total Delay	104.6	68.9	20.7	237.7	9.6	112.2	3.2	50.5	7.8	0.1
Queue Length 50th (m)	57.3	6.6	0.0	~216.9	1.1	~442.1	4.9	67.2	94.1	0.0
Queue Length 95th (m)	#87.7	15.7	17.5	#302.7	2.6	#460.1	13.5	#112.4	121.5	0.6
Internal Link Dist (m)		192.0			209.3			227.9		
Turn Bay Length (m)	50.0		50.0	50.0	90.0		90.0	90.0		90.0
Base Capacity (vph)	215	252	297	410	135	2949	1099	436	4011	1524
Starvation Cap Reductn	0	0	0	0	0	297	0	0	886	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	0.90	0.09	0.32	1.41	0.15	1.30	0.17	0.71	0.75	0.07

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.

Queue shown is maximum after two cycles.

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

Queue shown is maximum after two cycles.

HCM Signalized Intersection Capacity Analysis
104: Trafalgar Rd & West Street A/East Street A

TT (2041) - Scenario A - 25% Reduction
Timing Plan: PM Peak Hour

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔
Traffic Volume (vph)	194	23	96	0	0	579	20	3458	190	309	2338	101
Future Volume (vph)	194	23	96	0	0	579	20	3458	190	309	2338	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			1.0	4.0	4.0	1.0	4.0	4.0	1.0
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	1.00	0.85			0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00			1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1770	1863	1583			1583	1770	5085	1583	1770	5085	1583
Flt Permitted	0.95	1.00	1.00			1.00	0.07	1.00	1.00	0.05	1.00	1.00
Satd. Flow (perm)	1770	1863	1583			1583	122	5085	1583	85	5085	1583
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	194	23	96	0	0	579	20	3458	190	309	2338	101
RTOR Reduction (vph)	0	0	90	0	0	34	0	0	52	0	0	8
Lane Group Flow (vph)	194	23	6	0	0	545	20	3458	138	309	2338	93

	pm+pt	NA	Perm	pm+pt	pm+ov	pm+pt	NA	pm+ov	pm+pt	NA	pm+ov
Turn Type	pm+pt	NA	Perm	pm+pt	pm+ov	pm+pt	NA	pm+ov	pm+pt	NA	pm+ov
Protected Phases	7	4		3	8	1	5	2	3	1	6
Permitted Phases	4		4	8		8	2		2	6	6
Actuated Green, G (s)	19.3	7.8	7.8			33.7	88.6	85.0	90.5	121.7	115.1
Effective Green, g (s)	18.3	9.8	9.8			35.7	86.6	87.0	94.5	120.7	117.1
Actuated g/C Ratio	0.12	0.07	0.07			0.24	0.58	0.58	0.63	0.80	0.78
Clearance Time (s)	3.0	6.0	6.0			3.0	3.0	6.0	3.0	3.0	6.0
Vehicle Extension (s)	3.0	3.0	3.0			3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	215	121	103			376	99	2949	997	435	3969
v/s Ratio Prot	c0.11	0.01				c0.34	0.00	c0.68	0.01	0.15	0.46
v/s Ratio Perm			0.00				0.11		0.08	0.42	0.05
v/c Ratio	0.90	0.19	0.06			1.45	0.20	1.17	0.14	0.71	0.59
Uniform Delay, d1	65.0	66.3	65.8			57.1	16.0	31.5	11.2	47.0	6.7
Progression Factor	1.00	1.00	1.00			1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	35.8	0.8	0.2			217.2	1.0	81.6	0.1	9.5	0.6
Delay (s)	100.8	67.1	66.0			274.4	17.0	113.1	11.3	56.4	7.3
Level of Service	F	E	E			F	B	F	B	E	A
Approach Delay (s)		87.6			274.4			107.3			12.6
Approach LOS		F			F			F			B

Intersection Summary

HCM 2000 Control Delay	84.1	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	1.25		
Actuated Cycle Length (s)	150.0	Sum of lost time (s)	16.0
Intersection Capacity Utilization	123.4%	ICU Level of Service	H
Analysis Period (min)	15		

c Critical Lane Group

Lanes, Volumes, Timings

105: Trafalgar Rd & William Halton Parkway

TT (2041) - Scenario A - 25% Reduction

Timing Plan: PM Peak Hour

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↩	↩↩	↩	↩	↩↩	↩	↩↩	↩↩	↩	↩↩	↩↩	↩
Traffic Volume (vph)	691	531	139	464	1496	547	561	2662	200	447	1818	427
Future Volume (vph)	691	531	139	464	1496	547	561	2662	200	447	1818	427
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	0.105			0.275			0.087			0.095		
Satd. Flow (perm)	196	3539	1583	512	3539	1583	162	5085	1583	177	5085	1583
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			139			190			83			244
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		212.9			205.0			193.0			233.3	
Travel Time (s)		15.3			14.8			13.9			16.8	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	691	531	139	464	1496	547	561	2662	200	447	1818	427
Shared Lane Traffic (%)												
Lane Group Flow (vph)	691	531	139	464	1496	547	561	2662	200	447	1818	427
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

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Lanes, Volumes, Timings

105: Trafalgar Rd & William Halton Parkway

TT (2041) - Scenario A - 25% Reduction

Timing Plan: PM Peak Hour

	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)	14.0	38.0	38.0	14.2	38.0	38.0	13.9	42.9	42.9	13.9	42.9	42.9
Total Split (s)	31.0	46.2	46.2	29.8	45.0	45.0	24.0	56.0	56.0	18.0	50.0	50.0
Total Split (%)	20.7%	30.8%	30.8%	19.9%	30.0%	30.0%	16.0%	37.3%	37.3%	12.0%	33.3%	33.3%
Maximum Green (s)	28.0	39.2	39.2	26.8	38.0	38.0	21.0	49.1	49.1	15.0	43.1	43.1
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)	0.0	3.3	3.3	0.0	3.3	3.3	0.0	2.3	2.3	0.0	2.3	2.3
Lost Time Adjust (s)	1.0	-3.0	-3.0	1.0	-3.0	-3.0	1.0	-2.9	-2.9	1.0	-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	Max	Max	Max	Max	Max	Max
Walk Time (s)		7.0	7.0		7.0	7.0		7.0	7.0		7.0	7.0
Flash Dont Walk (s)		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 Effect Green (s)	69.2	42.2	42.2	66.8	41.0	41.0	70.0	52.0	52.0	60.0	46.0	46.0
Actuated g/C Ratio	0.46	0.28	0.28	0.45	0.27	0.27	0.47	0.35	0.35	0.40	0.31	0.31
v/c Ratio	1.85	0.53	0.26	1.05	1.55	0.96	1.93	1.51	0.33	2.04	1.17	0.65
Control Delay	421.8	47.9	7.2	84.5	287.8	63.6	459.6	267.7	22.3	508.9	127.7	23.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	421.8	47.9	7.2	84.5	287.8	63.6	459.6	267.7	22.3	508.9	127.7	23.7
LOS	F	D	A	F	F	E	F	F	C	F	F	C
Approach Delay		233.6			201.2		284.8			174.5		
Approach LOS		F			F		F			F		

Intersection Summary

Area Type: Other

Cycle Length: 150

Actuated Cycle Length: 150

Natural Cycle: 140

Control Type: Semi Act-Uncoord

Maximum v/c Ratio: 2.04

Intersection Signal Delay: 227.1

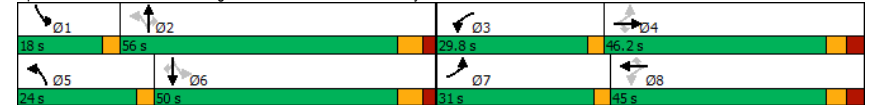
Intersection LOS: F

Intersection Capacity Utilization 169.2%

ICU Level of Service H

Analysis Period (min) 15

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

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Queues
105: Trafalgar Rd & William Halton Parkway

TT (2041) - Scenario A - 25% Reduction
Timing Plan: PM Peak Hour

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	691	531	139	464	1496	547	561	2662	200	447	1818	427
v/c Ratio	1.85	0.53	0.26	1.05	1.55	0.96	1.93	1.51	0.33	2.04	1.17	0.65
Control Delay	421.8	47.9	7.2	84.5	287.8	63.6	459.6	267.7	22.3	508.9	127.7	23.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	421.8	47.9	7.2	84.5	287.8	63.6	459.6	267.7	22.3	508.9	127.7	23.7
Queue Length 50th (m)	~292.2	69.7	0.0	~103.3	~324.2	113.4	~238.5	~396.9	24.4	~190.2	~231.4	47.0
Queue Length 95th (m)	#367.4	88.1	16.0	#171.4	#366.2	#186.8	#310.1	#420.9	45.4	#256.8	#260.0	85.2
Internal Link Dist (m)	188.9		181.0		150.0		150.0		169.0		209.3	
Turn Bay Length (m)	100.0		100.0		100.0		150.0		150.0		75.0	
Base Capacity (vph)	373	995	545	444	967	570	290	1762	603	219	1559	654
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	1.85	0.53	0.26	1.05	1.55	0.96	1.93	1.51	0.33	2.04	1.17	0.65

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.

HCM Signalized Intersection Capacity Analysis
105: Trafalgar Rd & William Halton Parkway

TT (2041) - Scenario A - 25% Reduction
Timing Plan: PM Peak Hour

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰	↰↰	↰	↰	↰↰	↰	↰	↰↰	↰	↰	↰↰	↰
Traffic Volume (vph)	691	531	139	464	1496	547	561	2662	200	447	1818	427
Future Volume (vph)	691	531	139	464	1496	547	561	2662	200	447	1818	427
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	0.10	1.00	1.00	0.28	1.00	1.00	0.09	1.00	1.00	0.10	1.00	1.00
Satd. Flow (perm)	195	3539	1583	512	3539	1583	162	5085	1583	177	5085	1583
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	691	531	139	464	1496	547	561	2662	200	447	1818	427
RTOR Reduction (vph)	0	0	100	0	0	138	0	0	54	0	0	169
Lane Group Flow (vph)	691	531	39	464	1496	409	561	2662	146	447	1818	258
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)	67.2	39.2	39.2	64.8	38.0	38.0	67.1	49.1	49.1	58.1	43.1	43.1
Effective Green, g (s)	65.2	42.2	42.2	62.8	41.0	41.0	66.1	52.0	52.0	56.1	46.0	46.0
Actuated g/C Ratio	0.43	0.28	0.28	0.42	0.27	0.27	0.44	0.35	0.35	0.37	0.31	0.31
Clearance Time (s)	3.0	7.0	7.0	3.0	7.0	7.0	3.0	6.9	6.9	3.0	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	995	445	430	967	432	285	1762	548	214	1559	485
v/s Ratio Prot	c0.34	0.15		0.19	0.42		c0.26	0.52		0.19	0.36	
v/s Ratio Perm	c0.48		0.02	0.27		0.26	0.60		0.09	c0.58		0.16
v/c Ratio	1.88	0.53	0.09	1.08	1.55	0.95	1.97	1.51	0.27	2.09	1.17	0.53
Uniform Delay, d1	48.0	45.6	39.7	36.4	54.5	53.4	48.3	49.0	35.3	44.1	52.0	43.1
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	405.2	1.0	0.2	66.3	251.3	30.6	448.3	232.8	1.2	505.6	82.1	4.1
Delay (s)	453.1	46.6	39.9	102.6	305.8	84.0	496.5	281.8	36.5	549.7	134.1	47.2
Level of Service	F	D	D	F	F	F	F	F	D	F	F	D
Approach Delay (s)	252.3			219.8			302.7			189.3		
Approach LOS	F			F			F			F		

Intersection Summary

HCM 2000 Control Delay	244.4	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	1.86		
Actuated Cycle Length (s)	150.0	Sum of lost time (s)	16.0
Intersection Capacity Utilization	169.2%	ICU Level of Service	H
Analysis Period (min)	15		
c Critical Lane Group			

Lanes, Volumes, Timings TT (2041) - Scenario A - 25% Reduction
106: Trafalgar Rd & Burhamthorpe Rd/Burnhamthorpe Rd Timing Plan: PM Peak Hour

	←	→	↖	↗	←	→	↖	↗	←	→	↖	↗
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖	↖	↖	↖	↖	↖	↖	↖	↖	↖	↖	↖
Traffic Volume (vph)	170	339	18	135	297	545	100	2397	145	329	1581	276
Future Volume (vph)	170	339	18	135	297	545	100	2397	145	329	1581	276
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	1.00	1.00	1.00	1.00	1.00	1.00	0.91	1.00	1.00	0.91	1.00
Frt		0.992			0.903				0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1770	1848	0	1770	1682	0	1770	5085	1583	1770	5085	1583
Flt Permitted	0.137			0.246			0.105			0.095		
Satd. Flow (perm)	255	1848	0	458	1682	0	196	5085	1583	177	5085	1583
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		2			87				99			276
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	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	170	339	18	135	297	545	100	2397	145	329	1581	276
Shared Lane Traffic (%)												
Lane Group Flow (vph)	170	357	0	135	842	0	100	2397	145	329	1581	276
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	pm+ov	pm+pt	NA	pm+ov
Protected Phases	7	4		3	8		5	2	3	1	6	7
Permitted Phases	4			8			2		2	6		6

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Lanes, Volumes, Timings TT (2041) - Scenario A - 25% Reduction
106: Trafalgar Rd & Burhamthorpe Rd/Burnhamthorpe Rd Timing Plan: PM Peak Hour

	←	→	↖	↗	←	→	↖	↗	←	→	↖	↗
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector Phase	7	4		3	8		5	2	3	1	6	7
Switch Phase												
Minimum Initial (s)	5.0	10.0		5.0	10.0		5.0	20.0	5.0	7.0	20.0	5.0
Minimum Split (s)	9.5	24.0		9.5	24.0		9.5	26.0	9.5	11.5	26.0	9.5
Total Split (s)	10.0	36.2		11.8	38.0		9.6	45.0	11.8	17.0	52.4	10.0
Total Split (%)	9.1%	32.9%		10.7%	34.5%		8.7%	40.9%	10.7%	15.5%	47.6%	9.1%
Maximum Green (s)	7.0	30.2		8.8	32.0		6.6	39.0	8.8	14.0	46.4	7.0
Yellow Time (s)	3.0	3.7		3.0	3.7		3.0	4.6	3.0	3.0	4.6	3.0
All-Red Time (s)	0.0	2.3		0.0	2.3		0.0	1.4	0.0	0.0	1.4	0.0
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	1.0	4.0	4.0	1.0
Lead/Lag	Lead	Lag		Lead	Lag		Lead	Lag	Lead	Lag	Lag	Lead
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	Max	None		Max	None		Max	Max	Max	Max	Max	Max
Act Effct Green (s)	38.2	32.2		41.8	34.0		46.6	41.0	55.8	58.0	48.4	61.4
Actuated g/C Ratio	0.35	0.29		0.38	0.31		0.42	0.37	0.51	0.53	0.44	0.56
v/c Ratio	0.99	0.66		0.51	1.45		0.61	1.26	0.17	1.17	0.71	0.27
Control Delay	96.8	40.7		28.8	241.0		32.6	155.1	5.8	136.1	27.2	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	96.8	40.7		28.8	241.0		32.6	155.1	5.8	136.1	27.2	2.1
LOS	F	D		C	F		C	F	A	F	C	A
Approach Delay		58.8			211.7			142.2			40.4	
Approach LOS		E			F			F			D	

Intersection Summary

Area Type: Other

Cycle Length: 110

Actuated Cycle Length: 110

Natural Cycle: 120

Control Type: Semi Act-Uncooord

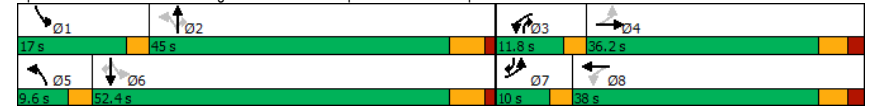
Maximum v/c Ratio: 1.45

Intersection Signal Delay: 110.9

Intersection Capacity Utilization 136.4%

Analysis Period (min) 15

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



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Queues
106: Trafalgar Rd & Burhamthorpe Rd/Burnhamthorpe Rd

TT (2041) - Scenario A - 25% Reduction
Timing Plan: PM Peak Hour

	EBL	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	170	357	135	842	100	2397	145	329	1581	276
v/c Ratio	0.99	0.66	0.51	1.45	0.61	1.26	0.17	1.17	0.71	0.27
Control Delay	96.8	40.7	28.8	241.0	32.6	155.1	5.8	136.1	27.2	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	96.8	40.7	28.8	241.0	32.6	155.1	5.8	136.1	27.2	2.1
Queue Length 50th (m)	23.5	65.8	18.3	~232.3	10.2	~234.5	4.8	~67.0	97.2	0.0
Queue Length 95th (m)	#62.5	97.1	31.4	#305.2	#24.3	#262.9	14.6	#121.4	114.3	10.8
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	
Base Capacity (vph)	171	542	267	580	163	1895	851	281	2237	1005
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	0.99	0.66	0.51	1.45	0.61	1.26	0.17	1.17	0.71	0.27

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.

HCM Signalized Intersection Capacity Analysis
106: Trafalgar Rd & Burhamthorpe Rd/Burnhamthorpe Rd

TT (2041) - Scenario A - 25% Reduction
Timing Plan: PM Peak Hour

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔
Traffic Volume (vph)	170	339	18	135	297	545	100	2397	145	329	1581	276
Future Volume (vph)	170	339	18	135	297	545	100	2397	145	329	1581	276
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	1.0	4.0	4.0	1.0
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	0.99		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	1849		1770	1682		1770	5085	1583	1770	5085	1583
Flt Permitted	0.14	1.00		0.25	1.00		0.11	1.00	1.00	0.10	1.00	1.00
Satd. Flow (perm)	255	1849		459	1682		196	5085	1583	177	5085	1583
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	170	339	18	135	297	545	100	2397	145	329	1581	276
RTOR Reduction (vph)	0	1	0	0	60	0	0	0	52	0	0	132
Lane Group Flow (vph)	170	356	0	135	782	0	100	2397	93	329	1581	144
Turn Type	pm+pt	NA		pm+pt	NA		pm+pt	NA	pm+ov	pm+pt	NA	pm+ov
Protected Phases	7	4		3	8		5	2	3	1	6	7
Permitted Phases	4			8			2		2	6		6
Actuated Green, G (s)	37.2	30.2		40.8	32.0		45.6	39.0	47.8	56.0	46.4	53.4
Effective Green, g (s)	35.2	32.2		38.8	34.0		43.6	41.0	51.8	55.0	48.4	57.4
Actuated g/C Ratio	0.32	0.29		0.35	0.31		0.40	0.37	0.47	0.50	0.44	0.52
Clearance Time (s)	3.0	6.0		3.0	6.0		3.0	6.0	3.0	3.0	6.0	3.0
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)	164	541		254	519		157	1895	745	276	2237	826
v/s Ratio Prot	c0.06	0.19		0.04	c0.46		0.03	c0.47	c0.01	c0.14	0.31	0.01
v/s Ratio Perm	0.27			0.15			0.22		0.05	0.45		0.08
v/c Ratio	1.04	0.66		0.53	1.51		0.64	1.26	0.12	1.19	0.71	0.17
Uniform Delay, d1	35.2	34.1		26.5	38.0		23.2	34.5	16.4	32.9	25.0	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	80.3	2.9		2.1	237.8		18.1	123.6	0.3	116.5	1.9	0.5
Delay (s)	115.5	36.9		28.6	275.8		41.3	158.1	16.7	149.3	26.9	14.3
Level of Service	F	D		C	F		D	F	B	F	C	B
Approach Delay (s)		62.3			241.7			145.9			43.8	
Approach LOS		E			F			F			D	

Intersection Summary

HCM 2000 Control Delay	118.5	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	1.33		
Actuated Cycle Length (s)	110.0	Sum of lost time (s)	16.0
Intersection Capacity Utilization	136.4%	ICU Level of Service	H
Analysis Period (min)	15		

c Critical Lane Group

Lanes, Volumes, Timings
202: Trafalgar Rd & East Street C

TT (2041) - Scenario A - 25% Reduction
Timing Plan: PM Peak Hour

	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations		↗		↗↗↗	↗↗↗	↗
Traffic Volume (vph)	0	145	0	3112	2041	177
Future Volume (vph)	0	145	0	3112	2041	177
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (m)	0.0	0.0	0.0			90.0
Storage Lanes	0	1	0			1
Taper Length (m)	7.5		7.5			
Lane Util. Factor	1.00	1.00	1.00	0.91	0.91	1.00
Frt		0.865				0.850
Flt Protected						
Satd. Flow (prot)	0	1611	0	5085	5085	1583
Flt Permitted						
Satd. Flow (perm)	0	1611	0	5085	5085	1583
Link Speed (k/h)	50			50	50	
Link Distance (m)	205.4			92.4	193.0	
Travel Time (s)	14.8			6.7	13.9	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	0	145	0	3112	2041	177
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	145	0	3112	2041	177
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	0.0			3.6	3.6	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	4.8			4.8	4.8	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)	25	15	25			15
Sign Control	Stop			Free	Free	
Intersection Summary						
Area Type:	Other					
Control Type:	Unsignalized					
Intersection Capacity Utilization 63.5%	ICU Level of Service B					
Analysis Period (min) 15						

HCM Unsignalized Intersection Capacity Analysis
202: Trafalgar Rd & East Street C

TT (2041) - Scenario A - 25% Reduction
Timing Plan: PM Peak Hour

Movement	EBL	EBR	NBL	NBT	SBT	SBR		
Lane Configurations		↗		↗↗↗	↗↗↗	↗		
Traffic Volume (veh/h)	0	145	0	3112	2041	177		
Future Volume (Veh/h)	0	145	0	3112	2041	177		
Sign Control	Stop			Free	Free			
Grade	0%			0%	0%			
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00		
Hourly flow rate (vph)	0	145	0	3112	2041	177		
Pedestrians								
Lane Width (m)								
Walking Speed (m/s)								
Percent Blockage								
Right turn flare (veh)								
Median type				None	None			
Median storage veh								
Upstream signal (m)				263	193			
pX, platoon unblocked	0.79	0.70	0.70					
vC, conflicting volume	3078	680	2218					
vC1, stage 1 conf vol								
vC2, stage 2 conf vol								
vCu, unblocked vol	191	0	1260					
tC, single (s)	6.8	6.9	4.1					
tC, 2 stage (s)								
tF (s)	3.5	3.3	2.2					
p0 queue free %	100	81	100					
cM capacity (veh/h)	618	764	386					
Direction, Lane #	EB 1	NB 1	NB 2	NB 3	SB 1	SB 2	SB 3	SB 4
Volume Total	145	1037	1037	1037	680	680	680	177
Volume Left	0	0	0	0	0	0	0	0
Volume Right	145	0	0	0	0	0	0	177
cSH	764	1700	1700	1700	1700	1700	1700	1700
Volume to Capacity	0.19	0.61	0.61	0.61	0.40	0.40	0.40	0.10
Queue Length 95th (m)	5.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Control Delay (s)	10.8	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Lane LOS	B							
Approach Delay (s)	10.8	0.0			0.0			
Approach LOS	B							
Intersection Summary								
Average Delay			0.3					
Intersection Capacity Utilization			63.5%		ICU Level of Service			B
Analysis Period (min)			15					

Lanes, Volumes, Timings
203: East Street D & East Street A

TT (2041) - Scenario A - 25% Reduction
Timing Plan: PM Peak Hour

						
Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	112	342	0	186	233	0
Future Volume (vph)	112	342	0	186	233	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	0.850					
Flt Protected			0.950			
Satd. Flow (prot)	1863	1583	0	1863	1770	0
Flt Permitted			0.950			
Satd. Flow (perm)	1863	1583	0	1863	1770	0
Link Speed (k/h)	50		50		50	
Link Distance (m)	205.9		205.1		113.3	
Travel Time (s)	14.8		14.8		8.2	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	112	342	0	186	233	0
Shared Lane Traffic (%)						
Lane Group Flow (vph)	112	342	0	186	233	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
Sign Control	Free		Free		Stop	
Intersection Summary						
Area Type:	Other					
Control Type:	Unsignalized					
Intersection Capacity Utilization	37.6%			ICU Level of Service A		
Analysis Period (min)	15					

HCM Unsignalized Intersection Capacity Analysis
203: East Street D & East Street A

TT (2041) - Scenario A - 25% Reduction
Timing Plan: PM Peak Hour

	→	↖	↗	←	↖	↗
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑	↑		↑	↑	
Traffic Volume (veh/h)	112	342	0	186	233	0
Future Volume (Veh/h)	112	342	0	186	233	0
Sign Control	Free			Free		Stop
Grade	0%			0%		0%
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	112	342	0	186	233	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)	206					
pX, platoon unblocked						
vC, conflicting volume			454		298	112
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			454		298	112
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			100		66	100
cM capacity (veh/h)			1107		693	941
Direction, Lane #	EB 1	EB 2	WB 1	NB 1		
Volume Total	112	342	186	233		
Volume Left	0	0	0	233		
Volume Right	0	342	0	0		
cSH	1700	1700	1107	693		
Volume to Capacity	0.07	0.20	0.00	0.34		
Queue Length 95th (m)	0.0	0.0	0.0	11.1		
Control Delay (s)	0.0	0.0	0.0	12.8		
Lane LOS				B		
Approach Delay (s)	0.0		0.0	12.8		
Approach LOS				B		
Intersection Summary						
Average Delay			3.4			
Intersection Capacity Utilization			37.6%		ICU Level of Service	A
Analysis Period (min)			15			

Lanes, Volumes, Timings
204: East Street E & East Street A

TT (2041) - Scenario A - 25% Reduction
Timing Plan: PM Peak Hour

	→	↖	↗	←	↖	↗
Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↖			↖	↖	↖
Traffic Volume (vph)	0	63	0	0	201	0
Future Volume (vph)	0	63	0	0	201	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.865					
Flt Protected					0.950	
Satd. Flow (prot)	1611	0	0	1863	1770	0
Flt Permitted					0.950	
Satd. Flow (perm)	1611	0	0	1863	1770	0
Link Speed (k/h)	50			50	50	
Link Distance (m)	205.1			192.2	115.1	
Travel Time (s)	14.8			13.8	8.3	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	0	63	0	0	201	0
Shared Lane Traffic (%)						
Lane Group Flow (vph)	63	0	0	0	201	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	0.0			0.0	3.6	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	4.8			4.8	4.8	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)		15	25		25	15
Sign Control	Free			Free	Stop	
Intersection Summary						
Area Type:	Other					
Control Type:	Unsignalized					
Intersection Capacity Utilization 21.7%	ICU Level of Service A					
Analysis Period (min) 15						

HCM Unsignalized Intersection Capacity Analysis
204: East Street E & East Street A

TT (2041) - Scenario A - 25% Reduction
Timing Plan: PM Peak Hour

	→	↖	↗	←	↖	↗
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↖			↖	↖	↖
Traffic Volume (veh/h)	0	63	0	0	201	0
Future Volume (Veh/h)	0	63	0	0	201	0
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	0	63	0	0	201	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			63		32	32
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			63		32	32
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			100		80	100
cM capacity (veh/h)			1540		982	1043
Direction, Lane #	EB 1	WB 1	NB 1			
Volume Total	63	0	201			
Volume Left	0	0	201			
Volume Right	63	0	0			
cSH	1700	1700	982			
Volume to Capacity	0.04	0.00	0.20			
Queue Length 95th (m)	0.0	0.0	5.7			
Control Delay (s)	0.0	0.0	9.6			
Lane LOS			A			
Approach Delay (s)	0.0	0.0	9.6			
Approach LOS			A			
Intersection Summary						
Average Delay			7.3			
Intersection Capacity Utilization			21.7%		ICU Level of Service	A
Analysis Period (min)			15			

Lanes, Volumes, Timings
205: East Street F & East Street A

TT (2041) - Scenario A - 25% Reduction
Timing Plan: PM Peak Hour

						
Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
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	1.00	1.00	1.00
Frt						
Flt Protected						
Satd. Flow (prot)	1863	0	0	1863	1863	0
Flt Permitted						
Satd. Flow (perm)	1863	0	0	1863	1863	0
Link Speed (k/h)	50			50	50	
Link Distance (m)	192.2			209.4	115.6	
Travel Time (s)	13.8			15.1	8.3	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
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)	0.0			0.0	3.6	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	4.8			4.8	4.8	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)		15	25		25	15
Sign Control	Free			Free	Stop	
Intersection Summary						
Area Type:	Other					
Control Type:	Unsignalized					
Intersection Capacity Utilization	0.0%			ICU Level of Service A		
Analysis Period (min)	15					

HCM Unsignalized Intersection Capacity Analysis
205: East Street F & East Street A

TT (2041) - Scenario A - 25% Reduction
Timing Plan: PM Peak Hour

	→	↖	↗	←	↖	↗
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↖			↖	↖	
Traffic Volume (veh/h)	0	0	0	0	0	0
Future Volume (Veh/h)	0	0	0	0	0	0
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	0	0	0	0	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			0		0	0
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			0		0	0
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			100		100	100
cM capacity (veh/h)			1623		1023	1085
Direction, Lane #	EB 1	WB 1	NB 1			
Volume Total	0	0	0			
Volume Left	0	0	0			
Volume Right	0	0	0			
cSH	1700	1700	1700			
Volume to Capacity	0.00	0.00	0.00			
Queue Length 95th (m)	0.0	0.0	0.0			
Control Delay (s)	0.0	0.0	0.0			
Lane LOS			A			
Approach Delay (s)	0.0	0.0	0.0			
Approach LOS			A			
Intersection Summary						
Average Delay			0.0			
Intersection Capacity Utilization			0.0%		ICU Level of Service	A
Analysis Period (min)			15			

Lanes, Volumes, Timings
206: East Street D & East Street B

TT (2041) - Scenario A - 25% Reduction
Timing Plan: PM Peak Hour

	←	←	↑	↗	↘	↓
Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	↰		↰			↰
Traffic Volume (vph)	68	6	115	14	15	265
Future Volume (vph)	68	6	115	14	15	265
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	0.989		0.985			
Flt Protected	0.956					0.997
Satd. Flow (prot)	1761	0	1835	0	0	1857
Flt Permitted	0.956					0.997
Satd. Flow (perm)	1761	0	1835	0	0	1857
Link Speed (k/h)	50		50			50
Link Distance (m)	203.4		120.6			113.3
Travel Time (s)	14.6		8.7			8.2
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	68	6	115	14	15	265
Shared Lane Traffic (%)						
Lane Group Flow (vph)	74	0	129	0	0	280
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 35.8% ICU Level of Service A

Analysis Period (min) 15

HCM Unsignalized Intersection Capacity Analysis
206: East Street D & East Street B

TT (2041) - Scenario A - 25% Reduction
Timing Plan: PM Peak Hour

	←	←	↑	↗	↘	↓
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	↰		↰			↰
Traffic Volume (veh/h)	68	6	115	14	15	265
Future Volume (Veh/h)	68	6	115	14	15	265
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	68	6	115	14	15	265
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	417	122			129	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	417	122			129	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	88	99			99	
cM capacity (veh/h)	586	929			1457	

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	74	129	280
Volume Left	68	0	15
Volume Right	6	14	0
cSH	604	1700	1457
Volume to Capacity	0.12	0.08	0.01
Queue Length 95th (m)	3.1	0.0	0.2
Control Delay (s)	11.8	0.0	0.5
Lane LOS	B		A
Approach Delay (s)	11.8	0.0	0.5
Approach LOS	B		

Intersection Summary

Average Delay	2.1		
Intersection Capacity Utilization	35.8%	ICU Level of Service	A
Analysis Period (min)	15		

Lanes, Volumes, Timings
207: East Street E & East Street B

TT (2041) - Scenario A - 25% Reduction
Timing Plan: PM Peak Hour

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔			↔			↔			↔	
Traffic Volume (vph)	79	0	86	0	0	0	152	15	0	0	63	0
Future Volume (vph)	79	0	86	0	0	0	152	15	0	0	63	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	0.930											
Flt Protected	0.977											
Satd. Flow (prot)	0	1693	0	0	1863	0	0	1781	0	0	1863	0
Flt Permitted	0.977											
Satd. Flow (perm)	0	1693	0	0	1863	0	0	1781	0	0	1863	0
Link Speed (k/h)	50											
Link Distance (m)	203.4											
Travel Time (s)	14.6											
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	79	0	86	0	0	0	152	15	0	0	63	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	165	0	0	0	0	0	167	0	0	63	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											
Link Offset(m)	0.0											
Crosswalk Width(m)	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											

Intersection Summary

Area Type: Other

Control Type: Unsignalized

Intersection Capacity Utilization 32.2% ICU Level of Service A

Analysis Period (min) 15

HCM Unsignalized Intersection Capacity Analysis
207: East Street E & East Street B

TT (2041) - Scenario A - 25% Reduction
Timing Plan: PM Peak Hour

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Movement		↔			↔			↔			↔	
Lane Configurations		↔			↔			↔			↔	
Traffic Volume (veh/h)	79	0	86	0	0	0	152	15	0	0	63	0
Future Volume (Veh/h)	79	0	86	0	0	0	152	15	0	0	63	0
Sign Control	Stop											
Grade	0%											
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	79	0	86	0	0	0	152	15	0	0	63	0
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type	None											
Median storage (veh)												
Upstream signal (m)	121											
pX, platoon unblocked												
vC, conflicting volume	382	382	63	468	382	15	63			15		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	382	382	63	468	382	15	63			15		
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 %	85	100	91	100	100	100	90			100		
cM capacity (veh/h)	532	497	1002	427	497	1065	1540			1603		

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	165	0	167	63
Volume Left	79	0	152	0
Volume Right	86	0	0	0
cSH	704	1700	1540	1603
Volume to Capacity	0.23	0.00	0.10	0.00
Queue Length 95th (m)	6.8	0.0	2.5	0.0
Control Delay (s)	11.7	0.0	7.0	0.0
Lane LOS	B	A	A	
Approach Delay (s)	11.7	0.0	7.0	0.0
Approach LOS	B	A		

Intersection Summary

Average Delay 7.8
Intersection Capacity Utilization 32.2% ICU Level of Service A
Analysis Period (min) 15

Lanes, Volumes, Timings
208: East Street F & East Street B

TT (2041) - Scenario A - 25% Reduction
Timing Plan: PM Peak Hour

	EBL	EBR	NBL	NBT	SBT	SBR
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	1.00	1.00	1.00
Flt						
Flt Protected						
Satd. Flow (prot)	1863	0	0	1863	1863	0
Flt Permitted						
Satd. Flow (perm)	1863	0	0	1863	1863	0
Link Speed (k/h)	50			50	50	
Link Distance (m)	193.8			120.1	115.6	
Travel Time (s)	14.0			8.6	8.3	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
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			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	25			15
Sign Control	Stop			Free	Free	

Intersection Summary

Area Type: Other
Control Type: Unsignalized
Intersection Capacity Utilization 0.0% ICU Level of Service A
Analysis Period (min) 15

HCM Unsignalized Intersection Capacity Analysis
208: East Street F & East Street B

TT (2041) - Scenario A - 25% Reduction
Timing Plan: PM Peak Hour

	EBL	EBR	NBL	NBT	SBT	SBR
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	↔	↔	↔	↔	↔	↔
Traffic Volume (veh/h)	0	0	0	0	0	0
Future Volume (Veh/h)	0	0	0	0	0	0
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	0	0	0	0	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	0	0	0			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	0	0	0			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	100	100	100			
cM capacity (veh/h)	1023	1085	1623			

Direction, Lane #	EB 1	NB 1	SB 1
Volume Total	0	0	0
Volume Left	0	0	0
Volume Right	0	0	0
cSH	1700	1700	1700
Volume to Capacity	0.00	0.00	0.00
Queue Length 95th (m)	0.0	0.0	0.0
Control Delay (s)	0.0	0.0	0.0
Lane LOS	A		
Approach Delay (s)	0.0	0.0	0.0
Approach LOS	A		

Intersection Summary

Average Delay 0.0
Intersection Capacity Utilization 0.0% ICU Level of Service A
Analysis Period (min) 15

Lanes, Volumes, Timings
209: William Halton Parkway & East Street D

TT (2041) - Scenario A - 25% Reduction
Timing Plan: PM Peak Hour

	↖	→	←	↗	↘	↙
Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↕↕	↕↕	↗		↗
Traffic Volume (vph)	0	1185	2215	53	0	292
Future Volume (vph)	0	1185	2215	53	0	292
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (m)	0.0			50.0	0.0	0.0
Storage Lanes	0			1	0	1
Taper Length (m)	7.5				7.5	
Lane Util. Factor	1.00	0.95	0.95	1.00	1.00	1.00
Frt				0.850		0.865
Flt Protected						
Satd. Flow (prot)	0	3539	3539	1583	0	1611
Flt Permitted						
Satd. Flow (perm)	0	3539	3539	1583	0	1611
Link Speed (k/h)		50	50		50	
Link Distance (m)		205.0	201.5		120.6	
Travel Time (s)		14.8	14.5		8.7	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	0	1185	2215	53	0	292
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	1185	2215	53	0	292
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(m)		3.6	3.6		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	25	15
Sign Control		Free	Free		Stop	
Intersection Summary						
Area Type:	Other					
Control Type:	Unsignalized					
Intersection Capacity Utilization 86.0%	ICU Level of Service E					
Analysis Period (min) 15						

HCM Unsignalized Intersection Capacity Analysis
209: William Halton Parkway & East Street D

TT (2041) - Scenario A - 25% Reduction
Timing Plan: PM Peak Hour

	↖	→	←	↗	↘	↙
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↕↕	↕↕	↗		↗
Traffic Volume (veh/h)	0	1185	2215	53	0	292
Future Volume (Veh/h)	0	1185	2215	53	0	292
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	0	1185	2215	53	0	292
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		None	None			
Median storage (veh)						
Upstream signal (m)		205	201			
pX, platoon unblocked	0.38				0.44	0.38
vC, conflicting volume	2268				2808	1108
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1073				1309	0
tC, single (s)	4.1				6.8	6.9
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	100				100	29
cM capacity (veh/h)	245				67	412
Direction, Lane #	EB 1	EB 2	WB 1	WB 2	WB 3	SB 1
Volume Total	592	592	1108	1108	53	292
Volume Left	0	0	0	0	0	0
Volume Right	0	0	0	0	53	292
cSH	1700	1700	1700	1700	1700	412
Volume to Capacity	0.35	0.35	0.65	0.65	0.03	0.71
Queue Length 95th (m)	0.0	0.0	0.0	0.0	0.0	40.3
Control Delay (s)	0.0	0.0	0.0	0.0	0.0	32.4
Lane LOS						D
Approach Delay (s)	0.0		0.0			32.4
Approach LOS						D
Intersection Summary						
Average Delay			2.5			
Intersection Capacity Utilization			86.0%		ICU Level of Service	E
Analysis Period (min)			15			

Lanes, Volumes, Timings

210: William Halton Parkway & East Street E

TT (2041) - Scenario A - 25% Reduction

Timing Plan: PM Peak Hour

	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations	↩	↩↩	↩↩	↩	↩	↩
Traffic Volume (vph)	148	1024	2222	26	103	46
Future Volume (vph)	148	1024	2222	26	103	46
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (m)	90.0			50.0	0.0	0.0
Storage Lanes	1			1	1	0
Taper Length (m)	100.0				7.5	
Lane Util. Factor	1.00	*0.95	*0.95	1.00	1.00	1.00
Frt				0.850	0.958	
Flt Protected	0.950				0.967	
Satd. Flow (prot)	1770	3539	3539	1583	1726	0
Flt Permitted	0.053				0.967	
Satd. Flow (perm)	99	3539	3539	1583	1726	0
Right Turn on Red				Yes	Yes	
Satd. Flow (RTOR)				13	16	
Link Speed (k/h)		50	50		50	
Link Distance (m)		201.5	195.6		120.6	
Travel Time (s)		14.5	14.1		8.7	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	148	1024	2222	26	103	46
Shared Lane Traffic (%)						
Lane Group Flow (vph)	148	1024	2222	26	149	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
Number of Detectors	1	2	2	1	1	
Detector Template	Left	Thru	Thru	Right	Left	
Leading Detector (m)	2.0	10.0	10.0	2.0	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)	2.0	0.6	0.6	2.0	2.0	
Detector 1 Type	CI+Ex	CI+Ex	CI+Ex	CI+Ex	CI+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		CI+Ex	CI+Ex			
Detector 2 Channel						
Detector 2 Extend (s)		0.0	0.0			
Turn Type	pm+pt	NA	NA	Perm	Perm	
Protected Phases	7	4	8			
Permitted Phases	4			8	6	

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Lanes, Volumes, Timings

210: William Halton Parkway & East Street E

TT (2041) - Scenario A - 25% Reduction

Timing Plan: PM Peak Hour

	EBL	EBT	WBT	WBR	SBL	SBR
Detector Phase	7	4	8	8	6	
Switch Phase						
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	
Minimum Split (s)	9.5	24.0	24.0	24.0	24.0	
Total Split (s)	17.6	95.6	78.0	78.0	24.4	
Total Split (%)	14.7%	79.7%	65.0%	65.0%	20.3%	
Maximum Green (s)	14.6	89.6	72.0	72.0	18.4	
Yellow Time (s)	3.0	4.0	4.0	4.0	4.0	
All-Red Time (s)	0.0	2.0	2.0	2.0	2.0	
Lost Time Adjust (s)	1.0	-2.0	-2.0	-2.0	-2.0	
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	
Lead/Lag	Lead		Lag	Lag		
Lead-Lag Optimize?	Yes		Yes	Yes		
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	
Flash Dont Walk (s)		11.0	11.0	11.0	11.0	
Pedestrian Calls (#/hr)		0	0	0	0	
Act Effct Green (s)	91.7	91.7	74.1	74.1	15.8	
Actuated g/C Ratio	0.79	0.79	0.64	0.64	0.14	
v/c Ratio	0.54	0.36	0.98	0.03	0.60	
Control Delay	28.4	4.1	35.7	5.6	51.8	
Queue Delay	0.0	0.0	0.0	0.0	0.0	
Total Delay	28.4	4.1	35.7	5.6	51.8	
LOS	C	A	D	A	D	
Approach Delay		7.2	35.3		51.8	
Approach LOS		A	D		D	

Intersection Summary

Area Type: Other

Cycle Length: 120

Actuated Cycle Length: 115.5

Natural Cycle: 90

Control Type: Semi Act-Uncoord

Maximum v/c Ratio: 0.98

Intersection Signal Delay: 26.8

Intersection LOS: C

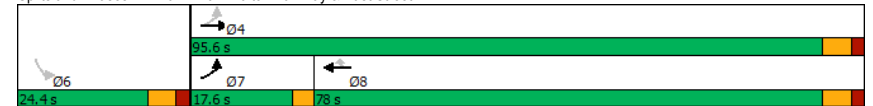
Intersection Capacity Utilization 88.1%

ICU Level of Service E

Analysis Period (min) 15

* User Entered Value

Splits and Phases: 210: William Halton Parkway & East Street E

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Queues
210: William Halton Parkway & East Street E

TT (2041) - Scenario A - 25% Reduction
Timing Plan: PM Peak Hour

	EBL	EBT	WBT	WBR	SBL
Lane Group	EBL	EBT	WBT	WBR	SBL
Lane Group Flow (vph)	148	1024	2222	26	149
v/c Ratio	0.54	0.36	0.98	0.03	0.60
Control Delay	28.4	4.1	35.7	5.6	51.8
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	28.4	4.1	35.7	5.6	51.8
Queue Length 50th (m)	14.8	28.7	234.5	1.0	28.2
Queue Length 95th (m)	37.4	43.5	#328.5	4.5	48.7
Internal Link Dist (m)		177.5	171.6		96.6
Turn Bay Length (m)	90.0			50.0	
Base Capacity (vph)	275	2808	2269	1019	318
Starvation Cap Reductn	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.54	0.36	0.98	0.03	0.47

Intersection Summary

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

HCM Signalized Intersection Capacity Analysis
210: William Halton Parkway & East Street E

TT (2041) - Scenario A - 25% Reduction
Timing Plan: PM Peak Hour

	EBL	EBT	WBT	WBR	SBL	SBR
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations	↰	↱	↰	↱	↰	↱
Traffic Volume (vph)	148	1024	2222	26	103	46
Future Volume (vph)	148	1024	2222	26	103	46
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	
Lane Util. Factor	1.00	*0.95	*0.95	1.00	1.00	
Flt	1.00	1.00	1.00	0.85	0.96	
Flt Protected	0.95	1.00	1.00	1.00	0.97	
Satd. Flow (prot)	1770	3539	3539	1583	1725	
Flt Permitted	0.05	1.00	1.00	1.00	0.97	
Satd. Flow (perm)	99	3539	3539	1583	1725	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	148	1024	2222	26	103	46
RTOR Reduction (vph)	0	0	0	5	14	0
Lane Group Flow (vph)	148	1024	2222	21	135	0
Turn Type	pm+pt	NA	NA	Perm	Perm	
Protected Phases	7	4	8			
Permitted Phases	4			8	6	
Actuated Green, G (s)	89.7	89.7	72.1	72.1	13.8	
Effective Green, g (s)	88.7	91.7	74.1	74.1	15.8	
Actuated g/C Ratio	0.77	0.79	0.64	0.64	0.14	
Clearance Time (s)	3.0	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)	272	2809	2270	1015	235	
v/s Ratio Prot	c0.06	0.29	c0.63			
v/s Ratio Perm	0.35			0.01	c0.08	
v/c Ratio	0.54	0.36	0.98	0.02	0.58	
Uniform Delay, d1	33.4	3.5	19.9	7.5	46.7	
Progression Factor	1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	7.6	0.4	14.5	0.0	3.4	
Delay (s)	41.1	3.8	34.5	7.6	50.1	
Level of Service	D	A	C	A	D	
Approach Delay (s)		8.5	34.2		50.1	
Approach LOS		A	C		D	

Intersection Summary

HCM 2000 Control Delay	26.4	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.88		
Actuated Cycle Length (s)	115.5	Sum of lost time (s)	14.0
Intersection Capacity Utilization	88.1%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

Lanes, Volumes, Timings

211: William Halton Parkway & East Street F

TT (2041) - Scenario A - 25% Reduction

Timing Plan: PM Peak Hour

						
Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		 	 		 	
Traffic Volume (vph)	0	1127	2248	0	0	0
Future Volume (vph)	0	1127	2248	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (m)	90.0			0.0	0.0	0.0
Storage Lanes	1			0	1	0
Taper Length (m)	100.0				7.5	
Lane Util. Factor	1.00	0.95	0.95	0.95	1.00	1.00
Frt						
Flt Protected						
Satd. Flow (prot)	1863	3539	3539	0	1863	0
Flt Permitted						
Satd. Flow (perm)	1863	3539	3539	0	1863	0
Link Speed (k/h)		50	50		50	
Link Distance (m)		195.6	407.9		120.1	
Travel Time (s)		14.1	29.4		8.6	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	0	1127	2248	0	0	0
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	1127	2248	0	0	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 65.5%				ICU Level of Service C		
Analysis Period (min) 15						

HCM Unsignalized Intersection Capacity Analysis

211: William Halton Parkway & East Street F

TT (2041) - Scenario A - 25% Reduction

Timing Plan: PM Peak Hour

						
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	0	1127	2248	0	0	0
Future Volume (Veh/h)	0	1127	2248	0	0	0
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	0	1127	2248	0	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)		196				
pX, platoon unblocked				0.92		
vC, conflicting volume	2248			2812	1124	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	2248			2794	1124	
tC, single (s)	4.1			6.8	6.9	
tC, 2 stage (s)						
tF (s)	2.2			3.5	3.3	
p0 queue free %	100			100	100	
cM capacity (veh/h)	226			14	200	
Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	SB 1
Volume Total	0	564	564	1499	749	0
Volume Left	0	0	0	0	0	0
Volume Right	0	0	0	0	0	0
cSH	1700	1700	1700	1700	1700	1700
Volume to Capacity	0.00	0.33	0.33	0.88	0.44	0.00
Queue Length 95th (m)	0.0	0.0	0.0	0.0	0.0	0.0
Control Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0
Lane LOS						A
Approach Delay (s)	0.0			0.0		0.0
Approach LOS						A
Intersection Summary						
Average Delay			0.0			
Intersection Capacity Utilization		65.5%		ICU Level of Service		C
Analysis Period (min)		15				

Lanes, Volumes, Timings

212: West Street A & Transit Station

TT (2041) - Scenario A - 25% Reduction

Timing Plan: PM Peak Hour

	←	←	↑	↗	↘	↓
Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	↔		↔			↔
Traffic Volume (vph)	94	0	0	266	0	0
Future Volume (vph)	94	0	0	266	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt			0.865			
Flt Protected	0.950					
Satd. Flow (prot)	1770	0	1611	0	0	1863
Flt Permitted	0.950					
Satd. Flow (perm)	1770	0	1611	0	0	1863
Link Speed (k/h)	50		50			50
Link Distance (m)	216.0		234.7			101.9
Travel Time (s)	15.6		16.9			7.3
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	94	0	0	266	0	0
Shared Lane Traffic (%)						
Lane Group Flow (vph)	94	0	266	0	0	0
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 28.3%

ICU Level of Service A

Analysis Period (min) 15

HCM Unsignalized Intersection Capacity Analysis

212: West Street A & Transit Station

TT (2041) - Scenario A - 25% Reduction

Timing Plan: PM Peak Hour

	←	←	↑	↗	↘	↓
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	↔		↔			↔
Traffic Volume (veh/h)	94	0	0	266	0	0
Future Volume (Veh/h)	94	0	0	266	0	0
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	94	0	0	266	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	133	133			266	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	133	133			266	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	89	100			100	
cM capacity (veh/h)	861	916			1298	

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	94	266	0
Volume Left	94	0	0
Volume Right	0	266	0
cSH	861	1700	1700
Volume to Capacity	0.11	0.16	0.00
Queue Length 95th (m)	2.7	0.0	0.0
Control Delay (s)	9.7	0.0	0.0
Lane LOS	A		
Approach Delay (s)	9.7	0.0	0.0
Approach LOS	A		

Intersection Summary

Average Delay 2.5

Intersection Capacity Utilization 28.3%

ICU Level of Service A

Analysis Period (min) 15

Lanes, Volumes, Timings TT (2041) - Scenario A - 25% Reduction
213: East Street A/West Street A & William Halton Parkway Timing Plan: PM Peak Hour

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑	↑		↑↑	↑			↑			↑
Traffic Volume (vph)	0	1038	10	0	2386	98	0	0	333	0	0	20
Future Volume (vph)	0	1038	10	0	2386	98	0	0	333	0	0	20
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	0.0		90.0	0.0		90.0	0.0		0.0	0.0		0.0
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	0.95	1.00	1.00	0.95	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt			0.850			0.850			0.865			0.865
Flt Protected												
Satd. Flow (prot)	0	3539	1583	0	3539	1583	0	0	1611	0	0	1611
Flt Permitted												
Satd. Flow (perm)	0	3539	1583	0	3539	1583	0	0	1611	0	0	1611
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		200.8			212.9			103.7			234.7	
Travel Time (s)		14.5			15.3			7.5			16.9	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	0	1038	10	0	2386	98	0	0	333	0	0	20
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	1038	10	0	2386	98	0	0	333	0	0	20
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 76.0%	ICU Level of Service D											
Analysis Period (min) 15												

HCM Unsignalized Intersection Capacity Analysis TT (2041) - Scenario A - 25% Reduction
213: East Street A/West Street A & William Halton Parkway Timing Plan: PM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕↕	↗		↕↕	↗			↗			↗
Traffic Volume (veh/h)	0	1038	10	0	2386	98	0	0	333	0	0	20
Future Volume (Veh/h)	0	1038	10	0	2386	98	0	0	333	0	0	20
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	0	1038	10	0	2386	98	0	0	333	0	0	20
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type	None			None								
Median storage veh												
Upstream signal (m)	201			213								
pX, platoon unblocked	0.73			0.84			0.81	0.81	0.84	0.81	0.81	0.73
vC, conflicting volume	2484			1048			2251	3522	519	3238	3434	1193
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	2297			686			1212	2776	59	2426	2667	540
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	60	100	100	94
cM capacity (veh/h)	159			762			106	15	839	8	18	357
Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	WB 3	NB 1	SB 1				
Volume Total	519	519	10	1193	1193	98	333	20				
Volume Left	0	0	0	0	0	0	0	0				
Volume Right	0	0	10	0	0	98	333	20				
cSH	1700	1700	1700	1700	1700	1700	839	357				
Volume to Capacity	0.31	0.31	0.01	0.70	0.70	0.06	0.40	0.06				
Queue Length 95th (m)	0.0	0.0	0.0	0.0	0.0	0.0	14.4	1.3				
Control Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	12.1	15.7				
Lane LOS							B	C				
Approach Delay (s)	0.0			0.0			12.1	15.7				
Approach LOS							B	C				
Intersection Summary												
Average Delay	1.1											
Intersection Capacity Utilization	76.0%			ICU Level of Service			D					
Analysis Period (min)	15											

Lanes, Volumes, Timings

214: West Street D & William Halton Parkway

TT (2041) - Scenario A - 25% Reduction

Timing Plan: PM Peak Hour

	←	→	↖	↗	←	↖	↗	→	↖	↗	→	↖	↗
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations	↖	↖	↖	↖	↖	↖	↖	↖	↖	↖	↖	↖	
Traffic Volume (vph)	0	936	9	198	2123	85	36	0	10	109	0	8	
Future Volume (vph)	0	936	9	198	2123	85	36	0	10	109	0	8	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	
Storage Length (m)	90.0		90.0	90.0		90.0	50.0		0.0	50.0		0.0	
Storage Lanes	1		1	1		1	1		0	1		0	
Taper Length (m)	100.0			100.0			75.0			75.0			
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Frt			0.850			0.850		0.850			0.850		
Flt Protected				0.950			0.950			0.950			
Satd. Flow (prot)	1863	3539	1583	1770	3539	1583	1770	1583	0	1770	1583	0	
Flt Permitted				0.214			0.752			0.751			
Satd. Flow (perm)	1863	3539	1583	399	3539	1583	1401	1583	0	1399	1583	0	
Right Turn on Red			Yes			Yes		Yes			Yes		
Satd. Flow (RTOR)			73			85		502			73		
Link Speed (k/h)		50			50			50			50		
Link Distance (m)		573.3			200.8			99.4			133.2		
Travel Time (s)		41.3			14.5			7.2			9.6		
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Adj. Flow (vph)	0	936	9	198	2123	85	36	0	10	109	0	8	
Shared Lane Traffic (%)													
Lane Group Flow (vph)	0	936	9	198	2123	85	36	10	0	109	8	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	1	2	1	1	2		1	2		
Detector Template	Left	Thru	Right	Left	Thru	Right	Left	Thru		Left	Thru		
Leading Detector (m)	2.0	10.0	2.0	2.0	10.0	2.0	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		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	2.0	0.6	2.0	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		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	pm+pt	NA	Perm	Perm	NA		Perm	NA		
Protected Phases		4		3	8			2			6		
Permitted Phases	4		4	8		8	2			6			

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Lanes, Volumes, Timings

214: West Street D & William Halton Parkway

TT (2041) - Scenario A - 25% Reduction

Timing Plan: PM Peak Hour

	←	→	↖	↗	←	↖	↗	→	↖	↗	→	↖	↗
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Detector Phase	4	4	4	3	8	8	2	2		6	6		
Switch Phase													
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0		5.0	5.0		
Minimum Split (s)	24.0	24.0	24.0	9.5	24.0	24.0	24.0	24.0		29.0	29.0		
Total Split (s)	34.8	34.8	34.8	26.2	61.0	61.0	29.0	29.0		29.0	29.0		
Total Split (%)	38.7%	38.7%	38.7%	29.1%	67.8%	67.8%	32.2%	32.2%		32.2%	32.2%		
Maximum Green (s)	28.8	28.8	28.8	23.2	55.0	55.0	23.0	23.0		23.0	23.0		
Yellow Time (s)	4.0	4.0	4.0	3.0	4.0	4.0	4.0	4.0		4.0	4.0		
All-Red Time (s)	2.0	2.0	2.0	0.0	2.0	2.0	2.0	2.0		2.0	2.0		
Lost Time Adjust (s)	-2.0	-2.0	-2.0	1.0	-2.0	-2.0	-2.0	-2.0		1.0	-2.0		
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0		7.0	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	None	None	Min	Min		Min	Min		
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 Effect Green (s)		40.9	40.9	52.8	52.8	52.8	13.2	13.2		10.2	13.2		
Actuated g/C Ratio		0.55	0.55	0.71	0.71	0.71	0.18	0.18		0.14	0.18		
v/c Ratio		0.48	0.01	0.46	0.84	0.07	0.14	0.01		0.57	0.02		
Control Delay		12.0	0.0	7.5	12.6	1.2	28.3	0.0		43.4	0.1		
Queue Delay		0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0		
Total Delay		12.0	0.0	7.5	12.6	1.2	28.3	0.0		43.4	0.1		
LOS		B	A	A	B	A	C	A		D	A		
Approach Delay		11.9			11.8		22.2			40.5			
Approach LOS		B			B		C			D			

Intersection Summary

Area Type: Other

Cycle Length: 90

Actuated Cycle Length: 74.2

Natural Cycle: 90

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 0.84

Intersection Signal Delay: 12.9

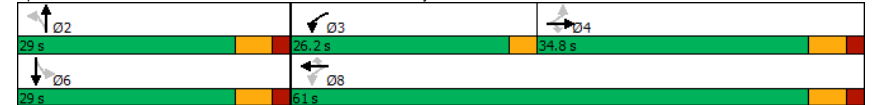
Intersection LOS: B

Intersection Capacity Utilization 85.6%

ICU Level of Service E

Analysis Period (min) 15

Splits and Phases: 214: West Street D & William Halton Parkway

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Queues
214: West Street D & William Halton Parkway

TT (2041) - Scenario A - 25% Reduction
Timing Plan: PM Peak Hour

	→	↘	↙	←	↖	↗	↘	↙	↓
Lane Group	EBT	EBR	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	936	9	198	2123	85	36	10	109	8
v/c Ratio	0.48	0.01	0.46	0.84	0.07	0.14	0.01	0.57	0.02
Control Delay	12.0	0.0	7.5	12.6	1.2	28.3	0.0	43.4	0.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	12.0	0.0	7.5	12.6	1.2	28.3	0.0	43.4	0.1
Queue Length 50th (m)	36.8	0.0	7.1	89.2	0.0	4.5	0.0	15.3	0.0
Queue Length 95th (m)	68.6	0.0	16.4	159.9	3.7	12.0	0.0	30.1	0.0
Internal Link Dist (m)	549.3			176.8			75.4		109.2
Turn Bay Length (m)		90.0	90.0		90.0	50.0		50.0	
Base Capacity (vph)	1951	905	702	2766	1256	481	873	422	591
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.48	0.01	0.28	0.77	0.07	0.07	0.01	0.26	0.01
Intersection Summary									

HCM Signalized Intersection Capacity Analysis
214: West Street D & William Halton Parkway

TT (2041) - Scenario A - 25% Reduction
Timing Plan: PM Peak Hour

	↖	→	↘	↙	←	↖	↗	↘	↙	↓	↘	↙
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↖	↖	↖	↖	↖	↖	↖	↖	↖	↖	↖
Traffic Volume (vph)	0	936	9	198	2123	85	36	0	10	109	0	8
Future Volume (vph)	0	936	9	198	2123	85	36	0	10	109	0	8
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		7.0	4.0	
Lane Util. Factor		0.95	1.00	1.00	0.95	1.00	1.00	1.00		1.00	1.00	
Frt		1.00	0.85	1.00	1.00	0.85	1.00	0.85		1.00	0.85	
Flt Protected		1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)		3539	1583	1770	3539	1583	1770	1583		1770	1583	
Flt Permitted		1.00	1.00	0.21	1.00	1.00	0.75	1.00		0.75	1.00	
Satd. Flow (perm)		3539	1583	400	3539	1583	1402	1583		1399	1583	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	0	936	9	198	2123	85	36	0	10	109	0	8
RTOR Reduction (vph)	0	0	4	0	0	24	0	8	0	0	7	0
Lane Group Flow (vph)	0	936	5	198	2123	61	36	2	0	109	1	0
Turn Type	Perm	NA	Perm	pm+pt	NA	Perm	Perm	NA		Perm	NA	
Protected Phases		4		3	8			2			6	
Permitted Phases	4		4	8		8	2			6		
Actuated Green, G (s)		38.9	38.9	50.8	50.8	50.8	11.2	11.2		11.2	11.2	
Effective Green, g (s)		40.9	40.9	49.8	52.8	52.8	13.2	13.2		10.2	13.2	
Actuated g/C Ratio		0.55	0.55	0.67	0.71	0.71	0.18	0.18		0.14	0.18	
Clearance Time (s)		6.0	6.0	3.0	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	3.0	
Lane Grp Cap (vph)		1956	874	415	2525	1129	250	282		192	282	
v/s Ratio Prot		0.26		0.05	c0.60			0.00			0.00	
v/s Ratio Perm			0.00	0.27		0.04	0.03			c0.08		
v/c Ratio		0.48	0.01	0.48	0.84	0.05	0.14	0.01		0.57	0.01	
Uniform Delay, d1		10.1	7.4	6.1	7.6	3.2	25.6	25.0		29.8	25.0	
Progression Factor		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	0.9	2.7	0.0	0.3	0.0		3.8	0.0	
Delay (s)		10.3	7.4	6.9	10.3	3.2	25.9	25.0		33.7	25.0	
Level of Service		B	A	A	B	A	C	C		C	C	
Approach Delay (s)		10.2			9.8			25.7			33.1	
Approach LOS		B			A			C			C	
Intersection Summary												
HCM 2000 Control Delay			10.9							B		
HCM 2000 Volume to Capacity ratio			0.81									
Actuated Cycle Length (s)			74.0							12.0		
Intersection Capacity Utilization			85.6%							E		
Analysis Period (min)			15									
c Critical Lane Group												

Lanes, Volumes, Timings

215: East Street A & West Street B

TT (2041) - Scenario A - 25% Reduction

Timing Plan: PM Peak Hour

	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	157	80	0	75	55	13
Future Volume (vph)	157	80	0	75	55	13
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	0.954				0.974	
Flt Protected	0.968					
Satd. Flow (prot)	1720	0	0	1863	1814	0
Flt Permitted	0.968					
Satd. Flow (perm)	1720	0	0	1863	1814	0
Link Speed (k/h)	50			50	50	
Link Distance (m)	202.4			83.5	103.7	
Travel Time (s)	14.6			6.0	7.5	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	157	80	0	75	55	13
Shared Lane Traffic (%)						
Lane Group Flow (vph)	237	0	0	75	68	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
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	25			15
Sign Control	Stop			Free	Free	

Intersection Summary

Area Type: Other

Control Type: Unsignalized

Intersection Capacity Utilization 24.2%

ICU Level of Service A

Analysis Period (min) 15

HCM Unsignalized Intersection Capacity Analysis

215: East Street A & West Street B

TT (2041) - Scenario A - 25% Reduction

Timing Plan: PM Peak Hour

	EBL	EBR	NBL	NBT	SBT	SBR
Movement						
Lane Configurations						
Traffic Volume (veh/h)	157	80	0	75	55	13
Future Volume (Veh/h)	157	80	0	75	55	13
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	157	80	0	75	55	13
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	None	
Median storage (veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	136	62	68			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	136	62	68			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	82	92	100			
cM capacity (veh/h)	857	1004	1533			
Direction, Lane #	EB 1	NB 1	SB 1			
Volume Total	237	75	68			
Volume Left	157	0	0			
Volume Right	80	0	13			
cSH	901	1533	1700			
Volume to Capacity	0.26	0.00	0.04			
Queue Length 95th (m)	7.9	0.0	0.0			
Control Delay (s)	10.4	0.0	0.0			
Lane LOS	B					
Approach Delay (s)	10.4	0.0	0.0			
Approach LOS	B					
Intersection Summary						
Average Delay		6.5				
Intersection Capacity Utilization		24.2%		ICU Level of Service	A	
Analysis Period (min)		15				

Lanes, Volumes, Timings

216: West Street D & West Street B

TT (2041) - Scenario A - 25% Reduction

Timing Plan: PM Peak Hour

	←	←	↑	↗	↘	↓
Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	↰		↱			↱
Traffic Volume (vph)	0	21	25	0	133	74
Future Volume (vph)	0	21	25	0	133	74
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.865					
Flt Protected						0.969
Satd. Flow (prot)	1611	0	1863	0	0	1805
Flt Permitted						0.969
Satd. Flow (perm)	1611	0	1863	0	0	1805
Link Speed (k/h)	50		50			50
Link Distance (m)	202.4		82.8			99.4
Travel Time (s)	14.6		6.0			7.2
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	0	21	25	0	133	74
Shared Lane Traffic (%)						
Lane Group Flow (vph)	21	0	25	0	0	207
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
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		15	25	
Sign Control	Stop		Free			Free

Intersection Summary

Area Type: Other

Control Type: Unsignalized

Intersection Capacity Utilization 27.9%

ICU Level of Service A

Analysis Period (min) 15

HCM Unsignalized Intersection Capacity Analysis

216: West Street D & West Street B

TT (2041) - Scenario A - 25% Reduction

Timing Plan: PM Peak Hour

	←	←	↑	↗	↘	↓
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	↰		↱			↱
Traffic Volume (veh/h)	0	21	25	0	133	74
Future Volume (Veh/h)	0	21	25	0	133	74
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	0	21	25	0	133	74
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage (veh)						
Upstream signal (m)						99
pX, platoon unblocked	0.98					
vC, conflicting volume	365	25			25	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	340	25			25	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	100	98			92	
cM capacity (veh/h)	588	1051			1589	

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	21	25	207
Volume Left	0	0	133
Volume Right	21	0	0
cSH	1051	1700	1589
Volume to Capacity	0.02	0.01	0.08
Queue Length 95th (m)	0.5	0.0	2.1
Control Delay (s)	8.5	0.0	5.0
Lane LOS	A		A
Approach Delay (s)	8.5	0.0	5.0
Approach LOS	A		

Intersection Summary

Average Delay 4.8
 Intersection Capacity Utilization 27.9% ICU Level of Service A
 Analysis Period (min) 15

Lanes, Volumes, Timings
217: East Street C & East Street A

TT (2041) - Scenario A - 25% Reduction
Timing Plan: PM Peak Hour

						
Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	0	41	59	154	107	3
Future Volume (vph)	0	41	59	154	107	3
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		0.902			0.996	
Flt Protected					0.954	
Satd. Flow (prot)	0	1863	1680	0	1770	0
Flt Permitted					0.954	
Satd. Flow (perm)	0	1863	1680	0	1770	0
Link Speed (k/h)		50			50	
Link Distance (m)		206.1			205.4	
Travel Time (s)		14.8			14.8	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	0	41	59	154	107	3
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	41	213	0	110	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(m)		0.0			3.6	
Link Offset(m)		0.0			0.0	
Crosswalk Width(m)		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 25.4%	ICU Level of Service A					
Analysis Period (min) 15						

HCM Unsignalized Intersection Capacity Analysis
217: East Street C & East Street A

TT (2041) - Scenario A - 25% Reduction
Timing Plan: PM Peak Hour

						
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	0	41	59	154	107	3
Future Volume (Veh/h)	0	41	59	154	107	3
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	0	41	59	154	107	3
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	213				177	136
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	213				177	136
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	100				87	100
cM capacity (veh/h)	1357				813	913
Direction, Lane #	EB 1	WB 1	SB 1			
Volume Total	41	213	110			
Volume Left	0	0	107			
Volume Right	0	154	3			
cSH	1357	1700	815			
Volume to Capacity	0.00	0.13	0.13			
Queue Length 95th (m)	0.0	0.0	3.5			
Control Delay (s)	0.0	0.0	10.1			
Lane LOS			B			
Approach Delay (s)	0.0	0.0	10.1			
Approach LOS			B			
Intersection Summary						
Average Delay			3.1			
Intersection Capacity Utilization		25.4%		ICU Level of Service	A	
Analysis Period (min)		15				

Lanes, Volumes, Timings

218: West Street D & East Street C

TT (2041) - Scenario A - 25% Reduction

Timing Plan: PM Peak Hour

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔			↔			↔			↔	
Traffic Volume (vph)	0	0	0	13	0	46	0	11	6	60	14	0
Future Volume (vph)	0	0	0	13	0	46	0	11	6	60	14	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					0.895			0.952				
Flt Protected					0.989						0.961	
Satd. Flow (prot)	0	1863	0	0	1649	0	0	1773	0	0	1790	0
Flt Permitted					0.989						0.961	
Satd. Flow (perm)	0	1863	0	0	1649	0	0	1773	0	0	1790	0
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		164.8			206.1			68.2			82.8	
Travel Time (s)		11.9			14.8			4.9			6.0	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	0	0	0	13	0	46	0	11	6	60	14	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	0	0	0	59	0	0	17	0	0	74	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 20.9%

ICU Level of Service A

Analysis Period (min) 15

HCM Unsignalized Intersection Capacity Analysis

218: West Street D & East Street C

TT (2041) - Scenario A - 25% Reduction

Timing Plan: PM Peak Hour

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Movement		↔			↔			↔			↔	
Lane Configurations		↔			↔			↔			↔	
Traffic Volume (veh/h)	0	0	0	13	0	46	0	11	6	60	14	0
Future Volume (Veh/h)	0	0	0	13	0	46	0	11	6	60	14	0
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	0	0	0	13	0	46	0	11	6	60	14	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	46			0			56	72	0	60	49	23
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	46			0			56	72	0	60	49	23
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			99			100	99	99	93	98	100
cM capacity (veh/h)	1562			1623			924	812	1085	915	836	1054
Direction, Lane #	EB 1	WB 1	NB 1	SB 1								
Volume Total	0	59	17	74								
Volume Left	0	13	0	60								
Volume Right	0	46	6	0								
cSH	1700	1623	891	899								
Volume to Capacity	0.00	0.01	0.02	0.08								
Queue Length 95th (m)	0.0	0.2	0.4	2.0								
Control Delay (s)	0.0	1.6	9.1	9.4								
Lane LOS	A	A	A	A								
Approach Delay (s)	0.0	1.6	9.1	9.4								
Approach LOS		A	A	A								
Intersection Summary												
Average Delay			6.3									
Intersection Capacity Utilization		20.9%		ICU Level of Service					A			
Analysis Period (min)			15									

Lanes, Volumes, Timings

101: Trafalgar Rd & Lower Base Line

Total (2041) - Scenario B - 25% Reduction

Timing Plan: AM Peak Hour

	↖	→	↘	↙	←	↖	↗	↘	↙	↖	↗	↘	↙
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations	↖	↖	↖	↖	↖	↖	↖	↖	↖	↖	↖	↖	
Traffic Volume (vph)	151	588	224	345	119	219	48	1949	280	502	2343	24	
Future Volume (vph)	151	588	224	345	119	219	48	1949	280	502	2343	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	0.423			0.165			0.085			0.083			
Satd. Flow (perm)	788	3394	0	307	3196	0	158	5085	1583	155	5085	1583	
Right Turn on Red			Yes			Yes			Yes			Yes	
Satd. Flow (RTOR)		41			238				248			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)	164	639	243	375	129	238	52	2118	304	546	2547	26	
Shared Lane Traffic (%)													
Lane Group Flow (vph)	164	882	0	375	367	0	52	2118	304	546	2547	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	CI+Ex	CI+Ex		CI+Ex	CI+Ex		CI+Ex	CI+Ex	CI+Ex	CI+Ex	CI+Ex	CI+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		CI+Ex			CI+Ex			CI+Ex			CI+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

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Lanes, Volumes, Timings

101: Trafalgar Rd & Lower Base Line

Total (2041) - Scenario B - 25% Reduction

Timing Plan: AM Peak Hour

	↖	→	↘	↙	←	↖	↗	↘	↙	↖	↗	↘	↙
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		1.45	0.41		0.30	1.09	0.40	1.46	0.95	0.03	
Control Delay	32.5	158.8		250.2	15.4		16.5	84.1	7.3	250.6	36.5	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	32.5	158.8		250.2	15.4		16.5	84.1	7.3	250.6	36.5	0.0	
LOS	C	F		F	B		B	F	A	F	D	A	
Approach Delay		139.0			134.0			73.3			73.6		
Approach LOS		F			F			E			E		

Intersection Summary

Area Type: Other

Cycle Length: 120

Actuated Cycle Length: 120

Natural Cycle: 110

Control Type: Semi Act-Uncooord

Maximum v/c Ratio: 1.46

Intersection Signal Delay: 88.8

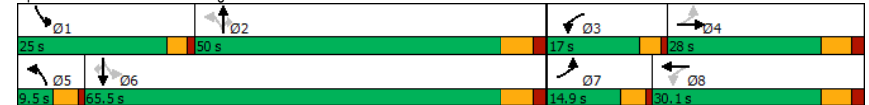
Intersection LOS: F

Intersection Capacity Utilization 121.3%

ICU Level of Service H

Analysis Period (min) 15

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

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Queues
101: Trafalgar Rd & Lower Base Line

Total (2041) - Scenario B - 25% Reduction
Timing Plan: AM Peak Hour

	EBL	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	164	882	375	367	52	2118	304	546	2547	26
v/c Ratio	0.47	1.24	1.45	0.41	0.30	1.09	0.40	1.46	0.95	0.03
Control Delay	32.5	158.8	250.2	15.4	16.5	84.1	7.3	250.6	36.5	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	32.5	158.8	250.2	15.4	16.5	84.1	7.3	250.6	36.5	0.0
Queue Length 50th (m)	26.8	~130.3	~103.1	12.9	4.6	~202.5	8.2	~158.8	204.7	0.0
Queue Length 95th (m)	43.5	#169.9	#161.6	26.3	9.5	#231.2	27.9	#225.2	#247.8	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	759	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	0.46	1.24	1.45	0.41	0.30	1.09	0.40	1.46	0.95	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.

HCM Signalized Intersection Capacity Analysis
101: Trafalgar Rd & Lower Base Line

Total (2041) - Scenario B - 25% Reduction
Timing Plan: AM Peak Hour

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔
Traffic Volume (vph)	151	588	224	345	119	219	48	1949	280	502	2343	24
Future Volume (vph)	151	588	224	345	119	219	48	1949	280	502	2343	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	3393		1770	3195		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)	788	3393		308	3195		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)	164	639	243	375	129	238	52	2118	304	546	2547	26
RTOR Reduction (vph)	0	33	0	0	186	0	0	0	152	0	0	12
Lane Group Flow (vph)	164	849	0	375	181	0	52	2118	152	546	2547	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	
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		c0.16	0.06		0.02	0.42		c0.26	0.50	
v/s Ratio Perm	0.10			c0.30			0.13			0.10	c0.59	0.01
v/c Ratio	0.49	1.26		1.49	0.26		0.33	1.07	0.25	1.48	0.96	0.02
Uniform Delay, d1	32.7	48.5		36.7	39.2		26.7	37.0	25.1	39.2	27.4	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	129.5		242.2	0.4		1.2	43.5	1.0	231.8	9.7	0.0
Delay (s)	33.9	178.0		278.9	39.6		27.9	80.5	26.0	270.9	37.1	13.8
Level of Service	C	F		F	D		C	F	C	F	D	B
Approach Delay (s)		155.4			160.5			72.7			77.9	
Approach LOS		F			F			E			E	

Intersection Summary

HCM 2000 Control Delay	95.4	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	1.49		
Actuated Cycle Length (s)	120.9	Sum of lost time (s)	16.0
Intersection Capacity Utilization	121.3%	ICU Level of Service	H
Analysis Period (min)	15		

c Critical Lane Group

Lanes, Volumes, Timings
102: Trafalgar Rd & North Carpool Lot/Hwy 407 WB Off

Total (2041) - Scenario B - 25% Reduction

Timing Plan: AM Peak Hour

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔		↔	↔	↔	↔	↔	↔	↔	↔	↔
Traffic Volume (vph)	2	0	9	440	1	26	6	2247	0	0	2909	5
Future Volume (vph)	2	0	9	440	1	26	6	2247	0	0	2909	5
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	0.721		0.063					
Satd. Flow (perm)	0	1639	0	1327	1220	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)	2	0	10	478	1	28	7	2442	0	0	3162	5
Shared Lane Traffic (%)				50%		10%						
Lane Group Flow (vph)	0	12	0	239	243	25	7	2442	0	0	3162	5
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	CI+Ex	CI+Ex		CI+Ex	CI+Ex	CI+Ex	CI+Ex	CI+Ex			CI+Ex	CI+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		CI+Ex			CI+Ex			CI+Ex				CI+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	Perm
Protected Phases	4	4			8		5	2			6	
Permitted Phases				8		8	2					6

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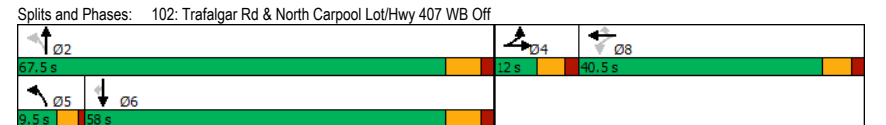
Lanes, Volumes, Timings
102: Trafalgar Rd & North Carpool Lot/Hwy 407 WB Off

Total (2041) - Scenario B - 25% Reduction

Timing Plan: AM Peak Hour

	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			27.3	27.3	27.3	64.5	64.5			62.8	62.8
Actuated g/C Ratio	0.08			0.26	0.26	0.26	0.62	0.62			0.60	0.60
v/c Ratio	0.05			0.69	0.76	0.05	0.05	0.78			1.03	0.00
Control Delay	0.4			45.8	51.4	0.2	12.8	19.5			47.7	0.0
Queue Delay	0.0			0.0	0.0	0.0	0.0	0.0			0.0	0.0
Total Delay	0.4			45.8	51.4	0.2	12.8	19.5			47.7	0.0
LOS	A			D	D	A	B	B			D	A
Approach Delay	0.4				46.3			19.4			47.7	
Approach LOS	A				D			B			D	

Intersection Summary												
Area Type:	Other											
Cycle Length:	120											
Actuated Cycle Length:	104.1											
Natural Cycle:	150											
Control Type:	Actuated-Uncoordinated											
Maximum v/c Ratio:	1.03											
Intersection Signal Delay:	36.2											
Intersection Capacity Utilization	82.0%											
Analysis Period (min)	15											



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Synchro 10 Report
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Queues
102: Trafalgar Rd & North Carpool Lot/Hwy 407 WB Off

Total (2041) - Scenario B - 25% Reduction

Timing Plan: AM Peak Hour

	→	↖	←	↗	↖	↑	↓	↗
Lane Group	EBT	WBL	WBT	WBR	NBL	NBT	SBT	SBR
Lane Group Flow (vph)	12	239	243	25	7	2442	3162	5
v/c Ratio	0.05	0.69	0.76	0.05	0.05	0.78	1.03	0.00
Control Delay	0.4	45.8	51.4	0.2	12.8	19.5	47.7	0.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	0.4	45.8	51.4	0.2	12.8	19.5	47.7	0.0
Queue Length 50th (m)	0.0	41.8	45.2	0.0	0.4	103.3	183.9	0.0
Queue Length 95th (m)	0.0	77.6	85.1	0.0	3.0	204.9	#382.1	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)	245	472	434	617	161	3149	3068	1002
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	0.51	0.56	0.04	0.04	0.78	1.03	0.00

Intersection Summary

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

Queue shown is maximum after two cycles.

HCM Signalized Intersection Capacity Analysis
102: Trafalgar Rd & North Carpool Lot/Hwy 407 WB Off

Total (2041) - Scenario B - 25% Reduction

Timing Plan: AM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	2	0	9	440	1	26	6	2247	0	0	2909	5
Future Volume (vph)	2	0	9	440	1	26	6	2247	0	0	2909	5
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	1613	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)		1640		1327	1220	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)	2	0	10	478	1	28	7	2442	0	0	3162	5
RTOR Reduction (vph)	0	12	0	0	1	19	0	0	0	0	0	2
Lane Group Flow (vph)	0	0	0	239	242	6	7	2442	0	0	3162	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)		2.1		25.3	25.3	25.3	64.8	64.8			59.8	59.8
Effective Green, g (s)		4.1		27.3	27.3	27.3	64.8	67.8			62.8	62.8
Actuated g/C Ratio		0.04		0.25	0.25	0.25	0.58	0.61			0.56	0.56
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		325	299	369	83	3100			2871	893
v/s Ratio Prot		c0.00					0.00	c0.48			c0.62	
v/s Ratio Perm				0.18	c0.20	0.00	0.05					0.00
v/c Ratio		0.01		0.74	0.81	0.02	0.08	0.79			1.10	0.00
Uniform Delay, d1		51.6		38.6	39.5	31.8	25.9	16.3			24.2	10.6
Progression Factor		1.00		1.00	1.00	1.00	1.00	1.00			1.00	1.00
Incremental Delay, d2		0.1		8.6	15.6	0.0	0.3	2.1			51.6	0.0
Delay (s)		51.6		47.3	55.1	31.8	26.2	18.4			75.8	10.6
Level of Service		D		D	E	C	C	B			E	B
Approach Delay (s)		51.6			50.2			18.4			75.7	
Approach LOS		D			D			B			E	

Intersection Summary

HCM 2000 Control Delay	50.7	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	1.00		
Actuated Cycle Length (s)	111.2	Sum of lost time (s)	18.0
Intersection Capacity Utilization	82.0%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

Lanes, Volumes, Timings
103: Trafalgar Rd & Hwy 407 EB Off

Total (2041) - Scenario B - 25% Reduction
Timing Plan: AM Peak Hour

	EBL	EBR	NBL	NBT	SBT	SBR
Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	↔	↔		↕↕↕	↕↕↕	
Traffic Volume (vph)	140	372	0	2246	3097	0
Future Volume (vph)	140	372	0	2246	3097	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	0.930	0.850				
Flt Protected	0.974					
Satd. Flow (prot)	1687	1504	0	5085	5085	0
Flt Permitted	0.974					
Satd. Flow (perm)	1687	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)	152	404	0	2441	3366	0
Shared Lane Traffic (%)		33%				
Lane Group Flow (vph)	285	271	0	2441	3366	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	CI+Ex	CI+Ex		CI+Ex	CI+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				CI+Ex	CI+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	

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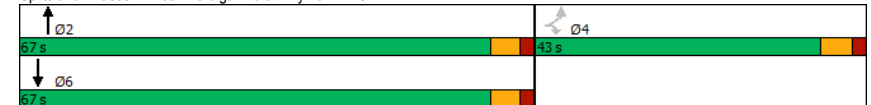
Lanes, Volumes, Timings
103: Trafalgar Rd & Hwy 407 EB Off

Total (2041) - Scenario B - 25% Reduction
Timing Plan: AM Peak Hour

	EBL	EBR	NBL	NBT	SBT	SBR
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)	24.2	24.2		63.3	63.3	
Actuated g/C Ratio	0.25	0.25		0.66	0.66	
v/c Ratio	0.67	0.71		0.72	1.00	
Control Delay	39.9	43.2		13.1	33.0	
Queue Delay	0.0	0.0		0.0	0.0	
Total Delay	39.9	43.2		13.1	33.0	
LOS	D	D		B	C	
Approach Delay	41.5			13.1	33.0	
Approach LOS	D			B	C	

Intersection Summary	
Area Type:	Other
Cycle Length: 110	
Actuated Cycle Length: 95.5	
Natural Cycle: 90	
Control Type: Semi Act-Uncoord	
Maximum v/c Ratio: 1.00	
Intersection Signal Delay: 26.1	Intersection LOS: C
Intersection Capacity Utilization 81.9%	ICU Level of Service D
Analysis Period (min) 15	

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



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Synchro 10 Report
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Queues
103: Trafalgar Rd & Hwy 407 EB Off

Total (2041) - Scenario B - 25% Reduction
Timing Plan: AM Peak Hour

	EBL	EBR	NBT	SBT
Lane Group	EBL	EBR	NBT	SBT
Lane Group Flow (vph)	285	271	2441	3366
v/c Ratio	0.67	0.71	0.72	1.00
Control Delay	39.9	43.2	13.1	33.0
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	39.9	43.2	13.1	33.0
Queue Length 50th (m)	46.5	47.1	93.2	197.9
Queue Length 95th (m)	71.7	74.0	149.7	#310.1
Internal Link Dist (m)	530.6		96.3	339.6
Turn Bay Length (m)				
Base Capacity (vph)	692	617	3370	3370
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	0.41	0.44	0.72	1.00

Intersection Summary

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

HCM Signalized Intersection Capacity Analysis
103: Trafalgar Rd & Hwy 407 EB Off

Total (2041) - Scenario B - 25% Reduction
Timing Plan: AM Peak Hour

	EBL	EBR	NBL	NBT	SBT	SBR
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	↰	↱		↰	↰	↰
Traffic Volume (vph)	140	372	0	2246	3097	0
Future Volume (vph)	140	372	0	2246	3097	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	
Flt	0.93	0.85		1.00	1.00	
Flt Protected	0.97	1.00		1.00	1.00	
Satd. Flow (prot)	1687	1504		5085	5085	
Flt Permitted	0.97	1.00		1.00	1.00	
Satd. Flow (perm)	1687	1504		5085	5085	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	152	404	0	2441	3366	0
RTOR Reduction (vph)	0	0	0	0	0	0
Lane Group Flow (vph)	285	271	0	2441	3366	0
Turn Type	Perm	Perm		NA	NA	
Protected Phases				2	6	
Permitted Phases	4	4				
Actuated Green, G (s)	22.1	22.1		61.3	61.3	
Effective Green, g (s)	24.1	24.1		63.3	63.3	
Actuated g/C Ratio	0.25	0.25		0.66	0.66	
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)	426	379		3374	3374	
v/s Ratio Prot				0.48	0.66	
v/s Ratio Perm	0.17	0.18				
v/c Ratio	0.67	0.72		0.72	1.00	
Uniform Delay, d1	32.1	32.5		10.4	16.0	
Progression Factor	1.00	1.00		1.00	1.00	
Incremental Delay, d2	4.0	6.3		1.4	15.0	
Delay (s)	36.0	38.8		11.8	30.9	
Level of Service	D	D		B	C	
Approach Delay (s)	37.4			11.8	30.9	
Approach LOS	D			B	C	

Intersection Summary

HCM 2000 Control Delay	24.1	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.94		
Actuated Cycle Length (s)	95.4	Sum of lost time (s)	10.0
Intersection Capacity Utilization	81.9%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

Lanes, Volumes, Timings

104: Trafalgar Rd & West Street A/East Street A

Total (2041) - Scenario B - 25% Reduction

Timing Plan: AM Peak Hour

	←	→	↖	↗	←	↖	↗	↖	↗	↖	↗	↖	↗
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations	↖	↗	↖	↖	↗	↖	↖	↖	↖	↖	↖	↖	↖
Traffic Volume (vph)	92	16	58	0	0	259	16	2708	274	471	2830	168	
Future Volume (vph)	92	16	58	0	0	259	16	2708	274	471	2830	168	
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			
Satd. Flow (prot)	1770	1863	1583	1863	1863	1583	1770	5085	1583	1770	5085	1583	
Flt Permitted	0.757						0.055			0.052			
Satd. Flow (perm)	1410	1863	1583	1863	1863	1583	102	5085	1583	97	5085	1583	
Right Turn on Red			Yes			Yes			Yes			Yes	
Satd. Flow (RTOR)			86			23			112			78	
Link Speed (k/h)		50				50			80			80	
Link Distance (m)		143.5				212.6			233.3			131.6	
Travel Time (s)		10.3				15.3			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)	100	17	63	0	0	282	17	2943	298	512	3076	183	
Shared Lane Traffic (%)													
Lane Group Flow (vph)	100	17	63	0	0	282	17	2943	298	512	3076	183	
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		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	

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Lanes, Volumes, Timings

104: Trafalgar Rd & West Street A/East Street A

Total (2041) - Scenario B - 25% Reduction

Timing Plan: AM Peak Hour

	←	→	↖	↗	←	↖	↗	↖	↗	↖	↗	↖	↗
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)	24.0	24.0	24.0	24.0	24.0	40.0	9.5	76.0	76.0	40.0	106.5	106.5	
Total Split (%)	17.1%	17.1%	17.1%	17.1%	17.1%	28.6%	6.8%	54.3%	54.3%	28.6%	76.1%	76.1%	
Maximum Green (s)	18.0	18.0	18.0	18.0	18.0	36.0	5.5	70.0	70.0	36.0	100.5	100.5	
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 Effect Green (s)	16.2	16.2	16.2			58.3	77.5	72.0	72.0	112.1	108.4	108.4	
Actuated g/C Ratio	0.12	0.12	0.12			0.43	0.57	0.53	0.53	0.82	0.80	0.80	
v/c Ratio	0.60	0.08	0.24			0.41	0.14	1.10	0.34	0.98	0.76	0.14	
Control Delay	71.9	53.4	7.0			26.6	11.4	81.0	12.6	76.8	10.2	2.8	
Queue Delay	0.0	0.0	0.0			0.0	0.0	2.2	0.0	0.0	1.0	0.0	
Total Delay	71.9	53.4	7.0			26.6	11.4	83.2	12.6	76.8	11.1	2.8	
LOS	E	D	A			C	B	F	B	E	B	A	
Approach Delay		47.4			26.6			76.4			19.7		
Approach LOS		D			C			E			B		

Intersection Summary

Area Type: Other

Cycle Length: 140

Actuated Cycle Length: 136.3

Natural Cycle: 150

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 1.10

Intersection Signal Delay: 45.3

Intersection LOS: D

Intersection Capacity Utilization 93.5%

ICU Level of Service F

Analysis Period (min) 15

Splits and Phases: 104: Trafalgar Rd & West Street A/East Street A

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Queues
104: Trafalgar Rd & West Street A/East Street A

Total (2041) - Scenario B - 25% Reduction
Timing Plan: AM Peak Hour

	EBL	EBT	EBR	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group	EBL	EBT	EBR	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	100	17	63	282	17	2943	298	512	3076	183
v/c Ratio	0.60	0.08	0.24	0.41	0.14	1.10	0.34	0.98	0.76	0.14
Control Delay	71.9	53.4	7.0	26.6	11.4	81.0	12.6	76.8	10.2	2.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	2.2	0.0	0.0	1.0	0.0
Total Delay	71.9	53.4	7.0	26.6	11.4	83.2	12.6	76.8	11.1	2.8
Queue Length 50th (m)	25.6	4.1	0.0	46.9	1.0	~326.3	26.5	121.0	113.2	4.5
Queue Length 95th (m)	44.4	11.2	7.3	70.1	2.8	#363.0	47.5	#199.4	205.2	14.0
Internal Link Dist (m)		119.5				209.3			107.6	
Turn Bay Length (m)	50.0		50.0	50.0	50.0		50.0	30.0		30.0
Base Capacity (vph)	206	273	305	689	125	2687	889	521	4042	1274
Starvation Cap Reductn	0	0	0	0	0	215	0	0	624	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	0.49	0.06	0.21	0.41	0.14	1.19	0.34	0.98	0.90	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.

HCM Signalized Intersection Capacity Analysis
104: Trafalgar Rd & West Street A/East Street A

Total (2041) - Scenario B - 25% Reduction
Timing Plan: AM Peak Hour

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰	↱	↲	↰	↱	↲	↰	↱	↲	↰	↱	↲
Traffic Volume (vph)	92	16	58	0	0	259	16	2708	274	471	2830	168
Future Volume (vph)	92	16	58	0	0	259	16	2708	274	471	2830	168
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	1.00	0.85			0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00			1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1770	1863	1583			1583	1770	5085	1583	1770	5085	1583
Flt Permitted	0.76	1.00	1.00			1.00	0.06	1.00	1.00	0.05	1.00	1.00
Satd. Flow (perm)	1410	1863	1583			1583	103	5085	1583	97	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)	100	17	63	0	0	282	17	2943	298	512	3076	183
RTOR Reduction (vph)	0	0	56	0	0	14	0	0	52	0	0	17
Lane Group Flow (vph)	100	17	7	0	0	268	17	2943	246	512	3076	166
Turn Type	Perm	NA	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)	14.2	14.2	14.2			50.2	74.6	72.5	72.5	112.5	106.4	106.4
Effective Green, g (s)	16.2	16.2	16.2			54.2	74.6	74.5	74.5	112.5	108.4	108.4
Actuated g/C Ratio	0.12	0.12	0.12			0.39	0.54	0.54	0.54	0.81	0.78	0.78
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)	164	217	184			618	80	2731	850	512	3974	1237
v/s Ratio Prot		0.01				0.12	0.00	c0.58		c0.26	0.60	
v/s Ratio Perm	c0.07		0.00			0.05	0.11		0.16	0.55		0.10
v/c Ratio	0.61	0.08	0.04			0.43	0.21	1.08	0.29	1.00	0.77	0.13
Uniform Delay, d1	58.2	54.6	54.3			31.0	24.7	32.1	17.6	46.5	8.4	3.7
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	6.3	0.2	0.1			0.5	1.3	42.5	0.9	39.8	1.5	0.2
Delay (s)	64.5	54.8	54.4			31.5	26.0	74.6	18.5	86.2	9.9	3.9
Level of Service	E	D	D			C	C	E	B	F	A	A
Approach Delay (s)		60.1			31.5			69.2			20.0	
Approach LOS		E			C			E			B	

Intersection Summary

HCM 2000 Control Delay	42.8	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	1.00		
Actuated Cycle Length (s)	138.7	Sum of lost time (s)	12.0
Intersection Capacity Utilization	93.5%	ICU Level of Service	F
Analysis Period (min)	15		

c Critical Lane Group

Lanes, Volumes, Timings

105: Trafalgar Rd & William Halton Parkway

Total (2041) - Scenario B - 25% Reduction

Timing Plan: AM Peak Hour

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔
Traffic Volume (vph)	501	942	205	192	512	243	384	2498	151	596	2110	182
Future Volume (vph)	501	942	205	192	512	243	384	2498	151	596	2110	182
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	0.170			0.129			0.077			0.071		
Satd. Flow (perm)	317	3539	1583	240	3539	1583	143	5085	1583	132	5085	1583
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			209			224			120			120
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		209.3			204.1			208.3			233.3	
Travel Time (s)		15.1			14.7			15.0			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)	545	1024	223	209	557	264	417	2715	164	648	2293	198
Shared Lane Traffic (%)												
Lane Group Flow (vph)	545	1024	223	209	557	264	417	2715	164	648	2293	198
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

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Lanes, Volumes, Timings

105: Trafalgar Rd & William Halton Parkway

Total (2041) - Scenario B - 25% Reduction

Timing Plan: AM Peak Hour

	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)	23.0	47.0	47.0	14.0	38.0	38.0	21.0	59.0	59.0	25.0	63.0	63.0
Total Split (%)	15.9%	32.4%	32.4%	9.7%	26.2%	26.2%	14.5%	40.7%	40.7%	17.2%	43.4%	43.4%
Maximum Green (s)	19.0	40.0	40.0	10.0	31.0	31.0	17.0	52.1	52.1	21.0	56.1	56.1
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)	57.0	43.0	43.0	44.0	34.0	34.0	72.0	55.0	55.0	80.0	59.0	59.0
Actuated g/C Ratio	0.39	0.30	0.30	0.30	0.23	0.23	0.50	0.38	0.38	0.55	0.41	0.41
v/c Ratio	1.73	0.98	0.36	1.17	0.67	0.49	1.60	1.41	0.24	2.09	1.11	0.28
Control Delay	367.1	72.8	7.7	154.5	55.1	12.5	317.2	221.9	10.2	526.5	96.6	12.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	367.1	72.8	7.7	154.5	55.1	12.5	317.2	221.9	10.2	526.5	96.7	12.3
LOS	F	E	A	F	E	B	F	F	B	F	F	B
Approach Delay		154.2			64.3			223.4			180.1	
Approach LOS		F			E			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: 2.09

Intersection Signal Delay: 177.6

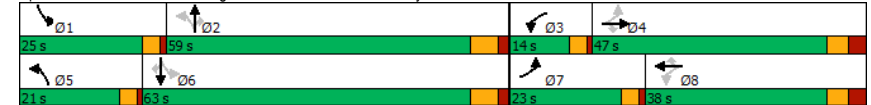
Intersection LOS: F

Intersection Capacity Utilization 139.0%

ICU Level of Service H

Analysis Period (min) 15

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

I/O Trafalgar Oakville TIS
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Queues
105: Trafalgar Rd & William Halton Parkway

Total (2041) - Scenario B - 25% Reduction
Timing Plan: AM Peak Hour

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	545	1024	223	209	557	264	417	2715	164	648	2293	198
v/c Ratio	1.73	0.98	0.36	1.17	0.67	0.49	1.60	1.41	0.24	2.09	1.11	0.28
Control Delay	367.1	72.8	7.7	154.5	55.1	12.5	317.2	221.9	10.2	526.5	96.6	12.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	367.1	72.8	7.7	154.5	55.1	12.5	317.2	221.9	10.2	526.5	96.7	12.3
Queue Length 50th (m)	~204.5	151.7	2.8	~53.2	76.1	9.0	~153.1	~376.8	7.9	~276.3	~270.9	13.7
Queue Length 95th (m)	#274.3	#195.5	22.2	#104.3	96.0	34.0	#218.0	#401.2	23.4	#349.6	#297.6	31.1
Internal Link Dist (m)		185.3			180.1			184.3			209.3	
Turn Bay Length (m)	100.0		100.0	100.0		150.0	150.0		75.0			
Base Capacity (vph)	315	1049	616	178	829	542	261	1928	674	310	2069	715
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	31	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	1.73	0.98	0.36	1.17	0.67	0.49	1.60	1.41	0.24	2.09	1.13	0.28

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.

HCM Signalized Intersection Capacity Analysis
105: Trafalgar Rd & William Halton Parkway

Total (2041) - Scenario B - 25% Reduction
Timing Plan: AM Peak Hour

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔
Traffic Volume (vph)	501	942	205	192	512	243	384	2498	151	596	2110	182
Future Volume (vph)	501	942	205	192	512	243	384	2498	151	596	2110	182
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	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00
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	0.17	1.00	1.00	0.13	1.00	1.00	0.08	1.00	1.00	0.07	1.00	1.00
Satd. Flow (perm)	316	3539	1583	240	3539	1583	143	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)	545	1024	223	209	557	264	417	2715	164	648	2293	198
RTOR Reduction (vph)	0	0	147	0	0	171	0	0	74	0	0	71
Lane Group Flow (vph)	545	1024	76	209	557	93	417	2715	90	648	2293	127
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)	54.0	40.0	40.0	41.0	31.0	31.0	69.1	52.1	52.1	77.1	56.1	56.1
Effective Green, g (s)	54.0	43.0	43.0	41.0	34.0	34.0	69.1	55.0	55.0	77.1	59.0	59.0
Actuated g/C Ratio	0.37	0.30	0.30	0.28	0.23	0.23	0.48	0.38	0.38	0.53	0.41	0.41
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)	308	1049	469	173	829	371	258	1928	600	307	2069	644
v/s Ratio Prot	c0.23	0.29		0.08	0.16		0.19	0.53		c0.30	0.45	
v/s Ratio Perm	c0.43		0.05	0.26		0.06	0.58		0.06	c0.82		0.08
v/c Ratio	1.77	0.98	0.16	1.21	0.67	0.25	1.62	1.41	0.15	2.11	1.11	0.20
Uniform Delay, d1	37.3	50.5	37.7	46.5	50.4	45.1	46.8	45.0	29.6	48.5	43.0	27.7
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	359.2	22.2	0.3	135.4	2.8	0.7	294.6	186.9	0.5	510.7	56.4	0.7
Delay (s)	396.6	72.7	38.0	181.9	53.2	45.9	341.3	231.9	30.1	559.3	99.4	28.4
Level of Service	F	E	D	F	D	D	F	F	C	F	F	C
Approach Delay (s)		166.9			77.5			235.7			189.9	
Approach LOS		F			E			F			F	

Intersection Summary

HCM 2000 Control Delay	189.2	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	1.96		
Actuated Cycle Length (s)	145.0	Sum of lost time (s)	16.0
Intersection Capacity Utilization	139.0%	ICU Level of Service	H
Analysis Period (min)	15		
c Critical Lane Group			

Lanes, Volumes, Timings

Total (2041) - Scenario B - 25% Reduction

106: Trafalgar Rd & Burnhamthorpe Rd/Burnhamthorpe Rd

Timing Plan: AM Peak Hour

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰	↱	↲	↰	↱	↲	↰	↱	↲	↰	↱	↲
Traffic Volume (vph)	454	491	80	83	157	247	56	2332	174	331	1618	181
Future Volume (vph)	454	491	80	83	157	247	56	2332	174	331	1618	181
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	1.00	1.00	1.00	1.00	1.00	1.00	0.91	1.00	1.00	0.91	1.00
Frt		0.979			0.908				0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1770	1824	0	1770	1691	0	1770	5085	1583	1770	5085	1583
Flt Permitted	0.140			0.154			0.074			0.066		
Satd. Flow (perm)	261	1824	0	287	1691	0	138	5085	1583	123	5085	1583
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		6			49				160			142
Link Speed (k/h)		60			60			80			80	
Link Distance (m)		828.7			989.6			1077.8			247.3	
Travel Time (s)		49.7			59.4			48.5			11.1	
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)	493	534	87	90	171	268	61	2535	189	360	1759	197
Shared Lane Traffic (%)												
Lane Group Flow (vph)	493	621	0	90	439	0	61	2535	189	360	1759	197
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)	26.0	46.5		9.5	30.0		9.6	63.0	63.0	21.0	74.4	74.4
Total Split (%)	18.6%	33.2%		6.8%	21.4%		6.9%	45.0%	45.0%	15.0%	53.1%	53.1%
Maximum Green (s)	21.5	40.5		5.0	24.0		5.1	57.0	57.0	17.0	68.4	68.4
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 Effect Green (s)	53.5	42.5		34.5	26.0		67.6	59.0	59.0	80.0	70.4	70.4
Actuated g/C Ratio	0.38	0.30		0.25	0.19		0.48	0.42	0.42	0.57	0.50	0.50
v/c Ratio	1.40	1.11		0.62	1.24		0.41	1.18	0.25	1.33	0.69	0.23
Control Delay	227.8	117.9		50.5	172.4		23.1	124.4	6.4	207.3	28.2	6.5
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	227.8	117.9		50.5	172.4		23.1	124.4	6.4	207.3	28.2	6.5

Lanes, Volumes, Timings

Total (2041) - Scenario B - 25% Reduction

106: Trafalgar Rd & Burnhamthorpe Rd/Burnhamthorpe Rd

Timing Plan: AM Peak Hour

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
LOS	F	F		D	F		C	F	A	F	C	A
Approach Delay		166.5			151.7			114.2			54.2	
Approach LOS		F			F			F			D	
Intersection Summary												
Area Type:	Other											
Cycle Length: 140												
Actuated Cycle Length: 140												
Offset: 0 (0%), Referenced to phase 2:NBT and 6:SBTL, Start of Green												
Natural Cycle: 110												
Control Type: Pretimed												
Maximum v/c Ratio: 1.40												
Intersection Signal Delay: 105.2						Intersection LOS: F						
Intersection Capacity Utilization 125.3%						ICU Level of Service H						
Analysis Period (min) 15												

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



Queues
106: Trafalgar Rd & Burhamthorpe Rd/Burnhamthorpe Rd

Total (2041) - Scenario B - 25% Reduction

Timing Plan: AM Peak Hour

	EBL	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	493	621	90	439	61	2535	189	360	1759	197
v/c Ratio	1.40	1.11	0.62	1.24	0.41	1.18	0.25	1.33	0.69	0.23
Control Delay	227.8	117.9	50.5	172.4	23.1	124.4	6.4	207.3	28.2	6.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	227.8	117.9	50.5	172.4	23.1	124.4	6.4	207.3	28.2	6.5
Queue Length 50th (m)	~164.3	~193.2	15.9	~137.6	6.9	~303.8	4.6	~112.1	130.6	7.6
Queue Length 95th (m)	#231.6	#265.1	#28.7	#203.2	13.3	#329.8	19.2	#173.0	147.1	20.6
Internal Link Dist (m)		804.7		965.6		1053.8			223.3	
Turn Bay Length (m)	30.0		15.0		60.0		60.0	60.0		60.0
Base Capacity (vph)	353	557	144	353	149	2142	759	270	2557	866
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	1.40	1.11	0.63	1.24	0.41	1.18	0.25	1.33	0.69	0.23

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.

HCM Signalized Intersection Capacity Analysis
106: Trafalgar Rd & Burhamthorpe Rd/Burnhamthorpe Rd

Total (2041) - Scenario B - 25% Reduction

Timing Plan: AM Peak Hour

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔
Traffic Volume (vph)	454	491	80	83	157	247	56	2332	174	331	1618	181
Future Volume (vph)	454	491	80	83	157	247	56	2332	174	331	1618	181
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	1.00		1.00	1.00		1.00	0.91	1.00	1.00	0.91	1.00
Flt	1.00	0.98		1.00	0.91		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	1824		1770	1692		1770	5085	1583	1770	5085	1583
Flt Permitted	0.14	1.00		0.15	1.00		0.07	1.00	1.00	0.07	1.00	1.00
Satd. Flow (perm)	261	1824		287	1692		138	5085	1583	122	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)	493	534	87	90	171	268	61	2535	189	360	1759	197
RTOR Reduction (vph)	0	4	0	0	40	0	0	0	93	0	0	71
Lane Group Flow (vph)	493	617	0	90	399	0	61	2535	96	360	1759	126
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	
Actuated Green, G (s)	50.0	40.5		29.0	24.0		62.1	57.0	57.0	78.0	68.4	68.4
Effective Green, g (s)	52.0	42.5		33.0	26.0		66.1	59.0	59.0	78.0	70.4	70.4
Actuated g/C Ratio	0.37	0.30		0.24	0.19		0.47	0.42	0.42	0.56	0.50	0.50
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)	350	553		141	314		147	2142	667	268	2557	796
v/s Ratio Prot	c0.24	0.34		0.03	0.24		0.02	0.50		c0.16	0.35	
v/s Ratio Perm	c0.29			0.12			0.17		0.06	c0.58		0.08
v/c Ratio	1.41	1.12		0.64	1.27		0.41	1.18	0.14	1.34	0.69	0.16
Uniform Delay, d1	42.8	48.8		44.9	57.0		22.9	40.5	25.0	47.1	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	200.1	74.0		20.1	144.6		8.4	87.7	0.5	177.4	1.5	0.4
Delay (s)	242.9	122.8		65.0	201.6		31.3	128.2	25.4	224.5	28.0	19.2
Level of Service	F	F		E	F		C	F	C	F	C	B
Approach Delay (s)		175.9			178.4			119.1			57.8	
Approach LOS		F			F			F			E	

Intersection Summary

HCM 2000 Control Delay	112.1	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	1.40		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	14.5
Intersection Capacity Utilization	125.3%	ICU Level of Service	H
Analysis Period (min)	15		
c Critical Lane Group			

Lanes, Volumes, Timings
202: Trafalgar Rd & West Street C

Total (2041) - Scenario B - 25% Reduction
Timing Plan: AM Peak Hour

	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations		↗		↗↗↗	↗↗↗	↗
Traffic Volume (vph)	0	84	0	3034	2045	299
Future Volume (vph)	0	84	0	3034	2045	299
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (m)	0.0	0.0	0.0			90.0
Storage Lanes	0	1	0			1
Taper Length (m)	7.5		7.5			
Lane Util. Factor	1.00	1.00	1.00	0.91	0.91	1.00
Frt		0.865				0.850
Flt Protected						
Satd. Flow (prot)	0	1611	0	5085	5085	1583
Flt Permitted						
Satd. Flow (perm)	0	1611	0	5085	5085	1583
Link Speed (k/h)	50			50	50	
Link Distance (m)	202.4			247.3	208.3	
Travel Time (s)	14.6			17.8	15.0	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	91	0	3298	2223	325
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	91	0	3298	2223	325
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	0.0			3.6	3.6	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	4.8			4.8	4.8	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)	25	15	25			15
Sign Control	Stop			Free	Free	
Intersection Summary						
Area Type:	Other					
Control Type:	Unsignalized					
Intersection Capacity Utilization 62.0%	ICU Level of Service B					
Analysis Period (min) 15						

HCM Unsignalized Intersection Capacity Analysis Total (2041) - Scenario B - 25% Reduction
202: Trafalgar Rd & West Street C

Timing Plan: AM Peak Hour

									
Movement	EBL	EBR	NBL	NBT	SBT	SBR			
Lane Configurations				  	  				
Traffic Volume (veh/h)	0	84	0	3034	2045	299			
Future Volume (Veh/h)	0	84	0	3034	2045	299			
Sign Control	Stop			Free	Free				
Grade	0%			0%	0%				
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92			
Hourly flow rate (vph)	0	91	0	3298	2223	325			
Pedestrians									
Lane Width (m)									
Walking Speed (m/s)									
Percent Blockage									
Right turn flare (veh)									
Median type			None	None					
Median storage (veh)									
Upstream signal (m)			247	208					
pX, platoon unblocked	0.79	0.61	0.61						
vC, conflicting volume	3322	741	2548						
vC1, stage 1 conf vol									
vC2, stage 2 conf vol									
vCu, unblocked vol	0	0	1311						
tC, single (s)	6.8	6.9	4.1						
tC, 2 stage (s)									
tF (s)	3.5	3.3	2.2						
p0 queue free %	100	86	100						
cM capacity (veh/h)	804	664	320						
Direction, Lane #	EB 1	NB 1	NB 2	NB 3	SB 1	SB 2	SB 3	SB 4	
Volume Total	91	1099	1099	1099	741	741	741	325	
Volume Left	0	0	0	0	0	0	0	0	
Volume Right	91	0	0	0	0	0	0	325	
cSH	664	1700	1700	1700	1700	1700	1700	1700	
Volume to Capacity	0.14	0.65	0.65	0.65	0.44	0.44	0.44	0.19	
Queue Length 95th (m)	3.6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Control Delay (s)	11.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Lane LOS	B								
Approach Delay (s)	11.3	0.0			0.0				
Approach LOS	B								
Intersection Summary									
Average Delay			0.2						
Intersection Capacity Utilization			62.0%			ICU Level of Service			B
Analysis Period (min)			15						

Lanes, Volumes, Timings
203: East Street D & East Street A

Total (2041) - Scenario B - 25% Reduction
Timing Plan: AM Peak Hour

						
Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	133	371	0	82	110	0
Future Volume (vph)	133	371	0	82	110	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	0.901					
Flt Protected					0.950	
Satd. Flow (prot)	1678	0	0	1863	1770	0
Flt Permitted					0.950	
Satd. Flow (perm)	1678	0	0	1863	1770	0
Link Speed (k/h)	50			50	50	
Link Distance (m)	212.6			202.8	119.6	
Travel Time (s)	15.3			14.6	8.6	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	145	403	0	89	120	0
Shared Lane Traffic (%)						
Lane Group Flow (vph)	548	0	0	89	120	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
Sign Control	Free			Free	Stop	
Intersection Summary						
Area Type:	Other					
Control Type:	Unsignalized					
Intersection Capacity Utilization	42.6%			ICU Level of Service A		
Analysis Period (min)	15					

HCM Unsignalized Intersection Capacity Analysis Total (2041) - Scenario B - 25% Reduction
203: East Street D & East Street A

Timing Plan: AM Peak Hour

	→	↖	↗	←	↖	↗
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↖			↖	↖	
Traffic Volume (veh/h)	133	371	0	82	110	0
Future Volume (Veh/h)	133	371	0	82	110	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)	145	403	0	89	120	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)	213					
pX, platoon unblocked			0.97		0.97	0.97
vC, conflicting volume			548		436	346
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			516		400	308
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			100		80	100
cM capacity (veh/h)			1016		586	708
Direction, Lane #	EB 1	WB 1	NB 1			
Volume Total	548	89	120			
Volume Left	0	0	120			
Volume Right	403	0	0			
cSH	1700	1016	586			
Volume to Capacity	0.32	0.00	0.20			
Queue Length 95th (m)	0.0	0.0	5.7			
Control Delay (s)	0.0	0.0	12.7			
Lane LOS			B			
Approach Delay (s)	0.0	0.0	12.7			
Approach LOS			B			
Intersection Summary						
Average Delay			2.0			
Intersection Capacity Utilization			42.6%		ICU Level of Service	A
Analysis Period (min)			15			

Lanes, Volumes, Timings
204: East Street E & East Street A

Total (2041) - Scenario B - 25% Reduction
Timing Plan: AM Peak Hour

	→	↘	↙	←	↖	↗
Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↗			↖	↗	↖
Traffic Volume (vph)	0	45	0	0	90	0
Future Volume (vph)	0	45	0	0	90	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.865					
Flt Protected					0.950	
Satd. Flow (prot)	1611	0	0	1863	1770	0
Flt Permitted					0.950	
Satd. Flow (perm)	1611	0	0	1863	1770	0
Link Speed (k/h)	50			50	50	
Link Distance (m)	202.8			186.3	118.9	
Travel Time (s)	14.6			13.4	8.6	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	49	0	0	98	0
Shared Lane Traffic (%)						
Lane Group Flow (vph)	49	0	0	0	98	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	0.0			0.0	3.6	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	4.8			4.8	4.8	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)		15	25		25	15
Sign Control	Free			Free	Stop	

Intersection Summary

Area Type: Other

Control Type: Unsignalized

Intersection Capacity Utilization 15.0% ICU Level of Service A

Analysis Period (min) 15

HCM Unsignalized Intersection Capacity Analysis Total (2041) - Scenario B - 25% Reduction
204: East Street E & East Street A

Timing Plan: AM Peak Hour

	→	↘	↙	←	↖	↗
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↗			↖	↗	↖
Traffic Volume (veh/h)	0	45	0	0	90	0
Future Volume (Veh/h)	0	45	0	0	90	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)	0	49	0	0	98	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			49		24	24
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			49		24	24
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			100		90	100
cM capacity (veh/h)			1558		991	1052

Direction, Lane #	EB 1	WB 1	NB 1
Volume Total	49	0	98
Volume Left	0	0	98
Volume Right	49	0	0
cSH	1700	1700	991
Volume to Capacity	0.03	0.00	0.10
Queue Length 95th (m)	0.0	0.0	2.5
Control Delay (s)	0.0	0.0	9.0
Lane LOS			A
Approach Delay (s)	0.0	0.0	9.0
Approach LOS			A

Intersection Summary

Average Delay	6.0		
Intersection Capacity Utilization	15.0%	ICU Level of Service	A
Analysis Period (min)	15		

Lanes, Volumes, Timings
205: East Street F & East Street A

Total (2041) - Scenario B - 25% Reduction
Timing Plan: AM Peak Hour

						
Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
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	1.00	1.00	1.00
Fit						
Fit Protected						
Satd. Flow (prot)	1863	0	0	1863	1863	0
Fit Permitted						
Satd. Flow (perm)	1863	0	0	1863	1863	0
Link Speed (k/h)	50			50	50	
Link Distance (m)	186.3			197.2	119.9	
Travel Time (s)	13.4			14.2	8.6	
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)	0.0			0.0	3.6	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	4.8			4.8	4.8	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)		15	25		25	15
Sign Control	Stop			Free	Free	
Intersection Summary						
Area Type:	Other					
Control Type:	Unsignalized					
Intersection Capacity Utilization	0.0%			ICU Level of Service A		
Analysis Period (min)	15					

HCM Unsignalized Intersection Capacity Analysis Total (2041) - Scenario B - 25% Reduction
205: East Street F & East Street A Timing Plan: AM Peak Hour

Intersection Sign configuration not allowed in HCM analysis.

Lanes, Volumes, Timings
206: East Street D & East Street B

Total (2041) - Scenario B - 25% Reduction
Timing Plan: AM Peak Hour

	←	←	↑	↗	↘	↓
Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	↖		↖			↗
Traffic Volume (vph)	54	23	60	11	11	217
Future Volume (vph)	54	23	60	11	11	217
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	0.960		0.979			
Flt Protected	0.966					0.998
Satd. Flow (prot)	1727	0	1824	0	0	1859
Flt Permitted	0.966					0.998
Satd. Flow (perm)	1727	0	1824	0	0	1859
Link Speed (k/h)	50		50			50
Link Distance (m)	200.4		111.4			119.6
Travel Time (s)	14.4		8.0			8.6
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	59	25	65	12	12	236
Shared Lane Traffic (%)						
Lane Group Flow (vph)	84	0	77	0	0	248
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 29.8% ICU Level of Service A

Analysis Period (min) 15

HCM Unsignalized Intersection Capacity Analysis Total (2041) - Scenario B - 25% Reduction
206: East Street D & East Street B

Timing Plan: AM Peak Hour

	←	←	↑	↗	↘	↓
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	↖		↖			↗
Traffic Volume (veh/h)	54	23	60	11	11	217
Future Volume (Veh/h)	54	23	60	11	11	217
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)	59	25	65	12	12	236
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	331	71			77	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	331	71			77	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	91	97			99	
cM capacity (veh/h)	659	991			1522	

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	84	77	248
Volume Left	59	0	12
Volume Right	25	12	0
cSH	732	1700	1522
Volume to Capacity	0.11	0.05	0.01
Queue Length 95th (m)	2.9	0.0	0.2
Control Delay (s)	10.6	0.0	0.4
Lane LOS	B		A
Approach Delay (s)	10.6	0.0	0.4
Approach LOS	B		

Intersection Summary

Average Delay	2.4		
Intersection Capacity Utilization	29.8%	ICU Level of Service	A
Analysis Period (min)	15		

Lanes, Volumes, Timings
207: East Street E & East Street B

Total (2041) - Scenario B - 25% Reduction
Timing Plan: AM Peak Hour

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔			↔			↔			↔	
Traffic Volume (vph)	35	0	52	0	0	0	197	8	0	0	45	0
Future Volume (vph)	35	0	52	0	0	0	197	8	0	0	45	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	0.919											
Flt Protected	0.980											
Satd. Flow (prot)	0	1678	0	0	1863	0	0	1777	0	0	1863	0
Flt Permitted	0.980											
Satd. Flow (perm)	0	1678	0	0	1863	0	0	1777	0	0	1863	0
Link Speed (k/h)	50											
Link Distance (m)	200.4											
Travel Time (s)	14.4											
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)	38	0	57	0	0	0	214	9	0	0	49	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	95	0	0	0	0	0	223	0	0	49	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											
Link Offset(m)	0.0											
Crosswalk Width(m)	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											

Intersection Summary

Area Type: Other

Control Type: Unsignalized

Intersection Capacity Utilization 29.8% ICU Level of Service A

Analysis Period (min) 15

HCM Unsignalized Intersection Capacity Analysis Total (2041) - Scenario B - 25% Reduction
207: East Street E & East Street B

Timing Plan: AM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	35	0	52	0	0	0	197	8	0	0	45	0
Future Volume (Veh/h)	35	0	52	0	0	0	197	8	0	0	45	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)	38	0	57	0	0	0	214	9	0	0	49	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)	114											
pX, platoon unblocked												
vC, conflicting volume	486	486	49	543	486	9	49			9		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	486	486	49	543	486	9	49			9		
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 %	91	100	94	100	100	100	86			100		
cM capacity (veh/h)	440	415	1020	381	415	1073	1558			1611		
Direction, Lane #	EB 1	WB 1	NB 1	SB 1								
Volume Total	95	0	223	49								
Volume Left	38	0	214	0								
Volume Right	57	0	0	0								
cSH	668	1700	1558	1611								
Volume to Capacity	0.14	0.00	0.14	0.00								
Queue Length 95th (m)	3.7	0.0	3.6	0.0								
Control Delay (s)	11.3	0.0	7.4	0.0								
Lane LOS	B	A	A									
Approach Delay (s)	11.3	0.0	7.4	0.0								
Approach LOS	B	A										
Intersection Summary												
Average Delay	7.4											
Intersection Capacity Utilization	29.8%			ICU Level of Service					A			
Analysis Period (min)	15											

Lanes, Volumes, Timings
208: East Street F & East Street B

Total (2041) - Scenario B - 25% Reduction
Timing Plan: AM Peak Hour

						
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	1.00	1.00	1.00
Fit						
Fit Protected						
Satd. Flow (prot)	1863	0	0	1863	1863	0
Fit Permitted						
Satd. Flow (perm)	1863	0	0	1863	1863	0
Link Speed (k/h)	50			50	50	
Link Distance (m)	185.7			112.6	119.9	
Travel Time (s)	13.4			8.1	8.6	
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			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	25			15
Sign Control	Stop			Free	Free	
Intersection Summary						
Area Type:	Other					
Control Type:	Unsignalized					
Intersection Capacity Utilization	0.0%			ICU Level of Service A		
Analysis Period (min)	15					

HCM Unsignalized Intersection Capacity Analysis Total (2041) - Scenario B - 25% Reduction
208: East Street F & East Street B

Timing Plan: AM Peak Hour

	EBL	EBR	NBL	NBT	SBT	SBR
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	↔			↔	↔	
Traffic Volume (veh/h)	0	0	0	0	0	0
Future Volume (Veh/h)	0	0	0	0	0	0
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	0	0	0	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	0	0	0			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	0	0	0			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	100	100	100			
cM capacity (veh/h)	1023	1085	1623			
Direction, Lane #	EB 1	NB 1	SB 1			
Volume Total	0	0	0			
Volume Left	0	0	0			
Volume Right	0	0	0			
cSH	1700	1700	1700			
Volume to Capacity	0.00	0.00	0.00			
Queue Length 95th (m)	0.0	0.0	0.0			
Control Delay (s)	0.0	0.0	0.0			
Lane LOS	A					
Approach Delay (s)	0.0	0.0	0.0			
Approach LOS	A					
Intersection Summary						
Average Delay		0.0				
Intersection Capacity Utilization		0.0%		ICU Level of Service A		
Analysis Period (min)		15				

Lanes, Volumes, Timings
209: William Halton Parkway & East Street D

Total (2041) - Scenario B - 25% Reduction

Timing Plan: AM Peak Hour

	EBL	EBT	WBT	WBR	SBL	SBR
Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑↑	↑↑	↑		↑
Traffic Volume (vph)	0	1712	796	29	0	150
Future Volume (vph)	0	1712	796	29	0	150
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (m)	0.0			50.0	0.0	0.0
Storage Lanes	0			1	0	1
Taper Length (m)	7.5				7.5	
Lane Util. Factor	1.00	0.95	0.95	1.00	1.00	1.00
Frt				0.850		0.865
Flt Protected						
Satd. Flow (prot)	0	3539	3539	1583	0	1611
Flt Permitted						
Satd. Flow (perm)	0	3539	3539	1583	0	1611
Link Speed (k/h)		50	50		50	
Link Distance (m)		204.1	194.7		111.4	
Travel Time (s)		14.7	14.0		8.0	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	1861	865	32	0	163
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	1861	865	32	0	163
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(m)		3.6	3.6		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	25	15
Sign Control		Free	Free		Stop	
Intersection Summary						
Area Type:	Other					
Control Type:	Unsignalized					
Intersection Capacity Utilization 50.7%	ICU Level of Service A					
Analysis Period (min) 15						

HCM Unsignalized Intersection Capacity Analysis
209: William Halton Parkway & East Street D

Total (2041) - Scenario B - 25% Reduction

Timing Plan: AM Peak Hour

	EBL	EBT	WBT	WBR	SBL	SBR
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑↑	↑↑	↑		↑
Traffic Volume (veh/h)	0	1712	796	29	0	150
Future Volume (Veh/h)	0	1712	796	29	0	150
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)	0	1861	865	32	0	163
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		None	None			
Median storage (veh)						
Upstream signal (m)		204	195			
pX, platoon unblocked	0.84				0.80	0.84
vC, conflicting volume	897				1796	432
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	487				575	0
tC, single (s)	4.1				6.8	6.9
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	100				100	82
cM capacity (veh/h)	897				358	907
Direction, Lane #	EB 1	EB 2	WB 1	WB 2	WB 3	SB 1
Volume Total	930	930	432	432	32	163
Volume Left	0	0	0	0	0	0
Volume Right	0	0	0	0	32	163
cSH	1700	1700	1700	1700	1700	907
Volume to Capacity	0.55	0.55	0.25	0.25	0.02	0.18
Queue Length 95th (m)	0.0	0.0	0.0	0.0	0.0	4.9
Control Delay (s)	0.0	0.0	0.0	0.0	0.0	9.8
Lane LOS						A
Approach Delay (s)	0.0		0.0			9.8
Approach LOS						A
Intersection Summary						
Average Delay			0.5			
Intersection Capacity Utilization			50.7%		ICU Level of Service	A
Analysis Period (min)			15			

Lanes, Volumes, Timings

210: William Halton Parkway & East Street E

Total (2041) - Scenario B - 25% Reduction

Timing Plan: AM Peak Hour

	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations	↰	↱	↱	↰	↰	↰
Traffic Volume (vph)	214	1452	803	14	75	22
Future Volume (vph)	214	1452	803	14	75	22
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	0.969	
Flt Protected	0.950				0.963	
Satd. Flow (prot)	1770	3539	3539	1583	1738	0
Flt Permitted	0.181				0.963	
Satd. Flow (perm)	337	3539	3539	1583	1738	0
Right Turn on Red				Yes	Yes	
Satd. Flow (RTOR)				15	24	
Link Speed (k/h)		50	50		50	
Link Distance (m)		194.7	188.1		114.3	
Travel Time (s)		14.0	13.5		8.2	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	233	1578	873	15	82	24
Shared Lane Traffic (%)						
Lane Group Flow (vph)	233	1578	873	15	106	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
Number of Detectors	1	2	2	1	1	
Detector Template	Left	Thru	Thru	Right	Left	
Leading Detector (m)	2.0	10.0	10.0	2.0	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)	2.0	0.6	0.6	2.0	2.0	
Detector 1 Type	CI+Ex	CI+Ex	CI+Ex	CI+Ex	CI+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		CI+Ex	CI+Ex			
Detector 2 Channel						
Detector 2 Extend (s)		0.0	0.0			
Turn Type	pm+pt	NA	NA	Perm	Prot	
Protected Phases	7	4	8		6	
Permitted Phases	4			8		

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Lanes, Volumes, Timings

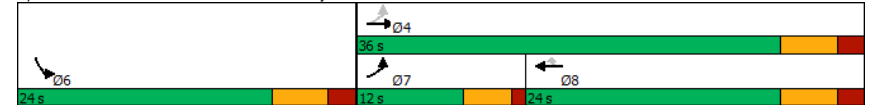
210: William Halton Parkway & East Street E

Total (2041) - Scenario B - 25% Reduction

Timing Plan: AM Peak Hour

	EBL	EBT	WBT	WBR	SBL	SBR
Detector Phase	7	4	8	8	6	
Switch Phase						
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	
Minimum Split (s)	9.5	24.0	24.0	24.0	24.0	
Total Split (s)	12.0	36.0	24.0	24.0	24.0	
Total Split (%)	20.0%	60.0%	40.0%	40.0%	40.0%	
Maximum Green (s)	7.5	30.0	18.0	18.0	18.0	
Yellow Time (s)	3.5	4.0	4.0	4.0	4.0	
All-Red Time (s)	1.0	2.0	2.0	2.0	2.0	
Lost Time Adjust (s)	1.0	-2.0	-2.0	-2.0	-2.0	
Total Lost Time (s)	5.5	4.0	4.0	4.0	4.0	
Lead/Lag	Lead		Lag	Lag		
Lead-Lag Optimize?	Yes		Yes	Yes		
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	
Recall Mode	None	Max	Max	Max	None	
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 Effect Green (s)	33.5	35.8	23.1	23.1	9.9	
Actuated g/C Ratio	0.66	0.71	0.46	0.46	0.20	
v/c Ratio	0.58	0.63	0.54	0.02	0.30	
Control Delay	12.2	7.1	13.0	5.8	16.0	
Queue Delay	0.0	0.0	0.0	0.0	0.0	
Total Delay	12.2	7.1	13.0	5.8	16.0	
LOS	B	A	B	A	B	
Approach Delay		7.8	12.9		16.0	
Approach LOS		A	B		B	
Intersection Summary						
Area Type:	Other					
Cycle Length: 60						
Actuated Cycle Length: 50.6						
Natural Cycle: 60						
Control Type: Semi Act-Uncoord						
Maximum v/c Ratio: 0.63						
Intersection Signal Delay: 9.7						Intersection LOS: A
Intersection Capacity Utilization 52.3%						ICU Level of Service A
Analysis Period (min) 15						

Splits and Phases: 210: William Halton Parkway & East Street E

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Queues
210: William Halton Parkway & East Street E

Total (2041) - Scenario B - 25% Reduction
Timing Plan: AM Peak Hour

	EBL	EBT	WBT	WBR	SBL
Lane Group	EBL	EBT	WBT	WBR	SBL
Lane Group Flow (vph)	233	1578	873	15	106
v/c Ratio	0.58	0.63	0.54	0.02	0.30
Control Delay	12.2	7.1	13.0	5.8	16.0
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	12.2	7.1	13.0	5.8	16.0
Queue Length 50th (m)	7.4	36.5	30.2	0.0	6.1
Queue Length 95th (m)	#26.2	67.2	50.0	2.6	15.7
Internal Link Dist (m)		170.7	164.1		90.3
Turn Bay Length (m)	50.0			50.0	
Base Capacity (vph)	407	2504	1615	730	702
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	0.57	0.63	0.54	0.02	0.15

Intersection Summary

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

HCM Signalized Intersection Capacity Analysis
210: William Halton Parkway & East Street E

Total (2041) - Scenario B - 25% Reduction
Timing Plan: AM Peak Hour

	EBL	EBT	WBT	WBR	SBL	SBR
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations	↰	↱	↰	↱	↰	↱
Traffic Volume (vph)	214	1452	803	14	75	22
Future Volume (vph)	214	1452	803	14	75	22
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.5	4.0	4.0	4.0	4.0	
Lane Util. Factor	1.00	0.95	0.95	1.00	1.00	
Frt	1.00	1.00	1.00	0.85	0.97	
Flt Protected	0.95	1.00	1.00	1.00	0.96	
Satd. Flow (prot)	1770	3539	3539	1583	1739	
Flt Permitted	0.18	1.00	1.00	1.00	0.96	
Satd. Flow (perm)	337	3539	3539	1583	1739	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	233	1578	873	15	82	24
RTOR Reduction (vph)	0	0	0	8	20	0
Lane Group Flow (vph)	233	1578	873	7	86	0
Turn Type	pm+pt	NA	NA	Perm	Prot	
Protected Phases	7	4	8		6	
Permitted Phases	4			8		
Actuated Green, G (s)	33.0	33.0	21.1	21.1	6.8	
Effective Green, g (s)	32.0	35.0	23.1	23.1	8.8	
Actuated g/C Ratio	0.62	0.68	0.45	0.45	0.17	
Clearance Time (s)	4.5	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)	385	2391	1578	705	295	
v/s Ratio Prot	0.07	c0.45	0.25		c0.05	
v/s Ratio Perm	0.30			0.00		
v/c Ratio	0.61	0.66	0.55	0.01	0.29	
Uniform Delay, d1	6.4	4.9	10.6	8.0	18.8	
Progression Factor	1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	2.7	1.4	1.4	0.0	0.6	
Delay (s)	9.1	6.4	12.0	8.0	19.3	
Level of Service	A	A	B	A	B	
Approach Delay (s)		6.7	11.9		19.3	
Approach LOS		A	B		B	

Intersection Summary

HCM 2000 Control Delay	8.8	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.67		
Actuated Cycle Length (s)	51.8	Sum of lost time (s)	13.5
Intersection Capacity Utilization	52.3%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Lanes, Volumes, Timings

211: William Halton Parkway & East Street F

Total (2041) - Scenario B - 25% Reduction

Timing Plan: AM Peak Hour

						
Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		 	 		 	
Traffic Volume (vph)	0	1527	817	0	0	0
Future Volume (vph)	0	1527	817	0	0	0
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						
Flt Protected						
Satd. Flow (prot)	1863	3539	3539	1863	1863	0
Flt Permitted						
Satd. Flow (perm)	1863	3539	3539	1863	1863	0
Link Speed (k/h)		50	50		50	
Link Distance (m)		188.1	219.2		112.6	
Travel Time (s)		13.5	15.8		8.1	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	1660	888	0	0	0
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	1660	888	0	0	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	45.5%			ICU Level of Service A		
Analysis Period (min)	15					

HCM Unsignalized Intersection Capacity Analysis

211: William Halton Parkway & East Street F

Total (2041) - Scenario B - 25% Reduction

Timing Plan: AM Peak Hour

	EBL	EBT	WBT	WBR	SBL	SBR
Movement	↰	↱↱	↱↱	↰	↰	
Lane Configurations	↰	↱↱	↱↱	↰	↰	
Traffic Volume (veh/h)	0	1527	817	0	0	0
Future Volume (Veh/h)	0	1527	817	0	0	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)	0	1660	888	0	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)		188				
pX, platoon unblocked					0.69	
vC, conflicting volume	888				1718	444
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	888				1141	444
tC, single (s)	4.1				6.8	6.9
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	100				100	100
cM capacity (veh/h)	758				134	561
Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	WB 3
Volume Total	0	830	830	444	444	0
Volume Left	0	0	0	0	0	0
Volume Right	0	0	0	0	0	0
cSH	1700	1700	1700	1700	1700	1700
Volume to Capacity	0.00	0.49	0.49	0.26	0.26	0.00
Queue Length 95th (m)	0.0	0.0	0.0	0.0	0.0	0.0
Control Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0
Lane LOS						A
Approach Delay (s)	0.0			0.0		0.0
Approach LOS						A
Intersection Summary						
Average Delay			0.0			
Intersection Capacity Utilization			45.5%		ICU Level of Service	A
Analysis Period (min)			15			

Lanes, Volumes, Timings

212: West Street A & Transit Station

Total (2041) - Scenario B - 25% Reduction

Timing Plan: AM Peak Hour

	←	←	↑	↗	↘	↓
Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	↔		↔			↔
Traffic Volume (vph)	159	0	0	130	0	0
Future Volume (vph)	159	0	0	130	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt			0.865			
Flt Protected	0.950					
Satd. Flow (prot)	1770	0	1611	0	0	1863
Flt Permitted	0.950					
Satd. Flow (perm)	1770	0	1611	0	0	1863
Link Speed (k/h)	50		50			50
Link Distance (m)	70.0		239.0			98.7
Travel Time (s)	5.0		17.2			7.1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	173	0	0	141	0	0
Shared Lane Traffic (%)						
Lane Group Flow (vph)	173	0	141	0	0	0
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 23.5%

ICU Level of Service A

Analysis Period (min) 15

HCM Unsignalized Intersection Capacity Analysis

212: West Street A & Transit Station

Total (2041) - Scenario B - 25% Reduction

Timing Plan: AM Peak Hour

	←	←	↑	↗	↘	↓
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	↔		↔			↔
Traffic Volume (veh/h)	159	0	0	130	0	0
Future Volume (Veh/h)	159	0	0	130	0	0
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)	173	0	0	141	0	0
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None					
Median storage (veh)						
Upstream signal (m)	213					
pX, platoon unblocked						
vC, conflicting volume	0		346	0	487	346
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	0		346	0	487	346
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 %	89		100	87	100	100
cM capacity (veh/h)	1623		516	1085	392	516

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	173	141	0
Volume Left	173	0	0
Volume Right	0	141	0
cSH	1623	1085	1700
Volume to Capacity	0.11	0.13	0.00
Queue Length 95th (m)	2.7	3.3	0.0
Control Delay (s)	7.5	8.8	0.0
Lane LOS	A	A	A
Approach Delay (s)	7.5	8.8	0.0
Approach LOS	A	A	

Intersection Summary

Average Delay	8.1		
Intersection Capacity Utilization	23.5%	ICU Level of Service	A
Analysis Period (min)	15		

Lanes, Volumes, Timings

213: West Street A & William Halton Parkway

Total (2041) - Scenario B - 25% Reduction

Timing Plan: AM Peak Hour

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑	↑		↑↑	↑			↑			↑
Traffic Volume (vph)	0	1520	36	0	968	109	0	0	164	0	0	7
Future Volume (vph)	0	1520	36	0	968	109	0	0	164	0	0	7
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		1	0		1	0		1	0		1
Taper Length (m)	7.5			7.5			7.5			7.5		
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt			0.850			0.850			0.865			0.865
Flt Protected												
Satd. Flow (prot)	0	3539	1583	0	3539	1583	0	0	1611	0	0	1611
Flt Permitted												
Satd. Flow (perm)	0	3539	1583	0	3539	1583	0	0	1611	0	0	1611
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		202.0			209.3			100.4			239.0	
Travel Time (s)		14.5			15.1			7.2			17.2	
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	1652	39	0	1052	118	0	0	178	0	0	8
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	1652	39	0	1052	118	0	0	178	0	0	8
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	58.8%											
Analysis Period (min)	15											
ICU Level of Service B												

HCM Unsignalized Intersection Capacity Analysis

213: West Street A & William Halton Parkway

Total (2041) - Scenario B - 25% Reduction

Timing Plan: AM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑	↑		↑↑	↑			↑			↑
Traffic Volume (veh/h)	0	1520	36	0	968	109	0	0	164	0	0	7
Future Volume (Veh/h)	0	1520	36	0	968	109	0	0	164	0	0	7
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	1652	39	0	1052	118	0	0	178	0	0	8
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type	None			None								
Median storage veh												
Upstream signal (m)	202			209								
pX, platoon unblocked	0.87			0.60			0.66	0.66	0.60	0.66	0.66	0.87
vC, conflicting volume	1170			1691			2186	2822	826	2056	2743	526
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	896			815			893	1850	0	697	1732	156
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	73	100	100	99
cM capacity (veh/h)	655			484			155	49	650	158	58	750
Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	WB 3	NB 1	SB 1				
Volume Total	826	826	39	526	526	118	178	8				
Volume Left	0	0	0	0	0	0	0	0				
Volume Right	0	0	39	0	0	118	178	8				
cSH	1700	1700	1700	1700	1700	1700	650	750				
Volume to Capacity	0.49	0.49	0.02	0.31	0.31	0.07	0.27	0.01				
Queue Length 95th (m)	0.0	0.0	0.0	0.0	0.0	0.0	8.3	0.2				
Control Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	12.6	9.9				
Lane LOS							B	A				
Approach Delay (s)	0.0			0.0			12.6	9.9				
Approach LOS							B	A				
Intersection Summary												
Average Delay	0.8											
Intersection Capacity Utilization	58.8%			ICU Level of Service				B				
Analysis Period (min)	15											

Lanes, Volumes, Timings

214: West Street D & William Halton Parkway

Total (2041) - Scenario B - 25% Reduction

Timing Plan: AM Peak Hour

	←	→	↖	↗	←	↖	↗	→	↖	↗	→	↖	↗
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations	↖	↖	↖	↖	↖	↖	↖	↖	↖	↖	↖	↖	
Traffic Volume (vph)	0	1510	43	280	595	100	14	0	17	52	0	3	
Future Volume (vph)	0	1510	43	280	595	100	14	0	17	52	0	3	
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		0.0	50.0		0.0	
Storage Lanes	1		0	1		1	1		0	1		0	
Taper Length (m)	100.0			100.0			75.0			75.0			
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Frt			0.850			0.850			0.850			0.850	
Flt Protected				0.950			0.950			0.950			
Satd. Flow (prot)	1863	3539	1583	1770	3539	1583	1770	1583	0	1770	1583	0	
Flt Permitted				0.063			0.756			0.746			
Satd. Flow (perm)	1863	3539	1583	117	3539	1583	1408	1583	0	1390	1583	0	
Right Turn on Red			Yes		Yes			Yes			Yes		
Satd. Flow (RTOR)			55			109		347			366		
Link Speed (k/h)		50			50			50			50		
Link Distance (m)		241.6			202.0			103.2			133.4		
Travel Time (s)		17.4			14.5			7.4			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)	0	1641	47	304	647	109	15	0	18	57	0	3	
Shared Lane Traffic (%)													
Lane Group Flow (vph)	0	1641	47	304	647	109	15	18	0	57	3	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	1	2	1	1	2		1	2		
Detector Template	Left	Thru	Right	Left	Thru	Right	Left	Thru		Left	Thru		
Leading Detector (m)	2.0	10.0	2.0	2.0	10.0	2.0	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		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	2.0	0.6	2.0	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		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	pm+pt	NA	Perm	Perm	NA		Perm	NA		
Protected Phases		4		3	8			2			6		
Permitted Phases	4		4	8		8	2			6			

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Lanes, Volumes, Timings

214: West Street D & William Halton Parkway

Total (2041) - Scenario B - 25% Reduction

Timing Plan: AM Peak Hour

	←	→	↖	↗	←	↖	↗	→	↖	↗	→	↖	↗
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Detector Phase	4	4	4	3	8	8	2	2		6	6		
Switch Phase													
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0		5.0	5.0		
Minimum Split (s)	24.0	24.0	24.0	9.5	24.0	24.0	24.0	24.0		24.0	24.0		
Total Split (s)	66.0	66.0	66.0	29.9	95.9	95.9	24.1	24.1		24.1	24.1		
Total Split (%)	55.0%	55.0%	55.0%	24.9%	79.9%	79.9%	20.1%	20.1%		20.1%	20.1%		
Maximum Green (s)	60.0	60.0	60.0	26.9	89.9	89.9	18.1	18.1		18.1	18.1		
Yellow Time (s)	4.0	4.0	4.0	3.0	4.0	4.0	4.0	4.0		4.0	4.0		
All-Red Time (s)	2.0	2.0	2.0	0.0	2.0	2.0	2.0	2.0		2.0	2.0		
Lost Time Adjust (s)	-2.0	-2.0	-2.0	1.0	-2.0	-2.0	-2.0	-2.0		-2.0	-2.0		
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0		4.0	4.0		
Lead/Lag	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	Max	Max	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	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 Effect Green (s)		62.3	62.3	92.3	93.2	93.2	11.8	11.8		11.8	11.8		
Actuated g/C Ratio		0.57	0.57	0.84	0.85	0.85	0.11	0.11		0.11	0.11		
v/c Ratio		0.82	0.05	0.62	0.21	0.08	0.10	0.04		0.38	0.01		
Control Delay		24.5	3.0	31.1	2.4	0.6	45.9	0.1		53.8	0.0		
Queue Delay		0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0		
Total Delay		24.5	3.0	31.1	2.4	0.6	45.9	0.1		53.8	0.0		
LOS		C	A	C	A	A	D	A		D	A		
Approach Delay		23.9			10.4		20.9				51.1		
Approach LOS		C			B		C				D		

Intersection Summary

Area Type: Other

Cycle Length: 120

Actuated Cycle Length: 109.5

Natural Cycle: 90

Control Type: Semi Act-Uncoord

Maximum v/c Ratio: 0.82

Intersection Signal Delay: 19.4

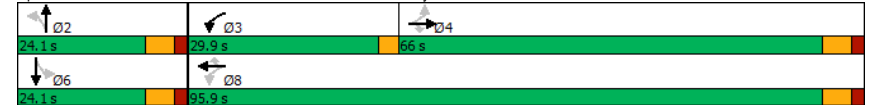
Intersection LOS: B

Intersection Capacity Utilization 76.8%

ICU Level of Service D

Analysis Period (min) 15

Splits and Phases: 214: West Street D & William Halton Parkway

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Queues
214: West Street D & William Halton Parkway

Total (2041) - Scenario B - 25% Reduction
Timing Plan: AM Peak Hour

	→	↘	↙	←	↖	↗	↘	↙	↓
Lane Group	EBT	EBR	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	1641	47	304	647	109	15	18	57	3
v/c Ratio	0.82	0.05	0.62	0.21	0.08	0.10	0.04	0.38	0.01
Control Delay	24.5	3.0	31.1	2.4	0.6	45.9	0.1	53.8	0.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	24.5	3.0	31.1	2.4	0.6	45.9	0.1	53.8	0.0
Queue Length 50th (m)	147.1	0.0	41.7	12.1	0.0	3.0	0.0	11.6	0.0
Queue Length 95th (m)	196.6	4.6	75.2	20.6	3.1	9.1	0.0	24.1	0.0
Internal Link Dist (m)	217.6			178.0			79.2		109.4
Turn Bay Length (m)		50.0	50.0		50.0	50.0		50.0	
Base Capacity (vph)	2012	923	491	3012	1363	259	574	256	590
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.82	0.05	0.62	0.21	0.08	0.06	0.03	0.22	0.01
Intersection Summary									

HCM Signalized Intersection Capacity Analysis
214: West Street D & William Halton Parkway

Total (2041) - Scenario B - 25% Reduction
Timing Plan: AM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		 			 						 	
Traffic Volume (vph)	0	1510	43	280	595	100	14	0	17	52	0	3
Future Volume (vph)	0	1510	43	280	595	100	14	0	17	52	0	3
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	
Lane Util. Factor		0.95	1.00	1.00	0.95	1.00	1.00	1.00		1.00	1.00	
Frt		1.00	0.85	1.00	1.00	0.85	1.00	0.85		1.00	0.85	
Flt Protected		1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)		3539	1583	1770	3539	1583	1770	1583		1770	1583	
Flt Permitted		1.00	1.00	0.06	1.00	1.00	0.76	1.00		0.75	1.00	
Satd. Flow (perm)		3539	1583	118	3539	1583	1408	1583		1389	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)	0	1641	47	304	647	109	15	0	18	57	0	3
RTOR Reduction (vph)	0	0	21	0	0	18	0	16	0	0	3	0
Lane Group Flow (vph)	0	1641	26	304	647	91	15	2	0	57	0	0
Turn Type	Perm	NA	Perm	pm+pt	NA	Perm	Perm	NA		Perm	NA	
Protected Phases		4		3		8		2			6	
Permitted Phases	4		4	8		8		2		6		
Actuated Green, G (s)		60.3	60.3	90.3	90.3	90.3	8.5	8.5		8.5	8.5	
Effective Green, g (s)		62.3	62.3	89.3	92.3	92.3	10.5	10.5		10.5	10.5	
Actuated g/C Ratio		0.56	0.56	0.81	0.83	0.83	0.09	0.09		0.09	0.09	
Clearance Time (s)		6.0	6.0	3.0	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	3.0	
Lane Grp Cap (vph)		1989	890	482	2948	1318	133	150		131	150	
v/s Ratio Prot		c0.46		c0.15	0.18			0.00			0.00	
v/s Ratio Perm			0.02	0.36		0.06	0.01			c0.04		
v/c Ratio		0.83	0.03	0.63	0.22	0.07	0.11	0.01		0.44	0.00	
Uniform Delay, d1		19.8	10.8	29.0	1.9	1.6	45.9	45.4		47.3	45.4	
Progression Factor		1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Incremental Delay, d2		4.1	0.1	6.2	0.2	0.1	0.4	0.0		2.3	0.0	
Delay (s)		23.9	10.9	35.2	2.1	1.7	46.3	45.5		49.7	45.4	
Level of Service		C	B	D	A	A	D	D		D	D	
Approach Delay (s)		23.5			11.5			45.8			49.4	
Approach LOS		C			B			D			D	
Intersection Summary												
HCM 2000 Control Delay			19.8		HCM 2000 Level of Service					B		
HCM 2000 Volume to Capacity ratio			0.73									
Actuated Cycle Length (s)			110.8		Sum of lost time (s)					12.0		
Intersection Capacity Utilization			76.8%		ICU Level of Service					D		
Analysis Period (min)			15									
c Critical Lane Group												

Lanes, Volumes, Timings

215: West Street A & West Street B

Total (2041) - Scenario B - 25% Reduction

Timing Plan: AM Peak Hour

	EBL	EBR	NBL	NBT	SBT	SBR
Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	↔	↔	↔	↔	↔	↔
Traffic Volume (vph)	98	61	0	38	39	5
Future Volume (vph)	98	61	0	38	39	5
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	0.948			0.986		
Flt Protected	0.970					
Satd. Flow (prot)	1713	0	0	1863	1837	0
Flt Permitted	0.970					
Satd. Flow (perm)	1713	0	0	1863	1837	0
Link Speed (k/h)	50			50	50	
Link Distance (m)	202.8			106.4	100.4	
Travel Time (s)	14.6			7.7	7.2	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	107	66	0	41	42	5
Shared Lane Traffic (%)						
Lane Group Flow (vph)	173	0	0	41	47	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
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	25			15
Sign Control	Stop			Free	Free	

Intersection Summary

Area Type: Other

Control Type: Unsignalized

Intersection Capacity Utilization 19.2% ICU Level of Service A

Analysis Period (min) 15

HCM Unsignalized Intersection Capacity Analysis

215: West Street A & West Street B

Total (2041) - Scenario B - 25% Reduction

Timing Plan: AM Peak Hour

	EBL	EBR	NBL	NBT	SBT	SBR
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	↔	↔	↔	↔	↔	↔
Traffic Volume (veh/h)	98	61	0	38	39	5
Future Volume (Veh/h)	98	61	0	38	39	5
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)	107	66	0	41	42	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	86	44	47			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	86	44	47			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	88	94	100			
cM capacity (veh/h)	916	1025	1560			
Direction, Lane #	EB 1	NB 1	SB 1			
Volume Total	173	41	47			
Volume Left	107	0	0			
Volume Right	66	0	5			
cSH	955	1560	1700			
Volume to Capacity	0.18	0.00	0.03			
Queue Length 95th (m)	4.9	0.0	0.0			
Control Delay (s)	9.6	0.0	0.0			
Lane LOS	A					
Approach Delay (s)	9.6	0.0	0.0			
Approach LOS	A					
Intersection Summary						
Average Delay		6.4				
Intersection Capacity Utilization		19.2%		ICU Level of Service	A	
Analysis Period (min)		15				

Lanes, Volumes, Timings

216: West Street D & West Street B

Total (2041) - Scenario B - 25% Reduction

Timing Plan: AM Peak Hour

	←	←	↑	↗	↘	↓
Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	↖		↗			↗
Traffic Volume (vph)	0	8	23	0	182	141
Future Volume (vph)	0	8	23	0	182	141
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.865					
Flt Protected						0.973
Satd. Flow (prot)	1611	0	1863	0	0	1812
Flt Permitted						0.973
Satd. Flow (perm)	1611	0	1863	0	0	1812
Link Speed (k/h)	50		50			50
Link Distance (m)	202.8		99.7			103.2
Travel Time (s)	14.6		7.2			7.4
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	9	25	0	198	153
Shared Lane Traffic (%)						
Lane Group Flow (vph)	9	0	25	0	0	351
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
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		15	25	
Sign Control	Stop		Free			Free

Intersection Summary

Area Type: Other

Control Type: Unsignalized

Intersection Capacity Utilization 34.2%

ICU Level of Service A

Analysis Period (min) 15

HCM Unsignalized Intersection Capacity Analysis

216: West Street D & West Street B

Total (2041) - Scenario B - 25% Reduction

Timing Plan: AM Peak Hour

	←	←	↑	↗	↘	↓
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	↖		↗			↗
Traffic Volume (veh/h)	0	8	23	0	182	141
Future Volume (Veh/h)	0	8	23	0	182	141
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	9	25	0	198	153
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage (veh)						
Upstream signal (m)						103
pX, platoon unblocked	0.97					
vC, conflicting volume	574	25			25	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	543	25			25	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	100	99			88	
cM capacity (veh/h)	424	1051			1589	

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	9	25	351
Volume Left	0	0	198
Volume Right	9	0	0
cSH	1051	1700	1589
Volume to Capacity	0.01	0.01	0.12
Queue Length 95th (m)	0.2	0.0	3.2
Control Delay (s)	8.5	0.0	4.7
Lane LOS	A		A
Approach Delay (s)	8.5	0.0	4.7
Approach LOS	A		

Intersection Summary

Average Delay 4.5
 Intersection Capacity Utilization 34.2% ICU Level of Service A
 Analysis Period (min) 15

Lanes, Volumes, Timings

217: West Street C & West Street A

Total (2041) - Scenario B - 25% Reduction

Timing Plan: AM Peak Hour

	EBL	EBT	WBT	WBR	SBL	SBR
Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↔	↔		↔	↔
Traffic Volume (vph)	0	64	117	154	57	11
Future Volume (vph)	0	64	117	154	57	11
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			0.923		0.978	
Flt Protected					0.960	
Satd. Flow (prot)	0	1863	1719	0	1749	0
Flt Permitted					0.960	
Satd. Flow (perm)	0	1863	1719	0	1749	0
Link Speed (k/h)		50	50		50	
Link Distance (m)		208.6	202.4		106.4	
Travel Time (s)		15.0	14.6		7.7	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	70	127	167	62	12
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	70	294	0	74	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 26.1%

ICU Level of Service A

Analysis Period (min) 15

HCM Unsignalized Intersection Capacity Analysis

217: West Street C & West Street A

Total (2041) - Scenario B - 25% Reduction

Timing Plan: AM Peak Hour

	EBL	EBT	WBT	WBR	SBL	SBR
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↔	↔		↔	↔
Traffic Volume (veh/h)	0	64	117	154	57	11
Future Volume (Veh/h)	0	64	117	154	57	11
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)	0	70	127	167	62	12
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		None	None			
Median storage (veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	294				280	210
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	294				280	210
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	100				91	99
cM capacity (veh/h)	1268				709	830
Direction, Lane #	EB 1	WB 1	SB 1			
Volume Total	70	294	74			
Volume Left	0	0	62			
Volume Right	0	167	12			
cSH	1268	1700	727			
Volume to Capacity	0.00	0.17	0.10			
Queue Length 95th (m)	0.0	0.0	2.5			
Control Delay (s)	0.0	0.0	10.5			
Lane LOS			B			
Approach Delay (s)	0.0	0.0	10.5			
Approach LOS			B			
Intersection Summary						
Average Delay			1.8			
Intersection Capacity Utilization		26.1%		ICU Level of Service	A	
Analysis Period (min)		15				

Lanes, Volumes, Timings

218: West Street D & West Street C

Total (2041) - Scenario B - 25% Reduction

Timing Plan: AM Peak Hour

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔			↔			↔			↔	
Traffic Volume (vph)	0	0	0	62	0	55	0	18	9	86	55	0
Future Volume (vph)	0	0	0	62	0	55	0	18	9	86	55	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					0.936			0.955				
Flt Protected					0.974						0.971	
Satd. Flow (prot)	0	1863	0	0	1698	0	0	1779	0	0	1809	0
Flt Permitted					0.974						0.971	
Satd. Flow (perm)	0	1863	0	0	1698	0	0	1779	0	0	1809	0
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		258.7			208.6			93.0			99.7	
Travel Time (s)		18.6			15.0			6.7			7.2	
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	0	67	0	60	0	20	10	93	60	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	0	0	0	127	0	0	30	0	0	153	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 27.8%

ICU Level of Service A

Analysis Period (min) 15

HCM Unsignalized Intersection Capacity Analysis

218: West Street D & West Street C

Total (2041) - Scenario B - 25% Reduction

Timing Plan: AM Peak Hour

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔			↔			↔			↔	
Traffic Volume (veh/h)	0	0	0	62	0	55	0	18	9	86	55	0
Future Volume (Veh/h)	0	0	0	62	0	55	0	18	9	86	55	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)	0	0	0	67	0	60	0	20	10	93	60	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	60			0			194	194	0	184	164	30
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	60			0			194	194	0	184	164	30
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			96			100	97	99	87	91	100
cM capacity (veh/h)	1544			1623			693	672	1085	729	698	1044

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	0	127	30	153
Volume Left	0	67	0	93
Volume Right	0	60	10	0
cSH	1700	1623	770	717
Volume to Capacity	0.00	0.04	0.04	0.21
Queue Length 95th (m)	0.0	1.0	0.9	6.0
Control Delay (s)	0.0	4.0	9.9	11.4
Lane LOS		A	A	B
Approach Delay (s)	0.0	4.0	9.9	11.4
Approach LOS		A	B	

Intersection Summary

Average Delay

8.2

Intersection Capacity Utilization

27.8%

ICU Level of Service

A

Analysis Period (min)

15

Lanes, Volumes, Timings

101: Trafalgar Rd & Lower Base Line

TT (2041) - Scenario B - 25% Reduction

Timing Plan: PM Peak Hour

	↖	→	↘	↙	←	↖	↗	↘	↙	↖	↗	↘	↙
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations	↖	↖	↖	↖	↖	↖	↖	↖	↖	↖	↖	↖	
Traffic Volume (vph)	54	240	77	356	678	368	493	2732	458	306	1760	123	
Future Volume (vph)	54	240	77	356	678	368	493	2732	458	306	1760	123	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	
Storage Length (m)	45.0		45.0	110.0		110.0	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	0.260			0.206			0.072			0.077			
Satd. Flow (perm)	484	3412	0	384	3352	0	134	5085	1583	143	5085	1583	
Right Turn on Red			Yes			Yes			Yes			Yes	
Satd. Flow (RTOR)		25			68				79			95	
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	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Adj. Flow (vph)	54	240	77	356	678	368	493	2732	458	306	1760	123	
Shared Lane Traffic (%)													
Lane Group Flow (vph)	54	317	0	356	1046	0	493	2732	458	306	1760	123	
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	pm+ov	pm+pt	NA	pm+ov	
Protected Phases	7	4		3	8		5	2	3	1	6	7	
Permitted Phases	4			8			2		2	6		6	

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Lanes, Volumes, Timings

101: Trafalgar Rd & Lower Base Line

TT (2041) - Scenario B - 25% Reduction

Timing Plan: PM Peak Hour

	↖	→	↘	↙	←	↖	↗	↘	↙	↖	↗	↘	↙
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Detector Phase	7	4		3	8		5	2	3	1	6	7	
Switch Phase													
Minimum Initial (s)	5.0	10.0		7.0	10.0		5.0	25.0	7.0	7.0	25.0	5.0	
Minimum Split (s)	11.6	22.5		13.6	22.5		11.6	31.6	13.6	13.6	31.6	11.6	
Total Split (s)	11.6	22.6		27.0	38.0		31.0	71.4	27.0	19.0	59.4	11.6	
Total Split (%)	8.3%	16.1%		19.3%	27.1%		22.1%	51.0%	19.3%	13.6%	42.4%	8.3%	
Maximum Green (s)	5.0	16.4		24.0	31.8		28.0	64.8	24.0	16.0	52.8	5.0	
Yellow Time (s)	4.6	4.2		3.0	4.2		3.0	4.6	3.0	3.0	4.6	4.6	
All-Red Time (s)	2.0	2.0		0.0	2.0		0.0	2.0	0.0	0.0	2.0	2.0	
Lost Time Adjust (s)	1.0	-2.2		1.0	-2.2		1.0	-2.2	1.0	1.0	-2.2	-2.2	
Total Lost Time (s)	7.6	4.0		4.0	4.0		4.0	4.4	4.0	4.0	4.4	4.4	
Lead/Lag	Lead	Lag		Lead	Lag		Lead	Lag	Lead	Lag	Lead	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	0.2	0.2	5.0	3.0	
Recall Mode	None	None		None	None		None	Max	None	Max	Max	None	
Act Effct Green (s)	19.0	18.6		45.6	34.0		86.4	67.0	94.4	70.4	55.0	66.6	
Actuated g/C Ratio	0.14	0.13		0.33	0.24		0.62	0.48	0.67	0.50	0.39	0.48	
v/c Ratio	0.53	0.67		1.01	1.21		1.24	1.12	0.42	1.24	0.88	0.15	
Control Delay	59.5	60.8		91.7	146.9		164.2	96.1	9.6	175.6	45.8	6.5	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	
Total Delay	59.5	60.8		91.7	146.9		164.2	96.1	9.6	175.6	45.8	6.5	
LOS	E	E		F	F		F	F	A	F	D	A	
Approach Delay		60.6			132.9			94.5			61.7		
Approach LOS		E			F			F			E		

Intersection Summary

Area Type: Other

Cycle Length: 140

Actuated Cycle Length: 140

Natural Cycle: 145

Control Type: Semi Act-Uncooord

Maximum v/c Ratio: 1.24

Intersection Signal Delay: 90.5

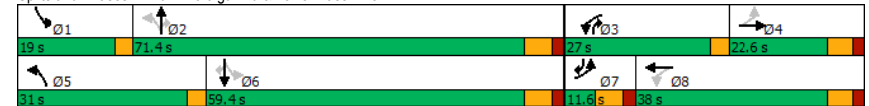
Intersection LOS: F

Intersection Capacity Utilization 121.1%

ICU Level of Service H

Analysis Period (min) 15

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

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Queues
101: Trafalgar Rd & Lower Base Line

TT (2041) - Scenario B - 25% Reduction
Timing Plan: PM Peak Hour

	EBL	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	54	317	356	1046	493	2732	458	306	1760	123
v/c Ratio	0.53	0.67	1.01	1.21	1.24	1.12	0.42	1.24	0.88	0.15
Control Delay	59.5	60.8	91.7	146.9	164.2	96.1	9.6	175.6	45.8	6.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	59.5	60.8	91.7	146.9	164.2	96.1	9.6	175.6	45.8	6.5
Queue Length 50th (m)	10.7	40.5	~83.3	~175.8	~150.8	~314.6	42.6	~87.7	162.3	4.0
Queue Length 95th (m)	#21.6	56.6	#144.7	#217.6	#218.1	#339.3	62.5	#145.8	182.8	14.8
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)	102	474	352	865	398	2433	1093	246	1997	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	0.53	0.67	1.01	1.21	1.24	1.12	0.42	1.24	0.88	0.15

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.

HCM Signalized Intersection Capacity Analysis
101: Trafalgar Rd & Lower Base Line

TT (2041) - Scenario B - 25% Reduction
Timing Plan: PM Peak Hour

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔
Traffic Volume (vph)	54	240	77	356	678	368	493	2732	458	306	1760	123
Future Volume (vph)	54	240	77	356	678	368	493	2732	458	306	1760	123
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	7.6	4.0		4.0	4.0		4.0	4.4	4.0	4.0	4.4	4.4
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	3410		1770	3352		1770	5085	1583	1770	5085	1583
Flt Permitted	0.26	1.00		0.21	1.00		0.07	1.00	1.00	0.08	1.00	1.00
Satd. Flow (perm)	484	3410		384	3352		134	5085	1583	144	5085	1583
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	54	240	77	356	678	368	493	2732	458	306	1760	123
RTOR Reduction (vph)	0	22	0	0	51	0	0	0	30	0	0	53
Lane Group Flow (vph)	54	295	0	356	995	0	493	2732	428	306	1760	70
Turn Type	pm+pt	NA		pm+pt	NA		pm+pt	NA	pm+ov	pm+pt	NA	pm+ov
Protected Phases	7	4		3	8		5	2	3	1	6	7
Permitted Phases	4			8			2		2	6		6
Actuated Green, G (s)	21.4	16.4		43.4	31.8		83.8	64.8	88.8	68.8	52.8	57.8
Effective Green, g (s)	19.4	18.6		42.4	34.0		82.8	67.0	86.8	66.8	55.0	62.2
Actuated g/C Ratio	0.14	0.13		0.30	0.24		0.59	0.48	0.62	0.48	0.39	0.44
Clearance Time (s)	6.6	6.2		3.0	6.2		3.0	6.6	3.0	3.0	6.6	6.6
Vehicle Extension (s)	3.0	5.0		0.2	5.0		3.0	5.0	0.2	0.2	5.0	3.0
Lane Grp Cap (vph)	103	453		343	814		394	2433	981	242	1997	753
v/s Ratio Prot	0.01	0.09		c0.17	c0.30		c0.24	0.54	0.07	0.13	0.35	0.00
v/s Ratio Perm	0.06			0.14			c0.50		0.20	0.47		0.04
v/c Ratio	0.52	0.65		1.04	1.22		1.25	1.12	0.44	1.26	0.88	0.09
Uniform Delay, d1	54.1	57.6		43.3	53.0		46.3	36.5	13.9	44.3	39.5	22.6
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	4.7	4.5		58.8	110.8		132.5	61.4	0.1	147.7	6.0	0.1
Delay (s)	58.8	62.1		102.0	163.8		178.8	97.9	14.0	192.0	45.5	22.6
Level of Service	E	E		F	F		F	F	B	F	D	C
Approach Delay (s)		61.6			148.1			98.3			64.7	
Approach LOS		E			F			F			E	

Intersection Summary

HCM 2000 Control Delay	96.0	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	1.27		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	20.0
Intersection Capacity Utilization	121.1%	ICU Level of Service	H
Analysis Period (min)	15		

c Critical Lane Group

Lanes, Volumes, Timings TT (2041) - Scenario B - 25% Reduction
102: Trafalgar Rd & North Carpool Lot/Hwy 407 WB Off Timing Plan: PM Peak Hour

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔		↔	↔	↔	↔	↔	↔	↔	↔	↔
Traffic Volume (vph)	7	0	49	622	16	174	9	3497	0	0	2188	5
Future Volume (vph)	7	0	49	622	16	174	9	3497	0	0	2188	5
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	0.882				0.992	0.850						0.850
Flt Protected	0.994			0.950	0.957		0.950					
Satd. Flow (prot)	0	1633	0	1681	1609	1504	1770	5085	0	0	5085	1583
Flt Permitted	0.994			0.720	0.708		0.070					
Satd. Flow (perm)	0	1633	0	1274	1191	1504	130	5085	0	0	5085	1583
Right Turn on Red		Yes			Yes			Yes			Yes	
Satd. Flow (RTOR)		78			3	95						70
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	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	7	0	49	622	16	174	9	3497	0	0	2188	5
Shared Lane Traffic (%)				47%		10%						
Lane Group Flow (vph)	0	56	0	330	325	157	9	3497	0	0	2188	5
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	CI+Ex	CI+Ex		CI+Ex	CI+Ex	CI+Ex	CI+Ex	CI+Ex			CI+Ex	CI+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		CI+Ex			CI+Ex			CI+Ex			CI+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Split	NA		Perm	NA	Perm	Perm	NA		NA	Perm	
Protected Phases	4	4			8			2			6	
Permitted Phases				8		8	2					6

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Lanes, Volumes, Timings TT (2041) - Scenario B - 25% Reduction
102: Trafalgar Rd & North Carpool Lot/Hwy 407 WB Off Timing Plan: PM Peak Hour

	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)	6.0	6.0		7.0	7.0	7.0	20.0	20.0			20.0	20.0
Minimum Split (s)	12.0	12.0		22.5	22.5	22.5	27.0	27.0			27.0	27.0
Total Split (s)	12.0	12.0		68.0	68.0	68.0	60.0	60.0			60.0	60.0
Total Split (%)	8.6%	8.6%		48.6%	48.6%	48.6%	42.9%	42.9%			42.9%	42.9%
Maximum Green (s)	6.0	6.0		62.0	62.0	62.0	53.0	53.0			53.0	53.0
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	-3.0	-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 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)		8.2		39.0	39.0	39.0	57.2	57.2			57.2	57.2
Actuated g/C Ratio		0.07		0.34	0.34	0.34	0.50	0.50			0.50	0.50
v/c Ratio		0.29		0.76	0.79	0.27	0.14	1.36			0.85	0.01
Control Delay		10.1		44.4	47.7	11.9	29.0	193.1			31.6	0.0
Queue Delay		0.0		0.0	0.0	0.0	0.0	0.0			0.0	0.0
Total Delay		10.1		44.4	47.7	11.9	29.0	193.1			31.6	0.0
LOS		B		D	D	B	C	F			C	A
Approach Delay		10.1			39.4		192.7				31.5	
Approach LOS		B			D		F				C	

Intersection Summary

Area Type: Other

Cycle Length: 140

Actuated Cycle Length: 113.5

Natural Cycle: 140

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 1.36

Intersection Signal Delay: 118.4

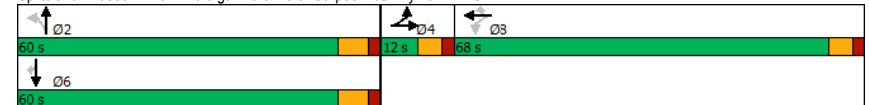
Intersection LOS: F

Intersection Capacity Utilization 100.3%

ICU Level of Service G

Analysis Period (min) 15

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



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PTSL (210156/210157)

Synchro 10 Report
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Queues TT (2041) - Scenario B - 25% Reduction
102: Trafalgar Rd & North Carpool Lot/Hwy 407 WB Off Timing Plan: PM Peak Hour

	→	↖	←	↙	↘	↑	↓	↗
Lane Group	EBT	WBL	WBT	WBR	NBL	NBT	SBT	SBR
Lane Group Flow (vph)	56	330	325	157	9	3497	2188	5
v/c Ratio	0.29	0.76	0.79	0.27	0.14	1.36	0.85	0.01
Control Delay	10.1	44.4	47.7	11.9	29.0	193.1	31.6	0.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	10.1	44.4	47.7	11.9	29.0	193.1	31.6	0.0
Queue Length 50th (m)	0.0	68.3	70.9	9.8	1.1	~387.6	158.0	0.0
Queue Length 95th (m)	7.6	102.1	107.4	24.6	6.4	#504.3	#251.5	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)	190	734	687	907	65	2564	2564	832
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.29	0.45	0.47	0.17	0.14	1.36	0.85	0.01

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.

HCM Signalized Intersection Capacity Analysis TT (2041) - Scenario B - 25% Reduction
102: Trafalgar Rd & North Carpool Lot/Hwy 407 WB Off Timing Plan: PM Peak Hour

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕		↖	↕	↗	↖	↕↕↕			↕↕↕	↗
Traffic Volume (vph)	7	0	49	622	16	174	9	3497	0	0	2188	5
Future Volume (vph)	7	0	49	622	16	174	9	3497	0	0	2188	5
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)		1633		1681	1609	1504	1770	5085			5085	1583
Flt Permitted		0.99		0.72	0.71	1.00	0.07	1.00			1.00	1.00
Satd. Flow (perm)		1633		1275	1190	1504	130	5085			5085	1583
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	7	0	49	622	16	174	9	3497	0	0	2188	5
RTOR Reduction (vph)	0	53	0	0	2	63	0	0	0	0	0	3
Lane Group Flow (vph)	0	3	0	330	323	94	9	3497	0	0	2188	2
Turn Type	Split	NA		Perm	NA	Perm	Perm	NA			NA	Perm
Protected Phases	4	4			8		2				6	
Permitted Phases				8		8	2					6
Actuated Green, G (s)		4.6		37.0	37.0	37.0	54.2	54.2			54.2	54.2
Effective Green, g (s)		6.6		39.0	39.0	39.0	57.2	57.2			57.2	57.2
Actuated g/C Ratio		0.06		0.34	0.34	0.34	0.50	0.50			0.50	0.50
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)		93		433	404	510	64	2533			2533	788
v/s Ratio Prot		c0.00						c0.69			0.43	
v/s Ratio Perm				0.26	c0.27	0.06	0.07					0.00
v/c Ratio		0.03		0.76	0.80	0.18	0.14	1.38			0.86	0.00
Uniform Delay, d1		51.1		33.8	34.4	26.7	15.5	28.8			25.4	14.5
Progression Factor		1.00		1.00	1.00	1.00	1.00	1.00			1.00	1.00
Incremental Delay, d2		0.2		8.0	10.9	0.2	4.5	173.8			4.2	0.0
Delay (s)		51.3		41.7	45.2	26.9	20.1	202.6			29.6	14.5
Level of Service		D		D	D	C	C	F			C	B
Approach Delay (s)		51.3			40.3			202.1			29.6	
Approach LOS		D			D			F			C	

Intersection Summary

HCM 2000 Control Delay	123.2	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	1.09		
Actuated Cycle Length (s)	114.8	Sum of lost time (s)	14.0
Intersection Capacity Utilization	100.3%	ICU Level of Service	G
Analysis Period (min)	15		

c Critical Lane Group

Lanes, Volumes, Timings

103: Trafalgar Rd & Hwy 407 EB Off

TT (2041) - Scenario B - 25% Reduction

Timing Plan: PM Peak Hour

	EBL	EBR	NBL	NBT	SBT	SBR
Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	↩	↩		↩↩↩	↩↩↩	
Traffic Volume (vph)	87	230	0	4043	2656	0
Future Volume (vph)	87	230	0	4043	2656	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			251.9	363.6	
Travel Time (s)	39.9			18.1	26.2	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	87	230	0	4043	2656	0
Shared Lane Traffic (%)						
Lane Group Flow (vph)	87	230	0	4043	2656	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	CI+Ex	CI+Ex		CI+Ex	CI+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				CI+Ex	CI+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	

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Lanes, Volumes, Timings

103: Trafalgar Rd & Hwy 407 EB Off

TT (2041) - Scenario B - 25% Reduction

Timing Plan: PM Peak Hour

	EBL	EBR	NBL	NBT	SBT	SBR
Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Minimum Split (s)	24.0	24.0		24.0	24.0	
Total Split (s)	35.0	35.0		55.0	55.0	
Total Split (%)	38.9%	38.9%		61.1%	61.1%	
Maximum Green (s)	29.0	29.0		49.0	49.0	
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)	18.5	18.5		52.7	52.7	
Actuated g/C Ratio	0.23	0.23		0.67	0.67	
v/c Ratio	0.21	0.62		1.20	0.79	
Control Delay	24.5	34.2		108.8	12.4	
Queue Delay	0.0	0.0		0.0	0.0	
Total Delay	24.5	34.2		108.8	12.4	
LOS	C	C		F	B	
Approach Delay	31.6			108.8	12.4	
Approach LOS	C			F	B	

Intersection Summary

Area Type: Other

Cycle Length: 90

Actuated Cycle Length: 79.2

Natural Cycle: 130

Control Type: Semi Act-Uncoord

Maximum v/c Ratio: 1.20

Intersection Signal Delay: 68.8

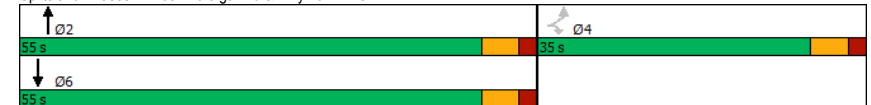
Intersection LOS: E

Intersection Capacity Utilization 89.6%

ICU Level of Service E

Analysis Period (min) 15

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

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Queues
103: Trafalgar Rd & Hwy 407 EB Off

TT (2041) - Scenario B - 25% Reduction
Timing Plan: PM Peak Hour

	EBL	EBR	NBT	SBT
Lane Group	EBL	EBR	NBT	SBT
Lane Group Flow (vph)	87	230	4043	2656
v/c Ratio	0.21	0.62	1.20	0.79
Control Delay	24.5	34.2	108.8	12.4
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	24.5	34.2	108.8	12.4
Queue Length 50th (m)	10.1	29.6	~264.2	85.8
Queue Length 95th (m)	20.5	50.2	#334.8	140.9
Internal Link Dist (m)	530.6		227.9	339.6
Turn Bay Length (m)				
Base Capacity (vph)	694	621	3382	3382
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	0.13	0.37	1.20	0.79

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.

HCM Signalized Intersection Capacity Analysis
103: Trafalgar Rd & Hwy 407 EB Off

TT (2041) - Scenario B - 25% Reduction
Timing Plan: PM Peak Hour

	EBL	EBR	NBL	NBT	SBT	SBR
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	↰	↱		↰	↰	↰
Traffic Volume (vph)	87	230	0	4043	2656	0
Future Volume (vph)	87	230	0	4043	2656	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	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	87	230	0	4043	2656	0
RTOR Reduction (vph)	0	1	0	0	0	0
Lane Group Flow (vph)	87	229	0	4043	2656	0
Turn Type	Perm	Perm		NA	NA	
Protected Phases				2	6	
Permitted Phases	4	4				
Actuated Green, G (s)	16.5	16.5		50.7	50.7	
Effective Green, g (s)	18.5	18.5		52.7	52.7	
Actuated g/C Ratio	0.23	0.23		0.67	0.67	
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)	413	369		3383	3383	
v/s Ratio Prot				c0.80	0.52	
v/s Ratio Perm	0.05	c0.14				
v/c Ratio	0.21	0.62		1.20	0.79	
Uniform Delay, d1	24.5	27.2		13.2	9.3	
Progression Factor	1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.3	3.2		90.9	1.9	
Delay (s)	24.7	30.4		104.2	11.2	
Level of Service	C	C		F	B	
Approach Delay (s)	28.9			104.2	11.2	
Approach LOS	C			F	B	

Intersection Summary

HCM 2000 Control Delay	65.6	HCM 2000 Level of Service	E
HCM 2000 Volume to Capacity ratio	1.08		
Actuated Cycle Length (s)	79.2	Sum of lost time (s)	10.0
Intersection Capacity Utilization	89.6%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

Lanes, Volumes, Timings

104: Trafalgar Rd & West Street A/East Street A

TT (2041) - Scenario B - 25% Reduction

Timing Plan: PM Peak Hour

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↩	↑	↪	↩	↑	↪	↩	↑	↪	↩	↑	↪
Traffic Volume (vph)	267	33	132	0	0	834	20	3693	225	363	2403	120
Future Volume (vph)	267	33	132	0	0	834	20	3693	225	363	2403	120
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	90.0		90.0	90.0		90.0
Storage Lanes	1		1	1		1	1		1	1		1
Taper Length (m)	75.0			75.0			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		
Satd. Flow (prot)	1770	1863	1583	1863	1863	1583	1770	5085	1583	1770	5085	1583
Flt Permitted	0.950						0.061			0.045		
Satd. Flow (perm)	1770	1863	1583	1863	1863	1583	114	5085	1583	84	5085	1583
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			132			44			155			120
Link Speed (k/h)	50				50			80			80	
Link Distance (m)	216.0				205.9			233.3			251.9	
Travel Time (s)	15.6				14.8			10.5			11.3	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	267	33	132	0	0	834	20	3693	225	363	2403	120
Shared Lane Traffic (%)												
Lane Group Flow (vph)	267	33	132	0	0	834	20	3693	225	363	2403	120
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	pm+pt	NA	Perm	pm+pt		pm+ov	pm+pt	NA	pm+ov	pm+pt	NA	pm+ov
Protected Phases	7	4		3	8	1	5	2	3	1	6	7
Permitted Phases	4		4	8		8	2		2	6		6

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Lanes, Volumes, Timings

104: Trafalgar Rd & West Street A/East Street A

TT (2041) - Scenario B - 25% Reduction

Timing Plan: PM Peak Hour

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector Phase	7	4	4	3	8	1	5	2	3	1	6	7
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)	9.5	24.0	24.0	9.5	24.0	11.0	9.5	24.0	9.5	11.0	24.0	9.5
Total Split (s)	10.0	24.3	24.3	9.7	24.0	25.0	9.5	91.0	9.7	25.0	106.5	10.0
Total Split (%)	6.7%	16.2%	16.2%	6.5%	16.0%	16.7%	6.3%	60.7%	6.5%	16.7%	71.0%	6.7%
Maximum Green (s)	7.0	18.3	18.3	6.7	18.0	22.0	6.5	85.0	6.7	22.0	100.5	7.0
Yellow Time (s)	3.0	4.0	4.0	3.0	4.0	3.0	3.0	4.0	3.0	3.0	4.0	3.0
All-Red Time (s)	0.0	2.0	2.0	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
Lost Time Adjust (s)	1.0	-2.0	-2.0	1.0	-2.0	-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	1.0	4.0	4.0	1.0	4.0	4.0	1.0
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lead	Lead	Lag	Lead	Lead	Lag	Lead
Lead-Lag Optimize?	Yes	Yes	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	3.0	3.0
Recall Mode	None	None	None	None	None	Max	None	C-Max	None	Max	C-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 Effect Green (s)	19.0	10.5	10.5			35.0	91.8	87.0	98.5	123.0	117.6	144.0
Actuated g/C Ratio	0.13	0.07	0.07			0.23	0.61	0.58	0.66	0.82	0.78	0.96
v/c Ratio	1.19	0.25	0.57			2.07	0.16	1.25	0.21	0.85	0.60	0.08
Control Delay	175.6	69.7	19.6			518.5	9.8	146.2	3.6	63.2	8.1	0.2
Queue Delay	0.0	0.0	0.0			0.0	0.0	0.2	0.0	0.0	0.4	0.0
Total Delay	175.6	69.7	19.6			518.5	9.8	146.4	3.6	63.2	8.5	0.2
LOS	F	E	B			F	A	F	A	E	A	A
Approach Delay		119.8			518.5			137.5			15.0	
Approach LOS		F			F			F			B	

Intersection Summary

Area Type: Other

Cycle Length: 150

Actuated Cycle Length: 150

Offset: 0 (0%), Referenced to phase 2:NBT and 6:SBTL, Start of Green

Natural Cycle: 150

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 2.07

Intersection Signal Delay: 132.2

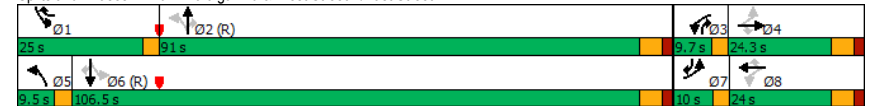
Intersection LOS: F

Intersection Capacity Utilization 147.8%

ICU Level of Service H

Analysis Period (min) 15

Splits and Phases: 104: Trafalgar Rd & West Street A/East Street A

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Queues
104: Trafalgar Rd & West Street A/East Street A

TT (2041) - Scenario B - 25% Reduction
Timing Plan: PM Peak Hour

	EBL	EBT	EBR	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group	EBL	EBT	EBR	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	267	33	132	834	20	3693	225	363	2403	120
v/c Ratio	1.19	0.25	0.57	2.07	0.16	1.25	0.21	0.85	0.60	0.08
Control Delay	175.6	69.7	19.6	518.5	9.8	146.2	3.6	63.2	8.1	0.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.2	0.0	0.0	0.4	0.0
Total Delay	175.6	69.7	19.6	518.5	9.8	146.4	3.6	63.2	8.5	0.2
Queue Length 50th (m)	~95.7	9.4	0.0	~376.6	1.1	~494.5	7.0	86.2	102.4	0.0
Queue Length 95th (m)	#134.5	19.9	20.0	#469.3	2.7	#510.5	16.4	#153.2	132.3	0.7
Internal Link Dist (m)		192.0			209.3			227.9		
Turn Bay Length (m)	50.0		50.0	50.0	90.0		90.0		90.0	
Base Capacity (vph)	224	252	328	402	131	2949	1104	428	3985	1524
Starvation Cap Reductn	0	0	0	0	0	250	0	0	847	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	1.19	0.13	0.40	2.07	0.15	1.37	0.20	0.85	0.77	0.08

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.

HCM Signalized Intersection Capacity Analysis
104: Trafalgar Rd & West Street A/East Street A

TT (2041) - Scenario B - 25% Reduction
Timing Plan: PM Peak Hour

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔
Traffic Volume (vph)	267	33	132	0	0	834	20	3693	225	363	2403	120
Future Volume (vph)	267	33	132	0	0	834	20	3693	225	363	2403	120
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			1.0	4.0	4.0	1.0	4.0	4.0	1.0
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	1.00	0.85			0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00			1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1770	1863	1583			1583	1770	5085	1583	1770	5085	1583
Flt Permitted	0.95	1.00	1.00			1.00	0.06	1.00	1.00	0.05	1.00	1.00
Satd. Flow (perm)	1770	1863	1583			1583	114	5085	1583	85	5085	1583
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	267	33	132	0	0	834	20	3693	225	363	2403	120
RTOR Reduction (vph)	0	0	123	0	0	34	0	0	57	0	0	9
Lane Group Flow (vph)	267	33	9	0	0	800	20	3693	168	363	2403	111
Turn Type	pm+pt	NA	Perm	pm+pt		pm+ov	pm+pt	NA	pm+ov	pm+pt	NA	pm+ov
Protected Phases	7	4		3	8	1	5	2	3	1	6	7
Permitted Phases	4		4	8		8	2		2	6		6
Actuated Green, G (s)	20.0	8.5	8.5			33.0	88.6	85.0	90.5	121.0	114.4	134.4
Effective Green, g (s)	19.0	10.5	10.5			35.0	86.6	87.0	94.5	120.0	116.4	138.4
Actuated g/C Ratio	0.13	0.07	0.07			0.23	0.58	0.58	0.63	0.80	0.78	0.92
Clearance Time (s)	3.0	6.0	6.0			3.0	3.0	6.0	3.0	3.0	6.0	3.0
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)	224	130	110			369	94	2949	997	427	3945	1460
v/s Ratio Prot	c0.15	0.02				c0.51	0.00	c0.73	0.01	0.18	0.47	0.01
v/s Ratio Perm			0.01				0.12		0.10	0.50		0.06
v/c Ratio	1.19	0.25	0.08			2.17	0.21	1.25	0.17	0.85	0.61	0.08
Uniform Delay, d1	65.5	66.0	65.3			57.5	16.3	31.5	11.5	50.2	7.1	0.5
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	121.8	1.0	0.3			534.8	1.1	116.5	0.1	18.7	0.7	0.0
Delay (s)	187.3	67.1	65.6			592.3	17.4	148.0	11.6	68.9	7.8	0.5
Level of Service	F	E	E			F	B	F	B	E	A	A
Approach Delay (s)		140.9			592.3			139.5			15.2	
Approach LOS		F			F			F			B	

Intersection Summary

HCM 2000 Control Delay	141.9	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	1.52		
Actuated Cycle Length (s)	150.0	Sum of lost time (s)	16.0
Intersection Capacity Utilization	147.8%	ICU Level of Service	H
Analysis Period (min)	15		

c Critical Lane Group

Lanes, Volumes, Timings

105: Trafalgar Rd & William Halton Parkway

TT (2041) - Scenario B - 25% Reduction

Timing Plan: PM Peak Hour

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰	↰	↰	↰	↰	↰	↰	↰	↰	↰	↰	↰
Traffic Volume (vph)	928	566	147	592	1537	547	616	2695	207	454	1903	436
Future Volume (vph)	928	566	147	592	1537	547	616	2695	207	454	1903	436
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	0.105			0.247			0.087			0.095		
Satd. Flow (perm)	196	3539	1583	460	3539	1583	162	5085	1583	177	5085	1583
Right Turn on Red			Yes			Yes			Yes		Yes	
Satd. Flow (RTOR)			147			187			85		238	
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		212.9			205.0			193.0			233.3	
Travel Time (s)		15.3			14.8			13.9			16.8	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	928	566	147	592	1537	547	616	2695	207	454	1903	436
Shared Lane Traffic (%)												
Lane Group Flow (vph)	928	566	147	592	1537	547	616	2695	207	454	1903	436
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

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Lanes, Volumes, Timings

105: Trafalgar Rd & William Halton Parkway

TT (2041) - Scenario B - 25% Reduction

Timing Plan: PM Peak Hour

	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)	14.0	38.0	38.0	14.2	38.0	38.0	13.9	42.9	42.9	13.9	42.9	42.9
Total Split (s)	31.0	46.2	46.2	29.8	45.0	45.0	24.0	56.0	56.0	18.0	50.0	50.0
Total Split (%)	20.7%	30.8%	30.8%	19.9%	30.0%	30.0%	16.0%	37.3%	37.3%	12.0%	33.3%	33.3%
Maximum Green (s)	28.0	39.2	39.2	26.8	38.0	38.0	21.0	49.1	49.1	15.0	43.1	43.1
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)	0.0	3.3	3.3	0.0	3.3	3.3	0.0	2.3	2.3	0.0	2.3	2.3
Lost Time Adjust (s)	1.0	-3.0	-3.0	1.0	-3.0	-3.0	1.0	-2.9	-2.9	1.0	-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	Max	Max	Max	Max	Max	Max
Walk Time (s)		7.0	7.0		7.0	7.0		7.0	7.0		7.0	7.0
Flash Dont Walk (s)		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 Effect Green (s)	69.2	42.2	42.2	66.8	41.0	41.0	70.0	52.0	52.0	60.0	46.0	46.0
Actuated g/C Ratio	0.46	0.28	0.28	0.45	0.27	0.27	0.47	0.35	0.35	0.40	0.31	0.31
v/c Ratio	2.49	0.57	0.27	1.38	1.59	0.96	2.12	1.53	0.34	2.07	1.22	0.67
Control Delay	699.2	48.8	7.1	211.1	305.7	64.6	541.9	275.7	22.6	522.7	149.1	25.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	699.2	48.8	7.1	211.1	305.7	64.6	541.9	275.7	22.6	522.7	149.1	25.4
LOS	F	D	A	F	F	E	F	F	C	F	F	C
Approach Delay		412.9			235.5			307.4			190.5	
Approach LOS		F			F			F			F	

Intersection Summary

Area Type: Other

Cycle Length: 150

Actuated Cycle Length: 150

Natural Cycle: 150

Control Type: Semi Act-Uncoord

Maximum v/c Ratio: 2.49

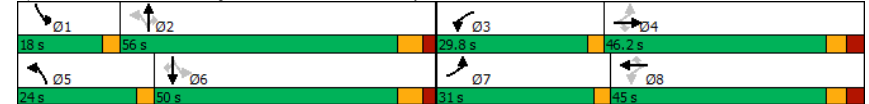
Intersection Signal Delay: 274.9

Intersection Capacity Utilization 184.5%

Analysis Period (min) 15

Intersection LOS: F
ICU Level of Service H

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

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Queues
105: Trafalgar Rd & William Halton Parkway

TT (2041) - Scenario B - 25% Reduction
Timing Plan: PM Peak Hour

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	928	566	147	592	1537	547	616	2695	207	454	1903	436
v/c Ratio	2.49	0.57	0.27	1.38	1.59	0.96	2.12	1.53	0.34	2.07	1.22	0.67
Control Delay	699.2	48.8	7.1	211.1	305.7	64.6	541.9	275.7	22.6	522.7	149.1	25.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	699.2	48.8	7.1	211.1	305.7	64.6	541.9	275.7	22.6	522.7	149.1	25.4
Queue Length 50th (m)	~438.3	75.2	0.0	~191.4	~337.3	114.4	~272.4	~404.2	25.7	~194.5	~250.4	51.8
Queue Length 95th (m)	#517.3	94.3	16.5	#263.6	#379.3	#188.2	#345.2	#428.1	47.1	#261.7	#278.7	90.7
Internal Link Dist (m)		188.9			181.0			169.0			209.3	
Turn Bay Length (m)	100.0		100.0	100.0		150.0	150.0		75.0			
Base Capacity (vph)	373	995	550	430	967	568	290	1762	604	219	1559	650
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	2.49	0.57	0.27	1.38	1.59	0.96	2.12	1.53	0.34	2.07	1.22	0.67

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.

HCM Signalized Intersection Capacity Analysis
105: Trafalgar Rd & William Halton Parkway

TT (2041) - Scenario B - 25% Reduction
Timing Plan: PM Peak Hour

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔
Traffic Volume (vph)	928	566	147	592	1537	547	616	2695	207	454	1903	436
Future Volume (vph)	928	566	147	592	1537	547	616	2695	207	454	1903	436
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	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00
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	0.10	1.00	1.00	0.25	1.00	1.00	0.09	1.00	1.00	0.10	1.00	1.00
Satd. Flow (perm)	195	3539	1583	461	3539	1583	162	5085	1583	177	5085	1583
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	928	566	147	592	1537	547	616	2695	207	454	1903	436
RTOR Reduction (vph)	0	0	106	0	0	136	0	0	56	0	0	165
Lane Group Flow (vph)	928	566	41	592	1537	411	616	2695	151	454	1903	271
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)	67.2	39.2	39.2	64.8	38.0	38.0	67.1	49.1	49.1	58.1	43.1	43.1
Effective Green, g (s)	65.2	42.2	42.2	62.8	41.0	41.0	66.1	52.0	52.0	56.1	46.0	46.0
Actuated g/C Ratio	0.43	0.28	0.28	0.42	0.27	0.27	0.44	0.35	0.35	0.37	0.31	0.31
Clearance Time (s)	3.0	7.0	7.0	3.0	7.0	7.0	3.0	6.9	6.9	3.0	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	995	445	418	967	432	285	1762	548	214	1559	485
v/s Ratio Prot	c0.45	0.16		0.24	0.43		c0.29	0.53		0.20	0.37	
v/s Ratio Perm	c0.64		0.03	0.35		0.26	c0.66		0.10	0.59		0.17
v/c Ratio	2.52	0.57	0.09	1.42	1.59	0.95	2.16	1.53	0.28	2.12	1.22	0.56
Uniform Delay, d1	48.0	46.1	39.8	35.8	54.5	53.5	48.3	49.0	35.4	44.1	52.0	43.5
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	692.8	1.2	0.2	201.0	270.2	31.7	534.1	241.2	1.2	520.1	105.3	4.6
Delay (s)	740.7	47.3	40.0	236.8	324.7	85.2	582.4	290.2	36.7	564.2	157.3	48.1
Level of Service	F	D	D	F	F	F	F	F	D	F	F	D
Approach Delay (s)		438.8			256.3			326.4			206.4	
Approach LOS		F			F			F			F	

Intersection Summary

HCM 2000 Control Delay	294.6	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	2.27		
Actuated Cycle Length (s)	150.0	Sum of lost time (s)	16.0
Intersection Capacity Utilization	184.5%	ICU Level of Service	H
Analysis Period (min)	15		

c Critical Lane Group

Lanes, Volumes, Timings TT (2041) - Scenario B - 25% Reduction
106: Trafalgar Rd & Burnhamthorpe Rd/Burnhamthorpe Rd Timing Plan: PM Peak Hour

	←	→	↙	↘	←	↙	↘	→	↙	↘	→	↙	↘
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations	↙	↘		↙	↘		↙	↘	↙	↘	↙	↘	
Traffic Volume (vph)	170	339	18	135	297	572	100	2465	145	377	1745	324	
Future Volume (vph)	170	339	18	135	297	572	100	2465	145	377	1745	324	
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	1.00	1.00	1.00	1.00	1.00	1.00	0.91	1.00	1.00	0.91	1.00	
Frt		0.992			0.901				0.850			0.850	
Flt Protected	0.950			0.950			0.950			0.950			
Satd. Flow (prot)	1770	1848	0	1770	1678	0	1770	5085	1583	1770	5085	1583	
Flt Permitted	0.137			0.246			0.105			0.095			
Satd. Flow (perm)	255	1848	0	458	1678	0	196	5085	1583	177	5085	1583	
Right Turn on Red			Yes			Yes			Yes			Yes	
Satd. Flow (RTOR)		2			91				96			305	
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	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Adj. Flow (vph)	170	339	18	135	297	572	100	2465	145	377	1745	324	
Shared Lane Traffic (%)													
Lane Group Flow (vph)	170	357	0	135	869	0	100	2465	145	377	1745	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	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	pm+ov	pm+pt	NA	pm+ov	
Protected Phases	7	4		3	8		5	2	3	1	6	7	
Permitted Phases	4			8			2		2	6		6	

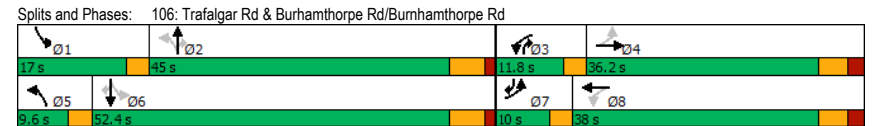
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Lanes, Volumes, Timings TT (2041) - Scenario B - 25% Reduction
106: Trafalgar Rd & Burnhamthorpe Rd/Burnhamthorpe Rd Timing Plan: PM Peak Hour

	←	→	↙	↘	←	↙	↘	→	↙	↘	→	↙	↘
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Detector Phase	7	4		3	8		5	2	3	1	6	7	
Switch Phase													
Minimum Initial (s)	5.0	10.0		5.0	10.0		5.0	20.0	5.0	7.0	20.0	5.0	
Minimum Split (s)	9.5	24.0		9.5	24.0		9.5	26.0	9.5	11.5	26.0	9.5	
Total Split (s)	10.0	36.2		11.8	38.0		9.6	45.0	11.8	17.0	52.4	10.0	
Total Split (%)	9.1%	32.9%		10.7%	34.5%		8.7%	40.9%	10.7%	15.5%	47.6%	9.1%	
Maximum Green (s)	7.0	30.2		8.8	32.0		6.6	39.0	8.8	14.0	46.4	7.0	
Yellow Time (s)	3.0	3.7		3.0	3.7		3.0	4.6	3.0	3.0	4.6	3.0	
All-Red Time (s)	0.0	2.3		0.0	2.3		0.0	1.4	0.0	0.0	1.4	0.0	
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	1.0	4.0	4.0	1.0	
Lead/Lag	Lead	Lag		Lead	Lag		Lead	Lag	Lead	Lag	Lag	Lead	
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	Max	None		Max	None		Max	Max	Max	Max	Max	Max	
Act Effct Green (s)	38.2	32.2		41.8	34.0		46.6	41.0	55.8	58.0	48.4	61.4	
Actuated g/C Ratio	0.35	0.29		0.38	0.31		0.42	0.37	0.51	0.53	0.44	0.56	
v/c Ratio	0.99	0.66		0.51	1.50		0.61	1.30	0.17	1.34	0.78	0.32	
Control Delay	96.8	40.7		28.8	259.7		32.6	170.4	6.0	202.6	29.3	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	96.8	40.7		28.8	259.7		32.6	170.4	6.0	202.6	29.3	2.6	
LOS	F	D		C	F		C	F	A	F	C	A	
Approach Delay		58.8			228.6			156.5			52.5		
Approach LOS		E			F			F			D		

Intersection Summary												
Area Type:	Other											
Cycle Length:	110											
Actuated Cycle Length:	110											
Natural Cycle:	100											
Control Type:	Semi Act-Uncooord											
Maximum v/c Ratio:	1.50											
Intersection Signal Delay:	121.6											
Intersection Capacity Utilization	142.0%											
Analysis Period (min)	15											



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Queues
106: Trafalgar Rd & Burhamthorpe Rd/Burnhamthorpe Rd

TT (2041) - Scenario B - 25% Reduction
Timing Plan: PM Peak Hour

	EBL	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	170	357	135	869	100	2465	145	377	1745	324
v/c Ratio	0.99	0.66	0.51	1.50	0.61	1.30	0.17	1.34	0.78	0.32
Control Delay	96.8	40.7	28.8	259.7	32.6	170.4	6.0	202.6	29.3	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	96.8	40.7	28.8	259.7	32.6	170.4	6.0	202.6	29.3	2.6
Queue Length 50th (m)	23.5	65.8	18.3	~243.5	10.2	~245.6	5.1	~88.6	112.7	1.7
Queue Length 95th (m)	#62.5	97.1	31.4	#316.4	#24.3	#273.7	15.0	#145.7	131.3	13.6
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	
Base Capacity (vph)	171	542	267	581	163	1895	850	281	2237	1018
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	0.99	0.66	0.51	1.50	0.61	1.30	0.17	1.34	0.78	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.

HCM Signalized Intersection Capacity Analysis
106: Trafalgar Rd & Burhamthorpe Rd/Burnhamthorpe Rd

TT (2041) - Scenario B - 25% Reduction
Timing Plan: PM Peak Hour

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰	↱		↰	↱		↰	↱	↱	↰	↱	↱
Traffic Volume (vph)	170	339	18	135	297	572	100	2465	145	377	1745	324
Future Volume (vph)	170	339	18	135	297	572	100	2465	145	377	1745	324
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	1.0	4.0	4.0	1.0
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	0.99		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	1849		1770	1679		1770	5085	1583	1770	5085	1583
Flt Permitted	0.14	1.00		0.25	1.00		0.11	1.00	1.00	0.10	1.00	1.00
Satd. Flow (perm)	255	1849		459	1679		196	5085	1583	177	5085	1583
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	170	339	18	135	297	572	100	2465	145	377	1745	324
RTOR Reduction (vph)	0	1	0	0	63	0	0	0	51	0	0	146
Lane Group Flow (vph)	170	356	0	135	806	0	100	2465	94	377	1745	178
Turn Type	pm+pt	NA		pm+pt	NA		pm+pt	NA	pm+ov	pm+pt	NA	pm+ov
Protected Phases	7	4		3	8		5	2	3	1	6	7
Permitted Phases	4			8			2		2	6		6
Actuated Green, G (s)	37.2	30.2		40.8	32.0		45.6	39.0	47.8	56.0	46.4	53.4
Effective Green, g (s)	35.2	32.2		38.8	34.0		43.6	41.0	51.8	55.0	48.4	57.4
Actuated g/C Ratio	0.32	0.29		0.35	0.31		0.40	0.37	0.47	0.50	0.44	0.52
Clearance Time (s)	3.0	6.0		3.0	6.0		3.0	6.0	3.0	3.0	6.0	3.0
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)	164	541		254	518		157	1895	745	276	2237	826
v/s Ratio Prot	c0.06	0.19		0.04	c0.48		0.03	0.48	c0.01	c0.16	0.34	0.02
v/s Ratio Perm	0.27			0.15			0.22		0.05	c0.52		0.09
v/c Ratio	1.04	0.66		0.53	1.56		0.64	1.30	0.13	1.37	0.78	0.22
Uniform Delay, d1	35.2	34.1		26.5	38.0		24.2	34.5	16.4	32.9	26.3	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	80.3	2.9		2.1	259.7		18.1	139.3	0.3	186.2	2.8	0.6
Delay (s)	115.5	36.9		28.6	297.7		42.3	173.8	16.7	219.1	29.0	14.8
Level of Service	F	D		C	F		D	F	B	F	C	B
Approach Delay (s)		62.3			261.5			160.6			56.4	
Approach LOS		E			F			F			E	

Intersection Summary

HCM 2000 Control Delay	129.9	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	1.41		
Actuated Cycle Length (s)	110.0	Sum of lost time (s)	16.0
Intersection Capacity Utilization	142.0%	ICU Level of Service	H
Analysis Period (min)	15		

c Critical Lane Group

Lanes, Volumes, Timings
202: Trafalgar Rd & East Street C

TT (2041) - Scenario B - 25% Reduction
Timing Plan: PM Peak Hour

	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations		↗		↗↗↗	↗↗↗	↗
Traffic Volume (vph)	0	239	0	3207	2207	232
Future Volume (vph)	0	239	0	3207	2207	232
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (m)	0.0	0.0	0.0			90.0
Storage Lanes	0	1	0			1
Taper Length (m)	7.5		7.5			
Lane Util. Factor	1.00	1.00	1.00	0.91	0.91	1.00
Frt		0.865				0.850
Flt Protected						
Satd. Flow (prot)	0	1611	0	5085	5085	1583
Flt Permitted						
Satd. Flow (perm)	0	1611	0	5085	5085	1583
Link Speed (k/h)	50			50	50	
Link Distance (m)	205.4			92.4	193.0	
Travel Time (s)	14.8			6.7	13.9	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	0	239	0	3207	2207	232
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	239	0	3207	2207	232
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	0.0			3.6	3.6	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	4.8			4.8	4.8	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)	25	15	25			15
Sign Control	Stop			Free	Free	
Intersection Summary						
Area Type:	Other					
Control Type:	Unsignalized					
Intersection Capacity Utilization 65.3%	ICU Level of Service C					
Analysis Period (min) 15						

HCM Unsignalized Intersection Capacity Analysis
202: Trafalgar Rd & East Street C

TT (2041) - Scenario B - 25% Reduction
Timing Plan: PM Peak Hour

								
Movement	EBL	EBR	NBL	NBT	SBT	SBR		
Lane Configurations				  	  			
Traffic Volume (veh/h)	0	239	0	3207	2207	232		
Future Volume (Veh/h)	0	239	0	3207	2207	232		
Sign Control	Stop			Free	Free			
Grade	0%			0%	0%			
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00		
Hourly flow rate (vph)	0	239	0	3207	2207	232		
Pedestrians								
Lane Width (m)								
Walking Speed (m/s)								
Percent Blockage								
Right turn flare (veh)								
Median type				None	None			
Median storage veh								
Upstream signal (m)				263	193			
pX, platoon unblocked	0.79	0.70	0.70					
vC, conflicting volume	3276	736	2439					
vC1, stage 1 conf vol								
vC2, stage 2 conf vol								
vCu, unblocked vol	433	0	1569					
tC, single (s)	6.8	6.9	4.1					
tC, 2 stage (s)								
tF (s)	3.5	3.3	2.2					
p0 queue free %	100	69	100					
cM capacity (veh/h)	437	763	293					
Direction, Lane #	EB 1	NB 1	NB 2	NB 3	SB 1	SB 2	SB 3	SB 4
Volume Total	239	1069	1069	1069	736	736	736	232
Volume Left	0	0	0	0	0	0	0	0
Volume Right	239	0	0	0	0	0	0	232
cSH	763	1700	1700	1700	1700	1700	1700	1700
Volume to Capacity	0.31	0.63	0.63	0.63	0.43	0.43	0.43	0.14
Queue Length 95th (m)	10.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Control Delay (s)	11.9	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Lane LOS	B							
Approach Delay (s)	11.9	0.0				0.0		
Approach LOS	B							
Intersection Summary								
Average Delay	0.5							
Intersection Capacity Utilization	65.3%			ICU Level of Service			C	
Analysis Period (min)	15							

Lanes, Volumes, Timings
203: East Street D & East Street A

TT (2041) - Scenario B - 25% Reduction
Timing Plan: PM Peak Hour

						
Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	141	436	0	259	335	0
Future Volume (vph)	141	436	0	259	335	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	0.850					
Flt Protected			0.950			
Satd. Flow (prot)	1863	1583	0	1863	1770	0
Flt Permitted			0.950			
Satd. Flow (perm)	1863	1583	0	1863	1770	0
Link Speed (k/h)	50		50		50	
Link Distance (m)	205.9		205.1		113.3	
Travel Time (s)	14.8		14.8		8.2	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	141	436	0	259	335	0
Shared Lane Traffic (%)						
Lane Group Flow (vph)	141	436	0	259	335	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
Sign Control	Free		Free		Stop	
Intersection Summary						
Area Type:	Other					
Control Type:	Unsignalized					
Intersection Capacity Utilization	47.3%			ICU Level of Service A		
Analysis Period (min)	15					

HCM Unsignalized Intersection Capacity Analysis
203: East Street D & East Street A

TT (2041) - Scenario B - 25% Reduction
Timing Plan: PM Peak Hour

	→	↖	↗	←	↖	↗
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑	↑		↑	↑	
Traffic Volume (veh/h)	141	436	0	259	335	0
Future Volume (Veh/h)	141	436	0	259	335	0
Sign Control	Free			Free		Stop
Grade	0%			0%		0%
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	141	436	0	259	335	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)	206					
pX, platoon unblocked						
vC, conflicting volume			577		400	141
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			577		400	141
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			100		45	100
cM capacity (veh/h)			996		606	907
Direction, Lane #	EB 1	EB 2	WB 1	NB 1		
Volume Total	141	436	259	335		
Volume Left	0	0	0	335		
Volume Right	0	436	0	0		
cSH	1700	1700	996	606		
Volume to Capacity	0.08	0.26	0.00	0.55		
Queue Length 95th (m)	0.0	0.0	0.0	25.3		
Control Delay (s)	0.0	0.0	0.0	18.0		
Lane LOS				C		
Approach Delay (s)	0.0		0.0	18.0		
Approach LOS				C		
Intersection Summary						
Average Delay			5.2			
Intersection Capacity Utilization			47.3%		ICU Level of Service	A
Analysis Period (min)			15			

Lanes, Volumes, Timings
204: East Street E & East Street A

TT (2041) - Scenario B - 25% Reduction
Timing Plan: PM Peak Hour

						
Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	0	90	0	0	276	0
Future Volume (vph)	0	90	0	0	276	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.865					
Flt Protected					0.950	
Satd. Flow (prot)	1611	0	0	1863	1770	0
Flt Permitted					0.950	
Satd. Flow (perm)	1611	0	0	1863	1770	0
Link Speed (k/h)	50			50	50	
Link Distance (m)	205.1			192.2	115.1	
Travel Time (s)	14.8			13.8	8.3	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	0	90	0	0	276	0
Shared Lane Traffic (%)						
Lane Group Flow (vph)	90	0	0	0	276	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	0.0			0.0	3.6	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	4.8			4.8	4.8	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)		15	25		25	15
Sign Control	Free			Free	Stop	
Intersection Summary						
Area Type:	Other					
Control Type:	Unsignalized					
Intersection Capacity Utilization	27.5%			ICU Level of Service A		
Analysis Period (min)	15					

HCM Unsignalized Intersection Capacity Analysis
204: East Street E & East Street A

TT (2041) - Scenario B - 25% Reduction
Timing Plan: PM Peak Hour

	→	↖	↗	←	↖	↗
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↖			↖	↖	↖
Traffic Volume (veh/h)	0	90	0	0	276	0
Future Volume (Veh/h)	0	90	0	0	276	0
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	0	90	0	0	276	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			90		45	45
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			90		45	45
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			100		71	100
cM capacity (veh/h)			1505		965	1025
Direction, Lane #	EB 1	WB 1	NB 1			
Volume Total	90	0	276			
Volume Left	0	0	276			
Volume Right	90	0	0			
cSH	1700	1700	965			
Volume to Capacity	0.05	0.00	0.29			
Queue Length 95th (m)	0.0	0.0	8.9			
Control Delay (s)	0.0	0.0	10.2			
Lane LOS			B			
Approach Delay (s)	0.0	0.0	10.2			
Approach LOS			B			
Intersection Summary						
Average Delay			7.7			
Intersection Capacity Utilization			27.5%		ICU Level of Service	A
Analysis Period (min)			15			

Lanes, Volumes, Timings
205: East Street F & East Street A

TT (2041) - Scenario B - 25% Reduction
Timing Plan: PM Peak Hour

						
Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
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	1.00	1.00	1.00
Frt						
Flt Protected						
Satd. Flow (prot)	1863	0	0	1863	1863	0
Flt Permitted						
Satd. Flow (perm)	1863	0	0	1863	1863	0
Link Speed (k/h)	50			50	50	
Link Distance (m)	192.2			209.4	115.6	
Travel Time (s)	13.8			15.1	8.3	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
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)	0.0			0.0	3.6	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	4.8			4.8	4.8	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)		15	25		25	15
Sign Control	Free			Free	Stop	
Intersection Summary						
Area Type:	Other					
Control Type:	Unsignalized					
Intersection Capacity Utilization	0.0%			ICU Level of Service A		
Analysis Period (min)	15					

HCM Unsignalized Intersection Capacity Analysis
205: East Street F & East Street A

TT (2041) - Scenario B - 25% Reduction
Timing Plan: PM Peak Hour

	→	↖	↗	←	↖	↗
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↖			↖	↖	
Traffic Volume (veh/h)	0	0	0	0	0	0
Future Volume (Veh/h)	0	0	0	0	0	0
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	0	0	0	0	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			0		0	0
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			0		0	0
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			100		100	100
cM capacity (veh/h)			1623		1023	1085
Direction, Lane #	EB 1	WB 1	NB 1			
Volume Total	0	0	0			
Volume Left	0	0	0			
Volume Right	0	0	0			
cSH	1700	1700	1700			
Volume to Capacity	0.00	0.00	0.00			
Queue Length 95th (m)	0.0	0.0	0.0			
Control Delay (s)	0.0	0.0	0.0			
Lane LOS			A			
Approach Delay (s)	0.0	0.0	0.0			
Approach LOS			A			
Intersection Summary						
Average Delay			0.0			
Intersection Capacity Utilization			0.0%		ICU Level of Service	A
Analysis Period (min)			15			

Lanes, Volumes, Timings
206: East Street D & East Street B

TT (2041) - Scenario B - 25% Reduction
Timing Plan: PM Peak Hour

	←	←	↑	↗	↘	↓
Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	↰		↰			↰
Traffic Volume (vph)	96	7	161	21	21	361
Future Volume (vph)	96	7	161	21	21	361
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	0.991		0.984			
Flt Protected	0.955					0.997
Satd. Flow (prot)	1763	0	1833	0	0	1857
Flt Permitted	0.955					0.997
Satd. Flow (perm)	1763	0	1833	0	0	1857
Link Speed (k/h)	50		50			50
Link Distance (m)	203.4		120.6			113.3
Travel Time (s)	14.6		8.7			8.2
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	96	7	161	21	21	361
Shared Lane Traffic (%)						
Lane Group Flow (vph)	103	0	182	0	0	382
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 45.7% ICU Level of Service A

Analysis Period (min) 15

HCM Unsignalized Intersection Capacity Analysis
206: East Street D & East Street B

TT (2041) - Scenario B - 25% Reduction
Timing Plan: PM Peak Hour

	←	←	↑	↗	↘	↓
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	↰		↰			↰
Traffic Volume (veh/h)	96	7	161	21	21	361
Future Volume (Veh/h)	96	7	161	21	21	361
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	96	7	161	21	21	361
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None		None	
Median storage (veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	574	172			182	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	574	172			182	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	80	99			98	
cM capacity (veh/h)	473	872			1393	

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	103	182	382
Volume Left	96	0	21
Volume Right	7	21	0
cSH	488	1700	1393
Volume to Capacity	0.21	0.11	0.02
Queue Length 95th (m)	5.9	0.0	0.3
Control Delay (s)	14.3	0.0	0.6
Lane LOS	B		A
Approach Delay (s)	14.3	0.0	0.6
Approach LOS	B		

Intersection Summary

Average Delay	2.5		
Intersection Capacity Utilization	45.7%	ICU Level of Service	A
Analysis Period (min)	15		

Lanes, Volumes, Timings
207: East Street E & East Street B

TT (2041) - Scenario B - 25% Reduction
Timing Plan: PM Peak Hour

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	111	0	122	0	0	0	169	17	0	0	90	0
Future Volume (vph)	111	0	122	0	0	0	169	17	0	0	90	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	0.929											
Flt Protected	0.977											
Satd. Flow (prot)	0	1691	0	0	1863	0	0	1783	0	0	1863	0
Flt Permitted	0.977											
Satd. Flow (perm)	0	1691	0	0	1863	0	0	1783	0	0	1863	0
Link Speed (k/h)	50				50				50			
Link Distance (m)	203.4				193.8				120.6			
Travel Time (s)	14.6				14.0				8.7			
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	111	0	122	0	0	0	169	17	0	0	90	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	233	0	0	0	0	0	186	0	0	90	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			
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	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 37.2% ICU Level of Service A

Analysis Period (min) 15

HCM Unsignalized Intersection Capacity Analysis
207: East Street E & East Street B

TT (2041) - Scenario B - 25% Reduction
Timing Plan: PM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	111	0	122	0	0	0	169	17	0	0	90	0
Future Volume (Veh/h)	111	0	122	0	0	0	169	17	0	0	90	0
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	111	0	122	0	0	0	169	17	0	0	90	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)								121				
pX, platoon unblocked												
vC, conflicting volume	445	445	90	567	445	17	90			17		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	445	445	90	567	445	17	90			17		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	77	100	87	100	100	100	89			100		
cM capacity (veh/h)	478	451	968	347	451	1062	1505			1600		

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	233	0	186	90
Volume Left	111	0	169	0
Volume Right	122	0	0	0
cSH	651	1700	1505	1600
Volume to Capacity	0.36	0.00	0.11	0.00
Queue Length 95th (m)	12.2	0.0	2.8	0.0
Control Delay (s)	13.6	0.0	7.1	0.0
Lane LOS	B	A	A	
Approach Delay (s)	13.6	0.0	7.1	0.0
Approach LOS	B	A		

Intersection Summary

Average Delay	8.8			
Intersection Capacity Utilization	37.2%	ICU Level of Service	A	
Analysis Period (min)	15			

Lanes, Volumes, Timings
208: East Street F & East Street B

TT (2041) - Scenario B - 25% Reduction
Timing Plan: PM Peak Hour

	EBL	EBR	NBL	NBT	SBT	SBR
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	1.00	1.00	1.00
Fit						
Fit Protected						
Satd. Flow (prot)	1863	0	0	1863	1863	0
Fit Permitted						
Satd. Flow (perm)	1863	0	0	1863	1863	0
Link Speed (k/h)	50			50	50	
Link Distance (m)	193.8			120.1	115.6	
Travel Time (s)	14.0			8.6	8.3	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
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			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	25			15
Sign Control	Stop			Free	Free	

Intersection Summary

Area Type: Other
Control Type: Unsignalized
Intersection Capacity Utilization 0.0% ICU Level of Service A
Analysis Period (min) 15

HCM Unsignalized Intersection Capacity Analysis
208: East Street F & East Street B

TT (2041) - Scenario B - 25% Reduction
Timing Plan: PM Peak Hour

	EBL	EBR	NBL	NBT	SBT	SBR
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	↔	↔	↔	↔	↔	↔
Traffic Volume (veh/h)	0	0	0	0	0	0
Future Volume (Veh/h)	0	0	0	0	0	0
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	0	0	0	0	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	0	0	0			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	0	0	0			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	100	100	100			
cM capacity (veh/h)	1023	1085	1623			

Direction, Lane #	EB 1	NB 1	SB 1
Volume Total	0	0	0
Volume Left	0	0	0
Volume Right	0	0	0
cSH	1700	1700	1700
Volume to Capacity	0.00	0.00	0.00
Queue Length 95th (m)	0.0	0.0	0.0
Control Delay (s)	0.0	0.0	0.0
Lane LOS	A		
Approach Delay (s)	0.0	0.0	0.0
Approach LOS	A		

Intersection Summary

Average Delay 0.0
Intersection Capacity Utilization 0.0% ICU Level of Service A
Analysis Period (min) 15

Lanes, Volumes, Timings
209: William Halton Parkway & East Street D

TT (2041) - Scenario B - 25% Reduction
Timing Plan: PM Peak Hour

						
Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	0	1235	2251	62	0	425
Future Volume (vph)	0	1235	2251	62	0	425
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (m)	0.0			50.0	0.0	0.0
Storage Lanes	0			1	0	1
Taper Length (m)	7.5				7.5	
Lane Util. Factor	1.00	0.95	0.95	1.00	1.00	1.00
Frt				0.850		0.865
Flt Protected						
Satd. Flow (prot)	0	3539	3539	1583	0	1611
Flt Permitted						
Satd. Flow (perm)	0	3539	3539	1583	0	1611
Link Speed (k/h)		50	50		50	
Link Distance (m)		205.0	201.5		120.6	
Travel Time (s)		14.8	14.5		8.7	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	0	1235	2251	62	0	425
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	1235	2251	62	0	425
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(m)		3.6	3.6		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	25	15
Sign Control		Free	Free		Stop	
Intersection Summary						
Area Type:	Other					
Control Type:	Unsignalized					
Intersection Capacity Utilization	95.2%			ICU Level of Service F		
Analysis Period (min)	15					

HCM Unsignalized Intersection Capacity Analysis
209: William Halton Parkway & East Street D

TT (2041) - Scenario B - 25% Reduction
Timing Plan: PM Peak Hour

						
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	0	1235	2251	62	0	425
Future Volume (Veh/h)	0	1235	2251	62	0	425
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	0	1235	2251	62	0	425
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		None	None			
Median storage (veh)						
Upstream signal (m)		205	201			
pX, platoon unblocked	0.38				0.45	0.38
vC, conflicting volume	2313				2868	1126
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1211				1375	0
tC, single (s)	4.1				6.8	6.9
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	100				100	0
cM capacity (veh/h)	220				61	416
Direction, Lane #	EB 1	EB 2	WB 1	WB 2	WB 3	SB 1
Volume Total	618	618	1126	1126	62	425
Volume Left	0	0	0	0	0	0
Volume Right	0	0	0	0	62	425
cSH	1700	1700	1700	1700	1700	416
Volume to Capacity	0.36	0.36	0.66	0.66	0.04	1.02
Queue Length 95th (m)	0.0	0.0	0.0	0.0	0.0	98.8
Control Delay (s)	0.0	0.0	0.0	0.0	0.0	81.5
Lane LOS						F
Approach Delay (s)	0.0		0.0			81.5
Approach LOS						F
Intersection Summary						
Average Delay			8.7			
Intersection Capacity Utilization			95.2%		ICU Level of Service	F
Analysis Period (min)			15			

Lanes, Volumes, Timings

210: William Halton Parkway & East Street E

TT (2041) - Scenario B - 25% Reduction

Timing Plan: PM Peak Hour

	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations	↰	↰↰	↰↰	↰	↰	↰
Traffic Volume (vph)	164	1056	2248	30	147	65
Future Volume (vph)	164	1056	2248	30	147	65
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (m)	90.0			50.0	0.0	0.0
Storage Lanes	1			1	1	0
Taper Length (m)	100.0				7.5	
Lane Util. Factor	1.00	*0.95	*0.95	1.00	1.00	1.00
Frt				0.850	0.959	
Flt Protected	0.950				0.966	
Satd. Flow (prot)	1770	3539	3539	1583	1726	0
Flt Permitted	0.053				0.966	
Satd. Flow (perm)	99	3539	3539	1583	1726	0
Right Turn on Red				Yes	Yes	
Satd. Flow (RTOR)				15	16	
Link Speed (k/h)		50	50		50	
Link Distance (m)		201.5	195.6		120.6	
Travel Time (s)		14.5	14.1		8.7	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	164	1056	2248	30	147	65
Shared Lane Traffic (%)						
Lane Group Flow (vph)	164	1056	2248	30	212	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
Number of Detectors	1	2	2	1	1	
Detector Template	Left	Thru	Thru	Right	Left	
Leading Detector (m)	2.0	10.0	10.0	2.0	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)	2.0	0.6	0.6	2.0	2.0	
Detector 1 Type	CI+Ex	CI+Ex	CI+Ex	CI+Ex	CI+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		CI+Ex	CI+Ex			
Detector 2 Channel						
Detector 2 Extend (s)		0.0	0.0			
Turn Type	pm+pt	NA	NA	Perm	Perm	
Protected Phases	7	4	8			
Permitted Phases	4			8	6	

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Lanes, Volumes, Timings

210: William Halton Parkway & East Street E

TT (2041) - Scenario B - 25% Reduction

Timing Plan: PM Peak Hour

	EBL	EBT	WBT	WBR	SBL	SBR
Detector Phase	7	4	8	8	6	
Switch Phase						
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	
Minimum Split (s)	9.5	24.0	24.0	24.0	24.0	
Total Split (s)	17.6	95.6	78.0	78.0	24.4	
Total Split (%)	14.7%	79.7%	65.0%	65.0%	20.3%	
Maximum Green (s)	14.6	89.6	72.0	72.0	18.4	
Yellow Time (s)	3.0	4.0	4.0	4.0	4.0	
All-Red Time (s)	0.0	2.0	2.0	2.0	2.0	
Lost Time Adjust (s)	1.0	-2.0	-2.0	-2.0	-2.0	
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	
Lead/Lag	Lead		Lag	Lag		
Lead-Lag Optimize?	Yes		Yes	Yes		
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	
Flash Dont Walk (s)		11.0	11.0	11.0	11.0	
Pedestrian Calls (#/hr)		0	0	0	0	
Act Effct Green (s)	91.7	91.7	74.1	74.1	18.5	
Actuated g/C Ratio	0.78	0.78	0.63	0.63	0.16	
v/c Ratio	0.61	0.38	1.01	0.03	0.75	
Control Delay	34.1	4.9	45.5	5.7	60.8	
Queue Delay	0.0	0.0	0.0	0.0	0.0	
Total Delay	34.1	4.9	45.5	5.7	60.8	
LOS	C	A	D	A	E	
Approach Delay		8.8	45.0		60.8	
Approach LOS		A	D		E	

Intersection Summary

Area Type: Other

Cycle Length: 120

Actuated Cycle Length: 118.2

Natural Cycle: 110

Control Type: Semi Act-Uncoord

Maximum v/c Ratio: 1.01

Intersection Signal Delay: 34.0

Intersection LOS: C

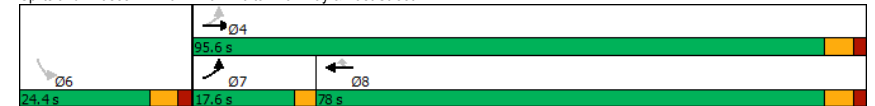
Intersection Capacity Utilization 93.3%

ICU Level of Service F

Analysis Period (min) 15

* User Entered Value

Splits and Phases: 210: William Halton Parkway & East Street E

I/O Trafalgar Oakville TIS
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Queues
210: William Halton Parkway & East Street E

TT (2041) - Scenario B - 25% Reduction
Timing Plan: PM Peak Hour

	EBL	EBT	WBT	WBR	SBL
Lane Group	EBL	EBT	WBT	WBR	SBL
Lane Group Flow (vph)	164	1056	2248	30	212
v/c Ratio	0.61	0.38	1.01	0.03	0.75
Control Delay	34.1	4.9	45.5	5.7	60.8
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	34.1	4.9	45.5	5.7	60.8
Queue Length 50th (m)	20.1	37.0	~294.4	1.3	43.3
Queue Length 95th (m)	42.4	45.4	#335.1	4.9	#70.1
Internal Link Dist (m)		177.5	171.6		96.6
Turn Bay Length (m)	90.0			50.0	
Base Capacity (vph)	268	2744	2217	997	311
Starvation Cap Reductn	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.61	0.38	1.01	0.03	0.68

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.

HCM Signalized Intersection Capacity Analysis
210: William Halton Parkway & East Street E

TT (2041) - Scenario B - 25% Reduction
Timing Plan: PM Peak Hour

	EBL	EBT	WBT	WBR	SBL	SBR
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations	↰	↱	↰	↱	↰	↱
Traffic Volume (vph)	164	1056	2248	30	147	65
Future Volume (vph)	164	1056	2248	30	147	65
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	
Lane Util. Factor	1.00	*0.95	*0.95	1.00	1.00	
Flt	1.00	1.00	1.00	0.85	0.96	
Flt Protected	0.95	1.00	1.00	1.00	0.97	
Satd. Flow (prot)	1770	3539	3539	1583	1726	
Flt Permitted	0.05	1.00	1.00	1.00	0.97	
Satd. Flow (perm)	99	3539	3539	1583	1726	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	164	1056	2248	30	147	65
RTOR Reduction (vph)	0	0	0	6	13	0
Lane Group Flow (vph)	164	1056	2248	24	199	0
Turn Type	pm+pt	NA	NA	Perm	Perm	
Protected Phases	7	4	8			
Permitted Phases	4			8	6	
Actuated Green, G (s)	89.6	89.6	72.0	72.0	16.5	
Effective Green, g (s)	88.6	91.6	74.0	74.0	18.5	
Actuated g/C Ratio	0.75	0.78	0.63	0.63	0.16	
Clearance Time (s)	3.0	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)	266	2744	2217	991	270	
v/s Ratio Prot	c0.07	0.30	c0.64			
v/s Ratio Perm	0.39			0.02	c0.12	
v/c Ratio	0.62	0.38	1.01	0.02	0.74	
Uniform Delay, d1	35.6	4.2	22.0	8.4	47.5	
Progression Factor	1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	10.3	0.4	22.6	0.0	9.9	
Delay (s)	45.9	4.6	44.7	8.4	57.4	
Level of Service	D	A	D	A	E	
Approach Delay (s)		10.2	44.2		57.4	
Approach LOS		B	D		E	

Intersection Summary

HCM 2000 Control Delay	33.8	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.93		
Actuated Cycle Length (s)	118.1	Sum of lost time (s)	14.0
Intersection Capacity Utilization	93.3%	ICU Level of Service	F
Analysis Period (min)	15		

c Critical Lane Group

Lanes, Volumes, Timings
211: William Halton Parkway & East Street F

TT (2041) - Scenario B - 25% Reduction

Timing Plan: PM Peak Hour

	EBL	EBT	WBT	WBR	SBL	SBR
Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations	↔	↕	↕		↕	
Traffic Volume (vph)	0	1203	2278	0	0	0
Future Volume (vph)	0	1203	2278	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (m)	90.0			0.0	0.0	0.0
Storage Lanes	1			0	1	0
Taper Length (m)	100.0				7.5	
Lane Util. Factor	1.00	0.95	0.95	0.95	1.00	1.00
Fr						
Fit Protected						
Satd. Flow (prot)	1863	3539	3539	0	1863	0
Fit Permitted						
Satd. Flow (perm)	1863	3539	3539	0	1863	0
Link Speed (k/h)		50	50		50	
Link Distance (m)		195.6	407.9		120.1	
Travel Time (s)		14.1	29.4		8.6	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	0	1203	2278	0	0	0
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	1203	2278	0	0	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 66.3%	ICU Level of Service C					
Analysis Period (min) 15						

HCM Unsignalized Intersection Capacity Analysis
211: William Halton Parkway & East Street F

TT (2041) - Scenario B - 25% Reduction

Timing Plan: PM Peak Hour

	EBL	EBT	WBT	WBR	SBL	SBR
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations	↔	↕	↕		↕	
Traffic Volume (veh/h)	0	1203	2278	0	0	0
Future Volume (Veh/h)	0	1203	2278	0	0	0
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	0	1203	2278	0	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)		196				
pX, platoon unblocked					0.90	
vC, conflicting volume	2278				2880	1139
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	2278				2867	1139
tC, single (s)	4.1				6.8	6.9
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	100				100	100
cM capacity (veh/h)	220				12	195
Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	SB 1
Volume Total	0	602	602	1519	759	0
Volume Left	0	0	0	0	0	0
Volume Right	0	0	0	0	0	0
cSH	1700	1700	1700	1700	1700	1700
Volume to Capacity	0.00	0.35	0.35	0.89	0.45	0.00
Queue Length 95th (m)	0.0	0.0	0.0	0.0	0.0	0.0
Control Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0
Lane LOS						A
Approach Delay (s)	0.0			0.0		0.0
Approach LOS						A
Intersection Summary						
Average Delay			0.0			
Intersection Capacity Utilization			66.3%		ICU Level of Service	C
Analysis Period (min)			15			

Lanes, Volumes, Timings

212: West Street A & Transit Station

TT (2041) - Scenario B - 25% Reduction

Timing Plan: PM Peak Hour

	←	←	↑	↗	↘	↓
Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	↔		↔			↔
Traffic Volume (vph)	113	0	0	385	0	0
Future Volume (vph)	113	0	0	385	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt			0.865			
Flt Protected	0.950					
Satd. Flow (prot)	1770	0	1611	0	0	1863
Flt Permitted	0.950					
Satd. Flow (perm)	1770	0	1611	0	0	1863
Link Speed (k/h)	50		50			50
Link Distance (m)	216.0		234.7			101.9
Travel Time (s)	15.6		16.9			7.3
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	113	0	0	385	0	0
Shared Lane Traffic (%)						
Lane Group Flow (vph)	113	0	385	0	0	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(m)	7.2		0.0		Left	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 36.8%

ICU Level of Service A

Analysis Period (min) 15

HCM Unsignalized Intersection Capacity Analysis

212: West Street A & Transit Station

TT (2041) - Scenario B - 25% Reduction

Timing Plan: PM Peak Hour

	←	←	↑	↗	↘	↓
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	↔		↔			↔
Traffic Volume (veh/h)	113	0	0	385	0	0
Future Volume (Veh/h)	113	0	0	385	0	0
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	113	0	0	385	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	192	192			385	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	192	192			385	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	86	100			100	
cM capacity (veh/h)	796	849			1173	

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	113	385	0
Volume Left	113	0	0
Volume Right	0	385	0
cSH	796	1700	1700
Volume to Capacity	0.14	0.23	0.00
Queue Length 95th (m)	3.7	0.0	0.0
Control Delay (s)	10.3	0.0	0.0
Lane LOS	B		
Approach Delay (s)	10.3	0.0	0.0
Approach LOS	B		

Intersection Summary

Average Delay 2.3
 Intersection Capacity Utilization 36.8% ICU Level of Service A
 Analysis Period (min) 15

Lanes, Volumes, Timings TT (2041) - Scenario B - 25% Reduction
213: East Street A/West Street A & William Halton Parkway Timing Plan: PM Peak Hour

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑	↑		↑↑	↑			↑			↑
Traffic Volume (vph)	0	1174	12	0	2474	115	0	0	479	0	0	29
Future Volume (vph)	0	1174	12	0	2474	115	0	0	479	0	0	29
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	0.0		90.0	0.0		90.0	0.0		0.0	0.0		0.0
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	0.95	1.00	1.00	0.95	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt			0.850			0.850			0.865			0.865
Flt Protected												
Satd. Flow (prot)	0	3539	1583	0	3539	1583	0	0	1611	0	0	1611
Flt Permitted												
Satd. Flow (perm)	0	3539	1583	0	3539	1583	0	0	1611	0	0	1611
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		200.8			212.9			103.7			234.7	
Travel Time (s)		14.5			15.3			7.5			16.9	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	0	1174	12	0	2474	115	0	0	479	0	0	29
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	1174	12	0	2474	115	0	0	479	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 78.4%	ICU Level of Service D											
Analysis Period (min) 15												

HCM Unsignalized Intersection Capacity Analysis TT (2041) - Scenario B - 25% Reduction
213: East Street A/West Street A & William Halton Parkway Timing Plan: PM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑	↑		↑↑	↑			↑			↑
Traffic Volume (veh/h)	0	1174	12	0	2474	115	0	0	479	0	0	29
Future Volume (Veh/h)	0	1174	12	0	2474	115	0	0	479	0	0	29
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	0	1174	12	0	2474	115	0	0	479	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)	201			213								
pX, platoon unblocked	0.73			0.83			0.82	0.82	0.83	0.82	0.82	0.73
vC, conflicting volume	2589			1186			2440	3763	587	3540	3660	1237
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	2440			802			1362	2972	76	2700	2846	600
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	40	100	100	91
cM capacity (veh/h)	139			675			80	11	800	3	14	326
Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	WB 3	NB 1	SB 1				
Volume Total	587	587	12	1237	1237	115	479	29				
Volume Left	0	0	0	0	0	0	0	0				
Volume Right	0	0	12	0	0	115	479	29				
cSH	1700	1700	1700	1700	1700	1700	800	326				
Volume to Capacity	0.35	0.35	0.01	0.73	0.73	0.07	0.60	0.09				
Queue Length 95th (m)	0.0	0.0	0.0	0.0	0.0	0.0	30.5	2.2				
Control Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	16.0	17.1				
Lane LOS							C	C				
Approach Delay (s)	0.0			0.0			16.0	17.1				
Approach LOS							C	C				
Intersection Summary												
Average Delay	1.9											
Intersection Capacity Utilization	78.4%			ICU Level of Service			D					
Analysis Period (min)	15											

Lanes, Volumes, Timings

214: West Street D & William Halton Parkway

TT (2041) - Scenario B - 25% Reduction

Timing Plan: PM Peak Hour

	←	→	↖	↗	←	↖	↗	↖	↗	↖	↗	↖	↗
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations	↖	↖	↖	↖	↖	↖	↖	↖	↖	↖	↖	↖	
Traffic Volume (vph)	0	946	14	252	2162	89	63	0	105	143	0	11	
Future Volume (vph)	0	946	14	252	2162	89	63	0	105	143	0	11	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	
Storage Length (m)	90.0		90.0	90.0		90.0	50.0		0.0	50.0		0.0	
Storage Lanes	1		1	1		1	1		0	1		0	
Taper Length (m)	100.0			100.0			75.0			75.0			
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Frt			0.850			0.850		0.850			0.850		
Flt Protected				0.950			0.950			0.950			
Satd. Flow (prot)	1863	3539	1583	1770	3539	1583	1770	1583	0	1770	1583	0	
Flt Permitted				0.196			0.750			0.689			
Satd. Flow (perm)	1863	3539	1583	365	3539	1583	1397	1583	0	1283	1583	0	
Right Turn on Red			Yes			Yes		Yes			Yes		
Satd. Flow (RTOR)			73			89		501			73		
Link Speed (k/h)		50			50			50			50		
Link Distance (m)		573.3			200.8			99.4			133.2		
Travel Time (s)		41.3			14.5			7.2			9.6		
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Adj. Flow (vph)	0	946	14	252	2162	89	63	0	105	143	0	11	
Shared Lane Traffic (%)													
Lane Group Flow (vph)	0	946	14	252	2162	89	63	105	0	143	11	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	1	2	1	1	2		1	2		
Detector Template	Left	Thru	Right	Left	Thru	Right	Left	Thru		Left	Thru		
Leading Detector (m)	2.0	10.0	2.0	2.0	10.0	2.0	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		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	2.0	0.6	2.0	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		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	pm+pt	NA	Perm	Perm	NA		Perm	NA		
Protected Phases		4			3		8			2		6	
Permitted Phases	4		4	8		8	2			6			

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Lanes, Volumes, Timings

214: West Street D & William Halton Parkway

TT (2041) - Scenario B - 25% Reduction

Timing Plan: PM Peak Hour

	←	→	↖	↗	←	↖	↗	↖	↗	↖	↗	↖	↗
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Detector Phase	4	4	4	3	8	8	2	2		6	6		
Switch Phase													
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0		5.0	5.0		
Minimum Split (s)	24.0	24.0	24.0	9.5	24.0	24.0	24.0	24.0		29.0	29.0		
Total Split (s)	34.8	34.8	34.8	26.2	61.0	61.0	29.0	29.0		29.0	29.0		
Total Split (%)	38.7%	38.7%	38.7%	29.1%	67.8%	67.8%	32.2%	32.2%		32.2%	32.2%		
Maximum Green (s)	28.8	28.8	28.8	23.2	55.0	55.0	23.0	23.0		23.0	23.0		
Yellow Time (s)	4.0	4.0	4.0	3.0	4.0	4.0	4.0	4.0		4.0	4.0		
All-Red Time (s)	2.0	2.0	2.0	0.0	2.0	2.0	2.0	2.0		2.0	2.0		
Lost Time Adjust (s)	-2.0	-2.0	-2.0	1.0	-2.0	-2.0	-2.0	-2.0		1.0	-2.0		
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0		7.0	4.0		
Lead/Lag	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	None	None	Min	Min		Min	Min		
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 Effect Green (s)		40.6	40.6	54.7	54.7	54.7	16.2	16.2		13.1	16.2		
Actuated g/C Ratio		0.51	0.51	0.69	0.69	0.69	0.21	0.21		0.17	0.21		
v/c Ratio		0.52	0.02	0.58	0.88	0.08	0.22	0.15		0.67	0.03		
Control Delay		15.7	0.0	11.2	16.5	1.5	28.6	0.4		47.6	0.2		
Queue Delay		0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0		
Total Delay		15.7	0.0	11.2	16.5	1.5	28.6	0.4		47.6	0.2		
LOS		B	A	B	B	A	C	A		D	A		
Approach Delay		15.5			15.4		11.0				44.2		
Approach LOS		B			B		B				D		

Intersection Summary

Area Type: Other

Cycle Length: 90

Actuated Cycle Length: 79

Natural Cycle: 90

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 0.88

Intersection Signal Delay: 16.4

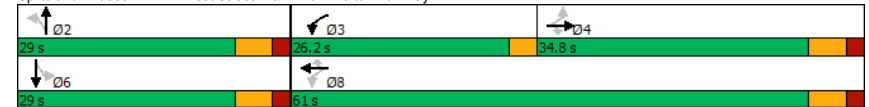
Intersection LOS: B

Intersection Capacity Utilization 88.5%

ICU Level of Service E

Analysis Period (min) 15

Splits and Phases: 214: West Street D & William Halton Parkway

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Queues
214: West Street D & William Halton Parkway

TT (2041) - Scenario B - 25% Reduction
Timing Plan: PM Peak Hour

	→	↘	↙	←	↖	↗	↘	↙	↓
Lane Group	EBT	EBR	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	946	14	252	2162	89	63	105	143	11
v/c Ratio	0.52	0.02	0.58	0.88	0.08	0.22	0.15	0.67	0.03
Control Delay	15.7	0.0	11.2	16.5	1.5	28.6	0.4	47.6	0.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	15.7	0.0	11.2	16.5	1.5	28.6	0.4	47.6	0.2
Queue Length 50th (m)	44.1	0.0	11.2	111.0	0.0	8.1	0.0	20.8	0.0
Queue Length 95th (m)	86.8	0.0	26.7	#230.8	4.5	17.8	0.0	38.3	0.0
Internal Link Dist (m)	549.3		176.8			75.4		109.2	
Turn Bay Length (m)		90.0	90.0		90.0	50.0		50.0	
Base Capacity (vph)	1818	849	653	2588	1181	448	848	362	557
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.52	0.02	0.39	0.84	0.08	0.14	0.12	0.40	0.02

Intersection Summary

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

HCM Signalized Intersection Capacity Analysis
214: West Street D & William Halton Parkway

TT (2041) - Scenario B - 25% Reduction
Timing Plan: PM Peak Hour

	↖	→	↘	←	↖	↗	↘	↙	↗	↙	↓	↘
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖	↖↖	↖	↖	↖↖	↖	↖	↖	↖	↖	↖	↖
Traffic Volume (vph)	0	946	14	252	2162	89	63	0	105	143	0	11
Future Volume (vph)	0	946	14	252	2162	89	63	0	105	143	0	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	4.0	4.0	4.0	4.0		7.0	4.0	
Lane Util. Factor	0.95	1.00	1.00	0.95	1.00	1.00	1.00	1.00		1.00	1.00	
Frt	1.00	0.85	1.00	1.00	0.85	1.00	0.85	1.00		1.00	0.85	
Flt Protected	1.00	1.00	0.95	1.00	1.00	0.95	1.00			0.95	1.00	
Satd. Flow (prot)	3539	1583	1770	3539	1583	1770	1583			1770	1583	
Flt Permitted	1.00	1.00	0.20	1.00	1.00	0.75	1.00			0.69	1.00	
Satd. Flow (perm)	3539	1583	365	3539	1583	1398	1583			1284	1583	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	0	946	14	252	2162	89	63	0	105	143	0	11
RTOR Reduction (vph)	0	0	7	0	0	27	0	84	0	0	9	0
Lane Group Flow (vph)	0	946	7	252	2162	62	63	21	0	143	2	0
Turn Type	Perm	NA	Perm	pm+pt	NA	Perm	Perm	NA		Perm	NA	
Protected Phases		4		3	8		2				6	
Permitted Phases	4		4	8		8	2			6		
Actuated Green, G (s)		38.6	38.6	52.7	52.7	52.7	14.1	14.1		14.1	14.1	
Effective Green, g (s)		40.6	40.6	51.7	54.7	54.7	16.1	16.1		13.1	16.1	
Actuated g/C Ratio		0.52	0.52	0.66	0.69	0.69	0.20	0.20		0.17	0.20	
Clearance Time (s)		6.0	6.0	3.0	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	3.0	
Lane Grp Cap (vph)		1823	815	419	2456	1098	285	323		213	323	
v/s Ratio Prot		0.27		0.08	c0.61			0.01			0.00	
v/s Ratio Perm			0.00	0.32		0.04	0.05			c0.11		
v/c Ratio		0.52	0.01	0.60	0.88	0.06	0.22	0.07		0.67	0.01	
Uniform Delay, d1		12.6	9.3	7.9	9.5	3.8	26.1	25.3		30.8	25.0	
Progression Factor		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	2.4	4.1	0.0	0.4	0.1		8.1	0.0	
Delay (s)		12.9	9.3	10.3	13.5	3.9	26.5	25.4		38.9	25.0	
Level of Service		B	A	B	B	A	C	C		D	C	
Approach Delay (s)		12.8			12.9			25.8			37.9	
Approach LOS		B			B			C			D	

Intersection Summary

HCM 2000 Control Delay	14.4	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.85		
Actuated Cycle Length (s)	78.8	Sum of lost time (s)	12.0
Intersection Capacity Utilization	88.5%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

Lanes, Volumes, Timings

215: East Street A & West Street B

TT (2041) - Scenario B - 25% Reduction

Timing Plan: PM Peak Hour

	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	216	105	0	109	79	20
Future Volume (vph)	216	105	0	109	79	20
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	0.956				0.973	
Flt Protected	0.967					
Satd. Flow (prot)	1722	0	0	1863	1812	0
Flt Permitted	0.967					
Satd. Flow (perm)	1722	0	0	1863	1812	0
Link Speed (k/h)	50			50	50	
Link Distance (m)	202.4			83.5	103.7	
Travel Time (s)	14.6			6.0	7.5	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	216	105	0	109	79	20
Shared Lane Traffic (%)						
Lane Group Flow (vph)	321	0	0	109	99	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
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	25			15
Sign Control	Stop			Free	Free	

Intersection Summary

Area Type: Other

Control Type: Unsignalized

Intersection Capacity Utilization 30.8% ICU Level of Service A

Analysis Period (min) 15

HCM Unsignalized Intersection Capacity Analysis

215: East Street A & West Street B

TT (2041) - Scenario B - 25% Reduction

Timing Plan: PM Peak Hour

	EBL	EBR	NBL	NBT	SBT	SBR
Movement						
Lane Configurations						
Traffic Volume (veh/h)	216	105	0	109	79	20
Future Volume (Veh/h)	216	105	0	109	79	20
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	216	105	0	109	79	20
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	198	89	99			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	198	89	99			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	73	89	100			
cM capacity (veh/h)	791	969	1494			
Direction, Lane #	EB 1	NB 1	SB 1			
Volume Total	321	109	99			
Volume Left	216	0	0			
Volume Right	105	0	20			
cSH	841	1494	1700			
Volume to Capacity	0.38	0.00	0.06			
Queue Length 95th (m)	13.5	0.0	0.0			
Control Delay (s)	11.9	0.0	0.0			
Lane LOS	B					
Approach Delay (s)	11.9	0.0	0.0			
Approach LOS	B					
Intersection Summary						
Average Delay		7.2				
Intersection Capacity Utilization		30.8%		ICU Level of Service	A	
Analysis Period (min)		15				

Lanes, Volumes, Timings

216: West Street D & West Street B

TT (2041) - Scenario B - 25% Reduction

Timing Plan: PM Peak Hour

	←	←	↑	↗	↘	↓
Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	↖		↖			↗
Traffic Volume (vph)	0	31	137	0	155	111
Future Volume (vph)	0	31	137	0	155	111
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.865					
Flt Protected						0.972
Satd. Flow (prot)	1611	0	1863	0	0	1811
Flt Permitted						0.972
Satd. Flow (perm)	1611	0	1863	0	0	1811
Link Speed (k/h)	50		50			50
Link Distance (m)	202.4		82.8			99.4
Travel Time (s)	14.6		6.0			7.2
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	0	31	137	0	155	111
Shared Lane Traffic (%)						
Lane Group Flow (vph)	31	0	137	0	0	266
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
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		15	25	
Sign Control	Stop		Free			Free

Intersection Summary

Area Type: Other

Control Type: Unsignalized

Intersection Capacity Utilization 35.0%

ICU Level of Service A

Analysis Period (min) 15

HCM Unsignalized Intersection Capacity Analysis

216: West Street D & West Street B

TT (2041) - Scenario B - 25% Reduction

Timing Plan: PM Peak Hour

	←	←	↑	↗	↘	↓
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	↖		↖			↗
Traffic Volume (veh/h)	0	31	137	0	155	111
Future Volume (Veh/h)	0	31	137	0	155	111
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	0	31	137	0	155	111
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None		None	
Median storage (veh)						
Upstream signal (m)						99
pX, platoon unblocked	0.95					
vC, conflicting volume	558	137			137	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	512	137			137	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	100	97			89	
cM capacity (veh/h)	444	911			1447	

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	31	137	266
Volume Left	0	0	155
Volume Right	31	0	0
cSH	911	1700	1447
Volume to Capacity	0.03	0.08	0.11
Queue Length 95th (m)	0.8	0.0	2.7
Control Delay (s)	9.1	0.0	4.9
Lane LOS	A		A
Approach Delay (s)	9.1	0.0	4.9
Approach LOS	A		

Intersection Summary

Average Delay 3.7

Intersection Capacity Utilization 35.0%

ICU Level of Service

A

Analysis Period (min) 15

Lanes, Volumes, Timings
217: East Street C & East Street A

TT (2041) - Scenario B - 25% Reduction
Timing Plan: PM Peak Hour

	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↔	↔		↔	
Traffic Volume (vph)	0	84	92	203	151	4
Future Volume (vph)	0	84	92	203	151	4
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			0.907		0.997	
Flt Protected					0.954	
Satd. Flow (prot)	0	1863	1690	0	1772	0
Flt Permitted					0.954	
Satd. Flow (perm)	0	1863	1690	0	1772	0
Link Speed (k/h)		50	50		50	
Link Distance (m)		206.1	205.4		83.5	
Travel Time (s)		14.8	14.8		6.0	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	0	84	92	203	151	4
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	84	295	0	155	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 32.6%	ICU Level of Service A					
Analysis Period (min) 15						

HCM Unsignalized Intersection Capacity Analysis
217: East Street C & East Street A

TT (2041) - Scenario B - 25% Reduction
Timing Plan: PM Peak Hour

	EBL	EBT	WBT	WBR	SBL	SBR
Movement		↔	↔		↔	
Lane Configurations		↔	↔		↔	
Traffic Volume (veh/h)	0	84	92	203	151	4
Future Volume (Veh/h)	0	84	92	203	151	4
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	0	84	92	203	151	4
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	295				278	194
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	295				278	194
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	100				79	100
cM capacity (veh/h)	1266				712	848
Direction, Lane #	EB 1	WB 1	SB 1			
Volume Total	84	295	155			
Volume Left	0	0	151			
Volume Right	0	203	4			
cSH	1266	1700	715			
Volume to Capacity	0.00	0.17	0.22			
Queue Length 95th (m)	0.0	0.0	6.2			
Control Delay (s)	0.0	0.0	11.4			
Lane LOS			B			
Approach Delay (s)	0.0	0.0	11.4			
Approach LOS			B			
Intersection Summary						
Average Delay			3.3			
Intersection Capacity Utilization		32.6%		ICU Level of Service	A	
Analysis Period (min)		15				

Lanes, Volumes, Timings

218: West Street D & East Street C

TT (2041) - Scenario B - 25% Reduction

Timing Plan: PM Peak Hour

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔			↔			↔			↔	
Traffic Volume (vph)	0	0	0	36	0	56	0	116	43	70	41	0
Future Volume (vph)	0	0	0	36	0	56	0	116	43	70	41	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					0.918			0.963				
Flt Protected					0.981						0.969	
Satd. Flow (prot)	0	1863	0	0	1678	0	0	1794	0	0	1805	0
Flt Permitted					0.981						0.969	
Satd. Flow (perm)	0	1863	0	0	1678	0	0	1794	0	0	1805	0
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		164.8			206.1			68.2			82.8	
Travel Time (s)		11.9			14.8			4.9			6.0	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	0	0	0	36	0	56	0	116	43	70	41	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	0	0	0	92	0	0	159	0	0	111	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 30.2%

ICU Level of Service A

Analysis Period (min) 15

HCM Unsignalized Intersection Capacity Analysis

218: West Street D & East Street C

TT (2041) - Scenario B - 25% Reduction

Timing Plan: PM Peak Hour

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔			↔			↔			↔	
Traffic Volume (veh/h)	0	0	0	36	0	56	0	116	43	70	41	0
Future Volume (Veh/h)	0	0	0	36	0	56	0	116	43	70	41	0
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	0	0	0	36	0	56	0	116	43	70	41	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	56			0			120	128	0	201	100	28
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	56			0			120	128	0	201	100	28
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			98			100	84	96	89	95	100
cM capacity (veh/h)	1549			1623			806	746	1085	630	773	1047

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	0	92	159	111
Volume Left	0	36	0	70
Volume Right	0	56	43	0
cSH	1700	1623	815	676
Volume to Capacity	0.00	0.02	0.20	0.16
Queue Length 95th (m)	0.0	0.5	5.4	4.4
Control Delay (s)	0.0	2.9	10.5	11.4
Lane LOS		A	B	B
Approach Delay (s)	0.0	2.9	10.5	11.4
Approach LOS		B	B	

Intersection Summary

Average Delay

8.8

Intersection Capacity Utilization

30.2%

ICU Level of Service

A

Analysis Period (min)

15

Lanes, Volumes, Timings

101: Trafalgar Rd & Lower Base Line

Total (2041) - Scenario A - 35% Mode Share

Timing Plan: AM Peak Hour

	↖	→	↗	↙	←	↖	↗	↙	↘	↗	↘	↙
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖	↖↗		↙	↖↗		↖	↖↗	↙	↖↗	↖↗	↙
Traffic Volume (vph)	151	588	224	322	119	219	49	1974	290	502	2151	24
Future Volume (vph)	151	588	224	322	119	219	49	1974	290	502	2151	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	0.423			0.165			0.085			0.083		
Satd. Flow (perm)	788	3394	0	307	3196	0	158	5085	1583	155	5085	1583
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		41			238				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)	164	639	243	350	129	238	53	2146	315	546	2338	26
Shared Lane Traffic (%)												
Lane Group Flow (vph)	164	882	0	350	367	0	53	2146	315	546	2338	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

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Lanes, Volumes, Timings

101: Trafalgar Rd & Lower Base Line

Total (2041) - Scenario A - 35% Mode Share

Timing Plan: AM Peak Hour

	↖	→	↗	↙	←	↖	↗	↙	↘	↗	↘	↙
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	1.10	0.41	1.46	0.87	0.03
Control Delay	32.5	158.8		210.8	15.4		16.7	89.5	7.9	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	32.5	158.8		210.8	15.4		16.7	89.5	7.9	250.6	29.8	0.0
LOS	C	F		F	B		B	F	A	F	C	A
Approach Delay		139.0			110.7			77.7			70.9	
Approach LOS		F			F			E			E	

Intersection Summary

Area Type: Other

Cycle Length: 120

Actuated Cycle Length: 120

Natural Cycle: 100

Control Type: Semi Act-Uncooord

Maximum v/c Ratio: 1.46

Intersection Signal Delay: 87.2

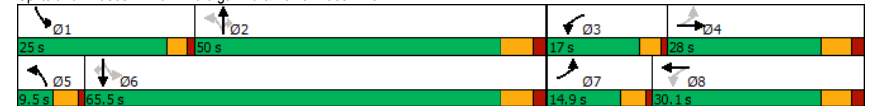
Intersection LOS: F

Intersection Capacity Utilization 120.5%

ICU Level of Service H

Analysis Period (min) 15

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

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Queues
101: Trafalgar Rd & Lower Base Line

Total (2041) - Scenario A - 35% Mode Share
Timing Plan: AM Peak Hour

	EBL	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	164	882	350	367	53	2146	315	546	2338	26
v/c Ratio	0.47	1.24	1.35	0.41	0.30	1.10	0.41	1.46	0.87	0.03
Control Delay	32.5	158.8	210.8	15.4	16.7	89.5	7.9	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	32.5	158.8	210.8	15.4	16.7	89.5	7.9	250.6	29.8	0.0
Queue Length 50th (m)	26.8	~130.3	~90.8	12.9	4.7	~207.4	9.6	~158.8	173.3	0.0
Queue Length 95th (m)	43.5	#169.9	#148.3	26.3	9.7	#236.0	30.4	#225.2	196.7	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	0.46	1.24	1.35	0.41	0.30	1.10	0.41	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.

HCM Signalized Intersection Capacity Analysis
101: Trafalgar Rd & Lower Base Line

Total (2041) - Scenario A - 35% Mode Share
Timing Plan: AM Peak Hour

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰	↱	↱	↰	↱	↱	↰	↱	↱	↰	↱	↱
Traffic Volume (vph)	151	588	224	322	119	219	49	1974	290	502	2151	24
Future Volume (vph)	151	588	224	322	119	219	49	1974	290	502	2151	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	3393		1770	3195		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)	788	3393		308	3195		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)	164	639	243	350	129	238	53	2146	315	546	2338	26
RTOR Reduction (vph)	0	33	0	0	186	0	0	0	153	0	0	12
Lane Group Flow (vph)	164	849	0	350	181	0	53	2146	162	546	2338	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	
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	0.42		c0.26	0.46	
v/s Ratio Perm	0.10			c0.28			0.13			0.10	c0.59	0.01
v/c Ratio	0.49	1.26		1.39	0.26		0.34	1.09	0.26	1.48	0.88	0.02
Uniform Delay, d1	32.7	48.5		36.7	39.2		24.0	37.0	25.2	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	129.5		200.0	0.4		1.3	48.9	1.0	231.8	4.5	0.0
Delay (s)	33.9	178.0		236.7	39.6		25.3	85.9	26.3	270.9	29.8	13.8
Level of Service	C	F		F	D		C	F	C	F	C	B
Approach Delay (s)		155.4			135.8			77.1			74.9	
Approach LOS		F			F			E			E	

Intersection Summary

HCM 2000 Control Delay	93.4	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	120.5%	ICU Level of Service	H
Analysis Period (min)	15		

c Critical Lane Group

Lanes, Volumes, Timings

Total (2041) - Scenario A - 35% Mode Share

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

Timing Plan: AM Peak Hour

	←	→	↖	↗	↙	↘	↖	↗	↙	↘	↖	↗
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔		↔	↔	↔	↔	↔		↔	↔	↔
Traffic Volume (vph)	2	0	9	369	1	26	6	2282	0	0	2694	5
Future Volume (vph)	2	0	9	369	1	26	6	2282	0	0	2694	5
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		0.063					
Satd. Flow (perm)	0	1639	0	1327	1221	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)	2	0	10	401	1	28	7	2480	0	0	2928	5
Shared Lane Traffic (%)				49%		10%						
Lane Group Flow (vph)	0	12	0	205	200	25	7	2480	0	0	2928	5
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	Perm
Protected Phases	4	4			8		5	2			6	
Permitted Phases				8		8	2					6

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Lanes, Volumes, Timings

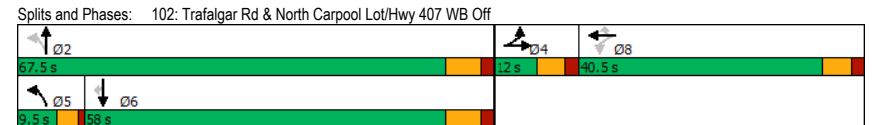
Total (2041) - Scenario A - 35% Mode Share

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

Timing Plan: AM Peak Hour

	←	→	↖	↗	↙	↘	↖	↗	↙	↘	↖	↗
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	
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	64.4	64.4			62.8	62.8
Actuated g/C Ratio	0.08			0.24	0.24	0.24	0.65	0.65			0.64	0.64
v/c Ratio	0.05			0.63	0.67	0.05	0.04	0.75			0.90	0.00
Control Delay	0.4			42.6	45.1	0.2	10.7	15.7			22.9	0.0
Queue Delay	0.0			0.0	0.0	0.0	0.0	0.0			0.0	0.0
Total Delay	0.4			42.6	45.1	0.2	10.7	15.7			22.9	0.0
LOS	A			D	D	A	B	B			C	A
Approach Delay	0.4				41.3		15.7				22.9	
Approach LOS	A				D		B				C	

Intersection Summary												
Area Type:	Other											
Cycle Length: 120												
Actuated Cycle Length: 98.5												
Natural Cycle: 110												
Control Type: Actuated-Uncoordinated												
Maximum v/c Ratio: 0.90												
Intersection Signal Delay: 21.1	Intersection LOS: C											
Intersection Capacity Utilization 75.9%	ICU Level of Service D											
Analysis Period (min) 15												



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Synchro 10 Report
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Queues
102: Trafalgar Rd & North Carpool Lot/Hwy 407 WB Off
Total (2041) - Scenario A - 35% Mode Share
Timing Plan: AM Peak Hour

	→	↖	←	↗	↖	↑	↓	↗
Lane Group	EBT	WBL	WBT	WBR	NBL	NBT	SBT	SBR
Lane Group Flow (vph)	12	205	200	25	7	2480	2928	5
v/c Ratio	0.05	0.63	0.67	0.05	0.04	0.75	0.90	0.00
Control Delay	0.4	42.6	45.1	0.2	10.7	15.7	22.9	0.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	0.4	42.6	45.1	0.2	10.7	15.7	22.9	0.0
Queue Length 50th (m)	0.0	34.8	35.7	0.0	0.4	91.6	130.8	0.0
Queue Length 95th (m)	0.0	66.2	68.4	0.0	3.0	211.1	#341.8	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)	251	498	459	644	169	3322	3242	1052
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	0.41	0.44	0.04	0.04	0.75	0.90	0.00

Intersection Summary

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

HCM Signalized Intersection Capacity Analysis
102: Trafalgar Rd & North Carpool Lot/Hwy 407 WB Off
Total (2041) - Scenario A - 35% Mode Share
Timing Plan: AM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations								  			  	
Traffic Volume (vph)	2	0	9	369	1	26	6	2282	0	0	2694	5
Future Volume (vph)	2	0	9	369	1	26	6	2282	0	0	2694	5
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	0.06	1.00			1.00	1.00
Satd. Flow (perm)		1640		1327	1221	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)	2	0	10	401	1	28	7	2480	0	0	2928	5
RTOR Reduction (vph)	0	12	0	0	1	19	0	0	0	0	0	2
Lane Group Flow (vph)	0	0	0	205	199	6	7	2480	0	0	2928	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)		1.0		22.0	22.0	22.0	64.6	64.6			59.7	59.7
Effective Green, g (s)		3.0		24.0	24.0	24.0	64.6	67.6			62.7	62.7
Actuated g/C Ratio		0.03		0.23	0.23	0.23	0.61	0.63			0.59	0.59
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)		46		298	274	338	84	3224			2990	931
v/s Ratio Prot		c0.00					0.00	c0.49			c0.58	
v/s Ratio Perm				0.15	c0.16	0.00	0.05					0.00
v/c Ratio		0.01		0.69	0.73	0.02	0.08	0.77			0.98	0.00
Uniform Delay, d1		50.4		37.9	38.3	32.1	25.1	13.9			21.3	9.1
Progression Factor		1.00		1.00	1.00	1.00	1.00	1.00			1.00	1.00
Incremental Delay, d2		0.1		6.7	9.5	0.0	0.3	1.8			12.3	0.0
Delay (s)		50.4		44.6	47.8	32.1	25.4	15.8			33.6	9.1
Level of Service		D		D	D	C	C	B			C	A
Approach Delay (s)		50.4			45.4			15.8			33.6	
Approach LOS		D			D			B			C	

Intersection Summary

HCM 2000 Control Delay	26.9	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.91		
Actuated Cycle Length (s)	106.6	Sum of lost time (s)	18.0
Intersection Capacity Utilization	75.9%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

Lanes, Volumes, Timings
103: Trafalgar Rd & Hwy 407 EB Off

Total (2041) - Scenario A - 35% Mode Share
Timing Plan: AM Peak Hour

	EBL	EBR	NBL	NBT	SBT	SBR
Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	↔	↔		↑↑↑	↑↑↑	
Traffic Volume (vph)	140	288	0	2285	2811	0
Future Volume (vph)	140	288	0	2285	2811	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	0.945	0.850				
Frt Protected	0.969					
Satd. Flow (prot)	1706	1504	0	5085	5085	0
Frt Permitted	0.969					
Satd. Flow (perm)	1706	1504	0	5085	5085	0
Right Turn on Red	Yes				Yes	
Satd. Flow (RTOR)	1	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)	152	313	0	2484	3055	0
Shared Lane Traffic (%)		28%				
Lane Group Flow (vph)	240	225	0	2484	3055	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	CI+Ex	CI+Ex		CI+Ex	CI+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				CI+Ex	CI+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	

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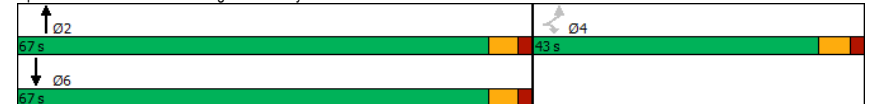
Lanes, Volumes, Timings
103: Trafalgar Rd & Hwy 407 EB Off

Total (2041) - Scenario A - 35% Mode Share
Timing Plan: AM Peak Hour

	EBL	EBR	NBL	NBT	SBT	SBR
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)	20.8	20.8		63.2	63.2	
Actuated g/C Ratio	0.23	0.23		0.69	0.69	
v/c Ratio	0.62	0.66		0.71	0.87	
Control Delay	39.2	42.0		11.1	16.3	
Queue Delay	0.0	0.0		0.0	0.0	
Total Delay	39.2	42.0		11.1	16.3	
LOS	D	D		B	B	
Approach Delay	40.5			11.1	16.3	
Approach LOS	D			B	B	

Intersection Summary	
Area Type:	Other
Cycle Length: 110	
Actuated Cycle Length: 92	
Natural Cycle: 75	
Control Type: Semi Act-Uncoord	
Maximum v/c Ratio: 0.87	
Intersection Signal Delay: 16.0	Intersection LOS: B
Intersection Capacity Utilization 74.6%	ICU Level of Service D
Analysis Period (min) 15	

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



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Queues
103: Trafalgar Rd & Hwy 407 EB Off

Total (2041) - Scenario A - 35% Mode Share
Timing Plan: AM Peak Hour

	EBL	EBR	NBT	SBT
Lane Group	EBL	EBR	NBT	SBT
Lane Group Flow (vph)	240	225	2484	3055
v/c Ratio	0.62	0.66	0.71	0.87
Control Delay	39.2	42.0	11.1	16.3
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	39.2	42.0	11.1	16.3
Queue Length 50th (m)	37.6	37.5	84.2	132.7
Queue Length 95th (m)	60.3	61.4	133.9	#218.7
Internal Link Dist (m)	530.6		96.3	339.6
Turn Bay Length (m)				
Base Capacity (vph)	726	640	3494	3494
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	0.33	0.35	0.71	0.87

Intersection Summary

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

HCM Signalized Intersection Capacity Analysis Total (2041) - Scenario A - 35% Mode Share
103: Trafalgar Rd & Hwy 407 EB Off Timing Plan: AM Peak Hour

	EBL	EBR	NBL	NBT	SBT	SBR
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	↔	↔	↔	↔	↔	↔
Traffic Volume (vph)	140	288	0	2285	2811	0
Future Volume (vph)	140	288	0	2285	2811	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	0.94	0.85		1.00	1.00	
Flt Protected	0.97	1.00		1.00	1.00	
Satd. Flow (prot)	1706	1504		5085	5085	
Flt Permitted	0.97	1.00		1.00	1.00	
Satd. Flow (perm)	1706	1504		5085	5085	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	152	313	0	2484	3055	0
RTOR Reduction (vph)	1	1	0	0	0	0
Lane Group Flow (vph)	239	224	0	2484	3055	0
Turn Type	Perm	Perm		NA	NA	
Protected Phases				2	6	
Permitted Phases	4	4				
Actuated Green, G (s)	18.7	18.7		61.2	61.2	
Effective Green, g (s)	20.7	20.7		63.2	63.2	
Actuated g/C Ratio	0.23	0.23		0.69	0.69	
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)	384	338		3496	3496	
v/s Ratio Prot				0.49	c0.60	
v/s Ratio Perm	0.14	c0.15				
v/c Ratio	0.62	0.66		0.71	0.87	
Uniform Delay, d1	32.1	32.4		8.8	11.2	
Progression Factor	1.00	1.00		1.00	1.00	
Incremental Delay, d2	3.1	4.8		1.3	3.4	
Delay (s)	35.2	37.3		10.0	14.6	
Level of Service	D	D		B	B	
Approach Delay (s)	36.2			10.0	14.6	
Approach LOS	D			B	B	

Intersection Summary

HCM 2000 Control Delay	14.4	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.84		
Actuated Cycle Length (s)	91.9	Sum of lost time (s)	10.0
Intersection Capacity Utilization	74.6%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

Lanes, Volumes, Timings
104: Trafalgar Rd & West Street A/East Street A

Total (2041) - Scenario A - 35% Mode Share

Timing Plan: AM Peak Hour

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰	↱	↰	↰	↰	↰	↰	↰	↰	↰	↰	↰
Traffic Volume (vph)	98	18	61	0	0	286	16	2727	192	327	2651	121
Future Volume (vph)	98	18	61	0	0	286	16	2727	192	327	2651	121
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		
Satd. Flow (prot)	1770	1863	1583	1863	1863	1583	1770	5085	1583	1770	5085	1583
Flt Permitted	0.757						0.052			0.049		
Satd. Flow (perm)	1410	1863	1583	1863	1863	1583	97	5085	1583	91	5085	1583
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			86			23			86			60
Link Speed (k/h)		50				50		80			80	
Link Distance (m)		143.5				212.6		233.3			131.6	
Travel Time (s)		10.3				15.3		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)	107	20	66	0	0	311	17	2964	209	355	2882	132
Shared Lane Traffic (%)												
Lane Group Flow (vph)	107	20	66	0	0	311	17	2964	209	355	2882	132
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		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

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Lanes, Volumes, Timings
104: Trafalgar Rd & West Street A/East Street A

Total (2041) - Scenario A - 35% Mode Share

Timing Plan: AM Peak Hour

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector Phase	4	4	4	8	8	1	5	5	2	2	1	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)	24.0	24.0	24.0	24.0	24.0	40.0	9.5	76.0	76.0	40.0	106.5	106.5
Total Split (%)	17.1%	17.1%	17.1%	17.1%	17.1%	28.6%	6.8%	54.3%	54.3%	28.6%	76.1%	76.1%
Maximum Green (s)	18.0	18.0	18.0	18.0	18.0	36.0	5.5	70.0	70.0	36.0	100.5	100.5
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 Effect Green (s)	16.3	16.3	16.3			48.4	81.8	76.3	76.3	106.4	102.9	102.9
Actuated g/C Ratio	0.12	0.12	0.12			0.37	0.63	0.58	0.58	0.81	0.79	0.79
v/c Ratio	0.61	0.09	0.24			0.52	0.13	1.00	0.22	0.87	0.72	0.10
Control Delay	70.2	52.3	7.8			31.8	10.4	44.2	9.6	59.8	9.3	2.7
Queue Delay	0.0	0.0	0.0			0.0	0.0	30.7	0.0	0.0	0.6	0.0
Total Delay	70.2	52.3	7.8			31.8	10.4	75.0	9.6	59.8	9.8	2.7
LOS	E	D	A			C	B	E	A	E	A	A
Approach Delay		47.0			31.8			70.3			14.8	
Approach LOS		D			C			E			B	

Intersection Summary

Area Type: Other

Cycle Length: 140

Actuated Cycle Length: 130.7

Natural Cycle: 120

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 1.00

Intersection Signal Delay: 41.5

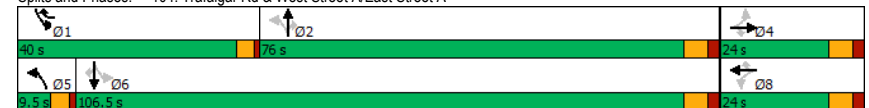
Intersection LOS: D

Intersection Capacity Utilization 86.2%

ICU Level of Service E

Analysis Period (min) 15

Splits and Phases: 104: Trafalgar Rd & West Street A/East Street A



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Queues
104: Trafalgar Rd & West Street A/East Street A

Total (2041) - Scenario A - 35% Mode Share
Timing Plan: AM Peak Hour

	EBL	EBT	EBR	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group	EBL	EBT	EBR	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	107	20	66	311	17	2964	209	355	2882	132
v/c Ratio	0.61	0.09	0.24	0.52	0.13	1.00	0.22	0.87	0.72	0.10
Control Delay	70.2	52.3	7.8	31.8	10.4	44.2	9.6	59.8	9.3	2.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	30.7	0.0	0.0	0.6	0.0
Total Delay	70.2	52.3	7.8	31.8	10.4	75.0	9.6	59.8	9.8	2.7
Queue Length 50th (m)	25.2	4.4	0.0	53.8	0.7	~285.8	13.6	70.2	96.2	3.0
Queue Length 95th (m)	47.2	12.5	8.5	78.5	2.8	#367.2	32.2	107.8	175.7	10.5
Internal Link Dist (m)	119.5		50.0		209.3		50.0		107.6	
Turn Bay Length (m)	50.0	50.0		50.0	50.0	50.0		30.0	30.0	
Base Capacity (vph)	216	286	315	720	131	2969	960	538	4001	1258
Starvation Cap Reductn	0	0	0	0	0	230	0	0	618	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	0.07	0.21	0.43	0.13	1.08	0.22	0.66	0.85	0.10

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.

HCM Signalized Intersection Capacity Analysis
104: Trafalgar Rd & West Street A/East Street A

Total (2041) - Scenario A - 35% Mode Share
Timing Plan: AM Peak Hour

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔
Traffic Volume (vph)	98	18	61	0	0	286	16	2727	192	327	2651	121
Future Volume (vph)	98	18	61	0	0	286	16	2727	192	327	2651	121
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	1.00	0.85			0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00			1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1770	1863	1583			1583	1770	5085	1583	1770	5085	1583
Flt Permitted	0.76	1.00	1.00			1.00	0.05	1.00	1.00	0.05	1.00	1.00
Satd. Flow (perm)	1410	1863	1583			1583	97	5085	1583	92	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)	107	20	66	0	0	311	17	2964	209	355	2882	132
RTOR Reduction (vph)	0	0	58	0	0	15	0	0	35	0	0	14
Lane Group Flow (vph)	107	20	8	0	0	296	17	2964	174	355	2882	118
Turn Type	Perm	NA	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)	14.3	14.3	14.3			40.4	79.0	76.9	76.9	107.0	100.9	100.9
Effective Green, g (s)	16.3	16.3	16.3			44.4	79.0	78.9	78.9	107.0	102.9	102.9
Actuated g/C Ratio	0.12	0.12	0.12			0.33	0.59	0.59	0.59	0.80	0.77	0.77
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)	172	227	193			527	83	3009	936	402	3925	1221
v/s Ratio Prot		0.01				0.12	0.00	c0.58		c0.17	0.57	
v/s Ratio Perm	c0.08		0.01			0.07	0.12		0.11	0.53		0.07
v/c Ratio	0.62	0.09	0.04			0.56	0.20	0.99	0.19	0.88	0.73	0.10
Uniform Delay, d1	55.6	51.9	51.6			36.5	21.0	26.6	12.5	45.6	8.0	3.7
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	6.8	0.2	0.1			1.4	1.2	13.3	0.4	19.8	1.3	0.2
Delay (s)	62.4	52.1	51.7			37.8	22.3	39.9	12.9	65.5	9.3	3.9
Level of Service	E	D	D			D	C	D	B	E	A	A
Approach Delay (s)	57.7		37.8		38.0		15.0					
Approach LOS	E		D		D		B					

Intersection Summary

HCM 2000 Control Delay	27.6	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.91		
Actuated Cycle Length (s)	133.3	Sum of lost time (s)	12.0
Intersection Capacity Utilization	86.2%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

Lanes, Volumes, Timings
105: Trafalgar Rd & William Halton Parkway

Total (2041) - Scenario A - 35% Mode Share
Timing Plan: AM Peak Hour

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰	↰	↰	↰	↰	↰	↰	↰	↰	↰	↰	↰
Traffic Volume (vph)	507	926	209	201	503	243	262	2429	127	575	1987	150
Future Volume (vph)	507	926	209	201	503	243	262	2429	127	575	1987	150
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	0.177			0.129			0.077			0.071		
Satd. Flow (perm)	330	3539	1583	240	3539	1583	143	5085	1583	132	5085	1583
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			217			224			120			120
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		209.3			204.1			208.3			233.3	
Travel Time (s)		15.1			14.7			15.0			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)	551	1007	227	218	547	264	285	2640	138	625	2160	163
Shared Lane Traffic (%)												
Lane Group Flow (vph)	551	1007	227	218	547	264	285	2640	138	625	2160	163
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

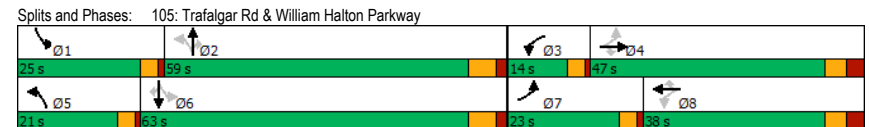
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Lanes, Volumes, Timings
105: Trafalgar Rd & William Halton Parkway

Total (2041) - Scenario A - 35% Mode Share
Timing Plan: AM Peak Hour

	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)	23.0	47.0	47.0	14.0	38.0	38.0	21.0	59.0	59.0	25.0	63.0	63.0
Total Split (%)	15.9%	32.4%	32.4%	9.7%	26.2%	26.2%	14.5%	40.7%	40.7%	17.2%	43.4%	43.4%
Maximum Green (s)	19.0	40.0	40.0	10.0	31.0	31.0	17.0	52.1	52.1	21.0	56.1	56.1
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)	57.0	43.0	43.0	44.0	34.0	34.0	72.0	55.0	55.0	80.0	59.0	59.0
Actuated g/C Ratio	0.39	0.30	0.30	0.30	0.23	0.23	0.50	0.38	0.38	0.55	0.41	0.41
v/c Ratio	1.73	0.96	0.36	1.22	0.66	0.49	1.09	1.37	1.37	2.02	1.04	0.23
Control Delay	368.1	69.7	7.2	172.4	54.7	12.5	122.5	205.4	7.5	494.3	74.1	9.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	6.7	0.0
Total Delay	368.1	69.7	7.2	172.4	54.7	12.5	122.5	205.4	7.5	494.3	80.8	9.2
LOS	F	E	A	F	D	B	F	F	A	F	F	A
Approach Delay		153.8			68.8		188.8				164.5	
Approach LOS		F			E		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: 2.02												
Intersection Signal Delay: 159.6							Intersection LOS: F					
Intersection Capacity Utilization 136.9%							ICU Level of Service H					
Analysis Period (min) 15												



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Queues
105: Trafalgar Rd & William Halton Parkway

Total (2041) - Scenario A - 35% Mode Share
Timing Plan: AM Peak Hour

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	551	1007	227	218	547	264	285	2640	138	625	2160	163
v/c Ratio	1.73	0.96	0.36	1.22	0.66	0.49	1.09	1.37	0.20	2.02	1.04	0.23
Control Delay	368.1	69.7	7.2	172.4	54.7	12.5	122.5	205.4	7.5	494.3	74.1	9.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	6.7	0.0
Total Delay	368.1	69.7	7.2	172.4	54.7	12.5	122.5	205.4	7.5	494.3	80.8	9.2
Queue Length 50th (m)	~206.1	148.1	2.0	~58.4	74.4	9.0	~74.4	~360.7	3.2	~262.6	~242.2	7.4
Queue Length 95th (m)	#276.4	#190.3	21.1	#110.9	94.2	34.0	#131.6	#385.4	16.9	#335.3	#269.6	22.0
Internal Link Dist (m)		185.3			180.1			184.3			209.3	
Turn Bay Length (m)	100.0		100.0	100.0		150.0	150.0		75.0			
Base Capacity (vph)	318	1049	622	178	829	542	261	1928	674	310	2069	715
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	33	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	1.73	0.96	0.36	1.22	0.66	0.49	1.09	1.37	0.20	2.02	1.06	0.23

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.

HCM Signalized Intersection Capacity Analysis
105: Trafalgar Rd & William Halton Parkway

Total (2041) - Scenario A - 35% Mode Share
Timing Plan: AM Peak Hour

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔
Traffic Volume (vph)	507	926	209	201	503	243	262	2429	127	575	1987	150
Future Volume (vph)	507	926	209	201	503	243	262	2429	127	575	1987	150
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
Flt	1.00	1.00	0.85	1.00	0.85	1.00	0.85	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	0.18	1.00	1.00	0.13	1.00	1.00	0.08	1.00	1.00	0.07	1.00	1.00
Satd. Flow (perm)	330	3539	1583	240	3539	1583	143	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)	551	1007	227	218	547	264	285	2640	138	625	2160	163
RTOR Reduction (vph)	0	0	153	0	0	171	0	0	74	0	0	71
Lane Group Flow (vph)	551	1007	74	218	547	93	285	2640	64	625	2160	92
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)	54.0	40.0	40.0	41.0	31.0	31.0	69.1	52.1	52.1	77.1	56.1	56.1
Effective Green, g (s)	54.0	43.0	43.0	41.0	34.0	34.0	69.1	55.0	55.0	77.1	59.0	59.0
Actuated g/C Ratio	0.37	0.30	0.30	0.28	0.23	0.23	0.48	0.38	0.38	0.53	0.41	0.41
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)	311	1049	469	173	829	371	258	1928	600	307	2069	644
v/s Ratio Prot	c0.23	0.28		0.09	0.15		0.13	0.52		c0.29	0.42	
v/s Ratio Perm	c0.43		0.05	0.27		0.06	0.40		0.04	c0.79		0.06
v/c Ratio	1.77	0.96	0.16	1.26	0.66	0.25	1.10	1.37	0.11	2.04	1.04	0.14
Uniform Delay, d1	37.5	50.2	37.6	46.5	50.3	45.1	46.8	45.0	29.1	48.5	43.0	27.1
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	360.1	19.0	0.3	155.1	2.6	0.7	87.0	169.6	0.4	477.4	32.4	0.5
Delay (s)	397.6	69.2	38.0	201.6	52.8	45.9	133.7	214.6	29.5	525.9	75.4	27.5
Level of Service	F	E	D	F	D	D	F	F	C	F	E	C
Approach Delay (s)		166.6			82.6			198.7			168.3	
Approach LOS		F			F			F			F	

Intersection Summary

HCM 2000 Control Delay	168.5	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	1.92		
Actuated Cycle Length (s)	145.0	Sum of lost time (s)	16.0
Intersection Capacity Utilization	136.9%	ICU Level of Service	H
Analysis Period (min)	15		
c Critical Lane Group			

Lanes, Volumes, Timings

Total (2041) - Scenario A - 35% Mode Share

106: Trafalgar Rd & Burnhamthorpe Rd/Burnhamthorpe Rd

Timing Plan: AM Peak Hour

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰	↱	↲	↰	↱	↲	↰	↱	↲	↰	↱	↲
Traffic Volume (vph)	447	491	80	83	157	213	56	2158	174	337	1640	184
Future Volume (vph)	447	491	80	83	157	213	56	2158	174	337	1640	184
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	1.00	1.00	1.00	1.00	1.00	1.00	0.91	1.00	1.00	0.91	1.00
Frt		0.979			0.914				0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1770	1824	0	1770	1703	0	1770	5085	1583	1770	5085	1583
Flt Permitted	0.140			0.154			0.071			0.066		
Satd. Flow (perm)	261	1824	0	287	1703	0	132	5085	1583	123	5085	1583
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		6			43				160			143
Link Speed (k/h)		60			60			80			80	
Link Distance (m)		828.7			989.6			1077.8			247.3	
Travel Time (s)		49.7			59.4			48.5			11.1	
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)	486	534	87	90	171	232	61	2346	189	366	1783	200
Shared Lane Traffic (%)												
Lane Group Flow (vph)	486	621	0	90	403	0	61	2346	189	366	1783	200
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)	26.0	46.5		9.5	30.0		9.6	63.0	63.0	21.0	74.4	74.4
Total Split (%)	18.6%	33.2%		6.8%	21.4%		6.9%	45.0%	45.0%	15.0%	53.1%	53.1%
Maximum Green (s)	21.5	40.5		5.0	24.0		5.1	57.0	57.0	17.0	68.4	68.4
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 Effect Green (s)	53.5	42.5		34.5	26.0		67.6	59.0	59.0	80.0	70.4	70.4
Actuated g/C Ratio	0.38	0.30		0.25	0.19		0.48	0.42	0.42	0.57	0.50	0.50
v/c Ratio	1.38	1.11		0.62	1.15		0.42	1.10	0.25	1.36	0.70	0.23
Control Delay	219.6	117.9		50.5	139.1		24.4	89.4	6.4	216.1	28.5	6.6
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	219.6	117.9		50.5	139.1		24.4	89.4	6.4	216.1	28.5	6.6

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Lanes, Volumes, Timings

Total (2041) - Scenario A - 35% Mode Share

106: Trafalgar Rd & Burnhamthorpe Rd/Burnhamthorpe Rd

Timing Plan: AM Peak Hour

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
LOS	F	F		D	F		C	F	A	F	C	A
Approach Delay		162.5			122.9			81.8			55.9	
Approach LOS		F			F			F			E	
Intersection Summary												
Area Type:	Other											
Cycle Length: 140												
Actuated Cycle Length: 140												
Offset: 0 (0%), Referenced to phase 2:NBT and 6:SBTL, Start of Green												
Natural Cycle: 120												
Control Type: Pretimed												
Maximum v/c Ratio: 1.38												
Intersection Signal Delay: 89.3							Intersection LOS: F					
Intersection Capacity Utilization 119.8%							ICU Level of Service H					
Analysis Period (min) 15												

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



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Queues
106: Trafalgar Rd & Burhamthorpe Rd/Burnhamthorpe Rd

Total (2041) - Scenario A - 35% Mode Share
Timing Plan: AM Peak Hour

	EBL	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	486	621	90	403	61	2346	189	366	1783	200
v/c Ratio	1.38	1.11	0.62	1.15	0.42	1.10	0.25	1.36	0.70	0.23
Control Delay	219.6	117.9	50.5	139.1	24.4	89.4	6.4	216.1	28.5	6.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	219.6	117.9	50.5	139.1	24.4	89.4	6.4	216.1	28.5	6.6
Queue Length 50th (m)	~160.2	~193.2	15.9	~119.1	6.9	~264.6	4.6	~115.5	133.2	7.8
Queue Length 95th (m)	#227.5	#265.1	#28.7	#182.4	14.1	#291.4	19.2	#177.1	149.9	20.9
Internal Link Dist (m)		804.7		965.6		1053.8			223.3	
Turn Bay Length (m)	30.0		15.0		60.0		60.0	60.0		60.0
Base Capacity (vph)	353	557	144	351	146	2142	759	270	2557	867
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	1.38	1.11	0.63	1.15	0.42	1.10	0.25	1.36	0.70	0.23

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.

HCM Signalized Intersection Capacity Analysis
106: Trafalgar Rd & Burhamthorpe Rd/Burnhamthorpe Rd

Total (2041) - Scenario A - 35% Mode Share
Timing Plan: AM Peak Hour

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰	↱		↰	↱		↰	↱	↱	↰	↱	↱
Traffic Volume (vph)	447	491	80	83	157	213	56	2158	174	337	1640	184
Future Volume (vph)	447	491	80	83	157	213	56	2158	174	337	1640	184
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	1.00		1.00	1.00		1.00	0.91	1.00	1.00	0.91	1.00
Frt	1.00	0.98		1.00	0.91		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	1824		1770	1702		1770	5085	1583	1770	5085	1583
Flt Permitted	0.14	1.00		0.15	1.00		0.07	1.00	1.00	0.07	1.00	1.00
Satd. Flow (perm)	261	1824		287	1702		131	5085	1583	122	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)	486	534	87	90	171	232	61	2346	189	366	1783	200
RTOR Reduction (vph)	0	4	0	0	35	0	0	0	93	0	0	71
Lane Group Flow (vph)	486	617	0	90	368	0	61	2346	96	366	1783	129
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)	50.0	40.5		29.0	24.0		62.1	57.0	57.0	78.0	68.4	68.4
Effective Green, g (s)	52.0	42.5		33.0	26.0		66.1	59.0	59.0	78.0	70.4	70.4
Actuated g/C Ratio	0.37	0.30		0.24	0.19		0.47	0.42	0.42	0.56	0.50	0.50
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)	350	553		141	316		144	2142	667	268	2557	796
v/s Ratio Prot	c0.23	0.34		0.03	0.22		0.02	0.46		c0.17	0.35	
v/s Ratio Perm	c0.28			0.12			0.18		0.06	c0.59		0.08
v/c Ratio	1.39	1.12		0.64	1.16		0.42	1.10	0.14	1.37	0.70	0.16
Uniform Delay, d1	42.8	48.8		44.9	57.0		23.1	40.5	25.0	47.1	26.6	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	191.6	74.0		20.1	103.0		8.9	51.0	0.5	186.7	1.6	0.4
Delay (s)	234.4	122.8		65.0	160.0		32.0	91.5	25.4	233.8	28.2	19.3
Level of Service	F	F		E	F		C	F	C	F	C	B
Approach Delay (s)		171.8			142.7			85.3			59.5	
Approach LOS		F			F			F			E	

Intersection Summary

HCM 2000 Control Delay	95.0	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	1.41		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	14.5
Intersection Capacity Utilization	119.8%	ICU Level of Service	H
Analysis Period (min)	15		
c Critical Lane Group			

Lanes, Volumes, Timings
202: Trafalgar Rd & West Street C

Total (2041) - Scenario A - 35% Mode Share
Timing Plan: AM Peak Hour

	EBL	EBR	NBL	NBT	SBT	SBR
Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations		↗		↗↗↗	↗↗↗	↗
Traffic Volume (vph)	0	94	0	2819	2066	168
Future Volume (vph)	0	94	0	2819	2066	168
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (m)	0.0	0.0	0.0			90.0
Storage Lanes	0	1	0			1
Taper Length (m)	7.5		7.5			
Lane Util. Factor	1.00	1.00	1.00	0.91	0.91	1.00
Frt		0.865				0.850
Flt Protected						
Satd. Flow (prot)	0	1611	0	5085	5085	1583
Flt Permitted						
Satd. Flow (perm)	0	1611	0	5085	5085	1583
Link Speed (k/h)	50			50	50	
Link Distance (m)	202.4			247.3	208.3	
Travel Time (s)	14.6			17.8	15.0	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	102	0	3064	2246	183
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	102	0	3064	2246	183
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	0.0			3.6	3.6	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	4.8			4.8	4.8	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)	25	15	25			15
Sign Control	Stop			Free	Free	
Intersection Summary						
Area Type:	Other					
Control Type:	Unsignalized					
Intersection Capacity Utilization 57.8%	ICU Level of Service B					
Analysis Period (min) 15						

HCM Unsignalized Intersection Capacity Analysis Total (2041) - Scenario A - 35% Mode Share
202: Trafalgar Rd & West Street C

Timing Plan: AM Peak Hour

								
Movement	EBL	EBR	NBL	NBT	SBT	SBR		
Lane Configurations				  	  			
Traffic Volume (veh/h)	0	94	0	2819	2066	168		
Future Volume (Veh/h)	0	94	0	2819	2066	168		
Sign Control	Stop			Free	Free			
Grade	0%			0%	0%			
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92		
Hourly flow rate (vph)	0	102	0	3064	2246	183		
Pedestrians								
Lane Width (m)								
Walking Speed (m/s)								
Percent Blockage								
Right turn flare (veh)								
Median type				None	None			
Median storage veh								
Upstream signal (m)				247	208			
pX, platoon unblocked	0.79	0.61	0.61					
vC, conflicting volume	3267	749	2429					
vC1, stage 1 conf vol								
vC2, stage 2 conf vol								
vCu, unblocked vol	0	0	1119					
tC, single (s)	6.8	6.9	4.1					
tC, 2 stage (s)								
tF (s)	3.5	3.3	2.2					
p0 queue free %	100	85	100					
cM capacity (veh/h)	803	664	380					
Direction, Lane #	EB 1	NB 1	NB 2	NB 3	SB 1	SB 2	SB 3	SB 4
Volume Total	102	1021	1021	1021	749	749	749	183
Volume Left	0	0	0	0	0	0	0	0
Volume Right	102	0	0	0	0	0	0	183
cSH	664	1700	1700	1700	1700	1700	1700	1700
Volume to Capacity	0.15	0.60	0.60	0.60	0.44	0.44	0.44	0.11
Queue Length 95th (m)	4.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Control Delay (s)	11.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Lane LOS	B							
Approach Delay (s)	11.4	0.0			0.0			
Approach LOS	B							
Intersection Summary								
Average Delay			0.2					
Intersection Capacity Utilization			57.8%		ICU Level of Service			B
Analysis Period (min)			15					

Lanes, Volumes, Timings
203: East Street D & East Street A

Total (2041) - Scenario A - 35% Mode Share
Timing Plan: AM Peak Hour

	→	↖	↗	←	↖	↗
Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↖			↖	↖	
Traffic Volume (vph)	107	280	0	97	109	0
Future Volume (vph)	107	280	0	97	109	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	0.902					
Frt Protected					0.950	
Satd. Flow (prot)	1680	0	0	1863	1770	0
Frt Permitted					0.950	
Satd. Flow (perm)	1680	0	0	1863	1770	0
Link Speed (k/h)	50			50	50	
Link Distance (m)	212.6			202.8	119.6	
Travel Time (s)	15.3			14.6	8.6	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	116	304	0	105	118	0
Shared Lane Traffic (%)						
Lane Group Flow (vph)	420	0	0	105	118	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
Sign Control	Free			Free	Stop	
Intersection Summary						
Area Type:	Other					
Control Type:	Unsignalized					
Intersection Capacity Utilization 35.6%	ICU Level of Service A					
Analysis Period (min) 15						

HCM Unsignalized Intersection Capacity Analysis Total (2041) - Scenario A - 35% Mode Share
203: East Street D & East Street A

Timing Plan: AM Peak Hour

	→	↖	↗	←	↖	↗
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↖			↖	↖	
Traffic Volume (veh/h)	107	280	0	97	109	0
Future Volume (Veh/h)	107	280	0	97	109	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)	116	304	0	105	118	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)	213					
pX, platoon unblocked			0.99		0.99	0.99
vC, conflicting volume			420		373	268
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			413		366	260
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			100		81	100
cM capacity (veh/h)			1139		630	774
Direction, Lane #	EB 1	WB 1	NB 1			
Volume Total	420	105	118			
Volume Left	0	0	118			
Volume Right	304	0	0			
cSH	1700	1139	630			
Volume to Capacity	0.25	0.00	0.19			
Queue Length 95th (m)	0.0	0.0	5.1			
Control Delay (s)	0.0	0.0	12.0			
Lane LOS			B			
Approach Delay (s)	0.0	0.0	12.0			
Approach LOS			B			
Intersection Summary						
Average Delay			2.2			
Intersection Capacity Utilization			35.6%		ICU Level of Service	A
Analysis Period (min)			15			

Lanes, Volumes, Timings

204: East Street E & East Street A

Total (2041) - Scenario A - 35% Mode Share

Timing Plan: AM Peak Hour

	→	↘	↙	←	↖	↗
Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↗			↖	↗	↖
Traffic Volume (vph)	0	50	0	0	102	0
Future Volume (vph)	0	50	0	0	102	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.865					
Flt Protected					0.950	
Satd. Flow (prot)	1611	0	0	1863	1770	0
Flt Permitted					0.950	
Satd. Flow (perm)	1611	0	0	1863	1770	0
Link Speed (k/h)	50			50	50	
Link Distance (m)	202.8			186.3	118.9	
Travel Time (s)	14.6			13.4	8.6	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	54	0	0	111	0
Shared Lane Traffic (%)						
Lane Group Flow (vph)	54	0	0	0	111	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	0.0			0.0	3.6	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	4.8			4.8	4.8	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)		15	25		25	15
Sign Control	Free			Free	Stop	

Intersection Summary

Area Type: Other

Control Type: Unsignalized

Intersection Capacity Utilization 15.7%

ICU Level of Service A

Analysis Period (min) 15

HCM Unsignalized Intersection Capacity Analysis Total (2041) - Scenario A - 35% Mode Share

204: East Street E & East Street A

Timing Plan: AM Peak Hour

	→	↘	↙	←	↖	↗
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↗			↖	↗	↖
Traffic Volume (veh/h)	0	50	0	0	102	0
Future Volume (Veh/h)	0	50	0	0	102	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)	0	54	0	0	111	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			54		27	27
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			54		27	27
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			100		89	100
cM capacity (veh/h)			1551		988	1048

Direction, Lane #	EB 1	WB 1	NB 1
Volume Total	54	0	111
Volume Left	0	0	111
Volume Right	54	0	0
cSH	1700	1700	988
Volume to Capacity	0.03	0.00	0.11
Queue Length 95th (m)	0.0	0.0	2.8
Control Delay (s)	0.0	0.0	9.1
Lane LOS			A
Approach Delay (s)	0.0	0.0	9.1
Approach LOS			A

Intersection Summary

Average Delay

6.1

Intersection Capacity Utilization

15.7%

ICU Level of Service

A

Analysis Period (min)

15

Lanes, Volumes, Timings
205: East Street F & East Street A

Total (2041) - Scenario A - 35% Mode Share
Timing Plan: AM Peak Hour

						
Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
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	1.00	1.00	1.00
Fit						
Fit Protected						
Satd. Flow (prot)	1863	0	0	1863	1863	0
Fit Permitted						
Satd. Flow (perm)	1863	0	0	1863	1863	0
Link Speed (k/h)	50			50	50	
Link Distance (m)	186.3			197.2	119.9	
Travel Time (s)	13.4			14.2	8.6	
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)	0.0			0.0	3.6	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	4.8			4.8	4.8	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)		15	25		25	15
Sign Control	Stop			Free	Free	
Intersection Summary						
Area Type:	Other					
Control Type:	Unsignalized					
Intersection Capacity Utilization	0.0%			ICU Level of Service A		
Analysis Period (min)	15					

HCM Unsignalized Intersection Capacity Analysis Total (2041) - Scenario A - 35% Mode Share
205: East Street F & East Street A

Timing Plan: AM Peak Hour

Intersection Sign configuration not allowed in HCM analysis.

Lanes, Volumes, Timings

Total (2041) - Scenario A - 35% Mode Share

206: East Street D & East Street B

Timing Plan: AM Peak Hour

	←	←	↑	↗	↘	↓
Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	↖		↗			↘
Traffic Volume (vph)	53	16	56	11	12	187
Future Volume (vph)	53	16	56	11	12	187
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	0.969		0.978			
Flt Protected	0.963					0.997
Satd. Flow (prot)	1738	0	1822	0	0	1857
Flt Permitted	0.963					0.997
Satd. Flow (perm)	1738	0	1822	0	0	1857
Link Speed (k/h)	50		50			50
Link Distance (m)	200.4		111.4			119.6
Travel Time (s)	14.4		8.0			8.6
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	58	17	61	12	13	203
Shared Lane Traffic (%)						
Lane Group Flow (vph)	75	0	73	0	0	216
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 27.8% ICU Level of Service A

Analysis Period (min) 15

HCM Unsignalized Intersection Capacity Analysis Total (2041) - Scenario A - 35% Mode Share

206: East Street D & East Street B

Timing Plan: AM Peak Hour

	←	←	↑	↗	↘	↓
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	↖		↗			↘
Traffic Volume (veh/h)	53	16	56	11	12	187
Future Volume (Veh/h)	53	16	56	11	12	187
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)	58	17	61	12	13	203
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	296	67			73	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	296	67			73	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	92	98			99	
cM capacity (veh/h)	689	997			1527	

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	75	73	216
Volume Left	58	0	13
Volume Right	17	12	0
cSH	741	1700	1527
Volume to Capacity	0.10	0.04	0.01
Queue Length 95th (m)	2.5	0.0	0.2
Control Delay (s)	10.4	0.0	0.5
Lane LOS	B		A
Approach Delay (s)	10.4	0.0	0.5
Approach LOS	B		

Intersection Summary

Average Delay 2.4

Intersection Capacity Utilization 27.8% ICU Level of Service A

Analysis Period (min) 15

Lanes, Volumes, Timings
207: East Street E & East Street B

Total (2041) - Scenario A - 35% Mode Share
Timing Plan: AM Peak Hour

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔			↔			↔			↔	
Traffic Volume (vph)	42	0	59	0	0	0	145	5	0	0	50	0
Future Volume (vph)	42	0	59	0	0	0	145	5	0	0	50	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		0.921						0.954				
Flt Protected		0.980						0.954				
Satd. Flow (prot)	0	1681	0	0	1863	0	0	1777	0	0	1863	0
Flt Permitted		0.980						0.954				
Satd. Flow (perm)	0	1681	0	0	1863	0	0	1777	0	0	1863	0
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		200.4			185.7			114.3			118.9	
Travel Time (s)		14.4			13.4			8.2			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)	46	0	64	0	0	0	158	5	0	0	54	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	110	0	0	0	0	0	163	0	0	54	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 27.6% ICU Level of Service A

Analysis Period (min) 15

HCM Unsignalized Intersection Capacity Analysis Total (2041) - Scenario A - 35% Mode Share
207: East Street E & East Street B

Timing Plan: AM Peak Hour

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Movement		↔			↔			↔			↔	
Lane Configurations		↔			↔			↔			↔	
Traffic Volume (veh/h)	42	0	59	0	0	0	145	5	0	0	50	0
Future Volume (Veh/h)	42	0	59	0	0	0	145	5	0	0	50	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)	46	0	64	0	0	0	158	5	0	0	54	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)							114					
pX, platoon unblocked												
vC, conflicting volume	375	375	54	439	375	5	54			5		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	375	375	54	439	375	5	54			5		
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 %	91	100	94	100	100	100	90			100		
cM capacity (veh/h)	537	499	1013	456	499	1078	1551			1616		
Direction, Lane #	EB 1	WB 1	NB 1	SB 1								
Volume Total	110	0	163	54								
Volume Left	46	0	158	0								
Volume Right	64	0	0	0								
cSH	739	1700	1551	1616								
Volume to Capacity	0.15	0.00	0.10	0.00								
Queue Length 95th (m)	3.9	0.0	2.5	0.0								
Control Delay (s)	10.7	0.0	7.4	0.0								
Lane LOS	B	A	A									
Approach Delay (s)	10.7	0.0	7.4	0.0								
Approach LOS	B	A										
Intersection Summary												
Average Delay			7.3									
Intersection Capacity Utilization			27.6%				ICU Level of Service			A		
Analysis Period (min)			15									

Lanes, Volumes, Timings
208: East Street F & East Street B

Total (2041) - Scenario A - 35% Mode Share
Timing Plan: AM Peak Hour

						
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	1.00	1.00	1.00
Fit						
Fit Protected						
Satd. Flow (prot)	1863	0	0	1863	1863	0
Fit Permitted						
Satd. Flow (perm)	1863	0	0	1863	1863	0
Link Speed (k/h)	50			50	50	
Link Distance (m)	185.7			112.6	119.9	
Travel Time (s)	13.4			8.1	8.6	
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			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	25			15
Sign Control	Stop			Free	Free	
Intersection Summary						
Area Type:	Other					
Control Type:	Unsignalized					
Intersection Capacity Utilization	0.0%			ICU Level of Service A		
Analysis Period (min)	15					

HCM Unsignalized Intersection Capacity Analysis Total (2041) - Scenario A - 35% Mode Share
208: East Street F & East Street B

Timing Plan: AM Peak Hour

	EBL	EBR	NBL	NBT	SBT	SBR
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	↔			↔	↔	
Traffic Volume (veh/h)	0	0	0	0	0	0
Future Volume (Veh/h)	0	0	0	0	0	0
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	0	0	0	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	0	0	0			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	0	0	0			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	100	100	100			
cM capacity (veh/h)	1023	1085	1623			
Direction, Lane #	EB 1	NB 1	SB 1			
Volume Total	0	0	0			
Volume Left	0	0	0			
Volume Right	0	0	0			
cSH	1700	1700	1700			
Volume to Capacity	0.00	0.00	0.00			
Queue Length 95th (m)	0.0	0.0	0.0			
Control Delay (s)	0.0	0.0	0.0			
Lane LOS	A					
Approach Delay (s)	0.0	0.0	0.0			
Approach LOS	A					
Intersection Summary						
Average Delay		0.0				
Intersection Capacity Utilization		0.0%		ICU Level of Service A		
Analysis Period (min)		15				

Lanes, Volumes, Timings
209: William Halton Parkway & East Street D

Total (2041) - Scenario A - 35% Mode Share

Timing Plan: AM Peak Hour

	↖	→	←	↗	↘	↙
Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑↑	↑↑	↑		↑
Traffic Volume (vph)	0	1644	785	20	0	161
Future Volume (vph)	0	1644	785	20	0	161
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (m)	0.0			50.0	0.0	0.0
Storage Lanes	0			1	0	1
Taper Length (m)	7.5				7.5	
Lane Util. Factor	1.00	0.95	0.95	1.00	1.00	1.00
Frt				0.850		0.865
Flt Protected						
Satd. Flow (prot)	0	3539	3539	1583	0	1611
Flt Permitted						
Satd. Flow (perm)	0	3539	3539	1583	0	1611
Link Speed (k/h)		50	50		50	
Link Distance (m)		204.1	194.7		111.4	
Travel Time (s)		14.7	14.0		8.0	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	1787	853	22	0	175
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	1787	853	22	0	175
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(m)		3.6	3.6		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	25	15
Sign Control		Free	Free		Stop	
Intersection Summary						
Area Type:	Other					
Control Type:	Unsignalized					
Intersection Capacity Utilization 48.8%	ICU Level of Service A					
Analysis Period (min) 15						

HCM Unsignalized Intersection Capacity Analysis Total (2041) - Scenario A - 35% Mode Share
209: William Halton Parkway & East Street D

Timing Plan: AM Peak Hour

	↖	→	←	↗	↘	↙
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑↑	↑↑	↑		↑
Traffic Volume (veh/h)	0	1644	785	20	0	161
Future Volume (Veh/h)	0	1644	785	20	0	161
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)	0	1787	853	22	0	175
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		None	None			
Median storage (veh)						
Upstream signal (m)		204	195			
pX, platoon unblocked	0.86				0.79	0.86
vC, conflicting volume	875				1746	426
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	517				605	0
tC, single (s)	4.1				6.8	6.9
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	100				100	81
cM capacity (veh/h)	894				341	928
Direction, Lane #	EB 1	EB 2	WB 1	WB 2	WB 3	SB 1
Volume Total	894	894	426	426	22	175
Volume Left	0	0	0	0	0	0
Volume Right	0	0	0	0	22	175
cSH	1700	1700	1700	1700	1700	928
Volume to Capacity	0.53	0.53	0.25	0.25	0.01	0.19
Queue Length 95th (m)	0.0	0.0	0.0	0.0	0.0	5.2
Control Delay (s)	0.0	0.0	0.0	0.0	0.0	9.8
Lane LOS						A
Approach Delay (s)	0.0		0.0			9.8
Approach LOS						A
Intersection Summary						
Average Delay			0.6			
Intersection Capacity Utilization			48.8%		ICU Level of Service	A
Analysis Period (min)			15			

Lanes, Volumes, Timings
210: William Halton Parkway & East Street E

Total (2041) - Scenario A - 35% Mode Share
Timing Plan: AM Peak Hour

	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations	↰	↱	↱	↰	↰	↰
Traffic Volume (vph)	157	1455	778	9	82	27
Future Volume (vph)	157	1455	778	9	82	27
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	0.967	
Flt Protected	0.950				0.964	
Satd. Flow (prot)	1770	3539	3539	1583	1736	0
Flt Permitted	0.209				0.964	
Satd. Flow (perm)	389	3539	3539	1583	1736	0
Right Turn on Red				Yes	Yes	
Satd. Flow (RTOR)				10	29	
Link Speed (k/h)		50	50		50	
Link Distance (m)		194.7	188.1		114.3	
Travel Time (s)		14.0	13.5		8.2	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	171	1582	846	10	89	29
Shared Lane Traffic (%)						
Lane Group Flow (vph)	171	1582	846	10	118	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
Number of Detectors	1	2	2	1	1	
Detector Template	Left	Thru	Thru	Right	Left	
Leading Detector (m)	2.0	10.0	10.0	2.0	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)	2.0	0.6	0.6	2.0	2.0	
Detector 1 Type	CI+Ex	CI+Ex	CI+Ex	CI+Ex	CI+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		CI+Ex	CI+Ex			
Detector 2 Channel						
Detector 2 Extend (s)		0.0	0.0			
Turn Type	pm+pt	NA	NA	Perm	Prot	
Protected Phases	7	4	8		6	
Permitted Phases	4			8		

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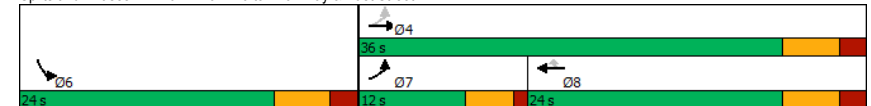
Lanes, Volumes, Timings
210: William Halton Parkway & East Street E

Total (2041) - Scenario A - 35% Mode Share
Timing Plan: AM Peak Hour

	EBL	EBT	WBT	WBR	SBL	SBR
Detector Phase	7	4	8	8	6	
Switch Phase						
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	
Minimum Split (s)	9.5	24.0	24.0	24.0	24.0	
Total Split (s)	12.0	36.0	24.0	24.0	24.0	
Total Split (%)	20.0%	60.0%	40.0%	40.0%	40.0%	
Maximum Green (s)	7.5	30.0	18.0	18.0	18.0	
Yellow Time (s)	3.5	4.0	4.0	4.0	4.0	
All-Red Time (s)	1.0	2.0	2.0	2.0	2.0	
Lost Time Adjust (s)	1.0	-2.0	-2.0	-2.0	-2.0	
Total Lost Time (s)	5.5	4.0	4.0	4.0	4.0	
Lead/Lag	Lead		Lag	Lag		
Lead-Lag Optimize?	Yes		Yes	Yes		
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	
Recall Mode	None	Max	Max	Max	None	
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 Effect Green (s)	33.5	35.8	26.3	26.3	10.1	
Actuated g/C Ratio	0.66	0.70	0.52	0.52	0.20	
v/c Ratio	0.41	0.63	0.46	0.01	0.32	
Control Delay	7.7	7.3	12.1	6.3	15.9	
Queue Delay	0.0	0.0	0.0	0.0	0.0	
Total Delay	7.7	7.3	12.1	6.3	15.9	
LOS	A	A	B	A	B	
Approach Delay		7.3	12.1		15.9	
Approach LOS		A	B		B	

Intersection Summary	
Area Type:	Other
Cycle Length: 60	
Actuated Cycle Length: 50.8	
Natural Cycle: 60	
Control Type: Semi Act-Uncoord	
Maximum v/c Ratio: 0.63	
Intersection Signal Delay: 9.2	Intersection LOS: A
Intersection Capacity Utilization 53.1%	ICU Level of Service A
Analysis Period (min) 15	

Splits and Phases: 210: William Halton Parkway & East Street E



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Queues
210: William Halton Parkway & East Street E

Total (2041) - Scenario A - 35% Mode Share
Timing Plan: AM Peak Hour

	EBL	EBT	WBT	WBR	SBL
Lane Group	EBL	EBT	WBT	WBR	SBL
Lane Group Flow (vph)	171	1582	846	10	118
v/c Ratio	0.41	0.63	0.46	0.01	0.32
Control Delay	7.7	7.3	12.1	6.3	15.9
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	7.7	7.3	12.1	6.3	15.9
Queue Length 50th (m)	5.3	37.3	29.1	0.0	6.7
Queue Length 95th (m)	13.3	69.7	48.8	2.2	17.0
Internal Link Dist (m)		170.7	164.1		90.3
Turn Bay Length (m)	50.0			50.0	
Base Capacity (vph)	433	2494	1834	825	701
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	0.39	0.63	0.46	0.01	0.17
Intersection Summary					

HCM Signalized Intersection Capacity Analysis
210: William Halton Parkway & East Street E

Total (2041) - Scenario A - 35% Mode Share
Timing Plan: AM Peak Hour

	EBL	EBT	WBT	WBR	SBL	SBR
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations	↰	↱	↰	↱	↰	↱
Traffic Volume (vph)	157	1455	778	9	82	27
Future Volume (vph)	157	1455	778	9	82	27
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.5	4.0	4.0	4.0	4.0	
Lane Util. Factor	1.00	0.95	0.95	1.00	1.00	
Frt	1.00	1.00	1.00	0.85	0.97	
Flt Protected	0.95	1.00	1.00	1.00	0.96	
Satd. Flow (prot)	1770	3539	3539	1583	1735	
Flt Permitted	0.21	1.00	1.00	1.00	0.96	
Satd. Flow (perm)	389	3539	3539	1583	1735	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	171	1582	846	10	89	29
RTOR Reduction (vph)	0	0	0	5	24	0
Lane Group Flow (vph)	171	1582	846	5	94	0
Turn Type	pm+pt	NA	NA	Perm	Prot	
Protected Phases	7	4	8		6	
Permitted Phases	4			8		
Actuated Green, G (s)	33.9	33.9	23.5	23.5	7.0	
Effective Green, g (s)	32.9	35.9	25.5	25.5	9.0	
Actuated g/C Ratio	0.62	0.68	0.48	0.48	0.17	
Clearance Time (s)	4.5	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)	369	2401	1705	763	295	
v/s Ratio Prot	0.04	c0.45	0.24		c0.05	
v/s Ratio Perm	0.25			0.00		
v/c Ratio	0.46	0.66	0.50	0.01	0.32	
Uniform Delay, d1	5.6	4.9	9.3	7.1	19.3	
Progression Factor	1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	0.9	1.4	1.0	0.0	0.6	
Delay (s)	6.5	6.4	10.4	7.1	19.9	
Level of Service	A	A	B	A	B	
Approach Delay (s)		6.4	10.3		19.9	
Approach LOS		A	B		B	
Intersection Summary						
HCM 2000 Control Delay			8.2		HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio			0.67			
Actuated Cycle Length (s)			52.9		Sum of lost time (s)	13.5
Intersection Capacity Utilization			53.1%		ICU Level of Service	A
Analysis Period (min)			15			
c Critical Lane Group						

Lanes, Volumes, Timings
211: William Halton Parkway & East Street F

Total (2041) - Scenario A - 35% Mode Share

Timing Plan: AM Peak Hour

						
Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		 	 		 	
Traffic Volume (vph)	0	1537	787	0	0	0
Future Volume (vph)	0	1537	787	0	0	0
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
Fr						
Flt Protected						
Satd. Flow (prot)	1863	3539	3539	1863	1863	0
Flt Permitted						
Satd. Flow (perm)	1863	3539	3539	1863	1863	0
Link Speed (k/h)		50	50		50	
Link Distance (m)		188.1	219.2		112.6	
Travel Time (s)		13.5	15.8		8.1	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	1671	855	0	0	0
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	1671	855	0	0	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		45.8%		ICU Level of Service A		
Analysis Period (min)		15				

HCM Unsignalized Intersection Capacity Analysis Total (2041) - Scenario A - 35% Mode Share
211: William Halton Parkway & East Street F

Timing Plan: AM Peak Hour

							
Movement	EBL	EBT	WBT	WBR	SBL	SBR	
Lane Configurations							
Traffic Volume (veh/h)	0	1537	787	0	0	0	
Future Volume (Veh/h)	0	1537	787	0	0	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)	0	1671	855	0	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)	188						
pX, platoon unblocked					0.69		
vC, conflicting volume	855				1690	428	
vC1, stage 1 conf vol							
vC2, stage 2 conf vol							
vCu, unblocked vol	855				1105	428	
tC, single (s)	4.1				6.8	6.9	
tC, 2 stage (s)							
tF (s)	2.2				3.5	3.3	
p0 queue free %	100				100	100	
cM capacity (veh/h)	781				142	576	
Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	WB 3	SB 1
Volume Total	0	836	836	428	428	0	0
Volume Left	0	0	0	0	0	0	0
Volume Right	0	0	0	0	0	0	0
cSH	1700	1700	1700	1700	1700	1700	1700
Volume to Capacity	0.00	0.49	0.49	0.25	0.25	0.00	0.00
Queue Length 95th (m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Control Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Lane LOS							A
Approach Delay (s)	0.0				0.0	0.0	
Approach LOS							A
Intersection Summary							
Average Delay				0.0			
Intersection Capacity Utilization	45.8%			ICU Level of Service		A	
Analysis Period (min)	15						

Lanes, Volumes, Timings

212: West Street A & Transit Station

Total (2041) - Scenario A - 35% Mode Share

Timing Plan: AM Peak Hour

	←	←	↑	↗	↘	↓
Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	↔		↔			↔
Traffic Volume (vph)	112	0	0	141	0	0
Future Volume (vph)	112	0	0	141	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt			0.865			
Flt Protected	0.950					
Satd. Flow (prot)	1770	0	1611	0	0	1863
Flt Permitted	0.950					
Satd. Flow (perm)	1770	0	1611	0	0	1863
Link Speed (k/h)	50		50			50
Link Distance (m)	70.0		239.0			98.7
Travel Time (s)	5.0		17.2			7.1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	122	0	0	153	0	0
Shared Lane Traffic (%)						
Lane Group Flow (vph)	122	0	153	0	0	0
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 21.6% ICU Level of Service A

Analysis Period (min) 15

HCM Unsignalized Intersection Capacity Analysis Total (2041) - Scenario A - 35% Mode Share

212: West Street A & Transit Station

Timing Plan: AM Peak Hour

	←	←	↑	↗	↘	↓
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	↔		↔			↔
Traffic Volume (veh/h)	112	0	0	141	0	0
Future Volume (Veh/h)	112	0	0	141	0	0
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)	122	0	0	153	0	0
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None					
Median storage (veh)						
Upstream signal (m)	213					
pX, platoon unblocked						
vC, conflicting volume	0		244	0	397	244
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	0		244	0	397	244
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 %	92		100	86	100	100
cM capacity (veh/h)	1623		608	1085	456	608
Direction, Lane #	WB 1	NB 1	SB 1			
Volume Total	122	153	0			
Volume Left	122	0	0			
Volume Right	0	153	0			
cSH	1623	1085	1700			
Volume to Capacity	0.08	0.14	0.00			
Queue Length 95th (m)	1.8	3.7	0.0			
Control Delay (s)	7.4	8.9	0.0			
Lane LOS	A	A	A			
Approach Delay (s)	7.4	8.9	0.0			
Approach LOS	A	A				
Intersection Summary						
Average Delay		8.2				
Intersection Capacity Utilization		21.6%		ICU Level of Service	A	
Analysis Period (min)		15				

Lanes, Volumes, Timings
213: West Street A & William Halton Parkway

Total (2041) - Scenario A - 35% Mode Share

Timing Plan: AM Peak Hour

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑	↑		↑↑	↑			↑			↑
Traffic Volume (vph)	0	1490	25	0	837	77	0	0	177	0	0	7
Future Volume (vph)	0	1490	25	0	837	77	0	0	177	0	0	7
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		1	0		1	0		1	0		1
Taper Length (m)	7.5			7.5			7.5			7.5		
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt			0.850			0.850			0.865			0.865
Fit Protected												
Satd. Flow (prot)	0	3539	1583	0	3539	1583	0	0	1611	0	0	1611
Fit Permitted												
Satd. Flow (perm)	0	3539	1583	0	3539	1583	0	0	1611	0	0	1611
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		202.0			209.3			100.4			239.0	
Travel Time (s)		14.5			15.1			7.2			17.2	
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	1620	27	0	910	84	0	0	192	0	0	8
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	1620	27	0	910	84	0	0	192	0	0	8
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 58.8%	ICU Level of Service B											
Analysis Period (min) 15												

HCM Unsignalized Intersection Capacity Analysis Total (2041) - Scenario A - 35% Mode Share
213: West Street A & William Halton Parkway

Timing Plan: AM Peak Hour

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑	↑		↑↑	↑			↑			↑
Traffic Volume (veh/h)	0	1490	25	0	837	77	0	0	177	0	0	7
Future Volume (Veh/h)	0	1490	25	0	837	77	0	0	177	0	0	7
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	1620	27	0	910	84	0	0	192	0	0	8
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh												
Upstream signal (m)		202			209							
pX, platoon unblocked	0.87			0.62			0.69	0.69	0.62	0.69	0.69	0.87
vC, conflicting volume	994			1647			2083	2614	810	1912	2557	455
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	698			835			829	1600	0	581	1517	79
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	72	100	100	99
cM capacity (veh/h)	779			496			179	72	678	196	81	841
Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	WB 3	NB 1	SB 1				
Volume Total	810	810	27	455	455	84	192	8				
Volume Left	0	0	0	0	0	0	0	0				
Volume Right	0	0	27	0	0	84	192	8				
cSH	1700	1700	1700	1700	1700	1700	678	841				
Volume to Capacity	0.48	0.48	0.02	0.27	0.27	0.05	0.28	0.01				
Queue Length 95th (m)	0.0	0.0	0.0	0.0	0.0	0.0	8.7	0.2				
Control Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	12.4	9.3				
Lane LOS							B	A				
Approach Delay (s)	0.0			0.0			12.4	9.3				
Approach LOS							B	A				
Intersection Summary												
Average Delay			0.9									
Intersection Capacity Utilization		58.8%					ICU Level of Service		B			
Analysis Period (min)		15										

Lanes, Volumes, Timings

214: West Street D & William Halton Parkway

Total (2041) - Scenario A - 35% Mode Share

Timing Plan: AM Peak Hour

	←	→	↖	↗	←	↖	↗	→	↖	↗	→	↖	↗
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations	↖	↖	↖	↖	↖	↖	↖	↖	↖	↖	↖	↖	
Traffic Volume (vph)	0	1449	21	170	597	77	14	0	18	64	0	3	
Future Volume (vph)	0	1449	21	170	597	77	14	0	18	64	0	3	
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		0.0	50.0		0.0	
Storage Lanes	1		0	1		1	1		0	1		0	
Taper Length (m)	100.0			100.0			75.0			75.0			
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Frt			0.850			0.850		0.850			0.850		
Flt Protected				0.950			0.950			0.950			
Satd. Flow (prot)	1863	3539	1583	1770	3539	1583	1770	1583	0	1770	1583	0	
Flt Permitted				0.063			0.756			0.744			
Satd. Flow (perm)	1863	3539	1583	117	3539	1583	1408	1583	0	1386	1583	0	
Right Turn on Red			Yes			Yes			Yes			Yes	
Satd. Flow (RTOR)			55			84		349			364		
Link Speed (k/h)		50			50			50			50		
Link Distance (m)		241.6			202.0			103.2			133.4		
Travel Time (s)		17.4			14.5			7.4			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)	0	1575	23	185	649	84	15	0	20	70	0	3	
Shared Lane Traffic (%)													
Lane Group Flow (vph)	0	1575	23	185	649	84	15	20	0	70	3	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	1	2	1	1	2		1	2		
Detector Template	Left	Thru	Right	Left	Thru	Right	Left	Thru		Left	Thru		
Leading Detector (m)	2.0	10.0	2.0	2.0	10.0	2.0	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		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	2.0	0.6	2.0	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		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	pm+pt	NA	Perm	Perm	NA		Perm	NA		
Protected Phases		4		3	8			2			6		
Permitted Phases	4		4	8		8	2			6			

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Lanes, Volumes, Timings

214: West Street D & William Halton Parkway

Total (2041) - Scenario A - 35% Mode Share

Timing Plan: AM Peak Hour

	←	→	↖	↗	←	↖	↗	→	↖	↗	→	↖	↗
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Detector Phase	4	4	4	3	8	8	2	2		6	6		
Switch Phase													
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0		5.0	5.0		
Minimum Split (s)	24.0	24.0	24.0	9.5	24.0	24.0	24.0	24.0		24.0	24.0		
Total Split (s)	66.0	66.0	66.0	29.9	95.9	95.9	24.1	24.1		24.1	24.1		
Total Split (%)	55.0%	55.0%	55.0%	24.9%	79.9%	79.9%	20.1%	20.1%		20.1%	20.1%		
Maximum Green (s)	60.0	60.0	60.0	26.9	89.9	89.9	18.1	18.1		18.1	18.1		
Yellow Time (s)	4.0	4.0	4.0	3.0	4.0	4.0	4.0	4.0		4.0	4.0		
All-Red Time (s)	2.0	2.0	2.0	0.0	2.0	2.0	2.0	2.0		2.0	2.0		
Lost Time Adjust (s)	-2.0	-2.0	-2.0	1.0	-2.0	-2.0	-2.0	-2.0		-2.0	-2.0		
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0		4.0	4.0		
Lead/Lag	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	Max	Max	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	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 Effect Green (s)		62.3	62.3	92.4	93.3	93.3	12.8	12.8		12.9	12.9		
Actuated g/C Ratio		0.56	0.56	0.84	0.84	0.84	0.12	0.12		0.12	0.12		
v/c Ratio		0.79	0.03	0.38	0.22	0.06	0.09	0.04		0.43	0.01		
Control Delay		24.0	0.3	19.1	2.6	0.7	45.1	0.2		54.8	0.0		
Queue Delay		0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0		
Total Delay		24.0	0.3	19.1	2.6	0.7	45.1	0.2		54.8	0.0		
LOS		C	A	B	A	A	D	A		D	A		
Approach Delay		23.6			5.8		19.4				52.5		
Approach LOS		C			A		B				D		

Intersection Summary

Area Type: Other

Cycle Length: 120

Actuated Cycle Length: 110.5

Natural Cycle: 80

Control Type: Semi Act-Uncoordinated

Maximum v/c Ratio: 0.79

Intersection Signal Delay: 18.1

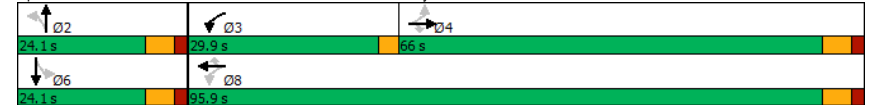
Intersection LOS: B

Intersection Capacity Utilization 69.7%

ICU Level of Service C

Analysis Period (min) 15

Splits and Phases: 214: West Street D & William Halton Parkway

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Queues
214: West Street D & William Halton Parkway

Total (2041) - Scenario A - 35% Mode Share
Timing Plan: AM Peak Hour

	→	↘	↙	←	↖	↗	↘	↙	↓
Lane Group	EBT	EBR	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	1575	23	185	649	84	15	20	70	3
v/c Ratio	0.79	0.03	0.38	0.22	0.06	0.09	0.04	0.43	0.01
Control Delay	24.0	0.3	19.1	2.6	0.7	45.1	0.2	54.8	0.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	24.0	0.3	19.1	2.6	0.7	45.1	0.2	54.8	0.0
Queue Length 50th (m)	140.0	0.0	16.9	13.1	0.0	3.0	0.0	14.4	0.0
Queue Length 95th (m)	188.4	0.5	40.2	22.6	2.9	9.1	0.0	28.3	0.0
Internal Link Dist (m)	217.6			178.0			79.2		109.4
Turn Bay Length (m)		50.0	50.0		50.0	50.0		50.0	
Base Capacity (vph)	1995	916	487	2987	1349	257	574	253	586
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.79	0.03	0.38	0.22	0.06	0.06	0.03	0.28	0.01
Intersection Summary									

HCM Signalized Intersection Capacity Analysis
214: West Street D & William Halton Parkway

Total (2041) - Scenario A - 35% Mode Share
Timing Plan: AM Peak Hour

	↖	→	↘	←	↖	↗	↘	↙	↗	↙	↓	↘
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↖	↖	↖	↖	↖	↖	↖	↖	↖	↖	↖
Traffic Volume (vph)	0	1449	21	170	597	77	14	0	18	64	0	3
Future Volume (vph)	0	1449	21	170	597	77	14	0	18	64	0	3
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	
Lane Util. Factor		0.95	1.00	1.00	0.95	1.00	1.00	1.00		1.00	1.00	
Frt		1.00	0.85	1.00	1.00	0.85	1.00	0.85		1.00	0.85	
Flt Protected		1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)		3539	1583	1770	3539	1583	1770	1583		1770	1583	
Flt Permitted		1.00	1.00	0.06	1.00	1.00	0.76	1.00		0.74	1.00	
Satd. Flow (perm)		3539	1583	118	3539	1583	1408	1583		1386	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)	0	1575	23	185	649	84	15	0	20	70	0	3
RTOR Reduction (vph)	0	0	10	0	0	15	0	18	0	0	3	0
Lane Group Flow (vph)	0	1575	13	185	649	69	15	2	0	70	0	0
Turn Type	Perm	NA	Perm	pm+pt	NA	Perm	Perm	NA		Perm	NA	
Protected Phases		4		3	8		2			6		
Permitted Phases	4		4		8		2			6		
Actuated Green, G (s)		60.4	60.4	90.4	90.4	90.4	9.5	9.5		9.5	9.5	
Effective Green, g (s)		62.4	62.4	89.4	92.4	92.4	11.5	11.5		11.5	11.5	
Actuated g/C Ratio		0.56	0.56	0.80	0.83	0.83	0.10	0.10		0.10	0.10	
Clearance Time (s)		6.0	6.0	3.0	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	3.0	
Lane Grp Cap (vph)		1973	882	478	2922	1307	144	162		142	162	
v/s Ratio Prot		c0.45		c0.09	0.18			0.00			0.00	
v/s Ratio Perm			0.01	0.22		0.04	0.01			c0.05		
v/c Ratio		0.80	0.01	0.39	0.22	0.05	0.10	0.01		0.49	0.00	
Uniform Delay, d1		19.7	11.0	22.2	2.1	1.8	45.5	45.1		47.4	45.0	
Progression Factor		1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Incremental Delay, d2		3.5	0.0	2.4	0.2	0.1	0.3	0.0		2.7	0.0	
Delay (s)		23.2	11.1	24.5	2.3	1.9	45.8	45.1		50.1	45.1	
Level of Service		C	B	C	A	A	D	D		D	D	
Approach Delay (s)		23.0			6.7		45.4				49.9	
Approach LOS		C			A		D				D	
Intersection Summary												
HCM 2000 Control Delay			18.4		HCM 2000 Level of Service			B				
HCM 2000 Volume to Capacity ratio			0.66									
Actuated Cycle Length (s)			111.9		Sum of lost time (s)			12.0				
Intersection Capacity Utilization			69.7%		ICU Level of Service			C				
Analysis Period (min)			15									
c Critical Lane Group												

Lanes, Volumes, Timings Total (2041) - Scenario A - 35% Mode Share
 215: West Street A & West Street B Timing Plan: AM Peak Hour

	EBL	EBR	NBL	NBT	SBT	SBR
Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	94	57	0	40	39	5
Future Volume (vph)	94	57	0	40	39	5
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	0.949				0.986	
Flt Protected	0.970					
Satd. Flow (prot)	1715	0	0	1863	1837	0
Flt Permitted	0.970					
Satd. Flow (perm)	1715	0	0	1863	1837	0
Link Speed (k/h)	50			50	50	
Link Distance (m)	202.8			106.4	100.4	
Travel Time (s)	14.6			7.7	7.2	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	102	62	0	43	42	5
Shared Lane Traffic (%)						
Lane Group Flow (vph)	164	0	0	43	47	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
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	25			15
Sign Control	Stop			Free	Free	

Intersection Summary		
Area Type:	Other	
Control Type:	Unsignalized	
Intersection Capacity Utilization	18.7%	ICU Level of Service A
Analysis Period (min)	15	

HCM Unsignalized Intersection Capacity Analysis Total (2041) - Scenario A - 35% Mode Share
 215: West Street A & West Street B Timing Plan: AM Peak Hour

	EBL	EBR	NBL	NBT	SBT	SBR
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	94	57	0	40	39	5
Future Volume (Veh/h)	94	57	0	40	39	5
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)	102	62	0	43	42	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	88	44	47			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	88	44	47			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	89	94	100			
cM capacity (veh/h)	913	1025	1560			

Direction, Lane #	EB 1	NB 1	SB 1
Volume Total	164	43	47
Volume Left	102	0	0
Volume Right	62	0	5
cSH	953	1560	1700
Volume to Capacity	0.17	0.00	0.03
Queue Length 95th (m)	4.6	0.0	0.0
Control Delay (s)	9.6	0.0	0.0
Lane LOS	A		
Approach Delay (s)	9.6	0.0	0.0
Approach LOS	A		

Intersection Summary			
Average Delay	6.2		
Intersection Capacity Utilization	18.7%	ICU Level of Service	A
Analysis Period (min)	15		

Lanes, Volumes, Timings
216: West Street D & West Street B

Total (2041) - Scenario A - 35% Mode Share

Timing Plan: AM Peak Hour

	←	←	↑	↗	↘	↓
Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	↖		↗			↗
Traffic Volume (vph)	0	8	24	0	129	62
Future Volume (vph)	0	8	24	0	129	62
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.865					
Flt Protected						0.967
Satd. Flow (prot)	1611	0	1863	0	0	1801
Flt Permitted						0.967
Satd. Flow (perm)	1611	0	1863	0	0	1801
Link Speed (k/h)	50		50			50
Link Distance (m)	202.8		99.7			103.2
Travel Time (s)	14.6		7.2			7.4
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	9	26	0	140	67
Shared Lane Traffic (%)						
Lane Group Flow (vph)	9	0	26	0	0	207
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
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		15	25	
Sign Control	Stop		Free			Free

Intersection Summary

Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	27.1%
Analysis Period (min)	15
	ICU Level of Service A

HCM Unsignalized Intersection Capacity Analysis Total (2041) - Scenario A - 35% Mode Share
216: West Street D & West Street B

Timing Plan: AM Peak Hour

	←	←	↑	↗	↘	↓
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	↖		↗			↗
Traffic Volume (veh/h)	0	8	24	0	129	62
Future Volume (Veh/h)	0	8	24	0	129	62
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	9	26	0	140	67
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage (veh)						
Upstream signal (m)						103
pX, platoon unblocked	0.99					
vC, conflicting volume	373	26			26	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	365	26			26	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	100	99			91	
cM capacity (veh/h)	575	1050			1588	

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	9	26	207
Volume Left	0	0	140
Volume Right	9	0	0
cSH	1050	1700	1588
Volume to Capacity	0.01	0.02	0.09
Queue Length 95th (m)	0.2	0.0	2.2
Control Delay (s)	8.5	0.0	5.3
Lane LOS	A		A
Approach Delay (s)	8.5	0.0	5.3
Approach LOS	A		

Intersection Summary

Average Delay	4.8
Intersection Capacity Utilization	27.1%
Analysis Period (min)	15
	ICU Level of Service A

Lanes, Volumes, Timings

217: West Street C & West Street A

Total (2041) - Scenario A - 35% Mode Share

Timing Plan: AM Peak Hour

	EBL	EBT	WBT	WBR	SBL	SBR
Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↔	↔		↔	↔
Traffic Volume (vph)	0	48	44	119	65	8
Future Volume (vph)	0	48	44	119	65	8
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.902		0.985		
Flt Protected					0.958	
Satd. Flow (prot)	0	1863	1680	0	1758	0
Flt Permitted					0.958	
Satd. Flow (perm)	0	1863	1680	0	1758	0
Link Speed (k/h)		50	50		50	
Link Distance (m)		208.6	202.4		106.4	
Travel Time (s)		15.0	14.6		7.7	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	52	48	129	71	9
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	52	177	0	80	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 20.4% ICU Level of Service A

Analysis Period (min) 15

HCM Unsignalized Intersection Capacity Analysis Total (2041) - Scenario A - 35% Mode Share

217: West Street C & West Street A

Timing Plan: AM Peak Hour

	EBL	EBT	WBT	WBR	SBL	SBR
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↔	↔		↔	↔
Traffic Volume (veh/h)	0	48	44	119	65	8
Future Volume (Veh/h)	0	48	44	119	65	8
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)	0	52	48	129	71	9
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	177				164	112
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	177				164	112
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	100				91	99
cM capacity (veh/h)	1399				826	940
Direction, Lane #	EB 1	WB 1	SB 1			
Volume Total	52	177	80			
Volume Left	0	0	71			
Volume Right	0	129	9			
cSH	1399	1700	838			
Volume to Capacity	0.00	0.10	0.10			
Queue Length 95th (m)	0.0	0.0	2.4			
Control Delay (s)	0.0	0.0	9.8			
Lane LOS			A			
Approach Delay (s)	0.0	0.0	9.8			
Approach LOS			A			
Intersection Summary						
Average Delay			2.5			
Intersection Capacity Utilization		20.4%		ICU Level of Service	A	
Analysis Period (min)		15				

Lanes, Volumes, Timings
218: West Street D & West Street C

Total (2041) - Scenario A - 35% Mode Share

Timing Plan: AM Peak Hour

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔			↔			↔			↔	
Traffic Volume (vph)	0	0	0	5	0	39	0	19	10	57	5	0
Future Volume (vph)	0	0	0	5	0	39	0	19	10	57	5	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					0.879			0.954				
Flt Protected					0.995						0.956	
Satd. Flow (prot)	0	1863	0	0	1629	0	0	1777	0	0	1781	0
Flt Permitted					0.995						0.956	
Satd. Flow (perm)	0	1863	0	0	1629	0	0	1777	0	0	1781	0
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		258.7			208.6			93.0			99.7	
Travel Time (s)		18.6			15.0			6.7			7.2	
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	0	5	0	42	0	21	11	62	5	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	0	0	0	47	0	0	32	0	0	67	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 20.1% ICU Level of Service A

Analysis Period (min) 15

HCM Unsignalized Intersection Capacity Analysis Total (2041) - Scenario A - 35% Mode Share
218: West Street D & West Street C

Timing Plan: AM Peak Hour

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Movement		↔			↔			↔			↔	
Lane Configurations		↔			↔			↔			↔	
Traffic Volume (veh/h)	0	0	0	5	0	39	0	19	10	57	5	0
Future Volume (Veh/h)	0	0	0	5	0	39	0	19	10	57	5	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)	0	0	0	5	0	42	0	21	11	62	5	0
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	42			0			34	52	0	52	31	21
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	42			0			34	52	0	52	31	21
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			100			100	97	99	93	99	100
cM capacity (veh/h)	1567			1623			967	837	1085	917	859	1056
Direction, Lane #	EB 1	WB 1	NB 1	SB 1								
Volume Total	0	47	32	67								
Volume Left	0	5	0	62								
Volume Right	0	42	11	0								
cSH	1700	1623	908	912								
Volume to Capacity	0.00	0.00	0.04	0.07								
Queue Length 95th (m)	0.0	0.1	0.8	1.8								
Control Delay (s)	0.0	0.8	9.1	9.3								
Lane LOS		A	A	A								
Approach Delay (s)	0.0	0.8	9.1	9.3								
Approach LOS		A	A	A								
Intersection Summary												
Average Delay			6.5									
Intersection Capacity Utilization		20.1%		ICU Level of Service					A			
Analysis Period (min)			15									

Lanes, Volumes, Timings

TT (2041) - Scenario A - 35% Mode Share

101: Trafalgar Rd & Lower Base Line

Timing Plan: PM Peak Hour

	↖	→	↗	↘	↙	↘	↙	↘	↙	↘	↙	↘
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖	↖	↖	↖	↖	↖	↖	↖	↖	↖	↖	↖
Traffic Volume (vph)	54	240	77	343	678	368	476	2513	390	306	1719	123
Future Volume (vph)	54	240	77	343	678	368	476	2513	390	306	1719	123
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	45.0		45.0	110.0		110.0	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	0.260			0.206			0.072			0.077		
Satd. Flow (perm)	484	3412	0	384	3352	0	134	5085	1583	143	5085	1583
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		25			68				79			95
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	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	54	240	77	343	678	368	476	2513	390	306	1719	123
Shared Lane Traffic (%)												
Lane Group Flow (vph)	54	317	0	343	1046	0	476	2513	390	306	1719	123
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	pm+ov	pm+pt	NA	pm+ov
Protected Phases	7	4		3	8		5	2	3	1	6	7
Permitted Phases	4			8			2		2	6		6

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Lanes, Volumes, Timings

TT (2041) - Scenario A - 35% Mode Share

101: Trafalgar Rd & Lower Base Line

Timing Plan: PM Peak Hour

	↖	→	↗	↘	↙	↘	↙	↘	↙	↘	↙	↘
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector Phase	7	4		3	8		5	2	3	1	6	7
Switch Phase												
Minimum Initial (s)	5.0	10.0		7.0	10.0		5.0	25.0	7.0	7.0	25.0	5.0
Minimum Split (s)	11.6	22.5		13.6	22.5		11.6	31.6	13.6	13.6	31.6	11.6
Total Split (s)	11.6	22.6		27.0	38.0		31.0	71.4	27.0	19.0	59.4	11.6
Total Split (%)	8.3%	16.1%		19.3%	27.1%		22.1%	51.0%	19.3%	13.6%	42.4%	8.3%
Maximum Green (s)	5.0	16.4		24.0	31.8		28.0	64.8	24.0	16.0	52.8	5.0
Yellow Time (s)	4.6	4.2		3.0	4.2		3.0	4.6	3.0	3.0	4.6	4.6
All-Red Time (s)	2.0	2.0		0.0	2.0		0.0	2.0	0.0	0.0	2.0	2.0
Lost Time Adjust (s)	1.0	-2.2		1.0	-2.2		1.0	-2.2	1.0	1.0	-2.2	-2.2
Total Lost Time (s)	7.6	4.0		4.0	4.0		4.0	4.4	4.0	4.0	4.4	4.4
Lead/Lag	Lead	Lag		Lead	Lag		Lead	Lag	Lead	Lag	Lag	Lead
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	0.2	0.2	5.0	3.0
Recall Mode	None	None		None	None		None	Max	None	Max	Max	None
Act Effct Green (s)	19.0	18.6		45.6	34.0		86.4	67.0	94.4	70.4	55.0	66.6
Actuated g/C Ratio	0.14	0.13		0.33	0.24		0.62	0.48	0.67	0.50	0.39	0.48
v/c Ratio	0.53	0.67		0.97	1.21		1.20	1.03	0.36	1.24	0.86	0.15
Control Delay	59.5	60.7		82.9	146.9		148.1	63.3	8.6	175.6	44.5	6.5
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	59.5	60.7		82.9	146.9		148.1	63.3	8.6	175.6	44.5	6.5
LOS	E	E		F	F		F	E	A	F	D	A
Approach Delay		60.5			131.1			68.9			61.0	
Approach LOS		E			F			E			E	

Intersection Summary

Area Type: Other

Cycle Length: 140

Actuated Cycle Length: 140

Natural Cycle: 135

Control Type: Semi Act-Uncooord

Maximum v/c Ratio: 1.24

Intersection Signal Delay: 78.0

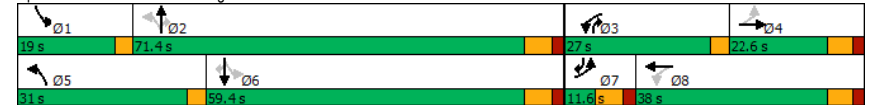
Intersection LOS: E

Intersection Capacity Utilization 116.9%

ICU Level of Service H

Analysis Period (min) 15

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

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Queues
101: Trafalgar Rd & Lower Base Line

TT (2041) - Scenario A - 35% Mode Share
Timing Plan: PM Peak Hour

	EBL	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	54	317	343	1046	476	2513	390	306	1719	123
v/c Ratio	0.53	0.67	0.97	1.21	1.20	1.03	0.36	1.24	0.86	0.15
Control Delay	59.5	60.7	82.9	146.9	148.1	63.3	8.6	175.6	44.5	6.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	59.5	60.7	82.9	146.9	148.1	63.3	8.6	175.6	44.5	6.5
Queue Length 50th (m)	10.7	40.5	78.4	~175.8	~141.0	~269.1	32.8	~87.7	156.7	4.0
Queue Length 95th (m)	#21.6	56.6	#136.1	#217.6	#207.8	#295.1	49.4	#145.8	176.7	14.8
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)	102	475	352	865	398	2433	1093	246	1997	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	0.53	0.67	0.97	1.21	1.20	1.03	0.36	1.24	0.86	0.15

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.

HCM Signalized Intersection Capacity Analysis
101: Trafalgar Rd & Lower Base Line

TT (2041) - Scenario A - 35% Mode Share
Timing Plan: PM Peak Hour

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰	↱	↱	↰	↱	↱	↰	↱	↱	↰	↱	↱
Traffic Volume (vph)	54	240	77	343	678	368	476	2513	390	306	1719	123
Future Volume (vph)	54	240	77	343	678	368	476	2513	390	306	1719	123
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	7.6	4.0		4.0	4.0		4.0	4.4	4.0	4.0	4.4	4.4
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	3410		1770	3352		1770	5085	1583	1770	5085	1583
Flt Permitted	0.26	1.00		0.21	1.00		0.07	1.00	1.00	0.08	1.00	1.00
Satd. Flow (perm)	484	3410		384	3352		134	5085	1583	144	5085	1583
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	54	240	77	343	678	368	476	2513	390	306	1719	123
RTOR Reduction (vph)	0	22	0	0	51	0	0	0	30	0	0	53
Lane Group Flow (vph)	54	295	0	343	995	0	476	2513	360	306	1719	70
Turn Type	pm+pt	NA		pm+pt	NA		pm+pt	NA	pm+ov	pm+pt	NA	pm+ov
Protected Phases	7	4		3	8		5	2	3	1	6	7
Permitted Phases	4			8			2		2	6		6
Actuated Green, G (s)	21.4	16.4		43.4	31.8		83.8	64.8	88.8	68.8	52.8	57.8
Effective Green, g (s)	19.4	18.6		42.4	34.0		82.8	67.0	86.8	66.8	55.0	62.2
Actuated g/C Ratio	0.14	0.13		0.30	0.24		0.59	0.48	0.62	0.48	0.39	0.44
Clearance Time (s)	6.6	6.2		3.0	6.2		3.0	6.6	3.0	3.0	6.6	6.6
Vehicle Extension (s)	3.0	5.0		0.2	5.0		3.0	5.0	0.2	0.2	5.0	3.0
Lane Grp Cap (vph)	103	453		343	814		394	2433	981	242	1997	753
v/s Ratio Prot	0.01	0.09		c0.16	c0.30		c0.23	0.49	0.06	0.13	0.34	0.00
v/s Ratio Perm	0.06			0.14			c0.48		0.17	0.47		0.04
v/c Ratio	0.52	0.65		1.00	1.22		1.21	1.03	0.37	1.26	0.86	0.09
Uniform Delay, d1	54.1	57.6		43.3	53.0		46.2	36.5	13.1	44.3	39.0	22.6
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	4.7	4.5		48.6	110.8		115.2	27.4	0.1	147.7	5.2	0.1
Delay (s)	58.8	62.1		91.9	163.8		161.4	63.9	13.2	192.0	44.1	22.6
Level of Service	E	E		F	F		F	E	B	F	D	C
Approach Delay (s)	61.6		146.0		71.8		64.0					
Approach LOS	E		F		E		E					

Intersection Summary

HCM 2000 Control Delay	83.1	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	1.24		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	20.0
Intersection Capacity Utilization	116.9%	ICU Level of Service	H
Analysis Period (min)	15		

c Critical Lane Group

Lanes, Volumes, Timings TT (2041) - Scenario A - 35% Mode Share
102: Trafalgar Rd & North Carpool Lot/Hwy 407 WB Off Timing Plan: PM Peak Hour

	←	→	↙	↘	←	↙	↘	→	↙	↘	→	↙	↘
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations		↔		↔	↔	↔	↔	↔		↔	↔	↔	
Traffic Volume (vph)	7	0	49	592	16	174	9	3193	0	0	2134	5	
Future Volume (vph)	7	0	49	592	16	174	9	3193	0	0	2134	5	
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		0.882				0.992	0.850					0.850	
Flt Protected		0.994		0.950	0.957		0.950						
Satd. Flow (prot)	0	1633	0	1681	1609	1504	1770	5085	0	0	5085	1583	
Flt Permitted		0.994		0.720	0.709		0.070						
Satd. Flow (perm)	0	1633	0	1274	1192	1504	130	5085	0	0	5085	1583	
Right Turn on Red			Yes		Yes			Yes			Yes		
Satd. Flow (RTOR)		78			3	95						70	
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	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Adj. Flow (vph)	7	0	49	592	16	174	9	3193	0	0	2134	5	
Shared Lane Traffic (%)				47%		10%							
Lane Group Flow (vph)	0	56	0	314	311	157	9	3193	0	0	2134	5	
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	CI+Ex	CI+Ex		CI+Ex	CI+Ex	CI+Ex	CI+Ex	CI+Ex			CI+Ex	CI+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		CI+Ex			CI+Ex			CI+Ex			CI+Ex		
Detector 2 Channel													
Detector 2 Extend (s)		0.0			0.0			0.0			0.0		
Turn Type	Split	NA		Perm	NA	Perm	Perm	NA			NA	Perm	
Protected Phases	4	4			8			2			6		
Permitted Phases				8		8	2					6	

Lanes, Volumes, Timings TT (2041) - Scenario A - 35% Mode Share
102: Trafalgar Rd & North Carpool Lot/Hwy 407 WB Off Timing Plan: PM Peak Hour

	←	→	↙	↘	←	↙	↘	→	↙	↘	→	↙	↘
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)	6.0	6.0		7.0	7.0	7.0		20.0	20.0		20.0	20.0	
Minimum Split (s)	12.0	12.0		22.5	22.5	22.5		27.0	27.0		27.0	27.0	
Total Split (s)	12.0	12.0		68.0	68.0	68.0		60.0	60.0		60.0	60.0	
Total Split (%)	8.6%	8.6%		48.6%	48.6%	48.6%		42.9%	42.9%		42.9%	42.9%	
Maximum Green (s)	6.0	6.0		62.0	62.0	62.0		53.0	53.0		53.0	53.0	
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		-3.0	-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 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)		8.2		37.0	37.0	37.0		57.2	57.2		57.2	57.2	
Actuated g/C Ratio		0.07		0.33	0.33	0.33		0.51	0.51		0.51	0.51	
v/c Ratio		0.29		0.74	0.78	0.28		0.14	1.22		0.82	0.01	
Control Delay		9.9		44.2	47.5	12.3		27.6	132.0		29.0	0.0	
Queue Delay		0.0		0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay		9.9		44.2	47.5	12.3		27.6	132.0		29.0	0.0	
LOS	A			D	D	B		C	F		C	A	
Approach Delay		9.9			39.1			131.7			28.9		
Approach LOS		A			D			F			C		

Intersection Summary

Area Type: Other

Cycle Length: 140

Actuated Cycle Length: 111.5

Natural Cycle: 140

Control Type: Actuated-Uncoordinated

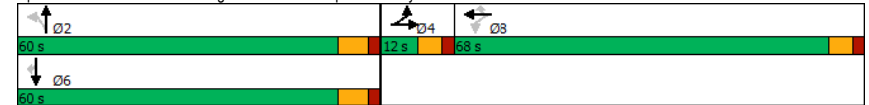
Maximum v/c Ratio: 1.22

Intersection Signal Delay: 83.3

Intersection Capacity Utilization 93.6%

Analysis Period (min) 15

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



Queues TT (2041) - Scenario A - 35% Mode Share
102: Trafalgar Rd & North Carpool Lot/Hwy 407 WB Off Timing Plan: PM Peak Hour

	→	↖	←	↗	↖	↑	↓	↗
Lane Group	EBT	WBL	WBT	WBR	NBL	NBT	SBT	SBR
Lane Group Flow (vph)	56	314	311	157	9	3193	2134	5
v/c Ratio	0.29	0.74	0.78	0.28	0.14	1.22	0.82	0.01
Control Delay	9.9	44.2	47.5	12.3	27.6	132.0	29.0	0.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	9.9	44.2	47.5	12.3	27.6	132.0	29.0	0.0
Queue Length 50th (m)	0.0	64.0	66.7	9.8	1.0	~322.1	143.4	0.0
Queue Length 95th (m)	7.5	96.2	101.9	24.8	6.1	#433.4	#232.5	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)	191	746	700	921	66	2608	2608	846
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.29	0.42	0.44	0.17	0.14	1.22	0.82	0.01

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.

HCM Signalized Intersection Capacity Analysis TT (2041) - Scenario A - 35% Mode Share
102: Trafalgar Rd & North Carpool Lot/Hwy 407 WB Off Timing Plan: PM Peak Hour

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations								  			  	
Traffic Volume (vph)	7	0	49	592	16	174	9	3193	0	0	2134	5
Future Volume (vph)	7	0	49	592	16	174	9	3193	0	0	2134	5
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)		1633		1681	1609	1504	1770	5085			5085	1583
Flt Permitted		0.99		0.72	0.71	1.00	0.07	1.00			1.00	1.00
Satd. Flow (perm)		1633		1275	1191	1504	130	5085			5085	1583
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	7	0	49	592	16	174	9	3193	0	0	2134	5
RTOR Reduction (vph)	0	53	0	0	2	64	0	0	0	0	0	2
Lane Group Flow (vph)	0	3	0	314	309	93	9	3193	0	0	2134	3
Turn Type	Split	NA		Perm	NA	Perm	Perm	NA			NA	Perm
Protected Phases	4	4			8			2			6	
Permitted Phases				8		8	2					6
Actuated Green, G (s)		4.6		35.0	35.0	35.0	54.1	54.1			54.1	54.1
Effective Green, g (s)		6.6		37.0	37.0	37.0	57.1	57.1			57.1	57.1
Actuated g/C Ratio		0.06		0.33	0.33	0.33	0.51	0.51			0.51	0.51
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)		95		418	391	493	65	2576			2576	802
v/s Ratio Prot		c0.00						c0.63			0.42	
v/s Ratio Perm				0.25	c0.26	0.06	0.07					0.00
v/c Ratio		0.03		0.75	0.79	0.19	0.14	1.24			0.83	0.00
Uniform Delay, d1		50.0		33.7	34.3	27.1	14.7	27.8			23.6	13.7
Progression Factor		1.00		1.00	1.00	1.00	1.00	1.00			1.00	1.00
Incremental Delay, d2		0.2		7.7	10.7	0.2	4.4	111.3			3.2	0.0
Delay (s)		50.2		41.4	45.0	27.3	19.2	139.1			26.9	13.7
Level of Service		D		D	D	C	B	F			C	B
Approach Delay (s)		50.2			40.0			138.7			26.8	
Approach LOS		D			D			F			C	

Intersection Summary

HCM 2000 Control Delay	86.7	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	1.02		
Actuated Cycle Length (s)	112.7	Sum of lost time (s)	14.0
Intersection Capacity Utilization	93.6%	ICU Level of Service	F
Analysis Period (min)	15		

c Critical Lane Group

Lanes, Volumes, Timings
103: Trafalgar Rd & Hwy 407 EB Off

TT (2041) - Scenario A - 35% Mode Share
Timing Plan: PM Peak Hour

	EBL	EBR	NBL	NBT	SBT	SBR
Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	↩	↩		↕↕↕	↕↕↕	
Traffic Volume (vph)	87	213	0	3618	2572	0
Future Volume (vph)	87	213	0	3618	2572	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)		2				
Link Speed (k/h)	50			50	50	
Link Distance (m)	554.6			251.9	363.6	
Travel Time (s)	39.9			18.1	26.2	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	87	213	0	3618	2572	0
Shared Lane Traffic (%)						
Lane Group Flow (vph)	87	213	0	3618	2572	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	CI+Ex	CI+Ex		CI+Ex	CI+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				CI+Ex	CI+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	

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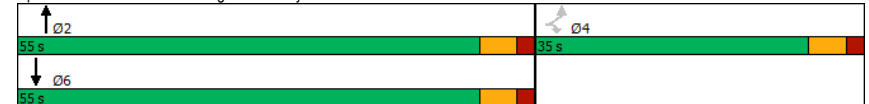
Lanes, Volumes, Timings
103: Trafalgar Rd & Hwy 407 EB Off

TT (2041) - Scenario A - 35% Mode Share
Timing Plan: PM Peak Hour

	EBL	EBR	NBL	NBT	SBT	SBR
Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Minimum Split (s)	24.0	24.0		24.0	24.0	
Total Split (s)	35.0	35.0		55.0	55.0	
Total Split (%)	38.9%	38.9%		61.1%	61.1%	
Maximum Green (s)	29.0	29.0		49.0	49.0	
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)	17.6	17.6		53.1	53.1	
Actuated g/C Ratio	0.22	0.22		0.67	0.67	
v/c Ratio	0.22	0.60		1.05	0.75	
Control Delay	25.0	33.9		48.0	11.0	
Queue Delay	0.0	0.0		0.0	0.0	
Total Delay	25.0	33.9		48.0	11.0	
LOS	C	C		D	B	
Approach Delay	31.3			48.0	11.0	
Approach LOS	C			D	B	

Intersection Summary	
Area Type:	Other
Cycle Length: 90	
Actuated Cycle Length: 78.7	
Natural Cycle: 90	
Control Type: Semi Act-Uncoord	
Maximum v/c Ratio: 1.05	
Intersection Signal Delay: 32.5	Intersection LOS: C
Intersection Capacity Utilization 81.4%	ICU Level of Service D
Analysis Period (min) 15	

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



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Queues
103: Trafalgar Rd & Hwy 407 EB Off

TT (2041) - Scenario A - 35% Mode Share
Timing Plan: PM Peak Hour

	EBL	EBR	NBT	SBT
Lane Group	EBL	EBR	NBT	SBT
Lane Group Flow (vph)	87	213	3618	2572
v/c Ratio	0.22	0.60	1.05	0.75
Control Delay	25.0	33.9	48.0	11.0
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	25.0	33.9	48.0	11.0
Queue Length 50th (m)	10.1	26.9	~211.3	76.4
Queue Length 95th (m)	20.7	46.4	#275.6	125.0
Internal Link Dist (m)	530.6		227.9	339.6
Turn Bay Length (m)				
Base Capacity (vph)	699	626	3431	3431
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	0.12	0.34	1.05	0.75

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.

HCM Signalized Intersection Capacity Analysis
103: Trafalgar Rd & Hwy 407 EB Off

TT (2041) - Scenario A - 35% Mode Share
Timing Plan: PM Peak Hour

	EBL	EBR	NBL	NBT	SBT	SBR
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	↰	↱		↰	↰	↰
Traffic Volume (vph)	87	213	0	3618	2572	0
Future Volume (vph)	87	213	0	3618	2572	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	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	87	213	0	3618	2572	0
RTOR Reduction (vph)	0	2	0	0	0	0
Lane Group Flow (vph)	87	211	0	3618	2572	0
Turn Type	Perm	Perm		NA	NA	
Protected Phases				2	6	
Permitted Phases	4	4				
Actuated Green, G (s)	15.6	15.6		51.1	51.1	
Effective Green, g (s)	17.6	17.6		53.1	53.1	
Actuated g/C Ratio	0.22	0.22		0.67	0.67	
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)	395	354		3430	3430	
v/s Ratio Prot				c0.71	0.51	
v/s Ratio Perm	0.05	c0.13				
v/c Ratio	0.22	0.60		1.05	0.75	
Uniform Delay, d1	24.9	27.4		12.8	8.4	
Progression Factor	1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.3	2.7		32.4	1.6	
Delay (s)	25.2	30.1		45.2	10.0	
Level of Service	C	C		D	A	
Approach Delay (s)	28.7			45.2	10.0	
Approach LOS	C			D	A	

Intersection Summary

HCM 2000 Control Delay	30.5	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.97		
Actuated Cycle Length (s)	78.7	Sum of lost time (s)	10.0
Intersection Capacity Utilization	81.4%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

Lanes, Volumes, Timings
104: Trafalgar Rd & West Street A/East Street A

TT (2041) - Scenario A - 35% Mode Share

Timing Plan: PM Peak Hour

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰	↑	↱	↰	↑	↱	↰	↑	↱	↰	↑	↱
Traffic Volume (vph)	202	24	102	0	0	609	20	3481	198	325	2353	107
Future Volume (vph)	202	24	102	0	0	609	20	3481	198	325	2353	107
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	90.0		90.0	90.0		90.0
Storage Lanes	1		1	1		1	1		1	1		1
Taper Length (m)	75.0			75.0			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		
Satd. Flow (prot)	1770	1863	1583	1863	1863	1583	1770	5085	1583	1770	5085	1583
Flt Permitted	0.950						0.064			0.045		
Satd. Flow (perm)	1770	1863	1583	1863	1863	1583	119	5085	1583	84	5085	1583
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			102			44			144			107
Link Speed (k/h)		50			50			80			80	
Link Distance (m)		216.0			205.9			233.3			251.9	
Travel Time (s)		15.6			14.8			10.5			11.3	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	202	24	102	0	0	609	20	3481	198	325	2353	107
Shared Lane Traffic (%)												
Lane Group Flow (vph)	202	24	102	0	0	609	20	3481	198	325	2353	107
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	pm+pt	NA	Perm	pm+pt		pm+ov	pm+pt	NA	pm+ov	pm+pt	NA	pm+ov
Protected Phases	7	4		3	8	1	5	2	3	1	6	7
Permitted Phases	4		4	8		8	2		2	6		6

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Lanes, Volumes, Timings
104: Trafalgar Rd & West Street A/East Street A

TT (2041) - Scenario A - 35% Mode Share

Timing Plan: PM Peak Hour

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector Phase	7	4	4	3	8	1	5	2	3	1	6	7
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)	9.5	24.0	24.0	9.5	24.0	11.0	9.5	24.0	9.5	11.0	24.0	9.5
Total Split (s)	10.0	24.3	24.3	9.7	24.0	25.0	9.5	91.0	9.7	25.0	106.5	10.0
Total Split (%)	6.7%	16.2%	16.2%	6.5%	16.0%	16.7%	6.3%	60.7%	6.5%	16.7%	71.0%	6.7%
Maximum Green (s)	7.0	18.3	18.3	6.7	18.0	22.0	6.5	85.0	6.7	22.0	100.5	7.0
Yellow Time (s)	3.0	4.0	4.0	3.0	4.0	3.0	3.0	4.0	3.0	3.0	4.0	3.0
All-Red Time (s)	0.0	2.0	2.0	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
Lost Time Adjust (s)	1.0	-2.0	-2.0	1.0	-2.0	-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	1.0	4.0	4.0	1.0	4.0	4.0	1.0
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lead	Lead	Lag	Lead	Lag	Lag	Lead
Lead-Lag Optimize?	Yes	Yes	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	3.0	3.0
Recall Mode	None	None	None	None	None	Max	None	C-Max	None	Max	C-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 Effect Green (s)	18.4	9.8	9.8			35.6	91.8	87.0	98.5	123.6	118.3	144.0
Actuated g/C Ratio	0.12	0.07	0.07			0.24	0.61	0.58	0.66	0.82	0.79	0.96
v/c Ratio	0.94	0.20	0.51			1.49	0.16	1.18	0.18	0.75	0.59	0.07
Control Delay	110.6	69.0	20.5			268.6	9.7	115.4	3.3	53.2	7.6	0.1
Queue Delay	0.0	0.0	0.0			0.0	0.0	0.2	0.0	0.0	0.3	0.0
Total Delay	110.6	69.0	20.5			268.6	9.7	115.6	3.3	53.2	7.9	0.1
LOS	F	E	C			F	A	F	A	D	A	A
Approach Delay		79.6			268.6			109.0			12.9	
Approach LOS		E			F			F			B	

Intersection Summary

Area Type: Other

Cycle Length: 150

Actuated Cycle Length: 150

Offset: 0 (0%), Referenced to phase 2:NBT and 6:SBTL, Start of Green

Natural Cycle: 150

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 1.49

Intersection Signal Delay: 84.7

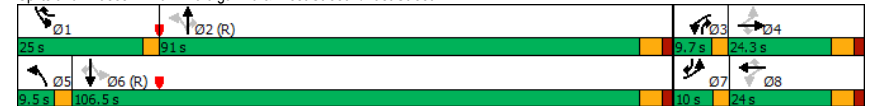
Intersection LOS: F

Intersection Capacity Utilization 126.2%

ICU Level of Service H

Analysis Period (min) 15

Splits and Phases: 104: Trafalgar Rd & West Street A/East Street A



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Queues
104: Trafalgar Rd & West Street A/East Street A

TT (2041) - Scenario A - 35% Mode Share
Timing Plan: PM Peak Hour

	EBL	EBT	EBR	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group	EBL	EBT	EBR	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	202	24	102	609	20	3481	198	325	2353	107
v/c Ratio	0.94	0.20	0.51	1.49	0.16	1.18	0.18	0.75	0.59	0.07
Control Delay	110.6	69.0	20.5	268.6	9.7	115.4	3.3	53.2	7.6	0.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.2	0.0	0.0	0.3	0.0
Total Delay	110.6	69.0	20.5	268.6	9.7	115.6	3.3	53.2	7.9	0.1
Queue Length 50th (m)	60.0	6.8	0.0	~235.4	1.1	~447.2	5.3	72.4	95.2	0.0
Queue Length 95th (m)	#93.4	16.0	17.8	#322.2	2.6	#464.8	14.1	#123.2	123.3	0.6
Internal Link Dist (m)		192.0				209.3			227.9	
Turn Bay Length (m)	50.0		50.0	50.0	90.0		90.0		90.0	
Base Capacity (vph)	216	252	302	409	133	2949	1100	435	4009	1524
Starvation Cap Reductn	0	0	0	0	0	292	0	0	881	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	0.94	0.10	0.34	1.49	0.15	1.31	0.18	0.75	0.75	0.07

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.

Queue shown is maximum after two cycles.

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

Queue shown is maximum after two cycles.

HCM Signalized Intersection Capacity Analysis
104: Trafalgar Rd & West Street A/East Street A

TT (2041) - Scenario A - 35% Mode Share
Timing Plan: PM Peak Hour

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔
Traffic Volume (vph)	202	24	102	0	0	609	20	3481	198	325	2353	107
Future Volume (vph)	202	24	102	0	0	609	20	3481	198	325	2353	107
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			1.0	4.0	4.0	1.0	4.0	4.0	1.0
Lane Util. Factor	1.00	1.00	1.00			1.00	1.00	0.91	1.00	1.00	0.91	1.00
Flt	1.00	1.00	0.85			0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00			1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1770	1863	1583			1583	1770	5085	1583	1770	5085	1583
Flt Permitted	0.95	1.00	1.00			1.00	0.06	1.00	1.00	0.05	1.00	1.00
Satd. Flow (perm)	1770	1863	1583			1583	120	5085	1583	85	5085	1583
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	202	24	102	0	0	609	20	3481	198	325	2353	107
RTOR Reduction (vph)	0	0	95	0	0	34	0	0	53	0	0	8
Lane Group Flow (vph)	202	24	7	0	0	575	20	3481	145	325	2353	99
Turn Type	pm+pt	NA	Perm	pm+pt		pm+ov	pm+pt	NA	pm+ov	pm+pt	NA	pm+ov
Protected Phases	7	4		3	8	1	5	2	3	1	6	7
Permitted Phases	4		4	8		8	2		2	6		6
Actuated Green, G (s)	19.4	7.9	7.9			33.6	88.6	85.0	90.5	121.6	115.0	134.4
Effective Green, g (s)	18.4	9.9	9.9			35.6	86.6	87.0	94.5	120.6	117.0	138.4
Actuated g/C Ratio	0.12	0.07	0.07			0.24	0.58	0.58	0.63	0.80	0.78	0.92
Clearance Time (s)	3.0	6.0	6.0			3.0	3.0	6.0	3.0	3.0	6.0	3.0
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)	217	122	104			375	97	2949	997	434	3966	1460
v/s Ratio Prot	c0.11	0.01				c0.36	0.00	c0.68	0.01	0.16	0.46	0.01
v/s Ratio Perm			0.00				0.11		0.08	0.44		0.05
v/c Ratio	0.93	0.20	0.06			1.53	0.21	1.18	0.15	0.75	0.59	0.07
Uniform Delay, d1	65.2	66.3	65.7			57.2	16.1	31.5	11.3	47.8	6.8	0.5
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	42.1	0.8	0.3			253.6	1.1	85.0	0.1	11.2	0.7	0.0
Delay (s)	107.3	67.1	66.0			310.8	17.1	116.5	11.4	59.1	7.4	0.5
Level of Service	F	E	E			F	B	F	B	E	A	A
Approach Delay (s)		91.5			310.8			110.3			13.2	
Approach LOS		F			F			F			B	

Intersection Summary

HCM 2000 Control Delay	89.5	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	1.28		
Actuated Cycle Length (s)	150.0	Sum of lost time (s)	16.0
Intersection Capacity Utilization	126.2%	ICU Level of Service	H
Analysis Period (min)	15		

c Critical Lane Group

Lanes, Volumes, Timings

TT (2041) - Scenario A - 35% Mode Share

105: Trafalgar Rd & William Halton Parkway

Timing Plan: PM Peak Hour

	←	→	↖	↗	←	→	↖	↗	←	→	↖	↗
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖	↖	↖	↖	↖	↖	↖	↖	↖	↖	↖	↖
Traffic Volume (vph)	715	534	139	480	1500	547	569	2669	205	449	1833	431
Future Volume (vph)	715	534	139	480	1500	547	569	2669	205	449	1833	431
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
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	0.105			0.273			0.087			0.095		
Satd. Flow (perm)	196	3539	1583	509	3539	1583	162	5085	1583	177	5085	1583
Right Turn on Red			Yes			Yes			Yes		Yes	
Satd. Flow (RTOR)			139			189			85		245	
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		212.9			205.0			193.0			233.3	
Travel Time (s)		15.3			14.8			13.9			16.8	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	715	534	139	480	1500	547	569	2669	205	449	1833	431
Shared Lane Traffic (%)												
Lane Group Flow (vph)	715	534	139	480	1500	547	569	2669	205	449	1833	431
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

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Lanes, Volumes, Timings

TT (2041) - Scenario A - 35% Mode Share

105: Trafalgar Rd & William Halton Parkway

Timing Plan: PM Peak Hour

	←	→	↖	↗	←	→	↖	↗	←	→	↖	↗
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)	14.0	38.0	38.0	14.2	38.0	38.0	13.9	42.9	42.9	13.9	42.9	42.9
Total Split (s)	31.0	46.2	46.2	29.8	45.0	45.0	24.0	56.0	56.0	18.0	50.0	50.0
Total Split (%)	20.7%	30.8%	30.8%	19.9%	30.0%	30.0%	16.0%	37.3%	37.3%	12.0%	33.3%	33.3%
Maximum Green (s)	28.0	39.2	39.2	26.8	38.0	38.0	21.0	49.1	49.1	15.0	43.1	43.1
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)	0.0	3.3	3.3	0.0	3.3	3.3	0.0	2.3	2.3	0.0	2.3	2.3
Lost Time Adjust (s)	1.0	-3.0	-3.0	1.0	-3.0	-3.0	1.0	-2.9	-2.9	1.0	-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	Max	Max	Max	Max	Max	Max
Walk Time (s)		7.0	7.0		7.0	7.0		7.0	7.0		7.0	7.0
Flash Dont Walk (s)		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 Effect Green (s)	69.2	42.2	42.2	66.8	41.0	41.0	70.0	52.0	52.0	60.0	46.0	46.0
Actuated g/C Ratio	0.46	0.28	0.28	0.45	0.27	0.27	0.47	0.35	0.35	0.40	0.31	0.31
v/c Ratio	1.92	0.54	0.26	1.08	1.55	0.96	1.96	1.51	0.34	2.05	1.18	0.66
Control Delay	449.6	48.0	7.2	96.2	289.5	63.7	471.6	269.4	22.4	512.8	131.4	24.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	449.6	48.0	7.2	96.2	289.5	63.7	471.6	269.4	22.4	512.8	131.4	24.0
LOS	F	D	A	F	F	E	F	F	C	F	F	C
Approach Delay		250.8			203.9			288.1			177.5	
Approach LOS		F			F			F			F	

Intersection Summary

Area Type: Other

Cycle Length: 150

Actuated Cycle Length: 150

Natural Cycle: 150

Control Type: Semi Act-Uncoord

Maximum v/c Ratio: 2.05

Intersection Signal Delay: 232.0

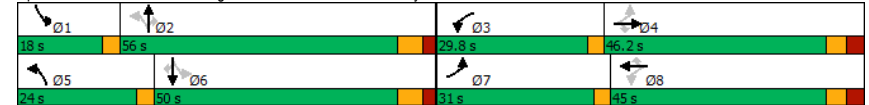
Intersection LOS: F

Intersection Capacity Utilization 170.9%

ICU Level of Service H

Analysis Period (min) 15

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

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Queues TT (2041) - Scenario A - 35% Mode Share
105: Trafalgar Rd & William Halton Parkway Timing Plan: PM Peak Hour

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	715	534	139	480	1500	547	569	2669	205	449	1833	431
v/c Ratio	1.92	0.54	0.26	1.08	1.55	0.96	1.96	1.51	0.34	2.05	1.18	0.66
Control Delay	449.6	48.0	7.2	96.2	289.5	63.7	471.6	269.4	22.4	512.8	131.4	24.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	449.6	48.0	7.2	96.2	289.5	63.7	471.6	269.4	22.4	512.8	131.4	24.0
Queue Length 50th (m)	~307.0	70.1	0.0	~113.4	~325.5	113.7	~243.5	~398.4	25.2	~191.4	~234.7	48.0
Queue Length 95th (m)	#382.2	88.5	16.0	#182.4	#367.4	#187.3	#315.0	#422.5	46.3	#258.6	#263.1	86.0
Internal Link Dist (m)	188.9			181.0			169.0			209.3		
Turn Bay Length (m)	100.0		100.0	100.0		150.0	150.0		75.0			
Base Capacity (vph)	373	995	545	443	967	570	290	1762	604	219	1559	655
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	1.92	0.54	0.26	1.08	1.55	0.96	1.96	1.51	0.34	2.05	1.18	0.66

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.

HCM Signalized Intersection Capacity Analysis TT (2041) - Scenario A - 35% Mode Share
105: Trafalgar Rd & William Halton Parkway Timing Plan: PM Peak Hour

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔
Traffic Volume (vph)	715	534	139	480	1500	547	569	2669	205	449	1833	431
Future Volume (vph)	715	534	139	480	1500	547	569	2669	205	449	1833	431
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	0.85	1.00	0.85	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	0.10	1.00	1.00	0.27	1.00	1.00	0.09	1.00	1.00	0.10	1.00	1.00
Satd. Flow (perm)	195	3539	1583	508	3539	1583	162	5085	1583	177	5085	1583
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	715	534	139	480	1500	547	569	2669	205	449	1833	431
RTOR Reduction (vph)	0	0	100	0	0	137	0	0	56	0	170	0
Lane Group Flow (vph)	715	534	39	480	1500	410	569	2669	149	449	1833	261
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)	67.2	39.2	39.2	64.8	38.0	38.0	67.1	49.1	49.1	58.1	43.1	43.1
Effective Green, g (s)	65.2	42.2	42.2	62.8	41.0	41.0	66.1	52.0	52.0	56.1	46.0	46.0
Actuated g/C Ratio	0.43	0.28	0.28	0.42	0.27	0.27	0.44	0.35	0.35	0.37	0.31	0.31
Clearance Time (s)	3.0	7.0	7.0	3.0	7.0	7.0	3.0	6.9	6.9	3.0	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	995	445	429	967	432	285	1762	548	214	1559	485
v/s Ratio Prot	c0.35	0.15		0.19	0.42		c0.27	0.52		0.20	0.36	
v/s Ratio Perm	c0.49		0.02	0.28		0.26	c0.61		0.09	0.59		0.16
v/c Ratio	1.94	0.54	0.09	1.12	1.55	0.95	2.00	1.51	0.27	2.10	1.18	0.54
Uniform Delay, d1	48.0	45.6	39.7	36.3	54.5	53.5	48.3	49.0	35.4	44.1	52.0	43.2
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	434.2	1.0	0.2	79.9	253.2	30.9	460.7	234.6	1.2	509.7	86.2	4.2
Delay (s)	482.1	46.6	39.9	116.3	307.7	84.3	509.0	283.6	36.6	553.8	138.2	47.4
Level of Service	F	D	D	F	F	F	F	F	D	F	F	D
Approach Delay (s)		270.3			223.0			306.1			192.6	
Approach LOS		F			F			F			F	

Intersection Summary

HCM 2000 Control Delay	249.7	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	1.91		
Actuated Cycle Length (s)	150.0	Sum of lost time (s)	16.0
Intersection Capacity Utilization	170.9%	ICU Level of Service	H
Analysis Period (min)	15		

c Critical Lane Group

Lanes, Volumes, Timings

TT (2041) - Scenario A - 35% Mode Share

106: Trafalgar Rd & Burnhamthorpe Rd/Burnhamthorpe Rd

Timing Plan: PM Peak Hour

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰	↱	↲	↰	↱	↲	↰	↱	↲	↰	↱	↲
Traffic Volume (vph)	165	339	18	135	297	554	100	2413	145	334	1597	277
Future Volume (vph)	165	339	18	135	297	554	100	2413	145	334	1597	277
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	1.00	1.00	1.00	1.00	1.00	1.00	0.91	1.00	1.00	0.91	1.00
Frt		0.992			0.902				0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1770	1848	0	1770	1680	0	1770	5085	1583	1770	5085	1583
Flt Permitted	0.137			0.246			0.105			0.095		
Satd. Flow (perm)	255	1848	0	458	1680	0	196	5085	1583	177	5085	1583
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		2			88				98			277
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	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	165	339	18	135	297	554	100	2413	145	334	1597	277
Shared Lane Traffic (%)												
Lane Group Flow (vph)	165	357	0	135	851	0	100	2413	145	334	1597	277
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	CI+Ex	CI+Ex		CI+Ex	CI+Ex		CI+Ex	CI+Ex	CI+Ex	CI+Ex	CI+Ex	CI+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		CI+Ex			CI+Ex			CI+Ex			CI+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	pm+ov	pm+pt	NA	pm+ov
Protected Phases	7	4		3	8		5	2	3	1	6	7
Permitted Phases	4			8			2		2	6		6

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Lanes, Volumes, Timings

TT (2041) - Scenario A - 35% Mode Share

106: Trafalgar Rd & Burnhamthorpe Rd/Burnhamthorpe Rd

Timing Plan: PM Peak Hour

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector Phase	7	4		3	8		5	2	3	1	6	7
Switch Phase												
Minimum Initial (s)	5.0	10.0		5.0	10.0		5.0	20.0	5.0	7.0	20.0	5.0
Minimum Split (s)	9.5	24.0		9.5	24.0		9.5	26.0	9.5	11.5	26.0	9.5
Total Split (s)	10.0	36.2		11.8	38.0		9.6	45.0	11.8	17.0	52.4	10.0
Total Split (%)	9.1%	32.9%		10.7%	34.5%		8.7%	40.9%	10.7%	15.5%	47.6%	9.1%
Maximum Green (s)	7.0	30.2		8.8	32.0		6.6	39.0	8.8	14.0	46.4	7.0
Yellow Time (s)	3.0	3.7		3.0	3.7		3.0	4.6	3.0	3.0	4.6	3.0
All-Red Time (s)	0.0	2.3		0.0	2.3		0.0	1.4	0.0	0.0	1.4	0.0
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	1.0	4.0	4.0	1.0
Lead/Lag	Lead	Lag		Lead	Lag		Lead	Lag	Lead	Lag	Lag	Lead
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	Max	None		Max	None		Max	Max	Max	Max	Max	Max
Act Effct Green (s)	38.2	32.2		41.8	34.0		46.6	41.0	55.8	58.0	48.4	61.4
Actuated g/C Ratio	0.35	0.29		0.38	0.31		0.42	0.37	0.51	0.53	0.44	0.56
v/c Ratio	0.96	0.66		0.51	1.47		0.61	1.27	0.17	1.19	0.71	0.28
Control Delay	89.1	40.7		28.8	247.6		32.6	158.7	5.9	142.6	27.4	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	89.1	40.7		28.8	247.6		32.6	158.7	5.9	142.6	27.4	2.1
LOS	F	D		C	F		C	F	A	F	C	A
Approach Delay		56.0			217.6			145.6			41.6	
Approach LOS		E			F			F			D	

Intersection Summary

Area Type: Other

Cycle Length: 110

Actuated Cycle Length: 110

Natural Cycle: 120

Control Type: Semi Act-Uncooord

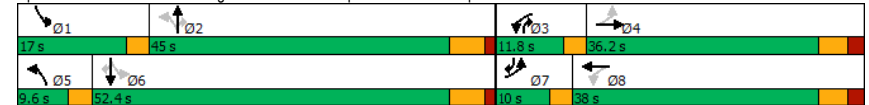
Maximum v/c Ratio: 1.47

Intersection Signal Delay: 113.4

Intersection Capacity Utilization 137.2%

Analysis Period (min) 15

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



I/O Trafalgar Oakville TIS
PTSL (210156/210157)

Synchro 10 Report
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Queues
106: Trafalgar Rd & Burhamthorpe Rd/Burnhamthorpe Rd

TT (2041) - Scenario A - 35% Mode Share
Timing Plan: PM Peak Hour

	EBL	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	165	357	135	851	100	2413	145	334	1597	277
v/c Ratio	0.96	0.66	0.51	1.47	0.61	1.27	0.17	1.19	0.71	0.28
Control Delay	89.1	40.7	28.8	247.6	32.6	158.7	5.9	142.6	27.4	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	89.1	40.7	28.8	247.6	32.6	158.7	5.9	142.6	27.4	2.1
Queue Length 50th (m)	22.8	65.8	18.3	~236.2	10.2	~237.1	4.9	~69.2	98.9	0.0
Queue Length 95th (m)	#59.3	97.1	31.4	#309.1	#24.3	#265.4	14.7	#123.7	115.8	10.9
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	
Base Capacity (vph)	171	542	267	580	163	1895	851	281	2237	1005
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	0.96	0.66	0.51	1.47	0.61	1.27	0.17	1.19	0.71	0.28

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.

HCM Signalized Intersection Capacity Analysis
106: Trafalgar Rd & Burhamthorpe Rd/Burnhamthorpe Rd

TT (2041) - Scenario A - 35% Mode Share
Timing Plan: PM Peak Hour

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰	↱		↰	↱		↰	↱	↱	↰	↱	↱
Traffic Volume (vph)	165	339	18	135	297	554	100	2413	145	334	1597	277
Future Volume (vph)	165	339	18	135	297	554	100	2413	145	334	1597	277
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	1.0	4.0	4.0	1.0
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	0.99		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	1849		1770	1681		1770	5085	1583	1770	5085	1583
Flt Permitted	0.14	1.00		0.25	1.00		0.11	1.00	1.00	0.10	1.00	1.00
Satd. Flow (perm)	255	1849		459	1681		196	5085	1583	177	5085	1583
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	165	339	18	135	297	554	100	2413	145	334	1597	277
RTOR Reduction (vph)	0	1	0	0	61	0	0	0	52	0	0	132
Lane Group Flow (vph)	165	356	0	135	790	0	100	2413	93	334	1597	145
Turn Type	pm+pt	NA		pm+pt	NA		pm+pt	NA	pm+ov	pm+pt	NA	pm+ov
Protected Phases	7	4		3	8		5	2	3	1	6	7
Permitted Phases	4			8			2		2	6		6
Actuated Green, G (s)	37.2	30.2		40.8	32.0		45.6	39.0	47.8	56.0	46.4	53.4
Effective Green, g (s)	35.2	32.2		38.8	34.0		43.6	41.0	51.8	55.0	48.4	57.4
Actuated g/C Ratio	0.32	0.29		0.35	0.31		0.40	0.37	0.47	0.50	0.44	0.52
Clearance Time (s)	3.0	6.0		3.0	6.0		3.0	6.0	3.0	3.0	6.0	3.0
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)	164	541		254	519		157	1895	745	276	2237	826
v/s Ratio Prot	c0.05	0.19		0.04	c0.47		0.03	c0.47	c0.01	c0.14	0.31	0.01
v/s Ratio Perm	0.27			0.15			0.22		0.05	0.46		0.08
v/c Ratio	1.01	0.66		0.53	1.52		0.64	1.27	0.13	1.21	0.71	0.17
Uniform Delay, d1	35.2	34.1		26.5	38.0		23.3	34.5	16.4	32.9	25.1	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	71.9	2.9		2.1	244.8		18.1	127.3	0.3	123.4	2.0	0.5
Delay (s)	107.1	36.9		28.6	282.8		41.4	161.8	16.7	156.3	27.1	14.3
Level of Service	F	D		C	F		D	F	B	F	C	B
Approach Delay (s)		59.1			248.0			149.3			45.0	
Approach LOS		E			F			F			D	

Intersection Summary

HCM 2000 Control Delay	121.1	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	1.34		
Actuated Cycle Length (s)	110.0	Sum of lost time (s)	16.0
Intersection Capacity Utilization	137.2%	ICU Level of Service	H
Analysis Period (min)	15		

c Critical Lane Group

Lanes, Volumes, Timings
202: Trafalgar Rd & East Street C

TT (2041) - Scenario A - 35% Mode Share
Timing Plan: PM Peak Hour

	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations		↗		↗↗↗	↗↗↗	↗
Traffic Volume (vph)	0	147	0	3132	2061	188
Future Volume (vph)	0	147	0	3132	2061	188
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (m)	0.0	0.0	0.0			90.0
Storage Lanes	0	1	0			1
Taper Length (m)	7.5		7.5			
Lane Util. Factor	1.00	1.00	1.00	0.91	0.91	1.00
Frt		0.865				0.850
Flt Protected						
Satd. Flow (prot)	0	1611	0	5085	5085	1583
Flt Permitted						
Satd. Flow (perm)	0	1611	0	5085	5085	1583
Link Speed (k/h)	50			50	50	
Link Distance (m)	205.4			92.4	193.0	
Travel Time (s)	14.8			6.7	13.9	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	0	147	0	3132	2061	188
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	147	0	3132	2061	188
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	0.0			3.6	3.6	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	4.8			4.8	4.8	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)	25	15	25			15
Sign Control	Stop			Free	Free	
Intersection Summary						
Area Type:	Other					
Control Type:	Unsignalized					
Intersection Capacity Utilization 63.8%	ICU Level of Service B					
Analysis Period (min) 15						

HCM Unsignalized Intersection Capacity Analysis TT (2041) - Scenario A - 35% Mode Share
202: Trafalgar Rd & East Street C

Timing Plan: PM Peak Hour

								
Movement	EBL	EBR	NBL	NBT	SBT	SBR		
Lane Configurations				  	  			
Traffic Volume (veh/h)	0	147	0	3132	2061	188		
Future Volume (Veh/h)	0	147	0	3132	2061	188		
Sign Control	Stop			Free	Free			
Grade	0%			0%	0%			
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00		
Hourly flow rate (vph)	0	147	0	3132	2061	188		
Pedestrians								
Lane Width (m)								
Walking Speed (m/s)								
Percent Blockage								
Right turn flare (veh)								
Median type				None	None			
Median storage (veh)								
Upstream signal (m)				263	193			
pX, platoon unblocked	0.79	0.70	0.70					
vC, conflicting volume	3105	687	2249					
vC1, stage 1 conf vol								
vC2, stage 2 conf vol								
vCu, unblocked vol	223	0	1303					
tC, single (s)	6.8	6.9	4.1					
tC, 2 stage (s)								
tF (s)	3.5	3.3	2.2					
p0 queue free %	100	81	100					
cM capacity (veh/h)	591	763	371					
Direction, Lane #	EB 1	NB 1	NB 2	NB 3	SB 1	SB 2	SB 3	SB 4
Volume Total	147	1044	1044	1044	687	687	687	188
Volume Left	0	0	0	0	0	0	0	0
Volume Right	147	0	0	0	0	0	0	188
cSH	763	1700	1700	1700	1700	1700	1700	1700
Volume to Capacity	0.19	0.61	0.61	0.61	0.40	0.40	0.40	0.11
Queue Length 95th (m)	5.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Control Delay (s)	10.8	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Lane LOS	B							
Approach Delay (s)	10.8	0.0			0.0			
Approach LOS	B							
Intersection Summary								
Average Delay				0.3				
Intersection Capacity Utilization	63.8%			ICU Level of Service			B	
Analysis Period (min)	15							

Lanes, Volumes, Timings
203: East Street D & East Street A

TT (2041) - Scenario A - 35% Mode Share
Timing Plan: PM Peak Hour

						
Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	119	357	0	195	246	0
Future Volume (vph)	119	357	0	195	246	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	0.850					
Flt Protected			0.950			
Satd. Flow (prot)	1863	1583	0	1863	1770	0
Flt Permitted			0.950			
Satd. Flow (perm)	1863	1583	0	1863	1770	0
Link Speed (k/h)	50			50	50	
Link Distance (m)	205.9			205.1	113.3	
Travel Time (s)	14.8			14.8	8.2	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	119	357	0	195	246	0
Shared Lane Traffic (%)						
Lane Group Flow (vph)	119	357	0	195	246	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
Sign Control	Free			Free	Stop	
Intersection Summary						
Area Type:	Other					
Control Type:	Unsignalized					
Intersection Capacity Utilization	39.0%			ICU Level of Service A		
Analysis Period (min)	15					

HCM Unsignalized Intersection Capacity Analysis TT (2041) - Scenario A - 35% Mode Share
203: East Street D & East Street A

Timing Plan: PM Peak Hour

	→	↗	↖	←	↙	↘
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑	↗		↖	↙	↘
Traffic Volume (veh/h)	119	357	0	195	246	0
Future Volume (Veh/h)	119	357	0	195	246	0
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	119	357	0	195	246	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)	206					
pX, platoon unblocked						
vC, conflicting volume			476		314	119
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			476		314	119
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			100		64	100
cM capacity (veh/h)			1086		679	933
Direction, Lane #	EB 1	EB 2	WB 1	NB 1		
Volume Total	119	357	195	246		
Volume Left	0	0	0	246		
Volume Right	0	357	0	0		
cSH	1700	1700	1086	679		
Volume to Capacity	0.07	0.21	0.00	0.36		
Queue Length 95th (m)	0.0	0.0	0.0	12.4		
Control Delay (s)	0.0	0.0	0.0	13.3		
Lane LOS				B		
Approach Delay (s)	0.0		0.0	13.3		
Approach LOS				B		
Intersection Summary						
Average Delay			3.6			
Intersection Capacity Utilization			39.0%		ICU Level of Service	A
Analysis Period (min)			15			

Lanes, Volumes, Timings
204: East Street E & East Street A

TT (2041) - Scenario A - 35% Mode Share
Timing Plan: PM Peak Hour

						
Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	0	66	0	0	211	0
Future Volume (vph)	0	66	0	0	211	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.865					
Flt Protected					0.950	
Satd. Flow (prot)	1611	0	0	1863	1770	0
Flt Permitted					0.950	
Satd. Flow (perm)	1611	0	0	1863	1770	0
Link Speed (k/h)	50			50	50	
Link Distance (m)	205.1			192.2	115.1	
Travel Time (s)	14.8			13.8	8.3	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	0	66	0	0	211	0
Shared Lane Traffic (%)						
Lane Group Flow (vph)	66	0	0	0	211	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	0.0			0.0	3.6	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	4.8			4.8	4.8	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)		15	25		25	15
Sign Control	Free			Free	Stop	
Intersection Summary						
Area Type:	Other					
Control Type:	Unsignalized					
Intersection Capacity Utilization	22.4%			ICU Level of Service A		
Analysis Period (min)	15					

HCM Unsignalized Intersection Capacity Analysis TT (2041) - Scenario A - 35% Mode Share
204: East Street E & East Street A

Timing Plan: PM Peak Hour

	→	↗	↖	←	↙	↘
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↗			↖	↙	↘
Traffic Volume (veh/h)	0	66	0	0	211	0
Future Volume (Veh/h)	0	66	0	0	211	0
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	0	66	0	0	211	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			66		33	33
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			66		33	33
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			100		78	100
cM capacity (veh/h)			1536		980	1041
Direction, Lane #	EB 1	WB 1	NB 1			
Volume Total	66	0	211			
Volume Left	0	0	211			
Volume Right	66	0	0			
cSH	1700	1700	980			
Volume to Capacity	0.04	0.00	0.22			
Queue Length 95th (m)	0.0	0.0	6.1			
Control Delay (s)	0.0	0.0	9.7			
Lane LOS			A			
Approach Delay (s)	0.0	0.0	9.7			
Approach LOS			A			
Intersection Summary						
Average Delay			7.4			
Intersection Capacity Utilization			22.4%		ICU Level of Service	A
Analysis Period (min)			15			

Lanes, Volumes, Timings
205: East Street F & East Street A

TT (2041) - Scenario A - 35% Mode Share
Timing Plan: PM Peak Hour

						
Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
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	1.00	1.00	1.00
Frt						
Flt Protected						
Satd. Flow (prot)	1863	0	0	1863	1863	0
Flt Permitted						
Satd. Flow (perm)	1863	0	0	1863	1863	0
Link Speed (k/h)	50			50	50	
Link Distance (m)	192.2			209.4	115.6	
Travel Time (s)	13.8			15.1	8.3	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
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)	0.0			0.0	3.6	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	4.8			4.8	4.8	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)		15	25		25	15
Sign Control	Free			Free	Stop	
Intersection Summary						
Area Type:	Other					
Control Type:	Unsignalized					
Intersection Capacity Utilization	0.0%			ICU Level of Service A		
Analysis Period (min)	15					

HCM Unsignalized Intersection Capacity Analysis TT (2041) - Scenario A - 35% Mode Share
205: East Street F & East Street A

Timing Plan: PM Peak Hour

	→	↖	↗	←	↖	↗
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↖			↖	↖	
Traffic Volume (veh/h)	0	0	0	0	0	0
Future Volume (Veh/h)	0	0	0	0	0	0
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	0	0	0	0	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			0		0	0
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			0		0	0
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			100		100	100
cM capacity (veh/h)			1623		1023	1085
Direction, Lane #	EB 1	WB 1	NB 1			
Volume Total	0	0	0			
Volume Left	0	0	0			
Volume Right	0	0	0			
cSH	1700	1700	1700			
Volume to Capacity	0.00	0.00	0.00			
Queue Length 95th (m)	0.0	0.0	0.0			
Control Delay (s)	0.0	0.0	0.0			
Lane LOS			A			
Approach Delay (s)	0.0	0.0	0.0			
Approach LOS			A			
Intersection Summary						
Average Delay			0.0			
Intersection Capacity Utilization			0.0%		ICU Level of Service	A
Analysis Period (min)			15			

Lanes, Volumes, Timings
206: East Street D & East Street B

TT (2041) - Scenario A - 35% Mode Share
Timing Plan: PM Peak Hour

	←	←	↑	↗	↘	↓
Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	↖		↖			↗
Traffic Volume (vph)	73	6	121	15	15	275
Future Volume (vph)	73	6	121	15	15	275
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		0.985			
Flt Protected	0.956					0.997
Satd. Flow (prot)	1763	0	1835	0	0	1857
Flt Permitted	0.956					0.997
Satd. Flow (perm)	1763	0	1835	0	0	1857
Link Speed (k/h)	50		50			50
Link Distance (m)	203.4		120.6			113.3
Travel Time (s)	14.6		8.7			8.2
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	73	6	121	15	15	275
Shared Lane Traffic (%)						
Lane Group Flow (vph)	79	0	136	0	0	290
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 37.0% ICU Level of Service A

Analysis Period (min) 15

HCM Unsignalized Intersection Capacity Analysis TT (2041) - Scenario A - 35% Mode Share
206: East Street D & East Street B

Timing Plan: PM Peak Hour

	←	←	↑	↗	↘	↓
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	↖		↖			↗
Traffic Volume (veh/h)	73	6	121	15	15	275
Future Volume (Veh/h)	73	6	121	15	15	275
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	73	6	121	15	15	275
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	434	128			136	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	434	128			136	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	87	99			99	
cM capacity (veh/h)	573	921			1448	

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	79	136	290
Volume Left	73	0	15
Volume Right	6	15	0
cSH	590	1700	1448
Volume to Capacity	0.13	0.08	0.01
Queue Length 95th (m)	3.5	0.0	0.2
Control Delay (s)	12.0	0.0	0.5
Lane LOS	B		A
Approach Delay (s)	12.0	0.0	0.5
Approach LOS	B		

Intersection Summary

Average Delay	2.2		
Intersection Capacity Utilization	37.0%	ICU Level of Service	A
Analysis Period (min)	15		

Lanes, Volumes, Timings
207: East Street E & East Street B

TT (2041) - Scenario A - 35% Mode Share
Timing Plan: PM Peak Hour

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	84	0	90	0	0	0	160	16	0	0	66	0
Future Volume (vph)	84	0	90	0	0	0	160	16	0	0	66	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		0.930										
Flt Protected		0.976						0.957				
Satd. Flow (prot)	0	1691	0	0	1863	0	0	1783	0	0	1863	0
Flt Permitted		0.976						0.957				
Satd. Flow (perm)	0	1691	0	0	1863	0	0	1783	0	0	1863	0
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		203.4			193.8			120.6			115.1	
Travel Time (s)		14.6			14.0			8.7			8.3	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	84	0	90	0	0	0	160	16	0	0	66	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	174	0	0	0	0	0	176	0	0	66	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 33.2% ICU Level of Service A

Analysis Period (min) 15

HCM Unsignalized Intersection Capacity Analysis TT (2041) - Scenario A - 35% Mode Share
207: East Street E & East Street B

Timing Plan: PM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	84	0	90	0	0	0	160	16	0	0	66	0
Future Volume (Veh/h)	84	0	90	0	0	0	160	16	0	0	66	0
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	84	0	90	0	0	0	160	16	0	0	66	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)	121											
pX, platoon unblocked												
vC, conflicting volume	402	402	66	492	402	16	66	16				
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	402	402	66	492	402	16	66	16				
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 %	84	100	91	100	100	100	90	100				
cM capacity (veh/h)	514	481	998	408	481	1063	1536	1602				
Direction, Lane #	EB 1	WB 1	NB 1	SB 1								
Volume Total	174	0	176	66								
Volume Left	84	0	160	0								
Volume Right	90	0	0	0								
cSH	686	1700	1536	1602								
Volume to Capacity	0.25	0.00	0.10	0.00								
Queue Length 95th (m)	7.5	0.0	2.6	0.0								
Control Delay (s)	12.0	0.0	7.0	0.0								
Lane LOS	B	A	A									
Approach Delay (s)	12.0	0.0	7.0	0.0								
Approach LOS	B	A										
Intersection Summary												
Average Delay				8.0								
Intersection Capacity Utilization				33.2%			ICU Level of Service			A		
Analysis Period (min)				15								

Lanes, Volumes, Timings
208: East Street F & East Street B

TT (2041) - Scenario A - 35% Mode Share
Timing Plan: PM Peak Hour

						
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	1.00	1.00	1.00
Fit						
Fit Protected						
Satd. Flow (prot)	1863	0	0	1863	1863	0
Fit Permitted						
Satd. Flow (perm)	1863	0	0	1863	1863	0
Link Speed (k/h)	50			50	50	
Link Distance (m)	193.8			120.1	115.6	
Travel Time (s)	14.0			8.6	8.3	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
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			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	25			15
Sign Control	Stop			Free	Free	
Intersection Summary						
Area Type:	Other					
Control Type:	Unsignalized					
Intersection Capacity Utilization	0.0%			ICU Level of Service A		
Analysis Period (min)	15					

HCM Unsignalized Intersection Capacity Analysis TT (2041) - Scenario A - 35% Mode Share
208: East Street F & East Street B

Timing Plan: PM Peak Hour

	EBL	EBR	NBL	NBT	SBT	SBR
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	↔			↔	↔	
Traffic Volume (veh/h)	0	0	0	0	0	0
Future Volume (Veh/h)	0	0	0	0	0	0
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	0	0	0	0	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	0	0	0			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	0	0	0			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	100	100	100			
cM capacity (veh/h)	1023	1085	1623			
Direction, Lane #	EB 1	NB 1	SB 1			
Volume Total	0	0	0			
Volume Left	0	0	0			
Volume Right	0	0	0			
cSH	1700	1700	1700			
Volume to Capacity	0.00	0.00	0.00			
Queue Length 95th (m)	0.0	0.0	0.0			
Control Delay (s)	0.0	0.0	0.0			
Lane LOS	A					
Approach Delay (s)	0.0	0.0	0.0			
Approach LOS	A					
Intersection Summary						
Average Delay		0.0				
Intersection Capacity Utilization		0.0%		ICU Level of Service		A
Analysis Period (min)		15				

Lanes, Volumes, Timings TT (2041) - Scenario A - 35% Mode Share
209: William Halton Parkway & East Street D Timing Plan: PM Peak Hour

	↖	→	←	↗	↘	↙
Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↕↕	↕↕	↗		↗
Traffic Volume (vph)	0	1195	2221	55	0	306
Future Volume (vph)	0	1195	2221	55	0	306
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (m)	0.0			50.0	0.0	0.0
Storage Lanes	0			1	0	1
Taper Length (m)	7.5				7.5	
Lane Util. Factor	1.00	0.95	0.95	1.00	1.00	1.00
Frt				0.850		0.865
Flt Protected						
Satd. Flow (prot)	0	3539	3539	1583	0	1611
Flt Permitted						
Satd. Flow (perm)	0	3539	3539	1583	0	1611
Link Speed (k/h)		50	50		50	
Link Distance (m)		205.0	201.5		120.6	
Travel Time (s)		14.8	14.5		8.7	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	0	1195	2221	55	0	306
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	1195	2221	55	0	306
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(m)		3.6	3.6		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	25	15
Sign Control		Free	Free		Stop	
Intersection Summary						
Area Type:	Other					
Control Type:	Unsignalized					
Intersection Capacity Utilization 87.0%	ICU Level of Service E					
Analysis Period (min) 15						

HCM Unsignalized Intersection Capacity Analysis TT (2041) - Scenario A - 35% Mode Share
209: William Halton Parkway & East Street D Timing Plan: PM Peak Hour

	↖	→	←	↗	↘	↙
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↕↕	↕↕	↗		↗
Traffic Volume (veh/h)	0	1195	2221	55	0	306
Future Volume (Veh/h)	0	1195	2221	55	0	306
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	0	1195	2221	55	0	306
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		None	None			
Median storage (veh)						
Upstream signal (m)		205	201			
pX, platoon unblocked	0.38				0.44	0.38
vC, conflicting volume	2276				2818	1110
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1095				1327	0
tC, single (s)	4.1				6.8	6.9
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	100				100	26
cM capacity (veh/h)	241				65	412
Direction, Lane #	EB 1	EB 2	WB 1	WB 2	WB 3	SB 1
Volume Total	598	598	1110	1110	55	306
Volume Left	0	0	0	0	0	0
Volume Right	0	0	0	0	55	306
cSH	1700	1700	1700	1700	1700	412
Volume to Capacity	0.35	0.35	0.65	0.65	0.03	0.74
Queue Length 95th (m)	0.0	0.0	0.0	0.0	0.0	44.8
Control Delay (s)	0.0	0.0	0.0	0.0	0.0	35.0
Lane LOS						E
Approach Delay (s)	0.0		0.0			35.0
Approach LOS						E
Intersection Summary						
Average Delay			2.8			
Intersection Capacity Utilization			87.0%		ICU Level of Service	E
Analysis Period (min)			15			

Lanes, Volumes, Timings

210: William Halton Parkway & East Street E

TT (2041) - Scenario A - 35% Mode Share

Timing Plan: PM Peak Hour

	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations	↰	↱	↱	↰	↰	↰
Traffic Volume (vph)	155	1027	2228	28	108	48
Future Volume (vph)	155	1027	2228	28	108	48
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (m)	90.0			50.0	0.0	0.0
Storage Lanes	1			1	1	0
Taper Length (m)	100.0				7.5	
Lane Util. Factor	1.00	*0.95	*0.95	1.00	1.00	1.00
Frt				0.850	0.958	
Flt Protected	0.950				0.967	
Satd. Flow (prot)	1770	3539	3539	1583	1726	0
Flt Permitted	0.053				0.967	
Satd. Flow (perm)	99	3539	3539	1583	1726	0
Right Turn on Red				Yes	Yes	
Satd. Flow (RTOR)				14	16	
Link Speed (k/h)		50	50		50	
Link Distance (m)		201.5	195.6		120.6	
Travel Time (s)		14.5	14.1		8.7	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	155	1027	2228	28	108	48
Shared Lane Traffic (%)						
Lane Group Flow (vph)	155	1027	2228	28	156	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
Number of Detectors	1	2	2	1	1	
Detector Template	Left	Thru	Thru	Right	Left	
Leading Detector (m)	2.0	10.0	10.0	2.0	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)	2.0	0.6	0.6	2.0	2.0	
Detector 1 Type	CI+Ex	CI+Ex	CI+Ex	CI+Ex	CI+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		CI+Ex	CI+Ex			
Detector 2 Channel						
Detector 2 Extend (s)		0.0	0.0			
Turn Type	pm+pt	NA	NA	Perm	Perm	
Protected Phases	7	4	8			
Permitted Phases	4			8	6	

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Lanes, Volumes, Timings

210: William Halton Parkway & East Street E

TT (2041) - Scenario A - 35% Mode Share

Timing Plan: PM Peak Hour

	EBL	EBT	WBT	WBR	SBL	SBR
Detector Phase	7	4	8	8	6	
Switch Phase						
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	
Minimum Split (s)	9.5	24.0	24.0	24.0	24.0	
Total Split (s)	17.6	95.6	78.0	78.0	24.4	
Total Split (%)	14.7%	79.7%	65.0%	65.0%	20.3%	
Maximum Green (s)	14.6	89.6	72.0	72.0	18.4	
Yellow Time (s)	3.0	4.0	4.0	4.0	4.0	
All-Red Time (s)	0.0	2.0	2.0	2.0	2.0	
Lost Time Adjust (s)	1.0	-2.0	-2.0	-2.0	-2.0	
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	
Lead/Lag	Lead		Lag	Lag		
Lead-Lag Optimize?	Yes		Yes	Yes		
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	
Flash Dont Walk (s)		11.0	11.0	11.0	11.0	
Pedestrian Calls (#/hr)		0	0	0	0	
Act Effct Green (s)	91.7	91.7	74.1	74.1	16.2	
Actuated g/C Ratio	0.79	0.79	0.64	0.64	0.14	
v/c Ratio	0.57	0.37	0.98	0.03	0.61	
Control Delay	30.5	4.2	37.1	5.6	52.6	
Queue Delay	0.0	0.0	0.0	0.0	0.0	
Total Delay	30.5	4.2	37.1	5.6	52.6	
LOS	C	A	D	A	D	
Approach Delay		7.7	36.7		52.6	
Approach LOS		A	D		D	

Intersection Summary

Area Type: Other

Cycle Length: 120

Actuated Cycle Length: 115.9

Natural Cycle: 100

Control Type: Semi Act-Uncoord

Maximum v/c Ratio: 0.98

Intersection Signal Delay: 27.9

Intersection LOS: C

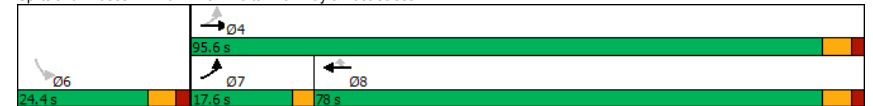
Intersection Capacity Utilization 89.1%

ICU Level of Service E

Analysis Period (min) 15

* User Entered Value

Splits and Phases: 210: William Halton Parkway & East Street E

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Queues
210: William Halton Parkway & East Street E

TT (2041) - Scenario A - 35% Mode Share
Timing Plan: PM Peak Hour

	EBL	EBT	WBT	WBR	SBL
Lane Group	EBL	EBT	WBT	WBR	SBL
Lane Group Flow (vph)	155	1027	2228	28	156
v/c Ratio	0.57	0.37	0.98	0.03	0.61
Control Delay	30.5	4.2	37.1	5.6	52.6
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	30.5	4.2	37.1	5.6	52.6
Queue Length 50th (m)	16.6	29.6	239.5	1.1	29.8
Queue Length 95th (m)	39.5	43.6	#330.0	4.7	51.0
Internal Link Dist (m)		177.5	171.6		96.6
Turn Bay Length (m)	90.0			50.0	
Base Capacity (vph)	274	2800	2262	1016	317
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	0.57	0.37	0.98	0.03	0.49

Intersection Summary

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

HCM Signalized Intersection Capacity Analysis
210: William Halton Parkway & East Street E

TT (2041) - Scenario A - 35% Mode Share
Timing Plan: PM Peak Hour

	EBL	EBT	WBT	WBR	SBL	SBR
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations	↰	↱	↰	↱	↰	↱
Traffic Volume (vph)	155	1027	2228	28	108	48
Future Volume (vph)	155	1027	2228	28	108	48
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	
Lane Util. Factor	1.00	*0.95	*0.95	1.00	1.00	
Frt	1.00	1.00	1.00	0.85	0.96	
Flt Protected	0.95	1.00	1.00	1.00	0.97	
Satd. Flow (prot)	1770	3539	3539	1583	1726	
Flt Permitted	0.05	1.00	1.00	1.00	0.97	
Satd. Flow (perm)	99	3539	3539	1583	1726	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	155	1027	2228	28	108	48
RTOR Reduction (vph)	0	0	0	5	14	0
Lane Group Flow (vph)	155	1027	2228	23	142	0
Turn Type	pm+pt	NA	NA	Perm	Perm	
Protected Phases	7	4	8			
Permitted Phases	4			8	6	
Actuated Green, G (s)	89.7	89.7	72.1	72.1	14.2	
Effective Green, g (s)	88.7	91.7	74.1	74.1	16.2	
Actuated g/C Ratio	0.77	0.79	0.64	0.64	0.14	
Clearance Time (s)	3.0	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)	271	2800	2262	1012	241	
v/s Ratio Prot	c0.07	0.29	c0.63			
v/s Ratio Perm	0.37			0.01	c0.08	
v/c Ratio	0.57	0.37	0.98	0.02	0.59	
Uniform Delay, d1	34.3	3.6	20.4	7.6	46.7	
Progression Factor	1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	8.5	0.4	15.7	0.0	3.8	
Delay (s)	42.8	3.9	36.1	7.7	50.6	
Level of Service	D	A	D	A	D	
Approach Delay (s)		9.0	35.7		50.6	
Approach LOS		A	D		D	

Intersection Summary

HCM 2000 Control Delay	27.6	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.89		
Actuated Cycle Length (s)	115.9	Sum of lost time (s)	14.0
Intersection Capacity Utilization	89.1%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

Lanes, Volumes, Timings
211: William Halton Parkway & East Street F

TT (2041) - Scenario A - 35% Mode Share
Timing Plan: PM Peak Hour

	EBL	EBT	WBT	WBR	SBL	SBR
Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations	↰	↱	↱		↰	
Traffic Volume (vph)	0	1135	2256	0	0	0
Future Volume (vph)	0	1135	2256	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (m)	90.0			0.0	0.0	0.0
Storage Lanes	1			0	1	0
Taper Length (m)	100.0				7.5	
Lane Util. Factor	1.00	0.95	0.95	0.95	1.00	1.00
Fr						
Fit Protected						
Satd. Flow (prot)	1863	3539	3539	0	1863	0
Fit Permitted						
Satd. Flow (perm)	1863	3539	3539	0	1863	0
Link Speed (k/h)		50	50		50	
Link Distance (m)		195.6	407.9		120.1	
Travel Time (s)		14.1	29.4		8.6	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	0	1135	2256	0	0	0
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	1135	2256	0	0	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 65.7%	ICU Level of Service C					
Analysis Period (min) 15						

HCM Unsignalized Intersection Capacity Analysis TT (2041) - Scenario A - 35% Mode Share
211: William Halton Parkway & East Street F

Timing Plan: PM Peak Hour

						
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	0	1135	2256	0	0	0
Future Volume (Veh/h)	0	1135	2256	0	0	0
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	0	1135	2256	0	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)	196					
pX, platoon unblocked					0.92	
vC, conflicting volume	2256				2824	1128
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	2256				2807	1128
tC, single (s)	4.1				6.8	6.9
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	100				100	100
cM capacity (veh/h)	224				13	198
Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	SB 1
Volume Total	0	568	568	1504	752	0
Volume Left	0	0	0	0	0	0
Volume Right	0	0	0	0	0	0
cSH	1700	1700	1700	1700	1700	1700
Volume to Capacity	0.00	0.33	0.33	0.88	0.44	0.00
Queue Length 95th (m)	0.0	0.0	0.0	0.0	0.0	0.0
Control Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0
Lane LOS	A					
Approach Delay (s)	0.0				0.0	
Approach LOS	A					
Intersection Summary						
Average Delay	0.0					
Intersection Capacity Utilization	65.7%			ICU Level of Service		C
Analysis Period (min)	15					

Lanes, Volumes, Timings

212: West Street A & Transit Station

TT (2041) - Scenario A - 35% Mode Share

Timing Plan: PM Peak Hour

	←	←	↑	↗	↘	↓
Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	↔		↔			↔
Traffic Volume (vph)	100	0	0	281	0	0
Future Volume (vph)	100	0	0	281	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt			0.865			
Flt Protected	0.950					
Satd. Flow (prot)	1770	0	1611	0	0	1863
Flt Permitted	0.950					
Satd. Flow (perm)	1770	0	1611	0	0	1863
Link Speed (k/h)	50		50			50
Link Distance (m)	216.0		234.7			101.9
Travel Time (s)	15.6		16.9			7.3
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	100	0	0	281	0	0
Shared Lane Traffic (%)						
Lane Group Flow (vph)	100	0	281	0	0	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(m)	7.2		0.0		Left	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 29.6%

ICU Level of Service A

Analysis Period (min) 15

HCM Unsignalized Intersection Capacity Analysis

212: West Street A & Transit Station

TT (2041) - Scenario A - 35% Mode Share

Timing Plan: PM Peak Hour

	←	←	↑	↗	↘	↓
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	↔		↔			↔
Traffic Volume (veh/h)	100	0	0	281	0	0
Future Volume (Veh/h)	100	0	0	281	0	0
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	100	0	0	281	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	140	140			281	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	140	140			281	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	88	100			100	
cM capacity (veh/h)	852	907			1282	

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	100	281	0
Volume Left	100	0	0
Volume Right	0	281	0
cSH	852	1700	1700
Volume to Capacity	0.12	0.17	0.00
Queue Length 95th (m)	3.0	0.0	0.0
Control Delay (s)	9.8	0.0	0.0
Lane LOS	A		
Approach Delay (s)	9.8	0.0	0.0
Approach LOS	A		

Intersection Summary

Average Delay 2.6

Intersection Capacity Utilization 29.6%

ICU Level of Service

A

Analysis Period (min) 15

Lanes, Volumes, Timings TT (2041) - Scenario A - 35% Mode Share
213: East Street A/West Street A & William Halton Parkway Timing Plan: PM Peak Hour

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑	↑		↑↑	↑			↑			↑
Traffic Volume (vph)	0	1049	11	0	2399	101	0	0	350	0	0	21
Future Volume (vph)	0	1049	11	0	2399	101	0	0	350	0	0	21
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	0.0		90.0	0.0		90.0	0.0		0.0	0.0		0.0
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	0.95	1.00	1.00	0.95	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt			0.850			0.850			0.865			0.865
Fit Protected												
Satd. Flow (prot)	0	3539	1583	0	3539	1583	0	0	1611	0	0	1611
Fit Permitted												
Satd. Flow (perm)	0	3539	1583	0	3539	1583	0	0	1611	0	0	1611
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		200.8			212.9			103.7			234.7	
Travel Time (s)		14.5			15.3			7.5			16.9	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	0	1049	11	0	2399	101	0	0	350	0	0	21
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	1049	11	0	2399	101	0	0	350	0	0	21
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 76.3%	ICU Level of Service D											
Analysis Period (min) 15												

HCM Unsignalized Intersection Capacity Analysis TT (2041) - Scenario A - 35% Mode Share
213: East Street A/West Street A & William Halton Parkway Timing Plan: PM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		 			 							
Traffic Volume (veh/h)	0	1049	11	0	2399	101	0	0	350	0	0	21
Future Volume (Veh/h)	0	1049	11	0	2399	101	0	0	350	0	0	21
Sign Control	Free			Free			Stop			Stop		
Grade	0%			0%			0%			0%		
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	0	1049	11	0	2399	101	0	0	350	0	0	21
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type	None				None							
Median storage (veh)												
Upstream signal (m)	201				213							
pX, platoon unblocked	0.73			0.84			0.81	0.81	0.84	0.81	0.81	0.73
vC, conflicting volume	2500			1060			2270	3549	524	3274	3459	1200
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	2319			691			1219	2790	53	2452	2680	548
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	58	100	100	94
cM capacity (veh/h)	156			756			104	15	842	8	18	352
Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	WB 3	NB 1	SB 1				
Volume Total	524	524	11	1200	1200	101	350	21				
Volume Left	0	0	0	0	0	0	0	0				
Volume Right	0	0	11	0	0	101	350	21				
cSH	1700	1700	1700	1700	1700	1700	842	352				
Volume to Capacity	0.31	0.31	0.01	0.71	0.71	0.06	0.42	0.06				
Queue Length 95th (m)	0.0	0.0	0.0	0.0	0.0	0.0	15.5	1.4				
Control Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	12.3	15.9				
Lane LOS							B	C				
Approach Delay (s)	0.0				0.0			12.3	15.9			
Approach LOS							B	C				
Intersection Summary												
Average Delay				1.2								
Intersection Capacity Utilization				76.3%			ICU Level of Service			D		
Analysis Period (min)				15								

Lanes, Volumes, Timings

TT (2041) - Scenario A - 35% Mode Share

214: West Street D & William Halton Parkway

Timing Plan: PM Peak Hour

	←	→	↖	↗	←	↖	↗	↖	↗	↖	↗	↖	↗
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations	↖	↖	↖	↖	↖	↖	↖	↖	↖	↖	↖	↖	
Traffic Volume (vph)	0	939	9	206	2126	88	37	0	12	116	0	9	
Future Volume (vph)	0	939	9	206	2126	88	37	0	12	116	0	9	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	
Storage Length (m)	90.0		90.0	90.0		90.0	50.0		0.0	50.0		0.0	
Storage Lanes	1		1	1		1	1		0	1		0	
Taper Length (m)	100.0			100.0			75.0			75.0			
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Frt			0.850			0.850		0.850			0.850		
Flt Protected				0.950			0.950			0.950			
Satd. Flow (prot)	1863	3539	1583	1770	3539	1583	1770	1583	0	1770	1583	0	
Flt Permitted				0.211			0.752			0.750			
Satd. Flow (perm)	1863	3539	1583	393	3539	1583	1401	1583	0	1397	1583	0	
Right Turn on Red			Yes			Yes		Yes			Yes		
Satd. Flow (RTOR)			73			88		501			73		
Link Speed (k/h)		50			50			50			50		
Link Distance (m)		573.3			200.8			99.4			133.2		
Travel Time (s)		41.3			14.5			7.2			9.6		
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Adj. Flow (vph)	0	939	9	206	2126	88	37	0	12	116	0	9	
Shared Lane Traffic (%)													
Lane Group Flow (vph)	0	939	9	206	2126	88	37	12	0	116	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)		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	2		
Detector Template	Left	Thru	Right	Left	Thru	Right	Left	Thru		Left	Thru		
Leading Detector (m)	2.0	10.0	2.0	2.0	10.0	2.0	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		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	2.0	0.6	2.0	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		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	pm+pt	NA	Perm	Perm	NA		Perm	NA		
Protected Phases		4		3	8			2			6		
Permitted Phases	4		4	8		8	2			6			

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Lanes, Volumes, Timings

TT (2041) - Scenario A - 35% Mode Share

214: West Street D & William Halton Parkway

Timing Plan: PM Peak Hour

	←	→	↖	↗	←	↖	↗	↖	↗	↖	↗	↖	↗
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Detector Phase	4	4	4	3	8	8	2	2		6	6		
Switch Phase													
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0		5.0	5.0		
Minimum Split (s)	24.0	24.0	24.0	9.5	24.0	24.0	24.0	24.0		29.0	29.0		
Total Split (s)	34.8	34.8	34.8	26.2	61.0	61.0	29.0	29.0		29.0	29.0		
Total Split (%)	38.7%	38.7%	38.7%	29.1%	67.8%	67.8%	32.2%	32.2%		32.2%	32.2%		
Maximum Green (s)	28.8	28.8	28.8	23.2	55.0	55.0	23.0	23.0		23.0	23.0		
Yellow Time (s)	4.0	4.0	4.0	3.0	4.0	4.0	4.0	4.0		4.0	4.0		
All-Red Time (s)	2.0	2.0	2.0	0.0	2.0	2.0	2.0	2.0		2.0	2.0		
Lost Time Adjust (s)	-2.0	-2.0	-2.0	1.0	-2.0	-2.0	-2.0	-2.0		1.0	-2.0		
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0		7.0	4.0		
Lead/Lag	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	None	None	Min	Min		Min	Min		
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 Effect Green (s)		40.8		53.0	53.0	53.0	13.7	13.7		10.6	13.7		
Actuated g/C Ratio		0.54	0.54	0.71	0.71	0.71	0.18	0.18		0.14	0.18		
v/c Ratio		0.49	0.01	0.48	0.85	0.08	0.14	0.02		0.59	0.03		
Control Delay		12.5	0.0	8.0	13.1	1.3	28.2	0.1		43.8	0.1		
Queue Delay		0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0		
Total Delay		12.5	0.0	8.0	13.1	1.3	28.2	0.1		43.8	0.1		
LOS		B	A	A	B	A	C	A		D	A		
Approach Delay		12.4			12.2		21.3				40.7		
Approach LOS		B			B		C				D		

Intersection Summary

Area Type: Other

Cycle Length: 90

Actuated Cycle Length: 74.9

Natural Cycle: 90

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 0.85

Intersection Signal Delay: 13.4

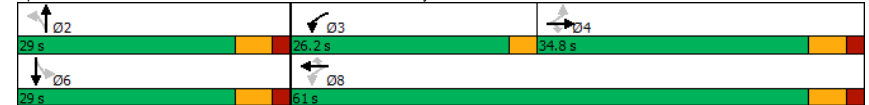
Intersection LOS: B

Intersection Capacity Utilization 86.0%

ICU Level of Service E

Analysis Period (min) 15

Splits and Phases: 214: West Street D & William Halton Parkway

I/O Trafalgar Oakville TIS
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Queues
214: West Street D & William Halton Parkway

TT (2041) - Scenario A - 35% Mode Share
Timing Plan: PM Peak Hour

	→	↘	↙	←	↖	↗	↘	↙	↓
Lane Group	EBT	EBR	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	939	9	206	2126	88	37	12	116	9
v/c Ratio	0.49	0.01	0.48	0.85	0.08	0.14	0.02	0.59	0.03
Control Delay	12.5	0.0	8.0	13.1	1.3	28.2	0.1	43.8	0.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	12.5	0.0	8.0	13.1	1.3	28.2	0.1	43.8	0.1
Queue Length 50th (m)	37.9	0.0	7.6	91.9	0.0	4.7	0.0	16.4	0.0
Queue Length 95th (m)	71.3	0.0	17.7	165.7	3.8	12.1	0.0	31.8	0.0
Internal Link Dist (m)	549.3			176.8			75.4		109.2
Turn Bay Length (m)		90.0	90.0		90.0	50.0		50.0	
Base Capacity (vph)	1928	895	694	2744	1247	476	869	418	586
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.49	0.01	0.30	0.77	0.07	0.08	0.01	0.28	0.02
Intersection Summary									

HCM Signalized Intersection Capacity Analysis
214: West Street D & William Halton Parkway

TT (2041) - Scenario A - 35% Mode Share
Timing Plan: PM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	939	9	206	2126	88	37	0	12	116	0	9
Future Volume (vph)	0	939	9	206	2126	88	37	0	12	116	0	9
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		7.0	4.0	
Lane Util. Factor		0.95	1.00	1.00	0.95	1.00	1.00	1.00		1.00	1.00	
Frt		1.00	0.85	1.00	1.00	0.85	1.00	0.85		1.00	0.85	
Flt Protected		1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)		3539	1583	1770	3539	1583	1770	1583		1770	1583	
Flt Permitted		1.00	1.00	0.21	1.00	1.00	0.75	1.00		0.75	1.00	
Satd. Flow (perm)		3539	1583	393	3539	1583	1400	1583		1397	1583	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	0	939	9	206	2126	88	37	0	12	116	0	9
RTOR Reduction (vph)	0	0	4	0	0	26	0	10	0	0	7	0
Lane Group Flow (vph)	0	939	5	206	2126	62	37	2	0	116	2	0
Turn Type	Perm	NA	Perm	pm+pt	NA	Perm	Perm	NA		Perm	NA	
Protected Phases		4		3	8		2	2			6	
Permitted Phases	4		4	8		8	2			6		
Actuated Green, G (s)	38.8	38.8	51.0	51.0	51.0	11.7	11.7			11.7	11.7	
Effective Green, g (s)	40.8	40.8	50.0	53.0	53.0	13.7	13.7			10.7	13.7	
Actuated g/C Ratio	0.55	0.55	0.67	0.71	0.71	0.18	0.18			0.14	0.18	
Clearance Time (s)	6.0	6.0	3.0	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	3.0	
Lane Grp Cap (vph)	1932	864	414	2510	1123	256	290			200	290	
v/s Ratio Prot	0.27		0.05	c0.60			0.00				0.00	
v/s Ratio Perm		0.00	0.28		0.04	0.03				c0.08		
v/c Ratio	0.49	0.01	0.50	0.85	0.06	0.14	0.01			0.58	0.01	
Uniform Delay, d1	10.5	7.7	6.4	7.9	3.3	25.6	24.9			29.9	24.9	
Progression Factor	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	0.9	2.8	0.0	0.3	0.0			4.0	0.0	
Delay (s)	10.7	7.7	7.3	10.7	3.3	25.8	25.0			33.9	24.9	
Level of Service	B	A	A	B	A	C	C			C	C	
Approach Delay (s)	10.6			10.2			25.6				33.3	
Approach LOS	B			B			C				C	
Intersection Summary												
HCM 2000 Control Delay		11.3		HCM 2000 Level of Service					B			
HCM 2000 Volume to Capacity ratio		0.81										
Actuated Cycle Length (s)		74.7		Sum of lost time (s)					12.0			
Intersection Capacity Utilization		86.0%		ICU Level of Service					E			
Analysis Period (min)		15										
c Critical Lane Group												

Lanes, Volumes, Timings

TT (2041) - Scenario A - 35% Mode Share

215: East Street A & West Street B

Timing Plan: PM Peak Hour

	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	164	84	0	80	57	14
Future Volume (vph)	164	84	0	80	57	14
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	0.954				0.973	
Flt Protected	0.968					
Satd. Flow (prot)	1720	0	0	1863	1812	0
Flt Permitted	0.968					
Satd. Flow (perm)	1720	0	0	1863	1812	0
Link Speed (k/h)	50			50	50	
Link Distance (m)	202.4			83.5	103.7	
Travel Time (s)	14.6			6.0	7.5	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	164	84	0	80	57	14
Shared Lane Traffic (%)						
Lane Group Flow (vph)	248	0	0	80	71	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
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	25			15
Sign Control	Stop			Free	Free	

Intersection Summary

Area Type: Other

Control Type: Unsignalized

Intersection Capacity Utilization 25.1%

ICU Level of Service A

Analysis Period (min) 15

HCM Unsignalized Intersection Capacity Analysis

TT (2041) - Scenario A - 35% Mode Share

215: East Street A & West Street B

Timing Plan: PM Peak Hour

	EBL	EBR	NBL	NBT	SBT	SBR
Movement						
Lane Configurations						
Traffic Volume (veh/h)	164	84	0	80	57	14
Future Volume (Veh/h)	164	84	0	80	57	14
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	164	84	0	80	57	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)						
pX, platoon unblocked						
vC, conflicting volume	144	64	71			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	144	64	71			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	81	92	100			
cM capacity (veh/h)	849	1000	1529			
Direction, Lane #	EB 1	NB 1	SB 1			
Volume Total	248	80	71			
Volume Left	164	0	0			
Volume Right	84	0	14			
cSH	895	1529	1700			
Volume to Capacity	0.28	0.00	0.04			
Queue Length 95th (m)	8.5	0.0	0.0			
Control Delay (s)	10.6	0.0	0.0			
Lane LOS	B					
Approach Delay (s)	10.6	0.0	0.0			
Approach LOS	B					
Intersection Summary						
Average Delay		6.6				
Intersection Capacity Utilization		25.1%		ICU Level of Service	A	
Analysis Period (min)		15				

Lanes, Volumes, Timings

TT (2041) - Scenario A - 35% Mode Share

216: West Street D & West Street B

Timing Plan: PM Peak Hour

	←	←	↑	↗	↘	↓
Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	↰		↱			↱
Traffic Volume (vph)	0	22	27	0	139	76
Future Volume (vph)	0	22	27	0	139	76
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.865					
Flt Protected						0.969
Satd. Flow (prot)	1611	0	1863	0	0	1805
Flt Permitted						0.969
Satd. Flow (perm)	1611	0	1863	0	0	1805
Link Speed (k/h)	50		50			50
Link Distance (m)	202.4		82.8			99.4
Travel Time (s)	14.6		6.0			7.2
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	0	22	27	0	139	76
Shared Lane Traffic (%)						
Lane Group Flow (vph)	22	0	27	0	0	215
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
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		15	25	
Sign Control	Stop		Free			Free

Intersection Summary

Area Type: Other

Control Type: Unsignalized

Intersection Capacity Utilization 28.4%

ICU Level of Service A

Analysis Period (min) 15

HCM Unsignalized Intersection Capacity Analysis

TT (2041) - Scenario A - 35% Mode Share

216: West Street D & West Street B

Timing Plan: PM Peak Hour

	←	←	↑	↗	↘	↓
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	↰		↱			↱
Traffic Volume (veh/h)	0	22	27	0	139	76
Future Volume (Veh/h)	0	22	27	0	139	76
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	0	22	27	0	139	76
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage (veh)						
Upstream signal (m)						99
pX, platoon unblocked	0.97					
vC, conflicting volume	381	27			27	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	351	27			27	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	100	98			91	
cM capacity (veh/h)	574	1048			1587	

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	22	27	215
Volume Left	0	0	139
Volume Right	22	0	0
cSH	1048	1700	1587
Volume to Capacity	0.02	0.02	0.09
Queue Length 95th (m)	0.5	0.0	2.2
Control Delay (s)	8.5	0.0	5.1
Lane LOS	A		A
Approach Delay (s)	8.5	0.0	5.1
Approach LOS	A		

Intersection Summary

Average Delay 4.8
 Intersection Capacity Utilization 28.4% ICU Level of Service A
 Analysis Period (min) 15

Lanes, Volumes, Timings
217: East Street C & East Street A

TT (2041) - Scenario A - 35% Mode Share
Timing Plan: PM Peak Hour

	EBL	EBT	WBT	WBR	SBL	SBR
Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↔	↔		↔	
Traffic Volume (vph)	0	41	63	164	111	4
Future Volume (vph)	0	41	63	164	111	4
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			0.902		0.995	
Flt Protected					0.954	
Satd. Flow (prot)	0	1863	1680	0	1768	0
Flt Permitted					0.954	
Satd. Flow (perm)	0	1863	1680	0	1768	0
Link Speed (k/h)		50	50		50	
Link Distance (m)		206.1	205.4		83.5	
Travel Time (s)		14.8	14.8		6.0	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	0	41	63	164	111	4
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	41	227	0	115	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 26.5%	ICU Level of Service A					
Analysis Period (min) 15						

HCM Unsignalized Intersection Capacity Analysis TT (2041) - Scenario A - 35% Mode Share
217: East Street C & East Street A

Timing Plan: PM Peak Hour

	EBL	EBT	WBT	WBR	SBL	SBR
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↔	↔		↔	
Traffic Volume (veh/h)	0	41	63	164	111	4
Future Volume (Veh/h)	0	41	63	164	111	4
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	0	41	63	164	111	4
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	227				186	145
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	227				186	145
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	100				86	100
cM capacity (veh/h)	1341				803	902
Direction, Lane #	EB 1	WB 1	SB 1			
Volume Total	41	227	115			
Volume Left	0	0	111			
Volume Right	0	164	4			
cSH	1341	1700	806			
Volume to Capacity	0.00	0.13	0.14			
Queue Length 95th (m)	0.0	0.0	3.7			
Control Delay (s)	0.0	0.0	10.2			
Lane LOS			B			
Approach Delay (s)	0.0	0.0	10.2			
Approach LOS			B			
Intersection Summary						
Average Delay			3.1			
Intersection Capacity Utilization 26.5%			ICU Level of Service		A	
Analysis Period (min)			15			

Lanes, Volumes, Timings

TT (2041) - Scenario A - 35% Mode Share

218: West Street D & East Street C

Timing Plan: PM Peak Hour

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔			↔			↔			↔	
Traffic Volume (vph)	0	0	0	14	0	49	0	13	5	61	15	0
Future Volume (vph)	0	0	0	14	0	49	0	13	5	61	15	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					0.895			0.962				
Flt Protected					0.989						0.961	
Satd. Flow (prot)	0	1863	0	0	1649	0	0	1792	0	0	1790	0
Flt Permitted					0.989						0.961	
Satd. Flow (perm)	0	1863	0	0	1649	0	0	1792	0	0	1790	0
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		164.8			206.1			68.2			82.8	
Travel Time (s)		11.9			14.8			4.9			6.0	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	0	0	0	14	0	49	0	13	5	61	15	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	0	0	0	63	0	0	18	0	0	76	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 21.3%

ICU Level of Service A

Analysis Period (min) 15

HCM Unsignalized Intersection Capacity Analysis

TT (2041) - Scenario A - 35% Mode Share

218: West Street D & East Street C

Timing Plan: PM Peak Hour

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔			↔			↔			↔	
Traffic Volume (veh/h)	0	0	0	14	0	49	0	13	5	61	15	0
Future Volume (Veh/h)	0	0	0	14	0	49	0	13	5	61	15	0
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	0	0	0	14	0	49	0	13	5	61	15	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	49			0			60	77	0	64	52	24
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	49			0			60	77	0	64	52	24
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			99			100	98	100	93	98	100
cM capacity (veh/h)	1558			1623			917	806	1085	908	832	1052
Direction, Lane #	EB 1	WB 1	NB 1	SB 1								
Volume Total	0	63	18	76								
Volume Left	0	14	0	61								
Volume Right	0	49	5	0								
cSH	1700	1623	868	892								
Volume to Capacity	0.00	0.01	0.02	0.09								
Queue Length 95th (m)	0.0	0.2	0.5	2.1								
Control Delay (s)	0.0	1.7	9.2	9.4								
Lane LOS	A	A	A	A								
Approach Delay (s)	0.0	1.7	9.2	9.4								
Approach LOS		A	A									
Intersection Summary												
Average Delay			6.3									
Intersection Capacity Utilization		21.3%										
ICU Level of Service										A		
Analysis Period (min)			15									

Lanes, Volumes, Timings

101: Trafalgar Rd & Lower Base Line

Total (2041) - Scenario B - 35% Mode Share

Timing Plan: AM Peak Hour

	↖	→	↗	↙	←	↖	↗	↙	↘	↖	↗	↙	↘
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations	↖	↖↗		↙	↖↗		↖	↖↗	↙	↖↗	↖↗	↙	
Traffic Volume (vph)	151	588	224	349	119	219	49	1959	284	502	2375	24	
Future Volume (vph)	151	588	224	349	119	219	49	1959	284	502	2375	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	0.423			0.165			0.085			0.083			
Satd. Flow (perm)	788	3394	0	307	3196	0	158	5085	1583	155	5085	1583	
Right Turn on Red			Yes			Yes			Yes			Yes	
Satd. Flow (RTOR)		41			238				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)	164	639	243	379	129	238	53	2129	309	546	2582	26	
Shared Lane Traffic (%)													
Lane Group Flow (vph)	164	882	0	379	367	0	53	2129	309	546	2582	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	CI+Ex	CI+Ex		CI+Ex	CI+Ex		CI+Ex	CI+Ex	CI+Ex	CI+Ex	CI+Ex	CI+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		CI+Ex			CI+Ex			CI+Ex			CI+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

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Lanes, Volumes, Timings

101: Trafalgar Rd & Lower Base Line

Total (2041) - Scenario B - 35% Mode Share

Timing Plan: AM Peak Hour

	↖	→	↗	↙	←	↖	↗	↙	↘	↖	↗	↙	↘
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		1.46	0.41		0.30	1.09	0.41	1.46	0.96	0.03	
Control Delay	32.5	158.8		256.6	15.4		16.7	86.2	7.5	250.6	38.3	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	32.5	158.8		256.6	15.4		16.7	86.2	7.5	250.6	38.3	0.0	
LOS	C	F		F	B		B	F	A	F	D	A	
Approach Delay		139.0			137.9			75.0			74.7		
Approach LOS		F			F			E			E		

Intersection Summary

Area Type: Other

Cycle Length: 120

Actuated Cycle Length: 120

Natural Cycle: 110

Control Type: Semi Act-Uncooord

Maximum v/c Ratio: 1.46

Intersection Signal Delay: 90.2

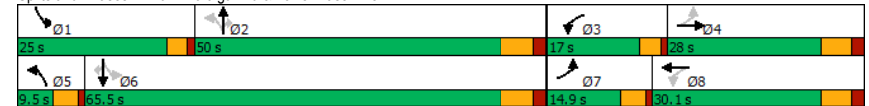
Intersection LOS: F

Intersection Capacity Utilization 121.7%

ICU Level of Service H

Analysis Period (min) 15

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

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Queues
101: Trafalgar Rd & Lower Base Line

Total (2041) - Scenario B - 35% Mode Share
Timing Plan: AM Peak Hour

	EBL	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	164	882	379	367	53	2129	309	546	2582	26
v/c Ratio	0.47	1.24	1.46	0.41	0.30	1.09	0.41	1.46	0.96	0.03
Control Delay	32.5	158.8	256.6	15.4	16.7	86.2	7.5	250.6	38.3	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	32.5	158.8	256.6	15.4	16.7	86.2	7.5	250.6	38.3	0.0
Queue Length 50th (m)	26.8	~130.3	~105.1	12.9	4.7	~204.4	8.7	~158.8	210.3	0.0
Queue Length 95th (m)	43.5	#169.9	#164.1	26.3	9.7	#233.1	28.6	#225.2	#253.8	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	0.46	1.24	1.46	0.41	0.30	1.09	0.41	1.46	0.96	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.

HCM Signalized Intersection Capacity Analysis
101: Trafalgar Rd & Lower Base Line

Total (2041) - Scenario B - 35% Mode Share
Timing Plan: AM Peak Hour

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰	↱	↱	↰	↱	↱	↰	↱	↱	↰	↱	↱
Traffic Volume (vph)	151	588	224	349	119	219	49	1959	284	502	2375	24
Future Volume (vph)	151	588	224	349	119	219	49	1959	284	502	2375	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	3393		1770	3195		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)	788	3393		308	3195		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)	164	639	243	379	129	238	53	2129	309	546	2582	26
RTOR Reduction (vph)	0	33	0	0	186	0	0	0	153	0	0	12
Lane Group Flow (vph)	164	849	0	379	181	0	53	2129	156	546	2582	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	
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		c0.16	0.06		0.02	0.42		c0.26	0.51	
v/s Ratio Perm	0.10			c0.30			0.13			0.10	c0.59	0.01
v/c Ratio	0.49	1.26		1.51	0.26		0.34	1.08	0.25	1.48	0.97	0.02
Uniform Delay, d1	32.7	48.5		36.7	39.2		27.2	37.0	25.1	39.2	27.8	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	129.5		249.0	0.4		1.3	45.6	1.0	231.8	11.5	0.0
Delay (s)	33.9	178.0		285.7	39.6		28.5	82.6	26.1	270.9	39.3	13.8
Level of Service	C	F		F	D		C	F	C	F	D	B
Approach Delay (s)		155.4			164.6			74.4			79.2	
Approach LOS		F			F			E			E	

Intersection Summary

HCM 2000 Control Delay	96.9	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	1.49		
Actuated Cycle Length (s)	120.9	Sum of lost time (s)	16.0
Intersection Capacity Utilization	121.7%	ICU Level of Service	H
Analysis Period (min)	15		

c Critical Lane Group

Lanes, Volumes, Timings

Total (2041) - Scenario B - 35% Mode Share

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

Timing Plan: AM Peak Hour

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	2	0	9	452	1	26	6	2261	0	0	2945	5
Future Volume (vph)	2	0	9	452	1	26	6	2261	0	0	2945	5
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	0.721		0.063					
Satd. Flow (perm)	0	1639	0	1327	1220	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)	2	0	10	491	1	28	7	2458	0	0	3201	5
Shared Lane Traffic (%)				50%		10%						
Lane Group Flow (vph)	0	12	0	245	250	25	7	2458	0	0	3201	5
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	Perm
Protected Phases	4	4			8		5	2			6	
Permitted Phases				8		8	2					6

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Lanes, Volumes, Timings

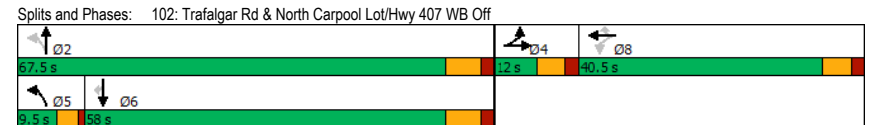
Total (2041) - Scenario B - 35% Mode Share

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

Timing Plan: AM Peak Hour

	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	
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			27.8	27.8	27.8	64.5	64.5			62.8	62.8
Actuated g/C Ratio	0.08			0.27	0.27	0.27	0.62	0.62			0.60	0.60
v/c Ratio	0.05			0.70	0.77	0.05	0.05	0.78			1.05	0.01
Control Delay	0.4			46.1	52.3	0.2	13.0	19.9			53.9	0.0
Queue Delay	0.0			0.0	0.0	0.0	0.0	0.0			0.0	0.0
Total Delay	0.4			46.1	52.3	0.2	13.0	19.9			53.9	0.0
LOS	A			D	D	A	B	B			D	A
Approach Delay	0.4				46.9			19.9			53.8	
Approach LOS	A				D			B			D	

Intersection Summary												
Area Type:	Other											
Cycle Length: 120												
Actuated Cycle Length: 104.6												
Natural Cycle: 140												
Control Type: Actuated-Uncoordinated												
Maximum v/c Ratio: 1.05												
Intersection Signal Delay: 39.6	Intersection LOS: D											
Intersection Capacity Utilization 83.0%	ICU Level of Service E											
Analysis Period (min) 15												



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Queues
102: Trafalgar Rd & North Carpool Lot/Hwy 407 WB Off
Total (2041) - Scenario B - 35% Mode Share
Timing Plan: AM Peak Hour

	→	↖	←	↗	↖	↑	↓	↗
Lane Group	EBT	WBL	WBT	WBR	NBL	NBT	SBT	SBR
Lane Group Flow (vph)	12	245	250	25	7	2458	3201	5
v/c Ratio	0.05	0.70	0.77	0.05	0.05	0.78	1.05	0.01
Control Delay	0.4	46.1	52.3	0.2	13.0	19.9	53.9	0.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	0.4	46.1	52.3	0.2	13.0	19.9	53.9	0.0
Queue Length 50th (m)	0.0	43.1	46.9	0.0	0.4	107.3	194.7	0.0
Queue Length 95th (m)	0.0	79.8	87.9	0.0	3.0	207.6	#388.9	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)	244	470	432	614	160	3134	3053	997
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	0.52	0.58	0.04	0.04	0.78	1.05	0.01

Intersection Summary

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

HCM Signalized Intersection Capacity Analysis
102: Trafalgar Rd & North Carpool Lot/Hwy 407 WB Off
Total (2041) - Scenario B - 35% Mode Share
Timing Plan: AM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	2	0	9	452	1	26	6	2261	0	0	2945	5
Future Volume (vph)	2	0	9	452	1	26	6	2261	0	0	2945	5
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	1613	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)		1640		1327	1220	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)	2	0	10	491	1	28	7	2458	0	0	3201	5
RTOR Reduction (vph)	0	12	0	0	1	19	0	0	0	0	0	2
Lane Group Flow (vph)	0	0	0	245	249	6	7	2458	0	0	3201	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)		2.1		25.8	25.8	25.8	64.8	64.8			59.8	59.8
Effective Green, g (s)		4.1		27.8	27.8	27.8	64.8	67.8			62.8	62.8
Actuated g/C Ratio		0.04		0.25	0.25	0.25	0.58	0.61			0.56	0.56
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		330	303	374	82	3086			2858	889
v/s Ratio Prot		c0.00					0.00	c0.48			c0.63	
v/s Ratio Perm				0.18	c0.20	0.00	0.05					0.00
v/c Ratio		0.01		0.74	0.82	0.02	0.09	0.80			1.12	0.00
Uniform Delay, d1		51.8		38.7	39.6	31.6	26.0	16.7			24.5	10.7
Progression Factor		1.00		1.00	1.00	1.00	1.00	1.00			1.00	1.00
Incremental Delay, d2		0.1		9.0	16.7	0.0	0.3	2.2			59.4	0.0
Delay (s)		51.9		47.6	56.3	31.7	26.3	18.9			83.8	10.7
Level of Service		D		D	E	C	C	B			F	B
Approach Delay (s)		51.9			51.0			19.0			83.7	
Approach LOS		D			D			B			F	

Intersection Summary

HCM 2000 Control Delay	55.2	HCM 2000 Level of Service	E
HCM 2000 Volume to Capacity ratio	1.02		
Actuated Cycle Length (s)	111.7	Sum of lost time (s)	18.0
Intersection Capacity Utilization	83.0%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

Lanes, Volumes, Timings
103: Trafalgar Rd & Hwy 407 EB Off

Total (2041) - Scenario B - 35% Mode Share
Timing Plan: AM Peak Hour

	EBL	EBR	NBL	NBT	SBT	SBR
Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	↔	↔		↑↑↑	↑↑↑	
Traffic Volume (vph)	140	387	0	2262	3145	0
Future Volume (vph)	140	387	0	2262	3145	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	0.927	0.850				
Frt Protected	0.975					
Satd. Flow (prot)	1684	1504	0	5085	5085	0
Frt Permitted	0.975					
Satd. Flow (perm)	1684	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)	152	421	0	2459	3418	0
Shared Lane Traffic (%)		34%				
Lane Group Flow (vph)	295	278	0	2459	3418	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	CI+Ex	CI+Ex		CI+Ex	CI+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				CI+Ex	CI+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	

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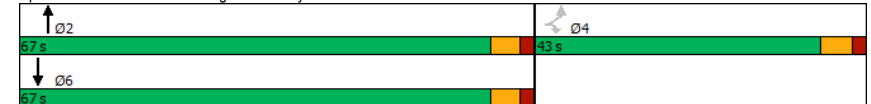
Lanes, Volumes, Timings
103: Trafalgar Rd & Hwy 407 EB Off

Total (2041) - Scenario B - 35% Mode Share
Timing Plan: AM Peak Hour

	EBL	EBR	NBL	NBT	SBT	SBR
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)	24.9	24.9		63.3	63.3	
Actuated g/C Ratio	0.26	0.26		0.66	0.66	
v/c Ratio	0.68	0.72		0.74	1.02	
Control Delay	40.1	43.0		13.7	39.8	
Queue Delay	0.0	0.0		0.0	0.0	
Total Delay	40.1	43.0		13.7	39.8	
LOS	D	D		B	D	
Approach Delay	41.5			13.7	39.8	
Approach LOS	D			B	D	

Intersection Summary	
Area Type:	Other
Cycle Length: 110	
Actuated Cycle Length: 96.2	
Natural Cycle: 90	
Control Type: Semi Act-Uncoord	
Maximum v/c Ratio: 1.02	
Intersection Signal Delay: 30.0	Intersection LOS: C
Intersection Capacity Utilization 83.4%	ICU Level of Service E
Analysis Period (min) 15	

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



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Queues
103: Trafalgar Rd & Hwy 407 EB Off

Total (2041) - Scenario B - 35% Mode Share
Timing Plan: AM Peak Hour

	EBL	EBR	NBT	SBT
Lane Group	EBL	EBR	NBT	SBT
Lane Group Flow (vph)	295	278	2459	3418
v/c Ratio	0.68	0.72	0.74	1.02
Control Delay	40.1	43.0	13.7	39.8
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	40.1	43.0	13.7	39.8
Queue Length 50th (m)	48.5	48.6	96.9	~225.1
Queue Length 95th (m)	74.1	75.8	158.4	#326.2
Internal Link Dist (m)	530.6		96.3	339.6
Turn Bay Length (m)				
Base Capacity (vph)	685	612	3345	3345
Starvation Cap Reductn	0	0	0	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.43	0.45	0.74	1.02

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.

HCM Signalized Intersection Capacity Analysis Total (2041) - Scenario B - 35% Mode Share
103: Trafalgar Rd & Hwy 407 EB Off Timing Plan: AM Peak Hour

	EBL	EBR	NBL	NBT	SBT	SBR
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	↔	↔	↔	↔	↔	↔
Traffic Volume (vph)	140	387	0	2262	3145	0
Future Volume (vph)	140	387	0	2262	3145	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)	1684	1504		5085	5085	
Flt Permitted	0.97	1.00		1.00	1.00	
Satd. Flow (perm)	1684	1504		5085	5085	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	152	421	0	2459	3418	0
RTOR Reduction (vph)	0	0	0	0	0	0
Lane Group Flow (vph)	295	278	0	2459	3418	0
Turn Type	Perm	Perm		NA	NA	
Protected Phases				2	6	
Permitted Phases	4	4				
Actuated Green, G (s)	22.9	22.9		61.3	61.3	
Effective Green, g (s)	24.9	24.9		63.3	63.3	
Actuated g/C Ratio	0.26	0.26		0.66	0.66	
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)	435	389		3345	3345	
v/s Ratio Prot				0.48	c0.67	
v/s Ratio Perm	0.18	c0.18				
v/c Ratio	0.68	0.71		0.74	1.02	
Uniform Delay, d1	32.0	32.4		10.9	16.5	
Progression Factor	1.00	1.00		1.00	1.00	
Incremental Delay, d2	4.2	6.1		1.5	21.4	
Delay (s)	36.2	38.5		12.4	37.8	
Level of Service	D	D		B	D	
Approach Delay (s)	37.3			12.4	37.8	
Approach LOS	D			B	D	

Intersection Summary

HCM 2000 Control Delay	28.1	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.96		
Actuated Cycle Length (s)	96.2	Sum of lost time (s)	10.0
Intersection Capacity Utilization	83.4%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

Lanes, Volumes, Timings
104: Trafalgar Rd & West Street A/East Street A

Total (2041) - Scenario B - 35% Mode Share

Timing Plan: AM Peak Hour

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰	→	↱	↰	→	↱	↰	→	↱	↰	→	↱
Traffic Volume (vph)	96	17	58	0	0	271	16	2714	290	497	2858	177
Future Volume (vph)	96	17	58	0	0	271	16	2714	290	497	2858	177
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		
Satd. Flow (prot)	1770	1863	1583	1863	1863	1583	1770	5085	1583	1770	5085	1583
Flt Permitted	0.757						0.055			0.052		
Satd. Flow (perm)	1410	1863	1583	1863	1863	1583	102	5085	1583	97	5085	1583
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			86			23			118			81
Link Speed (k/h)		50				50			80			80
Link Distance (m)		143.5				212.6			233.3			131.6
Travel Time (s)		10.3				15.3			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)	104	18	63	0	0	295	17	2950	315	540	3107	192
Shared Lane Traffic (%)												
Lane Group Flow (vph)	104	18	63	0	0	295	17	2950	315	540	3107	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	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		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

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Lanes, Volumes, Timings
104: Trafalgar Rd & West Street A/East Street A

Total (2041) - Scenario B - 35% Mode Share

Timing Plan: AM Peak Hour

	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)	24.0	24.0	24.0	24.0	24.0	40.0	9.5	76.0	76.0	40.0	106.5	106.5
Total Split (%)	17.1%	17.1%	17.1%	17.1%	17.1%	28.6%	6.8%	54.3%	54.3%	28.6%	76.1%	76.1%
Maximum Green (s)	18.0	18.0	18.0	18.0	18.0	36.0	5.5	70.0	70.0	36.0	100.5	100.5
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 Effect Green (s)	16.5	16.5	16.5			58.5	77.6	72.1	72.1	112.1	108.4	108.4
Actuated g/C Ratio	0.12	0.12	0.12			0.43	0.57	0.53	0.53	0.82	0.79	0.79
v/c Ratio	0.61	0.08	0.24			0.43	0.14	1.10	0.35	1.04	0.77	0.15
Control Delay	72.6	53.4	6.9			27.1	11.4	83.0	12.8	90.5	10.5	2.8
Queue Delay	0.0	0.0	0.0			0.0	0.0	0.2	0.0	0.0	1.1	0.0
Total Delay	72.6	53.4	6.9			27.1	11.4	83.2	12.8	90.5	11.6	2.8
LOS	E	D	A			C	B	F	B	F	B	A
Approach Delay		48.4			27.1			76.1			22.2	
Approach LOS		D			C			E			C	

Intersection Summary

Area Type: Other

Cycle Length: 140

Actuated Cycle Length: 136.6

Natural Cycle: 150

Control Type: Actuated-Uncoordinated

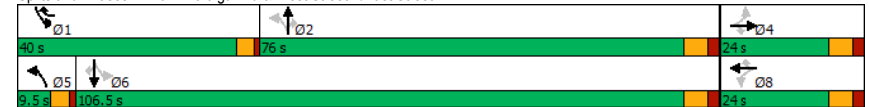
Maximum v/c Ratio: 1.10

Intersection Signal Delay: 46.3

Intersection Capacity Utilization 95.3%

Analysis Period (min) 15

Splits and Phases: 104: Trafalgar Rd & West Street A/East Street A



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Queues
104: Trafalgar Rd & West Street A/East Street A

Total (2041) - Scenario B - 35% Mode Share
Timing Plan: AM Peak Hour

	EBL	EBT	EBR	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group	EBL	EBT	EBR	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	104	18	63	295	17	2950	315	540	3107	192
v/c Ratio	0.61	0.08	0.24	0.43	0.14	1.10	0.35	1.04	0.77	0.15
Control Delay	72.6	53.4	6.9	27.1	11.4	83.0	12.8	90.5	10.5	2.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.2	0.0	0.0	1.1	0.0
Total Delay	72.6	53.4	6.9	27.1	11.4	83.2	12.8	90.5	11.6	2.8
Queue Length 50th (m)	26.7	4.3	0.0	49.8	1.0	~329.4	28.6	~141.2	118.4	4.9
Queue Length 95th (m)	45.9	11.7	7.3	73.7	2.8	#364.5	50.5	#216.7	210.4	14.7
Internal Link Dist (m)		119.5				209.3			107.6	
Turn Bay Length (m)	50.0		50.0	50.0	50.0		50.0	30.0		30.0
Base Capacity (vph)	206	273	305	691	124	2682	890	520	4034	1272
Starvation Cap Reductn	0	0	0	0	0	215	0	0	612	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	0.07	0.21	0.43	0.14	1.20	0.35	1.04	0.91	0.15

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.

HCM Signalized Intersection Capacity Analysis Total (2041) - Scenario B - 35% Mode Share
104: Trafalgar Rd & West Street A/East Street A

Timing Plan: AM Peak Hour

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰	↑	↱	↰	↑	↱	↰	↑	↱	↰	↑	↱
Traffic Volume (vph)	96	17	58	0	0	271	16	2714	290	497	2858	177
Future Volume (vph)	96	17	58	0	0	271	16	2714	290	497	2858	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			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
Flt	1.00	1.00	0.85			0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00			1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1770	1863	1583			1583	1770	5085	1583	1770	5085	1583
Flt Permitted	0.76	1.00	1.00			1.00	0.06	1.00	1.00	0.05	1.00	1.00
Satd. Flow (perm)	1410	1863	1583			1583	103	5085	1583	97	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)	104	18	63	0	0	295	17	2950	315	540	3107	192
RTOR Reduction (vph)	0	0	56	0	0	14	0	0	55	0	0	18
Lane Group Flow (vph)	104	18	7	0	0	281	17	2950	260	540	3107	174
Turn Type	Perm	NA	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)	14.5	14.5	14.5			50.5	74.6	72.5	72.5	112.5	106.4	106.4
Effective Green, g (s)	16.5	16.5	16.5			54.5	74.6	74.5	74.5	112.5	108.4	108.4
Actuated g/C Ratio	0.12	0.12	0.12			0.39	0.54	0.54	0.54	0.81	0.78	0.78
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)	167	221	187			620	80	2725	848	511	3965	1234
v/s Ratio Prot		0.01				0.12	0.00	c0.58		c0.27	0.61	
v/s Ratio Perm	c0.07		0.00			0.05	0.11		0.16	0.58		0.11
v/c Ratio	0.62	0.08	0.04			0.45	0.21	1.08	0.31	1.06	0.78	0.14
Uniform Delay, d1	58.3	54.5	54.2			31.2	25.9	32.2	17.9	46.6	8.7	3.8
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	7.0	0.2	0.1			0.5	1.3	44.4	0.9	55.6	1.6	0.2
Delay (s)	65.3	54.7	54.3			31.8	27.3	76.7	18.8	102.2	10.3	4.0
Level of Service	E	D	D			C	C	E	B	F	B	A
Approach Delay (s)		60.5			31.8			70.8			22.9	
Approach LOS		E			C			E			C	

Intersection Summary

HCM 2000 Control Delay	44.9	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	1.02		
Actuated Cycle Length (s)	139.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	95.3%	ICU Level of Service	F
Analysis Period (min)	15		

c Critical Lane Group

Lanes, Volumes, Timings
105: Trafalgar Rd & William Halton Parkway

Total (2041) - Scenario B - 35% Mode Share

Timing Plan: AM Peak Hour

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰	↱	↱	↰	↱	↱	↰	↱	↱	↰	↱	↱
Traffic Volume (vph)	510	948	206	198	515	243	409	2511	160	599	2128	189
Future Volume (vph)	510	948	206	198	515	243	409	2511	160	599	2128	189
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	0.168			0.129			0.077			0.071		
Satd. Flow (perm)	313	3539	1583	240	3539	1583	143	5085	1583	132	5085	1583
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			209			223			120			120
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		209.3			204.1			208.3			233.3	
Travel Time (s)		15.1			14.7			15.0			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)	554	1030	224	215	560	264	445	2729	174	651	2313	205
Shared Lane Traffic (%)												
Lane Group Flow (vph)	554	1030	224	215	560	264	445	2729	174	651	2313	205
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

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Lanes, Volumes, Timings
105: Trafalgar Rd & William Halton Parkway

Total (2041) - Scenario B - 35% Mode Share

Timing Plan: AM Peak Hour

	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)	23.0	47.0	47.0	14.0	38.0	38.0	21.0	59.0	59.0	25.0	63.0	63.0
Total Split (%)	15.9%	32.4%	32.4%	9.7%	26.2%	26.2%	14.5%	40.7%	40.7%	17.2%	43.4%	43.4%
Maximum Green (s)	19.0	40.0	40.0	10.0	31.0	31.0	17.0	52.1	52.1	21.0	56.1	56.1
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 Effect Green (s)	57.0	43.0	43.0	44.0	34.0	34.0	72.0	55.0	55.0	80.0	59.0	59.0
Actuated g/C Ratio	0.39	0.30	0.30	0.30	0.23	0.23	0.50	0.38	0.38	0.55	0.41	0.41
v/c Ratio	1.77	0.98	0.36	1.21	0.68	0.49	1.70	1.42	0.26	2.10	1.12	0.29
Control Delay	384.3	74.0	7.8	166.3	55.2	12.6	362.5	225.0	11.3	530.7	100.3	12.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	384.3	74.0	7.8	166.3	55.2	12.6	362.5	225.0	11.3	530.7	100.4	12.8
LOS	F	E	A	F	E	B	F	F	B	F	F	B
Approach Delay		160.9			67.4			232.1			183.1	
Approach LOS		F			E			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: 2.10

Intersection Signal Delay: 183.5

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



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Queues
105: Trafalgar Rd & William Halton Parkway

Total (2041) - Scenario B - 35% Mode Share
Timing Plan: AM Peak Hour

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	554	1030	224	215	560	264	445	2729	174	651	2313	205
v/c Ratio	1.77	0.98	0.36	1.21	0.68	0.49	1.70	1.42	0.26	2.10	1.12	0.29
Control Delay	384.3	74.0	7.8	166.3	55.2	12.6	362.5	225.0	11.3	530.7	100.3	12.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	384.3	74.0	7.8	166.3	55.2	12.6	362.5	225.0	11.3	530.7	100.4	12.8
Queue Length 50th (m)	~210.5	153.0	3.0	~56.6	76.6	9.2	~169.8	~379.8	9.8	~278.1	~275.2	15.0
Queue Length 95th (m)	#280.9	#197.7	22.4	#109.1	96.7	34.3	#235.9	#403.9	26.2	#351.4	#301.7	32.9
Internal Link Dist (m)		185.3			180.1			184.3			209.3	
Turn Bay Length (m)	100.0		100.0	100.0		150.0	150.0		75.0			
Base Capacity (vph)	313	1049	616	178	829	541	261	1928	674	310	2069	715
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	31	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	1.77	0.98	0.36	1.21	0.68	0.49	1.70	1.42	0.26	2.10	1.13	0.29

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.

HCM Signalized Intersection Capacity Analysis
105: Trafalgar Rd & William Halton Parkway

Total (2041) - Scenario B - 35% Mode Share
Timing Plan: AM Peak Hour

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰	↱	↱	↰	↱	↱	↰	↱	↱	↰	↱	↱
Traffic Volume (vph)	510	948	206	198	515	243	409	2511	160	599	2128	189
Future Volume (vph)	510	948	206	198	515	243	409	2511	160	599	2128	189
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	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00
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	0.17	1.00	1.00	0.13	1.00	1.00	0.08	1.00	1.00	0.07	1.00	1.00
Satd. Flow (perm)	312	3539	1583	240	3539	1583	143	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)	554	1030	224	215	560	264	445	2729	174	651	2313	205
RTOR Reduction (vph)	0	0	147	0	0	171	0	0	74	0	0	71
Lane Group Flow (vph)	554	1030	77	215	560	93	445	2729	100	651	2313	134
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)	54.0	40.0	40.0	41.0	31.0	31.0	69.1	52.1	52.1	77.1	56.1	56.1
Effective Green, g (s)	54.0	43.0	43.0	41.0	34.0	34.0	69.1	55.0	55.0	77.1	59.0	59.0
Actuated g/C Ratio	0.37	0.30	0.30	0.28	0.23	0.23	0.48	0.38	0.38	0.53	0.41	0.41
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)	307	1049	469	173	829	371	258	1928	600	307	2069	644
v/s Ratio Prot	c0.24	0.29		0.09	0.16		0.20	0.54		c0.31	0.45	
v/s Ratio Perm	c0.44		0.05	0.26		0.06	0.62		0.06	c0.82		0.08
v/c Ratio	1.80	0.98	0.16	1.24	0.68	0.25	1.72	1.42	0.17	2.12	1.12	0.21
Uniform Delay, d1	37.3	50.6	37.7	46.5	50.5	45.1	46.8	45.0	29.8	48.5	43.0	27.9
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	374.8	23.5	0.3	148.4	2.9	0.7	342.0	190.1	0.6	515.1	60.3	0.7
Delay (s)	412.0	74.1	38.1	195.0	53.3	45.9	388.8	235.1	30.4	563.6	103.3	28.6
Level of Service	F	E	D	F	D	D	F	F	C	F	F	C
Approach Delay (s)		173.2			80.8			244.9			193.0	
Approach LOS		F			F			F			F	

Intersection Summary

HCM 2000 Control Delay	195.3	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	1.98		
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			

Lanes, Volumes, Timings

Total (2041) - Scenario B - 35% Mode Share

106: Trafalgar Rd & Burnhamthorpe Rd/Burnhamthorpe Rd

Timing Plan: AM Peak Hour

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰	↱	↲	↰	↱	↲	↰	↱	↲	↰	↱	↲
Traffic Volume (vph)	461	491	80	83	157	253	56	2366	174	336	1625	180
Future Volume (vph)	461	491	80	83	157	253	56	2366	174	336	1625	180
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	1.00	1.00	1.00	1.00	1.00	1.00	0.91	1.00	1.00	0.91	1.00
Frt		0.979			0.908				0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1770	1824	0	1770	1691	0	1770	5085	1583	1770	5085	1583
Flt Permitted	0.140			0.154			0.073			0.066		
Satd. Flow (perm)	261	1824	0	287	1691	0	136	5085	1583	123	5085	1583
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		6			51				160			141
Link Speed (k/h)		60			60			80			80	
Link Distance (m)		828.7			989.6			1077.8			247.3	
Travel Time (s)		49.7			59.4			48.5			11.1	
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)	501	534	87	90	171	275	61	2572	189	365	1766	196
Shared Lane Traffic (%)												
Lane Group Flow (vph)	501	621	0	90	446	0	61	2572	189	365	1766	196
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)	26.0	46.5		9.5	30.0		9.6	63.0	63.0	21.0	74.4	74.4
Total Split (%)	18.6%	33.2%		6.8%	21.4%		6.9%	45.0%	45.0%	15.0%	53.1%	53.1%
Maximum Green (s)	21.5	40.5		5.0	24.0		5.1	57.0	57.0	17.0	68.4	68.4
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 Effect Green (s)	53.5	42.5		34.5	26.0		67.6	59.0	59.0	80.0	70.4	70.4
Actuated g/C Ratio	0.38	0.30		0.25	0.19		0.48	0.42	0.42	0.57	0.50	0.50
v/c Ratio	1.42	1.11		0.62	1.26		0.41	1.20	0.25	1.35	0.69	0.23
Control Delay	237.1	117.9		50.5	176.9		23.5	131.5	6.4	214.6	28.3	6.5
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	237.1	117.9		50.5	176.9		23.5	131.5	6.4	214.6	28.3	6.5

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Synchro 10 Report
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Lanes, Volumes, Timings

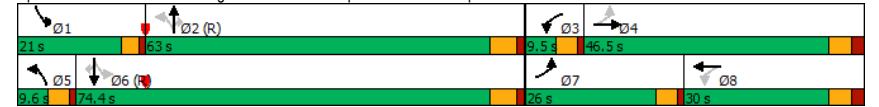
Total (2041) - Scenario B - 35% Mode Share

106: Trafalgar Rd & Burnhamthorpe Rd/Burnhamthorpe Rd

Timing Plan: AM Peak Hour

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
LOS	F	F		D	F		C	F	A	F	C	A
Approach Delay		171.1			155.7			120.8			55.7	
Approach LOS		F			F			F			E	
Intersection Summary												
Area Type:	Other											
Cycle Length: 140												
Actuated Cycle Length: 140												
Offset: 0 (0%), Referenced to phase 2:NBT and 6:SBTL, Start of Green												
Natural Cycle: 110												
Control Type: Pretimed												
Maximum v/c Ratio: 1.42												
Intersection Signal Delay: 109.6						Intersection LOS: F						
Intersection Capacity Utilization 127.0%						ICU Level of Service H						
Analysis Period (min) 15												

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



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Synchro 10 Report
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Queues
106: Trafalgar Rd & Burhamthorpe Rd/Burnhamthorpe Rd

Total (2041) - Scenario B - 35% Mode Share
Timing Plan: AM Peak Hour

	EBL	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	501	621	90	446	61	2572	189	365	1766	196
v/c Ratio	1.42	1.11	0.62	1.26	0.41	1.20	0.25	1.35	0.69	0.23
Control Delay	237.1	117.9	50.5	176.9	23.5	131.5	6.4	214.6	28.3	6.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	237.1	117.9	50.5	176.9	23.5	131.5	6.4	214.6	28.3	6.5
Queue Length 50th (m)	~168.9	~193.2	15.9	~140.7	6.9	~311.5	4.6	~114.9	131.4	7.6
Queue Length 95th (m)	#236.7	#265.1	#28.7	#206.2	13.6	#337.3	19.2	#176.5	147.9	20.6
Internal Link Dist (m)		804.7		965.6		1053.8			223.3	
Turn Bay Length (m)	30.0		15.0		60.0		60.0		60.0	
Base Capacity (vph)	353	557	144	355	148	2142	759	270	2557	866
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	1.42	1.11	0.63	1.26	0.41	1.20	0.25	1.35	0.69	0.23

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.

HCM Signalized Intersection Capacity Analysis
106: Trafalgar Rd & Burhamthorpe Rd/Burnhamthorpe Rd

Total (2041) - Scenario B - 35% Mode Share
Timing Plan: AM Peak Hour

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰	↱		↰	↱		↰	↱	↱	↰	↱	↱
Traffic Volume (vph)	461	491	80	83	157	253	56	2366	174	336	1625	180
Future Volume (vph)	461	491	80	83	157	253	56	2366	174	336	1625	180
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	1.00		1.00	1.00		1.00	0.91	1.00	1.00	0.91	1.00
Frt	1.00	0.98		1.00	0.91		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	1824		1770	1690		1770	5085	1583	1770	5085	1583
Flt Permitted	0.14	1.00		0.15	1.00		0.07	1.00	1.00	0.07	1.00	1.00
Satd. Flow (perm)	261	1824		287	1690		136	5085	1583	122	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)	501	534	87	90	171	275	61	2572	189	365	1766	196
RTOR Reduction (vph)	0	4	0	0	42	0	0	0	93	0	0	70
Lane Group Flow (vph)	501	617	0	90	404	0	61	2572	96	365	1766	126
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)	50.0	40.5		29.0	24.0		62.1	57.0	57.0	78.0	68.4	68.4
Effective Green, g (s)	52.0	42.5		33.0	26.0		66.1	59.0	59.0	78.0	70.4	70.4
Actuated g/C Ratio	0.37	0.30		0.24	0.19		0.47	0.42	0.42	0.56	0.50	0.50
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)	350	553		141	313		147	2142	667	268	2557	796
v/s Ratio Prot	c0.24	0.34		0.03	0.24		0.02	0.51		c0.17	0.35	
v/s Ratio Perm	c0.29			0.12			0.17		0.06	c0.59		0.08
v/c Ratio	1.43	1.12		0.64	1.29		0.41	1.20	0.14	1.36	0.69	0.16
Uniform Delay, d1	42.8	48.8		44.9	57.0		22.9	40.5	25.0	47.1	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	209.9	74.0		20.1	153.3		8.4	95.1	0.5	185.1	1.6	0.4
Delay (s)	252.7	122.8		65.0	210.3		31.3	135.6	25.4	232.2	28.1	19.2
Level of Service	F	F		E	F		C	F	C	F	C	B
Approach Delay (s)		180.8			185.9			126.0			59.3	
Approach LOS		F			F			F			E	

Intersection Summary

HCM 2000 Control Delay	116.9	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	1.42		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	14.5
Intersection Capacity Utilization	127.0%	ICU Level of Service	H
Analysis Period (min)	15		
c Critical Lane Group			

Lanes, Volumes, Timings
202: Trafalgar Rd & West Street C

Total (2041) - Scenario B - 35% Mode Share
Timing Plan: AM Peak Hour

	EBL	EBR	NBL	NBT	SBT	SBR
Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations		↗		↗↗↗	↗↗↗	↗
Traffic Volume (vph)	0	89	0	3081	2051	318
Future Volume (vph)	0	89	0	3081	2051	318
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (m)	0.0	0.0	0.0			90.0
Storage Lanes	0	1	0			1
Taper Length (m)	7.5		7.5			
Lane Util. Factor	1.00	1.00	1.00	0.91	0.91	1.00
Frt		0.865				0.850
Flt Protected						
Satd. Flow (prot)	0	1611	0	5085	5085	1583
Flt Permitted						
Satd. Flow (perm)	0	1611	0	5085	5085	1583
Link Speed (k/h)	50			50	50	
Link Distance (m)	202.4			247.3	208.3	
Travel Time (s)	14.6			17.8	15.0	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	97	0	3349	2229	346
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	97	0	3349	2229	346
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	0.0			3.6	3.6	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	4.8			4.8	4.8	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)	25	15	25			15
Sign Control	Stop			Free	Free	
Intersection Summary						
Area Type:	Other					
Control Type:	Unsignalized					
Intersection Capacity Utilization 62.9%	ICU Level of Service B					
Analysis Period (min) 15						

HCM Unsignalized Intersection Capacity Analysis Total (2041) - Scenario B - 35% Mode Share
202: Trafalgar Rd & West Street C

Timing Plan: AM Peak Hour

								
Movement	EBL	EBR	NBL	NBT	SBT	SBR		
Lane Configurations				  	  			
Traffic Volume (veh/h)	0	89	0	3081	2051	318		
Future Volume (Veh/h)	0	89	0	3081	2051	318		
Sign Control	Stop			Free	Free			
Grade	0%			0%	0%			
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92		
Hourly flow rate (vph)	0	97	0	3349	2229	346		
Pedestrians								
Lane Width (m)								
Walking Speed (m/s)								
Percent Blockage								
Right turn flare (veh)								
Median type				None	None			
Median storage (veh)								
Upstream signal (m)				247	208			
pX, platoon unblocked	0.79	0.61	0.61					
vC, conflicting volume	3345	743	2575					
vC1, stage 1 conf vol								
vC2, stage 2 conf vol								
vCu, unblocked vol	0	0	1354					
tC, single (s)	6.8	6.9	4.1					
tC, 2 stage (s)								
tF (s)	3.5	3.3	2.2					
p0 queue free %	100	85	100					
cM capacity (veh/h)	804	664	308					
Direction, Lane #	EB 1	NB 1	NB 2	NB 3	SB 1	SB 2	SB 3	SB 4
Volume Total	97	1116	1116	1116	743	743	743	346
Volume Left	0	0	0	0	0	0	0	0
Volume Right	97	0	0	0	0	0	0	346
cSH	664	1700	1700	1700	1700	1700	1700	1700
Volume to Capacity	0.15	0.66	0.66	0.66	0.44	0.44	0.44	0.20
Queue Length 95th (m)	3.8	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Control Delay (s)	11.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Lane LOS	B							
Approach Delay (s)	11.4	0.0				0.0		
Approach LOS	B							
Intersection Summary								
Average Delay				0.2				
Intersection Capacity Utilization	62.9%			ICU Level of Service			B	
Analysis Period (min)	15							

Lanes, Volumes, Timings
203: East Street D & East Street A

Total (2041) - Scenario B - 35% Mode Share
Timing Plan: AM Peak Hour

						
Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	140	390	0	85	117	0
Future Volume (vph)	140	390	0	85	117	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	0.901					
Flt Protected					0.950	
Satd. Flow (prot)	1678	0	0	1863	1770	0
Flt Permitted					0.950	
Satd. Flow (perm)	1678	0	0	1863	1770	0
Link Speed (k/h)	50			50	50	
Link Distance (m)	212.6			202.8	119.6	
Travel Time (s)	15.3			14.6	8.6	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	152	424	0	92	127	0
Shared Lane Traffic (%)						
Lane Group Flow (vph)	576	0	0	92	127	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
Sign Control	Free			Free	Stop	
Intersection Summary						
Area Type:	Other					
Control Type:	Unsignalized					
Intersection Capacity Utilization	44.5%			ICU Level of Service A		
Analysis Period (min)	15					

HCM Unsignalized Intersection Capacity Analysis Total (2041) - Scenario B - 35% Mode Share
203: East Street D & East Street A

Timing Plan: AM Peak Hour

	→	↖	↗	←	↖	↗
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↖			↖	↖	
Traffic Volume (veh/h)	140	390	0	85	117	0
Future Volume (Veh/h)	140	390	0	85	117	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)	152	424	0	92	127	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)	213					
pX, platoon unblocked			0.96		0.96	0.96
vC, conflicting volume			576		456	364
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			537		412	316
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			100		78	100
cM capacity (veh/h)			989		572	695
Direction, Lane #	EB 1	WB 1	NB 1			
Volume Total	576	92	127			
Volume Left	0	0	127			
Volume Right	424	0	0			
cSH	1700	989	572			
Volume to Capacity	0.34	0.00	0.22			
Queue Length 95th (m)	0.0	0.0	6.3			
Control Delay (s)	0.0	0.0	13.1			
Lane LOS			B			
Approach Delay (s)	0.0	0.0	13.1			
Approach LOS			B			
Intersection Summary						
Average Delay			2.1			
Intersection Capacity Utilization			44.5%		ICU Level of Service	A
Analysis Period (min)			15			

Lanes, Volumes, Timings
204: East Street E & East Street A

Total (2041) - Scenario B - 35% Mode Share
Timing Plan: AM Peak Hour

						
Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	0	47	0	0	93	0
Future Volume (vph)	0	47	0	0	93	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.865					
Flt Protected					0.950	
Satd. Flow (prot)	1611	0	0	1863	1770	0
Flt Permitted					0.950	
Satd. Flow (perm)	1611	0	0	1863	1770	0
Link Speed (k/h)	50			50	50	
Link Distance (m)	202.8			186.3	118.9	
Travel Time (s)	14.6			13.4	8.6	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	51	0	0	101	0
Shared Lane Traffic (%)						
Lane Group Flow (vph)	51	0	0	0	101	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	0.0			0.0	3.6	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	4.8			4.8	4.8	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)		15	25		25	15
Sign Control	Free			Free	Stop	
Intersection Summary						
Area Type:	Other					
Control Type:	Unsignalized					
Intersection Capacity Utilization	15.2%			ICU Level of Service A		
Analysis Period (min)	15					

HCM Unsignalized Intersection Capacity Analysis Total (2041) - Scenario B - 35% Mode Share
204: East Street E & East Street A

Timing Plan: AM Peak Hour

	→	↖	↗	←	↖	↗
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↖			↖	↖	
Traffic Volume (veh/h)	0	47	0	0	93	0
Future Volume (Veh/h)	0	47	0	0	93	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)	0	51	0	0	101	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			51		26	26
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			51		26	26
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			100		90	100
cM capacity (veh/h)			1555		990	1050
Direction, Lane #	EB 1	WB 1	NB 1			
Volume Total	51	0	101			
Volume Left	0	0	101			
Volume Right	51	0	0			
cSH	1700	1700	990			
Volume to Capacity	0.03	0.00	0.10			
Queue Length 95th (m)	0.0	0.0	2.5			
Control Delay (s)	0.0	0.0	9.0			
Lane LOS			A			
Approach Delay (s)	0.0	0.0	9.0			
Approach LOS			A			
Intersection Summary						
Average Delay			6.0			
Intersection Capacity Utilization			15.2%		ICU Level of Service	A
Analysis Period (min)			15			

Lanes, Volumes, Timings
205: East Street F & East Street A

Total (2041) - Scenario B - 35% Mode Share
Timing Plan: AM Peak Hour

						
Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
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	1.00	1.00	1.00
Frt						
Flt Protected						
Satd. Flow (prot)	1863	0	0	1863	1863	0
Flt Permitted						
Satd. Flow (perm)	1863	0	0	1863	1863	0
Link Speed (k/h)	50			50	50	
Link Distance (m)	186.3			197.2	119.9	
Travel Time (s)	13.4			14.2	8.6	
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)	0.0			0.0	3.6	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	4.8			4.8	4.8	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)		15	25		25	15
Sign Control	Stop			Free	Free	
Intersection Summary						
Area Type:	Other					
Control Type:	Unsignalized					
Intersection Capacity Utilization	0.0%			ICU Level of Service A		
Analysis Period (min)	15					

HCM Unsignalized Intersection Capacity Analysis Total (2041) - Scenario B - 35% Mode Share
205: East Street F & East Street A

Timing Plan: AM Peak Hour

Intersection Sign configuration not allowed in HCM analysis.

Lanes, Volumes, Timings
206: East Street D & East Street B

Total (2041) - Scenario B - 35% Mode Share
Timing Plan: AM Peak Hour

	←	←	↑	↗	↘	↓
Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	↔		↔			↔
Traffic Volume (vph)	57	24	63	11	12	228
Future Volume (vph)	57	24	63	11	12	228
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	0.960		0.980			
Flt Protected	0.966					0.998
Satd. Flow (prot)	1727	0	1825	0	0	1859
Flt Permitted	0.966					0.998
Satd. Flow (perm)	1727	0	1825	0	0	1859
Link Speed (k/h)	50		50			50
Link Distance (m)	200.4		111.4			119.6
Travel Time (s)	14.4		8.0			8.6
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	62	26	68	12	13	248
Shared Lane Traffic (%)						
Lane Group Flow (vph)	88	0	80	0	0	261
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 30.6% ICU Level of Service A

Analysis Period (min) 15

HCM Unsignalized Intersection Capacity Analysis Total (2041) - Scenario B - 35% Mode Share
206: East Street D & East Street B

Timing Plan: AM Peak Hour

	←	←	↑	↗	↘	↓
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	↔		↔			↔
Traffic Volume (veh/h)	57	24	63	11	12	228
Future Volume (Veh/h)	57	24	63	11	12	228
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)	62	26	68	12	13	248
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	348	74			80	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	348	74			80	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	90	97			99	
cM capacity (veh/h)	643	988			1518	

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	88	80	261
Volume Left	62	0	13
Volume Right	26	12	0
cSH	717	1700	1518
Volume to Capacity	0.12	0.05	0.01
Queue Length 95th (m)	3.1	0.0	0.2
Control Delay (s)	10.7	0.0	0.4
Lane LOS	B		A
Approach Delay (s)	10.7	0.0	0.4
Approach LOS	B		

Intersection Summary

Average Delay	2.5		
Intersection Capacity Utilization	30.6%	ICU Level of Service	A
Analysis Period (min)	15		

Lanes, Volumes, Timings
207: East Street E & East Street B

Total (2041) - Scenario B - 35% Mode Share
Timing Plan: AM Peak Hour

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔			↔			↔			↔	
Traffic Volume (vph)	36	0	55	0	0	0	210	8	0	0	47	0
Future Volume (vph)	36	0	55	0	0	0	210	8	0	0	47	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	0.918											
Flt Protected	0.981											
Satd. Flow (prot)	0	1678	0	0	1863	0	0	1777	0	0	1863	0
Flt Permitted	0.981											
Satd. Flow (perm)	0	1678	0	0	1863	0	0	1777	0	0	1863	0
Link Speed (k/h)	50											
Link Distance (m)	200.4											
Travel Time (s)	14.4											
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)	39	0	60	0	0	0	228	9	0	0	51	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	99	0	0	0	0	0	237	0	0	51	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											
Link Offset(m)	0.0											
Crosswalk Width(m)	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											

Intersection Summary

Area Type: Other

Control Type: Unsignalized

Intersection Capacity Utilization 30.8% ICU Level of Service A

Analysis Period (min) 15

HCM Unsignalized Intersection Capacity Analysis Total (2041) - Scenario B - 35% Mode Share
207: East Street E & East Street B

Timing Plan: AM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	36	0	55	0	0	0	210	8	0	0	47	0
Future Volume (Veh/h)	36	0	55	0	0	0	210	8	0	0	47	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)	39	0	60	0	0	0	228	9	0	0	51	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)	114											
pX, platoon unblocked												
vC, conflicting volume	516	516	51	576	516	9	51	9				
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	516	516	51	576	516	9	51	9				
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 %	91	100	94	100	100	100	85	100				
cM capacity (veh/h)	417	395	1017	358	395	1073	1555	1611				
Direction, Lane #	EB 1	WB 1	NB 1	SB 1								
Volume Total	99	0	237	51								
Volume Left	39	0	228	0								
Volume Right	60	0	0	0								
cSH	649	1700	1555	1611								
Volume to Capacity	0.15	0.00	0.15	0.00								
Queue Length 95th (m)	4.0	0.0	3.9	0.0								
Control Delay (s)	11.5	0.0	7.5	0.0								
Lane LOS	B	A	A									
Approach Delay (s)	11.5	0.0	7.5	0.0								
Approach LOS	B	A										
Intersection Summary												
Average Delay				7.5								
Intersection Capacity Utilization				30.8%	ICU Level of Service				A			
Analysis Period (min)				15								

Lanes, Volumes, Timings
208: East Street F & East Street B

Total (2041) - Scenario B - 35% Mode Share
Timing Plan: AM Peak Hour

						
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	1.00	1.00	1.00
Fit						
Fit Protected						
Satd. Flow (prot)	1863	0	0	1863	1863	0
Fit Permitted						
Satd. Flow (perm)	1863	0	0	1863	1863	0
Link Speed (k/h)	50			50	50	
Link Distance (m)	185.7			112.6	119.9	
Travel Time (s)	13.4			8.1	8.6	
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			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	25			15
Sign Control	Stop			Free	Free	
Intersection Summary						
Area Type:	Other					
Control Type:	Unsignalized					
Intersection Capacity Utilization	0.0%			ICU Level of Service A		
Analysis Period (min)	15					

HCM Unsignalized Intersection Capacity Analysis Total (2041) - Scenario B - 35% Mode Share
208: East Street F & East Street B

Timing Plan: AM Peak Hour

	EBL	EBR	NBL	NBT	SBT	SBR
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	↔	↔	↔	↔	↔	↔
Traffic Volume (veh/h)	0	0	0	0	0	0
Future Volume (Veh/h)	0	0	0	0	0	0
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	0	0	0	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	0	0	0			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	0	0	0			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	100	100	100			
cM capacity (veh/h)	1023	1085	1623			
Direction, Lane #	EB 1	NB 1	SB 1			
Volume Total	0	0	0			
Volume Left	0	0	0			
Volume Right	0	0	0			
cSH	1700	1700	1700			
Volume to Capacity	0.00	0.00	0.00			
Queue Length 95th (m)	0.0	0.0	0.0			
Control Delay (s)	0.0	0.0	0.0			
Lane LOS	A					
Approach Delay (s)	0.0	0.0	0.0			
Approach LOS	A					
Intersection Summary						
Average Delay		0.0				
Intersection Capacity Utilization		0.0%		ICU Level of Service	A	
Analysis Period (min)		15				

Lanes, Volumes, Timings
209: William Halton Parkway & East Street D

Total (2041) - Scenario B - 35% Mode Share
Timing Plan: AM Peak Hour

						
Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑↑	↑↑	↑		↑
Traffic Volume (vph)	0	1731	800	31	0	155
Future Volume (vph)	0	1731	800	31	0	155
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (m)	0.0			50.0	0.0	0.0
Storage Lanes	0			1	0	1
Taper Length (m)	7.5				7.5	
Lane Util. Factor	1.00	0.95	0.95	1.00	1.00	1.00
Frt				0.850		0.865
Flt Protected						
Satd. Flow (prot)	0	3539	3539	1583	0	1611
Flt Permitted						
Satd. Flow (perm)	0	3539	3539	1583	0	1611
Link Speed (k/h)		50	50		50	
Link Distance (m)		204.1	194.7		111.4	
Travel Time (s)		14.7	14.0		8.0	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	1882	870	34	0	168
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	1882	870	34	0	168
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(m)		3.6	3.6		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	25	15
Sign Control		Free	Free		Stop	
Intersection Summary						
Area Type:	Other					
Control Type:	Unsignalized					
Intersection Capacity Utilization	51.2%			ICU Level of Service A		
Analysis Period (min)	15					

HCM Unsignalized Intersection Capacity Analysis Total (2041) - Scenario B - 35% Mode Share
209: William Halton Parkway & East Street D

Timing Plan: AM Peak Hour

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑↑	↑↑	↑		↑
Traffic Volume (veh/h)	0	1731	800	31	0	155
Future Volume (Veh/h)	0	1731	800	31	0	155
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)	0	1882	870	34	0	168
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		None	None			
Median storage (veh)						
Upstream signal (m)		204	195			
pX, platoon unblocked	0.83				0.80	0.83
vC, conflicting volume	904				1811	435
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	488				581	0
tC, single (s)	4.1				6.8	6.9
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	100				100	81
cM capacity (veh/h)	894				356	905
Direction, Lane #	EB 1	EB 2	WB 1	WB 2	WB 3	SB 1
Volume Total	941	941	435	435	34	168
Volume Left	0	0	0	0	0	0
Volume Right	0	0	0	0	34	168
cSH	1700	1700	1700	1700	1700	905
Volume to Capacity	0.55	0.55	0.26	0.26	0.02	0.19
Queue Length 95th (m)	0.0	0.0	0.0	0.0	0.0	5.1
Control Delay (s)	0.0	0.0	0.0	0.0	0.0	9.9
Lane LOS						A
Approach Delay (s)	0.0		0.0			9.9
Approach LOS						A
Intersection Summary						
Average Delay			0.6			
Intersection Capacity Utilization			51.2%		ICU Level of Service	A
Analysis Period (min)			15			

Lanes, Volumes, Timings

210: William Halton Parkway & East Street E

Total (2041) - Scenario B - 35% Mode Share

Timing Plan: AM Peak Hour

	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations	↰	↱	↱	↰	↰	↰
Traffic Volume (vph)	228	1454	807	14	78	24
Future Volume (vph)	228	1454	807	14	78	24
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	0.968	
Flt Protected	0.950				0.963	
Satd. Flow (prot)	1770	3539	3539	1583	1736	0
Flt Permitted	0.177				0.963	
Satd. Flow (perm)	330	3539	3539	1583	1736	0
Right Turn on Red				Yes	Yes	
Satd. Flow (RTOR)				15	26	
Link Speed (k/h)		50	50		50	
Link Distance (m)		194.7	188.1		114.3	
Travel Time (s)		14.0	13.5		8.2	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	248	1580	877	15	85	26
Shared Lane Traffic (%)						
Lane Group Flow (vph)	248	1580	877	15	111	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
Number of Detectors	1	2	2	1	1	
Detector Template	Left	Thru	Thru	Right	Left	
Leading Detector (m)	2.0	10.0	10.0	2.0	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)	2.0	0.6	0.6	2.0	2.0	
Detector 1 Type	CI+Ex	CI+Ex	CI+Ex	CI+Ex	CI+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		CI+Ex	CI+Ex			
Detector 2 Channel						
Detector 2 Extend (s)		0.0	0.0			
Turn Type	pm+pt	NA	NA	Perm	Prot	
Protected Phases	7	4	8		6	
Permitted Phases	4			8		

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Lanes, Volumes, Timings

210: William Halton Parkway & East Street E

Total (2041) - Scenario B - 35% Mode Share

Timing Plan: AM Peak Hour

	EBL	EBT	WBT	WBR	SBL	SBR
Detector Phase	7	4	8	8	6	
Switch Phase						
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	
Minimum Split (s)	9.5	24.0	24.0	24.0	24.0	
Total Split (s)	12.0	36.0	24.0	24.0	24.0	
Total Split (%)	20.0%	60.0%	40.0%	40.0%	40.0%	
Maximum Green (s)	7.5	30.0	18.0	18.0	18.0	
Yellow Time (s)	3.5	4.0	4.0	4.0	4.0	
All-Red Time (s)	1.0	2.0	2.0	2.0	2.0	
Lost Time Adjust (s)	1.0	-2.0	-2.0	-2.0	-2.0	
Total Lost Time (s)	5.5	4.0	4.0	4.0	4.0	
Lead/Lag	Lead		Lag	Lag		
Lead-Lag Optimize?	Yes		Yes	Yes		
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	
Recall Mode	None	Max	Max	Max	None	
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 Effect Green (s)	33.3	35.6	22.8	22.8	10.0	
Actuated g/C Ratio	0.66	0.71	0.45	0.45	0.20	
v/c Ratio	0.62	0.63	0.55	0.02	0.30	
Control Delay	14.3	7.2	13.2	5.8	15.9	
Queue Delay	0.0	0.0	0.0	0.0	0.0	
Total Delay	14.3	7.2	13.2	5.8	15.9	
LOS	B	A	B	A	B	
Approach Delay		8.2	13.1		15.9	
Approach LOS		A	B		B	

Intersection Summary

Area Type: Other

Cycle Length: 60

Actuated Cycle Length: 50.4

Natural Cycle: 60

Control Type: Semi Act-Uncoord

Maximum v/c Ratio: 0.63

Intersection Signal Delay: 10.0

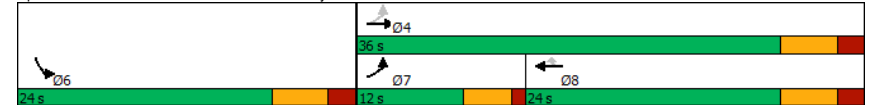
Intersection LOS: B

Intersection Capacity Utilization 52.6%

ICU Level of Service A

Analysis Period (min) 15

Splits and Phases: 210: William Halton Parkway & East Street E

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Queues
210: William Halton Parkway & East Street E

Total (2041) - Scenario B - 35% Mode Share
Timing Plan: AM Peak Hour

	EBL	EBT	WBT	WBR	SBL
Lane Group	EBL	EBT	WBT	WBR	SBL
Lane Group Flow (vph)	248	1580	877	15	111
v/c Ratio	0.62	0.63	0.55	0.02	0.30
Control Delay	14.3	7.2	13.2	5.8	15.9
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	14.3	7.2	13.2	5.8	15.9
Queue Length 50th (m)	8.0	37.0	30.5	0.0	6.3
Queue Length 95th (m)	#31.5	68.2	50.5	2.7	16.3
Internal Link Dist (m)		170.7	164.1		90.3
Turn Bay Length (m)	50.0		50.0		
Base Capacity (vph)	404	2499	1600	724	705
Starvation Cap Reductn	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.61	0.63	0.55	0.02	0.16

Intersection Summary

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

HCM Signalized Intersection Capacity Analysis
210: William Halton Parkway & East Street E

Total (2041) - Scenario B - 35% Mode Share
Timing Plan: AM Peak Hour

	EBL	EBT	WBT	WBR	SBL	SBR
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations	↰	↱	↰	↱	↰	↱
Traffic Volume (vph)	228	1454	807	14	78	24
Future Volume (vph)	228	1454	807	14	78	24
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.5	4.0	4.0	4.0	4.0	
Lane Util. Factor	1.00	0.95	0.95	1.00	1.00	
Frt	1.00	1.00	1.00	0.85	0.97	
Flt Protected	0.95	1.00	1.00	1.00	0.96	
Satd. Flow (prot)	1770	3539	3539	1583	1737	
Flt Permitted	0.18	1.00	1.00	1.00	0.96	
Satd. Flow (perm)	331	3539	3539	1583	1737	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	248	1580	877	15	85	26
RTOR Reduction (vph)	0	0	0	8	22	0
Lane Group Flow (vph)	248	1580	877	7	89	0
Turn Type	pm+pt	NA	NA	Perm	Prot	
Protected Phases	7	4	8		6	
Permitted Phases	4			8		
Actuated Green, G (s)	32.8	32.8	20.8	20.8	6.8	
Effective Green, g (s)	31.8	34.8	22.8	22.8	8.8	
Actuated g/C Ratio	0.62	0.67	0.44	0.44	0.17	
Clearance Time (s)	4.5	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)	385	2386	1563	699	296	
v/s Ratio Prot	0.08	c0.45	0.25		c0.05	
v/s Ratio Perm	0.32			0.00		
v/c Ratio	0.64	0.66	0.56	0.01	0.30	
Uniform Delay, d1	6.6	4.9	10.7	8.1	18.7	
Progression Factor	1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	3.7	1.5	1.5	0.0	0.6	
Delay (s)	10.2	6.4	12.1	8.1	19.3	
Level of Service	B	A	B	A	B	
Approach Delay (s)		6.9	12.1		19.3	
Approach LOS		A	B		B	

Intersection Summary

HCM 2000 Control Delay	9.0	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.67		
Actuated Cycle Length (s)	51.6	Sum of lost time (s)	13.5
Intersection Capacity Utilization	52.6%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Lanes, Volumes, Timings
211: William Halton Parkway & East Street F

Total (2041) - Scenario B - 35% Mode Share

Timing Plan: AM Peak Hour

						
Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		 	 		 	
Traffic Volume (vph)	0	1532	821	0	0	0
Future Volume (vph)	0	1532	821	0	0	0
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
Fr						
Flt Protected						
Satd. Flow (prot)	1863	3539	3539	1863	1863	0
Flt Permitted						
Satd. Flow (perm)	1863	3539	3539	1863	1863	0
Link Speed (k/h)		50	50		50	
Link Distance (m)		188.1	219.2		112.6	
Travel Time (s)		13.5	15.8		8.1	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	1665	892	0	0	0
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	1665	892	0	0	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		45.7%		ICU Level of Service A		
Analysis Period (min)		15				

HCM Unsignalized Intersection Capacity Analysis Total (2041) - Scenario B - 35% Mode Share
211: William Halton Parkway & East Street F

Timing Plan: AM Peak Hour

							
Movement	EBL	EBT	WBT	WBR	SBL	SBR	
Lane Configurations		 	 		 		
Traffic Volume (veh/h)	0	1532	821	0	0	0	
Future Volume (Veh/h)	0	1532	821	0	0	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)	0	1665	892	0	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)		188					
pX, platoon unblocked					0.69		
vC, conflicting volume	892				1724	446	
vC1, stage 1 conf vol							
vC2, stage 2 conf vol							
vCu, unblocked vol	892				1145	446	
tC, single (s)	4.1				6.8	6.9	
tC, 2 stage (s)							
tF (s)	2.2				3.5	3.3	
p0 queue free %	100				100	100	
cM capacity (veh/h)	756				133	560	
Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	WB 3	SB 1
Volume Total	0	832	832	446	446	0	0
Volume Left	0	0	0	0	0	0	0
Volume Right	0	0	0	0	0	0	0
cSH	1700	1700	1700	1700	1700	1700	1700
Volume to Capacity	0.00	0.49	0.49	0.26	0.26	0.00	0.00
Queue Length 95th (m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Control Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Lane LOS							A
Approach Delay (s)	0.0			0.0			0.0
Approach LOS							A
Intersection Summary							
Average Delay			0.0				
Intersection Capacity Utilization			45.7%			ICU Level of Service	A
Analysis Period (min)			15				

Lanes, Volumes, Timings

212: West Street A & Transit Station

Total (2041) - Scenario B - 35% Mode Share

Timing Plan: AM Peak Hour

	←	←	↑	↗	↘	↓
Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	↔		↔			↔
Traffic Volume (vph)	168	0	0	135	0	0
Future Volume (vph)	168	0	0	135	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt			0.865			
Flt Protected	0.950					
Satd. Flow (prot)	1770	0	1611	0	0	1863
Flt Permitted	0.950					
Satd. Flow (perm)	1770	0	1611	0	0	1863
Link Speed (k/h)	50		50			50
Link Distance (m)	70.0		239.0			98.7
Travel Time (s)	5.0		17.2			7.1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	183	0	0	147	0	0
Shared Lane Traffic (%)						
Lane Group Flow (vph)	183	0	147	0	0	0
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 24.3%

ICU Level of Service A

Analysis Period (min) 15

HCM Unsignalized Intersection Capacity Analysis Total (2041) - Scenario B - 35% Mode Share

212: West Street A & Transit Station

Timing Plan: AM Peak Hour

	←	←	↑	↗	↘	↓
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	↔		↔			↔
Traffic Volume (veh/h)	168	0	0	135	0	0
Future Volume (Veh/h)	168	0	0	135	0	0
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)	183	0	0	147	0	0
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None					
Median storage (veh)						
Upstream signal (m)	213					
pX, platoon unblocked						
vC, conflicting volume	0		366	0	513	366
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	0		366	0	513	366
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 %	89		100	86	100	100
cM capacity (veh/h)	1623		499	1085	373	499

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	183	147	0
Volume Left	183	0	0
Volume Right	0	147	0
cSH	1623	1085	1700
Volume to Capacity	0.11	0.14	0.00
Queue Length 95th (m)	2.9	3.5	0.0
Control Delay (s)	7.5	8.8	0.0
Lane LOS	A	A	A
Approach Delay (s)	7.5	8.8	0.0
Approach LOS	A	A	

Intersection Summary

Average Delay	8.1		
Intersection Capacity Utilization	24.3%	ICU Level of Service	A
Analysis Period (min)	15		

Lanes, Volumes, Timings
213: West Street A & William Halton Parkway

Total (2041) - Scenario B - 35% Mode Share

Timing Plan: AM Peak Hour

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑	↑		↑↑	↑			↑			↑
Traffic Volume (vph)	0	1532	38	0	995	117	0	0	170	0	0	7
Future Volume (vph)	0	1532	38	0	995	117	0	0	170	0	0	7
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		1	0		1	0		1	0		1
Taper Length (m)	7.5			7.5			7.5			7.5		
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt			0.850			0.850			0.865			0.865
Fit Protected												
Satd. Flow (prot)	0	3539	1583	0	3539	1583	0	0	1611	0	0	1611
Fit Permitted												
Satd. Flow (perm)	0	3539	1583	0	3539	1583	0	0	1611	0	0	1611
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		202.0			209.3			100.4			239.0	
Travel Time (s)		14.5			15.1			7.2			17.2	
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	1665	41	0	1082	127	0	0	185	0	0	8
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	1665	41	0	1082	127	0	0	185	0	0	8
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 59.5%	ICU Level of Service B											
Analysis Period (min) 15												

HCM Unsignalized Intersection Capacity Analysis Total (2041) - Scenario B - 35% Mode Share
213: West Street A & William Halton Parkway

Timing Plan: AM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	1532	38	0	995	117	0	0	170	0	0	7
Future Volume (Veh/h)	0	1532	38	0	995	117	0	0	170	0	0	7
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	1665	41	0	1082	127	0	0	185	0	0	8
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type	None				None							
Median storage veh												
Upstream signal (m)	202				209							
pX, platoon unblocked	0.87			0.59			0.66	0.66	0.59	0.66	0.66	0.87
vC, conflicting volume	1209			1706			2214	2874	832	2100	2788	541
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	940			815			910	1914	0	736	1783	171
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	71	100	100	99
cM capacity (veh/h)	630			479			149	44	642	144	53	732
Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	WB 3	NB 1	SB 1				
Volume Total	832	832	41	541	541	127	185	8				
Volume Left	0	0	0	0	0	0	0	0				
Volume Right	0	0	41	0	0	127	185	8				
cSH	1700	1700	1700	1700	1700	1700	642	732				
Volume to Capacity	0.49	0.49	0.02	0.32	0.32	0.07	0.29	0.01				
Queue Length 95th (m)	0.0	0.0	0.0	0.0	0.0	0.0	8.9	0.2				
Control Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	12.9	10.0				
Lane LOS							B	A				
Approach Delay (s)	0.0			0.0			12.9	10.0				
Approach LOS							B	A				
Intersection Summary												
Average Delay				0.8								
Intersection Capacity Utilization				59.5%			ICU Level of Service			B		
Analysis Period (min)				15								

Lanes, Volumes, Timings

214: West Street D & William Halton Parkway

Total (2041) - Scenario B - 35% Mode Share

Timing Plan: AM Peak Hour

	←	→	↖	↗	←	↖	↗	→	↖	↗	→	↖	↗
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations	↖	↖	↖	↖	↖	↖	↖	↖	↖	↖	↖	↖	
Traffic Volume (vph)	0	1522	46	297	597	108	14	0	18	54	0	3	
Future Volume (vph)	0	1522	46	297	597	108	14	0	18	54	0	3	
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		0.0	50.0		0.0	
Storage Lanes	1		0	1		1	1		0	1		0	
Taper Length (m)	100.0			100.0			75.0			75.0			
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Frt			0.850			0.850		0.850			0.850		
Flt Protected				0.950			0.950			0.950			
Satd. Flow (prot)	1863	3539	1583	1770	3539	1583	1770	1583	0	1770	1583	0	
Flt Permitted				0.063			0.756			0.744			
Satd. Flow (perm)	1863	3539	1583	117	3539	1583	1408	1583	0	1386	1583	0	
Right Turn on Red			Yes			Yes			Yes			Yes	
Satd. Flow (RTOR)			55			117		347			364		
Link Speed (k/h)		50			50			50			50		
Link Distance (m)		241.6			202.0			103.2			133.4		
Travel Time (s)		17.4			14.5			7.4			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)	0	1654	50	323	649	117	15	0	20	59	0	3	
Shared Lane Traffic (%)													
Lane Group Flow (vph)	0	1654	50	323	649	117	15	20	0	59	3	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	1	2	1	1	2		1	2		
Detector Template	Left	Thru	Right	Left	Thru	Right	Left	Thru		Left	Thru		
Leading Detector (m)	2.0	10.0	2.0	2.0	10.0	2.0	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		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	2.0	0.6	2.0	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		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	pm+pt	NA	Perm	Perm	NA		Perm	NA		
Protected Phases		4			3		8			2		6	
Permitted Phases	4		4		8		8		2		6		

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Lanes, Volumes, Timings

214: West Street D & William Halton Parkway

Total (2041) - Scenario B - 35% Mode Share

Timing Plan: AM Peak Hour

	←	→	↖	↗	←	↖	↗	→	↖	↗	→	↖	↗
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Detector Phase	4	4	4	3	8	8	2	2		6	6		
Switch Phase													
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0		5.0	5.0		
Minimum Split (s)	24.0	24.0	24.0	9.5	24.0	24.0	24.0	24.0		24.0	24.0		
Total Split (s)	66.0	66.0	66.0	29.9	95.9	95.9	24.1	24.1		24.1	24.1		
Total Split (%)	55.0%	55.0%	55.0%	24.9%	79.9%	79.9%	20.1%	20.1%		20.1%	20.1%		
Maximum Green (s)	60.0	60.0	60.0	26.9	89.9	89.9	18.1	18.1		18.1	18.1		
Yellow Time (s)	4.0	4.0	4.0	3.0	4.0	4.0	4.0	4.0		4.0	4.0		
All-Red Time (s)	2.0	2.0	2.0	0.0	2.0	2.0	2.0	2.0		2.0	2.0		
Lost Time Adjust (s)	-2.0	-2.0	-2.0	1.0	-2.0	-2.0	-2.0	-2.0		-2.0	-2.0		
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0		4.0	4.0		
Lead/Lag	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	Max	Max	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	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 Effect Green (s)		62.3	62.3	92.3	93.2	93.2	12.0	12.0		12.0	12.0		
Actuated g/C Ratio		0.57	0.57	0.84	0.85	0.85	0.11	0.11		0.11	0.11		
v/c Ratio		0.82	0.05	0.66	0.22	0.09	0.10	0.04		0.39	0.01		
Control Delay		25.0	3.2	33.3	2.4	0.6	45.7	0.2		53.9	0.0		
Queue Delay		0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0		
Total Delay		25.0	3.2	33.3	2.4	0.6	45.7	0.2		53.9	0.0		
LOS		C	A	C	A	A	D	A		D	A		
Approach Delay		24.3			11.4		19.7				51.3		
Approach LOS		C			B		B				D		

Intersection Summary

Area Type: Other

Cycle Length: 120

Actuated Cycle Length: 109.7

Natural Cycle: 90

Control Type: Semi Act-Uncoord

Maximum v/c Ratio: 0.82

Intersection Signal Delay: 20.0

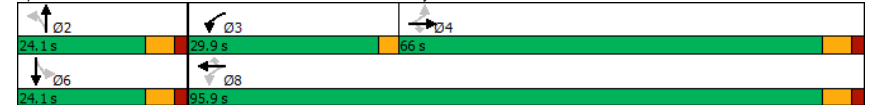
Intersection LOS: B

Intersection Capacity Utilization 78.2%

ICU Level of Service D

Analysis Period (min) 15

Splits and Phases: 214: West Street D & William Halton Parkway

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Lanes, Volumes, Timings

Total (2041) - Scenario B - 35% Mode Share

215: West Street A & West Street B

Timing Plan: AM Peak Hour

	EBL	EBR	NBL	NBT	SBT	SBR
Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	↔	↔	↔	↔	↔	↔
Traffic Volume (vph)	104	66	0	38	40	5
Future Volume (vph)	104	66	0	38	40	5
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	0.947				0.986	
Flt Protected	0.970					
Satd. Flow (prot)	1711	0	0	1863	1837	0
Flt Permitted	0.970					
Satd. Flow (perm)	1711	0	0	1863	1837	0
Link Speed (k/h)	50			50	50	
Link Distance (m)	202.8			106.4	100.4	
Travel Time (s)	14.6			7.7	7.2	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	113	72	0	41	43	5
Shared Lane Traffic (%)						
Lane Group Flow (vph)	185	0	0	41	48	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
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	25			15
Sign Control	Stop			Free	Free	

Intersection Summary

Area Type: Other

Control Type: Unsignalized

Intersection Capacity Utilization 19.8%

ICU Level of Service A

Analysis Period (min) 15

HCM Unsignalized Intersection Capacity Analysis Total (2041) - Scenario B - 35% Mode Share

215: West Street A & West Street B

Timing Plan: AM Peak Hour

	EBL	EBR	NBL	NBT	SBT	SBR
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	↔	↔	↔	↔	↔	↔
Traffic Volume (veh/h)	104	66	0	38	40	5
Future Volume (Veh/h)	104	66	0	38	40	5
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)	113	72	0	41	43	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	86	46	48			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	86	46	48			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	88	93	100			
cM capacity (veh/h)	915	1024	1559			
Direction, Lane #	EB 1	NB 1	SB 1			
Volume Total	185	41	48			
Volume Left	113	0	0			
Volume Right	72	0	5			
cSH	954	1559	1700			
Volume to Capacity	0.19	0.00	0.03			
Queue Length 95th (m)	5.4	0.0	0.0			
Control Delay (s)	9.7	0.0	0.0			
Lane LOS	A					
Approach Delay (s)	9.7	0.0	0.0			
Approach LOS	A					
Intersection Summary						
Average Delay		6.5				
Intersection Capacity Utilization		19.8%		ICU Level of Service	A	
Analysis Period (min)		15				

Lanes, Volumes, Timings

Total (2041) - Scenario B - 35% Mode Share

216: West Street D & West Street B

Timing Plan: AM Peak Hour

	←	←	↑	↗	↘	↓
Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	↔		↔			↔
Traffic Volume (vph)	0	8	24	0	192	151
Future Volume (vph)	0	8	24	0	192	151
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.865					
Flt Protected						0.973
Satd. Flow (prot)	1611	0	1863	0	0	1812
Flt Permitted						0.973
Satd. Flow (perm)	1611	0	1863	0	0	1812
Link Speed (k/h)	50		50			50
Link Distance (m)	202.8		99.7			103.2
Travel Time (s)	14.6		7.2			7.4
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	9	26	0	209	164
Shared Lane Traffic (%)						
Lane Group Flow (vph)	9	0	26	0	0	373
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
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		15	25	
Sign Control	Stop		Free			Free

Intersection Summary

Area Type: Other

Control Type: Unsignalized

Intersection Capacity Utilization 35.2% ICU Level of Service A

Analysis Period (min) 15

HCM Unsignalized Intersection Capacity Analysis Total (2041) - Scenario B - 35% Mode Share

216: West Street D & West Street B

Timing Plan: AM Peak Hour

	←	←	↑	↗	↘	↓
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	↔		↔			↔
Traffic Volume (veh/h)	0	8	24	0	192	151
Future Volume (Veh/h)	0	8	24	0	192	151
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	9	26	0	209	164
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage (veh)						
Upstream signal (m)						103
pX, platoon unblocked	0.96					
vC, conflicting volume	608	26			26	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	574	26			26	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	100	99			87	
cM capacity (veh/h)	402	1050			1588	
Direction, Lane #	WB 1	NB 1	SB 1			
Volume Total	9	26	373			
Volume Left	0	0	209			
Volume Right	9	0	0			
cSH	1050	1700	1588			
Volume to Capacity	0.01	0.02	0.13			
Queue Length 95th (m)	0.2	0.0	3.4			
Control Delay (s)	8.5	0.0	4.8			
Lane LOS	A		A			
Approach Delay (s)	8.5	0.0	4.8			
Approach LOS	A					
Intersection Summary						
Average Delay			4.5			
Intersection Capacity Utilization			35.2%		ICU Level of Service	A
Analysis Period (min)			15			

Lanes, Volumes, Timings

217: West Street C & West Street A

Total (2041) - Scenario B - 35% Mode Share

Timing Plan: AM Peak Hour

	EBL	EBT	WBT	WBR	SBL	SBR
Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↔	↔		↔	↔
Traffic Volume (vph)	0	68	125	161	60	12
Future Volume (vph)	0	68	125	161	60	12
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		0.924		0.977		
Flt Protected					0.960	
Satd. Flow (prot)	0	1863	1721	0	1747	0
Flt Permitted					0.960	
Satd. Flow (perm)	0	1863	1721	0	1747	0
Link Speed (k/h)		50	50		50	
Link Distance (m)		208.6	202.4		106.4	
Travel Time (s)		15.0	14.6		7.7	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	74	136	175	65	13
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	74	311	0	78	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 27.2% ICU Level of Service A

Analysis Period (min) 15

HCM Unsignalized Intersection Capacity Analysis Total (2041) - Scenario B - 35% Mode Share

217: West Street C & West Street A

Timing Plan: AM Peak Hour

	EBL	EBT	WBT	WBR	SBL	SBR
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↔	↔		↔	↔
Traffic Volume (veh/h)	0	68	125	161	60	12
Future Volume (Veh/h)	0	68	125	161	60	12
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)	0	74	136	175	65	13
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		None	None			
Median storage (veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	311				298	224
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	311				298	224
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	100				91	98
cM capacity (veh/h)	1249				694	816
Direction, Lane #	EB 1	WB 1	SB 1			
Volume Total	74	311	78			
Volume Left	0	0	65			
Volume Right	0	175	13			
cSH	1249	1700	712			
Volume to Capacity	0.00	0.18	0.11			
Queue Length 95th (m)	0.0	0.0	2.8			
Control Delay (s)	0.0	0.0	10.7			
Lane LOS			B			
Approach Delay (s)	0.0	0.0	10.7			
Approach LOS			B			
Intersection Summary						
Average Delay			1.8			
Intersection Capacity Utilization		27.2%		ICU Level of Service	A	
Analysis Period (min)		15				

Lanes, Volumes, Timings
218: West Street D & West Street C

Total (2041) - Scenario B - 35% Mode Share

Timing Plan: AM Peak Hour

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔			↔			↔			↔	
Traffic Volume (vph)	0	0	0	66	0	59	0	19	10	90	61	0
Future Volume (vph)	0	0	0	66	0	59	0	19	10	90	61	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				0.936				0.954				
Flt Protected				0.974							0.971	
Satd. Flow (prot)	0	1863	0	0	1698	0	0	1777	0	0	1809	0
Flt Permitted				0.974							0.971	
Satd. Flow (perm)	0	1863	0	0	1698	0	0	1777	0	0	1809	0
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		258.7			208.6			93.0			99.7	
Travel Time (s)		18.6			15.0			6.7			7.2	
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	0	72	0	64	0	21	11	98	66	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	0	0	0	136	0	0	32	0	0	164	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 28.8% ICU Level of Service A

Analysis Period (min) 15

HCM Unsignalized Intersection Capacity Analysis Total (2041) - Scenario B - 35% Mode Share
218: West Street D & West Street C

Timing Plan: AM Peak Hour

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Movement		↔			↔			↔			↔	
Lane Configurations		↔			↔			↔			↔	
Traffic Volume (veh/h)	0	0	0	66	0	59	0	19	10	90	61	0
Future Volume (Veh/h)	0	0	0	66	0	59	0	19	10	90	61	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)	0	0	0	72	0	64	0	21	11	98	66	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	64			0			209	208	0	198	176	32
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	64			0			209	208	0	198	176	32
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			96			100	97	99	86	90	100
cM capacity (veh/h)	1538			1623			670	658	1085	711	686	1042
Direction, Lane #	EB 1	WB 1	NB 1	SB 1								
Volume Total	0	136	32	164								
Volume Left	0	72	0	98								
Volume Right	0	64	11	0								
cSH	1700	1623	761	700								
Volume to Capacity	0.00	0.04	0.04	0.23								
Queue Length 95th (m)	0.0	1.0	1.0	6.8								
Control Delay (s)	0.0	4.0	9.9	11.7								
Lane LOS		A	A	B								
Approach Delay (s)	0.0	4.0	9.9	11.7								
Approach LOS		A	B									
Intersection Summary												
Average Delay			8.4									
Intersection Capacity Utilization		28.8%		ICU Level of Service					A			
Analysis Period (min)			15									

Lanes, Volumes, Timings

TT (2041) - Scenario B - 35% Mode Share

101: Trafalgar Rd & Lower Base Line

Timing Plan: PM Peak Hour

	↖	→	↘	↙	←	↖	↗	↘	↙	↖	↗	↘	↙
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations	↖	↖	↖	↖	↖	↖	↖	↖	↖	↖	↖	↖	
Traffic Volume (vph)	54	240	77	359	678	368	494	2769	472	306	1773	123	
Future Volume (vph)	54	240	77	359	678	368	494	2769	472	306	1773	123	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	
Storage Length (m)	45.0		45.0	110.0		110.0	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	0.260			0.206			0.072			0.077			
Satd. Flow (perm)	484	3412	0	384	3352	0	134	5085	1583	143	5085	1583	
Right Turn on Red			Yes			Yes			Yes			Yes	
Satd. Flow (RTOR)		25			68				79			95	
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	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Adj. Flow (vph)	54	240	77	359	678	368	494	2769	472	306	1773	123	
Shared Lane Traffic (%)													
Lane Group Flow (vph)	54	317	0	359	1046	0	494	2769	472	306	1773	123	
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	pm+ov	pm+pt	NA	pm+ov	
Protected Phases	7	4		3	8		5	2	3	1	6	7	
Permitted Phases	4			8			2		2	6		6	

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Lanes, Volumes, Timings

TT (2041) - Scenario B - 35% Mode Share

101: Trafalgar Rd & Lower Base Line

Timing Plan: PM Peak Hour

	↖	→	↘	↙	←	↖	↗	↘	↙	↖	↗	↘	↙
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Detector Phase	7	4		3	8		5	2	3	1	6	7	
Switch Phase													
Minimum Initial (s)	5.0	10.0		7.0	10.0		5.0	25.0	7.0	7.0	25.0	5.0	
Minimum Split (s)	11.6	22.5		13.6	22.5		11.6	31.6	13.6	13.6	31.6	11.6	
Total Split (s)	11.6	22.6		27.0	38.0		31.0	71.4	27.0	19.0	59.4	11.6	
Total Split (%)	8.3%	16.1%		19.3%	27.1%		22.1%	51.0%	19.3%	13.6%	42.4%	8.3%	
Maximum Green (s)	5.0	16.4		24.0	31.8		28.0	64.8	24.0	16.0	52.8	5.0	
Yellow Time (s)	4.6	4.2		3.0	4.2		3.0	4.6	3.0	3.0	4.6	4.6	
All-Red Time (s)	2.0	2.0		0.0	2.0		0.0	2.0	0.0	0.0	2.0	2.0	
Lost Time Adjust (s)	1.0	-2.2		1.0	-2.2		1.0	-2.2	1.0	1.0	-2.2	-2.2	
Total Lost Time (s)	7.6	4.0		4.0	4.0		4.0	4.4	4.0	4.0	4.4	4.4	
Lead/Lag	Lead	Lag		Lead	Lag		Lead	Lag	Lead	Lag	Lead	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	0.2	0.2	5.0	3.0	
Recall Mode	None	None		None	None		None	Max	None	Max	Max	None	
Act Effct Green (s)	19.0	18.6		45.6	34.0		86.4	67.0	94.4	70.4	55.0	66.6	
Actuated g/C Ratio	0.14	0.13		0.33	0.24		0.62	0.48	0.67	0.50	0.39	0.48	
v/c Ratio	0.53	0.67		1.02	1.21		1.24	1.14	0.43	1.24	0.89	0.15	
Control Delay	59.5	60.8		93.7	146.9		165.2	102.3	9.9	175.6	46.2	6.5	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	
Total Delay	59.5	60.8		93.7	146.9		165.2	102.3	9.9	175.6	46.2	6.5	
LOS	E	E		F	F		F	F	A	F	D	A	
Approach Delay		60.6			133.3			98.9			62.0		
Approach LOS		E			F			F			E		

Intersection Summary

Area Type: Other

Cycle Length: 140

Actuated Cycle Length: 140

Natural Cycle: 145

Control Type: Semi Act-Uncooord

Maximum v/c Ratio: 1.24

Intersection Signal Delay: 92.8

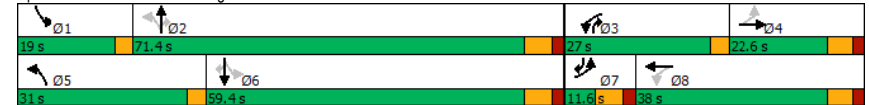
Intersection LOS: F

Intersection Capacity Utilization 121.8%

ICU Level of Service H

Analysis Period (min) 15

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

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Queues
101: Trafalgar Rd & Lower Base Line

TT (2041) - Scenario B - 35% Mode Share
Timing Plan: PM Peak Hour

	EBL	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	54	317	359	1046	494	2769	472	306	1773	123
v/c Ratio	0.53	0.67	1.02	1.21	1.24	1.14	0.43	1.24	0.89	0.15
Control Delay	59.5	60.8	93.7	146.9	165.2	102.3	9.9	175.6	46.2	6.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	59.5	60.8	93.7	146.9	165.2	102.3	9.9	175.6	46.2	6.5
Queue Length 50th (m)	10.7	40.5	~85.5	~175.8	~151.4	~322.3	44.9	~87.7	164.1	4.0
Queue Length 95th (m)	#21.6	56.6	#146.5	#217.6	#218.7	#346.8	65.3	#145.8	184.7	14.8
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)	102	474	352	865	398	2433	1093	246	1997	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	0.53	0.67	1.02	1.21	1.24	1.14	0.43	1.24	0.89	0.15

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.

HCM Signalized Intersection Capacity Analysis
101: Trafalgar Rd & Lower Base Line

TT (2041) - Scenario B - 35% Mode Share
Timing Plan: PM Peak Hour

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰	↱	↱	↰	↱	↱	↰	↱	↱	↰	↱	↱
Traffic Volume (vph)	54	240	77	359	678	368	494	2769	472	306	1773	123
Future Volume (vph)	54	240	77	359	678	368	494	2769	472	306	1773	123
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	7.6	4.0		4.0	4.0		4.0	4.4	4.0	4.0	4.4	4.4
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	3410		1770	3352		1770	5085	1583	1770	5085	1583
Flt Permitted	0.26	1.00		0.21	1.00		0.07	1.00	1.00	0.08	1.00	1.00
Satd. Flow (perm)	484	3410		384	3352		134	5085	1583	144	5085	1583
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	54	240	77	359	678	368	494	2769	472	306	1773	123
RTOR Reduction (vph)	0	22	0	0	51	0	0	0	30	0	0	53
Lane Group Flow (vph)	54	295	0	359	995	0	494	2769	442	306	1773	70
Turn Type	pm+pt	NA		pm+pt	NA		pm+pt	NA	pm+ov	pm+pt	NA	pm+ov
Protected Phases	7	4		3	8		5	2	3	1	6	7
Permitted Phases	4			8			2		2	6		6
Actuated Green, G (s)	21.4	16.4		43.4	31.8		83.8	64.8	88.8	68.8	52.8	57.8
Effective Green, g (s)	19.4	18.6		42.4	34.0		82.8	67.0	86.8	66.8	55.0	62.2
Actuated g/C Ratio	0.14	0.13		0.30	0.24		0.59	0.48	0.62	0.48	0.39	0.44
Clearance Time (s)	6.6	6.2		3.0	6.2		3.0	6.6	3.0	3.0	6.6	6.6
Vehicle Extension (s)	3.0	5.0		0.2	5.0		3.0	5.0	0.2	0.2	5.0	3.0
Lane Grp Cap (vph)	103	453		343	814		394	2433	981	242	1997	753
v/s Ratio Prot	0.01	0.09		c0.17	c0.30		c0.24	0.54	0.07	0.13	0.35	0.00
v/s Ratio Perm	0.06			0.14			c0.50		0.21	0.47		0.04
v/c Ratio	0.52	0.65		1.05	1.22		1.25	1.14	0.45	1.26	0.89	0.09
Uniform Delay, d1	54.1	57.6		43.3	53.0		46.4	36.5	14.0	44.3	39.6	22.6
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	4.7	4.5		61.3	110.8		133.5	67.7	0.1	147.7	6.3	0.1
Delay (s)	58.8	62.1		104.6	163.8		179.9	104.2	14.1	192.0	46.0	22.6
Level of Service	E	E		F	F		F	F	B	F	D	C
Approach Delay (s)		61.6			148.6			102.9			64.9	
Approach LOS		E			F			F			E	

Intersection Summary

HCM 2000 Control Delay	98.4	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	1.27		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	20.0
Intersection Capacity Utilization	121.8%	ICU Level of Service	H
Analysis Period (min)	15		

c Critical Lane Group

Lanes, Volumes, Timings TT (2041) - Scenario B - 35% Mode Share
102: Trafalgar Rd & North Carpool Lot/Hwy 407 WB Off Timing Plan: PM Peak Hour

	←	→	↙	↘	↖	↗	↖	↗	↖	↗	↖	↗
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔		↔	↔	↔	↔	↔		↔	↔	↔
Traffic Volume (vph)	7	0	49	630	16	174	9	3550	0	0	2204	5
Future Volume (vph)	7	0	49	630	16	174	9	3550	0	0	2204	5
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	0.882				0.992	0.850						0.850
Flt Protected	0.994			0.950	0.957		0.950					
Satd. Flow (prot)	0	1633	0	1681	1609	1504	1770	5085	0	0	5085	1583
Flt Permitted	0.994			0.720	0.707		0.070					
Satd. Flow (perm)	0	1633	0	1274	1189	1504	130	5085	0	0	5085	1583
Right Turn on Red		Yes			Yes			Yes			Yes	
Satd. Flow (RTOR)		78			3	95						70
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	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	7	0	49	630	16	174	9	3550	0	0	2204	5
Shared Lane Traffic (%)				47%		10%						
Lane Group Flow (vph)	0	56	0	334	329	157	9	3550	0	0	2204	5
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	CI+Ex	CI+Ex		CI+Ex	CI+Ex	CI+Ex	CI+Ex	CI+Ex			CI+Ex	CI+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		CI+Ex			CI+Ex			CI+Ex			CI+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Split	NA		Perm	NA	Perm	Perm	NA		NA	Perm	Perm
Protected Phases	4	4			8			2			6	
Permitted Phases				8		8	2					6

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Lanes, Volumes, Timings TT (2041) - Scenario B - 35% Mode Share
102: Trafalgar Rd & North Carpool Lot/Hwy 407 WB Off Timing Plan: PM Peak Hour

	←	→	↙	↘	↖	↗	↖	↗	↖	↗	↖	↗
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)	6.0	6.0		7.0	7.0	7.0	20.0	20.0			20.0	20.0
Minimum Split (s)	12.0	12.0		22.5	22.5	22.5	27.0	27.0			27.0	27.0
Total Split (s)	12.0	12.0		68.0	68.0	68.0	60.0	60.0			60.0	60.0
Total Split (%)	8.6%	8.6%		48.6%	48.6%	48.6%	42.9%	42.9%			42.9%	42.9%
Maximum Green (s)	6.0	6.0		62.0	62.0	62.0	53.0	53.0			53.0	53.0
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	-3.0	-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 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)		8.2		39.6	39.6	39.6	57.3	57.3			57.3	57.3
Actuated g/C Ratio		0.07		0.35	0.35	0.35	0.50	0.50			0.50	0.50
v/c Ratio		0.30		0.76	0.79	0.27	0.14	1.39			0.86	0.01
Control Delay		10.2		44.4	47.8	11.9	29.3	205.2			32.4	0.0
Queue Delay		0.0		0.0	0.0	0.0	0.0	0.0			0.0	0.0
Total Delay		10.2		44.4	47.8	11.9	29.3	205.2			32.4	0.0
LOS		B		D	D	B	C	F			C	A
Approach Delay		10.2			39.5		204.8				32.3	
Approach LOS		B			D		F				C	

Intersection Summary

Area Type: Other

Cycle Length: 140

Actuated Cycle Length: 114.1

Natural Cycle: 150

Control Type: Actuated-Uncoordinated

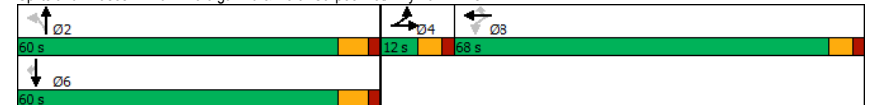
Maximum v/c Ratio: 1.39

Intersection Signal Delay: 125.4

Intersection Capacity Utilization 101.6%

Analysis Period (min) 15

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



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Synchro 10 Report
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Queues TT (2041) - Scenario B - 35% Mode Share
102: Trafalgar Rd & North Carpool Lot/Hwy 407 WB Off Timing Plan: PM Peak Hour

	→	↖	←	↙	↘	↑	↓	↗
Lane Group	EBT	WBL	WBT	WBR	NBL	NBT	SBT	SBR
Lane Group Flow (vph)	56	334	329	157	9	3550	2204	5
v/c Ratio	0.30	0.76	0.79	0.27	0.14	1.39	0.86	0.01
Control Delay	10.2	44.4	47.8	11.9	29.3	205.2	32.4	0.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	10.2	44.4	47.8	11.9	29.3	205.2	32.4	0.0
Queue Length 50th (m)	0.0	69.5	72.1	9.8	1.1	~399.8	161.7	0.0
Queue Length 95th (m)	7.7	103.1	109.2	24.4	6.2	#519.6	#258.0	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)	189	730	683	903	65	2551	2551	829
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.30	0.46	0.48	0.17	0.14	1.39	0.86	0.01

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.

HCM Signalized Intersection Capacity Analysis TT (2041) - Scenario B - 35% Mode Share
102: Trafalgar Rd & North Carpool Lot/Hwy 407 WB Off Timing Plan: PM Peak Hour

	↖	→	↗	↖	←	↙	↘	↑	↗	↖	↓	↙
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔		↖	↔	↗	↖	↔	↗	↖	↔	↗
Traffic Volume (vph)	7	0	49	630	16	174	9	3550	0	0	2204	5
Future Volume (vph)	7	0	49	630	16	174	9	3550	0	0	2204	5
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)	1633		1681	1610	1504	1770	5085				5085	1583
Flt Permitted	0.99		0.72	0.71	1.00	0.07	1.00				1.00	1.00
Satd. Flow (perm)	1633		1275	1190	1504	130	5085				5085	1583
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	7	0	49	630	16	174	9	3550	0	0	2204	5
RTOR Reduction (vph)	0	53	0	0	2	62	0	0	0	0	0	3
Lane Group Flow (vph)	0	3	0	334	327	95	9	3550	0	0	2204	2
Turn Type	Split	NA		Perm	NA	Perm	Perm	NA			NA	Perm
Protected Phases	4	4			8		2				6	
Permitted Phases				8		8	2					6
Actuated Green, G (s)		4.6		37.5	37.5	37.5	54.2	54.2			54.2	54.2
Effective Green, g (s)		6.6		39.5	39.5	39.5	57.2	57.2			57.2	57.2
Actuated g/C Ratio		0.06		0.34	0.34	0.34	0.50	0.50			0.50	0.50
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)		93		436	407	515	64	2522			2522	785
v/s Ratio Prot		c0.00						c0.70			0.43	
v/s Ratio Perm				0.26	c0.27	0.06	0.07					0.00
v/c Ratio		0.03		0.77	0.80	0.18	0.14	1.41			0.87	0.00
Uniform Delay, d1		51.3		33.8	34.4	26.6	15.7	29.0			25.8	14.7
Progression Factor		1.00		1.00	1.00	1.00	1.00	1.00			1.00	1.00
Incremental Delay, d2		0.2		8.1	11.2	0.2	4.5	185.9			4.6	0.0
Delay (s)		51.5		41.9	45.6	26.8	20.3	214.9			30.4	14.7
Level of Service		D		D	D	C	C	F			C	B
Approach Delay (s)		51.5			40.5			214.4			30.4	
Approach LOS		D			D			F			C	

Intersection Summary

HCM 2000 Control Delay	130.4	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	1.11		
Actuated Cycle Length (s)	115.3	Sum of lost time (s)	14.0
Intersection Capacity Utilization	101.6%	ICU Level of Service	G
Analysis Period (min)	15		

c Critical Lane Group

Lanes, Volumes, Timings
103: Trafalgar Rd & Hwy 407 EB Off

TT (2041) - Scenario B - 35% Mode Share
Timing Plan: PM Peak Hour

	EBL	EBR	NBL	NBT	SBT	SBR
Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	↰	↱		↰↰↰	↰↰↰	
Traffic Volume (vph)	87	234	0	4117	2680	0
Future Volume (vph)	87	234	0	4117	2680	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			251.9	363.6	
Travel Time (s)	39.9			18.1	26.2	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	87	234	0	4117	2680	0
Shared Lane Traffic (%)						
Lane Group Flow (vph)	87	234	0	4117	2680	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	CI+Ex	CI+Ex		CI+Ex	CI+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				CI+Ex	CI+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	

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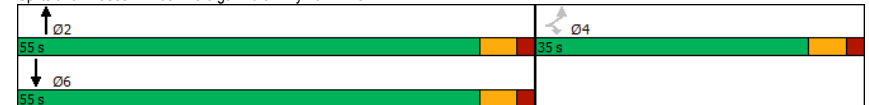
Lanes, Volumes, Timings
103: Trafalgar Rd & Hwy 407 EB Off

TT (2041) - Scenario B - 35% Mode Share
Timing Plan: PM Peak Hour

	EBL	EBR	NBL	NBT	SBT	SBR
Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Minimum Split (s)	24.0	24.0		24.0	24.0	
Total Split (s)	35.0	35.0		55.0	55.0	
Total Split (%)	38.9%	38.9%		61.1%	61.1%	
Maximum Green (s)	29.0	29.0		49.0	49.0	
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)	18.7	18.7		52.6	52.6	
Actuated g/C Ratio	0.24	0.24		0.66	0.66	
v/c Ratio	0.21	0.63		1.22	0.80	
Control Delay	24.3	34.3		120.4	12.9	
Queue Delay	0.0	0.0		0.0	0.0	
Total Delay	24.3	34.3		120.4	12.9	
LOS	C	C		F	B	
Approach Delay	31.6			120.4	12.9	
Approach LOS	C			F	B	

Intersection Summary	
Area Type:	Other
Cycle Length: 90	
Actuated Cycle Length: 79.3	
Natural Cycle: 140	
Control Type: Semi Act-Uncoord	
Maximum v/c Ratio: 1.22	
Intersection Signal Delay: 75.9	Intersection LOS: E
Intersection Capacity Utilization 91.0%	ICU Level of Service F
Analysis Period (min) 15	

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



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Queues
103: Trafalgar Rd & Hwy 407 EB Off

TT (2041) - Scenario B - 35% Mode Share
Timing Plan: PM Peak Hour

	EBL	EBR	NBT	SBT
Lane Group	EBL	EBR	NBT	SBT
Lane Group Flow (vph)	87	234	4117	2680
v/c Ratio	0.21	0.63	1.22	0.80
Control Delay	24.3	34.3	120.4	12.9
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	24.3	34.3	120.4	12.9
Queue Length 50th (m)	10.1	30.2	~273.7	88.4
Queue Length 95th (m)	20.5	50.9	#346.1	145.8
Internal Link Dist (m)	530.6		227.9	339.6
Turn Bay Length (m)				
Base Capacity (vph)	693	620	3371	3371
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	0.13	0.38	1.22	0.80

Intersection Summary

- ~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

HCM Signalized Intersection Capacity Analysis
103: Trafalgar Rd & Hwy 407 EB Off

TT (2041) - Scenario B - 35% Mode Share
Timing Plan: PM Peak Hour

	EBL	EBR	NBL	NBT	SBT	SBR
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	↰	↱		↰	↰	↰
Traffic Volume (vph)	87	234	0	4117	2680	0
Future Volume (vph)	87	234	0	4117	2680	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	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	87	234	0	4117	2680	0
RTOR Reduction (vph)	0	1	0	0	0	0
Lane Group Flow (vph)	87	233	0	4117	2680	0
Turn Type	Perm	Perm		NA	NA	
Protected Phases				2	6	
Permitted Phases	4	4				
Actuated Green, G (s)	16.7	16.7		50.6	50.6	
Effective Green, g (s)	18.7	18.7		52.6	52.6	
Actuated g/C Ratio	0.24	0.24		0.66	0.66	
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)	417	373		3372	3372	
v/s Ratio Prot				c0.81	0.53	
v/s Ratio Perm	0.05	c0.15				
v/c Ratio	0.21	0.63		1.22	0.79	
Uniform Delay, d1	24.4	27.2		13.3	9.5	
Progression Factor	1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.3	3.3		102.3	2.0	
Delay (s)	24.6	30.4		115.6	11.5	
Level of Service	C	C		F	B	
Approach Delay (s)	28.8			115.6	11.5	
Approach LOS	C			F	B	

Intersection Summary

HCM 2000 Control Delay	72.5	HCM 2000 Level of Service	E
HCM 2000 Volume to Capacity ratio	1.10		
Actuated Cycle Length (s)	79.3	Sum of lost time (s)	10.0
Intersection Capacity Utilization	91.0%	ICU Level of Service	F
Analysis Period (min)	15		

c Critical Lane Group

Lanes, Volumes, Timings
104: Trafalgar Rd & West Street A/East Street A

TT (2041) - Scenario B - 35% Mode Share

Timing Plan: PM Peak Hour

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰	↑	↱	↰	↑	↱	↰	↑	↱	↰	↑	↱
Traffic Volume (vph)	280	35	136	0	0	876	20	3727	232	374	2416	124
Future Volume (vph)	280	35	136	0	0	876	20	3727	232	374	2416	124
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	90.0		90.0	90.0		90.0
Storage Lanes	1		1	1		1	1		1	1		1
Taper Length (m)	75.0			75.0			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		
Satd. Flow (prot)	1770	1863	1583	1863	1863	1583	1770	5085	1583	1770	5085	1583
Flt Permitted	0.950						0.060			0.045		
Satd. Flow (perm)	1770	1863	1583	1863	1863	1583	112	5085	1583	84	5085	1583
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			136			44			158			124
Link Speed (k/h)		50			50			80			80	
Link Distance (m)		216.0			205.9			233.3			251.9	
Travel Time (s)		15.6			14.8			10.5			11.3	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	280	35	136	0	0	876	20	3727	232	374	2416	124
Shared Lane Traffic (%)												
Lane Group Flow (vph)	280	35	136	0	0	876	20	3727	232	374	2416	124
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	pm+pt	NA	Perm	pm+pt		pm+ov	pm+pt	NA	pm+ov	pm+pt	NA	pm+ov
Protected Phases	7	4		3	8	1	5	2	3	1	6	7
Permitted Phases	4		4	8		8	2		2	6		6

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Lanes, Volumes, Timings
104: Trafalgar Rd & West Street A/East Street A

TT (2041) - Scenario B - 35% Mode Share

Timing Plan: PM Peak Hour

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector Phase	7	4	4	3	8	1	5	2	3	1	6	7
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)	9.5	24.0	24.0	9.5	24.0	11.0	9.5	24.0	9.5	11.0	24.0	9.5
Total Split (s)	10.0	24.3	24.3	9.7	24.0	25.0	9.5	91.0	9.7	25.0	106.5	10.0
Total Split (%)	6.7%	16.2%	16.2%	6.5%	16.0%	16.7%	6.3%	60.7%	6.5%	16.7%	71.0%	6.7%
Maximum Green (s)	7.0	18.3	18.3	6.7	18.0	22.0	6.5	85.0	6.7	22.0	100.5	7.0
Yellow Time (s)	3.0	4.0	4.0	3.0	4.0	3.0	3.0	4.0	3.0	3.0	4.0	3.0
All-Red Time (s)	0.0	2.0	2.0	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
Lost Time Adjust (s)	1.0	-2.0	-2.0	1.0	-2.0	-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	1.0	4.0	4.0	1.0	4.0	4.0	1.0
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lead	Lead	Lag	Lead	Lag	Lag	Lead
Lead-Lag Optimize?	Yes	Yes	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	3.0	3.0
Recall Mode	None	None	None	None	None	Max	None	C-Max	None	Max	C-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 Effect Green (s)	19.1	10.6	10.6			34.9	91.8	87.0	98.5	122.9	117.5	144.0
Actuated g/C Ratio	0.13	0.07	0.07			0.23	0.61	0.58	0.66	0.82	0.78	0.96
v/c Ratio	1.24	0.27	0.57			2.18	0.16	1.26	0.21	0.88	0.61	0.08
Control Delay	193.1	69.9	19.4			566.3	9.8	151.2	3.7	66.9	8.2	0.2
Queue Delay	0.0	0.0	0.0			0.0	0.0	0.2	0.0	0.0	0.4	0.0
Total Delay	193.1	69.9	19.4			566.3	9.8	151.4	3.7	66.9	8.6	0.2
LOS	F	E	B			F	A	F	A	E	A	A
Approach Delay		131.2			566.3			142.0			15.7	
Approach LOS		F			F			F			B	

Intersection Summary

Area Type:	Other
Cycle Length: 150	
Actuated Cycle Length: 150	
Offset: 0 (0%), Referenced to phase 2:NBT and 6:SBTL, Start of Green	
Natural Cycle: 150	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 2.18	
Intersection Signal Delay: 141.9	Intersection LOS: F
Intersection Capacity Utilization 151.8%	ICU Level of Service H
Analysis Period (min) 15	

Splits and Phases: 104: Trafalgar Rd & West Street A/East Street A

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Queues
104: Trafalgar Rd & West Street A/East Street A

TT (2041) - Scenario B - 35% Mode Share
Timing Plan: PM Peak Hour

	EBL	EBT	EBR	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group	EBL	EBT	EBR	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	280	35	136	876	20	3727	232	374	2416	124
v/c Ratio	1.24	0.27	0.57	2.18	0.16	1.26	0.21	0.88	0.61	0.08
Control Delay	193.1	69.9	19.4	566.3	9.8	151.2	3.7	66.9	8.2	0.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.2	0.0	0.0	0.4	0.0
Total Delay	193.1	69.9	19.4	566.3	9.8	151.4	3.7	66.9	8.6	0.2
Queue Length 50th (m)	~103.3	9.9	0.0	~402.8	1.1	~502.0	7.4	90.2	103.8	0.0
Queue Length 95th (m)	#143.2	21.0	20.0	#496.8	2.8	#517.6	17.1	#160.9	133.9	0.7
Internal Link Dist (m)		192.0			209.3			227.9		
Turn Bay Length (m)	50.0		50.0	50.0	90.0		90.0		90.0	
Base Capacity (vph)	225	252	331	401	129	2949	1105	427	3981	1524
Starvation Cap Reductn	0	0	0	0	0	243	0	0	841	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	1.24	0.14	0.41	2.18	0.16	1.38	0.21	0.88	0.77	0.08

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.

HCM Signalized Intersection Capacity Analysis
104: Trafalgar Rd & West Street A/East Street A

TT (2041) - Scenario B - 35% Mode Share
Timing Plan: PM Peak Hour

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔
Traffic Volume (vph)	280	35	136	0	0	876	20	3727	232	374	2416	124
Future Volume (vph)	280	35	136	0	0	876	20	3727	232	374	2416	124
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			1.0	4.0	4.0	1.0	4.0	4.0	1.0
Lane Util. Factor	1.00	1.00	1.00			1.00	1.00	0.91	1.00	1.00	0.91	1.00
Flt	1.00	1.00	0.85			0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00			1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1770	1863	1583			1583	1770	5085	1583	1770	5085	1583
Flt Permitted	0.95	1.00	1.00			1.00	0.06	1.00	1.00	0.05	1.00	1.00
Satd. Flow (perm)	1770	1863	1583			1583	112	5085	1583	85	5085	1583
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	280	35	136	0	0	876	20	3727	232	374	2416	124
RTOR Reduction (vph)	0	0	126	0	0	34	0	0	58	0	0	10
Lane Group Flow (vph)	280	35	10	0	0	842	20	3727	174	374	2416	114
Turn Type	pm+pt	NA	Perm	pm+pt		pm+ov	pm+pt	NA	pm+ov	pm+pt	NA	pm+ov
Protected Phases	7	4		3	8	1	5	2	3	1	6	7
Permitted Phases	4		4	8		8	2		2	6		6
Actuated Green, G (s)	20.1	8.6	8.6			32.9	88.6	85.0	90.5	120.9	114.3	134.4
Effective Green, g (s)	19.1	10.6	10.6			34.9	86.6	87.0	94.5	119.9	116.3	138.4
Actuated g/C Ratio	0.13	0.07	0.07			0.23	0.58	0.58	0.63	0.80	0.78	0.92
Clearance Time (s)	3.0	6.0	6.0			3.0	3.0	6.0	3.0	3.0	6.0	3.0
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)	225	131	111			368	93	2949	997	426	3942	1460
v/s Ratio Prot	c0.16	0.02				c0.53	0.00	c0.73	0.01	0.19	0.48	0.01
v/s Ratio Perm			0.01				0.12		0.10	0.52		0.06
v/c Ratio	1.24	0.27	0.09			2.29	0.22	1.26	0.17	0.88	0.61	0.08
Uniform Delay, d1	65.5	66.0	65.2			57.6	16.3	31.5	11.5	50.8	7.2	0.5
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	141.6	1.1	0.3			588.5	1.2	121.6	0.1	21.8	0.7	0.0
Delay (s)	207.1	67.1	65.5			646.0	17.5	153.1	11.6	72.6	7.9	0.5
Level of Service	F	E	E			F	B	F	B	E	A	A
Approach Delay (s)		153.5			646.0			144.1			15.9	
Approach LOS		F			F			F			B	

Intersection Summary

HCM 2000 Control Delay	152.7	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	1.57		
Actuated Cycle Length (s)	150.0	Sum of lost time (s)	16.0
Intersection Capacity Utilization	151.8%	ICU Level of Service	H
Analysis Period (min)	15		

c Critical Lane Group

Lanes, Volumes, Timings

105: Trafalgar Rd & William Halton Parkway

TT (2041) - Scenario B - 35% Mode Share

Timing Plan: PM Peak Hour

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰	↰	↰	↰	↰	↰	↰	↰	↰	↰	↰	↰
Traffic Volume (vph)	963	573	150	611	1546	547	630	2701	213	456	1915	439
Future Volume (vph)	963	573	150	611	1546	547	630	2701	213	456	1915	439
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	0.105			0.242			0.087			0.095		
Satd. Flow (perm)	196	3539	1583	451	3539	1583	162	5085	1583	177	5085	1583
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			150			187			87			238
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		212.9			205.0			193.0			233.3	
Travel Time (s)		15.3			14.8			13.9			16.8	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	963	573	150	611	1546	547	630	2701	213	456	1915	439
Shared Lane Traffic (%)												
Lane Group Flow (vph)	963	573	150	611	1546	547	630	2701	213	456	1915	439
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	CI+Ex	CI+Ex	CI+Ex	CI+Ex	CI+Ex	CI+Ex	CI+Ex	CI+Ex	CI+Ex	CI+Ex	CI+Ex	CI+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		CI+Ex			CI+Ex			CI+Ex			CI+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

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Lanes, Volumes, Timings

105: Trafalgar Rd & William Halton Parkway

TT (2041) - Scenario B - 35% Mode Share

Timing Plan: PM Peak Hour

	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)	14.0	38.0	38.0	14.2	38.0	38.0	13.9	42.9	42.9	13.9	42.9	42.9
Total Split (s)	31.0	46.2	46.2	29.8	45.0	45.0	24.0	56.0	56.0	18.0	50.0	50.0
Total Split (%)	20.7%	30.8%	30.8%	19.9%	30.0%	30.0%	16.0%	37.3%	37.3%	12.0%	33.3%	33.3%
Maximum Green (s)	28.0	39.2	39.2	26.8	38.0	38.0	21.0	49.1	49.1	15.0	43.1	43.1
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)	0.0	3.3	3.3	0.0	3.3	3.3	0.0	2.3	2.3	0.0	2.3	2.3
Lost Time Adjust (s)	1.0	-3.0	-3.0	1.0	-3.0	-3.0	1.0	-2.9	-2.9	1.0	-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	Max	Max	Max	Max	Max	Max
Walk Time (s)		7.0	7.0		7.0	7.0		7.0	7.0		7.0	7.0
Flash Dont Walk (s)		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 Effect Green (s)	69.2	42.2	42.2	66.8	41.0	41.0	70.0	52.0	52.0	60.0	46.0	46.0
Actuated g/C Ratio	0.46	0.28	0.28	0.45	0.27	0.27	0.47	0.35	0.35	0.40	0.31	0.31
v/c Ratio	2.58	0.58	0.27	1.43	1.60	0.96	2.17	1.53	0.35	2.08	1.23	0.68
Control Delay	740.6	49.0	7.0	234.3	309.7	64.6	563.0	277.2	22.8	526.7	152.2	25.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	740.6	49.0	7.0	234.3	309.7	64.6	563.0	277.2	22.8	526.7	152.2	25.8
LOS	F	D	A	F	F	E	F	F	C	F	F	C
Approach Delay		440.3			243.1			312.7			193.2	
Approach LOS		F			F			F			F	

Intersection Summary

Area Type: Other

Cycle Length: 150

Actuated Cycle Length: 150

Natural Cycle: 150

Control Type: Semi Act-Uncoord

Maximum v/c Ratio: 2.58

Intersection Signal Delay: 283.9

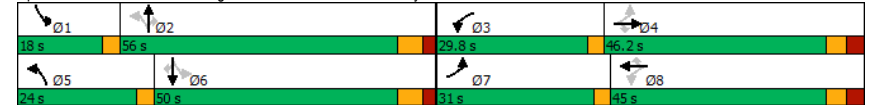
Intersection LOS: F

Intersection Capacity Utilization 186.9%

ICU Level of Service H

Analysis Period (min) 15

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

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Queues
105: Trafalgar Rd & William Halton Parkway

TT (2041) - Scenario B - 35% Mode Share
Timing Plan: PM Peak Hour

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	963	573	150	611	1546	547	630	2701	213	456	1915	439
v/c Ratio	2.58	0.58	0.27	1.43	1.60	0.96	2.17	1.53	0.35	2.08	1.23	0.68
Control Delay	740.6	49.0	7.0	234.3	309.7	64.6	563.0	277.2	22.8	526.7	152.2	25.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	740.6	49.0	7.0	234.3	309.7	64.6	563.0	277.2	22.8	526.7	152.2	25.8
Queue Length 50th (m)	~459.9	76.3	0.0	~204.7	~340.2	114.4	~281.1	~405.6	26.7	~195.7	~253.0	52.7
Queue Length 95th (m)	#539.5	95.5	16.5	#277.5	#382.2	#188.2	#354.5	#429.4	48.4	#262.9	#281.1	91.9
Internal Link Dist (m)	188.9			181.0			169.0			209.3		
Turn Bay Length (m)	100.0		100.0	100.0		150.0	150.0		75.0			
Base Capacity (vph)	373	995	553	427	967	568	290	1762	605	219	1559	650
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	2.58	0.58	0.27	1.43	1.60	0.96	2.17	1.53	0.35	2.08	1.23	0.68

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.

HCM Signalized Intersection Capacity Analysis
105: Trafalgar Rd & William Halton Parkway

TT (2041) - Scenario B - 35% Mode Share
Timing Plan: PM Peak Hour

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰	↱	↱	↰	↱	↱	↰	↱	↱	↰	↱	↱
Traffic Volume (vph)	963	573	150	611	1546	547	630	2701	213	456	1915	439
Future Volume (vph)	963	573	150	611	1546	547	630	2701	213	456	1915	439
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
Flt	1.00	1.00	0.85	1.00	0.85	1.00	0.85	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	0.10	1.00	1.00	0.24	1.00	1.00	0.09	1.00	1.00	0.10	1.00	1.00
Satd. Flow (perm)	195	3539	1583	451	3539	1583	162	5085	1583	177	5085	1583
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	963	573	150	611	1546	547	630	2701	213	456	1915	439
RTOR Reduction (vph)	0	0	108	0	0	136	0	0	57	0	0	165
Lane Group Flow (vph)	963	573	42	611	1546	411	630	2701	156	456	1915	274
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)	67.2	39.2	39.2	64.8	38.0	38.0	67.1	49.1	49.1	58.1	43.1	43.1
Effective Green, g (s)	65.2	42.2	42.2	62.8	41.0	41.0	66.1	52.0	52.0	56.1	46.0	46.0
Actuated g/C Ratio	0.43	0.28	0.28	0.42	0.27	0.27	0.44	0.35	0.35	0.37	0.31	0.31
Clearance Time (s)	3.0	7.0	7.0	3.0	7.0	7.0	3.0	6.9	6.9	3.0	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	995	445	415	967	432	285	1762	548	214	1559	485
v/s Ratio Prot	c0.47	0.16		0.25	0.44		c0.29	0.53		0.20	0.38	
v/s Ratio Perm	c0.67		0.03	0.36		0.26	c0.68		0.10	0.60		0.17
v/c Ratio	2.62	0.58	0.09	1.47	1.60	0.95	2.21	1.53	0.28	2.13	1.23	0.56
Uniform Delay, d1	48.0	46.2	39.8	35.7	54.5	53.5	48.3	49.0	35.5	44.1	52.0	43.6
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	735.4	1.3	0.2	225.3	274.3	31.7	556.0	242.7	1.3	524.3	108.6	4.7
Delay (s)	783.4	47.5	40.0	260.9	328.8	85.2	604.3	291.7	36.8	568.4	160.6	48.3
Level of Service	F	D	D	F	F	F	F	F	D	F	F	D
Approach Delay (s)		467.1			264.2			332.0			209.2	
Approach LOS		F			F			F			F	

Intersection Summary

HCM 2000 Control Delay	304.0	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	2.34		
Actuated Cycle Length (s)	150.0	Sum of lost time (s)	16.0
Intersection Capacity Utilization	186.9%	ICU Level of Service	H
Analysis Period (min)	15		

c Critical Lane Group

Lanes, Volumes, Timings

TT (2041) - Scenario B - 35% Mode Share

106: Trafalgar Rd & Burnhamthorpe Rd/Burnhamthorpe Rd

Timing Plan: PM Peak Hour

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰	↱	↲	↰	↱	↲	↰	↱	↲	↰	↱	↲
Traffic Volume (vph)	173	339	18	135	297	578	100	2482	145	385	1773	328
Future Volume (vph)	173	339	18	135	297	578	100	2482	145	385	1773	328
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	1.00	1.00	1.00	1.00	1.00	1.00	0.91	1.00	1.00	0.91	1.00
Frt		0.992			0.901				0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1770	1848	0	1770	1678	0	1770	5085	1583	1770	5085	1583
Flt Permitted	0.137			0.246			0.105			0.095		
Satd. Flow (perm)	255	1848	0	458	1678	0	196	5085	1583	177	5085	1583
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		2			92				95			305
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	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	173	339	18	135	297	578	100	2482	145	385	1773	328
Shared Lane Traffic (%)												
Lane Group Flow (vph)	173	357	0	135	875	0	100	2482	145	385	1773	328
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	pm+ov	pm+pt	NA	pm+ov
Protected Phases	7	4		3	8		5	2	3	1	6	7
Permitted Phases	4			8			2		2	6		6

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Lanes, Volumes, Timings

TT (2041) - Scenario B - 35% Mode Share

106: Trafalgar Rd & Burnhamthorpe Rd/Burnhamthorpe Rd

Timing Plan: PM Peak Hour

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector Phase	7	4		3	8		5	2	3	1	6	7
Switch Phase												
Minimum Initial (s)	5.0	10.0		5.0	10.0		5.0	20.0	5.0	7.0	20.0	5.0
Minimum Split (s)	9.5	24.0		9.5	24.0		9.5	26.0	9.5	11.5	26.0	9.5
Total Split (s)	10.0	36.2		11.8	38.0		9.6	45.0	11.8	17.0	52.4	10.0
Total Split (%)	9.1%	32.9%		10.7%	34.5%		8.7%	40.9%	10.7%	15.5%	47.6%	9.1%
Maximum Green (s)	7.0	30.2		8.8	32.0		6.6	39.0	8.8	14.0	46.4	7.0
Yellow Time (s)	3.0	3.7		3.0	3.7		3.0	4.6	3.0	3.0	4.6	3.0
All-Red Time (s)	0.0	2.3		0.0	2.3		0.0	1.4	0.0	0.0	1.4	0.0
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	1.0	4.0	4.0	1.0
Lead/Lag	Lead	Lag		Lead	Lag		Lead	Lag	Lead	Lag	Lag	Lead
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	Max	None		Max	None		Max	Max	Max	Max	Max	Max
Act Effct Green (s)	38.2	32.2		41.8	34.0		46.6	41.0	55.8	58.0	48.4	61.4
Actuated g/C Ratio	0.35	0.29		0.38	0.31		0.42	0.37	0.51	0.53	0.44	0.56
v/c Ratio	1.01	0.66		0.51	1.50		0.61	1.31	0.17	1.37	0.79	0.32
Control Delay	101.3	40.7		28.8	262.9		32.6	174.2	6.1	214.2	29.8	2.7
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	101.3	40.7		28.8	262.9		32.6	174.2	6.1	214.2	29.8	2.7
LOS	F	D		C	F		C	F	A	F	C	A
Approach Delay		60.5			231.6			160.1			54.8	
Approach LOS		E			F			F			D	

Intersection Summary

Area Type: Other

Cycle Length: 110

Actuated Cycle Length: 110

Natural Cycle: 120

Control Type: Semi Act-Uncoord

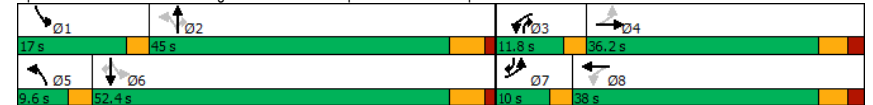
Maximum v/c Ratio: 1.50

Intersection Signal Delay: 124.2

Intersection Capacity Utilization 143.3%

Analysis Period (min) 15

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



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Queues
106: Trafalgar Rd & Burhamthorpe Rd/Burnhamthorpe Rd

TT (2041) - Scenario B - 35% Mode Share
Timing Plan: PM Peak Hour

	EBL	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	173	357	135	875	100	2482	145	385	1773	328
v/c Ratio	1.01	0.66	0.51	1.50	0.61	1.31	0.17	1.37	0.79	0.32
Control Delay	101.3	40.7	28.8	262.9	32.6	174.2	6.1	214.2	29.8	2.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	101.3	40.7	28.8	262.9	32.6	174.2	6.1	214.2	29.8	2.7
Queue Length 50th (m)	~24.4	65.8	18.3	~245.9	10.2	~248.3	5.2	~92.2	115.4	2.1
Queue Length 95th (m)	#63.8	97.1	31.4	#319.2	#24.3	#276.5	15.1	#149.8	134.4	14.0
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	
Base Capacity (vph)	171	542	267	582	163	1895	849	281	2237	1018
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	1.01	0.66	0.51	1.50	0.61	1.31	0.17	1.37	0.79	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.

HCM Signalized Intersection Capacity Analysis
106: Trafalgar Rd & Burhamthorpe Rd/Burnhamthorpe Rd

TT (2041) - Scenario B - 35% Mode Share
Timing Plan: PM Peak Hour

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰	↱		↰	↱		↰	↱	↱	↰	↱	↱
Traffic Volume (vph)	173	339	18	135	297	578	100	2482	145	385	1773	328
Future Volume (vph)	173	339	18	135	297	578	100	2482	145	385	1773	328
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	1.0	4.0	4.0	1.0
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	0.99		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	1849		1770	1678		1770	5085	1583	1770	5085	1583
Flt Permitted	0.14	1.00		0.25	1.00		0.11	1.00	1.00	0.10	1.00	1.00
Satd. Flow (perm)	255	1849		459	1678		196	5085	1583	177	5085	1583
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	173	339	18	135	297	578	100	2482	145	385	1773	328
RTOR Reduction (vph)	0	1	0	0	64	0	0	0	50	0	0	146
Lane Group Flow (vph)	173	356	0	135	811	0	100	2482	95	385	1773	182
Turn Type	pm+pt	NA		pm+pt	NA		pm+pt	NA	pm+ov	pm+pt	NA	pm+ov
Protected Phases	7	4		3	8		5	2	3	1	6	7
Permitted Phases	4			8			2		2	6		6
Actuated Green, G (s)	37.2	30.2		40.8	32.0		45.6	39.0	47.8	56.0	46.4	53.4
Effective Green, g (s)	35.2	32.2		38.8	34.0		43.6	41.0	51.8	55.0	48.4	57.4
Actuated g/C Ratio	0.32	0.29		0.35	0.31		0.40	0.37	0.47	0.50	0.44	0.52
Clearance Time (s)	3.0	6.0		3.0	6.0		3.0	6.0	3.0	3.0	6.0	3.0
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)	164	541		254	518		157	1895	745	276	2237	826
v/s Ratio Prot	c0.06	0.19		0.04	c0.48		0.03	0.49	c0.01	c0.16	0.35	0.02
v/s Ratio Perm	0.28			0.15			0.22		0.05	c0.53		0.10
v/c Ratio	1.05	0.66		0.53	1.57		0.64	1.31	0.13	1.39	0.79	0.22
Uniform Delay, d1	35.2	34.1		26.5	38.0		24.3	34.5	16.4	32.9	26.5	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	85.6	2.9		2.1	264.2		18.1	143.3	0.4	198.4	3.0	0.6
Delay (s)	120.8	36.9		28.6	302.2		42.4	177.8	16.7	231.3	29.5	14.8
Level of Service	F	D		C	F		D	F	B	F	C	B
Approach Delay (s)		64.3			265.6			164.3			58.8	
Approach LOS		E			F			F			E	

Intersection Summary

HCM 2000 Control Delay	132.8	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	1.43		
Actuated Cycle Length (s)	110.0	Sum of lost time (s)	16.0
Intersection Capacity Utilization	143.3%	ICU Level of Service	H
Analysis Period (min)	15		

c Critical Lane Group

Lanes, Volumes, Timings
202: Trafalgar Rd & East Street C

TT (2041) - Scenario B - 35% Mode Share
Timing Plan: PM Peak Hour

	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations		↑		↑↑↑	↑↑↑	↑
Traffic Volume (vph)	0	254	0	3233	2232	241
Future Volume (vph)	0	254	0	3233	2232	241
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (m)	0.0	0.0	0.0			90.0
Storage Lanes	0	1	0			1
Taper Length (m)	7.5		7.5			
Lane Util. Factor	1.00	1.00	1.00	0.91	0.91	1.00
Frt		0.865				0.850
Flt Protected						
Satd. Flow (prot)	0	1611	0	5085	5085	1583
Flt Permitted						
Satd. Flow (perm)	0	1611	0	5085	5085	1583
Link Speed (k/h)	50			50	50	
Link Distance (m)	205.4			92.4	193.0	
Travel Time (s)	14.8			6.7	13.9	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	0	254	0	3233	2232	241
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	254	0	3233	2232	241
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	0.0			3.6	3.6	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	4.8			4.8	4.8	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)	25	15	25			15
Sign Control	Stop			Free	Free	
Intersection Summary						
Area Type:	Other					
Control Type:	Unsignalized					
Intersection Capacity Utilization 65.8%	ICU Level of Service C					
Analysis Period (min) 15						

HCM Unsignalized Intersection Capacity Analysis TT (2041) - Scenario B - 35% Mode Share
202: Trafalgar Rd & East Street C

Timing Plan: PM Peak Hour

								
Movement	EBL	EBR	NBL	NBT	SBT	SBR		
Lane Configurations				  	  			
Traffic Volume (veh/h)	0	254	0	3233	2232	241		
Future Volume (Veh/h)	0	254	0	3233	2232	241		
Sign Control	Stop			Free	Free			
Grade	0%			0%	0%			
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00		
Hourly flow rate (vph)	0	254	0	3233	2232	241		
Pedestrians								
Lane Width (m)								
Walking Speed (m/s)								
Percent Blockage								
Right turn flare (veh)								
Median type				None	None			
Median storage (veh)								
Upstream signal (m)				263	193			
pX, platoon unblocked	0.79	0.70	0.70					
vC, conflicting volume	3310	744	2473					
vC1, stage 1 conf vol								
vC2, stage 2 conf vol								
vCu, unblocked vol	476	0	1618					
tC, single (s)	6.8	6.9	4.1					
tC, 2 stage (s)								
tF (s)	3.5	3.3	2.2					
p0 queue free %	100	67	100					
cM capacity (veh/h)	411	763	280					
Direction, Lane #	EB 1	NB 1	NB 2	NB 3	SB 1	SB 2	SB 3	SB 4
Volume Total	254	1078	1078	1078	744	744	744	241
Volume Left	0	0	0	0	0	0	0	0
Volume Right	254	0	0	0	0	0	0	241
cSH	763	1700	1700	1700	1700	1700	1700	1700
Volume to Capacity	0.33	0.63	0.63	0.63	0.44	0.44	0.44	0.14
Queue Length 95th (m)	11.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Control Delay (s)	12.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Lane LOS	B							
Approach Delay (s)	12.1	0.0	0.0					
Approach LOS	B							
Intersection Summary								
Average Delay	0.5							
Intersection Capacity Utilization	65.8%			ICU Level of Service			C	
Analysis Period (min)	15							

Lanes, Volumes, Timings
203: East Street D & East Street A

TT (2041) - Scenario B - 35% Mode Share
Timing Plan: PM Peak Hour

						
Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	147	452	0	271	353	0
Future Volume (vph)	147	452	0	271	353	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	0.850					
Flt Protected			0.950			
Satd. Flow (prot)	1863	1583	0	1863	1770	0
Flt Permitted			0.950			
Satd. Flow (perm)	1863	1583	0	1863	1770	0
Link Speed (k/h)	50			50	50	
Link Distance (m)	205.9			205.1	113.3	
Travel Time (s)	14.8			14.8	8.2	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	147	452	0	271	353	0
Shared Lane Traffic (%)						
Lane Group Flow (vph)	147	452	0	271	353	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
Sign Control	Free			Free	Stop	
Intersection Summary						
Area Type:	Other					
Control Type:	Unsignalized					
Intersection Capacity Utilization	48.9%			ICU Level of Service A		
Analysis Period (min)	15					

HCM Unsignalized Intersection Capacity Analysis TT (2041) - Scenario B - 35% Mode Share
203: East Street D & East Street A

Timing Plan: PM Peak Hour

	→	↖	↗	←	↖	↗
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑	↑		↑	↑	
Traffic Volume (veh/h)	147	452	0	271	353	0
Future Volume (Veh/h)	147	452	0	271	353	0
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	147	452	0	271	353	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)	206					
pX, platoon unblocked						
vC, conflicting volume			599		418	147
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			599		418	147
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			100		40	100
cM capacity (veh/h)			978		591	900
Direction, Lane #	EB 1	EB 2	WB 1	NB 1		
Volume Total	147	452	271	353		
Volume Left	0	0	0	353		
Volume Right	0	452	0	0		
cSH	1700	1700	978	591		
Volume to Capacity	0.09	0.27	0.00	0.60		
Queue Length 95th (m)	0.0	0.0	0.0	29.4		
Control Delay (s)	0.0	0.0	0.0	19.7		
Lane LOS				C		
Approach Delay (s)	0.0		0.0	19.7		
Approach LOS				C		
Intersection Summary						
Average Delay			5.7			
Intersection Capacity Utilization			48.9%		ICU Level of Service	A
Analysis Period (min)			15			

Lanes, Volumes, Timings
204: East Street E & East Street A

TT (2041) - Scenario B - 35% Mode Share
Timing Plan: PM Peak Hour

						
Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	0	95	0	0	288	0
Future Volume (vph)	0	95	0	0	288	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.865					
Flt Protected					0.950	
Satd. Flow (prot)	1611	0	0	1863	1770	0
Flt Permitted					0.950	
Satd. Flow (perm)	1611	0	0	1863	1770	0
Link Speed (k/h)	50			50	50	
Link Distance (m)	205.1			192.2	115.1	
Travel Time (s)	14.8			13.8	8.3	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	0	95	0	0	288	0
Shared Lane Traffic (%)						
Lane Group Flow (vph)	95	0	0	0	288	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	0.0			0.0	3.6	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	4.8			4.8	4.8	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)		15	25		25	15
Sign Control	Free			Free	Stop	
Intersection Summary						
Area Type:	Other					
Control Type:	Unsignalized					
Intersection Capacity Utilization	28.5%			ICU Level of Service A		
Analysis Period (min)	15					

HCM Unsignalized Intersection Capacity Analysis TT (2041) - Scenario B - 35% Mode Share
204: East Street E & East Street A

Timing Plan: PM Peak Hour

	→	↘	↙	←	↖	↗
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↗			↖	↗	↖
Traffic Volume (veh/h)	0	95	0	0	288	0
Future Volume (Veh/h)	0	95	0	0	288	0
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	0	95	0	0	288	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			95		48	48
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			95		48	48
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			100		70	100
cM capacity (veh/h)			1499		962	1022
Direction, Lane #	EB 1	WB 1	NB 1			
Volume Total	95	0	288			
Volume Left	0	0	288			
Volume Right	95	0	0			
cSH	1700	1700	962			
Volume to Capacity	0.06	0.00	0.30			
Queue Length 95th (m)	0.0	0.0	9.5			
Control Delay (s)	0.0	0.0	10.3			
Lane LOS			B			
Approach Delay (s)	0.0	0.0	10.3			
Approach LOS			B			
Intersection Summary						
Average Delay			7.8			
Intersection Capacity Utilization			28.5%		ICU Level of Service	A
Analysis Period (min)			15			

Lanes, Volumes, Timings
205: East Street F & East Street A

TT (2041) - Scenario B - 35% Mode Share
Timing Plan: PM Peak Hour

						
Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
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	1.00	1.00	1.00
Frt						
Flt Protected						
Satd. Flow (prot)	1863	0	0	1863	1863	0
Flt Permitted						
Satd. Flow (perm)	1863	0	0	1863	1863	0
Link Speed (k/h)	50			50	50	
Link Distance (m)	192.2			209.4	115.6	
Travel Time (s)	13.8			15.1	8.3	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
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)	0.0			0.0	3.6	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	4.8			4.8	4.8	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)		15	25		25	15
Sign Control	Free			Free	Stop	
Intersection Summary						
Area Type:	Other					
Control Type:	Unsignalized					
Intersection Capacity Utilization	0.0%			ICU Level of Service A		
Analysis Period (min)	15					

HCM Unsignalized Intersection Capacity Analysis TT (2041) - Scenario B - 35% Mode Share
205: East Street F & East Street A

Timing Plan: PM Peak Hour

	→	↖	↗	←	↖	↗
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↖			↖	↖	
Traffic Volume (veh/h)	0	0	0	0	0	0
Future Volume (Veh/h)	0	0	0	0	0	0
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	0	0	0	0	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			0		0	0
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			0		0	0
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			100		100	100
cM capacity (veh/h)			1623		1023	1085
Direction, Lane #	EB 1	WB 1	NB 1			
Volume Total	0	0	0			
Volume Left	0	0	0			
Volume Right	0	0	0			
cSH	1700	1700	1700			
Volume to Capacity	0.00	0.00	0.00			
Queue Length 95th (m)	0.0	0.0	0.0			
Control Delay (s)	0.0	0.0	0.0			
Lane LOS			A			
Approach Delay (s)	0.0	0.0	0.0			
Approach LOS			A			
Intersection Summary						
Average Delay			0.0			
Intersection Capacity Utilization			0.0%		ICU Level of Service	A
Analysis Period (min)			15			

Lanes, Volumes, Timings
206: East Street D & East Street B

TT (2041) - Scenario B - 35% Mode Share
Timing Plan: PM Peak Hour

	←	←	↑	↗	↘	↓
Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	↖		↖			↗
Traffic Volume (vph)	100	8	170	22	22	376
Future Volume (vph)	100	8	170	22	22	376
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		0.985			
Flt Protected	0.956					0.997
Satd. Flow (prot)	1763	0	1835	0	0	1857
Flt Permitted	0.956					0.997
Satd. Flow (perm)	1763	0	1835	0	0	1857
Link Speed (k/h)	50		50			50
Link Distance (m)	203.4		120.6			113.3
Travel Time (s)	14.6		8.7			8.2
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	100	8	170	22	22	376
Shared Lane Traffic (%)						
Lane Group Flow (vph)	108	0	192	0	0	398
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 47.3% ICU Level of Service A

Analysis Period (min) 15

HCM Unsignalized Intersection Capacity Analysis TT (2041) - Scenario B - 35% Mode Share
206: East Street D & East Street B

Timing Plan: PM Peak Hour

	←	←	↑	↗	↘	↓
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	↖		↖			↗
Traffic Volume (veh/h)	100	8	170	22	22	376
Future Volume (Veh/h)	100	8	170	22	22	376
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	100	8	170	22	22	376
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	601	181			192	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	601	181			192	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	78	99			98	
cM capacity (veh/h)	456	862			1381	

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	108	192	398
Volume Left	100	0	22
Volume Right	8	22	0
cSH	472	1700	1381
Volume to Capacity	0.23	0.11	0.02
Queue Length 95th (m)	6.5	0.0	0.4
Control Delay (s)	14.9	0.0	0.6
Lane LOS	B		A
Approach Delay (s)	14.9	0.0	0.6
Approach LOS	B		

Intersection Summary

Average Delay	2.6		
Intersection Capacity Utilization	47.3%	ICU Level of Service	A
Analysis Period (min)	15		

Lanes, Volumes, Timings
207: East Street E & East Street B

TT (2041) - Scenario B - 35% Mode Share
Timing Plan: PM Peak Hour

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔			↔			↔			↔	
Traffic Volume (vph)	116	0	128	0	0	0	177	17	0	0	95	0
Future Volume (vph)	116	0	128	0	0	0	177	17	0	0	95	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	0.929											
Flt Protected	0.977											
Satd. Flow (prot)	0	1691	0	0	1863	0	0	1781	0	0	1863	0
Flt Permitted	0.977											
Satd. Flow (perm)	0	1691	0	0	1863	0	0	1781	0	0	1863	0
Link Speed (k/h)	50											
Link Distance (m)	203.4											
Travel Time (s)	14.6											
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	116	0	128	0	0	0	177	17	0	0	95	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	244	0	0	0	0	0	194	0	0	95	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											
Link Offset(m)	0.0											
Crosswalk Width(m)	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											

Intersection Summary

Area Type: Other
Control Type: Unsignalized
Intersection Capacity Utilization 38.3%
Analysis Period (min) 15

ICU Level of Service A

HCM Unsignalized Intersection Capacity Analysis TT (2041) - Scenario B - 35% Mode Share
207: East Street E & East Street B

Timing Plan: PM Peak Hour

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Movement		↔			↔			↔			↔	
Lane Configurations		↔			↔			↔			↔	
Traffic Volume (veh/h)	116	0	128	0	0	0	177	17	0	0	95	0
Future Volume (Veh/h)	116	0	128	0	0	0	177	17	0	0	95	0
Sign Control	Stop											
Grade	0%											
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	116	0	128	0	0	0	177	17	0	0	95	0
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type	None											
Median storage (veh)												
Upstream signal (m)	121											
pX, platoon unblocked												
vC, conflicting volume	466	466	95	594	466	17	95			17		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	466	466	95	594	466	17	95			17		
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 %	75	100	87	100	100	100	88			100		
cM capacity (veh/h)	461	436	962	329	436	1062	1499			1600		

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	244	0	194	95
Volume Left	116	0	177	0
Volume Right	128	0	0	0
cSH	634	1700	1499	1600
Volume to Capacity	0.38	0.00	0.12	0.00
Queue Length 95th (m)	13.6	0.0	3.0	0.0
Control Delay (s)	14.2	0.0	7.1	0.0
Lane LOS	B	A	A	
Approach Delay (s)	14.2	0.0	7.1	0.0
Approach LOS	B	A		

Intersection Summary

Average Delay 9.1
Intersection Capacity Utilization 38.3% ICU Level of Service A
Analysis Period (min) 15

Lanes, Volumes, Timings
208: East Street F & East Street B

TT (2041) - Scenario B - 35% Mode Share
Timing Plan: PM Peak Hour

						
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	1.00	1.00	1.00
Fit						
Fit Protected						
Satd. Flow (prot)	1863	0	0	1863	1863	0
Fit Permitted						
Satd. Flow (perm)	1863	0	0	1863	1863	0
Link Speed (k/h)	50			50	50	
Link Distance (m)	193.8			120.1	115.6	
Travel Time (s)	14.0			8.6	8.3	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
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			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	25			15
Sign Control	Stop			Free	Free	
Intersection Summary						
Area Type:	Other					
Control Type:	Unsignalized					
Intersection Capacity Utilization	0.0%			ICU Level of Service A		
Analysis Period (min)	15					

HCM Unsignalized Intersection Capacity Analysis TT (2041) - Scenario B - 35% Mode Share
208: East Street F & East Street B

Timing Plan: PM Peak Hour

	EBL	EBR	NBL	NBT	SBT	SBR
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	0	0	0	0	0	0
Future Volume (Veh/h)	0	0	0	0	0	0
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	0	0	0	0	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	0	0	0			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	0	0	0			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	100	100	100			
cM capacity (veh/h)	1023	1085	1623			
Direction, Lane #	EB 1	NB 1	SB 1			
Volume Total	0	0	0			
Volume Left	0	0	0			
Volume Right	0	0	0			
cSH	1700	1700	1700			
Volume to Capacity	0.00	0.00	0.00			
Queue Length 95th (m)	0.0	0.0	0.0			
Control Delay (s)	0.0	0.0	0.0			
Lane LOS	A					
Approach Delay (s)	0.0	0.0	0.0			
Approach LOS	A					
Intersection Summary						
Average Delay		0.0				
Intersection Capacity Utilization		0.0%		ICU Level of Service A		
Analysis Period (min)		15				

Lanes, Volumes, Timings TT (2041) - Scenario B - 35% Mode Share
209: William Halton Parkway & East Street D Timing Plan: PM Peak Hour

	EBL	EBT	WBT	WBR	SBL	SBR
Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑↑	↑↑	↑		↑
Traffic Volume (vph)	0	1250	2258	66	0	446
Future Volume (vph)	0	1250	2258	66	0	446
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (m)	0.0			50.0	0.0	0.0
Storage Lanes	0			1	0	1
Taper Length (m)	7.5				7.5	
Lane Util. Factor	1.00	0.95	0.95	1.00	1.00	1.00
Frt				0.850		0.865
Flt Protected						
Satd. Flow (prot)	0	3539	3539	1583	0	1611
Flt Permitted						
Satd. Flow (perm)	0	3539	3539	1583	0	1611
Link Speed (k/h)		50	50		50	
Link Distance (m)		205.0	201.5		120.6	
Travel Time (s)		14.8	14.5		8.7	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	0	1250	2258	66	0	446
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	1250	2258	66	0	446
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(m)		3.6	3.6		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	25	15
Sign Control		Free	Free		Stop	
Intersection Summary						
Area Type:	Other					
Control Type:	Unsignalized					
Intersection Capacity Utilization 96.7%	ICU Level of Service F					
Analysis Period (min) 15						

HCM Unsignalized Intersection Capacity Analysis TT (2041) - Scenario B - 35% Mode Share
209: William Halton Parkway & East Street D Timing Plan: PM Peak Hour

	EBL	EBT	WBT	WBR	SBL	SBR
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑↑	↑↑	↑		↑
Traffic Volume (veh/h)	0	1250	2258	66	0	446
Future Volume (Veh/h)	0	1250	2258	66	0	446
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	0	1250	2258	66	0	446
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		None	None			
Median storage (veh)						
Upstream signal (m)		205	201			
pX, platoon unblocked	0.39				0.45	0.39
vC, conflicting volume	2324				2883	1129
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1247				1396	0
tC, single (s)	4.1				6.8	6.9
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	100				100	0
cM capacity (veh/h)	214				60	418
Direction, Lane #	EB 1	EB 2	WB 1	WB 2	WB 3	SB 1
Volume Total	625	625	1129	1129	66	446
Volume Left	0	0	0	0	0	0
Volume Right	0	0	0	0	66	446
cSH	1700	1700	1700	1700	1700	418
Volume to Capacity	0.37	0.37	0.66	0.66	0.04	1.07
Queue Length 95th (m)	0.0	0.0	0.0	0.0	0.0	110.9
Control Delay (s)	0.0	0.0	0.0	0.0	0.0	94.6
Lane LOS						F
Approach Delay (s)	0.0		0.0			94.6
Approach LOS						F
Intersection Summary						
Average Delay			10.5			
Intersection Capacity Utilization			96.7%		ICU Level of Service	F
Analysis Period (min)			15			

Lanes, Volumes, Timings

210: William Halton Parkway & East Street E

TT (2041) - Scenario B - 35% Mode Share

Timing Plan: PM Peak Hour

	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations	↩	↩↩	↩↩	↩	↩	↩
Traffic Volume (vph)	172	1062	2256	30	155	68
Future Volume (vph)	172	1062	2256	30	155	68
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (m)	90.0			50.0	0.0	0.0
Storage Lanes	1			1	1	0
Taper Length (m)	100.0				7.5	
Lane Util. Factor	1.00	*0.95	*0.95	1.00	1.00	1.00
Frt				0.850	0.959	
Flt Protected	0.950				0.966	
Satd. Flow (prot)	1770	3539	3539	1583	1726	0
Flt Permitted	0.053				0.966	
Satd. Flow (perm)	99	3539	3539	1583	1726	0
Right Turn on Red				Yes	Yes	
Satd. Flow (RTOR)				15	16	
Link Speed (k/h)		50	50		50	
Link Distance (m)		201.5	195.6		120.6	
Travel Time (s)		14.5	14.1		8.7	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	172	1062	2256	30	155	68
Shared Lane Traffic (%)						
Lane Group Flow (vph)	172	1062	2256	30	223	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
Number of Detectors	1	2	2	1	1	
Detector Template	Left	Thru	Thru	Right	Left	
Leading Detector (m)	2.0	10.0	10.0	2.0	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)	2.0	0.6	0.6	2.0	2.0	
Detector 1 Type	CI+Ex	CI+Ex	CI+Ex	CI+Ex	CI+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		CI+Ex	CI+Ex			
Detector 2 Channel						
Detector 2 Extend (s)		0.0	0.0			
Turn Type	pm+pt	NA	NA	Perm	Perm	
Protected Phases	7	4	8			
Permitted Phases	4			8	6	

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Lanes, Volumes, Timings

210: William Halton Parkway & East Street E

TT (2041) - Scenario B - 35% Mode Share

Timing Plan: PM Peak Hour

	EBL	EBT	WBT	WBR	SBL	SBR
Detector Phase	7	4	8	8	6	
Switch Phase						
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	
Minimum Split (s)	9.5	24.0	24.0	24.0	24.0	
Total Split (s)	17.6	95.6	78.0	78.0	24.4	
Total Split (%)	14.7%	79.7%	65.0%	65.0%	20.3%	
Maximum Green (s)	14.6	89.6	72.0	72.0	18.4	
Yellow Time (s)	3.0	4.0	4.0	4.0	4.0	
All-Red Time (s)	0.0	2.0	2.0	2.0	2.0	
Lost Time Adjust (s)	1.0	-2.0	-2.0	-2.0	-2.0	
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	
Lead/Lag	Lead		Lag	Lag		
Lead-Lag Optimize?	Yes		Yes	Yes		
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	
Flash Dont Walk (s)		11.0	11.0	11.0	11.0	
Pedestrian Calls (#/hr)		0	0	0	0	
Act Effect Green (s)	91.6	91.6	74.0	74.0	18.9	
Actuated g/C Ratio	0.77	0.77	0.62	0.62	0.16	
v/c Ratio	0.64	0.39	1.02	0.03	0.77	
Control Delay	36.6	5.0	47.6	5.7	63.0	
Queue Delay	0.0	0.0	0.0	0.0	0.0	
Total Delay	36.6	5.0	47.6	5.7	63.0	
LOS	D	A	D	A	E	
Approach Delay		9.4	47.1		63.0	
Approach LOS		A	D		E	

Intersection Summary

Area Type: Other

Cycle Length: 120

Actuated Cycle Length: 118.5

Natural Cycle: 100

Control Type: Semi Act-Uncoord

Maximum v/c Ratio: 1.02

Intersection Signal Delay: 35.6

Intersection LOS: D

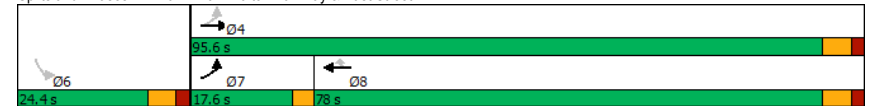
Intersection Capacity Utilization 94.6%

ICU Level of Service F

Analysis Period (min) 15

* User Entered Value

Splits and Phases: 210: William Halton Parkway & East Street E

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Queues
210: William Halton Parkway & East Street E

TT (2041) - Scenario B - 35% Mode Share
Timing Plan: PM Peak Hour

	EBL	EBT	WBT	WBR	SBL
Lane Group	EBL	EBT	WBT	WBR	SBL
Lane Group Flow (vph)	172	1062	2256	30	223
v/c Ratio	0.64	0.39	1.02	0.03	0.77
Control Delay	36.6	5.0	47.6	5.7	63.0
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	36.6	5.0	47.6	5.7	63.0
Queue Length 50th (m)	22.1	37.3	~296.4	1.3	46.2
Queue Length 95th (m)	45.2	45.8	#337.1	4.9	#78.4
Internal Link Dist (m)		177.5	171.6		96.6
Turn Bay Length (m)	90.0			50.0	
Base Capacity (vph)	268	2736	2210	994	310
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	0.64	0.39	1.02	0.03	0.72

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.

HCM Signalized Intersection Capacity Analysis
210: William Halton Parkway & East Street E

TT (2041) - Scenario B - 35% Mode Share
Timing Plan: PM Peak Hour

	EBL	EBT	WBT	WBR	SBL	SBR
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations	↰	↱	↰	↱	↰	↱
Traffic Volume (vph)	172	1062	2256	30	155	68
Future Volume (vph)	172	1062	2256	30	155	68
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	
Lane Util. Factor	1.00	*0.95	*0.95	1.00	1.00	
Flt	1.00	1.00	1.00	0.85	0.96	
Flt Protected	0.95	1.00	1.00	1.00	0.97	
Satd. Flow (prot)	1770	3539	3539	1583	1726	
Flt Permitted	0.05	1.00	1.00	1.00	0.97	
Satd. Flow (perm)	99	3539	3539	1583	1726	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	172	1062	2256	30	155	68
RTOR Reduction (vph)	0	0	0	6	13	0
Lane Group Flow (vph)	172	1062	2256	24	210	0
Turn Type	pm+pt	NA	NA	Perm	Perm	
Protected Phases	7	4	8			
Permitted Phases	4			8	6	
Actuated Green, G (s)	89.6	89.6	72.0	72.0	16.9	
Effective Green, g (s)	88.6	91.6	74.0	74.0	18.9	
Actuated g/C Ratio	0.75	0.77	0.62	0.62	0.16	
Clearance Time (s)	3.0	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)	265	2735	2210	988	275	
v/s Ratio Prot	c0.07	0.30	c0.64			
v/s Ratio Perm	0.41			0.02	c0.12	
v/c Ratio	0.65	0.39	1.02	0.02	0.76	
Uniform Delay, d1	36.5	4.4	22.2	8.5	47.6	
Progression Factor	1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	11.7	0.4	24.6	0.0	11.8	
Delay (s)	48.2	4.8	46.8	8.5	59.4	
Level of Service	D	A	D	A	E	
Approach Delay (s)		10.8	46.3		59.4	
Approach LOS		B	D		E	

Intersection Summary

HCM 2000 Control Delay	35.4	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.95		
Actuated Cycle Length (s)	118.5	Sum of lost time (s)	14.0
Intersection Capacity Utilization	94.6%	ICU Level of Service	F
Analysis Period (min)	15		

c Critical Lane Group

Lanes, Volumes, Timings
211: William Halton Parkway & East Street F

TT (2041) - Scenario B - 35% Mode Share
Timing Plan: PM Peak Hour

Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	0	1217	2286	0	0	0
Future Volume (vph)	0	1217	2286	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (m)	90.0			0.0	0.0	0.0
Storage Lanes	1			0	1	0
Taper Length (m)	100.0				7.5	
Lane Util. Factor	1.00	0.95	0.95	0.95	1.00	1.00
Fr						
Flt Protected						
Satd. Flow (prot)	1863	3539	3539	0	1863	0
Flt Permitted						
Satd. Flow (perm)	1863	3539	3539	0	1863	0
Link Speed (k/h)		50	50		50	
Link Distance (m)		195.6	407.9		120.1	
Travel Time (s)		14.1	29.4		8.6	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	0	1217	2286	0	0	0
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	1217	2286	0	0	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 66.5%				ICU Level of Service C		
Analysis Period (min) 15						

HCM Unsignalized Intersection Capacity Analysis TT (2041) - Scenario B - 35% Mode Share
211: William Halton Parkway & East Street F

Timing Plan: PM Peak Hour

	EBL	EBT	WBT	WBR	SBL	SBR
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations	↔	↕	↕		↕	
Traffic Volume (veh/h)	0	1217	2286	0	0	0
Future Volume (Veh/h)	0	1217	2286	0	0	0
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	0	1217	2286	0	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)		196				
pX, platoon unblocked					0.90	
vC, conflicting volume	2286				2894	1143
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	2286				2883	1143
tC, single (s)	4.1				6.8	6.9
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	100				100	100
cM capacity (veh/h)	218				12	194
Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	SB 1
Volume Total	0	608	608	1524	762	0
Volume Left	0	0	0	0	0	0
Volume Right	0	0	0	0	0	0
cSH	1700	1700	1700	1700	1700	1700
Volume to Capacity	0.00	0.36	0.36	0.90	0.45	0.00
Queue Length 95th (m)	0.0	0.0	0.0	0.0	0.0	0.0
Control Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0
Lane LOS						A
Approach Delay (s)	0.0			0.0		0.0
Approach LOS						A
Intersection Summary						
Average Delay			0.0			
Intersection Capacity Utilization			66.5%		ICU Level of Service	C
Analysis Period (min)			15			

Lanes, Volumes, Timings

212: West Street A & Transit Station

TT (2041) - Scenario B - 35% Mode Share

Timing Plan: PM Peak Hour

	←	←	↑	↗	↘	↓
Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	↔		↔			↔
Traffic Volume (vph)	117	0	0	404	0	0
Future Volume (vph)	117	0	0	404	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt			0.865			
Flt Protected	0.950					
Satd. Flow (prot)	1770	0	1611	0	0	1863
Flt Permitted	0.950					
Satd. Flow (perm)	1770	0	1611	0	0	1863
Link Speed (k/h)	50		50			50
Link Distance (m)	216.0		234.7			101.9
Travel Time (s)	15.6		16.9			7.3
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	117	0	0	404	0	0
Shared Lane Traffic (%)						
Lane Group Flow (vph)	117	0	404	0	0	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(m)	7.2		0.0		Left	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 38.2%

ICU Level of Service A

Analysis Period (min) 15

HCM Unsignalized Intersection Capacity Analysis

212: West Street A & Transit Station

TT (2041) - Scenario B - 35% Mode Share

Timing Plan: PM Peak Hour

	←	←	↑	↗	↘	↓
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	↔		↔			↔
Traffic Volume (veh/h)	117	0	0	404	0	0
Future Volume (Veh/h)	117	0	0	404	0	0
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	117	0	0	404	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	202	202			404	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	202	202			404	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	85	100			100	
cM capacity (veh/h)	787	839			1155	

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	117	404	0
Volume Left	117	0	0
Volume Right	0	404	0
cSH	787	1700	1700
Volume to Capacity	0.15	0.24	0.00
Queue Length 95th (m)	3.9	0.0	0.0
Control Delay (s)	10.4	0.0	0.0
Lane LOS	B		
Approach Delay (s)	10.4	0.0	0.0
Approach LOS	B		

Intersection Summary

Average Delay 2.3

Intersection Capacity Utilization 38.2%

ICU Level of Service

A

Analysis Period (min) 15

Lanes, Volumes, Timings TT (2041) - Scenario B - 35% Mode Share
213: East Street A/West Street A & William Halton Parkway Timing Plan: PM Peak Hour

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑	↑		↑↑	↑			↑			↑
Traffic Volume (vph)	0	1193	12	0	2496	119	0	0	505	0	0	30
Future Volume (vph)	0	1193	12	0	2496	119	0	0	505	0	0	30
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	0.0		90.0	0.0		90.0	0.0		0.0	0.0		0.0
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	0.95	1.00	1.00	0.95	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt			0.850			0.850			0.865			0.865
Fit Protected												
Satd. Flow (prot)	0	3539	1583	0	3539	1583	0	0	1611	0	0	1611
Fit Permitted												
Satd. Flow (perm)	0	3539	1583	0	3539	1583	0	0	1611	0	0	1611
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		200.8			212.9			103.7			234.7	
Travel Time (s)		14.5			15.3			7.5			16.9	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	0	1193	12	0	2496	119	0	0	505	0	0	30
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	1193	12	0	2496	119	0	0	505	0	0	30
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 79.0%	ICU Level of Service D											
Analysis Period (min) 15												

HCM Unsignalized Intersection Capacity Analysis TT (2041) - Scenario B - 35% Mode Share
213: East Street A/West Street A & William Halton Parkway Timing Plan: PM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		 			 							
Traffic Volume (veh/h)	0	1193	12	0	2496	119	0	0	505	0	0	30
Future Volume (Veh/h)	0	1193	12	0	2496	119	0	0	505	0	0	30
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	0	1193	12	0	2496	119	0	0	505	0	0	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)	201			213								
pX, platoon unblocked	0.73			0.82			0.82	0.82	0.82	0.82	0.82	0.73
vC, conflicting volume	2615			1205			2471	3808	596	3598	3701	1248
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	2476			810			1374	2995	67	2740	2865	615
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	37	100	100	91
cM capacity (veh/h)	135			665			78	11	805	3	14	319
Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	WB 3	NB 1	SB 1				
Volume Total	596	596	12	1248	1248	119	505	30				
Volume Left	0	0	0	0	0	0	0	0				
Volume Right	0	0	12	0	0	119	505	30				
cSH	1700	1700	1700	1700	1700	1700	805	319				
Volume to Capacity	0.35	0.35	0.01	0.73	0.73	0.07	0.63	0.09				
Queue Length 95th (m)	0.0	0.0	0.0	0.0	0.0	0.0	33.8	2.3				
Control Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	16.7	17.4				
Lane LOS							C	C				
Approach Delay (s)	0.0			0.0			16.7	17.4				
Approach LOS							C	C				
Intersection Summary												
Average Delay	2.1											
Intersection Capacity Utilization	79.0%			ICU Level of Service			D					
Analysis Period (min)	15											

Lanes, Volumes, Timings

TT (2041) - Scenario B - 35% Mode Share

214: West Street D & William Halton Parkway

Timing Plan: PM Peak Hour

	←	→	↖	↗	←	↖	↗	↖	↗	↖	↗	↖	↗
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations	↖	↖	↖	↖	↖	↖	↖	↖	↖	↖	↖	↖	
Traffic Volume (vph)	0	948	14	265	2169	92	65	0	113	152	0	11	
Future Volume (vph)	0	948	14	265	2169	92	65	0	113	152	0	11	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	
Storage Length (m)	90.0		90.0	90.0		90.0	50.0		0.0	50.0		0.0	
Storage Lanes	1		1	1		1	1		0	1		0	
Taper Length (m)	100.0			100.0			75.0			75.0			
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Frt			0.850			0.850		0.850			0.850		
Flt Protected				0.950			0.950			0.950			
Satd. Flow (prot)	1863	3539	1583	1770	3539	1583	1770	1583	0	1770	1583	0	
Flt Permitted				0.190			0.750			0.673			
Satd. Flow (perm)	1863	3539	1583	354	3539	1583	1397	1583	0	1254	1583	0	
Right Turn on Red			Yes			Yes		Yes			Yes		
Satd. Flow (RTOR)			73			92		501			73		
Link Speed (k/h)		50			50			50			50		
Link Distance (m)		573.3			200.8			99.4			133.2		
Travel Time (s)		41.3			14.5			7.2			9.6		
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Adj. Flow (vph)	0	948	14	265	2169	92	65	0	113	152	0	11	
Shared Lane Traffic (%)													
Lane Group Flow (vph)	0	948	14	265	2169	92	65	113	0	152	11	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	1	2	1	1	2		1	2		
Detector Template	Left	Thru	Right	Left	Thru	Right	Left	Thru		Left	Thru		
Leading Detector (m)	2.0	10.0	2.0	2.0	10.0	2.0	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		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	2.0	0.6	2.0	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		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	pm+pt	NA	Perm	Perm	NA		Perm	NA		
Protected Phases		4			3		8			2		6	
Permitted Phases	4		4	8		8	2			6			

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Lanes, Volumes, Timings

TT (2041) - Scenario B - 35% Mode Share

214: West Street D & William Halton Parkway

Timing Plan: PM Peak Hour

	←	→	↖	↗	←	↖	↗	↖	↗	↖	↗	↖	↗
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Detector Phase	4	4	4	3	8	8	2	2		6	6		
Switch Phase													
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0		5.0	5.0		
Minimum Split (s)	24.0	24.0	24.0	9.5	24.0	24.0	24.0	24.0		29.0	29.0		
Total Split (s)	34.8	34.8	34.8	26.2	61.0	61.0	29.0	29.0		29.0	29.0		
Total Split (%)	38.7%	38.7%	38.7%	29.1%	67.8%	67.8%	32.2%	32.2%		32.2%	32.2%		
Maximum Green (s)	28.8	28.8	28.8	23.2	55.0	55.0	23.0	23.0		23.0	23.0		
Yellow Time (s)	4.0	4.0	4.0	3.0	4.0	4.0	4.0	4.0		4.0	4.0		
All-Red Time (s)	2.0	2.0	2.0	0.0	2.0	2.0	2.0	2.0		2.0	2.0		
Lost Time Adjust (s)	-2.0	-2.0	-2.0	1.0	-2.0	-2.0	-2.0	-2.0		1.0	-2.0		
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0		7.0	4.0		
Lead/Lag	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	None	None	Min	Min		Min	Min		
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 Effect Green (s)	40.2	40.2	55.1	55.1	55.1	17.0	17.0			14.0	17.0		
Actuated g/C Ratio	0.50	0.50	0.69	0.69	0.69	0.21	0.21			0.17	0.21		
v/c Ratio	0.53	0.02	0.61	0.89	0.08	0.22	0.15			0.70	0.03		
Control Delay	16.9	0.1	12.7	17.7	1.6	28.2	0.5			48.6	0.1		
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0			0.0	0.0		
Total Delay	16.9	0.1	12.7	17.7	1.6	28.2	0.5			48.6	0.1		
LOS	B	A	B	B	A	C	A			D	A		
Approach Delay	16.7			16.6			10.6				45.3		
Approach LOS	B			B			B				D		

Intersection Summary

Area Type: Other

Cycle Length: 90

Actuated Cycle Length: 80.2

Natural Cycle: 90

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 0.89

Intersection Signal Delay: 17.6

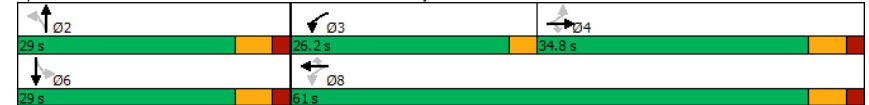
Intersection LOS: B

Intersection Capacity Utilization 89.2%

ICU Level of Service E

Analysis Period (min) 15

Splits and Phases: 214: West Street D & William Halton Parkway

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Queues
214: West Street D & William Halton Parkway

TT (2041) - Scenario B - 35% Mode Share
Timing Plan: PM Peak Hour

	→	↘	↙	←	↖	↗	↘	↙	↓
Lane Group	EBT	EBR	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	948	14	265	2169	92	65	113	152	11
v/c Ratio	0.53	0.02	0.61	0.89	0.08	0.22	0.15	0.70	0.03
Control Delay	16.9	0.1	12.7	17.7	1.6	28.2	0.5	48.6	0.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	16.9	0.1	12.7	17.7	1.6	28.2	0.5	48.6	0.1
Queue Length 50th (m)	46.5	0.0	12.4	116.8	0.0	8.4	0.0	22.4	0.0
Queue Length 95th (m)	91.7	0.0	31.9	#238.8	4.8	18.2	0.0	40.8	0.0
Internal Link Dist (m)	549.3		176.8			75.4		109.2	
Turn Bay Length (m)		90.0	90.0		90.0	50.0		50.0	
Base Capacity (vph)	1775	830	640	2547	1165	440	842	348	549
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.53	0.02	0.41	0.85	0.08	0.15	0.13	0.44	0.02

Intersection Summary

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

HCM Signalized Intersection Capacity Analysis
214: West Street D & William Halton Parkway

TT (2041) - Scenario B - 35% Mode Share
Timing Plan: PM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		 			 						 	
Traffic Volume (vph)	0	948	14	265	2169	92	65	0	113	152	0	11
Future Volume (vph)	0	948	14	265	2169	92	65	0	113	152	0	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	4.0	4.0	4.0	4.0		7.0	4.0	
Lane Util. Factor		0.95	1.00	1.00	0.95	1.00	1.00	1.00		1.00	1.00	
Frt		1.00	0.85	1.00	1.00	0.85	1.00	0.85		1.00	0.85	
Flt Protected		1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)		3539	1583	1770	3539	1583	1770	1583		1770	1583	
Flt Permitted		1.00	1.00	0.19	1.00	1.00	0.75	1.00		0.67	1.00	
Satd. Flow (perm)		3539	1583	354	3539	1583	1398	1583		1254	1583	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	0	948	14	265	2169	92	65	0	113	152	0	11
RTOR Reduction (vph)	0	0	7	0	0	29	0	89	0	0	9	0
Lane Group Flow (vph)	0	948	7	265	2169	63	65	24	0	152	2	0
Turn Type	Perm	NA	Perm	pm+pt	NA	Perm	Perm	NA		Perm	NA	
Protected Phases		4		3	8		2				6	
Permitted Phases	4		4	8		8	2			6		
Actuated Green, G (s)		38.2	38.2	53.0	53.0	53.0	15.0	15.0		15.0	15.0	
Effective Green, g (s)		40.2	40.2	52.0	55.0	55.0	17.0	17.0		14.0	17.0	
Actuated g/C Ratio		0.50	0.50	0.65	0.69	0.69	0.21	0.21		0.18	0.21	
Clearance Time (s)		6.0	6.0	3.0	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	3.0	
Lane Grp Cap (vph)		1778	795	421	2433	1088	297	336		219	336	
v/s Ratio Prot		0.27		0.08	c0.61			0.02			0.00	
v/s Ratio Perm			0.00	0.32		0.04	0.05			c0.12		
v/c Ratio		0.53	0.01	0.63	0.89	0.06	0.22	0.07		0.69	0.01	
Uniform Delay, d1		13.5	9.9	8.5	10.1	4.1	26.0	25.2		31.0	24.8	
Progression Factor		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	2.9	4.6	0.0	0.4	0.1		9.2	0.0	
Delay (s)		13.8	9.9	11.5	14.7	4.1	26.4	25.3		40.2	24.9	
Level of Service		B	A	B	B	A	C	C		D	C	
Approach Delay (s)		13.8			13.9			25.7			39.1	
Approach LOS		B			B			C			D	

Intersection Summary

HCM 2000 Control Delay	15.5	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.86		
Actuated Cycle Length (s)	80.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	89.2%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

Lanes, Volumes, Timings

TT (2041) - Scenario B - 35% Mode Share

215: East Street A & West Street B

Timing Plan: PM Peak Hour

	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	230	111	0	115	84	20
Future Volume (vph)	230	111	0	115	84	20
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	0.956				0.974	
Flt Protected	0.967					
Satd. Flow (prot)	1722	0	0	1863	1814	0
Flt Permitted	0.967					
Satd. Flow (perm)	1722	0	0	1863	1814	0
Link Speed (k/h)	50			50	50	
Link Distance (m)	202.4			83.5	103.7	
Travel Time (s)	14.6			6.0	7.5	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	230	111	0	115	84	20
Shared Lane Traffic (%)						
Lane Group Flow (vph)	341	0	0	115	104	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
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	25			15
Sign Control	Stop			Free	Free	

Intersection Summary

Area Type: Other

Control Type: Unsignalized

Intersection Capacity Utilization 32.2% ICU Level of Service A

Analysis Period (min) 15

HCM Unsignalized Intersection Capacity Analysis

TT (2041) - Scenario B - 35% Mode Share

215: East Street A & West Street B

Timing Plan: PM Peak Hour

	EBL	EBR	NBL	NBT	SBT	SBR
Movement						
Lane Configurations						
Traffic Volume (veh/h)	230	111	0	115	84	20
Future Volume (Veh/h)	230	111	0	115	84	20
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	230	111	0	115	84	20
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	209	94	104			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	209	94	104			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	70	88	100			
cM capacity (veh/h)	779	963	1488			
Direction, Lane #	EB 1	NB 1	SB 1			
Volume Total	341	115	104			
Volume Left	230	0	0			
Volume Right	111	0	20			
cSH	831	1488	1700			
Volume to Capacity	0.41	0.00	0.06			
Queue Length 95th (m)	15.2	0.0	0.0			
Control Delay (s)	12.3	0.0	0.0			
Lane LOS	B					
Approach Delay (s)	12.3	0.0	0.0			
Approach LOS	B					
Intersection Summary						
Average Delay		7.5				
Intersection Capacity Utilization		32.2%		ICU Level of Service	A	
Analysis Period (min)		15				

Lanes, Volumes, Timings

TT (2041) - Scenario B - 35% Mode Share

216: West Street D & West Street B

Timing Plan: PM Peak Hour

	←	←	↑	↗	↘	↓
Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	↖		↗			↗
Traffic Volume (vph)	0	32	146	0	163	116
Future Volume (vph)	0	32	146	0	163	116
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.865					
Flt Protected						0.972
Satd. Flow (prot)	1611	0	1863	0	0	1811
Flt Permitted						0.972
Satd. Flow (perm)	1611	0	1863	0	0	1811
Link Speed (k/h)	50		50			50
Link Distance (m)	202.4		82.8			99.4
Travel Time (s)	14.6		6.0			7.2
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	0	32	146	0	163	116
Shared Lane Traffic (%)						
Lane Group Flow (vph)	32	0	146	0	0	279
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
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		15	25	
Sign Control	Stop		Free			Free

Intersection Summary

Area Type: Other

Control Type: Unsignalized

Intersection Capacity Utilization 36.1%

ICU Level of Service A

Analysis Period (min) 15

HCM Unsignalized Intersection Capacity Analysis

TT (2041) - Scenario B - 35% Mode Share

216: West Street D & West Street B

Timing Plan: PM Peak Hour

	←	←	↑	↗	↘	↓
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	↖		↗			↗
Traffic Volume (veh/h)	0	32	146	0	163	116
Future Volume (Veh/h)	0	32	146	0	163	116
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	0	32	146	0	163	116
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage (veh)						
Upstream signal (m)						99
pX, platoon unblocked	0.95					
vC, conflicting volume	588	146			146	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	538	146			146	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	100	96			89	
cM capacity (veh/h)	424	901			1436	
Direction, Lane #	WB 1	NB 1	SB 1			
Volume Total	32	146	279			
Volume Left	0	0	163			
Volume Right	32	0	0			
cSH	901	1700	1436			
Volume to Capacity	0.04	0.09	0.11			
Queue Length 95th (m)	0.8	0.0	2.9			
Control Delay (s)	9.1	0.0	5.0			
Lane LOS	A		A			
Approach Delay (s)	9.1	0.0	5.0			
Approach LOS	A					
Intersection Summary						
Average Delay			3.7			
Intersection Capacity Utilization			36.1%		ICU Level of Service	A
Analysis Period (min)			15			

Lanes, Volumes, Timings
217: East Street C & East Street A

TT (2041) - Scenario B - 35% Mode Share
Timing Plan: PM Peak Hour

						
Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	0	91	99	211	160	4
Future Volume (vph)	0	91	99	211	160	4
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			0.908		0.997	
Flt Protected					0.953	
Satd. Flow (prot)	0	1863	1691	0	1770	0
Flt Permitted					0.953	
Satd. Flow (perm)	0	1863	1691	0	1770	0
Link Speed (k/h)		50	50		50	
Link Distance (m)		206.1	205.4		83.5	
Travel Time (s)		14.8	14.8		6.0	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	0	91	99	211	160	4
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	91	310	0	164	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	33.9%			ICU Level of Service A		
Analysis Period (min)	15					

HCM Unsignalized Intersection Capacity Analysis TT (2041) - Scenario B - 35% Mode Share
217: East Street C & East Street A

Timing Plan: PM Peak Hour

	EBL	EBT	WBT	WBR	SBL	SBR
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↔	↔		↔	↔
Traffic Volume (veh/h)	0	91	99	211	160	4
Future Volume (Veh/h)	0	91	99	211	160	4
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	0	91	99	211	160	4
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	310				296	204
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	310				296	204
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	100				77	100
cM capacity (veh/h)	1250				696	836
Direction, Lane #	EB 1	WB 1	SB 1			
Volume Total	91	310	164			
Volume Left	0	0	160			
Volume Right	0	211	4			
cSH	1250	1700	698			
Volume to Capacity	0.00	0.18	0.23			
Queue Length 95th (m)	0.0	0.0	6.8			
Control Delay (s)	0.0	0.0	11.7			
Lane LOS			B			
Approach Delay (s)	0.0	0.0	11.7			
Approach LOS			B			
Intersection Summary						
Average Delay			3.4			
Intersection Capacity Utilization			33.9%		ICU Level of Service	A
Analysis Period (min)			15			

Lanes, Volumes, Timings

TT (2041) - Scenario B - 35% Mode Share

218: West Street D & East Street C

Timing Plan: PM Peak Hour

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔			↔			↔			↔	
Traffic Volume (vph)	0	0	0	40	0	59	0	125	47	72	44	0
Future Volume (vph)	0	0	0	40	0	59	0	125	47	72	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					0.920			0.963				
Flt Protected					0.980						0.970	
Satd. Flow (prot)	0	1863	0	0	1679	0	0	1794	0	0	1807	0
Flt Permitted					0.980						0.970	
Satd. Flow (perm)	0	1863	0	0	1679	0	0	1794	0	0	1807	0
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		164.8			206.1			68.2			82.8	
Travel Time (s)		11.9			14.8			4.9			6.0	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	0	0	0	40	0	59	0	125	47	72	44	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	0	0	0	99	0	0	172	0	0	116	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 31.6%

ICU Level of Service A

Analysis Period (min) 15

HCM Unsignalized Intersection Capacity Analysis

TT (2041) - Scenario B - 35% Mode Share

218: West Street D & East Street C

Timing Plan: PM Peak Hour

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔			↔			↔			↔	
Traffic Volume (veh/h)	0	0	0	40	0	59	0	125	47	72	44	0
Future Volume (Veh/h)	0	0	0	40	0	59	0	125	47	72	44	0
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	0	0	0	40	0	59	0	125	47	72	44	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	59			0			132	139	0	219	110	30
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	59			0			132	139	0	219	110	30
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			98			100	83	96	88	94	100
cM capacity (veh/h)	1545			1623			789	733	1085	602	761	1045
Direction, Lane #	EB 1	WB 1	NB 1	SB 1								
Volume Total	0	99	172	116								
Volume Left	0	40	0	72								
Volume Right	0	59	47	0								
cSH	1700	1623	805	654								
Volume to Capacity	0.00	0.02	0.21	0.18								
Queue Length 95th (m)	0.0	0.6	6.1	4.8								
Control Delay (s)	0.0	3.0	10.7	11.7								
Lane LOS		A	B	B								
Approach Delay (s)	0.0	3.0	10.7	11.7								
Approach LOS			B	B								
Intersection Summary												
Average Delay			9.0									
Intersection Capacity Utilization		31.6%						ICU Level of Service		A		
Analysis Period (min)			15									

Lanes, Volumes, Timings

101: Trafalgar Rd & Lower Base Line

Total (2041) - Scenario A - East Side Only

Timing Plan: AM Peak Hour

	↖	→	↘	↙	←	↖	↗	↘	↙	↖	↗	↘
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖	↖	↖	↖	↖	↖	↖	↖	↖	↖	↖	↖
Traffic Volume (vph)	151	588	224	304	119	219	48	1854	248	502	1984	24
Future Volume (vph)	151	588	224	304	119	219	48	1854	248	502	1984	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	0.423			0.165			0.085			0.083		
Satd. Flow (perm)	788	3394	0	307	3196	0	158	5085	1583	155	5085	1583
Right Turn on Red		Yes			Yes			Yes			Yes	
Satd. Flow (RTOR)		41			238			231			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)	164	639	243	330	129	238	52	2015	270	546	2157	26
Shared Lane Traffic (%)												
Lane Group Flow (vph)	164	882	0	330	367	0	52	2015	270	546	2157	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	CI+Ex	CI+Ex		CI+Ex	CI+Ex		CI+Ex	CI+Ex	CI+Ex	CI+Ex	CI+Ex	CI+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		CI+Ex			CI+Ex			CI+Ex			CI+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

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Lanes, Volumes, Timings

101: Trafalgar Rd & Lower Base Line

Total (2041) - Scenario A - East Side Only

Timing Plan: AM Peak Hour

	↖	→	↘	↙	←	↖	↗	↘	↙	↖	↗	↘
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		1.27	0.41		0.30	1.03	0.36	1.46	0.80	0.03
Control Delay	32.5	158.8		180.2	15.4		16.5	66.3	6.5	250.6	26.6	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	32.5	158.8		180.2	15.4		16.5	66.3	6.5	250.6	26.6	0.0
LOS	C	F		F	B		B	E	A	F	C	A
Approach Delay		139.0			93.4			58.3			71.2	
Approach LOS		F			F			E			E	

Intersection Summary

Area Type: Other

Cycle Length: 120

Actuated Cycle Length: 120

Natural Cycle: 110

Control Type: Semi Act-Uncooord

Maximum v/c Ratio: 1.46

Intersection Signal Delay: 79.4

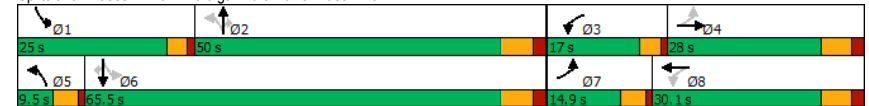
Intersection LOS: E

Intersection Capacity Utilization 117.2%

ICU Level of Service H

Analysis Period (min) 15

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

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Queues
101: Trafalgar Rd & Lower Base Line

Total (2041) - Scenario A - East Side Only
Timing Plan: AM Peak Hour

	EBL	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	164	882	330	367	52	2015	270	546	2157	26
v/c Ratio	0.47	1.24	1.27	0.41	0.30	1.03	0.36	1.46	0.80	0.03
Control Delay	32.5	158.8	180.2	15.4	16.5	66.3	6.5	250.6	26.6	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	32.5	158.8	180.2	15.4	16.5	66.3	6.5	250.6	26.6	0.0
Queue Length 50th (m)	26.8	~130.3	~81.0	12.9	4.6	~184.2	5.7	~158.8	150.0	0.0
Queue Length 95th (m)	43.5	#169.9	#137.5	26.3	9.5	#212.9	23.2	#225.2	170.8	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	749	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	0.46	1.24	1.27	0.41	0.30	1.03	0.36	1.46	0.80	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.

HCM Signalized Intersection Capacity Analysis
101: Trafalgar Rd & Lower Base Line

Total (2041) - Scenario A - East Side Only
Timing Plan: AM Peak Hour

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰	↱	↱	↰	↱	↱	↰	↱	↱	↰	↱	↱
Traffic Volume (vph)	151	588	224	304	119	219	48	1854	248	502	1984	24
Future Volume (vph)	151	588	224	304	119	219	48	1854	248	502	1984	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	3393		1770	3195		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)	788	3393		308	3195		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)	164	639	243	330	129	238	52	2015	270	546	2157	26
RTOR Reduction (vph)	0	33	0	0	186	0	0	0	141	0	0	12
Lane Group Flow (vph)	164	849	0	330	181	0	52	2015	129	546	2157	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		c0.14	0.06		0.02	0.40		c0.26	0.42	
v/s Ratio Perm	0.10			c0.26			0.13		0.08	c0.59		0.01
v/c Ratio	0.49	1.26		1.31	0.26		0.33	1.02	0.21	1.48	0.81	0.02
Uniform Delay, d1	32.7	48.5		36.7	39.2		22.3	37.0	24.6	39.2	23.8	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	129.5		167.0	0.4		1.2	26.0	0.8	231.8	2.8	0.0
Delay (s)	33.9	178.0		203.7	39.6		23.5	63.0	25.4	270.9	26.5	13.8
Level of Service	C	F		F	D		C	E	C	F	C	B
Approach Delay (s)		155.4			117.3			57.8			75.3	
Approach LOS		F			F			E			E	

Intersection Summary

HCM 2000 Control Delay	85.9	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	1.42		
Actuated Cycle Length (s)	120.9	Sum of lost time (s)	16.0
Intersection Capacity Utilization	117.2%	ICU Level of Service	H
Analysis Period (min)	15		

c Critical Lane Group

Lanes, Volumes, Timings

Total (2041) - Scenario A - East Side Only

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

Timing Plan: AM Peak Hour

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔		↔	↔	↔	↔	↔	↔	↔	↔	↔
Traffic Volume (vph)	2	0	9	307	1	26	6	2120	0	0	2509	5
Future Volume (vph)	2	0	9	307	1	26	6	2120	0	0	2509	5
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	0.953		0.950					
Satd. Flow (prot)	0	1639	0	1681	1611	1504	1770	5085	0	0	5085	1583
Flt Permitted	0.992			0.750	0.723		0.063					
Satd. Flow (perm)	0	1639	0	1327	1222	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)	2	0	10	334	1	28	7	2304	0	0	2727	5
Shared Lane Traffic (%)				49%		10%						
Lane Group Flow (vph)	0	12	0	170	168	25	7	2304	0	0	2727	5
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	CI+Ex	CI+Ex		CI+Ex	CI+Ex	CI+Ex	CI+Ex	CI+Ex			CI+Ex	CI+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		CI+Ex			CI+Ex			CI+Ex				CI+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	Perm
Protected Phases	4	4			8		5	2			6	
Permitted Phases				8		8	2					6

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Lanes, Volumes, Timings

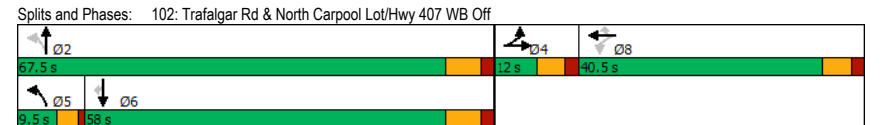
Total (2041) - Scenario A - East Side Only

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

Timing Plan: AM Peak Hour

	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	
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			21.0	21.0	21.0	64.2	64.2			62.6	62.6
Actuated g/C Ratio	0.08			0.22	0.22	0.22	0.67	0.67			0.66	0.66
v/c Ratio	0.05			0.58	0.62	0.06	0.04	0.67			0.82	0.00
Control Delay	0.4			41.9	44.3	0.3	9.3	12.4			17.7	0.0
Queue Delay	0.0			0.0	0.0	0.0	0.0	0.0			0.0	0.0
Total Delay	0.4			41.9	44.3	0.3	9.3	12.4			17.7	0.0
LOS	A			D	D	A	A	B			B	A
Approach Delay	0.4				40.1			12.4			17.7	
Approach LOS	A				D			B			B	

Intersection Summary												
Area Type:	Other											
Cycle Length: 120												
Actuated Cycle Length: 95.3												
Natural Cycle: 100												
Control Type: Actuated-Uncoordinated												
Maximum v/c Ratio: 0.82												
Intersection Signal Delay: 16.9	Intersection LOS: B											
Intersection Capacity Utilization 70.6%	ICU Level of Service C											
Analysis Period (min) 15												



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Synchro 10 Report
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Queues
102: Trafalgar Rd & North Carpool Lot/Hwy 407 WB Off

Total (2041) - Scenario A - East Side Only

Timing Plan: AM Peak Hour

	→	↖	←	↗	↖	↑	↓	↗
Lane Group	EBT	WBL	WBT	WBR	NBL	NBT	SBT	SBR
Lane Group Flow (vph)	12	170	168	25	7	2304	2727	5
v/c Ratio	0.05	0.58	0.62	0.06	0.04	0.67	0.82	0.00
Control Delay	0.4	41.9	44.3	0.3	9.3	12.4	17.7	0.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	0.4	41.9	44.3	0.3	9.3	12.4	17.7	0.0
Queue Length 50th (m)	0.0	28.0	29.0	0.0	0.3	70.7	98.9	0.0
Queue Length 95th (m)	0.0	55.2	57.8	0.0	2.7	166.9	#286.9	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)	255	514	473	660	175	3426	3342	1080
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	0.33	0.36	0.04	0.04	0.67	0.82	0.00

Intersection Summary

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

Queue shown is maximum after two cycles.

HCM Signalized Intersection Capacity Analysis
102: Trafalgar Rd & North Carpool Lot/Hwy 407 WB Off

Total (2041) - Scenario A - East Side Only

Timing Plan: AM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	2	0	9	307	1	26	6	2120	0	0	2509	5
Future Volume (vph)	2	0	9	307	1	26	6	2120	0	0	2509	5
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	0.06	1.00			1.00	1.00
Satd. Flow (perm)		1640		1327	1222	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)	2	0	10	334	1	28	7	2304	0	0	2727	5
RTOR Reduction (vph)	0	12	0	0	1	20	0	0	0	0	0	2
Lane Group Flow (vph)	0	0	0	170	167	5	7	2304	0	0	2727	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)		1.0		19.0	19.0	19.0	64.5	64.5			59.6	59.6
Effective Green, g (s)		3.0		21.0	21.0	21.0	64.5	67.5			62.6	62.6
Actuated g/C Ratio		0.03		0.20	0.20	0.20	0.62	0.65			0.60	0.60
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)		47		269	247	305	87	3316			3075	957
v/s Ratio Prot		c0.00					0.00	c0.45			c0.54	
v/s Ratio Perm				0.13	c0.14	0.00	0.05					0.00
v/c Ratio		0.01		0.63	0.68	0.02	0.08	0.69			0.89	0.00
Uniform Delay, d1		48.8		37.7	38.1	33.0	20.1	11.4			17.4	8.1
Progression Factor		1.00		1.00	1.00	1.00	1.00	1.00			1.00	1.00
Incremental Delay, d2		0.1		5.0	7.4	0.0	0.3	1.2			4.2	0.0
Delay (s)		48.9		42.7	45.6	33.0	20.4	12.7			21.7	8.1
Level of Service		D		D	D	C	C	B			C	A
Approach Delay (s)		48.9			43.4			12.7			21.6	
Approach LOS		D			D			B			C	

Intersection Summary

HCM 2000 Control Delay	19.3	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.83		
Actuated Cycle Length (s)	103.5	Sum of lost time (s)	18.0
Intersection Capacity Utilization	70.6%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

Lanes, Volumes, Timings
103: Trafalgar Rd & Hwy 407 EB Off

Total (2041) - Scenario A - East Side Only
Timing Plan: AM Peak Hour

	EBL	EBR	NBL	NBT	SBT	SBR
Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	↔	↔		↑↑↑	↑↑↑	
Traffic Volume (vph)	140	212	0	2104	2564	0
Future Volume (vph)	140	212	0	2104	2564	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	0.964	0.850				
Flt Protected	0.963					
Satd. Flow (prot)	1729	1504	0	5085	5085	0
Flt Permitted	0.963					
Satd. Flow (perm)	1729	1504	0	5085	5085	0
Right Turn on Red	Yes				Yes	
Satd. Flow (RTOR)	1	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)	152	230	0	2287	2787	0
Shared Lane Traffic (%)		21%				
Lane Group Flow (vph)	200	182	0	2287	2787	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	CI+Ex	CI+Ex		CI+Ex	CI+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				CI+Ex	CI+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	

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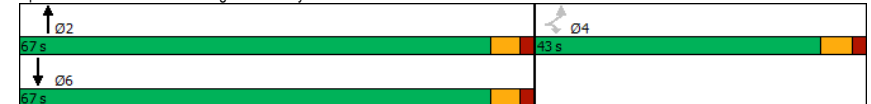
Lanes, Volumes, Timings
103: Trafalgar Rd & Hwy 407 EB Off

Total (2041) - Scenario A - East Side Only
Timing Plan: AM Peak Hour

	EBL	EBR	NBL	NBT	SBT	SBR
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)	17.9	17.9		63.3	63.3	
Actuated g/C Ratio	0.20	0.20		0.71	0.71	
v/c Ratio	0.58	0.60		0.63	0.77	
Control Delay	38.8	40.9		8.4	11.0	
Queue Delay	0.0	0.0		0.0	0.0	
Total Delay	38.8	40.9		8.4	11.0	
LOS	D	D		A	B	
Approach Delay	39.8			8.4	11.0	
Approach LOS	D			A	B	

Intersection Summary	
Area Type:	Other
Cycle Length: 110	
Actuated Cycle Length: 89.2	
Natural Cycle: 65	
Control Type: Semi Act-Uncoord	
Maximum v/c Ratio: 0.77	
Intersection Signal Delay: 11.9	Intersection LOS: B
Intersection Capacity Utilization 68.3%	ICU Level of Service C
Analysis Period (min) 15	

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



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Queues
103: Trafalgar Rd & Hwy 407 EB Off

Total (2041) - Scenario A - East Side Only
Timing Plan: AM Peak Hour

	EBL	EBR	NBT	SBT
Lane Group	EBL	EBR	NBT	SBT
Lane Group Flow (vph)	200	182	2287	2787
v/c Ratio	0.58	0.60	0.63	0.77
Control Delay	38.8	40.9	8.4	11.0
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	38.8	40.9	8.4	11.0
Queue Length 50th (m)	30.5	29.3	62.9	93.4
Queue Length 95th (m)	50.8	50.2	99.7	147.8
Internal Link Dist (m)	530.6		96.3	339.6
Turn Bay Length (m)				
Base Capacity (vph)	758	660	3609	3609
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	0.26	0.28	0.63	0.77
Intersection Summary				

HCM Signalized Intersection Capacity Analysis
103: Trafalgar Rd & Hwy 407 EB Off

Total (2041) - Scenario A - East Side Only
Timing Plan: AM Peak Hour

	EBL	EBR	NBL	NBT	SBT	SBR
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	↰	↱		↰	↰	↰
Traffic Volume (vph)	140	212	0	2104	2564	0
Future Volume (vph)	140	212	0	2104	2564	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	0.96	1.00		1.00	1.00	
Satd. Flow (prot)	1730	1504		5085	5085	
Flt Permitted	0.96	1.00		1.00	1.00	
Satd. Flow (perm)	1730	1504		5085	5085	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	152	230	0	2287	2787	0
RTOR Reduction (vph)	1	1	0	0	0	0
Lane Group Flow (vph)	199	181	0	2287	2787	0
Turn Type	Perm	Perm		NA	NA	
Protected Phases				2	6	
Permitted Phases	4	4				
Actuated Green, G (s)	15.9	15.9		61.3	61.3	
Effective Green, g (s)	17.9	17.9		63.3	63.3	
Actuated g/C Ratio	0.20	0.20		0.71	0.71	
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)	347	301		3608	3608	
v/s Ratio Prot				0.45	0.55	
v/s Ratio Perm	0.12	0.12				
v/c Ratio	0.57	0.60		0.63	0.77	
Uniform Delay, d1	32.2	32.4		6.8	8.3	
Progression Factor	1.00	1.00		1.00	1.00	
Incremental Delay, d2	2.3	3.4		0.9	1.7	
Delay (s)	34.5	35.8		7.7	10.0	
Level of Service	C	D		A	A	
Approach Delay (s)	35.1			7.7	10.0	
Approach LOS	D			A	A	
Intersection Summary						
HCM 2000 Control Delay			10.8		HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio			0.75			
Actuated Cycle Length (s)			89.2		Sum of lost time (s)	10.0
Intersection Capacity Utilization			68.3%		ICU Level of Service	C
Analysis Period (min)			15			

c Critical Lane Group

Lanes, Volumes, Timings

104: Trafalgar Rd & West Street A/East Street A

Total (2041) - Scenario A - East Side Only

Timing Plan: AM Peak Hour

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰	↱	↰	↰	↰	↰	↰	↰	↰	↰	↰	↰
Traffic Volume (vph)	20	0	16	0	0	310	16	2531	238	413	2354	9
Future Volume (vph)	20	0	16	0	0	310	16	2531	238	413	2354	9
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		
Satd. Flow (prot)	1770	1863	1583	1863	1863	1583	1770	5085	1583	1770	5085	1583
Flt Permitted	0.757						0.053			0.051		
Satd. Flow (perm)	1410	1863	1583	1863	1863	1583	99	5085	1583	95	5085	1583
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			86			23			104			55
Link Speed (k/h)		50				50			80			80
Link Distance (m)		143.5				212.6			233.3			131.6
Travel Time (s)		10.3				15.3			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)	22	0	17	0	0	337	17	2751	259	449	2559	10
Shared Lane Traffic (%)												
Lane Group Flow (vph)	22	0	17	0	0	337	17	2751	259	449	2559	10
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

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Lanes, Volumes, Timings

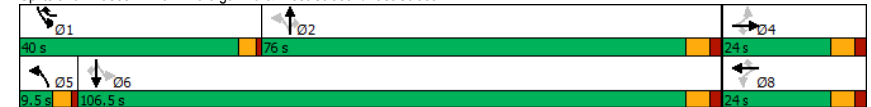
104: Trafalgar Rd & West Street A/East Street A

Total (2041) - Scenario A - East Side Only

Timing Plan: AM Peak Hour

	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)	24.0	24.0	24.0	24.0	24.0	40.0	9.5	76.0	76.0	40.0	106.5	106.5
Total Split (%)	17.1%	17.1%	17.1%	17.1%	17.1%	28.6%	6.8%	54.3%	54.3%	28.6%	76.1%	76.1%
Maximum Green (s)	18.0	18.0	18.0	18.0	18.0	36.0	5.5	70.0	70.0	36.0	100.5	100.5
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 Effect Green (s)	9.5		9.5			40.3	80.0	74.5	74.5	108.6	106.9	106.9
Actuated g/C Ratio	0.08		0.08			0.33	0.66	0.62	0.62	0.90	0.88	0.88
v/c Ratio	0.20		0.08			0.62	0.12	0.88	0.26	0.89	0.57	0.01
Control Delay	59.6		0.8			35.4	10.0	26.4	8.6	56.4	4.1	0.0
Queue Delay	0.0		0.0			0.0	0.0	2.2	0.0	0.0	0.2	0.0
Total Delay	59.6		0.8			35.4	10.0	28.5	8.6	56.4	4.3	0.0
LOS	E		A			D	A	C	A	E	A	A
Approach Delay		34.0			35.4			26.7			12.0	
Approach LOS		C			D			C			B	
Intersection Summary												
Area Type:		Other										
Cycle Length: 140												
Actuated Cycle Length: 120.8												
Natural Cycle: 140												
Control Type: Actuated-Uncoordinated												
Maximum v/c Ratio: 0.89												
Intersection Signal Delay: 20.3								Intersection LOS: C				
Intersection Capacity Utilization 86.0%								ICU Level of Service E				
Analysis Period (min) 15												

Splits and Phases: 104: Trafalgar Rd & West Street A/East Street A

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Queues
104: Trafalgar Rd & West Street A/East Street A

Total (2041) - Scenario A - East Side Only
Timing Plan: AM Peak Hour

	EBL	EBR	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group	EBL	EBR	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	22	17	337	17	2751	259	449	2559	10
v/c Ratio	0.20	0.08	0.62	0.12	0.88	0.26	0.89	0.57	0.01
Control Delay	59.6	0.8	35.4	10.0	26.4	8.6	56.4	4.1	0.0
Queue Delay	0.0	0.0	0.0	0.0	2.2	0.0	0.0	0.2	0.0
Total Delay	59.6	0.8	35.4	10.0	28.5	8.6	56.4	4.3	0.0
Queue Length 50th (m)	5.2	0.0	59.5	1.0	229.3	18.0	89.4	45.0	0.0
Queue Length 95th (m)	13.9	0.0	88.0	2.9	#292.8	35.3	#145.4	103.7	0.0
Internal Link Dist (m)					209.3			107.6	
Turn Bay Length (m)	50.0	50.0	50.0	50.0		50.0	30.0		30.0
Base Capacity (vph)	235	336	624	142	3134	1015	589	4500	1407
Starvation Cap Reductn	0	0	0	0	252	0	0	832	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.09	0.05	0.54	0.12	0.95	0.26	0.76	0.70	0.01

Intersection Summary

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

HCM Signalized Intersection Capacity Analysis
104: Trafalgar Rd & West Street A/East Street A

Total (2041) - Scenario A - East Side Only
Timing Plan: AM Peak Hour

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰	↑	↱	↰	↑	↱	↰	↑	↱	↰	↑	↱
Traffic Volume (vph)	20	0	16	0	0	310	16	2531	238	413	2354	9
Future Volume (vph)	20	0	16	0	0	310	16	2531	238	413	2354	9
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	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	0.91	1.00	1.00	0.91	1.00
Frt	1.00		0.85			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
Satd. Flow (prot)	1770		1583			1583	1770	5085	1583	1770	5085	1583
Flt Permitted	0.76		1.00			1.00	0.05	1.00	1.00	0.05	1.00	1.00
Satd. Flow (perm)	1410		1583			1583	99	5085	1583	94	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)	22	0	17	0	0	337	17	2751	259	449	2559	10
RTOR Reduction (vph)	0	0	16	0	0	16	0	0	40	0	0	2
Lane Group Flow (vph)	22	0	1	0	0	321	17	2751	219	449	2559	8
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)	4.8		4.8			34.9	76.9	74.9	74.9	109.0	103.0	103.0
Effective Green, g (s)	6.8		6.8			38.9	76.9	76.9	76.9	109.0	105.0	105.0
Actuated g/C Ratio	0.05		0.05			0.31	0.61	0.61	0.61	0.87	0.83	0.83
Clearance Time (s)	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
Lane Grp Cap (vph)	76		85			489	87	3108	967	482	4244	1321
v/s Ratio Prot						c0.17	0.00	0.54		c0.22	0.50	
v/s Ratio Perm	0.02		0.00			0.04	0.12		0.14	c0.58		0.01
v/c Ratio	0.29		0.01			0.66	0.20	0.89	0.23	0.93	0.60	0.01
Uniform Delay, d1	57.2		56.3			37.7	11.5	20.7	11.0	41.5	3.5	1.7
Progression Factor	1.00		1.00			1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	2.1		0.1			3.2	1.1	4.1	0.5	24.9	0.6	0.0
Delay (s)	59.3		56.4			40.8	12.6	24.8	11.6	66.5	4.1	1.7
Level of Service	E		E			D	B	C	B	E	A	A
Approach Delay (s)		58.0			40.8			23.6			13.4	
Approach LOS		E			D			C			B	

Intersection Summary

HCM 2000 Control Delay	19.9	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.92		
Actuated Cycle Length (s)	125.8	Sum of lost time (s)	12.0
Intersection Capacity Utilization	86.0%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

Lanes, Volumes, Timings

105: Trafalgar Rd & William Halton Parkway

Total (2041) - Scenario A - East Side Only

Timing Plan: AM Peak Hour

	←	→	↖	↗	←	→	↖	↗	←	→	↖	↗
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖	↖	↖	↖	↖	↖	↖	↖	↖	↖	↖	↖
Traffic Volume (vph)	319	880	189	197	491	243	43	2467	104	523	1786	61
Future Volume (vph)	319	880	189	197	491	243	43	2467	104	523	1786	61
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	0.185			0.129			0.076			0.070		
Satd. Flow (perm)	345	3539	1583	240	3539	1583	142	5085	1583	130	5085	1583
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			205			236			120			120
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		209.3			204.1			208.3			233.3	
Travel Time (s)		15.1			14.7			15.0			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)	347	957	205	214	534	264	47	2682	113	568	1941	66
Shared Lane Traffic (%)												
Lane Group Flow (vph)	347	957	205	214	534	264	47	2682	113	568	1941	66
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

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Lanes, Volumes, Timings

105: Trafalgar Rd & William Halton Parkway

Total (2041) - Scenario A - East Side Only

Timing Plan: AM Peak Hour

	←	→	↖	↗	←	→	↖	↗	←	→	↖	↗
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)	23.0	47.0	47.0	14.0	38.0	38.0	21.0	59.0	59.0	25.0	63.0	63.0
Total Split (%)	15.9%	32.4%	32.4%	9.7%	26.2%	26.2%	14.5%	40.7%	40.7%	17.2%	43.4%	43.4%
Maximum Green (s)	19.0	40.0	40.0	10.0	31.0	31.0	17.0	52.1	52.1	21.0	56.1	56.1
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)	57.0	43.0	43.0	44.0	34.0	34.0	62.6	55.0	55.0	80.0	70.6	70.6
Actuated g/C Ratio	0.39	0.30	0.30	0.30	0.23	0.23	0.43	0.38	0.38	0.55	0.49	0.49
v/c Ratio	1.08	0.91	0.33	1.20	0.64	0.48	0.32	1.39	1.17	1.84	0.78	0.08
Control Delay	106.1	62.7	6.2	164.3	54.2	11.0	22.8	214.6	4.7	417.5	34.4	0.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.7	0.0
Total Delay	106.1	62.7	6.2	164.3	54.2	11.0	22.8	214.6	4.7	417.5	35.1	0.2
LOS	F	E	A	F	D	B	C	F	A	F	D	A
Approach Delay		65.0			66.2			203.1			118.5	
Approach LOS		E			E			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: 1.84

Intersection Signal Delay: 132.0

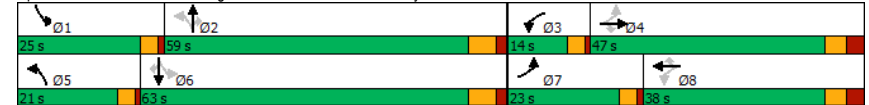
Intersection LOS: F

Intersection Capacity Utilization 125.2%

ICU Level of Service H

Analysis Period (min) 15

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

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Queues
105: Trafalgar Rd & William Halton Parkway

Total (2041) - Scenario A - East Side Only
Timing Plan: AM Peak Hour

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	347	957	205	214	534	264	47	2682	113	568	1941	66
v/c Ratio	1.08	0.91	0.33	1.20	0.64	0.48	0.32	1.39	0.17	1.84	0.78	0.08
Control Delay	106.1	62.7	6.2	164.3	54.2	11.0	22.8	214.6	4.7	417.5	34.4	0.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.7	0.0
Total Delay	106.1	62.7	6.2	164.3	54.2	11.0	22.8	214.6	4.7	417.5	35.1	0.2
Queue Length 50th (m)	~82.1	138.1	0.0	~56.1	72.4	6.2	5.9	~369.7	0.0	~229.1	168.2	0.0
Queue Length 95th (m)	#143.5	#174.8	18.0	#108.5	91.8	30.4	12.1	#394.1	10.9	#300.0	192.1	0.0
Internal Link Dist (m)		185.3			180.1			184.3			209.3	
Turn Bay Length (m)	100.0		100.0	100.0		150.0	150.0		75.0			
Base Capacity (vph)	322	1049	613	178	829	551	261	1928	674	309	2475	832
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	230	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	1.08	0.91	0.33	1.20	0.64	0.48	0.18	1.39	0.17	1.84	0.86	0.08

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.

HCM Signalized Intersection Capacity Analysis
105: Trafalgar Rd & William Halton Parkway

Total (2041) - Scenario A - East Side Only
Timing Plan: AM Peak Hour

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔
Traffic Volume (vph)	319	880	189	197	491	243	43	2467	104	523	1786	61
Future Volume (vph)	319	880	189	197	491	243	43	2467	104	523	1786	61
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	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00
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	0.19	1.00	1.00	0.13	1.00	1.00	0.08	1.00	1.00	0.07	1.00	1.00
Satd. Flow (perm)	345	3539	1583	240	3539	1583	141	5085	1583	131	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)	347	957	205	214	534	264	47	2682	113	568	1941	66
RTOR Reduction (vph)	0	0	145	0	0	181	0	0	70	0	0	34
Lane Group Flow (vph)	347	957	60	214	534	83	47	2682	43	568	1941	32
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)	54.0	40.0	40.0	41.0	31.0	31.0	59.1	52.9	52.9	77.9	67.7	67.7
Effective Green, g (s)	54.0	43.0	43.0	41.0	34.0	34.0	59.1	55.8	55.8	77.9	70.6	70.6
Actuated g/C Ratio	0.37	0.29	0.29	0.28	0.23	0.23	0.41	0.38	0.38	0.53	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)	313	1043	466	172	825	369	126	1946	605	306	2462	766
v/s Ratio Prot	c0.14	0.27		0.09	0.15		0.02	0.53		c0.27	0.38	
v/s Ratio Perm	0.27		0.04	c0.26		0.05	0.14		0.03	c0.72		0.02
v/c Ratio	1.11	0.92	0.13	1.24	0.65	0.23	0.37	1.38	0.07	1.86	0.79	0.04
Uniform Delay, d1	38.2	49.7	37.7	46.9	50.5	45.2	30.2	45.0	28.6	49.0	31.4	19.8
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	83.3	13.0	0.3	149.2	2.4	0.7	1.9	173.5	0.2	397.7	2.7	0.1
Delay (s)	121.5	62.6	37.9	196.1	52.9	45.9	32.0	218.5	28.8	446.6	34.0	19.9
Level of Service	F	E	D	F	D	D	C	F	C	F	C	B
Approach Delay (s)		72.8			81.3			207.9			124.7	
Approach LOS		E			F			F			F	

Intersection Summary

HCM 2000 Control Delay	139.1	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	1.55		
Actuated Cycle Length (s)	145.8	Sum of lost time (s)	16.0
Intersection Capacity Utilization	125.2%	ICU Level of Service	H
Analysis Period (min)	15		
c Critical Lane Group			

Lanes, Volumes, Timings

Total (2041) - Scenario A - East Side Only

106: Trafalgar Rd & Burnhamthorpe Rd/Burnhamthorpe Rd

Timing Plan: AM Peak Hour

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰	↱	↲	↰	↱	↲	↰	↱	↲	↰	↱	↲
Traffic Volume (vph)	433	491	80	83	157	181	56	2000	174	308	1534	168
Future Volume (vph)	433	491	80	83	157	181	56	2000	174	308	1534	168
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	1.00	1.00	1.00	1.00	1.00	1.00	0.91	1.00	1.00	0.91	1.00
Frt		0.979			0.920				0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1770	1824	0	1770	1714	0	1770	5085	1583	1770	5085	1583
Flt Permitted	0.140			0.154			0.089			0.066		
Satd. Flow (perm)	261	1824	0	287	1714	0	166	5085	1583	123	5085	1583
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		6			36				160			139
Link Speed (k/h)		60			60			80			80	
Link Distance (m)		828.7			989.6			1077.8			247.3	
Travel Time (s)		49.7			59.4			48.5			11.1	
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)	471	534	87	90	171	197	61	2174	189	335	1667	183
Shared Lane Traffic (%)												
Lane Group Flow (vph)	471	621	0	90	368	0	61	2174	189	335	1667	183
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)	26.0	46.5		9.5	30.0		9.6	63.0	63.0	21.0	74.4	74.4
Total Split (%)	18.6%	33.2%		6.8%	21.4%		6.9%	45.0%	45.0%	15.0%	53.1%	53.1%
Maximum Green (s)	21.5	40.5		5.0	24.0		5.1	57.0	57.0	17.0	68.4	68.4
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 Effect Green (s)	53.5	42.5		34.5	26.0		67.6	59.0	59.0	80.0	70.4	70.4
Actuated g/C Ratio	0.38	0.30		0.25	0.19		0.48	0.42	0.42	0.57	0.50	0.50
v/c Ratio	1.33	1.11		0.62	1.06		0.38	1.01	0.25	1.24	0.65	0.21
Control Delay	202.4	117.9		50.5	113.4		21.0	63.2	6.4	171.6	27.3	5.9
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	202.4	117.9		50.5	113.4		21.0	63.2	6.4	171.6	27.3	5.9

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Synchro 10 Report
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Lanes, Volumes, Timings

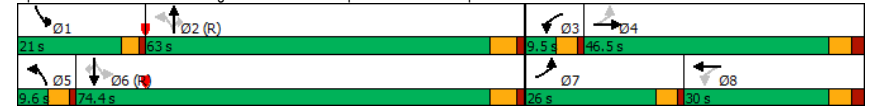
Total (2041) - Scenario A - East Side Only

106: Trafalgar Rd & Burnhamthorpe Rd/Burnhamthorpe Rd

Timing Plan: AM Peak Hour

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
LOS	F	F		D	F		C	E	A	F	C	A
Approach Delay		154.3			101.1			57.7			47.6	
Approach LOS		F			F			E			D	
Intersection Summary												
Area Type:	Other											
Cycle Length: 140												
Actuated Cycle Length: 140												
Offset: 0 (0%), Referenced to phase 2:NBT and 6:SBTL, Start of Green												
Natural Cycle: 130												
Control Type: Pretimed												
Maximum v/c Ratio: 1.33												
Intersection Signal Delay: 74.5							Intersection LOS: E					
Intersection Capacity Utilization 112.4%							ICU Level of Service H					
Analysis Period (min) 15												

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



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Synchro 10 Report
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Queues
106: Trafalgar Rd & Burhamthorpe Rd/Burnhamthorpe Rd

Total (2041) - Scenario A - East Side Only
Timing Plan: AM Peak Hour

	EBL	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	471	621	90	368	61	2174	189	335	1667	183
v/c Ratio	1.33	1.11	0.62	1.06	0.38	1.01	0.25	1.24	0.65	0.21
Control Delay	202.4	117.9	50.5	113.4	21.0	63.2	6.4	171.6	27.3	5.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	202.4	117.9	50.5	113.4	21.0	63.2	6.4	171.6	27.3	5.9
Queue Length 50th (m)	~151.6	~193.2	15.9	~101.7	6.9	~222.8	4.6	~97.7	120.4	6.0
Queue Length 95th (m)	#218.3	#265.1	#28.7	#163.2	13.2	#256.5	19.2	#157.5	136.0	18.3
Internal Link Dist (m)		804.7		965.6		1053.8			223.3	
Turn Bay Length (m)	30.0		15.0		60.0		60.0	60.0		60.0
Base Capacity (vph)	353	557	144	347	161	2142	759	270	2557	865
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	1.33	1.11	0.63	1.06	0.38	1.01	0.25	1.24	0.65	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.

HCM Signalized Intersection Capacity Analysis
106: Trafalgar Rd & Burhamthorpe Rd/Burnhamthorpe Rd

Total (2041) - Scenario A - East Side Only
Timing Plan: AM Peak Hour

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔
Traffic Volume (vph)	433	491	80	83	157	181	56	2000	174	308	1534	168
Future Volume (vph)	433	491	80	83	157	181	56	2000	174	308	1534	168
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	1.00		1.00	1.00		1.00	0.91	1.00	1.00	0.91	1.00
Frt	1.00	0.98		1.00	0.92		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	1824		1770	1713		1770	5085	1583	1770	5085	1583
Flt Permitted	0.14	1.00		0.15	1.00		0.09	1.00	1.00	0.07	1.00	1.00
Satd. Flow (perm)	261	1824		287	1713		166	5085	1583	122	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)	471	534	87	90	171	197	61	2174	189	335	1667	183
RTOR Reduction (vph)	0	4	0	0	29	0	0	0	93	0	0	69
Lane Group Flow (vph)	471	617	0	90	339	0	61	2174	96	335	1667	114
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	
Actuated Green, G (s)	50.0	40.5		29.0	24.0		62.1	57.0	57.0	78.0	68.4	68.4
Effective Green, g (s)	52.0	42.5		33.0	26.0		66.1	59.0	59.0	78.0	70.4	70.4
Actuated g/C Ratio	0.37	0.30		0.24	0.19		0.47	0.42	0.42	0.56	0.50	0.50
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)	350	553		141	318		159	2142	667	268	2557	796
v/s Ratio Prot	c0.23	0.34		0.03	0.20		0.02	0.43		c0.15	0.33	
v/s Ratio Perm	c0.27			0.12			0.16			0.06	c0.54	0.07
v/c Ratio	1.35	1.12		0.64	1.07		0.38	1.01	0.14	1.25	0.65	0.14
Uniform Delay, d1	42.8	48.8		44.9	57.0		22.1	40.5	25.0	47.1	25.7	18.6
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	173.5	74.0		20.1	68.7		6.9	23.2	0.5	139.6	1.3	0.4
Delay (s)	216.3	122.8		65.0	125.7		29.0	63.7	25.4	186.7	27.0	19.0
Level of Service	F	F		E	F		C	E	C	F	C	B
Approach Delay (s)		163.1			113.8			59.9			50.8	
Approach LOS		F			F			E			D	

Intersection Summary

HCM 2000 Control Delay	79.0	HCM 2000 Level of Service	E
HCM 2000 Volume to Capacity ratio	1.32		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	14.5
Intersection Capacity Utilization	112.4%	ICU Level of Service	H
Analysis Period (min)	15		
c Critical Lane Group			

Lanes, Volumes, Timings
202: Trafalgar Rd & West Street C

Total (2041) - Scenario A - East Side Only
Timing Plan: AM Peak Hour

	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations		↗		↖↖↖	↖↖↖	↗
Traffic Volume (vph)	0	0	0	2615	2009	0
Future Volume (vph)	0	0	0	2615	2009	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (m)	0.0	0.0	0.0			90.0
Storage Lanes	0	1	0			1
Taper Length (m)	7.5		7.5			
Lane Util. Factor	1.00	1.00	1.00	0.91	0.91	1.00
Frt						
Flt Protected						
Satd. Flow (prot)	0	1863	0	5085	5085	1863
Flt Permitted						
Satd. Flow (perm)	0	1863	0	5085	5085	1863
Link Speed (k/h)	50			50	50	
Link Distance (m)	202.4			247.3	208.3	
Travel Time (s)	14.6			17.8	15.0	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	0	0	2842	2184	0
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	0	0	2842	2184	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	0.0			3.6	3.6	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	4.8			4.8	4.8	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)	25	15	25			15
Sign Control	Stop			Free	Free	
Intersection Summary						
Area Type:	Other					
Control Type:	Unsignalized					
Intersection Capacity Utilization 53.9%	ICU Level of Service A					
Analysis Period (min) 15						

HCM Unsignalized Intersection Capacity Analysis Total (2041) - Scenario A - East Side Only
202: Trafalgar Rd & West Street C Timing Plan: AM Peak Hour

								
Movement	EBL	EBR	NBL	NBT	SBT	SBR		
Lane Configurations				  	  			
Traffic Volume (veh/h)	0	0	0	2615	2009	0		
Future Volume (Veh/h)	0	0	0	2615	2009	0		
Sign Control	Stop			Free	Free			
Grade	0%			0%	0%			
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92		
Hourly flow rate (vph)	0	0	0	2842	2184	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)				247	208			
pX, platoon unblocked	0.75	0.69	0.69					
vC, conflicting volume	3131	728	2184					
vC1, stage 1 conf vol								
vC2, stage 2 conf vol								
vCu, unblocked vol	0	0	1122					
tC, single (s)	6.8	6.9	4.1					
tC, 2 stage (s)								
tF (s)	3.5	3.3	2.2					
p0 queue free %	100	100	100					
cM capacity (veh/h)	766	743	424					
Direction, Lane #	EB 1	NB 1	NB 2	NB 3	SB 1	SB 2	SB 3	SB 4
Volume Total	0	947	947	947	728	728	728	0
Volume Left	0	0	0	0	0	0	0	0
Volume Right	0	0	0	0	0	0	0	0
cSH	1700	1700	1700	1700	1700	1700	1700	1700
Volume to Capacity	0.00	0.56	0.56	0.56	0.43	0.43	0.43	0.00
Queue Length 95th (m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Control Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Lane LOS	A							
Approach Delay (s)	0.0	0.0			0.0			
Approach LOS	A							
Intersection Summary								
Average Delay				0.0				
Intersection Capacity Utilization	53.9%			ICU Level of Service			A	
Analysis Period (min)	15							

Lanes, Volumes, Timings
203: East Street D & East Street A

Total (2041) - Scenario A - East Side Only
Timing Plan: AM Peak Hour

						
Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	113	351	0	70	140	0
Future Volume (vph)	113	351	0	70	140	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	0.898					
Flt Protected					0.950	
Satd. Flow (prot)	1673	0	0	1863	1770	0
Flt Permitted					0.950	
Satd. Flow (perm)	1673	0	0	1863	1770	0
Link Speed (k/h)	50			50	50	
Link Distance (m)	212.6			202.8	119.6	
Travel Time (s)	15.3			14.6	8.6	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	123	382	0	76	152	0
Shared Lane Traffic (%)						
Lane Group Flow (vph)	505	0	0	76	152	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
Sign Control	Free			Free	Stop	
Intersection Summary						
Area Type:	Other					
Control Type:	Unsignalized					
Intersection Capacity Utilization	42.0%			ICU Level of Service A		
Analysis Period (min)	15					

HCM Unsignalized Intersection Capacity Analysis Total (2041) - Scenario A - East Side Only
203: East Street D & East Street A Timing Plan: AM Peak Hour

	→	↖	↗	←	↖	↗
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↖			↖	↖	↖
Traffic Volume (veh/h)	113	351	0	70	140	0
Future Volume (Veh/h)	113	351	0	70	140	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)	123	382	0	76	152	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)	213					
pX, platoon unblocked			1.00		1.00	1.00
vC, conflicting volume			505		390	314
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			504		388	312
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			100		75	100
cM capacity (veh/h)			1059		614	727
Direction, Lane #	EB 1	WB 1	NB 1			
Volume Total	505	76	152			
Volume Left	0	0	152			
Volume Right	382	0	0			
cSH	1700	1059	614			
Volume to Capacity	0.30	0.00	0.25			
Queue Length 95th (m)	0.0	0.0	7.3			
Control Delay (s)	0.0	0.0	12.8			
Lane LOS			B			
Approach Delay (s)	0.0	0.0	12.8			
Approach LOS			B			
Intersection Summary						
Average Delay			2.6			
Intersection Capacity Utilization			42.0%		ICU Level of Service	A
Analysis Period (min)			15			

Lanes, Volumes, Timings
204: East Street E & East Street A

Total (2041) - Scenario A - East Side Only
Timing Plan: AM Peak Hour

						
Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	0	41	0	0	77	0
Future Volume (vph)	0	41	0	0	77	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.865					
Flt Protected					0.950	
Satd. Flow (prot)	1611	0	0	1863	1770	0
Flt Permitted					0.950	
Satd. Flow (perm)	1611	0	0	1863	1770	0
Link Speed (k/h)	50			50	50	
Link Distance (m)	202.8			186.3	118.9	
Travel Time (s)	14.6			13.4	8.6	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	45	0	0	84	0
Shared Lane Traffic (%)						
Lane Group Flow (vph)	45	0	0	0	84	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	0.0			0.0	3.6	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	4.8			4.8	4.8	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)		15	25		25	15
Sign Control	Free			Free	Stop	
Intersection Summary						
Area Type:	Other					
Control Type:	Unsignalized					
Intersection Capacity Utilization	14.3%			ICU Level of Service A		
Analysis Period (min)	15					

HCM Unsignalized Intersection Capacity Analysis Total (2041) - Scenario A - East Side Only
204: East Street E & East Street A Timing Plan: AM Peak Hour

	→	↖	↗	←	↖	↗
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↖			↖	↖	
Traffic Volume (veh/h)	0	41	0	0	77	0
Future Volume (Veh/h)	0	41	0	0	77	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)	0	45	0	0	84	0
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage (veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume			45		22	22
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			45		22	22
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			100		92	100
cM capacity (veh/h)			1563		994	1054
Direction, Lane #	EB 1	WB 1	NB 1			
Volume Total	45	0	84			
Volume Left	0	0	84			
Volume Right	45	0	0			
cSH	1700	1700	994			
Volume to Capacity	0.03	0.00	0.08			
Queue Length 95th (m)	0.0	0.0	2.1			
Control Delay (s)	0.0	0.0	9.0			
Lane LOS			A			
Approach Delay (s)	0.0	0.0	9.0			
Approach LOS			A			
Intersection Summary						
Average Delay			5.8			
Intersection Capacity Utilization			14.3%		ICU Level of Service	A
Analysis Period (min)			15			

Lanes, Volumes, Timings
205: East Street F & East Street A

Total (2041) - Scenario A - East Side Only
Timing Plan: AM Peak Hour

	→	↘	↙	←	↖	↗
Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
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	1.00	1.00	1.00
Flt						
Flt Protected						
Satd. Flow (prot)	1863	0	0	1863	1863	0
Flt Permitted						
Satd. Flow (perm)	1863	0	0	1863	1863	0
Link Speed (k/h)	50			50	50	
Link Distance (m)	186.3			197.2	119.9	
Travel Time (s)	13.4			14.2	8.6	
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)	0.0			0.0	3.6	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	4.8			4.8	4.8	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)		15	25		25	15
Sign Control	Stop			Free	Free	
Intersection Summary						
Area Type:	Other					
Control Type:	Unsignalized					
Intersection Capacity Utilization 0.0%	ICU Level of Service A					
Analysis Period (min) 15						

HCM Unsignalized Intersection Capacity Analysis Total (2041) - Scenario A - East Side Only
205: East Street F & East Street A Timing Plan: AM Peak Hour

Intersection Sign configuration not allowed in HCM analysis.

Lanes, Volumes, Timings
206: East Street D & East Street B

Total (2041) - Scenario A - East Side Only
Timing Plan: AM Peak Hour

	←	←	↑	↗	↘	↓
Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	↖		↗			↘
Traffic Volume (vph)	65	20	72	14	15	234
Future Volume (vph)	65	20	72	14	15	234
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	0.968		0.978			
Flt Protected	0.963					0.997
Satd. Flow (prot)	1736	0	1822	0	0	1857
Flt Permitted	0.963					0.997
Satd. Flow (perm)	1736	0	1822	0	0	1857
Link Speed (k/h)	50		50			50
Link Distance (m)	200.4		111.4			119.6
Travel Time (s)	14.4		8.0			8.6
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	71	22	78	15	16	254
Shared Lane Traffic (%)						
Lane Group Flow (vph)	93	0	93	0	0	270
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 31.3% ICU Level of Service A

Analysis Period (min) 15

HCM Unsignalized Intersection Capacity Analysis Total (2041) - Scenario A - East Side Only
206: East Street D & East Street B Timing Plan: AM Peak Hour

	←	←	↑	↗	↘	↓
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	↖		↗			↘
Traffic Volume (veh/h)	65	20	72	14	15	234
Future Volume (Veh/h)	65	20	72	14	15	234
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)	71	22	78	15	16	254
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	372	86			93	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	372	86			93	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	89	98			99	
cM capacity (veh/h)	622	973			1501	

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	93	93	270
Volume Left	71	0	16
Volume Right	22	15	0
cSH	680	1700	1501
Volume to Capacity	0.14	0.05	0.01
Queue Length 95th (m)	3.5	0.0	0.2
Control Delay (s)	11.1	0.0	0.5
Lane LOS	B		A
Approach Delay (s)	11.1	0.0	0.5
Approach LOS	B		

Intersection Summary

Average Delay	2.6		
Intersection Capacity Utilization	31.3%	ICU Level of Service	A
Analysis Period (min)	15		

Lanes, Volumes, Timings

Total (2041) - Scenario A - East Side Only

207: East Street E & East Street B

Timing Plan: AM Peak Hour

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	0	29	0	0	0	54	7	0	0	41	0
Future Volume (vph)	0	0	29	0	0	0	54	7	0	0	41	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	0.865											
Flt Protected	0.958											
Satd. Flow (prot)	0	1611	0	0	1863	0	0	1785	0	0	1863	0
Flt Permitted	0.958											
Satd. Flow (perm)	0	1611	0	0	1863	0	0	1785	0	0	1863	0
Link Speed (k/h)	50			50			50			50		
Link Distance (m)	200.4			185.7			114.3			118.9		
Travel Time (s)	14.4			13.4			8.2			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	32	0	0	0	59	8	0	0	45	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	32	0	0	0	0	0	67	0	0	45	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 20.0%

ICU Level of Service A

Analysis Period (min) 15

HCM Unsignalized Intersection Capacity Analysis

Total (2041) - Scenario A - East Side Only

207: East Street E & East Street B

Timing Plan: AM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	0	29	0	0	0	54	7	0	0	41	0
Future Volume (Veh/h)	0	0	29	0	0	0	54	7	0	0	41	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	0	32	0	0	0	59	8	0	0	45	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)	114											
pX, platoon unblocked												
vC, conflicting volume	171	171	45	203	171	8	45	8				
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	171	171	45	203	171	8	45	8				
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	97	100	100	100	96	100				
cM capacity (veh/h)	769	695	1025	710	695	1074	1563	1612				
Direction, Lane #	EB 1	WB 1	NB 1	SB 1								
Volume Total	32	0	67	45								
Volume Left	0	0	59	0								
Volume Right	32	0	0	0								
cSH	1025	1700	1563	1612								
Volume to Capacity	0.03	0.00	0.04	0.00								
Queue Length 95th (m)	0.7	0.0	0.9	0.0								
Control Delay (s)	8.6	0.0	6.5	0.0								
Lane LOS	A	A	A									
Approach Delay (s)	8.6	0.0	6.5	0.0								
Approach LOS	A	A										
Intersection Summary												
Average Delay				5.0								
Intersection Capacity Utilization				20.0%			ICU Level of Service			A		
Analysis Period (min)				15								

Lanes, Volumes, Timings
208: East Street F & East Street B

Total (2041) - Scenario A - East Side Only
Timing Plan: AM Peak Hour

						
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	1.00	1.00	1.00
Flt						
Flt Protected						
Satd. Flow (prot)	1863	0	0	1863	1863	0
Flt Permitted						
Satd. Flow (perm)	1863	0	0	1863	1863	0
Link Speed (k/h)	50			50	50	
Link Distance (m)	185.7			112.6	119.9	
Travel Time (s)	13.4			8.1	8.6	
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			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	25			15
Sign Control	Stop			Free	Free	
Intersection Summary						
Area Type:	Other					
Control Type:	Unsignalized					
Intersection Capacity Utilization 0.0%	ICU Level of Service A					
Analysis Period (min) 15						

HCM Unsignalized Intersection Capacity Analysis Total (2041) - Scenario A - East Side Only
208: East Street F & East Street B Timing Plan: AM Peak Hour

						
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	0	0	0	0	0	0
Future Volume (Veh/h)	0	0	0	0	0	0
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	0	0	0	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	0	0	0			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	0	0	0			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	100	100	100			
cM capacity (veh/h)	1023	1085	1623			
Direction, Lane #	EB 1	NB 1	SB 1			
Volume Total	0	0	0			
Volume Left	0	0	0			
Volume Right	0	0	0			
cSH	1700	1700	1700			
Volume to Capacity	0.00	0.00	0.00			
Queue Length 95th (m)	0.0	0.0	0.0			
Control Delay (s)	0.0	0.0	0.0			
Lane LOS	A					
Approach Delay (s)	0.0	0.0	0.0			
Approach LOS	A					
Intersection Summary						
Average Delay		0.0				
Intersection Capacity Utilization		0.0%		ICU Level of Service	A	
Analysis Period (min)		15				

Lanes, Volumes, Timings

209: William Halton Parkway & East Street D

Total (2041) - Scenario A - East Side Only

Timing Plan: AM Peak Hour

						
Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑↑	↑↑	↑		↑
Traffic Volume (vph)	0	1527	730	26	0	200
Future Volume (vph)	0	1527	730	26	0	200
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (m)	0.0			50.0	0.0	0.0
Storage Lanes	0			1	0	1
Taper Length (m)	7.5				7.5	
Lane Util. Factor	1.00	0.95	0.95	1.00	1.00	1.00
Frt				0.850		0.865
Flt Protected						
Satd. Flow (prot)	0	3539	3539	1583	0	1611
Flt Permitted						
Satd. Flow (perm)	0	3539	3539	1583	0	1611
Link Speed (k/h)		50	50		50	
Link Distance (m)		204.1	194.7		111.4	
Travel Time (s)		14.7	14.0		8.0	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	1660	793	28	0	217
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	1660	793	28	0	217
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(m)		3.6	3.6		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	25	15
Sign Control		Free	Free		Stop	
Intersection Summary						
Area Type:	Other					
Control Type:	Unsignalized					
Intersection Capacity Utilization	45.5%			ICU Level of Service A		
Analysis Period (min)	15					

HCM Unsignalized Intersection Capacity Analysis

209: William Halton Parkway & East Street D

Total (2041) - Scenario A - East Side Only

Timing Plan: AM Peak Hour

	EBL	EBT	WBT	WBR	SBL	SBR
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑↑	↑↑	↑		↑
Traffic Volume (veh/h)	0	1527	730	26	0	200
Future Volume (Veh/h)	0	1527	730	26	0	200
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)	0	1660	793	28	0	217
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		None	None			
Median storage (veh)						
Upstream signal (m)		204	195			
pX, platoon unblocked	0.90				0.79	0.90
vC, conflicting volume	821				1623	396
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	568				660	94
tC, single (s)	4.1				6.8	6.9
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	100				100	74
cM capacity (veh/h)	896				312	846
Direction, Lane #	EB 1	EB 2	WB 1	WB 2	WB 3	SB 1
Volume Total	830	830	396	396	28	217
Volume Left	0	0	0	0	0	0
Volume Right	0	0	0	0	28	217
cSH	1700	1700	1700	1700	1700	846
Volume to Capacity	0.49	0.49	0.23	0.23	0.02	0.26
Queue Length 95th (m)	0.0	0.0	0.0	0.0	0.0	7.7
Control Delay (s)	0.0	0.0	0.0	0.0	0.0	10.7
Lane LOS						B
Approach Delay (s)	0.0		0.0			10.7
Approach LOS						B
Intersection Summary						
Average Delay			0.9			
Intersection Capacity Utilization			45.5%		ICU Level of Service	A
Analysis Period (min)			15			

Lanes, Volumes, Timings

210: William Halton Parkway & East Street E

Total (2041) - Scenario A - East Side Only

Timing Plan: AM Peak Hour

	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations	↰	↱	↱	↰	↰	↰
Traffic Volume (vph)	74	1412	756	7	70	0
Future Volume (vph)	74	1412	756	7	70	0
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		
Flt Protected	0.950				0.950	
Satd. Flow (prot)	1770	3539	3539	1583	1770	0
Flt Permitted	0.250				0.950	
Satd. Flow (perm)	466	3539	3539	1583	1770	0
Right Turn on Red				Yes		Yes
Satd. Flow (RTOR)				8		
Link Speed (k/h)		50	50		50	
Link Distance (m)		194.7	188.1		114.3	
Travel Time (s)		14.0	13.5		8.2	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	80	1535	822	8	76	0
Shared Lane Traffic (%)						
Lane Group Flow (vph)	80	1535	822	8	76	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
Number of Detectors	1	2	2	1	1	
Detector Template	Left	Thru	Thru	Right	Left	
Leading Detector (m)	2.0	10.0	10.0	2.0	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)	2.0	0.6	0.6	2.0	2.0	
Detector 1 Type	CI+Ex	CI+Ex	CI+Ex	CI+Ex	CI+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		CI+Ex	CI+Ex			
Detector 2 Channel						
Detector 2 Extend (s)		0.0	0.0			
Turn Type	pm+pt	NA	NA	Perm	Prot	
Protected Phases	7	4	8		6	
Permitted Phases	4			8		

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Lanes, Volumes, Timings

210: William Halton Parkway & East Street E

Total (2041) - Scenario A - East Side Only

Timing Plan: AM Peak Hour

	EBL	EBT	WBT	WBR	SBL	SBR
Detector Phase	7	4	8	8	6	
Switch Phase						
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	
Minimum Split (s)	9.5	24.0	24.0	24.0	24.0	
Total Split (s)	12.0	36.0	24.0	24.0	24.0	
Total Split (%)	20.0%	60.0%	40.0%	40.0%	40.0%	
Maximum Green (s)	7.5	30.0	18.0	18.0	18.0	
Yellow Time (s)	3.5	4.0	4.0	4.0	4.0	
All-Red Time (s)	1.0	2.0	2.0	2.0	2.0	
Lost Time Adjust (s)	1.0	-2.0	-2.0	-2.0	-2.0	
Total Lost Time (s)	5.5	4.0	4.0	4.0	4.0	
Lead/Lag	Lead		Lag	Lag		
Lead-Lag Optimize?	Yes		Yes	Yes		
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	
Recall Mode	None	Max	Max	Max	None	
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)	36.5	39.6	32.8	32.8	9.6	
Actuated g/C Ratio	0.72	0.78	0.65	0.65	0.19	
v/c Ratio	0.17	0.56	0.36	0.01	0.23	
Control Delay	4.8	5.5	9.3	6.3	18.6	
Queue Delay	0.0	0.0	0.0	0.0	0.0	
Total Delay	4.8	5.5	9.3	6.3	18.6	
LOS	A	A	A	A	B	
Approach Delay		5.5	9.2		18.6	
Approach LOS		A	A		B	

Intersection Summary

Area Type: Other

Cycle Length: 60

Actuated Cycle Length: 50.8

Natural Cycle: 60

Control Type: Semi Act-Uncoord

Maximum v/c Ratio: 0.56

Intersection Signal Delay: 7.1

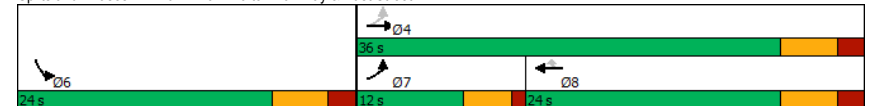
Intersection LOS: A

Intersection Capacity Utilization 49.9%

ICU Level of Service A

Analysis Period (min) 15

Splits and Phases: 210: William Halton Parkway & East Street E

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Queues
210: William Halton Parkway & East Street E

Total (2041) - Scenario A - East Side Only
Timing Plan: AM Peak Hour

	EBL	EBT	WBT	WBR	SBL
Lane Group	EBL	EBT	WBT	WBR	SBL
Lane Group Flow (vph)	80	1535	822	8	76
v/c Ratio	0.17	0.56	0.36	0.01	0.23
Control Delay	4.8	5.5	9.3	6.3	18.6
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	4.8	5.5	9.3	6.3	18.6
Queue Length 50th (m)	2.2	34.1	26.1	0.0	5.6
Queue Length 95th (m)	6.5	60.5	45.1	1.9	13.8
Internal Link Dist (m)		170.7	164.1		90.3
Turn Bay Length (m)	50.0			50.0	
Base Capacity (vph)	501	2759	2282	1023	697
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	0.16	0.56	0.36	0.01	0.11
Intersection Summary					

HCM Signalized Intersection Capacity Analysis
210: William Halton Parkway & East Street E

Total (2041) - Scenario A - East Side Only
Timing Plan: AM Peak Hour

	EBL	EBT	WBT	WBR	SBL	SBR
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations	↰	↱	↰	↱	↰	↱
Traffic Volume (vph)	74	1412	756	7	70	0
Future Volume (vph)	74	1412	756	7	70	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.5	4.0	4.0	4.0	4.0	
Lane Util. Factor	1.00	0.95	0.95	1.00	1.00	
Frt	1.00	1.00	1.00	0.85	1.00	
Flt Protected	0.95	1.00	1.00	1.00	0.95	
Satd. Flow (prot)	1770	3539	3539	1583	1770	
Flt Permitted	0.25	1.00	1.00	1.00	0.95	
Satd. Flow (perm)	466	3539	3539	1583	1770	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	80	1535	822	8	76	0
RTOR Reduction (vph)	0	0	0	3	0	0
Lane Group Flow (vph)	80	1535	822	5	76	0
Turn Type	pm+pt	NA	NA	Perm	Prot	
Protected Phases	7	4	8		6	
Permitted Phases	4			8		
Actuated Green, G (s)	37.7	37.7	29.1	29.1	5.2	
Effective Green, g (s)	36.7	39.7	31.1	31.1	7.2	
Actuated g/C Ratio	0.67	0.72	0.57	0.57	0.13	
Clearance Time (s)	4.5	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)	385	2559	2004	896	232	
v/s Ratio Prot	0.01	c0.43	0.23		c0.04	
v/s Ratio Perm	0.13			0.00		
v/c Ratio	0.21	0.60	0.41	0.01	0.33	
Uniform Delay, d1	4.0	3.7	6.7	5.2	21.7	
Progression Factor	1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	0.3	1.0	0.6	0.0	0.8	
Delay (s)	4.3	4.8	7.3	5.2	22.5	
Level of Service	A	A	A	A	C	
Approach Delay (s)		4.7	7.3		22.5	
Approach LOS		A	A		C	
Intersection Summary						
HCM 2000 Control Delay			6.1		HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio			0.63			
Actuated Cycle Length (s)			54.9		Sum of lost time (s)	13.5
Intersection Capacity Utilization			49.9%		ICU Level of Service	A
Analysis Period (min)			15			
c Critical Lane Group						

Lanes, Volumes, Timings

211: William Halton Parkway & East Street F

Total (2041) - Scenario A - East Side Only

Timing Plan: AM Peak Hour

						
Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		 	 		 	
Traffic Volume (vph)	0	1482	763	0	0	0
Future Volume (vph)	0	1482	763	0	0	0
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
Fr						
Flt Protected						
Satd. Flow (prot)	1863	3539	3539	1863	1863	0
Flt Permitted						
Satd. Flow (perm)	1863	3539	3539	1863	1863	0
Link Speed (k/h)		50	50		50	
Link Distance (m)		188.1	219.2		112.6	
Travel Time (s)		13.5	15.8		8.1	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	1611	829	0	0	0
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	1611	829	0	0	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	44.3%			ICU Level of Service A		
Analysis Period (min)	15					

HCM Unsignalized Intersection Capacity Analysis

211: William Halton Parkway & East Street F

Total (2041) - Scenario A - East Side Only

Timing Plan: AM Peak Hour

							
Movement	EBL	EBT	WBT	WBR	SBL	SBR	
Lane Configurations		 	 		 		
Traffic Volume (veh/h)	0	1482	763	0	0	0	
Future Volume (Veh/h)	0	1482	763	0	0	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)	0	1611	829	0	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)		188					
pX, platoon unblocked					0.75		
vC, conflicting volume	829				1634	414	
vC1, stage 1 conf vol							
vC2, stage 2 conf vol							
vCu, unblocked vol	829				1178	414	
tC, single (s)	4.1				6.8	6.9	
tC, 2 stage (s)							
tF (s)	2.2				3.5	3.3	
p0 queue free %	100				100	100	
cM capacity (veh/h)	798				138	587	
Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	WB 3	SB 1
Volume Total	0	806	806	414	414	0	0
Volume Left	0	0	0	0	0	0	0
Volume Right	0	0	0	0	0	0	0
cSH	1700	1700	1700	1700	1700	1700	1700
Volume to Capacity	0.00	0.47	0.47	0.24	0.24	0.00	0.00
Queue Length 95th (m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Control Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Lane LOS							A
Approach Delay (s)	0.0			0.0			0.0
Approach LOS							A
Intersection Summary							
Average Delay			0.0				
Intersection Capacity Utilization			44.3%			ICU Level of Service	A
Analysis Period (min)			15				

Lanes, Volumes, Timings

212: West Street A & Transit Station

Total (2041) - Scenario A - East Side Only

Timing Plan: AM Peak Hour

	WBL	WBR	NBT	NBR	SBL	SBT
Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	WBL	WBR	NBT	NBR	SBL	SBT
Traffic Volume (vph)	140	0	0	178	0	0
Future Volume (vph)	140	0	0	178	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt			0.865			
Flt Protected	0.950					
Satd. Flow (prot)	1770	0	1611	0	0	1863
Flt Permitted	0.950					
Satd. Flow (perm)	1770	0	1611	0	0	1863
Link Speed (k/h)	50		50			50
Link Distance (m)	70.0		239.0			98.7
Travel Time (s)	5.0		17.2			7.1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	152	0	0	193	0	0
Shared Lane Traffic (%)						
Lane Group Flow (vph)	152	0	193	0	0	0
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 25.4%

ICU Level of Service A

Analysis Period (min) 15

HCM Unsignalized Intersection Capacity Analysis

212: West Street A & Transit Station

Total (2041) - Scenario A - East Side Only

Timing Plan: AM Peak Hour

	WBL	WBR	NBT	NBR	SBL	SBT
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	WBL	WBR	NBT	NBR	SBL	SBT
Traffic Volume (veh/h)	140	0	0	178	0	0
Future Volume (Veh/h)	140	0	0	178	0	0
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)	152	0	0	193	0	0
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None					
Median storage (veh)						
Upstream signal (m)	213					
pX, platoon unblocked						
vC, conflicting volume	0		304	0	497	304
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	0		304	0	497	304
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 %	91		100	82	100	100
cM capacity (veh/h)	1623		552	1085	369	552

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	152	193	0
Volume Left	152	0	0
Volume Right	0	193	0
cSH	1623	1085	1700
Volume to Capacity	0.09	0.18	0.00
Queue Length 95th (m)	2.3	4.8	0.0
Control Delay (s)	7.4	9.0	0.0
Lane LOS	A	A	A
Approach Delay (s)	7.4	9.0	0.0
Approach LOS	A	A	

Intersection Summary

Average Delay 8.3

Intersection Capacity Utilization 25.4%

ICU Level of Service

A

Analysis Period (min) 15

Lanes, Volumes, Timings

213: West Street A & William Halton Parkway

Total (2041) - Scenario A - East Side Only

Timing Plan: AM Peak Hour

															
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR			
Lane Configurations		↑↑	↑		↑↑	↑			↑			↑			
Traffic Volume (vph)	0	1387	0	0	594	0	0	0	0	0	0	0			
Future Volume (vph)	0	1387	0	0	594	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		50.0	0.0		50.0	0.0		0.0	0.0		0.0			
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	0.95	1.00	1.00	0.95	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Fit															
Fit Protected															
Satd. Flow (prot)	0	3539	1863	0	3539	1863	0	0	1863	0	0	1863			
Fit Permitted															
Satd. Flow (perm)	0	3539	1863	0	3539	1863	0	0	1863	0	0	1863			
Link Speed (k/h)		50			50			50			50				
Link Distance (m)		202.0			209.3			100.4			239.0				
Travel Time (s)		14.5			15.1			7.2			17.2				
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	1508	0	0	646	0	0	0	0	0	0	0			
Shared Lane Traffic (%)															
Lane Group Flow (vph)	0	1508	0	0	646	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			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 41.7%															
ICU Level of Service A															
Analysis Period (min) 15															

HCM Unsignalized Intersection Capacity Analysis

213: West Street A & William Halton Parkway

Total (2041) - Scenario A - East Side Only

Timing Plan: AM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑	↑		↑↑	↑			↑			↑
Traffic Volume (veh/h)	0	1387	0	0	594	0	0	0	0	0	0	0
Future Volume (Veh/h)	0	1387	0	0	594	0	0	0	0	0	0	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)	0	1508	0	0	646	0	0	0	0	0	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)	202			209								
pX, platoon unblocked	0.87			0.71			0.77	0.77	0.71	0.77	0.77	0.87
vC, conflicting volume	646			1508			1831	2154	754	1400	2154	323
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	287			891			719	1137	0	162	1137	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	100	100	100	100
cM capacity (veh/h)	1104			535			244	155	767	610	155	941
Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	WB 3	NB 1	SB 1				
Volume Total	754	754	0	323	323	0	0	0				
Volume Left	0	0	0	0	0	0	0	0				
Volume Right	0	0	0	0	0	0	0	0				
cSH	1700	1700	1700	1700	1700	1700	1700	1700				
Volume to Capacity	0.44	0.44	0.00	0.19	0.19	0.00	0.00	0.00				
Queue Length 95th (m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0				
Control Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0				
Lane LOS							A	A				
Approach Delay (s)	0.0				0.0			0.0	0.0			
Approach LOS							A	A				
Intersection Summary												
Average Delay				0.0								
Intersection Capacity Utilization				41.7%			ICU Level of Service			A		
Analysis Period (min)				15								

Lanes, Volumes, Timings

214: West Street D & William Halton Parkway

Total (2041) - Scenario A - East Side Only

Timing Plan: AM Peak Hour

	←	→	↖	↗	←	↖	↗	↖	↗	↖	↗	↖	↗
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations	↖	↖	↖	↖	↖	↖	↖	↖	↖	↖	↖	↖	
Traffic Volume (vph)	0	1407	0	0	594	0	0	0	0	0	0	0	
Future Volume (vph)	0	1407	0	0	594	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)	50.0		50.0	50.0		50.0	50.0		0.0	50.0		0.0	
Storage Lanes	1		0	1		1	1		0	1		0	
Taper Length (m)	100.0			100.0			75.0			75.0			
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Fr													
Flt Protected													
Satd. Flow (prot)	1863	3539	1863	1863	3539	1863	1863	1863	0	1863	1863	0	
Flt Permitted													
Satd. Flow (perm)	1863	3539	1863	1863	3539	1863	1863	1863	0	1863	1863	0	
Right Turn on Red			Yes			Yes			Yes			Yes	
Satd. Flow (RTOR)													
Link Speed (k/h)		50			50				50			50	
Link Distance (m)		241.6			202.0				103.2			133.4	
Travel Time (s)		17.4			14.5				7.4			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)	0	1529	0	0	646	0	0	0	0	0	0	0	
Shared Lane Traffic (%)													
Lane Group Flow (vph)	0	1529	0	0	646	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	1	2	1	1	2		1	2		
Detector Template	Left	Thru	Right	Left	Thru	Right	Left	Thru		Left	Thru		
Leading Detector (m)	2.0	10.0	2.0	2.0	10.0	2.0	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		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	2.0	0.6	2.0	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		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	pm+pt	NA	Perm	Perm			Perm			
Protected Phases		4			3		8		2			6	
Permitted Phases	4		4		8		8		2			6	

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Lanes, Volumes, Timings

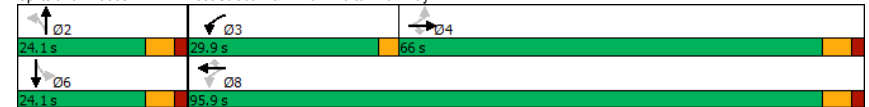
214: West Street D & William Halton Parkway

Total (2041) - Scenario A - East Side Only

Timing Plan: AM Peak Hour

	←	→	↖	↗	←	↖	↗	↖	↗	↖	↗	↖	↗
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Detector Phase	4	4	4	3	8	8	2	2		6	6		
Switch Phase													
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0		5.0	5.0		
Minimum Split (s)	24.0	24.0	24.0	9.5	24.0	24.0	24.0	24.0		24.0	24.0		
Total Split (s)	66.0	66.0	66.0	29.9	95.9	95.9	24.1	24.1		24.1	24.1		
Total Split (%)	55.0%	55.0%	55.0%	24.9%	79.9%	79.9%	20.1%	20.1%		20.1%	20.1%		
Maximum Green (s)	60.0	60.0	60.0	26.9	89.9	89.9	18.1	18.1		18.1	18.1		
Yellow Time (s)	4.0	4.0	4.0	3.0	4.0	4.0	4.0	4.0		4.0	4.0		
All-Red Time (s)	2.0	2.0	2.0	0.0	2.0	2.0	2.0	2.0		2.0	2.0		
Lost Time Adjust (s)	-2.0	-2.0	-2.0	1.0	-2.0	-2.0	-2.0	-2.0		-2.0	-2.0		
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0		4.0	4.0		
Lead/Lag	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	Max	Max	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	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)		62.0			95.9								
Actuated g/C Ratio		0.65			1.00								
v/c Ratio		0.67			0.18								
Control Delay		12.4			0.1								
Queue Delay		0.0			0.0								
Total Delay		12.4			0.1								
LOS		B			A								
Approach Delay		12.4			0.1								
Approach LOS		B			A								
Intersection Summary													
Area Type:		Other											
Cycle Length: 120													
Actuated Cycle Length: 95.9													
Natural Cycle: 70													
Control Type: Semi Act-Uncoord													
Maximum v/c Ratio: 0.67													
Intersection Signal Delay: 8.7													
Intersection Capacity Utilization 42.2%													
ICU Level of Service A													
Analysis Period (min) 15													

Splits and Phases: 214: West Street D & William Halton Parkway

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Queues
214: West Street D & William Halton Parkway

Total (2041) - Scenario A - East Side Only
Timing Plan: AM Peak Hour

	→	←
Lane Group	EBT	WBT
Lane Group Flow (vph)	1529	646
v/c Ratio	0.67	0.18
Control Delay	12.4	0.1
Queue Delay	0.0	0.0
Total Delay	12.4	0.1
Queue Length 50th (m)	82.4	0.0
Queue Length 95th (m)	103.8	0.0
Internal Link Dist (m)	217.6	178.0
Turn Bay Length (m)		
Base Capacity (vph)	2287	3539
Starvation Cap Reductn	0	0
Spillback Cap Reductn	0	0
Storage Cap Reductn	0	0
Reduced v/c Ratio	0.67	0.18
Intersection Summary		

HCM Signalized Intersection Capacity Analysis
214: West Street D & William Halton Parkway

Total (2041) - Scenario A - East Side Only
Timing Plan: AM Peak Hour

	↖	→	↗	←	↖	↗	↖	↗	↖	↗	↖	↗
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖	↖↗	↖	↖	↖↗	↖	↖	↖	↖	↖	↖	↖
Traffic Volume (vph)	0	1407	0	0	594	0	0	0	0	0	0	0
Future Volume (vph)	0	1407	0	0	594	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)		4.0			4.0							
Lane Util. Factor		0.95			0.95							
Frt		1.00			1.00							
Flt Protected		1.00			1.00							
Satd. Flow (prot)		3539			3539							
Flt Permitted		1.00			1.00							
Satd. Flow (perm)		3539			3539							
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	1529	0	0	646	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	1529	0	0	646	0	0	0	0	0	0	0
Turn Type	Perm	NA	Perm	pm+pt	NA	Perm	Perm			Perm		
Protected Phases		4		3	8			2			6	
Permitted Phases	4		4	8		8	2			6		
Actuated Green, G (s)		60.0			95.9							
Effective Green, g (s)		62.0			95.9							
Actuated g/C Ratio		0.65			1.00							
Clearance Time (s)		6.0			6.0							
Vehicle Extension (s)		3.0			3.0							
Lane Grp Cap (vph)		2287			3539							
v/s Ratio Prot		c0.43			c0.18							
v/s Ratio Perm												
v/c Ratio		0.67			0.18							
Uniform Delay, d1		10.6			0.0							
Progression Factor		1.00			1.00							
Incremental Delay, d2		1.6			0.1							
Delay (s)		12.1			0.1							
Level of Service		B			A							
Approach Delay (s)		12.1			0.1			0.0			0.0	
Approach LOS		B			A			A			A	
Intersection Summary												
HCM 2000 Control Delay			8.6		HCM 2000 Level of Service			A				
HCM 2000 Volume to Capacity ratio			0.56									
Actuated Cycle Length (s)			95.9		Sum of lost time (s)			12.0				
Intersection Capacity Utilization			42.2%		ICU Level of Service			A				
Analysis Period (min)			15									

c Critical Lane Group

Lanes, Volumes, Timings

215: West Street A & West Street B

Total (2041) - Scenario A - East Side Only

Timing Plan: AM Peak Hour

						
Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	119	73	0	51	50	6
Future Volume (vph)	119	73	0	51	50	6
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	0.949				0.985	
Flt Protected	0.970					
Satd. Flow (prot)	1715	0	0	1863	1835	0
Flt Permitted	0.970					
Satd. Flow (perm)	1715	0	0	1863	1835	0
Link Speed (k/h)	50			50	50	
Link Distance (m)	202.8			106.4	100.4	
Travel Time (s)	14.6			7.7	7.2	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	129	79	0	55	54	7
Shared Lane Traffic (%)						
Lane Group Flow (vph)	208	0	0	55	61	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
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	25			15
Sign Control	Stop			Free	Free	

Intersection Summary

Area Type: Other

Control Type: Unsignalized

Intersection Capacity Utilization 21.1%

ICU Level of Service A

Analysis Period (min) 15

HCM Unsignalized Intersection Capacity Analysis

215: West Street A & West Street B

Total (2041) - Scenario A - East Side Only

Timing Plan: AM Peak Hour

						
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	119	73	0	51	50	6
Future Volume (Veh/h)	119	73	0	51	50	6
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)	129	79	0	55	54	7
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	None	
Median storage (veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	112	58	61			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	112	58	61			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	85	92	100			
cM capacity (veh/h)	884	1009	1542			
Direction, Lane #	EB 1	NB 1	SB 1			
Volume Total	208	55	61			
Volume Left	129	0	0			
Volume Right	79	0	7			
cSH	928	1542	1700			
Volume to Capacity	0.22	0.00	0.04			
Queue Length 95th (m)	6.4	0.0	0.0			
Control Delay (s)	10.0	0.0	0.0			
Lane LOS	A					
Approach Delay (s)	10.0	0.0	0.0			
Approach LOS	A					
Intersection Summary						
Average Delay		6.4				
Intersection Capacity Utilization		21.1%		ICU Level of Service	A	
Analysis Period (min)		15				

Lanes, Volumes, Timings

216: West Street D & West Street B

Total (2041) - Scenario A - East Side Only

Timing Plan: AM Peak Hour

	←	←	↑	↗	↘	↓
Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	↔		↔			↔
Traffic Volume (vph)	0	10	31	0	163	79
Future Volume (vph)	0	10	31	0	163	79
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.865					
Flt Protected						0.967
Satd. Flow (prot)	1611	0	1863	0	0	1801
Flt Permitted						0.967
Satd. Flow (perm)	1611	0	1863	0	0	1801
Link Speed (k/h)	50		50			50
Link Distance (m)	202.8		99.7			103.2
Travel Time (s)	14.6		7.2			7.4
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	11	34	0	177	86
Shared Lane Traffic (%)						
Lane Group Flow (vph)	11	0	34	0	0	263
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
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		15	25	
Sign Control	Stop		Free			Free

Intersection Summary

Area Type: Other

Control Type: Unsignalized

Intersection Capacity Utilization 29.8%

ICU Level of Service A

Analysis Period (min) 15

HCM Unsignalized Intersection Capacity Analysis

216: West Street D & West Street B

Total (2041) - Scenario A - East Side Only

Timing Plan: AM Peak Hour

	←	←	↑	↗	↘	↓
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	↔		↔			↔
Traffic Volume (veh/h)	0	10	31	0	163	79
Future Volume (Veh/h)	0	10	31	0	163	79
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	11	34	0	177	86
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage (veh)						
Upstream signal (m)						103
pX, platoon unblocked						
vC, conflicting volume	474	34			34	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	474	34			34	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	100	99			89	
cM capacity (veh/h)	487	1039			1578	

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	11	34	263
Volume Left	0	0	177
Volume Right	11	0	0
cSH	1039	1700	1578
Volume to Capacity	0.01	0.02	0.11
Queue Length 95th (m)	0.2	0.0	2.8
Control Delay (s)	8.5	0.0	5.4
Lane LOS	A		A
Approach Delay (s)	8.5	0.0	5.4
Approach LOS	A		

Intersection Summary

Average Delay 4.9

Intersection Capacity Utilization 29.8%

ICU Level of Service

A

Analysis Period (min) 15

Lanes, Volumes, Timings

217: West Street C & West Street A

Total (2041) - Scenario A - East Side Only

Timing Plan: AM Peak Hour

	EBL	EBT	WBT	WBR	SBL	SBR
Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↔	↔		↔	
Traffic Volume (vph)	0	59	56	150	84	10
Future Volume (vph)	0	59	56	150	84	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		0.902		0.985		
Flt Protected				0.957		
Satd. Flow (prot)	0	1863	1680	0	1756	0
Flt Permitted				0.957		
Satd. Flow (perm)	0	1863	1680	0	1756	0
Link Speed (k/h)		50	50		50	
Link Distance (m)		208.6	202.4		106.4	
Travel Time (s)		15.0	14.6		7.7	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	64	61	163	91	11
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	64	224	0	102	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 24.1%

ICU Level of Service A

Analysis Period (min) 15

HCM Unsignalized Intersection Capacity Analysis

217: West Street C & West Street A

Total (2041) - Scenario A - East Side Only

Timing Plan: AM Peak Hour

	EBL	EBT	WBT	WBR	SBL	SBR
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↔	↔		↔	
Traffic Volume (veh/h)	0	59	56	150	84	10
Future Volume (Veh/h)	0	59	56	150	84	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)	0	64	61	163	91	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	224				206	142
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	224				206	142
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	100				88	99
cM capacity (veh/h)	1345				782	905
Direction, Lane #	EB 1	WB 1	SB 1			
Volume Total	64	224	102			
Volume Left	0	0	91			
Volume Right	0	163	11			
cSH	1345	1700	794			
Volume to Capacity	0.00	0.13	0.13			
Queue Length 95th (m)	0.0	0.0	3.3			
Control Delay (s)	0.0	0.0	10.2			
Lane LOS			B			
Approach Delay (s)	0.0	0.0	10.2			
Approach LOS			B			
Intersection Summary						
Average Delay			2.7			
Intersection Capacity Utilization		24.1%		ICU Level of Service	A	
Analysis Period (min)			15			

Lanes, Volumes, Timings
218: West Street D & West Street C

Total (2041) - Scenario A - East Side Only
Timing Plan: AM Peak Hour

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔			↔			↔			↔	
Traffic Volume (vph)	0	0	0	7	0	49	0	24	11	73	6	0
Future Volume (vph)	0	0	0	7	0	49	0	24	11	73	6	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					0.883			0.957				
Flt Protected					0.993						0.956	
Satd. Flow (prot)	0	1863	0	0	1633	0	0	1783	0	0	1781	0
Flt Permitted					0.993						0.956	
Satd. Flow (perm)	0	1863	0	0	1633	0	0	1783	0	0	1781	0
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		258.7			208.6			93.0			99.7	
Travel Time (s)		18.6			15.0			6.7			7.2	
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	0	8	0	53	0	26	12	79	7	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	0	0	0	61	0	0	38	0	0	86	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 21.1% ICU Level of Service A

Analysis Period (min) 15

HCM Unsignalized Intersection Capacity Analysis Total (2041) - Scenario A - East Side Only
218: West Street D & West Street C Timing Plan: AM Peak Hour

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Movement		↔			↔			↔			↔	
Lane Configurations		↔			↔			↔			↔	
Traffic Volume (veh/h)	0	0	0	7	0	49	0	24	11	73	6	0
Future Volume (Veh/h)	0	0	0	7	0	49	0	24	11	73	6	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)	0	0	0	8	0	53	0	26	12	79	7	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	53			0			46	69	0	68	42	26
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	53			0			46	69	0	68	42	26
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			100			100	97	99	91	99	100
cM capacity (veh/h)	1553			1623			946	818	1085	889	845	1049

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	0	61	38	86
Volume Left	0	8	0	79
Volume Right	0	53	12	0
cSH	1700	1623	887	886
Volume to Capacity	0.00	0.00	0.04	0.10
Queue Length 95th (m)	0.0	0.1	1.0	2.4
Control Delay (s)	0.0	1.0	9.2	9.5
Lane LOS		A	A	A
Approach Delay (s)	0.0	1.0	9.2	9.5
Approach LOS		A	A	

Intersection Summary

Average Delay 6.6

Intersection Capacity Utilization 21.1% ICU Level of Service A

Analysis Period (min) 15

Lanes, Volumes, Timings
101: Trafalgar Rd & Lower Base Line

TT (2041) - Scenario A - East Side Only
Timing Plan: PM Peak Hour

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔
Traffic Volume (vph)	54	240	77	309	678	368	461	2314	328	306	1607	123
Future Volume (vph)	54	240	77	309	678	368	461	2314	328	306	1607	123
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	45.0		45.0	110.0		110.0	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	0.230			0.241			0.072			0.077		
Satd. Flow (perm)	428	3412	0	449	3352	0	134	5085	1583	143	5085	1583
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		25			68				79			95
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	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	54	240	77	309	678	368	461	2314	328	306	1607	123
Shared Lane Traffic (%)												
Lane Group Flow (vph)	54	317	0	309	1046	0	461	2314	328	306	1607	123
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	pm+ov	pm+pt	NA	pm+ov
Protected Phases	7	4		3	8		5	2	3	1	6	7
Permitted Phases	4			8			2		2	6		6

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Lanes, Volumes, Timings
101: Trafalgar Rd & Lower Base Line

TT (2041) - Scenario A - East Side Only
Timing Plan: PM Peak Hour

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector Phase	7	4		3	8		5	2	3	1	6	7
Switch Phase												
Minimum Initial (s)	5.0	10.0		7.0	10.0		5.0	25.0	7.0	7.0	25.0	5.0
Minimum Split (s)	11.6	22.5		13.6	22.5		11.6	31.6	13.6	13.6	31.6	11.6
Total Split (s)	11.6	22.6		27.0	38.0		31.0	71.4	27.0	19.0	59.4	11.6
Total Split (%)	8.3%	16.1%		19.3%	27.1%		22.1%	51.0%	19.3%	13.6%	42.4%	8.3%
Maximum Green (s)	5.0	16.4		24.0	31.8		28.0	64.8	24.0	16.0	52.8	5.0
Yellow Time (s)	4.6	4.2		3.0	4.2		3.0	4.6	3.0	3.0	4.6	4.6
All-Red Time (s)	2.0	2.0		0.0	2.0		0.0	2.0	0.0	0.0	2.0	2.0
Lost Time Adjust (s)	1.0	-2.2		1.0	-2.2		1.0	-2.2	1.0	1.0	-2.2	-2.2
Total Lost Time (s)	7.6	4.0		4.0	4.0		4.0	4.4	4.0	4.0	4.4	4.4
Lead/Lag	Lead	Lag		Lead	Lag		Lead	Lag	Lead	Lag	Lead	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	0.2	0.2	5.0	3.0
Recall Mode	None	None		None	None		None	Max	None	Max	Max	None
Act Effct Green (s)	21.0	20.6		45.6	34.0		86.4	67.0	92.4	70.4	55.0	66.6
Actuated g/C Ratio	0.15	0.15		0.33	0.24		0.62	0.48	0.66	0.50	0.39	0.48
v/c Ratio	0.53	0.61		0.90	1.21		1.16	0.95	0.31	1.24	0.80	0.15
Control Delay	59.3	57.5		68.1	146.9		134.5	45.0	8.0	175.6	41.6	6.5
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	59.3	57.5		68.1	146.9		134.5	45.0	8.0	175.6	41.6	6.5
LOS	E	E		E	F		F	D	A	F	D	A
Approach Delay		57.8			128.9			54.4			59.6	
Approach LOS		E			F			D			E	
Intersection Summary												
Area Type:		Other										
Cycle Length: 140												
Actuated Cycle Length: 140												
Natural Cycle: 125												
Control Type: Semi Act-Uncooord												
Maximum v/c Ratio: 1.24												
Intersection Signal Delay: 70.8												
Intersection Capacity Utilization 113.0%												
Analysis Period (min) 15												
Splits and Phases: 101: Trafalgar Rd & Lower Base Line												
Diagram	Diagram showing traffic flow and timing for the intersection. It includes lane groups (EBL, EBT, EBR, WBL, WBT, WBR, NBL, NBT, NBR, SBL, SBT, SBR) and their corresponding phases (7, 4, 3, 8, 5, 2, 3, 1, 6, 7). The diagram also shows the timing plan for the PM Peak Hour, including minimum initial, minimum split, total split, maximum green, yellow time, all-red time, lost time adjust, total lost time, lead/lag, lead-lag optimize, vehicle extension, recall mode, act effct green, actuated g/c ratio, v/c ratio, control delay, queue delay, total delay, LOS, approach delay, approach LOS, intersection summary, area type, cycle length, actuated cycle length, natural cycle, control type, maximum v/c ratio, intersection signal delay, intersection capacity utilization, and analysis period.											

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Queues
101: Trafalgar Rd & Lower Base Line

TT (2041) - Scenario A - East Side Only
Timing Plan: PM Peak Hour

	EBL	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	54	317	309	1046	461	2314	328	306	1607	123
v/c Ratio	0.53	0.61	0.90	1.21	1.16	0.95	0.31	1.24	0.80	0.15
Control Delay	59.3	57.5	68.1	146.9	134.5	45.0	8.0	175.6	41.6	6.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	59.3	57.5	68.1	146.9	134.5	45.0	8.0	175.6	41.6	6.5
Queue Length 50th (m)	10.7	40.5	69.0	~175.8	~132.4	217.1	24.7	~87.7	141.7	4.0
Queue Length 95th (m)	#23.4	56.6	#108.3	#217.6	#198.5	#242.6	38.6	#145.8	160.4	14.8
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)	102	523	363	865	398	2433	1093	246	1997	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	0.53	0.61	0.85	1.21	1.16	0.95	0.30	1.24	0.80	0.15

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.

HCM Signalized Intersection Capacity Analysis
101: Trafalgar Rd & Lower Base Line

TT (2041) - Scenario A - East Side Only
Timing Plan: PM Peak Hour

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔
Traffic Volume (vph)	54	240	77	309	678	368	461	2314	328	306	1607	123
Future Volume (vph)	54	240	77	309	678	368	461	2314	328	306	1607	123
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	7.6	4.0		4.0	4.0		4.0	4.4	4.0	4.0	4.4	4.4
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	3410		1770	3352		1770	5085	1583	1770	5085	1583
Flt Permitted	0.23	1.00		0.24	1.00		0.07	1.00	1.00	0.08	1.00	1.00
Satd. Flow (perm)	428	3410		448	3352		134	5085	1583	144	5085	1583
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	54	240	77	309	678	368	461	2314	328	306	1607	123
RTOR Reduction (vph)	0	21	0	0	51	0	0	0	31	0	0	53
Lane Group Flow (vph)	54	296	0	309	995	0	461	2314	297	306	1607	70
Turn Type	pm+pt	NA		pm+pt	NA		pm+pt	NA	pm+ov	pm+pt	NA	pm+ov
Protected Phases	7	4		3	8		5	2	3	1	6	7
Permitted Phases	4			8			2		2	6		6
Actuated Green, G (s)	23.4	18.4		43.4	31.8		83.8	64.8	86.8	68.8	52.8	57.8
Effective Green, g (s)	21.4	20.6		42.4	34.0		82.8	67.0	84.8	66.8	55.0	62.2
Actuated g/C Ratio	0.15	0.15		0.30	0.24		0.59	0.48	0.61	0.48	0.39	0.44
Clearance Time (s)	6.6	6.2		3.0	6.2		3.0	6.6	3.0	3.0	6.6	6.6
Vehicle Extension (s)	3.0	5.0		0.2	5.0		3.0	5.0	0.2	0.2	5.0	3.0
Lane Grp Cap (vph)	103	501		333	814		394	2433	958	242	1997	753
v/s Ratio Prot	0.01	0.09		c0.14	c0.30		c0.23	0.46	0.05	0.13	0.32	0.00
v/s Ratio Perm	0.06			0.14			0.47		0.14	c0.47		0.04
v/c Ratio	0.52	0.59		0.93	1.22		1.17	0.95	0.31	1.26	0.80	0.09
Uniform Delay, d1	52.5	55.8		42.0	53.0		45.9	34.9	13.4	44.3	37.7	22.6
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	4.7	2.8		30.6	110.8		100.5	9.9	0.1	147.7	3.6	0.1
Delay (s)	57.2	58.6		72.6	163.8		146.4	44.8	13.5	192.0	41.3	22.6
Level of Service	E	E		E	F		F	D	B	F	D	C
Approach Delay (s)		58.4			143.0			56.6			62.8	
Approach LOS		E			F			E			E	

Intersection Summary

HCM 2000 Control Delay	75.6	HCM 2000 Level of Service	E
HCM 2000 Volume to Capacity ratio	1.22		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	20.0
Intersection Capacity Utilization	113.0%	ICU Level of Service	H
Analysis Period (min)	15		

c Critical Lane Group

Lanes, Volumes, Timings TT (2041) - Scenario A - East Side Only
102: Trafalgar Rd & North Carpool Lot/Hwy 407 WB Off Timing Plan: PM Peak Hour

	←	→	↖	↗	←	↖	↗	←	↖	↗	←	↖	↗
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations		↔		↔	↔	↔	↔	↔		↔	↔	↔	
Traffic Volume (vph)	7	0	49	513	16	174	9	2915	0	0	1988	5	
Future Volume (vph)	7	0	49	513	16	174	9	2915	0	0	1988	5	
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		0.882				0.991	0.850					0.850	
Flt Protected		0.994		0.950	0.958		0.950						
Satd. Flow (prot)	0	1633	0	1681	1609	1504	1770	5085	0	0	5085	1583	
Flt Permitted		0.994		0.720	0.712		0.070						
Satd. Flow (perm)	0	1633	0	1274	1196	1504	130	5085	0	0	5085	1583	
Right Turn on Red			Yes		Yes			Yes			Yes		
Satd. Flow (RTOR)		78			3	95						70	
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	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Adj. Flow (vph)	7	0	49	513	16	174	9	2915	0	0	1988	5	
Shared Lane Traffic (%)				47%		10%							
Lane Group Flow (vph)	0	56	0	272	274	157	9	2915	0	0	1988	5	
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	Perm	NA			NA	Perm	
Protected Phases	4	4			8			2			6		
Permitted Phases				8		8	2					6	

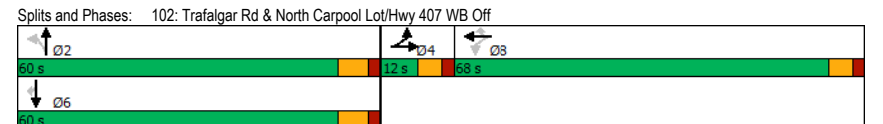
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Lanes, Volumes, Timings TT (2041) - Scenario A - East Side Only
102: Trafalgar Rd & North Carpool Lot/Hwy 407 WB Off Timing Plan: PM Peak Hour

	←	→	↖	↗	←	↖	↗	←	↖	↗	←	↖	↗
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)	6.0	6.0		7.0	7.0	7.0		20.0	20.0		20.0	20.0	
Minimum Split (s)	12.0	12.0		22.5	22.5	22.5		27.0	27.0		27.0	27.0	
Total Split (s)	12.0	12.0		68.0	68.0	68.0		60.0	60.0		60.0	60.0	
Total Split (%)	8.6%	8.6%		48.6%	48.6%	48.6%		42.9%	42.9%		42.9%	42.9%	
Maximum Green (s)	6.0	6.0		62.0	62.0	62.0		53.0	53.0		53.0	53.0	
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		-3.0	-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 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)		8.2		32.3	32.3	32.3		57.1	57.1		57.1	57.1	
Actuated g/C Ratio		0.08		0.30	0.30	0.30		0.54	0.54		0.54	0.54	
v/c Ratio		0.29		0.70	0.75	0.30		0.13	1.07		0.73	0.01	
Control Delay		9.7		43.3	46.7	13.1		24.4	67.2		23.7	0.0	
Queue Delay		0.0		0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay		9.7		43.3	46.7	13.1		24.4	67.2		23.7	0.0	
LOS		A		D	D	B		C	E		C	A	
Approach Delay		9.7			37.9			67.1			23.6		
Approach LOS		A			D			E			C		

Intersection Summary												
Area Type:	Other											
Cycle Length:	140											
Actuated Cycle Length:	106.7											
Natural Cycle:	100											
Control Type:	Actuated-Uncoordinated											
Maximum v/c Ratio:	1.07											
Intersection Signal Delay:	47.6											
Intersection Capacity Utilization	86.1%											
Analysis Period (min)	15											



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Lanes, Volumes, Timings
103: Trafalgar Rd & Hwy 407 EB Off

TT (2041) - Scenario A - East Side Only
Timing Plan: PM Peak Hour

	EBL	EBR	NBL	NBT	SBT	SBR
Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	↰	↱		↰↰↰	↰↰↰	
Traffic Volume (vph)	87	155	0	3226	2347	0
Future Volume (vph)	87	155	0	3226	2347	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			251.9	363.6	
Travel Time (s)	39.9			18.1	26.2	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	87	155	0	3226	2347	0
Shared Lane Traffic (%)						
Lane Group Flow (vph)	87	155	0	3226	2347	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	CI+Ex	CI+Ex		CI+Ex	CI+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				CI+Ex	CI+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	

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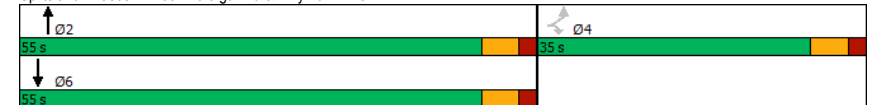
Lanes, Volumes, Timings
103: Trafalgar Rd & Hwy 407 EB Off

TT (2041) - Scenario A - East Side Only
Timing Plan: PM Peak Hour

	EBL	EBR	NBL	NBT	SBT	SBR
Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Minimum Split (s)	24.0	24.0		24.0	24.0	
Total Split (s)	35.0	35.0		55.0	55.0	
Total Split (%)	38.9%	38.9%		61.1%	61.1%	
Maximum Green (s)	29.0	29.0		49.0	49.0	
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)	14.6	14.6		54.2	54.2	
Actuated g/C Ratio	0.19	0.19		0.71	0.71	
v/c Ratio	0.26	0.51		0.90	0.65	
Control Delay	26.9	32.5		14.9	7.8	
Queue Delay	0.0	0.0		0.0	0.0	
Total Delay	26.9	32.5		14.9	7.8	
LOS	C	C		B	A	
Approach Delay	30.5			14.9	7.8	
Approach LOS	C			B	A	

Intersection Summary	
Area Type:	Other
Cycle Length: 90	
Actuated Cycle Length: 76.8	
Natural Cycle: 80	
Control Type: Semi Act-Uncoord	
Maximum v/c Ratio: 0.90	
Intersection Signal Delay: 12.7	Intersection LOS: B
Intersection Capacity Utilization 73.8%	ICU Level of Service D
Analysis Period (min) 15	

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



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Queues
103: Trafalgar Rd & Hwy 407 EB Off

TT (2041) - Scenario A - East Side Only
Timing Plan: PM Peak Hour

	EBL	EBR	NBT	SBT
Lane Group	EBL	EBR	NBT	SBT
Lane Group Flow (vph)	87	155	3226	2347
v/c Ratio	0.26	0.51	0.90	0.65
Control Delay	26.9	32.5	14.9	7.8
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	26.9	32.5	14.9	7.8
Queue Length 50th (m)	10.1	18.6	109.4	53.9
Queue Length 95th (m)	21.1	34.7	#207.6	87.6
Internal Link Dist (m)	530.6		227.9	339.6
Turn Bay Length (m)				
Base Capacity (vph)	716	642	3587	3587
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	0.12	0.24	0.90	0.65

Intersection Summary

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

HCM Signalized Intersection Capacity Analysis
103: Trafalgar Rd & Hwy 407 EB Off

TT (2041) - Scenario A - East Side Only
Timing Plan: PM Peak Hour

	EBL	EBR	NBL	NBT	SBT	SBR
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	↰	↱		↰	↰	↰
Traffic Volume (vph)	87	155	0	3226	2347	0
Future Volume (vph)	87	155	0	3226	2347	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	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	87	155	0	3226	2347	0
RTOR Reduction (vph)	0	2	0	0	0	0
Lane Group Flow (vph)	87	153	0	3226	2347	0
Turn Type	Perm	Perm		NA	NA	
Protected Phases				2	6	
Permitted Phases	4	4				
Actuated Green, G (s)	12.6	12.6		52.2	52.2	
Effective Green, g (s)	14.6	14.6		54.2	54.2	
Actuated g/C Ratio	0.19	0.19		0.71	0.71	
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)	336	300		3588	3588	
v/s Ratio Prot				c0.63	0.46	
v/s Ratio Perm	0.05	c0.10				
v/c Ratio	0.26	0.51		0.90	0.65	
Uniform Delay, d1	26.5	27.9		9.1	6.2	
Progression Factor	1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.4	1.4		4.1	0.9	
Delay (s)	26.9	29.2		13.2	7.1	
Level of Service	C	C		B	A	
Approach Delay (s)	28.4			13.2	7.1	
Approach LOS	C			B	A	

Intersection Summary

HCM 2000 Control Delay	11.4	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.84		
Actuated Cycle Length (s)	76.8	Sum of lost time (s)	10.0
Intersection Capacity Utilization	73.8%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

Lanes, Volumes, Timings

104: Trafalgar Rd & West Street A/East Street A

TT (2041) - Scenario A - East Side Only

Timing Plan: PM Peak Hour

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰	↑	↱	↰	↑	↱	↰	↑	↱	↰	↑	↱
Traffic Volume (vph)	249	0	153	0	0	0	20	3580	0	0	2368	134
Future Volume (vph)	249	0	153	0	0	0	20	3580	0	0	2368	134
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	90.0		90.0	90.0		90.0
Storage Lanes	1		1	1		1	1		1	1		1
Taper Length (m)	75.0			75.0			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
Flt Protected	0.950						0.950					
Satd. Flow (prot)	1770	1863	1583	1863	1863	1863	1770	5085	1863	1863	5085	1583
Flt Permitted	0.950						0.063					
Satd. Flow (perm)	1770	1863	1583	1863	1863	1863	117	5085	1863	1863	5085	1583
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			138									134
Link Speed (k/h)		50				50		80			80	
Link Distance (m)		216.0				205.9		233.3			251.9	
Travel Time (s)		15.6				14.8		10.5			11.3	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	249	0	153	0	0	0	20	3580	0	0	2368	134
Shared Lane Traffic (%)												
Lane Group Flow (vph)	249	0	153	0	0	0	20	3580	0	0	2368	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	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		pm+ov	pm+pt	NA	pm+ov	pm+pt	NA	pm+ov
Protected Phases	7	4		3	8	1	5	2	3	1	6	7
Permitted Phases	4		4	8		8	2		2	6		6

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Lanes, Volumes, Timings

104: Trafalgar Rd & West Street A/East Street A

TT (2041) - Scenario A - East Side Only

Timing Plan: PM Peak Hour

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector Phase	7	4	4	3	8	1	5	2	3	1	6	7
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)	9.5	24.0	24.0	9.5	24.0	11.0	9.5	24.0	9.5	11.0	24.0	9.5
Total Split (s)	10.0	24.3	24.3	9.7	24.0	25.0	9.5	91.0	9.7	25.0	106.5	10.0
Total Split (%)	6.7%	16.2%	16.2%	6.5%	16.0%	16.7%	6.3%	60.7%	6.5%	16.7%	71.0%	6.7%
Maximum Green (s)	7.0	18.3	18.3	6.7	18.0	22.0	6.5	85.0	6.7	22.0	100.5	7.0
Yellow Time (s)	3.0	4.0	4.0	3.0	4.0	3.0	3.0	4.0	3.0	3.0	4.0	3.0
All-Red Time (s)	0.0	2.0	2.0	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
Lost Time Adjust (s)	1.0	-2.0	-2.0	1.0	-2.0	-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	1.0	4.0	4.0	1.0	4.0	4.0	1.0
Lead/Lag	Lead	Lag	Lag	Lag	Lead	Lead	Lag	Lag	Lead	Lead	Lag	Lead
Lead-Lag Optimize?	Yes	Yes	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	3.0	3.0
Recall Mode	None	None	None	None	None	Max	None	C-Max	None	Max	C-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)	10.6		10.6				91.7	87.0			126.1	144.1
Actuated g/C Ratio	0.07		0.07				0.61	0.58			0.84	0.96
v/c Ratio	1.99		0.64				0.16	1.21			0.55	0.09
Control Delay	507.4		25.3				10.9	129.7			4.8	0.2
Queue Delay	0.0		0.0				0.0	0.2			0.3	0.0
Total Delay	507.4		25.3				10.9	129.9			5.1	0.2
LOS	F		C				B	F			A	A
Approach Delay		323.9						129.2			4.9	
Approach LOS		F						F			A	

Intersection Summary

Area Type: Other

Cycle Length: 150

Actuated Cycle Length: 150

Offset: 0 (0%), Referenced to phase 2:NBT and 6:SBTL, Start of Green

Natural Cycle: 150

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 1.99

Intersection Signal Delay: 93.4

Intersection LOS: F

Intersection Capacity Utilization 89.6%

ICU Level of Service E

Analysis Period (min) 15

Splits and Phases: 104: Trafalgar Rd & West Street A/East Street A

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Queues
104: Trafalgar Rd & West Street A/East Street A

TT (2041) - Scenario A - East Side Only
Timing Plan: PM Peak Hour

	EBL	EBR	NBL	NBT	SBT	SBR
Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Group Flow (vph)	249	153	20	3580	2368	134
v/c Ratio	1.99	0.64	0.16	1.21	0.55	0.09
Control Delay	507.4	25.3	10.9	129.7	4.8	0.2
Queue Delay	0.0	0.0	0.0	0.2	0.3	0.0
Total Delay	507.4	25.3	10.9	129.9	5.1	0.2
Queue Length 50th (m)	~119.2	4.3	1.5	~469.3	66.4	0.0
Queue Length 95th (m)	#145.0	25.8	2.9	#486.2	103.7	0.6
Internal Link Dist (m)			209.3	227.9		
Turn Bay Length (m)	50.0	50.0	90.0		90.0	
Base Capacity (vph)	125	333	132	2949	4274	1526
Starvation Cap Reductn	0	0	0	273	1012	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	1.99	0.46	0.15	1.34	0.73	0.09

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.

HCM Signalized Intersection Capacity Analysis
104: Trafalgar Rd & West Street A/East Street A

TT (2041) - Scenario A - East Side Only
Timing Plan: PM Peak Hour

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰	↑	↱	↰	↑	↱	↰	↑	↱	↰	↑	↱
Traffic Volume (vph)	249	0	153	0	0	0	20	3580	0	0	2368	134
Future Volume (vph)	249	0	153	0	0	0	20	3580	0	0	2368	134
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	1.0
Lane Util. Factor	1.00		1.00				1.00	0.91			0.91	1.00
Flt	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				118	5085			5085	1583
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	249	0	153	0	0	0	20	3580	0	0	2368	134
RTOR Reduction (vph)	0	0	128	0	0	0	0	0	0	0	0	10
Lane Group Flow (vph)	249	0	25	0	0	0	20	3580	0	0	2368	124
Turn Type	pm+pt		Perm	pm+pt		pm+ov	pm+pt	NA	pm+ov	pm+pt	NA	pm+ov
Protected Phases	7	4		3	8	1	5	2	3	1	6	7
Permitted Phases	4		4	8		8	2		2	6		6
Actuated Green, G (s)	11.6		8.6				88.5	85.0			122.9	134.5
Effective Green, g (s)	10.6		10.6				86.5	87.0			124.9	138.5
Actuated g/C Ratio	0.07		0.07				0.58	0.58			0.83	0.92
Clearance Time (s)	3.0		6.0				3.0	6.0			6.0	3.0
Vehicle Extension (s)	3.0		3.0				3.0	3.0			3.0	3.0
Lane Grp Cap (vph)	125		111				95	2949			4234	1461
v/s Ratio Prot	c0.14						c0.00	c0.70			c0.47	0.01
v/s Ratio Perm			0.02				0.12					0.07
v/c Ratio	1.99		0.22				0.21	1.21			0.56	0.08
Uniform Delay, d1	69.7		65.8				16.2	31.5			3.9	0.5
Progression Factor	1.00		1.00				1.00	1.00			1.00	1.00
Incremental Delay, d2	473.7		1.0				1.1	99.6			0.5	0.0
Delay (s)	543.4		66.8				17.3	131.1			4.5	0.5
Level of Service	F		E				B	F			A	A
Approach Delay (s)		362.0			0.0			130.5			4.3	
Approach LOS		F			A			F			A	

Intersection Summary

HCM 2000 Control Delay	96.2	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	1.10		
Actuated Cycle Length (s)	150.0	Sum of lost time (s)	16.0
Intersection Capacity Utilization	89.6%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

Lanes, Volumes, Timings
105: Trafalgar Rd & William Halton Parkway

TT (2041) - Scenario A - East Side Only
Timing Plan: PM Peak Hour

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰	↰	↰	↰	↰	↰	↰	↰	↰	↰	↰	↰
Traffic Volume (vph)	802	531	148	207	1441	547	641	2483	111	431	1893	455
Future Volume (vph)	802	531	148	207	1441	547	641	2483	111	431	1893	455
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	100.0		100.0			150.0	150.0		75.0	0.0		0.0
Storage Lanes	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	0.098			0.434			0.087			0.095		
Satd. Flow (perm)	183	3539	1583	808	3539	1583	162	5085	1583	177	5085	1583
Right Turn on Red			Yes			Yes			Yes		Yes	
Satd. Flow (RTOR)			148			188			73		250	
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		212.9			205.0			193.0			233.3	
Travel Time (s)		15.3			14.8			13.9			16.8	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	802	531	148	207	1441	547	641	2483	111	431	1893	455
Shared Lane Traffic (%)												
Lane Group Flow (vph)	802	531	148	207	1441	547	641	2483	111	431	1893	455
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

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Lanes, Volumes, Timings
105: Trafalgar Rd & William Halton Parkway

TT (2041) - Scenario A - East Side Only
Timing Plan: PM Peak Hour

	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)	14.0	38.0	38.0	14.2	38.0	38.0	13.9	42.9	42.9	13.9	42.9	42.9
Total Split (s)	31.0	46.2	46.2	29.8	45.0	45.0	24.0	56.0	56.0	18.0	50.0	50.0
Total Split (%)	20.7%	30.8%	30.8%	19.9%	30.0%	30.0%	16.0%	37.3%	37.3%	12.0%	33.3%	33.3%
Maximum Green (s)	28.0	39.2	39.2	26.8	38.0	38.0	21.0	49.1	49.1	15.0	43.1	43.1
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)	0.0	3.3	3.3	0.0	3.3	3.3	0.0	2.3	2.3	0.0	2.3	2.3
Lost Time Adjust (s)	1.0	-3.0	-3.0	1.0	-3.0	-3.0	1.0	-2.9	-2.9	1.0	-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	Max	Max	Max	Max	Max	Max
Walk Time (s)		7.0	7.0		7.0	7.0		7.0	7.0		7.0	7.0
Flash Dont Walk (s)		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 Effect Green (s)	72.0	53.1	53.1	55.9	41.0	41.0	70.0	52.0	52.0	60.0	46.0	46.0
Actuated g/C Ratio	0.48	0.35	0.35	0.37	0.27	0.27	0.47	0.35	0.35	0.40	0.31	0.31
v/c Ratio	2.15	0.42	0.23	0.52	1.49	0.96	2.21	1.41	0.19	1.97	1.21	0.69
Control Delay	551.0	38.8	6.0	29.2	263.9	64.2	579.5	224.6	13.9	477.2	146.5	25.9
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	551.0	38.8	6.0	29.2	263.9	64.2	579.5	224.6	13.9	477.2	146.5	25.9
LOS	F	D	A	C	F	E	F	F	B	F	F	C
Approach Delay		312.9			192.0			287.7			178.1	
Approach LOS		F			F			F			F	

Intersection Summary

Area Type:	Other
Cycle Length: 150	
Actuated Cycle Length: 150	
Natural Cycle: 140	
Control Type: Semi Act-Uncoord	
Maximum v/c Ratio: 2.21	
Intersection Signal Delay: 238.4	Intersection LOS: F
Intersection Capacity Utilization 169.7%	ICU Level of Service H
Analysis Period (min) 15	

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

Ø1	Ø2	Ø3	Ø4
18 s	56 s	29.8 s	46.2 s
Ø5	Ø6	Ø7	Ø8
24 s	50 s	31 s	45 s

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Queues
105: Trafalgar Rd & William Halton Parkway

TT (2041) - Scenario A - East Side Only
Timing Plan: PM Peak Hour

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	802	531	148	207	1441	547	641	2483	111	431	1893	455
v/c Ratio	2.15	0.42	0.23	0.52	1.49	0.96	2.21	1.41	0.19	1.97	1.21	0.69
Control Delay	551.0	38.8	6.0	29.2	263.9	64.2	579.5	224.6	13.9	477.2	146.5	25.9
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	551.0	38.8	6.0	29.2	263.9	64.2	579.5	224.6	13.9	477.2	146.5	25.9
Queue Length 50th (m)	~360.8	62.2	0.0	35.2	~306.6	114.1	~287.9	~356.9	7.5	~180.3	~248.1	54.4
Queue Length 95th (m)	#437.9	83.2	15.3	52.2	#348.5	#187.7	#361.9	#382.4	21.2	#246.3	#276.4	94.8
Internal Link Dist (m)		188.9			181.0			169.0			209.3	
Turn Bay Length (m)	100.0		100.0	100.0		150.0	150.0		75.0			
Base Capacity (vph)	373	1252	655	525	967	569	290	1762	596	219	1559	658
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	2.15	0.42	0.23	0.39	1.49	0.96	2.21	1.41	0.19	1.97	1.21	0.69

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.

HCM Signalized Intersection Capacity Analysis
105: Trafalgar Rd & William Halton Parkway

TT (2041) - Scenario A - East Side Only
Timing Plan: PM Peak Hour

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔
Traffic Volume (vph)	802	531	148	207	1441	547	641	2483	111	431	1893	455
Future Volume (vph)	802	531	148	207	1441	547	641	2483	111	431	1893	455
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	0.85	1.00	0.85	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	0.10	1.00	1.00	0.43	1.00	1.00	0.09	1.00	1.00	0.10	1.00	1.00
Satd. Flow (perm)	182	3539	1583	808	3539	1583	162	5085	1583	177	5085	1583
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	802	531	148	207	1441	547	641	2483	111	431	1893	455
RTOR Reduction (vph)	0	0	96	0	0	137	0	0	48	0	0	173
Lane Group Flow (vph)	802	531	52	207	1441	410	641	2483	63	431	1893	282
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)	69.0	50.1	50.1	53.9	38.0	38.0	67.1	49.1	49.1	58.1	43.1	43.1
Effective Green, g (s)	68.0	53.1	53.1	51.9	41.0	41.0	66.1	52.0	52.0	56.1	46.0	46.0
Actuated g/C Ratio	0.45	0.35	0.35	0.35	0.27	0.27	0.44	0.35	0.35	0.37	0.31	0.31
Clearance Time (s)	3.0	7.0	7.0	3.0	7.0	7.0	3.0	6.9	6.9	3.0	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	1252	560	375	967	432	285	1762	548	214	1559	485
v/s Ratio Prot	c0.39	0.15		0.05	0.41		c0.30	0.49		0.19	0.37	
v/s Ratio Perm	c0.60		0.03	0.14		0.26	c0.69		0.04	0.56		0.18
v/c Ratio	2.18	0.42	0.09	0.55	1.49	0.95	2.25	1.41	0.12	2.01	1.21	0.58
Uniform Delay, d1	48.3	36.8	32.4	36.3	54.5	53.5	48.3	49.0	33.3	44.1	52.0	43.9
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	539.6	0.5	0.2	1.8	226.1	31.2	573.3	187.6	0.4	472.4	102.6	5.0
Delay (s)	587.9	37.3	32.5	38.1	280.6	84.7	621.5	236.6	33.8	516.5	154.6	48.9
Level of Service	F	D	C	D	F	F	F	F	C	F	F	D
Approach Delay (s)		335.0			208.9			305.9			193.4	
Approach LOS		F			F			F			F	

Intersection Summary

HCM 2000 Control Delay	256.1	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	2.17		
Actuated Cycle Length (s)	150.0	Sum of lost time (s)	16.0
Intersection Capacity Utilization	169.7%	ICU Level of Service	H
Analysis Period (min)	15		

c Critical Lane Group

Lanes, Volumes, Timings TT (2041) - Scenario A - East Side Only
106: Trafalgar Rd & Burnhamthorpe Rd/Burnhamthorpe Rd Timing Plan: PM Peak Hour

	←	→	↖	↗	←	→	↖	↗	←	→	↖	↗
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖	↖	↖	↖	↖	↖	↖	↖	↖	↖	↖	↖
Traffic Volume (vph)	148	339	18	135	297	503	100	2273	145	294	1464	238
Future Volume (vph)	148	339	18	135	297	503	100	2273	145	294	1464	238
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	1.00	1.00	1.00	1.00	1.00	1.00	0.91	1.00	1.00	0.91	1.00
Frt		0.992			0.906				0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1770	1848	0	1770	1688	0	1770	5085	1583	1770	5085	1583
Flt Permitted	0.137			0.246			0.105			0.095		
Satd. Flow (perm)	255	1848	0	458	1688	0	196	5085	1583	177	5085	1583
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		2			80				104			238
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	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	148	339	18	135	297	503	100	2273	145	294	1464	238
Shared Lane Traffic (%)												
Lane Group Flow (vph)	148	357	0	135	800	0	100	2273	145	294	1464	238
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	pm+ov	pm+pt	NA	pm+ov
Protected Phases	7	4		3	8		5	2	3	1	6	7
Permitted Phases	4			8			2		2	6		6

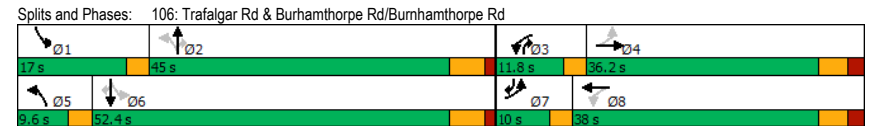
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Lanes, Volumes, Timings TT (2041) - Scenario A - East Side Only
106: Trafalgar Rd & Burnhamthorpe Rd/Burnhamthorpe Rd Timing Plan: PM Peak Hour

	←	→	↖	↗	←	→	↖	↗	←	→	↖	↗
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector Phase	7	4		3	8		5	2	3	1	6	7
Switch Phase												
Minimum Initial (s)	5.0	10.0		5.0	10.0		5.0	20.0	5.0	7.0	20.0	5.0
Minimum Split (s)	9.5	24.0		9.5	24.0		9.5	26.0	9.5	11.5	26.0	9.5
Total Split (s)	10.0	36.2		11.8	38.0		9.6	45.0	11.8	17.0	52.4	10.0
Total Split (%)	9.1%	32.9%		10.7%	34.5%		8.7%	40.9%	10.7%	15.5%	47.6%	9.1%
Maximum Green (s)	7.0	30.2		8.8	32.0		6.6	39.0	8.8	14.0	46.4	7.0
Yellow Time (s)	3.0	3.7		3.0	3.7		3.0	4.6	3.0	3.0	4.6	3.0
All-Red Time (s)	0.0	2.3		0.0	2.3		0.0	1.4	0.0	0.0	1.4	0.0
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	1.0	4.0	4.0	1.0
Lead/Lag	Lead	Lag		Lead	Lag		Lead	Lag	Lead	Lag	Lag	Lead
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	Max	None		Max	None		Max	Max	Max	Max	Max	Max
Act Effct Green (s)	38.2	32.2		41.8	34.0		46.6	41.0	55.8	58.0	48.4	61.4
Actuated g/C Ratio	0.35	0.29		0.38	0.31		0.42	0.37	0.51	0.53	0.44	0.56
v/c Ratio	0.87	0.66		0.51	1.39		0.61	1.20	0.17	1.05	0.65	0.24
Control Delay	67.8	40.7		28.8	213.5		32.6	127.4	5.4	95.1	26.0	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	67.8	40.7		28.8	213.5		32.6	127.4	5.4	95.1	26.0	2.1
LOS	E	D		C	F		C	F	A	F	C	A
Approach Delay		48.7			186.9			116.6			33.3	
Approach LOS		D			F			F			C	

Intersection Summary												
Area Type:	Other											
Cycle Length:	110											
Actuated Cycle Length:	110											
Natural Cycle:	120											
Control Type:	Semi Act-Uncooord											
Maximum v/c Ratio:	1.39											
Intersection Signal Delay:	94.0											
Intersection Capacity Utilization	128.2%											
ICU Level of Service	H											
Analysis Period (min)	15											



I/O Trafalgar Oakville TIS
PTSL (210156/210157)

Synchro 10 Report
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Queues
106: Trafalgar Rd & Burhamthorpe Rd/Burnhamthorpe Rd

TT (2041) - Scenario A - East Side Only
Timing Plan: PM Peak Hour

	EBL	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	148	357	135	800	100	2273	145	294	1464	238
v/c Ratio	0.87	0.66	0.51	1.39	0.61	1.20	0.17	1.05	0.65	0.24
Control Delay	67.8	40.7	28.8	213.5	32.6	127.4	5.4	95.1	26.0	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	67.8	40.7	28.8	213.5	32.6	127.4	5.4	95.1	26.0	2.1
Queue Length 50th (m)	20.2	65.8	18.3	~215.2	10.2	~214.5	4.2	~51.2	87.3	0.0
Queue Length 95th (m)	#49.0	97.1	31.4	#286.8	#24.3	#243.1	14.0	#103.4	102.9	10.2
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	
Base Capacity (vph)	171	542	267	577	163	1895	854	281	2237	988
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	0.87	0.66	0.51	1.39	0.61	1.20	0.17	1.05	0.65	0.24

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.

HCM Signalized Intersection Capacity Analysis
106: Trafalgar Rd & Burhamthorpe Rd/Burnhamthorpe Rd

TT (2041) - Scenario A - East Side Only
Timing Plan: PM Peak Hour

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔
Traffic Volume (vph)	148	339	18	135	297	503	100	2273	145	294	1464	238
Future Volume (vph)	148	339	18	135	297	503	100	2273	145	294	1464	238
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	1.0	4.0	4.0	1.0
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	0.91	1.00	1.00	0.91	1.00
Flt	1.00	0.99		1.00	0.91		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	1849		1770	1687		1770	5085	1583	1770	5085	1583
Flt Permitted	0.14	1.00		0.25	1.00		0.11	1.00	1.00	0.10	1.00	1.00
Satd. Flow (perm)	255	1849		459	1687		196	5085	1583	177	5085	1583
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	148	339	18	135	297	503	100	2273	145	294	1464	238
RTOR Reduction (vph)	0	1	0	0	55	0	0	0	55	0	0	114
Lane Group Flow (vph)	148	356	0	135	745	0	100	2273	90	294	1464	124
Turn Type	pm+pt	NA		pm+pt	NA		pm+pt	NA	pm+ov	pm+pt	NA	pm+ov
Protected Phases	7	4		3	8		5	2	3	1	6	7
Permitted Phases	4			8			2		2	6		6
Actuated Green, G (s)	37.2	30.2		40.8	32.0		45.6	39.0	47.8	56.0	46.4	53.4
Effective Green, g (s)	35.2	32.2		38.8	34.0		43.6	41.0	51.8	55.0	48.4	57.4
Actuated g/C Ratio	0.32	0.29		0.35	0.31		0.40	0.37	0.47	0.50	0.44	0.52
Clearance Time (s)	3.0	6.0		3.0	6.0		3.0	6.0	3.0	3.0	6.0	3.0
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)	164	541		254	521		157	1895	745	276	2237	826
v/s Ratio Prot	c0.05	0.19		0.04	c0.44		0.03	c0.45	c0.01	c0.13	0.29	0.01
v/s Ratio Perm	0.24			0.15			0.22		0.04	0.40		0.07
v/c Ratio	0.90	0.66		0.53	1.43		0.64	1.20	0.12	1.07	0.65	0.15
Uniform Delay, d1	33.1	34.1		26.5	38.0		22.7	34.5	16.3	32.9	24.2	13.6
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	43.1	2.9		2.1	204.1		18.1	95.2	0.3	72.5	1.5	0.4
Delay (s)	76.2	36.9		28.6	242.1		40.8	129.7	16.7	105.4	25.7	14.0
Level of Service	E	D		C	F		D	F	B	F	C	B
Approach Delay (s)		48.5			211.3			119.6			36.1	
Approach LOS		D			F			F			D	

Intersection Summary

HCM 2000 Control Delay	100.0	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	1.25		
Actuated Cycle Length (s)	110.0	Sum of lost time (s)	16.0
Intersection Capacity Utilization	128.2%	ICU Level of Service	H
Analysis Period (min)	15		

c Critical Lane Group

Lanes, Volumes, Timings
202: Trafalgar Rd & East Street C

TT (2041) - Scenario A - East Side Only
Timing Plan: PM Peak Hour

	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations		↗		↗↗↗	↗↗↗	↗
Traffic Volume (vph)	0	188	0	2924	1808	237
Future Volume (vph)	0	188	0	2924	1808	237
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (m)	0.0	0.0	0.0			90.0
Storage Lanes	0	1	0			1
Taper Length (m)	7.5		7.5			
Lane Util. Factor	1.00	1.00	1.00	0.91	0.91	1.00
Frt		0.865				0.850
Flt Protected						
Satd. Flow (prot)	0	1611	0	5085	5085	1583
Flt Permitted						
Satd. Flow (perm)	0	1611	0	5085	5085	1583
Link Speed (k/h)	50			50	50	
Link Distance (m)	205.4			92.4	193.0	
Travel Time (s)	14.8			6.7	13.9	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	0	188	0	2924	1808	237
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	188	0	2924	1808	237
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	0.0			3.6	3.6	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	4.8			4.8	4.8	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)	25	15	25			15
Sign Control	Stop			Free	Free	
Intersection Summary						
Area Type:	Other					
Control Type:	Unsignalized					
Intersection Capacity Utilization 59.8%	ICU Level of Service B					
Analysis Period (min) 15						

HCM Unsignalized Intersection Capacity Analysis
202: Trafalgar Rd & East Street C

TT (2041) - Scenario A - East Side Only
Timing Plan: PM Peak Hour

								
Movement	EBL	EBR	NBL	NBT	SBT	SBR		
Lane Configurations				  	  			
Traffic Volume (veh/h)	0	188	0	2924	1808	237		
Future Volume (Veh/h)	0	188	0	2924	1808	237		
Sign Control	Stop			Free	Free			
Grade	0%			0%	0%			
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00		
Hourly flow rate (vph)	0	188	0	2924	1808	237		
Pedestrians								
Lane Width (m)								
Walking Speed (m/s)								
Percent Blockage								
Right turn flare (veh)								
Median type				None	None			
Median storage veh								
Upstream signal (m)				263	193			
pX, platoon unblocked	0.79	0.70	0.70					
vC, conflicting volume	2783	603	2045					
vC1, stage 1 conf vol								
vC2, stage 2 conf vol								
vCu, unblocked vol	0	0	1017					
tC, single (s)	6.8	6.9	4.1					
tC, 2 stage (s)								
tF (s)	3.5	3.3	2.2					
p0 queue free %	100	75	100					
cM capacity (veh/h)	811	764	478					
Direction, Lane #	EB 1	NB 1	NB 2	NB 3	SB 1	SB 2	SB 3	SB 4
Volume Total	188	975	975	975	603	603	603	237
Volume Left	0	0	0	0	0	0	0	0
Volume Right	188	0	0	0	0	0	0	237
cSH	764	1700	1700	1700	1700	1700	1700	1700
Volume to Capacity	0.25	0.57	0.57	0.57	0.35	0.35	0.35	0.14
Queue Length 95th (m)	7.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Control Delay (s)	11.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Lane LOS	B							
Approach Delay (s)	11.2	0.0			0.0			
Approach LOS	B							
Intersection Summary								
Average Delay			0.4					
Intersection Capacity Utilization			59.8%		ICU Level of Service			B
Analysis Period (min)			15					

Lanes, Volumes, Timings
203: East Street D & East Street A

TT (2041) - Scenario A - East Side Only
Timing Plan: PM Peak Hour

						
Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	112	342	0	186	233	0
Future Volume (vph)	112	342	0	186	233	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	0.850					
Flt Protected			0.950			
Satd. Flow (prot)	1863	1583	0	1863	1770	0
Flt Permitted			0.950			
Satd. Flow (perm)	1863	1583	0	1863	1770	0
Link Speed (k/h)	50			50	50	
Link Distance (m)	205.9			205.1	113.3	
Travel Time (s)	14.8			14.8	8.2	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	112	342	0	186	233	0
Shared Lane Traffic (%)						
Lane Group Flow (vph)	112	342	0	186	233	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
Sign Control	Free			Free	Stop	
Intersection Summary						
Area Type:	Other					
Control Type:	Unsignalized					
Intersection Capacity Utilization	37.6%			ICU Level of Service A		
Analysis Period (min)	15					

HCM Unsignalized Intersection Capacity Analysis
203: East Street D & East Street A

TT (2041) - Scenario A - East Side Only
Timing Plan: PM Peak Hour

	→	↖	↗	←	↖	↗
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑	↑		↑	↑	
Traffic Volume (veh/h)	112	342	0	186	233	0
Future Volume (Veh/h)	112	342	0	186	233	0
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	112	342	0	186	233	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)	206					
pX, platoon unblocked						
vC, conflicting volume			454		298	112
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			454		298	112
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			100		66	100
cM capacity (veh/h)			1107		693	941
Direction, Lane #	EB 1	EB 2	WB 1	NB 1		
Volume Total	112	342	186	233		
Volume Left	0	0	0	233		
Volume Right	0	342	0	0		
cSH	1700	1700	1107	693		
Volume to Capacity	0.07	0.20	0.00	0.34		
Queue Length 95th (m)	0.0	0.0	0.0	11.1		
Control Delay (s)	0.0	0.0	0.0	12.8		
Lane LOS				B		
Approach Delay (s)	0.0		0.0	12.8		
Approach LOS				B		
Intersection Summary						
Average Delay			3.4			
Intersection Capacity Utilization			37.6%		ICU Level of Service	A
Analysis Period (min)			15			

Lanes, Volumes, Timings
204: East Street E & East Street A

TT (2041) - Scenario A - East Side Only
Timing Plan: PM Peak Hour

	→	↖	↗	←	↖	↗
Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↖			↖	↖	↖
Traffic Volume (vph)	0	63	0	0	201	0
Future Volume (vph)	0	63	0	0	201	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.865					
Flt Protected					0.950	
Satd. Flow (prot)	1611	0	0	1863	1770	0
Flt Permitted					0.950	
Satd. Flow (perm)	1611	0	0	1863	1770	0
Link Speed (k/h)	50			50	50	
Link Distance (m)	205.1			192.2	115.1	
Travel Time (s)	14.8			13.8	8.3	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	0	63	0	0	201	0
Shared Lane Traffic (%)						
Lane Group Flow (vph)	63	0	0	0	201	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	0.0			0.0	3.6	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	4.8			4.8	4.8	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)		15	25		25	15
Sign Control	Free			Free	Stop	
Intersection Summary						
Area Type:	Other					
Control Type:	Unsignalized					
Intersection Capacity Utilization 21.7%	ICU Level of Service A					
Analysis Period (min) 15						

HCM Unsignalized Intersection Capacity Analysis
204: East Street E & East Street A

TT (2041) - Scenario A - East Side Only
Timing Plan: PM Peak Hour

	→	↖	↗	←	↖	↗
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↖			↖	↖	↖
Traffic Volume (veh/h)	0	63	0	0	201	0
Future Volume (Veh/h)	0	63	0	0	201	0
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	0	63	0	0	201	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			63		32	32
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			63		32	32
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			100		80	100
cM capacity (veh/h)			1540		982	1043
Direction, Lane #	EB 1	WB 1	NB 1			
Volume Total	63	0	201			
Volume Left	0	0	201			
Volume Right	63	0	0			
cSH	1700	1700	982			
Volume to Capacity	0.04	0.00	0.20			
Queue Length 95th (m)	0.0	0.0	5.7			
Control Delay (s)	0.0	0.0	9.6			
Lane LOS			A			
Approach Delay (s)	0.0	0.0	9.6			
Approach LOS			A			
Intersection Summary						
Average Delay			7.3			
Intersection Capacity Utilization			21.7%		ICU Level of Service	A
Analysis Period (min)			15			

Lanes, Volumes, Timings
205: East Street F & East Street A

TT (2041) - Scenario A - East Side Only
Timing Plan: PM Peak Hour

						
Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
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	1.00	1.00	1.00
Frt						
Flt Protected						
Satd. Flow (prot)	1863	0	0	1863	1863	0
Flt Permitted						
Satd. Flow (perm)	1863	0	0	1863	1863	0
Link Speed (k/h)	50			50	50	
Link Distance (m)	192.2			209.4	115.6	
Travel Time (s)	13.8			15.1	8.3	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
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)	0.0			0.0	3.6	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	4.8			4.8	4.8	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)		15	25		25	15
Sign Control	Free			Free	Stop	
Intersection Summary						
Area Type:	Other					
Control Type:	Unsignalized					
Intersection Capacity Utilization	0.0%			ICU Level of Service A		
Analysis Period (min)	15					

HCM Unsignalized Intersection Capacity Analysis
205: East Street F & East Street A

TT (2041) - Scenario A - East Side Only
Timing Plan: PM Peak Hour

	→	↖	↗	←	↖	↗
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↖			↖	↖	
Traffic Volume (veh/h)	0	0	0	0	0	0
Future Volume (Veh/h)	0	0	0	0	0	0
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	0	0	0	0	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			0		0	0
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			0		0	0
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			100		100	100
cM capacity (veh/h)			1623		1023	1085
Direction, Lane #	EB 1	WB 1	NB 1			
Volume Total	0	0	0			
Volume Left	0	0	0			
Volume Right	0	0	0			
cSH	1700	1700	1700			
Volume to Capacity	0.00	0.00	0.00			
Queue Length 95th (m)	0.0	0.0	0.0			
Control Delay (s)	0.0	0.0	0.0			
Lane LOS			A			
Approach Delay (s)	0.0	0.0	0.0			
Approach LOS			A			
Intersection Summary						
Average Delay			0.0			
Intersection Capacity Utilization			0.0%		ICU Level of Service	A
Analysis Period (min)			15			

Lanes, Volumes, Timings
206: East Street D & East Street B

TT (2041) - Scenario A - East Side Only
Timing Plan: PM Peak Hour

	←	←	↑	↗	↘	↓
Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	↰		↰			↰
Traffic Volume (vph)	68	6	115	14	15	265
Future Volume (vph)	68	6	115	14	15	265
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	0.989		0.985			
Flt Protected	0.956					0.997
Satd. Flow (prot)	1761	0	1835	0	0	1857
Flt Permitted	0.956					0.997
Satd. Flow (perm)	1761	0	1835	0	0	1857
Link Speed (k/h)	50		50			50
Link Distance (m)	203.4		120.6			113.3
Travel Time (s)	14.6		8.7			8.2
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	68	6	115	14	15	265
Shared Lane Traffic (%)						
Lane Group Flow (vph)	74	0	129	0	0	280
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 35.8% ICU Level of Service A

Analysis Period (min) 15

HCM Unsignalized Intersection Capacity Analysis
206: East Street D & East Street B

TT (2041) - Scenario A - East Side Only
Timing Plan: PM Peak Hour

	←	←	↑	↗	↘	↓
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	↰		↰			↰
Traffic Volume (veh/h)	68	6	115	14	15	265
Future Volume (Veh/h)	68	6	115	14	15	265
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	68	6	115	14	15	265
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	417	122			129	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	417	122			129	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	88	99			99	
cM capacity (veh/h)	586	929			1457	

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	74	129	280
Volume Left	68	0	15
Volume Right	6	14	0
cSH	604	1700	1457
Volume to Capacity	0.12	0.08	0.01
Queue Length 95th (m)	3.1	0.0	0.2
Control Delay (s)	11.8	0.0	0.5
Lane LOS	B		A
Approach Delay (s)	11.8	0.0	0.5
Approach LOS	B		

Intersection Summary

Average Delay	2.1		
Intersection Capacity Utilization	35.8%	ICU Level of Service	A
Analysis Period (min)	15		

Lanes, Volumes, Timings
207: East Street E & East Street B

TT (2041) - Scenario A - East Side Only
Timing Plan: PM Peak Hour

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔			↔			↔			↔	
Traffic Volume (vph)	79	0	86	0	0	0	152	15	0	0	63	0
Future Volume (vph)	79	0	86	0	0	0	152	15	0	0	63	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	0.930											
Flt Protected	0.977											
Satd. Flow (prot)	0	1693	0	0	1863	0	0	1781	0	0	1863	0
Flt Permitted	0.977											
Satd. Flow (perm)	0	1693	0	0	1863	0	0	1781	0	0	1863	0
Link Speed (k/h)	50											
Link Distance (m)	203.4											
Travel Time (s)	14.6											
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	79	0	86	0	0	0	152	15	0	0	63	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	165	0	0	0	0	0	167	0	0	63	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											
Link Offset(m)	0.0											
Crosswalk Width(m)	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											

Intersection Summary

Area Type: Other

Control Type: Unsignalized

Intersection Capacity Utilization 32.2% ICU Level of Service A

Analysis Period (min) 15

HCM Unsignalized Intersection Capacity Analysis
207: East Street E & East Street B

TT (2041) - Scenario A - East Side Only
Timing Plan: PM Peak Hour

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Movement		↔			↔			↔			↔	
Lane Configurations		↔			↔			↔			↔	
Traffic Volume (veh/h)	79	0	86	0	0	0	152	15	0	0	63	0
Future Volume (Veh/h)	79	0	86	0	0	0	152	15	0	0	63	0
Sign Control	Stop											
Grade	0%											
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	79	0	86	0	0	0	152	15	0	0	63	0
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type	None											
Median storage (veh)												
Upstream signal (m)	121											
pX, platoon unblocked												
vC, conflicting volume	382	382	63	468	382	15	63			15		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	382	382	63	468	382	15	63			15		
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 %	85	100	91	100	100	100	90			100		
cM capacity (veh/h)	532	497	1002	427	497	1065	1540			1603		

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	165	0	167	63
Volume Left	79	0	152	0
Volume Right	86	0	0	0
cSH	704	1700	1540	1603
Volume to Capacity	0.23	0.00	0.10	0.00
Queue Length 95th (m)	6.8	0.0	2.5	0.0
Control Delay (s)	11.7	0.0	7.0	0.0
Lane LOS	B	A	A	
Approach Delay (s)	11.7	0.0	7.0	0.0
Approach LOS	B	A		

Intersection Summary

Average Delay 7.8
Intersection Capacity Utilization 32.2% ICU Level of Service A
Analysis Period (min) 15

Lanes, Volumes, Timings
208: East Street F & East Street B

TT (2041) - Scenario A - East Side Only
Timing Plan: PM Peak Hour

						
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	1.00	1.00	1.00
Frt						
Flt Protected						
Satd. Flow (prot)	1863	0	0	1863	1863	0
Flt Permitted						
Satd. Flow (perm)	1863	0	0	1863	1863	0
Link Speed (k/h)	50			50	50	
Link Distance (m)	193.8			120.1	115.6	
Travel Time (s)	14.0			8.6	8.3	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
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			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	25			15
Sign Control	Stop			Free	Free	
Intersection Summary						
Area Type:	Other					
Control Type:	Unsignalized					
Intersection Capacity Utilization	0.0%			ICU Level of Service A		
Analysis Period (min)	15					

HCM Unsignalized Intersection Capacity Analysis
208: East Street F & East Street B

TT (2041) - Scenario A - East Side Only
Timing Plan: PM Peak Hour

	EBL	EBR	NBL	NBT	SBT	SBR
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	↔			↔	↔	
Traffic Volume (veh/h)	0	0	0	0	0	0
Future Volume (Veh/h)	0	0	0	0	0	0
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	0	0	0	0	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	0	0	0			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	0	0	0			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	100	100	100			
cM capacity (veh/h)	1023	1085	1623			
Direction, Lane #	EB 1	NB 1	SB 1			
Volume Total	0	0	0			
Volume Left	0	0	0			
Volume Right	0	0	0			
cSH	1700	1700	1700			
Volume to Capacity	0.00	0.00	0.00			
Queue Length 95th (m)	0.0	0.0	0.0			
Control Delay (s)	0.0	0.0	0.0			
Lane LOS	A					
Approach Delay (s)	0.0	0.0	0.0			
Approach LOS	A					
Intersection Summary						
Average Delay		0.0				
Intersection Capacity Utilization		0.0%		ICU Level of Service A		
Analysis Period (min)		15				

Lanes, Volumes, Timings
209: William Halton Parkway & East Street D

TT (2041) - Scenario A - East Side Only
Timing Plan: PM Peak Hour

	EBL	EBT	WBT	WBR	SBL	SBR
Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑↑	↑↑	↑		↑
Traffic Volume (vph)	0	1073	2195	0	0	0
Future Volume (vph)	0	1073	2195	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (m)	0.0			50.0	0.0	0.0
Storage Lanes	0			1	0	1
Taper Length (m)	7.5				7.5	
Lane Util. Factor	1.00	0.95	0.95	1.00	1.00	1.00
Frt						
Flt Protected						
Satd. Flow (prot)	0	3539	3539	1863	0	1863
Flt Permitted						
Satd. Flow (perm)	0	3539	3539	1863	0	1863
Link Speed (k/h)		50	50		50	
Link Distance (m)		205.0	201.5		120.6	
Travel Time (s)		14.8	14.5		8.7	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	0	1073	2195	0	0	0
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	1073	2195	0	0	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		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	25	15
Sign Control		Free	Free		Stop	
Intersection Summary						
Area Type:	Other					
Control Type:	Unsignalized					
Intersection Capacity Utilization 64.0%	ICU Level of Service C					
Analysis Period (min) 15						

HCM Unsignalized Intersection Capacity Analysis
209: William Halton Parkway & East Street D

TT (2041) - Scenario A - East Side Only
Timing Plan: PM Peak Hour

	EBL	EBT	WBT	WBR	SBL	SBR
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑↑	↑↑	↑		↑
Traffic Volume (veh/h)	0	1073	2195	0	0	0
Future Volume (Veh/h)	0	1073	2195	0	0	0
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	0	1073	2195	0	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)		205	201			
pX, platoon unblocked	0.26				0.31	0.26
vC, conflicting volume	2195				2732	1098
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	0				566	0
tC, single (s)	4.1				6.8	6.9
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	100				100	100
cM capacity (veh/h)	420				143	281
Direction, Lane #	EB 1	EB 2	WB 1	WB 2	WB 3	SB 1
Volume Total	536	536	1098	1098	0	0
Volume Left	0	0	0	0	0	0
Volume Right	0	0	0	0	0	0
cSH	1700	1700	1700	1700	1700	1700
Volume to Capacity	0.32	0.32	0.65	0.65	0.00	0.00
Queue Length 95th (m)	0.0	0.0	0.0	0.0	0.0	0.0
Control Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0
Lane LOS						
Approach Delay (s)	0.0		0.0			0.0
Approach LOS						A
Intersection Summary						
Average Delay			0.0			
Intersection Capacity Utilization			64.0%		ICU Level of Service	C
Analysis Period (min)			15			

Lanes, Volumes, Timings

210: William Halton Parkway & East Street E

TT (2041) - Scenario A - East Side Only

Timing Plan: PM Peak Hour

	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations	↰	↱	↱	↰	↰	↰
Traffic Volume (vph)	0	1073	2195	0	0	0
Future Volume (vph)	0	1073	2195	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (m)	90.0			50.0	0.0	0.0
Storage Lanes	1			1	1	0
Taper Length (m)	100.0				7.5	
Lane Util. Factor	1.00	*0.95	*0.95	1.00	1.00	1.00
Frt						
Flt Protected						
Satd. Flow (prot)	1863	3539	3539	1863	1863	0
Flt Permitted						
Satd. Flow (perm)	1863	3539	3539	1863	1863	0
Right Turn on Red				Yes	Yes	
Satd. Flow (RTOR)						
Link Speed (k/h)		50	50		50	
Link Distance (m)		201.5	195.6		120.6	
Travel Time (s)		14.5	14.1		8.7	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	0	1073	2195	0	0	0
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	1073	2195	0	0	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
Number of Detectors	1	2	2	1	1	
Detector Template	Left	Thru	Thru	Right	Left	
Leading Detector (m)	2.0	10.0	10.0	2.0	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)	2.0	0.6	0.6	2.0	2.0	
Detector 1 Type	CI+Ex	CI+Ex	CI+Ex	CI+Ex	CI+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		CI+Ex	CI+Ex			
Detector 2 Channel						
Detector 2 Extend (s)		0.0	0.0			
Turn Type	pm+pt	NA	NA	Perm	Perm	
Protected Phases	7	4	8			
Permitted Phases	4			8	6	

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Lanes, Volumes, Timings

210: William Halton Parkway & East Street E

TT (2041) - Scenario A - East Side Only

Timing Plan: PM Peak Hour

	EBL	EBT	WBT	WBR	SBL	SBR
Detector Phase	7	4	8	8	6	
Switch Phase						
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	
Minimum Split (s)	9.5	24.0	24.0	24.0	24.0	
Total Split (s)	17.6	95.6	78.0	78.0	24.4	
Total Split (%)	14.7%	79.7%	65.0%	65.0%	20.3%	
Maximum Green (s)	14.6	89.6	72.0	72.0	18.4	
Yellow Time (s)	3.0	4.0	4.0	4.0	4.0	
All-Red Time (s)	0.0	2.0	2.0	2.0	2.0	
Lost Time Adjust (s)	1.0	-2.0	-2.0	-2.0	-2.0	
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	
Lead/Lag	Lead		Lag	Lag		
Lead-Lag Optimize?	Yes		Yes	Yes		
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	
Flash Dont Walk (s)		11.0	11.0	11.0	11.0	
Pedestrian Calls (#/hr)		0	0	0	0	
Act Effct Green (s)		95.6	74.0			
Actuated g/C Ratio		1.00	0.77			
v/c Ratio		0.30	0.80			
Control Delay		0.2	9.4			
Queue Delay		0.0	0.0			
Total Delay		0.2	9.4			
LOS		A	A			
Approach Delay		0.2	9.4			
Approach LOS		A	A			

Intersection Summary

Area Type: Other

Cycle Length: 120

Actuated Cycle Length: 95.6

Natural Cycle: 90

Control Type: Semi Act-Uncoord

Maximum v/c Ratio: 0.80

Intersection Signal Delay: 6.4

Intersection LOS: A

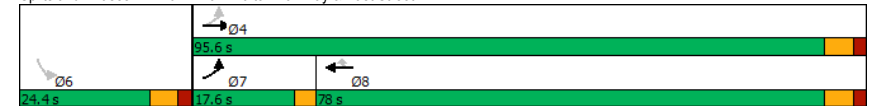
Intersection Capacity Utilization 64.0%

ICU Level of Service C

Analysis Period (min) 15

* User Entered Value

Splits and Phases: 210: William Halton Parkway & East Street E

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Queues
210: William Halton Parkway & East Street E

TT (2041) - Scenario A - East Side Only
Timing Plan: PM Peak Hour

	→	←
Lane Group	EBT	WBT
Lane Group Flow (vph)	1073	2195
v/c Ratio	0.30	0.80
Control Delay	0.2	9.4
Queue Delay	0.0	0.0
Total Delay	0.2	9.4
Queue Length 50th (m)	0.0	99.0
Queue Length 95th (m)	0.0	128.1
Internal Link Dist (m)	177.5	171.6
Turn Bay Length (m)		
Base Capacity (vph)	3539	2739
Starvation Cap Reductn	0	0
Spillback Cap Reductn	0	0
Storage Cap Reductn	0	0
Reduced v/c Ratio	0.30	0.80
Intersection Summary		

HCM Signalized Intersection Capacity Analysis
210: William Halton Parkway & East Street E

TT (2041) - Scenario A - East Side Only
Timing Plan: PM Peak Hour

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	0	1073	2195	0	0	0
Future Volume (vph)	0	1073	2195	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0	4.0			
Lane Util. Factor		*0.95	*0.95			
Frt		1.00	1.00			
Flt Protected		1.00	1.00			
Satd. Flow (prot)		3539	3539			
Flt Permitted		1.00	1.00			
Satd. Flow (perm)		3539	3539			
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	0	1073	2195	0	0	0
RTOR Reduction (vph)	0	0	0	0	0	0
Lane Group Flow (vph)	0	1073	2195	0	0	0
Turn Type	pm+pt	NA	NA	Perm	Perm	
Protected Phases	7	4	8			
Permitted Phases	4			8	6	
Actuated Green, G (s)		95.6	72.0			
Effective Green, g (s)		95.6	74.0			
Actuated g/C Ratio		1.00	0.77			
Clearance Time (s)		6.0	6.0			
Vehicle Extension (s)		3.0	3.0			
Lane Grp Cap (vph)		3539	2739			
v/s Ratio Prot		c0.30	c0.62			
v/s Ratio Perm						
v/c Ratio		0.30	0.80			
Uniform Delay, d1		0.0	6.4			
Progression Factor		1.00	1.00			
Incremental Delay, d2		0.2	2.6			
Delay (s)		0.2	9.0			
Level of Service		A	A			
Approach Delay (s)		0.2	9.0		0.0	
Approach LOS		A	A		A	
Intersection Summary						
HCM 2000 Control Delay			6.1	HCM 2000 Level of Service		A
HCM 2000 Volume to Capacity ratio			0.79			
Actuated Cycle Length (s)			95.6	Sum of lost time (s)		14.0
Intersection Capacity Utilization			64.0%	ICU Level of Service		C
Analysis Period (min)			15			
c Critical Lane Group						

c Critical Lane Group

Lanes, Volumes, Timings

211: William Halton Parkway & East Street F

TT (2041) - Scenario A - East Side Only

Timing Plan: PM Peak Hour

	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations	↰	↱	↱		↰	
Traffic Volume (vph)	0	1073	2195	0	0	0
Future Volume (vph)	0	1073	2195	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (m)	90.0			0.0	0.0	0.0
Storage Lanes	1			0	1	0
Taper Length (m)	100.0				7.5	
Lane Util. Factor	1.00	0.95	0.95	0.95	1.00	1.00
Frt						
Flt Protected						
Satd. Flow (prot)	1863	3539	3539	0	1863	0
Flt Permitted						
Satd. Flow (perm)	1863	3539	3539	0	1863	0
Link Speed (k/h)		50	50		50	
Link Distance (m)		195.6	407.9		120.1	
Travel Time (s)		14.1	29.4		8.6	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	0	1073	2195	0	0	0
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	1073	2195	0	0	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 64.0%	ICU Level of Service C					
Analysis Period (min) 15						

HCM Unsignalized Intersection Capacity Analysis

211: William Halton Parkway & East Street F

TT (2041) - Scenario A - East Side Only

Timing Plan: PM Peak Hour

	EBL	EBT	WBT	WBR	SBL	SBR
Movement	↰	↱	↱		↰	
Lane Configurations	↰	↱	↱		↰	
Traffic Volume (veh/h)	0	1073	2195	0	0	0
Future Volume (Veh/h)	0	1073	2195	0	0	0
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	0	1073	2195	0	0	0
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type						
Median storage (veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	2195				2732	1098
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	2195				2732	1098
tC, single (s)	4.1				6.8	6.9
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	100				100	100
cM capacity (veh/h)	237				16	208
Direction, Lane #						
Volume Total	0	536	536	1463	732	0
Volume Left	0	0	0	0	0	0
Volume Right	0	0	0	0	0	0
cSH	1700	1700	1700	1700	1700	1700
Volume to Capacity	0.00	0.32	0.32	0.86	0.43	0.00
Queue Length 95th (m)	0.0	0.0	0.0	0.0	0.0	0.0
Control Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0
Lane LOS						
Approach Delay (s)	0.0			0.0		0.0
Approach LOS						
Intersection Summary						
Average Delay			0.0			
Intersection Capacity Utilization			64.0%		ICU Level of Service	C
Analysis Period (min)			15			

Lanes, Volumes, Timings

212: West Street A & Transit Station

TT (2041) - Scenario A - East Side Only

Timing Plan: PM Peak Hour

	←	←	↑	↗	↘	↓
Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	↔		↔			↔
Traffic Volume (vph)	127	0	0	355	0	0
Future Volume (vph)	127	0	0	355	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt			0.865			
Flt Protected	0.950					
Satd. Flow (prot)	1770	0	1611	0	0	1863
Flt Permitted	0.950					
Satd. Flow (perm)	1770	0	1611	0	0	1863
Link Speed (k/h)	50		50			50
Link Distance (m)	216.0		234.7			101.9
Travel Time (s)	15.6		16.9			7.3
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	127	0	0	355	0	0
Shared Lane Traffic (%)						
Lane Group Flow (vph)	127	0	355	0	0	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(m)	7.2		0.0		Left	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 35.7%

ICU Level of Service A

Analysis Period (min) 15

HCM Unsignalized Intersection Capacity Analysis

212: West Street A & Transit Station

TT (2041) - Scenario A - East Side Only

Timing Plan: PM Peak Hour

	←	←	↑	↗	↘	↓
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	↔		↔			↔
Traffic Volume (veh/h)	127	0	0	355	0	0
Future Volume (Veh/h)	127	0	0	355	0	0
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	127	0	0	355	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	178	178			355	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	178	178			355	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	84	100			100	
cM capacity (veh/h)	812	866			1204	

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	127	355	0
Volume Left	127	0	0
Volume Right	0	355	0
cSH	812	1700	1700
Volume to Capacity	0.16	0.21	0.00
Queue Length 95th (m)	4.1	0.0	0.0
Control Delay (s)	10.3	0.0	0.0
Lane LOS	B		
Approach Delay (s)	10.3	0.0	0.0
Approach LOS	B		

Intersection Summary

Average Delay 2.7

Intersection Capacity Utilization 35.7%

ICU Level of Service

A

Analysis Period (min) 15

Lanes, Volumes, Timings TT (2041) - Scenario A - East Side Only
213: East Street A/West Street A & William Halton Parkway Timing Plan: PM Peak Hour

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑	↑		↑↑	↑			↑			↑
Traffic Volume (vph)	0	1054	13	0	2408	129	0	0	440	0	0	27
Future Volume (vph)	0	1054	13	0	2408	129	0	0	440	0	0	27
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	0.0		90.0	0.0		90.0	0.0		0.0	0.0		0.0
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	0.95	1.00	1.00	0.95	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt			0.850			0.850			0.865			0.865
Fit Protected												
Satd. Flow (prot)	0	3539	1583	0	3539	1583	0	0	1611	0	0	1611
Fit Permitted												
Satd. Flow (perm)	0	3539	1583	0	3539	1583	0	0	1611	0	0	1611
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		200.8			212.9			103.7			234.7	
Travel Time (s)		14.5			15.3			7.5			16.9	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	0	1054	13	0	2408	129	0	0	440	0	0	27
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	1054	13	0	2408	129	0	0	440	0	0	27
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 76.6%	ICU Level of Service D											
Analysis Period (min) 15												

HCM Unsignalized Intersection Capacity Analysis TT (2041) - Scenario A - East Side Only
213: East Street A/West Street A & William Halton Parkway Timing Plan: PM Peak Hour

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑	↑		↑↑	↑			↑			↑
Traffic Volume (veh/h)	0	1054	13	0	2408	129	0	0	440	0	0	27
Future Volume (Veh/h)	0	1054	13	0	2408	129	0	0	440	0	0	27
Sign Control	Free			Free			Stop			Stop		
Grade	0%			0%			0%			0%		
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	0	1054	13	0	2408	129	0	0	440	0	0	27
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type	None			None								
Median storage (veh)												
Upstream signal (m)	201			213								
pX, platoon unblocked	0.73			0.83			0.82	0.82	0.83	0.82	0.82	0.73
vC, conflicting volume	2537			1067			2285	3591	527	3375	3475	1204
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	2370			668			1189	2782	16	2518	2640	555
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	50	100	100	92
cM capacity (veh/h)	149			761			108	15	877	6	19	349
Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	WB 3	NB 1	SB 1				
Volume Total	527	527	13	1204	1204	129	440	27				
Volume Left	0	0	0	0	0	0	0	0				
Volume Right	0	0	13	0	0	129	440	27				
cSH	1700	1700	1700	1700	1700	1700	877	349				
Volume to Capacity	0.31	0.31	0.01	0.71	0.71	0.08	0.50	0.08				
Queue Length 95th (m)	0.0	0.0	0.0	0.0	0.0	0.0	21.5	1.9				
Control Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	13.2	16.2				
Lane LOS							B	C				
Approach Delay (s)	0.0			0.0			13.2	16.2				
Approach LOS							B	C				
Intersection Summary												
Average Delay			1.5									
Intersection Capacity Utilization			76.6%				ICU Level of Service			D		
Analysis Period (min)			15									

Lanes, Volumes, Timings

214: West Street D & William Halton Parkway

TT (2041) - Scenario A - East Side Only

Timing Plan: PM Peak Hour

	←	→	↖	↗	←	↖	↗	↖	↗	↖	↗	↖	↗
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations	↖	↖	↖	↖	↖	↖	↖	↖	↖	↖	↖	↖	
Traffic Volume (vph)	0	906	13	263	2060	112	49	0	15	146	0	11	
Future Volume (vph)	0	906	13	263	2060	112	49	0	15	146	0	11	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	
Storage Length (m)	90.0		90.0	90.0		90.0	50.0		0.0	50.0		0.0	
Storage Lanes	1		1	1		1	1		0	1		0	
Taper Length (m)	100.0			100.0			75.0			75.0			
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Frt			0.850			0.850		0.850			0.850		
Flt Protected				0.950			0.950			0.950			
Satd. Flow (prot)	1863	3539	1583	1770	3539	1583	1770	1583	0	1770	1583	0	
Flt Permitted				0.201			0.750			0.748			
Satd. Flow (perm)	1863	3539	1583	374	3539	1583	1397	1583	0	1393	1583	0	
Right Turn on Red			Yes			Yes		Yes			Yes		
Satd. Flow (RTOR)			73			112		504			73		
Link Speed (k/h)		50			50			50			50		
Link Distance (m)		573.3			200.8			99.4			133.2		
Travel Time (s)		41.3			14.5			7.2			9.6		
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Adj. Flow (vph)	0	906	13	263	2060	112	49	0	15	146	0	11	
Shared Lane Traffic (%)													
Lane Group Flow (vph)	0	906	13	263	2060	112	49	15	0	146	11	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	1	2	1	1	2		1	2		
Detector Template	Left	Thru	Right	Left	Thru	Right	Left	Thru		Left	Thru		
Leading Detector (m)	2.0	10.0	2.0	2.0	10.0	2.0	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		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	2.0	0.6	2.0	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		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	pm+pt	NA	Perm	Perm	NA		Perm	NA		
Protected Phases		4		3	8			2			6		
Permitted Phases	4		4	8		8	2			6			

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Lanes, Volumes, Timings

214: West Street D & William Halton Parkway

TT (2041) - Scenario A - East Side Only

Timing Plan: PM Peak Hour

	←	→	↖	↗	←	↖	↗	↖	↗	↖	↗	↖	↗
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Detector Phase	4	4	4	3	8	8	2	2		6	6		
Switch Phase													
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0		5.0	5.0		
Minimum Split (s)	24.0	24.0	24.0	9.5	24.0	24.0	24.0	24.0		29.0	29.0		
Total Split (s)	34.8	34.8	34.8	26.2	61.0	61.0	29.0	29.0		29.0	29.0		
Total Split (%)	38.7%	38.7%	38.7%	29.1%	67.8%	67.8%	32.2%	32.2%		32.2%	32.2%		
Maximum Green (s)	28.8	28.8	28.8	23.2	55.0	55.0	23.0	23.0		23.0	23.0		
Yellow Time (s)	4.0	4.0	4.0	3.0	4.0	4.0	4.0	4.0		4.0	4.0		
All-Red Time (s)	2.0	2.0	2.0	0.0	2.0	2.0	2.0	2.0		2.0	2.0		
Lost Time Adjust (s)	-2.0	-2.0	-2.0	1.0	-2.0	-2.0	-2.0	-2.0		1.0	-2.0		
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0		7.0	4.0		
Lead/Lag	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	None	None	Min	Min		Min	Min		
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 Effect Green (s)		37.0	37.0	51.4	51.4	51.4	15.5	15.5		12.4	15.5		
Actuated g/C Ratio		0.49	0.49	0.68	0.68	0.68	0.21	0.21		0.16	0.21		
v/c Ratio		0.52	0.02	0.59	0.85	0.10	0.17	0.02		0.63	0.03		
Control Delay		15.8	0.0	11.0	14.3	1.4	27.6	0.1		43.8	0.2		
Queue Delay		0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0		
Total Delay		15.8	0.0	11.0	14.3	1.4	27.6	0.1		43.8	0.2		
LOS		B	A	B	B	A	C	A		D	A		
Approach Delay		15.5			13.4		21.1			40.8			
Approach LOS		B			B		C			D			

Intersection Summary

Area Type: Other

Cycle Length: 90

Actuated Cycle Length: 75.2

Natural Cycle: 80

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 0.85

Intersection Signal Delay: 15.3

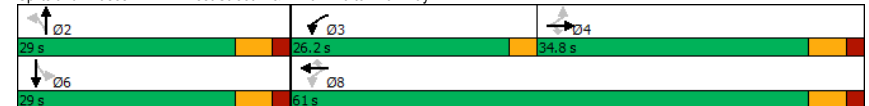
Intersection LOS: B

Intersection Capacity Utilization 85.9%

ICU Level of Service E

Analysis Period (min) 15

Splits and Phases: 214: West Street D & William Halton Parkway

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Queues
214: West Street D & William Halton Parkway

TT (2041) - Scenario A - East Side Only
Timing Plan: PM Peak Hour

	→	↘	↙	←	↖	↗	↘	↙	↓
Lane Group	EBT	EBR	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	906	13	263	2060	112	49	15	146	11
v/c Ratio	0.52	0.02	0.59	0.85	0.10	0.17	0.02	0.63	0.03
Control Delay	15.8	0.0	11.0	14.3	1.4	27.6	0.1	43.8	0.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	15.8	0.0	11.0	14.3	1.4	27.6	0.1	43.8	0.2
Queue Length 50th (m)	41.5	0.0	11.4	95.4	0.0	6.2	0.0	21.1	0.0
Queue Length 95th (m)	80.7	0.0	27.1	171.5	4.8	14.8	0.0	38.8	0.0
Internal Link Dist (m)	549.3			176.8			75.4		109.2
Turn Bay Length (m)		90.0	90.0		90.0	50.0		50.0	
Base Capacity (vph)	1793	838	680	2727	1245	478	873	420	590
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.51	0.02	0.39	0.76	0.09	0.10	0.02	0.35	0.02
Intersection Summary									

HCM Signalized Intersection Capacity Analysis
214: West Street D & William Halton Parkway

TT (2041) - Scenario A - East Side Only
Timing Plan: PM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	906	13	263	2060	112	49	0	15	146	0	11
Future Volume (vph)	0	906	13	263	2060	112	49	0	15	146	0	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	4.0	4.0	4.0	4.0		7.0	4.0	
Lane Util. Factor		0.95	1.00	1.00	0.95	1.00	1.00	1.00		1.00	1.00	
Frt		1.00	0.85	1.00	1.00	0.85	1.00	0.85		1.00	0.85	
Flt Protected		1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)		3539	1583	1770	3539	1583	1770	1583		1770	1583	
Flt Permitted		1.00	1.00	0.20	1.00	1.00	0.75	1.00		0.75	1.00	
Satd. Flow (perm)		3539	1583	375	3539	1583	1398	1583		1393	1583	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	0	906	13	263	2060	112	49	0	15	146	0	11
RTOR Reduction (vph)	0	0	7	0	0	35	0	12	0	0	9	0
Lane Group Flow (vph)	0	906	6	263	2060	77	49	3	0	146	2	0
Turn Type	Perm	NA	Perm	pm+pt	NA	Perm	Perm	NA		Perm	NA	
Protected Phases		4		3	8		2	2			6	
Permitted Phases	4		4	8		8	2			6		
Actuated Green, G (s)		34.9	34.9	49.3	49.3	49.3	13.5	13.5		13.5	13.5	
Effective Green, g (s)		36.9	36.9	48.3	51.3	51.3	15.5	15.5		12.5	15.5	
Actuated g/C Ratio		0.49	0.49	0.65	0.69	0.69	0.21	0.21		0.17	0.21	
Clearance Time (s)		6.0	6.0	3.0	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	3.0	
Lane Grp Cap (vph)		1745	780	436	2427	1085	289	328		232	328	
v/s Ratio Prot		0.26		0.08	c0.58			0.00			0.00	
v/s Ratio Perm			0.00	0.31		0.05	0.04			c0.10		
v/c Ratio		0.52	0.01	0.60	0.85	0.07	0.17	0.01		0.63	0.01	
Uniform Delay, d1		12.9	9.6	7.8	8.8	3.9	24.4	23.6		29.0	23.5	
Progression Factor		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	2.4	3.0	0.0	0.3	0.0		5.3	0.0	
Delay (s)		13.2	9.6	10.1	11.8	3.9	24.6	23.6		34.3	23.5	
Level of Service		B	A	B	B	A	C	C		C	C	
Approach Delay (s)		13.1			11.3			24.4			33.5	
Approach LOS		B			B			C			C	
Intersection Summary												
HCM 2000 Control Delay			12.9		HCM 2000 Level of Service					B		
HCM 2000 Volume to Capacity ratio			0.82									
Actuated Cycle Length (s)			74.8		Sum of lost time (s)					12.0		
Intersection Capacity Utilization			85.9%		ICU Level of Service					E		
Analysis Period (min)			15									
c Critical Lane Group												

Lanes, Volumes, Timings

215: East Street A & West Street B

TT (2041) - Scenario A - East Side Only

Timing Plan: PM Peak Hour

						
Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	208	108	0	100	73	18
Future Volume (vph)	208	108	0	100	73	18
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	0.954				0.973	
Flt Protected	0.968					
Satd. Flow (prot)	1720	0	0	1863	1812	0
Flt Permitted	0.968					
Satd. Flow (perm)	1720	0	0	1863	1812	0
Link Speed (k/h)	50			50	50	
Link Distance (m)	202.4			83.5	103.7	
Travel Time (s)	14.6			6.0	7.5	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	208	108	0	100	73	18
Shared Lane Traffic (%)						
Lane Group Flow (vph)	316	0	0	100	91	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
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	25			15
Sign Control	Stop			Free	Free	

Intersection Summary

Area Type: Other

Control Type: Unsignalized

Intersection Capacity Utilization 30.1%

ICU Level of Service A

Analysis Period (min) 15

HCM Unsignalized Intersection Capacity Analysis

215: East Street A & West Street B

TT (2041) - Scenario A - East Side Only

Timing Plan: PM Peak Hour

						
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	208	108	0	100	73	18
Future Volume (Veh/h)	208	108	0	100	73	18
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	208	108	0	100	73	18
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	182	82	91			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	182	82	91			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	74	89	100			
cM capacity (veh/h)	807	978	1504			
Direction, Lane #	EB 1	NB 1	SB 1			
Volume Total	316	100	91			
Volume Left	208	0	0			
Volume Right	108	0	18			
cSH	859	1504	1700			
Volume to Capacity	0.37	0.00	0.05			
Queue Length 95th (m)	12.8	0.0	0.0			
Control Delay (s)	11.6	0.0	0.0			
Lane LOS	B					
Approach Delay (s)	11.6	0.0	0.0			
Approach LOS	B					
Intersection Summary						
Average Delay		7.2				
Intersection Capacity Utilization		30.1%		ICU Level of Service	A	
Analysis Period (min)		15				

Lanes, Volumes, Timings

216: West Street D & West Street B

TT (2041) - Scenario A - East Side Only

Timing Plan: PM Peak Hour

	←	←	↑	↗	↘	↓
Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	↖		↗			↗
Traffic Volume (vph)	0	28	36	0	179	97
Future Volume (vph)	0	28	36	0	179	97
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.865					
Flt Protected						0.969
Satd. Flow (prot)	1611	0	1863	0	0	1805
Flt Permitted						0.969
Satd. Flow (perm)	1611	0	1863	0	0	1805
Link Speed (k/h)	50		50			50
Link Distance (m)	202.4		82.8			99.4
Travel Time (s)	14.6		6.0			7.2
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	0	28	36	0	179	97
Shared Lane Traffic (%)						
Lane Group Flow (vph)	28	0	36	0	0	276
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
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		15	25	
Sign Control	Stop		Free			Free

Intersection Summary

Area Type: Other

Control Type: Unsignalized

Intersection Capacity Utilization 31.7%

ICU Level of Service A

Analysis Period (min) 15

HCM Unsignalized Intersection Capacity Analysis

216: West Street D & West Street B

TT (2041) - Scenario A - East Side Only

Timing Plan: PM Peak Hour

	←	←	↑	↗	↘	↓
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	↖		↗			↗
Traffic Volume (veh/h)	0	28	36	0	179	97
Future Volume (Veh/h)	0	28	36	0	179	97
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	0	28	36	0	179	97
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage (veh)						
Upstream signal (m)						99
pX, platoon unblocked	0.95					
vC, conflicting volume	491	36			36	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	437	36			36	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	100	97			89	
cM capacity (veh/h)	485	1037			1575	

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	28	36	276
Volume Left	0	0	179
Volume Right	28	0	0
cSH	1037	1700	1575
Volume to Capacity	0.03	0.02	0.11
Queue Length 95th (m)	0.6	0.0	2.9
Control Delay (s)	8.6	0.0	5.2
Lane LOS	A		A
Approach Delay (s)	8.6	0.0	5.2
Approach LOS	A		

Intersection Summary

Average Delay

5.0

Intersection Capacity Utilization

31.7%

ICU Level of Service

A

Analysis Period (min)

15

Lanes, Volumes, Timings
217: East Street C & East Street A

TT (2041) - Scenario A - East Side Only
Timing Plan: PM Peak Hour

						
Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	0	50	79	205	143	4
Future Volume (vph)	0	50	79	205	143	4
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		0.903			0.996	
Flt Protected					0.954	
Satd. Flow (prot)	0	1863	1682	0	1770	0
Flt Permitted					0.954	
Satd. Flow (perm)	0	1863	1682	0	1770	0
Link Speed (k/h)		50			50	
Link Distance (m)		206.1			205.4	
Travel Time (s)		14.8			14.8	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	0	50	79	205	143	4
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	50	284	0	147	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(m)		0.0			3.6	
Link Offset(m)		0.0			0.0	
Crosswalk Width(m)		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 31.6%	ICU Level of Service A					
Analysis Period (min) 15						

HCM Unsignalized Intersection Capacity Analysis
217: East Street C & East Street A

TT (2041) - Scenario A - East Side Only
Timing Plan: PM Peak Hour

						
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	0	50	79	205	143	4
Future Volume (Veh/h)	0	50	79	205	143	4
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	0	50	79	205	143	4
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	284				232	182
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	284				232	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 %	100				81	100
cM capacity (veh/h)	1278				757	861
Direction, Lane #	EB 1	WB 1	SB 1			
Volume Total	50	284	147			
Volume Left	0	0	143			
Volume Right	0	205	4			
cSH	1278	1700	759			
Volume to Capacity	0.00	0.17	0.19			
Queue Length 95th (m)	0.0	0.0	5.4			
Control Delay (s)	0.0	0.0	10.9			
Lane LOS			B			
Approach Delay (s)	0.0	0.0	10.9			
Approach LOS			B			
Intersection Summary						
Average Delay			3.3			
Intersection Capacity Utilization		31.6%		ICU Level of Service	A	
Analysis Period (min)		15				

Lanes, Volumes, Timings

218: West Street D & East Street C

TT (2041) - Scenario A - East Side Only

Timing Plan: PM Peak Hour

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔			↔			↔			↔	
Traffic Volume (vph)	0	0	0	17	0	62	0	17	5	78	19	0
Future Volume (vph)	0	0	0	17	0	62	0	17	5	78	19	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					0.894			0.969				
Flt Protected					0.989						0.961	
Satd. Flow (prot)	0	1863	0	0	1647	0	0	1805	0	0	1790	0
Flt Permitted					0.989						0.961	
Satd. Flow (perm)	0	1863	0	0	1647	0	0	1805	0	0	1790	0
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		164.8			206.1			68.2			82.8	
Travel Time (s)		11.9			14.8			4.9			6.0	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	0	0	0	17	0	62	0	17	5	78	19	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	0	0	0	79	0	0	22	0	0	97	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 23.4%

ICU Level of Service A

Analysis Period (min) 15

HCM Unsignalized Intersection Capacity Analysis

218: West Street D & East Street C

TT (2041) - Scenario A - East Side Only

Timing Plan: PM Peak Hour

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔			↔			↔			↔	
Traffic Volume (veh/h)	0	0	0	17	0	62	0	17	5	78	19	0
Future Volume (Veh/h)	0	0	0	17	0	62	0	17	5	78	19	0
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	0	0	0	17	0	62	0	17	5	78	19	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	62			0			74	96	0	78	65	31
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	62			0			74	96	0	78	65	31
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			99			100	98	100	91	98	100
cM capacity (veh/h)	1541			1623			892	786	1085	884	817	1043
Direction, Lane #	EB 1	WB 1	NB 1	SB 1								
Volume Total	0	79	22	97								
Volume Left	0	17	0	78								
Volume Right	0	62	5	0								
cSH	1700	1623	838	870								
Volume to Capacity	0.00	0.01	0.03	0.11								
Queue Length 95th (m)	0.0	0.2	0.6	2.8								
Control Delay (s)	0.0	1.6	9.4	9.7								
Lane LOS		A	A	A								
Approach Delay (s)	0.0	1.6	9.4	9.7								
Approach LOS			A	A								
Intersection Summary												
Average Delay			6.4									
Intersection Capacity Utilization		23.4%						ICU Level of Service		A		
Analysis Period (min)			15									

Lanes, Volumes, Timings

101: Trafalgar Rd & Lower Base Line

Total (2041) - Scenario B - East Side Only

Timing Plan: AM PEAK HOUR

	↖	→	↘	↙	←	↖	↗	↘	↙	↖	↗	↘	↙
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations	↖	↖	↖	↖	↖	↖	↖	↖	↖	↖	↖	↖	
Traffic Volume (vph)	151	588	224	323	119	219	48	1870	254	502	2146	24	
Future Volume (vph)	151	588	224	323	119	219	48	1870	254	502	2146	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	0.423			0.165			0.085			0.083			
Satd. Flow (perm)	788	3394	0	307	3196	0	158	5085	1583	155	5085	1583	
Right Turn on Red			Yes			Yes			Yes			Yes	
Satd. Flow (RTOR)		41			238				234			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)	164	639	243	351	129	238	52	2033	276	546	2333	26	
Shared Lane Traffic (%)													
Lane Group Flow (vph)	164	882	0	351	367	0	52	2033	276	546	2333	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	CI+Ex	CI+Ex		CI+Ex	CI+Ex		CI+Ex	CI+Ex	CI+Ex	CI+Ex	CI+Ex	CI+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		CI+Ex			CI+Ex			CI+Ex			CI+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

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Lanes, Volumes, Timings

101: Trafalgar Rd & Lower Base Line

Total (2041) - Scenario B - East Side Only

Timing Plan: AM PEAK HOUR

	↖	→	↘	↙	←	↖	↗	↘	↙	↖	↗	↘	↙
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		1.36	0.41		0.30	1.04	0.37	1.46	0.87	0.03	
Control Delay	32.5	158.8		212.3	15.4		16.5	69.1	6.7	250.6	29.7	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	32.5	158.8		212.3	15.4		16.5	69.1	6.7	250.6	29.7	0.0	
LOS	C	F		F	B		B	E	A	F	C	A	
Approach Delay		139.0			111.6			60.7			70.9		
Approach LOS		F			F			E			E		

Intersection Summary

Area Type: Other

Cycle Length: 120

Actuated Cycle Length: 120

Natural Cycle: 100

Control Type: Semi Act-Uncooord

Maximum v/c Ratio: 1.46

Intersection Signal Delay: 81.8

Intersection LOS: F

Intersection Capacity Utilization 118.6%

ICU Level of Service H

Analysis Period (min) 15

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

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Queues
101: Trafalgar Rd & Lower Base Line

Total (2041) - Scenario B - East Side Only
Timing Plan: AM PEAK HOUR

	EBL	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	164	882	351	367	52	2033	276	546	2333	26
v/c Ratio	0.47	1.24	1.36	0.41	0.30	1.04	0.37	1.46	0.87	0.03
Control Delay	32.5	158.8	212.3	15.4	16.5	69.1	6.7	250.6	29.7	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	32.5	158.8	212.3	15.4	16.5	69.1	6.7	250.6	29.7	0.0
Queue Length 50th (m)	26.8	~130.3	~91.3	12.9	4.6	~187.4	6.1	~158.8	172.7	0.0
Queue Length 95th (m)	43.5	#169.9	#148.8	26.3	9.5	#216.1	24.0	#225.2	195.7	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	751	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	0.46	1.24	1.36	0.41	0.30	1.04	0.37	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.

HCM Signalized Intersection Capacity Analysis
101: Trafalgar Rd & Lower Base Line

Total (2041) - Scenario B - East Side Only
Timing Plan: AM PEAK HOUR

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰	↱	↲	↰	↱	↲	↰	↱	↲	↰	↱	↲
Traffic Volume (vph)	151	588	224	323	119	219	48	1870	254	502	2146	24
Future Volume (vph)	151	588	224	323	119	219	48	1870	254	502	2146	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
Flt	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	3393		1770	3195		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)	788	3393		308	3195		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)	164	639	243	351	129	238	52	2033	276	546	2333	26
RTOR Reduction (vph)	0	33	0	0	186	0	0	0	143	0	0	12
Lane Group Flow (vph)	164	849	0	351	181	0	52	2033	133	546	2333	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	
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	0.40		c0.26	0.46	
v/s Ratio Perm	0.10			c0.28			0.13		0.08	c0.59		0.01
v/c Ratio	0.49	1.26		1.40	0.26		0.33	1.03	0.22	1.48	0.88	0.02
Uniform Delay, d1	32.7	48.5		36.7	39.2		23.9	37.0	24.7	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	129.5		201.7	0.4		1.2	28.7	0.8	231.8	4.4	0.0
Delay (s)	33.9	178.0		238.3	39.6		25.2	65.7	25.5	270.9	29.7	13.8
Level of Service	C	F		F	D		C	E	C	F	C	B
Approach Delay (s)		155.4			136.7			60.1			74.9	
Approach LOS		F			F			E			E	

Intersection Summary

HCM 2000 Control Delay	88.2	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	118.6%	ICU Level of Service	H
Analysis Period (min)	15		

c Critical Lane Group

Lanes, Volumes, Timings

Total (2041) - Scenario B - East Side Only

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

Timing Plan: AM PEAK HOUR

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔		↔	↔	↔	↔	↔	↔	↔	↔	↔
Traffic Volume (vph)	2	0	9	366	1	26	6	2142	0	0	2690	5
Future Volume (vph)	2	0	9	366	1	26	6	2142	0	0	2690	5
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		0.063					
Satd. Flow (perm)	0	1639	0	1327	1221	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)	2	0	10	398	1	28	7	2328	0	0	2924	5
Shared Lane Traffic (%)				49%		10%						
Lane Group Flow (vph)	0	12	0	203	199	25	7	2328	0	0	2924	5
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	CI+Ex	CI+Ex		CI+Ex	CI+Ex	CI+Ex	CI+Ex	CI+Ex			CI+Ex	CI+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		CI+Ex			CI+Ex			CI+Ex				CI+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	Perm
Protected Phases	4	4			8		5	2			6	
Permitted Phases				8		8	2					6

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Lanes, Volumes, Timings

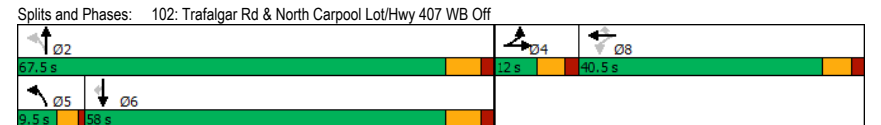
Total (2041) - Scenario B - East Side Only

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

Timing Plan: AM PEAK HOUR

	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	
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			24.0	24.0	24.0	64.3	64.3			62.8	62.8
Actuated g/C Ratio	0.08			0.24	0.24	0.24	0.65	0.65			0.64	0.64
v/c Ratio	0.05			0.63	0.67	0.05	0.04	0.70			0.90	0.00
Control Delay	0.4			42.4	45.0	0.2	10.7	14.6			22.8	0.0
Queue Delay	0.0			0.0	0.0	0.0	0.0	0.0			0.0	0.0
Total Delay	0.4			42.4	45.0	0.2	10.7	14.6			22.8	0.0
LOS	A			D	D	A	B	B			C	A
Approach Delay	0.4				41.2			14.6			22.7	
Approach LOS	A				D			B			C	

Intersection Summary												
Area Type:	Other											
Cycle Length: 120												
Actuated Cycle Length: 98.4												
Natural Cycle: 110												
Control Type: Actuated-Uncoordinated												
Maximum v/c Ratio: 0.90												
Intersection Signal Delay: 20.7	Intersection LOS: C											
Intersection Capacity Utilization 75.7%	ICU Level of Service D											
Analysis Period (min) 15												



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Queues
102: Trafalgar Rd & North Carpool Lot/Hwy 407 WB Off

Total (2041) - Scenario B - East Side Only

Timing Plan: AM PEAK HOUR

	→	↖	←	↗	↖	↑	↓	↗
Lane Group	EBT	WBL	WBT	WBR	NBL	NBT	SBT	SBR
Lane Group Flow (vph)	12	203	199	25	7	2328	2924	5
v/c Ratio	0.05	0.63	0.67	0.05	0.04	0.70	0.90	0.00
Control Delay	0.4	42.4	45.0	0.2	10.7	14.6	22.8	0.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	0.4	42.4	45.0	0.2	10.7	14.6	22.8	0.0
Queue Length 50th (m)	0.0	34.4	35.4	0.0	0.4	81.0	130.0	0.0
Queue Length 95th (m)	0.0	65.3	68.1	0.0	3.0	187.6	#341.0	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)	251	498	459	644	170	3324	3244	1052
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	0.41	0.43	0.04	0.04	0.70	0.90	0.00

Intersection Summary

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

Queue shown is maximum after two cycles.

HCM Signalized Intersection Capacity Analysis
102: Trafalgar Rd & North Carpool Lot/Hwy 407 WB Off

Total (2041) - Scenario B - East Side Only

Timing Plan: AM PEAK HOUR

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	2	0	9	366	1	26	6	2142	0	0	2690	5
Future Volume (vph)	2	0	9	366	1	26	6	2142	0	0	2690	5
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	0.06	1.00			1.00	1.00
Satd. Flow (perm)		1640		1327	1221	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)	2	0	10	398	1	28	7	2328	0	0	2924	5
RTOR Reduction (vph)	0	12	0	0	1	19	0	0	0	0	0	2
Lane Group Flow (vph)	0	0	0	203	198	6	7	2328	0	0	2924	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)		1.0		22.0	22.0	22.0	64.6	64.6			59.7	59.7
Effective Green, g (s)		3.0		24.0	24.0	24.0	64.6	67.6			62.7	62.7
Actuated g/C Ratio		0.03		0.23	0.23	0.23	0.61	0.63			0.59	0.59
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)		46		298	274	338	84	3224			2990	931
v/s Ratio Prot		c0.00					0.00	c0.46			c0.57	
v/s Ratio Perm				0.15	c0.16	0.00	0.05					0.00
v/c Ratio		0.01		0.68	0.72	0.02	0.08	0.72			0.98	0.00
Uniform Delay, d1		50.4		37.8	38.2	32.1	25.1	13.2			21.3	9.1
Progression Factor		1.00		1.00	1.00	1.00	1.00	1.00			1.00	1.00
Incremental Delay, d2		0.1		6.5	9.4	0.0	0.3	1.4			12.1	0.0
Delay (s)		50.4		44.3	47.6	32.1	25.4	14.6			33.3	9.1
Level of Service		D		D	D	C	C	B			C	A
Approach Delay (s)		50.4			45.1			14.6			33.3	
Approach LOS		D			D			B			C	

Intersection Summary

HCM 2000 Control Delay	26.6	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.91		
Actuated Cycle Length (s)	106.6	Sum of lost time (s)	18.0
Intersection Capacity Utilization	75.7%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

Lanes, Volumes, Timings
103: Trafalgar Rd & Hwy 407 EB Off

Total (2041) - Scenario B - East Side Only
Timing Plan: AM PEAK HOUR

	EBL	EBR	NBL	NBT	SBT	SBR
Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	↔	↔		↑↑↑	↑↑↑	
Traffic Volume (vph)	140	280	0	2129	2804	0
Future Volume (vph)	140	280	0	2129	2804	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	0.946	0.850				
Flt Protected	0.969					
Satd. Flow (prot)	1708	1504	0	5085	5085	0
Flt Permitted	0.969					
Satd. Flow (perm)	1708	1504	0	5085	5085	0
Right Turn on Red	Yes				Yes	
Satd. Flow (RTOR)	1	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)	152	304	0	2314	3048	0
Shared Lane Traffic (%)		28%				
Lane Group Flow (vph)	237	219	0	2314	3048	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	CI+Ex	CI+Ex		CI+Ex	CI+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				CI+Ex	CI+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	

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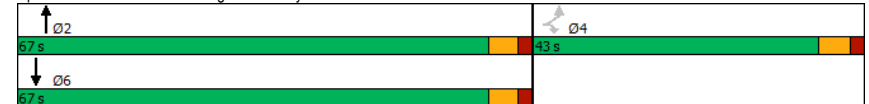
Lanes, Volumes, Timings
103: Trafalgar Rd & Hwy 407 EB Off

Total (2041) - Scenario B - East Side Only
Timing Plan: AM PEAK HOUR

	EBL	EBR	NBL	NBT	SBT	SBR
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)	20.3	20.3		63.2	63.2	
Actuated g/C Ratio	0.22	0.22		0.69	0.69	
v/c Ratio	0.62	0.66		0.66	0.87	
Control Delay	39.4	41.8		9.9	15.8	
Queue Delay	0.0	0.0		0.0	0.0	
Total Delay	39.4	41.8		9.9	15.8	
LOS	D	D		A	B	
Approach Delay	40.5			9.9	15.8	
Approach LOS	D			A	B	

Intersection Summary	
Area Type:	Other
Cycle Length: 110	
Actuated Cycle Length: 91.6	
Natural Cycle: 75	
Control Type: Semi Act-Uncoord	
Maximum v/c Ratio: 0.87	
Intersection Signal Delay: 15.4	Intersection LOS: B
Intersection Capacity Utilization 74.3%	ICU Level of Service D
Analysis Period (min) 15	

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



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Queues
103: Trafalgar Rd & Hwy 407 EB Off

Total (2041) - Scenario B - East Side Only
Timing Plan: AM PEAK HOUR

	EBL	EBR	NBT	SBT
Lane Group	EBL	EBR	NBT	SBT
Lane Group Flow (vph)	237	219	2314	3048
v/c Ratio	0.62	0.66	0.66	0.87
Control Delay	39.4	41.8	9.9	15.8
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	39.4	41.8	9.9	15.8
Queue Length 50th (m)	37.1	36.4	72.3	129.9
Queue Length 95th (m)	59.5	59.8	115.2	#209.3
Internal Link Dist (m)	530.6		96.3	339.6
Turn Bay Length (m)				
Base Capacity (vph)	730	643	3509	3509
Starvation Cap Reductn	0	0	0	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.32	0.34	0.66	0.87

Intersection Summary

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

HCM Signalized Intersection Capacity Analysis
103: Trafalgar Rd & Hwy 407 EB Off

Total (2041) - Scenario B - East Side Only
Timing Plan: AM PEAK HOUR

	EBL	EBR	NBL	NBT	SBT	SBR
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	↰	↱		↰	↰	↰
Traffic Volume (vph)	140	280	0	2129	2804	0
Future Volume (vph)	140	280	0	2129	2804	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	0.95	0.85		1.00	1.00	
Flt Protected	0.97	1.00		1.00	1.00	
Satd. Flow (prot)	1708	1504		5085	5085	
Flt Permitted	0.97	1.00		1.00	1.00	
Satd. Flow (perm)	1708	1504		5085	5085	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	152	304	0	2314	3048	0
RTOR Reduction (vph)	1	1	0	0	0	0
Lane Group Flow (vph)	236	218	0	2314	3048	0
Turn Type	Perm	Perm		NA	NA	
Protected Phases				2	6	
Permitted Phases	4	4				
Actuated Green, G (s)	18.3	18.3		61.2	61.2	
Effective Green, g (s)	20.3	20.3		63.2	63.2	
Actuated g/C Ratio	0.22	0.22		0.69	0.69	
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)	378	333		3512	3512	
v/s Ratio Prot				0.46	c0.60	
v/s Ratio Perm	0.14	c0.15				
v/c Ratio	0.62	0.66		0.66	0.87	
Uniform Delay, d1	32.2	32.4		8.0	10.9	
Progression Factor	1.00	1.00		1.00	1.00	
Incremental Delay, d2	3.2	4.6		1.0	3.2	
Delay (s)	35.4	37.0		9.0	14.1	
Level of Service	D	D		A	B	
Approach Delay (s)	36.2			9.0	14.1	
Approach LOS	D			A	B	

Intersection Summary

HCM 2000 Control Delay	13.8	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.84		
Actuated Cycle Length (s)	91.5	Sum of lost time (s)	10.0
Intersection Capacity Utilization	74.3%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

Lanes, Volumes, Timings

104: Trafalgar Rd & West Street A/East Street A

Total (2041) - Scenario B - East Side Only

Timing Plan: AM PEAK HOUR

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰	↱	↰	↰	↱	↱	↰	↰	↰	↰	↱	↱
Traffic Volume (vph)	20	0	16	0	0	344	16	2531	364	625	2450	9
Future Volume (vph)	20	0	16	0	0	344	16	2531	364	625	2450	9
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		
Satd. Flow (prot)	1770	1863	1583	1863	1863	1583	1770	5085	1583	1770	5085	1583
Flt Permitted	0.757						0.055			0.052		
Satd. Flow (perm)	1410	1863	1583	1863	1863	1583	102	5085	1583	97	5085	1583
Right Turn on Red			Yes			Yes			Yes		Yes	
Satd. Flow (RTOR)			86			23			159		55	
Link Speed (k/h)		50				50			80		80	
Link Distance (m)		143.5				212.6			233.3		131.6	
Travel Time (s)		10.3				15.3			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)	22	0	17	0	0	374	17	2751	396	679	2663	10
Shared Lane Traffic (%)												
Lane Group Flow (vph)	22	0	17	0	0	374	17	2751	396	679	2663	10
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

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Lanes, Volumes, Timings

104: Trafalgar Rd & West Street A/East Street A

Total (2041) - Scenario B - East Side Only

Timing Plan: AM PEAK HOUR

	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)	24.0	24.0	24.0	24.0	24.0	40.0	9.5	76.0	76.0	40.0	106.5	106.5
Total Split (%)	17.1%	17.1%	17.1%	17.1%	17.1%	28.6%	6.8%	54.3%	54.3%	28.6%	76.1%	76.1%
Maximum Green (s)	18.0	18.0	18.0	18.0	18.0	36.0	5.5	70.0	70.0	36.0	100.5	100.5
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 Effect Green (s)	9.5		9.5			46.5	77.8	72.2	72.2	112.4	110.5	110.5
Actuated g/C Ratio	0.08		0.08			0.37	0.62	0.58	0.58	0.90	0.89	0.89
v/c Ratio	0.21		0.09			0.62	0.12	0.93	0.40	1.19	0.59	0.01
Control Delay	60.4		0.8			34.5	10.1	32.5	10.3	136.3	4.3	0.0
Queue Delay	0.0		0.0			0.0	0.0	13.2	0.0	0.0	0.2	0.0
Total Delay	60.4		0.8			34.5	10.1	45.6	10.3	136.3	4.5	0.0
LOS	E		A			C	B	D	B	F	A	A
Approach Delay		34.4			34.5			41.0			31.2	
Approach LOS		C			C			D			C	

Intersection Summary

Area Type: Other

Cycle Length: 140

Actuated Cycle Length: 124.8

Natural Cycle: 150

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 1.19

Intersection Signal Delay: 35.9

Intersection LOS: D

Intersection Capacity Utilization 97.7%

ICU Level of Service F

Analysis Period (min) 15

Splits and Phases: 104: Trafalgar Rd & West Street A/East Street A

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Queues
104: Trafalgar Rd & West Street A/East Street A

Total (2041) - Scenario B - East Side Only
Timing Plan: AM PEAK HOUR

	EBL	EBR	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group	EBL	EBR	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	22	17	374	17	2751	396	679	2663	10
v/c Ratio	0.21	0.09	0.62	0.12	0.93	0.40	1.19	0.59	0.01
Control Delay	60.4	0.8	34.5	10.1	32.5	10.3	136.3	4.3	0.0
Queue Delay	0.0	0.0	0.0	0.0	13.2	0.0	0.0	0.2	0.0
Total Delay	60.4	0.8	34.5	10.1	45.6	10.3	136.3	4.5	0.0
Queue Length 50th (m)	5.3	0.0	68.6	1.0	235.2	31.2	~197.0	48.8	0.0
Queue Length 95th (m)	13.9	0.0	99.8	2.9	#292.8	55.6	#277.7	112.5	0.0
Internal Link Dist (m)					209.3			107.6	
Turn Bay Length (m)	50.0	50.0	50.0	50.0		50.0	30.0		30.0
Base Capacity (vph)	226	326	604	137	2943	983	571	4501	1407
Starvation Cap Reductn	0	0	0	0	250	0	0	806	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.10	0.05	0.62	0.12	1.02	0.40	1.19	0.72	0.01

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.

HCM Signalized Intersection Capacity Analysis
104: Trafalgar Rd & West Street A/East Street A

Total (2041) - Scenario B - East Side Only
Timing Plan: AM PEAK HOUR

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰	↱	↰	↰	↱	↰	↰	↱	↰	↰	↱	↰
Traffic Volume (vph)	20	0	16	0	0	344	16	2531	364	625	2450	9
Future Volume (vph)	20	0	16	0	0	344	16	2531	364	625	2450	9
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	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	0.91	1.00	1.00	0.91	1.00
Frt	1.00		0.85			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
Satd. Flow (prot)	1770		1583			1583	1770	5085	1583	1770	5085	1583
Flt Permitted	0.76		1.00			1.00	0.05	1.00	1.00	0.05	1.00	1.00
Satd. Flow (perm)	1410		1583			1583	102	5085	1583	97	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)	22	0	17	0	0	374	17	2751	396	679	2663	10
RTOR Reduction (vph)	0	0	16	0	0	15	0	0	67	0	0	2
Lane Group Flow (vph)	22	0	1	0	0	359	17	2751	329	679	2663	8
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)	5.0		5.0			41.1	74.9	72.8	72.8	112.9	106.8	106.8
Effective Green, g (s)	7.0		7.0			45.1	74.9	74.8	74.8	112.9	108.8	108.8
Actuated g/C Ratio	0.05		0.05			0.35	0.58	0.58	0.58	0.87	0.84	0.84
Clearance Time (s)	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
Lane Grp Cap (vph)	75		85			549	85	2928	911	549	4259	1325
v/s Ratio Prot						c0.19	0.00	0.54		c0.34	0.52	
v/s Ratio Perm	0.02		0.00			0.04	0.11		0.21	c0.73		0.01
v/c Ratio	0.29		0.01			0.65	0.20	0.94	0.36	1.24	0.63	0.01
Uniform Delay, d1	59.1		58.2			35.8	14.0	25.5	14.7	42.9	3.6	1.7
Progression Factor	1.00		1.00			1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	2.2		0.1			2.8	1.2	7.5	1.1	121.6	0.7	0.0
Delay (s)	61.2		58.2			38.6	15.1	33.0	15.9	164.4	4.3	1.7
Level of Service	E		E			D	B	C	B	F	A	A
Approach Delay (s)		59.9			38.6			30.7			36.7	
Approach LOS		E			D			C			D	

Intersection Summary

HCM 2000 Control Delay	34.2	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	1.21		
Actuated Cycle Length (s)	129.9	Sum of lost time (s)	12.0
Intersection Capacity Utilization	97.7%	ICU Level of Service	F
Analysis Period (min)	15		

c Critical Lane Group

Lanes, Volumes, Timings

105: Trafalgar Rd & William Halton Parkway

Total (2041) - Scenario B - East Side Only

Timing Plan: AM PEAK HOUR

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↩	↩↩	↩	↩	↩↩	↩	↩	↩↩	↩	↩	↩↩	↩
Traffic Volume (vph)	338	923	189	221	493	243	43	2574	189	619	1786	61
Future Volume (vph)	338	923	189	221	493	243	43	2574	189	619	1786	61
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	0.184			0.129			0.076			0.070		
Satd. Flow (perm)	343	3539	1583	240	3539	1583	142	5085	1583	130	5085	1583
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			196			234			120			120
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		209.3			204.1			208.3			233.3	
Travel Time (s)		15.1			14.7			15.0			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)	367	1003	205	240	536	264	47	2798	205	673	1941	66
Shared Lane Traffic (%)												
Lane Group Flow (vph)	367	1003	205	240	536	264	47	2798	205	673	1941	66
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

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Lanes, Volumes, Timings

105: Trafalgar Rd & William Halton Parkway

Total (2041) - Scenario B - East Side Only

Timing Plan: AM PEAK HOUR

	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)	23.0	47.0	47.0	14.0	38.0	38.0	21.0	59.0	59.0	25.0	63.0	63.0
Total Split (%)	15.9%	32.4%	32.4%	9.7%	26.2%	26.2%	14.5%	40.7%	40.7%	17.2%	43.4%	43.4%
Maximum Green (s)	19.0	40.0	40.0	10.0	31.0	31.0	17.0	52.1	52.1	21.0	56.1	56.1
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 Effect Green (s)	57.0	43.0	43.0	44.0	34.0	34.0	62.6	55.0	55.0	80.0	70.6	70.6
Actuated g/C Ratio	0.39	0.30	0.30	0.30	0.23	0.23	0.43	0.38	0.38	0.55	0.49	0.49
v/c Ratio	1.14	0.96	0.34	1.35	0.65	0.48	0.32	1.45	0.30	2.18	0.78	0.08
Control Delay	127.4	69.0	7.3	219.1	54.3	11.2	22.8	240.2	14.0	564.8	34.4	0.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.7	0.0
Total Delay	127.4	69.0	7.3	219.1	54.3	11.2	22.8	240.2	14.0	564.8	35.1	0.2
LOS	F	E	A	F	D	B	C	F	B	F	D	A
Approach Delay		74.6			81.4		221.7			167.3		
Approach LOS		E			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: 2.18

Intersection Signal Delay: 158.9

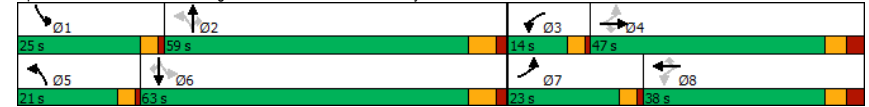
Intersection LOS: F

Intersection Capacity Utilization 135.1%

ICU Level of Service H

Analysis Period (min) 15

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

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Queues
105: Trafalgar Rd & William Halton Parkway

Total (2041) - Scenario B - East Side Only
Timing Plan: AM PEAK HOUR

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	367	1003	205	240	536	264	47	2798	205	673	1941	66
v/c Ratio	1.14	0.96	0.34	1.35	0.65	0.48	0.32	1.45	0.30	2.18	0.78	0.08
Control Delay	127.4	69.0	7.3	219.1	54.3	11.2	22.8	240.2	14.0	564.8	34.4	0.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.7	0.0
Total Delay	127.4	69.0	7.3	219.1	54.3	11.2	22.8	240.2	14.0	564.8	35.1	0.2
Queue Length 50th (m)	~94.4	147.4	1.8	~72.2	72.7	6.7	5.9	~394.7	15.7	~291.7	168.2	0.0
Queue Length 95th (m)	#156.9	#189.3	20.1	#125.8	92.2	31.0	12.1	#418.6	34.6	#365.6	192.1	0.0
Internal Link Dist (m)		185.3			180.1			184.3			209.3	
Turn Bay Length (m)	100.0		100.0	100.0		150.0	150.0		75.0			
Base Capacity (vph)	321	1049	607	178	829	550	261	1928	674	309	2475	832
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	230	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	1.14	0.96	0.34	1.35	0.65	0.48	0.18	1.45	0.30	2.18	0.86	0.08

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.

HCM Signalized Intersection Capacity Analysis
105: Trafalgar Rd & William Halton Parkway

Total (2041) - Scenario B - East Side Only
Timing Plan: AM PEAK HOUR

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔
Traffic Volume (vph)	338	923	189	221	493	243	43	2574	189	619	1786	61
Future Volume (vph)	338	923	189	221	493	243	43	2574	189	619	1786	61
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	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00
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	0.18	1.00	1.00	0.13	1.00	1.00	0.08	1.00	1.00	0.07	1.00	1.00
Satd. Flow (perm)	342	3539	1583	240	3539	1583	141	5085	1583	131	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)	367	1003	205	240	536	264	47	2798	205	673	1941	66
RTOR Reduction (vph)	0	0	138	0	0	179	0	0	74	0	0	34
Lane Group Flow (vph)	367	1003	67	240	536	85	47	2798	131	673	1941	32
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)	54.0	40.0	40.0	41.0	31.0	31.0	59.1	52.9	52.9	77.9	67.7	67.7
Effective Green, g (s)	54.0	43.0	43.0	41.0	34.0	34.0	59.1	55.8	55.8	77.9	70.6	70.6
Actuated g/C Ratio	0.37	0.29	0.29	0.28	0.23	0.23	0.41	0.38	0.38	0.53	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)	312	1043	466	172	825	369	126	1946	605	306	2462	766
v/s Ratio Prot	c0.15	0.28		c0.10	0.15		0.02	0.55		c0.32	0.38	
v/s Ratio Perm	0.28		0.04	c0.30		0.05	0.14		0.08	c0.86		0.02
v/c Ratio	1.18	0.96	0.14	1.40	0.65	0.23	0.37	1.44	0.22	2.20	0.79	0.04
Uniform Delay, d1	38.1	50.6	37.8	46.9	50.5	45.3	30.2	45.0	30.3	49.0	31.4	19.8
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	107.7	19.5	0.3	209.3	2.4	0.7	1.9	200.0	0.8	550.3	2.7	0.1
Delay (s)	145.8	70.1	38.1	256.2	52.9	46.0	32.0	245.0	31.1	599.3	34.0	19.9
Level of Service	F	E	D	F	D	D	C	F	C	F	C	B
Approach Delay (s)		83.6			98.1			227.4			175.6	
Approach LOS		F			F			F			F	

Intersection Summary

HCM 2000 Control Delay	167.5	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	1.81		
Actuated Cycle Length (s)	145.8	Sum of lost time (s)	16.0
Intersection Capacity Utilization	135.1%	ICU Level of Service	H
Analysis Period (min)	15		

c Critical Lane Group

Lanes, Volumes, Timings

Total (2041) - Scenario B - East Side Only

106: Trafalgar Rd & Burnhamthorpe Rd/Burnhamthorpe Rd

Timing Plan: AM PEAK HOUR

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰	↱	↲	↰	↱	↲	↰	↱	↲	↰	↱	↲
Traffic Volume (vph)	445	491	80	83	157	212	56	2149	174	311	1548	175
Future Volume (vph)	445	491	80	83	157	212	56	2149	174	311	1548	175
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	1.00	1.00	1.00	1.00	1.00	1.00	0.91	1.00	1.00	0.91	1.00
Frt		0.979			0.914				0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1770	1824	0	1770	1703	0	1770	5085	1583	1770	5085	1583
Flt Permitted	0.140			0.154			0.086			0.066		
Satd. Flow (perm)	261	1824	0	287	1703	0	160	5085	1583	123	5085	1583
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		6			42				160			144
Link Speed (k/h)		60			60			80			80	
Link Distance (m)		828.7			989.6			1077.8			247.3	
Travel Time (s)		49.7			59.4			48.5			11.1	
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)	484	534	87	90	171	230	61	2336	189	338	1683	190
Shared Lane Traffic (%)												
Lane Group Flow (vph)	484	621	0	90	401	0	61	2336	189	338	1683	190
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)	26.0	46.5		9.5	30.0		9.6	63.0	63.0	21.0	74.4	74.4
Total Split (%)	18.6%	33.2%		6.8%	21.4%		6.9%	45.0%	45.0%	15.0%	53.1%	53.1%
Maximum Green (s)	21.5	40.5		5.0	24.0		5.1	57.0	57.0	17.0	68.4	68.4
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 Effect Green (s)	53.5	42.5		34.5	26.0		67.6	59.0	59.0	80.0	70.4	70.4
Actuated g/C Ratio	0.38	0.30		0.25	0.19		0.48	0.42	0.42	0.57	0.50	0.50
v/c Ratio	1.37	1.11		0.62	1.15		0.39	1.09	0.25	1.25	0.66	0.22
Control Delay	217.3	117.9		50.5	138.5		21.4	87.7	6.4	175.7	27.4	5.9
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	217.3	117.9		50.5	138.5		21.4	87.7	6.4	175.7	27.4	5.9

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Lanes, Volumes, Timings

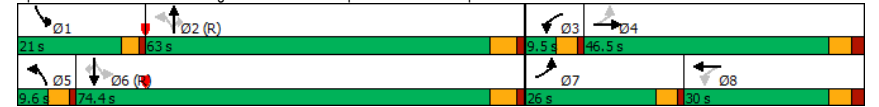
Total (2041) - Scenario B - East Side Only

106: Trafalgar Rd & Burnhamthorpe Rd/Burnhamthorpe Rd

Timing Plan: AM PEAK HOUR

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
LOS	F	F		D	F		C	F	A	F	C	A
Approach Delay		161.4			122.3			80.2			48.2	
Approach LOS		F			F			F			D	
Intersection Summary												
Area Type:	Other											
Cycle Length: 140												
Actuated Cycle Length: 140												
Offset: 0 (0%), Referenced to phase 2:NBT and 6:SBTL, Start of Green												
Natural Cycle: 120												
Control Type: Pretimed												
Maximum v/c Ratio: 1.37												
Intersection Signal Delay: 86.4							Intersection LOS: F					
Intersection Capacity Utilization 118.0%							ICU Level of Service H					
Analysis Period (min) 15												

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



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Synchro 10 Report
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Queues
106: Trafalgar Rd & Burhamthorpe Rd/Burnhamthorpe Rd

Total (2041) - Scenario B - East Side Only
Timing Plan: AM PEAK HOUR

	EBL	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	484	621	90	401	61	2336	189	338	1683	190
v/c Ratio	1.37	1.11	0.62	1.15	0.39	1.09	0.25	1.25	0.66	0.22
Control Delay	217.3	117.9	50.5	138.5	21.4	87.7	6.4	175.7	27.4	5.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	217.3	117.9	50.5	138.5	21.4	87.7	6.4	175.7	27.4	5.9
Queue Length 50th (m)	~159.1	~193.2	15.9	~118.4	6.9	~262.5	4.6	~99.4	122.1	6.3
Queue Length 95th (m)	#226.4	#265.1	#28.7	#181.7	13.2	#289.3	19.2	#159.2	137.9	18.9
Internal Link Dist (m)		804.7		965.6		1053.8			223.3	
Turn Bay Length (m)	30.0		15.0		60.0		60.0	60.0		60.0
Base Capacity (vph)	353	557	144	350	158	2142	759	270	2557	867
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	1.37	1.11	0.63	1.15	0.39	1.09	0.25	1.25	0.66	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.

HCM Signalized Intersection Capacity Analysis
106: Trafalgar Rd & Burhamthorpe Rd/Burnhamthorpe Rd

Total (2041) - Scenario B - East Side Only
Timing Plan: AM PEAK HOUR

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰	↱		↰	↱		↰	↱	↱	↰	↱	↱
Traffic Volume (vph)	445	491	80	83	157	212	56	2149	174	311	1548	175
Future Volume (vph)	445	491	80	83	157	212	56	2149	174	311	1548	175
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	1.00		1.00	1.00		1.00	0.91	1.00	1.00	0.91	1.00
Frt	1.00	0.98		1.00	0.91		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	1824		1770	1702		1770	5085	1583	1770	5085	1583
Flt Permitted	0.14	1.00		0.15	1.00		0.09	1.00	1.00	0.07	1.00	1.00
Satd. Flow (perm)	261	1824		287	1702		161	5085	1583	122	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)	484	534	87	90	171	230	61	2336	189	338	1683	190
RTOR Reduction (vph)	0	4	0	0	34	0	0	0	93	0	0	72
Lane Group Flow (vph)	484	617	0	90	367	0	61	2336	96	338	1683	118
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)	50.0	40.5		29.0	24.0		62.1	57.0	57.0	78.0	68.4	68.4
Effective Green, g (s)	52.0	42.5		33.0	26.0		66.1	59.0	59.0	78.0	70.4	70.4
Actuated g/C Ratio	0.37	0.30		0.24	0.19		0.47	0.42	0.42	0.56	0.50	0.50
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)	350	553		141	316		157	2142	667	268	2557	796
v/s Ratio Prot	c0.23	0.34		0.03	0.22		0.02	0.46		c0.15	0.33	
v/s Ratio Perm	c0.28			0.12			0.16		0.06	c0.55		0.07
v/c Ratio	1.38	1.12		0.64	1.16		0.39	1.09	0.14	1.26	0.66	0.15
Uniform Delay, d1	42.8	48.8		44.9	57.0		22.3	40.5	25.0	47.1	25.9	18.7
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	189.2	74.0		20.1	101.6		7.1	49.1	0.5	144.0	1.3	0.4
Delay (s)	232.0	122.8		65.0	158.6		29.4	89.6	25.4	191.1	27.2	19.1
Level of Service	F	F		E	F		C	F	C	F	C	B
Approach Delay (s)		170.6			141.5			83.5			51.6	
Approach LOS		F			F			F			D	

Intersection Summary

HCM 2000 Control Delay	92.0	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	1.34		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	14.5
Intersection Capacity Utilization	118.0%	ICU Level of Service	H
Analysis Period (min)	15		
c Critical Lane Group			

Lanes, Volumes, Timings
202: Trafalgar Rd & West Street C

Total (2041) - Scenario B - East Side Only
Timing Plan: AM PEAK HOUR

	EBL	EBR	NBL	NBT	SBT	SBR
Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations		↑		↑↑↑	↑↑↑	↑
Traffic Volume (vph)	0	0	0	2807	2033	0
Future Volume (vph)	0	0	0	2807	2033	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (m)	0.0	0.0	0.0			90.0
Storage Lanes	0	1	0			1
Taper Length (m)	7.5		7.5			
Lane Util. Factor	1.00	1.00	1.00	0.91	0.91	1.00
Frt						
Flt Protected						
Satd. Flow (prot)	0	1863	0	5085	5085	1863
Flt Permitted						
Satd. Flow (perm)	0	1863	0	5085	5085	1863
Link Speed (k/h)	50			50	50	
Link Distance (m)	202.4			247.3	208.3	
Travel Time (s)	14.6			17.8	15.0	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	0	0	3051	2210	0
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	0	0	3051	2210	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	0.0			3.6	3.6	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	4.8			4.8	4.8	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)	25	15	25			15
Sign Control	Stop			Free	Free	
Intersection Summary						
Area Type:	Other					
Control Type:	Unsignalized					
Intersection Capacity Utilization 57.6%	ICU Level of Service B					
Analysis Period (min) 15						

HCM Unsignalized Intersection Capacity Analysis Total (2041) - Scenario B - East Side Only
202: Trafalgar Rd & West Street C Timing Plan: AM PEAK HOUR

								
Movement	EBL	EBR	NBL	NBT	SBT	SBR		
Lane Configurations				  	  			
Traffic Volume (veh/h)	0	0	0	2807	2033	0		
Future Volume (Veh/h)	0	0	0	2807	2033	0		
Sign Control	Stop			Free	Free			
Grade	0%			0%	0%			
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92		
Hourly flow rate (vph)	0	0	0	3051	2210	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)				247	208			
pX, platoon unblocked	0.75	0.69	0.69					
vC, conflicting volume	3227	737	2210					
vC1, stage 1 conf vol								
vC2, stage 2 conf vol								
vCu, unblocked vol	0	0	1159					
tC, single (s)	6.8	6.9	4.1					
tC, 2 stage (s)								
tF (s)	3.5	3.3	2.2					
p0 queue free %	100	100	100					
cM capacity (veh/h)	766	743	410					
Direction, Lane #	EB 1	NB 1	NB 2	NB 3	SB 1	SB 2	SB 3	SB 4
Volume Total	0	1017	1017	1017	737	737	737	0
Volume Left	0	0	0	0	0	0	0	0
Volume Right	0	0	0	0	0	0	0	0
cSH	1700	1700	1700	1700	1700	1700	1700	1700
Volume to Capacity	0.00	0.60	0.60	0.60	0.43	0.43	0.43	0.00
Queue Length 95th (m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Control Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Lane LOS	A							
Approach Delay (s)	0.0	0.0	0.0					
Approach LOS	A							
Intersection Summary								
Average Delay	0.0							
Intersection Capacity Utilization	57.6%			ICU Level of Service			B	
Analysis Period (min)	15							

Lanes, Volumes, Timings
203: East Street D & East Street A

Total (2041) - Scenario B - East Side Only
Timing Plan: AM PEAK HOUR

						
Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	155	490	0	109	146	0
Future Volume (vph)	155	490	0	109	146	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	0.897					
Flt Protected					0.950	
Satd. Flow (prot)	1671	0	0	1863	1770	0
Flt Permitted					0.950	
Satd. Flow (perm)	1671	0	0	1863	1770	0
Link Speed (k/h)	50			50	50	
Link Distance (m)	212.6			202.8	119.6	
Travel Time (s)	15.3			14.6	8.6	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	168	533	0	118	159	0
Shared Lane Traffic (%)						
Lane Group Flow (vph)	701	0	0	118	159	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
Sign Control	Free			Free	Stop	
Intersection Summary						
Area Type:	Other					
Control Type:	Unsignalized					
Intersection Capacity Utilization	53.1%			ICU Level of Service A		
Analysis Period (min)	15					

HCM Unsignalized Intersection Capacity Analysis Total (2041) - Scenario B - East Side Only
203: East Street D & East Street A Timing Plan: AM PEAK HOUR

	→	↖	↗	←	↖	↗
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↖			↖	↖	
Traffic Volume (veh/h)	155	490	0	109	146	0
Future Volume (Veh/h)	155	490	0	109	146	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)	168	533	0	118	159	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)	213					
pX, platoon unblocked			0.96		0.96	0.96
vC, conflicting volume			701		552	434
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			667		512	389
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			100		68	100
cM capacity (veh/h)			885		501	632
Direction, Lane #	EB 1	WB 1	NB 1			
Volume Total	701	118	159			
Volume Left	0	0	159			
Volume Right	533	0	0			
cSH	1700	885	501			
Volume to Capacity	0.41	0.00	0.32			
Queue Length 95th (m)	0.0	0.0	10.2			
Control Delay (s)	0.0	0.0	15.5			
Lane LOS			C			
Approach Delay (s)	0.0	0.0	15.5			
Approach LOS			C			
Intersection Summary						
Average Delay			2.5			
Intersection Capacity Utilization			53.1%		ICU Level of Service	A
Analysis Period (min)			15			

Lanes, Volumes, Timings
204: East Street E & East Street A

Total (2041) - Scenario B - East Side Only
Timing Plan: AM PEAK HOUR

						
Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	0	38	0	0	119	0
Future Volume (vph)	0	38	0	0	119	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.865					
Flt Protected					0.950	
Satd. Flow (prot)	1611	0	0	1863	1770	0
Flt Permitted					0.950	
Satd. Flow (perm)	1611	0	0	1863	1770	0
Link Speed (k/h)	50			50	50	
Link Distance (m)	202.8			186.3	118.9	
Travel Time (s)	14.6			13.4	8.6	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	41	0	0	129	0
Shared Lane Traffic (%)						
Lane Group Flow (vph)	41	0	0	0	129	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	0.0			0.0	3.6	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	4.8			4.8	4.8	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)		15	25		25	15
Sign Control	Free			Free	Stop	
Intersection Summary						
Area Type:	Other					
Control Type:	Unsignalized					
Intersection Capacity Utilization	16.6%			ICU Level of Service A		
Analysis Period (min)	15					

HCM Unsignalized Intersection Capacity Analysis Total (2041) - Scenario B - East Side Only
204: East Street E & East Street A Timing Plan: AM PEAK HOUR

	→	↖	↗	←	↖	↗
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↖			↖	↖	↖
Traffic Volume (veh/h)	0	38	0	0	119	0
Future Volume (Veh/h)	0	38	0	0	119	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)	0	41	0	0	129	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			41		20	20
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			41		20	20
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			100		87	100
cM capacity (veh/h)			1568		996	1057
Direction, Lane #	EB 1	WB 1	NB 1			
Volume Total	41	0	129			
Volume Left	0	0	129			
Volume Right	41	0	0			
cSH	1700	1700	996			
Volume to Capacity	0.02	0.00	0.13			
Queue Length 95th (m)	0.0	0.0	3.3			
Control Delay (s)	0.0	0.0	9.1			
Lane LOS			A			
Approach Delay (s)	0.0	0.0	9.1			
Approach LOS			A			
Intersection Summary						
Average Delay			6.9			
Intersection Capacity Utilization			16.6%		ICU Level of Service	A
Analysis Period (min)			15			

Lanes, Volumes, Timings
205: East Street F & East Street A

Total (2041) - Scenario B - East Side Only
Timing Plan: AM PEAK HOUR

						
Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
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	1.00	1.00	1.00
Fit						
Fit Protected						
Satd. Flow (prot)	1863	0	0	1863	1863	0
Fit Permitted						
Satd. Flow (perm)	1863	0	0	1863	1863	0
Link Speed (k/h)	50			50	50	
Link Distance (m)	186.3			197.2	119.9	
Travel Time (s)	13.4			14.2	8.6	
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)	0.0			0.0	3.6	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	4.8			4.8	4.8	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)		15	25		25	15
Sign Control	Stop			Free	Free	
Intersection Summary						
Area Type:	Other					
Control Type:	Unsignalized					
Intersection Capacity Utilization 0.0%				ICU Level of Service A		
Analysis Period (min) 15						

HCM Unsignalized Intersection Capacity Analysis Total (2041) - Scenario B - East Side Only
205: East Street F & East Street A Timing Plan: AM PEAK HOUR

Intersection Sign configuration not allowed in HCM analysis.

Lanes, Volumes, Timings
206: East Street D & East Street B

Total (2041) - Scenario B - East Side Only
Timing Plan: AM PEAK HOUR

	←	←	↑	↗	↘	↓
Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	↖		↖			↗
Traffic Volume (vph)	71	31	78	14	15	287
Future Volume (vph)	71	31	78	14	15	287
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	0.959		0.980			
Flt Protected	0.966					0.998
Satd. Flow (prot)	1726	0	1825	0	0	1859
Flt Permitted	0.966					0.998
Satd. Flow (perm)	1726	0	1825	0	0	1859
Link Speed (k/h)	50		50			50
Link Distance (m)	200.4		111.4			119.6
Travel Time (s)	14.4		8.0			8.6
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	77	34	85	15	16	312
Shared Lane Traffic (%)						
Lane Group Flow (vph)	111	0	100	0	0	328
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 35.1% ICU Level of Service A

Analysis Period (min) 15

HCM Unsignalized Intersection Capacity Analysis Total (2041) - Scenario B - East Side Only
206: East Street D & East Street B Timing Plan: AM PEAK HOUR

	←	←	↑	↗	↘	↓
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	↖		↖			↗
Traffic Volume (veh/h)	71	31	78	14	15	287
Future Volume (Veh/h)	71	31	78	14	15	287
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)	77	34	85	15	16	312
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	436	92			100	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	436	92			100	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	87	96			99	
cM capacity (veh/h)	571	965			1493	

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	111	100	328
Volume Left	77	0	16
Volume Right	34	15	0
cSH	653	1700	1493
Volume to Capacity	0.17	0.06	0.01
Queue Length 95th (m)	4.6	0.0	0.2
Control Delay (s)	11.6	0.0	0.5
Lane LOS	B		A
Approach Delay (s)	11.6	0.0	0.5
Approach LOS	B		

Intersection Summary

Average Delay 2.7

Intersection Capacity Utilization 35.1% ICU Level of Service A

Analysis Period (min) 15

Lanes, Volumes, Timings
207: East Street E & East Street B

Total (2041) - Scenario B - East Side Only
Timing Plan: AM PEAK HOUR

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔			↔			↔			↔	
Traffic Volume (vph)	46	0	70	0	0	0	264	10	0	0	38	0
Future Volume (vph)	46	0	70	0	0	0	264	10	0	0	38	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	0.919											
Flt Protected	0.981											
Satd. Flow (prot)	0	1679	0	0	1863	0	0	1777	0	0	1863	0
Flt Permitted	0.981											
Satd. Flow (perm)	0	1679	0	0	1863	0	0	1777	0	0	1863	0
Link Speed (k/h)	50											
Link Distance (m)	200.4											
Travel Time (s)	14.4											
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)	50	0	76	0	0	0	287	11	0	0	41	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	126	0	0	0	0	0	298	0	0	41	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											
Link Offset(m)	0.0											
Crosswalk Width(m)	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											

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 Total (2041) - Scenario B - East Side Only
207: East Street E & East Street B Timing Plan: AM PEAK HOUR

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Movement		↔			↔			↔			↔	
Lane Configurations		↔			↔			↔			↔	
Traffic Volume (veh/h)	46	0	70	0	0	0	264	10	0	0	38	0
Future Volume (Veh/h)	46	0	70	0	0	0	264	10	0	0	38	0
Sign Control	Stop											
Grade	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)	50	0	76	0	0	0	287	11	0	0	41	0
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type	None											
Median storage (veh)												
Upstream signal (m)	114											
pX, platoon unblocked												
vC, conflicting volume	626	626	41	702	626	11	41			11		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	626	626	41	702	626	11	41			11		
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 %	85	100	93	100	100	100	82			100		
cM capacity (veh/h)	341	327	1030	281	327	1070	1568			1608		

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	126	0	298	41
Volume Left	50	0	287	0
Volume Right	76	0	0	0
cSH	571	1700	1568	1608
Volume to Capacity	0.22	0.00	0.18	0.00
Queue Length 95th (m)	6.3	0.0	5.0	0.0
Control Delay (s)	13.1	0.0	7.6	0.0
Lane LOS	B	A	A	
Approach Delay (s)	13.1	0.0	7.6	0.0
Approach LOS	B	A		

Intersection Summary

Average Delay	8.4			
Intersection Capacity Utilization	35.3%	ICU Level of Service	A	
Analysis Period (min)	15			

Lanes, Volumes, Timings
208: East Street F & East Street B

Total (2041) - Scenario B - East Side Only
Timing Plan: AM PEAK HOUR

						
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	1.00	1.00	1.00
Flt						
Flt Protected						
Satd. Flow (prot)	1863	0	0	1863	1863	0
Flt Permitted						
Satd. Flow (perm)	1863	0	0	1863	1863	0
Link Speed (k/h)	50			50	50	
Link Distance (m)	185.7			112.6	119.9	
Travel Time (s)	13.4			8.1	8.6	
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			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	25			15
Sign Control	Stop			Free	Free	
Intersection Summary						
Area Type:	Other					
Control Type:	Unsignalized					
Intersection Capacity Utilization 0.0%	ICU Level of Service A					
Analysis Period (min) 15						

HCM Unsignalized Intersection Capacity Analysis Total (2041) - Scenario B - East Side Only
208: East Street F & East Street B Timing Plan: AM PEAK HOUR

						
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	0	0	0	0	0	0
Future Volume (Veh/h)	0	0	0	0	0	0
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	0	0	0	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	0	0	0			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	0	0	0			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	100	100	100			
cM capacity (veh/h)	1023	1085	1623			
Direction, Lane #	EB 1	NB 1	SB 1			
Volume Total	0	0	0			
Volume Left	0	0	0			
Volume Right	0	0	0			
cSH	1700	1700	1700			
Volume to Capacity	0.00	0.00	0.00			
Queue Length 95th (m)	0.0	0.0	0.0			
Control Delay (s)	0.0	0.0	0.0			
Lane LOS	A					
Approach Delay (s)	0.0	0.0	0.0			
Approach LOS	A					
Intersection Summary						
Average Delay		0.0				
Intersection Capacity Utilization		0.0%		ICU Level of Service	A	
Analysis Period (min)		15				

Lanes, Volumes, Timings Total (2041) - Scenario B - East Side Only
 209: William Halton Parkway & East Street D Timing Plan: AM PEAK HOUR

						
Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	0	1761	761	39	0	195
Future Volume (vph)	0	1761	761	39	0	195
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (m)	0.0			50.0	0.0	0.0
Storage Lanes	0			1	0	1
Taper Length (m)	7.5				7.5	
Lane Util. Factor	1.00	0.95	0.95	1.00	1.00	1.00
Frt				0.850		0.865
Flt Protected						
Satd. Flow (prot)	0	3539	3539	1583	0	1611
Flt Permitted						
Satd. Flow (perm)	0	3539	3539	1583	0	1611
Link Speed (k/h)		50	50		50	
Link Distance (m)		204.1	194.7		111.4	
Travel Time (s)		14.7	14.0		8.0	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	1914	827	42	0	212
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	1914	827	42	0	212
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(m)		3.6	3.6		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	25	15
Sign Control		Free	Free		Stop	
Intersection Summary						
Area Type:	Other					
Control Type:	Unsignalized					
Intersection Capacity Utilization 52.0%	ICU Level of Service A					
Analysis Period (min) 15						

HCM Unsignalized Intersection Capacity Analysis Total (2041) - Scenario B - East Side Only
 209: William Halton Parkway & East Street D Timing Plan: AM PEAK HOUR

						
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	0	1761	761	39	0	195
Future Volume (Veh/h)	0	1761	761	39	0	195
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)	0	1914	827	42	0	212
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		None	None			
Median storage (veh)						
Upstream signal (m)		204	195			
pX, platoon unblocked	0.85				0.80	0.85
vC, conflicting volume	869				1784	414
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	487				623	0
tC, single (s)	4.1				6.8	6.9
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	100				100	77
cM capacity (veh/h)	909				334	919
Direction, Lane #	EB 1	EB 2	WB 1	WB 2	WB 3	SB 1
Volume Total	957	957	414	414	42	212
Volume Left	0	0	0	0	0	0
Volume Right	0	0	0	0	42	212
cSH	1700	1700	1700	1700	1700	919
Volume to Capacity	0.56	0.56	0.24	0.24	0.02	0.23
Queue Length 95th (m)	0.0	0.0	0.0	0.0	0.0	6.7
Control Delay (s)	0.0	0.0	0.0	0.0	0.0	10.1
Lane LOS						B
Approach Delay (s)	0.0		0.0			10.1
Approach LOS						B
Intersection Summary						
Average Delay			0.7			
Intersection Capacity Utilization			52.0%		ICU Level of Service	A
Analysis Period (min)			15			

Lanes, Volumes, Timings

210: William Halton Parkway & East Street E

Total (2041) - Scenario B - East Side Only

Timing Plan: AM PEAK HOUR

	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations	↰	↱	↱	↰	↰	↰
Traffic Volume (vph)	287	1412	769	17	77	31
Future Volume (vph)	287	1412	769	17	77	31
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	0.961	
Flt Protected	0.950				0.966	
Satd. Flow (prot)	1770	3539	3539	1583	1729	0
Flt Permitted	0.184				0.966	
Satd. Flow (perm)	343	3539	3539	1583	1729	0
Right Turn on Red				Yes	Yes	
Satd. Flow (RTOR)				18	34	
Link Speed (k/h)		50	50		50	
Link Distance (m)		194.7	188.1		114.3	
Travel Time (s)		14.0	13.5		8.2	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	312	1535	836	18	84	34
Shared Lane Traffic (%)						
Lane Group Flow (vph)	312	1535	836	18	118	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
Number of Detectors	1	2	2	1	1	
Detector Template	Left	Thru	Thru	Right	Left	
Leading Detector (m)	2.0	10.0	10.0	2.0	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)	2.0	0.6	0.6	2.0	2.0	
Detector 1 Type	CI+Ex	CI+Ex	CI+Ex	CI+Ex	CI+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		CI+Ex	CI+Ex			
Detector 2 Channel						
Detector 2 Extend (s)		0.0	0.0			
Turn Type	pm+pt	NA	NA	Perm	Prot	
Protected Phases	7	4	8		6	
Permitted Phases	4			8		

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Lanes, Volumes, Timings

210: William Halton Parkway & East Street E

Total (2041) - Scenario B - East Side Only

Timing Plan: AM PEAK HOUR

	EBL	EBT	WBT	WBR	SBL	SBR
Detector Phase	7	4	8	8	6	
Switch Phase						
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	
Minimum Split (s)	9.5	24.0	24.0	24.0	24.0	
Total Split (s)	12.0	36.0	24.0	24.0	24.0	
Total Split (%)	20.0%	60.0%	40.0%	40.0%	40.0%	
Maximum Green (s)	7.5	30.0	18.0	18.0	18.0	
Yellow Time (s)	3.5	4.0	4.0	4.0	4.0	
All-Red Time (s)	1.0	2.0	2.0	2.0	2.0	
Lost Time Adjust (s)	1.0	-2.0	-2.0	-2.0	-2.0	
Total Lost Time (s)	5.5	4.0	4.0	4.0	4.0	
Lead/Lag	Lead		Lag	Lag		
Lead-Lag Optimize?	Yes		Yes	Yes		
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	
Recall Mode	None	Max	Max	Max	None	
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)	31.9	34.3	21.3	21.3	9.9	
Actuated g/C Ratio	0.66	0.71	0.44	0.44	0.20	
v/c Ratio	0.75	0.61	0.54	0.03	0.31	
Control Delay	22.0	7.0	13.2	5.6	15.2	
Queue Delay	0.0	0.0	0.0	0.0	0.0	
Total Delay	22.0	7.0	13.2	5.6	15.2	
LOS	C	A	B	A	B	
Approach Delay		9.5	13.0		15.2	
Approach LOS		A	B		B	

Intersection Summary

Area Type: Other

Cycle Length: 60

Actuated Cycle Length: 48.6

Natural Cycle: 60

Control Type: Semi Act-Uncoord

Maximum v/c Ratio: 0.75

Intersection Signal Delay: 10.8

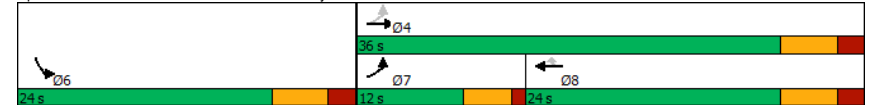
Intersection LOS: B

Intersection Capacity Utilization 54.6%

ICU Level of Service A

Analysis Period (min) 15

Splits and Phases: 210: William Halton Parkway & East Street E

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Queues
210: William Halton Parkway & East Street E

Total (2041) - Scenario B - East Side Only
Timing Plan: AM PEAK HOUR

	EBL	EBT	WBT	WBR	SBL
Lane Group	EBL	EBT	WBT	WBR	SBL
Lane Group Flow (vph)	312	1535	836	18	118
v/c Ratio	0.75	0.61	0.54	0.03	0.31
Control Delay	22.0	7.0	13.2	5.6	15.2
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	22.0	7.0	13.2	5.6	15.2
Queue Length 50th (m)	10.5	35.2	28.6	0.0	6.3
Queue Length 95th (m)	#47.4	65.1	47.7	2.9	16.5
Internal Link Dist (m)		170.7	164.1		90.3
Turn Bay Length (m)	50.0			50.0	
Base Capacity (vph)	417	2499	1549	703	736
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	0.75	0.61	0.54	0.03	0.16

Intersection Summary

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

HCM Signalized Intersection Capacity Analysis
210: William Halton Parkway & East Street E

Total (2041) - Scenario B - East Side Only
Timing Plan: AM PEAK HOUR

	EBL	EBT	WBT	WBR	SBL	SBR
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations	↰	↱	↰	↱	↰	↱
Traffic Volume (vph)	287	1412	769	17	77	31
Future Volume (vph)	287	1412	769	17	77	31
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.5	4.0	4.0	4.0	4.0	
Lane Util. Factor	1.00	0.95	0.95	1.00	1.00	
Frt	1.00	1.00	1.00	0.85	0.96	
Flt Protected	0.95	1.00	1.00	1.00	0.97	
Satd. Flow (prot)	1770	3539	3539	1583	1729	
Flt Permitted	0.18	1.00	1.00	1.00	0.97	
Satd. Flow (perm)	343	3539	3539	1583	1729	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	312	1535	836	18	84	34
RTOR Reduction (vph)	0	0	0	10	28	0
Lane Group Flow (vph)	312	1535	836	8	90	0
Turn Type	pm+pt	NA	NA	Perm	Prot	
Protected Phases	7	4	8		6	
Permitted Phases	4			8		
Actuated Green, G (s)	31.4	31.4	19.3	19.3	6.6	
Effective Green, g (s)	30.4	33.4	21.3	21.3	8.6	
Actuated g/C Ratio	0.61	0.67	0.43	0.43	0.17	
Clearance Time (s)	4.5	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)	396	2364	1507	674	297	
v/s Ratio Prot	0.10	c0.43	0.24		c0.05	
v/s Ratio Perm	c0.37			0.00		
v/c Ratio	0.79	0.65	0.55	0.01	0.30	
Uniform Delay, d1	7.0	4.9	10.8	8.3	18.1	
Progression Factor	1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	10.0	1.4	1.5	0.0	0.6	
Delay (s)	16.9	6.3	12.3	8.3	18.7	
Level of Service	B	A	B	A	B	
Approach Delay (s)		8.1	12.2		18.7	
Approach LOS		A	B		B	

Intersection Summary

HCM 2000 Control Delay	9.8	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.69		
Actuated Cycle Length (s)	50.0	Sum of lost time (s)	13.5
Intersection Capacity Utilization	54.6%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Lanes, Volumes, Timings
211: William Halton Parkway & East Street F

Total (2041) - Scenario B - East Side Only

Timing Plan: AM PEAK HOUR

						
Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		 	 		 	
Traffic Volume (vph)	0	1489	786	0	0	0
Future Volume (vph)	0	1489	786	0	0	0
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
Fr						
Flt Protected						
Satd. Flow (prot)	1863	3539	3539	1863	1863	0
Flt Permitted						
Satd. Flow (perm)	1863	3539	3539	1863	1863	0
Link Speed (k/h)		50	50		50	
Link Distance (m)		188.1	219.2		112.6	
Travel Time (s)		13.5	15.8		8.1	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	1618	854	0	0	0
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	1618	854	0	0	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 44.5%				ICU Level of Service A		
Analysis Period (min) 15						

HCM Unsignalized Intersection Capacity Analysis
211: William Halton Parkway & East Street F

Total (2041) - Scenario B - East Side Only

Timing Plan: AM PEAK HOUR

							
Movement	EBL	EBT	WBT	WBR	SBL	SBR	
Lane Configurations		 	 		 		
Traffic Volume (veh/h)	0	1489	786	0	0	0	
Future Volume (Veh/h)	0	1489	786	0	0	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)	0	1618	854	0	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)		188					
pX, platoon unblocked					0.70		
vC, conflicting volume	854				1663	427	
vC1, stage 1 conf vol							
vC2, stage 2 conf vol							
vCu, unblocked vol	854				1095	427	
tC, single (s)	4.1				6.8	6.9	
tC, 2 stage (s)							
tF (s)	2.2				3.5	3.3	
p0 queue free %	100				100	100	
cM capacity (veh/h)	781				146	576	
Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	WB 3	SB 1
Volume Total	0	809	809	427	427	0	0
Volume Left	0	0	0	0	0	0	0
Volume Right	0	0	0	0	0	0	0
cSH	1700	1700	1700	1700	1700	1700	1700
Volume to Capacity	0.00	0.48	0.48	0.25	0.25	0.00	0.00
Queue Length 95th (m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Control Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Lane LOS							A
Approach Delay (s)	0.0			0.0			0.0
Approach LOS							A
Intersection Summary							
Average Delay			0.0				
Intersection Capacity Utilization			44.5%			ICU Level of Service	A
Analysis Period (min)			15				

Lanes, Volumes, Timings

212: West Street A & Transit Station

Total (2041) - Scenario B - East Side Only

Timing Plan: AM PEAK HOUR

	←	←	↑	↗	↘	↓
Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	↔		↔			↔
Traffic Volume (vph)	140	0	0	178	0	0
Future Volume (vph)	140	0	0	178	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt			0.865			
Flt Protected	0.950					
Satd. Flow (prot)	1770	0	1611	0	0	1863
Flt Permitted	0.950					
Satd. Flow (perm)	1770	0	1611	0	0	1863
Link Speed (k/h)	50		50			50
Link Distance (m)	70.0		239.0			98.7
Travel Time (s)	5.0		17.2			7.1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	152	0	0	193	0	0
Shared Lane Traffic (%)						
Lane Group Flow (vph)	152	0	193	0	0	0
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 25.4%

ICU Level of Service A

Analysis Period (min) 15

HCM Unsignalized Intersection Capacity Analysis

212: West Street A & Transit Station

Total (2041) - Scenario B - East Side Only

Timing Plan: AM PEAK HOUR

	←	←	↑	↗	↘	↓
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	↔		↔			↔
Traffic Volume (veh/h)	140	0	0	178	0	0
Future Volume (Veh/h)	140	0	0	178	0	0
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)	152	0	0	193	0	0
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None					
Median storage (veh)						
Upstream signal (m)	213					
pX, platoon unblocked						
vC, conflicting volume	0		304	0	497	304
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	0		304	0	497	304
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 %	91		100	82	100	100
cM capacity (veh/h)	1623		552	1085	369	552

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	152	193	0
Volume Left	152	0	0
Volume Right	0	193	0
cSH	1623	1085	1700
Volume to Capacity	0.09	0.18	0.00
Queue Length 95th (m)	2.3	4.8	0.0
Control Delay (s)	7.4	9.0	0.0
Lane LOS	A	A	A
Approach Delay (s)	7.4	9.0	0.0
Approach LOS	A	A	

Intersection Summary

Average Delay	8.3		
Intersection Capacity Utilization	25.4%	ICU Level of Service	A
Analysis Period (min)	15		

Lanes, Volumes, Timings
213: West Street A & William Halton Parkway

Total (2041) - Scenario B - East Side Only
Timing Plan: AM PEAK HOUR

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑	↑		↑↑	↑			↑			↑
Traffic Volume (vph)	0	1449	0	0	596	0	0	0	0	0	0	0
Future Volume (vph)	0	1449	0	0	596	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		50.0	0.0		50.0	0.0		0.0	0.0		0.0
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	0.95	1.00	1.00	0.95	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt												
Flt Protected												
Satd. Flow (prot)	0	3539	1863	0	3539	1863	0	0	1863	0	0	1863
Flt Permitted												
Satd. Flow (perm)	0	3539	1863	0	3539	1863	0	0	1863	0	0	1863
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		202.0			209.3			100.4			239.0	
Travel Time (s)		14.5			15.1			7.2			17.2	
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	1575	0	0	648	0	0	0	0	0	0	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	1575	0	0	648	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			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 43.4% ICU Level of Service A												
Analysis Period (min) 15												

HCM Unsignalized Intersection Capacity Analysis
213: West Street A & William Halton Parkway

Total (2041) - Scenario B - East Side Only
Timing Plan: AM PEAK HOUR

													
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations		 			 								
Traffic Volume (veh/h)	0	1449	0	0	596	0	0	0	0	0	0	0	
Future Volume (Veh/h)	0	1449	0	0	596	0	0	0	0	0	0	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)	0	1575	0	0	648	0	0	0	0	0	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)	202				209								
pX, platoon unblocked	0.87			0.68			0.74	0.74	0.68	0.74	0.74	0.87	
vC, conflicting volume	648			1575			1899	2223	788	1436	2223	324	
vC1, stage 1 conf vol													
vC2, stage 2 conf vol													
vCu, unblocked vol	287			898			717	1152	0	94	1152	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	100	100	100	100	
cM capacity (veh/h)	1102			510			236	146	735	654	146	940	
Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	WB 3	NB 1	SB 1					
Volume Total	788	788	0	324	324	0	0	0					
Volume Left	0	0	0	0	0	0	0	0					
Volume Right	0	0	0	0	0	0	0	0					
cSH	1700	1700	1700	1700	1700	1700	1700	1700					
Volume to Capacity	0.46	0.46	0.00	0.19	0.19	0.00	0.00	0.00					
Queue Length 95th (m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0					
Control Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0					
Lane LOS							A	A					
Approach Delay (s)	0.0				0.0			0.0	0.0				
Approach LOS							A	A					
Intersection Summary													
Average Delay				0.0									
Intersection Capacity Utilization				43.4%	ICU Level of Service				A				
Analysis Period (min)				15									

Lanes, Volumes, Timings

214: West Street D & William Halton Parkway

Total (2041) - Scenario B - East Side Only

Timing Plan: AM PEAK HOUR

	←	→	↖	↗	←	↖	↗	↖	↗	↖	↗	↖	↗
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations	↖	↖	↖	↖	↖	↖	↖	↖	↖	↖	↖	↖	
Traffic Volume (vph)	0	1479	0	0	596	0	0	0	0	0	0	0	
Future Volume (vph)	0	1479	0	0	596	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)	50.0		50.0	50.0		50.0	50.0		0.0	50.0		0.0	
Storage Lanes	1		0	1		1	1		0	1		0	
Taper Length (m)	100.0			100.0			75.0			75.0			
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Fr													
Flt Protected													
Satd. Flow (prot)	1863	3539	1863	1863	3539	1863	1863	1863	0	1863	1863	0	
Flt Permitted													
Satd. Flow (perm)	1863	3539	1863	1863	3539	1863	1863	1863	0	1863	1863	0	
Right Turn on Red			Yes			Yes			Yes			Yes	
Satd. Flow (RTOR)													
Link Speed (k/h)		50			50				50			50	
Link Distance (m)		241.6			202.0				103.2			133.4	
Travel Time (s)		17.4			14.5				7.4			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)	0	1608	0	0	648	0	0	0	0	0	0	0	
Shared Lane Traffic (%)													
Lane Group Flow (vph)	0	1608	0	0	648	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	1	2	1	1	2		1	2		
Detector Template	Left	Thru	Right	Left	Thru	Right	Left	Thru		Left	Thru		
Leading Detector (m)	2.0	10.0	2.0	2.0	10.0	2.0	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		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	2.0	0.6	2.0	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		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	pm+pt	NA	Perm	Perm		Perm				
Protected Phases		4			3		8		2			6	
Permitted Phases	4		4		8		8		2		6		

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Lanes, Volumes, Timings

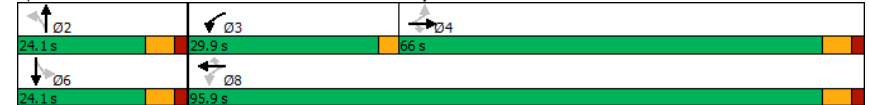
214: West Street D & William Halton Parkway

Total (2041) - Scenario B - East Side Only

Timing Plan: AM PEAK HOUR

	←	→	↖	↗	←	↖	↗	↖	↗	↖	↗	↖	↗
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Detector Phase	4	4	4	3	8	8	2	2		6	6		
Switch Phase													
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0		5.0	5.0		
Minimum Split (s)	24.0	24.0	24.0	9.5	24.0	24.0	24.0	24.0		24.0	24.0		
Total Split (s)	66.0	66.0	66.0	29.9	95.9	95.9	24.1	24.1		24.1	24.1		
Total Split (%)	55.0%	55.0%	55.0%	24.9%	79.9%	79.9%	20.1%	20.1%		20.1%	20.1%		
Maximum Green (s)	60.0	60.0	60.0	26.9	89.9	89.9	18.1	18.1		18.1	18.1		
Yellow Time (s)	4.0	4.0	4.0	3.0	4.0	4.0	4.0	4.0		4.0	4.0		
All-Red Time (s)	2.0	2.0	2.0	0.0	2.0	2.0	2.0	2.0		2.0	2.0		
Lost Time Adjust (s)	-2.0	-2.0	-2.0	1.0	-2.0	-2.0	-2.0	-2.0		-2.0	-2.0		
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0		4.0	4.0		
Lead/Lag	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	Max	Max	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	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)		62.0			95.9								
Actuated g/C Ratio		0.65			1.00								
v/c Ratio		0.70			0.18								
Control Delay		13.1			0.1								
Queue Delay		0.0			0.0								
Total Delay		13.1			0.1								
LOS		B			A								
Approach Delay		13.1			0.1								
Approach LOS		B			A								
Intersection Summary													
Area Type:		Other											
Cycle Length: 120													
Actuated Cycle Length: 95.9													
Natural Cycle: 70													
Control Type: Semi Act-Uncooord													
Maximum v/c Ratio: 0.70													
Intersection Signal Delay: 9.4													
Intersection Capacity Utilization 44.2%													
ICU Level of Service A													
Analysis Period (min) 15													

Splits and Phases: 214: West Street D & William Halton Parkway

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Queues
214: West Street D & William Halton Parkway

Total (2041) - Scenario B - East Side Only
Timing Plan: AM PEAK HOUR

	→	←
Lane Group	EBT	WBT
Lane Group Flow (vph)	1608	648
v/c Ratio	0.70	0.18
Control Delay	13.1	0.1
Queue Delay	0.0	0.0
Total Delay	13.1	0.1
Queue Length 50th (m)	90.2	0.0
Queue Length 95th (m)	113.6	0.0
Internal Link Dist (m)	217.6	178.0
Turn Bay Length (m)		
Base Capacity (vph)	2287	3539
Starvation Cap Reductn	0	0
Spillback Cap Reductn	0	0
Storage Cap Reductn	0	0
Reduced v/c Ratio	0.70	0.18
Intersection Summary		

HCM Signalized Intersection Capacity Analysis
214: West Street D & William Halton Parkway

Total (2041) - Scenario B - East Side Only
Timing Plan: AM PEAK HOUR

	↖	→	↗	←	↖	↗	↖	↗	↖	↗	↖	↗
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖	↖↖	↖	↖	↖↖	↖	↖	↖	↖	↖	↖	↖
Traffic Volume (vph)	0	1479	0	0	596	0	0	0	0	0	0	0
Future Volume (vph)	0	1479	0	0	596	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)		4.0			4.0							
Lane Util. Factor		0.95			0.95							
Frt		1.00			1.00							
Flt Protected		1.00			1.00							
Satd. Flow (prot)		3539			3539							
Flt Permitted		1.00			1.00							
Satd. Flow (perm)		3539			3539							
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	1608	0	0	648	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	1608	0	0	648	0	0	0	0	0	0	0
Turn Type	Perm	NA	Perm	pm+pt	NA	Perm	Perm			Perm		
Protected Phases		4		3	8			2			6	
Permitted Phases	4		4	8		8	2			6		
Actuated Green, G (s)		60.0			95.9							
Effective Green, g (s)		62.0			95.9							
Actuated g/C Ratio		0.65			1.00							
Clearance Time (s)		6.0			6.0							
Vehicle Extension (s)		3.0			3.0							
Lane Grp Cap (vph)		2287			3539							
v/s Ratio Prot		c0.45			c0.18							
v/s Ratio Perm												
v/c Ratio		0.70			0.18							
Uniform Delay, d1		11.0			0.0							
Progression Factor		1.00			1.00							
Incremental Delay, d2		1.8			0.1							
Delay (s)		12.8			0.1							
Level of Service		B			A							
Approach Delay (s)		12.8			0.1			0.0			0.0	
Approach LOS		B			A			A			A	
Intersection Summary												
HCM 2000 Control Delay			9.2		HCM 2000 Level of Service				A			
HCM 2000 Volume to Capacity ratio			0.58									
Actuated Cycle Length (s)			95.9		Sum of lost time (s)			12.0				
Intersection Capacity Utilization			44.2%		ICU Level of Service				A			
Analysis Period (min)			15									

c Critical Lane Group

Lanes, Volumes, Timings

215: West Street A & West Street B

Total (2041) - Scenario B - East Side Only

Timing Plan: AM PEAK HOUR

	EBL	EBR	NBL	NBT	SBT	SBR
Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	↔	↔	↔	↔	↔	↔
Traffic Volume (vph)	119	73	0	51	50	6
Future Volume (vph)	119	73	0	51	50	6
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	0.949				0.985	
Flt Protected	0.970					
Satd. Flow (prot)	1715	0	0	1863	1835	0
Flt Permitted	0.970					
Satd. Flow (perm)	1715	0	0	1863	1835	0
Link Speed (k/h)	50			50	50	
Link Distance (m)	202.8			106.4	100.4	
Travel Time (s)	14.6			7.7	7.2	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	129	79	0	55	54	7
Shared Lane Traffic (%)						
Lane Group Flow (vph)	208	0	0	55	61	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
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	25			15
Sign Control	Stop			Free	Free	

Intersection Summary

Area Type: Other

Control Type: Unsignalized

Intersection Capacity Utilization 21.1%

ICU Level of Service A

Analysis Period (min) 15

HCM Unsignalized Intersection Capacity Analysis

215: West Street A & West Street B

Total (2041) - Scenario B - East Side Only

Timing Plan: AM PEAK HOUR

	EBL	EBR	NBL	NBT	SBT	SBR
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	↔	↔	↔	↔	↔	↔
Traffic Volume (veh/h)	119	73	0	51	50	6
Future Volume (Veh/h)	119	73	0	51	50	6
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)	129	79	0	55	54	7
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	None	
Median storage (veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	112	58	61			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	112	58	61			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	85	92	100			
cM capacity (veh/h)	884	1009	1542			

Direction, Lane #	EB 1	NB 1	SB 1
Volume Total	208	55	61
Volume Left	129	0	0
Volume Right	79	0	7
cSH	928	1542	1700
Volume to Capacity	0.22	0.00	0.04
Queue Length 95th (m)	6.4	0.0	0.0
Control Delay (s)	10.0	0.0	0.0
Lane LOS	A		
Approach Delay (s)	10.0	0.0	0.0
Approach LOS	A		

Intersection Summary

Average Delay 6.4

Intersection Capacity Utilization 21.1%

ICU Level of Service

A

Analysis Period (min) 15

Lanes, Volumes, Timings

216: West Street D & West Street B

Total (2041) - Scenario B - East Side Only

Timing Plan: AM PEAK HOUR

	←	←	↑	↗	↘	↓
Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	↔		↔			↔
Traffic Volume (vph)	0	10	31	0	163	79
Future Volume (vph)	0	10	31	0	163	79
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.865					
Flt Protected						0.967
Satd. Flow (prot)	1611	0	1863	0	0	1801
Flt Permitted						0.967
Satd. Flow (perm)	1611	0	1863	0	0	1801
Link Speed (k/h)	50		50			50
Link Distance (m)	202.8		99.7			103.2
Travel Time (s)	14.6		7.2			7.4
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	11	34	0	177	86
Shared Lane Traffic (%)						
Lane Group Flow (vph)	11	0	34	0	0	263
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
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		15	25	
Sign Control	Stop		Free			Free

Intersection Summary

Area Type: Other

Control Type: Unsignalized

Intersection Capacity Utilization 29.8%

ICU Level of Service A

Analysis Period (min) 15

HCM Unsignalized Intersection Capacity Analysis

216: West Street D & West Street B

Total (2041) - Scenario B - East Side Only

Timing Plan: AM PEAK HOUR

	←	←	↑	↗	↘	↓
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	↔		↔			↔
Traffic Volume (veh/h)	0	10	31	0	163	79
Future Volume (Veh/h)	0	10	31	0	163	79
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	11	34	0	177	86
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage (veh)						
Upstream signal (m)						103
pX, platoon unblocked						
vC, conflicting volume	474	34			34	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	474	34			34	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	100	99			89	
cM capacity (veh/h)	487	1039			1578	

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	11	34	263
Volume Left	0	0	177
Volume Right	11	0	0
cSH	1039	1700	1578
Volume to Capacity	0.01	0.02	0.11
Queue Length 95th (m)	0.2	0.0	2.8
Control Delay (s)	8.5	0.0	5.4
Lane LOS	A		A
Approach Delay (s)	8.5	0.0	5.4
Approach LOS	A		

Intersection Summary

Average Delay 4.9

Intersection Capacity Utilization 29.8%

ICU Level of Service

A

Analysis Period (min)

15

Lanes, Volumes, Timings
217: West Street C & West Street A

Total (2041) - Scenario B - East Side Only
Timing Plan: AM PEAK HOUR

	EBL	EBT	WBT	WBR	SBL	SBR
Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↔	↔		↔	↔
Traffic Volume (vph)	0	59	56	150	84	10
Future Volume (vph)	0	59	56	150	84	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		0.902		0.985		
Flt Protected				0.957		
Satd. Flow (prot)	0	1863	1680	0	1756	0
Flt Permitted				0.957		
Satd. Flow (perm)	0	1863	1680	0	1756	0
Link Speed (k/h)		50	50		50	
Link Distance (m)		208.6	202.4		106.4	
Travel Time (s)		15.0	14.6		7.7	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	64	61	163	91	11
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	64	224	0	102	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 24.1%
Analysis Period (min) 15

ICU Level of Service A

HCM Unsignalized Intersection Capacity Analysis Total (2041) - Scenario B - East Side Only
217: West Street C & West Street A Timing Plan: AM PEAK HOUR

	EBL	EBT	WBT	WBR	SBL	SBR
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↔	↔		↔	↔
Traffic Volume (veh/h)	0	59	56	150	84	10
Future Volume (Veh/h)	0	59	56	150	84	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)	0	64	61	163	91	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	224				206	142
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	224				206	142
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	100				88	99
cM capacity (veh/h)	1345				782	905

Direction, Lane #	EB 1	WB 1	SB 1
Volume Total	64	224	102
Volume Left	0	0	91
Volume Right	0	163	11
cSH	1345	1700	794
Volume to Capacity	0.00	0.13	0.13
Queue Length 95th (m)	0.0	0.0	3.3
Control Delay (s)	0.0	0.0	10.2
Lane LOS			B
Approach Delay (s)	0.0	0.0	10.2
Approach LOS			B

Intersection Summary

Average Delay 2.7
Intersection Capacity Utilization 24.1%
Analysis Period (min) 15

ICU Level of Service A

Lanes, Volumes, Timings
218: West Street D & West Street C

Total (2041) - Scenario B - East Side Only
Timing Plan: AM PEAK HOUR

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔			↔			↔			↔	
Traffic Volume (vph)	0	0	0	7	0	49	0	24	11	73	6	0
Future Volume (vph)	0	0	0	7	0	49	0	24	11	73	6	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					0.883			0.957				
Flt Protected					0.993						0.956	
Satd. Flow (prot)	0	1863	0	0	1633	0	0	1783	0	0	1781	0
Flt Permitted					0.993						0.956	
Satd. Flow (perm)	0	1863	0	0	1633	0	0	1783	0	0	1781	0
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		258.7			208.6			93.0			99.7	
Travel Time (s)		18.6			15.0			6.7			7.2	
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	0	8	0	53	0	26	12	79	7	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	0	0	0	61	0	0	38	0	0	86	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 21.1% ICU Level of Service A

Analysis Period (min) 15

HCM Unsignalized Intersection Capacity Analysis Total (2041) - Scenario B - East Side Only
218: West Street D & West Street C Timing Plan: AM PEAK HOUR

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Movement		↔			↔			↔			↔	
Lane Configurations		↔			↔			↔			↔	
Traffic Volume (veh/h)	0	0	0	7	0	49	0	24	11	73	6	0
Future Volume (Veh/h)	0	0	0	7	0	49	0	24	11	73	6	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)	0	0	0	8	0	53	0	26	12	79	7	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	53			0			46	69	0	68	42	26
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	53			0			46	69	0	68	42	26
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			100			100	97	99	91	99	100
cM capacity (veh/h)	1553			1623			946	818	1085	889	845	1049

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	0	61	38	86
Volume Left	0	8	0	79
Volume Right	0	53	12	0
cSH	1700	1623	887	886
Volume to Capacity	0.00	0.00	0.04	0.10
Queue Length 95th (m)	0.0	0.1	1.0	2.4
Control Delay (s)	0.0	1.0	9.2	9.5
Lane LOS	A	A	A	A
Approach Delay (s)	0.0	1.0	9.2	9.5
Approach LOS		A	A	

Intersection Summary

Average Delay 6.6

Intersection Capacity Utilization 21.1% ICU Level of Service A

Analysis Period (min) 15

Lanes, Volumes, Timings

101: Trafalgar Rd & Lower Base Line

TT (2041) - Scenario A - East Side Only

Timing Plan: PM Peak Hour

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↩	↩↪	↪	↩	↩↪	↪	↩	↩↪	↪	↩	↩↪	↪
Traffic Volume (vph)	54	240	77	320	678	368	470	2486	382	306	1647	123
Future Volume (vph)	54	240	77	320	678	368	470	2486	382	306	1647	123
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	45.0		45.0	110.0		110.0	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	0.238			0.230			0.072			0.077		
Satd. Flow (perm)	443	3412	0	428	3352	0	134	5085	1583	143	5085	1583
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		25			68				79			95
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	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	54	240	77	320	678	368	470	2486	382	306	1647	123
Shared Lane Traffic (%)												
Lane Group Flow (vph)	54	317	0	320	1046	0	470	2486	382	306	1647	123
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	pm+ov	pm+pt	NA	pm+ov
Protected Phases	7	4		3	8		5	2	3	1	6	7
Permitted Phases	4			8			2		2	6		6

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Lanes, Volumes, Timings

101: Trafalgar Rd & Lower Base Line

TT (2041) - Scenario A - East Side Only

Timing Plan: PM Peak Hour

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector Phase	7	4		3	8		5	2	3	1	6	7
Switch Phase												
Minimum Initial (s)	5.0	10.0		7.0	10.0		5.0	25.0	7.0	7.0	25.0	5.0
Minimum Split (s)	11.6	22.5		13.6	22.5		11.6	31.6	13.6	13.6	31.6	11.6
Total Split (s)	11.6	22.6		27.0	38.0		31.0	71.4	27.0	19.0	59.4	11.6
Total Split (%)	8.3%	16.1%		19.3%	27.1%		22.1%	51.0%	19.3%	13.6%	42.4%	8.3%
Maximum Green (s)	5.0	16.4		24.0	31.8		28.0	64.8	24.0	16.0	52.8	5.0
Yellow Time (s)	4.6	4.2		3.0	4.2		3.0	4.6	3.0	3.0	4.6	4.6
All-Red Time (s)	2.0	2.0		0.0	2.0		0.0	2.0	0.0	0.0	2.0	2.0
Lost Time Adjust (s)	1.0	-2.2		1.0	-2.2		1.0	-2.2	1.0	1.0	-2.2	-2.2
Total Lost Time (s)	7.6	4.0		4.0	4.0		4.0	4.4	4.0	4.0	4.4	4.4
Lead/Lag	Lead	Lag		Lead	Lag		Lead	Lag	Lead	Lead	Lag	Lead
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	0.2	0.2	5.0	3.0
Recall Mode	None	None		None	None		None	Max	None	Max	Max	None
Act Effct Green (s)	20.4	20.0		45.6	34.0		86.4	67.0	93.0	70.4	55.8	66.6
Actuated g/C Ratio	0.15	0.14		0.33	0.24		0.62	0.48	0.66	0.50	0.39	0.48
v/c Ratio	0.53	0.62		0.92	1.21		1.18	1.02	0.35	1.24	0.82	0.15
Control Delay	59.3	58.4		72.7	146.9		142.6	60.0	8.7	175.6	42.5	6.5
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	59.3	58.4		72.7	146.9		142.6	60.0	8.7	175.6	42.5	6.5
LOS	E	E		E	F		F	E	A	F	D	A
Approach Delay		58.5			129.5			65.8			60.0	
Approach LOS		E			F			E			E	

Intersection Summary

Area Type: Other

Cycle Length: 140

Actuated Cycle Length: 140

Natural Cycle: 135

Control Type: Semi Act-Uncooord

Maximum v/c Ratio: 1.24

Intersection Signal Delay: 75.9

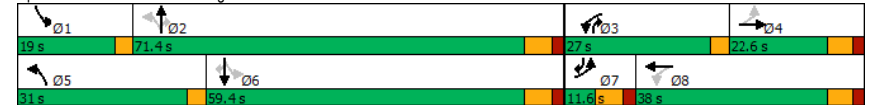
Intersection LOS: E

Intersection Capacity Utilization 116.3%

ICU Level of Service H

Analysis Period (min) 15

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

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Queues
101: Trafalgar Rd & Lower Base Line

TT (2041) - Scenario A - East Side Only
Timing Plan: PM Peak Hour

	EBL	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	54	317	320	1046	470	2486	382	306	1647	123
v/c Ratio	0.53	0.62	0.92	1.21	1.18	1.02	0.35	1.24	0.82	0.15
Control Delay	59.3	58.4	72.7	146.9	142.6	60.0	8.7	175.6	42.5	6.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	59.3	58.4	72.7	146.9	142.6	60.0	8.7	175.6	42.5	6.5
Queue Length 50th (m)	10.7	40.5	72.0	~175.8	~137.6	~263.5	31.7	~87.7	146.9	4.0
Queue Length 95th (m)	#22.9	56.6	#117.0	#217.6	#204.3	#289.7	47.9	#145.8	166.1	14.8
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)	102	508	359	865	398	2433	1093	246	1997	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	0.53	0.62	0.89	1.21	1.18	1.02	0.35	1.24	0.82	0.15

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.

HCM Signalized Intersection Capacity Analysis
101: Trafalgar Rd & Lower Base Line

TT (2041) - Scenario A - East Side Only
Timing Plan: PM Peak Hour

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰	↱	↱	↰	↱	↱	↰	↱	↱	↰	↱	↱
Traffic Volume (vph)	54	240	77	320	678	368	470	2486	382	306	1647	123
Future Volume (vph)	54	240	77	320	678	368	470	2486	382	306	1647	123
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	7.6	4.0		4.0	4.0		4.0	4.4	4.0	4.0	4.4	4.4
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	3410		1770	3352		1770	5085	1583	1770	5085	1583
Flt Permitted	0.24	1.00		0.23	1.00		0.07	1.00	1.00	0.08	1.00	1.00
Satd. Flow (perm)	444	3410		428	3352		134	5085	1583	144	5085	1583
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	54	240	77	320	678	368	470	2486	382	306	1647	123
RTOR Reduction (vph)	0	21	0	0	51	0	0	0	31	0	0	53
Lane Group Flow (vph)	54	296	0	320	995	0	470	2486	351	306	1647	70
Turn Type	pm+pt	NA		pm+pt	NA		pm+pt	NA	pm+ov	pm+pt	NA	pm+ov
Protected Phases	7	4		3	8		5	2	3	1	6	7
Permitted Phases	4			8			2		2	6		6
Actuated Green, G (s)	22.8	17.8		43.4	31.8		83.8	64.8	87.4	68.8	52.8	57.8
Effective Green, g (s)	20.8	20.0		42.4	34.0		82.8	67.0	85.4	66.8	55.0	62.2
Actuated g/C Ratio	0.15	0.14		0.30	0.24		0.59	0.48	0.61	0.48	0.39	0.44
Clearance Time (s)	6.6	6.2		3.0	6.2		3.0	6.6	3.0	3.0	6.6	6.6
Vehicle Extension (s)	3.0	5.0		0.2	5.0		3.0	5.0	0.2	0.2	5.0	3.0
Lane Grp Cap (vph)	103	487		336	814		394	2433	965	242	1997	753
v/s Ratio Prot	0.01	0.09		c0.15	c0.30		c0.23	0.49	0.06	0.13	0.32	0.00
v/s Ratio Perm	0.06			0.14			0.48		0.17	c0.47		0.04
v/c Ratio	0.52	0.61		0.95	1.22		1.19	1.02	0.36	1.26	0.82	0.09
Uniform Delay, d1	52.9	56.3		42.3	53.0		46.0	36.5	13.7	44.3	38.2	22.6
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	4.7	3.1		36.2	110.8		109.2	24.0	0.1	147.7	4.0	0.1
Delay (s)	57.7	59.5		78.5	163.8		155.3	60.5	13.8	192.0	42.2	22.6
Level of Service	E	E		E	F		F	E	B	F	D	C
Approach Delay (s)		59.2			143.8			68.5			63.1	
Approach LOS		E			F			E			E	

Intersection Summary

HCM 2000 Control Delay	80.8	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	1.23		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	20.0
Intersection Capacity Utilization	116.3%	ICU Level of Service	H
Analysis Period (min)	15		

c Critical Lane Group

Lanes, Volumes, Timings TT (2041) - Scenario A - East Side Only
102: Trafalgar Rd & North Carpool Lot/Hwy 407 WB Off Timing Plan: PM Peak Hour

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔		↔	↔	↔	↔	↔		↔	↔	↔
Traffic Volume (vph)	7	0	49	541	16	174	9	3155	0	0	2039	5
Future Volume (vph)	7	0	49	541	16	174	9	3155	0	0	2039	5
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		0.882				0.991	0.850					0.850
Flt Protected		0.994		0.950	0.958		0.950					
Satd. Flow (prot)	0	1633	0	1681	1609	1504	1770	5085	0	0	5085	1583
Flt Permitted		0.994		0.720	0.711		0.070					
Satd. Flow (perm)	0	1633	0	1274	1194	1504	130	5085	0	0	5085	1583
Right Turn on Red			Yes		Yes			Yes			Yes	
Satd. Flow (RTOR)		78			3	95						70
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	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	7	0	49	541	16	174	9	3155	0	0	2039	5
Shared Lane Traffic (%)				47%		10%						
Lane Group Flow (vph)	0	56	0	287	287	157	9	3155	0	0	2039	5
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	CI+Ex	CI+Ex		CI+Ex	CI+Ex	CI+Ex	CI+Ex	CI+Ex			CI+Ex	CI+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		CI+Ex			CI+Ex			CI+Ex				CI+Ex
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0				0.0
Turn Type	Split	NA		Perm	NA	Perm	Perm	NA		NA	Perm	Perm
Protected Phases	4	4			8			2			6	
Permitted Phases				8		8	2					6

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Lanes, Volumes, Timings TT (2041) - Scenario A - East Side Only
102: Trafalgar Rd & North Carpool Lot/Hwy 407 WB Off Timing Plan: PM Peak Hour

	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)	6.0	6.0		7.0	7.0	7.0	20.0	20.0			20.0	20.0
Minimum Split (s)	12.0	12.0		22.5	22.5	22.5	27.0	27.0			27.0	27.0
Total Split (s)	12.0	12.0		68.0	68.0	68.0	60.0	60.0			60.0	60.0
Total Split (%)	8.6%	8.6%		48.6%	48.6%	48.6%	42.9%	42.9%			42.9%	42.9%
Maximum Green (s)	6.0	6.0		62.0	62.0	62.0	53.0	53.0			53.0	53.0
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	-3.0	-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 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)		8.2		34.1	34.1	34.1	57.1	57.1			57.1	57.1
Actuated g/C Ratio		0.08		0.31	0.31	0.31	0.53	0.53			0.53	0.53
v/c Ratio		0.29		0.72	0.76	0.29	0.13	1.18			0.76	0.01
Control Delay		9.7		43.5	46.8	12.8	25.6	111.7			25.5	0.0
Queue Delay		0.0		0.0	0.0	0.0	0.0	0.0			0.0	0.0
Total Delay		9.7		43.5	46.8	12.8	25.6	111.7			25.5	0.0
LOS	A			D	D	B	C	F			C	A
Approach Delay		9.7			38.2		111.4				25.4	
Approach LOS	A				D		F				C	

Intersection Summary

Area Type: Other

Cycle Length: 140

Actuated Cycle Length: 108.5

Natural Cycle: 150

Control Type: Actuated-Uncoordinated

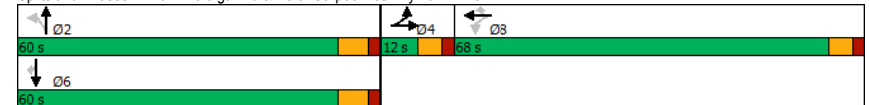
Maximum v/c Ratio: 1.18

Intersection Signal Delay: 72.2

Intersection Capacity Utilization 91.5%

Analysis Period (min) 15

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



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Synchro 10 Report
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Queues TT (2041) - Scenario A - East Side Only
102: Trafalgar Rd & North Carpool Lot/Hwy 407 WB Off Timing Plan: PM Peak Hour

	→	↖	←	↗	↖	↑	↓	↗
Lane Group	EBT	WBL	WBT	WBR	NBL	NBT	SBT	SBR
Lane Group Flow (vph)	56	287	287	157	9	3155	2039	5
v/c Ratio	0.29	0.72	0.76	0.29	0.13	1.18	0.76	0.01
Control Delay	9.7	43.5	46.8	12.8	25.6	111.7	25.5	0.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	9.7	43.5	46.8	12.8	25.6	111.7	25.5	0.0
Queue Length 50th (m)	0.0	56.8	59.7	9.8	1.0	~302.1	125.2	0.0
Queue Length 95th (m)	7.7	86.9	92.7	25.0	5.7	#404.5	190.2	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)	194	766	719	942	68	2676	2676	866
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.29	0.37	0.40	0.17	0.13	1.18	0.76	0.01

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.

HCM Signalized Intersection Capacity Analysis TT (2041) - Scenario A - East Side Only
102: Trafalgar Rd & North Carpool Lot/Hwy 407 WB Off Timing Plan: PM Peak Hour

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	7	0	49	541	16	174	9	3155	0	0	2039	5
Future Volume (vph)	7	0	49	541	16	174	9	3155	0	0	2039	5
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)		1633		1681	1609	1504	1770	5085			5085	1583
Flt Permitted		0.99		0.72	0.71	1.00	0.07	1.00			1.00	1.00
Satd. Flow (perm)		1633		1275	1194	1504	131	5085			5085	1583
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	7	0	49	541	16	174	9	3155	0	0	2039	5
RTOR Reduction (vph)	0	53	0	0	2	65	0	0	0	0	0	2
Lane Group Flow (vph)	0	3	0	287	285	92	9	3155	0	0	2039	3
Turn Type	Split	NA		Perm	NA	Perm	Perm	NA			NA	Perm
Protected Phases	4	4			8		2				6	
Permitted Phases				8		8	2					6
Actuated Green, G (s)		4.6		32.1	32.1	32.1	54.0	54.0			54.0	54.0
Effective Green, g (s)		6.6		34.1	34.1	34.1	57.0	57.0			57.0	57.0
Actuated g/C Ratio		0.06		0.31	0.31	0.31	0.52	0.52			0.52	0.52
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)		98		396	371	467	68	2642			2642	822
v/s Ratio Prot		c0.00						c0.62			0.40	
v/s Ratio Perm				0.23	c0.24	0.06	0.07					0.00
v/c Ratio		0.03		0.72	0.77	0.20	0.13	1.19			0.77	0.00
Uniform Delay, d1		48.5		33.6	34.2	27.7	13.6	26.4			21.1	12.7
Progression Factor		1.00		1.00	1.00	1.00	1.00	1.00			1.00	1.00
Incremental Delay, d2		0.2		6.7	9.5	0.2	4.0	91.4			2.3	0.0
Delay (s)		48.7		40.3	43.7	28.0	17.6	117.7			23.4	12.7
Level of Service		D		D	D	C	B	F			C	B
Approach Delay (s)		48.7			39.0			117.4			23.4	
Approach LOS		D			D			F			C	

Intersection Summary

HCM 2000 Control Delay	75.2	HCM 2000 Level of Service	E
HCM 2000 Volume to Capacity ratio	0.99		
Actuated Cycle Length (s)	109.7	Sum of lost time (s)	14.0
Intersection Capacity Utilization	91.5%	ICU Level of Service	F
Analysis Period (min)	15		

c Critical Lane Group

Lanes, Volumes, Timings
103: Trafalgar Rd & Hwy 407 EB Off

TT (2041) - Scenario A - East Side Only
Timing Plan: PM Peak Hour

	EBL	EBR	NBL	NBT	SBT	SBR
Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	↰	↱		↰↰↰	↰↰↰	
Traffic Volume (vph)	87	197	0	3563	2426	0
Future Volume (vph)	87	197	0	3563	2426	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			251.9	363.6	
Travel Time (s)	39.9			18.1	26.2	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	87	197	0	3563	2426	0
Shared Lane Traffic (%)						
Lane Group Flow (vph)	87	197	0	3563	2426	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	CI+Ex	CI+Ex		CI+Ex	CI+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				CI+Ex	CI+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	

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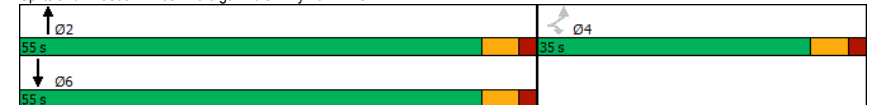
Lanes, Volumes, Timings
103: Trafalgar Rd & Hwy 407 EB Off

TT (2041) - Scenario A - East Side Only
Timing Plan: PM Peak Hour

	EBL	EBR	NBL	NBT	SBT	SBR
Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Minimum Split (s)	24.0	24.0		24.0	24.0	
Total Split (s)	35.0	35.0		55.0	55.0	
Total Split (%)	38.9%	38.9%		61.1%	61.1%	
Maximum Green (s)	29.0	29.0		49.0	49.0	
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)	16.7	16.7		53.6	53.6	
Actuated g/C Ratio	0.21	0.21		0.68	0.68	
v/c Ratio	0.23	0.58		1.02	0.70	
Control Delay	25.5	33.5		36.8	9.5	
Queue Delay	0.0	0.0		0.0	0.0	
Total Delay	25.5	33.5		36.8	9.5	
LOS	C	C		D	A	
Approach Delay	31.1			36.8	9.5	
Approach LOS	C			D	A	

Intersection Summary	
Area Type:	Other
Cycle Length: 90	
Actuated Cycle Length: 78.4	
Natural Cycle: 90	
Control Type: Semi Act-Uncoord	
Maximum v/c Ratio: 1.02	
Intersection Signal Delay: 26.0	Intersection LOS: C
Intersection Capacity Utilization 80.3%	ICU Level of Service D
Analysis Period (min) 15	

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



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Queues
103: Trafalgar Rd & Hwy 407 EB Off

TT (2041) - Scenario A - East Side Only
Timing Plan: PM Peak Hour

	EBL	EBR	NBT	SBT
Lane Group	EBL	EBR	NBT	SBT
Lane Group Flow (vph)	87	197	3563	2426
v/c Ratio	0.23	0.58	1.02	0.70
Control Delay	25.5	33.5	36.8	9.5
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	25.5	33.5	36.8	9.5
Queue Length 50th (m)	10.1	24.5	~200.4	64.9
Queue Length 95th (m)	20.8	43.0	#262.3	106.1
Internal Link Dist (m)	530.6		227.9	339.6
Turn Bay Length (m)				
Base Capacity (vph)	701	629	3479	3479
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	0.12	0.31	1.02	0.70

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.

HCM Signalized Intersection Capacity Analysis
103: Trafalgar Rd & Hwy 407 EB Off

TT (2041) - Scenario A - East Side Only
Timing Plan: PM Peak Hour

	EBL	EBR	NBL	NBT	SBT	SBR
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	↰	↱		↰	↰	↰
Traffic Volume (vph)	87	197	0	3563	2426	0
Future Volume (vph)	87	197	0	3563	2426	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	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	87	197	0	3563	2426	0
RTOR Reduction (vph)	0	2	0	0	0	0
Lane Group Flow (vph)	87	195	0	3563	2426	0
Turn Type	Perm	Perm		NA	NA	
Protected Phases				2	6	
Permitted Phases	4	4				
Actuated Green, G (s)	14.7	14.7		51.6	51.6	
Effective Green, g (s)	16.7	16.7		53.6	53.6	
Actuated g/C Ratio	0.21	0.21		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)	377	337		3480	3480	
v/s Ratio Prot				c0.70	0.48	
v/s Ratio Perm	0.05	c0.12				
v/c Ratio	0.23	0.58		1.02	0.70	
Uniform Delay, d1	25.5	27.6		12.3	7.5	
Progression Factor	1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.3	2.4		21.7	1.2	
Delay (s)	25.8	30.0		34.1	8.6	
Level of Service	C	C		C	A	
Approach Delay (s)	28.7			34.1	8.6	
Approach LOS	C			C	A	

Intersection Summary

HCM 2000 Control Delay	24.0	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.94		
Actuated Cycle Length (s)	78.3	Sum of lost time (s)	10.0
Intersection Capacity Utilization	80.3%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

Lanes, Volumes, Timings
104: Trafalgar Rd & West Street A/East Street A

TT (2041) - Scenario A - East Side Only
Timing Plan: PM Peak Hour

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰	↑	↱	↰	↑	↱	↰	↑	↱	↰	↑	↱
Traffic Volume (vph)	27	0	20	0	0	1112	20	3089	300	480	2136	7
Future Volume (vph)	27	0	20	0	0	1112	20	3089	300	480	2136	7
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	90.0		90.0	90.0		90.0
Storage Lanes	1		1	1		1	1		1	1		1
Taper Length (m)	75.0			75.0			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		
Satd. Flow (prot)	1770	1863	1583	1863	1863	1583	1770	5085	1583	1770	5085	1583
Flt Permitted	0.851						0.082			0.048		
Satd. Flow (perm)	1585	1863	1583	1863	1863	1583	153	5085	1583	89	5085	1583
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			143			65			247			44
Link Speed (k/h)		50			50			80			80	
Link Distance (m)		216.0			205.9			233.3			251.9	
Travel Time (s)		15.6			14.8			10.5			11.3	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	27	0	20	0	0	1112	20	3089	300	480	2136	7
Shared Lane Traffic (%)												
Lane Group Flow (vph)	27	0	20	0	0	1112	20	3089	300	480	2136	7
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	pm+pt		Perm	pm+pt		pm+ov	pm+pt	NA	pm+ov	pm+pt	NA	pm+ov
Protected Phases	7	4		3	8	1	5	2	3	1	6	7
Permitted Phases	4		4	8		8	2		2	6		6

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Lanes, Volumes, Timings
104: Trafalgar Rd & West Street A/East Street A

TT (2041) - Scenario A - East Side Only
Timing Plan: PM Peak Hour

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector Phase	7	4	4	3	8	1	5	2	3	1	6	7
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)	9.5	24.0	24.0	9.5	24.0	11.0	9.5	24.0	9.5	11.0	24.0	9.5
Total Split (s)	10.0	24.3	24.3	9.7	24.0	25.0	9.5	91.0	9.7	25.0	106.5	10.0
Total Split (%)	6.7%	16.2%	16.2%	6.5%	16.0%	16.7%	6.3%	60.7%	6.5%	16.7%	71.0%	6.7%
Maximum Green (s)	7.0	18.3	18.3	6.7	18.0	22.0	6.5	85.0	6.7	22.0	100.5	7.0
Yellow Time (s)	3.0	4.0	4.0	3.0	4.0	3.0	3.0	4.0	3.0	3.0	4.0	3.0
All-Red Time (s)	0.0	2.0	2.0	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
Lost Time Adjust (s)	1.0	-2.0	-2.0	1.0	-2.0	-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	1.0	4.0	4.0	1.0	4.0	4.0	1.0
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lead	Lead	Lag	Lead	Lead	Lag	Lead
Lead-Lag Optimize?	Yes	Yes	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	3.0	3.0
Recall Mode	None	None	None	None	None	Max	None	C-Max	None	Max	C-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 Effect Green (s)	11.6		7.5			46.0	91.7	87.0	99.7	129.4	124.0	142.7
Actuated g/C Ratio	0.08		0.05			0.31	0.61	0.58	0.66	0.86	0.83	0.95
v/c Ratio	0.20		0.09			2.10	0.14	1.05	0.26	0.95	0.51	0.00
Control Delay	65.4		0.8			526.4	9.1	61.9	2.6	74.0	5.1	0.0
Queue Delay	0.0		0.0			0.0	0.0	22.4	0.0	0.0	0.2	0.0
Total Delay	65.4		0.8			526.4	9.1	84.3	2.6	74.0	5.3	0.0
LOS	E		A			F	A	F	A	E	A	A
Approach Delay		38.0			526.4			76.6			17.9	
Approach LOS		D			F			E			B	

Intersection Summary

Area Type: Other

Cycle Length: 150

Actuated Cycle Length: 150

Offset: 0 (0%), Referenced to phase 2:NBT and 6:SBTL, Start of Green

Natural Cycle: 150

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 2.10

Intersection Signal Delay: 124.5

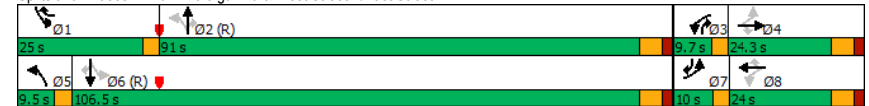
Intersection LOS: F

Intersection Capacity Utilization 142.7%

ICU Level of Service H

Analysis Period (min) 15

Splits and Phases: 104: Trafalgar Rd & West Street A/East Street A



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Queues
104: Trafalgar Rd & West Street A/East Street A

TT (2041) - Scenario A - East Side Only
Timing Plan: PM Peak Hour

	EBL	EBR	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group	EBL	EBR	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	27	20	1112	20	3089	300	480	2136	7
v/c Ratio	0.20	0.09	2.10	0.14	1.05	0.26	0.95	0.51	0.00
Control Delay	65.4	0.8	526.4	9.1	61.9	2.6	74.0	5.1	0.0
Queue Delay	0.0	0.0	0.0	0.0	22.4	0.0	0.0	0.2	0.0
Total Delay	65.4	0.8	526.4	9.1	84.3	2.6	74.0	5.3	0.0
Queue Length 50th (m)	7.3	0.0	~530.2	1.2	~359.8	5.2	~133.3	75.0	0.0
Queue Length 95th (m)	17.1	0.0	#611.3	3.0	#380.8	15.6	#202.1	84.3	0.0
Internal Link Dist (m)					209.3			227.9	
Turn Bay Length (m)	50.0	50.0	50.0	90.0		90.0	90.0		90.0
Base Capacity (vph)	141	337	530	153	2949	1141	506	4204	1511
Starvation Cap Reductn	0	0	0	0	372	0	0	1016	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.19	0.06	2.10	0.13	1.20	0.26	0.95	0.67	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.

HCM Signalized Intersection Capacity Analysis
104: Trafalgar Rd & West Street A/East Street A

TT (2041) - Scenario A - East Side Only
Timing Plan: PM Peak Hour

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰	↱	↲	↰	↱	↲	↰	↱	↲	↰	↱	↲
Traffic Volume (vph)	27	0	20	0	0	1112	20	3089	300	480	2136	7
Future Volume (vph)	27	0	20	0	0	1112	20	3089	300	480	2136	7
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0		4.0			1.0	4.0	4.0	1.0	4.0	4.0	1.0
Lane Util. Factor	1.00		1.00			1.00	1.00	0.91	1.00	1.00	0.91	1.00
Frt	1.00		0.85			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
Satd. Flow (prot)	1770		1583			1583	1770	5085	1583	1770	5085	1583
Flt Permitted	0.85		1.00			1.00	0.08	1.00	1.00	0.05	1.00	1.00
Satd. Flow (perm)	1585		1583			1583	152	5085	1583	90	5085	1583
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	27	0	20	0	0	1112	20	3089	300	480	2136	7
RTOR Reduction (vph)	0	0	19	0	0	45	0	0	97	0	0	1
Lane Group Flow (vph)	27	0	1	0	0	1067	20	3089	203	480	2136	6
Turn Type	pm+pt		Perm	pm+pt		pm+ov	pm+pt	NA	pm+ov	pm+pt	NA	pm+ov
Protected Phases	7	4		3	8	1	5	2	3	1	6	7
Permitted Phases	4		4	8		8	2		2	6		6
Actuated Green, G (s)	15.4		5.7			41.6	83.7	80.2	86.9	122.6	116.1	126.3
Effective Green, g (s)	13.9		7.7			45.6	81.7	82.2	90.9	121.6	118.1	130.3
Actuated g/C Ratio	0.09		0.05			0.30	0.54	0.55	0.61	0.81	0.79	0.87
Clearance Time (s)	3.0		6.0			3.0	3.0	6.0	3.0	3.0	6.0	3.0
Vehicle Extension (s)	3.0		3.0			3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	158		81			481	109	2786	959	503	4003	1375
v/s Ratio Prot	c0.01					c0.61	0.00	c0.61	c0.01	0.24	0.42	0.00
v/s Ratio Perm	0.01		0.00			0.06	0.10	0.12	0.12	0.53		0.00
v/c Ratio	0.17		0.01			2.22	0.18	1.11	0.21	0.95	0.53	0.00
Uniform Delay, d1	62.7		67.5			52.2	17.9	33.9	13.4	49.8	5.8	1.3
Progression Factor	1.00		1.00			1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	0.5		0.1			554.7	0.8	54.8	0.1	30.2	0.5	0.0
Delay (s)	63.2		67.6			606.9	18.7	88.7	13.5	80.1	6.4	1.3
Level of Service	E		E			F	B	F	B	F	A	A
Approach Delay (s)		65.1			606.9			81.7			19.8	
Approach LOS		E			F			F			B	

Intersection Summary

HCM 2000 Control Delay	140.2	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	1.42		
Actuated Cycle Length (s)	150.0	Sum of lost time (s)	16.0
Intersection Capacity Utilization	142.7%	ICU Level of Service	H
Analysis Period (min)	15		

c Critical Lane Group

Lanes, Volumes, Timings
105: Trafalgar Rd & William Halton Parkway

TT (2041) - Scenario A - East Side Only
Timing Plan: PM Peak Hour

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↩	↩↩	↩	↩	↩↩	↩	↩	↩↩	↩	↩	↩↩	↩
Traffic Volume (vph)	329	491	106	680	1516	547	305	2765	242	472	1596	346
Future Volume (vph)	329	491	106	680	1516	547	305	2765	242	472	1596	346
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
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	0.108			0.293			0.087			0.095		
Satd. Flow (perm)	201	3539	1583	546	3539	1583	162	5085	1583	177	5085	1583
Right Turn on Red			Yes			Yes			Yes		Yes	
Satd. Flow (RTOR)			106			229			97		225	
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		212.9			205.0			193.0			233.3	
Travel Time (s)		15.3			14.8			13.9			16.8	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	329	491	106	680	1516	547	305	2765	242	472	1596	346
Shared Lane Traffic (%)												
Lane Group Flow (vph)	329	491	106	680	1516	547	305	2765	242	472	1596	346
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

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Lanes, Volumes, Timings
105: Trafalgar Rd & William Halton Parkway

TT (2041) - Scenario A - East Side Only
Timing Plan: PM Peak Hour

	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)	14.0	38.0	38.0	14.2	38.0	38.0	13.9	42.9	42.9	13.9	42.9	42.9
Total Split (s)	31.0	46.2	46.2	29.8	45.0	45.0	24.0	56.0	56.0	18.0	50.0	50.0
Total Split (%)	20.7%	30.8%	30.8%	19.9%	30.0%	30.0%	16.0%	37.3%	37.3%	12.0%	33.3%	33.3%
Maximum Green (s)	28.0	39.2	39.2	26.8	38.0	38.0	21.0	49.1	49.1	15.0	43.1	43.1
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)	0.0	3.3	3.3	0.0	3.3	3.3	0.0	2.3	2.3	0.0	2.3	2.3
Lost Time Adjust (s)	1.0	-3.0	-3.0	1.0	-3.0	-3.0	1.0	-2.9	-2.9	1.0	-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	Max	Max	Max	Max	Max	Max
Walk Time (s)		7.0	7.0		7.0	7.0		7.0	7.0		7.0	7.0
Flash Dont Walk (s)		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 Effect Green (s)	66.7	41.0	41.0	66.7	41.0	41.0	70.0	52.0	52.0	60.0	46.0	46.0
Actuated g/C Ratio	0.45	0.28	0.28	0.45	0.28	0.28	0.47	0.35	0.35	0.40	0.31	0.31
v/c Ratio	0.91	0.50	0.21	1.49	1.55	0.91	1.04	1.56	0.39	2.14	1.02	0.54
Control Delay	70.7	47.4	7.8	258.3	290.9	50.2	105.8	286.9	23.5	550.6	76.9	17.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	70.7	47.4	7.8	258.3	290.9	50.2	105.8	286.9	23.5	550.6	76.9	17.7
LOS	E	D	A	F	F	D	F	F	C	F	E	B
Approach Delay		51.1			234.9			251.0			161.0	
Approach LOS		D			F			F			F	

Intersection Summary

Area Type: Other

Cycle Length: 150

Actuated Cycle Length: 148.8

Natural Cycle: 150

Control Type: Semi Act-Uncoord

Maximum v/c Ratio: 2.14

Intersection Signal Delay: 203.5

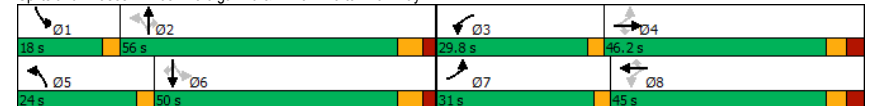
Intersection LOS: F

Intersection Capacity Utilization 153.0%

ICU Level of Service H

Analysis Period (min) 15

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



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Queues
105: Trafalgar Rd & William Halton Parkway

TT (2041) - Scenario A - East Side Only
Timing Plan: PM Peak Hour

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	329	491	106	680	1516	547	305	2765	242	472	1596	346
v/c Ratio	0.91	0.50	0.21	1.49	1.55	0.91	1.04	1.56	0.39	2.14	1.02	0.54
Control Delay	70.7	47.4	7.8	258.3	290.9	50.2	105.8	286.9	23.5	550.6	76.9	17.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	70.7	47.4	7.8	258.3	290.9	50.2	105.8	286.9	23.5	550.6	76.9	17.7
Queue Length 50th (m)	76.8	63.6	0.0	~231.0	~330.6	99.9	~80.6	~419.8	31.4	~205.6	~181.9	28.1
Queue Length 95th (m)	#129.1	81.1	14.2	#305.6	#372.5	#169.1	#139.8	#443.2	54.9	#273.4	#210.9	59.0
Internal Link Dist (m)	188.9			181.0			169.0			209.3		
Turn Bay Length (m)	100.0		100.0	100.0		150.0	150.0		75.0			
Base Capacity (vph)	376	1003	524	456	975	602	292	1777	616	221	1572	644
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	0.88	0.49	0.20	1.49	1.55	0.91	1.04	1.56	0.39	2.14	1.02	0.54

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.

HCM Signalized Intersection Capacity Analysis
105: Trafalgar Rd & William Halton Parkway

TT (2041) - Scenario A - East Side Only
Timing Plan: PM Peak Hour

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔
Traffic Volume (vph)	329	491	106	680	1516	547	305	2765	242	472	1596	346
Future Volume (vph)	329	491	106	680	1516	547	305	2765	242	472	1596	346
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	0.29	1.00	1.00	0.09	1.00	1.00	0.10	1.00	1.00
Satd. Flow (perm)	201	3539	1583	546	3539	1583	162	5085	1583	177	5085	1583
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	329	491	106	680	1516	547	305	2765	242	472	1596	346
RTOR Reduction (vph)	0	0	77	0	0	166	0	0	63	0	0	155
Lane Group Flow (vph)	329	491	29	680	1516	381	305	2765	179	472	1596	191

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)	64.8	38.0	38.0	64.8	38.0	38.0	67.1	49.1	49.1	58.1	43.1	43.1
Effective Green, g (s)	62.8	41.0	41.0	62.8	41.0	41.0	66.1	52.0	52.0	56.1	46.0	46.0
Actuated g/C Ratio	0.42	0.28	0.28	0.42	0.28	0.28	0.44	0.35	0.35	0.38	0.31	0.31
Clearance Time (s)	3.0	7.0	7.0	3.0	7.0	7.0	3.0	6.9	6.9	3.0	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)	356	975	436	442	975	436	288	1777	553	216	1571	489
v/s Ratio Prot	0.16	0.14		c0.27	c0.43		0.14	c0.54		c0.21	0.31	
v/s Ratio Perm	0.23		0.02	0.38		0.24	0.33		0.11	c0.62		0.12
v/c Ratio	0.92	0.50	0.07	1.54	1.55	0.87	1.06	1.56	0.32	2.19	1.02	0.39
Uniform Delay, d1	45.2	45.3	39.8	36.2	53.9	51.4	47.9	48.4	35.5	43.8	51.4	40.4
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	29.0	0.9	0.1	253.4	254.8	18.6	69.4	253.0	1.5	548.3	26.7	2.3
Delay (s)	74.2	46.2	39.9	289.7	308.7	70.1	117.4	301.4	37.0	592.1	78.1	42.7
Level of Service	E	D	D	F	F	E	F	F	D	F	E	D
Approach Delay (s)		55.4			256.4			265.1			173.6	
Approach LOS		E			F			F			F	

Intersection Summary

HCM 2000 Control Delay	218.4	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	1.74		
Actuated Cycle Length (s)	148.8	Sum of lost time (s)	16.0
Intersection Capacity Utilization	153.0%	ICU Level of Service	H
Analysis Period (min)	15		

c Critical Lane Group

Lanes, Volumes, Timings TT (2041) - Scenario A - East Side Only
106: Trafalgar Rd & Burnhamthorpe Rd/Burnhamthorpe Rd Timing Plan: PM Peak Hour

	←	→	↙	↘	←	↙	↘	→	↙	↘	→	↙	↘
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations	↙	↘		↙	↘		↙	↘	↙	↘	↙	↘	
Traffic Volume (vph)	158	339	18	135	297	521	100	2322	145	328	1579	272	
Future Volume (vph)	158	339	18	135	297	521	100	2322	145	328	1579	272	
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	1.00	1.00	1.00	1.00	1.00	1.00	0.91	1.00	1.00	0.91	1.00	
Frt		0.992			0.904				0.850			0.850	
Flt Protected	0.950			0.950			0.950			0.950			
Satd. Flow (prot)	1770	1848	0	1770	1684	0	1770	5085	1583	1770	5085	1583	
Flt Permitted	0.137			0.246			0.105			0.095			
Satd. Flow (perm)	255	1848	0	458	1684	0	196	5085	1583	177	5085	1583	
Right Turn on Red			Yes			Yes			Yes			Yes	
Satd. Flow (RTOR)		2			83				102			272	
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	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Adj. Flow (vph)	158	339	18	135	297	521	100	2322	145	328	1579	272	
Shared Lane Traffic (%)													
Lane Group Flow (vph)	158	357	0	135	818	0	100	2322	145	328	1579	272	
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	pm+ov	pm+pt	NA	pm+ov	
Protected Phases	7	4		3	8		5	2	3	1	6	7	
Permitted Phases	4			8			2		2	6		6	

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Synchro 10 Report
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Lanes, Volumes, Timings TT (2041) - Scenario A - East Side Only
106: Trafalgar Rd & Burnhamthorpe Rd/Burnhamthorpe Rd Timing Plan: PM Peak Hour

	←	→	↙	↘	←	↙	↘	→	↙	↘	→	↙	↘
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Detector Phase	7	4		3	8		5	2	3	1	6	7	
Switch Phase													
Minimum Initial (s)	5.0	10.0		5.0	10.0		5.0	20.0	5.0	7.0	20.0	5.0	
Minimum Split (s)	9.5	24.0		9.5	24.0		9.5	26.0	9.5	11.5	26.0	9.5	
Total Split (s)	10.0	36.2		11.8	38.0		9.6	45.0	11.8	17.0	52.4	10.0	
Total Split (%)	9.1%	32.9%		10.7%	34.5%		8.7%	40.9%	10.7%	15.5%	47.6%	9.1%	
Maximum Green (s)	7.0	30.2		8.8	32.0		6.6	39.0	8.8	14.0	46.4	7.0	
Yellow Time (s)	3.0	3.7		3.0	3.7		3.0	4.6	3.0	3.0	4.6	3.0	
All-Red Time (s)	0.0	2.3		0.0	2.3		0.0	1.4	0.0	0.0	1.4	0.0	
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	1.0	4.0	4.0	1.0	
Lead/Lag	Lead	Lag		Lead	Lag		Lead	Lag	Lead	Lag	Lag	Lead	
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	Max	None		Max	None		Max	Max	Max	Max	Max	Max	
Act Effct Green (s)	38.2	32.2		41.8	34.0		46.6	41.0	55.8	58.0	48.4	61.4	
Actuated g/C Ratio	0.35	0.29		0.38	0.31		0.42	0.37	0.51	0.53	0.44	0.56	
v/c Ratio	0.92	0.66		0.51	1.42		0.61	1.23	0.17	1.17	0.71	0.27	
Control Delay	79.5	40.7		28.8	226.6		32.6	138.3	5.6	134.8	27.2	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	79.5	40.7		28.8	226.6		32.6	138.3	5.6	134.8	27.2	2.1	
LOS	E	D		C	F		C	F	A	F	C	A	
Approach Delay		52.6			198.6			126.7			40.2		
Approach LOS		D			F			F			D		

Intersection Summary

Area Type: Other

Cycle Length: 110

Actuated Cycle Length: 110

Natural Cycle: 110

Control Type: Semi Act-Uncooord

Maximum v/c Ratio: 1.42

Intersection Signal Delay: 101.3

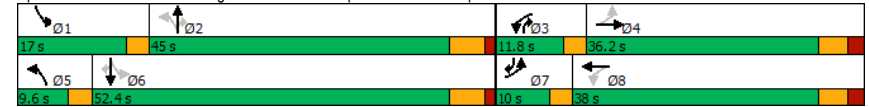
Intersection LOS: F

Intersection Capacity Utilization 132.7%

ICU Level of Service H

Analysis Period (min) 15

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



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Synchro 10 Report
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Queues
106: Trafalgar Rd & Burhamthorpe Rd/Burnhamthorpe Rd

TT (2041) - Scenario A - East Side Only
Timing Plan: PM Peak Hour

	EBL	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	158	357	135	818	100	2322	145	328	1579	272
v/c Ratio	0.92	0.66	0.51	1.42	0.61	1.23	0.17	1.17	0.71	0.27
Control Delay	79.5	40.7	28.8	226.6	32.6	138.3	5.6	134.8	27.2	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	79.5	40.7	28.8	226.6	32.6	138.3	5.6	134.8	27.2	2.1
Queue Length 50th (m)	21.7	65.8	18.3	~222.6	10.2	~222.4	4.4	~66.5	97.1	0.0
Queue Length 95th (m)	#54.2	97.1	31.4	#294.6	#24.3	#250.9	14.2	#120.5	114.1	10.7
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	
Base Capacity (vph)	171	542	267	577	163	1895	853	281	2237	1003
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	0.92	0.66	0.51	1.42	0.61	1.23	0.17	1.17	0.71	0.27

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.

HCM Signalized Intersection Capacity Analysis
106: Trafalgar Rd & Burhamthorpe Rd/Burnhamthorpe Rd

TT (2041) - Scenario A - East Side Only
Timing Plan: PM Peak Hour

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔
Traffic Volume (vph)	158	339	18	135	297	521	100	2322	145	328	1579	272
Future Volume (vph)	158	339	18	135	297	521	100	2322	145	328	1579	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	1.0	4.0	4.0	1.0
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	0.99		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	1849		1770	1685		1770	5085	1583	1770	5085	1583
Flt Permitted	0.14	1.00		0.25	1.00		0.11	1.00	1.00	0.10	1.00	1.00
Satd. Flow (perm)	255	1849		459	1685		196	5085	1583	177	5085	1583
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	158	339	18	135	297	521	100	2322	145	328	1579	272
RTOR Reduction (vph)	0	1	0	0	57	0	0	0	54	0	0	130
Lane Group Flow (vph)	158	356	0	135	761	0	100	2322	91	328	1579	142
Turn Type	pm+pt	NA		pm+pt	NA		pm+pt	NA	pm+ov	pm+pt	NA	pm+ov
Protected Phases	7	4		3	8		5	2	3	1	6	7
Permitted Phases	4			8			2		2	6		6
Actuated Green, G (s)	37.2	30.2		40.8	32.0		45.6	39.0	47.8	56.0	46.4	53.4
Effective Green, g (s)	35.2	32.2		38.8	34.0		43.6	41.0	51.8	55.0	48.4	57.4
Actuated g/C Ratio	0.32	0.29		0.35	0.31		0.40	0.37	0.47	0.50	0.44	0.52
Clearance Time (s)	3.0	6.0		3.0	6.0		3.0	6.0	3.0	3.0	6.0	3.0
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)	164	541		254	520		157	1895	745	276	2237	826
v/s Ratio Prot	c0.05	0.19		0.04	c0.45		0.03	c0.46	c0.01	c0.14	0.31	0.01
v/s Ratio Perm	0.26			0.15			0.22		0.05	0.45		0.08
v/c Ratio	0.96	0.66		0.53	1.46		0.64	1.23	0.12	1.19	0.71	0.17
Uniform Delay, d1	34.5	34.1		26.5	38.0		23.2	34.5	16.3	32.9	25.0	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	59.0	2.9		2.1	218.7		18.1	106.3	0.3	115.1	1.9	0.5
Delay (s)	93.5	36.9		28.6	256.7		41.3	140.8	16.7	148.0	26.9	14.3
Level of Service	F	D		C	F		D	F	B	F	C	B
Approach Delay (s)		54.3			224.4			129.9			43.6	
Approach LOS		D			F			F			D	

Intersection Summary

HCM 2000 Control Delay	107.9	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	1.29		
Actuated Cycle Length (s)	110.0	Sum of lost time (s)	16.0
Intersection Capacity Utilization	132.7%	ICU Level of Service	H
Analysis Period (min)	15		
c Critical Lane Group			

Lanes, Volumes, Timings
202: Trafalgar Rd & East Street C

TT (2041) - Scenario A - East Side Only
Timing Plan: PM Peak Hour

						
Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations				  	  	
Traffic Volume (vph)	0	0	0	3001	2179	0
Future Volume (vph)	0	0	0	3001	2179	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (m)	0.0	0.0	0.0			90.0
Storage Lanes	0	1	0			1
Taper Length (m)	7.5		7.5			
Lane Util. Factor	1.00	1.00	1.00	0.91	0.91	1.00
Frt						
Flt Protected						
Satd. Flow (prot)	0	1863	0	5085	5085	1863
Flt Permitted						
Satd. Flow (perm)	0	1863	0	5085	5085	1863
Link Speed (k/h)	50			50	50	
Link Distance (m)	205.4			92.4	193.0	
Travel Time (s)	14.8			6.7	13.9	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	0	0	0	3001	2179	0
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	0	0	3001	2179	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	0.0			3.6	3.6	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	4.8			4.8	4.8	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)	25	15	25			15
Sign Control	Stop			Free	Free	
Intersection Summary						
Area Type:	Other					
Control Type: Unsignalized						
Intersection Capacity Utilization 61.3%				ICU Level of Service B		
Analysis Period (min) 15						

HCM Unsignalized Intersection Capacity Analysis
202: Trafalgar Rd & East Street C

TT (2041) - Scenario A - East Side Only
Timing Plan: PM Peak Hour

								
Movement	EBL	EBR	NBL	NBT	SBT	SBR		
Lane Configurations				  	  			
Traffic Volume (veh/h)	0	0	0	3001	2179	0		
Future Volume (Veh/h)	0	0	0	3001	2179	0		
Sign Control	Stop			Free	Free			
Grade	0%			0%	0%			
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00		
Hourly flow rate (vph)	0	0	0	3001	2179	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)				263	193			
pX, platoon unblocked	0.79	0.71	0.71					
vC, conflicting volume	3179	726	2179					
vC1, stage 1 conf vol								
vC2, stage 2 conf vol								
vCu, unblocked vol	328	0	1213					
tC, single (s)	6.8	6.9	4.1					
tC, 2 stage (s)								
tF (s)	3.5	3.3	2.2					
p0 queue free %	100	100	100					
cM capacity (veh/h)	508	766	403					
Direction, Lane #	EB 1	NB 1	NB 2	NB 3	SB 1	SB 2	SB 3	SB 4
Volume Total	0	1000	1000	1000	726	726	726	0
Volume Left	0	0	0	0	0	0	0	0
Volume Right	0	0	0	0	0	0	0	0
cSH	1700	1700	1700	1700	1700	1700	1700	1700
Volume to Capacity	0.00	0.59	0.59	0.59	0.43	0.43	0.43	0.00
Queue Length 95th (m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Control Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Lane LOS	A							
Approach Delay (s)	0.0	0.0	0.0					
Approach LOS	A							
Intersection Summary								
Average Delay	0.0							
Intersection Capacity Utilization	61.3%			ICU Level of Service			B	
Analysis Period (min)	15							

Lanes, Volumes, Timings
203: East Street D & East Street A

TT (2041) - Scenario A - East Side Only
Timing Plan: PM Peak Hour

						
Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	144	578	0	345	446	0
Future Volume (vph)	144	578	0	345	446	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	0.850					
Flt Protected			0.950			
Satd. Flow (prot)	1863	1583	0	1863	1770	0
Flt Permitted			0.950			
Satd. Flow (perm)	1863	1583	0	1863	1770	0
Link Speed (k/h)	50			50	50	
Link Distance (m)	205.9			205.1	113.3	
Travel Time (s)	14.8			14.8	8.2	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	144	578	0	345	446	0
Shared Lane Traffic (%)						
Lane Group Flow (vph)	144	578	0	345	446	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
Sign Control	Free			Free	Stop	
Intersection Summary						
Area Type:	Other					
Control Type:	Unsignalized					
Intersection Capacity Utilization	60.6%			ICU Level of Service B		
Analysis Period (min)	15					

HCM Unsignalized Intersection Capacity Analysis
203: East Street D & East Street A

TT (2041) - Scenario A - East Side Only
Timing Plan: PM Peak Hour

	→	↖	↗	←	↖	↗
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑	↑		↑	↑	
Traffic Volume (veh/h)	144	578	0	345	446	0
Future Volume (Veh/h)	144	578	0	345	446	0
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	144	578	0	345	446	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)	206					
pX, platoon unblocked						
vC, conflicting volume			722		489	144
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			722		489	144
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			100		17	100
cM capacity (veh/h)			880		538	903
Direction, Lane #	EB 1	EB 2	WB 1	NB 1		
Volume Total	144	578	345	446		
Volume Left	0	0	0	446		
Volume Right	0	578	0	0		
cSH	1700	1700	880	538		
Volume to Capacity	0.08	0.34	0.00	0.83		
Queue Length 95th (m)	0.0	0.0	0.0	63.0		
Control Delay (s)	0.0	0.0	0.0	36.2		
Lane LOS				E		
Approach Delay (s)	0.0		0.0	36.2		
Approach LOS				E		
Intersection Summary						
Average Delay			10.7			
Intersection Capacity Utilization			60.6%		ICU Level of Service	B
Analysis Period (min)			15			

Lanes, Volumes, Timings
204: East Street E & East Street A

TT (2041) - Scenario A - East Side Only
Timing Plan: PM Peak Hour

	→	↖	↗	←	↖	↗
Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↖			↖	↖	↖
Traffic Volume (vph)	0	77	0	0	367	0
Future Volume (vph)	0	77	0	0	367	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.865					
Flt Protected					0.950	
Satd. Flow (prot)	1611	0	0	1863	1770	0
Flt Permitted					0.950	
Satd. Flow (perm)	1611	0	0	1863	1770	0
Link Speed (k/h)	50			50	50	
Link Distance (m)	205.1			192.2	115.1	
Travel Time (s)	14.8			13.8	8.3	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	0	77	0	0	367	0
Shared Lane Traffic (%)						
Lane Group Flow (vph)	77	0	0	0	367	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	0.0			0.0	3.6	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	4.8			4.8	4.8	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)		15	25		25	15
Sign Control	Free			Free	Stop	
Intersection Summary						
Area Type:	Other					
Control Type:	Unsignalized					
Intersection Capacity Utilization 31.8%	ICU Level of Service A					
Analysis Period (min) 15						

HCM Unsignalized Intersection Capacity Analysis
204: East Street E & East Street A

TT (2041) - Scenario A - East Side Only
Timing Plan: PM Peak Hour

	→	↖	↗	←	↖	↗
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↖			↖	↖	↖
Traffic Volume (veh/h)	0	77	0	0	367	0
Future Volume (Veh/h)	0	77	0	0	367	0
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	0	77	0	0	367	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			77		38	38
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			77		38	38
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			100		62	100
cM capacity (veh/h)			1522		973	1033
Direction, Lane #	EB 1	WB 1	NB 1			
Volume Total	77	0	367			
Volume Left	0	0	367			
Volume Right	77	0	0			
cSH	1700	1700	973			
Volume to Capacity	0.05	0.00	0.38			
Queue Length 95th (m)	0.0	0.0	13.3			
Control Delay (s)	0.0	0.0	10.9			
Lane LOS			B			
Approach Delay (s)	0.0	0.0	10.9			
Approach LOS			B			
Intersection Summary						
Average Delay			9.0			
Intersection Capacity Utilization			31.8%		ICU Level of Service	A
Analysis Period (min)			15			

Lanes, Volumes, Timings
205: East Street F & East Street A

TT (2041) - Scenario A - East Side Only
Timing Plan: PM Peak Hour

						
Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
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	1.00	1.00	1.00
Frt						
Flt Protected						
Satd. Flow (prot)	1863	0	0	1863	1863	0
Flt Permitted						
Satd. Flow (perm)	1863	0	0	1863	1863	0
Link Speed (k/h)	50			50	50	
Link Distance (m)	192.2			209.4	115.6	
Travel Time (s)	13.8			15.1	8.3	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
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)	0.0			0.0	3.6	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	4.8			4.8	4.8	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)		15	25		25	15
Sign Control	Free			Free	Stop	
Intersection Summary						
Area Type:	Other					
Control Type:	Unsignalized					
Intersection Capacity Utilization	0.0%			ICU Level of Service A		
Analysis Period (min)	15					

HCM Unsignalized Intersection Capacity Analysis
205: East Street F & East Street A

TT (2041) - Scenario A - East Side Only
Timing Plan: PM Peak Hour

	→	↖	↗	←	↖	↗
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↖			↖	↖	
Traffic Volume (veh/h)	0	0	0	0	0	0
Future Volume (Veh/h)	0	0	0	0	0	0
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	0	0	0	0	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			0		0	0
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			0		0	0
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			100		100	100
cM capacity (veh/h)			1623		1023	1085
Direction, Lane #	EB 1	WB 1	NB 1			
Volume Total	0	0	0			
Volume Left	0	0	0			
Volume Right	0	0	0			
cSH	1700	1700	1700			
Volume to Capacity	0.00	0.00	0.00			
Queue Length 95th (m)	0.0	0.0	0.0			
Control Delay (s)	0.0	0.0	0.0			
Lane LOS			A			
Approach Delay (s)	0.0	0.0	0.0			
Approach LOS			A			
Intersection Summary						
Average Delay			0.0			
Intersection Capacity Utilization			0.0%		ICU Level of Service	A
Analysis Period (min)			15			

Lanes, Volumes, Timings
206: East Street D & East Street B

TT (2041) - Scenario A - East Side Only
Timing Plan: PM Peak Hour

	←	←	↑	↘	↘	↓
Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	↘		↘			↘
Traffic Volume (vph)	125	10	215	28	28	478
Future Volume (vph)	125	10	215	28	28	478
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		0.984			
Flt Protected	0.956					0.997
Satd. Flow (prot)	1763	0	1833	0	0	1857
Flt Permitted	0.956					0.997
Satd. Flow (perm)	1763	0	1833	0	0	1857
Link Speed (k/h)	50		50			50
Link Distance (m)	203.4		120.6			113.3
Travel Time (s)	14.6		8.7			8.2
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	125	10	215	28	28	478
Shared Lane Traffic (%)						
Lane Group Flow (vph)	135	0	243	0	0	506
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 57.3%
Analysis Period (min) 15

ICU Level of Service B

HCM Unsignalized Intersection Capacity Analysis
206: East Street D & East Street B

TT (2041) - Scenario A - East Side Only
Timing Plan: PM Peak Hour

	←	←	↑	↘	↘	↓
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	↘		↘			↘
Traffic Volume (veh/h)	125	10	215	28	28	478
Future Volume (Veh/h)	125	10	215	28	28	478
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	125	10	215	28	28	478
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	763	229			243	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	763	229			243	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	66	99			98	
cM capacity (veh/h)	364	810			1323	

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	135	243	506
Volume Left	125	0	28
Volume Right	10	28	0
cSH	380	1700	1323
Volume to Capacity	0.36	0.14	0.02
Queue Length 95th (m)	11.8	0.0	0.5
Control Delay (s)	19.6	0.0	0.6
Lane LOS	C		A
Approach Delay (s)	19.6	0.0	0.6
Approach LOS	C		

Intersection Summary

Average Delay 3.4
Intersection Capacity Utilization 57.3% ICU Level of Service B
Analysis Period (min) 15

Lanes, Volumes, Timings
207: East Street E & East Street B

TT (2041) - Scenario A - East Side Only
Timing Plan: PM Peak Hour

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔			↔			↔			↔	
Traffic Volume (vph)	148	0	162	0	0	0	228	22	0	0	77	0
Future Volume (vph)	148	0	162	0	0	0	228	22	0	0	77	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	0.929											
Flt Protected	0.977											
Satd. Flow (prot)	0	1691	0	0	1863	0	0	1781	0	0	1863	0
Flt Permitted	0.977											
Satd. Flow (perm)	0	1691	0	0	1863	0	0	1781	0	0	1863	0
Link Speed (k/h)	50											
Link Distance (m)	203.4											
Travel Time (s)	14.6											
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	148	0	162	0	0	0	228	22	0	0	77	0
Shared Lane Traffic (%)	0											
Lane Group Flow (vph)	0	310	0	0	0	0	0	250	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											
Link Offset(m)	0.0											
Crosswalk Width(m)	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											

Intersection Summary

Area Type: Other

Control Type: Unsignalized

Intersection Capacity Utilization 45.3% ICU Level of Service A

Analysis Period (min) 15

HCM Unsignalized Intersection Capacity Analysis
207: East Street E & East Street B

TT (2041) - Scenario A - East Side Only
Timing Plan: PM Peak Hour

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Movement		↔			↔			↔			↔	
Lane Configurations		↔			↔			↔			↔	
Traffic Volume (veh/h)	148	0	162	0	0	0	228	22	0	0	77	0
Future Volume (Veh/h)	148	0	162	0	0	0	228	22	0	0	77	0
Sign Control	Stop											
Grade	0%											
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	148	0	162	0	0	0	228	22	0	0	77	0
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type	None											
Median storage (veh)												
Upstream signal (m)	121											
pX, platoon unblocked												
vC, conflicting volume	555	555	77	717	555	22	77			22		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	555	555	77	717	555	22	77			22		
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 %	62	100	84	100	100	100	85			100		
cM capacity (veh/h)	391	374	984	255	374	1055	1522			1593		

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	310	0	250	77
Volume Left	148	0	228	0
Volume Right	162	0	0	0
cSH	571	1700	1522	1593
Volume to Capacity	0.54	0.00	0.15	0.00
Queue Length 95th (m)	24.3	0.0	4.0	0.0
Control Delay (s)	18.5	0.0	7.2	0.0
Lane LOS	C	A	A	
Approach Delay (s)	18.5	0.0	7.2	0.0
Approach LOS	C	A		

Intersection Summary

Average Delay	11.8			
Intersection Capacity Utilization	45.3%	ICU Level of Service	A	
Analysis Period (min)	15			

Lanes, Volumes, Timings
208: East Street F & East Street B

TT (2041) - Scenario A - East Side Only
Timing Plan: PM Peak Hour

						
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	1.00	1.00	1.00
Friction						
Flt Protected						
Satd. Flow (prot)	1863	0	0	1863	1863	0
Flt Permitted						
Satd. Flow (perm)	1863	0	0	1863	1863	0
Link Speed (k/h)	50			50	50	
Link Distance (m)	193.8			120.1	115.6	
Travel Time (s)	14.0			8.6	8.3	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
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			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	25			15
Sign Control	Stop			Free	Free	
Intersection Summary						
Area Type:	Other					
Control Type: Unsignalized						
Intersection Capacity Utilization 0.0%				ICU Level of Service A		
Analysis Period (min) 15						

HCM Unsignalized Intersection Capacity Analysis
208: East Street F & East Street B

TT (2041) - Scenario A - East Side Only
Timing Plan: PM Peak Hour

	EBL	EBR	NBL	NBT	SBT	SBR
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	0	0	0	0	0	0
Future Volume (Veh/h)	0	0	0	0	0	0
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	0	0	0	0	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	0	0	0			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	0	0	0			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	100	100	100			
cM capacity (veh/h)	1023	1085	1623			
Direction, Lane #	EB 1	NB 1	SB 1			
Volume Total	0	0	0			
Volume Left	0	0	0			
Volume Right	0	0	0			
cSH	1700	1700	1700			
Volume to Capacity	0.00	0.00	0.00			
Queue Length 95th (m)	0.0	0.0	0.0			
Control Delay (s)	0.0	0.0	0.0			
Lane LOS	A					
Approach Delay (s)	0.0	0.0	0.0			
Approach LOS	A					
Intersection Summary						
Average Delay		0.0				
Intersection Capacity Utilization		0.0%		ICU Level of Service A		
Analysis Period (min)		15				

Lanes, Volumes, Timings
209: William Halton Parkway & East Street D

TT (2041) - Scenario A - East Side Only
Timing Plan: PM Peak Hour

						
Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑↑	↑↑	↑		↑
Traffic Volume (vph)	0	1215	2180	84	0	563
Future Volume (vph)	0	1215	2180	84	0	563
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (m)	0.0			50.0	0.0	0.0
Storage Lanes	0			1	0	1
Taper Length (m)	7.5				7.5	
Lane Util. Factor	1.00	0.95	0.95	1.00	1.00	1.00
Frt				0.850		0.865
Flt Protected						
Satd. Flow (prot)	0	3539	3539	1583	0	1611
Flt Permitted						
Satd. Flow (perm)	0	3539	3539	1583	0	1611
Link Speed (k/h)		50	50		50	
Link Distance (m)		205.0	201.5		120.6	
Travel Time (s)		14.8	14.5		8.7	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	0	1215	2180	84	0	563
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	1215	2180	84	0	563
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(m)		3.6	3.6		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	25	15
Sign Control		Free	Free		Stop	
Intersection Summary						
Area Type:	Other					
Control Type:	Unsignalized					
Intersection Capacity Utilization	101.8%			ICU Level of Service G		
Analysis Period (min)	15					

HCM Unsignalized Intersection Capacity Analysis
209: William Halton Parkway & East Street D

TT (2041) - Scenario A - East Side Only
Timing Plan: PM Peak Hour

	EBL	EBT	WBT	WBR	SBL	SBR
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑↑	↑↑	↑		↑
Traffic Volume (veh/h)	0	1215	2180	84	0	563
Future Volume (Veh/h)	0	1215	2180	84	0	563
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	0	1215	2180	84	0	563
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		None	None			
Median storage (veh)						
Upstream signal (m)		205	201			
pX, platoon unblocked	0.40				0.45	0.40
vC, conflicting volume	2264				2788	1090
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1142				1412	0
tC, single (s)	4.1				6.8	6.9
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	100				100	0
cM capacity (veh/h)	241				58	429
Direction, Lane #	EB 1	EB 2	WB 1	WB 2	WB 3	SB 1
Volume Total	608	608	1090	1090	84	563
Volume Left	0	0	0	0	0	0
Volume Right	0	0	0	0	84	563
cSH	1700	1700	1700	1700	1700	429
Volume to Capacity	0.36	0.36	0.64	0.64	0.05	1.31
Queue Length 95th (m)	0.0	0.0	0.0	0.0	0.0	188.3
Control Delay (s)	0.0	0.0	0.0	0.0	0.0	182.5
Lane LOS						F
Approach Delay (s)	0.0		0.0			182.5
Approach LOS						F
Intersection Summary						
Average Delay			25.4			
Intersection Capacity Utilization			101.8%		ICU Level of Service	G
Analysis Period (min)			15			

Lanes, Volumes, Timings

210: William Halton Parkway & East Street E

TT (2041) - Scenario A - East Side Only

Timing Plan: PM Peak Hour

	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations	↰	↱	↱	↱	↰	↰
Traffic Volume (vph)	221	974	2178	39	153	86
Future Volume (vph)	221	974	2178	39	153	86
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (m)	90.0			50.0	0.0	0.0
Storage Lanes	1			1	1	0
Taper Length (m)	100.0				7.5	
Lane Util. Factor	1.00	*0.95	*0.95	1.00	1.00	1.00
Frt				0.850	0.951	
Flt Protected	0.950				0.969	
Satd. Flow (prot)	1770	3539	3539	1583	1717	0
Flt Permitted	0.053				0.969	
Satd. Flow (perm)	99	3539	3539	1583	1717	0
Right Turn on Red				Yes		Yes
Satd. Flow (RTOR)				20	20	
Link Speed (k/h)		50	50		50	
Link Distance (m)		201.5	195.6		120.6	
Travel Time (s)		14.5	14.1		8.7	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	221	974	2178	39	153	86
Shared Lane Traffic (%)						
Lane Group Flow (vph)	221	974	2178	39	239	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
Number of Detectors	1	2	2	1	1	
Detector Template	Left	Thru	Thru	Right	Left	
Leading Detector (m)	2.0	10.0	10.0	2.0	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)	2.0	0.6	0.6	2.0	2.0	
Detector 1 Type	CI+Ex	CI+Ex	CI+Ex	CI+Ex	CI+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		CI+Ex	CI+Ex			
Detector 2 Channel						
Detector 2 Extend (s)		0.0	0.0			
Turn Type	pm+pt	NA	NA	Perm	Perm	
Protected Phases	7	4	8			
Permitted Phases	4			8	6	

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Lanes, Volumes, Timings

210: William Halton Parkway & East Street E

TT (2041) - Scenario A - East Side Only

Timing Plan: PM Peak Hour

	EBL	EBT	WBT	WBR	SBL	SBR
Detector Phase	7	4	8	8	6	
Switch Phase						
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	
Minimum Split (s)	9.5	24.0	24.0	24.0	24.0	
Total Split (s)	17.6	95.6	78.0	78.0	24.4	
Total Split (%)	14.7%	79.7%	65.0%	65.0%	20.3%	
Maximum Green (s)	14.6	89.6	72.0	72.0	18.4	
Yellow Time (s)	3.0	4.0	4.0	4.0	4.0	
All-Red Time (s)	0.0	2.0	2.0	2.0	2.0	
Lost Time Adjust (s)	1.0	-2.0	-2.0	-2.0	-2.0	
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	
Lead/Lag	Lead		Lag	Lag		
Lead-Lag Optimize?	Yes		Yes	Yes		
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	
Flash Dont Walk (s)		11.0	11.0	11.0	11.0	
Pedestrian Calls (#/hr)		0	0	0	0	
Act Effct Green (s)	91.7	91.7	74.0	74.0	19.3	
Actuated g/C Ratio	0.77	0.77	0.62	0.62	0.16	
v/c Ratio	0.83	0.36	0.99	0.04	0.81	
Control Delay	55.8	4.9	39.6	5.5	65.2	
Queue Delay	0.0	0.0	0.0	0.0	0.0	
Total Delay	55.8	4.9	39.6	5.5	65.2	
LOS	E	A	D	A	E	
Approach Delay		14.3	39.0		65.2	
Approach LOS		B	D		E	

Intersection Summary

Area Type: Other

Cycle Length: 120

Actuated Cycle Length: 119

Natural Cycle: 110

Control Type: Semi Act-Uncoord

Maximum v/c Ratio: 0.99

Intersection Signal Delay: 32.6

Intersection LOS: C

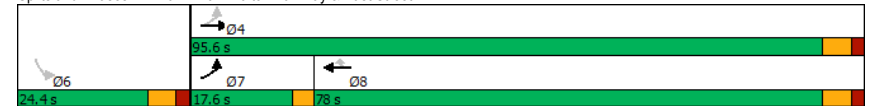
Intersection Capacity Utilization 96.2%

ICU Level of Service F

Analysis Period (min) 15

* User Entered Value

Splits and Phases: 210: William Halton Parkway & East Street E

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Queues
210: William Halton Parkway & East Street E

TT (2041) - Scenario A - East Side Only
Timing Plan: PM Peak Hour

	EBL	EBT	WBT	WBR	SBL
Lane Group	EBL	EBT	WBT	WBR	SBL
Lane Group Flow (vph)	221	974	2178	39	239
v/c Ratio	0.83	0.36	0.99	0.04	0.81
Control Delay	55.8	4.9	39.6	5.5	65.2
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	55.8	4.9	39.6	5.5	65.2
Queue Length 50th (m)	34.4	33.0	248.4	1.6	49.3
Queue Length 95th (m)	#75.1	40.8	#317.3	5.7	#85.9
Internal Link Dist (m)		177.5	171.6		96.6
Turn Bay Length (m)	90.0			50.0	
Base Capacity (vph)	267	2725	2202	992	311
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	0.83	0.36	0.99	0.04	0.77

Intersection Summary

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

HCM Signalized Intersection Capacity Analysis
210: William Halton Parkway & East Street E

TT (2041) - Scenario A - East Side Only
Timing Plan: PM Peak Hour

	EBL	EBT	WBT	WBR	SBL	SBR
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations	↰	↱	↰	↱	↰	↱
Traffic Volume (vph)	221	974	2178	39	153	86
Future Volume (vph)	221	974	2178	39	153	86
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	
Lane Util. Factor	1.00	*0.95	*0.95	1.00	1.00	
Flt	1.00	1.00	1.00	0.85	0.95	
Flt Protected	0.95	1.00	1.00	1.00	0.97	
Satd. Flow (prot)	1770	3539	3539	1583	1717	
Flt Permitted	0.05	1.00	1.00	1.00	0.97	
Satd. Flow (perm)	99	3539	3539	1583	1717	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	221	974	2178	39	153	86
RTOR Reduction (vph)	0	0	0	8	17	0
Lane Group Flow (vph)	221	974	2178	31	222	0
Turn Type	pm+pt	NA	NA	Perm	Perm	
Protected Phases	7	4	8			
Permitted Phases	4			8	6	
Actuated Green, G (s)	89.6	89.6	72.0	72.0	17.3	
Effective Green, g (s)	88.6	91.6	74.0	74.0	19.3	
Actuated g/C Ratio	0.75	0.77	0.62	0.62	0.16	
Clearance Time (s)	3.0	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)	264	2726	2202	985	278	
v/s Ratio Prot	c0.10	0.28	c0.62			
v/s Ratio Perm	0.52			0.02	c0.13	
v/c Ratio	0.84	0.36	0.99	0.03	0.80	
Uniform Delay, d1	40.5	4.3	22.1	8.6	47.9	
Progression Factor	1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	25.9	0.4	16.8	0.1	14.8	
Delay (s)	66.4	4.7	38.8	8.7	62.7	
Level of Service	E	A	D	A	E	
Approach Delay (s)		16.1	38.3		62.7	
Approach LOS		B	D		E	

Intersection Summary

HCM 2000 Control Delay	32.6	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.95		
Actuated Cycle Length (s)	118.9	Sum of lost time (s)	14.0
Intersection Capacity Utilization	96.2%	ICU Level of Service	F
Analysis Period (min)	15		

c Critical Lane Group

Lanes, Volumes, Timings
211: William Halton Parkway & East Street F

TT (2041) - Scenario A - East Side Only
Timing Plan: PM Peak Hour

						
Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		 	 		 	
Traffic Volume (vph)	0	1127	2217	0	0	0
Future Volume (vph)	0	1127	2217	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (m)	90.0			0.0	0.0	0.0
Storage Lanes	1			0	1	0
Taper Length (m)	100.0				7.5	
Lane Util. Factor	1.00	0.95	0.95	0.95	1.00	1.00
Fr						
Flt Protected						
Satd. Flow (prot)	1863	3539	3539	0	1863	0
Flt Permitted						
Satd. Flow (perm)	1863	3539	3539	0	1863	0
Link Speed (k/h)		50	50		50	
Link Distance (m)		195.6	407.9		120.1	
Travel Time (s)		14.1	29.4		8.6	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	0	1127	2217	0	0	0
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	1127	2217	0	0	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 64.6%				ICU Level of Service C		
Analysis Period (min) 15						

HCM Unsignalized Intersection Capacity Analysis
211: William Halton Parkway & East Street F

TT (2041) - Scenario A - East Side Only
Timing Plan: PM Peak Hour

	EBL	EBT	WBT	WBR	SBL	SBR
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations	↔	↕	↕		↕	
Traffic Volume (veh/h)	0	1127	2217	0	0	0
Future Volume (Veh/h)	0	1127	2217	0	0	0
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	0	1127	2217	0	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)		196				
pX, platoon unblocked					0.91	
vC, conflicting volume	2217				2780	1108
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	2217				2760	1108
tC, single (s)	4.1				6.8	6.9
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	100				100	100
cM capacity (veh/h)	232				14	204
Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	SB 1
Volume Total	0	564	564	1478	739	0
Volume Left	0	0	0	0	0	0
Volume Right	0	0	0	0	0	0
cSH	1700	1700	1700	1700	1700	1700
Volume to Capacity	0.00	0.33	0.33	0.87	0.43	0.00
Queue Length 95th (m)	0.0	0.0	0.0	0.0	0.0	0.0
Control Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0
Lane LOS						A
Approach Delay (s)	0.0			0.0		0.0
Approach LOS						A
Intersection Summary						
Average Delay			0.0			
Intersection Capacity Utilization			64.6%		ICU Level of Service	C
Analysis Period (min)			15			

Lanes, Volumes, Timings

212: West Street A & Transit Station

TT (2041) - Scenario A - East Side Only

Timing Plan: PM Peak Hour

	←	←	↑	↗	↘	↓
Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	↔		↔			↔
Traffic Volume (vph)	127	0	0	355	0	0
Future Volume (vph)	127	0	0	355	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt			0.865			
Flt Protected	0.950					
Satd. Flow (prot)	1770	0	1611	0	0	1863
Flt Permitted	0.950					
Satd. Flow (perm)	1770	0	1611	0	0	1863
Link Speed (k/h)	50		50			50
Link Distance (m)	216.0		234.7			101.9
Travel Time (s)	15.6		16.9			7.3
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	127	0	0	355	0	0
Shared Lane Traffic (%)						
Lane Group Flow (vph)	127	0	355	0	0	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(m)	7.2		0.0		Left	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 35.7%

ICU Level of Service A

Analysis Period (min) 15

HCM Unsignalized Intersection Capacity Analysis

212: West Street A & Transit Station

TT (2041) - Scenario A - East Side Only

Timing Plan: PM Peak Hour

	←	←	↑	↗	↘	↓
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	↔		↔			↔
Traffic Volume (veh/h)	127	0	0	355	0	0
Future Volume (Veh/h)	127	0	0	355	0	0
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	127	0	0	355	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	178	178			355	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	178	178			355	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	84	100			100	
cM capacity (veh/h)	812	866			1204	
Direction, Lane #	WB 1	NB 1	SB 1			
Volume Total	127	355	0			
Volume Left	127	0	0			
Volume Right	0	355	0			
cSH	812	1700	1700			
Volume to Capacity	0.16	0.21	0.00			
Queue Length 95th (m)	4.1	0.0	0.0			
Control Delay (s)	10.3	0.0	0.0			
Lane LOS	B					
Approach Delay (s)	10.3	0.0	0.0			
Approach LOS	B					
Intersection Summary						
Average Delay		2.7				
Intersection Capacity Utilization		35.7%			ICU Level of Service	A
Analysis Period (min)		15				

Lanes, Volumes, Timings TT (2041) - Scenario A - East Side Only
213: East Street A/West Street A & William Halton Parkway Timing Plan: PM Peak Hour

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑	↑		↑↑	↑			↑			↑
Traffic Volume (vph)	0	926	0	0	2167	0	0	0	0	0	0	0
Future Volume (vph)	0	926	0	0	2167	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		90.0	0.0		90.0	0.0		0.0	0.0		0.0
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	0.95	1.00	1.00	0.95	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Fit												
Fit Protected												
Satd. Flow (prot)	0	3539	1863	0	3539	1863	0	0	1863	0	0	1863
Fit Permitted												
Satd. Flow (perm)	0	3539	1863	0	3539	1863	0	0	1863	0	0	1863
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		200.8			212.9			103.7			234.7	
Travel Time (s)		14.5			15.3			7.5			16.9	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	0	926	0	0	2167	0	0	0	0	0	0	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	926	0	0	2167	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			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 63.2%					ICU Level of Service B							
Analysis Period (min) 15												

HCM Unsignalized Intersection Capacity Analysis TT (2041) - Scenario A - East Side Only
213: East Street A/West Street A & William Halton Parkway Timing Plan: PM Peak Hour

													
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations		↑↑	↑		↑↑	↑			↑			↑	
Traffic Volume (veh/h)	0	926	0	0	2167	0	0	0	0	0	0	0	
Future Volume (Veh/h)	0	926	0	0	2167	0	0	0	0	0	0	0	
Sign Control		Free			Free			Stop			Stop		
Grade		0%			0%			0%			0%		
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Hourly flow rate (vph)	0	926	0	0	2167	0	0	0	0	0	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)		201			213								
pX, platoon unblocked	0.73			0.95			0.76	0.76	0.95	0.76	0.76	0.73	
vC, conflicting volume	2167			926			2010	3093	463	2630	3093	1084	
vC1, stage 1 conf vol													
vC2, stage 2 conf vol													
vCu, unblocked vol	1862			805			1371	2797	315	2188	2797	383	
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	100	100	100	100	
cM capacity (veh/h)	235			770			80	14	643	19	14	451	
Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	WB 3	NB 1	SB 1					
Volume Total	463	463	0	1084	1084	0	0	0					
Volume Left	0	0	0	0	0	0	0	0					
Volume Right	0	0	0	0	0	0	0	0					
cSH	1700	1700	1700	1700	1700	1700	1700	1700					
Volume to Capacity	0.27	0.27	0.00	0.64	0.64	0.00	0.00	0.00					
Queue Length 95th (m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0					
Control Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0					
Lane LOS							A	A					
Approach Delay (s)	0.0			0.0			0.0	0.0					
Approach LOS							A	A					
Intersection Summary													
Average Delay			0.0										
Intersection Capacity Utilization			63.2%			ICU Level of Service			B				
Analysis Period (min)			15										

Lanes, Volumes, Timings

214: West Street D & William Halton Parkway

TT (2041) - Scenario A - East Side Only

Timing Plan: PM Peak Hour

	←	→	↖	↗	←	↖	↗	↖	↗	↖	↗	↖	↗
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations	↖	↖	↖	↖	↖	↖	↖	↖	↖	↖	↖	↖	
Traffic Volume (vph)	0	936	0	0	2167	0	0	0	0	0	0	0	
Future Volume (vph)	0	936	0	0	2167	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)	90.0		90.0	90.0		90.0	50.0		0.0	50.0		0.0	
Storage Lanes	1		1	1		1	1		0	1		0	
Taper Length (m)	100.0			100.0			75.0			75.0			
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Flt													
Flt Protected													
Satd. Flow (prot)	1863	3539	1863	1863	3539	1863	1863	1863	0	1863	1863	0	
Flt Permitted													
Satd. Flow (perm)	1863	3539	1863	1863	3539	1863	1863	1863	0	1863	1863	0	
Right Turn on Red			Yes			Yes			Yes			Yes	
Satd. Flow (RTOR)													
Link Speed (k/h)		50			50				50			50	
Link Distance (m)		573.3			200.8				99.4			133.2	
Travel Time (s)		41.3			14.5				7.2			9.6	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Adj. Flow (vph)	0	936	0	0	2167	0	0	0	0	0	0	0	
Shared Lane Traffic (%)													
Lane Group Flow (vph)	0	936	0	0	2167	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	1	2	1	1	2		1	2		
Detector Template	Left	Thru	Right	Left	Thru	Right	Left	Thru		Left	Thru		
Leading Detector (m)	2.0	10.0	2.0	2.0	10.0	2.0	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		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	2.0	0.6	2.0	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		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	pm+pt	NA	Perm	Perm			Perm			
Protected Phases		4			3		8		2			6	
Permitted Phases	4		4		8		8		2			6	

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Lanes, Volumes, Timings

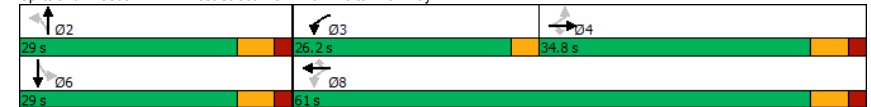
214: West Street D & William Halton Parkway

TT (2041) - Scenario A - East Side Only

Timing Plan: PM Peak Hour

	←	→	↖	↗	←	↖	↗	↖	↗	↖	↗	↖	↗
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Detector Phase	4	4	4	3	8	8	2	2		6	6		
Switch Phase													
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0		5.0	5.0		
Minimum Split (s)	24.0	24.0	24.0	9.5	24.0	24.0	24.0	24.0		29.0	29.0		
Total Split (s)	34.8	34.8	34.8	26.2	61.0	61.0	29.0	29.0		29.0	29.0		
Total Split (%)	38.7%	38.7%	38.7%	29.1%	67.8%	67.8%	32.2%	32.2%		32.2%	32.2%		
Maximum Green (s)	28.8	28.8	28.8	23.2	55.0	55.0	23.0	23.0		23.0	23.0		
Yellow Time (s)	4.0	4.0	4.0	3.0	4.0	4.0	4.0	4.0		4.0	4.0		
All-Red Time (s)	2.0	2.0	2.0	0.0	2.0	2.0	2.0	2.0		2.0	2.0		
Lost Time Adjust (s)	-2.0	-2.0	-2.0	1.0	-2.0	-2.0	-2.0	-2.0		1.0	-2.0		
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0		7.0	4.0		
Lead/Lag	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	None	None	Min	Min		Min	Min		
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)		53.1			53.1								
Actuated g/C Ratio		0.77			0.77								
v/c Ratio		0.34			0.79								
Control Delay		2.7			7.2								
Queue Delay		0.0			0.0								
Total Delay		2.7			7.2								
LOS		A			A								
Approach Delay		2.7			7.2								
Approach LOS		A			A								
Intersection Summary													
Area Type:		Other											
Cycle Length: 90													
Actuated Cycle Length: 68.7													
Natural Cycle: 90													
Control Type: Actuated-Uncoordinated													
Maximum v/c Ratio: 0.79													
Intersection Signal Delay: 5.9													
Intersection Capacity Utilization 63.2%													
ICU Level of Service B													
Analysis Period (min) 15													

Splits and Phases: 214: West Street D & William Halton Parkway

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Queues
214: West Street D & William Halton Parkway

TT (2041) - Scenario A - East Side Only
Timing Plan: PM Peak Hour

	→	←
Lane Group	EBT	WBT
Lane Group Flow (vph)	936	2167
v/c Ratio	0.34	0.79
Control Delay	2.7	7.2
Queue Delay	0.0	0.0
Total Delay	2.7	7.2
Queue Length 50th (m)	13.3	58.3
Queue Length 95th (m)	18.0	81.6
Internal Link Dist (m)	549.3	176.8
Turn Bay Length (m)		
Base Capacity (vph)	2734	2958
Starvation Cap Reductn	0	0
Spillback Cap Reductn	0	0
Storage Cap Reductn	0	0
Reduced v/c Ratio	0.34	0.73
Intersection Summary		

HCM Signalized Intersection Capacity Analysis
214: West Street D & William Halton Parkway

TT (2041) - Scenario A - East Side Only
Timing Plan: PM Peak Hour

	↖	→	↗	←	↖	↗	↖	↗	↖	↗	↖	↗
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖	↖↖	↖	↖	↖↖	↖	↖	↖	↖	↖	↖	↖
Traffic Volume (vph)	0	936	0	0	2167	0	0	0	0	0	0	0
Future Volume (vph)	0	936	0	0	2167	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)		4.0			4.0							
Lane Util. Factor		0.95			0.95							
Frt		1.00			1.00							
Flt Protected		1.00			1.00							
Satd. Flow (prot)		3539			3539							
Flt Permitted		1.00			1.00							
Satd. Flow (perm)		3539			3539							
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	0	936	0	0	2167	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	936	0	0	2167	0	0	0	0	0	0	0
Turn Type	Perm	NA	Perm	pm+pt	NA	Perm	Perm			Perm		
Protected Phases		4		3	8			2			6	
Permitted Phases	4		4	8		8	2			6		
Actuated Green, G (s)		51.0			51.0							
Effective Green, g (s)		53.0			53.0							
Actuated g/C Ratio		0.77			0.77							
Clearance Time (s)		6.0			6.0							
Vehicle Extension (s)		3.0			3.0							
Lane Grp Cap (vph)		2738			2738							
v/s Ratio Prot		0.26			c0.61							
v/s Ratio Perm												
v/c Ratio		0.34			0.79							
Uniform Delay, d1		2.4			4.5							
Progression Factor		1.00			1.00							
Incremental Delay, d2		0.1			1.6							
Delay (s)		2.5			6.2							
Level of Service		A			A							
Approach Delay (s)		2.5			6.2			0.0			0.0	
Approach LOS		A			A			A			A	
Intersection Summary												
HCM 2000 Control Delay			5.0		HCM 2000 Level of Service				A			
HCM 2000 Volume to Capacity ratio			0.74									
Actuated Cycle Length (s)			68.5		Sum of lost time (s)			12.0				
Intersection Capacity Utilization			63.2%		ICU Level of Service			B				
Analysis Period (min)			15									

c Critical Lane Group

Lanes, Volumes, Timings

215: East Street A & West Street B

TT (2041) - Scenario A - East Side Only

Timing Plan: PM Peak Hour

						
Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	208	108	0	100	73	18
Future Volume (vph)	208	108	0	100	73	18
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	0.954				0.973	
Flt Protected	0.968					
Satd. Flow (prot)	1720	0	0	1863	1812	0
Flt Permitted	0.968					
Satd. Flow (perm)	1720	0	0	1863	1812	0
Link Speed (k/h)	50			50	50	
Link Distance (m)	202.4			83.5	103.7	
Travel Time (s)	14.6			6.0	7.5	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	208	108	0	100	73	18
Shared Lane Traffic (%)						
Lane Group Flow (vph)	316	0	0	100	91	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
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	25			15
Sign Control	Stop			Free	Free	

Intersection Summary

Area Type: Other

Control Type: Unsignalized

Intersection Capacity Utilization 30.1%

ICU Level of Service A

Analysis Period (min) 15

HCM Unsignalized Intersection Capacity Analysis

215: East Street A & West Street B

TT (2041) - Scenario A - East Side Only

Timing Plan: PM Peak Hour

						
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	208	108	0	100	73	18
Future Volume (Veh/h)	208	108	0	100	73	18
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	208	108	0	100	73	18
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	182	82	91			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	182	82	91			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	74	89	100			
cM capacity (veh/h)	807	978	1504			
Direction, Lane #	EB 1	NB 1	SB 1			
Volume Total	316	100	91			
Volume Left	208	0	0			
Volume Right	108	0	18			
cSH	859	1504	1700			
Volume to Capacity	0.37	0.00	0.05			
Queue Length 95th (m)	12.8	0.0	0.0			
Control Delay (s)	11.6	0.0	0.0			
Lane LOS	B					
Approach Delay (s)	11.6	0.0	0.0			
Approach LOS	B					
Intersection Summary						
Average Delay		7.2				
Intersection Capacity Utilization		30.1%		ICU Level of Service	A	
Analysis Period (min)		15				

Lanes, Volumes, Timings

216: West Street D & West Street B

TT (2041) - Scenario A - East Side Only

Timing Plan: PM Peak Hour

	←	←	↑	↗	↘	↓
Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	↔		↔			↔
Traffic Volume (vph)	0	28	36	0	179	97
Future Volume (vph)	0	28	36	0	179	97
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.865					
Flt Protected						0.969
Satd. Flow (prot)	1611	0	1863	0	0	1805
Flt Permitted						0.969
Satd. Flow (perm)	1611	0	1863	0	0	1805
Link Speed (k/h)	50		50			50
Link Distance (m)	202.4		82.8			99.4
Travel Time (s)	14.6		6.0			7.2
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	0	28	36	0	179	97
Shared Lane Traffic (%)						
Lane Group Flow (vph)	28	0	36	0	0	276
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
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		15	25	
Sign Control	Stop		Free			Free

Intersection Summary

Area Type: Other

Control Type: Unsignalized

Intersection Capacity Utilization 31.7%

ICU Level of Service A

Analysis Period (min) 15

HCM Unsignalized Intersection Capacity Analysis

216: West Street D & West Street B

TT (2041) - Scenario A - East Side Only

Timing Plan: PM Peak Hour

	←	←	↑	↗	↘	↓
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	↔		↔			↔
Traffic Volume (veh/h)	0	28	36	0	179	97
Future Volume (Veh/h)	0	28	36	0	179	97
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	0	28	36	0	179	97
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage (veh)						
Upstream signal (m)						99
pX, platoon unblocked						
vC, conflicting volume	491	36			36	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	491	36			36	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	100	97			89	
cM capacity (veh/h)	476	1037			1575	

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	28	36	276
Volume Left	0	0	179
Volume Right	28	0	0
cSH	1037	1700	1575
Volume to Capacity	0.03	0.02	0.11
Queue Length 95th (m)	0.6	0.0	2.9
Control Delay (s)	8.6	0.0	5.2
Lane LOS	A		A
Approach Delay (s)	8.6	0.0	5.2
Approach LOS	A		

Intersection Summary

Average Delay 5.0

Intersection Capacity Utilization 31.7%

ICU Level of Service

A

Analysis Period (min) 15

Lanes, Volumes, Timings
217: East Street C & East Street A

TT (2041) - Scenario A - East Side Only
Timing Plan: PM Peak Hour

	EBL	EBT	WBT	WBR	SBL	SBR
Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↔	↔		↔	
Traffic Volume (vph)	0	50	79	205	143	4
Future Volume (vph)	0	50	79	205	143	4
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			0.903		0.996	
Flt Protected					0.954	
Satd. Flow (prot)	0	1863	1682	0	1770	0
Flt Permitted					0.954	
Satd. Flow (perm)	0	1863	1682	0	1770	0
Link Speed (k/h)		50	50		50	
Link Distance (m)		206.1	205.4		83.5	
Travel Time (s)		14.8	14.8		6.0	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	0	50	79	205	143	4
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	50	284	0	147	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 31.6%	ICU Level of Service A					
Analysis Period (min) 15						

HCM Unsignalized Intersection Capacity Analysis
217: East Street C & East Street A

TT (2041) - Scenario A - East Side Only
Timing Plan: PM Peak Hour

	EBL	EBT	WBT	WBR	SBL	SBR
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↔	↔		↔	
Traffic Volume (veh/h)	0	50	79	205	143	4
Future Volume (Veh/h)	0	50	79	205	143	4
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	0	50	79	205	143	4
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	284				232	182
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	284				232	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 %	100				81	100
cM capacity (veh/h)	1278				757	861
Direction, Lane #	EB 1	WB 1	SB 1			
Volume Total	50	284	147			
Volume Left	0	0	143			
Volume Right	0	205	4			
cSH	1278	1700	759			
Volume to Capacity	0.00	0.17	0.19			
Queue Length 95th (m)	0.0	0.0	5.4			
Control Delay (s)	0.0	0.0	10.9			
Lane LOS			B			
Approach Delay (s)	0.0	0.0	10.9			
Approach LOS			B			
Intersection Summary						
Average Delay			3.3			
Intersection Capacity Utilization		31.6%		ICU Level of Service	A	
Analysis Period (min)		15				

Lanes, Volumes, Timings

218: West Street D & East Street C

TT (2041) - Scenario A - East Side Only

Timing Plan: PM Peak Hour

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔			↔			↔			↔	
Traffic Volume (vph)	0	0	0	17	0	62	0	17	5	78	19	0
Future Volume (vph)	0	0	0	17	0	62	0	17	5	78	19	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					0.894			0.969				
Flt Protected					0.989						0.961	
Satd. Flow (prot)	0	1863	0	0	1647	0	0	1805	0	0	1790	0
Flt Permitted					0.989						0.961	
Satd. Flow (perm)	0	1863	0	0	1647	0	0	1805	0	0	1790	0
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		164.8			206.1			68.2			82.8	
Travel Time (s)		11.9			14.8			4.9			6.0	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	0	0	0	17	0	62	0	17	5	78	19	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	0	0	0	79	0	0	22	0	0	97	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 23.4%

ICU Level of Service A

Analysis Period (min) 15

HCM Unsignalized Intersection Capacity Analysis

218: West Street D & East Street C

TT (2041) - Scenario A - East Side Only

Timing Plan: PM Peak Hour

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Movement		↔			↔			↔			↔	
Lane Configurations		↔			↔			↔			↔	
Traffic Volume (veh/h)	0	0	0	17	0	62	0	17	5	78	19	0
Future Volume (Veh/h)	0	0	0	17	0	62	0	17	5	78	19	0
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	0	0	0	17	0	62	0	17	5	78	19	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	62			0			74	96	0	78	65	31
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	62			0			74	96	0	78	65	31
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			99			100	98	100	91	98	100
cM capacity (veh/h)	1541			1623			892	786	1085	884	817	1043
Direction, Lane #	EB 1	WB 1	NB 1	SB 1								
Volume Total	0	79	22	97								
Volume Left	0	17	0	78								
Volume Right	0	62	5	0								
cSH	1700	1623	838	870								
Volume to Capacity	0.00	0.01	0.03	0.11								
Queue Length 95th (m)	0.0	0.2	0.6	2.8								
Control Delay (s)	0.0	1.6	9.4	9.7								
Lane LOS		A	A	A								
Approach Delay (s)	0.0	1.6	9.4	9.7								
Approach LOS			A	A								
Intersection Summary												
Average Delay			6.4									
Intersection Capacity Utilization		23.4%						ICU Level of Service		A		
Analysis Period (min)			15									

Lanes, Volumes, Timings

101: Trafalgar Rd & Lower Base Line

Total (2041) - Scenario A - West Side Only

Timing Plan: AM Peak Hour

	↖	→	↗	↙	←	↖	↗	↙	↘	↗	↘	↙
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖	↖	↖	↖	↖	↖	↖	↖	↖	↖	↖	↖
Traffic Volume (vph)	151	588	224	304	119	219	51	1872	254	502	2000	24
Future Volume (vph)	151	588	224	304	119	219	51	1872	254	502	2000	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	0.423			0.165			0.085			0.083		
Satd. Flow (perm)	788	3394	0	307	3196	0	158	5085	1583	155	5085	1583
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		41			238				234			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)	164	639	243	330	129	238	55	2035	276	546	2174	26
Shared Lane Traffic (%)												
Lane Group Flow (vph)	164	882	0	330	367	0	55	2035	276	546	2174	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	CI+Ex	CI+Ex		CI+Ex	CI+Ex		CI+Ex	CI+Ex	CI+Ex	CI+Ex	CI+Ex	CI+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		CI+Ex			CI+Ex			CI+Ex			CI+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

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Lanes, Volumes, Timings

101: Trafalgar Rd & Lower Base Line

Total (2041) - Scenario A - West Side Only

Timing Plan: AM Peak Hour

	↖	→	↗	↙	←	↖	↗	↙	↘	↗	↘	↙
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		1.27	0.41		0.31	1.04	0.37	1.46	0.81	0.03
Control Delay	32.5	158.8		180.2	15.4		17.0	69.4	6.7	250.6	26.9	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	32.5	158.8		180.2	15.4		17.0	69.4	6.7	250.6	26.9	0.0
LOS	C	F		F	B		B	E	A	F	C	A
Approach Delay		139.0			93.4			60.9			71.1	
Approach LOS		F			F			E			E	

Intersection Summary

Area Type: Other

Cycle Length: 120

Actuated Cycle Length: 120

Natural Cycle: 100

Control Type: Semi Act-Uncooord

Maximum v/c Ratio: 1.46

Intersection Signal Delay: 80.2

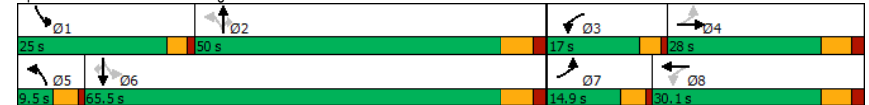
Intersection LOS: F

Intersection Capacity Utilization 117.6%

ICU Level of Service H

Analysis Period (min) 15

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

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Queues
101: Trafalgar Rd & Lower Base Line

Total (2041) - Scenario A - West Side Only
Timing Plan: AM Peak Hour

	EBL	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	164	882	330	367	55	2035	276	546	2174	26
v/c Ratio	0.47	1.24	1.27	0.41	0.31	1.04	0.37	1.46	0.81	0.03
Control Delay	32.5	158.8	180.2	15.4	17.0	69.4	6.7	250.6	26.9	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	32.5	158.8	180.2	15.4	17.0	69.4	6.7	250.6	26.9	0.0
Queue Length 50th (m)	26.8	~130.3	~81.0	12.9	4.9	~187.8	6.1	~158.8	152.2	0.0
Queue Length 95th (m)	43.5	#169.9	#137.5	26.3	10.0	#216.5	24.0	#225.2	173.1	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	751	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	0.46	1.24	1.27	0.41	0.31	1.04	0.37	1.46	0.81	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.

HCM Signalized Intersection Capacity Analysis
101: Trafalgar Rd & Lower Base Line

Total (2041) - Scenario A - West Side Only
Timing Plan: AM Peak Hour

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔
Traffic Volume (vph)	151	588	224	304	119	219	51	1872	254	502	2000	24
Future Volume (vph)	151	588	224	304	119	219	51	1872	254	502	2000	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	3393		1770	3195		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)	788	3393		308	3195		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)	164	639	243	330	129	238	55	2035	276	546	2174	26
RTOR Reduction (vph)	0	33	0	0	186	0	0	0	143	0	0	12
Lane Group Flow (vph)	164	849	0	330	181	0	55	2035	133	546	2174	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	
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		c0.14	0.06		0.02	0.40		c0.26	0.43	
v/s Ratio Perm	0.10			c0.26			0.13			0.08	c0.59	0.01
v/c Ratio	0.49	1.26		1.31	0.26		0.35	1.03	0.22	1.48	0.82	0.02
Uniform Delay, d1	32.7	48.5		36.7	39.2		22.5	37.0	24.7	39.2	23.9	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	129.5		167.0	0.4		1.3	29.0	0.8	231.8	2.9	0.0
Delay (s)	33.9	178.0		203.7	39.6		23.8	66.0	25.5	270.9	26.8	13.8
Level of Service	C	F		F	D		C	E	C	F	C	B
Approach Delay (s)		155.4			117.3			60.3			75.2	
Approach LOS		F			F			E			E	

Intersection Summary

HCM 2000 Control Delay	86.6	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	1.42		
Actuated Cycle Length (s)	120.9	Sum of lost time (s)	16.0
Intersection Capacity Utilization	117.6%	ICU Level of Service	H
Analysis Period (min)	15		

c Critical Lane Group

Lanes, Volumes, Timings

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

Total (2041) - Scenario A - West Side Only

Timing Plan: AM Peak Hour

	←	→	↖	↗	↙	↘	↖	↗	↙	↘	↖	↗	↙	↘
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR		
Lane Configurations		↔		↔	↔	↔	↔	↔		↔	↔	↔		
Traffic Volume (vph)	2	0	9	312	1	26	6	2144	0	0	2525	5		
Future Volume (vph)	2	0	9	312	1	26	6	2144	0	0	2525	5		
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	0.953		0.950							
Satd. Flow (prot)	0	1639	0	1681	1611	1504	1770	5085	0	0	5085	1583		
Flt Permitted	0.992			0.750	0.723		0.063							
Satd. Flow (perm)	0	1639	0	1327	1222	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)	2	0	10	339	1	28	7	2330	0	0	2745	5		
Shared Lane Traffic (%)				49%		10%								
Lane Group Flow (vph)	0	12	0	173	170	25	7	2330	0	0	2745	5		
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	CI+Ex	CI+Ex		CI+Ex	CI+Ex	CI+Ex	CI+Ex	CI+Ex			CI+Ex	CI+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		CI+Ex			CI+Ex			CI+Ex				CI+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

Lanes, Volumes, Timings

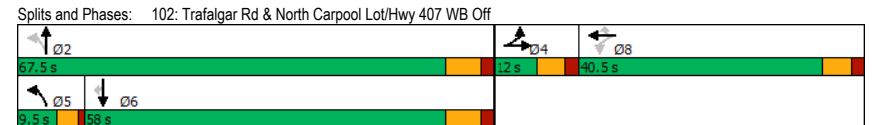
102: Trafalgar Rd & North Carpool Lot/Hwy 407 WB Off

Total (2041) - Scenario A - West Side Only

Timing Plan: AM Peak Hour

	←	→	↖	↗	↙	↘	↖	↗	↙	↘	↖	↗	↙	↘
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			
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			21.2	21.2	21.2	64.2	64.2			62.6	62.6		
Actuated g/C Ratio	0.08			0.22	0.22	0.22	0.67	0.67			0.66	0.66		
v/c Ratio	0.05			0.59	0.62	0.06	0.04	0.68			0.82	0.00		
Control Delay	0.4			42.0	44.3	0.3	9.3	12.7			18.0	0.0		
Queue Delay	0.0			0.0	0.0	0.0	0.0	0.0			0.0	0.0		
Total Delay	0.4			42.0	44.3	0.3	9.3	12.7			18.0	0.0		
LOS	A			D	D	A	A	B			B	A		
Approach Delay	0.4				40.2			12.7				18.0		
Approach LOS	A				D			B				B		

Intersection Summary														
Area Type:	Other													
Cycle Length: 120														
Actuated Cycle Length: 95.5														
Natural Cycle: 100														
Control Type: Actuated-Uncoordinated														
Maximum v/c Ratio: 0.82														
Intersection Signal Delay: 17.2	Intersection LOS: B													
Intersection Capacity Utilization 71.1%	ICU Level of Service C													
Analysis Period (min) 15														



Queues
102: Trafalgar Rd & North Carpool Lot/Hwy 407 WB Off

Total (2041) - Scenario A - West Side Only

Timing Plan: AM Peak Hour

	→	↖	←	↗	↖	↑	↓	↗
Lane Group	EBT	WBL	WBT	WBR	NBL	NBT	SBT	SBR
Lane Group Flow (vph)	12	173	170	25	7	2330	2745	5
v/c Ratio	0.05	0.59	0.62	0.06	0.04	0.68	0.82	0.00
Control Delay	0.4	42.0	44.3	0.3	9.3	12.7	18.0	0.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	0.4	42.0	44.3	0.3	9.3	12.7	18.0	0.0
Queue Length 50th (m)	0.0	28.6	29.4	0.0	0.3	73.0	101.0	0.0
Queue Length 95th (m)	0.0	56.3	58.6	0.0	2.7	171.9	#291.4	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)	254	512	473	659	175	3419	3335	1078
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	0.34	0.36	0.04	0.04	0.68	0.82	0.00

Intersection Summary

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

Queue shown is maximum after two cycles.

HCM Signalized Intersection Capacity Analysis
102: Trafalgar Rd & North Carpool Lot/Hwy 407 WB Off

Total (2041) - Scenario A - West Side Only

Timing Plan: AM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	2	0	9	312	1	26	6	2144	0	0	2525	5
Future Volume (vph)	2	0	9	312	1	26	6	2144	0	0	2525	5
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	0.06	1.00			1.00	1.00
Satd. Flow (perm)		1640		1327	1222	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)	2	0	10	339	1	28	7	2330	0	0	2745	5
RTOR Reduction (vph)	0	12	0	0	1	20	0	0	0	0	0	2
Lane Group Flow (vph)	0	0	0	173	169	5	7	2330	0	0	2745	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)		1.0		19.2	19.2	19.2	64.5	64.5			59.6	59.6
Effective Green, g (s)		3.0		21.2	21.2	21.2	64.5	67.5			62.6	62.6
Actuated g/C Ratio		0.03		0.20	0.20	0.20	0.62	0.65			0.60	0.60
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)		47		271	249	307	87	3309			3069	955
v/s Ratio Prot		c0.00					0.00	c0.46			c0.54	
v/s Ratio Perm				0.13	c0.14	0.00	0.05					0.00
v/c Ratio		0.01		0.64	0.68	0.02	0.08	0.70			0.89	0.00
Uniform Delay, d1		48.9		37.7	38.1	32.9	20.6	11.7			17.7	8.2
Progression Factor		1.00		1.00	1.00	1.00	1.00	1.00			1.00	1.00
Incremental Delay, d2		0.1		5.1	7.5	0.0	0.3	1.3			4.5	0.0
Delay (s)		49.0		42.8	45.6	33.0	20.9	12.9			22.2	8.2
Level of Service		D		D	D	C	C	B			C	A
Approach Delay (s)		49.0			43.4			13.0			22.2	
Approach LOS		D			D			B			C	

Intersection Summary

HCM 2000 Control Delay	19.7	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.84		
Actuated Cycle Length (s)	103.7	Sum of lost time (s)	18.0
Intersection Capacity Utilization	71.1%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

Lanes, Volumes, Timings
103: Trafalgar Rd & Hwy 407 EB Off

Total (2041) - Scenario A - West Side Only
Timing Plan: AM Peak Hour

	EBL	EBR	NBL	NBT	SBT	SBR
Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	↔	↔		↑↑↑	↑↑↑	
Traffic Volume (vph)	140	225	0	2129	2585	0
Future Volume (vph)	140	225	0	2129	2585	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	0.961	0.850				
Flt Protected	0.964					
Satd. Flow (prot)	1726	1504	0	5085	5085	0
Flt Permitted	0.964					
Satd. Flow (perm)	1726	1504	0	5085	5085	0
Right Turn on Red	Yes				Yes	
Satd. Flow (RTOR)	1	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)	152	245	0	2314	2810	0
Shared Lane Traffic (%)		22%				
Lane Group Flow (vph)	206	191	0	2314	2810	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	CI+Ex	CI+Ex		CI+Ex	CI+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				CI+Ex	CI+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	

I/O Trafalgar Oakville TIS
PTSL (210156/210157)

Synchro 10 Report
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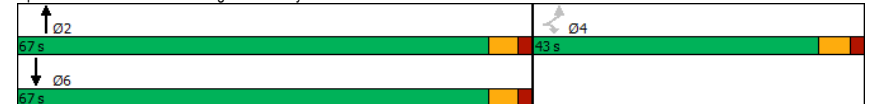
Lanes, Volumes, Timings
103: Trafalgar Rd & Hwy 407 EB Off

Total (2041) - Scenario A - West Side Only
Timing Plan: AM Peak Hour

	EBL	EBR	NBL	NBT	SBT	SBR
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)	18.4	18.4		63.2	63.2	
Actuated g/C Ratio	0.21	0.21		0.71	0.71	
v/c Ratio	0.58	0.62		0.65	0.78	
Control Delay	38.5	41.0		8.9	11.6	
Queue Delay	0.0	0.0		0.0	0.0	
Total Delay	38.5	41.0		8.9	11.6	
LOS	D	D		A	B	
Approach Delay	39.7			8.9	11.6	
Approach LOS	D			A	B	

Intersection Summary	
Area Type:	Other
Cycle Length: 110	
Actuated Cycle Length: 89.6	
Natural Cycle: 65	
Control Type: Semi Act-Uncoord	
Maximum v/c Ratio: 0.78	
Intersection Signal Delay: 12.5	Intersection LOS: B
Intersection Capacity Utilization 69.0%	ICU Level of Service C
Analysis Period (min) 15	

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



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Queues
103: Trafalgar Rd & Hwy 407 EB Off

Total (2041) - Scenario A - West Side Only
Timing Plan: AM Peak Hour

	EBL	EBR	NBT	SBT
Lane Group	EBL	EBR	NBT	SBT
Lane Group Flow (vph)	206	191	2314	2810
v/c Ratio	0.58	0.62	0.65	0.78
Control Delay	38.5	41.0	8.9	11.6
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	38.5	41.0	8.9	11.6
Queue Length 50th (m)	31.5	31.0	66.1	97.9
Queue Length 95th (m)	52.1	52.5	105.1	155.3
Internal Link Dist (m)	530.6		96.3	339.6
Turn Bay Length (m)				
Base Capacity (vph)	753	656	3583	3583
Starvation Cap Reductn	0	0	0	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.27	0.29	0.65	0.78
Intersection Summary				

HCM Signalized Intersection Capacity Analysis
103: Trafalgar Rd & Hwy 407 EB Off

Total (2041) - Scenario A - West Side Only
Timing Plan: AM Peak Hour

	EBL	EBR	NBL	NBT	SBT	SBR
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	↔	↔	↔	↔	↔	↔
Traffic Volume (vph)	140	225	0	2129	2585	0
Future Volume (vph)	140	225	0	2129	2585	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	0.96	1.00		1.00	1.00	
Satd. Flow (prot)	1726	1504		5085	5085	
Flt Permitted	0.96	1.00		1.00	1.00	
Satd. Flow (perm)	1726	1504		5085	5085	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	152	245	0	2314	2810	0
RTOR Reduction (vph)	1	1	0	0	0	0
Lane Group Flow (vph)	205	190	0	2314	2810	0
Turn Type	Perm	Perm		NA	NA	
Protected Phases				2	6	
Permitted Phases	4	4				
Actuated Green, G (s)	16.4	16.4		61.2	61.2	
Effective Green, g (s)	18.4	18.4		63.2	63.2	
Actuated g/C Ratio	0.21	0.21		0.71	0.71	
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)	354	308		3586	3586	
v/s Ratio Prot				0.46	0.55	
v/s Ratio Perm	0.12	0.13				
v/c Ratio	0.58	0.62		0.65	0.78	
Uniform Delay, d1	32.1	32.4		7.1	8.7	
Progression Factor	1.00	1.00		1.00	1.00	
Incremental Delay, d2	2.3	3.7		0.9	1.8	
Delay (s)	34.4	36.1		8.0	10.5	
Level of Service	C	D		A	B	
Approach Delay (s)	35.2			8.0	10.5	
Approach LOS	D			A	B	
Intersection Summary						
HCM 2000 Control Delay			11.2		HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio			0.76			
Actuated Cycle Length (s)			89.6		Sum of lost time (s)	10.0
Intersection Capacity Utilization			69.0%		ICU Level of Service	C
Analysis Period (min)			15			
c Critical Lane Group						

Lanes, Volumes, Timings

104: Trafalgar Rd & West Street A/East Street A

Total (2041) - Scenario A - West Side Only

Timing Plan: AM Peak Hour

	←	→	↖	↗	←	→	↖	↗	←	→	↖	↗
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖	↗	↖	↖	↗	↖	↖	↖	↖	↖	↖	↖
Traffic Volume (vph)	119	0	95	0	0	0	16	2777	0	0	2661	149
Future Volume (vph)	119	0	95	0	0	0	16	2777	0	0	2661	149
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
Flt Protected	0.950						0.950					
Satd. Flow (prot)	1770	1863	1583	1863	1863	1863	1770	5085	1863	1863	5085	1583
Flt Permitted	0.757						0.038					
Satd. Flow (perm)	1410	1863	1583	1863	1863	1863	71	5085	1863	1863	5085	1583
Right Turn on Red			Yes			Yes			Yes		Yes	
Satd. Flow (RTOR)			86								73	
Link Speed (k/h)		50				50		80			80	
Link Distance (m)		143.5				212.6		233.3			131.6	
Travel Time (s)		10.3				15.3		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)	129	0	103	0	0	0	17	3018	0	0	2892	162
Shared Lane Traffic (%)												
Lane Group Flow (vph)	129	0	103	0	0	0	17	3018	0	0	2892	162
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

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Lanes, Volumes, Timings

104: Trafalgar Rd & West Street A/East Street A

Total (2041) - Scenario A - West Side Only

Timing Plan: AM Peak Hour

	←	→	↖	↗	←	→	↖	↗	←	→	↖	↗
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)	24.0	24.0	24.0	24.0	24.0	40.0	9.5	76.0	76.0	40.0	106.5	106.5
Total Split (%)	17.1%	17.1%	17.1%	17.1%	17.1%	28.6%	6.8%	54.3%	54.3%	28.6%	76.1%	76.1%
Maximum Green (s)	18.0	18.0	18.0	18.0	18.0	36.0	5.5	70.0	70.0	36.0	100.5	100.5
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 Effect Green (s)	17.4		17.4				106.4	106.4			102.8	102.8
Actuated g/C Ratio	0.13		0.13				0.81	0.81			0.78	0.78
v/c Ratio	0.69		0.36				0.13	0.74			0.73	0.13
Control Delay	75.2		18.6				5.0	7.6			9.8	2.8
Queue Delay	0.0		0.0				0.0	0.9			0.6	0.0
Total Delay	75.2		18.6				5.0	8.5			10.4	2.8
LOS	E		B				A	A			B	A
Approach Delay		50.1						8.5			10.0	
Approach LOS		D						A			A	

Intersection Summary

Area Type: Other

Cycle Length: 140

Actuated Cycle Length: 131.8

Natural Cycle: 90

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 0.74

Intersection Signal Delay: 10.7

Intersection LOS: B

Intersection Capacity Utilization 66.9%

ICU Level of Service C

Analysis Period (min) 15

Splits and Phases: 104: Trafalgar Rd & West Street A/East Street A

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Queues
104: Trafalgar Rd & West Street A/East Street A

Total (2041) - Scenario A - West Side Only
Timing Plan: AM Peak Hour

	EBL	EBR	NBL	NBT	SBT	SBR
Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Group Flow (vph)	129	103	17	3018	2892	162
v/c Ratio	0.69	0.36	0.13	0.74	0.73	0.13
Control Delay	75.2	18.6	5.0	7.6	9.8	2.8
Queue Delay	0.0	0.0	0.0	0.9	0.6	0.0
Total Delay	75.2	18.6	5.0	8.5	10.4	2.8
Queue Length 50th (m)	30.9	3.8	0.8	119.8	108.2	4.1
Queue Length 95th (m)	#56.2	20.9	2.2	136.6	177.0	12.4
Internal Link Dist (m)				209.3	107.6	
Turn Bay Length (m)	50.0	50.0	50.0			30.0
Base Capacity (vph)	214	313	128	4103	3965	1250
Starvation Cap Reductn	0	0	0	703	608	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.60	0.33	0.13	0.89	0.86	0.13

Intersection Summary

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

HCM Signalized Intersection Capacity Analysis
104: Trafalgar Rd & West Street A/East Street A

Total (2041) - Scenario A - West Side Only
Timing Plan: AM Peak Hour

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Movement												
Lane Configurations												
Traffic Volume (vph)	119	0	95	0	0	0	16	2777	0	0	2661	149
Future Volume (vph)	119	0	95	0	0	0	16	2777	0	0	2661	149
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
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	0.76		1.00				0.04	1.00			1.00	1.00
Satd. Flow (perm)	1410		1583				71	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)	129	0	103	0	0	0	17	3018	0	0	2892	162
RTOR Reduction (vph)	0	0	75	0	0	0	0	0	0	0	0	17
Lane Group Flow (vph)	129	0	28	0	0	0	17	3018	0	0	2892	145
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)	15.4		15.4				106.9	106.9			100.8	100.8
Effective Green, g (s)	17.4		17.4				106.9	108.9			102.8	102.8
Actuated g/C Ratio	0.13		0.13				0.80	0.81			0.77	0.77
Clearance Time (s)	6.0		6.0				4.0	6.0			6.0	6.0
Vehicle Extension (s)	3.0		3.0				3.0	3.0			3.0	3.0
Lane Grp Cap (vph)	182		205				83	4123			3892	1211
v/s Ratio Prot							0.00	c0.59			0.57	
v/s Ratio Perm	c0.09		0.02				0.16					0.09
v/c Ratio	0.71		0.14				0.20	0.73			0.74	0.12
Uniform Delay, d1	56.0		51.8				11.6	5.9			8.6	4.1
Progression Factor	1.00		1.00				1.00	1.00			1.00	1.00
Incremental Delay, d2	11.9		0.3				1.2	1.2			1.3	0.2
Delay (s)	67.9		52.1				12.8	7.1			9.9	4.3
Level of Service	E		D				B	A			A	A
Approach Delay (s)		60.9			0.0			7.1			9.6	
Approach LOS		E			A			A			A	
Intersection Summary												
HCM 2000 Control Delay			10.3		HCM 2000 Level of Service					B		
HCM 2000 Volume to Capacity ratio			0.75									
Actuated Cycle Length (s)			134.3		Sum of lost time (s)					12.0		
Intersection Capacity Utilization			66.9%		ICU Level of Service					C		
Analysis Period (min)			15									
c Critical Lane Group												

Lanes, Volumes, Timings
105: Trafalgar Rd & William Halton Parkway

Total (2041) - Scenario A - West Side Only
Timing Plan: AM Peak Hour

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰	↰	↰	↰	↰	↰	↰	↰	↰	↰	↰	↰
Traffic Volume (vph)	529	893	214	41	481	243	323	2265	50	545	2040	171
Future Volume (vph)	529	893	214	41	481	243	323	2265	50	545	2040	171
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
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	0.183			0.136			0.077			0.071		
Satd. Flow (perm)	341	3539	1583	253	3539	1583	143	5085	1583	132	5085	1583
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			231			223			120			120
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		209.3			204.1			208.3			233.3	
Travel Time (s)		15.1			14.7			15.0			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)	575	971	233	45	523	264	351	2462	54	592	2217	186
Shared Lane Traffic (%)												
Lane Group Flow (vph)	575	971	233	45	523	264	351	2462	54	592	2217	186
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	CI+Ex	CI+Ex	CI+Ex	CI+Ex	CI+Ex	CI+Ex	CI+Ex	CI+Ex	CI+Ex	CI+Ex	CI+Ex	CI+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		CI+Ex			CI+Ex			CI+Ex			CI+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

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Lanes, Volumes, Timings
105: Trafalgar Rd & William Halton Parkway

Total (2041) - Scenario A - West Side Only
Timing Plan: AM Peak Hour

	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)	23.0	47.0	47.0	14.0	38.0	38.0	21.0	59.0	59.0	25.0	63.0	63.0
Total Split (%)	15.9%	32.4%	32.4%	9.7%	26.2%	26.2%	14.5%	40.7%	40.7%	17.2%	43.4%	43.4%
Maximum Green (s)	19.0	40.0	40.0	10.0	31.0	31.0	17.0	52.1	52.1	21.0	56.1	56.1
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)	54.6	44.8	44.8	39.6	31.5	31.5	72.0	55.0	55.0	80.0	59.0	59.0
Actuated g/C Ratio	0.38	0.31	0.31	0.28	0.22	0.22	0.50	0.39	0.39	0.56	0.41	0.41
v/c Ratio	1.79	0.87	0.36	0.29	0.67	0.50	1.32	1.25	0.08	1.88	1.05	0.26
Control Delay	394.5	56.6	6.2	33.4	55.3	12.9	203.3	156.6	0.2	434.7	75.8	11.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	6.6	0.0
Total Delay	394.5	56.6	6.2	33.4	55.3	12.9	203.3	156.6	0.2	434.7	82.5	11.3
LOS	F	E	A	C	E	B	F	F	A	F	F	B
Approach Delay		159.2			40.7			159.4			147.7	
Approach LOS		F			D			F			F	

Intersection Summary

Area Type: Other

Cycle Length: 145

Actuated Cycle Length: 142.6

Natural Cycle: 145

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 1.88

Intersection Signal Delay: 143.5

Intersection LOS: F

Intersection Capacity Utilization 133.3%

ICU Level of Service H

Analysis Period (min) 15

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



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Queues
105: Trafalgar Rd & William Halton Parkway

Total (2041) - Scenario A - West Side Only
Timing Plan: AM Peak Hour

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	575	971	233	45	523	264	351	2462	54	592	2217	186
v/c Ratio	1.79	0.87	0.36	0.29	0.67	0.50	1.32	1.25	0.08	1.88	1.05	0.26
Control Delay	394.5	56.6	6.2	33.4	55.3	12.9	203.3	156.6	0.2	434.7	75.8	11.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	6.6	0.0
Total Delay	394.5	56.6	6.2	33.4	55.3	12.9	203.3	156.6	0.2	434.7	82.5	11.3
Queue Length 50th (m)	~218.3	137.4	0.4	7.9	70.6	9.2	~113.3	~321.2	0.0	~242.2	~253.5	11.4
Queue Length 95th (m)	#290.1	#178.8	19.3	16.2	89.7	34.3	#175.7	#348.2	0.0	#314.4	#281.6	27.9
Internal Link Dist (m)		185.3			180.1			184.3			209.3	
Turn Bay Length (m)	100.0		100.0	100.0		150.0	150.0		75.0			
Base Capacity (vph)	321	1111	655	180	844	547	266	1962	684	315	2105	725
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	32	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	1.79	0.87	0.36	0.25	0.62	0.48	1.32	1.25	0.08	1.88	1.07	0.26

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.

HCM Signalized Intersection Capacity Analysis
105: Trafalgar Rd & William Halton Parkway

Total (2041) - Scenario A - West Side Only
Timing Plan: AM Peak Hour

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰	↱	↱	↰	↱	↱	↰	↱	↱	↰	↱	↱
Traffic Volume (vph)	529	893	214	41	481	243	323	2265	50	545	2040	171
Future Volume (vph)	529	893	214	41	481	243	323	2265	50	545	2040	171
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	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00
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	0.18	1.00	1.00	0.14	1.00	1.00	0.08	1.00	1.00	0.07	1.00	1.00
Satd. Flow (perm)	341	3539	1583	253	3539	1583	143	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)	575	971	233	45	523	264	351	2462	54	592	2217	186
RTOR Reduction (vph)	0	0	159	0	0	173	0	0	33	0	0	71
Lane Group Flow (vph)	575	971	74	45	523	91	351	2462	21	592	2217	115
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)	52.4	41.8	41.8	36.0	29.4	29.4	69.1	52.1	52.1	77.1	56.1	56.1
Effective Green, g (s)	52.4	44.8	44.8	36.0	32.4	32.4	69.1	55.0	55.0	77.1	59.0	59.0
Actuated g/C Ratio	0.37	0.31	0.31	0.25	0.23	0.23	0.48	0.38	0.38	0.54	0.41	0.41
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)	313	1105	494	133	799	357	261	1950	607	311	2092	651
v/s Ratio Prot	c0.24	0.27		0.02	0.15		0.16	0.48		c0.28	0.44	
v/s Ratio Perm	c0.43		0.05	0.07		0.06	0.49		0.01	c0.75		0.07
v/c Ratio	1.84	0.88	0.15	0.34	0.65	0.26	1.34	1.26	0.03	1.90	1.06	0.18
Uniform Delay, d1	37.9	46.7	35.6	43.1	50.4	45.6	46.3	44.2	27.6	48.0	42.2	26.8
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	388.9	8.8	0.3	1.5	2.6	0.8	178.5	122.4	0.1	418.4	37.8	0.6
Delay (s)	426.8	55.5	35.9	44.7	53.0	46.4	224.8	166.6	27.7	466.5	80.0	27.4
Level of Service	F	E	D	D	D	D	F	F	C	F	E	C
Approach Delay (s)		172.9			50.5			171.1			153.1	
Approach LOS		F			D			F			F	

Intersection Summary

HCM 2000 Control Delay	153.3	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	1.87		
Actuated Cycle Length (s)	143.4	Sum of lost time (s)	16.0
Intersection Capacity Utilization	133.3%	ICU Level of Service	H
Analysis Period (min)	15		
c Critical Lane Group			

Lanes, Volumes, Timings

Total (2041) - Scenario A - West Side Only

106: Trafalgar Rd & Burnhamthorpe Rd/Burnhamthorpe Rd

Timing Plan: AM Peak Hour

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰	↱	↲	↰	↱	↲	↰	↱	↲	↰	↱	↲
Traffic Volume (vph)	438	491	80	83	157	185	56	2015	174	313	1548	180
Future Volume (vph)	438	491	80	83	157	185	56	2015	174	313	1548	180
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	1.00	1.00	1.00	1.00	1.00	0.91	1.00	1.00	0.91	1.00	
Frt		0.979			0.919				0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1770	1824	0	1770	1712	0	1770	5085	1583	1770	5085	1583
Flt Permitted	0.140			0.154			0.086			0.066		
Satd. Flow (perm)	261	1824	0	287	1712	0	160	5085	1583	123	5085	1583
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		6			37				160			148
Link Speed (k/h)		60			60			80			80	
Link Distance (m)		828.7			989.6			1077.8			247.3	
Travel Time (s)		49.7			59.4			48.5			11.1	
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)	476	534	87	90	171	201	61	2190	189	340	1683	196
Shared Lane Traffic (%)												
Lane Group Flow (vph)	476	621	0	90	372	0	61	2190	189	340	1683	196
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)	26.0	46.5		9.5	30.0		9.6	63.0	63.0	21.0	74.4	74.4
Total Split (%)	18.6%	33.2%		6.8%	21.4%		6.9%	45.0%	45.0%	15.0%	53.1%	53.1%
Maximum Green (s)	21.5	40.5		5.0	24.0		5.1	57.0	57.0	17.0	68.4	68.4
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 Effect Green (s)	53.5	42.5		34.5	26.0		67.6	59.0	59.0	80.0	70.4	70.4
Actuated g/C Ratio	0.38	0.30		0.25	0.19		0.48	0.42	0.42	0.57	0.50	0.50
v/c Ratio	1.35	1.11		0.62	1.07		0.39	1.02	0.25	1.26	0.66	0.23
Control Delay	208.1	117.9		50.5	115.5		21.4	65.2	6.4	178.5	27.4	6.0
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	208.1	117.9		50.5	115.5		21.4	65.2	6.4	178.5	27.4	6.0

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Lanes, Volumes, Timings

Total (2041) - Scenario A - West Side Only

106: Trafalgar Rd & Burnhamthorpe Rd/Burnhamthorpe Rd

Timing Plan: AM Peak Hour

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
LOS	F	F		D	F		C	E	A	F	C	A
Approach Delay		157.0			102.9			59.5			48.7	
Approach LOS		F			F			E			D	
Intersection Summary												
Area Type:	Other											
Cycle Length: 140												
Actuated Cycle Length: 140												
Offset: 0 (0%), Referenced to phase 2:NBT and 6:SBTL, Start of Green												
Natural Cycle: 130												
Control Type: Pretimed												
Maximum v/c Ratio: 1.35												
Intersection Signal Delay: 76.1							Intersection LOS: E					
Intersection Capacity Utilization 113.5%							ICU Level of Service H					
Analysis Period (min) 15												

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

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Queues
106: Trafalgar Rd & Burhamthorpe Rd/Burnhamthorpe Rd

Total (2041) - Scenario A - West Side Only
Timing Plan: AM Peak Hour

	EBL	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	476	621	90	372	61	2190	189	340	1683	196
v/c Ratio	1.35	1.11	0.62	1.07	0.39	1.02	0.25	1.26	0.66	0.23
Control Delay	208.1	117.9	50.5	115.5	21.4	65.2	6.4	178.5	27.4	6.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	208.1	117.9	50.5	115.5	21.4	65.2	6.4	178.5	27.4	6.0
Queue Length 50th (m)	~154.5	~193.2	15.9	~103.6	6.9	~232.2	4.6	~100.6	122.1	6.6
Queue Length 95th (m)	#221.2	#265.1	#28.7	#165.8	13.2	#259.6	19.2	#161.0	137.9	19.4
Internal Link Dist (m)		804.7		965.6		1053.8			223.3	
Turn Bay Length (m)	30.0		15.0		60.0		60.0	60.0		60.0
Base Capacity (vph)	353	557	144	348	158	2142	759	270	2557	869
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	1.35	1.11	0.63	1.07	0.39	1.02	0.25	1.26	0.66	0.23

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.

HCM Signalized Intersection Capacity Analysis
106: Trafalgar Rd & Burhamthorpe Rd/Burnhamthorpe Rd

Total (2041) - Scenario A - West Side Only
Timing Plan: AM Peak Hour

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔
Traffic Volume (vph)	438	491	80	83	157	185	56	2015	174	313	1548	180
Future Volume (vph)	438	491	80	83	157	185	56	2015	174	313	1548	180
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	1.00		1.00	1.00		1.00	0.91	1.00	1.00	0.91	1.00
Frt	1.00	0.98		1.00	0.92		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	1824		1770	1712		1770	5085	1583	1770	5085	1583
Flt Permitted	0.14	1.00		0.15	1.00		0.09	1.00	1.00	0.07	1.00	1.00
Satd. Flow (perm)	261	1824		287	1712		161	5085	1583	122	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)	476	534	87	90	171	201	61	2190	189	340	1683	196
RTOR Reduction (vph)	0	4	0	0	30	0	0	0	93	0	0	72
Lane Group Flow (vph)	476	617	0	90	342	0	61	2190	96	340	1683	122
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)	50.0	40.5		29.0	24.0		62.1	57.0	57.0	78.0	68.4	68.4
Effective Green, g (s)	52.0	42.5		33.0	26.0		66.1	59.0	59.0	78.0	70.4	70.4
Actuated g/C Ratio	0.37	0.30		0.24	0.19		0.47	0.42	0.42	0.56	0.50	0.50
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)	350	553		141	317		157	2142	667	268	2557	796
v/s Ratio Prot	c0.23	0.34		0.03	0.20		0.02	0.43		c0.15	0.33	
v/s Ratio Perm	c0.28			0.12			0.16		0.06	c0.55		0.08
v/c Ratio	1.36	1.12		0.64	1.08		0.39	1.02	0.14	1.27	0.66	0.15
Uniform Delay, d1	42.8	48.8		44.9	57.0		22.3	40.5	25.0	47.1	25.9	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	179.5	74.0		20.1	73.0		7.1	25.3	0.5	147.0	1.3	0.4
Delay (s)	222.3	122.8		65.0	130.0		29.4	65.8	25.4	194.1	27.2	19.2
Level of Service	F	F		E	F		C	E	C	F	C	B
Approach Delay (s)		166.0			117.4			61.8			52.1	
Approach LOS		F			F			E			D	

Intersection Summary

HCM 2000 Control Delay	80.8	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	1.34		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	14.5
Intersection Capacity Utilization	113.5%	ICU Level of Service	H
Analysis Period (min)	15		
c Critical Lane Group			

Lanes, Volumes, Timings
202: Trafalgar Rd & West Street C

Total (2041) - Scenario A - West Side Only
Timing Plan: AM Peak Hour

						
Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations				  	  	
Traffic Volume (vph)	0	119	0	2639	1921	211
Future Volume (vph)	0	119	0	2639	1921	211
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (m)	0.0	0.0	0.0			90.0
Storage Lanes	0	1	0			1
Taper Length (m)	7.5		7.5			
Lane Util. Factor	1.00	1.00	1.00	0.91	0.91	1.00
Frt		0.865				0.850
Flt Protected						
Satd. Flow (prot)	0	1611	0	5085	5085	1583
Flt Permitted						
Satd. Flow (perm)	0	1611	0	5085	5085	1583
Link Speed (k/h)	50			50	50	
Link Distance (m)	202.4			247.3	208.3	
Travel Time (s)	14.6			17.8	15.0	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	129	0	2868	2088	229
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	129	0	2868	2088	229
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	0.0			3.6	3.6	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	4.8			4.8	4.8	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)	25	15	25			15
Sign Control	Stop			Free	Free	
Intersection Summary						
Area Type:	Other					
Control Type:	Unsignalized					
Intersection Capacity Utilization	54.3%			ICU Level of Service A		
Analysis Period (min)	15					

HCM Unsignalized Intersection Capacity Analysis Total (2041) - Scenario A - West Side Only
202: Trafalgar Rd & West Street C

Timing Plan: AM Peak Hour

								
Movement	EBL	EBR	NBL	NBT	SBT	SBR		
Lane Configurations				  	  			
Traffic Volume (veh/h)	0	119	0	2639	1921	211		
Future Volume (Veh/h)	0	119	0	2639	1921	211		
Sign Control	Stop			Free	Free			
Grade	0%			0%	0%			
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92		
Hourly flow rate (vph)	0	129	0	2868	2088	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)				247	208			
pX, platoon unblocked	0.79	0.61	0.61					
vC, conflicting volume	3044	696	2317					
vC1, stage 1 conf vol								
vC2, stage 2 conf vol								
vCu, unblocked vol	0	0	918					
tC, single (s)	6.8	6.9	4.1					
tC, 2 stage (s)								
tF (s)	3.5	3.3	2.2					
p0 queue free %	100	80	100					
cM capacity (veh/h)	805	661	450					
Direction, Lane #	EB 1	NB 1	NB 2	NB 3	SB 1	SB 2	SB 3	SB 4
Volume Total	129	956	956	956	696	696	696	229
Volume Left	0	0	0	0	0	0	0	0
Volume Right	129	0	0	0	0	0	0	229
cSH	661	1700	1700	1700	1700	1700	1700	1700
Volume to Capacity	0.20	0.56	0.56	0.56	0.41	0.41	0.41	0.13
Queue Length 95th (m)	5.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Control Delay (s)	11.8	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Lane LOS	B							
Approach Delay (s)	11.8	0.0				0.0		
Approach LOS	B							
Intersection Summary								
Average Delay				0.3				
Intersection Capacity Utilization	54.3%			ICU Level of Service			A	
Analysis Period (min)	15							

Lanes, Volumes, Timings
203: East Street D & East Street A

Total (2041) - Scenario A - West Side Only
Timing Plan: AM Peak Hour

						
Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	102	265	0	91	104	0
Future Volume (vph)	102	265	0	91	104	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	0.903					
Flt Protected					0.950	
Satd. Flow (prot)	1682	0	0	1863	1770	0
Flt Permitted					0.950	
Satd. Flow (perm)	1682	0	0	1863	1770	0
Link Speed (k/h)	50			50	50	
Link Distance (m)	212.6			202.8	119.6	
Travel Time (s)	15.3			14.6	8.6	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	111	288	0	99	113	0
Shared Lane Traffic (%)						
Lane Group Flow (vph)	399	0	0	99	113	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
Sign Control	Free			Free	Stop	
Intersection Summary						
Area Type:	Other					
Control Type:	Unsignalized					
Intersection Capacity Utilization	34.1%			ICU Level of Service A		
Analysis Period (min)	15					

HCM Unsignalized Intersection Capacity Analysis Total (2041) - Scenario A - West Side Only
203: East Street D & East Street A

Timing Plan: AM Peak Hour

	→	↖	↗	←	↖	↗
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↖			↖	↖	
Traffic Volume (veh/h)	102	265	0	91	104	0
Future Volume (Veh/h)	102	265	0	91	104	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)	111	288	0	99	113	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)	213					
pX, platoon unblocked						
vC, conflicting volume			399		354	255
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			399		354	255
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			100		82	100
cM capacity (veh/h)			1160		644	784
Direction, Lane #	EB 1	WB 1	NB 1			
Volume Total	399	99	113			
Volume Left	0	0	113			
Volume Right	288	0	0			
cSH	1700	1160	644			
Volume to Capacity	0.23	0.00	0.18			
Queue Length 95th (m)	0.0	0.0	4.7			
Control Delay (s)	0.0	0.0	11.8			
Lane LOS			B			
Approach Delay (s)	0.0	0.0	11.8			
Approach LOS			B			
Intersection Summary						
Average Delay			2.2			
Intersection Capacity Utilization			34.1%		ICU Level of Service	A
Analysis Period (min)			15			

Lanes, Volumes, Timings
204: East Street E & East Street A

Total (2041) - Scenario A - West Side Only
Timing Plan: AM Peak Hour

						
Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	0	48	0	0	96	0
Future Volume (vph)	0	48	0	0	96	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.865					
Flt Protected					0.950	
Satd. Flow (prot)	1611	0	0	1863	1770	0
Flt Permitted					0.950	
Satd. Flow (perm)	1611	0	0	1863	1770	0
Link Speed (k/h)	50			50	50	
Link Distance (m)	202.8			186.3	118.9	
Travel Time (s)	14.6			13.4	8.6	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	52	0	0	104	0
Shared Lane Traffic (%)						
Lane Group Flow (vph)	52	0	0	0	104	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	0.0			0.0	3.6	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	4.8			4.8	4.8	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)		15	25		25	15
Sign Control	Free			Free	Stop	
Intersection Summary						
Area Type:	Other					
Control Type:	Unsignalized					
Intersection Capacity Utilization	15.3%			ICU Level of Service A		
Analysis Period (min)	15					

HCM Unsignalized Intersection Capacity Analysis Total (2041) - Scenario A - West Side Only
204: East Street E & East Street A

Timing Plan: AM Peak Hour

	→	↗	↖	←	↙	↘
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↗			↖	↙	↘
Traffic Volume (veh/h)	0	48	0	0	96	0
Future Volume (Veh/h)	0	48	0	0	96	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)	0	52	0	0	104	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			52		26	26
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			52		26	26
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			100		89	100
cM capacity (veh/h)			1554		989	1050
Direction, Lane #	EB 1	WB 1	NB 1			
Volume Total	52	0	104			
Volume Left	0	0	104			
Volume Right	52	0	0			
cSH	1700	1700	989			
Volume to Capacity	0.03	0.00	0.11			
Queue Length 95th (m)	0.0	0.0	2.6			
Control Delay (s)	0.0	0.0	9.1			
Lane LOS			A			
Approach Delay (s)	0.0	0.0	9.1			
Approach LOS			A			
Intersection Summary						
Average Delay			6.0			
Intersection Capacity Utilization			15.3%		ICU Level of Service	A
Analysis Period (min)			15			

Lanes, Volumes, Timings
205: East Street F & East Street A

Total (2041) - Scenario A - West Side Only
Timing Plan: AM Peak Hour

						
Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
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	1.00	1.00	1.00
Frt						
Flt Protected						
Satd. Flow (prot)	1863	0	0	1863	1863	0
Flt Permitted						
Satd. Flow (perm)	1863	0	0	1863	1863	0
Link Speed (k/h)	50			50	50	
Link Distance (m)	186.3			197.2	119.9	
Travel Time (s)	13.4			14.2	8.6	
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)	0.0			0.0	3.6	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	4.8			4.8	4.8	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)		15	25		25	15
Sign Control	Stop			Free	Free	
Intersection Summary						
Area Type:	Other					
Control Type:	Unsignalized					
Intersection Capacity Utilization	0.0%			ICU Level of Service A		
Analysis Period (min)	15					

HCM Unsignalized Intersection Capacity Analysis Total (2041) - Scenario A - West Side Only
205: East Street F & East Street A Timing Plan: AM Peak Hour

Intersection Sign configuration not allowed in HCM analysis.

Lanes, Volumes, Timings
206: East Street D & East Street B

Total (2041) - Scenario A - West Side Only
Timing Plan: AM Peak Hour

	←	←	↑	↗	↘	↓
Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	↰		↰			↰
Traffic Volume (vph)	49	15	54	11	11	176
Future Volume (vph)	49	15	54	11	11	176
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	0.969		0.977			
Flt Protected	0.963					0.997
Satd. Flow (prot)	1738	0	1820	0	0	1857
Flt Permitted	0.963					0.997
Satd. Flow (perm)	1738	0	1820	0	0	1857
Link Speed (k/h)	50		50			50
Link Distance (m)	200.4		111.4			119.6
Travel Time (s)	14.4		8.0			8.6
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	53	16	59	12	12	191
Shared Lane Traffic (%)						
Lane Group Flow (vph)	69	0	71	0	0	203
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 26.8% ICU Level of Service A

Analysis Period (min) 15

HCM Unsignalized Intersection Capacity Analysis Total (2041) - Scenario A - West Side Only
206: East Street D & East Street B

Timing Plan: AM Peak Hour

	←	←	↑	↗	↘	↓
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	↰		↰			↰
Traffic Volume (veh/h)	49	15	54	11	11	176
Future Volume (Veh/h)	49	15	54	11	11	176
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)	53	16	59	12	12	191
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	280	65			71	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	280	65			71	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	92	98			99	
cM capacity (veh/h)	704	999			1529	

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	69	71	203
Volume Left	53	0	12
Volume Right	16	12	0
cSH	756	1700	1529
Volume to Capacity	0.09	0.04	0.01
Queue Length 95th (m)	2.3	0.0	0.2
Control Delay (s)	10.2	0.0	0.5
Lane LOS	B		A
Approach Delay (s)	10.2	0.0	0.5
Approach LOS	B		

Intersection Summary

Average Delay 2.4

Intersection Capacity Utilization 26.8% ICU Level of Service A

Analysis Period (min) 15

Lanes, Volumes, Timings
208: East Street F & East Street B

Total (2041) - Scenario A - West Side Only
Timing Plan: AM Peak Hour

						
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	1.00	1.00	1.00
Frt						
Flt Protected						
Satd. Flow (prot)	1863	0	0	1863	1863	0
Flt Permitted						
Satd. Flow (perm)	1863	0	0	1863	1863	0
Link Speed (k/h)	50			50	50	
Link Distance (m)	185.7			112.6	119.9	
Travel Time (s)	13.4			8.1	8.6	
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			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	25			15
Sign Control	Stop			Free	Free	
Intersection Summary						
Area Type:	Other					
Control Type:	Unsignalized					
Intersection Capacity Utilization	0.0%			ICU Level of Service A		
Analysis Period (min)	15					

HCM Unsignalized Intersection Capacity Analysis Total (2041) - Scenario A - West Side Only
208: East Street F & East Street B

Timing Plan: AM Peak Hour

	EBL	EBR	NBL	NBT	SBT	SBR
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	↔			↔	↔	
Traffic Volume (veh/h)	0	0	0	0	0	0
Future Volume (Veh/h)	0	0	0	0	0	0
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	0	0	0	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	0	0	0			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	0	0	0			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	100	100	100			
cM capacity (veh/h)	1023	1085	1623			
Direction, Lane #	EB 1	NB 1	SB 1			
Volume Total	0	0	0			
Volume Left	0	0	0			
Volume Right	0	0	0			
cSH	1700	1700	1700			
Volume to Capacity	0.00	0.00	0.00			
Queue Length 95th (m)	0.0	0.0	0.0			
Control Delay (s)	0.0	0.0	0.0			
Lane LOS	A					
Approach Delay (s)	0.0	0.0	0.0			
Approach LOS	A					
Intersection Summary						
Average Delay		0.0				
Intersection Capacity Utilization		0.0%		ICU Level of Service A		
Analysis Period (min)		15				

Lanes, Volumes, Timings Total (2041) - Scenario A - West Side Only
 209: William Halton Parkway & East Street D Timing Plan: AM Peak Hour

						
Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		 	 	 		 
Traffic Volume (vph)	0	1488	764	0	0	0
Future Volume (vph)	0	1488	764	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (m)	0.0			50.0	0.0	0.0
Storage Lanes	0			1	0	1
Taper Length (m)	7.5				7.5	
Lane Util. Factor	1.00	0.95	0.95	1.00	1.00	1.00
Frt						
Flt Protected						
Satd. Flow (prot)	0	3539	3539	1863	0	1863
Flt Permitted						
Satd. Flow (perm)	0	3539	3539	1863	0	1863
Link Speed (k/h)		50	50		50	
Link Distance (m)		204.1	194.7		111.4	
Travel Time (s)		14.7	14.0		8.0	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	1617	830	0	0	0
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	1617	830	0	0	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		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	25	15
Sign Control		Free	Free		Stop	
Intersection Summary						
Area Type:	Other					
Control Type:	Unsignalized					
Intersection Capacity Utilization 44.5%	ICU Level of Service A					
Analysis Period (min) 15						

HCM Unsignalized Intersection Capacity Analysis Total (2041) - Scenario A - West Side Only
 209: William Halton Parkway & East Street D Timing Plan: AM Peak Hour

						
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		 	 	 		 
Traffic Volume (veh/h)	0	1488	764	0	0	0
Future Volume (Veh/h)	0	1488	764	0	0	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)	0	1617	830	0	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)		204	195			
pX, platoon unblocked					0.74	
vC, conflicting volume	830				1638	415
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	830				1154	415
tC, single (s)	4.1				6.8	6.9
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	100				100	100
cM capacity (veh/h)	798				140	586
Direction, Lane #	EB 1	EB 2	WB 1	WB 2	WB 3	SB 1
Volume Total	808	808	415	415	0	0
Volume Left	0	0	0	0	0	0
Volume Right	0	0	0	0	0	0
cSH	1700	1700	1700	1700	1700	1700
Volume to Capacity	0.48	0.48	0.24	0.24	0.00	0.00
Queue Length 95th (m)	0.0	0.0	0.0	0.0	0.0	0.0
Control Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0
Lane LOS						A
Approach Delay (s)	0.0		0.0			0.0
Approach LOS						A
Intersection Summary						
Average Delay			0.0			
Intersection Capacity Utilization			44.5%		ICU Level of Service	A
Analysis Period (min)			15			

Lanes, Volumes, Timings

210: William Halton Parkway & East Street E

Total (2041) - Scenario A - West Side Only

Timing Plan: AM Peak Hour

	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations	↰	↱	↱	↰	↰	↰
Traffic Volume (vph)	0	1488	764	0	0	0
Future Volume (vph)	0	1488	764	0	0	0
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
Fr						
Flt Protected						
Satd. Flow (prot)	1863	3539	3539	1863	1863	0
Flt Permitted						
Satd. Flow (perm)	1863	3539	3539	1863	1863	0
Right Turn on Red				Yes	Yes	
Satd. Flow (RTOR)						
Link Speed (k/h)		50	50		50	
Link Distance (m)		194.7	188.1		114.3	
Travel Time (s)		14.0	13.5		8.2	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	1617	830	0	0	0
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	1617	830	0	0	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
Number of Detectors	1	2	2	1	1	
Detector Template	Left	Thru	Thru	Right	Left	
Leading Detector (m)	2.0	10.0	10.0	2.0	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)	2.0	0.6	0.6	2.0	2.0	
Detector 1 Type	CI+Ex	CI+Ex	CI+Ex	CI+Ex	CI+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		CI+Ex	CI+Ex			
Detector 2 Channel						
Detector 2 Extend (s)		0.0	0.0			
Turn Type	pm+pt	NA	NA	Perm	Prot	
Protected Phases	7	4	8		6	
Permitted Phases	4			8		

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Lanes, Volumes, Timings

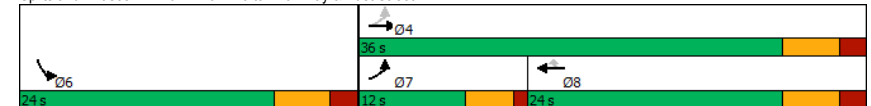
210: William Halton Parkway & East Street E

Total (2041) - Scenario A - West Side Only

Timing Plan: AM Peak Hour

	EBL	EBT	WBT	WBR	SBL	SBR
Detector Phase	7	4	8	8	6	
Switch Phase						
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	
Minimum Split (s)	9.5	24.0	24.0	24.0	24.0	
Total Split (s)	12.0	36.0	24.0	24.0	24.0	
Total Split (%)	20.0%	60.0%	40.0%	40.0%	40.0%	
Maximum Green (s)	7.5	30.0	18.0	18.0	18.0	
Yellow Time (s)	3.5	4.0	4.0	4.0	4.0	
All-Red Time (s)	1.0	2.0	2.0	2.0	2.0	
Lost Time Adjust (s)	1.0	-2.0	-2.0	-2.0	-2.0	
Total Lost Time (s)	5.5	4.0	4.0	4.0	4.0	
Lead/Lag	Lead		Lag	Lag		
Lead-Lag Optimize?	Yes		Yes	Yes		
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	
Recall Mode	None	Max	Max	Max	None	
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)		51.0	51.0			
Actuated g/C Ratio		1.00	1.00			
v/c Ratio		0.46	0.23			
Control Delay		0.4	0.2			
Queue Delay		0.0	0.0			
Total Delay		0.4	0.2			
LOS		A	A			
Approach Delay		0.4	0.2			
Approach LOS		A	A			
Intersection Summary						
Area Type:	Other					
Cycle Length: 60						
Actuated Cycle Length: 51						
Natural Cycle: 60						
Control Type: Semi Act-Uncoord						
Maximum v/c Ratio: 0.46						
Intersection Signal Delay: 0.3	Intersection LOS: A					
Intersection Capacity Utilization 44.5%	ICU Level of Service A					
Analysis Period (min) 15						

Splits and Phases: 210: William Halton Parkway & East Street E

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Queues Total (2041) - Scenario A - West Side Only
 210: William Halton Parkway & East Street E Timing Plan: AM Peak Hour

	→	←
Lane Group	EBT	WBT
Lane Group Flow (vph)	1617	830
v/c Ratio	0.46	0.23
Control Delay	0.4	0.2
Queue Delay	0.0	0.0
Total Delay	0.4	0.2
Queue Length 50th (m)	0.0	0.0
Queue Length 95th (m)	0.0	0.0
Internal Link Dist (m)	170.7	164.1
Turn Bay Length (m)		
Base Capacity (vph)	3539	3539
Starvation Cap Reductn	0	0
Spillback Cap Reductn	0	0
Storage Cap Reductn	0	0
Reduced v/c Ratio	0.46	0.23
Intersection Summary		

HCM Signalized Intersection Capacity Analysis Total (2041) - Scenario A - West Side Only
 210: William Halton Parkway & East Street E Timing Plan: AM Peak Hour

	↖	→	←	↗	↘	↙
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations	↖	↗	↗	↖	↖	↗
Traffic Volume (vph)	0	1488	764	0	0	0
Future Volume (vph)	0	1488	764	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0	4.0			
Lane Util. Factor		0.95	0.95			
Frt		1.00	1.00			
Flt Protected		1.00	1.00			
Satd. Flow (prot)		3539	3539			
Flt Permitted		1.00	1.00			
Satd. Flow (perm)		3539	3539			
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	1617	830	0	0	0
RTOR Reduction (vph)	0	0	0	0	0	0
Lane Group Flow (vph)	0	1617	830	0	0	0
Turn Type	pm+pt	NA	NA	Perm	Prot	
Protected Phases	7	4	8		6	
Permitted Phases	4			8		
Actuated Green, G (s)		51.0	51.0			
Effective Green, g (s)		51.0	51.0			
Actuated g/C Ratio		1.00	1.00			
Clearance Time (s)		6.0	6.0			
Vehicle Extension (s)		3.0	3.0			
Lane Grp Cap (vph)		3539	3539			
v/s Ratio Prot		c0.46	0.23			
v/s Ratio Perm						
v/c Ratio		0.46	0.23			
Uniform Delay, d1		0.0	0.0			
Progression Factor		1.00	1.00			
Incremental Delay, d2		0.4	0.2			
Delay (s)		0.4	0.2			
Level of Service		A	A			
Approach Delay (s)		0.4	0.2		0.0	
Approach LOS		A	A		A	
Intersection Summary						
HCM 2000 Control Delay		0.3		HCM 2000 Level of Service		A
HCM 2000 Volume to Capacity ratio		0.62				
Actuated Cycle Length (s)		51.0		Sum of lost time (s)		13.5
Intersection Capacity Utilization		44.5%		ICU Level of Service		A
Analysis Period (min)		15				

c Critical Lane Group

Lanes, Volumes, Timings

211: William Halton Parkway & East Street F

Total (2041) - Scenario A - West Side Only

Timing Plan: AM Peak Hour

						
Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	0	1488	764	0	0	0
Future Volume (vph)	0	1488	764	0	0	0
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
Fr						
Flt Protected						
Satd. Flow (prot)	1863	3539	3539	1863	1863	0
Flt Permitted						
Satd. Flow (perm)	1863	3539	3539	1863	1863	0
Link Speed (k/h)		50	50		50	
Link Distance (m)		188.1	219.2		112.6	
Travel Time (s)		13.5	15.8		8.1	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	1617	830	0	0	0
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	1617	830	0	0	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	44.5%			ICU Level of Service A		
Analysis Period (min)	15					

HCM Unsignalized Intersection Capacity Analysis

211: William Halton Parkway & East Street F

Total (2041) - Scenario A - West Side Only

Timing Plan: AM Peak Hour

	EBL	EBT	WBT	WBR	SBL	SBR
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations	↩	↗	↗	↗	↩	↩
Traffic Volume (veh/h)	0	1488	764	0	0	0
Future Volume (Veh/h)	0	1488	764	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
Grade	0%	0%	0%	0%	0%	0%
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	1617	830	0	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)		188				
pX, platoon unblocked						
vC, conflicting volume	830				1638	415
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	830				1638	415
tC, single (s)	4.1				6.8	6.9
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	100				100	100
cM capacity (veh/h)	798				91	586
Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	WB 3
Volume Total	0	808	808	415	415	0
Volume Left	0	0	0	0	0	0
Volume Right	0	0	0	0	0	0
cSH	1700	1700	1700	1700	1700	1700
Volume to Capacity	0.00	0.48	0.48	0.24	0.24	0.00
Queue Length 95th (m)	0.0	0.0	0.0	0.0	0.0	0.0
Control Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0
Lane LOS						A
Approach Delay (s)	0.0			0.0		0.0
Approach LOS						A
Intersection Summary						
Average Delay			0.0			
Intersection Capacity Utilization			44.5%		ICU Level of Service	A
Analysis Period (min)			15			

Lanes, Volumes, Timings

212: West Street A & Transit Station

Total (2041) - Scenario A - West Side Only

Timing Plan: AM Peak Hour

	WBL	WBR	NBT	NBR	SBL	SBT
Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	WBL	WBR	NBT	NBR	SBL	SBT
Traffic Volume (vph)	140	0	0	178	0	0
Future Volume (vph)	140	0	0	178	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt			0.865			
Flt Protected	0.950					
Satd. Flow (prot)	1770	0	1611	0	0	1863
Flt Permitted	0.950					
Satd. Flow (perm)	1770	0	1611	0	0	1863
Link Speed (k/h)	50		50			50
Link Distance (m)	70.0		239.0			98.7
Travel Time (s)	5.0		17.2			7.1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	152	0	0	193	0	0
Shared Lane Traffic (%)						
Lane Group Flow (vph)	152	0	193	0	0	0
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 25.4%

ICU Level of Service A

Analysis Period (min) 15

HCM Unsignalized Intersection Capacity Analysis

212: West Street A & Transit Station

Total (2041) - Scenario A - West Side Only

Timing Plan: AM Peak Hour

	WBL	WBR	NBT	NBR	SBL	SBT
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	WBL	WBR	NBT	NBR	SBL	SBT
Traffic Volume (veh/h)	140	0	0	178	0	0
Future Volume (Veh/h)	140	0	0	178	0	0
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)	152	0	0	193	0	0
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None					
Median storage (veh)						
Upstream signal (m)	213					
pX, platoon unblocked						
vC, conflicting volume	0		304	0	497	304
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	0		304	0	497	304
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 %	91		100	82	100	100
cM capacity (veh/h)	1623		552	1085	369	552

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	152	193	0
Volume Left	152	0	0
Volume Right	0	193	0
cSH	1623	1085	1700
Volume to Capacity	0.09	0.18	0.00
Queue Length 95th (m)	2.3	4.8	0.0
Control Delay (s)	7.4	9.0	0.0
Lane LOS	A	A	A
Approach Delay (s)	7.4	9.0	0.0
Approach LOS	A	A	A

Intersection Summary

Average Delay	8.3		
Intersection Capacity Utilization	25.4%	ICU Level of Service	A
Analysis Period (min)	15		

Lanes, Volumes, Timings

213: West Street A & William Halton Parkway

Total (2041) - Scenario A - West Side Only

Timing Plan: AM Peak Hour

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑	↑		↑↑	↑			↑			↑
Traffic Volume (vph)	0	1444	31	0	876	98	0	0	223	0	0	9
Future Volume (vph)	0	1444	31	0	876	98	0	0	223	0	0	9
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		1	0		1	0		1	0		1
Taper Length (m)	7.5			7.5			7.5			7.5		
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt			0.850			0.850			0.865			0.865
Fit Protected												
Satd. Flow (prot)	0	3539	1583	0	3539	1583	0	0	1611	0	0	1611
Fit Permitted												
Satd. Flow (perm)	0	3539	1583	0	3539	1583	0	0	1611	0	0	1611
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		202.0			209.3			100.4			239.0	
Travel Time (s)		14.5			15.1			7.2			17.2	
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	1570	34	0	952	107	0	0	242	0	0	10
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	1570	34	0	952	107	0	0	242	0	0	10
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 60.4%	ICU Level of Service B											
Analysis Period (min) 15												

HCM Unsignalized Intersection Capacity Analysis

213: West Street A & William Halton Parkway

Total (2041) - Scenario A - West Side Only

Timing Plan: AM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		 			 							
Traffic Volume (veh/h)	0	1444	31	0	876	98	0	0	223	0	0	9
Future Volume (Veh/h)	0	1444	31	0	876	98	0	0	223	0	0	9
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	1570	34	0	952	107	0	0	242	0	0	10
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				209							
pX, platoon unblocked	0.88			0.66			0.72	0.72	0.66	0.72	0.72	0.88
vC, conflicting volume	1059			1604			2056	2629	785	1979	2556	476
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	792			872			923	1723	0	816	1621	129
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	66	100	100	99
cM capacity (veh/h)	725			505			159	63	711	127	73	788
Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	WB 3	NB 1	SB 1				
Volume Total	785	785	34	476	476	107	242	10				
Volume Left	0	0	0	0	0	0	0	0				
Volume Right	0	0	34	0	0	107	242	10				
cSH	1700	1700	1700	1700	1700	1700	711	788				
Volume to Capacity	0.46	0.46	0.02	0.28	0.28	0.06	0.34	0.01				
Queue Length 95th (m)	0.0	0.0	0.0	0.0	0.0	0.0	11.3	0.3				
Control Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	12.6	9.6				
Lane LOS							B	A				
Approach Delay (s)	0.0			0.0			12.6	9.6				
Approach LOS							B	A				
Intersection Summary												
Average Delay	1.1											
Intersection Capacity Utilization	60.4%			ICU Level of Service			B					
Analysis Period (min)	15											

Lanes, Volumes, Timings

214: West Street D & William Halton Parkway

Total (2041) - Scenario A - West Side Only

Timing Plan: AM Peak Hour

	←	→	↖	↗	←	↖	↗	↖	↗	↖	↗	↖	↗
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations	↖	↖	↖	↖	↖	↖	↖	↖	↖	↖	↖	↖	
Traffic Volume (vph)	0	1373	27	215	573	97	19	0	22	80	0	4	
Future Volume (vph)	0	1373	27	215	573	97	19	0	22	80	0	4	
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		0.0	50.0		0.0	
Storage Lanes	1		0	1		1	1		0	1		0	
Taper Length (m)	100.0			100.0			75.0			75.0			
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Frt			0.850			0.850			0.850			0.850	
Flt Protected				0.950			0.950			0.950			
Satd. Flow (prot)	1863	3539	1583	1770	3539	1583	1770	1583	0	1770	1583	0	
Flt Permitted				0.066			0.755			0.742			
Satd. Flow (perm)	1863	3539	1583	123	3539	1583	1406	1583	0	1382	1583	0	
Right Turn on Red			Yes			Yes			Yes			Yes	
Satd. Flow (RTOR)			55			105			353			381	
Link Speed (k/h)		50			50			50			50		
Link Distance (m)		241.6			202.0			103.2			133.4		
Travel Time (s)		17.4			14.5			7.4			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)	0	1492	29	234	623	105	21	0	24	87	0	4	
Shared Lane Traffic (%)													
Lane Group Flow (vph)	0	1492	29	234	623	105	21	24	0	87	4	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	1	2	1	1	2		1	2		
Detector Template	Left	Thru	Right	Left	Thru	Right	Left	Thru		Left	Thru		
Leading Detector (m)	2.0	10.0	2.0	2.0	10.0	2.0	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		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	2.0	0.6	2.0	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		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	pm+pt	NA	Perm	Perm	NA		Perm	NA		
Protected Phases		4			3		8			2		6	
Permitted Phases	4		4		8		8		2		6		

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Lanes, Volumes, Timings

214: West Street D & William Halton Parkway

Total (2041) - Scenario A - West Side Only

Timing Plan: AM Peak Hour

	←	→	↖	↗	←	↖	↗	↖	↗	↖	↗	↖	↗
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Detector Phase	4	4	4	3	8	8	2	2		6	6		
Switch Phase													
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0		5.0	5.0		
Minimum Split (s)	24.0	24.0	24.0	9.5	24.0	24.0	24.0	24.0		24.0	24.0		
Total Split (s)	66.0	66.0	66.0	29.9	95.9	95.9	24.1	24.1		24.1	24.1		
Total Split (%)	55.0%	55.0%	55.0%	24.9%	79.9%	79.9%	20.1%	20.1%		20.1%	20.1%		
Maximum Green (s)	60.0	60.0	60.0	26.9	89.9	89.9	18.1	18.1		18.1	18.1		
Yellow Time (s)	4.0	4.0	4.0	3.0	4.0	4.0	4.0	4.0		4.0	4.0		
All-Red Time (s)	2.0	2.0	2.0	0.0	2.0	2.0	2.0	2.0		2.0	2.0		
Lost Time Adjust (s)	-2.0	-2.0	-2.0	1.0	-2.0	-2.0	-2.0	-2.0		-2.0	-2.0		
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0		4.0	4.0		
Lead/Lag	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	Max	Max	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	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 Effect Green (s)		62.4	62.4	92.5	93.4	93.4	14.0	14.0		14.3	14.3		
Actuated g/C Ratio		0.56	0.56	0.83	0.84	0.84	0.13	0.13		0.13	0.13		
v/c Ratio		0.76	0.03	0.48	0.21	0.08	0.12	0.05		0.49	0.01		
Control Delay		23.5	1.1	24.1	2.9	0.8	45.1	0.2		55.9	0.0		
Queue Delay		0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0		
Total Delay		23.5	1.1	24.1	2.9	0.8	45.1	0.2		55.9	0.0		
LOS		C	A	C	A	A	D	A		E	A		
Approach Delay		23.0			7.8		21.1			53.5			
Approach LOS		C			A		C			D			

Intersection Summary

Area Type: Other

Cycle Length: 120

Actuated Cycle Length: 111.8

Natural Cycle: 75

Control Type: Semi Act-Uncoord

Maximum v/c Ratio: 0.76

Intersection Signal Delay: 18.5

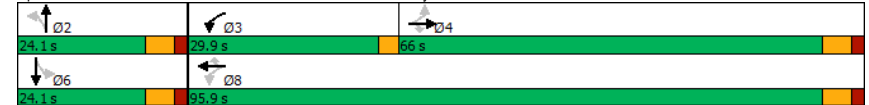
Intersection LOS: B

Intersection Capacity Utilization 71.0%

ICU Level of Service C

Analysis Period (min) 15

Splits and Phases: 214: West Street D & William Halton Parkway

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Queues
214: West Street D & William Halton Parkway

Total (2041) - Scenario A - West Side Only
Timing Plan: AM Peak Hour

	→	↘	↙	←	↖	↗	↘	↓	
Lane Group	EBT	EBR	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	1492	29	234	623	105	21	24	87	4
v/c Ratio	0.76	0.03	0.48	0.21	0.08	0.12	0.05	0.49	0.01
Control Delay	23.5	1.1	24.1	2.9	0.8	45.1	0.2	55.9	0.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	23.5	1.1	24.1	2.9	0.8	45.1	0.2	55.9	0.0
Queue Length 50th (m)	131.2	0.0	26.8	13.6	0.0	4.2	0.0	18.2	0.0
Queue Length 95th (m)	177.4	1.7	55.0	23.6	3.5	11.4	0.0	33.9	0.0
Internal Link Dist (m)	217.6			178.0			79.2		109.4
Turn Bay Length (m)		50.0	50.0		50.0	50.0		50.0	
Base Capacity (vph)	1974	907	485	2956	1339	254	575	249	598
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.76	0.03	0.48	0.21	0.08	0.08	0.04	0.35	0.01
Intersection Summary									

HCM Signalized Intersection Capacity Analysis
214: West Street D & William Halton Parkway

Total (2041) - Scenario A - West Side Only
Timing Plan: AM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		 			 							
Traffic Volume (vph)	0	1373	27	215	573	97	19	0	22	80	0	4
Future Volume (vph)	0	1373	27	215	573	97	19	0	22	80	0	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	4.0	
Lane Util. Factor		0.95	1.00	1.00	0.95	1.00	1.00	1.00		1.00	1.00	
Frt		1.00	0.85	1.00	1.00	0.85	1.00	0.85		1.00	0.85	
Flt Protected		1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)		3539	1583	1770	3539	1583	1770	1583		1770	1583	
Flt Permitted		1.00	1.00	0.07	1.00	1.00	0.76	1.00		0.74	1.00	
Satd. Flow (perm)		3539	1583	124	3539	1583	1407	1583		1381	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)	0	1492	29	234	623	105	21	0	24	87	0	4
RTOR Reduction (vph)	0	0	13	0	0	19	0	21	0	0	4	0
Lane Group Flow (vph)	0	1492	16	234	623	86	21	3	0	87	0	0
Turn Type	Perm	NA	Perm	pm+pt	NA	Perm	Perm	NA		Perm	NA	
Protected Phases		4		3	8			2			6	
Permitted Phases	4		4	8		8	2			6		
Actuated Green, G (s)		60.4	60.4	90.5	90.5	90.5	10.7	10.7		10.7	10.7	
Effective Green, g (s)		62.4	62.4	89.5	92.5	92.5	12.7	12.7		12.7	12.7	
Actuated g/C Ratio		0.55	0.55	0.79	0.82	0.82	0.11	0.11		0.11	0.11	
Clearance Time (s)		6.0	6.0	3.0	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	3.0	
Lane Grp Cap (vph)		1950	872	477	2891	1293	157	177		154	177	
v/s Ratio Prot		c0.42		c0.11	0.18			0.00			0.00	
v/s Ratio Perm			0.01	0.28		0.05	0.01			c0.06		
v/c Ratio		0.77	0.02	0.49	0.22	0.07	0.13	0.02		0.56	0.00	
Uniform Delay, d1		19.7	11.5	24.9	2.3	2.0	45.3	44.7		47.6	44.6	
Progression Factor		1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Incremental Delay, d2		2.9	0.0	3.6	0.2	0.1	0.4	0.0		4.7	0.0	
Delay (s)		22.6	11.6	28.4	2.5	2.1	45.7	44.7		52.3	44.6	
Level of Service		C	B	C	A	A	D	D		D	D	
Approach Delay (s)		22.4			8.7		45.2			52.0		
Approach LOS		C			A		D			D		
Intersection Summary												
HCM 2000 Control Delay			18.8		HCM 2000 Level of Service					B		
HCM 2000 Volume to Capacity ratio			0.67									
Actuated Cycle Length (s)			113.2		Sum of lost time (s)					12.0		
Intersection Capacity Utilization			71.0%		ICU Level of Service					C		
Analysis Period (min)			15									
c Critical Lane Group												

Lanes, Volumes, Timings

215: West Street A & West Street B

Total (2041) - Scenario A - West Side Only

Timing Plan: AM Peak Hour

						
Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	119	73	0	51	50	6
Future Volume (vph)	119	73	0	51	50	6
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	0.949				0.985	
Flt Protected	0.970					
Satd. Flow (prot)	1715	0	0	1863	1835	0
Flt Permitted	0.970					
Satd. Flow (perm)	1715	0	0	1863	1835	0
Link Speed (k/h)	50			50	50	
Link Distance (m)	202.8			106.4	100.4	
Travel Time (s)	14.6			7.7	7.2	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	129	79	0	55	54	7
Shared Lane Traffic (%)						
Lane Group Flow (vph)	208	0	0	55	61	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
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	25			15
Sign Control	Stop			Free	Free	

Intersection Summary

Area Type: Other

Control Type: Unsignalized

Intersection Capacity Utilization 21.1%

ICU Level of Service A

Analysis Period (min) 15

HCM Unsignalized Intersection Capacity Analysis

215: West Street A & West Street B

Total (2041) - Scenario A - West Side Only

Timing Plan: AM Peak Hour

						
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	119	73	0	51	50	6
Future Volume (Veh/h)	119	73	0	51	50	6
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)	129	79	0	55	54	7
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	None	
Median storage (veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	112	58	61			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	112	58	61			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	85	92	100			
cM capacity (veh/h)	884	1009	1542			
Direction, Lane #	EB 1	NB 1	SB 1			
Volume Total	208	55	61			
Volume Left	129	0	0			
Volume Right	79	0	7			
cSH	928	1542	1700			
Volume to Capacity	0.22	0.00	0.04			
Queue Length 95th (m)	6.4	0.0	0.0			
Control Delay (s)	10.0	0.0	0.0			
Lane LOS	A					
Approach Delay (s)	10.0	0.0	0.0			
Approach LOS	A					
Intersection Summary						
Average Delay		6.4				
Intersection Capacity Utilization		21.1%		ICU Level of Service	A	
Analysis Period (min)		15				

Lanes, Volumes, Timings

Total (2041) - Scenario A - West Side Only

216: West Street D & West Street B

Timing Plan: AM Peak Hour

	←	←	↑	↗	↘	↓
Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	↰		↱			↱
Traffic Volume (vph)	0	10	31	0	163	79
Future Volume (vph)	0	10	31	0	163	79
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.865					
Flt Protected						0.967
Satd. Flow (prot)	1611	0	1863	0	0	1801
Flt Permitted						0.967
Satd. Flow (perm)	1611	0	1863	0	0	1801
Link Speed (k/h)	50		50			50
Link Distance (m)	202.8		99.7			103.2
Travel Time (s)	14.6		7.2			7.4
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	11	34	0	177	86
Shared Lane Traffic (%)						
Lane Group Flow (vph)	11	0	34	0	0	263
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
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		15	25	
Sign Control	Stop		Free			Free

Intersection Summary

Area Type: Other

Control Type: Unsignalized

Intersection Capacity Utilization 29.8% ICU Level of Service A

Analysis Period (min) 15

HCM Unsignalized Intersection Capacity Analysis

Total (2041) - Scenario A - West Side Only

216: West Street D & West Street B

Timing Plan: AM Peak Hour

	←	←	↑	↗	↘	↓
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	↰		↱			↱
Traffic Volume (veh/h)	0	10	31	0	163	79
Future Volume (Veh/h)	0	10	31	0	163	79
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	11	34	0	177	86
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage (veh)						
Upstream signal (m)						103
pX, platoon unblocked	0.98					
vC, conflicting volume	474	34			34	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	452	34			34	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	100	99			89	
cM capacity (veh/h)	491	1039			1578	
Direction, Lane #	WB 1	NB 1	SB 1			
Volume Total	11	34	263			
Volume Left	0	0	177			
Volume Right	11	0	0			
cSH	1039	1700	1578			
Volume to Capacity	0.01	0.02	0.11			
Queue Length 95th (m)	0.2	0.0	2.8			
Control Delay (s)	8.5	0.0	5.4			
Lane LOS	A		A			
Approach Delay (s)	8.5	0.0	5.4			
Approach LOS	A					
Intersection Summary						
Average Delay			4.9			
Intersection Capacity Utilization			29.8%		ICU Level of Service	A
Analysis Period (min)			15			

Lanes, Volumes, Timings

217: West Street C & West Street A

Total (2041) - Scenario A - West Side Only

Timing Plan: AM Peak Hour

	EBL	EBT	WBT	WBR	SBL	SBR
Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↔	↔		↔	
Traffic Volume (vph)	0	59	56	150	84	10
Future Volume (vph)	0	59	56	150	84	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		0.902		0.985		
Flt Protected				0.957		
Satd. Flow (prot)	0	1863	1680	0	1756	0
Flt Permitted				0.957		
Satd. Flow (perm)	0	1863	1680	0	1756	0
Link Speed (k/h)		50	50		50	
Link Distance (m)		208.6	202.4		106.4	
Travel Time (s)		15.0	14.6		7.7	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	64	61	163	91	11
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	64	224	0	102	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 24.1%

ICU Level of Service A

Analysis Period (min) 15

HCM Unsignalized Intersection Capacity Analysis

217: West Street C & West Street A

Total (2041) - Scenario A - West Side Only

Timing Plan: AM Peak Hour

	EBL	EBT	WBT	WBR	SBL	SBR
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↔	↔		↔	
Traffic Volume (veh/h)	0	59	56	150	84	10
Future Volume (Veh/h)	0	59	56	150	84	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)	0	64	61	163	91	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	224				206	142
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	224				206	142
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	100				88	99
cM capacity (veh/h)	1345				782	905

Direction, Lane #	EB 1	WB 1	SB 1
Volume Total	64	224	102
Volume Left	0	0	91
Volume Right	0	163	11
cSH	1345	1700	794
Volume to Capacity	0.00	0.13	0.13
Queue Length 95th (m)	0.0	0.0	3.3
Control Delay (s)	0.0	0.0	10.2
Lane LOS			B
Approach Delay (s)	0.0	0.0	10.2
Approach LOS			B

Intersection Summary

Average Delay 2.7

Intersection Capacity Utilization 24.1%

ICU Level of Service

A

Analysis Period (min) 15

Lanes, Volumes, Timings

218: West Street D & West Street C

Total (2041) - Scenario A - West Side Only

Timing Plan: AM Peak Hour

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔			↔			↔			↔	
Traffic Volume (vph)	0	0	0	7	0	49	0	24	11	73	6	0
Future Volume (vph)	0	0	0	7	0	49	0	24	11	73	6	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					0.883			0.957				
Flt Protected					0.993						0.956	
Satd. Flow (prot)	0	1863	0	0	1633	0	0	1783	0	0	1781	0
Flt Permitted					0.993						0.956	
Satd. Flow (perm)	0	1863	0	0	1633	0	0	1783	0	0	1781	0
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		258.7			208.6			93.0			99.7	
Travel Time (s)		18.6			15.0			6.7			7.2	
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	0	8	0	53	0	26	12	79	7	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	0	0	0	61	0	0	38	0	0	86	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 21.1%

ICU Level of Service A

Analysis Period (min) 15

HCM Unsignalized Intersection Capacity Analysis

218: West Street D & West Street C

Total (2041) - Scenario A - West Side Only

Timing Plan: AM Peak Hour

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔			↔			↔			↔	
Traffic Volume (veh/h)	0	0	0	7	0	49	0	24	11	73	6	0
Future Volume (Veh/h)	0	0	0	7	0	49	0	24	11	73	6	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)	0	0	0	8	0	53	0	26	12	79	7	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	53			0			46	69	0	68	42	26
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	53			0			46	69	0	68	42	26
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			100			100	97	99	91	99	100
cM capacity (veh/h)	1553			1623			946	818	1085	889	845	1049
Direction, Lane #	EB 1	WB 1	NB 1	SB 1								
Volume Total	0	61	38	86								
Volume Left	0	8	0	79								
Volume Right	0	53	12	0								
cSH	1700	1623	887	886								
Volume to Capacity	0.00	0.00	0.04	0.10								
Queue Length 95th (m)	0.0	0.1	1.0	2.4								
Control Delay (s)	0.0	1.0	9.2	9.5								
Lane LOS	A	A	A	A								
Approach Delay (s)	0.0	1.0	9.2	9.5								
Approach LOS		A	A									
Intersection Summary												
Average Delay			6.6									
Intersection Capacity Utilization		21.1%		ICU Level of Service					A			
Analysis Period (min)			15									

Lanes, Volumes, Timings

101: Trafalgar Rd & Lower Base Line

TT (2041) - Scenario A - West Side Only

Timing Plan: PM Peak Hour

	↖	→	↗	↙	←	↖	↗	↙	↘	↖	↗	↙
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖	↖	↖	↖	↖	↖	↖	↖	↖	↖	↖	↖
Traffic Volume (vph)	54	240	77	309	678	368	461	2314	328	306	1607	123
Future Volume (vph)	54	240	77	309	678	368	461	2314	328	306	1607	123
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	45.0		45.0	110.0		110.0	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	0.230			0.241			0.072			0.077		
Satd. Flow (perm)	428	3412	0	449	3352	0	134	5085	1583	143	5085	1583
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		25			68				79			95
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	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	54	240	77	309	678	368	461	2314	328	306	1607	123
Shared Lane Traffic (%)												
Lane Group Flow (vph)	54	317	0	309	1046	0	461	2314	328	306	1607	123
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	pm+ov	pm+pt	NA	pm+ov
Protected Phases	7	4		3	8		5	2	3	1	6	7
Permitted Phases	4			8			2		2	6		6

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Lanes, Volumes, Timings

101: Trafalgar Rd & Lower Base Line

TT (2041) - Scenario A - West Side Only

Timing Plan: PM Peak Hour

	↖	→	↗	↙	←	↖	↗	↙	↘	↖	↗	↙
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector Phase	7	4		3	8		5	2	3	1	6	7
Switch Phase												
Minimum Initial (s)	5.0	10.0		7.0	10.0		5.0	25.0	7.0	7.0	25.0	5.0
Minimum Split (s)	11.6	22.5		13.6	22.5		11.6	31.6	13.6	13.6	31.6	11.6
Total Split (s)	11.6	22.6		27.0	38.0		31.0	71.4	27.0	19.0	59.4	11.6
Total Split (%)	8.3%	16.1%		19.3%	27.1%		22.1%	51.0%	19.3%	13.6%	42.4%	8.3%
Maximum Green (s)	5.0	16.4		24.0	31.8		28.0	64.8	24.0	16.0	52.8	5.0
Yellow Time (s)	4.6	4.2		3.0	4.2		3.0	4.6	3.0	3.0	4.6	4.6
All-Red Time (s)	2.0	2.0		0.0	2.0		0.0	2.0	0.0	0.0	2.0	2.0
Lost Time Adjust (s)	1.0	-2.2		1.0	-2.2		1.0	-2.2	1.0	1.0	-2.2	-2.2
Total Lost Time (s)	7.6	4.0		4.0	4.0		4.0	4.4	4.0	4.0	4.4	4.4
Lead/Lag	Lead	Lag		Lead	Lag		Lead	Lag	Lead	Lag	Lead	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	0.2	0.2	5.0	3.0
Recall Mode	None	None		None	None		None	Max	None	Max	Max	None
Act Effct Green (s)	21.0	20.6		45.6	34.0		86.4	67.0	92.4	70.4	55.0	66.6
Actuated g/C Ratio	0.15	0.15		0.33	0.24		0.62	0.48	0.66	0.50	0.39	0.48
v/c Ratio	0.53	0.61		0.90	1.21		1.16	0.95	0.31	1.24	0.80	0.15
Control Delay	59.3	57.5		68.1	146.9		134.5	45.0	8.0	175.6	41.6	6.5
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	59.3	57.5		68.1	146.9		134.5	45.0	8.0	175.6	41.6	6.5
LOS	E	E		E	F		F	D	A	F	D	A
Approach Delay		57.8			128.9			54.4			59.6	
Approach LOS		E			F			D			E	

Intersection Summary

Area Type: Other

Cycle Length: 140

Actuated Cycle Length: 140

Natural Cycle: 125

Control Type: Semi Act-Uncooord

Maximum v/c Ratio: 1.24

Intersection Signal Delay: 70.8

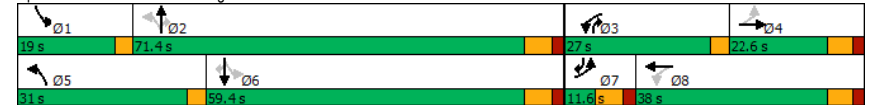
Intersection LOS: E

Intersection Capacity Utilization 113.0%

ICU Level of Service H

Analysis Period (min) 15

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

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Queues
101: Trafalgar Rd & Lower Base Line

TT (2041) - Scenario A - West Side Only
Timing Plan: PM Peak Hour

	EBL	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	54	317	309	1046	461	2314	328	306	1607	123
v/c Ratio	0.53	0.61	0.90	1.21	1.16	0.95	0.31	1.24	0.80	0.15
Control Delay	59.3	57.5	68.1	146.9	134.5	45.0	8.0	175.6	41.6	6.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	59.3	57.5	68.1	146.9	134.5	45.0	8.0	175.6	41.6	6.5
Queue Length 50th (m)	10.7	40.5	69.0	~175.8	~132.4	217.1	24.7	~87.7	141.7	4.0
Queue Length 95th (m)	#23.4	56.6	#108.3	#217.6	#198.5	#242.6	38.6	#145.8	160.4	14.8
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)	102	523	363	865	398	2433	1093	246	1997	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	0.53	0.61	0.85	1.21	1.16	0.95	0.30	1.24	0.80	0.15

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.

HCM Signalized Intersection Capacity Analysis
101: Trafalgar Rd & Lower Base Line

TT (2041) - Scenario A - West Side Only
Timing Plan: PM Peak Hour

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰	↱	↱	↰	↱	↱	↰	↱	↱	↰	↱	↱
Traffic Volume (vph)	54	240	77	309	678	368	461	2314	328	306	1607	123
Future Volume (vph)	54	240	77	309	678	368	461	2314	328	306	1607	123
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	7.6	4.0		4.0	4.0		4.0	4.4	4.0	4.0	4.4	4.4
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	3410		1770	3352		1770	5085	1583	1770	5085	1583
Flt Permitted	0.23	1.00		0.24	1.00		0.07	1.00	1.00	0.08	1.00	1.00
Satd. Flow (perm)	428	3410		448	3352		134	5085	1583	144	5085	1583
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	54	240	77	309	678	368	461	2314	328	306	1607	123
RTOR Reduction (vph)	0	21	0	0	51	0	0	0	31	0	0	53
Lane Group Flow (vph)	54	296	0	309	995	0	461	2314	297	306	1607	70
Turn Type	pm+pt	NA		pm+pt	NA		pm+pt	NA	pm+ov	pm+pt	NA	pm+ov
Protected Phases	7	4		3	8		5	2	3	1	6	7
Permitted Phases	4			8			2		2	6		6
Actuated Green, G (s)	23.4	18.4		43.4	31.8		83.8	64.8	86.8	68.8	52.8	57.8
Effective Green, g (s)	21.4	20.6		42.4	34.0		82.8	67.0	84.8	66.8	55.0	62.2
Actuated g/C Ratio	0.15	0.15		0.30	0.24		0.59	0.48	0.61	0.48	0.39	0.44
Clearance Time (s)	6.6	6.2		3.0	6.2		3.0	6.6	3.0	3.0	6.6	6.6
Vehicle Extension (s)	3.0	5.0		0.2	5.0		3.0	5.0	0.2	0.2	5.0	3.0
Lane Grp Cap (vph)	103	501		333	814		394	2433	958	242	1997	753
v/s Ratio Prot	0.01	0.09		c0.14	c0.30		c0.23	0.46	0.05	0.13	0.32	0.00
v/s Ratio Perm	0.06			0.14			0.47		0.14	c0.47		0.04
v/c Ratio	0.52	0.59		0.93	1.22		1.17	0.95	0.31	1.26	0.80	0.09
Uniform Delay, d1	52.5	55.8		42.0	53.0		45.9	34.9	13.4	44.3	37.7	22.6
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	4.7	2.8		30.6	110.8		100.5	9.9	0.1	147.7	3.6	0.1
Delay (s)	57.2	58.6		72.6	163.8		146.4	44.8	13.5	192.0	41.3	22.6
Level of Service	E	E		E	F		F	D	B	F	D	C
Approach Delay (s)		58.4			143.0			56.6			62.8	
Approach LOS		E			F			E			E	

Intersection Summary

HCM 2000 Control Delay	75.6	HCM 2000 Level of Service	E
HCM 2000 Volume to Capacity ratio	1.22		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	20.0
Intersection Capacity Utilization	113.0%	ICU Level of Service	H
Analysis Period (min)	15		

c Critical Lane Group

Lanes, Volumes, Timings

TT (2041) - Scenario A - West Side Only

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

Timing Plan: PM Peak Hour

	←	→	↙	↘	←	↙	↘	→	↙	↘	→	↙	↘
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations		↔		↔	↔	↔	↔	↔		↔	↔	↔	
Traffic Volume (vph)	7	0	49	513	16	174	9	2915	0	0	1988	5	
Future Volume (vph)	7	0	49	513	16	174	9	2915	0	0	1988	5	
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		0.882				0.991	0.850					0.850	
Flt Protected		0.994		0.950	0.958		0.950						
Satd. Flow (prot)	0	1633	0	1681	1609	1504	1770	5085	0	0	5085	1583	
Flt Permitted		0.994		0.720	0.712		0.070						
Satd. Flow (perm)	0	1633	0	1274	1196	1504	130	5085	0	0	5085	1583	
Right Turn on Red			Yes			Yes			Yes			Yes	
Satd. Flow (RTOR)		78			3	95						70	
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	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Adj. Flow (vph)	7	0	49	513	16	174	9	2915	0	0	1988	5	
Shared Lane Traffic (%)				47%		10%							
Lane Group Flow (vph)	0	56	0	272	274	157	9	2915	0	0	1988	5	
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	CI+Ex	CI+Ex		CI+Ex	CI+Ex	CI+Ex	CI+Ex	CI+Ex			CI+Ex	CI+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		CI+Ex			CI+Ex			CI+Ex			CI+Ex		
Detector 2 Channel													
Detector 2 Extend (s)		0.0			0.0			0.0			0.0		
Turn Type	Split	NA		Perm	NA	Perm	Perm	NA			NA	Perm	
Protected Phases	4	4			8			2			6		
Permitted Phases				8		8	2						6

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Synchro 10 Report
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Lanes, Volumes, Timings

TT (2041) - Scenario A - West Side Only

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

Timing Plan: PM Peak Hour

	←	→	↙	↘	←	↙	↘	→	↙	↘	→	↙	↘
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)	6.0	6.0		7.0	7.0	7.0		20.0	20.0		20.0	20.0	
Minimum Split (s)	12.0	12.0		22.5	22.5	22.5		27.0	27.0		27.0	27.0	
Total Split (s)	12.0	12.0		68.0	68.0	68.0		60.0	60.0		60.0	60.0	
Total Split (%)	8.6%	8.6%		48.6%	48.6%	48.6%		42.9%	42.9%		42.9%	42.9%	
Maximum Green (s)	6.0	6.0		62.0	62.0	62.0		53.0	53.0		53.0	53.0	
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		-3.0	-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 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)		8.2		32.3	32.3	32.3		57.1	57.1		57.1	57.1	
Actuated g/C Ratio		0.08		0.30	0.30	0.30		0.54	0.54		0.54	0.54	
v/c Ratio		0.29		0.70	0.75	0.30		0.13	1.07		0.73	0.01	
Control Delay		9.7		43.3	46.7	13.1		24.4	67.2		23.7	0.0	
Queue Delay		0.0		0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay		9.7		43.3	46.7	13.1		24.4	67.2		23.7	0.0	
LOS		A		D	D	B		C	E		C	A	
Approach Delay		9.7			37.9			67.1			23.6		
Approach LOS		A			D			E			C		

Intersection Summary

Area Type: Other

Cycle Length: 140

Actuated Cycle Length: 106.7

Natural Cycle: 100

Control Type: Actuated-Uncoordinated

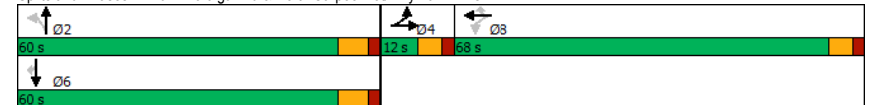
Maximum v/c Ratio: 1.07

Intersection Signal Delay: 47.6

Intersection Capacity Utilization 86.1%

Analysis Period (min) 15

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



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Queues TT (2041) - Scenario A - West Side Only
102: Trafalgar Rd & North Carpool Lot/Hwy 407 WB Off Timing Plan: PM Peak Hour

	→	↖	←	↙	↗	↑	↓	↘
Lane Group	EBT	WBL	WBT	WBR	NBL	NBT	SBT	SBR
Lane Group Flow (vph)	56	272	274	157	9	2915	1988	5
v/c Ratio	0.29	0.70	0.75	0.30	0.13	1.07	0.73	0.01
Control Delay	9.7	43.3	46.7	13.1	24.4	67.2	23.7	0.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	9.7	43.3	46.7	13.1	24.4	67.2	23.7	0.0
Queue Length 50th (m)	0.0	53.1	56.2	9.8	1.0	~256.1	116.1	0.0
Queue Length 95th (m)	7.5	81.8	87.8	25.2	5.5	#351.0	176.8	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)	196	778	732	956	69	2719	2719	879
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.29	0.35	0.37	0.16	0.13	1.07	0.73	0.01

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.

HCM Signalized Intersection Capacity Analysis TT (2041) - Scenario A - West Side Only
102: Trafalgar Rd & North Carpool Lot/Hwy 407 WB Off Timing Plan: PM Peak Hour

	↖	→	↘	↙	←	↗	↖	↗	↑	↘	↓	↙
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔		↖	↔	↗	↖	↔	↗	↖	↔	↗
Traffic Volume (vph)	7	0	49	513	16	174	9	2915	0	0	1988	5
Future Volume (vph)	7	0	49	513	16	174	9	2915	0	0	1988	5
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)	1633		1681	1609	1504	1770	5085				5085	1583
Flt Permitted	0.99		0.72	0.71	1.00	0.07	1.00				1.00	1.00
Satd. Flow (perm)	1633		1275	1196	1504	131	5085				5085	1583
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	7	0	49	513	16	174	9	2915	0	0	1988	5
RTOR Reduction (vph)	0	53	0	0	2	67	0	0	0	0	0	2
Lane Group Flow (vph)	0	3	0	272	272	90	9	2915	0	0	1988	3
Turn Type	Split	NA		Perm	NA	Perm	Perm	NA			NA	Perm
Protected Phases	4	4			8		2				6	
Permitted Phases				8		8	2					6
Actuated Green, G (s)		4.6		30.3	30.3	30.3	54.0	54.0			54.0	54.0
Effective Green, g (s)		6.6		32.3	32.3	32.3	57.0	57.0			57.0	57.0
Actuated g/C Ratio		0.06		0.30	0.30	0.30	0.53	0.53			0.53	0.53
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)		99		381	358	450	69	2686			2686	836
v/s Ratio Prot		c0.00						c0.57			0.39	
v/s Ratio Perm				0.21	c0.23	0.06	0.07					0.00
v/c Ratio		0.03		0.71	0.76	0.20	0.13	1.09			0.74	0.00
Uniform Delay, d1		47.7		33.7	34.3	28.2	12.9	25.5			19.7	12.0
Progression Factor		1.00		1.00	1.00	1.00	1.00	1.00			1.00	1.00
Incremental Delay, d2		0.2		6.4	9.2	0.3	3.9	45.6			1.9	0.0
Delay (s)		47.8		40.1	43.5	28.4	16.8	71.0			21.6	12.0
Level of Service		D		D	D	C	B	E			C	B
Approach Delay (s)		47.8			38.8			70.8			21.6	
Approach LOS		D			D			E			C	

Intersection Summary

HCM 2000 Control Delay	49.3	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.92		
Actuated Cycle Length (s)	107.9	Sum of lost time (s)	14.0
Intersection Capacity Utilization	86.1%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

Lanes, Volumes, Timings
103: Trafalgar Rd & Hwy 407 EB Off

TT (2041) - Scenario A - West Side Only
Timing Plan: PM Peak Hour

	EBL	EBR	NBL	NBT	SBT	SBR
Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	↩	↩		↗↗↗	↗↗↗	
Traffic Volume (vph)	87	155	0	3226	2347	0
Future Volume (vph)	87	155	0	3226	2347	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			251.9	363.6	
Travel Time (s)	39.9			18.1	26.2	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	87	155	0	3226	2347	0
Shared Lane Traffic (%)						
Lane Group Flow (vph)	87	155	0	3226	2347	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	CI+Ex	CI+Ex		CI+Ex	CI+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				CI+Ex	CI+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	

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Synchro 10 Report
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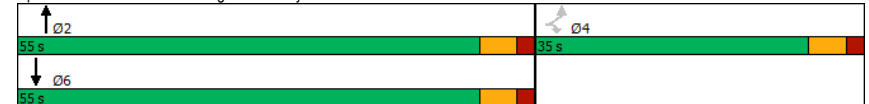
Lanes, Volumes, Timings
103: Trafalgar Rd & Hwy 407 EB Off

TT (2041) - Scenario A - West Side Only
Timing Plan: PM Peak Hour

	EBL	EBR	NBL	NBT	SBT	SBR
Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Minimum Split (s)	24.0	24.0		24.0	24.0	
Total Split (s)	35.0	35.0		55.0	55.0	
Total Split (%)	38.9%	38.9%		61.1%	61.1%	
Maximum Green (s)	29.0	29.0		49.0	49.0	
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)	14.6	14.6		54.2	54.2	
Actuated g/C Ratio	0.19	0.19		0.71	0.71	
v/c Ratio	0.26	0.51		0.90	0.65	
Control Delay	26.9	32.5		14.9	7.8	
Queue Delay	0.0	0.0		0.0	0.0	
Total Delay	26.9	32.5		14.9	7.8	
LOS	C	C		B	A	
Approach Delay	30.5			14.9	7.8	
Approach LOS	C			B	A	

Intersection Summary	
Area Type:	Other
Cycle Length: 90	
Actuated Cycle Length: 76.8	
Natural Cycle: 80	
Control Type: Semi Act-Uncoord	
Maximum v/c Ratio: 0.90	
Intersection Signal Delay: 12.7	Intersection LOS: B
Intersection Capacity Utilization 73.8%	ICU Level of Service D
Analysis Period (min) 15	

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



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Queues
103: Trafalgar Rd & Hwy 407 EB Off

TT (2041) - Scenario A - West Side Only
Timing Plan: PM Peak Hour

	EBL	EBR	NBT	SBT
Lane Group	EBL	EBR	NBT	SBT
Lane Group Flow (vph)	87	155	3226	2347
v/c Ratio	0.26	0.51	0.90	0.65
Control Delay	26.9	32.5	14.9	7.8
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	26.9	32.5	14.9	7.8
Queue Length 50th (m)	10.1	18.6	109.4	53.9
Queue Length 95th (m)	21.1	34.7	#207.6	87.6
Internal Link Dist (m)	530.6		227.9	339.6
Turn Bay Length (m)				
Base Capacity (vph)	716	642	3587	3587
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	0.12	0.24	0.90	0.65

Intersection Summary

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

HCM Signalized Intersection Capacity Analysis
103: Trafalgar Rd & Hwy 407 EB Off

TT (2041) - Scenario A - West Side Only
Timing Plan: PM Peak Hour

	EBL	EBR	NBL	NBT	SBT	SBR
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	↰	↱		↰	↰	↰
Traffic Volume (vph)	87	155	0	3226	2347	0
Future Volume (vph)	87	155	0	3226	2347	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	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	87	155	0	3226	2347	0
RTOR Reduction (vph)	0	2	0	0	0	0
Lane Group Flow (vph)	87	153	0	3226	2347	0
Turn Type	Perm	Perm		NA	NA	
Protected Phases				2	6	
Permitted Phases	4	4				
Actuated Green, G (s)	12.6	12.6		52.2	52.2	
Effective Green, g (s)	14.6	14.6		54.2	54.2	
Actuated g/C Ratio	0.19	0.19		0.71	0.71	
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)	336	300		3588	3588	
v/s Ratio Prot				c0.63	0.46	
v/s Ratio Perm	0.05	c0.10				
v/c Ratio	0.26	0.51		0.90	0.65	
Uniform Delay, d1	26.5	27.9		9.1	6.2	
Progression Factor	1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.4	1.4		4.1	0.9	
Delay (s)	26.9	29.2		13.2	7.1	
Level of Service	C	C		B	A	
Approach Delay (s)	28.4			13.2	7.1	
Approach LOS	C			B	A	

Intersection Summary

HCM 2000 Control Delay	11.4	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.84		
Actuated Cycle Length (s)	76.8	Sum of lost time (s)	10.0
Intersection Capacity Utilization	73.8%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

Lanes, Volumes, Timings
104: Trafalgar Rd & West Street A/East Street A

TT (2041) - Scenario A - West Side Only
Timing Plan: PM Peak Hour

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰	↑	↱	↰	↑	↱	↰	↑	↱	↰	↑	↱
Traffic Volume (vph)	249	0	153	0	0	0	20	3580	0	0	2368	134
Future Volume (vph)	249	0	153	0	0	0	20	3580	0	0	2368	134
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	90.0		90.0	90.0		90.0
Storage Lanes	1		1	1		1	1		1	1		1
Taper Length (m)	75.0			75.0			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
Flt Protected	0.950						0.950					
Satd. Flow (prot)	1770	1863	1583	1863	1863	1863	1770	5085	1863	1863	5085	1583
Flt Permitted	0.950						0.063					
Satd. Flow (perm)	1770	1863	1583	1863	1863	1863	117	5085	1863	1863	5085	1583
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			138									134
Link Speed (k/h)		50				50		80			80	
Link Distance (m)		216.0				205.9		233.3			251.9	
Travel Time (s)		15.6				14.8		10.5			11.3	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	249	0	153	0	0	0	20	3580	0	0	2368	134
Shared Lane Traffic (%)												
Lane Group Flow (vph)	249	0	153	0	0	0	20	3580	0	0	2368	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	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		pm+ov	pm+pt	NA	pm+ov	pm+pt	NA	pm+ov
Protected Phases	7	4		3	8	1	5	2	3	1	6	7
Permitted Phases	4		4	8		8	2		2	6		6

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Lanes, Volumes, Timings
104: Trafalgar Rd & West Street A/East Street A

TT (2041) - Scenario A - West Side Only
Timing Plan: PM Peak Hour

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector Phase	7	4	4	3	8	1	5	2	3	1	6	7
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)	9.5	24.0	24.0	9.5	24.0	11.0	9.5	24.0	9.5	11.0	24.0	9.5
Total Split (s)	10.0	24.3	24.3	9.7	24.0	25.0	9.5	91.0	9.7	25.0	106.5	10.0
Total Split (%)	6.7%	16.2%	16.2%	6.5%	16.0%	16.7%	6.3%	60.7%	6.5%	16.7%	71.0%	6.7%
Maximum Green (s)	7.0	18.3	18.3	6.7	18.0	22.0	6.5	85.0	6.7	22.0	100.5	7.0
Yellow Time (s)	3.0	4.0	4.0	3.0	4.0	3.0	3.0	4.0	3.0	3.0	4.0	3.0
All-Red Time (s)	0.0	2.0	2.0	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
Lost Time Adjust (s)	1.0	-2.0	-2.0	1.0	-2.0	-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	1.0	4.0	4.0	1.0	4.0	4.0	1.0
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lead	Lead	Lag	Lead	Lag	Lag	Lead
Lead-Lag Optimize?	Yes	Yes	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	3.0	3.0
Recall Mode	None	None	None	None	None	Max	None	C-Max	None	Max	C-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 Effect Green (s)	10.6		10.6				91.7	87.0			126.1	144.1
Actuated g/C Ratio	0.07		0.07				0.61	0.58			0.84	0.96
v/c Ratio	1.99		0.64				0.16	1.21			0.55	0.09
Control Delay	507.4		25.3				10.9	129.7			4.8	0.2
Queue Delay	0.0		0.0				0.0	0.2			0.3	0.0
Total Delay	507.4		25.3				10.9	129.9			5.1	0.2
LOS	F		C				B	F			A	A
Approach Delay		323.9						129.2			4.9	
Approach LOS		F						F			A	

Intersection Summary

Area Type:	Other
Cycle Length: 150	
Actuated Cycle Length: 150	
Offset: 0 (0%), Referenced to phase 2:NBT and 6:SBTL, Start of Green	
Natural Cycle: 150	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 1.99	
Intersection Signal Delay: 93.4	Intersection LOS: F
Intersection Capacity Utilization 89.6%	ICU Level of Service E
Analysis Period (min) 15	

Splits and Phases: 104: Trafalgar Rd & West Street A/East Street A

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Queues
104: Trafalgar Rd & West Street A/East Street A

TT (2041) - Scenario A - West Side Only
Timing Plan: PM Peak Hour

	EBL	EBR	NBL	NBT	SBT	SBR
Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Group Flow (vph)	249	153	20	3580	2368	134
v/c Ratio	1.99	0.64	0.16	1.21	0.55	0.09
Control Delay	507.4	25.3	10.9	129.7	4.8	0.2
Queue Delay	0.0	0.0	0.0	0.2	0.3	0.0
Total Delay	507.4	25.3	10.9	129.9	5.1	0.2
Queue Length 50th (m)	~119.2	4.3	1.5	~469.3	66.4	0.0
Queue Length 95th (m)	#145.0	25.8	2.9	#486.2	103.7	0.6
Internal Link Dist (m)			209.3	227.9		
Turn Bay Length (m)	50.0	50.0	90.0		90.0	
Base Capacity (vph)	125	333	132	2949	4274	1526
Starvation Cap Reductn	0	0	0	273	1012	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	1.99	0.46	0.15	1.34	0.73	0.09

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.

HCM Signalized Intersection Capacity Analysis
104: Trafalgar Rd & West Street A/East Street A

TT (2041) - Scenario A - West Side Only
Timing Plan: PM Peak Hour

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰	↑	↱	↰	↑	↱	↰	↑	↱	↰	↑	↱
Traffic Volume (vph)	249	0	153	0	0	0	20	3580	0	0	2368	134
Future Volume (vph)	249	0	153	0	0	0	20	3580	0	0	2368	134
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	1.0
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				118	5085			5085	1583
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	249	0	153	0	0	0	20	3580	0	0	2368	134
RTOR Reduction (vph)	0	0	128	0	0	0	0	0	0	0	0	10
Lane Group Flow (vph)	249	0	25	0	0	0	20	3580	0	0	2368	124
Turn Type	pm+pt		Perm	pm+pt		pm+ov	pm+pt	NA	pm+ov	pm+pt	NA	pm+ov
Protected Phases	7	4		3	8	1	5	2	3	1	6	7
Permitted Phases	4		4	8		8	2		2	6		6
Actuated Green, G (s)	11.6		8.6				88.5	85.0			122.9	134.5
Effective Green, g (s)	10.6		10.6				86.5	87.0			124.9	138.5
Actuated g/C Ratio	0.07		0.07				0.58	0.58			0.83	0.92
Clearance Time (s)	3.0		6.0				3.0	6.0			6.0	3.0
Vehicle Extension (s)	3.0		3.0				3.0	3.0			3.0	3.0
Lane Grp Cap (vph)	125		111				95	2949			4234	1461
v/s Ratio Prot	c0.14						c0.00	c0.70			c0.47	0.01
v/s Ratio Perm			0.02				0.12					0.07
v/c Ratio	1.99		0.22				0.21	1.21			0.56	0.08
Uniform Delay, d1	69.7		65.8				16.2	31.5			3.9	0.5
Progression Factor	1.00		1.00				1.00	1.00			1.00	1.00
Incremental Delay, d2	473.7		1.0				1.1	99.6			0.5	0.0
Delay (s)	543.4		66.8				17.3	131.1			4.5	0.5
Level of Service	F		E				B	F			A	A
Approach Delay (s)		362.0			0.0			130.5			4.3	
Approach LOS		F			A			F			A	

Intersection Summary

HCM 2000 Control Delay	96.2	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	1.10		
Actuated Cycle Length (s)	150.0	Sum of lost time (s)	16.0
Intersection Capacity Utilization	89.6%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

Lanes, Volumes, Timings
105: Trafalgar Rd & William Halton Parkway

TT (2041) - Scenario A - West Side Only
Timing Plan: PM Peak Hour

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔
Traffic Volume (vph)	802	531	148	207	1441	547	641	2483	111	431	1893	455
Future Volume (vph)	802	531	148	207	1441	547	641	2483	111	431	1893	455
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	0.098			0.434			0.087			0.095		
Satd. Flow (perm)	183	3539	1583	808	3539	1583	162	5085	1583	177	5085	1583
Right Turn on Red			Yes			Yes			Yes		Yes	
Satd. Flow (RTOR)			148			188			73		250	
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		212.9			205.0			193.0			233.3	
Travel Time (s)		15.3			14.8			13.9			16.8	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	802	531	148	207	1441	547	641	2483	111	431	1893	455
Shared Lane Traffic (%)												
Lane Group Flow (vph)	802	531	148	207	1441	547	641	2483	111	431	1893	455
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

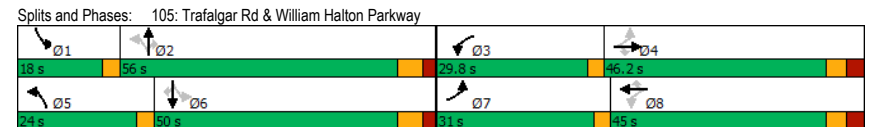
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Lanes, Volumes, Timings
105: Trafalgar Rd & William Halton Parkway

TT (2041) - Scenario A - West Side Only
Timing Plan: PM Peak Hour

	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)	14.0	38.0	38.0	14.2	38.0	38.0	13.9	42.9	42.9	13.9	42.9	42.9
Total Split (s)	31.0	46.2	46.2	29.8	45.0	45.0	24.0	56.0	56.0	18.0	50.0	50.0
Total Split (%)	20.7%	30.8%	30.8%	19.9%	30.0%	30.0%	16.0%	37.3%	37.3%	12.0%	33.3%	33.3%
Maximum Green (s)	28.0	39.2	39.2	26.8	38.0	38.0	21.0	49.1	49.1	15.0	43.1	43.1
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)	0.0	3.3	3.3	0.0	3.3	3.3	0.0	2.3	2.3	0.0	2.3	2.3
Lost Time Adjust (s)	1.0	-3.0	-3.0	1.0	-3.0	-3.0	1.0	-2.9	-2.9	1.0	-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	Max	Max	Max	Max	Max	Max
Walk Time (s)		7.0	7.0		7.0	7.0		7.0	7.0		7.0	7.0
Flash Dont Walk (s)		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 Effect Green (s)	72.0	53.1	53.1	55.9	41.0	41.0	70.0	52.0	52.0	60.0	46.0	46.0
Actuated g/C Ratio	0.48	0.35	0.35	0.37	0.27	0.27	0.47	0.35	0.35	0.40	0.31	0.31
v/c Ratio	2.15	0.42	0.23	0.52	1.49	0.96	2.21	1.41	0.19	1.97	1.21	0.69
Control Delay	551.0	38.8	6.0	29.2	263.9	64.2	579.5	224.6	13.9	477.2	146.5	25.9
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	551.0	38.8	6.0	29.2	263.9	64.2	579.5	224.6	13.9	477.2	146.5	25.9
LOS	F	D	A	C	F	E	F	F	B	F	F	C
Approach Delay		312.9			192.0			287.7			178.1	
Approach LOS		F			F			F			F	
Intersection Summary												
Area Type:		Other										
Cycle Length: 150												
Actuated Cycle Length: 150												
Natural Cycle: 140												
Control Type: Semi Act-Uncoord												
Maximum v/c Ratio: 2.21												
Intersection Signal Delay: 238.4							Intersection LOS: F					
Intersection Capacity Utilization 169.7%							ICU Level of Service H					
Analysis Period (min) 15												



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Queues
105: Trafalgar Rd & William Halton Parkway

TT (2041) - Scenario A - West Side Only
Timing Plan: PM Peak Hour

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	802	531	148	207	1441	547	641	2483	111	431	1893	455
v/c Ratio	2.15	0.42	0.23	0.52	1.49	0.96	2.21	1.41	0.19	1.97	1.21	0.69
Control Delay	551.0	38.8	6.0	29.2	263.9	64.2	579.5	224.6	13.9	477.2	146.5	25.9
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	551.0	38.8	6.0	29.2	263.9	64.2	579.5	224.6	13.9	477.2	146.5	25.9
Queue Length 50th (m)	~360.8	62.2	0.0	35.2	~306.6	114.1	~287.9	~356.9	7.5	~180.3	~248.1	54.4
Queue Length 95th (m)	#437.9	83.2	15.3	52.2	#348.5	#187.7	#361.9	#382.4	21.2	#246.3	#276.4	94.8
Internal Link Dist (m)		188.9			181.0			169.0			209.3	
Turn Bay Length (m)	100.0		100.0	100.0		150.0	150.0		75.0			
Base Capacity (vph)	373	1252	655	525	967	569	290	1762	596	219	1559	658
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	2.15	0.42	0.23	0.39	1.49	0.96	2.21	1.41	0.19	1.97	1.21	0.69

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.

HCM Signalized Intersection Capacity Analysis
105: Trafalgar Rd & William Halton Parkway

TT (2041) - Scenario A - West Side Only
Timing Plan: PM Peak Hour

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰	↱	↱	↰	↱	↱	↰	↱	↱	↰	↱	↱
Traffic Volume (vph)	802	531	148	207	1441	547	641	2483	111	431	1893	455
Future Volume (vph)	802	531	148	207	1441	547	641	2483	111	431	1893	455
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	0.85	1.00	0.85	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	0.10	1.00	1.00	0.43	1.00	1.00	0.09	1.00	1.00	0.10	1.00	1.00
Satd. Flow (perm)	182	3539	1583	808	3539	1583	162	5085	1583	177	5085	1583
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	802	531	148	207	1441	547	641	2483	111	431	1893	455
RTOR Reduction (vph)	0	0	96	0	0	137	0	0	48	0	0	173
Lane Group Flow (vph)	802	531	52	207	1441	410	641	2483	63	431	1893	282
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)	69.0	50.1	50.1	53.9	38.0	38.0	67.1	49.1	49.1	58.1	43.1	43.1
Effective Green, g (s)	68.0	53.1	53.1	51.9	41.0	41.0	66.1	52.0	52.0	56.1	46.0	46.0
Actuated g/C Ratio	0.45	0.35	0.35	0.35	0.27	0.27	0.44	0.35	0.35	0.37	0.31	0.31
Clearance Time (s)	3.0	7.0	7.0	3.0	7.0	7.0	3.0	6.9	6.9	3.0	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	1252	560	375	967	432	285	1762	548	214	1559	485
v/s Ratio Prot	c0.39	0.15		0.05	0.41		c0.30	0.49		0.19	0.37	
v/s Ratio Perm	c0.60		0.03	0.14		0.26	c0.69		0.04	0.56		0.18
v/c Ratio	2.18	0.42	0.09	0.55	1.49	0.95	2.25	1.41	0.12	2.01	1.21	0.58
Uniform Delay, d1	48.3	36.8	32.4	36.3	54.5	53.5	48.3	49.0	33.3	44.1	52.0	43.9
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	539.6	0.5	0.2	1.8	226.1	31.2	573.3	187.6	0.4	472.4	102.6	5.0
Delay (s)	587.9	37.3	32.5	38.1	280.6	84.7	621.5	236.6	33.8	516.5	154.6	48.9
Level of Service	F	D	C	D	F	F	F	F	C	F	F	D
Approach Delay (s)		335.0			208.9			305.9			193.4	
Approach LOS		F			F			F			F	

Intersection Summary

HCM 2000 Control Delay	256.1	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	2.17		
Actuated Cycle Length (s)	150.0	Sum of lost time (s)	16.0
Intersection Capacity Utilization	169.7%	ICU Level of Service	H
Analysis Period (min)	15		

c Critical Lane Group

Lanes, Volumes, Timings TT (2041) - Scenario A - West Side Only
106: Trafalgar Rd & Burnhamthorpe Rd/Burnhamthorpe Rd Timing Plan: PM Peak Hour

	←	→	↙	↘	←	↙	↘	→	↙	↘	→	↙	↘
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations	↙	↘		↙	↘		↙	↘	↙	↘	↙	↘	
Traffic Volume (vph)	148	339	18	135	297	503	100	2273	145	294	1464	238	
Future Volume (vph)	148	339	18	135	297	503	100	2273	145	294	1464	238	
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	1.00	1.00	1.00	1.00	1.00	1.00	0.91	1.00	1.00	0.91	1.00	
Frt		0.992				0.906			0.850			0.850	
Flt Protected	0.950			0.950			0.950			0.950			
Satd. Flow (prot)	1770	1848	0	1770	1688	0	1770	5085	1583	1770	5085	1583	
Flt Permitted	0.137			0.246			0.105			0.095			
Satd. Flow (perm)	255	1848	0	458	1688	0	196	5085	1583	177	5085	1583	
Right Turn on Red			Yes			Yes			Yes			Yes	
Satd. Flow (RTOR)		2			80				104			238	
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	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Adj. Flow (vph)	148	339	18	135	297	503	100	2273	145	294	1464	238	
Shared Lane Traffic (%)													
Lane Group Flow (vph)	148	357	0	135	800	0	100	2273	145	294	1464	238	
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	pm+ov	pm+pt	NA	pm+ov	
Protected Phases	7	4		3	8		5	2	3	1	6	7	
Permitted Phases	4			8			2		2	6		6	

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Lanes, Volumes, Timings TT (2041) - Scenario A - West Side Only
106: Trafalgar Rd & Burnhamthorpe Rd/Burnhamthorpe Rd Timing Plan: PM Peak Hour

	←	→	↙	↘	←	↙	↘	→	↙	↘	→	↙	↘
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Detector Phase	7	4		3	8		5	2	3	1	6	7	
Switch Phase													
Minimum Initial (s)	5.0	10.0		5.0	10.0		5.0	20.0	5.0	7.0	20.0	5.0	
Minimum Split (s)	9.5	24.0		9.5	24.0		9.5	26.0	9.5	11.5	26.0	9.5	
Total Split (s)	10.0	36.2		11.8	38.0		9.6	45.0	11.8	17.0	52.4	10.0	
Total Split (%)	9.1%	32.9%		10.7%	34.5%		8.7%	40.9%	10.7%	15.5%	47.6%	9.1%	
Maximum Green (s)	7.0	30.2		8.8	32.0		6.6	39.0	8.8	14.0	46.4	7.0	
Yellow Time (s)	3.0	3.7		3.0	3.7		3.0	4.6	3.0	3.0	4.6	3.0	
All-Red Time (s)	0.0	2.3		0.0	2.3		0.0	1.4	0.0	0.0	1.4	0.0	
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	1.0	4.0	4.0	1.0	
Lead/Lag	Lead	Lag		Lead	Lag		Lead	Lag	Lead	Lag	Lag	Lead	
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	Max	None		Max	None		Max	Max	Max	Max	Max	Max	
Act Effct Green (s)	38.2	32.2		41.8	34.0		46.6	41.0	55.8	58.0	48.4	61.4	
Actuated g/C Ratio	0.35	0.29		0.38	0.31		0.42	0.37	0.51	0.53	0.44	0.56	
v/c Ratio	0.87	0.66		0.51	1.39		0.61	1.20	0.17	1.05	0.65	0.24	
Control Delay	67.8	40.7		28.8	213.5		32.6	127.4	5.4	95.1	26.0	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	67.8	40.7		28.8	213.5		32.6	127.4	5.4	95.1	26.0	2.1	
LOS	E	D		C	F		C	F	A	F	C	A	
Approach Delay		48.7			186.9			116.6			33.3		
Approach LOS		D			F			F			C		

Intersection Summary

Area Type: Other

Cycle Length: 110

Actuated Cycle Length: 110

Natural Cycle: 120

Control Type: Semi Act-Uncooord

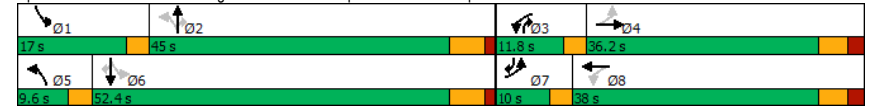
Maximum v/c Ratio: 1.39

Intersection Signal Delay: 94.0

Intersection Capacity Utilization 128.2%

Analysis Period (min) 15

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



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Queues
106: Trafalgar Rd & Burhamthorpe Rd/Burnhamthorpe Rd

TT (2041) - Scenario A - West Side Only
Timing Plan: PM Peak Hour

	EBL	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	148	357	135	800	100	2273	145	294	1464	238
v/c Ratio	0.87	0.66	0.51	1.39	0.61	1.20	0.17	1.05	0.65	0.24
Control Delay	67.8	40.7	28.8	213.5	32.6	127.4	5.4	95.1	26.0	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	67.8	40.7	28.8	213.5	32.6	127.4	5.4	95.1	26.0	2.1
Queue Length 50th (m)	20.2	65.8	18.3	~215.2	10.2	~214.5	4.2	~51.2	87.3	0.0
Queue Length 95th (m)	#49.0	97.1	31.4	#286.8	#24.3	#243.1	14.0	#103.4	102.9	10.2
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	
Base Capacity (vph)	171	542	267	577	163	1895	854	281	2237	988
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	0.87	0.66	0.51	1.39	0.61	1.20	0.17	1.05	0.65	0.24

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.

HCM Signalized Intersection Capacity Analysis
106: Trafalgar Rd & Burhamthorpe Rd/Burnhamthorpe Rd

TT (2041) - Scenario A - West Side Only
Timing Plan: PM Peak Hour

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰	↱	↲	↰	↱	↲	↰	↱	↲	↰	↱	↲
Traffic Volume (vph)	148	339	18	135	297	503	100	2273	145	294	1464	238
Future Volume (vph)	148	339	18	135	297	503	100	2273	145	294	1464	238
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	1.0	4.0	4.0	1.0
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	0.99		1.00	0.91		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	1849		1770	1687		1770	5085	1583	1770	5085	1583
Flt Permitted	0.14	1.00		0.25	1.00		0.11	1.00	1.00	0.10	1.00	1.00
Satd. Flow (perm)	255	1849		459	1687		196	5085	1583	177	5085	1583
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	148	339	18	135	297	503	100	2273	145	294	1464	238
RTOR Reduction (vph)	0	1	0	0	55	0	0	0	55	0	0	114
Lane Group Flow (vph)	148	356	0	135	745	0	100	2273	90	294	1464	124
Turn Type	pm+pt	NA		pm+pt	NA		pm+pt	NA	pm+ov	pm+pt	NA	pm+ov
Protected Phases	7	4		3	8		5	2	3	1	6	7
Permitted Phases	4			8			2		2	6		6
Actuated Green, G (s)	37.2	30.2		40.8	32.0		45.6	39.0	47.8	56.0	46.4	53.4
Effective Green, g (s)	35.2	32.2		38.8	34.0		43.6	41.0	51.8	55.0	48.4	57.4
Actuated g/C Ratio	0.32	0.29		0.35	0.31		0.40	0.37	0.47	0.50	0.44	0.52
Clearance Time (s)	3.0	6.0		3.0	6.0		3.0	6.0	3.0	3.0	6.0	3.0
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)	164	541		254	521		157	1895	745	276	2237	826
v/s Ratio Prot	c0.05	0.19		0.04	c0.44		0.03	c0.45	c0.01	c0.13	0.29	0.01
v/s Ratio Perm	0.24			0.15			0.22		0.04	0.40		0.07
v/c Ratio	0.90	0.66		0.53	1.43		0.64	1.20	0.12	1.07	0.65	0.15
Uniform Delay, d1	33.1	34.1		26.5	38.0		22.7	34.5	16.3	32.9	24.2	13.6
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	43.1	2.9		2.1	204.1		18.1	95.2	0.3	72.5	1.5	0.4
Delay (s)	76.2	36.9		28.6	242.1		40.8	129.7	16.7	105.4	25.7	14.0
Level of Service	E	D		C	F		D	F	B	F	C	B
Approach Delay (s)		48.5			211.3			119.6			36.1	
Approach LOS		D			F			F			D	

Intersection Summary

HCM 2000 Control Delay	100.0	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	1.25		
Actuated Cycle Length (s)	110.0	Sum of lost time (s)	16.0
Intersection Capacity Utilization	128.2%	ICU Level of Service	H
Analysis Period (min)	15		

c Critical Lane Group

Lanes, Volumes, Timings
202: Trafalgar Rd & East Street C

TT (2041) - Scenario A - West Side Only
Timing Plan: PM Peak Hour

	EBL	EBR	NBL	NBT	SBT	SBR
Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations		↗		↗↗↗	↗↗↗	↗
Traffic Volume (vph)	0	188	0	2924	1808	237
Future Volume (vph)	0	188	0	2924	1808	237
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (m)	0.0	0.0	0.0			90.0
Storage Lanes	0	1	0			1
Taper Length (m)	7.5		7.5			
Lane Util. Factor	1.00	1.00	1.00	0.91	0.91	1.00
Frt		0.865				0.850
Flt Protected						
Satd. Flow (prot)	0	1611	0	5085	5085	1583
Flt Permitted						
Satd. Flow (perm)	0	1611	0	5085	5085	1583
Link Speed (k/h)	50			50	50	
Link Distance (m)	205.4			92.4	193.0	
Travel Time (s)	14.8			6.7	13.9	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	0	188	0	2924	1808	237
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	188	0	2924	1808	237
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	0.0			3.6	3.6	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	4.8			4.8	4.8	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)	25	15	25			15
Sign Control	Stop			Free	Free	
Intersection Summary						
Area Type:	Other					
Control Type:	Unsignalized					
Intersection Capacity Utilization 59.8%	ICU Level of Service B					
Analysis Period (min) 15						

HCM Unsignalized Intersection Capacity Analysis
202: Trafalgar Rd & East Street C

TT (2041) - Scenario A - West Side Only
Timing Plan: PM Peak Hour

								
Movement	EBL	EBR	NBL	NBT	SBT	SBR		
Lane Configurations				  	  			
Traffic Volume (veh/h)	0	188	0	2924	1808	237		
Future Volume (Veh/h)	0	188	0	2924	1808	237		
Sign Control	Stop			Free	Free			
Grade	0%			0%	0%			
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00		
Hourly flow rate (vph)	0	188	0	2924	1808	237		
Pedestrians								
Lane Width (m)								
Walking Speed (m/s)								
Percent Blockage								
Right turn flare (veh)								
Median type				None	None			
Median storage (veh)								
Upstream signal (m)				263	193			
pX, platoon unblocked	0.79	0.70	0.70					
vC, conflicting volume	2783	603	2045					
vC1, stage 1 conf vol								
vC2, stage 2 conf vol								
vCu, unblocked vol	0	0	1017					
tC, single (s)	6.8	6.9	4.1					
tC, 2 stage (s)								
tF (s)	3.5	3.3	2.2					
p0 queue free %	100	75	100					
cM capacity (veh/h)	811	764	478					
Direction, Lane #	EB 1	NB 1	NB 2	NB 3	SB 1	SB 2	SB 3	SB 4
Volume Total	188	975	975	975	603	603	603	237
Volume Left	0	0	0	0	0	0	0	0
Volume Right	188	0	0	0	0	0	0	237
cSH	764	1700	1700	1700	1700	1700	1700	1700
Volume to Capacity	0.25	0.57	0.57	0.57	0.35	0.35	0.35	0.14
Queue Length 95th (m)	7.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Control Delay (s)	11.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Lane LOS	B							
Approach Delay (s)	11.2	0.0	0.0					
Approach LOS	B							
Intersection Summary								
Average Delay	0.4							
Intersection Capacity Utilization	59.8%			ICU Level of Service			B	
Analysis Period (min)	15							

Lanes, Volumes, Timings
203: East Street D & East Street A

TT (2041) - Scenario A - West Side Only
Timing Plan: PM Peak Hour

						
Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	112	342	0	186	233	0
Future Volume (vph)	112	342	0	186	233	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	0.850					
Flt Protected			0.950			
Satd. Flow (prot)	1863	1583	0	1863	1770	0
Flt Permitted			0.950			
Satd. Flow (perm)	1863	1583	0	1863	1770	0
Link Speed (k/h)	50			50	50	
Link Distance (m)	205.9			205.1	113.3	
Travel Time (s)	14.8			14.8	8.2	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	112	342	0	186	233	0
Shared Lane Traffic (%)						
Lane Group Flow (vph)	112	342	0	186	233	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
Sign Control	Free			Free	Stop	
Intersection Summary						
Area Type:	Other					
Control Type:	Unsignalized					
Intersection Capacity Utilization	37.6%			ICU Level of Service A		
Analysis Period (min)	15					

HCM Unsignalized Intersection Capacity Analysis
203: East Street D & East Street A

TT (2041) - Scenario A - West Side Only
Timing Plan: PM Peak Hour

	→	↗	↖	←	↙	↘
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑	↗		↖	↙	↘
Traffic Volume (veh/h)	112	342	0	186	233	0
Future Volume (Veh/h)	112	342	0	186	233	0
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	112	342	0	186	233	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)	206					
pX, platoon unblocked						
vC, conflicting volume			454		298	112
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			454		298	112
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			100		66	100
cM capacity (veh/h)			1107		693	941
Direction, Lane #	EB 1	EB 2	WB 1	NB 1		
Volume Total	112	342	186	233		
Volume Left	0	0	0	233		
Volume Right	0	342	0	0		
cSH	1700	1700	1107	693		
Volume to Capacity	0.07	0.20	0.00	0.34		
Queue Length 95th (m)	0.0	0.0	0.0	11.1		
Control Delay (s)	0.0	0.0	0.0	12.8		
Lane LOS				B		
Approach Delay (s)	0.0		0.0	12.8		
Approach LOS				B		
Intersection Summary						
Average Delay			3.4			
Intersection Capacity Utilization			37.6%		ICU Level of Service	A
Analysis Period (min)			15			

Lanes, Volumes, Timings
204: East Street E & East Street A

TT (2041) - Scenario A - West Side Only
Timing Plan: PM Peak Hour

	→	↘	↙	←	↖	↗
Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↗			↖	↗	↖
Traffic Volume (vph)	0	63	0	0	201	0
Future Volume (vph)	0	63	0	0	201	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.865					
Flt Protected					0.950	
Satd. Flow (prot)	1611	0	0	1863	1770	0
Flt Permitted					0.950	
Satd. Flow (perm)	1611	0	0	1863	1770	0
Link Speed (k/h)	50			50	50	
Link Distance (m)	205.1			192.2	115.1	
Travel Time (s)	14.8			13.8	8.3	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	0	63	0	0	201	0
Shared Lane Traffic (%)						
Lane Group Flow (vph)	63	0	0	0	201	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	0.0			0.0	3.6	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	4.8			4.8	4.8	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)		15	25		25	15
Sign Control	Free			Free	Stop	
Intersection Summary						
Area Type:	Other					
Control Type:	Unsignalized					
Intersection Capacity Utilization 21.7%	ICU Level of Service A					
Analysis Period (min) 15						

HCM Unsignalized Intersection Capacity Analysis
204: East Street E & East Street A

TT (2041) - Scenario A - West Side Only
Timing Plan: PM Peak Hour

	→	↘	↙	←	↖	↗
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↗			↖	↗	↖
Traffic Volume (veh/h)	0	63	0	0	201	0
Future Volume (Veh/h)	0	63	0	0	201	0
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	0	63	0	0	201	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			63		32	32
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			63		32	32
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			100		80	100
cM capacity (veh/h)			1540		982	1043
Direction, Lane #	EB 1	WB 1	NB 1			
Volume Total	63	0	201			
Volume Left	0	0	201			
Volume Right	63	0	0			
cSH	1700	1700	982			
Volume to Capacity	0.04	0.00	0.20			
Queue Length 95th (m)	0.0	0.0	5.7			
Control Delay (s)	0.0	0.0	9.6			
Lane LOS			A			
Approach Delay (s)	0.0	0.0	9.6			
Approach LOS			A			
Intersection Summary						
Average Delay			7.3			
Intersection Capacity Utilization			21.7%		ICU Level of Service	A
Analysis Period (min)			15			

Lanes, Volumes, Timings
205: East Street F & East Street A

TT (2041) - Scenario A - West Side Only
Timing Plan: PM Peak Hour

						
Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
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	1.00	1.00	1.00
Frt						
Flt Protected						
Satd. Flow (prot)	1863	0	0	1863	1863	0
Flt Permitted						
Satd. Flow (perm)	1863	0	0	1863	1863	0
Link Speed (k/h)	50			50	50	
Link Distance (m)	192.2			209.4	115.6	
Travel Time (s)	13.8			15.1	8.3	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
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)	0.0			0.0	3.6	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	4.8			4.8	4.8	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)		15	25		25	15
Sign Control	Free			Free	Stop	
Intersection Summary						
Area Type:	Other					
Control Type:	Unsignalized					
Intersection Capacity Utilization	0.0%			ICU Level of Service A		
Analysis Period (min)	15					

HCM Unsignalized Intersection Capacity Analysis
205: East Street F & East Street A

TT (2041) - Scenario A - West Side Only
Timing Plan: PM Peak Hour

	→	↖	↗	←	↖	↗
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↖			↖	↖	
Traffic Volume (veh/h)	0	0	0	0	0	0
Future Volume (Veh/h)	0	0	0	0	0	0
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	0	0	0	0	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			0		0	0
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			0		0	0
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			100		100	100
cM capacity (veh/h)			1623		1023	1085
Direction, Lane #	EB 1	WB 1	NB 1			
Volume Total	0	0	0			
Volume Left	0	0	0			
Volume Right	0	0	0			
cSH	1700	1700	1700			
Volume to Capacity	0.00	0.00	0.00			
Queue Length 95th (m)	0.0	0.0	0.0			
Control Delay (s)	0.0	0.0	0.0			
Lane LOS			A			
Approach Delay (s)	0.0	0.0	0.0			
Approach LOS			A			
Intersection Summary						
Average Delay			0.0			
Intersection Capacity Utilization			0.0%		ICU Level of Service	A
Analysis Period (min)			15			

Lanes, Volumes, Timings
206: East Street D & East Street B

TT (2041) - Scenario A - West Side Only
Timing Plan: PM Peak Hour

	←	←	↑	↗	↘	↓
Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	↖		↗			↖
Traffic Volume (vph)	68	6	115	14	15	265
Future Volume (vph)	68	6	115	14	15	265
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	0.989		0.985			
Flt Protected	0.956					0.997
Satd. Flow (prot)	1761	0	1835	0	0	1857
Flt Permitted	0.956					0.997
Satd. Flow (perm)	1761	0	1835	0	0	1857
Link Speed (k/h)	50		50			50
Link Distance (m)	203.4		120.6			113.3
Travel Time (s)	14.6		8.7			8.2
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	68	6	115	14	15	265
Shared Lane Traffic (%)						
Lane Group Flow (vph)	74	0	129	0	0	280
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 35.8% ICU Level of Service A

Analysis Period (min) 15

HCM Unsignalized Intersection Capacity Analysis
206: East Street D & East Street B

TT (2041) - Scenario A - West Side Only
Timing Plan: PM Peak Hour

	←	←	↑	↗	↘	↓
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	↖		↗			↖
Traffic Volume (veh/h)	68	6	115	14	15	265
Future Volume (Veh/h)	68	6	115	14	15	265
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	68	6	115	14	15	265
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	417	122			129	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	417	122			129	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	88	99			99	
cM capacity (veh/h)	586	929			1457	

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	74	129	280
Volume Left	68	0	15
Volume Right	6	14	0
cSH	604	1700	1457
Volume to Capacity	0.12	0.08	0.01
Queue Length 95th (m)	3.1	0.0	0.2
Control Delay (s)	11.8	0.0	0.5
Lane LOS	B		A
Approach Delay (s)	11.8	0.0	0.5
Approach LOS	B		

Intersection Summary

Average Delay	2.1		
Intersection Capacity Utilization	35.8%	ICU Level of Service	A
Analysis Period (min)	15		

Lanes, Volumes, Timings
207: East Street E & East Street B

TT (2041) - Scenario A - West Side Only
Timing Plan: PM Peak Hour

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	79	0	86	0	0	0	152	15	0	0	63	0
Future Volume (vph)	79	0	86	0	0	0	152	15	0	0	63	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	0.930											
Flt Protected	0.977											
Satd. Flow (prot)	0	1693	0	0	1863	0	0	1781	0	0	1863	0
Flt Permitted	0.977											
Satd. Flow (perm)	0	1693	0	0	1863	0	0	1781	0	0	1863	0
Link Speed (k/h)	50											
Link Distance (m)	203.4											
Travel Time (s)	14.6											
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	79	0	86	0	0	0	152	15	0	0	63	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	165	0	0	0	0	0	167	0	0	63	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											
Link Offset(m)	0.0											
Crosswalk Width(m)	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											
Intersection Summary												
Area Type:	Other											
Control Type:	Unsignalized											
Intersection Capacity Utilization	32.2%											
Analysis Period (min)	15											
ICU Level of Service A												

HCM Unsignalized Intersection Capacity Analysis
207: East Street E & East Street B

TT (2041) - Scenario A - West Side Only
Timing Plan: PM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	79	0	86	0	0	0	152	15	0	0	63	0
Future Volume (Veh/h)	79	0	86	0	0	0	152	15	0	0	63	0
Sign Control	Stop			Stop			Free			Free		
Grade	0%			0%			0%			0%		
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	79	0	86	0	0	0	152	15	0	0	63	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)	121											
pX, platoon unblocked												
vC, conflicting volume	382	382	63	468	382	15	63				15	
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	382	382	63	468	382	15	63				15	
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 %	85	100	91	100	100	100	90				100	
cM capacity (veh/h)	532	497	1002	427	497	1065	1540				1603	
Direction, Lane #	EB 1	WB 1	NB 1	SB 1								
Volume Total	165	0	167	63								
Volume Left	79	0	152	0								
Volume Right	86	0	0	0								
cSH	704	1700	1540	1603								
Volume to Capacity	0.23	0.00	0.10	0.00								
Queue Length 95th (m)	6.8	0.0	2.5	0.0								
Control Delay (s)	11.7	0.0	7.0	0.0								
Lane LOS	B	A	A									
Approach Delay (s)	11.7	0.0	7.0	0.0								
Approach LOS	B	A										
Intersection Summary												
Average Delay	7.8											
Intersection Capacity Utilization	32.2%			ICU Level of Service			A					
Analysis Period (min)	15											

Lanes, Volumes, Timings
208: East Street F & East Street B

TT (2041) - Scenario A - West Side Only
Timing Plan: PM Peak Hour

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	1.00	1.00	1.00
Flt						
Flt Protected						
Satd. Flow (prot)	1863	0	0	1863	1863	0
Flt Permitted						
Satd. Flow (perm)	1863	0	0	1863	1863	0
Link Speed (k/h)	50			50	50	
Link Distance (m)	193.8			120.1	115.6	
Travel Time (s)	14.0			8.6	8.3	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
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			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	25			15
Sign Control	Stop			Free	Free	
Intersection Summary						
Area Type:	Other					
Control Type:	Unsignalized					
Intersection Capacity Utilization	0.0%			ICU Level of Service A		
Analysis Period (min)	15					

HCM Unsignalized Intersection Capacity Analysis
208: East Street F & East Street B

TT (2041) - Scenario A - West Side Only
Timing Plan: PM Peak Hour

	EBL	EBR	NBL	NBT	SBT	SBR
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	0	0	0	0	0	0
Future Volume (Veh/h)	0	0	0	0	0	0
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	0	0	0	0	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	0	0	0			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	0	0	0			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	100	100	100			
cM capacity (veh/h)	1023	1085	1623			
Direction, Lane #	EB 1	NB 1	SB 1			
Volume Total	0	0	0			
Volume Left	0	0	0			
Volume Right	0	0	0			
cSH	1700	1700	1700			
Volume to Capacity	0.00	0.00	0.00			
Queue Length 95th (m)	0.0	0.0	0.0			
Control Delay (s)	0.0	0.0	0.0			
Lane LOS	A					
Approach Delay (s)	0.0	0.0	0.0			
Approach LOS	A					
Intersection Summary						
Average Delay		0.0				
Intersection Capacity Utilization		0.0%		ICU Level of Service A		
Analysis Period (min)		15				

Lanes, Volumes, Timings
209: William Halton Parkway & East Street D

TT (2041) - Scenario A - West Side Only
Timing Plan: PM Peak Hour

						
Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑↑	↑↑	↑		↑
Traffic Volume (vph)	0	1073	2195	0	0	0
Future Volume (vph)	0	1073	2195	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (m)	0.0			50.0	0.0	0.0
Storage Lanes	0			1	0	1
Taper Length (m)	7.5				7.5	
Lane Util. Factor	1.00	0.95	0.95	1.00	1.00	1.00
Frt						
Flt Protected						
Satd. Flow (prot)	0	3539	3539	1863	0	1863
Flt Permitted						
Satd. Flow (perm)	0	3539	3539	1863	0	1863
Link Speed (k/h)		50	50		50	
Link Distance (m)		205.0	201.5		120.6	
Travel Time (s)		14.8	14.5		8.7	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	0	1073	2195	0	0	0
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	1073	2195	0	0	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		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	25	15
Sign Control		Free	Free		Stop	
Intersection Summary						
Area Type:	Other					
Control Type:	Unsignalized					
Intersection Capacity Utilization	64.0%			ICU Level of Service C		
Analysis Period (min)	15					

HCM Unsignalized Intersection Capacity Analysis
209: William Halton Parkway & East Street D

TT (2041) - Scenario A - West Side Only
Timing Plan: PM Peak Hour

	EBL	EBT	WBT	WBR	SBL	SBR
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑↑	↑↑	↑		↑
Traffic Volume (veh/h)	0	1073	2195	0	0	0
Future Volume (Veh/h)	0	1073	2195	0	0	0
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	0	1073	2195	0	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)		205	201			
pX, platoon unblocked	0.26				0.31	0.26
vC, conflicting volume	2195				2732	1098
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	0				566	0
tC, single (s)	4.1				6.8	6.9
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	100				100	100
cM capacity (veh/h)	420				143	281
Direction, Lane #	EB 1	EB 2	WB 1	WB 2	WB 3	SB 1
Volume Total	536	536	1098	1098	0	0
Volume Left	0	0	0	0	0	0
Volume Right	0	0	0	0	0	0
cSH	1700	1700	1700	1700	1700	1700
Volume to Capacity	0.32	0.32	0.65	0.65	0.00	0.00
Queue Length 95th (m)	0.0	0.0	0.0	0.0	0.0	0.0
Control Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0
Lane LOS						A
Approach Delay (s)	0.0		0.0			0.0
Approach LOS						A
Intersection Summary						
Average Delay			0.0			
Intersection Capacity Utilization			64.0%		ICU Level of Service	C
Analysis Period (min)			15			

Lanes, Volumes, Timings

210: William Halton Parkway & East Street E

TT (2041) - Scenario A - West Side Only

Timing Plan: PM Peak Hour

	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations	↰	↱	↱	↰	↰	↰
Traffic Volume (vph)	0	1073	2195	0	0	0
Future Volume (vph)	0	1073	2195	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (m)	90.0			50.0	0.0	0.0
Storage Lanes	1			1	1	0
Taper Length (m)	100.0				7.5	
Lane Util. Factor	1.00	*0.95	*0.95	1.00	1.00	1.00
Fr						
Flt Protected						
Satd. Flow (prot)	1863	3539	3539	1863	1863	0
Flt Permitted						
Satd. Flow (perm)	1863	3539	3539	1863	1863	0
Right Turn on Red				Yes	Yes	
Satd. Flow (RTOR)						
Link Speed (k/h)		50	50		50	
Link Distance (m)		201.5	195.6		120.6	
Travel Time (s)		14.5	14.1		8.7	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	0	1073	2195	0	0	0
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	1073	2195	0	0	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
Number of Detectors	1	2	2	1	1	
Detector Template	Left	Thru	Thru	Right	Left	
Leading Detector (m)	2.0	10.0	10.0	2.0	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)	2.0	0.6	0.6	2.0	2.0	
Detector 1 Type	CI+Ex	CI+Ex	CI+Ex	CI+Ex	CI+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		CI+Ex	CI+Ex			
Detector 2 Channel						
Detector 2 Extend (s)		0.0	0.0			
Turn Type	pm+pt	NA	NA	Perm	Perm	
Protected Phases	7	4	8			
Permitted Phases	4			8	6	

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Lanes, Volumes, Timings

210: William Halton Parkway & East Street E

TT (2041) - Scenario A - West Side Only

Timing Plan: PM Peak Hour

	EBL	EBT	WBT	WBR	SBL	SBR
Detector Phase	7	4	8	8	6	
Switch Phase						
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	
Minimum Split (s)	9.5	24.0	24.0	24.0	24.0	
Total Split (s)	17.6	95.6	78.0	78.0	24.4	
Total Split (%)	14.7%	79.7%	65.0%	65.0%	20.3%	
Maximum Green (s)	14.6	89.6	72.0	72.0	18.4	
Yellow Time (s)	3.0	4.0	4.0	4.0	4.0	
All-Red Time (s)	0.0	2.0	2.0	2.0	2.0	
Lost Time Adjust (s)	1.0	-2.0	-2.0	-2.0	-2.0	
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	
Lead/Lag	Lead		Lag	Lag		
Lead-Lag Optimize?	Yes		Yes	Yes		
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	
Flash Dont Walk (s)		11.0	11.0	11.0	11.0	
Pedestrian Calls (#/hr)		0	0	0	0	
Act Effct Green (s)		95.6	74.0			
Actuated g/C Ratio		1.00	0.77			
v/c Ratio		0.30	0.80			
Control Delay		0.2	9.4			
Queue Delay		0.0	0.0			
Total Delay		0.2	9.4			
LOS		A	A			
Approach Delay		0.2	9.4			
Approach LOS		A	A			

Intersection Summary

Area Type: Other

Cycle Length: 120

Actuated Cycle Length: 95.6

Natural Cycle: 90

Control Type: Semi Act-Uncoord

Maximum v/c Ratio: 0.80

Intersection Signal Delay: 6.4

Intersection LOS: A

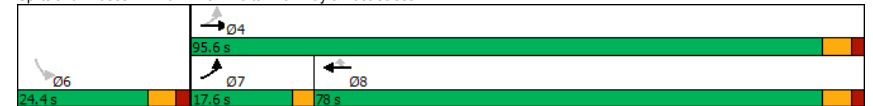
Intersection Capacity Utilization 64.0%

ICU Level of Service C

Analysis Period (min) 15

* User Entered Value

Splits and Phases: 210: William Halton Parkway & East Street E

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Queues
210: William Halton Parkway & East Street E

TT (2041) - Scenario A - West Side Only
Timing Plan: PM Peak Hour

	→	←
Lane Group	EBT	WBT
Lane Group Flow (vph)	1073	2195
v/c Ratio	0.30	0.80
Control Delay	0.2	9.4
Queue Delay	0.0	0.0
Total Delay	0.2	9.4
Queue Length 50th (m)	0.0	99.0
Queue Length 95th (m)	0.0	128.1
Internal Link Dist (m)	177.5	171.6
Turn Bay Length (m)		
Base Capacity (vph)	3539	2739
Starvation Cap Reductn	0	0
Spillback Cap Reductn	0	0
Storage Cap Reductn	0	0
Reduced v/c Ratio	0.30	0.80
Intersection Summary		

HCM Signalized Intersection Capacity Analysis
210: William Halton Parkway & East Street E

TT (2041) - Scenario A - West Side Only
Timing Plan: PM Peak Hour

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	0	1073	2195	0	0	0
Future Volume (vph)	0	1073	2195	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0	4.0			
Lane Util. Factor		*0.95	*0.95			
Frt		1.00	1.00			
Flt Protected		1.00	1.00			
Satd. Flow (prot)		3539	3539			
Flt Permitted		1.00	1.00			
Satd. Flow (perm)		3539	3539			
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	0	1073	2195	0	0	0
RTOR Reduction (vph)	0	0	0	0	0	0
Lane Group Flow (vph)	0	1073	2195	0	0	0
Turn Type	pm+pt	NA	NA	Perm	Perm	
Protected Phases	7	4	8			
Permitted Phases	4			8	6	
Actuated Green, G (s)		95.6	72.0			
Effective Green, g (s)		95.6	74.0			
Actuated g/C Ratio		1.00	0.77			
Clearance Time (s)		6.0	6.0			
Vehicle Extension (s)		3.0	3.0			
Lane Grp Cap (vph)		3539	2739			
v/s Ratio Prot		c0.30	c0.62			
v/s Ratio Perm						
v/c Ratio		0.30	0.80			
Uniform Delay, d1		0.0	6.4			
Progression Factor		1.00	1.00			
Incremental Delay, d2		0.2	2.6			
Delay (s)		0.2	9.0			
Level of Service		A	A			
Approach Delay (s)		0.2	9.0		0.0	
Approach LOS		A	A		A	
Intersection Summary						
HCM 2000 Control Delay			6.1	HCM 2000 Level of Service		A
HCM 2000 Volume to Capacity ratio			0.79			
Actuated Cycle Length (s)			95.6	Sum of lost time (s)		14.0
Intersection Capacity Utilization			64.0%	ICU Level of Service		C
Analysis Period (min)			15			
c Critical Lane Group						

c Critical Lane Group

Lanes, Volumes, Timings
211: William Halton Parkway & East Street F

TT (2041) - Scenario A - West Side Only
Timing Plan: PM Peak Hour

						
Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		 	 		 	
Traffic Volume (vph)	0	1073	2195	0	0	0
Future Volume (vph)	0	1073	2195	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (m)	90.0			0.0	0.0	0.0
Storage Lanes	1			0	1	0
Taper Length (m)	100.0				7.5	
Lane Util. Factor	1.00	0.95	0.95	0.95	1.00	1.00
Frt						
Flt Protected						
Satd. Flow (prot)	1863	3539	3539	0	1863	0
Flt Permitted						
Satd. Flow (perm)	1863	3539	3539	0	1863	0
Link Speed (k/h)		50	50		50	
Link Distance (m)		195.6	407.9		120.1	
Travel Time (s)		14.1	29.4		8.6	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	0	1073	2195	0	0	0
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	1073	2195	0	0	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	64.0%			ICU Level of Service C		
Analysis Period (min)	15					

HCM Unsignalized Intersection Capacity Analysis
211: William Halton Parkway & East Street F

TT (2041) - Scenario A - West Side Only
Timing Plan: PM Peak Hour

	EBL	EBT	WBT	WBR	SBL	SBR
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations	↰	↱	↱		↰	
Traffic Volume (veh/h)	0	1073	2195	0	0	0
Future Volume (Veh/h)	0	1073	2195	0	0	0
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	0	1073	2195	0	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)		196				
pX, platoon unblocked						
vC, conflicting volume	2195				2732	1098
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	2195				2732	1098
tC, single (s)	4.1				6.8	6.9
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	100				100	100
cM capacity (veh/h)	237				16	208
Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	SB 1
Volume Total	0	536	536	1463	732	0
Volume Left	0	0	0	0	0	0
Volume Right	0	0	0	0	0	0
cSH	1700	1700	1700	1700	1700	1700
Volume to Capacity	0.00	0.32	0.32	0.86	0.43	0.00
Queue Length 95th (m)	0.0	0.0	0.0	0.0	0.0	0.0
Control Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0
Lane LOS						A
Approach Delay (s)	0.0			0.0		0.0
Approach LOS						A
Intersection Summary						
Average Delay			0.0			
Intersection Capacity Utilization			64.0%		ICU Level of Service	C
Analysis Period (min)			15			

Lanes, Volumes, Timings

212: West Street A & Transit Station

TT (2041) - Scenario A - West Side Only

Timing Plan: PM Peak Hour

	←	←	↑	↗	↘	↓
Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	↔		↔			↔
Traffic Volume (vph)	127	0	0	355	0	0
Future Volume (vph)	127	0	0	355	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt			0.865			
Flt Protected	0.950					
Satd. Flow (prot)	1770	0	1611	0	0	1863
Flt Permitted	0.950					
Satd. Flow (perm)	1770	0	1611	0	0	1863
Link Speed (k/h)	50		50			50
Link Distance (m)	216.0		234.7			101.9
Travel Time (s)	15.6		16.9			7.3
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	127	0	0	355	0	0
Shared Lane Traffic (%)						
Lane Group Flow (vph)	127	0	355	0	0	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(m)	7.2		0.0		Left	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 35.7%

ICU Level of Service A

Analysis Period (min) 15

HCM Unsignalized Intersection Capacity Analysis

212: West Street A & Transit Station

TT (2041) - Scenario A - West Side Only

Timing Plan: PM Peak Hour

	←	←	↑	↗	↘	↓
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	↔		↔			↔
Traffic Volume (veh/h)	127	0	0	355	0	0
Future Volume (Veh/h)	127	0	0	355	0	0
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	127	0	0	355	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	178	178			355	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	178	178			355	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	84	100			100	
cM capacity (veh/h)	812	866			1204	

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	127	355	0
Volume Left	127	0	0
Volume Right	0	355	0
cSH	812	1700	1700
Volume to Capacity	0.16	0.21	0.00
Queue Length 95th (m)	4.1	0.0	0.0
Control Delay (s)	10.3	0.0	0.0
Lane LOS	B		
Approach Delay (s)	10.3	0.0	0.0
Approach LOS	B		

Intersection Summary

Average Delay 2.7

Intersection Capacity Utilization 35.7%

ICU Level of Service

A

Analysis Period (min) 15

Lanes, Volumes, Timings TT (2041) - Scenario A - West Side Only
213: East Street A/West Street A & William Halton Parkway Timing Plan: PM Peak Hour

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑	↑		↑↑	↑			↑			↑
Traffic Volume (vph)	0	1054	13	0	2408	129	0	0	440	0	0	27
Future Volume (vph)	0	1054	13	0	2408	129	0	0	440	0	0	27
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	0.0		90.0	0.0		90.0	0.0		0.0	0.0		0.0
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	0.95	1.00	1.00	0.95	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt			0.850			0.850			0.865			0.865
Fit Protected												
Satd. Flow (prot)	0	3539	1583	0	3539	1583	0	0	1611	0	0	1611
Fit Permitted												
Satd. Flow (perm)	0	3539	1583	0	3539	1583	0	0	1611	0	0	1611
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		200.8			212.9			103.7			234.7	
Travel Time (s)		14.5			15.3			7.5			16.9	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	0	1054	13	0	2408	129	0	0	440	0	0	27
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	1054	13	0	2408	129	0	0	440	0	0	27
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 76.6%	ICU Level of Service D											
Analysis Period (min) 15												

HCM Unsignalized Intersection Capacity Analysis TT (2041) - Scenario A - West Side Only
213: East Street A/West Street A & William Halton Parkway Timing Plan: PM Peak Hour

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑	↑		↑↑	↑			↑			↑
Traffic Volume (veh/h)	0	1054	13	0	2408	129	0	0	440	0	0	27
Future Volume (Veh/h)	0	1054	13	0	2408	129	0	0	440	0	0	27
Sign Control	Free			Free			Stop			Stop		
Grade	0%			0%			0%			0%		
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	0	1054	13	0	2408	129	0	0	440	0	0	27
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type	None			None								
Median storage (veh)												
Upstream signal (m)	201			213								
pX, platoon unblocked	0.73			0.83			0.82	0.82	0.83	0.82	0.82	0.73
vC, conflicting volume	2537			1067			2285	3591	527	3375	3475	1204
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	2370			668			1189	2782	16	2518	2640	555
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	50	100	100	92
cM capacity (veh/h)	149			761			108	15	877	6	19	349
Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	WB 3	NB 1	SB 1				
Volume Total	527	527	13	1204	1204	129	440	27				
Volume Left	0	0	0	0	0	0	0	0				
Volume Right	0	0	13	0	0	129	440	27				
cSH	1700	1700	1700	1700	1700	1700	877	349				
Volume to Capacity	0.31	0.31	0.01	0.71	0.71	0.08	0.50	0.08				
Queue Length 95th (m)	0.0	0.0	0.0	0.0	0.0	0.0	21.5	1.9				
Control Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	13.2	16.2				
Lane LOS							B	C				
Approach Delay (s)	0.0			0.0			13.2	16.2				
Approach LOS							B	C				
Intersection Summary												
Average Delay			1.5									
Intersection Capacity Utilization 76.6%							ICU Level of Service		D			
Analysis Period (min)			15									

Lanes, Volumes, Timings

214: West Street D & William Halton Parkway

TT (2041) - Scenario A - West Side Only

Timing Plan: PM Peak Hour

	←	→	↖	↗	←	↖	↗	↖	↗	↖	↗	↖	↗
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations	↖	↖	↖	↖	↖	↖	↖	↖	↖	↖	↖	↖	
Traffic Volume (vph)	0	906	13	263	2060	112	49	0	15	146	0	11	
Future Volume (vph)	0	906	13	263	2060	112	49	0	15	146	0	11	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	
Storage Length (m)	90.0		90.0	90.0		90.0	50.0		0.0	50.0		0.0	
Storage Lanes	1		1	1		1	1		0	1		0	
Taper Length (m)	100.0			100.0			75.0			75.0			
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Frt			0.850			0.850		0.850			0.850		
Flt Protected				0.950			0.950			0.950			
Satd. Flow (prot)	1863	3539	1583	1770	3539	1583	1770	1583	0	1770	1583	0	
Flt Permitted				0.201			0.750			0.748			
Satd. Flow (perm)	1863	3539	1583	374	3539	1583	1397	1583	0	1393	1583	0	
Right Turn on Red			Yes			Yes			Yes			Yes	
Satd. Flow (RTOR)			73			112			504			73	
Link Speed (k/h)		50				50			50			50	
Link Distance (m)		573.3				200.8			99.4			133.2	
Travel Time (s)		41.3				14.5			7.2			9.6	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Adj. Flow (vph)	0	906	13	263	2060	112	49	0	15	146	0	11	
Shared Lane Traffic (%)													
Lane Group Flow (vph)	0	906	13	263	2060	112	49	15	0	146	11	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	1	2	1	1	2		1	2		
Detector Template	Left	Thru	Right	Left	Thru	Right	Left	Thru		Left	Thru		
Leading Detector (m)	2.0	10.0	2.0	2.0	10.0	2.0	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		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	2.0	0.6	2.0	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		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	pm+pt	NA	Perm	Perm	NA		Perm	NA		
Protected Phases		4			3		8			2		6	
Permitted Phases	4		4		8		8		2		6		

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Lanes, Volumes, Timings

214: West Street D & William Halton Parkway

TT (2041) - Scenario A - West Side Only

Timing Plan: PM Peak Hour

	←	→	↖	↗	←	↖	↗	↖	↗	↖	↗	↖	↗
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Detector Phase	4	4	4	3	8	8	2	2		6	6		
Switch Phase													
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0		5.0	5.0		
Minimum Split (s)	24.0	24.0	24.0	9.5	24.0	24.0	24.0	24.0		29.0	29.0		
Total Split (s)	34.8	34.8	34.8	26.2	61.0	61.0	29.0	29.0		29.0	29.0		
Total Split (%)	38.7%	38.7%	38.7%	29.1%	67.8%	67.8%	32.2%	32.2%		32.2%	32.2%		
Maximum Green (s)	28.8	28.8	28.8	23.2	55.0	55.0	23.0	23.0		23.0	23.0		
Yellow Time (s)	4.0	4.0	4.0	3.0	4.0	4.0	4.0	4.0		4.0	4.0		
All-Red Time (s)	2.0	2.0	2.0	0.0	2.0	2.0	2.0	2.0		2.0	2.0		
Lost Time Adjust (s)	-2.0	-2.0	-2.0	1.0	-2.0	-2.0	-2.0	-2.0		1.0	-2.0		
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0		7.0	4.0		
Lead/Lag	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	None	None	Min	Min		Min	Min		
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 Effect Green (s)		37.0	37.0	51.4	51.4	51.4	15.5	15.5		12.4	15.5		
Actuated g/C Ratio		0.49	0.49	0.68	0.68	0.68	0.21	0.21		0.16	0.21		
v/c Ratio		0.52	0.02	0.59	0.85	0.10	0.17	0.02		0.63	0.03		
Control Delay		15.8	0.0	11.0	14.3	1.4	27.6	0.1		43.8	0.2		
Queue Delay		0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0		
Total Delay		15.8	0.0	11.0	14.3	1.4	27.6	0.1		43.8	0.2		
LOS		B	A	B	B	A	C	A		D	A		
Approach Delay		15.5			13.4		21.1				40.8		
Approach LOS		B			B		C				D		

Intersection Summary

Area Type: Other

Cycle Length: 90

Actuated Cycle Length: 75.2

Natural Cycle: 80

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 0.85

Intersection Signal Delay: 15.3

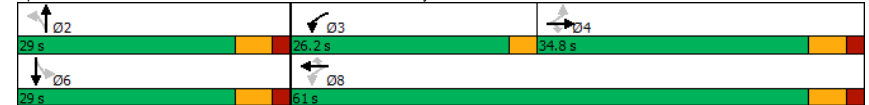
Intersection LOS: B

Intersection Capacity Utilization 85.9%

ICU Level of Service E

Analysis Period (min) 15

Splits and Phases: 214: West Street D & William Halton Parkway

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Queues
214: West Street D & William Halton Parkway

TT (2041) - Scenario A - West Side Only
Timing Plan: PM Peak Hour

	→	↘	↙	←	↖	↗	↑	↘	↓
Lane Group	EBT	EBR	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	906	13	263	2060	112	49	15	146	11
v/c Ratio	0.52	0.02	0.59	0.85	0.10	0.17	0.02	0.63	0.03
Control Delay	15.8	0.0	11.0	14.3	1.4	27.6	0.1	43.8	0.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	15.8	0.0	11.0	14.3	1.4	27.6	0.1	43.8	0.2
Queue Length 50th (m)	41.5	0.0	11.4	95.4	0.0	6.2	0.0	21.1	0.0
Queue Length 95th (m)	80.7	0.0	27.1	171.5	4.8	14.8	0.0	38.8	0.0
Internal Link Dist (m)	549.3			176.8			75.4		109.2
Turn Bay Length (m)		90.0	90.0		90.0	50.0		50.0	
Base Capacity (vph)	1793	838	680	2727	1245	478	873	420	590
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.51	0.02	0.39	0.76	0.09	0.10	0.02	0.35	0.02
Intersection Summary									

HCM Signalized Intersection Capacity Analysis
214: West Street D & William Halton Parkway

TT (2041) - Scenario A - West Side Only
Timing Plan: PM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	906	13	263	2060	112	49	0	15	146	0	11
Future Volume (vph)	0	906	13	263	2060	112	49	0	15	146	0	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	4.0	4.0	4.0	4.0		7.0	4.0	
Lane Util. Factor		0.95	1.00	1.00	0.95	1.00	1.00	1.00		1.00	1.00	
Frt		1.00	0.85	1.00	1.00	0.85	1.00	0.85		1.00	0.85	
Flt Protected		1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)		3539	1583	1770	3539	1583	1770	1583		1770	1583	
Flt Permitted		1.00	1.00	0.20	1.00	1.00	0.75	1.00		0.75	1.00	
Satd. Flow (perm)		3539	1583	375	3539	1583	1398	1583		1393	1583	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	0	906	13	263	2060	112	49	0	15	146	0	11
RTOR Reduction (vph)	0	0	7	0	0	35	0	12	0	0	9	0
Lane Group Flow (vph)	0	906	6	263	2060	77	49	3	0	146	2	0
Turn Type	Perm	NA	Perm	pm+pt	NA	Perm	Perm	NA		Perm	NA	
Protected Phases		4		3	8		2	2			6	
Permitted Phases	4		4	8		8	2			6		
Actuated Green, G (s)		34.9	34.9	49.3	49.3	49.3	13.5	13.5		13.5	13.5	
Effective Green, g (s)		36.9	36.9	48.3	51.3	51.3	15.5	15.5		12.5	15.5	
Actuated g/C Ratio		0.49	0.49	0.65	0.69	0.69	0.21	0.21		0.17	0.21	
Clearance Time (s)		6.0	6.0	3.0	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	3.0	
Lane Grp Cap (vph)		1745	780	436	2427	1085	289	328		232	328	
v/s Ratio Prot		0.26		0.08	c0.58			0.00			0.00	
v/s Ratio Perm			0.00	0.31		0.05	0.04			c0.10		
v/c Ratio		0.52	0.01	0.60	0.85	0.07	0.17	0.01		0.63	0.01	
Uniform Delay, d1		12.9	9.6	7.8	8.8	3.9	24.4	23.6		29.0	23.5	
Progression Factor		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	2.4	3.0	0.0	0.3	0.0		5.3	0.0	
Delay (s)		13.2	9.6	10.1	11.8	3.9	24.6	23.6		34.3	23.5	
Level of Service		B	A	B	B	A	C	C		C	C	
Approach Delay (s)		13.1			11.3			24.4			33.5	
Approach LOS		B			B			C			C	
Intersection Summary												
HCM 2000 Control Delay			12.9		HCM 2000 Level of Service					B		
HCM 2000 Volume to Capacity ratio			0.82									
Actuated Cycle Length (s)			74.8		Sum of lost time (s)					12.0		
Intersection Capacity Utilization			85.9%		ICU Level of Service					E		
Analysis Period (min)			15									
c Critical Lane Group												

c Critical Lane Group

Lanes, Volumes, Timings

215: East Street A & West Street B

TT (2041) - Scenario A - West Side Only

Timing Plan: PM Peak Hour

	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	208	108	0	100	73	18
Future Volume (vph)	208	108	0	100	73	18
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	0.954				0.973	
Flt Protected	0.968					
Satd. Flow (prot)	1720	0	0	1863	1812	0
Flt Permitted	0.968					
Satd. Flow (perm)	1720	0	0	1863	1812	0
Link Speed (k/h)	50			50	50	
Link Distance (m)	202.4			83.5	103.7	
Travel Time (s)	14.6			6.0	7.5	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	208	108	0	100	73	18
Shared Lane Traffic (%)						
Lane Group Flow (vph)	316	0	0	100	91	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
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	25			15
Sign Control	Stop			Free	Free	

Intersection Summary

Area Type: Other

Control Type: Unsignalized

Intersection Capacity Utilization 30.1% ICU Level of Service A

Analysis Period (min) 15

HCM Unsignalized Intersection Capacity Analysis

215: East Street A & West Street B

TT (2041) - Scenario A - West Side Only

Timing Plan: PM Peak Hour

	EBL	EBR	NBL	NBT	SBT	SBR
Movement						
Lane Configurations						
Traffic Volume (veh/h)	208	108	0	100	73	18
Future Volume (Veh/h)	208	108	0	100	73	18
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	208	108	0	100	73	18
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	182	82	91			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	182	82	91			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	74	89	100			
cM capacity (veh/h)	807	978	1504			
Direction, Lane #	EB 1	NB 1	SB 1			
Volume Total	316	100	91			
Volume Left	208	0	0			
Volume Right	108	0	18			
cSH	859	1504	1700			
Volume to Capacity	0.37	0.00	0.05			
Queue Length 95th (m)	12.8	0.0	0.0			
Control Delay (s)	11.6	0.0	0.0			
Lane LOS	B					
Approach Delay (s)	11.6	0.0	0.0			
Approach LOS	B					
Intersection Summary						
Average Delay		7.2				
Intersection Capacity Utilization		30.1%		ICU Level of Service	A	
Analysis Period (min)		15				

Lanes, Volumes, Timings

216: West Street D & West Street B

TT (2041) - Scenario A - West Side Only

Timing Plan: PM Peak Hour

	←	←	↑	↗	↘	↓
Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	↰		↱			↱
Traffic Volume (vph)	0	28	36	0	179	97
Future Volume (vph)	0	28	36	0	179	97
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.865					
Flt Protected						0.969
Satd. Flow (prot)	1611	0	1863	0	0	1805
Flt Permitted						0.969
Satd. Flow (perm)	1611	0	1863	0	0	1805
Link Speed (k/h)	50		50			50
Link Distance (m)	202.4		82.8			99.4
Travel Time (s)	14.6		6.0			7.2
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	0	28	36	0	179	97
Shared Lane Traffic (%)						
Lane Group Flow (vph)	28	0	36	0	0	276
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
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		15	25	
Sign Control	Stop		Free			Free

Intersection Summary

Area Type: Other

Control Type: Unsignalized

Intersection Capacity Utilization 31.7% ICU Level of Service A

Analysis Period (min) 15

HCM Unsignalized Intersection Capacity Analysis

216: West Street D & West Street B

TT (2041) - Scenario A - West Side Only

Timing Plan: PM Peak Hour

	←	←	↑	↗	↘	↓
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	↰		↱			↱
Traffic Volume (veh/h)	0	28	36	0	179	97
Future Volume (Veh/h)	0	28	36	0	179	97
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	0	28	36	0	179	97
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage (veh)						
Upstream signal (m)						99
pX, platoon unblocked	0.95					
vC, conflicting volume	491	36			36	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	437	36			36	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	100	97			89	
cM capacity (veh/h)	485	1037			1575	

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	28	36	276
Volume Left	0	0	179
Volume Right	28	0	0
cSH	1037	1700	1575
Volume to Capacity	0.03	0.02	0.11
Queue Length 95th (m)	0.6	0.0	2.9
Control Delay (s)	8.6	0.0	5.2
Lane LOS	A		A
Approach Delay (s)	8.6	0.0	5.2
Approach LOS	A		

Intersection Summary

Average Delay	5.0		
Intersection Capacity Utilization	31.7%	ICU Level of Service	A
Analysis Period (min)	15		

Lanes, Volumes, Timings
217: East Street C & East Street A

TT (2041) - Scenario A - West Side Only
Timing Plan: PM Peak Hour

	EBL	EBT	WBT	WBR	SBL	SBR
Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↔	↔		↔	
Traffic Volume (vph)	0	50	79	205	143	4
Future Volume (vph)	0	50	79	205	143	4
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			0.903		0.996	
Flt Protected					0.954	
Satd. Flow (prot)	0	1863	1682	0	1770	0
Flt Permitted					0.954	
Satd. Flow (perm)	0	1863	1682	0	1770	0
Link Speed (k/h)		50	50		50	
Link Distance (m)		206.1	205.4		83.5	
Travel Time (s)		14.8	14.8		6.0	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	0	50	79	205	143	4
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	50	284	0	147	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 31.6%	ICU Level of Service A					
Analysis Period (min) 15						

HCM Unsignalized Intersection Capacity Analysis
217: East Street C & East Street A

TT (2041) - Scenario A - West Side Only
Timing Plan: PM Peak Hour

	EBL	EBT	WBT	WBR	SBL	SBR
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↔	↔		↔	
Traffic Volume (veh/h)	0	50	79	205	143	4
Future Volume (Veh/h)	0	50	79	205	143	4
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	0	50	79	205	143	4
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	284				232	182
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	284				232	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 %	100				81	100
cM capacity (veh/h)	1278				757	861
Direction, Lane #	EB 1	WB 1	SB 1			
Volume Total	50	284	147			
Volume Left	0	0	143			
Volume Right	0	205	4			
cSH	1278	1700	759			
Volume to Capacity	0.00	0.17	0.19			
Queue Length 95th (m)	0.0	0.0	5.4			
Control Delay (s)	0.0	0.0	10.9			
Lane LOS			B			
Approach Delay (s)	0.0	0.0	10.9			
Approach LOS			B			
Intersection Summary						
Average Delay			3.3			
Intersection Capacity Utilization		31.6%		ICU Level of Service	A	
Analysis Period (min)		15				

Lanes, Volumes, Timings

218: West Street D & East Street C

TT (2041) - Scenario A - West Side Only

Timing Plan: PM Peak Hour

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔			↔			↔			↔	
Traffic Volume (vph)	0	0	0	17	0	62	0	17	5	78	19	0
Future Volume (vph)	0	0	0	17	0	62	0	17	5	78	19	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					0.894			0.969				
Flt Protected					0.989						0.961	
Satd. Flow (prot)	0	1863	0	0	1647	0	0	1805	0	0	1790	0
Flt Permitted					0.989						0.961	
Satd. Flow (perm)	0	1863	0	0	1647	0	0	1805	0	0	1790	0
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		164.8			206.1			68.2			82.8	
Travel Time (s)		11.9			14.8			4.9			6.0	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	0	0	0	17	0	62	0	17	5	78	19	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	0	0	0	79	0	0	22	0	0	97	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 23.4%

ICU Level of Service A

Analysis Period (min) 15

HCM Unsignalized Intersection Capacity Analysis

218: West Street D & East Street C

TT (2041) - Scenario A - West Side Only

Timing Plan: PM Peak Hour

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Movement		↔			↔			↔			↔	
Lane Configurations		↔			↔			↔			↔	
Traffic Volume (veh/h)	0	0	0	17	0	62	0	17	5	78	19	0
Future Volume (Veh/h)	0	0	0	17	0	62	0	17	5	78	19	0
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	0	0	0	17	0	62	0	17	5	78	19	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	62			0			74	96	0	78	65	31
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	62			0			74	96	0	78	65	31
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			99			100	98	100	91	98	100
cM capacity (veh/h)	1541			1623			892	786	1085	884	817	1043
Direction, Lane #	EB 1	WB 1	NB 1	SB 1								
Volume Total	0	79	22	97								
Volume Left	0	17	0	78								
Volume Right	0	62	5	0								
cSH	1700	1623	838	870								
Volume to Capacity	0.00	0.01	0.03	0.11								
Queue Length 95th (m)	0.0	0.2	0.6	2.8								
Control Delay (s)	0.0	1.6	9.4	9.7								
Lane LOS		A	A	A								
Approach Delay (s)	0.0	1.6	9.4	9.7								
Approach LOS			A	A								
Intersection Summary												
Average Delay			6.4									
Intersection Capacity Utilization		23.4%						ICU Level of Service		A		
Analysis Period (min)			15									

Lanes, Volumes, Timings

101: Trafalgar Rd & Lower Base Line

Total (2041) - Scenario B - West Side Only

Timing Plan: AM Peak Hour

	↖	→	↗	↖	←	↖	↖	↖	↖	↖	↖	↖
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖	↖		↖	↖		↖	↖	↖	↖	↖	↖
Traffic Volume (vph)	151	588	224	324	119	219	49	1864	251	502	2154	24
Future Volume (vph)	151	588	224	324	119	219	49	1864	251	502	2154	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	0.423			0.165			0.085			0.083		
Satd. Flow (perm)	788	3394	0	307	3196	0	158	5085	1583	155	5085	1583
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		41			238				233			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)	164	639	243	352	129	238	53	2026	273	546	2341	26
Shared Lane Traffic (%)												
Lane Group Flow (vph)	164	882	0	352	367	0	53	2026	273	546	2341	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

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Lanes, Volumes, Timings

101: Trafalgar Rd & Lower Base Line

Total (2041) - Scenario B - West Side Only

Timing Plan: AM Peak Hour

	↖	→	↗	↖	←	↖	↖	↖	↖	↖	↖	↖
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		1.36	0.41		0.30	1.04	0.36	1.46	0.87	0.03
Control Delay	32.5	158.8		213.9	15.4		16.7	68.0	6.6	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	32.5	158.8		213.9	15.4		16.7	68.0	6.6	250.6	29.8	0.0
LOS	C	F		F	B		B	E	A	F	C	A
Approach Delay		139.0			112.5			59.7			70.9	
Approach LOS		F			F			E			E	

Intersection Summary

Area Type: Other

Cycle Length: 120

Actuated Cycle Length: 120

Natural Cycle: 100

Control Type: Semi Act-Uncooord

Maximum v/c Ratio: 1.46

Intersection Signal Delay: 81.6

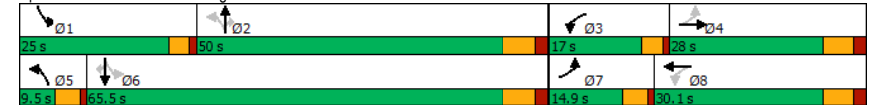
Intersection LOS: F

Intersection Capacity Utilization 118.5%

ICU Level of Service H

Analysis Period (min) 15

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

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Queues
101: Trafalgar Rd & Lower Base Line

Total (2041) - Scenario B - West Side Only
Timing Plan: AM Peak Hour

	EBL	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	164	882	352	367	53	2026	273	546	2341	26
v/c Ratio	0.47	1.24	1.36	0.41	0.30	1.04	0.36	1.46	0.87	0.03
Control Delay	32.5	158.8	213.9	15.4	16.7	68.0	6.6	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	32.5	158.8	213.9	15.4	16.7	68.0	6.6	250.6	29.8	0.0
Queue Length 50th (m)	26.8	~130.3	~91.8	12.9	4.7	~186.2	5.8	~158.8	173.9	0.0
Queue Length 95th (m)	43.5	#169.9	#149.3	26.3	9.7	#215.0	23.6	#225.2	197.1	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	750	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	0.46	1.24	1.36	0.41	0.30	1.04	0.36	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.

HCM Signalized Intersection Capacity Analysis
101: Trafalgar Rd & Lower Base Line

Total (2041) - Scenario B - West Side Only
Timing Plan: AM Peak Hour

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰	↱	↱	↰	↱	↱	↰	↱	↱	↰	↱	↱
Traffic Volume (vph)	151	588	224	324	119	219	49	1864	251	502	2154	24
Future Volume (vph)	151	588	224	324	119	219	49	1864	251	502	2154	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	3393		1770	3195		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)	788	3393		308	3195		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)	164	639	243	352	129	238	53	2026	273	546	2341	26
RTOR Reduction (vph)	0	33	0	0	186	0	0	0	143	0	0	12
Lane Group Flow (vph)	164	849	0	352	181	0	53	2026	130	546	2341	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	
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	0.40		c0.26	0.46	
v/s Ratio Perm	0.10			c0.28			0.13			0.08	c0.59	0.01
v/c Ratio	0.49	1.26		1.40	0.26		0.34	1.03	0.21	1.48	0.88	0.02
Uniform Delay, d1	32.7	48.5		36.7	39.2		24.1	37.0	24.7	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	129.5		203.3	0.4		1.3	27.6	0.8	231.8	4.5	0.0
Delay (s)	33.9	178.0		240.0	39.6		25.3	64.6	25.5	270.9	29.8	13.8
Level of Service	C	F		F	D		C	E	C	F	C	B
Approach Delay (s)		155.4			137.7			59.2			74.9	
Approach LOS		F			F			E			E	

Intersection Summary

HCM 2000 Control Delay	88.0	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	118.5%	ICU Level of Service	H
Analysis Period (min)	15		

c Critical Lane Group

Lanes, Volumes, Timings

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

Total (2041) - Scenario B - West Side Only

Timing Plan: AM Peak Hour

	←	→	↖	↗	↙	↘	↖	↗	↙	↘	↖	↗	↙	↘
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR		
Lane Configurations		↔		↔	↔	↔	↔	↔		↔	↔	↔		
Traffic Volume (vph)	2	0	9	369	1	26	6	2133	0	0	2699	5		
Future Volume (vph)	2	0	9	369	1	26	6	2133	0	0	2699	5		
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		0.063							
Satd. Flow (perm)	0	1639	0	1327	1221	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)	2	0	10	401	1	28	7	2318	0	0	2934	5		
Shared Lane Traffic (%)				49%		10%								
Lane Group Flow (vph)	0	12	0	205	200	25	7	2318	0	0	2934	5		
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	CI+Ex	CI+Ex		CI+Ex	CI+Ex	CI+Ex	CI+Ex	CI+Ex			CI+Ex	CI+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		CI+Ex			CI+Ex			CI+Ex				CI+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

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Lanes, Volumes, Timings

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

Total (2041) - Scenario B - West Side Only

Timing Plan: AM Peak Hour

	←	→	↖	↗	↙	↘	↖	↗	↙	↘	↖	↗	↙	↘
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			
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	64.4	64.4			62.8	62.8		
Actuated g/C Ratio	0.08			0.24	0.24	0.24	0.65	0.65			0.64	0.64		
v/c Ratio	0.05			0.63	0.67	0.05	0.04	0.70			0.90	0.00		
Control Delay	0.4			42.6	45.1	0.2	10.7	14.5			23.0	0.0		
Queue Delay	0.0			0.0	0.0	0.0	0.0	0.0			0.0	0.0		
Total Delay	0.4			42.6	45.1	0.2	10.7	14.5			23.0	0.0		
LOS	A			D	D	A	B	B			C	A		
Approach Delay	0.4				41.3		14.5				23.0			
Approach LOS	A				D		B				C			

Intersection Summary

Area Type: Other

Cycle Length: 120

Actuated Cycle Length: 98.5

Natural Cycle: 110

Control Type: Actuated-Uncoordinated

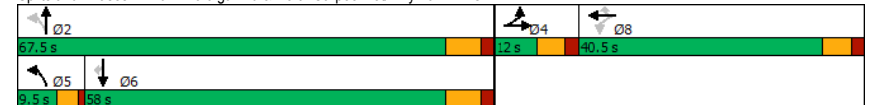
Maximum v/c Ratio: 0.90

Intersection Signal Delay: 20.9

Intersection Capacity Utilization 76.0%

Analysis Period (min) 15

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



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Queues
102: Trafalgar Rd & North Carpool Lot/Hwy 407 WB Off

Total (2041) - Scenario B - West Side Only
Timing Plan: AM Peak Hour

	→	↖	←	↗	↖	↑	↓	↗
Lane Group	EBT	WBL	WBT	WBR	NBL	NBT	SBT	SBR
Lane Group Flow (vph)	12	205	200	25	7	2318	2934	5
v/c Ratio	0.05	0.63	0.67	0.05	0.04	0.70	0.90	0.00
Control Delay	0.4	42.6	45.1	0.2	10.7	14.5	23.0	0.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	0.4	42.6	45.1	0.2	10.7	14.5	23.0	0.0
Queue Length 50th (m)	0.0	34.8	35.7	0.0	0.4	80.7	131.5	0.0
Queue Length 95th (m)	0.0	66.2	68.4	0.0	3.0	186.1	#342.8	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)	251	498	459	644	169	3322	3242	1052
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	0.41	0.44	0.04	0.04	0.70	0.90	0.00

Intersection Summary

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

HCM Signalized Intersection Capacity Analysis
102: Trafalgar Rd & North Carpool Lot/Hwy 407 WB Off

Total (2041) - Scenario B - West Side Only
Timing Plan: AM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	2	0	9	369	1	26	6	2133	0	0	2699	5
Future Volume (vph)	2	0	9	369	1	26	6	2133	0	0	2699	5
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	0.06	1.00			1.00	1.00
Satd. Flow (perm)		1640		1327	1221	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)	2	0	10	401	1	28	7	2318	0	0	2934	5
RTOR Reduction (vph)	0	12	0	0	1	19	0	0	0	0	0	2
Lane Group Flow (vph)	0	0	0	205	199	6	7	2318	0	0	2934	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)		1.0		22.0	22.0	22.0	64.6	64.6			59.7	59.7
Effective Green, g (s)		3.0		24.0	24.0	24.0	64.6	67.6			62.7	62.7
Actuated g/C Ratio		0.03		0.23	0.23	0.23	0.61	0.63			0.59	0.59
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)		46		298	274	338	84	3224			2990	931
v/s Ratio Prot		c0.00					0.00	c0.46			c0.58	
v/s Ratio Perm				0.15	c0.16	0.00	0.05					0.00
v/c Ratio		0.01		0.69	0.73	0.02	0.08	0.72			0.98	0.00
Uniform Delay, d1		50.4		37.9	38.3	32.1	25.1	13.1			21.4	9.1
Progression Factor		1.00		1.00	1.00	1.00	1.00	1.00			1.00	1.00
Incremental Delay, d2		0.1		6.7	9.5	0.0	0.3	1.4			12.6	0.0
Delay (s)		50.4		44.6	47.8	32.1	25.4	14.5			34.0	9.1
Level of Service		D		D	D	C	C	B			C	A
Approach Delay (s)		50.4			45.4			14.6			34.0	
Approach LOS		D			D			B			C	

Intersection Summary

HCM 2000 Control Delay	26.9	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.91		
Actuated Cycle Length (s)	106.6	Sum of lost time (s)	18.0
Intersection Capacity Utilization	76.0%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

Lanes, Volumes, Timings
103: Trafalgar Rd & Hwy 407 EB Off

Total (2041) - Scenario B - West Side Only
Timing Plan: AM Peak Hour

	EBL	EBR	NBL	NBT	SBT	SBR
Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	↔	↔		↕	↕	
Traffic Volume (vph)	140	294	0	2118	2816	0
Future Volume (vph)	140	294	0	2118	2816	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	0.943	0.850				
Flt Protected	0.970					
Satd. Flow (prot)	1704	1504	0	5085	5085	0
Flt Permitted	0.970					
Satd. Flow (perm)	1704	1504	0	5085	5085	0
Right Turn on Red	Yes				Yes	
Satd. Flow (RTOR)	1	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)	152	320	0	2302	3061	0
Shared Lane Traffic (%)		29%				
Lane Group Flow (vph)	245	227	0	2302	3061	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	CI+Ex	CI+Ex		CI+Ex	CI+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				CI+Ex	CI+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	

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Lanes, Volumes, Timings
103: Trafalgar Rd & Hwy 407 EB Off

Total (2041) - Scenario B - West Side Only
Timing Plan: AM Peak Hour

	EBL	EBR	NBL	NBT	SBT	SBR
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)	20.9	20.9		63.2	63.2	
Actuated g/C Ratio	0.23	0.23		0.69	0.69	
v/c Ratio	0.63	0.66		0.66	0.88	
Control Delay	39.5	42.0		10.2	16.6	
Queue Delay	0.0	0.0		0.0	0.0	
Total Delay	39.5	42.0		10.2	16.6	
LOS	D	D		B	B	
Approach Delay	40.7			10.2	16.6	
Approach LOS	D			B	B	

Intersection Summary

Area Type: Other

Cycle Length: 110

Actuated Cycle Length: 92.1

Natural Cycle: 75

Control Type: Semi Act-Uncoord

Maximum v/c Ratio: 0.88

Intersection Signal Delay: 16.0

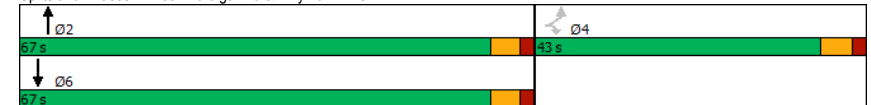
Intersection LOS: B

Intersection Capacity Utilization 74.8%

ICU Level of Service D

Analysis Period (min) 15

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



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Queues
103: Trafalgar Rd & Hwy 407 EB Off

Total (2041) - Scenario B - West Side Only
Timing Plan: AM Peak Hour

	EBL	EBR	NBT	SBT
Lane Group	EBL	EBR	NBT	SBT
Lane Group Flow (vph)	245	227	2302	3061
v/c Ratio	0.63	0.66	0.66	0.88
Control Delay	39.5	42.0	10.2	16.6
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	39.5	42.0	10.2	16.6
Queue Length 50th (m)	38.6	37.8	73.3	133.9
Queue Length 95th (m)	61.4	62.0	117.1	#223.4
Internal Link Dist (m)	530.6		96.3	339.6
Turn Bay Length (m)				
Base Capacity (vph)	724	639	3488	3488
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	0.66	0.88

Intersection Summary

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

HCM Signalized Intersection Capacity Analysis
103: Trafalgar Rd & Hwy 407 EB Off

Total (2041) - Scenario B - West Side Only
Timing Plan: AM Peak Hour

	EBL	EBR	NBL	NBT	SBT	SBR
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	↔	↔	↔	↔	↔	↔
Traffic Volume (vph)	140	294	0	2118	2816	0
Future Volume (vph)	140	294	0	2118	2816	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	0.94	0.85		1.00	1.00	
Flt Protected	0.97	1.00		1.00	1.00	
Satd. Flow (prot)	1704	1504		5085	5085	
Flt Permitted	0.97	1.00		1.00	1.00	
Satd. Flow (perm)	1704	1504		5085	5085	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	152	320	0	2302	3061	0
RTOR Reduction (vph)	1	1	0	0	0	0
Lane Group Flow (vph)	244	226	0	2302	3061	0
Turn Type	Perm	Perm		NA	NA	
Protected Phases				2	6	
Permitted Phases	4	4				
Actuated Green, G (s)	18.9	18.9		61.2	61.2	
Effective Green, g (s)	20.9	20.9		63.2	63.2	
Actuated g/C Ratio	0.23	0.23		0.69	0.69	
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)	386	341		3489	3489	
v/s Ratio Prot				0.45	c0.60	
v/s Ratio Perm	0.14	c0.15				
v/c Ratio	0.63	0.66		0.66	0.88	
Uniform Delay, d1	32.1	32.4		8.3	11.4	
Progression Factor	1.00	1.00		1.00	1.00	
Incremental Delay, d2	3.4	4.8		1.0	3.5	
Delay (s)	35.5	37.2		9.3	14.9	
Level of Service	D	D		A	B	
Approach Delay (s)	36.3			9.3	14.9	
Approach LOS	D			A	B	

Intersection Summary

HCM 2000 Control Delay	14.4	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.84		
Actuated Cycle Length (s)	92.1	Sum of lost time (s)	10.0
Intersection Capacity Utilization	74.8%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

Lanes, Volumes, Timings

104: Trafalgar Rd & West Street A/East Street A

Total (2041) - Scenario B - West Side Only

Timing Plan: AM Peak Hour

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰	↑	↱	↰	↑	↱	↰	↑	↱	↰	↑	↱
Traffic Volume (vph)	115	22	70	0	0	0	16	2764	0	0	2889	221
Future Volume (vph)	115	22	70	0	0	0	16	2764	0	0	2889	221
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
Flt Protected	0.950						0.950					
Satd. Flow (prot)	1770	1863	1583	1863	1863	1863	1770	5085	1863	1863	5085	1583
Flt Permitted	0.757						0.038					
Satd. Flow (perm)	1410	1863	1583	1863	1863	1863	71	5085	1863	1863	5085	1583
Right Turn on Red			Yes			Yes			Yes		Yes	
Satd. Flow (RTOR)			86									100
Link Speed (k/h)		50				50		80			80	
Link Distance (m)		143.5				212.6		233.3			131.6	
Travel Time (s)		10.3				15.3		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)	125	24	76	0	0	0	17	3004	0	0	3140	240
Shared Lane Traffic (%)												
Lane Group Flow (vph)	125	24	76	0	0	0	17	3004	0	0	3140	240
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		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

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Lanes, Volumes, Timings

104: Trafalgar Rd & West Street A/East Street A

Total (2041) - Scenario B - West Side Only

Timing Plan: AM Peak Hour

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector Phase	4	4	4	8	8	1	5	5	2	2	1	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)	24.0	24.0	24.0	24.0	24.0	40.0	9.5	76.0	76.0	40.0	106.5	106.5
Total Split (%)	17.1%	17.1%	17.1%	17.1%	17.1%	28.6%	6.8%	54.3%	54.3%	28.6%	76.1%	76.1%
Maximum Green (s)	18.0	18.0	18.0	18.0	18.0	36.0	5.5	70.0	70.0	36.0	100.5	100.5
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 Effect Green (s)	17.2	17.2	17.2				106.4	106.4			102.8	102.8
Actuated g/C Ratio	0.13	0.13	0.13				0.81	0.81			0.78	0.78
v/c Ratio	0.68	0.10	0.27				0.13	0.73			0.79	0.19
Control Delay	74.4	52.4	10.8				4.9	7.5			11.4	3.0
Queue Delay	0.0	0.0	0.0				0.0	0.8			1.1	0.0
Total Delay	74.4	52.4	10.8				4.9	8.3			12.4	3.0
LOS	E	D	B				A	A			B	A
Approach Delay		50.6						8.3			11.8	
Approach LOS		D						A			B	

Intersection Summary

Area Type: Other

Cycle Length: 140

Actuated Cycle Length: 131.6

Natural Cycle: 90

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 0.79

Intersection Signal Delay: 11.5

Intersection LOS: B

Intersection Capacity Utilization 68.9%

ICU Level of Service C

Analysis Period (min) 15

Splits and Phases: 104: Trafalgar Rd & West Street A/East Street A

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Queues
104: Trafalgar Rd & West Street A/East Street A

Total (2041) - Scenario B - West Side Only
Timing Plan: AM Peak Hour

	EBL	EBT	EBR	NBL	NBT	SBT	SBR
Lane Group	EBL	EBT	EBR	NBL	NBT	SBT	SBR
Lane Group Flow (vph)	125	24	76	17	3004	3140	240
v/c Ratio	0.68	0.10	0.27	0.13	0.73	0.79	0.19
Control Delay	74.4	52.4	10.8	4.9	7.5	11.4	3.0
Queue Delay	0.0	0.0	0.0	0.0	0.8	1.1	0.0
Total Delay	74.4	52.4	10.8	4.9	8.3	12.4	3.0
Queue Length 50th (m)	29.9	5.3	0.0	0.7	115.4	129.2	6.6
Queue Length 95th (m)	54.0	14.5	11.8	2.2	135.1	215.8	17.9
Internal Link Dist (m)		119.5			209.3	107.6	
Turn Bay Length (m)	50.0		50.0	50.0			30.0
Base Capacity (vph)	215	284	314	128	4111	3973	1258
Starvation Cap Reductn	0	0	0	0	710	536	0
Spillback Cap Reductn	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.58	0.08	0.24	0.13	0.88	0.91	0.19
Intersection Summary							

HCM Signalized Intersection Capacity Analysis
104: Trafalgar Rd & West Street A/East Street A

Total (2041) - Scenario B - West Side Only
Timing Plan: AM Peak Hour

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔
Traffic Volume (vph)	115	22	70	0	0	0	16	2764	0	0	2889	221
Future Volume (vph)	115	22	70	0	0	0	16	2764	0	0	2889	221
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
Lane Util. Factor	1.00	1.00	1.00				1.00	0.91			0.91	1.00
Frt	1.00	1.00	0.85				1.00	1.00			1.00	0.85
Flt Protected	0.95	1.00	1.00				0.95	1.00			1.00	1.00
Satd. Flow (prot)	1770	1863	1583				1770	5085			5085	1583
Flt Permitted	0.76	1.00	1.00				0.04	1.00			1.00	1.00
Satd. Flow (perm)	1410	1863	1583				71	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)	125	24	76	0	0	0	17	3004	0	0	3140	240
RTOR Reduction (vph)	0	0	66	0	0	0	0	0	0	0	0	23
Lane Group Flow (vph)	125	24	10	0	0	0	17	3004	0	0	3140	217
Turn Type	Perm	NA	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)	15.2	15.2	15.2				106.9	106.9			100.8	100.8
Effective Green, g (s)	17.2	17.2	17.2				106.9	108.9			102.8	102.8
Actuated g/C Ratio	0.13	0.13	0.13				0.80	0.81			0.77	0.77
Clearance Time (s)	6.0	6.0	6.0				4.0	6.0			6.0	6.0
Vehicle Extension (s)	3.0	3.0	3.0				3.0	3.0			3.0	3.0
Lane Grp Cap (vph)	180	238	203				83	4129			3898	1213
v/s Ratio Prot		0.01					0.00	0.59			0.62	
v/s Ratio Perm	0.09		0.01				0.16					0.14
v/c Ratio	0.69	0.10	0.05				0.20	0.73			0.81	0.18
Uniform Delay, d1	55.9	51.6	51.3				15.7	5.8			9.6	4.2
Progression Factor	1.00	1.00	1.00				1.00	1.00			1.00	1.00
Incremental Delay, d2	11.0	0.2	0.1				1.2	1.2			1.9	0.3
Delay (s)	67.0	51.8	51.4				16.9	6.9			11.4	4.6
Level of Service	E	D	D				B	A			B	A
Approach Delay (s)		60.1			0.0			7.0			10.9	
Approach LOS		E			A			A			B	
Intersection Summary												
HCM 2000 Control Delay			10.8								B	
HCM 2000 Volume to Capacity ratio			0.80									
Actuated Cycle Length (s)			134.1					Sum of lost time (s)		12.0		
Intersection Capacity Utilization			68.9%					ICU Level of Service		C		
Analysis Period (min)			15									

c Critical Lane Group

Lanes, Volumes, Timings

105: Trafalgar Rd & William Halton Parkway

Total (2041) - Scenario B - West Side Only

Timing Plan: AM Peak Hour

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↩	↩↩	↩	↩	↩↩	↩	↩↩↩	↩	↩	↩↩	↩↩	↩
Traffic Volume (vph)	516	892	210	50	495	243	501	2265	50	523	2215	221
Future Volume (vph)	516	892	210	50	495	243	501	2265	50	523	2215	221
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	0.173			0.135			0.077			0.071		
Satd. Flow (perm)	322	3539	1583	251	3539	1583	143	5085	1583	132	5085	1583
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			226			223			120			125
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		209.3			204.1			208.3			233.3	
Travel Time (s)		15.1			14.7			15.0			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)	561	970	228	54	538	264	545	2462	54	568	2408	240
Shared Lane Traffic (%)												
Lane Group Flow (vph)	561	970	228	54	538	264	545	2462	54	568	2408	240
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

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Lanes, Volumes, Timings

105: Trafalgar Rd & William Halton Parkway

Total (2041) - Scenario B - West Side Only

Timing Plan: AM Peak Hour

	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)	23.0	47.0	47.0	14.0	38.0	38.0	21.0	59.0	59.0	25.0	63.0	63.0
Total Split (%)	15.9%	32.4%	32.4%	9.7%	26.2%	26.2%	14.5%	40.7%	40.7%	17.2%	43.4%	43.4%
Maximum Green (s)	19.0	40.0	40.0	10.0	31.0	31.0	17.0	52.1	52.1	21.0	56.1	56.1
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)	54.8	44.8	44.8	40.1	31.8	31.8	72.0	55.0	55.0	80.0	59.0	59.0
Actuated g/C Ratio	0.38	0.31	0.31	0.28	0.22	0.22	0.50	0.39	0.39	0.56	0.41	0.41
v/c Ratio	1.78	0.87	0.35	0.34	0.68	0.50	2.06	1.26	0.08	1.80	1.15	0.33
Control Delay	387.2	56.8	6.2	34.7	55.8	12.9	512.6	157.5	0.2	402.4	110.3	14.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	387.2	56.8	6.2	34.7	55.8	12.9	512.6	157.5	0.2	402.4	110.3	14.8
LOS	F	E	A	C	E	B	F	F	A	F	F	B
Approach Delay		155.6			41.3		218.0				154.8	
Approach LOS		F			D		F				F	

Intersection Summary

Area Type: Other

Cycle Length: 145

Actuated Cycle Length: 142.8

Natural Cycle: 145

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 2.06

Intersection Signal Delay: 165.8

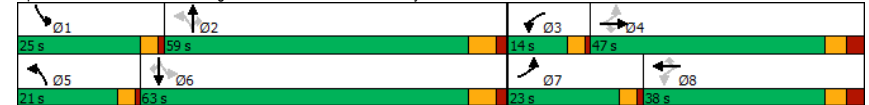
Intersection LOS: F

Intersection Capacity Utilization 131.3%

ICU Level of Service H

Analysis Period (min) 15

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

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Queues
105: Trafalgar Rd & William Halton Parkway

Total (2041) - Scenario B - West Side Only
Timing Plan: AM Peak Hour

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	561	970	228	54	538	264	545	2462	54	568	2408	240
v/c Ratio	1.78	0.87	0.35	0.34	0.68	0.50	2.06	1.26	0.08	1.80	1.15	0.33
Control Delay	387.2	56.8	6.2	34.7	55.8	12.9	512.6	157.5	0.2	402.4	110.3	14.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	387.2	56.8	6.2	34.7	55.8	12.9	512.6	157.5	0.2	402.4	110.3	14.8
Queue Length 50th (m)	~213.3	138.0	0.4	9.5	73.0	9.2	~229.3	~322.4	0.0	~228.6	~295.6	20.8
Queue Length 95th (m)	#284.2	#178.8	19.3	18.7	92.5	34.3	#299.1	#348.2	0.0	#299.5	#321.7	41.2
Internal Link Dist (m)	185.3			180.1			184.3			209.3		
Turn Bay Length (m)	100.0		100.0	100.0		150.0	150.0		75.0			
Base Capacity (vph)	316	1109	651	179	842	546	265	1958	683	315	2101	727
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	30	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	1.78	0.87	0.35	0.30	0.64	0.48	2.06	1.26	0.08	1.80	1.16	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.

HCM Signalized Intersection Capacity Analysis
105: Trafalgar Rd & William Halton Parkway

Total (2041) - Scenario B - West Side Only
Timing Plan: AM Peak Hour

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔
Traffic Volume (vph)	516	892	210	50	495	243	501	2265	50	523	2215	221
Future Volume (vph)	516	892	210	50	495	243	501	2265	50	523	2215	221
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	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00
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	0.17	1.00	1.00	0.14	1.00	1.00	0.08	1.00	1.00	0.07	1.00	1.00
Satd. Flow (perm)	322	3539	1583	252	3539	1583	143	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)	561	970	228	54	538	264	545	2462	54	568	2408	240
RTOR Reduction (vph)	0	0	155	0	0	172	0	0	33	0	0	74
Lane Group Flow (vph)	561	970	73	54	538	92	545	2462	21	568	2408	166
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)	52.6	41.8	41.8	36.4	29.6	29.6	69.1	52.1	52.1	77.1	56.1	56.1
Effective Green, g (s)	52.6	44.8	44.8	36.4	32.6	32.6	69.1	55.0	55.0	77.1	59.0	59.0
Actuated g/C Ratio	0.37	0.31	0.31	0.25	0.23	0.23	0.48	0.38	0.38	0.54	0.41	0.41
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)	309	1104	493	135	803	359	261	1947	606	310	2089	650
v/s Ratio Prot	c0.24	0.27		0.02	0.15		c0.25	0.48		c0.27	0.47	
v/s Ratio Perm	c0.42		0.05	0.08		0.06	c0.76		0.01	0.71		0.11
v/c Ratio	1.82	0.88	0.15	0.40	0.67	0.26	2.09	1.26	0.03	1.83	1.15	0.26
Uniform Delay, d1	37.6	46.8	35.6	43.2	50.6	45.5	46.4	44.3	27.7	48.1	42.3	27.8
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	379.5	8.8	0.3	1.9	2.8	0.8	502.6	123.3	0.1	386.9	74.7	0.9
Delay (s)	417.1	55.6	35.9	45.1	53.4	46.3	548.9	167.6	27.8	434.9	117.0	28.8
Level of Service	F	E	D	D	D	D	F	F	C	F	F	C
Approach Delay (s)	168.3				50.7		233.0			166.6		
Approach LOS	F				D		F			F		

Intersection Summary

HCM 2000 Control Delay	178.6	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	1.90		
Actuated Cycle Length (s)	143.6	Sum of lost time (s)	16.0
Intersection Capacity Utilization	131.3%	ICU Level of Service	H
Analysis Period (min)	15		

c Critical Lane Group

Lanes, Volumes, Timings

Total (2041) - Scenario B - West Side Only

106: Trafalgar Rd & Burnhamthorpe Rd/Burnhamthorpe Rd

Timing Plan: AM Peak Hour

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰	↱	↲	↰	↱	↲	↰	↱	↲	↰	↱	↲
Traffic Volume (vph)	445	491	80	83	157	213	56	2158	174	310	1543	173
Future Volume (vph)	445	491	80	83	157	213	56	2158	174	310	1543	173
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	1.00	1.00	1.00	1.00	1.00	1.00	0.91	1.00	1.00	0.91	1.00
Frt		0.979			0.914				0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1770	1824	0	1770	1703	0	1770	5085	1583	1770	5085	1583
Flt Permitted	0.140			0.154			0.087			0.066		
Satd. Flow (perm)	261	1824	0	287	1703	0	162	5085	1583	123	5085	1583
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		6			43				160			143
Link Speed (k/h)		60			60			80			80	
Link Distance (m)		828.7			989.6			1077.8			247.3	
Travel Time (s)		49.7			59.4			48.5			11.1	
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)	484	534	87	90	171	232	61	2346	189	337	1677	188
Shared Lane Traffic (%)												
Lane Group Flow (vph)	484	621	0	90	403	0	61	2346	189	337	1677	188
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)	26.0	46.5		9.5	30.0		9.6	63.0	63.0	21.0	74.4	74.4
Total Split (%)	18.6%	33.2%		6.8%	21.4%		6.9%	45.0%	45.0%	15.0%	53.1%	53.1%
Maximum Green (s)	21.5	40.5		5.0	24.0		5.1	57.0	57.0	17.0	68.4	68.4
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 Effect Green (s)	53.5	42.5		34.5	26.0		67.6	59.0	59.0	80.0	70.4	70.4
Actuated g/C Ratio	0.38	0.30		0.25	0.19		0.48	0.42	0.42	0.57	0.50	0.50
v/c Ratio	1.37	1.11		0.62	1.15		0.38	1.10	0.25	1.25	0.66	0.22
Control Delay	217.3	117.9		50.5	139.1		21.2	89.4	6.4	174.3	27.4	5.9
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	217.3	117.9		50.5	139.1		21.2	89.4	6.4	174.3	27.4	5.9

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Lanes, Volumes, Timings

Total (2041) - Scenario B - West Side Only

106: Trafalgar Rd & Burnhamthorpe Rd/Burnhamthorpe Rd

Timing Plan: AM Peak Hour

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
LOS	F	F		D	F		C	F	A	F	C	A
Approach Delay		161.4			122.9			81.8			48.0	
Approach LOS		F			F			F			D	
Intersection Summary												
Area Type:	Other											
Cycle Length: 140												
Actuated Cycle Length: 140												
Offset: 0 (0%), Referenced to phase 2:NBT and 6:SBTL, Start of Green												
Natural Cycle: 130												
Control Type: Pretimed												
Maximum v/c Ratio: 1.37												
Intersection Signal Delay: 87.1						Intersection LOS: F						
Intersection Capacity Utilization 118.2%						ICU Level of Service H						
Analysis Period (min) 15												

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

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Queues
106: Trafalgar Rd & Burhamthorpe Rd/Burnhamthorpe Rd

Total (2041) - Scenario B - West Side Only
Timing Plan: AM Peak Hour

	EBL	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	484	621	90	403	61	2346	189	337	1677	188
v/c Ratio	1.37	1.11	0.62	1.15	0.38	1.10	0.25	1.25	0.66	0.22
Control Delay	217.3	117.9	50.5	139.1	21.2	89.4	6.4	174.3	27.4	5.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	217.3	117.9	50.5	139.1	21.2	89.4	6.4	174.3	27.4	5.9
Queue Length 50th (m)	~159.1	~193.2	15.9	~119.1	6.9	~264.6	4.6	~98.8	121.5	6.2
Queue Length 95th (m)	#226.4	#265.1	#28.7	#182.4	13.2	#291.4	19.2	#158.6	137.2	18.6
Internal Link Dist (m)		804.7		965.6		1053.8			223.3	
Turn Bay Length (m)	30.0		15.0		60.0		60.0	60.0		60.0
Base Capacity (vph)	353	557	144	351	159	2142	759	270	2557	867
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	1.37	1.11	0.63	1.15	0.38	1.10	0.25	1.25	0.66	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.

HCM Signalized Intersection Capacity Analysis
106: Trafalgar Rd & Burhamthorpe Rd/Burnhamthorpe Rd

Total (2041) - Scenario B - West Side Only
Timing Plan: AM Peak Hour

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔
Traffic Volume (vph)	445	491	80	83	157	213	56	2158	174	310	1543	173
Future Volume (vph)	445	491	80	83	157	213	56	2158	174	310	1543	173
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	1.00		1.00	1.00		1.00	0.91	1.00	1.00	0.91	1.00
Frt	1.00	0.98		1.00	0.91		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	1824		1770	1702		1770	5085	1583	1770	5085	1583
Flt Permitted	0.14	1.00		0.15	1.00		0.09	1.00	1.00	0.07	1.00	1.00
Satd. Flow (perm)	261	1824		287	1702		162	5085	1583	122	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)	484	534	87	90	171	232	61	2346	189	337	1677	188
RTOR Reduction (vph)	0	4	0	0	35	0	0	0	93	0	0	71
Lane Group Flow (vph)	484	617	0	90	368	0	61	2346	96	337	1677	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)	50.0	40.5		29.0	24.0		62.1	57.0	57.0	78.0	68.4	68.4
Effective Green, g (s)	52.0	42.5		33.0	26.0		66.1	59.0	59.0	78.0	70.4	70.4
Actuated g/C Ratio	0.37	0.30		0.24	0.19		0.47	0.42	0.42	0.56	0.50	0.50
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)	350	553		141	316		158	2142	667	268	2557	796
v/s Ratio Prot	c0.23	0.34		0.03	0.22		0.02	0.46		c0.15	0.33	
v/s Ratio Perm	c0.28			0.12			0.16		0.06	c0.55		0.07
v/c Ratio	1.38	1.12		0.64	1.16		0.39	1.10	0.14	1.26	0.66	0.15
Uniform Delay, d1	42.8	48.8		44.9	57.0		22.2	40.5	25.0	47.1	25.8	18.7
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	189.2	74.0		20.1	103.0		7.0	51.0	0.5	142.5	1.3	0.4
Delay (s)	232.0	122.8		65.0	160.0		29.2	91.5	25.4	189.6	27.1	19.1
Level of Service	F	F		E	F		C	F	C	F	C	B
Approach Delay (s)		170.6			142.7			85.2			51.3	
Approach LOS		F			F			F			D	

Intersection Summary

HCM 2000 Control Delay	92.7	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	1.34		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	14.5
Intersection Capacity Utilization	118.2%	ICU Level of Service	H
Analysis Period (min)	15		
c Critical Lane Group			

Lanes, Volumes, Timings
202: Trafalgar Rd & West Street C

Total (2041) - Scenario B - West Side Only
Timing Plan: AM Peak Hour

	EBL	EBR	NBL	NBT	SBT	SBR
Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations		↑		↑↑↑	↑↑↑	↑
Traffic Volume (vph)	0	111	0	2817	1914	398
Future Volume (vph)	0	111	0	2817	1914	398
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (m)	0.0	0.0	0.0			90.0
Storage Lanes	0	1	0			1
Taper Length (m)	7.5		7.5			
Lane Util. Factor	1.00	1.00	1.00	0.91	0.91	1.00
Frt		0.865				0.850
Flt Protected						
Satd. Flow (prot)	0	1611	0	5085	5085	1583
Flt Permitted						
Satd. Flow (perm)	0	1611	0	5085	5085	1583
Link Speed (k/h)	50			50	50	
Link Distance (m)	202.4			247.3	208.3	
Travel Time (s)	14.6			17.8	15.0	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	121	0	3062	2080	433
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	121	0	3062	2080	433
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	0.0			3.6	3.6	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	4.8			4.8	4.8	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)	25	15	25			15
Sign Control	Stop			Free	Free	
Intersection Summary						
Area Type:	Other					
Control Type:	Unsignalized					
Intersection Capacity Utilization 57.8%	ICU Level of Service B					
Analysis Period (min) 15						

HCM Unsignalized Intersection Capacity Analysis Total (2041) - Scenario B - West Side Only
202: Trafalgar Rd & West Street C

Timing Plan: AM Peak Hour

								
Movement	EBL	EBR	NBL	NBT	SBT	SBR		
Lane Configurations				  	  			
Traffic Volume (veh/h)	0	111	0	2817	1914	398		
Future Volume (Veh/h)	0	111	0	2817	1914	398		
Sign Control	Stop			Free	Free			
Grade	0%			0%	0%			
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92		
Hourly flow rate (vph)	0	121	0	3062	2080	433		
Pedestrians								
Lane Width (m)								
Walking Speed (m/s)								
Percent Blockage								
Right turn flare (veh)								
Median type				None	None			
Median storage veh								
Upstream signal (m)				247	208			
pX, platoon unblocked	0.79	0.61	0.61					
vC, conflicting volume	3101	693	2513					
vC1, stage 1 conf vol								
vC2, stage 2 conf vol								
vCu, unblocked vol	0	0	1240					
tC, single (s)	6.8	6.9	4.1					
tC, 2 stage (s)								
tF (s)	3.5	3.3	2.2					
p0 queue free %	100	82	100					
cM capacity (veh/h)	805	661	340					
Direction, Lane #	EB 1	NB 1	NB 2	NB 3	SB 1	SB 2	SB 3	SB 4
Volume Total	121	1021	1021	1021	693	693	693	433
Volume Left	0	0	0	0	0	0	0	0
Volume Right	121	0	0	0	0	0	0	433
cSH	661	1700	1700	1700	1700	1700	1700	1700
Volume to Capacity	0.18	0.60	0.60	0.60	0.41	0.41	0.41	0.25
Queue Length 95th (m)	5.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Control Delay (s)	11.7	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Lane LOS	B							
Approach Delay (s)	11.7	0.0			0.0			
Approach LOS	B							
Intersection Summary								
Average Delay			0.2					
Intersection Capacity Utilization			57.8%		ICU Level of Service			B
Analysis Period (min)			15					

Lanes, Volumes, Timings
203: East Street D & East Street A

Total (2041) - Scenario B - West Side Only
Timing Plan: AM Peak Hour

	→	↘	↙	←	↖	↗
Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↗			↖	↗	↖
Traffic Volume (vph)	22	0	0	0	0	0
Future Volume (vph)	22	0	0	0	0	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
Flt						
Flt Protected						
Satd. Flow (prot)	1863	0	0	1863	1863	0
Flt Permitted						
Satd. Flow (perm)	1863	0	0	1863	1863	0
Link Speed (k/h)	50			50	50	
Link Distance (m)	212.6			202.8	119.6	
Travel Time (s)	15.3			14.6	8.6	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	24	0	0	0	0	0
Shared Lane Traffic (%)						
Lane Group Flow (vph)	24	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)		15	25		25	15
Sign Control	Free			Free	Stop	
Intersection Summary						
Area Type:	Other					
Control Type:	Unsignalized					
Intersection Capacity Utilization 6.7%	ICU Level of Service A					
Analysis Period (min) 15						

HCM Unsignalized Intersection Capacity Analysis Total (2041) - Scenario B - West Side Only
203: East Street D & East Street A

Timing Plan: AM Peak Hour

	→	↘	↙	←	↖	↗
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↗			↖	↗	↖
Traffic Volume (veh/h)	22	0	0	0	0	0
Future Volume (Veh/h)	22	0	0	0	0	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)	24	0	0	0	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)	213					
pX, platoon unblocked						
vC, conflicting volume			24		24	24
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			24		24	24
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			100		100	100
cM capacity (veh/h)			1591		992	1052
Direction, Lane #	EB 1	WB 1	NB 1			
Volume Total	24	0	0			
Volume Left	0	0	0			
Volume Right	0	0	0			
cSH	1700	1700	1700			
Volume to Capacity	0.01	0.00	0.00			
Queue Length 95th (m)	0.0	0.0	0.0			
Control Delay (s)	0.0	0.0	0.0			
Lane LOS			A			
Approach Delay (s)	0.0	0.0	0.0			
Approach LOS			A			
Intersection Summary						
Average Delay			0.0			
Intersection Capacity Utilization			6.7%		ICU Level of Service	A
Analysis Period (min)			15			

Lanes, Volumes, Timings
204: East Street E & East Street A

Total (2041) - Scenario B - West Side Only
Timing Plan: AM Peak Hour

	→	↗	↖	←	↙	↘
Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↗			↖	↙	↘
Traffic Volume (vph)	0	22	0	0	0	0
Future Volume (vph)	0	22	0	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.865					
Flt Protected						
Satd. Flow (prot)	1611	0	0	1863	1863	0
Flt Permitted						
Satd. Flow (perm)	1611	0	0	1863	1863	0
Link Speed (k/h)	50			50	50	
Link Distance (m)	202.8			186.3	118.9	
Travel Time (s)	14.6			13.4	8.6	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	24	0	0	0	0
Shared Lane Traffic (%)						
Lane Group Flow (vph)	24	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)	0.0			0.0	3.6	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	4.8			4.8	4.8	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)		15	25		25	15
Sign Control	Free			Free	Stop	

Intersection Summary

Area Type: Other

Control Type: Unsignalized

Intersection Capacity Utilization 6.7% ICU Level of Service A

Analysis Period (min) 15

HCM Unsignalized Intersection Capacity Analysis Total (2041) - Scenario B - West Side Only
204: East Street E & East Street A

Timing Plan: AM Peak Hour

	→	↗	↖	←	↙	↘
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↗			↖	↙	↘
Traffic Volume (veh/h)	0	22	0	0	0	0
Future Volume (Veh/h)	0	22	0	0	0	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)	0	24	0	0	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			24		12	12
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			24		12	12
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			100		100	100
cM capacity (veh/h)			1591		1008	1069

Direction, Lane #	EB 1	WB 1	NB 1
Volume Total	24	0	0
Volume Left	0	0	0
Volume Right	24	0	0
cSH	1700	1700	1700
Volume to Capacity	0.01	0.00	0.00
Queue Length 95th (m)	0.0	0.0	0.0
Control Delay (s)	0.0	0.0	0.0
Lane LOS			A
Approach Delay (s)	0.0	0.0	0.0
Approach LOS			A

Intersection Summary

Average Delay	0.0		
Intersection Capacity Utilization	6.7%	ICU Level of Service	A
Analysis Period (min)	15		

Lanes, Volumes, Timings
205: East Street F & East Street A

Total (2041) - Scenario B - West Side Only
Timing Plan: AM Peak Hour

						
Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
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	1.00	1.00	1.00
Frt						
Flt Protected						
Satd. Flow (prot)	1863	0	0	1863	1863	0
Flt Permitted						
Satd. Flow (perm)	1863	0	0	1863	1863	0
Link Speed (k/h)	50			50	50	
Link Distance (m)	186.3			197.2	119.9	
Travel Time (s)	13.4			14.2	8.6	
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)	0.0			0.0	3.6	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	4.8			4.8	4.8	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)		15	25		25	15
Sign Control	Stop			Free	Free	
Intersection Summary						
Area Type:	Other					
Control Type:	Unsignalized					
Intersection Capacity Utilization	0.0%			ICU Level of Service A		
Analysis Period (min)	15					

HCM Unsignalized Intersection Capacity Analysis Total (2041) - Scenario B - West Side Only
205: East Street F & East Street A Timing Plan: AM Peak Hour

Intersection Sign configuration not allowed in HCM analysis.

Lanes, Volumes, Timings
206: East Street D & East Street B

Total (2041) - Scenario B - West Side Only
Timing Plan: AM Peak Hour

	←	←	↑	↗	↘	↓
Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	↖		↖			↗
Traffic Volume (vph)	49	15	54	11	11	176
Future Volume (vph)	49	15	54	11	11	176
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	0.969		0.977			
Flt Protected	0.963					0.997
Satd. Flow (prot)	1738	0	1820	0	0	1857
Flt Permitted	0.963					0.997
Satd. Flow (perm)	1738	0	1820	0	0	1857
Link Speed (k/h)	50		50			50
Link Distance (m)	200.4		111.4			119.6
Travel Time (s)	14.4		8.0			8.6
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	53	16	59	12	12	191
Shared Lane Traffic (%)						
Lane Group Flow (vph)	69	0	71	0	0	203
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 26.8% ICU Level of Service A

Analysis Period (min) 15

HCM Unsignalized Intersection Capacity Analysis Total (2041) - Scenario B - West Side Only
206: East Street D & East Street B

Timing Plan: AM Peak Hour

	←	←	↑	↗	↘	↓
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	↖		↖			↗
Traffic Volume (veh/h)	49	15	54	11	11	176
Future Volume (Veh/h)	49	15	54	11	11	176
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)	53	16	59	12	12	191
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	280	65			71	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	280	65			71	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	92	98			99	
cM capacity (veh/h)	704	999			1529	

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	69	71	203
Volume Left	53	0	12
Volume Right	16	12	0
cSH	756	1700	1529
Volume to Capacity	0.09	0.04	0.01
Queue Length 95th (m)	2.3	0.0	0.2
Control Delay (s)	10.2	0.0	0.5
Lane LOS	B		A
Approach Delay (s)	10.2	0.0	0.5
Approach LOS	B		

Intersection Summary

Average Delay	2.4		
Intersection Capacity Utilization	26.8%	ICU Level of Service	A
Analysis Period (min)	15		

Lanes, Volumes, Timings
207: East Street E & East Street B

Total (2041) - Scenario B - West Side Only
Timing Plan: AM Peak Hour

	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	22	0
Future Volume (vph)	0	0	0	0	0	0	0	0	0	0	22	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
Flt Protected												
Satd. Flow (prot)	0	1863	0	0	1863	0	0	1863	0	0	1863	0
Flt Permitted												
Satd. Flow (perm)	0	1863	0	0	1863	0	0	1863	0	0	1863	0
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		200.4			185.7			114.3			118.9	
Travel Time (s)		14.4			13.4			8.2			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	24	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	0	0	0	0	0	0	0	0	0	24	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 6.7% ICU Level of Service A

Analysis Period (min) 15

HCM Unsignalized Intersection Capacity Analysis Total (2041) - Scenario B - West Side Only
207: East Street E & East Street B

Timing Plan: AM Peak Hour

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Movement		↔			↔			↔			↔	
Lane Configurations		↔			↔			↔			↔	
Traffic Volume (veh/h)	0	0	0	0	0	0	0	0	0	0	22	0
Future Volume (Veh/h)	0	0	0	0	0	0	0	0	0	0	22	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	0	0	0	0	0	0	0	0	0	24	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)								114				
pX, platoon unblocked												
vC, conflicting volume	24	24	24	24	24	0	24			0		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	24	24	24	24	24	0	24			0		
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	100	100	100	100			100		
cM capacity (veh/h)	987	869	1052	987	869	1085	1591			1623		
Direction, Lane #	EB 1	WB 1	NB 1	SB 1								
Volume Total	0	0	0	24								
Volume Left	0	0	0	0								
Volume Right	0	0	0	0								
cSH	1700	1700	1700	1623								
Volume to Capacity	0.00	0.00	0.00	0.00								
Queue Length 95th (m)	0.0	0.0	0.0	0.0								
Control Delay (s)	0.0	0.0	0.0	0.0								
Lane LOS	A	A										
Approach Delay (s)	0.0	0.0	0.0	0.0								
Approach LOS	A	A										
Intersection Summary												
Average Delay				0.0								
Intersection Capacity Utilization				6.7%				ICU Level of Service			A	
Analysis Period (min)				15								

Lanes, Volumes, Timings
208: East Street F & East Street B

Total (2041) - Scenario B - West Side Only
Timing Plan: AM Peak Hour

						
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	1.00	1.00	1.00
Frt						
Flt Protected						
Satd. Flow (prot)	1863	0	0	1863	1863	0
Flt Permitted						
Satd. Flow (perm)	1863	0	0	1863	1863	0
Link Speed (k/h)	50			50	50	
Link Distance (m)	185.7			112.6	119.9	
Travel Time (s)	13.4			8.1	8.6	
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			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	25			15
Sign Control	Stop			Free	Free	
Intersection Summary						
Area Type:	Other					
Control Type:	Unsignalized					
Intersection Capacity Utilization	0.0%			ICU Level of Service A		
Analysis Period (min)	15					

HCM Unsignalized Intersection Capacity Analysis Total (2041) - Scenario B - West Side Only
208: East Street F & East Street B

Timing Plan: AM Peak Hour

	EBL	EBR	NBL	NBT	SBT	SBR
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	↔			↔	↔	
Traffic Volume (veh/h)	0	0	0	0	0	0
Future Volume (Veh/h)	0	0	0	0	0	0
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	0	0	0	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	0	0	0			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	0	0	0			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	100	100	100			
cM capacity (veh/h)	1023	1085	1623			
Direction, Lane #	EB 1	NB 1	SB 1			
Volume Total	0	0	0			
Volume Left	0	0	0			
Volume Right	0	0	0			
cSH	1700	1700	1700			
Volume to Capacity	0.00	0.00	0.00			
Queue Length 95th (m)	0.0	0.0	0.0			
Control Delay (s)	0.0	0.0	0.0			
Lane LOS	A					
Approach Delay (s)	0.0	0.0	0.0			
Approach LOS	A					
Intersection Summary						
Average Delay		0.0				
Intersection Capacity Utilization		0.0%		ICU Level of Service A		
Analysis Period (min)		15				

Lanes, Volumes, Timings Total (2041) - Scenario B - West Side Only
 209: William Halton Parkway & East Street D Timing Plan: AM Peak Hour

						
Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	0	1465	787	0	0	0
Future Volume (vph)	0	1465	787	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (m)	0.0			50.0	0.0	0.0
Storage Lanes	0			1	0	1
Taper Length (m)	7.5				7.5	
Lane Util. Factor	1.00	0.95	0.95	1.00	1.00	1.00
Frt						
Flt Protected						
Satd. Flow (prot)	0	3539	3539	1863	0	1863
Flt Permitted						
Satd. Flow (perm)	0	3539	3539	1863	0	1863
Link Speed (k/h)		50	50		50	
Link Distance (m)		204.1	194.7		111.4	
Travel Time (s)		14.7	14.0		8.0	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	1592	855	0	0	0
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	1592	855	0	0	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		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	25	15
Sign Control		Free	Free		Stop	
Intersection Summary						
Area Type:	Other					
Control Type:	Unsignalized					
Intersection Capacity Utilization 43.8%	ICU Level of Service A					
Analysis Period (min) 15						

HCM Unsignalized Intersection Capacity Analysis Total (2041) - Scenario B - West Side Only
 209: William Halton Parkway & East Street D Timing Plan: AM Peak Hour

						
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	0	1465	787	0	0	0
Future Volume (Veh/h)	0	1465	787	0	0	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)	0	1592	855	0	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)		204	195			
pX, platoon unblocked	0.99				0.74	0.99
vC, conflicting volume	855				1651	428
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	840				1138	410
tC, single (s)	4.1				6.8	6.9
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	100				100	100
cM capacity (veh/h)	785				145	587
Direction, Lane #	EB 1	EB 2	WB 1	WB 2	WB 3	SB 1
Volume Total	796	796	428	428	0	0
Volume Left	0	0	0	0	0	0
Volume Right	0	0	0	0	0	0
cSH	1700	1700	1700	1700	1700	1700
Volume to Capacity	0.47	0.47	0.25	0.25	0.00	0.00
Queue Length 95th (m)	0.0	0.0	0.0	0.0	0.0	0.0
Control Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0
Lane LOS						A
Approach Delay (s)	0.0		0.0			0.0
Approach LOS						A
Intersection Summary						
Average Delay			0.0			
Intersection Capacity Utilization			43.8%		ICU Level of Service	A
Analysis Period (min)			15			

Lanes, Volumes, Timings

210: William Halton Parkway & East Street E

Total (2041) - Scenario B - West Side Only

Timing Plan: AM Peak Hour

	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations	↰	↱	↱	↰	↰	↰
Traffic Volume (vph)	0	1465	787	0	22	0
Future Volume (vph)	0	1465	787	0	22	0
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						
Flt Protected					0.950	
Satd. Flow (prot)	1863	3539	3539	1863	1770	0
Flt Permitted					0.950	
Satd. Flow (perm)	1863	3539	3539	1863	1770	0
Right Turn on Red				Yes		Yes
Satd. Flow (RTOR)						
Link Speed (k/h)		50	50		50	
Link Distance (m)		194.7	188.1		114.3	
Travel Time (s)		14.0	13.5		8.2	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	1592	855	0	24	0
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	1592	855	0	24	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
Number of Detectors	1	2	2	1	1	
Detector Template	Left	Thru	Thru	Right	Left	
Leading Detector (m)	2.0	10.0	10.0	2.0	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)	2.0	0.6	0.6	2.0	2.0	
Detector 1 Type	CI+Ex	CI+Ex	CI+Ex	CI+Ex	CI+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		CI+Ex	CI+Ex			
Detector 2 Channel						
Detector 2 Extend (s)		0.0	0.0			
Turn Type	pm+pt	NA	NA	Perm	Prot	
Protected Phases	7	4	8		6	
Permitted Phases	4			8		

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Lanes, Volumes, Timings

210: William Halton Parkway & East Street E

Total (2041) - Scenario B - West Side Only

Timing Plan: AM Peak Hour

	EBL	EBT	WBT	WBR	SBL	SBR
Detector Phase	7	4	8	8	6	
Switch Phase						
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	
Minimum Split (s)	9.5	24.0	24.0	24.0	24.0	
Total Split (s)	12.0	36.0	24.0	24.0	24.0	
Total Split (%)	20.0%	60.0%	40.0%	40.0%	40.0%	
Maximum Green (s)	7.5	30.0	18.0	18.0	18.0	
Yellow Time (s)	3.5	4.0	4.0	4.0	4.0	
All-Red Time (s)	1.0	2.0	2.0	2.0	2.0	
Lost Time Adjust (s)	1.0	-2.0	-2.0	-2.0	-2.0	
Total Lost Time (s)	5.5	4.0	4.0	4.0	4.0	
Lead/Lag	Lead		Lag	Lag		
Lead-Lag Optimize?	Yes		Yes	Yes		
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	
Recall Mode	None	Max	Max	Max	None	
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)		50.8	50.8		8.4	
Actuated g/C Ratio		0.94	0.94		0.16	
v/c Ratio		0.48	0.26		0.09	
Control Delay		1.9	1.2		21.8	
Queue Delay		0.0	0.0		0.0	
Total Delay		1.9	1.2		21.8	
LOS		A	A		C	
Approach Delay		1.9	1.2		21.8	
Approach LOS		A	A		C	

Intersection Summary

Area Type: Other

Cycle Length: 60

Actuated Cycle Length: 53.8

Natural Cycle: 60

Control Type: Semi Act-Uncoord

Maximum v/c Ratio: 0.48

Intersection Signal Delay: 1.8

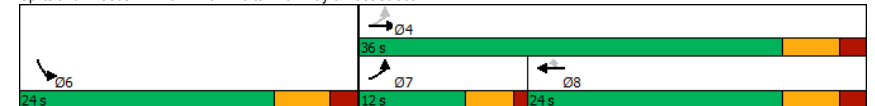
Intersection LOS: A

Intersection Capacity Utilization 51.3%

ICU Level of Service A

Analysis Period (min) 15

Splits and Phases: 210: William Halton Parkway & East Street E

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Queues
210: William Halton Parkway & East Street E

Total (2041) - Scenario B - West Side Only
Timing Plan: AM Peak Hour

	→	←	↘
Lane Group	EBT	WBT	SBL
Lane Group Flow (vph)	1592	855	24
v/c Ratio	0.48	0.26	0.09
Control Delay	1.9	1.2	21.8
Queue Delay	0.0	0.0	0.0
Total Delay	1.9	1.2	21.8
Queue Length 50th (m)	0.0	0.0	1.9
Queue Length 95th (m)	52.4	20.8	8.1
Internal Link Dist (m)	170.7	164.1	90.3
Turn Bay Length (m)			
Base Capacity (vph)	3343	3343	664
Starvation Cap Reductn	0	0	0
Spillback Cap Reductn	0	0	0
Storage Cap Reductn	0	0	0
Reduced v/c Ratio	0.48	0.26	0.04
Intersection Summary			

HCM Signalized Intersection Capacity Analysis
210: William Halton Parkway & East Street E

Total (2041) - Scenario B - West Side Only
Timing Plan: AM Peak Hour

	↖	→	←	↗	↘	↙
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations	↖	↗	↗	↖	↖	↗
Traffic Volume (vph)	0	1465	787	0	22	0
Future Volume (vph)	0	1465	787	0	22	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0	4.0		4.0	
Lane Util. Factor		0.95	0.95		1.00	
Frt		1.00	1.00		1.00	
Flt Protected		1.00	1.00		0.95	
Satd. Flow (prot)		3539	3539		1770	
Flt Permitted		1.00	1.00		0.95	
Satd. Flow (perm)		3539	3539		1770	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	1592	855	0	24	0
RTOR Reduction (vph)	0	0	0	0	0	0
Lane Group Flow (vph)	0	1592	855	0	24	0
Turn Type	pm+pt	NA	NA	Perm	Prot	
Protected Phases	7	4	8		6	
Permitted Phases	4			8		
Actuated Green, G (s)		45.4	45.4		1.3	
Effective Green, g (s)		47.4	47.4		3.3	
Actuated g/C Ratio		0.81	0.81		0.06	
Clearance Time (s)		6.0	6.0		6.0	
Vehicle Extension (s)		3.0	3.0		3.0	
Lane Grp Cap (vph)		2857	2857		99	
v/s Ratio Prot		c0.45	0.24		c0.01	
v/s Ratio Perm						
v/c Ratio		0.56	0.30		0.24	
Uniform Delay, d1		2.0	1.4		26.5	
Progression Factor		1.00	1.00		1.00	
Incremental Delay, d2		0.8	0.3		1.3	
Delay (s)		2.8	1.7		27.8	
Level of Service		A	A		C	
Approach Delay (s)		2.8	1.7		27.8	
Approach LOS		A	A		C	
Intersection Summary						
HCM 2000 Control Delay		2.6		HCM 2000 Level of Service		A
HCM 2000 Volume to Capacity ratio		0.60				
Actuated Cycle Length (s)		58.7		Sum of lost time (s)		13.5
Intersection Capacity Utilization		51.3%		ICU Level of Service		A
Analysis Period (min)		15				

c Critical Lane Group

Lanes, Volumes, Timings

211: William Halton Parkway & East Street F

Total (2041) - Scenario B - West Side Only

Timing Plan: AM Peak Hour

						
Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		 	 		 	
Traffic Volume (vph)	0	1487	787	0	0	0
Future Volume (vph)	0	1487	787	0	0	0
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						
Flt Protected						
Satd. Flow (prot)	1863	3539	3539	1863	1863	0
Flt Permitted						
Satd. Flow (perm)	1863	3539	3539	1863	1863	0
Link Speed (k/h)		50	50		50	
Link Distance (m)		188.1	219.2		112.6	
Travel Time (s)		13.5	15.8		8.1	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	1616	855	0	0	0
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	1616	855	0	0	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	44.4%			ICU Level of Service A		
Analysis Period (min)	15					

HCM Unsignalized Intersection Capacity Analysis

211: William Halton Parkway & East Street F

Total (2041) - Scenario B - West Side Only

Timing Plan: AM Peak Hour

							
Movement	EBL	EBT	WBT	WBR	SBL	SBR	
Lane Configurations							
Traffic Volume (veh/h)	0	1487	787	0	0	0	
Future Volume (Veh/h)	0	1487	787	0	0	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)	0	1616	855	0	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)		188					
pX, platoon unblocked					0.81		
vC, conflicting volume	855				1663	428	
vC1, stage 1 conf vol							
vC2, stage 2 conf vol							
vCu, unblocked vol	855				1342	428	
tC, single (s)	4.1				6.8	6.9	
tC, 2 stage (s)							
tF (s)	2.2				3.5	3.3	
p0 queue free %	100				100	100	
cM capacity (veh/h)	781				116	576	
Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	WB 3	SB 1
Volume Total	0	808	808	428	428	0	0
Volume Left	0	0	0	0	0	0	0
Volume Right	0	0	0	0	0	0	0
cSH	1700	1700	1700	1700	1700	1700	1700
Volume to Capacity	0.00	0.48	0.48	0.25	0.25	0.00	0.00
Queue Length 95th (m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Control Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Lane LOS							A
Approach Delay (s)	0.0			0.0			0.0
Approach LOS							A
Intersection Summary							
Average Delay			0.0				
Intersection Capacity Utilization			44.4%		ICU Level of Service		A
Analysis Period (min)			15				

Lanes, Volumes, Timings

212: West Street A & Transit Station

Total (2041) - Scenario B - West Side Only

Timing Plan: AM Peak Hour

	←	←	↑	↗	↘	↓
Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	↔		↔			↔
Traffic Volume (vph)	212	0	0	171	0	0
Future Volume (vph)	212	0	0	171	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt			0.865			
Flt Protected	0.950					
Satd. Flow (prot)	1770	0	1611	0	0	1863
Flt Permitted	0.950					
Satd. Flow (perm)	1770	0	1611	0	0	1863
Link Speed (k/h)	50		50			50
Link Distance (m)	70.0		239.0			98.7
Travel Time (s)	5.0		17.2			7.1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	230	0	0	186	0	0
Shared Lane Traffic (%)						
Lane Group Flow (vph)	230	0	186	0	0	0
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 29.0%

ICU Level of Service A

Analysis Period (min) 15

HCM Unsignalized Intersection Capacity Analysis

212: West Street A & Transit Station

Total (2041) - Scenario B - West Side Only

Timing Plan: AM Peak Hour

	←	←	↑	↗	↘	↓
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	↔		↔			↔
Traffic Volume (veh/h)	212	0	0	171	0	0
Future Volume (Veh/h)	212	0	0	171	0	0
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)	230	0	0	186	0	0
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None					
Median storage (veh)						
Upstream signal (m)	213					
pX, platoon unblocked						
vC, conflicting volume	0		460	0	646	460
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	0		460	0	646	460
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 %	86		100	83	100	100
cM capacity (veh/h)	1623		427	1085	284	427

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	230	186	0
Volume Left	230	0	0
Volume Right	0	186	0
cSH	1623	1085	1700
Volume to Capacity	0.14	0.17	0.00
Queue Length 95th (m)	3.7	4.6	0.0
Control Delay (s)	7.6	9.0	0.0
Lane LOS	A	A	A
Approach Delay (s)	7.6	9.0	0.0
Approach LOS	A	A	

Intersection Summary

Average Delay	8.2		
Intersection Capacity Utilization	29.0%	ICU Level of Service	A
Analysis Period (min)	15		

Lanes, Volumes, Timings

213: West Street A & William Halton Parkway

Total (2041) - Scenario B - West Side Only

Timing Plan: AM Peak Hour

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑	↑		↑↑	↑			↑			↑
Traffic Volume (vph)	0	1450	48	0	1070	146	0	0	216	0	0	9
Future Volume (vph)	0	1450	48	0	1070	146	0	0	216	0	0	9
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		1	0		1	0		1	0		1
Taper Length (m)	7.5			7.5			7.5			7.5		
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt			0.850			0.850			0.865			0.865
Fit Protected												
Satd. Flow (prot)	0	3539	1583	0	3539	1583	0	0	1611	0	0	1611
Fit Permitted												
Satd. Flow (perm)	0	3539	1583	0	3539	1583	0	0	1611	0	0	1611
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		202.0			209.3			100.4			239.0	
Travel Time (s)		14.5			15.1			7.2			17.2	
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	1576	52	0	1163	159	0	0	235	0	0	10
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	1576	52	0	1163	159	0	0	235	0	0	10
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 60.1%	ICU Level of Service B											
Analysis Period (min) 15												

HCM Unsignalized Intersection Capacity Analysis

213: West Street A & William Halton Parkway

Total (2041) - Scenario B - West Side Only

Timing Plan: AM Peak Hour

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑	↑		↑↑	↑			↑			↑
Traffic Volume (veh/h)	0	1450	48	0	1070	146	0	0	216	0	0	9
Future Volume (Veh/h)	0	1450	48	0	1070	146	0	0	216	0	0	9
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	1576	52	0	1163	159	0	0	235	0	0	10
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			209							
pX, platoon unblocked	0.88			0.64			0.71	0.71	0.64	0.71	0.71	0.88
vC, conflicting volume	1322			1628			2168	2898	788	2186	2791	582
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	1086			871			1035	2069	0	1061	1918	241
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	66	100	100	98
cM capacity (veh/h)	559			496			129	38	699	83	47	666
Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	WB 3	NB 1	SB 1				
Volume Total	788	788	52	582	582	159	235	10				
Volume Left	0	0	0	0	0	0	0	0				
Volume Right	0	0	52	0	0	159	235	10				
cSH	1700	1700	1700	1700	1700	1700	699	666				
Volume to Capacity	0.46	0.46	0.03	0.34	0.34	0.09	0.34	0.02				
Queue Length 95th (m)	0.0	0.0	0.0	0.0	0.0	0.0	11.1	0.3				
Control Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	12.7	10.5				
Lane LOS							B	B				
Approach Delay (s)	0.0			0.0			12.7	10.5				
Approach LOS							B	B				
Intersection Summary												
Average Delay			1.0									
Intersection Capacity Utilization		60.1%			ICU Level of Service			B				
Analysis Period (min)		15										

Lanes, Volumes, Timings

214: West Street D & William Halton Parkway

Total (2041) - Scenario B - West Side Only

Timing Plan: AM Peak Hour

	←	→	↖	↗	←	↖	↗	↖	↗	↖	↗	↖	↗
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations	↖	↖	↖	↖	↖	↖	↖	↖	↖	↖	↖	↖	
Traffic Volume (vph)	0	1407	57	370	573	136	19	0	22	69	0	4	
Future Volume (vph)	0	1407	57	370	573	136	19	0	22	69	0	4	
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		0.0	50.0		0.0	
Storage Lanes	1		0	1		1	1		0	1		0	
Taper Length (m)	100.0			100.0			75.0			75.0			
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Frt			0.850			0.850		0.850			0.850		
Flt Protected				0.950			0.950			0.950			
Satd. Flow (prot)	1863	3539	1583	1770	3539	1583	1770	1583	0	1770	1583	0	
Flt Permitted				0.063			0.755			0.742			
Satd. Flow (perm)	1863	3539	1583	117	3539	1583	1406	1583	0	1382	1583	0	
Right Turn on Red			Yes			Yes		Yes			Yes		
Satd. Flow (RTOR)			55			148		351			381		
Link Speed (k/h)		50			50			50			50		
Link Distance (m)		241.6			202.0			103.2			133.4		
Travel Time (s)		17.4			14.5			7.4			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)	0	1529	62	402	623	148	21	0	24	75	0	4	
Shared Lane Traffic (%)													
Lane Group Flow (vph)	0	1529	62	402	623	148	21	24	0	75	4	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	1	2	1	1	2		1	2		
Detector Template	Left	Thru	Right	Left	Thru	Right	Left	Thru		Left	Thru		
Leading Detector (m)	2.0	10.0	2.0	2.0	10.0	2.0	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		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	2.0	0.6	2.0	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		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	pm+pt	NA	Perm	Perm	NA		Perm	NA		
Protected Phases		4		3	8			2			6		
Permitted Phases	4		4	8		8	2			6			

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Lanes, Volumes, Timings

214: West Street D & William Halton Parkway

Total (2041) - Scenario B - West Side Only

Timing Plan: AM Peak Hour

	←	→	↖	↗	←	↖	↗	↖	↗	↖	↗	↖	↗
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Detector Phase	4	4	4	3	8	8	2	2		6	6		
Switch Phase													
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0		5.0	5.0		
Minimum Split (s)	24.0	24.0	24.0	9.5	24.0	24.0	24.0	24.0		24.0	24.0		
Total Split (s)	66.0	66.0	66.0	29.9	95.9	95.9	24.1	24.1		24.1	24.1		
Total Split (%)	55.0%	55.0%	55.0%	24.9%	79.9%	79.9%	20.1%	20.1%		20.1%	20.1%		
Maximum Green (s)	60.0	60.0	60.0	26.9	89.9	89.9	18.1	18.1		18.1	18.1		
Yellow Time (s)	4.0	4.0	4.0	3.0	4.0	4.0	4.0	4.0		4.0	4.0		
All-Red Time (s)	2.0	2.0	2.0	0.0	2.0	2.0	2.0	2.0		2.0	2.0		
Lost Time Adjust (s)	-2.0	-2.0	-2.0	1.0	-2.0	-2.0	-2.0	-2.0		-2.0	-2.0		
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0		4.0	4.0		
Lead/Lag	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	Max	Max	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	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)		62.3	62.3	92.4	93.3	93.3	13.1	13.1		13.3	13.3		
Actuated g/C Ratio		0.56	0.56	0.83	0.84	0.84	0.12	0.12		0.12	0.12		
v/c Ratio		0.77	0.07	0.83	0.21	0.11	0.13	0.05		0.45	0.01		
Control Delay		23.4	4.6	46.4	2.7	0.7	45.7	0.2		55.1	0.0		
Queue Delay		0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0		
Total Delay		23.4	4.6	46.4	2.7	0.7	45.7	0.2		55.1	0.0		
LOS		C	A	D	A	A	D	A		E	A		
Approach Delay		22.7			17.4		21.4				52.3		
Approach LOS		C			B		C				D		

Intersection Summary

Area Type: Other

Cycle Length: 120

Actuated Cycle Length: 110.9

Natural Cycle: 90

Control Type: Semi Act-Uncoordinated

Maximum v/c Ratio: 0.83

Intersection Signal Delay: 21.3

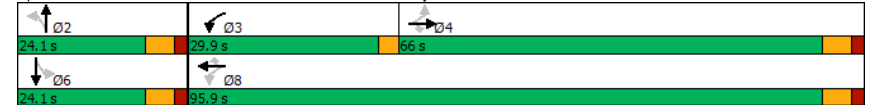
Intersection LOS: C

Intersection Capacity Utilization 79.9%

ICU Level of Service D

Analysis Period (min) 15

Splits and Phases: 214: West Street D & William Halton Parkway

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Queues
214: West Street D & William Halton Parkway

Total (2041) - Scenario B - West Side Only
Timing Plan: AM Peak Hour

	→	↘	↙	←	↖	↗	↘	↙	↓
Lane Group	EBT	EBR	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	1529	62	402	623	148	21	24	75	4
v/c Ratio	0.77	0.07	0.83	0.21	0.11	0.13	0.05	0.45	0.01
Control Delay	23.4	4.6	46.4	2.7	0.7	45.7	0.2	55.1	0.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	23.4	4.6	46.4	2.7	0.7	45.7	0.2	55.1	0.0
Queue Length 50th (m)	133.8	0.7	67.5	12.7	0.0	4.2	0.0	15.5	0.0
Queue Length 95th (m)	180.9	7.2	#128.2	22.2	3.9	11.6	0.0	30.0	0.0
Internal Link Dist (m)	217.6			178.0			79.2		109.4
Turn Bay Length (m)		50.0	50.0		50.0	50.0		50.0	
Base Capacity (vph)	1988	913	485	2977	1355	256	575	251	600
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.77	0.07	0.83	0.21	0.11	0.08	0.04	0.30	0.01

Intersection Summary

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

HCM Signalized Intersection Capacity Analysis
214: West Street D & William Halton Parkway

Total (2041) - Scenario B - West Side Only
Timing Plan: AM Peak Hour

	↖	→	↘	←	↖	↗	↘	↙	↗	↙	↓	↘	↙
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations	↖	↖↗	↖	↖	↖↗	↖	↖	↖	↖	↖	↖	↖	
Traffic Volume (vph)	0	1407	57	370	573	136	19	0	22	69	0	4	
Future Volume (vph)	0	1407	57	370	573	136	19	0	22	69	0	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	4.0		
Lane Util. Factor	0.95	1.00	1.00	0.95	1.00	1.00	1.00	1.00		1.00	1.00		
Frt	1.00	0.85	1.00	1.00	0.85	1.00	0.85	1.00		1.00	0.85		
Flt Protected	1.00	1.00	0.95	1.00	1.00	0.95	1.00			0.95	1.00		
Satd. Flow (prot)	3539	1583	1770	3539	1583	1770	1583			1770	1583		
Flt Permitted	1.00	1.00	0.06	1.00	1.00	0.76	1.00			0.74	1.00		
Satd. Flow (perm)	3539	1583	118	3539	1583	1407	1583			1381	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	0.92
Adj. Flow (vph)	0	1529	62	402	623	148	21	0	24	75	0	4	
RTOR Reduction (vph)	0	0	24	0	0	26	0	21	0	0	4	0	
Lane Group Flow (vph)	0	1529	38	402	623	122	21	3	0	75	0	0	
Turn Type	Perm	NA	Perm	pm+pt	NA	Perm	Perm	NA		Perm	NA		
Protected Phases		4		3		8		2			6		
Permitted Phases	4		4	8		8		2		6			
Actuated Green, G (s)		60.3	60.3	90.4	90.4	90.4	9.9	9.9		9.9	9.9		
Effective Green, g (s)		62.3	62.3	89.4	92.4	92.4	11.9	11.9		11.9	11.9		
Actuated g/C Ratio		0.55	0.55	0.80	0.82	0.82	0.11	0.11		0.11	0.11		
Clearance Time (s)		6.0	6.0	3.0	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	3.0		
Lane Grp Cap (vph)		1963	878	477	2911	1302	149	167		146	167		
v/s Ratio Prot		0.43		c0.20	0.18			0.00			0.00		
v/s Ratio Perm			0.02	c0.48		0.08	0.01			c0.05			
v/c Ratio		0.78	0.04	0.84	0.21	0.09	0.14	0.02		0.51	0.00		
Uniform Delay, d1		19.6	11.4	33.4	2.1	1.9	45.6	45.0		47.5	44.9		
Progression Factor		1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00		
Incremental Delay, d2		3.1	0.1	16.4	0.2	0.1	0.4	0.0		3.0	0.0		
Delay (s)		22.7	11.5	49.8	2.3	2.1	46.0	45.0		50.5	44.9		
Level of Service		C	B	D	A	A	D	D		D	D		
Approach Delay (s)		22.3			18.6			45.5			50.2		
Approach LOS		C			B			D			D		

Intersection Summary

HCM 2000 Control Delay	21.9	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.80		
Actuated Cycle Length (s)	112.3	Sum of lost time (s)	12.0
Intersection Capacity Utilization	79.9%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

Lanes, Volumes, Timings

215: West Street A & West Street B

Total (2041) - Scenario B - West Side Only

Timing Plan: AM Peak Hour

						
Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	131	83	0	49	52	6
Future Volume (vph)	131	83	0	49	52	6
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	0.948				0.985	
Flt Protected	0.970					
Satd. Flow (prot)	1713	0	0	1863	1835	0
Flt Permitted	0.970					
Satd. Flow (perm)	1713	0	0	1863	1835	0
Link Speed (k/h)	50			50	50	
Link Distance (m)	202.8			106.4	100.4	
Travel Time (s)	14.6			7.7	7.2	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	142	90	0	53	57	7
Shared Lane Traffic (%)						
Lane Group Flow (vph)	232	0	0	53	64	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
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	25			15
Sign Control	Stop			Free	Free	

Intersection Summary

Area Type: Other

Control Type: Unsignalized

Intersection Capacity Utilization 22.3% ICU Level of Service A

Analysis Period (min) 15

HCM Unsignalized Intersection Capacity Analysis

215: West Street A & West Street B

Total (2041) - Scenario B - West Side Only

Timing Plan: AM Peak Hour

						
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	131	83	0	49	52	6
Future Volume (Veh/h)	131	83	0	49	52	6
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)	142	90	0	53	57	7
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	None	
Median storage (veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	114	60	64			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	114	60	64			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	84	91	100			
cM capacity (veh/h)	883	1005	1538			
Direction, Lane #	EB 1	NB 1	SB 1			
Volume Total	232	53	64			
Volume Left	142	0	0			
Volume Right	90	0	7			
cSH	927	1538	1700			
Volume to Capacity	0.25	0.00	0.04			
Queue Length 95th (m)	7.4	0.0	0.0			
Control Delay (s)	10.2	0.0	0.0			
Lane LOS	B					
Approach Delay (s)	10.2	0.0	0.0			
Approach LOS	B					
Intersection Summary						
Average Delay		6.8				
Intersection Capacity Utilization		22.3%		ICU Level of Service	A	
Analysis Period (min)		15				

Lanes, Volumes, Timings

216: West Street D & West Street B

Total (2041) - Scenario B - West Side Only

Timing Plan: AM Peak Hour

	←	←	↑	↗	↘	↓
Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	↖		↗			↘
Traffic Volume (vph)	0	10	31	0	242	185
Future Volume (vph)	0	10	31	0	242	185
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.865					
Flt Protected						0.972
Satd. Flow (prot)	1611	0	1863	0	0	1811
Flt Permitted						0.972
Satd. Flow (perm)	1611	0	1863	0	0	1811
Link Speed (k/h)	50		50			50
Link Distance (m)	202.8		99.7			103.2
Travel Time (s)	14.6		7.2			7.4
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	11	34	0	263	201
Shared Lane Traffic (%)						
Lane Group Flow (vph)	11	0	34	0	0	464
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
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		15	25	
Sign Control	Stop		Free			Free

Intersection Summary

Area Type: Other

Control Type: Unsignalized

Intersection Capacity Utilization 39.8%

ICU Level of Service A

Analysis Period (min) 15

HCM Unsignalized Intersection Capacity Analysis

216: West Street D & West Street B

Total (2041) - Scenario B - West Side Only

Timing Plan: AM Peak Hour

	←	←	↑	↗	↘	↓
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	↖		↗			↘
Traffic Volume (veh/h)	0	10	31	0	242	185
Future Volume (Veh/h)	0	10	31	0	242	185
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	11	34	0	263	201
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage (veh)						
Upstream signal (m)						103
pX, platoon unblocked	0.94					
vC, conflicting volume	761	34			34	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	716	34			34	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	100	99			83	
cM capacity (veh/h)	312	1039			1578	

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	11	34	464
Volume Left	0	0	263
Volume Right	11	0	0
cSH	1039	1700	1578
Volume to Capacity	0.01	0.02	0.17
Queue Length 95th (m)	0.2	0.0	4.5
Control Delay (s)	8.5	0.0	5.0
Lane LOS	A		A
Approach Delay (s)	8.5	0.0	5.0
Approach LOS	A		

Intersection Summary

Average Delay 4.8

Intersection Capacity Utilization 39.8%

ICU Level of Service

A

Analysis Period (min) 15

Lanes, Volumes, Timings

217: West Street C & West Street A

Total (2041) - Scenario B - West Side Only

Timing Plan: AM Peak Hour

	EBL	EBT	WBT	WBR	SBL	SBR
Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↔	↔		↔	↔
Traffic Volume (vph)	0	84	157	202	76	15
Future Volume (vph)	0	84	157	202	76	15
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			0.924		0.978	
Flt Protected					0.960	
Satd. Flow (prot)	0	1863	1721	0	1749	0
Flt Permitted					0.960	
Satd. Flow (perm)	0	1863	1721	0	1749	0
Link Speed (k/h)		50	50		50	
Link Distance (m)		208.6	202.4		106.4	
Travel Time (s)		15.0	14.6		7.7	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	91	171	220	83	16
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	91	391	0	99	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 32.4%

ICU Level of Service A

Analysis Period (min) 15

HCM Unsignalized Intersection Capacity Analysis

217: West Street C & West Street A

Total (2041) - Scenario B - West Side Only

Timing Plan: AM Peak Hour

	EBL	EBT	WBT	WBR	SBL	SBR
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↔	↔		↔	↔
Traffic Volume (veh/h)	0	84	157	202	76	15
Future Volume (Veh/h)	0	84	157	202	76	15
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)	0	91	171	220	83	16
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		None	None			
Median storage (veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	391				372	281
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	391				372	281
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	100				87	98
cM capacity (veh/h)	1168				629	758
Direction, Lane #	EB 1	WB 1	SB 1			
Volume Total	91	391	99			
Volume Left	0	0	83			
Volume Right	0	220	16			
cSH	1168	1700	647			
Volume to Capacity	0.00	0.23	0.15			
Queue Length 95th (m)	0.0	0.0	4.0			
Control Delay (s)	0.0	0.0	11.6			
Lane LOS			B			
Approach Delay (s)	0.0	0.0	11.6			
Approach LOS			B			
Intersection Summary						
Average Delay			2.0			
Intersection Capacity Utilization			32.4%		ICU Level of Service	A
Analysis Period (min)			15			

Lanes, Volumes, Timings

218: West Street D & West Street C

Total (2041) - Scenario B - West Side Only

Timing Plan: AM Peak Hour

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔			↔			↔			↔	
Traffic Volume (vph)	0	0	0	82	0	75	0	24	12	111	74	0
Future Volume (vph)	0	0	0	82	0	75	0	24	12	111	74	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					0.935			0.955				
Flt Protected					0.975						0.971	
Satd. Flow (prot)	0	1863	0	0	1698	0	0	1779	0	0	1809	0
Flt Permitted					0.975						0.971	
Satd. Flow (perm)	0	1863	0	0	1698	0	0	1779	0	0	1809	0
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		258.7			208.6			93.0			99.7	
Travel Time (s)		18.6			15.0			6.7			7.2	
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	0	89	0	82	0	26	13	121	80	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	0	0	0	171	0	0	39	0	0	201	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 32.5%

ICU Level of Service A

Analysis Period (min) 15

HCM Unsignalized Intersection Capacity Analysis

218: West Street D & West Street C

Total (2041) - Scenario B - West Side Only

Timing Plan: AM Peak Hour

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔			↔			↔			↔	
Traffic Volume (veh/h)	0	0	0	82	0	75	0	24	12	111	74	0
Future Volume (Veh/h)	0	0	0	82	0	75	0	24	12	111	74	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)	0	0	0	89	0	82	0	26	13	121	80	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	82			0			259	260	0	245	219	41
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	82			0			259	260	0	245	219	41
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			95			100	96	99	81	88	100
cM capacity (veh/h)	1515			1623			602	609	1085	649	642	1030
Direction, Lane #	EB 1	WB 1	NB 1	SB 1								
Volume Total	0	171	39	201								
Volume Left	0	89	0	121								
Volume Right	0	82	13	0								
cSH	1700	1623	714	646								
Volume to Capacity	0.00	0.05	0.05	0.31								
Queue Length 95th (m)	0.0	1.3	1.3	9.9								
Control Delay (s)	0.0	4.0	10.3	13.1								
Lane LOS		A	B	B								
Approach Delay (s)	0.0	4.0	10.3	13.1								
Approach LOS			B	B								
Intersection Summary												
Average Delay			9.0									
Intersection Capacity Utilization		32.5%		ICU Level of Service					A			
Analysis Period (min)			15									

Lanes, Volumes, Timings

101: Trafalgar Rd & Lower Base Line

TT (2041) - Scenario B - West Side Only

Timing Plan: PM Peak Hour

	←	→	↖	↗	←	→	↖	↗	←	→	↖	↗
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖	↖	↖	↖	↖	↖	↖	↖	↖	↖	↖	↖
Traffic Volume (vph)	54	240	77	321	678	368	474	2491	386	306	1649	123
Future Volume (vph)	54	240	77	321	678	368	474	2491	386	306	1649	123
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	45.0		45.0	110.0		110.0	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	0.240			0.228			0.072			0.077		
Satd. Flow (perm)	447	3412	0	425	3352	0	134	5085	1583	143	5085	1583
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		25			68				79			95
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	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	54	240	77	321	678	368	474	2491	386	306	1649	123
Shared Lane Traffic (%)												
Lane Group Flow (vph)	54	317	0	321	1046	0	474	2491	386	306	1649	123
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	pm+ov	pm+pt	NA	pm+ov
Protected Phases	7	4		3	8		5	2	3	1	6	7
Permitted Phases	4			8			2		2	6		6

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Lanes, Volumes, Timings

101: Trafalgar Rd & Lower Base Line

TT (2041) - Scenario B - West Side Only

Timing Plan: PM Peak Hour

	←	→	↖	↗	←	→	↖	↗	←	→	↖	↗
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector Phase	7	4		3	8		5	2	3	1	6	7
Switch Phase												
Minimum Initial (s)	5.0	10.0		7.0	10.0		5.0	25.0	7.0	7.0	25.0	5.0
Minimum Split (s)	11.6	22.5		13.6	22.5		11.6	31.6	13.6	13.6	31.6	11.6
Total Split (s)	11.6	22.6		27.0	38.0		31.0	71.4	27.0	19.0	59.4	11.6
Total Split (%)	8.3%	16.1%		19.3%	27.1%		22.1%	51.0%	19.3%	13.6%	42.4%	8.3%
Maximum Green (s)	5.0	16.4		24.0	31.8		28.0	64.8	24.0	16.0	52.8	5.0
Yellow Time (s)	4.6	4.2		3.0	4.2		3.0	4.6	3.0	3.0	4.6	4.6
All-Red Time (s)	2.0	2.0		0.0	2.0		0.0	2.0	0.0	0.0	2.0	2.0
Lost Time Adjust (s)	1.0	-2.2		1.0	-2.2		1.0	-2.2	1.0	1.0	-2.2	-2.2
Total Lost Time (s)	7.6	4.0		4.0	4.0		4.0	4.4	4.0	4.0	4.4	4.4
Lead/Lag	Lead	Lag		Lead	Lag		Lead	Lag	Lead	Lag	Lag	Lead
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	0.2	0.2	5.0	3.0
Recall Mode	None	None		None	None		None	Max	None	Max	Max	None
Act Effct Green (s)	20.3	19.9		45.6	34.0		86.4	67.0	93.1	70.4	55.8	66.6
Actuated g/C Ratio	0.14	0.14		0.33	0.24		0.62	0.48	0.66	0.50	0.39	0.48
v/c Ratio	0.53	0.63		0.93	1.21		1.19	1.02	0.36	1.24	0.83	0.15
Control Delay	59.4	58.5		73.0	146.9		146.3	60.6	8.8	175.6	42.6	6.5
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	59.4	58.5		73.0	146.9		146.3	60.6	8.8	175.6	42.6	6.5
LOS	E	E		E	F		F	E	A	F	D	A
Approach Delay		58.6			129.5			66.8			60.0	
Approach LOS		E			F			E			E	

Intersection Summary

Area Type: Other

Cycle Length: 140

Actuated Cycle Length: 140

Natural Cycle: 135

Control Type: Semi Act-Uncooord

Maximum v/c Ratio: 1.24

Intersection Signal Delay: 76.4

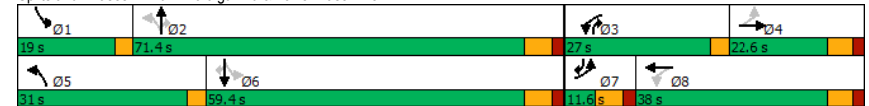
Intersection LOS: E

Intersection Capacity Utilization 116.4%

ICU Level of Service H

Analysis Period (min) 15

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

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Queues
101: Trafalgar Rd & Lower Base Line

TT (2041) - Scenario B - West Side Only
Timing Plan: PM Peak Hour

	EBL	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	54	317	321	1046	474	2491	386	306	1649	123
v/c Ratio	0.53	0.63	0.93	1.21	1.19	1.02	0.36	1.24	0.83	0.15
Control Delay	59.4	58.5	73.0	146.9	146.3	60.6	8.8	175.6	42.6	6.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	59.4	58.5	73.0	146.9	146.3	60.6	8.8	175.6	42.6	6.5
Queue Length 50th (m)	10.7	40.5	72.3	~175.8	~139.9	~264.5	32.2	~87.7	147.1	4.0
Queue Length 95th (m)	#22.8	56.6	#117.8	#217.6	#206.6	#290.5	48.5	#145.8	166.4	14.8
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)	102	506	359	865	398	2433	1093	246	1997	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	0.53	0.63	0.89	1.21	1.19	1.02	0.35	1.24	0.83	0.15

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.

HCM Signalized Intersection Capacity Analysis
101: Trafalgar Rd & Lower Base Line

TT (2041) - Scenario B - West Side Only
Timing Plan: PM Peak Hour

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰	↱	↱	↰	↱	↱	↰	↱	↱	↰	↱	↱
Traffic Volume (vph)	54	240	77	321	678	368	474	2491	386	306	1649	123
Future Volume (vph)	54	240	77	321	678	368	474	2491	386	306	1649	123
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	7.6	4.0		4.0	4.0		4.0	4.4	4.0	4.0	4.4	4.4
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	3410		1770	3352		1770	5085	1583	1770	5085	1583
Flt Permitted	0.24	1.00		0.23	1.00		0.07	1.00	1.00	0.08	1.00	1.00
Satd. Flow (perm)	446	3410		424	3352		134	5085	1583	144	5085	1583
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	54	240	77	321	678	368	474	2491	386	306	1649	123
RTOR Reduction (vph)	0	21	0	0	51	0	0	0	31	0	0	53
Lane Group Flow (vph)	54	296	0	321	995	0	474	2491	355	306	1649	70
Turn Type	pm+pt	NA		pm+pt	NA		pm+pt	NA	pm+ov	pm+pt	NA	pm+ov
Protected Phases	7	4		3	8		5	2	3	1	6	7
Permitted Phases	4			8			2		2	6		6
Actuated Green, G (s)	22.7	17.7		43.4	31.8		83.8	64.8	87.5	68.8	52.8	57.8
Effective Green, g (s)	20.7	19.9		42.4	34.0		82.8	67.0	85.5	66.8	55.0	62.2
Actuated g/C Ratio	0.15	0.14		0.30	0.24		0.59	0.48	0.61	0.48	0.39	0.44
Clearance Time (s)	6.6	6.2		3.0	6.2		3.0	6.6	3.0	3.0	6.6	6.6
Vehicle Extension (s)	3.0	5.0		0.2	5.0		3.0	5.0	0.2	0.2	5.0	3.0
Lane Grp Cap (vph)	103	484		337	814		394	2433	966	242	1997	753
v/s Ratio Prot	0.01	0.09		c0.15	c0.30		c0.23	0.49	0.06	0.13	0.32	0.00
v/s Ratio Perm	0.06			0.14			0.48		0.17	c0.47		0.04
v/c Ratio	0.52	0.61		0.95	1.22		1.20	1.02	0.37	1.26	0.83	0.09
Uniform Delay, d1	53.0	56.4		42.3	53.0		46.0	36.5	13.7	44.3	38.2	22.6
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	4.7	3.3		36.2	110.8		113.2	24.6	0.1	147.7	4.1	0.1
Delay (s)	57.8	59.7		78.5	163.8		159.3	61.1	13.8	192.0	42.3	22.6
Level of Service	E	E		E	F		F	E	B	F	D	C
Approach Delay (s)		59.4			143.8			69.5			63.1	
Approach LOS		E			F			E			E	

Intersection Summary

HCM 2000 Control Delay	81.3	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	1.23		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	20.0
Intersection Capacity Utilization	116.4%	ICU Level of Service	H
Analysis Period (min)	15		

c Critical Lane Group

Lanes, Volumes, Timings

TT (2041) - Scenario B - West Side Only

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

Timing Plan: PM Peak Hour

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔		↔	↔	↔	↔	↔			↔	↔
Traffic Volume (vph)	7	0	49	541	16	174	9	3163	0	0	2042	5
Future Volume (vph)	7	0	49	541	16	174	9	3163	0	0	2042	5
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	0.882				0.991	0.850						0.850
Flt Protected	0.994			0.950	0.958		0.950					
Satd. Flow (prot)	0	1633	0	1681	1609	1504	1770	5085	0	0	5085	1583
Flt Permitted	0.994			0.720	0.711		0.070					
Satd. Flow (perm)	0	1633	0	1274	1194	1504	130	5085	0	0	5085	1583
Right Turn on Red		Yes			Yes			Yes			Yes	
Satd. Flow (RTOR)	78				3	95						70
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	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	7	0	49	541	16	174	9	3163	0	0	2042	5
Shared Lane Traffic (%)				47%		10%						
Lane Group Flow (vph)	0	56	0	287	287	157	9	3163	0	0	2042	5
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	CI+Ex	CI+Ex		CI+Ex	CI+Ex	CI+Ex	CI+Ex	CI+Ex			CI+Ex	CI+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		CI+Ex			CI+Ex			CI+Ex				CI+Ex
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0				0.0
Turn Type	Split	NA		Perm	NA	Perm	Perm	NA		NA	Perm	Perm
Protected Phases	4	4			8			2			6	
Permitted Phases				8		8	2					6

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Lanes, Volumes, Timings

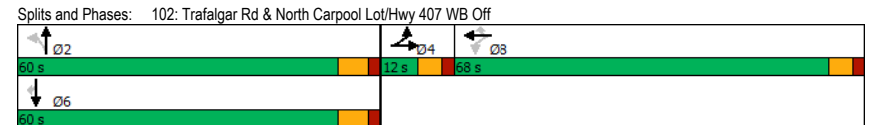
TT (2041) - Scenario B - West Side Only

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

Timing Plan: PM Peak Hour

	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)	6.0	6.0		7.0	7.0	7.0	20.0	20.0			20.0	20.0
Minimum Split (s)	12.0	12.0		22.5	22.5	22.5	27.0	27.0			27.0	27.0
Total Split (s)	12.0	12.0		68.0	68.0	68.0	60.0	60.0			60.0	60.0
Total Split (%)	8.6%	8.6%		48.6%	48.6%	48.6%	42.9%	42.9%			42.9%	42.9%
Maximum Green (s)	6.0	6.0		62.0	62.0	62.0	53.0	53.0			53.0	53.0
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	-2.0	-3.0	-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	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)	8.2			34.1	34.1	34.1	57.1	57.1			57.1	57.1
Actuated g/C Ratio	0.08			0.31	0.31	0.31	0.53	0.53			0.53	0.53
v/c Ratio	0.29			0.72	0.76	0.29	0.13	1.18			0.76	0.01
Control Delay	9.7			43.5	46.8	12.8	25.6	112.9			25.5	0.0
Queue Delay	0.0			0.0	0.0	0.0	0.0	0.0			0.0	0.0
Total Delay	9.7			43.5	46.8	12.8	25.6	112.9			25.5	0.0
LOS	A			D	D	B	C	F			C	A
Approach Delay	9.7				38.2		112.7				25.5	
Approach LOS	A				D		F				C	

Intersection Summary												
Area Type:	Other											
Cycle Length:	140											
Actuated Cycle Length:	108.5											
Natural Cycle:	150											
Control Type:	Actuated-Uncoordinated											
Maximum v/c Ratio:	1.18											
Intersection Signal Delay:	72.9											
Intersection Capacity Utilization	91.6%											
Analysis Period (min)	15											



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Synchro 10 Report
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Queues TT (2041) - Scenario B - West Side Only
102: Trafalgar Rd & North Carpool Lot/Hwy 407 WB Off Timing Plan: PM Peak Hour

	→	↖	←	↗	↖	↑	↓	↗
Lane Group	EBT	WBL	WBT	WBR	NBL	NBT	SBT	SBR
Lane Group Flow (vph)	56	287	287	157	9	3163	2042	5
v/c Ratio	0.29	0.72	0.76	0.29	0.13	1.18	0.76	0.01
Control Delay	9.7	43.5	46.8	12.8	25.6	112.9	25.5	0.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	9.7	43.5	46.8	12.8	25.6	112.9	25.5	0.0
Queue Length 50th (m)	0.0	56.8	59.7	9.8	1.0	~303.4	125.5	0.0
Queue Length 95th (m)	7.7	86.9	92.7	25.0	5.7	#405.8	190.6	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)	194	766	719	942	68	2676	2676	866
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.29	0.37	0.40	0.17	0.13	1.18	0.76	0.01

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.

HCM Signalized Intersection Capacity Analysis TT (2041) - Scenario B - West Side Only
102: Trafalgar Rd & North Carpool Lot/Hwy 407 WB Off Timing Plan: PM Peak Hour

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	7	0	49	541	16	174	9	3163	0	0	2042	5
Future Volume (vph)	7	0	49	541	16	174	9	3163	0	0	2042	5
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)		1633		1681	1609	1504	1770	5085			5085	1583
Flt Permitted		0.99		0.72	0.71	1.00	0.07	1.00			1.00	1.00
Satd. Flow (perm)		1633		1275	1194	1504	131	5085			5085	1583
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	7	0	49	541	16	174	9	3163	0	0	2042	5
RTOR Reduction (vph)	0	53	0	0	2	65	0	0	0	0	0	2
Lane Group Flow (vph)	0	3	0	287	285	92	9	3163	0	0	2042	3
Turn Type	Split	NA		Perm	NA	Perm	Perm	NA			NA	Perm
Protected Phases	4	4			8			2			6	
Permitted Phases				8		8	2					6
Actuated Green, G (s)		4.6		32.1	32.1	32.1	54.0	54.0			54.0	54.0
Effective Green, g (s)		6.6		34.1	34.1	34.1	57.0	57.0			57.0	57.0
Actuated g/C Ratio		0.06		0.31	0.31	0.31	0.52	0.52			0.52	0.52
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)		98		396	371	467	68	2642			2642	822
v/s Ratio Prot		c0.00						c0.62			0.40	
v/s Ratio Perm				0.23	c0.24	0.06	0.07					0.00
v/c Ratio		0.03		0.72	0.77	0.20	0.13	1.20			0.77	0.00
Uniform Delay, d1		48.5		33.6	34.2	27.7	13.6	26.4			21.2	12.7
Progression Factor		1.00		1.00	1.00	1.00	1.00	1.00			1.00	1.00
Incremental Delay, d2		0.2		6.7	9.5	0.2	4.0	92.7			2.3	0.0
Delay (s)		48.7		40.3	43.7	28.0	17.6	119.0			23.4	12.7
Level of Service		D		D	D	C	B	F			C	B
Approach Delay (s)		48.7			39.0			118.8			23.4	
Approach LOS		D			D			F			C	

Intersection Summary

HCM 2000 Control Delay	75.9	HCM 2000 Level of Service	E
HCM 2000 Volume to Capacity ratio	0.99		
Actuated Cycle Length (s)	109.7	Sum of lost time (s)	14.0
Intersection Capacity Utilization	91.6%	ICU Level of Service	F
Analysis Period (min)	15		

c Critical Lane Group

Lanes, Volumes, Timings
103: Trafalgar Rd & Hwy 407 EB Off

TT (2041) - Scenario B - West Side Only
Timing Plan: PM Peak Hour

	EBL	EBR	NBL	NBT	SBT	SBR
Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	↩	↩		↗↗↗	↗↗↗	
Traffic Volume (vph)	87	168	0	3575	2429	0
Future Volume (vph)	87	168	0	3575	2429	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			251.9	363.6	
Travel Time (s)	39.9			18.1	26.2	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	87	168	0	3575	2429	0
Shared Lane Traffic (%)						
Lane Group Flow (vph)	87	168	0	3575	2429	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	CI+Ex	CI+Ex		CI+Ex	CI+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				CI+Ex	CI+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	

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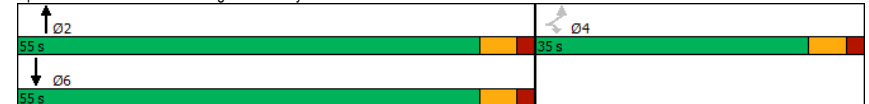
Lanes, Volumes, Timings
103: Trafalgar Rd & Hwy 407 EB Off

TT (2041) - Scenario B - West Side Only
Timing Plan: PM Peak Hour

	EBL	EBR	NBL	NBT	SBT	SBR
Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Minimum Split (s)	24.0	24.0		24.0	24.0	
Total Split (s)	35.0	35.0		55.0	55.0	
Total Split (%)	38.9%	38.9%		61.1%	61.1%	
Maximum Green (s)	29.0	29.0		49.0	49.0	
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)	15.2	15.2		54.0	54.0	
Actuated g/C Ratio	0.20	0.20		0.70	0.70	
v/c Ratio	0.25	0.54		1.01	0.68	
Control Delay	26.4	32.8		30.4	8.5	
Queue Delay	0.0	0.0		0.0	0.0	
Total Delay	26.4	32.8		30.4	8.5	
LOS	C	C		C	A	
Approach Delay	30.6			30.4	8.5	
Approach LOS	C			C	A	

Intersection Summary	
Area Type:	Other
Cycle Length: 90	
Actuated Cycle Length: 77.3	
Natural Cycle: 90	
Control Type: Semi Act-Uncoord	
Maximum v/c Ratio: 1.01	
Intersection Signal Delay: 22.0	Intersection LOS: C
Intersection Capacity Utilization 80.6%	ICU Level of Service D
Analysis Period (min) 15	

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



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Queues
103: Trafalgar Rd & Hwy 407 EB Off

TT (2041) - Scenario B - West Side Only
Timing Plan: PM Peak Hour

	EBL	EBR	NBT	SBT
Lane Group	EBL	EBR	NBT	SBT
Lane Group Flow (vph)	87	168	3575	2429
v/c Ratio	0.25	0.54	1.01	0.68
Control Delay	26.4	32.8	30.4	8.5
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	26.4	32.8	30.4	8.5
Queue Length 50th (m)	10.1	20.3	~166.0	60.1
Queue Length 95th (m)	20.9	37.1	#251.6	97.3
Internal Link Dist (m)	530.6		227.9	339.6
Turn Bay Length (m)				
Base Capacity (vph)	712	638	3555	3555
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	0.12	0.26	1.01	0.68

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.

HCM Signalized Intersection Capacity Analysis
103: Trafalgar Rd & Hwy 407 EB Off

TT (2041) - Scenario B - West Side Only
Timing Plan: PM Peak Hour

	EBL	EBR	NBL	NBT	SBT	SBR
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	↰	↱		↰	↰	↰
Traffic Volume (vph)	87	168	0	3575	2429	0
Future Volume (vph)	87	168	0	3575	2429	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	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	87	168	0	3575	2429	0
RTOR Reduction (vph)	0	2	0	0	0	0
Lane Group Flow (vph)	87	166	0	3575	2429	0
Turn Type	Perm	Perm		NA	NA	
Protected Phases				2	6	
Permitted Phases	4	4				
Actuated Green, G (s)	13.2	13.2		52.0	52.0	
Effective Green, g (s)	15.2	15.2		54.0	54.0	
Actuated g/C Ratio	0.20	0.20		0.70	0.70	
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)	348	311		3556	3556	
v/s Ratio Prot				c0.70	0.48	
v/s Ratio Perm	0.05	c0.10				
v/c Ratio	0.25	0.53		1.01	0.68	
Uniform Delay, d1	26.2	27.8		11.6	6.7	
Progression Factor	1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.4	1.8		16.4	1.1	
Delay (s)	26.6	29.6		28.0	7.8	
Level of Service	C	C		C	A	
Approach Delay (s)	28.5			28.0	7.8	
Approach LOS	C			C	A	

Intersection Summary

HCM 2000 Control Delay	20.2	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.93		
Actuated Cycle Length (s)	77.2	Sum of lost time (s)	10.0
Intersection Capacity Utilization	80.6%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

Lanes, Volumes, Timings
104: Trafalgar Rd & West Street A/East Street A

TT (2041) - Scenario B - West Side Only
Timing Plan: PM Peak Hour

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰	↱	↰	↰	↱	↱	↰	↰	↰	↰	↱	↱
Traffic Volume (vph)	347	0	212	0	0	0	20	3895	0	0	2440	157
Future Volume (vph)	347	0	212	0	0	0	20	3895	0	0	2440	157
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	90.0		90.0	90.0		90.0
Storage Lanes	1		1	1		1	1		1	1		1
Taper Length (m)	75.0			75.0			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
Flt Protected	0.950						0.950					
Satd. Flow (prot)	1770	1863	1583	1863	1863	1863	1770	5085	1863	1863	5085	1583
Flt Permitted	0.950						0.059					
Satd. Flow (perm)	1770	1863	1583	1863	1863	1863	110	5085	1863	1863	5085	1583
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			137									157
Link Speed (k/h)		50			50			80			80	
Link Distance (m)		216.0			205.9			233.3			251.9	
Travel Time (s)		15.6			14.8			10.5			11.3	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	347	0	212	0	0	0	20	3895	0	0	2440	157
Shared Lane Traffic (%)												
Lane Group Flow (vph)	347	0	212	0	0	0	20	3895	0	0	2440	157
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	pm+pt		Perm	pm+pt		pm+ov	pm+pt	NA	pm+ov	pm+pt	NA	pm+ov
Protected Phases	7	4		3	8	1	5	2	3	1	6	7
Permitted Phases	4		4	8		8	2		2	6		6

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Lanes, Volumes, Timings
104: Trafalgar Rd & West Street A/East Street A

TT (2041) - Scenario B - West Side Only
Timing Plan: PM Peak Hour

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector Phase	7	4	4	3	8	1	5	2	3	1	6	7
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)	9.5	24.0	24.0	9.5	24.0	11.0	9.5	24.0	9.5	11.0	24.0	9.5
Total Split (s)	10.0	24.3	24.3	9.7	24.0	25.0	9.5	91.0	9.7	25.0	106.5	10.0
Total Split (%)	6.7%	16.2%	16.2%	6.5%	16.0%	16.7%	6.3%	60.7%	6.5%	16.7%	71.0%	6.7%
Maximum Green (s)	7.0	18.3	18.3	6.7	18.0	22.0	6.5	85.0	6.7	22.0	100.5	7.0
Yellow Time (s)	3.0	4.0	4.0	3.0	4.0	3.0	3.0	4.0	3.0	3.0	4.0	3.0
All-Red Time (s)	0.0	2.0	2.0	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
Lost Time Adjust (s)	1.0	-2.0	-2.0	1.0	-2.0	-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	1.0	4.0	4.0	1.0	4.0	4.0	1.0
Lead/Lag	Lead	Lag	Lag	Lag	Lead	Lead	Lead	Lag	Lead	Lag	Lag	Lead
Lead-Lag Optimize?	Yes	Yes	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	3.0	3.0
Recall Mode	None	None	None	None	None	Max	None	C-Max	None	Max	C-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)	15.4		15.4				91.8	87.0			121.2	144.0
Actuated g/C Ratio	0.10		0.10				0.61	0.58			0.81	0.96
v/c Ratio	1.91		0.74				0.17	1.32			0.59	0.10
Control Delay	462.8		38.8				10.1	175.9			7.3	0.2
Queue Delay	0.0		0.0				0.0	0.1			0.3	0.0
Total Delay	462.8		38.8				10.1	176.0			7.6	0.2
LOS	F		D				B	F			A	A
Approach Delay		302.0						175.2			7.1	
Approach LOS		F						F			A	

Intersection Summary	
Area Type:	Other
Cycle Length:	150
Actuated Cycle Length:	150
Offset:	0 (0%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green
Natural Cycle:	150
Control Type:	Actuated-Coordinated
Maximum v/c Ratio:	1.91
Intersection Signal Delay:	123.5
	Intersection LOS: F
Intersection Capacity Utilization	101.1%
	ICU Level of Service G
Analysis Period (min)	15

Splits and Phases: 104: Trafalgar Rd & West Street A/East Street A

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Queues
104: Trafalgar Rd & West Street A/East Street A

TT (2041) - Scenario B - West Side Only
Timing Plan: PM Peak Hour

	EBL	EBR	NBL	NBT	SBT	SBR
Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Group Flow (vph)	347	212	20	3895	2440	157
v/c Ratio	1.91	0.74	0.17	1.32	0.59	0.10
Control Delay	462.8	38.8	10.1	175.9	7.3	0.2
Queue Delay	0.0	0.0	0.0	0.1	0.3	0.0
Total Delay	462.8	38.8	10.1	176.0	7.6	0.2
Queue Length 50th (m)	~157.0	21.3	1.2	~539.5	92.4	0.0
Queue Length 95th (m)	#184.8	46.7	2.8	#553.5	139.8	0.7
Internal Link Dist (m)			209.3	227.9		
Turn Bay Length (m)	50.0	50.0	90.0		90.0	
Base Capacity (vph)	182	340	128	2949	4107	1526
Starvation Cap Reductn	0	0	0	209	872	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	1.91	0.62	0.16	1.42	0.75	0.10

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.

HCM Signalized Intersection Capacity Analysis
104: Trafalgar Rd & West Street A/East Street A

TT (2041) - Scenario B - West Side Only
Timing Plan: PM Peak Hour

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰	↑	↱	↰	↑	↱	↰	↑	↱	↰	↑	↱
Traffic Volume (vph)	347	0	212	0	0	0	20	3895	0	0	2440	157
Future Volume (vph)	347	0	212	0	0	0	20	3895	0	0	2440	157
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	1.0
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				109	5085			5085	1583
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	347	0	212	0	0	0	20	3895	0	0	2440	157
RTOR Reduction (vph)	0	0	123	0	0	0	0	0	0	0	0	12
Lane Group Flow (vph)	347	0	89	0	0	0	20	3895	0	0	2440	145
Turn Type	pm+pt		Perm	pm+pt		pm+ov	pm+pt	NA	pm+ov	pm+pt	NA	pm+ov
Protected Phases	7	4		3	8	1	5	2	3	1	6	7
Permitted Phases	4		4	8		8	2		2	6		6
Actuated Green, G (s)	16.4		13.4				88.6	85.0			118.0	134.4
Effective Green, g (s)	15.4		15.4				86.6	87.0			120.0	138.4
Actuated g/C Ratio	0.10		0.10				0.58	0.58			0.80	0.92
Clearance Time (s)	3.0		6.0				3.0	6.0			6.0	3.0
Vehicle Extension (s)	3.0		3.0				3.0	3.0			3.0	3.0
Lane Grp Cap (vph)	181		162				91	2949			4068	1460
v/s Ratio Prot	c0.20						c0.00	c0.77			c0.48	0.01
v/s Ratio Perm			0.06				0.12					0.08
v/c Ratio	1.92		0.55				0.22	1.32			0.60	0.10
Uniform Delay, d1	67.3		64.0				16.4	31.5			5.8	0.5
Progression Factor	1.00		1.00				1.00	1.00			1.00	1.00
Incremental Delay, d2	432.5		3.8				1.2	146.8			0.7	0.0
Delay (s)	499.8		67.8				17.6	178.3			6.4	0.5
Level of Service	F		E				B	F			A	A
Approach Delay (s)		336.0			0.0			177.5			6.1	
Approach LOS		F			A			F			A	

Intersection Summary

HCM 2000 Control Delay	127.1	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	1.22		
Actuated Cycle Length (s)	150.0	Sum of lost time (s)	16.0
Intersection Capacity Utilization	101.1%	ICU Level of Service	G
Analysis Period (min)	15		

c Critical Lane Group

Lanes, Volumes, Timings
105: Trafalgar Rd & William Halton Parkway

TT (2041) - Scenario B - West Side Only
Timing Plan: PM Peak Hour

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↩	↩↩	↩	↩	↩↩	↩	↩	↩↩	↩	↩	↩↩	↩
Traffic Volume (vph)	1117	576	161	214	1456	547	719	2483	111	444	2001	465
Future Volume (vph)	1117	576	161	214	1456	547	719	2483	111	444	2001	465
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	0.098			0.388			0.087			0.095		
Satd. Flow (perm)	183	3539	1583	723	3539	1583	162	5085	1583	177	5085	1583
Right Turn on Red			Yes			Yes			Yes		Yes	
Satd. Flow (RTOR)			161			186			73		242	
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		212.9			205.0			193.0			233.3	
Travel Time (s)		15.3			14.8			13.9			16.8	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	1117	576	161	214	1456	547	719	2483	111	444	2001	465
Shared Lane Traffic (%)												
Lane Group Flow (vph)	1117	576	161	214	1456	547	719	2483	111	444	2001	465
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

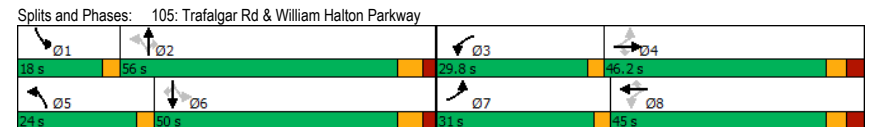
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Lanes, Volumes, Timings
105: Trafalgar Rd & William Halton Parkway

TT (2041) - Scenario B - West Side Only
Timing Plan: PM Peak Hour

	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)	14.0	38.0	38.0	14.2	38.0	38.0	13.9	42.9	42.9	13.9	42.9	42.9
Total Split (s)	31.0	46.2	46.2	29.8	45.0	45.0	24.0	56.0	56.0	18.0	50.0	50.0
Total Split (%)	20.7%	30.8%	30.8%	19.9%	30.0%	30.0%	16.0%	37.3%	37.3%	12.0%	33.3%	33.3%
Maximum Green (s)	28.0	39.2	39.2	26.8	38.0	38.0	21.0	49.1	49.1	15.0	43.1	43.1
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)	0.0	3.3	3.3	0.0	3.3	3.3	0.0	2.3	2.3	0.0	2.3	2.3
Lost Time Adjust (s)	1.0	-3.0	-3.0	1.0	-3.0	-3.0	1.0	-2.9	-2.9	1.0	-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	Max	Max	Max	Max	Max	Max
Walk Time (s)		7.0	7.0		7.0	7.0		7.0	7.0		7.0	7.0
Flash Dont Walk (s)		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 Effect Green (s)	72.0	52.7	52.7	56.3	41.0	41.0	70.0	52.0	52.0	60.0	46.0	46.0
Actuated g/C Ratio	0.48	0.35	0.35	0.38	0.27	0.27	0.47	0.35	0.35	0.40	0.31	0.31
v/c Ratio	2.99	0.46	0.24	0.57	1.51	0.96	2.48	1.41	0.19	2.03	1.28	0.71
Control Delay	923.1	39.9	6.0	30.5	270.4	65.1	697.5	224.6	13.9	502.9	174.5	28.1
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	923.1	39.9	6.0	30.5	270.4	65.1	697.5	224.6	13.9	502.9	174.5	28.1
LOS	F	D	A	C	F	E	F	F	B	F	F	C
Approach Delay		569.1			196.6		320.2			201.2		
Approach LOS		F			F		F			F		
Intersection Summary												
Area Type:		Other										
Cycle Length: 150												
Actuated Cycle Length: 150												
Natural Cycle: 150												
Control Type: Semi Act-Uncoord												
Maximum v/c Ratio: 2.99												
Intersection Signal Delay: 304.7							Intersection LOS: F					
Intersection Capacity Utilization 194.0%							ICU Level of Service H					
Analysis Period (min) 15												



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Queues
105: Trafalgar Rd & William Halton Parkway

TT (2041) - Scenario B - West Side Only
Timing Plan: PM Peak Hour

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	1117	576	161	214	1456	547	719	2483	111	444	2001	465
v/c Ratio	2.99	0.46	0.24	0.57	1.51	0.96	2.48	1.41	0.19	2.03	1.28	0.71
Control Delay	923.1	39.9	6.0	30.5	270.4	65.1	697.5	224.6	13.9	502.9	174.5	28.1
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	923.1	39.9	6.0	30.5	270.4	65.1	697.5	224.6	13.9	502.9	174.5	28.1
Queue Length 50th (m)	~555.1	68.7	0.0	36.5	~311.4	114.8	~336.0	~356.9	7.5	~188.3	~272.2	60.2
Queue Length 95th (m)	#635.2	91.3	16.1	54.0	#353.6	#188.6	#411.8	#382.4	21.2	#255.5	#299.8	102.0
Internal Link Dist (m)	188.9			181.0			169.0			209.3		
Turn Bay Length (m)	100.0		100.0	100.0		150.0	150.0		75.0			
Base Capacity (vph)	373	1242	660	502	967	567	290	1762	596	219	1559	653
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	2.99	0.46	0.24	0.43	1.51	0.96	2.48	1.41	0.19	2.03	1.28	0.71

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.

Queue shown is maximum after two cycles.

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

Queue shown is maximum after two cycles.

HCM Signalized Intersection Capacity Analysis
105: Trafalgar Rd & William Halton Parkway

TT (2041) - Scenario B - West Side Only
Timing Plan: PM Peak Hour

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔
Traffic Volume (vph)	1117	576	161	214	1456	547	719	2483	111	444	2001	465
Future Volume (vph)	1117	576	161	214	1456	547	719	2483	111	444	2001	465
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	0.10	1.00	1.00	0.39	1.00	1.00	0.09	1.00	1.00	0.10	1.00	1.00
Satd. Flow (perm)	182	3539	1583	723	3539	1583	162	5085	1583	177	5085	1583
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	1117	576	161	214	1456	547	719	2483	111	444	2001	465
RTOR Reduction (vph)	0	0	104	0	0	135	0	0	48	0	0	168
Lane Group Flow (vph)	1117	576	57	214	1456	412	719	2483	63	444	2001	297
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)	69.0	49.7	49.7	54.3	38.0	38.0	67.1	49.1	49.1	58.1	43.1	43.1
Effective Green, g (s)	68.0	52.7	52.7	52.3	41.0	41.0	66.1	52.0	52.0	56.1	46.0	46.0
Actuated g/C Ratio	0.45	0.35	0.35	0.35	0.27	0.27	0.44	0.35	0.35	0.37	0.31	0.31
Clearance Time (s)	3.0	7.0	7.0	3.0	7.0	7.0	3.0	6.9	6.9	3.0	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	1243	556	358	967	432	285	1762	548	214	1559	485
v/s Ratio Prot	c0.55	0.16		0.06	0.41		c0.34	0.49		0.19	0.39	
v/s Ratio Perm	c0.83		0.04	0.15		0.26	c0.77		0.04	0.58		0.19
v/c Ratio	3.04	0.46	0.10	0.60	1.51	0.95	2.52	1.41	0.12	2.07	1.28	0.61
Uniform Delay, d1	48.3	37.7	32.7	36.3	54.5	53.6	48.3	49.0	33.3	44.1	52.0	44.4
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	923.1	0.6	0.2	2.7	233.0	32.0	695.6	187.6	0.4	499.4	132.6	5.7
Delay (s)	971.5	38.3	32.9	38.9	287.5	85.6	743.8	236.6	33.8	543.5	184.6	50.1
Level of Service	F	D	C	D	F	F	F	F	C	F	F	D
Approach Delay (s)		600.0			213.7			339.9			217.9	
Approach LOS		F			F			F			F	

Intersection Summary

HCM 2000 Control Delay	325.1	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	2.72		
Actuated Cycle Length (s)	150.0	Sum of lost time (s)	16.0
Intersection Capacity Utilization	194.0%	ICU Level of Service	H
Analysis Period (min)	15		

c Critical Lane Group

Lanes, Volumes, Timings TT (2041) - Scenario B - West Side Only
106: Trafalgar Rd & Burnhamthorpe Rd/Burnhamthorpe Rd Timing Plan: PM Peak Hour

	←	→	↖	↗	←	→	↖	↗	←	→	↖	↗
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖	↖		↖	↖		↖	↖	↖	↖	↖	↖
Traffic Volume (vph)	155	339	18	135	297	522	100	2325	145	329	1585	271
Future Volume (vph)	155	339	18	135	297	522	100	2325	145	329	1585	271
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	1.00	1.00	1.00	1.00	1.00	1.00	0.91	1.00	1.00	0.91	1.00
Frt		0.992			0.904				0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1770	1848	0	1770	1684	0	1770	5085	1583	1770	5085	1583
Flt Permitted	0.137			0.246			0.105			0.095		
Satd. Flow (perm)	255	1848	0	458	1684	0	196	5085	1583	177	5085	1583
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		2			83				102			271
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	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	155	339	18	135	297	522	100	2325	145	329	1585	271
Shared Lane Traffic (%)												
Lane Group Flow (vph)	155	357	0	135	819	0	100	2325	145	329	1585	271
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	pm+ov	pm+pt	NA	pm+ov
Protected Phases	7	4		3	8		5	2	3	1	6	7
Permitted Phases	4			8			2		2	6		6

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Lanes, Volumes, Timings TT (2041) - Scenario B - West Side Only
106: Trafalgar Rd & Burnhamthorpe Rd/Burnhamthorpe Rd Timing Plan: PM Peak Hour

	←	→	↖	↗	←	→	↖	↗	←	→	↖	↗
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector Phase	7	4		3	8		5	2	3	1	6	7
Switch Phase												
Minimum Initial (s)	5.0	10.0		5.0	10.0		5.0	20.0	5.0	7.0	20.0	5.0
Minimum Split (s)	9.5	24.0		9.5	24.0		9.5	26.0	9.5	11.5	26.0	9.5
Total Split (s)	10.0	36.2		11.8	38.0		9.6	45.0	11.8	17.0	52.4	10.0
Total Split (%)	9.1%	32.9%		10.7%	34.5%		8.7%	40.9%	10.7%	15.5%	47.6%	9.1%
Maximum Green (s)	7.0	30.2		8.8	32.0		6.6	39.0	8.8	14.0	46.4	7.0
Yellow Time (s)	3.0	3.7		3.0	3.7		3.0	4.6	3.0	3.0	4.6	3.0
All-Red Time (s)	0.0	2.3		0.0	2.3		0.0	1.4	0.0	0.0	1.4	0.0
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	1.0	4.0	4.0	1.0
Lead/Lag	Lead	Lag		Lead	Lag		Lead	Lag	Lead	Lag	Lag	Lead
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	Max	None		Max	None		Max	Max	Max	Max	Max	Max
Act Effct Green (s)	38.2	32.2		41.8	34.0		46.6	41.0	55.8	58.0	48.4	61.4
Actuated g/C Ratio	0.35	0.29		0.38	0.31		0.42	0.37	0.51	0.53	0.44	0.56
v/c Ratio	0.91	0.66		0.51	1.42		0.61	1.23	0.17	1.17	0.71	0.27
Control Delay	75.7	40.7		28.8	227.4		32.6	139.0	5.6	136.1	27.2	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	75.7	40.7		28.8	227.4		32.6	139.0	5.6	136.1	27.2	2.1
LOS	E	D		C	F		C	F	A	F	C	A
Approach Delay		51.3			199.3			127.3			40.5	
Approach LOS		D			F			F			D	

Intersection Summary

Area Type: Other

Cycle Length: 110

Actuated Cycle Length: 110

Natural Cycle: 120

Control Type: Semi Act-Uncooord

Maximum v/c Ratio: 1.42

Intersection Signal Delay: 101.6

Intersection LOS: F

Intersection Capacity Utilization 132.7%

ICU Level of Service H

Analysis Period (min) 15

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



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Synchro 10 Report
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Queues
106: Trafalgar Rd & Burhamthorpe Rd/Burnhamthorpe Rd

TT (2041) - Scenario B - West Side Only
Timing Plan: PM Peak Hour

	EBL	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	155	357	135	819	100	2325	145	329	1585	271
v/c Ratio	0.91	0.66	0.51	1.42	0.61	1.23	0.17	1.17	0.71	0.27
Control Delay	75.7	40.7	28.8	227.4	32.6	139.0	5.6	136.1	27.2	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	75.7	40.7	28.8	227.4	32.6	139.0	5.6	136.1	27.2	2.1
Queue Length 50th (m)	21.3	65.8	18.3	~223.1	10.2	~222.9	4.4	~67.0	97.6	0.0
Queue Length 95th (m)	#52.9	97.1	31.4	#295.1	#24.3	#251.4	14.2	#121.4	114.7	10.7
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)	171	542	267	577	163	1895	853	281	2237	1003
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	0.91	0.66	0.51	1.42	0.61	1.23	0.17	1.17	0.71	0.27

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.

HCM Signalized Intersection Capacity Analysis
106: Trafalgar Rd & Burhamthorpe Rd/Burnhamthorpe Rd

TT (2041) - Scenario B - West Side Only
Timing Plan: PM Peak Hour

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔	↔		↔	↔		↔	↔	↔	↔	↔	↔
Traffic Volume (vph)	155	339	18	135	297	522	100	2325	145	329	1585	271
Future Volume (vph)	155	339	18	135	297	522	100	2325	145	329	1585	271
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	1.0	4.0	4.0	1.0
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	0.99		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	1849		1770	1685		1770	5085	1583	1770	5085	1583
Flt Permitted	0.14	1.00		0.25	1.00		0.11	1.00	1.00	0.10	1.00	1.00
Satd. Flow (perm)	255	1849		459	1685		196	5085	1583	177	5085	1583
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	155	339	18	135	297	522	100	2325	145	329	1585	271
RTOR Reduction (vph)	0	1	0	0	57	0	0	0	54	0	0	130
Lane Group Flow (vph)	155	356	0	135	762	0	100	2325	91	329	1585	141
Turn Type	pm+pt	NA		pm+pt	NA		pm+pt	NA	pm+ov	pm+pt	NA	pm+ov
Protected Phases	7	4		3	8		5	2	3	1	6	7
Permitted Phases	4			8			2		2	6		6
Actuated Green, G (s)	37.2	30.2		40.8	32.0		45.6	39.0	47.8	56.0	46.4	53.4
Effective Green, g (s)	35.2	32.2		38.8	34.0		43.6	41.0	51.8	55.0	48.4	57.4
Actuated g/C Ratio	0.32	0.29		0.35	0.31		0.40	0.37	0.47	0.50	0.44	0.52
Clearance Time (s)	3.0	6.0		3.0	6.0		3.0	6.0	3.0	3.0	6.0	3.0
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)	164	541		254	520		157	1895	745	276	2237	826
v/s Ratio Prot	c0.05	0.19		0.04	c0.45		0.03	c0.46	c0.01	c0.14	0.31	0.01
v/s Ratio Perm	0.25			0.15			0.22		0.05	0.45		0.08
v/c Ratio	0.95	0.66		0.53	1.46		0.64	1.23	0.12	1.19	0.71	0.17
Uniform Delay, d1	34.1	34.1		26.5	38.0		23.2	34.5	16.3	32.9	25.1	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	53.8	2.9		2.1	219.5		18.1	107.0	0.3	116.5	1.9	0.4
Delay (s)	87.9	36.9		28.6	257.5		41.3	141.5	16.7	149.3	27.0	14.3
Level of Service	F	D		C	F		D	F	B	F	C	B
Approach Delay (s)		52.4			225.1			130.6			43.8	
Approach LOS		D			F			F			D	

Intersection Summary

HCM 2000 Control Delay	108.2	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	1.29		
Actuated Cycle Length (s)	110.0	Sum of lost time (s)	16.0
Intersection Capacity Utilization	132.7%	ICU Level of Service	H
Analysis Period (min)	15		
c Critical Lane Group			

Lanes, Volumes, Timings
202: Trafalgar Rd & East Street C

TT (2041) - Scenario B - West Side Only
Timing Plan: PM Peak Hour

						
Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations				  	  	
Traffic Volume (vph)	0	318	0	3002	1867	306
Future Volume (vph)	0	318	0	3002	1867	306
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (m)	0.0	0.0	0.0			90.0
Storage Lanes	0	1	0			1
Taper Length (m)	7.5		7.5			
Lane Util. Factor	1.00	1.00	1.00	0.91	0.91	1.00
Frt		0.865				0.850
Flt Protected						
Satd. Flow (prot)	0	1611	0	5085	5085	1583
Flt Permitted						
Satd. Flow (perm)	0	1611	0	5085	5085	1583
Link Speed (k/h)	50			50	50	
Link Distance (m)	205.4			92.4	193.0	
Travel Time (s)	14.8			6.7	13.9	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	0	318	0	3002	1867	306
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	318	0	3002	1867	306
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	0.0			3.6	3.6	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	4.8			4.8	4.8	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)	25	15	25			15
Sign Control	Stop			Free	Free	
Intersection Summary						
Area Type:	Other					
Control Type:	Unsignalized					
Intersection Capacity Utilization	62.4%			ICU Level of Service B		
Analysis Period (min)	15					

HCM Unsignalized Intersection Capacity Analysis
202: Trafalgar Rd & East Street C

TT (2041) - Scenario B - West Side Only
Timing Plan: PM Peak Hour

								
Movement	EBL	EBR	NBL	NBT	SBT	SBR		
Lane Configurations				  	  			
Traffic Volume (veh/h)	0	318	0	3002	1867	306		
Future Volume (Veh/h)	0	318	0	3002	1867	306		
Sign Control	Stop			Free	Free			
Grade	0%			0%	0%			
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00		
Hourly flow rate (vph)	0	318	0	3002	1867	306		
Pedestrians								
Lane Width (m)								
Walking Speed (m/s)								
Percent Blockage								
Right turn flare (veh)								
Median type				None	None			
Median storage (veh)								
Upstream signal (m)				263	193			
pX, platoon unblocked	0.79	0.70	0.70					
vC, conflicting volume	2868	622	2173					
vC1, stage 1 conf vol								
vC2, stage 2 conf vol								
vCu, unblocked vol	0	0	1191					
tC, single (s)	6.8	6.9	4.1					
tC, 2 stage (s)								
tF (s)	3.5	3.3	2.2					
p0 queue free %	100	58	100					
cM capacity (veh/h)	812	763	409					
Direction, Lane #	EB 1	NB 1	NB 2	NB 3	SB 1	SB 2	SB 3	SB 4
Volume Total	318	1001	1001	1001	622	622	622	306
Volume Left	0	0	0	0	0	0	0	0
Volume Right	318	0	0	0	0	0	0	306
cSH	763	1700	1700	1700	1700	1700	1700	1700
Volume to Capacity	0.42	0.59	0.59	0.59	0.37	0.37	0.37	0.18
Queue Length 95th (m)	15.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Control Delay (s)	13.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Lane LOS	B							
Approach Delay (s)	13.1	0.0	0.0					
Approach LOS	B							
Intersection Summary								
Average Delay	0.8							
Intersection Capacity Utilization	62.4%			ICU Level of Service			B	
Analysis Period (min)	15							

Lanes, Volumes, Timings
203: East Street D & East Street A

TT (2041) - Scenario B - West Side Only
Timing Plan: PM Peak Hour

	→	↗	↖	←	↙	↘
Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑	↗		↖	↙	↘
Traffic Volume (vph)	44	0	0	0	0	0
Future Volume (vph)	44	0	0	0	0	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
Flt						
Flt Protected						
Satd. Flow (prot)	1863	1863	0	1863	1863	0
Flt Permitted						
Satd. Flow (perm)	1863	1863	0	1863	1863	0
Link Speed (k/h)	50			50	50	
Link Distance (m)	205.9			205.1	113.3	
Travel Time (s)	14.8			14.8	8.2	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	44	0	0	0	0	0
Shared Lane Traffic (%)						
Lane Group Flow (vph)	44	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)		15	25		25	15
Sign Control	Free			Free	Stop	
Intersection Summary						
Area Type:	Other					
Control Type:	Unsignalized					
Intersection Capacity Utilization 6.7%	ICU Level of Service A					
Analysis Period (min) 15						

HCM Unsignalized Intersection Capacity Analysis
203: East Street D & East Street A

TT (2041) - Scenario B - West Side Only
Timing Plan: PM Peak Hour

	→	↗	↖	←	↙	↘
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑	↗		↖	↙	↘
Traffic Volume (veh/h)	44	0	0	0	0	0
Future Volume (Veh/h)	44	0	0	0	0	0
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	44	0	0	0	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)	206					
pX, platoon unblocked						
vC, conflicting volume			44		44	44
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			44		44	44
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			100		100	100
cM capacity (veh/h)			1564		967	1026
Direction, Lane #	EB 1	EB 2	WB 1	NB 1		
Volume Total	44	0	0	0		
Volume Left	0	0	0	0		
Volume Right	0	0	0	0		
cSH	1700	1700	1700	1700		
Volume to Capacity	0.03	0.00	0.00	0.00		
Queue Length 95th (m)	0.0	0.0	0.0	0.0		
Control Delay (s)	0.0	0.0	0.0	0.0		
Lane LOS				A		
Approach Delay (s)	0.0		0.0	0.0		
Approach LOS				A		
Intersection Summary						
Average Delay			0.0			
Intersection Capacity Utilization			6.7%		ICU Level of Service	A
Analysis Period (min)			15			

Lanes, Volumes, Timings
204: East Street E & East Street A

TT (2041) - Scenario B - West Side Only
Timing Plan: PM Peak Hour

	→	↖	↗	←	↖	↗
Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↖			↖	↖	
Traffic Volume (vph)	0	44	0	0	0	0
Future Volume (vph)	0	44	0	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.865					
Flt Protected						
Satd. Flow (prot)	1611	0	0	1863	1863	0
Flt Permitted						
Satd. Flow (perm)	1611	0	0	1863	1863	0
Link Speed (k/h)	50			50	50	
Link Distance (m)	205.1			192.2	115.1	
Travel Time (s)	14.8			13.8	8.3	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	0	44	0	0	0	0
Shared Lane Traffic (%)						
Lane Group Flow (vph)	44	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)	0.0			0.0	3.6	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	4.8			4.8	4.8	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)		15	25		25	15
Sign Control	Free			Free	Stop	
Intersection Summary						
Area Type:	Other					
Control Type:	Unsignalized					
Intersection Capacity Utilization 6.7%	ICU Level of Service A					
Analysis Period (min) 15						

HCM Unsignalized Intersection Capacity Analysis
204: East Street E & East Street A

TT (2041) - Scenario B - West Side Only
Timing Plan: PM Peak Hour

	→	↖	↗	←	↖	↗
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↖			↖	↖	
Traffic Volume (veh/h)	0	44	0	0	0	0
Future Volume (Veh/h)	0	44	0	0	0	0
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	0	44	0	0	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			44		22	22
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			44		22	22
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			100		100	100
cM capacity (veh/h)			1564		995	1055
Direction, Lane #	EB 1	WB 1	NB 1			
Volume Total	44	0	0			
Volume Left	0	0	0			
Volume Right	44	0	0			
cSH	1700	1700	1700			
Volume to Capacity	0.03	0.00	0.00			
Queue Length 95th (m)	0.0	0.0	0.0			
Control Delay (s)	0.0	0.0	0.0			
Lane LOS			A			
Approach Delay (s)	0.0	0.0	0.0			
Approach LOS			A			
Intersection Summary						
Average Delay			0.0			
Intersection Capacity Utilization			6.7%		ICU Level of Service	A
Analysis Period (min)			15			

Lanes, Volumes, Timings
205: East Street F & East Street A

TT (2041) - Scenario B - West Side Only
Timing Plan: PM Peak Hour

						
Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
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	1.00	1.00	1.00
Frt						
Flt Protected						
Satd. Flow (prot)	1863	0	0	1863	1863	0
Flt Permitted						
Satd. Flow (perm)	1863	0	0	1863	1863	0
Link Speed (k/h)	50			50	50	
Link Distance (m)	192.2			209.4	115.6	
Travel Time (s)	13.8			15.1	8.3	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
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)	0.0			0.0	3.6	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	4.8			4.8	4.8	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)		15	25		25	15
Sign Control	Free			Free	Stop	
Intersection Summary						
Area Type:	Other					
Control Type:	Unsignalized					
Intersection Capacity Utilization	0.0%			ICU Level of Service A		
Analysis Period (min)	15					

HCM Unsignalized Intersection Capacity Analysis
205: East Street F & East Street A

TT (2041) - Scenario B - West Side Only
Timing Plan: PM Peak Hour

	→	↖	↗	←	↖	↗
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↖			↖	↖	
Traffic Volume (veh/h)	0	0	0	0	0	0
Future Volume (Veh/h)	0	0	0	0	0	0
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	0	0	0	0	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			0		0	0
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			0		0	0
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			100		100	100
cM capacity (veh/h)			1623		1023	1085
Direction, Lane #	EB 1	WB 1	NB 1			
Volume Total	0	0	0			
Volume Left	0	0	0			
Volume Right	0	0	0			
cSH	1700	1700	1700			
Volume to Capacity	0.00	0.00	0.00			
Queue Length 95th (m)	0.0	0.0	0.0			
Control Delay (s)	0.0	0.0	0.0			
Lane LOS			A			
Approach Delay (s)	0.0	0.0	0.0			
Approach LOS			A			
Intersection Summary						
Average Delay			0.0			
Intersection Capacity Utilization			0.0%		ICU Level of Service	A
Analysis Period (min)			15			

Lanes, Volumes, Timings
206: East Street D & East Street B

TT (2041) - Scenario B - West Side Only
Timing Plan: PM Peak Hour

	←	←	↑	↗	↘	↓
Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	↖		↖			↗
Traffic Volume (vph)	68	6	115	14	15	265
Future Volume (vph)	68	6	115	14	15	265
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	0.989		0.985			
Flt Protected	0.956					0.997
Satd. Flow (prot)	1761	0	1835	0	0	1857
Flt Permitted	0.956					0.997
Satd. Flow (perm)	1761	0	1835	0	0	1857
Link Speed (k/h)	50		50			50
Link Distance (m)	203.4		120.6			113.3
Travel Time (s)	14.6		8.7			8.2
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	68	6	115	14	15	265
Shared Lane Traffic (%)						
Lane Group Flow (vph)	74	0	129	0	0	280
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 35.8% ICU Level of Service A

Analysis Period (min) 15

HCM Unsignalized Intersection Capacity Analysis
206: East Street D & East Street B

TT (2041) - Scenario B - West Side Only
Timing Plan: PM Peak Hour

	←	←	↑	↗	↘	↓
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	↖		↖			↗
Traffic Volume (veh/h)	68	6	115	14	15	265
Future Volume (Veh/h)	68	6	115	14	15	265
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	68	6	115	14	15	265
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	417	122			129	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	417	122			129	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	88	99			99	
cM capacity (veh/h)	586	929			1457	

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	74	129	280
Volume Left	68	0	15
Volume Right	6	14	0
cSH	604	1700	1457
Volume to Capacity	0.12	0.08	0.01
Queue Length 95th (m)	3.1	0.0	0.2
Control Delay (s)	11.8	0.0	0.5
Lane LOS	B		A
Approach Delay (s)	11.8	0.0	0.5
Approach LOS	B		

Intersection Summary

Average Delay	2.1		
Intersection Capacity Utilization	35.8%	ICU Level of Service	A
Analysis Period (min)	15		

Lanes, Volumes, Timings

207: East Street E & East Street B

TT (2041) - Scenario B - West Side Only

Timing Plan: PM Peak Hour

	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	44	0
Future Volume (vph)	0	0	0	0	0	0	0	0	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
Flt Protected												
Satd. Flow (prot)	0	1863	0	0	1863	0	0	1863	0	0	1863	0
Flt Permitted												
Satd. Flow (perm)	0	1863	0	0	1863	0	0	1863	0	0	1863	0
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		203.4			193.8			120.6			115.1	
Travel Time (s)		14.6			14.0			8.7			8.3	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	0	0	0	0	0	0	0	0	0	0	44	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	0	0	0	0	0	0	0	0	0	44	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 6.7%

ICU Level of Service A

Analysis Period (min) 15

HCM Unsignalized Intersection Capacity Analysis

207: East Street E & East Street B

TT (2041) - Scenario B - West Side Only

Timing Plan: PM Peak Hour

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Movement		↔			↔			↔			↔	
Lane Configurations		↔			↔			↔			↔	
Traffic Volume (veh/h)	0	0	0	0	0	0	0	0	0	0	44	0
Future Volume (Veh/h)	0	0	0	0	0	0	0	0	0	0	44	0
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	0	0	0	0	0	0	0	0	0	0	44	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)								121				
pX, platoon unblocked												
vC, conflicting volume	44	44	44	44	44	0	44			0		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	44	44	44	44	44	0	44			0		
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	100	100	100	100			100		
cM capacity (veh/h)	958	848	1026	958	848	1085	1564			1623		
Direction, Lane #	EB 1	WB 1	NB 1	SB 1								
Volume Total	0	0	0	44								
Volume Left	0	0	0	0								
Volume Right	0	0	0	0								
cSH	1700	1700	1700	1623								
Volume to Capacity	0.00	0.00	0.00	0.00								
Queue Length 95th (m)	0.0	0.0	0.0	0.0								
Control Delay (s)	0.0	0.0	0.0	0.0								
Lane LOS	A	A										
Approach Delay (s)	0.0	0.0	0.0	0.0								
Approach LOS	A	A										
Intersection Summary												
Average Delay				0.0								
Intersection Capacity Utilization				6.7%				ICU Level of Service			A	
Analysis Period (min)				15								

Lanes, Volumes, Timings
208: East Street F & East Street B

TT (2041) - Scenario B - West Side Only
Timing Plan: PM Peak Hour

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	1.00	1.00	1.00
Flt						
Flt Protected						
Satd. Flow (prot)	1863	0	0	1863	1863	0
Flt Permitted						
Satd. Flow (perm)	1863	0	0	1863	1863	0
Link Speed (k/h)	50			50	50	
Link Distance (m)	193.8			120.1	115.6	
Travel Time (s)	14.0			8.6	8.3	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
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			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	25			15
Sign Control	Stop			Free	Free	
Intersection Summary						
Area Type:	Other					
Control Type:	Unsignalized					
Intersection Capacity Utilization	0.0%			ICU Level of Service A		
Analysis Period (min)	15					

HCM Unsignalized Intersection Capacity Analysis
208: East Street F & East Street B

TT (2041) - Scenario B - West Side Only
Timing Plan: PM Peak Hour

	EBL	EBR	NBL	NBT	SBT	SBR
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	↔			↔	↔	
Traffic Volume (veh/h)	0	0	0	0	0	0
Future Volume (Veh/h)	0	0	0	0	0	0
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	0	0	0	0	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	0	0	0			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	0	0	0			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	100	100	100			
cM capacity (veh/h)	1023	1085	1623			
Direction, Lane #	EB 1	NB 1	SB 1			
Volume Total	0	0	0			
Volume Left	0	0	0			
Volume Right	0	0	0			
cSH	1700	1700	1700			
Volume to Capacity	0.00	0.00	0.00			
Queue Length 95th (m)	0.0	0.0	0.0			
Control Delay (s)	0.0	0.0	0.0			
Lane LOS	A					
Approach Delay (s)	0.0	0.0	0.0			
Approach LOS	A					
Intersection Summary						
Average Delay		0.0				
Intersection Capacity Utilization		0.0%		ICU Level of Service	A	
Analysis Period (min)		15				

Lanes, Volumes, Timings
209: William Halton Parkway & East Street D

TT (2041) - Scenario B - West Side Only
Timing Plan: PM Peak Hour

						
Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	0	1131	2217	0	0	0
Future Volume (vph)	0	1131	2217	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (m)	0.0			50.0	0.0	0.0
Storage Lanes	0			1	0	1
Taper Length (m)	7.5				7.5	
Lane Util. Factor	1.00	0.95	0.95	1.00	1.00	1.00
Frt						
Flt Protected						
Satd. Flow (prot)	0	3539	3539	1863	0	1863
Flt Permitted						
Satd. Flow (perm)	0	3539	3539	1863	0	1863
Link Speed (k/h)		50	50		50	
Link Distance (m)		205.0	201.5		120.6	
Travel Time (s)		14.8	14.5		8.7	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	0	1131	2217	0	0	0
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	1131	2217	0	0	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		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	25	15
Sign Control		Free	Free		Stop	
Intersection Summary						
Area Type:	Other					
Control Type:	Unsignalized					
Intersection Capacity Utilization 64.6%	ICU Level of Service C					
Analysis Period (min) 15						

HCM Unsignalized Intersection Capacity Analysis
209: William Halton Parkway & East Street D

TT (2041) - Scenario B - West Side Only
Timing Plan: PM Peak Hour

						
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	0	1131	2217	0	0	0
Future Volume (Veh/h)	0	1131	2217	0	0	0
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	0	1131	2217	0	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)		205	201			
pX, platoon unblocked	0.26				0.32	0.26
vC, conflicting volume	2217				2782	1108
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	0				591	0
tC, single (s)	4.1				6.8	6.9
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	100				100	100
cM capacity (veh/h)	419				140	280
Direction, Lane #	EB 1	EB 2	WB 1	WB 2	WB 3	SB 1
Volume Total	566	566	1108	1108	0	0
Volume Left	0	0	0	0	0	0
Volume Right	0	0	0	0	0	0
cSH	1700	1700	1700	1700	1700	1700
Volume to Capacity	0.33	0.33	0.65	0.65	0.00	0.00
Queue Length 95th (m)	0.0	0.0	0.0	0.0	0.0	0.0
Control Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0
Lane LOS						
Approach Delay (s)	0.0		0.0			0.0
Approach LOS						A
Intersection Summary						
Average Delay			0.0			
Intersection Capacity Utilization			64.6%		ICU Level of Service	C
Analysis Period (min)			15			

Lanes, Volumes, Timings

210: William Halton Parkway & East Street E

TT (2041) - Scenario B - West Side Only

Timing Plan: PM Peak Hour

	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations	↰	↱	↱	↰	↰	↰
Traffic Volume (vph)	0	1131	2217	0	0	0
Future Volume (vph)	0	1131	2217	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (m)	90.0			50.0	0.0	0.0
Storage Lanes	1			1	1	0
Taper Length (m)	100.0				7.5	
Lane Util. Factor	1.00	*0.95	*0.95	1.00	1.00	1.00
Frt						
Flt Protected						
Satd. Flow (prot)	1863	3539	3539	1863	1863	0
Flt Permitted						
Satd. Flow (perm)	1863	3539	3539	1863	1863	0
Right Turn on Red				Yes	Yes	
Satd. Flow (RTOR)						
Link Speed (k/h)		50	50		50	
Link Distance (m)		201.5	195.6		120.6	
Travel Time (s)		14.5	14.1		8.7	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	0	1131	2217	0	0	0
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	1131	2217	0	0	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
Number of Detectors	1	2	2	1	1	
Detector Template	Left	Thru	Thru	Right	Left	
Leading Detector (m)	2.0	10.0	10.0	2.0	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)	2.0	0.6	0.6	2.0	2.0	
Detector 1 Type	CI+Ex	CI+Ex	CI+Ex	CI+Ex	CI+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		CI+Ex	CI+Ex			
Detector 2 Channel						
Detector 2 Extend (s)		0.0	0.0			
Turn Type	pm+pt	NA	NA	Perm	Perm	
Protected Phases	7	4	8			
Permitted Phases	4			8	6	

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Lanes, Volumes, Timings

210: William Halton Parkway & East Street E

TT (2041) - Scenario B - West Side Only

Timing Plan: PM Peak Hour

	EBL	EBT	WBT	WBR	SBL	SBR
Detector Phase	7	4	8	8	6	
Switch Phase						
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	
Minimum Split (s)	9.5	24.0	24.0	24.0	24.0	
Total Split (s)	17.6	95.6	78.0	78.0	24.4	
Total Split (%)	14.7%	79.7%	65.0%	65.0%	20.3%	
Maximum Green (s)	14.6	89.6	72.0	72.0	18.4	
Yellow Time (s)	3.0	4.0	4.0	4.0	4.0	
All-Red Time (s)	0.0	2.0	2.0	2.0	2.0	
Lost Time Adjust (s)	1.0	-2.0	-2.0	-2.0	-2.0	
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	
Lead/Lag	Lead		Lag	Lag		
Lead-Lag Optimize?	Yes		Yes	Yes		
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	
Flash Dont Walk (s)		11.0	11.0	11.0	11.0	
Pedestrian Calls (#/hr)		0	0	0	0	
Act Effct Green (s)		95.6	74.0			
Actuated g/C Ratio		1.00	0.77			
v/c Ratio		0.32	0.81			
Control Delay		0.2	9.6			
Queue Delay		0.0	0.0			
Total Delay		0.2	9.6			
LOS		A	A			
Approach Delay		0.2	9.6			
Approach LOS		A	A			

Intersection Summary

Area Type: Other

Cycle Length: 120

Actuated Cycle Length: 95.6

Natural Cycle: 90

Control Type: Semi Act-Uncoord

Maximum v/c Ratio: 0.81

Intersection Signal Delay: 6.5

Intersection LOS: A

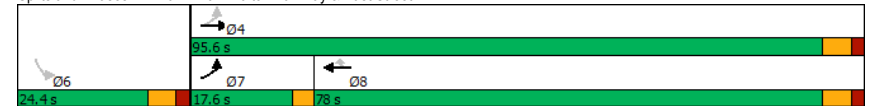
Intersection Capacity Utilization 64.6%

ICU Level of Service C

Analysis Period (min) 15

* User Entered Value

Splits and Phases: 210: William Halton Parkway & East Street E

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Queues
210: William Halton Parkway & East Street E

TT (2041) - Scenario B - West Side Only
Timing Plan: PM Peak Hour

	→	←
Lane Group	EBT	WBT
Lane Group Flow (vph)	1131	2217
v/c Ratio	0.32	0.81
Control Delay	0.2	9.6
Queue Delay	0.0	0.0
Total Delay	0.2	9.6
Queue Length 50th (m)	0.0	102.0
Queue Length 95th (m)	0.0	131.6
Internal Link Dist (m)	177.5	171.6
Turn Bay Length (m)		
Base Capacity (vph)	3539	2739
Starvation Cap Reductn	0	0
Spillback Cap Reductn	0	0
Storage Cap Reductn	0	0
Reduced v/c Ratio	0.32	0.81
Intersection Summary		

HCM Signalized Intersection Capacity Analysis
210: William Halton Parkway & East Street E

TT (2041) - Scenario B - West Side Only
Timing Plan: PM Peak Hour

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	0	1131	2217	0	0	0
Future Volume (vph)	0	1131	2217	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0	4.0			
Lane Util. Factor		*0.95	*0.95			
Frt		1.00	1.00			
Flt Protected		1.00	1.00			
Satd. Flow (prot)		3539	3539			
Flt Permitted		1.00	1.00			
Satd. Flow (perm)		3539	3539			
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	0	1131	2217	0	0	0
RTOR Reduction (vph)	0	0	0	0	0	0
Lane Group Flow (vph)	0	1131	2217	0	0	0
Turn Type	pm+pt	NA	NA	Perm	Perm	
Protected Phases	7	4	8			
Permitted Phases	4			8	6	
Actuated Green, G (s)		95.6	72.0			
Effective Green, g (s)		95.6	74.0			
Actuated g/C Ratio		1.00	0.77			
Clearance Time (s)		6.0	6.0			
Vehicle Extension (s)		3.0	3.0			
Lane Grp Cap (vph)		3539	2739			
v/s Ratio Prot		c0.32	c0.63			
v/s Ratio Perm						
v/c Ratio		0.32	0.81			
Uniform Delay, d1		0.0	6.5			
Progression Factor		1.00	1.00			
Incremental Delay, d2		0.2	2.7			
Delay (s)		0.2	9.2			
Level of Service		A	A			
Approach Delay (s)		0.2	9.2		0.0	
Approach LOS		A	A		A	
Intersection Summary						
HCM 2000 Control Delay			6.2	HCM 2000 Level of Service		A
HCM 2000 Volume to Capacity ratio			0.80			
Actuated Cycle Length (s)			95.6	Sum of lost time (s)		14.0
Intersection Capacity Utilization			64.6%	ICU Level of Service		C
Analysis Period (min)			15			
c Critical Lane Group						

c Critical Lane Group

Lanes, Volumes, Timings
211: William Halton Parkway & East Street F

TT (2041) - Scenario B - West Side Only
Timing Plan: PM Peak Hour

						
Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		 	 		 	
Traffic Volume (vph)	0	1131	2217	0	0	0
Future Volume (vph)	0	1131	2217	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (m)	90.0			0.0	0.0	0.0
Storage Lanes	1			0	1	0
Taper Length (m)	100.0				7.5	
Lane Util. Factor	1.00	0.95	0.95	0.95	1.00	1.00
Frt						
Flt Protected						
Satd. Flow (prot)	1863	3539	3539	0	1863	0
Flt Permitted						
Satd. Flow (perm)	1863	3539	3539	0	1863	0
Link Speed (k/h)		50	50		50	
Link Distance (m)		195.6	407.9		120.1	
Travel Time (s)		14.1	29.4		8.6	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	0	1131	2217	0	0	0
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	1131	2217	0	0	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 64.6%				ICU Level of Service C		
Analysis Period (min) 15						

HCM Unsignalized Intersection Capacity Analysis
211: William Halton Parkway & East Street F

TT (2041) - Scenario B - West Side Only
Timing Plan: PM Peak Hour

	EBL	EBT	WBT	WBR	SBL	SBR
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations	↔	↕	↕		↕	
Traffic Volume (veh/h)	0	1131	2217	0	0	0
Future Volume (Veh/h)	0	1131	2217	0	0	0
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	0	1131	2217	0	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)		196				
pX, platoon unblocked						
vC, conflicting volume	2217				2782	1108
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	2217				2782	1108
tC, single (s)	4.1				6.8	6.9
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	100				100	100
cM capacity (veh/h)	232				15	204
Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	SB 1
Volume Total	0	566	566	1478	739	0
Volume Left	0	0	0	0	0	0
Volume Right	0	0	0	0	0	0
cSH	1700	1700	1700	1700	1700	1700
Volume to Capacity	0.00	0.33	0.33	0.87	0.43	0.00
Queue Length 95th (m)	0.0	0.0	0.0	0.0	0.0	0.0
Control Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0
Lane LOS						A
Approach Delay (s)	0.0			0.0		0.0
Approach LOS						A
Intersection Summary						
Average Delay			0.0			
Intersection Capacity Utilization			64.6%		ICU Level of Service	C
Analysis Period (min)			15			

Lanes, Volumes, Timings

212: West Street A & Transit Station

TT (2041) - Scenario B - West Side Only

Timing Plan: PM Peak Hour

	←	←	↑	↗	↘	↓
Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	↔		↔			↔
Traffic Volume (vph)	150	0	0	512	0	0
Future Volume (vph)	150	0	0	512	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt			0.865			
Flt Protected	0.950					
Satd. Flow (prot)	1770	0	1611	0	0	1863
Flt Permitted	0.950					
Satd. Flow (perm)	1770	0	1611	0	0	1863
Link Speed (k/h)	50		50			50
Link Distance (m)	216.0		234.7			101.9
Travel Time (s)	15.6		16.9			7.3
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	150	0	0	512	0	0
Shared Lane Traffic (%)						
Lane Group Flow (vph)	150	0	512	0	0	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(m)	7.2		0.0		Left	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 46.7% ICU Level of Service A

Analysis Period (min) 15

HCM Unsignalized Intersection Capacity Analysis

212: West Street A & Transit Station

TT (2041) - Scenario B - West Side Only

Timing Plan: PM Peak Hour

	←	←	↑	↗	↘	↓
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	↔		↔			↔
Traffic Volume (veh/h)	150	0	0	512	0	0
Future Volume (Veh/h)	150	0	0	512	0	0
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	150	0	0	512	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	256	256			512	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	256	256			512	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	80	100			100	
cM capacity (veh/h)	733	783			1053	

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	150	512	0
Volume Left	150	0	0
Volume Right	0	512	0
cSH	733	1700	1700
Volume to Capacity	0.20	0.30	0.00
Queue Length 95th (m)	5.7	0.0	0.0
Control Delay (s)	11.2	0.0	0.0
Lane LOS	B		
Approach Delay (s)	11.2	0.0	0.0
Approach LOS	B		

Intersection Summary

Average Delay	2.5		
Intersection Capacity Utilization	46.7%	ICU Level of Service	A
Analysis Period (min)	15		

Lanes, Volumes, Timings TT (2041) - Scenario B - West Side Only
213: East Street A/West Street A & William Halton Parkway Timing Plan: PM Peak Hour

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑	↑		↑↑	↑			↑			↑
Traffic Volume (vph)	0	1229	16	0	2488	152	0	0	641	0	0	39
Future Volume (vph)	0	1229	16	0	2488	152	0	0	641	0	0	39
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	0.0		90.0	0.0		90.0	0.0		0.0	0.0		0.0
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	0.95	1.00	1.00	0.95	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt			0.850			0.850			0.865			0.865
Fit Protected												
Satd. Flow (prot)	0	3539	1583	0	3539	1583	0	0	1611	0	0	1611
Fit Permitted												
Satd. Flow (perm)	0	3539	1583	0	3539	1583	0	0	1611	0	0	1611
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		200.8			212.9			103.7			234.7	
Travel Time (s)		14.5			15.3			7.5			16.9	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	0	1229	16	0	2488	152	0	0	641	0	0	39
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	1229	16	0	2488	152	0	0	641	0	0	39
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 80.3%	ICU Level of Service D											
Analysis Period (min) 15												

HCM Unsignalized Intersection Capacity Analysis TT (2041) - Scenario B - West Side Only
213: East Street A/West Street A & William Halton Parkway Timing Plan: PM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑	↑		↑↑	↑			↑			↑
Traffic Volume (veh/h)	0	1229	16	0	2488	152	0	0	641	0	0	39
Future Volume (Veh/h)	0	1229	16	0	2488	152	0	0	641	0	0	39
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	0	1229	16	0	2488	152	0	0	641	0	0	39
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type	None			None								
Median storage veh												
Upstream signal (m)	201			213								
pX, platoon unblocked	0.73			0.80			0.83	0.83	0.80	0.83	0.83	0.73
vC, conflicting volume	2640			1245			2512	3869	614	3744	3733	1244
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	2510			818			1356	2987	35	2836	2824	609
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	23	100	100	88
cM capacity (veh/h)	131			648			79	11	829	2	15	322
Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	WB 3	NB 1	SB 1				
Volume Total	614	614	16	1244	1244	152	641	39				
Volume Left	0	0	0	0	0	0	0	0				
Volume Right	0	0	16	0	0	152	641	39				
cSH	1700	1700	1700	1700	1700	1700	829	322				
Volume to Capacity	0.36	0.36	0.01	0.73	0.73	0.09	0.77	0.12				
Queue Length 95th (m)	0.0	0.0	0.0	0.0	0.0	0.0	57.8	3.1				
Control Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	22.5	17.7				
Lane LOS							C	C				
Approach Delay (s)	0.0			0.0			22.5	17.7				
Approach LOS							C	C				
Intersection Summary												
Average Delay				3.3								
Intersection Capacity Utilization				80.3%	ICU Level of Service			D				
Analysis Period (min)				15								

Lanes, Volumes, Timings

214: West Street D & William Halton Parkway

TT (2041) - Scenario B - West Side Only

Timing Plan: PM Peak Hour

	←	→	↖	↗	←	↖	↗	↖	↗	↖	↗	↖	↗
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations	↖	↖	↖	↖	↖	↖	↖	↖	↖	↖	↖	↖	
Traffic Volume (vph)	0	912	18	337	2072	118	83	0	140	193	0	14	
Future Volume (vph)	0	912	18	337	2072	118	83	0	140	193	0	14	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	
Storage Length (m)	90.0		90.0	90.0		90.0	50.0		0.0	50.0		0.0	
Storage Lanes	1		1	1		1	1		0	1		0	
Taper Length (m)	100.0			100.0			75.0			75.0			
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Frt			0.850			0.850		0.850			0.850		
Flt Protected				0.950			0.950			0.950			
Satd. Flow (prot)	1863	3539	1583	1770	3539	1583	1770	1583	0	1770	1583	0	
Flt Permitted				0.168			0.748			0.621			
Satd. Flow (perm)	1863	3539	1583	313	3539	1583	1393	1583	0	1157	1583	0	
Right Turn on Red			Yes			Yes			Yes			Yes	
Satd. Flow (RTOR)			73			118			503			73	
Link Speed (k/h)		50			50			50			50		
Link Distance (m)		573.3			200.8			99.4			133.2		
Travel Time (s)		41.3			14.5			7.2			9.6		
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Adj. Flow (vph)	0	912	18	337	2072	118	83	0	140	193	0	14	
Shared Lane Traffic (%)													
Lane Group Flow (vph)	0	912	18	337	2072	118	83	140	0	193	14	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	1	2	1	1	2		1	2		
Detector Template	Left	Thru	Right	Left	Thru	Right	Left	Thru		Left	Thru		
Leading Detector (m)	2.0	10.0	2.0	2.0	10.0	2.0	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		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	2.0	0.6	2.0	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		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	pm+pt	NA	Perm	Perm	NA		Perm	NA		
Protected Phases		4			3		8			2		6	
Permitted Phases	4		4		8		8		2		6		

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Lanes, Volumes, Timings

214: West Street D & William Halton Parkway

TT (2041) - Scenario B - West Side Only

Timing Plan: PM Peak Hour

	←	→	↖	↗	←	↖	↗	↖	↗	↖	↗	↖	↗
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Detector Phase	4	4	4	3	8	8	2	2		6	6		
Switch Phase													
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0		5.0	5.0		
Minimum Split (s)	24.0	24.0	24.0	9.5	24.0	24.0	24.0	24.0		29.0	29.0		
Total Split (s)	34.8	34.8	34.8	26.2	61.0	61.0	29.0	29.0		29.0	29.0		
Total Split (%)	38.7%	38.7%	38.7%	29.1%	67.8%	67.8%	32.2%	32.2%		32.2%	32.2%		
Maximum Green (s)	28.8	28.8	28.8	23.2	55.0	55.0	23.0	23.0		23.0	23.0		
Yellow Time (s)	4.0	4.0	4.0	3.0	4.0	4.0	4.0	4.0		4.0	4.0		
All-Red Time (s)	2.0	2.0	2.0	0.0	2.0	2.0	2.0	2.0		2.0	2.0		
Lost Time Adjust (s)	-2.0	-2.0	-2.0	1.0	-2.0	-2.0	-2.0	-2.0		1.0	-2.0		
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0		7.0	4.0		
Lead/Lag	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	None	None	Min	Min		Min	Min		
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 Effect Green (s)		35.5	35.5	53.8	53.8	53.8	20.3	20.3		17.2	20.3		
Actuated g/C Ratio		0.43	0.43	0.65	0.65	0.65	0.25	0.25		0.21	0.25		
v/c Ratio		0.60	0.02	0.74	0.90	0.11	0.24	0.18		0.80	0.03		
Control Delay		21.9	0.1	21.5	19.4	1.6	27.7	0.5		56.3	0.1		
Queue Delay		0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0		
Total Delay		21.9	0.1	21.5	19.4	1.6	27.7	0.5		56.3	0.1		
LOS		C	A	C	B	A	C	A		E	A		
Approach Delay		21.5			18.8		10.6				52.5		
Approach LOS		C			B		B				D		

Intersection Summary

Area Type: Other

Cycle Length: 90

Actuated Cycle Length: 82.2

Natural Cycle: 80

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 0.90

Intersection Signal Delay: 20.8

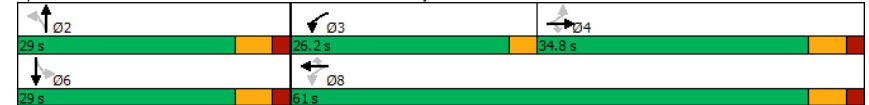
Intersection LOS: C

Intersection Capacity Utilization 94.1%

ICU Level of Service F

Analysis Period (min) 15

Splits and Phases: 214: West Street D & William Halton Parkway

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Queues
214: West Street D & William Halton Parkway

TT (2041) - Scenario B - West Side Only
Timing Plan: PM Peak Hour

	→	↘	↙	←	↖	↗	↘	↙	↓
Lane Group	EBT	EBR	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	912	18	337	2072	118	83	140	193	14
v/c Ratio	0.60	0.02	0.74	0.90	0.11	0.24	0.18	0.80	0.03
Control Delay	21.9	0.1	21.5	19.4	1.6	27.7	0.5	56.3	0.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	21.9	0.1	21.5	19.4	1.6	27.7	0.5	56.3	0.1
Queue Length 50th (m)	57.2	0.0	23.4	131.2	0.0	10.9	0.0	30.0	0.0
Queue Length 95th (m)	93.5	0.0	52.6	#205.2	5.4	22.2	0.0	#58.3	0.0
Internal Link Dist (m)	549.3		176.8			75.4		109.2	
Turn Bay Length (m)		90.0	90.0		90.0	50.0		50.0	
Base Capacity (vph)	1533	727	606	2504	1154	432	838	315	541
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.59	0.02	0.56	0.83	0.10	0.19	0.17	0.61	0.03

Intersection Summary

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

HCM Signalized Intersection Capacity Analysis
214: West Street D & William Halton Parkway

TT (2041) - Scenario B - West Side Only
Timing Plan: PM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	912	18	337	2072	118	83	0	140	193	0	14
Future Volume (vph)	0	912	18	337	2072	118	83	0	140	193	0	14
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		7.0	4.0	
Lane Util. Factor		0.95	1.00	1.00	0.95	1.00	1.00	1.00		1.00	1.00	
Frt		1.00	0.85	1.00	1.00	0.85	1.00	0.85		1.00	0.85	
Flt Protected		1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)		3539	1583	1770	3539	1583	1770	1583		1770	1583	
Flt Permitted		1.00	1.00	0.17	1.00	1.00	0.75	1.00		0.62	1.00	
Satd. Flow (perm)		3539	1583	313	3539	1583	1394	1583		1157	1583	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	0	912	18	337	2072	118	83	0	140	193	0	14
RTOR Reduction (vph)	0	0	10	0	0	41	0	105	0	0	11	0
Lane Group Flow (vph)	0	912	8	337	2072	77	83	35	0	193	3	0
Turn Type	Perm	NA	Perm	pm+pt	NA	Perm	Perm	NA		Perm	NA	
Protected Phases		4		3	8		2				6	
Permitted Phases	4		4	8		8	2			6		
Actuated Green, G (s)		33.5	33.5	51.7	51.7	51.7	18.2	18.2		18.2	18.2	
Effective Green, g (s)		35.5	35.5	50.7	53.7	53.7	20.2	20.2		17.2	20.2	
Actuated g/C Ratio		0.43	0.43	0.62	0.66	0.66	0.25	0.25		0.21	0.25	
Clearance Time (s)		6.0	6.0	3.0	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	3.0	
Lane Grp Cap (vph)		1533	686	446	2320	1037	343	390		242	390	
v/s Ratio Prot		0.26		0.13	c0.59			0.02			0.00	
v/s Ratio Perm			0.00	0.34		0.05	0.06			c0.17		
v/c Ratio		0.59	0.01	0.76	0.89	0.07	0.24	0.09		0.80	0.01	
Uniform Delay, d1		17.7	13.2	12.6	11.7	5.1	24.7	23.8		30.7	23.3	
Progression Factor		1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Incremental Delay, d2		0.6	0.0	7.1	4.9	0.0	0.4	0.1		16.5	0.0	
Delay (s)		18.3	13.2	19.8	16.6	5.1	25.1	23.9		47.2	23.3	
Level of Service		B	B	B	B	A	C	C		D	C	
Approach Delay (s)		18.2			16.5			24.3			45.6	
Approach LOS		B			B			C			D	

Intersection Summary

HCM 2000 Control Delay	18.9	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.88		
Actuated Cycle Length (s)	81.9	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

Lanes, Volumes, Timings

215: East Street A & West Street B

TT (2041) - Scenario B - West Side Only

Timing Plan: PM Peak Hour

						
Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	289	140	0	146	105	26
Future Volume (vph)	289	140	0	146	105	26
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	0.956				0.973	
Flt Protected	0.967					
Satd. Flow (prot)	1722	0	0	1863	1812	0
Flt Permitted	0.967					
Satd. Flow (perm)	1722	0	0	1863	1812	0
Link Speed (k/h)	50			50	50	
Link Distance (m)	202.4			83.5	103.7	
Travel Time (s)	14.6			6.0	7.5	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	289	140	0	146	105	26
Shared Lane Traffic (%)						
Lane Group Flow (vph)	429	0	0	146	131	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
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	25			15
Sign Control	Stop			Free	Free	

Intersection Summary

Area Type: Other

Control Type: Unsignalized

Intersection Capacity Utilization 38.9% ICU Level of Service A

Analysis Period (min) 15

HCM Unsignalized Intersection Capacity Analysis

215: East Street A & West Street B

TT (2041) - Scenario B - West Side Only

Timing Plan: PM Peak Hour

						
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	289	140	0	146	105	26
Future Volume (Veh/h)	289	140	0	146	105	26
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	289	140	0	146	105	26
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	None	
Median storage (veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	264	118	131			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	264	118	131			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	60	85	100			
cM capacity (veh/h)	725	934	1454			
Direction, Lane #	EB 1	NB 1	SB 1			
Volume Total	429	146	131			
Volume Left	289	0	0			
Volume Right	140	0	26			
cSH	782	1454	1700			
Volume to Capacity	0.55	0.00	0.08			
Queue Length 95th (m)	25.4	0.0	0.0			
Control Delay (s)	15.0	0.0	0.0			
Lane LOS	C					
Approach Delay (s)	15.0	0.0	0.0			
Approach LOS	C					
Intersection Summary						
Average Delay		9.1				
Intersection Capacity Utilization		38.9%		ICU Level of Service	A	
Analysis Period (min)		15				

Lanes, Volumes, Timings

216: West Street D & West Street B

TT (2041) - Scenario B - West Side Only

Timing Plan: PM Peak Hour

	←	←	↑	↗	↘	↓
Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	↰		↱			↱
Traffic Volume (vph)	0	41	182	0	206	149
Future Volume (vph)	0	41	182	0	206	149
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.865					
Flt Protected						0.972
Satd. Flow (prot)	1611	0	1863	0	0	1811
Flt Permitted						0.972
Satd. Flow (perm)	1611	0	1863	0	0	1811
Link Speed (k/h)	50		50			50
Link Distance (m)	202.4		82.8			99.4
Travel Time (s)	14.6		6.0			7.2
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	0	41	182	0	206	149
Shared Lane Traffic (%)						
Lane Group Flow (vph)	41	0	182	0	0	355
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
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		15	25	
Sign Control	Stop		Free			Free

Intersection Summary

Area Type: Other

Control Type: Unsignalized

Intersection Capacity Utilization 42.2% ICU Level of Service A

Analysis Period (min) 15

HCM Unsignalized Intersection Capacity Analysis

216: West Street D & West Street B

TT (2041) - Scenario B - West Side Only

Timing Plan: PM Peak Hour

	←	←	↑	↗	↘	↓
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	↰		↱			↱
Traffic Volume (veh/h)	0	41	182	0	206	149
Future Volume (Veh/h)	0	41	182	0	206	149
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	0	41	182	0	206	149
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage (veh)						
Upstream signal (m)						99
pX, platoon unblocked	0.91					
vC, conflicting volume	743	182			182	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	672	182			182	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	100	95			85	
cM capacity (veh/h)	328	861			1393	

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	41	182	355
Volume Left	0	0	206
Volume Right	41	0	0
cSH	861	1700	1393
Volume to Capacity	0.05	0.11	0.15
Queue Length 95th (m)	1.1	0.0	3.9
Control Delay (s)	9.4	0.0	5.2
Lane LOS	A		A
Approach Delay (s)	9.4	0.0	5.2
Approach LOS	A		

Intersection Summary

Average Delay	3.9		
Intersection Capacity Utilization	42.2%	ICU Level of Service	A
Analysis Period (min)	15		

Lanes, Volumes, Timings
217: East Street C & East Street A

TT (2041) - Scenario B - West Side Only
Timing Plan: PM Peak Hour

	EBL	EBT	WBT	WBR	SBL	SBR
Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↔	↔		↔	↔
Traffic Volume (vph)	0	113	121	271	201	5
Future Volume (vph)	0	113	121	271	201	5
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			0.907		0.997	
Flt Protected					0.953	
Satd. Flow (prot)	0	1863	1690	0	1770	0
Flt Permitted					0.953	
Satd. Flow (perm)	0	1863	1690	0	1770	0
Link Speed (k/h)		50	50		50	
Link Distance (m)		206.1	205.4		83.5	
Travel Time (s)		14.8	14.8		6.0	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	0	113	121	271	201	5
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	113	392	0	206	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 41.1% ICU Level of Service A

Analysis Period (min) 15

HCM Unsignalized Intersection Capacity Analysis
217: East Street C & East Street A

TT (2041) - Scenario B - West Side Only
Timing Plan: PM Peak Hour

	EBL	EBT	WBT	WBR	SBL	SBR
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↔	↔		↔	↔
Traffic Volume (veh/h)	0	113	121	271	201	5
Future Volume (Veh/h)	0	113	121	271	201	5
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	0	113	121	271	201	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	392				370	256
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	392				370	256
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	100				68	99
cM capacity (veh/h)	1167				631	782

Direction, Lane #	EB 1	WB 1	SB 1
Volume Total	113	392	206
Volume Left	0	0	201
Volume Right	0	271	5
cSH	1167	1700	634
Volume to Capacity	0.00	0.23	0.33
Queue Length 95th (m)	0.0	0.0	10.6
Control Delay (s)	0.0	0.0	13.4
Lane LOS			B
Approach Delay (s)	0.0	0.0	13.4
Approach LOS			B

Intersection Summary

Average Delay 3.9

Intersection Capacity Utilization 41.1% ICU Level of Service A

Analysis Period (min) 15

Lanes, Volumes, Timings

218: West Street D & East Street C

TT (2041) - Scenario B - West Side Only

Timing Plan: PM Peak Hour

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔			↔			↔			↔	
Traffic Volume (vph)	0	0	0	48	0	73	0	155	57	94	55	0
Future Volume (vph)	0	0	0	48	0	73	0	155	57	94	55	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					0.919			0.964				
Flt Protected					0.981						0.969	
Satd. Flow (prot)	0	1863	0	0	1679	0	0	1796	0	0	1805	0
Flt Permitted					0.981						0.969	
Satd. Flow (perm)	0	1863	0	0	1679	0	0	1796	0	0	1805	0
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		164.8			206.1			68.2			82.8	
Travel Time (s)		11.9			14.8			4.9			6.0	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	0	0	0	48	0	73	0	155	57	94	55	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	0	0	0	121	0	0	212	0	0	149	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 36.9%

ICU Level of Service A

Analysis Period (min) 15

HCM Unsignalized Intersection Capacity Analysis

218: West Street D & East Street C

TT (2041) - Scenario B - West Side Only

Timing Plan: PM Peak Hour

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Movement		↔			↔			↔			↔	
Lane Configurations		↔			↔			↔			↔	
Traffic Volume (veh/h)	0	0	0	48	0	73	0	155	57	94	55	0
Future Volume (Veh/h)	0	0	0	48	0	73	0	155	57	94	55	0
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	0	0	0	48	0	73	0	155	57	94	55	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	73			0			160	169	0	267	132	36
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	73			0			160	169	0	267	132	36
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			97			100	78	95	82	93	100
cM capacity (veh/h)	1527			1623			743	702	1085	528	736	1036
Direction, Lane #	EB 1	WB 1		NB 1	SB 1							
Volume Total	0	121		212	149							
Volume Left	0	48		0	94							
Volume Right	0	73		57	0							
cSH	1700	1623		776	589							
Volume to Capacity	0.00	0.03		0.27	0.25							
Queue Length 95th (m)	0.0	0.7		8.3	7.5							
Control Delay (s)	0.0	3.0		11.4	13.2							
Lane LOS		A		B	B							
Approach Delay (s)	0.0	3.0		11.4	13.2							
Approach LOS				B	B							
Intersection Summary												
Average Delay				9.8								
Intersection Capacity Utilization		36.9%			ICU Level of Service				A			
Analysis Period (min)				15								